IEEE MAGNETICS

Programme

Dublin 2017 INTERMAG

INTERMAG Europe 2017

24th - 28th April 2017

www.intermag2017.com

The Convention Centre Dublin, Ireland

Fáilte Ireland
National Tourism Development Authority

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

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Welcome

Dear Colleagues,

It is my great pleasure to welcome you to Dublin for the IEEE International Magnetics Conference, INTERMAG Europe 2017.

INTERMAG is the premier conference on all aspects of applied magnetism and provides a range of oral and poster presentations, invited talks and symposia, a tutorial session, and exhibits reviewing the latest developments in magnetism ranging from fundamental to applied aspects, including advances in magnetic recording, spintronics, energy and power technologies and the emerging field of bio-magnetism. All members of the international scientific community interested in new developments in magnetism and associated technologies are invited to attend. Selected papers from the conference will be published in the IEEE Transactions on Magnetics.

Dublin follows Dresden (2014) and Madrid (2008) in hosting the INTERMAG Europe Conference. Dublin is a vibrant city, and serves as an excellent gateway to the island of Ireland. The centrally located Convention Centre Dublin is walking distance from historic Trinity College Dublin, many hotels, restaurants and lively bars. For the many things to see and to do in and around Dublin, please visit www.dublintown.ie

On behalf of the Management Committee of Intermag 2017, I wish all participants a fruitful and enjoyable stay in Dublin.

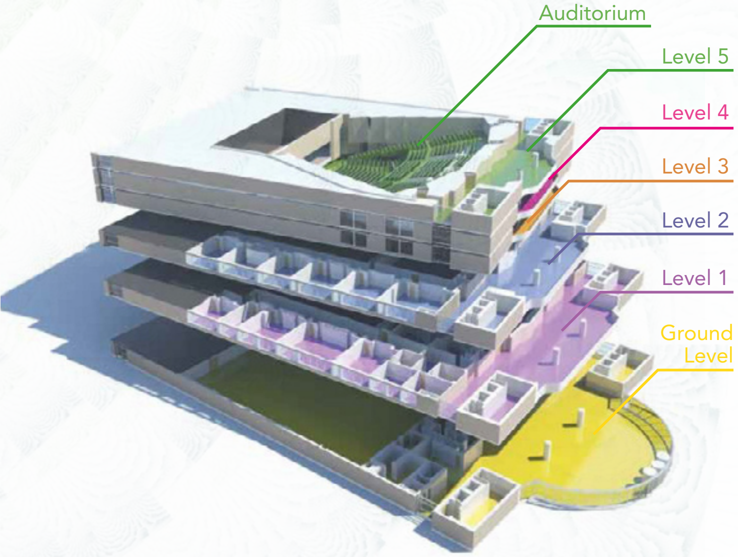
Nora Dempsey

INTERMAG 2017 General Chair

Contents

Venue

The Technical programme and exhibits for INTERMAG 2017 will take place at the Convention Centre Dublin (CCD). The CCD, Ireland's first purpose-built convention centre is located in Spencer Dock in the heart of Dublin city. Designed by Pritzker award-winning Irish-born architect Kevin Roche, the CCD has quickly become a landmark building. Its stunning design includes a unique glass-fronted atrium running the full height of the building, which gives visitors panoramic views of the River Liffey, Dublin City Centre and the Wicklow mountains.



Convention Centre Dublin (CCD)

Ground Floor:
Foyer (Registration Desk)
The Forum (Posters, exhibition, tea/coffee breaks, bierstubes, water, information announcement boards, catering points and other conference services)

Second Floor:
Wicklow Hall 1 (Oral Sessions)
Wicklow Hall 2A & 2B (Oral Sessions)
Level 2 foyer (Networking Events)
EcoCem Room

First Floor:
The Liffey A & B (Oral Sessions)
The Liffey Hall 1 & 2 (Oral Sessions)
Liffey Meeting Rooms 1-5
Liffey Boardroom 3

Third, Fourth & Fifth Floors:
The Auditorium (Plenary Session)
Level 3 Foyer (Plenary Reception)

General Information

Registration

All Conference attendees, including invited speakers, must pay registration fees. Payments onsite must be made in Euros € by Cash or by MasterCard, Visa or American Express credit card.

Registration Desk

The registration desk will be located on the ground floor foyer inside the main entrance area. The opening hours are as follows:

Monday, April 24th	2:00pm – 7:00pm
Tuesday, April 25th	8:00am – 5:00pm
Wednesday, April 26th	8:00am – 5:00pm
Thursday, April 27th	8:00am – 5:00pm
Friday, April 28th	8:00am – 5:00pm

Many thanks to Singulus Technologies AG for sponsoring the registration lanyards for INTERMAG 2017.

Badge Policy

All Conference attendees are required to wear the official INTERMAG 2017 Conference name badge to enter the Technical Sessions, Exhibits and the Reception.

Camera, Cell Phone and Video Recording Policy

Attendees are not permitted to take pictures of speaker slides or posters, or to make video recordings of presentations. Furthermore, attendees are asked to be respectful of their colleagues by turning off all cell phones before entering the session rooms.

Special Conference Events

Coffee Service and Bierstube

Coffee service will be available on Tuesday through Friday mornings from 8:30am in the poster and exhibitions area (The Forum).
Join your colleagues at the traditional Bierstube which will be open on Monday from 6:15pm – 7:15pm, Tuesday and Thursday evenings from 4:30pm – 6pm in the poster and exhibition area.
Many thanks to Materion Corporation for sponsoring the Bierstube on Tuesday the 25th April.

Tutorial Session

The Internet of Things
Monday April 24th 4:00pm – 6:15pm Liffey B

This session will present tutorials related to the Internet-of-Things (IoT). The first speaker will provide an overview of the different elements that make up an IoT network from the devices, through the network, to the data analytics, as well as look at the wider context in which IoT plays out in the built environment and in the natural world. The second speaker will review the status of STT-MRAM development and explain the particular advantages of STT-MRAM for IoT applications. The third speaker will discuss the use of HF Magnetics to Power the IoT. 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 organised by the Education Committee of the IEEE Magnetics Society.

Linda Doyle, Trinity College Dublin, Ireland.
"A General Introduction to the Internet of Things (IoT)"

Bernard Dieny, SPINTEC, Grenoble, France.
"Non-Volatile Magnetic Memories for Internet of Things"

Cian O'Mathuna, Tyndall National Institute, Cork, Ireland.
"High Frequency Magnetics to Power the Internet of Things (IoT)"

Symposia

IEEE Magnetic Society Annual Meeting

This meeting is open to all INTERMAG 2017 delegates and will be held on Thursday 27th April in Liffey Meeting Room 3 from 5:00pm – 6:00pm

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! Beverages will be provided.

Plenary Session and Award Ceremony

Wednesday April 26th, 4pm, The Auditorium

Session Chair: Nora Dempsey

Awards Chair: Burkard Hillebrands

IEEE Magnetics Society Achievement Award

Dr. William H. Butler

For predicting the spin-filter effect and the resulting high magnetoresistance of MgO magnetic tunnel junctions, used by the HDD industry to substantially increase storage density

IEEE Magnetics Society Early Career Award

Dr. Wie Zhang

Oakland University

For contributions to exploring spin-orbit coupling phenomena with antiferromagnets, magnetic insulators, two-dimensional systems, and topologically non-trivial spin textures

IEEE Magnetics Society Distinguished Service Award

Dr. Robert E. Fontana, Jr.

IBM

For establishing the structure and enhancing the international impact of major technical conferences sponsored by the IEEE Magnetics Society

Newly Elected Fellows of the IEEE

Dr. Laura Heyderman

ETH Zurich

For contributions to nanoimprint lithography and nanostructured magnetic systems and devices

Dr. Jordan Katine

HGST

For contributions to nanoscale magnetic device design, fabrication, and characterization

Dr. David Lowther

McGill University

For contributions to and industrial applications of computer aided design in electromagnetics

Dr. Sara Majetich

Carnegie Mellon University

For contributions to understanding of magnetic nanoparticles

2017 Magnetics Society Distinguished Lecturers

Michael Farle, Univ. of Duisburg-Essen, Germany

"Functionalised Hybrid Nanomagnets: New Materials for Innovations in Energy Storage and Medical Theranostics"

Xiaofeng Jin, Fudan University, China

"The Hall Effects Edwin Hall Never Imagined"

Hendrik Ohldag, SLAC, USA

"Ultrafast and Very Small: Discover Nanoscale Magnetism With Picosecond Time Resolution Using X-Rays"

Eiji Saitoh, Tohoku University, Sendai, Japan

"Spin Current Physics and Applications"

Plenary Lecture

Wednesday 26th April, 5:15pm, The Auditorium

By: Kazuhiro Hono

Title: Recent advances in nano-characterisation of magnetic materials and devices

Abstract: Magnetic properties are structuraly sensitive; hence, understanding the structure-property relationships is essential for developing magnetic materials and spintronic devices. A typical example is the coercivity of hard magnets; it varies from a near zero value to $H_A/3$ depending on the grain size, shape and intergrain exchange coupling. The optimisation of the size distribution, shapes and defects of FePt nanograins is critical for achieving sufficient signal to noise ratio in high density heat-assisted magnetic recording media. Controlling the atomistic structure at FM/Oxide or FM/NM interfaces is essential for magnetic tunneling junctions for both the MRAM cells and the current perpendicular to plane giant magnetoresistive devices (CPP-GMR) for readers. In this talk, I will address the importance of nanostructure characterisations to optimise the magnetic and transport properties of various magnetic and spintronic materials by showing specific examples of property optimisation of hard magnets, recording media and magnetoresistive devices. Through these examples, we will try to address which structural feature will lead to breakthroughs for overcoming current issues in these materials and devices.

Biography: Kazuhiro Hono received the BS and MS degrees in Materials Science from Tohoku University in 1982 and 1984, and a Ph.D. degree in Metals Science and Engineering from Penn State in 1988. After working as a post doc at Carnegie Mellon, he became a research associate at the Institute for Materials Research, Tohoku University in 1990. He moved to the National Institute for Materials Science (NIMS) as a senior researcher in 1995, and is now a NIMS Fellow and the Director of the Research Center for Magnetic and Spintronic Materials. He is also a professor in Materials Science and Engineering at the University of Tsukuba. His current research interest is materials science in magnetic and spintronics materials and their devices.

Plenary Reception

Invitation from Nora Dempsey, General Chair of INTERMAG 2017

Following the Plenary Lecture a Conference Reception will be held for all delegates of INTERMAG 2017. This reception is supported by the IEEE Magnetics Society. The reception will be held on the third floor foyer as you exit the Auditorium. All registered delegates are cordially invited to attend and celebrate the achievements of our award winners and to network with colleagues. Canapes and refreshments will be served.

Lunch with the Speakers

Tuesday 25th April at 12pm, EcoCem Room

Lunch with the Experts

Thursday 27th April at 12pm, EcoCem Room

Many thanks to Evico Magnetics GmbH for sponsoring these lunches.

Special Evening Sessions

Tuesday 25th April, 5:30pm – 6:30pm, Liffey A

Chair: Michael Coey, Trinity College Dublin

Title: Who Funds Magnetics Research, and Why?

Pannelists:

Mark Fergusson, Director and CEO, Science Foundation Ireland

Burkhard Jahnen, Programme Director at the DFG

Paul Dodd, Associate Vice Chancellor for Interdisciplinary Research and Strategic Initiatives UC Davis

John Pethica, Chief Scientist, U.K. National Physical Laboratory and former Vice President of the Royal Society

Thursday 27th April, 5:30pm – 6:30pm, Liffey A

Chair: Dominique Givord

Title: 50 years of rare earth permanent magnets

Speakers:

G. Hadjipanayis – The development of Sm-Co magnets

M. Sagawa – NdFeB magnets – past, present and future

I.R. Harris – The use of hydrogen in the processing of RE-TM magnets

J.M.D. Coey – Reflection and tribute to I.V. Mitchell

Women’s Networking Event

Thursday 27th April, 6:00pm – 7:30pm, Level 2 foyer

There will be 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. Canapes and refreshments will be provided.

Many thanks to Intel for sponsoring the
Women’s Networking Event at INTERMAG 2017.

Sponsors

The INTERMAG 2017 Conference Committee would like to gratefully acknowledge the following sponsors:

Silver Sponsors

Intel Ireland
Seagate Technology

Other Sponsors and Partners

Science Foundation Ireland
Evico Magnetics
Singulus Technologies AG
Materion
Beijing Zhong Ke San Huan High-tech Co., Ltd.
VACUUMSCHMELZE GmbH & Co. KG

Exhibition

Suppliers of instrumentation, materials, process tools and other products and services will exhibit their latest offerings for professionals in magnetism and associated technologies. The exhibition will be located in the Forum, which is also the location of the coffee service and Bierstubes.

Exhibition Opening Hours

Tuesday 25th April	8:30am – 5:30pm
Wednesday 26th April	8:30am – 4:00pm
Thursday 27th April	8:30am – 5:30pm
Friday 28th April	8:30am – 12:00pm

List of Exhibitors

- Attocube Systems AG
- Capres A/S
- Hinds Instruments, Inc.
- HPROBE
- Intlvac Thin Film
- IOP Publishing
- JEOL (UK) Ltd
- JMAG Instruments
- Lake Shore Cryotronics
- MAGNET-PHYSIK Dr. Steingroever GmbH
- Mantis Deposition Ltd
- Metrolab Technology SA
- MicroXact Inc.
- NanoManyetik Bilimsel Cihazlar
- Nanoscan
- NT-MDT Spectrum Instruments
- Oxford University Press
- Quantum Design Inc
- Singulus Technologies AG
- SmartTip BV
- TOHOKU STEEL CO., LTD.
- Zurich Instruments

The INTERMAG 2017 Conference Committee would like to acknowledge the participation of the exhibitors.

Internet Access

To access the CCD Wi-Fi network:

- Open network Settings
- Select the network 'CCD Guest'
- Open a new page in your browser
- Accept the terms and conditions
- You are then free to browse and read emails

Speaker Preview Room

Speakers may use Liffey Meeting Room 5 on the first floor to practice their presentations and test their computer's connections prior to their individual presentations. Audio-visual equipment will be provided in the Speaker Preview Room which will be open from 8:00am – 6:00pm Tuesday – Friday. Speakers are encouraged to use this facility to practice their presentation, either alone or with colleagues.

Oral Sessions

The oral sessions will be held in the Liffey A & B and Liffey Hall 1 & 2 and Liffey Meeting Room 2 on the first floor and the Wicklow Hall 1, 2A & 2B on the second floor. Oral sessions will take place from 9:00am – 12:00pm and from 2:00pm – 5:00pm Tuesday through Friday except Wednesday where they will finish at 4:00pm.
Contributed oral presentations are 15 minutes per speaker (including 3 minutes Q&A), while invited presentations are 30 minutes per speaker (including 5 minutes Q&A).

The conference will provide the screen, projector, pointer and microphone in each oral session room. All presentations should be in 16:9 format.

Speakers must use their own laptops. Only standard PC-style VGA connections to the projector will be provided. Presenting authors must supply any adaptor required for their device. 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 devices during the question period of the previous speaker.

Presenting authors should "check in" with the session chair at least 10 minutes before the start of their session. Session chairs have the responsibility of reporting "No-Shows" to the Publication Committee. Papers associated with "No Shows" will not be published in the special INTERMAG issue of the IEEE Transactions on Magnetics and the related digests will also be removed from IEEE Xplore.

IEEE Magnetics Society Best Student Oral Presentation Award

Following the establishment of this prestigious award by the IEEE Magnetics Society in 2008, the selection of the five finalists for INTERMAG 2017 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 the student's presentation

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

The five finalists of INTERMAG 2017 are:

AC-09 Manu Sushruth (Tuesday, 11:15am, THE LIFFEY A)

AE-02 Maite Goiriena-Goikoetxea
(Tuesday, 9:15am,LIFFEY MEETING ROOM 2)

BB-05 Philip Lenox (Tuesday, 3:00pm, LIFFEY HALL 2)

BD-09 Jiawei Yu (Tuesday, 4:30pm, LIFFEY HALL 1)

CF-05 Jyotirmoy Chatterjee (Wednesday, 10:00am, WICKLOW HALL 1)

Poster Sessions

The poster sessions will be held in the Forum of the CCD on the ground floor. Posters should be displayed from 8:30am – 11:30am in the morning and from 1:30pm – 4:30pm in the afternoon. Posters should be set up 15 minutes before the session starts and must be removed by the authors promptly at the end of their session. Posters that have not been removed will be discarded.

The poster size is A0 vertical/portrait format (841 x 1189 mm; 33.1 x 46.8 in) and the paper weight should not exceed 170g. You must include the title and authors on the poster. The conference provides a small numbered sign designating the paper to be posted on each board and Velcro 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 at least the first and last hour of the poster session. If a poster is posted but none of the authors are present, the Session Chairs will count the presentation as a "No-Show". Papers associated with "No Shows" will not be published in the special INTERMAG issue of the IEEE Transactions on Magnetics and the related digests will also be removed from IEEE Xplore.

Best Poster Awards

Best poster awards will be given out to recognise 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 €50 cash prize and an award certificate. 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 a 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 Grants

Travel grants of up to $1,000 each will be awarded to a limited number of students in the areas of basic and applied magnetism. These grants, which will be sponsored by the IEEE Magnetics Society and Science Foundation Ireland, are intended to partially offset travel and local costs related to participation in INTERMAG 2017. Support is for current graduate students only. Postdoctoral fellows, undergraduates or non-students are not eligible. To be eligible for the IEEE Magnetics Society award, the student's advisor must be a member of the IEEE Magnetics Society. Preference for these grants will be given to those applicants who are student members of the Magnetics Society, nearing completion of their graduate studies and presenting conference papers. Students who have previously received travel support from the Magnetics Society for any other conference are not eligible for an award from either sponsor.

Travel grants are a reimbursement for actual expenses. Thus the students must attend the conference and submit receipts to a representative of the student travel coordinator (details will be supplied to successful applicants). Chip and pin debit cards will be issued to awardees on the last day of the conference.

Shortly after the conference, grant recipients must submit a short account of their experience for possible inclusion in the Magnetic Society Newsletter and / or a wrap up account of INTERMAG 2017.

Additional Information

Dublin

There are many layers to the city of Dublin amongst which every visitor finds their niche. It is a bustling city with a population of over 1.7 million and is home to over 100 different nationalities all of whom contribute to the fabric of Dublin. While it has a genuine cosmopolitan feel, Dublin has still managed to retain its own distinct culture which is expressed in a love of literature, drama, traditional music and sport.

Browsing the shops on Dublin's Grafton Street or O'Connell Street is a renowned pastime as the shopping can also be combined with sight-seeing. The city is abundant with unique buildings and quirky stores; and the streets are always bustling.

The wide-ranging choice of hotels, restaurants, and pubs meets every visitor's pocket and taste and whether it is a chic boutique hotel, world-class international accommodation or a quaint B&B, Dublin's menu suits every palette.

The quintessential Dublin Pub provides the focal point of Dublin's social life, illuminating the vibrant hues of Dubliners and their culture. Conversation flows freely unleashing the unique atmosphere that defines the city.

Dublin is one of the oldest cities in Europe and with ancient churches, grand buildings and fine museums, cultural riches abound. From the ancient to the avant-garde, from history, architecture, literature, art and archaeology to the performing arts Dublin has it, with the real advantage to the visitor being that everything is contained within a small area. Furthermore, Dublin boasts the largest park to be found in a European City, the Phoenix Park.

When conference business is over, there is a wealth of activities and culture to attract the delegate. Due to Dublin's coastal location, the sea is an integral part of Dublin life. This inheritance allows for a wide variety of water activities, sports or just strolling. Inland, Dublin offers a pick of events from greyhound racing, a variety of many fine gardens, old stately homes and picturesque parklands.

Did you know?

- Dublin accounts for 40% of Ireland's GDP
- Dublin has 47% of all Foreign Direct Investment Projects in Ireland
- 50% of Dublin's population are under the age of 36, the youngest capital city in Europe
- James Joyce and four Nobel Laureates in literature were from or lived in Dublin

Useful tips

Language:	English	Country code:	+353
Currency:	EUR €	Voltage:	230 V
Time zone:	GMT	Electrical socket:	Type G Plug
Smoking:	Smoking is not allowed inside public places		

Travelling around Dublin

Dublin Bus

Dublin Bus is the main provider of public transport in the Irish capital. If you are planning on following the established tourist routes, joining a hop-on-hop-off tour of Dublin is advised. Tickets are valid the whole day and the buses will take you to the major attractions on circular routes. An average bus trip costs €2.70 each way.

LUAS Light rail

There are at present two routes or "lines" - the Red Line and the Green Line. The colour designation refers to the route, all trains are steel-grey with a yellow band. It is important to note that there is no interchange facility between the two LUAS lines, a brisk five to ten minute walk is the quickest connection. There are ticket machines at all LUAS stops. For more info, see www.luas.ie

Congress Organiser

Conference Partners LTD,
Suites 11-13, The Hyde Building
The Park, Carrickmines
Dublin 18. Ireland

IEEE Magnetics Society

President:	Manuel Vazquez
Vice President:	Pallavi Dhagat
Secretary/Treasurer:	Masahiro Yamaguchi
Past-President:	Bruce Terris

Elected IEEE Magnetics Society Administrative Committee Members

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

Terms expiring December 31, 2018: K. Gao; G. Ju; D. Jiles; O. Kazakova; V. Mazauric; K. Nakagawa; M. Pasquale; R. Stamps.

Terms expiring December 31, 2019: A. Adeyeye; D. Altbir; Y. Kubota; C.-H. Lai; S. Mangin; M. Rührig; R. Sommer; J. Sykulski.

Appointed Committee Chairs: P. Andrei; O. Chubykalo-Fesenko; B. Hillebrands; A. Hirohata; L.Lewis; P. Pong; R. Schaefer; B. Stadler; B. Terris; D. Wei; M. Wu

Council Representatives:
R. Goldfarb and A. Zeller (Superconductivity);
I. Nlebedim (Engagement with Young Professionals);
J. Kosel (Sensors);
J. A. Incorvia and 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 recognised as being part of the established and vibrant IEEE technical community
- 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.

There will be an IEEE membership desk located in the Forum on the ground floor. We are looking forward to meeting you at INTERMAG 2017.

Conference Management Committee

General Chair	Nora Dempsey
Local Chair	Michael Coey
Program Chairs	Adekunle Adeyeye Cindi Dennis Jeffrey McCord
Treasurers	Karsten Rode, Mark T Kief
Publication Chairs	Petru Andrei, S. N. Piramanayagam
Exhibition Chairs	Gavin D'Arcy, Mark Gubbins
Publicity Chair	Plamen Stamenov
Student Awards	Atsufumi Hirohata
Student Travel	Matt Carey
IEEE Representative	Randall H. Victora
Mag Soc support	Diane Melton, Regina Mohr

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Publication Editors

Amr Adly; Yacine Amara; Radhika Barua; Ciro Visone; David Dorrell; Min-Fu Hsieh Ron Jansen; Dennis Leung; Nicoleta Lupu; Gangping Ju; Iulian Nistor; Johannes J.H. Paulides; Philip Pong; Alexandru Stancu; Dan Wei; Hyunsoo Yang

Conference Local Support

We would like to thank Trinity College Dublin and The Science Foundation of Ireland for supporting the conference.

Future Conferences

2017 Conference on Magnetism and Magnetic Materials
Nov 6-10, 2017, Pittsburgh, USA

2018 Intermag Conference
April 23-27, 2018, Singapore, Singapore

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

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

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

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

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

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

Programme at a Glance

	Title	Start Time	Type	Location
24/04/17 MONDAY PM				
WA	The Internet of Things	4:00 PM	Tutorial	The Liffey B
25/04/17 TUESDAY AM				
AA	Magnetocaloric Materials: New Concepts for Energy Application	9:00 AM	Symposium	The Liffey B
AB	Magnetic Nanoparticles, Nanowires, and 3D Structures I	9:00 AM	Oral	Liffey Hall 2
AC	Magnonics I	9:00 AM	Oral	The Liffey A
AD	Spin currents, switching and Spin Seebeck Effect I	9:00 AM	Oral	Liffey Hall 1
AE	Exchange bias and patterned film I	9:00 AM	Oral	Liffey Meeting Room 2
AF	Sensors and MEMS: Materials	9:00 AM	Oral	Wicklow Hall 1
AG	L10 Magnets and Related Crystal Structures	9:00 AM	Oral	Wicklow Hall 2A
AH	Fundamental properties and interdisciplinary topics	9:00 AM	Oral	Wicklow Hall 2B
AM	Spin-orbit torques and spin-orbit effects I	8:30 AM	Poster	The Forum
AN	Spin Torques, switching and Spin Torque Oscillators	8:30 AM	Poster	The Forum
AO	Spin orbit effects, skyrmions and domain walls	8:30 AM	Poster	The Forum
AP	Giant and Tunneling Magnetoresistance I	8:30 AM	Poster	The Forum
AQ	Recording Heads, Energy Assisted Recording and Novel Recording	8:30 AM	Poster	The Forum
AR	Recording media: Materials and channels	8:30 AM	Poster	The Forum
AS	Multiferroics and Complex Oxides	8:30 AM	Poster	The Forum
AT	Micromagnetism and multiscale modeling I	8:30 AM	Poster	The Forum

Dublin 2017 INTERMAG

25/04/17 TUESDAY PM				
BA	Smart City, Smart Living	2:00 PM	Symposium	The Liffey B
BB	Magnetic Bio-Sensors and Separation	2:00 PM	Oral	Liffey Hall 2
BC	Spin Torques and Spin Torque Oscillators	2:00 PM	Oral	The Liffey A
BD	Thin Films and Multilayers I	2:00 PM	Oral	Liffey Hall 1
BE	Energy Assisted Recording	2:00 PM	Oral	Liffey Meeting Room 2
BF	Antiferromagnetic Spintronics and Complex Oxides	2:00 PM	Oral	Wicklow Hall 1
BG	Magnetocaloric and shape memory materials	2:00 PM	Oral	Wicklow Hall 2A
BH	Motors	2:00 PM	Oral	Wicklow Hall 2B
BM	Exchange bias and patterned films II	1:30 PM	Poster	The Forum
BN	Magnetic Properties and Characterization Techniques	1:30 PM	Poster	The Forum
BO	Magnetic Domain Configuration	1:30 PM	Poster	The Forum
BP	Magnetization Dynamics I	1:30 PM	Poster	The Forum
BQ	Magnonics II	1:30 PM	Poster	The Forum
BR	Fundamental properties with relevance to applications I	1:30 PM	Poster	The Forum
BS	2:14:1-Based Rare Earth Magnets	1:30 PM	Poster	The Forum
BT	Motors, generators and actuators I	1:30 PM	Poster	The Forum
BU	Transformers and Inductors I	1:30 PM	Poster	The Forum
XA	Panel Discussion on Scientific Funding	5:30 PM	Special	The Liffey B

26/04/17 WEDNESDAY AM				
CA	Bio-Applied Magnetism	9:00 AM	Symposium	The Liffey B
CB	Ab initio and first principles calculations	9:00 AM	Oral	Liffey Hall 2

CC	Magnetization Dynamics II	9:00 AM	Oral	The Liffey A
CD	Transformers and Inductors II	9:00 AM	Oral	Liffey Hall 1
CE	Amorphous and Nanocrystalline Alloys I	9:00 AM	Oral	Liffey Meeting Room 2
CF	STT and SOT-MRAM	9:00 AM	Oral	Wicklow Hall 1
CG	Rare Earth Permanent Magnets	9:00 AM	Oral	Wicklow Hall 2A
CH	Motors, Generators and Actuators II	9:00 AM	Oral	Wicklow Hall 2B
CM	Magnetic Semiconductors, Antiferromagnetic Spintronics, Organic and Carbon-based Spin Transport	8:30 AM	Poster	The Forum
CN	Spin currents, switching and Spin Seebeck Effect II	8:30 AM	Poster	The Forum
CO	Magnonics, Ultrafast and all-optical switching	8:30 AM	Poster	The Forum
CP	Thin Films and Multilayers II	8:30 AM	Poster	The Forum
CQ	Frustrated magnets and emerging topics	8:30 AM	Poster	The Forum
CR	Magnetocaloric materials	8:30 AM	Poster	The Forum
CS	Ferrites and Fe-Si Steels	8:30 AM	Poster	The Forum
CT	Motors, Generators and Actuators III	8:30 AM	Poster	The Forum
CU	Motors, generators and actuators IV	8:30 AM	Poster	The Forum
26/04/17 WEDNESDAY PM				
DA	Additive manufacturing and 3D printing of magnets	2:00 PM	Symposium	The Liffey B
DB	Bio-medical magnetic therapies I	2:00 PM	Oral	Liffey Hall 2
DC	Magnonics III	2:00 PM	Oral	The Liffey A
DD	Skyrmions and vortex motion	2:00 PM	Oral	Liffey Hall 1

DE	Recording media: Recording physics and lubricants	2:00 PM	Oral	Liffey Meeting Room 2
DF	Theory of Hysteresis and Coercivity I	2:00 PM	Oral	Wicklow Hall 1
DG	Crystalline Soft Magnetic Materials	2:00 PM	Oral	Wicklow Hall 2A
DH	Motors, generators and actuators V	2:00 PM	Oral	Wicklow Hall 2B
ZA	Plenary	4:00 PM	Plenary	Auditorium
27/04/17 THURSDAY AM				
EA	When THz meets X-rays: An Ultrafast View on Magnetism	9:00 AM	Symposium	The Liffey B
EB	Bio-medical magnetic therapies II	9:00 AM	Oral	Liffey Hall 2
EC	Spin-orbit torques and spin-orbit effects II	9:00 AM	Oral	The Liffey A
ED	Thin-Film Inductors, Magnetoimpedance, Magnetodynamics	9:00 AM	Oral	Liffey Hall 1
EE	Recording media: Materials	9:00 AM	Oral	Liffey Meeting Room 2
EF	Giant and Tunneling Magnetoresistance II	9:00 AM	Oral	Wicklow Hall 1
EG	Micromagnetism and multiscale modeling II	9:00 AM	Oral	Wicklow Hall 2A
EH	Motors, generators and actuators VI	9:00 AM	Oral	Wicklow Hall 2B
EM	Magnetization Dynamics III	8:30 AM	Poster	The Forum
EN	Magnetization Dynamics IV	8:30 AM	Poster	The Forum
EO	Microwave and Magneto-Optic Materials	8:30 AM	Poster	The Forum
EP	Ferrites, Garnets and other Materials	8:30 AM	Poster	The Forum
EQ	Functional magnetic materials and superconductivity	8:30 AM	Poster	The Forum
ER	Electromagnetic compatibility and Motors	8:30 AM	Poster	The Forum
ES	Motors, generators and actuators VII	8:30 AM	Poster	The Forum
ET	Power and control magnetics	8:30 AM	Poster	The Forum

27/04/17 THURSDAY PM				
FA	Magnetic micro- and nano-actuators and robots	2:00 PM	Symposium	The Liffey B
FB	Novel magnetic materials and emerging topics	2:00 PM	Oral	Liffey Hall 2
FC	Spin-orbit torques and spin-orbit effects III	2:00 PM	Oral	The Liffey A
FD	Magnetic Imaging	2:00 PM	Oral	Liffey Hall 1
FE	Recording Heads and materials; plus recording physics and modelling	2:00 PM	Oral	Liffey Meeting Room 2
FF	Sensors and MEMS: Devices and Applications I	2:00 PM	Oral	Wicklow Hall 1
FG	Ce Substitution, Recycling and Novel Permanent Magnets	2:00 PM	Oral	Wicklow Hall 2A
FH	Shielding, levitation and propulsion with Motors, generators and actuators	2:00 PM	Oral	Wicklow Hall 2B
FM	Bio-medical Magnetic Therapies III	1:30 PM	Poster	The Forum
FN	Magnetic Nanoparticles, Nanowires, and 3D Structures II	1:30 PM	Poster	The Forum
FO	Amorphous and Nanocrystalline Alloys II	1:30 PM	Poster	The Forum
FP	Magnetoelastic materials I	1:30 PM	Poster	The Forum
FQ	Micromagnetism and multiscale modeling III	1:30 PM	Poster	The Forum
FR	Sensing, Magnetoimpedance, Magnetodynamics	1:30 PM	Poster	The Forum
FS	Shielding, levitation and propulsion	1:30 PM	Poster	The Forum
FT	Motors, generators and actuators with Shielding, levitation and propulsion	1:30 PM	Poster	The Forum
FU	Motors, generators and actuators VIII	1:30 PM	Poster	The Forum
YA	50 Years of Rare Earth Permanent Magnets	5:30 PM	Special	The Liffey B

Dublin 2017 INTERMAG

28/04/17 FRIDAY AM				
GA	STT-MRAM: Toward volume production	9:00 AM	Symposium	The Liffey B
GB	Magnetic Nanoparticles, Nanowires, and 3D Structures III	9:00 AM	Oral	Liffey Hall 2
GC	Ultrafast and all-optical switching	9:00 AM	Oral	The Liffey A
GD	Skyrmions and domain walls based devices	9:00 AM	Oral	Liffey Hall 1
GE	Microscopy and Spectroscopy	9:00 AM	Oral	Liffey Meeting Room 2
GF	Theory of Hysteresis and Coercivity II	9:00 AM	Oral	Wicklow Hall 1
GG	Magnetoelastic Materials II	9:00 AM	Oral	Wicklow Hall 2A
GH	Motors, generators and actuators IX	9:00 AM	Oral	Wicklow Hall 2B
GM	Bio-medical Diagnosis and Imaging	8:30 AM	Poster	The Forum
GN	Fundamental properties with relevance to applications II	8:30 AM	Poster	The Forum
GO	Voltage-controlled magnetism/ Magnetoresistive and half-metallic materials I	8:30 AM	Poster	The Forum
GP	Sensors and MEMS: Devices and Applications II	8:30 AM	Poster	The Forum
GQ	Motor and Generators	8:30 AM	Poster	The Forum
GR	Motors, generators and actuators X	8:30 AM	Poster	The Forum
GS	Motors, generators and actuators XI	8:30 AM	Poster	The Forum
GT	Motors and Actuators	8:30 AM	Poster	The Forum

28/04/17 FRIDAY PM				
HA	Spin-dependent phenomena in 2D materials and van der Waals heterostructures	2:00 PM	Symposium	The Liffey B
HB	Composites, Nanoparticles, and Modeling	2:00 PM	Oral	Liffey Hall 2
HC	Microwave, Magneto-Optic and New Materials	2:00 PM	Oral	The Liffey A
HD	Domain wall motion	2:00 PM	Oral	Liffey Hall 1
HE	Multiferroics: Materials and Phenomena	2:00 PM	Oral	Liffey Meeting Room 2
HF	Voltage-controlled magnetism/ Magnetoresistive and half-metallic materials II	2:00 PM	Oral	Wicklow Hall 1
HG	Microstructure and Magnetic Characterization	2:00 PM	Oral	Wicklow Hall 2A
HH	Motors and Generators	2:00 PM	Oral	Wicklow Hall 2B
HM	Bio- and Chemical Magnetism and Magnetic Fluids	1:30 PM	Poster	The Forum
HN	Magnetic Nanoparticles, Nanowires, and 3D Structures IV	1:30 PM	Poster	The Forum
HO	STT- MRAM and spin-FET	1:30 PM	Poster	The Forum
HP	Sensors and MEMS: Materials & Devices	1:30 PM	Poster	The Forum
HQ	Ce-Based and Other Rare Earth Magnets	1:30 PM	Poster	The Forum
HR	Rare Earth Free Magnets, Composites and Recycling	1:30 PM	Poster	The Forum
HS	Motors and Magnetic Gears	1:30 PM	Poster	The Forum
HT	Motors, Generators and Actuators XII	1:30 PM	Poster	The Forum

Session WA
TUTORIAL: THE INTERNET OF THINGS
Atsufumi Hirohata, Chair
University of York, York, United Kingdom

4:00

WA-01. **A General Introduction to the Internet of Things (IoT).** ***(Invited)*** *L. Doyle*[1] *1. University of Dublin, Dublin, Ireland*

4:45

WA-02. **Non-Volatile Magnetic Memories for Internet of Things.** ***(Invited)*** *B. Dieny*[1] *1. SPINTEC, Univ Grenoble Alpes / CEA-INAC / CNRS, Grenoble, France*

5:30

WA-03. **HF Magnetics to Power the IoT.** ***(Invited)*** *C. O'Mathuna*[1] *1. Tyndall National Institute, Cork, Ireland*

TUESDAY THE LIFFEY B
MORNING
9:00

Session AA
MAGNETOCALORIC MATERIALS: NEW CONCEPTS FOR ENERGY APPLICATION
Anja Waske, Co-Chair
IFW Dresden, Dresden, Germany
Jesus Blanco, Co-Chair
University of Oviedo, Oviedo, Spain

9:00

AA-01. **Expanding the operating temperature range of magnetocaloric materials towards gas liquefaction.** ***(Invited)*** *A. Barcza*[1], H. Vieyra[1] and M. Katter[1] *1. Permanent Magnets, Vacuumschmelze GmbH & Co. KG, Hanau, Germany*

9:30

AA-02. **Thermal Switches and Enhanced Heat Transfer for Magnetocalorics.** ***(Invited)*** *A. Kitanovski*[1] *1. Faculty of Mechanical Engineering, University of Ljubljana, Ljubljana, Slovenia*

10:00

AA-03. **Active Magnetocaloric Heat Pipe (AMH) – A new concept for high-efficient cooling systems.** ***(Invited)*** T. Hess[1], L. Maier[1], A. Mahlke[1], J. König[1] and *K. Bartholome*[1] *1. Fraunhofer IPM, Freiburg, Germany*

10:30

AA-04. **Humidity regulation assisted by the magnetocaloric effect.** ***(Invited)*** *N. Hirano*[1] *1. Chubu Electric Power Co., Inc., Nagoya, Japan*

11:00

AA-05. **Efficient energy-conversion near room-temperature with transition metal based magnetic materials.** ***(Invited)*** *E. Brück*[1] *1. TU Delft, Delft, Netherlands*

11:30

AA-06. **Tuning magnetocaloric materials with stress.** ***(Invited)*** *X. Moya*[1] *1. Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom*

TUESDAY
MORNING
9:00

LIFFEY HALL 2

Session AB
MAGNETIC NANOPARTICLES, NANOWIRES, AND 3D STRUCTURES I

Frank Ludwig, Chair
TU Braunschweig, Braunschweig, Germany

9:00

AB-01. **Current Induced Domain Wall Motion in Cylindrical Nanowires.** ***(Invited)*** *H. Mohammed*[1], H. Corte-León[2], Y.P. Ivanov[1,3], J.A. Moreno[1], O. Kazakova[2] and J. Kosel[1] *1. King Abdullah University of Science and Technology, Thuwal - Jeddah, Saudi Arabia; 2. National Physical Laboratory, London, United Kingdom; 3. Erich Schmid Institute of Materials Science, Leoben, Austria*

9:30

AB-02. **In-situ TEM study of the field and current driven domain wall motion in cylindrical nanowires.** *I. Ivanov*[1,2], J. Kosel[2] and A. Chuvilin[3] *1. Electron Microscopy Group, Erich Schmid Institute of Materials Science, Leoben, Austria; 2. Department of Electrical Engineering, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 3. Electron Microscopy Lab, CIC NanoGUNE, San Sebastian, Spain*

9:45

AB-03. **Domains and Domain Walls in Flux-Closure Magnetic Nanotubes.** *M. Stano*[1], S. Schaefer[2], A. Wartelle[1], D. Gusakova[3], J. Toussaint[1], F. Genuzio[4], A. Sala[4], T.O. Mentes[4], A. Locatelli[4], M. Rioult[5], R. Belkhou[5], W. Ensinger[2], S. Martin[1,3] and O. Fruchart[1,3] *1. Institut Néel, Grenoble, France; 2. Materials Science, TU Darmstadt, Darmstadt, Germany; 3. SPINTEC, Grenoble, France; 4. Elettra – Sincrotrone Trieste S.C.p.A, Trieste, Italy; 5. Synchrotron SOLEIL, Gif-sur-Yvette, France*

10:00

AB-04. **Electroless Synthesis of Magnetic Trilayered Nanotubes.** ***(Invited)*** *S. Schaefer*[1], M. Stano[2], S. Martin[3,2], F. Genuzio[4], T.O. Mentes[4], A. Locatelli[4], M. Rioult[5], R. Belkhou[5], M. Antoni[1], O. Fruchart[3,2] and W. Ensinger[1] *1. Department of Materials Science, Technische Universität Darmstadt, Darmstadt, Germany; 2. CNRS, Institut Néel, Université Grenoble Alpes, Grenoble, France; 3. CNRS, CEA, SPINTEC, Université Grenoble Alpes, Grenoble, France; 4. Elettra - Syncrotrone Trieste S.C.p.A., Basovizza, Trieste, Italy; 5. Synchrotron SOLEIL, Saint-Aubin, France*

10:30

AB-05. **Magnetoresistance Measurements of FePt Nanoparticles in Dense Arrays.** A. Abdelgawad[1,2], S.D. Oberdick[1], M. Bapna[1], *S. Majetich*[1], C. Sun[3] and P. Voyles[3] *1. Physics, Carnegie Mellon University, Pittsburgh, PA; 2. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 3. Materials Science and Engineering, University of Wisconsin, Madison, WI*

10:45

AB-06. **Magnetization reversal of 3D vortices in cobalt nanospheres.** *M. Urbánek*[1], O. Vyroubal[1], M. Kolibal[1], M. Corbetta[2], O. Wojewoda[1], L. Flajsman[1], M. Vanatka[1], M. Stano[3], O. Fruchart[3,4] and T. Sikola[1] *1. Brno University of Technology, Brno, Czech Republic; 2. Nanoscan AG, Duebendorf, Switzerland; 3. Institut Néel, Univ. Grenoble Alpes / CNRS, Grenoble, France; 4. SPINTEC, Univ. Grenoble Alpes / CNRS / CEA-INAC, Grenoble, France*

11:00

AB-07. **Ferromagnetic resonance study of individual highly ordered 3D nanoparticle superlattices.** *E. Josten*[1,2], R. Narkowicz[1], A. Kakay[1], D. Meertens[3], L. Bergström[4], K. Lenz[1], T. Brückel[2], J. Faßbender[1] and J. Lindner[1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. JCNS-2 and PGI-4, Forschungszentrum Jülich, Jülich, Germany; 3. ERC, Forschungszentrum Jülich, Jülich, Germany; 4. Department of Materials and Environmental Chemistry, Stockholm University, Stockholm, Sweden*

11:15

AB-08. **Microstructure evolution and magnetic behavior of self-organized arrays of ultra-high aspect ratio epitaxial Co nanostrips.** *K. Ermakov*[1], A. Ognev[1], A.Y. Samardak[1], A. Kozlov[1], A.V. Davydenko[1], E. Sukovatitsina[1], L. Chebotkevich[1], A. Stancu[2] and A.S. Samardak[1] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania*

11:30

AB-09. **Two-Photon Lithography for 3D Magnetic Nanostructure Fabrication.** *M. Hunt*[1], G.I. Williams[1], B. Boehm[2], M. Taverne[3], D. Ho[3], S.R. Giblin[1], D.E. Read[1], J.G. Rarity[3], R. Allenspach[2] and S. Ladak[1] *1. School of Physics and Astronomy, Cardiff University, Cardiff, United Kingdom; 2. IBM Research - Zurich, Rüschlikon, Switzerland; 3. Department of Electrical and Electronic Engineering, University of Bristol, Bristol, United Kingdom*

