



2019 Joint MMM-Intermag Conference

January 14-18, 2019
Washington, DC

PROGRAM

Marriott Wardman Park
www.magnetism.org



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GENERAL CONFERENCE INFORMATION

SCOPE OF THE CONFERENCE

The 14th Joint MMM-Intermag Conference (2019 Joint) is sponsored jointly by AIP Publishing and the IEEE Magnetics Society, in cooperation with the American Physical Society. Members of the international scientific and engineering communities interested in recent developments in fundamental and applied magnetism are invited to attend and contribute to the technical sessions. The technical program will include invited and contributed papers in oral and poster sessions, invited symposia, a plenary session, and an evening session, with about 1500 presentations overall. This Conference provides an outstanding opportunity for worldwide participants to meet their colleagues and collaborators and discuss developments in all areas of magnetism research.

WASHINGTON, DC

Welcome to Washington, DC, the Nation's Capital! DC is a fantastic place to visit—you'll want to extend your stay to see it all! With over 100+ [free things to do](#), world-class restaurants around every corner, more museums than you could visit in a month, gorgeous historical homes and buildings, live theater and music, both city and Capitol tours, shopping, and more, you will never be bored. From the White House and the Washington Monument, to the [International Spy Museum](#) and the [National Zoo](#), to the new Wharf on the Southwest Waterfront, you'll fill your days (and nights) with exciting sights and adventures. Go to www.washington.org for more information.

HOTEL

All Conference sessions will be held at the Wardman Park Marriott Hotel, in the beautiful Woodley Park neighborhood of northwest DC, close to Embassy Row, Rock Creek Park, Dupont Circle, the National Zoo, and lots of restaurants. The hotel is conveniently located at the Woodley Park/Zoo/Adams Morgan stop on the Metro's Red Line, making your trip to and from the airport, and in and around town, a breeze.

A block of discounted hotel rooms has been reserved for attendees at the Marriott. Please support our efforts to keep registration fees low by booking your room here. Discounted rates are available until December 21 at www.magnetism.org under "Travel Guide/Hotel Information".

SPECIAL CONFERENCE SESSIONS

Tutorial: Foundational Methods for Understanding Magnetic Materials

Monday, January 14 2:30 - 5:00 pm
Salon 2

Co-Chairs: Laura H. Lewis, *Northeastern University*
2019 Joint Conference Program Co-Chair
Steve May, *Drexel University*
2019 Joint Conference Program Co-Chair

Magnetometry—the Good, the Bad and the Ugly
Plamen Stamenov, *Trinity College Dublin*

Computational Methods in Magnetism: From First Principles to Magnetization Dynamics
Claudia Mewes, *University of Alabama*

Ferromagnetic Resonance
Mingzhong Wu, *Colorado State University*

Symposia

There will be eight symposia during the Conference which consist entirely of invited talks by experts in the field.

Tuesday 8:30 am	AA	Spin-transport in Insulators: From Transport in Ferromagnets to Unconventional Magnonics in Antiferromagnets
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Tuesday 1:30 pm	BA	Magnetic Nanoparticles and Nanograins for Biosensing and Magnetic Recording
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Wednesday 8:30 am	CA	Switching Antiferromagnets by Spin-orbit Torques
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Thursday 8:30 am	EA	3D Magnetic Frustration: Pyrochlore, Spinel and FCC Lattices
	EB	Magnetism for the Brain: Challenges and Solutions

Thursday 1:30 pm	FA	Voltage Control of Nanomagnetism
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Friday 8:30 am	GA	Energy Harvesting and Transformations Based on Magnetic Materials
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Friday 1:30 pm	HA	Magnetism Research Using X-ray Free Electron Lasers
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Young Professionals Panel Session

Tuesday, January 15 12:30 - 1:30 pm
Wilson AB

Chair: Ikenna Nlebedim, *Iowa State University*

Panelists: Jun Cui, *Iowa State University*

Randy Dumas, *Quantum Design*

Olga Kazakova, *National Physical Laboratory*

Melissa Patterson, *AIP Publishing*

If you have just recently entered the professional workforce, please join us for a special panel session focused on “**Navigating Career Domain Walls as Young Professionals in Magnetism**”, sponsored by the IEEE Magnetism Society. Lunch will be provided at no extra cost to attendees. **Space is limited so advance registration is required.**

Meet the Experts Panel Session

Supported by:



Tuesday, January 15 6:00 - 7:30 pm
Maryland

Co-Chairs: Laura H. Lewis, *Northeastern University*
2019 Joint Conference Program Co-Chair

Steve May, *Drexel University*

2019 Joint Conference Program Co-Chair

Panelists: Johan Åkerman

Professor of Physics, University of Gothenburg

Meigan Aronson

Dean of Science, University of British Columbia

Gang Chen
Professor of Physics, Fudan University

Shikha Jain
Principal Research Engineer, Western Digital

June Lau
Staff Physicist, NIST

Chris Leighton
*Distinguished McKnight University Professor,
University of Minnesota
Editor, Physical Review Materials*

Students and post-doctoral researchers are invited to attend the Meet the Experts Panel Session to be held on Tuesday evening, followed by a networking reception. This event provides young researchers with an exclusive opportunity to hear from a panel of six experts from different fields for advice on career planning, technical paper writing and publication, job searches and interviews, society involvement, and more. **Space is limited so advance registration is required.**

Communications Workshop

Wednesday, January 16 12:30 - 1:30 pm
Wilson AB

Co-Chairs: Laura H. Lewis, *Northeastern University*
2019 Joint Conference Program Co-Chair

Steve May, *Drexel University*
2019 Joint Conference Program Co-Chair

Evidence-Based Strategies for Communicating Your Science

Dr. Rose Hendricks, *Researcher,
FrameWorks Institute*

No skill contributes more consistently, and more meaningfully, to professional achievement than the ability to shape thinking and secure support through communication. In this event, sponsored by the IEEE Magnetics Society, recommendations for communicating science in an accessible and engaging way, will be provided. These recommendations, based in qualitative and quantitative social science research, will help audience members communicate their own work more effectively to other scientists as well as to members of the public. To that end, particular emphasis will be placed on tailoring scientific communications to various audiences. These recommendations are provided by the FrameWorks Institute, a nonprofit organization that conducts research to help the nonprofit sector better communicate about scientific and social issues. Lunch will be provided at no extra cost to attendees. **Space is limited so advance registration is required.**

Plenary Session

Wednesday, January 16 4:30 - 6:30 pm
Salons 2 & 3

Welcome

Pallavi Dhagat, *Oregon State University*
IEEE Magnetics Society President

Awards Presentation by the IEEE Magnetics Society

Jürgen Fassbender, *Helmholtz-Zentrum Dresden -
Rossendorf*
*IEEE Magnetics Society Honors and Awards
Committee Chair*

Congratulations to the Achievement Award Winner:

Bernard Dieny, *Spintec*

For contributions to spintronics applications including spin-valves and MRAMs and for strengthening the relationship between magnetism and microelectronic communities.

Congratulations to the Distinguished Service Award Winner:

David Jiles, *Iowa State University*

For twenty years of leadership in the Magnetism Society as Editor and Editor-in-Chief of IEEE Transactions on Magnetism and as an elected member of the Administrative Committee.

Awards and recognition will also be given to the Best Student Presentation Finalists, IEEE Fellows, Distinguished Lecturers, Magnetism as Art Finalists, Student Travel Grant Recipients and others.

Plenary Talk

Chair: Suzanne te Velthuis, *Argonne National Laboratory*
2019 Joint Conference General Chair

Quantum Magnetism: An Unfinished Revolution

Meigan Aronson, *Dean of Science,*
University of British Columbia

Meigan Aronson is Dean of the Faculty of Science at the University of British Columbia, where she is also Professor of Physics and Astronomy. Previously she served as Dean of Science at Texas A&M University (2015-2018), and as Professor of Physics and Astronomy at Stony Brook University while concurrently leading the correlated electron materials group in the Condensed Matter Physics and Materials Science Department at Brookhaven National Laboratory (2007-2015). Her research interests include correlated electron materials and the discovery and characterization of quantum materials. Aronson has an extensive publication record, and has been honored with a number of fellowships, including from the American Physical Society and the Neutron Scattering Society of America. Among her many professional activities, she is the current chair of the Oak Ridge National Laboratory Neutron Advisory Board and the National High Magnetic Field Laboratory External Advisory Committee. In addition, Aronson has been a member of several advisory committees for the National Academy Board on Physics and Astronomy. Recently, she served as a panel lead for the US Department of Energy Basic Research Needs Workshop on Quantum Materials for Energy Relevant Technology.

Smithsonian National Zoo Lecture

Thursday, January 17 12:00 - 1:00 pm
Maryland

Co-Chairs: Laura H. Lewis, *Northeastern University*
2019 Joint Conference Program Co-Chair

Steve May, *Drexel University*
2019 Joint Conference Program Co-Chair

How Do Animals Navigate Long-Distance Migrations and What is the Role of the Earth's Magnetic Field?

Dr. Emily Cohen, *Research Ecologist,*
Migratory Bird Center, Smithsonian
Conservation Biology Institute

Join us as Dr. Emily Cohen reviews the phenomena and diversity of long-distance animal migrations and what we know about the mechanisms animals use to navigate during these journeys with a particular focus on magnetoreception and birds.

Evening Session

Thursday, January 17 6:00 - 7:30 pm
Salon 2

Co-Chairs: Laura H. Lewis, *Northeastern University*
2019 Joint Conference Program Co-Chair

Steve May, *Drexel University*
2019 Joint Conference Program Co-Chair

2D Magnets and Heterostructures

Xiaodong Xu, *University of Washington*

Xiaodong Xu is a Boeing Distinguished Professor in the Department of Physics and the Department of Materials Science and Engineering at the University of Washington. He received his PhD (Physics, 2008) from the University of Michigan and then performed postdoctoral research (2009-2010) at the Center for Nanoscale Systems at Cornell University. His nanoscale quantum optoelectronics group at University of Washington focuses on creation, control, and understanding of novel device physics based on two-dimensional quantum materials. Selected awards include DAPRA YFA, NSF Early Career Award, DoE Early Career Award, Cottrell Scholar Award, and IUPAP Young Scientist Prize in Semiconductor Physics.

What Will We Make Magnets From?

Alexander King, *Iowa State University*

Alexander King is the founding and former Director of the U.S. Department of Energy's Critical Materials Institute—one of DOE's four Energy Innovation Hubs established to accelerate scientific discovery of critical energy technologies. King was also Director of DOE's Ames Laboratory (2008-2013) and was Head of the School of Materials Engineering at Purdue University from 1999 to 2007. A native Londoner, King is a Fellow of the Institute of Mining Minerals and Materials, ASM International, and the Materials Research Society. He was also a Visiting Fellow of the Japan Society for the Promotion of Science in 1996, President of the Materials Research Society (MRS) for 2002, U.S. Department of State Jefferson Science Fellow for 2005-06. King's most recent work, highlighted in a 2013 TEDx talk and as the 2017 TMS & ASM Distinguished Lecturer on Materials and Society, focuses on understanding the dynamics of materials supply-chain failures and implementing effective strategies to avoid or alleviate them.

SPECIAL CONFERENCE EVENTS

Magnetism as Art Showcase

Supported by:



The 2019 Joint Conference will host a Magnetism as Art Showcase, to highlight the beauty of magnetism and magnetic materials. Selected submissions will be displayed at the Conference and all submissions will be posted to the [Conference Facebook](#) page. Four finalists will be determined by popular vote and of those finalists, one winner will be selected by a panel of local Washington, DC art experts. Finalists will receive a \$200 cash prize, and the winner will receive a \$400 cash prize, presented at the Plenary Session on Wednesday. **Don't forget to take a look at the selected submissions on display and vote for your favorite! Submit your ballot by 12:30 pm on Wednesday, January 16.**

IEEE Magnetics Society Annual Meeting

Tuesday, January 15

4:30 - 5:15 pm

Washington 4

This meeting is open to all Joint Conference participants, and food and drinks will be served. Come to learn more about what the IEEE Magnetics Society is doing to support and strengthen the magnetics community, and about the benefits of belonging to the Society. Your suggestions and feedback are most welcome.

By joining the IEEE Magnetics Society, you become part of the world's best-known magnetics organization. In addition to discounts on Conference registrations, such as the 2019 MMM Conference, you will gain access to local Chapter events and technical activities. To join, go to www.ieeemagnetics.org. If you would like to use your IEEE Magnetics Society membership to qualify for the registration discount, you must join *before you register* for the 2019 MMM Conference.

Women in Magnetism Networking Reception

Tuesday, January 15

4:30 - 6:00 pm

Stone's Throw Restaurant

Expand your professional network! Don't miss the Women in Magnetism Networking Reception, sponsored by the IEEE Magnetics Society. This is an opportunity to become acquainted with women in the profession and to discuss a range of topics including leadership, work-life balance, and professional development. All students, researchers and retirees are encouraged to attend.

Plenary Reception—Welcome to Embassy Row

Wednesday, January 16

6:30 - 8:00 pm

Salon 1 and Marriott Foyer

Immediately following the Plenary Session on Wednesday, Conference attendees are invited to attend a Plenary Reception. Join us for a taste of the international flavors of Embassy Row in Washington, DC. And, of course, there will be a great selection of local beers and wines, sponsored by the IEEE Magnetics Society. Don't miss this uniquely DC event!

Student Networking Reception and Next Generation Magneticians Science Slam

Thursday, January 17

4:30 - 6:00 pm

Wilson

The Student Networking Reception, sponsored by the IEEE Magnetics Society, is a fun networking event open to all current student registrants. Come for the food and drinks and stay for the friends, old and new.

This reception will be held concurrently with, and right next door to, the Next Generation Magneticians Science Slam. Present your work in a different way! Join us for this innovative and funny event, full of emotion and creativity to introduce your scientific research from a new angle, a new perspective. This is not your boring weekly seminar! Recite, rap, sing, make a photographic design, screen a video, dance: we leave it to your discretion and creativity. Just let us know about your performance by December 1 so that we can accommodate your needs. Email ScienceSlamINTERMAG@gmail.com to submit your idea.

Bierstuben

Join us Monday 5:00 - 6:30 pm and Tuesday and Thursday from 4:30 - 6:00 pm for a taste of the best local beers as you network among the poster sessions and exhibits.

Tuesday Bierstube supported by:



MATERION

Coffee

Complimentary coffee service will be available Tuesday through Friday mornings from 8:15 - 9:45 am in the Exhibit/Poster Hall.

Tuesday coffee break supported by:



REGISTRATION

Registration Hours:

Monday	12:30 pm - 6:30 pm
Tuesday	7:00 am - 7:00 pm
Wednesday	8:00 am - 7:00 pm
Thursday	8:00 am - 2:00 pm
Friday	8:00 am - 1:30 pm

Onsite Registration Rates:

IEEE, AIP Society, or AIP Affiliated Society Member

Full.....	\$725
Student.....	\$270
Retiree.....	\$330
Life Member.....	\$225

Non-member

Full.....	\$870
Student.....	\$325
Retiree.....	\$400

CAMERA, CELL PHONE AND VIDEO RECORDING POLICIES

By registering for this meeting, all attendees acknowledge that they may be photographed by Conference personnel while at events, and that those photos may be used for promotional purposes, in Conference publications and websites, and on social media sites. Any recording of sessions (audio, video, still photography, etc.) intended for personal use, distribution, publication, or copyright is strictly prohibited. Attendees violating this policy may be asked to leave the session.

NAME BADGE POLICY

Attendees are required to wear name badges to enter all Conference events.

PRIVACY POLICY

By registering for the 2019 Joint Conference, you agree to receive emails related to this Conference for a period up to three months after the Conference concludes. Your personal information is for Conference use only and will not be shared with anyone else. During the registration process, you will also have the option to join the mailing list for future Joint, MMM, Intermag and ICM Conferences. If you do not select this option, you will not receive any emails for future Conferences. You can modify your email preferences at any time by contacting us at info@mmmconference.com.

CODE OF CONDUCT

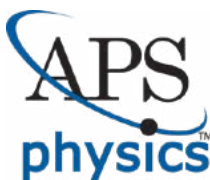
The objective of the Conference organizers is to create a collegial, inclusive, and professional environment at the Conference in order to facilitate and support open scientific discourse and advance knowledge in the field of magnetism. Creating this environment is the responsibility of all participants, including attendees, speakers, vendors, exhibitors, Conference management staff and organizers. It is the policy of the Conference that all meeting and Conference participants will conduct themselves in a professional manner that is welcoming and free from any form of bias, discrimination, harassment, or retaliation.

Accordingly, participants are required to treat each other with respect and consideration and avoid any actions or statements based on individual characteristics such as age, ancestry, color, disability or handicap, national origin, race, religion, gender, sexual or affectional orientation, gender identity, gender expression, appearance, matriculation, political affiliation, marital status, veteran status, or any other characteristic protected by law. Discriminatory or harassing behavior of any kind will not be tolerated. Harassment includes but is not limited to inappropriate or intimidating behavior and language, unwelcome jokes or comments, unwanted touching or attention, offensive images, and stalking.

Violations of this policy, or those additionally referred to in the [IEEE Code of Conduct](#), should be reported to the Conference organizers, management staff, or to the IEEE Magnetics Society President. Sanctions may range from verbal or written warning, to ejection from the meeting without refund. Retaliation for complaints of inappropriate conduct will not be tolerated.

WIRELESS INTERNET ACCESS

Supported by:



Wi-Fi for attendees is jointly supported by the American Physical Society and the IEEE Magnetics Society.

Network: APS_PhysicalReview
Password: PRMaterials

SESSION CHAIRS

Poster and Oral Session Chairs should attend the Session Chair Breakfast at 7:15 am in Washington 4 (Exhibit Level) **on the day of their session**. Timer slides will be pre-loaded on the session laptops in each oral session room, however, Session Chairs should bring their laptop to be used as a backup for presentations if needed.

SPEAKER REHEARSAL ROOM

Presenters are encouraged to use the Speaker Rehearsal Room in Room 8222 to practice their presentations with the provided audio-visual equipment (LCD projector and screen). This room is available from Monday at 1:00 pm until Friday at 1:00 pm.

PUBLICATIONS

Peer-reviewed Conference papers will be published online in late 2019 as special issues of *AIP Advances* and the *IEEE Transactions on Magnetics* (TMAG). Entire sessions will be assigned to one of these journals by the Publication Co-Chairs. Invited papers will be published in the Journal to which their session is assigned. All accepted papers are identified by presentation ID. All *AIP Advances* papers will be open access at no additional cost to the authors.

To check the status of their papers, authors should refer to the AIP submission site at <http://mmm.peerx-press.org> or the IEEE submission site at <https://mc.manuscriptcentral.com/transmag-ieee>. For all other publication questions, visit the Conference Office in Room 8226.

ORAL SESSIONS

Nine simultaneous oral sessions will be held daily from 8:30 - 11:30 am and 1:30 - 4:30 pm. The Wednesday afternoon sessions will be held from 1:30 - 3:18 pm to accommodate the Plenary Session.

Speakers must bring their presentation on their own laptop computer. If you are unable to bring a laptop for any reason, presenters should alert their Session Chair and arrange to share their presentation by email.

In each session room there will be a multi-port switchbox so that speakers can connect their laptop during the question period of the previous speaker. Each speaker will be responsible for promptly connecting to the projector and switching to the correct input port. **The presentation timer will begin immediately after the introduction by the Session Chair. No extra time will be given in the event of technical difficulties as session timing must be strictly maintained to allow attendees to attend talks in multiple parallel symposia.** Speakers are strongly encouraged to test their laptop connections and screen resolution settings in the Speaker Rehearsal Room prior to the start of the session.

There will be a dedicated audio-visual technician in each oral session room to assist presenters as needed.

BEST STUDENT PRESENTATION AWARD

The Best Student Presentation competition, sponsored by the IEEE Magnetics Society, recognizes and encourages excellence in graduate studies in the field of magnetism. There will be a \$1000 one-year fellowship for the winner and \$250 one-year fellowship for the remaining finalists, who will be announced at the Presentation of Awards during the Plenary Session on Wednesday afternoon. Conference attendees are encouraged to attend the finalists' talks and support these young scientists.

Finalists:

- AB-07
- Spin-Orbit Torque and Nernst Effects in $\text{Bi}_x\text{Sb}_{1-x}$ Ferromagnet Heterostructures**
Niklas Roschewsky, *University of California, Berkeley*

- AG-11** **Large MR Ratio by Using Metastable bcc-Cu Spacer Layer in Epitaxial Current In-Plane Giant Magnetoresistance Devices**
Kresna B. Fathoni, *National Institute for Materials Science and University of Tsukuba*
- BC-01** **Controlling the Profile, Stability and Dynamics of Chiral Hybrid Skyrmions**
William Legrand, *Université Paris-Saclay*
- CE-03** **Single Domain Magnetoelastic Terfenol-D Microdisks for Particle and Cell Manipulation**
Zhuyun Xiao, *University of California, Los Angeles*
- CB-09** **Electric-field Control of Spin Accumulation Direction in a Spin-orbit Torque Device**
Rahul Mishra, *National University of Singapore*

Congratulations to the Best Student Presentation Award Winner at the 2017 MMM Conference:

- BE-02** ***Enhancement of $L2_1$ Order and Spin-Polarization of Co_2FeSi Thin Film by Substitution of Fe with Ti***
Jiamin Chen, *University of Tsukuba*

Congratulations to the Best Student Presentation Award Winner at the 2018 Intermag Conference:

- AI-11** ***Mutually Synchronized 2D Spin Hall Nano-oscillator Arrays***
Mohammad Zahedinejad, *University of Gothenburg*

IEEE SUMMER SCHOOL ON MAGNETICS POSTERS

Posters describing projects designed and executed by two student groups from the 2018 IEEE Magnetism Society Summer School held in Quito, Ecuador, will be on display with the 2019 Joint Conference Best Poster Award Winners outside the Exhibit Hall.

- DN-06** **Magnetic Combination Therapy: A New, Drug-free Approach to Cancer Treatment**
Irati Rodrigo Arrizabalaga, Michael Stanton, Daniela Valdés, and Emma P. Welbourne
- BO-02** **A Comparison of Dzyaloshinskii-Moriya Interaction Detection Techniques in Pt/Co/Ir Multilayers**
Katherin Nygren, Jeffrey Brock, Domenichini Pablo, Anni Cao, Avinash Kumar Chaurasiya, and Pierre Vallobra

POSTER SESSIONS

Poster Sessions will be held daily from 9:30 am - 12:30 pm and 2:30 - 5:30 pm. On Friday there will only be a morning Poster Session.

Poster presenters should set up their materials at least 30 minutes before their session starts, and must be present at their poster, at a minimum, for the first *and* last hour of each Poster Session. Presenters must remove all of their materials promptly at the end of their session. Any poster materials not removed will be discarded.

BEST POSTER PRESENTATION AWARD

Supported by:

GMW

All posters will be eligible for nomination for this award. Additionally, it is required that an author be registered for the Conference and be present during the entire 3-hour poster session to present details and answer questions. Nominations will be made by the Poster Session Chairs. Selections will be based on the level of the research, quality of the poster, and clarity of the presentation. The award will be presented during the last hour of each poster session. The winning presenters will receive a \$50 cash award and certificate, thanks to the generous support of GMW. A ribbon will also be attached to the winning posters which will be prominently displayed for the remainder of the Conference.

A list of the Best Poster Award Winners from the 2017 MMM Conference and 2018 InterMag Conference is available at www.magnetism.org.

STUDENT TRAVEL SUPPORT

Conference Travel Grants supported by:



IEEE Travel Grants supported by:



Travel grants are offered to a limited number of students who are presenting their work at the Conference. Students who have not previously received a Conference or IEEE Magnetism Society travel grant are eligible for this program. Only one application per research group is accepted. Postdoctoral fellows and non-students are not eligible. Travel grant recipients for this Conference have already been informed about their selection. If you are interested in applying for a travel grant to attend a future MMM Conference, go to www.magnetism.org.

CHILD CARE SUPPORT

Child care grants are offered to a limited number of attendees who are bringing young children to the Conference or who incur extra expenses in leaving their children at home. The recipients for this Conference have already been informed about their selection. If you are interested in applying for child care support at a future MMM Conference, go to www.magnetism.org.

SOCIAL MEDIA

Be sociable—share! #Joint



Follow us on Twitter
@JointConf



Like our Facebook page
www.facebook.com/JointConf/

FUTURE CONFERENCES

2019 Magnetism and Magnetic Materials Conference
November 4-8, 2019, Las Vegas, NV

2020 Intermag Conference
May 4-8, 2020, Montreal, Canada

2020 Magnetism and Magnetic Materials Conference
November 16-20, 2020, Fort Lauderdale, FL

2021 Intermag Conference
April 26-30, 2021, Lyon, France

2022 Joint MMM-Intermag Conference
January 10-14, 2022, New Orleans, LA

2022 Magnetism and Magnetic Materials Conference
October 31-November 4, 2022, Minneapolis, MN

2023 Magnetism and Magnetic Materials Conference
October 30-November 3, 2023 Dallas, TX

CONFERENCE ORGANIZATION

IEEE MAGNETICS SOCIETY ADVISORY COMMITTEE

President..... Pallavi Dhagat
(Term expiring December 31, 2020)

President Elect Masahiro Yamaguchi

Secretary/Treasurer Atsufumi Hirohata

Past President Manual Vazquez
(Term expiring December 31, 2018)

Committee Members (Term expiring December 31, 2019):

Adekunle Adeyeye, Dora Altbir, Yukiko Kubota, Chih-Huang Lai,
Stephane Mangin, Manfred Ruehrig, Rubem Sommer, Jan Sykulski

Committee Members (Term expiring December 31, 2020):

Cindi Dennis, Peter Fischer, Simon Greaves, Mathias Kläui, June
Lau, Hans Nembach, Teruo Ono, Thomas Thomson

Committee Members (Term expiring December 31, 2021):

Elke Arenholz, David Jiles, Olga Kazakova, Nicoleta Lupu, Katsuji
Nakagawa, Johannes Paulides, Günter Reiss, Shinji Yuasa

CONFERENCE MANAGEMENT COMMITTEE

General Chair	Suzanne te Velthuis
Chair-Elect	Shinji Yuasa
Past Chair	Pallavi Dhagat
Co-Treasurers	Kristen Buchanan and June Lau
Program Co-Chairs	Laura H. Lewis and Steve May

Program Committee Members:

- I. Fundamental Properties and Cooperative Phenomena**
Sabine Wurmehl, Christianne Beekman, Yuko Hosokoshi, Natalia Perkins
- II. Magnetoelectronic Materials and Phenomena**
Kathrin Dörr, Marta Gibert, Margo Staruch
- II. Magnetoelectronic Materials and Phenomena**
Brian Kirby, Andrew May, Binghai Yan
- III. Soft Magnetic Materials**
Masahiro Yamaguchi, Yunume Obi, Rafael Pérez del Real
- IV. Hard Magnetic Materials**
Toshiyuki Shima, Ikenna Nlebedim, Jinbo Yang
- IV. Hard Magnetic Materials**
Jeffrey Shield, Felix Jimenez-Villacorta, Arjun Pathak
- V. Structured Materials**
Christian Binek, Jessada Chureemart, Karin Leistner, Melissa Loving
- V. Structured Materials**
Kathryn Krycka, Arantxa Fraile Rodríguez, Paola Tiberto
- VI. Materials with Coupled Magnetic Functionality**
Karl Sandeman, Victorino Franco, Manh-Huong Phan
- VII. Spintronics: Fundamentals and Devices**
Shiho Nakamura, Jingsheng Chen, Jean Anne Incorvia
- VII. Spintronics: Fundamentals and Devices**
Goran Mihajlovic, Chiara Ciccarelli, Satoru Emori, Ashwin Tulapurkar
- VII. Spintronics: Fundamentals and Devices**
Barry Zink, Byoung-Chul Min, Benjamin Jungfleisch, Stephen Wu
- VII. Spintronics: Fundamentals and Devices**
Peter Fischer, Karin Everschor-Sitte, Anjan Soumyanarayanan, Jiadong Zang
- VIII. Magnetization Dynamics and Micromagnetics**
Roopali Kukreja, Petru Andrei, Joe Barker, Thomas Schrefl
- VIII. Magnetization Dynamics and Micromagnetics**
Dafine Ravelosona, Claudia Mewes, Philipp Pirro, Justin Shaw
- IX. Magnetic Recording**
Yukiko Takahashi, Chris Rea, Tiffany Santos
- X. Sensors (not Magnetic Recording), High Frequency and Power Devices**
Denys Makarov, Ioanna Giouroudi, Chris Olson
- X. Sensors (not Magnetic Recording), High Frequency and Power Devices**
Paul Ohodnicki, Julia Zhang, Arcady Zhukov
- X. Sensors (not Magnetic Recording), High Frequency and Power Devices**
Hatem Elbidweihi, Babak Fahimi, Nuwantha Fernando, Aphrodite Ktena, Elena Lomonova
- X. Sensors (not Magnetic Recording), High Frequency and Power Devices**
Hongbin Yu, Kais Atallah, Jen-Yuan (James) Chang

XI. Magnetic Characterization

Dario Arena, Greg Fuchs, Christy Kinane

XII. Interdisciplinary and Emerging Topics

Hari Srikanth, Yanglong Hou, Galina Kurlyandskaya,
Maria Torija

Publications Chair, AIPP..... Victorino Franco

Editors (AIPP)..... Fernando Bartolomé, Riccardo Hertel, Connie Li, Vivian Ng, Manh-Huong Phan, Kiyonori Suzuki

Publications Chair, IEEE Petru Andrei

Editors (IEEE)..... Amr Adly, Yacine Amara, Radhika Barua, David Dorrell, Hatem Elbidweihi, Ravi Hadimani, Min-Fu Hsieh, Ron Jansen, Gangping Ju, Dennis Leung, Chunhua Liu, Thierry Lubin, Nicoleta Lupu, Frédéric Mazaleyrat, Iulian Nistor, Johannes Paulides, Philip Pong, Alexandru Stancu, Ciro Visone, Dan Wei, Hyunsoo Yang

Exhibits Chair Barry Zink

Publicity Chair Philip Pong

Student Awards/Travel Chair Brian Kirby

Editor, *AIP Advances* Vincent Crespi

Editor, *IEEE Transactions*

on *Magnetics* Laura H. Lewis

Conference Manager Molly Bartkowski

Abstracts/Publications Manager Regina Mohr

Exhibits Manager Jennifer Fiske

Registration Manager Ashley Cesare

MMM ADVISORY COMMITTEE

Chair..... Pallavi Dhagat

Chair-Elect Suzanne te Velthuis

Executive Secretary/Treasurer June Lau

Recording Secretaries Diane Melton, Regina Mohr

Term expiring February 1, 2019:

Julie Borchers, Cindi Dennis, Peter Fischer, Chih-Huang Lai, June Lau, Kyung-Jin Lee, Laura H. Lewis, Alan MacDonald, Stephane Mangin, Christopher Marrows

Term expiring December 1, 2019:

Pallavi Dhagat, Victorino Franco, Chris Leighton, Philip Pong, Mark Stiles, Yayoi Takamura, Maria Varela, Manuel Vazquez, Randall Victoria, Mingzhong Wu

Term expiring December 1, 2020:

Adekunle Adeyeye, Petru Andrei, Liesl Folks, Atsufumi Hirohata, Xiaofeng Jin, Mark Kief, Kai Liu, Yoshichika Otani, Tiffany Santos, Tom Thomson

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AIP Publishing Bill Burke

IEEE Magnetics Society Rudolf Schäfer

ADDITIONAL INFORMATION

To join our mailing list, please visit www.magnetism.org or contact info@mmmconference.com.

EXHIBITORS (AS OF OCTOBER 22, 2018)

An exhibition of magnetism-related services, equipment, materials, and software will be held in Exhibit Hall A.

Exhibit Hall Hours:

Tuesday/Thursday 8:15 am - 12:30 pm and 2:30 - 6:00 pm

Wednesday 8:15 am - 12:30 pm and 1:30 – 4:30 pm



AJA INTERNATIONAL, Inc.

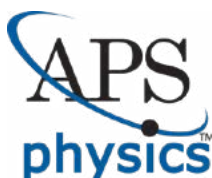
Booth 5

Thin Film Deposition Systems (Sputtering, E-beam, Thermal, Ion Beam, PLD and Multi-Technique). Ion Beam Etch Systems with SIMS (Ion Milling, RIBE). R&D and Pilot Scale Equipment. UHV and HV Magnetron Sputter Sources and Thermal Evaporation Sources. Wide range of Substrate Holders featuring Azimuthal Rotation, RF/DC Biasing, Heating, Water Cooling, LN₂ Cooling and Tilting. Sputter Targets and Evaporation Materials. RF/DC Power Supplies.

Contact: Jim Hannon

Email: topgun@ajaint.com

Website: www.ajaint.com



Booth 21

The American Physical Society (APS) is a non-profit membership organization that publishes the world's most widely read physics research and review journals: *Physical Review Letters*, *Physical Review X*, *Reviews of Modern Physics*, *Physical Review A-E*, *Physical Review Accelerators and Beams*, *Physical Review Applied*, *Physical Review Fluids*, *Physical Review Materials*, *Physical Review Physics Education Research*, and *Physics*. Please stop by our booth in the exhibit hall to learn more about our prestigious collection of journals.

Contact: Kenneth Newberry

Email: newberry@aps.org

Website: www.journals.aps.org



attocube

WITTENSTEIN Group

Booth 1

attocube is technology leader for nanoscale cryogenic measurement instrumentation, including low vibration closed-cycle cryostats, a cryo-optical table and various low temperature & high magnetic field compatible measurement inserts, allowing for research techniques such as AFM, MFM, SHPM, confocal & RAMAN microscopy. The attoTMS is attocube's powerful all-in-one solution for transport measurements based on the Nanonis Tramea™ electronics. Nano-precise piezo positioning stages and a laser displacement sensor with picometer resolution complete attocube's portfolio.

Contact: Joanna Kelkile
Email: info@attocube.com
Website: www.attocube.com



CAEN Technologies, Inc.

Booth 20

High current, high stability, highly accurate. Less than 1 ppm/K TC and less than 10 ppm ripple on wide current ranges are among some of our specs. CAEN ELS magnet power supplies are designed with a completely digital control and feedback loop, allowing for software-based adjustment of PID parameters, synchronizing fully and behaving nicely with your reactive loads (up to 100 H). Supporting large installations at many synchrotrons and colliders around the world, our offerings include standard and custom products. Home-grown DCCT current sensors are implemented within the supplies for aiding in such performance, or are available separately in various models with a complete digitizing current measurement system for your own setups. CAEN ELS is represented in the U.S. by CAEN Technologies.

Contact: Erik Soiman
Email: erik@caentechnologies.com
Website: www.caenels.com

GMW Associates

Booth 2

GMW offers One- and Three-component Magnetic Sensors, Transducers and Field Mappers, including: Metrolab Three-Component Magnetic Field Probes with USB Interface and LabView software. Full-scale ranges of +/-100uT, +/-8mT, +/-3T and +/-20T. Senis One-, Two- and Three-Component Hall Transducers with analog output, full-scale field ranges to +/-20T and frequency response from dc to 75kHz. The Senis Probes can be used stand-alone or in Senis Magnetic Field Mapping Systems. We also offer GMW Electromagnets for magnetic material and thin film studies including the Miniature Projected Field Electromagnet family of: 5201 for in-plane fields; 5203 for vertical fields, 5205 series for larger volume, modest vertical fields, and 5204 for generating any field direction and amplitude from three components. HTS-110 compact Electromagnets including Short Solenoids to +/-3T and Projected Field magnets to +/- 2T.

Contact: Viki Beatty
Email: vbeatty@gmw.com
Website: www.gmw.com



Speed-Up Wafer-level Magnetic Test

Booth 18

Hprobe presents the fastest Magnetic ATE for MRAM and Magnetic Sensors (TMR...). Our products are designed to fasten your development time with turnkey Magnetic ATE, and increase your production throughput with world record field sweeping rate. Hprobe presents a full product family covering all the control and monitoring steps of MRAM manufacturing flow: Ferromagnetic thin film characterization, Ultra-Fast MOKE, Ferro-Magnetic Resonance...; Magnetic Parametric Testing of MRAM devices, for process control and monitoring; Magnetic Functional testing of MRAM array and System On Chip, for final testing and chip sorting.

Contact: Yann Richard
Email: yann.richard@hprobe.com
Website: www.hprobe.com



Booth 19

Based in Wellington, New Zealand, HTS-110 designs and manufactures a range of High Temperature Superconducting (HTS) products including compact cryogen-free HTS magnets, HTS motor coils and HTS current leads. HTS-110 magnets are used in many research areas including Magnetism, Quantum Hall Effect, Thin Films, X-Ray & Neutron Scattering, Spintronics and Superconducting Materials. Offerings include: Standard solenoid magnets up to 14 T with RT bore from Ø40 mm to Ø80 mm; Standard fast ramping split-pair magnets up to 8 T; Vector magnets; Vertical and horizontal projected field magnets; and Custom magnets.

Contact: Taotao Huang
Email: t.huang@hts-110.com
Website: www.scottautomation.com/hts-110/



Booth 16

Intlvac Thin Film provides customers with machinery needed for creating coatings including ion source and all parts needed to make it function. Additionally, we manufacture high quality PVD coatings using techniques such as Ion Assisted Thermal and Electron Beam Evaporation, Reactive and non-Reactive Magnetron Sputtering and Diamond Like Carbon by Plasma Enhanced Chemical Vapor Deposition. Research and development is key in giving our technology competitive advantage. We provide prototype and production run coating services to customers around the world. Intlvac Thin Film has become an authority in Ion Beam Etch/Sputter systems and reactive sputter systems for precision optical coating.

Contact: Ken Rennie
Email: jill@intlvac.com
Website: www.intlvac.com

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Contact: Lisa Searle

Email: lisa.searle@iop.org

Website: www.ioppublishing.org



Kaufman & Robinson engineers and manufactures broad beam ion and plasma products. Our products are vacuum-based process tools which interact with materials at the atomic level. Typical material processes include the precision deposition of thin films, remote plasma etching of patterned wafers, and nanometer-scale modification of surfaces. We are respected across the globe for innovative designs, product quality and technical expertise. Our products incorporate technical features such as gridded or gridless sources, DC or RF discharges and automated power supply controllers.

Contact: Carrie Stadtmueller

Email: stadtmueller@ionsources.com

Website: www.ionsources.com



A fully integrated manufacturer of thin film deposition systems, vacuum components and materials. Our new High-Power IMPULSE Magnetron (HiPIM's) power supply and TORUS® Mag Keeper magnetron combination delivers films with better adhesion, improved grain structure and fewer defects than conventional sputtering. This advanced cathode is also available in an Ultra-High Vacuum version. Lesker's thin film deposition systems include the improved Pro-Line PVD 75, enhanced for flexibility of layout, deposition, operation and expansion. Our eKLipse™ control software makes recipe development and execution easy. Materials for research include: Co, Fe, Ir, Ni, Pt; and alloys and oxides such as Permalloy, BiFeO₃, YIG, Fe-CoMn, MoS₂, Fe₃O₄, and LaSrMnO.

Contact: Bill Zinn

Email: salesUS@lesker.com

Website: www.lesker.com

**Booth 3**

Lake Shore offers electromagnet-based VSMs for characterizing magnetic properties over a range of temperatures (4.2 K to 1273 K) and fields to 3.42 T. Among these is the award-winning 8600 Series VSM, which combines high sensitivity (33 nemu), measurement speed (10 ms/pt), and simple operation in a system capable of accurately characterizing a broad range of materials with unprecedented ease. Also available: magnetic test and measurement instruments, including gaussmeters and a new line of dependable, precise, easy-to-use teslameters, as well as cryogenic probe stations with integrated field magnets for on-wafer magneto-transport, DC, RF, or microwave measurements.

Contact: Andy Phillips
Email: sales@lakeshore.com
Website: www.lakeshore.com

**Booth 23**

MANTIS-SIGMA, the partnership of MANTIS Deposition and SIGMA Surface Science, is dedicated to the development and manufacture of high-quality systems and components for cutting-edge applications in nanotechnology, thin film deposition, and surface analysis. We enable researchers to both create and analyse thin films for advanced materials and device development. MANTIS specializes in MBE, PLD, UHV nanoparticle e-beam, and sputtering deposition. We offer a range of nanotechnology, RF atom and ion sources, sputter cathodes, mini e-beam evaporators, organic evaporators and modular R&D deposition systems. SIGMA specializes in state-of-the-art surface analysis technology with an exciting new range of UHV tools for ESCA and SPM.

Contact: Anthony Graziano
Email: anthony.graziano@mantis-sigma.com
Website: www.mantis-sigma.com

**Booth 10**

MicroSense is a leading manufacturer of magnetic measurement systems for research and production. MicroSense VSMs are sensitive, easy to use fast and versatile. The MicroSense VSMs offer the highest field, the highest maximum temperature and the widest range of options of any resistive magnet VSM. Options offered including low and high temperature, Magneto-resistance (AC and DC, in-plane and perpendicular), Vector/Torque, FMR, MOKE and automatic sample loading. MicroSense also offers a range of non-contact, full wafer or disk research and production metrology systems for in-plane and perpendicular MRAM, hard disk, recording head and sensor manufacturing process control.

Contact: Erik Samwel
Email: esamwel@microsense.net
Website: www.microsense.net



Booth 4

NanoScan is a member of the IONTOF group of companies. We are specialized in high-vacuum Scanning Probe Microscopes and our flagship microscope, the VLS-80, offers a high-end standalone solution for high-vacuum SPM. It runs all SPM modes of imaging and is equipped with two phase-locked loops to enable dual frequency modes. Magnetic imaging is a key strength of the VLS-80, with 550 mT out-of-plane, 200 mT in-plane magnetic field options and 10-nm lateral resolution guaranteed; an industry best. The large stage offers excellent positioning repeatability over the complete range of 100mm x 100mm.

Contact: Marco Corbetta
Email: m.corbetta@nanoscan.ch
Website: www.nanoscan.ch



Booth 8

OHT as an expert of Non-Contact Inspection System, offer the highest level of MRAM inspection System in the industry.

Contact: [Se Kageyama](mailto:Se.Kageyama@ohtinc.jp)
Email: se_kageyama@ohtinc.jp
Website: www.oht-inc.co.jp



Booth 11

PVD Products, Inc: Enabling Coating Method and Design. PVD Products is the leading manufacturer of custom thin film deposition systems, reel-to-reel deposition equipment for the coated-conductor market, and combinatorial deposition tools for rapid process development. A wide variety of our custom deposition systems are now operating in many high-profile universities and national labs around the world, as well as start-up and Fortune 500 companies.

Contact: Larry Scipioni
Email: lscipioni@pvdproducts.com
Website: www.pvdproducts.com



Quantum Design
International

Booths 14 & 15

Quantum Design manufactures automated material characterization systems providing temperatures from 0.05 to 1000 K, magnetic fields up to 16 tesla, and a wide range of measurements., including: VSM magnetometry, magneto resistance, sample rotator, thermal expansion, Raman spectroscopy, FMR and SPM. Platforms include the PPMS®, MPMS®3, VersaLab, and DynaCool. Quantum Design also recently introduced an innovative 7 tesla magneto-optical cryostat (OptiCool™). All systems have cryogen free options. Quantum Design also manufactures advanced heliumheliumfiers (ATL80, ATL160) and recovery systems. They distribute direct write, e-beam and nano-lithography systems, NanoMOKE, single crystal furnaces, AFM for SEM/FIB, SNSPD based single photon detectors and time tagging electronics.

Contact: Dan Polancic
Email: info@qdusa.com
Website: www.qdusa.com



Booth 7

SINGULUS TECHNOLOGIES is a renowned manufacturer of advanced thin-film deposition equipment for MRAM, thin-film head, sensor and other semiconductor applications. Already established in the field, SINGULUS TECHNOLOGIES recently introduced the second generation of its TIMARIS PVD Cluster Tool platform, comprising a complete portfolio of process modules for different applications. These include the deposition of ultra-thin Metallic and insulating films down to thickness of one nanometer and below, as well as stacks of such films with very precise material thickness and high uniformity specifications.

Contact: Bernhard Krause
Email: sales@singulus.de
Website: www.singulus.de



Booth 24

SmartTip has extended its range of magnetic analysis tools with the SmartProber P1, a 300 mm capable 6 kOe perpendicular field CIPT tool. Find out more about this and our other affordable CIPT analysis tools at our booth. As the world's only AFM probe provider specializing in MFM probes, we also continue to offer a range of MFM probe solutions fit to your specific application: hard magnetic media, soft magnetic structures, applied field measurements, etc. Our Smart Coating technology guarantees very high resolution and reproducible results.

Contact: Daniel Bijl
Email: d.bijl@smarttip.nl
Website: www.smarttip.nl



We are going to exhibit our MgO sputtering target which is indispensable for spintronics applications. We can provide the world's largest class MgO sputtering target (18 inch/460 mm) which is high purity (the actual measurement value is 99.999%) and high density (the actual measurement value is 99.7%). And, our MgO sputtering target has high mechanical strength. It will reduce the risk of target cracking. Furthermore, we are manufacturing the raw material "high purity MgO powder" by ourselves. So, we will be able to provide you sufficient quantity of high quality MgO sputtering target.

Contact: Mishima Takuya
Email: takuya.mishima@ubematerials.co.jp
Website: www.ubematerial.com



Vinci Technologies is an independent French company, specialized in the design, manufacturing and marketing of instrumentation, for the high vacuum and Oil & Gas industries. Based in Paris, the company has 80+ employees including one subsidiary in the US and one in India. The vacuum division of the company designs complete thin film analysis & deposition systems (thermal and e-beam evaporation, sputtering, pulse laser deposition, Molecular Beam Epitaxy, UHV Transfer Tunnels, ...). By combining satellite growth systems along the UHV linear transfer Tunnel, Vinci provide complete Lab solutions that addresses all technical requests of nanotechnology centers across the globe.

Contact: Christine Walsh
Email: c.walsh@vinci-technologies.com
Website: www.vinci-technologies.com



Zurich
Instruments

Zurich Instruments is a test and measurement company based in Zurich, Switzerland, developing and selling measurement instruments and delivering customer support in key markets around the world, either directly or with carefully selected partners. Our core offering includes lock-in amplifiers, phase-locked loops, arbitrary waveform generator, impedance analyzers, digitizers and boxcar averagers. We believe that system integration is good. We believe that system integration leads to significant time savings, reduced lab setup complexity, efficient workflows and reliable, accurate measurements.

Contact: Jelena Trbovic
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The IEEE Magnetics Society is the leading international professional organization for magnetism and related professionals throughout the world. The IEEE Magnetics Society promotes the advancement of science, technology, applications and training in magnetism. It fosters presentation and exchange of information among its members and within the global technical community, including education and training of young engineers and scientists. It seeks to nurture positive interactions between all national and regional societies acting in the field of magnetism.

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TUESDAY BIERSTUBE SUPPORT



MATERION

Materion offers the widest range of high purity thin film materials to meet your advanced memory requirements. We have a comprehensive portfolio of specialty materials to support STT-RAM (MRAM) applications. These include fine-microstructure precious metals such as Palladium alloys, Platinum alloys, Iridium alloys and Ruthenium. We manufacture high purity tunnel junction materials of Magnesium, Magnesium Oxide and Magnesium-Aluminum alloys. Our casting and purification technology produces CoFe and CoFeB alloys with very low oxygen impurity. In addition, we offer services such as sputter target bonding, precision parts cleaning, and precious/high value metal reclamation services.

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MEET THE EXPERTS SUPPORT



The evico magnetics GmbH was founded in 2006 as a spin-off of the Leibniz Institut for Solid State and Materials Research (IFW) Dresden. The main products are: (i) Advanced magneto-optical wide-field Kerr microscope systems for the visualization of magnetic domains and magnetization processes in all kinds of magnetic materials. The Kerr microscopes also serve as magneto-optical magnetometers for the sensitive and local measurement of hysteresis loops by MOKE magnetometry. (ii) High Pressure Milling Vials with a gas temperature monitoring system for the synthesis of magnetic powders and hydrogen storage materials.

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CONFERENCE PROGRAM-AT-A-GLANCE

MONDAY, JANUARY 14, 2019

2:30 pm to 5:00 pm

TU Tutorial: Foundational Methods for Understanding Magnetic Materials *Salon 2*

TUESDAY, JANUARY 15, 2019

8:30 am to 11:30 am • Oral Sessions

AA Symposium: Spin-transport in Insulators: From Transport in Ferromagnets to Unconventional Magnonics in Antiferromagnets *Salon 2*

AB Spin and Valley Hall Effect in 2D and Topological Systems *Salon 3*

AC Chiral Spintronics, DMI and Domain Walls *Salon 1*

AD Exchange Bias *Maryland*

AE Magneto-caloric Materials I *Virginia*

AF Soft Magnetic Materials I: Ferrites, Garnets and Others *Delaware*

AG Magnetoresistive Effects for Sensor Applications *Washington 1*

AH Correlated Nanoparticles and Nanowires *Washington 2*

AI Energy Assisted Magnetic Recording I *Washington 5*

9:30 am to 12:30 pm • Poster Sessions *Exhibit Hall A*

AJ Spin Hall Effect, Spin Injection and Related Effects

AK Spin Transfer Torque MRAM I

AL Soft Magnetic Components: Electrical Machinery Applications

AM Neuromorphic, Logic, and Spin Injection Devices

AN Multiferroics and Complex Oxides I

AO Motors: Modeling and Simulations I

AP Rock Magnetism, Magnetic Fluids and Imaging

AQ High Frequency and Magnetoelastic Effects for Sensor Design I

AR Multi-layered Films and Superlattices I

AS Rare-earth Intermetallics and Compounds I

1:30 pm to 4:30 pm • Oral Sessions

BA Symposium: Magnetic Nanoparticles and Nanograins for Biosensing and Magnetic Recording *Salon 2*

BB Spin Currents & Spin-orbit Torques: From Intrinsic to Interfacial *Salon 3*

BC Skyrmions I *Salon 1*

BD Domain Wall and Related Devices *Maryland*

BE Magnetic Semiconductors and Magnetism in Heusler Compounds *Virginia*

BF Critical Phenomena, Quantum Spin Liquids, f-electron Magnetism and Molecular Magnets *Delaware*

BG Motors: Design and Analysis I *Washington 1*

BH Patterned Films *Washington 2*

BI Rare-earth Intermetallics and Compounds II *Washington 5*

- BJ** Magnetic Fields and Cellular Response
- BK** Motors in Automotive Applications
- BL** Motors in Wind and Wave Applications
- BM** Soft Magnetic Components: Wireless Power
- BN** Multiferroics and Complex Oxides II
- BO** Topological Spin Textures I
- BP** Magneto-caloric, Magneto-elastic and Magneto-optical Materials
- BQ** Soft Magnetic Materials II: Ferrites and Garnets
- BR** Hard Magnetic Materials: Ferrites and Composites
- BS** Voltage-Controlled Magnetic Anisotropy and Switching I

WEDNESDAY, JANUARY 16, 2019**8:30 am to 11:30 am • Oral Sessions**

- CA** Symposium: Switching Antiferromagnets by Spin-orbit Torques *Salon 2*
- CB** Spin-Charge Conversion and Materials *Salon 3*
- CC** Novel Applications of MRAM: Neuromorphic Computing and Cryogenic Memory *Salon 1*
- CD** Multiferroics and Magnetoelectric Phenomena I *Maryland*
- CE** Magneto-caloric and Magneto-elastic Materials *Virginia*
- CF** Magnetization Dynamics I *Delaware*
- CG** Soft Magnetic Materials III: Amorphous and Nanocrystalline Materials *Washington 1*
- CH** Motors: Design and Analysis II *Washington 2*
- CI** Rare-earth Intermetallics and Compounds III *Washington 5*

9:30 am to 12:30 pm • Poster Sessions*Exhibit Hall A*

- CJ** Motors: Modeling and Simulations II
- CK** Motors: Modeling and Simulations III
- CL** Soft Magnetic Components: Energy Harvesting and Acoustics
- CM** High Frequency and Magnetoelastic Effects for Sensor Design II
- CN** Critical Phenomena, f-electron Magnetism and Organic Magnets
- CO** Biomaterials and Transcranial Stimulation
- CP** 2D Materials and Magnetic Semiconductors
- CQ** Bit Patterned Media & Perpendicular Magnetic Recording
- CR** Spinwaves
- CS** Magnetic Sensors and Devices

WEDNESDAY, JANUARY 16, 2019 *(Continued)***1:30 pm to 3:18 pm • Oral Sessions**

DA	Voltage-Controlled Magnetic Anisotropy and Switching II	<i>Salon 2</i>
DB	Ultrafast Dynamics	<i>Salon 3</i>
DC	Thermal Spin Physics and Magnetothermoelectric Effects	<i>Salon 1</i>
DD	New Coupled Magnetic Phenomena	<i>Maryland</i>
DE	Complex Oxides	<i>Virginia</i>
DF	Highly Frustrated Magnetism and Spin Glasses I	<i>Delaware</i>
DG	Individual Nanoparticles and Nanowires	<i>Washington 1</i>
DH	Energy-Assisted Magnetic Recording and Bit Patterned Media	<i>Washington 2</i>
DI	Metrology and Spintronic Devices	<i>Washington 5</i>

1:30 pm to 4:30 pm • Poster Sessions*Exhibit Hall A*

DJ	Spin Currents and Spin-orbit Torques
DK	Magneto-caloric Materials II
DL	Soft Magnetic Components: Transformers and Inductors I
DM	Hard Magnetic Materials Theory and Application I
DN	Magnetic Particles and Hyperthermia
DO	Motors: Modeling and Simulations IV
DP	Motors: Modeling and Simulations V
DQ	Magnetic Instrumentation and Characterization I
DR	Soft Magnetic Materials IV: Crystalline, Nanocrystalline and Amorphous Materials

4:30 pm to 6:30 pm

YA	Plenary	<i>Salons 2 & 3</i>
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THURSDAY, JANUARY 17, 2019**8:30 am to 11:30 am • Oral Sessions**

EA	Symposium: 3D Magnetic Frustration: Pyrochlore, Spinel and FCC Lattices	<i>Salon 2</i>
EB	Symposium: Magnetism for the Brain: Challenges and Solutions	<i>Salon 3</i>
EC	Skymions II	<i>Salon 1</i>
ED	Spinwaves and Magnonics	<i>Maryland</i>
EE	Multiferroics and Magnetoelectric Phenomena II	<i>Virginia</i>
EF	Magnetization Dynamics II	<i>Delaware</i>
EG	Magnetic Imaging and Measurement Techniques I	<i>Washington 1</i>
EH	Thin Films and Surface Effects I	<i>Washington 2</i>
EI	New and Nanostructured Permanent Magnets I	<i>Washington 5</i>

EJ Nanoparticles and Nanowires

EK Energy Assisted Magnetic Recording II

EL Magnetism in Heusler Alloys

EM Magneto-caloric Materials III

EN Soft Magnetic Components: Transformers and Inductors II

EO Actuation

EP Soft Magnetic Materials V: Amorphous and Nanocrystalline Materials

EQ Motors: Control and Drives

ER Actuation, Shielding and Levitation

12:00 pm to 1:00 pm

Smithsonian National Zoo Lecture

Maryland

1:30 pm to 4:30 pm • Oral Sessions

FA Symposium: Voltage Control of Nanomagnetism *Salon 2*

FB Spin-orbit Torque Switching *Salon 3*

FC Topological Spin Textures II *Salon 1*

FD Magnetic Field Sensors and Applications at High Frequencies *Maryland*

FE Magneto-caloric and Magneto-optical Materials *Virginia*

FF Spin Transfer Torque MRAM II *Delaware*

FG Micromagnetic and Hysteresis Modeling I *Washington 1*

FH Soft Magnetic Components: Performance, Modeling and Optimization *Washington 2*

FI Magnetic Nanoparticles for Biomedical Applications and Imaging *Washington 5*

2:30 pm to 5:30 pm • Poster Sessions

FJ New and Nanostructured Permanent Magnets II

FK Thin Films and Surface Effects II

FL Magnetization Dynamics III

FM Spin Caloritronics and Spin Mechatronics

FN Magnetic Instrumentation and Characterization II

FO Tunneling Magnetoresistance, Giant Magnetoresistance, Hall Effect and Related Effects

FP Highly Frustrated Magnetism and Spin Glasses II

FQ Motors: Modeling and Simulations VI

FR Motors: Modeling and Simulations VII

6:00 pm to 7:30 pm

XA Evening Session: Forefront Issues and New Opportunities in Magnetic Materials *Salon 2*

FRIDAY, JANUARY 18, 2019**8:30 am to 11:30 am • Oral Sessions**

GA	Symposium: Energy Harvesting and Transformations based on Magnetic Materials	<i>Salon 2</i>
GB	Antiferromagnetic Spintronics	<i>Salon 3</i>
GC	Tunneling Magnetoresistance and Tunneling Anisotropic Magnetoresistance	<i>Salon 1</i>
GD	Spin-orbit Torque and Spin Injection Devices	<i>Maryland</i>
GE	Motors Applications, Actuators, Shielding and Levitation	<i>Virginia</i>
GF	Magnetic Fluids, Composites and Biomedical Devices	<i>Delaware</i>
GG	Magnetic Imaging and Measurement Techniques II	<i>Washington 1</i>
GH	Multi-layered Films and Superlattices II	<i>Washington 2</i>
GI	Hard Magnetic Materials Theory and Application II	<i>Washington 5</i>

9:30 am to 12:30 pm • Poster Sessions*Exhibit Hall A*

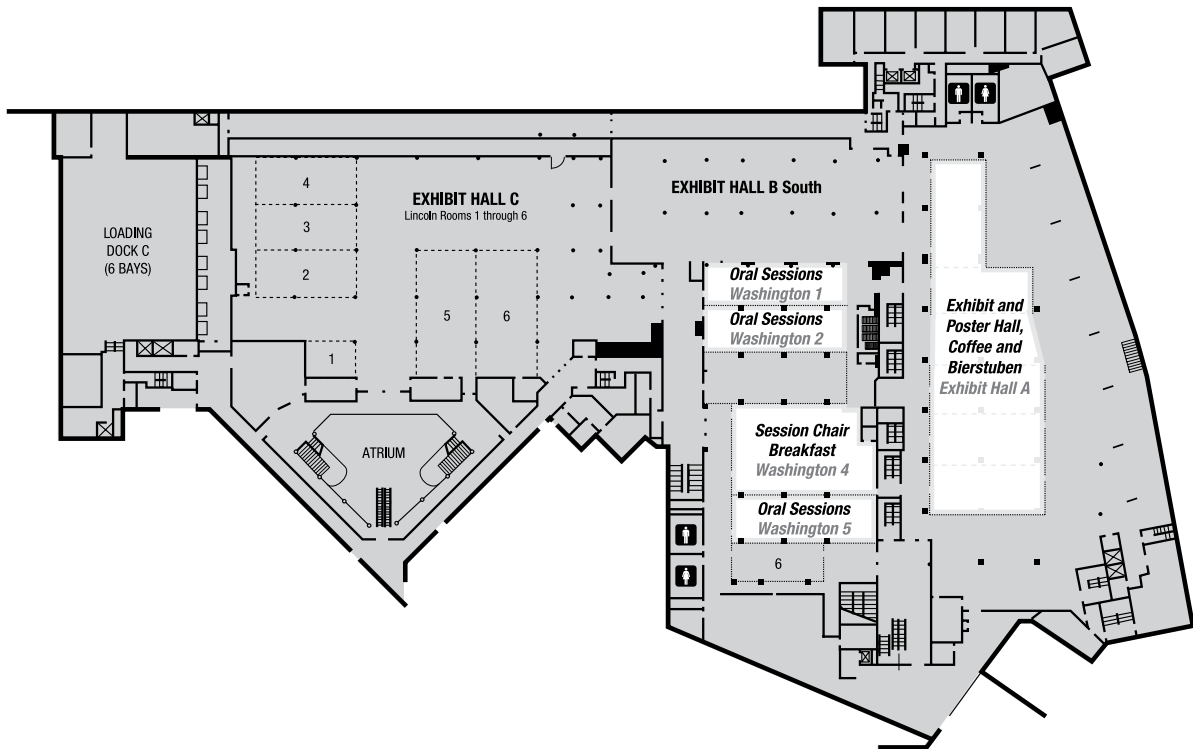
GJ	Magnetic Field Sensors and Applications
GK	Exchange Bias and Nanomagnetism
GL	Soft Magnetic Components: Other Applications
GM	Magneto-elastic Materials
GN	Domain Wall Dynamics and Devices
GO	Motors: Modeling and Simulations IX
GP	Motors: Modeling and Simulations VIII
GQ	Skyrmions III
GR	Multiferroics and Complex Oxides III
GS	Micromagnetic and Hysteresis Modeling II

1:30 pm - 4:30 pm • Oral Sessions

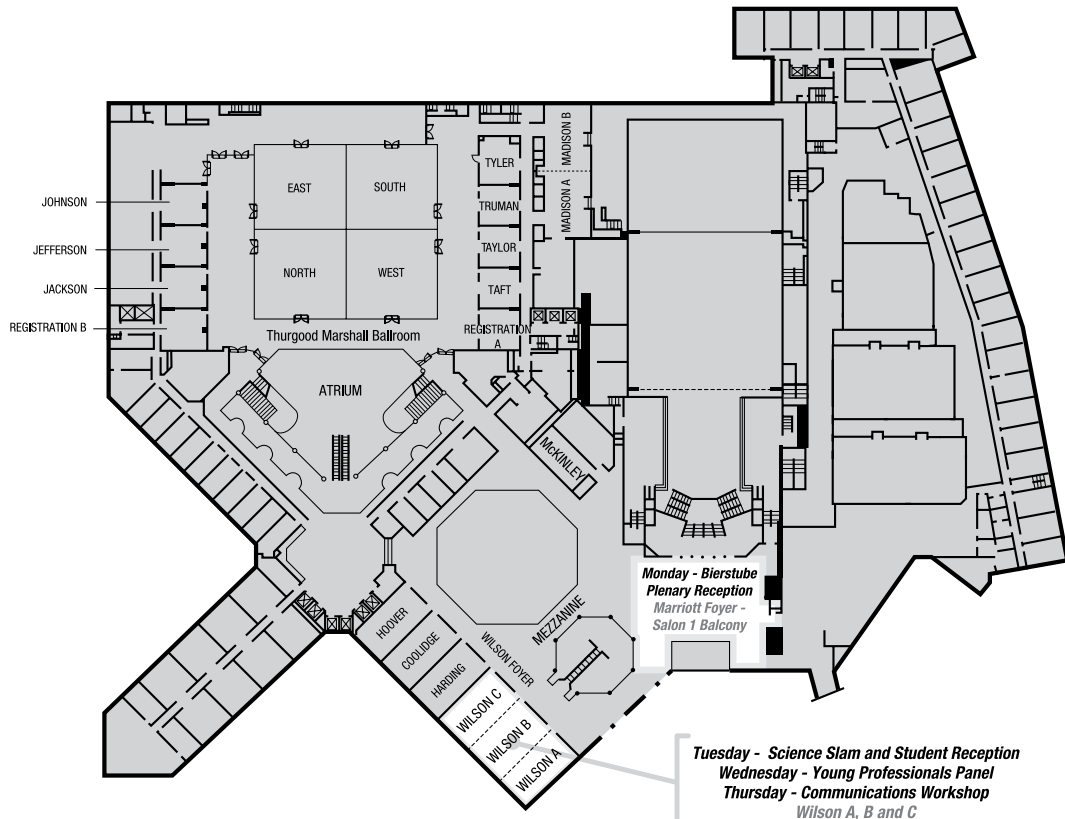
HA	Symposium: Magnetism Research Using X-ray Free Electron Lasers	<i>Salon 2</i>
HB	Spin Transport & Relaxation in Nanoscale Materials and Devices	<i>Salon 3</i>
HC	Skyrmions IV	<i>Salon 1</i>
HD	Spin Torque Oscillators and Spin Waves	<i>Maryland</i>
HE	Spinwaves and Spin Dynamics	<i>Virginia</i>
HF	Novel Sensor Architectures and Applications	<i>Delaware</i>
HG	Topological Insulators and Magnetism in 2D Materials	<i>Washington 1</i>
HH	Magnetoresistance, Hall Effect and Related Effects	<i>Washington 2</i>
HI	Motor Applications	<i>Washington 5</i>

WASHINGTON MARRIOTT WARDMAN PARK

EXHIBITION LEVEL

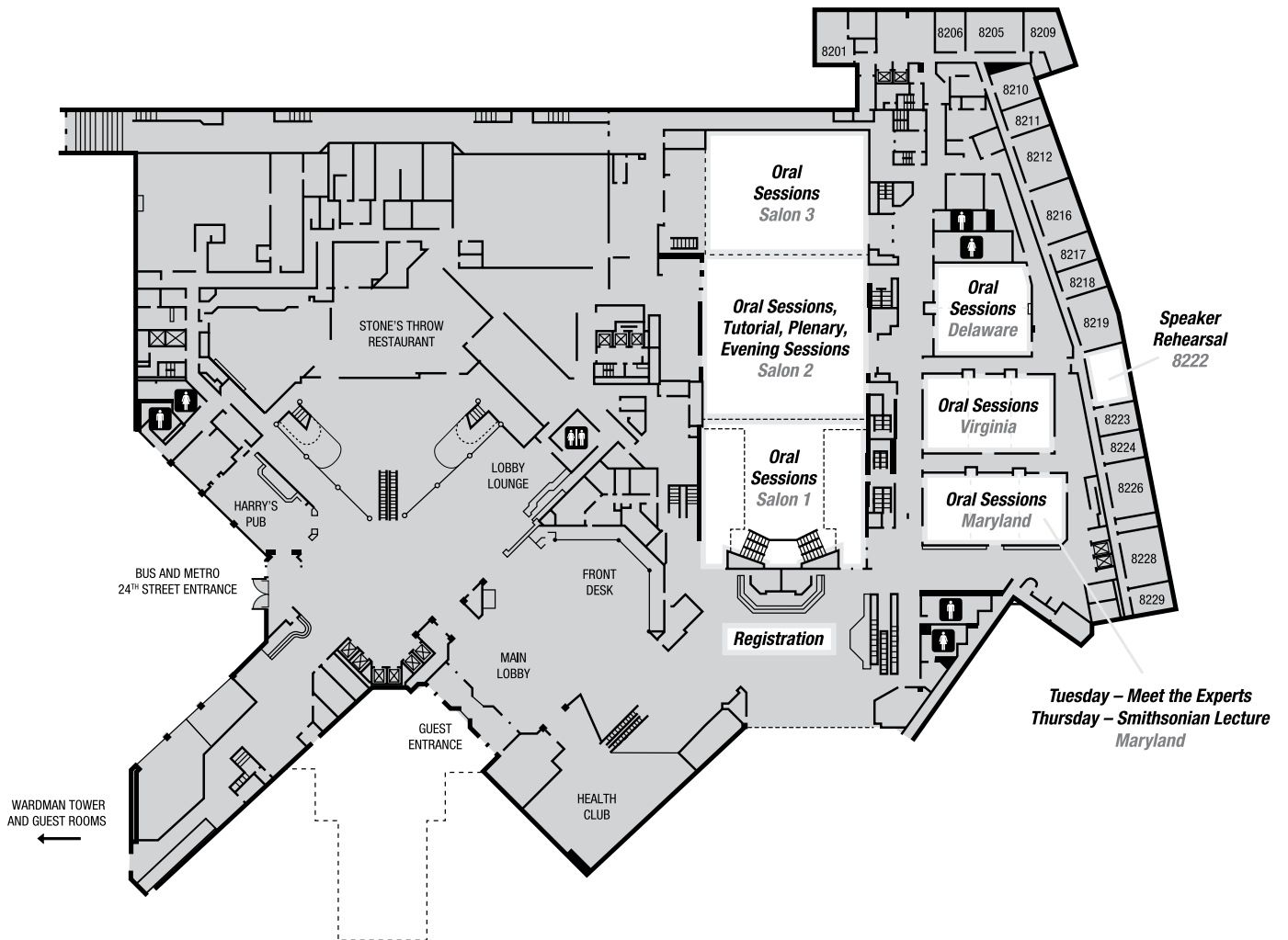


MEZZANINE LEVEL



WASHINGTON MARRIOTT WARDMAN PARK

LOBBY LEVEL



Session TU

**TUTORIAL: FOUNDATIONAL METHODS FOR
UNDERSTANDING MAGNETIC MATERIALS**

Steve May, Co-Chair

Drexel University, Philadelphia, PA, United States

Laura H. Lewis, Co-Chair

Northeastern University, Boston, MA, United States

2:30

- TU-01. Magnetometry – the Good, the Bad and the Ugly. (Invited)** *P.S. Stamenov¹ 1. Trinity College Dublin, Dublin, Ireland*

3:20

- TU-02. Computational Methods in Magnetism: From First Principles to Magnetization Dynamics. (Invited)** *C.K. Mewes¹ 1. MINT Center/Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, AL, United States*

4:10

- TU-03. Ferromagnetic Resonance. (Invited)** *M. Wu¹ 1. Colorado State University, Fort Collins, CO, United States*

Session AA

**SPIN-TRANSPORT IN INSULATORS:
FROM TRANSPORT IN FERROMAGNETS
TO UNCONVENTIONAL MAGNONICS IN
ANTIFERROMAGNETS**

Andrii Chumak, Chair

Technische Universität Kaiserslautern, Kaiserslautern, Germany

8:30

- AA-01. Control of optimized magnon spin transport in ferromagnetic insulators. (Invited)** *B. Van Wees¹ 1. Zernike Institute for Advanced Materials, Groningen, Netherlands*

9:06

- AA-02. Spin Current in Uniaxial Antiferromagnets and Quantum Spin Liquids. (Invited)** *E. Saitoh^{1,2} 1. Department of Applied Physics, The University of Tokyo, Tokyo, Japan; 2. ERATO-SQR, JST, Tokyo, Japan*

- AA-03. Room Temperature Electrically Tunable Long-Distance Spin Transport in Antiferromagnetic Insulators. (Invited)** *R. Lebrun¹, A. Ross¹, S. Bender², A. Qaiumzadeh³, L. Baldrati¹, J. Cramer¹, A. Brataas³, R. Duine² and M. Kläui¹* *1. Johannes Gutenberg University, Mainz, Germany; 2. Utrecht University, Utrecht, Netherlands; 3. Norwegian University of Science and Technology, Trondheim, Norway*

10:18

- AA-04. Long-Distance Spin Transport Through a Graphene Quantum Hall Antiferromagnet. (Invited)** *C. Lau¹*
1. The Ohio State University, Columbus, OH, United States

10:54

- AA-05. Nonequilibrium Spin Transport in Quantum Paramagnets. (Invited)** *J. Aftergood^{1,2}, D. Joshi³, A. Schnyder³, A. Mitra⁴ and S. Takei^{1,2}* *1. Physics, Queens College of The City University of New York, Queens, NY, United States; 2. The Graduate Center of The City University of New York, New York, NY, United States; 3. Max Planck Institute for Solid State Research, Stuttgart, Germany; 4. Physics, New York University, New York, NY, United States*

TUESDAY
MORNING
8:30

SALON 3

Session AB SPIN AND VALLEY HALL EFFECT IN 2D AND TOPOLOGICAL SYSTEMS

Byong-Guk Park, Chair
Korea Advanced Institute of Science and Technology (KAIST),
Daejeon, The Republic of Korea

8:30

- AB-01. Electrical Detection of Charge-to-Spin and Spin-to-Charge Conversion in a Topological Insulator Bi_2Te_3 Using $\text{BN}/\text{Al}_2\text{O}_3$ Hybrid Tunnel Barrier.** *C.H. Li¹, O. Van't Erve¹, C. Yan², L. Li² and B. Jonker¹* *1. Naval Research Lab, Washington, DC, United States; 2. Department of Physics and Astronomy, West Virginia University, Morgantown, WV, United States*

8:42

- AB-02. Spin-orbit torque driven magnetization switching in WTe_2 /ferromagnet heterostructures.** *S. Shi^{1,2}, S. Liang¹, K. Cai¹, S. Pollard¹, Y. Wang¹, Q. Wang¹, J. Wang^{3,2}, G. Eda^{3,2} and H. Yang^{1,2}* *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Centre for Advanced 2D Materials, National University of Singapore, Singapore, Singapore; 3. Physics, National University of Singapore, Singapore, Singapore*

8:54

- AB-03. Observation of high spin-to-charge conversion by sputtered $\text{Bi}_x\text{Se}_{(1-x)}$ at room temperature.** D.C. Mahendra¹, J. Chen², T. Peterson¹, P. Sahu¹ and J. Wang^{2,1} *1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

9:06

- AB-04. Spin and Valley Hall Effect in n- and p- Type WSe_2 Transistors Controlled via Electric Field. (Invited)** E. Barre², X. Li¹, S. Kim³, E. Antunano¹, H. Wong², T. Heinz³ and J.C. Incorvia¹ *1. Electrical and Computer Engineering, University of Texas at Austin, Austin, TX, United States; 2. Electrical Engineering, Stanford University, Stanford, CA, United States; 3. Applied Physics, Stanford University, Stanford, CA, United States*

9:42

- AB-05. Valley Coupled Spin Hall Effect in WSe_2 .** T. Hung¹ and Z. Chen¹ *1. ECE, Purdue University, West Lafayette, IN, United States*

9:54

- AB-06. Imaging of current induced spin accumulation in topological insulators and heavy metals.** Y. Liu¹, J. Besbas¹, Y. Wang¹, P. He¹, M. Chen¹, D. Zhu¹, Y. Wu¹, J. Lee¹, L. Wang², J. Moon³, N. Koirala³, S. Oh³ and H. Yang¹ *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. School of Science, Physics, RMIT University, Melbourne, VIC, Australia; 3. Department of Physics and Astronomy, Rutgers, The State University of New Jersey, Piscataway, NJ, United States*

10:06

- AB-07. Spin-Orbit Torque and Nernst Effects in $\text{Bi}_x\text{Sb}_{1-x}$ /Ferromagnet Heterostructures.** N. Roschewsky^{1*}, E.S. Walker², P. Gowtham³, F. Hellman¹, S.R. Bank² and S. Salahuddin³ *1. Physics, UC Berkeley, Berkeley, CA, United States; 2. ECE, UT Austin, Austin, TX, United States; 3. EECS, UC Berkeley, Berkeley, CA, United States*

10:18

- AB-08. Room Temperature Spin-Orbit Torque Measurements of Sputtered Bismuth Antimonide.** T. Gosavi¹, K. Oguz¹, C. Lin¹, S. Manipatruni¹, D.E. Nikonov¹ and I. Young¹ *1. Components Research, Intel Corp, Hillsboro, OR, United States*

10:30

- AB-09. Voltage-Controlled Topological Spin-Switch for Approximate Computing.** S. Rakheja¹, M.E. Flatte² and A.D. Kent³ *1. Electrical and Computer Engineering, New York University, Brooklyn, NY, United States; 2. Physics and Astronomy and Optical Science and Technology Center, University of Iowa, Iowa City, IA, United States; 3. Physics, New York University, New York, NY, United States*

- AB-10. Toward Two Dimensional Dirac Half Metallic MnX_3 for Spintronics.** *Q. Sun*¹ and *N. Kioussis*¹ *1. Physics and Astronomy Department, California State University, Northridge, CA, United States*

- AB-11. The spin texture in a SrTiO_3 (111) two-dimensional electron gas.** *P. He*³, *S. McKeown Walker*¹, *S. Zhang*², *F. Bruno*¹, *M. Bahrany*⁴, *O. Heinonen*², *G. Vignale*⁵, *F. Baumberger*¹ and *H. Yang*³ *1. Department of Quantum Matter Physics, University of Geneva, Geneva, Switzerland; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 4. Department of Applied Physics, The University of Tokyo, Tokyo, Japan; 5. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States*

- AB-12. Spin orbit gaps and magnetotransport in epitaxial monolayers of Fe on Au(001).** *L. Plucinski*¹, *E. Mlynczak*¹, *P. Gospodarcic*¹ and *C.M. Schneider*¹ *1. PGI-6, FZ Juelich, Juelich, Germany*

TUESDAY
MORNING
8:30

SALON 1

Session AC

CHIRAL SPINTRONICS, DMI AND DOMAIN WALLS

Tim Mewes, Chair

University of Alabama, Tuscaloosa, AL, United States

- AC-01. Controlling Asymmetric Expansion of Magnetic Bubbles by Chiral Damping and Dzyaloshinskii-Moria Interaction.** *A. Ganguly*¹, *I. Miron*^{2,3} and *A. Manchon*¹ *1. Physical Science and Engineering, King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia; 2. CEA, INAC, SPINTEC, 38000 Grenoble, France; 3. CNRS, SPINTEC, 38000 Grenoble, France*

- AC-02. Assessing a refined elastic model of Dzyaloshinskii domain wall creep using composition graded Pt-Ir-Au seedlayers in Co/Ni heterostructures.** *D.K. Lau*¹, *J.P. Pellegren*¹, *H. Nembach*², *J.M. Shaw*² and *V. Sokalski*¹ *1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Quantum Electromagnetics Division, NIST, Boulder, CO, United States*

8:54

- AC-03. Determination of the Dzyaloshinskii-Moriya interaction in epitaxial asymmetric trilayers.** F. Ajejas¹, A. Gudin¹, R. Guerrero¹, J. Vogel², J. Camarero¹, S. Pizzini² and P. Perna¹
1. IMDEA Nanociencia, Madrid, Spain; 2. Institut Néel, Grenoble, France

9:06

- AC-04. Twisted domain walls and skyrmions in perpendicularly magnetized multilayers.** I. Lemes¹ and G. Beach¹ *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

9:18

- AC-05. Spin wave spectrum under parametric excitation on a skyrmion.** X. Chen¹, W. Kang¹ and W. Zhao¹ *1. Beihang University, Beijing, China*

9:30

- AC-06. Collective excitations in a skyrmion-bubble lattice stabilized in an antidot lattice.** A. Laurensen¹, A. Marchenko², V. Krivoruchko², J. Bertolotti¹ and V.V. Kruglyak¹ *1. Physics & Astronomy, University of Exeter, Exeter, United Kingdom; 2. Donetsk Institute for Physics and Engineering, Kiev, Ukraine*

9:42

- AC-07. Chiral Spintronics. (Invited)** S. Yang¹ *1. IBM Research - Almaden, San Jose, CA, United States*

10:18

- AC-08. Temperature dependence of chiral spin structure dynamics.** K. Litzius^{1,2}, J. Leliaert³, P. Bassirian¹, S. Kromin¹, J. Zazvorka¹, I. Lemes⁴, N. Kerber^{1,2}, D. Heinze¹, N. Keil¹, R.M. Reeve^{1,2}, M. Weigand⁵, G.A. Schütz⁵, G. Beach⁴ and M. Kläui^{1,2}
1. Physics, Johannes Gutenberg-University Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Department of Solid State Sciences, Ghent University, Ghent, Belgium; 4. Department of Materials Science and Engineering, MIT, Boston, MA, United States; 5. Max Planck Institute for Intelligent Systems, Stuttgart, Germany

10:30

- AC-09. Current-induced distortion of magnetic bubbles in out-of-plane anisotropy thin layers.** M. Nsibi¹, J. Nath¹, I. Joumard¹, S. Auffret¹, I. Miron¹ and G. Gaudin¹ *1. SPINTEC, CEA-INAC/CNRS/Université Grenoble Alpes, Grenoble, France*

AC-10. Enhancement of domain wall velocity in He+ irradiated W-CoFeB-MgO films with perpendicular anisotropy.

X. Zhao^{1,2}, *N. Vernier*², *L. Herrera Diez*², *M. Sall*², *C. Hepburn*², *G. Durin*³, *A. Casiraghi*³, *M. Belmeguenai*⁴, *Y. Roussigné*⁴, *A. Stashkevich*⁴, *S. Cherif*⁴, *J. Langer*⁵, *B. Ocker*⁵, *W. Zhao*¹ and *D. Ravelosona*² *1. Fert Beijing Institute, Beihang University, Beijing, China; 2. Centre de Nanosciences et de Nanotechnologies, Université Paris-Sud, Orsay, France; 3. Istituto Nazionale di Ricerca Metrologica, Turin, Italy; 4. Université Paris 13, Villetaneuse, France; 5. Singulus Technology AG, Kahl am Main, Germany*

AC-11. The role of the Oersted field in current-induced domain-wall motion in circular cross-section nanowires and tubes.

*A. De Riz*¹, *M. Schöbitz*^{1,2}, *S. Martin*^{1,2}, *C. Thirion*², *L. Cagnon*², *J. Vogel*², *M. Foerster*³, *L. Aballe*³, *A. Locatelli*⁴, *T.O. Mendes*⁴, *S. Bochmann*⁵, *J. Bachmann*⁵, *J. Toussaint*², *O. Fruchart*¹ and *D. Gusakova*¹ *1. Univ. Grenoble Alpes, CNRS, CEA, Grenoble INP, INAC-SPINTEC, Grenoble, France; 2. Univ. Grenoble Alpes, CNRS, Institut Néel, Grenoble, France; 3. Alba Synchrotron Light Facility, CELLS, Barcelona, Spain; 4. Elettra-Sincrotrone Trieste, S.C.p.A., Trieste, Italy; 5. Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany*

AC-12. Simulation of Optical Reversal and Domain Wall Displacement Using the Landau Lifshitz Lambda Model.

*M. Menarini*², *R. Medapalli*², *V. Lomakin*² and *S. Mangin*¹ *1. Université de Lorraine, Nancy, France; 2. University of California San Diego, La Jolla, CA, United States*

AC-13. Magnetoelastic spin wave excitation in non-uniform magnetized waveguides.

F. Vanderveken^{1,2}, *F. Ciubotaru*¹, *M. Heyns*¹, *B. Soree*¹, *I.P. Radu*¹ and *C. Adelmann*¹ *1. Imec, Leuven, Belgium; 2. Faculty of Engineering, KU Leuven, Leuven, Belgium*

Session AD
EXCHANGE BIAS

Roy Chantrell, Chair
University of York, York, United Kingdom

8:30

- AD-01. Phase Boundary Exchange Coupling in the Mixed Magnetic Phase of a B2-Ordered FeRh Epilayer. (Invited)** *J. Massey¹, K. Matsumoto², M. Strungaru³, R.C. Temple¹, T. Higo², K. Kondou⁴, R.F. Evans³, R.W. Chantrell³, Y. Otani^{2,4} and C.H. Marrows¹* *1. Condensed Matter Physics, University of Leeds, Leeds, United Kingdom; 2. Institute of Solid State Physics, Kashiwa, Japan; 3. University of York, York, United Kingdom; 4. RIKEN, Wako, Japan*

9:06

- AD-02. Giant exchange bias in antiferromagnetic bulk Mn₃In.** *B. Giri¹ and A.K. Nayak¹* *1. National Institute of Science Education and Research, Bhubaneswar, India*

9:18

- AD-03. Exchange Bias in CoO/Fe(110) Bilayers: a Ferromagnet Drives an Antiferromagnet.** *M. Slezak¹, P. Drozd¹, K. Matlak¹, J. Korecki^{1,2} and T. Slezak¹* *1. AGH University of Science and Technology, Krakow, Poland; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry PAS, Krakow, Poland*

9:30

- AD-04. Asymmetric Magnetization Reversal in Exchange Coupled FePt/FeCo/CoO_x/FeCo Multilayer.** *S. Singh¹ and D. Kumar¹* *1. In-situ thin film lab, UGC-DAE Consortium for Scientific Research, INDORE, India*

9:42

- AD-05. Spin structure of the epitaxial Fe/FeO bi- and multi-layers.** *A. Koziol-Rachwal¹, W. Janus¹, M. Szpytma¹, P. Drozd¹, M. Slezak¹, T. Slezak¹, M. Szczepanik-Ciba^{1,2}, K. Freindl², N. Spiridis² and J. Korecki^{1,2}* *1. AGH University of Science and Technology, Krakow, Poland; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Krakow, Poland*

9:54

- AD-06. Ion Implantation Induced Exchange Bias in bcc Fe Thin Film.** *R. Gupta³, S. Sen³, A. Gupta¹ and V. Reddy²* *1. Center for Spintronic Materials, Amity University, Noida, India; 2. UGC DAE CSR Indore Centre, Indore, India; 3. School of Instrumentation, Devi Ahilya University, Indore, India*

10:06

- AD-07. Improved Exchange Bias and Blocking Temperature of PtCr/PtMn bilayer Antiferromagnets.** *M. Saito*¹ and *F. Koike*¹
1. Alps Electric Co., LTD., Engineering Headquarters, Nagaoka, Japan

10:18

- AD-08. Magnetic domain texture and the Dzyaloshinskii-Moriya interaction in systems with perpendicular exchange bias.** *R.A. Khan*¹, *H. Nembach*², *M. Ali*¹, *J.M. Shaw*², *C.H. Marrows*¹ and *T.A. Moore*¹ *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO, United States*

10:30

- AD-09. In-plane and out-of-plane exchange bias effects induced by noncollinear antiferromagnetic Mn₃Ge and Fe doped Mn₃Ga thin films.** *T. Ogasawara*^{1,2}, *J. Kim*³, *M. Tsunoda*⁴, *Y. Ando*^{1,5} and *A. Hirohata*² *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Department of Electronic Engineering, University of York, York, United Kingdom; 3. Department of Physics, University of York, York, United Kingdom; 4. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 5. Center for Spintronics Research Network, Sendai, Japan*

10:42

- AD-10. Temperature Dependent Coupling in Spin Valves Whose Interlayer Undergoes a Magnetic Phase Transition.** *K. Repa*¹, *B.J. Kirby*² and *C. Miller*¹ *1. School of Chemistry and Materials Science, Rochester Institute of Technology, Rochester, NY, United States; 2. National Institute of Standards and Technology, Gaithersburg, MD, United States*

10:54

- AD-11. Magnetic Properties Study of FeMn/NiFe Bilayers: Dependence on Ferromagnetic Layer Thickness.** *Y. Liu*¹, *Z. Lan*¹, *K. Sun*¹, *Z. Yu*¹, *R. Guo*¹, *X. Jiang*¹ and *C. Wu*¹
1. School of Materials and Energy, University of Electronic Science and Technology of China, Chengdu, China

11:06

- AD-12. Interlayer exchange coupling across RuFe alloys.** *Z. Nunn*¹, *F. Schultz*², *E.J. Goering*², *P. Nagel*³, *S. Schuppler*³ and *E. Girt*¹
1. Simon Fraser University, Burnaby, BC, Canada; 2. Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany; 3. Karlsruhe Institute of Technology, Karlsruhe, Germany

11:18

- AD-13. Exchange bias in perovskite NaNiF₃ thin films.** *S.A. Morley*¹, *H. Marquez*¹, *A. KC*¹ and *D. Lederman*¹ *1. Physics, University of California Santa Cruz, Santa Cruz, CA, United States*

Session AE
MAGNETO-CALORIC MATERIALS I

Martino LoBue, Chair
CNRS, Cachan, France

8:30

- AE-01. AC Susceptibility study of overlapping thermomagnetic transitions in NiMnIn Heusler alloy.** Á. Díaz-García¹, J. Law¹, V. Franco¹, A. Conde¹ and A. Giri² *1. Universidad de Sevilla, Sevilla, Spain; 2. Weapons and Materials Research Directorate, US Army Research Laboratory, Aberdeen, MD, United States*

8:42

- AE-02. Giant magnetocaloric effect in Ni-Mn based shape memory alloys.** A.K. Pathak¹, H.N. Bez^{1,2}, Y. Mudryk¹, N. Zarkevich¹, A. Biswas¹, X. Liu¹, V. Balema¹, D. Johnson^{1,3} and V.K. Pecharsky^{1,3} *1. Ames Laboratory of the US Department of Energy, Ames, IA, United States; 2. Mechanical Engineering, Federal University of Santa Catarina, Polo – Research Laboratories for Emerging Technologies in Cooling and Thermophysics, Florianopolis, Brazil; 3. Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States*

8:54

- AE-03. Investigation of Magnetocaloric effect in $\text{Ni}_2\text{Mn}_{1+x}\text{In}_{1-x}$ compounds for room-temperature magnetic refrigeration.** B.R. Dahal¹, C. Huber¹, K. Schroeder¹, W. Zhang², Y. Huh¹, P.R. Kharel¹ and D.J. Sellmyer² *1. Physics, South Dakota State University, Brookings, SD, United States; 2. Physics and Astronomy, University of Nebraska, Lincoln, NE, United States*

9:06

- AE-04. Field dependence of magnetocaloric effect as a fingerprint of first-order phase transition. (Invited)** J. Law¹, V. Franco¹ and A. Conde¹ *1. Condensed Matter Physics, Sevilla University, Sevilla, Spain*

9:42

- AE-05. Magnetocaloric effect in MnNiSi-Fe₂Ge and (Mn,Fe)Ni(Si,Sn) alloys.** D. Kamble^{1,2} and R.V. Ramanujan^{1,2} *1. School of Materials Science and Engineering, Nanyang Technological University, Singapore 639798, Singapore; 2. Singapore-HUJ Alliance for Research and Enterprise (SHARE), Nanomaterials for Energy and Energy-Water Nexus (NEW), Campus for Research Excellence and Technological Enterprise (CREATE), Singapore - 138602, Singapore*

- AE-06. Wide structural and magnetic successive transitions and related magnetocaloric properties in directionally solidified polycrystalline Ni-Co-Mn-In.** F. Chen¹, J.L. Sanchez Llamazares², C. Sanchez-Valdes³ and P. Müllner⁴ *1. Harbin Engineering University, Harbin, China; 2. Instituto Potosino de Investigación Científica y Tecnológica A.C., San Luis Potosí, Mexico; 3. Universidad Autónoma de Ciudad Juárez, Ciudad Juárez, Mexico; 4. Boise State University, Boise, ID, United States*

10:06

- AE-07. Magnetocaloric effect and solid hydriding of La(Fe, Si)₁₃ powders through decomposing YH₂ hydride.** N. Tian¹, N. Yang¹, Y. Zhang¹, H. Fu¹, L. Ma¹, C. You¹, J. He² and Y. Li¹ *1. Xi'an University of Technology, Xi'an, China; 2. Division of Functional Materials, Central Iron and Steel Research Institute, Beijing, China*

10:18

- AE-08. Effects of Al and Fe solubility on the magnetocaloric properties of AlFe₂B₂.** B. Lejeune¹, D. Schlagel², B. Jensen², T.A. Lograsso², M.J. Kramer² and L.H. Lewis¹ *1. Chemical Engineering, Northeastern University, Boston, MA, United States; 2. Division of Materials Science and Engineering, U.S. Department of Energy Ames Laboratory, Ames, IA, United States*

10:30

- AE-09. Computational and experimental design of magnetocalorics with large magnetostructural coupling.** J.D. Bocarsly¹, E.E. Levin¹, J.A. Cooley¹, J.H. Grebenkemper¹, S.D. Wilson¹ and R. Seshadri¹ *1. Materials Research Laboratory, UC Santa Barbara, Santa Barbara, CA, United States*

10:42

- AE-10. Influence of the Ge distribution on the first order magnetic transition of the MnFePGe magnetocaloric materials.** D. Liu¹, S. Wang¹, Z. Zhang¹ and H. Li¹ *1. Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing, China*

10:54

- AE-11. Optimizing Magnetocaloric Material for Thermomagnetic Energy Harvesting.** M. Almanza^{1,2} and M. LoBue¹ *1. SATIE, ENS Cachan, CNRS, Université Paris-Saclay, Cachan, France; 2. LAI, École Polytechnique Fédérale de Lausanne (EPFL), Neuchâtel, Switzerland*

11:06

- AE-12. Ultra-low-field magneto-elastocaloric cooling in a multiferroic composite device.** H. Hou², P. Finkel¹, M. Staruch¹, J. Cui³ and I. Takeuchi² *1. Naval Research Laboratory, Washington, DC, United States; 2. University of Maryland, College Park, MD, United States; 3. Ames Laboratory, Ames, IA, United States*

- AE-13. Magnetic and Magnetocaloric Properties of $\text{Pr}_{2-x}\text{Nd}_x\text{Fe}_{15}$ Alloys.**
P.R. Kharel¹, T. Ott¹, W. Zhang², B.R. Dahal¹, S. Valloppilly³, X. Li³ and D.J. Sellmyer² 1. *Physics, South Dakota State University, Brookings, SD, United States*; 2. *Physics and Astronomy, University of Nebraska, Lincoln, NE, United States*; 3. *Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States*

**TUESDAY
MORNING
8:30**

DELAWARE

Session AF

**SOFT MAGNETIC MATERIALS I: FERRITES,
GARNETS AND OTHERS**

Shin Yabukami, Co-Chair

Tohoku University, Sendai, Japan

Alexander Sokolov, Co-Chair

Northeastern University, Burlington, MA, United States

8:30

- AF-01. Magnetostriction of Iron-Gallium Alloys Revisited.**
J. Steiner¹, A. Lisfi², L. Salamanca-Riba¹, J. Cumings³ and M. Wuttig¹ 1. *Materials Science, University of Maryland, College Park, MD, United States*; 2. *Physics, Morgan State University, Baltimore, MD, United States*

8:42

- AF-02. Suppression of anisotropy and inversion symmetry effects by magnetic charge density points to better motors.**
A.S. Arrott¹ and T.L. Templeton¹ 1. *Physics, Simon Fraser University, Burnaby, BC, Canada*

8:54

- AF-03. A New Power MnZn Ferrite for Broad Temperature Range Applications.** *V. Tsakaloudi¹, G. Kogias¹ and V.T. Zaspalis^{1,2}*
 1. *Chemical Processes and Energy Resources Institute CPERI, Centre for Research and Technology Hellas CERTH, Thessaloniki, Greece*; 2. *Department of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece*

9:06

- AF-04. 3D Structure Design of Magnetic Ferrite Cores Using Gelcasting and Pressure-less Sintering Process.** *B. Ahmadi¹, L. Empringham¹, L. De Lillo¹ and A. Stratta¹* 1. *PEMC, University of Nottingham, Nottingham, United Kingdom*

9:18

- AF-05. Thermal Transport Properties of Fe-Co Alloys.**
G. Kozlowski^{2,1}, M.A. Susner^{2,3}, J. Horwath² and Z. Turgut²
 1. *Physics, Wright State University, Dayton, OH, United States*; 2. *Air Force Research Laboratory, Wright-Patterson AFB, OH, United States*; 3. *UES Inc., Dayton, OH, United States*

- AF-06. Brillouin Light Scattering Measurements of Exchange Stiffness as a Function of Composition in Copper-Permalloy Alloys.** *N.T. Sorensen¹, P. Kabos², R.E. Camley¹ and Z. Celinski¹* *1. Dept of Physics, University of Colorado at Colorado Springs, Colorado Springs, CO, United States; 2. NIST, Boulder, CO, United States*

- AF-07. The application of macroscopic flakes for Fe-6.5%Si bulk magnetism with superior magnetic properties.** *G. Ouyang^{1,2}, B. Jensen², K.W. Dennis², W. Tang², B. Cui² and J. Cui^{1,2}* *1. Materials Science and Engineering, Iowa State University, Ames, IA, United States; 2. Ames Laboratory, Ames, IA, United States*

- AF-08. The study of the particle sizes fractions effects on the SMC materials.** *E. Poskovic^{1,2}, L. Ferraris¹, F. Franchini¹ and M. Actis Grande¹* *1. Politecnico di Torino, Alessandria, Italy; 2. Università degli Studi di Padova, Padova, Italy*

- AF-09. The Thickness and Growth Temperature Dependences of Soft Magnetic Properties and an Effective Damping Parameter of (FeCo)-Si Alloy Thin Films.** *K. Abe^{1,2}, S. Wu¹, Y. Tanaka², Y. Ariake², I. Kanada², T. Mewes¹, G.J. Mankey¹, C.K. Mewes¹ and T. Suzuki¹* *1. The Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL, United States; 2. Materials Development Center, TDK Corporation, Narita, Japan*

- AF-10. FeCr alloys damage observed through magnetic domain structure after self-ions irradiation under an external magnetic field.** *J.F. Cuñado¹, A. Morono², F. Sanchez², P. Muñoz², J. Camarero¹ and I. Garcia-Cortes²* *1. Nanomagnetism, IMDEA Nanociencia, Madrid, Spain; 2. Laboratorio Nacional de Fusion, CIEMAT, Madrid, Spain*

- AF-11. Off-equimolar Multiple Component Alloys: Phase and Magnetic Behaviour Evolution in $\text{CoFeCr}_{0.5}\text{Ni}_{0.5}\text{-Al}_x$ (x: 0, 0.5, 1.0, and 1.5).** *C.R. Lim¹, Z. Leong¹ and N. Morley¹* *1. Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom*

- AF-12. Electronic Structure of Nanocrystalline Fe-Co-B-P-Cu Soft Magnet: New Calculation Methodology.** *M. Choi¹, Y. Hong¹, W. Lee¹, H. Won¹, C. Turner⁴, D. Choi², S. Bae² and S. Kim³* *1. Department of Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL, United States; 2. LG Innotek, Seoul, The Republic of Korea; 3. Department of Physics and Astronomy and Center for Computational Sciences, Mississippi State University, Starkville, MS, United States; 4. Department of Chemical Engineering, The University of Alabama, Tuscaloosa, AL, United States*

10:54

AF-13. Effect of Ferric ion on the Magnetic Properties and Curie Temperature of MFe_2O_4 (Fe, Co and Mn) Ferrites.

*A. Thirumurugan¹, J. Joseyphus², R. Ponraj² and A. Fakhrabadi¹
1. Physics and Mathematics (Mechanical), University of Chile, Santiago, Chile; 2. Physics, National Institute of Technology, Tiruchirappalli, India*

11:06

AF-14. Growth Temperature Dependence of Magnetic Anisotropy for CoFe Films.

*W. Zhu¹, Z. Zhu¹, H. Xue¹, G. Wu¹, Q. Jin¹ and Z. Zhang¹
1. Department of Optical Science and Engineering, Fudan University, Shanghai, China*

11:18

AF-15. Synthesis of $\gamma\text{-Fe}_4\text{N}$ Powder in Liquid Nitrogen.

*Y. Jiang^{2,3} and L. Jiang¹
1. Chemical Engineering, UC Berkeley, Berkeley, CA, United States; 2. Microelectronics, Jiangnan University, Wuxi, China; 3. Electrical & Computer Engineering, University of Minnesota, Minneapolis, MN, United States*

TUESDAY
MORNING
8:30

WASHINGTON 1

Session AG

MAGNETORESISTIVE EFFECTS FOR SENSOR APPLICATIONS

Steven Bennett, Chair

U.S. Naval Research Laboratory, Washington, DC, United States

8:30

AG-01. A magnetoresistive sensor for wide-dynamic-range magnetic field measurements.

*X. Yin^{1,2}, Y. Yang^{1,3}, Y. Liu^{1,3}, D. Ewing⁴, P.J. De Rego⁴ and S. Liou^{1,3}
1. NCMN, University of Nebraska, Lincoln, NE, United States; 2. Western Digital, Fremont, CA, United States; 3. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE, United States; 4. Department of Energy's National Security Campus, Kansas City, MO, United States*

8:42

AG-02. Realization of Full-Wheatstone-Bridge GMR Sensors by One-time Thermal Annealing Process.

*S. Yan¹, Z. Cao¹, Z. Guo¹, Z. Li¹, Q. An¹, W. Zhao¹ and Q. Leng¹
1. Beihang-Goertek Joint Microelectronics Institute, Qingdao Research Institute, Beihang University, Qingdao, China*

8:54

AG-03. Reconfigurable Wheatstone Bridge spintronic sensors with Offset Voltage Compensation at Wafer Level.

*F. Franco^{1,2}, S. Cardoso de Freitas^{1,2} and P.P. Freitas¹
1. INESC-MN, Lisbon, Portugal; 2. Instituto Superior Técnico, Lisbon, Portugal*

- AG-04. A New TMR-Sensor-Based Detection Approach for Overhead Transmission System.** Q. Xu², C. Liu¹, X. Liu² and P. Pong² 1. School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong; 2. Department of Electrical and Electronic Engineering, University of Hong Kong, Hong Kong, Hong Kong

- AG-05. Characterization of MgO-based magnetic tunnel junctions with superparamagnetic freelayers.** J.E. Davies¹, B. Vavra², D. Huang², M.A. Torija¹ and P. Eames¹ 1. Advanced Technology, NVE Corporation, Eden Prairie, MN, United States; 2. NVE Corporation, Eden Prairie, MN, United States

- AG-06. Paramagnetic Molecule Producing Strong Inter-Ferromagnetic Electrode Coupling and Current Suppression on a Magnetic Tunnel Junction.** P. Tyagi^{1,2}, C. Riso¹, T. Goulet¹ and C. Beckett³ 1. Mechanical Engineering, University of the District of Columbia, Washington, DC, United States; 2. Chemical and Materials Engineering, University of Kentucky, Lexington, KY, United States; 3. Electrical Engineering, University of the District of Columbia, Washington, DC, United States

- AG-07. Magnetic Sensors: Taxonomy, Applications and New Trends. (Invited)** E. Hristoforou¹ 1. Laboratory of Electronic Sensors, National Technical University of Athens, Athens, Greece

- AG-08. Optimization of the gap size of flux-concentrators: pushing further on low noise levels and high sensitivities in spin-valve sensors.** M.D. Silva^{1,2}, J.F. Silva^{1,2}, D.C. Leitao^{1,2}, S. Cardoso de Freitas^{1,2} and P.P. Freitas¹ 1. INESC-MN, Lisbon, Portugal; 2. Instituto Superior Técnico, Lisbon, Portugal

- AG-09. Temperature Dependence of Noise in Giant- and Tunneling Magnetoresistive Vortex Sensors.** H. Weitensfelder¹, H. Brueckl³, A. Satz² and D. Suess¹ 1. Physics of Functional Materials, University of Vienna, Vienna, Austria; 2. Infineon Technologies Austria AG, Villach, Austria; 3. Department for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria

- AG-10. Negative Resistance and Amplification of Microwave in Heat-driven Magnetic Tunnel Junctions.** M. Goto^{1,3}, Y. Wakatake¹, U.K. Oji¹, S. Miwa^{1,3}, N. Strelkov^{4,5}, B. Dieny⁴, H. Kubota², K. Yakushiji², A. Fukushima², S. Yuasa² and Y. Suzuki^{1,3} 1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 3. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 4. University of Grenoble Alpes, Grenoble, France; 5. Moscow Lomonosov State University, Moscow, Russian Federation

- AG-11. Large MR Ratio by Using Metastable bcc-Cu Spacer Layer in Epitaxial Current In-Plane Giant Magnetoresistance Devices.** *K.B. Fathoni^{1,2*}, Y. Sakuraba¹, T. Sasaki¹, Y. Miura¹, T. Nakatani¹ and K. Hono¹* *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan*

TUESDAY
MORNING
8:30

WASHINGTON 2

Session AH

CORRELATED NANOPARTICLES AND NANOWIRES

Julie Borchers, Chair

National Institute of Standards and Technology, Gaithersburg, MD,
United States

8:30

- AH-01. New Magnetic Orders, and Phase Diagram Exploration in Artificial Spin Systems. (Invited)** *J. Sklenar¹, Y. Lao¹, A. Albrecht², J.D. Watts², J. Park¹, B.L. Le¹, F. Caravelli³, M. Sheikh¹, D. Gardezabal¹, A. Scholl⁴, K. Dahmen¹, C. Leighton², G. Chern⁵, C. Nisoli³ and P. Schiffer^{6,1}* *1. University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. University of Minnesota, Minneapolis, MN, United States; 3. Los Alamos National Laboratory, Los Alamos, NM, United States; 4. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. University of Virginia, Charlottesville, VA, United States; 6. Yale University, New Haven, CT, United States*

9:06

- AH-02. The effect of geometry on ordering and correlations in Artificial Spin Ice.** *G.M. Macauley¹, R. Macedo¹, Y. Li¹, G. Paterson¹, R. Stamps² and S. McVitie¹* *1. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada*

9:18

- AH-03. Dynamics of emergent magnetic monopoles in ferromagnetic nanoparticles.** *M. Charilaou^{1,2}, H. Braun³ and J.F. Löffler¹* *1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. Department of Physics, University of Louisiana at Lafayette, Lafayette, LA, United States; 3. School of Physics, University College Dublin, Dublin, Ireland*

AH-04. Optimizing Thermalization of Square Artificial Spin Ice.

