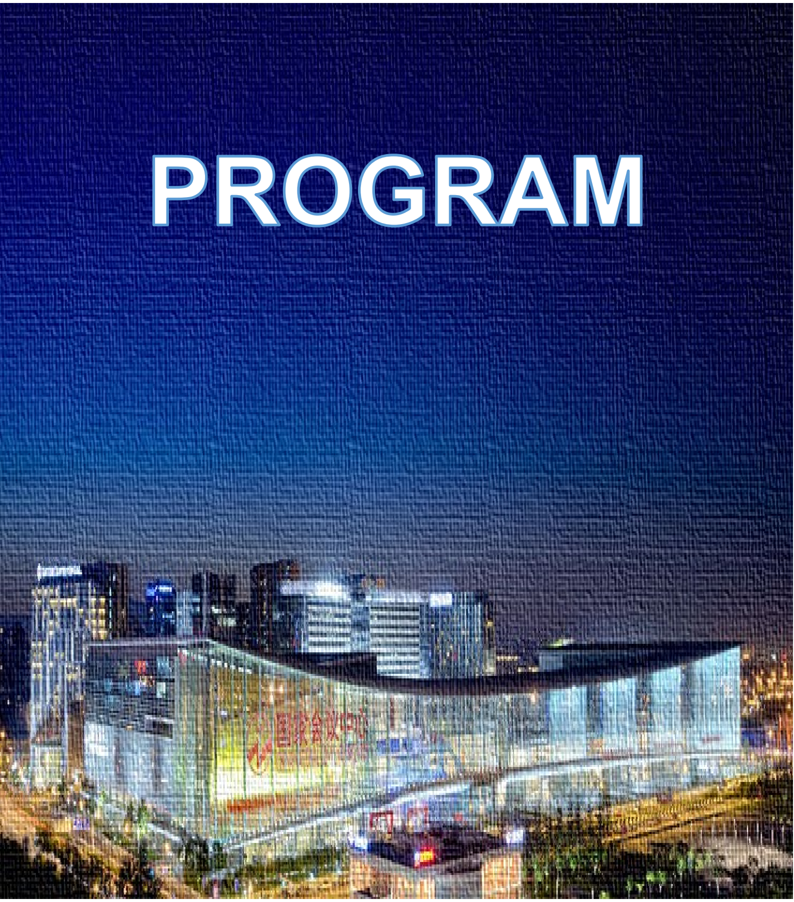
IEEE International Magnetics Conference



PROGRAM

China National Convention Center

May 11-15, 2015, Beijing, China

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SHOWA DENKO

SINGULUS

May 11, 2015
Beijing

Welcome

On behalf of the organizing committee, it is our great pleasure to welcome you all here in Beijing to the IEEE International Magnetics Conference, Asia INTERMAG, 2015.

INTERMAG as the premier conference on all aspects of applied magnetism provides a range of oral and poster presentations, invited talks and symposia, a tutorial session, and exhibits reviewing the latest developments in magnetism, extending from fundamental magnetism to advances in magnetic recording, emerging applications in energy and power technologies, and biomagnetism. All members of the international scientific community interested in new developments in magnetism and associated technologies are invited to attend INTERMAG 2015.

Beijing is famous for its well-established infrastructure and excellent business environment associated with the great success of the 2008 Beijing Olympic Games. It is the capital city of China, with a history of more than 3000 years. Beijing is both a tribute to China's proud history and a gateway to its future. Alongside 7300 cultural relics and historic sites along with more than 200 scenic spots, including the world's largest palace, the Forbidden City, as well as the Great Wall, the Summer Palace, and the Temple of Heaven, Beijing boasts an impressive modern skyline reflecting its rapid economic development. We hope you will have 7an opportunity to explore the rich culture, history and modern landmark of this glamorous city.

On behalf of the Management Committee of INTERMAG 2015, we wish all INTERMAG 2015 participants a fruitful and enjoyable stay in Beijing.

Kaizhong Gao
Jinliang He
Conference co-Chairmen

Contents

Conference Site

The technical program and exhibits of Intermag 2015 are being held in the **China National Convention Center (CNCC)** in Beijing. Opened in October 2009, CNCC is ideally located in the heart of the Olympic Green adjacent to the National Stadium (Bird Nest), the National Aquatics Center (Water Cube) and the National Indoor Stadium.

Underground/Subway: Interchange station on Line 8 and Line 15, "Olympic Green (北京奥林匹克公园地铁站)" Station, Exit E.

China National Conventional Center (CNCC)

Level 1:

- Ballroom A & B (lunch served here)

Level 2:

- Publication room (212 A)
- Speakers practice room (212 B)
- Woman in Magnetism (206 A & B)
- Conference committee (210 A)
- Interview room for Job Fair (201)

Level 3:

- Registration desk
- IEEE membership desk
- 306 A (oral sessions)
- 306 B (oral sessions)
- 307 (oral sessions)
- 308 (oral sessions)
- 309 A (Tutorial session, evening session and symposia)
- 309 B (Tutorial session, evening session and oral sessions)
- 310 (oral sessions)
- 311 A (oral sessions)
- 311 B (oral sessions)

Level 4:

- Plenary Hall A (Plenary Session)
- Plenary Hall B (Posters, exhibits, tea/ coffee breaks, Bierstubes, water, information, announcement boards and other conference services)

The detailed information on the conference rooms can be found in the reference book.

Registration

All 2015 Intermag conference attendees, including invited speakers, must pay registration fees. Registration should be done in advance via the online system at http://intermagasia.com/21r.htm. Incomplete or incorrect payments will be considered “late” and the regular rates will be collected onsite.

Onsite registrations during the conference will be at the regular rates listed below. Onsite payments must be in cash (RMB).

	Onsite registration fee
Full Registration IEEE Member	4900 RMB
Full Registration Non-IEEE Member	5900 RMB
Student/Retiree IEEE Member	2400 RMB
Student/Retiree Non-IEEE Member	3000 RMB

Student registrants should be ready to show a confirmation of their student status (student ID card or similar) when they pick up their conference materials at the registration desk.

- **Lunch is provided each day (Tue-Fri) for each registered participant at Ballroom A&B on Level 1.**

Registration Cancellation Policy:

Cancellations of advanced registrations must be submitted in writing and received no later than Wednesday, April 9, 2015. Refunds of the original payment, less a $75 service fee, will be mailed to the original registrant following the Conference. Later cancellations will not be refunded.

For a registrant who has paid the registration fee in advance but cannot attend the conference, attendee substitution can be made at any time, both on the Registration website and at the Onsite Registration Desk. Onsite substitutes must bring authorization of their substitution in writing from the original registrant.

Registration desk

The registration desk will be located on Level 3 next to the business center. It will be open at the following times:

Monday, May 11:	1:00 pm – 9:00 pm
Tuesday, May 12:	7:30 am – 5:00 pm
Wednesday, May 13:	8:30 am – 5:00 pm

Thursday, May 14: 8:30 pm – 5:00 pm
Friday, May 15: 8:30 pm – 4:00 pm

Many thanks to Singulus Technologies AG for sponsoring registration lanyards of Intermag 2015.

Badge policy

On check-in you will receive a personalized name badge. It enables you to access all conference areas, as well as the special conference events. All attendees will be required to wear their name badges to enter the Technical Sessions, Exhibits and special conference events.

Special conference events

Coffee Service and Bierstube

Coffee service will be available on Tuesday through Friday mornings start from 8:30am in the poster and exhibits area (Plenary Hall B).

Join your colleagues at the traditional Bierstube which will be open on Tuesday and Thursday evenings from 5:00 pm - 6:30 pm in the poster and exhibits area.

Many thanks to Materion Corporation for sponsoring the Bierstube of Intermag 2015.

Job Fair

Samsung Electronics Device Solutions (Memory, System LSI, Semiconductor R&D Center, Test & Package Center, LED, Mechatronics R&D Center, Software R&D Center, and Giheung/Hwasung Complex) will carry out recruitment during the conference. PhD candidates/post-docs can have a chance for a job interview. Master's degree holder must have at least 4 years of work experience in the semiconductor area. Major fields of interest include electrical engineering, material science and engineering, computer science, mechanical engineering, chemistry, and physics. Interested candidates are advised to prepare and submit a CV, including academic background, GPA, and academic achievements (e.g. journal papers and conference presentations) before the conference.

Contact information: Manager Mr. Sangil Han,
E-mail: sangil47.han@samsung.com.

Interview Room at CNCC: 201

Tutorial session

Monday, May 11 5:00 pm-7:30 pm 309 A&B

This session will present tutorials on recent advances in topological insulators. The first speaker will introduce topological insulator materials. The second speaker will explain the theory and concepts of topological insulators. The third speaker will discuss the potential devices and applications of topological insulators. The tutorials will not only be accessible to those with no background in the subjects, but will also provide comprehensive and timely summaries to specialists in the field. The tutorial session is organized by the Education Committee of the IEEE Magnetics Society.

Qikun Xue, Tsinghua University, China
"Topological Insulator Materials"

Nitin Samarth, Pennsylvania State University, USA
"Topological Insulators: Theory & Concepts"

Kang L. Wang, University of California, Los Angeles, USA
"Topological Insulators: Potential Devices and Applications"

Symposia

AA	Recent advances in heat-assisted magnetic recording
BA	Voltage control of magnetic domain walls
CA	Future reader sensors for high density magnetic recording
DA	Recent progress in STT-MRAM
EA	Advanced permanent magnets
FA	Tuning magnetism at oxide interfaces
GA	Emerging device concepts for magnetic memory
HA	Skyrmions in helimagnets

IEEE Magnetics Society Annual Meeting

This meeting is open to all Intermag 2015 participants and will be held on Tuesday, May 12, 5:30 pm – 6:30 pm, in Room 307A & B.

Come to learn more about what the IEEE Magnetics Society is doing to support and strengthen the Magnetics Community, and about the benefits of joining the Society. Your suggestions and feedback are most welcome! Beverage and light snacks will be provided.

Plenary Session and Award Ceremony

Wednesday, May 13 **Plenary Hall A**
4:30 pm – 6:00 pm

Session Chair: Jinliang He

Awards Chair: Burkard Hillebrands

IEEE Magnetics Society Achievement Award

Professor Takao Suzuki
for contributions to the micromagnetics of materials with high magnetocrystalline anisotropy and their applications in magnetic recording media

Newly elected Fellows of the IEEE

- **Charanjit Singh Bhatia, National University of Singapore,** for contributions to magnetic head-media interfaces and tribology
- **Yoshihiro Shiroishi, Hitachi Research and Development Group,** for leadership in the development of high density magnetic recording technologies and devices
- **Jian-Ping Wang, University of Minnesota,** for contributions to magnetic material and spintronic devices for magnetic recording, information processing and biomedical applications
- **Dieter Weller, HGST,** for contributions to heat-assisted magnetic recording media
- **Ming Cheng, Southeast University,** for contributions to the development and control of stator permanent magnet machines for vehicular propulsion and wind power generation
- **Mircea Popescu, Motor Design Ltd.,** for contributions to AC induction and permanent magnet electric machines

2015 Magnetics Society Distinguished Lecturers

- **Russell Cowburn, University of Cambridge**, “Perpendicular Magnetic Anisotropy: from Ultralow Power Spintronics to Cancer Therapy”
- **Ivan K. Schuller, UC San Diego,** “35 Years of Magnetic Heterostructures”
- **Ludwig Schultz, IFW Dresden,**

“Interaction of Ferromagnetic and Superconducting Permanent Magnets - Superconducting Levitation”

- **Bethanie Stadler, University of Minnesota,** “Magnetic Nanowires: Revolutionizing Hard Drives, RAM, and Cancer Treatment”

Plenary Lecture

Wednesday, May 13, 5:15 pm, Plenary Hall A

By:

Professor Enge Wang
International Center for Quantum Materials and School of Physics, Peking University

Title:

A step up to self-assembly of low-dimensional quantum structures

Abstract:

Pattern formation and decay in the early growth stage of low-dimensional quantum structures is fundamental to many phenomena in materials physics and chemistry. Understanding the complex interplay between factors that influence the evolution of surface-based nanostructures can be challenging and so computer simulation can play an important role in providing insight. In this talk, I will first introduce a one-, two-, and three-dimensional Ehrlich-Schwoebel (ES) barrier in kinetics-driven growth. Within this framework, I will show how to control the island shape, the island instability, and the film roughness efficiently. Furthermore, I will discuss a novel concept: a true upward adatom diffusion on metal surface, which is beyond the traditional Ehrlich-Schwoebel (ES) barrier model. This process offers new indications as how to use ab initio kinetic Monte Carlo simulation can uncover some of the building regulations of the evolution mechanism down to atomic-scale.

Biography:

Professor Enge Wang is the Deputy President, Chinese Academy of Sciences (CAS), President Emeritus and Professor in School of Physics and International Center for Quantum Materials, Peking University. He received his Ph.D. from Peking University in 1990. After working in France and US as a post-doctoral fellow and a research scientist, he started his academic career in 1995 as a professor at Institute of Physics in CAS. He was the Director of the Institute of Physics, CAS (1999-2007), the Deputy Secretary-General of CAS;

the Dean of School of Physics, Provost and Deputy President, and President (2013-2015) of Peking University. Professor Wang is a member of CAS and the World Academy of Sciences (TWAS), and a fellow of the American Physical Society and the Institute of Physics (UK). Professor Wang's main scientific research accomplishments include the fundamental understanding of the surface kinetics, and study of water behaviors in confinement system. In the above areas, he is the author of over 320 papers in peer-reviewed journals and 2 books, coeditor of 1 MRS proceeding, and coinventor on 13 patents. He is an ISI highly-cited researcher in physics.

Plenary Reception

Invitation from Kaizhong Gao and Jinliang He, General co-chairmen of Intermag 2015:

Following the Plenary Lecture a Conference Reception (6:15 pm – 7:45 pm) will be held for all participants of Intermag 2015. This reception is supported by the IEEE Magnetics Society. The reception will be held in Ballroom A&B. All registered participants are cordially invited to attend and celebrate the achievements of our award winners and to network with your colleagues. A western Chinese buffet will be served.

Lunch with Experts

Thursday, May 14 at 12:00 pm, Ballroom B

Evening Session

Thursday, May 14 at 6:00pm 309 A&B

Chair: Kaizhong Gao

Title

Current and Future Perspective of Data Storage Technologies

By:

Dr. Mark Re, CTO and SVP of Seagate Technology

Dr. Steve Campbell, CTO, HGST, a Western Digital Company

Dr. Yoichiro Tanaka, Sr. Fellow, Toshiba

Women's Networking Event

Thursday afternoon, May 14 206 A & B
5:30 pm – 7:00 pm

As is the tradition, the IEEE Magnetics Society will be sponsoring a Networking Reception for women in the magnetism community. This is a great opportunity to become acquainted with other women in the profession and to discuss a range of topics including leadership, work-life balance, and professional development. At the reception you will also have the opportunity to build new friendships and expand your professional network. All graduate students, researchers and retirees are encouraged to attend. For questions, please contact Pallavi Dhagat (dhagat@eecs.orst.edu). A light meal will be provided.

Sponsors

The Intermag 2015 Conference Committee would like to gratefully thank the following sponsors (in alphabetical order):

Platinum sponsors:
HGST, a Western Digital Company
Seagate Technology

Gold sponsor:
Samsung Electronics

Silver sponsors:
Materion Corporation
SAE Magnetics (HK) Limited

Other sponsors and partner:
Enico Magnetics
Showa Denko
Singulus Technologies AG
Institute of Physics

Exhibits

Suppliers of instrumentation, materials, process tools, and other products and services will exhibit their latest offerings for professionals in magnetism and associated technologies. The exhibit will be located in Plenary Hall B. The Exhibit Hall will also be the site of coffee service, Bierstube etc...

Exhibit opening hours

Tuesday, May 12	12:00 pm – 6:30 pm
Wednesday, May 13	8:00 am – 4:00 pm
Thursday, May 14	8:00 am – 6:30 pm
Friday, May 15	8:00 am – 12:00 pm

List of Exhibitors

(in alphabetical order)

- ABC Trading Beijing Co., Ltd.

- Adnano
- Bruker Nano Surface
- Capres A/S
- East Changing Technologies
- GMW Associates
- HGST, a Western Digital Company
- HTS-110
- Hystron Inc.
- Lake Shore Cryotronics
- MTI-KJ Corporation
- Nanomagnetics Instruments
- NanoScan AG
- Neoark Corporation
- NT-MDT
- Quantum Design China
- Science China Press
- Seagate Technology Llc
- Singulus Technologies AG
- Sinomags
- SmartTip BV
- Tohoku Steel Co. Ltd.
- Zurich Instruments AG

The Intermag 2015 Conference Committee would like to acknowledge and thank participation of the exhibitors.

Wireless access

Wireless access will be available in the conference area including poster and exhibits areas. An access code and relevant instructions will be posted onsite. The speed of connection may be limited due to high number of attendees. The wireless (cell phone) charging stations will also be provided in the exhibition area. Please do not remove the hardware provided after using it, so other conference attendees can use. The Intermag 2015 Conference Committee would like to acknowledge and thank Showa Denko's support for providing this service to the conference.

Speakers practice room

Speakers may use Room 212B on Level 2 to practice presentation and test their computer connections with the in-house equipment prior to their individual presentations. Audiovisual equipment (LCD projector and screen) will be available for speakers to use from Monday to Friday (Friday will be until 4 pm). Speakers are encouraged to use this facility to practice their presentation, either alone or with colleagues.

Publication room

Authors can check the status of their manuscripts in Room 212A on Level 2. The status of all papers can be found here and authors should check periodically on their individual papers. The room will be opened from Monday 4pm-7pm, Tuesday to Friday 8am-6pm.

Oral sessions

The oral sessions will be held on the Level 3 and Level 4 of the CNCC from 9:00 am to 12:00 pm in the morning and 2:00 pm–5:00 pm in the afternoon on Tuesday through Friday (except Wednesday, when the afternoon session will run from 2:00 pm–4:00 pm) with the detailed order and locations of talks as listed in the program.

Contributed oral presentations are 15 minutes per speaker (including 3 minutes questions), while invited presentations are 30 minutes per speaker (including 5 minutes questions).

All oral presentations are to be made using the speaker's own laptop. The Conference will provide the LCD projector and screen, pointer, and microphone in each oral session room.

Only standard PC-style VGA connections to the LCD projector will be supplied. Presenting authors must supply any adaptor required for their computer. In particular, Mac OS users must make sure that they have the correct adaptor plug and that video "mirroring" is activated.

In each session room, there will be a multi-port switchbox so that speakers can connect their laptops during the question period of the previous speaker.

Presenting authors should "check in" with the session chair at least five minutes before the scheduled start of the session. Session chairs have the responsibility of reporting "No-Shows" to the Publication Committee. Papers associated with no-show presentations will not be published in the special INTERMAG issue of the IEEE Transactions on Magnetics and the related abstracts will also be removed from IEEE Xplore.

IEEE Magnetics Society Best Student Presentation Award

Following the establishment of this prestigious prize by the IEEE Magnetics Society in 2008, the selection of the five finalists for Intermag 2015 has been made after full review of all students entering the competition. This selection has been based on the quality and likely impact of the work, with preference given to students who are within one year of graduation and who are, and whose advisors are, current members of the IEEE Magnetics Society. The five finalists will receive a cash award from the Magnetics Society as well as recognition for their achievement. The eventual winner will be selected by a transnational panel of scientists who will assess each presentation according to the following criteria:

1. The quality/impact of the work
2. The student's contribution/involvement in the work
3. The quality of student's presentation

Each of the criteria will make an equal contribution to the assessment. The panel evaluation process will be overseen by the Chairman of the IEEE Magnetics Society Education Committee and the Chairman of the Honors and Awards Committee. The award will be made to the student achieving the highest overall ranking in the three criteria.

The five finalists of Intermag 2015 are:

Aitian Chen
AE-05 (Tuesday, 10:15am, 311B)

Alice Mizrahi
CB-09 (Wednesday, 11:15am, 309B)

Robert Streubel
CG-05 (Wednesday, 10:15am, 307)

Wei-Yang Sun
AG-01 (Tuesday, 9:00am, 307)

Seonghoon Woo
BB-11 (Tuesday, 4:45pm, 309B)

Poster sessions

The poster sessions will be held in the Plenary Hall B of the CNCC 4th floor. Posters should be displayed from 8:30 am-12:00 pm for morning sessions, and 1:30 pm-5:00 pm for afternoon sessions. Posters should be set up at least 15 minutes before the session starts and must be removed by the authors promptly at the end of their session. Posters not removed will be discarded.

The poster size is **vertical** / portrait format of 1 meter wide and 2 meter high (40 inches by 80 inches). You must include the title and authors on the poster. The Conference provides a small sign designating the paper to be posted on each board and pushpins for attaching your poster to the board.

Poster presentations will consist of well-prepared visual materials about the work posted on a designated board. An author of the digest must be available to present details and answer questions during the selected poster session times. If a poster is posted but none of the authors is present, the Session Chairs will count the presentation as a "No-Show". Papers associated with no-show presentations will not be published in the IEEE Transactions on Magnetics.

Best Poster Awards

Best Poster awards will be given to recognize excellence in research and presentation. There will be one award made for each morning and afternoon session of the conference. The awards will be made in the last hour of each poster session. The award consists of a RMB 400 cash prize and an award certificate. A ribbon will also be attached to the winning posters. Winning posters will be prominently displayed throughout the remainder of the conference.

All posters will be eligible for nomination for this award provided that they meet the requirements and guidelines for poster presentations and sessions, as described above. Nominations will be made by the individual Session Chairs. The final decision will be made by the Poster Award Committee after reviewing the nominated posters. Selections will be based on the level of the research, quality of the poster, and clarity of the presentation.

Student travel awards

The IEEE Magnetics Society awards travel grants of up to $1000 each to a limited number of students wishing to attend Intermag 2015. These grants are intended to partially offset travel costs. Support is for current graduate students only. Post-doctoral workers and undergraduate students are ineligible. Students who have previously received travel support from the Magnetics Society are also ineligible.

Preference is given to Student Members of the Magnetics Society. Preference is also given to students approaching completion of their studies and presenting conference papers. The student's supervisor must also be a member of the Magnetics Society. The student's supervisor must write a letter of endorsement for the applicant. A second letter of endorsement from a full member of the Magnetics Society is also required.

Travel grants are a reimbursement for actual expenses. Thus the students must attend the conference and submit receipts afterwards to the student travel coordinator, which then are processed and reimbursed by IEEE. Checks will neither be sent in advance nor issued directly at the conference.

Shortly after the conference, grant recipients must submit a short article of their experience for possible inclusion in the IEEE Magnetics Society newsletter.

Additional information

Complete conference information can be accessed through the Web at the Intermag homepage at:

www.intermagconference.com/2015/.

IEEE Magnetics Society

President	Bruce Terris
Vice President	Manuel Vazquez
Secretary/Treasurer	Pallavi Dhagat
Past-President	Liesl Folks

Elected IEEE Magnetics Society Administrative Committee Members

Terms expiring December 31, 2015: O. Chubykalo-Fesenko; N. Dempsey; D. Dorrell; C. Felser; P. Kabos; B. Liu; K. Liu; J. Sykulski.

Terms expiring December 31, 2016: J. Childress; M. Diaz Michelena; P. Fischer; M. Futamoto; S. Mangin; J. Moreland; L. Schultz; M. Yamaguchi.

Terms expiring December 31, 2017: F. Albertini; B. Dieny; D. Ravelosona; R. Schafer; A. Stancu; T. Thomson; J.-P. Wang; R. Wood.

Appointed Committee Chairs: L. Folks; R. Goldfarb; L. Heyderman; B. Hillebrands; J. Lau; C.-H. Lai; S. Majetich; S.N. Piramanayagam; P.W.T. Pong; R. Victora; M. Wu.

Council Representatives: R. Goldfarb and A. Zeller (Superconductivity); K. Krycka and I. Nlebedim (Engagement with Young Professionals); P. Ripka (Sensors); J-P Wang (Nanotechnology).

Joining IEEE Magnetics Society

By joining the IEEE Magnetics Society, you become a part of the world's best-known magnetics organization.

- You gain access to local Chapter events, technical activities and can sponsor students for conference travel grants.
- You will be recognized as being part of the established and vibrant IEEE technical community.
- And you will receive a large discount at conferences, such as this Intermag.

Joining is easy: You can go online via the Society website at www.ieeemagnetics.org and follow the links prior to registering for the conference.

There will be an IEEE membership desk located on Level 3, and giveaways are available for the new members. We are looking forward to meeting you at the 2015 Intermag Conference.

Note that if you wish to use your IEEE Magnetics Society membership to qualify for the registration discount, you must join before you register for Intermag 2015 and have your Membership Number with you.

Conference Management Committee

Honorary Chair	Dingsheng Wang
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	Jinliang He
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Publicity Chairs	Jinbo Yang
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Award Chairs	Burkard Hillebrands
	Mingzhong Wu
	Zhidong Zhang
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	Young Keun Kim
	Runwei Li
Student Travel Award	Matthew J Carey
IEEE Representatives	Massimo Pasquale
	Bruce Terris
Conference Sponsor and Exhibits Coordinator	Huihui Li

Program Committee Members

Amr Adly, Antony Ajan, Yacine Amara, Hiroyuki Awano, Gerrit Bauer, Jonathan Bird, Kwok Tong Chau, Jingsheng Chen, Alina Maria Deac, Nora Dempsey, Cindi Dennis, Marina Diaz-Michelena, Haifeng Ding, Peter Fischer, Victorino Franco, Lucia Frosini, Chao-Ming Fu, Eric Fullerton, Donald S. Gardner, Guchang Han, Jung-Pyo Hong, Kazuhiro Hono, Min-Fu Hsieh, Fengxia Hu, Guohan Hu, June W. Lau, Zhongyuan Liu, Bogi Bech Jensen, Geraint Jewel, Xiaofeng Jin, Ganping Ju, Myung-Hwa Jung, Narayan C. Kar, Cheolgi Kim, Mochimitsu Komori, Pavel Krivosik, Chih-Huang Lai, Hakho Lee, Jian Li, Sang-Ho Lim, Jauyn Grace Lin, Kai Liu, Elena Lomonova, Julia Lyubina, Christopher Marrows, Casey Miller, Paulo de Morais, Oleg Mryasov, Kenji Nakamura, Johannes Paulides, Dongliang Peng, S.N. Piramanayagam, Philip Pong, Ronghai Qu, Jiang Quan, Rudolf Schafer, Jing Shi, Kwang Ho Shin, Hariharan Srikanth, Robert Stamps, Gang Su, Yukiko Takahashi, Mi-Ching Tsai, Evgeny Tsymbal, Mean-Jue Tung, Ciro Visone, Junling Wang, Xiangrong Wang, Mingzhong Wu, Ke Xia, Xiaohong Xu, Desheng Xue, Masahiro Yamaguchi, Masafumi Yamamoto, Shishen Yan, Shinji Yuasa, Xixiang Zhang, JianHua Zhao, Minggang Zhu, Arcady Zhukov

Publication Editors

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Conference Local Support

We want to thank various organizations to provide additional support to ensure the success of the conference, the acknowledge goes to:

Tsinghua University,

Chinese Academy of Sciences,

Peking University,

Chinese Institute of Electronics Magnetics Society,

Chinese Institute of Physics Magnetics Society,

Chinese Magnetics Society for Chinese Materials Research Society.

In addition, we also acknowledge IEEE magnetics societies in other regions in Asia and IEEE China Office for their great support.

Future Conferences

13th Joint MMM/Intermag Conference
January 11-15, 2016, San Diego, California

61st Conference on Magnetism and Magnetic Materials
October 31-November 4, 2016, New Orleans, Louisiana

2017 Intermag Conference

April 24-28, 2017, Dublin, Ireland

62nd Conference on Magnetism and Magnetic Materials
November 6-10, 2017, Pittsburgh,

Pennsylvania

The 21st International Conference on Magnetism (ICM 2018)
July 16-20, 2018, San Francisco, California

14th Joint MMM/Intermag Conference
January 14-18, 2019, Washington, DC

63rd Conference on Magnetism and Magnetic Materials
November 4-8, 2019, Las Vegas, NV

64th Conference on Magnetism and Magnetic Materials
November 16-20, 2020, Fort Lauderdale, FL

Program at a Glance

Monday, May 11, 2015

XA	Tutorial session: Topological Insulators	5:00 PM	309 A&B	Symposium

Tuesday, May 12, 2015

AA	Recent Advances in Heat-Assisted Magnetic Recording	9:00 AM	309 A	Symposium
AB	Magnetic Random Access and Domain Wall Memory		309 B	Oral
AC	Emerging Magnetism at Interfaces		310	Oral
AD	Intermetallic and Other Hard Magnets I		311 A	Oral
AE	Multiferroic Materials I		311 B	Oral
AF	Modelling and Computational Magnetism I		308	Oral
AG	Exchange Bias & patterned Films and Elements I		307	Oral
AH	Switched and Synchronous Reluctance Machines I		306 B	Oral
AI	Magnetic Sensors (non-recording) I		306 A	Oral
AP	Magnetocaloric Materials I	8:30 AM	Plenary Hall B	Poster
AQ	Exchange Bias & Patterned Films and Elements II		Plenary Hall B	Poster
AR	Rare Earth Transition Metal Borides I		Plenary Hall B	Poster
AS	Rare Earth Transition Metal Borides II		Plenary Hall B	Poster
AT	Superconducting, Magnetic-geared and Memory Machines		Plenary Hall B	Poster
AU	Magnetic Gears and Linear Machines I		Plenary Hall B	Poster
AV	Magnetic Gears, Multiphase and Other Special Machines		Plenary Hall B	Poster
BA	Voltage Control of Magnetic Domain Walls	2:00 PM	309 A	Symposium
BB	Spin-orbit Interaction (Spin Hall)		309 B	Oral
BC	Magnetization Dynamics and Magneto-impedance Materials		310	Oral
BD	Rare Earth Transition Metal Borides III		311 A	Oral
BE	Magnetic Imaging and Characterization I		311 B	Oral
BF	Magnetic Recording Media		308	Oral
BG	Electric Machine Modeling and Analysis I		307	Oral
BH	Electric Machine Applications I		306 B	Oral
BI	Life Science and Applications I		306 A	Oral
BP	Linear, Multiphase and Other Special Machines I	1:30 PM	Plenary Hall B	Poster

BQ	Magnetic Anisotropy and Surface Effects		Plenary Hall B	Poster
BR	Ferrites, Garnets and Other Soft Materials I		Plenary Hall B	Poster
BS	Magnetocaloric Materials II		Plenary Hall B	Poster
BT	Magnetic Sensors (non-recording) and MEMS		Plenary Hall B	Poster
BU	Fundamental Properties I		Plenary Hall B	Poster
BV	Modelling and Computational Magnetism II		Plenary Hall B	Poster
BW	Power and control magnetics		Plenary Hall B	Poster
BX	Transformers and Inductors I		Plenary Hall B	Poster
BY	Generators for Renewable Energy		Plenary Hall B	Poster
BZ	Magnetic Materials and Manufacturing Effects for Electric Machines		Plenary Hall B	Poster

Wednesday, May 13, 2015

CA	Future Reader Sensors for High Density Magnetic Recording	9:00 AM	309 A	Symposium
CB	Spin-transfer Torque and Dynamics I		309 B	Oral
CC	Spin Transport in Magnetic Semiconductors, Organic and Carbon-based materials I		310	Oral
CD	Soft Magnetic Materials I: Crystalline, Nanocrystalline and Amorphous Materials		311 A	Oral
CE	Fundamental Properties II		311 B	Oral
CF	Modelling and Computational Magnetism III		308	Oral
CG	Exchange Bias & Patterned Films and Elements III		307	Oral
CH	Permanent Magnet and Induction Machines I		306 B	Oral
CI	Power, Control and Coupling Analysis		306 A	Oral
CP	Spin-electronics and Applications I	8:30 AM	Plenary Hall B	Poster
CQ	Exchange Bias & Patterned Films and Elements IV		Plenary Hall B	Poster
CR	Nanoscale Magnetism I		Plenary Hall B	Poster
CS	Ferrites, Garnets and Other Soft Materials II		Plenary Hall B	Poster
CT	Novel Applications of Magnetic Sensors		Plenary Hall B	Poster
CU	Superconductivity and Emerging Topics I		Plenary Hall B	Poster
CV	Modelling and computational magnetism IV		Plenary Hall B	Poster
CW	Magnetization Dynamics and Microwave Materials		Plenary Hall B	Poster
CX	Electric Machines and Applications		Plenary Hall B	Poster
CY	Machine Modeling, Analysis and Fault Diagnosis		Plenary Hall B	Poster
DA	Recent Progress in STT-MRAM	2:00 PM	309 A	Symposium
DB	Spin Waves and Magnonics I		309 B	Oral
DC	Modelling and Computational Magnetism V		310	Oral
DD	Intermetallic and Other Hard Magnets II		311 A	Oral
DE	Magnetic Imaging and Characterization II		311 B	Oral
DF	Recording Systems I		308	Oral
DG	Magneto-optic and Novel		307	Oral

	Materials			
DH	Inductors		306 B	Oral
ZA	Plenary Session and Plenary Talk	4:30 PM	Plenary Hall A	Oral

Thursday, May 14, 2015

EA	Advanced Permanent Magnets	9:00AM	309 A	Symposium
EB	Magnetic Tunnel Junction and Perpendicular Anisotropy (I)		309 B	Oral
EC	Nanoscale Magnetism II		310	Oral
ED	Soft Magnetic Materials II: Crystalline, Nanocrystalline and Amorphous Materials		311 A	Oral
EE	Superconductivity and Emerging Topics II		311 B	Oral
EF	Energy Assisted and Novel Recording I		308	Oral
EG	Permanent Magnet Machines I		307	Oral
EH	Machine Modeling and Renewable Energy		306 B	Oral
EI	Magnetic Sensors (non-recording) II		306 A	Oral
EP	Head-Disk Interface and Tribology I	8:30 AM	Plenary Hall B	Poster
EQ	Energy Assisted and Novel Recording II		Plenary Hall B	Poster
ER	Soft Magnetic Materials III: Crystalline, Nanocrystalline and Amorphous materials		Plenary Hall B	Poster
ES	Anisotropy and Exchange Coupling		Plenary Hall B	Poster
ET	Spin-orbit Interaction and Spin-caloric Effect		Plenary Hall B	Poster
EU	Intermetallic and Other Hard Magnets III		Plenary Hall B	Poster
EV	Life Science and Applications II		Plenary Hall B	Poster
EW	Electromagnetic Compatibility and Transformers I		Plenary Hall B	Poster
EX	Shielding, Levitation and Propulsion		Plenary Hall B	Poster
EY	Permanent Magnet Machines II		Plenary Hall B	Poster
EZ	Switched and Synchronous Reluctance Machines II		Plenary Hall B	Poster
FA	Tuning Magnetism at Oxide Interfaces	2:00 PM	309 A	Symposium
FB	Domain Wall, Magnonics and Logic Devices		309 B	Oral
FC	Spin Textures and Magnetic Interactions		310	Oral
FD	Magnetoelastic and Magnetocaloric Materials		311 A	Oral
FF	Patterned Media and Recording Heads		308	Oral
FG	Electromagnetic Compatibility and Transformers II		307	Oral
FH	Electric Machine Modeling and Analysis II		306 B	Oral
FP	Multiferroic Materials II	1:30 PM	Plenary Hall B	Poster
FQ	Recording Physics, Heads and Patterned Media		Plenary Hall B	Poster
FR	Magneto-impedance and Microwave Materials		Plenary Hall B	Poster
FS	Nanoparticles I		Plenary Hall B	Poster
FT	Multiferroic Materials III		Plenary Hall B	Poster
FU	Magnetic Nanostructures with Perpendicular Anisotropy		Plenary Hall B	Poster
FV	Modelling and computational magnetism VI		Plenary Hall B	Poster

FW	Electromagnetic, Thermal and Vibrational Coupling I		Plenary Hall B	Poster
FX	PM-assisted Synchronous Reluctance and Flux Switching Machines		Plenary Hall B	Poster
FY	Permanent Magnet Machines III		Plenary Hall B	Poster
FZ	Permanent Magnet and Induction Machines II		Plenary Hall B	Poster
YA	Evening Session: Current and Future Perspective of Data Storage Technologies	6:00 PM	309A& B	Oral

Friday, May 15, 2015

GA	Emerging Device Concepts for Magnetic Memory	9:00 AM	309 A	Symposium
GB	Spin-electronics and Applications II		309 B	Oral
GC	Nanoparticles II		310	Oral
GD	Nanostructured and Composite Hard Magnetic Materials I		311 A	Oral
GE	Spin-caloric Effect and Spin-pumping		311 B	Oral
GF	Magnetic Recording Physics and Modeling		308	Oral
GG	Linear, Multiphase and Other Special Machines II		307	Oral
GH	Machine Iron Losses & Renewable Energy		306 B	Oral
GI	Life Science and Applications III		306 A	Oral
GP	Magnetic Tunnel Junction and Perpendicular Anisotropy II	8:30 AM	Plenary Hall B	Poster
GQ	Recording Media		Plenary Hall B	Poster
GR	Soft Magnetic Materials IV: Crystalline, Nanocrystalline and Amorphous Materials		Plenary Hall B	Poster
GS	Magneto-optic, Elastic, Functional Materials and Applications		Plenary Hall B	Poster
GT	Domain Wall, MRAM and Logic Devices		Plenary Hall B	Poster
GU	Magnetic Imaging and Characterization III		Plenary Hall B	Poster
GV	Life Science and Applications IV		Plenary Hall B	Poster
GW	Magnetic Molecules and Fluids		Plenary Hall B	Poster
GX	Electromagnetic, Thermal and Vibrational Coupling II		Plenary Hall B	Poster
GY	Electric Machine Applications II		Plenary Hall B	Poster
GZ	Electric Machine Modeling and Analysis III		Plenary Hall B	Poster
HA	Skyrmions in Helimagnets	2:00 PM	309 A	Symposium
HB	Domain Wall Motion and Logic Devices		309 B	Oral
HC	Controlled Anisotropy		310	Oral
HD	Ferrites, Garnets and Other Soft Materials III		311 A	Oral
HE	Magnetocaloric Materials III		311 B	Oral
HF	Head-Disk Interface and Tribology II		308	Oral
HG	Exchange Bias & Patterned Films and Elements V		307	Oral
HH	Magnetic Gears and Linear Machines II		306 B	Oral
HP	Spin-transfer Torque and Dynamics II	1:30 PM	Plenary Hall B	Poster
HQ	Recording Systems II		Plenary Hall B	Poster
HR	Soft Magnetic Materials V: Crystalline, Nanocrystalline and		Plenary Hall B	Poster

	Amorphous materials		
HS	**Nanostructured and Composite Hard Magnetic Materials II**	**Plenary Hall B**	**Poster**
HT	**Spin Waves and Magnonics II**	**Plenary Hall B**	**Poster**
HU	**Fundamental Properties III**	**Plenary Hall B**	**Poster**
HV	**Spin Transport in Magnetic Semiconductors, Organic and Carbon-based materials II**	**Plenary Hall B**	**Poster**
HW	**Transformers and inductors II**	**Plenary Hall B**	**Poster**
HX	**Iron Loss Analysis, Modeling and Measurements**	**Plenary Hall B**	**Poster**
HY	**Electric Machine Applications III**	**Plenary Hall B**	**Poster**
HZ	**Electric Machine Modeling and Analysis IV**	**Plenary Hall B**	**Poster**

Conference Program

The conference language is English.

Recording equipment policy: The use of cameras, videotaping and/or recording devices in the technical sessions is strictly prohibited.

MONDAY 309 A
EVENING
5:00

Session XA
TUTORIAL SESSION: TOPOLOGICAL INSULATORS

Mingzhong Wu, Chair
Colorado State University
Chih-Huang Lai, Chair
National Tsing Hua University

5:00 **XA-01. Topological Insulator Materials. *(Invited)*** *Q. Xue[1] 1. Physics, Tsinghua University, Beijing*

5:45 **XA-02. Topological insulators: theory & concepts. *(Invited)*** *N. Samarth[1] 1. Physics, Penn State University, University Park, Pennsylvania*

6:30 **XA-03. Topological Insulators: Potential Devices and Applications. *(Invited)*** *K.L. Wang[1] 1. EE, University of California at Los Angles, Los Angeles, California*

TUESDAY 309 A
MORNING
9:00

Session AA
RECENT ADVANCES IN HEAT-ASSISTED MAGNETIC RECORDING

Cheng-Jun Sun, Chair
Argonne National Laboratory

9:00 **AA-01. High Density Heat Assisted Magnetic Recording Media and Advanced Characterization – Progress and Challenges. *(Invited)*** *G. Ju*[1], Y. Peng[1], K. Chang[1], Y. Ding[1], A.Q. Wu[1], X. Zhu[1], H. Amini[1], T.J. Klemmer[1], Y. Kubota[1], L. Gao[1], Z. Fan[1], K. Wang[1], T. Rausch[2], P. Subedi[3], S. Kalarickal[2], D. Dimitrov[3], M. Ma[2], C.J. Rea[3], D.W. Karns[3], X. Chen[1], J.W. Dykes[2], M.A. Seigler[3], E. Gage[2], R. Chantrell[4] and J. Thiele[1] *1. Seagate Technology, Fremont, California; 2. Seagate Technology, Shakopee, Minnesota; 3. Seagate Technology, Bloomington, Minnesota; 4. Physics, University of York, York, United Kingdom*

9:30 AA-02. **Simulation of Expected Areal Density Gain for Heat Assisted Magnetic Recording.** ***(Invited)***
R.H. Victora[1], Y. Dong[1], P. Huang[1], S. Wang[1] and Y. Wang[1] *1. MINT, Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota*

10:00 AA-03. **HAMR Recording Challenges at High Linear Densities.** ***(Invited)*** *G. Bertero*[1], M. Alex[1], B. Valcu[1] and R. Eaton[1] *1. Western Digital, Redwood City, California*

10:30 AA-04. **Short pulse laser heating for HAMR: Density potential and implementation issues.** ***(Invited)*** *B. Xu*[1], H. Wang[1], Z. Cen[1], Z. Liu[1], K. Ye[1], H. Yang[1], J. Zhang[1] and J. Li[1] *1. Data Storage Institute, Singapore*

11:00 AA-05. **Challenges in Developing FePt L10 Granular Thin Film Media for Heat Assisted Magnetic Recording (HAMR).** ***(Invited)*** *O. Hellwig*[1] *1. HGST, San Jose, California*

11:30 AA-06. **Magnetometry-based order parameter to probe the A1 to $L1_0$ transformation in FeCuPt for heat-assisted magnetic recording media.** ***(Invited)***
D.A. Gilbert[1], J. Liao[2], L. Wang[2], J.W. Lau[3], T.J. Klemmer[4], J. Thiele[4], C. Lai[2] and *K. Liu*[1] *1. Physics Department, U. C. Davis, Davis, California; 2. National Tsing Hua University, Hsinchu, Taiwan; 3. NIST, Gaithersburg, Maryland; 4. Seagate Technology, Fremont, California*

TUESDAY MORNING 9:00

309 B

Session AB

MAGNETIC RANDOM ACCESS AND DOMAIN WALL MEMORY

Shinji Yuasa, Chair
National Institute of Advanced Industrial Science and Technology (AIST)
S.N. Piramanayagam, Chair
Nanyang Technological University, Singapore

9:00 AB-01. **Domain Wall Pinning for Racetrack Memory Using Exchange Bias.** ***(Invited)*** I. Polenciuc[3], A.J. Vick[1,3], D.A. Allwood[4], T.J. Hayward[4], G. Vallejo-Fernandez[3], *A. Hirohata*[1,2] and K. O'Grady[3] *1. Department of Electronics, University of York, York, United Kingdom; 2. PRESTO, Japan Science and Technology Agency, Kawaguchi, Japan; 3. Department of Physics, University of York, York, United Kingdom; 4. Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom*

9:30 AB-02. **Stochastic Memristive Synapses from Spin-Transfer Torque Magnetic Tunnel Junctions.** *A.F. Vincent*[1], N. Locatelli[1], J. Larroque[1], W. Zhao[1,2], J. Klein[1], S. Galdin-Retailleau[1] and D. Querlioz[1] *1. Institut d'Électronique Fondamentale, CNRS/Université Paris-Sud, Orsay, France; 2. Spintronics Interdisciplinary Center, Beihang University, Beijing*

9:45 AB-03. **A Multi-Level Cell for STT-MRAM Realized by Capping Layer Adjustment.** *M. Wang*[1], S. Peng[1], Y. Zhang[1], Y. Zhang[4], D. Ravelosona[3], W. Zhao[1,3] and Q. Zhang[2] *1. Spintronics Interdisciplinary Centre, Beihang University, Beijing; 2. School of Materials Science and Engineering, Beihang University, Beijing; 3. Institut d'Electronique Fondamentale (IEF), University of Paris Sud, Orsay, France; 4. School of electronic and information engineering, Beihang University, Beijing*

10:00 AB-04. **Domain walls in Pt/Co/Pt influenced by microstructure, strain and the Dzyaloshinskii-Moriya interaction.** ***(Invited)*** *T. Moore*[1] *1. University of Leeds, Leeds, United Kingdom*

10:30 **AB-05. Laser powered Magnetic-Random Access Memory.** *Y. Xu*[1], W. Lin[1], M. Hehn[1], Y. Lu[1], H. Rinnert[1], S. Petit[1], F. Montaigne[1], L. Chaput[1], B. Negulescu[2], S. Andrieu[1] and S. Mangin[1] *1. Institut Jean Lamour, Vandoeuvre les Nancy, Lorraine, France; 2. Laboratoire d'Electrodynamique des Materiaux Avances, Tour, France*

10:45 **AB-06. Ultra-fast three-terminal Spin-Orbit Torque MRAM with perpendicular magnetization.** M. Cubukcu[1], *O. Boulle*[1], C. Hamelin[1], N. Lamard[3], M. Ioan Mihai[1], J. Langer[2], B. Ocker[2], M. Cyrille[3], K. Garello[4], P. Gambardella[4] and G. Gaudin[1] *1. SPINTEC, Grenoble, France; 2. Singulus Technologies, Kahl am Main, Germany; 3. CEA/LETI, Grenoble, France; 4. ETH Zurich, Zurich, Switzerland*

11:00 **AB-07. PMTJ Driven STT MRAM with 300mm Process.** ***(Invited)*** *Y. Huai*[1], J. Zhang[1], Y. Zhou[1], X. Wang[1], E. Abedifard[1], Z. Wang[1], X. Hao[1], D. Jung[1], K. Satoh[1], H. Gan[1], B.K. Yen[1], K. Moon[1] and U. Chandrashekar[1] *1. Avalanche Technology, Fremont, California*

11:30 **AB-08. Controlled pulse shape cooling in planar TAS-STT-MRAM for improved writeability.** *A. Chavent*[1,2], C. Ducruet[1], C. Portemont[1], C. Creuzet[1], L. Vila[3], J. Alvarez-Hérault[1], R.C. Sousa[2], I.L. Prejbeanu[2] and B. Dieny[2] *1. Crocus Technology, Grenoble, France; 2. Spintec, CEA, Grenoble, France; 3. SP2M, CEA, Grenoble, France*

11:45 **AB-09. Transistor-less Spin Torque Transfer MRAM Design.** *W. Wang*[1] *1. Electrical Engineering and Computer Scinece, University of Wisconsin - Milwaukee, Milwaukee, Wisconsin*

TUESDAY
MORNING
9:00

310

Session AC
EMERGING MAGNETISM AT INTERFACES
Yizheng Wu, Chair
Fudan university

9:00 AC-01. **Emergent Magnetism in Molecular Interfaces. *(Invited)*** *O. Cespedes*[1], T. Moorsom[1], F. Al Ma'Mari[1], G. Teobaldi[3], H. Luetkens[2], T. Prokscha[2], S. Lee[4], M. Flokstra[4], M. Ali[1], G. Burnell[1], B. Hickey[1] and M. Wheeler[1] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 2. Laboratory for Muon-Spin Spectroscopy, Paul Scherrer Institut, Villigen, Switzerland; 3. Stephenson Institute for Renewable Energy, Department of Chemistry, University of Liverpool, Liverpool, United Kingdom; 4. School of Physics & Astronomy, University of St. Andrews, St. Andrews, United Kingdom*

9:30 AC-02. **Ferromagnetism in Cr_2O_3 thin films: an ab-initio study.** *R. Choudhary*[1], R. Skomski[2] and A. Kashyap[1] *1. School of Basic Sciences (Physics), Indian Institute Of Technology Mandi, Mandi, Himachal Pradesh, India; 2. Physics and Astronomy, NCMN University of Nebraska, Lincoln, Nebraska*

9:45 AC-03. **Perpendicular Magnetic Anistropy in Co_2FeAl Thin Films: Effect of the Annealing Temperature.** M. Belmeguenai[1], M. Gabor[2], Y. Roussigne[1], T. Petrisor Jr[2], F. Zighem[1], *S. Cherif*[1] and T. Coriolan[2,3] *1. LSPM (CNRS-UPR 3407), Université Paris 13, Sorbonne Paris Cité, Villetaneuse, France; 2. Center for Superconductivity, Spintronics and Surface Science, Department of Physics and Chemistry, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; 3. Institut Jean Lamour, CNRS, Lorraine Université, Vandoeuvre, France*

10:00 AC-04. **FePt/Au Multilayers with Lower Phase Transition Temperature by H^+ Ion Exposure using Plasma Focus Device.** *T. Liu*[1,2], Y. Wang[2], B. Ouyang[2], Z. Du[1], S. Zhang[3] and W. Li[1] *1. Research Institute of Functional Material, China Iron & Steel Research Institute, Beijing; 2. NSSE, Nanyang Technological University, Singapore; 3. MAE, Nanyang Technological University, Singapore*

10:15 AC-05. **Crystal Orientation, Order Degree, and Surface Roughness of FePd-Alloy Film Formed on MgO(001) Substrate.** *M. Ohtake*[1], A. Itabashi[1], M. Futamoto[1], F. Kirino[2] and N. Inaba[3] *1. Faculty of Science and Engineering, Chuo University, Tokyo, Japan; 2. Graduate School of Fine Arts, Tokyo University of the Arts, Tokyo, Japan; 3. Faculty of Engineering, Yamagata University, Yonezawa, Japan*

10:30 AC-06. **Ferromagnetic resonance study of the perpendicular magnetic anisotropy in MgO/CoFeB/Ta multilayers as a function of annealing temperature.** *Y. Aleksandrov*[1,2], C. Fowley[1], E. Kowalska[1,2], V. Sluka[1], J. Lindner[1], M. Farle[4], B. Ocker[3], J. Fassbender[1,2] and A. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Physics Department, Dresden University of Technology, Dresden, Germany; 3. Singulus Technologies AG, Kahl am Main, Germany; 4. University Duisburg-Essen, Duisburg, Germany*

10:45 AC-07. **Enhancements of Saturation Magnetization and Damping in Tb/Cr/Fe Trilayers.** L. Sun[1], D. Zhang[2,4], Z. Huang[2], *Y. Zhai*[2], J. Du[3], Y. Sui[3] and H. Zhai[3] *1. College of Physics and Electronic Engineering, Hainan Normal University, Haikou, Hainan; 2. Department of Physics, Southeast University, Nanjing, Jiangsu; 3. National Laboratory of Solid Microstructures and Center of Modern Analysis, Nanjing University, Nanjing, Jiangsu; 4. School of Physics Science and Information Engineering, Liaocheng University, Liaocheng, Shandong*

11:00 AC-08. **tomic-scale interfacial magnetization of FM/SC heterostructure.** *W. Liu*[1,2] and Y. Xu[2,1] *1. Electronics Department, University of York, York, North Yorkshire, United Kingdom; 2. York-Nanjing Joint Centre (YNJC), Nanjing University, Nanjing, Jiangsu*

11:15 AC-09. **Influences of $Y_3Fe_5O_{12}$ structure properties on magnetic proximity effect in Pt/$Y_3Fe_5O_{12}$ Heterostructures.** *X. Liang*[1], Y. Zhu[1], L. Deng[1], J. Xie[1], M. Wu[2] and L. Bi[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Physics, Colorado State University, Fort Collins, Colorado*

11:30 AC-10. **Electric field control of magnetization and anisotropy in ultrathin Fe und FePt/Fe films.** K. Duschek[1], S. Fähler[1], H. Schlörb[1] and *K. Leistner*[1] *1. IMW, IFW Dresden, Dresden, Saxony, Germany*

11:45 AC-11. **Thermally activated domain wall motion in [Co/Ni](111) superlattices with perpendicular magnetic anisotropy.** S. Legall[2], T. Hauet[1], N. Vernier[2], M. Hehn[1], D. Lacour[1], F. Montaigne[1], M. Gottwald[1], S. Andrieu[1], D. Ravelosona[2] and *S. Mangin*[1] *1. Institut Jean Lamour, Universite de Lorraine, Vamdoeuvre-les-Nancy, France; 2. University of Paris Sud, Orsay, France*

TUESDAY MORNING 9:00 — 311 A

Session AD
INTERMETALLIC AND OTHER HARD MAGNETS I

Nora Dempsey, Chair
Institut Néel (CNRS & UJF)

9:00 AD-01. **High magnetic anisotropy of strained epitaxial Fe-Co-X films – buffer induced distortion versus spontaneous strain.** ***(Invited)*** *L. Reichel*[1,5], R. Salikhov[4], G. Giannopoulos[3], A. Edström[2], D. Pohl[1], J. Rusz[2], L. Schultz[1,5] and S. Fähler[1] *1. Institute for Metallic Materials, IFW Dresden, Dresden, Saxony, Germany; 2. Department of Physics and Astronomy, University of Uppsala, Uppsala, Sweden; 3. Demokritos NCSR, Athens, Greece; 4. Experimental Physics, Universität Duisburg-Essen, Duisburg, Germany; 5. Institute of Materials Science, TU Dresden, Dresden, Germany*

9:30 AD-02. **New Alnico Magnets Fabricated from Pre-alloyed Gas Atomization Powder through Diverse Consolidation Techniques.** *W. Tang*[1], L. Zhou[1], A. Kassen[1], A. Palasyuk[1], E. White[1], K.W. Dennis[1], M.J. Kramer[1], R.W. McCallum[1] and I.E. Anderson[1] *1. Materials Science and Engineering, Ames Lab of DOE, Ames, Iowa*

9:45 AD-03. **Development of MnBi Based Permanent Magnet.** *J. Cui*[2], M.J. Kramer[3], D.D. Johnson[3], I. Takeuchi[1], M. Marinescu[4] and J. Liu[5] *1. Univ. of Maryland, College Park, Maryland; 2. Energy and Environment Directorate, Pacific Northwest National Laboratory, Richland, Washington; 3. Materials Science and Engineering, AMES Lab, Ames, Iowa; 4. Electron Energy Corp, Landisville, Pennsylvania; 5. Physics, University of Texas at Arlington, Arlington, Texas*

10:00 <u>AD-04</u>. **Investigation into Magnetic Anisotropy of Low Temperature Phase (LTP) MnBi Thin Films.**
T. Suzuki[1,2], T. Hozumi[1,3], J. Barker[4], S. Okatov[1], O.N. Mryasov[1,5] and T. Suwa[1,3] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, Alabama; 2. Departments of Electrical and Computer Engineering, and Metallurgical and Materials Engineering, University of Alabama, Tuscaloosa, Alabama; 3. Technology HQ, TDK Corporation, Narita, Japan; 4. Institute for Materials Research, Tohoku University, Sendai, Japan; 5. Western Digital, San Jose, California*

10:15 <u>AD-05</u>. **Studies of Mn-based permanent magnetic materials MnX(X=Al,Ga).**
J. Yang[1,2], J. Wei[1], H. Zhao[1], Y. Yang[1], S. Liu[1], D. Zhou[1], J. Han[1], H. Du[1], C. Wang[1] and Y. Yang[1] *1. School of Physics, Peking University, Beijing; 2. Collaborative Innovation Center of Quantum Matter, Beijing*

10:30 <u>AD-06</u>. **Temperature Dependence of Magnetic Anisotropy for Single Domain L10 FePd Crystal and Role of the Ordering Defects.**
A. Korolev[1], N. Vlasova[1], O. Golovina[1], S. Okatov[2], J. Barker[3], B. Greenberg[1], O. Klementjeva[1], A. Volkov[1] and O.N. Mryasov[2,4] *1. Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, Ekaterinburg, RF, Russian Federation; 2. University of Alabama, Tuscaloosa, Alabama; 3. Institute for Materials Research, Tohoku University, Sendai, Japan; 4. Western Digital, San Jose, California*

10:45 <u>AD-07</u>. **Magnetic Anisotropy of tau-MnAl Thin Films.**
S. Zhao[1,2], T. Hozumi[1,3], P. Leclair[1,4], G.J. Mankey[1,4] and T. Suzuki[1,5] *1. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, Alabama; 2. Department of Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, Alabama; 3. Advanced Technology Development Center, TDK Corporation, Narita, Japan; 4. Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, Alabama; 5. Department of Metallurgical and Materials Engineering & Department of Electrical and Computer Engineering, The University of Alabama, Tuscaloosa, Alabama*

11:00 <u>AD-08</u>. **Combinatorial search of rare-earth free permanent magnets.**
S. Fackler[1], *T. Gao*[1], D. Staska[1], V. Alexandrakis[3], A. Ludwig[3], A. Mehta[2], M.J. Kramer[4] and I. Takeuchi[1] *1. University of Maryland, College Park, Maryland; 2. Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Menlo Park, California; 3. Ruhr University Bochum, Bochum, Germany; 4. Ames Laboratory, Ames, Iowa*

11:15 **AD-09. High-field Magnetic Behavior and Forced-Ferromagnetic State in Rare-Earth Intermetallics $ErFe_{11}Ti$ and $ErFe_{11}TiH$.** *N.V. Kostyuchenko*[1,2], I. Tereshina[3,4], Y. Skourski[5], E. Tereshina[6], M. Doerr[7], I. Pelevin[4], H. Drulis[8], M. Davydova[2] and A. Zvezdin[1,2] *1. Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russian Federation; 2. Moscow Institute of Physics and Technology (State University), Moscow, Russian Federation; 3. Lomonosov Moscow State University, Moscow, Russian Federation; 4. Baikov Institute of Metallurgy and Materials Science, Moscow, Russian Federation; 5. Hochfeld-Magnetlabor Dresden (HLD), Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 6. Institute of Physics, ASCR, Prague, Czech Republic; 7. Technische Universität Dresden, Dresden, Germany; 8. Institute of Low Temperature and Structure Research, Wroclaw, Poland*

11:30 **AD-10. Anisotropy of Mechanical Properties of Sm-Co Permanent Magnets Doped with Dysprosium.** *Z. Xue*[1,2], Z. Liu[1], L. Liu[1], M. Li[1], S. He[1], D. Lee[1], Y. Guo[2] and A. Yan[1] *1. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. School of Energy Power and Mechanical Engineering, North China Electric Power University, Beijing*

11:45 **AD-11. The Influence of Severe Plastic Deformation on Magnetic Properties of $Ni_{48}Fe_{48}Zr_4$, $Fe_{1.5}Co_{0.5}BTa_{0.3}$ and $Co_{80}Zr_{16}B_4$ Alloys.** *S.V. Taskaev*[1], K.P. Skokov[5], V.V. Khovaylo[2,4], D. Gunderov[3], D.Y. Karpenkov[5,6] and O. Gutfleisch[5] *1. Physics, Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. National University of Science and Technology "MISIS", Moscow, Russian Federation; 3. Ufa State Aviation Technical University, Ufa, Russian Federation; 4. ITMO University, St. Petersburg, Russian Federation; 5. TU Darmstadt, Darmstadt, Germany; 6. Tver State University, Tver, Russian Federation*

TUESDAY MORNING 9:00

311 B

Session AE
MULTIFERROIC MATERIALS I
Yonggang Zhao, Chair
Tsinghua University

9:00 AE-01. **Switching magnetic order at an $Fe/BaTiO_3$ interface on and off: impact on hybrid magnetic-ferroelectric tunnel junctions.** ***(Invited)*** *R. Bertacco*[1,2], G. Radaelli[1], D. Petti[1], E. Plekhanov[4], I. Fina[5], M. Asa[1], L. Baldrati[1], C. Rinaldi[1], M. Cantoni[1], P. Torelli[3], D. Gutiérrez[5], G. Panaccione[3], M. Varela[6], S. Picozzi[4] and J. Fontcuberta[5] *1. Center LNESS, Politecnico di Milano, Como, Italy; 2. IFN-CNR (Istituto di Fotonica e Nanotecnologie), Milano, Italy; 3. Laboratorio TASC, Consiglio Nazionale delle Ricerche, CNR - IOM, Trieste, Italy; 4. CNR-SPIN, Consiglio Nazionale delle Ricerche, L'Aquila, Italy; 5. ICMAB-CSIC, Institut de Ciència de Materials de Barcelona, Bellaterra, Spain; 6. Oak Ridge National Laboratory, Materials Science & Technology Division, Oak Ridge, Tennessee*

9:30 AE-02. **Magnetic-ion-induced displacive electric polarization in FeO_5 bipyramidal units of (Ba,Sr) $Fe_{12}O_{19}$ hexaferrites.** *Y. Chai*[1], S. Shen[1], J. Cong[1], P. Sun[1], L. Yan[1], S. Wang[1] and Y. Sun[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing*

9:45 AE-03. **Magnetic structure and thermal conductivity of $FeVO_4$ multiferroic.** *A. Dixit*[1], B. Ramchandran[2], Y.K. Kuo[2] and G. Lawes[3] *1. Center for Energy, Indian Institute of Technology Jodhpur, Jodhpur, Rajasthan, India; 2. Department of Physics, National Dong Hwa University, Hualien, Taiwan; 3. Department of Physics and Astronomy, Wayne State University, Detroit, Michigan*

10:00 AE-04. **Modulation of Magnetization Direction in Flexible Multiferroic Heterostructures towards flexible spintronics.** *Y. Liu*[1], Q. Zhan[1], B. Wang[1], S. Mao[1] and R. Li[1] *1. Ningbo Institute of Materials Technology & Engineering (NIMTE), Chinese Academy of Sciences (CAS), Ningbo, Zhejiang*

10:15 AE-05. **Electric-field manipulation of magnetization rotation and tunneling magnetoresistance of magnetic tunnel junctions at room temperature.** *A. Chen*[1], P. Li[1], D. Li[2], Y. Zhao[1], S. Zhang[1,3], L. Yang[1], Y. Liu[1], M. Zhu[1], H. Zhang[1] and X. Han[2] *1. Department of Physics, Tsinghua University, Beijing; 2. Institute of Physics, Chinese Academy of Sciences, Beijing; 3. College of Science, National University of Defense Technology, Changsha, Hunan*

10:30 AE-06. **Magnetic domain wall induced hysteresis in magnetoelectric 2-2 composites.** N.O. Urs[1], S. Deldar[1], V. Röbisch[2], D. Meyners[2], E. Quandt[2] and *J. McCord*[1] *1. Nanoscale Magnetic Materials - Magnetic Domains, Institute of Material Science, Kiel, Germany; 2. Inorganic Functional Materials, Institute of Material Science, Kiel, Germany*

10:45 AE-07. **Electric Field Control of Magnetism.** ***(Invited)*** *R. Ramesh*[1] *1. Physics / MSE, University of California Berkeley, Berkeley, California*

11:15 AE-08. **Electric field control of the magnetization dynamics of ferromagnetic/ferroelectric multiferroic heterostructure.** *L. Xie*[1], T. Nan[1], Z. Hu[1], X. Wang[1], Y. Gao[1], X. Chen[1], M. Liu[2] and N. Sun[1] *1. ECE, Northeastern University, Boston, Massachusetts; 2. Xi'an Jiaotong University, Xi'an, Shaanxi*

11:30 AE-09. **Electric field manipulated nonvolatile and reversible 90°-rotation of the magnetic easy-axis in LSMO/PMN-PT (011) multiferroic heterostructures.** *W. Zhao*[1], S. Yang[1], W. Huang[1], L. Feng[1], D. Zhang[1], Q. Hu[1], Y. Yin[1], S. Dong[1] and X. Li[1,2] *1. Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, University of Science and Technology of China, Hefei, Anhui; 2. Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, Anhui*

11:45 <u>AE-10</u>. **Multiferroic properties of neodymium and cobalt co-doped four-layer Aurivillius compounds.** *D. Zhang*[1], S. Yang[1], Z. Chen[1], L. Feng[1], W. Huang[1], W. Zhao[1], S. Dong[1] and X. Li[1,2] *1. University of Science and Technology of China, Hefei, Anhui; 2. Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, Anhui*

TUESDAY MORNING 9:00 — 308

Session AF
MODELLING AND COMPUTATIONAL MAGNETISM I

Shufeng Zhang, Chair
Department of Physics, University of Arizona

9:00 <u>AF-01</u>. **Magnetic field, current and voltage-induced ferromagnetic resonance in magnetic tunnel junctions: micromagnetic spatial analysis.** *J. Checinski*[1,2], M. Frankowski[1], M. Czapkiewicz[1] and T. Stobiecki[1] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland*

9:15 <u>AF-02</u>. **Novel micromagnetics for high-temperature applications and modeling of ultra-fast laser-induced magnetization dynamics.** ***(Invited)*** *O. Chubykalo-Fesenko*[1] and P. Nieves[1] *1. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Madrid, Spain*

9:45 <u>AF-03</u>. **Noise-Induced Effective Potential for Analysis of Switching in Uniaxial Spin-Valves.** *S. Perna*[1], C. Serpico[1], G. Bertotti[2], M. d'Aquino[3], A. Quercia[1] and I.D. Mayergoyz[4] *1. DIETI, University of Naples Federico II, Naples, Italy; 2. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 3. Dipartimento di Ingegneria, Università "Parthenope", Napoli, Italy; 4. ECE Department and UMIACS, University of Maryland, College Park, Maryland, Maryland*

10:00 <u>AF-04</u>. **Geometry effects on magnetization dynamics in circular cross-section wires.** *M. Sturma*[1,2], J. Toussaint[2] and D. Gusakova[1] *1. Univ. Grenoble Alpes, INAC-SPINTEC, F-38000 Grenoble, France; 2. Univ. Grenoble Alpes, Institute Néel, Grenoble, France*

10:15 <u>AF-05</u>. **Adjusting Spectrum Gaps of Spin Waves by Interference.** *Q. Wang*[1], D. Zhang[1,2], H. Zhang[1], L. Jin[1], Y. Liao[1], T. Xiaoli[1] and Z. Zhong[1] *1. University of Electronic Science and Technology of China, State key Laboratory of Electronic Thin Films and Integrated Devices, Chengdu, Sichuan; 2. University of Delaware, Department of Electrical and Computer Engineering, Newark, Delaware*

10:30 <u>AF-06</u>. **The influence of spin-diffusion effects on current driven domain-wall motion.** *C. Abert*[1], F. Bruckner[1], C. Vogler[2] and D. Suess[1] *1. Institute of Solid State Physics, Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna University of Technology, Vienna, Austria; 2. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria*

10:45 <u>AF-07</u>. **Skyrmion motion induced by spin-Hall current in constrained geometries.** R. Zivieri[1,3], R. Tomasello[2], M. Carpentieri[3] and *G. Finocchio*[4] *1. Department of Physics, Instituto Nazionale Di Fisica Nucleare, Ferrara, Italy; 2. Department of Computer Science, Modelling, Electronics and System Science, University of Calabria, Rende (CS), Italy; 3. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 4. Department of Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy*

11:00 <u>AF-08</u>. **Blume-Emery-Griffiths Model For Thin Films of Stacked Triangular Lattices.** S. El Hog[1] and *H. DieP*[1] *1. Laboratory for Theoretical Physics and Modeling, University of Cergy-Pontoise, Cergy-Pontoise, France*

11:15 <u>AF-09</u>. **Examining the correlation between microstructure and Barkhausen noise activity for ferromagnetic materials.** *N. Prabhu Gaunkar*[1], C.I. Nlebedim[1] and D. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa*

11:30 <u>AF-10</u>. **Semi-Implicit Steepest Descent Method for Energy Minimization and its application to Micromagnetic Simulation of Permanent Magnets.** *A. Furuya*[1], K. Fujisaki[1], K. Shimizu[1], Y. Uehara[1], T. Ataka[1], T. Tanaka[1] and H. Oshima[2] *1. Fujitsu Ltd., Kawasaki, Japan; 2. Fujitsu Laboratories Ltd., Atsugi, Japan*

11:45 <u>AF-11</u>. **Azimuthal-spin-wave-mode-driven vortex-core reversal and its control by perpendicular magnetic field.** *M. Yoo*[1] and S. Kim[1] *1. Seoul National University, Seoul, Korea*

TUESDAY
MORNING
9:00

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Session AG
EXCHANGE BIAS & PATTERNED FILMS AND ELEMENTS I

Anurag Chaturvedi, Chair
U of Alabama

9:00 AG-01. **Strain-Mediated Voltage Control of a Ni/NiO Spontaneous Exchange Bias (SEB) System.** *W. Sun*[1] and G. Carman[1] *1. Mechanical and Aerospace Engineering, University of California Los Angeles, Los Angeles, California*

9:15 AG-02. **Magnetic and Electrical Transport Properties of Epitaxial γ'-Fe_4N/CoN Bilayers.** *Z. Li*[1], W. Mi[1], X. Wang[2] and X. Zhang[3] *1. Department of Applied Physics, Tianjin University, Tianjin; 2. Tianjin Key Laboratory of Film Electronic & Communicate Devices, School of Electronics Information Engineering, Tianjin University of Technology, Tianjin; 3. PSE Division, KAUST, Thuwal, Saudi Arabia*

9:30 AG-03. **Multi-field Modulation of Exchange Biased FeGa/IrMn Bilayers Grown on Flexible Polyvinylidene Fluoride (PVDF) Membranes.** *H. Li*[1], Q. Zhan[1], X. Rong[1], Y. Liu[1], Z. Zhenghu[1], H. Yang[1], Z. Xiaoshan[1], B. Wang[1], S. Mao[1] and R. Li[1] *1. Key Laboratory of Magnetic Materials and Devices & Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

9:45 AG-04. **Large exchange bias in polycrystalline MnN/CoFe bilayers at room temperature.** M. Dunz[1] and *M. Meinert*[1] *1. Department of Physics, Bielefeld University, Bielefeld, NRW, Germany*

10:00 AG-05. **Role of Antiferromagnetic Exchange Coupling on Exchange-Bias Propagation.** X. Chi[1] and *Y. Hu*[1] *1. Northeastern University, Shenyang, Liaoning*

10:15 AG-06. **Room temperature instability of exchange anisotropy in FeMn/FeCo system.** *E. Jimenez*[1], N. Mikuszeit[2], D.R. Cavicchia[3], F. D'Orazio[4] and L. Rossi[4] *1. the european synchrotron, Grenoble, France; 2. CEA (INAC/SP2M/NM), Grenoble, France; 3. Institue of Applied Physics, University of Hamburg, Hamburg, Germany; 4. Dipartimento di Scienze Fisiche e Chimiche, Universit a di L'Aquila, L'Aquila, Italy*

10:30 AG-07. **Magnetic Properties of MnRh Thin Films grown on MgO Single-Crystal Substrates.** *A. Chaturvedi*[1], T. Suzuki[1,2] and G.J. Mankey[1,3] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, Alabama; 2. Department of Electrical and Computer Engineering, and Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, Alabama; 3. Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, Alabama*

10:45 AG-08. **Interface Exchange Coupling and Non equilibrium dynamics in Ferromagnetic / Antiferromagnetic Metallic nanocomposites.** *D. Peddis*[1], D. Fiorani[1], K.N. Trohidou[3], M. Vasilakaki[3], S. Baker[2] and C. Binns[2] *1. ISM _CNR, Roma, Italy; 2. University of Leicester, Leicester, United Kingdom; 3. NCSR Demokritos, Athens, Greece*

11:00 AG-09. **Observation of an atomic exchange bias effect in $DyCo_4$ film.** *K. Chen*[1], L. Dieter[2] and F. Radu[3] *1. Synchrotron Soleil, L'Orme des Merisiers, Saint-Aubin, France; 2. Institute for Materials Research, Helmholtz-Zentrum Geesthacht, Geesthacht, 21502,Geesthacht, Germany; 3. Helmholtz-Zentrum Berlin fuur Materialien und Energie, Berlin, Germany*

11:15 AG-10. **CaF_2-Based UO_2/Fe_3O_4 Thin Films: Crystal Structure and Magnetic Exchange Bias Effect.** *E. Tereshina*[1], Z. Bao[2], L. Havela[3], A. Mackova[4], T. Gouder[5] and R. Caciuffo[5] *1. Department of Magnetic Nanosystems, Institute of Physics ASCR, Prague, Czech Republic; 2. PANalytical B.V., Lelyweg, Netherlands; 3. Department of Condensed Matter Physics, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; 4. Tandetron Laboratory, Nuclear Physics Institute of Academy of Sciences of the Czech Republic, Rez near Prague, Czech Republic; 5. European Commission, Joint Research Centre (JRC), Institute for Transuranium Elements (ITU), Karlsruhe, Germany*

11:30 AG-11. **Temperature dependence of the exchange bias properties in polycrystalline $BiFeO_3/Ni_{80}Fe_{20}$.**
J. Richy[1,2], T. Hauguel[1], J. Jay[1], S.P. Pogossian[1], B. Warot-Fonrose[3], C.J. Sheppard[2], J.L. Snyman[2], A.M. Strydom[2], J. Ben Youssef[1], A.R. Prinsloo[2], D. Spenato[1] and D.T. Dekadjévi[1] *1. Laboratoire de magnétisme de Bretagne, Université de Bretagne occidentale, Brest, Finistère, France; 2. Department of Physics, University of Johannesburg, Johannesburg, Gauteng, South Africa; 3. Groupe nanomatériaux, CEMES-CNRS, Toulouse, Haute-Garonne, France*

11:45 AG-12. **Particular Reversal Characteristics of Exchange Coupled Ferri-/Ferromagnetic Heterostructures.** *B. Hebler*[1], D. Suess[2], F. Radu[3] and M. Albrecht[1] *1. Institute of Physics, University of Augbsurg, Augsburg, Germany; 2. Institute of Solid State Physics, Vienna University of Technology, Wien, Austria; 3. Helmholtz-Zentrum Berlin für Materialen und Energie, Berlin, Germany*

TUESDAY
MORNING
9:00

306 B

Session AH
SWITCHED AND SYNCHRONOUS RELUCTANCE MACHINES I
Amr Adly, Chair
Cairo University

9:00 AH-01. **A Novel Axial Flux Switched Reluctance Motor with Grain Oriented Electrical Steel.** *J. Ma*[1], R. Qu[1] and J. Li[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei*

9:15 AH-02. **Integrated Stator Magnetic Interaction in a Double-Rotor Switched Reluctance Machine.** *Y. Yang*[1], N. Schofield[1] and A. Emadi[1] *1. McMaster University, Hamilton, Ontario, Canada*

9:30 AH-03. **A Novel Analytical Model of Air-Gap Permeance in Tubular Linear Switched Reluctance Actuators with Hybrid Flux Paths.** *X. Xue*[1], K. Cheng[1], Y. Bao[1] and Z. Zhang[2] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong; 2. School of Information and Electrical Engineering, Hunan University of Science and Technology, Changsha, Hunan*

9:45 AH-04. **Permanent Magnet Assisted Current Superimposition Variable Flux Machine.** *A. Kohara*[1], K. Hirata[1], N. Niguchi[1] and Y. Ohno[1] *1. Osaka university, Suita, Osaka, Japan*

10:00 AH-05. **Transient Finite Element Analysis of Flux Switching Permanent Magnet Machine with More Accurate Model.** S. Zhu[1], *M. Cheng*[1], W. Hua[1], M. Tong[1] and X. Cai[1] *1. Southeast University, Nanjing, Jiangsu*

10:15 AH-06. **Pole Ratio Effect on Performance of Stator DC Excited Vernier Reluctance Machines.** *S. Jia*[1], R. Qu[1] and J. Li[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei*

10:30 AH-07. **High Torque Density Design of a New Outer-Rotor Hybrid Excitation Flux Switching Machine for In-Wheel Drive Electric Vehicle.** *M. Ahmad*[1] and E. Sulaiman[1] *1. Faculty of Electrical and Electronic Engineering, Universiti Tun Hussein Onn Malaysia, Batu Pahat Johor, Johor, Malaysia*

10:45 AH-08. **Power Factor of Three-Phase Flux Reversal Machines.** *Y. Gao*[1], R. Qu[1], J. Li[1], D. Li[1] and L. Wu[1] *1. Huazhong University of Science of Technology, Wuhan, Hubei*

11:00 AH-09. **Analysis and Modeling for the Linear Hybrid Switched Reluctance Machine.** *Q. Li*[1] and E.K. Cheng[2] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong; 2. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong*

11:15 AH-10. **Electromagnetic Design of a New Hybrid-Excited Flux-Switching Machine for Fault-Tolerant Operation.** *F. Lin*[1], K. Chau[1] and C. Liu[1] *1. The University of Hong Kong, Hong Kong*

11:30 AH-11. Performance Improvement of Ferrite-Assisted Synchronous Reluctance Machines Using Asymmetrical Rotor Configuration. *W. Zhao*[1], T.A. Lipo[2] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Korea; 2. Electronic Systems Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

11:45 AH-12. Rotor Unbalanced Magnetic Force in Flux Switching Permanent Magnet Machines due to Static and Dynamic Eccentricity. S. Li[1], *Y. Li*[1] and B. Sarlioglu[1] *1. University of Wisconsin-Madison, Madison, Wisconsin*

TUESDAY MORNING 9:00 — 306 A

Session AI
MAGNETIC SENSORS (NON-RECORDING) I
Masahiro Yamaguchi, Chair
Tohoku University

9:00 AI-01. Magnetic Sensors for Mobile Health. *(Invited)* *S.X. Wang*[1,2], D.J. Bechstein[3], J. Lee[3], A.W. Gani[2], J. Choi[2] and P. Utz[4] *1. Materials Science and Engineering, Stanford University, Stanford, California; 2. Department of Electrical Engineering, Stanford University, Stanford, California; 3. Department of Mechanical Engineering, Stanford University, Stanford, California; 4. Department of Medicine, Stanford University, Stanford, California*

9:30 AI-02. Curved Magnetic Nanomembranes. *(Invited)* *D. Makarov*[1] *1. Magnetic nanomembranes, Institute for Integrative Nanosciences, IFW Dresden, Dresden, Germany*

10:00 AI-03. Fabrication and Mechanical Characterization of Flexible Devices with Sensors with Magnetoresistance Responses above 150%. *J. Gaspar*[1], H. Fonseca[1], E. Paz[1], M. Costa[1,2], M. Martins[1], R. Ferreira[1], S. Cardoso[3,2] and P. Freitas[1,2] *1. International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 2. Department of Physics, Instituto Superior Tecnico, Lisbon, Portugal; 3. INESC Microsystems and Nanotechnologies (INESC MN), Lisbon, Portugal*

10:15 AI-04. **Shapeable magnetic sensorics.** *D. Makarov*[1], M. Melzer[1], D. Karnaushenko[1], G. Lin[1], I. Mönch[1] and O.G. Schmidt[1] *1. Institute for Integrative Nanosciences, IFW Dresden, Dresden, Germany*

10:30 AI-05. **Influence of Mn concentration on magnetic topological insulator $Mn_xBi_{2-x}Te_3$ thin film Hall effect sensor.** *Y. Ni*[1], Z. Zhang[1], C.I. Nlebedim[2], R.L. Hadimani[1] and D. Jiles[1] *1. Electrical and Computer Engineering, Iowa State University, Ames, Iowa; 2. Ames Laboratory, U.S. Department of Energy, Ames, Iowa*

10:45 AI-06. **HIGH-Sensitive Magnetoresistive Sensors with Integrated Micro-fabricated and External Magnetic Flux Concentrators.** *X. Yin*[1] and S. Liou[1] *1. Department of Physics and Astronomy and Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, Lincoln, Nebraska*

11:00 AI-07. **Systematic investigation on correlation between sensitivity and nonlinearity in magnetic tunnel junction for magnetic sensor.** *T. Nakano*[1], M. Oogane[1], H. Naganuma[1] and Y. Ando[1] *1. Department of Applied Physics, Tohoku University, Sendai, Miyagi, Japan*

11:15 AI-08. **Non-linear Current Detection Based on Magnetic Modulation Technology.** K. Li[1], *F. Niu*[1], Y. Wu[2], Y. Wang[1], Y. Dai[1] and L. Wang[1] *1. Province-Ministry Joint Key Lab of EFEAR, Hebei University of Technology, Tianjin; 2. Tianjin Key Lab of Electronic Materials & Devices, Hebei University of Technology, Tianjin*

11:30 AI-09. **Planar Hall Effect Bridge sensor with NiFeX (X = Cu, Ag and Au) sensing layer.** *F. Qejvanaj*[2], H. Mazraati[2], S. Jiang[1], A. Persson[3], S. Sani[1], S. Chung[1], F. Magnusson[2] and J. Åkerman[2,1] *1. ICT, KTH, Solna, Sweden; 2. NanOsc AB, Stockholm, Sweden; 3. UU, Uppsala, Sweden*

11:45 AI-10. **Effect of Bias Voltage on Field Detection of CoFeB/MgO/CoFeB Sensors with Low and High Sensitivity.** *P. Wisniowski*[1], M. Dabek[1], T. Stobiecki[1] and J. Wrona[2] *1. Electronics, AGH-UST, Krakow, Poland; 2. Singulus Technologies AG, Kahl am Main, Germany*

TUESDAY
MORNING
8:30

PLENARY HALL B

Session AP
MAGNETOCALORIC MATERIALS I
(Poster Session)

S. C. Yu, Chair
Chungbuk National University

AP-01. Magnetic and magnetocaloric properties in ferrimagnetic $Mn_{2-x}Co_xSb$ (x=0.15, 0.20) alloys. *S. Ma*[1], Y. Su[1], Y. Huang[1] and Z. Zhong[1] *1. School of Material Science and Engineering, Nanchang Hangkong University, Nanchang, Jiangxi*

AP-02. Martensitic transition and magnetocaloric effect in Mn1-xCoGe melt-spun ribbons. Y. Liu[1], M. Zhang[1], *F. Hu*[1], J. Wang[1], R. Wu[1], Y. Zhao[1], H. Kuang[1], W. Zuo[1], J. Sun[1] and B. Shen[1] *1. Institute of Physis, Chinese Academy of Sciences, Beijing*

AP-03. Successive Magnetic Transitions and Magnetocaloric Effect in DY_3AL_2 Compound. Y. Li[1], *H. Zhang*[1], T. Yan[2], K. Long[2], C. Cheng[1], Y. Xue[1] and H. Zhou[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing; 2. ChuanDong Magnetic Electronic Co. Ltd., Foshan, Guangdong*

AP-04. A Comparative Study of Magnetic Behavious in $DYCO_2MN$ and $DYCO_2$ Compounds. *J. Wang*[1], G. Li[1], Z. Cheng[1] and M. Md Din[1] *1. Institute for Superconducting & Electronic Materials, University of Wollongong, Wollongong, New South Wales, Australia*

AP-05. Direct Evidence of Decoupling of Magnetostructural Transition Driven by Hydrostatic Pressure in Magnetocaloric Material $MnCoGe_{0.98}In_{0.02}$ R. Wu[1], *F. Hu*[1], J. Wang[1], L. Bao[2], H. Yang[1], Y. Liu[1], W. Zuo[1], Q. Huang[3], J. Sun[1] and B. Shen[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing; 2. School of Physics and Telecommunication Engineering, Shaanxi University of Technology, Hanzhong, Shaanxi; 3. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland*

AP-06. Synthesis of antiferromagnetic gadolinium dihydride nanoparticles and its large cryogenic magneto-caloric effect. J. Li[1], *S. Ma*[1], H. Wang[1], W. Gong[1], J. Jiang[1], S. Li[1], Y. Wang[1], D. Geng[1] and Z. Zhang[1] *1. Institute of Metal Research,Chinese Academy of Sciences, Shenyang, Liaoning*

AP-07. Magnetism and large magnetocaloric effect in GdNiBC compound. *Y. Zhang*[1] and G. Wilde[1] *1. Institute of Materials Physics, University of Münster, Germany*

AP-08. Magnetism and large magnetocaloric effect in Er_4PdMg compound. *L. Li*[1,2], O. Niehaus[2], M. Kersting[2] and R. Pöttgen[2] *1. Key Laboratory of Electromagnetic Processing of Materials (MOE), Northeastern University, Shenyang, Liaoning; 2. Institut für Anorganische und Analytische Chemie, Universität Münster, Münster, Germany*

AP-09. Magnetocaloric Effect and Critical Behavior in a Disordered Ferromagnet $La_{0.7}Sr_{0.3}Mn_{0.9}Ti_{0.1}O_3$ *T. Ho*[1], D. Quach[1], T. Ho[2], T. Thanh[1,3], M. Phan[4], T. Phan[5] and S. Yu[1] *1. Physiscs, Chungbuk National University, Seoul, Korea; 2. Institute of Chemistry, Vietnam Academy of Science and Technology, Hanoi, Vietnam; 3. Institute of Materials Science, Vietnam Academy of Science and Technology, Hanoi, Vietnam; 4. Department of Physics, University of South Florida, Tampa, Florida; 5. Department of Physics, Hankuk University of Foreign Studies, Seoul, Korea*

AP-10. Tunable Curie temperature and magnetocaloric effect in Mg-doped (La,Sr)MnO_3 manganites. *G. Wang*[1], Z. Zhao[2], D. Wang[2] and X. Zhang[1,2] *1. Key Laboratory of Integrated Exploitation of Bayan Obo Multi-Metal Resources, Inner Mongolia University of Science and Technology, Baotou, Inner Mongolia; 2. School of Mathematics, Physics and Biological Engineering, Inner Mongolia University of Science and Technology, Baotou, Inner Mongolia*