11:45

AB-10. **3D interconnected magnetic nanofiber networks with multifunctional properties.** *T. da Câmara Santa Clara Gomes*[1], J. De La Torre Medina[2], Y. Velázquez-Galván[3], J. Martnez-Huerta[1], A. Encinas[3] and L. Piraux[1] *1. Institute of Condensed Matter and Nanosciences, Université Catholique de Louvain, Louvain-La-Neuve, Belgium; 2. Instituto de Investigaciones en Materiales - Unidad Morelia, Universidad Nacional Autónoma de México, Mexico, Mexico; 3. Division de Materiales Avanzados, Instituto Potosino de Investigacion Cientca y Tecnologica, San Luis Potosí, Mexico*

TUESDAY MORNING 9:00 — THE LIFFEY A

Session AC
MAGNONICS I
Gianluca Gubbiotti, Chair
Istituto Officina dei Materiali del CNR, Perugia, Italy

9:00

AC-01. **Total non-reflection with refraction of spin waves at the edge of antidots to generate and control spin-wave beams propagating in YIG films of mm and nm thicknesses.** P. Gruszecki[1], R. Gieniusz[2], U. Guzowska[2], A. Stognij[3], A. Maziewski[2] and *M. Krawczyk*[1] *1. Faculty of Physics, Adam Mickiewicz University in Poznan, Poznan, Poland; 2. Faculty of Physics, University of Bialystok, Bialystok, Poland; 3. Scientific-Practical Materials Research Center at National Academy of Sciences of Belarus, Minsk, Belarus*

9:15

AC-02. **Inhomogeneous parametric pumping of spin-waves by acoustic waves in an yttrium-iron-garnet film.** I. Lisenkov[1], *P. Dhagat*[1] and A. Jander[1] *1. School of Electrical Engineering and Computer Science, Oregon State University, Corevallis, OR*

9:30

AC-03. **Coupled mode theory for the acoustic wave – spin wave interaction in the magphonic crystal.** *P. Graczyk*[1], J. Klos[1] and M. Krawczyk[1] *1. Department of Physics, Adam Mickiewicz University, Poznan, Poland*

9:45

AC-04. **Integrated three-port spin wave waveguide using thin YIG film.** *T. Yoshimoto*[1], T. Goto[1,2], A. Banno[1], K. Shimada[1], H. Takagi[1], Y. Nakamura[1], H. Uchida[1], K. Sekiguchi[3], C.A. Ross[4] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST PRESTO, Kawaguchi, Japan; 3. Keio University, Yokohama, Japan; 4. Massachusetts Institute of Technology, Cambridge, MA*

10:00

AC-05. **Spin wave propagation and spin polarized electron transport in single crystal iron films.** ***(Invited)*** O. Gladii[1], D. Halley[1], Y. Henry[1] and *M. Bailleul*[1] *1. Institut de Physique et Chimie des Matériaux de Strasbourg, CNRS-Université de Strasbourg, Strasbourg, France*

10:30

AC-06. **Splitting of Ferromagnetic Resonance Spectra of Periodically Modulated One Dimensional Magnonic Crystals.** *S. Khanal*[1], P.N. Sherpa[1] and L. Spinu[1] *1. AMRI, University of New Orleans, New Orleans, LA*

10:45

AC-07. **Spin wave power flow and caustics in ultrathin films with the Dzyaloshinskii-Moriya interaction and spin currents.** *J. Kim*[1], R. Stamps[2] and R.E. Camley[3] *1. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Univ. Paris-Sud, Universite Paris-Saclay, Orsay, France; 2. SUPA School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. Department of Physics and Energy Science, University of Colorado at Colorado Springs, Colorado Springs, CO*

11:00

AC-08. **Nano-scaled magnon transistor based on three-magnon splitting.** Q. Wang[1], P. Pirro[1], B. Hillebrands[1] and *A. Chumak*[1] *1. Fachbereich Physik, Technische Universität Kaiserslautern, Kaiserslautern, Germany*

11:15

AC-09. **Resonance based detection of magnetic nanoparticles using nanopatterned ferromagnets.** *M. Sushruth*[1]*, J. Ding[2], X. Zhou[2], J. Duczynski[3], R. Woodward[1], R. Begley[1], H. Fangohr[4], R. Fuller[3], A. Adeyeye[2], M. Kostylev[1] and P. Metaxas[1] *1. School of Physics, University of Western Australia, Perth, WA, Australia; 2. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 3. School of Chemistry and Biochemistry, University of Western Australia, Perth, WA, Australia; 4. University of Southampton, Southampton, United Kingdom*

11:30

AC-10. **Magnetostatic spin waves in irregular narrow ferromagnetic waveguides.** *D. Kalyabin*[1,2], E. Beginin[3], Y. Sharaevskii[3], A.V. Sadovnikov[3,1] and S. Nikitov[1,2] *1. Kotel'nikov IRE RAS, Moscow, Russian Federation; 2. MIPT, Dolgoprudny, Russian Federation; 3. Chernyshevskii Saratov State University, Saratov, Russian Federation*

11:45

AC-11. **Parametric amplification of nonlinear spin waves in magnetic nanostructures.** *M. Carpentieri*[1], R.V. Verba[2], G. Finocchio[3], V.S. Tiberkevich[4] and A.N. Slavin[4] *1. Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 4. Physics, Oakland University, Rochester, MI*

TUESDAY MORNING 9:00 — LIFFEY HALL 1

Session AD
SPIN CURRENTS, SWITCHING AND SPIN SEEBECK EFFECT I

Robert Reeve, Chair
Johannes Gutenberg University, Mainz, Germany

9:00

AD-01. **Towards standardisation of the spin Seebeck effect for thin films: Fe_3O_4:Pt.** *K. Morrison*[1] *1. Physics, Loughborough University, Loughborough, United Kingdom*

9:15

AD-02. **Spin transport in insulating systems – interface vs. bulk effects.** J. Cramer[1,2], E. Guo[1,3], A. Kehlberger[1], G. Jakob[1] and *M. Kläui*[1,2] *1. Institute of Physics, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, TN*

9:30

AD-03. **Auto-oscillations in YIG/Pt nanostructures driven by the spin Seebeck effect.** *V. Lauer*[1], M. Schneider[1], T. Meyer[1], C. Dubs[2], P. Pirro[1], T. Brächer[3], F. Heussner[1], B. Lägel[1], V.I. Vasyuchka[1], A.A. Serga[1], B. Hillebrands[1] and A. Chumak[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. INNOVENT e.V., Technologieentwicklung Jena, Jena, Germany; 3. SPINTEC, UMR-8191, CEA-INAC/CNRS/UJF-Grenoble/Grenoble-INP, Grenoble, France*

9:45

AD-04. **Absence of the Thermal Hall Effect in Anomalous Nernst and Spin Seebeck Effects.** *Y. Chen*[1] and S. Huang[1] *1. Physics, National Taiwan University, Taipei, Taiwan*

10:00

AD-05. **Thermal spin current originated from spin Nernst effect in ferromagnet/heavy metal bilayer structures.** *D. Kim*[1], C. Jeon[1], J. Choi[1], J. Lee[1], S. Surabhi[2], J. Jeong[2], K. Lee[3,4] and B. Park[1] *1. Department of Material Science and Engineering, KAIST, Daejeon, The Republic of Korea; 2. Department of Materials Science and Engineering, Chungnam National University, Daejeon, The Republic of Korea; 3. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 4. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea*

10:15

AD-06. **Optimisation of Co_2MnSi thin films and multilayers for spin Seebeck devices.** *C.D. Cox*[1], K. Morrison[1] and M. Cropper[1] *1. Department of Physics, Loughborough University, Loughborough, United Kingdom*

10:30

AD-07. **High Efficiency Pure Spin Current Driven Domain Wall Depinning in Geometrically Tailored Non-Local Spin Valves.** *R.M. Reeve*[1], A. Pfeiffer[1,2], M. Voto[3], S. Hu[4], W. Savero-Torres[5], N. Richter[1,2], A. Kronenberg[1], M. Jourdan[1,2], L. Vila[5], J. Attané[5], L. Lopez-Diaz[3], T. Kimura[4] and M. Kläui[1,2] *1. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz (MAINZ), Mainz, Germany; 3. Departamento de Física Aplicada, Universidad de Salamanca, Salamanca, Spain; 4. Research Center for Quantum Nano-Spin Sciences, Kyushu University, Fukuoka, Japan; 5. Institut Nanosciences et Cryogénie, Université Grenoble Alpes & CEA, Grenoble, France*

10:45

AD-08. **Observation of spin transport in *n*-type non-degenerate germanium using $Co_2Fe_{0.4}Mn_{0.6}Si$ Heusler alloy electrodes.** *T. Koike*[1], M. Oogane[1], T. Takada[2], H. Saito[2] and Y. Ando[1] *1. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Aoba-yama, Japan; 2. National Institute of Advanced Industrial Science and Technology, Umezono, Japan*

11:00

AD-09. **Giant Magnetoresistance exceeding 10 % in metal based lateral devices.** *G. Zahnd*[1], V. Pham[1], A. Marty[1], L. Vila[1] and J. Attané[1] *1. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, Grenoble, France*

11:15

AD-10. **Characterization of 3- and 4-terminal spin signals in Si non-local transport devices with giant spin accumulation.** *R. Jansen*[1], A. Spiesser[1], H. Saito[1], Y. Fujita[2], S. Yamada[2], K. Hamaya[2] and S. Yuasa[1] *1. National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

11:30

AD-11. Ballistic spin-polarized transport in a correlated electronic system. *M. Tomczyk*[1,2] and J. Levy[1,2] *1. Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA; 2. Pittsburgh Quantum Institute, Pittsburgh, PA*

11:45

AD-12. THz-Frequency Spin-Hall Oscillator Based on a Canted Antiferromagnet. R. Khymyn[1], *O. Prokopenko*[2], O. Sulymenko[2], V.S. Tiberkevich[3] and A.N. Slavin[3] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. Faculty of Radio Physics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 3. Department of Physics, Oakland University, Rochester, MI*

TUESDAY MORNING 9:00 | LIFFEY MEETING ROOM 2

Session AE
EXCHANGE BIAS AND PATTERNED FILM I
Paolo Vavassori, Chair
CIC nanoGUNE, San Sebastian, Spain

9:00

AE-01. Temperature dependent magnetic properties of patterned FeNi/Gd dot arrays. P. Lapa[1,2], J. Ding[1], C. Phatak[1], J. Pearson[1], J. Jiang[1], A. Hoffmann[1] and *V. Novosad*[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Depatment of Physics & Astronomy, Texas A&M University, College Station, TX*

9:15

AE-02. Magnetic vortex core sizes and hysteresis loops in sub-100 nm Permalloy dots. *M. Goiriena-Goikoetxea*[1]*, K. Guslienko[2,3], M. Rouco[4], I. Orue[5], E. Berganza[6], M. Jaafar[6], A. Asenjo[6] and A. García-Arribas[4,1] *1. Basque Center for Materials, Applications and Nanostructures (BCMaterials), Derio, Spain; 2. Materials Physics, University of the Basque Country (UPV/EHU), Donostia, Spain; 3. IKERBASQUE, Bilbao, Spain; 4. Electricity and Electronics, University of the Basque Country (UPV/EHU), Lejona, Spain; 5. SGIker, UPV/EHU, Lejona, Spain; 6. Instituto de Ciencia de Materiales CSIC, Madrid, Spain*

9:30

AE-03. Magnetic Stray Field Landscape Design by Domain Engineering in Magnetic Thin Film Systems for Magnetic Particle Transport. *(Invited)* *A. Ehresmann*[1], H. Huckfeldt[1], I. Koch[1], T. Ueltzhoeffer[1], A. Tomita[1], V. Neu[2], U. Wolff[2], O.G. Schmidt[2], M. Albrecht[3] and D. Holzinger[1] *1. Institute of Physics and Center for Interdisciplinary Nanostructure Science and Technology (CINSaT), Kassel University, Kassel, Germany; 2. IFW Dresden, Dresden, Germany; 3. University of Augsburg, Augsburg, Germany*

10:00

AE-04. **Crafting magnetic anisotropy landscapes in exchange-bias multilayers for the manipulation of spin waves. *(Invited)*** *R. Bertacco*[1,2], E. Albisetti[1,3], D. Petti[1], S. Tacchi[4], G. Csaba[5], P. Vavassori[6] and E. Riedo[3] *1. Department of Physics, Politecnico di Milano, Milano, Italy; 2. IFN-CNR (Istituto di Fotonica e Nanotecnologie), Milano, Italy; 3. CUNY-Advanced Science Research Center and City College New York, New York, NY; 4. Unità di Perugia, Istituto Officina dei Materiali del CNR (CNR-IOM), Perugia, Italy; 5. Center for Nano Science and Technology, University of Notre Dame, Notre Dame, IN; 6. CIC NanoGUNE, Donostia-San Sebastian, Spain*

10:30

AE-05. **Chirality induced exchange bias effect in DyCo/FeNi bilayers.** *D. Lott*[1] and K. Chen[2] *1. WPD, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany; 2. University of Cologne, Köln, Germany*

10:45

AE-06. **Depth-dependent magnetisation reversal in Fe/FeMn exchange-biased bilayers determined by conversion electron Mössbauer spectroscopy hysteresis loops.** M.S. Araujo Filho[1,2], L.E. Fernandez-Outon[3,1], J.D. Ardisson[1] and *W.A. Macedo*[1] *1. Centro de Desenvolvimento da Tecnologia Nuclear - CDTN, Belo Horizonte, Brazil; 2. Instituto Federal do Norte de Minas Gerais, Januária, Brazil; 3. Departamento de Física, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil*

11:00

AE-07. **Unconventional exchange-bias phenomenon in nanocomposite materials.** *T. Maity*[1] and S. Roy[1] *1. Tyndall National Institute, Cork, Ireland*

11:15

AE-08. **Exchange-bias Effect in $ErFeO_3$ Single Crystal and in Polycrystalline La-doped $BaFeO_3$.** *A. Wisniewski*[1], I. Fita[1], R. Puzniak[1] and V. Markovich[2] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 2. Department of Physics, Ben-Gurion University of the Negev, Beer Sheva, Israel*

11:30

AE-09. **Spatial Evolution of the Ferromagnetic Phase Transition in an Exchange Graded Film. *(Invited)*** *C. Miller*[1,2], D. Belyea[1], P. Riego[3], A. Berger[3], P. Kienzle[4], A. Grutter[4] and B.J. Kirby[4] *1. Rochester Institute of Technology, Rochester, NY; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. CIC nanoGUNE, San Sebastian, Spain; 4. NIST Center for Neutron Research, Gaithersburg, MD*

Session AF
SENSORS AND MEMS: MATERIALS

Alexander Samardak, Chair
Far Eastern Federal University, Vladivostok, Russian Federation

9:00

AF-01. **Thin film artificial magnetoelectric heterostructures as micro-beam resonators for high sensitivity magnetic sensing applications.** *S.P. Bennett*[1], M. Staruch[1], B.R. Matis[2], J.W. Baldwin[2], S.F. Cheng[3], K. Bussmann[1] and P. Finkel[1] *1. Materials Science and Technology, The U.S. Naval Research Laboratory, Washington, DC; 2. Acoustics Division, The U.S. Naval Research Laboratory, Washington, DC; 3. NOVA Research Inc., Washington, DC*

9:15

AF-02. **Magneto-optical and transport characterization of micromachined Si cantilever with integrated high frequency GMI thin-film device under local compressive/tensile strain.** *G. Büttel*[1] and U. Hartmann[1] *1. University of Saarland, Saabrücken, Germany*

9:30

AF-03. **Ultrasensitive flux-gate magnetometer based on iron garnet film for biomedical applications.** ***(Invited)*** *P. Vetoshko*[1,2], N. Gusev[1], V. Belotelov[1,3], A. Zvezdin[1,4] and V. Shavrov[2] *1. Russian Quantum Center, Skolkovo, Russian Federation; 2. Kotelnikov Institute of Radioengineering and Electronics of the Russian Academy of Sciences, Moscow, Russian Federation; 3. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 4. Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russian Federation*

10:00

AF-04. **Magnetic field distortion from conductive layers for high frequency speed sensor applications.** *M. Ortner*[1] *1. Microsystem Technologies, Carinthian Tech Research, Villach, Austria*

10:15

AF-05. **The influence of edge inhomogeneities on vortex hysteresis curves in magnetic tunnel junctions.** *T. Wurft*[1,2], W. Raberg[1], K. Pruegl[3], A. Satz[4] and H. Brueckl[5] *1. Infineon Technologies AG, Neubiberg, Germany; 2. Thin Films and Physics of Nanostructures, Bielefeld University, Bielefeld, Germany; 3. Infineon Technologies AG, Regensburg, Germany; 4. Infineon Technologies Austria AG, Villach, Austria; 5. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria*

10:30

AF-06. **Probing the geometrical dependence of the propagation and nucleation field in magnetic looping structures.** *B. Borie*[1,2], J. Wahrhusen[1], H. Grimm[1] and M. Kläui[2] *1. Sensitec GmbH, Mainz, Germany; 2. Institut für Physik, Johannes Gutenberg-Universität, Mainz, Germany*

10:45

AF-07. **Vortex magnetization state in a GMR spin-valve type field sensor.** *H. Brueckl*[1], A. Satz[2], K. Pruegl[2], T. Wurft[2], S. Luber[2], W. Raberg[2], J. Zimmer[2] and D. Suess[3] *1. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 2. Infineon Technologies Austria AG, Villach, Austria; 3. Institute of Solid State Physics, TU Wien, Vienna, Austria*

11:00

AF-08. **Wide-dynamic-range magnetic sensor based on magnetic tunnel junctions using perpendicularly magnetized synthetic antiferromagnetic reference layer.** *T. Nakano*[1], M. Oogane[1], T. Furuichi[2] and Y. Ando[1,3] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. DENSO Corporation, Kariya, Japan; 3. Center for Spintronics Research Network, Sendai, Japan*

11:15

AF-09. **Extremely sensitive magnetoresistance sensors using few-layer graphene/boron-nitride.** K. Gopinadhan[1], Y. Shin[1], R. Jalil[2], T. Venkatesan[1], A. Geim[2], A. Castro Neto[1] and *H. Yang*[1] *1. National University of Singapore, Singapore, Singapore; 2. University of Manchester, Manchester, United Kingdom*

11:30

AF-10. **Current dependence of low-frequency noise in giant magnetoresistive sensors.** *V. Trauchessec*[1], A. Solignac[1], M. Pannetier Lecoeur[1] and C. Fermon[1] *1. SPEC, Commissariat à l'Energie Atomique, Antony, France*

11:45

AF-11. **Nanostructured $La_{0.81}Sr_{0.19}Mn_{1-y}Co_yO_3$ Films for Room Temperature Pulsed Magnetic Field Sensors.** *N. Zurauskiene*[1], V. Rudokas[1], S. Balevicius[1], V. Stankevic[1], S. Kersulis[1], R. Vasiliauskas[1], M. Vagner[1] and V. Plausinaitiene[1] *1. Center for Physical Sciences and Technology, Vilnius, Lithuania*

Session AG
L10 MAGNETS AND RELATED CRYSTAL STRUCTURES
Dagmar Goll, Chair
Aalen University, Aalen, Germany

9:00

AG-01. **Tetragonality and Magnetism in Equiatomic FeNi.** N. Bordeaux[1], *L. Lewis*[1,2], K. Barmak[3] and S. Keshavarz[1,2] *1. Chemical Engineering Department, Northeastern University, Boston, MA; 2. Mechanical Engineering Department, Northeastern University, Boston, MA; 3. Department of Applied Physics and Applied Mathematics, Columbia University, New York, NY*

9:15

AG-02. **Towards realization of bulk $L1_0$-FeNi.** *D. Niarchos*[1], M. Gjoka[1], V. Psycharis[1] and E. Devlin[1] *1. INN, NCSR Demokritos, Athens, Greece*

9:30

AG-03. **Current assistant synthesis: acceleration formation of low temperature phases for permanent magnets production.** *D.Y. Karpenkov*[1,2], K. Skokov[1], I.A. Radulov[1], T. Braun[1] and O. Gutfleisch[1] *1. Institute of Materials Science, TU Darmstadt, Darmstadt, Germany; 2. National University of Science and Technology "MISiS", Moscow, Russian Federation*

9:45

AG-04. **Fabrication and characterization of $L1_0$-FeNi films using a combinatorial sputtering approach.** *G. Giannopoulos*[1], A. Kaidatzis[1], R. Salikhov[2], G. Varvaro[3], G. Barucca[4], S. Laureti[3], M. Koutsouflakis[1], V. Psycharis[1], M. Farle[2] and D. Niarchos[1] *1. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece; 2. Fakultät für Physik and Center for Nanointegration (CeNIDE), University of Duisburg-Essen, Duisburg, Germany; 3. ISM-CNR, Rome, Italy; 4. Dipartimento SIMAU, Università Politecnica delle Marche, Ancona, Italy*

10:00

AG-05. **Magnetic properties of $L1_0$ FeNi phase developed through annealing of an amorphous alloy.** ***(Invited)*** *P. Sharma*[1], Y. Zhang[1] and A. Makino[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Tohoku University, Sendai, Japan*

10:30

AG-06. **Coercivity development in MnAl permanent magnet powders through flash-milling processing of gas-atomized particles.** *J. Rial*[1], M. Villanueva[1], E. Céspedes[1], N. Lopez[1], J. Camarero[1], L. Marshall[2], L. Lewis[2] and A. Bollero[1] *1. Division of Permanent Magnets and Applications, IMDEA Nanoscience, Madrid, Spain; 2. Dept. of Chemical Engineering, Northeastern University, Boston, MA*

10:45

AG-07. **Ferromagnetic $L1_0$ phase formation in the Mn-Al-C alloys induced by high-pressure spark plasma sintering.** *M. Tyrman*[1,2], S. Quetel-Weben[3], A. Pasko[1], L. Perriere[3], I. Guillot[3], V. Etgens[2] and F. Mazaleyrat[1] *1. SATIE, ENS Cachan, CNRS, Universite Paris-Saclay, Cachan, France; 2. LISV, Universite de Versailles Saint-Quentin-en-Yvelines, Velizy, France; 3. ICMPE, CNRS, Universite Paris-Est Creteil, Thiais, France*

11:00

AG-08. **Alloying with a Few Atomic Percent of Ga Makes Mn-Al Thermodynamically Stable.** *T. Mix*[1,2], F. Bittner[1,3], K. Müller[1], L. Schultz[1,2] and T. Woodcock[1] *1. Institute for Metallic Materials, IFW Dresden, Dresden, Germany; 2. Department of Physics, TU Dresden, Dresden, Germany; 3. Institute for Materials Science, TU Dresden, Dresden, Germany*

11:15

AG-09. **Recrystallization and Magnetic Hardening in $Mn_{1.8}Ga$ Magnet by Spark Plasma Sintering Deformation.** *Q. Lu*[1], C. Li[1], M. Yue[1], H. Zhang[1] and Z. Altounian[2] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Physics Department and Centre for the Physics of Materials, McGill University, Montreal, QC, Canada*

11:30

AG-10. **Stripe domains in tetragonally distorted Fe-Co-C films with perpendicular anisotropy.** *V. Neu*[1], L. Reichel[1], S. Fähler[1], R. Schäfer[1] and K. Nielsch[1] *1. IFW Dresden, Dresden, Germany*

11:45

AG-11. **Magnetic hardening and coexistence of antiferromagnetic and ferromagnetic ordering in the Heusler solid solution $Mn_{1-x}Fe_xRu_2Sn$.** *J.E. Douglas*[1], E.E. Levin[2,3], P. Adler[4], J.C. Castillo[3], K.L. Page[5], C. Felser[4], T.M. Pollock[2,3] and R. Seshadri[3,2] *1. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD; 2. Materials, University of California, Santa Barbara, Santa Barbara, CA; 3. Materials Research Laboratory, University of California Santa Barbara, Santa Barbara, CA; 4. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 5. Chemical and Engineering Materials Division, Oak Ridge National Laboratory, Oak Ridge, TN*

Session AH
FUNDAMENTAL PROPERTIES AND INTERDISCIPLINARY TOPICS
Federico Montoncello, Chair
University of Ferrara, Ferrara, Italy

9:00

AH-01. **Magnetic order in Cr-doped $Sb_{2-x}Te_3$ topological insulator thin films.** ***(Invited)*** *N. Steinke*[1], P. Baker[1], L. Duffy[1,2], G. van der Laan[3], Z. Salman[4], T. Hesjedal[2] and S. Langridge[1] *1. ISIS neutron and muon source, Rutherford Appleton Laboratory, Chilton, United Kingdom; 2. Department of Physics, University of Oxford, Oxford, United Kingdom; 3. Diamond Light Source, Rutherford Appleton Laboratory, Chilton, United Kingdom; 4. SμS, Paul Scherrer Institut, Villigen, Switzerland*

9:30

AH-02. **Orbital magnetic anisotropy in ordered $L1_0$ CoPt and $NiFePt_2$ thin films probed with XMCD.** *F. Wilhelm*[1], T. Kohl[1], G. Schmerber[2], V. Pierron-Bohnes[2] and A. Rogalev[1] *1. ESRF, Grenoble, France; 2. Magnetism of the Nanostructures, IPCMS, Strasbourg, France*

9:45

AH-03. **Magnetic Behavior of Polycrystalline Gadolinium Subjected to a Magneto-Thermal Protocol.** *V. Provenzano*[1] and A. Arrott[2] *1. Materials Science and Engineering Division, National Institute of Standards and Technology (NIST), Gaithersburg, MD; 2. Physics, Simon Fraser University, Burnaby, BC, Canada*

10:00

AH-04. **From intrinsic magnetic properties to applications of Fe_8N.** *I. Dirba*[1], C. Schwöbel[1], T.O. Helbig[1,2], M. Duerrschnabel[2], L. Molina-Luna[2], K. Hofmann[3], H. Zhang[1], L. Alff[1] and O. Gutfleisch[1] *1. Institute of Materials Science, Technische Universität Darmstadt, Darmstadt, Germany; 2. Department of Materials and Geosciences, Technische Universität Darmstadt, Darmstadt, Germany; 3. Eduard-Zintl-Institute of Inorganic and Physical Chemistry, Technische Universität Darmstadt, Darmstadt, Germany*

10:15

AH-05. **Stochastic phase synchronization of perpendicularly magnetized spin torque oscillators with second-order uniaxial anisotropy.** *H. Arai*[1,2] and H. Imamura[2] *1. JST, Kawaguchi, Japan; 2. AIST, Tsukuba, Japan*

10:30

AH-06. **Ultrafast phase transition in strained VO_2 films.** *N.S. Bingham*[1], R.J. Suess[2], S.A. Mathews[3], H. Kim[3], N.A. Charipar[3] and A. Piqué[3] *1. National Research Council Research Associate at the Naval Research Laboratory, Washington, DC; 2. Nova Research, Inc. at the Naval Research Laboratory, Washington, DC; 3. Naval Research Laboratory, Washington, DC*

10:45

AH-07. **Current enhanced THz emission from nonmagnet/ ferromagnet structures on flexible substrates.** *Y. Wu*[1,2], M. Chen[1], L. Ke[2] and H. Yang[1] *1. National University of Singapore, Singapore, Singapore; 2. Institute of Materials Research and Engineering, A-STAR, Singapore, Singapore*

11:00

AH-08. **Control of volume magnetization in magnetoelectric antiferromagnet Cr_2O_3 thin film by doping.** *T. Nozaki*[1], M. Al-Mahdawi[1], Y. Shiokawa[1], S. Pati[1], S. Ye[1], T. Shibata[2], S. Yonemura[2], T. Nakamura[3], Y. Kotani[3], K. Toyoki[3] and M. Sahashi[1,4] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. TDK Corporation, Chiba, Japan; 3. Japan Synchrotron Radiation Institute, SPring-8, Hyogo, Japan; 4. ImPACT program, Tokyo, Japan*

11:15

AH-09. **Interacting magnetic nanoparticles under applied magnetic fields – how to estimate the local heat dissipation?** *C. Munoz-Menendez*[1], D. Serantes[1,2], S. Ruta[2], O. Hovorka[3], K. Livesey[4], O. Chubykalo-Fesenko[5], R. Chantrell[2] and D. Baldomir[1] *1. Instituto de Investigacións Tecnolóxicas and Departamento de Física Aplicada, Universidade de Santiago de Compostela, Santiago de Compostela, Spain; 2. Department of Physics, University of York, York, United Kingdom; 3. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 4. Department of Physics and Energy Science and UCCS Biofrontiers Center, University of Colorado Colorado Springs, Colorado Springs, CO; 5. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

11:30

AH-10. **Spin-orbit interaction and spin relaxation in graphene induced by transition-metal dichalcogenides.** *T. Wakamura*[1], S. Guéron[1], A. Ouerghi[2] and H. Bouchiat[1] *1. Laboratoire de Physique des Solides, University Paris-Sud, Orsay, France; 2. C2N, CNRS, Marcoussis, France*

11:45

AH-11. **Determining the Induced Magnetic Moment in Graphene by Polarised Neutron Reflectivity and X-Ray Magnetic Circular Dichroism.** *R. Aboljadayel*[1], D. Love[1], T. Charlton[2], C. Kinane[2], C. Vas[3], A. Ionescu[1], J. Llandro[1], M. Martin[4], R. Weatherup[4], C. Barnes[1], S. Hofmann[4] and S. Langridge[2] *1. Physics, University of Cambridge, Cambridge, United Kingdom; 2. ISIS Facility, STFC Rutherford Appleton Laboratory, Chilton, United Kingdom; 3. Paul Scherrer Institute, Zurich, Switzerland; 4. Engineering, University of Cambridge, Cambridge, United Kingdom*

Session AM
SPIN-ORBIT TORQUES AND SPIN-ORBIT EFFECTS I
(Poster Session)

Michel Viret, Co-Chair
CEA Saclay, Gif-sur-Yvette, France
Markus Meinert, Co-Chair
Bielefeld University, Bielefeld, Germany

AM-01. **Large and tunable spin Hall angles in gold based alloys: from intrinsic to side jump contributions.** P. Laczkowski[1,2], *P. Noel*[1], Y. Fu[1], H. Yang[1], J. Rojas-Sanchez[2], V. Pham[1], G. Zahnd[1], C. Deranlot[2], S. Collin[2], C. Bouard[1], P. Warin[1], M. Chshiev[1], A. Marty[1], J. Attané[1], A. Fert[2], H. Jaffres[2], L. Vila[1] and J. George[2] *1. Spintec, Institut Nanosciences et Cryogenie, Univ. Grenoble Alpes, CEA, CNRS, Grenoble, France; 2. Unité Mixte de Physique CNRS-Thales, Univ. Paris-sud, Université Paris-Saclay 11, Palaiseau, France*

AM-02. **Size effect of spin-Hall-assisted spin transfer torque in the presence of Dzyaloshinskii-Moriya interaction.** Y. Gao[1,2], *Z. Wang*[1,2], X. Lin[1,2], Y. Zhang[1,2] and W. Zhao[1,2] *1. Fert Beijing Research Institute, Beihang University, Beijing, China; 2. School of Electrical and Information Engineering, Beihang University, Beijing, China*

AM-03. **Inverse Spin Hall Effect in Nickel Thin Films.** *A.C. Gandhi*[1], Y. Weng[1] and J.G. Lin[1] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

AM-04. **Unexpected strong spin Hall effect in heavy-element-free paramagnetic CoGa.** *Y. Lau*[1,2], H. Lee[2] and M. Hayashi[1,2] *1. Department of Physics, The Univeristy of Tokyo, Tokyo, Japan; 2. National Institute for Materials Science, Tsukuba, Japan*

AM-05. **Field-free spin Hall effect driven magnetization switching induced by IrMn.** X. Han[1], C. Wan[1], *W. Kong*[1] and X. Zhang[1] *1. State Key Lab of Magnetism, Institute of Physics, Beijing, China*

AM-06. **Stack engineering of spin-orbit torque efficiency in magnetic bilayers.** *D. Lee*[1,2], J. Kim[1,3], B. Ju[3], H. Koo[1], B. Min[1], K. Lee[2,4] and O. Lee[1] *1. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. KU-KIST Graduate School, Korea University, Seoul, The Republic of Korea; 3. Electrical Engineering, Korea University, Seoul, The Republic of Korea; 4. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

AM-07. **The W thickness dependence of interfacial and bulk spin-orbit torques in the NiFe/W bilayers.** S. Li[1,2] and *T. Zhu*[1] *1. State Key Lab for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. College of Electronics and Information Technology, Guangdong Ocean University, Zhanjiang, China*

AM-08. **All-Optical Detection of Thickness Dependent Spin Hall Angle of W Within Structural Phase Transition Regime in W/CoFeB/SiO_2 Heterostructures.** S. Mondal[1], S. Choudhury[1], *S. Pan*[1], J. Sinha[1] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India*

AM-09. **Temperature dependence of spin orbit effective fields in Pt/GdFeCo.** *W. Ham*[1], S. Kim[1], K. Kim[1,2], T. Okuno[1], H. Yoshikawa[3], A. Tsukamoto[3], T. Moriyama[1] and T. Ono[1] *1. Institute of Chemical Research, Kyoto University, Uji, Japan; 2. Department of Physics, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 3. College of Science and Technology, Nihon University, Funabashi, Japan*

AM-10. **Continuous tuning the magnitude and direction of spin-orbit torque using bilayer heavy metals.** *P. He*[1], X. Qiu[1], V. Zhang[1], Y. Wu[1], M. Kuok[1] and H. Yang[1] *1. National University of Singapore, Singapore, Singapore*

AM-11. **Quantitative Characterization of Spin-Orbit Torques in Pt/Co/Pt /Co/Ta Heterostructure on the Magnetization Azimuthal Angle Dependence.** *C. Engel*[1], S. Goolaup[1], F. Luo[1] and W. Lew[1] *1. Nanyang Technological University, Singapore, Singapore*

AM-12. **Enhanced current induced spin orbital torque efficiency in Pt by B doping.** B. Yang[1], *P. Lin*[1] and C. Lai[1] *1. Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan*

AM-13. **Electrical control over spin-orbit-torque-induced perpendicular magnetization switching.** X. Han[1], *X. Zhang*[1], C. Wan[1], H. Wu[1], L. Huang[1], W. Kong[1], C. Fang[1] and U. Khan[1] *1. State Key Lab of Magnetism, Institute of Physics, Beijing, China*

AM-14. **Direct Magneto-Optical Detection of Transverse Effective Field Generated by Spin Orbit Torque.** *N. Lei*[1], T. Xing[1], C. Zhou[2], W. Zhao[1] and Y. Wu[2] *1. Beihang University, Beijing, China; 2. Fudan University, Shanghai, China*

AM-15. **Observation of Large Planar Hall Effect on the Current Induced Spin-orbit Effective Fields in Ta/MgO/CoFeB/Ta.** Q. Wong[1], W. Gan[1], F. Luo[1], G.J. Lim[1], F. Tan[1] and *W. Lew*[1] *1. Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore*

AM-16. **Spin-to-charge interconversion in ferromagnetic/ nonmagnetic nanostructures using direct and inverse spin Hall effects.** *V. Pham*[1], P. Noel[1], G. Zahnd[1], A. Marty[1], C. Bouard[1], W. Savero-Torres[1], L. Vila[1] and J. Attané[1] *1. Spintec, Institut Nanosciences et Cryogenie, Univ. Grenoble Alpes, CEA, CNRS, Grenoble, France*

AM-17. **Charge-to-spin conversion in the ferroelectric Rashba semiconductor GeTe.** *S. Varotto*[1], C. Rinaldi[1,2], S. Cecchi[3], R. Calarco[3] and R. Bertacco[1,2] *1. Dipartimento di Fisica, Politecnico di Milano, Milano, Italy; 2. IFN-CNR, Milano, Italy; 3. Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany*

AM-18. **Spin to charge current interconversion at NM/Bi_2O_3 (NM = Cu, Ag, and Au) interfaces.** H. Tsai[1], S. Karube[1], K. Kondou[2] and *Y. Otani*[1,2] *1. ISSP, University of Tokyo, Chiba, Japan; 2. CEMS, RIKEN, Wako, Japan*

TUESDAY MORNING 8:30 THE FORUM

Session AN

SPIN TORQUES, SWITCHING AND SPIN TORQUE OSCILLATORS (Poster Session)

Luc Thomas, Co-Chair
Headway Technologies, Inc., Milpitas, CA
Flavio Abreu Araujo, Co-Chair
CNRS/Thales, Paris, France

AN-01. **Analytical Limits to Maximum RF Performance of Spin Torque Nano-Oscillators.** *D. Ricketts*[1] and M. Abbasi[1] *1. ECE, North Carolina State University, Apex, NC*

AN-02. **Comparison between different synchronization schemes of spin transfer torque nano-oscillators.** J. Hem[1,2], *L.D. Buda-Prejbeanu*[1,2] and U. Ebels[1,2] *1. Univ. Grenoble Alpes, Grenoble, France; 2. INAC-SPINTEC, CEA/CNRS, Grenoble, France*

AN-03. **Order of magnitude improvement of nano-contact spin torque nano-oscillator performance.** *S. Banuazizi*[1], S.R. Sani[2], A. Eklund[3], M.M. Naiini[3], S. Mohseni[4], S. Chung[5], P. Dürrenfeld[6], B. Malm[3] and J. Åkerman[1,6] *1. Materials and Nano Physics, Department of Applied Physics, School of Engineering Sciences, KTH Royal Institute of Technology, Stockholm, Sweden; 2. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA; 3. Department of Integrated Devices and Circuits, School of Information and Communication Technology, KTH Royal Institute of Technology, Stockholm, Sweden; 4. Department of Physics, Shahid Beheshti University, Tehran, The Islamic Republic of Iran; 5. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 6. Department of Physics, University of Gothenburg, Gothenburg, Sweden*

AN-04. **Current tunability and spatial rotation of the auto-oscillation mode in nanoconstriction-based spin Hall nano-oscillators in oblique fields.** *A.A. Awad*[1], M. Dvornik[1], A. Houshang[1], P. Dürrenfeld[1,2], M. Zahedinejad[1], Y. Yin[1,3], R.K. Dumas[1] and J. Åkerman[1,4] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 3. Department of Physics, Southeast University, Nanjing, China; 4. Materials and Nanophysics, School of ICT, KTH Royal Institute of Technology, Kista, Sweden*

AN-05. **Free Layer Dynamics Excited with a Concurrent Spin Injection from a Spin-Polarized Tunneling Current and a Pure Spin Hall Current.** *M. Tarequzzaman*[1,2], T. Boehnert[1], M. Decker[3], J.D. Costa[1], J. Borme[1], B. Lacoste[1], E. Paz[1], A. Jenkins[1], S.S. Serrano-Guisan[1], C.H. Back[3], R. Ferreira[1] and P. Freitas[1,2] *1. Nanoelectronics (Spintronics), International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 2. Physics, Instituto Superior Tecnico (IST), Lisbon, Portugal; 3. Institut für Experimentelle Physik, Universität Regensburg, Regensburg, Germany*

AN-06. **Instantaneous RF detector based on vortex core expulsion in spintransfer nano-oscillators.** *S. Menshawy*[1,2], A. Jenkins[3], P. Bortolotti[2], J. Kermorvant[1], U. Ebels[4], M. Cyrille[5], L. Vila[4], K. Merazzo[4], R. Ferreira[3], P. Freitas[3], J.D. Costa[3] and V. Cros[2] *1. Thales Communications and Security, Gennevilliers, France; 2. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France; 3. International Iberian Nanotechnology Laboratory, Braga, Portugal; 4. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, Grenoble, France; 5. Univ. Grenoble Alpes, CEA-LETI MINATEC campus, Grenoble, France*

AN-07. **Conditions for the generation of pure spin currents in spin-Hall devices: application of the least dissipation principle.** *J. Wegrowe*[1], R. Benda[1] and M.M. Rubi[2] *1. Physics, Ecole Polytechnique, Palaiseau, France; 2. Facultat de Fisica, Universitat de Barcelona, Barcelona, Spain*

AN-08. **Reversible spin torque switching of uncompensated non-collinear antiferromagnet.** *Y. Liu*[1], M. Hsu[2], R. Skomski[1], S. Liou[1] and S. Lee[3] *1. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 2. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 3. Institute of Physics, Academia Sinica, Taipei, Taiwan*

AN-09. **Multi-scale investigation on FePt/MgO based MTJs for high stability STT-MRAMs.** *M. Galante*[1], M.O. Ellis[1], M. Stamenova[1] and S. Sanvito[1] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland*

AN-10. **Spectral characterization of in-plane MgO magnetic tunnel nanojunctions.** *A.V. Silva*[1,2], R. Ferreira[3], E. Paz[3], D.C. Leitao[1,2], T. Devolder[4], S. Cardoso[1,2] and P. Freitas[1,3] *1. INESC Microsystems and Nanotechnologies (INESC-MN), Lisboa, Portugal; 2. Instituto Superior Técnico, Universidade Lisboa, Lisboa, Portugal; 3. INL, Braga, Portugal; 4. Centre de Nanosciences et de Nanotechnologies, CNRS/Univ. Paris-sud, Orsay, France*

AN-11. **Spin-Transfer Torques in Antiferromagnetic Textures.** *Y. Jeong*[1], S. Oh[1] and K. Lee[1] *1. Korea University, Seoul, The Republic of Korea*

AN-12. **Drastic Dependence of Spin Torque Efficiency on Thickness of Magnetic Layer.** *Y. Nam*[1], M. Park[1], J. Kim[1], Y. Park[1,2], B. Min[2] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Center for Spintronics Research, Korea Institute of Science and Technology, Seoul, The Republic of Korea*

AN-13. **Systematic study of Gilbert damping of top magnetic electrode in MgO based magnetic tunnel junctions versus thicknesses, annealing temperature and capping layers.** *N. Perrissin*[1], R. Sousa[1], S. Auffret[1], M. Caminale[1], L. Prejbeanu[1] and B. Dieny[1] *1. SPINTEC, Grenoble, France*

AN-14. **Stability diagram of perpendicular magnetic tunnel junction with a composite free layer.** W. Skowronski[1], *M. Frankowski*[1], S. Zietek[1], J. Checinski[1], P. Rzeszut[1], J. Wrona[2] and M. Czapkiewicz[1] *1. Department of Electronics, AGH University of Science and Technology, Kraków, Poland; 2. Singulus Technologies AG, Kahl am Main, Germany*

AN-15. **Tuning the spin wave resonance using lateral current spread in nano-contact spin torque nano-oscillators.** *M. Fazlali*[1], S. Banuazizi[2], M. Dvornik[1], M. Ahlberg[1], S.R. Sani[3], S. Mohseni[4], P. Dürrenfeld[1] and J. Åkerman[1,2] *1. Physics, University of Gothenburg, Gothenburg, Sweden; 2. Department of Materials and Nano Physics, School of Information and Communication Technology, KTH Royal Institute of Technology, Stockholm, Sweden; 3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA; 4. Physics, Shahid Beheshti University, Tehran, The Islamic Republic of Iran*