X. Zhang^{1,2}, Y. Lao^{2,3}, J. Sklenar^{2,3}, N.S. Bingham¹, J.D. Watts^{4,5}, C. Leighton⁴ and P. Schiffer^{1,2} *1. Applied Physics, Yale University, New Haven, CT, United States; 2. Physics, University of Illinois Urbana and Champaign, Urbana, IL, United States; 3. Frederick Seitz Materials Research Laboratory, University of Illinois Urbana and Champaign, Urbana, IL, United States; 4. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 5. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States*

AH-05. Macroscopic flexible spin-caloritronic devices based on interconnected nanowire networks.

T. da Câmara Santa Clara Gomes¹, F. Abreu Araujo¹ and L. Piraux¹ *1. Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Louvain-La-Neuve, Belgium*

AH-06. Modulated anisotropy in multisegmented CoNi/Ni cylindrical nanowires.

M. Vázquez¹, C. Bran¹, J. Fernandez-Roldan¹, R. Perez del Real¹, O. Chubykalo-Fesenko¹ and A. Asenjo¹ *1. Institute of Materials Science of Madrid, CSIC, Madrid, Spain*

AH-07. Effect of Applied AC Magnetic Field on Response of Magnetic Nanoparticles.

C. Dennis¹, M. Bleuel¹, C.A. Glinka¹, J. Borchers¹, C. Gruettner² and R. Ivkov³ *1. NIST, Gaithersburg, MD, United States; 2. Micromod Partikeltechnologie GmbH, Rostock-Warnemuende, Germany; 3. Department of Radiation Oncology and Molecular Radiation Sciences, The Johns Hopkins University School of Medicine, Baltimore, MD, United States*

AH-08. Size-dependent magnetic correlations in Fe₃O₄ nanoparticle assemblies revealed by X-rays.

K. Chesnel¹, J. Rackham¹, B. Newbold¹, S. Kottter¹ and R. Harrison² *1. Physics, BYU, Provo, UT, United States; 2. Chemistry, BYU, Provo, UT, United States*

AH-09. Fabrication and characterisation of a three-dimensional magnetic nanowire lattice.

A. May¹, M. Hunt¹, A. Van Den Berg¹, A. Hejazi¹ and S. Ladak¹ *1. Physics and Astronomy, Cardiff University, Cardiff, United Kingdom*

AH-10. Magnetic Properties of Metallic Metalattices.

S. Kempinger¹, Y. Liu¹, P. Mahale¹, P. Moradifar¹, T. Mallouk¹, S. Mohny¹, N. Alem¹, J. Badding¹ and N. Samarth¹ *1. Penn State University, State College, PA, United States*

- AH-11. Magnetic spin structures in chemically homogeneous manganese ferrite nanoparticle assemblies.** *Y. Ijiri¹, A.M. Abdelgawad², J. Zhang³, Q. Zhang³, X. Zhang³, K.L. Krycka⁴, J. Borchers⁴, J. Rhyne⁴ and S. Majetich⁵*
1. Physics and Astronomy, Oberlin College, Oberlin, OH, United States; 2. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Materials Science and Engineering, King Abdullah University of Science and Technology, Jeddah, Saudi Arabia; 4. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. Physics, Carnegie Mellon University, Pittsburgh, PA, United States

- AH-12. Spin Waves Across 3-Dimensional, Close-Packed Nanoparticles.** *K.L. Krycka¹, J. Rhyne¹, S.D. Oberdick², A.M. Abdelgawad³, J. Borchers¹, Y. Ijiri⁴, S. Majetich³ and J.W. Lynn¹*
1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Applied Physics, National Institute of Standards and Technology, Boulder, CO, United States; 3. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 4. Physics and Astronomy, Oberlin College, Oberlin, OH, United States

- AH-13. Clickable Superparamagnetic Iron Oxide Nanoparticles for the Assembly of Magnetic Nanoring Structures on Viral Templates.** *S. Cross¹, K.V. Korpany¹, D. Petrescu¹, S. Abi Farraj² and A. Blum¹*
1. Chemistry, McGill University, Montreal, QC, Canada; 2. Materials Science, McGill University, Montreal, QC, Canada

TUESDAY
MORNING
8:30

WASHINGTON 5

Session AI ENERGY ASSISTED MAGNETIC RECORDING I

Chris Rea, Chair
Seagate Technology, Bloomington, MN, United States

- AI-01. All optical switching in ferromagnetic layer: From multiple to single laser pulse. (Invited)** *S. Mangin¹, M. Hehn¹, G. Malinowski¹ and J. Gorchon¹*
1. Institut Jean Lamour, Université de Lorraine, Nancy, France

- AI-02. Micromagnetic Modelling of Helicity-Dependent Laser Induced Domain Wall Motion in Ferromagnetic Thin Films.** *A. Hernandez¹, M. Zazo¹, E. Martinez¹ and V. Raposo¹*
1. Fisica Aplicada, University of Salamanca, Salamanca, Spain

9:18

AI-03. All-optical magnetization switching in spin-valve structure mediated by spin-polarized hot electron transport.

S. Iihama^{2,1}, Y. Xu², M. Deb², G. Malinowski², M. Hehn², J. Gorchon², E. Fullerton^{2,3} and S. Mangin² *1. AIMR, Tohoku University, Sendai, Japan; 2. Institut Jean Lamour, Université de Lorraine, Vandoeuvre-lès-Nancy, France; 3. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States*

9:30

AI-04. Implementation of the HAMR process for an exchange coupled composite media at significantly low recording and write temperatures.

N.A. Natekar¹, W. Tipcharoen^{1,2} and R.H. Victora¹ *1. Electrical & Computer Engineering, University of Minnesota, Twin Cities, Minneapolis, MN, United States; 2. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

9:42

AI-05. Characterizing Curvature in Heat Assisted Magnetic Recording using Spin Stand Imaging.

I. Gilbert¹, Z. Liu¹, D.A. Saunders², W.R. Eppler¹, C.J. Rea² and T. Rausch¹ *1. Seagate Research, Seagate Technology, Shakopee, MN, United States; 2. Recording Head Operations, Seagate Technology, Bloomington, MN, United States*

9:54

AI-06. Magnetic Field Effects in Heat Assisted Magnetic Recording.

Z. Liu¹, S. Hernandez¹, I. Gilbert¹, H. Zhou², C.J. Rea², P. Huang², G. Ju² and T. Rausch¹ *1. Seagate Research, Seagate Technology, Shakopee, MN, United States; 2. Seagate Technology, Bloomington, MN, United States*

10:06

AI-07. Variation in Optical Absorption of Heat Assisted Magnetic Recording Media.

A. Ghoreyshi¹ and R.H. Victora¹ *1. Electrical Engineering, University of Minnesota, Minneapolis, MN, United States*

10:18

AI-08. Viscoelastic Lubricant Deformation and Disk-to-Head Transfer during Heat-Assisted Magnetic Recording (HAMR).

S. Sakhalkar¹ and D. Bogy¹ *1. Mechanical Engineering, University of California Berkeley, Berkeley, CA, United States*

10:30

AI-09. Adjacent track interference in heat assisted magnetic recording: impact and implications.

S.S. Kalarickal¹, A. Tsoukatos¹, S. Hernandez¹, S. Granz¹, C. Hardie¹ and E.C. Gage¹ *1. Seagate Research Group, Seagate Technology, Shakopee, MN, United States*

10:42

AI-10. Limiting Factors for Linear Density Capability in Heat-Assisted Magnetic Recording.

Y. Qin¹ and J. Zhu¹ *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States*

- AI-11. Recording noise due to intergrain spin transfer torque caused by huge local thermal gradients in heat assisted magnetic recording (HAMR).** *B. Dieny¹, M. Chshiev¹, B. Charles¹, N. Strelkov^{1,2}, A. Truong¹, O. Fruchart¹, A. Hallal¹, J. Wang³, Y. Takahashi³, T. Mizuno⁴ and K. Hono³* *1. INAC-Spintec, Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, Grenoble, France; 2. Department of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 3. National Institute for Materials Science (NIMS), Tsukuba, Japan; 4. TDK/Headway, Milpitas, CA, United States*

- AI-12. Transition Jitter, Switching Probability and Curvature Reduction dependency of the Signal-to-Noise Ratio in Heat-Assisted Magnetic Recording.** *F. Slanovc¹, C. Vogler¹, O. Muthsam¹ and D. Suess¹* *1. Physics of Functional Materials, University of Vienna, Vienna, Austria*

- AI-13. Electronic Structure of Ferromagnetic Carbon-doped Fe-Pt for HAMR.** *M. Choi¹, Y. Hong¹, H. Won¹, W. Lee¹, C. Yeo², D.S. Kuo³ and J. Thiele³* *1. Department of Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL, United States; 2. Department of Mechanical Engineering, Texas Tech University, Lubbock, TX, United States; 3. Seagate Technology LLC, Fremont, CA, United States*

TUESDAY
MORNING
9:30

EXHIBIT HALL A

Session AJ
SPIN HALL EFFECT, SPIN INJECTION AND
RELATED EFFECTS
(Poster Session)

Peng Li, Chair
Stanford University, Palo Alto, CA, United States

- AJ-01. All-Optical Determination of Thickness-Dependent Spin Hall Angle of β -Tantalum in Ta/CoFeB/SiO₂ Heterostructure.** *S. Mondal¹, A. De¹, S. Choudhury¹, A.K. Chaurasiya¹, J. Sinha¹ and A. Barman¹* *1. Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, India*
- AJ-02. All-optical detection of interfacial spin transparency by spin pumping induced modulation of damping in CoFeB/ β -Ta thin films.** *S.N. Panda¹, S. Mondal¹, S. Choudhury¹, A.K. Chaurasiya¹, J. Sinha¹ and A. Barman¹* *1. Condensed Matter Physics and Material Sciences, S N Bose National Centre for Basic Sciences, Kolkata, India*

- AJ-03. Large enhancement of the effective spin Hall angle of Pt by metallic nanoparticles of Ag and Cu.** O. Alves-Santos¹, M. Gamino¹, E.F. Silva¹, J.B. Mendes², R. Rodriguez³, F.L. Machado¹, S.M. Rezende¹ and A. Azevedo¹
1. Departamento de Física, Universidade Federal de Pernambuco, Recife, Brazil; 2. Departamento de Física, Universidade Federal de Viçosa, Viçosa, Brazil; 3. Facultad de Física, Pontificia Universidad Católica de Chile, Santiago, Chile
- AJ-04. Giant spin Hall signals observed in CoFe/Pt nanostructures.** V. Pham¹, I. Groen¹, E. Sagasta¹, A. Marty², C. Lin³, I. Young³, T. Gosavi³, S. Manipatruni³, L.E. Hueso^{1,4} and F. Casanova^{1,4}
1. CIC nanoGUNE, Donostia-San Sebastián, Spain; 2. SPINTEC, CEA-INAC/CNRS/Univ., Grenoble, France; 3. Components Research, Intel Corp., Hillsboro, OR, United States; 4. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain
- AJ-05. THz radiation generated from interfacial Rashba spin-orbit coupling.** M. Jungfleisch^{1,2}, Q. Zhang³, W. Zhang^{1,4}, J. Pearson¹, R.D. Schaller^{5,6}, H. Wen³ and A. Hoffmann¹
1. Materials Science Division, Argonne National Laboratory, Argonne, IL, United States; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 3. Advanced Photon Source, Argonne National Laboratory, Argonne, IL, United States; 4. Department of Physics, Oakland University, Rochester, MI, United States; 5. Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL, United States; 6. Department of Chemistry, Northwestern University, Evanston, IL, United States
- AJ-06. Laser-induced THz emission in Ta/CoFeB/MgO films with different compositions.** Y. Sasaki^{1,2}, S. Iihama¹, K. Suzuki^{1,3} and S. Mizukami^{1,3}
1. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan
- AJ-07. Spin Memory Loss in Magnetically Ordered Pt.** P. Omelchenko¹, E. Girt¹ and B. Heinrich¹
1. Physics, Simon Fraser University, Burnaby, BC, Canada
- AJ-08. Electrical detection of spin-vorticity coupling using inverse spin Hall effect.** S. Tateno¹, G. Okano¹ and Y. Nozaki^{1,2}
1. Department of Physics, Keio univ., Yokohama, Japan; 2. Center for Spintronics Research Network, Keio University, Yokohama, Japan
- AJ-09. Amplification of Spin Waves in Yttrium Iron Garnet Waveguides by the Spin-Hall Effect.** M. Evelt¹, V.E. Demidov¹, S.O. Demokritov¹, J.L. Prieto², M. Muñoz³, J. Ben Youssef⁴, V. Naletov⁵, G. de Loubens⁵, O. Klein⁶, M. Collet⁷, K. Garcia-Hernandez⁷, P. Bortolotti⁷, V. Cros⁷ and A. Anane⁷
1. University of Muenster, Muenster, Germany; 2. Ciudad Universitaria, Madrid, Spain; 3. CNM-CSIC, Madrid, Spain; 4. Université de Bretagne Occidentale, Brest, France; 5. CEA Saclay, Gif-sur-Yvette, France; 6. Univ. Grenoble Alpes, Grenoble, France; 7. Université Paris-Saclay, Palaiseau, France

- AJ-10. Nonreciprocal spin waves in spin-Hall oscillators with Dzyaloshinskii-Moriya interaction.** *R.V. Verba¹, R. Zivieri², A. Giordano², B. Azzerboni², M. Carpentieri³, A.N. Slavin⁴ and G. Finocchio²* 1. *Institute of Magnetism, Kyiv, Ukraine;* 2. *University of Messina, Messina, Italy;* 3. *Politecnico di Bari, Bari, Italy;* 4. *Oakland University, Rochester, MI, United States*
- AJ-11. Defect-Induced Enhancement of Spin Mixing Conductance in Few-Layer MoS₂/Py.** *R. Bansal¹, A. Kumar¹, N. Sisodia¹, N. Chowdhury¹, A. Dogra^{2,3}, A. Barvat^{2,3}, P. Pal^{2,3} and P.K. Muduli¹* 1. *Physics, Indian Institute of Technology Delhi, New Delhi, India;* 2. *CSIR-National Physical Laboratory, New Delhi, India;* 3. *Academy of Scientific and Innovative Research (AcSIR), CSIR-National Physical Laboratory, New Delhi, India*
- AJ-12. Spin and valley polarized transport in strained silicene heterojunctions.** *Z. Siu¹ and M.B. Jalil¹* 1. *National University of Singapore, Singapore, Singapore*
- AJ-13. Monolayer Assembly of Chiral Molecules on Semiconductors for Spin Filtering.** *T. Liu¹, L. Hu¹, E. Lochner¹, P. Xiong¹, X. Wang², J. Zhao², G. Shi³, F. Gao³ and Y. Li³* 1. *Physics, Florida State University, Tallahassee, FL, United States;* 2. *Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China;* 3. *Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**TUESDAY
MORNING
9:30**

EXHIBIT HALL A

Session AK SPIN TRANSFER TORQUE MRAM I (Poster Session)

Behrouz Khodadadi, Chair
Virginia Tech, Tuscaloosa, AL, United States

- AK-01. High Magnetic Anisotropy in Epitaxial MnAl Thin Films for STT-MRAM.** *M. Parvin¹, M. Oogane¹, M. Tsunoda², M. Watanabe¹ and Y. Ando¹* 1. *Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai-shi, Japan;* 2. *Department of Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai-shi, Japan*
- AK-02. Effects of growth order on perpendicular magnetic anisotropy of heavy metal/ferromagnet/MgO tri-layered heterostructures.** *Y. Zhang¹, X. Yang¹, P. Li^{1,2}, J. Ouyang¹ and M. Wu²* 1. *School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China;* 2. *Department of Physics, Colorado State University, Fort Collins, CO, United States*
- AK-03. Micromagnetic study of edge-damage effects in perpendicular CoFeB/MgO Magnetic Tunnel Junction.** *C. Yoshida¹, T. Tanaka¹, T. Ataka¹ and A. Furuya¹* 1. *Application Research and Development Division, Fujitsu Limited, Kawasaki, Japan*

- AK-04. Stability and current-induced magnetization switching in spin-valves with composite free layers.** *V. Sluka¹ and A.D. Kent¹ 1. Department of Physics, New York University, New York, NY, United States*
- AK-05. Withdrawn**
- AK-06. Effect of reference layer magnetic properties on storage layer switching properties with STT-MRAM.** *S. Itai¹, T. Kai¹, J. Ozeki¹, M. Nakayama¹, J. Ito¹ and T. Ishihara¹ 1. Institute of Memory Technology Research & Development, Toshiba Memory Corporation, Kawasaki, Japan*
- AK-07. Critical role of sputtering condition for reference layer on magnetic and transport properties of perpendicular-anisotropy magnetic tunnel junction.** *H. Honjo^{1,2}, S. Ikeda^{1,4}, H. Sato^{1,4}, M. Yasuhira^{1,2} and T. Endoh^{1,3} 1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. JST ACCEL, Sendai, Japan; 3. Graduate School of Engineering, Tohoku University, Sendai, Japan; 4. Center for Science and Innovation in Spintronics, Tohoku University, Sendai, Japan*
- AK-08. Non-Switching probability with second order uniaxial anisotropy in STT-MRAM.** *E. Baek¹ and C. You¹ 1. Department of Emerging Material Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea*
- AK-09. Effect of Nonmagnetic Impurities on the High Temperature Magnetic Properties of CoFeB Free Layers for STT-MRAM.** *J.M. Iwata-Harms¹, G. Jan¹, H. Liu¹, S. Serrano-Guisan¹, L. Thomas¹, J. Zhu¹, R. Tong¹, V. Sundar¹ and P. Wang¹ 1. TDK - Headway Technologies, Inc., Milpitas, CA, United States*
- AK-10. Reducing the switching current with an antiferromagnetic coupling structure in nanomagnets with perpendicular anisotropy.** *K. Kubota¹, K. Yamada² and Y. Nakatani¹ 1. University of Electro-Communications, Tokyo, Japan; 2. Gifu University, Gifu, Japan*
- AK-11. Low-energy switching of a FM/HM/FM sandwich structure driven by spin-orbit torque.** *S. Wang¹, J. Luo¹, C. Zhao¹, W. Wang¹ and T. Ye¹ 1. Institute of Microelectronics, CAS, Beijing, China*

Session AL
SOFT MAGNETIC COMPONENTS: ELECTRICAL
MACHINERY APPLICATIONS
(Poster Session)

Satoru Simizu, Chair
Carnegie Mellon University, Pittsburgh, PA, United States

- AL-01. Design Process of Induction Motor by Equivalent Circuit Couple with Finite Element Analysis for Electrical Power Steering Application.** *S. Lee¹ 1. Hyosung Heavy Industries Corporation, Changwon, The Republic of Korea*
- AL-02. Analysis of Coaxial Magnetic Gear's Characteristics According to Gear Ratio.** *C. Gim¹, E. Park¹, S. Jung² and Y. Kim¹ 1. Chosun University, Gwangju, The Republic of Korea; 2. Sungkyunkwan University, Suwon, The Republic of Korea*
- AL-03. Torque Characteristic Analysis and Measurements of Magnetic Rack-Pinion Gear Based on Analytical Method.** *G. Jang¹, C. Kim¹, S. Seo¹, K. Shin¹ and J. Choi¹ 1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*
- AL-04. Optimized Design, Magnetic and Mechanical Analysis of Low Gear Ratio Magnetic Gear for Contra Rotating Propeller.** *T. Lee¹, D. Hong^{1,2}, Y. Jeong², S. Chung^{1,2} and J. Chang³ 1. Energy and Power Conversion Engineering, University of Science and Technology, Changwon-si, The Republic of Korea; 2. Electric Motor Research Center, Korea Electrotechnology Research Institute, Changwon-si, The Republic of Korea; 3. Electrical Engineering, Dong-A University, Busan, The Republic of Korea*
- AL-05. Design and Analysis of Coaxial Magnetic Gears Considering the Mechanical Stress.** *J. Lee¹, K. Shin¹, T. Bang¹ and J. Choi¹ 1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*
- AL-06. Analysis and Improvement of Power Factor of Magnetic-Field Modulated Brushless Double-Rotor Machine.** *J. Bai¹, J. Liu¹, P. Zheng¹ and Y. Liu¹ 1. Harbin Institute of Technology, Harbin, China*
- AL-07. Optimal Design and Experimental Verification of Linear Magnetic Gear.** *S. Seo¹, C. Kim¹, G. Jang¹, J. Woo¹ and J. Choi¹ 1. Chungnam National University, Daejeon, The Republic of Korea*
- AL-08. A Study on the Design of Axial Flux Motor Using 3D Printing of Amorphous Soft Magnetic Materials.** *S. Lee¹, I. Yang² and W. Kim² 1. Intelligent Information Technology, Busan University of Foreign Studies, Busan, The Republic of Korea; 2. Energy IT, Gachon University, Seongnam-Si, The Republic of Korea*

AL-09. Design and Implementation of a Magnetic Press System for Creating Magnetically Self-Biased Materials. *S.D. Johnson¹, E. Patterson¹, S. Shin¹, S. Qadri¹, E. Gorzkowski¹ and J. Xing¹*
1. Naval Research Laboratory, Washington, DC, United States

AL-10. A Novel Air-cored Linear and Rotary Machine with Helical Permanent Magnet Mover. *P. Jin¹, Y. Guo¹, Z. Pan² and S. Lyu²*
1. School of Energy and Electrical Engineering, Hohai University, Nanjing, China; 2. Southeast University, School of Electrical Engineering, Nanjing, China

AL-11. A Novel Air-cored Linear-Rotary Induction Machine and 3-D Hybrid Analytical Magnetic Field Analysis of Eddy Current. *P. Jin¹, Y. Guo¹, Z. Pan² and S. Lyu²*
1. College of Energy and Electrical Engineering, Hohai University, Nanjing, China; 2. Southeast University, School of Electrical Engineering, Nanjing, China

**TUESDAY
MORNING
9:30**

EXHIBIT HALL A

**Session AM
NEUROMORPHIC, LOGIC, AND SPIN INJECTION
DEVICES
(Poster Session)**

Arnab Bose, Chair
Cornell University, Ithaca, NY, United States

AM-01. Spintronic Synapses Based on the Angular Variation of Magnetoresistance in Magnetic Tunnel Junctions. *M. Mansueto¹, S. Auffret¹, I. Joumard¹, A. Chavent¹, L.D. Buda-Prejbeanu¹, I.L. Prejbeanu¹ and B. Dieny¹*
1. Univ. Grenoble Alpes / CEA / CNRS, Spintec, Grenoble, France

AM-02. Bipolar Random Spike Generation and Binary Random Number Generation by Two Magnetic Tunnel Junctions. *Y. Lv¹, B. Zink¹ and J. Wang¹*
1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States

AM-03. Realization of 15 Boolean Logic Functions Based on the ZnCoO-diode Combined Device. *Z. Zheng¹, K. Zhang^{1,2}, Y. Zhang¹, Z. Zhang¹ and W. Zhao^{1,2}*
1. Fert Beijing Research Institute, School of Electronics and Information Engineering, BDBC, Beihang University, Beijing, China; 2. Beihang-Goertek Joint Microelectronics Institute, Qingdao Research Institute, Beihang University, Qingdao, China

AM-04. Programmable Multi-functional Spin Logic Cell Based on Spin Hall Effect. *X. Zhang¹, C. Wan¹, W. Kong¹, C. Fang¹, H. Wu¹ and X. Han¹*
1. Institute of Physics, Chinese Academy of Sciences, Beijing, China

- AM-05. Chirality Reversible SOT-Switching and Field-Free Programmable Spin Logic.** X. Wang¹, C. Wan¹, W. Kong¹, C. Fang¹, H. Wu¹ and X. Han¹ *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*
- AM-06. Probing a Spin Transfer Controlled Nanomagnet with a Single Nitrogen Vacancy in Diamond.** A. Solyom¹, Z. Flansberry¹, M. Tschudin¹, N. Leitao¹, M. Pioro-Ladrière^{2,3}, J. Sankey¹ and L.I. Childress¹ *1. Department of Physics, McGill University, Montreal, QC, Canada; 2. Institut Quantique et Département de Physique, Université de Sherbrooke, Sherbrooke, QC, Canada; 3. Quantum Information Science Program, Canadian Institute for Advanced Research, Toronto, ON, Canada*
- AM-07. Electronic analogs of optical phenomena for spintronic information processing.** A. Sharma¹, A. Tulapurkar¹ and B. Muralidharan¹ *1. Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India*
- AM-08. Spin-orbit currents, spin-transfer torque and anomalous tunneling in III-V heterostructures probed by advanced 30 bands and 40-bands k.p tunneling methods.** D. To¹, T. Nguyen¹, V. Safarov¹, H. Drouhin¹ and H. Jaffres² *1. Laboratoire des Solides Irradiés, Ecole Polytechnique, Palaiseau, France; 2. UMPy CNRS-Thales, CNRS, Palaiseau, France*
- AM-09. Electrical spin injection into an AlGaAs/GaAs-based 2DEG system with a Co₂MnSi spin source up to room temperature.** Z. Lin¹, D. Pan¹, M. Rasly¹ and T. Uemura¹ *1. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan*
- AM-10. EuS/Co layers as spin-injection source.** A. Goschew¹, R.C. Roca², N. Nishizawa², H. Munekata², A. Delimitis³ and P. Fumagalli¹ *1. Department of Experimental Physics, Free University Berlin, Berlin, Germany; 2. Imaging Science and Engineering Laboratory, Tokyo Institute of Technology, Yokohama, Japan; 3. Department of Mechanical and Structural Engineering and Materials Science, University of Stavanger, Stavanger, Norway*
- AM-11. Effects of current on domain wall motion in SrRuO₃.** M. Yamanouchi^{1,2}, T. Oyamada², K. Sato², H. Ohta^{1,2} and J. Ieda³ *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan; 3. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Japan*

Session AN
MULTIFERROICS AND COMPLEX OXIDES I
(Poster Session)

Karsten Kuepper, Chair
Osnabrück University, Osnabrück, Germany

- AN-01. Effects of a High DC Magnetic Field on Spin Reorientation in Dysprosium-Yttrium Iron Garnets at Low Temperatures.** A. Boutaba¹, M. Lahoubi¹ and W. Wang² *1. Department of Physics, Badji Mokhtar Annaba University, Laboratory L.P.S., Annaba, Algeria; 2. Beijing University of Chemical Technology, Beijing, China*
- AN-02. Anomalous magnetotransport properties of $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3/\text{LaAlO}_3/\text{SrTiO}_3$.** M. Yamanouchi^{1,2}, T. Oyamada² and H. Ohta^{1,2} *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan*
- AN-03. Enhancement of ferromagnetic Curie temperature on substitution of Mn in $\text{La}_{0.85}\text{Ag}_{0.15}\text{CoO}_3$ Compound.** S.K. Srivastava¹, B. Samantaray², T. Bora³ and S. Ravi⁴ *1. Physics, Central Institute of Technology Kokrajhar, Kokrajhar, India; 2. Physics, Indian Institute of Technology Kanpur, Kanpur, India; 3. Physics, National Institute of Technology Meghalaya, Shilong, India; 4. Physics, Indian Institute of Technology Guwahati, Assam, India*
- AN-04. Structure-Property Correlations in $(0.5)\text{Bi}_{0.70}\text{A}_{0.3}\text{FeO}_3-(0.5)\text{PbTi}_{0.5}\text{Fe}_{0.5}\text{O}_3$ (A=Sr, Pb, and Ba) System.** S. Hussain¹, M. Shariq¹, S. Manzoor¹ and M. Rafique¹ *1. Physics, COMSATS University Islamabad, Islamabad, Pakistan*
- AN-05. Magnetic properties and resistive switching behavior in multiferroic based Ag/BY3FS100/FTO device for non-volatile memory device application.** A.K. Jena¹, A. Chelvane² and J. Mohanty¹ *1. Physics, Indian Institute of Technology (IIT) Hyderabad, Sangareddy, India; 2. Advanced Magnetic Group, Defence Metallurgical Research Laboratory (DMRL) Hyderabad, Hyderabad, India*
- AN-06. Ferrimagnetism and Ferroelectricity in $\kappa\text{-Al}_2\text{O}_3$ -type GaFeO_3 multiferroic thin films.** S. Yasui¹, T. Katayama² and M. Itoh¹ *1. Tokyo Institute of Technology, Yokohama, Japan; 2. The University of Tokyo, Tokyo, Japan*
- AN-07. Sol-gel Synthesis and Characterization of La-doped BiFeO_3 Nanostructured Multiferroic.** U.L. Shinde¹, S.M. Kachwala¹, M. Jha¹ and D. Marollikar¹ *1. Physics, KJ Somaiya Institute of Engineering and Information Technology, Mumbai, India*
- AN-08. Phenomenology of Magnetoelectric Switching of Antiferromagnetic Domains.** A. Parthasarathy¹ and S. Rakheja¹ *1. Electrical and Computer Engineering, New York University, Brooklyn, NY, United States*

AN-09. Electrical, Magneto-transport and Magnetization Studies of $(1-x)\text{La}_{0.7}\text{Sr}_{0.3}\text{Mn}_{0.94}\text{Co}_{0.06}\text{O}_3$ (LSMCO)/ $x\text{ZnO}$ ($x = 0, 0.04$) Composite. *H.D. Shah¹ and J.A. Bhalodia¹ 1. Department of Physics, Saurashtra University, Rajkot, India*

AN-10. Presence of unusual spin reorientation of $\text{Fe}^{3+}/\text{Mn}^{3+}$ spins in $\text{NdFe}_{0.5}\text{Mn}_{0.5}\text{O}_3$. *A. Singh¹, B. Padmanabhan¹, V. Nassif^{2,3} and V.K. Malik¹ 1. Physics, Indian Institute of Technology Roorkee, Roorkee, India; 2. Universite Grenoble-Alpes, Grenoble, France; 3. Institute Laue- langevin, Grenoble, France*

**TUESDAY
MORNING
9:30**

EXHIBIT HALL A

Session AO
MOTORS: MODELING AND SIMULATIONS I
(Poster Session)
Paola Tiberto, Chair
INRIM, Torino, Italy

AO-01. Multi-objective Optimization of the Soft Magnetic Composite Machine with the In-Wheel Applications. *X. Liu¹ and W. Fu¹ 1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

AO-02. Design and Analysis of a New Hybrid-Excited Permanent Magnet Machine with Unequal Teeth. *G. Qu¹, Y. Fan¹ and Z. Wu¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China*

AO-03. Improved Magnetic Equivalent Circuit for Predicting Open-Circuit Field in Interior Permanent Magnet Machines. *Z. Li¹, X. Huang¹, L. Wu¹ and Y. Fang¹ 1. Zhejiang University, Hangzhou, China*

AO-04. Multi-Objective Optimal Design of High Speed Surface Mounted Permanent Magnet Synchronous Motor for Magnetic Levitated Flywheel Energy Storage System. *Y. Li¹ and C. Zhu¹ 1. Zhejiang University, Hangzhou, China*

AO-05. Demagnetization Analysis in Multilayer Magnets of PMa-SynRM Considering Temperature Effect. *T. Huynh¹ and M. Hsieh¹ 1. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*

AO-06. Optimization Design of Segmented Permanent-Magnet Shape by Analysis of Thermal Characteristics. *J. Lee¹, B. Kim¹, D. Lee¹, W. Lee¹, J. Moon¹ and D. Kang¹ 1. Keimyung University, Daegu, The Republic of Korea*

AO-07. Effect of Angle Displacement on the Electromagnetic Performance of Dual Three-Phase Consequent-Pole Permanent Magnet Machines. *F. Li¹ and K. Wang¹ 1. Electric Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing City, China*

- AO-08. Investigation of the Dynamic Characteristics for a Coaxial Magnetic Gear under Loading Condition.** Y. Zhao¹, X. Liu¹, Y. Chen², Z. Tian², X. Zhang², M. Li¹ and S. Huang¹ *1. Hunan University, Changsha, China; 2. China North Vehicle Research Institute, Beijing, China*
- AO-09. A Study on Design of Line Start Synchronous Reluctance Motor Using Metal 3D Printing Technology.** J. Lee¹, D. Jung¹, J. Lim¹ and J. Kim¹ *1. Hanyang University, Seoul, The Republic of Korea*
- AO-10. Thermal Analysis of Modular-Spoke-Type Permanent-Magnet Machine Based on Thermal Network and Coupled FEA Method.** J. Qi¹, M. Chen² and W. Hua¹ *1. Southeast University, Nanjing, China; 2. State Grid Shanghai Municipal Electric Power Company, Shanghai, China*

**TUESDAY
MORNING
9:30**

EXHIBIT HALL A

**Session AP
ROCK MAGNETISM, MAGNETIC
FLUIDS AND IMAGING
(Poster Session)**

Beck Strauss, Chair
National Institute of Standards and Technology, Gaithersburg,
MD, United States

- AP-01. FORC study of the ferromagnetic impurities in Na and K feldspars of “El Realejo” mine.** J.A. Montiel-Anaya¹ and V. Franco¹ *1. Universidad de Sevilla, Sevilla, Spain*
- AP-02. Optical and Electrical Property of Carbonized Coal Tar Pitch under a High Magnetic Field of 10 T.** A. Hamasaki¹, K. Fujio¹, Y. Takeuchi² and S. Ozeki¹ *1. Shinshu University, Matsumoto, Japan; 2. Muroran Institute of Technology, Muroran, Japan*
- AP-03. Effect of Mesocarbon Microbeads on Magnetorheological Fluid Behavior.** R. Pierce¹, Y. Choi¹ and N. Wereley¹ *1. Aerospace Engineering, University of Maryland, College Park, MD, United States*
- AP-04. Three-Axis Vibration Isolation of A Full-Scale Magnetorheological Fluid-Based Seat Suspension.** Y. Choi¹, N. Wereley¹ and G.J. Hiemenz² *1. Aerospace Engineering, University of Maryland, College Park, MD, United States; 2. InnoVital Systems Inc., Beltsville, MD, United States*
- AP-05. Enhanced Magnetorheological Characteristics of Zn-doped Ferrite Nanoparticle-Added Carbonyl Iron-based Suspension.** J. Han¹ and H. Choi¹ *1. Department of Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea*

- AP-06. Magneto-viscosity of oil-based Ba-Sr ferrite ferrofluid.** *N. Gautam¹ and R. Singh¹ 1. School of Physics, University of Hyderabad, Hyderabad, India*
- AP-07. Method for Accelerated Testing of Sedimentation Physics in a Magnetorheological Fluid Column.** *S.G. Sherman¹, M. Wen² and N. Wereley¹ 1. Aerospace Engineering, University of Maryland, College Park, MD, United States; 2. College of Optoelectronic Engineering, Chongqing University, Chongqing, China*
- AP-08. Viscosity Control of Magnetorheological Fluid by Power Saving Magnetizing Mechanism using Permanent Magnet Movement.** *Y. Sato¹, Y. Nakamura¹ and M. Suzuki¹ 1. Department of Mechanical Engineering, Yokohama National University, Yokohama, Japan*
- AP-09. Effect of particle structure and hydrodynamic size of blood-pooling magnetic nanoparticles on harmonic signal intensity in magnetic particle imaging.** *Y. Ichikawa¹, S. Ota² and Y. Takemura¹ 1. Yokohama National University, Yokohama-shi, Japan; 2. Shizuoka University, Shizuoka-shi, Japan*
- AP-10. Tracking Cells with Iron Nanowires as MRI T2 Contrast Agents.** *A.I. Martínez Banderas¹, P. Ramos Cabrer^{2,4}, A. Aires³, S. Plaza García², J. Merzaban¹, T. Ravasi¹, A. López Cortajarena^{3,4} and J. Kosel⁵ 1. Division of Biological and Environmental Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal Jeddah, Saudi Arabia; 2. Magnetic Resonance Imaging Department, Molecular Imaging Unit, CIC BiomaGUNE, Donostia-San Sebastián, Spain; 3. CIC BiomaGUNE, Donostia-San Sebastián, Spain; 4. Ikerbasque, Basque Foundation for Science, Bilbao, Spain; 5. Division of Computer, Electrical and Mathematical Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal Jeddah, Saudi Arabia*

**TUESDAY
MORNING
9:30**

EXHIBIT HALL A

**Session AQ
HIGH FREQUENCY AND MAGNETOELASTIC
EFFECTS FOR SENSOR DESIGN I
(Poster Session)**

**Christian Huber, Chair
University of Vienna, Vienna, Austria**

- AQ-01. Magnetostrictive Tactile Sensor Array for Object Recognition.** *B. Zhang¹, B. Wang¹, Y. Li¹ and W. Huang¹ 1. Hebei University of Technology, Tianjin, China*

- AQ-02. Bio-inspired Magnetostrictive Tactile Sensor for Surface Material Recognition.** W. Zheng^{1,2}, B. Wang^{1,2}, H. Liu³ and X. Wang^{1,2} 1. *State Key Laboratory of Reliability and Intelligence of Electrical Equipment (School of Electrical Engineering, Hebei University of Technology), Tianjin, China;* 2. *Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province (School of Electrical Engineering, Hebei University of Technology), Tianjin, China;* 3. *State Key Laboratory of Intelligent Technology and Systems, Department of Computer Science and Technology, Tsinghua University, Beijing, China*
- AQ-03. Optimal Design and Analysis of the Field Excitation Coil in RFECT System for Ferromagnetic Pipeline Inspection.** H. Kim¹, H. Yoo² and G. Park¹ 1. *Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea;* 2. *Korea Gas Corporation, Incheon, The Republic of Korea*
- AQ-04. Synthesis and characterization of nitrogen-doped graphene/MnFe₂O₄@SiO₂ sphere hybrids with high-performance microwave absorption.** Y. Xiong¹, H. Luo¹, X. Wang¹ and R. Gong¹ 1. *Huazhong University of Science & Technology, Wuhan, China*
- AQ-05. Highly sensitive magnetic field sensing using magnetization dynamics in yttrium iron garnet single crystal thin films.** T. Koda¹, S. Muroga² and Y. Endo³ 1. *National Institute of Technology, Oshima College, Suo-Oshima, Japan;* 2. *Akita University, Akita, Japan;* 3. *Tohoku University, Sendai, Japan*
- AQ-06. Optimal Frequency of Low-frequency Eddy Current Testing for Detecting Cracks on the Posterior Side of Steel Plates.** W. Yoshimura¹, T. Sasayama¹ and K. Enpuku¹ 1. *Kyushu University, Fukuoka, Japan*
- AQ-07. Sprayed Magnetostrictive Powder Coating Transducer for On-line Monitoring of Multi-wire Cables using Guided Waves.** P. Zhang¹, Z. Tang², Q. Qi³, J. Wu¹, F. Lv¹, X. Gao³ and K. Yang¹ 1. *Zhejiang University, State Key Laboratory of Fluid Power and Mechatronic Systems, Hangzhou, China;* 2. *Zhejiang University, Institute of Advanced Digital Technologies and Instrumentation, Hangzhou, China;* 3. *University of Science and Technology, State Key Laboratory for Advanced Metals and Materials, Beijing, China*
- AQ-08. Optimization of Low-Noise and Low-Power Miniature Fluxgate Magnetometer.** N. Sun¹, A. Matyushov¹ and N. Sun¹ 1. *ECE, Northeastern University, Boston, MA, United States*
- AQ-09. Performance analysis of the inverse-magnetostrictive tactile sensor and object feature extraction.** L. Wan^{1,2} and B. Wang^{1,2} 1. *State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China;* 2. *Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*

Session AR
MULTI-LAYERED FILMS AND SUPERLATTICES I
(Poster Session)

Sergiu Ruta, Chair
University of York, York, United Kingdom

- AR-01. Interfacial Coupling-Induced Noncollinear Magnetism in $\text{La}_{0.5}\text{Sr}_{0.5}\text{CoO}_{3-6}/\text{La}_{2/3}\text{Sr}_{1/3}\text{MnO}_3/\text{La}_{0.5}\text{Sr}_{0.5}\text{CoO}_{3-6}$ Heterostructures.** *J. Zhang^{1,2}, J. Zhang^{1,2}, B. Shen^{1,2} and J. Sun^{1,2}* 1. State Key Laboratory of Magnetism & Institute of Physics, Chinese Academy of Sciences, Peking, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China
- AR-02. Antiferromagnetic Interlayer Coupling of (111)-Oriented $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3/\text{SrRuO}_3$ Superlattice.** *H. Zhang^{1,2}, J. Zhang^{1,2}, J. Zhang^{1,2}, F. Han^{1,2}, H. Huang^{1,2}, J. Song^{1,2}, B. Shen^{1,2} and J. Sun^{1,2}* 1. Beijing National Laboratory for Condensed Matter & Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China
- AR-03. Tuning perpendicular magnetic anisotropy in Co/Pt multilayers: crystalline texture vs. interface quality.** *O. Yildirim^{1,2}, M.A. Marioni¹, C. Falub², D. Jaeger², H. Rohrmann² and H.J. Hug¹* 1. Nanoscale Materials Science, Empa-Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 2. Evatec AG, Trübbach, Switzerland
- AR-04. Structural optimization and study of magnetism of $\text{L1}_0\text{-FeCo}$.** *H. Ito¹, M. Saito¹, T. Miyamachi², F. Komori², T. Koganezawa³, M. Mizuguchi⁴ and M. Kotsugi¹* 1. Tokyo University of Science, Katsushika, Japan; 2. ISSP of The University of Tokyo, Kashiwa, Japan; 3. JASRI/SPRING-8, Sayo, Japan; 4. IMR of Tohoku University, Sendai, Japan
- AR-05. Electrical Transport in $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3/\text{Pr}_{0.58}\text{Ca}_{0.42}\text{MnO}_3$ Superlattices: Effect of Substrate Twinning.** *S. Chauhan¹, P. Siwach¹, K. Maurya¹ and H. Singh¹* 1. Physics, CSIR-National Physical Laboratory, New Delhi, India
- AR-06. Influence of Co Layer Thickness on the Magnetic Properties of Co/Si Multilayer.** *R. Roy¹, D. Singh¹ and M.S. Kumar¹* 1. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India
- AR-07. Effect of interfaces on magnetic properties of Cu-Zn ferrite/ZnO multilayers.** *J. Kaur¹ and R. Singh¹* 1. School of Physics, University of Hyderabad, Hyderabad, India

AR-08. Transport properties in $\text{YBa}_{1.85}\text{Eu}_{0.15}\text{Cu}_3\text{O}_{7-\delta}/\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$ superlattices grown on (001) SrTiO_3 substrate. S. Huang^{1,2}, B. Qian⁴, Z. Zhang¹, W. Xie¹, A. Zhang³, F. Zhang¹ and X. Wu¹
1. State Key Lab of Solid State Microstructures, School of Physics, Nanjing University, Nanjing 210093, China; 2. School of Physics and technology, Nanjing Normal University, Nanjing 210094, China; 3. College of Science, Hohai University, Nanjing 210098, China; 4. School of Physics & Electronic Engineering, Changshu Institute of Technology, Changshu, 215500, China

AR-09. Perpendicular magnetic anisotropy of $\text{Fe}_3\text{O}_4/\text{Cr}$ multilayers. D. Oshima¹, T. Kato² and S. Iwata¹
1. Institute of Materials and Systems for Sustainability, Nagoya university, Nagoya, Japan; 2. Department of Electronics, Nagoya university, Nagoya, Japan

TUESDAY
 MORNING
 9:30

EXHIBIT HALL A

Session AS
RARE-EARTH INTERMETALLICS AND COMPOUNDS I
(Poster Session)
 Alexander Baker, Chair
 Lawrence Livermore National Laboratory, Livermore, CA,
 United States

AS-01. High-performance Nd-Fe-B Sintered Magnets via Co-doping Low-melting-point $\text{Dy}_{71.5}\text{Fe}_{28.5}$ and High-melting-point Zr. J. Jin¹, G. Bai¹, Z. Zhang¹ and M. Yan¹
1. School of Materials Science and Engineering, Zhejiang University, Hangzhou, China

AS-02. Development of MM-Fe-Co-B Permanent Magnet Alloys via High-throughput Methods. R.P. Chaudhary², K. Gandha², F. Meng^{2,1}, D. Paramanik¹, E. Simsek², M.J. Kramer^{2,1}, C.I. Nlebedim² and R. Ott^{2,1}
1. Division of Materials Science and Engineering, Ames Laboratory, Ames, IA, United States; 2. Critical Materials Institute, Ames Laboratory, Ames, IA, United States

AS-03. The Effect of Nd_8Cu_2 Alloy on the Microstructure and Magnetic Properties of (Nd, MM) FeB Sintered Magnets. Q. Ma^{1,2}, Z. Hu², Z. Zhang², Y. Liu^{1,2}, F. Liu², X. Zhang^{1,2}, G. Wang¹ and Y. Li^{1,2}
1. Inner Mongolia Key Laboratory for Utilization of Bayan Obo Multi Metallic Resources: Elected State Key Laboratory, Inner Mongolia University of Science and Technology, Baotou, China; 2. School of Science, Inner Mongolia University of Science and Technology, Baotou, China

AS-04. Anisotropic Nanostructured SmCo_5 Bonded Magnets Prepared by Magnetic Field Assisted Processing. H. Li¹, Q. Wu¹, M. Yue¹, H. Zhang¹, W. Liu¹, Y. Li¹, Z. Shang¹ and J. Zhang¹
1. Beijing University of Technology, Beijing, China

- AS-05. Magnetic Properties and Microstructure of $\text{Sm}_{0.7}\text{Y}_{0.3}\text{Co}_5$ Magnet Prepared by Traditional Powder Metallurgy Technique.** *N. Cai*¹, R. Zhu¹, D. Zhang¹, M. Yue¹, W. Liu¹, H. Zhang¹, Q. Wu¹ and Z. Shang¹ *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*
- AS-06. Magnetic performance of (Nd,Ce)-Fe-B-type die-upset hybrid magnet composed of melt-spun and HDDR-treated materials.** *D.R. Djuanda*¹, H. Kwon¹, C. Yang², M. Kang² and J. Lee³ *1. Pukyong National University, Busan, The Republic of Korea; 2. Sungkyunkwan University, Suwon, The Republic of Korea; 3. Korea Institute of Materials Science, Changwon, The Republic of Korea*
- AS-07. Effect of milling condition on magnetic properties of $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ powder by modified reduction-diffusion process.** *M. Kang*¹ and J. Kim¹ *1. Department of Materials Science and Chemical Engineering, Hanyang University, Ansan, The Republic of Korea*
- AS-08. Investigation of rare-earth-lean $\text{Nd}_{1-x}\text{Fe}_{11}\text{Ti}_1$ thin films.** *A. Kaidatzis*¹, G. Giannopoulos¹, V. Psycharis¹ and D. Niarchos¹ *1. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Aghia Paraskevi, Athens, Greece*

TUESDAY
AFTERNOON
1:30

SALON 2

Session BA

MAGNETIC NANOPARTICLES AND NANOGRAINS FOR BIOSENSING AND MAGNETIC RECORDING

Ian Gilbert, Chair

Seagate Technology, Shakopee, MN, United States

1:30

- BA-01. Magnetic biochip platforms: manipulating and detecting magnetic labelled bioanalytes in lab on chip devices.** *(Invited) P.P. Freitas*^{2,1}, V. Romao^{1,3}, S. Martins^{1,3}, E. Fernandes², C. Carvalho², S. Cardoso de Freitas^{1,4}, V. Silverio¹, T. Sobrino⁵, J. Castillo⁵, A. Chicharo^{2,6}, L. Dieguez² and B. Espina² *1. INESC MN, Lisbon, Portugal; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal; 3. Magnomics, Lisbon, Portugal; 4. Physics, IST, Lisbon, Portugal; 5. CHUS, SERGAS, Santiago de Compostela, Spain; 6. Biomedical Eng, IST, Lisbon, Portugal*

2:06

- BA-02. Droplet-based Magnetofluidic Platforms for Detection and Analytics.** *(Invited) D. Makarov*¹ *1. Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany*

- BA-03. Evaluation of Media Noise Mechanisms in Heated Dot Magnetic Recording. (Invited)** S. Hernandez¹, D. Karns¹, W.R. Eppler¹, P. Jin¹, Z. Liu¹, P. Krivosik², K. Wago³, K. Lee³, P. Steiner³, C.J. Rea² and T. Rausch¹ *1. Seagate Research, Shakopee, MN, United States; 2. Recording Head Operations, Seagate Technology, Bloomington, MN, United States; 3. Recording Media Operations, Seagate Technology, Fremont, CA, United States*

- BA-04. Correlating Static and Dynamic Magnetic Properties of FePt Nano-grains with Recording Performance. (Invited)** S. Jain¹, D. Tripathy¹, K. Srinivasan¹, T. Seki¹, H. Yuan¹, H. Ho¹, A. Ajan¹, B. Valcu¹, P. Dorsey¹, D. Griffith¹, C. Papusoi¹ and R. Acharya¹ *1. Western Digital, San Jose, CA, United States*

- BA-05. Thermally and magnetically non-volatile 3-nm shell-ferromagnetic Heusler bits. (Invited)** A. Cakir¹ and M. Acet² *1. Department of Metallurgical and Materials Engineering, Mugla Sitki Kocman University, Mugla, Turkey; 2. Physics, Duisburg-Essen University, Duisburg, Germany*

TUESDAY
AFTERNOON
1:30

SALON 3

Session BB
SPIN CURRENTS & SPIN-ORBIT TORQUES:
FROM INTRINSIC TO INTERFACIAL

Felix Casanova, Chair
CIC nanoGUNE, Donostia-San Sebastian, Spain

- BB-01. Enhanced spin pumping into superconductors provides evidence for superconducting pure spin currents. (Invited)** K. Jeon¹, C. Ciccarelli², A. Ferguson², H. Kurebayashi³, L. Cohen⁴, X. Montiel⁵, M. Eschrig⁵, J. Robinson¹ and M.G. Blamire¹ *1. Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom; 2. Physics, University of Cambridge, Cambridge, United Kingdom; 3. University College London, London, United Kingdom; 4. Imperial College London, London, United Kingdom; 5. Royal Holloway University, London, United Kingdom*

- BB-02. Exchange-field-enhanced superconducting spin currents.** K. Jeon^{1,2}, C. Ciccirelli², H. Kurebayashi³, L. Cohen⁴, X. Montiel⁵, M. Eschrig⁵, S. Komori¹, J. Robinson¹ and M.G. Blamire¹
1. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom; 2. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 3. London Centre for Nanotechnology and Department of Electronic and Electrical Engineering, University of College London, London, United Kingdom; 4. The Blackett Laboratory, Imperial College London, London, United Kingdom; 5. Department of Physics, Royal Holloway, University of London, London, United Kingdom

- BB-03. Dynamic Spin Transport in Antiferromagnetic Insulators: Angular Dependent Spin Pumping in $\text{Y}_3\text{Fe}_5\text{O}_{12}/\text{NiO}/\text{Pt}$ Trilayers.** Y. Cheng¹, R. Zarzuela², J. Brangham¹, A.J. Lee¹, S. White¹, P. Hammel¹, Y. Tserkovnyak² and F. Yang¹
1. Physics, The Ohio State University, Columbus, OH, United States; 2. Physics, University of California, Los Angeles, Los Angeles, CA, United States

- BB-04. Following spin currents through multilayered structures.** C. Klewe¹, P. Shafer¹, S. Emori², Z. Qiu³ and E. Arenholz¹
1. LBNL, Berkeley, CA, United States; 2. Department of Physics, Virginia Tech, Blacksburg, VA, United States; 3. UC Berkeley, Berkeley, CA, United States

- BB-05. Planar Hall torque in ferromagnetic/nonmagnetic multilayers.** E.A. Montoya¹, C.J. Safranski¹ and I. Krivorotov¹
1. Department of Physics & Astronomy, University of California, Irvine, Irvine, CA, United States

- BB-06. An Intrinsic Spin Orbit Torque Nano-Oscillator.** M. Haidar^{1,2}, A.A. Awad², M. Dvornik², R. Khymyn², A. Houshang² and J. Åkerman² *1. Chalmers University of Technology, Gothenburg, Sweden; 2. University of Gothenburg, Gothenburg, Sweden*

- BB-07. Intrinsic Spin Hall Effect in Ferromagnets.** V. Amin^{1,2}, X. Fan³, M. Stiles¹ and P.M. Haney¹ *1. NIST, Gaithersburg, MD, United States; 2. University of Maryland, College Park, MD, United States; 3. Department of Physics and Astronomy, University of Denver, Denver, CO, United States*

- BB-08. Single-layer spin-orbit torques in a fully-compensated, half-metallic Ferrimagnet.** S. Lenne¹, Y. Lau² and K. Rode¹
1. CRANN, AMBER and School of Physics, Trinity College Dublin, Dublin, Ireland; 2. Department of Physics, The University of Tokyo, Tokyo, Japan

3:30

- BB-09. Engineering Spin-Orbit Torques by Interfacial Oxidation.** *J. Nath*^{1,2}, *A. Trifu*^{1,2}, *S. Auffret*^{1,2}, *I. Joumard*^{1,2}, *G. Gaudin*^{1,2} and *I. Miron*^{1,2} *1. SPINTEC (CEA/CNRS), Grenoble, France;*
2. Université Grenoble Alpes, Grenoble, France

3:42

- BB-10. Spin Hall magnetoresistance effect in $\text{CoFe}_2\text{O}_4/\text{Pt}/\text{CoFe}_2\text{O}_4$ sandwich films.** *T. Yamamoto*¹, *T. Yanase*², *T. Shimada*² and *T. Nagahama*² *1. CSE, Hokkaido Univ., Sapporo, Japan;*
2. Graduate School of Engineering, Hokkaido Univ., Sapporo, Japan

3:54

- BB-11. Spin Hall magnetoresistance in ferrimagnetic $\text{Pt}/\text{Co}_{1-x}\text{Tb}_x$ bilayers.** *Y. Xu*¹, *D. Chen*¹, *J. Zhao*¹ and *D. Wei*¹ *1. State Key Laboratory for Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China*

4:06

- BB-12. Spin-orbit torques in heavy metal/ferromagnet bilayers with varying strength of interfacial spin-orbit coupling.** *L. Zhu*¹, *D. Ralph*¹ and *R. Buhrman*¹ *1. Cornell University, Ithaca, NY, United States*

4:18

- BB-13. Non-local transport, spin- and ordinary-Hall effects in ultrathin Au-based multilayers.** *M. El Hadri*¹, *Y. Xiao*¹ and *E. Fullerton*¹ *1. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States*

TUESDAY
AFTERNOON
1:30

SALON 1

Session BC SKYRMIONS I

Ran Cheng, Chair
University of California, Riverside, Riverside, CA, United States

1:30

- BC-01. Controlling the Profile, Stability and Dynamics of Chiral Hybrid Skyrmions.** *W. Legrand*^{1*}, *N. Ronceray*^{1,2}, *N. Reyren*¹, *D. Maccariello*¹, *V. Cros*¹ and *A. Fert*¹ *1. Unité Mixte de Physique CNRS/Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France;*
2. Ecole Polytechnique, Palaiseau, France

- BC-02. Room temperature magnetic imaging of chiral domain walls in synthetic anti-ferromagnets multilayers.** *F. Ajejas¹, W. Legrand¹, M. Akthar², S. Chouaieb², A. Haykal², D. Maccariello¹, N. Reyren¹, S. Collin¹, K. Bouzehouane¹, A. Vecchiola¹, V. Cros¹, V. Jacques² and A. Fert¹* *1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Laboratoire Charles Coulomb, Université de Montpellier and CNRS, Montpellier, France*

- BC-03. Tunable Chiral Spin Textures Characterized by Resonant Soft X-ray Diffraction.** *P. Shafer¹, G. Chen^{2,3}, A.T. N'Diaye¹, X. Xiao⁴, J. Hong⁵, L. Sun⁴, J. Liang⁴, S. Sloetjes^{6,1}, C. Ophus², A. Young¹, H. Ding⁷, A. Scholl¹, Z. Qiu⁸, Y. Wu⁴, K. Liu³, A.K. Schmid² and E. Arenholz¹* *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 2. National Center for Electron Microscopy, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Department of Physics, University of California, Davis, CA, United States; 4. Department of Physics, Fudan University, Shanghai, China; 5. Electrical Engineering and Computer Sciences, University of California, Berkeley, CA, United States; 6. Electronics and Telecommunications, NTNU, Trondheim, Norway; 7. Department of Physics, Nanjing University, Nanjing, China; 8. Department of Physics, University of California, Berkeley, CA, United States*

- BC-04. Direct imaging of hybrid chiral domain walls in multilayer thin film systems with interfacial exchange interaction using Lorentz microscopy.** *K. Fallon¹, S. McVitie¹, W. Legrand², D. Maccariello², S. Collin², K. Garcia², N. Reyren², V. Cros² and A. Fert²* *1. Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Unité Mixte de Physique, CNRS, Paris, France*

- BC-05. Current- and field-driven dynamics of chiral domain walls in a magnetic insulator.** *C. Avci^{1,2}, E.R. Rosenberg¹, L.M. Caretta¹, M. Mann¹, L. Beran^{3,1}, C. Ross¹ and G. Beach¹* *1. Materials Science and Eng., Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Materials, ETH Zürich, Zürich, Switzerland; 3. Charles University, Prague, Czechia*

- BC-06. Imaging the reversal of domain wall chirality in Pt/CoB/Ir by *in-situ* scanning electron microscopy with polarization analysis.** *M.J. Meijer¹, J. Lucassen¹, R. Duine^{1,2}, H. Swagten¹, B. Koopmans¹ and R. Lavrijsen¹* *1. Department of Applied Physics / Physics of Nanostructures, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Institute of Theoretical Physics, Utrecht University, Utrecht, Netherlands*

- BC-07. Investigation of Néel-type Magnetic Skyrmions using Off-axis Electron Holography.** *T. Denneulin¹, J. Caron¹, A. Kovacs¹, M. Hoffmann², B. Zimmermann², S. Blügel², M. Raju³, C. Panagopoulos³ and R.E. Dunin-Borkowski¹*
1. Ernst Ruska Centre for Microscopy and Spectroscopy with Electrons and Peter Grünberg Institute, Forschungszentrum Jülich, Jülich, Germany; 2. Peter Grünberg Institute and Institute for Advanced Simulation, Forschungszentrum Jülich, Jülich, Germany; 3. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore

- BC-08. Sub-monolayer capping induced switching of magnetic chirality.** *G. Chen¹, R. Lo Conte^{2,3}, A.K. Schmid⁴ and K. Liu^{1,5}*
1. Physics Department, University of California, Davis, Davis, CA, United States; 2. Institute of Applied Physics, University of Hamburg, Hamburg, Germany; 3. Materials Science and Engineering Department, University of California, Berkeley, Berkeley, CA, United States; 4. Materials Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Physics Department, Georgetown University, Washington, DC, United States

- BC-09. Lifetime and Dynamics of (Anti)Skyrmions.** *O. Tretiakov¹, M. Potkina^{2,4}, I. Lobanov³, V. Uzdin^{3,2} and H. Jonsson⁴*
1. IMR, Tohoku University, Sendai, Japan; 2. St. Petersburg State University, St. Peterburg, Russian Federation; 3. ITMO, St. Petersburg, Russian Federation; 4. University of Iceland, Reykjavk, Iceland

- BC-10. Boundary twists, instabilities, and (anti)skyrmion creation.** *A. Kovalev¹*
1. University of Nebraska - Lincoln, Lincoln, NE, United States

- BC-11. Computational study of tetragonal Inverse-Heusler compounds for anti-skyrmions.** *J. Ma¹, Y. Xie¹, J. He², H. Vakiltaleghani¹, C. Wolverton² and A. Ghosh¹*
1. Electrical and Computer Engineering, University of Virginia, Charlottesville, VA, United States; 2. Department of Materials Science and Engineering, Northwestern University, Evanston, IL, United States

- BC-12. Statistical thermodynamic approach for the computation of the entropy of a magnetic skyrmion.** *R. Zivieri¹, R. Tomasello², M. Carpentieri³, O. Chubykalo-Fesenko⁴ and G. Finocchio²*
1. Universtiy of Ferrara, Ferrara, Italy; 2. University of Messina, Messina, Italy; 3. Politecnico di Bari, Bari, Italy; 4. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain

- BC-13. Skyrmion formation in SrRuO₃-SrIrO₃ epitaxial bilayer.** *H.J. Hug*^{1,2}, *A. Mandru*¹, *M. Bacani*¹, *A.S. Ahmed*³, *K. Meng*³ and *F. Yang*³ *1. Nanoscale Materials Science, Empa, Duebendorf, Switzerland; 2. Physics, University of Basel, Basel, Switzerland; 3. Physics, The Ohio State University, Columbus, OH, United States*

- BC-14. Precipitating Ordered Skyrmion Lattices from Helical Spaghetti.** *D. Gilbert*^{1,2}, *A.J. Grutter*², *P. Neves*³, *G. Shu*⁴, *G. Zimanyi*⁵, *B.B. Maranville*², *F. Chou*⁴, *K.L. Krycka*², *N. Butch*^{2,3}, *S. Huang*⁶ and *J. Borchers*² *1. Materials Science, University of Tennessee, Knoxville, TN, United States; 2. National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Physics, University of Maryland, College Park, MD, United States; 4. Materials and Minerals Engineering, National Taipei University of Technology, Taipei, Taiwan; 5. Physics, University of California, Davis, CA, United States; 6. Physics, University of Miami, Miami, FL, United States*

TUESDAY
AFTERNOON
1:30

MARYLAND

Session BD

DOMAIN WALL AND RELATED DEVICES

Vincent Sokalski, Chair

Carnegie Mellon University, Pittsburgh, PA, United States

- BD-01. Domain Wall Type Spin Memristor for Analogue Neuromorphic Computing.** *T. Shibata*¹, *T. Shinohara*¹, *T. Ashida*¹, *M. Ohta*¹, *K. Ito*¹, *S. Yamada*¹, *Y. Terasaki*¹ and *T. Sasaki*¹ *1. Technology & Intellectual Property HQ, TDK Corporation, Ichikawa, Japan*

- BD-02. Deterministic multi-Hall resistance changes for a neuromorphic memristor application due to a DW motion in a single Hall bar.** *Y. Kim*¹, *J. Kwon*¹, *H. Hwang*¹ and *C. You*¹ *1. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea*

- BD-03. Frequency-Division Multiplexing in Magnonic Logic Networks Based on Caustic-Like Spin Wave Beams.** *F. Heussner*¹, *G. Talmelli*², *M. Nabinger*¹, *T. Fischer*¹, *T. Brächer*¹, *A.A. Serga*¹, *F. Ciubotaru*², *C. Adelmann*², *B. Hillebrands*¹ and *P. Pirro*¹ *1. Physics, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. IMEC, Leuven, Belgium*

- BD-04. Electrically Controllable Magnetic Switching and Soliton Motion in Insulating Magnetic Garnets with Perpendicular Magnetic Anisotropy.** *A. Ross*^{1,2}, *S. Ding*^{3,2}, *S. Becker*¹, *Y. Kurokawa*⁴, *S. Gupta*¹, *J. Yang*³, *R. Lebrun*¹, *G. Jakob*^{1,2} and *M. Kläui*^{1,2} *1. Johannes-Gutenberg University Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. State Key Laboratory for Mesoscopic Physics, Peking University, Beijing, China; 4. Graduate School of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan*

- BD-05. Control of domain wall motion with tilted magnetization for domain wall devices.** *T. Jin*¹, *F. Tan*¹, *C.C. Ang*¹, *W. Gan*¹, *J. Cao*², *W. Lew*¹ and *S. Piramanayagam*¹ *1. Nanyang Technological University, Singapore, Singapore; 2. Lanzhou University, Gansu, China*

- BD-06. Excitation and Amplification of Spin Waves by Spin-Orbit Torque.** *S. Urazhdin*¹, *B. Divinskiy*², *V.E. Demidov*², *R. Freeman*¹, *A. Rinkevich*³ and *S.O. Demokritov*^{2,3} *1. Physics, Emory University, Atlanta, GA, United States; 2. Institute for Applied Physics and Center for Nonlinear Science, University of Muenster, Muenster, Germany; 3. Physics, Institute of Metal Physics UB RAS, Ekaterinburg, Russian Federation*

- BD-07. Mutual synchronization of higher-order propagating spin-wave modes in MTJ based spin-torque nano-oscillators.** *H. Fulara*¹, *R. Khymyn*¹, *A. Houshang*¹, *A. Gangwar*¹, *R. Ferreira*², *P. Freitas*², *M. Dvornik*¹ and *J. Åkerman*^{1,3} *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Department of Nanoelectronics, INL-International Iberian Nanotechnology Laboratory, Braga, Portugal; 3. Department of Applied Physics, KTH Royal Institute of Technology, Kista, Sweden*

- BD-08. Manipulation of Spin Wave Interference Using Thermal Gradients.** *G.A. Riley*¹, *K.E. Nygren*¹, *C.L. Ordóñez-Romero*² and *K. Buchanan*¹ *1. Physics, Colorado State University, Fort Collins, CO, United States; 2. Instituto de Física, , Universidad Nacional Autónoma de México, Mexico City, Mexico*

- BD-09. Mutual control of coherent spin waves and magnetic domain walls in a magnonic device.** *J. Han*¹, *P. Zhang*¹, *J.T. Hou*¹ and *L. Liu*¹ *1. Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States*

- BD-10. Control of single domain wall dynamics in an amorphous microwire.** *E. Calle*¹, *M. Vázquez*¹ and *R. Perez del Real*¹ *1. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain*

- BD-11. Programmable Control of Spin-Wave Transmission in a Domain-Wall Spin Valve.** S.J. Hämäläinen¹, M. Madami², H. Qin¹, G. Gubbiotti³ and S. van Dijken¹ *1. Department of Applied Physics, Aalto University, Espoo, Finland; 2. Dipartimento di Fisica e Geologia, Università di Perugia, Perugia, Italy; 3. Istituto Officina dei Materiali del CNR (CNR-IOM), Perugia, Italy*

- BD-12. Phase Diagram of 360-degree Domain Walls in Magnetic Rings.** J.E. Bickel¹ and K.E. Aidala² *1. Physics, Cleveland State University, Cleveland, OH, United States; 2. Physics, Mount Holyoke College, South Hadley, MA, United States*

- BD-13. A Spin Wave Correlator Using Parametric Interactions.** M. Hansen¹, I. Lisenkov^{2,1}, N. Nujhat¹, L. Huaping¹, A. Jander¹ and P. Dhagat¹ *1. Electrical Engineering and Computer Science, Oregon State University, Corvallis, OR, United States; 2. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States*

- BD-14. Spin-wave phase shifter upon a single linear defect.** O. Dobrovolskiy^{1,2}, R. Sachser¹, S. Bunyaev³, D. Navas³, V. Bevz^{2,4}, M. Zelent⁵, J. Rychly⁵, M. Krawczyk⁵, R. Vovk^{2,4}, M. Huth¹ and G.N. Kakazei³ *1. Physikalisches Institut, Goethe University, Frankfurt, Germany; 2. Physics Department, V. Karazin National University, Kharkiv, Ukraine; 3. IFIMUP-IN/ Department of Physics and Astronomy, University of Porto, Porto, Portugal; 4. Ukrainian State University of Railway Transport, Kharkiv, Ukraine; 5. Nanomaterials Physics Division, Adam Mickiewicz University in Poznan, Poznan, Poland*

- BD-15. Spin-wave Confinement and Coupling in Organic-Based Magnetic Nanostructures.** M. Chilcote¹, M. Harberts¹, Y. Lu², H. Yu¹, B. Fuhrmann³, K. Lehmann⁴, A. Franson¹, N. Zhu⁵, H. Tang⁵, G. Schmidt^{3,4} and E. Johnston-Halperin¹ *1. Physics, The Ohio State University, Columbus, OH, United States; 2. Chemistry, The Ohio State University, Columbus, OH, United States; 3. IZM, Martin-Luther-Universität Halle-Wittenberg, Halle, Germany; 4. Institute für Physik, Martin-Luther-Universität Halle-Wittenberg, Halle, Germany; 5. Electrical Engineering, Yale University, New Haven, CT, United States*

Session BE
MAGNETIC SEMICONDUCTORS AND MAGNETISM
IN HEUSLER COMPOUNDS

Ryan Need, Chair

NIST Center for Neutron Research, Gaithersburg, MD, United States

1:30

- BE-01. Ferromagnetic behavior in rare earth-doped III-nitride semiconductors grown by Molecular beam epitaxy.** *R. Palai¹, K. Dasari¹, W. Jadwisienczak² and H. Huhtinen³* *1. Department of Physics, University of Puerto Rico, San Juan, PR, United States; 2. School of Electrical Engineering and Computer Science, Ohio University, Athens, OH, United States; 3. Department of Physics, University of Turku, Turku, Finland*

1:42

- BE-02. Giant molecular modulation of the magnetization direction in a magnetic semiconductor.** *X. Wang¹, H. Wang¹, J. Ma¹ and J. Zhao¹* *1. Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China*

1:54

- BE-03. Role of rare-earth size on the structural, electronic and magnetic properties of doubly ordered $R_2\text{NiMnO}_6$ perovskites.** *M. Nasir¹, M.U. Khan² and S. Sen¹* *1. Department of Physics, Indian Institute of Technology Indore, INDORE, India; 2. Department of Physics, Miami University, Miami, OH, United States*

2:06

- BE-04. High Curie Temperature and Electrical Control of Magnetic Properties in Fe-based Narrow-gap III-V Ferromagnetic Semiconductor Heterostructures. (Invited)** *L. Anh^{1,2}, N. Thanh Tu¹, N. Pham^{3,4} and M. Tanaka^{1,4}* *1. Department of Electrical Engineering and Information Systems, The University of Tokyo, Bunkyo, Japan; 2. Institute of Engineering Innovation, The University of Tokyo, Bunkyo, Japan; 3. Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Meguro, Japan; 4. Center for Spintronics Research Network (CSRN), The University of Tokyo, Bunkyo, Japan*

2:42

- BE-05. Room-Temperature Dilute Magnetic Semiconductor in V-doped Monolayer WSe_2 .** *D. Duong¹, S. Yun¹ and Y. Lee^{1,2}* *1. Center for Integrated Nanostructure Physics (CINAP), Institute for Basic Science (IBS), Suwon 16419, The Republic of Korea; 2. Department of Energy Science, Sungkyunkwan University, Suwon 16419, The Republic of Korea*

- BE-06. Interlayer Exchange Coupling in Ferromagnetic Semiconductor Trilayers with Out-of-Plane Magnetic Anisotropy.** *P. Chongthanaphisut*¹, *S. Bac*^{1,2}, *S. Choi*¹, *J. Chang*¹, *S. Choi*¹, *S. Lee*¹, *M. Nnaji*², *X. Liu*², *M. Dobrowolska*² and *J. Furdyna*² *1. Physics, Korea University, Seoul, The Republic of Korea; 2. Physics, University of Notre Dame, Notre Dame, IN, United States*

- BE-07. Room-Temperature Skyrmions in MnNiX Compounds.** *W. Zhang*^{1,2}, *B. Balasubramanian*^{1,2}, *X. Li*¹, *S. Valloppilly*¹, *L. Yue*¹, *R. Skomski*^{1,2} and *D.J. Sellmyer*^{1,2} *1. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE, United States*

- BE-08. Anomalous Hall effects in five-elements Heusler alloy, Co₂(Fe-Mn)(Al-Si) films.** *T. Kubota*^{1,2}, *Z. Wen*^{1,2} and *K. Takanashi*^{1,2} *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

- BE-09. High-field Magnetotransport Study of the Anisotropy of a Highly Spin-polarised Low-moment Ferrimagnet - Mn₂Ru_{0.9}Ga.** *A. Jha*¹, *S. Lenne*¹, *G. Atcheson*¹, *K. Rode*¹ and *P.S. Stamenov*¹ *1. School of Physics and CRANN, Trinity College, Dublin, Ireland*

- BE-10. Colossal Second Order Magnetocaloric Effect at Room and High Temperature in MnFe₂Ga Heusler Alloy for Magnetic Refrigeration.** *E. Martinez-Teran*¹, *A. Cordeiro*¹ and *A.A. El-Gendy*¹ *1. Physics, University of Texas-El Paso, El Paso, TX, United States*

- BE-11. Phase stabilization of epitaxial cubic Mn₂Ru_xAl Heusler alloy thin films.** *H. Kurt*¹, *K. Siewierska*², *G. Atcheson*², *M. Venkatesan*², *K. Rode*², *P.S. Stamenov*² and *M. Coey*² *1. Engineering Physics, Istanbul Medeniyet University, Istanbul, Turkey; 2. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland*

- BE-12. Magnetism of the compensated ferrimagnetic half-metal Mn_{1.5}V_{0.5}FeAl Heusler.** *R. Zhang*¹, *M. Venkatesan*¹, *P.S. Stamenov*¹, *Z. Gercsi*¹ and *M. Coey*¹ *1. Department of Physics, Trinity College Dublin, Dublin, Ireland*

- BE-13. Effects of thermal spin disorder on the half-metallicity of Co₂MnSi with antisite defects and Fe substitution.** *G.G. Baez Flores*¹ and *K. Belashchenko*¹ *1. Physics, University Of Nebraska Lincoln, Lincoln, NE, United States*

Session BF

**CRITICAL PHENOMENA, QUANTUM SPIN LIQUIDS,
f-ELECTRON MAGNETISM AND MOLECULAR
MAGNETS**

Rebecca Dally, Chair

University of California, Santa Barbara, Goleta, CA, United States

1:30

- BF-01. Quantum Spin Liquid in 5d-Electron Honeycomb Compound $\text{H}_3\text{LiIr}_2\text{O}_6$. (Invited) K. Kitagawa¹** *1. Department of Physics, The University of Tokyo, Tokyo, Japan*

2:06

- BF-02. Lattice symmetry breaking effects on the Raman phonon spectra of Kitaev magnet $\alpha\text{-RuCl}_3$.** *T. Mai¹, A. McCreary⁵, P. Lampen-Kelley^{2,3}, J.R. Simpson^{5,6}, S. Nagler⁴, D. Mandrus^{2,3}, A.R. Hight Walker⁵ and R. Valdes Aguilar¹* *1. Physics, The Ohio State University, Columbus, OH, United States; 2. Materials Science and Engineering, University of Tennessee, Knoxville, TN, United States; 3. Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 4. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 5. Engineering Physics Division, Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 6. Physics, Astronomy, and Geosciences, Towson University, Towson, MD, United States*

2:18

- BF-03. Novel elementary spin excitations in metals.** *V. Antropov¹, A. Wysocki¹ and A. Kutepov²* *1. Ames Laboratory, Ames, IA, United States; 2. Brookhaven National Laboratory, Upton, NY, United States*

2:30

- BF-04. Critical behavior of the antiferromagnetic transitions in intermetallics R_3T ($R=\text{Dy, Tb}$, $T=\text{Co, Ni}$).** *A. Herrero¹, A. Oleaga¹, A. Salazar¹, A. Gubkin^{2,3} and N.V. Baranov^{2,3}* *1. Department of Applied Physics I, University of the Basque Country, Bilbao, Spain; 2. M.N. Miheev Institute of Metal Physics, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russian Federation; 3. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation*

2:42

- BF-05. Magnetic Quantum-Phase Transition Caused by Interstitial Modification in Co_{1+x}Sn .** *R. Pahari^{1,2}, B. Balasubramanian^{1,2}, R. Pathak³, S. Valloppilly¹, R. Skomski^{1,2}, A. Kashyap³ and D.J. Sellmyer^{1,2}* *1. Nebraska Center for Materials and Nanoscience, Lincoln, NE, United States; 2. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States; 3. School of Basic Sciences, IIT Mandi, Mandi, India*

BF-06. The phase transition in lightly doped Mott insulators.

*L. Dubovskii*¹ 1. *Theoretical Division, NRC "Kurchatov Institute", Moscow, Russian Federation*

3:06

BF-07. Local short-scale correlations and the origin of Pseudo-Diamagnetism.

*M. Tripathi*¹, *T. Chatterji*², *S. Majumder*¹, *H. Fischer*², *R. Choudhary*¹ and *D. Phase*¹ 1. *Magnetism, UGC DAE Consortium for Scientific Research, Indore, India;*
2. *Institut Laue-Langevin, Grenoble, France*

3:18

BF-08. Structural and magnetic properties of PrIr₃B₂ single crystal.

*S. Manni*¹, *A. Thamizhavel*² and *S.K. Dhar*¹ 1. *Condensed Matter Physics & Materials Science, Tata Institute of Fundamental Research, Mumbai, India;* 2. *Condensed Matter Physics & Materials Science, Tata Institute of Fundamental Research, Mumbai, India*

3:30

BF-09. Brillouin Light Scattering (BLS) Measurements of Vanadium Tetracyanoethylene (VTCNE). (Invited)

*K.E. Nygren*¹, *D. Marchfield*¹, *G.A. Riley*¹, *A. Franson*², *T. Richter*², *M. Chilcote*², *E. Johnston-Halperin*² and *K. Buchanan*¹
1. *Department of Physics, Colorado State University, Fort Collins, CO, United States;* 2. *Department of Physics, The Ohio State University, Columbus, OH, United States*

4:06

BF-10. How do non-magnetic elements influence electronic structure to enhance magnetism and control phase transformation in rare earth compounds?

*D. Paudyal*¹ and *V.K. Pecharsky*^{2,3}
1. *Ames Laboratory, Ames, IA, United States;* 2. *Ames Laboratory, Ames, IA, United States;* 3. *Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States*

4:18

BF-11. Element-specific determination of the magnetic properties of the macrocyclic tetranuclear 3d-4f complexes with Cu₃Tb core by means of x-ray magnetic circular dichroism (XMCD).

*K. Balinski*¹, *L. Schneider*¹, *J. Wöllerma*¹, *A. Buling*¹, *L. Joly*², *C. Piamonteze*³, *H.L. Feltham*⁴, *S. Brooker*⁴, *A. Powell*⁵, *B. Delley*³ and *K. Kuepper*¹ 1. *Department of Physics, University of Osnabrück, Osnabrück, Germany;* 2. *CNRS, IPCMS, Université de Strasbourg, Strasbourg, France;* 3. *Paul Scherrer Institute, Villigen, Switzerland;* 4. *Department of Chemistry and the MacDiarmid Institute, University of Otago, Dunedin, New Zealand;* 5. *Institut für Anorganische Chemie, Karlsruhe Institute of Technology, Karlsruhe, Germany*

Session BG
MOTORS: DESIGN AND ANALYSIS I

Evangelos Hristoforou, Chair
National Technical University of Athens, Athens, Greece

BG-01. Withdrawn

1:30

BG-02. A Nonlinear Four-dimensional Flux Linkage Modeling Method for Axial Flux Coil Assisted Stator Excitation BLDCM Based on Fourier Series. A. Liu¹, D. Ren¹ and J. Lou¹
1. College of Electrical Engineering, Shenyang University of Technology, Shenyang, China

1:42

BG-03. A Consequent-Pole PM Magnetic-Geared Double-Rotor Machine with Flux-Weakening Ability. H. Zhao¹ and C. Liu¹
1. School of Energy and Environment, City University of Hong Kong, Kowloon, Hong Kong

1:54

BG-04. A Hybrid Interior Permanent Magnet Variable Flux Memory Machine Using Two-Part Rotor. L. Wu¹, Y. Zheng¹ and Y. Fang¹ *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

2:06

BG-05. Analytical prediction of iron losses in a spoke-type permanent magnet synchronous in-wheel motor for electric vehicles. P. Liang^{1,2}, F. Chai³, K. Shen^{1,2} and W. Liu^{1,2}
1. Department of Electrical Engineering, Northwestern Polytechnical University, Xi'an, China; 2. Shaanxi Key Laboratory of Small & Special Electrical Machine and Drive Technology, Xi'an, China; 3. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China

2:18

BG-06. A Distributed Winding Wound Field Pole Changing Vernier Machine for Variable Speed Application. N. Baloch¹ and B. Kwon¹ *1. Electronic Systems Engineering, Hanyang University, Ansan, The Republic of Korea*

2:30

BG-07. High Power-Density Axial Flux Rotational Machines with Metal Amorphous Nanocomposite (MANC) Soft Magnetic Material (SMM) and Rare Earth Free Permanent Magnets. S. Simizu¹, P. Ohodnicki^{2,1} and M.E. McHenry¹ *1. Carnegie Mellon University, Pittsburgh, PA, United States; 2. National Energy Technology Laboratory, Pittsburgh, PA, United States*

2:42

- BG-08. Analysis and Comparison of Printed-Circuit Stator Windings for Axial Flux Permanent Magnet Machines.** *M.D. Noh¹, J. Kim¹ and Y. Park¹ 1. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea*

2:54

- BG-09. Matrix-Free Nonlinear Finite Element Solver using Transmission-Line Modeling on GPU.** *P. Liu¹ and V. Dinavahi¹ 1. Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada*

3:06

- BG-10. AC Loss and Thermal Analysis of Doubly Salient Electro-Magnetic Machine with Round, Flat and Litz Wire Windings.** *J. Zhang¹, Z. Zhang¹ and L. Yu¹ 1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China*

3:18

- BG-11. Consequent-Pole Hybrid Excitation Brushless Wound Field Synchronous Machine with Fractional Slot Concentrated Winding.** *M. Ayub¹, G. Sirewal¹ and B. Kwon¹ 1. Hanyang University, Ansan, The Republic of Korea*

3:30

- BG-12. Mathematical Modeling and Verification of a 9-Phase Asymmetric Winding Permanent Magnet Synchronous Motor.** *E. Yolacan¹, M. Aydin¹ and M. Guven² 1. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey; 2. Schlumberger Limited, Sugar Land, TX, United States*

TUESDAY
AFTERNOON
1:30

WASHINGTON 2

Session BH PATTERNED FILMS

Nick Rizzo, Chair
Northrop Grumman Corporation, Tempe, AZ, United States

1:30

- BH-01. Engineering Spins in Nanostructured Complex Oxides. (Invited)** *M.S. Lee¹, R.V. Chopdekar^{1,2}, B. Li¹, A. Scholl², A. Young², S. Retterer³, E. Folven⁴, J. Grepstad⁴ and Y. Takamura¹ 1. Materials Science and Engineering, University of California, Davis, Davis, CA, United States; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 3. Center for Nanophase Materials Science, Oak Ridge National Laboratory, Oak Ridge, CA, United States; 4. Electronics and Telecommunications, Norwegian University of Science and Technology, Trondheim, Norway*

BH-02. Ion Irradiation Induced Cobalt/Cobalt Oxide

Heterostructures: From Materials to Devices. *D. Hilliard*^{1,2}, *O. Yildirim*^{1,3}, *C. Fowley*¹, *S. Arekapudi*², *H. Cansever*^{1,4}, *R. Böttger*¹, *G. Hlawacek*¹, *O. Hellwig*², *J. Lindner*¹, *J. Fassbender*^{1,4} and *A. Deac*¹ *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany; 3. Empa-Swiss Federal Laboratories for Materials Science and Technology, 8600 Dübendorf, Switzerland; 4. Institute of Physics of Solids, Dresden University of Technology, Dresden, Germany*

2:18

BH-03. Exchange Bias Properties of Ferromagnetic/Antiferromagnetic Square Nanodots: a Monte Carlo Investigation.

*H. Kanso*¹, *D. Ledue*¹ and *R. Patte*¹ *1. Normandie Universite, UNIROUEN, INSA Rouen, CNRS, GPM, 76800 St Etienne du Rouvray, France*

2:30

BH-04. Strong Interlayer Magnon-Magnon Coupling in Magnetic Hybrid Nanostructures. (Invited)

*J. Chen*¹, *C. Liu*¹, *T. Liu*², *Y. Xiao*³, *K. Xia*⁴, *G. Bauer*^{5,6}, *M. Wu*² and *H. Yu*¹ *1. Beihang University, Beijing, China; 2. Colorado State University, Fort Collins, CO, United States; 3. Nanjing University of Aeronautics and Astronautics, Nanjing, China; 4. Beijing Normal University, Beijing, China; 5. Tohoku University, Sendai, Japan; 6. University of Groningen, Groningen, Netherlands*

3:06

BH-05. Direct Observation of Magnetic Long-range Order in Ammann-Beenker Artificial Quasicrystals.

*B.W. Farmer*¹, *J. Unguris*², *J.S. Woods*¹ and *L.E. De Long*¹ *1. Department of Physics and Astronomy, University of Kentucky, Lexington, KY, United States; 2. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States*

3:18

BH-06. Using Square Artificial Spin Ice as a Model for Avalanche Physics.

*N.S. Bingham*¹, *J. Park*², *X. Zhang*¹, *J.D. Watts*^{3,4}, *C. Leighton*⁴ and *P. Schiffer*¹ *1. Department of Applied Physics, Yale University, New Haven, CT, United States; 2. Department of Physics, University of Illinois, Urbana-Champaign, IL, United States; 3. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 4. Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States*

- BH-07. Field-driven mobility and linear creep of emergent monopoles in square artificial spin ice.** S.A. Morley^{2,1}, J. Porro^{4,3}, A. Hrabec^{2,5}, M.C. Rosamond⁶, E. Linfield⁶, M. Im^{7,8}, P. Fischer^{9,1}, S. Langridge⁴ and C.H. Marrows² 1. *Department of Physics, UC Santa Cruz, Santa Cruz, CA, United States;* 2. *School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom;* 3. *BCMaterials, Derio, Spain;* 4. *ISIS, STFC Rutherford Appleton Laboratory, Didcot, United Kingdom;* 5. *Mesoscopic Systems, Paul Scherrer Institute, Villigen, Switzerland;* 6. *School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom;* 7. *Center for X-ray Optics, Lawrence Berkeley National Laboratory, Berkeley, CA, United States;* 8. *Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea;* 9. *Materials Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

3:42

- BH-08. MFM Study of Magnetic Charge Order in Fibonacci-Distorted, Honeycomb Artificial Spin Ice.** J.S. Woods¹, B.W. Farmer¹, Y. Wang², W. Kwok³, J. Hastings¹ and L.E. De Long¹ 1. *Physics and Astronomy, University of Kentucky, Lexington, KY, United States;* 2. *Physics, Nanjing University, Nanjing, China;* 3. *Material Science, Argonne National Laboratory, Lemont, IL, United States*

3:54

- BH-09. Thermal fluctuations in macroscopically degenerate artificial square ice.** A. Farhan^{1,2}, M.D. Saccone³, C.F. Petersen⁴, S. Dhuey⁵, M. Alava⁶, A. Scholl¹ and S. van Dijken⁶ 1. *Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States;* 2. *Paul Scherrer Institute, Villigen, Switzerland;* 3. *Department of Physics, UC Santa Cruz, Santa Cruz, CA, United States;* 4. *University of Innsbruck, Innsbruck, Austria;* 5. *Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, United States;* 6. *Aalto University, Espoo, Finland*

4:06

- BH-10. Thin films solid-state dewetting for physical synthesis of FePd magnetic nanoparticles.** G. Barrera¹, F. Celegato¹, M. Coisson¹, M. Cialone^{1,2}, P. Rizzi² and P. Tiberto¹ 1. *Nanoscience and Materials, INRIM, Torino, Italy;* 2. *Chemistry, Università di Torino, Torino, Italy*

4:18

- BH-11. Enhancing ultra-thin films with perpendicular anisotropy at the atomic scale using light ion irradiation.** L. Herrera Diez¹, M. Sall¹, N. Vernier¹, M. Belmeguenai², Y. Roussigné², A. Stashkevich², S. Cherif², G. Durin³, A. Casiraghi³, J. Langer⁴, B. Ocker⁴ and D. Ravelosona^{1,5} 1. *University of Paris Sud, Paris Saclay, CNRS, Center for Nanoscience and Nanotechnology, Orsay, France;* 2. *University Paris 13, Villetaneuse, France;* 3. *Istituto Nazionale di Ricerca Metrologica, Torino, Italy;* 4. *SINGULUS AG, Kahl am Main, Germany;* 5. *Spin-Ion Technologies, Orsay, France*

Session BI

RARE-EARTH INTERMETALLICS AND COMPOUNDS II

Dimitrios Niarchos, Chair
NCSR Demokritos, Athens, Greece

1:30

- BI-01. Single Crystal Permanent Magnet: Extraordinary Magnetic Behavior in the Ta, Cu and Fe Substituted CeCo₅ System.** *(Invited)* A. Palasyuk¹, T.N. Lamichhane², M. Onyszczak², O. Palasyuk³, S.L. Bud'ko^{2,1} and P.C. Canfield^{2,1} *1. Ames Laboratory, Ames, IA, United States; 2. Physics, Iowa State University, Ames, IA, United States; 3. Department of Material Science, Iowa State University, Ames, IA, United States*

2:06

- BI-02. A Study of the Transitional Paths to Ordering in L1₀ Compounds.** N. Maât¹, I.J. McDonald¹, S. Keshavarz¹ and L.H. Lewis¹ *1. Chemical Engineering, Northeastern University, Boston, MA, United States*

2:18

- BI-03. Metamagnetic Behavior in L1₀-MnAl Synthesis by the Post Annealing of Electrodeposited MnAl Powder.** S. Sato¹, S. Irie¹, Y. Nagamine¹ and Y. Tanaka¹ *1. TDK Corporation, Narita, Japan*

2:30

- BI-04. Magnetic and Structural Properties of L1₀-Mn₅₀Ga_{50-x}Al_x Epitaxially Grown Thin Films.** K. Kamiya^{1,2}, S. Zhao^{1,2}, Y. Tanaka², G.J. Mankey¹ and T. Suzuki¹ *1. Center for Materials for Information Technology (MINT), The University of Alabama, Tuscaloosa, AL, United States; 2. Materials Development Center, Technology & IP HQ, TDK Corporation, TDK Corporation, Narita, Japan*

2:42

- BI-05. Evaluation on Effects of α_2 -Phase on Coercivity of Alnico.** H. Won¹, Y. Hong¹, M. Choi¹, W. Lee¹ and G.J. Mankey² *1. Department of Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL, United States; 2. Department of Physics and Astronomy and MINT Center, The University of Alabama, Tuscaloosa, AL, United States*

2:54

- BI-06. Semi-Hard Magnetic Nanocomposites Based on Out-of-Equilibrium NbFe_{2+δ} and TaFe_{2+δ} Laves Phases.** A. Gabay¹ and G. Hadjipanayis¹ *1. University of Delaware, Newark, DE, United States*

- BI-07. Enhanced coercivity in $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ magnets.** *Y. Shen*^{1,3}, *S. Leontsev*^{1,3}, *M.V. McLeod*^{1,3}, *G. Kozlowski*^{2,3}, *R. Wheeler*^{2,3}, *J. Horwath*³ and *Z. Turgut*³ *1. University of Dayton, Dayton, OH, United States; 2. UES Inc., Dayton, OH, United States; 3. Air Force Research Laboratory, Wright-Patterson Air Force Base, OH, United States*

- BI-08. Towards realization of the $\text{SmFe}_{5-2x}(\text{CoNi})_x$ ($0 < x < 1$) hard magnetic phase by employing the High Entropy Alloy Concept: Special case SmFe_3CoNi .** *D. Niarchos*^{1,2}, *V. Psycharis*¹, *A. Kaidatzis*¹, *E. Devlin*¹, *M. Gjokas*¹, *M. Pissas*¹ and *G. Gkousias*² *1. INN, NCSR Demokritos, Aghia Paraskevi, Greece; 2. R&D, Amen Technologies, Aghia Paraskevi, Greece*

- BI-09. Increased Maximum Energy Product for 40 Atomic% Yttrium Substituted $\text{Sm}_2\text{Fe}_{17}\text{N}_x$ Magnets and Alternating Coexistence of Two Kinds of $\text{RE}_2\text{Fe}_{17}$ Phases in $(\text{Sm}_{0.6}\text{Y}_{0.4})_2\text{Fe}_{17}\text{N}_x$ with Annealing Temperature of 1000 °C.** *J. Xu*¹, *J. Zheng*¹, *H. Chen*¹, *L. Qiao*¹, *Y. Ying*¹, *W. Cai*¹, *W. Li*¹, *J. Yu*¹, *M. Lin*² and *S. Che*¹ *1. Zhejiang University of Technology, Hangzhou, China; 2. Ningbo Institute of Industrial Technology, Chinese Academy of Sciences, Ningbo, China*

- BI-10. Structure and magnetism of high-anisotropy R_2T_7 -type rare earth (R)-transition metal (T) alloys.** *B. Das*¹, *R. Choudhary*¹, *D. Paudyal*¹ and *R. Ott*¹ *1. Ames Laboratory, U.S. Department of Energy, Iowa State University, Ames, IA, United States*

- BI-11. Sm-Fe-V based ThMn_{12} -type Permanent Magnets.** *A.M. Schönhöbel*^{1,2}, *R. Madugundo*¹, *A. Gabay*³, *J. Barandiaran*² and *G. Hadjipanayis*³ *1. BCMaterials, Leioa, Spain; 2. Electricity & Electronics, University of Basque Country, Leioa, Spain; 3. Physics and Astronomy, University of Delaware, Newark, DE, United States*

- BI-12. Structural and magnetic properties of $(\text{Sm,R})(\text{Fe,Co})_{11.4}\text{Ti}_{0.6}$ ($\text{R} = \text{Y, Zr}$) with ThMn_{12} structure.** *M. Hagiwara*¹, *N. Sanada*¹ and *S. Sakurada*¹ *1. Toshiba Corporation, Kawasaki, Japan*

- BI-13. Microstructures and Magnetic Properties of Grain Boundary Modified $\text{Sm}(\text{Fe}_{0.8}\text{Co}_{0.2})_{11}\text{Ti}$ Bulk Materials.** *J. Park*¹, *H. Qian*¹, *J. Lim*¹, *J. Kim*¹ and *C. Choi*¹ *1. Powder & Ceramic Division, Korea Institute of Materials Science, Changwon, The Republic of Korea*

Session BJ

**MAGNETIC FIELDS AND CELLULAR RESPONSE
(Poster Session)**

Ravi Hadimani, Chair

Virginia Commonwealth University, Richmond, VA, United States

- BJ-01. Deformation of cellular components within bone forming cells when exposed to a magnetic field.** *M. Iwasaka¹*
1. Hiroshima University, Higashihiroshima, Japan
- BJ-02. Study of Poly(N-Isopropyl Acrylamide) Electrospinning Magnetic Fiber As A Cell Attach/Detach Substrate.**
T. Chen¹ and T. Ger¹ *1. Chung Yuan Christian University, Taoyuan City, Taiwan*
- BJ-03. Evaluation of bacteria using switching magnetic field.**
S. Yabukami^{1,2}, H. Onodera², Y. Sato², K. Miyauchi², G. Endo², M. Furuya¹, H. Kanetaka¹, Y. Miura³, H. Takahashi³ and T. Kodama³ *1. Tohoku University, Sendai, Japan; 2. Tohoku Gakuin University, Tagajo, Japan; 3. JNS Co., Ltd., Natori, Japan*
- BJ-04. Generation of tunable frequency, monophasic pulsed magnetic fields for low-field applications.** *N. Prabhu Gaunkar¹, W. Theh¹, T. Kimler¹, D.C. Jiles¹, R. Weber¹ and M. Mina^{1,2}* *1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Industrial Design, Iowa State University, Ames, IA, United States*
- BJ-05. Research on Interference Effect of Magnetic Nanoparticles in Magnetic Field on Lung Cancer Cells.** *N. Zhang¹, S. Ning², S. Wang¹, C. Zhang³, S. Wang¹ and Y. Wang⁴* *1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China; 2. College of Electrical and Information Engineering, Shaanxi University of Science and Technology, Xi'an, China; 3. Department of Oncology, Johns Hopkins University School of Medicine, Baltimore, MD, United States; 4. School of Life Sciences, Northwestern Polytechnical University, Xi'an, China*
- BJ-06. Intense light scattering by cooperative relaxation of magnetically aligned organic crystal particles.** *K. Baba¹ and M. Iwasaka¹* *1. Hiroshima University, Higashihiroshima, Japan*
- BJ-07. Effects of pulsed magnetic fields on cilia of comb jelly.**
Y. Fukagawa¹ and M. Iwasaka¹ *1. Hiroshima University, Higashihiroshima, Japan*
- BJ-08. Quantitative Analysis of Unconsciousness in ELF-Inducing Flickering Light Sensation.** *H. Nakagawa¹ and S. Ueno²*
1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan; 2. Department of Applied Quantum Physics, Kyushu University, Fukuoka, Japan

- BJ-09. Human Reliability Measurements during Extremely Low Frequency Magnetic Stimuli.** *H. Nakagawa*¹ and *S. Ueno*²
1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Tokyo, Japan; 2. Department of Applied Quantum Physics, Kyushu University, Fukuoka, Japan

**TUESDAY
AFTERNOON
2:30**

EXHIBIT HALL A

**Session BK
MOTORS IN AUTOMOTIVE APPLICATIONS
(Poster Session)**

Yang-Ki Hong, Chair
University of Alabama, Tuscaloosa, AL, United States

- BK-01. Practical Investigation of Motor Reconfiguration for On-board Chargers.** *Y. Xiao*¹ and *C. Liu*¹ *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong*
- BK-02. New Hybrid Stator Design for High Speed PMSMS Based on Selective Laser Melting of 3D Printing.** *P. Huang*¹, *M. Tsai*^{2,1} and *I. Jiang*¹ *1. Electrical Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan; 2. Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan*
- BK-03. Comparative Study between a Novel Multi-Tooth and a V-Shaped Flux-Switching Permanent Magnet Machines.** *G. Zhao*¹ and *W. Hua*¹ *1. School of electrical engineering, Southeast University, Nanjing, China*
- BK-04. A Double-Rotor Dual-PM-Excited Electrical Machine for Multimotor New Energy Vehicles.** *Y. Chen*¹ and *W. Fu*¹
1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong
- BK-05. A Novel High Torque Density PM Vernier Motor with Trapezoidal Magnets and Flux Barriers for In-wheel Direct Drive Application.** *Y. Yu*¹ and *F. Chai*¹ *1. Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*
- BK-06. Comparative Analysis and Experiment of High Speed Motor for Electric Turbo Charger According to Current waves.** *D. Hong*^{1,2}, *T. Lee*², *Y. Jeong*¹ and *J. Ahn*³ *1. Electric Machines and Drives Research Center, Korea Electrotechnology Research Institute, Changwon, The Republic of Korea; 2. Energy and Power Conversion Engineering, University of Science and Technology, Changwon, The Republic of Korea; 3. School of Mechatronics, Kyungsung Univeristy, Busan, The Republic of Korea*
- BK-07. Comparative Analysis of Novel V-Shaped and U-Shaped Consequent Pole PM Vernier Motors with High Torque Density for In-wheel Direct Drive Application.** *Y. Yu*¹ and *F. Chai*¹ *1. Harbin Institute of Technology, Harbin, China*

- BK-08. Analysis of Saliency in Modular Fractional Slot Interior PM Machines with Concentrated Windings.** Z. Zhang¹
1. Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States
- BK-09. Low Cost Direct Drive Ferrite PM-Assisted Modular Synchronous Reluctance Generator for Wind Power Applications.** Z. Zhang¹ *1. Electrical and Computer Engineering, The Ohio State University, Columbus, OH, United States*
- BK-10. A Novel Wide-Speed-Range Permanent Magnet Motor with Adjustable Winding Factor.** Y. Liu¹, X. Zhang² and S. Niu³
1. Huaqiao University, Xiamen, China; 2. Shenzhen In Drive Ampere Co. Ltd, Shenzhen, China; 3. The Hong Kong Polytechnic University, Hong Kong, Hong Kong

TUESDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session BL MOTORS IN WIND AND WAVE APPLICATIONS (Poster Session)

Kais Atallah, Chair
University of Sheffield, Sheffield, United Kingdom

- BL-01. Development of Fully Superconducting Wind Generator with Air-core and SC shield coils.** D. Lee¹, T. Balachandran¹ and K. Haran¹ *1. Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*
- BL-02. A Multiphase Tubular Fault-Tolerant PM Linear Machine with High Magnetic Isolation Ability.** Y. Sui¹, P. Zheng¹ and Z. Yin¹ *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*
- BL-03. Hybrid Analysis of Vibration Displacement of a Balanced Armature Receiver.** D. Xu¹, Y. Jiang² and S. Hwang²
1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai, China; 2. School of Mechanical Engineering, Pusan National University, Busan, The Republic of Korea
- BL-04. An Improved Brushless Doubly-fed Generator with Interior PM Rotor for Wind Power Application.** J. Zhang¹, Y. Jiang¹, J. Zhao¹ and X. Hu¹ *1. School of Electrical Engineering, Southeast University, Nanjing, China*
- BL-05. Experimental Verification of Operation Characteristics of Wound Rotor Synchronous Generator according to Rotor Design.** Y. Park¹, C. Kim¹ and J. Choi¹ *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

- BL-06. Research on Vibration Reduction of Switched Reluctance Motor.** *R. Yan^{1,2}, J. Chen^{1,2} and Y. Gao^{1,2} 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*
- BL-07. Design of a Permanent Magnet Homopolar Machine for Flywheel Energy Storage System.** *Z. Liu¹ and K. Wang¹ 1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*
- BL-08. A Novel Modular Stator Hybrid Excited Doubly Salient Synchronous Machine with Stator Slot Permanent Magnets.** *M. Zheng¹, Z. Zhu¹ and S. Cai¹ 1. University of Sheffield, Sheffield, United Kingdom*
- BL-09. Withdrawn**
- BL-10. Design and Experimental Results of Flywheel Energy Storage System Suitable for Target Capacity and Operation Time.** *H. Lee¹, J. Cho¹, C. Lee¹, H. Kim¹ and G. Park¹ 1. Pusan National University, Busan, The Republic of Korea*

TUESDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session BM
SOFT MAGNETIC COMPONENTS: WIRELESS POWER
(Poster Session)

Julian Gonzalez, Co-Chair
Universidad de Pais Vasco (UPV/EHU), Leioa, Spain
Lourdes Dominguez, Co-Chair
Universidad de Pais Vasco (UPV/EHU), Leioa, Spain

- BM-01. Influence of Medium with Magnetic or Electric Properties Located Between Coils in Magnetic Resonant Wireless Power Transfer.** *H. Lee¹, H. Jeong¹ and G. Park¹ 1. Pusan National University, Busan, The Republic of Korea*
- BM-02. Design and Analysis of Quasi-Omnidirectional Dynamic Wireless Power Transfer for Fly-and-Charge.** *W. Han¹, K. Chau¹, C. Jiang¹ and W. Liu¹ 1. EEE Department, The University of Hong Kong, Hong Kong*
- BM-03. Human Exposure to Magnetic Leakage from DDP Type Wireless Charging System for Electric Vehicle.** *F. Wen¹, T. Wang¹, L. Liu², R. Li¹ and L. Liu¹ 1. Nanjing University of Science and Technology, Nanjing, China; 2. MIGU Co., Ltd (Subsidiary of China Mobile), Nanjing, China*