AP-11. Influence of Gd and Dy additions on the magnetic properties and magnetocaloric effect of $Fe_{78-x}RE_xSi_4Nb_5B_{12}Cu_1$ amorphous alloys. *H. Tian*[1], X. Zhong[1] and Z. Liu[1] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, Guangdong*

<u>AP-12</u>. The structure and magnetocaloric effect of $Mn_{38}Fe_{22}Al_{40}B_x$ alloys. Q. Guo[1], Z. Ou[1], L. Bao[1], O. Hasichaolu[1] and *O. Tegus*[1] *1. Physics and Electronic Information College, Inner Mongolia Normal University, Hohhot, Inner Mongolia*

<u>AP-13</u>. Magnetocaloric Effect and Critical Behavior in $Gd_{54}Ho_6Co_{25}$ $Al_{14}Si$ Amorphous Ribbons. *F. Wang*[1], T. Feng[1], R. Sun[1], S. Yu[1] and J. Wang[1] *1. School of Materials Science and Enigeering, Ningbo University of Technology, Ningbo, Zhejiang*

TUESDAY
MORNING
8:30

PLENARY HALL B

Session AQ

EXCHANGE BIAS & PATTERNED FILMS AND ELEMENTS II (Poster Session)

Dexuan Hou, Chair
Hangzhou Dianzi University
Wenhong Wang, Chair
Institute of Physics, Chinese Academy of Sciences

<u>AQ-01</u>. Exchange bias induced by surface inhomogeneities in epitaxial $Pr_{0.7}Sr_{0.3}MnO_3$/ $La_{0.5}Ca_{0.5}MnO_3$ bilayer film. *H. Wang*[1,2], H. Liu[2], M. Cao[2], W. Tan[2], K. Su[1], Y. Cao[1], L. Li[1], D. Huo[1], F. Xu[3], Q. Jia[4] and J. Gao[5] *1. Institute of Materials Physics, Hangzhou Dianzi University, Hangzhou, Zhejiang; 2. Key Laboratory of Soft Chemistry and Functional Materials (MOE), Department of Applied Physics, Nanjing University of Science and Technology, Nanjing, Jiangsu; 3. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, Jiangsu; 4. Institute of High Energy Physics, Chinese Academy of Sciences, Beijing; 5. Department of Physics, the University of Hong Kong, Hong Kong*

<u>AQ-02</u>. Exchange Springs in $L1_0$-FePt(110)/$A1$-FePt Bilayer Films. Y. Li[1], D. Zeng[1], H. Zhao[1], B. Du[1], J. Wei[1], S. Yoshimura[2], H. Saito[2] and *G. Li*[1] *1. School of Physical Science and Technology, Southwest University, Chongqing; 2. Center for Geo-environmental Science, Graduate School of Engineering & Resource Science, Akita University, Akita, Japan*

AQ-03. The Loop-Stage Dependent Exchange Bias Training Effect in FeNi/FeMn Bilayer. M. Yang[1,2], X. Zhang[2], J. Zhao[2], B. You[1], Y. Xu[3] and *J. Du*[1] *1. Department of Physics, Nanjing Unversity, Nanjing, Jiangsu; 2. College of Physics and Electronic Information, Luoyang Normal University, Luoyang, Henan; 3. School of Electronics Science and Engineering, Nanjing Unversity, Nanjing, Jiangsu*

AQ-04. Band Structure calculation of thin film YIG based magnonic crystal. *T. Stückler*[1], P. Che[1], S. Tu[1], Z. Xueying[1] and H. Yu[1] *1. IRC, Beihang University, Beijing*

AQ-05. Spin wave bound modes in a circular array of magnetic inclusions embedded into ferromagnetic matrix. Y. Barabanenkov[1], *S. Osokin*[1,2], D. Kalyabin[1,2] and S.A. Nikitov[1,2] *1. Kotel'nikov Institute of Radio-Engineering and Electronics of RAS, Moscow, Russian Federation; 2. Moscow Institute os Physics and Technology (State University), Dolgoprudny, Moscow region, Russian Federation*

AQ-06. The angular dependence of the exchange bias under the plain-domain-wall model. *Y. Bai*[1] and X. Xu[1] *1. Shanxi Normal University, Linfen, Shanxi*

AQ-07. Exchange Bias Effect Determined by Anisotropic Magnetoresistance in $Co_xNi_{1-x}O/Ni_{0.8}Fe_{0.2}$ Bilayer System. *W. Yoo*[1], S. Choo[1], K. Lee[1], S. Jo[2], C. You[2], J. Hong[3] and M. Jung[1] *1. Department of Physics, Sogang University, Seoul, Korea; 2. Physics, Inha University, Incheon, Korea; 3. Emerging Materials Science, DGIST, Daegu, Korea*

AQ-08. Temperature stability of exchange bias field and magnetoresistance of permalloy layer in $Fe_{20}Ni_{80}$/Tb-Co films. *N. Kulesh*[1], K.G. Balymov[1], O.A. Adanakova[1] and V.O. Vas'kovskiy[1] *1. Ural Federal University, Yekaterinburg, Russian Federation*

AQ-09. Large Perpendicular Exchange Bias in CoFeB/MgO Systems Pinned by a Bottom IrMn Layer Through an Interfacial CoFe/Ta Composite Layer. *X. Zhang*[1], Y. Zhang[1] and J. Cai[1] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing*

AQ-10. Current induced magnetization switching in an antiperovskite nitride exchange-coupled bilayer. *Y. Kuroki*[1], H. Sakakibara[1], H. Ando[1], S. Kawai[1], T. Hajiri[1], K. Ueda[1] and H. Asano[1] *1. Department of Crystalline Materials Science, Nagoya univirsity, Nagoya, Aichi, Japan*

AQ-11. Influence of Perpendicular Magnetic Field on Angular Dependent Exchange Bias of $[Co/Pd]_5$/CoFeB Electrodes. *Q. Zhang*[1], T. Yu[2,1], H. Naganuma[2], D. Shi[1] and X. Han[1] *1. State Key Lab of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing; 2. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan*

AQ-12. The Shell Thickness Dependence of the Exchange Bias of Fe/Fe_3O_4 Core-Shell Nanoparticles. R. Wu[1], S. Ding[1], Z. Song[1], J. Fu[1], G. Chen[1], Y. Zhang[1], Y. Yang[1] and *J. Yang*[1,2] *1. School of Physics, Peking University, Beijing; 2. State Key Laboratory for Mesoscopic Physics, School of Physics, Peking University, Beijing*

AQ-13. Micromagnetic structure of Co stripe arrays with tuned anisotropy. *A.G. Kozlov*[1], M. Stebliy[1], A. Davydenko[1], A.S. Samardak[1], A. Ognev[1] and L. Chebotkevich[1] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation*

AQ-14. Cell-size effect on the interlayer coupling and magnetoresistance oscillation in perpendicular-anisotropy magnetic tunnel junction embedded with iron nanoparticles. *Y. Lee*[1], B. Das[1], T. Wu[2], L. Horng[1] and J. Wu[1] *1. National Changhua University of Education, Changhua, Taiwan; 2. National Yunlin University of Science and Technology, Yunlin, Taiwan*

AQ-15. Angular dependence of the vortex nucleation process in a regular triangle nanomagnet. *M. Hidegara*[1], X. Cui[2] and T. Kimura[1,3] *1. Department of Physics Kyushu Univ., Fukuoka, Japan; 2. ISEE Kyushu Univ., Fukuoka, Japan; 3. Research Center for Quantum Nano-Spin Science., Fukuoka, Japan*

AQ-16. Magnetic hysteresis in array of magnetic nanostructures by block copolymers. *P. Tiberto*[1], F. Celegato[1], G. Barrera[1,2], G. Conta[1,2], M. Coisson[1], A. Manzin[1], G. Aprile[1,3], L. Boarino[1], G. Seguini[4], F. Ferrarese Lupi[4], T. Giammaria[4] and M. Perego[4] *1. Electromagnetics, INRIM, Torino, Italy; 2. Chemistry Department, Università di Torino, Torino, Italy; 3. Chemistry, Universita del Piemonte Orientale, Alessandria, Italy; 4. MDM, IMM, CNR, Agrate Brianza, Italy*

TUESDAY
MORNING
8:30

PLENARY HALL B

Session AR
RARE EARTH TRANSITION METAL BORIDES I
(Poster Session)

Mi Yan, Chair
Zhejiang University

AR-01. **Magnetic and Microstructural Characteristics of Sintered $(Ce_{1-x}Nd_x)_{30}Fe_{bal}Cu_{0.1}B_1$ Magnets.** *S. Huang*[1,2], H. Feng[1], M. Zhu[1], A. Li[1], Y. Zhang[2] and W. Li[1]
1. Research Institute of Functional Materials, China Iron and Steel Research Institute Group, Beijing; 2. University of Science and Technology Beijing, Beijing

AR-02. **Effects of Different Orientations of Ta Underlayer on Magnetic Properties and Microstructures of PR-FE-B Thin Films.** Y. Yei[1], *Y. Chen*[1] and A. Sun[1]
1. Yuan-Ze University, Chungli, Taiwan

AR-03. **Study on ultrafine-grained sintered Nd-Fe-B magnets produced from jet-milled HDDR powders.** *G. Ding*[1], S. Guo[1], L. Cai[1], L. Chen[1], J. Liu[1], D. Lee[1] and A. Yan[1] *1. Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

AR-04. **Substitution of Nd in flake by rare earth dopant and its effect on coercivity of hot-pressed Nd-Fe-B magnet doped with RF_3** *J. Kim*[1], H. Kwon[1], J. Lee[2] and J. Yu[2] *1. Material engineering, Pukyong National University, Busan, Nam-Gu, Korea; 2. Korea Institute of Materials Science, Changwon, Korea*

AR-05. **Regeneration of Waste NdFeB Sintered Magnets via NdH_X Nanoparticles Doping.** X. Li[1], *M. Yue*[1], W. Liu[1] and D. Zhang[1] *1. Beijing University of Technology, Beijing*

AR-06. **Texture evolution in hot pressed and die-up magnets prepared by HDDR anisotropic magnetic powders.** *L. Cai*[1], S. Guo[1], G. Ding[1], R. Chen[1], J. Liu[1], D. Lee[2] and A. Yan[1] *1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. University of Dayton, Dayton, Ohio*

AR-07. Coercivity enhancement in magnetic anisotropic Ce-Fe-B nanoflakes. *R. Liu*[1], C. Liu[1], D. Liu[1], L. Jia[1], J. Jiang[1], J. Gao[1], K. Zou[1] and B. Chi[1] *1. Chinese National Engineering Technology Center for Magnetic Materials, Beijing*

AR-08. Coercivity enhancement of Dy-free sintered Nd-Fe-B magnets by grain refinement and induction heat treatment. *L. Chen*[1], X. Cao[1], S. Guo[1], G. Ding[1], J. Di[1], C. Yan[1] and A. Yan[1] *1. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

AR-09. Magnetic Properties and Microstructure of High (BH)max Nd-Fe-B Sintered Magnet with Grain Boundary Diffusion Treatment. D. Shi[1], W. Zhang[1] and *H. Nagata*[1] *1. Institute of rare earth magnetic material, Xiamen Tungsten Co., Ltd., Xiamen, Fujian*

AR-10. Formation of $CeFe_2$ phase in Nd-Ce-Fe-B magnet: A thermodynamics study. C. Yan[1,2], *S. Guo*[1], R. Chen[1], J. Liu[1] and A. Yan[1] *1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Ningbo Ketian magnet material Co. Ltd., Ningbo, Zhejiang*

AR-11. Simulation of Melt Spinning Process of NdFeB Nanocrystalline Ribbons Based on Ansys. *X. Wang*[1,2], M. Zhu[1], W. Li[1], H. Xin[3], X. Du[1] and A. Du[2] *1. China Iron & Steel Research Institute Group (CISRI), Beijing; 2. College of Sciences, Northeastern University, Shenyang, Liaoning; 3. College of Equipment Manufacture, Hebei University of Engineering, Handan, Hebei*

AR-12. The Effects of Si Substitution on Structure and Magnetic Properties in Mischmetal-Fe-B Ribbons. M. Zhang[1], B. Shen[1], F. Hu[1] and *J. Sun*[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing*

TUESDAY MORNING 8:30

PLENARY HALL B

Session AS

RARE EARTH TRANSITION METAL BORIDES II (Poster Session)

Wei Liu, Chair
Institute of Metal Research, Chinese Academy of Sciences
Aru Yan, Chair
NIMTE

AS-01. **Magnetic and microstructural properties of DyF_3 -coated sintered Nd-Fe-B magnets by electrophoretic deposition.** *X. Cao*[1,2], L. Chen[2], S. Guo[2], R. Chen[2], A. Yan[2] and G. Yan[1] *1. School of Physics and Technology, Wuhan University, Wuhan, Hubei; 2. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

AS-02. **Effect of Deformation Temperature on Crystal Texture Formation in Hot Deformed Nanocrystalline $SmCo_5$ Permanent Magnets.** Q. Ma[1], *M. Yue*[1], H. Zhang[1], X. Yuan[1], D. Zhang[1], J. Zhang[1] and X. Gao[2] *1. Beijing University of Technology, Beijing; 2. University of Science and Technology Beijing, Beijing*

AS-03. **The mechanism of enhanced coercivity for (CeNdPr)-Fe-B sintered magnet prepared by structure design.** *M. Zhu*[1], R. Han[1], W. Li[1], S. Huang[1], D. Zheng[1] and L. Song[1] *1. Research Institute of Functional Materials, China Iron & Steel Research Institute, Beijing*

AS-04. **Improvement of the thermal stability of sintered Nd-Fe-B magnets by intergranular addition of $Pr_{34.4}Co_{65.6}$** *C. Jin*[1,3], R. Chen[1,3], W. Yin[1,3], X. Tang[1,3], Z. Wang[1,3], A. Yan[1,3] and D. Lee[2] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Enginnering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. University of Dayton, Dayton, Ohio; 3. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

AS-05. X-ray magnetic circular dichroism study of rare earth $M_{4,5}$ absorption edges in Nd based rare earth permanent magnets. *S. Tripathi*[1], Y. Chen[1], T. Tietze[1], G. Schütz[1], S. Schuppler[2], P. Nagel[2] and E. Goering[1] *1. Modern Magnetic materials, Max Planck Institute for Intelligent Systems, Stuttgart, Germany, Stuttgart, Baden-wüttemberg, Germany; 2. Institute for Solid-State Physics, Karlsruhe Institute of Technology, Germany*

AS-06. The magnetic domain in hot deformed NdFeB magnets by Lorentz transmission electron microscopy and in-situ electron holography. *X. Tang*[1], R. Chen[1], W. Yin[1] and A. Yan[1] *1. Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

AS-07. Coercivity change of NdFeB sintered magnet through grain boundary diffusion treatment using DyH_2 powder mixed with low melting-point elements. T. Jang[1], *M. Lee*[1], H. Lee[1], T. Kim[2], S. Lee[2] and H. Kim[3] *1. Sunmoon University, Asan, Korea; 2. Korea University, Seoul, Korea; 3. Jahwa Electronics, Cheongwon, Korea*

AS-08. Nd-Fe-B film magnets with the thickness above 100 µm deposited on Si substrates. *Y. Chikuba*[1], M. Oryoshi[1], A. Yamashita[1], M. Nakano[1], T. Yanai[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

AS-09. Enhancement of Coercivity of Nd-Fe-B Ultrafine Powders Comparable to Single Domain Size by Grain Boundary Diffusion Process. *S. Sugimoto*[1], M. Nakamura[1], M. Matsuura[1], Y. Une[2], H. Kubo[2] and M. Sagawa[2] *1. Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Miyagi, Japan; 2. Intermetallics Co., Ltd., Nagoya, Aichi, Japan*

AS-10. Study on domain morphologies observed in different directions of anisotropic sintered Nd-Fe-B magnets. *Z. Chen*[1], E. Niu[1], D. Cai[1], X. Ye[1], X. Shi[1], X. Rao[1] and B. Hu[1] *1. Beijing Zhong Ke San Huan Research, Beijing*

AS-11. Electrochemical Corrosion Behavior of Dual-Main-Phase CeNdFeB Magnet. *Y. Wu*[2,1] *1. Beijing Engineering Laboratory of Advanced Metallic Magnetic Materials and Preparation Techniques, Beijing; 2. Research Institute of Functional Material, China Iron and Steel Research Institute, Beijing*

<u>AS-12</u>. **Microstructure and Magnetic Properties of High Coercivity Die-Upset Nd-Fe-B Magnets Prepared By Nd-Cu Alloy Addition.** *X. Du*[1,2], Z. Guo[1,2], M. Zhu[1,2], R. Han[1,2], Z. Jing[1,2] and W. Li[1,2] *1. Research Institute of Functional Materials, China Iron & Steel Research Institute, Beijing; 2. Beijing Engineering Laboratory of Advanced Metallic Magnetic Materials and Preparation Techniques, Beijing*

<u>AS-13</u>. **Magnetic properties and phase structure in CeFeB strip-cast permanent magnets.** Y.Q. Zhou[1] and *A. Yan*[1] *1. Magnetic Materials and Mechanical Equipment Department, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

<u>AS-14</u>. **Investigation of the Influence of Carbon on the Magnetic Properties of Powder Injection Molded Nd-Fe-B Magnet.** *L.U. Lopes*[1], E. Costa Santos[2], T. Hartwig[3] and P.A. Wendhausen[1] *1. Mechanical Engineering, Federal University of Santa Catarina, Florianopolis, Santa Catarina, Brazil; 2. Laser e Sistemas de Manufatura, ISI - Instituto SENAI de Inovação, Joinville, Santa Catarina, Brazil; 3. Powder Metallurgy, Fraunhofer IFAM, Bremen, Bremen, Germany*

<u>AS-15</u>. **Effect of RE ion valency variation in Tb and Dy doped magnetic $SrFe_{10-x}RE_xO_{19}$ Hexaferrite.** B.K. Rai[1], L. Wang[1] and *S.R. Mishra*[1] *1. Physics, University of Memphis, Memphis, Tennessee*

TUESDAY MORNING 8:30

PLENARY HALL B

Session AT
SUPERCONDUCTING, MAGNETIC-GEARED AND MEMORY MACHINES (Poster Session)

Ronghai Qu, Chair
Huazhong University of Science & Technology

AT-01. **Determining Operating Current of HTS No-insulation Field Magnet in Wind Generators.** *H. Kim*[1,2], J. Hur[1], S. Kim[2], J. Joo[3], R. Ko[2], D. Ha[2] and Y. Jo[2] *1. Electrical Engineering, University of Ulsan, Ulsan, Korea; 2. Superconductivity Research Center, Korea Electrotechnology Research Institute, Changwon-si, Gyeongsangnam-do, Korea; 3. Doosan Heavy Industries & Construction Co., Changwon-si, Korea*

AT-02. **Design process of a 10-MW class high temperature superconducting homo-polar generator for wind turbine.** *J. Jeong*[2], H. Kim[2], D. An[2], J. Hong[2] and Y. Jo[1] *1. Superconductivity Research Center, Korea Electrotechnology Research, Changwon, Gyeongsangnam-do, Korea; 2. Automotive engineering, Hanyang University, Seoul, Korea*

AT-03. **Winding Configuration Design of Flux-Switching PM Motors Based on Magnetic Gearing Principle.** *F. Xiao*[1], Y. Du[1], W. Hua[2], M. Cheng[2], Y. Sun[1], H. Zhu[1] and T. Ching[3] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu; 2. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu; 3. Faculty of Science and Technology, University of Macau, Macau*

AT-04. **Performance Analysis of a Magnetic-Geared Linear Permanent Magnet Generator for Wave Energy Conversion.** *N. Feng*[1], H. Yu[1], L. Huang[1], W. Zhong[1] and Z. Shi[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

AT-05. **A Distributed Magnetic Circuit Approach to Analysis of Halbach Magnetized Permanent-Magnet Machines.** *K. Wei*[1], D. Wang[1], S. Cheng[1] and J. Chen[1] *1. National Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, Hubei*

AT-06. **A novel design and research for an electromagnetic valve actuator with permanent magnets.** H. Liang[1], *K. Zhang*[1], H. Yu[1] and G. Zhai[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

AT-07. **Optimal Power Output and Efficiency of a Magneto-dynamic Battery.** *S. Yang*[1], D. Pesin[2], Q. Niu[3,4] and A.H. MacDonald[3] *1. Engineering Product Development, Singapore University of Technology and Design, Singapore; 2. Department of Physics and Astronomy, The University of Utah, Salt Lake City, Utah; 3. Department of Physics, The University of Texas at Austin, Austin, Texas; 4. International Center for Quantum Materials (ICQM), Peking University, Beijing*

AT-08. **Study of Variable Flux Memory Motor Using Magnetic Equivalent Circuit Modeling and Finite Element Method.** *J. Seo*[1], Y. Kim[1] and J. Lee[1] *1. Hanbat National University, Daejeon, Korea*

AT-09. **A Novel Magnetic-Geared Tubular Linear Machine With Halbach Permanent-Magnet Arrays for Tidal Energy Conversion.** S.L. Ho [1], Q. Wang[1], *S. Niu*[1] and W. Fu[1] *1. The Hong Kong Polytechnic University, Hong Kong*

AT-10. **Cogging Torque Optimization of a Novel Transverse Flux Permanent Magnet Generator with Double C-hoop Stator for Wind Power Application.** *Z. Jia*[1] and H. Lin[1] *1. Southeast University, Nanjing, Jiangsu*

AT-11. **Parameter Design and Behavior Analysis of the Non-uniform Damping and Screening System in the HTS Generator.** *W. Zhang*[1,2], D. Xia[1] and D. Zhang[1] *1. Key Laboratory of Applied Superconductivity, Chinese Academy of Sciences, Beijing; 2. University of Chinese Academy of Sciences, Beijing*

AT-12. **Design and Optimization of a Transverse Flux Machine using an Analytical 3-D Magnetic Charge Model.** *M. Kremers*[1], J.J. Paulides[1] and E. Lomonova[1] *1. Eindhoven University of Technology, Eindhoven, Netherlands*

AT-13. **Magnetic Circuit Analysis for a Magnetless Double-Rotor Flux Switching Motor.** *C. Yu*[1], S. Niu[1], S.L. Ho[1] and W. Fu[1] *1. The Hong Kong Polytechnic University, Hong Kong*

AT-14. Design of Cylindrical Linear Magnetic Gear Generator for Sterling Solar Power Generate System. *Q. Yang*[1], G. Bao[1] and B. Zhang[1] *1. Lanzhou University of Technology, Lanzhou, Gansu*

AT-15. Design and Analysis of Surface-Mounted-Type Variable Flux Permanent Magnet Motor for Wide-Speed Range Applications. *J. Kim*[1], J. Choi[1], K. Lee[2] and S. Lee[2] *1. Chungnam National University, Daejeon, Korea; 2. Gwangju R&D Center, Korea Institute of Industrial Technology, Gwangju, Korea*

TUESDAY MORNING 8:30 PLENARY HALL B

Session AU
MAGNETIC GEARS AND LINEAR MACHINES I (Poster Session)

Mi-Ching Tsai, Chair
National Cheng Kung University
Xiao Liu, Chair
Department of Energy Technology, Aalborg University

AU-01. Analytical Investigation on the Power Factor of a Flux-Modulated Permanent-Magnet Synchronous Machine. *X. Zhang*[1], X. Liu[1] and Z. Chen[1] *1. Department of energy technology, Aalborg University, Aalborg, Denmark*

AU-02. Design and Analysis of Coaxial Magnetic Gear Considering Rotor Losses. *G. Liu*[1], Y. Tian[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

AU-03. Design and Analysis of a New Halbach Magnetized Magnetic Screw for Artificial Hearts. *J. Ji*[1] and Z. Ling[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

AU-04. A Novel Flywheel Storage System with Multiple Power-Flow-Paths for Regenerative Braking. *L. Jian*[1], Y. Gong[1], J. Wei[1] and Z. Deng[1] *1. Department of Electrical and Electronic Engineering, South University of Science and Technology of China, Shenzhen, Guangdong*

AU-05. **Thrust Ripple Improvement of Stationary Distributed Armature System using Contribution Ratio of Factors about Objective Function.** *E. Park*[1], S. Jung[2] and Y. Kim[1] *1. Department of Electrical Engineering, Chosun University, Gwangju, Korea; 2. School of Electronic and Electrical Engineering, Sungkyunkwan University, Suwon, Korea*

AU-06. **A Novel Linear Resonant Actuator with 3-D Structural Magnetic Circuit.** *M. Kato*[1], K. Hirata[1] and Y. Asai[1] *1. Osaka University, Osaka, Suita, Japan*

AU-07. **Thrust Ripple Reduction for Slotless Permanent Magnet Linear Synchronous Machine with Arc-shaped Magnets based on Electromagnetic Field Theory.** *H. Park*[1], J. Choi[1], K. Kim[1], J. Ahn[1] and S. Jang[1] *1. Department of Electrical Engineering, Chungnam National University, Daejeon, Korea*

AU-08. **Optimization of Asymmetric Acceleration Waveform for Haptic Device Driven by 2-DOF Oscillatory Actuator.** *M. Kato*[1], J. Nitta[1], K. Hirata[1] and T. Yoshimoto[1] *1. Osaka University, Osaka, Suita, Japan*

AU-09. **Investigation of Auxiliary Poles Optimal Design on Reduction of End Effect Detent Force for PMLSM with Typical Slot-pole Combinations.** *H. Zhang*[1], B. Kou[1], Y. Jin[1] and H. Zhang[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

AU-10. **Analysis of New Modular Linear Flux Reversal Permanent Magnet Motors.** L. Xu[1], *G. Liu*[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

AU-11. **Modeling and Design of An Ironless Linear Synchronous Motor with Double-side Halbach Permanent Magnet Array.** *L. Zhang*[1], B. Kou[1], B. Zhao[1] and Y. Jin[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

AU-12. **A Novel High-Performance Magnetic Transmission for Converting Between Rotary and Rectilinear Motion.** X. Fu[1], *B. Wang*[1], K. Liu[1], M. Lin[1] and L. Hao[1] *1. Southeast University, Nanjing, Jiangsu*

AU-13. **Design and Analysis of an Advanced Magnetic Variable Gear for Hybrid Electric Vehicles.** *M. Chen*[1], K. Chau[1] and C. Liu[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong*

AU-14. 3D Printing Based Design of Axial Flux Magnetic Gear for High Torque Density. *M. Tsai*[1] and L. Ku[1] *1. Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan*

AU-15. Numerical Investigation on Transmission Torque ripple Reduction of a Magnetic-Geared Machine. *S. Kim*[1], S. Jung[2] and Y. Kim[1] *1. Electrical Engineering, Chosun University, Gwangju, Korea; 2. School of Information and Communication Engineering, Sungkyunkwan University, Suwon, Korea*

AU-16. Power Transmission Method of Dual-Stage Type for Magnetic Gear with High Gear Ratio. *C. Kim*[1], S. Jung[2] and Y. Kim[1] *1. Department of Electrical Engineering, Chosun University, Gwangju, Korea; 2. School of Electronic and Electrical Engineering, Sungkyunkwan University, Suwon, Korea*

TUESDAY
MORNING
8:30

PLENARY HALL B

Session AV

MAGNETIC GEARS, MULTIPHASE AND OTHER SPECIAL MACHINES (Poster Session)

Qinfen Lu, Co-Chair
College of Electrical Engineering
Jang-Young Choi, Co-Chair
Chungnam National University

AV-01. Magnetically Geared Induction Machines. *S. Mezani*[1], T. Hamiti[1], L. Belguerras[1], T. Lubin[2] and C. Gerada[1] *1. PEMC group - Faculty of Engineering, University of Nottingham, Nottingham, United Kingdom; 2. Laboratoire GREEN - Faculté des Sciences et Technologies, University of Lorraine, Vandoeuvre-lès-Nancy, France*

AV-02. Performance Analysis of a Novel Triple-permanent-magnet-excited Magnetic Gear and Its Design Method. Y. Chen[1] and *W. Fu*[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong*

AV-03. Optimization Design and Analysis of the New High Torque Density Magnetic Planetary Gear. *R. Zhang*[1], Z. Ma[1] and J. Gong[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

AV-04. Design Method of a Novel Hybrid-flux Magnetic Gear Using 3-D Finite Element Method. Y. Chen[1], *W. Fu*[1] and S. Peng[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong*

AV-05. Study on Design and Experiment for Magnetically Compounding Propulsion Motor. *H. Jia*[1], G. Wang[1], L. Wen[1] and J. Chen[1] *1. Wuhan Institute of Marine Electric Propulsion, Wuhan, Hubei*

AV-06. Comparison Study of Novel Designs of Triple-Permanent-Magnet-Excited Magnetic Gears. *S. Niu*[1], Y. Mao[1] and W. Fu[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong*

AV-07. Electromagnetic Performance of Non-overlapping Stator Wound Field Synchronous Machine with Salient Pole Rotor. Z. Zhu[1], *Y. Zhou*[1] and J. Chen[2] *1. University of Sheffield, Sheffield, United Kingdom; 2. Welling Shanghai R&D Centre, Shanghai*

AV-08. Design and Analysis of a New Six-Phase Fault-Tolerant Hybrid-Excitation Motor for Electric Vehicle. *L. Zhang*[1], Y. Fan[1] and C. Li[1] *1. Southeast University, Nanjing, Jiangsu*

AV-09. Analysis and Experimental Evaluation of Harmonic Leakage Inductance for Polyphase PM Machines Having Close Slot and Pole Combinations. F. Wu[1,2] and *P. Zheng*[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang; 2. Wisconsin Electrical Machine and Power Electronics Consortium (WEMPEC), University of Wisconsin-Madison, Madison, Wisconsin*

AV-10. A 2-D Differentially Coupled Magnetic Actuator. *Y. Sakaidani*[1], K. Hirata[1] and N. Niguchi[1] *1. Osaka University, Suita city, Osaka, Japan*

AV-11. Fault Tolerant Control for a Five-Phase Flux-Switching Permanent Magnet Machine. *M. Tong*[1], W. Hua[1], M. Cheng[1], P. Su[1] and F. Li[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

AV-12. A New Magnetic Steering Axial-Field Machine for Electronic Differential System in Electric Vehicle. *C. Lee*[1], K. Chau[1] and C. Liu[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong*

AV-13. Reliability Analysis of a Nine-Phase Flux-Switching PM Machine. *W. Li*[1], W. Hua[1], M. Cheng[1], F. Yu[1] and S. Ding[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

AV-14. Harmonic Injected Rotor Shape for Five-Phase Surface-Mounted Permanent Magnet Machine. *K. Wang*[1], Z. Zhu[2] and P. Zhou[1] *1. Ansys. Inc, Canonsburg, Pennsylvania; 2. Department of Electronics and Electrical Engineering, Sheffield University, Sheffield, United Kingdom*

AV-15. Dual Stator Two-phase Permanent Magnet Machines with Phase-group Concentrated-coil Windings for Torque Enhancement. *W. Zhao*[1], T.A. Lipo[2] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Korea; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

AV-16. A Study on Design of Magnetization Yoke of Ferrite Spoke-Type Permanent Magnet Synchronous Motor considering Demagnetization. *T. Jeong*[1], D. Kang[2], H. Hong[1] and M. Park[1] *1. Electric Machinery, Hanyang University, Seoul, Korea; 2. Electric Machinery, Keimyung University, Daegu, Korea*

TUESDAY
AFTERNOON
2:00

309 A

Session BA
VOLTAGE CONTROL OF MAGNETIC DOMAIN WALLS

Sebastiaan van Dijken, Chair
Aalto University

2:00 BA-01. **Magneto-Ionic control of interfacial magnetism and domain wall motion.** ***(Invited)*** U. Bauer[1], L. Yao[2], A. Tan[1], P. Agrawal[1], S. Emori[1], H. Tuller[1], S. van Dijken[2] and *G. Beach*[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts; 2. NanoSpin, Department of Applied Physics, Aalto University School of Science, Aalto, Finland*

2:30 BA-02. **Domain wall motion by electric field gating.** ***(Invited)*** *T. Ono*[1] *1. Kyoto University, Uji, Japan*

3:00 BA-03. **Piezoelectric and photon helicity dependent domain wall motion driven by electrical current and optical spin transfer torques.** ***(Invited)*** *J. Wunderlich*[2,1], T. Janda[3,1], P. Roy[2], A. Ramsay[2], R. Otxoa[2], A. Irvine[4], T. Jungwirth[1,5], P. Nemec[3], B. Gallagher[5] and R. Campion[5] *1. Institute of Physics, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 2. Hitachi Cambridge Laboratory, Hitachi Europe Ltd, Cambridge, United Kingdom; 3. Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; 4. Microelectronics Group, Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 5. School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom*

3:30 BA-04. **Current developments in electric-field control of interfacial anisotropy and interactions in perpendicularly magnetized thin films.** ***(Invited)*** *H. Swagten*[1], A. Van den Brink[1], D. Han[1], M. Lalieu[1], F. Ummelen[1], Y. Yin[1], R. Lavrijsen[1] and B. Koopmans[1] *1. Eindhoven University of Technology, Eindhoven, Netherlands*

4:00 BA-05. **Domain wall dynamics under electric field in Ta/$Co_{40}Fe_{40}B_{20}$/MgO devices with perpendicular anisotropy.** ***(Invited)*** *D. Ravelosona*[1], W. Lin[1], N. Vernier[1], G. Agnus[1], K. Garcia[1], B. Ocker[2], W. Zhao[1] and E.E. Fullerton[3] *1. University of Paris Sud-CNRS, Orsay, France; 2. SINGULUS, Kahl am main, Germany; 3. CMRR, University of California San Diego, San Diego, California*

4:30 BA-06. **Voltage control of single magnetic domain nanoscale structures - analysis and experiments.** ***(Invited)*** *G. Carman*[1], S. Keller[1] and C. Liang[1]
1. University of California at Los Angles, Los Angeles, California

TUESDAY AFTERNOON 2:00 — 309 B

Session BB
SPIN-ORBIT INTERACTION (SPIN HALL)

joerg Wunderlich, Chair
Hitachi Cambridge Lab

2:00 BB-01. **Coupling Heat With magnetization.** ***(Invited)*** *H. Yu*[1,2], J. Ansermet[2], S. Granville[2] and D. Yu[3]
1. Spintronics Interdisciplinary Center, Beihang University, Beijing; 2. EPFL, Lausanne, Switzerland; 3. Peking University, Beijing

2:30 BB-02. **Spin-Hall Assisted STT-RAM Design and Discussion.** *E. Eken*[1], Y. Zhang[1], B. Yan[1], W. Wu[2], H. Li[1] and Y. Chen[1] *1. Electrical and Computer Enginnering, University of Pittsburgh, Pittsburgh, Pennsylvania; 2. Corp. R & D Div., Qualcomm, San Diego, California*

2:45 BB-03. **Spin injection into superconductors and quasi-particle mediated spin Hall effects.** ***(Invited)*** *Y. Otani*[1,2]
1. ISSP, University of Tokyo, Kashiwa, Chiba, Japan; 2. CEMS, RIKEN, Wako, Saitama, Japan

3:15 BB-04. **Spin Orbit Torque Switching in Ta/CoFeB/MgO without longitudinal fields.** *R. Lo Conte*[1], A. Hrabec[2], A. Mihai[2], T. Schulz[1], S. Noh[1], C. Marrows[2], T. Moore[2] and M. Klaeui[1] *1. Physics, Johannes Gutenberg - University Mainz, Mainz, Germany; 2. Physics, University of Leeds, Leeds, United Kingdom*

3:30 BB-05. **Coherent Sub-Nanosecond Switching of Perpendicular Magnetization by the Field-Like Spin-Orbit Torque Without External Magnetic Field.** *W. Legrand*[1], R. Ramaswamy[1], R. Mishra[1] and H. Yang[1]
1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore

3:45 <u>BB-06</u>. **Proposal and demonstration of a new spin-orbit torque induced switching device.** *S. Fukami*[1,2], T. Anekawa[3], C. Zhang[3] and H. Ohno[3,4] *1. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan; 2. Center for Innovative integrated Systems, Tohoku University, Sendai, Miyagi, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Miyagi, Japan; 4. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Miyagi, Japan*

4:00 <u>BB-07</u>. **Spin-Hall Nano-oscillator: a study based on the synchronization.** *A. Giordano*[1], A. Laudani[2], G. Gubbiotti[3], B. Azzerboni[1], M. Carpentieri[4] and G. Finocchio[1] *1. Department of Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy; 2. Department of Engineering, University of Roma Tre, Roma, Italy; 3. Istituto Officina dei Materiali del CNR (CNR-IOM), Unità di Perugia, Perugia, Italy; 4. Department of Electrical and Information Engineering, Politecnico of Bari, Bari, Italy*

4:15 <u>BB-08</u>. **Spin orbit torque effect in Pt/FeMn bilayers.** *Y. Yang*[1,2], X. Zhang[1], Y. Xu[1], S. Zhang[3], R. Li[4], K. Yao[2] and Y. Wu[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Institute of Materials Research and Engineering, Singapore; 3. Physics, University of Arizona, Tucson, Arizona; 4. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

4:30 <u>BB-09</u>. **Mechanism of a pure spin transfer through an antiferromagnetic insulator.** R. Khymyn[1], B. Ivanov[2], I. Lisenkov[1,3], V. Tyberkevych[1] and *A. Slavin*[1] *1. Oakland University, Rochester, Michigan; 2. Institute of Magnetism of NASU and MESYSU, Kiev, Ukraine; 3. Kotelnikov Institute of Radio-engineering and Electronics of RAS, Moscow, Russian Federation*

4:45 <u>BB-10</u>. **Symmetry of spin orbit torque induced by impurities.** S. Nikolaev[2], A. Kalitsov[1,3] and *O.N. Mryasov*[1,3] *1. University of Alabama, Tuscaloosa, Alabama; 2. Ural Federal University, Ekaterinburg, Russian Federation; 3. Western Digital, San Jose, California*

5:00 <u>BB-11</u>. **Characterization of Spin-Orbit Torques in Pt/Co/Ta structures.** *S. Woo*[1], M. Mann[1], A. Tan[1], L. Carreta[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts*

TUESDAY AFTERNOON 2:00

310

Session BC
MAGNETIZATION DYNAMICS AND MAGNETO-IMPEDANCE MATERIALS
Ranajit Sai, Chair
Tohoku University

2:00 BC-01. **Spin current driven auto-oscillation in CoFeB/Pt bilayers.** *M. Ranjbar*[1], P. Dürrenfeld[1], M. Haidar[1], E. Iacocca[1], M. Balinskiy[1], T. Quang[2], M. Fazlali[1], A. Houshang[1], A.A. Awad[1], R.K. Dumas[1] and J. Åkerman[1,2] *1. Physics Department, University of Gothenburg, Gothenburg, Sweden; 2. Materials Physics, School of ICT, Royal Institute of Technology (KTH), Kista, Sweden*

2:15 BC-02. **Extended auto-oscillator equation and non-linear parameters of a synthetic ferrimagnet spin torque oscillator.** *B. Lacoste*[1], M. Romera[3,2], U. Ebels[3,2] and L. Buda-Prejbeanu[3,2] *1. Spintronics, International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 2. Université Grenoble Alpes, Grenoble, France; 3. INAC-SPINTEC, CEA, Grenoble, France*

2:30 BC-03. **Gilbert damping constant of Co-Pt based alloy films.** *Y. Kusanagi*[1], S. Okamoto[1], N. Kikuchi[1], T. Kato[2], S. Iwata[2], O. Kitakami[1] and H. Nemoto[3] *1. Tohoku Univ., Sendai, Japan; 2. Nagoya University, Nagoya, Japan; 3. HGST, a Western Digital company, Odawara, Japan*

2:45 BC-04. **Tunable magneto-dynamic properties of alloyed permalloy films.** *Y. Yin*[1,2], M. Ahlberg[2], F. Pan[3], M. Haidar[2], M. Ranjbar[2], L. Bergqvist[3], A. Delin[3], R.K. Dumas[2], Y. Zhai[1] and J. Åkerman[2,3] *1. Department of Physics, Southeast University, Nanjing, Jiangsu; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. Department of Materials and Nano Physics, KTH Royal Institute of Technology, Kista, Sweden*

3:00 BC-05. **Large rectification voltage in nanoscale highly sensitive rf detectors based on vortex core expulsion.** *A. Jenkins*[3], R. Lebrun[3], P. Bortolotti[3], E. Grimaldi[3], S. Tsunegi[3], H. Kubota[1], K. Yakushiji[1], A. Fukushima[1], O. Klein[2], S. Yuasa[1] and V. Cros[3] *1. Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Service de Physique de l'État Condensé, CEA Saclay/CNRS, Saclay, France; 3. Unité Mixte de Physique CNRS/Thales, Palaiseau, France*

3:15 BC-06. **Individual site reversal in centro-symmetric matrices by common current excitation.** *M. Elyasi*[1], C.S. Bhatia[1] and H. Yang[1] *1. Electrical and Computer Engineering Department, National University of Singapore, Singapore*

3:30 BC-07. **Tunable high-frequency properties of Co-Ni ferromagnetic nanowires through composition modulation.** *Y. Lei*[1] and L. Li[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing*

3:45 BC-08. **A new short-circuited coplanar waveguide to measuring the permeability of magnetic thin film: Comparison with short-circuited microstrip line.** J. Wei[1], H. Feng[1], Z. Zhu[1], Q. Liu[1] and *J. Wang*[1] *1. Key Laboratory for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu*

4:00 BC-09. **Magnetic characterization of on-chip integrated layer of substituted Sr-M hexaferrite beyond 10 GHz.** *R. Sai*[1], Y. Endo[1], Y. Shimada[1], R. Naik[2], N. Bhat[2], S.A. Shivashankar[2] and M. Yamaguchi[1] *1. Department of Electrical Engineering, Tohoku University, Sendai, Miyagi, Japan; 2. Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore, Karnataka, India*

4:15 BC-10. **Nano-patterned Permalloy Thin Film Enabled Electrically Tunable Spiral Inductor.** *T. Wang*[1], Y. Peng[1], W. Jiang[1], T. Xia[2] and G. Wang[1] *1. Electrical Engineering, University of South Carolina, Columbia, South Carolina; 2. School of Engineering, University of Vermont, Burlington, Vermont*

4:30 BC-11. **Development of high sensitivity multi core mi element.** *N. Hamada*[1], A. Shimode[1], C. Cai[1] and M. Yamamoto[1] *1. Aichi Steel Corporation, Tokai-shi, Aichi-ken, Japan*

4:45 BC-12. **Development of highly-sensitive mi sensor used for foreign particles inspection.** *C. Cai*[1], N. Hamada[1], A. Shimode[1], M. Mori[1] and M. Yamamoto[1] *1. Aichi Steel Corp., Tokai-shi, Aichi-ken, Japan*

TUESDAY
AFTERNOON
2:00

311 A

Session BD

RARE EARTH TRANSITION METAL BORIDES III

Hossein Sepehri-Amin, Chair
National Institute for Materials Science of Japan (NIMS)
Jinbo Yang, Chair
Peking University

2:00 BD-01. **Energy barrier analysis on hot-deformed Nd-Fe-B magnets.** R. Goto[1], *S. Okamoto*[1,2], T. Akiya[3], N. Kikuchi[1], O. Kitakami[1], H. Sepehri-Amin[3], T. Ohkubo[3,2], K. Hono[3,2], K. Hioki[4] and A. Hattori[4] *1. IMRAM, Tohoku University, Sendai, Japan; 2. Elements Strategy Initiative Center for Magnetic Materials, Tsukuba, Japan; 3. National Institute for Materials Science, Tsukuba, Japan; 4. Daido Steel Co. Ltd., Nagoya, Japan*

2:15 BD-02. **Preparation of highly textured hydrogenation-disproportionation-desorption-recombination powders for Nd-Fe-B sintered magnets.** Y. Zhang[1], T. Liu[2], *J. Han*[1], L. Zhou[2], S. Liu[1], X. Zhang[1], J. Yang[1] and Y. Yang[1] *1. School of Physics, Peking University, Beijing; 2. Advanced Technology & Materials Co., Ltd. Inc, Beijing*

2:30 BD-03. **Effects of strain ratio and stain rate on microstructure and magnetic properties of Nd-Fe-B nanocrystalline magnets during hot-deformation process.** *H. Cha*[1,2], S. Liu[1], J. Yu[1], H. Kwon[3], Y. Kim[2] and J. Lee[1] *1. Powder & Ceramics Division, Korea Institute of Materials Science, Changwon, Korea; 2. Pusan National University, Pusan, Korea; 3. Pukyong National University, Pusan, Korea*

2:45 BD-04. **Isotropic and anisotropic nanocrystalline NdFeB bulk magnets prepared by binder-free high-velocity compaction and hot deformation.** X. Deng[1], H. Yu[1], *Z. Liu*[1] and G. Zhang[2] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, Guangdong; 2. Science and Technology on Advanced High Temperature Structural Materials Laboratory, Beijing Institute of Aeronautical Materials, Beijing*

3:00 **BD-05. The study on grain-boundary microstructure of sintered (Ce, Nd)-Fe-B magnets.** *A. Li*[1], W. Li[1], S. Huang[1], J. Wang[1], H. Feng[1] and M. Zhu[1] *1. Research Institute of Functional Materials, China Iron & Steel Research Institute, Beijing*

3:15 **BD-06. Effect of temperature and pressure conditions on phase evolution and magnetic anisotropy in *d*-HDDR process for Nd-Fe-B powders.** *T. Horikawa*[1], M. Matsuura[1], S. Sugimoto[1], M. Yamazaki[2] and C. Mishima[2] *1. Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Miyagi, Japan; 2. Magnet Business Department, Aichi Steel Corporation, Seki, Gifu, Japan*

3:30 **BD-07. Effect of dry addition on the magnetic and mechanical properties of sintered Nd-Fe-B magnets prepared by double-alloy powder mixed method.** *Z. Hu*[1] *1. Material Engineering, Hubei University of Automotive Technology, Shiyan, Hubei*

3:45 **BD-08. Enhanced corrosion resistance of sintered NdFeB magnets by diffusion of Co film prepared by direct current magnetron sputtering deposition.** *J. Di*[1], S. Guo[1], L. Cai[1], L. Chen[1], G. Ding[1], J. Liu[1] and A. Yan[1] *1. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

4:00 **BD-09. Application of the hddr method for recycling of Nd-Fe-B magnets.** *M. Szymanski*[1], B. Michalski[1], M. Leonowicz[1] and Z. Miazga[2] *1. Faculty of Materials Science and Engineering, Warsaw University of Technology, Warsaw, Poland; 2. P.P.H.U. POLBLUME Zbigniew Miazga, Piaseczno, Poland*

4:15 **BD-10. Substitution of Ce for NdPr in Melt-Spun (NdPr)-Fe-B Powders.** *Z. Chen*[1], Y. Lim[1] and D. Brown[1] *1. Magnequench Technology Center, Singapore*

TUESDAY
AFTERNOON
2:00

311 B

Session BE
MAGNETIC IMAGING AND CHARACTERIZATION I

Hendrik Ohldag, Chair
SLAC National Accelerator Laboratory

2:00 **BE-01. Imaging chiral spin textures with spin-polarized microscopy.** ***(Invited)*** *G. Chen*[1] *1. NCEM, Berkeley Lab, Berkeley, California*

2:30 **BE-02. Skyrmions at room temperature in magnetic multilayers.** C. Moreau-Luchaire[1], *N. Reyren*[1], C. Moutafis[2], J. Sampaio[1], N. Van Horne[1], C.A. Vaz[2], P. Warnicke[2], K. Garcia[1], M. Weigand[3], K. Bouzehouane[1], C. Deranlot[1], J. George[1], J. Raabe[2], V. Cros[1] and A. Fert[1] *1. Unité Mixte de Physique CNRS/Thales (UMR-137), associée à l'université Paris-Sud, Palaiseau, France; 2. Swiss Light Source, Paul Scherrer Institute, Villigen PSI, Switzerland; 3. Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

2:45 **BE-03. Chaotic dynamics triggering stochastic formation of magnetic vortex structures in asymmetric permalloy disks.** *M. Im*[1,2], K. Lee[3], A. Vogel[4], J. Hong[2], G. Meier[4,6] and P. Fischer[1,5] *1. CXRO, Lawrence Berkeley National Laboratory, Berkeley, California; 2. DGIST, Daegu, Korea; 3. UNIST, Ulsan, Korea; 4. University of Hamburg, Hamburg, Germany; 5. University of California Santa Cruz, Santa Cruz, California; 6. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany*

3:00 **BE-04. Magnetic soft x-ray tomography of magnetic Swiss roll architectures.** *R. Streubel*[1], F. Kronast[2], P. Fischer[3,4], O.G. Schmidt[1,5] and D. Makarov[1] *1. Institute for Integrative Nanosciences, IFW Dresden, Dresden, Saxony, Germany; 2. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Berlin, Germany; 3. Lawrence Berkeley National Laboratory, Berkeley, California; 4. UC Santa Cruz, Santa Cruz, California; 5. TU Chemnitz, Chemnitz, Saxony, Germany*

3:15 **BE-05. X-ray microscopy and spectroscopy insights of organic spin-valve.** *D. Wei*[1,2] and P. Cheng[1] *1. Research Division, National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 2. Graduate Program for Science and Technology of Synchrotron Light Source, National Tsing Hua University, Hsinchu, Taiwan*

3:30 <u>BE-06</u>. **Visualizing domain wall magnetism and domain magnetoelectricity in multiferroic hexagonal manganites.** ***(Invited)*** *W. Wu*[1], Y. Geng[1], C. Fennie[2], M. Mostovoy[3] and S. Cheong[1] *1. Physics and Astronomy, Rutgers University, Piscataway, New Jersey; 2. Applied and Engineering Physics, Cornell, Ithaca, New York; 3. Zernike Institute for Advanced Materials, University of Groningen, Groningen, Netherlands*

4:00 <u>BE-07</u>. **Capacitive distance control for measuring particulate magnetic media with Magnetic Force Microscopy.** *J. Schwenk*[1], H.J. Hug[1,2], M.A. Marioni[1], T. Hauet[3], M. Hehn[3], F. Abreu Araujo[4], V.A. Antohe[4], S.K. Srivastava[4] and L. Piraux[4] *1. Nanoscale Materials Science, Empa, Swiss Federal Laboratories for Materials Science & Technology, Dübendorf, Zürich, Switzerland; 2. Institute of Physics, Universität Basel, Basel, Switzerland; 3. Institut Jean Lamour, Université de Lorraine & CNRS, Vandoeuvre l`es Nancy, France; 4. Institute of Condensed Matter and Nanosciences, Université catholique de Louvain, Louvain-la-Neuve, Belgium*

4:15 <u>BE-08</u>. **Radiation Pressure Excitation of Low Temperature Atomic Force & Magnetic Force Microscope (LT-AFM/MFM) for Imaging.** O. Karci[2], U. Celik[2] and *A. Oral*[1] *1. Physics, Middle EastTechnical University, Ankara, Turkey; 2. NanoMagnetics Instruments Ltd., Ankara, Turkey*

4:30 <u>BE-09</u>. **The local variation of magnetic anisotropy in cylindrical nanowires.** *I. Ivanov*[1], A. Chuvilin[2] and J. Kosel[1] *1. Department of Electrical Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. CIC nanoGUNE Consolider, San Sebastian, Spain*

TUESDAY
AFTERNOON
2:00

308

Session BF
MAGNETIC RECORDING MEDIA
Ganping Ju, Chair
Seagate Technology, USA

2:00 BF-01. **Concentration gradient layer deposition for the columnar growth of FePt-C granular film for heat assisted magnetic recording media.** B. Varaprasad[1], J. Wang[1], T. Shiroyama[1], *Y. Takahashi*[1] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan*

2:15 BF-02. **Improved magnetic properties and texture of FePt-C thin films doped with Ti or Zr.** *K. Cher*[1], T. Zhou[1] and J. Hu[1] *1. Data Storage Institute, Singapore*

2:30 BF-03. **Effect of TiN-MgO Intermediate Layer on the Microstructure and Magnetic Properties of FePt Thin Films.** *K. Dong*[1], H. Li[1], J. Deng[1], Y. Peng[2], G. Ju[2], G. Moog Chow[1] and J. Chen[1] *1. Department of Materials Science and Engineering, National University of Singapore, Singapore; 2. Seagate Technology, Fremont, California*

2:45 BF-04. **Switching field distribution of FePt-C/FePt exchange coupled granular/continuous perpendicular media.** *J. Wang*[1], Y. Takahashi[1], J. Kim[2] and K. Hono[1] *1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Seagate Technology, Fremont, California*

3:00 BF-05. **An experimental investigation on Curie temperature (Tc) variations and related switching field distributions (SFD) in heat assisted magnetic recording (HAMR) media.** *Y. Chen*[1], S. Leong[1], H. Yang[1] and J. Hu[1] *1. Data Storage Institute, A*STAR, Singapore*

3:15 BF-06. **Promoted columnar grain structure in bilayer FePt:C/FePt:B films.** *S. Huang*[1], W. Wen[1], K. Chang[2] and C. Lai[1] *1. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. Seagate Technology, Fremont, California*

3:30 BF-07. **TiN intermediate layer development for FePt based HAMR media.** *K. Cher*[1], J. Hu[1] and N. Lim[1] *1. Data Storage Institute, Singapore*

3:45 **BF-08. Tunable high coercivity FePt bilayer structure for HAMR application.** *T. Dutta*[1,2], S. Kundu[1], M. Saifullah[2], H. Yang[1] and C.S. Bhatia[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore; 2. A*STAR (Agency for Science, Technology and Research), Institute of Materials Research and Engineering, Singapore*

4:00 **BF-09. The effect of exchange coupling on switching fields in magnetic recording.** *R. Wood*[1] *1. Recording Integration Lab., HGST, A Western Digital Company, San Jose, California*

4:15 **BF-10. Adjacent and far track erasure dependence on media SUL permeability in shielded PMR head recording.** *G. Choe*[1], A. Goncharov[1], F. Chu[1] and P. Vanderheijden[1] *1. HGST a Western Digital company, San Jose, California*

4:30 **BF-11. Fabrication of templates for achieving one-to-one grain matching in HAMR media.** *V. Sundar*[1], B. Zhou[1], Y. Liu[1], J. Zhu[2], D. Laughlin[1,3] and J. Zhu[1,3] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. Sun Yat-sen University-Carnegie Mellon University Joint Institute of Engineering, Guangzhou, Guangdong; 3. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania*

4:45 **BF-12. Variation of structure and magnetic properties by Ag addition in (001) oriented CoPt and CoPd alloy film.** T. Nagata[1], Y. Tokuoka[1], *T. Kato*[2], D. Oshima[3] and S. Iwata[3] *1. Department of Quantum Engineering, Nagoya University, Nagoya, Aichi, Japan; 2. Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Aichi, Japan; 3. EcoTopia Science Institute, Nagoya University, Nagoya, Aichi, Japan*

TUESDAY
AFTERNOON
2:00

307

Session BG
ELECTRIC MACHINE MODELING AND ANALYSIS I

Christopher Gerada, Chair
University of Nottingham, United Kingdom

2:00 **BG-01. Exact Analytical Method for Air-Gap Main Magnetic Field Computation and Cogging Torque of Surface-Mounted Permanent-Magnet Motors.** *L. Jing*[1,2] and L. Liu[1] *1. College of Electrical Engineering & New Energy, Three Gorges University, Yichang, Hubei; 2. Hubei Collaborative Innovation Centre for Micro-grid of New Energy, Yichang, Hubei*

2:15 **BG-02. Ferromagnetic Core with High Permeability Composed with Strength Winding in Short Circuit Current.** *C. Hsu*[1,2], C. Fu[3], J. Liu[4], S. Jen[5] and S. Cheng[6] *1. Division of Electrical Engineering, Fortune Electric Company Ltd., Chung-Lin, Taiwan; 2. Department of Electronics & Information Engineering, Army Academy R. O. C., Taoyuan, Taiwan; 3. Department of Physics, National Taiwan University, Taoyuan, Taiwan; 4. Department of Multimedia and M-Commerce, Kainan University, Taoyuan, Taiwan; 5. Institute of Physics, Academia Sinica, Taoyuan, Taiwan; 6. Department of Aircraft Engineering, Army Academy R. O. C., Taoyuan, Taiwan*

2:30 **BG-03. A General Framework Based on a New Hybrid Analytical Model for the Analysis and Design of Permanent Magnet Machines.** S. Ouagued[1], A. Aden Diriyé[1], *Y. Amara*[1] and G. Barakat[1] *1. GREAH, Université du Havre, Le Havre, France*

2:45 **BG-04. Influences of Turbo-generator End Winding Dimensions on Electromagnetic Loss in the End Core and Metal Parts.** *L. Wang*[1], J. Li[2] and W. Li[3] *1. Harbin University of Science and Technology, Harbin, Heilongjiang; 2. Harbin Institute of Technology, Harbin, Heilongjiang; 3. Beijing Jiaotong University, Beijing*

2:45 **<u>BG-05</u>. Rotor mechanical stress and deformation analysis of coreless stator axial-flux permanent-magnet machines.** *Y. Cao*[1,2], L. Yu[1,2] and H. Jia[1,2] *1. Department of Electrical Engineering, Nanjing University of Information Science and Technology, Nanjing, Jiangsu; 2. Jiangsu Engineering Research Center on Meteorological Energy Using and Control, Nanjing, Jiangsu*

3:00 **<u>BG-06</u>. Effects of eddy current in electrical connection surface of lamininated core on high-speed PM motor supported by active magnetic bearings.** J. Fang[1] and *S. Xu*[1] *1. Fundamental Science on Novel Inertial Instrument & Navigation System Technology Laboratory, Beihang University, Beijing*

3:15 **<u>BG-07</u>. Armature Reaction Field and Inductance Feature of Hybrid Excitation Synchronous Machine with Magnetic Shunting Rotor.** *Z. Zhang*[1], Y. Mu[1] and Y. Liu[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu*

3:30 **<u>BG-08</u>. Novel Asymmetrical Rotor Design for Easy Assembly and Repair of Rotor Windings in Synchronous Generators.** *N. Yang*[1], W. Cao[1], Z. Liu[3], Z. Tan[3], Y. Zhang[1], S. Yu[2] and J. Morrow[1] *1. Queen's University Belfast, Belfast, United Kingdom; 2. Shenyang University of Technology, Shenyang, Liaoning; 3. Newcastle University, Newcastle, United Kingdom*

3:45 **<u>BG-09</u>. Influence of Slot Radial Magnetic Field on Circulating Current in Stator Transposition Strands of Large Turbogenerator.** Y. Liang[1], *X. Bian*[1] and L. Wu[1] *1. College of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

4:00 **<u>BG-10</u>. Effect of Hardness and Thickness of Non-Oriented Electrical Steel Sheets on Iron Loss Deterioration by Shearing Process.** *T. Omura*[1], Y. Zaizen[1], M. Fukumura[2], K. Senda[1] and H. Toda[1] *1. JFE Steel Corporation, Kurashiki, Japan; 2. JFE Steel Corporation, Kawasaki, Japan*

4:15 **<u>BG-11</u>. Design and analysis of a new spherical actuator.** *J. Chu*[1], N. Niguchi[1] and K. Hirata[1] *1. Osaka university, Suita, Osaka, Japan*

4:30 BG-12. **Adaptive Meshing for Eddy Current Calculations.** D. Dupuy[4], D. Pedreira[4], D. Verbeke[4], V. Leconte[4], P. Wendling[3], L. Rondot[1] and *V.G. Mazauric*[1,2] *1. Strategy & Technology, Schneider Electric, Grenoble Cedex 9, France; 2. Centre for Applied Mathematics, MINES ParisTech, Sophia Antipolis, France; 3. Magsoft Corporation, Clifton Park, New York; 4. CEDRAT, Meylan, France*

TUESDAY AFTERNOON 2:00 — 306 B

Session BH
ELECTRIC MACHINE APPLICATIONS I
Ciro Visone, Chair
University of Sannio

2:00 BH-01. **Optimization and thermal analysis of a new self-decelerating pm in-wheel motor for electric vehicles.** Y. Fan[1], *L. Gu*[1] and X. Zhou[1] *1. Southeast University, Nanjing, Jiangsu*

2:15 BH-02. **Multi-objective Optimal Design of Transverse Flux Permanent Magnet Motor Using Differential Evolution Algorithm.** *H. Li*[1] and H. Yao[1] *1. Department of Electrical Engineering, Hefei University of Technology, Hefei, Anhui*

2:30 BH-03. **Optimization design of a flux switching permanent magnet in-wheel machine using combined local and global optimization methods.** *W. Gu*[1], L. Quan[1] and Z. Shu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

2:45 BH-04. **A Novel Dual Mechanical Port, Spoke Array, Vernier Permanent Magnet Machine for HEVs.** *D. Li*[1], R. Qu[1] and J. Li[1] *1. School of Electrical & Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei*

3:00 BH-05. **A Non-Rare-Earth Doubly Salient Flux Controllable Motor Capable of Fault-Tolerant Control.** X. Zhu[1], *L. Wang*[1] and J. Zheng[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

3:15 BH-06. **A Brushless Double Mechanical Ports Permanent Magnet Motor for Plug-In HEVs.** *Z. Xiang*[1], L. Quan[1] and Q. Ni[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

3:30 BH-07. **Design and control of a novel six-phase hybrid field-exciting doubly-salient permanent magnet machines for integrated starter/generator in more electric aircraft.** *Z. Wang*[1], X. Wang[1], J. Chen[1] and M. Cheng[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

3:45 BH-08. **An Optimal Flux Switching Permanent Magnet Machine for Toyota Prius Hybrid Electric Vehicle.** *G. Lei*[1], W. Xu[2] and J. Zhu[1] *1. University of Technology Sydney, Sydney, New South Wales, Australia; 2. Huazhong University of Science and Technology, Wuhan, Hubei*

4:00 BH-09. **Investigation of A New Variable-Speed Operating Doubly Salient Brushless Generator with DC-Field Coil in Stator for Automobile Power System.** *Y. Wang*[1], Z. Zhang[1], L. Yu[1] and Y. Yan[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu*

4:15 BH-10. **Magnetic flux analysis of a new e-core HEFSM with various slot-pole combinations for HEV.** *E. Sulaiman*[1] and S. Zakaria[1] *1. Research Centre of Applied Electromagnetic, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia*

4:30 BH-11. **Optimal Design of Interior Permanent Magnet Synchronous Motor by Using a New Surrogate Assisted Multi-Objective Optimization.** *D. Lim*[1], K. Yi[2], S. Jung[4], J. Ro[3] and H. Jung[1] *1. Department and Computer Engineering, Seoul National University, Seoul, Korea; 2. Korea Railroad Research Institute, Uiwang, Korea; 3. Creative Research Engineer Development, Brain Korea 21 Plus, Seoul National University, Seoul, Korea; 4. School of Electronic and Electrical Engineering, SungKyunKwan University, Suwon, Korea*

4:45 BH-12. **Quantitative Comparison of Doubly-Salient PM Motor with Interior PM Motor for Electric Drive Vehicle Applications.** *J. Li*[1] and C. Mi[2] *1. School of Mechanical and Electronic Engineering, Wuhan University of Technology, Wuhan, Hubei; 2. Department of Electrical and Computer Engineering, University of Michigan-Dearborn, Dearborn, Michigan*

TUESDAY AFTERNOON 2:00 306 A

Session BI
LIFE SCIENCE AND APPLICATIONS I

R Sooryakumar, Chair
The Ohio State University
Ruogang Zhao, Chair

2:00 BI-01. **Magnetic Control of Living Cell Machinery.** ***(Invited)*** *V. Zablotskii*[1], O. Lunov[1], S. Kubinova[2], E. Sykova[2], D. Le Roy[3], N. Dempsey[3], D. Givord[3] and A. Dejneka[1] *1. Department of optical and biophysical systems, Institute of Physics, Prague, Czech Republic; 2. Institute of Experimental Medicine, Prague, Czech Republic; 3. Institut Néel (CNRS & UJF), Grenoble, France*

2:30 BI-02. **A Large Array MTJ Biosensor Chip: Design, Manufacturing and Evaluation.** *S. Shi*[1], Y. Gao[2], W. Huo[2,3], J. Lian[4] and L. Zhang[2,3] *1. Bosh Biotechnologies, Dongguan, Guangdong; 2. Key Laboratory of Photochemical Conversion and Optoelectronic Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing; 3. University of Chinese Academy of Sciences, Chinese Academy of Sciences, Beijing; 4. Department of Forensic Science, People's Public Security University of China, Beijing*

2:45 BI-03. **Magnetic nanoparticles for magnetomechanical cell destruction and magnetic hyperthermia agents.** *D. Wong*[1], Y. Yang[2], W. Gan[1], N. Liu[1], I. Purnama[1], C. Murapaka[1], S. Wong[1], J. Ding[2] and W. Lew[1] *1. Physics and Applied Physics, Nanyang Technological University, Singapore; 2. Department of Materials Science and Engineering, National University of Singapore, Singapore*

3:00 BI-04. **Narrowband Magnetic Particle Imaging Utilizing Electric Scanning of Field Free Point.** *S. Bai*[1], A. Hirokawa[1], K. Tanabe[1], T. Sasayama[1], T. Yoshida[1] and K. Enpuku[1] *1. Kyushu University, Fukuoka, Japan*

3:15 BI-05. **A spiral microrobot performing linear and drilling motions by magnetic gradient and rotating uniform magnetic field to unclog blocked human blood vessels.** *G. Jang*[2], S. Jeon[1], J. Nam[1], W. Lee[1] and G. Jang[1] *1. Department of Mechanical Convergence Engineering, Hanyang University, Seoul, Korea; 2. Campolindo High School, Moraga, California*

3:30 BI-06. **Physiological Magnetic Stimulation on Car Driver's Spine for Arousal Without Rebound Sleep Preventing Drowsy Driving and Back-Magnetocardiogram.** *Y. Mohri*[2], M. Yamada[2], T. Nakano[2], T. Uchiyama[1], Y. Inden[3], K. Mohri[1,4], M. Kawaguchi[2] and S. Kojima[2] *1. Graduate School of Engineering, Nagoya University, Nagoya, Japan; 2. Graduate School of Science and Technology, Meijo University, Nagoya, Japan; 3. Graduate School of Medicine, Nagoya University, Nagoya, Japan; 4. Division of Research, Nagoya Industrial Science Research Institute, Nagoya, Japan*

3:45 BI-07. **Clusters of magnetic nanoparticles as contrast agents for MRI: the effect of aggregation on T_2 relaxivity.** T. Dedourkova[4], *O. Kaman*[1], P. Veverka[1], J. Koktan[1,2], M. Veverka[1], J. Kulickova[1], Z. Jirak[1] and V. Herynek[3] *1. Institute of Physics, AS CR, v.v.i., Prague, Czech Republic; 2. Institute of Chemical Technology, Prague, Czech Republic; 3. Institute for Clinical and Experimental Medicine, Prague, Czech Republic; 4. University of Pardubice, Pardubice, Czech Republic*

4:00 BI-08. **Magnetic Superparamagnetic-like microparticles for cancer cells destruction.** *M. Morcrette*[1], H. Joisten[1,2], G. Ortiz[1], S. Lequien[3], P. Sabon[1], M. Carrière[4], Y. Hou[5], A. Bsiesy[6] and B. Dieny[1] *1. Univ. Grenoble Alpes, CNRS, CEA, INAC-SPINTEC, Grenoble, France; 2. Univ. Grenoble Alpes, CEA, LETI, MINATEC Campus, Grenoble, France; 3. Univ. Grenoble Alpes, CEA, INAC-SP2M, NM, Grenoble, France; 4. Univ. Grenoble Alpes, CEA, INAC-SCIB, Grenoble, France; 5. Univ. Grenoble Alpes, CNRS, CEA, INAC-SPrAM, Grenoble, France; 6. Univ.Grenoble Alpes, CNRS, LTM, Grenoble, France*

4:15 BI-09. **Deep Transcranial Magnetic Stimulation Using Figure-of-Eight and Halo Coils.** *M. Lu*[1] and S. Ueno[2] *1. Lanzhou Jiaotong University, Lanzhou, Gansu; 2. Kyushu University, Fukuoka, Japan*

4:30 BI-10. **In-vitro cytotoxicity of biocompatible Fe-Ti-Nb-B magnetic nanoparticles in alternating magnetic fields.** H. Chiriac[1], C. Danceanu[1], D. Herea[1], L. Whitmore[1], M. Lostun[1], M. Grigoras[1], E. Carasevici[2], M. Vlad[2] and *N. Lupu*[1] *1. Magnetic Materials and Devices, National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. "Gr.T. Popa" University of Medicine and Pharmacy, Iasi, Romania*

4:45 **BI-11. New Class polyfunctional bioceramics based on calcium phosphate and M-type hexagonal ferrite for Medical Applications.** *A.S. Kamzin*[1] *1. Magnetism, Ioffe Physical-Technical Institute, Sanct-Petersburg, Russian Federation*

TUESDAY AFTERNOON 1:30 PLENARY HALL B

Session BP
LINEAR, MULTIPHASE AND OTHER SPECIAL MACHINES I (Poster Session)

Ming Cheng, Chair
Southeast University
Guohai Liu, Chair
Jiangsu University

BP-01. Design and Analysis of a New Linear Wound Field Flux Reversal Machine. L. Xu[1], *G. Liu*[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

BP-02. Design and analysis of a flux-switching permanent magnet linear machine with high thrust density. B. Zhang[1] and *M. Cheng*[1] *1. Southeast University, Nanjing, Jiangsu*

BP-03. Electromagnetic navigation displacement transducer based on magnetic gradiometer. *M. Zhang*[1], S. Or[1] and S. Wang[2] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong; 2. Beihang University, Beijing*

BP-04. A self-powered current sensor using a magnetostrictive cantilever beam, piezoelectric ceramic Pb(Zr,Ti)O_3, and a ferromagnetic yoke. *W. He*[1] *1. Department of Mathematics & Computer Information Engineering, Baise University, Baise, Guangxi*

BP-05. An improved method of initial rotor position estimation and magnetic polarity identification for surface permanent magnet synchronous motor. *X. Wu*[1], H. Wang[1], K. Huang[1], S. Huang[1], L. Wang[1] and Z. Jiang[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, Hunan*

<u>BP-06</u>. A Cost-Efficient Long Stroke Field Modulated Linear Machine. *X. Liu*[1], K. Lu[1] and Z. Chen[1]
1. Department of Energy Technology, Aalborg University, Aalborg, Denmark

<u>BP-07</u>. Performance Investigation of a Double-side Permanent Magnet Linear Synchronous Motor Having Shifted EndsP. *Q. Lu*[1] and Y. Ye[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang*

<u>BP-08</u>. Analysis of transverse-flux switched-flux permanent magnet linear motor. *Q. Lu*[1] and Y. Ye[1]
1. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang

<u>BP-09</u>. A Low-Speed Linear Harmonic Generator for Grid-Tied and Stand-Alone Operation using Hybrid Excitation Topology. T. Ching[2], K. Chau[1], W. Li[1] and *C. Liu*[1] *1. The University of Hong Kong, Hong Kong; 2. University of Macau, Macau*

<u>BP-10</u>. Quantitative Comparison of Permanent Magnet Linear Machines for Ropeless Elevator. *H. Fan*[1], K. Chau[1], C. Liu[1] and C. Chan[1] *1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong*

<u>BP-11</u>. Investigation of Cross-Coupling Inductances for Long-stator PM Linear Motor Arranged in Multiple Segments. *M. Ma*[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, Anhui*

<u>BP-12</u>. Analytical Methods for Minimizing Detent Force in Long-stator PM Linear Motor Including Longitudinal End Effects. *M. Ma*[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, Anhui*

<u>BP-13</u>. Modeling and Analysis of A Novel Moving-Magnet-Type Linear Synchronous Motor with Ring Structure Winding. *L. Zhang*[1], B. Kou[1] and Z. Zhang[1]
1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang

<u>BP-14</u>. Interval Deduction between Armature Modules of Long Distance Transportation PMLSM for End Cogging Force Reduction. *E. Park*[1], S. Jung[2] and Y. Kim[1]
1. Department of Electrical Engineering, Chosun University, Gwangju, Korea; 2. School of Electronic and Electrical Engineering, Sungkyunkwan University, Suwon, Korea

BP-15. A Three-Phase Tubular Permanent-Magnet Linear Motor Design For High Speed Lifting. *H. Zhang*[1] and X. Xi[1] *1. Xi'an University of Technology, Xi'an, Shaanxi*

BP-16. Analysis of linear Vernier hybrid motor with various permanent magnet arrangements. *T. Kim*[1] and J. Chang[1] *1. Electrical engineering, Dong-A University, Busan, Korea*

TUESDAY AFTERNOON 1:30 — PLENARY HALL B

Session BQ
MAGNETIC ANISOTROPY AND SURFACE EFFECTS (Poster Session)

Yuan Lu, Chair
Institut Jean Lamour
Ya Zhai, Chair
Southeast University

BQ-01. Uniaxial magnetic anisotropy induced by the antiferromagnetic order in Fe/NiO/MgO(001) system. *J. Liang*[1], Q. Li[1], Z. Ding[1], T. Gu[1], L. Sun[1] and Y. Wu[1] *1. Physics Department, Fudan University, Shanghai*

BQ-02. Uniaxial magnetic anisotropy in amorphous CoFeB films on different orientation GaAs substrates. H. Tu[1,2], B. You[1], Y. Zhang[1], Y. Gao[1], Y. Xu[3] and *J. Du*[1] *1. Department of Physics, Nanjing Unversity, Nanjing, Jiangsu; 2. Department of Mathematics and Physics, Nanjing Institute of Technology, Nanjing, Jiangsu; 3. School of Electronics Science and Engineering, Nanjing Unversity, Nanjing, Jiangsu*

BQ-03. Large negative magnetic anisotropy in W/Fe/W (001) epitaxial trilayers. *Y. Matsumoto*[1], S. Okamoto[1], N. Kikuchi[1], O. Kitakami[1], Y. Miura[2], M. Suzuki[3], M. Mizumaki[3] and N. Kawamura[3] *1. Tohoku University, Sendai, Japan; 2. Kyoto Institute of Techonology, Kyoto, Japan; 3. Japan Synchrotron Radiation Research Institute (JASRI/SPring-8), Sayo, Japan*

BQ-04. Magnetic anisotropy and reversal in epitaxial FeGa/MgO(001) films deposited at oblique deposition. *Y. Zhang*[1,2], Q. Zhan[1], Z. Zhenghu[1], H. Yang[1], Z. Xiaoshan[1], Y. Yu[1], Y. Liu[1], B. Wang[1] and R. Li[1] *1. Key Laboratory of Magnetic Materials and Devices & Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering (NIMTE), Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Department of Physics, Ningbo University, Ningbo, Zhejiang*

BQ-05. Perpendicular magnetic anisotropy for CoFeBZr/MgO. *J. Kil*[1], D. Suh[1], W. Park[1], G. Bae[1], G. Kim[2], S. Noh[2] and W. Choi[2] *1. Hanyang university, Seoul, Korea; 2. SK-Hynix, Icheon, Korea*

BQ-06. Dependence of magnetic domain size of ultra-thin CoPt perpendicular magnetic anisotropy films on demagnetization field direction. *R. Hara*[1], K. Hayakawa[1], H. Kawamura[1] and R. Sugita[1] *1. Department of Media and Telecommunications Engineering, Ibaraki University, Hitachi, Japan*

BQ-07. Study of $[Co/Ni]_N/[Co/Pt]_N$-Based Spin Valves with Perpendicular Magnetic Anisotropy. *H. Ju*[1], B. Li[1], Z. Wu[1], F. Zhang[1] and G. Yu[2] *1. School of Science, Beijing Technology and Business University, Beijing; 2. Department of Material Physics and Chemistry, University of Science and Technology Beijing, Beijing*

BQ-08. Sensitive Hydrogenation Effect on Magnetic behavior of CoPd alloy thin films. *W. Lin*[1], H. Huang[1] and P. Chang[1] *1. Physics, National Taiwan Normal University, Taipei, Taiwan*

BQ-09. Oscillatory magnetic coupling in amorphous CoSiB/Pt/CoSiB structure. Y. Choi[1], K. Lee[1], Y. Kim[2], T. Kim[2], C. You[3] and *M. Jung*[1] *1. Department of Physics, Sogang University, Seoul, Korea; 2. Department of Advanced Materials Engineering, Sejong University, Seoul, Korea; 3. Department of Physics, Inha University, Incheon, Korea*

BQ-10. Electrical Control of Ferromagnetism in Heusler Alloy $Co_2FeAl_{0.5}Si_{0.5}$ at Room Temperature. *H. Wang*[1], Y. Wu[2], Y. Jiang[2] and J. Zhao[1] *1. Institute of Semiconductors, Chinese Academy of Sciences, Beijing; 2. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing*

BQ-11. Superconducting TiN seed layer for Heusler compounds. *A. Niesen*[1], M. Glas[1], D. Ebke[2], J. Schmalhorst[1], G. Reiss[1], R. Sahoo[2] and E. Arenholz[3] *1. Physics Department, Bielefeld University, Bielefeld, Germany; 2. Max Planck Insitute for Chemical Physics of Solids, Dresden, Germany; 3. Lawrence Berkeley National Laboratory, Berkeley, California*

BQ-12. Mechanism of the enhanced electric-field effect on the interfacial magnetic anisotropyof Fe/MgO-based stack structure. *X. Guan*[1,2], X. Cheng[1,2], T. Huang[1,2] and X. Miao[1,2] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 2. Wuhan National Laboratory for Optoelectronics, Wuhan, Hubei*

BQ-13. Magneto-transport and thermoelectric properties of MnP thin film on GaAs (100). *A. Duong*[1], Y. Shin[1], S. Rhim[1], V. Nguyen[1] and S. Cho[1] *1. Physics, University of Ulsan, Ulsan, Korea*

BQ-14. Magnetostriction Theory of Ultrathin Nanofilms. *J. Li*[1], N. Bai[2] and G. Yun[1,2] *1. Inner Mongolia University, Hohhot, Inner Mongolia; 2. Inner Mongolia Normal University, Hohhot, Inner Mongolia*

BQ-15. Effect of pH on Phase Transition in Iron Oxide Thin Films –Microwave assisted Sol-Gel Method. *S. Riaz*[1,2], S. Naseem[1] and X. Han[2] *1. Centre of Excellence in Solid State Physics, University of the Punjab, Lahore, Pakistan; 2. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing*

TUESDAY AFTERNOON 1:30

PLENARY HALL B

Session BR

FERRITES, GARNETS AND OTHER SOFT MATERIALS I (Poster Session)

Nicoleta Lupu, Chair
National Institute of Research and Development for Technical Physics

BR-01. Curie temperature and magnetic properties of low temperature sintered CoTi-dope barium ferrites. *D. Chen*[1] and Y. Chen[1] *1. Materials and Chemical Engnieering, Hainan Univetsity, Haikou, Hainan*

BR-02. Hollow structured magnetic particles of $CoFe_2O_4$ and their magnetorheological characteristics. *K. Zhang*[1], S. Piao[2] and H. Choi[2] *1. School of Chemical Engineering and Technology, Harbin Institute of Technology, Harbin, Heilongjiang; 2. Department of Polymer Science and Engineering, Inha University, Incheon, Korea*

BR-03. Synthesis and characterization of >Co-Zn ferrite nanoparticles by hydrothermal method: A comparative study. *W. Wang*[1,2], Z. Ding[1,2] and J. Liu[3] *1. Department of Physics and Electronics, Beijing University of Chemical Technology, Beijing; 2. Beijing Key Laboratory of Environmentally Harmful Chemical Analysis, Beijing University of Chemical Technology, Beijing; 3. Department of Physics, University of Texas at Arlington, Arlington, Texas*

BR-04. Magnetic properties of cobalt ferrite (001) films grown on spinel-type buffer layers. Y. Hisamatsu[1], T. Niizeki[2,1], *H. Yanagihara*[1] and E. Kita[1] *1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. AIMR, Tohoku University, Sendai, Japan*

BR-05. Influence of Particle Size on Dynamic Magnetic Properties of Tape-Casting NiCuZn Ferrite Sheets. *X. Wu*[1], S. Yan[1], W. Liu[1], Y. Peng[1], Z. Feng[1], Y. Chen[2] and V.G. Harris[2] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 2. Department of Electrical and Computer Engineering, Northeastern University, Boston, Massachusetts*

<u>BR-06</u>. **Chemical epitaxial growth and ferromagnetic properties of nm-thick single crystal yttrium iron garnet films.** D. Zhang[1,2], *L. Jin*[1], H. Zhang[1], X. Tang[1], Q. Yang[1] and Z. Zhong[1] *1. Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Department of Electrical and Computer Engineering, University of Delaware, Newark, Delaware*

<u>BR-07</u>. **The magnetic thermo-sensitive magnetite nanoparticles filled in electrospun fibrous composite sheets.** *K. Kim*[1,2], J. Choi[2], J. Kim[1], H. Yang[2] and F. Ko[2] *1. Physics, Yeungnam University, Gyeongsan, Korea; 2. Materials Engineering, University of British Columbia, Vancouver, British Columbia, Canada*

<u>BR-08</u>. **The study of the permeability spectra of MgCuZn ferrite for near field communication application.** *W. Liu*[1], S. Yan[1], H. Jia[1], Y. Peng[1], Y. Nie[1] And Z. Feng[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei*

<u>BR-09</u>. **Low Temperature Sol-gel Autocombustion Synthesis and Magnetic Properties of Magnetite.** *X. Zhang*[1], Z. Hua[1] and S. Yang[1] *1. School of Physics and National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, Jiangsu*

<u>BR-10</u>. **Formation of the chaotic spin-wave soliton trains through self-modulation instability.** *A.B. Ustinov*[1], A. Kondrashov[1] and B. Kalinikos[1] *1. Department of Physical Electronics and Technology, St.Petersburg Electrotechnical University "LETI", Saint Petersburg, Russian Federation*

<u>BR-11</u>. **Enhanced Magnetic, Ferroelectric and Leakage Current Properties of Sm Substituted Bismuth Ferrite Thin Films.** *H. Chen*[1], M. Kao[1], S. Young[1] and P. Chen[2] *1. Department of Electronic Engineering, Hsiuping University of Science and Technology, Taichung, Taiwan; 2. Department of Electrical Engineering, Hsiuping University of Science and Technology, Taichung, Taiwan*

<u>BR-12</u>. **Growth of phase pure yttrium iron garnet thin films on silicon: the effect of substrate and post deposition annealing temperatures.** *Y. Zhang*[1], J. Xie[1], L. Deng[1] and L. Bi[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

BR-13. **Electromagnetic nondestructive evaluation of mechanical strength in flake and spheroidal graphite cast irons.** *Y. Kamada*[1], S. Masuda[1], T. Kowata[1], S. Hiratsuka[1] and H. Kage[2] *1. Faculty of Engineering, Iwate University, Morioka, Japan; 2. Kusaka Rare Metal Products Co., Tokyo, Japan*

BR-14. **Investigation of magnetic properties of Sr doped $Ba_{3-x}Sr_xCo_2Fe_{24}O_{41}$ Z-type hexaferrite by Mössbauer spectroscopy.** *J. Lim*[1] and C. Kim[1] *1. Kookmin University, Seoul, Korea*

BR-15. **Preparation and Application on Antenna of Soft Ferrite Core for Wireless Sensor Networks.** *L. Li*[1,2], Y. Fang[3,4] and Y. Liu[1,2] *1. State Key Laboratory of Networking and Switching Technology, Beijing University of Posts and Telecommunications, Beijing; 2. Beijing Key Laboratory of Network System Architecture and Convergence, Beijing University of Posts and Telecommunications, Beijing; 3. Research Institute of Functional Materials, China Iron and Steel Research Institute, Beijing; 4. Beijing Engineering Laboratory of Advanced Metallic Magnetic Materials and Preparation Techniques, Beijing*

TUESDAY AFTERNOON 1:30 — PLENARY HALL B

Session BS
MAGNETOCALORIC MATERIALS II (Poster Session)

Julia Lyubina, Co-Chair
Evonik Industries AG
Fengxia Hu, Co-Chair
Institute of Physics, Chinese Academy of Sciences

BS-01. **Tailoring of magnetic properties in Heusler-type NiMnGa glass-coated microwires.** V. Zhukova[1,3], V. Chernenko[4,2], M. Ipatov[1,3] and *A. Zhukov*[1,2] *1. Department of Material Physics, Basque Country University, San Sebastian, Spain; 2. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 3. Dpto. de Física Aplicada, EUPDS, University of Basque Country (UPV/EHU), San Sebastian, Spain; 4. BCMaterials & University of Basque Country (UPV/EHU), Bilbao, Spain*

BS-02. Magnetostructural coupling transition and magnetocaloric effect of Cu and In doped Ni-Mn-Ga alloys. *J. Wang*[1], L. Zhang[1] and C. Jiang[1] *1. School of Materials Science and Engineering, Beihang University, Beijing*

BS-03. Martensitic transformation and magnetocaloric effect of $Ni_{45-x}Co_5Mn_{40+x}Sn_{10}$ alloys. *Z. Guo*[1], C. Xiong[1] and L. Pan[2] *1. National Center for Electron Microscopy in Beijing, Key Laboratory of Advanced Materials (MOE), and School of Materials Science and Engineering, Tsinghua University, Beijing; 2. Collaborative Innovation Center for Magnetoelectric Industry CTGU, College of Science, Three Gorges University, Yichang, Hubei*

BS-04. Phase transition and magnetocaloric properties of $Ni_{50}Mn_{35-x}In_{15}Cu_x$ alloys and ribbons. *J. Liu*[1], X. Fei[1] and F. Xu[1] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, Jiangsu*