AN-16. **Influence of heavy metal materials on magnetic properties of Pt/Co/heavy metal tri-layered structures.** *B. Zhang*[1,2], A. Cao[1,2], J. Qiao[1,2], M. Tang[3], K. Cao[1,2], X. Zhao[1,2], S. Eimer[1,2], Z. Si[1,2], N. Lei[1,2], Z. Wang[1,2], X. Lin[1,2], Z. Zhang[3], M. Wu[4] and W. Zhao[1,2] *1. Fert Beijing Research Institute, Beijing Advanced Innovation Center for Big Data and Brain Computing (BDBC), Beihang University, Beijing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China; 3. Key Laboratory of Micro and Nano Photonic Structures (Ministry of Education), Department of Optical Science and Engineering, Fudan University, Shanghai, China; 4. Department of Physics, Colorado State University, Fort Collins, CO*

AN-17. **Temperature dependent spin transport properties of TmIG/normal metal bilayers with perpendicular magnetic anisotropy.** *C. Avci*[1], A.U. Quindeau[1], J. Mendil[2], P. Gambardella[2], C.A. Ross[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA; 2. Materials, ETH Zürich, Zurich, Switzerland*

Session AO
SPIN ORBIT EFFECTS, SKYRMIONS AND DOMAIN WALLS (Poster Session)

Henk Swagten, Chair
Eindhoven University of Technology, Eindhoven, Netherlands

AO-01. **Extraordinary Hall effect based magnetic comparison applications.** T. Liu[1], D. Lacour[1], *F. Montaigne*[1], S. Le Gall[1], M. Hehn[1] and T. Hauet[1] *1. Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France*

AO-02. **Numerical study on vertical domain wall propagation for three-dimensional race track memory.** Z. Zhang[1], Y. Hashiguchi[1], T. Tanaka[1] and *K. Matsuyama*[1] *1. ISEE, Kyushu University, Fukuoka, Japan*

AO-03. **Tailoring magnetic texture for domain wall motion control in nanowires of Co/Pd multilayers.** T. Jin[1], M. Ranjbar[1], W. Gan[1], W. Lew[1] and *S.N. Piramanayagam*[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

AO-04. **Efficient and reliable magnetic domain nucleation based on RKKY coupling and voltage control magnetic anisotropy.** *Y. Zhang*[1], Z. Zhang[1], Y. Zhang[1], J. Klein[2], D. Ravelosona[2] and W. Zhao[1] *1. Beihang University, Beijing, China; 2. C2N,Univ. Paris Sud, Orsay, France*

AO-05. **Domain-wall propagation in GaMnAs: beyond spin transfer torque?** *L. Thevenard*[1], B. Boutigny[1], L. Becerra[1], N. Güsken[1], C. Ulysse[2], S. Shihab[1], A. Lemaitre[2], J. Kim[2], V. Jeudy[3] and C. Gourdon[1] *1. Institut des Nanosciences de Paris, UPMC CNRS, Paris, France; 2. Centre de Nanosciences et de Nanotechnologies, CNRS, Universite Paris Sud, Orsay, France; 3. Laboratoire de Physique des Solides, CNRS Université Paris Sud, Orsay, France*

AO-06. **Domain walls as efficient pure spin current sources in lateral devices.** W. Savero Torres[1], *G. Zahnd*[1], V. Pham[1], A. Marty[1], L. Vila[1] and J. Attané[1] *1. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, Grenoble, France*

AO-07. **Probing stochastic domain wall positions in GMR nanowires by high resolution Kerr microscopy.** *E. Lage*[1], R. Mattheis[2] and J. McCord[1] *1. Institute for Materials Science, Kiel University, Kiel, Germany; 2. Leibniz Institute of Photonic Technology, Jena, Germany*

AO-08. **Quantifying data retention and the effect of radiation on domain wall memory devices.** *S. Krishnia*[1], P. Sethi[1], W. Gan[1], I. Purnama[1], R. Maddu[1] and W. Lew[1] *1. SPMS, Nanyang Technological University, Singapore, Singapore*

AO-09. **Electrical detection of magnetic domain wall by inverse and direct spin Hall effects.** V. Pham[1], *C. Bouard*[1], P. Warin[1], G. Zahnd[1], A. Marty[1], P. Noel[1], W. Savero-Torres[1], L. Vila[1] and J. Attané[1] *1. SPINTEC, Univ. Grenoble Alpes/CEA/CNRS, Grenoble, France*

AO-10. **Ring-Shaped Content Addressable Memory Based on Spin Orbit Torque Driven Chiral Domain Wall Motions.** *Y. Zhang*[1], J. Nan[1], L. Yue[1], X. Zhang[1], Y. Zhang[1], D. Ravelosona[2] and W. Zhao[1] *1. Beihang University, Beijing, China; 2. C2N, Univ. Paris Sud, Orsay, France*

AO-11. **Mesoscale Dzyaloshinskii-Moriya interaction: one-dimensional and two-dimensional cases.** *O.M. Volkov*[1,2], V.P. Kravchuk[2,3], D.D. Sheka[4], D. Makarov[1], J. Faßbender[1], Y. Gaididei[2], U. Roessler[3], J. van den Brink[3,5], H. Fuchs[1] and H. Fangohr[6] *1. Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany; 2. Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine, Kyiv, Ukraine; 3. Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden (IFW Dresden), Dresden, Germany; 4. Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 5. Institute for Theoretical Physics, TU Dresden, Dresden, Germany; 6. University of Southhampton, Southhampton, United Kingdom*

AO-12. **Skyrmion lattice and critical behavior of $Fe_{0.6}Co_{0.4}Si$: A bulk magnetization study.** *S. Samatham*[1] and K.G. Suresh[1] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India*

AO-13. **A novel neuron device based on current-driven magnetic skyrmions.** *S. Li*[1], W. Kang[1], Y. Huang[1], W. Zhao[1], Y. Zhou[2] and X. Zhang[2] *1. Fert Beijing Institute, Beijing, China; 2. School of Science and Engineering, Chinese University of Hong Kong, Shenzhen, China*

AO-14. **Exploring the Possibility of a Scalable Voltage Controlled Memory Element Using Magnetoelectric Cr_2O_3.** *R. Ahmed*[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

AO-15. **Spin-orbit effects in asymmetrically stacked cobalt thin films.** M. Kopte[1], *T. Kosub*[1], U. Roessler[2], E. Vedmedenko[3], R. Schäfer[4], A. Kakay[1], O.G. Schmidt[5], J. Lindner[1], J. Faßbender[1] and D. Makarov[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany; 2. Leibniz Institute for Solid State and Materials Research, Institute for Theoretical Solid State Physics, Dresden, Germany; 3. University of Hamburg, Institute of Applied Physics, Hamburg, Germany; 4. Leibniz Institute for Solid State and Materials Research, Institute for Metallic Materials, Dresden, Germany; 5. Institute for Integrative Nanosciences, Leibniz Insitute for Solid State and Materials Research, Dresden, Germany*

AO-16. **Spin-orbit torque-induced simultaneous switching of ferromagnetic multi-bits.** *S.C. Baek*[1], Y. Oh[1] and B. Park[1] *1. KAIST, Daejeon, The Republic of Korea*

AO-17. **Spin-orbit torque switching for the MnGa/Pt films with a perpendicular magnetic anisotropy.** R. Ranjbar[1], K. Suzuki[1], Y. Sasaki[1,2], L. Bainsla[1] and *S. Mizukami*[1] *1. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan*

AO-18. **Spin-Orbit Torque MRAM Read Reliability.** *H. Kazama*[1] and T. Kawahara[1] *1. Electrical Engineering, Tokyo University of Science, Tokyo, Japan*

TUESDAY MORNING 8:30 — THE FORUM

Session AP
GIANT AND TUNNELING MAGNETORESISTANCE I (Poster Session)

Hiroaki Sukegawa, Co-Chair
National Institute for Materials Science (NIMS), Tsukuba, Japan
Enrique Cobas, Co-Chair
U.S. Naval Research Laboratory, Washington, DC

AP-01. **Metrology for Accurate Via Opening While Defining Nanometric Magnetic Tunnel Junctions on Large Area Wafers.** *B.J. Pires*[1], D.C. Leitao[1,2], A.V. Silva[1] and S. Cardoso[1,2] *1. INESC-Microsystems and Nanotechnologies (MN) and IN, Lisbon, Portugal; 2. Department of Physics, Instituto Superior Técnico (IST), Universidade de Lisboa, Lisbon, Portugal*

AP-02. **Zero-moment spin electronics: tunneling magnetoresistance with compensated Mn_2Ru_xGa.** *K. Borisov*[1], D. Betto[1], Y. Lau[1], C. Fowley[2], A. Titova[2], G. Atcheson[1], N. Thiyagarajah[1], J. Lindner[2], A. Deac[2], M. Coey[1], P.S. Stamenov[1] and K. Rode[1] *1. School of Physics, CRANN and AMBER, Trinity College Dublin, Dublin, Ireland; 2. Institute of Ion Beam Physics and Materials Research, Dresden, Germany*

AP-03. **Structural, magnetic and magneto-transport properties of equiatomic CoFeMnSi Heusler epitaxial thin films.** *L. Bainsla*[1], K. Suzuki[1], J. Okabayashi[2], A. Ono[1] and S. Mizukami[1] *1. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Research Center for Spectrochemistry, University of Tokyo, Tokyo, Japan*

AP-04. **Numerical Calculation of Magnetoresistance in MTJ Containing Ferromagnetic Insulator.** K. Sate[1], Y. Kayama[2], S. Honda[1,3], Y. Sonobe[2] and *H. Itoh*[1,3] *1. Department of Pure and Applied Physics, Kansai University, Suita, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan; 3. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan*

AP-05. **Low noise all-oxide magnetic tunnel junctions based on a $La_{0.7}Sr_{0.3}MnO_3$ / Nb:$SrTiO_3$ interface.** *A. Solignac*[1], G. Kurij[2], T. Maroutian[2], G. Agnus[2], R. Guerrero[2], L.E. Calvet[2], M. Pannetier-Lecoeur[1] and P. Lecoeur[2] *1. SPEC, CEA, CNRS, Université Paris-Saclay, Gif-sur-Yvette, France; 2. Centre de Nanosciences et de Nanotechnologies, CNRS UMR 9001, Univ. Paris-Sud, Université Paris-Saclay, C2N – Orsay, Orsay, France*

AP-06. **Magnetoconductivity of the $La_{1-x}Sr_xMnO_3$@TiO_2 Nanocomposite.** *J. Koktan*[1,2], G. Goglio[3], J. Hejtmánek[1], Z. Jirák[1], K. Knízek[1], J. Kulickova[1], M. Marysko[1] and O. Kaman[1] *1. Department of Magnetics and Superconductors, Institute of Physics, AS CR, Prague, Czech Republic; 2. Department of Analytical Chemistry, University of Chemistry and Technology, Prague, Czech Republic; 3. University of Bordeaux, CNRS, ICMCB, Pessac, France*

AP-07. **Highly (001)-textured Mn-Ga polycrystalline ultrathin films with a perpendicular magnetic anisotropy.** A. Ono[1], *K. Suzuki*[1], R. Ranjbar[1], A. Sugihara[1] and S. Mizukami[1] *1. WPI-AIMR, Tohoku University, Sendai, Japan*

AP-08. **Magnetization reversal of elliptic submicron magnetic tunnel junctions.** C. Chao[1], G. Lai[1], L. Horng[1], T. Wu[2] and *J. Wu*[1] *1. Department of Physics, National Changhua University of Education, Changhua, Taiwan; 2. Graduate School of Materials Science, National Yunlin University of Science and Technology, Yunlin, Taiwan*

AP-09. **Influence of thickness, annealing and stack position on the perpendicular magnetic anisotropy of MgO-CoFeB nanostructures.** *L. Martins*[1], J. Ventura[1] and R. Ferreira[2] *1. Physics and Astronomy, Faculty of Sciences of the University of Porto, Porto, Portugal; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal*

AP-10. **Enhanced temperature stability of spin-torque microwave detector based on giant magnetoresistive microstripe with synthetic ferrimagnetic free layer.** *X. Li*[1], Y. Zhou[2], C. Zheng[1], P. Chan[1], M. Chan[3] and P. Pong[1] *1. EEE, The University of Hong Kong, Hong Kong, Hong Kong; 2. School of Science and Engineering, Chinese University of Hong Kong, Shenzhen, China; 3. Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong, Hong Kong*

AP-11. **Thickness and annealing temperature dependence of magnetic tunnel junctions using ultra-thin MnGa electrode.** *K. Suzuki*[1], R. Ranjbar[1], A. Sugihara[1] and S. Mizukami[1] *1. WPI-AIMR, Tohoku University, Sendai, Japan*

AP-12. **Disentangling low field anisotropic magnetoresistance in $La_{0.7}Sr_{0.3}MnO_3$ films.** *P. Perna*[1], F. Ajejas[1,2], D. Maccariello[1,3], R. Guerrero[1], L. Méchin[4], S. Flament[4], J. Santamaria[5], J. Camarero[1,2] and R. Miranda[1,2] *1. IMDEA Nanoscience, Madrid, Spain; 2. Universidad Autonoma de Madrid, Madrid, Spain; 3. CNRS-Thales, Paris, France; 4. GREYC-CNRS, Caen, France; 5. GFMC, Universidad Complutense Madrid, Madrid, Spain*

AP-13. **Dead layers in $La_{0.7}Sr_{0.3}MnO_3$ revisited.** *S.B. Porter*[1], M. Venkatesan[1], D. Betto[2], P. Dunne[3], K. Rode[1] and M. Coey[1] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland; 2. ESRF, Grenoble, France; 3. Université de Strasbourg, IPCMS, Strasbourg, France*

AP-14. **Magnetotransport properties of Ni/Bi_2Se_3 bilayers.** *T. Yoo*[1], S. Bac[1], H. Lee[1], S. Lee[1], S. Choi[1], S. Lee[1], X. Liu[2] and J.K. Furdyna[2] *1. Physics, Korea University, Seoul, The Republic of Korea; 2. Physics, University of Notre Dame, Notre Dame, IN*

AP-15. **Spin-Valve Junction with Transfer-Free MoS_2 Spacer Prepared by Sputtering.** W. Wong[1], S. Ng[1], *H. Wong*[1], W. Cheng[1], C. Mak[1] and C. Leung[1] *1. Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

AP-16. **Colossal positive magneto-resistance in oxygen deficient $Ca_4Mn_3O_{10}$.** *M. Periyasamy*[1,2], H. Fjellvåg[1,3] and A. Sjåstad[1,3] *1. Centre for Materials Science and Nanotechnology, University of Oslo, Oslo, Norway; 2. University of Oslo, Oslo, Norway; 3. Department of Chemistry, University of Oslo, Oslo, Norway*

AP-17. **Giant magnetoresistance variations due to the Hanle effect in lateral spin valves.** *G. Zahnd*[1], V. Pham[1], F. Rortais[1], M. Jamet[1], C. Vergnaud[1], A. Marty[1], L. Vila[1] and J. Attané[1] *1. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, Grenoble, France*

AP-18. **Magnetic Tunnel Junctions with Tunable Energy Barriers for Stochastic Computing.** *M. Bapna*[1], S. Oberdick[1], H. Almasi[2], W. Wang[2] and S. Majetich[1] *1. Department of Physics, Carnegie Mellon University, Pittsburgh, PA; 2. Department of Physics, University of Arizona, Tucson, AZ*

TUESDAY
MORNING
8:30

THE FORUM

Session AQ
RECORDING HEADS, ENERGY ASSISTED RECORDING AND NOVEL RECORDING (Poster Session)

Matthew Gibbons, Chair
Western Digital, San Jose, CA

AQ-01. **Real-Time Measurement of Spin-Torque Oscillator Signal During Microwave-Assisted Magnetization Switching.** *H. Suto*[1], T. Kanao[1], T. Nagasawa[1], K. Kudo[1], K. Mizushima[1] and R. Sato[1] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

AQ-02. **Optimising composite media for heat assisted magnetic recording.** *S. Greaves*[1], H. Muraoka[1] and Y. Sonobe[2] *1. Tohoku University, Sendai, Japan; 2. Samsung R&D Institute Japan, Tokyo, Japan*

AQ-03. **Micromagnetic model analysis of various spin torque oscillators with write head for microwave-assisted magnetic recording.** *Y. Kanai*[1], R. Itagaki[1], S. Greaves[2] and H. Muraoka[2] *1. Information and Electronics Engineering Department, Niigata Institute of Technology, Kashiwazaki, Japan; 2. RIEC, Tohoku University, Sendai, Japan*

AQ-04. **MAMR frequency optimization on [CoX/Pt]$_4$ media.** *Z. Zhao*[1] and D. Wei[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China*

AQ-05. **Micromagnetic simulation of microwave-assisted magnetization switching process for granular films.** *T. Tanaka*[1], Y. Nozaki[2] and K. Matsuyama[1] *1. ISEE, Kyushu University, Fukuoka, Japan; 2. Keio University, Yokohama, Japan*

AQ-06. **Micromagnetic study of thermally activated spin wave eigenmodes in a magnetic tunnel junction read head.** *M. Pauselli*[1,2], A. Stankiewicz[3] and G. Carlotti[1] *1. Physics Department, University of Perugia, Perugia, Italy; 2. Istituto Officina dei Materiali del CNR (CNR-IOM), University of Perugia, Perugia, Italy; 3. Seagate Technology, Bloomington, MN*

AQ-07. **Layer thickness effects and microstructure of CPP-GMR spin-valves with Ag/InZnO/Zn conductive oxide-based spacer layers.** *T. Nakatani*[1], T. Sasaki[1], S. Li[1], Y. Sakuraba[1], T. Furubayashi[1] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan*

AQ-08. **Effect of seed layers on both dynamic and static magnetic properties of CoFe thin films.** *S. Akansel*[1], V. Venugopal[2], A. Kumar[1], R. Brucas[1], S. George[3], M. Gubbins[2], G. Andersson[3] and P. Svedlindh[1] *1. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden; 2. Seagate Technology LLC, Londonderry, United Kingdom; 3. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

AQ-09. **Novel Design Concept for Highly-Efficient and Higher Data Rate PMR Write Head.** Y. Nakamura[1], R. Itagaki[2] and *Y. Kanai*[2] *1. RIEC, Tohoku University, Sendai, Japan; 2. Information and Electronics Engineering Department, Niigata Institute of Technology, Kashiwazaki, Japan*

AQ-10. **Thermal excitation of oscillatory modes in read head structures.** *A. Grier*[1], T. Dunn[2], S. Stokes[2] and A. Stankiewicz[2] *1. Seagate, Londonderry, United Kingdom; 2. Seagate, Bloomington, MN*

AQ-11. **Effects of Fe content on static and dynamic magnetic properties of NiFe thin films.** *S. Akansel*[1], V. Venugopal[2], A. Kumar[1], M. Gubbins[2] and P. Svedlindh[1] *1. Engineering Sciences, Uppsala University, Uppsala, Sweden; 2. Seagate Technology LLG, Londonderry, United Kingdom*

AQ-12. **Degradation of Bit Error Rate in CPP-GMR Read Heads due to Electromagnetic Interference.** P. Khunkitti[1], A. Siritaratiwat[1], A. Kaewrawang[1] and *A. Kruesubthaworn*[1] *1. Electrical Engineering, Khon Kaen University, Khon Kaen, Thailand*

AQ-13. **Spin-torque oscillator sensor for simultaneous readout of two adjacent bit tracks.** *J. Checinski*[1,2], M. Frankowski[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*

AQ-14. **Reader instability as a source of low frequency noise.** *A. Stankiewicz*[1] *1. Seagate Technology, Bloomington, MN*

AQ-15. **Non-error reconstruction of magnetic hologram with magnetic assist recording.** *Z. Shirakashi*[1], T. Goto[1,2], H. Takagi[1], Y. Nakamura[1], P. Lim[1], H. Uchida[1] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST, PRESTO, Kawaguchi, Japan*

TUESDAY
MORNING
8:30

THE FORUM

Session AR

RECORDING MEDIA: MATERIALS AND CHANNELS (Poster Session)

Jim Miles, Co-Chair
University of Manchester, Manchester, United Kingdom
Roger Wood, Co-Chair
Western Digital Corp., San Jose, CA

AR-01. **Quantitative evaluation of stacking faults for *c*-plane oriented pseudo-hcp Co-Pt-Ru alloy and Co-Pt-Ru-oxide granular films.** *S. Hinata*[1], Y. Suzuki[2] and S. Saito[1] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. R&D Department, Furuya Metal, Tsukuba, Japan*

AR-02. **Magnetic properties and microstructure of FePt films with MgTiOC intermediate layer.** *J. Tsai*[1], H. Li[1], Z. Pan[1] and Y. Chang[1] *1. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan*

AR-03. **Effect of Amorphous/Crystalline Material Doping on the Microstructure and Magnetic Properties of FePt Thin Films.** *K. Dong*[1], F. Jin[1], W. Mo[1], J. Song[1] and W. Cheng[2] *1. School of Automation, China University of Geosciences, Wuhan, China; 2. School of Optical and Electronic Information, Huazhong University of Science & Technology, Wuhan, China*

AR-04. **Magnetic anisotropy phase-graded A1/$L1_0$-FePt films on amorphous glass substrates.** G. Barucca[1], T. Speliotis[2], G. Giannopoulos[2], D. Niarchos[2], B. Rutkowski[3], A. Czyrska-Filemonowicz[3], S. Laureti[4], E. Agostinelli[4], A. Testa[4] and *G. Varvaro*[4] *1. Dipartimento SIMAU, Università Politecnica delle Marche, Ancona, Italy; 2. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece; 3. International Centre of Electron Microscopy for Material Science & Faculty of Metals Engineering and Industrial Computer Science, AGH University of Science and Technology, Krakow, Poland; 4. nM2-Lab, Istituto di Struttura della Materia - CNR, Monterotondo Scalo (Roma), Italy*

AR-05. **Formation of *L*1_0-FePt(001) Ultra-Thin Films with Flat Surfaces Using VC and VN Underlayers.** *T. Shimizu*[1], M. Ohtake[2,1], M. Futamoto[1], F. Kirino[3] and N. Inaba[4] *1. Faculty of Science and Engineerring, Chuo University, Bunkyo, Japan; 2. Faculty of Engineering, Kogakuin University, Hachioji, Japan; 3. Graduate School of Fine Arts, Tokyo University of the Arts, Taito, Japan; 4. Faculty of Engineering, Yamagata University, Yonezawa, Japan*

AR-06. **Nitrogen driven tuning of magnetic and microstructural properties of FePt bilayer.** *T. Dutta*[1,2], N. Dwivedi[1], M. Saifullah[2], S.N. Piramanayagam[3] and C.S. Bhatia[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), Singapore, Singapore; 3. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

AR-07. **Effects of the buffer layers thickness on magnetic properities in Co_3Pt thin films.** I. Chen[1], Y. Chen[1] and *A. Sun*[1] *1. Chemical Engineering and Material Science, Yuan-Ze University, Taoyuan City, Taiwan*

AR-08. **Magnetic properties and microstructure for CoPt alloy granular films with grain boundary oxides of various melting points.** *R. Kushibiki*[1], K. Tham[1], S. Hinata[2] and S. Saito[2] *1. Tanaka Kikinzoku Kogyo, Tsukuba, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Japan*

AR-09. **Magnetic properties of bct FeCo dot pattern.** *T. Hasegawa*[1], S. Kanatani[1], M. Kazaana[1], K. Takahashi[1], K. Kumagai[1], S. Yoshida[1], M. Hirao[1] and S. Ishio[1] *1. Department of Materials Science, Akita University, Akita, Japan*

AR-10. **Local switching field and magnetic state of ion-irradiation bit patterned $L1_0$-MnGa film probed by scanning X-ray magnetic circular dichroism.** *T. Ishikawa*[1], K. Fukuta[1], D. Oshima[2], T. Kato[1], T. Nakamura[3], Y. Kotani[3], K. Toyoki[3] and S. Iwata[2] *1. Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan; 2. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 3. Japan Synchrotron Radiation Research Institute / Spring8, Sayo, Japan*

AR-11. **A study on relationship between recording pattern and decoding reliability in SMR.** *R. Suzuto*[1], Y. Nakamura[1], M. Nishikawa[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, Niigata Institute of Technology, Kashiwazaki, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*

AR-12. **Non-Binary Protograph-Based LDPC Codes for 2-D ISI Magnetic Recording Channels.** *P. Chen*[1,2], K. Cai[1], L. Kong[3], Z. Chen[1] and M. Zhang[1] *1. Singapore University of Technology and Design, Singapore, Singapore; 2. Fuzhou University, Fuzhou, China; 3. School of Computer Science and Technology, Nanjing University of Posts and Communications, Nanjing, China*

AR-13. **Design of LDPC codes for unequal ISI channels.** *W. Phakphisut*[1] and P. Supnithi[1] *1. Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

AR-14. **A Detector-Aware LDPC Code Optimization for Ultra-High Density Magnetic Recording Channels.** *L. Kong*[1,2], K. Cai[3], P. Chen[3] and B. Fan[2] *1. Nanjing University of Posts and Telecommunications, Nanjing, China; 2. University of California, San Diego, San Diego, CA; 3. Singapore University of Technology and Design, Singapore, Singapore*

AR-15. **A Study on Optimal BAR in Array Head Reading.** *T. Kondoh*[1], Y. Nakamura[1], M. Nishikawa[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, Niigata Institute of Technology, Kashiwazaki, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*

AR-16. **Twin iterative detection for bit-patterned media recording systems.** *C.D. Nguyen*[1] and J. Lee[1] *1. School of Electronic Engineering, Soongsil University, Seoul, The Republic of Korea*

AR-17. **Iterative Channel Detection with LDPC Product Code for Bit Patterned Media Recording.** *S. Jeong*[1] and J. Lee[1] *1. School of Electronic Engineering, Soongsil University, Seoul, The Republic of Korea*

AR-18. **Modified Factor Graph to Belief Propagation Based Detection in BPMR Channel.** *T. Sopon*[1] and W. Wongtrairat[1] *1. Department of Electronic Engineering, Rajamangala University of Technology Isan, Nakhonratchasima, Thailand*

TUESDAY MORNING 8:30 — THE FORUM

Session AS
MULTIFERROICS AND COMPLEX OXIDES (Poster Session)

Peter Finkel, Chair
U.S. Naval Research Laboratory, Washington, DC

AS-01. **The role of anti-site disorder and oxygen vacancies in Sr_2FeMoO_6 thin films.** *M. Saloaro*[1], M. Hoffmann[2,3], W.A. Adeagbo[2], S. Granroth[1], H. Huhtinen[1], S. Majumdar[1,4], P. Laukkanen[1], W. Hergert[2], A. Ernst[3] and P. Paturi[1] *1. Department of Physics and Astronomy, University of Turku, Turku, Finland; 2. Institut für Physik, Martin Luther University Halle-Wittenberg, Halle, Germany; 3. Max Planck Institute of Microstructure Physics, Halle, Germany; 4. Department of Applied Physics, Aalto University School of Science, Espoo, Finland*

AS-02. **Design and Control of Magnetic and Thermodynamic Stability of Complex Oxide Interfaces.** T. Gerber[1], P. Lömker[1], B. Zijlstra[1], C. Besson[1], D. Mueller[1], J. Schubert[1], M. Gorgoi[2] and *M. Müller*[1,3] *1. Peter Gruenberg Institute, FZ Juelich, Juelich, Germany; 2. BESSY, Helmholtz Zentrum Berlin, Berlin, Germany; 3. Faculty of Physics, Technical University Dortmund, Dortmund, Germany*

AS-03. **Structural, magnetic and electrical properties of $La_2NiO_{4+\delta}$ (δ = 0.003-0.031) compounds.** *D. Tran*[1,2], H. Van[3], T. Do[2], D. Nam[2], L. Hong[2] and S.C. Yu[1] *1. Chungbuk National University, Cheongju, The Republic of Korea; 2. Institute of Materials Science, VAST, Hanoi, Vietnam; 3. Quang Ninh University of Industry, Quang Ninh, Vietnam*

AS-04. **Magnetic property and unusual critical behavior in La_2CoMnO_6 compound.** D. Pham[1], T. Manh[1], D. Tran[1], D. Yang[1] and *S.C. Yu*[1] *1. Chungbuk National University, Cheongju, The Republic of Korea*

AS-05. **Superparamagnetic-like behaviour of $Pb_{1-3x}[]_xGd_{2x}(MoO_4)_{1-3x}(WO_4)_{3x}$ (x = 0.0455, 0.0839, 0.1154) nanoparticles.** *T. Gron*[1], M. Piatkowska[2], E. Tomaszewicz[2], M. Oboz[1], P. Urbanowicz[1] and H. Duda[1] *1. Institute of Physics, University of Silesia, Katowice, Poland; 2. Department of Inorganic and Analytical Chemistry, Faculty of Chemical Technology and Engineering, West Pomeranian University of Technology, Szczecin, Poland*

AS-06. **Electric field tuning ferromagnetic resonance frequency in oblique sputtered $Fe_{42}Co_{46}Hf_{12}$/PZN-PT multiferroic heterostructures.** *S. Li*[1], X. Liu[1], H. Du[2], Q. Li[1], J. Xu[1] and X. Wang[1] *1. Physics, Qingdao University, Qingdao, China; 2. Physics, Shandong University, Jinan, China*

AS-07. **Magnetic anisotropy changes induced by strains in FePt/$BaTiO_3$.** A. Román[1,2], A. Lopez Pedroso[3,1], L. Neñer[4], M. Aguirre[5], A. Butera[4,6], J. Gómez[4,6], M. Sirena[4,6] and *L. Steren*[1,6] *1. Instituto de Nanociencia y Nanotecnologia & Dpto. Materia Condensada, Centro Atómico Constituyentes, San Martin, Argentina; 2. Universidad Nacional de San Martin, San Martin, Argentina; 3. Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Buenos Aires, Argentina; 4. Centro Atómico de Bariloche and Instituto Balseiro, S.C. de Bariloche, Argentina; 5. Instituto de Nanociencia de Aragón, Laboratorio de Microscopías Avanzadas, Universidad de Zaragoza & Dpto Física de la Materia Condensada, Universidad de Zaragoza, Zaragoza, Spain; 6. CONICET, Ciudad Autónoma de Buenos Aires, Argentina*

AS-08. **Parasitic phases at the origin of magnetic moment in $BiFeO_3$ thin films grown by low deposition rate RF sputtering.** *T.J. Mori*[1], C. Mouls[1,2], F.F. de Oliveira[1,3], P. Schio[1] and J.C. Cézar[1] *1. Brazilian Synchrotron Light Laboratory, Brazilian Center for Research in Energy and Materials, Campinas, Brazil; 2. IFGW, University of Campinas, Campinas, Brazil; 3. IFSC, University of São Paulo, São Carlos, Brazil*

AS-09. **Electric-field-controlled interface exchange coupling in a cobalt-chromia bilayer.** *R. Choudhary*[1], R. Skomski[2] and A. Kashyap[1] *1. Department of Physics, School of Basic Sciences, Indian Institute of Technology Mandi, HP, Mandi, India; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, Lincoln, NE*

AS-10. **Angular-dependent magnetic properties of interfacial exchange-coupled ferromagnetic and multiferroic $BiFeO_3$ thin films.** *F. Ajejas*[1,2] and P. Perna[2] *1. Nanomagnetism, Universidad Autónoma de Madrid/Imdea Nanociencia, Madrid, Spain; 2. Nanomagnetism, Imdea Nanociencia, Madrid, Spain*

AS-11. **Manipulation of in-plane magnetic anisotropy in amorphous CoFeB films induced by structural phase transitions of $BaTiO_3$.** *S. Isogami*[1] and T. Taniyama[2] *1. Fukushima National College of Technology, Iwaki, Japan; 2. Tokyo Institute of Technology, Tokyo, Japan*

AS-12. **Electric tuning of spin-electromagnetic waves in all-thin-film multiferroic multilayers.** *V. Vitko*[1], A. Nikitin[1], A.A. Nikitin[1], A.B. Ustinov[1], A.A. Semenov[1], B.A. Kalinikos[1] and E. Lähderanta[2] *1. Department of Physical Electronics and Technology, Saint Petersburg Electrotechnical University "LETI", Saint Petersburg, Russian Federation; 2. Department of Mathematics and Physics, Lappeenranta University of Technology, Lappeenranta, Finland*

AS-13. **Multiferroic properties of Sr-doped $BiFeO_3$ polycrystalline thin films on glass substrates.** *H.W. Chang*[1], S. Lin[1], C. Chang[1], C. Huang[1], C. Wang[1], C. Tu[2], S. Jen[3] and W.C. Chang[4] *1. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 2. Department of Physics, Fu Jen Catholic University, Taipei, Taiwan; 3. Institute of Physics, Academia Sinica, Taipei, Taiwan; 4. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan*

AS-14. **Preparation of Fe_3O_4/Pt heterostructures by ALD with *in situ* magnetic field for tuning the magnetic anisotropy and magnetoelectric coupling.** L. Zhang[1], *M. Liu*[1], Y. Zhang[1], Z. Zhou[1], B. Peng[1], W. Ren[1] and Z. Ye[1,2] *1. Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, Xi'an, China; 2. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, BC, Canada*

AS-15. **A single-crystal Mössbauer study of spin reorientations in the multi-ferroic $HoFeO_3$.** *D. Ryan*[1], Q. Stoyel[1], L. Veryha[1], K. Xu[2], W. Ren[2], S. Cao[2] and Z. Yamani[3] *1. McGill University, Montreal, QC, Canada; 2. Department of Physics, Shanghai University, Shanghai, China; 3. Canadian Neutron Beam Centre, Chalk River Laboratories, Chalk River, ON, Canada*

AS-16. **Fabrication and characterization of nanoimprinted organic-inorganic multiferroic nanocomposites.** *P.M. Pereira de Sá*[1] *1. Institute of Condensed Matter and Nanosciences (IMCN), Université Catholique de Louvain (UCL), Louvain la Neuve, Belgium*

AS-17. Spin Localized Magnetism and Electron Transport in $Fe_2Ti_{1-x}Co_xSi$. R. Pathak[1], Y. Jin[2], R. Choudhary[1], R. Skomski[2], G. Hadjipanayis[3], D. Sellmyer[2] and *A. Kashyap*[1] *1. Physics, School of Basic Sciences, Indian Institute of Technology Mandi, HP, Mandi, India; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE; 3. Department of Physics and Astronomy, University of Delaware, Newark, DE*

TUESDAY MORNING 8:30 | THE FORUM

Session AT
MICROMAGNETISM AND MULTISCALE MODELING I (Poster Session)

Hatem ElBidweihy, Co-Chair
United States Naval Academy, Annapolis, MD
Claas Abert, Co-Chair
TU Wien, Wien, Austria

AT-01. Effects of Anisotropy Field Dispersion on Squareness Ratio for HDDR-Processed NdFeB Powders. *F. Akagi*[1], Y. Ishii[1] and Y. Honkura[2] *1. Kogakuin Univ., Shinjuku-ku, Japan; 2. Magnedesign Corporation, Nagoya, Japan*

AT-02. Excitation of magnonic band gap for forward volume spin wave propagating using metalized yttrium iron garnet. *K. Shimada*[1], T. Goto[1,2], N. Kanazawa[1], H. Takagi[1], Y. Nakamura[1], H. Uchida[1] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST PRESTO, Kawaguchi, Japan*

AT-03. Voltage driven 180° magnetization switching in a magnetoelectric heterostructures. *G. Yu*[1,2], H. Lin[1], Y. Li[2], H. Zhang[2] and N. Sun[1] *1. Electrical and Computer Engineering, Northeastern University, Boston, MA; 2. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China*

AT-04. Small-angle neutron scattering on magnetic nanostructures: role of the spin misalignment. *L. Gonzalez Vivas*[1], R. Yanes[2] and A. Michels[1] *1. Research Unit Physique et Matériaux, University of Luxembourg, Luxembourg, Luxembourg; 2. Physics, University of Konstanz, Konstanz, Germany*

AT-05. Simple analytical model for the field dependence of the nucleation energy barrier. *L. Abelmann*[1,2] *1. KIST Europe, Saarbrücken, Germany; 2. University of Twente, Enschede, Netherlands*

AT-06. The anisotropy of ΔE effect of Fe-Ga single crystal. *H. Jiang*[1] and J. Zhu[1] *1. State Key Laboratory of Advanced Metals and Materials, University of Science and Technology Beijing, Beijing, China*

AT-07. **Micromagnetic simulation of the coercivity enhancement phenomenon in (Ce,Nd)FeB magnets.** *Y. Hong*[1], G. Wang[1] and D. Zeng[1] *1. Department of Metallic Materials Science and Engineering, South China University of Technology, Guangzhou, China*

AT-08. **Equilibrium Magnetization States and Hysteresis in Ferromagnetic Nanotubes with Dipolar Interacting Spins.** H. Salinas[1], *O. Iglesias*[2,3] and J. Restrepo[1] *1. Instituto de Fisica, University of Antioquia, Medellin, Colombia; 2. Condensed Matter Physics, University of Barcelona, Barcelona, Spain; 3. Institute of Nanoscience and Nanotecnology of UB, Barcelona, Spain*

AT-09. **High-Frequency Excitation of Toroidal Vortex Configurations in Hollow Ferromagnetic Spheres.** *C.J. McKeever*[1], M. Aziz[1] and F. Ogrin[1] *1. Physics and Astronomy, University of Exeter, Exeter, United Kingdom*

AT-10. **Effect of varying dimensions on gadolinium rectangular thin film elements: micromagnetic simulations.** *M. McMullan*[1] and S. Felton[1] *1. School of Mathematics and Physics, Queen's University Belfast, Belfast, United Kingdom*

AT-11. **Modeling of effective anisotropies in FeCo and Co nanowires.** C. Rotarescu[1], R. Moreno[2], N.M. Nemes[3], M. Vázquez[2], H. Chiriac[1], N. Lupu[1], *T.A. Ovari*[1] and O. Chubykalo-Fesenko[2] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 3. Universidad Complutense, Madrid, Spain*

AT-12. **Calculating the magneto-elastic anisotropy across grain boundary interfaces.** *S. Westmoreland*[1] *1. Physics, University of York, York, United Kingdom*

AT-13. **Withdrawn**

AT-14. **Mathematical Model for the MgB_2 Hysteresis Using Parameterized Preisach Model.** *K. Dong*[1] *1. EE, Nanjing, China*

AT-15. **Simulation-aided development of pulsed magnetic-aligned compaction process.** *R. Soda*[1], K. Takagi[1] and K. Ozaki[1] *1. National Institute of Advanced Industrial Science and Technology, Nagoya, Japan*

AT-16. **Nucleation and coercivity in rapidly solidified cylindrical amorphous nanowires.** *T.A. Ovari*[1], C. Rotarescu[1], F. Borza[1], N. Lupu[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

AT-17. **Simulation of Stress Effect on GMI in Soft Magnetic Amorphous Film.** Y. Zhu[1], *F. Jin*[1], J. Wang[1], K. Dong[1], W. Mo[1], J. Song[1] and J. Ouyang[2] *1. China University of Geosciences, Wuhan, China; 2. Department of Electronic Science and Technology, Huazhong University of Science and Technology, Wuhan, China*

AT-18. **Hysteresis model identification based on support vector regression.** P. Zheng[1] and *S. Zhang*[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

TUESDAY AFTERNOON 2:00 THE LIFFEY B

Session BA
SMART CITY, SMART LIVING
Philip Pong, Chair
University of Hong Kong, Hong Kong, Hong Kong

2:00

BA-01. **Spintronic Sensors in Transportation. *(Invited)*** *J. Davies*[1], P. Eames[1], M.A. Torija[1], A. Jander[2] and C. Nordman[1] *1. Advanced Technology, NVE Corporation, Eden Prairie, MN; 2. Oregon State University, Corvallis, OR*

2:30

BA-02. **Development of Reliable Gearless Motors for Electric Vehicles. *(Invited)*** *K. Chau*[1] and C. Lee[2] *1. Department of Electrical and Electronic Engineering, University of Hong Kong, Hong Kong, China; 2. Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA*

3:00

BA-03. **Magnetic Integrated Passives for Information and Communication Technology. *(Invited)*** *M. Yamaguchi*[1,2], S. Tanaka[2], J. Ma[1,3], Y. Miyazawa[2], M. Sato[2], M. Nishizawa[2], M. Nagata[4], K. Ishiyama[3], K. Kondo[5] and Y. Okiyoneda[6] *1. Department of Electrical Engineering, Tohoku Unviersity, Sendai, Japan; 2. New Industry Creation Hatchery Center (NICHe), Tohoku University, Sendai, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Graduate School of Science, Technology and Innovation, Kobe University, Kobe, Japan; 5. Advanced Materials Research & Development Division, NEC TOKIN Corp., Sendai, Japan; 6. Engineering Development Sect., Showa Aircraft Industry Co., Ltd., Akishima, Japan*

3:30

BA-04. **TMR sensors for the smart grid. *(Invited)*** *P. Freitas*[1,2], S. Cardoso[2,3], R. Ferreira[1], D. Ramirez[4] and J. Wang[5] *1. International Iberian Nanotechnology Laboratory, Braga, Portugal; 2. Instituto de Engenharia de Sistemas e Computadores-Microsistemas e Nanotecnologias (INESC MN), Lisbon, Portugal; 3. Physics Department, Instituto Superior Tecnico, Lisbon, Portugal; 4. Department of Electronic Engineering, University of Valencia, Valencia, Spain; 5. Sinomags Technology Co., Ningbo, China*

4:00

BA-05. **Magneto-Nanosensors for Precision Medicine and Precision Health.** ***(Invited)*** *S.X. Wang*[1] and J. Lee[1] *1. Materials Science and Engineering, Stanford University, Stanford, CA*

4:30

BA-06. **Magnets as enablers for renewable energy and resource efficiency.** ***(Invited)*** *O. Gutfleisch*[1,2] *1. Material Science, TU Darmstadt, Darmstadt, Germany; 2. Fraunhofer IWKS, Hanau, Germany*

TUESDAY AFTERNOON 2:00 — LIFFEY HALL 2

Session BB
MAGNETIC BIO-SENSORS AND SEPARATION
Maria Torija, Chair
NVE Corp, Eden Prairie, MN

2:00

BB-01. **Micro-magnetic trapping of highly diffusive magnetic nanoparticles induced by fluid-particle coupling.** *M. Fratzl*[1,2], G. Blaire[1], S. Delshadi[1,3], T. Devillers[2], F. Bruckert[4], O. Cugat[1] and N. Dempsey[2] *1. G2ELab, UMR 5269, Grenoble, France; 2. Institut Néel, CNRS UPR 2940, Grenoble, France; 3. IAB, INSERM UMR 823, Grenoble, France; 4. LMGP, CNRS UMR 5628, Grenoble, France*

2:15

BB-02. **On-chip magnetic nanoparticle manipulation and trapping for biomedical applications.** *V. Silverio*[1], R. Kumar[1], M. Amaral[2], J. Gaspar[2], S. Cardoso[1,3] and P. Freitas[1,2] *1. INESC Microsystems and Nanotechnologies, INESC-MN, Lisboa, Portugal; 2. International Iberian Nanotechnology Laboratory, INL, Braga, Portugal; 3. Physics Department, Instituto Superior Tecnico, Universidade de Lisboa, Lisboa, Portugal*

2:30

BB-03. **Low Field MRI with Superconducting-GMR Mixed Sensors.** *C. Fermon*[1], A. Reina[1] and M. Pannetier-Lecoeur[1] *1. SPEC/LNO, CEA, Gif sur Yvette, France*