- BM-04. Power Allocation for Dynamic Dual-Pickup Wireless Charging System of Electric Vehicle.** *Y. Huang¹ and C. Liu¹*
1. School of Energy and Environment, City University of Hong Kong, Kowloon, Hong Kong
- BM-05. Transmission Efficiency Analysis of Wireless Power Transmission System with Variable Inductance Regulated by DC.** *R. Yan^{1,2}, X. Guo^{1,2} and S. Cao^{1,2}*
1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China
- BM-06. Design and Implementation of Metamaterial-Based In-flight Wireless Charging for Drones.** *B. Zhang¹, Z. Zhang¹, S. Zhao¹, H. Wu², W. Han³ and W. Liu³*
1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China; 2. School of Electrical and Computer Engineering, Cornell University, Ithaca, NY, United States; 3. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong
- BM-07. Analysis of Power Variations in Magnetic Resonant Wireless Power Transmission by the Area of the Receiver Coil.** *H. Jeong¹ and G. Park¹*
1. Department of Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea
- BM-08. AC Resistance Reduction of a Flexible Wireless Power Transmission Coil Using Magnetic Path Control Technology at 13.56 MHz.** *Y. Tokudaiji¹, D. Miura¹, Y. Hattori¹, K. Murasato¹, Y. Bu¹ and T. Mizuno¹*
1. Faculty of Engineering, Shinshu University, Nagano, Japan
- BM-09. Investigation of Structure and Material for the Back Yoke at 13.56 MHz Wireless Power Transfer for High Transmission Efficiency.** *D. Miura¹, Y. Tokudaiji¹, Y. Hattori¹, K. Murasato¹, Y. Bu¹ and T. Mizuno¹*
1. Faculty of Engineering, Shinshu University, Nagano, Japan
- BM-10. A study on using scale model of wireless power supply system during EV running corresponding to vehicle magnetic fluctuation.** *T. Abe¹, F. Sato¹, S. Miyahara¹, K. Ishikawa¹, S. Oba¹ and Y. Hongo¹*
1. Tohoku Gakuin University, Tagajyo, Japan

Session BN
MULTIFERROICS AND COMPLEX OXIDES II
(Poster Session)

Margo Staruch, Chair

U.S. Naval Research Laboratory, Washington, DC, United States

- BN-01. Possible origin of “paramagnetism” in polar metal LiOsO_3 : Quenched static magnetic moment due to strong spin-orbit coupling.** Y. Zhang¹, C. Li¹, J. Gong¹, S. Dong² and Z. Yan¹
1. Nanjing University, Nanjing, China; 2. Southeast University, Nanjing, China
- BN-02. Direct Observation of Ferroelectricity in $\text{CaMn}_7\text{O}_{12}$ Thin Films.** P. Jain¹ and R. Chatterjee¹ *1. Physics, IIT DELHI, New Delhi, India*
- BN-03. Influence of Zinc Substitution on Self-Biased Magnetoelectric Gytrators.** J. Zhang¹, D. Chen¹, Q. Zhang¹, L. Jiang¹, X. Hang¹, K. Li¹, W. Zhu¹ and L. Cao¹ *1. Zhengzhou University of Light Industry, Zhengzhou, China*
- BN-04. Transition metal valence states and magnetic structure of the frustrated ABaM_4O_7 ($\text{A}=\text{Y}, \text{Ca}$; $\text{M}=\text{Co}, \text{Fe}, \text{Zn}$) system.** V.R. Galakhov², D.I. Turkin³, V.V. Mesilov³, S.N. Shamin², G.V. Bazuev³ and K. Kuepper¹ *1. Department of Physics, University of Osnabrück, Osnabrück, Germany; 2. Ural Branch of the Russian Academy of Sciences, IM. N. Mikheev Institute of Metal Physics, Yekaterinburg, Russian Federation; 3. Ural Branch of the Russian Academy of Sciences, Institute of Solid State Chemistry, Yekaterinburg, Russian Federation*
- BN-05. Magnetic Anisotropy in $\text{La}_{0.7}\text{Sr}_{0.3}\text{CoO}_3$ Films Regulated by Strain-Induced e^- -orbital Rearrangement.** J. Li^{1,2}, J. Wang^{1,2}, K. Qiao^{1,2}, Y. Liu^{1,2}, F. Hu^{1,2}, J. Sun^{1,2} and B. Shen^{1,2} *1. Beijing National Laboratory for Condensed Matter Physics & State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing 100049, China*
- BN-06. Spin orbit torque engineering via oxygen vacancies in a multiferroic BiFeO_3 based heterostructure.** P. Liu¹, J. Miao¹, K. Meng¹, Y. Wu¹, J. Chen¹, X. Xu¹ and Y. Jiang¹ *1. University of Science and Technology Beijing, Beijing, China*
- BN-07. Enhancement Mechanism of Magnetization for Hexagonal $\text{YCr}_x\text{Mn}_{1-x}\text{O}_3$ Multiferroic Nanoparticles.** J. Cui¹, A. Zhang¹, J. Shi¹, H. Cao¹, X. Wu² and Y. Zhang³ *1. College of Science, Hohai University, Nanjing, China; 2. National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, China; 3. School of Science, Jiangsu University of Science and Technology, Zhenjiang, China*

BN-08. Large interfacial magnetostriction in (Co/Ni)₄/piezoelectric multiferroic heterostructures. *D.B. Gopman¹, P.J. Chen^{2,1}, J.W. Lau¹, A.C. Chavez⁴, G. Carman⁴, P. Finkel³, M. Staruch³ and R. Shull¹* 1. *Materials Science & Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, United States*; 2. *Western Digital, Fremont, CA, United States*; 3. *Materials Science and Technology, US Naval Research Laboratory, Washington, DC, United States*; 4. *Mechanical and Aerospace Engineering, University of California Los Angeles, Los Angeles, CA, United States*

BN-09. Coexistence of long range ferromagnetism and glassy behavior in double perovskite La₂CoMnO₆. *R. Madhogia¹, R. Das¹, E. Clements¹, V. Kalappattil¹, N. Dang², D. Kozlenko³, M. Phan¹ and H. Srikanth¹* 1. *Physics, University of South Florida, Tampa, FL, United States*; 2. *Institute of Research and Development, Duy Tan University, Da Nang, Vietnam*; 3. *Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russian Federation*

BN-10. Giant zero-biased magnetoelectric coupling properties of flexible composites based on FeCuNbSiB nanocrystalline. *X. He¹, J. Qiu¹, Y. Long¹, Q. Chang¹, H. Liu¹, X. Wang², X. Tang¹, W. Hu¹ and Y. She¹* 1. *Key Laboratory of Optoelectronic Technology & Systems of the Education Ministry of China, College of Optoelectronic Engineering, Chongqing University, Chongqing, China*; 2. *School of optical and electronic information, Huazhong University of Science and Technology, Wuhan, China*

TUESDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session B0
TOPOLOGICAL SPIN TEXTURES I
(Poster Session)

Seonghoon Woo, Chair
Korea Institute of Science and Technology (KIST), Seoul,
The Republic of Korea

BO-01. Lorentz TEM Investigation of Dzyaloshinskii Domain Walls in Pt/Co/Ni/Ir Based Multi-Layers with Tunable Interface Properties. *M.P. Li¹, M. De Graef¹ and V. Sokalski¹* 1. *Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

BO-02. A comparison of Dzyaloshinskii-Moriya interaction detection techniques in Pt/Co/Ir multilayers. *J.A. Brock⁶, P. Vallobra⁴, A.K. Chaurasiya⁵, K.E. Nygren³, A. Cao¹, P. Domenichini² and E. Fullerton⁶* 1. *Fert Beijing Institute, Beihang University, Beijing, China*; 2. *Universidad de Buenos Aires, Buenos Aires, Argentina*; 3. *Department of Physics, Colorado State University, Ft. Collins, CO, United States*; 4. *Institut Jean Lamour, University of Lorraine, Nancy, France*; 5. *S.N. Bose National Center for Basic Sciences, Kolkata, India*; 6. *Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States*

- BO-03. Field manipulation of Bloch points in helimagnetic nanostructures.** *M. Beg^{1,2}, D.I. Cortés-Ortuño², R.A. Pepper², O. Hovorka² and H. Fangohr^{1,2}* 1. *European XFEL GmbH, Schenefeld, Germany*; 2. *University of Southampton, Southampton, United Kingdom*
- BO-04. Field-like torque switching and antidamping torque switching in a biaxial metallic antiferromagnet.** *X. Zhou¹, X. Chen¹, J. Zhang², G. Shi¹, F. Li¹, F. Pan¹ and C. Song¹* 1. *Tsinghua University, Beijing, China*; 2. *Huazhong University of Science and Technology, Wuhan, China*
- BO-05. Antidamping-torque-induced switching in biaxial antiferromagnetic insulators.** *X. Chen¹, R. Zarzuela², J. Zhang³, C. Song¹, W. Jiang¹, F. Pan¹ and Y. Tserkovnyak²* 1. *Tsinghua University, Beijing, China*; 2. *University of California, Los Angeles, Los Angeles, CA, United States*; 3. *Huazhong University of Science and Technology, Wuhan, China*
- BO-06. Anomalous Hall Effect in Mn₃Sn Polycrystalline Thin Film.** *S. Oh¹, T. Morita¹, T. Ikeda³, M. Oogane³, Y. Ando³ and M. Tsunoda²* 1. *Future Technology Research Laboratory, ULVAC, Inc., Tsukuba, Japan*; 2. *Department of Electronic Engineering, Tohoku University, Sendai, Japan*; 3. *Department of Applied Physics, Tohoku University, Sendai, Japan*
- BO-07. Modulated Topological Hall Effect in Pt/YIG Bilayers.** *Q. Liu¹, K. Meng¹, Y. Wu¹, J. Chen¹, Z. Li¹, J. Miao¹, X. Xu¹ and Y. Jiang¹* 1. *University of Science and Technology Beijing, Beijing, China*
- BO-08. Discretization Effects in the Helimagnon Resonance of a Chiral Spin Soliton Lattice.** *Y. Shimamoto¹, F. Goncalves^{1,2}, Y. Kousaka^{3,2} and Y. Togawa^{1,2}* 1. *Osaka Prefecture University, Osaka, Japan*; 2. *Chirality Research Center, Hiroshima, Japan*; 3. *Okayama University, Okayama, Japan*
- BO-09. Spin Wave Propagation in a Monoaxial Chiral Helimagnetic Crystal.** *F. Goncalves^{1,2}, Y. Shimamoto¹, Y. Kousaka^{3,2} and Y. Togawa^{1,2}* 1. *Osaka Prefecture University, Osaka, Japan*; 2. *Chirality Research Centre, Hiroshima, Japan*; 3. *Okayama University, Okayama, Japan*
- BO-10. Control of magnetic domain in Pt/Co/MgO trilayer with Ru insertion layer.** *T. Nozaki¹, M. Konoto¹, T. Nozaki¹, H. Kubota¹, A. Fukushima¹ and S. Yuasa¹* 1. *Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

Session BP

**MAGNETO-CALORIC, MAGNETO-ELASTIC AND
MAGNETO-OPTICAL MATERIALS
(Poster Session)**

Karl Sandeman, Chair

Brooklyn College of The City University of New York, Brooklyn, NY,
United States

- BP-01. Fabrication of $(Y,Ce)_3(Fe,Al)_5O_{12}$ films for integrated magnetooptical Q-switch.** *S. Nakata¹, T. Goto^{1,2}, R. Morimoto¹, T. Yoshimoto¹, Y. Nakamura¹, H. Uchida¹ and M. Inoue¹*
1. Toyohashi University Technology, Toyohashi, Japan; 2. JST PRESTO, Kawaguchi, Japan
- BP-02. Photomagnetic and spectroscopic properties of Er and Yb co-doped $La_{0.7}Sr_{0.3}MnO_3$.** *R. Martinez¹, N. Kumar¹, H. Huhtinen² and R. Palai¹*
1. Physics, University of Puerto Rico, San Juan, PR, United States; 2. Wihuri Physical Laboratory, Department of Physics and Astronomy, University of Turku, Turku, Finland
- BP-03. Near-infrared magneto-optical reflectance changes for antiferro-magnetically exchange-coupled Co/Ru multilayer films.** *S. Saito¹, H. Sato¹, K. Ooki¹, S. Kinno², K. Akahane¹ and H. Uchida³*
1. Graduate School of Engineering, Tohoku Univ., Sendai, Japan; 2. Department of Engineering, Tohoku Univ., Sendai, Japan; 3. Department of Electrical and Electronic Information Engineering, Toyohashi Univ. of Technology, Toyohashi, Japan
- BP-04. Imaging the magnetic phase transformation in Ni-Co-Mn-In magnetic shape memory alloy.** *H. Yang¹, B. Wang¹ and R. Li¹*
1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China
- BP-05. Scattering of Acoustic Waves from 1D Arrays of Magnetic Inclusions.** *Y. Gusieva¹, O. Latcham², A. Shytov², O. Gorobets¹ and V.V. Kruglyak²*
1. National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine; 2. University of Exeter, Exeter, United Kingdom
- BP-06. Magnetocaloric Effect in the Triangulated Kagome Lattice $Cu_9X_2(cpa)_6$.** *S.F. Skinner¹, R.A. Coro¹, W.M. Farmer¹, J. Lovett¹, J.C. Lupton¹, J. Moses¹, B.M. Ortolano¹, L.R. Reid¹, J.D. Taylor¹ and L.W. Ter Haar¹*
1. Chemistry, University of West Florida, Pensacola, FL, United States
- BP-07. Anomalous Nernst Effect in FeNi epitaxial thin films.** *L. Ma¹, Y. Zhang¹, H. Zhao¹, H. Fu¹, M. Tang², L.H. Yang², Z. Shi², N. Tian¹ and C. You¹*
1. Xi'an University of Technology, Xi'an, China; 2. Tongji University, Shanghai, China

BP-08. Hydrostatic pressure effects on magnetic transition and magnetocaloric effect in $\text{Ho}_{0.6}\text{Er}_{0.4}\text{Co}_2$ alloys. *J. Hao*^{1,2}, *F. Liang*^{2,3}, *J. He*¹, *F. Hu*^{2,3}, *J. Wang*^{2,3}, *J. Sun*^{2,3} and *B. Shen*^{2,3}
1. Division of Functional Material Research, Central Iron and Steel Research Institute, Beijing, China; 2. Beijing National Laboratory for Condensed Matter Physics & State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 3. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China

BP-09. Hydrostatic pressure-tuned magnetocaloric effect and multicaloric response in $\text{MnNi}_{1-x}\text{Fe}_x\text{Si}_{1-y}\text{Ge}_y$. *F. Shen*^{1,2}, *F. Liang*^{1,2}, *F. Hu*^{1,2}, *J. Hao*¹, *J. Wang*^{1,2}, *J. Sun*^{1,2} and *B. Shen*^{1,2}
1. Beijing National Laboratory for Condensed Matter Physics & State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China

TUESDAY
 AFTERNOON
 2:30

EXHIBIT HALL A

Session BQ SOFT MAGNETIC MATERIALS II: FERRITES AND GARNETS (Poster Session)

Ogheneyunume (Yunume) Obi, Chair
 Northeastern University, Boston and Burlington, MA, United States

BQ-01. Temperature Dependent Cation Distribution and Magnetic Ordering in $\text{NiFe}_{2-x}\text{R}_x\text{O}_4$ ($x = 0$ and 0.075 ; $\text{R} = \text{Y}, \text{Dy}, \text{Yb}$ and Lu) Compounds. *K. Ugendar*^{1,2}, *P. Gorria*³, *J.A. Blanco*³, *G. Cuello*⁴ and *G. Markandeyulu*² *1. Applied Physics, Jabalpur Engineering College, Jabalpur, India; 2. Physics, Indian Institute of Technology Madras, Chennai, India; 3. Physics, University of Oviedo, Oviedo, Spain; 4. DS, Institut Laue Langevin, Grenoble, France*

BQ-02. The BBSZ glass doping YIG possesses low ferromagnetic resonance loss. *N. Jia*¹ and *H. Zhang*¹ *1. University of Electronic Science and Technology of China, Chengdu, China*

BQ-03. Substrate Diffusion Effects on Cobalt Ferrite. *A. Cruz*¹, *J. Schwartz*² and *J. Jones*¹ *1. Material Science Engineering, North Carolina State University, Raleigh, NC, United States; 2. Material Science Engineering, Penn State, State College, PA, United States*

BQ-04. Fabrication and Magnetic Properties of Sintered Soft Magnetic Metallic Composites. *K. Lee*¹, *M. Choi*¹ and *J. Kim*¹
1. Hanyang University, Ansan, The Republic of Korea

- BQ-05. Low Core Loss with High Initial Magnetic Permeability in Ni, Ti and Sn Co-doped Manganese Zinc (MnZn) Ferrites.** Z. Zhang¹, Y. Chen², Y. Yao², P. Andalib¹ and V.G. Harris¹
1. Center for Microwave Magnetic Materials and Integrated Circuits, Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. Innovation Center, Rogers Corporation, Burlington, MA, United States
- BQ-06. RF complex permeability spectra of Ni-Cu-Zn ferrites for wireless power transfer (WPT) under different applied hydraulic pressures and durations.** P. Lathiya¹, J. Wang¹ and M. Kreuzer² *1. Electrical Engineering, University of South Florida, Tampa, FL, United States; 2. Chemical Engineering, University of South Florida, Tampa, FL, United States*
- BQ-07. Magnetic Properties of Microwave Processed Ferromagnetic Iron Oxide Powders.** B.Y. Rock¹, S. Qadri² and S.D. Johnson²
1. Plasma Physics Division, U.S. Naval Research Laboratory, Washington, DC, United States; 2. Materials Science Division, U.S. Naval Research Laboratory, Washington, DC, United States
- BQ-08. Synthesis of Giant Hexagonal Single Crystal Hematite Nanoplates: Elaborate Analysis of Microstructure, Size and Static Magnetic Properties.** J. Liu¹, F. Chen¹, H. Luo¹, X. Wang¹, Y. Nie¹, Z. Feng¹ and R. Gong¹ *1. School of Optical and Electronics, Huazhong University of Science and Technology, Wuhan, China*
- BQ-09. The Effect of annealing on Magnetic Properties of “Thick” Microwires.** P. Corte-León^{1,2}, V. Zhukova^{1,2}, M. Ipatov^{1,2}, J. Blanco², J. Gonzalez¹ and A. Zhukov^{1,3} *1. Dept. Phys. Mater, University of Basque Country, UPV/EHU, San Sebastian, Spain; 2. Dpto. Física Aplicada, EUPDS, University of Basque Country, UPV/EHU, San Sebastian, Spain; 3. Ikerbasque, Bilbao, Spain*

TUESDAY
 AFTERNOON
 2:30

EXHIBIT HALL A

Session BR

HARD MAGNETIC MATERIALS: FERRITES AND COMPOSITES (Poster Session)

Arjun Pathak, Chair

Ames Laboratory, USDOE, Iowa State University, Ames, IA, United States

- BR-01. Giant coercivity hexaferrite: effect of Ca²⁺ doping in Sr_{1-x/12}Ca_{x/12}Fe_{12-x}Al_xO₁₉ hexaferrite.** T.P. Poudel¹, S. Yoon³, J. Mohapatra², D. Neupane¹, D. Guragain¹, P. Liu² and S.R. Mishra¹ *1. Department of Physics and Material Science, University of Memphis, Memphis, TN, United States; 2. Department of Physics, University of Texas at Arlington, Arlington, TX, United States; 3. Department of Physics, Gunsan national University, Gunsan, The Republic of Korea*

- BR-02. Promising hard magnetic materials based on (Co, Mn)-doped BaFe₁₂O₁₉ hexaferrites.** *N. Tran¹, Y. Choi¹, T. Phan¹ and B. Lee¹*
1. Department of Physics and Oxide Research Center, Hankuk University of Foreign Studies, Yongsu-si, The Republic of Korea
- BR-03. Improved Magnetic and Dielectric Properties of Cobalt Substituted M-type Barium Hexaferrite Synthesised by Co-precipitation Method.** *K. Rana¹, S.S. Thakur² and A. Thakur³*
1. Department of Physics, IEC University, Baddi, India; 2. Department of Physics, Government Degree College, Sarkaghat, Mandi, India; 3. Department of Physics, Amity University, Gurgaon, India
- BR-04. Withdrawn**
- BR-05. Interfacial exchange coupling driven tunable microwave properties of hard/soft nanocomposite ferrites.** *C. Pahwa¹ and P. Sharma¹*
1. School of Physics & Materials Science, Thapar Institute of Engineering & Technology, Patiala, India
- BR-06. Polycrystalline Europium Iron Garnet Films with Perpendicular Magnetic Anisotropy.** *J. Bauer¹, E.R. Rosenberg¹, B. Song¹ and C. Ross¹*
1. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States
- BR-07. New routes for synthesis of Cobalt carbide nanoparticles for rare earth free permanent magnets.** *E. Martinez-Teran¹ and A.A. El-Gendy¹*
1. Physics, University of Texas-El Paso, El Paso, TX, United States
- BR-08. Super-Flexible Composite Magnet.** *A. Almansouri¹, M. Khan¹, A. Alrashoudi¹, L. Swanepoel², A. Kaidarova¹, K. Salama¹ and J. Kosel¹*
1. Computer, Electrical and Mathematical Sciences & Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. Stellenbosch University, Stellenbosch, South Africa

**TUESDAY
AFTERNOON
2:30**

EXHIBIT HALL A

Session BS
**VOLTAGE-CONTROLLED MAGNETIC ANISOTROPY
AND SWITCHING I**
(Poster Session)

Jingsheng Chen, Chair
National University of Singapore, Singapore, Singapore

- BS-01. Enhancement of voltage-controlled magnetic anisotropy by Ir doing in Co-based Heusler alloys.** *M. Tsujikawa^{1,2} and M. Shirai^{1,2}*
1. Research Institute of Electrical Communication, Tohoku Univ., Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku Univ., Sendai, Japan

- BS-02. Large Room Temperature VCMA in Co/Pt Bilayers Deposited on ALD-grown SrTiO₃: the Impact of the Interface.** B.F. Vermeulen^{1,2}, J. Swerts², S. Couet², M.I. Popovici², I.P. Radu², P.J. Roussel², K. Temst¹, G. Groeseneken^{3,2} and K.M. Martens^{1,2}
1. Department of Physics and Astronomy, KULeuven, Leuven, Belgium; 2. imec, Leuven, Belgium; 3. Department of Electrical Engineering, KULeuven, Leuven, Belgium
- BS-03. Voltage Control of Interfacial Magnetism for Flexible Spintronics.** Z. Zhou¹ and M. Liu¹ 1. School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, China
- BS-04. Electric Field Effect on Propagating Spin Wave in YIG Thin Films.** S. Kasukawa¹, Y. Shiota¹, T. Moriyama¹ and T. Ono¹
1. Science, Kyoto University, Uji City, Japan
- BS-05. Electric field control of magnetic phase transition by means of Li⁺ migration in FeRh thin film.** Y. Xie¹, B. Wang¹, H. Yang¹ and R. Li¹ 1. Ningbo Institute of Industrial Technology, Chinese Academy of Sciences., Ningbo, China
- BS-06. Investigation of interfacial Dzyaloshinskii-Moriya interaction under an electric field.** W. Zhang¹, H. Zhong¹, R. Zang¹, Y. Zhang¹ and S. Kang¹ 1. Physics, Shandong University, Jinan, China
- BS-07. Control of Magnetism in Multiferroic Heterostructures by Electric-Field-Induced Ferroelectric Phase Transition.** C. Feng¹, Y. Liu^{1,2}, H. Huang⁵, Z. Zhu³, S. Zhang⁴, Y. Yang⁵, J. Cai³, Y. Lu⁵ and Y. Zhao¹ 1. Department of Physics and State Key Laboratory of Low-Dimensional Quantum Physics, Tsinghua University, Beijing, China; 2. Key Laboratory of Space Utilization, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, Beijing, China; 3. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 4. National University of Defense Technology, Beijing, China; 5. University of Science and Technology of China, Hefei, China
- BS-08. Magneto-optical Light Modulation Using VCMA Effect in MgO/Co-Fe/Gd/Gd-Fe Layers.** N. Funabashi¹, R. Higashida¹, K. Aoshima¹ and K. Machida¹ 1. Japan Broadcasting Corporation, Tokyo, Japan

Session CA
SWITCHING ANTIFERROMAGNETS BY
SPIN-ORBIT TORQUES

Chun-Yeol You, Chair
DGIST, Deagu, The Republic of Korea

8:30

- CA-01. From fieldlike torque to antidamping torque in antiferromagnets. (Invited)** C. Song¹, X. Chen¹, X. Zhou¹, R. Zarzuela², Y. Tserkovnyak², J. Zhang³, W. Jiang¹ and F. Pan¹
1. Tsinghua University, Beijing, China; 2. UCLA, Los Angeles, CA, United States; 3. Huazhong University of Science and Technology, Wuhan, China

9:06

- CA-02. Current polarity-dependent manipulation of antiferromagnetic domains. (Invited)** P. Wadley¹, S. Reimers¹, O. Amin¹, L.X. Barton¹, J. Godinho², R.P. Campion¹, V. Novak², K. Olejnik², J. Wunderlich^{2,3}, K. Edmonds¹, B.L. Gallagher¹ and T. Jungwirth^{2,1}
1. School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom; 2. Nanospintronics, Institute of Physics ASCR, Prague, Czechia; 3. Spintronics, Hitachi Labs Cambridge, Cambridge, United Kingdom

9:42

- CA-03. Magnetization control and detection of antiferromagnetic NiO. (Invited)** T. Moriyama¹
1. Kyoto University, Kyoto, Japan

10:18

- CA-04. Néel vector manipulation and anisotropic magnetoresistance of Mn₂Au. (Invited)** M. Jourdan¹, S. Bodnar¹, L. Šmejkal^{1,2}, M. Filianina¹, A. Sapozhnik¹, J. Sinova¹, M. Kläui¹ and H. Elmers¹
1. Institute of Physics, Mainz University, Mainz, Germany; 2. Institute of Physics, Academy of Science of the Czech Republic, Prague, Czechia

10:54

- CA-05. Theory of Spin Transport and Torque in Non-Collinear Antiferromagnets. (Invited)** A. Manchon^{1,2}, P. Ndiaye¹, A. Salimath¹, F. Zhuo¹, D. Goli¹ and A. Abbout¹
1. Physical Science and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. Computer, Electrical and Mathematical Science and Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

Session CB
SPIN-CHARGE CONVERSION AND MATERIALS

Tom Silva, Chair
NIST, Boulder, CO, United States

8:30

- CB-01. Self-consistent determination of spin Hall angle and spin diffusion length in Pt and Pd.** *H. Ding*¹, *X. Tao*¹, *Q. Liu*¹, *B. Miao*¹, *R. Yu*¹, *L. Sun*¹, *J. Du*¹, *D. Wu*¹, *K. Chen*², *S. Zhang*², *Z. Yuan*³ and *L. Zhang*³ *1. Department of Physics, Nanjing University, Nanjing, China; 2. Department of Physics, University of Arizona, Tucson, AZ, United States; 3. Department of Physics, Beijing Normal University, Beijing, China*

8:42

- CB-02. Unveiling the mechanisms of the spin Hall effect in Ta.** *E. Sagasta*¹, *Y. Omori*², *S. Velez*¹, *R. Llopis*¹, *C. Tollan*¹, *A. Chuvilin*^{1,3}, *L.E. Hueso*^{1,3}, *M. Gradhand*⁴, *Y. Otani*^{2,5} and *F. Casanova*^{1,3} *1. CIC nanoGUNE, San Sebastian, Spain; 2. ISSP, University of Tokyo, Kashiwa, Japan; 3. IKERBASQUE, Bilbao, Spain; 4. University of Bristol, Bristol, United Kingdom; 5. RIKEN-CEMS, Wako, Japan*

8:54

- CB-03. Tuning the ISHE-induced electromotive force in a platinum film by ionic gating.** *M. Hokazono*¹, *S. Dushenko*¹, *K. Nakamura*², *Y. Ando*¹, *T. Shinjo*¹ and *M. Shiraishi*¹ *1. Dep. Electronic Engineering and Science, Kyoto University, Kyoto city, Japan; 2. Dep. of Physics Engineering, Mie University, Tsu City, Japan*

9:06

- CB-04. Spin-Charge Conversion Induced under Spin Pumping and Ferromagnetic Resonance in CoFeB.** *S. Dushenko*^{1,2}, *G. Kopnov*³, *A. Gerber*³, *T. Shinjo*¹, *Y. Ando*¹ and *M. Shiraishi*¹ *1. Department of Electronic Science and Engineering, Kyoto University, Kyoto, Japan; 2. Institute for Research in Electronics and Applied Physics, University of Maryland College Park and CNST National Institute of Standards and Technology, Gaithersburg, MD, United States; 3. Faculty of Exact Sciences, Tel Aviv University, Tel Aviv-Yafo, Israel*

9:18

- CB-05. Field- and Current-Driven Domain Wall Motion in Epitaxial Pt/Co/Pt_{1-x}Au_x Trilayers with Controlled Inversion Symmetry Breaking.** *K. Shahbazi*¹, *A. Hrabec*^{1,2}, *S. Moretti*^{3,4}, *M. Ward*¹, *T.A. Moore*¹, *V. Jeudy*⁵, *E. Martinez*³ and *C.H. Marrows*¹ *1. University of Leeds, Leeds, United Kingdom; 2. Paul Scherrer Institute, Villigen, Switzerland; 3. University of Salamanca, Salamanca, Spain; 4. University of Konstanz, Konstanz, Germany; 5. CNRS, Universites Paris-Sud et Paris-Saclay, Orsay, France*

- CB-06. Effect of Ta-W alloy composition on effective antidamping-like torque efficiency.** C. In Ho¹, K. Yong Jin¹, K. Gyu Won¹, K. Taehyun¹ and Y.K. Kim¹ 1. *Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

- CB-07. Magnetic Proximity Effect in Fe₃O₄:Pt Thin Films Above and Below the Metal-Insulator Verwey Transition.** K. Morrison¹, C. Cox¹, A. Caruana², B. Nicholson³, A. Mora-Hernandez³, A. Hindmarch³, C. Kinane², T. Charlton⁴ and L. Bouchenoire^{5,6} 1. *Physics Department, Loughborough University, Loughborough, United Kingdom*; 2. *ISIS Neutron and Muon Source, STFC Rutherford Appleton Laboratory, Harwell Science and Innovation Campus, Oxon, United Kingdom*; 3. *Department of Physics, Durham University, Durham, United Kingdom*; 4. *Large scale structures group in the Neutron scattering Division, Oak Ridge National Lab, Oak Ridge, TN, United States*; 5. *XMaS, European Synchrotron Radiation Facility, Grenoble, France*; 6. *Department of Physics, University of Liverpool, Liverpool, United Kingdom*

- CB-08. Spin-Torque Ferromagnetic Resonance in Low-Damping Spinel Ferrite Thin Films.** P. Li^{1,2}, J.J. Wisser^{1,2}, L.J. Riddiford^{1,2}, C. Bi^{1,3}, A. Altman^{1,2}, S.X. Wang^{1,3}, S. Emori⁴ and Y. Suzuki^{1,2} 1. *Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA, United States*; 2. *Applied Physics, Stanford University, Stanford, CA, United States*; 3. *Materials Science and Engineering, Stanford University, Stanford, CA, United States*; 4. *Physics, Virginia Tech, Blacksburg, CA, United States*

- CB-09. Electric-field control of spin accumulation direction in a spin-orbit torque device.** R. Mishra^{1*}, D. Kumar¹, K. Cai¹, X. Qiu² and H. Yang¹ 1. *Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*; 2. *Tongji University, Shanghai, China*

- CB-10. Static & dynamic coupling in Co_xZn_{1-x}O – Permalloy heterostructures detected by multifrequency ferromagnetic resonance.** M. Buchner¹, T. Schaffers¹, B. Henne¹, S. Pile¹, V. Ney¹ and A. Ney¹ 1. *Solid State Physics, Johannes Kepler University, Linz, Austria*

- CB-11. Studying spin-orbit coupling in Heavy-Metal/Ferromagnet/Heavy-Metal heterostructures using X-ray Magnetic Circular Dichroism.** L. Stiffins¹, H. Ohldag², A.T. N'Diaye⁴, E. Wiggins¹, K. Jeon³, N. Stelmashenko³, M.G. Blamire³, K. Morrison¹ and N. Banerjee¹ 1. *Loughborough University, Loughborough, United Kingdom*; 2. *Stanford Synchrotron Radiation Laboratory, California, CA, United States*; 3. *Cambridge University, Cambridge, United Kingdom*; 4. *Advanced Light Source, Berkeley, CA, United States*

10:42

- CB-12. Spintronic Properties of $\text{Tb}_3\text{Fe}_5\text{O}_{12}/\text{Pt}$ and $\text{Eu}_3\text{Fe}_5\text{O}_{12}/\text{Pt}$ Bilayer Thin Films.** *E.R. Rosenberg¹, J. Bauer¹, L. Beran^{1,2}, B. Song¹, C. Avci^{1,3}, M. Veis², G. Beach¹ and C. Ross¹*
1. Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Charles University, Prague, Czechia; 3. ETH Zurich, Zurich, Switzerland

10:54

- CB-13. Electric Field Control of Spin-Orbit Torques in Perpendicularly Magnetized Thin Films.** *M. Filianina^{1,2}, J. Hanke^{3,1}, K. Lee¹, D. Han¹, Y. Mokrousov^{3,1} and M. Kläui^{1,2}*
1. Johannes Gutenberg University, Mainz, Germany; 2. Graduate School of Excellence Material Science in Mainz, Mainz, Germany; 3. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, Jülich, Germany

11:06

- CB-14. Controlled interdiffusion of Al in ultrathin $\text{Ta}/\text{Co}_2\text{FeAl}/\text{MgO}$ heterostructures for enhanced Spin-orbit Torque.** *V. Bhardwaj¹, K.M. Chen², Y. Tseng² and R. Chatterjee¹*
1. Physics, IIT Delhi, New Delhi, India; 2. Materials Science & Engineering, National Chiao Tung University, Hsinchu, Taiwan

11:18

- CB-15. Role of $\text{Cu}/\text{Al}_2\text{O}_3$ Rashba interface for the highly efficient spin manipulation.** *J. Kim², H. Tsai^{3,2}, D. Go¹, K. Kondou², H. Lee¹ and Y. Otani^{3,2}*
1. Department of Physics, Pohang University of Science and Technology, Pohang, The Republic of Korea; 2. Center for Emergent Matter Science, RIKEN, Wako, Japan; 3. Institute for Materials Research, University of Tokyo, Kashiwa, Japan

WEDNESDAY
MORNING
8:30

SALON 1

Session CC
NOVEL APPLICATIONS OF MRAM:
NEUROMORPHIC COMPUTING AND CRYOGENIC
MEMORY

Graham Rowlands, Chair
Raytheon BBN Technologies, Cambridge, MA, United States

8:30

- CC-01. Magnetic Domain Wall based Synaptic and Activation Function Generators for Neuromorphic Accelerators.** *S.A. Siddiqui¹, S. Dutta¹, L. Liu¹, C. Ross¹ and M. Baldo¹*
1. Massachusetts Institute of Technology, Cambridge, MA, United States

CC-02. Neuromorphic Computing with Domain Wall-Based Three-Terminal Magnetic Tunnel Junctions: Synapse.

O.G. Akinola¹, E. Kim¹, N. Hassan², J.S. Friedman² and J.C. Incorvia¹ 1. *Electrical and Computer Engineering, University of Texas at Austin, Austin, TX, United States;* 2. *Electrical and Computer Engineering, University of Texas at Dallas, Dallas, TX, United States*

CC-03. Neuromorphic Computing with Domain Wall-Based Three-Terminal Magnetic Tunnel Junctions: Neurons.

N. Hassan¹, X. Hu¹, L. Jiang-Wei², W.H. Brigner¹, O.G. Akinola³, F. Garcia-Sanchez⁴, M. Pasquale⁴, C.H. Bennett⁵, J.C. Incorvia³ and J.S. Friedman¹ 1. *Electrical & Computer Engineering, The University of Texas at Dallas, Richardson, TX, United States;* 2. *Computer Science, The University of Texas at Dallas, Richardson, TX, United States;* 3. *Electrical & Computer Engineering, The University of Texas at Austin, Austin, TX, United States;* 4. *Istituto Nazionale di Ricerca Metrologica, Torino, Italy;* 5. *Centre de Nanosciences et de Nanotechnologies, Université Paris-Saclay, Orsay, France*

CC-04. Implementation of on-chip learning for domain wall and skyrmion based feedforward neural networks using transistor based feedback circuitry that executes back-propagation algorithm. *A. Dankar¹, A. Verma¹, D. Kaushik¹, U. Saxena¹, S. Chatterjee¹ and D. Bhowmik¹* 1. *Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India***CC-05. Neural-like computing with stochastic magnetic tunnel junctions.** *A. Mizrahi^{1,2}, T. Hirtzlin³, A. Fukushima⁴, H. Kubota⁴, S. Yuasa⁴, M. Stiles⁵, J. Grollier¹ and D. Querlioz³*

1. *CNRS / Thales, Palaiseau, France;* 2. *NIST / University of Maryland, Gaithersburg, MD, United States;* 3. *Centre de Nanosciences et Nanotechnologies, Orsay, France;* 4. *National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan;* 5. *NIST, Gaithersburg, MD, United States*

CC-06. Ultraefficient neural networks with spiking-mode stochastic MTJs. *M.W. Daniels¹, A. Mizrahi^{2,3}, A. Madhavan³ and M. Stiles¹*

1. *NIST, Gaithersburg, MD, United States;* 2. *CNRS/Thales Unité Mixte, Paris, France;* 3. *University of Maryland/ NIST, Gaithersburg, MD, United States*

CC-07. Energy Efficient Voltage Controlled Nanomagnetic Implementation of Neural Networks. *M. Azam¹, D. Bhattacharya¹, D. Querlioz² and J. Atulasimha¹*

1. *Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States;* 2. *University of Paris-Sud, Orsay, France*

- CC-08. Artificial Spin Ice Inspired Computation using Nanomagnets.** *H. Arava*^{1,2}, *P. Derlet*³, *J. Vijayakumar*⁴, *J. Cui*^{1,2}, *A. Kleibert*⁴ and *L. Heyderman*^{1,2} *1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. Laboratory for Multiscale Materials Experiments, Paul Scherrer Institute, Villigen, Switzerland; 3. Condensed Matter Theory Group, Paul Scherrer Institute, Villigen, Switzerland; 4. Swiss Light Source, Paul Scherrer Institute, Villigen, Switzerland*

10:06

- CC-09. Magnetic nanocluster-based Josephson junctions for use in neuromorphic computing.** *M.L. Schneider*¹, *C.A. Donnelly*^{1,2}, *S.E. Russek*¹, *B. Baek*¹, *M. Pufall*¹, *I.W. Haygood*¹, *P.F. Hopkins*¹ and *W. Rippard*¹ *1. NIST, Boulder, CO, United States; 2. Stanford University, Palo Alto, CA, United States*

10:18

- CC-10. Energy-efficient Josephson Magnetic Random Access Memory. (Invited)** *A. Herr*¹, *I. Dayton*¹, *E.C. Gingrich*¹, *Q. Herr*¹, *M. Loving*¹, *T. Ambrose*¹, *D. Miller*¹ and *R. Burnett*¹ *1. Northrop Grumman, Baltimore, MD, United States*

10:54

- CC-11. Prototype cryogenic memory architecture based on 3-terminal SOT-MRAM and superconducting nanocryotron devices.** *M. Nguyen*¹, *G. Rowlands*¹, *G.J. Ribeill*¹, *A.P. Wagner*¹, *L.M. Ranzani*¹, *M. Gustafsson*¹, *S.R. Cheng*¹, *T.A. Ohki*¹, *S. Shi*², *L. Zhu*², *R. Buhrman*², *E. Toomey*³, *M. Colangelo*³, *A. Dane*³ and *K.K. Berggren*³ *1. Raytheon BBN Technologies, Cambridge, MA, United States; 2. Cornell University, Ithaca, NY, United States; 3. Massachusetts Institute of Technology, Cambridge, MA, United States*

11:06

- CC-12. zLink 3D High Density and High Speed Magnetic Memory.** *J. Zhu*¹ *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States*

11:18

- CC-13. Modeling Magnetization Dynamics Driven by Magneto-electricity.** *S. Rakheja*¹ and *N. Kani*² *1. Electrical and Computer Engineering, New York University, Brooklyn, NY, United States; 2. Reservoir Labs, New York, NY, United States*

Session CD
MULTIFERROICS AND MAGNETOELECTRIC
PHENOMENA I

Nian Sun, Chair
Northeastern University, Boston, MA, United States

8:30

- CD-01. Strain-mediated Ferroelectricity and Ferromagnetism in $\text{BiFeO}_3\text{-CoFe}_2\text{O}_4$ Nanocomposite.** *S. Ning¹, G. Tian¹, S. Ojha¹ and C. Ross¹ 1. Materials Science and Engineering, MIT, Cambridge, MA, United States*

8:42

- CD-02. Magnetoelectric and Photomagnetic behavior in $\text{Er}^{+3}/\text{Yb}^{+3}$ codoped BiFeO_3 .** *R. Martinez^{1,2}, C. Zuluaga¹, Y. Rosas¹, N. Kumar¹, H. Huhtinen² and R. Palai¹ 1. Department of Physics, University of Puerto Rico, San Juan, PR, United States; 2. Department of Physics, University of Turku, Turku, Finland*

8:54

- CD-03. Neutron Investigation of the Magnetic Structures and Phase Transitions in Multiferroic GaV_4S_8 .** *J.W. Lynn¹, W.D. Ratcliff¹, M. Bleuel^{1,4}, L. Zhang³ and S. Cheong² 1. NCNR, NIST, Gaithersburg, MD, United States; 2. Department of Physics, Rutgers University, Piscataway, NJ, United States; 3. Max Planck POSTECH, Pohang University of Science and Technology, Pohang, The Republic of Korea; 4. Materials Science and Engineering, University of Maryland, College Park, MD, United States*

9:06

- CD-04. Influence of Micron-Scale Strain Distributions on the Electrical Reorientation of Magnetization in a Composite Multiferroic System. (Invited)** *R. Lo Conte¹, Z. Xiao², C. Chen³, C.V. Stan⁴, J. Gorchon^{1,5}, A. El-Ghazaly¹, M. Nowakowski¹, H. Sohn², A. Pattabi¹, A. Scholl⁴, N. Tamura⁴, A. Sepulveda³, G. Carman³, R. Candler^{2,3} and J. Bokor^{1,5} 1. EECS, University of California at Berkeley, Berkeley, CA, United States; 2. EE, University of California at Los Angeles, Los Angeles, CA, United States; 3. Mechanical and Aerospace Engineering, University of California at Los Angeles, Los Angeles, CA, United States; 4. ALS, Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 5. Materials Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

9:42

- CD-05. Electric Field Mediated Magnetism in $\gamma\text{-Fe}_4\text{N/PMN-PT(011)}$ Multiferroic Heterostructures.** *Z. Lai¹ and W. Mi¹ 1. Department of Applied Physics, Tianjin University, Tianjin, China*

- CD-06. Exploiting growth anisotropy in CoFeB films on PMN-PT substrates for giant non-volatile magnetoelectric effects.** *M. Ghidini*^{1,2}, *J. Wang*³, *D. Pesquera*³, *R. Mansell*³, *R. Cowburn*³ and *N.D. Mathur*³ *1. University of Parma, Parma, Italy;*
2. Diamond Light Source, Didcot, United Kingdom;
3. University of Cambridge, Cambridge, United Kingdom

10:06

- CD-07. Modeling the Effects of Ferroelectric Domain Wall Motion on Magnetic Nano-Islands in Strain-Mediated Heterostructures.** *A. Kundu*¹, *K. Wetzlar*¹, *P. Lv*¹ and *C. Lynch*¹
1. Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States

10:18

- CD-08. Strain and Charge-Mediated Nonvolatile Magneto-Electric Effects in Complex Oxide Heterostructures.** *R.V. Chopdekar*¹, *E. Arenholz*¹ and *Y. Takamura*² *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States;*
2. Materials Science and Engineering, University of California-Davis, Davis, CA, United States

10:30

- CD-09. Voltage control of RKKY exchange coupling in magnetoelectric heterostructures.** *X. Wang*¹, *Q. Yang*², *Z. Zhou*², *M. Liu*² and *N.X. Sun*¹ *1. Northeastern University, Boston, MA, United States;*
2. Xi'an Jiaotong University, Xi'an, China

10:42

- CD-10. Ferroelectric Control of the Magnetic Anisotropy of an Ultrathin Co/Pt Bilayer.** *B.F. Vermeulen*^{1,2}, *J. Swerts*², *S. Couet*², *M. Popovici*², *F. Ciubotaru*², *C. Adelman*², *I.P. Radu*², *A. Stancu*³, *K. Temst*¹, *G. Groeseneken*⁴ and *K.M. Martens*^{1,2} *1. Department of Physics and Astronomy, KULeuven, Leuven, Belgium;*
2. imec, Leuven, Belgium;
3. Department of Electrical Engineering, Alexandru Ioan Cuza University of Iasi, Iasi, Romania;
4. Department of Electrical Engineering, KULeuven, Leuven, Belgium

10:54

- CD-11. Magnetoelectric Response of Different Shape Metallic Glass/PVDF Laminates Composites.** *A. Lasheras*², *A. Lopes*¹, *P.G. Saiz*¹ and *J. Gutierrez*² *1. BCMaterials, Leioa, Spain;*
2. Universidad del País Vasco (UPV/EHU), Leioa, Spain

11:06

- CD-12. Nonvolatile Memory and Synaptic Devices Based on the Magnetoelectric Effects.** *Y. Sun*¹, *J. Shen*¹, *K. Zhai*¹, *D. Shang*¹ and *Y. Chai*¹ *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

- CD-13. Experimental/Numerical Demonstration/Validation of a Multiferroic Antenna at Low Frequencies.** *J.D. Schneider¹, J.P. Domann², M.K. Panduranga¹, P. Shirazi¹, C. Sennott³, D. Shahan³, S. Selvin³, G. McKnight³, W. Wall³, Z. Yao⁴, A.C. Chavez¹, Y.E. Wang⁴ and G. Carman¹* *1. Mechanical and Aerospace Engineering, University of California Los Angeles, Los Angeles, CA, United States; 2. Department of Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA, United States; 3. HRL Laboratories, Malibu, CA, United States; 4. Electrical and Computer Engineering, University of California Los Angeles, Los Angeles, CA, United States*

WEDNESDAY
MORNING
8:30

VIRGINIA

Session CE
MAGNETO-CALORIC AND MAGNETO-ELASTIC
MATERIALS

Franca Albertini, Chair
IMEM-CNR, Parma, Italy

8:30

- CE-01. Wide-band nonreciprocity of coupled surface magneto-acoustic waves propagating in a ferromagnetic bilayer with antiparallel layer magnetizations.** *R.V. Verba¹, V. Tyberkevych² and A.N. Slavin²* *1. Institute of Magnetism, Kyiv, Ukraine; 2. Department of Physics, Oakland University, Rochester, MI, United States*

8:42

- CE-02. A vector formalism for magneto-elastic interactions in micro- and nano-sized magnetic systems.** *I. Lisenkov¹* *1. Electrical and Computer Engineering Department, Northeastern University, Boston, MA, United States*

8:54

- CE-03. Single domain magnetoelastic Terfenol-D microdisks for particle and cell manipulation.** *Z. Xiao^{1*}, R.I. Khojah², M.K. Panduranga³, M. Goiriena-Goikoetxea⁴, R.V. Chopdekar⁵, R. Lo Conte⁴, J. Bokor⁴, G. Carman³, D. Di Carlo² and R. Candler^{1,3}* *1. Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Bioengineering, University of California, Los Angeles, Los Angeles, CA, United States; 3. Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 4. Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, United States; 5. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

9:06

- CE-04. Magneto-Caloric Materials for Something Other than Refrigeration: Switchable MRI Labels and Neuro-Stimulation. (Invited)** *M. Barbic*¹ *1. Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, VA, United States*

9:42

- CE-05. Epitaxial NiMnGa thin films: microstructure and magnetic engineering by post-growth treatments.** *M. Takhsha Ghahfarokhi*¹, *F. Casoli*¹, *S. Fabbri*¹, *L. Nasi*¹, *R. Cabassi*¹, *F. Celegato*², *P. Tiberto*², *G. Trevisi*¹, *G. Bertoni*¹ and *F. Albertini*¹ *1. IMEM-CNR, Parma, Italy; 2. INRIM, Torino, Italy*

9:54

- CE-06. Magnetoelastic non-hysteretic first-order phase transition in rare-earth intermetallic Eu₂In.** *F. Guillou*¹, *A.K. Pathak*¹, *D. Paudyal*¹, *Y. Mudryk*¹ and *V.K. Pecharsky*^{1,2} *1. Ames Laboratory, U.S. Department of Energy, Ames, IA, United States; 2. Materials Science and Engineering, Iowa State University, Ames, IA, United States*

10:06

- CE-07. Investigating the Role of Ga-substitution in Fe_{1-x}Ga_x (Galfenol) Thin Films.** *S. Roy*¹, *M. Wang*¹, *L. Clarke*², *S.A. Cavill*², *K.W. Edmonds*¹ and *A. Rushforth*¹ *1. Physics, University of Nottingham, Nottingham, United Kingdom; 2. Physics, University of York, York, United Kingdom*

10:18

- CE-08. Texture Dependent Surface Energy Measurements on Magnetostrictive Alloys for Abnormal Grain Growth Modeling.** *M.N. Van Order*¹, *S. Na*² and *A.B. Flatau*^{1,2} *1. Materials Science & Engineering, University of Maryland, College Park, MD, United States; 2. Aerospace Engineering, University of Maryland, College Park, MD, United States*

10:30

- CE-09. Aluminum and Gallium additions to Magnetic High Entropy Alloys.** *N.J. Jones*¹, *G. Petculescu*², *P.K. Lambert*¹ and *S. Na*¹ *1. Physical Metallurgy and Fire Protection Branch, Naval Surface Warfare Center, Carderock Division, Bethesda, MD, United States; 2. Physics, University of Louisiana at Lafayette, Lafayette, LA, United States*

10:42

- CE-10. The shape memory effect in FeMnSi-based rapidly solidified glass-covered microwires.** *H. Chiriac*¹, *S. Corodeanu*¹, *M. Grigoras*¹, *F. Borza*¹, *V. Dobrea*¹ and *N. Lupu*¹ *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

10:54

- CE-11. Magnetostrictive Antiferromagnetic Fe₅₀Mn₅₀ for High Speed Multiferroic Applications.** *P. Shirazi*², *A. Barra*¹, *T. Lee*², *M.K. Panduranga*¹, *S.V. Prikhidko*² and *G. Carman*¹
1. Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA, United States;
2. Materials Science and Engineering, University of California, Los Angeles, Los Angeles, CA, United States

11:06

- CE-12. Development of a Water Level Sensor using Magnetostrictive Materials.** *J. Yoo*¹, *N.J. Jones*¹, *K. Flynn*² and *R. Jacobs*³
1. Physical Metallurgy and Fire Protection Branch, Naval Surface Warfare Center, Carderock Division, Bethesda, MD, United States;
2. Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, United States;
3. Wastewater Management Branch, Naval Surface Warfare Center, Carderock Division, Bethesda, MD, United States

11:18

- CE-13. Self-assembling Structure Formation in Low Density Magnetoactive Polymers.** *D. Sindesberger*¹, *N. Prem*¹ and *G. Monkman*¹
1. Mechatronics Research Unit, OTH Regensburg, Regensburg, Germany

WEDNESDAY
MORNING
8:30

DELAWARE

Session CF
MAGNETIZATION DYNAMICS I
Yayoi Takamura, Chair
University of California - Davis, Davis, CA, United States

8:30

- CF-01. Fast, Nanoscale Addressability of Nitrogen-Vacancy Spins via Coupling to a Dynamic Ferromagnetic Vortex. (Invited)**
*J. Berezovsky*¹, *M.S. Wolf*¹ and *R. Badae*¹
1. Physics, Case Western Reserve University, Cleveland, OH, United States

9:06

- CF-02. Time Resolved Investigation of Joule Heating Dissipation in Metallic Multilayer Devices.** *K. Litzius*^{1,2}, *S. Kromin*¹, *J. Zazvorka*¹, *I. Lemesh*³, *P. Bassirian*¹, *N. Kerber*¹, *D. Heinze*¹, *M. Asa*¹, *J. Nothelfer*¹, *K. Richter*¹, *M. Weigand*⁴, *G.A. Schütz*⁴, *G. Beach*³ and *M. Kläui*^{1,2}
1. Institute of Physics, University of Mainz, Mainz, Germany;
2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany;
3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States;
4. Max Planck Institute for Intelligent Systems, Stuttgart, Germany

9:18

- CF-03. Imaging of the dynamics of the current-induced nucleation of a magnetic skyrmion at a point contact.** *S. Finizio¹, K. Zeissler², S. Wintz^{1,3}, S. Mayr¹, G. Burnell², C.H. Marrows² and J. Raabe¹* *1. Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland; 2. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

9:30

- CF-04. Dynamic magnetic behaviour investigation using spatially and time-resolved x-ray detected ferromagnetic resonance.** *S. Pile¹, T. Schaffers¹, T. Feggeler², R. Meckenstock², D. Spoddig², K.J. Ollefs², V. Ney¹, H. Ohldag³, M. Farle², H. Wende² and A. Ney¹* *1. Institute of Semiconductor and Solid State Physics, Johannes Kepler University, Linz, Austria; 2. Faculty of Physics and Center for Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Duisburg, Germany; 3. Stanford Synchrotron Radiation Laboratory, SLAC National Accelerator Laboratory, Menlo Park, CA, United States*

9:42

- CF-05. Size Dependence of Magnetization Dynamics in Individual CoFeB Nanodots.** *A.M. Abdelgawad^{1,2}, B. Parks² and S. Majetich²* *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Carnegie Mellon University, Pittsburgh, PA, United States*

9:54

- CF-06. Plasmon-Induced Demagnetization and Magnetic Switching in Ni Nanoparticle Arrays.** *F. Freire Fernández¹, M. Kataja^{1,2}, J. Witteveen¹, T. Hakala¹, P. Törmä¹ and S. van Dijken¹* *1. Department of Applied Physics, Aalto University, Espoo, Finland; 2. Institut de Ciència de Materials de Barcelona, Barcelona, Spain*

10:06

- CF-07. Dynamics of Magnetization Reversal in Magnetic Insulators Induced by Spin-Orbit Torque.** *W. Hsu¹ and R.H. Victora¹* *1. Electrical and Computer Engineering, University of Minnesota - Twin Cities, Minneapolis, MN, United States*

10:18

- CF-08. Enhanced ferromagnetic resonance linewidth in coupled ferromagnetic bilayer samples.** *J. Xu¹, V. Sluka¹, B. Kardasz², M. Pinarbasi² and A.D. Kent¹* *1. Department of Physics, New York University, New York, NY, United States; 2. Spin Transfer Technologies, Inc., Fremont, CA, United States*

CF-09. Response Speed of Heat-Driven Spin-Torque in a Magnetic Tunnel Junction through Time-Resolved Measurement.

N. Furuichi¹, M. Goto⁵, E. Tamura¹, H. Kubota², K. Yakushiji², A. Fukushima², S. Yuasa², N. Strelkov^{3,4}, B. Dieny³, S. Miwa⁵ and Y. Suzuki^{5,2} 1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. National Institute of Advance Industrial Science and Technology (AIST), Tsukuba, Japan; 3. CEA, CNRS, Grenoble-INP, INAC-SPINTEC, Univ. Grenoble Alpes, Grenoble, France; 4. Lomonosov Moscow State Univ., Moscow, Russian Federation; 5. Graduate School of Engineering Science, Osaka University & Center for Spintronics Research Network, Toyonaka, Japan

CF-10. Dynamic Magnetization Switching, a Machine Learning Study for Switching Criterion. *K. Gao^{1,2}* 1. Applied Materials Division, Argonne National Laboratory, Argonne, IL, United States; 2. Research and Technology Development, International Business and Technology Service, North Oaks, MN, United States

CF-11. Chaotic dynamics in a nanocontact vortex oscillator system. *M. Yoo¹ and J. Kim¹* 1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France

CF-12. GPU-accelerated Thermal Lifetime Calculations for Atomistic Skyrmion Annihilation Processes. *P.T. Heistracher¹, C. Abert¹, F. Bruckner¹ and D. Suess¹* 1. Faculty of Physics, University of Vienna, Vienna, Austria

CF-13. Highly anisotropic propagation of domain walls in in-plane magnetic films. *X. Zhou^{1,2}, N. Vernier², G. Agnus², S. Eimer², X. Zhao^{3,2}, W. Zhang⁴, D. Ravelosona² and Y. Zhai¹* 1. School of Physics, Southeast University, 211189 Nanjing, China; 2. Center for Nanoscience and Nanotechnology, Université Paris-Sud & CNRS, UMR 9001, 91400 Orsay, France; 3. Fert Beijing Institute, School of Electronic and Information Engineering, Beihang University, 100191 Beijing, China; 4. Department of Physics, National University of Singapore, 117542 Singapore, Singapore

Session CG

**SOFT MAGNETIC MATERIALS III: AMORPHOUS
AND NANOCRYSTALLINE MATERIALS**

Rafael Pérez del Real, Co-Chair

ICMM, CSIC, Madrid, Spain

Agustina Asenjo, Co-Chair

ICMM, CSIC, Madrid, Spain

8:30

CG-01. Nanocrystalline soft magnetic materials from binary alloy precursors with high saturation magnetization. (Invited)

K. Suzuki¹, R.R. Parsons¹, B. Zang¹, K. Onodera², H. Kishimoto², T. Shoji² and A. Kato² 1. Department of Materials Science and Engineering, Monash University, Clayton, VIC, Australia; 2. Advanced Material Engineering Div., Toyota Motor Corporation, Susono, Japan

9:06

CG-02. Development and Test of Concentration Scaled Particulate Demagnetization and Biased Percolation in Effective Media Theories of Magnetic Composites. R.L. Moore¹ 1. ACL, Georgia Tech Research Institute, Atlanta, GA, United States

9:18

CG-03. Multi-parameters Optimization of Magnetic Properties in Microwires for Sensor Application. J. Gonzalez¹, A. Chizhik¹, A. Zhukov^{1,2}, P. Corte-León¹ and A. Stupakiewicz³ 1. Universidad del País Vasco UPV/EHU, San Sebastian, Spain; 2. IKERBASQUE, Basque Foundation for Science, San Sebastian, Spain; 3. University of Bialystok, Bialystok, Poland

9:30

CG-04. Realization of constant permeability up to more than 3 GHz in high B_s powder cores. T. Suzuki^{1,2}, P. Sharma¹ and A. Makino¹ 1. New Industry Creation Hatchery Center (NICHe), Tohoku University, Sendai, Japan; 2. ALPS ELECTRIC Co., LTD., Sendai, Japan

9:42

CG-05. Aging and Consequences of Ferromagnetic Amorphous Fe₇₅Si₁₀B₁₅ Microwires for Advanced Inductive Applications. X. Zhang¹, R. Pérez del Real², M. Vázquez² and L.H. Lewis^{1,3} 1. Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States; 2. Instituto de Ciencia de Materiales de Madrid (ICMM), CSIC, Madrid, Spain; 3. Department of Chemical Engineering, Northeastern University, Boston, MA, United States

9:54

CG-06. Virtual Bound State Elements and their Effects on Magnetic and Electrical Properties of Fe-Ni based Metal Amorphous Nanocomposites. N. Aronhime¹ and M.E. McHenry¹ 1. Carnegie Mellon University, Pittsburgh, PA, United States

10:06

- CG-07. FeNbBP Type Nanocrystalline Alloy with High Bs of 1.64T Optimized by Sputtered Thin Film Method.** *H. Amano¹, A. Hasegawa¹, K. Ara¹, K. Horino¹ and H. Matsumoto¹* *1. Material Development Center, TDK Corporation, Ichikawa, Japan*

10:18

- CG-08. FeSiP-based Magneto-Dielectric Composites for High Performance Inductors.** *K. Qian¹, Q. Li¹, C. Yu¹, A.S. Sokolov¹ and V.G. Harris¹* *1. Electrical Engineering, Northeastern University, Boston, MA, United States*

10:30

- CG-09. Magnetic characterization of 1- μ m-thick CoFeB steels with ultra-low loss in MHz frequency ranges for power electronics application.** *Y. Takamura¹, G. Nguyen², Y. Ogawa¹, W. Koganoki¹, K. Tsukada², S. Nakagawa¹ and K. Fujisaki²* *1. Dept. of Electrical and Electronic Eng., Tokyo Institute of Technology, Meguro, Japan; 2. Research Center for Smart Vehicles, and Electromagnetic Energy System Laboratory, Toyota Technological Institute, Nagoya, Japan*

10:42

- CG-10. Lehrer Phase Diagram for Nitriding of Nanocrystalline Iron.** *Y. Jiang^{1,2} and L. Jiang³* *1. Microelectronics, Jiangnan University, Wuxi, China; 2. Electrical & Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 3. Chemical Engineering, UC Berkeley, Berkeley, CA, United States*

10:54

- CG-11. Magnetic Properties of Fe-Cu Solid Solutions processed by Severe Plastic Deformation.** *M. Stücker¹, L. Weissitsch¹, S. Wurster¹, H. Krenn², P. Knoll², P. Felfel³ and A. Bachmaier¹* *1. Erich Schmid Institute of Materials Science, Austrian Academy of Sciences, Leoben, Austria; 2. Institute of Physics, University of Graz, Graz, Austria; 3. Department of Materials Science and Engineering, Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany*

11:06

- CG-12. Synthesis of novel FeSiBPCCu alloys with high amorphous forming ability and good soft magnetic properties.** *X. Fan¹ and B. Shen^{1,2}* *1. School of Materials Science and Engineering, Southeast University, Nanjing, China; 2. Institute of Massive Amorphous Metal Science, China University of Mining and Technology, Xuzhou, China*

11:18

- CG-13. Structural and Magnetic properties of the homologous series of High Entropy alloys of the type FeCoNi-(MnT_x), (T= B, Al, Ga, In and O.** *D. Niarchos^{1,2}, V. Psycharis¹, A. Kaidatzis¹, E. Devlin¹ and G. Gkousias²* *1. INN, NCSR D, Aghia Paraskevi, Greece; 2. R&D, AMEN Technologies, Aghia Paraskevi, Greece*

Session CH
MOTORS: DESIGN AND ANALYSIS II

Narayan Kar, Chair
University of Windsor, Windsor, ON, Canada

8:30

- CH-01. Field Current Control of a Brushless Synchronous Machine using Single Inverter Based Sub-Harmonic Field Excitation.** *G. Sirewal¹, M. Ayub¹ and B. Kwon¹ 1. Electronic Systems, Hanyang University, Ansan-si, The Republic of Korea*

8:42

- CH-02. A New Hybrid Excited Flux Reversal Arc Permanent Magnet Machine Having Partitioned Stators for Large Telescope Application.** *Z. Pan¹, S. Fang¹, H. Lin¹, H. Yang¹ and S. Lyu¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China*

8:54

- CH-03. The Influence of Slot Combination on Performance of Brushless Doubly-Fed Generator with Hybrid Rotor.** *F. Zhang¹, Y. Song¹, S. Jin¹, C. Gerada² and J. Wang³ 1. Shenyang University of Technology, Shenyang, China; 2. University of Nottingham Ningbo China, Ningbo, China; 3. CSIC Electrical Machinery Science & Technology Corporation, Wuxi, China*

9:06

- CH-04. 2D Hybrid Steady-State Magnetic Field Model for Linear Induction Motors.** *S. Aleksandrov¹, T. Overboom¹ and E.A. Lomonova¹ 1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

9:18

- CH-05. A 2.5-D Calculation Method of Magnet Eddy Current Loss for Permanent Magnet Electrical Machines.** *S. Xue¹, Z. Zhu¹, A. Duke², Z. Azar², R. Clark², A. Thomas², G. Li¹, M. Odavic¹, A. Griffo¹, M. Foster¹ and D. Stone¹ 1. University of Sheffield, Sheffield, United Kingdom; 2. Siemens-Gamesa Wind Power, Sheffield, United Kingdom*

9:30

- CH-06. Quantitative Comparison of Distinct Dual-Stator Permanent Magnet Vernier Machines for Direct-Drive Applications.** *Z. Song¹ and C. Liu¹ 1. School of Energy and Environment, City University of Hong Kong, Kowloon, Hong Kong*

CH-07. Development of a High Performance Axial Flux PM Machine with SMC Cores for Electric Vehicle Application.

J. Lu^{1,2}, Y. Wang^{1,2}, C. Liu^{1,2}, G. Lei³, Y. Guo³ and J. Zhu⁴

1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment (School of Electrical Engineering, Hebei University of Technology), Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province (School of Electrical Engineering, Hebei University of Technology), Tianjin, China; 3. University of Technology Sydney, Sydney, NSW, Australia; 4. University of Sydney, Sydney, NSW, Australia

9:54

CH-08. Electromagnetic Performance Analysis for Tubular Flux-Switching Permanent Magnet Motor with Hybrid Cores.

S. Wang^{1,2}, Y. Wang^{1,2}, C. Liu^{1,2}, Y. Guo³ and J. Zhu⁴

1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment (School of Electrical Engineering, Hebei University of Technology), Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province (School of Electrical Engineering, Hebei University of Technology), Tianjin, China; 3. University of Technology Sydney, Sydney, NSW, Australia; 4. University of Sydney, Sydney, NSW, Australia

10:06

CH-09. Lumped-Parameter Magnetic Circuit Based Model of a New Axial Gap Hybrid Excited Flux Switching Permanent Magnet Motor.

E. Yildiriz¹, M. Gulec² and M. Aydin²

1. Electrical and Electronics Engineering, Düzce University, Düzce, Turkey; 2. Mechatronic Engineering, Kocaeli University, Kocaeli, Turkey

10:18

CH-10. Modeling and Design of a Novel 3-DOF Magnetic Bearing with Toroidal Radial Control Coil.

Y. Zhong¹, L. Wu¹,

X. Huang¹ and Y. Fang¹ *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

10:30

CH-11. A planar generator for a wave energy converter.

M. Trapanese¹, V. Franzitta¹, D. Curto¹, X. Wang², Z. Liu² and

L. McNabb² *1. DEIM, Palermo University, Palermo, Italy; 2. School of Engineering, RMIT, Melbourne, VIC, Australia*

10:42

CH-12. The innovative electric motor design with 3D airgap.

W. Peng¹, Y. Yang¹, H. Yang¹ and C. Lin¹

1. Industrial Technology Research Institute, Hsinchu, Taiwan

10:54

CH-13. Novel Efficiency-shifting Radial-Axial Hybrid Interior Permanent Magnet Synchronous Motor for Electric Vehicle.

H. Won¹, Y. Hong¹, W. Lee¹ and M. Choi¹

1. Department of Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL, United States

- CH-14. Design of Magnetic Circuit for Improving Output of Magnetostrictive Vibration Power Generator.** *Y. Takenaka¹ and T. Ueno¹ 1. Kanazawa University, Kanazawa, Japan*

WEDNESDAY
MORNING
8:30

WASHINGTON 5

Session CI
RARE-EARTH INTERMETALLICS
AND COMPOUNDS III

Baozhi Cui, Chair
Ames Laboratory, US DOE, Ames, IA, United States

8:30

- CI-01. New Approaches for Fabrication of Highly Coercive Net Shape Magnets.** *A. Baker¹, S. Baker¹, M. Worthington¹, J. Lee¹, C. Orme¹, J. Kuntz¹ and S.K. McCall¹ 1. Lawrence Livermore National Laboratory, Livermore, CA, United States*

8:42

- CI-02. Laser Beam Melting process applied to NdFeB permanent magnets.** *M. Opprecht¹, S. Luca¹, S. Cayre¹, G. Gaillard¹, C. Rado¹ and G. Delette¹ 1. CEA-LITEN, Grenoble, France*

8:54

- CI-03. Control of crystalline orientation of hot forged Nd-Fe-B magnet.** *O. Yamashita¹, D. Ichigozaki¹, D. Kobuchi¹ and T. Shoji¹ 1. Toyota Motor Corporation, Toyota, Japan*

9:06

- CI-04. Magnetic Anisotropy and Crystallographic Alignment in Fe and NdH₂ during d-HDDR Process of Nd-Fe-B-Ga-Nb Powders.** *T. Horikawa¹, M. Yamazaki¹, C. Mishima¹, M. Matsuura² and S. Sugimoto² 1. Aichi Steel Corporation, Tokai, Japan; 2. Tohoku University, Sendai, Japan*

9:18

- CI-05. Application of high-pressure torsion to Nd-Fe-B nanocomposite magnets.** *A. Hosokawa¹, K. Takagi¹ and K. Ozaki¹ 1. Magnetic Powder Metallurgy Research Center, National Institute of Advanced Industrial Science and Technology, Nagoya, Japan*

9:30

- CI-06. Spark Plasma Sintering of Jet-Milled NdFeB Powders with Low Rare Earth Contents.** *L.M. Scherf¹, R. Kessler¹, T. Tomše², J. Jaćimović¹, L. Herrmann¹, J. Dubois^{2,3} and S. Kobe² 1. Corporate Research, ABB, Baden-Dättwil, Switzerland; 2. Department for Nanostructured Materials, Jozef Stefan Institut, Ljubljana, Slovenia; 3. Institut Jean Lamour, CNRS, Université de Lorraine, Nancy, France*

9:42

- CI-07. Coating low-oxygen $\text{Sm}_2\text{Fe}_{17}\text{N}_3$ magnet powders with nonmagnetic metal elements by using DC magnetron sputtering method.** *W. Yamaguchi¹, R. Soda¹ and K. Takagi¹*
1. MagMet, AIST, Nagoya, Japan

9:54

- CI-08. Magnetic properties of Mg-assisted flux grown single crystalline $\text{Sm}_2\text{Fe}_{17}\text{N}_3$.** *T.N. Lamichhane^{1,2}, V. Taufour^{2,3}, A. Palasyuk², Q. Lin², T. Pandey⁴, D. Parker⁴, S.L. Bud'ko^{1,2} and P.C. Canfield^{1,2}*
1. Physics and Astronomy, Iowa State University, Ames, IA, United States; 2. Ames Laboratory, Ames, IA, United States; 3. Physics, University of California Davis, Davis, CA, United States; 4. Oak Ridge National Laboratory, Oak Ridge, TN, United States

10:06

- CI-09. Tough heterogeneous Sm-Co sintered magnets with improved flexural strength.** *B. Cui¹, G. Ouyang^{1,2} and J. Cui^{1,2}*
1. Ames Laboratory, Ames, IA, United States; 2. Department of Materials Science and Engineering, Iowa State University, AMES, IA, United States

10:18

- CI-10. Anisotropic $\text{Ce}(\text{CoFeCu})_5$ as Gap Magnet Material.** *K. Gandha¹, R.P. Chaudhary¹, F. Meng^{1,2}, M.J. Kramer², R. Ott^{1,2} and C.I. Nlebedim¹*
1. Critical Materials Institute, Ames Laboratory, Ames, IA, United States; 2. Division of Materials Science and Engineering, Ames Laboratory, Ames, IA, United States

10:30

- CI-11. Crystalline and Magnetic Properties of Rare-Earth Doped $(\text{Sm}_{1-x-y}\text{Re}_x\text{Zr}_y)(\text{Fe}_{0.8}\text{Co}_{0.2})_{11}\text{Ti}$ with ThMn_{12} structure.** *J. Lim¹, H. Qian¹, J. Park¹ and C. Choi¹*
1. Powder & Ceramic Division, Korea Institute of Materials Science, Changwon, The Republic of Korea

10:42

- CI-12. Inter-Sublattice Exchange Interaction in $\text{Nd}(\text{Fe,Ti})_{12}$ Permanent Magnets.** *S.C. Westmoreland¹, C. Skelland², R.F. Evans¹, T.A. Ostler⁷, M. Yano³, T. Shoji³, A. Manabe³, A. Kato³, M. Ito³, M. Winklhofer⁴, G. Zimanyi⁵, J. Fischbacher⁶, T. Schrefl⁶, R.W. Chantrell¹ and G. Hrkac²*
1. Department of Physics, University of York, York, United Kingdom; 2. College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom; 3. Toyota Motor Corporation, Toyota 471-8572, Japan; 4. Department of Biology and Environmental Sciences, University of Duisburg, Duisburg, Germany; 5. Department of Physics, University of California, Davis, CA, United States; 6. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 7. Faculty of Arts, Computing, Engineering and Sciences, Sheffield Hallam University, Sheffield, United Kingdom

- CI-13. Synthesis of Nd-Fe-B/Fe Hybrid Micro-magnets.** *F. Mert¹, N. Gündüz Akdoğan², I.B. Misirliglu^{3,4} and O. Akdoğan¹*
1. Department of Mechatronics Engineering, Bahçeşehir University, Istanbul, Turkey; 2. Faculty of Engineering, Piri Reis University, Istanbul, Turkey; 3. Department of Materials Science and Engineering, Sabanci University, Istanbul, Turkey; 4. Nanotechnology Application Center, Sabanci University, Istanbul, Turkey

WEDNESDAY
 MORNING
 9:30

EXHIBIT HALL A

Session CJ
MOTORS: MODELING AND SIMULATIONS II
(Poster Session)

Chunhua Liu, Chair
 City University of Hong Kong, Kowloon, Hong Kong

- CJ-01. Design of BLDC coreless PM motor using 3-D printing technology.** *D. Jung¹, J. Lee¹, J. Lim¹ and J. Kim¹* *1. Hanyang University, Seoul, The Republic of Korea*
- CJ-02. Effect of Pole Ratio on the Performance of Dual Airgap Spoke Type Permanent Magnet Vernier Machine.** *M.R. Siddiqi¹ and J. Hur¹* *1. Department of Electrical Engineering, Incheon National University, Incheon, The Republic of Korea*
- CJ-03. Comparative Analysis of Parallel Hybrid Magnet Memory Machines with Different PM Arrangements.** *H. Yang¹, H. Zheng¹, H. Lin¹, Z. Zhu², S. Lyu¹ and Z. Pan¹* *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*
- CJ-04. Leakage Flux of the Trans-Rotary Magnetic Gear.** *K.N. Jenney¹ and S. Pakdelian¹* *1. Electrical and Computer Engineering, University of Massachusetts Lowell, Lowell, MA, United States*
- CJ-05. Iron Nitride Magnet Based Permanent Magnet Linear Generator for Oceanic Wave Energy Conversion.** *S. Molla¹, O. Farrok¹, M. Islam² and K.M. Muttaqi²* *1. Department of Electrical and Electronic Engineering, Ahsanullah University of Science & Technology, Dhaka, Bangladesh; 2. Faculty of Engineering and Information Sciences, University of Wollongong, Wollongong, NSW, Australia*
- CJ-06. Electromagnetic-Thermal Coupled Analysis of Electric Machines Considering Electromagnetic Losses Formed by Inverter Switching Harmonics.** *B. Son¹, H. Jung², D. Lee³, Y. Kim⁴ and S. Jung¹* *1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Katech, Cheonan, The Republic of Korea; 3. University of Illinois, Urbana, IL, United States; 4. Chosun University, Gwangju, The Republic of Korea*

- CJ-07. Analytical Calculation of Performance for Electro-dynamic wheel with a Ladder-Slit Guideway.** *Y. Ma¹ and W. Qin¹*
1. School of Electrical Engineering, Beijing Jiaotong University, Beijing, China
- CJ-08. Improvement Method of Productivity and Field Weakening Control in Surface-Mounted Permanent Magnet Synchronous Motor.** *S. Kang¹, Y. Ko¹, M. Seo¹, W. Han¹, Y. Kim² and S. Jung¹*
1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Chosun University, Gwangju, The Republic of Korea
- CJ-09. Analytical Calculation of Air-Gap Magnetic Field in Dual-Stator Brushless Double-Fed Machine.** *H. Liu¹, G. Liu¹, F. Zhang¹, S. Jin¹, H. Zhang² and C. Gerada^{2,3}*
1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; 2. University of Nottingham, Ningbo, China; 3. University of Nottingham, Nottingham, United Kingdom

WEDNESDAY
MORNING
9:30

EXHIBIT HALL A

Session CK
MOTORS: MODELING AND SIMULATIONS III
(Poster Session)

Shuangxia Niu, Chair
The Hong Kong Polytechnic University, Hong Kong, China

- CK-01. Short-circuit fault analysis of a five-phase fault-tolerant permanent-magnet synchronous machine.** *Y. Sui¹, P. Zheng¹, L. Cheng¹ and Z. Yin¹*
1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China
- CK-02. Analytical and Experimental Study of Electromagnetic Loss and Temperature Rise in Induction Machine.** *K. Shin¹, H. Cho² and J. Choi¹*
1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Electric, Electronic and Comm. Eng. Edu., Chungnam National University, Daejeon, The Republic of Korea
- CK-03. Multi-objective Robust Optimization for a Dual-Flux-Modulator Coaxial Magnetic Gear.** *X. Liu¹, Y. Zhao¹, Z. Chen², D. Luo¹ and S. Huang¹*
1. Hunan University, Changsha, China; 2. Aalborg University, Aalborg, Denmark
- CK-04. Analysis and Design of Surface-Mounted Permanent Magnet Motor Using a Novel Magnetic Equivalent Circuit Taking into Account Magnetic Saturation.** *J. Lee¹, T. Kim², H. Jung¹ and J. Ro³*
1. Department of Electrical and Computer Engineering, Seoul National University, Seoul, The Republic of Korea; 2. Intelligent Robotics Research Center, Korea Electronics Technology Institute (KETI), Bucheon, The Republic of Korea; 3. School of Electrical and Electronics Engineering, Chung-Ang University, Seoul, The Republic of Korea

CK-05. Influences of Stator Teeth Number on PM Coupling Levels of Co-Axial Dual-Mechanical-Port Flux-Switching PM Machines. L. Zhou¹ and W. Hua¹ *1. School of Electrical Engineering, Southeast University, Nanjing, China*

CK-06. A Study on the IE4 Class Line-Start SynRM Design Using Kw-Map. J. Lee¹, D. Jung¹, J. Lim¹ and J. Kim¹ *1. Hanyang University, Seoul, The Republic of Korea*

CK-07. The Influence of Winding Location in Flux-Switching Permanent-Magnet Machines. H. Zhang¹ and W. Hua¹ *1. Southeast University, Nanjing, China*

CK-08. Rotor Flux-Barriers Designs of Iron Loss Reduction in a Multi-layered IPM Machine for EV Applications. M. Sheng¹ *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

CK-09. Comparison of Unbalanced Force of BLDC Motor Considering the Number of Parallel Circuits, Y-and Δ-Connection. H. Lee¹, T. Bang¹, J. Choi¹, K. Shin¹ and S. Cho¹ *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

CK-10. High performance ferrite permanent magnet brushless machines. A.K. Shanshal¹, K. Hoang¹ and K. Atallah¹ *1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

WEDNESDAY
MORNING
9:30

EXHIBIT HALL A

Session CL
SOFT MAGNETIC COMPONENTS: ENERGY
HARVESTING AND ACOUSTICS
(Poster Session)

Julia Zhang, Chair
Ohio State University, Columbus, OH, United States

CL-01. Impulse magnetised magnetic screws. H.M. Mohamed¹ and K. Atallah¹ *1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

CL-02. Vibration-type energy harvester for wide frequency range using a Wiegand wire. H. Hoshiyama¹, T. Yamada¹ and Y. Takemura¹ *1. Electrical and Computer Engineering, Yokohama National University, Yokohama, Japan*

CL-03. A Helical Magnetic Millirobot with Object Delivery and Collect Mechanism Actuated by a Precession Rotating Magnetic Field. H. Lee¹, S. Lee¹, H. Cho¹, B. Kim¹ and S. Jeon¹ *1. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea*

- CL-04. Design of Lower Vibration Magnetically Controlled Reactor.** T. Ben¹, L. Chen¹, R. Yan², Q. Yang², Y. Huang¹, Z. Li¹ and S. Cheng¹ 1. College of Electrical Engineering and New Energy, China Three Gorges University, Yichang, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China
- CL-05. Single Domain Nanoparticle All-Magnetic Flux Transistor.** M. Barbic², R. Smith², V. Provenzano³ and H. ElBidiweihy¹ 1. Electrical and Computer Engineering Department, United States Naval Academy, Annapolis, MD, United States; 2. Applied Physics and Instrumentation Group, Howard Hughes Medical Institute - Janelia Research Campus, Ashburn, VA, United States; 3. National Institute of Standards and Technology, Gaithersburg, MD, United States
- CL-06. A Signal Generator Utilizing Magnetoelectric Laminate With Quartz Resonator.** J. Zhang¹, D. Chen¹, Q. Zhang¹, L. Jiang¹, X. Hang¹, K. Li¹, W. Zhu¹ and L. Cao¹ 1. Zhengzhou University of Light Industry, Zhengzhou, China
- CL-07. A New Simulation Method for Magnetic Devices with Nonlinear Oscillation.** Z. Wang¹, J. Hu¹, G. Zhao¹, Y. Ouyang¹, J. He¹ and S.X. Wang^{2,1} 1. Electrical Engineering, Tsinghua University, Beijing, China; 2. Center for Magnetic Nanotechnology, Stanford University, Palo Alto, CA, United States
- CL-08. 1D and 2D Magnetostrictive Actuators.** Y. Park¹, M.D. Noh¹ and S. Park¹ 1. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea
- CL-09. Dual Magnet Assembly for Enhanced Region of Detection in Portable NMR Applications.** N. Prabhu Gaunkar¹, T. Day¹, M. Mina^{1,2} and D.C. Jiles¹ 1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Industrial Design, Iowa State University, Ames, IA, United States
- CL-10. Magnetostrictive Energy Harvesting.** G. Backman¹, B.F. Lawton¹ and N. Morley¹ 1. Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom

WEDNESDAY
MORNING
9:30

EXHIBIT HALL A

Session CM
HIGH FREQUENCY AND MAGNETOELASTIC
EFFECTS FOR SENSOR DESIGN II
(Poster Session)

Hariharan Nhalil, Chair
Bar-Ilan University, Ramat-Gan, Israel

- CM-01. Magnetostrictive sensors for composite damage.** W.R. Holmes¹, J. Clarke¹, A.S. Padki¹, Z. Leong¹ and N. Morley¹ 1. Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom

- CM-02. A new type of highly sensitive inductive sensor integrating soft ferromagnetic wire with ribbon.** *V. Ortiz-Jimenez¹, T. Eggers¹, O. Thiabgoh¹ and M. Phan¹ 1. Physics, University of South Florida, Tampa, FL, United States*
- CM-03. Broadband microwave absorption of composite honeycomb sandwich structures based on magnetic absorbers.** *W. Gong¹, H. Luo¹, X. Wang¹ and R. Gong¹ 1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*
- CM-04. Numerical analysis of surface wave attenuation of two-layer microwave absorbing sheet.** *Y. Li¹, X. Wang¹, D. Li¹ and R. Gong¹ 1. Huazhong University of Science and Technology, Wuhan, China*
- CM-05. Magnetostrictive Tactile Sensor Based on Two-Dimensional Force Detection for Object Recognition.** *B. Zhang^{1,2}, B. Wang¹, Y. Li¹ and W. Huang¹ 1. Hebei University of Technology, Tianjin, China; 2. Henan University of Animal Husbandry and Economy, Zhengzhou, China*
- CM-06. Influence of Magnetic Field on Output Characteristics of Piezoresistive Silicon Nanowire Accelerometer.** *R. Yan^{1,2}, W. Zhao^{1,2}, X. Zhang^{1,2} and Z. Wu^{1,2} 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*
- CM-07. Magnetoelastic Modelling of the ΔE Effect for Sensor Application.** *B. Spetzler¹, A. Kittmann¹, C. Kirchhof¹, E. Quandt¹ and F. Faupel¹ 1. Kiel University, Kiel, Germany*
- CM-08. Microwave monolithic devices using hard-soft ferrite nanoparticles.** *V. Sharma¹ and B.K. Kuanr¹ 1. Special Centre for Nanoscience, Jawaharlal Nehru University, Delhi, India*
- CM-09. Three-Axis Microfluxgate with a Fluxguide.** *J. Jeng¹, C. Lu², H. Ku³ and X. Trinh¹ 1. Department of Mechanical Engineering, National Kaohsiung University of Science and Technology, Kaohsiung, Taiwan; 2. Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan; 3. Graduate Institute of Mechatronics Engineering, National Taipei University of Technology, Taipei, Taiwan*
- CM-10. Field Annealing of Flat Ring and Racetrack Cores for Fluxgate Sensors.** *V. Petrucha¹ 1. Faculty of Electrical Engineering, Department of Measurement, Czech Technical University in Prague, Prague, Czechia*

Session CN
CRITICAL PHENOMENA, f-ELECTRON MAGNETISM
AND ORGANIC MAGNETS
(Poster Session)

Kentaro Kitagawa, Chair
The University of Tokyo, Tokyo, Japan

- CN-01. Investigation of the structural and magnetic phase transition of Ga-doped $\text{Eu}_3\text{Ir}_4\text{Sn}_{13}$.** C. Adriano¹, R. Grossi¹, J.C. Souza¹, A.L. Ribeiro¹ and P. Pagliuso¹ *1. Physics, University of Campinas, Campinas, Brazil*
- CN-02. Dilution and Crystal Electric Field Effects on the Intermetallic $(\text{Y}_x\text{RE}_{1-x})\text{Ni}_3\text{Ga}$, (RE = Tb, Dy, Ho and Er) Compounds.** E. Mendonça¹, L. Silva², C.B. Jesus¹, J. Duque¹, D. Garcia³, J.C. Souza⁴ and P. Pagliuso⁴ *1. Física, Universidade Federal de Sergipe, São Cristóvão, Brazil; 2. Física, Instituto Federal de Tocantins - IFTO, Colinas do Tocantins, Brazil; 3. CONICET, Centro Atómico Bariloche, Bariloche, Argentina; 4. DEQ, UNICAMP, Campinas, Brazil*
- CN-03. Phase evolution of noncollinear spin textures in $\text{Cr}_{1/3}\text{NbS}_2$.** E. Clements¹, R. Das², L. Li⁴, V. Keppens³, D. Mandrus³, M. Osofsky⁵, H. Srikanth¹ and M. Phan¹ *1. Physics, University of South Florida, Tampa, FL, United States; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 3. Materials Science and Engineering, University of Tennessee Knoxville, Knoxville, TN, United States; 4. Chemical Sciences, Oak Ridge National Lab, Knoxville, TN, United States; 5. Naval Research Lab, Washington, DC, United States*
- CN-04. Orbital-Phonon Coupling in $\text{Ir}^{5+}(\text{5d}^4)$ Double Perovskite Ba_2YIrO_6 .** B. Singh¹, G.A. Cansever², T. Dey², A. Malyuk², S. Wurmehl^{2,3}, B. Büchner^{2,3} and P. Kumar¹ *1. School of Basic Sciences, Indian Institute of Technology, Mandi, Mandi, India; 2. Leibniz-Institute for Solid State and Materials Research, (IFW)-Dresden, Dresden, Germany; 3. Institute of Solid State Physics, TU Dresden, Dresden, Germany*
- CN-05. The phenomenological theory of the metal-insulator phase transition kinetics.** L. Dubovskii¹ *1. Theoretical Division, NRC "Kurchatov Institute", Moscow, Russian Federation*
- CN-06. Effects of Nd doping in CeMIn_5 (M = Rh and Ir): an NMR study.** P.E. Menegasso¹, T. Kissikov², Z. Wang², N. Curro², P. Pagliuso¹ and R.R. Urbano¹ *1. Department of Quantum Electronics, Unicamp, Campinas, Brazil; 2. Physics Institute, University of California, Davis, CA, United States*

CN-07. Complex high field phase of the Kondo-lattice CeRhIn₅ unveiled by NMR. G.G. Lesseux⁴, H. Sakai¹, Y. Tokunaga¹, S. Kambe¹, P. Kuhns², A. Reyes², J. Thompson³, P. Pagliuso⁴ and R.R. Urbano⁴ *1. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Japan; 2. NHMFL, Tallahassee, FL, United States; 3. LANL, Los Alamos, NM, United States; 4. Department of Quantum Eletronics, Unicamp, Campinas, Brazil*

CN-08. Magnetic Molecules Covalently Bound to Carbon Nanotubes for Single Molecule Spin State Detection. C. Besson¹, H. Flötotto², R. Frielinghaus³, A. Hucht⁴, P. Kögerler², J. König⁴, C. Ma¹, J. Maultzsch⁵, C. Meyer⁶, M. Schnee³, C.M. Schneider³, P. Stegmann⁴, A. Vierck⁷ and Z. Zanolli⁸
1. The George Washington University, Washington, DC, United States; 2. Institute of Inorganic Chemistry, RWTH Aachen University, Aachen, Germany; 3. Peter Gruenberg Institut (PGI-6), Forschungszentrum Juelich, Juelich, Germany; 4. Theoretische Physik, Universität Duisburg-Essen, Duisburg, Germany; 5. Department of Physics, Friedrich-Alexander University Erlangen-Nuernberg, Erlangen, Germany; 6. Fachbereich Physik, Universität Osnabrueck, Osnabrueck, Germany; 7. Institut für Festkörperphysik, Technische Universität Berlin, Berlin, Germany; 8. Institute for Theoretical Solid State Physics, RWTH Aachen University, Aachen, Germany

CN-09. Synchrotron radiation spectroscopy study of the spin-state transition in Prussian blue analogue: (Rb,Ba)Mn[Fe(CN)₆]. E. Lee¹, S. Seong¹, B. Kim³, B. Min³, S. Yusuf² and J. Kang¹
1. Physics, The Catholic University of Korea, Bucheon, The Republic of Korea; 2. Solid State Physics, Bhabha Atomic Research Centre, Mumbai, India; 3. Physics, POSTECH, Pohang, The Republic of Korea

CN-10. Refinement of synthetic guanine crystals for fast diamagnetic rotation. A. Mootha¹, K. Suzuki², T. Kimura³, M. Kurahashi³, H. Asada³ and M. Iwasaka¹ *1. Hiroshima University, Higashihiroshima, Japan; 2. Kanagawa University, Hiratsuka, Japan; 3. Yamaguchi University, Ube, Japan*

WEDNESDAY
MORNING
9:30

EXHIBIT HALL A

Session CO BIOMATERIALS AND TRANSCRANIAL STIMULATION (Poster Session)

Sahar Jafari, Chair

Weinberg Medical Physics, Inc., Germantown, MD, United States

CO-01. Magnetically induced flickering change in light-reflecting cuticles of the butterfly Common Bluebottle *Graphium sarpedon*. M. Iwasaka¹, H. Asada² and Y. Oba³ *1. Hiroshima University, Higashihiroshima, Japan; 2. Yamaguchi University, Ube, Japan; 3. Chubu University, Kasugai, Japan*

- CO-02. Three-dimensional magnetic orientation control of ferromagnetic film/guanine crystal hybrid plate.** *T. Sogame¹, M. Kurahashi¹, E. Muneyama¹, M. Iwasaka², K. Kishimoto¹, T. Koyanagi¹ and H. Asada¹* *1. Yamaguchi University, Ube, Japan; 2. Hiroshima University, Higashi-Hiroshima, Japan*
- CO-03. The behavior of monosodium urate crystals as highly viscous suspension modeled synovial fluid.** *Y. Takeuchi¹, A. Hamasaki², M. Iwasaka³ and M. Matsuda¹* *1. Muroran Institute of Technology, Muroran, Japan; 2. Faculty of Science, Shinshu University, Matsumoto, Japan; 3. RNBS, Hiroshima University, Higashi-Hiroshima, Japan*
- CO-04. Advanced Processing of Bio-Inspired Magnetic Metamaterials.** *E.L. Martin¹, M.T. Bryan¹, S. Pagliara² and F.Y. Ogrin¹* *1. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Living Systems Institute, University of Exeter, Exeter, United Kingdom*
- CO-05. Control of light reflection angle of guanine crystals by utilizing nonuniform magnetic field.** *K. Deguchi¹, E. Muneyama¹, M. Iwasaka² and H. Asada¹* *1. Yamaguchi University, Ube, Japan; 2. Hiroshima University, Higashi-Hiroshima, Japan*
- CO-06. Effect of Brain Scalp Distance on the Stimulated Brain Volume of Schizophrenia Brain Models During Transcranial Magnetic Stimulation.** *E. Cheng², J.R. Germick³, A. Pandurangi⁴, D.C. Jiles³ and R.L. Hadimani¹* *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 3. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 4. Department of Psychiatry, Virginia Commonwealth University, Richmond, VA, United States*
- CO-07. 3D Modeling of Diffusion Tensor Imaging Tractography Data for Finite Element Analysis of Transcranial Magnetic Stimulation.** *J. Mak¹, F. Syeda² and R.L. Hadimani²* *1. Biomedical Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States*
- CO-08. The Influence of Magnetic Field Orientation on the Growth of Neurite Extensions of NGF Differentiated PC-12 Neuronal Cells.** *J. Boldrey², L. Que², I. Schneider¹ and D.C. Jiles²* *1. Chemical and Biological Engineering, Iowa State University, Ames, IA, United States; 2. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*
- CO-09. The Influence of Pulsed Magnetic Fields on the Proliferation of Adherent and Non-Adherent Neuronal Cell Types.** *J. Boldrey¹, X. Zhong¹, L. Que¹, I. Schneider² and D.C. Jiles¹* *1. Electrical and Computer Engineering, Iowa State University, Ames, IA, United States; 2. Chemical and Biological Engineering, Iowa State University, Ames, IA, United States*

- CO-10. New Motor Pathway Model to Study Effect of Transcranial Magnetic Stimulation for Treatment of Parkinson's Disease.** F. Syeda¹, D. Kumbhare^{2,3}, M.S. Baron⁴ and R.L. Hadimani¹
1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Department of Neurosurgery, Virginia Commonwealth University, Richmond, VA, United States; 3. McGuire Research Institute, Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA, United States; 4. Southeast Parkinson's Disease Research, Education and Clinical Center, Hunter Holmes McGuire Veterans Affairs Medical Center, Richmond, VA, United States

WEDNESDAY
 MORNING
 9:30

EXHIBIT HALL A

Session CP
2D MATERIALS AND MAGNETIC
SEMICONDUCTORS
(Poster Session)

Binod Rai, Chair
 Oak Ridge National Lab, Oak Ridge, TN, United States

- CP-01. Growth and Magnetic Properties of Fe₃Se₄ Thin Films.** Y. Li^{1,2}, F. Sun², C. Zhao², L. Cheng³, H. Ren³, G. Miao³, S. Yang¹ and H. Zeng² *1. Xi'an Jiaotong University, Xi'an, China; 2. University at Buffalo, Buffalo, NY, United States; 3. University of Waterloo, Waterloo, ON, Canada*
- CP-02. Electron Spin Resonance Properties of CrI₃ and CrCl₃ Single Crystals.** A. Cosio¹, L.M. Martinez¹, C.L. Saiz¹, M. McGuire², J. van Tol³ and S. Singamaneni¹ *1. Physics, University of Texas at El Paso, El Paso, TX, United States; 2. Material Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 3. National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, United States*
- CP-03. Magneto-transport properties of Ga_{0.94}Mn_{0.06}As_{1-x}P_x films grown by molecular beam epitaxy.** S. Dong¹, X. Li¹, X. Liu¹, S. Bac^{1,2}, S. Lee², M. Dobrowolska¹, R. Zheng^{3,4} and J. Furdyna¹
1. Department of Physics, University of Notre Dame, Notre Dame, IN, United States; 2. Physics Department, Korea University, Seoul, The Republic of Korea; 3. School of Materials Science and Engineering, Nanchang University, Nanchang, China; 4. Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China
- CP-04. Solvent-less Redox Synthesis of Nanostructured Rare-earth Nitrides: Magnetism, and Opportunities for New Higher-order Nitrides.** S. Gupta¹, Y. Mudryk¹ and V.K. Pecharsky¹
1. Division of Materials Science and enigneerig, Ames Laboratory, Ames, IA, United States
- CP-05. Static and Dynamic Magnetic Response of Ni doped 3C-SiC.** G.P. Moharana¹, S. Singh² and H. Narayanan¹ *1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. CSIR Innovation Centre For Plasma Processing, Bhubaneswar, India*

- CP-06. Possible Contribution of p-Electrons in the Dirac Cone of Topological Insulator Bi_2Se_3 Probed by Frequency Dependent Electron Spin Resonance.** *J.C. Souza¹, G.G. Lesseux², C. Adriano¹, R.R. Urbano¹, C. Rettori^{1,3} and P. Pagliuso¹* 1. IFGW, Unicamp, Campinas, Brazil; 2. 1. Physikalisches Institut, Universität Stuttgart, Stuttgart, Germany; 3. Natural and Humans Science Center, UFABC, Santo Andre, Brazil
- CP-07. Anomalous Hall Effect in a Magnetic Topological Insulator $(\text{Bi}_{1-x}\text{Mn}_x)_2\text{Te}_3$.** A. Pilidi¹ and T. Speliotis¹ 1. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece
- CP-08. Magnetic Properties of Proton Irradiated van der Waals crystals.** *L.M. Martinez¹, A. Cosio¹, C.L. Saiz¹, Y. Liu², C. Petrovic², L. Shao³ and S. Singamaneni¹* 1. Physics, University of Texas at El Paso, El Paso, TX, United States; 2. Condensed Matter Physics and Materials Science, Brookhaven National Laboratory, Upton, NY, United States; 3. Nuclear Engineering, Texas A&M University, College Station, TX, United States
- CP-09. Strong room temperature ferromagnetism observed in Gd doped ZnO films.** *H. Zhang¹, J. Wang^{3,4}, J. Du^{3,4} and Q. Xu^{2,3}* 1. School of Mechanical Engineering, North University of China, Taiyuan, China; 2. School of Physics, Southeast University, Nanjing, China; 3. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, China; 4. Department of Physics, Nanjing University, Nanjing, China
- CP-10. High throughput screening for spin gapless semiconductors and thermoelectric materials in quaternary Heusler compounds.** *H. Zhang¹, Q. Gao¹, T. Lin¹ and I. Opahle¹* 1. Institute of Materials Science, TU Darmstadt, Darmstadt, Germany

WEDNESDAY
MORNING
9:30

EXHIBIT HALL A

Session CQ

BIT PATTERNED MEDIA & PERPENDICULAR MAGNETIC RECORDING (Poster Session)

Nobuaki Kikuchi, Chair
IMRAM Tohoku University, Sendai, Japan

- CQ-01. Performance evaluation of LDPC coding and iterative decoding system for three-dimensional magnetic recording with dot position fluctuation.** *K. Masuda¹, Y. Nakamura¹, M. Nishikawa¹ and Y. Okamoto¹* 1. Graduate School of Science and Engineering, Ehime University, Matsuyama, Japan
- CQ-02. Mitigating the Effects of Track Mis-Registration in Single Reader/Two-Track Reading (SRTR) BPMR Systems.** *C. Warisarn¹* 1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand

- CQ-03. Modified 2D Viterbi Algorithm using 2D Modulation Encoding Constraint in Bit-Patterned Magnetic Recording.** T. Chumpuwiset¹, C. Warisarn¹, L.M. Myint³, S. Koonkarnkhai² and P. Kovintavewat² 1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand; 3. Shinawatra University, Pathum Thani, Thailand
- CQ-04. Two-Dimensional Magnetic Mesocrystals for Bit Patterned Media.** S. Guo^{1,2}, B. Wang¹ and R. Li¹ 1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 2. University of Chinese Academy of Sciences, Beijing, China
- CQ-05. A Study on Iterative Decoding with LLR Modulator Using Neural Network in SMR System.** M. Nishikawa¹, Y. Nakamura¹, Y. Okamoto¹, H. Osawa¹ and Y. Kanai² 1. Ehime University, Matsuyama, Japan; 2. Niigata Institute of Technology, Kashiwazaki, Japan
- CQ-06. Multi-Path Concatenated LDPC Coding Scheme for Staggered Bit Patterned Media Recording.** S. Jeong¹ and J. Lee¹ 1. Dept. of ICMC Convergence Technology, Soongsil University, Seoul, The Republic of Korea
- CQ-07. MnGa (001) textured film fabricated on Si substrate for application to ion beam bit patterned media.** T. Ishikawa¹, Y. Miwa², D. Oshima³, T. Kato² and S. Iwata³ 1. Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan; 2. Department of Electronics, Nagoya University, Nagoya, Japan; 3. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan
- CQ-08. A Detection Scheme with Track Mis-Registration Estimation Based on Multi-Layer Perceptrons for Bit Patterned Media Recoding.** S. Han¹, G. Kong¹ and S. Choi¹ 1. Yonsei University, Seoul, The Republic of Korea
- CQ-09. Proposal of granular-type capping layer with high K_u CoPt grains and ferromagnetic oxide grain boundaries for perpendicular magnetic recording media.** K. Tham¹, R. Kushibiki¹, T. Kamada¹ and S. Saito² 1. Tanaka Kikinzoku Kogyo, Tsukuba, Japan; 2. Tohoku University, Sendai, Japan
- CQ-10. Perpendicular Exchange Bias in (Co/Pt)_n Multilayers.** K. Elphick¹, G. Vallejo-Fernandez² and K. O'Grady² 1. Electronics Engineering, University of York, York, United Kingdom; 2. Physics, University of York, York, United Kingdom

Session CR
SPINWAVES
(Poster Session)

Liza Herrera Diez, Co-Chair
CNRS, University of Paris-Sud, Orsay, France
Hans Nembach, Co-Chair
NIST, Boulder, CO, United States

- CR-01. Excitation of Propagating Spin Waves by Nonlocal Spin Injection.** *B. Divinskiy¹, V.E. Demidov¹, S.O. Demokritov¹ and S. Urazhdin²* *1. Institute for Applied Physics, University of Muenster, Muenster, Germany; 2. Department of Physics, Emory University, Atlanta, GA, United States*
- CR-02. Withdrawn**
- CR-03. Manipulation of propagating Spin Waves by local magnetic fields.** *Z. Zhang^{1,2}, J. Ding², M. Jungfleisch³, Y. Li², M. Vogel², J. Pearson², R. Divan⁴, A. Hoffmann², Y. Nie¹ and V. Novosad²* *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States; 4. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States*
- CR-04. Spin-wave modes in Permalloy line and antidot arrays.** *A.S. Silva¹, A. Hierro-Rodriguez², S. Bunyayev¹, G.N. Kakazei¹, C. Redondo³, R. Morales^{4,5}, H. Crespo¹ and D. Navas¹* *1. IFIMUP-IN and Department of Physics and Astronomy, Faculdade de Ciências da Universidade do Porto, Porto, Portugal; 2. SUPA, School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. Department of Chemical-Physics, University of the Basque Country, Leioa, Spain; 4. Department of Chemical-Physics & BCMaterials, University of the Basque Country & BCMaterials, Leioa, Spain; 5. Ikerbasque, Basque Foundation for Science, Bilbao, Spain*
- CR-05. Local probe of spin wave signal in antidot stripes using micro-focused Brillouin light scattering spectroscopy.** *C. Tian¹ and A. Adeyeye¹* *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*
- CR-06. 3D FDTD-LLG modelling of magnetisation dynamics in thin film ferromagnetic structures.** *F.Y. Ogrin¹, T. Manago² and S. Grishin³* *1. University of Exeter, Exeter, United Kingdom; 2. Fukuoka University, Fukuoka, Japan; 3. Saratov State University, Saratov, Russian Federation*
- CR-07. Withdrawn**
- CR-08. Magnonic Spectra of Spin Wave in Antiferromagnetic Skyrmion Crystals.** *F. Ma¹, X. Jin¹ and Y. Li¹* *1. School of Physics and Technology, Nanjing Normal University, Nanjing, China*

CR-09. Scattering of Spin Waves on Surfaces of Cylindrical and Spherical Spin Lenses with Inhomogeneous Coupling in Interfaces. *S. Reshetniak^{1,2} and A. Kutrayeva¹ 1. Faculty of Physics and Mathematics, National Technical University of Ukraine Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine; 2. Institute of Magnetism of NAS and MES of Ukraine, Kyiv, Ukraine*

CR-10. Scanning Transmission X-Ray Microscopy of Spin Waves in Permalloy. *F. Gross¹, N. Traeger¹, M. Weigand¹, G.A. Schütz¹ and J. Gräfe¹ 1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

WEDNESDAY
MORNING
9:30

EXHIBIT HALL A

Session CS
MAGNETIC SENSORS AND DEVICES
(Poster Session)

Matthew Bryan, Chair
University of Exeter, Exeter, United Kingdom

- CS-01. Wireless power transmission for implantable medical devices using a Wiegand pulse in magnetic wires.** *K. Takahashi¹, T. Yamada¹ and Y. Takemura¹ 1. Electrical and Computer Engineering, Yokohama National University, Yokohama, Japan*
- CS-02. Visual Event-Related Fields (ERFs) Measurements via Peak to Peak Voltage Detector Type MI Sensor system.** *J. Ma¹ and T. Uchiyama¹ 1. Graduate School of Engineering, Nagoya University, Nagoya, Japan*
- CS-03. Orientation monitoring of flexible composite magnet for catheter tip localization.** *L. Swanepoel¹, A. Kaidarova¹, A. Almansouri¹, M. Khan¹ and J. Kosel¹ 1. CEMSE, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*
- CS-04. Resonance and contact angle properties of the magnetic-field-controlled droplet.** *C. Li¹, B. Chen¹, Y. He¹, H. Huang² and Z. Wei² 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. NanoEngineering and MicroSystems, National Tsing Hua University, Hsinchu, Taiwan*
- CS-05. Development of a Multi-Modular Helical Magnetic Millirobot with High Stability and Mobility in Narrow and Curved Tubular Environments.** *S. Lee¹, H. Lee¹, S. Kang¹, K. Lee¹ and S. Jeon¹ 1. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea*
- CS-06. Magnetic Self-Assembly and Disassembly of a Multi-Modular Magnetic Millirobot with a Head-to-Tail Chain Structure.** *S. Jeon¹, H. Lee¹ and S. Lee¹ 1. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea*

- CS-07. Iron Oxide and Gold Magneto-Plasmonic Nanoclusters for Biomedical Applications.** *S. Pourmiri¹, V. Tzitzios² and G. Hadjipanayis¹* 1. *Department of Physics and Astronomy, University of Delaware, Newark, DE, United States;* 2. *Department of Chemical Engineering, Khalifa University of Science and Technology, Abu Dhabi, United Arab Emirates*
- CS-08. Investigating the role of coil designs and anatomical variations in cerebellar TMS.** *X. Zhong¹, P. Rastogi¹, E.G. Lee² and D.C. Jiles¹* 1. *Department of Electrical and Computer Engineering, Iowa State University, Ames, IA, United States;* 2. *Department of Psychiatry, Massachusetts General Hospital, Charlestown, MA, United States*

WEDNESDAY
AFTERNOON
1:30

SALON 2

Session DA VOLTAGE-CONTROLLED MAGNETIC ANISOTROPY AND SWITCHING II

Amal El-Ghazaly, Chair
University of California - Berkeley, Berkeley, CA, United States

1:30

- DA-01. Control of Vortex Core Dynamics with Electric Field Induced Strain.** *M. Filianina^{1,2}, L. Baldrati¹, T. Hajiri³, K. Litzius^{1,4}, L. Aballe⁵, M. Foerster⁵ and M. Kläui^{1,2}* 1. *Johannes Gutenberg University, Mainz, Germany;* 2. *Graduate School of Excellence Material Science in Mainz, Mainz, Germany;* 3. *Department of Materials Physics, Nagoya University, Nagoya, Japan;* 4. *Max Planck Institute for Intelligent Systems, Stuttgart, Germany;* 5. *ALBA Synchrotron Light Facility, Barcelona, Spain*

1:42

- DA-02. Spatially Resolved Electric-Field Control of Magnetism in Mesoscopic Multiferroic Heterostructures.** *Y. Bai^{1,8}, Y. Liu^{1,2}, P. Li^{1,3}, L. Wu⁴, J. Unguris⁵, D. Pierce⁵, D. Yang⁶, C. Feng^{1,8}, Y. Zhang^{1,8}, H. Wu⁷, D. Li⁷, Y. Chang⁷, J. Zhang⁶, X. Han⁷, J. Cai⁷, C. Nan⁴ and Y. Zhao^{1,8}* 1. *Physics, Tsinghua University, Beijing, China;* 2. *Key Laboratory of Space Utilization, Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, Beijing, China;* 3. *College of Mechatronics and Automation, National University of Defense Technology, Changsha, China;* 4. *School of Materials Science and Engineering and State Key Lab of New Ceramics and Fine Processing, Tsinghua University, Beijing, China;* 5. *Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States;* 6. *Department of Physics, Beijing Normal University, Beijing, China;* 7. *Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Beijing, China;* 8. *State Key Laboratory of Low-Dimensional Quantum Physics, Tsinghua University, Beijing, China*

- DA-03. Highly efficient magneto-ionic control of interfacial magnetism using yttria-stabilized zirconia gate oxide.** S. Jo¹, J. Park², A. Tan³, H. Ji², J. Son², G. Beach³ and S. Woo¹ *1. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. High Temperature Energy Materials Research Center, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States*

- DA-04. Voltage-controlled magnetic anisotropy and voltage-induced Dzyaloshinskii-Moriya interaction change in Fe, Co, Ni and Pd.** J. Suwardy¹, K. Nawaoka¹, M. Goto^{1,2}, Y. Suzuki^{1,2} and S. Miwa^{1,3} *1. Engineering Science, Osaka University Graduate School, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 3. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan*

- DA-05. Non volatile ionic control of Dzyaloshinskii Moriya Interaction in Pt/Co/HfO₂.** L. Herrera Diez¹, Y. Liu¹, M. Belmeguenai², S. Pizzini³, D.A. Gilbert⁴, Y. Roussigné², J. Vogel³, S. Ono⁵, J. Langer⁶, B. Ocker⁶, E. Fullerton⁷ and D. Ravelosona¹ *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 2. Laboratoire des Sciences des Procédés et des Matériaux, Université Paris 13 Nord, Villetaneuse, France; 3. Université Grenoble Alpes, CNRS, Institut Néel, Grenoble, France; 4. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 5. Central Research Institute of Electric Power Industry, Tokyo, Japan; 6. Singulus Technology AG, Kahl am Main, Germany; 7. Center for Magnetic Recording Research, University of California-San Diego, La Jolla, CA, United States*

- DA-06. Non-volatile ferroelastic switching of an antiferromagnet.** X. Chen¹, X. Zhou¹, R. Cheng², J. Zhang³, C. Song¹, Y. Zhao¹ and F. Pan¹ *1. Tsinghua University, Beijing, China; 2. University of California, Riverside, California, CA, United States; 3. Huazhong University of Science and Technology, Wuhan, China*

- DA-07. A materials design framework for high-performance magnetic memory devices based on experimental element distribution analysis.** X. Li^{1,2}, T. Sasaki³, C. Grezes¹, D. Wu^{4,1}, K. Wong¹, C. Bi^{5,2}, N. Kioussis⁶, W. Wang⁵, Z. Zhang⁴, T. Ohkubo³, K. Hono³, P. Khalili^{1,7} and K. Wang¹ *1. Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Materials Science and Engineering, Stanford University, Stanford, CA, United States; 3. National Institute of Materials Science, Tsukuba, Japan; 4. Optical Science and Engineering, Fudan University, Shanghai, China; 5. Physics, University of Arizona, Tucson, AZ, United States; 6. Physics and Astronomy, California State University Northridge, Northridge, CA, United States; 7. Electrical Engineering and Computer Science, Northwestern University, Evanston, IL, United States*

2:54

DA-08. Withdrawn

3:06

- DA-09. Picosecond Electric-Field-Induced Switching of Antiferromagnets.** *V. Lopez*¹, H. Almasi¹ and P. Khalili Amiri¹
1. Electrical Engineering and Computer Science, Northwestern University, Evanston, IL, United States

WEDNESDAY
AFTERNOON
1:30

SALON 3

Session DB
ULTRAFAST DYNAMICS

Rajasekhar Medapalli, Chair
University of California - San Diego, La Jolla, CA, United States

1:30

- DB-01. Spin-current-mediated rapid magnon localisation and coalescence after ultrafast optical pumping of ferrimagnetic alloys. (Invited)** *E. Iacocca*^{1,2}, T. Liu³, A. Reid³, Z. Fu⁴, A. Kimel⁵, A. Kirilyuk⁵, T. Rasing⁵, T.A. Ostler⁶, R.W. Chantrell⁷, M. Hofer¹, T. Silva² and H. Durr⁸
1. Applied Mathematics, University of Colorado, Boulder, CO, United States; 2. NIST, Boulder, CO, United States; 3. SLAC National Accelerator Laboratory, Menlo Park, CA, United States; 4. Tongji University, Shanghai, China; 5. Radboud University, Nijmegen, Netherlands; 6. Sheffield Hallam University, Sheffield, United Kingdom; 7. University of York, York, United Kingdom; 8. Uppsala University, Uppsala, Sweden

2:06

- DB-02. Ultrafast domain wall propagation in ferrimagnets by spin-orbit torques.** *K. Cai*¹, R. Mishra¹, L. Ren¹, Z. Zhu¹, G. Liang¹, K.L. Teo¹ and H. Yang¹
1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore

2:18

- DB-03. Coherent Control of Ultrafast Photo-Magnetic Recording in Iron Garnets.** *K. Szerenos*¹, A. Stupakiewicz², A. Kimel¹ and A. Kirilyuk¹
1. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 2. Faculty of Physics, University of Bialystok, Bialystok, Poland

2:30

- DB-04. Time-resolved observation of THz driven magnetic switching in an antiferromagnet.** *S. Schlauderer¹, C. Lange¹, S. Baierl¹, T. Ebnet¹, A.K. Zvezdin^{2,3}, A. Kimmel^{4,5}, R. Mikhaylovskiy⁴ and R. Huber¹* *1. Physics, University of Regensburg, Regensburg, Germany; 2. Prokhorov General Physics Institute and P.N. Lebedev Physical Institute, Moscow, Russian Federation; 3. Moscow Institute of Physics and Technology (State University), Dolgoprudny, Russian Federation; 4. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 5. Moscow Technological University (MIREA), Moscow, Russian Federation*

2:42

- DB-05. Composition- and magnetic-field-dependent THz emission of spintronic TbFe/Pt layers.** *R. Schneider¹, M. Fix², R. Heming¹, S. Michaelis de Vasconcellos¹, M. Albrecht² and R. Bratschitsch¹* *1. Institute of Physics and Center for Nanotechnology, University of Münster, Münster, Germany; 2. Institute of Physics, University of Augsburg, Augsburg, Germany*

2:54

- DB-06. Macromagnetic Simulation of THz signals in antiferromagnetic FeRh by ultrafast thermal pulses.** *M. Menarini¹, R. Medapalli¹, E. Fullerton¹ and V. Lomakin¹* *1. University of California San Diego, La Jolla, CA, United States*

3:06

- DB-07. The role of Cu₄ spin cluster excitations in photo-induced melting of chiral magnetic order in Cu₂OSeO₃.** *R.B. Versteeg¹, J. Zhu¹, F. Sekiguchi¹, C. Boguschewski¹, A. Saharashbudhe¹, K. Budzinauskas¹, P. Becker² and P.H. van Loosdrecht¹* *1. Institute of Physics II, University of Cologne, Cologne, Germany; 2. Institute of Geology and Mineralogy, Section of Crystallography, University of Cologne, Cologne, Germany*

WEDNESDAY
AFTERNOON
1:30

SALON 1

Session DC
THERMAL SPIN PHYSICS AND
MAGNETOTHERMOELECTRIC EFFECTS

Barry Zink, Chair
University of Denver, Denver, CO, United States

1:30

- DC-01. Thermal spin-orbit torque induced by spin Nernst effect in W/CoFeB/MgO structures.** *J. Kim¹, D. Kim¹ and B. Park¹* *1. KAIST, Daejeon, The Republic of Korea*

1:42

DC-02. Thermal Excitation Magnonic Spin Current by Light.