BS-05. Martensitic Transitions and Magnetocaloric Properties in $Mn_{49-x}Co_xNi_{41}Sn_{10}$ (x = 0-4) Ribbons. C. Shih[1], R. Yuan[1], S. Ma[1,2] and *W.C. Chang*[1] *1. Physics, National Chung Cheng University, Chia-Yi, Taiwan; 2. School of Material Science and Engineering, Nanchang Hangkong University, Nanchang, Jiangxi*

BS-06. The magnetic states of the $Ni_{1.75}Co_{0.25}Mn_{1.25}Cr_{0.25}In_{0.5}$ Heusler alloy. *V.D. Buchelnikov*[1], V.V. Sokolovskiy[1], M. Gruner[2] and P. Entel[2] *1. Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. University of Duisburg-Essen, Duisburg, Germany*

BS-07. Ni-Mn-In Heusler Alloy Magnetic States Stabilization. *M. Ghahremani*[1], A. Aslani[1], A. Siddique[1], V. Provenzano[2], L.H. Bennett[1] and E. Della Torre[1] *1. Electrical and Computer Engneering, The George Washington University, Washngton, District of Columbia; 2. National Institute for Science and Technology, Gaithersburg, Maryland*

BS-08. Microstructure and magnetocaloric effect of $LaFe_{11}Co_{0.8}Si_{1.2}$ strip-cast flakes. *M. Zhang*[1], Z. Zhang[1], Y. Shao[1], A. Yan[1] and J. Liu[1] *1. Ningbo Institute of Material Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

<u>BS-09</u>. **Mechanic properties and magnetocaloric effects of bonded $La_{0.9}Ce_{0.1}Fe_{11.7-x}Mn_xSi_{1.3}H_{1.8}$** *W. Xia*[1], L. Song[1], J. Huang[2] and Z. Ou[1] *1. Inner Mongolia Key Laboratory for Physics and Chemistry of Functional Materials, Inner Mongolia Normal University, Hohhot, Inner Mongolia; 2. Baotou Research Institute of Rare Earth, Baotou, Inner Mongolia*

<u>BS-10</u>. **$LaFe_{11.6}Si_{1.4}$/Cu composites prepared by hot pressing.** *J. Liu*[1], M. Zhang[1], Y. Shao[1] and A. Yan[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

<u>BS-11</u>. **Polymer-bonded $La(Fe,Mn,Si)_{13}H_x$ heat exchangers with optimized magnetocaloric properties.** *K.P. Skokov*[1], I.A. Radulov[1], D.Y. Karpenkov[1], T. Gottschall[1] and O. Gutfleisch[1] *1. Institute for Materials Science, FG Functional Materials, Technische Universität Darmstadt, Darmstadt, Germany*

<u>BS-12</u>. **Magnetic properties and Magnetocaloric Effect Studies for $La_{0.6}Ce_{0.4}Fe_{11.5}Si_{1.5}$** W. Nan[1], K. Kim[1], *S. Yu*[1], T. You[2] and B. Kang[3] *1. Department of Physics, Chungbuk National University, Cheongju, Korea; 2. Department of Chemistry, Chungbuk National University, Cheongju, Korea; 3. Nanotechnology Research Center, Department of Nano science and Mechanical engineering, Konkuk University, Chungju, Korea*

<u>BS-13</u>. **Assessment of the magnetic entropy change of $(La_{0.6}Pr_{0.4})(Fe,Si)_{13}$ under cycling.** *B. Kaeswurm*[1], V. Franco[2], K.P. Skokov[1] and O. Gutfleisch[1] *1. Institut für Geo- und Materialwissenschaften, Technische Universität Darmstadt, Darmstadt, Germany; 2. Departamento Fisica de la Materia Condensada, Universidad de Sevilla, Sevilla, Spain*

<u>BS-14</u>. **Femto Second Pulsed Laser Deposition of Nanoparticulate Thin Film of $Gd_5(Si_xGe_{1-x})_4$** *R.L. Hadimani*[1,2], A.H. Shaw[3,2], D.L. Schlagel[2], T.A. Lograsso[2,3], J.H. da Silva[4], A.M. Pereira[4], J.P. Araujo[4], E.A. Balfou[5], H. Fu[5] and D. Jiles[1,2] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa; 2. Ames Laboratory, US Department of Energy, Ames, Iowa; 3. Department of Material Science and Engineering, Iowa State University, Ames, Iowa; 4. Departamento de Física e Astronomia da Faculdade de Ciências da, Universidade do Porto, Porto, Portugal; 5. School of Physical Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan*

BS-15. Magnetocaloric property and magnetic regenerator performance of melt-extracted Er_3Ni microwire. *J. Huo*[1], Q. Zhou[2], Y. Zhou[2], Q. Man[1], X. Wang[1], J. Wang[1], C. Chang[1] and R. Li[1] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Key Laboratory of Cryogenics, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing*

BS-16. Excellent mechanical properties and specific heat capacity of $Er_{3+x}Ni$ binary alloys. J. Hu[1], J. Shi[1], J. Xue[1], *Y. Long*[1] and R. Ye[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing*

TUESDAY AFTERNOON 1:30 — PLENARY HALL B

Session BT
MAGNETIC SENSORS (NON-RECORDING) AND MEMS (Poster Session)

Yan Zhou, Chair
The University of Hong Kong

BT-01. Development of low-noise three-axis magnetometer with tunneling-magnetoresistance sensors. *V. Luong*[1], J. Jeng[1], B. Lai[1] and C. Lu[2] *1. Department of Mechanical Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan; 2. Institute of Mechatronics Engineering, National Taipei University of Technology, Taipei, Taiwan*

BT-02. Micromagnetic study of AMR-sensor sensitivity. N.A. Djuzhev[1], V.A. Bespalov[1], A.S. Iurov[1], N.S. Mazurkin[1], *R. Preobrazhensky*[1] and M. Chinenkov[1] *1. National Research University of Electronic Technology (MIET), Zelenograd, Moscow, Russian Federation*

<u>BT-03</u>. **Design of three-dimensional magnetic field sensor with single bridge of spin-valve giant magnetoresistance films.** *V. Luong*[1], J. Jeng[1], B. Lai[1], J. Hsu[2], C. Chang[2] and C. Lu[3] *1. Department of Mechanical Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan; 2. Department of Physics, National Taiwan University, Taipei, Taiwan; 3. Institute of Mechatronics Engineering, National Taipei University of Technology, Taipei, Taiwan*

<u>BT-04</u>. **Prediction and Optimization for linearity of MTJ Magnetic Sensors based on single-domain model.** *Y. Ouyang*[1], J. He[1], J. Hu[1], G. Zhao[1], F. Xue[1] and S.X. Wang[1,2] *1. Department of Electrical Engineering, State Key Lab of Power Systems, Tsinghua University, Beijing; 2. Center of Magnetic Nanotechnology, Stanford University, Stanford, California*

<u>BT-05</u>. **Highly sensitive thin film magnetic field sensor meandering coplanar line.** H. Uetake[1], T. Kawakami[1], K. Moriya[1], *S. Yabukami*[1] and T. Ozawa[1] *1. Tohoku-Gakuin University, Tagajo, Japan*

<u>BT-06</u>. **Temperature characteristics of a fluxgate current sensor with Fe-Ni-Co ring core.** *Y. Watanabe*[1], M. Otsubo[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

<u>BT-07</u>. **Langevin magnetic sensor using perpendicular anisotropic CoFeB/MgO/CoFeB tunneling junction with ferromagnetic and superparamagnetic CoFeB layers.** *C. Cheng*[1], C. Wang[1], D. Li[2], X. Han[2] and G. Chern[1] *1. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan; 2. Beijing National Laboratory of Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing*

<u>BT-08</u>. **A Fluxgate Current Sensor with a U-shaped Magnetic Gathering Shell.** *X. Yang*[1] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin*

<u>BT-09</u>. **Spin valve sensor for superparamagnetic nanoparticles detection.** *A. Jitariu*[1,2], S. Cardoso[3], H. Lv[3], N. Lupu[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Alexandru Ioan Cuza University, Iasi, Romania; 3. INESC-Microsystems and Nanotechnology, Lisbon, Portugal*

BT-10. Dynamic properties of MgO/CoFeB based sensors with perpendicular anisotropy. *M. Dabek*[1] and P. Wisniowski[1] *1. Electronics, AGH University of Science and Technology, Krakow, Malopolska, Poland*

BT-11. Bending effect on magnetoresistive silicon probes. *J. Valadeiro*[1], J. Amaral[1], J. Gaspar[2], D.C. Leitao[1], A.V. Silva[1], S. Cardoso[1,3] and P. Freitas[1,2] *1. INESC-MN, Lisboa, Portugal; 2. INL, Braga, Portugal; 3. IST, Lisboa, Portugal*

BT-12. Low frequency noise characterization of CoFeB/MgO/CoFeB MTJ based perpendicular field sensor. Y. Lee[1], B. Das[1], L. Li[2], Y. Suen[3], L. Horng[1], T. Wu[4], C. Chang[5] and *J. Wu*[1] *1. Department of Physics, National Changhua University of Education, Changhua, Taiwan; 2. Center for Nanoscience and Technology, National Chiao Tung University, Hsinchu, Taiwan; 3. Department of Physics, National Chung Hsing University, Hsinchu, Taiwan; 4. Taiwan SPIN Research Center, National Yunlin University of Science and Technology, Taichung, Taiwan; 5. Department of Physics, National Taiwan University, Taipei, Taiwan*

TUESDAY AFTERNOON 1:30 — PLENARY HALL B

Session BU
FUNDAMENTAL PROPERTIES I (Poster Session)

Xi Yang, Chair
Beijing Institute of Technology

BU-01. Vector potential coil and transformer. *M. Daibo*[1], S. Oshima[1], Y. Sasaki[1] and K. Sugiyama[1] *1. Iwate University, Morioka, Iwate, Japan*

BU-02. Microwave and Millimeter Wave Dielectric Permittivity and Magnetic Permeability of Epsilon-Gallium-Iron-Oxide Nano-Powders. M.N. Afsar[1], *L. Chao*[1] and S. Ohkoshi[2] *1. Electrical and Computer Engineering, Tufts Univ, Medford, Massachusetts; 2. Department of Chemistry, University of Tokyo, Tokyo, Japan*

<u>BU-03</u>. **The influence of atomic vacancies on the structural and magnetic properties of RMn_2 (R=Y, Gd, and Tb) compounds.** *J. Zou*[1] *1. School of Materials Science and Engineering, Zhejiang University, Hangzhou, Zhejiang*

<u>BU-04</u>. **Effects of Grain Size on Magnetic and Dielectric Properties of nano-Ferrites at Microwave and Millimeterwave Frequencies.** *M.N. Afsar*[1] and A. Sharma[1] *1. Electrical and Computer Engineering, Tufts University, Medford, Massachusetts*

<u>BU-05</u>. **Observation of anti-ferromagnetic coupling status between Tb and Fe moments and femtosecond-resolved dynamics of 4f spins in amorphous TbFeCo alloy films.** *T. Lai*[1] *1. Sun Yat-Sen University, Guangzhou, Guangdong*

<u>BU-06</u>. **Disorder-induced Enhancement of Magnetism in Ball-milled Fe_2CrAl Alloy.** *H. Zhang*[1], E. Liu[2], M. Yue[1], W. Wang[2], Z. Altounian[3] and G. Wu[2] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing; 2. Institute of Physics, Chinese Academy of Sciences, Beijing; 3. Center for the Physics of Materials and Department of Physics, McGill University, Montreal, Quebec, Canada*

<u>BU-07</u>. **Role of surface on magnetic properties of $La_{1-x}Sr_xMnO_{3+\gamma}$ nanocrystallites.** *Z. Jirak*[1], M. Kacenka[1], O. Kaman[1], M. Marysko[1], N. Belozerova[2], S. Kichanov[2] and D. Kozlenko[2] *1. Institute of Physics, ASCR, Prague, Czech Republic; 2. Frank Laboratory of Neutron Physics, JINR, Dubna, Russian Federation*

<u>BU-08</u>. **Kinetics of First Order Magnetostructural Transition in Sngle Crystalline FeRh Thin Film.** *W. Lu*[1], Y. Xu[2], X. Fang[2], Y. Song[1] and X. Li[3] *1. School of Materials Science and Engineering, Tongji University, Shanghai; 2. National Key Laboratory of Science Technology on Near-surface Detection and Sensing Technology, Wuxi, Jiangsu; 3. University of Shanghai for Science and Technology, Shanghai*

<u>BU-09</u>. **Zitterbewegung induced by spin and pseudospin precession in thin topological insulator film.** C. Ho[1] and *M.B. Jalil*[1] *1. Department of Electrical Engineering, National University of Singapore, Singapore*

BU-10. Local geometric and electronic structures, and magnetic properties of Mn-doped $SrTiO_3$ *T. Phan*[1], T. Thanh[2], D. Quach[1], T. Ho[1], T. Manh[1], A. Le[3], C. Jung[4], B. Lee[4], A. Duong[5] and S. Yu[1] *1. Chungbuk National University, Cheongju, Korea; 2. Vietnam Academy of Science and Technology, Hanoi, Vietnam; 3. Hanoi University of Science and Technology, Hanoi, Vietnam; 4. Hankuk University of Foreign Studies, Yongin, Korea; 5. University of Ulsan, Ulsan, Korea*

BU-11. Proper and Improper $SrRuO_3$ Phase and Corresponding Itinerant Ferromagnetic Behavior. *G.D. Dwivedi*[1], C. Lee[1], T. Huang[1], Y. Liang[1], H. Huang[1], D. Jhong[1], W. Chan[1] and H. Chou[1] *1. Physics, National Sun Yat-sen University, Kaohsiung, Taiwan*

BU-12. Low-energy dynamics of spin-1/2 square J1-J2 Heisenberg antiferromagnet. *A. Akterskii*[1,2] and A. Syromyatnikov[1,3] *1. Petersburg Nuclear Physics Institute, St Petersburg, Russian Federation; 2. St Petersburg Academic University, St Petersburg, Russian Federation; 3. Saint Petersburg State University, St Petersburg, Russian Federation*

BU-13. Anomalous magnetic and electrical transport behaviour in intermetallic $Co_{58.5}Ga_{41.5}$ *Sk.M. Yasin*[1], R. Saha[2], V. Srinivas[1], S. Kasiviswanathan[1] and A. Nigam[2] *1. Department of Physics, Indian Institute of Technology Madras, Chennai, India; 2. Department of Condensed Matter Physics and Material Sciences, TIFR, Mumbai, India*

BU-14. Superconductivity in Pt and La doped $BaFe_2As_2$ compounds prepared by solid state reaction. *A. Guler*[3], M. Sertkol[1], L. Saribaev[2], M. Ozdemir[3], Y. Oner[1] and J.H. Ross[2] *1. Department of Physics Engineering, Istanbul Technical University, Istanbul, Maslak, Turkey; 2. Department of Physics and Astronomy, Texas A&M University, College Station, Texas; 3. Department of Physics, Marmara University, Istanbul, Goztepe, Turkey*

BU-15. Transport characterizations and diodelike behaviour of $Mn_{0.98}CR_{0.02}Te$ film prepared by pulsed laser deposition. *L. Yang*[1], Z. Wang[1] and Z. Zhang[1] *1. Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Liaoning*

TUESDAY
AFTERNOON
1:30

PLENARY HALL B

Session BV
MODELLING AND COMPUTATIONAL MAGNETISM II
(Poster Session)
Xian Sheng, Chair
Beihang University

BV-01. Controlling magnetic anisotropy energy by electric field in 2d magnet :(111) surface of YCo_2
T.H. Rana[1,2], *A. Kashyap*[3], D. Biswas[1] and P. Sabirianov[2]
1. Department of Physics, The LNM Institute of INformation Technology, Jaipur, Rajasthan, India; 2. Department of Physics, University of Nebraska at Omaha, Omaha, Nebraska; 3. The School of Basic science, Indian Institute of Technology, Mandi, Himachal Pradesh, India

BV-02. Vacancy formation energy in disordered FePt mediated by distortion and magnetism. *H. Luo*[1], W. Xia[1], J. Du[1], J. Zhang[1], A. Yan[1] and J. Liu[2] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Department of Physics, University of Texas at Arlington, Arlington, Texas*

BV-03. Modelling and Experimental Validation of Radial Permanent Magnet Biased Magnetic Bearing for Flywheel Energy Storage Systems. *L. Wu*[1], D. Wang[1] and X. Zhang[1] *1. National Key Laboratory of Science and Technology on Vessel Integrated Power System, Wuhan, Hubei*

BV-04. First-principles calculations of magnetic properties of Cr-doped $Ni_{45}Co_5Mn_{37}In_{13}$ Heusler alloys. *V.V. Sokolovskiy*[1], V.D. Buchelnikov[1], M. Gruner[2] and P. Entel[2] *1. Condensed Matter, Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. University of Duisburg-Essen, Duisburg, Germany*

BV-05. Fast Computation of Torque-Speed Characteristics of Induction Machines. *S. Niu*[1], S.L. Ho[1] and W. Fu[1] *1. The Hong Kong Polytechnic University, Hong Kong*

BV-06. First Principles Calculations of Structural Properties and Exchange Interaction Constants of $Fe_{8-x}Ni_xMn_{4+y}Al_{4-y}$ Heusler Alloys. *M.A. Zagrebin*[1,2], M.A. Klyuchnikova[1], V.D. Buchelnikov[1] and V.V. Sokolovskiy[1] *1. Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. National Research South Ural State University, Chelyabinsk, Russian Federation*

BV-07. Nonlinear Convergence Acceleration of Magnetic Field Computation. *S. Niu*[1], S.L. Ho[1] and W. Fu[1] *1. The Hong Kong Polytechnic University, Hong Kong*

BV-08. Electronic structures and magnetism of Zr_2CoZ (Z=Al, Ga, In, Si, Ge, Sn, Pb, Sb) with Hg_2CuTi-type structure: A first-principles study. *X. Wang*[1,2], X. Dai[1], L. Wang[1], Q. Xia[1], E. Liu[2], W. Wang[2], G. Wu[2] and G. Liu[1] *1. School of Material Sciences and Engineering, Hebei University of Technology, Tianjin; 2. Beijing National Laboratory for Condensed Matter Physics, Institute of physics, Chinese Academy of Sciences, Beijing*

BV-09. Magnetic Field Representation in A Yoke Generated Air Gap with Single Vertical Profile Measurement. *S. Li*[1,2], W. Zhao[1] and S. Huang[1] *1. Department of Electrical Engineering, Tsinghua University, Beijing; 2. National Institute of Metrology, Beijing*

BV-10. A circuit model of transverse electric eddy current problems in magnetic rings. *J. He*[1], W. Liu[1] and Y. Guan[1] *1. Tsinghua University, Beijing*

BV-11. Effect of doping on B2-phase ordering temperature of Co-based heusler alloy: an AB initio stud. *X. Xu*[1], B. Zhao[1], Y. Wu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing*

BV-12. DFT calculations on the interfaces of tetragonal $La_{2/3}Sr_{1/3}MnO_3/BiFeO_3$ multiferroic superlattices. *N. Feng*[1], W. Mi[1], X. Wang[2], Y. Cheng[3] and U. Schwingenschlogl[3] *1. Department of Applied Physics, Tianjin University, Tianjin; 2. Tianjin Key Laboratory of Film Electronic & Communicate Devices, School of Electronics Information Engineering, Tianjin University of Technology, Tianjin; 3. PSE Division, KAUST, Thuwal, South Africa*

BV-13. Inverting the Preisach model of hysteresis. *P. Andrei*[1] *1. Florida State University, Tallahassee, Florida*

BV-14. Simulation of one-dimensional magneto-elastic interactions using anisotropic vector hysteresis models. *A. Adly*[1] and S. Abd-El-Hafiz[2] *1. Elect. Power & Machines Department, Cairo University, Giza, Egypt; 2. Engineering Mathematics Department, Cairo University, Giza, Egypt*

BV-15. Analysis of noise spectral density and coherence resonance phenomena in mixed hysteretic systems driven by noise. *M. Dimian*[1,2], P. Andrei[3], M. Mehta[3] and O. Idubor[1] *1. Electrical and Computer Engineering, Howard University, Washington, District of Columbia; 2. Computers, Electronics, and Automation, Stefan cel Mare University, Suceava, Romania; 3. Electrical and Computer Engineering, Florida State University, Tallahassee, Florida*

BV-16. Grain scale Hysteresis Model embedded in a Multi-scale Material Model. *D. Vanoost*[1,2], S. Steentjes[3], J. Peuteman[1,4], G. Gielen[5], H. De Gersem[2,6], D. Pissoort[1,5] and K. Hameyer[3] *1. KU Leuven, ReMI Research Group, Oostende, Belgium; 2. KU Leuven - Kulak, Wave Propagation and Signal Processing Research Group, Kortrijk, Belgium; 3. Institute of Electrical Machines, RWTH Aachen University, Aachen, Germany; 4. KU Leuven, Department of Electrical Engineering, Electrical Energy and Computer Architecture, Heverlee, Belgium; 5. KU Leuven, Department of Electrical Engineering, Microelectronics and Sensors, Heverlee, Belgium; 6. TU Darmstadt, Institut für Theorie Elektromagnetischer Felder, Darmstadt, Germany*

TUESDAY AFTERNOON 1:30 | PLENARY HALL B

Session BW
POWER AND CONTROL MAGNETICS (Poster Session)
Bowen Wang, Chair
Hebei University of Technology

BW-01. Application of One Axis Controlled Magnetic Bearing with a Hollow Shaft to Non-Contact Rotation Drive. K. Hirose[1], *M. Komori*[1], A. Sakai[1] and K. Asami[1] *1. Applied Science for Integrated System Engineering, Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan*

BW-02. Dynamic Nonlinear Model with Eddy Current Effect for Stress-Driven Galfenol Energy. *S. Cao*[1], P. Zhang[1], J. Zheng[1], Z. Zhao[1] and B. Wang[1] *1. Hebei University of Technology, Tianjin*

BW-03. Control integrated studies on HSPGS. J. Li[1], *X. Zhang*[2,1], H. Zhang[1] and C. Gerada[1] *1. The University of Nottingham, Notingham, United Kingdom; 2. Beijing Jiaotong University, Beijing*

BW-04. Omnidirectional wireless power transfer system supporting mobile devices. B. Che[1], *F. Meng*[1,2], Y. Lyu[1], K. Zhang[1], G. Yang[1], J. Fu[1], Q. Wu[1] and S. Li[3] *1. Department of Microwave Engineering, Harbin Institute of Technology, Harbin, Heilongjiang; 2. The State Key Laboratory of Millimeter Waves, Nanjing, Jiangsu; 3. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

BW-05. Multi-objective Optimal Control for EMS based on Reduced Order Observer. C. Kim[1], *Y. Oh*[1] and H. Hong[1] *1. Electrical Engineering, Hanyang University, Seoul, Korea*

BW-06. Analysis of a Small Size Resonator for Wearable Device Based on Coupled Magnetic Resonance. *G. Xu*[1], Y. Zhang[1], J. Zhao[1], X. Yang[1], C. Han[1] and D. Xu[1] *1. Hebei University of Technology, Tianjin*

BW-07. An Energy-Encrypted Contactless Charging System for Swarm Robots. Z. Zhang[1], X. Xu[2], *B. Li*[1] and B. Deng[1] *1. School of Electrical Engineering and Automation, Tianjin University, Tianjin; 2. State Grid Tianjin Electric Power Company, Tianjin*

BW-08. A new diagnostic method of open switch faults in inverters using sliding mode observer and MLD model. *X. Zhang*[1] *1. North China University of Technology, Beijing*

BW-09. Magnetic actuator control of oil whip instability in bearings. A. Dimitri[2], A. Elshafei Ahmed[2], *A. Adly*[1] and J. Mahfoud[3] *1. Elect. Power & Machines Department, Cairo University, Giza, Egypt; 2. Mech. Design and Production Department, Cairo University, Giza, Egypt; 3. INSA, Lyon, France*

BW-10. Hybrid Pulse Width Modulation Technique for Wide Speed Range with Low Cost Drivers on IPMSM. *H. Ahn*[1], H. Hong[1], Y. Oh[1], J. Lee[1] and J. Lee[1] *1. Electrical Engineering, Hanyang University, Seoul, Korea*

BW-11. A new sliding mode flux observer for a direct torque controlled PMSM drive. *X. Zhang*[1] and Z. Li[1] *1. North China University of Technology, Beijing*

BW-12. A New Decoupled Control for Five-Phase In-Wheel Fault-Tolerant Permanent Magnet Motors for Electric Vehicles. *G. Liu*[1], X. Cai[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

BW-13. Dual Loop Position Control of a Linear Hybrid Switched Reluctance Machine with Zero Cogging Force. *B. Zhang*[1] and Y. Zou[1,2] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong; 2. Department of Electrical Engineering, Hong Kong Polytechnic University, Hong Kong*

BW-14. Comparison of Experiment and Simulation Results for Inductance and Equivalent Resistance Obtained using Multi-port Transformer Model and FEM. *T. Sasayama*[1], Y. Yanamoto[2], S. Funaji[3] and T. Ao[4] *1. Kyushu University, Fukuoka, Japan; 2. Nabtesco Corporation, Hirakawacho, Japan; 3. Mitsui Engineering & Shipbuilding Co., Ltd, Tamano, Japan; 4. MES Power-Electronics Industry Co., Ltd., Tamano, Japan*

BW-15. A low-frequency resonant electromagnetic vibration energy harvester employing the Halbach arrays for intelligent wireless sensor networks. *J. Qiu*[1], X. Liu[1], Y. Wen[1], P. Li[1] and W. Li[2] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing; 2. College of Engineering, University of California, Davis, California*

BW-16. Calculation and Elimination of the Residual Flux in the Closed Magnetic Core. *W. Ge*[2] and Y. Wang[1] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin; 2. School of Mechanical Engineering, Hebei University of Technology, Tianjin*

TUESDAY PLENARY HALL B
AFTERNOON
1:30

Session BX
TRANSFORMERS AND INDUCTORS I
(Poster Session)

Shuhong Wang, Chair
Xi'an Jiaotong University

BX-01. Research of transformer winding deformation based on Finite Element Method. J. Yuan[1], *J. Yuan*[1] and Z. Yu[1] *1. Department of Electrical Engineering, Wuhan University, Wuhan, Hubei*

BX-02. Research on the Influence of HVDC Transmission on Measuring Accuracy of Current Transformers. *S. Yang*[1,3], Z. Wei[1], J. Cai[2], G. Zhou[2] and Z. Wang[3] *1. College of Energy and Electrical Engineering, Hohai University, Nanjing, Jiangsu; 2. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu; 3. Electric Power Research Institute, Jiangsu Electric Power Company, Nanjing, Jiangsu*

BX-03. Wideband Testing and Modeling of High Frequency Transformer Considering Nonlinearity and Parasitic Parameters. *Z. Shen*[1], L. Qi[1], X. Cui[2], C. Liu[1] and G. Zhao[3] *1. Beijing Key Laboratory of High Voltage & EMC, North China Electric Power University, Beijing; 2. State Key Laboratory for Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, Beijing; 3. Smart Grid Research Institute of State Grid, Beijing*

BX-04. Magnetostriction and Magnetic Loss Variation dependent on Stress for Power Transformer Core. *C. Hsu*[1,2], S. Jen[3], J. Liu[6], C. Fu[5] and S. Cheng[4] *1. Division of Electrical Engineering, Fortune Electric Company Ltd., Chung-Lin, Taiwan; 2. Department of Electronics & Information Engineering, Army Academy, Taoyuan, Taiwan; 3. Institute of Physics, Academia Sinica, Taoyuan, Taiwan; 4. Department of Aircraft Engineering, Army Academy, Taoyuan, Taiwan; 5. Department of Physics, National Taiwan University, Taoyuan, Taiwan; 6. Department of Multimedia and M-Commerce, Kainan University, Taoyuan, Taiwan*

BX-05. **Double-ladder Circuit Model of Transformer Windings for Frequency Response Analysis Considering Frequency-dependent Losses.** H. Zhang[1,3], *S. Wang*[1], J. Zhu[2] and Y. Guo[2] *1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi; 2. School of Electrical, Mechanical and Mechatronic Systems, University of Technology Sydney, Sydney, New South Wales, Australia; 3. Faculty of Hydroelectric Power, Hebei University of Engineering, Handan, Hebei*

BX-06. **Optimal Design of Magnetic Shielding Plates for Main-Transformer in High-Speed Railway Vehicle Using Design of Experiment.** *J. Baek*[1], S. Yun[2] and S. Lee[1] *1. Department of Electical Engineering, Kyungpook National Univ., Deagu, Korea; 2. International Electric Co., Ltd., Eumseong, Chungbuk, Korea*

BX-07. **A Study on the Transformer Design for Size Reduction in the Arc Welding Machine.** *I. Kim*[1], H. Hong[1], Y. Oh[1] and J. Lee[1] *1. Hanyang University, Seoul, Korea*

BX-08. **An Integrated Harmonic-filtering Transformer for Low-voltage Distribution systems.** C. Liang[1] and *L. Luo*[1] *1. Hunan University, Changsha, Hunan*

BX-09. **Measurement and analysis of high frequency transformer made of nano-crystalline.** *X. Jiang*[1], J. Xu[1], B. Cui[1] and Y. Zeng[1] *1. Department of Electrical Engineering, Tsinghua University, Beijing*

BX-10. **Copper Losses Analysis of EV Charging Couplers.** S. Wang[1] and *D.G. Dorrell*[1] *1. School of Electrical, Mechanical and Mechatronic Systems, University of Technology Sydney, Sydney, New South Wales, Australia*

BX-11. **A Novel Compact Structure of the Three-phase Virtual Air Gap Controllable Reactor.** *X. Chen*[1], Z. Wang[1], Z. Yu[2] and B. Chen[2] *1. School of Information Science and Engineering, Wuhan University of Science and Technology, Wuhan, Hubei; 2. School of Electrical Engineering, Wuhan University, Wuhan, Hubei*

BX-12. **Multilayer power choke inductor with metal powder.** *K. Kawano*[1], T. Arai[1], M. Hachiya[2], O. Takahashi[2] and K. Oyama[2] *1. R&D Managing, TAIYO YUDEN, Takasaki, Japan; 2. Ferrite Application Product Division, TAIYO YUDEN, Tamamura, Japan*

BX-13. A new stress-based variable-inductor for electronic ballasts. *Y. Xia*[2,1], L. Zhang[3], K. Lu[1], Y. Fang[3] and D. Wang[1] *1. Department of Energy Technology, Aalborg University, Aalborg, Denmark; 2. Faculty of Mechanical Engineering & Automation, Zhejiang Sci-Tech University, Hangzhou, Zhejiang; 3. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang*

BX-14. Iron Loss Comparison Between Reactor With Air Gap and Material. S. Yamamoto[1], N. Denis[1] and *K. Fujisaki*[1] *1. Toyota Technological Institute, Nagoya, Aichi, Japan*

BX-15. Domain Structure of Micro-Patterned CoZrTa with 45 Degree Induced Anisotropy for Isotropic High Permeability. *N. Sato*[1], A. El-Ghazaly[1], R.M. White[2] and S.X. Wang[1,2] *1. Electrical Engineering, Stanford University, Stanford, California; 2. Materials Science and Engineering, Stanford University, Stanford, California*

TUESDAY AFTERNOON 1:30 PLENARY HALL B

Session BY
GENERATORS FOR RENEWABLE ENERGY (Poster Session)

Bogi Jensen, Chair
University of the Faroe Islands

BY-01. Design and optimization of a tunable magnetoelectric and electromagnetic hybrid vibration-based generator for wireless sensor networks. *J. Qiu*[1], H. Chen[1], Y. Wen[1], P. Li[1] and W. Li[2] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing; 2. College of Engineering, University of California, Davis, California*

BY-02. Size Reduction of Permanent Magnet Generators for Wind Turbines Using Halbach Cylinders. *H.A. Khazdozian*[1,2], R.L. Hadimani[2] and D. Jiles[2] *1. Wind Energy Science, Engineering and Policy, Iowa State University, Ames, Iowa; 2. Electrical and Computer Engineering, Iowa State University, Ames, Iowa*

<u>BY-03</u>. **Improvement of the power of the linear generator using mechanical vibration energy.** *T. Aoki*[1], Y. Sugiura[1], K. Hirasawa[1] and S. Ohashi[1] *1. Department of Electrical and Electric Engineering, Kansai University, Osaka, Japan*

<u>BY-04</u>. **The analysis of nonlinear system characteristics of vibration-to-electric generator.** *Z. Wang*[1], T. Yao[1], Z. Wang[2], D. Lv[1] and B. Wang[1] *1. Hebei University of Technology, Tianjin; 2. Tianjin University of Technology and Education, Tianjin*

<u>BY-05</u>. **A Simple Structure Passive MPPT Stand-alone Wind Turbine Generator System.** *Y. Bai*[1], B. Kou[1] and C. Chan[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, Heilongjiang*

<u>BY-06</u>. **Detection of static and dynamic eccentricities in a permanent magnet motor by monitoring BEMF.** *K. Kang*[1], S. Sung[1], J. Song[1], B. Seo[1] and G. Jang[1] *1. Department of Mechanical Convergence Engineering, Hanyang University, Seoul, Korea*

<u>BY-07</u>. **Characteristics Analysis of the Excitation Assistance Switched Reluctance Wind Power Generator.** *X. Liu*[1], C. Wang[1] and Z. Chen[1] *1. Department of Energy Technology, Aalborg University, Aalborg, Denmark*

<u>BY-08</u>. **Design and Construction of High Efficiency Magnetostrictive Energy Harvester for Huge and Short-time Impact Vibration Systems.** *B. Yan*[1] *1. Zhejiang University, Zhejiang*

<u>BY-09</u>. **Enhanced Energy Harvesting From Low-frequency Magnetic Fields Utilizing Magneto-mechano-electric Composite Tuning-fork.** A. Yang[1], *P. Li*[1], Y. Wen[1], C. Yang[1], D. Wang[1], F. Zhang[1] and J. Zhang[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

<u>BY-10</u>. **Design and optimization of an electromagnetic energy harvester using dual Halbach arrays.** X. Liu[1], *J. Qiu*[1], H. Chen[1] and Y. Wen[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

<u>BY-11</u>. **Analysis and optimization of a double-sided air-cored tubular generator.** *L. Guo*[1], H. Zhang[2], J. Li[2], M. Galea[2] and C. Gerada[2] *1. Zhejiang Sci-Tech University, Hangzhou, Zhejiang; 2. University of Nottingham, Nottingham, United Kingdom*

BY-12. Electromagnetic analysis and structure optimization of permanent magnet synchronous linear generator for direct-drive wave power generation system. *X. Xiao*[1], X. Huang[1] and Q. Kang[1] *1. Department of Electrical Engineering, Tsinghua University, Beijing*

BY-13. A Novel Transverse Flux Permanent Magnet Generator with Double C-hoop Stator for Wind Power Generation. *Z. Jia*[1] and H. Lin[1] *1. Southeast University, Nanjing, Jiangsu*

BY-14. Performance Evaluation of coreless Axial Flux Permanent Magnet Wind Generator. *D. Lee*[1], K. Jeon[1], Y. Kim[2] and S. Jung[1] *1. School of Electronic and Electrical Engineering, Sungkyunkwan University, Busan, Korea; 2. Department of Electrical Engineering, Chosun University, Gwang-Ju, Korea*

BY-15. A broadband and two-dimensional vibration energy harvester using multiple magnetostrictive/piezoelectric composite transducers. *J. Yang*[1], Q. Yu[1], J. Zhao[1], J. Qiu[1], Y. Wen[1] and P. Li[1] *1. Optoelectronic Engineering, Chongqing University, Chongqing*

TUESDAY AFTERNOON 1:30 — PLENARY HALL B

Session BZ
MAGNETIC MATERIALS AND MANUFACTURING EFFECTS FOR ELECTRIC MACHINES (Poster Session)

Huijun Wang, Chair

Luc Dupre, Chair
Ghent University

BZ-01. Improved Accuracy for Performance Prediction of Synchronous Reluctance Motor by Incorporating End Turn Inductance in 2-D FEM. *M. Hsieh*[1], I. Lin[1] and M. Tsai[1] *1. National Cheng Kung University, Tainan, Taiwan*

BZ-02. Performance Improvement of an Automotive Alternator by Heat Treatment. *J. Kim*[1,3], J. Hong[1], J. Lee[2] and S. Park[2] *1. Department of Automotive Engineering, Hanyang University, Seoul, Korea; 2. R&D Center, Valeo Electrical Systems Korea, Gyeongju, Korea; 3. Global R&D Centre, POSCO, Incheon, Korea*

BZ-03. In-Situ Magnetization of Permanent Magnet Machines Considering Magnetizer Capacity and Connection Types. *M. Hsieh*[1] and S. Yu[1] *1. National Cheng Kung University, Tainan, Taiwan*

BZ-04. Modeling of a Bearingless Permanent Magnet Synchronous Motor Using Adaptive Weighted Least Square Support Vector Machine. *X. Sun*[1], S. Luo[1], J. Zhu[2], Z. Yang[1] and F. Li[1] *1. Automotive Engineering Research Institute, Jiangsu University, Zhenjiang, Jiangsu; 2. University of Technology Sydney, Sydney, New South Wales, Australia*

BZ-05. Investigation of a Novel 2-D Halbach Magnet Array for Magnetically Levitated Planar Motor. B. Kou[1], *L. Zhang*[1], F. Xing[1] and Y. Jin[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

BZ-06. Experimental Characterization of Slinky-Laminated Core and Iron Loss Analysis of Electric Machine. *M. Lim*[1], J. Kim[1] and J. Hong[1] *1. Department of Automotive Engineering, Hanyang University, Seoul, Korea*

BZ-07. New Magnetizing Procedure for Bonded-Magnets with Enhanced Surface Flux Density. *S. Isogami*[1], T. Sakai[1] and M. Kanamaru[1] *1. Fukushima National College of Technology, Iwaki, Japan*

BZ-08. Evaluation on Iron Loss of Reactor Core under High Frequency Excitation by Magnetic Field Analysis. *S. Odawara*[1], K. Sawatari[1], S. Yamamoto[1], K. Fujisaki[1], Y. Shindo[2], N. Yoshikawa[2] and T. Konishi[2] *1. Toyota Technological Institute, Nagoya, Japan; 2. Kawasaki Heavy Industries, Ltd., Akashi, Japan*

BZ-09. Design of High-Speed IPM-BLDC Motor with High Efficiency. *H. Lee*[1] and J. Lee[1] *1. Department of Electric Engineering, Hanyang University, Seoul, Korea*

BZ-10. Loss Reduction Design of High Speed PM Motor for Vacuum Cleaner using Soft Magnetic Composite Material. S. Lee[2], Y. Kim[1], K. Lee[2] and *S. Kim*[1,2] *1. Department of Electrical Engineering, Chosun University, Gwangju, Korea; 2. Honam Regional Division, Korea Institute of Industrial Technology, Gwangju, Korea*

BZ-11. Analysis and Reduction of Cogging Torque Caused by Manufacturing Tolerances of SPMSM for Electric Power Steering. *J. Kim*[1], S. Chai[1] and J. Hong[1] *1. Department of Automotive Engineering, Hanyang University, Seoul, Korea*

BZ-12. Design Criteria for High-speed Permanent Magnet Synchronous Motors considering Rotor magnet and Sleeve material. *J. Ahn*[2,1], C. Park[2], S. Choi[2], J. Choi[1], K. Kim[1] and H. Park[1] *1. Chungnam National University, Daejun, Korea; 2. Advanced Manufacturing Systems Research Division, Korea Institute of Machinery and Materials, Daejeon, Korea*

BZ-13. Anisotropic Magnetostriction of Non-oriented Silicon Steel Sheet and Its Frequency Dependence. *Y. Zhang*[1], Y. Wang[1] and Z. Ren[1] *1. School of Electrical Engineering, Shengyang University of Technology, Shenyang, Liaoning*

BZ-14. Optimal Magnet Design for Considering Manufacture of Magnetizing Process. *D. Kang*[1], T. Jeong[2], H. Hong[2] and J. Lee[2] *1. Electrical Energy Engineering, Keimyung, Daegu, Korea; 2. Electrical Engineering, Hanyang University, Seoul, Korea*

BZ-15. Impact of Electrical Steel Punching Process on Performance of Switched Reluctance Motors. *M. Hsieh*[1], C. Chiang[1] and M. Tsai[1] *1. National Cheng Kung University, Tainan, Taiwan*

TUESDAY 306 A
EVENING
5:30

Session
MAGNETIC SOCIETY GENERAL MEETING

WEDNESDAY 309 A
MORNING
9:00

Session CA
FUTURE READER SENSORS FOR HIGH DENSITY MAGNETIC RECORDING

Qunwen Leng, Chair
Western Digital Corporation

9:00 CA-01. **High-output CPP-GMR recording sensors using Heusler alloys.** ***(Invited)*** *J.R. Childress*[1], J.C. Read[1], Y. Choi[1], T. Nakatani[1], N. Smith[1], G. Mihajlovic[1], P.A. van der Heijden[1], P.M. Braganca[1], J. Katine[1], J.S. Lille[1], H. Tseng[1] and C.H. Tsang[1] *1. San Jose Research Center, HGST, a Western Digital company, San Jose, California*

9:30 CA-02. **Magnetic Heusler Alloys and CPP GMR: Technology Breakthrough and Potential Application in Magnetic Recording.** ***(Invited)*** *Z. Diao*[1], Y. Zheng[1], C. Kaiser[1], X. Jiang[1], L. Chen[1], A. Roy[1], C. Chien[1], M. Wang[1], S. Gider[1], D. Mauri[1] and Q. Leng[1] *1. RND, Western Digital Inc, Fremont, California*

10:00 CA-03. **Tri-magnetic terminals based non-local-spin-valves with high output.** ***(Invited)*** *H. Iwasaki*[1], S. Shirotori[1], M. Takagishi[1], S. Hashimoto[1] and Y. Kamiguchi[1] *1. Corporate R&D Center, Toshiba Corp., Kawasaki, Kanagawa, Japan*

10:30 CA-04. **Robust spin currents in mesoscopic metallic lateral structures.** ***(Invited)*** *Y. Ji*[1], S. Chen[1], H. Zou[1], C. Qin[1], Y. Cai[1], Y. Luo[2], C. Zhou[2] and Y. Wu[2] *1. University of Delaware, Newark, Delaware; 2. Fudan University, Shanghai*

11:00 CA-05. **Experimental Investigation of Two-Dimensional Magnetic Recording.** ***(Invited)*** *D. Guarisco*[1], T. Ngo[1], D. Nagulapally[2], S. Li[1] and J. Alexander[1] *1. Advanced Technology Orgnization, Western Digital Corp., San Jose, California; 2. Recording Sub-Systems, Western Digital Corp., San Jose, California*

WEDNESDAY MORNING 9:00 — 309 B

Session CB
SPIN-TRANSFER TORQUE AND DYNAMICS I

Alina Deac, Chair
Institute of Ion Beam Physics and Materials Research

9:00 CB-01. **Excitation of magnetization dynamics by pure spin currents.** ***(Invited)*** *V.E. Demidov*[1], S. Urazhdin[2] and S.O. Demokritov[1,3] *1. Institute for Applied Physics, University of Muenster, Muenster, Germany; 2. Emory University, Atlanta, Georgia; 3. Institute of Metal Physics, Yekaterinburg, Russian Federation*

9:30 CB-02. **Generation of highly stable 5 GHz microwave from a spin torque oscillator by phase locked loop referenced to a 80 MHz clock.** *S. Tamaru*[1], K. Yakushiji[1], B. Wang[1], A. Fukushima[1] and H. Kubota[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan*

9:45 CB-03. Spin-transfer effects in MgO-based tunnel junctions with an out-of-plane free layer and an in-plane polarizer: static states and steady-state precession. *E. Kowalska*[1,2], V. Sluka[1], C. Fowley[1], A. Kakay[1], Y. Aleksandrov[1,2], J. Lindner[1], J. Fassbender[1,2] and A. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Solid State Physics, TU Dresden, Dresden, Germany*

10:00 CB-04. Utilizing spin-pumping, inverse spin-Hall and spin-Hall phenomena for synchronization of nano magnetic oscillators. *M. Elyasi*[1], C.S. Bhatia[1] and H. Yang[1] *1. Electrical and Computer Engineering Department, National University of Singapore, Singapore*

10:15 CB-05. Large amplitude Spin Transfer Torque Nano-Oscillators implemented with intermediate thickness MgO barriers in the 10-30 Ωmm^2 range. *D. Costa*[1,2], S. Serrano-Guisan[1], E. Paz[1], J. Borme[1], J. Teixeira[2], J. Ventura[2], R. Ferreira[1] and P. Freitas[1] *1. International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 2. IFIMUP, Porto, Portugal*

10:30 CB-06. Magneto-optical observation of mutual phase-locking in a pair of spin-torque vortex oscillators. *P.S. Keatley*[1], S. Sani[2,3], G. Hrkac[4], S. Mohseni[2], P. Dürrenfeld[5], J. Åkerman[2,3] and R. Hicken[1] *1. School of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Materials and Nano Physics, School of ICT, KTH Royal Institute of Technology, Kista, Sweden; 3. NanOsc AB, Kista, Sweden; 4. College of Engineering, Mathematics and Physical Science CEMPS, University of Exeter, Exeter, United Kingdom; 5. Physics Department, University of Gothenburg, Gothenburg, United Kingdom*

10:45 CB-07. Understanding of phase noise squeezing under fractional synchronization of non-linear spin transfer vortex oscillator. *R. Lebrun*[1], A. Jenkins[1], N. Locatelli[1], S. Tsunegi[1], H. Kubota[2], P. Bortolotti[1], K. Yakushiji[2], J. Grollier[1], A. Fukushima[2], S. Yuasa[2] and V. Cros[1] *1. UMR CNRS/THALES, Palaiseau, France; 2. AIST, Tsukuba, Japan*

11:00 CB-08. Spin Transfer Torque in Magnetic Tunnel Junctions with Magnetic Insulators. *C. Ortiz Pauyac*[1], A. Kalitsov[2], A. Manchon[1] and M. Chshiev[2] *1. Material Science, King Abdullah University, Thuwal, Saudi Arabia; 2. SPINTEC, UMR-8191, CEA/CNRS/UJF/GINP, INAC, Grenoble, France*

11:15 CB-09. **Magnetic stochastic oscillators: Noise-induced synchronization to under-threshold excitation and comprehensive compact model.** *A. Mizrahi*[1,2], N. Locatelli[1], R. Matsumoto[3], A. Fukushima[3], H. Kubota[3], S. Yuasa[3], V. Cros[2], J. Kim[1], J. Grollier[2] and D. Querlioz[1] *1. Intitut d'Electronique Fondamentale, Orsay, France; 2. CNRS/Thales, Palaiseau, France; 3. AIST, Tsukuba, Japan*

11:30 CB-10. **Topological Skyrmion Dynamics Driven by Spin-Transfer Torque.** M. Carpentieri[1], R. Tomasello[2], *G. Finocchio*[3] and R. Zivieri[4,1] *1. Ingegneria Elettrica e dell'Informazione, Politecnico of Bari, Bari, Italy; 2. Computer Science, Modelling, Electronics and System Science, University of Calabria, Rende, Cosenza, Italy; 3. Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy; 4. Physics and Earth Sciences and CNISM Unit of Ferrara, University of Ferrara, Ferrara, Italy*

11:45 CB-11. **Skyrmion Based Microwave Detector and STT-MRAM.** *R. Tomasello*[1], M. Ricci[2], P. Burrascano[2], M. Lanuzza[1], A. Giordano[3], M. Carpentieri[4] and G. Finocchio[3] *1. Department of Computer Science, Modelling, Electronics and System Science, University of Calabria, Cosenza, Italy; 2. Department of Engineering, University of Perugia, Perugia, Italy; 3. Department of Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy; 4. Department of Electrical and Information Engineering, Polytechnic of Bari, Bari, Italy*

WEDNESDAY 310
MORNING
9:00

Session CC

SPIN TRANSPORT IN MAGNETIC SEMICONDUCTORS, ORGANIC AND CARBON-BASED MATERIALS I

Xinyu Liu, Chair
University of Notre Dame

9:00 CC-01. **Manipulation of nuclear spins in GaAs using a half-metallic spin source of Co_2MnSi.** ***(Invited)*** *T. Uemura*[1] and M. Yamamoto[1] *1. Hokkaido University, Sapporo, Japan*

9:30 CC-02. MBE-grown Mn-doped $SnSe_2$ 2D films on GaAs (111)B substrates. *X. Liu*[1], X. Li[1], S. Vishwanath[2], S. Dong[1], T. Yoo[1,3], D. Jena[2], H. Xing[2], M. Dobrowolska[1] and J.K. Furdyna[1] *1. Department of Physics, University of Notre Dame, Notre Dame, Indiana; 2. School of Electrical and Computer Engineering, Cornell University, Ithaca, New York; 3. Physics Department, Korea University, Seoul, Korea*

9:45 CC-03. Defect-induced Ferromagnetism in Silicon. *Y. Liu*[1], X. Zhang[2], Q. Yuan[2], M. Helm[1], S. Zhou[1] and B. Song[2] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Harbin Institute of Technology, Harbin, Heilongjiang*

10:00 CC-04. High Curie temperature and perpendicular magnetic anisotropy in homoepitaxial InMnAs films. *Y. Yuan*[1,2] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Technische Universität Dresden, Dresden, Germany*

10:15 CC-05. New method for effective manipulation of the magnetism in (Ga,Mn)As films by organic molecules. *X. Wang*[1], H. Wang[1], D. Pan[1], T. Keiper[2], L. Li[1], X. Yu[1], J. Lu[1], E. Lochner[2], S.V. Molnar[2], P. Xiong[2] and J. Zhao[1] *1. State Key Laboratory of Superlattices and Microstructrues, Institute of Semiconductors, Chinese Academy of Sciences, Beijing; 2. Department of Physics, Florida State University, Tallahassee, Florida*

10:30 CC-06. Anisotropic *ac* magnetic susceptibility in (Ga,Mn)As film. X. Li[1], *S. Dong*[1], T. Yoo[1,2], X. Liu[1], M. Dobrowolska[1] and J.K. Furdyna[1] *1. Department of Physics, University of Notre Dame, Notre Dame, Indiana; 2. Department of Physics, Korea University, Seoul, Korea*

10:45 CC-07. Spin relaxation in n-type multivalley semiconductors. *(Invited)* *Y. Song*[1], O. Chalaev[1] and H. Dery[1] *1. University of Rochester, Rochester, New York*

11:15 CC-08. The magnetic moment of Cr-doped Bi_2Se_3 thin film topological insulator. *W. Liu*[1,2], D. West[3], L. He[4,2], S. Zhang[3], Y. Xu[2,1], R. Zhang[2] and K.L. Wang[4] *1. Electronics, University of York, York, North Yorkshire, United Kingdom; 2. York-Nanjing Joint Centre (YNJC), Nanjing University, Nanjing, Jiangsu; 3. Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, Troy, New York; 4. Department of Electrical Engineering, University of California Los Angeles, Los Angeles, California*

11:30 CC-09. **Magnetocapacitive Response in Organic Spin Valve with a 3,4,9,10-Perylene-Teracarboxylic-Dianhydride Spacer.** *J. Hong*[1], S. Chen[1], W. Chiang[2] and M. Lin[1,3] *1. Department of Physics, National Taiwan University, Taipei, Taiwan; 2. Department of Optoelectric Physics, Chinese Culture University, Taipei, Taiwan; 3. Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan*

11:45 CC-10. **Manipulating the magnetic properties of C_{60} non-magnetic transition metal interfaces.** *F. Al Ma'Mari*[1], M. Rogers[1], T. Moorsom[1], M.C. Wheeler[1], G. Burnell[1], B. Hickey[1] and O. Cespedes[1] *1. Physics and Astronomy, University of Leeds, Leeds, United Kingdom*

WEDNESDAY MORNING 9:00 — 311 A

Session CD
SOFT MAGNETIC MATERIALS I: CRYSTALLINE, NANOCRYSTALLINE AND AMORPHOUS MATERIALS
Mingzhong Wu, Chair
Colorado State University

9:00 CD-01. **Field/stress tunable behaviour of composites containing the combined current-modulation annealed ferromagnetic microwires.** *Y. Luo*[6], F. Scarpa[6], F. Qin[4], J. Liu[2], H. Wang[1], C. Brosseau[3], D. Xing[5], J. Sun[5] and H. Peng[1] *1. Zhejiang University, Hangzhou, Zhejiang; 2. Inner Mongolia University of Technology, Hohhot, Inner Mongolia; 3. Université de Brest, Brest, France; 4. National Institute for Material Science, Tsukuba, Japan; 5. Harbin Institute of Technology, Harbin, Heilongjiang; 6. University of Bristol, Bristol, United Kingdom*

9:15 CD-02. **Effects of Gamma Ray Radiation on Amorphous Thin Ribbons Saturation Magnetization.** *A.B. Fernández*[1], J. Mesa[1], C. Aroca[2] and M. Diaz-Michelena[1] *1. Magnetism, National Institute of Aerospace Technology, Madrid, Spain; 2. Applied Physics, ISOM-ETSIT, Madrid, Madrid, Spain*

9:30 <u>CD-03</u>**. Effects of alloying elements on thermal stability, glass-forming ability and soft magnetic properties of Fe-P-C-B metallic glasses.** *W. Zhang*[1,2], H. Miu[1], X. Jia[1], Y. Li[1] and G. Xie[2] *1. School of Materials Science and Engineering, Dalian University of Technology, Dalian, Liaoning; 2. Institute for Materials Research, Tohoku University, Sendai, Japan*

9:45 <u>CD-04</u>**. Enhancing the microwave absorption properties of Fe-Cu-Nb-Si-B nanocomposite flakes by coating with spinel ferrite $NiFe_2O_4$** Y. Wu[1], *M. Han*[1] and L. Deng[1] *1. National Engineering Research Center of Electromagnetic Radiation Control Materials, University of Electronic Science and Technology of China, Chengdu, Sichuan*

10:00 <u>CD-05</u>**. Studies of High Frequency Giant Magnetoimpedance Effect in Co-rich Amorphous Microwires.** *A. Zhukov*[1,2], M. Ipatov[1,3], A. Talaat[1,3] and V. Zhukova[1,3] *1. Department of Material Physics, Basque Country University, San Sebastian, Spain; 2. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 3. Dpto. de Física Aplicada, EUPDS, University of Basque Country (UPV/EHU), San Sebastian, Spain*

10:15 <u>CD-06</u>**. Transport and magnetic properties of a magnetic-superconductor $Co_{70.4}Fe_{4.6}Si_{15}B_{10}$-Nb bulk core-shell structured material.** G. Barbosa[2] and *F. de Araujo Machado*[1] *1. Departamento de Física, Universidade Federal de Pernambuco, Recife, Pernambuco, Brazil; 2. Departamento de Ciências Exatas e Naturais, Universidade Federal Rural do Semi-Árido, Mossoró, Rio Grande do Norte, Brazil*

10:30 <u>CD-07</u>**. Development of Fe-based amorphous alloys with high B_s and amorphous-forming ability.** *A. Wang*[1], C. Zhao[1], M. He[1], C. Chang[1], X. Wang[1] and R. Li[1] *1. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

10:45 <u>CD-08</u>**. Fabrication of FePBNbCr glassy cores with good soft magnetic properties by hot pressing.** *Y. Dong*[1], Q. Man[1], J. Zhang[1,2], C. Chang[1], R. Li[1] and X. Wang[1] *1. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. School of Physics Science and Technology, Xinjiang University, Urumqi, Xinjiang*

11:00 CD-09. Study on Magnetic Properties and Domain Structures of Fe-(5, 6) wt% Si alloys prepared with High Purity Metallurgy. *Z. Lei*[1], T. Horiuchi[1], Y. Mimura[1], I. Sasaki[1], C. Kaido[2], M. Takezawa[1], S. Kubo[3], T. Ogawa[4] and H. Era[1] *1. Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan; 2. Kitakyushu National College of Technology, Kitakyushu, Fukuoka, Japan; 3. Kagoshima University, Kagoshima, Japan; 4. Fukuoka Industrial Technology Center, Kitakyushu, Fukuoka, Japan*

11:15 CD-10. The Influence of Annealing Temperature on the Structure and Magnetic Properties of Fe-Si-Al-Cr Flake-Shaped Particles. *N. Zhang*[1], J. Xie[1], X. Wang[1] and H. Shi[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

11:30 CD-11. High frequency magnetic response properties by introducing chromium into Fe-Hf-B-O ribbons. *Y. Wang*[1], Y. Zhou[2], J.Q. Xiao[2] and Y. Zhai[1] *1. Southeast University, Nanjing, Jiangsu; 2. Department of Physics and Astronomy, University of Delaware, Newark, Delaware*

11:45 CD-12. Microstructure and Texture Evolution of Strip Casting Grain-oriented Silicon Steel. *H. Song*[1], H. Liu[1], H. Lu[1,2], Z. Liu[1] and G. Wang[1] *1. State Key Laboratory of Rolling and Automation, Northeastern University, Shenyang, Liaoning; 2. Department of Mechatronic Engineering, Yuncheng Polytechnic College, Yuncheng, Shanxi*

WEDNESDAY
MORNING
9:00

311 B

Session CE
FUNDAMENTAL PROPERTIES II

Shishou Kang, Chair
Shandong University

9:00 CE-01. **Cryogenic FSF spin valves with long-range triplet superconducting correlations.** *N. Pugach*[1,2], M. Eschrig[2], M. Flokstra[3], T. Cunningham[3], J. Kim[4], N. Satchell[4], S. Bending[5], P. Curran[5], S. Langridge[6], C. Kinane[6], J. Cooper[6] and S. Lee[3] *1. Skobeltsyn institute of Nuclear Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 2. Physics, Royal Holloway University of London, Egham, Surrey, United Kingdom; 3. School of Physics and Astronomy, SUPA, University of St.Andrews, St.Andrews, United Kingdom; 4. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 5. Department of Physics, University of Bath, Claverton Down, Bath, United Kingdom; 6. ISIS, Rutherford Appleton Laboratory, Oxfordshire, United Kingdom*

9:15 CE-02. **Magnetization dynamics of a network structure via conservation of topological charge.** C. Murapaka[1], *P. Sethi*[1], S. Goolaup[1], R. Maddu[1] and W. Lew[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

9:30 CE-03. **Theoretical insights into heterostructures with magnetic insulators. *(Invited)*** *G.E. Bauer*[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Kavli Institute of NanoScience, Delft University of Technology, Delft, Netherlands*

10:00 CE-04. **Skyrmion phase stability of transition-metal silicides investigated with AC susceptibility.** *T. Ou Yang*[2,1], G. Shu[1], C. Hu[2] and F. Chou[1] *1. CCMS, National Taiwan University, Taipei, Taiwan; 2. Physics, National Taiwan University, Taipei, Taiwan*

10:15 CE-05. **Rich Magnetic Phase Diagram Induced by Particle Size in $ZnFe_2O_4$ Nanoparticles.** *Y. Ying*[1], X. Wang[1], W. Li[1] and S. Che[1] *1. Research Center of Magnetic and Electronic Materials, College of Materials Science and Engineering, Zhejiang University of Technology, Hangzhou, Zhejiang*

10:30 CE-06. The combination of the Random Interaction Field Method and Bethe Peierls Method for studying of two-sublattice magnets. *V. Belokon*[1] and O. Dyachenko[2] *1. Department of theoretical and experimental physics, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Department of General Physics, Far Eastern Federal University, VladivostoK, Russian Federation*

10:45 CE-07. Sound-like Excitations in a Dense Gas of Thermalized Parametrically Pumped Magnons. ***(Invited)*** P. Nowik-Boltyk[2], V.E. Demidov[2], S.O. Demokritov[2], V. Tyberkevych[1] and *A. Slavin*[1] *1. Physics, Oakland University, Rochester, Michigan; 2. Physics, University of Muenster, Muenster, Germany*

11:15 CE-08. Giant Converse Magnetoelectric Effect in PZT/FeCuNbSiB/FeGa/FeCuNbSiB/PZT Laminates without Magnetic Bias Field. C. Yang[1], *P. Li*[1], Y. Wen[1], A. Yang[1], D. Wang[1], F. Zhang[1] and J. Zhang[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

11:30 CE-09. On the independence of the domain wall velocity from the magnetic field and the equation for the motion of the curving 180*⁰* domain wall. *Y. Prykhodzka*[1] *1. Minsk, Prykhodzka, Minsk, Belarus*

11:45 CE-10. Evidence for ferromagnetic coupling at the TI/FMI interface. *W. Liu*[1,2], L. He[2], K. Murata[4], M. Onbasli[5], Y. Jiang[3], C. Ross[5], Y. Wang[3], Y. Xu[2,1], R. Zhang[2] and K.L. Wang[4] *1. Electronics Department, University of York, York, North Yorkshire, United Kingdom; 2. York-Nanjing Joint Centre (YNJC), Nanjing University, Nanjing, Jiangsu; 3. Department of Materials Science and Engineering, Zhejiang University, Hangzhou, Zhejiang; 4. Department of Electrical Engineering, University of California Los Angeles, Los Angeles, California; 5. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts*

WEDNESDAY
MORNING
9:00

308

Session CF
MODELLING AND COMPUTATIONAL MAGNETISM III
Qin-Bo Yan, Chair
University of CAS

9:00 CF-01. **Intrinsic magnetic properties in doped Ce_2Co_{17} and $CeFe_{11}Ti$ systems.** *L. Ke*[1], D. Kukusta[1], R.W. McCallum[1] and V. Antropov[1] *1. Ames Laboratory, Ames, Iowa*

9:15 CF-02. **A Hybrid Meshing Technique For Ferromagnetic Structures Based On The PEEC Method.** *N. Xia*[1] *1. College of Electrical Engineering, Shanghai University of Electric Power, Shanghai*

9:30 CF-03. **Lightning-induced Magnetic Field Distribution on Cable-Stayed Bridge Based on Modified Equivalent Electrical-Circuit Method.** *X. Bian*[1] and Y. Geng[1] *1. School of Electric Power Engineering, Shanghai University of Electric Power, Shanghai*

9:45 CF-04. **Electrically Controlled Spin Injection into a Ferroelectric Semiconductor.** X. Liu[1], J.D. Burton[1], M.Y. Zhuravlev[2] and *E.Y. Tsymbal*[1] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, Nebraska; 2. Kurnakov Institute for General and Inorganic Chemistry, Moscow, Russian Federation*

10:00 CF-05. **First-principle calculation of exchange interactions and compensation point in ferrimagnetic $DyCo_5$.** *S. Khmelevskyi*[1], L. Szunyogh[1], A. Donges[2], D. Hinzke[2] and U. Nowak[2] *1. Theoretical Physics, Budapest University of Technology and Economics, Budapest, Hungary; 2. Fachbereich Physik, Universität Konstanz, Konstanz, Germany*

10:15 CF-06. **Spectral properties of Gd surface in the ferromagnetic and paramagnetic state.** *L. Oroszlany*[1], S. Khmelevskyi[1], A. Deák[1] and L. Szunyogh[1] *1. Department of Theoretical Physics, Budapest University of Technology and Economics, Budapest, Hungary*

10:30 CF-07. **Latent Heat of Magnetization of MnFeSiP-System.** *P. Roy*[1], E. Bruck[2] and R.A. de Groot[1] *1. Institute of Molecules and materials, Radboud University Nijmegen, Nijmegen, Gederland, Netherlands; 2. Fundamental Aspects of Materials and Energy group, Technical University Delft, Delft, Netherlands*

10:45 CF-08. **Chaotic assisted switching of spin-valve elements.** *M. d'Aquino*[1], A. Quercia[2], C. Serpico[2], G. Bertotti[3], I.D. Mayergoyz[4], S. Perna[2] and P. Ansalone[3] *1. Dipartimento di Ingegneria, Università degli Studi di Napoli "Parthenope", Napoli, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy; 3. Istituto Nazionale di Ricerca Metrologica, Turin, Italy; 4. ECE and UMIACS, University of Maryland, College Park, Maryland*

11:00 CF-09. **Modeling the stress dependent hysteretic dynamics of Magnetostrictive Transducers.** *D. Wang*[1], L. Wang[1] and Z. Tang[2] *1. Institute of Mechanical Design, Department of Mechanical Engineering, Zhejiang University, Hangzhou, Zhejiang; 2. Institute of Advanced Digital Technologies and Instrumentation, College of Biomedical Engineering, Zhejiang University, Hangzhou, Zhejiang*

11:15 CF-10. **An Energy Minimization Approach to Vector Hysteresis Modeling In Objects Having Arbitrary Shapes.** *A. Adly*[1] and S. Abd-El-Hafiz[2] *1. Elect. Power & Machines Department, Cairo University, Giza, Egypt; 2. Engineering Mathematics Department, Cairo University, Giza, Egypt*

11:30 CF-11. **Analytical Hysteresis Model for Numerical Electromagnetic Simulations.** *S. Mousavi*[1], G. Engdahl[1] and A. Lotfi[2] *1. Electromagnetic Engineering, Royal Institute of Technology (KTH), Stockholm, Sweden; 2. Electric Power Engineering, NTNU, Trondheim, Norway*

11:45 CF-12. **Optimization of Magnetic Read Widths in Two Dimensional Magnetic Recording Based on Micromagnetic Simulations.** *J. Park*[1], B. Lengsfield[1], R. Galbraith[2], R. Wood[1] and S. Fu[3] *1. HGST, a Western Digital Company, San Jose, California; 2. HGST, a Western Digital Company, Rochester, Minnesota; 3. Center for Magnetic Recording Research, University of California, San Diego, La Jolla, California*

WEDNESDAY 307
MORNING
9:00

Session CG
EXCHANGE BIAS & PATTERNED FILMS AND ELEMENTS III
Jose de la Venta, Chair
Colorado State University

9:00 CG-01. **Manipulating Magnetic Anisotropy and Ultrafast Spin Dynamics of Magnetic Nanostructures. *(Invited)*** *Z. Cheng*[1] and W. He[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing*

9:30 CG-02. **Exchange bias effect in half-doped $Sm_{0.5}Ca_{0.5}MnO_3$ polycrystalline ceramics.** *D. Kakarla*[1,2], K. Jyothinagaram[3], A. Das[2], H. Yang[1] and V. Adyam[3] *1. Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan; 2. Department of Physics, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India; 3. Cryogenic Engineering Centre, Indian Institute of Technology Kharagpur, Kharagpur, West Bengal, India*

9:45 CG-03. **Extraordinary exchange-bias effects in coupled $SmCo_5$ (perpendicular)/CoFeB (in-plane) bilayers.** *A. Bollero*[1], F. Pedrosa[1], J. Cuñado[1], J. Camarero[1], M. Seifert[2], V. Neu[2], V. Baltz[3], D. Serantes[4], O. Chubykalo-Fesenko[4], R. del Real[4], M. Vázquez[4], L. Schultz[2], B. Dieny[3] and R. Miranda[1] *1. IMDEA Nanoscience, Madrid, Spain; 2. IFW Dresden, Institute for Metallic Materials, Dresden, Germany; 3. SPINTEC, UMR-8191 CNRS/CEA, Grenoble, France; 4. Instituto de Ciencias de Materiales de Madrid, ICMM-CSIC, Madrid, Spain*

10:00 CG-04. **Arrays of submicrometric triangular holes as 2D magnetic domail wall ratchets.** *C. Castán Guerrero*[3,2], F. Valdés-Bango[4], J. Herrero-Albillos[3,5], J. Bartolomé[3,2], F. Bartolome[2,3], A. Hierro-Rodríguez[4], J. Martín[4], M. Vélez[4], J. Alameda[4], J. Sese[1,2] and L. Garcia[3,2] *1. Instituto de Nanociencia and Laboratorio de Microscopias Avanzadas, University of Zaragoza, Zaragoza, Spain; 2. Departamento de Fisica de la Materia Condensada, University of Zaragoza, Zaragoza, Spain; 3. Instituto de Ciencia de Materiales de Aragon, CSIC-Unizar, Zaragoza, Spain; 4. Departamento de Fisica-CINN, Universidad de Oviedo, Oviedo, Spain; 5. Centro Universitario de la Defensa and Fundación ARAID, Zaragoza, Spain*

10:15 <u>CG-05</u>. **Magnetic chiral spin textures by imprinting.** *R. Streubel*[1], F. Kronast[2], U. Rössler[3], O.G. Schmidt[1,4], P. Fischer[5,6] and D. Makarov[1] *1. Institute for Integrative Nanosciences, IFW Dresden, Dresden, Saxony, Germany; 2. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany; 3. Institute for Theoretical Physics, IFW Dresden, Dresden, Saxony, Germany; 4. TU Chemnitz, Chemntiz, Saxony, Germany; 5. Lawrence Berkeley National Laboratory, Berkeley, California; 6. UC Santa Cruz, Santa Cruz, California*

10:30 <u>CG-06</u>. **Spin wave waveguides formed by domain walls in arrays of dipolarly coupled magnetic nanodots.** I. Lisenkov[1,2], *S. Louis*[1], S.A. Nikitov[2,3], V. Tyberkevych[1] and A. Slavin[1] *1. Department of Physics, Oakland University, Rochester, Michigan; 2. Kotelnikov Institute of Radio-engineering and Electronics of RAS, Moscow, Russian Federation; 3. Saratov State University, Saratov, Russian Federation*

10:45 <u>CG-07</u>. **Isothermal switching of in-plane exchange bias in orthogonal coupled DyCo/NiFe bilayer.** *L. Dieter*[1] and K. Chen[2,1] *1. WPN, Helmholtz Zentrum Geesthacht, Geesthacht, Germany; 2. Synchrotron SOLEIL, GIF-sur-YVETTE CEDEX, France*

11:00 <u>CG-08</u>. **Deterministic motion of domain wall in artificial spin ice lattice.** *P. Sethi*[1], C. Murapaka[1], S. Goolaup[1] and W. Lew[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

11:15 <u>CG-09</u>. **Combined FORC and X-Ray Microscopy Study of Magnetisation Reversal in Antidot Lattices.** *J. Gräfe*[1], F. Haering[2], C. Stahl[1], M. Weigand[1], M. Skripnik[3], U. Nowak[3], P. Ziemann[2], U. Wiedwald[4,2], G. Schütz[1] and E. Goering[1] *1. Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Institute of Solid State Physics, Ulm University, Ulm, Germany; 3. Department of Physics, Universität Konstanz, Konstanz, Germany; 4. Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany*

11:30 <u>CG-10</u>. **Microwave-induced dynamic switching of magnetic skyrmion cores in nanodots.** *B. Zhang*[1], W. Wang[2], M. Beg[2], H. Fangohr[2] and W. Kuch[1] *1. Freie Universität Berlin, Berlin, Germany; 2. University of Southampton, Southampton, United Kingdom*

11:45 CG-11. Magnetic and magnetotransport properties of bi-component arrays of magnetic dots by self-assembling of polystyrene nanospheres. *P. Tiberto*[1,2], G. Barrera[1,2], F. Celegato[1], M. Coisson[1] and F. Vinai[1] *1. Electromagnetics, INRIM, Torino, Italy; 2. Chemistry, Università di Torino, Torino, Italy*

WEDNESDAY MORNING 9:00 — 306 B

Session CH
PERMANENT MAGNET AND INDUCTION MACHINES I
Weinong Fu, Chair
The Hong Kong Polytechnic University

9:00 CH-01. Effect of Control Strategies on the Two Torque-Producing Mechanisms in High-Speed PMSMs. *B. Hannon*[1,2], P. Sergeant[1,2] and L. Dupre[2] *1. Industrial Technology and Construction, Ghent University, Gent, Oost-Vlaanderen, Belgium; 2. Electrical Energy, Systems and Automation, Ghent University, Gent, Oost-Vlaanderen, Belgium*

9:15 CH-02. Rotor Design of a 7 MW Interior Permanent Magnet Wind Generator Considering Demagnetization. *H. Chen*[1], R. Qu[1] and J. Li[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei*

9:30 CH-03. Practical Consideration in Selecting Skew Angle to Reduce Cogging Torque in a Mass-produced Permanent Magnet Synchronous Motors. *R. Islam*[1] *1. Nexteer Automotive, Saginaw, Michigan*

9:45 CH-04. Development of A Novel Axial-Flux Claw Pole Machine with Soft Magnetic Composite Core. *C. Liu*[1,2], J. Zhu[2], Y. Wang[1], G. Lei[2], Y. Guo[2] and X. Liu[1] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin; 2. School of Electrical, Mechanical and Mechatronic System, University of Technology Sydney, Sydney, New South Wales, Australia*

10:00 CH-05. **Research on Rotor Eccentricity Compensation Control for Bearingless Surface-Mounted Permanent-Magnet Motors Based on an Exact Analytical Method.** *J. Dai*[1], X. Zhou[1] and Z. Qiu[1] *1. School of Mechatronic Engineering and Automation, Shanghai University, Shanghai*

10:15 CH-06. **Analytical Model of Electromagnetic Vibration of Salient Permanent Magnet Motors with Time Harmonics.** *L. Zhang*[1] and C. Gao[1] *1. College of Information and Control Engineering, University of Petroleum (East China), Qingdao, Shandong*

10:30 CH-07. **Optimization of Stator Pole Arrangement for 3-DOF Spherical Actuator Using Genetic Algorithm.** *Y. Nishiura*[1], K. Hirata[1] and K. Oya[1] *1. Osaka University, Suita, Osaka, Japan*

10:45 CH-08. **Torque Pulsation Minimization in Spoke-type Interior Permanent Magnet Motors with Skewing and Sinusoidal Permanent Magnet Configurations.** *W. Zhao*[1], T.A. Lipo[2] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Korea; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

11:00 CH-09. **Bridge and Rotor Inductances of Closed Slots Induction Motor.** *M. Matsushita*[1], S. Mizuno[3] and F. Ishibashi[2] *1. Electrical / Mechanical Systems and Power Electronics R&D Department, Toshiba Corporation, Fuchu-city, Japan; 2. Shibaura Institute of Technology, Tokyo, Japan; 3. Electrical/Mechanical Systems and Power Electronics R&D Department, Toshiba Corporation, Fuchu-City, Japan*

11:15 CH-10. **Optimal Design of Premium Efficiency Cage Induction Motors (IE3 Level) with Non-Skewed Asymmetrical Rotor Bars Based on FEA.** *H. Zhao*[1], S. Wang[1], D. Zhang[1] and X. Liu[1] *1. State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, Beijing*

11:30 CH-11. **Design of Radial and Axial Flux Induction Machine-an Analytical approach.** *B. Paul Benet*[1] *1. Department of Electrical and Electronics engineering, College of Engineering Guindy, Anna University, Chennai, Tamilnadu, India*

11:45 CH-12. Comparison of Claw Pole Machines with Different Rotor Structure. *C. Liu*[1,2], J. Zhu[2], Y. Wang[1], G. Lei[2], Y. Guo[2] and X. Liu[1] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin; 2. School of Electrical, Mechanical and Mechatronic System, University of Technology Sydney, Sydney, New South Wales, Australia*

WEDNESDAY 306 A
MORNING
9:00

Session CI
POWER, CONTROL AND COUPLING ANALYSIS

Mochimitsu Komori, Chair
Kyushu Institute of Technology
Shyh Leh Chen, Chair
National Chung Cheng University

9:00 CI-01. A Self-tuning Regulator for the Voice Coil Motor. *S. Or*[1], N. Cheung[1] and Y. Zou[1] *1. Department of Electrical Engineering, Hong Kong Polytechnic University, Hong Kong*

9:15 CI-02. Nonlinear Dynamic Characteristics of Giant Magnetostrictive-Piezoelectric Vibration Energy Harvester Subjected to Stochastic Excitation. Z. Zhu[2], W. Zhang[2] and *J. Xu*[1,2] *1. Tianjin Key Laboratory of Nonlinear Dynamics and Chaos Control, Tianjin; 2. Mechanics, Tianjin University, Tianjin*

9:30 CI-03. Three-Port High-Frequency Transformer Based Current-Source Electric Drive System for Hybrid Electric Vehicles. *Z. Wang*[1], K. Chu[1], B. Liu[1] and M. Cheng[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

9:45 CI-04. A Frequency Up-converted Magnetostrictive Transducer for Harvesting Energy from Finger Tapping. *Z. Yang*[1], Y. Tan[1] and J. Zu[1] *1. Mechanical and Industrial Engineering, University of Toronto, Toronto, Ontario, Canada*

10:00 CI-05. **An Adaptive High-precision Tracking Controller for the Coupled Switched Reluctance Two-finger Gripper.** *Y. Fan*[1] and J. Pan[1] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong*

10:15 CI-06. **A New Implementation Method of Low Stiffness for Magnetic Levitation Gravity Compensator.** *H. Zhang*[1], B. Kou[1], Y. Jin[1] and H. Zhang[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

10:30 CI-07. **Generation of Magnetic Propulsion Force using Wireless Power Transfer Coil.** *D. Kim*[1], J. Park[1], H. Park[2] and S. Ahn[1] *1. KAIST, Daejeon, Korea; 2. The University of Suwon, Hwaseong, Korea*

10:45 CI-08. **Development and Experimental Test of Hybrid Magnetic Bearing for Ring-type Flywheel.** *C. Toh*[1,2] and S. Chen[1,2] *1. Mechanical Engineering, National Chung Cheng University, Chia Yi, Taiwan; 2. Advanced Institute of Manufacturing with High-tech Innovations, National Chung Cheng University, Chia Yi, Taiwan*

11:00 CI-09. **A 3-D Analytical Model for a Double Halbach Linear Array Electrodynamic Suspension System.** *Y. Chen*[2], S. Paul[3], J. Bird[1] and K. Zhang[2] *1. Electrical and Computer Engineering, University of North Carolina at Charlotte, Charlotte, North Carolina; 2. Key Laboratory of Magnetic Suspension Technology and Maglev Vehicle (MOE), Southwest JiaoTong University, Chengdu, Sichuan; 3. Nexteer Automotive, Saginaw, Michigan*

11:15 CI-10. **Multidisciplinary Design Analysis for PM Motors with Soft Magnetic Composite Cores.** *G. Lei*[1], C. Liu[1], J. Zhu[1] and Y. Guo[1] *1. University of Technology Sydney, Sydney, New South Wales, Australia*

11:30 CI-11. **Coupled Electromagnetic and Thermal Analysis of an Axial Flux PM Machine.** *H. Vansompel*[1,2], A. Hemeida[1,2], A. Rasekh[3], P. Sergeant[1,2] and J. Vierendeels[3] *1. Department of Electrical Energy, Systems and Automation, Ghent University, Zwijnaarde, Belgium; 2. Department of Industrial Technology and Construction, Ghent University, Ghent, Belgium; 3. Department of Flow, Heat and Combustion Mechanics, Ghent University, Ghent, Belgium*

11:45 CI-12. **Research on Fast Calculation of Dynamic Process with Thermal Effects in Electromagnetic Device Based on Semi-Analytical Modeling.** W. Yang[1], *P. Liu*[1] and G. Zhai[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, Heilongjiang*

WEDNESDAY
MORNING
8:30

PLENARY HALL B

Session CP
SPIN-ELECTRONICS AND APPLICATIONS I (Poster Session)

Masafumi Yamamoto, Chair
Hokkaido University

CP-01. **Magnetoresistance and magnetothermopower in $Nd_{0.7}Sr_{0.3}MnO_3$ and $Nd_{0.7}Sr_{0.3}CoO_3$** P. Kumar[1] and *M. Ramanathan*[1] *1. Department of Physics, National University of Singapore, Singapore*

CP-02. **Thin layer of MgO as seed layer used in MgO/Co_2FeSi Heusler alloy Tunnel Junctions.** *P.J. Chen*[1] and R. Shull[1] *1. National Institute of Standards and Technology, Gaithersburg, Maryland*

CP-03. **Fabrication and Characterization of Co2MnSi Thin Film with an Extreme Low Damping Constant.** S. Qiao[1], J. Zhang[1], R. Hao[1], H. Zhaong[1], Y. Kang[1] and *S. Kang*[1] *1. School of Physics, Shandong University, Jinan, Shandong*

CP-04. **Anisotropic Magnetoresistance Effect in Co_2(Fe-Mn)(Al-Si) Heusler Alloy Thin Films.** H. Yako[1], *T. Kubota*[1] and K. Takanashi[1] *1. Institute for Materials Research, Tohoku university, Sendai, Miyagi, Japan*

CP-05. **Improvement of the Half-Metallic Stability of Co_2FeAl Heusler Alloys by GeTe-Doping.** *T. Huang*[1,2], X. Cheng[1,2], X. Guan[1,2] and X. Miao[1,2] *1. School of Optical and Electronic Information, Huazhong University of Science & Technology, Wuhan, Hubei; 2. Wuhan National Laboratory for Optoelectronics, Wuhan, Hubei*

CP-06. Cation Effect on the Magnetic and Magnetotransport Properties of $Co_xFe_{3-x}O_4$ Films: An Experimental and First-Principles Study. *C. Jin*[1], M. Tang[1] and H. Bai[1] *1. Department of Applied Physics, Faculty of Science, Tianjin University, Tianjin*

CP-07. Electron spin resonance study on room-temperature ferromagnetic $La_{0.9}Sr_{0.1}MnO_3$ nano-particles. *Y. Chen*[1], K. Liang[1], C. Chang[1] and J. Lin[1] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

CP-08. Site Preference and Magnetic Properties of Mn_2CoGa Heusler Alloy. *R.Y. Umetsu*[1,2], K. Saito[3], K. Ono[3], T. Ishigaki[4], T. Minakuchi[1], M. Nagasako[1] and R. Kainuma[1] *1. Tohoku Universty, Sendai, Japan; 2. JST-PRESTO, Tokyo, Japan; 3. KEK, Tsukuba, Japan; 4. Ibaraki University, Naka-gun, Japan*

CP-09. Magnetic-field-controlled tunablity of magnetoresistance in La0.9Hf0.1MnO3/0.7Pb(Mg1/3Nb2/3)O3-0.3PbTiO3 heterostructures. *L. Wang*[1], L. Jin[2], L. Wang[1] and J. Gao[2] *1. Department of Materials Science and Engineering, Shanghai University, Shanghai; 2. Physics Department, University of Hong Kong, Hong Kong*

CP-10. Magnetic and transport properties of antiperovskite nitride Co_3FeN films. *S. Kawai*[1], H. Ando[1], H. Sakakibara[1], Y. Kuroki[1], T. Hajiri[1], K. Ueda[1] and H. Asano[1] *1. Nagoya University, Nagoya, Japan*

CP-11. ESR Study of Strain Effect on Phase Separation in $Pr_{0.7}(Ca_{0.6}Sr_{0.4})_{0.3}MnO_3$ Thin Films. *Q. Ma*[1], Y. Zhao[1], F. Hu[1], J. Sun[1], B. Shen[1] and Y. Sun[1] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing*

CP-12. Electron Spin Resonance and Magnetization Studies of Bi Rich La-Manganites. D. Vijayan[1], R. Ade[1], J. Kurian[1] and *R. Singh*[1] *1. School of Physics, University of Hyderabad, Hyderabad, Telengana, India*

CP-13. Influence of Lattice Strain on Phase Separation and Percolative Behaviors in $La_{0.325}Pr_{0.3}Ca_{0.375}MnO_3$ Thin Films. Y. Zhao[1], F. Hu[1], *J. Wang*[1], H. Kuang[1], Y. Liu[1], R. Wu[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences (CAS), Beijing*

CP-14. Effect of interlayer-induced asymmetrical stress on magnetotransport properties of epitaxial [$Pr_{0.7}Sr_{0.3}MnO_3$/$La_{0.5}Ca_{0.5}MnO_3$]$_{20}$ superlattice.
H. Wang[1,2], H. Liu[1], M. Cao[1], X. Wang[1], *W. Tan*[1], X. Wang[1], F. Xu[3], Q. Jia[4] and J. Gao[5] *1. Department of Physics, Nanjing University of Science & Technology, Nanjing, Jiangsu; 2. Institute of Materials Physics, Hangzhou Dianzi University, Hangzhou, Zhejiang; 3. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, Jiangsu; 4. Institute of High Energy Physics, Chinese Academy of Sciences, Beijing; 5. Department of Physics, The University of Hong Kong, Hong Kong*

CP-15. Novel structural and magnetic properties of multifunctional bulk $LaCrO_3$ and $LaFeO_3$ composite system. *B. Tiwari*[2], A. Dixit[1], G. Lawes[3], R. Naik[3] and M. Rao[2] *1. Center for Energy, Indian Institute of Technology Jodhpur, Jodhpur, Rajasthan, India; 2. Nano Functional Materials Technology Centre, Materials Science Research Center and Department of Physics, Indian Institute of Technology Madras, Chennai, India; 3. Department of Physics and Astronomy, Wayne State University, Detroit, Michigan*

WEDNESDAY MORNING 8:30 — PLENARY HALL B

Session CQ
EXCHANGE BIAS & PATTERNED FILMS AND ELEMENTS IV (Poster Session)
Caiyin You, Chair

CQ-01. Reconfigurable dynamic properties using a polygonal Py dot. S. Yakata[1], *X. Cui*[2] and T. Kimura[2,3] *1. Department of Information Electronics, Fukuoka Institute of Technology, Fukuoka, Japan; 2. Department of Physics, Kyushu University, Fukuoka, Japan; 3. Research Center for Quantum Nano-Spin Sciences, Kyushu University, Fukuoka, Japan*

CQ-02. Observation of asymmetry in anomalous Hall effect measurements of magnetic dots. *R.A. Griffiths*[1] and P.W. Nutter[1] *1. School of Computer Science, University of Manchester, Manchester, United Kingdom*

CQ-03. Study on the magnetization dynamics of Ni-Fe dot arrays estimated by the CPW-FMR measurement method. *Y. Endo*[1], Y. Shimada[1] and M. Yamaguchi[1]
1. Department of Electrical Engineering, Tohoku University, Sendai, Japan