2:45

BB-04. **System characterisation and phantom image reconstruction using a preclinical Magnetic Particle Imaging system with seperate pick-up coil.** *J. Wells*[1], O. Kosch[1], N. Löwa[1], J. Franke[2], L. Trahms[1] and F. Wiekhorst[1] *1. PTB, Berlin, Germany; 2. Bruker, Ettlingen, Germany*

3:00

BB-05. **A Micro-Scale Magnetic Particle Imaging Scanner.** *P. Lenox*[1]*, A. Jander[1] and P. Dhagat[1] *1. School of Electrical Engineering and Computer Science, Oregon State Universtiy, Corvallis, OR*

3:15

BB-06. **Local recordings of the magnetic signature of neurons with GMR sensors.** V. Trauchessec[1], T. Wunderle[2], L. Caruso[1], C.M. Lewis[2], J. Valadeiro[3], J. Tréjo-Rosillo[1], J. Pedro Amaral[3], J. Ni[2], C. Fermon[1], S. Cardoso[3], P. Freitas[3], P. Fries[2] and *M. Pannetier Lecoeur*[1] *1. SPEC, CEA Saclay, Gif sur Yvette, France; 2. Ernst Strüngmann Institute (ESI) for Neuroscience in Cooperation with Max Planck Society, Frankfurt, Germany; 3. Microsistemas e Nanotecnologias, Instituto de Engenharia de Sistemas e Computadores, Lisboa, Portugal*

3:30

BB-07. **Finding magnetic particles in the human body with a hand-held instrument, using DiffMag detection technology.** *B. ten Haken*[1] *1. Science and Technology - MD&I, University of Twente, Enschede, Netherlands*

3:45

BB-08. **Magnetic nanoparticle-based nano-grating guided-mode resonance biosensors.** *R. Yukino*[1], J. Sharma[2], T. Takamura[3], J. Joseph[4] and A. Sandhu[1] *1. Department of Engineering Science, University of Electro-Communications, Chofu Tokyo, Japan; 2. Department of Electrical and Electronic Information Engineering, Toyohashi University of Technology, Toyohashi, Japan; 3. Electronics Inspired Interdisciplinary Research Institute, Toyohashi University of Technology, Toyohashi, Japan; 4. Photonics Research Lab, Department of Physics, Indian Institute of Technology Delhi, New Delhi, India*

4:00

BB-09. **Operator Safety and Field Focality in Shielded Transcranial Magnetic Stimulation.** *M. Zucca*[1], O. Bottauscio[1], M. Chiampi[2] and L. Zilberti[1] *1. Metrology for Quality of Life Department, INRiM, Torino, Italy; 2. Dipartimento Energia, Politecnico di Torino, Torino, Italy*

4:15

BB-10. **GIAMAG magnets for magnetic particle separation.** *A. Skjeltorp*[1,2] *1. Physics, Giamag Technologies, Kjeller, Norway; 2. Physics, Institute for Energy Technology, Kjeller, Norway*

4:30

BB-11. **Trapping of superparamagnetic particles with a single current-conducting micro-ring.** B. Riedmüller[1], F. Ostermaier[1] and *U. Herr*[1] *1. Institut für Mikro- und Nanomaterialien, Universität Ulm, Ulm, Germany*

4:45

BB-12. **Magnetic composite based magneto hydrodynamic pump.** *M. Khan*[1], I.R. Hristovski[2], G. Marinaro[1] and J. Kosel[1] *1. CEMSE, King Abdullah Univeristy of Science and Technology, Thuwal, Saudi Arabia; 2. University of British Columbia, Kelowna, BC, Canada*

Session BC

SPIN TORQUES AND SPIN TORQUE OSCILLATORS

Mohammad Haidar, Chair
University of Gothenburg, Gothenburg, Sweden

2:00

BC-01. **Spoken vowel recognition with coupled spin torque nano-oscillators.** *M. Romera*[1], P. Talatchian[1], F. Abreu Araujo[1], S. Tsunegi[2], H. Kubota[2], K. Yakushiji[2], A. Fukushima[2], S. Yuasa[2], R. Lebrun[1], P. Bortolotti[1], V. Cros[1], D. Vodenicarevic[3], N. Locatelli[3], D. Querlioz[3] and J. Grollier[1]
1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Spintronics Research Center, AIST, Tsukuba, Japan; 3. Centre de Nanosciences et de Nanotechnologies, CNRS/ Univ. Paris-Sud, Orsay, France

2:15

BC-02. **Current-induced frequency and amplitude modulation of spin torque nano-oscillators.** *A. Ruiz-Calaforra*[1], A. Purbawati[1], J. Hem[1], L.D. Buda-Prejbeanu[1] and U. Ebels[1]
1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France

2:30

BC-03. **Stabilization of phase noise in vortex spin torque nano-oscillators by a phase locked loop.** M. Kreissig[1], *S. Wittrock*[2], R. Lebrun[2,3], S. Menshawy[2], F. Protze[1], K. Merazzo-Jaimes[4], M. Cyrille[5], R. Ferreira[6], F. Ellinger[1], P. Bortolotti[2], U. Ebels[4] and V. Cros[2] *1. Chair for Circuit Design and Network Theory, Technische Universität Dresden, Dresden, Germany; 2. Unité Mixte de Physique CNRS/Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France; 3. Microelectronics Group, Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 4. SPINTEC, Univ. Grenoble Alpes / CNRS / CEA, Grenoble, France; 5. CEA-LETI MINATEC-Campus, Univ. Grenoble Alpes, Grenoble, France; 6. International Iberian Nanotechnology Laboratory (INL), Braga, Portugal*

2:45

BC-04. **Precision power measurement of spin-torque nano-oscillators using an accurate de-embedding structure and analysis.** M. Abbasi[1], B. Wang[2], S. Tamaru[2], H. Kubota[2], A. Fukushima[2] and *D. Ricketts*[1] *1. ECE, North Carolina State University, Apex, NC; 2. National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

3:00

BC-05. **Low power microwave signal detection with a spin-torque nano-oscillator in the active self-oscillating regime.** *S. Louis*[1,2], I. Lisenkov[3,4], V.S. Tiberkevich[1], J. Li[2], R. Khymyn[5], E. Bankowksi[6], T. Meitzler[6], I. Krivorotov[7] and A.N. Slavin[1] *1. Physics, Oakland University, Rochester, MI; 2. Department of Electrical and Computer Engineering, Oakland University, Rochester, MI; 3. Department of Electrical Engineering and Computer Science, Oregon State Universtiy, Corvallis, OR; 4. Kotelnikov Institute of Radio-engineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation; 5. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 6. TARDEC, US Army, Warren, MI; 7. Department of Physics, University of California Irvine, Irvine, CA*

3:15

BC-06. **Multi-scale spin dynamics simulations of current-induced switching in magnetic tunnel junctions.** *M.O. Ellis*[1], M. Stamenova[1] and S. Sanvito[1] *1. Trinity College Dublin, Dublin, Ireland*

3:30

BC-07. **Investigation of magneto-transport and spin-transfer-torque switching properties in magnetic tunnel junctions with perpendicularly magnetized CoFeB/W/CoFeB and CoFeB/Mo/CoFeB free layer.** *H. Tomita*[1], Y. Tanaka[1], K. Nagasaka[1], H. Maehara[2], K. Nakamura[1], S. Furukawa[1], H. Kubota[3], A. Fukushima[3], K. Yakushiji[3], S. Yuasa[3] and N. Watanabe[1] *1. Tokyo Electron Yamanashi Limited, Nirasaki, Japan; 2. Tokyo Electron Limited, Nirasaki, Japan; 3. AIST Spintronics Research Center, Tsukuba, Japan*

3:45

BC-08. **Linear and nonlinear spin-wave mode localization in a spin-torque oscillator with a field well.** R.V. Verba[1], *V.S. Tiberkevich*[2] and A.N. Slavin[2] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Oakland University, Rochester, MI*

4:00

BC-09. **Critical current density of a spin-torque oscillator with an in-plane magnetized free layer and an out-of-plane magnetized polarizer.** *R. Matsumoto*[1] and H. Imamura[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

4:15

BC-10. **Synchronization of spin torque oscillators through spin Hall magnetoresistance.** *T. Taniguchi*[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

4:30

BC-11. **Spin transfer torque driven dynamics of the synthetic antiferromagnetic reference layer of perpendicular MRAM devices.** *L. Thomas*[1], M. Benzaouia[1], S. Serrano-Guisan[1], G. Jan[1], S. Le[1], Y. Lee[1], H. Liu[1], J. Zhu[1], J. Iwata-Harms[1], R. Tong[1], Y. Yang[1], V. Sundar[1], S. Patel[1], J. Haq[1], D. Shen[1], R. He[1], V. Lam[1], J. Teng[1], P. Liu[1], A. Wang[1], T. Zhong[1], T. Torng[1] and P. Wang[1] *1. TDK - Headway Technologies, Inc., Milpitas, CA*

4:45

BC-12. **Cylindrical and Spiral Dynamics Driven by Spin-Transfer Torque in Perpendicularly Magnetized Materials with Dzyaloshinskii–Moriya Interaction.** *R. Zivieri*[1,2], M. Carpentieri[3], A. Giordano[2] and G. Finocchio[2] *1. Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy; 2. Department of Mathematics and Computer Science, Physics and Earth Sciences, University of Messina, Messina, Italy; 3. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy*

TUESDAY AFTERNOON 2:00 | LIFFEY HALL 1

Session BD
THIN FILMS AND MULTILAYERS I
Coriolan Tiusan, Chair
Universitatea Tehnica din Cluj-Napoca, Cluj-Napoca, Romania

2:00

BD-01. **Spin-Hall controlled magnetization dynamics in ultra-thin YIG films.** ***(Invited)*** *S.O. Demokritov*[1], V.E. Demidov[1], M. Evelt[1], J. Prieto[2], M. Muñoz[3], J. Ben Youssef[4], V. Naletov[5], G. de Loubens[5], O. Klein[6], M. Collet[7], K. Garcia-Hernandez[7], P. Bortolotti[7], V. Cros[7] and A. Anane[7] *1. Physics Department, University of Muenster, Muenster, Germany; 2. Instituto de Sistemas Optoelectronicos y Microtecnologa, Ciudad Universitaria, Madrid, Spain; 3. IMM-Instituto de Microelectrónica de Madrid, Madrid, Spain; 4. Université de Bretagne Occidentale, Brest, France; 5. Université Paris-Saclay, Gif-sur-Yvette, France; 6. CEA/CNRS and Univ. Grenoble Alpes, Grenoble, France; 7. Univ. Paris Sud, Palaiseau, France*

2:30

BD-02. **Skyrmion detection using electrical transport in Pt/Co/Ir multilayer disc.** *K. Zeissler*[1], K. Shahbazi[1], J. Massey[1], S. Finizio[2], J. Raabe[2], M.C. Rosamond[3], E.H. Linfield[3], T.A. Moore[1], G. Burnell[1] and C.H. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Paul Scherrer Institute, Villigen, Switzerland; 3. School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom*

2:45

BD-03. ***In-situ* study of the role of Co-O-Mg bond in magnetic anisotropy of Pt/Co/MgO.** *Y. Yang*[1], J. Yuan[2,3], L. Qi[1], Y. Wang[1], Y. Xu[1,4], X. Wang[1], Y. Feng[3], B. Xu[4], L. Shen[5] and Y. Wu[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. College of Science, Nanjing University of Aeronautics and Astronautics, Nanjing, China; 3. Department of Physics & Centre for Advanced Two-Dimensional Materials, National University of Singapore, Singapore, Singapore; 4. Data Storage Institute, Singapore, Singapore; 5. Engineering Science Program, National University of Singapore, Singapore, Singapore*

3:00

BD-04. **Artificial fabrication and characterization of large magnetic anisotropy ferromagnet "*L*1_0-ordered FeNi".** ***(Invited)*** *M. Mizuguchi*[1], T. Kojima[1], T.Y. Tashiro[1] and K. Takanashi[1] *1. Tohoku University, Sendai, Japan*

3:30

BD-05. **Ion irradiation induced cobalt/cobalt oxide heterostructures: from materials to devices.** *D. Hilliard*[1,2], O. Yildirim[1], C. Fowley[1], S. Arekapudi[2], H. Cansever[1,3], R. Böttger[1], G. Hlawacek[1], O. Hellwig[1,2], J. Lindner[1], J. Faßbender[1,3] and A. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Physics, Chemnitz University of Technology, Chemnitz, Germany; 3. Institute of Physics of Solids, Dresden University of Technology, Dresden, Germany*

3:45

BD-06. **Thermally Induced Magnetization Switching in Fe/MnAs Bilayers and Ultrafast Dynamics of Magneto-Structural Phase Transitions in MnAs.** *L. Lounis*[1], F. Vidal[1], Y. Zheng[1], M. Eddrief[1], R. Delaunay[2], E. Allaria[3], E. Ferrari[4], C. Spezzani[3,5], H. Popescu[6], A. Ciavardini[6], C. Laulhe[6,7], M. Chollet[8], R. Alonso-Mori[8] and M. Sacchi[1,6] *1. Sorbonne Universités, UPMC Univ Paris 06, Institut des Nanosciences de Paris (INSP), Paris, France; 2. Sorbonne Universités, UPMC Univ Paris 06, Laboratoire de Chimie Physique - Matière et Rayonnement (LCPMR), Paris, France; 3. ELETTRA-Sincrotrone Trieste, Area Science Park, Trieste, Italy; 4. Particle Accelerator Physics Laboratory, EPFL Lausanne, Lausanne, Switzerland; 5. Laboratoire de Physique des Solides (LPS), Université Paris-Sud, Orsay, France; 6. Synchrotron SOLEIL, L'Orme des Merisiers, Gif-sur-Yvette, France; 7. Université Paris-Saclay, Université Paris-Sud, Orsay, France; 8. Linac Coherent Light Source, SLAC National Accelerator Laboratory, Menlo Park, CA*

4:00

BD-07. **DMI-stabilized Néel walls in epitaxially cobalt films on Pt(111).** E.C. Corredor Vega[1], *F. Kloodt*[1], S. Kuhrau[1], R. Frömter[1] and H. Oepen[1] *1. Physik, Institut für Nanostruktur- und Festkörperphysik, Hamburg, Germany*

4:15

BD-08. **Determination of interfacial Dzyaloshinskii-Moriya interaction from static domain imaging.** *P. Agrawal*[1], F. Buettner[1], I. Lemesh[1], S. Schlotter[1] and G. Beach[1] *1. Materials Science and Engineering, MIT, Cambridge, MA*

4:30

BD-09. **Abnormal backward Néel domain wall motion in double-heavy-metal heterostructures with large spin orbit torques and Dzyaloshinskii-Moriya interaction.** *J. Yu*[1]*, X. Qiu[1], W. Legrand[1], D. Bang[2], Y. Wu[1], J. Yoon[1], P. Deorani[1], J. Besbas[1], H. Awano[2], A. Manchon[3] and H. Yang[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Toyota Technological Institute, Nagoya, Japan; 3. Division of Physical Science and Engineering, Thuwal, Saudi Arabia*

4:45

BD-10. **Atomic-scale surface engineering for enhancement of the Dzyaloshinskii-Moriya interaction in thin films with 3d-5d(4d) interfaces.** *A.S. Samardak*[1], B. Pal[1], A.Y. Samardak[1], A.V. Davydenko[1], A. Ognev[1], A.V. Sadovnikov[2,3], S. Nikitov[3,2], I. Cha[4] and Y. Kim[4] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Laboratory "Metamaterials", Saratov State University, Saratov, Russian Federation; 3. Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation; 4. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

TUESDAY AFTERNOON 2:00 | LIFFEY MEETING ROOM 2

Session BE
ENERGY ASSISTED RECORDING
Robert Bowman, Chair
Queen's University Belfast, Belfast, United Kingdom

2:00

BE-01. **Heat Assisted Recording: Advances in Recording Integration. *(Invited)*** *C.J. Rea*[1], P. Krivosik[1], V. Venugopal[1], M.F. Erden[2], S. Stokes[1], P. Subedi[1], M.A. Cordle[2], M. Benakli[1], H. Zhou[1], D. Karns[2], D.A. Saunders[1], S. Franzen[1], G. Ju[3], T. Rausch[2], M.A. Seigler[1] and E. Gage[2] *1. Recording Head Operations, Seagate Technology, Bloomington, MN; 2. Twin Cities Operations, Seagate Technology, Shakopee, MN; 3. Recording Media Operations, Seagate Technology, Fremont, CA*

2:30

BE-02. **A Head Cleaning Procedure for Heat-Assisted Magnetic Recording.** *J. Aoyama*[1], M. Furukawa[1], S. Nishida[1], K. Tasaka[1], K. Matsuda[1], K. Kuroki[1] and M. Ikeda[1] *1. Western Digital, Fujisawa, Japan*

2:45

BE-03. **Transition jitter in heat assisted magnetic recording by micromagnetic simulations.** *H. Özelt*[1], A. Kovacs[1], J. Fischbacher[1], S. Bance[2], M. Gubbins[2] and T. Schrefl[1] *1. Center for Integrated Sensor Systems, Danube University Krems, Wr. Neustadt, Austria; 2. Research & Developement, Seagate Technology, Derry, United Kingdom*

3:00

BE-04. **Head Field Design and Track Edge Characteristics in Heat Assisted Magnetic Recording.** Y. Qin[1], H. Li[1] and *J. Zhu*[1] *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

3:15

BE-05. **Medium Stack Optimization for Microwave Assisted Magnetic Recording.** *X. Bai*[1] and J. Zhu[1] *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

3:30

BE-06. **Magnetization Switching of a Perpendicular Nanomagnet in a Rotating Microwave Magnetic Field.** *H. Suto*[1], T. Kanao[1], T. Nagasawa[1], K. Kudo[1], K. Mizushima[1] and R. Sato[1] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

3:45

BE-07. **Magnetization switching assisted by double-frequency component of an in-plane-magnetized spin-torque oscillator: Micromagnetic simulation study.** *T. Kanao*[1], H. Suto[1], K. Kudo[1], T. Nagasawa[1], K. Mizushima[1] and R. Sato[1] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki-shi, Japan*

4:00

BE-08. **Temperature Scaling of Anisotropy Field in HAMR Recording.** ***(Invited)*** *H. Richter*[1] and G. Parker[1] *1. Western Digital, San Jose, CA*

Session BF

ANTIFERROMAGNETIC SPINTRONICS AND COMPLEX OXIDES

Daniel Gopman, Chair
National Institute of Standards and Technology, Gaithersburg, MD

2:00

BF-01. **Purely Antiferromagnetic MERAM.** *T. Kosub*[1], M. Kopte[1], P. Appel[2], B. Shields[2], P. Maletinsky[2], R. Hübner[1], O.G. Schmidt[3], J. Faßbender[1] and D. Makarov[1] *1. Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany; 2. University of Basel, Basel, Switzerland; 3. Leibniz Institute for Solid State and Materials Research e.V., Dresden, Germany*

2:15

BF-02. **Towards Cr-based antiferromagnet spintronics: growth and magnetic anisotropy of chromium thin films on MgO.** C. Rinaldi[1,2], M. Asa[1], D. Chrastina[3], R. Bertacco[1,2] and *M. Cantoni*[1] *1. Physics, Politecnico di Milano, Milano, Italy; 2. IFN-CNR, Politecnico di Milano, Milano, Italy; 3. Physics, LNESS, Politecnico di Milano, Milano, Italy*

2:30

BF-03. **Revealing Grain Decoupling in Antiferromagnetic Mn_2Au Ultra-Thin Films.** *V.M. Barthem*[1], T.J. Mori[2], A.Y. Ramos[3], H.C. Tolentino[2], J. Criginski Cézar[2], M. Soares[2], L.F. Outon[4], W.A. Macedo[5] and D. Givord[3,1] *1. Instituto de Fisica, UFRJ, Rio de Janeiro, Brazil; 2. Laboratório Nacional Luz Sincrotron, Campinas, Brazil; 3. Institut Néel, CNRS, Grenoble, France; 4. Departamento de Fisica, Universidade Federal de Minais Gerais, Belo Horizonte, Brazil; 5. Centro de Desenvolvimento da Tecnologia Nuclear, Belo Horizonte, Brazil*

2:45

BF-04. **First-principles spin-transfer torque in CuMnAs|GaP|CuMnAs junctions.** *M. Stamenova*[1], R. Mohebbi[2], J. Seyed-Yazdi[2], I. Rungger[3] and S. Sanvito[1] *1. Physics, Trinity College Dublin, Dublin, Ireland; 2. Department of Physics, Vali-e-Asr University of Rafsanjan, Rafsanjan, The Islamic Republic of Iran; 3. National Physical Laboratory, Teddington, United Kingdom*

3:00

BF-05. **Spin-orbit torque memristive memory operated by pulses down to 1 ns.** *A. Kurenkov*[1], S. Duttagupta[1,2], C. Zhang[1], W.A. Borders[1], S. Fukami[1,2] and H. Ohno[1,2] *1. RIEC, Tohoku University, Sendai, Japan; 2. CSRN, Tohoku University, Sendai, Japan*

3:15

BF-06. **Spin absorption in antiferromagnets.** ***(Invited)*** L. Frangou[1], G. Forestier[1], S. Auffret[1], S. Gambareli[2] and *V. Baltz*[1] *1. SPINTEC, Grenoble, France; 2. SYMMES, Grenoble, France*

3:45

BF-07. **Band-gap engineering in all-oxide magnetic quantum wells.** G. Prinz[1], T. Gerber[2], A. Lorke[1] and *M. Müller*[2,3] *1. Faculty of Physics, University Duisburg-Essen, Duisburg, Germany; 2. Peter Grünberg Institut, FZ Jülich, Juelich, Germany; 3. Faculty of Physics, Technical University Dortmund, Dortmund, Germany*

4:00

BF-08. **Room temperature spin-orbit torque at $LaAlO_3/SrTiO_3$ oxide interface.** *Y. Wang*[1], R. Ramaswamy[1], M. Motapothula[1], K. Narayanapillai[1], D. Zhu[1], T. Venkatesan[1,2] and H. Yang[1] *1. Department of Electrical and Computer Engineering, NUSNNI, National University of Singapore, Singapore, Singapore; 2. Department of Physics, National University of Singapore, Singapore, Singapore*

4:15

BF-09. **Ultrathin Magnetite in Fe_3O_4/MgO and $Fe_3O_4/MgFe_2O_4$ Superlattices.** O. Mauit[1,2], K. Fleischer[1] and *I.V. Shvets*[1] *1. School of Physics, Trinity College Dublin, Dublin, Ireland; 2. National Laboratory Astana, National Laboratory Astana, Astana, Kazakhstan*

4:30

BF-10. **Efficient and tunable spin-to-charge conversion through Rashba coupling at $LaAlO_3/SrTiO_3$ interfaces.** E. Lesne[1], Y. Fu[2], *P. Noel*[2], S. Oyarzun[3], J. Rojas-Sanchez[1], D. Vaz[1], H. Naganuma[4], G. Sicoli[5], J. Attané[2], M. Jamet[2], E. Jacquet[1], J. George[1], H. Jaffres[1], A. Barthélémy[1], A. Fert[1], M. Bibès[1] and L. Vila[2] *1. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Spintec, Institut Nanosciences et Cryogenie, Univ. Grenoble Alpes, CEA, CNRS, Grenoble, France; 3. Departamento de Física, CEDENNA, Universidad de Santiago de Chile (USACH), Santiago, Chile; 4. Department of Applied Physics, Tohoku University, Sendai, Japan; 5. SCIB, Institut Nanosciences et Cryogenie, Univ. Grenoble Alpes, CEA, Grenoble, France*

4:45

BF-11. **Domain Rearrangement and Tuning of Ferroelectricity by External Magnetic Fields in the Multiferroic $CuCrO_2$: a Monte Carlo Approach.** *A. Albaalbaky*[1], Y. Kvashnin[2], D. Ledue[1], R. Patte[1] and R. Frésard[3] *1. Normandie Univ., INSA Rouen, UNIROUEN, CNRS, GPM, Rouen, France; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Normandie Univ., ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen, France*

Session BG

MAGNETOCALORIC AND SHAPE MEMORY MATERIALS

Julia Lyubina, Chair
Evonik Industries AG, Hanau, Germany

2:00

BG-01. **First vs second order magnetocaloric material for thermomagnetic energy conversion.** *M. Almanza*[1,2], A. Pasko[1,2], F. Mazaleyrat[1,2] and M. Lo Bue[1,2] *1. SATIE, Cachan, France; 2. Université Paris-Saclay, Cachan, France*

2:15

BG-02. **Anisotropic Magnetocaloric Effect in Layered $AlFe_2B_2$.** R. Barua[1], B. Lejeune[1], L. Ke[2], E. Levin[2], M.J. Kramer[2], R.W. McCallum[3] and *L. Lewis*[1,4] *1. Chemical Engineering, Northeastern University, Boston, MA; 2. Division of Materials Science and Engineering, Ames Laboratory, Ames, IA; 3. McCallum Consulting LLC, Santa Fe, NM; 4. Mechanical Engineering, Northeastern University, Boston, MA*

2:30

BG-03. **Microstructural and magnetic properties of Mn-Fe-P-Si (Fe_2P-type) magnetocaloric compounds.** *M. Fries*[1], L. Pfeuffer[1], E. Bruder[2], T. Gottschall[1], S. Ener[1], L.V. Diop[1], T. Gröb[2], K. Skokov[1] and O. Gutfleisch[1] *1. Funktionale Materialien, Materialwissenschaft, TU Darmstadt, Darmstadt, Germany; 2. Physikalische Metallkunde, TU Darmstadt, Darmstadt, Germany*

2:45

BG-04. **Modification of the field dependence and scaling of the magnetocaloric effect in LaFeSi across the tricritical point.** *V. Franco*[1], J. Law[1], A. Conde[1], V. Brabander[2], D.Y. Karpenkov[2], I.A. Radulov[2], K. Skokov[2] and O. Gutfleisch[2] *1. University of Sevilla, Sevilla, Spain; 2. T.U. Darmstadt, Darmstadt, Germany*

3:00

BG-05. **Magnetocaloric heat exchangers made from metal-bonded $La(Fe,Mn,Si)_{13}H_x$ powder.** *I.A. Radulov*[1], M. Specht[1], T. Braun[1], D.Y. Karpenkov[1,2], K. Skokov[1] and O. Gutfleisch[1] *1. TU Darmstadt, Darmstadt, Germany; 2. NUST MISiS, Moscow, Russian Federation*

3:15

BG-06. **General Working Characteristics of Magnetocaloric Materials in High Magnetic Fields.** *A.P. Kamantsev*[1,2], E. Dilmieva[1,2], V. Koledov[1,2], A. Mashirov[1,2], V. Shavrov[1], I. Tereshina[3], L.N. Butvina[4], A.S. Los[2], I. Koshkidko[1,2], J. Cwik[2], D.H. Nguyen[5], T.T. Pham[5], Y.H. Nguyen[5] and Q.M. Vu[5] *1. Kotelnikov Institute of Radioengineering and Electronics of RAS, Moscow, Russian Federation; 2. International Laboratory of High Magnetic Fields and Low Temperatures, Wroclaw, Poland; 3. Lomonosov Moscow State University, Moscow, Russian Federation; 4. Fiber Optics Research Center of RAS, Moscow, Russian Federation; 5. Institute of Materials Science of VAST, Hanoi, Vietnam*

3:30

BG-07. **Role of A site atom in magneto-structural transformation in Mn based antiperovskites.** E. Dias[1], K. Priolkar[1] and *A.K. Nigam*[2] *1. Department of Physics, Goa University, Goa, India; 2. Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai, India*

3:45

BG-08. **Ferromagnetic shape memory turns to nano: microstructure engineering of thin films and nano-disks for new-concept biomedical applications.** *F. Albertini*[1], S. Fabbrici[1,2], F. Casoli[1], L. Nasi[1], P. Ranzieri[1], R. Cabassi[1], M. Campanini[3], C. Magen[4], F. Celegato[5], G. Barrera[5] and P. Tiberto[5,1] *1. IMEM-CNR, Parma, Italy; 2. MIST E-R, Bologna, Italy; 3. EMPA, Dübendorf, Switzerland; 4. INA-University of Zaragoza, Zaragoza, Spain; 5. INRIM, Torino, Italy*

4:00

BG-09. **Modulations in magnetic shape memory alloys originate from nanotwin ordering.** M.E. Gruner[1,2], R. Niemann[1], P. Entel[2], R. Pentcheva[2], U. Roessler[1], K. Nielsch[1] and *S. Fähler*[1] *1. IFW Dresden, Dresden, Germany; 2. University of Duisburg-Essen, Duisburg, Germany*

4:15

BG-10. **Using Kerr microscopy for direct observation of magnetic domain in Ni-Mn-Ga Heusler alloy.** *O. Heczko*[1], O. Perevertov[1], I. Soldatov[2,3] and R. Schäfer[2,3] *1. Department of Functional Materials, Institute of Physics of Czech Academy of Sciences, Prague, Czech Republic; 2. Institute for Metallic Materials, Leibniz Institute for Solid State and Materials Research (IFW) Dresden, Dresden, Germany; 3. Institute for Materials Science, TU Dresden, Dresden, Germany*

4:30

BG-11. **Research of magnetocaloric effect of Ni-Mn-In-Co- based Heusler alloys by the direct method in magnetic fields up to 14 T.** *E. Dilmieva*[1,2], I. Koshkidko[1,3], A.P. Kamantsev[1], V. Koledov[1], A. Mashirov[1], V. Shavrov[1], J. Cwik[3], V. Khovaylo[4] and B. Grande[5] *1. Kolelnikov Institute of Radio Endineering and Electronics of RAS, Moscow, Russian Federation; 2. Bauman Moscow Technical University, Moscow, Russian Federation; 3. International Laboratory of High Magnetic Fields and Low Temperatures, Wroclaw, Poland; 4. National University of Science and Technology MISiS, Moscow, Russian Federation; 5. Oviedo University, Oviedo, Spain*

TUESDAY AFTERNOON 2:00 | WICKLOW HALL 2B

Session BH
MOTORS
Jonathan Bird, Chair
Portland State University, Portland, OR

2:00

BH-01. **On the Design and Construction Assessments of a Permanent Magnet Assisted Synchronous Reluctance Motor.** *C. Liu*[1], T. Luo[1], P. Shih[1], S. Yen[2], H. Lin[2], Y. Hsu[2] and C. Hwang[3] *1. Department of Electrical Engineering, National Sun Yat-Sen University, Kaohsuing, Taiwan; 2. Nidec Research and Development Center, Nidec Taiwan Corporation, Tainan, Taiwan; 3. Department of Electrical Engineering, Feng Chia University, Taichung, Taiwan*

2:15

BH-02. **Design and Performance Analysis of a Self-Start Radial Flux Hysteresis Interior Permanent Magnet Motor.** *M. Rahman*[1] and S.F. Rabbi[1] *1. Electrical and Computer Engineering, Memorial University of Newfoundland, St. John's, NL, Canada*

2:30

BH-03. **Design and Analysis of Double-Rotors Disc-Type PM Motor for Contra-Rotating Propulsion System.** G. Liu[1], G. Qiu[1], S. Jin[1] and *Y. Zhang*[2] *1. Shenyang University of Technology, Shenyang, China; 2. Queen’s University Belfast, Belfast, United Kingdom*

2:45

BH-04. **Design Criteria of a PM Vernier Motor with Fractional-Slot Concentrated Winding Configurations.** *B. Kim*[1] *1. Electrical Engineering, Kunsan National Univeristy, Gunsan, The Republic of Korea*

3:00

BH-05. **Electromagnetic Design of a Synchronous Reluctance Motor with Single Tooth Windings.** *C. Donaghy-Spargo*[1] *1. School of Engineering and Computing Sciences, Durham University, Durham, United Kingdom*

3:15

BH-06. **Development of a New Low Cost Transverse Flux-Flux Switching Permanent Magnet Machine with Soft Magnetic Composite Cores and Ferrite Magnets.** *C. Liu*[1,2], B. Ma[3], G. Lei[3], Y. Guo[3], Y. Wang[3] and J. Zhu[3] *1. Hebei University of Technology, Tianjin, China; 2. PMG GmbH, Fussen, Germany; 3. University of Technology Sydney, Sydeny, NSW, Australia*

3:30

BH-07. **A Novel Hybrid Reluctance Motor with Multiple Teeth per Stator Pole for In-Wheel Applications.** *J. Zhu*[1], K.E. Cheng[1], X. Xue[1] and Y. Zou[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

3:45

BH-08. **Magnetic Flux Analysis of a New Field Excitation Flux Switching Motor with Segmental Rotor.** M.F. Omar[1], E. Sulaiman[1], M. Ahmad[1], *M. Jenal*[1] and G.M. Romalan[1] *1. Electric Power, Universiti Tun Hussein Onn Malaysia, Parit Raja, Malaysia*

4:00

BH-09. **'Pseudo' direct drive electrical machines with alternative winding configurations.** ***(Invited)*** *G. Cooke*[1] and K. Atallah[1] *1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

4:30

BH-10. **Effect of Rotor Geometry on Peak and Average Torque of Direct Drive External-Rotor Synchronous Reluctance Motor (Ex-R SynRM) in comparison with Switched Reluctance Motor for Low Speed Domestic Application.** R.M. Azhagar[1] and *A. Kavitha*[1] *1. Electrical and Electronics Engineering, College of Engineering, Anna University, Chennai, India*

4:45

BH-11. **An Approach to Characterize Charged Magnet Rings for Permanent Magnet Motors.** *N. Aung*[1] and J. Quan[1] *1. DST Division, Data Storage Institute, Singapore, Singapore*

Session BM
EXCHANGE BIAS AND PATTERNED FILMS II (Poster Session)

Casey Miller, Co-Chair
Rochester Institute of Technology, Rochester, NY
Ko-Wei Lin, Co-Chair
National Chung Hsing University, Taichung, Taiwan

BM-01. **Vectorial mapping of exchange anisotropy in [FeNi/IrMn]$_n$ multilayers through static and dynamic measurements.** *D. Adams*[1,2], M.A. Khan[1,2] and L. Spinu[1,2] *1. Advanced Materials Research Institute, University of New Orleans, New Orleans, LA; 2. Physics, University of New Orleans, New Orleans, LA*

BM-02. **Artificially Designed Magnetic Domain Patterns Investigated by Neutron Scattering.** *T. Saerbeck*[1], N. Steinke[2], H. Huckfeldt[3], I. Koch[3] and A. Ehresmann[3] *1. LSS, Institut Laue-Langevin, Grenoble, France; 2. ISIS, Rutherford Appleton Laboratory, Oxfordshire, United Kingdom; 3. Institute of Physics, University of Kassel, Kassel, Germany*

BM-03. **Growth of epitaxial MnN thin films and exchange coupling properties.** *T. Yoshida*[1], H. Ando[1], T. Hajiri[1] and H. Asano[1] *1. Crystalline Materials Science, Nagoya University, Nagoya, Japan*

BM-04. **Effect of etching on exchange bias in CoFe/IrMn bilayers studied by soft X-Ray XMCD and resonant magnetic reflectometry.** *D. O'Donnell*[1], A. Smekhova[2], H. Wende[3], R. Fan[4], P. Steadman[4], Y. Du[1], S. Hassan[1] and A. Dobrynin[1] *1. Research and Development, Seagate Technology, Derry, United Kingdom; 2. Forschungszentrum Juelich, Juelich, Germany; 3. University of Duisburg-Essen, Duisburg, Germany; 4. Diamond Light Source, Didcot, United Kingdom*

BM-05. **Influence of Pt layer insertion on IrMn antiferromagnetic properties.** *G. Forestier*[1], L. Frangou[1], Y. Wen[2], S. Auffret[1], X. Zhang[2], A. Manchon[2] and V. Baltz[1] *1. SPINTEC, Grenoble, France; 2. KAUST, Thuwal, Saudi Arabia*

BM-06. **Investigation of the Exchange Bias in NiO(111)/EuO(001) Heterostructure.** *R. Aboljadayel*[1], A. Ionescu[1], P. Monteiro[1], G. Cheglakov[1], N. Steinke[2], C. Kinane[2], T. Saerbeck[3], C. Barnes[1] and S. Langridge[2] *1. Physics, University of Cambridge, Cambridge, United Kingdom; 2. ISIS Facility, STFC Rutherford Appleton Laboratory, Didcot, United Kingdom; 3. LSS, Institut Laue-Langevin, Grenoble, France*

BM-07. **Thickness-dependent spin reorientation transition enhanced by perpendicular exchange bias in Co/CoO(111) bilayer.** *B.A. Matlak*[1], K. Matlak[1], T. Slezak[1] and J. Korecki[1,2] *1. AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Kraków, Poland; 2. Jerzy Haber Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences, Kraków, Poland*

BM-08. **Manipulation of lateral ferromagnetic domain by Pt insertion layer in Cr_2O_3/Co exchange coupled thin film system.** *T. Nozaki*[1], M. Al-Mahdawi[1], S. Pati[1], S. Ye[1] and M. Sahashi[1,2] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. ImPACT program, Tokyo, Japan*

BM-09. **Microscopic control of the direction of the exchange bias driven by a phase transition in the antiferromagnetic layer.** *A. Migliorini*[1], M. Muñoz[2], T. Huminiuc[3], J.F. Cunnado[4], J. Camarero[5], C. Aroca[1] and J. Prieto[1] *1. ISOM - Universidad Politécnica de Madrid, Madrid, Spain; 2. IMM-CSIC, Madrid, Spain; 3. University of York, York, United Kingdom; 4. IMDEA Nanociencia, Madrid, Spain; 5. UAM-IMDEA Nanociencia, Madrid, Spain*

BM-10. **Exchange Bias Induced by the Spin Glass-Like Surface Spins in Sputter Deposited Fe_3O_4 Thin Films.** *M. Shameem*[1], L. Mekala[1] and M. Senthil Kumar[1] *1. Department of Physics, Indian Institute of Technology Bombay, Mumbai, India*

BM-11. **Interface Exchange Coupling and Non-Equilibrium Dynamics in Ferromagnetic /Antiferromagnetic Metallic Nanocomposites.** G. Margaris[1], M. Vasilakaki[1], *D. Peddis*[2], K. Trohidou[1], S. Laureti[2], C. Binns[3], D. Rinaldi[4], R. Mathieu[5], D. Fiorani[2] and E. Agostinelli[2] *1. Institute of Nanoscience and Nanotechnology, National Center for Scientific Research Demokritos, Athens, Greece; 2. ISM-CNR, Monterotondoi, Italy; 3. Department of Physics and Astronomy, University of Leicester, Liecester, United Kingdom; 4. Dipartimento SIMAU, Università Politecnica delle Marche, Ancona, Italy; 5. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden*

BM-12. **Probing core and shell contributions to exchange bias in Co/Co_3O_4 nanoparticles of controlled size.** D. De[1,2], *O. Iglesias*[3,4], S. Majumdar[2] and S. Giri[2] *1. Dpt. of Physics, The Neotia University, Sarisa, India; 2. Dpt. Solid State Physics, Indian Association for the Cultivation of Science, Jadavpur, Kolkata, India; 3. Dpt. Condensed Matter Physics, University of Barcelona, Barcelona, Spain; 4. Institute of Nanoscience and Nanotechnology of UB, Barcelona, Spain*

BM-13. **All-amorphous magnetic patterns by ion implantation.** *G. Muscas*[1], R. Brucas[2] and P. Jönsson[1] *1. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Engineering Sciences, Uppsala University, Uppsala, Sweden*

BM-14. **Magnetic phase transition asymmetry dependent on the spatial confinement of FeRh patterns.** V. Schanilec[1], *M. Horky*[1], J. Arregi[1], M. Dhankhar[1], E. Fullerton[2] and V. Uhlir[1] *1. Central European Institute of Technology, Brno University of Technology, Brno, Czech Republic; 2. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA*

BM-15. **Magnetism of nanopatterned arrays with perpendicular anisotropy.** *M. Marszalek*[1], M. Krupinski[1], A. Maximenko[1], Y. Zabila[1] and A. Zarzycki[1] *1. Institute of Nuclear Physics Polish Academy of Sciences, Krakow, Poland*

BM-16. **Patterned T-Shaped Magnetic Structures Exhibiting Four Different Stable Magnetic States.** E. Sinnecker[1], *J. Garcia-Martin*[2], R. Escobar[3], D. Altbir[3], J. D'Albuquerque e Castro[1] and J. Sinnecker[4] *1. Instituto de Fisica, UFRJ, Rio de Janeiro, Brazil; 2. Instituto de Microelectronica de Madrid, CSIC, Madrid, Spain; 3. Universidad de Santiago de Chile, Santiago, Chile; 4. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil*

BM-17. **Programmable magnetization configurations in Co-antidot lattices of optimized geometry.** T. Schneider[1,2], M. Langer[1,3], E. Kowalska[1,3], *A. Semisalova*[1,4], A. Neudert[1], K. Lenz[1], K. Potzger[1], M. Kostylev[5], J. Faßbender[1,3], A. Adeyeye[6], J. Lindner[1] and R. Bali[1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. TU Chemnitz, Chemnitz, Germany; 3. TU Dresden, Dresden, Germany; 4. Lomonosov Moscow State University, Moscow, Russian Federation; 5. University of Western Australia, Crawley, WA, Australia; 6. National University of Singapore, Singapore, Singapore*

BM-18. **Antidot patterned single and bilayer thin films based on ferrimagnetic Tb-Co alloys with tailored magnetic anisotropy.** *N. Kulesh*[1,2], K. Balymov[1], V.N. Lepalovskij[1], E. Palmero[2], F. Makhin'ko[3], V.O. Vas'kovskiy[1] and M. Vázquez[2,1] *1. Ural Federal University, Ekaterinburg, Russian Federation; 2. Insitute of Materials Science of Madrid, CSIC, Madrid, Spain; 3. Institute of Electrophysics, Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russian Federation*

TUESDAY AFTERNOON 1:30 | THE FORUM

Session BN

MAGNETIC PROPERTIES AND CHARACTERIZATION TECHNIQUES (Poster Session)

Atsufumi Hirohata, Chair
University of York, York, United Kingdom

BN-01. ***In situ* membrane bending setup for the investigation of magnetostrictive materials with XMCD-STXM imaging.** *S. Finizio*[1], S. Wintz[1,2], E. Kirk[1] and J. Raabe[1] *1. Paul Scherrer Institut, Villigen PSI, Switzerland; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

BN-02. **Improved 3D Magnetic Properties Measurement of Silicon Steel Laminations Based on a Novel Sensing Structure.** *Y. Li*[1], X. Geng[1], J. Li[1], C. Zhang[1] and J. Zhu[2] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin, China; 2. School of EMMS, University of Technology, Sydney, NSW, Australia*

BN-03. **Improvements to the NMR method with flowing water at CMI.** *M. Ulvr*[1] and J. Kupec[1] *1. Department of Electromagnetic Quantities, Czech Metrology Institute, Brno, Czech Republic*

BN-04. **Design and implementation of a low frequency pulsed magnetic field generator applicable to unilateral NMR.** *N. Prabhu Gaunkar*[1], R. Weber[1], M. Mina[1] and D. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA*

BN-05. **Properties of Signal Caused by the Cracks on the Back Surface of Steel Plate in Low Frequency Eddy Current Testing.** R. Tanaka[1], *T. Sasayama*[1], M. Matsuo[1] and K. Enpuku[1] *1. Kyushu University, Fukuoka, Japan*