Y. Chen¹ and S. Huang¹ 1. Physics, National Taiwan University, Taipei, Taiwan

1:54

DC-03. Visualization of Surface Spin-Flop Transition in $\text{Y}_3\text{Fe}_5\text{O}_{12}$.

P. Wu¹, Y. Chan², T. Hung², Y. Zhang², T. Chuang² and S. Huang¹ 1. Physics, National Taiwan University, Taipei, Taiwan; 2. Physics, Academia Sinica, Taipei, Taiwan

2:06

DC-04. Spin torque nano-oscillator with tunable perpendicular anisotropy.

C.J. Safranski¹, E.A. Montoya¹, A. Smith¹, J. Chen¹ and I. Krivorotov¹ 1. Physics and Astronomy, University of California Irvine, Irvine, CA, United States

2:18

DC-05. Investigation of the Nernst Effect in Magnetically Coupled Co/Au/Fe Multilayer.

H. Sharma^{1,2} and M. Mizuguchi^{1,2} 1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. CREST, Japan Science and Technology Agency, Kawaguchi, Japan

2:30

DC-06. Thermodynamic Characteristics of Magnons Driven by the Spin-Orbit Torque.

V.E. Demidov¹, S. Urazhdin², B. Divinskiy¹ and S.O. Demokritov¹ 1. University of Muenster, Muenster, Germany; 2. Emory University, Atlanta, GA, United States

2:42

DC-07. Observation of anisotropic magneto-Peltier effect. (Invited)

K. Uchida¹ 1. National Institute for Materials Science, Tsukuba, Japan

WEDNESDAY
AFTERNOON
1:30

MARYLAND

Session DD

NEW COUPLED MAGNETIC PHENOMENA

Don Heiman, Chair

Northeastern University, Boston, MA, United States

1:30

DD-01. Magnetism and magnetic structures in the NCS compounds

ScTGe (T = Mn, Fe). (Invited) *A. Provino^{1,2}, C. Ritter³, S.K. Dhar⁴ and P. Manfrinetti^{1,2} 1. Institute SPIN, CNR, Genova, Italy; 2. Department of Chemistry, University of Genova, Genova, Italy; 3. Institute Laue-Langevin, ILL, Grenoble, France; 4. Department of Condensed Matter Physics & Material Science, TIFR, Mumbai, India*

DD-02. Withdrawn

- DD-03. Magnon-photon coupling between a superconducting resonator and a thin film permalloy stripe.** *Y. Li^{1,2}, T. Polakovic^{3,4}, Y. Wang², J. Xu^{2,5}, S. Lendinez², Z. Zhang^{2,6}, J. Ding², T. Khair², H. Saglam², R. Divan⁷, J. Pearson², W. Kwok², Z. Xiao^{2,5}, V. Novosad², A. Hoffmann² and W. Zhang^{1,2}* *1. Oakland University, Rochester, MI, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Physics Division, Argonne National Laboratory, Lemont, IL, United States; 4. Drexel University, Philadelphia, PA, United States; 5. North Illinois University, DeKalb, IL, United States; 6. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 7. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL, United States*

- DD-04. Chiral surface and edge plasmons in ferromagnetic conductors.** *S. Zhang^{1,2} and G. Vignale²* *1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Department of Physics and Astronomy, University of Missouri, Columbia, MO, United States*

- DD-05. Influence of seed layers on the location and shape of the 0- π transition in the Fe material system.** *N. Siwak¹, T. Ambrose¹, I. Dayton¹, H.K. Ermer¹, E.C. Gingrich¹, S. Keebaugh¹, M. Loving¹, D. Miller¹, N. Rizzo¹, A. Sidorov¹ and O. Naaman¹* *1. Advanced Concepts & Technologies, Northrop Grumman Corporation, Linthicum, MD, United States*

DD-06. Withdrawn

- DD-07. Unusual evolution of the magnetism in nanocrystalline $\text{BaCo}_{1-x}\text{Mn}_x\text{O}_{3-\delta}$ ($0 < x < 0.5$).** *A. Kumar¹ and R.N. Mahato¹* *1. School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India*

Session DE
COMPLEX OXIDES

Jeffrey Lynn, Chair
NIST, Gaithersburg, MD, United States

1:30

- DE-01. Magneto-optical Properties of Fe-doped CuAlO_2 .** *M. Aziziha*¹, R. Beesley¹, S.A. Byard^{1,2}, J.P. Lewis¹, M.S. Seehra¹ and M.B. Johnson¹ *1. Department of Physics and Astronomy, West Virginia University, Morgantown, WV, United States; 2. Department of Physics, Grove City College, Grove City, PA, United States*

1:42

- DE-02. Kondo effect and spin orbit interaction in $\text{LaTiO}_3/\text{CeTiO}_3/\text{SrTiO}_3$ heterostructure.** *P. Ghising*¹, D. Das¹, S. Das^{1,2} and Z. Hossain¹ *1. Physics, Indian Institute of Technology, Kanpur, Kanpur, India; 2. Physics, Nano-Magnetism Research Center, Institute of Nanotechnology and Advanced Materials, Bar-Ilan University, Ramat-Gan 52900, Israel, Israel*

1:54

- DE-03. Controlling magnetocrystalline anisotropy of $\epsilon\text{-Fe}_2\text{O}_3$.** *I. Ahamed*¹, R. Skomski² and A. Kashyap¹ *1. School of Basic Sciences, Indian Institute of Technology, Mandi, India; 2. Nebraska Center for Materials and Nanoscience & Department of Physics and Astronomy, University of Nebraska, University of Nebraska, Lincoln, NE, United States*

2:06

- DE-04. Colossal Magnetoresistance in EuTiO_{3-d} .** *K. Rubi*¹ and R. Mahendiran¹ *1. Physics, National University of Singapore, Singapore, Singapore*

2:18

- DE-05. Study of magnetic phase transition in LaCoO_3 and $\text{La}_{0.7}\text{Sr}_{0.3}\text{CoO}_3$ thin films grown by pulsed laser deposition.** *T. Joshi*¹, D. Belanger¹ and D. Lederman¹ *1. Physics, University of California, Santa Cruz, Santa Cruz, CA, United States*

2:30

- DE-06. Stabilization of $\text{Sr}_{0.6}\text{Ba}_{0.4}\text{MnO}_3$ thin films and modulation in magnetic behaviour.** *R. Rawat*¹, G. Panchal¹, S. Choudhary¹, A. Jana¹, R. Choudhary¹ and D. Phase¹ *1. Department of Condensed Matter Physics, UGC DAE Consortium for Scientific Research, Indore, India*

2:42

- DE-07. Interfacial Ferromagnetism and Exchange Bias in $\text{NdNiO}_3/\text{NdMnO}_3$ Multilayers.** *H. S*¹, M. Chandra¹ and K. Mavani¹ *1. Discipline of Physics, Indian Institute of Technology (IIT) Indore, Simrol, India*

2:54

- DE-08. Interfacial control of chiral magnetism in iridate-manganite superlattices.** *E. Skoropata*¹, J. Nichols¹, A. Rastogi¹, C. Sohn¹, R.D. Desautels¹, X. Gao¹, S. Okamoto¹ and H. Lee¹ *1. Oak Ridge National Laboratory, Oak Ridge, TN, United States*

3:06

- DE-09. Incommensurate Helical Magnetism in Epitaxial SrFeO₃ and CaFeO₃ Heterostructures.** *P.C. Rogge*¹, R.J. Green^{2,3} and S.J. May¹ *1. Materials Science and Engineering, Drexel University, Philadelphia, PA, United States; 2. Stewart Blusson Quantum Matter Institute, University of British Columbia, Vancouver, BC, Canada; 3. Department of Physics and Engineering Physics, University of Saskatchewan, Saskatoon, SK, Canada*

WEDNESDAY
AFTERNOON
1:30

DELAWARE

Session DF
HIGHLY FRUSTRATED MAGNETISM
AND SPIN GLASSES I

Bruce Gaulin, Chair
McMaster University, Hamilton, ON, Canada

1:30

- DF-01. Amplitude Mode in the Planar Triangular Antiferromagnet α -NaMnO₂. (Invited)** *R. Dally*^{1,2}, Y. Zhao^{3,4}, Z. Xu^{3,4}, R. Chisnell³, M. Stone⁵, J.W. Lynn³, L. Balents⁶ and S.D. Wilson¹ *1. Materials Department, University of California, Santa Barbara, Santa Barbara, CA, United States; 2. Physics Department, Boston College, Chestnut Hill, MA, United States; 3. NIST Center for Neutron Research, Gaithersburg, MD, United States; 4. Materials Science and Engineering, University of Maryland, College Park, MD, United States; 5. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 6. Kavli Institute for Theoretical Physics, University of California, Santa Barbara, Santa Barbara, CA, United States*

2:06

- DF-02. Nanoscale Control of Competing Interactions and Geometrical Frustration in a Dipolar Trident Lattice.** *A. Farhan*^{1,2}, C.F. Petersen³, S. Dhuey¹, L. Anghinolfi⁴, Q. Qin³, M.D. Saccone⁵, S. Velten¹, C. Wuth¹, S. Gliga⁶, P. Mellado⁷, M. Alava³, A. Scholl¹ and S. van Dijken³ *1. Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA, United States; 2. Paul Scherrer Institute, Villigen, Switzerland; 3. Aalto University, Espoo, Finland; 4. Università di Genova, Genova, Italy; 5. University of California Santa Cruz, Santa Cruz, CA, United States; 6. University of Glasgow, Glasgow, United Kingdom; 7. Adolfo Ibáñez University, Santiago, Chile*

2:18

- DF-03. Anomalous nano-magnetic effects in non-collinear spinel chromite NiCr_2O_4 .** *A. Rathi*¹, *P. Babu*², *P. Rout*¹, *V. Awana*¹, *R. Pant*¹ and *G. Basheed*¹ *1. CSIR-National Physical Laboratory (NPL), New Delhi, India; 2. UGC-DAE Consortium for Scientific Research, B. A. R. C., Mumbai, India*

2:30

- DF-04. A magnetic study of spin reorientation transition in lanthanum doped DyFeO_3 .** *C. Reddy*¹, *S. Reddy*², *P. Reddy*³ and *V. Reddy*⁴ *1. Physics, Osmania University, Hyderabad, India; 2. Physics, Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad, India; 3. Physics, Osmania University, Hyderabad, India; 4. UGC-DAE Consortium for Scientific Research, Indore, India*

2:42

- DF-05. Tuning magnetic frustration in partially ordered double perovskite: $\text{SrMn}_{1-x}\text{W}_x\text{O}_3$ ($x=0.20$ to 0.40).** *P. Yadav*¹, *P.J. Baker*², *P. Biswas*², *I.D. Silva*² and *N.P. Lalla*¹ *1. LTHM-XRD, UGC-DAE Consortium for Scientific Research, Indore, India; 2. ISIS Facility, Rutherford Appleton Laboratory, Didcot, United Kingdom*

2:54

- DF-06. Spin-freezing Transition in a CoO/Permalloy Bilayer Revealed by Transverse ac Susceptibility.** *W. Li*¹ and *S. Urazhdin*¹ *1. Physics, Emory University, Atlanta, GA, United States*

3:06

- DF-07. Effect of non J-T active element Fe on structure and magnetic transitions in $\text{GdMn}_{1-x}\text{Fe}_x\text{O}_3$ nanoparticles.** *P. Tiwari*¹ and *C. Rath*¹ *1. Materials Science, Indian Institute of Technology, Varanasi, India*

WEDNESDAY
AFTERNOON
1:30

WASHINGTON 1

Session DG INDIVIDUAL NANOPARTICLES AND NANOWIRES

Cristina Gomez-Polo, Chair
Universidad Publica de Navarra, Pamplona, Spain

1:30

- DG-01. Synthesis, Optical and Magnetic Properties of Graphene Quantum Dots and Iron Oxide Nanocomposites.** *M. Sajjad*¹, *V. Makarove*², *M. Sultan*², *W. Jadwisieniczak*³, *B. Weiner*⁴ and *G. Morell*² *1. Department of Physics and Astronomy, Austin Peay State University, Austin, TN, United States; 2. Department of Physics, University of Puerto Rico, San Juan, PR, United States; 3. School of Electrical Engineering and Computer Science, Ohio University, Athens, OH, United States; 4. Department of Chemistry, University of Puerto Rico, San Juan, PR, United States*

- DG-02. Fabrication, structural and magnetic properties of one-dimensional anti-ferromagnetic FeMn nanostructures.** S.S. Ali^{1,2}, W. Li¹, X. Zhang¹, M. Irfan¹, J. Feng¹, K. Javed³, G. Zhai⁴ and X. Han¹ *1. Institute of Physics, University of Chinese Academy of Sciences, Beijing, China; 2. Department of Physics, The University of Lahore, Lahore, Pakistan; 3. Department of Physics, Forman Christian College, Lahore, Pakistan; 4. National Space Science Center, University of Chinese Academy of Sciences, Beijing, China*

- DG-03. From Paramagnetic Iron Glycolate to Ferromagnetic Metal Iron Wires.** T. Gaudisson¹, M. François², S. Ammar³, J. Greneche⁴ and S. Fujieda⁵ *1. JSPS International Research Fellow (IMRAM, Tohoku University), Sendai, Japan; 2. Institut Jean Lamour, Université de Lorraine, Nancy, France; 3. ITODYS, Université Paris Diderot, Sorbonne Paris Cité, Paris, France; 4. IMMM, Université du Maine, Le Mans, France; 5. IMRAM, Tohoku University, Sendai, Japan*

- DG-04. Domain Wall Motion in Multi-Stack Co/Ni Cylindrical Nanowires.** H. Mohammed¹, S. Finizio², A. Salimath¹, T.C. Hidalgo¹, J.A. Moreno¹, C. Vogler³, D. Lago-Cachón¹, J. Raabe², A. Manchon¹, D. Suess³, J. Wang⁴, B. Stadler⁴ and J. Kosel¹ *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. Paul Scherrer Institut, Villigen, Switzerland; 3. University of Vienna, Vienna, Austria; 4. University of Minnesota, Minneapolis, MN, United States*

- DG-05. Demonstration of Exchange Coupling in Ni/CoFe₂O₄ Nanoparticles.** S.K. McCall¹, A. Baker¹, J. Han¹, S. Baker¹, C. Orme¹, J. Lee¹, M. Worthington¹ and J. Kuntz¹ *1. Materials Science Division, Lawrence Livermore National Laboratory, Livermore, CA, United States*

- DG-06. Magnetically Coupled Core-shell Nanoparticles: Towards Thermometry and Temperature Control on the Nanoscale.** A.J. Biacchi¹, G. Cheng¹, T. Moffat¹, W. Tew¹, M.J. Donahue¹, S. Woods¹, C. Dennis¹ and A.R. Hight Walker¹ *1. National Institute of Standards and Technology, Gaithersburg, MD, United States*

- DG-07. Surface spin disorder induced by wet milling in Fe/Fe_xO_y core-shell nanoparticles: the influence of the milling agent.** M. Lostun¹, M. Porcescu¹, M. Grigoras¹, G. Ababei¹, G. Stoian¹ and N. Lupu¹ *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

2:54

- DG-08. Synthesis of Fe metal nanoparticles employing sugars as reducing agents.** L. Cervera^{1,2}, M. Monteserín³, S. Larumbe³, F. Martín³, J. Perez-Landazabal^{1,2} and C. Gomez-Polo^{1,2}
1. Departamento de Ciencias, Universidad Publica de Navarra, Pamplona, Spain; 2. INAMAT, Universidad Publica de Navarra, Pamplona, Spain; 3. Surface Engineering, Asociación de la Industria Navarra, Cordovilla, Spain

3:06

- DG-09. Structure and Magnetism of Cobalt Silicide Nanoparticles.** B. Balasubramanian^{1,2}, R. Pathak³, R. Pahari^{1,2}, R. Skomski^{1,2}, Z. Ahmadi⁴, H. Komuro^{1,2}, A. Kashyap³, J. Shield⁴, G. Hadjipanayis⁵ and D.J. Sellmyer^{1,2}
1. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE, United States; 3. School of Basic Sciences, Indian Institute of Technology Mandi, Mandi, India; 4. Department of Mechanical and Materials Engineering, University of Nebraska, Lincoln, NE, United States; 5. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States

WEDNESDAY
AFTERNOON
1:30

WASHINGTON 2

Session DH

ENERGY-ASSISTED MAGNETIC RECORDING AND BIT PATTERNED MEDIA

Shikha Jain, Chair
Western Digital, San Jose, CA, United States

1:30

- DH-01. Skew-aware Joint Multi-track Equalization for Array-reader based Interlaced Magnetic Recording.** S. Yoon¹ and E. Hwang¹
1. School of Mechatronics, Gwangju Institute of Science & Technology, Gwangju, The Republic of Korea

1:42

- DH-02. Write Head Design for Effective Curvature Reduction in Heat-Assisted Magnetic Recording by Topology Optimization.** O. Muthsam¹, F. Bruckner¹, C. Vogler¹ and D. Suess¹
1. Physics of Functional Materials, University of Vienna, Vienna, Austria

1:54

- DH-03. Tabu Search Aided Two-dimensional Partial Response Maximum Likelihood Detection Scheme for Bit Patterned Media Recording.** G. Kong¹ and S. Choi¹
1. School of Electrical and Electronic Engineering, Yonsei University, Seoul, The Republic of Korea

- DH-04. A Simple 2-Head 2-Track Detection Method for Staggered Bit-Patterned Magnetic Recording.** *P. Kovintavewat*¹, *S. Koonkarnkhai*¹ and *C. Warisarn*² *1. Data Storage Technology Research Center, Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand; 2. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

- DH-05. Thermal activation effect in microwave assisted switching of CoCrPt granular media.** *N. Kikuchi*^{1,2}, *S. Kikuchi*³, *K. Shimada*³, *K. Sato*¹, *S. Okamoto*^{1,2}, *O. Kitakami*^{1,2} and *T. Shimatsu*^{3,4} *1. IMRAM Tohoku University, Sendai, Japan; 2. CSRN Tohoku University, Sendai, Japan; 3. FRIS Tohoku University, Sendai, Japan; 4. RIEC Tohoku University, Sendai, Japan*

- DH-06. Read Head Problems for 2Tbit/in² Hard Disk Drive.** *M. Takagishi*¹ and *T. Nagasawa*¹ *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

- DH-07. Large current spin polarization of polycrystalline Co₂(Mn_{0.6}Fe_{0.4})Ge Heusler alloy films for CPP-GMR devices.** *S. Narayananellor*¹, *T. Nakatani*¹, *Y. Sakuraba*¹, *K.R. Loku Singgappulige*², *H. Tajiri*² and *K. Hono*¹ *1. National Institute for Materials Science, Tsukuba, Japan; 2. Japan Synchrotron Radiation Research Institute, Sayo, Japan*

- DH-08. Tuning magnetic anisotropy in (Y_{1-x}Ce_x)Co₅ thin films grown by molecular beam epitaxy.** *S. Sharma*¹, *I.A. Radulov*¹, *L. Diop*¹, *P. Komissinskiy*¹, *M. Major*¹, *K.P. Skokov*¹, *O. Gutfleisch*¹ and *L. Alff*¹ *1. Institute of Materials Science, Technische Universität Darmstadt, Darmstadt, Germany*

- DH-09. Cu₂Sb-type MnGaGe films with perpendicular magnetization.** *M. Sun*^{1,2}, *T. Kubota*^{1,3}, *Y. Kawato*⁴, *Y. Sonobe*⁴ and *K. Takanashi*^{1,3} *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. Samsung R&D Institute Japan, Yokohama, Japan*

Session DI
METROLOGY AND SPINTRONIC DEVICES

Ron Goldfarb, Chair
National Institute of Standards and Technology, Boulder, CO,
United States

1:30

- DI-01. Electromagnetic Units, the Giorgi System, and the Revised International System of Units. (Invited) R.B. Goldfarb¹**
1. National Institute of Standards and Technology, Boulder, CO, United States

2:06

- DI-02. Magnetic Calibration Standards for 3D Magnetometers.**
B.E. Strauss¹, A.J. Biazchi², A.R. Hight Walker², R. Shull¹ and C. Dennis¹ 1. Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States; 2. Physical Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD, United States

2:18

- DI-03. Characterization and model of soft magnetic materials by magnetic spectroscopy: from Cole-Cole model to fractional high amplitude dynamic hysteresis model.** *B. Ducharme¹ and B. Zhang² 1. LGEF, INSA Lyon, Villeurbanne, France; 2. School of mechanical engineering, Shandong University, Weihai, China*

2:30

- DI-04. Sensitivity of Synchrotron X-ray Diffraction to the Magnetic Anomalies: Low Temperature Study.** *H. Singh^{1,2}, M.N. Singh², A. Upadhyay², A. Sagdeo² and A.K. Sinha² 1. Stony Brook University, Stony Brook, NY, United States; 2. Indus-2, RRCAT, Indore, India*

2:42

- DI-05. Electromagnetic and Mechanical Characterization of Totally Flexible Coil for Transcranial Magnetic Stimulation.**
M. Liu¹, P. Tuovinen^{1,2}, Y. Kawasaki¹, M.A. Yedeas¹, Y. Saitoh³ and M. Sekino^{1,3} 1. Graduate School of Engineering, the University of Tokyo, Tokyo, Japan; 2. Aalto University, Helsinki, Finland; 3. Osaka University, Osaka, Japan

2:54

- DI-06. Photovoltaic Effect on Magnetic Tunnel Junction Based Molecular Spintronic Devices.** *P. Tyagi^{1,2} and C. Riso¹ 1. Mechanical Engineering, University of the District of Columbia, Washington, DC, United States; 2. Chemical and Materials Engineering, University of Kentucky, Lexington, KY, United States*

- DI-07. Spintronic Nano-Neuron: The Role of Non-Linear Data Processing on Speech Recognition in the Framework of Reservoir Computing.** *F. Abreu Araujo*¹, M. Riou², J. Torrejon³ and J. Grollier² *1. Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Louvain-la-Neuve, Belgium; 2. Unité Mixte de Physique CNRS/Thales, Université Paris-Sud, Palaiseau, France; 3. Service de Physique de l'Etat Condensé, CEA Saclay, Gif-sur-Yvette, France*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DJ
SPIN CURRENTS AND SPIN-ORBIT TORQUES
(Poster Session)

Sergi Lendinez, Co-Chair
Argonne National Laboratory, Lemont, IL, United States
Matthias Benjamin Jungfleisch, Co-Chair
University of Delaware, Newark, DE, United States

- DJ-01. Spin-orbit torque switching of CoFeB/Gd/CoFeB perpendicular layer on sputtered Gd-Bi-Se channel layer.** *J. Chen*¹, P. Sahu², DC. Mahendra² and J. Wang¹ *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States*
- DJ-02. Spin-Orbit Torque Induced Controllable Switching Chirality by Small Voltage.** *M. Yang*¹, Y. Deng¹, Y. Li¹ and K. Wang¹ *1. Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China*
- DJ-03. Anomalous Spin-orbit Torque Generated by a Ferromagnet in Spin-valve Structure.** *A. Bose*^{1,2}, D.D. Lam³, S.S. Bhuktare¹, S. Dutta¹, H. Singh¹, Y. Jibiki³, M. Goto³, S. Miwa³ and A. Tulapurkar¹ *1. Dept. of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India; 2. Dept. of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 3. Graduate School of Engineering Science, Osaka University, Osaka, Japan*
- DJ-04. Spin-orbit torques in low-resistive mixed phase Ta.** *A. Kumar*¹, R. Sharma¹, S. Chaudhary¹ and P.K. Muduli¹ *1. Department of Physics, Indian Institute of Technology Delhi, New Delhi, India*
- DJ-05. The current-induced spin-orbit torque from Mo-based magnetic heterostructures.** *T. Chen*¹ and C. Pai¹ *1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan*
- DJ-06. Investigation of interlayer coupling in field free spin orbit torque structures.** *P. Quarterman*¹, J. Chen², J. Wang² and J. Borchers¹ *1. NIST, Gaithersburg, MD, United States; 2. University of Minnesota, Minneapolis, MN, United States*

- DJ-07. Multi-level magnetization switching by spin-orbit torques in perpendicular ferromagnetic trilayer structures.** C. Siao¹, P. Chen¹, Y. Du¹ and C. Lai¹ *1. National Tsing Hua University, Hsinchu, Taiwan*
- DJ-08. Observation of Spin-Orbit Magnetoresistance in Metal Films on Magnetic Insulators.** L. Zhou¹, H. Song², K. Liu³, Z. Luan¹, P. Wang¹, L. Sun¹, S. Jiang¹, H. Xiang³, Y. Chen¹, J. Du¹, H. Ding¹, K. Xia², J. Xiao³ and D. Wu¹ *1. Nanjing University, Nanjing, China; 2 Beijing Normal University, Beijing, China; 3. Fudan University, Shanghai, China*
- DJ-09. Spin-Orbit Torques in Platinum based Systems.** J. Nath^{1,2}, A. Trifu^{1,2}, S. Auffret^{1,2}, I. Joumard^{1,2}, G. Gaudin^{1,2} and I. Miron^{1,2} *1. SPINTEC (CEA/CNRS), Grenoble, France; 2. Université Grenoble Alpes, Grenoble, France*
- DJ-10. Room temperature spin-orbit torque switching by topological surface states.** H. Wu¹, Y. Xu², P. Deng¹, S. Razavi¹, S. Mangin² and K. Wang¹ *1. Department of Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Institut Jean Lamour, Université de Lorraine, Nancy, France*
- DJ-11. Observing the magnon valve effect in the YIG/Au/YIG structure.** H. Wu¹, C. Fang¹, C. Wan¹, G. Yu¹, J. Feng¹ and X. Han¹ *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*
- DJ-12. Topological Superconductors in Ferromagnetic Nanowires with Domain Wall.** M. Ichimura¹ and M. Hirokawa² *1. Hitachi R&D Group, Hatoyama, Japan; 2. Institute of Engineering, Hiroshima University, Higashi-hiroshima, Japan*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DK MAGNETO-CALORIC MATERIALS II (Poster Session)

Jia Yan Law, Chair
Sevilla University, Sevilla, Spain

- DK-01. Magnetic transition and magnetocaloric effect of $\text{Gd}_4\text{Sb}_{3-x}\text{R}_x$ ($\text{R}=\text{Si, Ge, Sn}$, $0 \leq x \leq 0.75$) compounds.** S. Chen¹, G. Yao¹, J. Zhang¹, X. Fan², X. Yin², Z. Chen³, W. Cui^{1,2} and Q. Wang¹ *1. Northeastern University, Shenyang, China; 2. Northwestern Polytechnical University, Shenyang, China; 3. National Institute for Materials Science, Tsukuba, Japan*

- DK-02. Investigating the Mechanical and Chemical Stability of AlFe_2B_2 -Based Compounds for Magnetic Refrigeration.** X. Zhang¹, B. Lejeune², R. Barua³, R. McCallum⁴ and L.H. Lewis^{1,2} 1. Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA, United States; 2. Department of Chemical Engineering, Northeastern University, Boston, MA, United States; 3. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 4. McCallum Consulting LLC, Santa Fe, NM, United States
- DK-03. Ferromagnetic Gd_5Si_4 -PVDF composite films for triboelectric energy harvesting applications.** S.M. Harstad¹, P. Zhao², N. Soin², A.A. El-Gendy³, S. Gupta⁴, V.K. Pecharsky^{4,5} and R.L. Hadimani¹ 1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Institute of Renewable Energy & Environment Technology, University of Bolton, Bolton, United Kingdom; 3. Physics, University of Texas at El Paso, El Paso, TX, United States; 4. Division of Material Science and Engineering, Ames Laboratory, US Dept. of Energy, Ames, IA, United States; 5. Dept. of Materials Science and Engineering, Iowa State University, Ames, IA, United States
- DK-04. Addition of Co and the magnetic properties of MnSb.** H. Dara¹ and G. Markandeyulu¹ 1. Physics, IIT Madras, Chennai, India
- DK-05. The effects of Ge occupations and hydrostatic pressure on the metamagnetic phase transition and magnetocaloric effects in Mn_2Sb alloy.** J. Zhang¹, G. Yao¹, S. Chen¹, F. Wei¹, X. Fan², X. Yin², Z. Chen³, W. Cui^{1,2} and Q. Wang¹ 1. Northeastern University, Shenyang, China; 2. Northwestern Polytechnical University, Shenyang, China; 3. National Institute for Materials Science, Tsukuba, Japan
- DK-06. Structural, magnetic and magnetocaloric properties of $\text{Ni}_{43}\text{Mn}_{46-x}\text{Fe}_x\text{Sn}_{11}$ ($x = 0, 6, 8, 10$) alloys.** H. Qian^{1,2}, B.R. Dahal¹, L. Halbritter¹, J. Hu², Y. Huh¹ and P.R. Kharel¹ 1. Department of Physics, South Dakota State University, Brookings, SD, United States; 2. Material Science and Engineering, Changzhou University, Changzhou, China
- DK-07. Effect of Cooling Rate on Magnetocaloric Response of Ni-Mn-Sn Heusler Alloy.** Z. Turgut¹, M.V. McLeod^{1,2}, S. Leonstev^{1,2}, G. Kozlowski^{1,3}, T. Bowen^{1,4}, M. Farfel^{1,5} and J. Horwath¹ 1. Air Force Research Laboratory, Wright Patterson Air Force Base, OH, United States; 2. University of Dayton, Dayton, OH, United States; 3. Department of Physics, Wright State University, Dayton, OH, United States; 4. Department of Materials, Penn State University, State College, PA, United States; 5. Department of Materials, Carnegie Mellon University, Pittsburgh, PA, United States
- DK-08. Powdering and SPS Sintering Effect on The Magnetocaloric Properties of MnNiSi-based Compounds.** I. Hidayah¹, H. Zhang¹, Y. Ming¹, Q. Lu¹, D. Zhang¹ and W. Liu¹ 1. Beijing University of Technology, Beijing, China

DK-09. Thermomagnetic properties and magnetocaloric effect of non-equiatomic FeCoNiCrAl high-entropy alloys. S. Na¹, P.K. Lambert¹, H. Kim², J. Paglione² and N.J. Jones¹ *1. Physical Metallurgy and Fire Protection Branch, Naval Surface Warfare Center, Carderock Division, West Bethesda, MD, United States; 2. Center for Nanophysics and Advanced Materials, University of Maryland, College Park, College Park, MD, United States*

DK-10. An Examination of the Virgin Effect in Mn-Fe-P-Si Alloys via Total Scattering. N. Fuller¹, M.W. Terban¹, S.P. Vallone^{2,3}, O.L. Baumfeld⁴, P. Ko⁵, A. Pasko⁶, A. Bartok⁶, L. Bessais⁷, K. Zehani⁷, M. LoBue⁶, K.G. Sandeman^{2,3} and S.J. Billinge¹ *1. Department of Applied Physics and Applied Mathematics, Columbia University, New York, NY, United States; 2. Department of Physics, Brooklyn College of The City University of New York, Brooklyn, NY, United States; 3. Physics Program, The Graduate Center of The City University of New York, New York, NY, United States; 4. Department of Physics, Imperial College London, London, United Kingdom; 5. Cornell High Energy Synchrotron Source, Cornell University, Ithaca, NY, United States; 6. SATIE, ENS Cachan, CNRS, Université Paris-Saclay, Cachan, France; 7. CMTR, ICMPE, CNRS-UPEC, Thiais, France*

DK-11. Tunable Magneto-Structural Transition and Giant Magneto-Caloric Effect in MnCoGeC_{0.06} Melt Spun Ribbons. E. Soto-Tovar¹, C. Sanchez-Valdes², G. Daniel-Pérez³, R. Varga⁴ and J.L. Sanchez Llamazares⁵ *1. Instituto de Ingeniería y Tecnología, Universidad Autónoma de Ciudad Juárez, Av. del Charro 450, Ciudad Juárez, Mexico; 2. División Multidisciplinaria, Ciudad Universitaria, Universidad Autónoma de Ciudad Juárez, calle José de Jesús Macías Delgado, Ciudad Juárez, Mexico; 3. Instituto Tecnológico Superior de Irapuato, Irapuato, Mexico; 4. Institute of Physics, Faculty of Sciences, University Pavol Jozef Safárik, Park Angelinum 9, Kosice, Slovakia; 5. Instituto Potosino de Investigación Científica y Tecnológica A.C., Camino a la Presa San José, Col. Lomas 4a sección, San Luis Potosí, Mexico*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DL

SOFT MAGNETIC COMPONENTS: TRANSFORMERS AND INDUCTORS I (Poster Session)

Arcady Zhukov, Co-Chair
Basque Foundation for Science, San Sebastian, Spain
Scooter Johnson, Co-Chair
Naval Research Laboratory, Washington, DC, United States

DL-01. Soft magnetic multilayers for integrated inductors. M. Landmann¹, J. Wrona², M. Stenger-Koob², R. Salahuddin³, S. Soh³, R.P. Singh³, J. Langer² and B. Ocker⁴ *1. Product Management, Singulus Technologies AG, Kahl am Main, Germany; 2. R&D, Singulus Technologies AG, Kahl am Main, Germany; 3. Institute for Microelectronics (IME), A*STAR, Singapore, Singapore; 4. Head of NDT, Singulus Technologies AG, Kahl am Main, Germany*

- DL-02. Optimization Design of Oil-immersed Transformer Windings Using Response Surface Method.** Y. Zhang¹, S. Ho¹ and W. Fu¹ 1. *Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*
- DL-03. Performance Enhancement of Q Factor and Inductance of Integrated RF Inductors.** X. Wang¹, H. Chen¹ and N. Sun¹ 1. *Northeastern University, Boston, MA, United States*
- DL-04. Transformer magnetostriction and noise level consideration via PSO method.** C. Hsu¹ and M. Hsieh² 1. *Department of Mechanical Engineering, Oriental Institute of Technology, New Taipei, Taiwan;* 2. *Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*
- DL-05. Localized Magnetic and Magnetostrictive Characteristics in the Single-phase Transformer Core Magnetized with a DC Biased Magnetic Field.** Z. Wang¹, Y. Zhang¹, W. Jiang², D. Zhang¹, Z. Ren¹ and C. Koh³ 1. *School of Electrical Engineering, Shenyang University of Technology, Shenyang, China;* 2. *School of Science, Shenyang University of Technology, Shenyang, China;* 3. *Chungbuk National University, Cheongju, The Republic of Korea*
- DL-06. Analysis and Design of Nanofluid-filled Power Transformers.** X. Yang³, S. Ho³, W. Fu³, G. Xu¹, D. Peng¹ and W. Deng² 1. *Department of Electrical Engineering, Hebei University of Technology, Tianjin, China;* 2. *Maintenance Branch, State Grid Jibei Electric Power Co. LTD, Beijing, China;* 3. *Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*
- DL-07. Rotational Core Loss Measurements of Steel Sheet Based on a Novel High Frequency 2-D Magnetization.** Y. Li¹, K. Zhang¹, S. Yue¹, C. Zhang¹ and Y. Dou¹ 1. *Electrical Engineering, Hebei University of Technology, Tianjin, China*
- DL-08. Excess Losses in Gapped Amorphous and Nanocrystalline Tape Core Inductors Under a DC Bias.** H. Kosai^{1,2}, Z. Turgut¹, T. Bixel^{1,2}, L. Raymond^{1,2} and J. Scofield¹ 1. *UES Inc., Dayton, OH, United States;* 2. *Air Force Research Laboratory, Wright-Patterson AFB, OH, United States*
- DL-09. Novel Remanence Determination for Power Transformers Based on Magnetic Inductance Measurement.** X. Li^{1,2}, H. Zhang¹, M. Yang^{3,2}, S. Hu¹ and F.D. Leon² 1. *Wuhan University of Technology, Wuhan, China;* 2. *New York University, New York, NY, United States;* 3. *Chongqing University, Chongqing, China*
- DL-10. A Novel Method for Calculating Vibration and Noise of Three-phase Dry-type Transformer.** N. Yan¹, B. Zhang¹, Z. Xing¹ and W. Li¹ 1. *Shenyang University of Technology, Shenyang, China*

Session DM
HARD MAGNETIC MATERIALS THEORY AND
APPLICATION I
(Poster Session)

Bhaskar Das, Chair
Ames Laboratory, US DOE, Iowa State University, Ames, IA,
United States

- DM-01. The Effect of Interstitial Nitrogen on the Structural Properties of Super Cells of $\text{NdFe}_{12-x}\text{Ti}_x$ at Low Ti at.%.
*C. Skelland*¹, *S.C. Westmoreland*², *T.A. Ostler*³, *R.F. Evans*², *R.W. Chantrell*², *M. Yano*⁴, *T. Shoji*⁵, *A. Manabe*⁵, *A. Kato*⁵, *M. Ito*⁵, *M. Winklhofer*⁶, *G. Zimanyi*⁷, *J. Fischbacher*⁸, *T. Schrefl*⁸ and *G. Hrkac*¹ 1. *University of Exeter, Exeter, United Kingdom*; 2. *University of York, York, United Kingdom*; 3. *Sheffield Hallam University, Sheffield, United Kingdom*; 4. *MagHEM, Susono, Japan*; 5. *Toyota Motor Corporation, Susono, Japan*; 6. *University of Duisburg, Duisburg, Germany*; 7. *UC Davis, Davis, CA, United States*; 8. *Danube University Krems, Krems an der Donau, Austria***
- DM-02. Coercivity evolution and suppressed thermally activated defects in diffusion processed Nd-Fe-B.** *F. Wei*¹, *G. Yao*¹, *S. Chen*¹, *X. Fan*², *X. Yin*², *Q. Xiang*³, *W. Cui*^{1,2} and *Q. Wang*¹
1. *Northeastern University, Shenyang, China*; 2. *Northwestern Polytechnical University, Xi'an, China*; 3. *National Institute for Material Science, Tsukuba, Japan*
- DM-03. Experimental investigation of the relationship between magnetic properties of permanent magnet and temperature and pressure coupling environment.** *L. Xiao*¹, *G. Yu*¹, *J. Zou*¹, *Y. Xu*¹, *B. Zheng*¹ and *H. Lan*¹ 1. *Harbin Institute of Technology, Harbin, China*
- DM-04. Theoretical Study of Gilbert Damping in Rare-Earth Permanent Magnets.** *F. Saito*¹, *D. Miura*¹ and *A. Sakuma*¹
1. *Dept. of Applied Physics, Tohoku University, Sendai, Japan*
- DM-05. Electronic Structure of τ -phase MnAl-C Alloy.** *M. Choi*¹, *Y. Hong*¹, *H. Won*¹, *W. Lee*¹, *S. Kim*², *H. Lee*², *W. Lee*², *S. Kim*³ and *G.J. Mankey*⁴ 1. *Department of Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL, United States*; 2. *Department of Materials Science and Engineering, Yonsei University, Seoul, The Republic of Korea*; 3. *Department of Physics and Astronomy and Center for Computational Sciences, Mississippi State University, Starkville, MS, United States*; 4. *Department of Physics and Astronomy and MINT Center, The University of Alabama, Tuscaloosa, AL, United States*

DM-06. Magnetic and Structural Parameters of $\text{Fe}_5(\text{Si}_{0.75}\text{Ge}_{0.25})\text{B}_2$ Single Crystals. *B. Lejeune*¹, *S. Thimmaiah*², *I. McDonald*¹, *A. Gabay*³, *M.J. Kramer*², *L.H. Lewis*¹ and *G. Hadjipanayis*³
1. Chemical Engineering, Northeastern University, Boston, MA, United States; 2. Division of Materials Science and Engineering, U.S. Department of Energy Ames Laboratory, Ames, IA, United States; 3. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States

DM-07. Electrical resistivity and magnetic performance of ceramics-bonded Nd-Fe-B-type magnet consolidated using dielectric oxide binder. *M. Kang*¹, *K. Kim*¹, *H. Kwon*¹, *D. Kim*², *J. Lee*³ and *K. Shin*⁴
1. Pukyong National University, Busan, The Republic of Korea; 2. Star-group Ind. Co., Daegu, The Republic of Korea; 3. Korea Institute of Materials Science, Changwon, The Republic of Korea; 4. Kyung Sung University, Busan, The Republic of Korea

DM-08. Intrinsic Properties, Phase Constitution and Microstructure of Novel R-Fe-B Strip-casting Alloys Based on Misch Metal. *Y. Liu*^{1,2}, *X. Zhang*³, *X. Wang*³, *Q. Ma*^{3,1}, *F. Liu*³, *T. Zhao*¹ and *B. Shen*¹
1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. University of Chinese Academy of Sciences, Beijing, China; 3. School of Science, Inner Mongolia University of Science & Technology, Baotou, China

DM-09. Microstructure Characteristics and Magnetic Domain Observation of 2:17 SmCo Commercial Magnet with Different Coercivity. *Z. Xie*¹, *D. Zhang*¹, *Z. Shang*¹, *W. Liu*¹, *M. Yue*¹, *H. Zhang*¹ and *Q. Wu*¹
1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DN
MAGNETIC PARTICLES AND HYPERThERMIA
(Poster Session)

Joseph Davies, Chair
NVE Corporation, Eden Prairie, MN, United States

DN-01. High Magnetic Moment Metal-Polymer Nanoparticles with Superparamagnetic-Like Characteristics. *I. Nekrashevich*¹ and *D. Litvinov*^{1,2}
1. Electrical and Computer Engineering, University of Houston, Houston, TX, United States; 2. Nanofabrication Facility, University of Houston, Houston, TX, United States

DN-02. Smart Magnetic-stimuli Magnetorheological Response of Soft-magnetic Manganese Ferrite Nanoparticles. *C. Gao*¹, *Q. Lu*¹ and *H. Choi*¹
1. Department of Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea

- DN-03. Synthesis of Greigite (Fe_3S_4) Nanoparticles via a PVP-assisted Hydrothermal Method.** J. Moore¹, E. Nienhuis¹, M. Ahmadzadeh¹ and J. McCloy¹ 1. School of Mechanical and Materials Engineering, Washington State University, Pullman, WA, United States
- DN-04. Combined action of magneto-mechanical effect with hyperthermia and stem cell delivery of Fe-Cr-Nb-B magnetic particles on cancer cell destruction.** H. Chiriac¹, E. Radu^{1,2}, D. Herea¹, L. Labusca¹ and N. Lupu¹ 1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Faculty of Physics, Alexander Ioan Cuza University of Iasi, Iasi, Romania
- DN-05. High intrinsic loss power of multi-core magnetic nanoparticles with long blood-pooling property for hyperthermia.** K. Nishimoto¹, S. Trisnanto¹, S. Ota², T. Yamada¹ and Y. Takemura¹ 1. Electrical and Computer Engineering, Yokohama National University, Yokohama, Japan; 2. Electrical and Computer Engineering, Shizuoka University, Hamamatsu, Japan
- DN-06. Magnetic Combination Therapy: A New, Drug-free Approach to Cancer Treatment.** I. Rodrigo Arrizabalaga^{1,2}, M. Stanton³, D.P. Valdés⁴, E. Welbourne³, B. Herrero de la Parte⁵, T.E. Torres^{6,7}, E. Lima, Jr.^{6,7}, E. De Biasi^{6,7}, R.D. Zysler^{6,7}, J.A. García^{1,8}, F. Plazaola² and R. Cowburn³ 1. Basque Center for Materials, Applications and Nanostructures, Leioa, Spain; 2. Department of Electricity and Electronics, University of the Basque Country (UPV/EHU), Leioa, Spain; 3. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 4. Instituto Balseiro, Rio Negro, Argentina; 5. Department of Surgery and Radiology and Physical Medicine, University of the Basque Country (UPV/EHU), Leioa, Spain; 6. Laboratorio de Resonancias Magnéticas, Gerencia de Física, Centro Atómico Bariloche, CNEA, Rio Negro, Argentina; 7. Ministerio de Ciencia, Tecnología e Innovación Productiva, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires, Argentina; 8. Department of Applied Physics II, University of the Basque Country (UPV/EHU), Leioa, Spain
- DN-07. Magnetosome-like nanoparticle systems for magnetic hyperthermia: modeling the effect of dipolar interactions.** D.P. Valdés^{1,2}, E. De Biasi^{1,2}, E. Lima Jr.² and R.D. Zysler^{1,2} 1. Instituto Balseiro, San Carlos de Bariloche, Argentina; 2. Laboratorio de Resonancias Magnéticas, Centro Atómico Bariloche, Gerencia de Física, CNEA, San Carlos de Bariloche, Argentina
- DN-08. High biocompatibility and specific loss power of magnetic nanoparticles for hyperthermia.** G. Shi¹, S. Trisnanto¹, T. Yamada¹, S. Ota² and Y. Takemura¹ 1. Electrical and Computer Engineering, Yokohama National University, Yokohama, Japan; 2. Electrical and Electronic Engineering, Shizuoka University, Hamamatsu, Japan
- DN-09. Superparamagnetic Fe_3O_4 Magnetic Nanoparticles: Examination of their Feasibility for Hyperthermia Treatment for Cancer.** A. Cordeiro¹, B. Meneses Brassea¹, M. Ortega-Neder¹, C.M. Cyr¹, C.E. Botez¹ and A.A. El-Gendy¹ 1. Physics, The University of Texas at El Paso, El Paso, TX, United States

- DN-10. Dynamic Hysteresis Loops and Specific Loss Power of Iron Oxide Nanoflowers in the Nonlinear Regime.** Z. Boekelheide¹, J.T. Miller¹ and C. Gruettner² *1. Physics, Lafayette College, Easton, PA, United States; 2. Micromod Partikeltechnologie GmbH, Rostock, Germany*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DO
MOTORS: MODELING AND SIMULATIONS IV
(Poster Session)

Wei Hua, Chair
Southeast University, Nanjing, China

- DO-01. Linear Scalar Magnetic Potential Interpolation For Non-conformal Meshing in Mesh Based Generated Reluctance Networks.** S. Asfirane¹, S. Hlioui^{3,1}, S. Mezani², Y. Amara⁵, O. de la Barrière^{4,1}, G. Barakat⁵ and M. Gabsi¹ *1. SATIE, ENS Paris Saclay, Cachan, France; 2. GREEN-UHP, Faculté des Sciences, Nancy, France; 3. CNAM, Paris, France; 4. CNRS, Cachan, France; 5. GREAH, Université Le Havre Normandie, Le Havre, France*
- DO-02. Analytical Modeling of Novel Hybrid Magnet Dual-Stator Field Modulation Machine.** H. Wang^{1,2}, S. Fang¹, H. Yang¹, Y. Li¹, Z. Pan¹ and H. Lin¹ *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), University of Wisconsin-Madison, Madison, WI, United States*
- DO-03. Loss Analysis and Experimental Verification of High-Speed Permanent Magnet Synchronous Machine Considering Current Harmonics.** K. Shin¹, H. Park² and J. Choi¹ *1. Chungnam National University, Daejeon, The Republic of Korea; 2. Hyundai Mobis, Yongin, The Republic of Korea*
- DO-04. Electromagnetic Analysis of the Saturation Effect with Different Nonlinear Soft Magnetic Materials of a Balanced Armature Receiver.** D. Xu¹, Y. Jiang² and S. Hwang² *1. School of Mechatronics Engineering and Automation, Shanghai University, Shanghai, China; 2. Mechanical Engineering, Pusan National University, Busan, The Republic of Korea*
- DO-05. A Novel Dual-Flux-Modulation Linear Permanent-Magnet Machine.** Y. Zhou¹, Y. Gao¹, R. Qu¹ and C. Shi¹ *1. Huazhong University of Science and Technology, Wuhan, China*
- DO-06. Multi-physical coupling analysis of balanced armature receiver by lumped parameter method, finite element method and boundary element method.** Y. Jiang¹, D. Xu², J. Kim¹ and S. Hwang¹ *1. School of Mechanical Engineering, Pusan National University, Busan, The Republic of Korea; 2. School of Mechatronics Engineering and Automation, Shanghai University, Shanghai, China*

DO-07. Demagnetization Computation of Outer-Rotor Flux Switching Permanent Magnet Motor Considering Magnet Region Division. D. Fan¹ and L. Quan¹ *1. Jiangsu University, Zhenjiang, China*

DO-08. Cogging Torque Reduction on Transverse Flux Motor with Multilevel Skew Configuration of Toothed Cores. Y. Ueda¹ and H. Takahashi¹ *1. Toshiba, Kawasaki, Japan*

DO-09. An Analytical and Numerical Hybrid Model for Static Characteristics of a Interior Permanent Magnet Machine. P. Jin¹, Y. Guo¹, Z. Pan² and S. Lyu² *1. Department of Electric Power Engineering, College of Electrical Engineering, Hohai University, Nanjing, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DP
MOTORS: MODELING AND SIMULATIONS V
(Poster Session)

Siavash Pakdelian, Chair
University of Massachusetts Lowell, Lowell, MA, United States

DP-01. Impact of Eccentricity on a Low Reactance High-Speed, High-Frequency Slotless PMSM. D. Lee¹, S. Sirimanna¹, K. Haran¹ and S. Salon² *1. Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States; 2. Electrical, Computer, & Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY, United States*

DP-02. Derivation of Optimal Skew Angle to Reduce Cogging Torque of Magnetic-Geared Permanent Magnet Synchronous Motor for Railway Vehicles. I. Jo¹, H. Lee¹, G. Jeong², W. Ji¹ and C. Park³ *1. Department of Railway Vehicle System Engineering, Korea National University of Transportation, Uiwang-si, The Republic of Korea; 2. Department of Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 3. Department of Railroad Operation System Engineering, Korea National University of Transportation, Uiwang-si, The Republic of Korea*

DP-03. Utilization of Reluctance Torque to Improve Starting Torque and Average Torque of a Brushless-Wound Field Synchronous Machine. M. Ayub¹ and B. Kwon¹ *1. Hanyang University, Ansan, The Republic of Korea*

DP-04. Determination Scheme of Field Circuit Constants for Improving Running Efficiency in Single-Phase Induction Motor. H. Kim¹, K. Kim¹ and G. Park¹ *1. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea*

- DP-05. Design and Analysis of A Novel Stator-Segmented SRM for In-Wheel Electric Vehicle Application.** *K. Diao¹, X. Sun¹, G. Lei² and J. Zhu³* *1. Jiangsu University, Zhenjiang, China; 2. University of Technology, Sedney, Sedney, NSW, Australia; 3. The University of Sedney, Sydney, NSW, Australia*
- DP-06. A Novel DC Bias Excited Machine with Integrated Winding.** *Q. Wang¹ and S. Niu¹* *1. Hong Kong Polytechnic University, Hung Hom, Hong Kong*
- DP-07. Influence of Design Parameters on On-Load Demagnetization Characteristics of Switched Flux Memory Machine.** *S. Lyu¹, H. Yang¹, H. Lin¹, Z. Zhu² and Z. Pan¹* *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*
- DP-08. Analysis and Calculation of Zigzag Leakage Flux in Surface-Mounted Permanent Magnet Motor with Similar Number of Poles and Slots.** *Z. Yu¹, Y. Li¹, Y. Jing¹ and J. Du¹* *1. National Engineering Research Center for REPM Electrical Machines, Shenyang University of Technology, Shenyang, China*
- DP-09. Improvement of Systematic Efficiency in a High-Speed Single-Phase Brushless DC Motor using Multi-Physics Analysis for a Vacuum Cleaner.** *Y. Choo¹, C. Kim¹, J. Cho¹, H. Hwang¹, J. Kim¹, J. Choi², S. Hwang² and C. Lee¹* *1. Pusan National University, Busan, The Republic of Korea; 2. Kyungsoong University, Busan, The Republic of Korea*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DQ MAGNETIC INSTRUMENTATION AND CHARACTERIZATION I (Poster Session)

Martina Ahlberg, Chair
University of Gothenburg, Gothenburg, Sweden

- DQ-01. High spatial and temporal resolution magnetic imaging at the PoLLux endstation of the Swiss Light Source.** *S. Finizio¹, S. Wintz¹, K. Witte¹, S. Mayr¹, B. Watts¹ and J. Raabe¹* *1. Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland*
- DQ-02. Non-destructive *in situ* Imaging for Investigating Spintronic Devices.** *E. Jackson¹, W. Frost¹, J. Kim¹, M. Samiepour¹ and A. Hirohata¹* *1. Department of Electronics, University of York, York, United Kingdom*
- DQ-03. Scanning Microwave Microscopy for Probing Electrical and Magnetic Properties of Ferromagnetic Thin Films.** *N. Sernicola¹, D. Kumar¹, V. Chaudhary¹ and S. Piramanayagam¹* *1. Division of PAP, SPMS, Nanyang Technological University, Singapore, Singapore*

- DQ-04. Structural Mapping of Co-HfO₂ Granular Films using Conductive Atomic Force Microscopy.** A.K. Toh¹ and V. Ng¹
1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore
- DQ-05. A Method for Measuring Magnetostriction of Amorphous and Nanocrystalline Materials under Different Frequency Excitation.** P. Zhang¹ and L. Li¹ *1. State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources(North China Electric Power University), Beijing, China*
- DQ-06. Issues with Background Subtraction in Magnetometry Measurements of High Coercivity Samples.** A. Mandru¹, O. Yildirim¹, M. Penedo¹, X. Zhao¹, M.A. Marion¹ and H.J. Hug^{1,2} *1. Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; 2. Department of Physics, University of Basel, Basel, Switzerland*
- DQ-07. Morphological Phase Transition of Magnetic Domains in Co(12Å)/Pt(7Å) Multilayers.** L.A. Ortiz¹ and K. Chesnel²
1. Physics and Electronics, University of Puerto Rico - Humacao, Yabucoa, Puerto Rico; 2. Brigham Young University, Provo, UT, United States
- DQ-08. Optimizing Magnetic Recording Media for Nanoparticle Self-Assembly: Using Non-Magnetic Layer Substitution to Isolate Hard Layer Magnetism.** S. FitzGerald^{1,2} and T. Crawford^{1,2} *1. SmartState Center for Experimental Nanoscale Physics, University of South Carolina, Columbia, SC, United States; 2. Department of Physics and Astronomy, University of South Carolina, Columbia, SC, United States*

WEDNESDAY
AFTERNOON
1:30

EXHIBIT HALL A

Session DR
SOFT MAGNETIC MATERIALS IV:
CRYSTALLINE, NANOCRYSTALLINE AND
AMORPHOUS MATERIALS
(Poster Session)

Radhika Barua, Chair
Virginia Commonwealth University, Richmond, VA, United States

- DR-01. Clustering Effect on Eddy Current and Magnetic Properties in Metallic Particle-Loaded Magneto-Dielectric Composites.** Q. Li¹, Y. Chen² and V.G. Harris¹ *1. Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. Innovation Center, Rogers Corporation, Burlington, MA, United States*
- DR-02. Compaction behaviors and magnetic properties of bi-modal Fe-based powders.** M. Choi¹, M. Kim¹, K. Lee¹, J. Song¹ and J. Kim¹ *1. Material Engineering, Hanyang University, Ansan, The Republic of Korea*

- DR-03. A combined FORC and neutron scattering investigation of microstructural changes in thermally aged Fe-1wt%Cu alloy.** S. Kobayashi¹, R. Kawagoe¹, H. Murakami¹, K. Ohishi², Y. Kawamura² and J. Suzuki² *1. Iwate University, Morioka, Japan; 2. CROSS, Tokai, Japan*
- DR-04. Carbon Tailoring and Structure Evolution in Mn_3GaC_x Compounds.** E.T. Dias¹, A.K. Nigam¹ and K.R. Priolkar²
1. Department of Condensed Matter Physics, Tata Institute of Fundamental Research, Mumbai, India; 2. Department of Physics, Goa University, Taleigao, India
- DR-05. Loss decomposition and Barkhausen noise in plastically deformed steel sheets.** O. de la Barrière¹, C. Ragusa², F. Landgraf³, D. Luiz Rodrigues Junior³, F. Mazaleyra¹, S. Bagnis², A. Magni⁴, F. Fiorillo⁴ and C. Appino⁴ *1. SATIE, Cachan, France; 2. Politecnico di Torino, Torino, Italy; 3. University of São Paulo, São Paulo, Brazil; 4. INRIM, Torino, Italy*
- DR-06. Characteristic of high frequency Fe-Si-Cr motor component by selective laser melting.** T. Chang¹, K. Jhong², W. Lee², M. Tsai^{1,3} and I. Jiang¹ *1. Electric Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan; 2. Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; 3. Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan*
- DR-07. Influence of Ball Milling on magnetic properties of $(\text{Fe}_{1-x}\text{Mn}_x)_{75}\text{P}_{15}\text{C}_{10}$ Alloy Ribbons.** M. Islam¹, M.A. Bally¹, S. Satter² and M.A. Khan¹ *1. Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh; 2. Department of Electrical and Electronic Engineering, University of Dhaka, Dhaka, Bangladesh*
- DR-08. Unusually Inverted Dynamic and Static Magnetic Hysteresis Loops of $\text{Co}_{70-x}\text{Fe}_x\text{B}_{10}\text{Si}_{10}$ with $x = 0$ and 10 (at. %).** A. Rosales-Rivera¹, N. Salazar-Henao¹, A. Velásquez-Salazar¹, I.G. Cely-Orjuela¹ and M. Gómez-Hermida² *1. Laboratorio de Magnetismo y Materiales Avanzados, Universidad Nacional de Colombia, Sede Manizales, Manizales, Colombia; 2. Departamento de Ciencias Básicas, Facultad de Ciencias Básicas e Ingeniería, Universidad Católica de Pereira, Pereira, Colombia*

WEDNESDAY
AFTERNOON
4:30

SALONS 2 & 3

**Session YA
PLENARY**

Suzanne G.E. te Velthuis, Chair
Argonne National Laboratory, Argonne, IL, United States

4:30

Welcome

Pallavi Dhagat, Oregon State University, IEEE Magnetics Society President

Awards Presentation by the IEEE Magnetics Society

Jürgen Fassbender, HZDR, Honors and Awards Committee Chair

- YA-01. Quantum Magnetism: an Unfinished Revolution. (Invited)**
M. Aronson¹ 1. University of British Columbia, Vancouver, BC, Canada

THURSDAY
MORNING
8:30

SALON 2

**Session EA
3D MAGNETIC FRUSTRATION: PYROCHLORE,
SPINEL AND FCC LATTICES**

Jeffrey Lynn, Chair
NIST, Gaithersburg, MD, United States

8:30

- EA-01. High pressure routes to new pyrochlores and novel magnetism. (Invited)** *C. Wiebe^{1,2} 1. University of Winnipeg, Winnipeg, MB, Canada; 2. CIFAR, Toronto, ON, Canada*

9:06

- EA-02. Order and Disorder in Spin Liquids from Diffuse Magnetic Neutron Scattering. (Invited)** *J. Paddison^{1,2}, Z. Dun^{2,3}, X. Bai², M. Daum², H. Ong¹, J. Hamp¹, P. Mukherjee¹, N. Butch⁵, M. Tucker⁴, Y. Liu⁴, A. Goodwin⁶, C. Castelnovo¹, H. Zhou³, S. Dutton¹ and M. Mourigal² 1. Department of Physics, University of Cambridge, Cambridge, United Kingdom; 2. School of Physics, Georgia Tech, Atlanta, GA, United States; 3. Department of Physics and Astronomy, University of Tennessee, Knoxville, TN, United States; 4. Spallation Neutron Source, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 5. NIST Center for Neutron Research, NIST, Gaithersburg, MD, United States; 6. Department of Chemistry, University of Oxford, Oxford, United Kingdom*

9:42

- EA-03. Ground State Selection in Quantum XY Pyrochlore Magnets. (Invited)** *B. Gaulin¹ 1. Physics and Astronomy, McMaster University, Hamilton, ON, Canada*

10:18

- EA-04. Competing orders and topological excitation in spin-1 pyrochlore antiferromagnets. (Invited)** *G. Chen¹ and F. Li¹*
1. Physics, Fudan Univ, Shanghai, China

10:54

- EA-05. Structural Tuning of Orbital and Spin Order in Frustrated Antiferromagnets. (Invited)** *C. Beekman^{1,2}, C.J. Thompson^{3,2}, D. Reig-i-Plessis⁵, L. Kish⁵, A. Aczel⁴, B. Zhang^{1,2}, E. Karapetrova⁶ and G. MacDougall⁵*
1. Physics, Florida State University, Tallahassee, FL, United States; 2. National High Magnetic Field Laboratory, Tallahassee, FL, United States; 3. Materials Science and Engineering Program, Florida State University, Tallahassee, FL, United States; 4. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 5. Physics, University of Illinois at Urbana-Champaign, Champaign, IL, United States; 6. Advanced Photon Source, Argonne National Laboratory, Argonne, IL, United States

THURSDAY
MORNING
8:30

SALON 3

Session EB

MAGNETISM FOR THE BRAIN: CHALLENGES AND SOLUTIONS

Ravi Hadimani, Co-Chair

Virginia Commonwealth University, Richmond, VA, United States

Montserrat Rivas, Co-Chair

Universidad de Oviedo, Gijón, Spain

8:30

- EB-01. Magnetic Nanorobots to Cross the Blood-brain Barrier. (Invited)** *S. Martel¹*
1. Computer and Software Engineering, Polytechnique Montreal, Montreal, QC, Canada

9:06

- EB-02. Magnetoencephalography with conformal microfabricated optically-pumped magnetometer arrays. (Invited)**
S. Krzyzewski¹, N. Nardelli¹, B. Korenko¹, G. Romanov¹, J. Hughes^{1,2}, O. Alem^{1,2} and S. Knappe^{1,2}
1. Department of Mechanical Engineering, University of Colorado, Boulder, CO, United States; 2. FieldLine Inc., Lafayette, CO, United States

9:42

- EB-03. Design and demonstration of novel magnetoencephalogram detectors. (Invited)** *T. Uchiyama¹ and J. Ma¹*
1. Electrical Engineering, Nagoya University, Nagoya, Japan

10:18

- EB-04. Recent Developments in Deep Brain Stimulation using Magnetic Fields for Non-invasive Therapy of Brain Disorders. (Invited)** *D.C. Jiles¹*
1. Iowa State University, Ames, IA, United States

- EB-05. Cell Tracking Using Magnetic Particles: from MRI to MPI.** *(Invited) J. Bulte¹ 1. Johns Hopkins University School of Medicine, Baltimore, MD, United States*

THURSDAY
MORNING
8:30

SALON 1

Session EC SKYRMIONS II

Stephen McVitie, Chair
University of Glasgow, Glasgow, United Kingdom

8:30

- EC-01. Nucleation, Stability and Dynamics of Topological Spin Structures.** *(Invited) A. Soumyanarayanan¹ 1. Institute of Materials Research & Engg (IMRE), Agency for Science, Technology & Research (A*STAR), Singapore, Singapore*

9:06

- EC-02. Polarized neutron reflectometry measurements to detect chiral bobbles in FeGe thin films.** *R. Need¹, A. Ahmed², R. Bennett², R. Kawakami² and B.J. Kirby¹ 1. NIST Center for Neutron Research, Gaithersburg, MD, United States; 2. Ohio State University, Columbus, OH, United States*

9:18

- EC-03. Ultrafast Domain Walls and Ultrasmall Skyrmions in a Compensated Ferrimagnet.** *L.M. Caretta¹, M. Mann¹, F. Buettner¹, K. Ueda¹, B. Pfau², C. Günther², P. Helsing², A. Churikova¹, C. Klose², M. Schneider², D. Engel², C. Marcus¹, D. Bono¹, K. Bagschik³, S. Eisebitt² and G. Beach¹ 1. Materials Science and Engineering, Massachusetts Institute of Technology (MIT), Cambridge, MA, United States; 2. Max-Born-Institut, Berlin, Germany; 3. DESY, Hamburg, Germany*

9:30

- EC-04. Isolated magnetic skyrmions: from a fundamental understanding to the observation of ultrasmall skyrmions at room temperature.** *F. Buettner¹, I. Lemesh¹, L.M. Caretta¹, M. Mann¹, K. Ueda¹, B. Pfau², C. Günther³, P. Helsing², A. Churikova¹, M. Schneider², D. Engel², C. Klose², K. Bagschik⁴, S. Eisebitt² and G. Beach¹ 1. Massachusetts Institute of Technology, Cambridge, MA, United States; 2. Max Born Institut, Berlin, Germany; 3. TU Berlin, Berlin, Germany; 4. DESY, Hamburg, Germany*

9:42

- EC-05. Nonequilibrium skyrmion accumulation in Ir/Co/Pt heterostructure.** *S. Sugimoto¹, S. Kasai¹, Y. Takahashi¹ and Y. Tokura^{2,3} 1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. RIKEN Center for Emergent Matter Science, Wako, Japan; 3. Department of Applied Physics, University of Tokyo, Tokyo, Japan*

- EC-06. Confinement and Controlled Skyrmion Motion in Magnonic Antidot Lattices.** *S. Saha*^{3,4}, *M. Mruczkiewicz*^{1,2}, *S. Finizio*⁴, *M. Zelent*², *S. Wintz*⁴, *A. Suszka*^{3,4}, *N.S. Bingham*^{3,4}, *J. Raabe*⁴, *M. Krawczyk*² and *L. Heyderman*^{3,4} *1. Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava, Slovakia; 2. Adam Mickiewicz University, Poznan, Poland; 3. ETH Zurich, Zurich, Switzerland; 4. Paul Scherrer Institute, Villigen, Switzerland*

10:06

- EC-07. Brownian motion of skyrmion bubbles on wire.** *Y. Jibiki*¹, *M. Goto*^{1,3}, *T. Srivastava*², *W. Lim*², *S. Auffret*², *C. Baraduc*², *H. Bea*², *J. Cho*^{1,3}, *E. Tamura*^{1,3} and *Y. Suzuki*^{1,3} *1. Osaka University, Osaka, Japan; 2. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-Spintec, Grenoble, France; 3. Osaka CSRN, Osaka, Japan*

10:18

- EC-08. Visualizing the Dynamics of sub-100 nm Néel Skyrmions in Multilayer Nanowires.** *A. Tan Kok Cheng*^{1,2}, *P. Ho*¹, *L. Huang*¹, *J. Lourembam*¹, *S. Goolaup*¹ and *A. Soumyanarayanan*¹ *1. Agency for Science, Technology and Research (A*STAR), Singapore, Singapore; 2. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom*

10:30

- EC-09. Thermal stability of metastable magnetic skyrmions: Entropic narrowing and significance of internal eigenmodes.** *L. Desplat*^{1,2}, *D. Suess*³, *J. Kim*² and *R. Stamps*^{4,1} *1. SUPA School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 3. Christian Doppler Laboratory, Physics of Functional Materials, Faculty of Physics, University of Vienna, Vienna, Austria; 4. Department of Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada*

10:42

- EC-10. Direct observation of coherent and ferrimagnetic skyrmions in Co and Gd layers in [Co/Gd/Pt]_n multilayers using X-PEEM.** *X. Wang*¹, *A.T. Clark*¹, *Z. Yan*¹, *P.N. Lapa*², *M. Vogel*², *J. Pearson*², *D.J. Keavney*³, *A. Hoffmann*², *S.G.E. te Velthuis*² and *X. Cheng*¹ *1. Department of Physics, Bryn Mawr College, Bryn Mawr, PA, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Advanced Photon Source, Argonne National Laboratory, Lemont, IL, United States*

10:54

- EC-11. Controlled generation of room-temperature magnetic skyrmion bubble lattices in ultrathin films by ultrafast laser.** *S. Je*^{1,2}, *P. Vallobrá*², *T. Srivastava*¹, *J. Rojas-Sánchez*², *T. Pham*², *M. Hehn*², *G. Malinowski*², *C. Baraduc*¹, *S. Auffret*¹, *G. Gaudin*¹, *S. Mangin*², *H. Bea*¹ and *O. Boulle*¹ *1. SPINTEC, Grenoble, France; 2. Institut Jean Lamour, Nancy, France*

- EC-12. Cascaded Skyrmion Logic System Inspired by Conservative Logic.** *X. Hu*¹, *M. Chauwin*^{1,2}, *F. Garcia-Sanchez*³, *N. Betrabet*¹, *C. Moutafis*⁴ and *J.S. Friedman*¹ *1. Electrical and Computer Engineering, The University of Texas at Dallas, Richardson, TX, United States; 2. Department of Physics, Ecole Polytechnique, Palaiseau, France; 3. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 4. School of Computer Science, The University of Manchester, Manchester, United Kingdom*

- EC-13. Thermally excited skyrmion diffusion used in a reshuffler device.** *J. Zazvorka*¹, *F. Jakobs*³, *D. Heinze*¹, *K. Litzius*^{1,2}, *S. Jaiswal*¹, *S. Kromin*¹, *N. Keil*¹, *P. Virnau*¹, *D. Pinna*¹, *K. Everschor-Sitte*^{1,2}, *G. Jakob*^{1,2}, *A. Donges*³, *U. Nowak*³ and *M. Kläui*^{1,2} *1. Physics, Johannes Gutenberg-University Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Physics, University of Konstanz, Konstanz, Germany*

THURSDAY
MORNING
8:30

MARYLAND

Session ED SPINWAVES AND MAGNONICS

Dafiné Ravelosona, Chair
Institut d'Electronique Fondamentale, Orsay, France

- ED-01. Magnon Linewidths in YIG-based Waveguides at Millikelvin Temperatures.** *S. Kosen*¹, *A.F. van Loo*¹, *L. Mihalceanu*², *D.A. Bozhko*², *A.A. Serga*² and *A.D. Karenowska*¹ *1. Physics, University of Oxford, Oxford, United Kingdom; 2. Physics, Technische Universitaet Kaiserslautern, Kaiserslautern, Germany*

- ED-02. Magnonic crystals based on ultra-thin YIG: experimental realizations and micro-magnetic simulation insights.** *H.P. Merbouche*¹, *M. Collet*¹, *M. Evelt*³, *V.E. Demidov*³, *L. Soumah*¹, *J.L. Prieto*⁴, *M. Muñoz*⁵, *J. Ben Youssef*⁶, *G. de Loubens*⁷, *O. Klein*⁸, *S. Xavier*², *V. Cros*¹, *P. Bortolotti*¹, *S.O. Demokritov*³ and *A. Anane*¹ *1. Unité Mixte de Recherche CNRS/THALES, Palaiseau, France; 2. Thales Research & Technology, Palaiseau, France; 3. Institute for Applied Physics and Center for Nanotechnology, University of Muenster, Muenster, Germany; 4. Universidad Polytechnica de Madrid, Madrid, Spain; 5. Instituto de Microelectrónica de Madrid, Madrid, Spain; 6. Laboratoire de Magnetisme de Bretagne CNRS, Universite de Bretagne Occidentale, Brest, France; 7. CEA Saclay, Service de Physique de l'Etat Condense, Gif-sur-Yvette, France; 8. CEA-SPINTEC, Grenoble, France*

ED-03. Strain-Controlled Magnonic Networks Based on Lateral Yttrium Iron Garnet Stripes and Magnonic Crystals.

A.V. Sadovnikov¹, E.N. Beginin¹, A. Grachev¹ and S. Nikitov^{1,2}
1. Laboratory of Magnonics, Saratov State University, Saratov, Russian Federation; 2. IRE RAS, Moscow, Russian Federation

9:06

ED-04. Magnonic band diagram for spin density waves sustained in thin films.

P. Sprenger¹, M. Hoefer¹ and E. Iacocca¹ *1. Applied Mathematics, University of Colorado Boulder, Boulder, CO, United States*

9:18

ED-05. Efficient Magnonic Spin Transport in Insulating

Antiferromagnetic Thin Films. *A. Ross^{1,2}, R. Lebrun¹, S. Bender³, J. Cramer^{1,2}, D. Ellis⁴, A. Kay⁴, D. Grave⁴, L. Baldrati¹, J. Moussy⁵, A. Brataas⁶, A. Rothschild⁴, R. Duine^{3,6} and M. Kläui^{1,2}* *1. Johannes-Gutenberg University Mainz, Mainz, Germany; 2. Graduate School of Excellence Material Science in Mainz, Mainz, Germany; 3. Utrecht University, Utrecht, Netherlands; 4. Department of Materials Science and Engineering, Technion-Israel Institute of Technology, Haifa, Israel; 5. SPEC, CEA-Saclay, CNRS, Université Paris-Saclay, Paris, France; 6. Center for Quantum Spintronics, Department of Physics, Norwegian University of Science and Technology, Trondheim, Norway*

9:30

ED-06. Magnon transport in multilayer magnetic system.

S. Ruta¹, Z. Fu², T.A. Ostler³, A. Kimel⁴, R.F. Evans¹ and R.W. Chantrell¹
1. Physics, University of York, York, United Kingdom; 2. Tongji University, Shanghai, China; 3. Sheffield Hallam University, Sheffield, United Kingdom; 4. Institute for Molecules and Materials, Radboud University Nijmegen, Nijmegen, Netherlands

9:42

ED-07. Emergent Magnon Motifs and Worm-like Nanochannels in Artificial Ferromagnetic Quasicrystals Created by Nanoholes in Amorphous CoFeB.

S. Watanabe¹, V.S. Bhat¹, K. Baumgärtl¹ and D. Grundler^{1,2} *1. IMX-LMGN, EPFL, Lausanne, Switzerland; 2. IMT, EPFL, Lausanne, Switzerland*

9:54

ED-08. Demonstration of dynamic control of the cavity-magnon exchange coupling.

I. Boventer^{1,2}, C. Dörflinger², T. Wolz², M. Kläui^{1,3} and M.P. Weides^{2,4} *1. Institute of Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 2. Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany; 3. University Mainz, Materials Science in Mainz, Mainz, Germany; 4. School of Engineering, University of Glasgow, Glasgow, United Kingdom*

10:06

- ED-09. Electrical determination of magnon band structure in narrow NiFe strip using parametric magnon excitation.** G. Okano¹ and Y. Nozaki^{1,2} *1. Department of Physics, Keio Univ., Yokohama, Japan; 2. Center for Spintronics Research Network, Keio Univ., Yokohama, Japan*

10:18

- ED-10. 3D transport of spin waves in curved nano-membranes. (Invited)** M. Zimmermann¹, J.A. Otalora Arias², S. Wintz³, T. Schneider⁴, H. Schultheiss⁴, J. Lindner⁴, J. Fassbender⁴, C. Back⁵ and A. Kakay⁴ *1. Physics Department, University of Regensburg, Regensburg, Germany; 2. Leibniz-Institut für Festkörper- und Werkstoffforschung, Dresden, Germany; 3. Paul Scherrer Institute, Villigen, Switzerland; 4. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 5. Technical University Munich, München, Germany*

10:54

- ED-11. Graded Index Lenses for Spin Waves.** N.J. Whitehead¹, S.A. Horsley¹, T.G. Philbin¹ and V.V. Kruglyak¹ *1. Physics and Astronomy, University of Exeter, Exeter, United Kingdom*

11:06

- ED-12. Implementation of the Stimulated-Raman-Adiabatic-Passage mechanism in magnonics.** Q. Wang¹, P. Pirro¹, T. Brächer¹, A. Chumak¹ and B. Hillebrands¹ *1. Physics, TU Kaiserslautern, Kaiserslautern, Germany*

11:18

- ED-13. Magnon focusing in NiFe thin films using GHz repetition rate femtosecond laser pulses.** S. Muralidhar¹, A. Aleman¹, A.A. Awad¹, R.E. Camley², D. Hanstorp¹ and J. Åkerman¹ *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Physics Department, University of Colorado at Colorado Springs, Colorado Springs, CO, United States*

THURSDAY
MORNING
8:30

VIRGINIA

Session EE MULTIFERROICS AND MAGNETOELECTRIC PHENOMENA II

Massimo Ghidini, Chair
University of Cambridge, Cambridge, United Kingdom

8:30

- EE-01. Strong magnetodielectric coupling in a Ru-based 6H-perovskite, Ba₃RRu₂O₉ (R=Nd, Ho).** T. Basu¹, A. Pautrat¹, V. Hardy¹, A. Loidl² and S. Krohns² *1. CRISMAT, CNRS, Caen, France; 2. Augsburg University, Augsburg, Germany*

8:42

- EE-02. Modulated magnetic structure in ^{57}Fe doped orthorhombic YbMnO_3 : a Mössbauer study.** M. Duttine², A. Wattiaux², F. Balima², C. Decorse³, H. Moutaabbid⁴, D. Ryan¹ and P. Bonville⁵ *1. Physics Department, McGill University, Montreal, QC, Canada; 2. CNRS, Université de Bordeaux, Pessac, France; 3. ICMO, Université Paris-Sud, Orsay, France; 4. IMPMC, Sorbonne Universités, Paris, France; 5. CEA, Université Paris-Saclay, Gif-sur-Yvette, France*

8:54

- EE-03. Voltage Driven Magnetic Domain Wall Motion in $\text{FeCoSiB/PMN-PT}(011)$ Multiferroic Heterostructures.** X. Zhao¹, Z. Hu¹, W. Hou¹, Q. Yang¹, M. Yao¹, L. Wang¹, Y. Cheng¹, Z. Zhou¹ and M. Liu¹ *1. Xi'an Jiaotong University, Xi'an, China*

9:06

- EE-04. Multiferroic Behavior in Fe-doped BaTiO_3 single crystals.** M. Staruch¹, H. ElBidweihy², M. Cain³, P. Thompson⁴ and P. Finkel¹ *1. U.S. Naval Research Laboratory, Washington, DC, United States; 2. Electrical and Computer Engineering Department, United States Naval Academy, Annapolis, MD, United States; 3. Electrosiences Ltd., Surrey, United Kingdom; 4. European Synchrotron Radiation Facility, Grenoble, France*

9:18

- EE-05. Magnetic properties of Gd-doped NFO - BTO nanocomposites.** T. Parida¹, B. Murty² and G. Markandeyulu¹ *1. Physics, IIT Madras, Chennai, India; 2. Metallurgical and Materials Engineering, IIT Madras, Chennai, India*

9:30

- EE-06. Non-Specular Optical Investigations of the Magnetic Properties of Rod-Like Multiferroic Janus Fibers.** C.J. Dolbashian¹, T. Crawford¹ and J. Andrew² *1. Physics and Astronomy, University of South Carolina, Columbia, SC, United States; 2. Material Science and Engineering, University of Florida, Gainesville, FL, United States*

9:42

- EE-07. Using Magnetic Field Chaining in Multiferroic Janus Nanofibers to Extract the Magnetoelectric Coupling.** B. Chavez^{1,2}, M.J. Bauer³, J. Andrew³ and T. Crawford^{1,2} *1. Smart State Center for Experimental Nanoscale Physics, University of South Carolina, Columbia, SC, United States; 2. Department of Physics and Astronomy, University of South Carolina, Columbia, SC, United States; 3. Materials Science and Engineering, University of Florida, Gainesville, FL, United States*

- EE-08. Voltage-induced Magnetocapacitance in Magnetic Tunnel Junctions.** *H. Kaiju*¹, *T. Misawa*¹, *T. Nagahama*², *T. Komine*³, *O. Kitakami*⁴, *M. Fujioka*¹, *J. Nishii*¹ and *G. Xiao*⁵ *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Graduate School of Engineering, Hokkaido University, Sapporo, Japan; 3. Faculty of Engineering, Ibaraki University, Hitachi, Japan; 4. Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan; 5. Department of Physics, Brown University, Providence, RI, United States*

10:06

- EE-09. Withdrawn**

10:18

- EE-10. Room-Temperature Electric Field Controlled On-Off Ferromagnetism in a Single Metal Oxide Film.** *A. Quintana Puebla*^{1,2}, *E. Menendez*², *M. Liedke*³, *M. Butterling*³, *A. Wagner*³, *V. Sireus*², *P. Torruella*^{4,5}, *S. Estradé*^{4,5}, *F. Peiró*^{4,5}, *J. Dendooven*⁶, *C. Detavernier*⁶, *P. Murray*⁷, *D. Gilbert*^{8,7}, *E. Pellicer*², *J. Nogues*^{9,10}, *J. Sort*^{2,10} and *K. Liu*¹ *1. Department of Physics, Georgetown University, Washington, DC, United States; 2. Physics Department, Universitat Autònoma de Barcelona, Cerdanyola del Vallès, Spain; 3. Nuclear Physics, Helmholtz-Zentrum Dresden-Rossendorf, Rossendorf, Germany; 4. Departament d'Enginyeria Electrònica i Biomèdica, Universitat de Barcelona, Barcelona, Spain; 5. Institute of Nanoscience and Nanotechnology, Universitat de Barcelona, Barcelona, Spain; 6. Department of Solid State Sciences, Universiteit Ghent, Ghent, Belgium; 7. Physics Department, University of California Davis, Davis, CA, United States; 8. Neutron-Condensed Matter Science, NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 9. Magnetic Nanostructures Group, Catalan Institute of Nanoscience and Nanotechnology, CSIC and BIST, Cerdanyola del Vallès, Spain; 10. Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain*

10:30

- EE-11. Voltage induced manipulation of domains and exchange bias in Fe thin films.** *J. Zehner*^{1,2}, *I. Soldatov*¹, *S. Faehler*¹, *R. Hühnstock*^{3,4}, *D. Holzinger*^{3,4}, *A. Ehresmann*^{3,4}, *K. Nielsch*^{1,2}, *R. Schäfer*¹ and *K. Leistner*^{1,2} *1. IFW Dresden, Dresden, Germany; 2. TU Dresden, Dresden, Germany; 3. Institute of Physics and CINSaT, Kassel, Germany; 4. Univ. Kassel, Kassel, Germany*

10:42

- EE-12. Voltage control of RKKY interaction for AFM-FM spintronic devices.** *Q. Yang*¹, *X. Wang*², *L. Wang*¹, *Z. Zhou*¹, *N. Sun*² and *M. Liu*¹ *1. Xi'an Jiaotong University, Xi'an, China; 2. Northeastern University, Boston, MA, United States*

10:54

- EE-13. Tunable giant magnetoelectric impedance in magnetoelectric heterostructures.** *Z. Wang*¹, *W. Su*¹, *Z. Hu*¹, *Z. Zhou*¹ and *M. Liu*¹ *1. ECE, Xi'an Jiaotong University, Xi'an, China*

11:06

- EE-14. Magneto-ionic control of magnetism using a solid state proton pump.** *A. Tan*¹, *M. Huang*¹, *C. Avci*¹, *F. Buettner*^{1,2}, *W. Hu*², *C. Mazzoli*², *H.L. Tuller*¹ and *G. Beach*¹ *1. Materials Science and Engineering, MIT, Cambridge, MA, United States; 2. Brookhaven National Laboratory, Upton, NY, United States*

11:18

- EE-15. Effect of dopant-induced defects on structural and enhanced ferromagnetism and magnetoelectric properties of Dy and Sr co-doped BiFeO₃ at room temperature.** *M. Muniyandi*¹ and *A. Fakhrabadi*¹ *1. Mechanical Engineering, University of Chile, Beauchef, Chile*

THURSDAY
MORNING
8:30

DELAWARE

Session EF

MAGNETIZATION DYNAMICS II

Marco Battiato, Chair

Nanyang Technological University, Singapore, Singapore

8:30

- EF-01. Ultralow Damping in Epitaxial Spinel Ferrite Thin Films.** *S. Emori*^{1,2}, *D. Yi*², *S. Crossley*², *J.J. Wissner*², *L.J. Riddiford*², *P.P. Balakrishnan*², *B. Khodadadi*¹, *P. Shafer*³, *C. Klewe*³, *A.T. N'Diaye*³, *B.T. Urwin*⁴, *K. Mahalingam*⁴, *B.M. Howe*⁴, *H. Hwang*², *E. Arenholz*³ and *Y. Suzuki*² *1. Virginia Tech, Blacksburg, VA, United States; 2. Stanford University, Stanford, CA, United States; 3. Lawrence Berkeley National Laboratory, Berkeley, CA, United States; 4. Air Force Research Laboratory, WPAFB, OH, United States*

8:42

- EF-02. Giant Anisotropy of Gilbert Damping in Epitaxial FeCo Films.** *Y. Li*^{1,2}, *F. Zeng*³, *S. Zhang*², *H. Shin*^{2,4}, *H. Saglam*^{2,5}, *V. Karakas*^{2,6}, *O. Ozatay*^{2,6}, *J. Pearson*², *O. Heinonen*², *Y. Wu*³, *A. Hoffmann*² and *W. Zhang*^{1,2} *1. Physics, Oakland University, Rochester, MI, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Physics, Fudan University, Shanghai, China; 4. Computational Sciences Division, Argonne National Laboratory, Lemont, IL, United States; 5. Physics, Illinois Institute of Technology, Chicago, IL, United States; 6. Physics, Bogazici University, Istanbul, Turkey*

- EF-03. Two-magnon Scattering and Magnetization Damping in Epitaxial Heusler Compound Films.** T.A. Peterson¹, W. Peria¹, T. Qu², A.P. McFadden^{3,4}, R.H. Victora², C.J. Palmström^{3,4} and P.A. Crowell¹ *1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 2. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 3. Department of Electrical & Computer Engineering, University of California, Santa Barbara, CA, United States; 4. Department of Materials, University of California, Santa Barbara, CA, United States*

- EF-04. Electron-Mediated Spin Pumping into Biased Antiferromagnetic IrMn: Absence of Anisotropic Damping.** B. Khodadadi¹, Y. Lim¹, D. Smith¹, R. Greening¹, Y. Zheng², C. Kaiser² and S. Emori¹ *1. Physics, Virginia Tech, Blacksburg, VA, United States; 2. Western Digital, Fremont, CA, United States*

- EF-05. Low Gilbert damping for epitaxial thin films of the equiatomic CoFeMnSi Heusler alloy.** L. Bainsla¹, R. Yilgin¹, M. Tsujikawa^{2,3}, K. Suzuki^{1,3}, M. Shirai^{2,3} and S. Mizukami^{1,3} *1. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

- EF-06. Damping Constant and Interfacial Anisotropy in Co/Pt Multilayers.** Z. Dai^{1,2}, B. Zhou^{1,3} and J. Zhu^{1,2} *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Materials Science and Engineering Department, Carnegie Mellon University, Pittsburgh, PA, United States*

- EF-07. Theory of magnetization damping in chiral magnetic textures.** C.A. Akosa¹, A. Takeuchi², Z. Yuan³ and G. Tatara^{1,4} *1. RIKEN Center for Emergent Matter Science (CEMS), RIKEN, Wako, Saitama 351-0198, Japan; 2. Department of Physics and Mathematics, Aoyama Gakuin University, Sagamihara, Kanagawa 252-5258, Japan; 3. The Center for Advanced Quantum Studies and Department of Physics, Beijing Normal University, 100875 Beijing, China; 4. RIKEN Cluster for Pioneering Research (CPR), RIKEN, Wako, Saitama, 351-0198, Japan*

- EF-08. A First Principle Study of Antiferromagnetic Resonance Linewidth in Metallic Systems: The Crucial Role of Interlattice Spin Current.** F. Mahfouzi¹ and N. Kioussis¹ *1. Physics and Astronomy, California State University, Northridge, Northridge, CA, United States*

10:06

- EF-09. Mutual Synchronization of Spin Torque Nano Oscillator by Magnetic Field coupling.** H. Singh¹, A. Bose¹, S.S. Bhuktare¹, A. Fukushima², K. Yakushiji², H. Kubota², S. Yuasa² and A. Tulapurkar¹ *1. Electrical Engineering, Indian Institute of Technology, Bombay, Bombay, India; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Ibaraki, Japan*

10:18

- EF-10. Study on the Magnetization Dynamics of Fe-Si Thin Films Using Our Proposed Measurement Technique.** Y. Endo^{1,2}, O. Mori³, Y. Shimada¹, S. Yabukami⁴, S. Sato³ and R. Utsumi³ *1. ECEI, Tohoku University, Sendai, Japan; 2. CSRN, Tohoku University, Sendai, Japan; 3. Toei Scientific Industrial Co., Ltd, Natori, Japan; 4. Division of Biomedical Engineering for Diagnosis and Treatment, Tohoku University, Sendai, Japan*

10:30

- EF-11. Modeling of thermally driven asymmetric oscillations in magnetoresistive readers.** T. Pipathanapoompron^{1,2}, M. d'Aquino³, C. Serpico⁴ and A. Stankiewicz⁵ *1. Department of Electrical Engineering, Khon Kaen University, Khon Kaen, Thailand; 2. Seagate Technology, Korat, Thailand; 3. Department of Engineering, University of Naples "Parthenope", Naples, Italy; 4. Department of Electrical Engineering and Information Technology, University of Naples Federico II, Naples, Italy; 5. Seagate Technology, Bloomington, MN, United States*

10:42

- EF-12. Modeling Magnetoelectric Switching of the Exchange-Coupled G-type Antiferromagnet and Ferromagnet.** Y. Liao¹, D.E. Nikonov², S. Manipatruni², I. Young² and A. Naeemi¹ *1. Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States; 2. Components Research, Intel Corporation, Hillsboro, OR, United States*

10:54

- EF-13. Experimental evidence of the tunable nonlinearity in He⁺ irradiated spin-torque nano-oscillators.** S. Jiang^{1,2}, S. Chung^{1,3}, T.Q. Le¹, L. Herrera Diez⁴, A. Houshang⁵, M. Zahedinejad⁵, D. Ravelosona^{4,6} and J. Åkerman^{5,1} *1. Applied Physics, KTH Royal Institute Technology, Stockholm, Sweden; 2. NanOsc AB, Kista, Sweden; 3. Uppsala University, Uppsala, Sweden; 4. Center for Nanoscience and Nanotechnology, CNRS, Université Paris-Sud, Paris, France; 5. Physics Department, University of Gothenburg, Gothenburg, Sweden; 6. Spin-Ion Technologies, Versailles Cedex, France*

11:06

- EF-14. Cavity Optomechanics of Topological Spin Textures in Magnetic Insulators.** I. Proskurin^{1,2} and R. Stamps¹ *1. Physics & Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation*

- EF-15. Ultrafast Demagnetization by Extreme Ultraviolet Light.** *A. Philippi-Kobs*¹, *M. Berntsen*², *L. Müller*¹, *M. Riepp*¹, *W. Roseker*¹, *K. Bagschik*¹, *J. Wagner*³, *R. Frömter*³, *F. Capotondi*⁴, *E. Pedersoli*⁴, *M. Kiskinova*⁴, *M. Manfredda*⁴, *M. Danailov*⁴, *B. Ziaja*¹, *H. Oepen*³ and *G. Grübel*¹ *1. DESY, Hamburg, Germany; 2. KTH Royal Institute of Technology, Kista, Sweden; 3. University of Hamburg, Hamburg, Germany; 4. Elettra-Sincrotrone Trieste, Trieste, Italy*

THURSDAY
MORNING
8:30

WASHINGTON 1

Session EG
MAGNETIC IMAGING AND MEASUREMENT
TECHNIQUES I

Emrah Turgut, Chair
Oklahoma State University, Stillwater, OK, United States

8:30

- EG-01. Electrically-induced topological phase transition and current-driven skyrmion motion in a chiral-lattice FeGe.** *(Invited) X. Yu*¹ *1. CEMS, RIKEN, Wako, Japan*

9:06

- EG-02. Quantitative magnetization measurements of Néel-type skyrmions, Bloch-type skyrmions and chiral bobbles using off-axis electron holography.** *A. Kovacs*¹, *J. Caron*¹, *T. Denneulin*¹, *N.S. Kiselev*², *F. Zheng*¹, *Z. Li*³, *M. Hoffmann*², *S. Blügel*² and *R.E. Dunin-Borkowski*¹ *1. Ernst Ruska-Centre, Forschungszentrum Juelich, Juelich, Germany; 2. Peter Gruenberg Institute and Institute for Advanced Simulation, Forschungszentrum Juelich, Juelich, Germany; 3. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

9:18

- EG-03. Imaging Néel Skyrmions in permalloy nanodots induced by a magnetic field.** *E. Berganza*¹, *M. Jaafar*¹, *M. Goiriena-Goikoetxea*², *J. Pablo-Navarro*³, *J. Fernandez-Roldan*¹, *A. Garcia-Arribas*², *K. Guslienko*², *C. Magen*⁴, *J. de Teresa*⁴, *O. Chubykalo-Fesenko*¹ and *A. Asenjo*¹ *1. ICMM-CSIC, Madrid, Spain; 2. UPV-EHU, Leioa, Spain; 3. Universidad de Zaragoza, Zaragoza, Spain; 4. ICMA-CSIC, Zaragoza, Spain*

9:30

- EG-04. Ultrafast Lorentz Microscopy: A tool to study laser- and current-driven magnetization dynamics.** *M. Möller*¹, *N. Rubiano da Silva*¹, *J.H. Gaida*¹, *A. Feist*¹, *S. Schäfer*¹ and *C. Ropers*¹ *1. 4th Physical Institute, University of Goettingen, Göttingen, Germany*