CQ-04. Indirect Reversal of Vortex Core Polarity in Magnetically Dynamic Coupled Disks. G. Fior[2], E.R. Novais[3], J. Sinnecker[1], *A.P. Guimaraes*[1] and F. Garcia[1]
1. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, RJ, Brazil; 2. Laboratório Nacional de Luz Sincrotron, Campinas, SP, Brazil; 3. Universidade Federal de Alagoas, Maceio, AL, Brazil

CQ-05. Fabrication of Laterally-Configured Resistive Switching Device with Spin-Polarized Nano-Gap Electrodes. *M. Kawakita*[1], K. Okabe[1], S. Yakata[2] and T. Kimura[1,3] *1. Physics, Kyushu University, Hakozaki, Fukuoka, Japan; 2. Information, Fukuoka Institute of Technology, Wajirohigashi, Fukuoka, Japan; 3. Research Center for Quantum Nano-Spin Sciences, Kyushu University, Hakozaki, Fukuoka, Japan*

CQ-06. Effects of Dzyaloshinskii–Moriya interaction on magnetic vortex gyration. *Y. Luo*[1], C. Zhou[1] and Y. Wu[1]
1. Department of Physics, Fudan University, Shanghai

CQ-07. Magnetic properties and microstructure investigation of FeNi films with step-height by Nano-MOKE. D. Cao[1], C. Jin[1], L. Pan[1], J. Wang[1] and *Q. Liu*[1]
1. Key Laboratory for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu

CQ-08. The effect of the cubic anisotropy on the angular dependence of the exchange bias. *Y. Bai*[1] and X. Xu[1]
1. Shanxi Normal University, Linfen, Shanxi

CQ-09. The role of the (111) texture on the exchange bias and interlayer coupling effects observed in sputtered NiFe/IrMn/Co trilayers. *I.L. Castro Merino*[1], V. Pedruzzi Nascimento[2], E. Passamani Caetano[2] and E. Baggio Saitovitch[1] *1. Exp, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Rio de Janeiro, Brazil; 2. Universiade Federal do Espírito Santo, Vitória, Espirito Santo, Brazil*

<u>CQ-10</u>. **Broadband Ferromagnetic Resonance Study of Spin-Wave Dynamics in Two Dimensional Filled Antidot Lattices.** S. Choudhury[1], S. Saha[1], R. Mandal[1], *A. Ganguly*[1], Y. Otani[2,3] and A. Barman[1] *1. Department of Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, West Bengal, India; 2. Institute for Solid State Physics, University of Tokyo, Kashiwanoha, Kashiwa, Chiba, Tokyo, Japan; 3. RIKEN-CEMS, Hirosawa, Wako, Saitama, Japan*

<u>CQ-11</u>. **Thickness-dependent magnetic properties of patterned FeCoBSi amorphous thin films on silicon substrate.** W. Zhu[1,2], *L. Zhang*[1,2], H. Zheng[1,2], X. Wang[1,2], M. Bi[1,2], M. Li[1,2], J. Xie[1,2] and L. Deng[1,2] *1. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. National Engineering Research Center of Electromagnetic Radiation Control Materials, Chengdu, Sichuan*

<u>CQ-12</u>. **Collective Magnetization Dynamics in Arrays of Triangular Nanodots with Varying Areal Density.** *A. Barman*[4], B.K. Mahato[4], S. Barman[4], D. Kumar[1] and Y. Otani[2,3] *1. Department of Electrical Computer Engineering, National University of Singapore, Singapore; 2. Advanced Science Institute, RIKEN, Hirosawa, Wako, Saitama, Japan; 3. Institute for Solid State Physics, University of Tokyo, Kashiwanoha, Kashiwa, Chiba, Tokyo, Japan; 4. Department of Condensed Matter Physics and Material Sciences, S. N. Bose National Centre For Basic Sciences, Kolkata, India*

<u>CQ-13</u>. **Periodically Ordered Yttrium Iron Garnet Nanodots Arrays Prepared by AAO Templates on $Ga_3Gd_5O_{12}$ Substrates.** H. Zheng[1] and *M. Han*[1] *1. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan*

<u>CQ-14</u>. **Micromagnetic Simulation on the Inter-elements Coupling of High-density Patterned Film.** *L. Sun*[1], Y. Zhai[2], D. Niu[3], Y. Xu[3] and H. Zhai[4] *1. College of Physics and Electronic Engineering, Hainan Normal University, Haikou, Hainan; 2. Department of Physics, Southeast Univeristy, Nanjing, Jiangsu; 3. Spintronics and Nanodevice Laboratory, Department of Electronics, University of York, York, United Kingdom; 4. National Laboratory of Solid Microstructures and Center of Modern Analysis, Nanjing University, Nanjing, Jiangsu*

CQ-15. Control of the Magnetic Structure of Co/Pd Thin Films by Direct Laser Interference Patterning. *M. Stärk*[1], F. Schlickeiser[1], D. Nissen[2], B. Hebler[2], P. Graus[1], D. Hinzke[1], M. Albrecht[2], P. Leiderer[1], M. Fonin[1] and J. Boneberg[1] *1. Physics, University of Konstanz, Konstanz, Germany; 2. Institut für Physik, Universität Augsburg, Augsburg, Germany*

CQ-16. Resonance Frequency of Ferromagnetic Thin Film Controlled by Rectangle Antidot Arrays. X.J. Luo[1,2], *P. Zhou*[1,2], X. Wang[1,2], N. Zhang[1,2] and L. Deng[1,2] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. National Engineering Research Center of Electromagnetic Radiation Control Materials, University of Electronic Science and Technology of China, Chengdu, Sichuan*

WEDNESDAY MORNING 8:30 — PLENARY HALL B

Session CR
NANOSCALE MAGNETISM I (Poster Session)

Yukiko Takahashi, Chair
National Institute for Materials Science

CR-01. Microwave permeability of iron nanowire array: measurements and simulations. *M. Han*[1], L. Deng[1] and Z. Tang[1] *1. National Engineering Research Center of Electromagnetic Radiation Control Materials, University of Electronic Science and Technology of China, Chengdu, Sichuan*

CR-02. A novel one-pot approach for synthesis of Iron oxide/silica (Fe_3O_4/SiO_2) and Iron oxide/carbon (Fe_3O_4/C) core/shell nanocubes. *M.A. Ahmed*[1,3], M.O. Abdel-Hamed[2] and C. Kim[1] *1. Emerging Material Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, Korea; 2. Physics, El-Minia University, Minia, Egypt; 3. Ceramics, National Research Center, Cairo, Egypt*

CR-03. Large electromagnetic wave absorbing bandwidth of composites containing Fe_3O_4 nano ribbons.
Y. Wu[1], M. Han[1] and L. Deng[1] *1. National Engineering Research Center of Electromagnetic Radiation Control Materials, University of Electronic Science and Technology of China, Chengdu, Sichuan*

CR-04. Selective behaviour of spin wave propagation in asymmetrically modulated ferromagnetic nanowires.
H. Piao[1,2], J. Shim[2], M. Yang[1], L. Pan[1] and D. Kim[2,1]
1. School of Science, Three Gorges University, Yichang, Hubei; 2. Department of Physics, Chungbuk National University, CheongJu, Korea

CR-05. Aspect ratio and temperature dependent magnetic properties of CoNi alloy nanotubes arrays.
A.K. Singh[1] and K. Mandal[1] *1. Condensed Matter Physics and Material Sciences, S.N. Bose National Centre For Basic Sciences, Kolkata, West Bengal, India*

CR-06. Simulation on the formation of a 360° domain wall in permalloy crescent patterns. F. Wu[1], *L. Horng*[1] and J. Wu[1] *1. Department of Physics, National Changhua University of Education, Changhua, Taiwan*

CR-07. Controllable One Dimensional FePt Nanomaterials Synthesized by Chemical Method.
W. Pei[1], Y. Zhang[1], C. Wu[2] and Q. Wang[2] *1. Key Laboratory for Anisotropy and Texture of Materials (MOE), Northeastern University, Shenyang, Liaoning; 2. Key Laboratory for Electromagnetic Processing of Materials (MOE), Northeastern University, Shenyang, Liaoning*

CR-08. Rational surface modification to tune the magnetic properties of cobalt ferrite nanoparticles.
R. Rakshit[1], M. Pal[1], M. Mandal[1] and K. Mandal[1]
1. Condensed Matter Physics and Material Sciences, S.N.Bose National Centre For Basic Sciences, Kolkata, West Bengal, India

CR-09. Magnetic Behavior and local structure of $La_{1-x}Sr_xMnO_3$ with nominal concentration $x = 0.05, 0.3$.
H. Zhang[1], X. Liang[2], Y. Li[1], S. Liu[1], B. Li[1] and Q. Li[3]
1. College of Science, Nanjing University of Posts and Telecommunications, Nanjing, Jiangsu; 2. Department of Physical and Chemical Sciences, North China University of Technology, Beijing; 3. Department of Physics, Southeast University, Nanjing, Jiangsu

CR-10. Intrawire Magnetic Interactions in Electrodeposited Co/Cu and Co/Au Multilayer Nanowires. T. Dasagir[1] and *H. Yu*[1] *1. Arizona State University, Tempe, Arizona*

CR-11. Magnetic thermal dissipations of FeCo hollow fibers in composite sheets for hyperthermia applications. *J. Kim*[1], S. Lee[3], S. Lee[3], F. Ko[2] and K. Kim[1,2] *1. Physics, Yeungnam University, Gyeongsan, Korea; 2. Department of Materials Engineering, University of British Columbia, Vancouver, British Columbia, Canada; 3. Korea Institute of Materials Science, Changwon, Korea*

CR-12. Facile Synthesis of Cubic Hematites Using Diamines. *G. Kim*[1], S. Lee[1], S. Bae[1] and A.T. Nguyen[1] *1. Chemical and Biochemical Engineering, Gachon University, Seongnam, Gyunggi, The Democratic People's Republic of Korea*

CR-13. Fabrication, structural and Magnetic Properties of Electrodeposited $Fe_{80}Pt_{20}$ Nanowires and Nanotubes. *U. Khan*[1], W. Li[1], S.S. Ali[1], K. Javed[1], S. Riaz[1] and X. Han[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing*

CR-14. The Oxygen Vacancies Correlated Ferromagnetism in transition metal-doped ZnO nanowires. *Y. Zhang*[1], E. Cao[1], C. Shi[2] and J. Hu[2] *1. Taiyuan University of Technology, Taiyuan, Shanxi; 2. Shandong University, Jinan, Shandong*

CR-15. Solution synthesis of $Fe_{1-x}Cr_xTe$ nanostructures. *F. Wang*[1], J. Du[1], F. Sun[2], X. Xu[1] and H. Zeng[2] *1. School of Chemistry and Materials Science, Shanxi Normal University, Linfen, Shanxi; 2. Department of Physics, University at Buffalo-SUNY, Buffalo, New York*

WEDNESDAY MORNING 8:30

PLENARY HALL B

Session CS

FERRITES, GARNETS AND OTHER SOFT MATERIALS II (Poster Session)

Zhongwu Liu, Chair
South China University of Technology

CS-01. Influences of Li_2O-B_2O_3-ZnO Glass Addition on Microstructural and Magnetic Properties of LiZnTi-Ferrites. F. Xie[1], *L. Jia*[1], Z. Zheng[1] and H. Zhang[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

CS-02. Effect of the nanosized Ni fillers on electromagnetic properties of NiCuZn ferrite/Ni/polymer functional composites. *S. Tong*[1], M. Tung[1], W.S. Ko[1], Y.T. Huang[1] and J.M. Wu[2] *1. Material and Chemical Research Laboratories, Industrial Technology Research Institute, Hsinchu, Taiwan; 2. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

CS-03. Mössbauer studies and magnetic properties of $BaCo_{2-x}Zn_xFe_{16}O_2$ *H. Kim*[1] and C. Kim[1] *1. Department of Physics, Kookmin University, Seoul, Korea*

CS-04. Preparation of low microwave loss YIG thin films by Pulsed Laser Deposition. *B. Bhoi*[1], B. Sahu[2], N. Venkataramani[3], R. Aiyar[1] and S. Prasad[2] *1. Center for Research in Nanotechnology and Science, Indian Institute of Technology Bombay, Mumbai, Maharastra, India; 2. Department of Physics, Indian Institute of Technology Bombay, Mumbai, Maharastra, India; 3. Department of Metalurgical and Material Science, Indian Institute of Technology Bombay, Mumbai, Maharastra, India*

CS-05. A study of FMR line width and magnetic order in nano crystalline $ZnFe_2O_4$ thin films. *B. Sahu*[1], N. Venkataramani[2], S. Prasad[1] and K. Ramanathan[3] *1. Physics, IIT Bombay, Mumbai, Maharastra, India; 2. Department of Mettalurgical and Material Science, Indian Institute of Technology Bombay, Mumbai, Maharastra, India; 3. Department of Physics, CNRS/Universite de Versailles-St-Quentin, Versailles Cedex, Versailles Cedex, France*

CS-06. Hydrothermal Synthesis and Magnetic Properties of Hexagonal $Sr_3Co_2Fe_{24}O_{41}$ Particles. *L. Jia*[1], X. Wen[1] and H. Zhang[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

CS-07. Resonant magnetoelectric effect in winglike magnetoelectric composites of Fe-based Nanocrystalline FeCuNbSiB alloy and piezoelectric ceramic $Pb(Zr,TiO)_3$ with middle bonding. D. Wang[1], *P. Li*[1], Y. Wen[1], C. Yang[1], F. Zhang[1], A. Yang[1] and J. Zhang[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

CS-09. Effect of organic fuel on dispersive magnetic property of Fe-Al_2O_3 composite powders synthesized by solution combustion. D. Choi[1], *M. Choi*[1] and J. Kim[1] *1. Hanyang University, Ansan, Kyeonggi-do, Korea*

CS-10. High magnetic loss Mg-Cu ferrites for ultra-high frequency EMI suppression applications. *J. Li*[1], X. Wang[1], K. Song[1], Q. Li[1], R. Gong[1], Z. Su[2], Y. Chen[2] and V.G. Harris[2] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 2. Department of Electrical and Computer Engineering, Northeastern University, Boston, Massachusetts*

CS-11. Enhancement of Absorption Bandwidth of Magnetic Microwave Absorbers via Embedding Metamaterials. *W. Wang*[1], Y. Wang[2], Y. Cheng[1], D. Cheng[1], Y. Liu[1], Y. Nie[1], M. Wu[3] and R. Gong[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 2. Raisecom Technology Development Company Limited, Beijing; 3. Department of Physics, Colorado State University, Fort Collins, Colorado*

CS-12. Magnetic, electric and magnetoelectric properties of zirconium doped $Y_3Fe_5O_{12}$ ferrite ceramics. *F. Chen*[1], Z. Zhang[1], X. Wang[1], Z. Feng[1], Y. Chen[2] and V.G. Harris[2] *1. Huazhong University of Science and Technology, Wuhan, Hubei; 2. Northeastern University, Boston, Massachusetts*

CS-13. Rotational Alignment of Magnetic Microdisks in Composites for High Frequency Applications. *H. Song*[2], M. Tan[1], T.W. Walker[1], A. Jander[2] and P. Dhagat[2] *1. Rheology Research Lab, School of CBEE, Oregon State University, Corvallis, Oregon; 2. Applied Magnetics Lab, School of EECS, Oregon State University, Corvallis, Oregon*

CS-14. Ultrathin Planar Metasurface for Controlling Electromagnetic Wave with Broad Bandwidth. *Q. Wu*[1], X. Ding[1], H. Yu[1] and K. Zhang[1] *1. Harbin Institution of Technology, Harbin, Heilongjiang*

CS-15. The Stability of Permeability of Co Doped NiCuZn Ferrite Applied in Wireless Power Transmission. *S. Yan*[1], X. Wu[1], Y. Nie[1], X. Wang[1] and Z. Feng[1] *1. Huazhong University of Science and Technology, Wuhan, Hubei*

WEDNESDAY
MORNING
8:30

PLENARY HALL B

Session CT
NOVEL APPLICATIONS OF MAGNETIC SENSORS (Poster Session)

Zung-Hang Wei, Chair
National Tsing Hua University
Mean-Jue Tung, Chair
Material and Chemical Research Laboratories/ ITRI

CT-01. A Novel High-sensitivity Cardiac Multi-biomarkers Detecting System Based on Microfluidic Chip and GMR Sensor. W. Huo[1,2], Y. Gao[1,2], L. Zhang[1,2], S. Shi[3] and *Y. Gao*[2] *1. Key Laboratory of Photochemical Conversion and Optoelectronic Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing; 2. University of Chinese Academy of Sciences, Beijing; 3. Dongguan Bosh Biotechnologies, LTD, Dongguan, Guangdong*

CT-02. Magneto-Impedance Sensor Based on TAD for Integration. S. Tajima[1,3], *P. Wu*[1], Y. Okuda[1], T. Watanabe[2] and T. Uchiyama[1] *1. NAGOYA UNIVERSITY, Nagoya, Aichi, Japan; 2. DENSO CORPORATION, Kariya, Aichi, Japan; 3. Oregon State University, Corvallis, Oregon*

CT-03. Elimination of hysteresis effect in superparamagnetic nanoparticle detection by GMR sensors for biosensing. *L. Li*[1], W. Lo[1], C. Leung[2], S. Ng[2] and P. Pong[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong; 2. Department of Applied Physics, Hong Kong Polytechnic University, Hong Kong*

CT-04. Design and Optimization of magnetic ring for MTJ based current sensors applied in the smart grid. *Y. Ouyang*[1], J. He[1], J. Hu[1], G. Zhao[1], Z. Wang[1] and S.X. Wang[1,2] *1. Department of Electrical Engineering, State Key Lab of Power Systems, Tsinghua University, Beijing; 2. Center for Magnetic Nanotechnology, Stanford University, Stanford, California*

CT-05. Diameter Effect of Induced Voltage in Sensing Coil Embedded in Projectile for Application of Air Bursting Munition. *K. Ryu*[1], D. Son[2], D. Park[3] and U. Baek[1] *1. Div. of Industrial Metrology, Korea Research Institute of Standards and Science, Daejeon, Korea; 2. Photonics and Sensors, Hannam University, Daejeon, Korea; 3. Korea Atomic Energy Research Institute, Daejeon, Korea*

CT-06. Biomolecular detection and capture in wave sheet ferromagnetic nanostructure. *H. Huang*[1], C. Li[2] and Z. Wei[2] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

CT-07. Proposal of electromagnetic inspection method of thickness of opposite side nickel-layer in nickel-plated steel without influence of distance between specimen and inspection sensor. *Y. Gotoh*[1] and S. Nakayama[1] *1. Mechanical and Energy Systems Engineering, Oita University, Oita, Japan*

CT-08. Analysis of the metallic structural noise of the EMAT and optimal design. *C. Zhang*[1], S. Liu[1], Q. Yang[1], Z. Cai[1] and L. Jin[2] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin; 2. Tianjin Polytechnic University, Tianjin*

CT-09. Fluxgate Gradiometer for Magnetic Nanoparticle Magnetorelaxometry in Unshielded Environment. *A.L. Elrefai*[1], I. Sasada[1] and T. Yoshida[2] *1. Applied Science for Electronics and Materials, Kyushu University, Fukuoka, Japan; 2. Electrical and Electronic Engineering, Kyushu University, Fukuoka, Japan*

CT-10. A new inductive sensor for online health monitoring of mechanical transmission systems. *C. Wang*[1], X. Liu[1] and Z. Chen[1] *1. Department of Energy Technology, Aalborg University, Aalborg, Denmark*

CT-11. **A Novel MEMS-Based 13.56 MHz Micro Antenna for RFID Application.** *B. Qu*[1,2], H. Liu[1,2], Q. Ye[1,2], Y. Geng[1,2] and T. Ren[1,2] *1. Institute of Microelectronics, Tsinghua University, Beijing; 2. Tsinghua National Laboratory for Information Science and Technology (TNList), Tsinghua University, Beijing*

CT-12. **Determination of Affinity and Kinetic Constants of the Biotin-streptavidin Complex Using GMR Microfluidic Biosensor.** L. Zhang[1,2], Y. Gao[1,2], W. Huo[1,2], S. Shi[3] and *Y. Gao*[1] *1. Key Laboratory of Photochemical Conversion and Optoelectronic Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing; 2. University of Chinese Academy of Sciences, Beijing; 3. Dongguan Bosh Biotechnologies, LTD, Guangdong*

CT-13. **Tensile Stress Measurement of Tendon by Means of Current Applied to the Tendon.** D. Son[1], *S. Kang*[1], C. Joh[2] and J. Lee[2] *1. Optics and Sensors engineering, Hannam University, Daejeon, Korea; 2. Korea Institute of Civil Engin. and Building Tech., Goyang, Korea*

CT-14. **Magnetic Field Sensors based on Galfenol with variable measurable ranges.** M.A. Caponero[2], C. Cianfarani[2], D. Davino[1], A. Polimadei[2] and *C. Visone*[1] *1. University of Sannio, Benevento, Italy; 2. ENEA C.R. FRASCATI, Frascati, RM, Italy*

WEDNESDAY MORNING 8:30 — PLENARY HALL B

Session CU
SUPERCONDUCTIVITY AND EMERGING TOPICS I (Poster Session)

Cong Ren, Chair
Institute of Physics, Chinese Academy of Sciences

CU-01. **High-pressure synthesis and superconductivity of the Yb-substituted $Ba_{8-x}Yb_xSi_{46}$ clathrates.** L. Liu[1], B. Song[1], H. Ma[3], X. Ma[1] and *Y. Li*[2] *1. University of Science and Technology Beijing, Beijing; 2. University of Puerto Rico at Mayaguez, Mayaguez, Puerto Rico; 3. Jilin University, Changchun, Jilin*

CU-02. High Performance Electrically Tunable RF Phase Shifter with Application of PZT and Nano-patterned Permalloy Thin Films. *T. Wang*[1], Y. Peng[1], W. Jiang[1], T. Xia[2] and G. Wang[1] *1. Electrical Engineering, University of South Carolina, Columbia, South Carolina; 2. School of Engineering, University of Vermont, Burlington, Vermont*

CU-03. Tunable Compact Low Noise Amplifier with Permalloy Thin Film Enabled Slow Wave Transmission Lines. *T. Xia*[1], P. Candra[3,1] and G. Wang[2] *1. Electrical Engineering, University of Vermont, Burlington, Vermont; 2. Electrical Engineering, University of South Carolina, Columbia, South Carolina; 3. IBM, Essex Junction, Vermont*

CU-04. Rotating magnetic field induced mechanical stress and cell death on magnetically labeled cell. *C. Huang*[1] and Z. Wei[2] *1. Institute of NanoEngineering and MicroSystems, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

CU-05. The influence of the introduce of carbon on pseudo-ternaries $RMn_{1.7}Cr_{0.3}Si_2$ G. Chen[1], Q. Du[1], W. Yang[1], J. Wei[1], R. Wu[1], J. Yang[1], C. Wang[1], J. Han[1], S. Liu[1], Y. Zhang[1] and *H. Du*[1] *1. School of Physics, Peking University, Beijing*

CU-06. Dynamics of the superconducting transition of Nb/Ni/FeMn thin-film arrays with exchange bias. *J.P. Badilla Orozco*[1] and D.R. Cornejo[1] *1. Instituto de Física, Universidade de São Paulo, São Paulo, Brazil*

CU-07. Magnetic pinning effect in $YBa_2Cu_3O_{7-d}$/ $Nd_{0.35}Sr_{0.65}MnO_3$ bilayer. *S. Cheng*[1,2], J. Lin[1] and T. Chuang[2] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 2. Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan*

CU-08. Low-magnetic-threshold Acoustic Switching Utilizing Magnetoelastic FeNi/brass Phononic Crystal plate. A. Yang[1], *P. Li*[1], Y. Wen[1], C. Yang[1], D. Wang[1], F. Zhang[1] and J. Zhang[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

CU-09. STUDY OF METAMAGNETISM IN $Sm(Ni_{0.5}Fe_{0.4}Cu_{0.1})_7$ W. Yang[1], Q. Du[1], G. Chen[1], H. Du[1], S. Liu[1], C. Wang[1], J. Han[1], Y. Zhang[1], Y. Yang[1] and *J. Yang*[1,2] *1. State Key Laboratory for Mesoscopic Physics, School of Physics, Peking University, Beijing; 2. Collaborative Innovation Center of Quantum Matter, Beijing*

<u>CU-10</u>. **Critical magnetic fields of superconducting aluminum-substituted $Ba_8Si_{42}Al_4$ clathrate.** *G. Jose*[1], Y. Li[1], G. Franco[1], J. Lu[1], K. Lu[1], B. Shafiq[1], Z. Luo[2], S. Johnson[2], L. Liu[3], N. Chen[3] and Y. Liu[3] *1. School of Engineering, University of Puerto Rico, Mayaguez Campus, Mayaguez, Puerto Rico; 2. Department of Chemistry and Physics, Fayetteville State University, Fayetteville, North Carolina; 3. Physics Department, University of Science and Technology Beijing, Beijing*

<u>CU-11</u>. **NMR study of electronic properties in $Mo_7Re_{13}B$ and $W_7Re_{13}B$ superconductors.** *C. Tseng*[1], H. Liu[1] and C. Lue[1] *1. Physics Department, National Cheng Kung University, Tainan, Taiwan*

<u>CU-12</u>. **Reducing delamination in MgB_2 films deposited on hastelloy tapes by applying SiC buffer layers.** *W.B. Putri*[1], B. Kang[1], M. Ranot[2], P.V. Duong[2], Y.H. Oh[2] and W.N. Kang[2] *1. Physics Department, Chungbuk National University, Cheongju, Korea; 2. Physics Department, Sungkyunkwan University, Suwon, Korea*

<u>CU-13</u>. **Microscopic Mechanism and Calculation of Electromagnetically Induced Acoustic Emission.** Z. Cai[1], *S. Liu*[1], C. Zhang[1] and Q. Yang[1,2] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin; 2. Key Laboratory of Advanced Electrical Engineering and Energy Technology, Tianjin Polytechnic University, Tianjin*

<u>CU-14</u>. **Quantized transmission in magnetized TI nanowires tunable by magnetization.** *Z. Siu*[1] and M.B. Jalil[2] *1. NUS Graduate School for Integrative Sciences and Engineering, National University of Singapore, Singapore; 2. Computational Nanoelectronics and Nanodevice Laboratory, National University of Singapore, Singapore*

WEDNESDAY
MORNING
8:30

PLENARY HALL B

Session CV
MODELLING AND COMPUTATIONAL MAGNETISM IV (Poster Session)

Yaowen Liu, Chair
Tongji University

CV-01. 3D Multifields FEM Computation of Crossed Traveling Wave Induction Heating System. P. Lingling[1], *Y. Wang*[1] and R. Pan[1] *1. Hebei University of Science and Technology, Tianjin*

CV-02. Current Distribution Analysis for a Multilayer High-Tc Superconducting Cable Considering Magnetic Hysteresis. W. Xu[1,2], N. Duan[1,2], *S. Wang*[1], J. Zhu[2] and Y. Guo[2] *1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi; 2. School of Electrical, Mechanical and Mechatronic Systems, University of Technology Sydney, Sydney, New South Wales, Australia*

CV-03. Efficient Deperming Protocols based on the Magnetic Properties in Demagnetization Process. *H. Ju*[1], S. Im[1], J. Lee[1] and G. Park[1] *1. Pusan National University, Busan, Korea*

CV-04. Loop Orientation and Preisach Modeling in Hysteresis Systems. *W. Zamboni*[1] and C. Visone[2] *1. DIEM, Universita' degli Studi di Salerno, Fisciano (SA), Italy; 2. Dipartimento di Ingegneria, Universita' degli Studi del Sannio, Benevento, BN, Italy*

CV-05. Analysis of Different Hysteresis Models When Considering Magnetization Dynamics in Non-oriented Soft Magnetic Steel Sheet. *M. Petrun*[1], S. Steentjes[2], K. Hameyer[2] and D. Dolinar[1] *1. FERI, University of Maribor, Maribor, Slovenia; 2. IEM, RWTH Aachen, Aachen, Germany*

CV-06. Hysteresis Modeling of Soft and Hard Multilayer Magnetic Thin Film Structure by Stoner-Wohlfart Model. W. Tipcharoen[1], *A. Kaewrawang*[1] and A. Siritaratiwat[1] *1. Electrical Engineering, Khon Kaen University, Khon Kaen, Thailand*

CV-07. Modeling of First Order Phase Transition Kinetics. D.A. Kuzmin[1], *I.V. Bychkov*[1], A.P. Kamantsev[2], V. Koledov[2] and V. Shavrov[2] *1. Department of Radiophysics and Electronics, Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. Kotel'nikov Institute of Radio Engineering and Electronics of Russian Academy of Sciences, Moscow, Russian Federation*

CV-08. Magnetization Reversal Mechanism in Notched Elliptic Co Rings. *Z. Xu*[1], Y. Yin[1] and F. Xu[1] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, Jiangsu*

CV-09. A Fast Method for Calculating Magnetic Hysteresis Loops. *I. Stockem*[1] and C. Schröder[1] *1. Bielefeld Institute for Applied Materials Research, Bielefeld University of Applied Sciences, Bielefeld, NRW, Germany*

CV-10. A Practical Method for Characterization of Magnetic Materials. L.A. Righi[2], P.R. Eckert[1] and Á.F.. Flores Filho[1] *1. Post-Graduate Programme in Electrical Engineering, Federal University of Rio Grande do Sul, Porto Alegre, RS, Brazil; 2. Federal University of Santa Maria, Santa Maria, RS, Brazil*

CV-11. Thermodynamic Properties of $Eu_{1-x}A_xCoO_3$ (A=Sr, Gd, Ho and Ce) Cobaltates. *R. Thakur*[1], R.K. Thakur[1] and N. Gaur[1] *1. BARKATULLAH UNIVERSITY, Bhopal, India*

CV-12. Probabilistic Aspects in Biased Quasiballistic Magnetization Reversal in Spin-Valve Devices. *C. Serpico*[1], N. Liebing[2], S. Perna[1], M. d'Aquino[3], G. Bertotti[4] and H.W. Schumacher[2] *1. Univ. of Naples Federico II, Napoli, Italy; 2. Department 2.5, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany; 3. Dipartimento di Ingegneria, Università di Napoli Parthenope, Napoli, Italy; 4. Istituto Nazionale di Ricerca Metrologica, Torino, Italy*

CV-13. Study of Magnetic Properties for Co double-nanorings: Monte Carlo simulation. *Q. Ye*[1], S. Chen[1,2], J. Liu[1], C. Huang[1], H. Zhang[1] and Z. Huang[1] *1. College of Physics and Energy, Fujian Normal University, Fuzhou, Fujian; 2. Electrical and Computer Engineering, Northeastern University, Boston, Massachusetts*

CV-14. Confinement of magnetic vortex and domain walls in dipolar coupled concentric nanocylinders. *A.L. Dantas*[1], M.S. Nunes[1], C.M. Souza[1], I.D. Queiroz[2], G.O. Rebouças[2,3] and A.S. Carriço[3] *1. Departament of Physics, University of State of Rio Grande do Norte, Natal, RN, Brazil; 2. Department of Physics, Federal Rural University of the Semiarid, Mossró, RN, Brazil; 3. Department of Physics, Federal University of Rio Grande do Norte, Natal, RN, Brazil*

CV-15. Oscillatory tunneling magnetoresistance in Fe_3O_4/GaAs/Fe_3O_4 junction. *Z. Huang*[1,4], J. Yue[1], J. Wang[1], Y. Zhai[1,3], Y. Xu[2] and B. Wang[4] *1. Department of Physics, Southeast University, Nanjing, Jiangsu; 2. Department of Electronics, University of York, York, United Kingdom; 3. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, Jiangsu; 4. School of Electronic Science and Engineering, Southeast University, Nanjing, Jiangsu*

CV-16. Quaternary memory based on magnetic skyrmion. *S. Zhang*[1,2], W. Gan[1], I. Kerk[1], J. Kwon[1], F. Luo[1], J. Wang[2], Q. Liu[2] and W. Lew[1] *1. Nanyang Technological University, Singapore; 2. Lanzhou University, Lanzhou, Gansu*

WEDNESDAY MORNING 8:30 — PLENARY HALL B

Session CW
MAGNETIZATION DYNAMICS AND MICROWAVE MATERIALS (Poster Session)

DeSheng Xue, Chair
lanzhou univeristy

CW-01. Analysis of multilayered CoZrNb film on-chip noise suppressor as a function of resistivity and permeability. *J. Ma*[1], H. Kijima[1] and M. Yamaguchi[1] *1. Electrical engineering, Tohoku University, Sendai, Japan*

CW-02. Zero-bias-field spin wave excitations in trapezoidal ferromagnetic strips. *M. Bi*[1], H. Lu[1], X. Wang[1], L. Zhang[1], L. Deng[1] and J. Xie[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

CW-03. Excitations of Nonlinear Ferromagentic Resonance and Standing Spin Wave using Inhomogenous High-Power RF Magnetic Field.
Y. Yokotani[1], K. Yamanoi[1], S. Yakata[2] and T. Kimura[1,3]
1. Department of Physics, Kyushu University, Fukuoka, Japan; 2. Department of Information Electronics, Fukuoka Institute of Technology, Fukuoka, Japan; 3. Research Center for Quantum Nano-spin Science, Kyushu University, Fukuoka, Japan

CW-04. Ferromagnetic resonance modes of nanomagnetic logic elements. *X. Hu*[1], H.S. Dey[2], N. Liebing[1], G. Csaba[2], A. Orlov[2], G.H. Bernstein[2], W. Porod[2], S. Sievers[1] and H.W. Schumacher[1]
1. Nanomagnetism, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany; 2. Department of Electrical Engineering, University of Notre Dame, Notre Dame, Indiana

CW-05. Ferromagnetic Resonance Study of Si/NiO/NiFe Films with Different Orientations of NiO Buffer Layers.
K. Sun[1], Y. Yang[2], Y. Liu[1], Z. Yu[1], Y. Zeng[1], W. Tong[3], X. Jiang[1], Z. Lan[1], R. Guo[1] and C. Wu[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Department of Communication Engineering, Chengdu Technological University, Chengdu, Sichuan; 3. High Magnetic Field Laboratory, Chinese Academy of Sciences, Hefei, Anhui*

CW-06. Aspect ratio dependence of ferromagnetic resonance in thin film ellipse arrays. *H. Huang*[1], C. Li[2] and Z. Wei[2] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

CW-07. X-ray Absorption Spectra and Self-bias Ferromagnetic Resonance of FeCoB Films Prepared by Composition Gradient Sputtering. Q. Xue[1], L. Zhang[2], J. Li[2], Y. Zhang[1], C. Wang[1], Q. Li[1], J. Xu[1] and *S. Li*[1]
1. College of Physics Science, Qingdao University, Qingdao, Shandong; 2. Shanghai Synchrotron Radiation Facility, Shanghai

CW-08. Dynamical spin injection induced by FMR heating effect in CoFeAl strip. *K. Yamanoi*[1], Y. Yokotani[1], S. Yakata[2] and T. Kimura[1] *1. Kyushu-university, Hakozaki, Fukuoka, Japan; 2. Fukuoka Instutuion of Technology, Fukuoka, Japan*

CW-09. Tuning of the microwave magnetization dynamics in $Fe_{65}Co_{35}$-based thin films by Dy Doping. *Z. Xu*[1], Y. Yin[1] and F. Xu[1] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, Jiangsu*

CW-10. Tunable Magnetization Dynamics in Interfacially Modified $Ni_{81}Fe_{19}$(Py)/Pt Bilayer Sample. *A. Ganguly*[1], J. Sinha[1], J. King[2], R. Rowan-Robinson[2], A. Hindmarch[2], D. Atkinson[2] and A. Barman[1] *1. Department of Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, West Bengal, India; 2. Department of Physics, Durham University, Durham, United Kingdom*

CW-11. Nonlinear behavior and mode coupling in spin transfer nano-oscillator. *R. Lebrun*[1], N. Locatelli[2], F. Abreu Araujo[3], S. Tsunegi[1], J. Grollier[1], H. Kubota[4], K. Yakushiji[4], A. Fukushima[4], S. Yuasa[4] and V. Cros[1] *1. UMR CNRS/THALES, Palaiseau, France; 2. Institut d'Electronique Fondamentale, Orsay, France; 3. Université catholique de Louvain, Louvain La Neuve, Belgium; 4. AIST, Tsukuba, Japan*

CW-12. 2nd harmonic detection of nonlinear vortex oscillation under strong RF magnetic field based on the anisotropic magnetoresistance effect. *X. Cui*[1], S. Yakata[2] and T. Kimura[3,4] *1. Graduate School of Information Science and Electrical Engineering, Kyushu Univerisity, Fukuoka, Japan; 2. Fukuoka Institute of Technology, Fukuoka, Japan; 3. Department of Physics, Kyushu Univerisity, Fukuoka, Japan; 4. Research Center for Quantum Nano-Spin Sciences, Kyushu Univerisity, Fukuoka, Japan*

CW-13. Static and high frequency magnetic properties of FeGa thin films deposited on convex flexible substrates. *Y. Yu*[1,3], Q. Zhan[1], J. Wei[2], J. Wang[2], D. Guohong[1], Z. Zhenghu[1], Z. Xiaoshan[1], Y. Liu[1], H. Yang[1], Y. Zhang[1], S. Xie[3], B. Wang[1] and R. Li[1] *1. Key Laboratory of Magnetic Materials and Devices & Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering (NIMTE), Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Key Laboratory for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu; 3. Key Laboratory of Low Dimensional Materials and Application Technology (MOE), School of Materials Science and Engineering, Xiangtan University, Xiangtan, Hunan*

CW-14. Influence of Cu underlayer on the high-frequency magnetic properties of FeCoSiO thin films. *G. Lu*[2,1], X. Miao[2], W. Cheng[2], X. Huang[1], L. Yang[1] and L. Pan[1] *1. College of Science, Three Gorges University, Yichang, Hubei; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei*

WEDNESDAY MORNING 8:30

PLENARY HALL B

Session CX
ELECTRIC MACHINES AND APPLICATIONS (Poster Session)

Heyun Lin, Chair
Southeast University
Do-Kwan Hong, Chair
Korea Electrotechnology Research Institute

CX-01. Numerical Model for Influence of Unbanaced Magnetic Pull on the Critical Speed of Motor-Driven Spindle. *J. Chen*[1], Z. Wang[1], H. Hu[1] and Y. Bai[1] *1. Electromechanical Engineering, Donghua University, Shanghai*

CX-02. Fundamental Comparative Study Of Permanent Magnet Flux Switching Machine Over Various Rotor Structures. *M. Jenal*[1], E. Sulaiman[1] and M. Ahmad[1] *1. Research Center for Applied Electromagnetics, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia*

CX-03. Design and optimization of a High-Bandwidth Low-Speed High-Torque Permanent Magnet Synchronous Motor. *H. Chen*[1], X. Liu[1] and J. Zhao[1] *1. Key Laboratory of Complex System Intelligent Control and Decision, Beijing Institute of Technology, Beijing*

CX-04. Comparative Study of Novel Variable-Flux Memory Machines Having Stator Permanent Magnet Topologies. H. Yang[1,2], Z. Zhu[2], *H. Lin*[1], S. Fang[1] and Y. Huang[1] *1. Engineering Research Center for Motion Control (MOE), Southeast University, Nanjing, Jiangsu; 2. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, South Yorkshire, United Kingdom*

CX-05. Design of Torque Actuator in Hybrid Type Multi-DOF System Considering Magnetic Saturation.
H. Hong[2], H. Park[2], M. Park[2], S. Won[1] and J. Lee[2]
1. Electrical System Engineering, Dongyang Mirae University, Seoul, Korea; 2. Electrical Engineering, Hanyang University, Seoul, Korea

CX-06. Motion Analysis and Control of The Hybrid Multi-DOF Motor with Taking Account on Design of Motor Shape. H. Park[1], *H. Hong*[1], Y. Oh[1], J. Lee[1] and J. Lee[1] *1. Hanyang University, Seoul, Korea*

CX-07. The Magnetic Shield and the Conductive Shield for Air-Core Pulsed Alternators. *L. Tang*[1], K. Yu[1], C. Ye[1], X. Xie[1] and H. Zhang[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei*

CX-08. Design and Analysis of High Speed Permanent Magnet Motor considering Thermal Influence and Nonlinaer Load for Turbo Blower System. *J. Park*[1], K. Lee[1], S. Lee[1] and S. Jung[2] *1. Korea Institute of Industrial Technology, GwangChu, Korea; 2. SungKyunKwan University, Suwon, Korea*

CX-09. A two degree of freedom switched reluctance based tracker for concentrated photovoltaic power generation system. *S. Li*[1] and K. Cheng[1] *1. Department of Electrical Engineering, Hong Kong Polytechnic University, Hong Kong*

CX-10. Design and Model-Free Predictive Current Control for Dual Air-Gap Transverse-Flux Sensorless Permanent Magnet Brushless Direct Current Motors with Low Rare Earth Material. *H. Yu*[1], Z. Wang[1], H. Chuang[1] and C. Lin[2] *1. Department of Systems Engineering and Naval Architecture, National Taiwan Ocean University, Keelung, Taiwan; 2. Department of Electrical Engineering, National Taiwan Ocean University, Keelung, Taiwan*

CX-11. Estimation of Maximum Angular Operation Range for Permanent-Magnet Slotted Limited-Angle Torque Motor. *G. Yu*[1], J. Zou[1], Y. Xu[1] and J. Li[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

CX-12. Optimum Design of PMA-SynRM for Zero Inductance of Q-axis and Experimental Verification.
J. Lee[1], Y. Kim[1] and *D. Kim*[1] *1. Hanbat National University, Deojeon, Korea*

CX-13. Magnetic Actuator Capable of Inspection in a Complex Pipe by Plural Electromagnetic Vibration Components. *H. Yaguchi*[1] *1. Tohoku Gakuin University, Tagajo, Japan*

CX-14. Analysis of a Superconducting Induction Magnetic Levitation device for Hydraulic Turbo-Generator. H. Ma[1], *J. Liu*[1,2], P. Ju[1] and L. Huang[3] *1. College of Energy and Electrical Engineering, Hohai University, Nanjing, Jiangsu; 2. College of Mechanical and Electrical Engineering University of Petroleum East China, Qingdao, Shandong; 3. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

CX-15. Design of a New 2D Trpezoidal Permanent Magnet Array for Planar Motor. *L. Guo*[1], H. Zhang[2], J. Li[2], M. Galea[2] and C. Gerada[2] *1. Zhejiang Sci-Tech University, Hangzhou, Zhejiang; 2. University of Nottingham, Nottingham, United Kingdom*

CX-16. Design and Implementation of a Three-Degrees-of-Freedom Deflection Type PM Motor. *Z. Li*[1], Q. Lun[1], D. Xing[1] and P. Gao[1] *1. School of Electrical Engineering, Hebei University of Science and Technology, Shijiazhuang, Hebei*

WEDNESDAY MORNING 8:30 — PLENARY HALL B

Session CY
MACHINE MODELING, ANALYSIS AND FAULT DIAGNOSIS
(Poster Session)

Kaiyuan Lu, Chair
Aalborg University
Huan Yang, Chair
Zhejiang University

CY-01. Analytical Prediction of Armature Reaction Field Distribution in PMAC Machines With Different Winding Configuration. L. Li[1], *J. Yu*[1] and J. Cao[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

CY-02. Detection of Rotor Eccentricity in Wound Rotor Induction Machines using Pole-Specific Search Coils. *D.G. Dorrell*[1] and A. Salah[1] *1. School of Electrical, Mechanical and Mechatronic Systems, University of Technology Sydney, Sydney, New South Wales, Australia*

CY-03. Parameter optimization and experimental research for a novel axial hybrid magnetic bearing. *S. Chen*[1] and H. Zhu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

CY-04. Modeling of Radial Forces due to Eccentricity in a Permanent-Magnet Synchronous Motor Using Perturbation Theory. *M.D. Noh*[1], D. Kim[1], M. Kim[1] and Y. Park[1] *1. Mechatronics Engineering, Chungnam National University, Daejeon, Korea*

CY-05. Design method for improving the power density applied to Fan-shape of non-rare earth spoke-type PMSM. *S. Ham*[1], S. Cho[2], T. Jeong[2], H. Hong[2] and M. Park[2] *1. Electric Machinery, Kyungil University, Gyeongsan, Korea; 2. Electrical Engineering, Hanyang University, Seoul, Korea*

CY-06. A Novel Sequential Strategy for multivariable optimization in designing of PM motor. *X. Liu*[1] and W. Fu[1] *1. Electrical and Electronic Engineering, The Hong Kong Ploytechnic University, Hong Kong*

CY-07. Mathematic Model of Radial Suspension Force for a New Stator-Permanent Magnet Bearingless Machine. J. Wang[3], *H. Jia*[1,2], S. Fei[1], M. Cheng[3] and W. Hua[3] *1. School of Automation, Southeast University, Nanjing, Jiangsu; 2. CICAEET, Nanjing University of Information Science and Technology, Nanjing, Jiangsu; 3. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

CY-08. Actuator Design based on Flux Path Switching for High Energy Utilization. P. Huang[1] and *M. Tsai*[1] *1. Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan*

CY-09. A Study on the Inductance Calculation of Flux Concentrating Permanent Magnet Motor through Non-Linear Magnetic Equivalent Circuit. *K. Lee*[1], H. Hong[1], Y. Oh[1] and M. Park[1] *1. Hanyang Univ., Seoul, Korea*

CY-10. Comparative Analysis of Eddy Current Loss in Permanent Magnet Synchronous Generator considering PM Shape and Skew Effect for Wind Power Generation. *M. Koo*[1], J. Choi[1], J. Jeong[1], J. Kim[1] and Y. Park[1] *1. Chungnam National University, Daejeon, Korea*

CY-11. A Novel RSM Based Sub-region Alopex Optimization Method for Design of Permanent Magnet Machines. *X. Liu*[1] and W. Fu[1] *1. Electrical and Electronic Engineering, The Hong Kong Ploytechnic University, Hong Kong*

CY-12. Modeling and Analysis of the Magnetic Field of a Surface-interior Permanent Magnet Synchronous Motor. *M. Si*[1], X. Yang[1], S. Zhao[1], J. Si[2] and W. Cao[3] *1. School of Electric Power, South China University of Technology, Guangzhou, Guangdong; 2. Key Laboratory of Control Engineering of Henan Province, Henan Polytechnic University, Jiaozuo, Henan; 3. School of Electronics, Electrical Engineering and Computer Science, Queen's University Belfast, Belfast, Northern Ireland, United Kingdom*

CY-13. Design and Analysis of a Novel Brushless Wound Rotor Synchronous Machine. *Q. Ali*[1], T.A. Lipo[2] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Korea; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

CY-14. Design of Unidirectional Magnetostrictive Actuator without Permanent Magnet. *Y. Park*[1], O. Oh[1] and M.D. Noh[1] *1. Mechatronics Engineering, Chungnam Natational University, Daejeon, Korea*

CY-15. Efficient electromagnetic energy harvesting devices. *M. Tibu*[1], H. Chiriac[1], T. Ovari[1] and N. Lupu[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

CY-16. Cost-effective Design for High Efficiency Synchronous Reluctance Motor. *M. Hsieh*[1], I. Tsai[1] and Y. Weng[1] *1. National Cheng Kung University, Tainan, Taiwan*

WEDNESDAY
AFTERNOON
2:00

309 A

Session DA

RECENT PROGRESS IN STT-MRAM

Guohan Hu, Chair
IBM T J Watson Research Center

2:00 DA-01. **Emerging Memory Technology Landscape - the land of alternate state variables.** ***(Invited)*** *G.S. Sandhu*[1] *1. Micron Technology, Boise, Idaho*

2:30 DA-02. **Low-Current Spin Transfer Torque MRAM.** ***(Invited)*** *D. Worledge*[1,2], A.J. Annunziata[1,2], S. Brown[1,2], W. Chen[1], J. Harms[1], G. Hu[1,2], Y. Kim[2], C. Kothandaraman[1,2], G. Lauer[1,2], J. Lee[2], L. Liu[1,2], S. Murthy[1], J. Nowak[1,2], E. O'Sullivan[1,2], J. Park[2], R. Robertazzi[1,2], J.Z. Sun[1,2] and P. Trouilloud[1,2] *1. IBM-Micron MRAM Alliance, Yorktown Heights, New York; 2. IBM-Samsung MRAM Alliance, Yorktown Heights, New York*

3:00 DA-03. **Perpendicular STT-MRAM for High Speed Non-Volatile Embedded Memory Application.** ***(Invited)*** *P. Wang*[1], G. Jan[1], L. Thomas[1], Y. Lee[1], H. Liu[1], J. Zhu[1], S. Le[1], R. Tong[1], K. Pi[1], D. Shen[1], R. He[1], J. Haq[1], J. Teng[1], V. Lam[1], Y. Wang[1], T. Zhong[1] and T. Torng[1] *1. TDK-Headway Technologies, Inc., Milpitas, California*

3:30 DA-04. **Antiferromagnetic Spin-Orbitronics.** ***(Invited)*** *A. Manchon*[1], H. Saidaoui[1] and S. Ghosh[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

WEDNESDAY
AFTERNOON
2:00

309 B

Session DB
SPIN WAVES AND MAGNONICS I
Dan Wei, Chair
Tsinghua University

2:00 DB-01. **Spin-Wave Dark Soliton Pairs in Magnetic Thin Films.** Z. Wang[1], M. Cherkasskii[2], B. Kalinikos[1,2] and *M. Wu*[1] *1. Department of Physics, Colorado State University, Fort Collins, Colorado; 2. Petersburg Electrotechnical University, St. Petersburg, Russian Federation*

2:15 DB-02. **Excitation of propagating spin waves in an in-plane magnetized ferromagnetic strip by voltage-controlled magnetic anisotropy.** *R.V. Verba*[1], V. Tyberkevych[2] and A. Slavin[2] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Oakland University, Rochester, Michigan*

2:30 DB-03. **Field-induced waveguides for spin-torque magnonics.** *S. Urazhdin*[1], V.E. Demidov[2], A. Zholud[1], H. Ulrichs[2] and S.O. Demokritov[2,3] *1. Physics, Emory University, Atlanta, Georgia; 2. Physics, University of Muenster, Muenster, Germany; 3. Institute of Metal Physics, Ural Division of RAS, Yekaterinburg, Russian Federation*

2:45 DB-04. **Parametric Amplification of Spin Waves Using Bulk Acoustic Waves.** *P. Chowdhury*[1], P. Dhagat[1] and A. Jander[1] *1. Electrical Engineering, Oregon State University, Corvallis, Oregon*

3:00 DB-05. **Field-controlled Phase-rectified Magnonic Multiplexor.** *C.S. Davies*[1], A. Sadovnikov[2], S.V. Grishin[2], Y.P. Sharaevsky[2], S.A. Nikitov[2,3] and V. Kruglyak[1] *1. University of Exeter, Exeter, United Kingdom; 2. Saratov State University, Saratov, Russian Federation; 3. Kotel'nikov Institute of Radioengineering and Electronics, Moscow, Russian Federation*

3:15 DB-06. **Current induced magnetization dynamics in one dimensional magnonic crystal.** *G. Dhurairaj*[1], P. Sabareesan[2] and M. Daniel[1] *1. Centre for Nonlinear Dynamics, Bharathidasan University, Tiruchirappalli, Tamilnadu, India; 2. Centre for Nonlinear Science and Engineering, School of Electrical and Electronics Engineering, SASTRA University, Thanjvavur, Tamilnadu, India*

3:30 <u>DB-07</u>. **Magnetic Skyrmions Motion Driven By Propagating Spin Waves.** *J. Ding*[1,2], W. Wang[3], H. Fangohr[3], X. Yang[2] and T. Zhu[1] *1. Institute of Physics and Beijing National Laboratory for Condensed Matter Physics, Chinese Academy of Sciences, Beijing; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 3. Engineering and the Environment, University of Southampton, Southampton, United Kingdom*

3:45 <u>DB-08</u>. **Magnonic bandstucture in a Skyrmion crystal.** *F. Ma*[1], H. Braun[2], Y. Zhou[3] and W. Lew[4] *1. Temasek Lab, National University of Singapore, Singapore; 2. School of Physics, UCD Science Centre Belfield, Dublin, Iceland; 3. Department of Physics, The University of Hong Kong, Hong Kong; 4. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

WEDNESDAY AFTERNOON 2:00 — 310

Session DC
MODELLING AND COMPUTATIONAL MAGNETISM V
Gang Su, Chair
University of Chinese Academy of Sciences

2:00 <u>DC-01</u>. **Mechanically induced 180°switching in nanomagnets.** *M. Yi*[1] and B. Xu[1] *1. Institute of Materials Science, TU Darmstadt, Darmstadt, Germany*

2:15 <u>DC-02</u>. **Modeling Perpendicular Magnetic Multilayered Oxide Media with Discretized Magnetic Layers.** *S. Fu*[1,2], V. Lomakin[1,2], A. Torabi[3] and B. Lengsfield[3] *1. Center for Magnetic Recording Research, University of California, San Diego, La Jolla, California; 2. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, California; 3. HGST, A Western Digital Company, San Jose, California*

2:30 <u>DC-03</u>. **Multiscale modeling of ultrafast element-specific magnetization dynamics in FeNi ferromagnetic alloys.** D. Hinzke[1], *U. Atxitia*[1,2], K. Carva[3,4], P. Nieves[5], O. Chubykalo-Fesenko[5], P.M. Oppeneer[4] and U. Nowak[1] *1. Fachbereich Physik, Universität Konstanz, Konstanz, Baden-Württemberg, Germany; 2. Zukunftskolleg at the University of Konstanz, Konstanz, Baden-Württemberg, Germany; 3. Faculty of Mathematics and Physics, DCMP, Charles University, Prague, Czech Republic; 4. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 5. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

2:45 <u>DC-04</u>. **Mitigation of magnus force in current-induced skyrmion dynamics.** *H. Fook*[1], C. Ang Ching Ian[1], W. Gan[1], I. Purnama[1] and W. Lew[1] *1. Nanyang Technological University, Singapore*

3:00 <u>DC-05</u>. **Determining pseudo-particle properties of Skyrmion from its response to applied alternating current.** *S. Wu*[1], W. Gan[1], I. Purnama[1] and W. Lew[1] *1. Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

3:15 <u>DC-06</u>. **Hysteresis Model of Magnetically Controlled Shape Memory Alloy Based on a PID Neural Network.** M. Zhou[1] and *Q. Zhang*[1] *1. College of Communication Engineering, Jilin University, Changchun, Jilin*

WEDNESDAY AFTERNOON 2:00 — 311 A

Session DD
INTERMETALLIC AND OTHER HARD MAGNETS II
Oleg Mryasov, Chair
University of Alabama

2:00 <u>DD-01</u>. **Fabrication of SmCo films using facing target sputtering system with sputtering Ar and Xe gas.** *Y. Takamura*[1], S. Hidetada[1] and S. Nakagawa[1] *1. Department of Physical Electronics, Tokyo Institute of Technology, Tokyo, Japan*

2:15 **DD-02. Magnetic properties and microstructures of high-performance Sm_2Co_{17} based alloy.** *W. Sun*[1], M. Zhu[1], Y. Fang[1], Z. Guo[1] and W. Li[1] *1. Research Institute of Functional Materials, China Iron and Steel Research Institute, Beijing*

2:30 **DD-03. Electron theory of interstitial dopant dependence of magnetic properties in $NdFe_{11}TiX$ (X= B, C, N, O, F).** *Y. Harashima*[1,3], K. Terakura[1,5], H. Kino[2,3], S. Ishibashi[1,4] and T. Miyake[1,3] *1. Nanosystem Research Institute "RICS", AIST, Tsukuba, Ibaraki, Japan; 2. MANA, NIMS, Tsukuba, Ibaraki, Japan; 3. ESICMM, NIMS, Tsukuba, Ibaraki, Japan; 4. G-MAG, AIST, Tsukuba, Ibaraki, Japan; 5. NIMS, Tsukuba, Ibaraki, Japan*

2:45 **DD-04. Magnetic phase relations of RCo_3** Q. He[1] and *Y. Guo*[1] *1. School of Energy Power and Mechanical Engineering, North China Electric Power University, Beijing*

3:00 **DD-05. In-Situ Observation of Domain Wall Pinning in $Sm(Co,Fe,Cu,Zr)_z$ Magnet by Lorentz Microscopy.** *Y. Tian*[1,2], Z. Liu[1], W. Xia[1], H. Xu[2], J. Du[1], J. Zhang[1], A. Yan[1] and J. Liu[1,3] *1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. School of Materials Science and Engineering, Shanghai University, Shanghai; 3. University of Texas at Arlington, Arlington, Texas*

3:15 **DD-06. Positive temperature coefficient of coercivity in $Sm_{1-x}Nd_x(Co_{0.695}Fe_{0.2}Cu_{0.08}Zr_{0.025})_{7.2}$ magnets with spin-reorientation-transition cell boundary phases.** *L. Liu*[2,1], Z. Liu[2,1], M. Li[2,1], Z. Xue[2,1], D. Lee[2,1], J. Liu[2,1], A. Yan[2,1] and W. Li[2,1] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

3:30 **DD-07. Microstructure and magnetic properties of SmCo-based nanocrystalline alloys doped with Cr_3C_2** *L. Li*[1] *1. The State key Laboratory for Powder Metallurgy, Central South University, Changsha, Hunan*

3:45 DD-08. **Effect of Fe on Hydrogenation and Dehydrogenation of $Sm(Co_{bal}Fe_xCu_{0.053}Zr_{0.02})_{7.84}$(x=0.2,0.3,0.4,0.5) Alloys.** *M. Li*[1,2], Z. Liu[1,2], L. Lei[1,2], Z. Xue[1,2], S. He[1,2], R. Chen[1,2], D. Lee[1,2], X. Liu[3] and A. Yan[1,2] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 3. State Key Laboratory Base of Novel Functional Materials and Preparation Science, Faculty of Materials Science and Chemical Engineering, Ningbo University, Ningbo, Zhejiang*

WEDNESDAY AFTERNOON 2:00 311 B

Session DE
MAGNETIC IMAGING AND CHARACTERIZATION II

Xinhui Zhang, Chair
Institute of Semiconductors, Chinese Academy of Sciences

2:00 DE-01. **Time Resolved Magnetic Imaging At 10Ghz And Beyond. *(Invited)*** *H. Ohldag*[1,2], S. Bonetti[3], R. Kukreja[3], J. Frisch[1], H. Duerr[1] and J. Stoehr[1] *1. SLAC National Accelerator Laboratory, Menlo Park, California; 2. New York University, New York, New York; 3. Stanford University, Stanford, California*

2:30 DE-02. **Generation and direct imaging of resonant domain wall mediated spin wave.** *B. Mozooni*[1] and J. McCord[1] *1. Institute for Materials Science, Kiel University, Kiel, Germany*

2:45 DE-03. **Stacked topological spin textures as emitters for multidimensional spin wave modes.** V. Sluka[1,3], M. Weigand[4], A. Kakay[1], A. Erbe[1], V. Tyberkevych[5], A. Slavin[5], A. Deac[1], J. Lindner[1], J. Fassbender[1,6], J. Raabe[2] and *S. Wintz*[2,1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Paul Scherrer Institut, Villigen, Switzerland; 3. New York University, New York, New York; 4. Max-Planck-Institut für Intelligente Systeme, Stuttgart, Germany; 5. Oakland University, Rochester, Michigan; 6. Technische Universität Dresden, Dresden, Germany*

3:00 **DE-04. Direct Imaging Magnetic Vortex Precession Orbit and Dynamics Using High-Energy Electrons with GHz Excitations.** ***(Invited)*** *Y. Zhu*[1,2], S. Pollard[1,2] and J. Pulecio[1] *1. Condensed Matter Physics, Brookhaven National Laboratory, Upton, New York; 2. Physics and Astronomy, Stony Brook University, Stony Brook, New York*

3:30 **DE-05. Dependence of All-optical Magnetic Switching on the Sublattice Magnetization Orientation in Tb-Fe Thin Films.** *A. Hassdenteufel*[1], C. Schubert[2,1], J. Schmidt[3,4], P. Richter[1], D. Zahn[1], G. Salvan[1], M. Helm[3,4], R. Bratschitsch[5] and M. Albrecht[2] *1. Institute of Physics, Technische Universität Chemnitz, Chemnitz, Germany; 2. Institute of Physics, University of Augsburg, Augsburg, Germany; 3. Helmholtz Zentrum Dresden Rossendorf, Dresden, Germany; 4. Technische Universität Dresden, Dresden, Germany; 5. Physikalisches Institut, University of Münster, Münster, Germany*

3:45 **DE-06. Ghost imaging protocol for magneto-optical applications.** *A. Caprile*[1], A. Meda[1], A. Avella[1], I. Ruo Berchera[1], I. Degiovanni[1], A. Magni[1] and M. Genovese[1] *1. INRiM, Torino, Italy*

WEDNESDAY AFTERNOON 2:00 — 308

Session DF
RECORDING SYSTEMS I
Kheong Sann Chan, Chair
Data Storage Institute

2:00 **DF-01. Multihead Multitrack Detection with Reduced-State Sequence Estimation in Shingled Magnetic Recording.** *B. Fan*[1,2], H.K. Thapar[2] and P.H. Siegel[1,2] *1. ECE, University of California San Diego, La Jolla, California; 2. CMRR, University of California San Diego, San Diego, California*

2:15 **DF-02. Resolution Limits of Timing-Based Servo Schemes in Magnetic Tape Drives.** *S. Furrer*[1], A. Pantazi[1], G. Cherubini[1] and M. Lantz[1] *1. IBM Research, Ruschlikon, Switzerland*

2:30 <u>DF-03</u>**. Noise and error pattern in shingled magnetic recording.** *Y. Wang*[1,2], R.H. Victora[2] and V. Bhagavatula[1] *1. Data Storage System Center (DSSC), Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. Center for Micromagnetic and Information Technologies, University of Minnesota, Minneapolis, Minnesota*

2:45 <u>DF-04</u>**. Signal Processing and Detection for Array Reader Magnetic Recording System.** *H. Xia*[1], L. Lu[1], S. Jeong[1], L. Pan[1] and J. Xiao[1] *1. Avago Technologies, San Jose, California*

3:00 <u>DF-05</u>**. Joint Optimization Of Disk Drive Channel And Preamp Using The Nelder-Mead Simplex Method.** *M. Alex*[1] and J. Long[1] *1. Western Digital Technologies, San Jose, California*

3:15 <u>DF-06</u>**. Areal Density prediction for Microwave Assisted Magnetic Recording (MAMR).** K.K. Teo[1], *K. Chan*[1], S. Greaves[2] and Y. Kanai[3] *1. Data Storage Institute (DSI), Agency for Science Technology and Research(A*STAR)., Singapore; 2. RIEC, Tohoku University, Sendai, Japan; 3. Department of Information and Electronics Engineering, Niigata Institute of Technology, Kashiwazaki, Japan*

3:30 <u>DF-07</u>**. A Study of Timing Recovery for High Recording Density Tape System.** *A. Musha*[1,2], O. Shimizu[1], Y. Nakamura[2] and Y. Okamoto[2] *1. Recording media research laboratory, FUJIFILM Corporation, Odawara-shi, Japan; 2. Ehime University, Matsuyama-shi, Japan*

3:45 <u>DF-08</u>**. Upper Limits on Achievable Storage Density Using Turbo Equalization in Two-Dimensional Magnetic Recording.** *J. No*[1] and J. Moon[1] *1. Electrical Engineering, KAIST, Daejeon, Korea*

WEDNESDAY
AFTERNOON
2:00

307

Session DG
MAGNETO-OPTIC AND NOVEL MATERIALS

Franca Albertini, Chair
IMEM-CNR

2:00 **DG-01. Investigation of the strain-affected ultrafast spin switching on cobalt-doped carbon fullerenes.** C. Li[1,3], *J. Liu*[1], S. Zhang[2], G. Lefkidis[3,1] and W. Hübner[3] *1. Department of Engineering Mechanics, Northwestern Polytechnical University, Xi'an, Shaanxi; 2. State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an, Shaanxi; 3. Department of Physics and Research Center OPTIMAS, University of Kaiserslautern, Kaiserslautern, Germany*

2:15 **DG-02. Nonlinear Dynamic Characteristics of MSMA Microgripper in Harmonic Magnetic Fields.** J. Xu[2], Y. Kong[1] and *Z. Zhu*[1] *1. Tianjin University, Tianjin; 2. Tianjin Key Laboratory of Nonlinear Dynamics and Chaos Control, Tianjin*

2:30 **DG-03. Magneto-optical and Magnetic Properties of BiLuIG Single Crystal Film Prepared by LPE Method from Lead-free Flux.** *Q. Yang*[1], H. Zhang[1] and Q. Wen[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

2:45 **DG-04. Manipulation of the photoluminescence of C_{60} via ferromagnetic resonance.** *M.C. Wheeler*[1], T. Moorsom[1], F. Al Ma'Mari[1], F. Goncalves[2], R. Stamps[2], B. Hickey[1], G. Burnell[1] and O. Cespedes[1] *1. Condensed Matter Research Group, University of Leeds, Leeds, West Yorkshire, United Kingdom; 2. Materials and Condensed Matter Physics, University of Glasgow, Glasgow, United Kingdom*

3:00 **DG-05. Probing Spinterface physics with a ferrimagnetic spin donor.** *T. Moorsom*[1], M.C. Wheeler[1], M. Khan[1], F. Al Ma'Mari[1], C. Kinane[3], S. Langridge[3], D. Ciudad[2], L. Hueso[2], G. Teobaldi[4], G. Burnell[1], B. Hickey[1] and O. Cespedes[1] *1. University of Leeds, Leeds, United Kingdom; 2. CIC NanoGUNE, San Sebastian, Spain; 3. ISIS Neutron Source, Rutherford Appleton Laboratory, United Kingdom; 4. University of Liverpool, Liverpool, United Kingdom*

3:15 DG-06. **In-situ observation of behavior of magnetic particle clusters during torque transfer between textured magnetic poles.** *T. Oshima*[1], K. Nagato[1,2], A. Kuwayama[3], K. Enokizono[3], H. Okada[3], T. Matsushima[4], S. Takagi[1], M. Nakao[1] and T. Hamaguchi[1] *1. The University of Tokyo, Tokyo, Japan; 2. JST, PRESTO, Saitama, Japan; 3. DENSO CORPORATION, Aichi, Japan; 4. University of Tsukuba, Chiba, Japan*

3:30 DG-07. **Magneto Optical Kerr Rotation of $[(GeTe)_2(Sb_2Te_3)_1]_n$ Superlattice.** *B. Do*[1,2], H. Awano[1,2], Y. Saito[3,2], J. Tominaga[3,2] and S. Murakami[4,2] *1. Toyoya Technological Institute, Nagoya, Japan; 2. JST-CREST, Japan Science and Technology, Honcho, Kawaguchi, Saitama, Japan; 3. Nanoelectronics Research Institute, National Institute of Advanced Industrial Science & Technology, Tsukuba, Ibaraki, Japan; 4. Department of Physics, Tokyo Institute of Technology, Tokyo, Japan*

3:45 DG-08. **Microwave absorption and catalytic activity of NiCo nanostructures.** *J. Liu*[1] and M. Zeng[1] *1. Beihang University, Beijing*

WEDNESDAY AFTERNOON 2:00 — 306 B

Session DH
INDUCTORS
Jianguo Zhu, Chair
University of Technology, Sydney

2:00 DH-01. **Solenoid microinductors with anisotropic nanolaminated CoNiFe cores for high-frequency DC-DC power conversion.** *J. Kim*[1], M. Kim[1], J. Kim[2] and M. Allen[2] *1. Electrical and Computer Engineering, Georgia Institute of Technology, Lansdowne, Pennsylvania; 2. Electrical and Systems Engineering, University of Pennsylvania, Philadelphia, Pennsylvania*

2:15 DH-02. **Development of Concentric-Winding type Three-Phase Variable Inductor.** *K. Nakamura*[1], K. Honma[1], T. Ohinata[2], K. Arimatsu[2], T. Kojima[3], M. Yamada[3], R. Matsumoto[3], M. Takiguchi[3] and O. Ichinokura[1] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Tohoku Electric Power Co., Inc., Sendai, Japan; 3. Fuji Electric Co., Ltd., Tokyo, Japan*

2:30 **DH-03. Investigation of Non-Linear Phenomenon for Integrated Magnetics Used in LLC Converters.**
W. Water[1], J. Lu[1] and *N. Wang*[2] *1. Griffith University, Nathan, Queensland, Australia; 2. University of College Cork, Cork, Ireland*

2:45 **DH-04. A Novel Bridge-Type Hybrid Saturated Core Fault Current Limiter Based on Permanent Magnets.**
J. Yuan[1,2], *Y. Lei*[1], L. Wei[1] and B. Chen[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Electrical and computer engineering, the Ohio State University, Columbus, Ohio*

3:00 **DH-05. On-line Demagnetization Method for an Iron Core CT.**
T. Zheng[1], E. Hu[1], H. Yang[1], R. Zhao[1], Y. Kang[3,4] and V. Terzija[2] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang; 2. School of Electrical and Electronic Engineering, University of Manchester, Manchester, United Kingdom; 3. Department of Electrical Engineering, Chonbuk National University, Chonju, Chonbuk, Korea; 4. Wind energy grid-adaptive technology research center, Chonju, Korea*

3:15 **DH-06. Material Optimization with Perpendicular Anisotropy for Closed-Loop Magnetic Inductors.**
A. El-Ghazaly[1], N. Sato[1], R.M. White[2] and S.X. Wang[1,2] *1. Electrical Engineering, Stanford University, Stanford, California; 2. Materials Science and Engineering, Stanford University, Stanford, California*

3:30 **DH-07. Optimal Design of Superconducting Controlled Reactor Based on Immune Algorithm and ANSYS.**
J. Yuan[1,2], *Z. Yu*[1], G. Xue[1], B. Sun[1] and B. Chen[1] *1. Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Electrical Engineering, Ohio State University, Columbus, Ohio*

3:45 **DH-08. Study on the electric performances of planar inductor with Fe-system magnetic flake composite integrated for SiP DC-to-DC converter applications.**
Y. Endo[1], H. Sato[1], T. Miyazaki[2], M. Yamaguchi[1], H. Kamada[3], M. Takahashi[3], M. Sakamoto[3], S. Maita[3], N. Kato[3], Y. Yorozu[4] and T. Yasui[4] *1. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 2. Faculty of Engineering, Tohoku University, Sendai, Japan; 3. Hikaridenshi Company, LTD, Osaki, Miyagi, Japan; 4. Core Technology R&D Center, Ricoh Institute of Technology, Ricoh Company, LTD, Yokohama, Japan*

WEDNESDAY AFTERNOON 4:30 — PLENARY HALL A

Session ZA
PLENARY SESSION AND AWARD CEREMONY

Burkard Hillebrands, Chair
Technical University of Kaiserslautern
Jinliang He, Chair
Tsinghua University

PLENARY TALK by Prof. ENGE WANG
Deputy President of Chinese Academy of Science

A step up to self-assembly of low-dimensional quantum structures

WEDNESDAY EVENING 6:15 — BALLROOM A & B

RECEPTION

THURSDAY MORNING 9:00 — 309 A

Session EA
ADVANCED PERMANENT MAGNETS

J. M. D. Coey, Chair
Trinity College Dublin

9:00 EA-01. **Research and development of rare earth-iron interstitial compounds.** ***(Invited)*** *Y. Yang*[1], J. Yang[2,3], J. Han[1], S. Liu[1], C. Wang[1] and H. Du[1] *1. School of Physics, Peking University, Beijing; 2. State Key Laboratory for Mesoscopic, Peking University, Beijing; 3. Collaborative Innovation Center of Quantum Matter, Beijing*

9:30 EA-02. **Decoding Magnetic Anisotropy Temperature Dependence: 3D-5D(4D), 3D-Metalloid And FeCo/MgO Cases.** ***(Invited)*** *O.N. Mryasov*[1,2], A. Kalitsov[1,2], S. Okatov[1], A. Singh[1], S. Faleev[1,2] and J. Barker[1,3] *1. University of Alabama, Tuscaloosa, Alabama; 2. Western Digital, San Jose, California; 3. Tohoku University, Sendai, Japan*

10:00 EA-03. **Thermal stability of coercivity in grain boundary modified anisotropic hot-deformed Nd-Fe-B magnets.** ***(Invited)*** *H. Sepehri-Amin*[1], L. Liu[1], T. Ohkubo[1], M. Yano[2], T. Shoji[2], A. Kato[2] and K. Hono[1] *1. Elements Strategy Initiative Center for Magnetic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Advanced Material Engineering Division, Toyota Motor Corporation, Susono, Japan*

10:30 EA-04. **Exchange-Coupled MnBi/Co_xFe_{1-x} Bilayers with Room-Temperature Energy Product of 25 MGOe.** ***(Invited)*** *I. Takeuchi*[1] *1. University of Maryland, College Park, Maryland*

11:00 EA-05. **Nanostructured Rare-Earth Permanent Magnets, What's Next?** ***(Invited)*** N. Poudyal[1] and *J. Liu*[1] *1. Physics, University of Texas at Arlington, Arlington, Texas*

11:30 EA-06. **Artificial fabrication and characterization of $L1_0$-ordered FeNi thin films.** ***(Invited)*** *K. Takanashi*[1], M. Mizuguchi[1], T. Kojima[1] and T. Tashiro[1] *1. Institute for Materials Research, Tohoku Univ, Sendai, Miyagi, Japan*

THURSDAY MORNING 9:00 — 309 B

Session EB
MAGNETIC TUNNEL JUNCTION AND PERPENDICULAR ANISOTROPY (I)
Ron Jansen, Chair
Spintronics Research Center, Japan

9:00 EB-01. **Spin Polarized Tunneling Study on Spin Hall Effect Metals and Topological Insulator.** ***(Invited)*** *L. Liu*[1], C. Chen[1], J.Z. Sun[1], A. Richardella[2], I. Garate[3], Y. Zhu[1] and N. Samarth[2] *1. IBM Watson Research Center, Yorktown Heights, New York; 2. Pennsylvania State University, State College, Pennsylvania; 3. Physics Department, Université de Sherbrooke, Sherbrooke, Quebec, Canada*

9:30 EB-02. **Phase diagram and optimal switching induced by spin Hall effect in a perpendicular magnetic layer.** S. Yan[1] and *Y. Bazaliy*[1] *1. Department of Physics and Astronomy, University of South Carolina, Columbia, South Carolina*

9:45 EB-03. **Kondo effect on the transport properties in the multiferroic tunnel junction of $La_{0.7}Sr_{0.3}MnO_3/BaTiO_3/La_{0.7}Sr_{0.3}MnO_3$** *W. Huang*[1], Y. Yin[1,2], S. Yang[1], L. Feng[1], D. Zhang[1], W. Zhao[1], Q. Li[2] and X. Li[1,3] *1. Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, University of Science and Technology of China, Hefei, Anhui; 2. Department of Physics, Pennsylvania State University, University Park, Pennsylvania; 3. School of Physics and Materials Science, Anhui University, Hefei, Anhui*

10:00 EB-04. **Eight non-volatile states in a multiferroic tunnel junction unit cell.** *Y. Yin*[1,3], Y. Liu[1], S. Yang[1], W. Huang[1], S. Dong[1], J. Tao[2], Y. Zhu[2], Q. Li[3] and X. Li[1] *1. Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, University of Science and Technology of China, Hefei, Anhui; 2. Brookhaven National Laboratory, Upton, New York; 3. Department of Physics, Pennsylvania State University, University Park, Pennsylvania*

10:15 EB-05. **Feasibility of a quaternary state memory using a magnetic tunnel junction with a ferroelectric barrier.** *Q. Li*[1], Y. Yin[1], W. Hu[1,2], M. Raju[1], X. Li[3] and Z. Zhang[2] *1. Department of Physics, Pennsylvania State University, University Park, Pennsylvania; 2. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Liaoning; 3. Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, University of Science and Technology of China, Hefei, Anhui*

10:30 EB-06. **Spin light emitting diode with CoFeB/MgO spin injector.** ***(Invited)*** *Y. Lu*[1], S. Liang[2,1], T. Zhang[4], P. Barate[4], J. Frougier[3], P. Renucci[4], B. Xu[5], H.Y. Jaffres[3], J. George[3], X. Devaux[1], M. Hehn[1], X. Marie[4], S. Mangin[1], T. Amand[4], X. Han[2] and Z. Wang[5] *1. Département Physique de la matière et des matériaux, Institut Jean Lamour, Vandoeuvre-les-Nancy, France; 2. Beijing National Laboratory of Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing; 3. Unité Mixte de Physique CNRS/Thales and Université Paris-Sud 11, Palaiseau, France; 4. INSA-CNRS-UPS, LPCNO, Université de Toulouse, Toulouse, France; 5. Key Laboratory of Semiconductor Materials Science, Institute of Semiconductors, Chinese Academy of Sciences, Beijing*

11:00 EB-07. **Effect of Mn impurities on the 3-terminal Hanle signals in ferromagnet/oxide tunnel contacts on a semiconductor.** *A.M. Spiesser*[1], H. Saito[1], S. Yuasa[1] and R. Jansen[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology AIST, Tsukuba, Ibaraki, Japan*

11:15 EB-08. **Tunneling Anisotropic Magnetoresistance with Half-Metallic Electrodes.** J.D. Burton[1] and *E.Y. Tsymbal*[1] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, Nebraska*

11:30 EB-09. **Double magnetic tunnel junctions with perpendicular anisotropy.** *L. Cuchet*[1], R.C. Sousa[1], S. Auffret[1], I.L. Prejbeanu[1] and B. Dieny[1] *1. Univ. Grenoble Alpes, CEA, CNRS, INAC-SPINTEC, Grenoble, France*

11:45 EB-10. **Conductive Atomic Force Microscopy of Small Magnetic Tunnel Junctions with Interface Anisotropy.** *S. Majetich*[1], S.K. Piotrowski[1], M. Bapna[1], S.D. Oberdick[1], M. Li[2], C. Chien[2], L. Tryputen[3], C. Ross[3], H. Almasi[4] and W. Wang[4] *1. Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. Physics, Johns Hopkins University, Baltimore, Maryland; 3. MIT, Cambridge, Massachusetts; 4. University of Arizona, Tuscon, Arizona*

THURSDAY MORNING 9:00 — 310

Session EC
NANOSCALE MAGNETISM II
Takahide Kubota, Chair
Tohoku university

9:00 EC-01. **Increasing the Magnetisation of Electrolessly Deposited Ni-B Nanotubes.** *D. Richardson*[1,2] and F.M. Rhen[1,2] *1. Physics and Energy, University of Limerick, Limerick, Ireland; 2. Materials and Surface Science Institute, University of Limerick, Limerick, Ireland*

9:15 EC-02. **30,000% Magnetoresistance at 77 K in Gas-Stabilised Platinum Atomic Chains.** *O. Cespedes*[1], M. Wheeler[1], T. Moorsom[1] and M. Viret[2] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 2. Service de Physique de l'Etat Condensé, French Alternative Energies and Atomic Energy Commission (CEA), Saclay, France*

9:30 EC-03. **Composition-dependent reorientation of magnetic anisotropy in electrodeposited CoNi nanowire arrays.** *A.S. Samardak*[1], A. Ognev[1], E. Sukovatitsina[1], A. Samardak[1], E. Modin[1], L. Chebotkevich[1], E. Panahi-Danaei[2] and F. Nasirpouri[2] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Faculty of Materials Engineering, Sahand University of Technology, Tabriz, Iran*

9:45 EC-04. **Local control of domain wall dynamics in ferromagnetic rings.** *K. Richter*[1], M. Mawass[1,2], A. Krone[1], B. Krüger[1], M. Weigand[2], H. Stoll[2], G. Schütz[2] and M. Klaeui[1] *1. Johannes Gutenberg University, Mainz, Germany; 2. Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany*

10:00 EC-05. **Doping effects on structure, morphology and magnetic properties of $SmFe_{1-x}Mn_xO_3$ nanopowders.** *W. Li*[1], J. Xu[1] and H. Shen[1] *1. Institute of Crystal Growth, School of Materials Science and Engineering, Shanghai Institute of Technology, Shanghai*

10:15 EC-06. **Magnetic Properties of Core-Shell Fe-Fe_3O_4 Nanowires.** *I. Ivanov*[1], A. Alfadhel[1], M. Alnassar[1], M. Vazquez[2] and J. Kosel[1] *1. Department of Electrical Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. Institute of Materials Science of Madrid, CSIC, Madrid, Spain*

10:30 EC-07. **Direct Detection of Neighboring Stray Field Interaction on a Single Nanodisk Using Micro-Focused Brillouin Light Scattering Spectroscopy.** *G. Shimon*[1] and A. Adeyeye[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore*

10:45 EC-08. **Magnetoresistance of Cylindrical Nanowires with Artificial Pinning Site.** E. Vilanova Vidal[1], H. Mohammed[1], *I. Ivanov*[1] and J. Kosel[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

11:00 EC-09. **Synthesis and Characterisation of Ni-Fe Nanotubes.** *D. Richardson*[1,2], F.M. Rhen[1,2] and S. Kingston[1,2] *1. Physics and Energy, University of Limerick, Limerick, Ireland; 2. Materials and Surface Science Institute, University of Limerick, Limerick, Ireland*

11:15 EC-10. **Microstructure and Improved Coercivity of $Mn_{1.33}Ga$ Nanoflakes by Surfactant-Assisted Ball Milling.** Q. Lu[1], *M. Wang*[1], H. Zhang[1] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing*

11:30 EC-11. **Control of domain wall position in L-shaped Fe_4N negatively spin polarized ferromagnetic nanowire.** *T. Gushi*[1], K. Ito[1,2], S. Honda[1,3], Y. Yasutomi[1], S. Higashikozono[1], K. Toko[1], H. Oosato[4], Y. Sugimoto[4], K. Asakawa[3], N. Ota[3] and T. Suemasu[1] *1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan; 2. Japan Society for the Promotion of Science (JSPS), Chiyoda, Tokyo, Japan; 3. Tsukuba Nanotechnology Human Resource Development Program, University of Tsukuba, Tsukuba, Ibaraki, Japan; 4. NIMS Nanofabrication Platform, National Institute for Material Science, Tsukuba, Ibaraki, Japan*

11:45 EC-12. **Spin Waves Modes In Cobalt Nanowires Arrays.** D. Gonzalez[2], Y. Roussigné[1], *S.M. Cherif*[1], A. Stashkevich[1], M. Belmeguenai[1] and M. Vazquez[2] *1. LSPM, Institut Galilée, University Paris 13-Nord, Villetaneuse, France; 2. CSIC, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain*

THURSDAY MORNING 9:00 — 311 A

Session ED

SOFT MAGNETIC MATERIALS II: CRYSTALLINE, NANOCRYSTALLINE AND AMORPHOUS MATERIALS

Vincent Harris, Chair
Northeastern University
Yajie Chen, Chair
Northeastern University

9:00 ED-01. **Electric-field tuned magnetic anisotropy in the FeSiBC/PMN-PT heterostructures with different history of induced uniaxial anisotropy.** *D. Wen*[1], H. Zhang[1], J.Q. Xiao[2] and F. Bai[1] *1. State Key Laboratory of Electronic Thin films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Institute of Electronic and Information Engineering in Dongguan, University of Electronic Science and Technology, Dongguan, Guangdong*

9:15 ED-02. **Electromotive Force Induced by Domain Wall Propagation in Cylindrical Magnetic Microwire.** A. Jiménez[1,2], R. Varga[2] and *M. Vazquez*[1] *1. Institute of Materials Science of Madrid de Madrid (CSIC), Madrid, Spain; 2. Dpt. Experimental Physics, Faculty of Science, P.J.Š. University, Kosiçe, Slovakia*

9:30 ED-03. **Formation of bulk nanocrystalline and amorphous alloy with controllable microstructure and magnetic properties by plasma spray deposition.**
E. Denisova[1,2], R. Iskhakov[1], A. Lepeshev[3], V. Saunin[4], S. Telegin[4], L. Kuzovnikova[2] and N. Shepeta[4] *1. L. V. Kirensky Institute of Physics SB RAS, Krasnoyarsk, Russian Federation; 2. Krasnoyarsk Institute of Railways Transport, Krasnoyarsk, Russian Federation; 3. Sibirien Federal University, Krasnoyarsk, Russian Federation; 4. Siberian State Aerospace University, Krasnoyarsk, Russian Federation*

9:45 ED-04. **Microstructure, texture evolution and magnetic properties of strip-casting non-oriented 6.5 wt.% Si electrical steel sheets with different thickness.** *H. Li*[1] and H. Liu[1] *1. State Key Laboratory of Rolling and Automation, Northeastern University, Shenyang, Liaoning*

10:00 ED-05. **Magneto-strictive Behavior of Fe-B(001) Single-Crystal Films under Rotating Magnetic Fields.**
T. Kawai[1], T. Aida[1], M. Ohtake[1] and M. Futamoto[1] *1. Faculty of Science and Engineering, Chuo University, Tokyo, Japan*

10:15 ED-06. **The effect of cooling rate on order degree of 6.5 wt% Si electrical steel.** *X. Wang*[1] and H. Liu[1] *1. State Key Laboratory of Rolling and Automation, Northeastern University, Shenyang, Liaoning*

10:30 ED-07. **Studies on magnetic properties and ball-milling process of Fe–Si–Cr powders.** *X. Zhou*[1,2], D. Liang[1,2] and X. Wang[1,2] *1. National Engineering Research Center of Electromagnetic Radiation Control Materials, Chengdu, Sichuan; 2. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