BN-06. **Phase stabilities and magnetic properties of Mn-deficient and Ge-substituted Mn_3Ga with $D0_{22}$ structure.** *H. Okada*[1], T. Sasaki[2], Y. Shoji[1] and R.Y. Umetsu[3] *1. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan; 2. Division of Engineering, Graduate School of Tohoku Gakuin University, Tagajo, Japan; 3. Institute for Materials Research, Tohoku University, Sendai, Japan*

BN-07. **Phase transformations in $La_{1-y}R_yMnO_{3+\delta}$ (R = Pr, Nd, Sm, δ =0.1) manganites.** *F. Bukhanko*[1] and A. Bukhanko[1] *1. Donetsk Institute for Physics and Engineering named after O.O. Galkin, National Academy of Sciences of Ukraine, Kharkiv, Ukraine*

BN-08. **Fully automated ultra-high sensitivity ferromagnetic resonance measurement based on microwave interferometer.** *S. Tamaru*[1], K. Yakushiji[1], A. Fukushima[1], S. Yuasa[1] and H. Kubota[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

BN-09. **Characterization of Permanent Magnet Magnetization.** *L. Arbenz*[1], O. Chadebec[2], C. Espanet[1], Y. Rtimi[1,2] and G. Cauffet[2] *1. Advanced Research Team, Moving Magnet Technologies, Besançon, France; 2. G2Elab, Univ. Grenoble Alpes, CNRS, Grenoble, France*

BN-10. **Withdrawn.**

BN-11. **Towards NMR scanning microscopy with magnetoresistive sensors.** *A. Doll*[1], A. Solignac[1], E. Paul[1], M. Pannetier-Lecoeur[1] and C. Fermon[1] *1. SPEC/LNO, CEA Saclay, Gif-sur-Yvette, France*

BN-12. **Equipment for determination of the static *B-H* relationship in soft magnetic alloys.** V. Manescu (Paltanea)[1], *G. Paltanea*[1], P. Andrei[1], C. Grumeza[1] and P. Minciunescu[2] *1. Electrical Engineering Department, University Politehnica of Bucharest, Bucharest, Romania; 2. ICPE-SA, Bucharest, Romania*

BN-13. **Polarized neutron investigation of ultrathin Co films on polycrystalline Pt under UHV.** *S. Pütter*[1], A. Syed Mohd[1], S. Mattauch[1], A. Koutsioubas[1] and T. Brückel[1,2] *1. Jülich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), Forschungszentrum Jülich GmbH, Garching, Germany; 2. Jülich Centre for Neutron Science (JCNS) and Peter Grünberg Institute (PGI); JCNS-2, PGI-4, Forschungszentrum Jülich GmbH, Jülich, Germany*

BN-14. **A Cryogenic Polar Kerr Effect Microscope for Imaging Spin Polarisation at 1.7 Kelvin.** *J. Liu*[1], J. Llandro[2], R. Mansell[3], R. Cowburn[1], R. Phillips[1] and C. Barnes[1] *1. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. Department of Applied Physics, Aalto University, Helsinki, Finland*

BN-15. **High temperature characterization of electrical steels using an adapted Epstein frame.** *M. Ababsa*[1], O. Ninet[1] and G. Velu[1] *1. Electrical Engineering, Artois University, Béthune, France*

BN-16. **Eddy current non-destructive evaluation for healthiness of radiator structure.** *S. Nagata*[1] and M. Numachi[1] *1. Faculty of Engineering, University of Miyazaki, Miyazaki city, Japan*

BN-17. **Improved High-Frequency Rotating Magnetic Properties Tester for Nanocrystalline Soft Magnetic Material.** *Y. Li*[1], Q. Zhao[1], L. Wang[1], J. Li[1] and C. Zhang[1] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin, China*

BN-18. **Non-Standard Imaging in Magnetic Force Microscopy: New Probes and Methods.** M. Jaafar[1], E. Berganza[1], O. Iglesias–Freire[1], P. Ares[2], J.P. Navarro[3,4], J. Gomez-Herrero[2], J. de Teresa[3,4], M. Fernández Gubieda[5,6] and *A. Asenjo*[1] *1. CSIC, Madrid, Spain; 2. UAM, Madrid, Spain; 3. ICMA-CSIC, Zaragoza, Spain; 4. INA, Zaragoza, Spain; 5. UPV/EHU, Bilbao, Spain; 6. BCMaterials, Bilbao, Spain*

TUESDAY AFTERNOON 1:30 — THE FORUM

Session BO
MAGNETIC DOMAIN CONFIGURATION (Poster Session)

Trevor Almeida, Co-Chair
University of Glasgow, Glasgow, United Kingdom
Oksana Chubykalo-Fesenko, Co-Chair
Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

BO-01. **Coupled Vortex-Antivortex Oscillation Studied by Time-Resolved Scanning Electron Microscopy with Polarization Analysis.** *F. Kloodt*[1], R. Frömter[1,2], P. Staeck[1], S. Kuhrau[1] and H. Oepen[1,2] *1. Institut für Nanostruktur- und Festkörperphysik, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany*

BO-02. **Multi-Color Imaging of Magnetic Co/Pt Multilayers.** C. von Korff Schmising[1], *D. Weder*[1], F. Willems[1], C.M. Günther[2], M. Schneider[1], B. Pfau[1], A. Merhe[3,4], E. Jal[3,4], B. Vodungbo[3,4], J. Lüning[3,4], B. Mahieu[5], F. Capotondi[6], E. Pedersoli[6] and S. Eisebitt[1,2] *1. Max-Born-Institut, Berlin, Germany; 2. Technische Universität Berlin, Berlin, Germany; 3. UMR 7614, Sorbonne Universités, UPMC Université, Paris, France; 4. UMR 7614, CNRS, Paris, France; 5. ENSTA ParisTech, Laboratoire d'Optique Appliquée, Palaiseau, France; 6. Elettra-Sincrotrone Trieste, Basovizza, Trieste, Italy*

BO-03. **Novel static magnetic field imaging with fixed measuring direction for fractured surface of Sr ferrite magnet by alternating magnetic force microscopy with superparamagnetic FeCo-Gd_2O_3 tip.** Y. Cao[1], G. Egawa[2], S. Yoshimura[2] and *H. Saito*[2] *1. Center for Regional Revitalization in Research and Education, Akita University, Akita, Japan; 2. Graduate School of Engineering Science, Akita University, Akita, Japan*

BO-04. **Imaging magnetization dynamics in nano-contact spin-torque vortex oscillators that exhibit gyrotropic mode splitting.** *P.S. Keatley*[1], S.R. Sani[2,3], G. Hrkac[4], S.M. Mohseni[5], P. Dürrenfeld[6], J. Åkerman[2,6] and R.J. Hicken[1] *1. Department 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. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 4. College of Engineering, Mathematics and Physical Science, University of Exeter, Exeter, United Kingdom; 5. Department of Physics, Shahid Beheshti University, Tehran, The Islamic Republic of Iran; 6. Physics Department, University of Gothenburg, Gothenburg, Sweden*

BO-05. **Electron holography investigations of magnetic nanoprecipitations in (Ga,Mn)As dilute ferromagnetic semiconductor subjected to high temperature post-growth annealing.** *P. Dluzewski*[1] *1. Institute of Physics Polish Academy of Sciences, Warsaw, Poland*

BO-06. **Direct imaging of delayed magneto dynamic modes induced by strain waves.** *F. Macia*[1], M. Foerster[2], N. Statuto[3], S. Finizio[4], A. Herández-Mínguez[5], S. Lendínez[3], P. Santos[5], J. Hernàndez[3], J. Fontcuberta[1], M. Kläui[6] and L. Aballe[2] *1. Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain; 2. ALBA Synchrotron Light Source, Cerdanyola, Spain; 3. Dept. of Condensed Matter Physics, Universitat de Barcelona, Barcelona, Spain; 4. Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland; 5. Paul Drude Institut für Festkörperelektronik, Berlin, Germany; 6. Institut fur Physik, Johannes Gutenberg Universitat, Mainz, Germany*

BO-07. **Conservation of energy and linear momentum in ferromagnetic systems with broken inversion symmetry.** *P. Borys*[1], R. Stamps[2] and G. Tatara[1] *1. CEMS, Riken, Wako, Japan; 2. University of Glasgow, Glasgow, United Kingdom*

BO-08. **Domain structure and spin reorientation in $TbCo_{5.1}$ and $DyCo_{5.2}$ intermetallics.** *A.I. Ivanova*[1] *1. Applied Physics, Tver State University, Tver, Russian Federation*

BO-09. **Attainment of observation of microscopic image under pulse high magnetic field of 20 T with using an optimized new coil.** *A. Hamasaki*[1], Y. Takeuchi[2] and S. Ozeki[1] *1. Chemistry, Shinshu University, Matsumoto, Japan; 2. Muroran Institute of Technology, Muroran, Japan*

BO-10. **X-ray reciprocal space mapping of the magnetostructural transition in epitaxial FeRh films with different strain states.** *J. Arregi*[1], O. Caha[2], E. Fullerton[3] and V. Uhlir[1] *1. CEITEC, Brno University of Technology, Brno, Czech Republic; 2. CEITEC, Masaryk University, Brno, Czech Republic; 3. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA*

BO-11. **Quantitative Analysis of Magnetic Nanoparticles by Means of the Magnetic Force Microscopy.** *R. Shao*[1], A. Schillik[2], U. Herr[1] and B. Koslowski[2] *1. Institute of Micro and Nanomaterials, Ulm University, Ulm, Germany; 2. Institute of Solid State Physics, Ulm University, Ulm, Germany*

BO-12. **Absence of topological protection between transverse-vortex and Bloch-point domain walls in cylindrical nanowires.** A. Wartelle[1], C. Thirion[1], S. Bochmann[2], M. Stano[1], B. Trapp[3], A. Sala[4], T.O. Mentes[4], A. Locatelli[4], J. Bachmann[2], M. Foerster[5], J. Toussaint[1] and *O. Fruchart*[3,1] *1. Institut Néel, Univ. Grenoble Alpes, CNRS, Grenoble, France; 2. Department of Chemistry, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany; 3. SPINTEC, Univ. Grenoble Alpes, CNRS, CEA, Grenoble, France; 4. Elettra Synchrotron, Trieste, Italy; 5. Alba Synchrotron, Barcelona, Spain*

BO-13. **Control of domain structure in artificial Ni wires fabricated on a $LiNbO_3$ substrate.** *A. Yamaguchi*[1], T. Ohkochi[2], A. Yasui[2], T. Kinoshita[2] and K. Yamada[3] *1. Laboratry of Advanced Science and Technology for Industry, University of Hyogo, Ako-gun, Japan; 2. Japan Synchrotron Radiation Research Institute, Sayo, Japan; 3. Materials Science and Technology Division, Graduated School of Engineering, Gifu University, Gifu, Japan*

BO-14. **Time-resolved imaging of biased Landau pattern studied by x-ray holography with extended references.** *N. Bukin*[1,2], E.O. Burgos Parra[1], C.J. McKeever[1], F. Ogrin[1], G. Beutier[3], F. Yakhou[4] and G. van der Laan[2] *1. University of Exeter, Exeter, United Kingdom; 2. Diamond Light Source, Didcot, United Kingdom; 3. SIMAP, CNRS, Grenoble, France; 4. ESRF, Grenoble, France*

BO-15. **Transmission electron microscopic studies of interfaces in reprocessed HDDR Nd-Fe-B permanent magnets by using protective atmosphere transfer system.** *M. Mehmood*[1,2], A. Ikram[1,2], S. Kobe[2], K. Zuzek Rozman[1,2] and S. Sturm[1,2] *1. Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia; 2. Jozef Stefan International Postgraduate School, Ljubljana, Slovenia*

BO-16. **Magnetic Properties of Antidots of Magnetite Synthesized by Atomic Layer Deposition and Focused Ion Beam.** *J.L. Palma*[1,2], J. Garcia-Martin[3], A. Pereira[2] and J. Escrig[4,2] *1. Physics Department, Universidad Central de Chile, Santiago, Chile; 2. Center for the Development of Nanoscience and Nanotechnology, Santiago, Chile; 3. Instituto de Microelectrónica de Madrid, Madrid, Spain; 4. Physics Department, Universidad de Santiago, Santiago, Chile*

BO-17. **Withdrawn**

BO-18. **Trapping ferromagnetic domains in pentagonal Cairo-tilings.** *J.L. Palma*[1,2], E. Saavedra[3], N. Vargas[2], J. Denardin[3,2] and J. Escrig[3,2] *1. Physics Department, Universidad Central de Chile, Santiago, Chile; 2. CEDENNA, Center for the Development of Nanoscience and Nanotechnology, Santiago, Chile; 3. Physics Department, Universidad de Santiago, Santiago, Chile*

TUESDAY AFTERNOON 1:30 — THE FORUM

Session BP
MAGNETIZATION DYNAMICS I (Poster Session)

Helmut Schultheiss, Chair
Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany

BP-01. **Towards a mutually synchronized 2D array of nanoconact spin torque oscillators: a micromagnetic study.** *M. Pauselli*[1,2], A. Houshang[3], R.K. Dumas[3], J. Åkerman[3,4] and G. Carlotti[1] *1. Physics Department, University of Perugia, Perugia, Italy; 2. Physics Department, Istituto Officina dei Materiali del CNR (CNR-IOM), Perugia, Italy; 3. Physics Department, University of Gothenburg, Gothenburg, Sweden; 4. Material Physics, School of ICT, KTH Royal Institute of Technology, Kista, Sweden*

BP-02. **Inverse spin Hall effect and spin rectification voltages from coplanar waveguide ferromagnetic resonance measurements.** *S. Jiang*[1,2], S. Chung[1], H. Mazraati[1,2], F. Qejvanaj[1,2], F. Magnusson[2] and J. Åkerman[1,2] *1. Applied Physics, KTH Royal Institute Technology, Kista, Sweden; 2. NanOsc AB, Kista, Sweden*

BP-03. **Spin waves in CoFeB thin films dominated by Dzyaloshinskii-Moriya interaction.** *T. Fischer*[1,2], F. Heussner[1], M. Kläui[3,2], B. Hillebrands[1] and P. Pirro[1] *1. Physics, TU Kaiserslautern, Kaiserslautern, Germany; 2. MAINZ Graduate School of Excellence, Mainz, Germany; 3. Physics, University of Mainz, Mainz, Germany*

BP-04. **Damping coefficient of Co_2MnSi Heusler alloy with Mn/Si and Co/Mn atomic disorder.** *N. Biziere*[1] *1. CEMES, Toulouse, France*

BP-05. **Bubble dynamics in the presence of the Dzyaloshinskii-Moriya interaction analysed by a semi-analytical approach.** *J. Vandermeulen*[1,2], B. Van Waeyenberge[2] and L. Dupré[1] *1. Electrical Energy, Metals, Mechanical Construction and Systems, Ghent University, Gent-Zwijnaarde, Belgium; 2. Solid State Sciences, Ghent University, Ghent, Belgium*

BP-06. **Analytical Treatment of Nonlinear Ferromagnetic Resonance in Nanomagnets.** M. d'Aquino[1], *C. Serpico*[2], V. Scalera[2], G. Bertotti[3], A. Quercia[2], S. Perna[2] and I.D. Mayergoyz[4] *1. Engineering Department, University of Naples "Parthenope", Naples, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy; 3. Istituto Nazionale di Ricerca Metrologica, Turin, Italy; 4. ECE Department, University of Maryland, College Park, MD*

BP-07. **Spin-Hall effect induced damping control in ultra-thin Ta/FeCoB/MgO spin-wave waveguides.** *M. Fabre*[1], T. Brächer[1], A. Timopheev[1], A. Ruiz-Calaforra[1], S. Auffret[1], O. Klein[1], G. Gaudin[1], O. Boulle[1] and U. Ebels[1] *1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France*

BP-08. **First-Principles Study on the Gilbert Damping Constants of Transition Metals in the Presence of Spin Fluctuation.** *D. Ozaki*[1] *1. Applied Physics, Tohoku University, Sendai, Japan*

BP-09. **Anisotropy and damping of molecules/cobalt hybrid thin films.** O. Rousseau[1], Y. Roussigné[1], M. Belmeguenai[1], P. Martin[2], C. Barraud[3] and *S.M. Chérif*[1] *1. LSPM, University Paris 13, Villetaneuse, France; 2. ITODYS, University Paris Diderot, Paris, France; 3. MPQ, University Paris-Diderot, Paris, France*

BP-10. **Autoresonant magnetization switching by spin-orbit torques.** *G. Go*[1], S. Lee[1] and K. Lee[1] *1. Korea University, Seoul, The Republic of Korea*

BP-11. **Giant damping-like spin orbit torque in perpendicular magnetized double Pt/Co stack structure.** *S. Li*[1], S. Goolaup[1] and W. Lew[1] *1. School of Physics and Physical Science, Nanyang Technological University, Singapore, Singapore*

BP-12. **Enhanced power of spin torque oscillators with Permalloy free layer.** *C. Murapaka*[1], E. Jimenez[1], K. Merazzo-Jaimes[1], A. Ruiz-Calaforra[1], R. Ferreira[2], L. Vila[1], M. Cyrille[1] and U. Ebels[1] *1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal*

BP-13. **Controlling of voltage-induced spin wave resonance properties in ferromagnetic nanowires with perpendicular anisotropy.** *X. Ya*[1], T. Tanaka[1] and K. Matsuyama[1] *1. Kyushu University, Fukuoka, Japan*

BP-14. **The effect of growth sequence on magnetization damping in Ta/CoFeB/MgO structures.** *D. Huang*[1], B. Liu[1], M. Gao[1], H. Tu[1], K. Wang[1], X. Ruan[1], J. Du[1], L. He[1], J. Wu[2], X. Wang[1], J. Cai[3] and Y. Xu[1] *1. Nanjing University, Nanjing, China; 2. The University of York, York, United Kingdom; 3. Chinese Academy of Sciences, Beijing, China*

BP-15. **Magnetization dynamics of post-annealed yttrium-iron-garnet thin-films sputter deposited over a platinum electrode.** *S. Pati*[1], M. Al-Mahdawi[1], Y. Shiokawa[1], M. Sahashi[1] and Y. Endo[2,3] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network (CSRN), Tohoku University, Sendai, Japan*

BP-16. **Characterization of the ferromagnetic resonance induced spin pumping in $Co_{20}Fe_{60}B_{20}$/Pt systems.** *M. Belmeguenai*[1], M. Gabor[2], F. Zighem[1], N. Challab[3], T. Petrisor, Jr.[2], R. Mos[2] and C. Tiusan[2] *1. LSPM, CNRS-Université Paris 13, Sorbonne Paris Cité, Villetaneuse, France; 2. Center for Superconductivity, Spintronics and Surface Science, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; 3. Université Paris 13, Villetaneuse, France*

BP-17. **Magnetic properties and broadband microwave absorption of electroplated NiFe thin films deposited directly on Si (100) substrates.** *B.G. Silva*[1], D.E. González Chávez[1], S.A. Raza[1], J. Gomes Filho[1] and R.L. Sommer[1] *1. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil*

BP-18. **Change in the Magnetization Dynamics of $Fe_{1-x}Co_x$ Thin Films with Co Concentration x.** *Y. Endo*[1,2], T. Miyazaki[3] and Y. Shimada[1] *1. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Technical Division, School of Engineering, Tohoku University, Sendai, Japan*

TUESDAY AFTERNOON 1:30 — THE FORUM

Session BQ
MAGNONICS II
(Poster Session)

Andrii Chumak, Chair
Technische Universität Kaiserslautern, Kaiserslautern, Germany

BQ-01. **Pinned domain wall oscillator as tunable direct current spin wave emitter.** *M. Voto*[1] and L. Lopez-Diaz[1] *1. Departamento de Física Aplicada, Universidad de Salamanca, Salamanca, Spain*

BQ-02. **Micro-Focused Pulse Laser-Induced Propagating Spin Wave in Permalloy Films with Different Thicknesses.** *A. Kamimaki*[1,2], S. Iihama[2], Y. Sasaki[1,2], Y. Ando[2] and S. Mizukami[1] *1. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Department of Applied Physics, Tohoku University, Sendai, Japan*

BQ-03. **Design and Basic Spin Wave Dynamics of a Dual Band Magnonic Crystal.** *F. Montoncello*[1] and L. Giovannini[1] *1. Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy*

BQ-04. **Magnetoacoustic resonance and spin waves in ferromagnetic nanogratings.** *A.S. Salasyuk*[1], A.V. Rudkovskaya[1], A. Danilov[2], A.V. Scherbakov[1], B. Glavin[3], A. Rushforth[4], A. Elistratov[5], S. Sokolov[5], P. Nekludova[5], D. Yakovlev[1,2], A. Akimov[4] and M. Bayer[1,2] *1. Ferroics Physics Lab, Ioffe Institute, Saint Petersburg, Russian Federation; 2. Experimentelle Physik 2, Technische Universität Dortmund, Dortmund, Germany; 3. Department of Theoretical Physics, Lashkaryov Institute of Semiconductor Physics, Kyiv, Ukraine; 4. School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom; 5. Institute of Nanotechnology of Microelectronics of the Russian Academy of Sciences, Moscow, Russian Federation*

BQ-05. **Excitation of the interface spin waves using acoustic Kosevich wave.** *Y. Gusieva*[1], M. Krawczyk[2], O. Gorobets[1] and P. Graczyk[2] *1. National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kiev, Ukraine; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

BQ-06. **Nonlinear switching of spin waves in the side-coupled magnonic stripes.** *A.V. Sadovnikov*[1,2], S.A. Odincov[1], E. Beginin[1], M.A. Morozova[1], S.E. Sheshukova[1], S.V. Grishin[1], Y. Sharaevskii[1] and S. Nikitov[1,2] *1. Laboratory "Metamaterials," Saratov State Universit, Saratov, Russian Federation; 2. Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation*

BQ-07. **Frequency and Amplitude Modulation of Spin Wave Signals Generated in Topological Spin Textures.** *S. Wintz*[1,2], S. Finizio[1], K. Schultheiss[2], V. Liersch[2], F. Kilibarda[2], T. Warnatz[2], A. Suszka[1], P. Warnicke[1], P. Wohlhüter[1], A. Erbe[2], J. Lindner[2], J. Faßbender[2] and J. Raabe[1] *1. Paul Scherrer Institut, Villigen PSI, Switzerland; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

BQ-08. **Strain reconfigurable coupling of spin waves in width modulated magnonic crystal waveguide.** *A.V. Sadovnikov*[1,2], A.A. Grachev[1], E. Beginin[1], S.E. Sheshukova[1], Y. Sharaevskii[1], D.V. Romanenko[1], A.A. Serdobintsev[3], D.M. Mitin[3] and S. Nikitov[1,2] *1. Laboratory "Metamaterials," Saratov State University, Saratov, Russian Federation; 2. Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation; 3. Education and Research Institute of Nanostructures and Biosystems, Saratov State University, Saratov, Russian Federation*

BQ-09. **Magnon cloaking.** *M. Elyasi*[1], C.S. Bhatia[2], C. Qiu[2] and H. Yang[2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Electrical and Computer Engineering Department, National University of Singapore, Singapore, Singapore*

BQ-10. **Writing magnonic waveguides in $Fe_{60}Al_{40}$ with an nano-sized ion beam.** *J. Osten*[1], T. Hula[1], K. Wagner[1], X. Xu[1], G. Hlawacek[1], R. Bali[1], K. Potzger[1], J. Lindner[1], J. Faßbender[1,2] and H. Schultheiss[1] *1. Institute of Ion Beam Physics and Materials Research, HZDR, Dresden, Germany; 2. TU Dresden, Dresden, Germany*

BQ-11. **Effect of pinning on magnetic domain wall resonance spectra.** *J. Adam*[1], R. Soucaille[1], F. Garcia-Sanchez[1], J. Kim[1] and T. Devolder[1] *1. Centre des Nanosciences et des Nanotechnologies, Université Paris-Sud/CNRS, Orsay, France*

BQ-12. **Goos-Hänchen shift of a spin-wave beam in transmission through interface between two ferromagnets.** *M. Mailian*[1], P. Gruszecki[2], O. Gorobets[1,3] and M. Krawczyk[2] *1. Faculty of Physics and Mathematics, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 3. Institute of Magnetism, National Academy of Sciences of Ukraine, Kyiv, Ukraine*

BQ-13. **Investigation of Magnonic Band Structure in Co/Pd Stripe Domain System for Energy Efficient Spin Wave Propagation.** C. Banerjee[1], P. Gruszecki[2], J. Klos[2], *S. Pan*[1], O. Hellwig[3], M. Krawczyk[2] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Adam Mickiewicz University, Poznan, Poland; 3. Chemnitz University of Technology, Reichenhainer Straße, Germany*

BQ-14. **Tunable Magnonic Crystals with Alternating Dzyaloshinskii-Moriya Interactions.** *S. Lee*[1] and K. Lee[1] *1. Korea University, Seoul, The Republic of Korea*

BQ-15. **Brillouin Light Scattering Study of Spin-Wave Dynamics in Two-Dimensional Binary Magnonic Crystals.** A. De[1], S. Mondal[1], C. Banerjee[1], A. Chaurasiya[1], *S. Pan*[1], R. Mandal[1], Y. Otani[2] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. University of Tokyo, Tokyo, Japan*

BQ-16. **Bias Field Tunable Magnetic Configuration and Magnetization Dynamics in $Ni_{80}Fe_{20}$ Nano-Cross Structures with Varying Arm Length.** K. Adhikari[1], S. Choudhury[1], R. Mandal[1], *S. Pan*[1], S. Barman[1], Y. Otani[2,3] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute for Solid State Physics, Kashiwa, Japan; 3. CEMS-RIKEN, Wako, Japan*

TUESDAY AFTERNOON 1:30 — THE FORUM

Session BR

FUNDAMENTAL PROPERTIES WITH RELEVANCE TO APPLICATIONS I (Poster Session)

Plamen Stamenov, Chair
Trinity College Dublin, Dublin, Ireland

BR-01. **Magnetic and transport properties of melt spun ribbons of $Fe_{43.5}Mn_{34}Al_{15}Ni_{7.5}$ Heusler alloys.** *M. Seredina*[1], M. Lyange[1], D.Y. Karpenkov[1], V. Khovaylo[1], R. Chatterjee[2] and R. Varga[3] *1. NUST MISIS, Vorkuta, Russian Federation; 2. Indian Institute of Technology Delhi, New Delhi, India; 3. University of Pavol Jozef Safarik, Kosice, Slovakia*

BR-02. **Iron-Loss Characteristics Using a 1MHz GaNFET PWM Inverter.** *W. Martinez*[1], S. Odawara[1] and K. Fujisaki[1] *1. Toyota Technological Institute, Nagoya, Japan*

BR-03. **Reversing the exchange bias using all-optical helicity-dependent magnetic switching.** *P. Vallobra*[1], T. Fache[1], Y. Xu[1], L. Zhang[1], G. Malinowski[1], M. Hehn[1], J. Rojas-Sanchez[1], E. Fullerton[2] and S. Mangin[1] *1. Institut Jean Lamour, UMR 7198 CNRS-Université de Lorraine, Vandoeuvre lès Nancy, France; 2. Center for Memory and Recording Research, University of California, San Diego, CA*

BR-04. **Magnetic properties of nanocrystalline N-NFO thin films.** *K.B. Anoop Baby*[1], G. Markandeyulu[1] and A. Subrahmanyam[1] *1. Physics, Indian Istitute of Technology Madras, Chennai, India*

BR-05. **Preparation and evaluation of Mn_3GaN_{1-x} thin films with controlled N compositions.** S. Ishino[1], J. So[1], T. Hajiri[1] and *H. Asano*[1] *1. Crystalline Materials Science, Nagoya University, Nagoya, Japan*

BR-06. **Structure-property correlations of carbon and nitrogen incorporated $NiFe_2O_4$.** *K.B. Anoop Baby*[1], L. George[1], M. Jaiswal[1], G. Markandeyulu[1] and A. Subrahmanyam[1] *1. Physics, Indian Institute of Technology Madras, Chennai, India*

BR-07. **Structural, magnetic and dielectric studies of pristine and Gd-doped $YBiO_3$.** *D. Bhatnagar*[1], A. Kandasami[2] and R. Chatterjee[1] *1. Physics, Indian Institute of Technology Delhi, New Delhi, India; 2. Materials Science Division, Inter-University Accelerator Centre, New Delhi, India*

BR-08. **Tuning the magnetic and structural properties of $Fe_{60}Al_{40}$ thin films by ion irradiation.** *J. Ehrler*[1,2], R. Bali[1], R. Böttger[1], A. Semisalova[1], S. Zhou[1], J. Grenzer[1] and K. Potzger[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Faculty of Mechanical Science and Engineering, Dresden University of Technology, Dresden, Germany*

BR-09. **Enhancement of trapped magnetic field of SiC-doped MgB_2 bulk prepared by *in-situ* hot isostatic pressing method.** *T. Naito*[1] and H. Fujishiro[1] *1. Iwate University, Morioka, Japan*

BR-10. **Electrolyte gel gating of magnetic topological Insulator: $Cr_xSb_{1-x}Te_3$.** *A. Singh*[1], V. Kamboj[1], L. Duffy[2], D.A. Ritchie[1], T. Hesjedal[2] and C. Barnes[1] *1. Physics, University of Cambridge, Cambridge, United Kingdom; 2. Physics, University of Oxford, Oxford, United Kingdom*

Session BS
2:14:1-BASED RARE EARTH MAGNETS (Poster Session)

Volker Neu, Co-Chair
IFW Dresden, Dresden, Germany
Kazuhiro Hono, Co-Chair
National Institute for Materials Science, Tsukuba, Japan

BS-01. **Magnetic domain structure and demagnetization process of Nd–Fe–B anisotropic HDDR magnetic particles.** *M. Takezawa*[1], T. Nagaishi[1], K. Shimba[2], C. Mishima[2] and H. Mitarai[2] *1. Faculty of Engineering, Kyushu Institute of Technology, Kitakyushu, Japan; 2. Advanced and High Functional Products Development Division, Aichi Steel Corporation, Seki, Japan*

BS-02. **Consolidation of HDDR sintered magnets and coercivity enhancement by low-temperature sintering.** *F.O. Keller*[1], L.U. Lopes[1] and P.A. Wendhausen[1] *1. Federal University of Santa Catarina, Florianópolis, Brazil*

BS-03. **Anisotropic consolidation behavior of isotropic Nd-Fe-B HDDR powders during hot deformation.** *J. Lee*[1], H. Cha[1], Y. Baek[1], J. Yu[1], J. Park[1] and H. Kwon[2] *1. Korea Institute of Materials Science, Changwon, The Republic of Korea; 2. Department of Materials Science and Engineering, Busan, The Republic of Korea*

BS-04. **Improved coercivity of Nd-Fe-B sintered magnet by intergranular adding DyMg.** *J. Zeng*[1], S. Guo[1], L. Chen[1], X. Yang[1] and A. Yan[1] *1. Ningbo Institute of Industrial Technology, CAS, Ningbo, China*

BS-05. **Study of Migration Behavior of La, Ce and Y in the Strip Cast Process for Sintered Magnet.** *X. Fan*[1,2], S. Guo[2], K. Chen[2], R. Chen[2], D. Lee[2] and A. Yan[2] *1. Xi'an University of Technology Ningbo, China; 2. Ningbo Institute of Material Technology and Engineering, CAS, Ningbo, China*

BS-06. **Microstructure transformation and magnetic properties enhancement of sintered Nd-Fe-B magnets by electrophoretic diffusing TbF_3 Powder.** *X. Yang*[1], S. Guo[1], G. Ding[1], X. Cao[1], J. Zeng[1] and A. Yan[1] *1. Ningbo Institute of Industry Technology, CAS, Ningbo, China*

BS-07. **A novel approach for plastic bonded magnets of the type MQU-F melt spun NdFeGaB–type alloys.** *S. Karamanou*[1], M. Gjoka[1], E. Devlin[1], V. Psycharis[1], A. Ioannidou[1,2], G. Giannopoulos[1,2], G. Vekinis[1] and D. Niarchos[1,2] *1. INN, NCSR Demokritos, Athens, Greece; 2. R&D, Amen Technologies, Athens, Greece*

BS-08. **Features of the Magnetization Behavior in the Rare-Earth Intermetallic $NdDyFe_{14}B$.** *N. Kostyuchenko*[1], I. Tereshina[2,3], D. Gorbunov[4], E. Tereshina[5], A. Andreev[5], M. Doerr[6], G. Politova[3] and A. Zvezdin[1,7] *1. Moscow Institute of Physics and Technology (State University), Moscow, Russian Federation; 2. Lomonosov Moscow State University, Moscow, Russian Federation; 3. Baikov Institute of Metallurgy and Materials Science RAS, Moscow, Russian Federation; 4. Hochfeld-Magnetlabor Dresden (HLD), Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 5. Institute of Physics, ASCR, Prague, Czech Republic; 6. Technische Universität Dresden, Dresden, Germany; 7. A. M. Prokhorov General Physics Institute of Russian Academy of Sciences, Moscow, Russian Federation*

BS-09. **An adaptive genetic algorithm approach for predicting magnetic structure suitable for high-performance permanent magnet development.** *P. Nieves*[1], S. Arapan[1] and S. Cuesta-López[1] *1. Advanced Materials, Nuclear Technology and NanoBioTechnology, University of Burgos-ICCRAM, Burgos, Spain*

BS-10. **The effect of diffusion process of heavy rare-earths on the magnetic properties of melt-spun Nd-Fe-B ribbons.** *M. Soderznik*[1], M. Korent[1] and S. Kobe[1] *1. Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia*

BS-11. **Comparison on the coercivity enhancement of hot deformed $Nd_2Fe_{14}B$-type magnets by doping $R_{70}Cu_{30}$ (R=Nd, Dy and Tb) alloy powders.** *Y. Lee*[1], K. Huang[1], C. Shih[1], W.C. Chang[1] and H.W. Chang[2] *1. Department of Physics, National Chung Cheng University, Chiayi, Taiwan; 2. Department of Applied Physics, Tunghai University, Taichung, Taiwan*

BS-12. **Utilizing spark plasma sintering to fabricate fully dense Nd-Fe-B-type permanent magnets from the recycled HDDR powders.** *A. Ikram*[1] *1. K7 Nano, Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia*

BS-13. **Additive Manufacturing of Bonded NdFeB, Process Parameters Evaluation on Magnetic Properties.** *P.P. Wendhausen*[1], C.H. Ahrens[2], A.B. Baldissera[1], P.D. Pavez[2] and J.M. Mascheroni[3] *1. MAGMA, Universidade Federal de Santa Catarina, Florianópolis, Brazil; 2. NIMMA, Universidade Federal de Santa Catarina, Florianópolis, Brazil; 3. Alkimat Tecnologia, Florianópolis, Brazil*

BS-14. **Magnetic and microstructural changes of Dy-free and Dy-containing Nd-Fe-B sintered magnets during grain boundary diffusion process.** *T. Kim*[1], T. Sasaki[1], T. Ohkubo[1], Y. Takada[2], T. Sato[2], A. Kato[3], Y. Kaneko[2] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba Japan; 2. Toyota Central R&D Labs, Inc., Nagakute, Japan; 3. Toyota Motor Corp., Susono, Japan*

BS-15. **Preparation of the Zn-Al coating with high corrosion resistance on the sintered NdFeB magnets.** *Q. Zhou*[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China*

BS-16. **Perspectives of additive manufacturing of rare-earth and non-rare earth permanent magnets: possible compositions and technological limitations.** *V.V. Popov*[1] *1. Israel Institute of Metals, Technion - Israel Institute of Technology, Haifa, Israel*

BS-17. **Fabrication Hard Magnet by 3D printing.** *K. Jhong*[1] *1. NCKU, Tainan, Taiwan*

TUESDAY
AFTERNOON
1:30

THE FORUM

Session BT
MOTORS, GENERATORS AND ACTUATORS I (Poster Session)

Ronghai Qu, Chair
Huazhong University of Science and Technology, Wuhan, China

BT-01. **Improvement of Winding Factor in a Four-Phase Fractional-Slot Concentrated-Winding Permanent-Magnet Machine.** *T. Tao*[1], J. Zhu[2] and W. Zhao[1] *1. Jiangsu Univeristy, Zhenjiang, China; 2. Tsinghua University, Beijing, China*

BT-02. **The Novel Notching Scheme of IPMSM Considering Incidental Losses.** *B. Son*[1], K. Park[1], G. Park[1], Y. Kim[2] and S. Jung[1] *1. Sungkyunkwan Univ., Suwon-si, The Republic of Korea; 2. Chosun Univ., Gwangju, The Republic of Korea*

BT-03. **Analytical Modeling and Experimental Verification for Electromagnetic Analysis of Tubular Linear Synchronous Machines with Axially Magnetized Permanent Magnets accounting for Flux-Passing Iron Pole.** *K. Shin*[1], H. Park[2], H. Cho[3] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Advanced People's Brake Engineering Team, Hyundai Mobis, Yongin-si, The Republic of Korea; 3. Dept. of Electric, Electronic and Communication Engineering Edu., Chungnam National University, Daejeon, The Republic of Korea*

BT-04. **Asymmetric Multiple Inductive Coupling Coil for Wireless Power Transmission System with Self-Frequency Modulation Efficiency Tracking.** S. Wu[1], C. Chang[1] and *C. Tai*[1] *1. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan*

BT-05. **Analysis of a Multi-Phase Bearingless PMSM with Double-Winding Based on MMF.** *Y. Qin*[1], H. Zhu[1] and C. Zhao[1] *1. Jiangsu University, Zhenjiang, China*

BT-06. **Characteristic Analysis and Experimental Verification of Generating Performance in Double-Sided Permanent Magnet Synchronous Linear Generator Considering Three-Dimensional Effects for Ocean Wave Energy Converter.** M. Koo[1], *G. Jang*[1], S. Seo[1], K. Hong[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea*

BT-07. **A Study on the Design of IPMSM for Reliability of Demagnetization Characteristics-Based Rotor.** *G. Jeong*[1], H. Liu[1], D. Jung[1] and S. Cho[2] *1. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Korea Automotive Technology Institute, Chenan-si, The Republic of Korea*

BT-08. **Multi-Objective Design Optimization of Fan Filter Unit Motors Using Response Surface Method.** *K. Lee*[1,2], S. Lee[1], J. Park[1] and J. Choi[2] *1. Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Department of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

BT-09. **Design and Analysis of a Spoke-Type Hybrid Permanent Magnet Motor for Electric Vehicles.** X. Wang[1], X. Zhu[1], C. Zhang[1], L. Wang[1] and *W. Wu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

BT-10. **Optimal design method of PMa-SynRM by loading ratio for achievement of ultra-premium efficiency.** *D. Jung*[1], H. Hong[1], J. Won[1] and J. Lee[1] *1. Hanyang University, Seoul, The Republic of Korea*

BT-11. **Characteristic Analysis of Axial Flux Permanent Magnet Machines with Double-Sided Rotor and Soft Magnetic Composites Core Using Analytical Method.** *C. Kim*[1], G. Jang[1], J. Kim[1], J. Ahn[2,1], C. Baek[1] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. R&D, MAGNETAR, Daejeon, The Republic of Korea*

BT-12. **Optimal Structure Design of Permanent Magnet Motors Based on a General Pattern of Rotor Topologies.** X. Liu[1] and *W. Fu*[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Hom, Hong Kong*

BT-13. **Three-Dimensional Integral Approach for Calculating Mutual Interactions Between Polygonal Shaped Massive Coils.** L. Aomar[1], A. Hicham[1], M. Feliachi[2] and *J. Yonnet*[3] *1. L2EI Laboratory, University of Jijel, Jijel, Algeria; 2. IREENA Lab, IUT St Nazaire, University of Nantes, St-Nazaire, France; 3. G2E Lab, St Martin d'Heres, France*

Session BU
TRANSFORMERS AND INDUCTORS I (Poster Session)
Florin Ciubotaru, Chair
IMEC, Leuven, Belgium

BU-01. **Single-Source Multiple-Coil Homogeneous Induction Heating.** *W. Han*[1], K. Chau[1], Z. Zhang[2] and C. Jiang[1] *1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong; 2. Tianjin University, Tianjin, China*

BU-02. **A Novel Three-Dimensional Concentric-Winding Type Three-Phase Variable Inductor for Reactive Power Compensation in Electric Power Systems.** *K. Nakamura*[1], Y. Yamada[1], R. Nono[1], T. Ohinata[2], K. Arimatsu[2] and O. Ichinokura[1] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Tohoku Electric Power Co., Inc., Sendai, Japan*

BU-03. **Transformer Core Design Depending on Magnetic Properties and Microstructures of Goss Texture Fe-3%Si Steel.** *T. Gunes*[1] and R. Schäfer[2] *1. Energy Systems Engineering, University of Yalova, Yalova, Turkey; 2. Magnetic Materials, Leibniz Institute for Solid State and Materials Research, Dresden, Germany*

BU-04. **Modeling and Analysis of Parasitic Capacitance of High Frequency High Voltage Transformer Using Finite-Element Method.** *L. Deng*[1] and T. Peng[1] *1. Wuhan National High Magnetic Field Center, Huazhong University of Science and Technology, Wuhan, China*

BU-05. **Surface-oxidized amorphous alloy powder/epoxy resin composite bulk magnetic core and its application to MHz band switching LLC resonant converter.** *K. Sugimura*[1], D. Shibamoto[1], T. Yamamoto[1], H. Ryosuke[1], A. Ueno[1], K.S. Lai[1], N. Yabu[1], M. Sonehara[1], T. Satou[1], T. Mizuno[1] and H. Mizusaki[2,1] *1. Faculty of Engineering, Shinshu University, Nagano, Japan; 2. Precision and Electronics Technology, Nagano Prefecture General Industrial Technology Center, Okaya, Japan*

BU-06. **A Study for Transformer Ratio of Variable Reluctance Resolver Considering End Slot Leakage Inductance and Off-axis.** *J. Ha*[1], J. Kang[1] and K. Kim[1] *1. Dept. of Electrical Engineering, Hanbat National University, Daejeon, The Republic of Korea*

BU-07. **Equalization method of the wireless power transfer in an electronic shelf label power supply system.** *Y. Bu*[1] and S.C. Mukhopadhyay[2] *1. Shinshu University, Nagano, Japan; 2. Macquarie University, Sydney, NSW, Australia*

BU-08. **Non-hysteretic and voltage tunable magnetoelectric inductors based on magnetic ribbon/(100) $Pb(Mg_{1/3}Nb_{2/3})O_3$-$PbTiO_3$ multiferroic composites.** *B. Peng*[1], M. Liu[1], C. Zhang[1] and Y. Yan[1] *1. Xi'an Jiaotong University, Xi'an, China*

BU-09. **The Integration of Energy-Saving Transformer Possessing Variable Impedance.** K. Ma[1,2], *H. He*[1], S. Wang[1] and S. Ai[2] *1. State Key Laboratory of Electrical Insulation and Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China; 2. State Grid Ningxia Electric Power Company, Yinchuan, China*

BU-10. **Noise Reduction of Saturable Magnetically Controlled Reactor Using Magnetic-Mechanical Analyses.** *Y. Gao*[1], D. Kusano[1], W. Guan[2], J. Yuan[2], C. Tian[2], B. Chen[2], H. Dozono[1] and K. Muramatsu[1] *1. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan; 2. School of Electrical Engineering, Wuhan University, Wuhan, China*