9:42

- EG-05. Crossover of Tip-sample Magnetic Couplings in an In-field Spin-polarized Scanning Tunneling Microscopy.** *S. Phark*^{1,2} and *D. Sander*³ *1. Center for Quantum Nanoscience, Institute for Basic Science, Seoul, The Republic of Korea; 2. Physics, Ewha Womans University, Seoul, The Republic of Korea; 3. Max-Planck-Institute of Microstructure Physics, Halle (Saale), Germany*

9:54

- EG-06. Investigation of Magnetostriction in Permalloy Thin Films using Lorentz Electron Microscopy.** *A.A. Cowan*^{1,2} *1. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Centre of Nanostructured Media, Queen's University, Belfast, United Kingdom*

10:06

- EG-07. Thin films magnetostriction measurements by scanning probe microscopy.** *M. Coisson*¹, *M. Cialone*^{1,2}, *W. Huettene*³, *G. Barrera*¹, *F. Celegato*¹, *Z. Barber*³, *P. Rizzi*² and *P. Tiberto*¹ *1. Nanoscience and Materials, INRIM, Torino, Italy; 2. Chemistry, Università di Torino, Torino, Italy; 3. Materials science and metallurgy, University of Cambridge, Cambridge, United Kingdom*

10:18

- EG-08. An Apparatus and Methodology for High-power SQUID-detected Ferromagnetic Resonance Measurements.** *J.M. O'Reilly*¹ and *P.S. Stamenov*¹ *1. School of Physics and CRANN, Trinity College, Dublin, Ireland*

10:30

- EG-09. Investigating interlayer exchange coupling in FePt/MgO/CoFeB by ferromagnetic resonance.** *D. Tiwari*¹ *1. In-Situ Thin Film Lab, UGC-DAE-CSR Indore, Indore, India*

10:42

- EG-10. Real-Time Magnetometry by Tracked Magnetic Resonance of Nitrogen Vacancy Centers in Diamond.** *K. Ambal*^{1,2} and *R.D. McMichael*² *1. Institute for Research in Electronics and Applied Physics, University of Maryland, College Park, MD, United States; 2. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States*

10:54

- EG-11. Study of thermally induced uniaxial anisotropy in nickel thin films by surface acoustic waves.** *S.A. Mathews*¹, *N.A. Charipar*¹ and *K.M. Charipar*¹ *1. Materials Science and Technology Division, US Naval Research Laboratory, Washington, DC, United States*

- EG-12. Development of a System for Low Temperature Optical Measurement of Three-Dimensional Magnon, Plasmon and Spin Torque Transfer Dynamics.** *Y. Ou*¹, *X. Zhou*¹, *H. Kannan*², *R. Barri*², *S. Law*¹, *J. Xiao*² and *M.F. Doty*¹
1. Material Science and Engineering, University of Delaware, Newark, DE, United States; 2. Physics and Astronomy, University of Delaware, Newark, DE, United States

THURSDAY
MORNING
8:30

WASHINGTON 2

Session EH

THIN FILMS AND SURFACE EFFECTS I

Melissa Loving, Chair

Northrop Grumman Corporation, Linthicum, MD, United States

8:30

- EH-01. Probing Chiral Ferrimagnetism in Amorphous GdCo Films.** *(Invited) R. Streubel*¹ *1. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

9:06

- EH-02. Imaging the Magnetic Domain Structure of Cobalt Intercalated underneath Graphene on Silicon Carbide.** *R. Hönig*¹, *P. Roese*¹, *K. Shamout*¹, *T. Ohkochi*³, *U. Berges*^{2,1} and *C. Westphal*¹ *1. TU Dortmund University, Dortmund, Germany; 2. Zentrum für Synchrotronstrahlung, Dortmund, Germany; 3. Japan Synchrotron Radiation Research Institute, Sayo-gun, Japan*

9:18

- EH-03. Reversal processes in CoCrPt thin films and pseudo-spin-valves with perpendicular magnetic anisotropy.** *D. Navas*¹, *F. Beron*², *C.T. Sousa*¹, *M. Puydinger*², *K.R. Pirota*², *N. Soriano*³, *C. Redondo*³, *R. Morales*^{4,5} and *C. Ross*⁶
1. IFIMUP-IN and Departamento de Física e Astronomia, Universidade do Porto, Porto, Portugal; 2. Instituto de Física Gleb Wataghin, Universidade Estadual Campinas, Campinas, Brazil; 3. Department of Chemical-Physics, University of the Basque Country UPV/EHU, Leioa, Spain; 4. Department of Chemical-Physics & BCMaterials, University of the Basque Country UPV/EHU & BCMaterials, Leioa, Spain; 5. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 6. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States

9:30

- EH-04. Enhancement of Perpendicular Magnetic Anisotropy in Epitaxial Co₅₀Fe₅₀(110)/Pt(111) Films on MgAl₂O₄(001).** *A.J. Lee*¹, *A. Ahmed*¹, *S. Guo*¹ and *F. Yang*¹ *1. Physics, The Ohio State University, Columbus, OH, United States*

9:42

- EH-05. Interfacial perpendicular magnetic anisotropy in Fe/MgAl₂O₄: A first-principles and experimental study.** K. Masuda¹, Q. Xiang^{1,2}, H. Sukegawa¹, S. Mitani^{1,2} and Y. Miura¹ *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan*

9:54

- EH-06. Withdrawn**

10:06

- EH-07. MnBi Thin and Ultra-thin Films for High Temperature Permanent Magnet Applications.** M. Villanueva¹, C. Navío¹, J. Rial¹, E. Céspedes¹, F.J. Mompean², M. García-Hernández², J. Camarero^{1,3} and A. Bollero¹ *1. IMDEA Nanoscience, Madrid, Spain; 2. ICMN-CSIC, Madrid, Spain; 3. UAM, Madrid, Spain*

10:18

- EH-08. Thin Film Rare Earth Iron Garnets with Perpendicular Magnetic Anisotropy for Spintronic Applications.** S. Mokarian Zanjani¹ and M.C. Onbasli^{1,2} *1. Graduate School of Materials Science and Engineering, Koc University, Istanbul, Turkey; 2. Electrical and Electronics Engineering, Koc University, Istanbul, Turkey*

10:30

- EH-09. Investigation of different Growth Modes of epitaxial EuS grown on InAs.** N.V. Blümel¹, A. Goschew¹, Y. Shokr¹ and P. Fumagalli¹ *1. Experimental Physics, Freie Universität Berlin, Berlin, Germany*

10:42

- EH-10. Engineering and monitoring spin states: From antiferromagnetic thin films to spin-crossover molecules.** A.T. N'Diaye¹, X. Zhang³, P.S. Costa³, G. Hao³, M. Yang², Q. Li², Z. Qiu², P.S. Dowben³ and E. Arenholz¹ *1. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States; 2. Department of Physics, University of California, Berkeley, Berkeley, CA, United States; 3. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States*

10:54

- EH-11. Ferromagnetic Interlayer Exchange Coupling in Py/Pt/Py.** P. Omelchenko¹, B. Heinrich¹ and E. Girt¹ *1. Physics, Simon Fraser University, Burnaby, BC, Canada*

11:06

- EH-12. Preparation and Characterization of Sputtered Fe₃O₄ Thin Film.** L. Cao¹, Z. Huang¹, J. Liang¹, X. Zhou¹, Y. Zhai^{1,2}, J. Du² and B. You² *1. School of Physics, Southeast University, Nanjing, China; 2. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, China*

- EH-13. Investigating the role of island formation on the mediation of strain and magnetic properties of ultra-thin film FeRh using PNR.** *C. Bull*¹, *C. Barton*¹, *W. Griggs*¹, *A. Caruana*², *C. Kinane*², *P. Nutter*¹ and *T. Thomson*¹ *1. Nano Engineering and Storage Technology Research Group, School Of Computer Science, University Of Manchester, Manchester, United Kingdom; 2. ISIS, Harwell Science and Innovation Campus, Science and Technology Facilities Council, Rutherford Appleton Laboratory, Didcot, United Kingdom*

THURSDAY
MORNING
8:30

WASHINGTON 5

Session EI NEW AND NANOSTRUCTURED PERMANENT MAGNETS I

Mahmud Khan, Co-Chair
Miami University, Oxford, OH, United States
Balamurugan Balasubramanian, Co-Chair
University of Nebraska, Lincoln, NE, United States

8:30

- EI-01. Phase-tuning control in MnAl gas atomized powder by nanostructuring through flash-milling process.** *J. Rial*¹, *P. Švec*², *E. Palmero*¹, *P. Švec* Sr² and *A. Bollero*¹ *1. Division of Permanent Magnets and Applications, IMDEA Nanoscience, Madrid, Spain; 2. Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia*

8:42

- EI-02. In-situ observation of the ferromagnetic L1₀ phase formation in the Mn-Al-C rapidly solidified alloy by synchrotron X-ray diffraction.** *A. Pasko*¹, *V. Etgens*¹, *M. Tyrman*¹, *F. Mazaleyrat*¹, *A. Vlad*², *Y. Garreau*², *A. Coati*², *M. Sauvage-Simkin*², *S. Quetel-Weben*³, *L. Perrière*³ and *I. Guillot*³ *1. SATIE, ENS Paris-Saclay, CNRS, Cachan, France; 2. Synchrotron SOLEIL, CNRS, Gif-sur-Yvette, France; 3. ICMPE, UPEC, CNRS, Thiais, France*

8:54

- EI-03. A Novel Approach for Rare Earth Free Hf-Co Permanent Magnet.** *I. Singh*², *M. Palit*¹ and *R. Mathur*¹ *1. Advanced Magnetism Group, Defence Metallurgical Research Laboratory, Hyderabad, India; 2. Dept. Of Mechanical Engg, National Institute of Technology, Calicut, Calicut, India*

9:06

- EI-04. The core-shell engineering on energy product of magnetic nanometals. (Invited)** *S. Ren*¹ *1. University at Buffalo, The State University of New York, Buffalo, NY, United States*

- EI-05. Magnetic Property Enhancement of High-Field-Annealed Rapidly-Quenched MnBi Due to Sn Addition.** *W. Zhang*^{1,2}, R. Skomski^{1,2}, P.R. Kharel³, L. Yue¹ and D.J. Sellmyer^{1,2}
1. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, United States; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE, United States; 3. Department of Physics, South Dakota State University, Brookings, SD, United States

- EI-06. Novel fabrication processing of MnBi powder and magnets with high performance.** *W. Tang*¹, G. Ouyang^{1,2}, B. Jensen¹, B. Cui¹, K.W. Dennis¹ and J. Cui^{1,2} *1. Ames Laboratory of USDOE, Ames, IA, United States; 2. Materials Science and Engineering, Iowa State University, Ames, IA, United States*

- EI-07. Neutron diffraction study of $\text{Fe}_{3+x}\text{Co}_{3-x}\text{Ti}_2$ ($x=0, 2, 3$).** *H. Wang*¹, B. Balasubramanian^{1,3}, R. Pahari¹, Y. Liu², A. Huq², D.J. Sellmyer^{1,3} and X. Xu^{1,3} *1. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States; 3. Nebraska Center for Materials and Nanoscience, Lincoln, NE, United States*

- EI-08. Hierarchical Lengthscales and Coercivity in Exchange-Coupled Nanochessboards.** *E. Vetter*¹, L. Geng², W. Jensen¹, M. Phillips¹, D. Joo¹, W. Soffa¹, Y. Jin² and J. Floro¹
1. Materials Science and Engineering, University of Virginia, Charlottesville, VA, United States; 2. Materials Science and Engineering, Michigan Technological University, Houghton, MI, United States

- EI-09. Thick On-chip Hard Magnets Having Excellent Performance for MEMS Applications.** *Y. He*¹, B. Chen², S. Haider², M. Zaeimbashi¹, C. Yu¹, G.M. Stephen³, D. Heiman³, Y. Wei¹, H. Chen¹, X. Liang¹, C. Tu¹, C. Dong¹, Y. Zhang¹ and N.X. Sun¹ *1. Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, United States; 2. Analog Devices, Inc., Wilmington, MA, United States; 3. Department of Physics, Northeastern University, Boston, MA, United States*

- EI-10. Large coercive field of ruthenium substituted ϵ -iron oxide nanomagnet.** *A. Namai*¹ and S. Ohkoshi¹ *1. The University of Tokyo, Tokyo, Japan*

- EI-11. Chemical Synthesis of Metal-Substituted Epsilon Iron Oxide and Preparation of Magnetically Oriented Films.** *M. Yoshikiyo*¹, A. Namai¹ and S. Ohkoshi¹ *1. Department of Chemistry, School of Science, The University of Tokyo, Tokyo, Japan*

- EI-12. Magnetically Oriented Barium Hexaferrite Thick Films Deposited by Aerosol Deposition with *in situ* Magnetic Field.** *S.D. Johnson*¹, *D. Park*², *S. Shin*¹, *S. Qadri*¹ and *E. Gorzkowski*¹
 1. *Naval Research Laboratory, Washington, DC, United States;*
 2. *Korean Institute of Material Science, Changwon, The Republic of Korea*

- EI-13. Theoretical and Computational Discovery of Critical Element Reduced Permanent Magnet Materials.** *D. Paudyal*¹ and *R. Choudhary*¹ 1. *Ames Laboratory, Ames, IA, United States*

THURSDAY
 MORNING
 9:30

EXHIBIT HALL A

Session EJ
NANOPARTICLES AND NANOWIRES
(Poster Session)
 Karine Chesnel, Chair
 Brigham Young University, Provo, UT, United States

- EJ-01. Quantitative size-structure-magnetic property relationships in thoroughly-characterized metallic Ni nanoparticle assemblies.** *J.T. Batley*¹, *M. Nguyen*¹, *I. Kamboj*¹, *C. Leighton*¹ and *E. Aydil*¹ 1. *Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States*
- EJ-02. Self-assembly of magnetic nanoparticles on magnetically recorded templates with sub-100 nm feature sizes.** *A.R. Mohtasebzadeh*^{1,2}, *E. Vreeland*³ and *T. Crawford*^{1,2}
 1. *SmartState Center for Experimental Nanoscale Physics, University of South Carolina, Columbia, SC, United States;*
 2. *Physics and Astronomy, University of South Carolina, Columbia, SC, United States;* 3. *IR Dynamics, LLC, Albuquerque, NM, United States*
- EJ-03. Properties of Magnetic Nanofibers under Different Growth Conditions.** *K. Gao*¹, *Y. Zhang*¹, *Y. Xie*¹, *B. Kucukgok*¹ and *J. Wang*² 1. *Applied Materials Division, Argonne National Laboratory, Argonne, IL, United States;* 2. *Nanoscience and Technology, Argonne National Laboratory, Argonne, IL, United States*
- EJ-04. Bloch point states in arrays of dipole-coupled magnetic nanodots and effects of magnetic frustration.** *I. Nekrashevich*¹ and *D. Litvinov*^{1,2} 1. *Electrical and Computer Engineering, University of Houston, Houston, TX, United States;* 2. *Nanofabrication Facility, University of Houston, Houston, TX, United States*

- EJ-05. Studies on the Magnetism of Well Conformed Sets of Nanoparticles.** *L.M. Socolovsky^{6,1}, P.C. Rivas Rojas^{3,2}, P. Tancredi^{3,4} and O. Moscoso Londoño⁵* 1. CIT Santa Cruz, CONICET, Río Gallegos, Argentina; 2. Facultad de Ingeniería, Universidad de Buenos Aires, Buenos Aires, Argentina; 3. CONICET, San Martín, Argentina; 4. Instituto Nacional de Tecnología Industrial, San Martín, Argentina; 5. Universidad Autónoma de Manizales, Manizales, Colombia; 6. UTN FRSC, Río Gallegos, Argentina
- EJ-06. Magnetic properties of flexible nanofibers modulated by far-field electrospinning.** *C. Li¹, B. Chen¹, Y. He¹, H. Huang² and Z. Wei²* 1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan
- EJ-07. Magnetic Nanowires Grown with Directed Electrochemical Nanowire Assembly.** *J. Samba¹, S. Pokharel¹, A. Lisfi¹ and B. Ozturk¹* 1. Physics and Engineering Physics, Morgan State University, Baltimore, MD, United States
- EJ-08. Challenge to the synthesis of α'' -(Fe, Co)₁₆N₂ nanoparticles obtained by hydrogen reduction and subsequent nitrogenation starting from α -(Fe, Co)OOH.** *M. Tobise¹, S. Saito¹ and M. Doi²* 1. Electronic Engineering, Tohoku University, Sendai, Japan; 2. Electronic Engineering, Tohoku Gakuin University, Tagajo, Japan
- EJ-09. Investigation on Synthesis of Fe₃O₄@nSiO₂@mSiO₂ Hybrid Particles and Peroxidation.** *Y. Zhu¹, Z. Kou¹, W. Chao¹, S. Yuan¹, Z. Huang¹, X. Zhou¹, L. Cao¹, Y. Zhai^{1,2}, B. You² and J. Du²* 1. School of Physics, Southeast University, Nanjing, China; 2. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, China
- EJ-10. Temperature dependence of magnetic first-order reversal curves for hollow Fe₃O₄ submicron particles.** *M. Chiba¹, S. Kobayashi¹, T. Murakami¹ and J. Manjanna²* 1. Iwate University, Morioka, Japan; 2. Rani Channamma, Belgavi, India
- EJ-11. Detection of compositional change in magnetic nanowire by FMR; A non-invasive technique.** *S. Aslam^{1,2}, A. Das¹, M. Khanna² and B.K. Kuanr¹* 1. Special Centre for Nanoscience, Jawaharlal Nehru University, Delhi, India; 2. Electronic Science Department, University of Delhi, Delhi, India
- EJ-12. Parametric Amplification of Reversible Transverse Magnetic Susceptibility in Oriented Single Domain Magnetic Nanoparticles.** *M. Barbic², R. Smith² and H. ElBidweihy¹* 1. Electrical and Computer Engineering Department, United States Naval Academy, Annapolis, MD, United States; 2. Applied Physics and Instrumentation Group, Howard Hughes Medical Institute - Janelia Research Campus, Ashburn, VA, United States

Session EK
ENERGY ASSISTED MAGNETIC RECORDING II
(Poster Session)

Yukiko Takahashi, Chair
NIMS, Tsukuba, Japan

- EK-01. Theoretical Investigation of Intersystem Crossing for All-Optical Switching.** Y. Zou¹, H. Wang¹, K. Wang², W. Cheng³, Z. Zeng¹, Y. Xiao¹ and C. Xie¹ *1. Wuhan National Laboratory for Optoelectronics, Wuhan, China; 2. School of Physics, Huazhong University of Science and Technology, Wuhan, China; 3. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*
- EK-02. Thermodiffusion phenomena of the functional polymer lubricants for the heat-assisted magnetic recording.** P. Chung¹ and H. Park¹ *1. Energy Engineering, Inje University, Gimhae, The Republic of Korea*
- EK-03. Control of Nucleation and Coarsening at Initial Stage during Film Growth of FePt-C Granular Films.** I. Suzuki¹, J. Wang¹, Y. Takahashi¹ and K. Hono¹ *1. National Institute for Materials Science, Tsukuba, Japan*
- EK-04. High melting point metal (Pt, W, Ir) as seed layer for grain size control of FePt based heat-assisted magnetic recording media.** J. Wang¹, D. Liu², I. Suzuki³, Y. Takahashi³ and K. Hono³ *1. International Center for Young Scientists, National Institute For Materials Science, Tsukuba, Japan; 2. School of Materials Science and Engineering, Zhejiang University, Hangzhou, China; 3. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*
- EK-05. The network-shaped upheaval structure in (002) textured MgO layer for L1₀ FePt-based granular media with columnar nanostructure.** A. Shimizu¹, S. Hinata¹, S. Jo¹ and S. Saito¹ *1. Tohoku Univ., Sendai, Japan*
- EK-06. Microwave-assisted magnetization reversal in dispersed nano-sized barium ferrite particles.** E. Ozawa¹ *1. FUJIFILM Corporation, ODAWARA-SHI, Japan*
- EK-07. Optimisation of dual structure recording media for microwave assisted magnetic recording.** S. Greaves¹, K.S. Chan³ and Y. Kanai² *1. RIEC, Tohoku University, Sendai, Japan; 2. Dept. of Engineering, Niigata Institute of Technology, Kashiwazaki, Japan; 3. Nanjing Institute of Technology, Nanjing, China*
- EK-08. Correction of transition curvature for shingled, heat assisted magnetic recording.** S. Greaves¹, R. Itagaki² and Y. Kanai² *1. RIEC, Tohoku University, Sendai, Japan; 2. Dept. of Engineering, Niigata Institute of Technology, Kashiwazaki, Japan*

EK-09. Large Uniaxial Anisotropy $\text{Co}_{50}(\text{Pt}_{1-x}\text{Rh}_x)_{50}$ Thin Films for Microwave Assisted Magnetic Recording. *D. Kumar*¹, *T. Jin*¹, *V. Chaudhary*¹, *K. Tham*², *S. Saito*² and *S. Piramanayagam*¹
1. Division of Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore; 2. Department of Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Japan

EK-10. The critical frequency for microwave-assisted magnetization switching in exchange coupled composite medium.
*H. Tatsuno*¹, *S. Suzuki*¹, *S. Kasai*² and *Y. Nozaki*^{1,3}
1. Department of Physics, Keio Univ., Yokohama, Japan; 2. National Institute for Material Science, Tsukuba, Japan; 3. Center for Spintronics Research Network, Keio Univ., Yokohama, Japan

THURSDAY
 MORNING
 9:30

EXHIBIT HALL A

Session EL MAGNETISM IN HEUSLER ALLOYS (Poster Session)

Patrick Quarterman, Chair
 NIST Center for Neutron Research, Gaithersburg, MD, United States

EL-01. Electric-field modulation of magnetism in Heusler CoFeMnSi thin film. *H. Fu*¹, *C. You*¹, *L. Ma*¹ and *N. Tian*¹
1. School of Materials Science and Engineering, Xi'an University of Technology, Xi'an, China

EL-02. Al substitution effects on phase stabilities and magnetic properties of tetragonal Mn_3Ge . *H. Okada*^{1,2} and *Y. Shoji*²
1. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan; 2. Graduate School of Engineering, Tohoku Gakuin University, Tagajo, Japan

EL-03. Experimental and theoretical investigations of half metallic $\text{Co}_{2-x}\text{Fe}_x\text{CrAl}$ ($x = 0.25, 0.50$ and 0.75) Heusler alloys.
*A.K. Patel*¹, *L. Bainsla*², *V. Yenugonda*¹ and *K.G. Suresh*¹
1. Department Of Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan, Sendai, Japan

EL-04. Theoretical prediction of new quaternary Heusler alloys having high Curie temperatures and high spin polarizations with the aid of machine learning. *T. Kanemura*¹, *T. Roy*¹, *M. Tujikawa*^{1,2} and *M. Shirai*^{1,2}
1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan

- EL-05. Magnetic Critical Behavior and Magneto-Caloric Effect in $\text{Mn}_{50}\text{Ni}_{41-x}\text{Fe}_x\text{Sn}_9$ Heusler Alloys.** A. Rosales-Rivera¹, N. Salazar-Henao¹, R. González-Sánchez¹, A. Velásquez-Salazar¹, J. López-Tabares¹ and F. Saccone² 1. *Laboratorio de Magnetismo y Materiales Avanzados, Universidad Nacional de Colombia, Sede Manizales, Manizales, Colombia;* 2. *Departamento de Física, Facultad de Ingeniería, Universidad de Buenos Aires, Buenos Aires, Argentina*
- EL-06. Magnetic coupling in $\text{Ni}_{49}\text{Mn}_{36}\text{In}_{15}$ Heusler alloy.** V. Franco¹, J. Law¹, A. Conde¹, A. Giri², F. Schulz³, M. Huang³, F. Gross³, M. Weigand³, G.A. Schütz³, E.J. Goering³ and J. Gräfe³ 1. *Universidad de Sevilla, Sevilla, Spain;* 2. *Weapons and Materials Research Directorate, US Army Research Laboratory, Aberdeen, MD, United States;* 3. *Max Planck Institute for Intelligent Systems, Stuttgart, Germany*
- EL-07. Fabrication of metastable B2-type $\text{Fe}_{1-x}\text{Sn}_x$ epitaxial films on $\text{MgO}(001)$ substrates.** Y. Goto¹, M. Araki¹, N. Takahashi¹, T. Yanase², T. Shimada², M. Tsujikawa^{3,4}, M. Shirai^{3,4}, A. Kamimaki^{5,6}, S. Iihama⁵, S. Mizukami^{4,7} and T. Nagahama² 1. *Graduate School of Chemical Sciences and Engineering, Hokkaido University, Sapporo, Japan;* 2. *Graduate School of Engineering, Hokkaido University, Sapporo, Japan;* 3. *Research Institute of Electrical Communication (RIEC), Tohoku University, Sendai, Japan;* 4. *Center for Spintronics Research Network (CSRN), Tohoku University, Sendai, Japan;* 5. *WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan;* 6. *Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan;* 7. *Center for Science and Innovation in Spintronics (Core Research Cluster), Tohoku University, Sendai, Japan*
- EL-08. Structure and magnetism of $\text{NiFeMnGa}_x\text{Sn}_{1-x}$ ($x = 0, 0.25, 0.5, 0.75, 1$) Heusler alloys.** J. Waybright¹, L. Halbritter¹, B.R. Dahal¹, H. Qian^{1,2}, P. Lukashev³, Y. Huh¹ and P.R. Kharel¹ 1. *Department of Physics, South Dakota State University, Brookings, SD, United States;* 2. *Material Science and Engineering, Changzhou University, Changzhou, China;* 3. *Department of Physics, University of Northern Iowa, Cedar Falls, IA, United States*
- EL-09. Structural stabilities and magnetic characteristics of Heusler alloys Fe_2MnGa .** M. Ono¹, H. Okada^{1,2}, M. Doi^{1,2} and S. Awaji³ 1. *Graduate School of Engineering, Tohoku Gakuin University, Tagajo 985-8573, Japan;* 2. *Faculty of Engineering, Tohoku Gakuin University, Tagajo 985-8573, Japan;* 3. *High Field Laboratory for Superconducting Materials, IMR, Tohoku University, Sendai 980-8577, Japan*
- EL-10. Impact of atomic ordering on anomalous Nernst effect in Co_2MnGa thin film.** Y. Sakuraba^{1,2}, K. Hyodo³, S. Mitani¹, K.R. Loku Singgappulige⁴, H. Tajiri⁴, T. Nakatani¹ and A. Sakuma³ 1. *Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan;* 2. *PRESTO, Japan Science and technology Agency (JST), Saitama, Japan;* 3. *Tohoku University, Sendai, Japan;* 4. *Japan Synchrotron Radiation Research Institute, Sayo, Japan*

Session EM
MAGNETO-CALORIC MATERIALS III
(Poster Session)

Manh-Huong Phan, Chair
University of South Florida, Tampa, FL, United States

EM-01. Withdrawn

EM-02. Electronic structure and magnetic properties of gadolinium-based intermetallic compounds from ab initio calculations accounting for electronic correlations. *A. Lukoyanov^{1,2}, Y. Knyazev¹, Y. Kuz'min¹, S. Samatham^{4,3} and K.G. Suresh⁴*
1. M.N. Miheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences (IMP UB RAS), Yekaterinburg, Russian Federation; 2. Ural Federal University, Yekaterinburg, Russian Federation; 3. Department of Physics, Maharaj Vijayaram Gajapathi Raj College of Engineering, Vizianagaram, India; 4. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India

EM-03. Effect of Training on the Magnetic Hysteresis in $\text{Gd}_5\text{Si}_2\text{Ge}_2$.
Y. Mudryk¹ and V.K. Pecharsky^{1,2}
1. Ames Laboratory, Iowa State University, Ames, IA, United States; 2. Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States

EM-04. Mechanical and magnetocaloric properties of $\text{La}(\text{Fe,Mn,Si})_{13}\text{H}_y$ plates prepared by metal-binding prior to hydrogenation. *Y. Li¹, F. Hu¹, J. Wang¹, J. Hao¹, F. Shen¹, J. Sun¹ and B. Shen¹*
1. Institution of Physics, Beijing, China

EM-05. Magnetocaloric Effect of Nano and Micro particles of $\text{La}(\text{Fe}_x\text{Co}_y\text{Si}_{1-x-y})_{13}$. *K. Javed¹, B. Williams¹, S. Gupta², V.K. Pecharsky^{2,3} and R.L. Hadimani¹*
1. Dept. of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Division of Materials Science and Engineering, Ames Laboratory, Ames, VA, United States; 3. Department of Materials Science and Engineering, Iowa State University, Ames, VA, United States

EM-06. Magnetocaloric properties of GdVO_4 nanoparticles synthesized by microwave-assisted hydrothermal methods.
S. Ryu¹, J. Lee², M. Song², B. Cho² and C. Nam¹
1. Photonics and Sensors, Hannam University, Daejeon, The Republic of Korea; 2. Materials Science and Engineering, Gwanju Institute of Science and Technology, Gwangju, The Republic of Korea

EM-07. Enhancement of magnetocaloric effect driven by hydrostatic pressure in HoCuSi compound. *J. Hao^{1,2}, F. Liang^{1,3}, Y. Liu^{1,3}, J. He², J. Wang^{1,3}, F. Hu^{1,3}, J. Sun^{1,3} and B. Shen^{1,3}*
1. Beijing National Laboratory for Condensed Matter Physics & State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Division of Functional Material Research, Central Iron and Steel Research Institute, Beijing, China; 3. School of Physical Sciences, University of Chinese Academy of Sciences, Beijing, China

EM-08. Magnetocaloric effect in rare earth Ho_2O_3 nanopowder at cryogenic temperature regime. *K.P. Shinde¹, M.V. Tien¹, L. Huang¹, H.R. Park¹, S. Yu¹, K. Chung² and D. Kim¹*
1. Department of Physics, Chungbuk National University, Cheongju, The Republic of Korea; 2. Functional Materials Department, Korea Institute of Material Science, Changwon, The Republic of Korea

EM-09. Interstitial effects on the magnetic phase transition and magnetocaloric effects in $(\text{Hf}, \text{Ta})\text{Fe}_2$ Kagome phase.
Y. Yang¹, C. Tian¹, X. Fan², X. Yin², Q. Xiang³, W. Cui^{1,2} and Q. Wang¹
1. Northeastern University, Shenyang, China; 2. Northwestern Polytechnical University, Xi'an, China; 3. National Institute for Materials Science, Tsukuba, Japan

EM-10. Critical behavior and magnetocaloric effect in $\text{La}_{0.7}\text{Ba}_{0.25}\text{Nd}_{0.05}\text{Mn}_{1-x}\text{Cu}_x\text{O}_3$. *M.V. Tien¹, K. Shinde¹, D. Nanto³, L. Huang¹, D. Pham¹, K. Chung², S. Yu¹ and D. Kim¹*
1. Physics, Chungbuk National University, Cheongju, The Republic of Korea; 2. Functional Materials Department, Korea Institute of Materials Science, Changwon, The Republic of Korea; 3. Physics Education, Syarif Hidayatullah State Islamic University, Jakarta, Indonesia

THURSDAY
MORNING
9:30

EXHIBIT HALL A

Session EN
SOFT MAGNETIC COMPONENTS: TRANSFORMERS
AND INDUCTORS II
(Poster Session)

Pilar Marin, Chair
Universidad Complutense de Madrid, Madrid, Spain

EN-01. Finite Element Analysis of Epoxy Cast Dry Transformer Considering Core Rotational Loss. *C. Zhang¹, X. Yan¹ and Y. Li¹*
1. Hebei University of Technology, Tianjin, China

EN-02. Effect of Specimen Shape on Eddy Current Distribution in Large Single Sheet Tester. *Y. Li¹, Y. Dou¹, C. Zhang¹, S. Yue¹ and K. Zhang¹*
1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China

EN-03. Research on the Squeeze Current Effect of the Foil-type Excitation Windings under the Condition of High Frequency.
M. Yang^{1,2}, Y. Li^{1,2}, C. Zhang^{1,2} and Q. Yang^{1,3}
1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 3. Tianjin Key Laboratory of AEEET, Tianjin Polytechnic University, Tianjin, China

- EN-04. Parameter Estimation of Extended Jiles–Atherton Hysteresis Reactor for Transformer Modeling Based on ISFLA.** *M. Zou*^{1,2}, *Y. Qiu*³ and *P. Duan*^{1,2} *1. College of Automation, Chongqing University of Posts and Telecommunications, Chongqing, China; 2. Key Laboratory of Industrial Internet of Things and Networked Control, Ministry of Education, Chongqing University of Posts and Telecommunications, Chongqing, China; 3. Chongqing Architectural Design Institute, Chongqing, China*
- EN-05. 3-D Coupled Magnetic-Fluid-Thermal Analysis of Single-phase Potential Transformer Under Overvoltage Condition.** *S. Feng*¹ and *S. Wang*¹ *1. Xi'an Jiaotong University, Xi'an, China*
- EN-06. Reduction of Magnet Eddy Current Loss in PMSM by using Partially Magnet Segment Method.** *J. Ma*^{1,2}, *Y. Wang*^{1,2}, *C. Liu*^{1,2}, *G. Lei*³, *Y. Guo*³ and *J. Zhu*⁵ *1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment(School of Electrical Engineering, Hebei University of Technology), Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province(School of Electrical Engineering, Hebei University of Technology), Tianjin, China; 3. University of Technology Sydney, Sydney, NSW, Australia; 5. University of Sydney, Sydney, NSW, Australia*
- EN-07. Numerical and Experimental Validation of Cooling Performance in Vegetable Insulating Oil-Based Ferrofluid with Different Volume Fractions.** *H. Lee*¹ *1. Changshin University, Changwon-si, The Republic of Korea*
- EN-08. Transient Electromagnetic Field and Mechanical Stress Coupled Simulation for Fast Linear Transformer Driver.** *H. Qiu*¹, *S. Wang*¹, *Y. Huangfu*¹, *S. Wang*¹, *S. Wang*¹ and *T. Zhu*¹ *1. School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China*
- EN-09. Research on Dynamic Characteristics of Transformer Windings Using Optical Fiber Measurement System and High-speed Camera.** *S. Wang*¹, *S. Wang*¹, *H. Qiu*¹, *N. Zhang*¹ and *D. Yuan*¹ *1. National State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China*
- EN-10. Impact of magnetostriction of core loss and noise on numerous capacity of no-load power transformer.** *C. Hsu*¹ and *M. Hsieh*² *1. Department of Mechanical Engineering, Oriental Institute of Technology, New Taipei, Taiwan; 2. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*

Session EO
ACTUATION
(Poster Session)

Atsushi Yao, Chair
Toyama Prefectural University, Imizu, Japan

- EO-01. Harmonic induced magnetism distortion caused by AC and DC composited power for dc motor device.** C. Hsu² and M. Hsieh¹ *1. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; 2. Department of Mechanical Engineering, Oriental Institute of Technology, New Taipei, Taiwan*
- EO-02. Cableless magnetic actuator capable of high-speed transport in a curved pipe.** H. Yaguchi¹, Y. Konno¹ and H. Sano¹ *1. Tohoku Gakuin University, Tagajo, Japan*
- EO-03. A Novel Modular Vernier Reluctance Machine Excited by Zero Sequence Current for In-Wheel Vehicle Propulsion.** X. Zhao¹ and S. Niu¹ *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*
- EO-04. Comparison of Electromagnetic Characteristics of Short Stroke Linear Oscillating Actuators with Rare-Earth and Ferrite Magnets.** C. Kim¹, G. Jang¹, S. Jeong² and J. Choi¹ *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. LG Electronics, Seoul, The Republic of Korea*
- EO-05. Research on Temperature Rise and Temperature Control for Ultrasonic Giant Magnetostrictive Transducer.** Y. Li¹, W. Huang¹, B. Wang¹ and C. Gao¹ *1. Hebei University of Technology, Tianjin, China*
- EO-06. The Design and Output Characteristics of Ultrasonic Transducer Based on Rare-earth Giant Magnetostrictive Material.** Y. Li¹, W. Huang¹ and B. Wang¹ *1. Hebei University of Technology, Tianjin, China*
- EO-07. Design of Switchable Magnetic Wheel for Mobile Robots.** M.D. Noh¹, E. Kwon¹, S. Park¹ and Y. Park¹ *1. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea*
- EO-08. Detent Force and Static Force Experimental Analysis of a 3 kW Single-Phase Linear Permanent Magnet Generator for Stirling Engines.** K. Lee¹, S. Lee¹, J. Park¹ and J. Choi² *1. EV Components & Materials Group, Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Department of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*
- EO-09. A Novel Mover-separated Fast Permanent Magnet Actuator for 10kV Vacuum Circuit Breaker.** H. Ni¹, S. Fang¹, H. Lin¹ and Z. Pan¹ *1. Southeast University, Nanjing, China*

Session EP
**SOFT MAGNETIC MATERIALS V: AMORPHOUS
AND NANOCRYSTALLINE MATERIALS**
(Poster Session)

Qifan Li, Chair
Northeastern University, Boston, MA, United States

- EP-01. Enhancement of Magnetic and Surface Properties in Magneto-electrodeposited FePd Alloy Thin films.** S. Annamalai¹ and J. Mohanty¹ *1. Department of Physics, Indian Institute of Technology, Hyderabad, Hyderabad, India*
- EP-02. Withdrawn**
- EP-03. Current controlled longitudinal magnetization switching in glass coated microwires.** S. Corodeanu¹, H. Chiriac¹, N. Lupu¹ and T.A. Ovari¹ *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*
- EP-04. Characterization of Magnetic Properties of Nanocrystalline Alloys under Rotational Magnetization.** L. Chen¹, T. Ben¹, C. Fang¹, H. Zhao², C. Liu² and Y. Wang² *1. College of Electrical Engineering and New Energy, China Three Gorges University, Yichang, China; 2. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China*
- EP-05. Production of nanocrystalline soft magnetic powders with high Bs by an improved rapid-cooling water-atomization process.** K. Yoshida¹, T. Takahashi¹ and H. Kuwata¹ *1. Tohoku Magnet Institute Co., Ltd., Sendai, Japan*
- EP-06. Magnetically Controlled Electrical Properties of Amorphous $\text{Fe}_{(85-x)}\text{Co}_x\text{Ti}_7\text{Hf}_6\text{B}_2$ Alloys.** C. Chen¹, L. Huang², S. Kim³, X. Ma¹, H. Piao^{1,2}, H. Yim³ and D. Kim² *1. Research Institute for Magnetoelectronics & Weak Magnetic-field Detection, College of Science, China Three Gorges University, Yichang, China; 2. Chungbuk National University, Cheongju, The Republic of Korea; 3. Physics, Sookmyung Women's University, Seoul, The Republic of Korea*
- EP-07. Si effects on a thermal stability and a crystallization behavior of P-riched Fe(-Si)-B-P-Cu alloys.** T. Tomita¹, T. Takahashi¹ and H. Kuwata¹ *1. Tohoku Magnet Institute Co., Ltd., Sendai, Japan*
- EP-08. Interplay between magnetic ion and amorphous carbon in $\text{Na}_3\text{V}_2(\text{PO}_4)_3/\text{C}$ nanocomposite.** C. Kao¹, C. Yang¹, C. Wang², Y. Tung¹, T. Hsu¹, W. Wu¹, S. Zhuang³ and W. Liu³ *1. Physics, Chung Yuan Christian University, Taoyuan, Taiwan; 2. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 3. Chemical Engineering, Chung Yuan Christian University, Taoyuan, Taiwan*

- EP-09. Correlation between the structural and magnetic characteristics of $\text{Fe}_{73.5}\text{Cu}_1\text{Nb}_3\text{Si}_{13.5}\text{B}_9$ glass-coated nanowires.** *T.A. Ovari¹, G. Ababei¹, S. Corodeanu¹, H. Chiriac¹ and N. Lupu¹ 1. Department of Magnetic Materials and Devices, National Institute of Research and Development for Technical Physics, Iasi, Romania*

THURSDAY
MORNING
9:30

EXHIBIT HALL A

Session EQ
MOTORS: CONTROL AND DRIVES
(Poster Session)

Jonathan Bird, Chair
Portland State University, Portland, OR, United States

- EQ-01. Research on Common Mode Current and Electromagnetic Radiation in PWM Motor System.** *F. Niu^{1,2}, S. Cao¹, X. Huang², K. Li¹ and Y. Fang² 1. Hebei University of Technology, Tianjin, China; 2. Zhejiang University, Hangzhou, China*
- EQ-02. A Multi-Vector-Based Model Predictive Control with Geometric Method of Five-Phase Flux-Switching Permanent Magnet Motor.** *W. Hua¹, F. Chen¹ and W. Huang¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China*
- EQ-03. Withdrawn**
- EQ-04. Optimal Design and control of Double-Rotor Flux-Bidirectional Modulation Machine.** *Y. Wang¹, J. Shen² and S. Niu² 1. Electrical Engineering, Zhejiang University, Hangzhou, China; 2. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*
- EQ-05. Model Predictive Torque Control of Permanent Magnet Synchronous Motors for In-wheel Traction Applications.** *B. Zhu¹, L. Chen¹, X. Sun¹ and H. Wang¹ 1. Jiangsu University, Zhenjiang, China*
- EQ-06. Experimental Evaluation of Motor Core Loss and Magnetic Flux Density with PAM Inverter under Different Excitation Angles.** *G. Nguyen³, K. Fujisaki¹, S. Zhong^{1,4}, F. Iwamoto², T. Kimura² and T. Yamada² 1. Toyota Technological Institute, Nagoya, Japan; 2. Electronics R&I Division, DENSO Corporation, Aichi 470-0111, Japan; 3. Research Center for Smart Vehicles, and Electromagnetic Energy System Lab, Toyota Technological Institute, Nagoya, Japan; 4. School of Mechanical Engineering, Shenyang University of Technology, Shenyang 110870, China*
- EQ-07. Investigation of Load Effect on the Magnetization Process of a Stator Consequent Pole Memory Machine.** *S. Lyu¹, H. Yang¹, H. Lin¹, Z. Zhu² and Z. Pan¹ 1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

EQ-08. Analysis of Magnetic Properties of AlNiCo and Magnetization State Estimation in Variable Flux PMSMs. G. Qiao¹, M. Wang¹, F. Liu¹, Y. Liu¹ and P. Zheng¹ *I. Harbin Institute of Technology, Harbin, China*

EQ-09. Influence of Exciting Field on Electromagnetic Torque of Novel Switched Reluctance Motor. A. Liu¹, J. Lou¹ and Y. Wei¹ *I. College of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

EQ-10. Fault Tolerance Performance Analysis of Five-phase Permanent-Magnet Linear Synchronous Machine. Q. Jiang¹ and Q. Lu¹ *I. Zhejiang University, Hangzhou, China*

THURSDAY
MORNING
9:30

EXHIBIT HALL A

Session ER
ACTUATION, SHIELDING AND LEVITATION
(Poster Session)

Chang-Dong Yeo, Chair
Texas Tech University, , United States

ER-01. Design Optimization and Comparative Study of Novel Linear Doubly Salient Machines With/Without Primary Slot Permanent Magnets. Y. Shen¹ and Q. Lu¹ *I. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

ER-02. Development of a Radial-Flux Slotted Limited-Angle Torque Motor with Non-uniform Teeth for Output Torque Improvement. G. Yu¹, Y. Xu¹, J. Zou¹, L. Xiao¹, B. Zheng¹ and H. Lan¹ *I. Harbin Institute of Technology, Harbin, China*

ER-03. Design Aspects of a Reluctance Based Magnetic Lead Screw. M. Cirolini¹, Á.F. Flores¹ and Y. Wu¹ *I. Electrical Engineering, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil*

ER-04. An Improved Configuration for Cogging Torque Reduction in Transverse-flux Flux-reversal Permanent Magnet Motor. X. Yang¹, B. Kou¹, Y. Zhou¹, J. Luo¹ and L. Zhang¹ *I. Harbin Institute of Technology, Harbin, China*

ER-05. Three-Phase AC Linear Proportional Solenoid Actuator with Zero Hysteresis in Current-Thrust Force Characteristics. Y. Tominari¹ and Y. Sato¹ *I. Department of Mechanical Engineering, Yokohama National University, Yokohama, Japan*

ER-06. Comparision of Magnetic Levitation Systems Using Ring-Shaped Permanent Magnets. K. Kim¹ and G. Park¹ *I. Pusan National University, Busan, The Republic of Korea*

ER-07. Modeling and Analysis of a Magnetic Levitation Vibration Isolation System Using Magnetic Gravity Compensators. *Y. Zhou¹, B. Kou¹ and H. Zhang¹ 1. Harbin Institute of Technology, Harbin, China*

ER-08. An Improved Method for Calculating the Force between Permanent Magnets Considering Inhomogeneity of Magnetization. *Y. Zhou¹, B. Kou¹ and H. Zhang¹ 1. Harbin Institute of Technology, Harbin, China*

THURSDAY
AFTERNOON
1:30

SALON 2

Session FA
VOLTAGE CONTROL OF NANOMAGNETISM

Jiamian Hu, Co-Chair
University of Wisconsin-Madison, Madison, WI, United States
Massimo Ghidini, Co-Chair
University of Cambridge, Cambridge, United Kingdom

1:30

FA-01. Voltage control of the Dzyaloshinskii-Moriya interaction (DMI) and skyrmion stability. (Invited) *A. Bernand-Mantel¹, T. Srivastava², H. Bea², M. Schott¹, L. Ranno¹, S. Pizzini¹, S. Auffret² and M. Belmeguenai³ 1. Institut Néel-CNRS, Grenoble, France; 2. SPINTEC-CEA, Grenoble, France; 3. LSPM, Université Paris 13, Villetaneuse, France*

2:06

FA-02. Deterministic and robust room-temperature exchange coupling in monodomain multiferroic BiFeO₃ heterostructures. (Invited) *C. Eom¹ 1. Materials Science and Engineering, University of Wisconsin-Madison, Madison, WI, United States*

2:42

FA-03. Low Voltage Control of RKKY Interaction in Synthetic Antiferromagnetic Nanostructures. (Invited) *M. Liu¹ 1. Electronic Materials Research Lab., School of Electrical and Information Engineering, Xian Jiaotong University, Xian, China*

3:18

FA-04. Nanoscale magnetoelectric effects revealed by high-resolution imaging. (Invited) *N.D. Mathur¹ 1. Materials Science, University of Cambridge, Cambridge, United Kingdom*

3:54

FA-05. Redox-based voltage-programmable magnetism in metal oxide/metal thin films and nanoislands. (Invited) *K. Leistner¹ 1. IMW, IFW Dresden, Dresden, Germany*

Session FB
SPIN-ORBIT TORQUE SWITCHING

Kyung-Jin Lee, Chair
Korea University, Seoul, The Republic of Korea

1:30

- FB-01. Spin-orbit Torque Switching of Multi-state Magnetic Structures: a Novel Route Towards Multi-level Magnetic Random Access Memory.** *S. Das¹, L. Avraham¹, Y. Telepinsky¹, V. Mor¹, M. Schultz¹ and L. Klein¹*
1. Department of Physics, Nano-magnetism Research Center, Institute of Nanotechnology and Advanced Materials, Bar-Ilan University, Ramat-Gan 52900, Israel, Ramat Gan, Israel

1:42

- FB-02. Spin-Orbit Torque Switching in Cr-based Heterostructure.** *T. Chuang¹, C. Pai² and S. Huang¹* *1. Department of Physics, National Taiwan University, Taipei City, Taiwan;*
2. Department of Materials Science and Engineering, National Taiwan University, Taipei City, Taiwan

1:54

- FB-03. Field-free spin-orbit torque switching in a W-based magnetic heterostructure with perpendicular magnetic anisotropy.** *T. Wang¹, T. Chang², N. Murray¹, T. Tsai¹, S. Lee² and C. Pai¹* *1. National Taiwan University, Taipei, Taiwan;*
2. Institute of Physics, Academia Sinica, Taipei, Taiwan

2:06

- FB-04. Field-free spin-orbit torque switching from geometrical domain wall pinning.** *K. Cai¹, J. Lee¹, G. Yang¹, Y. Liu¹, R. Ramaswamy¹, P. He¹ and H. Yang¹* *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

2:18

- FB-05. The current-induced field-free switching from a weak spin-orbit interaction magnetic heterostructure.** *H. Chan¹, T. Chen¹ and C. Pai¹* *1. Materials and Engineering, National Taiwan University, Taipei, Taiwan*

2:30

- FB-06. Sub-ns and low-power magnetization switching by combination of spin-orbit torque and spin-transfer torque.** *C. Zhang^{1,2}, Y. Takeuchi², Y. Takahashi², S. Fukami^{2,3} and H. Ohno^{2,3}* *1. FRIS, Tohoku Univ., Sendai, Japan; 2. Laboratory for Nanoelectronics and Spintronics, RIEC, Tohoku Univ., Sendai, Japan; 3. CSIS, Tohoku Univ., Sendai, Japan*

- FB-07. Field-free Magnetization Switching by Utilizing the Spin Hall Effect and Interlayer Exchange Coupling of Iridium.** *Y. Liu^{1,2}, B. Zhou^{1,2} and J. Zhu^{3,2}* 1. *Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States;* 2. *Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States;* 3. *Electrical & Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

- FB-08. First-principles calculation of the spin-orbit torque in a Co/Pt bilayer.** *K. Belashchenko¹, A. Kovalev¹ and M. van Schilfgaarde²* 1. *Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE, United States;* 2. *Department of Physics, King's College London, London, United Kingdom*

- FB-09. Spin-Orbit Torque Switching in Asymmetric Structures with Double Heavy Metal Layers.** *S. Razavi¹, G. Yu^{2,1}, H. Wu¹, Q. Shao¹, K. Wong¹ and K. Wang¹* 1. *Electrical and Computer Engineering, University of California, Los Angeles, Los Angeles, CA, United States;* 2. *Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

- FB-10. Spin-Orbit Torque Switching in a Nearly Compensated Heusler Ferrimagnet.** *J.T. Finley¹, C. Lee², P. Huang² and L. Liu¹* 1. *Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States;* 2. *Materials Science and Engineering, University of Illinois Urbana-Champaign, Urbana, IL, United States*

- FB-11. Spin valve effect induced by spin-orbit torque switching.** *R. Zhang¹, G. Shi¹, J. Su², F. Li¹, L. Liao¹, J. Cai², F. Pan¹ and C. Song¹* 1. *Key Laboratory of Advanced Materials (MOE), School of Materials Science and Engineering, Tsinghua University, Beijing 100084, Beijing, China;* 2. *Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, Beijing, China*

- FB-12. Relationship between spin-orbit torque switching efficiency and W resistivity in W/CoFeB/MgO.** *K. Furuya¹, Y. Takeuchi¹, C. Zhang^{2,3}, B. Jinnai³, S. Fukami^{4,5} and H. Ohno^{6,7}* 1. *Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan;* 2. *Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan;* 3. *Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan;* 4. *Center for Spintronics Research Network, Tohoku University, Sendai, Japan;* 5. *Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan;* 6. *Center for Science and Innovation in Spintronics (Core Research Cluster), Tohoku University, Sendai, Japan;* 7. *WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

3:54

- FB-13. Spin currents and spin-orbit torques in ferromagnetic trilayers.** S.C. Baek¹, V. Amin², Y. Oh¹, G. Go³, S. Lee³, K. Kim¹, B. Park¹, M. Stiles², G. Lee¹ and K. Lee³ *1. KAIST, Daejeon, The Republic of Korea; 2. NIST, Gaithersburg, MD, United States; 3. Korea University, Seoul, The Republic of Korea*

4:06

- FB-14. Picosecond reorientation of in-plane magnetisation within a nano-element by spin orbit torque.** P.S. Keatley¹, G. Mihajlovic², L. Wan², Y. Choi², J.A. Katine² and R.J. Hicken¹ *1. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. San Jose Research Center, HGST, a Western Digital Company, San Jose, CA, United States*

4:18

- FB-15. Micromagnetics of Spin Hall Driven Perpendicular Magnetization Switching.** J. Zhu¹, Y. Liu¹ and B. Zhou¹ *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA, United States*

THURSDAY
AFTERNOON
1:30

SALON 1

Session FC
TOPOLOGICAL SPIN TEXTURES II

Oleg Tretiakov, Chair
Tohoku University, Sendai, Japan

1:30

- FC-01. Terahertz radiation from compensated magnetic heterostructures.** M. Chen¹, R. Mishra¹, Y. Wu¹, K. Lee¹ and H. Yang¹ *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

1:42

- FC-02. Detector of terahertz-frequency signals based on an antiferromagnetic tunnel junction.** P. Artemchuk¹, O. Sulymenko¹, O. Prokopenko¹, V. Tyberkevych² and A.N. Slavin² *1. Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 2. Department of Physics, Oakland University, Rochester, MI, United States*

- FC-03. THz oscillations in an antiferromagnetic spin-Hall oscillator: a micromagnetic approach.** *V. Puliafito*¹, R. Khymyn², M. Carpentieri³, B. Azzerboni¹, V. Tyberkevych⁴, A.N. Slavin⁴ and G. Finocchio⁵ 1. *Department of Engineering, University of Messina, Messina, Italy*; 2. *Department of Physics, University of Gothenburg, Gothenburg, Sweden*; 3. *Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy*; 4. *Department of Physics, Oakland University, Rochester, MI, United States*; 5. *Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

- FC-04. Mutual phase locking of nonlinear THz-frequency antiferromagnetic spin-Hall oscillators.** *A. Safin*^{3,2}, A.N. Slavin¹, S. Nikitov^{3,4} and V. Tyberkevych¹ 1. *Physics, Oakland University, Rochester, MI, United States*; 2. *National Research University "MPEI", Moscow, Russian Federation*; 3. *Kotel'nikov Institute of Radioengineering and Electronics, Moscow, Russian Federation*; 4. *Moscow Institute of Physics and Technology, Dolgoprudny, Russian Federation*

- FC-05. Optical excitation of magnon spin currents and spin angular momentum transfer in antiferromagnetic insulators.** *I. Proskurin*^{1,2}, A. Ovchinnikov^{2,3}, J. Kishine⁴ and R. Stamps¹ 1. *Physics & Astronomy, University of Manitoba, Winnipeg, MB, Canada*; 2. *Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation*; 3. *Institute for Metal Physics, Ekaterinburg, Russian Federation*; 4. *Division of Natural and Environmental Sciences, The Open University of Japan, Chiba, Japan*

- FC-06. Skyrmionogenesis: Skyrmion–antiskyrmion asymmetry from pair generation.** U. Ritzmann¹, B. Dupé², R.E. Camley³ and J. Kim⁴ 1. *Department for Physics and Astronomy, Uppsala University, Uppsala, Sweden*; 2. *Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany*; 3. *Department of Physics and Energy Science, University of Colorado at Colorado Springs, Colorado Springs, CO, United States*; 4. *Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

- FC-07. Domain Wall Skyrmions.** R. Cheng², M.P. Li¹, A. Sapkota³, A. Rai³, A. Pokhrel³, T. Mewes³, C.K. Mewes³, M. De Graef¹, D. Xiao^{2,1} and V. Sokalski¹ 1. *Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*; 2. *Physics, Carnegie Mellon University, Pittsburgh, PA, United States*; 3. *Physics & Astronomy, MINT, University of Alabama, Tuscaloosa, AL, United States*

- FC-08. Vortex-antivortex Motion and Cycloidal Domains in Magnetic Trilayers Studied by Transmission X-ray Microscopy.** *C. Quiros*^{1,2}, *A. Hierro-Rodriguez*³, *A. Sorrentino*⁴, *R. Valcarcel*⁴, *L.M. Alvarez-Prado*^{1,2}, *J. Diaz*^{1,2}, *R. Fernandez-Gonzalez*¹, *J. Martin*^{1,2}, *J.M. Alameda*^{1,2}, *S. McVitie*³, *E. Pereiro*⁴, *M. Velez*^{1,2} and *S. Ferrer*⁴ *1. Departamento de Física, Universidad de Oviedo, 33007 Oviedo, Spain; 2. CINN (CSIC – Universidad de Oviedo), 33940 El Entrego, Spain; 3. SUPA, University of Glasgow, School of Physics and Astronomy, G12 8QQ Glasgow, United Kingdom; 4. ALBA Synchrotron, 08290 Cerdanyola del Valles, Spain*

- FC-09. Dependence of Interfacial Dzyaloshinskii-Moriya Interaction on Layer Thicknesses in Ta/CoFeB/TaO_x Heterostructures from Brillouin Light Scattering.** *A.K. Chaurasiya*¹, *S. Choudhury*¹, *J. Sinha*¹ and *A. Barman*¹ *1. Condensed Matter Physics and Material Sciences, S N Bose National Centre for Basic Sciences, Kolkata, India*

- FC-10. Anisotropic Dzyaloshinskii-Moriya Interaction in a System with C_{2v} Symmetry: Epitaxial Fe/Pt(110).** *B. Zimmermann*¹, *G. Chen*², *J.M. Shaw*³, *A.K. Schmid*⁵, *K. Liu*^{2,4}, *S. Blügel*¹ and *H. Nembach*³ *1. Peter Gruenberg Institute, Forschungszentrum Juelich, Juelich, Germany; 2. Physics Department, University of California - Davis, Davis, CA, United States; 3. Quantum Electromagnetics Division, NIST, Boulder, CO, United States; 4. Physics Department, Georgetown University, Washington, DC, United States; 5. MSD, Lawrence Berkeley National Laboratory, Berkeley, CA, United States*

- FC-11. Sign reversal of Dzyaloshinskii-Moriya effective field with ferromagnetic layer thickness in W/(Co)FeB/MgO heterostructures.** *T. Dohi*¹, *S. Dutttagupta*^{1,2}, *Y. Takeuchi*¹, *S. Fukami*^{1,2} and *H. Ohno*^{1,2} *1. RIEC, Tohoku University, Sendai, Japan; 2. CSIS, Tohoku University, Sendai, Japan*

- FC-12. Engineering the Dzyaloshinskii-Moriya interaction in B20 thin-film chiral magnets.** *E. Turgut*^{1,2}, *H. Paik*¹, *K. Nguyen*¹, *D.A. Muller*¹, *D. Schlom*¹ and *G. Fuchs*¹ *1. Cornell University, Ithaca, NY, United States; 2. Oklahoma State University, Stillwater, OK, United States*

- FC-13. Formation of skyrmions in soft magnetic films without Dzyaloshinskii-Moriya interaction.** D. Navas¹, R.V. Verba², A. Hierro-Rodriguez^{1,3}, S. Bunyaev¹, X. Zhou⁴, A. Adeyeye⁴, O. Dobrovolskiy^{5,6}, B. Ivanov^{2,7}, K. Guslienko^{8,9} and G.N. Kakazei¹ 1. IFIMUP-IN/Department of Physics and Astronomy, University of Porto, Porto, Portugal; 2. Institute of Magnetism NAS of Ukraine, Kyiv, Ukraine; 3. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 4. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 5. Physikalisches Institut, Goethe University, Frankfurt, Germany; 6. Physics Department, V. Karazin National University, Kharkiv, Ukraine; 7. National University of Science and Technology "MISiS", Moscow, Russian Federation; 8. Departamento de Física de Materiales, Universidad del País Vasco UPV/EHU, San Sebastian, Spain; 9. IKERBASQUE, the Basque Foundation for Science, Bilbao, Spain

4:06

- FC-14. Magnetic phases of skyrmion-hosting $\text{GaV}_4\text{S}_{8-y}\text{Se}_y$ ($y = 0, 2, 4, 8$) probed with muon spectroscopy.** K.J. Franke¹, B. Huddart¹, T.J. Hicken¹, F. Xiao^{4,5}, S.J. Blundell³, F.L. Pratt⁶, M. Crisanti^{7,8}, J.A. Barker², S.J. Clark¹, A. Štefančíč⁷, M. Ciomaga Hatnean⁷, G. Balakrishnan⁷ and T. Lancaster¹ 1. Centre for Materials Physics, Durham University, Durham, United Kingdom; 2. Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institut, Viligen, Switzerland; 3. Department of Physics, Oxford University, Oxford, United Kingdom; 4. Laboratory for Neutron Scattering, Paul Scherrer Institut, Viligen, Switzerland; 5. Department of Chemistry and Biochemistry, University of Bern, Bern, Switzerland; 6. ISIS Facility, STFC Rutherford Appleton Laboratory, Chilton, Didcot, United Kingdom; 7. Department of Physics, University of Warwick, Coventry, United Kingdom; 8. Institut Laue-Langevin, Grenoble, France

4:18

- FC-15. Influence of the multidomain structure on the nonlinear ac magnetic response in the Néel skyrmion lattice host GaV_4S_8 .** E. Clements¹, R. Das², G. Pokharel³, D. Mandrus³, M. Osofsky⁴, M. Phan¹ and H. Srikanth¹ 1. Physics, University of South Florida, Tampa, FL, United States; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 3. Department of Materials Science and Engineering, University of Tennessee Knoxville, Knoxville, TN, United States; 4. Naval Research Lab, Washington, DC, United States

Session FD
MAGNETIC FIELD SENSORS AND APPLICATIONS
AT HIGH FREQUENCIES

Joseph Davies, Chair
NVE Corporation, Eden Prairie, MN, United States

1:30

- FD-01. Magneto-Impedance Response of a Double Exchange Metallic Ferromagnet: $\text{La}_{0.80}\text{Sr}_{0.20}\text{MnO}_3$.** *U. Chaudhuri¹ and R. Mahendiran¹ 1. Physics, National University of Singapore, Singapore, Singapore*

1:42

- FD-02. Miniaturization Techniques using Magnetic Materials for Broadband Antenna Applications.** *R. Durbha¹ and A. Mohammed¹ 1. Electrical and Computer Engineering, Tufts University, Medford, MA, United States*

1:54

- FD-03. Electrically Tunable Ferrite Band Pass Filter in X-Band with Wide Tunability.** *S. Kagita¹, A. Basu¹ and S.K. Koul¹ 1. Centre for Applied Research in Electronics, Indian Institute of Technology Delhi, New Delhi, India*

2:06

- FD-04. Giant Magnetostriction and Low Loss in FeGa/NiFe Laminates for Strain-Mediated Multiferroic Micro-Antenna Applications.** *K. Fitzell¹, C.R. Rementer¹, J.D. Schneider², J. Hu², N. Virushabadoss³, M.E. Jamer^{4,5}, A. Barra², D.B. Gopman⁶, J. Borchers⁵, B.J. Kirby⁵, A. Sepulveda², R. Henderson³, G. Carman² and J.P. Chang¹ 1. Chemical and Biomolecular Engineering, UCLA, Los Angeles, CA, United States; 2. Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA, United States; 3. Electrical and Computer Engineering, University of Texas at Dallas, Dallas, TX, United States; 4. Physics, United States Naval Academy, Annapolis, MD, United States; 5. NCNR, NIST, Gaithersburg, MD, United States; 6. Materials Science and Engineering, NIST, Gaithersburg, MD, United States*

2:18

- FD-05. Microwave absorbing properties of mechanically jet-milled U-type hexaferrite.** *S. Kumar¹, D.P. Dubey¹, R. Chatterjee¹ and S. Shannigrahi² 1. Physics, IIT Delhi, New Delhi, India; 2. A*STAR (Agency for Science, Technology and Research), Institute of Materials Research and Engineering, Singapore, Singapore*

2:30

- FD-06. High-Q on-chip C-band inductor with a nanocrystalline MnZn-ferrite film core.** *R. Sai^{1,2} and M. Yamaguchi¹ 1. Tohoku University, Sendai, Japan; 2. Indian Institute of Science, Bengaluru, India*

- FD-07. Development of Anisotropic Magnetic Nanocomposites for Miniaturized RF Device Applications.** Y. Zhang¹, Y. Xie¹, B. Kucukgok¹, L. Witkowski², Y. Cui², S. Yoon³, Y. Cao², C. Lee², A. Ketterson³ and K. Gao¹ *1. Applied Materials Division, Argonne National Laboratory, Lemont, IL, United States; 2. IDP Research, Qorvo, Richardson, TX, United States; 3. IDP, Qorvo, Newbury Park, CA, United States*

- FD-08. Electric Field Control of the Magnetic Properties in Multiferroic Heterostructures.** J. Harris¹, M.M. Saleem¹, E. Miskevich¹, S. Baco¹, J. Sharp¹, W. Yang², P.W. Fry³, Z. Leong¹ and N. Morley¹ *1. Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom; 2. Department of Engineering, University of California Santa Cruz, Santa Cruz, CA, United States; 3. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

THURSDAY
AFTERNOON
1:30

VIRGINIA

Session FE MAGNETO-CALORIC AND MAGNETO-OPTICAL MATERIALS

Thomas Thomson, Chair
University of Manchester, San Jose, CA, United States

- FE-01. Unusual Effects of Sc Substitution and Processing on Magnetism of $(\text{Gd}_{1-x}\text{Sc}_x)_5\text{Ge}_4$.** J. Liu^{1,2}, Y. Mudryk¹, D. Paudyal¹ and V.K. Pecharsky^{1,2} *1. Ames Laboratory, Iowa State University, Ames, IA, United States; 2. Department of Materials Science and Engineering, Iowa State University, Ames, IA, United States*

- FE-02. Critical behavior and magnetocaloric effect in $\text{GdSc}(\text{Si},\text{Ge})$ intermetallics.** A. Herrero¹, A. Oleaga¹, P. Manfrinetti^{2,3}, A. Provino^{2,3} and A. Salazar¹ *1. Faculty of Engineering/Applied Physics I, University of the Basque Country, Bilbao, Spain; 2. Department of Chemistry, University of Genova, Genova, Italy; 3. Institute SPIN-CNR, Genova, Italy*

- FE-03. Withdrawn**

2:06

- FE-04. Magnetocaloric effect in 2D ferromagnetic semiconductor $\text{Cr}_2\text{Ge}_2\text{Te}_6$.** N. R¹, A. V¹, A.V. Morozkin² and A.K. Nigam³
1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. Chemistry, Moscow State University, Moscow, Russian Federation; 3. DCMPS, Tata Institute of Fundamental Research, Mumbai, India

2:18

- FE-05. Quantifying Individual Contributions of Magnetic Interactions in Magnetocaloric FeCoNiCuMn High Entropy Alloys using Mossbauer Spectroscopy.** A.E. Perrin¹, M. Sorescu², V. Ravi³, M.E. McHenry¹ and D. Laughlin¹
1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physics, Duquesne University, Pittsburgh, PA, United States; 3. Materials Science and Engineering, Berkeley, Berkeley, CA, United States

2:30

- FE-06. Strong Coupling between Cavity Photons and Nano-Ferromagnet Magnons.** J.T. Hou¹ and L. Liu¹ *1. Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, United States*

2:42

- FE-07. Magnetic and Optical Studies of 2D Antiferromagnetic MnPS_3 .** C. Zhao¹, P. Zhang¹, Y. Cheng², A. Petrou¹ and H. Zeng¹ *1. Physics, State Univ of NY - Buffalo, Buffalo, NY, United States; 2. Advanced Material, Nanjing Tech University, Nanjing, China*

2:54

- FE-08. Magnetic-field patterning of a spintronic source for arbitrary THz polarization control.** M. Hibberd^{1,3}, D. Lake^{1,3}, N. Johansson², S. Jamison^{3,4}, T. Thomson² and D. Graham^{1,3}
1. School of Physics and Astronomy & Photon Science Institute, University of Manchester, Manchester, United Kingdom; 2. School of Computer Science, University of Manchester, Manchester, United Kingdom; 3. The Cockcroft Institute, Warrington, United Kingdom; 4. Accelerator Science and Technology Centre, Science and Technology Facilities Council, Warrington, United Kingdom

3:06

- FE-09. Enhanced Magneto-optical Kerr Rotation in Yttrium Iron Garnet-Bismuth Quantum Dots Hybrid System by Spin-Orbit Coupling.** L. Jin¹, P. Gao², H. Zhang¹, Z. Zhong¹, M. Liu² and D. Zhang³ *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 2. School of Physics, Peking University, Beijing, China; 3. University of Delaware, Department of Physics and Astronomy, Newark, DE, United States*

- FE-10. Time-resolved quadratic magneto-optical Kerr effect for studies of magnetic dynamics of antiferromagnetic materials.** *K. Yang¹, K. Kang¹, A. Ramanathan¹, D. Shoemaker¹, A. Schleife¹ and D.G. Cahill¹* *1. University of Illinois at Urbana Champaign, Urbana, IL, United States*

- FE-11. Directly coated Bragg mirror on magnetic garnet film for small magneto-optical Q-switch.** *R. Morimoto¹, T. Goto^{1,2}, J.W. Pritchard³, Y. Nakamura¹, P. Lim¹, M. Mina³, T. Taira⁴, H. Uchida¹ and M. Inoue¹* *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST PRESTO, Kawaguchi, Japan; 3. Iowa State University, Ames, IA, United States; 4. Institute for Molecular Science, Okazaki, Japan*

- FE-12. High-contrast Magneto-optical Spatial Light Modulators Based on RGB Magnetophotonic Crystals.** *S. Kharratian², H. Urey^{1,2} and M.C. Onbasli^{1,2}* *1. Electrical and Electronics Engineering, Koç University, Istanbul, Turkey; 2. Materials Science and Engineering, Koc University, Istanbul, Turkey*

- FE-13. Magneto-optical Terbium Iron Garnet and Bi and Ce-substituted Terbium Iron Garnet thin films for nonreciprocal photonics.** *T. Fakhru¹, E. Tsotsos¹, L. Beran², B. Song¹, Y. Zhang¹, E.R. Rosenberg¹, M. Veis² and C. Ross¹* *1. Materials Science and Engineering, MIT, Cambridge, MA, United States; 2. Faculty of Mathematics and Physics, Charles University, Prague, Czechia*

- FE-14. Manipulation of the magneto-optical efficiencies by a hybridization of nanomagnets and plasmons.** *Y. Yasukawa¹, R. Hara^{1,2}, H. Yamane³ and M. Kobayashi¹* *1. Chiba Institute of Technology, Narashino, Japan; 2. Nihon Dempa Kogyo Co., Ltd., Sayama, Japan; 3. Akita Industrial Technology Center, Akita, Japan*

- FE-15. Magnetic and Magneto-Optical Properties of Seedlayer-Free Cerium-Doped Terbium Iron Garnets.** *K. Srinivasan¹, R. Peng¹, T. Gage², P. Dulal², C. Radu³, L. Mo¹ and B. Stadler^{1,2}* *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 3. Lake Shore Cryotronics, Inc., Westerville, OH, United States*

Session FF
SPIN TRANSFER TORQUE MRAM II

Minh-Hai Nguyen, Chair
Raytheon BBN Technologies, Cambridge, MA, United States

1:30

- FF-01. Perpendicular magnetized magnetic random access memory (MRAM) cells utilizing the precessional spin current (PSC) structure, benefits for modern memory applications.**

M. Pinarbasi¹, B. Kardasz¹, G. Wolf¹, J. Vasquez¹, S. Watts¹, T. Boone¹, J. Hernandez¹, K.D. Bozdag¹, M. Schabes¹, P. Manandhar¹, E. Dobisz¹, P. Shrivastava¹, Y. Chin¹, E. Ryan¹ and G. Jagtiani¹ I. Spin Transfer Technologies Inc., Fremont, CA, United States

1:42

- FF-02. Thermal stability determination by current-driven switching: limitations of macrospin model and relation to size-dependence paradox.**

D. Apalkov¹, S. Wang¹ and V. Nikitin¹ I. New Memory Technology, Samsung Semiconductor Inc, San Jose, CA, United States

1:54

- FF-03. From conventional STT-MRAM to Perpendicular Shape Anisotropy STT-MRAM (PSA-STT-MRAM): Dramatic reduction in thermal variation of anisotropy.**

N. Perrissin¹, G. Grégoire¹, S. Lequeux¹, L. Tille¹, N. Strelkov¹, A. Chavent¹, S. Auffret¹, L.D. Buda-Prejbeanu¹, R.C. Sousa¹, L. Vila¹, I.L. Prejbeanu¹ and B. Dieny¹ I. INAC-SPINTEC, Univ.Grenoble Alpes, CEA, CNRS, Grenoble-INP, Grenoble, France*

2:06

- FF-04. Perpendicular Shape Anisotropy STT-MRAM (PSA-STT-MRAM): Determination of pillar tilt from 3D Stoner Wohlfarth asteroïd analysis.**

N. Perrissin¹, G. Grégoire¹, S. Lequeux¹, L. Tille¹, N. Strelkov¹, A. Chavent¹, S. Auffret¹, L.D. Buda-Prejbeanu¹, R.C. Sousa¹, L. Vila¹, I.L. Prejbeanu¹ and B. Dieny¹ I. INAC-SPINTEC, Univ.Grenoble Alpes, CEA, CNRS, Grenoble INP, Grenoble, France

2:18

- FF-05. STT efficiency modulation in double barrier pSTT-MRAM cell with read/write mode control layer.**

P. Coelho¹, J. Chatterjee¹, N. Lamard¹, Y. Bel¹, A. Chavent¹, C. Baraduc¹, N. Strelkov¹, S. Auffret¹, L.D. Buda-Prejbeanu¹, R.C. Sousa¹, L. Vila¹, I.L. Prejbeanu¹ and B. Dieny¹ I. SPINTEC, Grenoble, France

- FF-06. Insertion Layer Thickness Dependence of Magnetic and Electrical Properties for Double CoFeB/MgO Interface Magnetic Tunnel Junctions.** *S. Miura*¹, *H. Sato*^{1,2}, *S. Ikeda*^{1,2}, *K. Nishioka*¹, *H. Honjo*¹ and *T. Endoh*^{1,3} *1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Graduate School of Engineering, Tohoku University, Sendai, Japan*

- FF-07. Low RA Perpendicular MTJs with High Thermal Tolerance for STT-MRAM.** *R. Whig*¹, *C. Ching*¹, *X. Wang*¹, *P. Agrawal*¹, *D. Kim*¹, *L. Xue*¹, *J. Ahn*¹, *H. Tseng*¹, *M. Pakala*¹, *R. Wang*¹ and *X. Tang*¹ *1. Applied Materials, Sunnyvale, CA, United States*

- FF-08. Pulsed Spin Torque Switching of Spin-Valve Devices with Diluted and Undiluted Permalloy Free Layers.** *L. Rehm*², *V. Sluka*², *J. Beik Mohammadi*², *M. Nguyen*¹, *G. Rowlands*¹, *T.A. Ohki*¹ and *A.D. Kent*² *1. Raytheon BBN Technologies, Cambridge, MA, United States; 2. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States*

- FF-09. Perpendicular Magnetized Magnetic Tunnel Junctions with SAF Structure Comprising Co/Pt and Co/Ir Multilayers.** *K. Nakamura*¹, *H. Maehara*^{2,3}, *H. Tomita*^{1,3}, *K. Nagasaka*^{1,3}, *Y. Tanaka*^{1,3}, *A. Gomi*¹ and *N. Watanabe*¹ *1. Tokyo Electron Technology Solutions Limited, Nirasaki, Japan; 2. Tokyo Electron Limited, Nirasaki, Japan; 3. National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

- FF-10. Diffusion Control in Top-Pinned STT-MRAM Magnetic Tunnel Junctions.** *R. Carpenter*¹, *J. Swerts*¹, *S. Couet*¹, *S. Mertens*¹, *E. Liu*¹, *W. Kim*¹, *S. Rao*¹, *S. Kundu*¹ and *G.S. Kar*¹ *1. Imec, Leuven, Belgium*

- FF-11. Determination of the Exchange Energy of Composite Perpendicular Magnetic Tunnel Junction Free Layers.** *J. Beik Mohammadi*¹, *B. Kardasz*², *G. Wolf*², *M. Pinarbasi*² and *A.D. Kent*¹ *1. Center for Quantum Phenomena, Physics, New York University, New York, NY, United States; 2. Spin Transfer Technologies Inc, Freemont, CA, United States*

- FF-12. Magnetic and free-layer properties of MgO/(Co)FeB/MgO structure: Dependence on CoFeB composition.** *M. Bersweiller*¹, *H. Sato*¹ and *H. Ohno*¹ *1. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan*

3:54

- FF-13. Effect of tunnel-electron spin-flip scattering on the shape of IV curves in CoFeB-MgO-CoFeB type of magnetic tunnel junctions.** *J. Sun*¹, J.J. Nowak¹, G. Hu¹, M.G. Gottwald¹, R.R. Robertazzi¹, P.L. Trouilloud¹, G. Lauer¹, P. Hashemi¹, E. O'Sullivan¹, R. Kothandaraman¹, B. Doris¹ and D. Worledge¹
1. IBM Research, Yorktown Heights, NY, United States

4:06

- FF-14. Novel Low Damage MTJ Etch Chemistry for High Performance STT-MRAM.** *S. Kang*¹, T. Kubo¹, Y. Yagi¹ and T. Endoh²
1. Tokyo Electron Ltd., Sendai, Miyagi, Japan;
2. Center for Innovative Integrated Electronic Systems (CIES), Tohoku University, Sendai, Miyagi, Japan

4:18

- FF-15. Spin transfer torque random access memories based on band-pass Fabry-Pérot physics.** *A. Sharma*¹, A. Tulapurkar¹ and B. Muralidharan¹
1. Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India

THURSDAY
AFTERNOON
1:30

WASHINGTON 1

Session FG

MICROMAGNETIC AND HYSTERESIS MODELING I

Vitaliy Lomakin, Chair

University of California - San Diego, La Jolla, CA, United States

1:30

- FG-01. Novel micromagnetic approach for self-consistent modeling of magneto-thermodynamics. (Invited)** *O. Chubykalo-Fesenko*¹, P. Nieves², D. Serantes³, R. Otxoa^{5,4} and R.W. Chantrell⁶
1. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. University of Burgos, Burgos, Spain; 3. University of Santiago de Compostela, Santiago de Compostela, Spain; 4. DIPIC, San Sebastian, Spain; 5. Hitachi, Cambridge, United Kingdom; 6. The University of York, York, United Kingdom

2:06

- FG-02. Analytical treatment of broadband nonlinear ferromagnetic resonance in uniaxial nanomagnets.** *C. Serpico*¹, M. d'Aquino², V. Scalera¹, A. Quercia¹, S. Perna¹ and I. Mayergoyz³
1. DIETI, University of Napoli Federico II, Napoli, Italy; 2. DING, University of Napoli "Parthenope", Napoli, Italy; 3. ECE Department, University of Maryland, College Park, MD, United States

- FG-03. Large Scale Finite-Element Simulation of Micromagnetic Thermal Noise.** *F. Bruckner*¹, *M. d'Aquino*², *C. Serpico*³, *C. Abert*¹, *C. Vogler*¹ and *D. Suess*¹ *1. Faculty of Physics, University of Vienna, Vienna, Austria; 2. Department of Technology, University of Napoli "Parthenope", Napoli, Italy; 3. Department of Electrical Engineering, University of Napoli "Federico II", Napoli, Italy*

- FG-04. Using a Micromagnetic Eigenmode Solver and the Vector Hamiltonian Formalism to Accelerate Simulations.** *G. Rowlands*¹, *L.M. Ranzani*¹, *A.N. Slavin*² and *V. Tyberkevych*² *1. Physical Sciences and Systems, Raytheon BBN Technologies, Cambridge, MA, United States; 2. Physics, Oakland University, Rochester, MI, United States*

- FG-05. Magnetic Microstructure Machine Learning Analysis.** *L. Exl*^{1,2}, *J. Fischbacher*⁴, *A. Kovacs*⁴, *M. Gusenbauer*⁴, *G. Hrkac*³ and *T. Schrefl*⁴ *1. Wolfgang Pauli Institute, University of Vienna, Vienna, Austria; 2. Institute of Mathematics, University of Vienna, Vienna, Austria; 3. College of Engineering, The University of Exeter, Exeter, United Kingdom; 4. Center for Integrated Sensor Systems, Danube University Krems, Wr. Neustadt, Austria*

- FG-06. Limitations of the Macrospin Approximation of Materials with Inhomogeneous Perpendicular Anisotropy.** *A. Sapkota*¹, *J. Beik Mohammadi*², *A. Rai*¹, *A. Pokhrel*¹, *M.P. Li*³, *D.K. Lau*³, *M. De Graef*³, *V. Sokalski*³, *T. Mewes*¹ and *C.K. Mewes*¹ *1. Department of Physics and Astronomy, MINT Center, The University of Alabama, Tuscaloosa, AL, United States; 2. Center for Quantum Phenomena, Department of Physics, New York University, New York, NY, United States; 3. Department of Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

- FG-07. Characterization of cw laser-induced thermal gradients in magnetic tunnel junctions integrated into microresonators via COMSOL simulations.** *H. Cansever*^{1,2}, *J. Lindner*¹, *T. Huebner*³, *A. Niesen*³, *G. Reiss*³, *J. Fassbender*^{1,2} and *A. Deac*¹ *1. Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Solid State Physics, TU Dresden, Dresden, Germany; 3. Physics Department, University of Bielefeld, Bielefeld, Germany*

- FG-08. Experimentally-Derived Parameters for Local Magnetic Anisotropy Term in Spin-Lattice Dynamics Simulations.** *J.R. Cooke*¹ and *J.R. Lukes*¹ *1. Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, PA, United States*

- FG-09. Analysis of switching times statistical distributions for magnetic nanoparticles.** *M. d'Aquino¹, V. Scalera² and C. Serpico²* 1. *DING, University of Napoli "Parthenope", Napoli, Italy;* 2. *DIETI, University of Napoli Federico II, Napoli, Italy*

- FG-10. Mapping Magnetisation in Compensating Synthetic Ferrimagnets with Negative Remanence.** *J.N. Scott¹, W.R. Hendren¹, R.W. Chantrell², R.F. Evans², R.J. Hicken³, M. Dabrowski³ and R. Bowman¹* 1. *Queen's University Belfast, Belfast, United Kingdom;* 2. *University of York, York, United Kingdom;* 3. *University of Exeter, Exeter, United Kingdom*

- FG-11. Micromagnetic modeling of non-uniformities in magnetic tunnel junctions for MRAM devices.** *I. Volvach¹, M.V. Lubarda² and V. Lomakin³* 1. *Material Science and Engineering, University of California San Diego, San Diego, CA, United States;* 2. *Faculty of Polytechnics, University of Donja Gorica, Donja Gorica, Montenegro;* 3. *Department of Electrical and Computer Engineering, University of California San Diego, San Diego, CA, United States*

- FG-12. Fast parallel techniques for the calculation of the dipole-dipole interaction.** *R.A. Pepper¹, M. Beg², D.I. Cortés-Ortuño¹, O. Hovorka¹ and H. Fangohr^{2,1}* 1. *Faculty of Physical Sciences and Engineering, University of Southampton, Southampton, United Kingdom;* 2. *European XFEL GmbH, Schenefeld, Germany*

- FG-13. Extended Micromagnetic Modeling for All Optical Switching.** *V. Raposo¹, E. Martinez¹, M. Zazo¹ and A. Hernandez¹* 1. *Fisica Aplicada, University of Salamanca, Salamanca, Spain*

THURSDAY
AFTERNOON
1:30

WASHINGTON 2

Session FH

SOFT MAGNETIC COMPONENTS: PERFORMANCE, MODELING AND OPTIMIZATION

Faxiang Qin, Chair
Zhejiang University, Hangzhou, China

- FH-01. Podded marine propulsion till Formula-E cars: Requirements and limits of magnetic materials. (Invited)** *G. Shrestha¹* 1. *ABB INC Corporate Research, Raleigh, NC, United States*

- FH-02. Iron loss properties of magnetic materials under PWM inverter excitation at high temperatures.** *A. Yao*¹ and *T. Hatakeyama*¹ *1. Department of Electrical and Computer Engineering, Toyama Prefectural University, Imizu, Japan*

- FH-03. Reluctance Network Model of Three-Phase-Laminated-Core Variable Inductor Considering Magnetic Hysteresis Behavior.** *Y. Hane*¹, *K. Nakamura*¹, *T. Ohinata*² and *K. Arimatsu*² *1. Graduate school of Engineering, Tohoku University, Sendai, Japan; 2. Tohoku Electric Power Co., Inc., Sendai, Japan*

- FH-04. Finite Element Analysis (FEA) Modeling of High Frequency Single Phase Solid State Transformers Enabled by Metal Amorphous Nanocomposites (MANC) and Calculation of Leakage Inductance for Different Winding Topologies.** *M. Nazmunnahar*¹, *S. Simizu*¹, *P. Ohodnicki*¹, *S. Bhattacharya*² and *M.E. McHenry*¹ *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Electrical Engineering Department, North Carolina State University, Raleigh, NC, United States*

- FH-05. Leakage Flux Mitigation of Laminated Ribbon Core based Transformer for a Triple Active Bridge DC-DC Converter.** *M.A. Juds*¹, *Z. Xu*¹, *M. Rashidi*¹ and *R. Gao*¹ *1. Corporate Research and Technology, Eaton Corporation, Menomonee Falls, WI, United States*

- FH-06. Comparison of DC Current and Bias Field Tuning of High Frequency Inductors with Magnetic Core.** *H. Wu*¹, *M. Khmour*¹, *Y. Wu*¹ and *H. Yu*¹ *1. Arizona State University, Tempe, AZ, United States*

- FH-07. Influence of Electric and Magnetic Biases on Tunable Magnetoelectric Inductor.** *J. Zhang*¹, *D. Chen*¹, *Q. Zhang*¹, *L. Jiang*¹, *X. Hang*¹, *K. Li*¹, *W. Zhu*¹ and *L. Cao*¹ *1. Zhengzhou University of Light Industry, Zhengzhou, China*

- FH-08. Broadband circuit models of Ferrite cores including dimensional resonance, saturation, and hysteresis.** *B. Wunsch*¹, *T. Christen*¹, *S. Skibin*¹ and *V. Forsstrom*² *1. ABB Corporate Research, Baden-Dättwil, Switzerland; 2. ABB Oy Drives, Helsinki, Finland*

- FH-09. Ultra-low Profile Integrated Magnetic Inductors and Transformers for HF Applications.** *J. Michel¹, H. Sibuet¹, N. Buffet¹, J. Bastien¹, R. Hida¹, B. Viala¹, P. Poveda², A. Berneux-Dugast², E. Bruno² and C. Falub³* 1. *Univ. Grenoble Alpes, CEA, LETI, F-38000 Grenoble, France;* 2. *ST Microelectronics, F-37100 Tours, France;* 3. *Evatec AG, CH-9477 Trübbach, Switzerland*

- FH-10. Design, Fabrication and Characterization of Package Embedded Solenoidal Magnetic Core Inductors for High Efficiency System In Package Integrated Voltage Regulators.** *M.L. Bellaredj^{1,2}, A.K. Davis^{1,2}, P. Kohl^{3,2}, M. Swaminathan^{1,2} and S. Sandler⁴* 1. *School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, United States;* 2. *Center for Co-Design of Chip, Package, System (C3PS), Georgia Institute of Technology, Atlanta, GA, United States;* 3. *School of Chemical and Bio-molecular Engineering, Georgia Institute of Technology, Atlanta, GA, United States;* 4. *Picotest, Phoenix, AZ, United States*

- FH-11. 3D coupled magnetic-fluid-thermal analysis and validation of 10kV oil-immersed triangular wound core transformer.** *R. Gong^{1,2}, Z. Tang¹, S. Wang³, T. Henneron¹ and J. Ruan²* 1. *L2EP-Laboratoire d'Electrotechnique et d'Electronique de Puissance, Lille University, Arts et Metiers Paris Tech, Centrale Lille, HEI, EA 2697, Lille, F-59000, France;* 2. *School of Electrical Engineering, Wuhan University, Wuhan, China;* 3. *State Key Laboratory of Electrical Insulation and Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China*

- FH-12. Efficiency Comparison between a Permanent Magnet Generator and a Pseudo Direct Drive.** *C.D. Neves² and Á.F. Flores¹* 1. *DELET, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil;* 2. *Centro de Engenharias, Universidade Federal de Pelotas, Pelotas, Brazil*

- FH-13. Multi-Frequency Multi-Power One-to-Many Wireless Power Transfer System.** *W. Liu¹, K. Chau¹, C. Lee^{1,2}, C. Jiang¹ and W. Han¹* 1. *Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China;* 2. *Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA, United States*

Session FI
MAGNETIC NANOPARTICLES FOR BIOMEDICAL APPLICATIONS AND IMAGING

Bethanie Stadler, Chair
University of Minnesota, Minneapolis, MN, United States

1:30

- FI-01. Element-Selective Measurement of Magnetic Properties in Bimagnetic Nanoparticles and Binary Ferrofluids by X-ray Magnetic Spectroscopies. (Invited)** *A. Juhin¹, N. Daffé², M. Sikora³, J. Zecevic⁴, K. Trohidou⁵, J. Nogues⁶, N. Bouldi⁷, V. Gavrilov⁸, S. Neveu⁹, F. Choueikani¹⁰, V. Dupuis⁸, P. Ohresser¹⁰, M. Arrio¹, M. Rovezzi¹¹ and P. Saintavit¹*
1. CNRS, Paris, France; 2. Paul Scherrer Institut, Villigen, Switzerland; 3. AGH University, Krakow, Poland; 4. Debye Institute, Utrecht, Netherlands; 5. NCSR "Demokritos", Athens, Greece; 6. Catalan Institute of Nanoscience and Nanotechnology (ICN2), Barcelona, Spain; 7. Heidelberg University, Heidelberg, Germany; 8. Sorbonne Université, Paris, France; 9. Sorbonne Université, Paris, France; 10. Synchrotron SOLEIL, Saint-Aubin, France; 11. ESRF, Grenoble, France

2:06

- FI-02. Magnetic characterization of bi-directional aligned collagen fibrils using nickel nanowires for bio-medical applications.** *M. Zamani Kouhpanji¹, Y. Zhang¹, S. Roughani², J. Um¹, R. Franklin¹ and B. Stadler^{1,2}*
1. Electrical and Computer Engineering, University of Minnesota Twin Cities, Minneapolis, MN, United States; 2. Chemical Engineering and Material Science, University of Minnesota Twin Cities, Minneapolis, MN, United States

2:18

- FI-03. Novel Production of Magnetite Particles via Thermochemical Processing of Digestate from Manure and Food Waste.** *D. Rodriguez Alberto¹, K. Repa², S. Hegde¹, C. Miller² and T.A. Trabold¹*
1. Golisano Institute for Sustainability, Rochester Institute of Technology, Rochester, NY, United States; 2. School of Chemistry and Materials Science, Rochester Institute of Technology, Rochester, NY, United States

2:30

- FI-04. Magnetic Characterization of Ferrite Particles Employed as a Contrast Agent for Magnetic Resonance Imaging Thermometry.** *N.A. Alghamdi¹, J. Stroud¹, T. Read¹, J.H. Hankiewicz¹, R.E. Camley¹ and Z. Celinski¹*
1. UCCS BioFrontiers Center, University of Colorado, Colorado Springs, CO, United States

- FI-05. Exploring Relaxation Dynamics and Temperature Sensitivity of Magnetic Nanoparticles using Magnetic Particle Spectroscopy.** *H. Khurshid^{1,2}, Y. Shi⁴, Z. Nemati³, M. Phan³, H. Srikanth³ and J. Weaver^{1,4}* *1. Radiology, Dartmouth Hitchcock Medical Center, Lebanon, NH, United States; 2. Applied Physics and Astronomy, University of Sharjah, Sharjah, United Arab Emirates; 3. Applied Physics, University of South Florida, Tampa, FL, United States; 4. Physics, Dartmouth College, Hanover, NH, United States*

- FI-06. Shape anisotropy effects on magnetic and hyperthermia properties of iron oxide nanoparticles.** *J. Mohapatra¹, J. Beatty¹, M. Xing¹, J. Elkins¹ and P. Liu¹* *1. Department of Physics, University of Texas at Arlington, Arlington, TX, United States*

- FI-07. Intra-nasal transport of particles into rodent brain by magnetic drilling.** *S. Jafari¹, L. Mair¹, I. Weinberg¹, J. Baker-McKee¹, O. Hale¹, J. Watson-Daniels¹, B. English¹, P. Stepanov¹, C. Ropp¹, O. Atoyebi¹ and D. Sun¹* *1. Weinberg Medical Physics, Inc, North Bethesda, MD, United States*

- FI-08. Development of magnetic probe for laparoscopic identification of sentinel lymph nodes.** *R. Tanaka¹, A. Kuwahata¹, S. Chiaki¹, S. Matsuda², E. Amada², M. Kusakabe^{1,3} and M. Sekino¹* *1. The University of Tokyo, Bunkyo, Japan; 2. Keio University, Shinjuku, Japan; 3. Matrix Cell Research Institute Inc., Ushiku, Japan*

- FI-09. Uric acid crystals control firefly bioluminescence under magnetic fields.** *M. Iwasaka¹ and Y. Takeuchi²* *1. Hiroshima University, Higashihiroshima, Japan; 2. Muroran Institute of Technology, Muroran, Japan*

- FI-10. Size effect: Effective T_2 (T_2^*) of gadolinium silicide (Gd_5Si_4) ferromagnetic nanoparticles (NPs) for high magnetic field (21.1 T) MRI.** *S. Hunagund¹, J. Rosenberg³, S.M. Harstad¹, S. Gupta², V.K. Pecharsky^{2,4}, A.A. El-Gendy⁵ and R.L. Hadimani¹* *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA, United States; 2. Ames Laboratory, Iowa State University, Ames, IA, United States; 3. The National High Magnetic Field Laboratory, Florida State University, Tallahassee, FL, United States; 4. Material Science and Engineering, Iowa State University, Ames, IA, United States; 5. Physics, University of Texas at El Paso, El Paso, TX, United States*

- FI-11. Enhanced T_1 contrast with superparamagnetic nanoparticles in ultra-low field magnetic resonance imaging.** *X. Yin^{1,2}* *1. Western Digital, Fremont, CA, United States; 2. National Institute of Standards and Technology, Boulder, CO, United States*

- FI-12. Dynamically Interleaved Magnetic Resonance Imaging Using AlNiCo Electropermanent Magnet Arrays.** *C. Ropp¹, C. Chen², J. Glickstein², L. Mair¹, O. Hale¹, J. Baker-McKee¹, M. Greer², D. Ariando², J. Watson-Daniels¹, S. Jafari¹, S. Mandal² and I. Weinberg¹* *1. Weinberg Medical Physics, Rockville, MD, United States; 2. Department of Electrical Engineering and Computer Science, Case Western Reserve University, Cleveland, OH, United States*

- FI-13. Recovery of reflective properties in deep-sea fish photophores by applying magnetic fields.** *J. Paitio¹, Y. Oba¹, E. Muneyama², H. Asada² and M. Iwasaka³* *1. Chubu University, Kasugai, Japan; 2. Yamaguchi University, Ube, Japan; 3. Hiroshima University, Higashi Hiroshima, Japan*

THURSDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session FJ
NEW AND NANOSTRUCTURED PERMANENT
MAGNETS II
(Poster Session)

Durga Paudyal, Co-Chair
Ames Laboratory, US DOE, Iowa State University, Ames,
IA, United States
Parashu Kharel, Co-Chair
South Dakota State University, Brookings, SD, United States
Bishnu Dahal, Co-Chair
South Dakota State University, Brookings, SD, United States

- FJ-01. Effect of Milling Time on the Morphology and Magnetic Properties of Nanocrystalline $\text{Sm}_{0.6}\text{Pr}_{0.4}\text{Co}_5$ Powders Prepared by High-energy Ball Milling.** *J. Liang¹, Y. Li¹, M. Yue¹, D. Zhang¹, W. Liu¹, H. Zhang¹, Q. Wu¹ and Z. Shang¹* *1. Beijing University of Technology, Beijing, China*
- FJ-02. Anisotropy and Magnetic Properties of Hot Deformed $\text{Sm}(\text{CoCuFeZr})_7$ magnet Doped by PrCu Alloy.** *W. Jiang¹, D. Zhang¹, Z. Shang¹, X. Xu¹, H. Zhang¹, Q. Wu¹, W. Liu¹ and M. Yue¹* *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*
- FJ-03. Directional dependence of grain boundary phases in a permanent magnet.** *H. Tsukahara¹, K. Iwano¹, C. Mitsumata², T. Ishikawa¹ and K. Ono¹* *1. High Energy Accelerator Research Organization, Tsukuba, Japan; 2. National Institute for Materials Science, Tsukuba, Japan*
- FJ-04. Effect of Bismuth on Chemically Synthesized Fe-Pt-Ni Alloy.** *V. Deepchand¹, F.M. Abel¹, V. Tzitzios² and G. Hadjipanayis¹* *1. Physics and Astronomy, University of Delaware, Newark, DE, United States; 2. Department of Chemical Engineering, Khalifa University of Science and Technology, Petroleum Institute, Abu Dhabi, United Arab Emirates*

- FJ-05. Thermal stability of $L1_0$ -FeNi synthesized by the NITE method.** E. Watanabe¹, S. Goto¹, H. Kura¹, H. Yanagihara³, M. Mizuguchi², K. Takanashi² and E. Kita^{3,4} 1. *Advanced Research and Innovation Center, DENSO Corporation, Aichi, Japan*; 2. *Institute for Materials Research, Tohoku University, Sendai, Japan*; 3. *Institute of Applied Physics, University of Tsukuba, Ibaraki, Japan*; 4. *National Institute of Technology, Ibaraki College, Ibaraki, Japan*
- FJ-06. Micromagnetic Simulations to Understand Angular Dependence of Coercivity in $L1_0$ FeNi based alloys.** P. Sharma¹ and A. Makino¹ 1. *New Industry Creation Hatchery Center (NICHe), Tohoku University, Sendai, Japan*
- FJ-07. Magnetocrystalline Anisotropy of Co_3Si (001) Films from First Principles.** R. Pathak¹, B. Balasubramanian^{2,3}, D.J. Sellmyer^{2,3}, R. Skomski^{2,3} and A. Kashyap¹ 1. *School of Basic Sciences, Indian Institute of Technology, Mandi, India*; 2. *Nebraska Center for Materials and Nanoscience, University of Nebraska Lincoln, Lincoln, NE, United States*; 3. *Department of Physics and Astronomy, University of Nebraska Lincoln, Lincoln, NE, United States*
- FJ-08. High pressure synthesis of bulk MnBi magnets from surface modified powders.** P. Si^{1,2}, Y. Yang¹, X. Wang^{1,2}, H. Ge², J. Park¹, J. Lim¹ and C. Choi¹ 1. *Korea Institute of Materials Science, Changwon, The Republic of Korea*; 2. *China Jiliang University, Hangzhou, China*
- FJ-09. Effect of Fe composition on the structure and magnetic properties for Mn-Ga-N thin films.** K. Ohwada¹, M. Doi¹ and T. Shima¹ 1. *Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan*
- FJ-10. Iron nanoparticles with tunable tetragonal structure and magnetic properties.** J. Liu¹, K. Schliep², S. He¹, B. Ma¹, Y. Jing¹, D.J. Flannigan² and J. Wang^{1,2} 1. *Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*; 2. *Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States*
- FJ-11. Effects of packing density on the magnetic properties of cobalt nanowire assemblies.** M. Xing¹, J. Mohapatra¹, J. Elkins¹ and P. Liu¹ 1. *Physics, University of Texas at Arlington, Arlington, TX, United States*
- FJ-12. Local magnetic interactions in Cadmium-doped Cobalt allotropic phases by first principles calculation.** L.F. Pereira¹ and A.W. Carbonari¹ 1. *IPEN, Sao Paulo, Brazil*
- FJ-13. Magnetic properties and microstructure of nanocomposite $(La,Pr)_3Fe_{14}B$ ribbons by doping La element.** Y. Li¹, S. Peng¹, M. Zhang², S. Wang³, S. Zhu¹, J. Zhang⁴ and F. Shen⁴ 1. *The State Key Laboratory of Refractories and Metallurgy, Hubei Province Key Laboratory of Systems Science in Metallurgical Process, International Research Institute for Steel Technology, Wuhan University of Science and Technology, Wuhan, China*; 2. *Faculty of Science, Inner Mongolia University Of Science and Technology, Inner Mongolia, China*; 3. *Faculty of Science, Northwestern Polytechnical University, Xian, China*; 4. *Institute of Physics, Chinese Academy of Sciences, Beijing, China*

Session FK
THIN FILMS AND SURFACE EFFECTS II
(Poster Session)

Alexey Kovalev, Co-Chair

University of Nebraska-Lincoln, Lincoln, NE, United States

Alexander Samardak, Co-Chair

Far Eastern Federal University, Vladivostok, Russian Federation

- FK-01. The electronic transport properties of ferromagnetic cobaltate $\text{La}_{0.8}\text{Sr}_{0.2}\text{CoO}_3$ film heterojunctions.** Y. Li¹, S. Peng¹, D. Wang¹, K. Wu¹, S. Zhu¹, S. Wang² and F. Shen³ *1. The State Key Laboratory of Refractories and Metallurgy, Hubei Province Key Laboratory of Systems Science in Metallurgical Process, International Research Institute for Steel Technology, Wuhan University of Science and Technology, Wuhan, China; 2. Faculty of Science, Northwestern Polytechnical University, Xian, China; 3. The Institute of Physics, Chinese Academy of Sciences, Beijing, China*
- FK-02. Electric and magnetic properties of $\text{Ni}_{78}\text{Fe}_{22}/\text{Alq}_3/\text{Ni}_{78}\text{Fe}_{22}$ nanoscale junction devices utilizing magnetic thin-film edges.** Y. Sasaki¹, R. Msiska¹, T. Misawa¹, S. Mori¹, T. Komine², N. Hoshino³, T. Akutagawa³, M. Fujioka¹, J. Nishii¹ and H. Kaiju¹ *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Faculty of Engineering, Ibaraki University, Hitachi, Japan; 3. Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan*
- FK-03. Withdrawn**
- FK-04. Growth and characterisation of superconducting $\text{Fe}(\text{Te},\text{Se})$ thin films by pulsed laser deposition method.** R. Kumar¹ and G.D. Varma¹ *1. Physics, I.I.T. Roorkee, Roorkee, India*
- FK-05. Assessing the use of of magnetostrictive ellipse nanostructures for capture and release of superparamagnetic beads in biomedical applications.** M. Guevara¹, Y. Hsiao¹, R.I. Khojah², A.C. Chavez¹, K. Fitzell³, A. Kundu¹, D. Di Carlo², J.P. Chang³, G. Carman¹ and C. Lynch¹ *1. Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA, United States; 2. Bioengineering, UCLA, Los Angeles, CA, United States; 3. Chemical and Biomolecular Engineering, UCLA, Los Angeles, CA, United States*
- FK-06. Laser induced thermo-magnetic electromotive force in a TbCo/Pt hetero-structure wire.** T. Suzuki¹, K. Matsumoto¹, S. Sumi¹ and H. Awano¹ *1. Toyota Technological Institute, Nagoya, Japan*
- FK-07. Tunable Giant Magnetocapacitance in Single Layer Capacitive Device on Epitaxial Nickel Zinc Ferrite Thin Film.** R. Joshi¹, D. Roy², S. Singh¹, S. Dash¹ and P. Anil Kumar³ *1. Physics, Central University of Karnataka, Kalaburagi, India; 2. Physics, Indian Institute of Technology Ropar, Ropar, India; 3. Physics, Indian Institute of Science, Bengaluru, India*

FK-08. Spatial and Temporal Correlations of XY Macro Spins. R. Streubel¹, N. Kent¹, S. Dhuey², A. Scholl³, S. Kevan³ and P. Fischer¹ *1. Materials Sciences Division, Lawrence Berkeley National Lab, Berkeley, CA, United States; 2. Molecular Foundry, Lawrence Berkeley National Lab, Berkeley, CA, United States; 3. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States*

THURSDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session FL
MAGNETIZATION DYNAMICS III
(Poster Session)

Claas Abert, Chair

Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, University of Vienna, Vienna, Austria

FL-01. Studies of HAMR Recording by Hybrid Monte-Carlo Micromagnetics. J. Miao¹ and D. Wei^{1,2} *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. College of Physics and Electronic Information, Inner Mongolia Normal University, Hohhot, China*