10:45 ED-08. **Large Converse Magnetoelectric Properties without Bias in Composite of Rosen-type Piezoelectric Transformer and Magnetization-graded Ferromagnetic Material.** C. Yang[1], *P. Li*[1], Y. Wen[1], A. Yang[1], D. Wang[1], F. Zhang[1] and J. Zhang[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

11:00 **<u>ED-09</u>. New approach to closely-spaced disordered cobalt-graphene nanocomposites for non-conductive ferromagnetic films: from local structure to radio-electric properties.** *H. Takacs*[1,2], V. Herman[1], B. Viala[1], J. Alarcon Ramos[1], J. Tortai[2] and F. Duclairoir[3] *1. CEA, LETI, MINATEC Campus, Grenoble, France; 2. LTM-CNRS-UJF, CEA, LETI, MINATEC Campus, Grenoble, France; 3. CEA, INAC, Grenoble, France*

11:15 **<u>ED-10</u>. Formation of {100} Texture in 2.3%Si-0.1%Mn Steel Strips by Short-Time Annealing and Their Magnetic Properties.** *N.H. Heo*[1] *1. GIFT, POSTECH, Pohang, Korea*

11:30 **<u>ED-11</u>. Magnetic properties and GMI response in thin FINEMET cold drawn microwires.** *H. Chiriac*[1], S. Corodeanu[1], A. Donac[1], V. Dobrea[1], G. Ababei[1], M. Lostun[1], T. Ovari[1] and N. Lupu[1] *1. National Institute of R&D for Technical Physics, Iasi, Romania*

11:45 **<u>ED-12</u>. Tayloring the hysteresis loop of soft magnetic nanocrystalline alloys by magnetic and tensile stress annealing.** *L.K. Varga*[1] *1. Metallurgy and Magnetism, Wigner Research Center for Physics, Budapest, Hungary*

THURSDAY MORNING 9:00 — 311 B

Session EE

SUPERCONDUCTIVITY AND EMERGING TOPICS II

Aurelien Manchon, Chair
King Abdullah University of Science and Technology

9:00 **<u>EE-01</u>. Angular dependent vortex glass phase transition in $BaFe_{1.8}Co_{0.2}As_2$ single crystal.** *F. Hao*[1], M. Zhang[1], M. Teng[1], Y. Yin[1], W. Jiao[2,3], G. Cao[2,3] and X. Li[1,3] *1. Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, University of Science and Technology of China, Hefei, Anhui; 2. Department of Physics, Zhejiang University, Hangzhou, Zhejiang; 3. Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing, Jiangsu*

9:15 EE-02. **Singlet Superconductivity in $SmO_{0.82}F_{0.18}FeAs$.** J. Gifford[1], B. Chen[2], J. Zhang[1], G. Zhao[1], D. Kim[1], D. Wu[2] and *T. Chen*[1] *1. Physics, Arizona State University, Tempe, Arizona; 2. Department of Physics, Nanjing University, Nanjing, Jiangsu*

9:30 EE-03. **Active control of magnetoresistance of organic spin valves using ferroelectricity.** ***(Invited)*** *J. Shen*[1] *1. Department of Physics, Fudan University, Shanghai*

10:00 EE-04. **Effects of geometry on skyrmion pinning and operation symmetry.** *C. Ang Ching Ian*[1], H. Fook[1], W. Gan[1], I. Purnama[1] and W. Lew[1] *1. Nanyang Technological University, Singapore*

10:15 EE-05. **Magnetic Separation Nanotechnology for Nuclear Energy.** ***(Invited)*** *Y. Qiang*[1] *1. Physics Department, University of Idaho, Moscow, Idaho*

10:45 EE-06. **Unipolar Resistive Switching in Spin-coated Cobalt Ferrite Thin Films.** *C. Liu*[1], M. Mustaqima[1], P. Yoo[1], D. Kim[1] and B. Lee[1] *1. Physics, Hankuk Univ of Foreign Studies, Yongin, Korea*

11:00 EE-07. **Structure and magnetic properties of $RIn_{2.9}Co_{0.1}$ (R=La, Ce, Pr, Nd).** *Q. He*[1] and Y. Guo[1] *1. School of Energy Power and Mechanical Engineering, North China Electric Power University, Beijing*

11:15 EE-08. **Temperature dependence of magnetization, anisotropy and hyperfine fields of $NiFe_{2-x}Yb_xO_4$ (x = 0, 0.05, 0.075).** M. Garimella[1], *Y. Kodam*[1] and R. Reddy V[2] *1. Physics, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India; 2. University Campus, Khandwa Road, UGC–DAE Consortium for Scientific Research, Indore, Madhya Pradesh, India*

11:30 EE-09. **Strain effect of *a*-axis oriented $Sr_{1-x}La_xCuO_2$ thin films grown on $LaAlO_3$ substrates.** *Y. He*[1], M. Ito[1], T. Hajiri[1], K. Ueda[1] and H. Asano[1] *1. Nagoya University, Nagoya, Aichi, Japan*

11:45 EE-10. **Magnetic monopoles hopping in artificial spin ice.** *S. Krishnia*[1], I. Purnama[1], C. Soh[1] and W. Lew[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

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9:00

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Session EF
ENERGY ASSISTED AND NOVEL RECORDING I
Takao Suzuki, Chair
University of Alabama

9:00 EF-01. **Energy Efficient Thermally Induced Magnetization Switching by Tailoring the Electron and Phonon Dynamics.** ***(Invited)*** U. Atxitia[2,3], *T.A. Ostler*[1], O. Chubykalo-Fesenko[4] and R. Chantrell[1] *1. Department of Physics, The University of York, York, North Yorkshire, United Kingdom; 2. Fachbereich Physik, Universität Konstanz, Konstanz, Germany; 3. Zukunftskolleg, Universität Konstanz, Konstanz, Germany; 4. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

9:30 EF-02. **Inverse Faraday effect as mechanism for ultrafast all-optical magnetic switching.** D. Hinzke[1], M. Berritta[2], U. Atxitia[1], R. Mondal[2], P.M. Oppeneer[2] and *U. Nowak*[1] *1. Department of Physics, University of Konstanz, Konstanz, Germany; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

9:45 EF-03. **A Theoretical Study of Thermally Activated Magnetization Switching under Microwave Assistance.** *H. Suto*[1], K. Kudo[1], T. Nagasawa[1], T. Kanao[1], K. Mizushima[1], R. Sato[1], S. Okamoto[2], N. Kikuchi[2], O. Kitakami[2] and T. Shimatsu[3,4] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan; 2. IMRAM, Tohoku University, Sendai, Japan; 3. FRIS, Tohoku University, Sendai, Japan; 4. RIEC, Tohoku University, Sendai, Japan*

10:00 EF-04. **Analysis and comparisons of LLB variants for high temperature magnetization dynamics.** *K. Eason*[1], O. Krupin[2], A. Chernyshov[2] and B. Livshitz[1] *1. Advanced Technologies Organization, Western Digital Corporation, San Jose, California; 2. Media Organization, Western Digital Corporation, San Jose, California*

10:15 EF-05. **Impact of Grain Anisotropy Temperature Dependence for Heat Assisted Magnetic Recording.** *J. Zhu*[1] and H. Li[1] *1. Data Storage Systems Center, Carnegie Mellon Univ, Pittsburgh, Pennsylvania*

10:30 EF-06. **Interface effects on FePt (L10-phase) grains for ECC media.** *G. Hrkac*[1], L. Saharan[1], C.W. Barton[2] and T. Thomson[2] *1. CEMPS, University of Exeter, Exeter, United Kingdom; 2. University of Manchester, Manchester, United Kingdom*

10:45 EF-07. **Heat assisted magnetic recording media design using impedance modification method.** A. Ghoreyshi[1], *S. Wang*[1] and R.H. Victora[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota*

11:00 EF-08. **The Importance of Depth Varying Fields for MAMR Switching-Field Reduction.** *L. Xu*[1], T. Olson[1], B. Lengsfield[1], M. Shiimoto[1], M. Sugiyama[1] and A. Torabi[1] *1. HGST, a Western Digital company, San Jose, California*

11:15 EF-09. **Stability Study of Spin Torque Oscillator for Microwave Assisted Magnetic Recording (MAMR).** *T. Zhou*[1], M. Zhang[1] and Z. Yuan[1] *1. Data Storage Institute, Singapore*

11:30 EF-10. **Detrimental Effects of the STO Vertical Field Component in MAMR.** *T. Olson*[1], M. Igarashi[1], B. Lengsfield[1], M. Shiimoto[1] and M. Sugiyama[1] *1. HGST, Santa Cruz, California*

11:45 EF-11. **Technologies for magnetic tape recording at 100Gb/in^2 and beyond.** *M. Lantz*[1], S. Furrer[1], J.B. Engelen[1], A. Pantazi[1], H. Rothuizen[1], R.D. Cideciyan[1], G. Cherubini[1], W. Haeberle[1], J. Jelitto[1], E. Eleftheriou[1], M. Oyanagi[2], A. Morooka[2], M. Mori[2], Y. Kurihashi[2], T. Kaneko[2], T. Tada[2], H. Suzuki[2], T. Harasawa[2], O. Shimizu[2], H. Ohtsu[2] and H. Noguchi[2] *1. IBM Research - Zurich, Rueschlikon, Switzerland; 2. Recording Media Research Laboratories, FUJIFILM Corporation, Odawara, Japan*

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9:00

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Session EG
PERMANENT MAGNET MACHINES I
Min Fu Hsieh, Chair
National Cheng Kung University

9:00 <u>EG-01</u>. **Harmonic Analysis of Low Stator Slot and Rotor Pole Combination FSPM Machine Topology for High Speed.** D. Bobba[1], *Y. Li*[1] and B. Sarlioglu[1] *1. WEMPEC, University of Wisconsin-Madison, Madison, Wisconsin*

9:15 <u>EG-02</u>. **Magnetic Slot Wedge Design for High Power Permanent Magnet Traction Motors.** *J. Rao*[1] and R. Qu[1] *1. Huazhong University of Science and Technology, Wuhan, Hubei*

9:30 <u>EG-03</u>. **Design and Analysis of Variable Flux Pole-Changing Permanent Magnet Memory Machine.** *D. Wang*[1], H. Lin[1], H. Yang[1], Y. Zhang[1] and X. Lu[1] *1. Southeast University, Nanjing, Jiangsu*

9:45 <u>EG-04</u>. **Dynamic Eccentricity in Single-Rotor Single-Stator Axial Flux Permanent Magnet Synchronous Machine with Parallel Path Windings.** *J. Li*[1], R. Qu[1] and Y. Cho[2] *1. Electrical and Electronics Engineering, Huazhong University of Science&Technology, Wuhan, Hubei; 2. Electrical Engineering, Dong-A University, Busan, Korea*

10:00 <u>EG-05</u>. **Electrical and Magnetic Model Coupling of Permanent Magnet Machines Based on Harmonic Analysis.** M. Merdzan[1], *S. Jumayev*[1], A. Borisavljevic[1], K.O. Boynov[1], J.J. Paulides[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

10:15 <u>EG-06</u>. **Reduction of Eddy-Current Losses by Circumferential and Radial PM Segmentation in Axial Flux Permanent Magnet Machines with Fractional-Slot Concentrated Winding.** *J. Li*[1], R. Qu[1], Y. Cho[2] and D. Li[1] *1. Electrical and Electronics Engineering, Huazhong University of Science&Technology, Wuhan, Hubei; 2. Dong-A University, Busan, Korea*

10:30 EG-07. **Reduced Dysprosium permanent magnets and their applications in electric vehicle traction motors.** L. Chen[1], D. Hopkinson[2], *J. Wang*[1], A. Cockburn[2], M. Sparkes[2] and W. O'Neill[2] *1. The University of Sheffield, Sheffield, United Kingdom; 2. The University of Cambridge, Cambridge, United Kingdom*

10:45 EG-08. **Optimal Design of Asymmetric Rotor Overhang Lengths in an Axial-Flux Dual-Stator Permanent Magnet Vernier Machine.** *F. Zhao*[1] and B. Kwon[1] *1. Electronic systems engingeering, Hanyang University, Ansan, Korea*

11:00 EG-09. **Torque Characteristics of Dual Stator Permanent Magnet Vernier Machine with Different Pole/Slot Combinations.** *Y. Zhang*[1], H. Lin[1], S. Fang[1], D. Wang[1] and H. Yang[1] *1. Engineering Research Center for Motion Control (MOE), Southeast University, Nanjing, Jiangsu*

11:15 EG-10. **Inductance Calculation in Variable-Flux Flux-Intensifying Permanent Magnet Synchronous Machines Using Improved Frozen Permeability Method.** *A. Sun*[1], J. Li[1] and R. Qu[1] *1. Huangzhong University of Science and Technology, Wuhan, Hubei*

11:30 EG-11. **Comparison Analysis of Demagnetization and Torque ripple in accordance with Freewheeling Current in BLDC Motor.** *J. Park*[1], H. Kim[1] and J. Hur[1] *1. University of Ulsan, Ulsan, Korea*

11:45 EG-12. **The Effect of PWM on Rotor Eddy-Current Losses in High-Speed Permanent Magnet Machines.** *S. Jumayev*[1], M. Merdzan[1], K.O. Boynov[1], J.J. Paulides[1], J. Pyrhönen[2] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Electrical Engineering, Lappeenranta University of Technology, Lappeenranta, Finland*

THURSDAY MORNING 9:00

306 B

Session EH

MACHINE MODELING AND RENEWABLE ENERGY

Metin Aydin, Chair
Kocaeli University

9:00 EH-01. **Modeling of Non-Cuboidal magnetic sources in 3-D Fourier Modeling.** *K.J. Pluk*[1], J. Jansen[1] and E. Lomonova[1] *1. Eindhoven University of Technology, Eindhoven, Netherlands*

9:15 EH-02. **Harmonic and Magnetic Charge Model Comparison of Spherical Permanent Magnet Structures Considering a Neumann boundary.** *B. van Ninhuijs*[1], J. Jansen[1], B.L. Gysen[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

9:30 EH-03. **Influence of Teeth Materials and Slot-pole Combinations on Electromagnetic Forces and Vibrations of a 12 MW Superconducting Direct-Drive Wind Generator.** *H. Chen*[1], R. Qu[1], J. Li[1], Y. Liu[2] and H. Fang[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei; 2. Institute of Technical Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany*

9:45 EH-04. **Analytical Method to Calculate Flux Density in a Superconducting (SC) direct-current (DC) Wind Generator.** *Y. Liu*[1] and M. Noe[1] *1. Institute of Technical Physics, Karlsruhe, Germany*

10:00 EH-05. **Modeling the Field Inside a Soft-Magnetic Boundary using Surface Charge Modeling.** *D.T. van Casteren*[1], J.J. Paulides[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

10:15 EH-06. **Wireless Power Transmission System Based on Multilayer Coils Arrangment.** *C. Chen*[1], X. Huang[1] and L. Tan[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

10:30 EH-07. Analysis of Power Factor of Stator DC Excited Vernier Reluctance Machines. *S. Jia*[1], R. Qu[1] and J. Li[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei*

10:45 EH-08. Modeling and Validation of High-Temperature Electromagnetic Actuator. *M.D. Noh*[1], M. Gi[1], D. Kim[1], Y. Park[1], J. Lee[2] and J. Kim[2] *1. Mechatronics Engineering, Chungnam National University, Daejeon, Korea; 2. Korea Atomic Energy Research Institute, Daejeon, Korea*

11:00 EH-09. 2D Semianalytical Modeling of Eddy Currents in Segmented Structures. *C. Custers*[1], T. Overboom[1], J. Jansen[1] and E. Lomonova[1] *1. Electromechanics and Power Electronics, Eindhoven University of Technology, Eindhoven, Netherlands*

11:15 EH-10. A Split Magnetic Core with Tooth Profile End Face for Decreasing Magnetic Flux Leakage. *Z. Wu*[1] *1. Chongqing University of Technology, Chongqing*

11:30 EH-11. Detection of Eccentricity Fault by Monitoring Magnetic Field of Stator Yoke in Induction Motor. *X. Bao*[1], H. Wang[1], C. Di[1] and Z. Cheng[1] *1. School of Electrical Engineering & Automation, Hefei University of Technology, Hefei, Anhui*

11:45 EH-12. Fault Signature of a Flux-Switching DC-Field Generator. *F. Lin*[1], K. Chau[1], C. Lee[1] and C. Liu[1] *1. The University of Hong Kong, Hong Kong*

THURSDAY
MORNING
9:00

306 A

Session EI
MAGNETIC SENSORS (NON-RECORDING) II
Shin Yabukami, Chair
Tohoku-Gakuin University

9:00 EI-01. **Advanced magnetoresistive sensors and their integration in challenging applications.** ***(Invited)*** *S. Cardoso*[1,3], J. Amaral[1], D.C. Leitao[1], J. Gaspar[2], R. Ferreira[2], F.A. Cardoso[1] and P. Freitas[2,1] *1. INESC Microsystems and Nanotechnologies, Lisbon, Portugal; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal; 3. Physics, Instituto Superior Tecnico, Lisbon, Portugal*

9:30 EI-02. **Integration of Magnetoresistive Sensors with Atomic Force Microscopy Cantilevers for Scanning Magnetoresistance Microscopy Applications.** *M. Costa*[1,3], J. Gaspar[1], R. Ferreira[1], E. Paz[1], H. Fonseca[1], M. Martins[1], S. Cardoso[2,3] and P. Freitas[1,2] *1. International Iberian Nanotechnology Laboratory, Braga, Portugal; 2. INESC-MN/Institute for Nanosciences and Nanotechnologies, Lisbon, Portugal; 3. Physics Department, Instituto Superior Técnico (IST), Universidade Técnica de Lisboa, Lisbon, Portugal*

9:45 EI-03. **Novel Magnetoelectric Effect Detection Method Based on Surface Acoustic Wave Resonator.** *F. Bai*[1], Q. Lyu[1], L. Huang[1] and H. Zhang[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

10:00 EI-04. **Nonintrusive Current Sensor For Two-Wire Power Cords.** *Y. Wen*[1], J. Zhang[1] and P. Li[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

10:15 EI-05. **Automatic Scanning System for Back-Side Defect of Steel Structure Using Magnetic Flux Leakage Method.** *K. Sakai*[1], K. Morita[1], Y. Haga[1], T. Kiwa[1], K. Inoue[2] and K. Tsukada[1] *1. Graduate School of Natural Science and Technology, Okayama University, Okayama, Okayama, Japan; 2. MES Testing & Research Center Co., Ltd., Tama, Okayama, Japan*

10:30 <u>EI-06</u>. New Explorations Of Magnetoelastic Force Transducers Wherein Bending Moments Cause Magnetic Fields to Arise. *I.J. Garshelis*[1,2] *1. Magnova, Inc., Pittsfield, Massachusetts; 2. MagCanica, Inc., San Diego, California*

10:45 <u>EI-07</u>. Enhanced Sensitivity in FeCuNbSiB/FeGa/PZT Laminate Magnetoelectric Sensor with Up-conversion Mechanism by Square Wave Modulation. C. Yang[1], *P. Li*[1], Y. Wen[1], A. Yang[1], D. Wang[1], F. Zhang[1] and J. Zhang[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

11:00 <u>EI-08</u>. Study on the effects of yoke parameters on uniform magnetization for magnetic flux leakage testing. *Y. Wang*[1], X. Wu[1] and K. Zhao[1] *1. School of Mechanical Science & Engineering, Huazhong University of Science and Technology, Wuhan, Hubei*

11:15 <u>EI-09</u>. Gradiometer and Magnetometer Integration by Using a Pair of Fundamental Mode Orthogonal Fluxgate Sensor Heads. I. Sasada[1], S. Harada[1] and *A.L. Elrefai*[1] *1. Applied Science for Electronics and Materials, Kyushu University, Fukuoka, Japan*

11:30 <u>EI-10</u>. Investigation of magnetic interference to enhance the system sensitivity of the self-powered piezoelectric current sensors network. *C. Lai*[1], P. Yeh[1] and T. Chung[1] *1. National Chiao Tung University, Hsinchu, Taiwan*

11:45 <u>EI-11</u>. A Novel AMR Magnetic Sensor Utilizing Nanoscale Magnetic-Domain Transformation. *Y. Chen*[1], P. Yeh[1] and T. Chung[1] *1. National Chiao Tung University, Hsinchu, Taiwan*

THURSDAY
MORNING
8:30

PLENARY HALL B

Session EP
HEAD-DISK INTERFACE AND TRIBOLOGY I (Poster Session)

Zhimin Yuan, Chair
Data Storage Institute

EP-01. Unexpected degradation of perfluoropolyethers induced by talc. *L. Li*[1], V. Vah[1], X. Gong[1], S. Chen[2] and Y. Hsia[2] *1. University of Pittsburgh, Pittsburgh, Pennsylvania; 2. Western Digital, San Jose, California*

EP-02. Dynamic Behavior of Air Bearing Slider in Air-Helium Gas Mixtures. *B. Shi*[1,2], Z. Tang[3,2] and F. Talke[2] *1. School of Mechanical and Electronics Engineering, Shandong Jianzhu University, Jinan, Shandong; 2. Center for Memory and Recording Research, University of California, San Diego, San Diego, California; 3. Guizhou University, Guiyang, Guizhou*

EP-03. Nanotribological Properties of Silicon Doped Diamond-like Carbon Films for Hard Disk Drives. *L. Li*[1], W. Song[1], J. Liu[1], Q. Liu[1], S. Wang[1] and G. Zhang[1] *1. School of Mechatronics Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

EP-04. Effect of Bonded Molecules on Replenishment of Lubricant-Depleted Area Created by Sliding on Molecularly Thin Lubricant Film. *K. Fukuzawa*[1], R. Watanabe[1], S. Itoh[1] and H. Zhang[2] *1. Department of Micro/Nano Systems Engineering, Nagoya University, Nagoya, Aichi, Japan; 2. Department of Complex Systems Scinece, Nagoya University, Nagoya, Aichi, Japan*

EP-05. Effect of Asperity Size during Contact between a Thermal Flying Height Control Slider and a Disk Asperity. *W. Song*[1], L. Li[1], C. Zhang[1] and F. Talke[2] *1. Harbin Institute of Technology, Harbin, Heilongjiang; 2. Center for Magnetic Recording Research, University of California, San diego, La Jolla, California*

EP-06. Film Conformation and Dynamic Properties of Atomistically Architectured Perfluoropolyethers on the Carbon Overcoated Surface. P. Chung[1] and *M.S. Jhon*[1] *1. Chemical Engineering, Carnegie Mellon University Pittsburgh, Pennsylvania*

EP-07. Investigation into Transient Head-disk Interaction Using Advanced Time-Frequency Analysis. Y. Wang[1] and *Y. Peng*[1] *1. School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi*

EP-08. Numerical Simulation of Bearing Force over Bit Patterned Media using 3D DSMC Method. X. Dai[1], *H. Li*[1], S. Shen[1], M. Cai[1], F. Cui[1], G. Zhang[1] and S. Wu[1] *1. Wuhan University, Wuhan, Hubei*

EP-09. Atomistic and Molecular Effects on the Surface Morphology and Film Conformation of Perfluoropolyether Lubricant Layer. *P. Chung*[1], S. Vemuri[1] and M.S. Jhon[1] *1. Chemical Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania*

EP-10. Experimental and FEA study of particle-scratch induced wear in the magnetic storage disk. *Y. Zhang*[1] and A. Polycarpou[1] *1. Mechanical Engineering, Texas A&M University, College Station, Texas*

EP-11. Simulation of particle trajectory in the head-disk interface. S. Liu[1], S. Shen[1], *H. Li*[1] and S. Wu[1] *1. Wuhan University, Wuhan, Hubei*

THURSDAY
MORNING
8:30

PLENARY HALL B

Session EQ
ENERGY ASSISTED AND NOVEL RECORDING II (Poster Session)

Satoshi Okamoto, Chair
IMRAM, Tohoku Univ.

EQ-01. Microwave-assisted shingled magnetic recording. *S. Greaves*[1], Y. Kanai[2] and H. Muraoka[1] *1. RIEC, Tohoku University, Sendai, Japan; 2. Niigata Institute of Technology, Kashiwazaki, Japan*

EQ-02. Signal-To-Noise Ratio Improvement of MAMR on CoX/Pt Media. *Z. Zhao*[1], J. Li[1], L. Wang[1], D. Wei[1] and K. Gao[2] *1. Key Laboratory of Advanced Materials (MOE), School of Materials Science and Engineering, Tsinghua University, Beijing; 2. Seagate Technology, Shakopee, Minnesota*

EQ-03. Increasing AC-Field Frequency in Microwave-Assisted Magnetic Recording. *R. Koga*[1], F. Akagi[1] and K. Yoshida[1] *1. Kogakuin University, Tokyo, Japan*

EQ-04. Micromagnetic Studies on Switching Dynamics of Spin-Torque Oscillators. *M. Zhang*[1], D. Wei[1] and K. Gao[2] *1. Key Laboratory of Advanced Materials (MOE), School of Materials Science and Engineering, Tsinghua University, Beijing; 2. Seagate Technology, Shakopee, Minnesota*

EQ-05. Collective mode excitation assist for magnetization reversal. *M. Elyasi*[1], C.S. Bhatia[1] and H. Yang[1] *1. Electrical and Computer Engineering Department, National University of Singapore, Singapore*

EQ-06. Simulation of temperature distribution around media heat spot in Heat Assisted Magnetic Recording. *H. Li*[1], G. Zhang[1], S. Shen[1], H. Zheng[2] and S. Wu[1] *1. Wuhan University, Wuhan, Hubei; 2. Western Digital, San Jose, California*

EQ-07. A Hybrid Model for Media Layer Thermal Management in Heat Assisted Magnetic Recording. *M.S. Jhon*[1,2], S. Vemuri[1,2], H. Kim[3,2], W. Song[1,2] and P. Chung[1,2] *1. Chemical Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. Data Storage Systems Center, Pittsburgh, Pennsylvania; 3. Department of Mechanical System Engineering, Kyonggi University, Suwon, Kyeonggi, Korea*

EQ-08. Influence of waveguide refractive index on near-field transducer efficiency in heat-assisted magnetic recordin. *Z. Cen*[1], B. Xu[1], Y. Toh[1], J. Li[1], K. Ye[1] and J. Zhang[1] *1. Data storage institute, Singapore*

EQ-09. Fabrication of multiferroic $(Bi_{1-x}Ba_x)FeO_3$ thin films with (001) orientation for novel perpendicular magnetic recording media by electric-field writing. *S. Yoshimura*[1], Y. Sugawara[1], J. Lu[1], G. Egawa[1], Y. Kinoshita[2] and H. Saito[1] *1. Research Center for Engineering Science, Graduate School of Engineering & Resource Science, Akita University, Akita, Japan; 2. Venture Business Laboratory, Akita University, Akita, Japan*

THURSDAY MORNING 8:30

PLENARY HALL B

Session ER
SOFT MAGNETIC MATERIALS III: CRYSTALLINE, NANOCRYSTALLINE AND AMORPHOUS MATERIALS (Poster Session)

Xiaoxi Liu, Chair
Shinshu University
Hui Hui Li, Chair
Ningbo Institute of Materials Technology and Engineering

ER-01. **Structure and High-Frequency Magnetic Properties of Co-HfN Nanogranular Films.** *Y. Cao*[1], Y. Zhang[1], S. Ohnuma[1,2], N. Kobayashi[2] and H. Masumoto[1] *1. Frontier Research Institute for Interdisciplinary Science, Tohoku University, Sendai, Japan; 2. Research Institute for Electromagnetic Materials, DENJIKEN, Sendai, Japan*

ER-02. **Magnetoelectric coupling characteristics of multi-phase laminate heterostructures based on FeCuNbSiB nanocrystalline soft magnetic alloy.** *J. Qiu*[1], Y. Wen[1], P. Li[1], H. Chen[1] and W. Li[2] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing; 2. College of Engineering, University of California at Davis, Davis, California*

ER-03. **Influence of magnetic field annealing methods on soft magnetic properties for FeCo-based nanocrystalline alloys.** *M. Liu*[1], Z. Wang[1] and Y. Xu[1] *1. Department of Applied Physics, Tianjin University, Tianjin*

ER-04. **Stress-annealing induced anisotropy in FeCrCuNbSiB nanocrystalline wires.** *Y. Li*[1], P. Liu[1] and M. Vazquez[2] *1. Laboratory of Electromagnetic Transport Materials, Xingtai University, Xingtai, Hebei; 2. Instituto de Ciencias Materiales de Madrid, Madrid, Spain*

ER-05. **Excellent high-temperature magnetic softness for Si-rich Fe-based nanocrystalline alloy with a small amount of Al.** Y. Han[1], Z. Wang[1], L. Wen[1] and *Y. Xu*[1] *1. Department of Applied Physics, Tianjin University, Tianjin*

ER-06. Temperature Dependence of Lancet Domains in Grain-Oriented Fe-3%Si Steels. *K. Iwata*[1,2], M. Suzuki[3], M. Hashimoto[3], M. Ueda[3], Y. Matuoka[3], T. Yasue[3], T. Koshikawa[3], M. Kotsugi[4,5], T. Ohkochi[4], T. Kinoshita[4,5], Y. Watanabe[4] and K. Ishiyama[2] *1. Nippon Steel & Sumitomo Metal Corporation, Futtsu, Japan; 2. RIEC, Tohoku University, Sendai, Japan; 3. Osaka Electro-Communication University, Neyagawa, Japan; 4. JASRI, SPring-8, Sayo, Japan; 5. CREST, JST, Kawaguchi, Japan*

ER-07. Magnetic behavior of soft magnetic FeMoCuB metallic glass at low temperature. *M. Hasiak*[1] and M. Miglierini[2] *1. Department of Mechanics and Materials Science, Wroclaw University of Technology, Wroclaw, Poland; 2. Department of Nuclear Reactors, Faculty of Nuclear Sciences and Physical Engineering, Czech Technical University in Prague, Prague, Czech Republic*

ER-08. Effect of Underlayer on Thickness Dependent Magnetic Properties of Ni-Fe Films. P. Saravanan[1,2], *J. Hsu*[1], C. Tsai[1], A.K. Singh[1] and A. Perumal[3] *1. Physics, National Taiwan University, Taipei, Taiwan, Taiwan; 2. Defence Metallurgical Research Laboratory, Hyderabad, India; 3. Department of Physics, Indian Institute of Technology Guwahati, Guwahati, India*

ER-09. Multi-Domain Structures in Magnetic Microwire. *A. Chizhik*[1], A. Stupakiewicz[2], A. Maziewski[2], A. Zhukov[1,3] and J. Gonzalez[1] *1. Universidad del Pais Vasco, San Sebastian, Spain; 2. University of Bialystok, Bialystok, Poland; 3. IKERBASQUE, Bilbao, Spain*

ER-10. Upper Limit for the Simultaneous Existence of High B_s and Low H_c in Nanocrystalline FeCoSiBPCu Alloys. *Y. Zhang*[1,2], P. Sharma[2] and A. Makino[1,2] *1. Cooperative Research and Development Center for Advanced Materials, Institute for Materials Research, Tohoku University, Sendai, Miyagi, Japan; 2. Research and Development Center for Ultra High Efficiency Nano-crystalline Soft Magnetic Materials, Institute for Materials Research, Tohoku University, Sendai, Miyagi, Japan*

ER-11. Relationship between Magnetic Properties and Hardness on Recovery and Recrystallization Process in Cold Rolled Steel. F. Ito[1], T. Murakami[1], K. Takekawa[1] and *H. Kikuchi*[1] *1. Iwate University, Morioka, Iwate, Japan*

ER-12. **Effect of Ni content on the crystallization, soft magnetic properties and GMI effect in amorphous $Co_{68}Fe_{7-x}Ni_xSi_{15}B_{10}$ (x = 0, 1.5, 3, 4.5) ribbons.** *W. Lu*[1], Y. Xu[2], X. Fang[2], Y. Song[1] and X. Li[3] *1. School of Materials Science and Engineering, Tongji University, Shanghai; 2. National Key Laboratory of Science Technology on Near-surface Detection and Sensing Technology, Wuxi, Jiangsu; 3. University of Shanghai for Science and Technology, Shanghai*

ER-13. **Effects of metalloids in Fe-rich soft magnetic amorphous alloys on magnetization.** *Y. Wang*[1], A. Takeuchi[1], A. Makino[1], Y. Liang[2] and Y. Kawazoe[2,3] *1. Institute for Materials Research, Tohoku University, Sendai, Japan, Miyagi Prefecture, Japan; 2. New Industry Creation Hatchery Center, Tohoku University, Sendai, Miyagi, Japan; 3. Kutateladze Institute of Thermophysics, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russian Federation*

ER-14. **Self-bias Ferromagnetic Resonance and Quasi Magnetic Isotropy of $[FeCoB/MgO]_6$ Multilayers Prepared by Composition Gradient Sputtering.** *S. Li*[1], Q. Xue[1], H. Du[1], C. Chen[1], X. Gao[1], Q. Li[1], Y. Zhang[1] and J. Xue[1] *1. College of Physics, Qingdao University, Qingdao, Shandong*

ER-15. **High saturation magnetization in $Fe_{(87-x-y)}Co_xTi_7Zr_6B_y$ amorphous alloys and nanocomposites.** *H. Yim*[1] *1. Department of Physics, Sookmyung Women's University, Seoul, Korea*

THURSDAY
MORNING
8:30

PLENARY HALL B

Session ES
ANISOTROPY AND EXCHANGE COUPLING
(Poster Session)

Damien Querlioz, Chair
Univ. Paris Sud, CNRS
Wen-Chin Lin, Chair
National Taiwan Normal University

ES-01. Antiferromagnetic interlayer exchange coupling in ferromagnetic GaMnAs/GaAs:Be multilayers. *H. Lee*[1], S. Lee[1], S. Choi[1], S. Lee[1], X. Liu[2] and J.K. Furdyna[2]
1. Department of Physics, Korea University, Seoul, Korea; 2. University of Notre Dame, Notre dame, Indiana

ES-02. Analysis of magnetic relaxation with pre-existing nucleation sites based on the Fatuzzo-Labrune model. *D. Quach*[1], D. Handoko[1], S. Lee[1], J. Shim[1], T. Phan[1], D. Kim[1], D. Pham[2], K. Lee[3], J. Jeong[3] and D. Ngo[4]
1. Department of Physics, Chungbuk National University, Cheongju, Korea; 2. Faculty of Engineering Physics and Nanotechnology, University of Engineering and Technology, Vietnam National University, Hanoi, Vietnam; 3. Department of Material Science and Engineering and Graduate School of Energy Science and Technology, Chungnam National University, Daejeon, Korea; 4. Department of Micro- and Nanotechnology, Technical University of Denmark, Kgs. Lyngby, Denmark

ES-03. Voltage-induced reversible and irreversible changes in the magnetic coercivity of Fe, Co/ZnO heterostructures. *P. Chang*[1], C. Hsu[1] and W. Lin[1]
1. Department of Physics, National Taiwan Normal University, Taipei, Taiwan

ES-04. Effect of epitaxial strain on magnetic transition in FeRh thin film. *X. Yali*[1], Q. Zhan[1], T. Shang[1], H. Yang[1], Y. Zhang[1], Z. Zhenghu[1], Y. Liu[1], H. Li[1], B. Chen[1], B. Wang[1] and R. Li[1] *1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

ES-05. Influence of ferromagnetic electrodes on the resistive switching device based on NiO. *K. Okabe*[1], M. Kawakita[1], S. Yakata[2] and T. Kimura[1,3] *1. Department of Physics, Kyushu University, Fukuoka, Japan; 2. Department of Information Electronics, Fukuoka Institute of Technology, Fukuoka, Japan; 3. Research Center for Quantum Nano-Spin Sciences, Kyushu University, Fukuoka, Japan*

ES-06. Effects of Thickness Ratio of Co to Pt Layer on Magnetic Properties and Microstructure of $[Co/Pt]_N$ Multilayer Films. T. Yang[1], *Y. Chen*[1], C. Huang[1] and A. Sun[1] *1. Chemical Engineering and Material Science, Yuan-Ze University, New Taipei, Taiwan*

ES-07. Room-Temperature-Prepared *A*3 $Co_{50}Pt_{50}$ Thin Films With Perpendicular Magnetic Anisotropy. *F. Yuan*[1], H. Chang[2], H. Ouyang[3], G. Wang[1] and M. Lai[1] *1. Advanced Sensor Laboratory, iSentek Inc., New Taipei, Taiwan; 2. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 3. Department of Materials Sciences and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

ES-08. Monte Carlo study of surface effect on a mixed spin-1 and spin-3/2 Ising ferrimagnetic system with two alternative layers. *W. Wang*[1], D. Lv[1], X. Luo[1], J. Huang[1] and W. Jiang[1] *1. School of Science, Shenyang University of Technology, Shenyang, Liaoning*

ES-09. Monte Carlo investigation of magnetic and thermal properties of four-subalttice ferromagnetic-antiferromagnetic double layer superlattices. *W. Wang*[1], W. Jiang[1], D. Chen[1] and S. Xu[1] *1. School of Science, Shenyang University of Technology, Shenyang, Liaoning*

ES-10. Anisotropic magnetic domain growth of Co/Pt multilayers with a perpendicular magnetic anisotropy. *D. Quach*[1], D. Handoko[1], S. Lee[1], J. Shim[1], D. Kim[1], K. Lee[2], J. Jeong[2], N. Kim[3] and H. Shin[3] *1. Department of Physics, Chungbuk National University, Cheongju, Korea; 2. Department of Material Science and Engineering and Graduate School of Green Energy Technology, Chungnam National University, Daejeon, Korea; 3. Pohang Accelerator Laboratory, POSTECH, Pohang, Korea*

ES-11. Epitaxial growth of $CO_{0.75}Fe_{2.25}O_4$/NiO bilayer on MgO(001) substrate. *Y. Hisamatsu*[1], M. Oka[1], T. Tainosho[1], H. Yanagihara[1] and E. Kita[1] *1. Institute of Applied Physics, U. Tsukuba, University of Tsukuba, Tsukuba, Ibaraki, Japan*

ES-12. The structural, electrical and Magnetic Properties of Multiferroic/Ferroelectric Bilayer Thin Films.
M. Kao[1], H. Chen[1], S. Young[1] and P. Chen[2] *1. Department of Electronic Engineering, Hsiuping University of Science and Technology, Taichung, Taiwan; 2. Department of Electrical Engineering, Hsiuping University of Science and Technology, Taichung, Taiwan*

ES-13. Perpendicular magnetization of Ta/Ru/Ta/Co/Fe/MgO multilayer. *J. Kil*[1], Y. Choi[1], G. Bae[1], W. Park[1] and W. Choi[2] *1. Electronics Engineering, Hanyang University, Seoul, Korea; 2. SK-Hynix, Icheon, Korea*

ES-14. Influence of modulation periods on the magnetic and structural properties of $L1_0$-FePt/Fe multi-layer films. *B. Yang*[1], J. Wang[1], G. Qin[1], Z. Li[1], Y. Zhang[2,3], X. Zhao[1], C. Esling[2,3] and L. Zuo[1] *1. Key Laboratory for Anisotropy and Texture of Materials, Northeastern University, Shenyang, Liaoning; 2. Laboratoire d'Étude des Microstructures et de Mécanique des Matériaux (LEM3), CNRS UMR 7239, Metz, France; 3. Laboratory of Excellence on Design of Alloy Metals for low-mAss Structures (DAMAS), Université de Lorraine, Metz, France*

ES-15. The effect of interfacial intermixing on magnetization and anomalous Hall effect in Co/Pd multilayers. *Z. Guo*[1], X. Wang[1] and W. Mi[2] *1. Core Labs, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. Tianjin Key Laboratory of Low Dimensional Materials Physics and Preparing Technology, Tianjin University, Tianjin*

THURSDAY MORNING 8:30

PLENARY HALL B

Session ET
SPIN-ORBIT INTERACTION AND SPIN-CALORIC EFFECT (Poster Session)

Ke Xia, Chair
Beijing Normal University
Zhe Yuan, Chair
Johannes Gutenberg-University Mainz

ET-01. Thickness, Crystallinity and Single Interface Contribution to Ferromagnetic Resonance of Polycrystalline Co Thin-Film. *M. Tokac*[1], S.A. Bunyaev[2], G.N. Kakazei[2], D.S. Schmool[3], D. Atkinson[1] and A. Hindmarch[1] *1. Physics Department, Durham University, Durham, United Kingdom; 2. IFIMUP and IN, Departamento de Fisica e Astronomia, Universidade do Porto, Porto, Portugal; 3. Laboratorie PROMES CNRS UPR 8521 University of Perpignan Via Domitia, Perpignan, France*

ET-02. Voltage-Gated Skyrmion Transistor. *X. Zhang*[1], M. Ezawa[2], G. Zhao[3] and Y. Zhou[1] *1. Department of Physics, The University of Hong Kong, Hong Kong; 2. The University of Tokyo, Tokyo, Japan; 3. Department of Physics & EE, Sichuan Normal University, Chengdu, Sichuan*

ET-03. Nanoconstriction-based spin-Hall oscillators. *V.E. Demidov*[1], S. Urazhdin[2], A. Zholud[2], A. Sadovnikov[3] and S.O. Demokritov[1,4] *1. Institute for Applied Physics, University of Muenster, Muenster, Germany; 2. Emory University, Atlanta, Georgia; 3. Saratov State University, Saratov, Russian Federation; 4. Institute of Metal Physics, Yekaterinburg, Russian Federation*

ET-04. Platinum thickness dependence on the spin pumping and the inverse spin Hall effect in Fe | Pt bilayer. *S. Keller*[1], L. Mihalceanu[1], A. Conca[1], J. Greser[1], J. Lösch[2], B. Hillebrands[1] and E.T. Papaioannou[1] *1. Department of Physics, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Institut für Oberflächen- und Schichtanalytik, Kaiserslautern, Germany*

ET-05. Scaling of the anomalous Hall effect in ferrimagnetic $Co_{90}Gd_{10}$ thin films. J. Han[1], W. Sui[1], *D. Yang*[1], T. Wang[1], H. Chen[1], Y. Li[1], L. Xi[1], M. Si[1] and D. Xue[1] *1. Key Laboratory for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu*

ET-06. Spin Hall Magnetoresistance in $CoFe_2O_4$/Pt Films. *H. Wu*[1], Q. Zhang[1], C. Wan[1], S. Ali[1], L. You[2], J. Wang[2], Y. Choi[3] and X. Han[1] *1. State Key Lab of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing; 2. School of Materials Science and Engineering, Nanyang Technological University, Singapore; 3. Advanced Photon Source, Argonne National Laboratory, Argonne, Illinois*

ET-07. The effect of spin pumping in epitaxial Bi_2Se_3 films. *T. Chiang*[1], J. Lee[1], P. Tai[1], Z. Wang[1], T. Yi[1], S. Lee[2] and J. Huang[1,3] *1. Department of Physics, National Cheng Kung University, Tainan, Taiwan; 2. Physics, Academia Sinica, Taipei, Taiwan; 3. Taiwan Consortium of Emergent Crystalline Materials, Ministry of Science and Technology, Taipei, Taiwan*

ET-08. Magnetic Anisotropy Influence on Inverse Spin Hall Voltage. *G. Luo*[1,2], C. Chang[1] and J. Lin[2] *1. Department of Physics, National Taiwan university, Taipei, Taiwan; 2. Center for Condensed Matter Science, National Taiwan University, Taipei, Taiwan*

ET-09. Electrical spin injection into InAs nanowires by local measurement. Z. Wang[2], *D. Pan*[3], Z. Wang[1], X. Xu[1], Y. Wu[1], J. Miao[1], S. Yin[1], J. Zhao[3] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing; 2. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing; 3. State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing*

ET-10. Spin motive force and generation of pure spin current in ferromagnetic ring under time modulation and Rashba spin orbit coupling. C. Ho[1] and *M.B. Jalil*[1] *1. Department of Electrical Engineering, National University of Singapore, Singapore*

ET-11. A study of perpendicular-anisotropy magnetic tunnel junction switched by spin-Hall-assisted spin-transfer torque. *Z. Wang*[1], W. Zhao[1,2], E. Deng[1], J. Klein[1] and C. Chappert[1] *1. Institut D'Electronique Fondamentale, Univ. Paris Sud/UMR 8622, CNRS, Orsay, France; 2. Beihang University, Beijing*

<u>ET-12</u>. **Precise evaluation of small spin-dependent Seebeck coefficient for Permalloy using lateral spin valve.** *S. Hu*[1], X. Cui[1], T. Nomura[2] and T. Kimura[2,3] *1. Graduate School of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan; 2. Department of Physics, Kyushu University, Fukuoka, Japan; 3. Research Center for Quantum Nano-Spin Sciences, Kyushu University, Fukuoka, Japan*

<u>ET-13</u>. **Spin-Thermoelectric Voltage in the STE Element Fabricated by using LPE YIG Films.** *M. Imamura*[1], Y. Kouno[2] and Y. Li[1] *1. Electrical Engineering, Fukuoka Institute of Technology, Fukuoka, Japan; 2. Research Laboratories, DENSO CORPORATION, Nisshin, Aichi, Japan*

<u>ET-14</u>. **Enhancement of thermal spin signal and suppression of anomalous Nernst effect in the CoFeAl/Cu/CoFeAl lateral spin valve.** *G. Uematsu*[1], T. Nomura[1], S. Hu[2], M. Hidegara[1] and T. Kimura[1,3] *1. Department of Physics, Kyushu University, Fukuoka, Japan; 2. Graduate School of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan; 3. Research Center for Quantum Nano-Spin Science, Kyushu University, Fukuoka, Japan*

THURSDAY MORNING 8:30 — PLENARY HALL B

Session EU
INTERMETALLIC AND OTHER HARD MAGNETS III
(Poster Session)

Ming Yue, Chair
Beijing University of Technology
Yanglong Hou, Chair
Peking University

<u>EU-01</u>. **Synthesis and magnetic properties of core-shell structured γ''-$Fe_{16}N_2$ magnetic powders.** *M. Kang*[1], K. Moon[1], K. Jeon[1] and J. Kim[1] *1. Department of Materials Engineering, Hanyang University, Ansan, Korea*

EU-02. Magnetic properties improvement of melt spun $Co_{86.5}Hf_{11.5}B_2$ nanocomposites by refractory elements substitution. H.W. Chang[2], Y. Lin[1], C. Shih[1], M. Liao[1], Y. Lee[1] and *W.C. Chang*[1] *1. Physics, National Chung Cheng University, Chia-Yi, Taiwan; 2. Department of Applied Physics, Tunghai University, Taichung, Taiwan*

EU-03. Microstructure and Magnetic Properties of Ca-La-Co-Substituted Strontium Hexaferrites $Sr_{0.62-x}La_{0.38}Ca_xFe_{10.4}Co_{0.24}O_{19}$ *F. Wang*[1], Z. Chen[1,2], Y. Peng[1], X. Wu[1] and Z. Feng[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 2. JPMF GuangDong Co., Ltd., Jiangmen, Guangdong*

EU-04. Hard magnetic property improvement of sputter-prepared FePd films on glass substrates by underlayering with refractory elements. *H.W. Chang*[1], W. Chen[2], D. Wei[2], C. Wang[1], C.W. Shih[3] and W.C. Chang[3] *1. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 2. Institute of Mechatronic Engineering, National Taipei University of Technology, Taipei, Taiwan; 3. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan*

EU-05. Magnetic properties and coercivity mechanism of MnGa films. J. Feng[1], *W. Liu*[1], W. Gong[1], W. Ren[1], X.G. Zhao[1] and Z. Zhang[1] *1. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Liaoning*

EU-06. Phase Structure and Magnetic Properties of $Mn_{70}Ga_{30-x}Sn_x$ (x = 5-30) Alloy Ribbons. *X.G. Zhao*[1], M. Tong[1], C.W. Shih[2], W.C. Chang[2], W. Liu[1] and Z. Zhang[1] *1. Institute of Metal Research,Chinese Academy of Sciences, Shenyang, Liaoning; 2. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan*

EU-07. Evolution of microstructure and magnetic properties of MnAl alloy induced by mechanical milling. *W. Lu*[1], M. Lin[1], J. Niu[1], M. Jia[1], Y. Song[1] and Y. Xu[2] *1. School of Materials Science and Engineering, Tongji University, Shanghai; 2. National Key Laboratory of Science Technology on Near-surface Detection and Sensing Technology, Wuxi, Jiangsu*

EU-08. Enhanced Energy Product in Magnets Intermediate between Nd-Fe-B and Ferrite. P. Tozman[1], M. Venkatesan[1] and *J. Coey*[1] *1. School of Physics and CRANN, Trinity College, Dublin 2, Ireland*

<u>EU-09</u>. **Effects of Milling Conditions on the Magnetic Properties of MnBi Alloys.** *M. Gjoka*[1], C. Sarafidis[2], G. Giannopoulos[1] and D. Niarchos[1] *1. Department of Materials Science, INN, NCSR "Demokritos", Athens, Greece; 2. Department of Physics, Aristotle University, Thessaloniki, Greece*

<u>EU-10</u>. **Structure, Magnetic Properties and Coercivity Mechanism of Rapidly Quenched Mn_xGa Ribbons.** *W. Gong*[1], X. Zhao[2], W. Fan[1], J. Feng[2], A. Lin[1], J. He[1], W. Liu[2] and Z. Zhang[2] *1. National Institute of Metrology, Beijing; 2. Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Liaoning*

<u>EU-11</u>. **Electroplated Fe-Pt Films Prepared from Plating Baths with Various Citric Acid Content.** *M. Taro*[1], K. Furutani[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki Univercity, Nagasaki, Japan*

<u>EU-12</u>. **Strain-Induced High Coercivity in $La_{0.7}Sr_{0.3}CoO_3$ Films.** Y. Zhao[1], H. Yang[1], Y. Liu[1], H. Kuang[1], M. Zhang[1], W. Zuo[1], J. Wang[1], *F. Hu*[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences (CAS), Beijing*

<u>EU-13</u>. **Sintering And Magnetic Characteristics of Barium Hexaferrites with Bi_2O_3/CuO Additives.** *C. Wu*[1], Z. Yu[1], K. Sun[1], G. Wu[1], Y. Yang[2], X. Jiang[1], R. Guo[1] and Z. Lan[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Department of Communication and Engineering, Chengdu Technological University, Chengdu, Sichuan*

<u>EU-14</u>. **Influence of de-bubbling on crystal structure and magnetic properties of electrodeposited CoNiP layers.** B. Tseng[1], Z. Xu[2], C. Chang[1], C. Hsiao[1], S. Liu[1], S. Hsiao[1,2], C. Sung[2] and *T. Chin*[1] *1. Material Science and Engineering, Feng Chia University, Taiching, Taiwan; 2. National Tsing Hua University, Hsinchu, Taiwan*

THURSDAY MORNING 8:30 PLENARY HALL B

Session EV
LIFE SCIENCE AND APPLICATIONS II
(Poster Session)
Eiji Kita, Chair
University of Tsukuba

EV-01. Proton Relaxivity and magnetic hyperthermia evaluation of gadolinium doped nickel ferrite nanoparticles as potential theranostic agents. *T. Yadavalli*[1], S. Ramaswamy[1,2], G. Chandrasekharan[1], H. Therese[1] and R. Chennakesavulu[1] *1. Nanotechnology Research Centre, SRM university, Chennai, Tamilnadu, India; 2. Physics, University of Western Australia, Perth, Western Australia, Australia*

EV-02. Preparation of Artificial Blood-Circulation System and Application of ELF Electromagnetic Fields to Effective Blood-Flow Controls. *H. Nakagawa*[1], M. Ohuchi[1], K. Hoshi[2], Y. Sakamoto[2], M. Tsunoda[2] and A. Tsutsumi[2] *1. Tokyo Denki University, Tokyo, Japan; 2. Kitasato University, Kanagawa, Japan*

EV-03. Biological Immunoassay Utilizing Magnetoresistive Sensor and Magnetic-Field-Controlled Binding between Magnetic Markers and Targets. K. Noguchi[1], T. Sakakibara[1], T. Yoshida[1] and *K. Enpuku*[1] *1. Kyushu University, Fukuoka, Japan*

EV-04. Improving Estimation Accuracy of Nasogastric Tube Tip Position using Pre Data. *T. Sasayama*[1], Y. Gotoh[2] and K. Enpuku[1] *1. Kyushu University, Fukuoka, Japan; 2. Oita University, Oita, Japan*

EV-05. Hysteresis Loss of Fractionated Magnetic Nanoparticles for Hyperthermia Application. *T. Sasayama*[1], T. Yoshida[1], K. Tanabe[1], N. Tsujimura[1] and K. Enpuku[1] *1. Kyushu University, Fukuoka, Japan*

EV-06. Hemodynamic Parameter Estimation from Dynamic Contrast-Enhanced Magnetic Resonance Imaging with Tikhonov Regularization Method. *Y. Li*[1], M. Gao[1], R. He[2], Y. Ren[1], H. Liu[1], L. Guo[1] and G. Xu[1] *1. Department of Biomedical Enginee, Hebei University of Technology, Tianjin; 2. United imaging healthcare America, Houston, Texas*

EV-07. Octahedral Shaped Fe_3O_4 Nanoparticles with Enhanced Specific Absorption Rate and R_2 Relaxivity.
J. Mohapatra[1], A. Mitra[2], M. Aslam[2,1] and D. Bahadur[3,1]
1. Centre for Research in Nanotechnology and Science, Indian Institute of Technology Bombay, Mumbai, Maharashtra, India; 2. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India; 3. Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India

EV-08. Liquid phase synthesis of spinel-structured ferrimagnetic iron oxide nanoparticles for magnetic hyperthermia. *H. Latiff*[1], A. Horiuchi[1], M. Kishimoto[1], H. Yanagihara[1] and E. Kita[1] *1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Ibaraki, Japan*

EV-09. TMS Study on Changes in Cortical Excitability Elicited by Visual Feedback during Rhythmic Movement. *M. Odagaki*[1], K. Ito[1], Y. Osawa[1], Y. Kikuchi[2] and K. Imamura[1] *1. Maebashi Institute of Technology, Maebashi, Gunmma, Japan; 2. Institute of Blood and Vessels, Mihara Memorial Hospital, Isesaki, Gunnma, Japan*

EV-10. The potential of combinations of chloroaluminum phthalocyanine-loaded magnetic-nanoemulsion systems and mesenchymal stem cells for glioma therapy. L.B. De Paula[2,1], F.L. Primo[1], M.R. Pinto[1], P.C. Morais[3] and *A.C. Tedesco*[1] *1. Chemistry, São Paulo Universitiy, Ribeirão Preto, Brazil; 2. Genetics, São Paulo, University, Ribeirão Preto, Brazil; 3. Physics, Brasília, University, Brasília, Brazil*

EV-11. Design and Fabrication of Magnetically Driven Cytology Brush Applicable to Capsule Endoscope.
K. Hajima[1], M. Yamashita[1] and T. Honda[1] *1. Faculty of Engineering, Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan*

EV-12. Tunneling magnetoresistive biosensor for the detection of E. coli O157:H7 bacterium. *Y. Wu*[1], Y. Liu[1], Q. Zhan[1], H. Li[1], D. Sun[1], S. Mao[1] and R. Li[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang*

EV-13. Optimization of magnetizing parameters for multi-pole magnetic scales by Taguchi method. *Z. Xu*[1], S. Wang[2], Z. Zhang[2], T. Chin[3] and C. Sung[1] *1. Department of Power Mechanical Engineering, National Tsing Hua Univ., Hsinchu, Taiwan; 2. Department of Mechanical Engineering, National United Univ., Miaoli, Taiwan; 3. Department of Materials Science & Engineering, Feng Chia University, Taichung, Taiwan*

EV-14. Capping-ligands-induced synthesis of non-spherical magnetite nanoparticles for hyperthermia and their biocompatibility study. *L. Li*[1], C. Leung[2], Y. Du[1], C. Wong[3,4] and P. Pong[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong; 2. Department of Applied Physics, Hong Kong Polytechnic University, Hong Kong; 3. Department of Pathology, The University of Hong Kong, Hong Kong; 4. State Key Laboratory for Liver Research, The University of Hong Kong, Hong Kong*

EV-15. Dendrimerized magnetic nanoparticles as carriers for the anti-cancer compound, epigallocatechin gallate. *S. Nigam*[1] and D. Bahadur[2] *1. Metallurgical Engineering & Materials Science, IITB-Monash Research Academy, Mumbai, India; 2. Metallurgical Engineering & Materials Science, Indian Institute of Technology Bombay, Mumbai, Maharashtra, India*

THURSDAY MORNING 8:30 — PLENARY HALL B

Session EW
ELECTROMAGNETIC COMPATIBILITY AND TRANSFORMERS I (Poster Session)
Mingyao Lin, Chair

EW-01. A Comparative Analysis of PWM Algorithms for Electromagnetic Interference Mitigation in Vehicle-to-Grid Power Interface. *B. Li*[1], J. Wang[1], X. Xu[2] and Z. Zhang[1] *1. School of Electrical Engineering and Automation, Tianjin University, Tianjin; 2. State Grid Tianjin Electric Power Company, Tianjin*

EW-02. Effect of Air-Gap between Metal Strips and a Ferrite Plate on Magnetic Shielding. *H. Park*[1], J. Kwon[2], S. Kwak[2] and S. Ahn[3] *1. Electronic Engineering, The University of Suwon, Hwaseong-si, Korea; 2. Electronics and Telecommunications Research Institute (ETRI), Daejeon, Korea; 3. The Cho Chun Shik Graduate School for Green Transportation, KAIST, Daejeon, Korea*

EW-03. Influence of Periodic Carrier Frequency Modulation on Low Frequency Electromagnetic Interference of Permanent Magnet Synchronous Motor Drive System. Y. Xu[1], Q. Yuan[1], J. Zou[1] and *J. Li*[1]
1. Harbin Institute of Technology, Harbin, Heilongjiang

EW-04. The Proximity Effect of Earth Conductivity Change on Geomagnetically Induced Current. C. Liu[1], *C. Lin*[1], B. Dong[1] and P. Zhang[1] *1. North China Electric Power University, Beijing*

EW-05. Frequency Domain Analysis of EM Crosstalk Problem in a Quad by the Equivalent Cable Bundle Method among Twisted-Wire Pairs Cable Bundle. *S. Belkhelfa*[1], M. Lefouili[1] and K. Drissi[2] *1. Lamel laboratory, Jijel, jijel, Algeria; 2. Institut Pascal, Aubière, France*

EW-06. A Promoted Design for Primary Coil in Roadway-Powered System. *Z. Chen*[1] and X. Huang[1]
1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu

EW-07. Common-mode Electromagnetic Interference Calculation Method for a PV Inverter with Chaotic SPWM. *Z. Yang*[1], H. Li[1], C. Fang[1], B. Zhu[1] and B. Zhang[2]
1. School of Electrical Engineering, Beijing Jiaotong University, Beijing; 2. School of Electric Power, South China University of Technology, Guangzhou, Guangdong

EW-08. Wave Process in Scale-down Model of UHVDC Converter Transformer Winding under the Lightning Impulse Voltage. *Z. Pu*[1], J. Ruan[1], Y. Zhang[1], Z. Du[1] and Q. Xie[2] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Electric Power Research Institute of Hubei Power Grid Corporation, Wuhan, Hubei*

EW-09. Modeling and Analysis of Magnetic-Combination Transformer for an AC-DC Converter. *C. Li*[1], W. Huang[1], C. Fan[1] and X. Jiang[1] *1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu*

EW-10. Analysis of Wave Impedance and Lightning Characteristics for Composite Transmission Tower under Direct Lightning Strokes. Y. Huangfu[1], *S. Wang*[1], X. Tao[1] and G. Wang[1] *1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi*

EW-11. The Analysis on Inner Winding Stability of Power Transformer after Initial Short-circuit and Reclosing under Short-circuit Fault. *X. Sun*[1], Y. Li[1], F. Han[1], B. Zhang[1] and H. Wang[1] *1. Shenyang University of Technology, Shenyang, Liaoning*

EW-12. Power transformer longitudinal insulation electric field calculation and analysis software. *H. Wang*[1], Y. Li[1], F. Han[1], X. Sun[1] and B. Zhang[1] *1. Shenyang University of Technology, Shenyang, Liaoning*

EW-13. Analytic Computation of the Magnetizing Inductance of Current Instrument Transformers under Consideration of Eddy Currents. *C. Jäschke*[1] and P. Schegner[1] *1. Institute of Electrical Power Systems and High Voltage Engineering, Technische Universität Dresden, Dresden, Saxony, Germany*

EW-14. Calculation of Magnetic Flux Leakage and Temperature Field in New Power Transformer. H. Wu[1,2] and *B. Bai*[1,2] *1. Shenyang University of Techonlogy, Shenyang, Liaoning; 2. Liaoning Key Laboratory of Modern Electrical Equipment Theory and Common Technologies, Shenyang, Liaoning*

EW-15. An Improved Three-coil Wireless Power Link to Increase Spacing Distance and Power for Resonant Coupling System. *X. Zhang*[1], Q. Yang[1], X. Zhang[1], P. Zhang[1], Y. Li[1] and L. Jin[1] *1. Tianjin Key Laboratory of Advanced Electrical Engineering and Energy Technology, Tianjin Polytechnic University, Tianjin*

THURSDAY
MORNING
8:30

PLENARY HALL B

Session EX
SHIELDING, LEVITATION AND PROPULSION
(Poster Session)

Jian Li, Chair
Huazhong University of Science&Technology

EX-01. Analytical Modeling of Homopolar Permanent Magnet Biased Radial Magnetic Bearing. K. Wang[1], D. Wang[2], *H. Lin*[1], Y. Shen[2] and X. Zhang[2] *1. Engineering Research Center for Motion Control (MOE), Southeast University, Nanjing, Jiangsu; 2. National Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, Hubei*

EX-02. Design and analysis of a magnetic levitation device for deloading the thrust-bearing of vertical hydroelectric generating set. *H. Ma*[1], J. Liu[2,1] and P. Ju[1] *1. Hohai University, Nanjing, Jiangsu; 2. China University of Petroleum, Qingdao, Shandong*

EX-03. Control method of the magnetically levitated system with two phase linear motor to improve the levitation characteristics. *M. Fukuda*[1], Y. Watanabe[1] and S. Ohashi[1] *1. Department of Electrical and Electric Engineering, Kansai University, Osaka, Japan*

EX-04. Method for Evaluating Shielding Factor of Magnetically Shielded Rooms Taking Account of Eddy Currents Using Exciting Coil. *K. Muramatsu*[1], Y. Gao[1], Y. Yoneyama[2], A. Sakai[2], S. Yuuki[3], K. Kazami[3], K. Yamazaki[4], T. Shinnoh[5] and T. Yamaguchi[6] *1. Saga University, Saga, Japan; 2. Giken Kogyo Co., Ltd., Suginami-ku, Tokyo, Japan; 3. Yokogawa Electric Corp., Kanazawa, Ishikawa, Japan; 4. Takenaka Corp., Inzai, Chiba, Japan; 5. Kajima Corp., Chofu, Tokyo, Japan; 6. Daido Plant Industries Co.,Ltd., Nagoya, Aichi, Japan*

EX-05. Estimating unbalance mass of vertical axis washing machine by measuring current ripple of PMSM motor. *K. Jung*[1], S. Chai[1], Y. Kim[1] and J. Hong[1] *1. Automotive Engineering, Hanyang University, Seoul, Korea*

EX-06. Study of Magnetic Levitation for a 0.18-mm-thick Steel Plate by Adopting Twisting-mode Control. *O. Suzuki*[1], D. Nagashima[1], K. Nishimura[1] and T. Nakagawa[1] *1. Electrical Engineering, Tokyo City University, Kawasaki, Kanagawa, Japan*

EX-07. Three-Dimensional Finite Element Modeling of Active Magnetic Bearings Considering Eddy Current Losses in Laminated Rotor. M. Zaki[1], O. Mahgoub[1] and *A. Adly*[1] *1. Electric Power & Machines Department, Cairo University, Giza, Egypt*

EX-08. High Performances of Magnetic Levitation System by Using Persistent Current in Superconducting Coil. S. Takase[1], *M. Komori*[1], K. Asami[1] and A. Sakai[1] *1. Applied Science for Integrated System Engineering, Kyushu Institute of Technology, Kitakyushu, Fukuoka, Japan*

EX-09. Design and Optimisation of Three-Pole Radial-Axial HMB with Independent Radial and Axial Carrying Capacity. *H. Zhu*[1] and J. Ju[1] *1. Electrical Engineering, School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

EX-10. Analysis and Design of a Low Stiffness Flat Type Vertical-gap Passive Maglev Vibration Isolation Unit. *Y. Zhou*[1], B. Kou[1], X. Yang[1] and H. Zhang[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

EX-11. Modeling and Analysis of Discontinuous Magnetic Circuit Structure for Magnetically Shielded Room. *D. Pan*[2], Z. Sun[1] and L. Li[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang; 2. Research Center of Basic Space Science, Harbin, Heilongjiang*

EX-12. Improvement of the damping in the superconducting magnetically levitated bogie using the semi-active damper coil system. *S. Ohashi*[1] and H. Ueda[1] *1. Electrical and Electric Engineering, Kansai University, Osaka, Japan*

EX-13. Research of Acoustic Vibration Technique in Online Defects Detection in Porcelain Post Insulator. *K. Liang*[1], J. Wang[1], K. Liu[1] and L. Wang[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei*

<u>EX-14</u>. **Influence of Lateral-External Impulse Force Effects on Non-Guidance Force Control System of Electro-Permanent Magnet Suspension Maglev Conveyor.** *H. Shin*[1], J. Choi[1], H. Cho[1] and J. Lee[2] *1. Chung-Nam National University, Daejeon, Korea; 2. Magnetic Levitation and Linear drive, Korea Institute of Machinery and Material, Daejeon, Korea*

<u>EX-15</u>. **Suppression for Discharge Bearing Currents in Variable-Frequency Motors Based on Electromagnetic Shield.** *B. Bai*[1] and Y. Wang[1] *1. Shenyang University of Technology, Shenyang, Liaoning*

<u>EX-16</u>. **Magnetic Field Distribution Optimization for Press-Pack IGBT Pedestals in Turn-OnOff Transient.** *C. Ni*[1], Z. Zhao[1], X. Cui[1], E. Deng[1] and C. Zhao[1] *1. North China Electric Power University, Beijing*

THURSDAY
MORNING
8:30

PLENARY HALL B

Session EY
PERMANENT MAGNET MACHINES II
(Poster Session)

Wenping Cao, Chair
Queen's University Belfast
Daohan Wang, Chair
Shandong University

<u>EY-01</u>. **Analysis of Spoke-type IPM Machine by Step-Staggered Rotor with Alternate Airspace-barriers.** *X. Ge*[1], Z. Zhu[1], J. Li[2] and J. Chen[2] *1. University of Sheffield, Sheffield, United Kingdom; 2. Welling R&D Center, Shanghai*

<u>EY-02</u>. **Electromagnetic Performance Analysis of Novel Vernier Permanent-Magnet Motor With Improved Torque Capability.** W. Zhao[1], X. Sun[1] and *J. Ji*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

<u>EY-03</u>. **Vector Control of Hybrid Axial Field Flux-Switching Permanent Magnet Machine Based on Particle Swarm Optimization.** *J. Zhao*[1], M. Lin[1], D. Xu[1] and L. Hao[1] *1. School of Electric Engieering, Southeast University, Nanjing, Jiangsu*

EY-04. Mitigation of Magnetic Flux Saturation in Dual-Excitation Flux Switching Motor. *E. Sulaiman*[1] and S. Zakaria[1] *1. Research Centre of Applied Electromagnetic, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia*

EY-05. A New Hybrid-Permanent-Magnetic Flux Switching Motor with Compound Rotor Configuration. Y. Chen[1], *Z. Xiang*[1] and G. Jiang[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

EY-06. Magnetic Flux Distribution Analysis of Various Flux Switching Motors Using Segmental Rotor. *E. Sulaiman*[1], H. Ali Soomro[1] and M. Omar[1] *1. Research Centre of Applied Electromagnetic, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Johor, Malaysia*

EY-07. A Novel Design Concept of a PMSM For Flux Weakening Operation. *J. Yu*[1], L. Li[1] and J. Cao[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

EY-08. Comparison of Doubly Salient Permanent Magnet Machines with E-shaped and ∏-shaped Stator Iron Core Segments. *Y. Du*[1,2], Y. Sun[1], X. Zhu[1], M. Cheng[2], F. Xiao[1], Y. Sun[1] and H. Zhu[1] *1. Jiangsu University, Zhenjiang, Jiangsu; 2. Southeast University, Nanjing, Jiangsu*

EY-09. Parameter Calculation of The Hybrid Excitation Synchronous Machine System Utilizing Tooth Harmonic for Excitation. *Y. Xia*[1], B. Xu[1], H. Wu[1], J. Liu[1] and S. Huang[1] *1. Department of Electrical and Automatic Engineering, Nanchang University, Nanchang, Jiangxi*

EY-10. Optimal Arrangement of Permanent Magnets in a Dual-permanent-magnet-excited Synchronous Motor. Y. Chen[1], *W. Fu*[1] and W. Zhu[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong*

EY-11. Performance Analysis of Novel Multi-Permanent-Magnet-Excited Synchronous Motors. *W. Fu*[1], Y. Chen[1] and S. Peng[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong*

EY-12. Optimal Stator Shape Design for Cogging Torque of Surface-Mounted Type Variable Flux Permanent Magnet Motor considering Controllable Number of Variable Magnets. *K. Lee*[1], S. Lee[1], J. Park[1], J. Choi[2] and J. Kim[2] *1. Automotive Components R&D Group, Korea Institute of Industrial Technology, Gwangju, Korea; 2. Chungnam National University, Daejeon, Korea*

EY-13. Improved Rotor Structure Design of Concentrated Flux Type Ferrite Magnet Motor for Dual Clutch Transmission. *J. Kim*[1], S. Chai[1] and J. Hong[1] *1. Automotive Engineering, Hanyang University, Seoul, Korea*

EY-14. A Novel Structure of Vernier Permanent Magnet Machine for Direct-Driven System. Y. Wang[1], W. Fu[1], *S. Niu*[1] and S.L. Ho[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong*

EY-15. A Double-sided Linear Flux-Reversal Permanent Magnet Motor with Segmental Stator for Long-Stroke Application. *Y. Du*[1], C. Shen[1], D. Zhu[1] and F. Xiao[1] *1. Jiangsu University, Zhenjiang, Jiangsu*

EY-16. Analysis of the Performance Degradation due to Axial-leakage Flux in the Spoke-type Permanent Magnet Motor by Using an Analytic Method. *S. Lee*[2], W. Kim[2], H. Hong[1] and J. Lee[1] *1. Hanyang University, Seoul, Korea; 2. Samsung Electronics, Suwon, Korea*

THURSDAY
MORNING
8:30

PLENARY HALL B

Session EZ
SWITCHED AND SYNCHRONOUS RELUCTANCE MACHINES II (Poster Session)

Jiabin Wang, Chair
University of Sheffield, United Kingdom
Smail Mezani, Chair
University of Nottingham

EZ-01. Modelling of Radial Vibration in Switched Reluctance Motors. *X. Guo*[1], R. Zhong[1], L. Zhao[2], J. Yin[1] and W. Sun[1] *1. National ASIC System Engineering Research Center, Southeast University, Nanjing, Jiangsu; 2. Zhuzhou Times Electronic Technology Co., Ltd., Zhuzhou, Hunan*

EZ-02. Synchronous Reluctance Motors Performance Based on Different Electrical Steel Grades.
M.N. Ibrahim[1,2], P. Sergeant[1] and E.M. Rashad[3]
1. Department of Electrical Energy, Systems and Automation- Department of Industrial Technology & Construction, Ghent University, Gent, Belgium; 2. Department of Electrical Engineering, Kafrelshiekh University, Kafrelshiekh, Egypt; 3. Department of Electrical Power and Machines Engineering, Tanta Uinversity, Tanta, Egypt

EZ-03. Semi-Analytical Framework for Synchronous Reluctance Motor Analysis including Finite Soft-Magnetic Material Permeability. *R. Sprangers*[1], J.J. Paulides[1], B.L. Gysen[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Noord-Brabant, Netherlands*

EZ-04. An Optimized Decoupling Winding Connection for Six-phase Switched Reluctance Motor. *M. Guan*[1], C. Liu[1], S. Han[1], S. Dai[1] and C. Zhou[1] *1. Nanjing University Of Aeronautics And Astronautics, Nanjing, Jiangsu*

EZ-05. Simplified Model-Free Predictive Current Control for Synchronous Reluctance Motor Drive Systems. *C. Lin*[1], J. Yu[2], H. Yu[3] and Y. Lo[1] *1. Department of Electrical Engineering, National Taiwan Ocean University, Keelung City, Taiwan; 2. Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan; 3. Department of Systems Engineering and Naval Architecture, National Taiwan Ocean University, Keelung, Taiwan*

EZ-06. Design of Novel Axial Flux Dual Stator Doubly Fed Reluctance Machine. *S. Khaliq*[1], M. Modarres[1], T.A. Lipo[2] and B. Kwon[1] *1. Department of Electronic & Systems Engineering, Hanyang University, Ansan, Korea; 2. Department of Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

EZ-07. Magnet Arrangement in Novel Flux-Modulating Synchronous Machines with Permanent-Magnet Excitation. *T. Fukami*[1], Y. Ueno[1] and K. Shima[1]
1. Electrical and Electronic Engineering, Kanazawa Institute of Technology, Nonoichi, Japan

EZ-08. Comparative Analysis on Variable SynRM according to Geometric Structure by Numerical Analysis and Experimentation. J. Lee[1], Y. Kim[1] and *J. Lee*[1]
1. Hanbat National University, Daejeon, Korea

EZ-09. Field Path Design Assessments of a High-performance Small-power Synchronous-reluctance Motor. *C. Liu*[1], T. Luo[1], C. Hwang[2] and B. Chang[1] *1. Department of Electrical Engineering, National Sun Yat-Sen University, Kaohsuing, Taiwan; 2. Department of Electrical Engineering, Feng Chia University, Taichung, Taiwan*

EZ-10. Optimum Design of Axially Laminated Synchronous Reluctance Motor, Considering Centrifugal Force and Magnetic Saturation using FEM and RSM. J. Lee[1], *Y. Kim*[1], D. Kim[1] and J. Lee[1] *1. Hanbat National University, Deojeon, Korea*

EZ-11. Electromagnetic Design of Bilateral Switched Reluctance Linear Motor. H. Chen[1], Q. Wang[1] and *W. Yan*[1] *1. School of Information and Electrical Engineering University of Mining & Technology, Xuzhou, Jiangsu*

EZ-12. Rotor Resonances of Bearingless Switched Reluctance Motor with Axial Bias Permanent Magnet. H. Wang[1], S. Tang[1] and *B. Xue*[1] *1. Instrumentation Science and Opto-electronics Engineering, Beihang University, Beijing*

EZ-13. Modeling of A Switched Reluctance Motor Under Stator Winding Fault Condition. H. Chen[1], *W. Yan*[1], Q. Wang[1], S. Lu[1] and Z. Chen[2] *1. School of Information and Electrical Engineering University of Mining & Technology, Xuzhou, Jiangsu; 2. Aalborg University, Aalborg, Denmark*

EZ-14. Design and Analysis of a Direct-Drive Two Dimensional Hybrid-flux Planar Machine. *J. Pan*[1,2], B. Zhang[1] and S. Or[2] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong; 2. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong*

EZ-15. Stiffness Analysis for Bearingless Switched Reluctance Motor with Bias Permanent Magnet. *B. Xue*[1], H. Wang[1] and S. Tang[1] *1. Instrumentation Science and Opto-electronics Engineering, Beihang University, Beijing*

EZ-16. Optimization of Suspending Force for Novel Bearingless Switched Reluctance Motor. *B. Xue*[1], H. Wang[1] and S. Tang[1] *1. Instrumentation Science and Opto-electronics Engineering, Beihang University, Beijing*

THURSDAY
AFTERNOON
2:00

309 A

Session FA
TUNING MAGNETISM AT OXIDE INTERFACES
Gerhard Jakob, Chair
University of Mainz

2:00 <u>FA-01</u>. **Electric-field control of magnetism in multiferroic heterostructures.** ***(Invited)*** *Y. Zhao*[1], S. Zhang[1], P. Li[1], A. Chen[1], D. Li[2], S. Rizwan[2], J. Zhang[3], J. Seidel[3], T. Qu[1,3], Z. Luo[4], Q. He[3], L. Yang[1], Y. Wu[5], X. Jin[5], C. Gao[4], X. Han[2] and R. Ramesh[3] *1. Tsinghua University; 2. Beijing National Lab. for Cond. Matter Physics; 3. Univ. of California, Berkeley; 4. Univ. of Science and Technology of China, Anhui; 5. Fudan University, Shanghai*

2:30 <u>FA-02</u>. **Implications of Interfacial Magnetization for Oxide Spintronics.** ***(Invited)*** *Y. Liu*[2,1] *1. Materials Science Division, Argonne National Laboratory, Argonne, Illinois; 2. Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee*

3:00 <u>FA-03</u>. **Insight into spin transport in oxide heterostructures from interface-resolved magnetic mapping.** ***(Invited)*** *M. Grisolia*[1] *1. UMP 137 CNRS/Thales, Palaiseau, France*

3:30 <u>FA-04</u>. **Properties of single RuO_2 layer embedded in $SrTiO_3$** ***(Invited)*** *T. Harada*[1], C.R. Hughes[1,2], R. Ashoori[3], A.V. Boris[1], H. Hilgenkamp[4], M.E. Holtz[5], L. Li[6,3], J. Mannhart[1], D.A. Muller[5,7], D.G. Schlom[8,7], A. Soukiassian[8], X.R. Wang[4] and H. Boschker[1] *1. Max Planck Institute, Stuttgart, Germany; 2. Augsburg University, Augsburg, Germany; 3. MIT, Cambridge, Massachusetts; 4. University of Twente, Enschede, Netherlands; 5. School of Applied and Engineering Physics, Cornell University, Ithaca, New York; 6. Department of Physics, University of Michigan, Ann Arbor, Michigan; 7. Kavli Institute at Cornell for Nanoscale Science, Ithaca, New York; 8. Department of Materials Science and Engineering, Cornell University, Ithaca, New York*

4:00 <u>FA-05</u>. **Controlling Emergent Ferromagnetism at Oxide Interfaces.** ***(Invited)*** *A. Grutter*[1] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland*

4:30 <u>FA-06</u>. **Tuning Ferromagnetism at Interfaces between Insulating Perovskite Oxides.** ***(Invited)*** *P.J. Kelly*[1] and N. Ganguli[1] *1. Faculty of Science and Technology and MESA+ Institute for Nanotechnology, University of Twente, Enschede, Netherlands*

THURSDAY AFTERNOON 2:00 — 309 B

Session FB

DOMAIN WALL, MAGNONICS AND LOGIC DEVICES

Atsufumi Hirohata, Chair
University of York

2:00 <u>FB-01</u>. **Quantifying the Interfacial Dzyaloshinskii-Moriya Interactions from Spin-Waves.** ***(Invited)*** *H.T. Nembach*[1] *1. JILA, University of Colorado, Boulder, Colorado*

2:30 <u>FB-02</u>. **Effects of Dzyaloshinskii-Moriya interaction on the spin transfer magnetization switching in magnetic tunnel junctions.** J. Sampaio[1], A.V. Khvalkovskiy[2], M. Kuteifan[3], M. Cubukcu[1], D. Apalkov[2], V. Lomakin[3], V. Cros[1] and *N. Reyren*[1] *1. Unité Mixte de Physique CNRS/Thales (UMR-137), associée à l'université Paris-Sud, Palaiseau, France; 2. Semiconductor R&D Center (Grandis), Samsung Electronics, San Jose, California; 3. Department of Electrical and Computer Engineering, University of California at San Diego, La Jolla, California*

2:45 <u>FB-03</u>. **Design and Fabrication of Nanomagnetic Majority Logic Gate Based on Spin Hall Assisted Switching.** *A.K. Smith*[1], M. Jamali[1], D. Hickox-Young[2], Z. Zhao[1] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota; 2. Physics, St. Olaf College, Northfield, Minnesota*

3:00 <u>FB-04</u>. **Topological Manipulation of Magnetic Domain Wall Profile for Logic Applications.** *R. Maddu*[1], S. Goolaup[1], C. Murapaka[1] and W. Lew[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

3:15 FB-05. **Complementary Spintronic Logic with Spin Hall Effect Driven Magnetic Tunnel Junction.** *W. Kang*[1], Z. Wang[2], Y. Zhang[1], D. Ravelosona[2] and W. Zhao[1,2] *1. SIC, EIE, Beihang University, Beijing; 2. IEF, Univ. Paris-Sud, CNRS, Orsay, France*

3:30 FB-06. **Currents of Bose-Einstein magnon condensates.** ***(Invited)*** *B. Hillebrands*[1,2] *1. Fachbereich Physik, TU Kaiserslautern, Kaiserslautern, Germany; 2. Landesforschungszentrum OPTIMAS, TU Kaiserslautern, Kaiserslautern, Germany*

4:00 FB-07. **Optimised circuit configuration for STT-MTJ logic devices.** *D. Loy*[1], S. Goolaup[1] and W. Lew[1] *1. Physics, Nanyang Technological University, Singapore*

4:15 FB-08. **Spin-Orbitronics Memory Device with Matching and Self-reference Functionality.** *X. Wang*[1], M. Asnaashari[1], P. Keshtbod[1], Z. Wang[1], K. Satoh[1], B.K. Yen[1] and Y. Huai[1] *1. Avalanche Technology, Fremont, California*

4:30 FB-09. **Resistance switching behavior in Fe doped amorphous carbon thin films with different thickness prepared by DC magnetron sputtering.** *S. Zhang*[1] *1. Material science and engineering, Shanghai University, Shanghai*

4:45 FB-10. **Spin dice (physical random number generator using spin torque switching) and its thermal response.** *A. Fukushima*[1], K. Yakushiji[1], H. Kubota[1] and S. Yuasa[1] *1. AIST, Tsukuba, Japan*

THURSDAY
AFTERNOON
2:00

310

Session FC
SPIN TEXTURES AND MAGNETIC INTERACTIONS

Liza Herrera Diez, Chair
Univ. Paris- SUD

2:00 FC-01. **All-optical control of ferromagnetic thin films and nanostructures: Competition between polarized light and applied magnetic field.** *S. Mangin*[1], C. Lambert[1], M. Gottwald[2], D. Steil[3], V. Uhlir[4], M. Hehn[1], G. Malinowski[1], M. Salah Elhadri[1], M. Cinchetti[3], B. Varaprasad[6], Y. Takahashi[6], K. Hono[6], Y. Fainman[5], M. Aeschlimann[3] and E.E. Fullerton[4] *1. Institut Jean Lamour, Universite de Lorraine, Vamdoeuvre-les-Nancy, France; 2. IMEC, Leuven, Belgium; 3. Department of Physics and research center Optimas, University of Kaiserlautern, Kaiserlautern, Germany; 4. CMRR, University of California San Diego, San Diego, California; 5. Department of Electrical and Computer Engineering, University of California San Diego, San Diego, California; 6. Magnetic Materials Unit, National Institute for Materials Science, Tsukuba, Japan*

2:15 FC-02. **Orbital two-channel Kondo effect in epitaxial ferromagnetic $L1_0$-MnAl films.** *L. Zhu*[1,2], S. Nie[1], P. Xiong[3], P.U. Schlottmann[3] and J. Zhao[1] *1. State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing; 2. Institute of Physics, Martin-Luther University, Halle, Germany; 3. Department of Physics, Florida State University, Tallahassee, Florida*

2:30 FC-03. **Efficient thermal spin injection using CoFeAl nanowires and its application. *(Invited)*** *T. Kimura*[1] *1. Kyushu University, Fukuoka, Japan*

3:00 FC-04. **Trapping of a Magnetic Soliton by Modifying the Boundary Conditions of a Synthetic Ferrimagnetic Superlattice.** *S. Chin*[1], A. Fernández-Pacheco[1], A. Welbourne[1], R. Mansell[1], J. Lee[1], D.C. Petit[1] and R.P. Cowburn[1] *1. Physics, University of Cambridge, Cambridge, United Kingdom*

3:15 <u>FC-05</u>. **Vortex-Antivortex coexistence in Nb based Superconductor/Ferromagnet heterostructures.** *A. Cucolo*[1], F. Bobba[1], C. Di Giorgio[1], D. D'Agostino[1], M. Iavarone[2], S. Moore[2], G. Karapetrov[3], V. Novosad[4] and V. Yefremenko[4] *1. University of Salerno, Fisciano, Salerno, Italy; 2. Temple University, Philadelphia, Pennsylvania; 3. Drexel University, Philadelphia, Pennsylvania; 4. Argonne National Laboratories, Argonne, Illinois*

3:30 <u>FC-06</u>. **Stabilization of helical magnetic structures in thin multilayers.** *L. Dzemiantsova*[1,2], G. Meier[3,1] and R. Röhlsberger[2,1] *1. The Hamburg Center of Ultrafast Imaging, Hamburg, Germany; 2. Deutsches Elektronen-Synchrotron, Hamburg, Germany; 3. Max-Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

3:45 <u>FC-07</u>. **Spin orientation-dependent antiferromagnetic proximity effect.** *Q. Li*[1], Z. Ding[1], T. Gu[1], J. Liang[1], Y. Luo[1], J. Zhu[1], J. Li[1], Z. Hu[2], C. Hua[3], H. Lin[3], T. Pi[3], C. Won[4] and Y. Wu[1,5] *1. Department of Physics, Fudan University, Shanghai; 2. Max-Planck-Institut für Chemische Physik fester Stoffe, Dresden, Germany; 3. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 4. Department of Physics, Kyung Hee University, Seoul, Korea; 5. Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing, Jiangsu*