BU-11. **Comparative Analysis and Optimization of Dynamic Charging Coils for Roadway-Powered Electric Vehicles.** Z. Zhang[1], B. Jia[1], H. Pang[1] and *C. Liu*[1] *1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China*

BU-12. **Saturation and Hysteresis Characteristics Analysis of a New Type of HTS Controllable Reactor with Orthogonally Configured Core.** *Z. Wang*[1] *1. R&D Center of Applied Superconductivity; State Key Lab. of AEET, Wuhan, China*

BU-13. **A Novel Three-Phase Compact Saturated Core Fault Current Limiter.** J. Yuan[1], *Y. Zhong*[1], L. Wei[1], S. Liao[1], Y. Gao[2], K. Muramatsu[2] and B. Chen[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan*

BU-14. **Vibration Analysis of Reactor Cores Considering Magnetic and Magnetostrictive Anisotropy.** T. Ben[1], Q. Yang[1,2], *R. Yan*[1] and L. Zhu[2] *1. Hebei University of Technology, Tianjin, China; 2. Tianjin Polytechnic University, Tianjin, China*

BU-15. **A Study on Analytical Methods of FEM-based Edge Heating System.** *G. Jeong*[1], H. Liu[1], D. Jung[1], Y. Yang[2], J. Bae[3] and S. Cho[4] *1. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Dawonsys, Ansan-si, The Republic of Korea; 3. Dongyang Mirae University, Seoul, The Republic of Korea; 4. Korea Automotive Technology Institute, Cheonan-si, The Republic of Korea*

BU-16. **Computing the Coupling Resistances in High Current Instrument Transformers Considering Skin- and Proximity Effect.** *C. Jäschke*[1] and P. Schegner[1] *1. Technische Universität Dresden, Dresden, Germany*

BU-17. **Fabrication and Evaluation of PCB-Embedded Broadband Signal Transformers with Custom Machined Racetrack-Shaped Ferrite Cores for Ethernet Applications.** *D. Bowen*[1], D. Basu[2], C. Krafft[1] and I.D. Mayergoyz[2] *1. Laboratory for Physical Sciences, College Park, MD; 2. ECE, University of Maryland, College Park, College Park, MD*

BU-18. **Parameter Design and Optimization Study of a Novel Compact Permanent-Magnet-Biased Fault Current Limiter.** B. Chen[1], *L. Wei*[1], Y. Zhong[1], J. Yuan[1], Y. Gao[2], K. Muramatsu[2] and C. Tian[1] *1. Wuhan University, Wuhan, China, Wuhan, China; 2. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan*

TUESDAY EVENING 5:30 | THE LIFFEY B

Session XA
SPECIAL SESSION: PANEL DISCUSSION ON SCIENTIFIC FUNDING
Michael Coey, Chair
Trinity College Dublin, Dublin, Ireland

5:30

XA-01. **Who Funds Magnetics Research, and Why?** ***(Invited)*** *M. Coey*[1] *1. School of Physics, Trinity College Dublin, Dublin, Ireland*

WEDNESDAY MORNING 9:00 | THE LIFFEY B

Session CA
BIO-APPLIED MAGNETISM
Montserrat Rivas, Chair
Universidad de Oviedo, Gijón, Spain

9:00

CA-01. **Avian magnetoreception: a quantum compass needle.** ***(Invited)*** *P. Hore*[1] *1. University of Oxford, Oxford, United Kingdom*

9:30

CA-02. **Standardization methods for the synthesis of single-core and multi-core magnetic nanoparticles for medical applications.** ***(Invited)*** H. Gavilán[1], R. Costo[1], D. Heinke[2], A. Sugunan[3], J. Sommertune[3], A. Fornara[3], N. Gehrke[2], C. Grüttner[4], F. Westphal[4], S. Veintemillas-Verdaguer[1], C. Johansson[5] and *M. Morales*[1] *1. Energía, Medio Ambiente y Salud, Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. nanoPET Pharma GmbH, Berlin, Germany; 3. SP Technical Research Institute of Sweden, Stockholm, Sweden; 4. Micromod Partikeltechnologie GmbH, Rostock, Germany; 5. Acreo Swedish ICT AB, Göteborg, Sweden*

10:00

CA-03. **Development of an affinity magnetic nanobead technology for the identification of drug targets.** ***(Invited)*** *H. Handa*[1] *1. Department of Nanoparticle Translational Research, Tokyo Medical University, Tokyo, Japan*

10:30

CA-04. **Bio-Applications of Giant Magnetoresistance and Tunneling Magnetoresistance Phenomena: In-Flow Magnetic Biomarker Detection.** ***(Invited)*** *M.A. Torija*[1] *1. Advanced Technologies, NVE Corp, Eden Prairie, MN*

11:00

CA-05. **Enabling New NMR Imaging and Sensing Probes through Microengineered Magnetic Particles.** ***(Invited)*** *G. Zabow*[1,2] *1. Applied Physics, National Institute of Standards & Technology, Boulder, CO; 2. Laboratory of Functional and Molecular Imaging, National Institutes of Health (NIH), Bethesda, MD*

11:30

CA-06. **New anticancer approach based on the low frequency vibrations of magnetic microparticles.** ***(Invited)*** *C. Naud*[1], H. Joisten[1], S. Leulmi[1], M. Morcrette[1], P. Sabon[1], I. Joumard[1], E. Billet[1], S. Auffret[1], Y. Hou[2], M. Carriere[2], M. Dreyfus[3], F. Berger[3] and B. Dieny[1] *1. SPINTEC, Univ Grenoble Alpes/CNRS/CEA, INAC, Grenoble, France; 2. SYMMES, Univ Grenoble Alpes/CEA/CNRS, INAC, Grenoble, France; 3. Unit 1205, INSERM, Grenoble, France*

WEDNESDAY
MORNING
9:00

LIFFEY HALL 2

Session CB
AB INITIO AND FIRST PRINCIPLES CALCULATIONS

Petru Andrei, Co-Chair
Florida State University, Tallahassee, FL
Ermanno Cardelli, Co-Chair
Universitá degli Studi di Perugia, Perugia, Italy

9:00

CB-01. **Piezomagnetic and Elastocaloric Effects in Magnetically Frustrated Mn-Antiperovskite Nitrides: *Ab Initio* Theory.** *J. Zemen*[1,2], E. Mendive-Tapia[3], Z. Gercsi[4,2], R. Banerjee[5], J. Staunton[3] and K.G. Sandeman[6,7] *1. Institute of Physics ASCR, Prague, Czech Republic; 2. Department of Physics, Imperial College London, London, United Kingdom, United Kingdom; 3. Department of Physics, Universiry of Warwick, Coventry, United Kingdom; 4. CRANN and School of Physics, Trinity College Dublin, Dublin, Ireland; 5. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 6. Department of Physics, Brooklyn College, CUNY, Brooklyn, NY; 7. The Graduate Center, CUNY, New York, NY*

9:15

CB-02. **Nontrivial crossover in the topological Hall effect regimes.** *K. Denisov*[1,2], I. Rozhansky[1,2], N. Averkiev[1] and E. Lähderanta[2] *1. Centre of Nanoheterostructure Physics, Ioffe Institute, Saint-Petersburg, Russian Federation; 2. School of Engineering Science, Lappeenranta University of Technology, Lappeenranta, Finland*

9:30

CB-03. **Lifetime of magnetic skyrmions in a racetrack.** ***(Invited)*** *P.F. Bessarab*[1], G.P. Müller[2], I.S. Lobanov[3], F.N. Rybakov[4], S. Blügel[2], N.S. Kiselev[2], L. Bergqvist[5] and A. Delin[5] *1. University of Iceland, Reykjavik, Iceland; 2. Forschungszentrum Jülich, Jülich, Germany; 3. ITMO University, St. Petersburg, Russian Federation; 4. Institute of Metal Physics, Ekaterinburg, Russian Federation; 5. KTH Royal Institute of Technology, Stockholm, Sweden*

10:00

CB-04. **Fully relativistic temperature dependent electronic transport properties of magnetic alloys from the first principles.** *D. Wagenknecht*[1,2], K. Carva[1] and I. Turek[1,2] *1. Department of Condensed Matter Physics, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; 2. Institute of Physics of Materials, Academy of Sciences, Brno, Czech Republic*

10:15

CB-05. **Theory of magnetic tunneling junctions with semiconductor barriers $CuInSe_2$ and $CuGaSe_2$.** *K. Masuda*[1] and Y. Miura[1,2] *1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan*

10:30

CB-06. **Efficient *ab initio* technique for spin-wave stiffness of random ferromagnets.** *I. Turek*[1], J. Kudrnovsky[2] and V. Drchal[2] *1. Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno, Czech Republic; 2. Institute of Physics, Academy of Sciences of the Czech Republic, Praha, Czech Republic*

10:45

CB-07. **Evolution of electronic and magnetic structure of $CoCr_2O_4$ with Fe doping.** *B. Sanyal*[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

11:00

CB-08. **Engineering hard magnets by tailoring tetragonal distortions with interstitials.** *H. Zhang*[1], J. Weischenberg[1], I. Opahle[1], A. Marmodoro[1], I. Dirba[1], L. Alff[1] and O. Gutfleisch[1] *1. TU Darmstadt, Darmstadt, Germany*

11:15

CB-09. **Magnetic properties of doped rare-earth/transition metal permanent magnets at finite temperature.** *C. Patrick*[1], S. Kumar[1], L. Petit[2], E. Mendive-Tapia[1] and J. Staunton[1] *1. University of Warwick, Coventry, United Kingdom; 2. Daresbury Laboratory, Daresbury, United Kingdom*

11:30

CB-10. **Simulations of interface energies of Nd(liquid, solid) to NdFeB with Fe and Nd termination layer.** *G. Hrkac*[1], T. Schrefl[2], S. Westmoreland[3], R. Chantrell[3], J. Fischbacher[2], T. Ostler[1], R.F. Evans[3], M. Winklhofer[4], G. Zimanyi[5], M. Yano[6], A. Kato[6], A. Manabe[6] and T. Shoji[6] *1. University of Exeter, Exeter, United Kingdom; 2. Center for Integrated Sensor Systems, Danube University Krems, Krems, Austria; 3. University of York, York, United Kingdom; 4. University of Oldenburg, Oldenburg, Germany; 5. University of California, Davis, Davis, CA; 6. Toyota Motor Corporation, Toyota City, Japan*

11:45

CB-11. **Voltage Control of Magnetic Anisotropy in the $SrTiO_3$/Fe/Cu Structure.** *S. Peng*[1,2], S. Li[1], Y. Zhang[1], K. Wang[2] and W. Zhao[1] *1. Fert Beijing Institute, BDBC, School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Department of Electrical Engineering, University of California, Los Angeles, Los Angeles, CA*

WEDNESDAY THE LIFFEY A
MORNING
9:00

Session CC
MAGNETIZATION DYNAMICS II

Matthieu Bailleul, Co-Chair
Institut de Physique et Chimie des Matériaux de Strasbourg, Strasbourg, France

Roman Khymyn, Co-Chair
University of Gothenburg, Gothenburg, Sweden

9:00

CC-01. **Snell's Law for Spin Waves.** ***(Invited)*** *J. Stigloher*[1], M. Decker[1], H.S. Körner[1], K. Tanabe[2], T. Moriyama[3], T. Taniguchi[3], H. Hata[3], M. Madami[4], G. Gubbiotti[5], K. Kobayashi[6], T. Ono[3] and C.H. Back[1] *1. Institut für Experimentelle Physik, Universität Regensburg, Regensburg, Germany; 2. Department of Physics, Nagoya University, Nagoya, Japan; 3. Institute for Chemical Research, Kyoto University, Kyoto, Japan; 4. Dipartimento di Fisica e Geologia, Universita di Perugia, Perugia, Italy; 5. Dipartimento di Fisica e Geologia, Istituto Officina dei Materiali del Consiglio Nazionale delle Ricerche (IOM-CNR), Perugia, Italy; 6. Department of Physics, Osaka University, Osaka, Japan*

9:30

CC-02. **Optical Phase Shift Makes Non-Uniform Standing Spin Waves Detectable in Ferromagnetic Layers.** *C. Gourdon*[1], S. Shihab[1], L. Thevenard[1] and A. Lemaitre[2] *1. Institut des Nanosciences de Paris, UPMC Univ Paris 06, CNRS-UMR 7588, Paris, France; 2. Centre de Nanosciences et Nanotechnologies, CNRS, Marcoussis, France*

9:45

CC-03. **Time-resolved imaging investigation of the domain walls dynamics in Landau domain pattern.** N. Bukin[1], E.O. Burgos-Parra[1], C.J. McKeever[1], P.S. Keatley[1], R.J. Hicken[1], V.V. Kruglyak[1], K. Fripp[1], G. Beutier[2], N. Jaouen[3], H. Popescu[3], F. Yakhou[4], S.A. Cavill[5], M. Dupraz[6], G. van der Laan[7] and *F. Ogrin*[1] *1. School of Physics, University of Exeter, Exeter, United Kingdom; 2. CNRS, SIMAP, Grenoble, France; 3. SOLEIL Synchrotron, Saint-Aubin, France; 4. ESRF, Grenoble, France; 5. University of York, York, United Kingdom; 6. Paul Scherrer Institute, Villigen, Switzerland; 7. Diamond Light Source, Didcot, United Kingdom*

10:00

CC-04. **Magnetization dynamics of a single Fe-filled carbon nanotube detected by ferromagnetic resonance.** ***(Invited)*** *K. Lenz*[1], R. Narkowicz[1], C. Reiche[2], A. Kakay[1], T. Mühl[2], B. Büchner[2], D. Suter[3], J. Faßbender[1] and J. Lindner[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Leibniz Institute for Solid State and Materials Research IFW Dresden, Dresden, Germany; 3. Department of Physics, Technical University of Dortmund, Dortmund, Germany*

10:30

CC-05. **Significant reduction of threshold current in NiFe/W bilayers based spin Hall nano-oscillators.** *H. Mazraati*[1,2], S. Chung[2,3], A. Houshang[1,4], S. Jiang[1,2], M. Dvornik[4], F. Qejvanaj[1], Q. Le[2] and J. Åkerman[1,4] *1. NanOsc AB, Stockholm, Sweden; 2. Applied Physics, KTH Royal Institute of Technology, Stockholm, Sweden; 3. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 4. Physics, University of Gothenburg, Gothenburg, Sweden*

10:45

CC-06. **The effect of canted field on the nucleation boundary of magnetic droplet in orthogonal spin-torque nano-oscillators.** *S. Chung*[1,2], A. Eklund[3], E. Iacocca[4,5], Q. Le[2,6], S. Jiang[2,7], H. Mazraati[2,7], S. Mohseni[8], S.R. Sani[1,9] and J. Åkerman[2,6] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Applied Physics, KTH Royal Institute Technology, Stockholm, Sweden; 3. Integrated Devices and Circuits, School of ICT, KTH Royal Institute of Technology, Kista, Sweden; 4. Department of Applied Mathematics, University of Colorado Boulder, Boulder, CO; 5. Department of Physics, Division for Theoretical Physics, Chalmers University of Technology, Gothenburg, Sweden; 6. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 7. NanOsc AB, Kista, Sweden; 8. Department of Physics, Shahid Beheshti University, Tehran, The Islamic Republic of Iran; 9. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

11:00

CC-07. **On the origin of the auto-oscillations in the constriction-based spin Hall nano-oscillators.** *M. Dvornik*[1], A.A. Awad[1] and J. Åkerman[1,2] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. School of ICT, KTH Royal Institute of Technology, Kista, Sweden*

11:15

CC-08. **Exploring the spatial character of the non-linear spin wave 'bullet'.** *T. Spicer*[1], P.S. Keatley[1], M. Dvornik[2], P. Dürrenfeld[2], A. Houshang[2], M. Ranjbar[2], A.A. Awad[2], R. Dumas[2], J. Åkerman[2,3], V.V. Kruglyak[1] and R.J. Hicken[1] *1. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. Physics Department, University of Gothenburg, Gothenburg, Sweden; 3. Materials and Nano Physics, KTH Royal Institute of Technology, Kista, Sweden*

11:30

CC-09. **Quantum detection of thermally excited spin waves.** *J. Liu*[1], S. Yoon[1,2] and R. McMichael[1] *1. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD; 2. Maryland Nanocenter, University of Maryland, College Park, MD*

11:45

CC-10. **Origin of enhanced damping constant of Co_2FeAl film with perpendicular anisotropy.** *Y. Takahashi*[1], Y. Miura[2], R. Choi[3], T. Ohkubo[1], Z. Wen[1], K. Ishioka[1], R. Medapalli[3], R. Mandal[1], H. Sukegawa[1], S. Mitani[1], E. Fullerton[3] and K. Hono[1] *1. NIMS, Tsukuba, Japan; 2. Kyoto Institute of Technology, Kyoto, Japan; 3. UCSD, San Diego, CA*

WEDNESDAY MORNING 9:00 — LIFFEY HALL 1

Session CD
TRANSFORMERS AND INDUCTORS II
David Bowen, Chair
Laboratory for Physical Sciences, College Park, MD

9:00

CD-01. **Basic Characterization of Magnetocoated Wire Fabricated Using Spray Method.** ***(Invited)*** *Y. Konno*[1], T. Dobashi[1], C. Yuki[1], T. Yamamoto[1], Y. Bu[1] and T. Mizuno[1] *1. Department Electric and Electronic Engineering, Shinshu University, Nagano, Japan*

9:30

CD-02. **A Model to Compute the Resonance Effects in High Current Instrument Transformers.** *C. Jäschke*[1] and P. Schegner[1] *1. Technische Universität Dresden, Dresden, Germany*

9:45

CD-03. **Reduction of Iron-Loss Increase at Step-Lap Laminations in Large Transformers.** *K. Yamazaki*[1], H. Mukaiyama[1], N. Kurita[2] and A. Nishimizu[2] *1. Chiba Institute of Technology, Narashino, Japan; 2. Hitachi, Ltd., Hitachi, Japan*

10:00

CD-04. **Decomposition of Power Loss in High Energy Density Magnetic Component under Rectangular Voltage Waveforms.** *R. Saeed*[1], B. Ahmadi[1], C. Johnson[1], L. Empringham[1] and L. De Lillo[1] *1. The University of Nottingham, Nottingham, United Kingdom*

10:15

CD-05. **LLC Resonant Converter Using Magnetocoated Wire and Iron-Based Metal Composite Core.** *T. Yamamoto*[1], Y. Konno[1], T. Dobashi[1], K. Sugimura[1], T. Satou[1], Y. Bu[1] and T. Mizuno[1] *1. Shinshu University, Nagano, Japan*

10:30

CD-06. **On the influence of the distributed air-gap on the parameters of an industrial inductor.** *R. Jez*[1] *1. ABB Corporate Research Center, Krakow, Poland*

10:45

CD-07. **Integrated Micro-Transformers for Isolated Power Conversion.** *J. Kubik*[1] *1. Process Development, Analog Devices, Inc., Limerick, Ireland*

11:00

CD-08. **Core Loss Prediction in Magnetic Laminations under High-Frequency Trapezoidal Induction Waveform.** *B. Chen*[1], L. Li[1], Z. Zhao[1], Y. Shong[1] and W. Ma[1] *1. North China Electric Power University, Beijing, China*

11:15

CD-09. **Core loss characteristics of laminated magnetic block cores assembled with a high B_S Fe–based nanocrystalline alloy.** *A. Yao*[1], K. Tsukada[1], M. Inoue[2] and K. Fujisaki[1] *1. Department of Engineering, Toyota Technological Institute, Nagoya, Japan; 2. Hitachi Metals, Ltd., Yasugi, Japan*

11:30

CD-10. **Characteristics Investigation of Bridge-Type Saturated Core Fault Current Limiter.** J. Yuan[1], *Y. Zhong*[1], S. Liao[1], L. Wei[1], Y. Gao[2], K. Muramatsu[2] and B. Chen[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan*

11:45

CD-11. **Validation of Model for Medium Voltage Distribution Transformer under Inrush Current Conditions.** *J. Naidoo*[1,2] and A.G. Swanson[2] *1. Standards Implementation, Eskom, Durban, South Africa; 2. College of Agriculture, Engineering and Science, University of KwaZulu-Natal, Durban, South Africa*

Session CE

AMORPHOUS AND NANOCRYSTALLINE ALLOYS I

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

9:00

CE-01. **Soft magnetic properties of thin nanocrystalline particles due to the interplay of random and coherent anisotropies.** *A. Bachleitner-Hofmann*[1], B. Bergmair[2], T. Schrefl[3], A. Satz[4] and D. Suess[1] *1. Institute of Solid State Physics, TU Wien, Wien, Austria; 2. Linz Center of Mechatronics, Linz, Austria; 3. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 4. Infineon Austria AG, Villach, Austria*

9:15

CE-02. **Engineering of magnetic properties and GMI effect of Co- and Fe-rich microwires by annealing.** V. Zhukova[1,2], M. Ipatov[1,2], A. Talaat[1,2], J. Blanco[2] and *A. Zhukov*[3,2] *1. Dpto. de Fís. Mater., UPV/EHU San Sebastián 20018, Spain, San Sebastian, Spain; 2. Dpto. de Física Aplicada, EUPDS, UPV/EHU, San Sebastian, Spain; 3. Dept. Phys. Materials, University of Basque Country and Ikerbasque, San Sebastian, Spain*

9:30

CE-03. **The stress components effect on the Fe-based microwires magnetostatic and magnetostrictive properties.** *V.V. Rodionova*[1], I. Baraban[1], K. Chichay[1], A. Litvinova[1] and N.S. Perov[2,1] *1. STP "Fabrika" & Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 2. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation*

9:45

CE-04. **The Thickness Dependence of Soft Magnetic Properties of Fe(Co)-Al Alloy Thin Films.** *Y. Ariake*[1,2], I. Kanada[1,2], T. Mewes[1,3], G. Mankey[1,3], Y. Tanaka[2], S. Wu[1,3], C. Mewes[1,3] and T. Suzuki[1,4] *1. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL; 2. Materials Development Center, TDK Corporation, Narita, Japan; 3. Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, AL; 4. Departments of Electrical and Computer Engineering and Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, AL*

10:00

CE-05. **Structural and ferromagnetic resonance study of sputtered FeCoB-based soft magnetic multilayers.** *C. Falub*[1], H. Rohrmann[1], R. Hida[2], J. Michel[2], M. Meduna[3,4], J. Zweck[5], C. Morin[2], H. Sibuet[2], M.A. Marioni[6], J.H. Richter[1], M. Bless[1] and M. Padrun[1] *1. Evatec AG, Trübbach, Switzerland; 2. CEA-LETI/Minatec, Grenoble, France; 3. Department of Condensed Matter Physics, Masaryk University, Brno, Czech Republic; 4. CEITEC, Masaryk University, Brno, Czech Republic; 5. Institute of Experimental and Applied Physics, University of Regensburg, Regensburg, Germany; 6. Nanoscale Materials Science, Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland*

10:15

CE-06. **Magnetic and magnetoelastic behavior of Co-substituted Fe-Cu-Nb-Si-B amorphous alloys.** N. Lupu[1], *G. Manginas*[1], G. Ababei[1], M. Grigoras[1], M. Tibu[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

10:30

CE-07. **Surface magnetic properties and giant magnetoimpedance effect in Co-based amorphous ribbons.** A. Chizhik[1], V. Vega[2], A. Mohamed[2,3], V. Prida[2], T. Sánchez[2], B. Grande[2], M. Ipatov[1,4], V. Zhukova[1,4], *A. Zhukov*[5,4], L. Domínguez[4] and J. Gonzalez[1] *1. Department of Materials Physics, Faculty of Chemistry, University of the Basque Country, San Sebastian, Spain; 2. Department of Physics, Faculty of Sciences, University of Oviedo, Oviedo, Spain; 3. Department of Physics, Faculty of Sciences, Sohag University, Sohag, Egypt; 4. Department of Applied Physics I, University of the Basque Country, San Sebastian, Spain; 5. Dept. Phys. Materials, University of Basque Country and Ikerbasque, San Sebastian, Spain*

10:45

CE-08. **The role of internal stresses in microwires on their soft magnetic characteristics.** *X. Zheng*[1], F. Qin[1], H. Wang[1] and H. Peng[1] *1. Zhejiang University, Hangzhou, China*

11:00

CE-09. **Reversible switching of magnetic states in amorphous microwires.** *A. Chizhik*[1], J. Gonzalez[1], A. Zhukov[1,2], A. Maziewski[3] and A. Stupakiewicz[3] *1. Universidad del Pais Vasco, San Sebastian, Spain; 2. Ikerbasque, Basque Foundation for Science, Bilbao, Spain; 3. University of Bialystok, Bialystok, Poland*

11:15

CE-10. **Effect of P Addition on Amorphous Forming Ability and Magnetic Properties of FeSiBPCu Nanocrystalline Alloys.** X. Fan[1] and *B. Shen*[1] *1. School of Materials Science and Engineering, Southeast University, Nanjing, China*

Session CF
STT AND SOT-MRAM
Daniel Worledge, Chair
IBM Research, San Jose, CA

9:00

CF-01. **Breakthrough in Current In-Plane Metrology to Assist Large Scale MRAM Production.** *A. Cagliani*[1,2], F.W. Østerberg[1,2], O. Hansen[1], P.F. Nielsen[2] and D.H. Petersen[2] *1. DTU-Nanotech, Technical University of Denamrk, Copenhagen, Denmark; 2. Capres A/S, Kgs. Lyngby, Denmark*

9:15

CF-02. **Ultra-Low Resistance-Area Product and Large Magnetoresistance in Perpendicular Magnetized Magnetic Tunnel Junctions.** *K. Nakamura*[1], H. Maehara[2], H. Tomita[1], A. Shimada[1], Y. Tanaka[1], K. Nagasaka[1], S. Furukawa[1], A. Gomi[1] and N. Watanabe[1] *1. Tokyo Electron Yamanashi Ltd., Nirasaki City, Japan; 2. Tokyo Electron Ltd., Nirasaki City, Japan*

9:30

CF-03. **Study of the effect of CoFeB composition on the magnetic properties of MTJ free layer.** *S. Srivastava*[1], R. Ramaswamy[1], J. Son[1], T. Dutta[1], K. Teo[1] and H. Yang[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

9:45

CF-04. **Top pinned magnetic tunnel junction stacks with high annealing tolerance for high density STT-MRAM applications.** *J. Swerts*[1], S. Couet[1], E. Liu[1], S. Mertens[1], T. Lin[1], S. Rao[1], W. Kim[1], S. van Elshocht[1], A. Furnemont[1] and G.S. Kar[1] *1. IMEC, Leuven, Belgium*

10:00

CF-05. **Dramatic improvement of tunneling magnetoresistance and thermal stability factor of STT-MRAM cells by replacing Ta with W/Ta cap layers.** *J. Chatterjee*[1]*, R. Sousa[1], S. Auffret[1] and B. Dieny[1] *1. SPINTEC, Univ. Grenoble Alpes / CEA-INAC / CNRS, Grenoble, France*

10:15

CF-06. **High perpendicular anisotropy in sub-30 nm MRAM devices measured by spin-torque ferromagnetic resonance.** *L. Thomas*[1], G. Jan[1], S. Serrano-Guisan[1], S. Le[1], J. Iwata-Harms[1], J. Zhu[1], Y. Lee[1], H. Liu[1], R. Tong[1], S. Patel[1], V. Sundar[1], D. Shen[1], J. Haq[1], Y. Yang[1], J. Teng[1], R. He[1], V. Lam[1], P. Liu[1], T. Zhong[1], A. Wang[1], T. Torng[1] and P. Wang[1] *1. TDK - Headway Technologies, Inc., Milpitas, CA*

10:30

CF-07. **Control of interlayer exchange coupling and its impact on spin-torque switching of hybrid free layers with perpendicular magnetic anisotropy.** *E. Liu*[1,2], J. Swerts[1], A. Vaysset[1], T. Devolder[3], S. Couet[1], S. Mertens[1], T. Lin[1], S. van Elshocht[1], J. De Boeck[1,2] and G.S. Kar[1] *1. IMEC, Leuven, Belgium; 2. Department of Electrical Engineering, KU Leuven, Leuven, Belgium; 3. Institut d'Electronique Fondamentale, CNRS, Univ. Paris-Sud, Paris, France*

10:45

CF-08. **Distinctive behavior of perpendicular magnetic tunnel junctions with size comparable to the electrical switching nucleation.** *W. Kim*[1], S. Rao[1], S. Van Beek[1], K. Garello[1], S. Couet[1], J. Swerts[1], S. Mertens[1], T. Lin[1], L. Souriau[1], S. Kundu[1], D. Tsvetanova[1], D. Crotti[1], G. Donadio[1], F. Yasin[1], S. Sakhare[1], A. Furnemont[1] and G.S. Kar[1] *1. IMEC, Leuven, Belgium*

11:00

CF-09. **Time Resolved Studies of Spin-Torque Switching in Perpendicularly Magnetized Magnetic Tunnel Junction Devices.** *C. Hahn*[1], G. Wolf[1,2], B. Kardasz[2], S. Watts[2], M. Pinarbasi[2] and A.D. Kent[1] *1. New York University, New York, NY; 2. Spin Transfer Technologies, Fremont, CA*

11:15

CF-10. **Nanosecond-Scale Switching Process in Perpendicularly Magnetized STT-MRAM Cells.** *T. Devolder*[1], J. Kim[1], J. Swerts[2], W. Kim[2], S. Couet[2], G.S. Kar[2] and V. Nikitin[3] *1. Centre de Nanosciences et de Nanotechnologies, Orsay, France; 2. IMEC, Leuven, Belgium; 3. Samsung Electronics Corporation, Milpitas, CA*

11:30

CF-11. **Voltage-controlled magnetic tunnel junction based MRAM for replacing high density DRAM circuits corresponding to 2X nm generation.** *K. Ikegami*[1], Y. Shiota[2], T. Nozaki[2], K. Abe[1], H. Noguchi[1], S. Yuasa[2], Y. Suzuki[2,3] and S. Fujita[1] *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 3. Graduate School of Engineering Science, Osaka University, Osaka, Japan*

11:45

CF-12. **Voltage-control spintronics memory with a self-aligned heavy-metal electrode.** *S. Shirotori*[1], H. Yoda[1], Y. Ohsawa[1], N. Shimomura[1], T. Inokuchi[1], Y. Kato[1], Y. Kamiguchi[1], K. Koi[1], K. Ikegami[1], H. Sugiyama[1], M. Shimizu[1], A. Buyandalai[1], S. Oikawa[1], M. Ishikawa[1], T. Ajay[1], Y. Saito[1] and A. Kurobe[1] *1. Toshiba Corporation, Kawasaki, Japan*

Session CG
RARE EARTH PERMANENT MAGNETS

George Hadjipanayis, Chair
University of Delaware, Newark, DE

9:00

CG-01. Multi-scale electron microscopy of nano-cell structures formed in overnitrided $Sm_2Fe_{17}N_x$ magnet powder. *A. Hosokawa*[1] and K. Takagi[1] *1. National Institute of Advanced Industrial Science and Technology, Nagoya, Japan*

9:15

CG-02. Effects of the element distribution characteristics on the temperature dependence of the coercivity of Sm_2Co_{17}-based sintered magnets. *N. Yu*[1,2], M. Zhu[1], Y. Fang[1], L. Song[1,2], W. Sun[1], K. Song[1], Q. Wang[2] and W. Li[1] *1. Division of Functional Materials, Central Iron and Steel Research Institute, Beijing, China; 2. Key Laboratory of National Education Ministry for Electromagnetic Processing of Materials, Northeastern University, Shenyang, China*

9:30

CG-03. A combinatorial approach to the study of Sm-Fe-Ti based 1:12 hard magnetic films. *G. Gomez Eslava*[1,2], A. Dias[1,2], T. Devillers[1,2], M. Ito[3], M. Yano[3], N. Sakuma[3], T. Shoji[3], A. Kato[3], M. Bonfim[4], D. Givord[1,5] and N. Dempsey[1,2] *1. CNRS, Institut Néel, Grenoble, France; 2. Institut Néel, Univ. Grenoble Alpes, Grenoble, France; 3. Advanced Material Engineering Div., Toyota Motor Corporation, Susono, Japan; 4. Universidade Federal do Paraná, DELT, Curitiba, Brazil; 5. Instituto de Física, Univ. Federal do Rio de Janeiro, Rio de Janeiro, Brazil*

9:45

CG-04. Iron rich compound $Sm(Fe_{1-x}Co_x)_{12}$ with high intrinsic magnetic properties as permanent magnet materials. *Y. Hirayama*[1], Y. Takahashi[1], S. Hirosawa[1] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan*

10:00

CG-05. Propagation of magnetic domains in exchange coupled and exchange decoupled Nd-Fe-B magnets observed by magneto-optic Kerr effect. *M. Soderznik*[1,2], H. Sepehri Amin[1], T. Sasaki[1], T. Ohkubo[1], Y. Takada[3], T. Sato[3], Y. Kaneko[3], A. Kato[4], T. Schrefl[5] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Jozef Stefan Institute, Ljubljana, Slovenia; 3. Toyota Central R&D Labs, Inc., Nagakute, Japan; 4. Toyota Motor Corp, Advanced Material Engineering Div., Susono, Japan; 5. Center for Integrated Sensor Systems, Danube University, Krems, Austria*

10:15

CG-06. **Higher Density Melt Spun RE-Fe-B Isotropic Magnets.** *B. Veluri*[1,2] *1. Center of Excellence - Motor, Gundfos, Bjerringbro, Denmark; 2. R&D, Magnequench, Singapore, Singapore*

10:30

CG-07. **Size resolved FORC diagram of Nd-Fe-B sintered magnet.** *K. Saito*[1], T. Ueno[2], M. Ito[3], M. Yano[3], T. Shoji[3], Z. Fu[4], V. Pipich[4] and K. Ono[1] *1. Institute of Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan; 2. Elements Strategy Initiative Center for Magnetic Materials, National Institute for Materials Science, Tsukuba, Japan; 3. Advanced Material Engineering Division, Toyota Motor Corporation, Susono, Japan; 4. Jülich Centre for Neutron Science, Garching, Germany*

10:45

CG-08. **A method for evaluating the thickness of the magnetic phase lamellae in strip-cast NdFeB ribbons with improved accuracy.** *O. Tosoni*[1], G. Stéphane[1], M. Bailleux[1], M. Dalmasso[1] and F. Servant[1] *1. CEA-LITEN, Grenoble, France*

11:00

CG-09. **The Employment of the Hydrogen Ductilisation Process in the Production of NdFeB-Based Magnets.** O. Brooks[1], W. Zhou[1], C. Jönsson[1], A. Bradshaw[1], *A. Walton*[1] and I.R. Harris[1] *1. Shool of Metallurgy and Materials, University of Birmingham, Birmingham, United Kingdom*

11:15

CG-10. **Diffusion of Dy, Tb, Ce and Gd in Nd-Fe-B sintered magnets by experiment and FEM simulation.** *K. Löwe*[1], D. Benke[1], S. Ener[1], K. Skokov[1] and O. Gutfleisch[1] *1. Functional Materials, Material- and Geosciences, TU Darmstadt, Darmstadt, Germany*

11:30

CG-11. **XMCD study of local magnetic properties of microcrystalline NdFeB-based alloys.** A.P. Menushenkov[1], V.G. Ivanov[1], I.V. Shchetinin[2], D.G. Zhukov[2], V.P. Menushenkov[2], I.A. Rudnev[1], F. Wilhelm[3], A.G. Savchenko[2] and *A. Rogalev*[3] *1. National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russian Federation; 2. National University of Science and Technology MISIS, Moscow, Russian Federation; 3. ESRF, Grenoble, France*

Session CH
MOTORS, GENERATORS AND ACTUATORS II

Dragan Dinulovic, Chair
Würth Elektronik eiSos GmbH & Co. KG, Garhing, Germany

9:00

CH-01. **2D Semi-Analytical Modeling of Eddy Currents in Multiple Non-Connected Conducting Segments.** *C. Custers*[1], H. Jansen[1] and E. Lomonova[1] *1. Department of Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

9:15

CH-02. **Orthogonal Magnetic Field Analysis of a Double Stator Linear-Rotary Permanent Magnet Motor with Orthogonally Arrayed Permanent Magnets.** *L. Xu*[1], M. Lin[1] and X. Fu[1] *1. Southeast University, Nanjing, China*

9:30

CH-03. **Permanent Magnet Eddy Current Loss Analysis of Interior PM Machines for Electric Vehicle Application.** *Y. Hu*[1], S. Zhu[1] and C. Liu[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

9:45

CH-04. **Evaluation Method for Multi-Degree-of-Freedom Spherical Actuators under Power Control.** *K. Takahara*[1], K. Hirata[1], N. Niguchi[1], Y. Nishiura[1] and Y. Sakaidani[1] *1. Osaka University, Suita-city, Japan*

10:00

CH-05. **Current Harmonics of a Current Superimposition Variable Flux Reluctance Motor.** K. Takahara[1], K. Hirata[1], *N. Niguchi*[1] and A. Kohara[1] *1. Osaka University, Suita, Japan*

10:15

CH-06. **Portable Rotational Electromagnetic Energy Harvester for IoT.** *D. Dinulovic*[1], M. Shousha[1], M. Brooks[1], M. Haug[1] and T. Petrovic[2] *1. R&D, Würth Elektronik eiSos GmbH & Co. KG, Garhing, Germany; 2. Faculty of Mechanical Engineering, University of Niš, Niš, Serbia*

10:30

CH-07. **12-Slot 14-Pole Three-Phase Outer-Rotor Hybrid Excitation Flux Switching Motor for Direct Drive Electric Vehicle.** M. Ahmad[1], G.M. Romalan[1], S. Rahimi[1], *M. Jenal*[1] and E. Sulaiman[1] *1. Electrical Power Engineering Department, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia*

10:45

CH-08. **Simulation and Performance Analysis of a Decoupled Rotary-Linear Switched Reluctance Actuator.** *S. Li*[1] and Y. Zou[1] *1. EE, Hong Kong Polytechnic University, Hong Kong, Hong Kong*

11:00

CH-09. **Parameter Calculation and Analysis of a Novel Wind Power Generator.** S. Yu[1], *F. Zhang*[1] and H. Wang[1] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

11:15

CH-10. **Ironless Machine Design for Wind Based Microgeneration.** *V. Verdum*[1], R.P. Homrich[1], A.F. Flores Filho[1] and D.G. Dorrell[2] *1. Engenharia Elétrica, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil; 2. University of KwaZulu-Natal, Howard College Campus, Durban, South Africa*

WEDNESDAY MORNING 8:30 | THE FORUM

Session CM
MAGNETIC SEMICONDUCTORS, ANTIFERROMAGNETIC SPINTRONICS, ORGANIC AND CARBON-BASED SPIN TRANSPORT (Poster Session)

Steven Bennett, Chair
U.S. Naval Research Laboratory, Washington, DC

CM-01. **Fully compensated ferrimagnetic CoFeTiAl and CrVTiAl Heusler alloys for spintronic applications.** *V. Yenugonda*[1], S. Gupta[2,1] and K.G. Suresh[1] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. Tohoku University, Advanced Institute for Materials Research, Sendai, Japan*

CM-02. **Soft x-ray spectroscopy and first-principles calculation studies of the electronic structure of the novel high-T_C ferromagnetic semiconductor (Ga,Fe)Sb.** *S. Sakamoto*[1], N. Tu[2], Y. Takeda[3], S. Fujimori[3], P. Hai[4], L. Anh[2], Y.K. Wakabayashi[2], G. Shibata[1], M. Horio[1], K. Ikeda[1], Y. Saitoh[3], H. Yamagami[3,5], M. Tanaka[2] and A. Fujimori[1] *1. Department of Physics, The University of Tokyo, Tokyo, Japan; 2. Department of Electrical Engineering and Information Systems, The University of Tokyo, Tokyo, Japan; 3. Materials Sciences Research Center, Japan Atomic Energy Agency, Hyogo, Japan; 4. Department of Electrical and Electronic Engneering, Tokyo Institute of Technology, Tokyo, Japan; 5. Department of Physics, Kyoto Sangyo University, Kyoto, Japan*

CM-03. **Control of indirect exchange interaction in semiconductor nanostructures.** *I. Rozhansky*[1,2], I. Krainov[1,2], N. Averkiev[1] and E. Lähderanta[2] *1. Ioffe Institute, St.Petersburg, Russian Federation; 2. Lappeenranta University of Technology, Lappeenranta, Finland*

CM-04. **Rashba-effect-induced spin polarization and anisotropic magnetoresistance in a quantum well layer.** W. Choi[1,2], H. Kim[1], J. Chang[1], G. Go[2], K. Lee[2] and *H. Koo*[1,2] *1. Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. Korea University, Seoul, The Republic of Korea*

CM-05. **Magnetic characteristics of $CuCr_2S_4$ nanospinels obtained by mechanical alloying and heat treatment.** E. Maciazek[1], E. Malicka[1], M. Karolus[2], J. Panek[2], Z. Stoklosa[2], *T. Gron*[3] and A. Gudwanski[1] *1. Institute of Chemistry, University of Silesia, Katowice, Poland; 2. Institute of Material Science, University of Silesia, Chorzow, Poland; 3. Institute of Physics, University of Silesia, Katowice, Poland*

CM-06. **Local structure and phonon vibrational modes of Mn- doped GeTe phase change magnetic materials thin films with different concentrations.** *A.A. Adam*[1,2], X. Cheng[2] and X. Miao[2] *1. Applied Physics (Electronics), Al-Neelain University, Khartoum, Sudan; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

CM-07. **Quantitative Studies of Magnetic Anisotropy in Insulating Dilute Ferromagnet (Ga,Mn)N.** *K. Gas*[1,2], G. Kunert[3,4], D. Sztenkiel[2], S. Figge[4], T. Baraniecki[3], R. Jakiela[2], D. Hommel[3,1] and M. Sawicki[2] *1. Instituite of Experimental Physics, University of Wroclaw, Wroclaw, Poland; 2. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 3. Wroclaw Research Center EIT+, Wroclaw, Poland; 4. Institute of Solid State Physics, University of Bremen, Bremen, Germany*

CM-08. **Withdrawn**

CM-09. **Spin transport properties in thermally-evaporated pentacene films by using the spin-pump.** Y. Tani[1], T. Kondo[1], Y. Tanaka[1], Y. Teki[1], H. Tsujimoto[1] and *E. Shikoh*[1] *1. Osaka City University, Osaka, Japan*

CM-10. **Magnetic Fullerene at Fe/C_{60} Interface.** *S. Mallik*[1], S. Mattauch[2], T. Brückel[2], M. Dalai[3] and S. Bedanta[1] *1. Physics, National Institute of Science Education and Research (NISER), Bhubaneswar, India; 2. Forschungszentrum Juelich, Juelich Center for Neutron Science, Garching, Germany; 3. National Physical Laboratory, Delhi, India*

CM-11. **Spin transport in organic semiconductors: from spin pumping by ferromagnetic resonance to lateral spin-valves.** S. Wang[1], A. Wittmann[1], K. Kang[1], S. Schott[1], G. Schweicher[1], R. Di Pietro[2], J. Wunderlich[2], D. Venkateshvaran[1], *M. Cubukcu*[1] and H. Sirringhaus[1] *1. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 2. Hitachi Cavendish Laboratory, Cambridge, United Kingdom*

CM-12. **Mn-X-Ga (X = Pt, Ir, Ti): Design of Zero-Magnetization Heusler Ferrimagnet.** *M. Venkatesan*[1], P. Tozman[1], K.E. Siewierska[1], K. Rode[1] and M. Coey[1] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland*