FL-02. Magnetic Damping Constant of CoFeB/Pt Thin Films with Varying the Thicknesses of Pt and Insertion Layer of Al. K. Wu¹, J. Mao¹, Y. Zuo¹, J. Yun¹, B. Cui¹, X. Zhang¹, Y. Wang¹, H. Shi¹ and L. Xi¹ *1. Key Laboratory for Magnetism and Magnetic Materials of Ministry of Education & School of Physical Science and Technology, Lanzhou University, Lanzhou, China*

FL-03. Quantitative Evaluation of Errors in Calculation of the Demagnetization Tensor. M.J. Donahue¹ and D.G. Porter¹ *1. Applied and Computational Mathematics Division, National Institute of Standards and Technology, Gaithersburg, MD, United States*

FL-04. Thermally induced magnetization switching in FeGd ferrimagnetic thin films. Z. Fu¹, Z. Zhang² and Y. Liu¹ *1. School of Physics Science and Engineering, Tongji University, Shanghai, China; 2. Department of Optical Science and Engineering, Fudan University, Shanghai, China*

FL-05. Terahertz Spin Transfer Torque Oscillator of Synthetic Antiferromagnet. H. Zhong¹, S. Qiao², S. Yan¹, H. Zhang³, Y. Qin³, L. Liang², D. Wei², Y. Zhao¹ and S. Kang¹ *1. School of Physics, Shandong University, Jinan 250100, China; 2. School of Opto-Electronic Engineering, Zaozhuang University, Zaozhuang 277160, China; 3. Department of Applied Physics, Shandong Agricultural University, Taian 271018, China*

FL-06. Enhancing magnetic resonant frequency in coupled magnetic oscillators with tailored coupling strength. H. Chen¹, Y. Chen¹, Y. Xie¹, T. Wang¹, A.F. Franco² and J. Xiao¹ *1. University of Delaware, Newark, DE, United States; 2. Universidad Técnica Federico Santa María, Valparaiso, Chile*

- FL-07. Ultra-low damping insulating magnetic thin films get perpendicular.** L. Soumah¹, N. Beaulieu², L. Qassym³, C. Carrétéro¹, E. Jacquet¹, R. Lebourgeois³, J. Ben Youssef², P. Bortolotti¹, V. Cros¹ and A. Anane¹ *1. Unité Mixte CNRS\Thales et Université Paris Saclay, Palaiseau, France; 2. LABSTICC, UMR 6285 CNRS, Université de Bretagne Occidentale, Brest, France; 3. Thales Research and Technology, Palaiseau, France*
- FL-08. Compositional dependence of Gilbert damping in $\text{Fe}_x\text{Rh}_{1-x}$ thin films.** T. Usami^{1,2}, M. Itoh² and T. Taniyama^{1,2} *1. Department of Physics, Nagoya University, Nagoya, Japan; 2. Laboratory for Materials and Structures, Tokyo Institute of Technology, Yokohama, Japan*
- FL-09. Antiferromagnetic Oscillators driven by Interface-generated Spin Currents.** D. Lee¹, B. Park² and K. Lee^{1,3} *1. Department of Materials Science and Engineering, Korea University, Seoul 02841, The Republic of Korea; 2. Department of Materials Science and Engineering and KI for Nanocentury, KAIST, Daejeon 34141, The Republic of Korea; 3. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul 02841, The Republic of Korea*
- FL-10. Topological and non-topological domain walls in helical magnets.** T. Nattermann¹ and V. Pokrovsky^{2,3} *1. Institute of Theoretical Physics, University of Cologne, Cologne, Germany; 2. Department of Physics and Astronomy, Texas A&M University, College Station, TX, United States; 3. Landau Institute for Theoretical Physics, Chernogolovka, Russian Federation*
- FL-11. Non-Equilibrium Phase Transitions in One-Dimensional Spin Chains.** A. Galda^{1,2} and V. Vinokur² *1. James Franck Institute, University of Chicago, Chicago, IL, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States*
- FL-12. Gyration dynamics in $n\pi$ magnetic configurations stabilized in weak PMA materials.** S. Finizio¹, S. Wintz^{1,2}, D. Bracher¹, E. Kirk^{3,4}, A.S. Semisalova², J. Förster⁶, K. Zeissler⁵, T. Weßels⁷, M. Weigand⁶, K. Lenz², A. Kleibert¹ and J. Raabe¹ *1. Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Laboratory for Mesoscopic Systems, ETH Zürich, Zürich, Switzerland; 4. LMX, Paul Scherrer Institut, Villigen PSI, Switzerland; 5. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 6. Max-Planck-Institut für Intelligente Systeme, Stuttgart, Germany; 7. Forschungszentrum Jülich, Jülich, Germany*

Session FM
SPIN CALORITRONICS AND SPIN MECHATRONICS
(Poster Session)

Wei Zhang, Chair
Oakland University, Rochester, MI, United States

- FM-01. Enhanced spin injection via spin Seebeck effect in $\text{CoFe}_2\text{O}_4/\text{C}_{60}/\text{Pt}$ heterostructures.** *H. Nazari¹, V. Kalappattil¹, R. Das¹, R. Geng², H. Luong², T. Pham², T. Nguyen², B. Sahu³, P. Rajagiri³, N. Venkataramani³, S. Prasad³, M. Phan¹ and H. Srikanth¹* *1. Physics, University of South Florida, Tampa, FL, United States; 2. Physics, University of Georgia, Athens, GA, United States; 3. Physics, Indian Institute of Technology, Mumbai, India*
- FM-02. Control of Magnetization Dynamics by Spin Nernst Torque.** *A. Bose^{2,1}, A.S. Shukla², S.S. Bhuktare², S. Dutta², H. Singh² and A. Tulapurkar²* *1. Dept. of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 2. Dept. of Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India*
- FM-03. Anisotropic magneto-Peltier effect and anomalous Ettingshausen effect in Ni thin films.** *R. Das¹, R. Iguchi¹ and K. Uchida¹* *1. National Institute for Materials Science, Tsukuba 305-0047, Japan*
- FM-04. Impacts of perpendicular magnetic anisotropy of YIG on the spin Seebeck, spin Hall magnetoresistance and magnetic damping in YIG/Pt.** *V. Kalappattil¹, R. Das¹, M. Phan¹ and H. Srikanth¹* *1. Physics, University of South Florida, Tampa, FL, United States*
- FM-05. Evaluation of Spin Seebeck Effect in Single-crystal and Polycrystal $\text{Y}_3\text{Fe}_5\text{O}_{12}$ (YIG).** *A. Yamamoto¹ and T. Kawahara¹* *1. Electrical Engineering, Tokyo University of Science, 6-3-1, Niijuku, Katsushika-ku, Japan*
- FM-06. A comparative study of spin Seebeck effect and anomalous Nernst effect in a ferromagnetic-metal/normal-metal bilayer system.** *A. De¹, A. Ghosh², R. Mandal¹ and S. Nair¹* *1. Physics, Indian Institute of Science Education and Research, Pune, India; 2. National University of Singapore, Singapore, Singapore*
- FM-07. Thermal Transport Characterization by DC Planar Hall Measurements.** *P. Sahu¹, J. Chen² and J. Wang^{2,1}* *1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 2. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States*
- FM-08. Withdrawn**

FM-09. Mechanical generation of spin current via spin vorticity coupling in Cu, Pt and Ti thin films. *Y. Kurimune¹ and Y. Nozaki^{1,2} 1. Department of Physics, Keio University, Yokohama-shi, Japan; 2. Center for Spintronics Research Network, Keio University, Yokohama-shi, Japan*

FM-10. Generation of spin-motive force using surface acoustic waves. *S. Negami¹ and Y. Nozaki^{1,2} 1. Department of Physics, Keio Univ., Yokohama, Japan; 2. Center of Spintronics Research Network, Keio Univ., Yokohama, Japan*

FM-11. Spin Transport through Polyaniline Generated by Ferromagnetic Spin Pumping and Spin Seebeck Effects. *J.B. Mendes¹, O. Alves-Santos^{1,2}, J.P. Gomes¹, H.S. Assis¹, J.F. Felix^{1,3}, R. Rodriguez⁴, A. Azevedo² and S.M. Rezende² 1. Physics Department, Universidade Federal de Viçosa, Viçosa, Brazil; 2. Physics Department, Universidade Federal de Pernambuco, Recife, Brazil; 3. Physics Department, Universidade de Brasília, Brasília, Brazil; 4. Physics Department, Pontificia Universidad Católica de Chile, Santiago, Chile*

THURSDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session FN
MAGNETIC INSTRUMENTATION AND
CHARACTERIZATION II
(Poster Session)

Michalis Charilaou, Co-Chair
University of Louisiana at Lafayette, Lafayette, LA, United States
Yu-Sheng Ou, Co-Chair
University of Delaware, Newark, DE, United States

FN-01. Magnetic sensing of ellipsoidal inclusions in a medical Ti-6Al-4V alloy. *H. Carreon¹ 1. Materials, Universidad Michoacana, Morelia, Mexico*

FN-02. Hysteretic measurements of magnetic materials in an alternating magnetic field (AMF). *R. Onodera¹, T. Kuroiwa², H. Yanagihara², M. Kin³, H. Kura⁴ and E. Kita^{1,2} 1. National Institute of Technology, Ibaraki College, Hitachinaka, Japan; 2. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 3. Materials Engineering R&D Division, DENSO Corporation, Kariya, Japan; 4. Material R&I Div., DENSO Corporation, Nisshin, Japan*

FN-03. Frequency optimization for sugar concentration measurement with open-ended coaxial probe method by using dielectric properties measurement. *R. Sumranbumrung¹, A. Siritaratiwat¹ and A. Kruesubthaworn¹ 1. Department of Electrical Engineering, Khon Kaen University, Khon Kaen, Thailand*

- FN-04. Analysis of Excitation Coil System in Electromagnetic Flowmeter for Making Uniform Magnetic Field.** *K. Kim¹, S. Im¹ and G. Park¹ 1. Department of Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea*
- FN-05. Effect of Mechanical Stress on Alternating Magnetic Properties of Silicon Steel Sheet.** *Y. Li¹, Y. Dou¹, C. Zhang¹, A. Li¹ and S. Yue¹ 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China*
- FN-06. Study of Mechanical Resonance Induced by Magnetostriction in Cyclic Structures Based on FeSi.** *J. Li¹ 1. State Key Laboratory of Control and Simulation of Power System and Generation Equipments, Department of Electrical Engineering, Tsinghua University, Beijing, China*
- FN-07. Comprehensive Investigation of Core loss for Fe-Si Steel Sheet Under Both Alternating and Rotational Magnetizations Up to Kilohertz.** *S. Yue¹, Y. Li¹, Q. Yang¹ and C. Zhang¹ 1. Electrical Engineering, Hebei University of Technology, Tianjin, China*
- FN-08. A Primary Standard for DC and AC Magnetic Field Based in Nuclear Magnetic Resonance.** *R.V. Martin¹ 1. CTMetro, Instituto de Pesquisas Tecnológicas do Estado de São Paulo - IPT, São Paulo, Brazil*
- FN-09. Magnetic Imaging Drag Tester for Detection of High Frequency Magnetic Response by Contact-scanning of Magnetic Head Probe with HDD Head Preamplifier.** *Y. Miyamoto¹, M. Okuda¹, M. Kawana¹ and N. Ishii¹ 1. Science & Technology Research Labs., NHK (Japan Broadcasting Corp.), Tokyo, Japan*
- FN-10. On the investigation of surface induced-residual stresses due to shot peening using needle probes technique.** *Y.A. Tene Deffo¹, B. Gupta^{2,3}, B. Ducharme² and P. Tsafack¹ 1. Faculty of Engineering, Buea University, Buea, Cameroon; 2. LGEF, INSA LYON, Villeurbanne, France; 3. Elytmax, Tohoku University, Sendai, Japan*
- FN-11. Design and Optimization of a Resonant Reactive Shielding Coil in Two Wireless Power Transfer Systems.** *R. Li¹, Y. Li¹, Q. Yang², P. Zhang¹ and Z. Yuan¹ 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin, China; 2. Tianjin Key Laboratory of ATEEE, Tianjin Polytechnic University, Tianjin, China*

Session FO
TUNNELING MAGNETORESISTANCE, GIANT
MAGNETORESISTANCE, HALL EFFECT AND
RELATED EFFECTS
(Poster Session)

Jeongmin Hong, Chair

Huazhong University of Science and Technology, Wuhan, China

- FO-01. Anomalous Hall effect induced spin Hall magnetoresistance in an antiferromagnetic $\text{Cr}_2\text{O}_3/\text{Ta}$ bilayer.** Y. Ji¹, J. Miao¹, K. Meng¹, J. Chen¹, X. Xu¹, Y. Wu¹ and Y. Jiang¹ *1. Beijing Advanced Innovation Center for Materials Genome Engineering, School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China., Beijing, China*
- FO-02. Large Anomalous Hall Effect in Antiferromagnetic Mn_3Sn Thin Films.** T. Ikeda¹, M. Tsunoda², M. Oogane¹, S. Oh³, T. Morita³ and Y. Ando¹ *1. Applied Physics, Tohoku University, Sendai, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Japan; 3. ULVAC Inc., Tsukuba, Japan*
- FO-03. Anomalous Hall Effect in Epitaxial Thin Films of Mn_2VAl Full-Heusler Alloy.** K. Fukuda¹, M. Oogane¹, M. Tsunoda² and Y. Ando¹ *1. Applied Physics, Tohoku University, Sendai, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Japan*
- FO-04. Impact of Ultra-thin Oxide Interlayers on Spin Hall Magnetoresistance in $\text{Pt}/\text{Fe}_3\text{O}_4$ Thin Films.** T. Pham^{1,2}, N. Do^{1,2}, Q. Nguyen³, S. Cho³ and T. Kim^{1,2} *1. IBS-Center for Quantum Nanoscience, Ewha Womans University, Seoul, The Republic of Korea; 2. Physics, Ewha Womans University, Seoul, The Republic of Korea; 3. Physics, University of Ulsan, Ulsan, The Republic of Korea*
- FO-05. Temperature Dependent Magneto-transport Properties of MnAl Binary Alloy Thin Films.** V. Barwal¹, S. Chaudhary¹, S. Husain¹, N. Behera², A. Kumar² and P. Svedlindh² *1. Physics, Indian Institute of Technology, New Delhi, India; 2. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden*
- FO-06. The Seebeck Effect and Joule Heating in $\text{CoFeB}/\text{MgO}/\text{CoFeB}$ -based Perpendicular Magnetic Tunnel Junctions with Low Resistance Area Product.** H. Lv^{1,2}, J.F. Silva^{1,2}, D.C. Leitao^{1,2}, A. Silva¹, P.P. Freitas^{1,3}, S. Cardoso de Freitas^{1,2}, T. Kämpfe⁴, S. Riedel⁴, B. Ocker⁵, J. Langer⁵ and J. Wrona⁵ *1. INESC - Microsistemas e Nanotecnologias, Lisbon, Portugal; 2. Instituto Superior Tecnico (IST), Lisbon University, Lisbon, Portugal; 3. International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 4. Fraunhofer Institute for Photonic Microsystems IPMS, Dresden, Germany; 5. Singulus Technologies AG, 63796 Kahl am Main, Germany*

- FO-07. TAMR in fully epitaxial magnetic tunnel junctions with different barriers.** B. Tao¹, L. Jiang¹, M. Hehn², D. Lacour², Y. Lu² and X. Han² *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Institut Jean Lamour, CNRS-Université de Lorraine, Nancy, France*
- FO-08. Ultrahigh Tunneling-Magnetoresistance Ratios in Nitride-Based Perpendicular Magnetic Tunnel Junctions from First Principles.** B. Yang¹, L. Jiang², W. Chen², P. Tang², Y. Yan¹ and X. Han² *1. Department of Physics, Jilin University, Changchun, China; 2. Chinese Academy of Sciences, Institute of Physics, Beijing, China*
- FO-09. Magnetic Tunnel Junctions Based on Antiferromagnetic Coupled MnGa/Co₂MnSi Composite Electrodes.** S. Mao¹, J. Lu¹, X. Zhao¹ and J. Zhao¹ *1. Institute of semiconductors, Chinese Academy of Sciences, Beijing, China*
- FO-10. Study of free layer CoFeB thickness dependent magnetic tunneling junctions with perpendicular synthetic antiferromagnetic reference layer.** Z. Lei¹, Z. Guo¹, S. Yan¹, Z. Cao¹, Z. Zhou¹, Z. Li¹, W. Zhao¹ and Q. Leng¹ *1. Beihang-Geortek Joint Microelectronics Institute, Qingdao Research Institute, Beihang University, Qingdao, China*

THURSDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session FP HIGHLY FRUSTRATED MAGNETISM AND SPIN GLASSES II (Poster Session)

Christianne Beekman, Chair
Florida State/NHFML, Tallahassee, FL, United States

- FP-01. Longitudinal Resonance for Thin Film Ferromagnets with Random Anisotropy: A New Variable, A New Mode.** W. Saslow² and C. Sun^{2,1} *1. Physics, Brown University, Providence, RI, United States; 2. Physics, Texas A&M University, College Station, TX, United States*
- FP-02. A neutron diffraction demonstration of the long-range magnetic order in the quasicrystal approximant DyCd₆.** D. Ryan¹, S. Cadogan², T. Kong³, P.C. Canfield³, A.I. Goldman³ and A. Kreyssig³ *1. Physics, McGill University, Montreal, QC, Canada; 2. School of Physical, Environmental and Mathematical Sciences, UNSW Canberra, Canberra, ACT, Australia; 3. Department of Physics and Astronomy, Iowa State University, Ames, IA, United States*
- FP-03. Frustration and multiple bands effects probed by Electron Spin Resonance in the GdIn(Ni_xCu_{1-x})₄ (0.00 ≤ x ≤ 1.00) intermetallic compounds.** S. Mercena², E. Mendonça², C.B. Jesus², J.C. Souza¹, C. Meneses², J. Duque² and P. Pagliuso¹ *1. IFGW, Unicamp, Campinas, Brazil; 2. UFS, São Cristovão - SE, Brazil*

- FP-04. Anti-site disorder driven unusual magnetic properties in $\text{Sm}_2\text{NiMnO}_6$ double perovskite.** *S. Majumder*¹, *M. Tripathi*¹, *R. Choudhary*¹ and *D. Phase*¹ *1. Thin Film Magnetism, UGC-DAE Consortium for Scientific Research, INDORE, India*
- FP-05. Discovery of successive spin glass transitions involving transverse and longitudinal freezing in ordered $\text{BaFe}_{12}\text{O}_{19}$ hexaferrite due to anisotropic geometrical frustration.** *K. Kumar*¹, *D. Pandey*¹ and *A. Senyshyn*² *1. School of Material Science & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi, India; 2. Forschungsneutronenquelle Heinz Maier-Leibnitz (FRM-II), Technische Universitat Munchen, Munchen, Germany*
- FP-06. Suppression of Spin Glass behaviour in Phase Separated $\text{La}_{0.22}\text{Pr}_{0.40}\text{Ca}_{0.38}\text{MnO}_3$ by Nanostructuring.** *S. Kumari*¹, *D.S. Raghav*², *P.K. Siwach*¹, *G.D. Varma*² and *H.K. Singh*¹ *1. Time and Frequency and Electrical and Electronics Metrology Division, CSIR National Physical Laboratory, Delhi, India; 2. Physics, IIT Roorkee, Roorkee, India*
- FP-07. Novel Frustrated Magnetic Systems Created by Stepwise Nanosphere Lithography.** *B. Myint*¹ and *V. Ng*¹ *1. Information Storage Materials Laboratory, Electrical and Computer Engineering Department, National University of Singapore, Singapore, Singapore*
- FP-08. Magnetic Characterization of Amorphous YIG for Spin Transport.** *M. Roos*¹, *D. Wesenberg*¹, *T. Liu*², *M. Wu*², *F. Hellman*³ and *B.L. Zink*¹ *1. University of Denver, Denver, CO, United States; 2. Colorado State University, Fort Collins, CO, United States; 3. Physics, University of California, Berkeley, Berkeley, CA, United States*
- FP-09. Study of A-Site disorder dependent structural properties and magnetic ordering in the polycrystalline perovskite $\text{Sm}_{0.5}\text{Ca}_{0.5-x}\text{Sr}_x\text{MnO}_3$.** *M.A. Bally*¹, *P. Svedlindh*², *P. Nordblad*², *M. Islam*¹, *M.A. Khan*¹, *R. Mathieu*², *M.S. Andersson*² and *S. Ivanov*² *1. Physics, Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh; 2. Engineering Science, Uppsala University, Uppsala, Sweden*
- FP-10. Magnetism and transport properties of Mn doping in Sr_2IrO_4 .** *S. Huang*^{1,2}, *G. Zhou*¹, *Z. Zhang*¹, *X. Yang*¹, *F. Duan*¹, *F. Zhang*¹, *A. Zhang*³ and *X. Wu*¹ *1. State Key Lab of Solid State Microstructures, School of Physics, Nanjing University, Nanjing, China; 2. School of Physics and Technology, Nanjing Normal University, Nanjing, China; 3. College of Science, Hohai University, Nanjing, China*

Session FQ
MOTORS: MODELING AND SIMULATIONS VI
(Poster Session)

Metin Aydin, Chair
Kocaeli University, Kocaeli, Turkey

- FQ-01. Comparative study for a novel dual-stator composite-rotor synchronous machine.** Y. Zhang¹, S. McLoone¹ and F. Zhang²
1. Queens University Belfast, Belfast, United Kingdom; 2. Shenyang University of Technology, Shenyang, China
- FQ-02. A Novel Transverse-flux Machine with Dual-tooth-slot Configuration for Direct-drive Applications.** X. Yang¹, B. Kou¹, J. Luo¹, H. Zhang¹ and Y. Zhou¹ *1. Harbin Institute of Technology, Harbin, China*
- FQ-03. A study on design of magnet gear for improve magnetic field loss and transmission torque characteristics.** M. Kim¹, S. Lee¹, E. Park² and Y. Kim² *1. Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Chosun University, Gwangju, The Republic of Korea*
- FQ-04. Design of High Torque Density Magnet Coupling Using Halbach Magnet Array Structure.** H. Liu¹, H. Lee² and J. Lee¹
1. Hanyang Univ, Seoul, The Republic of Korea; 2. Busan Institute of Science & Technology, Busan, The Republic of Korea
- FQ-05. A Novel Approach for Power Factor Improvement in Dual-Stator Vernier Permanent Magnet Machine.** Q. Lin¹, S. Niu¹ and W. Fu¹ *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*
- FQ-06. Torque Enhancement for Flux Intensifying PMA-SynRM Using Flux Barrier Displacements.** D. Ngo¹ and M. Hsieh¹
1. National Cheng Kung University, Tainan, Taiwan
- FQ-07. A Study on the Effect of Eddy Current Loss Variation by the Direction of Magnet Division on Demagnetization Characteristics and Vibration.** B. Kim¹, J. Lee¹, D. Lee¹, W. Lee¹, J. Moon¹ and D. Kang¹ *1. Keimyung University, Daegu, The Republic of Korea*
- FQ-08. Electromagnetic Characteristics Comparison and Analysis of Surface-Mounted Permanent Magnet Vernier Machines With Different Stator Tooth Topologies.** F. Chai¹ and Y. Yu¹
1. Harbin Institute of Technology, Harbin, China
- FQ-09. Axial Field 'Pseudo' Direct Drive Electrical Machines.** G. Cooke¹, R.S. Dragan¹ and K. Atallah² *1. Magnomatics Ltd, Sheffield, United Kingdom; 2. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

- FQ-10. Analysis of a Novel Hybrid-PM Variable-Flux Machine Using New Magnet Material CeFeB.** *M. Wang¹, P. Zheng¹, L. Cheng¹, S. Zhang¹, G. Qiao¹ and F. Liu¹ 1. Harbin Institute of Technology, Harbin, China*

THURSDAY
AFTERNOON
2:30

EXHIBIT HALL A

Session FR
MOTORS: MODELING AND SIMULATIONS VII
(Poster Session)

Lijian Wu, Chair
Zhejiang University, Zhejiang, China

- FR-01. Electromagnetic and mechanical analyses of a high-speed permanent-magnet machine with improved rotor structure.** *Z. Song¹ 1. Beijing Institute of Automation Control Equipment, Beijing, China*
- FR-02. Analytical Computation of Inductance for Spoke-Type Permanent Magnet Synchronous Motor Accounting for Saturation.** *P. Liang^{1,2}, W. Liu^{1,2}, K. Shen^{1,2} and F. Chai³ 1. Department of Electrical Engineering, Northwestern Polytechnical University, Xi'an, China; 2. Shaanxi Key Laboratory of Small & Special Electrical Machine and Drive Technology, Xi'an, China; 3. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China*
- FR-03. Study of High Speed Reluctance Machine with Sensitivity Analysis.** *Y. Wang¹, J. Shen¹, Y. Sun¹ and L. Yingqian¹ 1. Electrical Engineering, Zhejiang University, Hangzhou, China*
- FR-04. Performance of a Hybrid-Permanent-Magnet Variable-Flux Machine over Wide-Speed Range.** *P. Zheng¹, F. Liu¹, X. Ma², L. Cheng¹, M. Wang¹ and G. Qiao¹ 1. Harbin Institute of Technology, Harbin, China; 2. State Grid Liaoning Electric Power Co., Ltd. Dalian Power Supply Company, Dalian, China*
- FR-05. Vibration Analysis of Switched Reluctance Motor Considering Magnetostriction.** *R. Yan^{1,2}, J. Chen^{1,2} and Y. Gao^{1,2} 1. State Key Laboratory of Reliability and Intelligence of Electrical Equipment, School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*
- FR-06. Modeling and Analysis of Axial Flux Permanent Magnet Machines with Coexistence of Rotor Radial Deviation and Angular Eccentricity.** *W. Tong¹, S. Dai¹, S. Wu¹ and R. Tang¹ 1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

- FR-07. Cogging Torque and Torque Ripple Reduction of Novel Dual-Stator Field Modulation Machine Using Hybrid Magnet.** H. Wang^{1,2}, S. Fang¹, H. Yang¹, Z. Pan¹ and H. Lin¹
1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), University of Wisconsin-Madison, Madison, WI, United States
- FR-08. Design and analysis of an improved flux intensifying PM embedded salient pole wind generator.** Y. Guo¹, P. Jin¹ and H. Yang² *1. College of Energy and Electrical Engineering, Hohai University, Nanjing, China; 2. School of Electrical Engineering, Southeast University, Nanjing, China*
- FR-09. Thermal- and Magnetic-Field Analysis of Large-Scale Permanent Magnet Embedded Salient Pole Wind Generator by Permeable Coupling Method.** Y. Guo¹ *1. Hohai University, Nanjing, China*

THURSDAY
 EVENING
 6:00

SALON 2

Session XA

EVENING SESSION: FOREFRONT ISSUES AND NEW OPPORTUNITIES IN MAGNETIC MATERIALS

Laura H. Lewis, Co-Chair
 Northeastern University, Boston, MA, United States
 Steve May, Co-Chair
 Drexel University, Philadelphia, PA, United States

6:00

- XA-01. 2D Magnets and Heterostructures. (Invited)** X. Xu¹
1. Department of Physics, Department of Materials Science and Engineering, University of Washington, Seattle, WA, United States

6:45

- XA-02. What Will We Make Magnets From? (Invited)** A.H. King¹
1. Department of Materials Science & Engineering, Iowa State University, Ames, IA, United States

Session GA
ENERGY HARVESTING AND TRANSFORMATIONS
BASED ON MAGNETIC MATERIALS

Hari Srikanth, Chair
University of South Florida, Tampa, FL, United States

8:30

- GA-01. High Power Magnetostrictive Vibrational Power Generator for Battery-free IoT. (Invited) T. Ueno¹ I. Kanazawa**
University, Kanazawa-city, Japan

9:06

- GA-02. MEMS based vibrational energy harvesting and conversion employing micro/nano magnetics. (Invited) S. Roy^{1,2}**
1. Tyndall National Institute, Cork, Ireland; 2. Physics, University College Cork, Cork, Ireland

9:42

- GA-03. Stress induced domain wall motion in FeCo based magnetic microwires for realization of energy harvesting. (Invited)**
S. Piramanayagam¹, X. Liu², S. Bhatti¹ and C. Ma²
1. Division of PAP, SPMS, Nanyang Technological University, Singapore, Singapore; 2. Department of ECE, Shinshu University, Nagano, Japan

10:18

- GA-04. Generating Electricity from Waste Heat using Magnetostructural Materials. (Invited) E. Brück¹,**
M. Maschek¹, X. You¹ and N. van Dijk¹ 1. TU Delft, Delft, Netherlands

10:54

- GA-05. A thermomagnetic generator with novel magnetic field topology - which thermomagnetic material works best? (Invited) A. Waske^{1,2}, D. Dzekan^{1,3}, K. Sellschopp^{4,1}, D. Berger¹, A. Stork^{1,3}, K. Nielsch^{1,3} and S. Faehler¹ 1. IFW Dresden, Dresden, Germany; 2. Federal Institute for Materials Research and Testing (BAM), Berlin, Germany; 3. Institute of Materials Science, TU Dresden, Dresden, Germany; 4. Technische Universität Hamburg, Hamburg, Germany**

Session GB
ANTIFERROMAGNETIC SPINTRONICS

Martina Ahlberg, Chair
University of Gothenburg, Gothenburg, Sweden

8:30

- GB-01. Novel functions observed in a topological antiferromagnet Mn_3Sn . (Invited)** *Y. Otani^{1,2} 1. ISSP, University of Tokyo, Kashiwa, Japan; 2. CEMS, RIKEN, Wako, Japan*

9:06

- GB-02. Imaging magnetic order in antiferromagnetic materials with a scanning-NV magnetometer.** *M. Akthar¹, A. Haykal¹, J. Fisher², I. Gross¹, V. Garcia², S. Chouaieb¹, C. Carrétéro², A. Barthelemy², P. Maletinsky³, M. Viret⁴, J. Chauleau⁴, N. Jaouen⁵, M. Bibes², S. Fusil² and V. Jacques¹ 1. Laboratoire Charles Coulomb, CNRS and Uni. Montpellier, Montpellier, France; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. Basel University, Basel, Switzerland; 4. CEA Saclay, Gif-sur-Yvette, France; 5. Synchrotron SOLEIL, Gif-sur-Yvette, France*

9:18

- GB-03. Chirality Conservation and Spin Current Driven Dichroism in Antiferromagnetic Insulators.** *I. Proskurin^{1,2}, R. Stamps¹, A. Ovchinnikov^{2,4} and J. Kishine³ 1. Physics & Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. Institute of Natural Sciences and Mathematics, Ural Federal University, Ekaterinburg, Russian Federation; 3. Division of Natural and Environmental Sciences, The Open University of Japan, Chiba, Japan; 4. Institute for Metal Physics, Ekaterinburg, Russian Federation*

9:30

- GB-04. Generation of the Propagating Domain Walls in Antiferromagnets by Spin Currents.** *R. Khymyn¹, V. Tyberkevych², A.N. Slavin² and J. Åkerman^{1,3} 1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Department of Physics, Oakland University, Rochester, MI, United States; 3. Materials Physics, School of ICT, KTH Royal Institute of Technology, Kista, Sweden*

9:42

- GB-05. Spin orbit torque effects on (100) oriented antiferromagnet IrMn_3 .** *V. Karakas^{1,2}, S. Lendinez², H. Saglam^{2,3}, Y. Li^{2,4}, M. Vogel², J. Pearson², R. Divan⁵, L. Yuzi⁶, J. Connell², W. Zhang^{4,2}, V. Novosad², A. Hoffmann² and O. Ozatay^{1,2} 1. Physics, Bogazici University, Istanbul, Turkey; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 3. Department of Physics, IIT, Chicago, IL, United States; 4. Department of Physics, Oakland University, Rochester, MI, United States; 5. Ctr Nanoscale Mat, Argonne National Laboratory, Lemont, IL, United States; 6. Advanced Photon Source, Argonne National Laboratory, Lemont, IL, United States*

- GB-06. Strain Control of the Néel Vector in Antiferromagnetic FeMn.** *A. Barra*¹, *L. Baldrati*², *R. Lebrun*², *P. Shirazi*³, *A. Ross*^{2,4}, *M. Kläui*^{2,4} and *G. Carman*¹ *1. Department of Mechanical Engineering, University of California, Los Angeles, Los Angeles, CA, United States; 2. Institute for Physics, Johannes Gutenberg University Mainz, Mainz, Germany; 3. Department of Materials Science, University of California, Los Angeles, Los Angeles, CA, United States; 4. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany*

10:06

- GB-07. Strong orientation dependent spin-orbit torque and synaptic functional application in antiferromagnet Mn₂Au.** *X. Zhou*¹, *J. Zhang*², *X. Chen*¹, *F. Li*¹ and *C. Song*¹ *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. Huazhong University of Science and Technology, Wuhan, China*

10:18

- GB-08. Evidence of resistive switching into a dynamical state in antiferromagnetic iridates.** *M.C. Williamson*^{1,2}, *S. Shen*^{1,2}, *G. Cao*³, *J. Zhou*², *J.B. Goodenough*² and *M. Tsoi*^{1,2} *1. Physics, The University of Texas at Austin, Austin, TX, United States; 2. Texas Materials Institute, Austin, TX, United States; 3. Physics, University of Colorado Boulder, Boulder, CO, United States*

10:30

- GB-09. Room-temperature skyrmions in an antiferromagnet-based heterostructure.** *G. Yu*^{1,2}, *A. Jenkins*³, *X. Ma*⁴, *S. Razavi*², *G. Yin*², *Q. Shao*², *H. Wu*², *W. Jiang*⁵, *X. Han*¹, *X. Li*⁴, *A. Jayich*³ and *K. Wang*² *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. UCLA-Electrical Engineering, Los Angeles, CA, United States; 3. Department of Physics, University of California, Santa Barbara, Santa Barbara, CA, United States; 4. Department of Physics, The University of Texas at Austin, Austin, TX, United States; 5. State Key Laboratory of Low-Dimensional Quantum Physics and Department of Physics, Tsinghua University, Beijing, China*

10:42

- GB-10. Spin Seebeck imaging of spin-torque switching in antiferromagnetic Pt/NiO/Pt heterostructures.** *I. Gray*^{1,7}, *T. Moriyama*², *N. Sivadas*¹, *B.J. Kirby*⁴, *R. Need*⁴, *D. Low*¹, *G.M. Stiehl*⁵, *J. Heron*⁶, *D. Ralph*^{5,7}, *K. Nowack*^{5,7}, *T. Ono*² and *G. Fuchs*^{1,7} *1. Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 2. Institute for Chemical Research, Kyoto University, Uji, Japan; 4. NIST Center for Neutron Research, National Institute for Standards and Technology, Gaithersburg, MD, United States; 5. Department of Physics, Cornell University, Ithaca, NY, United States; 6. Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, United States; 7. Kavli Institute for Nanoscale Science, Ithaca, NY, United States*

10:54

- GB-11. All-magnonic switching in an insulating ferromagnet/antiferromagnet/ferromagnet trilayer.** *R. Cheng^{1,2}, D. Xiao² and J. Zhu^{3,2}* *1. Electrical and Computer Engineering, University of California - Riverside, Riverside, CA, United States; 2. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 3. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, United States*

11:06

- GB-12. Complex magnetic anisotropy and relaxation dynamics in IrMn₃.** *S. Jenkins¹, R.W. Chantrell¹ and R.F. Evans¹* *1. Department of Physics, University of York, York, United Kingdom*

11:18

- GB-13. Spin Transport Properties of FeRh Across its Magnetic Phase Transition.** *H. Saglam^{1,2}, C. Liu¹, Y. Li^{3,1}, D. Hong¹, V. Karakas^{1,4}, O. Ozatay^{1,4}, J. Pearson¹, W. Zhang^{3,1}, A. Bhattacharya¹ and A. Hoffmann¹* *1. Material Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Department of Physics, Illinois Institute of Technology, Chicago, IL, United States; 3. Department of Physics, Oakland University, Rochester, MI, United States; 4. Department of Physics, Bogazici University, Istanbul, Turkey*

FRIDAY
MORNING
8:30

SALON 1

Session GC

TUNNELING MAGNETORESISTANCE AND TUNNELING ANISOTROPIC MAGNETORESISTANCE

Saima Siddiqui, Chair
MIT, Cambridge, MA, United States

8:30

- GC-01. Observation of spin-dependent resonant tunneling in an Fe quantum well detected by carriers injected from a *p*-type Ge semiconductor electrode.** *R. Suzuki¹, Y.K. Wakabayashi¹, K. Okamoto¹, M. Tanaka¹ and S. Ohya¹* *1. The University of Tokyo, Tokyo, Japan*

8:42

- GC-02. Nonmagnet-Barrier Interface Drives Tunneling Anisotropic Magnetoresistance.** *P. Risius¹, C. Mahr¹, M. Czerner¹ and C. Heiliger¹* *1. Institute for Theoretical Physics, Justus Liebig University Giessen, Gießen, Germany*

- GC-03. Investigation of Transport Property of MgO-based Magnetic Tunnel Junction with Vacancies and Grain Boundaries by First-principles Calculations.** *H. Kawai¹, Y. Nakasaki¹, T. Daibou¹, T. Ishihara¹, T. Kai¹ and J. Ito¹*
1. Institute of Memory Technology Research & Development, Toshiba Memory Corporation, Kawasaki, Japan

9:06

- GC-04. Low-resistive magnetic tunnel junction with chalcopyrite Cu(In,Ga)Se₂ tunneling barrier.** *S. Kasai¹, K. Mukaiyama¹, H. Sepehri-Amin¹, T. Ohkubo¹ and K. Hono^{1,2}*
1. National Institute for Materials Science, Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan

9:18

- GC-05. Large Tunnel Rectification Magnetoresistance in Engineered Device Consisted of MgO-MTJ and Diode.** *K. Zhang^{1,2}, Y. Zhang^{1,2}, K. Cao^{1,2}, W. Cai^{1,2}, Z. Zheng^{1,2}, Z. Zhang^{1,2} and W. Zhao^{1,2}*
1. School of Electrical and Information Engineering, Beihang University, Beijing, China; 2. Fert Beijing Institute, Beihang University, Beijing, China

9:30

- GC-06. Oscillatory dependence of both tunnel magnetoresistance and tunnel anisotropic magnetoresistance on the barrier thickness in Fe/MgAl₂O₄/Fe(001) junctions.** *M. Belmoubarik¹, M. Al-Mahdawi¹, H. Sukegawa¹ and S. Mitani¹*
1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan

9:42

- GC-07. Bulk perpendicular L1₀-FePd spintronic devices for ultralow-energy spin memory and computing applications. (Invited)** *D. Zhang¹, C. Sun², M. Bapna³, Z. Zhao¹, P. Voyles², S. Majetich³ and J. Wang¹*
1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Department of Materials Science and Engineering, University of Wisconsin-Madison, Madison, WI, United States; 3. Department of Physics, Carnegie Mellon University, Pittsburgh, PA, United States

10:18

- GC-08. Strong modulation of finite-bias tunnel magnetoresistance due to quantum well states in Cr/Fe/MgAl₂O₄/Fe(001) junctions.** *Q. Xiang^{1,2}, H. Sukegawa¹, M. Belmoubarik¹, M. Al-Mahdawi¹, T. Scheike¹, S. Kasai¹, Y. Miura¹ and S. Mitani^{1,2}*
1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan

10:30

- GC-09. Tunnel magnetoresistance and electric field effect on large perpendicular magnetic anisotropy observed in magnetic tunnel junctions with a nearly-zero moment Mn nano-layer electrode.** *K. Suzuki^{1,2}, S. Kimura³, H. Kubota⁴ and S. Mizukami^{1,2}* 1. *WPI-AIMR, Tohoku University, Sendai, Japan*; 2. *Center for Spintronics Research Network, Tohoku University, Sendai, Japan*; 3. *IMR High Field Laboratory for Superconducting Materials, Tohoku University, Sendai, Japan*; 4. *Spintronics Research Center, AIST, Tsukuba, Japan*

10:42

- GC-10. Magnetization dynamics for the equiatomic Heusler CoFeCrAl alloy epitaxial films and spin-dependent transport in their magnetic tunnel junctions.** *T. Tsuchiya^{1,2}, T. Roy³, K. Elphick⁴, L. Bainsla⁵, M. Tsujikawa^{3,2}, M. Shirai^{3,2}, A. Hirohata⁴ and S. Mizukami^{5,2}* 1. *Center for Science and Innovation in Spintronics (Core Research Center), Tohoku University, Sendai, Japan*; 2. *Center for Spintronics Research Network, Tohoku University, Sendai, Japan*; 3. *Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*; 4. *Department of Electronics, The University of York, York, United Kingdom*; 5. *WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

10:54

- GC-11. First Principle Calculation of Scandium Nitride Magnetic Tunnel Junctions.** *S. Karki¹, D. Marshall² and J.C. Incorvia¹* 1. *Electrical and Computer Engineering, UT Austin, Austin, TX, United States*; 2. *TAE Technologies, San Francisco, CA, United States*

11:06

- GC-12. High quality spinel MgAl₂O₄ tunnel barrier grown by controlled reactive sputtering.** *K. Nakada¹, S. Ichikawa¹, X. Xu², H. Sukegawa², T. Ohkubo², K. Hono² and S. Mitani²* 1. *Advanced Products Development Center, TDK Corporation, Ichikawa, Japan*; 2. *Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

11:18

- GC-13. Investigation of cap-metal dependence for improvement of free layer characteristics in magnetic-tunnel-junctions.** *H. Tomita^{1,2}, K. Nakamura¹, Y. Tanaka^{1,2}, K. Nagasaka^{1,2}, K. Ando³, S. Bosu^{1,2}, A. Gomi¹, A. Fukushima², H. Kubota², K. Yakushiji², S. Yuasa², H. Maehara^{3,2} and N. Watanabe¹* 1. *Tokyo Electron Technology Solutions Limited, Nirasaki, Japan*; 2. *Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*; 3. *Tokyo Electron Limited, Nirasaki, Japan*

Session GD
SPIN-ORBIT TORQUE AND SPIN INJECTION
DEVICES

Axel Hoffmann, Chair
Argonne National Laboratory, Lemont, IL, United States

8:30

- GD-01. Reliable, sub-nanosecond spin-orbit torque switching of three terminal magnetic tunnel junctions with in-plane magnetic anisotropy.** *S. Shi¹, L. Zhu¹, D. Ralph² and R. Buhrman¹* *1. Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 2. Department of Physics, Cornell University, Ithaca, NY, United States*

8:42

- GD-02. Switching Behavior of an Etch-Stop-On-MgO-Barrier Spin-Orbit Torque MRAM Cell.** *C. Pai¹, S. Rahaman², I. Wang² and T. Chen¹* *1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan; 2. Electronic and Optoelectronic System Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan*

8:54

- GD-03. Spin-Orbit Torques Generated Through a Tunnel Barrier Interface.** *A. Bose¹, J. Gibbons², R.C. Tapping¹, S. Shi¹, D. Ralph² and R. Buhrman¹* *1. Dept. of Applied and Engineering Physics, Cornell University, Ithaca, NY, United States; 2. Dept. of Physics, Cornell University, Ithaca, NY, United States*

9:06

- GD-04. Spin orbit torque switching process with non-uniform micromagnetic states in three terminal devices.** *J. Zhang¹, T. Phung², C. Garg², Y. Jiang¹ and S. Parkin²* *1. University of Science and Technology Beijing, Beijing, China; 2. IBM Almaden Research Center, San Jose, CA, United States*

9:18

- GD-05. Direct measurement of the two components of the spin-orbit-torque (SOT) in NiFe/Pt bilayers by an AMR-based Wheatstone bridge.** *A. Jouy^{1,3}, T. Dang², J. George¹, D. Vissiere³, S. Collin², M. Mansour¹ and H. Jaffres²* *1. Laboratoire de Physique des Plasmas, Ecole Polytechnique, Palaiseau, France; 2. Thales Research & Technology, Unité Mixte de Physique CNRS-Thales, Palaiseau, France; 3. SYSNAV, Vernon, France*

9:30

- GD-06. The role of damping in perpendicular spin-orbit-torque MRAM.** *C. Abert¹, F. Bruckner¹, C. Vogler¹ and D. Suess¹* *1. University of Vienna, Wien, Austria*

- GD-07. Design Rules for Deeply Scalable Spin-Orbit Magnetic Tunnel Junctions.** *M. Kazemi*¹ and *M. Bocko*^{1,2} *1. Electrical Engineering, University of Rochester, Rochester, NY, United States; 2. Physics and Astronomy, University of Rochester, Rochester, NY, United States*

- GD-08. Strain-mediated spin-orbit torque switching for magnetic memory.** *Q. Wang*¹, *J. Lille*², *P. Braganca*², *A. Bogdanov*², *H. Wu*¹, *J.P. Domann*³, *A. Barra*¹, *G. Yu*^{4,1}, *K. Wang*¹, *J.A. Katine*² and *G. Carman*¹ *1. University of California, Los Angeles, Los Angeles, CA, United States; 2. Western Digital Corporation, San Jose, CA, United States; 3. Virginia Tech, Blacksburg, VA, United States; 4. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

- GD-09. Novel High-Speed Nonvolatile Logging Memory using Voltage Control Spintronics Memory for IoT Edge to Cloud Servers.** *S. Takaya*¹, *K. Ikegami*¹, *S. Takeda*¹, *S. Fujita*¹, *T. Inokuchi*¹, *N. Shimomura*¹, *H. Yoda*¹ and *A. Kurobe*¹ *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan*

- GD-10. Real-Time Observation of Fast and Highly Reliable Magnetization Switching in Voltage-Control Spintronics Memory (VoCSM).** *T. Inokuchi*¹, *H. Yoda*¹, *K. Koi*¹, *N. Shimomura*¹, *Y. Ohsawa*¹, *Y. Kato*¹, *S. Shirotori*¹, *M. Shimizu*¹, *H. Sugiyama*¹, *S. Oikawa*¹, *B. Altansargai*¹ and *A. Kurobe*¹ *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan*

- GD-11. Comparison of Spin Transfer Torque and Spin Orbit Torque in a Superparamagnetic Tunnel Junction.** *B. Parks*¹, *T. Wong*¹, *S. Majetich*¹, *Y. Wen*², *Q. Zhang*² and *X. Zhang*² *1. Physics, Carnegie Mellon University, Pittsburgh, PA, United States; 2. Physical Science and Engineering Division, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

- GD-12. Room-temperature operation of a vertical spin field-effect transistor with an oxide semiconductor GaO_x channel layer.** *S. Ohya*^{1,5}, *T. Kanaki*¹, *S. Matsumoto*¹, *S. Narayananellor*², *H. Saito*², *Y. Iwasa*^{3,4} and *M. Tanaka*^{1,5} *1. Department of Electrical Engineering and Information Systems, The University of Tokyo, Tokyo, Japan; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 3. QPEC and Department of Applied Physics, The University of Tokyo, Tokyo, Japan; 4. RIKEN Center for Emergent Matter Science, Wako, Japan; 5. Center for Spintronics Research Network (CSRN), The University of Tokyo, Tokyo, Japan*

10:54

GD-13. Fe/MgO tunnel contacts with 90% spin filtering in Si-based nonlocal devices. *A.M. Spiesser¹, Y. Fujita¹, H. Saito¹, S. Yuasa¹ and R. Jansen¹* *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

11:06

GD-14. Asymmetric distortion of astroid curve with current bias in nanoscale magnetic tunnel junction. *J. Igarashi¹, S. Kanai^{1,4}, M. Shinozaki¹, J. Llandro^{1,2}, H. Sato^{3,2}, S. Fukami^{1,4} and H. Ohno^{1,4}* *1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 4. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan*

11:18

GD-15. Exceptional Points in Classical Spin Dynamics. *A. Galda^{1,2} and V. Vinokur²* *1. James Franck Institute, University of Chicago, Chicago, IL, United States; 2. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States*

FRIDAY
MORNING
8:30

VIRGINIA

Session GE MOTORS APPLICATIONS, ACTUATORS, SHIELDING AND LEVITATION

Hongbin Yu, Chair
Arizona State University, Tempe, AZ, United States

8:30

GE-01. Core losses of a permanent magnet synchronous motor with nanocrystalline cores under inverter and sinusoidal excitations. *A. Yao¹, T. Sugimoto² and K. Fujisaki²* *1. Department of Electrical and Computer Engineering, Toyama Prefectural University, Imizu, Japan; 2. Toyota Technological Institute, Nagoya, Japan*

8:42

GE-02. Three Pole Combined Radial Axial Magnetic Bearing for Bearingless Motors. *H. Gjerdal¹ and E.L. Severson²* *1. Electric Power Engineering, Norwegian Institute for Science and Technology, Trondheim, Norway; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, WI, United States*

8:54

GE-03. A Novel Assembled Permeable Retaining Sleeve for Improving Performance of High Speed PM Synchronous Machine. *Z. Zhu¹, Y. Huang¹, F. Peng¹ and B. Guo¹* *1. School of Electrical Engineering, Southeast University, Nanjing, China*

- GE-04. Soft Magnetic Materials. A Survey of Contemporary Developments in Electric Machines. (Invited) S. Sprague¹, A. Krings², A. Boglietti³ and A. Cavagnino³** *1. Proto Lam, LLC, Santa Fe Springs, CA, United States; 2. FEV Europe, GmbH, Aachen, Germany; 3. Politecnico di Torino, Torino, Italy*

- GE-05. Design and Analysis of Single-Transmitter Multiple-Frequency Wireless Motor Drives. C. Jiang¹, K. Chau¹, C. Lee², W. Han¹ and W. Liu¹** *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong; 2. Research Laboratory of Electronics, Massachusetts Institute of Technology, Boston, MA, United States*

- GE-06. Investigation on Interior Permanent Magnet Synchronous Machines with Dysprosium free Magnets and Magnets Recycling Concept for Hybrid Electrical Vehicle Applications. Z. Li^{1,2}, A. Kedous-Lebouc¹, J. Dubus², J. Legranger² and R. Fratila²** *1. G2Elab, Univ. Grenoble Alpes, Grenoble, France; 2. Electrical Motor Equipment, Valeo, Creteil, France*

- GE-07. Design and Feasibility Assessments of a Flux-switching Permanent-magnet Motor for Alternative Exoskeleton System Applications. C. Liu¹, Y. Wu¹, C. Hwang² and R. Lee³** *1. Department of Electrical Engineering, National Sun Yat-Sen University, Kaohsiung, Taiwan; 2. Department of Electrical Engineering, Feng Chia University, Taichung, Taiwan; 3. NaRoller Electronics Corporation, Taoyuan, Taiwan*

- GE-08. Consequent-Pole PM Machine with Unequal Number of Coil Turns for Low Even Order Harmonics in Back-EMFs. F. Li¹, K. Wang¹, H. Sun¹ and J. Li¹** *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

- GE-09. Comparing the Torque Density Performance of a Series and a Nested Magnetically Geared Generator. J. Bird¹ and H. Baninajar¹** *1. Electrical and Computer Engineering, Portland State University, Portland, OR, United States*

- GE-10. Torque and Suspension Force Characteristics of Consequent Pole Type Bearingless Vernier Motor. K. Minami¹, N. Tada¹, K. Hijikata¹ and Y. Tanaka¹** *1. Tokyo City University, Tokyo, Japan*

- GE-11. Rotor Flux-Barriers Designs of Torque Ripple Reduction in a Multi-layered IPM Machine for EV Applications. M. Xie¹ and S. Zhu¹** *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

11:06

- GE-12. Study on Characteristics of Electromagnetic Guidance Forces of Superconducting Maglev Vehicles.** *T. Yonezu¹, K. Watanabe¹, E. Suzuki¹ and T. Sasakawa¹ 1. Railway Technical Research Institute, Tokyo, Japan*

11:18

- GE-13. Indirect Optomechanical Actuation using the Diamagnetic Properties of Pyrolytic Graphite.** *M. Ewall-Wice¹, K. DeLawder¹, S.R. Montgomery², P.J. Joyce³, C. Brownell³ and H. ElBidweihy¹ 1. Electrical and Computer Engineering Department, United States Naval Academy, Annapolis, MD, United States; 2. Physics Department, United States Naval Academy, Annapolis, MD, United States; 3. Mechanical Engineering, United States Naval Academy, Annapolis, MD, United States*

FRIDAY
MORNING
8:30

DELAWARE

Session GF
MAGNETIC FLUIDS, COMPOSITES AND
BIOMEDICAL DEVICES

Jürgen Kosel, Chair
King Abdullah University of Science and Technology, Thuwal,
Saudi Arabia

8:30

- GF-01. Magneto-elastic composite membranes for wireless flow systems. (Invited)** *M.T. Bryan¹, E.L. Martin¹, P.D. Inzani¹, J.K. Hamilton¹ and F.Y. Ogrin¹ 1. College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom*

9:06

- GF-02. Chip-based magnetorelaxometry of nanomagnetic beads based on high-resolution elliptical planar Hall effect sensors.** *P.T. Das¹, M. Sasonker¹, M. Schultz¹, V. Mor¹ and L. Klein¹ 1. Department of Physics, Bar-Ilan University, Ramat Gan, Israel*

9:18

- GF-03. Withdrawn**

9:30

- GF-04. Magnetic isolation of exosomes using Fe/Au nanowires: towards an improved early detection of cancer.** *Z. Nemati Porshokouh^{1,2}, T. Gage¹, M. Zamani Kouhpanji¹, D. Shore¹, J. Um¹, K. Makielski^{2,3}, R. Franklin¹, J. Modiano^{2,3} and B. Stadler¹ 1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, United States; 2. Animal Cancer Care and Research Program, University of Minnesota, St Paul, MN, United States; 3. Department of Veterinary Clinical Sciences, University of Minnesota, St Paul, MN, United States*

- GF-05. Microstructure engineering of magnetically hard and soft composite polymer for controlled trapping in Lab-On-Chip systems.** *S. Mekkaoui*¹, A. Deman¹, M. Audry¹, E. Laurenceau¹, J. Garcia², L. Payen² and D. Le Roy³ *1. Institut des Nanotechnologies de Lyon, Lyon, France; 2. Hospices Civils de Lyon, Lyon, France; 3. Institut Lumière Matière, Lyon, France*

- GF-06. Nanowire substrate to control differentiation of mesenchymal stem cells.** *A. Sharip*¹, J.E. Perez¹, N. Alsharif¹, E. Fabrizio², J. Merzaban¹ and J. Kosel³ *1. Biological and Environmental Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. Physical Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 3. Computer, Electrical and Mathematical Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

- GF-07. Low frequency induction heating of 3D printed ferromagnetic composites: toward medical applications.** *Z. Xiang*¹, M. Le¹, P. Cottinet¹ and B. Ducharne¹ *1. LGEF, INSA Lyon, Villeurbanne, France*

- GF-08. Ultrasensitive Magnetometry for NanoChemistry & Bio-Physics Devices.** *F. Terki*¹, Q. Tran¹, M. Mahfoud^{1,2}, S. Kamara³, E. Belarbi², A. Boukra⁴, C. Kim⁵ and A. Bousseksou⁶ *1. Université de Montpellier, CNRS UMR5253, Montpellier, France; 2. Université Ibn Khaldoun, Tiaret, Algeria; 3. Institut de Physique Nucléaire d'Orsay CNRS/IN2P3, Université Paris Sud, Orsay, France; 4. Université Ibn Badis, Mostaganem, Algeria; 5. Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, The Republic of Korea; 6. Laboratoire de Chimie de Coordination CNRS UPR-8241, Toulouse, France*

- GF-09. Using magnetic-field gradients to shorten the antigen–antibody reaction time for a magnetic immunoassay.** *K. Tsukada*¹, K. Tsunashima¹, K. Jinno¹, S. Takeuchi¹, K. Fujimoto¹, K. Sakai¹, T. Kiwa¹ and M. Saari² *1. Okayama University, Okayama, Japan; 2. University Malaysia Pahang, Pahang, Malaysia*

- GF-10. Magnetic nanoparticle chain-assemblies in magnetotactic bacteria.** *M. Charilaou*^{1,2} *1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. Department of Physics, University of Louisiana at Lafayette, Lafayette, LA, United States*

10:54

- GF-11. Using Superparamagnetic Nanoclusters for Rapid Bioanalysis in Red Wine.** A. Moyano^{1,5}, M. Salvador^{1,2}, J.C. Martínez-García¹, V. Socoliuc³, L. Vékás³, D. Peddis², M. Fernández⁴, M.C. Blanco⁵ and M. Rivas¹ *1. Department of Physics, University of Oviedo, Gijón, Spain; 2. Institute of Structure of Matter, National Research Council, Rome, Italy; 3. Timisoara Branch, Center for Fundamental and Advanced Technical Research, Romanian Academy, Timisoara, Romania; 4. Institute of Dairy Products, National Research Council, Villaviciosa, Spain; 5. Department of Analytical and Physical Chemistry, University of Oviedo, Oviedo, Spain*

11:06

- GF-12. Magneto-mechanical vs. direct inductive power transfer for biomedical devices in the body.** Y. Malkova¹ and G. Friedman¹ *1. Electrical Engineering, Drexel University, Philadelphia, PA, United States*

11:18

- GF-13. Capturing Magnetic Bead-based Arrays Using Perpendicular Magnetic Anisotropy (PMA).** Y. Hsiao¹, R.I. Khojah³, L. Xu², A. Kundu¹, C. Chen¹, A.C. Chavez¹, Z. Xiao⁴, A. Sepulveda¹, R. Candler⁴, G. Carman¹, D. Carlo³ and C. Lynch¹ *1. Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA, United States; 2. Intel Corporation, Portland, OR, United States; 3. Bioengineering Department, UCLA, Los Angeles, CA, United States; 4. Electrical Engineering, UCLA, Los Angeles, CA, United States*

FRIDAY
MORNING
8:30

WASHINGTON 1

Session GG
MAGNETIC IMAGING AND MEASUREMENT
TECHNIQUES II

Sean Langridge, Chair
Rutherford Appleton Laboratory, Chilton, United Kingdom

8:30

- GG-01. Systematic Determination of Magnetic Structure Driven by Space Groups, as Implemented in GSAS-II. (Invited)** R.B. Von Dreele¹ *1. APS, Argonne National Laboratory, Lemont, IL, United States*

9:06

- GG-02. Chirality in ferromagnetic and antiferromagnetic multilayers probed by dichroism in x-ray resonant magnetic scattering.** J. Chauleau^{1,2}, W. Legrand², E.O. Burgos Parra^{1,2}, N. Reyren², D. Maccariello², S. Collin², H. Popescu¹, K. Bouzehouane², N. Jaouen¹, V. Cros² and A. Fert² *1. Ex Division, Synchrotron SOLEIL, Gif sur Yvette, France; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France*

- GG-03. Room temperature magnetic moment profile of EuS in EuS/Co/Ni multilayers measured by XRMS.** *A. Goschew¹, A. Stamatelatos², P. Pouloupoulos², F. Wilhelm³, A. Rogalev³ and P. Fumagalli¹* 1. *Experimental Physics, Free University Berlin, Berlin, Germany*; 2. *Materials Science Department, University of Patras, Patras, Greece*; 3. *ESRF, Grenoble, France*

- GG-04. Magnetic correlations in martensitic Heusler alloys under hydrostatic pressure : Neutron scattering.** *S. Aksoy Esinoglu¹, A. Wildes² and M. Acet³* 1. *Istanbul Technical University, Istanbul, Turkey*; 2. *Institut Laue Langevin, Grenoble, France*; 3. *Duisburg-Essen University, Duisburg, Germany*

- GG-05. Avoiding the Zero-Coercivity Anomaly in First Order Reversal Curves: FORC+.** *P.B. Visscher¹* 1. *MINT Center, University of Alabama, Tuscaloosa, AL, United States*

- GG-06. Interpreting FORC Diagrams Beyond the Preisach Model: an Experimental Permalloy Micro Array Investigation.** *F. Gross¹, S.E. Ilse¹, G.A. Schütz¹, J. Gräfe¹ and E.J. Goering¹* 1. *Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

- GG-07. Swept-Frequency Eddy Current Testing to Characterize the Layer of Interest in a Multilayered Structure.** *W. Cheng^{1,2}, N. Yusa² and H. Hashizume²* 1. *Japan Power Engineering and Inspection Corporation, Yokohama, Japan*; 2. *Quantum Science and Energy Engineering, Tohoku University, Sendai, Japan*

- GG-08. Characterization of Amorphous Magnetic Link Under High-Frequency Non-Sinusoidal Excitations.** *M. Rahman¹, M. Islam¹, K.M. Muttaqi¹ and D. Sutanto¹* 1. *Faculty of Engineering and Information Sciences, University of Wollongong, Wollongong, NSW, Australia*

- GG-09. Unified Test Equipment for Ultra-Fast Wafer Level Characterization of Integrated Magnetic Device Technologies.** *S. Salimy¹, G. Zahnd¹, E. Montredon¹, N. Lamard¹, B. Blanc¹, I. Joumar², A. Chavant², R.C. Sousa², L. Lebrun¹ and J. Nozieres¹* 1. *Hprobe, Eybens, France*; 2. *Spintec (UMR 8191) CNRS / CEA / UGA, Grenoble, France*

- GG-10. Numerical scheme for the simulation of the Eddy Current Magnetic Signature (ECMS) non-destructive micro-magnetic technique.** *T. Matsumoto¹, B. Ducharne² and T. Uchimoto^{3,4}* 1. *Graduate school of Engineering, Tohoku University, Sendai, Japan*; 2. *LGEF, INSA Lyon, Villeurbanne, France*; 3. *Université de Lyon, Tohoku University, International Joint Uni, ELyTMaX UMI 3757, Sendai, Japan*; 4. *Tohoku University, Institute of fluid science IFS, Sendai, Japan*

10:54

- GG-11. Dealing with magnetization effects in EV positioning systems based on periodic magnetic signals.** *D. Martinovic¹*
1. Institute of Internal Combustion Engines and Automotive, University of Stuttgart, Stuttgart, Germany

11:06

- GG-12. 4D Full-Vector Radio Frequency Complex Magnetic Susceptibility Mapping. Near-field Imaging of RFID Tags.** *P.S. Stamenov¹, K. Ackland¹, M. Lotya^{2,1} and D.J. Finn^{2,1}*
1. School of Physics and CRANN, Trinity College, Dublin, Ireland; 2. AmaTech Corp Group Ltd., Galway, Ireland

11:18

- GG-13. Local measurement of peening-induced residual stresses on Iron Nickel material using needle probes technique.** *Y.A. Tene Deffo¹, B. Gupta^{3,4}, B. Ducharme³, P. Tsafack¹ and L. Morel²* *1. Faculty of Engineering, Buea University, Buea, Cameroon; 2. Ampère Laboratory, Claude Bernard University, Villeurbanne, France; 3. LGEF, INSA LYON, Villeurbanne, France; 4. ELYTMAX, Tohoku University, Sendai, Japan*

FRIDAY
MORNING
8:30

WASHINGTON 2

Session GH **MULTI-LAYERED FILMS AND SUPERLATTICES II**

Karin Leistner, Chair
IFW Dresden, Dresden, Germany

8:30

- GH-01. Radial Magnetic Vortices and Skyrmions in Patterned Multilayers with Tailored Anisotropies. (Invited)** *O. Ozatay¹, V. Karakas¹, A. Gokce¹, A. Habiboglu¹, S. Arpacı¹, K. Ozbozduman¹, I. Cinar¹, C. Yanik², R. Tomasello³, S. Tacchi⁴, G. Siracusano⁵, M. Carpentieri⁶, G. Finocchio⁵ and T. Hauet⁷* *1. Physics, Bogazici University, Istanbul, Turkey; 2. Nanotechnology Research and Application Center, Sabanci University, Istanbul, Turkey; 3. Department of Engineering, Polo Scientifico Didattico di Terni, University of Perugia, Terni, Italy; 4. Istituto Officina dei Materiali del CNR (CNR-IOM), Sede Secondaria di Perugia, c/o Dipartimento di Fisica e Geologia, Università di Perugia, Perugia, Italy; 5. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 6. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 7. Institut Jean Lamour, Université de Lorraine, Vandoeuvre-lès Nancy, France*

- GH-02. Stabilizing Extended Target Skyrmions in DMI Multilayers via Structural Imprinting.** *N. Kent*^{1,2}, *R. Streubel*², *C.A. Lambert*³, *F. Buettner*⁴, *S. Dhuey*², *M. Im*² and *P. Fischer*²
1. Physics, University of California, Santa Cruz, Santa Cruz, CA, United States; 2. Material Science Division, Lawrence Berkeley National Lab, Berkeley, CA, United States;
3. Department of Electrical Engineering and Computer Science, University of California, Berkeley, Berkeley, CA, United States;
4. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States

- GH-03. Angular Dependence of Thickness-Gradient-Induced Unidirectional Anisotropic Magnetoresistance in Co/Pt Multilayer.** *J. Oh*¹, *L. Humbard*¹, *V. Humbert*¹, *J. Sklenar*¹ and *N. Mason*¹ *1. Physics, University of Illinois, Urbana-Champaign, Urbana, IL, United States*

- GH-04. Static and Dynamic Properties of Modulated Phases in Co/Pt Multilayers and their Dependence on the Total Magnetic Thickness.** *L. Fallarino*¹, *A. Oelschlägel*¹, *J. Arregi*², *S. Stienen*¹, *J. Lindner*¹, *R. Gallardo*⁵, *P. Landeros*⁵, *T. Schneider*¹, *K. Chesnel*³, *K. Lenz*¹ and *O. Hellwig*^{1,4} *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. CEITEC BUT, Brno University of Technology, Brno, Czechia; 3. BYU, Provo, UT, United States; 4. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany; 5. Universidad Técnica Federico Santa María, Valparaíso, Chile*

- GH-05. Understand the ordering of hexagonal Co₃Pt.** *X. Lu*¹, *D. Laughlin*¹ and *J. Zhu*¹ *1. Carnegie Mellon University, Pittsburgh, PA, United States*

- GH-06. Tunable Anisotropy and Coercivity in Amorphous Tb-Co/Sm-Co Bilayer Films.** *S. George*¹, *V. Djurberg*², *F. Magnus*³, *B. Skovdal*¹ and *G. Andersson*¹ *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden;*
2. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden; 3. Science Institute, University of Iceland, Reykjavik, Iceland

- GH-07. Temperature dependent investigation of stripe morphology and DMI determination from stripe width measurements.** *N. Kerber*^{1,2}, *K. Litzius*^{1,2}, *J. Zazvorka*¹, *N. Keil*¹, *J. Nothhelfer*¹, *M. Asa*¹, *P. Bassirian*¹, *I. Lemesh*³, *M. Weigand*⁴, *S. Finizio*⁵, *J. Raabe*⁵, *G. Beach*³ and *M. Kläui*^{1,2} *1. Institute of Physics, Johannes Gutenberg-University Mainz, Mainz, Germany;*
2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, United States; 4. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 5. Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland

10:18

- GH-08. Engineering Interfacial Perpendicular Magnetic Anisotropy in Fe₂CoSi/Pt heterostructure with Interface Strain and Orbital Hybridization.** Y. Liu¹, A.P. Chen², L. Ren¹, Y. Liu¹, S. Srivastava¹, Y. Feng², H. Yang¹ and K.L. Teo¹ *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Department of Physics, National University of Singapore, Singapore*

10:30

- GH-09. High Thermal Stability in W/Zr/CoFeB/MgO Stack with Perpendicular Magnetic Anisotropy studied by Polarized Neutron Reflectometry.** F. Chang^{1,3}, T. Zhu¹, H. Ambaye² and V. Lauter² *1. Institute of Physics, CAS, Beijing, China; 2. Neutron Science Directorate, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 3. Institute of High Energy Physics, CAS, Beijing, China*

10:42

- GH-10. Permalloy Thickness Effect on Magnetic Properties of Magnetostrictive Galfenol.** M.E. Jamer^{1,2}, C.R. Rementer³, A. Barra⁴, K. Fitzell³, G. Carman⁴, A.J. Grutter², D.A. Gilbert², D.B. Gopman⁵, B. Kirby², J. Borchers² and J.P. Chang³ *1. Physics, United States Naval Academy, Annapolis, MD, United States; 2. NIST Center for Neutron Research, NIST, Gaithersburg, MD, United States; 3. Chemical and Biomolecular Engineering, University of California Los Angeles, Los Angeles, CA, United States; 4. Mechanical and Aerospace Engineering, University of California Los Angeles, Los Angeles, CA, United States; 5. Materials Science and Engineering Division, NIST, Gaithersburg, MD, United States*

10:54

- GH-11. Bubble Domains at the Crossover of the In-plane Transition for the Fe/Co Bilayer.** Y. Chan¹, C. Huang^{1,2}, T. Chuang², D. Wei² and C. Kuo¹ *1. Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan; 2. National Synchrotron Radiation Research Center, Hsinchu, Taiwan*

11:06

- GH-12. Resonant tunneling anisotropic magnetoresistance in an Fe spin-dependent quantum well.** M. Al-Mahdawi¹, Q. Xiang¹, M. Belmoubarik¹, H. Sukegawa¹, S. Kasai¹, K. Masuda¹, Y. Miura¹ and S. Mitani¹ *1. National Institute for Materials Science, Tsukuba, Japan*

11:18

- GH-13. Enhanced Permeability Dielectric Films with Tailored Properties Deposited by Magnetron Sputtering on Silicon.** C. Falub¹, O. Yildirim², X. Zhao^{1,2}, H.J. Hug², M. Meduna^{3,4}, O. Caha^{3,4}, R. Hida⁵, J. Michel⁵, J. Zweck⁶, J. Ambrosini¹, H. Rohrmann¹ and S.V. Pietambaram⁷ *1. Evatec AG, Trübbach, Switzerland; 2. Nanoscale Materials Science, Empa, Dübendorf, Switzerland; 3. Department of Condensed Matter Physics, Masaryk University, Brno, Czechia; 4. CEITEC, Masaryk University, Brno, Czechia; 5. Univ. Grenoble Alpes, CEA, LETI, Grenoble, France; 6. Institut für Experimentelle und Angewandte Physik, University of Regensburg, Regensburg, Germany; 7. Substrate Packaging Tech. Development, Intel Corporation, Chandler, AZ, United States*

Session GI
HARD MAGNETIC MATERIALS THEORY AND APPLICATION II

Scott McCall, Chair
Lawrence Livermore National Laboratory, Livermore, CA,
United States

8:30

- GI-01. Spin reorientation, magnetostriction, symmetry change in MnBi: new insights from X-ray probes. (Invited)** *Y. Choi¹, P. Ryan¹, M. McGuire², B.C. Sales² and J. Kim¹* *1. Argonne National Laboratory, Argonne, IL, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States*

9:06

- GI-02. Inelastic neutron scattering study for rare earth magnets $R_2\text{Fe}_{14}\text{B}$ and $R\text{Fe}_{11}\text{Ti}$ ($R = \text{Y}, \text{Nd}$).** *H. Takafumi¹, M. Yano², T. Shoji², H. Saito¹, T. Yokoo¹, S. Itoh¹ and K. Ono¹* *1. Institute of Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan; 2. Advanced Materials Engineering Div., Toyota Motor Corporation, Susono, Japan*

9:18

- GI-03. Crystal-field analysis of the full magnetization process of the $\text{TmFe}_{11}\text{Ti}$ and $\text{TmFe}_{11}\text{TiH}$ rare-earth intermetallics.** *N. Kostyuchenko¹, I. Tereshina², E. Tereshina-Chitrova³, Y. Skourski⁴, M. Doerr⁵, A.K. Zvezdin^{1,6}, M. Paukov^{7,8}, L. Havela⁷ and H. Drulis⁹* *1. Moscow Institute of Physics and Technology (State University), Moscow, Russian Federation; 2. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Institute of Physics CAS, Prague, Czechia; 4. Hochfeld-Magnetlabor Dresden (HLD-EMFL), Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 5. Institut für Festkörper- und Materialphysik, Technische Universität Dresden, Dresden, Germany; 6. A. M. Prokhorov General Physics Institute RAS, Moscow, Russian Federation; 7. Faculty of Mathematics and Physics, Charles University, Prague, Czechia; 8. Laboratory of Novel Magnetic Material, Immanuel Kant Baltic Federal University, science and technology park "Fabrika", Kaliningrad, Russian Federation; 9. Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wrocław, Poland*

9:30

- GI-04. Theoretical Description of the Finite Temperature Magnetic Properties of $R(\text{Fe}_x\text{M}_{1-x})_{12}$ Systems.** *T. Yoshioka^{1,2} and H. Tsuchiura^{1,2}* *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Elements Strategy Initiative Center for Magnetic Materials (ESICMM), National Institute for Materials Science, Tsukuba, Japan*

- GI-05. Temperature dependence of element-specific spin- and orbital-moments in $\text{Sm}(\text{Fe}_{1-x}\text{Co}_x)_{12}$ system.** *K. Toyoki*^{1,2}, *N. Sasabe*¹, *D. Billington*^{1,2}, *H. Okazaki*^{1,2}, *Y. Kotani*¹, *D. Ogawa*², *Y. Takahashi*², *K. Hono*², *S. Hirosawa*² and *T. Nakamura*^{1,2}
1. Research & Utilization Division, Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 2. National Institute for Materials Science, Tsukuba, Japan

- GI-06. Effect of Anisotropic Exchange Stiffness on the Coercivity in Rare-Earth Permanent Magnet.** *Y. Toga*¹, *M. Nishino*^{2,1}, *S. Miyashita*^{3,1}, *T. Miyake*^{4,1} and *A. Sakuma*⁵
1. ESICMM, NIMS, Tsukuba, Japan; 2. Research Center for Advanced Measurement and Characterization, NIMS, Tsukuba, Japan; 3. Department of Physics, The University of Tokyo, Tokyo, Japan; 4. CD-FMat, AIST, Tsukuba, Japan; 5. Department of Applied Physics, Tohoku University, Sendai, Japan

- GI-07. Curie temperature of $\text{Sm}_2\text{Fe}_{17}$ and $\text{Nd}_2\text{Fe}_{14}\text{B}$: a first-principles study.** *T. Fukazawa*^{1,2}, *H. Akai*^{3,2}, *Y. Harashima*^{1,2} and *T. Miyake*^{1,2}
1. CD-FMat, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 2. ESICMM, National Institute for Materials Science, Tsukuba, Japan; 3. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan

- GI-08. First-order magnetization process and spin reorientation in $\text{Nd}_{1-x}\text{Y}_x\text{Fe}_{11}\text{Ti}$ compounds.** *O. Tosun*¹ and *G. Hadjipanayis*¹
1. Physics & Astronomy, University of Delaware, Newark, DE, United States

- GI-09. Investigation of coercivity mechanism of NdFeB based magnet within combination of First Order Reversal Curve diagram and Small Angle Neutron Scattering.** *T. Shoji*⁴, *M. Yano*², *K. Saito*¹ and *K. Ono*³
1. Laboratory of Neutron Scattering and Imaging, Paul Scherrer Institute, Villigen, Switzerland; 2. Material Platform Engineering Division, Toyota Motor Corporation, Toyota, Japan; 3. Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan; 4. Advanced Material Engineering Division, Toyota Motor Corporation, Susono, Japan

- GI-10. Quantifying micromagnetic interactions in NdFeB by using FORC.** *S.E. Ilse*¹, *F. Gross*¹, *G.A. Schütz*¹, *J. Gräfe*¹ and *E.J. Goering*¹
1. Modern Magnetic Systems (Schütz), Max Planck Institute for Intelligent Systems, Stuttgart, Germany

- GI-11. Prediction of Intrinsic Properties of Fe-doped CeCo_5 .** *R. Choudhary*¹ and *D. Paudyal*¹
1. Ames Laboratory, U.S. Department of Energy, Iowa State University, Ames, IA, United States

- GI-12. Structural Modifications of Nd-Fe-B Magnets during a Sub- and Supercritical Recycling Process.** *V. Nachbaur*¹, *N. Maât*², *M. Kchaw*¹, *S. Jouen*¹, *C. Aymonier*³ and *J. Le Breton*¹
1. Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, Rouen, France; 2. Department of Chemical Engineering, Northeastern University, Boston, MA, United States; 3. CNRS, Bordeaux INP, ICMCB, UMR5026, Univ. Bordeaux, Bordeaux, France

- GI-13. Efficient Reuse Approaches for Recycling of Rare Earth Permanent Magnets.** *K. Gandha*¹, *H.A. Khazdozian*¹, *M.P. Paranthaman*² and *C.I. Nlebedim*¹
1. Critical Materials Institute, Ames Laboratory, Ames, IA, United States; 2. Oak Ridge National Laboratory, Oak Ridge, TN, United States

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GJ

MAGNETIC FIELD SENSORS AND APPLICATIONS (Poster Session)

Ivan Lisenkov, Chair

Winchester Technologies, LLC, Burlington, MA, United States

- GJ-01. Arc-Faults Detection in DC Systems by TMR Sensors.** *W.C. Miao*¹, *X. Liu*¹, *K. Lam*¹ and *P. Pong*¹
1. University of Hong Kong, Hong Kong
- GJ-02. Development of a Misalignment-Tolerant Wireless Charging Technique via TMR Sensor Array for Roadway Electric Vehicles.** *X. Liu*¹, *C. Liu*² and *P. Pong*¹
1. Department of Electrical and Electronic Engineering, University of Hong Kong, Hong Kong, Hong Kong; 2. School of Energy and Environment, City University of Hong Kong, Hong Kong
- GJ-03. Surface texturing and enhanced microwave absorption of FeB alloy flakes through a dealloying process.** *N. Tian*¹, *W. Song*¹, *Z. Yang*¹, *H. Fu*¹, *L. Ma*¹, *C. You*¹ and *W. Wang*¹
1. Xi'an University of Technology, Xi'an, China
- GJ-04. Enhanced output power from energy-harvesting device using a Wiegand wire with flux guidance.** *T. Sakai*¹, *T. Yamada*¹ and *Y. Takemura*¹
1. Electrical and Computer Engineering, Yokohama National University, Yokohama, Japan
- GJ-05. TMR-Sensor-Based Approach for Current Reconstruction, Sag Detection and Inclination Detection for Overhead Transmission System.** *Q. Xu*¹, *X. Liu*¹, *C. Liu*² and *P. Pong*¹
1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong; 2. School of Energy and Environment, City University of Hong Kong, Hong Kong

- GJ-06. Rotation-Type Magnetic Flux Leakage Sensor System for Large Pipeline Inspection.** C. Heo¹ and G. Park¹ 1. *Department of Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea*
- GJ-07. A flexible zero-biased magnetoelectric sensor based on FeSiB nanocrystalline alloy for AC magnet field detection.** Y. Long¹, J. Qiu¹, X. He¹, Q. Chang¹, H. Liu¹, X. Tang¹, W. Hu¹, Y. She¹ and X. Wang² 1. *College of Optoelectronic Engineering, Chongqing University, Chongqing, China;* 2. *School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*
- GJ-08. An integrated magnetic field and vibration energy harvester for intelligent wireless sensor systems.** Q. Chang¹, J. Qiu¹, Y. Long¹, X. He¹, H. Liu¹, X. Tang¹, W. Hu¹, Y. She¹ and X. Wang² 1. *College of Optoelectronic Engineering, Chongqing University, Chongqing, China;* 2. *School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*
- GJ-09. Hall effect of amorphous CoSiB multilayer films for hall sensors.** H. Lee¹ and Y. Kim¹ 1. *Sejong University, Seoul, The Republic of Korea*
- GJ-10. Experimental results of verification of the unbalanced magnetic power for brushless DC motors due to current sensor sensitivity.** C. Hsu¹ and M. Hsieh² 1. *Department of Mechanical Engineering, Oriental Institute of Technology, New Taipei, Taiwan;* 2. *Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*
- GJ-11. Microwave absorbing properties of Zn²⁺-Ti⁴⁺ substituted U-type hexaferrite.** D.P. Dubey¹, S. Kumar¹ and R. Chatterjee¹ 1. *Physics, IIT Delhi, New Delhi, India*

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GK
EXCHANGE BIAS AND NANOMAGNETISM
(Poster Session)

Thomas Ambrose, Chair
Northrop Grumman Corporation, Linthicum, MD, United States

- GK-01. Remanent Magnetization dependent Exchange Bias in Hard/Soft Ferromagnetic Bilayer system.** V. Bhardwaj¹, M.S. Anwar¹, S.P. Pal¹ and R. Chatterjee¹ 1. *Physics, IIT Delhi, New Delhi, India*

GK-02. Exchange bias in Co/MnPt polycrystalline films on SiO₂/Si(100) substrates. H.W. Chang¹, P. Pan², P. Yeh³, C. Shen⁴, W. Chang-Ren³ and L. Horng⁵ *1. Physics, National Chung Cheng University, Chia-Yi, Taiwan; 2. Physics, National Tsinghua University, Hsinchu, Taiwan; 3. Applied Physics, Tunghai University, Taichung, Taiwan; 4. Electrical Engineering, Hsiuping University of Science and Technology, Taichung, Taiwan; 5. Physics, National Changhua University of Education, Changhua, Taiwan*

GK-03. High Annealing Temperature Tolerance Improvement in Longitudinal Magnetic Tunnel Junction with Synthetic Antiferromagnetic Pinned Layer. S. Oikawa¹, H. Yoda¹, Y. Kato¹, N. Shimomura¹, Y. Ohsawa¹, S. Shirotori¹, M. Shimizu¹, K. Koi¹, T. Inokuchi¹, H. Sugiyama¹, B. Altansargai¹ and A. Kurobe¹ *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan*

GK-04. Spin glass-like ground state and observation of giant exchange bias in Mn-rich Mn-Ni-Sn Heusler alloys. J. Sharma¹, A.K. Patel² and K. Suresh² *1. Dept. of Condensed Matter Physics & Materials Science, Tata Institute of Fundamental Research, Mumbai, Mumbai, India; 2. Physics, Indian Institute of Technology Bombay, Mumbai, India, Mumbai, India*

GK-05. Magnetic Phase Change Studied in Current Perpendicular-to-Plane FeRh Devices. R.C. Temple¹, J. Massey¹, T.P. Almeida², M.C. Rosamond³, K. Fallon², D. McGrouther², T.A. Moore¹, S. McVitie² and C.H. Marrows¹ *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom*

GK-06. Unique Magnetic Properties of 3D Antidots Created by Nanosphere Lithography. B. Myint¹ and V. Ng¹ *1. Information Storage Materials Laboratory, Electrical and Computer Engineering Department, National University of Singapore, Singapore, Singapore*

GK-07. XPEEM Imaging of Uncommon Magnetization Reversal in Artificial Ferromagnetic Quasicrystals with Varied Exchange and Dipolar Interactions. V.S. Bhat¹, S. Watanabe¹, K. Baumgärtl¹, F. Kronast² and D. Grundler¹ *1. Institute of Materials and Laboratory of Nanoscale Magnetic Materials and Magnonics, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 2. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Albert-Einstein-Strasse 15, D-12489 Berlin, Germany*

GK-08. Evaluation of magnetic properties of CoFe₂O₄ ultrathin film using magnetic proximity effect. S. Noda¹, T. Yamamoto¹, T. Yanase², T. Shimada² and T. Nagahama² *1. Graduate School of Chemical Sciences and Engineering, Hokkaido University, Sapporo, Japan; 2. Graduate School of Engineering, Hokkaido University, Sapporo, Japan*

Session GL
SOFT MAGNETIC COMPONENTS: OTHER
APPLICATIONS
(Poster Session)

Tsuyoshi Uchiyama, Chair
Nagoya University, Nagoya, Japan

- GL-01. Study on Directivity Dual Capsule Structure Element for Magnetic Soft Heating Hyperthermia System.** *Y. Yokoshita¹, S. Oba¹, Y. Hongo¹, T. Abe¹, S. Miyahara¹, F. Sato¹ and K. Ishikawa¹* *1. Tohoku Gakuin University, Tagajo, Japan*
- GL-02. Inductance Calculation of Spiral Coil Considering Ferrite Core Hole for Design of Induction Heater.** *Y. Jang¹ and G. Park²* *1. Department of Smart Interdisciplinary Engineering, Pusan National University, Busan, The Republic of Korea; 2. Department of Electrical Engineering, Pusan National University, Busan, The Republic of Korea*
- GL-03. A Fundamental Study on Smoothing of Magnetic Excitation of Implant Stimulator in Direct Feeding FES.** *Y. Kato¹, Y. Hongo¹, T. Abe¹, S. Oba¹, F. Sato¹, S. Miyahara¹ and K. Ishikawa¹* *1. Tohoku Gakuin University, Tagajo, Japan*
- GL-04. Magneto-thermal coupling design and current limiting characteristics experimental investigation of a 10 kV hybrid superconducting fault current limiter (SFCL) with bias magnetic field.** *J. Zhu¹* *1. China Electric Power Research Institute, Beijing, China*
- GL-05. Design for Efficiency Improvement of an Induction Range by Reducing Eddy Current of Shielding Plate.** *S. Im¹, J. Kim² and G. Park¹* *1. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea; 2. Korea Aerospace Industries, Sacheon, The Republic of Korea*
- GL-06. DC Circuit Breaker Based on Saturated Core Current-limiter.** *J. Yuan¹, Z. Zhang¹, P. Gan¹, H. Zhou¹, L. Wei¹, C. Tian¹, B. Chen¹, Y. Gao² and K. Muramatsu²* *1. Wuhan University, Wuhan, China; 2. Saga University, Saga, Japan*
- GL-07. Quasi-3D Cylindrical Coordinate XFEM Model of HTS Cable.** *N. Duan¹, W. Xu², S. Wang¹ and J. Zhu³* *1. Xi'an Jiaotong University, Xi'an, China; 2. State Grid Shaanxi Electric Power Company Construction Branch, Xi'an, China; 3. The University of Sydney, Sydney, NSW, Australia*
- GL-08. A Saturated Amorphous Magnetic Core based Inrush Current Limiter.** *M.M. Islam¹, M. Islam¹, K.M. Muttaqi¹ and D. Sutanto¹* *1. School of Electrical, Computer and Telecommunication Engineering, University of Wollongong, Wollongong, NSW, Australia*

GL-09. Design considerations for monophasic and biphasic pulsed field generators for portable single-sided NMR applications.

N. Prabhu Gaunkar¹, T. Kimler¹, W. Theh¹, D.C. Jiles¹, R. Weber¹ and M. Mina^{1,2} 1. *Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*; 2. *Industrial Design, Iowa State University, Ames, IA, United States*

GL-10. Observations of Anomalous Localized Magnetization in Bismuth-Substituted Iron Garnet.

L. Bauer^{1,2}, N. Prabhu Gaunkar¹ and M. Mina^{1,3} 1. *Electrical and Computer Engineering, Iowa State University, Ames, IA, United States*; 2. *Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States*; 3. *Industrial Design, Iowa State University, Ames, IA, United States*

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GM
MAGNETO-ELASTIC MATERIALS
(Poster Session)

Nicholas Jones, Chair

Naval Surface Warfare Center, Carderock Division, Bethesda,
MD, United States

GM-01. A Hybrid Jiles-Atherton/Armstrong Magnetization Model Considering Uniaxial Anisotropy for Galfenol Rods.

Y. Li¹, B. Wang¹, W. Huang¹ and L. Weng¹ 1. *Hebei University of Technology, Tianjin, China*

GM-02. Guided Wave Phased Array Sensor based on a Galfenol Flake-Epoxy Composite Patch with a Circular Comb Pattern.

B. Yoo¹ and D.J. Pines¹ 1. *Aerospace Engineering, University of Maryland, College Park, MD, United States*

GM-03. Strain-induced Elastocaloric Effect in $\text{Ti}_{51}\text{Ni}_{49}$ Shape Memory Alloy.

X. Luo^{1,2}, J. Qi^{1,3}, W. Ren¹, W. Jin⁴, Y. Zhuang³, S. Ma², Z. Zhong² and Z. Zhang¹ 1. *Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China*; 2. *Jiangxi Key Laboratory for Rare Earth Magnetic Materials and Devices/Institute for Rare Earth Magnetic Materials and Devices, Jiangxi University of Science and Technology, Ganzhou, China*; 3. *Key Laboratory of Electromagnetic Processing of Materials, Northeastern University, Shenyang, China*; 4. *Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China*

GM-04. The microstructure and ultrasonic guided wave sensing performance of magnetostrictive Fe-Ga coatings.

Q. Qi¹, J. Li¹, Z. Tang² and X. Gao¹ 1. *State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing, China*; 2. *Institute of Advanced Digital Technologies and Instrumentation, Yuquan campus, Zhejiang University, Hangzhou, China*

GM-05. Modelling the Magnetoelastic Properties of Composites of Aligned Rigid Magnetic Spheroidal Inclusions in a Linear Elastic Matrix. *J.P. Rath*¹ and *S. Lofland*¹ *1. Physics and Astronomy, Rowan University, Glassboro, NJ, United States*

GM-06. Effect of Ga Composition on Statics and Dynamic Magnetic Properties of Polycrystalline $\text{Fe}_{100-x}\text{Ga}_x$ Films. *Y. Endo*^{1,2}, *Y. Kawabe*¹, *T. Miyazaki*³ and *Y. Shimada*¹ *1. ECEI, Tohoku University, Sendai, Japan; 2. CSRN, Tohoku University, Sendai, Japan; 3. Technical Division, Tohoku University, Sendai, Japan*

GM-07. Hybrid magneto-dynamical modes in a single magnetostrictive nanomagnet on a piezoelectric substrate. *S. Mondal*¹, *M. Abeed*², *K. Dutta*¹, *A. De*¹, *S. Sahoo*¹, *A.K. Chaurasiya*¹, *A. Barman*¹ and *S. Bandyopadhyay*² *1. Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Department of Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, VA, United States*

GM-08. Production of a Flexible TPU-based Magnetorheological Elastomer for Fused Deposition Modeling. *A. Becnel*¹ and *C.M. Bailey*¹ *1. Aerospace, University of Maryland, College Park, MD, United States*

GM-09. Active Galfenol Bending Sensor for Monitoring Bending Load Impedances. *E.J. Barranco*¹, *J. Park*², *J. Yoo*³ and *A.B. Flatau*¹ *1. Aerospace Engineering, University of Maryland, Parkton, MD, United States; 2. Materials Science, University of Maryland, College Park, MD, United States; 3. Physical Metallurgy and Fire Protection Branch, Naval Surface Warfare Center, Carderock, MD, United States*

GM-10. Alfenol Patch-, Galfenol Patch- and Galfenol Paint-Based Torque Sensor Characterization Studies. *B. Muller*¹, *M. Darok*¹, *M.N. Van Order*², *S. Na*¹ and *A.B. Flatau*^{1,2} *1. Aerospace Engineering, University of Maryland, College Park, MD, United States; 2. Materials Science and Engineering, University of Maryland, College Park, MD, United States*

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GN
DOMAIN WALL DYNAMICS AND DEVICES
(Poster Session)

Vivek Amin, Co-Chair
NIST, Gaithersburg, MD, United States
Jamileh Beik Mohammadi, Co-Chair
New York University, New York, NY, United States

GN-01. Influence of Heat Accumulation in Surface Oxidized Silicon Layer for Current-driven Domain Wall Motion in [Co/Tb] Magnetic Nanowires. *Y. Miyamoto*¹, *M. Okuda*¹, *M. Kawana*¹ and *N. Ishii*¹ *1. Science & Technology Research Labs., NHK (Japan Broadcasting Corp.), Tokyo, Japan*

- GN-02. A Current Induced Domain Wall Motion Type Light Modulation Device for Electro-Holography.** *R. Higashida¹, N. Funabashi¹, K. Aoshima¹ and K. Machida¹* *1. Science & Technology Research Laboratories, NHK (Japan Broadcasting Corporation), Setagaya-ku, Japan*
- GN-03. Current driven domain wall dynamics along curved paths: the role of geometry and inhomogeneous currents.** *P.E. Guillem¹, L. Sánchez-Tejerina^{1,2}, E. Martinez², V. Raposo² and O. Alejos¹* *1. Electricidad y Electrónica, Universidad de Valladolid, Valladolid, Spain; 2. Física Aplicada, Universidad de Salamanca, Salamanca, Spain*
- GN-04. Domain Wall Pinning in Square Wave Shaped Magnetic Nanowires.** *D. Kumar¹ and S. Piramanayagam¹* *1. Division of Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore*
- GN-05. Observation of thermal distribution of magnetic nanowire memory by current injection.** *T. Sawa¹, M. Kawamoto¹, S. Sumi¹, P. Van Thach¹, K. Tanabe¹ and H. Awano¹* *1. Toyota Technological Institute, Nagoya, Japan*
- GN-06. Magnetic energy of field driven domain wall intrinsic pinning in permalloy nano-wire devices with notch.** *D. Shiu¹, C. Su¹, Y. Hong¹, K. Lai¹, L. Lin¹, Y. Kao¹, Y. Liu¹, J. Wu¹ and L. Horng¹* *1. Physics, National Changhua University of Education, Changhua, Taiwan*
- GN-07. Improved magnetic domain nucleation with antiferromagnetic coupling and voltage control magnetic anisotropy effect.** *Z. Zhang¹, Y. Zhang¹, J. Nan¹, Z. Zheng¹, G. Wang¹, J. Klein², D. Ravelosona², Y. Zhang¹ and W. Zhao¹* *1. Beihang University, Beijing, China; 2. Univ. Paris-Saclay, Orsay, France*
- GN-08. Visualization of domain wall motion during ultrafast demagnetization of permalloy.** *G. Cao¹, S. Jiang¹, J. Åkerman^{1,2} and J. Weissenrieder¹* *1. Department of Applied Physics, KTH Royal Institute of Technology, Stockholm, Sweden; 2. Physics Department, University of Gothenburg, Gothenburg, Sweden*
- GN-09. Withdrawn**
- GN-10. Fast current-induced domain wall motion in symmetric ferrimagnetic Tb-Co alloy wires.** *P. Van Thach^{1,2}, B. Do², S. Sumi¹ and H. Awano¹* *1. Toyota Technological Institute, Nagoya, Japan; 2. Institute of Materials Science, Vietnam Academy of Science and Technology, Ha noi, Vietnam*

Session GO
MOTORS: MODELING AND SIMULATIONS IX
(Poster Session)

Marco Trapanese, Chair
Palermo University, Palermo, Italy

- GO-01. Comparative Study of Stator Consequent Pole Permanent Magnet Machines with Different Stator Configurations.** Y. Li¹, H. Yang¹, H. Lin¹, S. Lyu¹ and Z. Pan¹ *1. School of Electrical Engineering, Southeast University, Nanjing, China*
- GO-02. High-Frequency Modeling for Wound-Rotor Synchronous Machine Based on VBR and Vector Fitting Methods.** D. Zhao^{1,2}, K. Shen^{1,2}, W. Liu^{1,2}, L. Lang^{1,2} and P. Liang^{1,2} *1. School of Automation, Northwestern Polytechnical University, Xi'an, China; 2. Shaanxi Key Laboratory of Small & Special Electrical Machine and Drive Technology, Xi'an, China*
- GO-03. A Study on the Shape Design of a Magnetic-Geared Synchronous Motor for Improvement of Performance and Securing Rigidity.** G. Jeong¹, I. Jo², C. Park², H. Lee², J. Lee¹ and H. Jang¹ *1. Hanyang University, Seoul, The Republic of Korea; 2. Korea National University of Transportation, Uiwang-si, The Republic of Korea*
- GO-04. Improvement of FEA Accuracy of Magnetic Gear by Torsion Analysis of Pole Piece and Supporter.** E. Park¹, C. Gim¹, S. Jung² and Y. Kim¹ *1. Electric Engineering, Chosun University, Gwangju, The Republic of Korea; 2. Sungkyunkwan University, Suwon, The Republic of Korea*
- GO-05. A Novel Current-Excited Doubly Salient Machine.** Y. Mao¹ and S. Niu¹ *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*
- GO-06. Analytical Model of a Permanent Magnet Synchronous Motor With a Trapezoidal Halbach Array.** X. Zhang¹, C. Zhang¹ and L. Li¹ *1. Harbin Institute of Technology, Harbin, China*
- GO-07. Comparative Study of Partitioned Stator Memory Machines with Series and Parallel Hybrid PM Configurations.** H. Yang¹, Z. Zhu², H. Lin¹, S. Lyu¹ and Z. Pan¹ *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. University of Sheffield, Sheffield, United Kingdom*
- GO-08. A Study on the Optimum Step Angle Considering the Three Dimensional Effect in Step Skew of Interior Permanent Magnet Motors through Finite Element.** S. Lee¹ and W. Kim² *1. Busan University of Foreign Studies, Busan, The Republic of Korea; 2. Gachon University, Seongnam, The Republic of Korea*

GO-09. Electromagnetic Vibration Characteristic of High-Speed Permanent Magnet Synchronous Machines with Amorphous Metal Stator Cores. *S. Wu¹, W. Tong¹, S. Yu¹ and R. Tang¹*
1. Shenyang University of Technology, Shenyang, China

GO-10. Rotor Design and Optimization of a High-Speed Induction Machine Based on Multi-physical Constraints. *X. Cheng¹, W. Xu² and G. Du²* *1. Institute of Electronic and Electrical Engineering, Shanghai University of Engineering Science, Shanghai, China; 2. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China*

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GP
MOTORS: MODELING AND SIMULATIONS VIII
(Poster Session)

Omar Farrok, Chair

Ahsanullah University of Science & Technology, Dhaka, Bangladesh

GP-01. Performance Analysis of a Hybrid Permanent Magnet V-Type Variable-Flux Machine. *S. Zhang¹, P. Zheng¹, M. Wang¹ and F. Liu¹* *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

GP-02. A Improved 24/14 Poles Stator Wound-Field Flux-Switching Machine Based on Virtual Coil Flux Linkages. *W. Jiang¹ and H. Wenxin¹* *1. College of Automation Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing, China*

GP-03. Withdrawn

GP-04. Design and Analysis of Efficiency Improvement through Reduction of Permanent Magnet Eddy Current of Ultra-High Speed Motors. *H. Lee¹, D. Jung² and J. Lee²* *1. Electrical Automatization, BIST (Busan Institute of Science & Technology), Busan, The Republic of Korea; 2. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea*

GP-05. 6/4 pole permanent magnet auxiliary composite stator reluctance motor. *M. Zong¹, A. Liu¹, J. Li¹ and J. Lou¹*
1. Shenyang University of Technology, Shenyang, China

GP-06. Design and Optimization of an Outer-Rotor Six-Phase PM Vernier Machine with Outstanding Torque Performance. *Y. Yao¹ and C. Liu¹* *1. City University of HK, Hong Kong, Hong Kong*

GP-07. A New Asymmetric Planar V-Shaped Magnet Arrangement for a Linear PM Synchronous Motor. *A. Boduroglu¹, Y. Demir¹ and M. Aydin^{1,2}* *1. R&D, MDS Motor Ltd., Kocaeli, Turkey; 2. Dept. of Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey*

- GP-08. Comparative Study of Complementary-Stator Flux-Modulated PM Machines with Different Flux Modulation Pole Structures.** *J. Yu¹ and C. Liu¹ 1. School of Energy and Environment, City University of Hong Kong, Hong Kong*
- GP-09. Analysis on AC Copper Loss in IPMSM with Concentrated Windings according to Conductor Arrangement.** *S. Jun¹, S. Seo¹, Y. Kim² and S. Jung¹ 1. Department of Electronics Electric Computer Engineering, Sungkyunkwan University, Suwon, The Republic of Korea; 2. Department of Electric Engineering, Chosun University, Gwangju, The Republic of Korea*

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GQ
SKYRMIONS III
(Poster Session)

Anjan Soumyanarayanan, Chair
A*STAR, Singapore, Singapore

- GQ-01. Skyrmion meets magnetic tunnel junction: an efficient way for electrical skyrmion detection investigated by ab initio theory.** *J.F. Schaefer¹, M. Czerner¹ and C. Heiliger¹ 1. Institut für Theoretische Physik, Justus-Liebig-Universität Giessen, Giessen, Germany*
- GQ-02. Control of a Skyrmion motion by an angelfish racetrack.** *K. Migita¹, K. Yamada² and Y. Nakatani¹ 1. University of Electro-Communications, Tokyo, Japan; 2. Gifu University, Gifu, Japan*
- GQ-03. Electrical detection of artificial skyrmion in synthetic antiferromagnetic nanostructures at room temperature.** *F. Ma¹, Q. Feng², S. Li³, Y. Li¹, X. Jin¹, Q. Lu² and W. Lew³ 1. School of Physics and Technology, Nanjing Normal University, Nanjing, China; 2. High Magnetic Field Laboratory, University of Science and Technology of China, Hefei, China; 3. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*
- GQ-04. Current-driven Skyrmion dynamics along curved tracks.** *V. Raposo¹, R. Luis Martinez¹, O. Alejos² and E. Martinez¹ 1. Fisica Aplicada, University of Salamanca, Salamanca, Spain; 2. University of Valladolid, Valladolid, Spain*

- GQ-05. High dense Skyrmion lattice fabrication by magnetic force microscopy.** A. Ognev¹, A.S. Samardak¹, A. Kolesnikov¹, A.V. Sadochnikov^{2,3}, S. Nikitov^{2,3}, I. Soldatov⁴, A. Talapatra⁵, J. Mohanty⁵, K. Yong Jin⁶ and Y.K. Kim⁶ *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Laboratory "Metamaterials", Saratov State University, Saratov, Russian Federation; 3. Kotel'nikov Institute of Radioengineering and Electronics, Moscow, Russian Federation; 4. Leibniz Institute for Solid State and Material Research (IFW-Dresden), Dresden, Germany; 5. Indian Institute of Technology, Hyderabad, India; 6. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*
- GQ-06. Exploring skyrmion/antiskyrmion phase by magnetic entropy change measurements.** S. Manna¹, J. Sk¹ and A.K. Nayak¹ *1. National Institute of Science Education and Research, Bhubaneswar, India*
- GQ-07. Experimental demonstration of VCMA induced manipulation of magnetic skyrmions.** D. Bhattacharya¹, S. Razavi², H. Wu², K. Wang² and J. Atulasimha¹ *1. Virginia Commonwealth University, Richmond, VA, United States; 2. University of California at Los Angeles, Los Angeles, CA, United States*
- GQ-08. Skyrmion Lattice Ordering and Interactions in Thin-Film Multilayer Systems.** R. Gruber¹, J. Zazvorka¹, N. Kerber^{1,2}, M. Vafaei¹, K. Litzius^{1,2}, P. Virnau¹ and M. Kläui^{1,2} *1. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany*
- GQ-09. Robust topological Hall effect driven by oxygen octahedral tilting in ultrathin SrRuO₃ single-layered films.** Y. Gu^{1,2}, Y. Wei³, K. Xu⁴, X. Zhong⁴, C. Song¹, J. Feng³, W. Liu², Z. Zhang², F. Pan¹ and J. Zhu⁴ *1. Key Laboratory of Advanced Materials (MOE), School of Materials Science and Engineering, Tsinghua University, Beijing 100084, China, Beijing, China; 2. Shenyang National Laboratory for Materials Science, Institute of Metal Research, University of Chinese Academy of Sciences, Chinese Academy of Sciences, Shenyang 110016, China, Shenyang, China; 3. International Center for Quantum Materials, School of Physics, Peking University, Beijing 100871, China, Beijing, China; 4. National Center for Electron Microscopy in Beijing, Key Laboratory of Advanced Materials (MOE), The State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, Beijing 100084, China, Beijing, China*

Session GR
MULTIFERROICS AND COMPLEX OXIDES III
(Poster Session)