4:00 <u>FC-08</u>. **Room temperature spin-polarization of EuS by thin ferromagnetic multilayers.** *A. Goschew*[1], P. Poulopoulos[2], V. Kapaklis[3], F. Wilhelm[4], A. Rogalev[4] and P. Fumagalli[1] *1. Freie Universität Berlin, Berlin, Germany; 2. University of Patras, Patras, Greece; 3. University of Uppsala, Uppsala, Sweden; 4. European Synchrotron Radiation Facility, Grenoble, France*

4:15 <u>FC-09</u>. **Mobile magnetic phase boundary in compositionally graded films.** *C.W. Miller*[1], B. Kirby[2], H. Belliveau[3], P. Kienzle[2], A. Grutter[2], P. Riego[4] and A. Berger[4] *1. Chemistry and Materials Science, Rochester Institute of Technology, Rochester, New York; 2. NCNR, NIST, Gaithersburg, Maryland; 3. University of South Florida, Tampa, Florida; 4. CIC nanoGUNE Consolider, Donostia San Sebastian, Spain*

4:30 <u>FC-10</u>. **Frustration and Spin Glass behaviour in C_{60}/ferromagnet multilayers.** *T. Moorsom*[1], M.C. Wheeler[1], F. Al Ma'Mari[1], W. Deacon[1], M. Ali[1], G. Burnell[1], B. Hickey[1] and O. Cespedes[1] *1. University of Leeds, Leeds, United Kingdom*

4:45 FC-11. **A Wide-band Magnetic Tunable Notch Filter Prototype with FeGaB/Al_2O_3 Multilayer Films.**
X. Yang[1], M. Liu[2], H. Sun[1], Z. Zhou[3], T. Nan[4] and N. Sun[4]
1. Beijing Institute of Technology, Beijing; 2. Xi'an Jiaotong Univeristy, Xi'an, Shaanxi; 3. Argonne National Laboratory, Lemont, Illinois; 4. Northeastern University, Boston, Massachusetts

THURSDAY AFTERNOON 2:00 — 311 A

Session FD
MAGNETOELASTIC AND MAGNETOCALORIC MATERIALS
Victorino Franco, Chair
Sevilla University

2:00 FD-01. **Magnetostriction Measurements of $L1_0$ $Fe_{50}Pt_{(50-x)}Pd_x$ Thin Films.** *W. Li*[1], W. Zhou[2], P. Lenox[1], T. Seki[2], K. Takanashi[2], A. Jander[1] and P. Dhagat[1]
1. School of Electrical Engineering and Computer Science, Oregon State Univerisity, Corvallis, Oregon; 2. Institute for Materials Research, Tohoku University, Sendai, Japan

2:15 FD-02. **Induced magnetoelectric effect driven by magnetization in $BaFe_{12}O_{19}$ / P(VDF-TrFE) composites.** *J. Guttierrez*[1], A. Lasheras[1], J.M. Barandiarán[1], R. Gonçalves[2], P. Martins[2] and S. Lanceros-Mendez[2] *1. Electricity and Electronics, BCMaterials and UPV/EHU, Bilbao, Bizakaia, Spain; 2. Centro/Departamento de Fisica, Universidade do Minho, Braga, Portugal*

2:30 FD-03. **Metallic glass/PVDF magnetoelectric energy harvester working up to the radiofrequency range.**
A. Lasheras[1], J. Guttierrez[3], S. Reis[2], D. Sousa[2], M. Silva[2], P. Martins[2], S. Lanceros-Mendez[2] and J.M. Barandiarán[3]
1. University of the Basque Country (UPV/EHU), Leioa, Spain; 2. Centro/Departamento de Física, Braga, Portugal; 3. BCMaterials and Universidad del País Vasco (UPV/EHU), Bilbao, Spain

2:45 FD-04. **Phase Control of Magnetic Susceptibility in Multiferroic Composites.** *L.M. Malkinski*[1], M. McGehee[1] and T. Gould[1] *1. Advanced Materials Research Institute, University of New Orleans, New Orleans, Louisiana*

3:00 FD-05. **Strain Induced Vortex Core Switching in Planar Magnetostrictive Nanostructures.** *T.A. Ostler*[1], R. Chantrell[1], A.W. Rushforth[3] and S.A. Cavill[1,2] *1. Department of Physics, The University of York, York, North Yorkshire, United Kingdom; 2. Diamond Light Source, Didcot, United Kingdom; 3. School of Physics and Astronomy, The University of Nottingham, Nottingham, United Kingdom*

3:15 FD-06. **Identification of a "thermodynamic consistent" model of magneto-mechanical hysteresis.** D. Davino[1], *C. Visone*[1], A. Cusano[1], M. Filograno[1] and M. Pisco[1] *1. Engineering, University of Sannio, Benevento, BN, Italy*

3:30 FD-07. **Ferromagnetic shape memory thin films and nanodisks: tuning properties by thickness, lattice mismatch and lateral confinement.** *F. Albertini*[1], P. Ranzieri[1], M. Campanini[1], V. Chiesi[1], S. Fabbrici[2,1], F. Casoli[1], L. Nasi[1], L. Righi[3,1], V. Grillo[4,1], F. Celegato[5], P. Tiberto[5,1] and G. Barrera[5] *1. IMEM-CNR, Parma, Italy; 2. MIST E-R, Bologna, Italy; 3. Università di Parma, Parma, Italy; 4. NANO-CNR, Modena, Italy; 5. INRIM, Torino, Italy*

3:45 FD-08. **Magnetic Domains and Twin Microstructure of Single Crystal Ni-Mn-Ga Exhibiting Magnetic Shape Memory Effect.** *V. Kopecký*[1], K. Jurek[1], J. Kopeček[1], L. Straka[2], H. Seiner[3] and O. Heczko[1] *1. Institute of Physics ASCR, Prague, Czech Republic; 2. Aalto University School of Science and Technology, Aalto, Finland; 3. Institute of Thermomechanics ASCR, Prague, Czech Republic*

4:00 FD-09. **Effect of hydrostatic pressure on martensitic transition, magnetic and magnetocaloric properties of Mn rich Mn-Ni-Sn Heusler alloy.** *J. Sharma*[1], A. Coelho[2] and K. Suresh[1] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India, Mumbai, Maharastra, India; 2. Instituto de Física "Gleb Wataghin", Universidade Estadual de Campinas-UNICAMP, Sao Paulo, Brazil*

4:15 FD-10. **Crystal Structure and Magnetic Transition in Fe-Mn-Ga Ribbon.** *D. Zhang*[1], H. Zhang[1], E. Liu[2], W. Wang[2], G. Wu[2] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing; 2. Institute of Physics, Chinese Academy of Sciences, Beijing*

4:30 <u>FD-11</u>. **Magnetocaloric and hysteretic properties of Ni-Mn based Heusler alloys.** *T. Gottschall*[1], K.P. Skokov[1], E. Palacios[2], R. Burriel[2] and O. Gutfleisch[1] *1. Material Science, TU Darmstadt, Darmstadt, Germany; 2. Institute of Materials Science of Aragon, University of Zaragoza, Zaragoza, Spain*

4:45 <u>FD-12</u>. **Magnetic field-induced isothermal entropy change across the magnetostructural transition in Ni-Mn-Ga melt-spun ribbons.** *Z. Li*[1], C. Sánchez Valdés[2], J.L. Sanchez Llamazares[2], Y. Zhang[3,4], C. Esling[3,4], X. Zhao[1] and L. Zuo[1] *1. Key Laboratory for Anisotropy and Texture of Materials (MOE), Northeastern University, Shenyang, Liaoning; 2. Instituto Potosino de Investigación Científica y Tecnológica A.C., San Luis Potosí, S.L.P. , Mexico; 3. Laboratoire d'Étude des Microstructures et de Mécanique des Matériaux (LEM3), CNRS UMR 7239, Université de Lorraine, Metz, France; 4. Laboratory of Excellence on Design of Alloy Metals for low-mAss Structures (DAMAS), Université de Lorraine, Metz, France*

THURSDAY AFTERNOON 2:00 — 308

Session FF
PATTERNED MEDIA AND RECORDING HEADS
Jingsheng Chen, Chair
National University of Singapore

2:00 <u>FF-01</u>. **Fabrication and Characterization of Bit Patterned Media at 1.5 Tdots/in^2 and Beyond.** ***(Invited)*** *K.Y. Lee*[1], X. Yang[1], S. Xiao[1], Y. Hsu[1], Z. Yu[1], M. Feldbaum[1], P. Steiner[1], K. Wago[1], N. Li[2] and D. Kuo[1] *1. Seagate Media Research, Fremont, California; 2. Seagate Enterprise Storage Drive Architecture, Shakopee, Minnesota*

2:30 <u>FF-02</u>. **Formation of FePt Nanoparticle Arrays Using Nanohole Templates.** A.M. Abdelgawad[1], S.D. Oberdick[1] and *S. Majetich*[1] *1. Carnegie Mellon University, Pittsburgh, Pennsylvania*

2:45 FF-03. **Direct growth of Bit Patterned Media - The template effect.** *E. Yang*[1], Z. Liu[1], H. Arora[1], T. Wu[1], D. Spoddig[1], F. Zhu[1], D. Bedau[1], M. Grobis[1], B. Gurney[1] and T. Albrecht[1] *1. HGST, San Jose, California*

3:00 FF-04. **Determining the Anisotropy of Bit Patterned Media for Optimal Performance.** *J. Talbot*[1], J. Miles[1] and J. Kalezhi[2] *1. School of Computer Science, University of Manchester, Manchester, Greater Manchester, United Kingdom; 2. Department of Computer Science, Copperbelt University, Kitwe, Zambia*

3:15 FF-05. **Nucleation and dynamic switching of magnetic vortices in geometrically confined nanodots.** *M. Bi*[1], X. Wang[1], L. Zhang[1], H. Lu[1], L. Deng[1] and J. Xie[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

3:30 FF-06. **Multitrack Recording and Simultaneous Detection Schemes for High Areal Density Bit-Patterned Media Magnetic Recording.** *H. Saito*[1] *1. School of Advanced Engineering, Kogakuin University, Tokyo, Japan*

3:45 FF-07. **Optimal Write Head Design for Perpendicular Magnetic Recording.** *H. Wang*[1], T. Katayama[2], K. Chan[1], Y. Kanai[2], Z. Yuan[1] and S. Shafidah[1] *1. Data Storage Institute, Agency for Science, Technology and Research, Singapore; 2. Niigata Institute of Technology, Kashiwazaki, Japan*

4:00 FF-08. **Lateral Spin Valve Device for Magnetic Reader Applications Fabricated by an Etch Back Process.** *A.K. Smith*[1], G. Stecklein[2], M. Jamali[1], P.A. Crowell[2] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota; 2. Physics and Astronomy, University of Minnesota, Minneapolis, Minnesota*

4:15 FF-09. **Suppression of spin pumping with insulating layers.** *C. Kaiser*[1], Y. Zheng[1], Z. Diao[1], D. Mauri[1], Q. Leng[1], C. Mewes[2], B. Khodadadi[2] and T. Mewes[2] *1. Western Digital, Fremont, California; 2. Department of Physics & Astronomy, MINT Center, University of Alabama, Tuscaloosa, Alabama*

4:30 FF-10. **Effective reduction of reader noise degradation in hard disk drives by thermal aging.** *P. Wong*[1] *1. Advanced Technology Development, SAE Magnetics, Shatin, N.T., Hong Kong*

4:45 FF-11. **Polycrystalline CPP-GMR devices using <001> textured $Co_2Fe(Ga_{0.5}Ge_{0.5})$ Heusler alloy layer and conductive $Mg_{0.5}Ti_{0.5}O_x$ buffer layer.** *Y. Du*[2,1], T. Furubayashi[1], Y. Takahashi[1], Y. Sakuraba[1] and K. Hono[1,2] *1. National Institute for Materials Science, Tsukuba, Ibaraki, Japan; 2. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Ibaraki, Japan*

THURSDAY AFTERNOON 307
2:00

Session FG
ELECTROMAGNETIC COMPATIBILITY AND TRANSFORMERS II
Yasushi Endo, Chair
Tohoku University

2:00 FG-01. **Transmission lines effects on charging system for on-line electric vehicle sharing the same corridor.** *F. Wen*[1] and X. Huang[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

2:15 FG-02. **Analysis on electromagnetic environment of high-speed train.** *G. Gao*[1], P. Chen[1] and G. Wu[1] *1. School of Electrical Engineering, Southwest Jiaotong University, Chengdu, Sichuan*

2:30 FG-03. **Suppression for Discharge Bearing Currents in Variable-Frequency Motors Based on Electromagnetic Shield.** *Y. Wang*[1] and B. Bai[1] *1. Shenyang University of Technology, Shenyang, Liaoning*

2:45 FG-04. **Suppressing Electromagnetic Interference of Power Converters Based on 2 × 2-scroll Chaotic PWM Method.** *H. Li*[1], Z. Yang[1], D. Yang[1], X. Gao[1] and J. Lü[2] *1. School of Elecrical Engineering, Beijing Jiaotong University, Beijing; 2. Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing*

3:00 FG-05. **Magnetic Fields inside Reduced-Scale Model of Truss Bridge by Direct Lightning Strikes.** *Y. Zhang*[1], F. Liu[1], Y. Wang[1], R. Liu[1], X. Si[2] and Z. Li[2] *1. Province-Ministry Joint Key Lab of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin; 2. Aviation Key Laboratory of Science Technology on High Intensity Electromagnetic Environment Protection, Hefei, Anhui*

3:15 **FG-06. Design and characterization of a new ferrite toroidal planar transformer integrated in a printed circuit board (PCB).** *R. Salas*[1] and J. Pleite[1]
1. Departamento de Tecnología Electrónica, Universidad Carlos III de Madrid, Leganés (Madrid), Spain

3:30 **FG-07. Basic Consideration of Winding Arrangement of Amorphous Transformers for MW-class DC-DC converters.** *H. Tanaka*[1], K. Nakamura[1] and O. Ichinokura[1]
1. Tohoku University, Sendai, Japan

3:45 **FG-08. Online Measurement Method of Transformer Leakage Impedance by Using Symmetrical Coupling Auxiliary Winding.** *R. Wang*[1], F. Xiao[1], Z. Zhao[1] and Y. Shen[1] *1. National Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, Hubei*

4:00 **FG-09. High–Frequency Planar Transformer Parameter Estimation Using Differential Evolution.** *L.R. Tria*[1], D. Zhang[1] and J. Fletcher[1] *1. School of Electrical Engineering and Telecommunications, University of New South Wales, Sydney, New South Wales, Australia*

4:15 **FG-10. DC bias Elimination and Integrated Magnetic Technology in Power Transformer.** *Z. Chen*[1]
1. Department of Electrical Engineering, Shenyang University of Technology, Shenyang, Liaoning

4:30 **FG-11. Remanence Detection and Low-Frequency Degaussing for Power Transformers Based on Modified J-A Model.** J. Li[1], *Z. Li*[1], X. Zhong[1], T. Li[1], Y. Gu[1], Z. Zhao[1], W. Jiang[1] and S.A. Raza[1] *1. High Voltage and Insulation Institute, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi*

4:45 **FG-12. The harmonic suppression characteristic analysis of phase-shifting reactor in rectifying system.** D. Yuan[1], *S. Wang*[1], H. Zhang[1], X. Tao[1], J. Zhu[2] and Y. Guo[2] *1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi; 2. Faculty of Engineering and Information Technology, University of Technology Sydney, Sydney, New South Wales, Australia*

THURSDAY
AFTERNOON
2:00

306 B

Session FH
ELECTRIC MACHINE MODELING AND ANALYSIS II

Cheng-Tsung Liu, Chair
National Sun Yat-Sen University

2:00 FH-01. **Influence of Material of Rotor End Plate on 3-D Electromagnetic Field and Eddy Current Losses in End Region of Hydro-Generator.** Y. Liang[1], *H. Yu*[1], X. Bian[1], L. Wu[1] and L. Gao[1] *1. College of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

2:15 FH-02. **Analytical assessment of optimum magnet pole-arc for PMSM under influence of different magnetization patterns.** *T. Tiang*[1], D. Ishak[1], C. Lim[2] and M. Kamarol[1] *1. School of Electrical and Electronic Engineering, Universiti Sains Malaysia, Engineering Campus, Nibong Tebal, Penang, Malaysia; 2. Center for Intelligent Systems Research, Deakin University, Geelong Waurn Ponds Campus, Geelong, Victoria, Australia*

2:30 FH-03. **Magnetic field analysis of a novel double stator linear-rotary permanent magnet motor.** *L. Xu*[1], M. Lin[1] and X. Fu[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

2:45 FH-04. **Nonlinear Modeling of Electromagnetic Forces for the Planar Switched Reluctance Motor.** *G. Cao*[1], L. Li[1], S. Huang[1,2], L. Li[1], Q. Qian[2] and J. Duan[3] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong; 2. College of Electrical Engineering, Southwest Jiaotong University, Chengdu, Sichuan; 3. State Key Laboratory of High Performance Complex Manufactory, Central South University, Changsha, Hunan*

3:00 FH-05. **Effects of laser cut on the performance of Permanent Magnet Assisted Synchronous Reluctance Machines.** P. Lazari[1], *J. Wang*[1] and K. Atallah[1] *1. Electrical and Electronic Engineering (Electrical Machines and Drives research group), The University of Sheffield, Sheffield, South Yorkshire, United Kingdom*

3:15 FH-06. **Influence of Can Materials on Electromagnetic Field of Double Canned Induction Motor.** Y. Liang[1], *L. Gao*[1], D. Wang[1] and H. Yu[1] *1. College of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

3:30 FH-07. **Analysis and characterization of switched reluctance motor with soft magnetic composite material.** *K. Vijayakumar*[1] *1. Electrical Engineering, Sri Manakula Vinayagar Engineering College, Pondicherry, Puducherry, India*

3:45 FH-08. **Torque Ripple Analysis with Current Harmonics in Permanent-Magnet Synchronous Machines.** *Z. Chen*[1] *1. College of Energy and Electrical Engineering, Hohai University, Nanjing, Jiangsu*

4:00 FH-09. **The role of the effect of manufacturing tolerances on a tubular linear ferrite motor.** *G. Cipriani*[1], V. Di Dio[1], M. Corpora[1], V. Franzitta[1], D. Curto[1] and M. Trapanese[1] *1. DEIM, Palermo University, Palermo, Italy*

4:15 FH-10. **2D Finite Element Modelling Approach for Axial Flux Permanent Magnet Synchronous Motors.** M. Gulec[1] and *M. Aydin*[1] *1. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey*

4:30 FH-11. **The Influence of Transposition Angle on Three-dimensional Global Domain Magnetic Field of Stator Bar in Water-cooled Turbo-generator.** Y. Liang[1], *L. Wu*[1], X. Bian[1] and H. Yu[1] *1. College of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

4:45 FH-12. **A Ferrite Tubular Linear Motor (FTLM): analysis and design.** *V. Di Dio*[1], G. Cipriani[1], M. Corpora[1], D. Curto[1] and M. Trapanese[1] *1. University of Palermo, Palermo, Italy*

THURSDAY
AFTERNOON
1:30

PLENARY HALL B

Session FP
MULTIFERROIC MATERIALS II
(Poster Session)
Chungang Duan, Chair
Physica

<u>FP-01</u>. **The multiferroic properties of $BiFeO_3$-$Na_{0.5}Bi_{0.5}TiO_3$ solid solution ceramics.** Z. Xu[1], L. Luo[2], M. He[3,4], K. Shen[2], J. Du[3,4] and *Q. Xu*[1,4] *1. Department of Physics, Southeast University, Nanjing, Jiangsu; 2. School of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu; 3. Department of Physics, Nanjing University, Nanjing, Jiangsu; 4. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, Jiangsu*

<u>FP-02</u>. **Crystal orientation modulated exchange bias effect in all manganites multiferroic heterostructures.** *D. Zheng*[1], J. Gong[1], C. Jin[1], P. Li[1] and H. Bai[1] *1. Department of Physics, Tianjin University, Tianjin*

<u>FP-03</u>. **Brillouin light scattering spectroscopy of laterally confined multiferroic waveguide.** *A. Sadovnikov*[1], K.V. Bublikov[1], E.N. Beginin[1], Y.P. Sharaevsky[1] and N.A. Sergey[1,2] *1. Nonlinear Physics, Saratov State University, Saratov, Russian Federation; 2. Kotel'nikov Institute of Radio Engineering and Electronics of Russian Academy of Science, Moscow, Russian Federation*

<u>FP-04</u>. **Investigation of defects formation in multiferroic $Bi_{1-x}Pb_xFeO_3/SrRu_{1-x}O_3/SrTiO_3$ heterostructure by Rutherford backscattering.** *M. Bohra*[2,1], H. Chou[1], X. Wang[3] and W. Chu[3] *1. Department of Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan; 2. Mahindra Ecole Centrale, Hyderabad, Telangana, India; 3. Texas Center for Superconductivity and Department of Physics, University of Houston, Houston, Texas*

<u>FP-05</u>. **Magnetic Property and Magnetoelectric Effect in $Ba_{0.3}Sr_{1.7}Co_2Fe_{12}O_{22}$ Single Crystal.** *L. Yan*[1], Y. Sun[1], S. Shen[1], Y. Chai[1], S. Chun[2] and K. Kim[2] *1. Insititute of Physics, Chinese Academy of Sciences, Beijing; 2. Seoul National University, Seoul, Korea*

FP-06. Non-volatile switching of magnetism for reconfigurable microwave devices. *M. Liu*[1], M. Zhu[1], X. Xue[1] and W. Ren[1] *1. Key Laboratory of Electronic Materials Research Laboratory (MOE) & International Center for Dielectric Research, Xi'an Jiaotong University, Xi'an, Shaanxi*

FP-07. The volatile and nonvolatile magnetization switching of CoNi thin films manipulated by electric-field. *T.L. Jin*[1], J. Cao[1], L. Hao[1], M. Liu[1], Y. Wang[1], D. Wu[1] and F. Wei[1] *1. Key Laboratory for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu*

FP-08. Resistive switching in Au/$BiFeO_3$/$La_{0.6}Sr_{0.4}MnO_3$ heterostructures. *L. Feng*[1], S. Yang[1], D. Zhang[1], W. Huang[1], Y. Yin[1], S. Dong[1], W. Zhao[1] and X. Li[1,2] *1. Hefei National Laboratory for Physical Sciences at Microscale, Department of Physics, University of Science and Technology of China, Hefei, Anhui; 2. School of Physics and Materials Science, Anhui University, Hefei, Anhui*

FP-09. Field-induced magnetoelectric effect in polycrystalline $Ba_{0.5}Sr_{1.5}Co_2Fe_{11}AlO_{22}$ hexaferrite. M. Wu[1,2], X. Gao[2] and *Z. Liu*[1] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, Guangdong; 2. Institute for Advance Materials, South China Normal University, Guangzhou, Guangdong*

FP-10. Near-flat self-biased magnetoelectric response in three-phase METGLAS/TERFENOL-D/PZT laminated composites. *L. Chen*[1,2], P. Li[1], Y. Wen[1] and Y. Zhu[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing; 2. Key Lab of Computer Vision and Intelligent Information System, Chongqing University of Arts and Sciences, Chongqing*

FP-11. Multiferroic properties of (Bi, Ca)FeO_3 films on glass substrates. *H.W. Chang*[1], K. Tu[1], Y. Lo[1], S. Tu[1], C. Wang[1], C. Tu[2], H. Ouyang[3], W.C. Chang[4] and S. Jen[5] *1. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 2. Fu Jen Catholic University, Taipei, Taiwan; 3. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; 4. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan; 5. Institute of Physics, Academia Sinica, Taipei, Taiwan*

<u>FP-12</u>. **Electric-Field-Controlled Magnetization Reversal in a NiFe/$BiFeO_3$/$SrRuO_3$/$SrTiO_3$ (111) Multiferroic Heterostructure.** S. Wu[1], *J. Miao*[1], Y. Wu[1], X. Xu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science & Technology Beijing, Beijing*

<u>FP-13</u>. **Interface charge induced non-volatile magnetic changes in $La_{0.7}Sr_{0.3}MnO_3$/$PbZr_{0.2}Ti_{0.8}O_3$ multiferroic heterostructure.** Q. Liu[1], *J. Miao*[1], Y. Wu[1], X. Xu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science & Technology Beijing, Beijing*

<u>FP-14</u>. **Multiferroic properties in tetragonal and rhombohedral phase of $BiFeO_3$/$BaTiO_3$ heterostructures.** F. Shao[1], *J. Miao*[1], Y. Wu[1], X. Xu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science & Technology Beijing, Beijing*

<u>FP-15</u>. **Dual-peak self-biased magnetoelectric couplings in symmetrical multiferroic heterostructures.** *J. Zhang*[1], X. Wang[1], Q. Yang[1], X. Zheng[1] and L. Cao[1] *1. Department of Smart Grids and Information Engineering, College of Electric and Information Engineering, Zhengzhou University of Light Industry, Zhengzhou, Henan*

<u>FP-16</u>. **Effect of Annealing to Oxidation State of Sr_2FeMoO_6 Films with Double Perovskite Structure.** *D. Handoko*[1], S. Yu[1], S. Oh[1], D. Kim[1], D. Yang[2], S. Demyanov[3], N. Kalanda[3], A. Petrov[3] and M. Yarmolich[3] *1. Physics Department, Chungbuk National University, Cheongju, Korea; 2. Department of Physics Education, Chungbuk National University, Cheongju, Korea; 3. Scientific-Practical Research Centre of NAS of Belarus, Minsk, Belarus*

THURSDAY AFTERNOON 1:30

PLENARY HALL B

Session FQ
RECORDING PHYSICS, HEADS AND PATTERNED MEDIA (Poster Session)

Xiaohong Xu, Chair
Shanxi Normal University

FQ-01. Spinning Disk Test Study in Determining the Optimum Writers and Shingled Track Pitch for Shingled Write Recording. *S. Chandrasekaran*[1,2], P. Supnithi[3] and C. Warisarn[1] *1. College of Data Storage Innovation, King Mongkut's Institute of Technology Ladkrabang, KMITL, Bangkok, Thailand; 2. Western Digital (Thailand) Company Limited, Bangkok, Thailand; 3. Faculty of Engineering, King Mongkut's Institute of Technology, Ladkrabang, KMITL, Bangkok, Thailand*

FQ-02. Skew and Corner angle induced Erase Band Noise for Shingled Magnetic Recording. *G. Xie*[1,2], J. Chen[1], G. Yu[1] and W. Cheng[1] *1. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, Hubei; 2. School of Mathematics and Computer Science, Gannan Normal University, Ganzhou, Jiangxi*

FQ-03. Analytical expressions for transition width and transition jitter in granular PMR media taking account of switching field distribution. *T. Jin*[1], H. Muraoka[1] and S. Greaves[1] *1. RIEC, Tohoku University, Sendai, Miyagi, Japan*

FQ-04. Two-track reading with a wide-track reader for shingled track recording. *H. Muraoka*[1] *1. RIEC, Tohoku Univ, Sendai, Japan*

FQ-05. Dynamic properties of magnetization reversal with microwave assisted. *S. Guo*[1] and A. Du[1] *1. College of Sciences, Northeastern University, Shenyang, Liaoning*

FQ-06. Perpendicular magnetic anisotropy of full-Heusler $Co_2FeAl_{0.5}Si_{0.5}$ films induced by $MgAl_2O_4$ layer. L. Li[1], *X. Xu*[1], Y. Wu[1], Z. Wang[1], J. Miao[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing*

<u>FQ-07</u>. **Write Head Performance and Skew Angle Effect in Shingled Magnetic Recording.** *X. Li*[1], B. Liu[1], Y. Wang[1] and Z. Liu[2] *1. Department of Physics and Optoelectronics, Taiyuan University of Technology, Taiyuan, Shanxi; 2. Department of Electrical and Computer Engineering, National University of Singapore, Singapore*

<u>FQ-08</u>. **Silicon Nitride/Tetrahedral Amorphous Carbon Bilayer Overcoat for Exceptional Wear Life of Functional Tape Heads.** *R.J. Yeo*[1], N. Dwivedi[1], S. Tripathy[2] and C.S. Bhatia[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Institute of Materials Research and Engineering, A*STAR, Singapore*

<u>FQ-09</u>. **Construction of Quasi-Cyclic LDPC Cycle Codes over Galois Field GF(q) Based on Cycle Entropy and Application on Patterned Media Storage.** *X. Liu*[1], F. Xiong[1] and Y. Yin[1] *1. Department of Electronic and Communication Engineering, Sun Yat-sen University, Guangzhou, Guangdong*

<u>FQ-10</u>. **CoPt antidot arrays fabricated with dry-etching using AAO templates.** *C. Deng*[1], X. Qiao[1], F. Wang[1], H. Zeng[2] and X. Xu[1] *1. Key Laboratory of Magnetic Molecules and Magnetic Information Materials (MOE), School of Chemistry and Materials Science, Shanxi Normal University, Linfen, Shanxi; 2. Department of Physics, University at Buffalo, Buffalo, New York*

<u>FQ-11</u>. **Anisotropic properties on exchange coupled composite array.** *H. Huang*[1], Z. Wei[2] and C. Li[2] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

<u>FQ-12</u>. **Ion-assisted Plasma Etch Modeling of $L1_0$ phase FePt Magnetic Media Fabrication with Embedded Mask Patterning Method.** *J. Zhu*[1], P. Quartman[1] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minnesapolis, Minnesota*

<u>FQ-13</u>. **Effect of magnetostriction on the low- and high-field magnetization reversal of rapidly solidified amorphous nanowires.** *T. Ovari*[1], C. Rotarescu[1], A. Atitoaie[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

THURSDAY AFTERNOON 1:30

PLENARY HALL B

Session FR
MAGNETO-IMPEDANCE AND MICROWAVE MATERIALS (Poster Session)

Jianbo Wang, Chair
Key Laboratory for Magnetism and Magnetic Materials of Ministry of Education

FR-01. 350% Magneto-Impedance ratio in thin-film structures. E. Fernández[2], *A. Garcia-Arribas*[1,2], A.V. Svalov[1], G.V. Kurlyandskaya[1,2] and J.M. Barandiarán[1,2] *1. Departamento de Electricidad y Electrónica, Universidad del País Vasco, UPV/EHU, Leioa, Vizcaya, Spain; 2. BCMaterials, Universidad del País Vasco, UPV/EHU, Leioa, Vizcaya, Spain*

FR-02. Optimized Magneto-Impedance Response of In-Rotating-Water Quenched Amorphous Wires. *T. Ovari*[1], S. Corodeanu[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

FR-03. Flexible Magnetoimpidence Sensor. *M.N. Kavaldzhiev*[1], B. Li[1] and J. Kosel[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

FR-04. Improvement of stepped magnetoimpedance properties by controlling demagnetizing effect. *H. Kikuchi*[1], S. Kamata[1], S. Oe[1], T. Nakai[2], S. Hashi[3] and K. Ishiyama[3] *1. Iwate University, Morioka, Iwate, Japan; 2. Industrial Technology Institute, Miyagi Prefectural Government, Sendai, Miyagi, Japan; 3. RIEC, Tohoku University, Sendai, Miyagi, Japan*

FR-05. Influence of outer shell thickness on magnetic properties of soft/hard biphase microwires. *B. Tian*[1,2] and M. Vázquez[1] *1. Institute of Materials Science of Madrid, Madrid, Spain; 2. Wuhan Institute of Technology, Wuhan, Hubei*

FR-06. The microstructure and magnetic properties of $[Fe_{65}Co_{35}/ZnO]_{50}$ multilayer thin films for GHz applications. *D. Yao*[1] *1. Tianjin University, Tianjin*

FR-07. Miniaturized Planar Antenna with NANOMET Powder Cores for The VHF Band Application. *G. Yang*[1], Y. Zhang[2] and A. Makino[2] *1. Fudan University, Shanghai; 2. Institute for Materials Research, Tohoku University, Sendai, Japan*

FR-08. Study on the Magnetically Tunable Filters Based on Mn^{2+} and Al^{3+} Co-Doped YIG Ferrite. *Z. Zhang*[1], Z. Feng[1] and H. Lv[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei*

FR-09. Feasibility of Self-biased Edge Mode Isolator Based on Hexagnal Ferrite Materials. *H. Ding*[1], F. Chen[1] and Z. Feng[1] *1. School of Optical Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei*

FR-10. Enhanced microwave absorption of flake-oriented Sendust sheets by tape-casting. *Q. Li*[1], S. Yan[1], X. Wang[1], Z. Feng[1], Y. Chen[2] and V.G. Harris[2] *1. Huazhong University of Science and Technology, Wuhan, Hubei; 2. Northeastern University, Boston, Massachusetts*

FR-11. Enhanced microwave absorption of SIO_2 coated FE-35CO flakes. *H. Luo*[1], X. Wang[1], R. Gong[1], Y. Nie[1], Y. Chen[2] and V.G. Harris[2] *1. Huazhong University of Science and Technology, Wuhan, Hubei; 2. Northeastern University, Boston, Massachusetts*

FR-12. Design of wide bandwidth pyramidal microwave absorbers with ferrite composites of broad magnetic loss spectrum. M. Park[1], Y. Ryu[1], T. Liu[1] and *S. Kim*[1] *1. Advanced Materials Engineering, Chungbuk National University, Cheongju, Korea*

THURSDAY AFTERNOON 1:30

PLENARY HALL B

Session FS

NANOPARTICLES I (Poster Session)

Zhiyong Zhong, Chair
University of Electronic Science and Technology of China

FS-01. Magnetic Vortices in Magnetic Nano-Caps formed on Densely Packed Particle Array. *D. Nissen*[1], S. Thomas[2], S.S. Arekapudi[3] and M. Albrecht[1] *1. Institute of Physics, University of Augsburg, Augsburg, Bavaria, Germany; 2. Materials Science and Technology Division, National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram, India; 3. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany*

FS-02. Effects of Ar/H_2 Annealing on the Structure and Magnetic Properties of CoO Nanoparticles. *X. He*[1], Z. Li[1], X. Zhang[1], W. Qiao[1], X. Song[1], S. Yan[1], W. Zhong[1] and Y. Du[1] *1. Department of Physics, Nanjing University, Nanjing, Jiangsu*

FS-03. Synthesis and characterization of superconducting γ-PbBi microcubes. A. Gandhi[1] and *S. Wu*[1] *1. Physics, National Dong Hwa University, Hualien, Taiwan*

FS-04. Ferromagnetism in $Zn_{1-x}Mn_xO$ nanoparticles prepared by mechanical milling. *M.V. Tien*[1], T. Ho[1], N. Vuong[3], T. Thanh[2], N. Dang[4], A. Le[4], T. Phan[1] and S. Yu[1] *1. Department of Physics, Chungbuk National University, Cheongju, Korea; 2. Institute of Materials Science, Vietnam Academy of Science and Technology, Hanoi, Vietnam; 3. Department of Materials Science and Engineering, Chungnam National University, Chungnam, Korea; 4. Institute of Research and Development, Duy Tan University, Da Nang, Vietnam*

FS-05. The effect of cationic disorder on low temperature magnetic properties of MnZn ferrite nanoparticles. *S. Mallesh*[1], V. Mutta[2] and V. Srinivas[1] *1. Department of Physics, Indian Institute of Technology, Chennai, Tamilnadu, India; 2. NIIST, Thiruvananthapuram, India*

<u>FS-06</u>. **Manipulation of electrical properties of graphene by Fe_3O_4 nanoparticles.** *J. Zhang*[1], M. Zhang[1], Z. Wu[1], X. Wang[1] and Y. Xu[1] *1. Nanjing University, Nanjing, Jiangsu*

<u>FS-07</u>. **The synthesis of FePt/Fe_3O_4 nanocomposite particles with high coercivity.** *J. He*[1,2], B. Baoru[1], J. Du[1], W. Xia[1], J. Zhang[1], J. Liu[1], A. Yan[1], W. Li[1] and Z. Guo[3] *1. Ningbo Institute of Industrial Technology, Ningbo, Zhejiang; 2. Shenyang Normal University, Shenyang, Liaoning; 3. China Iron and Steel Research Institute, Beijing*

<u>FS-08</u>. **Effect of synthesis conditions on the physiochemical properties of lauric acid coated magnetite nanoparticles.** *L. Li*[1], C. Leung[2] and P. Pong[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong; 2. Department of Applied Physics, Hong Kong Polytechnic University, Hong Kong*

<u>FS-09</u>. **Room temperature ferromagnetic nanoparticles of Gd_5Si_4** *R.L. Hadimani*[1,2], S.M. Harstad[3], S. Gupta[2], V.K. Pecharsky[3,2], E.A. Balfou[4], H. Fu[4] and D. Jiles[1,2] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa; 2. Ames Laboratory, US Department of Energy, Ames, Iowa; 3. Department of Materials Science and Engineering, Iowa State University, Ames, Iowa; 4. School of Physical Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan*

<u>FS-10</u>. **Surfactant Assisted Synthesis of $SrFe_{10}Al_2O_{19}$: Magnetic and Supercapacitor Ferrite.** *D. Neupane*[1], L. Wang[1], J. Candler[2], R. Gupta[2], N. Poudyal[3], J. Liu[3] and S.R. Mishra[1] *1. Physics, The University of Memphis, Memphis, Tennessee; 2. Chemistry, Pittsburg State University, Pittsburg, Kansas; 3. Physics, University of Texas, Arlington, Texas*

<u>FS-11</u>. **Tunnel magnetoresistance in magnetic tunnel junctions with embedded nanoparticles.** A. Useinov[1,2], N. Useinov[3], L. Ye[2], T. Wu[4] and *C. Lai*[2] *1. Department of Physics, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; 3. Institute of Physics, Kazan Federal University, Kazan, Russian Federation; 4. Graduate School of Materials Science, National Yunlin University of Science and Technology, Douliou, Taiwan*

FS-12. Phosphine-Free Synthesis of Iron Selenide Nanocrytals. *S. He*[1,2], H. Zhang[2], C. Liu[1], C. Yang[1] and H. Zeng[2] *1. Department of Physics, Capital Normal University, Beijing; 2. Department of Physics, University at Buffalo-SUNY, Buffalo, New York*

FS-13. Critical behaviour and magneticaloric effect in La_2NiMnO_6 nanoparticles. *M.V. Tien*[1], T. Ho[1], T. Thanh[2], T. Phan[1], M. Phan[3] and S. Yu[1] *1. Department of Physics, Chungbuk National University, Cheongju, Korea; 2. Institute of Materials Science, Vietnam Academy of Science and Technology, Hanoi, Vietnam; 3. Department of Physics, University of South Florida, Tampa, Florida*

FS-14. Tailoring magnetic properties in well order magnetic nanotstructures prepared by ALD technique. Y. Zhang[1], *M. Liu*[1], W. Ren[1], L. Zhang[1] and Z. Ye[1,2] *1. School of Electrical and Information Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi; 2. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, Burnaby, British Columbia, Canada*

FS-15. Citric Acid Coated Iron Oxide Nanoparticles – Structural and Magnetic Properties. *S. Riaz*[1,2], S. Naseem[1] and X. Han[2] *1. Centre of Excellence in Solid State Physics, University of the Punjab, Lahore, Pakistan; 2. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing*

THURSDAY
AFTERNOON
1:30

PLENARY HALL B

Session FT
MULTIFERROIC MATERIALS III (Poster Session)

Jinxing Zhang, Chair
Beijing Normal University

FT-01. Modulation effects of *ex situ* electric field on the magnetic and electric properties in $La_{0.6}Ca_{0.4}MnO_3$/PMN-PT bilayer film. *H. Zhang*[1], Q. Ye[1], L. Tang[1], S. Chen[1,2], Z. Huang[1] and N. Sun[2] *1. College of Physics and Energy, Fujian Normal University, Fuzhou, Fujian; 2. Electrical and Computer Engineering Department, Northeastern University, Boston, Massachusetts*

FT-02. Large zero-bias field magnetoelectric effect in $YFeO_3$-$Y_3Fe_5O_{12}$ composites. *F. Chen*[1], Z. Zhang[1], X. Wang[1], J. Ouyang[1], Z. Feng[1], Y. Chen[2] and V.G. Harris[2] *1. Huazhong University of Science & Technology, Wuhan, Hubei; 2. Northeastern University, Boston, Massachusetts*

FT-03. Giant resistive switching effects in symmetric all-oxide tunnel junctions with $La_{2/3}Sr_{1/3}MnO_3$ electrodes. *Q. Qin*[1], L. Äkäslompolo[1], L. Yao[1], S. Majumdar[1], J. Vijayakumar[1], B. Chen[1,2] and S. van Dijken[1] *1. Aalto University, Espoo, Finland; 2. Nanjing University, Nanjing, Jiangsu*

FT-04. Ferroelectric and Ferromagnetic Properties of Ordered Double Perovskite Superlattice: Pr_2NiMnO_6/ La_2NiMnO_6 *X. Sun*[1,2], H. Lu[1,2], Z. Hou[1,2], C. Dong[1,2], C. Liu[1,2] and L. Deng[1,2] *1. National Engineering Research Center of Electromagnetic Radiation Control Materials, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

FT-05. Correlation Between Magnetoelectric and Magnetic Properties of Ferromagnetic-Piezoelectric Structures. *Y.K. Fetisov*[1], D.V. Chashin[1], D.A. Burdin[1], N.A. Ekonomov[1] and L.Y. Fetisov[1] *1. Moscow State Technical University of Radio Engineering, Electronics and Automation, Moscow, Russian Federation*

FT-06. Behavior of atomic displacements and Mn-Mn coupling in $YMnO_3$ single crystal. *G. Zhou*[1], X. Gu[1], J. Peng[1] and X. Wu[1] *1. Department of Physics, Nanjing University, Nanjing, Jiangsu*

FT-07. Magnetism control of FeGa/BTO thin films by Electric-field. *B. Zhang*[1], M. Yang[1], L. Liu[2], Q. Zhan[2] and K. Wang[1] *1. Institute of Semiconductors, Chinese Academy of Sciences, Beijing; 2. Institute of Material Technology and Engineering in Ningbo, Chinese Academy of Sciences, Ningbo, Zhejiang*

FT-08. The magnetic augment in the nitrogen substituted bismuth ferrite. L. Chen[1], Z. Mao[1], J. Zhang[1] and *X. Chen*[1] *1. Department of Physics, South China University of Technology, Guangzhou, Guangdong*

FT-09. Co Nanoparticles Induced Resistive Switching of the Polypyrrole Composite Films. Z. Xu[1], M. Gao[1], L. Yu[1], L. Lu[2], X. Xu[1] and *Y. Jiang*[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing; 2. School of Chemistry and Biological Engineering, University of Science and Technology Beijing, Beijing*

FT-10. Nonvolatile bipolar resistive switching in Ba-doped $BFeO_3$ thin films. *H. Deng*[1], M. Zhang[1], J. Wei[1], S. Chu[1] and H. Yan[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing*

FT-11. Magnetic characterization and Low-temperature heat transport properties of the orthoferrites $RFeO_3$(R = rare earth and Y) single crystals. *F. Zhang*[1], S. Li[1], J. Song[1], J. Shi[1] and X. Sun[1] *1. University of Science and Technology of China, Hefei, Anhui*

FT-12. Uniaxial Magnetic Anisotropy in Amorphous CoFeB Films on InAs. *Z. Wu*[1], H. Tu[2], X. Ruan[1], J. Du[2], L. He[1] and Y. Xu[1] *1. School of Electronic Science and Engineering, Nanjing University, Nanjing, Jiangsu; 2. School of Physics, Nanjing University, Nanjing, Jiangsu*

FT-13. Zero-biased magnetoelectric effects in five-phase laminate composites with FeCoV soft magnetic alloy. X. Xu[1], *J. Qiu*[1], Y. Wen[1], P. Li[1], H. Chen[1] and X. Liu[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing*

FT-14. Voltage Control of Magnetism in Laminated $LiFe_5O_8$/PMN-PT Multiferroic Composites. *Z. Hu*[1], X. Chen[1], T. Nan[1], X. Wang[1], Y. Gao[1], Z. Wang[1], G. Srinivasan[2] and N. Sun[1] *1. Department of Electrical and Computer Engineering, Northeastern University, Boston, Massachusetts; 2. Department of Physics, Oakland University, Rochester, Michigan*

FT-15. Surfactant assisted synthesis of single phase $BiFeO_3$: Structural, Magnetic and Mossbauer Study. *D. Neupane*[1], L. Wang[1] and S.R. Mishra[1] *1. Physics, University of memphis, Memphis, Tennessee*

THURSDAY AFTERNOON 1:30 PLENARY HALL B

Session FU
MAGNETIC NANOSTRUCTURES WITH PERPENDICULAR ANISOTROPY (Poster Session)

Xiaolong Fan, Chair
Lanzhou University
Mangui Han, Chair
University of Electronic Science and Technology of China

FU-01. **Study of phase transition in [001]-oriented $L1_0$ Rh-doped FePt thin films.** A.S. Kamzin[3], S. Ishio[2], T. Hasegawa[2], *A. Valiullin*[1], V. Ganeev[1], L. Tagirov[1] and L. Zaripova[1] *1. Physics, Kazan Federal University, Kazan, Russian Federation; 2. Akita University, Akita, Japan; 3. Ioffe Physical-Technical Institute, St. Petersburg, Russian Federation*

FU-02. **Perpendicular magnetic anisotropy properties of tetragonal Mn_3Ga epitaxial films under various deposition conditions.** *H. Bang*[1], W. Yoo[1], Y. Choi[1], C. You[2], J. Hong[3], J. Dolinšek[4] and M. Jung[1] *1. Department of Physics, Sogang University, Seoul, Korea; 2. Physics, Inha University, Inchoen, Korea; 3. Emerging Materials Science, DGIST, Deagu, Korea; 4. J. Stefan Institute, Ljubljana, Slovenia*

FU-03. **Magnetization behavior of $L1_0$-ordered FePt alloy thin films prepared on single crystalline substrates.** *H. Iwama*[1], M. Doi[1] and T. Shima[1] *1. Tohoku Gakuin University, Tagajo, Japan*

FU-04. **Perpendicular magnetic anisotropy in CoFeSiB-Pd alloys.** *Y. Kim*[1], K.H. Kim[1] and Y.K. Kim[1] *1. Materials Science and Engineering, Korea University, Seoul, Korea*

FU-05. **Magnetization Reversal Process Study in Exchange Coupled Synthetic Antiferromagnetic Multilayers and Patterned Structures.** *X. Liu*[1] and S. Ishio[2] *1. Key Laboratory Opto-Electronic Technology and Intelligent Control (MOE), Lanzhou Jiaotong University, Lanzhou, Gansu; 2. Department of Materials Science and Engineering, Akita University, Akita, Japan*

FU-06. Compositional Control and Millimeter Wave Properties of Micro-/nano–sized M-type Barium Hexaferrite $BaFe_{12}O_{19}$ Synthesized by Hydrothermal Method. *D. Guo*[1], P. Zhou[1], J. Hou[1], X. Wang[1] and L. Deng[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

FU-07. Strong magnetic-field-induced photocurrent in ferromagnetic metal-dielectric heterostructures SiO_2(Co) on GaAs. *V.V. Pavlov*[1], L.V. Lutsev[1], P.A. Usachev[1], A.A. Astretsov[1], A.I. Stognij[2], N.N. Novitskij[2] and R.V. Pisarev[1] *1. Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russian Federation; 2. Scientic and Practical Materials Research Centre of NASB, Minsk, Belarus*

FU-08. Effect of Calcination on Structural and Magnetic Properties of Co doped ZnO Nanostructur. *M. Bashir*[1], R. Ashraf[1], A. Akbar[1], S. Riaz[1] and S. Naseem[1] *1. Centre of Excellence in Solid State Physics, University of the Punjab, Lahore, Pakistan*

FU-09. Electrical nonuniformity and non-ohmic current-voltage characteristics in Co_2FeSi film. *X. Huang*[1], G. Lu[1], L. Yang[1], L. Huang[1] and L. Pan[1] *1. College of Science, Three Gorges University, Yichang, Hubei*

FU-10. Magnetization: A tool to investigate the anode materials of Li ion batteries after the electrochemical test. *V. Vaithyanathan*[2], K. Ugendar[3], S. Inbanathan[4] and K. Kamala Bharathi[1] *1. Materials Sciences and Engineering, University of Maryland, College Park, Maryland; 2. Research and Development Centre, Bharathiar University, India, Coimbatore, India; 3. Advanced Magnetic Materials Laboratory (AMMLa), Department of Physics, Indian Institute of Technology Madras, Chennai, India; 4. Post Graduate and Research Department of Physics, The American College, Madurai, India*

THURSDAY
AFTERNOON
1:30

PLENARY HALL B

Session FV
MODELLING AND COMPUTATIONAL MAGNETISM VI (Poster Session)

Zhen-Gang Zhu, Chair
University of Chinese Academy of Sciences

FV-01. Accelerating algorithm of micromagnetic simulation by interpolating magnetization vectors. *T. Ataka*[1], A. Furuya[1], K. Shimizu[1], K. Fujisaki[1], Y. Uehara[1], T. Tanaka[1] and H. Oshima[2] *1. Fujitsu Limited, Kawasaki, Japan; 2. Fujitsu Laboratories Limited, Atsugi, Japan*

FV-02. Simulation of giant magneticimpedence effect in co-based amorphous films with demagnetizing field. *F. Jin*[1], J. Li[1], L. Zhou[1] and J. Peng[1] *1. School of Automation, University of Geosciences, Wuhan, Hubei*

FV-03. Micromagnetics and emergent electrodynamics of skyrmions, and their application to skyrmion-based memory. *M.B. Jalil*[1], W. Gan[2] and W. Lew[2] *1. Computational Nanoelectronics and Nanodevice Laboratory, Electrical and Computer Engineering Department, National University of Singapore, Singapore; 2. Nanyang Technological University, Singapore*

FV-04. Current-induced dynamics in a skyrmion lattice. *J.C. Martinez*[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore*

FV-05. Effects of anisotropy on magnetic properties of an organic polymer diamond chain. *W. Jiang*[1], X. Ma[1] and A. Guo[1] *1. Shenyang University of Technology, Shenyang, Liaoning*

FV-06. Skyrmion state of exchange coupled core-shell nanostructure. *J. Xia*[1], X. Zhang[2], G. Zhao[3] and Y. Zhou[2] *1. City University of Hong Kong, Hong Kong; 2. Department of Physics, The University of Hong Kong, Hong Kong; 3. Department of Physics & EE, Sichuan Normal University, Chengdu, Sichuan*

FV-07. An extended phase diagram of domain walls with geometry ranging from flat nanostrips to square and circular nanowires. S. Jamet[1,2], N. Rougemaille[1,2], J. Toussaint[1,2], *A. Wartelle*[1,2] and O. Fruchart[1,2] *1. CNRS, Institut Néel, Grenoble, France; 2. Université Grenoble Alpes, Institut Néel, Grenoble, France*

FV-08. Numerical Investigation of the Magneto-Dynamics of Self-Organizing Nanoparticle Ensembles: a Hybrid Molecular and Spin Dynamics Approach. *L. Teich*[1] and C. Schröder[1] *1. Bielefeld Institute for Applied Materials Research, University of Applied Sciences Bielefeld, Bielefeld, Germany*

FV-09. Vortex dynamics in magnetic nanodisks with a ring of magnetic defects. S. Chen[1], Q. Zheng[1], S. Zhang[1], Q. Zhu[1], J. Wang[1] and *Q. Liu*[1] *1. Key Laboratory for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu*

FV-10. Micromagnetic Simulation of Magnetization Reversal Process Using MFM Image. *Y. Hong*[1], L. Zhao[1], G. Wang[1] and Z. Dechang[1] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, Guangdong*

FV-11. Narrow magnetic vortex dynamics in easy-plane anisotropy films induced by spin-transfer torque and spin-orbit torque. *H. Liu*[1], L. Buda-Prejbeanu[1] and B. Dieny[1] *1. Univ. Grenoble Alpes, INAC-SPINTEC, CNRS-SPINTEC, Grenoble, France*

FV-12. Switching properties of perpendicular STT-MRAMs with second order anisotropy. S. Perna[2], *R. Tomasello*[1], C. Serpico[2], M. d'Aquino[3] and G. Finocchio[4] *1. Department of Computer Science, Modelling, Electronics and System Science, University of Calabria, Cosenza, Italy; 2. DIETI, University of Naples Federico II, Napoli, Italy; 3. Department of Engineering, University of Naples Parthenope, Napoli, Italy; 4. Department of Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy*

FV-13. Low critical current density of magnetic spin valve with Perpendicular Anisotropy. *C. Mu*[1,2], J. Xu[1], Q. Liu[2] and J. Wang[2] *1. College of Science, Yanshan University, Qinhuangdao, Hebei; 2. Institute of Applied Magnetics, Key Laboratory for Magnetism and Magnetic Materials of MOE, Lanzhou University, Lanzhou, Gansu*

FV-14. A Portable Dynamics Switching Model for Perpendicular Magnetic Tunnel Junctions Considering both Thermal and Process Variations. *B. Chen*[1], K. Cai[1], G. Han[1], S. Lim[1] and M. Tran[1] *1. NVM, Data Storage Institute, Singapore*

FV-15. Doppler effect of spin waves emitted by a domain wall drifting in spin current. *H. Xia*[1], J. Chen[1] and M. Yan[1] *1. Physics, Shanghai University, Shanghai*

FV-16. Effects of scratch-induced stress on demagnetization behavior under plastic deformation for Perpendicular Recording. *Y. Liu*[1], Z. Chen[1] and G. Zhang[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

THURSDAY AFTERNOON 1:30 — PLENARY HALL B

Session FW
ELECTROMAGNETIC, THERMAL AND VIBRATIONAL COUPLING I (Poster Session)
Ju Lee, Chair

FW-01. Circular Hole Punched on a Magnetic Circuit Used in Microspeakers to Reduce Flux Leakage. *D. Xu*[1], H. Lu[1], J. Kwon[2] and S. Hwang[1] *1. Mechanical Engineering, Pusan National University, Busan, Korea; 2. Research and development, EM-Tech, Changwon-si, Gyeongsangnam-do, Korea*

FW-02. Study on 3-D transient electromagnetic force during short circuit for dry-type transformer based on field-circuit coupled fem. *C. Liu*[1], J. Ruan[1], S. Jin[1], C. Liao[1] and W. Wen[1] *1. Wuhan University, Wuhan, Hubei*

FW-03. The Optimal Design and Thermal Analysis of Magnetic Coupler with Halbach Array for Underwater Electrical Propeller. *B. Zhao*[1], Q. Wang[1], J. Zou[1], Y. Xu[1] and Y. Li[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

FW-04. Magnetic and magneto-mechanical vibration properties of non-oriented electrical steel. *S. Jen*[1], Y. Lin[1], C. Hsu[2] and K. Lin[1] *1. Academia Sinica, Institute of Physics, Taipei, Taiwan; 2. Fortune Electric Co., Ltd., Taoyuan, Taiwan*

FW-05. Vibration and Acoustic Noise Prediction in Fault-Tolerant Flux-Switching Permanent-Magnet Machine. Y. Mao[1], *G. Liu*[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

FW-06. Influence for Temperature Rise by related Factors of casing for Surface Permanent Magnet Synchronous Motors. S. Ding[1] and *M. Wang*[1] *1. Harbin University of Science and Technology, Harbin, Heilongjiang*

FW-07. Prediction of Characteristics for High Power Permanent Magnet Synchronous Motor with Multi Phase Units. *X. Jiang*[1,3], Y. Tian[1], Y. Li[2] and W. Li[1] *1. Heilongjiang Bayi Agricultural University, Daqing, Heilongjiang; 2. Harbin Institute of Technology, Harbin, Heilongjiang; 3. Zhejiang University, Hangzhou, Zhejiang*

FW-08. Fluid Flow Analysis of Fan-Cooled Induction Motor for Driving Application by Means of Computational Fluid Dynamics. *S. Ding*[1], G. Cui[1], H. Wang[1] and Y. Deng[1] *1. Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

FW-09. A novel approach to estimate temperature of conductor in cable joint. J. Ruan[1], *C. Liu*[1], K. Tang[1], D. Huang[1], Z. Zheng[1] and C. Liao[1] *1. Wuhan University, Wuhan, Hubei*

FW-10. Investigation of Heat Treatment of Gears using a Simultaneous Dual Frequency Inducting Heating Method. *D. Yun*[1], H. Park[1], J. Koo[2], S. Ham[1] and S. Lee[1] *1. Department of Robotics and Mechatronics, Korea Institute of Machinery & Materials (KIMM), Daejeon, Korea; 2. Department of Mechanical and Manufacturing Engineering, Miami University, Oxford, Ohio*

FW-11. Heating Performance Improvement of an Induction Heating Rice Cooker with Magnetic Flux Concentrator. *D. Kim*[1], J. So[1], K. Woo[2], Y. You[3] and D. Kim[1] *1. Electrical Control Engineering, Sunchon National University, Suncheon, Jeollanam-do, Korea; 2. Electrical Engineering, Pukyong National University, Busan, Korea; 3. Electrical Engineering, Honam Univiersity, Gwangju, Korea*

<u>FW-12</u>. **3-D coupled circuit-electromagnetic-fluid-thermal analysis and temperature rise test of dry-type air-core reactor.** *Y. Yu*[1], X. Wen[1], Z. Jiang[1], Y. Wang[1] and L. Lan[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei*

<u>FW-13</u>. **Transient Thermal Analysis of the Conical Rotor Motor using LPTN and Finite Volume Method.** *B. Guo*[2], Y. Huang[2], J. Dong[1,2] and T. Zhou[2] *1. Engineering Research Center for Motion Control (MOE), Southeast University, NanJing, Jiangsu; 2. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

<u>FW-14</u>. **Extreme seeking control of inductive power transfer system.** *X. Yuan*[1], Y. Xiang[1] and Z. Li[1] *1. College of Electirc and Information Engineering, Hunan University, Changsha, Hunan*

<u>FW-15</u>. **Three-dimensional fluid field and thermal field research of squirrel-cage induction motors operating in broken bar fault.** Y. Li[1], *Y. Xie*[1] and Z. Wang[1] *1. School of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

<u>FW-16</u>. **Flux-Switching In-Wheel Motor Electromagnetic Performance Analysis Based On Electrical-Thermal Two-Way Coupling.** *H. Zhou*[1], J. Yin[1] and D. Fan[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

THURSDAY AFTERNOON 1:30 — PLENARY HALL B

Session FX
PM-ASSISTED SYNCHRONOUS RELUCTANCE AND FLUX SWITCHING MACHINES
(Poster Session)

Georges Barakat, Chair
University of Le Havre, France
Yacine Amara, Chair
GREAH, Université du Havre

FX-01. A Linear Hybrid Switched Reluctance Motor with Zero Cogging Force. Y. Zou[2,1], *S. Or*[1] and J. Pan[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong*

FX-02. Comparison of Globally Optimized Partitioned Stator SFPM Machines with Different Stator/Rotor Pole Combinations. Z. Wu[1], *Z. Zhu*[1] and D. Evans[1] *1. Department of Electronic and Electrical Engineering, The University of Sheffield, Sheffield, United Kingdom*

FX-03. Performance Analysis of a Hybrid Linear Switched Reluctance Machine. *Y. Fan*[1] and B. Zhang[1] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong*

FX-04. 3D Effects of Rotor Step-skews in Permanent Magnet Assisted Synchronous Reluctance Machines. P. Lazari[1], *J. Wang*[1] and B. Sen[1] *1. Electrical and Electronic Engineering (Electrical Machines and Drives group), The University of Sheffield, Sheffield, South Yorkshire, United Kingdom*

FX-05. Investigation of a Novel Rotor Permanent Magnet Flux Switching Machine for EV and HEV Applications. P. Su[1], *W. Hua*[1], G. Zhang[1] and M. Cheng[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

FX-06. Design and Performance Evaluation of a Double Side Segmental Stator Linear Switch Reluctance Machine Considering Force Ripples. *D. Wang*[1] and X. Wang[1] *1. Shandong University, Jinan, Shandong*

FX-07. Cogging torque reduction of axial field flux-switching permanent magnet machine by rotor tooth notching. *L. Hao*[1,2], M. Lin[1], D. Xu[1], N. Li[1] and W. Zhang[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu; 2. School of Automation, Southeast University, Nanjing, Jiangsu*

FX-08. Design and Analysis of A Hybrid Axial Field Flux-Switching Permanent Magnet Machine. *D. Xu*[1], M. Lin[1], X. Fu[1], L. Hao[1] and W. Zhang[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

FX-09. A Winding-Switching Concept for Flux Weakening in Consequent Magnet Pole Switched Flux Memory Machine. H. Yang[1,2], *H. Lin*[1], Z. Zhu[2], S. Fang[1] and Y. Huang[1] *1. Engineering Research Center for Motion Control (MOE), Southeast University of Nanjing, Nanjing, Jiangsu; 2. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

FX-10. A tubular single-phase dual-stator flux-switching PM oscillating generator with series magnetic circuit. *P. Zheng*[1], Y. Sui[1], B. Yu[1], L. Cheng[1] and W. Wang[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, Heilongjiang*

FX-11. Loss Analysis of Bearingless Flux-Switching Permanent Magnet Motors With the Single Winding. *H. Jia*[1,2], C. Fang[2], T. Zhang[3] and A. Yuan[1] *1. CICAEET, Nanjing University of Information Science and Technology, Nanjing, Jiangsu; 2. C-MEIC, School of Information and Control, Nanjing University of Information Science and Technology, Nanjing, Jiangsu; 3. Faculty of electronic and Electrical Engineering, Huaiyin Institute of Technology, Huaian, Jiangsu*

FX-12. Research on Electromagnetic Vibration and Suppression of Permanent Magnet assisted Synchronous Reluctance Motor. *Y. Hu*[1], B. Chen[1], W. Sun[1] and J. Shi[1] *1. Chinese National Engineering Research Center of Green Refrigeration Equipment, Zhuhai, Guangdong*

FX-13. Research of Parameters and Anti-demagnetization of Rare-earth-less Permanent Magnet assisted Synchronous Reluctance Motor. *H. Huang*[1,2], Y. Hu[2], Y. Xiao[2] and H. Lyu[2] *1. Gree Electric Appliances, INC. of Zhuhai, Zhuhai, Guangdong; 2. Chinese National Engineering Research Center of Green Refrigeration Equipment, Zhuhai, Guangdong*

<u>FX-14</u>. **Analysis of a Skewed-Rotor DC-Excited Flux-Switching Machine.** *G. Zhao*[1], W. Hua[1] and M. Cheng[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

<u>FX-15</u>. **A novel Complementary and Modular tubular permanent magnet flux-switching motor.** X. Wang[1] and *F. Wei*[1] *1. School of Electrical Engineering and Automation, Henan Polytechnic University, Jiaozuo, Henan*

<u>FX-16</u>. **Novel Dual-Airgap Axial Field Fault-Tolerant Flux Switching Permanent Magnet Machines with High Torque Performance.** *W. Zhao*[1], T.A. Lipo[2] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Korea; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

THURSDAY AFTERNOON 1:30 — PLENARY HALL B

Session FY
PERMANENT MAGNET MACHINES III (Poster Session)

Keisuke Fusjisaki, Chair
Toyota Technological Institute, Japan
Shuangxia Niu, Chair
the Hong Kong Polytechnic University

<u>FY-01</u>. **Design Trade-off between Cogging Torque and Torque Ripple in Fractional Slot Surface-Mounted Permanent Magnet Machines.** *D. Wu*[1] and Z. Zhu[1] *1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

<u>FY-02</u>. **Effect of air gap between PM segments on cogging torque and acoustic noise of BLDC motor.** *J. Song*[1], S. Sung[1] and G. Jang[1] *1. Department of Mechanical Convergence Engineering, Hanyang University, Seoul, Korea*

<u>FY-03</u>. **Partitioned Stator Flux Reversal Machines Having Halbach Array PMs.** *M. Zheng*[1], Z. Wu[1] and Z. Zhu[1] *1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

FY-04. Optimal Rotor Shape Design of LSPM with Efficiency And Power Factor Improvement using Response Surface Methodology. *S. Saha*[1] and Y. Cho[1]
1. Department of Electrical Engineering, Dong-A University, Saha-gu, Busan, Korea

FY-05. A Novel Half-type Permanent Magnet Structure of IPM BLDC Motor. *Y. Sim*[1], N. Niguchi[1] and K. Hirata[1]
1. Department of Adaptive Machine Systems, Graduate School of Engineering, Osaka University, Suita, Osaka, Japan

FY-06. Loss Calculation and Thermal Analysis of Surface-Mounted PM Motor and Interior PM Motor. *N. Zhao*[1,2] and W. Liu[2] *1. School of Mechanical and Electrical Engineering, Xi'an University of Architecture and Technology, Xi'an, Shaanxi; 2. Shaanxi Key Laboratory of Small & Special EMDT, University of Northwestern Polytechnical University, Xi'an, Shaanxi*

FY-07. A Novel Technique of Cogging Torque Reduction in Mass-produced Surface-mounted Permanent Magnet Motor Using Tooth Notching Pairing. *W. Ren*[1] and Q. Xu[1]
1. Huazhong University of Science & Technology, Wuhan, Hubei

FY-08. Design and Analysis of a Novel Two Phase BLDC Machine Avoiding Demagnetization. *T. Yazdan*[1], T.A. Lipo[2] and B. Kwon[1] *1. Department of electronics system engineering, Hanyang University, Ansan, Korea; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

FY-09. Prediction of Dynamic Characteristics of Permanent Magnet Motor using Numerical Analysis coupled with Motion Equation. S. Lee[2], Y. Kim[1], K. Lee[2] and *S. Kim*[1,2] *1. Electrical Engineering, Chosun University, Gwangju, Korea; 2. Honam Regional Division, Korea Institute of Industrial Technology, Gwangju, Korea*

FY-10. Armature Reaction Field and Inductance of Ironless BLDC Motor Used for Flywheel. *H. Hu*[1], X. Liu[1] and J. Zhao[1] *1. School of Automation, Beijing Institute of Technolog, Beijing*

FY-11. 2-Dimensional Analysis Approach Method of Outer-Rotor type Brushless DC Motor considering 3-Dimensional Effect of Housing. *M. Seo*[1], T. Lee[1], Y. Kim[2] and S. Jung[1] *1. Sungkyunkwan University, Suwon, Gyeonggi-Do, Korea; 2. Chosun University, Gwang-ju, Korea*

FY-12. Performance Analyses and Tests of Ultra High Speed Motor Using a Amorphous Stator Core. *D. Hong*[1] *1. Korea Electrotechnology Research Institute, Changwon, Korea*

FY-13. Magnetic Field Analysis of Irreversible Demagnetization in Brushless DC Motor According to the Dynamic and Static Characteristic. *H. Kim*[1] and J. Hur[1] *1. University of Ulsan, Ulsan, Korea*

FY-14. Fault Detection of Irreversible Demagnetization Based on Space Harmonics According to Equivalent Magnetizing Distribution. *D. Kang*[1], H. Kim[1] and J. Hur[1] *1. Electrical Engineering, University of Ulsan, Ulsan, Korea*

FY-15. Stator Inter-Turn Fault Detection of BLDC Motor using Third Harmonic According to Asymmetric Magnetic Fields. *S. Lee*[1] and J. Hur[1] *1. Ulsan of University, Ulsan, Korea*

FY-16. Analysis of the Electromagnetic Torque and the Effective Winding Inductance of a Surface-Mounted PMSM under Integrated Battery Charging Operation. *C. Lai*[1] and N.C. Kar[1] *1. Electrical and Computer Engineering, University of Windsor, Windsor, Ontario, Canada*

THURSDAY AFTERNOON 1:30 — PLENARY HALL B

Session FZ
PERMANENT MAGNET AND INDUCTION MACHINES II (Poster Session)

Ály Flores Filho, Chair

Hsing-Cheng Yu, Chair
National Taiwan Ocean University

FZ-01. Asymmetry V-shape Rotor Configuration of an Interior Permanent Magnet Machine for Improving Torque Characteristics. *W. Ren*[1] and Q. Xu[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei*

<u>FZ-02</u>. **Comparison of Winding Arrangements of a Linear Stator Permanent Magnet Vernier Machine.** *Y. Du*[1,2], C. Zou[1], M. Cheng[2], K. Chau[3] and F. Xiao[1] *1. Jiangsu University, Zhenjiang, Jiangsu; 2. Southeast University, Nanjing, Jiangsu; 3. The University of Hong Kong, Hong Kong*

<u>FZ-03</u>. **A Novel Flux-Switching Permanent Magnet Machine with Overlapping Windings.** W. Hua[1], *L. Shao*[1] and M. Cheng[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

<u>FZ-04</u>. **A Variable Flux Axial Field Permanent Magnet Synchronous Machine with a Novel Mechanical Device.** *X. Liu*[1], M. Wang[1], D. Chen[1] and Q. Xie[1] *1. Jiangxi University of Science and Technology, Ganzhou, Jiangxi*

<u>FZ-05</u>. **Multi-Objective Optimization Design of a PM-Less Synchronous Motor Using Simplified Response Surface Method.** *Z. Gaing*[1], Y. Chi[1] and M. Huang[1] *1. Electrical Engineering, Kao Yuan University, Kaohsiung, Taiwan*

<u>FZ-06</u>. **Design of an Axial-Flux Type Permanent-Magnet Generator.** *T. Ishikawa*[1] *1. Electronics and Informatics, Gunma University, Kiryu, Japan*

<u>FZ-07</u>. **Torque Ripple Reduction of Interior Permanent-Magnet Synchronous Motor by Pole-Shoe Shaping and Skewing.** *X. Huang*[1] and J. Zhang[1] *1. Zhejiang University, Hangzhou, Zhejiang*

<u>FZ-08</u>. **Estimation of Permanent Magnet Temperature using d-axis Current for IPMSM.** *C. Jin*[1] and H. Hong[2] *1. Samsung Techwin, Seongnam, Korea; 2. Hanyang University, Seoul, Korea*

<u>FZ-09</u>. **A Novel Structure of Brushless Doubly-fed Machine with Permanent Magnets.** *X. Chen*[1], X. Wang[1] and Z. Wei[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science & Technology, Wuhan, Hubei*

<u>FZ-10</u>. **Effects of Novel Skewed Rotor in Squirrel-Cage Induction Motor on Electromagnetic Force and Vibration Characteristics.** L. Wang[1], *X. Bao*[1], C. Di[1] and J. Li[1] *1. School of Electrical Engineering & Automation, Hefei University of Technology, Hefei, Anhui*

FZ-11. Design and Analysis of A Single-Phase Squirrel-Cage Induction Motor Considering End Ring Porosity Rate. *K. Lee*[1], S. Lee[1], J. Park[1], C. Kang[1], Y. Kim[1] and S. Kim[2] *1. Automotive Components R&D Group, Korea Institute of Industrial Technology, Gwangju, Korea; 2. Chosun Univeristy, Gwangju, Korea*

FZ-12. Design and Analysis of Fractional Slot Direct Drive Motor with Low Speed and High Torque. *X. Wang*[1] and J. Wu[1] *1. School of Electrical Engineering and Automation, Henan Polytechnic University, Jiaozuo, Henan*

FZ-13. 3-DOF outer rotor electromagnetic spherical actuator. *Y. Nishiura*[1], K. Oya[1] and K. Hirata[1] *1. Osaka University, Suita, Japan*

FZ-14. Research on Combined Pole for Interior Permanent-Magnet Machine. P. Zheng[1], *Z. Lin*[1] and Y. Sui[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

FZ-15. Optimization of Cogging Torque and Back-EMF for a 16-pole/24-slot IPM Machine. *J. Li*[1], J. Zou[1] and Y. Xu[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

FZ-16. The Effect of Magnet Depth on Magnet Eddy Current Loss in 16-pole/24-slot IPM Machines. *J. Li*[1], J. Zou[1] and Y. Xu[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

FRIDAY
MORNING
9:00

309 A

Session GA

EMERGING DEVICE CONCEPTS FOR MAGNETIC MEMORY

Yiming Huai, Chair
Avalanche Technology

9:00 **GA-01. Recent progress in domain wall motion in artificially engineered racetracks driven by spin-orbit torques.** ***(Invited)*** *S. Parkin*[1,2] *1. Cognitive and Spintronic Technologies, Max Planck Institute for Microstructure Physics, Halle (Saale), Germany; 2. Magnetoelectronics, IBM Research - Almaden, San Jose, California*

9:30 GA-02. **Three-terminal spintronics memory devices with perpendicular anisotropy.** ***(Invited)*** *H. Ohno*[1,2] and S. Fukami[3,4] *1. Laboratory for Nanoelectronics and Spintronics, RIEC, Tohoku University, Sendai, Miyagi, Japan; 2. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Miyagi, Japan; 3. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Miyagi, Japan; 4. Center for Innovative Integrated Systems, Tohoku University, Sendai, Miyagi, Japan*

10:00 GA-03. **Voltage controlled magnetism in 3*d* transitional metals.** ***(Invited)*** C. Bi[1], Y. Liu[2], T. Newhouse-Illige[1], M. Xu[1], J. Freeland[2], O.N. Mryasov[3], S. Zhang[1], S.G. te Velthuis[2] and *W. Wang*[1] *1. Department of Physics, University of Arizona, Tucson, Arizona; 2. Argonne National Laboratory, Argonne, Illinois; 3. Department of Physics and Astronomy, University of Alabama, Tuscaloosa, Alabama*

10:30 GA-04. **Spin Hall Driven All-Magnetic Memory Arrays Based on Four Terminal mCell Device.** ***(Invited)*** D. Bromberg[1], H. Sumbul[1], M.T. Moneck[1], V.M. Sokalski[2], L. Pileggi[1] and *J. Zhu*[1,2] *1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. Material Sciences and Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania*

11:00 GA-05. **Electric-field-controlled MRAM using voltage control of magnetic anisotropy: Progress, scaling, and challenges.** ***(Invited)*** *P. Khalili*[1] and K.L. Wang[1] *1. University of California at Los Angles, Los Angeles, California*

11:30 GA-06. **Electric Field Switching in Magnetic Random Access Memory for Low Power Applications.** ***(Invited)*** *G. Han*[1], J. Huang[1], B. Chen[1], S. Lim[1] and M. Tran[1] *1. Non-Volatile Memory, Data Storage Institute, Singapore*

FRIDAY
MORNING
9:00

309 B

Session GB
SPIN-ELECTRONICS AND APPLICATIONS II
Thomas Moore, Chair
University of Leeds

9:00 GB-01. **Multiferroic $BiFeO_3$ for conductance control at the $LaAlO_3/SrTiO_3$-interface.** C. Mix[1,2], S. Finizio[1,2], M. Vafaee Khanjani[1], E. Guo[1], M. Klaeui[1] and *G. Jakob*[1] *1. Institute of Physics, University of Mainz, Mainz, Germany; 2. MAINZ Graduate School of Excellence, Mainz, Germany*

9:15 GB-02. **Oxygen partial gas pressure dependence of interfacial perpendicular magnetic anisotropy in Co_2FeSi/MgO thin films.** T. Suzuki[1], *K. Shinohara*[1], Y. Takamura[1] and S. Nakagawa[1] *1. Department of Physical Electronics, Tokyo Institute of Technology, Tokyo, Japan*

9:30 GB-03. **Electrical Manipulation of Ferromagnetic Phase Transition and Orbital Occupancy in Manganites.** *C. Song*[1], B. Cui[1] and F. Pan[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing*

9:45 GB-04. **The Spin and Orbital Ordering of Magnetite Thin Film across Verwey Transition .** *W. Liu*[1,2], J. Wong[1], N. Maltby[1], S. Li[1], Y. Xu[2,1] and R. Zhang[2] *1. Electronics Department, University of York, York, North Yorkshire, United Kingdom; 2. York-Nanjing Joint Centre (YNJC), Nanjing University, Nanjing, Jiangsu*

10:00 GB-05. **Giant spontaneous Hall effect in zero-moment Mn_2Ru_xGa.** N. Thiyagarajah[1], Y. Lau[1], D. Betto[1], K. Borisov[1], *J. Coey*[1], P.S. Stamenov[1] and K. Rode[1] *1. CRANN & School of Physics, Trinity College Dublin, Raheny, Ireland*

10:15 GB-06. **Half-metallic electronic structure of $Co_2(Mn,Fe)Si$ electrodes investigated through tunneling spectroscopy for fully epitaxial magnetic tunnel junctions.** *K. Moges*[1], H. Liu[1], T. Kawami[1], T. Uemura[1] and M. Yamamoto[1] *1. Division of Electronics for Informatics, Hokkaido University, Sapporo, Japan*

10:30 <u>GB-07</u>**. Inverse Magnetoresistance in Single Layer Fe_3O_4 Film.** E. Liu[1,3], W. Zhang[1], X. Hu[3], R. Du[1], H. Ou[1], C. Kou[1], Y. Wang[1], *Y. Zhai*[1,2], J. Du[2], Y. Xu[3] and H. Zhai[2] *1. Department of Physics, Southeast University, Nanjing, Jiangsu; 2. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, Jiangsu; 3. Department of Electronics, The University of York, York, Yorkshire, United Kingdom*

10:45 <u>GB-08</u>**. Room temperature magnetic transition in ternary neodymium cobalt germanium 1:2:2 type intermetallics.** *Y. Guo*[1] *1. School of Energy Power and Mechanical Engineering, North China Electric Power University, Beijing*

11:00 <u>GB-09</u>**. Bias-dependent electrical spin generation in Fe_3Si/GaAs: Consistent behavior in the three-terminal, non-local, and local spin valve geometries.** Y. Manzke[1], P. Bruski[1], *J. Herfort*[1] and M. Ramsteiner[1] *1. Paul-Drude-Institute für Festkörperelektronik, Berlin, Germany*

11:15 <u>GB-10</u>**. Unprecedented tuning of the in-plane easy axis in (100) magnetite films grown by IR-PLD.** *A. Bollero*[1], F. Pedrosa[1], J. Cuñado[1], J. Rial[1], M. Sanz[2], M. Oujja[2], E. Rebollar[2], J. Marco[2], J. de la Figuera[2], M. Monti[2], M. Castillejo[2], M. Garcia-Hernandez[3], F. Mompean[3], N. Nemes[4], T. Feher[5], B. Nafradi[6], L. Forro[6] and J. Camarero[1] *1. IMDEA Nanoscience, Madrid, Spain; 2. Instituto Química Física Rocasolano, IQFR-CSIC, Madrid, Spain; 3. Instituto Ciencias de Materiales de Madrid, ICMM-CSIC, Madrid, Spain; 4. Dep. Fisica Aplicada III, UCM, Madrid, Spain; 5. Dep. Theoretical Physics, BUTE, Budapest, Hungary; 6. Institute of Condensed Matter Physics, EPFL-SB-ICMP-LPMC, Lausanne, Switzerland*

11:30 <u>GB-11</u>**. Temperature dependence of spin-dependent tunneling resistances of Co_2MnSi-based and $Co_2(Mn,Fe)Si$-based magnetic tunnel junctions showing high tunneling magnetoresistances.** *B. Hu*[1], H. Liu[1], T. Kawami[1], K. Moges[1], Y. Honda[1], T. Uemura[1] and M. Yamamoto[1] *1. Division of Electronics for Informatics, Hokkaido University, Sapporo, Japan*

11:45 <u>GB-12</u>**. Minority Band Gap and Magnetic Properties of $Co_2(Fe,Mn)Z$ (Z=Al, Ga, Si, Ge) in the Context of CPP-GMR Transport.** *S. Faleev*[1,2], S. Okatov[1] and O.N. Mryasov[1,3] *1. University of Alabama, Tuscaloosa, Alabama; 2. IBM Research Center, San Jose, California; 3. Western Digital, San Jose, California*

FRIDAY
MORNING
9:00

310

Session GC
NANOPARTICLES II

DongLiang Peng, Chair
Xiamen University
Tianlong Wen, Chair
University of Electronic Science and Technology of China

9:00 GC-01. **Mask-less fabrication of areal density tunable magnetic nanoparticles with annealing of CoFeB/Cu bilayer thin film: utilizing grain boundary diffusion.** *T. Xie*[1] and R. Gomez[1] *1. ECE, University of Maryland, College Park, Maryland*

9:15 GC-02. **Direct Chemical Synthesis of $L1_0$-FePtAu Nanoparticles with High Coercivity.** *Y. Yu*[1], W. Yang[1], H. Li[2] and D.J. Sellmyer[3] *1. School of Chemical Engineering and Technology, Harbin Institute of Technology, Harbin, Heilongjiang; 2. Key Laboratory of Functional Materials Physics and Chemistry (MOE), Jilin Normal University, Changchun, Jilin; 3. Nebraska Center for Materials and Nanoscience & Department of Physics and Astronomy, University of Nebraska Lincoln, Lincoln, Nebraska*

9:30 GC-03. **Magnetic Properties of $CoFe_2O_4$ Nanoparticle Crystal Arrays.** T. Wen[1], H. Zhang[1], *Q. Wen*[1], Y. Liao[1], Q. Yang[1], F. Bai[1] and Z. Zhong[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

9:45 GC-04. **Adjusting the magnetic properties of $Ni_{0.5}Zn_{0.5}Fe_2O_4$ thin film for high frequency applications by introducing $Fe_{65}Co_{35}$ alloy nanoclusters.** *J. Wang*[1], L. Wang[1], Y. Chen[1] and D. Peng[1] *1. Fujian Key Laboratory of Advanced Materials, Department of Materials Science and Engineering, College of Materials, Xiamen University, Xiamen, Fujian*

10:00 __GC-05__. **Synthesis of mono disperse magnetic Nanoparticles prepared on Block Copolymer templates for medical imaging techniques.** *M. Morcrette*[1], S. Tallegas[2], H. Joisten[1,3], G. Ortiz[1], R. Tiron[3], T. Baron[2], S. Lequien[4], Y. Hou[5], A. Bsiesy[2] and B. Dieny[1] *1. Univ. Grenoble Alpes, CNRS, CEA, INAC-SPINTEC, Grenoble, France; 2. Univ. Grenoble Alpes, CNRS, LTM, Grenoble, France; 3. Univ. Grenoble Alpes, CEA, LETI, MINATEC Campus, Grenoble, France; 4. Univ. Grenoble Alpes, CEA, INAC-SP2M, NM, Grenoble, France; 5. Univ. Grenoble Alpes, CNRS, CEA, INAC-SPrAM, Grenoble, France*

10:15 __GC-06__. **Magnetic Properties of Co_3O_4 Nanoparticles Fabricated by Chemical Synthesis.** *A. Chaturvedi*[1], T. Suzuki[1,2], J.N. Duggan[3] and C.B. Roberts[3] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, Alabama; 2. Department of Electrical and Computer Engineering, and Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, Alabama; 3. Department of Chemical Engineering, Auburn University, Auburn, Alabama*

10:30 __GC-07__. **Magnetic Properties of N and (Cr,N)-Doped TiO_2 Nanoparticles.** S. Larumbe[1,2] and *C. Gomez-Polo*[1,2] *1. Universidad Publica de Navarra, Pamplona, Spain; 2. INAMAT, Pamplona, Spain*

10:45 __GC-08__. **Self-Regulated Magnetic Induction Heating Of Zn-Co Ferrite Nanoparticles.** *C. Gomez-Polo*[1,2], S. Larumbe[1,2], J. Beato-Lopez[1,2], E. Mendonça[3], C. de Meneses[4] and J. Duque[4] *1. Universidad Publica de Navarra, Pamplona, Spain; 2. INAMAT, Pamplona, Spain; 3. Dpto. de Física, Universidade Federal de Sergipe, São Cristóvão, SE, Brazil; 4. Dpto. de Física, Universidade Federal de Sergipe, Itabaiana, SE, Brazil*

11:00 __GC-09__. **Fe_3O_4 nanoparticles and nanocomposites for applications in biomedicine and the ICTs: nanoparticle aggregation, interaction and effective magnetic anisotropy.** P. Allia[3], *G. Barrera*[1,2], P. Tiberto[1], T. Nardi[4], Y. Leterrier[4] and M. Sangermano[3] *1. Electromagnetism, INRiM, Turin, Italy; 2. Chemistry, Università di Torino, Torino, Italy; 3. DISAT, Politecnico di Torino, Torino, Italy; 4. EPFL-STI IMX LTC, Lausanne, Switzerland*

11:15 __GC-10__. **Spectral Study of Oxide-Shell in Core-Shell Iron Nanoclusters.** *M. Tarsem Singh*[1], J.S. McCloy[2], R. Kukkadapu[3] and Y. Qiang[1] *1. Physics Department, University of Idaho, Moscow, Idaho; 2. School of Mechanical & Materials Engineering, Washington State University, Pullman, Washington; 3. Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory, Richland, Washington*

11:30 GC-11. **Crystal structures and magnetic properties of iron oxide supraparticles.** X. Song[1], Q. Ding[1], X. Yao[1], S. Yan[1], W. Qiao[1], *X. He*[1], H. Chen[1], W. Zhong[1] and Y. Du[1] *1. Nanjing University, Nanjing, Jiangsu*

11:45 GC-12. **Self-assembled magnetic nanospheres with magnetic vortex.** *M. Kim*[1], P. Dhak[1], H. Lee[1], J. Lee[1], M. Yoo[1], J. Lee[1], K. Jin[1], A. Chu[1], K. Nam[1], H. Park[2], S. Aizawa[3], T. Tanigaki[3], D. Shindo[3], M. Kim[1] and S. Kim[1] *1. Seoul National University, Seoul, Korea; 2. Dong-A University, Busan, Korea; 3. RIKEN, Hirosawa, Japan*