CM-13. **Anisotropic magnetoresistance of a body centered tetragonal bimetallic antiferromagnet: a route towards room temperature antiferromagnetic spintronics.** *H. Wu*[1], M. Abid[1], A. Kalitsov[2], P. Zarzhitsky[2], M. Abid[1], Z. Liao[3], C. O'Coileain[1,4], H. Xu[1], J. Wang[4], H. Liu[5], O.N. Mryasov[2], C. Chang[6] and I.V. Shvets[4] *1. School of Physics, Beijing Institute of Technology, Beijing, China; 2. MINT Center, University of Alabama, Tuscaloosa, AL; 3. State Key Laboratory for Mesoscopic Physics, Department of Physics, Peking University, Beijing, China; 4. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland; 5. Institute of Plasma Physics, Chinese Academy of Sciences, Hefei, China; 6. National Taiwan University, Department of Physics and Institute of Applied Physics, Taipei, Taiwan*

CM-14. **Zero-offset Hall: a new avenue for antiferromagnetic spintronics.** *T. Kosub*[1], M. Kopte[1], J. Faßbender[1], O.G. Schmidt[2] and D. Makarov[1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Leibniz Institute for Solid State and Materials Research, Dresden, Germany*

CM-15. **Spintronic generator of ultrashort pulses based on an antiferromagnetic film.** I. Lisenkov[1,2], R. Khymyn[3], V.S. Tiberkevich[4] and *A.N. Slavin*[4] *1. School of Electrical Engineering and Electronics, Oregon State University, Corvallis, OR; 2. Kotelnikov Institute of Radioengineering and Electronics, Moscow, Russian Federation; 3. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 4. Department of Physics, Oakland University, Rochester, MI*

CM-16. **Large influence of capping layers on tunnel magnetoresistance in magnetic tunnel junctions.** *J. Zhou*[1,2], W. Zhao[1,2], Y. Wang[3], S. Peng[1,2], J. Qiao[1,2], L. Su[1,2], L. Zeng[1,2], N. Lei[1,2], L. Liu[4], Y. Zhang[1,2] and A. Bournel[5] *1. Fert Beijing Institute, Beihang University, Bejing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China; 3. Department of Physics and the Center of Theoretical and Computational Physics, The University of Hong Kong, Hong Kong, China; 4. Nanoacademic Technologies Inc., Brossard, QC, Canada; 5. Centre for Nanoscience and Nanotechnology, Université Paris Saclay, Orsay, France*

CM-17. **Tunneling magnetoresistance in $M_4N/MgO/M_4N$ (M = Fe, Co, Ni) magnetic tunnel junctions.** B. Yang[1,2], L. Tao[3], L. Jiang[2], Y. Yan[1] and *X. Han*[2] *1. Key Laboratory of Physics and Technology for Advanced Batteries (Ministry of Education), Department of Physics, Jilin University, Changchun, China; 2. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 3. Department of Physics and the Center of Theoretical and Computational Physics, The University of Hong Kong, Hong Kong, Hong Kong*

CM-18. **A coexistence of short- and long-range ferromagnetic interactions in $La_{1-x}K_xMnO_3$ compounds.** D. Linh[1], *D. Tran*[1], L. Bau[2], N. An[2], H. Piao[3] and S.C. Yu[4] *1. Institute of Materials Science, VAST, Hanoi, Vietnam; 2. Hong Duc University, Hanoi, Vietnam; 3. China Three Gorges University, Yichang, China; 4. Chungbuk National University, Cheongju, The Republic of Korea*

WEDNESDAY MORNING 8:30 | THE FORUM

Session CN
SPIN CURRENTS, SWITCHING AND SPIN SEEBECK EFFECT II
(Poster Session)

Ron Jansen, Co-Chair
AIST, Tsukuba, Japan
Mario Carpentieri, Co-Chair
Politecnico di Bari, Bari, Italy

CN-01. **Spin injection and transport properties of individual functionalized MWCNT behaving as 1D Moiré crystals.** *R. Bonnet*[1], C. Barraud[1], C. Salhani[1], M. Della Rocca[1] and P. Lafarge[1] *1. Laboratoire MPQ, Université Paris Diderot, Paris, France*

CN-02. **Hanle magnetoresistance: the role of edge spin accumulation and interfacial spin current.** H. Wu[1], X. Zhang[1], C. Wan[1], B. Tao[1], L. Huang[1], W. Kong[1] and *X. Han*[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

CN-03. **Spin relaxation time determined by second harmonic electrical transport measurement.** *X. Han*[1], C. Fang[1,2], C. Wan[1], B. Yang[1], J. Qin[1,2], B. Tao[1], H. Wu[1], X. Zhang[1], A. Hoffmann[3], Z. Jin[4] and X. Liu[4] *1. State Key Lab of Magnetism, Institute of Physics, Beijing, China; 2. University of Chinese Academy of Sciences, Beijing, China; 3. Argonne National Laboratory, Lemont, IL; 4. Shanghai University, Shanghai, China*

CN-04. **Large spin signals in metallic lateral spin-valves made with CoFe electrodes.** *G. Zahnd*[1], V. Pham[1], P. Laczkowski[1], A. Marty[1], L. Vila[1] and J. Attané[1] *1. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, Grenoble, France*

CN-05. **Highly Efficient Spin-Current Operation in a Cu Nano-Ring.** *M. Samiepour*[1], B. Murphy[1], A. Vick[1] and A. Hirohata[1] *1. University of York, York, United Kingdom*

CN-06. **Electrical and optical characterisation of Fe/*n*-GaAs non-local spin valve.** *J. Kim*[1], M. Samiepour[1], J. Ryu[2], D. Iizasa[2], T. Saito[2], M. Kohda[2], J. Nitta[2], H.E. Beere[3], I. Farrer[3,4], D.A. Ritchie[3] and A. Hirohata[1] *1. Physics/ Electronics, University of York, York, United Kingdom; 2. Material Science, Tohoku University, Sendai, Japan; 3. Physics, University of Cambridge, Cambridge, United Kingdom; 4. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom*

CN-07. **Electric field control of deterministic current-induced magnetization switching in a hybrid ferromagnetic/ ferroelectric structure.** *M. Yang*[1], K. Cai[1] and K. Wang[1] *1. Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China*

CN-08. **Transport Mechanism of the Magnetoresistance Effects in Ta-$CoFe_2O_4$ Nanostructures.** *Y. Hui*[1,2], W. Cheng[2], Z. Zhang[2], H. Wang[1], C. Xie[1] and X. Miao[1,2] *1. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China; 2. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

CN-09. **Spin pumping near the magnetic phase transition in δ-doped Pd(Fe) layers.** J. Greser[1], S. Keller[1], M. Schweizer[1], H. Stopfel[2], V. Kapaklis[2] and *E. Papaioannou*[1] *1. Department of Physics, TU Kaiserslautern, Kaiserslautern, Germany; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

CN-10. **Spin wave resonance induced spin pumping effect in yttrium iron garnet.** *Y. Chen*[1], S.Y. Huang[2] and J.G. Lin[1] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 2. Department of Physics, National Taiwan University, Taipei, Taiwan*

CN-11. **Thickness dependent spin-pumping in cobalt thin films.** *Y. Weng*[1,2], G. Luo[2], C. Liang[1] and J.G. Lin[2] *1. Graduate Institute of Applied Phicics, National Taiwan University, Taipei, Taiwan; 2. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan*

CN-12. **Probe temperature and temperature gradient in Hall crosses with 3ω method: towards thermal reading of the magnetic state.** *Y. Xu*[1], S. Petit-Watelot[1], F. Montaigne[1], G. Parent[2], V. Polewczyk[1], G. Sala[1], D. Lacroix[2], S. Mangin[1], J. Wegrowe[3], M. Hehn[1] and D. Lacour[1] *1. Institut Jean Lamour, Nancy, France; 2. LEMTA, Nancy, France; 3. Ecole Polytechnique, Paris, France*

CN-13. **Magnetoresistance ratio through Si semiconductor using a magnetic tunnel junction.** *N. Tezuka*[1], S. Oikawa[1], M. Matsuura[1], S. Sugimoto[1] and Y. Saito[2] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Toshiba Corporation, Kawasaki, Japan*

CN-14. **Crystal, Electronic Structures and Spin Signals $Co_2FeAl_{0.5}Si_{0.5}$/n-GaAs Junctions.** *N. Tezuka*[1], K. Kataoka[1], T. Saito[1], M. Matsuura[1] and S. Sugimoto[1] *1. Graduate School of Engineering, Tohoku University, Sendai, Japan*

CN-15. **Investigation of interfacial spin dependent transport and magnetic proximity effect in CoFeTaB/Pt bilayers.** *O.A. Inyang*[1] *1. Centre for Material Physics, Department of Physics, Durham University, Durham, United Kingdom*

CN-16. **Spin accumulaton generated by magnetization gradient in asymmetric topological insulator thin films.** *Z. Siu*[1], M.B. Jalil[1] and S. Tan[2] *1. National University of Singapore, Singapore, Singapore; 2. Data Storage Institute, Singapore, Singapore*

CN-17. **Evaluation of Correlation Between Orientation of $Y_3Fe_5O_{12}$(YIG) Thin Film and Spin Seebeck Effect.** *A. Yamamoto*[1], M. Arai[1], T. Takimoto[1], M. Itoh[1], S. Ando[1], S. Saito[1] and T. Kawahara[1] *1. Electrical Engineering, Faculty of Engineering, Tokyo University of Science, Tokyo, Japan*

WEDNESDAY MORNING 8:30 | THE FORUM

Session CO
MAGNONICS, ULTRAFAST AND ALL-OPTICAL SWITCHING (Poster Session)

Giovanni Finocchio, Chair
University of Messina, Messina, Italy

CO-01. **Static and dynamic magnetic properties of two-dimensional $Ni_{80}Fe_{20}$ annular antidot lattices.** N. Porwal[1], A. Barman[2] and *P.K. Datta*[1] *1. Physics, Indian Institute of Technology Kharagpur, Kharagpur, India; 2. Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, India*

CO-02. **Artificially controlled graded magnonic materials.** *L. Flajsman*[1], J. Gloss[2], M. Horký[1], V. Krizakova[3], M. Vanatka[1], T. Sikola[1,3], P. Varga[2,1] and M. Urbánek[1,3] *1. CEITEC BUT, Brno University of Technology, Brno, Czech Republic; 2. Institute of Applied Physics, Technische Universität Wien, Vienna, Austria; 3. Institute of Physical Engineering, Brno University of Technology, Brno, Czech Republic*

CO-03. **Spin wave beam propagation through the area with graded refractive index.** *P. Gruszecki*[1] and M. Krawczyk[1] *1. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

CO-04. **Magnon density control of room temperature supercurrents in yttrium iron garnet films.** *D.A. Bozhko*[1,2], A.J. Kreil[1], A.A. Serga[1] and B. Hillebrands[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Graduate School Materials Science in Mainz, Mainz, Germany*

CO-05. **Optical excitation of magnetization dynamics in magnetic optical microcavity.** *A. Kalish*[1,2], M. Kozhaev[1,3], A. Chernov[1,3], A. Shaposhnikov[4], V. Berzhansky[4], A. Zvezdin[1,3] and V. Belotelov[1,4] *1. Russian Quantum Center, Skolkovo, Russian Federation; 2. Faculty of Physucs, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Prokhorov General Physics Institute RAS, Moscow, Russian Federation; 4. Vernadsky Crimean Federal University, Simferopol, Russian Federation*

CO-06. **High frequency modes in patterned arrays of magnetic stripes.** *R. Dutra*[1], D. Gonzalez-Chavez[1] and R.L. Sommer[1] *1. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil*

CO-07. **Withdrawn**

CO-08. **Spin wave surface states in one-dimensional planar magnonic crystals.** *J. Rychly*[1] and J. Klos[1] *1. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

CO-09. **Frequency modulation spin waves generator via oscillating vortex core in NiFe disk array.** L. Chang[1], M. Kao[1], L. Tsai[1], J. Liang[2] and *S. Lee*[1] *1. Institute of Physics, Academia Sinica, Taipei, Taiwan; 2. Department of Physics, Fu Jen Catholic University, New Taipei city, Taiwan*

CO-10. **Control of defect modes in coupled magnonic crystals.** *A. Sharaevskaia*[1,2] and E. Beginin[1] *1. Saratov State University, Saratov, Russian Federation; 2. Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Moscow, Russian Federation*

CO-11. **Ultrafast Magnetization Switching of Ferrimagnetic Iron Garnets.** *I. Radu*[1,2], R. Abrudan[3], M. Hennecke[1], D. Mishra[1,3], C. von Korff Schmising[1], T. Ostler[4], O. Chubykalo-Fesenko[5], A. Kalashnikova[6], R. Pisarev[6] and S. Eisebitt[1,2] *1. Max Born Institute Berlin, Berlin, Germany; 2. Institut für Optik und Atomare Physik, Technical University Berlin, Berlin, Germany; 3. Helmholtz-Zentrum Berlin, Berlin, Germany; 4. Départementde Physique, Universitè de Liége, Liége, Belgium; 5. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 6. Ioffe Physical Technical Institute, St. Petersburg, Russian Federation*

CO-12. **Femtosecond laser induced magnetization reversal domain in TbCo film.** *W. Cheng*[1,2], X. Li[1], Y. Hui[2], H. Wang[2], K. Dong[3], C. Xie[2] and X. Miao[1,2] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China; 3. School of Automation, China University of Geosciences, Wuhan, China*

CO-13. **Femto- and pico-second laser-induced domain wall motion in Co/Pt thin films showing all-optical helicity-dependent switching.** *Y. Quessab*[1,2], R. Medapalli[2], M. El Hadri[1], M. Hehn[1], G. Malinowski[1], E. Fullerton[2] and S. Mangin[1] *1. Institut Jean-Lamour, UMR CNRS 7198, Université de Lorraine, Vandoeuvre-lès-Nancy, France; 2. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA*

CO-14. **Helicity Independent All Optical Switching of GdFeCo via Hot Electrons.** *Y. Xu*[1,2], M. Deb[1], W. Zhao[2], G. Malinowski[1] and S. Mangin[1] *1. Institut Jean Lamour, Nancy, France; 2. Beihang University, Fert Beijing Institute, Beijing, China*

CO-15. **Giant Tunability of Spin Wave Dynamics in Two-Dimensional Hexagonal Antidot Lattices.** S. Choudhury[1], *S. Pan*[1], Y. Otani[2,3] and A. Barman[1] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute for Solid State Physics, Kashiwa, Japan; 3. RIKEN-CEMS, Wako, Japan*

CO-16. **Investigation of the imprint of spin polarization on ultrafast demagnetization in Heusler alloys with different stoichiometric compositions.** *S. Pan*[1], T. Seki[2,3], K. Takanashi[2,3] and A. Barman[1] *1. Department of Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Institute of Materials Research, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

WEDNESDAY MORNING 8:30 THE FORUM

Session CP
THIN FILMS AND MULTILAYERS II (Poster Session)

Erol Girt, Co-Chair
Simon Fraser University, Burnaby, Canada
Weisheng Zhao, Co-Chair
Beihang University, Beijing, China

CP-01. **Correlation between growth, structure and magnetic properties of Ga rich $Fe_{100-x}Ga_x$ alloys.** A. Muñoz-Noval[1,2], S. Gallego[3], J. Cerdá[3], S. Fin[4], E. Salas-Colera[3,2], C. de Dios[5,6], M. Petrova[6], G. Herráiz[6], D. Bisero[7,4] and *R. Ranchal*[6] *1. Hiroshima University, Hiroshima, Japan; 2. BM25-Spline, ESRF, Grenoble, France; 3. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 4. Dipartimento di Fisica, Università di Ferrara, Ferrara, Italy; 5. Instituto de Microelectrónica de Madrid, CSIC, Madrid, Spain; 6. Física de Materiales, Universidad Complutense de Madrid, Madrid, Spain; 7. CNISM, Università di Ferrara, Ferrara, Italy*

CP-02. **Observation of magnetic reversal process in tuned exchange spring nanomagnet by XMCD spectroscopy.** *K. Son*[1], Y. Chen[1], S. Tripathi[1], T. Tietze[1], P. Nagel[2], S. Schuppler[2], G. Schütz[1] and E. Goering[1] *1. Modern Magnetic Systems, Max-Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Institute for Solid State Physics (IFP), Karlstuher Institute for Technology, Eggenstein-Leopoldshafen, Germany*

CP-03. **Underlayer-dependent perpendicular magnetic anisotropy of $Co_2Fe_{0.4}Mn_{0.6}Si$ Heusler alloy ultra-thin films.** *M. Sun*[1,2], S. Takahashi[3], T. Kubota[1,4], A. Tsukamoto[5], Y. Sonobe[3] and K. Takanashi[1,4] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Samsung R&D Institute Japan, Yokohama, Japan; 4. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 5. Department of Electronic Engineering, College of Science and Technology, Nihon University, Funabashi, Japan*

CP-04. **Interlayer exchange coupling in perpendicularly magnetized Co/Ir/Co structures.** *M. Gabor*[1], T. Petrisor, Jr.[1], B. Mos[1], C. Baciu[1] and C. Tiusan[1,2] *1. Center for Superconductivity, Spintronics and Surface Science, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; 2. Institut Jean Lamour, CNRS, Université de Lorraine, Vandoeuvre, France*

CP-05. **Antiferromagnetic coupling strength between Co films across NiRu, CoRu, and FeRu.** *Z. Nunn*[1] and E. Girt[1] *1. Physics, Simon Fraser University, Burnaby, BC, Canada*

CP-06. **Femtosecond laser pulse-induced perpendicular magnetization in Co ultra-thin films with diverse surroundings.** *J. Kisielewski*[1], I. Sveklo[1], Z. Kurant[1], D. Mitin[2], M. Albrecht[2], A. Wawro[3] and A. Maziewski[1] *1. Faculty of Physics, University of Bialystok, Bialystok, Poland; 2. Institute of Physics, University of Augsburg, Augsburg, Germany; 3. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

CP-07. **Inhomogeneous spatial distribution of the magnetic transition in a FeRh thin film.** *C. Gatel*[1], B. Warot-Fonrose[1], N. Biziere[1], L.A. Rodriguez[1], D. Reyes[1] and M. Casanove[1] *1. CEMES, CNRS/University of Toulouse, Toulouse, France*

CP-08. **Ferromagnetic resonance investigation of origins of the perpendicular magnetic anisotropy in Pd/Co bi-layer and Pd/Co/Pd tri-layer films.** C. Lueng[1], F. Zighem[2], D. Faurie[2] and *M. Kostylev*[1] *1. University of Western Australia, Crawley, WA, Australia; 2. 2LSPM (CNRS-UPR 3407), Universite Paris 13, Villetaneuse, France*

CP-09. **Inducing coercivity in coherently strained $[Fe\text{-}Co/Au\text{-}Cu]_n$ multilayers.** *G. Giannopoulos*[1], R. Salikhov[2], G. Varvaro[3], A. Testa[3], M. Farle[2], V. Psycharis[1] and D. Niarchos[1] *1. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece; 2. Fakultät für Physik and Center for Nanointegration (CeNIDE), University of Duisburg-Essen, Duisburg, Germany; 3. ISM-CNR, Rome, Italy*

CP-10. **Indirect exchange coupling driven magnetization switching of CoNi/Cu/CoPt pseudo spin-valves with perpendicular magnetic anisotropy.** *A. Ognev*[1], A. Kolesnikov[1], M. Stebliy[1], A.S. Samardak[1], L. Chebotkevich[1], H. Wu[2] and X. Han[2] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. State Key Laboratory of Magnetism, Institute of Physics, Beijing, China*

CP-11. **Second harmonic generation in non-collinear magnetic system due to spin current: theory and experiment.** *E. Karashtin*[1,2], N. Gusev[1], K. Sladkov[3], I. Kolmychek[3], T. Murzina[3] and A. Fraerman[1,2] *1. Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russian Federation; 2. University of Nizhny Novgorod, Nizhny Novgorod, Russian Federation; 3. Department of Physics, Moscow State University, Moscow, Russian Federation*

CP-12. **Modification of interlayer coupling in Co/Mo/Co structures by ion irradiation.** A. Wawro[1], *Z. Kurant*[2], M. Tekielak[2], M. Jakubowski[1], A. Pietruczik[1], P. Aleszkiewicz[1], R. Böttger[3] and A. Maziewski[2] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 2. Faculty of Physics, University of Bialystok, Bialystok, Poland; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden Rossendorf, Dresden, Germany*

CP-13. **Effect of annealing on the Dzyaloshinskii-Moriya interaction in Ta/CoFeB/MgO.** *R.A. Khan*[1], P.M. Shepley[1], A. Hrabec[1,3], A.W. Wells[1], B. Ocker[2], C.H. Marrows[1] and T.A. Moore[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Singulus Technologies AG, Kahl am Main, Germany; 3. Laboratoire de Physique des Solides, CNRS, Orsay, France*

CP-14. **Zeeman magnetoresistance as a three-dimensional spin texture detector in Bi_2Se_3 single layer.** *P. He*[1], D. Zhu[1], Y. Liu[1], Y. Wang[1], J. Yu[1] and H. Yang[1] *1. National University of Singapore, Singapore, Singapore*

CP-15. **Large negative uniaxial magnetic anisotropy in epitaxially strained nickel ferrite films.** M. Matsumoto[1], S. Sharmin[1], J. Inoue[1], E. Kita[1,2] and *H. Yanagihara*[1] *1. Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. NIT, Ibraki College, Hitachinaka, Japan*

CP-16. **Extraordinary Hall effect in GeTe/Sb_2Te_3 topological superlatties and perpendicular magnetic anisotropy Tb/Co films.** *D. Bang*[1,2], H. Awano[1], Y. Saito[3] and J. Tominaga[3] *1. Toyota Technological Institute, Nagoya, Japan; 2. Institute of Materials Science, Ha Noi, Vietnam; 3. Nanoelectronics Research Institute, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

CP-17. **Magnetic Coupling Behaviour in Gd/Mn/Fe Trilayers Studied by X-Ray Magnetic Circular Dichroism.** *D. Walecki*[1], A.K. Puri[1], A. Smekhova[2], K. Ollefs[1], A. Terwey[1], S. Webers[1], M. Gubbins[3], C. Autieri[4], B. Sanyal[4] and H. Wende[1] *1. Faculty of Physics and CENIDE, University of Duisburg-Essen, Duisburg, Germany; 2. Peter Grünberg Institut, Forschungszentrum Jülich, Jülich, Germany; 3. Seagate Technology, Derry, United Kingdom; 4. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

CP-18. **Nanoscale coupling roughness in exchange-coupled double layers.** *A.O. Mandru*[1], X. Zhao[1], J. Schwenk[1,2], M.A. Marioni[1] and H.J. Hug[1,2] *1. Empa, Materials Science and Technology, Duebendorf, Switzerland; 2. Department of Physics, University of Basel, Basel, Switzerland*

Session CQ

FRUSTRATED MAGNETS AND EMERGING TOPICS (Poster Session)

Valentyn Novosad, Chair
Argonne National Laboratory, Argonne, IL

CQ-01. **Vertex symmetry and magnon band structure in the artificial square ice ground state.** *S. Gliga*[1,2], E. Iacocca[3,4], A. Kakay[5], L. Heyderman[6,2], R. Stamps[1], R. Hertel[7] and O. Heinonen[8,9] *1. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Paul Scherrer Institute, Villigen PSI, Switzerland; 3. Department of Applied Mathematics, University of Colorado, Boulder, CO; 4. Department of Physics, Chalmers University of Technology, Gothenburg, Sweden; 5. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 6. Laboratory for Mesoscopic Systems, Department of Materials, ETH Zurich, Zurich, Switzerland; 7. IPCMS UMR7504, CNRS and UdS, Strasbourg, France; 8. Materials Science Division, Argonne National Laboratory, Argonne, IL; 9. Northwestern-Argonne Institute for Science and Engineering, Evanston, IL*

CQ-02. **On the mechanism underlying the magnetic separation of rare earth ions in aqueous solution.** *Z. Lei*[1,2] and K. Eckert[1,2] *1. Institute of Processing Engineering and Environment Technology Department of Transport Process at Interface, TU Dresden, Dresden, Germany; 2. Institute of Fluid Dynamics Department of Transport Process at Interface, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Dresden, Germany*

CQ-03. **A Novel Finger Rehabilitation Method Using an Electromagnetic System.** C. Yu[1] and *S. Kim*[2] *1. Department of Convergence Technology Engineering, Chonbuk National University, Jeonju, The Republic of Korea; 2. Department of Electronics Convergence Engineering, Wonkwang University, Iksan, The Republic of Korea*

CQ-04. **Dynamical neuromorphic computing with nanoscale magnetic oscillators.** *F. Abreu Araujo*[1], J. Torrejon[1], M. Riou[1], S. Tsunegi[2], G. Khalsa[3], D. Querlioz[4], P. Bortolotti[1], V. Cros[1], A. Fukushima[2], H. Kubota[2], S. Yuasa[2], M. Stiles[3] and J. Grollier[1] *1. Unité Mixte de Physique, CNRS/Thales, Paris, France; 2. Spintronic Research Center, AIST, Tsukuba, Japan; 3. Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD; 4. Univ. Paris-Sud, CNRS, Institut d'Électronique Fondamentale, Orsay, France*

CQ-05. **Improved Figure-of-Eight Coil for Transcranial Magnetic Stimulation Using Magnetic Resonant Coupling.** Z. Zhang[1], W. Ai[1] and *B. Deng*[1] *1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China*

CQ-06. **Spin Nernst Effect in Platinum.** *A. Bose*[1], S. Bhuktare[1], H. Singh[1] and A. Tulapurkar[1] *1. Electrical Engineering, Indian Institute of Technology Bombay, India, Mumbai, India*

CQ-07. **Between single ion magnets and macromolecules: poly(4-vinyl pyridine) – Co(II) based thin magnetic films.** *A.M. Majcher*[1], P. Dabczynski[1], M. Ceglarska[1] and O. Stefanczyk[2] *1. Institute of Physics, Jagiellonian University, Krakow, Poland; 2. Department of Chemistry, The University of Tokyo, Tokyo, Japan*

CQ-08. **Surface acoustic wave generation by ferromagnetic resonance.** *S.S. Bhuktare*[1], A. Bose[1], H. Singh[1] and A. Tulapurkar[1] *1. Electrical Engineering, IIT Bombay, Mumbai, India*

CQ-09. **Microfluidics without walls.** *P. Dunne*[1,2], T. Adachi[2], A. Sorrenti[2], M. Coey[3], B. Doudin[1] and T.M. Hermans[2] *1. Institut de Physique et de Chimie des Matériaux de Strasbourg, Université de Strasbourg, Strasbourg, France; 2. Institut de Science et d'Ingénierie Supramoléculaires, Université de Strasbourg, Strasbourg, France; 3. School of Physics, Trinity College Dublin, Dublin, Ireland*

CQ-10. **Magnetic structure of quasi-two-dimensional honeycomb lattice tellurate $Na_2Ni_2TeO_6$ in ground state.** *A. Korshunov*[1,2], A. Kurbakov[1,2] and S. Podchezertsev[1] *1. Petersburg Nuclear Physics Institute, Saint Petersburg, Russian Federation; 2. Saint Petersburg State University, Saint Petersburg, Russian Federation*

CQ-11. **Baromagnetic effect in the hexagonal Mn_3Sn system.** *K. Xu*[1], Y. Zhang[1,2], Y. Cao[1], Z. Li[1], H. Xijia[1], S. Wei[1], Y. Kang[1] and C. Jing[2] *1. Center for Magnetic Materials and Devices, Qujing Normal University, Qujing, China; 2. Department of Physics, Shanghai University, Shanghai, China*

CQ-12. **Withdrawn**

WEDNESDAY MORNING 8:30 — THE FORUM

Session CR
MAGNETOCALORIC MATERIALS (Poster Session)

Ekkes Brück, Co-Chair
TU Delft, Delft, Netherlands
Alexander Barcza, Co-Chair
Vacuumschmelze GmbH & Co. KG, Hanau, Germany

CR-01. **Magnetocaloric demonstrator with optimized nested Halbach cylinders made of recycled Nd-Fe-B.** *D. Benke*[1], J. Wortmann[1], T. Gottschall[1], I.A. Radulov[1], K. Skokov[1], O. Gutfleisch[1], D. Prosperi[2], P. Afiuny[2] and M. Zakotnik[2] *1. Funktionale Materialien, TU Darmstadt, Darmstadt, Germany; 2. Urban Mining Company, Austin, TX*

CR-02. **Effect of Annealing Atmosphere Pressure and Annealing Time on Phase Formation of $La_{0.7}Ce_{0.3}Fe_{11.78}Mn_{0.22}Si_{1.5}$ Strip.** *J. Xue*[1], J. Shi[2], Y. Long[1] and J. Liu[3] *1. School of Material Science and Engineering, University of Science and Technology Beijing, Beijing, China; 2. Graduate School of Engineering, Hokkaido University, Sapporo, Japan; 3. Ningbo Institute of Materials Technology and Engineering, Ningbo, China*

CR-03. **Electric field tuning of magnetocaloric effect.** *D. Wang*[1] *1. Physics Department, Nanjing University, Nanjing, China*

CR-04. **Key characteristics of well performing magneto-caloric materials from first principles.** *E.K. Delczeg-Czirjak*[1], M. Pereiro[1], L. Vitos[2,3] and O. Eriksson[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Department of Materials Science and Engineering, Royal Institute of Technology (KTH), Stockholm, Sweden; 3. Research Institute for Solid State Physics and Optics, Wigner Research Center for Physics, Budapest, Hungary*

CR-05. **Magnetocaloric effect in $Pd_{2-x}Ni_xMn_{1.47}Sn_{0.53}$ Heusler alloy.** *H. Yako*[1], T. Shima[1] and M. Doi[1] *1. Tohoku Gakuin University, Tagajo, Japan*

CR-06. **Experimental and numerical study on the behavior of a multilayer for active magnetic refrigerator based on La-Fe-Co-Si.** *Y. Chiba*[1] *1. Mechanical Engineering, University of Médéa, Médéa, Algeria*

CR-07. **Magnetostructural transition and magnetocaloric effect in MnNiGe-Fe_2Ge system.** *J. Liu*[1], Y. Si[1], Y. You[1], H. Yang[1], Y. Gong[1] and F. Xu[1] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China*

CR-08. **The deviation from the mean-field theory in $Ni_{43}Mn_{46}Sn_8X_3$ (X = In and Cr) Heusler alloys.** W. Nan[1], D. Tran[1], B. Jeon[1], G. Nam[1], T. You[1], H. Piao[2], L. Pan[2] and *S.C. Yu*[1] *1. Chungbuk National University, Cheongju, The Republic of Korea; 2. China Three Gorges University, Yichang, China*

CR-09. **Magnetic property and magnetocaloric effect in $La_{1-x}Sr_xCoO_3$ compounds (x = 0.2-0.4).** *D. Pham*[1], D. Tran[1] and S.C. Yu[1] *1. Chungbuk National University, Cheongju, The Republic of Korea*

CR-10. **Large change of magnetic moment in $Ni_{13}Co_3Mn_{13}Sn_3$ and $Ni_{13}Co_3Mn_{13}Sn_2Al_1$ Heusler alloys at martensitic transitions: investigation from first principles.** *V. Buchelnikov*[1], V. Sokolovskiy[1], M.A. Zagrebin[1] and D. Baygutlin[1] *1. Condensed Matter Physics, Chelyabinsk State University, Chelyabinsk, Russian Federation*

CR-11. **A multiscale model of thermo-magneto-elastic phase transition in Mn-Fe-P-Si.** *A. Bartok*[1], O. Hubert[2], A. Pasko[1], F. Mazaleyrat[1], L. Daniel[3] and M. Lo Bue[1] *1. SATIE, ENS Paris Saclay, Cachan, France; 2. LMT, ENS Paris Saclay, Cachan, France; 3. GeePs, CentraleSupelec, Gif-sur-Yvette, France*

CR-12. Direct and Inverse Magnetocaloric Effects in Metamagnetic Ni-Mn-In-based Alloys in High Magnetic Fields. *I. Koshkidko*[1], S. Pandey[2], A. Quetz[2], A. Aryal[2], I. Dubenko[2], J. Cwik[1], E. Dilmieva[1], A. Granovsky[3], E. Lähderanta[4], A. Zhukov[5,6], S. Stadler[7] and N. Ali[2] *1. International Laboratory of High Magnetic Fields and Low Temperatures, Wroclaw, Poland; 2. Department of Physics, Southern Illinois University, Carbondale, IL; 3. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 4. Lappeenranta University of Technology, Lappeenranta, Finland; 5. Dpto. de Física de Materiales, San Sebastian, Spain; 6. IKERBASQUE, Basque Foundation for Science, Bilbao, Spain; 7. Department of Physics and Astronomy, Louisiana State University, Baton Rouge, LA*

CR-13. Element specific insight into the magnetocaloric system $LaFe_{13-x}Si_x$. *H. Wende*[1], M.E. Gruner[1], W. Keune[1], B. Roldan Cuenya[2], C. Weis[1], J. Landers[1], A. Terwey[1], S. Salamon[1], S.I. Makarov[1], D. Klar[1], M.Y. Hu[3], E.E. Alp[3], J. Zhao[3], M. Krautz[4] and O. Gutfleisch[5] *1. Faculty of Physics and CENIDE, University of Duisburg-Essen, Duisburg, Germany; 2. Department of Physics, Ruhr-University Bochum, Bochum, Germany; 3. Advanced Photon Source, Argonne National Laboratory, Argonne, IL; 4. IFW Dresden, Dresden, Germany; 5. Materials Science, TU Darmstadt, Darmstadt, Germany*

CR-14. The influence of noise on the determination of the Curie temperature from magnetocaloric measurements. *L.M. Moreno-Ramírez*[1], V. Franco[1], M. Pekala[2] and A. Conde[1] *1. University of Sevilla, Sevilla, Spain; 2. University of Warsaw, Warsaw, Poland*

CR-15. Study on the viability of MnNiGe-system for magnetocaloric applications. *A. Taubel*[1], T. Gottschall[1], K. Skokov[1] and O. Gutfleisch[1] *1. Material Science, TU Darmstadt, Darmstadt, Germany*

WEDNESDAY MORNING 8:30 — THE FORUM

Session CS
FERRITES AND FE-SI STEELS (Poster Session)

Maz Shirkoohi, Chair
London South Bank University, London, United Kingdom

CS-01. On the homogeneity and isotropy of non-grain oriented electrical steel sheets for the modeling of basic magnetic properties from microstructure and texture. *N. Leuning*[1], S. Steentjes[1] and K. Hameyer[1] *1. Institute of Electrical Machines (IEM), RWTH Aachen University, Aachen, Germany*

CS-02. Relation between magnetic property changes and microstructure changes on austenitic stainless steel sensitized by heat treatment. *H. Kikuchi*[1], H. Yanagiwara[1] and T. Murakami[1] *1. Iwate University, Morioka, Japan*

CS-03. **Domain wall dynamics controlled through magnetoelastic interaction.** *K. Chichay*[1,2], V.V. Rodionova[1,2], V. Zhukova[3], N.S. Perov[1,4] and A. Zhukov[3,5] *1. Science and Technology Park "Fabrika", Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 2. Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation; 3. Dpto. Fisica de Materiales, Fac. Quimicas, UPV/EHU, San Sebastian, Spain; 4. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 5. Ikerbasque, Basque Foundation for Science, San Sebastian, Spain*

CS-04. **Magnetic characterization of α-Iron/Iron oxide core/shell nanoparticles synthesized by pulsed wire evaporation method.** *D. Kim*[1], S. An[2], J. Kim[2], S. Lee[1], K. Hyun Sung[1], J. Yeo[1,2], C. Liu[1] and B. Lee[1] *1. Department of Physics and Oxide Research Center, Hankuk University of Foreign Studies, Yongin-si, Gyeonggi-do, The Republic of Korea; 2. Corporate R&D Institute, Samsung Electro-Mechanics, Suwon-si, The Republic of Korea*

CS-05. **Flexible Magnetic Tape with High Permeability.** *Y. Yen*[1], C. Lee[1] and P. Lin[1] *1. Material Science and Engineering, National Tsing Hua University, Taichung City, Taiwan*

CS-06. **Site preference and hyperfine structure in doped Z-type hexaferrite $Ba_{1.5}Sr_{1.5}Co_2(Fe_{1-x}Al_x)_{24}O_{41}$ investigated by Mössbauer spectroscopy.** *J. Lim*[1], T. Kouh[1] and C. Kim[1] *1. Kookmin University, Seoul, The Republic of Korea*

CS-07. **Magnetostriction Behaviors of $Ni_{100-x}Fe_x$ and $Ni_{100-y}Co_y$ (001) Single-Crystal Films with fcc Structure under Rotating Magnetic Fields.** *K. Serizawa*[1], T. Kawai[1], M. Ohtake[2,1], M. Futamoto[1], F. Kirino[3] and N. Inaba[4] *1. Faculty of Science and Engineering, Chuo University, Koganei, Japan; 2. Faculty of Engineering, Kogakuin University, Hachioji, Japan; 3. Graduate School of Fine Arts, Tokyo University of the Arts, Taito-ku, Japan; 4. Faculty of Engineering, Yamagata University, Yonezawa, Japan*

CS-08. **Gd_5Si_4-PVDF nanocomposites-films for triboelectric energy harvesting.** *S.M. Harstad*[1], N. Soin[2], A. El-Gendy[1,3], P. Zhao[2], S. Gupta[4], V. Pecharsky[4,5], J. Luo[2], E. Siores[2] and R. Hadimani[1] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 2. Institute of Renewable Energy and Environment Technology, University of Bolton, Bolton, United Kingdom; 3. Nanotechnology and Nanometrology Laboratory, National Institute for Standards, Giza, Egypt; 4. Division of Materials Science and Engineering, Ames Laboratory, US Dept. of Energy, Ames, IA; 5. Department of Materials Science and Engineering, Iowa State University, Ames, IA*

CS-09. **$Lu_2Ni_{21-x}Co_xB_6$: From Pauli Paramagnetism to Weak Ferromagnetism.** *A. Leithe-Jasper*[1], R. Gumeniuk[2], W. Schnelle[1], H. Rosner[1] and S. Wirth[1] *1. MPI-CPfS, Dresden, Germany; 2. TU Bergakademie, Freiberg, Freiberg, Germany*

CS-10. **Tunable permeability and permittivity of low loss NiZnCo ferrite by sintering temperature for VHF-UHF applications.** *Z. Zheng*[1] and Q. Feng[1] *1. School of Information Science and Technology, Southwest Jiaotong University, Chengdu, China*

CS-11. **Improvement of Power Inductor Performance by Adding Fe Nanoparticle to Fe-Si Soft Magnetic Composite.** *S. Lee*[1], D. Kim[1], J. Yeo[1,2], S. An[2], J. Kim[2] and B. Lee[1] *1. Department of Physics and Oxide Research Center, Hankuk University of Foreign Studies, Yongin-si, The Republic of Korea; 2. Corporate R&D Institute, Samsung Electro-Mechanics, Suwon-si, Gyeonggi-do, The Republic of Korea*

CS-12. **Crystallographic orientation and microstructure dependent magnetic behaviors of arrays of Ni nanowires.** *M. Ko*[1], S. Kim[1] and Y.K. Kim[1] *1. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

CS-13. **Characterization of Soft Ferromagnetic Materials in AC Magnetic Fields with Regard to Magnetic Losses.** *R. Hiergeist*[1], K. Wagner[1] and G. Ross[1] *1. Magnet-Physik Dr. Steingroever GmbH, Köln, Germany*

CS-14. **Modelling of temperature dependence of saturation magnetisation of silicon-iron steels.** *G. Shirkoohi*[1] *1. Engineering, London South Bank University, London, United Kingdom*

WEDNESDAY MORNING 8:30 — THE FORUM

Session CT
MOTORS, GENERATORS AND ACTUATORS III (Poster Session)

Antonino Laudani, Chair
Universitá degli Studi Roma Tre, Roma, Italy

CT-01. **Proposal and Design of Transverse-Flux Flux-Reversal Linear Motor with Consequent-Pole Structure.** *J. Luo*[1], B. Kou[1], L. Zhang[1] and X. Yang[1] *1. Electrical Engineering, Harbin Institute of Technology, Harbin, China*

CT-02. **A Novel Consequent-Pole Hybrid Excited Vernier Permanent-Magnet Machine for EV/HEV Applications.** H. Wang[1], S. Fang[1], H. Yang[1], H. Lin[1], Y. Li[1] and *J. Jiang*[1] *1. Southeast University, Nanjing, China*

CT-03. **2D Finite Element Analysis of Hybrid Excitation Synchronous Machines with Radial/Axial Flux Paths via Magnetic Equivalent Circuit.** *Y. Liu*[1], Z. Zhang[1], W. Geng[1] and J. Li[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

CT-04. **Investigation of Stator Flux Density and Iron Loss in 3^rd Order Harmonic Shaped Surface-Mounted Permanent Magnet Machines.** *X. Chen*[1] and K. Wang[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

CT-05. **Regulation of High Efficiency Region in Permanent Magnet Machines According to a Given Driving Cycle.** *Q. Chen*[1,2], X. Fan[1] and G. Liu[1,2] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu Key Laboratory of Drive and Intelligent Control for Electric Vehicle, Zhenjiang, China*

CT-06. **Thermal Analysis of Consequent-Pole Hybrid Vernier Permanent-Magnet Machine for EV/HEV Applications.** H. Wang[1], S. Fang[1], H. Yang[1], H. Lin[1], Y. Li[1] and *J. Jiang*[1] *1. Southeast University, Nanjing, China*

CT-07. **Design of Winding Changeable BLDC Motor Considering Demagnetization in Winding Change Section.** *H. Seol*[1], H. Jun[1], D. Jung[1], H. Liu[1] and D. Kang[2] *1. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Electrical Energy Engineering, Keimyung University, Daegu, The Republic of Korea*

CT-08. **Cost-Effective Vernier Permanent-Magnet Machine with High Torque Performance.** *G. Liu*[1,2], G. Xu[1], M. Chen[1] and X. Du[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu Key Laboratory of Drive and Intelligent Control for Electric Vehicle, Zhenjiang, China*

CT-09. **3-D Magnetic Field Analysis Taking Account of Magnetic Hysteresis Property of Electrical Motor under Inverter Excitation.** *S. Odawara*[1], K. Fujisaki[1], M. Nakagawa[2], N. Kitano[2] and Y. Asano[2] *1. Toyota Technological Institute, Nagoya, Japan; 2. Technology Research Association of Magnetic Materials for High-Efficiency Motors (MagHEM), Osaka, Japan*

CT-10. **Optimal Design of an Inset PM Motor with Assisted Barriers and Magnet Shifting for Improvement of Torque Characteristics.** *G. Liu*[1,2], X. Du[1], G. Xu[1] and X. Fan[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu Key Laboratory of Drive and Intelligent Control for Electric Vehicle, Zhenjiang, China*

CT-11. **A Design of Rotor Bar Inclination in Squirrel Cage Induction Motor.** *C. Heo*[1], H. Kim[1] and G. Park[1] *1. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea*

CT-12. **Analysis and Experimental Validation of Dynamic Performance for Slotted Limited-Angle Torque Motor.** *G. Yu*[1], J. Zou[1], Y. Xu[1], H. Lan[1] and Q. Wang[1] *1. Harbin Institute of Technology, Harbin, China*