Daniel Gopman, Chair
NIST, Gaithersburg, MD, United States

- GR-01. A Mössbauer study of DyCrO₄ and ErCrO₄.** G.A. Stewart¹, S. Cadogan¹, W. Hutchison¹ and D. Ryan² *1. School of Physical, Environmental and Mathematical Sciences, UNSW Canberra, Canberra, ACT, Australia; 2. Physics Department, McGill University, Montreal, QC, Canada*
- GR-02. Large negative magnetoelectric coupling in Fe substituted ferroelectric Bi_{0.5}Na_{0.5}TiO₃ ceramics: A combined experimental and theoretical study.** M. Kumari^{1,2}, S. Santapuri¹ and R. Chatterjee¹ *1. Physics Department, IIT Delhi, Hauz Khas, New Delhi, India; 2. Department of Applied Physics, Delhi Technological University, New Delhi, India*
- GR-03. Observation of electric domains in InMn_{0.75}Fe_{0.25}O₃: The influence of oxygen vacancies.** J. Liu^{1,2}, Z. Wang¹ and S. He² *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China, Beijing, China; 2. Department of Physics, Capital Normal University, Beijing 100048, China, Beijing, China*
- GR-04. Phonon Invisibility Driven by Magnetic Ordering in AlFeO₃ Thin Film.** S. Tyagi¹ and V.G. Sathe¹ *1. Raman Laboratory, UGC DAE Consortium for Scientific Research, Indore, India*
- GR-05. Magnetic field at Ce impurities in La sites of LaBaMn₂O₆ double perovskites.** B. Bosch-Santos¹, N. Nascimento¹, M. Saiki¹, E.L. Correa¹, T.S. Sales¹, L.F. Pereira¹, G.A. Cabrera-Pasca² and A.W. Carbonari¹ *1. IPEN/USP, São Paulo, Brazil; 2. Física, Universidade Federal do Pará-Campus Abaetetuba, Abaetetuba, Brazil*
- GR-06. Engineering Magnetoresistance in (001)- and (111)-oriented (La_{2/3}Sr_{1/3}MnO₃)_n/(LaFeO₃)₁₀ Superlattices through Interfacial Coupling.** Y. Zhou^{1,2} and S.J. May² *1. Materials Science and Engineering, Shandong University, Ji'nan, China; 2. Materials Science and Engineering, Drexel University, Philadelphia, PA, United States*
- GR-07. Study of the Local Magnetism and Electric Properties at Gd₂Ti₂O₇ by PAC Spectroscopy and ab Initio Calculations.** E.L. Correa¹, L.F. Pereira¹, W.L. Ferreira¹, B. Bosch-Santos¹, L. Scalise¹, V. Gonçalves¹, R. dos Santos¹, J. Schell² and A.W. Carbonari^{1,2} *1. Instituto de Pesquisas Energéticas e Nucleares, Universidade de São Paulo, São Paulo, Brazil; 2. ISOLDE, CERN, Geneva, Switzerland*

GR-08. Tunneling Magneto-Dielectric Effects of Crystalized Co-BaF₂ Nano-granular Films at MHz Frequencies. *H. Kijima-Aoki¹, Y. Cao¹, Y. Endo¹, N. Kobayashi², S. Ohnuma^{2,1} and H. Masumoto¹* *1. Tohoku University, Sendai, Japan; 2. Research Institute for Electromagnetic Materials, Tomiya, Japan*

GR-09. Raman magnetic dependence in the quadrupole perovskite (LaMn₃)Mn₄O₁₂ at low temperature. *A.J. Gualdi¹, F. Perez², M. Verseils³, C. Bellin³, A.J. de Oliveira¹, E. Gilioli⁴ and A. Gauzzi³* *1. Physics, Federal University of São Carlos, São Carlos, Brazil; 2. INSP, Sorbonne Université, CNRS, IRD, MNHN, Paris, France; 3. IMPMC, Sorbonne Université, CNRS, IRD, MNHN, Paris, France; 4. Istituto dei Materiali per Elettronica e Magnetismo-CNR, Parma, Italy*

FRIDAY
MORNING
9:30

EXHIBIT HALL A

Session GS

MICROMAGNETIC AND HYSTERESIS MODELING II (Poster Session)

Hatem ElBidweihy, Chair

United States Naval Academy, Annapolis, MD, United States

GS-01. Theoretical Study of Gilbert Damping in Magnetic Multilayer Film. *D. Ozaki¹, D. Miura¹ and A. Sakuma¹* *1. Department of Applied Physics, Tohoku University, Sendai, Japan*

GS-02. Massively parallel atomistic spin dynamics and Monte Carlo simulations using VAMPIRE. *A. Meo¹, A. Laverack¹ and R.F. Evans¹* *1. Department of Physics, University of York, York, United Kingdom*

GS-03. Analytical modeling of magnetization switching in amorphous glass-coated nanowires and submicron wires. *T.A. Ovari¹, C. Rotarescu¹, C. Hlenschi¹, H. Chiriac¹ and N. Lupu¹* *1. Department of Magnetic Materials and Devices, National Institute of Research and Development for Technical Physics, Iasi, Romania*

GS-04. Withdrawn

GS-05. Effects of exchange interaction of grain boundary phase on hysteresis losses in magnetic thin film revealed by micromagnetic simulation. *H. Tsukahara¹, K. Iwano¹, C. Mitsumata², T. Ishikawa¹ and K. Ono¹* *1. High Energy Accelerator Research Organization, Tsukuba, Japan; 2. National Institute for Materials Science, Tsukuba, Japan*

GS-06. Generalized Dynamic Hysteresis Model for Improved Iron Loss Estimation of Complex Flux Waveforms. *L. Chang¹ and T.M. Jahns¹* *1. Electrical and Computer Engineering, University of Wisconsin- Madison, Madison, WI, United States*

GS-07. Dzyaloshinski-Moriya Micromagnetism. *R. Skomski¹ and D.J. Sellmyer¹ 1. Physics and Astronomy & NCMN, University of Nebraska, Lincoln, NE, United States*

GS-08. Computing resonant modes and excitation states in micromagnetic systems with a finite-element based frequency domain solver. *Z. Lin¹, X. Wang¹ and V. Lomakin¹ 1. University of California- San Diego, La Jolla, CA, United States*

FRIDAY
AFTERNOON
1:30

SALON 2

Session HA
**MAGNETISM RESEARCH USING X-RAY FREE
ELECTRON LASERS**

Peter Fischer, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA, United States

1:30

HA-01. Energy and Angular Momentum Transfer during Ultrafast Demagnetization of Ferromagnetic Alloys. (Invited) *E. Jal¹, B. Vodungbo¹, F. Capotondi², G. Lambert³, C. von korff Schmising⁴ and J. Lüning¹ 1. LCPMR, Sorbonne Université, Paris, France; 2. Elettra-Sincrotrone Trieste, Trieste, Italy; 3. LOA, CNRS, Palaiseau, France; 4. MBI, Berlin, Germany*

2:06

HA-02. Ultrafast energy- and momentum-resolved dynamics of magnetic correlations in the photo-doped Mott insulator Sr_2IrO_4 . (Invited) *M.P. Dean¹ 1. Condensed Matter Physics and Materials Science, Brookhaven National Laboratory, Upton, NY, United States*

2:42

HA-03. Ultrafast correlations between spins, electrons and lattice studied by x-rays. (Invited) *U. Staub¹ 1. Swiss Light Source, Paul Scherrer Institute, Villigen, Switzerland*

3:18

HA-04. Hot electron transport and ultrafast nonlocal magnetic response. (Invited) *S. Eisebitt¹ 1. Max Born Institute, Berlin, Germany*

3:54

HA-05. Spontaneous Fluctuation of Skyrmions in FeGd Thin Film. (Invited) *S. Roy¹ 1. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA, United States*

Session HB

SPIN TRANSPORT & RELAXATION IN NANOSCALE MATERIALS AND DEVICES

Joseph Sklenar, Chair

University of Illinois Urbana-Champaign, Urbana, IL, United States

1:30

- HB-01. Record quality factor of 170,000 in mutually synchronized spin Hall nano-oscillator arrays.** *M. Zahedinejad¹, A.A. Awad¹, S. Muralidhar¹, M. Dvornik¹ and J. Åkerman¹*
1. Physics, University of Gothenburg, Gothenburg, Sweden

1:42

- HB-02. High Write Endurance of over 10^{12} Cycles in Spin Current Type Magnetic Memory.** *Y. Shiokawa¹, E. Komura¹, Y. Ishitani¹, A. Tsumita¹, K. Suda¹, Y. Kakinuma¹ and T. Sasaki¹*
1. Technology & Intellectual Property HQ, TDK Corporation, Ichikawa, Japan

1:54

- HB-03. Spin-currents and THz emission from optimized 3d/5d heavy metals interfaces.** *T. Dang¹, H. Nong², J. Hawecker², Q. Barbedienne¹, V. Volpe¹, J. George¹, S. Collin¹, P. Bortolotti³, L. Vila⁴, J. Tignon², S. Dhillon² and H. Jaffres¹*
1. Unité Mixte de Physique CNRS-Thales, CNRS, Palaiseau, France; 2. LPA, ENS, Paris, France; 3. Thales Research and Technology, Thales, Palaiseau, France; 4. CEA-SPINTEC, CEA, Grenoble, France

2:06

- HB-04. Synchronization of spin-torque oscillators via spin pumping.** *T. Taniguchi¹* *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

2:18

- HB-05. Elliott-Yafet Scaling in Cu Non-Local Spin Valves and the Impact of Magnetic Impurities.** *J.D. Watts^{1,2}, L. O'Brien^{3,2}, J.S. Jeong², A. Mkhoyan², P.A. Crowell¹ and C. Leighton²*
1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN, United States; 2. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, United States; 3. Physics, University of Liverpool, Liverpool, United Kingdom

2:30

- HB-06. Separating Spin and Charge Effects in Non-local Transport Driven By the Spin Hall Effect.** *D. Wesenberg¹, R. Bennet¹, M. Roos¹, T. Liu², M. Wu² and B.L. Zink¹* *1. Physics & Astronomy, University of Denver, Denver, CO, United States; 2. Physics, Colorado State University, Fort Collins, CO, United States*

- HB-07. Spin-orbit effects and hot-carrier transport in graphene-based devices. (Invited)** L.A. Benitez^{1,2}, J.F. Sierra¹, W. Savero-Torres¹, F. Bonell¹, A. Arrighi^{1,2}, M.V. Costache¹ and S.O. Valenzuela^{1,3} 1. Catalan Institute of Nanoscience and Nanotechnology (ICN2), CSIC-BIST, Bellaterra, Spain; 2. Universidad Autonoma de Barcelona, Bellaterra, Spain; 3. Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain

- HB-08. Cascaded All-Carbon Spin Logic based on Graphene Nanoribbon Magnetoresistance.** J.S. Friedman¹ 1. Electrical & Computer Engineering, The University of Texas at Dallas, Richardson, TX, United States

- HB-09. Proximity magneto-resistance in graphene induced by magnetic insulators.** D.A. Solis², A. Hallal², X. Waintal¹ and M. Chshiev¹ 1. Univ. Grenoble Alpes, INAC-SPSMS/ CEA, Grenoble, France; 2. SPINTEC, Univ. Grenoble Alpes, CNRS, CEA-INAC, Grenoble, France

- HB-10. Unravelling Dzyaloshinskii–Moriya interaction and chiral nature of Graphene/Cobalt interface.** F. Ajejas¹, A. Gudin¹, J. Diez^{1,2}, P. Ollerros¹, L. de Melo Costa¹, A. Anadon¹, R. Guerrero¹, S. Pizzini³, J. Vogel³, M. Valvidares⁴, P. Gargiani⁴, M. Varela⁵, J. Camarero^{1,2}, R. Miranda^{1,2} and P. Perna¹ 1. IMDEA Nanociencia, Madrid, Spain; 2. Universidad Autonoma de Madrid, Madrid, Spain; 3. Institut Néel, Grenoble, France; 4. ALBA synchrotron, Cerdanyola del Valles, Spain; 5. Universidad Complutense de Madrid, Madrid, Spain

- HB-11. Self-Stabilizing Superfluidic Transport in Magnetic Thin Films in the Presence of Non-Local Dipole-Dipole Interactions.** T. Schneider^{1,2}, D.M. Hill³, A. Kakay¹, K. Lenz¹, J. Lindner¹, J. Fassbender¹, Y. Tserkovnyak³, I. Krivorotov⁴ and I. Barsukov⁵ 1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Department of Physics, TU Chemnitz, Chemnitz, Germany; 3. Department of Physics and Astronomy, University of California, Los Angeles, Los Angeles, CA, United States; 4. Physics and Astronomy, University of California, Irvine, Irvine, CA, United States; 5. Physics and Astronomy, University of California, Riverside, Riverside, CA, United States

- HB-12. Oxygen as key element for the correlation of bistability and magnetoresistance in organic spintronic devices.** I. Bergenti¹, F. Borgatti¹, A. Riminucci¹ and V.A. Dediu¹ 1. ISMN-CNR, Bologna, Italy

Session HC
SKYRMIONS IV

Sophie Morley, Chair

University of California - Santa Cruz, Santa Cruz, CA, USA

1:30

- HC-01. Generation of skyrmion bubbles in all-perpendicular nanocontact spin-torque oscillators.** *M. Ahlberg¹, S. Chung^{2,3}, T.Q. Le², H. Mazraati², A. Houshang¹, S. Jiang², A.T. Nguyen⁵, M. Weigand⁴, E.J. Goering⁴, G.A. Schütz⁴, J. Gräfe⁴ and J. Åkerman^{1,2}* *1. University of Gothenburg, Gothenburg, Sweden; 2. KTH Royal Institute of Technology, Stockholm, Sweden; 3. Uppsala University, Uppsala, Sweden; 4. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 5. Vietnam Academy of Science and Technology, Hanoi, Vietnam*

1:42

- HC-02. Current-induced dynamics of magnetic skyrmions in ultrathin Pt/Co/MgO nanostructures.** *R. Juge¹, S. Je¹, D. de Souza Chaves², S. Pizzini², L.D. Buda-Prejbeanu¹, L. Aballe³, M. Foerster³, A. Locatelli⁴, T.O. Montes⁴, F. Maccherozzi⁵, S.S. Dhesi⁵, S. Auffret¹, G. Gaudin¹, J. Vogel² and O. Boulle¹* *1. INAC-SPINTEC, Université Grenoble Alpes, CEA, CNRS, Grenoble INP, Grenoble, France; 2. Institut Néel, Université Grenoble Alpes, CNRS, Grenoble, France; 3. Circe Beamline, ALBA Synchrotron, Cerdanyola del Vallès, Barcelona, Spain; 4. Nanospectroscopy Beamline, Elettra Synchrotron, Basovizza, Trieste, Italy; 5. I06 Beamline, Diamond Light Source, Didcot, United Kingdom*

1:54

- HC-03. Zero Field Room Temperature Magnetic Skyrmions in Ultrathin Magnetic Layers using Exchange Bias.** *K. Rana¹, R. Juge¹, D. de Souza Chaves², S. Pizzini², S.L. Denmat², L. Aballe³, M. Foerster³, A. Locatelli⁴, T.O. Montes⁴, S. Auffret¹, G. Gaudin¹, O. Fruchart¹, J. Vogel² and O. Boulle¹* *1. SPINTEC, CEA-INAC, CNRS, Université Grenoble Alpes, Grenoble INP, Grenoble, France; 2. Institut Néel, CNRS, Université Grenoble Alpes, Grenoble, France; 3. ALBA Synchrotron Light Facility, Cerdanyola Del Vallès, Barcelona, Spain; 4. Elettra Sincrotrone, Trieste, Italy*

2:06

- HC-04. Thermally assisted skyrmions creation in Pt/Co/Ta multilayer films.** *S. Zhang¹, J. Zhang¹, Y. Wen¹, E.M. Chudnovsky² and X. Zhang¹* *1. Physical Science and Engineering Division (PSE), King Abdullah University of Science & Technology, Thuwal, Saudi Arabia; 2. The City University of New York, New, NY, United States*

HC-05. Skyrmions and Skyrmion-bubbles in Ultrathin Films

Modified by Ga⁺ Ion Irradiation. A.S. Samardak¹, A. Kolesnikov¹, E. Pustovalov¹, A.V. Sadovnikov^{2,3}, S. Nikitov^{2,3} and A. Ognev¹ 1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Laboratory “Metamaterials”, Saratov State University, Saratov, Russian Federation; 3. Kotel’nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation

2:30

HC-06. Realization of magnetic skyrmions in thin films at ambient conditions.

L. DeBeer-Schmitt¹, R.D. Desautels¹, S.A. Montoya², J. Borchers³, S. Je⁴, M. Im^{4,5}, M. Fitzsimmons¹, E. Fullerton⁶ and D.A. Gilbert⁷ 1. Neutron Scattering Division, Oak Ridge National Laboratory, Oak Ridge, TN, United States; 2. Space and Naval Warfare Systems Center Pacific, San Diego, CA, United States; 3. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States; 4. Center for X-ray Optics, Lawrence Berkeley National Laboratory, Berkely, CA, United States; 5. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Democratic People’s Republic of Korea; 6. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA, United States; 7. Department of Materials Engineering, University of Tennessee, Knoxville, TN, United States

2:42

HC-07. Investigating the physics of skyrmions in ultrathin ferromagnets with a scanning-NV magnetometer.

M. Akthar¹, A. Hrabec^{2,3}, A. Haykal¹, I. Gross¹, S. Chouaieb¹, M. Belmeguenai⁴, M. Gabor⁵, P. Maletinsky⁶, J. Sampaio², A. Thiaville², S. Rohart² and V. Jacques¹ 1. L2C, CNRS and Université Montpellier, Montpellier, France; 2. LPS, CNRS and Université Paris Saclay, Orsay, France; 3. ETH, Zurich, Switzerland; 4. LSPM, CNRS and Université Paris 13, Villetaneuse, France; 5. Technical University of Cluj-Napoca, Cluj-Napoca, Romania; 6. Basel University, Basel, Switzerland

2:54

HC-08. Enhanced Skyrmion Stability Induced by Antiferromagnetic Coupling in Ferrimagnets.

C.T. Ma¹, Y. Xie², A. Ghosh² and J. Poon¹ 1. Physics, University of Virginia, Charlottesville, VA, United States; 2. Electrical and Computer Engineering, University of Virginia, Charlottesville, VA, United States

3:06

HC-09. Temperature-dependent motion and size of ferrimagnetic skyrmions.

Z. Zhang¹, Y. Zhang¹, Z. Zheng¹, J. Nan¹, K. Zhang¹, Y. Zhang¹ and W. Zhao¹ 1. Beihang University, Beijing, China

3:18

HC-10. Current-Induced Stochastic Skyrmion Dynamics for Reservoir Computing.

S. Li^{1,2}, J. Bai¹, W. Kang¹ and W. Zhao¹ 1. Fert Beijing Institute, BDBC, and School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Shenyuan Honors College of Beihang University, Beijing, China

- HC-11. Topological Hall effect in diffusive ferromagnetic thin films with spin-flip scattering.** S. Zhang¹ and O. Heinonen^{1,2}
1. Materials Science Division, Argonne National Laboratory, Lemont, IL, United States; 2. Northwestern-Argonne Institute of Science and Technology, Evanston, IL, United States

- HC-12. Spin colossal magnetoresistance.** Z. Qiu¹, D. Hou², J. Barker², K. Yamamoto³, O. Gomonay⁴ and E. Saitoh⁵
1. School of Materials Science and Engineering, Dalian University of Technology, Dalian, China; 2. Tohoku University, Sendai, Japan; 3. Japan Atomic Energy Agency, Tokai, Japan; 4. Johannes Gutenberg Universität Mainz, Mainz, Germany; 5. University of Tokyo, Tokyo, Japan

- HC-13. Non-local spin transport via sustained noncollinear textures in ferromagnetic nanowires.** E. Iacocca^{1,2}, T. Silva² and M. Hoefer¹
1. Applied Mathematics, University of Colorado, Boulder, CO, United States; 2. NIST, Boulder, CO, United States

- HC-14. Interfacial Coupling and Negative Spin Hall Magnetoresistance in Pt/NiO/YIG.** Z. Luan¹, F. Chang^{2,4}, P. Wang¹, L. Zhou¹, J. Cooper³, C. Kinane³, S. Langridge³, J. Cai², J. Du¹, T. Zhu² and D. Wu¹
1. Nanjing University, Nanjing, China; 2. Chinese Academy of Sciences, Beijing, China; 3. ISIS Neutron and Muon Source, Oxon, United Kingdom; 4. Dongguan Neutron Science Center, Dongguan, China

- HC-15. Room temperature observation of different skyrmion phases in double wedges of Ta/FeCoB(t_{FeCoB})/Ta(t_{Ta})Ox.**
T. Srivastava¹, W. Lim¹, A. Bernand-Mantel², L. Ranno², S. Pizzini², M. Belmeguenai³, Y. Roussigné³, S. Auffret¹, M. Chshiev¹, C. Baraduc¹ and H. Bea¹ 1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-Spintec, Grenoble, France; 2. Univ. Grenoble Alpes, CNRS, Institut Néel, Grenoble, France; 3. Laboratoire des Sciences des Procédés et des Matériaux, Université Paris 13 Nord, Villetaneuse, France

Session HD
SPIN TORQUE OSCILLATORS AND SPIN WAVES

Bhaskaran Muralidharan, Chair
Indian Institute of Technology, India, India

1:30

- HD-01. Spin transfer torque driven higher-order propagating spin waves in nano-contact magnetic tunnel junctions. (Invited)** *J. Åkerman*¹, A. Houshang¹, R. Khymyn¹, H. Fulara¹, A. Gangwar¹, M. Haidar¹, S.R. Etesami¹, R. Ferreira², P.P. Freitas² and M. Dvornik¹ *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. INL - International Iberian Nanotechnology Laboratory, Braga, Portugal*

2:06

- HD-02. Identification of spin wave modes in perpendicular MTJs devices by field modulated spin-torque ferromagnetic resonance.** J. Hang¹, J. Beik Mohammadi¹, G. Wolf², B. Kardasz², S. Petit-Watelot³, S. Mangin³ and A.D. Kent¹
1. Physics, New York University, New York, NY, United States; 2. Spin Transfer Technologies, Fremont, CA, United States; 3. Institut Jean Lamour, Nancy, France

2:18

- HD-03. Resonant acoustic wave assisted spin-transfer-torque switching of single domain nanomagnets.** A. Roe¹, M. Azam¹, D. Bhattacharya¹ and J. Atulasimha¹ *1. Virginia Commonwealth Univ., Richmond, VA, United States*

2:30

- HD-04. Edge state of nanoscale magnetic tunnel junctions proved by spin-wave resonance.** M. Shinozaki¹, T. Dohi¹, J. Igarashi¹, J. Llandro^{1,2}, S. Kanai^{1,2}, S. Fukami^{1,2}, H. Sato^{1,2} and H. Ohno^{1,2}
1. RIEC, Tohoku University, Sendai, Japan; 2. CSRN, Tohoku University, Sendai, Japan

2:42

- HD-05. Comparison of the spin-transfer torque mechanisms efficiency in a three-terminal spin-torque oscillator.** E. Jué¹, W. Rippard¹ and M. Pufall¹ *1. National Institute of Standards and Technology, Boulder, CO, United States*

2:54

- HD-06. Demonstration of rf functions for spin torque oscillators based on fully perpendicular magnetic tunnel junctions.** V. Iurchuk¹, N. Lamard¹, J. Langer², J. Wrona², I. Prejbeanu¹, L. Vila¹, R.C. Sousa¹ and U. Ebels¹ *1. Univ. Grenoble Alpes, CEA, CNRS, G-INP*, INAc-SPINTEC, * Institute of Engineering Univ. Grenoble Alpes, SPINTEC, Grenoble, France; 2. Singulus Technologies AG, Kahl, Germany*

- HD-07. Role of non-linearity for 1/f flicker noise in vortex spin transfer nanooscillators.** S. Wittrock¹, S. Tsunegi², K. Yakushiji², A. Fukushima², H. Kubota², P. Bortolotti¹, U. Ebels³, S. Yuasa², G. Cibié⁴, S. Galliou⁵, E. Rubiola⁵ and V. Cros¹ *1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. National Institute of Advanced Industrial Science and Technology (AIST), Spintronics Research Center, Tsukuba, Japan; 3. Univ. Grenoble Alpes, CEA, INAC-SPINTEC, CNRS, SPINTEC, Grenoble, France; 4. Centre National d'Etudes Spatiales (CNES), Toulouse, France; 5. FEMTO-ST Institute, CNRS, Université Bourgogne Franche Comté, Besançon, France*

- HD-08. Phase-locking and modulation of nanocontact vortex oscillators.** J. Letang¹, M. Yoo¹, T. Devolder¹, J. Adam¹, S. Petit-Watelot², M. Hehn², K. Bouzehouane³, V. Cros³ and J. Kim¹ *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Université Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Institut Jean Lamour, CNRS, Université de Lorraine, Nancy, France; 3. Unité Mixte de Physique, CNRS, Thales, Université Paris-Sud, Université Paris-Saclay, Palaiseau, France*

- HD-09. Evaluation of short-term memory of spin torque oscillator with random voltage pulses.** S. Tsunegi¹, T. Taniguchi¹, S. Miwa², K. Nakajima³, K. Yakushiji¹, A. Fukushima¹, S. Yuasa¹ and H. Kubota¹ *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. The Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 3. Graduate School of Information Science and Technology, The University of Tokyo, Bunkyo-ku, Japan*

- HD-10. Phase shift keying in spin torque oscillators.** A. Litvinenko¹, P. Sethi¹, C. Murapaka¹, A. Jenkins², L. Vila¹, V. Cros³, P. Bortolotti⁴, R. Ferreira², B. Dieny¹ and U. Ebels¹ *1. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-Spintec, Grenoble, France; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal; 3. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 4. Thales TRT, Palaiseau, France*

- HD-11. Nonlinear dynamics of spin-torque nano-oscillators with delayed feedback.** J. Williams¹, D. Rontani², S. Petit-Watelot³, M. Sciamanna² and J. Kim¹ *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Laboratoire Matériaux Optiques, Photonique et Systèmes, CentraleSupélec, Université de Lorraine, Metz, France; 3. Institut Jean Lamour, CNRS, Université de Lorraine, Nancy, France*

- HD-12. In-line Spin Wave Majority Gate.** *G. Talmelli*^{1,2}, T. Devolder³, M. Heyns^{1,2}, I.P. Radu¹, C. Adelmann¹ and F. Ciubotaru¹
 1. imec, Leuven, Belgium; 2. KU Leuven, Leuven, Belgium;
 3. Centre de Nanosciences et de Nanotechnologies, Univ.Paris-Sud, Orsay, France

- HD-13. A fast coupled Landau-Lifshitz-Gilbert - Valet-Fert theory framework for micromagnetics.** *X. Wang*¹, A. Goncharov² and V. Lomakin¹ 1. Department of Electrical Computer Engineering, University of California, San Diego, La Jolla, CA, United States; 2. HGST, a Western Digital Company, San Jose, CA, United States

FRIDAY
 AFTERNOON
 1:30

VIRGINIA

Session HE SPINWAVES AND SPIN DYNAMICS

Philipp Pirro, Chair
 TU Kaiserslautern, Kaiserslautern, Germany

- HE-02. Spin-wave nonreciprocity on magnetization-graded ferromagnetic films.** *R. Gallardo*^{1,5}, P. Alvarado¹, T. Schneider^{2,3}, C.A. Gonzalez¹, A. Roldán⁴, K. Lenz², J. Lindner² and P. Landeros^{1,5} 1. Física, Universidad Técnica Federico Santa María, Valparaíso, Chile; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Department of Physics, Technische Universität Chemnitz, Dresden, Germany; 4. Universidad de Aysén, Coyhaique, Chile; 5. Center for the Development of Nanoscience and Nanotechnology (CEDENNA), Santiago, Chile

- HE-03. Theory of Emission of Coherent Spin Waves from Magnetic Interfaces Driven by a Uniform Microwave Magnetic Field.** *V. Poimanov*¹, A.N. Kuchko^{2,3} and V.V. Kruglyak⁴ 1. Donetsk National University, Donetsk, Ukraine; 2. Institute of Magnetism, Kiev, Ukraine; 3. Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine; 4. University of Exeter, Exeter, United Kingdom

- HE-04. Element specific time resolved visualization of spin wave modes with 50 nm resolution using Scanning Transmission X-ray Microscopy Ferromagnetic Resonance.** *T. Feggeler¹, T. Schaffers², S. Pile², B.W. Zingsem^{1,3}, C. Schöppner¹, R. Meckenstock¹, D. Spoddig¹, H. Ohldag⁴, A. Ney², M. Farle¹, H. Wende¹ and K.J. Ollefs¹* *1. Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany; 2. Institute of Semiconductor and Solid State Physics, Johannes Kepler University, Linz, Austria; 3. Ernst Ruska-Centre for Microscopy and Spectroscopy with Electrons, Forschungszentrum Jülich GmbH, Jülich, Germany; 4. Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Menlo Park, CA, United States*

- HE-05. X-ray microscopic imaging of sub-100 nm magnons.** *N. Traeger¹, P. Gruszecki², F. Lisiecki³, J. Förster¹, F. Gross¹, M. Weigand¹, P. Kuswik^{3,4}, J. Dubowik³, G.A. Schütz¹, M. Krawczyk² and J. Gräfe¹* *1. Modern Magnetic Systems, Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 3. Institute of Molecular Physics, Polish Academy of Sciences, Poznan, Poland; 4. Centre for Advanced Technology, Adam Mickiewicz University, Poznan, Poland*

- HE-06. Improving Excitation and Detection of Propagating Spiral Spin Waves in Magnetic Nano-patches: Influence of Thickness and Shape.** *D. Osuna Ruiz¹, E.O. Burgos Parra¹, N. Bukin¹, A. Lara², F.G. Aliev², A.P. Hibbins¹ and F.Y. Ogrin¹* *1. University of Exeter, Exeter, United Kingdom; 2. Universidad Autonoma de Madrid, Madrid, Spain*

- HE-07. Spin-Wave Modes in sub-100 nm YIG Waveguides.** *A. Chumak¹, Q. Wang¹, B. Heinz¹, R.V. Verba², M. Kewenig¹, P. Pirro¹, M. Schneider¹, B. Lägel¹, C. Dubs³ and T. Brächer¹* *1. University of Kaiserslautern, Kaiserslautern, Germany; 2. Institute of Magnetism, Kyiv, Ukraine; 3. INNOVENT e.V., Jena, Germany*

- HE-08. Lateral thermal gradient on a YIG film/GGG system in a uniform excitation.** *E. Shigematsu¹, Y. Ando¹, S. Dushenko², T. Shinjo¹ and M. Shiraishi¹* *1. Department of Electronic Science and Engineering, Kyoto University, Kyoto, Japan; 2. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States*

- HE-09. Time-resolved imaging of the field- and current-induced domain wall motion dynamics in perpendicularly magnetized materials with sub-200 ps resolution.** *S. Finizio¹, S. Wintz^{1,2}, K. Zeissler³, S. Mayr¹, D. Bracher¹, A. Kleibert¹, C.H. Marrows³ and J. Raabe¹* *1. Swiss Light Source, Paul Scherrer Institut, Villigen PSI, Switzerland; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom*

- HE-10. Magnetization Dynamics of Single NiFe Elements Measured Driven by Spin Torque.** *S. Lendinez¹, T. Polakovic², J. Ding¹, M. Jungfleisch³, J. Pearson¹, A. Hoffmann¹ and V. Novosad¹*
1. Materials Science Division, Argonne National Laboratory, Argonne, IL, United States; 2. Physics Division, Argonne National Laboratory, Argonne, IL, United States; 3. Department of Physics and Astronomy, University of Delaware, Newark, DE, United States

- HE-11. Off-Resonance Excitation of Spin Waves by a Thermal Four-Magnon Process.** *R.D. McMichael¹ and P.M. Haney¹*
1. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD, United States

- HE-12. Resonant properties of individual chains of dipolar coupled nanomagnets.** *B.W. Zingsem^{1,2}, T. Feggeler¹, A. Terwey¹, S. Ghaisari³, D. Spoddig¹, D. Faivre³, R. Meckenstock¹, M. Farle¹ and M. Winklhofer⁴*
1. Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany; 2. Ernst Ruska Centre for Microscopy and Spectroscopy with Electrons and Peter Gruenberg Institute, Forschungszentrum Juelich GmbH, Juelich, Germany; 3. Department of Biomaterials, Max-Planck Institute of Colloids and Interface Science, Golm, Germany; 4. School of Mathematics and Science, University of Oldenburg, Oldenburg, Germany

- HE-13. Earthquake-like dynamics of weakly-driven domain walls in ultrathin magnetic film.** *G. Durin¹, A. Casiraghi¹, L. Herrera Diez², D. Ravelosona², L. Foini³ and A. Rosso⁴*
1. INRiM, 10135 Torino, Italy; 2. Centre de Nanosciences et de Nanotechnologies, CNRS, 91405 Orsay, France; 3. Laboratoire de Physique Statistique, Ecole Normale Supérieure, 75005 Paris, France; 4. LPTMS, 91405 Orsay, France

- HE-14. Wire-edge-dependent magnetic domain wall creep.** *L. Herrera Diez¹, V. Jeudy², G. Durin³, A. Casiraghi³, Y. Liu¹, M. Voto⁴, G. Agnus¹, D. Bouville¹, L. Vila⁵, J. Langer⁶, B. Ocker⁶, L. Lopez-Diaz⁴ and D. Ravelosona¹*
1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 2. Laboratoire de Physique des Solides, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 3. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 4. Departamento de Física Aplicada, Universidad de Salamanca, Salamanca, Spain; 5. Univ. Grenoble Alpes, CEA, CNRS, Grenoble INP, INAC-Spintec, Grenoble, France; 6. Singulus Technology AG, Kahl am Main, Germany

- HE-15. Exploration of Topological Defects in Kagome Artificial Spin Ice via Spin Wave Spectroscopy, Magnetic Force Microscopy and micro-focus Brillouin Light Scattering.** *V.S. Bhat¹, K. Baumgärtl¹, S. Watanabe¹ and D. Grundler¹*
1. Institute of Materials and Laboratory of Nanoscale Magnetic Materials and Magnonics, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

FRIDAY
 AFTERNOON
 1:30

DELAWARE

Session HF NOVEL SENSOR ARCHITECTURES AND APPLICATIONS

Evangelos Hristoforou, Chair
 National Technical University of Athens, Athens, Greece

1:30

- HF-01. Low-noise Orthogonal Fluxgate using Flipped-Current Joule Annealing.** *M. Butta¹, M. Janosek¹ and B. Schutte¹*
1. Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czechia

1:42

- HF-02. Non-retangular shaped magnetoelastic ribbons for the accurate detection of pathogen agents.** *A. Lopes¹, P.G. Saiz¹, A. Lasheras², A. Muela² and J. Gutierrez²* *1. BCMaterials, Leioa, Spain; 2. UPV/EHU- Universidad del País Vasco, Leioa, Spain*

1:54

- HF-03. Additive Manufactured and Topology Optimized Passive Shimming Elements for Permanent Magnetic Systems.** *C. Huber^{1,4}, M. Goertler³, C. Abert¹, F. Bruckner^{1,4}, M. Groenefeld², I. Teliban² and D. Suess^{1,4}* *1. Physics of Functional Materials, University of Vienna, Vienna, Austria; 2. Magnetfabrik Bonn GmbH, Bonn, Germany; 3. Institute for Surface Technologies and Photonics, Joanneum Research Forschungsgesellschaft GmbH, Niklasdorf, Austria; 4. Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna, Austria*

2:06

- HF-04. Calibration of Room-Temperature Magnetic Sensor Arrays for Biomagnetic Measurement.** *Y. Adachi¹, D. Oyama¹, Y. Terazono², T. Hayashi², T. Shibuya² and S. Kawabata³*
1. Applied Electronics Laboratory, Kanazawa Institute of Technology, Kanazawa, Japan; 2. Advanced Product Development Center, TDK Corporation, Tokyo, Japan; 3. Department of Advanced Technology in Medicine, Tokyo Medical and Dental University, Tokyo, Japan

- HF-05. Highly Compliant Planar Hall Effect Sensor With Sub 50 nT Sensitivity.** P.N. Granell^{1,2}, G. Wang¹, G.S. Cañon Bermudez¹, T. Kosub¹, F. Golmar^{3,4}, L. Steren^{4,5}, J. Fassbender¹ and D. Makarov¹ *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Instituto Nacional de Tecnología Industrial, San Martín, Argentina; 3. Universidad Nacional de San Martín, San Martín, Argentina; 4. CONICET, Buenos Aires, Argentina; 5. Instituto de Nanociencia y Nanotecnología, San Martín, Argentina*

- HF-06. Low power in-situ calibration of a 3 axial magnetic sensor.** E. Weiss¹, A. Shavit², R. Alimi¹ and E. Fisher¹ *1. Technology, Soreq NRC, Yavne, Israel; 2. School of Computer Science and Engineering, Hebrew University of Jerusalem, Jerusalem, Israel*

- HF-07. Suspended Magnetoelectric Heterostructures as Resonators for Magnetic Field Detection. (Invited)** S.P. Bennett², M. Staruch², J.W. Baldwin¹, B. Matis¹, K. Bussmann² and P. Finkel² *1. Acoustics Division, The U.S. Naval Research Laboratory, Washington, DC, United States; 2. Materials Science and Technology Division, The U.S. Naval Research Laboratory, Washington, DC, United States*

- HF-08. Performance-Enhancing Anchor Design for NEMS Magnetoelectric antennas.** X. Liang¹, H. Chen¹, N. Sun¹, C. Tu¹, Y. Wei¹, C. Dong¹, Y. He¹, Y. Zhang^{1,2}, H. Lin¹ and N. Sun¹ *1. ECE, Northeastern University, Boston, MA, United States; 2. Sichuan University, Chengdu, China*

- HF-09. NEMS Direct ME Coupling Simulation and Demonstration.** H. Lin¹, N. Sun¹, X. Liang¹ and N.X. Sun¹ *1. Northeastern University, Boston, MA, United States*

- HF-10. Performance enhancement of a conformal antenna on a conductive substrate using a high-impedance magnetic metasurface layer.** I. Lisenkov¹, V. Tyberkevych², A.N. Slavin² and N. Sun¹ *1. Electrical and Computer Engineering Department, Northeastern University, Boston, MA, United States; 2. Department of Physics, Oakland University, Rochester, MI, United States*

- HF-11. Flexible Hall sensors based on laser induced graphene.** A. Kaidarova¹, S. Aldhurai¹, D. Lago-Cachón¹, W. Zhang¹, A. Almansouri¹, L. Swanepoel¹, M. Khan¹, Y. Mashraei¹, U. Buttner¹ and J. Kosel¹ *1. Computer, Electrical and Mathematical Sciences & Engineering, King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia*

- HF-12. 2-Axis magnetic planar Hall effect sensor with pico-Tesla resolution.** *H. Nhalil*¹, P.T. Das¹, A. Grosz², V. Mor¹ and L. Klein¹ *1. Physics, Bar-Ilan University, Ramat Gan, Israel; 2. Department of Electrical and Computer Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel*

FRIDAY
AFTERNOON
1:30

WASHINGTON 1

Session HG

TOPOLOGICAL INSULATORS AND MAGNETISM IN 2D MATERIALS

Alexander Grutter, Chair
National Institute of Standards and Technology,
Gaithersburg, MD, United States

1:30

- HG-01. Investigating magnetic order in magnetically doped topological insulator heterostructures.** *L.B. Duffy*^{1,2} *1. Condensed Matter Physics, University of Oxford, Oxford, United Kingdom; 2. Rutherford Appleton Laboratory, Oxford, United Kingdom*

1:42

- HG-02. Effect of spin-orbit coupling and magnetic strength on Weyl semimetallic and Chern insulating phase of magnetic Bi_2MnX_4 (X= Se, Te).** *S. Chowdhury*¹, K. Garrity¹ and F. Tavazza¹ *1. NIST, Gaithersburg, MD, United States*

1:54

- HG-03. Strain-induced nonlinear spin Hall effect in topological Dirac semimetal.** *Y. Araki*^{1,2} *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan*

2:06

- HG-04. Significant Dzyaloshinskii–Moriya Interaction at Graphene–Ferromagnet Interfaces due to the Rashba Effect. (Invited)** *A.K. Schmid*¹ *1. Molecular Foundry, Lawrence Berkeley Lab, Berkeley, CA, United States*

2:42

- HG-05. Room temperature ferromagnetism and exchange bias effect in magnetic van der Waals heterostructures.** V. Kalappattil¹, R. Das¹, T. Eggers¹, M. Bonilla¹, S. Kolekar¹, M. Batzill¹ and M. Phan¹ *1. Physics, University of South Florida, Tampa, FL, United States*

- HG-06. Magnetic and Electronic Properties of Exfoliated Fe_{2.7}GeTe₂ Nanoflakes.** W. Kim¹, D. Kim¹, Y. Liu², C. Petrovic², C. Jang¹, H. Ryu¹ and J. Choi¹ 1. *KIST, Seoul, The Republic of Korea;*
2. *Brookhaven National Laboratory, Upton, NY, United States*

- HG-07. First principles parameterization and atomistic spin dynamics of CrI₃ Van der Waals magnets.** R.F. Evans¹, E. Navarro-Moratalla² and E.G. Santos³ 1. *Department of Physics, University of York, York, United Kingdom;*
2. *Department of Physics, Massachusetts Institute of Technology, Cambridge, MA, United States;* 3. *School of Mathematics and Physics, Queens University Belfast, Belfast, United Kingdom*

- HG-08. Critical region phase transitions in the quasi-2D magnet CrCl₃.** N. Bykovetz¹, A. Hoser² and C. Lin¹ 1. *Physics, Temple University, Philadelphia, PA, United States;* 2. *Dept. Operation Reactor BER II, Helmholtz-Zentrum Berlin, Berlin, Germany*

- HG-09. Magnetic Properties of Transition Metal Doped MoS₂ Nano Sheets.** L.M. Martinez¹, J.A. Delgado¹, C.L. Saiz¹, A. Cosio¹, K. Gandha², C.I. Nlebedim² and S. Singamaneni¹ 1. *Physics, University of Texas at El Paso, El Paso, TX, United States;*
2. *Ames Laboratory, Critical Materials Institute, Ames, IA, United States*

- HG-10. Influence of Cobalt Substitution on the Magnetism of NiBr₂.** B.K. Rai¹, A. Christianson¹ and A. May¹ 1. *Materials Science and Technology Division, Oak Ridge National Lab, Oak Ridge, TN, United States*

- HG-11. Unique Raman Capabilities for Investigating Magnetic Layered MPS₃ Materials.** A. McCreary¹, J.R. Simpson¹, J. Cao², J.E. Douglas¹, R. Shull¹, C. Dennis¹, X. Ling² and A.R. Hight Walker¹ 1. *National Institute of Standards and Technology, Gaithersburg, MD, United States;* 2. *Boston University, Boston, MA, United States*

- HG-12. A novel study on soft ferromagnetic nature of molybdenum sulphide (MoS₂) nano flowers.** N. Kaur¹, R. Mir¹ and O. Pandey¹ 1. *School of Physics and Materials Science, Thapar Institute of Engineering and Technology, Patiala, India*

- HG-13. Ferromagnetism created from 2D heterostructures.** C. Gong¹, Y. Wang¹ and X. Zhang¹ 1. *University of California, Berkeley, Berkeley, CA, United States*

Session HH
**MAGNETORESISTANCE, HALL EFFECT AND
RELATED EFFECTS**

Hiroaki Sukegawa, Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan

1:30

- HH-01. Efficient magnetization switching by spin-orbit torque in a single layer of perpendicularly magnetized ferromagnetic semiconductor GaMnAs.** *M. Jiang*¹, H. Asahara¹, S. Sato¹, T. Kanaki¹, H. Yamasaki¹, S. Ohya^{1,2} and M. Tanaka^{1,2}
1. Electrical Engineering and Information Systems, The University of Tokyo, Tokyo, Japan; 2. Center for Spintronics Research Network (CSRN), Graduate School of Engineering, The University of Tokyo, Tokyo, Japan

1:42

- HH-02. Sign reversal of spin Hall magnetoresistance in Cr-Py bi-layer.** *S. Dutta*¹, A. Bose¹, A.S. Shukla¹ and A. Tulapurkar¹
1. Electrical Engineering, Indian Institute of Technology Bombay, Mumbai, India

1:54

- HH-03. Magnetotransport Properties in Facing-Target Sputtered Fe₃O₄ Films near Verwey Temperature.** *X. Liu*¹ and *W. Mi*¹ *1. Department of Applied Physics, Tianjin University, Tianjin, China*

2:06

- HH-04. Detection of the magnetic proximity effect in perpendicularly magnetised Heusler alloy/Pd bilayers probed with the anomalous Hall effect.** *S. Granville*^{1,2}, B. Ludbrook^{3,2} and T. Butler¹ *1. Robinson Research Institute, Victoria University of Wellington, Lower Hutt, New Zealand; 2. MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand; 3. School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand*

2:18

- HH-05. Origin of the Specific Magnetoresistance in Fe/X (X=Pt, CuO_x, Al₂O₃) Bilayers.** *S. Zheng*¹, K. Meng¹, X. Xu¹, J. Miao¹, J. Chen¹, Y. Wu¹ and Y. Jiang¹ *1. University of Science and Technology Beijing, Beijing, China*

- HH-06. The magnetic structure evolution, magnetocaloric and giant anomalous Hall effect of NdMn_2Ge_2 compound.** S. Wang¹, D. Liu^{1,2}, Y. Hao³, H. Zhang² and Q. Huang⁴ 1. *Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing, China;* 2. *Key Laboratory of Advanced Functional Materials, Education Ministry of China, Beijing University of Technology, Beijing, China;* 3. *State Key Laboratory of Surface Physics and Department of Physics, Fudan University, Shanghai, China;* 4. *NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD, United States*

- HH-07. Magnetic and Electrical Properties of Compensated Ferrimagnet $\text{Mn}_x\text{Gd}_y\text{Ge}$ Thin Films.** L. Ren¹, K. Cai¹, T. Herng², Y. Liu¹, J. Ding², H. Yang¹ and K. Teo¹ 1. *Department of Electrical & Computer Engineering, National University of Singapore, Singapore, Singapore;* 2. *Department of Materials Science & Engineering, National University of Singapore, Singapore, Singapore*

- HH-08. Magnetoresistance of Spin-Filter CrVTiAl Films.** G.M. Stephen¹, C. Lane¹, G. Buda¹, D. Graf², S. Kaprzyk^{3,1}, B. Barbiellini^{4,1}, L.H. Lewis¹, A. Bansil¹ and D. Heiman¹ 1. *Northeastern University, Boston, MA, United States;* 2. *National High Magnetic Field Lab, Tallahassee, FL, United States;* 3. *AGH University of Science and Technology, Krakow, Poland;* 4. *Lappeenranta University of Technology, Lappeenranta, Finland*

- HH-09. Anomalous Hall and Nernst effects on Co_2TiSn and $\text{Co}_2\text{Ti}_{0.6}\text{V}_{0.4}\text{Sn}$ Heusler thin films.** J. Hu^{1,5}, B. Ernst², S. Tu^{1,5}, M. Kuvezdic³, A. Hamzic^{3,1}, E. Tafr³, M. Basletic³, Y. Zhang¹, A. Markou², C. Felser², A. Fert^{4,1}, W. Zhao¹, J. Ansermet⁵ and H. Yu¹ 1. *Beihang University, Beijing, China;* 2. *Max Planck Institute for Chemical Physics of Solids, Dresden, Germany;* 3. *University of Zagreb, Zagreb, Croatia;* 4. *Universite Paris-Saclay, Palaiseau, France;* 5. *Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland*

- HH-10. Enhancement of the Spin-Orbit Coupling in Silicon by Bismuth Doping.** F. Rortais¹, S. Lee¹, R. Ohshima¹, S. Dushenko¹, Y. Ando¹ and M. Shiraishi¹ 1. *Kyoto University, Kyoto, Japan*

- HH-11. Magnetic phase transitions in mesoscopic epitaxial holmium thin films.** R. Medapalli¹, H. Ren¹, Y. Xiao¹, S. Sinha¹ and E. Fullerton¹ 1. *Center for Memory and Recording Research, University of California San Diego, La Jolla, CA, United States*

- HH-12. Origins of the unidirectional spin Hall magnetoresistance in metallic bilayers.** C. Avci^{1,2}, J. Mendil¹, G. Beach² and P. Gambardella¹ 1. *Materials, ETH Zürich, Zürich, Switzerland;* 2. *Materials Science and Eng., Massachusetts Institute of Technology, Cambridge, MA, United States*

3:54

- HH-13. Element and depth resolved analysis of magnetic moment in $\text{Co}_2\text{Fe}(\text{Ga}_{0.5}\text{Ge}_{0.5})/\text{Ag}$ structure by magnetic circular dichroism-hard x-ray photoelectron spectroscopy.** *J. Jung*¹, *Y. Sakuraba*¹, *T. Sasaki*¹, *Y. Miura*¹, *A. Yasui*², *Y. Takagi*², *K.R. Loku Singgappulige*², *T. Nakatani*¹ and *K. Hono*¹
1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan;
2. Japan Synchrotron Radiation Research Institute, Sayo, Japan

4:06

- HH-14. Improvement of band matching by monolayer Ni insertion at the $\text{Co}_2\text{FeGa}_{0.5}\text{Ge}_{0.5}/\text{Ag}$ interfaces in current-perpendicular-to-plane pseudo spin valves.** *B. Büker*^{1,2}, *J. Jung*², *Y. Sakuraba*², *Y. Miura*², *T. Sasaki*², *A. Hütten*¹ and *K. Hono*² *1. Department of Physics, Bielefeld University, Bielefeld, Germany; 2. Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

4:18

- HH-15. Heusler Alloy Films with Perpendicular Anisotropy Crystallised Below 100°C.** *W.J. Frost*¹, *M. Samiepour*¹ and *A. Hirohata*¹ *1. Department of Electronic Engineering, University of York, York, United Kingdom*

FRIDAY
AFTERNOON
1:30

WASHINGTON 5

Session HI MOTOR APPLICATIONS

Kais Atallah, Chair
University of Sheffield, Sheffield, United Kingdom

1:30

- HI-01. Fabrication and magnetic shielding properties of Ferro-Aluminum based sandwich composites.** *Q. Zhang*¹
1. Harbin Institute of Technology, Harbin, China

1:42

- HI-02. Analysis and Optimization of permanent magnet machines by modular poles.** *Y. Wang*¹, *H. Wang*¹, *W. Liu*¹ and *Q. Wang*¹
1. Nanjing University of Aeronautics and Astronautics, Nanjing, China

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- HI-03. Design and Comparison of High-Flexibility Double-Stator Toroidal-Winding PM Vernier Machine for Wave Energy Generation.** *J. Yu*¹ and *C. Liu*¹ *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong*

- HI-04. Design of Winding Configurations for Synchronous Generator with Uncontrolled Rectified Load.** Y. Shi¹, H. Wang¹ and Y. Wang¹ *I. Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China*

- HI-05. Performance Comparison between Ferrite-ASynRM and Interior PM Machine Drives for Electric Vehicle Applications.** Y. Hu¹ *I. Aviation Key Laboratory of Science and Technology on Aero Electromechanical System Integration, Nanjing Engineering Institute of Aircraft Systems, Nanjing, China*

- HI-06. Comparative Study of the Five-Phase and Three-Phase Permanent Magnet Synchronous Machines Having the Same Stator Laminations.** Y. Sui¹, P. Zheng¹ and Z. Yin¹ *I. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

- HI-07. Comparative Study of Coreless Stator Concentrated Winding Axial-Flux Permanent Magnet Machine with Different Slot-Pole Combinations.** C. Wang¹, W. Geng¹ and Z. Zhang¹ *I. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

- HI-08. No-load Iron Loss Analysis of a Radial Flux PMSM with an Amorphous Metal Stator Core.** W. Tong¹, S. Wu¹, L. Zhu¹ and J. Jia¹ *I. Shenyang University of Technology, Shen, China*

- HI-09. Analysis of a New Coupled Phenomenon in Electric Vehicle Charger.** Y. Xiao¹ and C. Liu¹ *I. School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong*

- HI-10. Proposal of simple wind vibration power generator using magnetostrictive material.** K. Hasegawa¹ and T. Ueno¹ *I. Kanazawa University, Kanazawa City, Japan*

- HI-11. CFD Modelling of Ferromagnetic Micromotors.** P.D. Inzani¹, A.D. Gilbert¹, G.R. Tabor¹, S.A. Horsley¹ and F.Y. Ogrin¹ *I. CEMPS, University of Exeter, Exeter, United Kingdom*

- HI-12. A New Type of Linear Magnetic Spring.** J. Bird¹ and H. Baninajar¹ *I. Electrical and Compute Engineering, Portland State University, Portland, OR, United States*

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Bang, T. (AL-05)	23	Beach, G. (EC-03)	125
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Bank, S.R. (AB-07)	3	Beach, G. (HH-12)	235
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Barbiellini, B. (HH-08)	235	Beik Mohammadi, J. (HD-02)	225
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Barman, A. (GM-07)	211	Bellaredj, M.L. (FH-10)	170
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Barra, A. (GB-06)	189	Belmeguenai, M. (DA-05)	98
Barra, A. (GD-08)	194	Belmeguenai, M. (FA-01)	153
Barra, A. (GH-10)	203	Belmeguenai, M. (HC-07)	223
Barranco, E.J. (GM-09)	211	Belmeguenai, M. (HC-15)	224
Barre, E. (AB-04)	3	Belmoubarik, M. (GC-06)	191
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Barton, C. (EH-13)	139	Ben, T. (EP-04)	150
Barton, L.X. (CA-02)	65	Bender, S. (AA-03)	2
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Barvat, A. (AJ-11)	21	Benitez, L.A. (HB-07)	221
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Bauer, J. (BR-06)	63	Berggren, K.K. (CC-11)	70
Bauer, J. (CB-12)	68	Bernand-Mantel, A. (FA-01)	153
Bauer, L. (GL-10)	210	Bernand-Mantel, A. (HC-15)	224
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Baumberger, F. (AB-11)	4	Berntsens, M. (EF-15)	135
Baumfeld, O.L. (DK-10)	113	Beron, F. (EH-03)	137
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Bez, H.N. (AE-02)	9	Borchers, J. (HC-06)	223
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Bhat, V.S. (ED-07)	128	Bortolotti, P. (FL-07)	177
Bhat, V.S. (GK-07)	208	Bortolotti, P. (HB-03)	220
Bhat, V.S. (HE-15)	230	Bortolotti, P. (HD-07)	226
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Bhattacharya, D. (HD-03)	225	Bosch-Santos, B. (GR-07)	217
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Bhatti, S. (GA-03)	187	Bose, A. (EF-09)	134
Bhowmik, D. (CC-04)	69	Bose, A. (FM-02)	178
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Boldrey, J. (CO-09)	91	Bryan, M.T. (CO-04)	91
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Bonell, F. (HB-07)	221	Bu, Y. (BM-09)	56
Bonilla, M. (HG-05)	232	Buchanan, K. (BD-08)	40
Bono, D. (EC-03)	125	Buchanan, K. (BF-09)	45
Bonville, P. (EE-02)	130	Büchner, B. (CN-04)	89
Boone, T. (FF-01)	164	Buchner, M. (CB-10)	67
Bora, T. (AN-03)	26	Bud'ko, S.L. (BI-01)	50
Borchers, J. (AH-07)	16	Bud'ko, S.L. (CI-08)	83
Borchers, J. (AH-11)	17	Buda-Prejbeanu, L.D. (AM-01)	24
Borchers, J. (AH-12)	17	Buda-Prejbeanu, L.D. (FF-03)	164
Borchers, J. (BC-14)	39	Buda-Prejbeanu, L.D. (FF-04)	164
Borchers, J. (DJ-06)	110	Buda-Prejbeanu, L.D. (FF-05)	164
Borchers, J. (FD-04)	160	Buda-Prejbeanu, L.D. (HC-02)	222

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Buettner, F. (EC-04)	125
Buettner, F. (EE-14)	132
Buettner, F. (GH-02)	202
Buffet, N. (FH-09)	170
Buhrman, R. (BB-12)	36
Buhrman, R. (CC-11)	70
Buhrman, R. (GD-01)	193
Buhrman, R. (GD-03)	193
Büker, B. (HH-14)	236
Bukin, N. (HE-06)	228
Buling, A. (BF-11)	45
Bull, C. (EH-13)	139
Bulte, J. (EB-05)	125
Bunyaev, S. (BD-14)	41
Bunyaev, S. (FC-13)	159
Bunyayev, S. (CR-04)	95
Burgos Parra, E.O. (GG-02)	199
Burgos Parra, E.O. (HE-06)	228
Burnell, G. (CF-03)	76
Burnett, R. (CC-10)	70
Bussmann, K. (HF-07)	231
Butch, N. (BC-14)	39
Butch, N. (EA-02)	123
Butler, T. (HH-04)	234
Butta, M. (HF-01)	230
Butterling, M. (EE-10)	131
Buttner, U. (HF-11)	231
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Cai, W. (BI-09)	51
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Cheng, Y. (BB-03)	35	Choudhary, R. (EI-13)	141
Cheng, Y. (EE-03)	130	Choudhary, R. (FP-04)	183
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Cho, J. (DP-09)	120	Chung, S. (AL-04)	23
Cho, J. (EC-07)	126	Chung, S. (EF-13)	134
Cho, S. (CK-09)	86	Chung, S. (HC-01)	222
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Cooke, J.R. (FG-08)	167
Cooley, J.A. (AE-09)	10
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Cui, B. (CI-09)	83
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Cui, J. (AE-12)	10
Cui, J. (AF-07)	12
Cui, J. (BN-07)	57
Cui, J. (CC-08)	70
Cui, J. (CI-09)	83
Cui, J. (EI-06)	140
Cui, W. (DK-01)	111
Cui, W. (DK-05)	112

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Cui, W. (EM-09)	147
Cui, Y. (FD-07)	161
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Das, R. (FM-03)	178
Das, R. (FM-04)	178
Das, R. (HG-05)	232
Das, S. (DE-02)	103
Das, S. (FB-01)	154
Dasari, K. (BE-01)	42
Dash, S. (FK-07)	175
Daum, M. (EA-02)	123
Davies, J.E. (AG-05)	14
Davis, A.K. (FH-10)	170
Day, T. (CL-09)	87
Dayton, I. (CC-10)	70
Dayton, I. (DD-05)	102
De Biasi, E. (DN-06)	117
De Biasi, E. (DN-07)	117
De Graef, M. (BO-01)	58
De Graef, M. (FC-07)	157
De Graef, M. (FG-06)	167
de la Barrière, O. (DO-01)	118
de la Barrière, O. (DR-05)	122
De Lillo, L. (AF-04)	11
De Long, L.E. (BH-05)	48
De Long, L.E. (BH-08)	49
de Loubens, G. (AJ-09)	20
de Loubens, G. (ED-02)	127
de Melo Costa, L. (HB-10)	221
de Oliveira, A.J. (GR-09)	218
De Rego, P.J. (AG-01)	13

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De Riz, A. (AC-11)	6
de Souza Chaves, D. (HC-02)	222
de Souza Chaves, D. (HC-03)	222
de Teresa, J. (EG-03)	135
De, A. (AJ-01)	19
De, A. (FM-06)	178
De, A. (GM-07)	211
Deac, A. (BH-02)	48
Deac, A. (FG-07)	167
Dean, M.P. (HA-02)	219
Deb, M. (AI-03)	18
DeBeer-Schmitt, L. (HC-06)	223
Decorse, C. (EE-02)	130
Dediu, V.A. (HB-12)	221
Deepchand, V. (FJ-04)	173
Deguchi, K. (CO-05)	91
DeLawder, K. (GE-13)	197
Delette, G. (CI-02)	82
Delgado, J.A. (HG-09)	233
Delimitis, A. (AM-10)	25
Delley, B. (BF-11)	45
Deman, A. (GF-05)	198
Demidov, V.E. (AJ-09)	20
Demidov, V.E. (BD-06)	40
Demidov, V.E. (CR-01)	95
Demidov, V.E. (DC-06)	101
Demidov, V.E. (ED-02)	127
Demir, Y. (GP-07)	214
Demokritov, S.O. (AJ-09)	20
Demokritov, S.O. (BD-06)	40
Demokritov, S.O. (CR-01)	95
Demokritov, S.O. (DC-06)	101
Demokritov, S.O. (ED-02)	127
Dendooven, J. (EE-10)	131
Deng, P. (DJ-10)	111
Deng, W. (DL-06)	114
Deng, Y. (DJ-02)	110
Denmat, S.L. (HC-03)	222
Denneulin, T. (BC-07)	38
Denneulin, T. (EG-02)	135
Dennis, C. (AH-07)	16
Dennis, C. (DG-06)	106
Dennis, C. (DI-02)	109
Dennis, C. (HG-11)	233
Dennis, K.W. (AF-07)	12
Dennis, K.W. (EI-06)	140
Derlet, P. (CC-08)	70
Desautels, R.D. (DE-08)	104
Desautels, R.D. (HC-06)	223
Desplat, L. (EC-09)	126
Detavernier, C. (EE-10)	131
Devlin, E. (BI-08)	51
Devlin, E. (CG-13)	79
Devolder, T. (HD-08)	226
Devolder, T. (HD-12)	227
Dey, T. (CN-04)	89
Dhagat, P.	123
Dhagat, P. (BD-13)	41
Dhar, S.K. (BF-08)	45
Dhar, S.K. (DD-01)	101
Dhesi, S.S. (HC-02)	222
Dhillon, S. (HB-03)	220
Dhuey, S. (BH-09)	49
Dhuey, S. (DF-02)	104
Dhuey, S. (FK-08)	176
Dhuey, S. (GH-02)	202
Di Carlo, D. (CE-03)	73
Di Carlo, D. (FK-05)	175
Diao, K. (DP-05)	120
Dias, E.T. (DR-04)	122
Díaz-García, Á. (AE-01)	9
Diaz, J. (FC-08)	158
Dieguez, L. (BA-01)	33
Dieny, B. (AG-10)	14
Dieny, B. (AI-11)	19
Dieny, B. (AM-01)	24
Dieny, B. (CF-09)	77

Dieny, B. (FF-03)	164
Dieny, B. (FF-04)	164
Dieny, B. (FF-05)	164
Dieny, B. (HD-10)	226
Diez, J. (HB-10)	221
Dinavahi, V. (BG-09)	47
Ding, H. (BC-03)	37
Ding, H. (CB-01)	66
Ding, H. (DJ-08)	111
Ding, J. (CR-03)	95
Ding, J. (DD-03)	102
Ding, J. (HE-10)	229
Ding, J. (HH-07)	235
Ding, S. (BD-04)	40
Diop, L. (DH-08)	108
Divan, R. (CR-03)	95
Divan, R. (DD-03)	102
Divan, R. (GB-05)	188
Divinskiy, B. (BD-06)	40
Divinskiy, B. (CR-01)	95
Divinskiy, B. (DC-06)	101
Djuanda, D.R. (AS-06)	33
Djurberg, V. (GH-06)	202
Do, B. (GN-10)	212
Do, N. (FO-04)	181
Dobisz, E. (FF-01)	164
Dobrea, V. (CE-10)	74
Dobrovolskiy, O. (BD-14)	41
Dobrovolskiy, O. (FC-13)	159
Dobrowolska, M. (BE-06)	43
Dobrowolska, M. (CP-03)	92
Doerr, M. (GI-03)	204
Dogra, A. (AJ-11)	21
Dohi, T. (FC-11)	158
Dohi, T. (HD-04)	225
Doi, M. (EJ-08)	142
Doi, M. (EL-09)	145
Doi, M. (FJ-09)	174
Dolbashian, C.J. (EE-06)	130
Domann, J.P. (CD-13)	73
Domann, J.P. (GD-08)	194
Domenichini, P. (BO-02)	58
Donahue, M.J. (DG-06)	106
Donahue, M.J. (FL-03)	176
Dong, C. (EI-09)	140
Dong, C. (HF-08)	231
Dong, S. (BN-01)	57
Dong, S. (CP-03)	92
Donges, A. (EC-13)	127
Donnelly, C.A. (CC-09)	70
Dörflinger, C. (ED-08)	128
Doris, B. (FF-13)	166
Dorsey, P. (BA-04)	34
dos Santos, R. (GR-07)	217
Doty, M.F. (EG-12)	137
Dou, Y. (DL-07)	114
Dou, Y. (EN-02)	147
Dou, Y. (FN-05)	180
Douglas, J.E. (HG-11)	233
Dowben, P.S. (EH-10)	138
Dragan, R.S. (FQ-09)	184
Drouhin, H. (AM-08)	25
Drozd, P. (AD-03)	7
Drozd, P. (AD-05)	7
Drulis, H. (GI-03)	204
Du, G. (GO-10)	214
Du, J. (CB-01)	66
Du, J. (CP-09)	93
Du, J. (DJ-08)	111
Du, J. (DP-08)	120
Du, J. (EH-12)	138
Du, J. (EJ-09)	142
Du, J. (HC-14)	224
Du, Y. (DJ-07)	111
Duan, F. (FP-10)	183
Duan, N. (GL-07)	209
Duan, P. (EN-04)	148

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Dubey, D.P. (FD-05)	160	ElBidweihiy, H. (EJ-12)	142
Dubey, D.P. (GJ-11)	207	ElBidweihiy, H. (GE-13)	197
Dubois, J. (CI-06)	82	Elkins, J. (FI-06)	172
Dubovskii, L. (BF-06)	45	Elkins, J. (FJ-11)	174
Dubovskii, L. (CN-05)	89	Ellis, D. (ED-05)	128
Dubowik, J. (HE-05)	228	Elmers, H. (CA-04)	65
Dubs, C. (HE-07)	228	Elphick, K. (CQ-10)	94
Dubus, J. (GE-06)	196	Elphick, K. (GC-10)	192
Ducharne, B. (DI-03)	109	Emori, S. (BB-04)	35
Ducharne, B. (FN-10)	180	Emori, S. (CB-08)	67
Ducharne, B. (GF-07)	198	Emori, S. (EF-01)	132
Ducharne, B. (GG-10)	200	Emori, S. (EF-04)	133
Ducharne, B. (GG-13)	201	Empringham, L. (AF-04)	11
Duffy, L.B. (HG-01)	232	Endo, G. (BJ-03)	52
Duine, R. (AA-03)	2	Endo, Y. (AQ-05)	30
Duine, R. (BC-06)	37	Endo, Y. (EF-10)	134
Duine, R. (ED-05)	128	Endo, Y. (GM-06)	211
Duke, A. (CH-05)	80	Endo, Y. (GR-08)	218
Dulal, P. (FE-15)	163	Endoh, T. (AK-07)	22
Dun, Z. (EA-02)	123	Endoh, T. (FF-06)	165
Dunin-Borkowski, R.E. (BC-07)	38	Endoh, T. (FF-14)	166
Dunin-Borkowski, R.E. (EG-02)	135	Engel, D. (EC-03)	125
Duong, D. (BE-05)	42	Engel, D. (EC-04)	125
Dupé, B. (FC-06)	157	English, B. (FI-07)	172
Dupuis, V. (FI-01)	171	Enpuku, K. (AQ-06)	30
Duque, J. (CN-02)	89	Eom, C. (FA-02)	153
Duque, J. (FP-03)	182	Eppler, W.R. (AI-05)	18
Durbha, R. (FD-02)	160	Eppler, W.R. (BA-03)	34
Durin, G. (AC-10)	6	Ermer, H.K. (DD-05)	102
Durin, G. (BH-11)	49	Ernst, B. (HH-09)	235
Durin, G. (HE-13)	229	Eschrig, M. (BB-01)	34
Durin, G. (HE-14)	229	Eschrig, M. (BB-02)	35
Durr, H. (DB-01)	99	Espina, B. (BA-01)	33
Dushenko, S. (CB-03)	66	Estradé, S. (EE-10)	131
Dushenko, S. (CB-04)	66	Etesami, S.R. (HD-01)	225
Dushenko, S. (HE-08)	228	Etgens, V. (EI-02)	139
Dushenko, S. (HH-10)	235	Evans, R.F. (AD-01)	7
Dutta, K. (GM-07)	211	Evans, R.F. (CI-12)	83
Dutta, S. (CC-01)	68	Evans, R.F. (DM-01)	115
Dutta, S. (DJ-03)	110	Evans, R.F. (ED-06)	128
Dutta, S. (FM-02)	178	Evans, R.F. (FG-10)	168
Dutta, S. (HH-02)	234	Evans, R.F. (GB-12)	190
Duttagupta, S. (FC-11)	158	Evans, R.F. (GS-02)	218
Duttine, M. (EE-02)	130	Evans, R.F. (HG-07)	233
Dutton, S. (EA-02)	123	Evelt, M. (AJ-09)	20
Dvornik, M. (BB-06)	35	Evelt, M. (ED-02)	127
Dvornik, M. (BD-07)	40	Everschor-Sitte, K. (EC-13)	127
Dvornik, M. (HB-01)	220	Ewall-Wice, M. (GE-13)	197
Dvornik, M. (HD-01)	225	Ewing, D. (AG-01)	13
Dzekan, D. (GA-05)	187	Exl, L. (FG-05)	167

- E -

Eames, P. (AG-05)	14
Ebels, U. (HD-06)	225
Ebels, U. (HD-07)	226
Ebels, U. (HD-10)	226
Ebnet, T. (DB-04)	100
Eda, G. (AB-02)	2
Edmonds, K. (CA-02)	65
Edmonds, K.W. (CE-07)	74
Eggers, T. (CM-02)	88
Eggers, T. (HG-05)	232
Ehresmann, A. (EE-11)	131
Eimer, S. (CF-13)	77
Eisebitt, S. (EC-03)	125
Eisebitt, S. (EC-04)	125
Eisebitt, S. (HA-04)	219
El Hadri, M. (BB-13)	36
El-Gendy, A.A. (BE-10)	43
El-Gendy, A.A. (BR-07)	63
El-Gendy, A.A. (DK-03)	112
El-Gendy, A.A. (DN-09)	117
El-Gendy, A.A. (FI-10)	172
El-Ghazaly, A. (CD-04)	71
ElBidweihiy, H. (CL-05)	87
ElBidweihiy, H. (EE-04)	130

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Fabbrici, S. (CE-05)	74
Fabrizio, E. (GF-06)	198
Faehler, S. (EE-11)	131
Faehler, S. (GA-05)	187
Faivre, D. (HE-12)	229
Fakhrabadi, A. (AF-13)	13
Fakhrabadi, A. (EE-15)	132
Fakhrul, T. (FE-13)	163
Fallarino, L. (GH-04)	202
Fallon, K. (BC-04)	37
Fallon, K. (GK-05)	208
Falub, C. (AR-03)	31
Falub, C. (FH-09)	170
Falub, C. (GH-13)	203
Fan, D. (DO-07)	119
Fan, X. (BB-07)	35
Fan, X. (CG-12)	79
Fan, X. (DK-01)	111
Fan, X. (DK-05)	112
Fan, X. (DM-02)	115
Fan, X. (EM-09)	147
Fan, Y. (AO-02)	27
Fang, C. (AM-04)	24
Fang, C. (AM-05)	25

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Fang, C. (DJ-11).....	111	Finkel, P. (HF-07).....	231
Fang, C. (EP-04).....	150	Finley, J.T. (FB-10).....	155
Fang, S. (CH-02).....	80	Finn, D.J. (GG-12).....	201
Fang, S. (DO-02).....	118	Finocchio, G. (AJ-10).....	21
Fang, S. (EO-09).....	149	Finocchio, G. (BC-12).....	38
Fang, S. (FR-07).....	186	Finocchio, G. (FC-03).....	157
Fang, Y. (AO-03).....	27	Finocchio, G. (GH-01).....	201
Fang, Y. (BG-04).....	46	Fiorillo, F. (DR-05).....	122
Fang, Y. (CH-10).....	81	Fischbacher, J. (CI-12).....	83
Fang, Y. (EQ-01).....	151	Fischbacher, J. (DM-01).....	115
Fangohr, H. (BO-03).....	59	Fischbacher, J. (FG-05).....	167
Fangohr, H. (FG-12).....	168	Fischer, H. (BF-07).....	45
Farfel, M. (DK-07).....	112	Fischer, P. (BH-07).....	49
Farhan, A. (BH-09).....	49	Fischer, P. (FK-08).....	176
Farhan, A. (DF-02).....	104	Fischer, P. (GH-02).....	202
Farle, M. (CF-04).....	76	Fischer, T. (BD-03).....	39
Farle, M. (HE-04).....	228	Fisher, E. (HF-06).....	231
Farle, M. (HE-12).....	229	Fisher, J. (GB-02).....	188
Farmer, B.W. (BH-05).....	48	Fitzell, K. (FD-04).....	160
Farmer, B.W. (BH-08).....	49	Fitzell, K. (FK-05).....	175
Farmer, W.M. (BP-06).....	60	Fitzell, K. (GH-10).....	203
Farrok, O. (CJ-05).....	84	FitzGerald, S. (DQ-08).....	121
Fassbender, J.....	123	Fitzsimmons, M. (HC-06).....	223
Fassbender, J. (BH-02).....	48	Fix, M. (DB-05).....	100
Fassbender, J. (ED-10).....	129	Flannigan, D.J. (FJ-10).....	174
Fassbender, J. (FG-07).....	167	Flansberry, Z. (AM-06).....	25
Fassbender, J. (HB-11).....	221	Flatau, A.B. (CE-08).....	74
Fassbender, J. (HF-05).....	231	Flatau, A.B. (GM-09).....	211
Fathoni, K.B. (AG-11)*.....	15	Flatau, A.B. (GM-10).....	211
Faupel, F. (CM-07).....	88	Flatte, M.E. (AB-09).....	3
Feggeler, T. (CF-04).....	76	Flores, Á.F. (ER-03).....	152
Feggeler, T. (HE-04).....	228	Flores, Á.F. (FH-12).....	170
Feggeler, T. (HE-12).....	229	Floro, J. (EI-08).....	140
Feist, A. (EG-04).....	135	Flötotto, H. (CN-08).....	90
Felfer, P. (CG-11).....	79	Flynn, K. (CE-12).....	75
Felix, J.F. (FM-11).....	179	Foerster, M. (AC-11).....	6
Felser, C. (HH-09).....	235	Foerster, M. (DA-01).....	97
Feltham, H.L. (BF-11).....	45	Foerster, M. (HC-02).....	222
Feng, C. (BS-07).....	64	Foerster, M. (HC-03).....	222
Feng, C. (DA-02).....	97	Foini, L. (HE-13).....	229
Feng, J. (DG-02).....	106	Folven, E. (BH-01).....	47
Feng, J. (DJ-11).....	111	Forsstrom, V. (FH-08).....	169
Feng, J. (GQ-09).....	216	Förster, J. (FL-12).....	177
Feng, Q. (GQ-03).....	215	Förster, J. (HE-05).....	228
Feng, S. (EN-05).....	148	Foster, M. (CH-05).....	80
Feng, Y. (GH-08).....	203	Fowley, C. (BH-02).....	48
Feng, Z. (BQ-08).....	62	Franchini, F. (AF-08).....	12
Ferguson, A. (BB-01).....	34	Franco, A.F. (FL-06).....	176
Fernandes, E. (BA-01).....	33	Franco, F. (AG-03).....	13
Fernandez-Gonzalez, R. (FC-08).....	158	Franco, V. (AE-01).....	9
Fernandez-Roldan, J. (AH-06).....	16	Franco, V. (AE-04).....	9
Fernandez-Roldan, J. (EG-03).....	135	Franco, V. (AP-01).....	28
Fernández, M. (GF-11).....	199	Franco, V. (EL-06).....	145
Ferraris, L. (AF-08).....	12	François, M. (DG-03).....	106
Ferreira, R. (BD-07).....	40	Franke, K.J. (FC-14).....	159
Ferreira, R. (HD-01).....	225	Franklin, R. (FI-02).....	171
Ferreira, R. (HD-10).....	226	Franklin, R. (GF-04).....	197
Ferreira, W.L. (GR-07).....	217	Franson, A. (BD-15).....	41
Ferrer, S. (FC-08).....	158	Franson, A. (BF-09).....	45
Fert, A. (BC-01).....	36	Franzitta, V. (CH-11).....	81
Fert, A. (BC-02).....	37	Fratila, R. (GE-06).....	196
Fert, A. (BC-04).....	37	Freeman, R. (BD-06).....	40
Fert, A. (GG-02).....	199	Freindl, K. (AD-05).....	7
Fert, A. (HH-09).....	235	Freire Fernández, F. (CF-06).....	76
Filianina, M. (CA-04).....	65	Freitas, P. (BD-07).....	40
Filianina, M. (CB-13).....	68	Freitas, P.P. (AG-03).....	13
Filianina, M. (DA-01).....	97	Freitas, P.P. (AG-08).....	14
Finizio, S. (CF-03).....	76	Freitas, P.P. (BA-01).....	33
Finizio, S. (DG-04).....	106	Freitas, P.P. (FO-06).....	181
Finizio, S. (DQ-01).....	120	Freitas, P.P. (HD-01).....	225
Finizio, S. (EC-06).....	126	Friedman, G. (GF-12).....	199
Finizio, S. (FL-12).....	177	Friedman, J.S. (CC-02).....	69
Finizio, S. (GH-07).....	202	Friedman, J.S. (CC-03).....	69
Finizio, S. (HE-09).....	228	Friedman, J.S. (EC-12).....	127
Finkel, P. (AE-12).....	10	Friedman, J.S. (HB-08).....	221
Finkel, P. (BN-08).....	58	Frielinghaus, R. (CN-08).....	90
Finkel, P. (EE-04).....	130	Frömter, R. (EF-15).....	135

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Gercsi, Z. (BE-12)	43	Goodwin, A. (EA-02)	123
Germick, J.R. (CO-06)	91	Goolaup, S. (EC-08)	126
Ghaisari, S. (HE-12)	229	Gopman, D.B. (BN-08)	58
Ghidini, M. (CD-06)	72	Gopman, D.B. (FD-04)	160
Ghising, P. (DE-02)	103	Gopman, D.B. (GH-10)	203
Ghoreyshi, A. (AI-07)	18	Gorchon, J. (AI-01)	17
Ghosh, A. (BC-11)	38	Gorchon, J. (AI-03)	18
Ghosh, A. (FM-06)	178	Gorchon, J. (CD-04)	71
Ghosh, A. (HC-08)	223	Gorobets, O. (BP-05)	60
Giannopoulos, G. (AS-08)	33	Gorria, P. (BQ-01)	61
Gibbons, J. (GD-03)	193	Gorzowski, E. (AL-09)	24
Gilbert, A.D. (HI-11)	237	Gorzowski, E. (EI-12)	141
Gilbert, D. (BC-14)	39	Gosavi, T. (AB-08)	3
Gilbert, D. (EE-10)	131	Gosavi, T. (AJ-04)	20
Gilbert, D.A. (DA-05)	98	Goschew, A. (AM-10)	25
Gilbert, D.A. (GH-10)	203	Goschew, A. (EH-09)	138
Gilbert, D.A. (HC-06)	223	Goschew, A. (GG-03)	200
Gilbert, I. (AI-05)	18	Gospodaric, P. (AB-12)	4
Gilbert, I. (AI-06)	18	Goto, M. (AG-10)	14
Gilioli, E. (GR-09)	218	Goto, M. (CF-09)	77
Gim, C. (AL-02)	23	Goto, M. (DA-04)	98
Gim, C. (GO-04)	213	Goto, M. (DJ-03)	110
Gingrich, E.C. (CC-10)	70	Goto, M. (EC-07)	126
Gingrich, E.C. (DD-05)	102	Goto, S. (FJ-05)	174
Giordano, A. (AJ-10)	21	Goto, T. (BP-01)	60
Giri, A. (AE-01)	9	Goto, T. (FE-11)	163
Giri, A. (EL-06)	145	Goto, Y. (EL-07)	145
Giri, B. (AD-02)	7	Gottwald, M.G. (FF-13)	166
Girt, E. (AD-12)	8	Goulet, T. (AG-06)	14
Girt, E. (AJ-07)	20	Gowtham, P. (AB-07)	3
Girt, E. (EH-11)	138	Grachev, A. (ED-03)	128
Gjemdal, H. (GE-02)	195	Gradhand, M. (CB-02)	66
Gjokas, M. (BI-08)	51	Graf, D. (HH-08)	235
Gkouzias, G. (BI-08)	51	Gräfe, J. (CR-10)	96
Gkouzias, G. (CG-13)	79	Gräfe, J. (EL-06)	145
Glickstein, J. (FI-12)	173	Gräfe, J. (GG-06)	200
Gliga, S. (DF-02)	104	Gräfe, J. (GI-10)	205
Glinka, C.A. (AH-07)	16	Gräfe, J. (HC-01)	222
Go, D. (CB-15)	68	Gräfe, J. (HE-05)	228
Go, G. (FB-13)	156	Graham, D. (FE-08)	162
Godinho, J. (CA-02)	65	Granell, P.N. (HF-05)	231
Goering, E.J. (AD-12)	8	Granville, S. (HH-04)	234
Goering, E.J. (EL-06)	145	Granz, S. (AI-09)	18
Goering, E.J. (GG-06)	200	Grave, D. (ED-05)	128
Goering, E.J. (GI-10)	205	Gray, I. (GB-10)	189
Goering, E.J. (HC-01)	222	Greaves, S. (EK-07)	143
Goertler, M. (HF-03)	230	Greaves, S. (EK-08)	143
Goiriena-Goikoetxea, M. (CE-03)	73	Greibenkemper, J.H. (AE-09)	10
Goiriena-Goikoetxea, M. (EG-03)	135	Green, R.J. (DE-09)	104
Gokce, A. (GH-01)	201	Greening, R. (EF-04)	133
Goldfarb, R.B. (DI-01)	109	Greer, M. (FI-12)	173
Goldman, A.I. (FP-02)	182	Grégoire, G. (FF-03)	164
Goli, D. (CA-05)	65	Grégoire, G. (FF-04)	164
Golmar, F. (HF-05)	231	Greneche, J. (DG-03)	106
Gomes, J.P. (FM-11)	179	Grepstad, J. (BH-01)	47
Gómez-Hermida, M. (DR-08)	122	Grezes, C. (DA-07)	98
Gomez-Polo, C. (DG-08)	107	Griffith, D. (BA-04)	34
Gomi, A. (FF-09)	165	Griffo, A. (CH-05)	80
Gomi, A. (GC-13)	192	Griggs, W. (EH-13)	139
Gomonay, O. (HC-12)	224	Grigoras, M. (CE-10)	74
Goncalves, F. (BO-08)	59	Grigoras, M. (DG-07)	106
Goncalves, F. (BO-09)	59	Grishin, S. (CR-06)	95
Gonçalves, V. (GR-07)	217	Groen, I. (AJ-04)	20
Goncharov, A. (HD-13)	227	Groenefeld, M. (HF-03)	230
Gong, C. (HG-13)	233	Groeseneken, G. (BS-02)	64
Gong, J. (BN-01)	57	Groeseneken, G. (CD-10)	72
Gong, R. (AQ-04)	30	Grollier, J. (CC-05)	69
Gong, R. (BQ-08)	62	Grollier, J. (DI-07)	110
Gong, R. (CM-03)	88	Gross, F. (CR-10)	96
Gong, R. (CM-04)	88	Gross, F. (EL-06)	145
Gong, R. (FH-11)	170	Gross, F. (GG-06)	200
Gong, W. (CM-03)	88	Gross, F. (GI-10)	205
González-Sánchez, R. (EL-05)	145	Gross, F. (HE-05)	228
Gonzalez, C.A. (HE-02)	227	Gross, I. (GB-02)	188
Gonzalez, J. (BQ-09)	62	Gross, I. (HC-07)	223
Gonzalez, J. (CG-03)	78	Grossi, R. (CN-01)	89
Goodenough, J.B. (GB-08)	189	Grosz, A. (HF-12)	232

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Grübel, G. (EF-15).....	135	Hadjipanayis, G. (FJ-04).....	173
Gruber, R. (GQ-08).....	216	Hadjipanayis, G. (GI-08).....	205
Gruettner, C. (AH-07).....	16	Hagiwara, M. (BI-12).....	51
Gruettner, C. (DN-10).....	118	Haidar, M. (BB-06).....	35
Grundler, D. (ED-07).....	128	Haidar, M. (HD-01).....	225
Grundler, D. (GK-07).....	208	Haider, S. (EI-09).....	140
Grundler, D. (HE-15).....	230	Hajiri, T. (DA-01).....	97
Gruszecki, P. (HE-05).....	228	Hakala, T. (CF-06).....	76
Grutter, A.J. (BC-14).....	39	Halbritter, L. (DK-06).....	112
Grutter, A.J. (GH-10).....	203	Halbritter, L. (EL-08).....	145
Gu, Y. (GQ-09).....	216	Hale, O. (FI-07).....	172
Gualdi, A.J. (GR-09).....	218	Hale, O. (FI-12).....	173
Gubbiotti, G. (BD-11).....	41	Hallal, A. (AI-11).....	19
Gubkin, A. (BF-04).....	44	Hallal, A. (HB-09).....	221
Gudin, A. (AC-03).....	5	Hämäläinen, S.J. (BD-11).....	41
Gudin, A. (HB-10).....	221	Hamasaki, A. (AP-02).....	28
Guerrero, R. (AC-03).....	5	Hamasaki, A. (CO-03).....	91
Guerrero, R. (HB-10).....	221	Hamilton, J.K. (GF-01).....	197
Guevara, M. (FK-05).....	175	Hammel, P. (BB-03).....	35
Guillem, P.E. (GN-03).....	212	Hamp, J. (EA-02).....	123
Guillot, I. (EI-02).....	139	Hamzic, A. (HH-09).....	235
Guillou, F. (CE-06).....	74	Han, D. (CB-13).....	68
Gulec, M. (CH-09).....	81	Han, F. (AR-02).....	31
Gündüz Akdoğan, N. (CI-13).....	84	Han, J. (AP-05).....	28
Günther, C. (EC-03).....	125	Han, J. (BD-09).....	40
Günther, C. (EC-04).....	125	Han, J. (DG-05).....	106
Guo, B. (GE-03).....	195	Han, S. (CQ-08).....	94
Guo, R. (AD-11).....	8	Han, W. (BM-02).....	55
Guo, S. (CQ-04).....	94	Han, W. (BM-06).....	56
Guo, S. (EH-04).....	137	Han, W. (CJ-08).....	85
Guo, X. (BM-05).....	56	Han, W. (FH-13).....	170
Guo, Y. (AL-10).....	24	Han, W. (GE-05).....	196
Guo, Y. (AL-11).....	24	Han, X. (AM-04).....	24
Guo, Y. (CH-07).....	81	Han, X. (AM-05).....	25
Guo, Y. (CH-08).....	81	Han, X. (DA-02).....	97
Guo, Y. (DO-09).....	119	Han, X. (DG-02).....	106
Guo, Y. (EN-06).....	148	Han, X. (DJ-11).....	111
Guo, Y. (FR-08).....	186	Han, X. (FO-07).....	182
Guo, Y. (FR-09).....	186	Han, X. (FO-08).....	182
Guo, Z. (AG-02).....	13	Han, X. (GB-09).....	189
Guo, Z. (FO-10).....	182	Hane, Y. (FH-03).....	169
Gupta, A. (AD-06).....	7	Haney, P.M. (BB-07).....	35
Gupta, B. (FN-10).....	180	Haney, P.M. (HE-11).....	229
Gupta, B. (GG-13).....	201	Hang, J. (HD-02).....	225
Gupta, R. (AD-06).....	7	Hang, X. (BN-03).....	57
Gupta, S. (BD-04).....	40	Hang, X. (CL-06).....	87
Gupta, S. (CP-04).....	92	Hang, X. (FH-07).....	169
Gupta, S. (DK-03).....	112	Hanke, J. (CB-13).....	68
Gupta, S. (EM-05).....	146	Hankiewicz, J.H. (FI-04).....	171
Gupta, S. (FI-10).....	172	Hansen, M. (BD-13).....	41
Guragain, D. (BR-01).....	62	Hanstorp, D. (ED-13).....	129
Gusakova, D. (AC-11).....	6	Hao, G. (EH-10).....	138
Gusenbauer, M. (FG-05).....	167	Hao, J. (BP-08).....	61
Gusieva, Y. (BP-05).....	60	Hao, J. (BP-09).....	61
Guslienکو, K. (EG-03).....	135	Hao, J. (EM-04).....	146
Guslienکو, K. (FC-13).....	159	Hao, J. (EM-07).....	146
Gustafsson, M. (CC-11).....	70	Hao, Y. (HH-06).....	235
Gutfleisch, O. (DH-08).....	108	Hara, R. (FE-14).....	163
Gutierrez, J. (CD-11).....	72	Haran, K. (BL-01).....	54
Gutierrez, J. (HF-02).....	230	Haran, K. (DP-01).....	119
Guven, M. (BG-12).....	47	Harashima, Y. (GI-07).....	205
Gyu Won, K. (CB-06).....	67	Harberts, M. (BD-15).....	41

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Habiboglu, A. (GH-01).....	201	Hardy, V. (EE-01).....	129
Hadimani, R.L. (CO-06).....	91	Harris, J. (FD-08).....	161
Hadimani, R.L. (CO-07).....	91	Harris, V.G. (BQ-05).....	62
Hadimani, R.L. (CO-10).....	92	Harris, V.G. (CG-08).....	79
Hadimani, R.L. (DK-03).....	112	Harris, V.G. (DR-01).....	121
Hadimani, R.L. (EM-05).....	146	Harrison, R. (AH-08).....	16
Hadimani, R.L. (FI-10).....	172	Harstad, S.M. (DK-03).....	112
Hadjipanayis, G. (BI-06).....	50	Harstad, S.M. (FI-10).....	172
Hadjipanayis, G. (BI-11).....	51	Hasegawa, A. (CG-07).....	79
Hadjipanayis, G. (CS-07).....	97	Hasegawa, K. (HI-10).....	237
Hadjipanayis, G. (DG-09).....	107	Hashemi, P. (FF-13).....	166
Hadjipanayis, G. (DM-06).....	116	Hashizume, H. (GG-07).....	200
		Hassan, N. (CC-02).....	69
		Hassan, N. (CC-03).....	69

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Hastings, J. (BH-08)	49	Herrera Diez, L. (HE-13)	229
Hatakeyama, T. (FH-02)	169	Herrera Diez, L. (HE-14)	229
Hattori, Y. (BM-08)	56	Herrero de la Parte, B. (DN-06)	117
Hattori, Y. (BM-09)	56	Herrero, A. (BF-04)	44
Hauet, T. (GH-01)	201	Herrero, A. (FE-02)	161
Havela, L. (GI-03)	204	Herrmann, L. (CI-06)	82
Hawecker, J. (HB-03)	220	Hessing, P. (EC-03)	125
Hayashi, T. (HF-04)	230	Hessing, P. (EC-04)	125
Haygood, I.W. (CC-09)	70	Heussner, F. (BD-03)	39
Haykal, A. (BC-02)	37	Heyderman, L. (CC-08)	70
Haykal, A. (GB-02)	188	Heyderman, L. (EC-06)	126
Haykal, A. (HC-07)	223	Heyns, M. (AC-13)	6
He, J. (AE-07)	10	Heyns, M. (HD-12)	227
He, J. (BC-11)	38	Hibberd, M. (FE-08)	162
He, J. (BP-08)	61	Hibbins, A.P. (HE-06)	228
He, J. (CL-07)	87	Hicken, R.J. (FB-14)	156
He, J. (EM-07)	146	Hicken, R.J. (FG-10)	168
He, P. (AB-06)	3	Hicken, T.J. (FC-14)	159
He, P. (AB-11)	4	Hida, R. (FH-09)	170
He, P. (FB-04)	154	Hida, R. (GH-13)	203
He, S. (FJ-10)	174	Hidalgo, T.C. (DG-04)	106
He, S. (GR-03)	217	Hidayah, I. (DK-08)	112
He, X. (BN-10)	58	Hiemenz, G.J. (AP-04)	28
He, X. (GJ-07)	207	Hierro-Rodriguez, A. (CR-04)	95
He, X. (GJ-08)	207	Hierro-Rodriguez, A. (FC-08)	158
He, Y. (CS-04)	96	Hierro-Rodriguez, A. (FC-13)	159
He, Y. (EI-09)	140	Higashida, R. (BS-08)	64
He, Y. (EJ-06)	142	Higashida, R. (GN-02)	212
He, Y. (HF-08)	231	Hight Walker, A.R. (BF-02)	44
Hegde, S. (FI-03)	171	Hight Walker, A.R. (DG-06)	106
Hehn, M. (AI-01)	17	Hight Walker, A.R. (DI-02)	109
Hehn, M. (AI-03)	18	Hight Walker, A.R. (HG-11)	233
Hehn, M. (EC-11)	126	Higo, T. (AD-01)	7
Hehn, M. (FO-07)	182	Hijikata, K. (GE-10)	196
Hehn, M. (HD-08)	226	Hill, D.M. (HB-11)	221
Heiliger, C. (GC-02)	190	Hillebrands, B. (BD-03)	39
Heiliger, C. (GQ-01)	215	Hillebrands, B. (ED-12)	129
Heiman, D. (EI-09)	140	Hilliard, D. (BH-02)	48
Heiman, D. (HH-08)	235	Hinata, S. (EK-05)	143
Heinonen, O. (AB-11)	4	Hindmarch, A. (CB-07)	67
Heinonen, O. (EF-02)	132	Hirohata, A. (AD-09)	8
Heinonen, O. (HC-11)	224	Hirohata, A. (DQ-02)	120
Heinrich, B. (AJ-07)	20	Hirohata, A. (GC-10)	192
Heinrich, B. (EH-11)	138	Hirohata, A. (HH-15)	236
Heinz, B. (HE-07)	228	Hirokawa, M. (DJ-12)	111
Heinz, T. (AB-04)	3	Hirosawa, S. (GI-05)	205
Heinze, D. (AC-08)	5	Hirtzlin, T. (CC-05)	69
Heinze, D. (CF-02)	75	Hlawacek, G. (BH-02)	48
Heinze, D. (EC-13)	127	Hlensch, C. (GS-03)	218
Heistracher, P.T. (CF-12)	77	Hlioui, S. (DO-01)	118
Hejazi, A. (AH-09)	16	Ho, H. (BA-04)	34
Hellman, F. (AB-07)	3	Ho, P. (EC-08)	126
Hellman, F. (FP-08)	183	Ho, S. (DL-02)	114
Hellwig, O. (BH-02)	48	Ho, S. (DL-06)	114
Hellwig, O. (GH-04)	202	Hoang, K. (CK-10)	86
Heming, R. (DB-05)	100	Hoefer, M. (DB-01)	99
Henderson, R. (FD-04)	160	Hoefer, M. (ED-04)	128
Hendren, W.R. (FG-10)	168	Hoefer, M. (HC-13)	224
Henne, B. (CB-10)	67	Hoffmann, A. (AJ-05)	20
Henneron, T. (FH-11)	170	Hoffmann, A. (CR-03)	95
Heo, C. (GJ-06)	207	Hoffmann, A. (DD-03)	102
Hepburn, C. (AC-10)	6	Hoffmann, A. (EC-10)	126
Herea, D. (DN-04)	117	Hoffmann, A. (EF-02)	132
Hernandez, A. (AI-02)	17	Hoffmann, A. (GB-05)	188
Hernandez, A. (FG-13)	168	Hoffmann, A. (GB-13)	190
Hernandez, J. (FF-01)	164	Hoffmann, A. (HE-10)	229
Hernandez, S. (AI-06)	18	Hoffmann, M. (BC-07)	38
Hernandez, S. (AI-09)	18	Hoffmann, M. (EG-02)	135
Hernandez, S. (BA-03)	34	Hokazono, M. (CB-03)	66
Herng, T. (HH-07)	235	Holmes, W.R. (CM-01)	87
Heron, J. (GB-10)	189	Holzinger, D. (EE-11)	131
Herr, A. (CC-10)	70	Hong, D. (AL-04)	23
Herr, Q. (CC-10)	70	Hong, D. (BK-06)	53
Herrera Diez, L. (AC-10)	6	Hong, D. (GB-13)	190
Herrera Diez, L. (BH-11)	49	Hong, J. (BC-03)	37
Herrera Diez, L. (DA-05)	98	Hong, Y. (AF-12)	12
Herrera Diez, L. (EF-13)	134	Hong, Y. (AI-13)	19

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Hong, Y. (BI-05)	50	Hu, J. (DK-06)	112
Hong, Y. (CH-13)	81	Hu, J. (FD-04)	160
Hong, Y. (DM-05)	115	Hu, J. (HH-09)	235
Hong, Y. (GN-06)	212	Hu, L. (AJ-13)	21
Hongo, Y. (BM-10)	56	Hu, S. (DL-09)	114
Hongo, Y. (GL-01)	209	Hu, W. (BN-10)	58
Hongo, Y. (GL-03)	209	Hu, W. (EE-14)	132
Hönig, R. (EH-02)	137	Hu, W. (GJ-07)	207
Honjo, H. (AK-07)	22	Hu, W. (GJ-08)	207
Honjo, H. (FF-06)	165	Hu, X. (BL-04)	54
Hono, K. (AG-11)	15	Hu, X. (CC-03)	69
Hono, K. (AI-11)	19	Hu, X. (EC-12)	127
Hono, K. (DA-07)	98	Hu, Y. (HI-05)	237
Hono, K. (DH-07)	108	Hu, Z. (AS-03)	32
Hono, K. (EK-03)	143	Hu, Z. (EE-03)	130
Hono, K. (EK-04)	143	Hu, Z. (EE-13)	131
Hono, K. (GC-04)	191	Hua, W. (AO-10)	28
Hono, K. (GC-12)	192	Hua, W. (BK-03)	53
Hono, K. (GI-05)	205	Hua, W. (CK-05)	86
Hono, K. (HH-13)	236	Hua, W. (CK-07)	86
Hono, K. (HH-14)	236	Hua, W. (EQ-02)	151
Hopkins, P.F. (CC-09)	70	Huang, C. (GH-11)	203
Horikawa, T. (CI-04)	82	Huang, D. (AG-05)	14
Horino, K. (CG-07)	79	Huang, H. (AR-02)	31
Horng, L. (GK-02)	208	Huang, H. (BS-07)	64
Horng, L. (GN-06)	212	Huang, H. (CS-04)	96
Horsley, S.A. (ED-11)	129	Huang, H. (EJ-06)	142
Horsley, S.A. (HI-11)	237	Huang, L. (EC-08)	126
Horwath, J. (AF-05)	11	Huang, L. (EM-08)	147
Horwath, J. (BI-07)	51	Huang, L. (EM-10)	147
Horwath, J. (DK-07)	112	Huang, L. (EP-06)	150
Hoser, A. (HG-08)	233	Huang, M. (EE-14)	132
Hoshino, N. (FK-02)	175	Huang, M. (EL-06)	145
Hoshiyama, H. (CL-02)	86	Huang, P. (AI-06)	18
Hosokawa, A. (CI-05)	82	Huang, P. (BK-02)	53
Hossain, Z. (DE-02)	103	Huang, P. (FB-10)	155
Hou, D. (HC-12)	224	Huang, Q. (HH-06)	235
Hou, H. (AE-12)	10	Huang, S. (AO-08)	28
Hou, J.T. (BD-09)	40	Huang, S. (AR-08)	32
Hou, J.T. (FE-06)	162	Huang, S. (BC-14)	39
Hou, W. (EE-03)	130	Huang, S. (CK-03)	85
Houshang, A. (BB-06)	35	Huang, S. (DC-02)	101
Houshang, A. (BD-07)	40	Huang, S. (DC-03)	101
Houshang, A. (EF-13)	134	Huang, S. (FB-02)	154
Houshang, A. (HC-01)	222	Huang, S. (FP-10)	183
Houshang, A. (HD-01)	225	Huang, W. (AQ-01)	29
Hovorka, O. (BO-03)	59	Huang, W. (CM-05)	88
Hovorka, O. (FG-12)	168	Huang, W. (EO-05)	149
Howe, B.M. (EF-01)	132	Huang, W. (EO-06)	149
Hrabec, A. (BH-07)	49	Huang, W. (EQ-02)	151
Hrabec, A. (CB-05)	66	Huang, W. (GM-01)	210
Hrabec, A. (HC-07)	223	Huang, X. (AO-03)	27
Hristoforou, E. (AG-07)	14	Huang, X. (CH-10)	81
Hrkac, G. (CI-12)	83	Huang, X. (EQ-01)	151
Hrkac, G. (DM-01)	115	Huang, Y. (BM-04)	56
Hrkac, G. (FG-05)	167	Huang, Y. (CL-04)	87
Hsiao, Y. (FK-05)	175	Huang, Y. (GE-03)	195
Hsiao, Y. (GF-13)	199	Huang, Z. (EH-12)	138
Hsieh, M. (AO-05)	27	Huang, Z. (EJ-09)	142
Hsieh, M. (DL-04)	114	Huangfu, Y. (EN-08)	148
Hsieh, M. (EN-10)	148	Huaping, L. (BD-13)	41
Hsieh, M. (EO-01)	149	Huber, C. (AE-03)	9
Hsieh, M. (FQ-06)	184	Huber, C. (HF-03)	230
Hsieh, M. (GJ-10)	207	Huber, R. (DB-04)	100
Hsu, C. (DL-04)	114	Hucht, A. (CN-08)	90
Hsu, C. (EN-10)	148	Huddart, B. (FC-14)	159
Hsu, C. (EO-01)	149	Huebner, T. (FG-07)	167
Hsu, C. (GJ-10)	207	Hueso, L.E. (AJ-04)	20
Hsu, T. (EP-08)	150	Hueso, L.E. (CB-02)	66
Hsu, W. (CF-07)	76	Huettenes, W. (EG-07)	136
Hu, F. (BN-05)	57	Hug, H.J. (AR-03)	31
Hu, F. (BP-08)	61	Hug, H.J. (BC-13)	39
Hu, F. (BP-09)	61	Hug, H.J. (DQ-06)	121
Hu, F. (EM-04)	146	Hug, H.J. (GH-13)	203
Hu, F. (EM-07)	146	Hughes, J. (EB-02)	124
Hu, G. (FF-13)	166	Huh, Y. (AE-03)	9
Hu, J. (CL-07)	87	Huh, Y. (DK-06)	112

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Huh, Y. (EL-08)	145
Huhnstock, R. (EE-11)	131
Huhtinen, H. (BE-01)	42
Huhtinen, H. (BP-02)	60
Huhtinen, H. (CD-02)	71
Humbard, L. (GH-03)	202
Humbert, V. (GH-03)	202
Hunagund, S. (FI-10)	172
Hung, T. (AB-05)	3
Hung, T. (DC-03)	101
Hunt, M. (AH-09)	16
Huq, A. (EI-07)	140
Hur, J. (CJ-02)	84
Husain, S. (FO-05)	181
Hussain, S. (AN-04)	26
Hutchison, W. (GR-01)	217
Huth, M. (BD-14)	41
Hütten, A. (HH-14)	236
Huynh, T. (AO-05)	27
Hwang, C. (GE-07)	196
Hwang, E. (DH-01)	107
Hwang, H. (BD-02)	39
Hwang, H. (DP-09)	120
Hwang, H. (EF-01)	132
Hwang, S. (BL-03)	54
Hwang, S. (DO-04)	118
Hwang, S. (DO-06)	118
Hwang, S. (DP-09)	120
Hyodo, K. (EL-10)	145