FRIDAY MORNING 9:00 — 311 A

Session GD

NANOSTRUCTURED AND COMPOSITE HARD MAGNETIC MATERIALS I

J. Ping Liu, Chair
UTA-Earth & Environmental Sci.
Wei Tang, Chair
Ames Lab of DOE

9:00 GD-01. **Magnetization Reversal in Nd-Fe-B Nanocrystalline Magnets at Elevated Temperatures Probed by Small-Angle Neutron Scattering.** *T. Ueno*[1,2], K. Saito[2], M. Yano[3], M. Harada[4], T. Shoji[3], N. Sakuma[3], A. Manabe[3], A. Kato[3], U. Keiderling[5] and K. Ono[2] *1. Elements Strategy Initiative Center for Magnetic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Institute of Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan; 3. Advanced Materials Engineering Division, Toyota Motor Corporation, Susono, Japan; 4. Toyota Central R&D Labs., Inc., Nagakute, Japan; 5. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany*

9:15 GD-02. **The synthesis and magnetic properties of Co(Fe)Pt nanoparticles.** *J. Du*[1], B. Baoru[1], W. Xia[1], J. Zhang[1], A. Yan[1] and J. Liu[2] *1. Ningbo Institute of Materials Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Department of Physics, University of Texas at Arlington, Arlington, Texas*

9:30 <u>GD-03</u>. **Increased magnetic moment induced by lattice expansion from γ-Fe to γ′-Fe_8N.** *I. Dirba*[1], P. Komissinskiy[1], T. Helbig[1], L. Alff[1] and O. Gutfleisch[1,2] *1. Institute of Materials Science, Technische Universität Darmstadt, Darmstadt, Hessen, Germany; 2. Fraunhofer-Projektgruppe für Wertstoffkreisläufe und Ressourcenstrategie IWKS, Hanau, Germany*

9:45 <u>GD-04</u>. **Angular dependence of the pinning fields for hard/soft multilayers.** *G. Zhao*[1,2], X. Wan[1] and J. Xia[2] *1. College of Physics and Electronic Engineering, Sichuan Normal University, Chengdu, Sichuan; 2. Department of Physics and Materials Science, City University of Hong Kong, Hong Kong*

10:00 <u>GD-05</u>. **FeCo Coating on $SmCo_5$ Nanochips by a Sonochemical Method.** *N. Poudyal*[1], K.E. Elkins[1], K.H. Gandha[1] and J. Liu[1] *1. Physics, University of Texas at Arlington, Arlington, Texas*

10:15 <u>GD-06</u>. **The effects of thermal gradient and magnetic field on the anisotropy and microstructure of direct cast $Nd_{24}Co_{20}Fe_{41}B_{11}Al_4$ magnets.** *L. Zhao*[1], Z. Liu[1], W. Li[1], Y. Hong[1], Z. Zhigang[1], G. Wang[1] and H. Yu[1] *1. Department of Metallic Materials Science & Engineering, South China University of Technology, Guangzhou, Guangdong*

10:30 <u>GD-07</u>. **Fabrication of perpendicular magnetic anisotropic Nd-Fe-B based thin films through annealing Nd-Fe-B/Nd-Fe multilayer.** *N. Tian*[1], Y. Li[1], F. Hong[1] and C. You[1] *1. School of Materials Science and Engineering, Xi'an University of Technology, Xi'an, Shaanxi*

10:45 <u>GD-08</u>. **Enhanced Magnetic Properties and Thermal Stability of $SmCo_5/Nd_2Fe_{14}B$ Composite Magnets by Spark Plasma Sintering.** *Q. Lu*[1], C. Zhou[1] and M. Yue[1] *1. College of Materials Science and Engineering, University of Technology, Beijing*

11:00 <u>GD-09</u>. **Anisotropic nanocomposite particles processed by surfactant-assisted ball milling after annealed from amorphous SmCo5/Fe.** *S. Yanfeng*[2,1], J. Zhang[2], J. Du[2], J. Liu[2], W. Xia[2], A. Yan[2] and J. Liu[3] *1. College of Science, Ningbo University, Ningbo, Zhejiang; 2. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, and Engineering, Ningbo, Zhejiang; 3. Department of Physics, University of Texas at Arlington, Arlington, Texas*

11:15 GD-10. **Anisotropic Nanocrystalline Nd-Fe-B based magnets producedby spark plasma sintered technique.** *S. Liu*[1,2], N. Kang[2], L. Feng[1,2], J. Yu[1] and J. Lee[1] *1. Korean Institure of Materials Science, Changwon, Gyeongnam, Korea; 2. Pusan National University, Busan, Korea*

11:30 GD-11. **MnBi Nanoparticles: Improved magnetic performance through annealing of as-synthesized nanoparticles.** *M.P. Rowe*[1], E. Skoropata[2], Y. Wrocynskyj[2], R.D. Desautels[2] and J. van Lierop[2] *1. Toyota, Ann Arbor, Michigan; 2. Department of Physics and Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada*

11:45 GD-12. **Investigation of Significantly Enhanced Electromagnetic Wave Absorption of Hard-Soft Ferrite- Graphene Nanocomposite.** *R. Panwar*[1] and D. Singh[1] *1. MMED/ECE, Indian Institute of Technology Roorkee, Roorkee, Uttrakhand, India*

FRIDAY MORNING 9:00 — 311 B

Session GE
SPIN-CALORIC EFFECT AND SPIN-PUMPING

Shiming Zhou, Chair
TongJi University

9:00 GE-01. **Magnetothermoelectrical properties of an individual magnetic domain wall. *(Invited)*** *P. Krzysteczko*[1], A. Fernandez Scarioni[1], X. Hu[1], N. Liebing[1], S. Sievers[1] and H.W. Schumacher[1] *1. PTB, Braunschweig, Germany*

9:30 GE-02. **Magnonic spin currents: localization, propagation, and accumulation.** D. Hinzke[1], U. Ritzmann[1], M. Evers[1], C. Müller[1] and *U. Nowak*[1] *1. Department of Physics, University of Konstanz, Konstanz, Germany*

9:45 GE-03. The origin of Spin Seebeck effect in compensated ferrimagnets. *E. Guo*[1], S. Geprägs[2], A. Kehlberger[1,3], T. Schultz[1], C. Mix[1,3], F. Della Coletta[2,4], S. Meyer[2,4], A. Kamra[2], M. Althammer[2], G. Jakob[1], H. Huebl[2,5], S.T. Goennenwein[2,4] and M. Kläui[1] *1. Institute for Physics, Johannes-Gutenberg-University Mainz, Mainz, Germany; 2. Walther-Meißner-Institut, Bayerische Akademie der Wissenschaften, Garching, Germany; 3. Graduate School Materials Science in Mainz, Johannes Gutenberg Universität Mainz, Mainz, Germany; 4. Physik-Department, Technische Universität München, Garching, Germany; 5. Nanosystems Initiative Munich (NIM), Technische Universität München, München, Germany*

10:00 GE-04. Anomalous Nernst effect in $L1_0$ type Mn-Ga alloy thin films. *M. Mizuguchi*[1], M. Inoue[1], S. Mizukami[2] and K. Takanashi[1] *1. Institute for Materials Research (IMR), Tohoku University, Sendai, Japan; 2. WPI–Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

10:15 GE-05. Energy dispersion of tunnel spin polarization extracted from thermal and electrical spin currents versus bias voltage. *K. Jeon*[1], H. Saito[1], S. Yuasa[1] and R. Jansen[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Ibaraki, Japan*

10:30 GE-06. Withdrawn

10:45 GE-07. Enhanced Magnetic Damping in $La_{0.7}Sr_{0.3}MnO_3$ Capped by Normal Metal Layer. *J. Lin*[1], G. Luo[1,2], M. Belmeguenai[3], Y. Roussigne[3], C. Chang[2] and S.M. Chérif[3] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan, Taiwan; 2. Physics Department, National Taiwan University, Taipei, Taiwan; 3. LSPM (CNRS-UPR 3407), Université Paris 13, Sorbonne Paris, France*

11:00 GE-08. Electric Néel temperature determination of an antiferromagnetic insulator film. *Z. Qiu*[1,2], D. Hou[1,2] and E. Saitoh[1,2] *1. WPI-AIMR, Tohoku university, Sendai, Japan; 2. ERATO, Japan Science and Technology Agency, Saitama, Japan*

11:15 GE-09. Spin Swapping in ferromagnetic films. *C. Ortiz Pauyac*[1] and A. Manchon[1] *1. Material Science, King Abdullah University, Thuwal, Saudi Arabia*

11:30 GE-10. High frequency and low line width microwave signals from spin Hall nano-oscillators in oblique magnetic fields. *P. Dürrenfeld*[1], A.A. Awad[1], A. Houshang[1], E. Iacocca[1], M. Ranjbar[1], R.K. Dumas[1] and J. Åkerman[1,2] *1. Department of Physics, University of Gothenburg, Göteborg, Sweden; 2. Materials Physics, School of ICT, KTH-Royal Institute of Technology, Kista, Sweden*

11:45 GE-11. Temperature dependence of spin Hall angle and spin orbit torques in Ta. *P. Deorani*[1], Y. Wang[1] and H. Yang[1] *1. National University of Singapore, Singapore*

FRIDAY MORNING 9:00 — 308

Session GF
MAGNETIC RECORDING PHYSICS AND MODELING
Roger Wood, Chair
Hitachi GST

9:00 GF-01. Comparative Study of Micromagnetic Modeling and Experiment in Heat-Assisted Magnetic Recording. *H. Li*[1], M. Alex[2] and J. Zhu[1] *1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. Western Digital Technologies, San Jose, California*

9:15 GF-02. Effect of the Curie Temperature Distribution on the Switching Distribution for HAMR. *S. Wang*[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota*

9:30 GF-03. Micromagnetic calculation of HAMR media hysteresis loop at experimental time scale. *F. Zong*[1], A. Chernyshov[1] and J. van Ek[1] *1. Western Digital Corp., San Jose, California*

9:45 GF-04. A Study of SNR and BER in Heat Assisted Magnetic Recording (HAMR). *Y. Jiao*[1], Y. Wang[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota*

10:00 GF-05. **Atomistic calculation of enhanced effective damping of CoFeB/MgO.** S. Sampan-a-pai[1], J. Chureemart[1], R. Chantrell[2], R. Chepulskyy[3], A.V. Khvalkovskiy[3], D. Apalkov[3], *R.F. Evans*[2] and P. Chureemart[1] *1. Physics, Mahasarakham University, Mahasarakham, Thailand; 2. Physics, University of York, York, United Kingdom; 3. Samsung Electronics, Semiconductor R&D Center (Grandis), San Jose, California*

10:15 GF-06. **Tradeoff of Write-ability and Erase-ability in Overwrite.** *E.E. Lin*[1], D. Bai[1], F. Liu[1] and S. Yuan[1] *1. Western Digital, Fremont, California*

10:30 GF-07. **Cluster Cutting: A Better Understanding of Media Noise Power and Its Plateau vs. Linear Density in Perpendicular Recording.** *J. Zhang*[1], T. Arnoldussen[1] and S. Duan[1] *1. HGST, Western Digital, San Jose, California*

10:45 GF-08. **Thermal stability analysis on pattern dependent BER and SNR decay.** *H. Wang*[1], Y. Tang[1], J. Park[1] and M. Song[1] *1. HGST, a Western Digital Company, San Jose, California*

11:00 GF-09. **Role of Inter-granular Exchange Coupling in Microwave-Assisted Magnetic Recording.** *H. Wang*[1], Z. Yuan[1], Z. Liu[1], T. Zhou[1], M. Zhang[1] and K. Chan[1] *1. Data Storage Institute, Singapore*

11:15 GF-10. **Pattern dependency of TMR sensor noise.** *V. Venugopal*[1], G. Wu[1] and S. Stokes[1] *1. Seagate Technology, Bloomington, Minnesota*

11:30 GF-11. **Modeling & Measurement of Track Width Induced Spacing Loss.** *S. Ang*[1], C. Ong[1] and Z. Yuan[1] *1. Drive System Technologies (DST), Data Storage Institute (DSI), Singapore*

11:45 GF-12. **Magnetization reversal by spin orbit torque in a perpendicularly magnetized nanomagnet: a micromagnetic study.** *N. Mikuszeit*[1], O. Boulle[1], L. Buda-Prejbeanu[1], M. Ioan Mihai[1] and G. Gaudin[1] *1. SPINTEC, Grenoble, France*

FRIDAY
MORNING
9:00

307

Session GG

LINEAR, MULTIPHASE AND OTHER SPECIAL MACHINES II

Ping Zheng, Chair
Harbin Institute of Technology

9:00 GG-01. **On the design of a linear composite magnetic damper.** *A. Bissal*[1,2], E. Salinas[2], J. Magnusson[1,2] and G. Engdahl[1] *1. Electromagnetic Engineering, Royal Institue of technology (KTH), Stockholm, Sweden; 2. ABB AB Corporate Reserach, Västerås, Sweden*

9:15 GG-02. **Development of A Novel Miniature Shaftless Rotational Motor Using Iron-gallium Alloy.** *Y. Tan*[1], J. Zu[1] and Z. Zhang[2] *1. Mechanical and Industrial Engineering, University of Toronto, Toronto, Ontario, Canada; 2. Advanced Mechatronics of Toronto, Toronto, Ontario, Canada*

9:30 GG-03. **New Topology of a Five-Phase Wound-Field Doubly Salient Generator.** *S. Liwei*[1] *1. Shandong University of Technology, Zibo, Shandong*

9:45 GG-04. **Systematic Design Method of Planar Switched Reluctance Motors.** *G. Cao*[1], H. Zheng[1], S. Huang[1,2], H. Qiu[1], C. Wu[1] and J. Duan[3] *1. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, Guangdong; 2. College of Electrical Engineering, Southwest Jiaotong University, Chengdu, Sichuan; 3. State Key Laboratory of High Performance Complex Manufactory, Central South University, Changsha, Hunan*

10:00 GG-05. **Investigation of a Magnetic-Field Modulated Brushless Double-Rotor Machine with the Same Polarity of PM Rotor.** *J. Bai*[1], P. Zheng[1], B. Yu[1], L. Cheng[1] and S. Zhang[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

10:15 GG-06. **Design, 2D/3D FE Analysis and Prototype of a Dual Three-Phase Integer Slot PM Synchronous Motor.** Y. Demir[1], M. Aydin[1] and *M. Aydin*[2,1] *1. R&D Depart., MDS Motor Design Ltd., Kocaeli, Turkey; 2. Kocaeli University, Kocaeli, Turkey*

10:30 GG-07. **Research on A Tubular Yokeless PM Linear Machine.** *Y. Sui*[1], P. Zheng[1], B. Yu[1], L. Cheng[1] and J. Liu[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, Heilongjiang*

10:45 GG-08. **Numerical Simulation of Forces in an Ironless Planar Actuator.** *M.J. Susin*[1], Á.F. Flores Filho[1] and D. Dorrell[2] *1. LMEAE, UFRGS, Caxias do Sul, RS, Brazil; 2. UTS, Sidney, New South Wales, Australia*

11:00 GG-09. **Magnetic Circuit Analysis and Performance Improvement of a Tubular Staggered-Tooth Transverse-Flux Linear Machine for Free-Piston Energy Converter.** P. Zheng[1], *S. Zhu*[1], B. Yu[1], L. Cheng[1] and Y. Fan[1] *1. Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

11:15 GG-10. **Design and Analysis of a Dual Stator Spoke Type Linear Vernier Machine for Wave Energy Extraction.** *S. Khaliq*[1], F. Zhao[1] and B. Kwon[1] *1. Department of Electronic Systems Engineering, Hanyang University, Ansan, Korea*

11:30 GG-11. **Influence of Edge Permanent-Magnet Shape on Performance of an Arc-Linear Permanent-Magnet Synchronous Machine.** *J. Zhao*[1], H. Hu[1] and B. Li[1] *1. School of Automation, Beijing Institute of Technology, Beijing*

FRIDAY
MORNING
9:00

306 B

Session GH
MACHINE IRON LOSSES & RENEWABLE ENERGY
Johannes Paulides, Chair
Eindhoven University of Technology

9:00 GH-01. **Minimization of detent force in a 1 kW linear permanent magnet generator for the conversion of sea waves energy: numerical and experimental validation.** *M. Trapanese*[1], G. Cipriani[1], D. Curto[1], V. Di Dio[1], V. Franzitta[1] and A. Viola[1] *1. DEIM, Università di Palermo, Palermo, Italy*

9:15 GH-02. **A Magnetostrictive Electric Power Generator for Energy Harvesting From Traffic: Design and Experimental Verification.** *V. Franzitta*[1], G. Cipriani[1], V. Di Dio[1], A. Viola[1], M. Trapanese[1] and F. Raimondi[1] *1. DEIM, Palermo University, Palermo, Italy*

9:30 GH-03. **Novel Transverse Flux Switched Reluctance Generator with New Rotor Structure considering Cogging Torque Reduction.** *J. Oh*[1] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Gyeonggi-do, Korea*

9:45 GH-04. **Integrated Brushless Excitation for Hybrid Excitation Synchronous Generator.** *S. Zhu*[1], C. Liu[1], J. Tang[1], Y. Hu[1] and X. Gan[1] *1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu*

10:00 GH-05. **A Novel Line Start Synchronous Reluctance Motor.** *J.L. Yeswanth*[1], G.A. Uvaraj[1] and N.C. Lenin[1] *1. Electrical Engineering, VIT University, Chennai, Tamilnadu, India*

10:15 GH-06. **Iron Loss Analysis Under Extreme Excitation And Validation Based On Upgraded Benchmark Model.** *Z. Cheng*[1], F. Behzad[2], Y. Liu[1], Y. Fan[1], Z. Zhao[3], T. Liu[1], G. Han[1] and W. Wu[1] *1. R & D Center, Baoding Tianwei Group, Baoding, Hebei; 2. Infolytica Corporation, Montreal, Quebec, Canada; 3. Hebei University of Technology, Tianjin*

10:30 GH-07. **Behavior of Iron loss Under Non-sinusoidal Excitation with High Harmonic Content.** *W. Chen*[1], J. Ma[1,2], X. Huang[1] and Y. Fang[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang; 2. China Academy of West Region Development, Zhejiang University, Hangzhou, Zhejiang*

10:45 GH-08. **Research on the Magnet Loss and its Segmentation in Permanent Magnet Synchronous Machines.** *Q. Shen*[1] and X. Han[2] *1. State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing; 2. National Engineering Research Center for Rare Earth Permanent Magnet Machine, Shenyang, Liaoning*

11:00 GH-09. **3D Analytical Slotting –Effect Model for Predicting Magnet Eddy Current Loss in Surface Mounted PM Machines.** *S.S. Nair*[1], J. Wang[1], R. Chin[2] and L. Chen[1] *1. Department of Electronic and Electrical Engineering, The University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2. ABB Corporate Research, Vasteras, Sweden*

11:15 <u>GH-10</u>. **Design Optimization and Efficiency Analysis of 12Slot-10Pole Wound Field Flux Switching Machine.** *F. Khan*[1] and E. Sulaiman[1] *1. Electrical Power Engineering, University Tun Hussein Onn Malaysia, Johor, Malaysia*

11:30 <u>GH-11</u>. **Analytical Calculation of Iron Losses Reduction for Interior Permanent Magnet Synchronous Motor.** F. Chai[1], *P. Liang*[1], Y. Pei[1] and S. Cheng[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

11:45 <u>GH-12</u>. **A 2D-3D Hybrid FEM Approach For Fast Analysis of Eddy Current Loss in Magnets of PMSM Driven by a PWM Inverter.** *X. Jiang*[1], Y. Zeng[1] and H. Li[1] *1. Department of Electrical Engineering, Tsinghua University, Beijing*

FRIDAY
MORNING
9:00

306 A

Session GI

LIFE SCIENCE AND APPLICATIONS III

CheolGi Kim, Chair
DGIST
Wen Siang Lew, Chair

9:00 <u>GI-01</u>. **Transcranial Magnetic Stimulation for Non-invasive Treatment of Brain Disorders.** ***(Invited)*** *D. Jiles*[1] *1. Electrical & Computer Engineering, Iowa State University, Ames, Iowa*

9:30 <u>GI-02</u>. **Mobile Magnetic Transporters and Gene Transfection in Living Cells.** M.L. Howdyshell[1], G.B. Vieira[1], V. Malkoc[2], D. Gallego-Perez[2], L. Lee[2] and *R. Sooryakumar*[1] *1. Department of Physics, The Ohio State University, Columbus, Ohio; 2. Department of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, Ohio*

9:45 <u>GI-03</u>. **Multifunctional Fe_5C_2 nanoparticles: a platform for magnetic resonance imaging, photoacoustic tomography and photothermal therapy.** J. Yu[1] and *Y. Hou*[1] *1. Department of Materials Science and Engineering, Peking University, Beijing*

10:00 GI-04. **Magnetic Micropillars to Study the Global Response of 3D Microtissues to Local Forces.** M. Asmani[1], Y. Li[1], C. Kotei[1], D. Olsen[1], Z. Chen[1] and *R. Zhao*[1] *1. Biomedical Engineering, State University of New York at Buffalo, Buffalo, New York*

10:15 GI-05. **Magnetic Field Projector for Deep Brain Stimulation.** J. Fan[1], T. Wu[1], J. Li[2], J. Li[3], Y. Ye[1] and *X. Li*[1] *1. Mechanical Engineering, National University of Singapore, Singapore; 2. La Jolla High School, La Jolla, California; 3. Cognitive Neuroscience, University of California San Diego, La Jolla, California*

10:30 GI-06. **Hop-On and Hop-Off – superparamagnetic beads on a merry-go-round.** U. Sajjad[1], R. Holländer[1], F. Klingbeil[1] and *J. McCord*[1] *1. Nanoscale magnetic materials-magnetic domains, Techanical Faculty, CAU Kiel, Kiel, Germany*

10:45 GI-07. **Micro magnetic mechanical systems for biomedical applications.** *G. Ortiz*[1], M. Morcrette[1], P. Sabon[1], C. Iss[1], T. Dietsch[1], S. Leulmi[1], H. Joisten[1,2] and B. Dieny[1] *1. SPINTEC - CEA/CNRS, Univ. Grenoble Alpes, Grenoble, France; 2. LETI, CEA, Grenoble, France*

11:00 GI-08. **Magneto-Nanosensor for Sensitive Detection of Ovarian Cancer Antibody Biomarker Anti-Selenium-Binding Protein 1.** *A. Gani*[1], S. Edassery[2], L. Xu[1], J. Lee[1], J. Luborsky[2] and S.X. Wang[1] *1. Stanford University, Stanford, California; 2. Rush University Medical Center, Chicago, Illinois*

11:15 GI-09. **Magnetic water treatment; What can we make of it?** *J. Coey*[1] *1. School of Physics, Trinity College, Dublin, Ireland*

11:30 GI-10. **Can be Iron Oxide Nano-particles acted as nano-electric machines?** *M. Trapanese*[1], V. Di Dio[1], D. Valenti[2] and G. Ricco Galluzzo[1] *1. DEIM, Università di Palermo, Palermo, Italy; 2. Dipartimento di Chimica e Fisica, Palermo University, Palermo, Italy*

11:45 GI-11. **Magnetic nanowires and hyperthermia: how geometry and material affect heat production efficiency.** *M.F. Contreras*[1], A. Zaher[2], J.E. Perez[1], T. Ravasi[1] and J. Kosel[1] *1. King Abdullah University of Science and Technology, Thuwal, Makkah, Saudi Arabia; 2. University of British Columbia, Vancouver, British Columbia, Canada*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GP
MAGNETIC TUNNEL JUNCTION AND PERPENDICULAR ANISOTROPY II (Poster Session)

Qi Li, Chair
Pennsylvania State University
Takeshi Seki, Chair
Tohoku University

GP-01. Diffusion Behaviors Observed on the Surface of CoFeB Film after the Natural Oxidation and the Annealing. *S. Sato*[1], H. Honjo[1], S. Ikeda[1,2], H. Ohno[1,2], T. Endoh[1,2] and M. Niwa[1] *1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Miyagi, Japan; 2. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Miyagi, Japan*

GP-02. Effect of deposition conditions and annealing temperature on tunnel magnetoresistance and structure of MgO-based double-barrier magnetic tunnel junctions. W. Feng[1], *C. Fowley*[1], K. Bernert[1], V. Sluka[1], E. Kowalska[1], Y. Aleksandrov[1], J. Lindner[1], H. Gan[1], J. Fassbender[1], A. Kunz[1], R. Hübner[1], J. Coey[2] and A. Deac[1] *1. Helmholtz Zentrum Dresden Rossendorf, Dresden, Germany; 2. School of Physics and CRANN, Trinity College Dublin, Dublin, Germany*

GP-03. Large inverse magnetoresistance induced by annealing effect in fully epitaxial FeCo/MgO/Fe magnetic tunnel junctions. *Q. Li*[1], S. Li[1], J. Xu[1], S. Yan[2], Y. Ji[3] and G. Miao[3] *1. College of Physics Science, Qingdao University, Qingdao, Shandong; 2. School of Physics, Shandong University, Jinan, Shandong; 3. Department of Electrical and Computer Engineering, University of Waterloo, Waterloo, Ontario, Canada*

GP-04. Temperature Dependence of Low Frequency Noise in Magnetic Tunneling Junctions with $Co_{40}Fe_{40}B_{20}$/$Co_{70.5}Fe_{4.5}Si_{15}B_{10}$ Composed Free Layer. *Z. Yuan*[1], J. Feng[1], P. Guo[1], T. Nakano[2], S. Ali[1], X. Han[1], H. Naganuma[2] and Y. Ando[2] *1. State Key Lab of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing; 2. Department of Applied Physics, Tohoku University, Sendai-shi, Miyagi, Japan*

GP-05. Electrical manipulation of magnetization switching in Co_2FeAl alloy based magnetic tunnel junctions with in-plane and perpendicular magnetization. *Z. Wen*[1], H. Sukegawa[1], S. Kasai[1], K. Inomata[1] and S. Mitani[1] *1. National Institute for Materials Science (NIMS), Tsukuba, Ibaraki, Japan*

GP-06. Possible Explanation For Observed Effectiveness Of Voltage Controlled Anisotropy. *R. Ahmed*[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, Minnesota*

GP-07. Non-Uniform Spatial Distribution of Spin Polarized Current in Perpendicular Magnetic Tunnel Junction Free Layer for Logic Operation. *H. Teoh*[1], S. Goolaup[1], C. Engel[1] and W. Lew[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

GP-08. High TMR Ratio in Perpendicular MTJs using Fe-based Heusler Alloy $Fe_2Cr_{1-x}Co_xSi$. *Y. Wang*[1,2], J. Qiu[2], R. Ji[2], S. Lim[2], G. Han[2] and K. Teo[1] *1. Electrical & Computer Engineering, National University of Singapore, Singapore; 2. Data Storage Institute, Singapore*

GP-09. Dependence of spin-dependent transport signals on measurement frequency in CoFe/MgO/n^+-Si junctions. *T. Inokuchi*[1], M. Ishikawa[1], H. Sugiyama[1] and Y. Saito[1] *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan*

GP-10. Thin Film Effects in the Crystallization of CoFeB and CoFeB-based Alloys. *J.P. Pellegren*[1] and V.M. Sokalski[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania*

GP-11. Effect of Ta thickness and annealing temperature on the perpendicular magnetic anisotropy in MTJ stack with CoFeB/Ta/$[Co/Pd]_n$ as top electrode. *Z. Yuhong*[1], Z. Meng[1], G. Han[2] and K. Teo[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Data Storage Institute, Singapore*

<u>GP-12</u>. **Influence of different buffers on magnetic dead layer, critical current and thermal stability in magnetic tunnel junctions with perpendicular magnetic anisotropy.** *M. Frankowski*[1], A. Zywczak[2], M. Czapkiewicz[1], S. Zietek[1], J. Kanak[1], M. Banasik[1], W. Powroznik[1], W. Skowronski[1], J. Checinski[1,3], J. Wrona[1,4] and T. Stobiecki[1] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Academic Center of Materials and Nanotechnology, AGH University of Science and Technology, Krakow, Poland; 3. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland; 4. Singulus Technologies, Kahl am Main, Germany*

<u>GP-13</u>. **Influence of Ta buffer layer thickness on magnetic properties and microstructure parameters of CoFeB and MgO layers.** *J. Kanak*[1], J. Wrona[1,3], M. Banasik[1], A. Zywczak[2], W. Powroznik[1], M. Czapkiewicz[1] and T. Stobiecki[1] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Academic Center of Materials and Nanotechnology, AGH University of Science and Technology, Krakow, Poland; 3. Singulus Technologies AG, Kahl am Main, Germany*

<u>GP-14</u>. **Effect of overlayer material and thickness in Ta/CoFeB/MgO/overlayer structures.** *M. Sabino*[1], S. Lim[1] and M. Tran[1] *1. Data Storage Institute, Singapore*

<u>GP-15</u>. **Thickness Dependence of Localization to the Anomalous Hall Effect in Amorphous CoFeB Thin Films.** *T. Zhu*[1] *1. State Key Lab for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GQ
RECORDING MEDIA
(Poster Session)
En Yang, Chair
HGST

<u>GQ-01</u>. **Simulation of $L1_0$ FePt Columnar Microstructure by Using Phase Field Model.** *L. Liu*[1], K. Ohsasa[2], L. Zhang[1] and S. Ishio[2] *1. Venture Business Laboratory, Akita University, Akita, Japan; 2. Department of Materials Science and Engineering, Akita University, Tegata, Akita, Japan*

<u>GQ-02</u>. **Tetragonal distortion and perpendicular magnetic anisotropy of FeCo layer in the FePt/FeCo and FePt/Cu/FeCo films.** B. Wang[1,2], H. Omiya[1], T. Hasegawa[1], T. Nakamura[4], L. Zhang[3], L. Liu[3] and *S. Ishio*[1] *1. Department of Materials Science and Engineering, Akita University, Akita, Japan; 2. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 3. Venture Business Laboratory, Akita University, Akita, Japan; 4. Japan Synchrotron Radiation Research Institute, Hyogo, Japan*

<u>GQ-03</u>. **Enhance perpendicular magnetic anisotropy of Co_3Pt thin film by inserting a Pt underlayer.** T. You[1], *Y. Chen*[1] and A. Sun[1] *1. Chemical Engineering and Material Science, Yuan-Ze University, Zhongli, Taiwan*

<u>GQ-04</u>. **Capping C layer effects on magnetic properties and microstructure of FePt/MoC/CrRu films.** *J. Tsai*[1], S. Fu[1], Y. Tseng[1] and C. Li[1] *1. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan*

<u>GQ-05</u>. **Magnetic properties and microstructure of FePt(MoC, C) granular films.** *J. Tsai*[1], S. Fu[1], Y. Tseng[1] and C. Li[1] *1. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan*

GQ-06. **Micromagnetics Studies of CoX/Pt Media with Interfacial Anisotropy based on Voronoi Polycrystalline Structures.** *L. Wang*[1], J. Li[1], Z. Zhao[1], D. Wei[1] and K. Gao[2] *1. Key Laboratory of Advanced Materials (MOE), School of Materials Science and Engineering, Tsinghua University, Beijing; 2. Research and Technology Development, Seagate Technology, Shakopee, Minnesota*

GQ-07. **Granular Nanostructures and Magnetic Properties of FePt-C/FePt-SiO_2 Films.** *L. Zhang*[1], L. Liu[1], K. Hayasaka[2] and S. Ishio[3] *1. Department of Materials Science and Engineering, Akita University, Venture business laboratory, Akita, Japan; 2. Nanotechnology Platform of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japan, Center for Integrated Nanotechnology Support, Tohoku University, Sendai, Japan; 3. Department of Materials Science and Engineering, Akita University, Akita, Japan*

GQ-08. **Anisotropy-graded $L1_0$ FePt(001) magnetic film obtained by graded working pressures.** *J. Hsu*[1], A. Sun[2], Y. Lin[1] and P. Kuo[1] *1. National Taiwan University, Taipei, Taiwan; 2. Department of Chemical Engineering & Materials Science, Yuan Ze University, Chungli, Taiwan*

GQ-09. **Effect of Fe Under Layer in Ultrathin FeRh films.** *C.W. Barton*[1], L. Saharan[2], G. Hrkac[2] and T. Thomson[1] *1. School of Computer Science, University of Manchester, Manchester, Greater Manchester, United Kingdom; 2. College of Engineering, Mathematics and Physical Science, University of Exeter, Exeter, Devon, United Kingdom*

GQ-10. **Effect of carbon overcoat implantation on the magnetic and structural properties of perpendicular recording media.** *S.N. Piramanayagam*[1,2], M. Shakerzadeh[1], B. Varghese[1] and H. Tan[1] *1. Data Storage Institute, A*STAR, Singapore; 2. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

GQ-11. **Microstructure and magnetic properties of FePt-MgO granular thin films fabricated by Co-sputtering method on the single crystal MgO substrate.** Z. Qiu[1], L. Zhao[1], *W. Wang*[2], Z. Liu[1], J. Liu[3] and Z. Dechang[1] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, Guangdong; 2. Department of Physics and Electronics, Beijing University of Chemical Technology, Beijing; 3. Department of Physics, The University of Texas at Arlington, Arlington, Texas*

GQ-12. Influence of recording field direction on linearity of transition in hard disks with stacked structure. *H. Saitou*[1], N. Tomiyama[1] and R. Sugita[1] *1. Department of Media and Telecommunications Engineering, Ibaraki University, Hitachi, Japan*

GQ-13. Anisotropic X-ray magnetic circular dichroism spectra of (001) oriented $L1_0$-MnGa film. *D. Oshima*[1], M. Tanimoto[1], T. Kato[1], Y. Fujiwara[2], T. Nakamura[3], Y. Kotani[3], S. Tsunashima[4] and S. Iwata[1] *1. Nagoya university, Nagoya, Aichi, Japan; 2. Mie University, Tsu, Mie, Japan; 3. Japan Synchrotron Radiation Research Institute / SPring-8, Sayo, Hyogo, Japan; 4. Department of Research, Nagoya Industrial Science Research Instittiute, Nagoya, Aichi, Japan*

GQ-14. Effect of topological bumpy surface underlayer on compositionally modulated atomic layer stacking for high K_u $Co_{80}Pt_{20}$ film with closed-packed orientation. *K. Tham*[1], S. Hinata[2,3] and S. Saito[2] *1. TANAKA KIKINZOKU KOGYO, Sendai, Miyagi, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Miyagi, Japan; 3. Japan Society for the Promotion of Science, Chiyoda-ku, Tokyo, Japan*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GR

SOFT MAGNETIC MATERIALS IV: CRYSTALLINE, NANOCRYSTALLINE AND AMORPHOUS MATERIALS (Poster Session)

Jiang Feng Hu, Chair

Rujun Tang, Chair
Soochow University

GR-01. The Saturation Magnetization Study And First-principles Calculation Of Fe-Si-Al. *Y. Cui*[1], G. Li[1], N. Zhang[1], X. Wang[1] and J. Xie[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

<u>GR-02</u>. **Critical Behavior in Double-Exchange Ferromagnets of $Pr_{0.6}Sr_{0.4}MnO_3$ Nanoparticles.** *T. Thanh*[1], Y. Yu[2], T. Ho[1], M.V. Tien[1], T. Phan[1], D. Tartakovsky[2] and S. Yu[1] *1. Department of Physics, Chungbuk National University, Cheongju, Korea; 2. Department of Mechanical and Aerospace Engineering, University of California, San Diego, California*

<u>GR-03</u>. **Magnetic and magnetoimpedance studies on rapidly solidified $(Fe_{70}Co_{30})B_{19}M_1$ ribbons.** *S.K. Manna*[1] and V. Srinivas[1] *1. Department of Physics, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India*

<u>GR-04</u>. **Left-handed metastructures based on nanocrystalline microwires for GHz shielding applications.** *G. Ababei*[1], C. Olariu[1], N. Lupu[1] and H. Chiriac[1] *1. National Institute of Research & Development for Technical Physics, Iasi, Romania*

<u>GR-05</u>. **Features of magnetic state of Fe-based melt-spun alloys upon heating.** *G. Kraynova*[1], A. Frolov[1], A. Kotvitckii[1] and A. Kuchma[1] *1. Far Eastern Federal University, Vladivostok, Sao Tome and Principe*

<u>GR-06</u>. **Mechanism of improved high-temperature magnetic softness for Co-contained Finemet alloy.** Y. Xu[1] and *Z. Wang*[1] *1. Department of Applied Physics, Tianjin University, Tianjin*

<u>GR-07</u>. **Effects of Silide Formation on the Surface Structure and Magnetic Properties of Cobalt Thin Films on Sigle Silicon.** *K. Wang*[1], Y. Zhao[1], G. Li[1], C. Wu[1], Q. Wang[1] and J. He[1] *1. Key Laboratory of Electromagnetic Processing of Materials (MOE), Shenyang, Liaoning*

<u>GR-08</u>. **Piezo-Voltage Manipulation of the Magnetization and Magnetic Reversal in Fe/GaAs.** B. Zhang[1], *K. Wang*[1], Y. Li[1], H. Zhang[1], M. Yang[1], K. Meng[1], J. Lu[1] and J. Zhao[1] *1. Institute of Semiconductors, Chinese Academy of Sciences, Beijing*

<u>GR-09</u>. **Stucture & Property Evolution of Thin Film Soft Magnetic Nanocomposites in the CoFe(B)-SiO_x System.** P. Ohodnicki[2], P. Ambhore[1], *J.P. Pellegren*[1], J. Kortright[3], A. Mangal[1] and V.M. Sokalski[1] *1. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania; 2. National Energy Technology Lab, Pittsburgh, Pennsylvania; 3. Lawrence Berkeley National Lab, Berkeley, California*

GR-10. Preliminary Study for the Nondestructive Evaluation of Radiation Embrittlement in the Nuclear Pressure Vessel. *D. Park*[1] *1. NMTD, Korea Atomic Energy Research Institute, Taejeon, Korea*

GR-11. Microwave Magnetic Property of Easy-Plane $Y_2Co_{14}B$ Particle Composite. R. Li[1], Y. Zhang[1], F. Xu[1], *T. Wang*[1] and F. Li[1] *1. Lanzhou University, Lanzhou, Gansu*

GR-12. High frequency dynamic magnetic properties of epitaxial FeSi thin films on (001) MgO. X. Guo[1], *L. Xi*[1], D. Li[1], B. Cui[1], Y. Li[1], X. Han[1] and K. Wu[1] *1. School of Physics and Technology, Lanzhou University, Lanzhou, Gansu*

GR-13. PLD-fabricated Fe-Co films prepared by using small spot size of laser beam. *A. Yamashita*[1], M. Nakano[1], T. Yanai[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

GR-14. Fe-Ni Thin Ribbons Prepared by an Electroplating Method. *T. Yanai*[1], Y. Watanabe[1], M. Otsubo[1], M. Nakano[1], N. Shimoya[2], K. Fujisaki[2] and H. Fukunaga[1] *1. Graduate School of Engineering, Nagasaki University, Nagasaki, Nagasaki, Japan; 2. Toyota Technological Institute, Nagoya, Aichi, Japan*

GR-15. Enhanced electrical resistivity and soft magnetic properties in Ca-doped Fe-B-Cu alloy ribbon. *Z. Zhigang*[1], Z. Jiasheng[1], H. Yu[1], Z. Dechang[1] and Z. Liu[1] *1. South China University of Technology, Guangzhou, Guangdong*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GS
MAGNETO-OPTIC, ELASTIC, FUNCTIONAL MATERIALS AND APPLICATIONS
(Poster Session)

Aimed Chang, Chair
Hohai university
Jauyn Grace Lin, Chair
National Taiwan University

GS-01. Spin – Injection Terahertz Radiation of Multirod Monolithic Structure Based On Magnetic Junctions. *E.A. Vilkov*[1], P.E. Zilberman[1], G.M. Mikhailov[2], A.V. Chernikh[2] and S.G. Chigarev[1] *1. Spintronics, Kotel'nikov Institute of Radioengineering and Electronics of RAS, Moscow, Moscow region, Russian Federation; 2. IMT RAS, Chernogolovka, Moscow, Russian Federation*

GS-02. Influence of Particle Size and Filling Factor of Galfenol Flakes on Sensing Performance of Magnetostrictive Composite Transducers. B. Yoo[1], *S. Na*[1] and D.J. Pines[1] *1. Aerospace Engineering, University of Maryland, College Park, Maryland*

GS-03. Three Inch Diameter Bismuth-Doped Thulium Iron Garnet Single-Crystal Films by Liquid Phase Epitaxy for Magneto-optical Applications. *D. Zhang*[1,2], B. Mei[1], H. Zhang[1], Q. Yang[1] and Y. Rao[1] *1. Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Department of Electrical and Computer Engineering, University of Delaware, Newark, Delaware*

GS-04. Microstructures and Magnetic Properties of Fe-Ga and Fe-Ga-V Ferromagnetic Shape Memory Alloys. *Y. Lin*[1] *1. Department of Mold and Die Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan*

GS-05. Effect of high magnetic fields on the microstructural, magnetic and magnetostrictive properties of $TbFe_2$ alloy during solidification process. *T. Liu*[1], P. Gao[1], Q. Wang[1], M. Dong[1] and J. He[1] *1. Key Laboratory of Electromagnetic Processing of Materials (MOE), Northeastern University, Shenyang, Liaoning*

GS-06. Speckle-Pattern Rotation of Light in Graphene-Coated Gyrotropic Optical Fiber. *D.A. Kuzmin*[1], I.V. Bychkov[1] and V. Shavrov[2] *1. Department of Radiophysics and Electronics, Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. Kotel'nikov Institute of Radio Engineering and Electronics of Russian Academy of Sciences, Moscow, Russian Federation*

GS-07. Doping effect on the martensitic and magnetic phase transitions of Heusler-type Ni_2MnGa. *C. Lue*[1], C. Tseng[1] and H. Liu[1] *1. Physics, National Cheng Kung University, Tainan, Taiwan*

GS-08. Tensile strain effects on magnetic properties in half-doped $La_{0.5}Ca_{0.5}MnO_3$ films. *A. Zhang*[1], J. Zhou[1], W. Zhang[1], J. Lin[2] and X. Wu[3] *1. College of Science, Hohai University, Nanjing, Jiangsu; 2. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 3. Lab of Solid State Microstructures, Department of Physics, Nanjing University, Nanjing, Jiangsu*

GS-09. Nonreciprocal TE-TM mode conversion based on photonic crystal fibre of air-holes filled with magnetic fluids into a terbium gallium garnet fibre. H. Otmani[1], M. Bouchemat[1], T. Bouchemat[1], M. Lahoubi[2], *W. Wang*[3] and S. Pu[4] *1. Laboratoire Micro-systèmes et Instrumentation (L.M.I.), Université de Constantine 1, Constantine, Algeria; 2. Department of Physics, Laboratory L.P.S., Badji-Molkhtar Annaba University, Annaba, Algeria; 3. Department of Physics and Electronics, Beijing University of Chemical Technology, Beijing; 4. College of Science, University of Shanghai for Science and Technology, Shanghai*

GS-10. Magnetic domain motion and magnetostriction in the Fe-Ga sheets. *C. Yuan*[1], X. Gao[1], J. Li[1], X. Mu[1] and X. Bao[1] *1. State Key Laboratory of Advanced Metals and Materials, University of Science and Technology Beijing, Beijing*

GS-11. Magnetism and optical properties of Co doped Sr_2RuO_4 *X. Gu*[1] *1. Nanjing University, Nanjing, Jiangsu*

GS-12. The Investigation of Magnetostriction of Different Phases in Fe-Co Alloys. *F. Wang*[1], X. Dai[1], Y. Li[1], H. Jia[1], X. Wang[1] and G. Liu[1] *1. School of Material Sciences and Engineering, Hebei University of Technology, Tianjin*

GS-13. Room-temperature magnetostructural transition in $Mn_{0.4}Fe_{0.6}NiSi$ compound. *Y. Li*[1,2], Z. Wei[1], E. Liu[1], G. Liu[2], H. Luo[2], W. Wang[1] and G. Wu[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing; 2. Hebei University of Technology, Tianjing*

GS-14. Relationship between grain orientation and magnetostrictive properties of Tb-Dy-Fe alloy. *X. Mu*[1], C. Wang[1] and X. Gao[1] *1. State Key Laboratory for Advanced Metals and Materials, University of Science &Technology Beijing, Beijing*

GS-15. Optical properties of Au/MnSb/Au magneto-plasmonic nanostructure for self temperature control device. *S. Saito*[1], T. Sasaki[1] and M. Takahashi[2] *1. Electronic Engineering, Graduate School of Engineering, Tohoku University, Sendai, Miyagi, Japan; 2. New Industry Creation Hatchery Center, Tohoku University, Sendai, Miyagi, Japan*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GT
DOMAIN WALL, MRAM AND LOGIC DEVICES
(Poster Session)
Sarjoosing Goolaup, Chair

GT-01. Reconfigurable logic device based on large magnetoresistance of germanium. *J. Chen*[1], Z. Luo[1] and X. Zhang[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing*

GT-02. Effect of Shape Anisotropy on Magnetization Dynamics in Perpendicular Magnetic Tunnel Junctions. *X. Li*[1], B. Liu[1], L. Li[1] and Z. Liu[2] *1. Department of Physics and Optoelectronics, Taiyuan University of Technology, Taiyuan, Shanxi; 2. National University of Singapore, Singapore*

GT-03. $L1_0$-Ordered MnAl Thin Films with High Perpendicular Magnetic Anisotropy Using TiN Underlayers on Si Substrates. *E.Y. Huang*[1] and M.H. Kryder[1] *1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, Pennsylvania*

<u>GT-04</u>. **Silicon based nonvolatile magnetic memristor.** *C. Xiong*[1,2], X. Zhang[1,2], Z. Luo[1,2], J. Wang[1,2], J. Chen[1,2] and Z. Guo[1,2] *1. School of Materials Science and Engineering, Tsinghua University, Beijing; 2. Beijing National Center for Electron Microscopy, Tsinghua University, Beijing*

<u>GT-05</u>. **Microwave assisted spin transfer torque switching in a vertically integrated logic-in-memory architecture.** *H. Yu*[1], X. Ya[1], T. Tanaka[1] and K. Matsuyama[1] *1. Kyushu University, Fukuoka, Japan*

<u>GT-06</u>. **Current induced domain wall motion in perpendicularly magnetized ultrathin ($Co_{70}Fe_{30}$/Pd)$_n$ nanowires.** *Z. Meng*[1,2], S. He[2], J. Qiu[2], G. Han[2] and K. Teo[1,2] *1. Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Data Storage Institute, Singapore*

<u>GT-07</u>. **Enhancement of spin Hall effect-induced torques for current-driven magnetic domain wall motion: Extrinsic spin Hall effect.** *B. Do*[1,2] and H. Awano[1] *1. Toyoya Technological Institute, Nagoya, Japan; 2. Institute of Materials Science, Vietnam Academy of Science and Technology, Hanoi, Vietnam*

<u>GT-08</u>. **An associative memory device using a magnetic tunnel junction.** *D. Suh*[1], Y. Choi[1], G. Bae[1] and W. Park[1] *1. Hanyang University, Seoul, Korea*

<u>GT-09</u>. **Distinct domain-wall expansion patterns due to Dzyaloshinskii-Moriya interaction.** *D. Kim*[1], D. Kim[1], J. Moon[1], S. Yoo[1,2], B. Min[2] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, Korea; 2. Korea Institue of Science and Technology, Seoul, Korea*

<u>GT-10</u>. **Computer simulation of domain wall motion induced by a slope electric field.** *S. Murayama*[1], K. Yamada[1] and Y. Nakatani[1] *1. Graduate school of Informatics and Engineering, University of Electro-Communications, Chohu, Tokyo, Japan*

<u>GT-11</u>. **Enhancement of Nonadiabatic Spin-Transfer Torque in Ultrathin Ferromagnetic Films.** *S. Je*[1], S. Yoo[1,2], J. Kim[1], J. Moon[1], B. Min[2] and S. Choe[1] *1. Center for Subwavelength Optics and School of Physics and Astronomy, Seoul National University, Seoul, Korea; 2. Spin Convergence Research Center, Korea Institute of Science and Technology, Seoul, Korea*

GT-12. **Influence of interfacial Dzyaloshinskii-Moriya interaction on parametric amplification of spin waves in ultrathin magnetic films.** *R.V. Verba*[1], V. Tyberkevych[2] and A. Slavin[2] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Oakland University, Rochester, Michigan*

GT-13. **Spin-wave propagation within domain walls.** *K. Wagner*[1,2], T. Sebastian[1], A. Kákay[1] and H. Schultheiss[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany; 2. Technische Universität Dresden, Dresden, Germany*

GT-14. **Magnetic Bubblecade Memory.** K. Moon[1], *D. Kim*[2], S. Yoo[2,3], S. Je[2], B. Chun[1], W. Kim[1], B. Min[3], C. Hwang[1] and S. Choe[2] *1. Center for Nanometrology, Korea Research Institute of Standards and Science, Daejeon, Korea; 2. Center for Subwavelength Optics and Department of Physics, Seoul National University, Seoul, Korea; 3. Center for Spintronics Research, Korea Institute of Science and Technology, Seoul, Korea*

GT-15. **Nonlinear effect on diode-assisted magnetoresistance in semiconductors.** *Z. Luo*[1], X. Zhang[1], C. Xiong[1] and J. Chen[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GU
MAGNETIC IMAGING AND CHARACTERIZATION III (Poster Session)

Ciaran Fowley, Co-Chair
Helmholtz Zentrum Dresden Rossendorf
Karsten Rode, Co-Chair

GU-01. Mechanism of single bubble formation in patterned dot array under in-plane magnetic field.
T. Liu[3], V. Puliafito[1], C. Deranlot[2], F. Montaigne[3], S. Petit[3], S. Andrieu[3], O. Ozhatay[4], *G. Finocchio*[1] and T. Hauet[3]
1. Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. Université de Lorraine, Vandoeuvre lès Nancy, France; 4. Department of Physics, Bogazici University, Istanbul, Turkey

GU-02. Imaging Magnetization reversal in Co/Pd-based pseudo-spin-valves and CoFe/Pt exchange biased samples with in-field magnetic force microscopy.
J. Chen[2,3], N. Thiyagarajah[3], *T. Ashworth*[1] and J. Coey[3]
1. NanoScan AG, Duebendorf, Zürich, Switzerland; 2. Department of Electrical and Computer Engineering, University of Minnesota, Twin Cities, Minnesota; 3. School of Physics and CRANN, Trinity College, Dublin, Ireland

GU-03. High coercive magnetic force microscopy probes by cobalt ferrite. *X. Liu*[1] and S. Fukaya[1] *1. Department of Information Engineering, Shinshu University, Nagano, Japan*

GU-04. Magnetic Nanoscale Investigation using Multi-Mode Scanning Transmission X-ray Microscopy.
P. Warnicke[1], N. Pilet[1], B. Sarafimov[1], S. Romer[2], M.A. Marioni[2], H.J. Hug[2] and J. Raabe[1] *1. Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland; 2. Nanoscale Materials Science, EMPA, Duebendorf, Switzerland*

<u>GU-05</u>. **The Third Dimension: Vortex Core Reversal by Interaction with 'Flexure Modes'** M. Noske[1], *H. Stoll*[1], M. Fähnle[1], M. Weigand[1], G. Dieterle[1], J. Förster[1], A. Gangwar[1,2], A. Slavin[3], C.H. Back[2] and G. Schütz[1] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Department of Physics, University of Regensburg, Regensburg, Germany; 3. Department of Physics, Oakland University, Rochester, Michigan*

<u>GU-06</u>. **Magnetic field-induced domain wall motion in cylindrical nanowires.** *A. Wartelle*[1,4], C. Thirion[1,4], R. Afid[1,4], S. Jamet[1,4], S. Da Col[1,4], L. Cagnon[1,4], J. Toussaint[1,4], J. Bachmann[2], S. Bochmann[2], A. Locatelli[3], T. Mentes[3] and O. Fruchart[1,4] *1. CNRS, Institut Néel, Grenoble, France; 2. Friedrich-Alexander-Universität, Erlangen, Germany; 3. Sincrotrone Elettra, Trieste, Italy; 4. Université Grenoble Alpes, Institut Néel, Grenoble, France*

<u>GU-07</u>. **Automotive domain wall propagation in ferromagnetic rings.** *K. Richter*[1], M. Mawass[1,2], A. Krone[1], B. Krüger[1], M. Weigand[2], G. Schütz[2], H. Stoll[2] and M. Klaeui[1] *1. Johannes Gutenberg University, Mainz, Germany; 2. Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany*

<u>GU-08</u>. **Imaging of Magnetic Nano Particles using 2nd harmonic signals.** *S. Tanaka*[1], T. Oishi[1], T. Suzuki[1], T. Ohtani[1] and S. Ariyoshi[1] *1. Environmental and Life Scienses, Toyohashi University of Technology, Toyohashi, Aichi, Japan*

<u>GU-09</u>. **High-Frequency Hysteresis Characterization of Superparamagnetic Particles.** *C. Whitaker*[1], A. Jansons[2], J. Hutchison[2], A. Jander[1] and P. Dhagat[1] *1. Electrical Engineering and Computer Science, Orergon State University, Corvallis, Oregon; 2. Chemistry and Biochemistry, Univeristy of Oregon, Eugene, Oregon*

<u>GU-10</u>. **The Field Domain FMR Linewidth Measurement by a Microstrip Line Transmission Resonator Perturbation Technique.** *A.S. Sokolov*[1], Y. Chen[1] and V.G. Harris[1] *1. CM3IC, Northeastern University, Boston, Massachusetts*

GU-11. Improvement of measured precision on complex permeability of magnetic thin films via optimizing the post data processing method. O. Xiang[1], *G. Lu*[1,2], W. Wang[1], L. Pan[1] and H. Zhang[3] *1. College of Science, Three Gorges University, Yichang, Hubei; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei; 3. University of Electronic Science and Technology of China, Chengdu, Sichuan*

GU-12. Development of a Method to Identify In-Plane Anisotropy Axes in Soft Magnetic Materials Using A Standard Vibrating Sample Magnetometer. *S.W. Bourn*[1], T. Mercer[1], P. Bissell[1] and M. Vopson[2] *1. Jeremiah Horrocks Institute for Mathematics, Physics and Astrophysics, University of Central Lancashire, Preston, United Kingdom; 2. University of Portsmouth, Portsmouth, United Kingdom*

GU-13. Research on the in situ Magnetization and Demagnetization for Scanning SQUID Microscopy. *X. Liu*[1], J. Du[1,2], Z. Wei[1,2] and T. Song[1] *1. Beijing Key Laboratory of Bioelectromagnetism, Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing; 2. University of Chinese Academy of Sciences, Beijing*

GU-14. Scanning Magneto-Optic Kerr-Effect Set-Up with a Bipolar Pulsed High Field Generator (12 T) for Combinatorial Studies of Functional Magnetic Materials. *A.L. Dias*[1], J.C. De Paula[1,2], M. Bonfim[2], G. Shaw[1], D. Givord[1] and N. Dempsey[1] *1. Institut Néel - CNRS, Grenoble, France; 2. DELT, Universidade Federal do Paraná, Curitiba, Brazil*

GU-15. Controlling the anisotropy and domain structure with oblique deposition and substrate rotation. *N. Chowdhury*[1] and S. Bedanta[1] *1. Physcis, National Institute of Science Education and Research, Bhubaneswar, Orissa, India*

GU-16. Grain Orientation Distributions of Polycrystalline Co-ferrite. *J. Wang*[1], C. Yuan[1], J. Li[1], X. Bao[1] and X. Gao[1] *1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GV
LIFE SCIENCE AND APPLICATIONS IV (Poster Session)

Keiji Enpuku, Chair
Kyushu University

GV-01. Effectiveness of Safe Working Procedure on SMF Exposure Levels and Work Performances in 3 T MRI System Operations. *S. Yamaguchi-Sekino*[1], M. Sekino[2] and T. Nakai[3] *1. National Institute of Occupational Safety and Health, Kawasaki, Kanagawa, Japan; 2. Department of Electrical Engineering and Information Systems, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan; 3. Neuroimaging & Informatics, National Center for Geriatrics and Gerontology, Ohbu, Aichi, Japan*

GV-02. Evaluation of Complex Harmonic Signals from Magnetic Nanoparticles for Magnetic Particle Imaging. *T. Yoshida*[1], N. Tsujimura[1], K. Tanabe[1], T. Sasayama[1] and K. Enpuku[1] *1. Kyushu University, Fukuoka, Japan*

GV-03. Study on Neural Regeneration Effect of Rat by using Pulsed Functional Magnetic Stimulation. N. Zhang[1], *S. Wang*[1], X. Chen[1], Q. Shi[1], J. Li[1], J. Zhu[2], S. Wang[1], B. Yang[1], Y. Guo[3] and J. Zhu[3] *1. Xi'an Jiaotong University, Xi'an, Shaanxi; 2. Department of Orthopedics, XiJing Hospital, Xi'an, Shaanxi; 3. School of Electrical, Mechanical and Mechatronic Systems, University of Technology, Sydney, New South Wales, Australia*

GV-04. The influence of extremely low frequency magnetic field and magnetic nanoparticle on $A\gamma_{1-40}$ aggregation in *vitro*. *H. Jia*[1,2], P. Wang[1] and T. Song[1] *1. Beijing Key Laboratory of Bioelectromagnetism, Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing; 2. University of Chinese Academy of Sciences, Beijing*

GV-05. Magnetic properties of LaSrMnO nanoparticles and their application to cardiac immunoassay. *W. Ham*[1], M. Kim[2], J. Gim[1], J. Lee[1], J. Wu[1], K. Lee[2] and Y.K. Kim[1] *1. Materials Science and Engineering, Korea University, Seoul, Korea; 2. Biomedical Engineering, Korea University, Seoul, Korea*

GV-06. 2D transport of superparamagnetic microbeads on a ferromagnetic hexagonal nanolattice. *J. Chen*[1], W. Gan[1] and W. Lew[1] *1. Nanyang Technological University, Singapore*

GV-07. Development of three channel SQUIDs Contaminant Detector for Food Inspection. *T. Ohtani*[1], Y. Narita[1], S. Tanaka[1], S. Ariyoshi[1] and S. Suzuki[2] *1. Environmental and Life Sciences, Toyohashi University of Technology, Toyohashi, Aichi, Japan; 2. Advance Food Technolgy Co.,Ltd, Toyohashi, Aichi, Japan*

GV-08. Control of the Flickering Light Sensation Based on Superimposed Electromagnetic Fields. *H. Nakagawa*[1] and S. Ueno[2] *1. Tokyo Denki University, Tokyo, Japan; 2. Kyushu University, Fukuoka, Japan*

GV-09. Luciferin-Luciferase bioluminescent emitting in the suspension of dia-magnetically aligned guanine microcrystals. *Y. Miyashita*[1,2] and M. Iwasaka[1,3] *1. Hiroshima University, Hiroshima, Japan; 2. JSPS, Tokyo, Japan; 3. JST, Saitama, Japan*

GV-10. Study of RGD/Dextran/Fe_3O_4 composite magnetic nanoparticles for diagnostic image. *T. Ger*[1], S. Lou[1] and S. Lin[1] *1. Chung Yuan Christian University, Taoyuan, Taiwan*

GV-11. Enhanced the resolution of surface plasmon polaritons for biosensor. *H. Huang*[1], C. Li[2] and Z. Wei[2] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan; 2. Department of Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

GV-12. Monodispersed hollow iron oxide clusters prepared by surfactant-free solvothermal method with hyperthermia-assisted Drug release property. *S. Kim*[1], K. Katsumata[1], K. Okada[1] and N. Matsushita[1] *1. Materials and Structures Laboratory, Tokoy Institute of Technology, Yokohama, Japan*

GV-13. Large Permanent for the Anti-matter Detector in Space. *Q. Wang*[1,2] and S. Ting[2,1] *1. Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing; 2. AMS International Cooperation Team, CERN, Geneva, Switzerland*

GV-14. Wide dynamic range SQUID magnetometer with noise cancellation for magnetocardiogram without magnetically shielded room. *K. Kobayashi*[1], T. Murakami[1] and D. Oyama[2] *1. Faculty of Engineering, Iwate University, Morioka, Iwate, Japan; 2. Applied Electronics Laboratory, Kanazawa Institute of Technology, Kanazawa, Ishikawa, Japan*

GV-15. Ellipsoidal Magnetic Nanoparticles for Superior Heating Performance. *D. Serantes*[1], K. Simeonidis[2], M. Marciello[1], M. Angelakeris[3], M. del Puerto Morales[1] and O. Chubykalo-Fesenko[1] *1. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 2. Department of Mechanical Engineering, School of Engineering, University of Thessaly, Volos, Greece; 3. Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece*

FRIDAY MORNING 8:30 — PLENARY HALL B

Session GW
MAGNETIC MOLECULES AND FLUIDS (Poster Session)

Y.S. Chen, Co-Chair
National Taiwan University
Lue Chin-Shan, Co-Chair
National Cheng Kong University

GW-01. Comparison of Characteristics between an Elevator Emergency Stop Device with a Magnetic Rheological Fluid Damper and a Conventional Device. *S. Sato*[1], T. Uchida[1] and T. Nakagawa[1] *1. Electrical and Electronic Engineering, Tokyo City University, Setagaya, Tokyo, Japan*

GW-02. Carbonyl Iron Suspension with Core-Shell Structured Fe_3O_4@SiO_2 Nanoparticle Additives and its Magnetorheological Property. *S. Piao*[1], H. Chae[1] and H. Choi[1] *1. Polymer Science and Engineering, Inha University, Incheon, Korea*

GW-03. Octahedral Shaped Magnetite Nanoparticle Added Carbonyl Iron Suspension and its Magnetorheology. *S. Kwon*[1], H. Jung[1] and H. Choi[1] *1. Department of Polymer Science and Engineering, Inha University, Incheon, Korea*

GW-04. Design and Control of a Magnetorheological Energy Absorber for Shock and Vibration Mitigation. *X. Bai*[1] and L. Qian[1] *1. Hefei University of Technology, Hefei, Anhui*

GW-05. Study of Magneto-Viscosity of Ferromagnetic MnZn-Ferrite Ferrofluid. T. Gadipelly[1] and *R. Singh*[1] *1. School of Physics, University of Hyderabad, Hyderabad, Telangana, India*

GW-06. Power Generation Using Magnetic Nanofluids in Millimeter-Sized Channel with In-Phase Mode Magnetization. *I. Kim*[1], J. Lee[2], S. Lee[3], G. Jeong[4] and S. Lee[1] *1. Department of Electrical Engineering, Kyungpook National University, Daegu, Korea; 2. School of Mechanical & Automotive Engineering, Gangneung-Wonju National University, Wonju, Korea; 3. Biomedical Research Institute, Korea Institute of Science and Technology, Seoul, Korea; 4. LS Cable & System, Gumi, Korea*

GW-07. Magnetic Separation and Transfer of Wastewater Contaminants Using Magnetic Travelling Wave and Micro Magnetic Bead. *K. Lee*[1], M. Baek[1], E. Cho[2] and I. Park[1] *1. Sungkyunkwan University, Suwon, Gyeonggi-Do, Korea; 2. Bead & Micro Co. Ltd., Yongin, Korea*

GW-08. Numerical Analysis of Electromagnetic Force on Magnetic Nanoparticles in Fluid. F. Fang[1] and *W. Guan*[1] *1. Wuhan University, Wuhan, Hubei*

GW-09. A Full Scale Study on Sedimentation of Magnetorheological Fluid. *L. Xie*[1,2], Y.T. Choi[1], C. Liao[2] and N.M. Wereley[1] *1. Department of Aerospace Engineering, University of Maryland, Hyattsville 20783, Maryland; 2. Key Lab of Opto-electronic Technology & Systems, Chongqing University, Chongqing*

GW-10. Synthesis and Magneto-Viscosity of Mn-Ferrite Ferrofluid. R. Singh[1] and *T. Gadipelly*[1] *1. School of Physics, University of Hyderabad, Hyderabad, Telangana, India*

GW-11. Magnetic Determination of the Electronic State of Copper in the Molecular Semiconductor Copper Phthalocyanine ($C_{32}H_{16}N_8Cu$). *Z. Wang*[1], K.L. Pisane[1] and M.S. Seehra[1] *1. Department of Physics and Astronomy, West Virginia University, Morgantown, West Virginia*

GW-12. Magnetic Properties of a Double-Layered Film on a Honeycomb Lattice. F. Zhang[1], *W. Jiang*[1], A. Guo[1] and W. Wang[1] *1. School of Science, Shenyang University of Technology, Shenyang, Liaoning*

GW-13. Morphology-controlled growth of magnetic iron oxide components on gold nanoparticles as bi-functional agents. *L. Li*[1], C. Leung[1], A. Ruotolo[2], C. Jiang[1] and P. Pong[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong; 2. Department of Physics and Materials Science, City University of Hong Kong, Hong Kong*

GW-14. Ferromagnetic behaviour from anionic complexes of carbon and boron. *M.P. Rowe*[1], E. Skoropata[2], R.D. Desautels[2] and J. van Lierop[2] *1. Toyota, Ann Arbor, Michigan; 2. Department of Physics and Astronomy, University of Manitoba, Winnipeg, Manitoba, Canada*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GX

ELECTROMAGNETIC, THERMAL AND VIBRATIONAL COUPLING II (Poster Session)

Kazuhiro Muramatsu, Chair
Saga University

GX-01. Analysis on Electromagnetic Vibration of Induction Machine Supplied by Frequency Converter. *A. Chenfan*[1], J. Ruan[1], F. Chen[1] and T. Huang[2] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Economic and Technology Research Institute of Jiangsu Electric Power Company, Nanjing, Jiangsu*

GX-02. The analysis and research on the coupling axial flux variable-reluctance resolver. J. Shang[1], *H. Wang*[1] and Q. Wang[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

GX-03. Design and Magnetic Properties of Electric Vehicle Wireless Charging System. *L. Tan*[1], X. Huang[1], C. Chen[1], W. Wang[1] and C. Yan[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

GX-04. Magnetostriction and the Influence of Harmonics in Magnetizing Voltage in Electrical steel. *W. Gong*[1], Z. Zhang[1], J. He[1], Z. Xu[1], A. Lin[1], R. Hou[1], W. Fan[1] and J. Wang[1] *1. National Institute of Metrology, Beijing*

GX-05. Vibration of an Electromagnetic Actuator with Sinusoidal Power Supply Considering Electromagnetism and Magnetostriction. *X. Zhang*[1], D. Wang[1], J. Chen[1] and Z. Su[1] *1. National Key Laboratory of Science and Technology on Vessel Integrated Power System, Naval University of Engineering, Wuhan, Jiangsu*

GX-06. Methodology of Incorporating Mechanical and Electromagnetic Characteristics Analysis for Separated Pole-Piece Type Ferrite Magnet Motor. W. Kim[1], *H. Hong*[2] and J. Lee[2] *1. Material & Device Research Center, Samsung Electronics, Gyeonggi-do, Korea; 2. Department of Electrical Engineering, Hanyang University, Seoul, Korea*

GX-07. Oblique Incidence Performance of Microwave Absorbers Based On Magnetic Polymer Composites. *L. Zhang*[1], P. Zhou[1], J. Xie[1] and L. Deng[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

GX-08. The Research on Electromagnetic and Thermal Issue of the High Power Density Permanent Magnet Synchronous Motor Based on Thermal Conductivity Optimization of the Armature End. L. Li[1], *J. Zhang*[1], C. Zhang[1] and H. Yan[2] *1. Harbin Institute of Technology, Harbin, Heilongjiang; 2. China Academy of Launch Vehicle Technology, Beijing*

GX-09. Research on Electromagnetic Vibrating Forces of inverted-fed Induction Motor. *H. Liu*[1,2], H. Zhu[2], J. Ruan[1] and H. He[2] *1. Department of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Wuhan Institute of Marine Electric Propulsion, CSIC, Wuhan, Hubei*

GX-10. Numerical Simulation of Electromagnetic-Thermal Field for Electromagnetic Levitation of Two-Frequency. H. Li[1], *S. Wang*[1], J. Zhu[2] and Y. Guo[2] *1. School of Electrical Engineering, State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi; 2. School of Electrical, Mechanical and Mechatronic Systems, University of Technology Sydney, Sydney, New South Wales, Australia*

GX-11. Torque Ripple and Unbalanced Magnetic Force of Permanent Magnet Motor for Full Electric Driven Compressor. *H. Shin*[1], J. Choi[1], K. Jung[2] and S. Cho[2] *1. Electrical Engineering, Chungnam National University, Daejeon, Korea; 2. Halla Visteon Climate Control Corp., Daejeon, Korea*

<u>GX-12</u>. **Study on Correlation of Rotor Vibration on the Mechanical Stress in the Ultra-high-speed Permanent Magnet Synchronous Motor.** *J. Ahn*[1,2], C. Park[2], S. Choi[2], J. Choi[1], S. Jang[1], K. Kim[1] and H. Park[1] *1. Chungnam National University, Daejun, Korea; 2. Advanced Manufacturing Systems Research Division, Korea Institute of Machinery and Materials, Daejeon, Korea*

<u>GX-13</u>. **Study of Electromagnetic Vibration Characteristic of PM Motor Considering Slot/Pole Combination.** I. Jang[1], *H. Hong*[2] and J. Lee[2] *1. Samsung Techwin, Gyeonggi-do, Korea; 2. Hanyang University, Seoul, Korea*

<u>GX-14</u>. **The Forced Vibration Analysis of High Speed Induction Motor According to the Combination the Number of Conductor Bar and the Number of Slot.** *D. Hong*[1] *1. Korea Electrotechnology Research Institute, Changwon, Korea*

<u>GX-15</u>. **Electromagnetic-thermal coupled analysis of proposed new PMSM design with cooling channel.** *H. Jun*[1], H. Hong[1], M. Park[1] and Y. Oh[1] *1. Electric Engineering Department, Hanyang University, Seoul, Korea*

<u>GX-16</u>. **Thrust and thermal management of high thrust density PMLSM.** *Y. Zhang*[1], M. Yu[1,3], B. Zhang[1] and Y. Ye[2] *1. School of Electric Power, South China University of Technology, Guangzhou, Guangdong; 2. Zhejiang University, Hangzhou, Zhejiang; 3. Guangdong Meizhi Compressor Limited, Foshan, Guangdong*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GY
ELECTRIC MACHINE APPLICATIONS II
(Poster Session)

Takeo Ishikawa, Chair
Gunma Univ.
Erwan Sulaiman, Chair
Nagoya Institute of technology

GY-01. **Design and Experimental Verification of a Low Leakage Flux Spoke Type Permanent Magnet Synchronous Motor.** *J. Jung*[2], H. Yeo[2] and J. Hong[1] *1. Automotive Engineering, Hanyang University, Seoul, Korea; 2. Hyundai Mobis, Yongin, Korea*

GY-02. **Novel Hybrid Excitation Permanent Magnet Vernier Machines.** L. Xu[1], *G. Liu*[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

GY-03. **Design and Analysis of Novel Permanent- Magnet Motors with Hybrid Rotor Configurations.** G. Xu[1], *L. Guohai*[1], W. Zhao[1] and Q. Chen[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

GY-04. **A Novel Consequent Pole Hybrid Magnet Vernier Memory Machine for Automotive Applications.** H. Yang[1,2], *H. Lin*[1], Z. Zhu[2], Y. Huang[1] and S. Fang[1] *1. Engineering Research Center for Motion Control of MOE, Southeast University, Nanjing, Jiangsu; 2. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

GY-05. **Fault-Tolerant Control of Novel Axial Field Flux-Switching Permanent Magnet Machine.** *W. Zhang*[1,2] and M. Lin[1] *1. Southeast University, Nanjing, Jiangsu; 2. Nantong University, Nantong, Jiangsu*

GY-06. **Analysis and Design of FSCW SPM Machines for a Given Constant Power Region.** *J. Li*[1], J. Zou[1] and Y. Xu[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

GY-07. **A Novel Axial-Flux-Modulated Electric Machine with an Improved Structure.** *Y. Xie*[1], Y. Zhang[1], G. Lian[1] and Y. Shao[1] *1. School of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

<u>GY-08</u>. **Identification of Acoustical Noise Source for Electric Power Steering Motor Using Finite Element Method.** *B. Yoo*[1], N. Niguchi[1], K. Hirata[1] and A. Zaini[1] *1. Adaptive Machine Systems, Osaka Univ., Suita, Osaka, Japan*

<u>GY-09</u>. **Research of Stator Displacement Technique in Multistage Axial-Flux Permanent Magnet Machines.** *X. Wei*[1] and K. Yang[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei*

<u>GY-10</u>. **A New General Design Method of Segmented-rotor Wound Field Flux-Switching Motors with Complementary Magnet Circuit.** *R. Cao*[1], Y. Jin[1], Y. Zhang[1] and W. Huang[1] *1. Department of Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu*

<u>GY-11</u>. **A New Magnetic-Field Modulated Brushless Double-Rotor Machine.** *J. Bai*[1], P. Zheng[1], L. Cheng[1], S. Zhang[1] and J. Liu[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

<u>GY-12</u>. **Optimal Design of Rotor Slot Shape of Indution Motor for Electric Vehicle.** *K. Kim*[1] *1. Department of Electrical Engineering, Hanbat National University, Daejeon, Korea*

<u>GY-13</u>. **A Novel Permanent Magnet Vernier In-Wheel Motor for Electric Vehicles.** *Z. Yan*[2], J. Li[1] and X. Zhong[1] *1. School of Mechanical and Electronic Engineering, Wuhan University of Technology, Wuhan, Hubei; 2. School of Information and Electronics, Beijing Institute of Technology, Beijing*

<u>GY-14</u>. **A Novel Co-axial Dual Flux-switching Permanent Magnet Machine For Hybrid Electric Vehicles.** *L. Zhou*[1], W. Hua[1] and M. Chen[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

<u>GY-15</u>. **A New Permanent-magnet Vernier Direct-drive In-wheel Motor for Electric Vehicles.** *J. Li*[1] and K. Chau[2] *1. School of Mechanical and Electronic Engineering, Wuhan University of Technology, Wuhan, Hubei; 2. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong*

<u>GY-16</u>. **Investigation of a Five-Phase Dual-Rotor Radial –Flux Permanent Magnet Synchronous Motor.** *W. Liu*[1] and J. Zhao[1] *1. Beijing Institute of Technology, Beijing*

FRIDAY
MORNING
8:30

PLENARY HALL B

Session GZ
ELECTRIC MACHINE MODELING AND ANALYSIS III
(Poster Session)
Zhuoran Zhang, Chair

GZ-01. Analytical Synthesis of Air-gap Field in Permanent Magnet Machines with Rotor Eccentricity by Superposition Method. *Y. Li*[1], Z. Zhu[1], G. Li[1] and D. Wu[1] *1. Department of Electronic and Electrical Engineering, The University of Sheffield, Sheffield, United Kingdom*

GZ-02. Nonlinear Analytical Modeling of Hybrid Excitation Double Sided Linear Eddy Current Brake. B. Kou[1], *Y. Jin*[1], H. Zhang[1], L. Zhang[1] and H. Zhang[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

GZ-03. Loss Study of Permanent Magnet Synchronous Motor in Voltage Deviation by Frequency Converter Power Supply. *S. Ding*[1], T. Guan[1] and S. Jiang[1] *1. College of Electrical and Electronic Engineering, Harbin University of Science and Technology, Harbin, Heilongjiang*

GZ-04. Study of the Performance of an Energy Storage Homopolar Inductor Electrical Machine. *C. Ye*[1], G. Liu[1], J. Yang[1], L. Tang[1] and K. Yu[1] *1. the State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei*

GZ-05. Temperature Prediction Study of Cable Joint Conductor Based on the PSO Algorithms of BP Neural Network. *H. Zhou*[1], J. Wang[1], K. Liu[1] and L. Wang[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei*

GZ-06. Equivalent Circuit Parameters Calculation of a Wound Rotor Brushless Doubly-Fed Machine Based on Finite Element Analysis. *L. Jia*[1] *1. Department of Electrical Machinery, Huazhong University of Science and Technology, Wuhan, Hubei*

<u>GZ-07</u>. **Optimum Design for Improving Bi-Directional Modulating Effect of Dual-Permanent-Magnet-Excited Machine.** *L. Jian*[1] and J. Wei[1] *1. Department of Electrical and Electronic Engineering, South University of Science and Technology of China, Shenzhen, Guangdong*

<u>GZ-08</u>. **Characteristic analysis of WRSM considering magnetic saturation.** J. Lee[1], H. Hong[1], Y. Oh[1] and *J. Lee*[1] *1. Hanyang University, Seoul, Korea*

<u>GZ-09</u>. **Subdivision-based Optimal Design of Multi-dimensional Electromagnetic Devices.** *Z. Ren*[1], Y. Shan[1], D. Zhang[1] and Y. Zhang[1] *1. School of Electrical Engineering, Shengyang University of Technology, Shenyang, Liaoning*

<u>GZ-10</u>. **High Efficient Permanent Magnet Actuator Design by Mitigating Irreversible Demagnetization Effect.** *S. Lim*[1], S. Min[1] and J. Hong[1] *1. Automotive Engineering, Hanyang University, Seoul, Korea*

<u>GZ-11</u>. **Establishing the Power Factor Limitations for Synchronous Reluctance Machines.** Y. Wang[2], D. Ionel[2,3], *D.G. Dorrell*[1] and S. Stretz[3] *1. school of Electrical, Mechanical and Mechatronic Systems, University of Technology Sydney, Sydney, New South Wales, Australia; 2. University of Wisconsin-Milwaukee, Milwaukee, Wisconsin; 3. Regal Beloit Corp, Grafton, Wisconsin*

<u>GZ-12</u>. **Structure Design and Analysis of Windings in a Bearingless Motor.** W. Pan[1] and *H. Zhu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, Jiangsu*

<u>GZ-13</u>. **Modeling and characteristic analysis of an integrated linear oscillatory compressor.** *Y. Zhang*[1], M. Yu[1,2] and Y. Ye[3] *1. School of Electric Power, South China University of Technology, Guangzhou, Guangdong; 2. Guangdong Meizhi Compressor Limited, Foshan, Guangdong; 3. Zhejiang University, Hangzhou, Zhejiang*

<u>GZ-14</u>. **Prediction Method of Flux Loss in Nd-Fe-B Bonded Magnets for an IPM Motor.** *S. Horita*[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

<u>GZ-15</u>. **A Study on the Design Parameter of PMSM using VP-Map.** *K. Lee*[1], H. Hong[1], Y. Oh[1], J. Lee[1] and J. Lee[1] *1. Hanyang University, Seoul, Korea*

FRIDAY 309 A
AFTERNOON
2:00

Session HA
SKYRMIONS IN HELIMAGNETS
Xiaofeng Jin, Chair
Fudan University

2:00 HA-01. **Broken Symmetry, Spin Helix, and Skyrmion State in B20 Magnets.** ***(Invited)*** S. Huang[1], J. Zang[1] and *C. Chien*[1] *1. Department of Physics & Astronomy, Johns Hopkins University, Baltimore, Maryland*

2:30 HA-02. **Electric Manipulation of Skyrmions in Metals and Insulators.** ***(Invited)*** *A. Hoffmann*[1], W. Jiang[1], P. Upadhyaya[2], Q. Yang[3], G. Yu[2], W. Zhang[1], M. Jungfleisch[1], F.Y. Fradin[1], J.E. Pearson[1], Z. Wang[2], K.L. Wong[2], M. Akyol[2], L. Chang[2], M. Lang[2], Y. Fan[2], Q. Wen[3], H. Zhang[3], R.N. Schwartz[2], Y. Tserkovnyak[4], K.L. Wang[2], O. Heinonen[1] and S.G. te Velthuis[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, Illinois; 2. Department of Electrical Engineering, University of California Los Angeles, Los Angeles, California; 3. State Key Laboratory of Electronic Films and Integrated Devices, University of Electronic Science and Technology, Chengdu, Sichuan; 4. Department of Physics and Astronomy, University of California Los Angeles, Los Angeles, California*

3:00 HA-03. **Individual Skyrmions in Helimagnets.** ***(Invited)*** *J. Zang*[1] *1. Physics and Astronomy, Johns Hopkins University, Baltimore, Maryland*

3:30 HA-04. **Magnetoelectric Skyrmions in Multiferroics.** ***(Invited)*** *S. Seki*[1] *1. Center for Emergent Matter Science (CEMS), RIKEN, Wako, Saitama, Japan*

3:30 HA-05. **Dynamics of topological spin structures.** ***(Invited)*** *M. Klaeui*[1] *1. Physics, Johannes Gutenberg - University Mainz, Mainz, Germany*

4:00 HA-06. **Transmission soft x-ray microscopy imaging of skyrmions in ultrathin film.** ***(Invited)*** *S. Woo*[1], B. Krüger[2], M. Im[3], K. Litzius[2], L. Carreta[1], K. Ritcher[2], M. Mann[1], A. Krone[2], P. Agrawal[1], P. Fischer[3], M. Kläui[2] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts; 2. Institut für Physik, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 3. The Center for X-ray and Optics, Lawrence Berkeley National Laboratory, Berkeley, California*

FRIDAY
AFTERNOON
2:00

309 B

Session HB
DOMAIN WALL MOTION AND LOGIC DEVICES

Mathias Klaeui, Chair
Johannes Gutenberg - University Mainz

2:00 HB-01. **Magnonics in view of applications in logic. *(Invited)*** *A. Chumak*[1] *1. Fachbereich Physik and Forschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany*

2:30 HB-02. **Rashba-effect induced chiral magnetic domain-wall resistance.** *Y. Yin*[1], J. Kim[1], D. Han[1], R. Lavrijsen[1], A. Van den Brink[1], K. Lee[3], H. Lee[2], K. Kim[2], H. Swagten[1] and B. Koopmans[1] *1. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. Pohang University of Science and Technology, Gyoungbuk, Korea; 3. Korea University, Seoul, Korea*

2:45 HB-03. **Chiral damping of field driven magnetic domain walls.** *S. Chenattukuzhiyil*[1,2], E. Jue[1,2], M. Drouard[1,2], A. Lopez[1,2], P. Balint[1,2], L. Buda-Prejbeanu[1,2], S. Auffret[1,2], A. Manchon[3], A. Schuhl[4], O. Boulle[1,2], M. Ioan Mihai[1,2] and G. Gaudin[1,2] *1. SPINTEC/INAC/CEA-Grenoble, Grenoble, France; 2. Universite de Grenoble Alpes, Grenoble, France; 3. Physical Science andEngineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 4. CNRS, Institute Neel, Grenoble, France*

3:00 HB-04. **Asymmetric domain-wall depinning induced by Dzyaloshinskii Moriya interaction.** *F. Ummelen*[1], D. Han[1], J. Kim[1], H. Swagten[1] and B. Koopmans[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Brabant, Netherlands*

3:15 **HB-05. Controlling magnetic domain wall pinning in CoFeB/MgO ultra thin films with perpendicular anisotropy by light ion irradiation.** *L. Herrera Diez*[1], I. Barisik[1], F. García-Sanchez[1], J. Kim[1], J. Adam[1], T. Devolder[1], S. Eimer[1], G. Agnus[1], K. Garcia[1], J. Morgan[2], M. El Hadri[1], A. Lamperti[3], R. Mantovan[3], B. Ocker[4], R.P. Cowburn[2] and D. Ravelosona[1] *1. Institut d'Électronique Fondamentale-Paris Sud University-CNRS, Orsay, France; 2. Department of Physics, University of Cambridge, Cambridge, United Kingdom; 3. Laboratorio MDM, IMM-CNR, Agrate Brianza, Italy; 4. Singulus Technology AG, Kahl am Main, Germany*

3:30 **HB-06. Propagation, steering and detection of spin waves for magnonic applications. *(Invited)*** *H. Schultheiss*[2,1], A. Hoffmann[1], K. Schultheiss[2,3], F.Y. Fradin[1], J.E. Pearson[1], T. Sebastian[2,3], B. Hillebrands[3] and S. Bader[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, Illinois; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany; 3. Fachbereich Physik und Forschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany*

4:00 **HB-07. Domain walls in thermal gradients – entropic torque and angular momentum transfer.** *D. Hinzke*[1], F. Schlickeiser[1], R. Yanes-Diaz[1], U. Ritzmann[1], S. Selzer[1] and U. Nowak[1] *1. Department of Physics, University of Konstanz, Konstanz, Germany*

4:15 **HB-08. Deterministic generation of single domain wall in ferromagnetic nanowire using local Oersted field.** *C. Guite*[1], I. Kerk[1], C. Murapaka[1], R. Maddu[1], G. Sarjoosing[1] and W. Lew[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore*

4:30 **HB-09. Magneto-Seebeck effect with in-plane thermal gradient.** *A.A. Tulapurkar*[1], S. Jain[1], D. Lam[2], A. Bose[1], H. Sharma[3], V. Palkar[1], C. Tomy[3] and Y. Suzuki[2] *1. Electrical Engineering, Indian Institute of Technology-Bombay, Mumbai, Maharashtra, India; 2. School of Engineering Science, Osaka University, Osaka, Japan; 3. Physics Department, Indian Institute of Technology-Bombay, Mumbai, India*

4:45 HB-10. **Metastable magnetic domain in bifurcated nanowire network probed by domain wall magnetoresistance.** *J. Kwon*[1,2], I. Kerk[1], G. Lim[1], C. Murapaka[1], S. Goolaup[1], C. Chang[2] and W. Lew[1] *1. Division of Physics and Applied Physics, Nanyang Technological University, Singapore; 2. School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore*

FRIDAY AFTERNOON 2:00 310

Session HC
CONTROLLED ANISOTROPY
Stephane Mangin, Chair
Universite de Lorraine

2:00 HC-01. **Co-Graphene Heterostructures with Giant Perpendicular Magnetocrystalline Anisotropy.** *H. Yang*[1] and M. Chshiev[1] *1. SPINTEC, INAC, CEA/CNRS/UJF-Grenoble 1/Grenoble-INP, Grenoble, France*

2:15 HC-02. **Inducing high coercivity and anisotropy into strained Fe-Co thin films, towards Rare Earth free permanent magnets applications.** *G. Giannopoulos*[1], R. Salikhov[2], L. Reichel[3,4], A. Markou[5], I. Panagiotopoulos[5], M. Farle[2], S. Fähler[3], V. Psycharis[1] and D.G. Niarchos[1] *1. INN, NCSR Demokritos, Athens, Greece; 2. Fakultät für Physik and Center for Nanointegration (CeNIDE), Universität Duisburg-Essen, Duisburg, Germany; 3. IFW, Dresden, Germany; 4. TU Dresden, Dresden, Germany; 5. Department of Materials Science and Engineering, University of Ioannina, Ioannina, Greece*

2:30 HC-03. **Tuning perpendicular magnetic anisotropy in the MgO/CoFeB/Ta thin films.** *T. Zhu*[1], Q. Zhang[2] and R. Yu[2] *1. State Key Lab for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing; 2. Institute of Physics, Chinese Academy of Sciences, Beijing*

2:45 HC-04. **Effects of interfacial electronic structure on the magnetic anisotropy in Pt/Co/MgO/Pt and Ta/CoFeB/MgO/Ta films.** *X. Chen*[1] *1. Department of Materials Physics and Chemistry, University of Science and Technology Beijing, Beijing*

3:00 HC-05. **Perpendicular magnetic anisotropy in Ta/Pd (0-10 nm)/$Co_2FeAl_{0.5}Si_{0.5}$/MgO/Ta structured films.**
H. Fu[1], C. You[1], X. Zhang[1] and N. Tian[1] *1. School of Materials Science Engineering, Xi'an University of Technology, Xi an, Shaanxi*

3:15 HC-06. **Mechanism of higher order contributions in interface anisotropy of thin films: FeCo/MgO case.**
J. Barker[3,1], A. Kalitsov[1,2], A. Singh[1], O.N. Mryasov[1,2] and *S. Okatov*[1] *1. University of Alabama, Tuscaloosa, Alabama; 2. Western Digital, San Jose, California; 3. Institute for Materials Research, Tohoku University, Sendai, Japan*

3:30 HC-07. **Investigation of temperature dependent magnetic properties in irradiated Co/Pt multilayer devices using Extraordinary Hall effect measurements.**
K. Wang[1], Y. Qiu[1], Y. Huang[1], P. Heard[2] and S. Bending[3] *1. College of Information Science and Engineering, Huaqiao University, Xiamen, Fujian; 2. Interface Analysis Centre, University of Bristol, Bristol, United Kingdom; 3. Department of Physics, University of Bath, Bath, United Kingdom*

3:45 HC-08. **Tailoring reversal mechanism in a $(Co_t/Pt_{t'})_n$ multilayers by strong interfacial coupling to a high coercivitiy rare earth ferrimagnetic film.**
X. Zhao[1], M.A. Marioni[1], S. Romer[1], J. Schwenk[1] and H.J. Hug[1,2] *1. Nanoscale Materials Science, EMPA, Duebendorf, Switzerland; 2. University of Basel, Department of Physics, Basel, Switzerland*

4:00 HC-09. **Measurement of the cubic anisotropy constant K_3 of Fe films on GaN{0001}.**
C. Gao[1], C. Dong[1], J. Herfort[2], O. Brandt[2], C. Jia[1] and D. Xue[1] *1. Key Lab for Magnetism and Magnetic Materials (MOE), Lanzhou University, Lanzhou, Gansu; 2. Paul-Drude-Institut fuer Festkoerperelektronik, Berlin, Germany*

4:15 HC-10. **Magnetocrystalline Anisotropy in Textured Fe_3O_4 Film.**
E. Liu[1], Z. Huang[1], J. Yue[1], L. Chen[2], Y. Sui[2], *Y. Zhai*[1], S. Tang[2], J. Du[2] and H. Zhai[2] *1. Department of Physics, Southeast University, Nanjing, Jiangsu; 2. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, Jiangsu*

4:30 HC-11. **In-situ internal stress observation of ferromagnetic thin films at the initial stage of the film growth during sputter-deposition process.**
H. Hayashibara[1], M. Nakagome[1], Y. Takamura[1] and *S. Nakagawa*[1] *1. Physical Electronics, Tokyo Institute of Technology, Tokyo, Japan*

4:45 HC-12. **Magnetization and X-ray absorption spectroscopy of Mn implanted Ge after flash lamp annealing.** *S. Zhou*[1], Y. Wang[1], S. Prucnal[1], Z. Jiang[1], W. Zhang[2], C. Wu[2,1], E. Weschke[3], W. Skorupa[1] and M. Helm[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz -Center Dresden-Rossendorf, Dresden, Germany; 2. University of Electronic Science and Technology of China, Chengdu, Sichuan; 3. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany*

FRIDAY 311 A
AFTERNOON
2:00

Session HD
FERRITES, GARNETS AND OTHER SOFT MATERIALS III
Andrii Chumak, Chair
TU Kaiserslautern

2:00 HD-01. **XAS and XMCD investigation of zinc ferrite nanoparticles irradiated with 100 MeV O beam.** *J.P. Singh*[1], S. Gautam[3], R.C. Srivastava[2], K. Asokan[4] and K.H. Chae[1] *1. Advanced Analysis Center, Korea Institute of Science and Technology, Seoul, Korea; 2. Physics, Govind Ballabh Pant University of Agricultutre and Technology, Pantnagar, Uttarkhanad, India; 3. Dr. S S Bhatnagar, University Institute of Chemical Engineering & Technology, Panjab University, Chandigarh, Punjab, India; 4. Materials Science Division, Inter University Accelerator Centre, New Delhi, India*

2:15 HD-02. **LPE growth of thin La:YIG films with narrow ferromagnetic resonance linewidth.** *Q. Yang*[1] and H. Zhang[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan*

2:30 HD-03. **Cation Distribution and the Temperature Dependence of Brillouin Function for Nickel-substituted MnZn Ferrites.** *K. Sun*[1], C. Wu[1], Y. Yang[2], P. Wei[1], Z. Yu[1], R. Guo[1], X. Jiang[1] and Z. Lan[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Chengdu Technological University, Chengdu, Sichuan*

2:45 HD-04. **Influences of pH value, Reaction time, and Filling Pressure in the Hydrothermal Synthesis of $ZnFe_2O_4$ nanoparticles.** *P. Yoo*[1], B. Lee[1] and C. Liu[1] *1. physics department, Hankuk University of Foreign Studies, Gyeonggi-do, Yongin-si, Korea*

3:00 HD-05. **Co-ferrite thin films with perpendicular magnetic anisotropy.** *X. Liu*[1], S.E. Shirsath[1] and K. Shindoh[1] *1. Department of Information Engineering, Shinshu University, Nagano, Japan*

3:15 HD-06. **Study On The Contribution Of Magnetization Mechanisms In NiZn Ferrites.** *H. Liu*[1], K. Sun[1], Z. Yu[1], Y. Yang[2], C. Wu[1], X. Jiang[1] and Z. Lan[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. Department of Communication and Engineering, Chengdu Technological University, Chengdu, Sichuan*

3:30 HD-07. **Measurement and Modeling of Temperature Effects on Magnetic Property of Non-oriented Silicon Steel Lamination.** *J. Chen*[1], D. Wang[1], S. Cheng[1] and Y. Wang[1] *1. Naval University of Engineering, Wuhan, Hubei*

3:45 HD-08. **Ultrafast laser-induced demagnetisation with spin precession in GdFe alloy film.** *X. Lu*[1], J. Sizeland[1], H. Ling[2], W. Rui[3], J. Du[3], J. Wu[1], Y. Xu[2] and R. Chantrell[1] *1. Department of Physics, University of York, York, North yorkshire, United Kingdom; 2. Department of Electronics, University of York, York, North Yorkshire, United Kingdom; 3. School of Physics, Nanjing University, Nanjing, Jiangsu*

4:00 HD-09. **Reflection of electromagnetic waves from an array of thin magnetic elements.** I. Lisenkov[1,2], V. Tyberkevych[1], S.A. Nikitov[2,3] and *A. Slavin*[1] *1. Department of Physics, Oakland University, Rochester, Michigan; 2. Kotelnikov Institute of Radio-engineering and Electronics of RAS, Moscow, Russian Federation; 3. Saratov State University, Saratov, Russian Federation*

4:15 HD-10. **Dielectric properties of $Sr_3Co_2Fe_{24}O_{41}$ Z-type hexaferrite.** *R. Tang*[1], C. Jiang[1], Y. Liang[1], X. Zhang[2], H. Wang[3] and H. Yang[1] *1. College of Physics, Optoelectronics and Energy, Soochow University, Suzhou, Jiangsu; 2. School of Materials Science and Engineering, Guilin University of Electronic Technology, Guilin, Guangxi; 3. Department of Electrical and Computer Engineering, Texas A&M University, College Station, Texas*

4:30 HD-11. **Electrically Tunable Band-pass Filter on Engineered Substrate Enabled with Patterned Permalloy Thin Film.** *Y. Peng*[1], T. Wang[1], W. Jiang[1], B. Rahman[1], T. Xia[2] and G. Wang[1] *1. Electrical Engineering, University of South Carolina, Columbia, South Carolina; 2. Electrical Engineering, UnIversity of Vermont, Burlington, Vermont*

4:45 HD-12. **Magnetodielectric Effect and Magnetoresistance in $Eu_{0.98}Ba_{0.02}TiO_3$** *R. Km*[1] and R. Mahendiran[1] *1. Department of Physics, National University of Singapore, Singapore*

FRIDAY AFTERNOON 2:00 311 B

Session HE

MAGNETOCALORIC MATERIALS III

Jian Liu, Chair
Ningbo Ningbo Institute of Materials Technology and Engineering

2:00 HE-01. **Dynamic effects in the characterization of the magnetocaloric effect of LaFeSi-type alloys.** C. Romero-Torralva[1], C. Mayer[2], *V. Franco*[1] and A. Conde[1] *1. Condensed Matter Physics, Sevilla University, Sevilla, Spain; 2. Erasteel SAS, Paris, France*

2:15 HE-02. **Experimental and theoretical studies of kinetics of phase transitions in magnetocaloric materials.** *A.P. Kamantsev*[1], V. Koledov[1], V. Shavrov[1], I. Tereshina[2], D.A. Kuzmin[3] and I.V. Bychkov[3] *1. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russian Federation; 2. Baikov Institute of Metallurgy and Material Science of RAS, Moscow, Russian Federation; 3. Chelyabinsk State University, Chelyabinsk, Russian Federation*

2:30 HE-03. **Investigation of antiferromagnetic order in $FeMnP_{0.75}Si_{0.25}$ alloy for magnetocaloric application by first principles calculations.** *G. Li*[1] and L. Vitos[1,2] *1. Applied Materials Physics, Department of Materials Science and Engineering, KTH Royal Institute of Technology, Stockholm, Sweden; 2. Department of Physics and Astronomy, Division of Materials Theory, Uppsala University, Uppsala, Sweden*

2:45 HE-04. **Thermal-history dependent magnetoelastic transition in $(MN,FE)_2(P,SI)$.** *X. Miao*[1], L. Caron[1], Z. Gercsi[2,3], A. Daoud-Aladine[4], N. Van Dijk[1], K.G. Sandeman[2,5] and E. Bruck[1] *1. Radiation Science and Technology, Delft University of Technology, Delft, Netherlands; 2. Imperial College London, London, United Kingdom; 3. Trinity College Dublin, Dublin, Ireland; 4. ISIS facility, Didcot, United Kingdom; 5. Brooklyn College, The City University of New York, New York, New York*

3:00 HE-05. **High field measurement of the magnetocaloric effect in MnFe(P,Si) materials.** *H. Yibole*[1], F. Guillou[1], G. Porcari[2,1], A.P. Kamantsev[3], J. Cwik[4], V. Koledov[3] and E. Bruck[1] *1. Technology University of Delft, Delft, Netherlands; 2. University of Parma, Parma, Italy; 3. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russian Federation; 4. International Laboratory of High Magnetic Fields and Low Temperatures, Wroclaw, Poland*

3:15 HE-06. **The influence of magnetocrystalline anisotropy on the magnetocaloric effect of Co_2B.** *M. Fries*[1], V. Franco[2], K.P. Skokov[1] and O. Gutfleisch[1] *1. Material Science - Functional Materials, Technische Universität Darmstadt, Darmstadt, Hessen, Germany; 2. Dpto. Física de la Materia Condensada, ICMSE-CSIC, Universidad de Sevilla, Sevilla, Spain*

3:30 HE-07. **Structural and magneto-caloric properties of $MnFeP_{1-x}Si_x$ compounds prepared by spark plasma sintering.** *M. Yue*[1], M. Xu[1], H. Zhang[1], D. Zhang[1], D. Liu[2] and Z. Altounian[3] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing; 2. Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing; 3. Department of Physics and Center for the Physics of Materials, McGill University, Montreal, Quebec, Canada*

3:45 HE-08. **Optimization of Magnetocaloric Properties of Arc Melted and Spark Plasma Sintered $LaFe_{11.6}Si_{1.4}$** *P. Shamba*[1], N.A. Morley[1], O. Cespedes[2], I.M. Reaney[1] and M. Rainforth[1] *1. Materials Engineering, University of Sheffield, Sheffield, South Yorkshire, United Kingdom; 2. Physics & Astronomy, University of Leeds, Leeds, West Yorkshire, United Kingdom*

4:00 HE-09. **Tunable magnetocaloric response in high-speed melt-spun La-Ce-Fe-Si ribbons.** *X. Hou*[1], Y. Xue[1], N. Han[2], C. Liu[1], Q. Lu[1] and M. Phan[3] *1. Shanghai University, Shanghai; 2. Shanghai University of Engineering Science, Shanghai; 3. University of South Florida, Tampa, Florida*

4:15 HE-10. **Structure and Giant Inverse Magnetocaloric Effect of Epitaxial Ni-Co-Mn-Al Films.** *N. Teichert*[1], D. Kucza[1], O. Yildirim[2,4], W. Hetaba[3,1], A. Behler[5], E. Yüzüak[6,7], I. Dincer[7], L. Helmich[1], A. Boehnke[1], M. Stöger-Pollach[3], A. Steiger-Thirsfeld[3], A. Waske[5], P. Schattschneider[3,8], Y. Elerman[7] and A. Hütten[1] *1. Department of Physics, Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf e.B., Dresden, Germany; 3. University Service Centre for Transmission Electron Microscopy, Vienna University of Technology, Wien, Austria; 4. Dresden University of Technology, Dresden, Germany; 5. Institute for Complex Materials, IFW Dresden, Dresden, Germany; 6. Faculty of Engineering, Department of Nanotechnology Engineering, Recep Tayyip Erdogan University, Rize, Turkey; 7. Faculty of Engineering, Department of Engineering Physics, Ankara University, Ankara, Turkey; 8. Institute of Solid State Physics, Vienna University of Technology, Wien, Austria*

4:30 HE-11. **Magnetocaloric effect studies on $MnSbR_{0.05}$ (R: Gd, Tb, Dy and Ho) intermetallics.** *R. Pothala*[1] and M. Garimella[1] *1. Physics, Indian Institute of Technology Madras, Chennai, Tamil Nadu, India*

4:45 HE-12. **A Novel Thermomagnetic Gripper.** *C. Chen*[1] and T. Chung[1] *1. National Chiao Tung University, Hsinchu, Taiwan*

FRIDAY AFTERNOON 2:00 — 308

Session HF
HEAD-DISK INTERFACE AND TRIBOLOGY II
Myung S. Jhon, Chair
Carnegie Mellon University

2:00 HF-01. **A Non-Skiving Tape Head with Sub-Ambient Air Pressure Cavities.** *J.B. Engelen*[1], V. Jonnalagadda[1], S. Furrer[1], H. Rothuizen[1] and M. Lantz[1] *1. Cloud & Computing Infrastructure, IBM Research - Zurich, Rüschlikon, Switzerland*

2:15 HF-02. **Radio-Frequency (RF) Fly Height Monitoring System for Heat-Assisted Magnetic Recording (HAMR).** *L.M. Franca-Neto*[1], B. Knigge[2], K. Flechsig[1] and K. Hunter[1] *1. HGST/Western Digital company, San Jose, California; 2. Western Digital, Fremont, California*

2:30 HF-03. **Effect of Laser Heating on Carbon Wear and Lube Depletion in Heat Assisted Magnetic Recording.** *S. Xu*[1], S. Sinha[1], E. Rismaniyazdi[1], A. Moser[1] and B. Knigge[1] *1. Western Digital Corporation, San Jose, California*

2:45 HF-04. **Understanding and Mitigation of Scratch Induced Magnetic Damage in Perpendicular Recording Media.** S. Zhu[1], J. Huang[1], X. Li[1], *X.B. Lu*[1] and H. Liu[1] *1. Recording Media Research Center, Seagate Technology, Fremont, California*

3:00 HF-05. **Room-temeprature ionic liquids (RTILs): media lubricants for Heat-assisted magnetic recording (HAMR)?** *L. Li*[1] *1. University of Pittsburgh, Pittsburgh, Pennsylvania*

3:15 HF-06. **Head-disk lubricant transfer and reposition during heat assisted write and read operations.** *Y. Yang*[1], X. Li[1], M. Stirniman[1], F. Huang[1], F. Zavaliche[1], H. Tang[1] and P. Jones[1] *1. Seagate Technology, Fremont, California*

3:30 HF-07. **Investigation of Temperature Dependence of Raman Shift of Amorphous Carbon Coatings used in Heat Assisted Magnetic Recording.** *L. Li*[2,1], B. Suen[2] and F. Talke[2] *1. School of Mechatronics Engineering, Harbin Institute of Technology, Harbin, Heilongjiang; 2. Center for Magnetic Recording Research, University of California San Diego, La Jolla, California*

3:45 HF-08. **Combined effects of surface roughness mode and accommodation coefficient of air bearing film in the head/disk interface.** *B. Shi*[1,2], Y. Feng[1], J. Ji[1,3] and Z. Wang[1] *1. School of Mechanical and Electronics Engineering, Shandong Jianzhu University, Jinan, Shandong; 2. Center for Magnetic Recording Research, University of California San Diego, San Diego, California; 3. School of Mechanical Engineering, Shandong University, Jinan, Shandong*

4:00 HF-09. **Coarse-grained Molecular Dynamics Simulation of Nanometer-thick Polar Lubricant Films Sheared between Solid Surfaces with Random Roughness.**
T. Kobayashi[2], H. Zhang[1], K. Fukuzawa[2] and S. Itoh[2]
1. Department of Complex Systems Science, Graduate School of Information Science, Nagoya University, Nagoya, Japan; 2. Department of Micro-Nano Systems Engineering, Graduate School of Engineering, Nagoya University, Nagoya, Japan

4:15 HF-10. **Repeatable and nonrepeatable FH modulation study near head contact.** *Z. Yuan*[1], C. Ong[1], S. Ang[1], S. Gan[2], T. Fujita[2], B. Santoso[1] and H. Wong[2] *1. Data Storage Institute, Singapore; 2. Seagate Technology, Singapore*

4:30 HF-11. **The Instability of Angstrom-scale Head-disk Interface Induced by Electrostatic Force.** *Y. Wang*[1], X. Wei[2] and X. Liang[2] *1. Xi'an Jiaotong University, Xi'an, Shaanxi; 2. SAE Magnetics (H.K.) Ltd., Dongguan, Guangdong*

4:45 HF-12. **Study of the Head Disk Interface using Touchdown Sensors and Electro-Magnetic Signals in Hard Disk Drives.** *Y. Ma*[1], S. Xue[2], J. Peng[2], D. Hellman[2] and D.B. Bogy[1] *1. Mechanical Engineering, University of California Berkeley, Berkeley, California; 2. Western Digital Corporation, San Jose, California*

FRIDAY
AFTERNOON
2:00

307

Session HG
EXCHANGE BIAS & PATTERNED FILMS AND ELEMENTS V

Jeffrey McCord, Chair
CAU Kiel

2:00 HG-01. **Control of vortex chirality in $Ni_{80}Fe_{20}$ dots using dipole coupled nanomagnets.** *A. Haldar*[1] and A. Adeyeye[1] *1. Department of Electrical & Computer Engineering, National University of Singapore, Singapore*

2:15 HG-02. **Skyrmions and skyrmion-like states in a perpendicularly magnetized multilayer Co/Ni nanodisks.** *M. Stebliy*[1], A.G. Kolesnikov[1], A. Davydenko[1], A. Ognev[1], A.S. Samardak[1] and L.A. Chebotkevich[1] *1. Far Eastern Federal University, Vladivostok, Russian Federation*

2:30 HG-03. **Temperature dependence of magnetization and magnetic anisotropy of ZnZr doped BaM ferrite thin films for microwave applications.** *B. Hu*[1], X. Wang[1], S. Bennett[1], Z. Su[1], Y. Chen[1] and V.G. Harris[1] *1. Northeastern University, Boston, Massachusetts*

2:45 HG-04. **Broadband Ferromagnetic Resonance Spectroscopy of Artificial Spin Ice Permalloy Structures.** *X. Zhou*[1], G. Chua[2], N. Singh[1] and A. Adeyeye[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore; 2. Institute of Microelectronics, A*STAR, Singapore*

3:00 HG-05. **Tuning four-fold magnetic anisotropy in two-dimensional modulated $Ni_{80}Fe_{20}$ films.** *G.N. Kakazei*[1,2], X. Liu[1], J. Ding[1], V. Golub[3], O. Salyuk[3], S. Bunyaev[2] and A. Adeyeye[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore; 2. IFIMUP-IN/Department of Physics, University of Porto, Porto, Portugal; 3. Institute of Magnetism NAS of Ukraine, Kiev, Ukraine*

3:15 HG-06. **Thickness dependence of the magneto-optic enhancement in Co sub-wavelength anti-dot arrays.** *E.T. Papaioannou*[1], E. Melander[2], E. Östman[2], V. Kapaklis[2] and B. Hjörvarsson[2] *1. Physics, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Physics and Astronomy, Uppsala University, Uppsala, Sweden*

3:30 HG-07. **Nanoscale modulated magnetization patterns for reproducible configurational and switchable static and dynamic properties films.** *J. McCord*[1], J. Trützschler[1], M. Langer[2], R. Mattheis[3] and J. Fassbender[2] *1. Institute for Materials Science, Kiel University, Kiel, Germany; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Leibniz Institute of Photonic Technology Jena, Jena, Germany*

3:45 HG-08. **Magnetization switching dynamics in single nanodot of epitaxial Co/Pt multilayer.** *B. Lao*[1], S. Okamoto[1], N. Kikuchi[1] and O. Kitakami[1] *1. IMRAM Tohoku University, Sendai, Japan*

4:00 HG-09. **Multiple gaps in spin waves spectra of the one-dimensional magnonic quasicrystals.** *J.N. Rychly*[1], J.W. Klos[1], M. Mruczkiewicz[1] and M. Krawczyk[1] *1. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

4:15 HG-10. **Modeling of the influence of defects on magnonic spectra of permalloy antidot arrays.** *A. Manzin*[1], G. Barrera[1], F. Celegato[1], M. Coisson[1] and P. Tiberto[1] *1. Istituto Nazionale di Ricerca Metrologica, Torino, Italy*

4:30 HG-11. **Control and Generation of Domain Walls Near Magnetic Compensation in Ferrimagnetic CoTb via Applied Thermal Gradient.** *R.D. Tolley*[1], T. Liu[2], T. Hauet[2], M. Hehn[2], G. Lengaigne[2], E.E. Fullerton[1] and S. Mangin[2] *1. Center for Magnetic Recording Research, University of California San Diego, La Jolla, California; 2. Institut Jean Lamour, Universite de Lorraine, Nancy, France*

4:45 HG-12. **Coupled core gyrations in one-dimensional vortex-antivortex lattices.** *H. Jeong*[1] and S. Kim[1] *1. Seoul National University, Seoul, Korea*

FRIDAY
AFTERNOON
2:00

306 B

Session HH
MAGNETIC GEARS AND LINEAR MACHINES II
Jonathan Bird, Chair
UNC Charlotte

2:00 HH-01. **A Novel Magnetic Gear: Towards a Higher Torque Density.** *X. Yin*[1], P. Pfister[1] and Y. Fang[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang*

2:15 HH-02. **Design and Analysis of a Flux-Decoupling Magnetic-Geared Permanent-Magnet Brushless Machine.** *C. Li*[1], Y. Zhang[1], C. Liu[2] and J. Jiang[1] *1. Department of Automation, Shanghai University, Shanghai; 2. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong*

2:30 <u>HH-03</u>. **Numerical consideration of symmetrical structure linear permanent magnet vernier machine.** *T. Imada*[1], S. Shimomura[1] and T. Tanaka[2] *1. Shibaura Institute of Technology, Tokyo, Japan; 2. Mitsubishi Electric Corporation, Hyogo, Japan*

2:45 <u>HH-04</u>. **An Induction Planar Actuator for Surface Inspection.** F. Treviso[1], M.A. da Silveira[2], Á.F. Flores Filho[1] and D. Dorrell[3] *1. UFRGS, Porto Alegre, RS, Brazil; 2. ULBRA, Canoas, RS, Brazil; 3. University of Technology, Sidney, New South Wales, Australia*

3:00 <u>HH-05</u>. **Design and Optimization of an Arc Vernier Permanent Magnet Synchronous Motor Used for Large Telescope.** *Y. Gao*[1], R. Qu[1], J. Li[1] and D. Li[1] *1. Huazhong University of Science of Technology, Wuhan, Hubei*

3:15 <u>HH-06</u>. **Optimal Design of Partitioned Primary Linear Switched Flux PM Machines.** *J. Shi*[1], Q. Lu[1] and Y. Ye[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang*

3:30 <u>HH-07</u>. **Analytical Computation of the Magnetic Field Distribution in the Concentric Magnetic Gear based on Sinusoidal Magnetizations.** *L. Jing*[1,2] and L. Liu[1] *1. College of Electrical Engineering & New Energy, Three Gorges University, Yichang, Hubei; 2. Hubei Collaborative Innovation Centre for Micro-grid of New Energy, Yichang, Hubei*

3:45 <u>HH-08</u>. **New Helical-shape Magnetic pole Design for Magnetic Lead Screw Enabling Structure Simplification.** K. Lu[1], Y. Xia[1], *W. Wu*[2] and L. Zhang[3] *1. Aalborg University, Aalborg, Denmark; 2. Shanghai Maritime University, Shanghai; 3. Zhejiang University, Hangzhou, Zhejiang*

4:00 <u>HH-09</u>. **Design Assessments of an Integrated Tubular Linear Magnetic-geared Generator for Slow-motion Renewable Energy Retrievals.** K. Hung[1], *C. Liu*[1] and C. Hwang[2] *1. Department of Electrical Engineering, National Sun Yat-Sen University, Kaohsuing, Taiwan; 2. Department of Electrical Engineering, Feng Chia University, Taichung, Taiwan*

4:15 <u>HH-10</u>. **Torque Analysis of Magnetic Spur Gear with Halbach Magnetized Permanent Magnets Using an Analytical Method.** *K. Min*[1], J. Choi[1], H. Cho[1] and H. Shin[1] *1. Chungnam National University, Dae-jeon, Korea*

4:30 <u>HH-11</u>. **A Flux Focusing Cycloidal Magnetic Gearbox.** *J. Bird*[1], K. Li[1], W. Williams[1] and J. Kadel[1] *1. University of North Carolina at Charlotte, Charlotte, North Carolina*

FRIDAY
AFTERNOON
1:30

PLENARY HALL B

Session HP
SPIN-TRANSFER TORQUE AND DYNAMICS II
(Poster Session)

Shingo Tamaru, Chair
National Institute of Advanced Industrial Science and Technology (AIST)
Peng Yan, Chair
Johannes Gutenberg University Mainz

<u>HP-01</u>. **Zero-field spin transfer oscillators combining in-plane and out-of-plane magnetized free layers.** *C. Fowley*[1], V. Sluka[1], K. Bernert[1,2], J. Lindner[1], J. Fassbender[1,3], W. Rippard[4], M. Pufall[4], S.E. Russek[4] and A. Deac[1] *1. Helmholtz Zentrum Dresden Rossendorf, Dresden, Germany; 2. Institute for Materials Science, TU Dresden, Dresden, Germany; 3. Institute for Physics of Solids, TU Dresden, Dresden, Germany; 4. National Institute of Standards and Technology, Boulder, Colorado*

<u>HP-02</u>. **Point-Contact Spin Torque Oscillators Using Highly Spin-Polarized Heusler Alloys.** *T. Seki*[1,2], T. Yamamoto[1], T. Kubota[1], H. Yako[1] and K. Takanashi[1] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. JST-PRESTO, Saitama, Japan*

<u>HP-03</u>. **Stray Field Dependence of Threshold Current In a Spin-torque Oscillator With a Perpendicular Spin-polarizer.** *H. Chen*[1], Z. Zhang[1], Y. Liu[2] and C. Chang[3] *1. Department of Optical Science and Engineering, Shanghai Ultra-Precision Optical Engineering Center, Shanghai; 2. School of Physical Science and Engineering, School of Physical Science and Engineering, Shanghai; 3. Department of Physics, Department of Physics and Center for Quantum Sciences and Engineering, Taipei, Taiwan*

HP-04. Spin torque on the surface state of topological insulators which are coupled to magnetization textures. *M.B. Jalil*[1] and S. Tan[2] *1. Information Storage Materials Laboratory, Electrical and Computer Engineering Department, National University of Singapore, Singapore; 2. Data Storage Institute, Singapore*

HP-05. Spin-torque diode with a perpendicularly magnetized free layer. *Z. Zeng*[1], G. Finocchio[2], B. Fang[1], H. Jiang[3], J. Langer[4], J. Katine[5], P. Khalili[3] and K.L. Wang[3] *1. Suzhou Institute of Nano-tech and Nano-bionics, Chinese Academy of Sciences, Suzhou, Jiangsu; 2. Department of Matter Physics and Electronic Engineering, University of Messina, Messina, Italy; 3. University of California, Los Angeles, Los Angeles, California; 4. Singulus Technologies, Kahl am Main, Germany; 5. HGST, San Jose, California*

HP-06. Realization of ultra-wide resonance detection regime of spin-torque diode radio-frequency detector by utilizing tilted fixed-layer magnetization. *T. Zeng*[1], Y. Zhou[2], K. Lin[3], P. Lai[1] and P. Pong[1] *1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong; 2. Physics, The University of Hong Kong, Hong Kong; 3. Materials Engineering, National Chung Hsing University, Taichung, Taiwan*

HP-07. Effective damping constant and perpendicular anisotropy of GdFeCo / TbFe exchange coupled bilayer. *T. Higashide*[1], B. Dai[2], D. Oshima[3], T. Kato[1], S. Iwata[3] and S. Tsunashima[4] *1. Electrical Engineering and Computer Science, Nagoya University, Nagoya, Aichi, Japan; 2. Quantum Engineering, Nagoya University, Nagoya, Aichi, Japan; 3. EcoTopia Science Institute, Nagoya University, Nagoya, Aichi, Japan; 4. Department of Research, Nagoya Industrial Science Research Institute, Nagoya, Aichi, Japan*

HP-08. Modulation rate study in spin torque oscillator based wireless communication system. *R. Sharma*[1], P. Dürrenfeld[2], M. Ranjbar[2], R.K. Dumas[2], J. Åkerman[2,3] and P.K. Muduli[1,2] *1. Department of Physics, Indian Institute of Technology, New Delhi, Delhi, India; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. Materials Physics, School of ICT, Royal Institute of Technology, Stockholm, Sweden*

HP-09. Unipolar Switching of Perpendicular MTJ for STT-MRAM Application. *Y. Zhou*[1], Z. Wang[1], X. Hao[1], Y. Huai[1], J. Zhang[1], D. Jung[1] and K. Satoh[1] *1. Avalanche Technology, Fremont, California*

HP-10. Magnetic properties and magnetization dynamics of magnetic tunnel junctions bottom electrode with different buffer layers. J. Wrona[1,2], J. Kanak[2], *M.J. Banasik*[2], S. Zietek[2], W. Skowronski[2] and T. Stobiecki[2] *1. Singulus Technologies AG, Kahl am Main, Germany; 2. Department of Electronics, AGH University of Science and Technology, Krakow, Poland*

HP-11. Pulse-coupled Synchronization in an Array of Spin Torque Nano Oscillators. *K. Nakada*[1] and K. Miura[2] *1. Graduate School of Informatics and Engineering, University of Electro-Communications, Chofu, Tokyo, Japan; 2. Graduate School of Information Sciences, Tohoku University, Sendai, Miyagi, Japan*

HP-12. Study of Current, Magnetic Field, and Energy Barrier on the Linewidth of Spin Torque Oscillation. X. Chao[1], M. Jamali[1], *A. Klemm*[1] and J. Wang[1] *1. University of Minnesota, Minneapolis, Minnesota*

FRIDAY AFTERNOON 1:30 — PLENARY HALL B

Session HQ
RECORDING SYSTEMS II (Poster Session)

Haitao Xia, Chair
LSI

HQ-01. Performance evaluation of LDPC coding and iterative decoding system in TDMR R/W channel with head skew. *R. Suzutou*[1], Y. Nakamura[1], H. Osawa[1], Y. Okamoto[1], Y. Kanai[2] and H. Muraoka[3] *1. Graduate School of Science and Engineering, Ehime University, Matsuyama, Japan; 2. Department of Information and Electronics Engineering, Niigata Institute of Technology, Kashiwazaki, Niigata, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Miyagi, Japan*

HQ-02. Joint Low-Complexity Detection and Reliability-based BP Decoding for Non-binary LDPC Coded TDMR Channels. *G. Han*[1], M. Wang[1], Y. Fang[1] and L. Kong[2] *1. School of Information Engineering, Guangdong University of Technology, Guangzhou, Guangdong; 2. School of Computer Science and Technology, Nanjing University of Posts and Communications, Nanjing, Jiangsu*

HQ-03. Nonlinear Dynamic Model of a Pivot Ball Bearing in Hard Disk Drive Including the Hertzian Contact Force. *J. Yoon*[1], N. Park[1], K. Park[2] and Y. Park[1] *1. Yonsei university, Seoul, Korea; 2. Gachon university, Seongnam, Korea*

HQ-04. A Study on the Implications of Grain Density Distribution over the Granular Media Model for TDMR. *C.K. Matcha*[1] and S.G. Srinivasa[1] *1. Department of Electronic Systems Engineering, Indian Institute of Science, Bangalore, Karnataka, India*

HQ-05. A Study of Multiple Reads of Target Track Prior to Detection for Two-Dimensional Magnetic Recording. *W. Singhaudom*[1], P. Supnithi[1] and C. Warisarn[1] *1. King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

HQ-06. Protograph based Quasi-Cyclic LDPC Coding for Ultra-High Density Magnetic Recording Channels. *L. Kong*[1], L. He[1], P. Chen[2], G. Han[3] and Y. Fang[3] *1. School of Computer Science & Technology, Nanjing University of Posts & Communications, Nanjing, Jiangshu; 2. Fuzhou University, Fuzhou, Fujian; 3. School of Information Engineering, Guangdong University of Technology, Guangzhou, Guangdong*

HQ-07. The Design of Protograph LDPC Codes for Two-dimensional Magnetic Recording channels. *P. Chen*[1,2], L. Kong[3], Y. Fang[4] and L. Wang[5] *1. Electronic and Information, Fuzhou University, Fuzhou, Fujian; 2. Institute of Network Coding, Hong Kong; 3. Nanjing University of Posts & Communications, Nanjing, Jiangsu; 4. Guangdong University of Technology, Guandong; 5. Xiamen University, Xiamen, Fujian*

HQ-08. An Iterative TMR Mitigation Method Based on Readback Signals for Bit-Patterned Media Recording. *W. Busyatras*[1], C. Warisarn[1], L. Myint[3], P. Supnithi[2] and P. Kovintavewat[4] *1. Collage of Data Storage Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Telecommunications Engineering Department, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 3. School of Information Technology, Shinawatra University, Bangkok, Thailand; 4. Data Storage Technology Research Center, Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand*

HQ-09. A Novel Linear-rotary-Permanent Magnet Actuator Using Interlaced Poles. *K. Guo*[1], S. Fang[1], H. Lin[1] and H. Yang[1] *1. Southeast University, Nanjing, Jiangsu*

HQ-10. A Simple Coding Scheme with Rotating Technique for DITI Mitigation in Bit-Pattern Media Recording. *P. Ketwong*[1,2] and A. Arrayangkool[1] *1. College of Data Storage Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Computer Technology, Faculty of Science and Technology, Rajabhat Mahasarakham University, Muange, Mahasarakham, Thailand*

HQ-11. A soft decodable concatenated LDPC code. *S. Yang*[1], Y. Han[1], X. Wu[1], R. Wood[2] and R. Galbraith[2] *1. Avago Technologies, San Jose, California; 2. HGST, Rochester, Minnesota*

HQ-12. Soft-Output Decoding of 2D Modulation Codes for Bit-Patterned Media Recording. *C. Warisarn*[1] and P. Kovintavewat[2] *1. College of Data Storage Innovation, King Mongkut's Institute of Technology Ladkrabang, KMITL, Bangkok, Thailand; 2. Data Storage Technology Research Center, Nakhon Pathom Rajabhat University, NPRU, Nakhon Pathom, Thailand*

HQ-13. Study of Fractionally-Spaced Equalizers for Bit-Patterned Media Recording. *S. Koonkarnkhai*[1] and P. Kovintavewat[1] *1. Data Storage Technology Research Center, Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand*

HQ-14. Comparison of signals from micromagnetic simulations, GFP model and a HDD. *K. Chan*[1], K.K. Teo[1], M. Lin[1], H. Kee[2], M. Elidrissi[2], Q. Li[2], B. Ko[2], Q. Choo[2] and M. Maung[2] *1. DST, Data Storage Institute, Singapore; 2. Seagate Technology, Singapore*

FRIDAY
AFTERNOON
1:30

PLENARY HALL B

Session HR
SOFT MAGNETIC MATERIALS V: CRYSTALLINE, NANOCRYSTALLINE AND AMORPHOUS MATERIALS (Poster Session)

Arcady Zhukov, Chair
Universidad de País Vasco

HR-01. Anisotropy Distribution in Rapidly Quenched Amorphous Glass-Coated Nanowires. *T. Ovari*[1], S. Corodeanu[1], M. Lostun[1], G. Ababei[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

HR-02. Influence of current annealing on the magnetic properties of amorphous and crystalline soft thin films. *M. Coisson*[1], G. Barrera[1,2], F. Celegato[1], P. Tiberto[1], F. Vinai[1], G. Fiore[2], P. Rizzi[2], P. Viteri Villacis[2] and L. Battezzati[2] *1. Electromagnetics, INRIM, Torino, TO, Italy; 2. Chemistry Department, Università di Torino, Torino, TO, Italy*

HR-03. Film Thickness Induced Magnetic Anisotropy and Ferromagnetic Resonance in $Fe_{56}Co_{24}B_{20}$ Amorphous Films Prepared by Pulse Laser Deposition. C. Wu[1], Y. Huang[1], Y. Cui[1], Z. Shen[1], Y. Ma[1], C. Chen[1], S. Xie[1], H. Du[1], Y. Li[1] and *S. Li*[1] *1. College of Physics Science, Qingdao University, Qingdao, Shandong*

HR-04. Co-based amorphous material for giant magneto-impedance and fluxgate sensing cores. *P. Sarkar*[1], J. Vcelak[1], R.K. Roy[2], A.K. Panda[2], A. Mitra[2] and P. Ripka[1,3] *1. University Centre for Energy Efficient Buildings, University Centre for Energy Efficient Buildings (UCEEB), Czech Technical University in Prague, Bustehrad, Czech Republic, Bustehrad, Czech Republic, Czech Republic; 2. NDE & Magnetic Materials Group, CSIR-National Metallurgical Laboratory, Jamshedpur, Jharkhand, India; 3. Faculty of Electrical Engineering, Czech technical University, Prague, Czech Republic*

HR-05. Tailoring of Damping Constant and Magnetic Anisotropy of $Co_{20}Fe_{60}B_{20}$ Thin Films by Excess Cobalt Addition. *D. Jhajhria*[1], S. Chaudhary[1] and D. Pandya[1] *1. Thin Film Laboratory, Department of Physics, Indian Institute of Technology Delhi, New Delhi, India*

<u>HR-06</u>. MAGNETO-TRANSPORT PROPERTIES OF CoFeSiB/(Co, CoPtRh) MULTILAYER MICROWIRES.
F. Borza[1], T. Ovari[1], S. Corodeanu[1] and H. Chiriac[1]
1. National Institute of Research & Development for Technical Physics, Iasi, Romania

<u>HR-07</u>. Co-based bulk glassy alloys with excellent soft-magnetic properties and high strength. *Q. Man*[1,2], Z. Li[1,2], E. Diana[1,2], Y. Dong[1,2], C. Chang[1,2], X. Wang[1,2] and R. Li[1,2]
1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Zhejiang Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang

<u>HR-08</u>. Epitaxial Growth and Magnetic Characterization of γ'-Fe_4N Thin Films. *S. Atiq*[1], S.A. Siddiqi[2], H.S. Ko[3], S. Riaz[1], S. Naseem[1] and S.C. Shin[3] *1. Centre of Excellence in Solid State Physics, University of the Punjab, Lahore, Lahore, Punjab, Pakistan; 2. Interdisciplinary Research Centre for Biomedical Materials (IRCBM), Off Raiwind Road, COMSATS Institute of Information Technology, Lahore, Pakistan; 3. Centre for Nanospinics and Spintronic Materials and Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, Korea*

<u>HR-09</u>. The adjusting of ferromagnetic resonance in FeCo-TiO_2 nanogranular films by oblique sputtering and strips patterning. *Y. Wang*[1], H. Zhang[1], L. Wang[1] and F. Bai[1] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

<u>HR-10</u>. Magnetic properties of electrodeposited nickel-MWCNT nanocomposite films. *F. Nasirpouri*[1], F. Daneshvar-Fattah[1], A. Samardak[2], E. Sukovatitsina[2] and L. Chebotkevich[2] *1. Materials, Sahand University of Technology, Tabriz, Iran; 2. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation*

<u>HR-11</u>. Nondestructive characterization of creep-fatigue in ferritic steel by dynamic coercivity. *C. Kim*[1]
1. Materials Science and Engineering, Chosun University, Gwangju, Korea

<u>HR-12</u>. Nanogranular CoFe-yttrium-doped zirconia films for Noise Suppressor. *G. Hao*[1], D. Zhang[2], L. Jin[1], H. Zhang[1] and X. Tang[1] *1. University of Electronic Science and Technology of China, Chengdu, Sichuan; 2. University of Delaware, Newark, Delaware*

HR-13. Preparation of Fe-based soft magnetic composites with high B_s by Acidic bluing coating. *G. Zhao*[1], C. Wu[1] and M. Yan[1] *1. Zhejiang University, Hangzhou, Zhejiang*

HR-14. Study of hyperthermia through the bio-plasma treatment and magnetic properties of Fe_3O_4 nanoparticles. *H. Choi*[1] and C. Kim[1] *1. Kookmin University, Seoul, Korea*

HR-15. Magnetically Recycle-able Pd-modified $NiFe_2O_4$ Nanoparticles. *S. Atiq*[1], S.M. Ramay[2], A. Mahmood[3], S. Riaz[1] and S. Naseem[1] *1. Centre of Excellence in Solid State Physics, University of the Punjab, Lahore, Lahore, Punjab, Pakistan; 2. Astronomy and Physics Department, Faculty of Science, King Saud University, Riyadh, Saudi Arabia; 3. Chemical Engineering Department, College of Engineering, King Saud University, Riyadh, Saudi Arabia*

FRIDAY AFTERNOON 1:30 — PLENARY HALL B

Session HS
NANOSTRUCTURED AND COMPOSITE HARD MAGNETIC MATERIALS II (Poster Session)

Minggang Zhu, Chair
China Iron & Steel Research Institute
Yikun Fang, Chair
China Iron and Steel Research Institute

HS-01. Analysis of Magnet Behaviors within High Frequency Field and High Temperature Using Micromagnetic Simulator. *F. Akagi*[1] and Y. Honkura[2] *1. Kogakuin University, Tokyo, Japan; 2. Magnedesign Corporation, Aichi-ken, Japan*

HS-02. Magnetic characteristics and microstructure of hot pressed $Pr_2(Fe,Co)_{14}B/PrCo_5$ hybrid magnet prepared by SPS. *D. Zhang*[1], C. Wang[1], M. Yue[1], Q. Lu[1], W. Liu[1], J. Sundararajan[2] and Y. Qiang[2] *1. College of Science and Engineering, Beijing University of Technology, Beijing; 2. Department of Physics, University of Idaho, Moscow, Idaho*

HS-03. **Uniaxial magnetic anisotropy of the distorted $Fe_{1-x}Co_x$ and $(Fe_{1-x}Co_x)_{0.94}C_{0.06}$ films sputtered on Rh buffer.** S. Yoshida[1], H. Omiya[1], T. Hasegawa[1], L. Zhang[2], L. Liu[2], S. Saito[3] and *S. Ishio*[1] *1. Department of Materials Science and Engineering, Akita University, Akita, Japan; 2. Venture Business Laboratory, Akita University, Akita, Japan; 3. Department of Electronic Engineering Tohoku University, Sendai, Japan*

HS-04. **$Nd_2Fe_{14}B/CaF_2$ composite magnet synthesized by liquid phase coating.** *L. Zheng*[2,1], H. Xin[2], W. Li[1], M. Zhu[1], L. Zhao[2] and F. Bai[2] *1. Research Institute of Functional Materials, China Iron & Steel Research Institute, Beijing; 2. Hebei University of Engineering, Handan, Hebei*

HS-05. **Coercivity and thermal stability enhancement for spark plasma sintered nanocrystalline Nd-Fe-B magnets with Dy_2O_3 and Zn additions.** *Z. Liu*[1], S. Hu[1], H. Yu[1], X. Zhong[1] and X. Gao[2] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, Guangdong; 2. University of Science and Technology Beijing, Beijing*

HS-06. **Exchange coupling and coercivity control in nanocomposite Nd-Fe-B/(Nd,Ce)-Fe-B multilayer films.** *Y. Sun*[1], X. Zhao[2], R. Han[1], W. Liu[2], M. Zhu[1] and W. Li[1] *1. Research Institute of Functional Material, China Iron & Steel Research Institute, Beijing; 2. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Liaoning*

HS-07. **Magnetic after-effect in optimal melt-spun $Pr_{7.8}Fe_{75.8}Co_5Cr_5B_{6.4}$ ribbons.** *G. Han*[1,2], H. Su[1], S. Kang[1], S. Yu[1], X. Liu[2] and J. Liu[2] *1. Physics, Shandong University, Jinan, Shandong; 2. Physics, University of Texas at Arlington, Arlington, Texas*

HS-08. **Evolution of texture and magnetic properties in NdPrFeB based nanocomposite magnets with plastic deformation.** *H. Meng*[1], J. Du[1], R. Chen[1], J. Liu[1], J. Zhang[1], W. Xia[1], K. Chen[2], A. Yan[1] and J. Liu[3] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. State Key Laboratory for Powder Metallurgy, Central South University, Changsha, Hunan; 3. Department of Physics, University of Texas at Arlington, Arlington, Texas*

HS-09. Magnetic and microstructural evolution of Nd-Fe-B processed via HDDR (hydrogenation–disproportionation–desorption-recombination) and Melt-Spinning sintered by SPS (spark plasma sintering).
J.A. Engerroff[1], L.H. Justo[1], L.U. Lopes[1], P.A. Wendhausen[1], F.O. Keller[1] and N.V. Júnior[2]
1. Mechanical Engineering, Federal University of Santa Catarina, Florianópolis, Santa Catarina, Brazil; 2. ISI Electrochemistry, SENAI Innovation Institute, Curitiba, Paraná, Brazil

HS-10. Chemical Synthesis of Exchange-coupled Nanocomposite Magnets. F. Liu[1] and *Y. Hou*[1]
1. Department of Materials Science and Engineering, Peking University, Beijing

HS-11. Nd-Fe-B thick-film magnets prepared by high laser energy density. *K. Fujiyama*[1], T. Yanai[1], M. Nakano[1], M. Itakura[2] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan; 2. Kyushu University, Fukuoka, Japan*

HS-12. Effect of non-magnetic cap layers for Nd-Fe-B thin films with small addition of rare earth element.
R. Nakagawa[1], M. Doi[1] and T. Shima[1] *1. Faculty of engineering, Tohoku Gakuin University, Tagajo, Japan*

HS-13. Influence of the preparation process and target composition on crystal structure and magnetic properties of NdFeB thin films. H. Su[1], *J. Zhang*[1], J. Du[1], W. Xia[1], A. Yan[1] and J. Liu[2] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Department of Physics, University of Texas at Arlington, Arlington, Texas*

HS-14. Synthesis of Ferromagnetic $Nd_2Fe_{14}B$ Nanocrystalline via Solvothermal Decomposition and Reduction-diffusion Calcination. H. Wei[1,2], *F. Wang*[1,2], J. Du[1,2], W. Xia[1,2], J. Zhang[1,2], J. Liu[3] and A. Yan[1,2] *1. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 2. Zhejiang Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang; 3. Department of Physics, University of Texas at Arlington, Arlington, Texas*

HS-15. Melt spinning process and its effect on the magnetic properties and structures of SM(CO,FE,CU,ZR)$_Z$ melt-spun ribbons. Z. Liu[1,2], *Y. Fang*[1,2], W. Sun[1,2], H. Chen[1,2], M. Zhu[1,2] and W. Li[1,2] *1. Research Institute of Functional Materials, Chiina Iron and Steel Research Institute, Beijing; 2. Beijing Engineering Laboratory of Advanced Metallic Magnetic Materials and Preparation Techniques, Beijing*

FRIDAY AFTERNOON 1:30 PLENARY HALL B

Session HT
SPIN WAVES AND MAGNONICS II (Poster Session)
Myung-Hwa Jung, Chair
Sogang University

HT-01. Spin wave coupling in the magnetic waveguide arrays. A. Sadovnikov[1], E.N. Beginin[1], Y.P. Sharaevsky[1], *S.E. Sheshukova*[1] and N.A. Sergey[1,2] *1. Nonlinear Physics, Saratov State University, Saratov, Russian Federation; 2. Kotel'nikov Institute of Radio Engineering and Electronics of Russian Academy of Science, Moscow, Russian Federation*

HT-02. Brilloin Spectroscopy of Magnetoacoustic Resonance in YIG-GGG Structure. *A.N. Litvinenko*[1], A. Sadovnikov[2], V.V. Tikhonov[1] and S.A. Nikitov[3] *1. Nano- and Biomedical Technology, Saratov State University, Saratov, Russian Federation; 2. Nonlinear Physics, Saratov State University, Saratov, Russian Federation; 3. Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation*

HT-03. All-magnetic control of skyrmions in nanowire by spin wave. *X. Zhang*[1,2], M. Ezawa[3], X. Dun[4], G. Zhao[2], Y. Liu[4] and Y. Zhou[1] *1. Department of Physics, The University of Hong Kong, Hong Kong; 2. Department of Physics & EE, Sichuan Normal University, Chengdu, Sichuan; 3. The University of Tokyo, Tokyo, Japan; 4. Tongji University, Shanghai*

HT-04. Amplification of spin waves by the spin-Hall effect in microscopic magnonic waveguides.
V.E. Demidov[1], S. Urazhdin[3], A.B. Rinkevich[2], G. Reiss[4] and *S.O. Demokritov*[1,2] *1. University of Muenster, Muenster, Germany; 2. Institute of Metal Physics, Yekaterinburg, Russian Federation; 3. Emory University, Atlanta, Georgia; 4. Bielefeld University, Bielefeld, Germany*

HT-05. Conversion of magnetostatic spin waves propagating through a junction of magnonic waveguides.
S.V. Grishin[1], C. Davies[2], A. Sadovnikov[1], V. Kruglyak[2], D. Romanenko[1], Y.P. Sharaevsky[1] and S.A. Nikitov[1,3] *1. Laboratory Metamaterials, Saratov State University, Saratov, Russian Federation; 2. University of Exeter, Exeter, United Kingdom; 3. Kotel'nikov Institute of Radioengineering and Electronics, Moscow, Russian Federation*

HT-06. Band Gap Control in Periodic Structure with Magnonic Crystal and Ferroelectric. *M.A. Morozova*[1], S. Grishin[1], A. Sadovnikov[1], Y.P. Sharaevsky[1] and S.A. Nikitov[2,1] *1. Laboratory "Metamaterials", Saratov State University, Saratov, Russian Federation; 2. Kotel'nikov Institute of Radio Engineering and Electronics of RAS, Moscow, Russian Federation*

HT-07. Controlling of synthesized standing spin wave configuration with external fields. *K. Imamura*[1], X. Ya[1], T. Tanaka[1] and K. Matsuyama[1] *1. Kyushu University, Fukuoka, Japan*

HT-08. Numerical analysis on two dimensional standing spin waves in microstructured exchange-coupled hard/soft bilayer strips. *X. Ya*[1], K. Imamura[1], T. Tanaka[1] and K. Matsuyama[1] *1. ISEE, Kyushu University, Fukuoka, Fukuoka, Japan*

HT-09. Modulation the phase of propagating spin wave in waveguide by spin-polarized current. *X. Chen*[1], Q. Wang[1], Y. Liao[1], X. Tang[1], H. Zhang[1] and Z. Zhong[1,2] *1. State Key Laboratory of Electronic Thin Films and Devices, University of Electronic Science and Technology of China, Chengdu, Sichuam*

HT-10. Polarization control in magnonic vortex crystals.
C. Swoboda[1,2], N. Breckwoldt[1], A. Kobs[1], J. Jacobsohn[1], A. Vogel[1], H.P. Oepen[1,2] and G. Meier[3,2] *1. Institute of Nanostructure and Solid State Physics, University of Hamburg, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 3. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

HT-11. Control of electric resistance of a ferromagnetic metal by parametric excitation of microwave magnons. *A.A. Serga*[1], Y.V. Kobljanskyj[3], G.A. Melkov[3], A. Slavin[2] and B. Hillebrands[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Department of Physics, Oakland University, Rochester, Michigan; 3. Faculty of Radiophysics, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine*

FRIDAY AFTERNOON 1:30 — PLENARY HALL B

Session HU
FUNDAMENTAL PROPERTIES III (Poster Session)
Wang Xiaolin, Chair
University of Wollongong

HU-01. An Observation of Variable Magnetic Forces Depending on Adjacent Surface Shapes of Bordering Magnetized Materials. *H. Choi*[1], I. Park[2] and B. Park[2] *1. Department of Electrical Engineering, Kyungpook National University, Daegu, Korea; 2. School of Electronic and Electrical Engineering, Sungkyunkwan University, Suwon, Korea*

HU-02. Time-dependent transport in gated topological insulators. Y. Li[1,2] and *M.B. Jalil*[2] *1. Department of Physics, Hangzhou Dianzi University, Hangzhou, Zhejiang; 2. Computational Nanoelectronics and Nano-device Laboratory, National University of Singapore, Singapore*

HU-03. Modeling and Experimental Analysis for Nanoparticles Heating Using Magnetic Fields to High Frequency. G.C. Maniçoba[1], A.O. Salazar[1] and *J.B. de Oliveira*[1] *1. Departamento de Engenharia de Computação e Automação, Universidade Federal do Rio Grande do Norte, Natal, Rio Grande do Norte, Brazil*

HU-04. Three-Dimensional magnetic properties measurement of the laminated silicon steels. *Y. Li*[1], Q. Yang[2] and J. Zhu[3] *1. Hebei University of Technology, Tianjin; 2. Tianjin Polytechnic University, Tianjin; 3. University of Technology Sydney, Sydney, New South Wales, Australia*

HU-05. Thermoelectric and magnetic properties of Pt substituted $BaFe_{4-x}Pt_xSb_{12}$ compounds. M. Sertkol[1], F. Aydogdu[2], *A. Guler*[2], S. Ballikaya[3,4], M. Ozdemir[2] and Y. Oner[1] *1. Physics, Istanbul Technical University, Istanbul, Turkey; 2. Physics, Marmara University, Istanbul, Goztepe, Turkey; 3. Physics, Istanbul University, Istanbul, Vezneciler, Turkey; 4. Physics, University of Michigan, Ann Arbor, Michigan*

HU-06. COMPETING MAGNETIC INTERACTION IN Co DOPED $La_{0.7}Sr_{0.3}MnO_3$ H. Zhao[1], X. Chen[1], J. Wei[1], Y. Yang[1], H. Du[1], J. Han[1], C. Wang[1], S. Liu[1], Y. Zhang[1], Y. Yang[1] and *J. Yang*[1,2] *1. State Key Laboratory for Mesoscopic Physics, School of Physics, Peking University, Beijing; 2. Collaborative Innovation Center of Quantum Matter, Beijing*

HU-07. Magnetotransport properties of 1-dimensional magnetic nanoparticle array. *J. Lee*[1], W. Ham[1] and Y.K. Kim[1] *1. Materials Science and Engineering, Korea University, Seoul, Korea*

HU-08. Comparison of structural and magnetic properties of $Zn_xMg_{1.5-x}Mn_{0.5}FeO_4$ and $MgAl_xCr_xFe_{2-2x}O_4$ spinel oxides. *K.P. Thummer*[3], A.R. Tanna[1] and H.H. Joshi[2] *1. School of Engineering, RK University, Rajkot, Gujarat, India; 2. Department of Physics, Saurashtra University, Rajkot, Gujarat, India; 3. Department of Electronics, Saurashtra University, Rajkot, Gujarat, India*

HU-09. Magnetic interaction and electronic transport in $La_{0.4}Bi_{0.6}Mn_{0.5}Ti_{0.5}O_3$ manganite. *V. Dayal*[1,2], P.V. Kumar[1,2], R.L. Hadimani[3], E.A. Balfour[4], H. Fu[4] and D. Jiles[3] *1. Department of Physics, Maharaja Institute of Technology-Mysore, Mandya, Karnataka, India; 2. Research Center Affiliation, Visvesvaraya Technological University, Belgavi, Karnataka, India; 3. Department of Electrical and Computer Engineering, Iowa State University, Ames, Iowa; 4. School of physical Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan*

HU-10. Development of Polarity-changeable Magnetizer for Manufacturing Coding Patterns in Rotary Encoder. *Y. Liu*[1], B. Chen[1] and J. Chang[1] *1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

HU-11. Magnetized Bi_2Te_3 nanocylinders as multi-state magnetic memory bits. *Z. Siu*[2] and M.B. Jalil[1] *1. Computational Nanoelectronics and Nanodevice Laboratory, National University of Singapore, Singapore; 2. NUS Graduate School for Integrative Sciences and Engineering, National University of Singapore, Singapore*

HU-12. Modeling of AC Resistance considering Magnetic Saturation Effect and Current Harmonics. *B. Lee*[1], J. Jung[2], J. Hong[3] and K. Kim[1] *1. Korea Automotive Technology Institute, Dague, Korea; 2. HYUNDAI Mobis, Yongin-Si, Korea; 3. Hanyang University, Seoul, Korea*

HU-13. Anomalous magnetoresistance and transport properties of itinerant ferromagnet $Fe_{1-x}Co_xSi$. *T. Ou Yang*[1,2], G. Shu[2], C. Hu[1] and F. Chou[2] *1. Physics, National Taiwan University, Taipei, Taiwan; 2. CCMS, National Taiwan University, Taipei, Taiwan*

HU-14. A comparison of the rapid-annealed FePt and FePd thin films: internal stress, $L1_0$ ordering, and texture. *S. Hsiao*[2,3], S. Liu[2], C. Chen[2], C. Chou[2], S. Chen[2], K. Chiu[2] and H. Lee[1] *1. National Synchrotron Radiation Research Center, Hsinchu, Taiwan; 2. Materials Science and Engineering, Feng Chia University, Taichung, Taiwan; 3. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

HU-15. Effect of Stress on Excess Loss of Electrical Steel Sheets. *D. Singh*[1], P. Rasilo[1], F. Martin[1], A. Belahcen[1] and A. Arkkio[1] *1. Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland*

FRIDAY AFTERNOON 1:30

PLENARY HALL B

Session HV

SPIN TRANSPORT IN MAGNETIC SEMICONDUCTORS, ORGANIC AND CARBON-BASED MATERIALS II (Poster Session)

Tetsuya Uemura, Chair
Hokkaido Universtiy

HV-01. First-principles calculations on the interface between Gd and monolayer MoS_2 *X. Zhang*[1], W. Mi[1], X. Wang[2], Y. Cheng[3] and U. Schwingenschlogl[3] *1. Department of Applied Physics, Tianjin University, Tianjin; 2. Tianjin Key Laboratory of Film Electronic & Communicate Devices, School of Electronics Information Engineering, Tianjin University of Technology, Tianjin; 3. PSE Division, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

HV-02. Magnetoresistance in a Rubrene-based Vertical Spin Valve at Room Temperature. *X. Zhang*[1,2], G. Qin[1], T. Miyazaki[2] and S. Mizukami[2] *1. Northeastern University, Shenyang, Liaoning; 2. WPI-AIMR, Tohoku University, Sendai, Japan*

HV-03. Transition metal-doped ZnO diluted magnetic semiconductors tuned by high pulsed magnetic field. *M. Zhong*[1], S. Wang[1], Y. Li[1], W. Li[1], Y. Hu[1], M. Zhu[1] and H. Jin[1] *1. Laboratory for Microstructures/School of Materials Science and Engineering, Shanghai University, Shanghai*

HV-04. Magnetism in a Nonmetal-Substituted Blue Phosphorene: A First-Principles Study. H. Zheng[1], H. Yang[1], X. Du[1] and *Y. Yan*[1] *1. Jilin University, Changchun, Jilin*

HV-05. Comparison of Magnetism and Transport Properties in Fe/X (X=C, Si, Ge) films. *X. Li*[1], Y. Wang[1], J. Jia[1], J. Li[1] and X. Xu[1] *1. Key Laboratory of Magnetic Molecules and Magnetic Information Materials (MOE), School of Chemistry and Materials Science, Shanxi Normal University, Linfen, Shanxi*

<u>HV-06</u>. **A first principles study of chalcopyrite (AlGaMn) P_2 alloys.** *B. Kang*[1], K. Chae[1], K. Kim[2] and S. Yu[2] *1. Nanotechnology Research Center, Department of Nano science and Mechanical engineering, Konkuk University, Chungju, Korea; 2. Department of Physics, Chungbuk National University, Cheongju, Korea*

<u>HV-07</u>. **Tuning of the metal-insulator transition in magnetic phase-change material $Ge_{1-x}Fe_xTe$.** J. Liu[1], *X. Cheng*[1], F. Tong[1] and X. Miao[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, Hubei*

<u>HV-08</u>. **Room temperature ferromagnetism of Fe-doped In_2O_3 nanodot arrays fabricated by porous anodized aluminum templates.** D. Chen[1], W. Ma[1], *F. Jiang*[1] and X. Xu[1] *1. Key Laboratory of Magnetic Molecules and Magnetic Information Materials (MOE), School of Chemistry and Materials Science, Linfen, Shanxi*

<u>HV-09</u>. **Microstructure Related Quantum Conductance in Mn-doped ZnO Resistive Switching Memory.** *S. Ren*[2], J. Dong[2], L. Zhang[2], Y. Huang[1], J. Guo[2], L. Zhang[2], J. Zhao[2] and W. Chen[2] *1. School of Material Science and Engineering, Shijiazhuang Tiedao University, Shijiazhuang, Hebei; 2. Key Laboratory of Advanced Films of Hebei, College of Physics Science & Information Engineering, Hebei Normal University, Shijiazhuang, Hebei*

<u>HV-10</u>. **Several magnetic semiconductors based on the quaternary Heusler compounds.** *Y. Wang*[1], W. Wang[1], G. Wu[1], E. Liu[1] and G. Liu[2] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing; 2. Hebei University Technology, Beijing*

<u>HV-11</u>. **Fully compensated ferrimagnetic semiconducting behavior in inverse Heusler compounds Ti_2VZ.** *Y. Zhang*[1], Z. Liu[1] and G. Liu[2] *1. University of Science and Technology Beijing, Beijing; 2. Hebei University of Technology, Tianjin*

<u>HV-12</u>. **Room temperature ferromagnetism of crystalline-amorphous bilayer chromium-doped indium oxides.** *Y. Liang*[1], C. Lin[1], C. Hsu[1] and H. Chou[1] *1. Physics, National Sun Yat-Sen University, Kaohsiung, Taiwan*

HV-13. Magnetic field modulation of chiral tunneling in graphene heterojunctions. Y. Li[1,2] and *M.B. Jalil*[2] *1. Department of Physics, Hangzhou Dianzi University, Hangzhou, Zhejiang; 2. Electrical and Computer Engineering Department, National University of Singapore, Singapore*

HV-14. Magnetoresistance of $(CH_3NH_3)PbI_3$ coated $La_{0.67}Sr_{0.33}MnO_3$ granular composites. K. Zhu[1], J. Chen[1], Q. Fan[4], L. Wang[2] and *Q. Xu*[1,3] *1. Department of Physics, Southeast University, Nanjing, Jiangsu; 2. Department of Physics, Nanjing University, Nanjing, Jiangsu; 3. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, Jiangsu; 4. School of Chemistry and Chemical Engineering, Southeast University, Nanjing, Jiangsu*

HV-15. Efficient Dual Spin-Valley Filter In Strained Silicene. *I.C. Yesilyurt*[1], G. Liang[1] and M.B. Jalil[1] *1. Electrical and Computer Enginnering, National University of Singapore, Singapore*

HV-16. Spin-dependent Bandgap Structures and Spin Filtering in Graphene with Multiple Ferromagnetic Barriers. *R. Zhang*[1], J. Li[1], R. Sun[1], R. Peng[1], R. Huang[1] and M. Wang[1] *1. National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, Jiangsu*

FRIDAY AFTERNOON 1:30 PLENARY HALL B

Session HW

TRANSFORMERS AND INDUCTORS II (Poster Session)

Xueliang Huang, Chair
Southeast University

HW-01. A novel method for prevention frequency splitting in wireless power transfer system. *Z. Li*[1], S. Huang[1] and X. Yuan[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, Hunan*

HW-02. Quantitative Analysis of Wireless Power Transfer System with Ferrite Cores. *X. Zhang*[1,2], S.L. Ho[1] and W. Fu[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong; 2. College of Electronic and Communication Engineering, Tianjin Normal University, Tianjin*

HW-03. The Characteristic of Magnetic Field Distribution for Resonant Wirelss Power Transfer. *X. Chen*[1], J. Wang[1], J. Luo[1], K. Liu[1] and L. Wang[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei*

HW-04. Optimal Design and Analysis of Wireless Power Transfer System Coupled with Power Source. *X. Zhang*[1,2], S.L. Ho[1] and W. Fu[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong; 2. College of Electronic and Communication Engineering, Tianjin Normal University, Tianjin*

HW-05. Analysis of DC-biased eddy current problems by an efficient fixed-point technique in harmonic domain. *X. Zhao*[1], Y. Zhong[1], L. Li[1], Z. Cheng[2], F. Meng[1] and D. Guan[1] *1. North China Electric Power University, Baoding, Hebei; 2. R&D center, Tianwei Group Ltd., Baoding, Hebei*

HW-06. Research on Dynamic Magnetic Flux Measurement under DC-Biased Magnetization by the Type-C Transducer. Z. Wang[1], B. Wang[1] and *X. Chen*[1] *1. School of Information Science and Engineering, Wuhan University of Science and Technology, Wuhan, Hubei*

HW-07. Design and Modeling of Wireless Power Transfer CoilsWith Double-layer Printed Boards Structure. *R. Li*[1] and L. Li[1] *1. State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, Beijing*

HW-08. Proposal of a Wireless Power Transfer Technique used to Low Power Multi-receiver Applications. *Y. Bu*[1], T. Mizuno[1] and H. Fujisawa[2] *1. Faculty of Engineering, Shinshu University, Nagano, Nagano, Japan; 2. Optoelectronics Co., Ltd., Warabi, Saitama, Japan*

HW-09. Investigation of the Performance of A Nove Permanent Magnet Biased Fault Current Limiter. J. Yuan[1,2], *Y. Lei*[1], L. Wei[1] and B. Chen[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Electrical and computer engineering, the Ohio State University, Columbus, Ohio*

HW-10. Effects of Multi-Core Structure on Magnetic Losses and Magneto-Mechanical Vibration at High Frequencies. *C. Hsu*[1,2], S. Jen[3], J. Liu[4], S. Cheng[5] and C. Fu[6] *1. Division of Electrical Engineering, Fortune Electric Company Ltd., Chung-Lin, Taiwan; 2. Department of Electronics & Information Engineering, Army Academy, Taoyuan, Taiwan; 3. Institute of Physics, Academia Sinica, Taipei, Taiwan; 4. Department of Multimedia and M-Commerce, Kainan University, Taoyuan, Taiwan; 5. Department of Aircraft Engineering, Army Academy, Taoyuan, Taiwan; 6. Department of Physics, National Taiwan University, Taipei, Taiwan*

HW-11. Design of the Rats Experiment Playground Based on the Magnetic Resonant Wireless Energy Transmission Technology. *J. Wang*[1], K. Liu[1], L. Wang[1] and M. Sun[2] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Department of Neurological Surgery, The University of Pittsburgh, Pittsburgh, Pennsylvania*

HW-12. Enhancement of inductance and quality factor in GHz range of solenoid inductor by integrating [$Fe_{80}Ni_{20}$-O/SiO_2]$_n$ magnetic multilayer films. L. Xu[1], *L. Wang*[1], Z. Wang[1], J. Wang[1], Y. Wang[2], F. Bai[2] and D. Peng[1] *1. College of Materials, Xiamen University, Xiamen, Fujian; 2. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, Sichuan*

HW-13. Cognition on the Current-Limiting Effect of Saturated-Core Superconducting Fault Current Limiter. *Y. Jia*[1], Z. Shi[2], H. Zhu[2], Y. Geng[1], J. Zou[1] and J. Yuan[1] *1. Department of Electrical Engineering, Tsinghua University, Beijing; 2. Grid Planning & Research Centre, Guangdong Power Grid Corporation, Guangzhou, Guangdong*

HW-14. Research on Dynamic Vibration of Transformer Cores under Wireless Power Transfer System Load. *L. Zhu*[1], Q. Yang[1], X. Zhang[1] and R. Yan[2] *1. Tianjin Polytechnic University, Tianjin; 2. Hebei University of Technology, Tianjin*

HW-15. A Novel Compact High Voltage Testing Ssytem Based on Magnetically Controlled Resonant Transformer. J. Yuan[1,2], *J. Zhou*[1], B. Chen[1], Z. Yu[1], G. Xue[1] and P. Zhou[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, Hubei; 2. Electrical and Computer Engineering, Ohio State University, Columbus, Ohio*

FRIDAY
AFTERNOON
1:30

PLENARY HALL B

Session HX
IRON LOSS ANALYSIS, MODELING AND MEASUREMENTS (Poster Session)

Elena Lomonova, Chair
TU Eindhoven

HX-01. Studies of High-Frequency Iron Core Losses for Synchronous Electric Machines Used in Electric Vehicles. *R. Pei*[1], L. Zeng[2] and T.A. Coombs[3] *1. Shanghai Innmag New Energy Co., Ltd., Shanghai; 2. HVAC/Electrical Department, Pan Asia Technical Automotive Center, Shanghai; 3. Engineering, Cambridge University, Cambridge, United Kingdom*

HX-02. Measurement of Surface Losses in Solid Poles of Synchronous Machines Under Load Conditions. *K. Shima*[1], K. Fujinuki[1], T. Matsumoto[1] and T. Fukami[1] *1. Department of Electrical and Electronic Engineering, Kanazawa Institute of Technology, Nonoichi, Ishikawa, Japan*

HX-03. Measurement of Hysteresis Loop at the Tip of the Teeth of an Inverter-Driven Squirrel-cage Induction Motor. K. Saito[2], *T. Sasayama*[1] and M. Nakano[3] *1. Kyushu University, Fukuoka, Japan; 2. KUBOTA Corporation, Osaka, Japan; 3. Okayama University, Okayama, Japan*

HX-04. The analysis and simulation of saddle-node bifurcation of the induction motor with iron loss. *X. Meng*[1], C. Shen[1], Y. Xu[1] and X. Liu[1] *1. Department of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi*

HX-05. Analytical Study and Corresponding Experiments for Iron Loss inside Laminated Core under AC-DC Hybrid Excitation. *Z. Zhao*[1], L. Fugui[1], Z. Cheng[2], L. Liu[2], Y. Liu[2] and Y. Fan[2] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin; 2. Baoding Tainwei Group Co., LTD, Baoding, Hebei*

HX-06. Iron loss estimation method for general hysteresis loop with minor loops. *T. Taitoda*[1], Y. Takahashi[1] and K. Fujiwara[1] *1. Doshisha University, Kyotanabe, Kyoto, Japan*

HX-07. The Effect of Common-Mode Voltage Elimination on the Iron Loss in Machine Core Laminations of Multilevel Drives. A. Salem[1], A. Abdallh[1], P. Rasilo[2], F. De Belie[1], *L. Dupre*[1] and J. Melkebeek[1] *1. Department of Electrical Energy, Systems & Automation, Ghent University, Ghent, Belgium; 2. Department of Electrical Engineering and Automation, Aalto University, Espoo, Finland*

HX-08. Ac loss estimation of armature windings in flux-switching permanent-magnet double-rotor machine. W. Ding[1] and *L. Mo*[1] *1. Huaiyin institute of technology, Huaian, Jiangsu*

HX-09. A Methodology of Iron Loss Calculation for Permanent Magnet Linear Synchronous Machine. *X. Mingfei*[1] *1. School of Electrical Engineering, Southeast University, Nanjing, Jiangsu*

HX-10. Determination of the Contribution of DC Component to Stray-Field Loss under AC-DC Hybrid Excitation. *Z. Zhao*[1], L. Fugui[1], Z. Cheng[2], Y. Liu[2], L. Liu[2] and X. Zhao[3] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin; 2. R & D Center, Baoding Tianwei Group Co., LTD, Baoding, Hebei; 3. North China Electric Power University, Baoding, Hebei*

HX-11. Numerical and Experimental Characterization of Thread Type Magnetic Core with Low Eddy Current Loss. H. Kim[1], *K. Seo*[1], K. Lee[1], S. Hong[1] and I. Park[1] *1. School of Electronic and Electrical Engineering, Sungkyunkwan University, Suwon, Korea*

HX-12. Comparison of motor stator teeth built of soft magnetic composite and laminated silicon steel sheets in an axial flux permanent magnet synchronous machine. *B. Scheerlinck*[2,1] and P. Sergeant[2,1] *1. Industrial Technology and Construction, Ghent University, Ghent, Belgium; 2. Electrical Energy, Systems & Automation, Ghent University, Ghent, Belgium*

HX-13. Permanent Magnet Eddy Loss of 150-kW Class IPMSM through Coupled-analysis of PWM Inverter Control and 3D Finite Element Analysis. *T. Jeong*[1], H. Hong[1], Y. Oh[1], M. Park[1] and J. Lee[1] *1. Electric Machinery, Hanyang University, Seoul, Korea*

HX-14. Measurement of the vector magnetic properties by utilizing rotor core exciting for actual stator core of an induction motor. *D. Zhang*[1], X. Tao[1], Y. Zhang[1] and Z. Ren[1] *1. School of Electrical Engineering, Shengyang University of Technology, Cheongju, Korea*

HX-15. Loss Analysis for the hybrid linear switched reluctance motor with no cogging force. *N. Cheung*[1] and E.K. Cheng[1] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong*

FRIDAY
AFTERNOON
1:30

PLENARY HALL B

Session HY
ELECTRIC MACHINE APPLICATIONS III (Poster Session)

Jung-Pyo Hong, Chair
HANYANG UNIVERSITY
Xiaoyan Huang, Chair

HY-01. Transfer Path Analysis of Structural Vibration on Propulsion Motor. *H. Yu*[1], L. Tian[1] and G. Zhang[1] *1. Wuhan Institute of Marine Electric Propulsion, Wuhan, Hubei*

HY-02. Investigation of a flux-switched permanent magnet linear motor for tamping machine. *J. Cai*[1], J. Ren[2], Q. Lu[3], Y. Ye[3] and Z. Wang[1] *1. College of Automation and Electrical Engineering, Zhejiang University of Science and Technology, Hangzhou, Zhejiang; 2. Automobile Engineering School, Zhejiang Institute of Mechanical and Electrical Engineering, Hangzhou, Zhejiang; 3. College of Electrical Engineering, Zhejiang University, Hangzhou, Zhejiang*

HY-03. Development of a fluid pumping system using a motor bearingless synchronous permanent magnet. A.F. Barros[1], L.P. Santos Júnior[1], D.S. Araújo Paulo[1] and *A.O. Salazar*[2] *1. indústria, IFRN, Parnamirim/RN, Brazil; 2. PPGEEC, UFRN, Natal, RN, Brazil*

HY-04. Design of the outboard PMDC motor considering the effect of the environment factor in a propulsion system. *G. Jeung*[1], G. Cho[1], S. Lee[1] and G. Kang[1] *1. Electric & Electronic Research Division, Korea Marine Equipment Research Institute, Pusan, Gangseo-gu, Korea*

HY-05. A New Hybrid-Structure Machine with Multi-Mode Fault-Tolerant Operation for Mars Rover. *C. Liu*[1] and K. Chau[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong*

HY-06. Newly Proposed Hybrid Type Multi-DOF Operation Motor for Multi-Copter UAV Systems.
H. Lee[1,2], H. Hong[1], D. Kang[2], S. Won[3] and J. Lee[1]
1. Electric engineering, Hanyang Univ. Seoul. Korea, Seoul, Korea; 2. Energy Engineering, Keimyung University, Daegu, Korea; 3. Electrical Systems, Dongyang University, Seoul, Korea

HY-07. Analysis of a Dual-Winding Fault-Tolerant Permanent Magnet Machine Drive for Aerospace Applications. *X. Jiang*[1], W. Huang[1], R. Cao[1], Z. Hao[1], C. Li[1] and W. Jiang[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu*

HY-08. Acoustic Emission Effect Induced by Lorentz and Magnetostriction Force. *L. Jin*[1], Q. Yang[1] and C. Zhang[1]
1. Electrical Engineering and Automation, Tianjin Polytechnic University, Tianjin

HY-09. Analysis of the Transient Electromagnetic Force in Air-Core Compulsators for Railgun Systems. *L. Tang*[1], K. Yu[1], C. Ye[1], X. Xie[1] and H. Zhang[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei*

HY-10. A Novel Magnetic Actuator Capable of Free Movement on a Magnetic Substance. *H. Yaguchi*[1]
1. Tohoku Gakuin University, Tagajo, Japan

HY-11. A Basic Study of a Novel Homopolar Type Magnetic Bearing Unifying Four C-Shaped Cores for High Output and Low Loss. *T. Matsuzaki*[1], M. Takemoto[1], S. Ogasawara[1], K. Nishihama[2], D. Kori[2] and K. Nagata[2]
1. Graduate School of Information Science and Technology, Hokkaido university, Sapporo, Hokkaido, Japan; 2. Hitachi Research Laboratory, Hitachi Ltd., Hitachi, Japan

HY-12. Design of Driving Method and Magnetic Circuit for Improving Performance of Solenoid Actuator.
H. Lee[1] and J. Lee[1] *1. Department of Electric Engineering, Hanyang University, Seoul, Korea*

HY-13. Design and Drive Control of Novel Pulsatile-flow Left Ventricular Assist Device. *H. Yu*[1], K. Lai[1], S. Lin[1] and S. Lee[1] *1. Department of Systems Engineering and Naval Architecture, National Taiwan Ocean University, Keelung, Taiwan*

HY-14. Study on time-delay characteristic of magnetostriction based on longitudinal and transverse wave with electromagnetic transducer. *L. Jin*[1] and Q. Yang[1] *1. School of Electrical Engineering and Automation, Tianjin Polytechnic University, Tianjin*

HY-15. Design of Ultra-High Speed Axial Flux Permanent Magnet Machine with Sinusoidal Back-EMF. *S. Kumar*[1], W. Zhao[1], Z.S. Du[2], T.A. Lipo[2] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, Korea; 2. Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, Wisconsin*

HY-16. Integrated Motor Propulsor Magnet Design with Halbach Array for Torque Ripple Reduction. *J. Ahn*[2,1], C. Park[2], S. Choi[2], J. Choi[1] and S. Jang[1] *1. Chungnam National University, Daejun, Korea; 2. Advanced Manufacturing Systems Research Division, Korea Institute of Machinery and Materials, Daejeon, Korea*

FRIDAY
AFTERNOON
1:30

PLENARY HALL B

Session HZ
ELECTRIC MACHINE MODELING AND ANALYSIS IV
(Poster Session)

Caiyong Ye, Co-Chair
Huazhong University of Science and Technology
Teruyoshi Sasayama, Co-Chair
Kyushu University

HZ-01. The influence of rotor slot wedge conductivity on transient stability of turbine generator. *G. Xu*[1], X. Liu[1] and Y. Luo[1] *1. North China Electric Power University, Beijing*

HZ-02. Characteristic Analysis of Permanent Magnet Synchronous Generators with Slotless Stator Structure Considering Magnetic/Mechanical Air-Gap using Semi-3D Analytical Method. *M. Koo*[1], J. Choi[1], J. Jeong[1], S. Seo[1] and S. Jang[1] *1. Chungnam National University, Daejeon, Korea*

HZ-03. Improved Analytical Modeling of an Ellipse-Shaped Permanent Magnet Rotor in Ultra-High-Speed Synchronous Motor by Electromagnetic Field Theory.
J. Jeong[1], J. Choi[1], M. Koo[1], J. Kim[1] and S. Jang[1]
1. Chungnam National University, Daejeon, Korea

HZ-04. Analytical and Experimental Study for Electromagnetic Analysis of Axially Magnetized Tubular Permanent Magnet Machine by Using Virtual Magnetization Method. *K. Shin*[1], H. Shin[1], H. Cho[1] and J. Choi[1] *1. Chungnam National University, Dae-jeon, Korea*

HZ-05. Eddy Current Loss Analysis of Non-Contact Magnetic Device with Permanent Magnets Based on Analytical Field Calculations. *K. Min*[1], J. Choi[1], H. Cho[1] and J. Kim[1] *1. Chungnam National University, Dae-jeon, Korea*

HZ-06. A numerical design of a frequency-based analytical model for demagnetization detection in axial flux permanent magnet synchronous machines. *J. De Bisschop*[1], A. Abdallh[2], P. Sergeant[1,2] and L. Dupre[2]
1. Department of Industrial Technology and Construction, Ghent University, Ghent, Belgium; 2. Department of Electrical Energy, Systems and Automation, Ghent University, Ghent, Belgium

HZ-07. Magnetic Simulations of a Fully Superconducting 10 MW Class Wind Generator based on 3-D FEA.
C. Sun[1] and Y. Liang[1] *1. Hebei University of Science and Technology, Shijiazhuang, Hebei*

HZ-08. Analytical Field Calculation of Doubly Fed Induction Generator. *C. Xia*[1,2], Z. Zhang[1] and H. Wang[2]
1. Tianjin University, Tianjin; 2. Tianjin Key Laboratory of Advanced Technology of Electrical Engineering and Energy, Tianjin Polytechnic University, Tianjin

HZ-09. Design and Analysis of an Outer Rotor Flux Switching Permanent Magnet Machine for Electric Vehicle. *C. Liu*[1,2], J. Zhu[2], Y. Wang[1], G. Lei[2], Y. Guo[2] and X. Liu[1] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin; 2. School of Electrical, Mechanical and Mechatronic System, University of Technology Sydney, Ultimo, New South Wales, Australia*

HZ-10. A kind of alloy designed for HSPMG rotor sleeve.
X. Zhang[2,1], H. Zhang[1], C. Gerada[1], J. Cao[2] and J. Li[1] *1. The University of Nottingham, Notingham, United Kingdom; 2. Beijing Jiaotong University, Beijing*

<u>HZ-11</u>. **Investigation of Electromagnetic Torque in Permanent Magnet Synchronous Machines with Fractional Slot Concentrated Winding.** *J. Li*[1], J. Zou[1] and Y. Xu[1] *1. Harbin Institute of Technology, Harbin, Heilongjiang*

<u>HZ-12</u>. **Analytical analysis of axial flux Halbach permanent-magnet machine.** *P. Jin*[1] *1. School of Energy and Electrical Engineering, Hohai University, Nanjing, Jiangsu*

<u>HZ-13</u>. **Design Optimization of a Permanent Magnet Motor with a Modified Halbach Magnetization.** *L. Yang*[1], S.L. Ho[1] and W. Fu[1] *1. The Hong Kong Polytechnic University, Hong Kong*

<u>HZ-14</u>. **Research on a Novel Synchronous Permanent Magnet Planar Motor with Concentric Winding for Lithography.** *L. Zhang*[1], B. Kou[1], F. Xing[1] and Y. Jin[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, Heilongjiang*

<u>HZ-15</u>. **Model and Control for Permanent Magnet Biased Permanent Magnet Type Bearingless Motors.** *T. Zhang*[1], H. Jia[2,3] and L. Mo[1] *1. Faculty of Electronic and Electrical Engineering, Huaiyin Institute of Technology, Huaian, Jiangsu; 2. School of Information and Control Engineering, Nanjing University of Information Science and Technology, Nanjing, Jiangsu; 3. CICAEET, Nanjing, Jiangsu*

<u>HZ-16</u>. **Optimization on the tooth top shape of a high speed permanent magnetic generator.** H. Zhang[1], *X. Zhang*[1,2], C. Gerada[1] and J. Li[1] *1. The University of Nottingham, Notingham, United Kingdom; 2. Beijing Jiaotong University, Beijing*

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