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Iacocca, E. (DB-01)	99
Iacocca, E. (ED-04)	128
Iacocca, E. (HC-13)	224
Ichigozaki, D. (CI-03)	82
Ichikawa, S. (GC-12)	192
Ichikawa, Y. (AP-09)	29
Ichimura, M. (DJ-12)	111
Ieda, J. (AM-11)	25
Igarashi, J. (GD-14)	195
Igarashi, J. (HD-04)	225
Iguchi, R. (FM-03)	178
Iihama, S. (AI-03)	18
Iihama, S. (AJ-06)	20
Iihama, S. (EL-07)	145
Ijiri, Y. (AH-11)	17
Ijiri, Y. (AH-12)	17
Ikeda, S. (AK-07)	22
Ikeda, S. (FF-06)	165
Ikeda, T. (BO-06)	59
Ikeda, T. (FO-02)	181
Ikegami, K. (GD-09)	194
Ilse, S.E. (GG-06)	200
Ilse, S.E. (GI-10)	205
Im, M. (BH-07)	49
Im, M. (GH-02)	202
Im, M. (HC-06)	223
Im, S. (FN-04)	180
Im, S. (GL-05)	209
In Ho, C. (CB-06)	67
Incorvia, J.C. (AB-04)	3
Incorvia, J.C. (CC-02)	69
Incorvia, J.C. (CC-03)	69
Incorvia, J.C. (GC-11)	192
Inokuchi, T. (GD-09)	194
Inokuchi, T. (GD-10)	194
Inokuchi, T. (GK-03)	208
Inoue, M. (BP-01)	60
Inoue, M. (FE-11)	163
Inzani, P.D. (GF-01)	197
Inzani, P.D. (HI-11)	237
Ipatov, M. (BQ-09)	62
Irfan, M. (DG-02)	106
Irie, S. (BI-03)	50
Ishihara, T. (AK-06)	22
Ishihara, T. (GC-03)	191

Ishii, N. (FN-09)	180
Ishii, N. (GN-01)	211
Ishikawa, K. (BM-10)	56
Ishikawa, K. (GL-01)	209
Ishikawa, K. (GL-03)	209
Ishikawa, T. (CQ-07)	94
Ishikawa, T. (FJ-03)	173
Ishikawa, T. (GS-05)	218
Ishitani, Y. (HB-02)	220
Islam, M. (CJ-05)	84
Islam, M. (DR-07)	122
Islam, M. (FP-09)	183
Islam, M. (GG-08)	200
Islam, M. (GL-08)	209
Islam, M.M. (GL-08)	209
Itagaki, R. (EK-08)	143
Itai, S. (AK-06)	22
Ito, H. (AR-04)	31
Ito, J. (AK-06)	22
Ito, J. (GC-03)	191
Ito, K. (BD-01)	39
Ito, M. (CI-12)	83
Ito, M. (DM-01)	115
Itoh, M. (AN-06)	26
Itoh, M. (FL-08)	177
Itoh, S. (GI-02)	204
Iurchuk, V. (HD-06)	225
Ivanov, B. (FC-13)	159
Ivanov, S. (FP-09)	183
Ivkov, R. (AH-07)	16
Iwamoto, F. (EQ-06)	151
Iwano, K. (FJ-03)	173
Iwano, K. (GS-05)	218
Iwasa, Y. (GD-12)	194
Iwasaka, M. (BJ-01)	52
Iwasaka, M. (BJ-06)	52
Iwasaka, M. (BJ-07)	52
Iwasaka, M. (CN-10)	90
Iwasaka, M. (CO-01)	90
Iwasaka, M. (CO-02)	91
Iwasaka, M. (CO-03)	91
Iwasaka, M. (CO-05)	91
Iwasaka, M. (FI-09)	172
Iwasaka, M. (FI-13)	173
Iwata-Harms, J.M. (AK-09)	22
Iwata, S. (AR-09)	32
Iwata, S. (CQ-07)	94

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Jaafar, M. (EG-03)	135
Jaćimović, J. (CI-06)	82
Jackson, E. (DQ-02)	120
Jacobs, R. (CE-12)	75
Jacques, V. (BC-02)	37
Jacques, V. (GB-02)	188
Jacques, V. (HC-07)	223
Jacquet, E. (FL-07)	177
Jadwisieniczak, W. (BE-01)	42
Jadwisieniczak, W. (DG-01)	105
Jaeger, D. (AR-03)	31
Jafari, S. (FI-07)	172
Jafari, S. (FI-12)	173
Jaffres, H. (AM-08)	25
Jaffres, H. (GD-05)	193
Jaffres, H. (HB-03)	220
Jagtiani, G. (FF-01)	164
Jahns, T.M. (GS-06)	218
Jain, P. (BN-02)	57
Jain, S. (BA-04)	34
Jaiswal, S. (EC-13)	127
Jakob, G. (BD-04)	40
Jakob, G. (EC-13)	127
Jakobs, F. (EC-13)	127
Jal, E. (HA-01)	219
Jalil, M.B. (AJ-12)	21
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Jamer, M.E. (GH-10)	203	Jiang, S. (HC-01)	222
Jamison, S. (FE-08)	162	Jiang, W. (BO-05)	59
Jan, G. (AK-09)	22	Jiang, W. (CA-01)	65
Jana, A. (DE-06)	103	Jiang, W. (DL-05)	114
Jander, A. (BD-13)	41	Jiang, W. (FJ-02)	173
Jang, C. (HG-06)	233	Jiang, W. (GB-09)	189
Jang, G. (AL-03)	23	Jiang, W. (GP-02)	214
Jang, G. (AL-07)	23	Jiang, X. (AD-11)	8
Jang, G. (EO-04)	149	Jiang, Y. (AF-15)	13
Jang, H. (GO-03)	213	Jiang, Y. (BL-03)	54
Jang, Y. (GL-02)	209	Jiang, Y. (BL-04)	54
Janosek, M. (HF-01)	230	Jiang, Y. (BN-06)	57
Jansen, R. (GD-13)	195	Jiang, Y. (BO-07)	59
Janus, W. (AD-05)	7	Jiang, Y. (CG-10)	79
Jaouen, N. (GB-02)	188	Jiang, Y. (DO-04)	118
Jaouen, N. (GG-02)	199	Jiang, Y. (DO-06)	118
Javed, K. (DG-02)	106	Jiang, Y. (FO-01)	181
Javed, K. (EM-05)	146	Jiang, Y. (GD-04)	193
Jayich, A. (GB-09)	189	Jiang, Y. (HH-05)	234
Je, S. (EC-11)	126	Jibiki, Y. (DJ-03)	110
Je, S. (HC-02)	222	Jibiki, Y. (EC-07)	126
Je, S. (HC-06)	223	Jiles, D.C. (BJ-04)	52
Jena, A.K. (AN-05)	26	Jiles, D.C. (CL-09)	87
Jeng, J. (CM-09)	88	Jiles, D.C. (CO-06)	91
Jenkins, A. (GB-09)	189	Jiles, D.C. (CO-08)	91
Jenkins, A. (HD-10)	226	Jiles, D.C. (CO-09)	91
Jenkins, S. (GB-12)	190	Jiles, D.C. (CS-08)	97
Jenney, K.N. (CJ-04)	84	Jiles, D.C. (EB-04)	124
Jensen, B. (AE-08)	10	Jiles, D.C. (GL-09)	210
Jensen, B. (AF-07)	12	Jin, J. (AS-01)	32
Jensen, B. (EI-06)	140	Jin, L. (FE-09)	162
Jensen, W. (EI-08)	140	Jin, P. (AL-10)	24
Jeon, K. (BB-01)	34	Jin, P. (AL-11)	24
Jeon, K. (BB-02)	35	Jin, P. (BA-03)	34
Jeon, K. (CB-11)	67	Jin, P. (DO-09)	119
Jeon, S. (CL-03)	86	Jin, P. (FR-08)	186
Jeon, S. (CS-05)	96	Jin, Q. (AF-14)	13
Jeon, S. (CS-06)	96	Jin, S. (CH-03)	80
Jeong, G. (DP-02)	119	Jin, S. (CJ-09)	85
Jeong, G. (GO-03)	213	Jin, T. (BD-05)	40
Jeong, H. (BM-01)	55	Jin, T. (EK-09)	144
Jeong, H. (BM-07)	56	Jin, W. (GM-03)	210
Jeong, J.S. (HB-05)	220	Jin, X. (CR-08)	95
Jeong, S. (CQ-06)	94	Jin, X. (GQ-03)	215
Jeong, S. (EO-04)	149	Jin, Y. (EI-08)	140
Jeong, Y. (AL-04)	23	Jing, Y. (DP-08)	120
Jeong, Y. (BK-06)	53	Jing, Y. (FJ-10)	174
Jesus, C.B. (CN-02)	89	Jinnai, B. (FB-12)	155
Jesus, C.B. (FP-03)	182	Jinno, K. (GF-09)	198
Jeudy, V. (CB-05)	66	Jo, I. (DP-02)	119
Jeudy, V. (HE-14)	229	Jo, I. (GO-03)	213
Jha, A. (BE-09)	43	Jo, S. (DA-03)	98
Jha, M. (AN-07)	26	Jo, S. (EK-05)	143
Jhong, K. (DR-06)	122	Johansson, N. (FE-08)	162
Ji, H. (DA-03)	98	Johnson, D. (AE-02)	9
Ji, W. (DP-02)	119	Johnson, M.B. (DE-01)	103
Ji, Y. (FO-01)	181	Johnson, S.D. (AL-09)	24
Jia, J. (HI-08)	237	Johnson, S.D. (BQ-07)	62
Jia, N. (BQ-02)	61	Johnson, S.D. (EI-12)	141
Jiang-Wei, L. (CC-03)	69	Johnston-Halperin, E. (BD-15)	41
Jiang, C. (BM-02)	55	Johnston-Halperin, E. (BF-09)	45
Jiang, C. (FH-13)	170	Joly, L. (BF-11)	45
Jiang, C. (GE-05)	196	Jones, J. (BQ-03)	61
Jiang, I. (BK-02)	53	Jones, N.J. (CE-09)	74
Jiang, I. (DR-06)	122	Jones, N.J. (CE-12)	75
Jiang, L. (AF-15)	13	Jones, N.J. (DK-09)	113
Jiang, L. (BN-03)	57	Jonker, B. (AB-01)	2
Jiang, L. (CG-10)	79	Jonsson, H. (BC-09)	38
Jiang, L. (CL-06)	87	Joo, D. (EI-08)	140
Jiang, L. (FH-07)	169	Joseyphus, J. (AF-13)	13
Jiang, L. (FO-07)	182	Joshi, D. (AA-05)	2
Jiang, L. (FO-08)	182	Joshi, R. (FK-07)	175
Jiang, M. (HH-01)	234	Joshi, T. (DE-05)	103
Jiang, Q. (EQ-10)	152	Jouen, S. (GI-12)	206
Jiang, S. (DJ-08)	111	Joumard, I. (AC-09)	5
Jiang, S. (EF-13)	134	Joumard, I. (AM-01)	24
Jiang, S. (GN-08)	212	Joumard, I. (BB-09)	36

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Joumard, I. (DJ-09)	111
Joumard, I. (GG-09)	200
Jourdan, M. (CA-04)	65
Jouy, A. (GD-05)	193
Joyce, P.J. (GE-13)	197
Ju, G. (AI-06)	18
Juds, M.A. (FH-05)	169
Jué, E. (HD-05)	225
Juge, R. (HC-02)	222
Juge, R. (HC-03)	222
Juhin, A. (FI-01)	171
Jun, S. (GP-09)	215
Jung, D. (AO-09)	28
Jung, D. (CJ-01)	84
Jung, D. (CK-06)	86
Jung, D. (GP-04)	214
Jung, H. (CJ-06)	84
Jung, H. (CK-04)	85
Jung, J. (HH-13)	236
Jung, J. (HH-14)	236
Jung, S. (AL-02)	23
Jung, S. (CJ-06)	84
Jung, S. (CJ-08)	85
Jung, S. (GO-04)	213
Jung, S. (GP-09)	215
Jungfleisch, M. (AJ-05)	20
Jungfleisch, M. (CR-03)	95
Jungfleisch, M. (HE-10)	229
Jungwirth, T. (CA-02)	65

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Kabos, P. (AF-06)	12
Kachwala, S.M. (AN-07)	26
Kagita, S. (FD-03)	160
Kai, T. (AK-06)	22
Kai, T. (GC-03)	191
Kaidarova, A. (BR-08)	63
Kaidarova, A. (CS-03)	96
Kaidarova, A. (HF-11)	231
Kaidatzis, A. (AS-08)	33
Kaidatzis, A. (BI-08)	51
Kaidatzis, A. (CG-13)	79
Kaiju, H. (EE-08)	131
Kaiju, H. (FK-02)	175
Kaiser, C. (EF-04)	133
Kakay, A. (ED-10)	129
Kakay, A. (HB-11)	221
Kakazei, G.N. (BD-14)	41
Kakazei, G.N. (CR-04)	95
Kakazei, G.N. (FC-13)	159
Kakinuma, Y. (HB-02)	220
Kalappattil, V. (BN-09)	58
Kalappattil, V. (FM-01)	178
Kalappattil, V. (FM-04)	178
Kalappattil, V. (HG-05)	232
Kalarickal, S.S. (AI-09)	18
Kamada, T. (CQ-09)	94
Kamara, S. (GF-08)	198
Kambe, S. (CN-07)	90
Kamble, D. (AE-05)	9
Kamboj, I. (EJ-01)	141
Kamimaki, A. (EL-07)	145
Kamiya, K. (BI-04)	50
Kämpfe, T. (FO-06)	181
Kanada, I. (AF-09)	12
Kanai, S. (GD-14)	195
Kanai, S. (HD-04)	225
Kanai, Y. (CQ-05)	94
Kanai, Y. (EK-07)	143
Kanai, Y. (EK-08)	143
Kanaki, T. (GD-12)	194
Kanaki, T. (HH-01)	234
Kanemura, T. (EL-04)	144
Kanetaka, H. (BJ-03)	52
Kang, D. (AO-06)	27
Kang, D. (FQ-07)	184

Kang, J. (CN-09)	90
Kang, K. (FE-10)	163
Kang, M. (AS-06)	33
Kang, M. (AS-07)	33
Kang, M. (DM-07)	116
Kang, S. (BS-06)	64
Kang, S. (CJ-08)	85
Kang, S. (CS-05)	96
Kang, S. (FF-14)	166
Kang, S. (FL-05)	176
Kang, W. (AC-05)	5
Kang, W. (HC-10)	223
Kani, N. (CC-13)	70
Kannan, H. (EG-12)	137
Kanso, H. (BH-03)	48
Kao, C. (EP-08)	150
Kao, Y. (GN-06)	212
Kaprzyk, S. (HH-08)	235
Kar, G.S. (FF-10)	165
Karakas, V. (EF-02)	132
Karakas, V. (GB-05)	188
Karakas, V. (GB-13)	190
Karakas, V. (GH-01)	201
Karapetrova, E. (EA-05)	124
Kardasz, B. (CF-08)	76
Kardasz, B. (FF-01)	164
Kardasz, B. (FF-11)	165
Kardasz, B. (HD-02)	225
Karenowska, A.D. (ED-01)	127
Karki, S. (GC-11)	192
Karns, D. (BA-03)	34
Kasai, S. (EC-05)	125
Kasai, S. (EK-10)	144
Kasai, S. (GC-04)	191
Kasai, S. (GC-08)	191
Kasai, S. (GH-12)	203
Kashyap, A. (BF-05)	44
Kashyap, A. (DE-03)	103
Kashyap, A. (DG-09)	107
Kashyap, A. (FJ-07)	174
Kasukawa, S. (BS-04)	64
Kataja, M. (CF-06)	76
Katayama, T. (AN-06)	26
Katine, J.A. (FB-14)	156
Katine, J.A. (GD-08)	194
Kato, A. (CG-01)	78
Kato, A. (CI-12)	83
Kato, A. (DM-01)	115
Kato, T. (AR-09)	32
Kato, T. (CQ-07)	94
Kato, Y. (GD-10)	194
Kato, Y. (GK-03)	208
Kato, Y. (GL-03)	209
Kaur, J. (AR-07)	31
Kaur, N. (HG-12)	233
Kaushik, D. (CC-04)	69
Kawabata, S. (HF-04)	230
Kawabe, Y. (GM-06)	211
Kawagoe, R. (DR-03)	122
Kawahara, T. (FM-05)	178
Kawai, H. (GC-03)	191
Kawakami, R. (EC-02)	125
Kawamoto, M. (GN-05)	212
Kawamura, Y. (DR-03)	122
Kawana, M. (FN-09)	180
Kawana, M. (GN-01)	211
Kawasaki, Y. (DI-05)	109
Kawato, Y. (DH-09)	108
Kay, A. (ED-05)	128
Kazemi, M. (GD-07)	194
KC, A. (AD-13)	8
Kchaw, M. (GI-12)	206
Keatley, P.S. (FB-14)	156
Keavney, D.J. (EC-10)	126
Kedous-Lebouc, A. (GE-06)	196
Keebaugh, S. (DD-05)	102
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Keil, N. (EC-13)	127	Kim, J. (AO-09)	28
Keil, N. (GH-07)	202	Kim, J. (AS-07)	33
Kempinger, S. (AH-10)	16	Kim, J. (BG-08)	47
Kent, A.D. (AB-09)	3	Kim, J. (BI-13)	51
Kent, A.D. (AK-04)	22	Kim, J. (BQ-04)	61
Kent, A.D. (CF-08)	76	Kim, J. (CB-15)	68
Kent, A.D. (FF-08)	165	Kim, J. (CF-11)	77
Kent, A.D. (FF-11)	165	Kim, J. (CJ-01)	84
Kent, A.D. (HD-02)	225	Kim, J. (CK-06)	86
Kent, N. (FK-08)	176	Kim, J. (DC-01)	100
Kent, N. (GH-02)	202	Kim, J. (DO-06)	118
Keppens, V. (CN-03)	89	Kim, J. (DP-09)	120
Kerber, N. (AC-08)	5	Kim, J. (DQ-02)	120
Kerber, N. (CF-02)	75	Kim, J. (DR-02)	121
Kerber, N. (GH-07)	202	Kim, J. (EC-09)	126
Kerber, N. (GQ-08)	216	Kim, J. (FC-06)	157
Keshavarz, S. (BI-02)	50	Kim, J. (GI-01)	204
Kessler, R. (CI-06)	82	Kim, J. (GL-05)	209
Ketterson, A. (FD-07)	161	Kim, J. (HD-08)	226
Kevan, S. (FK-08)	176	Kim, J. (HD-11)	226
Kewenig, M. (HE-07)	228	Kim, K. (DM-07)	116
Khaire, T. (DD-03)	102	Kim, K. (DP-04)	119
Khalili Amiri, P. (DA-09)	99	Kim, K. (ER-06)	152
Khalili, P. (DA-07)	98	Kim, K. (FB-13)	156
Khan, M. (BR-08)	63	Kim, K. (FN-04)	180
Khan, M. (CS-03)	96	Kim, M. (DR-02)	121
Khan, M. (HF-11)	231	Kim, M. (FQ-03)	184
Khan, M.A. (DR-07)	122	Kim, S. (AB-04)	3
Khan, M.A. (FP-09)	183	Kim, S. (AF-12)	12
Khan, M.U. (BE-03)	42	Kim, S. (DM-05)	115
Khan, R.A. (AD-08)	8	Kim, S. (EP-06)	150
Khanna, M. (EJ-11)	142	Kim, T. (CK-04)	85
Kharel, P.R. (AE-03)	9	Kim, T. (FO-04)	181
Kharel, P.R. (AE-13)	11	Kim, W. (AL-08)	23
Kharel, P.R. (DK-06)	112	Kim, W. (FF-10)	165
Kharel, P.R. (EI-05)	140	Kim, W. (GO-08)	213
Kharel, P.R. (EL-08)	145	Kim, W. (HG-06)	233
Kharratian, S. (FE-12)	163	Kim, Y. (AL-02)	23
Khazdozian, H.A. (GI-13)	206	Kim, Y. (BD-02)	39
Khdour, M. (FH-06)	169	Kim, Y. (CJ-06)	84
Khodadadi, B. (EF-01)	132	Kim, Y. (CJ-08)	85
Khodadadi, B. (EF-04)	133	Kim, Y. (FQ-03)	184
Khojah, R.I. (CE-03)	73	Kim, Y. (GJ-09)	207
Khojah, R.I. (FK-05)	175	Kim, Y. (GO-04)	213
Khojah, R.I. (GF-13)	199	Kim, Y. (GP-09)	215
Khurshid, H. (FI-05)	172	Kim, Y.K. (CB-06)	67
Khymyn, R. (BB-06)	35	Kim, Y.K. (GQ-05)	216
Khymyn, R. (BD-07)	40	Kimel, A. (DB-01)	99
Khymyn, R. (FC-03)	157	Kimel, A. (DB-03)	99
Khymyn, R. (GB-04)	188	Kimel, A. (DB-04)	100
Khymyn, R. (HD-01)	225	Kimel, A. (ED-06)	128
Kijima-Aoki, H. (GR-08)	218	Kimler, T. (BJ-04)	52
Kikuchi, N. (DH-05)	108	Kimler, T. (GL-09)	210
Kikuchi, S. (DH-05)	108	Kimura, S. (GC-09)	192
Kim, B. (AO-06)	27	Kimura, T. (CN-10)	90
Kim, B. (CL-03)	86	Kimura, T. (EQ-06)	151
Kim, B. (CN-09)	90	Kin, M. (FN-02)	179
Kim, B. (FQ-07)	184	Kinane, C. (CB-07)	67
Kim, C. (AL-03)	23	Kinane, C. (EH-13)	139
Kim, C. (AL-07)	23	Kinane, C. (HC-14)	224
Kim, C. (BL-05)	54	King, A.H. (XA-02)	186
Kim, C. (DP-09)	120	Kinno, S. (BP-03)	60
Kim, C. (EO-04)	149	Kioussis, N. (AB-10)	4
Kim, C. (GF-08)	198	Kioussis, N. (DA-07)	98
Kim, D. (DC-01)	100	Kioussis, N. (EF-08)	133
Kim, D. (DM-07)	116	Kirby, B.J. (AD-10)	8
Kim, D. (EM-08)	147	Kirby, B. (GH-10)	203
Kim, D. (EM-10)	147	Kirby, B.J. (EC-02)	125
Kim, D. (EP-06)	150	Kirby, B.J. (FD-04)	160
Kim, D. (FF-07)	165	Kirby, B.J. (GB-10)	189
Kim, D. (HG-06)	233	Kirchhof, C. (CM-07)	88
Kim, E. (CC-02)	69	Kirilyuk, A. (DB-01)	99
Kim, H. (AQ-03)	30	Kirilyuk, A. (DB-03)	99
Kim, H. (BL-10)	55	Kirk, E. (FL-12)	177
Kim, H. (DK-09)	113	Kiselev, N.S. (EG-02)	135
Kim, H. (DP-04)	119	Kish, L. (EA-05)	124
Kim, J. (AD-09)	8	Kishimoto, H. (CG-01)	78

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Kishimoto, K. (CO-02)	91	Kong, W. (AM-05).	25
Kishine, J. (FC-05).	157	König, J. (CN-08)	90
Kishine, J. (GB-03)	188	Konno, Y. (EO-02).	149
Kiskinova, M. (EF-15).	135	Konoto, M. (BO-10)	59
Kissikov, T. (CN-06)	89	Koonkarnkhai, S. (CQ-03).	94
Kita, E. (FJ-05)	174	Koonkarnkhai, S. (DH-04).	108
Kita, E. (FN-02)	179	Koopmans, B. (BC-06)	37
Kitagawa, K. (BF-01)	44	Kopnov, G. (CB-04).	66
Kitakami, O. (DH-05)	108	Korecki, J. (AD-03).	7
Kitakami, O. (EE-08).	131	Korecki, J. (AD-05)	7
Kittmann, A. (CM-07)	88	Korenko, B. (EB-02)	124
Kiwa, T. (GF-09)	198	Korpany, K.V. (AH-13)	17
Kläui, M. (AA-03)	2	Kosai, H. (DL-08)	114
Kläui, M. (AC-08)	5	Kosel, J. (AP-10)	29
Kläui, M. (BD-04)	40	Kosel, J. (BR-08)	63
Kläui, M. (CA-04)	65	Kosel, J. (CS-03)	96
Kläui, M. (CB-13)	68	Kosel, J. (DG-04).	106
Kläui, M. (CF-02)	75	Kosel, J. (GF-06)	198
Kläui, M. (DA-01)	97	Kosel, J. (HF-11)	231
Kläui, M. (EC-13)	127	Kosen, S. (ED-01)	127
Kläui, M. (ED-05)	128	Kostyuchenko, N. (GI-03)	204
Kläui, M. (ED-08)	128	Kosub, T. (HF-05)	231
Kläui, M. (GB-06)	189	Kotani, Y. (GI-05)	205
Kläui, M. (GH-07)	202	Kothandaraman, R. (FF-13).	166
Kläui, M. (GQ-08)	216	Kotsugi, M. (AR-04)	31
Kleibert, A. (CC-08)	70	Kottter, S. (AH-08)	16
Kleibert, A. (FL-12)	177	Kou, B. (ER-04).	152
Kleibert, A. (HE-09)	228	Kou, B. (ER-07).	153
Klein, J. (GN-07)	212	Kou, B. (ER-08).	153
Klein, L. (FB-01)	154	Kou, B. (FQ-02).	184
Klein, L. (GF-02).	197	Kou, Z. (EJ-09)	142
Klein, L. (HF-12).	232	Koul, S.K. (FD-03)	160
Klein, O. (AJ-09)	20	Kousaka, Y. (BO-08)	59
Klein, O. (ED-02)	127	Kousaka, Y. (BO-09)	59
Klewe, C. (BB-04)	35	Kovacs, A. (BC-07)	38
Klewe, C. (EF-01)	132	Kovacs, A. (EG-02)	135
Klose, C. (EC-03)	125	Kovacs, A. (FG-05)	167
Klose, C. (EC-04)	125	Kovalev, A. (BC-10)	38
Knappe, S. (EB-02)	124	Kovalev, A. (FB-08).	155
Knoll, P. (CG-11)	79	Kovintavewat, P. (CQ-03)	94
Knyazev, Y. (EM-02)	146	Kovintavewat, P. (DH-04)	108
Ko, P. (DK-10)	113	Koyanagi, T. (CO-02)	91
Ko, Y. (CJ-08)	85	Koziol-Rachwal, A. (AD-05).	7
Kobayashi, M. (FE-14)	163	Kozlenko, D. (BN-09)	58
Kobayashi, N. (GR-08)	218	Kozłowski, G. (AF-05)	11
Kobayashi, S. (DR-03).	122	Kozłowski, G. (BI-07)	51
Kobayashi, S. (EJ-10)	142	Kozłowski, G. (DK-07)	112
Kobe, S. (CI-06).	82	Kramer, M.J. (AE-08)	10
Kobuchi, D. (CI-03).	82	Kramer, M.J. (AS-02)	32
Koda, T. (AQ-05).	30	Kramer, M.J. (CI-10)	83
Kodama, T. (BJ-03)	52	Kramer, M.J. (DM-06).	116
Koganezawa, T. (AR-04)	31	Krawczyk, M. (BD-14)	41
Koganoki, W. (CG-09).	79	Krawczyk, M. (EC-06)	126
Kögerler, P. (CN-08)	90	Krawczyk, M. (HE-05)	228
Kogias, G. (AF-03)	11	Krenn, H. (CG-11).	79
Koh, C. (DL-05).	114	Kreuzer, M. (BQ-06)	62
Kohl, P. (FH-10).	170	Kreyssig, A. (FP-02)	182
Koi, K. (GD-10).	194	Krings, A. (GE-04).	196
Koi, K. (GK-03).	208	Krivorotov, I. (BB-05)	35
Koike, F. (AD-07)	8	Krivorotov, I. (DC-04).	101
Koirala, N. (AB-06)	3	Krivorotov, I. (HB-11).	221
Kolekar, S. (HG-05).	232	Krivoruchko, V. (AC-06)	5
Kolesnikov, A. (GQ-05).	216	Krivosik, P. (BA-03)	34
Kolesnikov, A. (HC-05).	223	Krohns, S. (EE-01).	129
Komine, T. (EE-08)	131	Kromin, S. (AC-08)	5
Komine, T. (FK-02)	175	Kromin, S. (CF-02)	75
Komissinskiy, P. (DH-08)	108	Kromin, S. (EC-13)	127
Komori, F. (AR-04)	31	Kronast, F. (GK-07)	208
Komori, S. (BB-02)	35	Kruesubthaworn, A. (FN-03)	179
Komura, E. (HB-02)	220	Kruglyak, V.V. (AC-06)	5
Komuro, H. (DG-09)	107	Kruglyak, V.V. (BP-05)	60
Kondou, K. (AD-01)	7	Kruglyak, V.V. (ED-11)	129
Kondou, K. (CB-15)	68	Kruglyak, V.V. (HE-03).	227
Kong, G. (CQ-08)	94	Krycka, K.L. (AH-11)	17
Kong, G. (DH-03)	107	Krycka, K.L. (AH-12)	17
Kong, T. (FP-02)	182	Krycka, K.L. (BC-14)	39
Kong, W. (AM-04).	24	Krzyzewski, S. (EB-02).	124

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Law, J. (EL-06)	145	Lee, K. (FL-09)	177
Law, S. (EG-12)	137	Lee, M.S. (BH-01)	47
Lawton, B.F. (CL-10)	87	Lee, R. (GE-07)	196
Le Breton, J. (GI-12)	206	Lee, S. (AL-01)	23
Le Roy, D. (GF-05)	198	Lee, S. (AL-08)	23
Le, B.L. (AH-01)	15	Lee, S. (BE-06)	43
Le, M. (GF-07)	198	Lee, S. (CL-03)	86
Le, T.Q. (EF-13)	134	Lee, S. (CP-03)	92
Le, T.Q. (HC-01)	222	Lee, S. (CS-05)	96
Lebourgeois, R. (FL-07)	177	Lee, S. (CS-06)	96
Lebrun, L. (GG-09)	200	Lee, S. (EO-08)	149
Lebrun, R. (AA-03)	2	Lee, S. (FB-03)	154
Lebrun, R. (BD-04)	40	Lee, S. (FB-13)	156
Lebrun, R. (ED-05)	128	Lee, S. (FQ-03)	184
Lebrun, R. (GB-06)	189	Lee, S. (GO-08)	213
Lederman, D. (AD-13)	8	Lee, S. (HH-10)	235
Lederman, D. (DE-05)	103	Lee, T. (AL-04)	23
Ledue, D. (BH-03)	48	Lee, T. (BK-06)	53
Lee, A.J. (BB-03)	35	Lee, T. (CE-11)	75
Lee, A.J. (EH-04)	137	Lee, W. (AF-12)	12
Lee, B. (BR-02)	63	Lee, W. (AI-13)	19
Lee, C. (BL-10)	55	Lee, W. (AO-06)	27
Lee, C. (DP-09)	120	Lee, W. (BI-05)	50
Lee, C. (FB-10)	155	Lee, W. (CH-13)	81
Lee, C. (FD-07)	161	Lee, W. (DM-05)	115
Lee, C. (FH-13)	170	Lee, W. (DR-06)	122
Lee, C. (GE-05)	196	Lee, W. (FQ-07)	184
Lee, D. (AO-06)	27	Lee, Y. (BE-05)	42
Lee, D. (BL-01)	54	Legrand, W. (BC-01)*	36
Lee, D. (CJ-06)	84	Legrand, W. (BC-02)	37
Lee, D. (DP-01)	119	Legrand, W. (BC-04)	37
Lee, D. (FL-09)	177	Legrand, W. (GG-02)	199
Lee, D. (FQ-07)	184	Legranger, J. (GE-06)	196
Lee, E. (CN-09)	90	Lehmann, K. (BD-15)	41
Lee, E.G. (CS-08)	97	Lei, G. (CH-07)	81
Lee, G. (FB-13)	156	Lei, G. (DP-05)	120
Lee, H. (BL-10)	55	Lei, G. (EN-06)	148
Lee, H. (BM-01)	55	Lei, Z. (FO-10)	182
Lee, H. (CB-15)	68	Leighton, C. (AH-01)	15
Lee, H. (CK-09)	86	Leighton, C. (AH-04)	16
Lee, H. (CL-03)	86	Leighton, C. (BH-06)	48
Lee, H. (CS-05)	96	Leighton, C. (EJ-01)	141
Lee, H. (CS-06)	96	Leighton, C. (HB-05)	220
Lee, H. (DE-08)	104	Leistner, K. (EE-11)	131
Lee, H. (DM-05)	115	Leistner, K. (FA-05)	153
Lee, H. (DP-02)	119	Leitao, D.C. (AG-08)	14
Lee, H. (EN-07)	148	Leitao, D.C. (FO-06)	181
Lee, H. (FQ-04)	184	Leitao, N. (AM-06)	25
Lee, H. (GJ-09)	207	Lejeune, B. (AE-08)	10
Lee, H. (GO-03)	213	Lejeune, B. (DK-02)	112
Lee, H. (GP-04)	214	Lejeune, B. (DM-06)	116
Lee, J. (AB-06)	3	Leliaert, J. (AC-08)	5
Lee, J. (AL-05)	23	Lemesh, I. (AC-04)	5
Lee, J. (AO-06)	27	Lemesh, I. (AC-08)	5
Lee, J. (AO-09)	28	Lemesh, I. (CF-02)	75
Lee, J. (AS-06)	33	Lemesh, I. (EC-04)	125
Lee, J. (CI-01)	82	Lemesh, I. (GH-07)	202
Lee, J. (CJ-01)	84	Lendinez, S. (DD-03)	102
Lee, J. (CK-04)	85	Lendinez, S. (GB-05)	188
Lee, J. (CK-06)	86	Lendinez, S. (HE-10)	229
Lee, J. (CQ-06)	94	Leng, Q. (AG-02)	13
Lee, J. (DG-05)	106	Leng, Q. (FO-10)	182
Lee, J. (DM-07)	116	Lenne, S. (BB-08)	35
Lee, J. (EM-06)	146	Lenne, S. (BE-09)	43
Lee, J. (FB-04)	154	Lenz, K. (FL-12)	177
Lee, J. (FQ-04)	184	Lenz, K. (GH-04)	202
Lee, J. (FQ-07)	184	Lenz, K. (HB-11)	221
Lee, J. (GO-03)	213	Lenz, K. (HE-02)	227
Lee, J. (GP-04)	214	Leon, F.D. (DL-09)	114
Lee, K. (BA-03)	34	Leong, Z. (AF-11)	12
Lee, K. (BQ-04)	61	Leong, Z. (CM-01)	87
Lee, K. (CB-13)	68	Leong, Z. (FD-08)	161
Lee, K. (CS-05)	96	Leonstev, S. (DK-07)	112
Lee, K. (DR-02)	121	Leontsev, S. (BI-07)	51
Lee, K. (EO-08)	149	Lequeux, S. (FF-03)	164
Lee, K. (FB-13)	156	Lequeux, S. (FF-04)	164
Lee, K. (FC-01)	156	Lesseux, G.G. (CN-07)	90

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Lesseux, G.G. (CP-06)	93	Li, Y. (CM-04)	88
Letang, J. (HD-08)	226	Li, Y. (CM-05)	88
Levin, E.E. (AE-09)	10	Li, Y. (CP-01)	92
Lew, W. (BD-05)	40	Li, Y. (CR-03)	95
Lew, W. (GQ-03)	215	Li, Y. (CR-08)	95
Lewis, J.P. (DE-01)	103	Li, Y. (DD-03)	102
Lewis, L.H. (AE-08)	10	Li, Y. (DJ-02)	110
Lewis, L.H. (BI-02)	50	Li, Y. (DL-07)	114
Lewis, L.H. (CG-05)	78	Li, Y. (DO-02)	118
Lewis, L.H. (DK-02)	112	Li, Y. (DP-08)	120
Lewis, L.H. (DM-06)	116	Li, Y. (EF-02)	132
Lewis, L.H. (HH-08)	235	Li, Y. (EM-04)	146
Li, A. (FN-05)	180	Li, Y. (EN-01)	147
Li, B. (BH-01)	47	Li, Y. (EN-02)	147
Li, C. (BN-01)	57	Li, Y. (EN-03)	147
Li, C. (CS-04)	96	Li, Y. (EO-05)	149
Li, C. (EJ-06)	142	Li, Y. (EO-06)	149
Li, C.H. (AB-01)	2	Li, Y. (FJ-01)	173
Li, D. (CM-04)	88	Li, Y. (FJ-13)	174
Li, D. (DA-02)	97	Li, Y. (FK-01)	175
Li, F. (AO-07)	27	Li, Y. (FN-05)	180
Li, F. (BO-04)	59	Li, Y. (FN-07)	180
Li, F. (EA-04)	124	Li, Y. (FN-11)	180
Li, F. (FB-11)	155	Li, Y. (GB-05)	188
Li, F. (GB-07)	189	Li, Y. (GB-13)	190
Li, F. (GE-08)	196	Li, Y. (GM-01)	210
Li, G. (CH-05)	80	Li, Y. (GO-01)	213
Li, H. (AE-10)	10	Li, Y. (GQ-03)	215
Li, H. (AS-04)	32	Li, Z. (AG-02)	13
Li, J. (BN-05)	57	Li, Z. (AO-03)	27
Li, J. (FN-06)	180	Li, Z. (BO-07)	59
Li, J. (GE-08)	196	Li, Z. (CL-04)	87
Li, J. (GM-04)	210	Li, Z. (EG-02)	135
Li, J. (GP-05)	214	Li, Z. (FO-10)	182
Li, K. (BN-03)	57	Li, Z. (GE-06)	196
Li, K. (CL-06)	87	Liang, F. (BP-08)	61
Li, K. (EQ-01)	151	Liang, F. (BP-09)	61
Li, K. (FH-07)	169	Liang, F. (EM-07)	146
Li, L. (AB-01)	2	Liang, G. (DB-02)	99
Li, L. (CN-03)	89	Liang, J. (BC-03)	37
Li, L. (DQ-05)	121	Liang, J. (EH-12)	138
Li, L. (GO-06)	213	Liang, J. (FJ-01)	173
Li, M. (AO-08)	28	Liang, L. (FL-05)	176
Li, M.P. (BO-01)	58	Liang, P. (BG-05)	46
Li, M.P. (FC-07)	157	Liang, P. (FR-02)	185
Li, M.P. (FG-06)	167	Liang, P. (GO-02)	213
Li, P. (AK-02)	21	Liang, S. (AB-02)	2
Li, P. (CB-08)	67	Liang, X. (EI-09)	140
Li, P. (DA-02)	97	Liang, X. (HF-08)	231
Li, Q. (CG-08)	79	Liang, X. (HF-09)	231
Li, Q. (DR-01)	121	Liao, L. (FB-11)	155
Li, Q. (EH-10)	138	Liao, Y. (EF-12)	134
Li, R. (BM-03)	55	Liedke, M. (EE-10)	131
Li, R. (BP-04)	60	Lille, J. (GD-08)	194
Li, R. (BS-05)	64	Lim, C.R. (AF-11)	12
Li, R. (CQ-04)	94	Lim, J. (AO-09)	28
Li, R. (FN-11)	180	Lim, J. (BI-13)	51
Li, S. (GQ-03)	215	Lim, J. (CI-11)	83
Li, S. (HC-10)	223	Lim, J. (CJ-01)	84
Li, W. (BI-09)	51	Lim, J. (CK-06)	86
Li, W. (DF-06)	105	Lim, J. (FJ-08)	174
Li, W. (DG-02)	106	Lim, P. (FE-11)	163
Li, W. (DL-10)	114	Lim, W. (EC-07)	126
Li, X. (AB-04)	3	Lim, W. (HC-15)	224
Li, X. (AE-13)	11	Lim, Y. (EF-04)	133
Li, X. (BE-07)	43	Lima Jr., E. (DN-07)	117
Li, X. (CP-03)	92	Lima, Jr., E. (DN-06)	117
Li, X. (DA-07)	98	Lin, C. (AB-08)	3
Li, X. (DL-09)	114	Lin, C. (AJ-04)	20
Li, X. (GB-09)	189	Lin, C. (CH-12)	81
Li, Y. (AE-07)	10	Lin, C. (HG-08)	233
Li, Y. (AH-02)	15	Lin, H. (CH-02)	80
Li, Y. (AJ-13)	21	Lin, H. (CJ-03)	84
Li, Y. (AO-04)	27	Lin, H. (DO-02)	118
Li, Y. (AQ-01)	29	Lin, H. (DP-07)	120
Li, Y. (AS-03)	32	Lin, H. (EO-09)	149
Li, Y. (AS-04)	32	Lin, H. (EQ-07)	151

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Lin, H. (FR-07)	186	Liu, J. (FE-01)	161
Lin, H. (GO-01)	213	Liu, J. (FJ-10).	174
Lin, H. (GO-07)	213	Liu, J. (GR-03).	217
Lin, H. (HF-08)	231	Liu, K. (BC-03)	37
Lin, H. (HF-09)	231	Liu, K. (BC-08)	38
Lin, L. (GN-06)	212	Liu, K. (DJ-08).	111
Lin, M. (BI-09)	51	Liu, K. (EE-10)	131
Lin, Q. (CI-08)	83	Liu, K. (FC-10)	158
Lin, Q. (FQ-05)	184	Liu, L. (BD-09)	40
Lin, T. (CP-10).	93	Liu, L. (BM-03)	55
Lin, Z. (AM-09)	25	Liu, L. (CC-01)	68
Lin, Z. (GS-08)	219	Liu, L. (FB-10).	155
Lindner, J. (BH-02)	48	Liu, L. (FE-06).	162
Lindner, J. (ED-10)	129	Liu, M. (BS-03)	64
Lindner, J. (FG-07)	167	Liu, M. (CD-09).	72
Lindner, J. (GH-04)	202	Liu, M. (DI-05)	109
Lindner, J. (HB-11)	221	Liu, M. (EE-03)	130
Lindner, J. (HE-02)	227	Liu, M. (EE-12)	131
Linfield, E. (BH-07).	49	Liu, M. (EE-13)	131
Ling, X. (HG-11)	233	Liu, M. (FA-03)	153
Liou, S. (AG-01)	13	Liu, M. (FE-09)	162
Lisenkov, I. (BD-13)	41	Liu, P. (BG-09).	47
Lisenkov, I. (CE-02)	73	Liu, P. (BN-06).	57
Lisenkov, I. (HF-10)	231	Liu, P. (BR-01).	62
Lisfi, A. (AF-01)	11	Liu, P. (FI-06).	172
Lisfi, A. (EJ-07)	142	Liu, P. (FJ-11).	174
Lisiecki, F. (HE-05)	228	Liu, Q. (BO-07)	59
Litvinenko, A. (HD-10)	226	Liu, Q. (CB-01)	66
Litvinov, D. (DN-01)	116	Liu, T. (AJ-13)	21
Litvinov, D. (EJ-04)	141	Liu, T. (BH-04)	48
Litzius, K. (AC-08)	5	Liu, T. (DB-01)	99
Litzius, K. (CF-02).	75	Liu, T. (FP-08)	183
Litzius, K. (DA-01)	97	Liu, T. (HB-06)	220
Litzius, K. (EC-13)	127	Liu, W. (AS-04)	32
Litzius, K. (GH-07)	202	Liu, W. (AS-05)	33
Litzius, K. (GQ-08)	216	Liu, W. (BG-05).	46
Liu, A. (BG-02)	46	Liu, W. (BM-02)	55
Liu, A. (EQ-09)	152	Liu, W. (BM-06)	56
Liu, A. (GP-05)	214	Liu, W. (DK-08).	112
Liu, C. (AG-04)	14	Liu, W. (DM-09)	116
Liu, C. (BG-03)	46	Liu, W. (EP-08)	150
Liu, C. (BH-04)	48	Liu, W. (FH-13)	170
Liu, C. (BK-01)	53	Liu, W. (FJ-01).	173
Liu, C. (BM-04).	56	Liu, W. (FJ-02).	173
Liu, C. (CH-06)	80	Liu, W. (FR-02)	185
Liu, C. (CH-07)	81	Liu, W. (GE-05)	196
Liu, C. (CH-08)	81	Liu, W. (GO-02).	213
Liu, C. (EN-06)	148	Liu, W. (GQ-09).	216
Liu, C. (EP-04).	150	Liu, W. (HI-02)	236
Liu, C. (GB-13)	190	Liu, X. (AE-02)	9
Liu, C. (GE-07)	196	Liu, X. (AG-04)	14
Liu, C. (GJ-02).	206	Liu, X. (AO-01)	27
Liu, C. (GJ-05).	206	Liu, X. (AO-08)	28
Liu, C. (GP-06)	214	Liu, X. (BE-06)	43
Liu, C. (GP-08)	215	Liu, X. (CK-03)	85
Liu, C. (HI-03).	236	Liu, X. (CP-03)	92
Liu, C. (HI-09).	237	Liu, X. (GA-03)	187
Liu, D. (AE-10)	10	Liu, X. (GJ-01).	206
Liu, D. (EK-04)	143	Liu, X. (GJ-02).	206
Liu, D. (HH-06)	235	Liu, X. (GJ-05).	206
Liu, E. (FF-10)	165	Liu, X. (HH-03)	234
Liu, F. (AS-03).	32	Liu, Y. (AB-06)	3
Liu, F. (DM-08)	116	Liu, Y. (AD-11)	8
Liu, F. (EQ-08).	152	Liu, Y. (AG-01)	13
Liu, F. (FQ-10).	185	Liu, Y. (AH-10)	16
Liu, F. (FR-04)	185	Liu, Y. (AL-06)	23
Liu, F. (GP-01).	214	Liu, Y. (AS-03).	32
Liu, G. (CJ-09).	85	Liu, Y. (BK-10)	54
Liu, H. (AK-09)	22	Liu, Y. (BN-05)	57
Liu, H. (AQ-02)	30	Liu, Y. (BS-07)	64
Liu, H. (BN-10)	58	Liu, Y. (CP-08).	93
Liu, H. (CJ-09).	85	Liu, Y. (DA-02)	97
Liu, H. (FQ-04)	184	Liu, Y. (DA-05)	98
Liu, H. (GJ-07).	207	Liu, Y. (DM-08)	116
Liu, H. (GJ-08).	207	Liu, Y. (EA-02)	123
Liu, J. (AL-06).	23	Liu, Y. (EI-07)	140
Liu, J. (BQ-08).	62	Liu, Y. (EM-07)	146

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Liu, Y. (EQ-08)	152	Ludbrook, B. (HH-04)	234
Liu, Y. (FB-04)	154	Luis Martinez, R. (GQ-04)	215
Liu, Y. (FB-07)	155	Luiz Rodrigues Junior, D. (DR-05)	122
Liu, Y. (FB-15)	156	Lukashev, P. (EL-08)	145
Liu, Y. (FL-04)	176	Lukes, J.R. (FG-08)	167
Liu, Y. (GH-08)	203	Lukoyanov, A. (EM-02)	146
Liu, Y. (GN-06)	212	Lüning, J. (HA-01)	219
Liu, Y. (HE-14)	229	Luo, D. (CK-03)	85
Liu, Y. (HG-06)	233	Luo, H. (AQ-04)	30
Liu, Y. (HH-07)	235	Luo, H. (BQ-08)	62
Liu, Z. (AI-05)	18	Luo, H. (CM-03)	88
Liu, Z. (AI-06)	18	Luo, J. (AK-11)	22
Liu, Z. (BA-03)	34	Luo, J. (ER-04)	152
Liu, Z. (BL-07)	55	Luo, J. (FQ-02)	184
Liu, Z. (CH-11)	81	Luo, X. (GM-03)	210
Llandro, J. (GD-14)	195	Luong, H. (FM-01)	178
Llandro, J. (HD-04)	225	Lupton, J.C. (BP-06)	60
Llopis, R. (CB-02)	66	Lupu, N. (CE-10)	74
Lo Conte, R. (BC-08)	38	Lupu, N. (DG-07)	106
Lo Conte, R. (CD-04)	71	Lupu, N. (DN-04)	117
Lo Conte, R. (CE-03)	73	Lupu, N. (EP-03)	150
Lobanov, I. (BC-09)	38	Lupu, N. (EP-09)	151
LoBue, M. (AE-11)	10	Lupu, N. (GS-03)	218
LoBue, M. (DK-10)	113	Lv, F. (AQ-07)	30
Locatelli, A. (AC-11)	6	Lv, H. (FO-06)	181
Locatelli, A. (HC-02)	222	Lv, P. (CD-07)	72
Locatelli, A. (HC-03)	222	Lv, Y. (AM-02)	24
Lochner, E. (AJ-13)	21	Lynch, C. (CD-07)	72
Löffler, J.F. (AH-03)	15	Lynch, C. (FK-05)	175
Lofland, S. (GM-05)	211	Lynch, C. (GF-13)	199
Lograsso, T.A. (AE-08)	10	Lynn, J.W. (AH-12)	17
Loidl, A. (EE-01)	129	Lynn, J.W. (CD-03)	71
Loku Singgappulige, K.R. (DH-07)	108	Lynn, J.W. (DF-01)	104
Loku Singgappulige, K.R. (EL-10)	145	Lyu, S. (AL-10)	24
Loku Singgappulige, K.R. (HH-13)	236	Lyu, S. (AL-11)	24
Lomakin, V. (AC-12)	6	Lyu, S. (CH-02)	80
Lomakin, V. (DB-06)	100	Lyu, S. (CJ-03)	84
Lomakin, V. (FG-11)	168	Lyu, S. (DO-09)	119
Lomakin, V. (GS-08)	219	Lyu, S. (DP-07)	120
Lomakin, V. (HD-13)	227	Lyu, S. (EQ-07)	151
Lomonova, E.A. (CH-04)	80	Lyu, S. (GO-01)	213
Long, Y. (BN-10)	58	Lyu, S. (GO-07)	213
Long, Y. (GJ-07)	207		
Long, Y. (GJ-08)	207		
Lopes, A. (CD-11)	72		
Lopes, A. (HF-02)	230		
López Cortajarena, A. (AP-10)	29		
Lopez-Diaz, L. (HE-14)	229		
López-Tabares, J. (EL-05)	145		
Lopez, V. (DA-09)	99		
Lostun, M. (DG-07)	106		
Lotya, M. (GG-12)	201		
Lou, J. (BG-02)	46		
Lou, J. (EQ-09)	152		
Lou, J. (GP-05)	214		
Lourembam, J. (EC-08)	126		
Lovett, J. (BP-06)	60		
Loving, M. (CC-10)	70		
Loving, M. (DD-05)	102		
Low, D. (GB-10)	189		
Lu, C. (CM-09)	88		
Lu, J. (CH-07)	81		
Lu, J. (FO-09)	182		
Lu, Q. (DK-08)	112		
Lu, Q. (DN-02)	116		
Lu, Q. (EQ-10)	152		
Lu, Q. (ER-01)	152		
Lu, Q. (GQ-03)	215		
Lu, X. (GH-05)	202		
Lu, Y. (BD-15)	41		
Lu, Y. (BS-07)	64		
Lu, Y. (FO-07)	182		
Luan, Z. (DJ-08)	111		
Luan, Z. (HC-14)	224		
Lubarda, M.V. (FG-11)	168		
Luca, S. (CI-02)	82		
Lucassen, J. (BC-06)	37		

- M -

Ma, B. (FJ-10)	174
Ma, C. (CN-08)	90
Ma, C. (GA-03)	187
Ma, C.T. (HC-08)	223
Ma, F. (CR-08)	95
Ma, F. (GQ-03)	215
Ma, J. (BC-11)	38
Ma, J. (BE-02)	42
Ma, J. (CS-02)	96
Ma, J. (EB-03)	124
Ma, J. (EN-06)	148
Ma, L. (AE-07)	10
Ma, L. (BP-07)	60
Ma, L. (EL-01)	144
Ma, L. (GJ-03)	206
Ma, Q. (AS-03)	32
Ma, Q. (DM-08)	116
Ma, S. (GM-03)	210
Ma, X. (EP-06)	150
Ma, X. (FR-04)	185
Ma, X. (GB-09)	189
Ma, Y. (CJ-07)	85
Maât, N. (BI-02)	50
Maât, N. (GI-12)	206
Macauley, G.M. (AH-02)	15
Maccariello, D. (BC-01)	36
Maccariello, D. (BC-02)	37
Maccariello, D. (BC-04)	37
Maccariello, D. (GG-02)	199
Maccherozzi, F. (HC-02)	222
MacDougall, G. (EA-05)	124
Macedo, R. (AH-02)	15

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Machado, F.L. (AJ-03)	20	Mankey, G.J. (BI-04)	50
Machida, K. (BS-08)	64	Mankey, G.J. (BI-05)	50
Machida, K. (GN-02)	212	Mankey, G.J. (DM-05)	115
Madami, M. (BD-11)	41	Mann, M. (BC-05)	37
Madhavan, A. (CC-06)	69	Mann, M. (EC-03)	125
Madhogaria, R. (BN-09)	58	Mann, M. (EC-04)	125
Madugundo, R. (BI-11)	51	Manna, S. (GQ-06)	216
Maehara, H. (FF-09)	165	Manni, S. (BF-08)	45
Maehara, H. (GC-13)	192	Mansell, R. (CD-06)	72
Magen, C. (EG-03)	135	Mansour, M. (GD-05)	193
Magni, A. (DR-05)	122	Mansueto, M. (AM-01)	24
Magnus, F. (GH-06)	202	Manzoor, S. (AN-04)	26
Mahale, P. (AH-10)	16	Mao, J. (FL-02)	176
Mahalingam, K. (EF-01)	132	Mao, S. (FO-09)	182
Mahato, R.N. (DD-07)	102	Mao, Y. (GO-05)	213
Mahendiran, R. (DE-04)	103	Maranville, B.B. (BC-14)	39
Mahendiran, R. (FD-01)	160	Marchenko, A. (AC-06)	5
Mahendra, D.C. (AB-03)	3	Marchfield, D. (BF-09)	45
Mahendra, DC. (DJ-01)	110	Marcus, C. (EC-03)	125
Mahfoud, M. (GF-08)	198	Marioni, M.A. (AR-03)	31
Mahfouzi, F. (EF-08)	133	Marioni, M.A. (DQ-06)	121
Mahr, C. (GC-02)	190	Markandeyulu, G. (BQ-01)	61
Mai, T. (BF-02)	44	Markandeyulu, G. (DK-04)	112
Mair, L. (FI-07)	172	Markandeyulu, G. (EE-05)	130
Mair, L. (FI-12)	173	Markou, A. (HH-09)	235
Majetich, S. (AH-11)	17	Marolikar, D. (AN-07)	26
Majetich, S. (AH-12)	17	Marquez, H. (AD-13)	8
Majetich, S. (CF-05)	76	Marrows, C.H. (AD-01)	7
Majetich, S. (GC-07)	191	Marrows, C.H. (AD-08)	8
Majetich, S. (GD-11)	194	Marrows, C.H. (BH-07)	49
Major, M. (DH-08)	108	Marrows, C.H. (CB-05)	66
Majumder, S. (BF-07)	45	Marrows, C.H. (CF-03)	76
Majumder, S. (FP-04)	183	Marrows, C.H. (GK-05)	208
Mak, J. (CO-07)	91	Marrows, C.H. (HE-09)	228
Makarov, D. (BA-02)	33	Marshall, D. (GC-11)	192
Makarov, D. (HF-05)	231	Martel, S. (EB-01)	124
Makarove, V. (DG-01)	105	Martens, K.M. (BS-02)	64
Makielski, K. (GF-04)	197	Martens, K.M. (CD-10)	72
Makino, A. (CG-04)	78	Martin, E.L. (CO-04)	91
Makino, A. (FJ-06)	174	Martin, E.L. (GF-01)	197
Maletinsky, P. (GB-02)	188	Martin, F. (DG-08)	107
Maletinsky, P. (HC-07)	223	Martin, J. (FC-08)	158
Malik, V.K. (AN-10)	27	Martin, R.V. (FN-08)	180
Malinowski, G. (AI-01)	17	Martin, S. (AC-11)	6
Malinowski, G. (AI-03)	18	Martinez Banderas, A.I. (AP-10)	29
Malinowski, G. (EC-11)	126	Martinez-Garcia, J.C. (GF-11)	199
Malkova, Y. (GF-12)	199	Martinez-Teran, E. (BE-10)	43
Mallouk, T. (AH-10)	16	Martinez-Teran, E. (BR-07)	63
Malyuk, A. (CN-04)	89	Martinez, E. (AI-02)	17
Manabe, A. (CI-12)	83	Martinez, E. (CB-05)	66
Manabe, A. (DM-01)	115	Martinez, E. (FG-13)	168
Manago, T. (CR-06)	95	Martinez, E. (GN-03)	212
Manandhar, P. (FF-01)	164	Martinez, E. (GQ-04)	215
Manchon, A. (AC-01)	4	Martinez, L.M. (CP-02)	92
Manchon, A. (CA-05)	65	Martinez, L.M. (CP-08)	93
Manchon, A. (DG-04)	106	Martinez, L.M. (HG-09)	233
Mandal, R. (FM-06)	178	Martinez, R. (BP-02)	60
Mandal, S. (FI-12)	173	Martinez, R. (CD-02)	71
Mandru, A. (BC-13)	39	Martinovic, D. (GG-11)	201
Mandru, A. (DQ-06)	121	Martins, S. (BA-01)	33
Mandrus, D. (BF-02)	44	Marty, A. (AJ-04)	20
Mandrus, D. (CN-03)	89	Maschek, M. (GA-04)	187
Mandrus, D. (FC-15)	159	Mashraei, Y. (HF-11)	231
Manfreda, M. (EF-15)	135	Mason, N. (GH-03)	202
Manfrinetti, P. (DD-01)	101	Massey, J. (AD-01)	7
Manfrinetti, P. (FE-02)	161	Massey, J. (GK-05)	208
Mangin, S. (AC-12)	6	Masuda, K. (CQ-01)	93
Mangin, S. (AI-01)	17	Masuda, K. (EH-05)	138
Mangin, S. (AI-03)	18	Masuda, K. (GH-12)	203
Mangin, S. (DJ-10)	111	Masumoto, H. (GR-08)	218
Mangin, S. (EC-11)	126	Mathews, S.A. (EG-11)	136
Mangin, S. (HD-02)	225	Mathieu, R. (FP-09)	183
Manipatruni, S. (AB-08)	3	Mathur, N.D. (CD-06)	72
Manipatruni, S. (AJ-04)	20	Mathur, N.D. (FA-04)	153
Manipatruni, S. (EF-12)	134	Mathur, R. (EI-03)	139
Manjanna, J. (EJ-10)	142	Matis, B. (HF-07)	231
Mankey, G.J. (AF-09)	12	Matlak, K. (AD-03)	7

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Matsuda, M. (CO-03)	91	Meng, K. (BO-07)	59
Matsuda, S. (FI-08)	172	Meng, K. (FO-01)	181
Matsumoto, H. (CG-07)	79	Meng, K. (HH-05)	234
Matsumoto, K. (AD-01)	7	Mentes, T.O. (AC-11)	6
Matsumoto, K. (FK-06)	175	Mentes, T.O. (HC-02)	222
Matsumoto, S. (GD-12)	194	Mentes, T.O. (HC-03)	222
Matsumoto, T. (GG-10)	200	Meo, A. (GS-02)	218
Matsuura, M. (CI-04)	82	Merbouche, H.P. (ED-02)	127
Matyushov, A. (AQ-08)	30	Mercena, S. (FP-03)	182
Maultzsch, J. (CN-08)	90	Mert, F. (CI-13)	84
Maurya, K. (AR-05)	31	Mertens, S. (FF-10)	165
Mavani, K. (DE-07)	103	Merzaban, J. (AP-10)	29
May, A. (AH-09)	16	Merzaban, J. (GF-06)	198
May, A. (HG-10)	233	Mesilov, V.V. (BN-04)	57
May, S.J. (DE-09)	104	Mewes, C.K. (AF-09)	12
May, S.J. (GR-06)	217	Mewes, C.K. (FC-07)	157
Mayergoyz, I. (FG-02)	166	Mewes, C.K. (FG-06)	167
Mayr, S. (CF-03)	76	Mewes, C.K. (TU-02)	1
Mayr, S. (DQ-01)	120	Mewes, T. (AF-09)	12
Mayr, S. (HE-09)	228	Mewes, T. (FC-07)	157
Mazaleyrat, F. (DR-05)	122	Mewes, T. (FG-06)	167
Mazaleyrat, F. (EI-02)	139	Meyer, C. (CN-08)	90
Mazraati, H. (HC-01)	222	Mezani, S. (DO-01)	118
Mazzoli, C. (EE-14)	132	Mi, W. (CD-05)	71
McCall, S.K. (CI-01)	82	Mi, W. (HH-03)	234
McCall, S.K. (DG-05)	106	Miao, B. (CB-01)	66
McCallum, R. (DK-02)	112	Miao, G. (CP-01)	92
McCloy, J. (DN-03)	117	Miao, J. (BN-06)	57
McCreary, A. (BF-02)	44	Miao, J. (BO-07)	59
McCreary, A. (HG-11)	233	Miao, J. (FL-01)	176
McDonald, I. (DM-06)	116	Miao, J. (FO-01)	181
McDonald, I.J. (BI-02)	50	Miao, J. (HH-05)	234
McFadden, A.P. (EF-03)	133	Miao, W.C. (GJ-01)	206
McGrouther, D. (GK-05)	208	Michaelis de Vasconcellos, S. (DB-05)	100
McGuire, M. (CP-02)	92	Michel, J. (FH-09)	170
McGuire, M. (GI-01)	204	Michel, J. (GH-13)	203
McHenry, M.E. (BG-07)	46	Migita, K. (GQ-02)	215
McHenry, M.E. (CG-06)	78	Mihajlovic, G. (FB-14)	156
McHenry, M.E. (FE-05)	162	Mihalceanu, L. (ED-01)	127
McHenry, M.E. (FH-04)	169	Mikhaylovskiy, R. (DB-04)	100
McKeown Walker, S. (AB-11)	4	Miller, C. (AD-10)	8
McKnight, G. (CD-13)	73	Miller, C. (FI-03)	171
McLeod, M.V. (BI-07)	51	Miller, D. (CC-10)	70
McLeod, M.V. (DK-07)	112	Miller, D. (DD-05)	102
McLoone, S. (FQ-01)	184	Miller, J.T. (DN-10)	118
McMichael, R.D. (EG-10)	136	Min, B. (CN-09)	90
McMichael, R.D. (HE-11)	229	Mina, M. (BJ-04)	52
McNabb, L. (CH-11)	81	Mina, M. (CL-09)	87
McVitie, S. (AH-02)	15	Mina, M. (FE-11)	163
McVitie, S. (BC-04)	37	Mina, M. (GL-09)	210
McVitie, S. (FC-08)	158	Mina, M. (GL-10)	210
McVitie, S. (GK-05)	208	Minami, K. (GE-10)	196
Meckenstock, R. (CF-04)	76	Ming, Y. (DK-08)	112
Meckenstock, R. (HE-04)	228	Mir, R. (HG-12)	233
Meckenstock, R. (HE-12)	229	Miranda, R. (HB-10)	221
Medapalli, R. (AC-12)	6	Miron, I. (AC-01)	4
Medapalli, R. (DB-06)	100	Miron, I. (AC-09)	5
Medapalli, R. (HH-11)	235	Miron, I. (BB-09)	36
Meduna, M. (GH-13)	203	Miron, I. (DJ-09)	111
Meijer, M.J. (BC-06)	37	Misawa, T. (EE-08)	131
Mekkaoui, S. (GF-05)	198	Misawa, T. (FK-02)	175
Mellado, P. (DF-02)	104	Mishima, C. (CI-04)	82
Menarini, M. (AC-12)	6	Mishra, R. (CB-09)*	67
Menarini, M. (DB-06)	100	Mishra, R. (DB-02)	99
Mendes, J.B. (AJ-03)	20	Mishra, R. (FC-01)	156
Mendes, J.B. (FM-11)	179	Mishra, S.R. (BR-01)	62
Mendil, J. (HH-12)	235	Misirliglu, I.B. (CI-13)	84
Mendonça, E. (CN-02)	89	Miskevich, E. (FD-08)	161
Mendonça, E. (FP-03)	182	Mitani, S. (EH-05)	138
Menegasso, P.E. (CN-06)	89	Mitani, S. (EL-10)	145
Menendez, E. (EE-10)	131	Mitani, S. (GC-06)	191
Meneses Brassea, B. (DN-09)	117	Mitani, S. (GC-08)	191
Meneses, C. (FP-03)	182	Mitani, S. (GC-12)	192
Meng, F. (AS-02)	32	Mitani, S. (GH-12)	203
Meng, F. (CI-10)	83	Mitra, A. (AA-05)	2
Meng, K. (BC-13)	39	Mitsumata, C. (FJ-03)	173
Meng, K. (BN-06)	57		

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Mitsumata, C. (GS-05).....	218	Montredon, E. (GG-09).....	200
Miura, D. (BM-08).....	56	Moon, J. (AB-06).....	3
Miura, D. (BM-09).....	56	Moon, J. (AO-06).....	27
Miura, D. (DM-04).....	115	Moon, J. (FQ-07).....	184
Miura, D. (GS-01).....	218	Moore, J. (DN-03).....	117
Miura, S. (FF-06).....	165	Moore, R.L. (CG-02).....	78
Miura, Y. (AG-11).....	15	Moore, T.A. (AD-08).....	8
Miura, Y. (BJ-03).....	52	Moore, T.A. (CB-05).....	66
Miura, Y. (EH-05).....	138	Moore, T.A. (GK-05).....	208
Miura, Y. (GC-08).....	191	Mootha, A. (CN-10).....	90
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Salimath, A. (CA-05)	65	Schäfer, S. (EG-04)	135
Salimath, A. (DG-04)	106	Schaffers, T. (CB-10)	67
Salimy, S. (GG-09)	200	Schaffers, T. (CF-04)	76
Sall, M. (AC-10)	6	Schaffers, T. (HE-04)	228
Sall, M. (BH-11)	49	Schaller, R.D. (AJ-05)	20
Salon, S. (DP-01)	119	Scheike, T. (GC-08)	191
Salvador, M. (GF-11)	199	Schell, J. (GR-07)	217
Samantaray, B. (AN-03)	26	Scherf, L.M. (CI-06)	82
Samardak, A.S. (GQ-05)	216	Schiffer, P. (AH-01)	15
Samardak, A.S. (HC-05)	223	Schiffer, P. (AH-04)	16
Samarth, N. (AH-10)	16	Schiffer, P. (BH-06)	48
Samatham, S. (EM-02)	146	Schlagel, D. (AE-08)	10
Samba, J. (EJ-07)	142	Schlauderer, S. (DB-04)	100
Samiepour, M. (DQ-02)	120	Schleife, A. (FE-10)	163
Samiepour, M. (HH-15)	236	Schliep, K. (FJ-10)	174
Sampaio, J. (HC-07)	223	Schlom, D. (FC-12)	158
Sanada, N. (BI-12)	51	Schmid, A.K. (BC-03)	37
Sanchez Llamazares, J.L. (AE-06)	10	Schmid, A.K. (BC-08)	38
Sanchez Llamazares, J.L. (DK-11)	113	Schmid, A.K. (FC-10)	158
Sánchez-Tejerina, L. (GN-03)	212	Schmid, A.K. (HG-04)	232
Sanchez-Valdes, C. (AE-06)	10	Schmidt, G. (BD-15)	41
Sanchez-Valdes, C. (DK-11)	113	Schnee, M. (CN-08)	90
Sanchez, F. (AF-10)	12	Schneider, C.M. (AB-12)	4
Sandeman, K.G. (DK-10)	113	Schneider, C.M. (CN-08)	90
Sander, D. (EG-05)	136	Schneider, I. (CO-08)	91
Sandler, S. (FH-10)	170	Schneider, I. (CO-09)	91
Sankey, J. (AM-06)	25	Schneider, J.D. (CD-13)	73
Sano, H. (EO-02)	149	Schneider, J.D. (FD-04)	160
Santapuri, S. (GR-02)	217	Schneider, L. (BF-11)	45
Santos, E.G. (HG-07)	233	Schneider, M. (EC-03)	125
Sapkota, A. (FC-07)	157	Schneider, M. (EC-04)	125
Sapkota, A. (FG-06)	167	Schneider, M. (HE-07)	228
Sapozhnik, A. (CA-04)	65	Schneider, M.L. (CC-09)	70
Sasabe, N. (GI-05)	205	Schneider, R. (DB-05)	100
Sasakawa, T. (GE-12)	197	Schneider, T. (ED-10)	129
Sasaki, T. (AG-11)	15	Schneider, T. (GH-04)	202
Sasaki, T. (BD-01)	39	Schneider, T. (HB-11)	221
Sasaki, T. (DA-07)	98	Schneider, T. (HE-02)	227
Sasaki, T. (HB-02)	220	Schnyder, A. (AA-05)	2
Sasaki, T. (HH-13)	236	Schöbitz, M. (AC-11)	6
Sasaki, T. (HH-14)	236	Scholl, A. (AH-01)	15
Sasaki, Y. (AJ-06)	20	Scholl, A. (BC-03)	37
Sasaki, Y. (FK-02)	175	Scholl, A. (BH-01)	47
Sasayama, T. (AQ-06)	30	Scholl, A. (BH-09)	49
Saslow, W. (FP-01)	182	Scholl, A. (CD-04)	71
Sasonker, M. (GF-02)	197	Scholl, A. (DF-02)	104
Sathe, V.G. (GR-04)	217	Scholl, A. (FK-08)	176
Sato, F. (BM-10)	56	Schönhöbel, A.M. (BI-11)	51
Sato, F. (GL-01)	209	Schöppner, C. (HE-04)	228
Sato, F. (GL-03)	209	Schott, M. (FA-01)	153
Sato, H. (AK-07)	22	Schrefl, T. (CI-12)	83
Sato, H. (BP-03)	60	Schrefl, T. (DM-01)	115
Sato, H. (FF-06)	165	Schrefl, T. (FG-05)	167
Sato, H. (FF-12)	165	Schroeder, K. (AE-03)	9
Sato, H. (GD-14)	195	Schultheiss, H. (ED-10)	129
Sato, H. (HD-04)	225	Schultz, F. (AD-12)	8
Sato, K. (AM-11)	25	Schultz, M. (FB-01)	154
Sato, K. (DH-05)	108	Schultz, M. (GF-02)	197
Sato, S. (BI-03)	50	Schulz, F. (EL-06)	145
Sato, S. (EF-10)	134	Schuppeler, S. (AD-12)	8
Sato, S. (HH-01)	234	Schutte, B. (HF-01)	230
Sato, Y. (AP-08)	29	Schütz, G.A. (AC-08)	5
Sato, Y. (BJ-03)	52	Schütz, G.A. (CF-02)	75
Sato, Y. (ER-05)	152	Schütz, G.A. (CR-10)	96
Satter, S. (DR-07)	122	Schütz, G.A. (EL-06)	145
Satz, A. (AG-09)	14	Schütz, G.A. (GG-06)	200

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Schütz, G.A. (GI-10)	205	Sharma, R. (DJ-04)	110
Schütz, G.A. (HC-01)	222	Sharma, S. (DH-08)	108
Schütz, G.A. (HE-05)	228	Sharma, V. (CM-08)	88
Schwartz, J. (BQ-03)	61	Sharp, J. (FD-08)	161
Sciamanna, M. (HD-11)	226	Shavit, A. (HF-06)	231
Scofield, J. (DL-08)	114	Shaw, J.M. (AC-02)	4
Scott, J.N. (FG-10)	168	Shaw, J.M. (AD-08)	8
Seehra, M.S. (DE-01)	103	Shaw, J.M. (FC-10)	158
Seki, T. (BA-04)	34	She, Y. (BN-10)	58
Sekiguchi, F. (DB-07)	100	She, Y. (GJ-07)	207
Sekino, M. (DI-05)	109	She, Y. (GJ-08)	207
Sekino, M. (FI-08)	172	Sheikh, M. (AH-01)	15
Sellmyer, D.J. (AE-03)	9	Shen, B. (AR-01)	31
Sellmyer, D.J. (AE-13)	11	Shen, B. (AR-02)	31
Sellmyer, D.J. (BE-07)	43	Shen, B. (BN-05)	57
Sellmyer, D.J. (BF-05)	44	Shen, B. (BP-08)	61
Sellmyer, D.J. (DG-09)	107	Shen, B. (BP-09)	61
Sellmyer, D.J. (EI-05)	140	Shen, B. (CG-12)	79
Sellmyer, D.J. (EI-07)	140	Shen, B. (DM-08)	116
Sellmyer, D.J. (FJ-07)	174	Shen, B. (EM-04)	146
Sellmyer, D.J. (GS-07)	219	Shen, B. (EM-07)	146
Sellschopp, K. (GA-05)	187	Shen, C. (GK-02)	208
Selvin, S. (CD-13)	73	Shen, F. (BP-09)	61
Semisalova, A.S. (FL-12)	177	Shen, F. (EM-04)	146
Sen, S. (AD-06)	7	Shen, F. (FJ-13)	174
Sen, S. (BE-03)	42	Shen, F. (FK-01)	175
Sennott, C. (CD-13)	73	Shen, J. (CD-12)	72
Senyshyn, A. (FP-05)	183	Shen, J. (EQ-04)	151
Seo, M. (CJ-08)	85	Shen, J. (FR-03)	185
Seo, S. (AL-03)	23	Shen, K. (BG-05)	46
Seo, S. (AL-07)	23	Shen, K. (FR-02)	185
Seo, S. (GP-09)	215	Shen, K. (GO-02)	213
Seong, S. (CN-09)	90	Shen, S. (GB-08)	189
Sepehri-Amin, H. (GC-04)	191	Shen, Y. (BI-07)	51
Sepulveda, A. (CD-04)	71	Shen, Y. (ER-01)	152
Sepulveda, A. (FD-04)	160	Sheng, M. (CK-08)	86
Sepulveda, A. (GF-13)	199	Sherman, S.G. (AP-07)	29
Serantes, D. (FG-01)	166	Shi, C. (DO-05)	118
Serga, A.A. (BD-03)	39	Shi, G. (AJ-13)	21
Serga, A.A. (ED-01)	127	Shi, G. (BO-04)	59
Sernicola, N. (DQ-03)	120	Shi, G. (DN-08)	117
Serpico, C. (EF-11)	134	Shi, G. (FB-11)	155
Serpico, C. (FG-02)	166	Shi, H. (FL-02)	176
Serpico, C. (FG-03)	167	Shi, J. (BN-07)	57
Serpico, C. (FG-09)	168	Shi, S. (AB-02)	2
Serrano-Guisan, S. (AK-09)	22	Shi, S. (CC-11)	70
Seshadri, R. (AE-09)	10	Shi, S. (GD-01)	193
Sethi, P. (HD-10)	226	Shi, S. (GD-03)	193
Severson, E.L. (GE-02)	195	Shi, Y. (FI-05)	172
Shafer, P. (BB-04)	35	Shi, Y. (HI-04)	237
Shafer, P. (BC-03)	37	Shi, Z. (BP-07)	60
Shafer, P. (EF-01)	132	Shibata, T. (BD-01)	39
Shah, H.D. (AN-09)	27	Shibuya, T. (HF-04)	230
Shahan, D. (CD-13)	73	Shield, J. (DG-09)	107
Shahbazi, K. (CB-05)	66	Shigematsu, E. (HE-08)	228
Shamin, S.N. (BN-04)	57	Shima, T. (FJ-09)	174
Shamout, K. (EH-02)	137	Shimada, K. (DH-05)	108
Shang, D. (CD-12)	72	Shimada, T. (BB-10)	36
Shang, Z. (AS-04)	32	Shimada, T. (EL-07)	145
Shang, Z. (AS-05)	33	Shimada, T. (GK-08)	208
Shang, Z. (DM-09)	116	Shimada, Y. (EF-10)	134
Shang, Z. (FJ-01)	173	Shimada, Y. (GM-06)	211
Shang, Z. (FJ-02)	173	Shimamoto, Y. (BO-08)	59
Shannigrahi, S. (FD-05)	160	Shimamoto, Y. (BO-09)	59
Shanshal, A.K. (CK-10)	86	Shimatsu, T. (DH-05)	108
Shao, L. (CP-08)	93	Shimizu, A. (EK-05)	143
Shao, Q. (FB-09)	155	Shimizu, M. (GD-10)	194
Shao, Q. (GB-09)	189	Shimizu, M. (GK-03)	208
Sharip, A. (GF-06)	198	Shimomura, N. (GD-09)	194
Shariq, M. (AN-04)	26	Shimomura, N. (GD-10)	194
Sharma, A. (AM-07)	25	Shimomura, N. (GK-03)	208
Sharma, A. (FF-15)	166	Shin, H. (EF-02)	132
Sharma, H. (DC-05)	101	Shin, K. (AL-03)	23
Sharma, J. (GK-04)	208	Shin, K. (AL-05)	23
Sharma, P. (BR-05)	63	Shin, K. (CK-02)	85
Sharma, P. (CG-04)	78	Shin, K. (CK-09)	86
Sharma, P. (FJ-06)	174	Shin, K. (DM-07)	116

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Shin, K. (DO-03)	118	Singh, A. (AN-10)	27
Shin, S. (AL-09)	24	Singh, B. (CN-04)	89
Shin, S. (EI-12)	141	Singh, D. (AR-06)	31
Shinde, K. (EM-10)	147	Singh, H. (AR-05)	31
Shinde, K.P. (EM-08)	147	Singh, H. (DI-04)	109
Shinde, U.L. (AN-07)	26	Singh, H. (DJ-03)	110
Shinjo, T. (CB-03)	66	Singh, H. (EF-09)	134
Shinjo, T. (CB-04)	66	Singh, H. (FM-02)	178
Shinjo, T. (HE-08)	228	Singh, H.K. (FP-06)	183
Shinohara, T. (BD-01)	39	Singh, I. (EI-03)	139
Shinozaki, M. (GD-14)	195	Singh, M.N. (DI-04)	109
Shinozaki, M. (HD-04)	225	Singh, R. (AP-06)	29
Shiokawa, Y. (HB-02)	220	Singh, R. (AR-07)	31
Shiota, Y. (BS-04)	64	Singh, R.P. (DL-01)	113
Shirai, M. (BS-01)	63	Singh, S. (AD-04)	7
Shirai, M. (EF-05)	133	Singh, S. (CP-05)	92
Shirai, M. (EL-04)	144	Singh, S. (FK-07)	175
Shirai, M. (EL-07)	145	Sinha, A.K. (DI-04)	109
Shirai, M. (GC-10)	192	Sinha, J. (AJ-01)	19
Shiraishi, M. (CB-03)	66	Sinha, J. (AJ-02)	19
Shiraishi, M. (CB-04)	66	Sinha, J. (FC-09)	158
Shiraishi, M. (HE-08)	228	Sinha, S. (HH-11)	235
Shiraishi, M. (HH-10)	235	Sinova, J. (CA-04)	65
Shirazi, P. (CD-13)	73	Siracusano, G. (GH-01)	201
Shirazi, P. (CE-11)	75	Sireus, V. (EE-10)	131
Shirazi, P. (GB-06)	189	Sirewal, G. (BG-11)	47
Shirotori, S. (GD-10)	194	Sirewal, G. (CH-01)	80
Shirotori, S. (GK-03)	208	Sirimanna, S. (DP-01)	119
Shiu, D. (GN-06)	212	Siritaratiwat, A. (FN-03)	179
Shoemaker, D. (FE-10)	163	Sisodia, N. (AJ-11)	21
Shoji, T. (CG-01)	78	Siu, Z. (AJ-12)	21
Shoji, T. (CI-03)	82	Sivadas, N. (GB-10)	189
Shoji, T. (CI-12)	83	Siwach, P. (AR-05)	31
Shoji, T. (DM-01)	115	Siwach, P.K. (FP-06)	183
Shoji, T. (GI-02)	204	Siwak, N. (DD-05)	102
Shoji, T. (GI-09)	205	Sk, J. (GQ-06)	216
Shoji, Y. (EL-02)	144	Skelland, C. (CI-12)	83
Shokr, Y. (EH-09)	138	Skelland, C. (DM-01)	115
Shore, D. (GF-04)	197	Skibin, S. (FH-08)	169
Shrestha, G. (FH-01)	168	Skinner, S.F. (BP-06)	60
Shrivastava, P. (FF-01)	164	Sklenar, J. (AH-01)	15
Shu, G. (BC-14)	39	Sklenar, J. (AH-04)	16
Shukla, A.S. (FM-02)	178	Sklenar, J. (GH-03)	202
Shukla, A.S. (HH-02)	234	Skokov, K.P. (DH-08)	108
Shull, R. (BN-08)	58	Skomski, R. (BE-07)	43
Shull, R. (DI-02)	109	Skomski, R. (BF-05)	44
Shull, R. (HG-11)	233	Skomski, R. (DE-03)	103
Shytov, A. (BP-05)	60	Skomski, R. (DG-09)	107
Si, P. (FJ-08)	174	Skomski, R. (EI-05)	140
Siao, C. (DJ-07)	111	Skomski, R. (FJ-07)	174
Sibuet, H. (FH-09)	170	Skomski, R. (GS-07)	219
Siddiqi, M.R. (CJ-02)	84	Skoropata, E. (DE-08)	104
Siddiqui, S.A. (CC-01)	68	Skourski, Y. (GI-03)	204
Sidorov, A. (DD-05)	102	Skovdal, B. (GH-06)	202
Sierra, J.F. (HB-07)	221	Slanovc, F. (AI-12)	19
Siewierska, K. (BE-11)	43	Slavin, A.N. (AJ-10)	21
Sikora, M. (FI-01)	171	Slavin, A.N. (CE-01)	73
Silva, A. (FO-06)	181	Slavin, A.N. (FC-02)	156
Silva, A.S. (CR-04)	95	Slavin, A.N. (FC-03)	157
Silva, E.F. (AJ-03)	20	Slavin, A.N. (FC-04)	157
Silva, I.D. (DF-05)	105	Slavin, A.N. (FG-04)	167
Silva, J.F. (AG-08)	14	Slavin, A.N. (GB-04)	188
Silva, J.F. (FO-06)	181	Slavin, A.N. (HF-10)	231
Silva, L. (CN-02)	89	Slezak, M. (AD-03)	7
Silva, M.D. (AG-08)	14	Slezak, M. (AD-05)	7
Silva, T. (DB-01)	99	Slezak, T. (AD-03)	7
Silva, T. (HC-13)	224	Slezak, T. (AD-05)	7
Silverio, V. (BA-01)	33	Sloetjes, S. (BC-03)	37
Simizu, S. (BG-07)	46	Sluka, V. (AK-04)	22
Simizu, S. (FH-04)	169	Sluka, V. (CF-08)	76
Simpson, J.R. (BF-02)	44	Sluka, V. (FF-08)	165
Simpson, J.R. (HG-11)	233	Šmejkal, L. (CA-04)	65
Simsek, E. (AS-02)	32	Smith, A. (DC-04)	101
Sindersberger, D. (CE-13)	75	Smith, D. (EF-04)	133
Singamaneni, S. (CP-02)	92	Smith, R. (CL-05)	87
Singamaneni, S. (CP-08)	93	Smith, R. (EJ-12)	142
Singamaneni, S. (HG-09)	233	Sobrinho, T. (BA-01)	33

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Socoliuc, V. (GF-11)	199	Srivastava, S. (GH-08)	203
Socolovsky, L.M. (EJ-05)	142	Srivastava, S.K. (AN-03)	26
Soda, R. (CI-07)	83	Srivastava, T. (EC-07)	126
Soffa, W. (EI-08)	140	Srivastava, T. (EC-11)	126
Sogame, T. (CO-02)	91	Srivastava, T. (FA-01)	153
Soh, S. (DL-01)	113	Srivastava, T. (HC-15)	224
Sohn, C. (DE-08)	104	Stadler, B. (DG-04)	106
Sohn, H. (CD-04)	71	Stadler, B. (FE-15)	163
Soin, N. (DK-03)	112	Stadler, B. (FI-02)	171
Sokalski, V. (AC-02)	4	Stadler, B. (GF-04)	197
Sokalski, V. (BO-01)	58	Stamatelatos, A. (GG-03)	200
Sokalski, V. (FC-07)	157	Stamenov, P.S. (BE-09)	43
Sokalski, V. (FG-06)	167	Stamenov, P.S. (BE-11)	43
Sokolov, A.S. (CG-08)	79	Stamenov, P.S. (BE-12)	43
Soldatov, I. (EE-11)	131	Stamenov, P.S. (EG-08)	136
Soldatov, I. (GQ-05)	216	Stamenov, P.S. (GG-12)	201
Solis, D.A. (HB-09)	221	Stamenov, P.S. (TU-01)	1
Solyom, A. (AM-06)	25	Stamps, R. (AH-02)	15
Son, B. (CJ-06)	84	Stamps, R. (EC-09)	126
Son, J. (DA-03)	98	Stamps, R. (EF-14)	134
Song, B. (BR-06)	63	Stamps, R. (FC-05)	157
Song, B. (CB-12)	68	Stamps, R. (GB-03)	188
Song, B. (FE-13)	163	Stan, C.V. (CD-04)	71
Song, C. (BO-04)	59	Stancu, A. (CD-10)	72
Song, C. (BO-05)	59	Stankiewicz, A. (EF-11)	134
Song, C. (CA-01)	65	Stanton, M. (DN-06)	117
Song, C. (DA-06)	98	Staruch, M. (AE-12)	10
Song, C. (FB-11)	155	Staruch, M. (BN-08)	58
Song, C. (GB-07)	189	Staruch, M. (EE-04)	130
Song, C. (GQ-09)	216	Staruch, M. (HF-07)	231
Song, H. (DJ-08)	111	Stashkevich, A. (AC-10)	6
Song, J. (AR-02)	31	Stashkevich, A. (BH-11)	49
Song, J. (DR-02)	121	Staub, U. (HA-03)	219
Song, M. (EM-06)	146	Štefančič, A. (FC-14)	159
Song, W. (GJ-03)	206	Stegmann, P. (CN-08)	90
Song, Y. (CH-03)	80	Steiner, J. (AF-01)	11
Song, Z. (CH-06)	80	Steiner, P. (BA-03)	34
Song, Z. (FR-01)	185	Stelmashenko, N. (CB-11)	67
Sonobe, Y. (DH-09)	108	Stenger-Koob, M. (DL-01)	113
Soree, B. (AC-13)	6	Stepanov, P. (FI-07)	172
Sorensen, N.T. (AF-06)	12	Stephen, G.M. (EI-09)	140
Sorescu, M. (FE-05)	162	Stephen, G.M. (HH-08)	235
Soriano, N. (EH-03)	137	Steren, L. (HF-05)	231
Sorrentino, A. (FC-08)	158	Stewart, G.A. (GR-01)	217
Sort, J. (EE-10)	131	Stiehl, G.M. (GB-10)	189
Soto-Tovar, E. (DK-11)	113	Stienen, S. (GH-04)	202
Soumah, L. (ED-02)	127	Stiles, M. (BB-07)	35
Soumah, L. (FL-07)	177	Stiles, M. (CC-05)	69
Soumyanarayanan, A. (EC-01)	125	Stiles, M. (CC-06)	69
Soumyanarayanan, A. (EC-08)	126	Stiles, M. (FB-13)	156
Sousa, C.T. (EH-03)	137	Stoian, G. (DG-07)	106
Sousa, R.C. (FF-03)	164	Stone, D. (CH-05)	80
Sousa, R.C. (FF-04)	164	Stone, M. (DF-01)	104
Sousa, R.C. (FF-05)	164	Stork, A. (GA-05)	187
Sousa, R.C. (GG-09)	200	Stratta, A. (AF-04)	11
Sousa, R.C. (HD-06)	225	Strauss, B.E. (DI-02)	109
Souza, J.C. (CN-01)	89	Strelkov, N. (AG-10)	14
Souza, J.C. (CN-02)	89	Strelkov, N. (AI-11)	19
Souza, J.C. (CP-06)	93	Strelkov, N. (CF-09)	77
Souza, J.C. (FP-03)	182	Strelkov, N. (FF-03)	164
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Wang, R. (FF-07)	165	Watanabe, S. (HE-15)	230
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Wang, S. (CH-08).	81	Watts, B. (DQ-01).	120
Wang, S. (EN-05).	148	Watts, J.D. (AH-01)	15
Wang, S. (EN-08).	148	Watts, J.D. (AH-04)	16
Wang, S. (EN-09).	148	Watts, J.D. (BH-06)	48
Wang, S. (FF-02)	164	Watts, J.D. (HB-05)	220
Wang, S. (FH-11).	170	Watts, S. (FF-01)	164
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Wang, S. (HH-06)	235	Weber, R. (GL-09).	210
Wang, S.X. (CB-08).	67	Wei, D. (BB-11)	36
Wang, S.X. (CL-07)	87	Wei, D. (FL-01)	176
Wang, T. (BM-03)	55	Wei, D. (FL-05)	176
Wang, T. (FB-03)	154	Wei, D. (GH-11).	203
Wang, T. (FL-06)	176	Wei, F. (DK-05)	112
Wang, W. (AK-11)	22	Wei, F. (DM-02).	115
Wang, W. (AN-01).	26	Wei, L. (GL-06)	209
Wang, W. (DA-07).	98	Wei, Y. (EI-09).	140
Wang, W. (GJ-03).	206	Wei, Y. (EQ-09)	152
Wang, X. (AJ-13).	21	Wei, Y. (GQ-09).	216
Wang, X. (AM-05).	25	Wei, Y. (HF-08)	231
Wang, X. (AQ-02)	30	Wei, Z. (CS-04)	96
Wang, X. (AQ-04)	30	Wei, Z. (EJ-06).	142
Wang, X. (BE-02)	42	Weides, M.P. (ED-08)	128
Wang, X. (BN-10)	58	Weigand, M. (AC-08)	5
Wang, X. (BQ-08)	62	Weigand, M. (CF-02).	75
Wang, X. (CD-09)	72	Weigand, M. (CR-10).	96
Wang, X. (CH-11)	81	Weigand, M. (EL-06).	145
Wang, X. (CM-03).	88	Weigand, M. (FL-12)	177
Wang, X. (CM-04).	88	Weigand, M. (GH-07)	202
Wang, X. (DL-03)	114	Weigand, M. (HC-01)	222
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Wen, Y. (GD-11)	194	Wu, G. (AF-14)	13
Wen, Y. (HC-04)	222	Wu, H. (AM-04)	24
Wen, Z. (BE-08)	43	Wu, H. (AM-05)	25
Wende, H. (CF-04)	76	Wu, H. (BM-06)	56
Wende, H. (HE-04)	228	Wu, H. (DA-02)	97
Weng, L. (GM-01)	210	Wu, H. (DJ-10)	111
Wenxin, H. (GP-02)	214	Wu, H. (DJ-11)	111
Wereley, N. (AP-03)	28	Wu, H. (FB-09)	155
Wereley, N. (AP-04)	28	Wu, H. (FH-06)	169
Wereley, N. (AP-07)	29	Wu, H. (GB-09)	189
Wesenberg, D. (FP-08)	183	Wu, H. (GD-08)	194
Wesenberg, D. (HB-06)	220	Wu, H. (GQ-07)	216
Weßels, T. (FL-12)	177	Wu, J. (AQ-07)	30
Westmoreland, S.C. (CI-12)	83	Wu, J. (GN-06)	212
Westmoreland, S.C. (DM-01)	115	Wu, K. (FK-01)	175
Westphal, C. (EH-02)	137	Wu, K. (FL-02)	176
Wetzlar, K. (CD-07)	72	Wu, L. (AO-03)	27
Wheeler, R. (BI-07)	51	Wu, L. (BG-04)	46
Whig, R. (FF-07)	165	Wu, L. (CH-10)	81
White, S. (BB-03)	35	Wu, L. (DA-02)	97
Whitehead, N.J. (ED-11)	129	Wu, M. (AK-02)	21
Wiebe, C. (EA-01)	123	Wu, M. (BH-04)	48
Wiggins, E. (CB-11)	67	Wu, M. (FP-08)	183
Wildes, A. (GG-04)	200	Wu, M. (HB-06)	220
Wilhelm, F. (GG-03)	200	Wu, M. (TU-03)	1
William, J. (HD-11)	226	Wu, P. (DC-03)	101
Williams, B. (EM-05)	146	Wu, Q. (AS-04)	32
Williamson, M.C. (GB-08)	189	Wu, Q. (AS-05)	33
Wilson, S.D. (AE-09)	10	Wu, Q. (DM-09)	116
Wilson, S.D. (DF-01)	104	Wu, Q. (FJ-01)	173
Winklhofer, M. (CI-12)	83	Wu, Q. (FJ-02)	173
Winklhofer, M. (DM-01)	115	Wu, S. (AF-09)	12
Winklhofer, M. (HE-12)	229	Wu, S. (FR-06)	185
Wintz, S. (CF-03)	76	Wu, S. (GO-09)	214
Wintz, S. (DQ-01)	120	Wu, S. (HI-08)	237
Wintz, S. (EC-06)	126	Wu, W. (EP-08)	150
Wintz, S. (ED-10)	129	Wu, X. (AR-08)	32
Wintz, S. (FL-12)	177	Wu, X. (BN-07)	57
Wintz, S. (HE-09)	228	Wu, X. (FP-10)	183
Wisser, J.J. (CB-08)	67	Wu, Y. (AB-06)	3
Wisser, J.J. (EF-01)	132	Wu, Y. (BC-03)	37
Witkowski, L. (FD-07)	161	Wu, Y. (BN-06)	57
Witte, K. (DQ-01)	120	Wu, Y. (BO-07)	59
Witteveen, J. (CF-06)	76	Wu, Y. (EF-02)	132
Wittrock, S. (HD-07)	226	Wu, Y. (ER-03)	152
Wolf, G. (FF-01)	164	Wu, Y. (FC-01)	156
Wolf, G. (FF-11)	165	Wu, Y. (FH-06)	169
Wolf, G. (HD-02)	225	Wu, Y. (FO-01)	181
Wolf, M.S. (CF-01)	75	Wu, Y. (GE-07)	196
Wöllermann, J. (BF-11)	45	Wu, Y. (HH-05)	234
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Wolz, T. (ED-08)	128	Wu, Z. (CM-06)	88
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Won, H. (BI-05)	50	Wurmehl, S. (CN-04)	89
Won, H. (CH-13)	81	Wurster, S. (CG-11)	79
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Wong, K. (DA-07)	98	Wysocki, A. (BF-03)	44
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Wong, T. (GD-11)	194		
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Woo, S. (DA-03)	98		
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Woods, J.S. (BH-08)	49		
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Worledge, D. (FF-13)	166		
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Worthington, M. (DG-05)	106		
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Wrona, J. (FO-06)	181		
Wrona, J. (HD-06)	225		
Wu, C. (AD-11)	8		
Wu, D. (CB-01)	66		
Wu, D. (DA-07)	98		

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Xiao, J. (DJ-08)	111
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Xiao, J. (FL-06)	176
Xiao, L. (DM-03)	115
Xiao, L. (ER-02)	152
Xiao, X. (BC-03)	37
Xiao, Y. (BB-13)	36
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Xie, Y. (BC-11)	38
Xie, Y. (BS-05)	64
Xie, Y. (EJ-03)	141
Xie, Y. (FD-07)	161
Xie, Y. (FL-06)	176
Xie, Y. (HC-08)	223
Xie, Z. (DM-09)	116
Xing, J. (AL-09)	24
Xing, M. (FI-06)	172
Xing, M. (FJ-11)	174
Xing, Z. (DL-10)	114
Xiong, P. (AJ-13)	21
Xiong, Y. (AQ-04)	30
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Xu, D. (DO-04)	118
Xu, D. (DO-06)	118
Xu, G. (DL-06)	114
Xu, J. (BI-09)	51
Xu, J. (CF-08)	76
Xu, J. (DD-03)	102
Xu, K. (GQ-09)	216
Xu, L. (GF-13)	199
Xu, Q. (AG-04)	14
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Xu, Q. (GJ-05)	206
Xu, W. (GL-07)	209
Xu, W. (GO-10)	214
Xu, X. (BN-06)	57
Xu, X. (BO-07)	59
Xu, X. (EI-07)	140
Xu, X. (FJ-02)	173
Xu, X. (FO-01)	181
Xu, X. (GC-12)	192
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Xu, Y. (DJ-10)	111
Xu, Y. (DM-03)	115
Xu, Y. (ER-02)	152
Xu, Z. (DF-01)	104
Xu, Z. (FH-05)	169
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Yakushiji, K. (HD-09)	226
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Yamazaki, M. (CI-04)	82
Yan, C. (AB-01)	2
Yan, M. (AS-01)	32
Yan, N. (DL-10)	114
Yan, R. (BL-06)	55
Yan, R. (BM-05)	56
Yan, R. (CL-04)	87
Yan, R. (CM-06)	88
Yan, R. (FR-05)	185
Yan, S. (AG-02)	13
Yan, S. (FL-05)	176
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Yan, X. (EN-01)	147
Yan, Y. (FO-08)	182
Yan, Z. (BN-01)	57
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Yanase, T. (GK-08)	208
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Yang, D. (DA-02)	97
Yang, F. (BB-03)	35
Yang, F. (BC-13)	39
Yang, F. (EH-04)	137
Yang, G. (FB-04)	154
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Yang, H. (DP-07)	120
Yang, H. (EQ-07)	151
Yang, H. (FB-04)	154
Yang, H. (FC-01)	156
Yang, H. (FR-07)	186
Yang, H. (FR-08)	186
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Yang, J. (BD-04)	40
Yang, K. (AQ-07)	30
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Yang, M. (EH-10)	138	Yoo, H. (AQ-03)	30
Yang, M. (EN-03)	147	Yoo, J. (CE-12)	75
Yang, N. (AE-07)	10	Yoo, J. (GM-09)	211
Yang, Q. (CD-09)	72	Yoo, M. (CF-11)	77
Yang, Q. (CL-04)	87	Yoo, M. (HD-08)	226
Yang, Q. (EE-03)	130	Yoon, S. (BR-01)	62
Yang, Q. (EE-12)	131	Yoon, S. (DH-01)	107
Yang, Q. (EN-03)	147	Yoon, S. (FD-07)	161
Yang, Q. (FN-07)	180	Yoshida, C. (AK-03)	21
Yang, Q. (FN-11)	180	Yoshida, K. (EP-05)	150
Yang, S. (AC-07)	5	Yoshikiyo, M. (EI-11)	140
Yang, S. (CP-01)	92	Yoshimoto, T. (BP-01)	60
Yang, W. (FD-08)	161	Yoshimura, W. (AQ-06)	30
Yang, X. (AK-02)	21	Yoshioka, T. (GI-04)	204
Yang, X. (DL-06)	114	You, B. (EH-12)	138
Yang, X. (ER-04)	152	You, B. (EJ-09)	142
Yang, X. (FP-10)	183	You, C. (AE-07)	10
Yang, X. (FQ-02)	184	You, C. (AK-08)	22
Yang, Y. (AG-01)	13	You, C. (BD-02)	39
Yang, Y. (BS-07)	64	You, C. (BP-07)	60
Yang, Y. (CH-12)	81	You, C. (EL-01)	144
Yang, Y. (EM-09)	147	You, C. (GJ-03)	206
Yang, Y. (FJ-08)	174	You, X. (GA-04)	187
Yang, Z. (GJ-03)	206	Young, A. (BC-03)	37
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Yano, M. (CI-12)	83	Young, I. (AB-08)	3
Yano, M. (DM-01)	115	Young, I. (AJ-04)	20
Yano, M. (GI-02)	204	Young, I. (EF-12)	134
Yano, M. (GI-09)	205	Yu, C. (CG-08)	79
Yao, A. (FH-02)	169	Yu, C. (EI-09)	140
Yao, A. (GE-01)	195	Yu, G. (DJ-11)	111
Yao, G. (DK-01)	111	Yu, G. (DM-03)	115
Yao, G. (DK-05)	112	Yu, G. (ER-02)	152
Yao, G. (DM-02)	115	Yu, G. (FB-09)	155
Yao, M. (EE-03)	130	Yu, G. (GB-09)	189
Yao, Y. (BQ-05)	62	Yu, G. (GD-08)	194
Yao, Y. (GP-06)	214	Yu, H. (BD-15)	41
Yao, Z. (CD-13)	73	Yu, H. (BH-04)	48
Yasuhira, M. (AK-07)	22	Yu, H. (FH-06)	169
Yasui, A. (HH-13)	236	Yu, H. (HH-09)	235
Yasui, S. (AN-06)	26	Yu, J. (BI-09)	51
Yasukawa, Y. (FE-14)	163	Yu, J. (GP-08)	215
Ye, T. (AK-11)	22	Yu, J. (HI-03)	236
Yedeas, M.A. (DI-05)	109	Yu, L. (BG-10)	47
Yeh, P. (GK-02)	208	Yu, R. (CB-01)	66
Yenugonda, V. (EL-03)	144	Yu, S. (EM-08)	147
Yeo, C. (AI-13)	19	Yu, S. (EM-10)	147
Yi, D. (EF-01)	132	Yu, S. (GO-09)	214
Yildirim, O. (AR-03)	31	Yu, X. (EG-01)	135
Yildirim, O. (BH-02)	48	Yu, Y. (BK-05)	53
Yildirim, O. (DQ-06)	121	Yu, Y. (BK-07)	53
Yildirim, O. (GH-13)	203	Yu, Y. (FQ-08)	184
Yildiriz, E. (CH-09)	81	Yu, Z. (AD-11)	8
Yilgin, R. (EF-05)	133	Yu, Z. (DP-08)	120
Yim, H. (EP-06)	150	Yuan, D. (EN-09)	148
Yin, G. (GB-09)	189	Yuan, H. (BA-04)	34
Yin, X. (AG-01)	13	Yuan, J. (GL-06)	209
Yin, X. (DK-01)	111	Yuan, S. (EJ-09)	142
Yin, X. (DK-05)	112	Yuan, Z. (CB-01)	66
Yin, X. (DM-02)	115	Yuan, Z. (EF-07)	133
Yin, X. (EM-09)	147	Yuan, Z. (FN-11)	180
Yin, X. (FI-11)	172	Yuasa, S. (AG-10)	14
Yin, Z. (BL-02)	54	Yuasa, S. (BO-10)	59
Yin, Z. (CK-01)	85	Yuasa, S. (CC-05)	69
Yin, Z. (HI-06)	237	Yuasa, S. (CF-09)	77
Ying, Y. (BI-09)	51	Yuasa, S. (EF-09)	134
Yingqian, L. (FR-03)	185	Yuasa, S. (GC-13)	192
Yoda, H. (GD-09)	194	Yuasa, S. (GD-13)	195
Yoda, H. (GD-10)	194	Yuasa, S. (HD-07)	226
Yoda, H. (GK-03)	208	Yuasa, S. (HD-09)	226
Yokoo, T. (GI-02)	204	Yue, L. (BE-07)	43
Yokoshita, Y. (GL-01)	209	Yue, L. (EI-05)	140
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Yue, S. (EN-02)	147
Yue, S. (FN-05)	180
Yue, S. (FN-07)	180
Yun, J. (FL-02)	176
Yun, S. (BE-05)	42
Yusa, N. (GG-07)	200
Yusuf, S. (CN-09)	90
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Zahedinejad, M. (EF-13)	134
Zahedinejad, M. (HB-01)	220
Zahnd, G. (GG-09)	200
Zamani Kouhpanji, M. (FI-02)	171
Zamani Kouhpanji, M. (GF-04)	197
Zang, B. (CG-01)	78
Zang, R. (BS-06)	64
Zanolli, Z. (CN-08)	90
Zarkevich, N. (AE-02)	9
Zarzuela, R. (BB-03)	35
Zarzuela, R. (BO-05)	59
Zarzuela, R. (CA-01)	65
Zaspalis, V.T. (AF-03)	11
Zazo, M. (AI-02)	17
Zazo, M. (FG-13)	168
Zazvorka, J. (AC-08)	5
Zazvorka, J. (CF-02)	75
Zazvorka, J. (EC-13)	127
Zazvorka, J. (GH-07)	202
Zazvorka, J. (GQ-08)	216
Zecevic, J. (FI-01)	171
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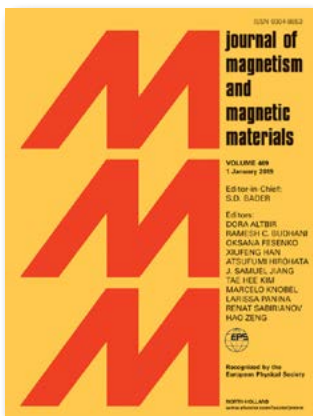
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