CT-13. **Design and Analysis of a Linear Slotless Generator with Improved Halbach PM Arrays for Wave Energy Conversion.** *J. Zhang*[1], H. Yu[1], M. Hu[1], L. Huang[1] and T. Xia[1] *1. Engineering Research Center of Motion Control of Ministry of Education, Southeast University, Nanjing, China*

CT-14. **Investigation on Electromagnetic Characteristics of Interior Permanent Magnet Synchronous Motor Considering Influence of Mechanical Energy Storage System.** *Y. Park*[1] *1. Korea National University of Transportation, Chungju, The Republic of Korea*

CT-15. **Investigation of a Novel Hybrid Excitation Machine with Auxiliary Winding for Energy Recycle.** *X. Zhao*[1] and S. Niu[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

CT-16. **Transverse-Flux Motor Design with Skewed and Unequally Distributed Armature Cores for Reducing Cogging Torque.** *Y. Ueda*[1] and H. Takahashi[1] *1. Mechanical Systems Laboratory, Corporate Research & Development Center, Toshiba Corp., Kawasaki, Japan*

WEDNESDAY MORNING 8:30 | THE FORUM

Session CU
MOTORS, GENERATORS AND ACTUATORS IV (Poster Session)
Kazuhiro Muramatsu, Chair
Saga University, Saga, Japan

CU-01. **Iron Loss Analysis and Reduction Techniques of Magnetic Geared Permanent Magnet Motors.** *C. Kim*[1], K. Shin[1], J. Kim[1], J. Ahn[2,1] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. R&D, MAGNETAR, Daejeon, The Republic of Korea*

CU-02. **Electromagnetic Analysis and Experimental Verification of Double-Sided Permanent Magnet Linear Synchronous Generator with Slotted Stator Using Analytical Method.** *S. Seo*[1], K. Kim[2], K. Hong[2] and J. Choi[1] *1. Electrical Engineering, Chung-Nam National University, Daejeon, The Republic of Korea; 2. Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea*

CU-03. **Reduction of Switching Loss of DC to AC Power Inverter with PID-Like Fuzzy Controller.** *C. Hsu*[1,2], C. Chang[3], M. Hsieh[4], Y. Huang[2] and C. Tao[5] *1. Research and Development Center, Fortune Electric Company, Taoyuan, Taiwan; 2. Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan; 3. Department of Information and Telecommunications Engineering, Ming Chuan University, Taoyuan, Taiwan; 4. Department of Systems and Naval Mechatronic Engineering, National Cheng Kung University, Taoyuan, Taiwan; 5. Department of Electrical Engineering, National Ilan University, Taoyuan, Taiwan*

CU-04. **Analysis on Electro-Magnetic Vibration for Interior Permanent Magnet Synchronous Motor due to Temperature and Loads.** *Z. Wang*[1], J. Ha[1] and K. Kim[1] *1. Dept. of Electrical Engineering, Hanbat National University, Daejeon, The Republic of Korea*

CU-05. **A Novel Approach for Power Factor Improvement in Dual Stator Vernier Permanent Magnet Machine.** Q. Lin[1] and *S. Niu*[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Kow Long, Hong Kong*

CU-06. **Magnetic Field Analysis of Edge Effect of Flux Distribution in Induction Motor Core Taking Account of Laminated Structure.** Y. Gao[1], *Y. Uchio*[1], H. Dozono[1] and K. Muramatsu[1] *1. Department of Electrical and Electronic Engineering, Saga University, Saga, Japan*

CU-07. **Experimental and Analytical Study of a Single-Phase Squirrel-Cage Induction Motor Considering End Ring Porosity Rate.** *K. Lee*[1,2], S. Lee[1], J. Park[1], J. Kim[2] and J. Choi[2] *1. Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Department of Electrical Engineering, ChungNam National University, Daejeon, The Republic of Korea*

CU-08. **AC copper loss estimation of armature windings in flux-switching permanent-magnet double-rotor machine.** *L. Mo*[1] *1. Huaiyin Institute of Technology, Huaian, China*

CU-09. **Analytical Modeling and Experimental Study for Electromagnetic Performance Analysis of Interior Permanent Magnet Machines considering Magnetic Structure.** *K. Shin*[1], H. Park[2], H. Cho[3] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Advanced Brake Engineering Team, Hyundai Mobis, Yongin-si, The Republic of Korea; 3. Dept. of Electric, Electronic and Communication Engineering Edu., Chungnam National University, Daejeon, The Republic of Korea*

CU-10. **Hybrid Rectangular Bar Wave Windings to Minimize Winding Losses of Permanent Magnet Machines for EV/HEVs over a Driving Cycle.** *X. Fan*[1], R. Qu[1], D. Li[1], J. Li[1], C. Wang[1] and H. Fang[1] *1. School of Electricity and Electronic Engineering, Huazhong University of Science and Technology, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Wuhan, China*

CU-11. **Core Loss Analysis of High Speed Motor by Using Vector Magnetic Characteristic.** *T. Sato*[1] and M. Enokizono[2] *1. Oita University, Oita, Japan; 2. Nippon Bunri University, Oita, Japan*

CU-12. **Experimental Verification of a Magnetic-CVT Motor.** *E. Morimoto*[1], N. Niguchi[1] and K. Hirata[1] *1. Osaka University, Suita, Japan*

Session DA
ADDITIVE MANUFACTURING AND 3D PRINTING OF MAGNETS
Thomas Schrefl, Chair
Danube University Krems, Wiener Neustadt, Austria

2:00

DA-01. **Tailoring magnetic field sources by 3D printing.** ***(Invited)*** C. Huber[1], M. Groenefeld[2], S. Schuschnigg[3] and *D. Suess*[1] *1. CD Laboratory AMSEN, TU - Wien, Vienna, Austria; 2. Magnetfabrik Bonn, Bonn, Germany; 3. Department of Polymer Engineering and Science, Montanuniversitaet Leoben, Leoben, Austria*

2:30

DA-02. **Net Shape Processing of AlNiCo Magnets by Additive Manufacturing.** ***(Invited)*** *E.M. White*[1], A.G. Kassen[1,2], E. Simsek[1], W. Tang[1], R.T. Ott[1] and I.E. Anderson[1,2] *1. Materials Science and Engineering, Ames Laboratory, Ames, IA; 2. Materials Science and Engineering, Iowa State University, Ames, IA*

3:00

DA-03. **Additive Manufacturing of High Performance NdFeB Permanent Magnets.** ***(Invited)*** *M.P. Paranthaman*[1] *1. Chemical Sciences Division, Oak Ridge National Laboratory, Oak Ridge, TN*

3:30

DA-04. **Net Shape 3D Printed NdFeB Permanent Magnet.** ***(Invited)*** *J. Jacimovic*[1] *1. Energy & Materials, ABB Corporate Research, Baden-Daettwil, Switzerland*

WEDNESDAY AFTERNOON 2:00 — LIFFEY HALL 2

Session DB
BIO-MEDICAL MAGNETIC THERAPIES I
Maria del Puerto Morales, Chair
Instituto de Ciencia de Materiales de Madrid, Madrid, Spain

2:00

DB-01. **Magnetic nanowire arrays initiate mesenchymal stem cell differentiation.** *J.E. Perez*[1], T. Ravasi[1] and J. Kosel[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

2:15

DB-02. Magnetic Field-induced Cytoskeleton Remodeling of Mesenchymal Stem Cells. *O. Lunov*[1], V. Zablotskii[1], T. Devillers[2,3], N. Dempsey[2,3], S. Kubinova[4,1] and A. Dejneka[1] *1. Institute of Physics CAS, Prague, Czech Republic; 2. University of Grenoble Alpes Institute Néel, Grenoble, France; 3. CNRS, Institute Néel, Grenoble, France; 4. Institute of Experimental Medicine, CAS, Prague, Czech Republic*

2:30

DB-03. Cell Electrophysiology and Mechanics in High-Gradient Magnetic Fields. ***(Invited)*** *V. Zablotskii*[1], O. Lunov[1], T. Polyakova[1], S. Kubinova[1,2] and A. Dejneka[1] *1. Department of Optical and Biophysical Systems, Institute of Physics AS CR, Prague, Czech Republic; 2. Institute of Experimental Medicine AS CR, Prague, Czech Republic*

3:00

DB-04. Magnetically actuated micropillars for mechanobiology studies. *M. Monticelli*[1], D.S. Jokhun[2], D. Petti[1], G.V. Shivashankar[2] and R. Bertacco[1] *1. Physics, Politecnico di Milano, Milan, Italy; 2. MBI, National University of Singapore, Singapore, Singapore*

3:15

DB-05. Direct functionalization of magnetic hollow spheres with (3-aminopropyl)triethoxysilane (APTES) for targeted drug delivery. *P.B. Patil*[1], V.C. Karade[2], P.P. Waifalkar[3] and P.S. Patil[3] *1. Department of Physics, The New College, Kolhapur, India; 2. School of Nanoscience and Technology, Shivaji University, Kolhapur, India; 3. Department of Physics, Shivaji University, Kolhapur, India*

3:30

DB-06. The osteogenesis promotion effect of iron oxide nanoparticles. ***(Invited)*** Q. Wang[1] and *N. Gu*[1] *1. Department of Biological Sciences and Medical Engineering, Southeast University, Nanjing, China*

WEDNESDAY AFTERNOON 2:00 — THE LIFFEY A

Session DC
MAGNONICS III
Maciej Krawczyk, Chair
Adam Mickiewicz University in Poznan, Poznan, Poland

2:00

DC-01. Route toward high-speed nano-magnonics. B. Divinskiy[1], *V.E. Demidov*[1], S.O. Demokritov[1] and S. Urazhdin[2] *1. Institute for Applied Physics, University of Muenster, Muenster, Germany; 2. Department of Physics, Emory University, Atlanta, GA*

2:15

DC-02. **Excitation and detection of short-waved spin waves in ultrathin Ta/CoFeB/MgO-layer system suitable for spin-orbit-torque magnonics.** *T. Brächer*[1], M. Fabre[1], T. Meyer[2], T. Fischer[2], O. Boulle[1], U. Ebels[1], P. Pirro[2] and G. Gaudin[1] *1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France; 2. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany*

2:30

DC-03. **Curvature-Induced Asymmetry of Spin-Wave Dispersion.** *A. Kakay*[1], J.A. Otálora[2], M. Yan[3], H. Schultheiss[1], J. Lindner[1], J. Faßbender[1] and R. Hertel[4] *1. IBC, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Universidad Técnica Federico Santa María, Valparaíso, Chile; 3. Shanghai University, Shanghai, China; 4. IPCMS, CNRS and UdS, Strasbourg, France*

2:45

DC-04. **Tailoring the spin waves band structure of one-dimensional magnonic crystals consisting of L-shaped iron/permalloy nanowires.** *G. Gubbiotti*[1], R. Silvani[2], S. Tacchi[1], M. Madami[2], G. Carlotti[2], Z. Yang[3], A. Adeyeye[3] and M. Kostylev[4] *1. Istituto Officina dei Materiali-Consiglio Nazionale delle Ricerche, Perugia, Italy; 2. Dipartimento di Fisica, Università di Perugia, Perugia, Italy; 3. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 4. University of Western Australia, Perth, WA, Australia*

3:00

DC-05. **New magnonic architectures in circuit QED.** *A.D. Karenowska*[1], A. van Loo[1], R. Morris[1] and S. Kosen[1] *1. Department of Physics, University of Oxford, Oxford, United Kingdom*

3:15

DC-06. **Reconfigurable nano-scale spin-wave directional coupler.** *Q. Wang*[1], P. Pirro[1], R.V. Verba[2], A.N. Slavin[3], B. Hillebrands[1] and A. Chumak[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Institute of Magnetism, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 3. Department of Physics, Oakland University, Rochester, MI*

3:30

DC-07. **X-Ray Microscopic Observation of Spin Wave Focussing by a Fresnel Lens.** *J. Gräfe*[1], M. Decker[2], K. Keskinbora[1], M. Noske[1], P. Gawronski[3], H. Stoll[1], C.H. Back[2], G. Schütz[1] and E. Goering[1] *1. Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Department of Physics, University of Regensburg, Regensburg, Germany; 3. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland*

3:45

DC-08. **Magnetic Domain Wall Depinning Assisted by Spin Wave Bursts.** *S. Woo*[1,2], T. Delaney[2] and G. Beach[2] *1. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

WEDNESDAY AFTERNOON 2:00 — LIFFEY HALL 1

Session DD
SKYRMIONS AND VORTEX MOTION

Hans Hug, Chair
Empa, Swiss Federal Laboratories for Materials Science and Technology, Duebendorf, Switzerland

2:00

DD-01. **Influence of thermal gradients on the vortex dynamics in CoFeB MTJs.** *M. Kuepferling*[1], F. Garcia-Sanchez[1], T. Boehnert[2], R. Ferreira[2], R. Dutra[3], R.L. Sommer[3] and M. Pasquale[1] *1. Nanoscience and Materials, INRIM, Torino, Italy; 2. Spintronics, INL, Braga, Portugal; 3. CBPF, Rio de Janeiro, Brazil*

2:15

DD-02. **Straight motion of topological defects in thin films of FeN with stripe magnetic domains.** S. Fin[1], R. Silvani[2], L. Garnier[3,4], S. Tacchi[5], M. Eddrief[3,6], V.H. Etgens[3,4], M. Pini[7], A. Rettori[8,9], D. Bisero[1,10] and *M. Marangolo*[3,6] *1. Dipartimento di Fisica e Scienze della Terra, Universita degli Studi di Ferrara, Ferrara, Italy; 2. Dipartimento di Fisica e Geologia, Universita di Perugia, Perugia, France; 3. Institut des Nanosciences de Paris, Université Pierre et Marie Curie, Paris, France; 4. LISV, Université Versailles St-Quentin, Versailles, France; 5. Istituto Officina dei Materiali del CNR, Perugia, Italy; 6. INSP, CNRS, Paris, France; 7. Istituto dei Sistemi Complessi del CNR, Firenze, Italy; 8. Dipartimento di Fisica ed Astronomia, Università di Firenze, Florence, Italy; 9. NANO, CNR, Modena, Italy; 10. CNISM, CNR, Ferrara, Italy*

2:30

DD-03. **Chiral bistability and strong frequency downshifting of the vortex gyrotropic resonance.** *M. Sushruth*[1], J. Fried[1], A. Anane[2], S. Xavier[3], C. Deranlot[2], V. Cros[2] and P. Metaxas[1] *1. School of Physics, University of Western Australia, Perth, WA, Australia; 2. Unité Mixte de Physique CNRS/Thales, Université Paris-Sud and Université Paris-Saclay, Palaiseau, France; 3. Thales Research and Technology, Palaiseau, France*

2:45

DD-04. **Spin-orbit torque-driven skyrmion dynamics revealed by time-resolved x-ray microscopy.** *S. Woo*[1], K. Song[1], H. Han[2], M. Jung[3], M. Im[4,3], K. Lee[2], K. Song[1], P. Fischer[4], J. Hong[3], J. Choi[1], B. Min[1], H. Koo[1] and J. Chang[1] *1. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. UNIST, Ulsan, The Republic of Korea; 3. DGIST, Daegu, The Republic of Korea; 4. LBNL, Berkeley, CA*

3:00

DD-05. **Skyrmion in-line injection and driving by spin Hall torque.** *W. Gan*[1], S. Krishnia[1], Q. Wong[1], W. Law[1], G.J. Lim[1] and W. Lew[1] *1. Nanyang Technological University, Singapore, Singapore*

3:15

DD-06. **Vortex dynamics in disks with tailored magnetisations: from single frequency to multiple frequencies.** *L. Ramasubramanian*[1,2], C. Fowley[1], A. Kakay[1], O. Yildirim[1], P. Matthes[3], J. Lindner[1], J. Faßbender[4], S. Gemming[1,2], S. Schulz[2,3] and A. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Technische Universität Chemnitz, Chemnitz, Germany; 3. Fraunhofer Institute for Electronic Nano Systems, Chemnitz, Germany; 4. Institute for Physics of Solids, TU Dresden, Dresden, Germany*

3:30

DD-07. **Comparison of static and switching dynamical properties between radial and circular vortices.** *G. Siracusano*[1], R. Tomasello[2], A. Giordano[3], V. Puliafito[4], B. Azzerboni[4], O. Ozatay[5], M. Carpentieri[6] and G. Finocchio[3] *1. Department of Electric, Electronic and Computer Engineering, University of Catania, Catania, Italy; 2. Department of Engineering, University of Perugia, Terni, Italy; 3. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 4. Department of Engineering, University of Messina, Messina, Italy; 5. Department of Physics, Bogazici University, Istanbul, Turkey; 6. Department of Electrical and Information Engineering, Technical University of Bari, Bari, Italy*

3:45

DD-08. **Magnetic skyrmion size and stability in ultrathin dots with interfacial Dzyaloshinskii-Moriya interactions.** G. Aranda[1], *O. Chubykalo-Fesenko*[2], G. Kakazei[3], A. Hierro-Rodriguez[3] and K. Guslienko[1] *1. Departamentod e Fisica de Materiales, Universidad del Pais Vasco, San Sebastian, Spain; 2. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 3. IFIMUP-IN/Departamento de Física e Astronomía, Universidade do Porto, Porto, Portugal*

Session DE

RECORDING MEDIA: RECORDING PHYSICS AND LUBRICANTS

Hans Juergen Richter, Chair
WD, San Jose, CA

2:00

DE-01. **Interpolation of Noisy Measurements in a Coarse Grid: Creating Waveforms for Intermediate Points on '747' Curves.** R. Galbraith[1], J. Jarrell[2] and *R.W. Wood*[2] *1. Recording Systems, Western Digital Corp., Rochester, MN; 2. Recording Systems, Western Digital Corp., San Jose, CA*

2:15

DE-02. **Improving BER Performance by Using V-shaped Read Head Array in Heat Assisted Magnetic Recording.** *Y. Wang*[1] and V. Bhagavatula[1] *1. Electrical and Computer Engineering Department, Carnegie Mellon University, Pittsburgh, PA*

2:30

DE-03. **Write Architectures and Their Impact on Hard Disk Drive Capacity.** *K. Gao*[1] *1. International Business and Technology Service, North Oaks, MN*

2:45

DE-04. **A Soft-5/6 Modulation Code with Iterative ITI Subtraction Scheme in Multi-Reader TDMR Systems.** *K. Pituso*[1], C. Warisarn[1] and D. Tongsomporn[2] *1. College of Advanced Manufacturing Innovation, KMITL, Bangkok, Thailand; 2. Seagate Technology, Samutprakarn, Thailand*

3:00

DE-05. **A TMR Mitigation Method with 3-Track Data Detection for Multi-Track Multi-Head BPMR System.** C. Warisarn[1], *W. Busyatras*[1], L.M.M. Myint[2], S. Koonkarnkhai[3] and P. Kovintavewat[3] *1. College of Advanced Manufacturing Innovation, KMITL, Bangkok, Thailand; 2. Shinawatra University, Bangkok, Thailand; 3. Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand*

3:15

DE-06. **Two-Dimensional Signal Processing Schemes for High Areal Density Bit-Patterned Media Magnetic Recording Based on Channel Polarization.** *H. Saito*[1] *1. School of Advanced Engineering, Kogakuin University, Tokyo, Japan*

3:30

DE-07. **Friction characteristics of ultra-thin perfluoropolyether boundary lubricant films subjected to laser irradiation heating in heat-assisted magnetic recording.** *N. Tagawa*[1] *1. Mechanical Engineering, Kansai University, Suita, Japan*

3:45

DE-08. **Real-time Observation of Molecularly Thin Lubricant Films on Head Sliders Using Rotating-Compensator-Based Ellipsometric Microscopy.** *K. Fukuzawa*[1], K. Miyata[1], C. Yamashita[1], S. Itoh[1] and H. Zhang[2] *1. Department of Micro/Nano Systems Engineering, Nagoya University, Nagoya, Japan; 2. Department of Complex Systems Science, Nagoya University, Nagoya, Japan*

WEDNESDAY AFTERNOON 2:00 — WICKLOW HALL 1

Session DF
THEORY OF HYSTERESIS AND COERCIVITY I

Leonard Spinu, Chair
University of New Orleans, New Orleans, LA

2:00

DF-01. **Enhancement of magnetization in Mn-Ga alloys doped with typical elements: a first-principles study.** *M. Tsujikawa*[1,2] and M. Shirai[1,2] *1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

2:15

DF-02. **Theoretical study of magnetocrystalline anisotropy in iron based ferromagnets from first principles.** *O. Vekilova*[1], O. Eriksson[1] and H. Herper[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

2:30

DF-03. **Systematic *ab initio* investigation of RE lean $REFe_{12-x}M_xN_y$ phases.** *H. Herper*[1], O. Vekilova[1] and O. Eriksson[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden*

2:45

DF-04. ***Ab initio* study of magnetic properties of Ni-Mn-Ga alloys along the tetragonal deformation path.** *M. Zelený*[1,2], A. Sozinov[3], T. Björkman[4], L. Straka[5] and R.M. Nieminen[6] *1. Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; 2. Institute of Materials Science and Engineering, NETME Centre, Faculty of Mechanical Engineering, Brno University of Technology, Brno, Czech Republic; 3. Material Physics Laboratory, Lappeenranta University of Technology, Savonlinna, Finland; 4. Physics/Department of Natural Sciences, Åbo Akademi University, Turku, Finland; 5. Institute of Physics, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 6. COMP/Department of Applied Physics, Aalto University School of Science, Aalto, Finland*

3:00

DF-05. **Coercivity reduction in Nd-Fe-B particles due to local anomalous magnetic anisotropy around thier interfaces.** *H. Tsuchiura*[1,2] and T. Yoshioka[1] *1. Applied Physics, Tohoku University, Sendai, Japan; 2. ESICMM, National Institute for Materials Science, Tsukuba, Japan*

3:15

DF-06. **First-principles study on element-doping effects in Nd-Fe-B sintered magnets.** *Y. Tatetsu*[1], S. Tsuneyuki[1,2] and Y. Gohda[1,3] *1. Physics, The University of Tokyo, Tokyo, Japan; 2. Institute for Solid State Physics, The University of Tokyo, Kashiwa, Japan; 3. Department of Materials Science and Engineering, Tokyo Institute of Technology, Yokohama, Japan*

WEDNESDAY
AFTERNOON
2:00

WICKLOW HALL 2A

Session DG
CRYSTALLINE SOFT MAGNETIC MATERIALS
Zsolt Gercsi, Chair
Trinity College, Dublin, Dublin, Ireland

2:00

DG-01. **Single crystalline FeCo nanoparticles with tuneable size, shape and composition: towards unique magnetic properties.** *L. Lacroix*[1], C. Garnero[1], A. Pierrot[1], R. Arenal[2,3], C. Gatel[4], K. Soulantica[1], B. Chaudret[1] and T. Blon[1] *1. LPCNO, Toulouse, France; 2. Laboratorio de Microscopias Avanzadas, Instituto de Nanociencia de Aragon, Zaragoza, Spain; 3. Fundacion ARAID, Zaragoza, Spain; 4. CEMES, Toulouse, France*

2:15

DG-02. **Magnetic losses versus frequency in non-oriented steel sheets and their prediction: the limits of the analytical approach.** *C. Ragusa*[1], H. Zhao[1,2], M. Khan[1], O. de la Barriere[3], C. Appino[4] and F. Fiorillo[4] *1. Energy Department, Politecnico di Torino, Torino, Italy; 2. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus, Hebei University of Technology, Tianjin, China; 3. Laboratoire SATIE, CNRS - ENS Cachan, Cachan, France; 4. Nanoscience and Materials Division, INRiM, Turin, Italy*

2:30

DG-03. **New insight in the magnetocrystalline anisotropy of iron borate.** *J. Kliava*[1], M. Strugatsky[2] and K. Seleznyova[2] *1. LOMA, University of Bordeaux, Bordeaux, France; 2. V.I. Vernadsky Crimean Federal University, Simferopol, Russian Federation*

2:45

DG-04. **Influence of Interlocking on Magnetic Properties of Electrical Steel Laminations.** *S. Imamori*[1,2], S. Steentjes[2] and K. Hameyer[2] *1. Fuji Electric Co., Ltd., Hino, Japan; 2. Institute of Electrical Machines (IEM), RWTH Aachen University, Aachen, Germany*

3:00

DG-05. **Effect of Arbitrary Shear Stress on Vector Magnetic Properties of a Non-Oriented Electrical Steel Sheet.** *Y. Kai*[1] and M. Enokizono[2] *1. Kagoshima University, Kagoshima, Japan; 2. Vector Magnetic Characteristic Technical Laboratory, OIta, Japan*

3:15

DG-06. **Experimental study of iron losses generated by a uniform rotating field.** *A. Bernot*[1], A. Giraud[1], Y. Lefevre[2] and J. Llibre[2] *1. Aéronef plus électrique, IRT Saint-Exupéry, Toulouse, France; 2. Université de Toulouse, Toulouse, France*

3:30

DG-07. **Vector Magnetic Characteristics of Ultra-Thin Electrical Steel Sheet for Development of High Efficiency High Speed Motor.** *S. Ueno*[1], M. Enokizono[2], Y. Mori[3] and K. Yamazaki[4] *1. Oita University, Oita, Japan; 2. Vector Magnetic Characteristic Technical Laboratory, Usa, Japan; 3. Yoshikawa Kogyo Co., Ltd., Kitakyushu, Japan; 4. Nippon Kinzoku Co., Ltd., Itabashi-ku, Japan*

3:45

DG-08. **Withdrawn**

WEDNESDAY AFTERNOON 2:00 — WICKLOW HALL 2B

Session DH
MOTORS, GENERATORS AND ACTUATORS V

Johannes Paulides, Chair
T.U. Eindhoven, Eindhoven, Netherlands

2:00

DH-01. **Contactless energy transfer: magnetics and acoustics.** ***(Invited)*** *M.G. Roes*[1], M.A. Hendrix[1], J.L. Duarte[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

2:30

DH-02. **A New Permanent Magnet Biased Eddy Current Brake with both AC and DC Windings for Low Speed Electromagnetic Braking Applications.** *M. Gulec*[1] and M. Aydin[1] *1. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey*

2:45

DH-03. **Non-linear magnetic modeling of aircraft variable frequency synchronous generators.** *P. Wilson*[1] *1. University of Bath, Bath, United Kingdom*

3:00

DH-04. **Fault-Tolerant Control Technique of Open-Winding Brushless Doubly-Fed Wind Power Generator Based on Dual Three-Level Converters.** S. Jin[1], L. Shi[1], L. Zhu[1,2], G. Liu[1] and *Y. Zhang*[3] *1. Shenyang University of Technology, Shenyang, China; 2. University of Science and Technology Liaoning, Anshan, China; 3. Queens University Belfast, Belfast, United Kingdom*

3:15

DH-05. **Analysis and Testing of a Hybrid Halbach Magnetic Gearbox.** *J. Bird*[1,2], K. Li[2], J. Kadel[2], J. Wright[2], D. Som[2] and W. Williams[2] *1. Electrical and Computer Engineering, Portland State University, Portland, OR; 2. University of North Carolina at Charlotte, Charlotte, NC*

3:30

DH-06. **Design of a novel two-degree-of-freedom in-wheel motor.** *L. Gan*[1], F. Chai[1], Y. Pei[1] and Y. Yu[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China*

3:45

DH-07. **Modeling and Optimization of a Tubular Generator for Vibration Energy Harvesting Application.** *L. Friedrich*[1], J. Paulides[1] and E. Lomonova[1] *1. EPE, TU/e, Eindhoven, Netherlands*

WEDNESDAY AFTERNOON 4:00 | AUDITORIUM

Session ZA
PLENARY

Nora Dempsey, Chair
CNRS/Institute Néel, Grenoble, France

4:00

ZA-01. **Recent advances in nano-characterization of magnetic materials and devices.** ***(Invited)*** *K. Hono*[1] *1. National Institute for Materials Science, Tsukuba, Japan*

Session EA
WHEN THZ MEETS X-RAYS: AN ULTRAFAST VIEW ON MAGNETISM

Ilie Radu, Chair
Max Born Institute Berlin, Berlin, Germany

9:00

EA-01. **Towards probing strong-field THz magnetization dynamics in complex materials with x-rays.** ***(Invited)*** *C.P. Hauri*[1] *1. SwissFEL, Paul Scherrer Insitute, Villigen-PSI, Switzerland*

9:30

EA-02. **THz driven spin-orbit scattering in ferromagnets.** ***(Invited)*** *H. Dürr*[1] *1. SLAC National Accelerator Laboratory, Menlo Park, CA*

10:00

EA-03. **Ultra-fast lattice-driven magnetization dynamics in complex oxides.** ***(Invited)*** *M. Först*[1] *1. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

10:30

EA-04. **X-ray imaging the ultrafast dynamics in non-trivial spin textures.** ***(Invited)*** *P. Fischer*[1,2] *1. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. Physics Department, UC Santa Cruz, Santa Cruz, CA*

11:00

EA-05. **Efficient nonlinear control of spins by ultrashort THz-fields.** ***(Invited)*** *S. Baierl*[1], J. Mentink[2], M. Hohenleutner[1], C. Lange[1], T. Do[1], L. Braun[3], A. Sell[4], A. Zvezdin[5], M. Fiebig[6], G. Woltersdorf[7], T. Kampfrath[3], A. Kimel[2,5], R. Mikhaylovskiy[2] and R. Huber[1] *1. University of Regensburg, Regensburg, Germany; 2. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 3. Department of Physical Chemistry, Fritz Haber Institute of the Max Planck Society, Berlin, Germany; 4. Toptica Photonics, Munich, Germany; 5. Moscow Technological University (MIREA), Moscow, Russian Federation; 6. Department of Materials, ETH Zurich, Zurich, Switzerland; 7. Institute of Physics, Martin Luther University Halle-Wittenberg, Halle, Germany*

11:30

EA-06. **Femtosecond laser-induced demagnetization: Importance of ultrafast magnon and coherent acoustic phonon generation.** ***(Invited)*** *P.M. Oppeneer*[1], P. Maldonado[1] and K. Carva[1,2] *1. Dept. of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Department of Condensed Matter Physics, Charles University, Prague, Czech Republic*

Session EB
BIO-MEDICAL MAGNETIC THERAPIES II
Vitalii Zablotskii, Chair
Institute of Physics AS CR, Prague, Czech Republic

9:00

EB-01. **Stimuli-Regulated Cancer Theranostics Based on Magnetic Nanoparticles.** *Y. Hou*[1], Y. Ju[1] and J. Qian[2] *1. Department of Materials Science and Engineering, Peking University, Beijing, China; 2. General Research Institute for Nonferrous Metals, Beijing, China*

9:15

EB-02. **Microfluidic platform for investigating penetration of human mucus by magnetotactic bacteria.** *M.P. Pichel*[1,2], T.A. Hageman[1,2], N. Korkmaz[1], X.E. Murgia[3], P.A. Löthman[1,2], C. Lehr[3], A. Manz[1] and L. Abelmann[1,2] *1. KIST Europe, Saarbrücken, Germany; 2. MESA+ Research Institute, University of Twente, Enschede, Netherlands; 3. Helmholtz Institut für Pharmazeutische Forschung, Saarbrücken, Germany*

9:30

EB-03. **Dynamic magnetization properties and heat generation of platelet ferromagnetic nanoparticles injected in tumors of mice.** ***(Invited)*** *E. Kita*[1,2], H. Yanagihara[1], M. Kishimoto[1], R. Miyamoto[3], T. Oda[3] and N. Ohkohchi[3] *1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. National Institute of Technology Ibaraki College, Hitachinaka, Japan; 3. Department of Surgery, Division of Medicine, University of Tsukuba, Tsukuba, Japan*

10:00

EB-04. ***In vitro*** **studies using multifunctional FePt/SiO_2/Au nanoparticles with magnetic and optical properties for advanced cancer treatments.** *K. Zuzek Rozman*[1,2], N. Kostevsek[1,2], I. Abramovic[1], S. Kobe[1,2], M. Erdani Kreft[3], S. Hudoklin[3], M. Spreitzer[1] and S. Sturm[1,2] *1. Jozef Stefan Institute, Ljubljana, Slovenia; 2. Jozef Stefan Postgraduation School, Ljubljana, Slovenia; 3. Institute for Cell Biology, University of Ljubljana, Medical Faculty, Ljubljana, Slovenia*

10:15

EB-05. **Magnetic fluorescent nanoparticles binding to beta-amyloid: silica coated, thioflavin-T functionalized iron oxide.** A. Tsolakis[1], E. Halevas[2,1], E. Gounari[3], G. Koliakos[3], A. Salifoglou[2] and *G. Litsardakis*[1] *1. Electrical and Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece; 2. Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece; 3. Medical School, Aristotle University of Thessaloniki, Thessaloniki, Greece*

10:30

EB-06. **Design of hybrid plasmonic-magnetic nanoparticles for hyperthermia applications.** T. Nguyen[1], J. Volatron[2], F. Gazeau[2], F. Mammeri[1] and *S. Ammar*[1] *1. ITODYS, CNRS UMR-7086, Université Paris Diderot, Sorbonne Paris Cité, Paris, France; 2. MSC, CNRS UMR-7057, Université Paris Dderot, Sorbonne Paris Cité, Paris, France*

10:45

EB-07. **Gd_5Si_4 particles for magnetic hyperthermia.** *Z. Boekelheide*[1], Z.A. Hussein[2], S.M. Harstad[3], A. El-Gendy[3,4] and R. Hadimani[3] *1. Department of Physics, Lafayette College, Easton, PA; 2. Department of Electrical and Computer Engineering, Lafayette College, Easton, PA; 3. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 4. Nanotechnology and Nanometrology Laboratory, National Institute for Standards, Giza, Egypt*

11:00

EB-08. **Core/shell nanoparticles and nonmagnetic interlayer: magnetic and hyperthermia properties.** *D. Serantes*[1,2], C. Martinez-Boubeta[3], K. Simeonidis[4], S. Ruta[1], O. Chubykalo-Fesenko[5], M. Angelakeris[4] and R. Chantrell[1] *1. University of York, York, United Kingdom; 2. Universidade de Santiago de Compostela, Santiago de Compostela, Spain; 3. Freelancer, Bilbao, Spain; 4. Aristotle University of Thessaloniki, Thessaloniki, Greece; 5. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain*

11:15

EB-09. **Experimental demonstration of swimming magneto-elastic micro-robots.** *M.T. Bryan*[1], J.K. Hamilton[1], P.G. Petrov[1], C.P. Winlove[1], A.D. Gilbert[1] and F. Ogrin[1] *1. College of Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom*

11:30

EB-10. **Magnetically remote control over self-propelled swimmers for biomedical applications.** *M.A. Ramos*[1], P. Schattling[2], V. Salgueiriño[1] and B. Stadler[2] *1. Applied Physics Department, University of Vigo, Vigo, Spain; 2. Interdisciplinary Nanoscience Center (iNANO), Aarhus University, Aarhus, Denmark*

11:45

EB-11. **An interventional suite for delivering therapeutics to cancer cells using magnetotactic bacteria.** *S. Martel*[1] *1. Polytechnique Montreal, Montreal, QC, Canada*

Session EC
SPIN-ORBIT TORQUES AND SPIN-ORBIT EFFECTS II
Mathias Kläui, Chair
Universität Mainz, Mainz, Germany

9:00

EC-01. **A fast-track and direct determination of spin-orbit torque efficiencies in magnetic heterostructures with perpendicular magnetic anisotropy.** *C. Pai*[1,2], M. Mann[2], A. Tan[2] and G. Beach[2] *1. Materials Science and Engineering, National Taiwan University, Taipei, Taiwan; 2. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

9:15

EC-02. **On local sensing of Spin Hall effect in tungsten film by using STM-type tunneling.** *T. Xie*[1], M. Dreyer[2], D. Bowen[3], D. Hinkel[3], R.E. Butera[3], C. Krafft[3] and I.D. Mayergoyz[1] *1. Department of Electrical and Computer Engineering, University of Maryland, College Park, MD; 2. Department of Physics, University of Maryland, College Park, MD; 3. Laboratory for Physical Sciences, College Park, MD*

9:30

EC-03. **Switching of Co/Pt multilayer structures by spin-orbit torque.** *B. Jinnai*[1], C. Zhang[1], A. Kurenkov[1], M. Bersweiler[1], H. Sato[1], S. Fukami[1] and H. Ohno[1] *1. Tohoku University, Sendai, Japan*

9:45

EC-04. **Spin-orbit torques and spin Hall magnetoresistance in antiferromagnetic hexagonal ε-Mn_3Ga/CoFeB bilayers.** *Y. Lau*[1,2], H. Lee[2] and M. Hayashi[1,2] *1. Department of Physics, The Univeristy of Tokyo, Tokyo, Japan; 2. National Institute for Materials Science, Tsukuba, Japan*

10:00

EC-05. **Chiral asymmetry driven by unidirectional magnetic anisotropy in spin-orbitronic systems.** *F. Ajejas*[1,2], D. Maccariello[1,3], R. Guerrero[1], J. Camarero[1,2], R. Miranda[1,2] and P. Perna[1] *1. IMDEA Nanoscience, Madrid, Spain; 2. Universidad Autonoma de Madrid, Madrid, Spain; 3. CNRS Thales, Paris, France*

10:15

EC-06. **Spin orbital torque induced effective field modulation in synthetic antiferromagnetic structures.** *S. Krishnia*[1], P. Sethi[1], W. Gan[1], Q. Wong[1] and W. Lew[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

10:30

EC-07. **Spin to charge conversion at non-magnetic interfaces.** ***(Invited)*** *M. Viret*[1], J. Chauleau[1], S. Sangiao[1,3], M. Boselli[2], S. Gariglio[2], G. de Loubens[1] and J. Triscone[2] *1. DRF/IRAMIS/SPEC, CEA Saclay, Gif-sur-Yvette, France; 2. Département de Physique de la Matière Quantique, University of Geneva, Geneve, Switzerland; 3. Insituto de Nanociencia de Aragón, Universidad de Zaragoza, Zaragoza, Spain*

11:00

EC-08. **Current-induced switching in a magnetic insulator.** *C. Avci*[1], A.U. Quindeau[1], C. Pai[1], M. Mann[1], L. Caretta[1], A. Tang[1], M. Onbasli[1], C.A. Ross[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

11:15

EC-09. **Efficient Spin-Charge Conversion with the Topological Insulator α-Sn.** *Q. Barbedienne*[1,2], H. Jaffres[1,2], N. Reyren[1,2], A. Fert[1,2], J. George[1,2], P. Noel[3,4], A. Marty[3,4], C. Vergnaud[3,4], L. Vila[3,4], M. Jamet[3,4], A. Taleb-Ibrahimi[5], P. Le Fevre[5], F. Bertran[5] and A. Lemaitre[6] *1. Unite Mixte de Physique CNRS Thales, CNRS, Palaiseau, France; 2. Université Paris Saclay, Saint-Aubin, France; 3. Spintec, CEA, Grenoble, France; 4. Université Grenoble Alpes, Grenoble, France; 5. UR1 CNRS/Synchrotron SOLEIL, Gif-sur-Yvette, France; 6. Centre de Nanosciences et de Nanotechnologies, CNRS, Marcoussis, France*

11:30

EC-10. **Antiferromagnetic Spin-Orbitronics.** ***(Invited)*** *J. Sinova*[1] *1. University of Mainz, Mainz, Germany*

THURSDAY MORNING 9:00 — LIFFEY HALL 1

Session ED
THIN-FILM INDUCTORS, MAGNETOIMPEDANCE, MAGNETODYNAMICS

Terence O'Donnell, Co-Chair
University College Dublin, Dublin, Ireland
Saibal Roy, Co-Chair
Tyndall National Institute, Cork, Ireland

9:00

ED-01. **High Frequency Magnetic Thin Film Inductor Integrated on Flexible Organic Substrates.** ***(Invited)*** H. Wu[1] and *H. Yu*[1] *1. Arizona State University, Tempe, AZ*

9:30

ED-02. **Comparative Study of Microfabricated Inductors / Transformers for High Frequency Power Applications.** *D. Dinulovic*[1], M. Shousha[1], M. Haug[1], S. Beringer[2], M. Wurz[2] and L. Rissing[2] *1. R&D, Würth Elektronik eiSos GmbH & Co. KG, Garhing, Germany; 2. Institute for Micro Production Technology, Leibniz Universität Hannover, Hanover, Germany*

9:45

ED-03. **DC-biased high-power impedance measurement of planar magnetic cores up to 70 MHz.** *M. Yamaguchi*[1], U. Erdenebat[1], K. Suzuki[1], A. Itagaki[2] and Y. Ishizuka[3] *1. Department of Electrical Engineering, Tohoku Unviersity, Sendai, Japan; 2. Research and Development Division, Ryowa Electronics, Sendai, Japan; 3. Division of Electrical Engineering and Computer Science, Nagasaki University, Nagasaki, Japan*

10:00

ED-04. **Sensitivity for hydrogen gas sensing using ferromagnetic resonance in Pd/Co bi-layer and PdCo alloyed single-layer films.** C. Lueng[1], X. Zhou[2], P. Metaxas[1], A. Adeyeye[2] and *M. Kostylev*[1] *1. University of Western Australia, Crawley, WA, Australia; 2. National University of Singapore, Singapore, Singapore*

10:15

ED-05. **SQUID-detected broadband ferrimagnetic resonance in bulk poly- and single-crystalline $Y_3Fe_5O_{12}$.** *J. O'Reilly*[1] and P.S. Stamenov[1] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland*

10:30

ED-06. **Development of an active shielding-type MI gradiometer: its application for magnetocardiography.** *T. Takiya*[1] and T. Uchiyama[1] *1. Nagoya University, Nagoya, Japan*

10:45

ED-07. **The Magnetic Differentiation Technique for GMI Sensor.** *J. Yonnet*[1,2] and A. Asfour[1,3] *1. G2E Lab, St Martin d'Heres, France; 2. CNRS / INP-Grenoble, Grenoble, France; 3. UGA / INP-Grenoble, Grenoble, France*

11:00

ED-08. **Temperature effects on the magnetoimpedance in glass-coated amorphous wires.** *A. Dzhumazoda*[1], L.V. Panina[1,2], A.T. Morchenko[1], A. Adam[1,3], R. Awale[1] and S.V. Podgornaya[1] *1. National University of Science and Technology, MISiS, Moscow, Russian Federation; 2. Institute for Design Problems in Microelectronics RAS, Moscow, Russian Federation; 3. Physics Department, Faculty of Science, Sohag University, Sohag, Egypt*

11:15

ED-09. **Effect of stress on magnetic properties of annealed glass-coated $Co_{71}Fe_5B_{11}Si_{10}Cr_3$ amorphous microwires.** M.G. Nematov[1], *M.M. Salem*[1,2], A. Adam[1,3], M. Ahmed[1], L.V. Panina[1,4] and A.T. Morchenko[1] *1. National University of Science and Technology "MISiS", Moscow, Russian Federation; 2. Physics Department, Faculty of Science, Tanta University, Tanta, Egypt; 3. Physics Department, Faculty of Science, Sohag University, Sohag, Egypt; 4. Institute for Design Problems in Microelectronics RAS, Moscow, Russian Federation*

11:30

ED-10. **Magnetoimpedance in samples with patterned surfaces for the detection of ferrofluids.** *A. García-Arribas*[1,2], M. Goiriena-Goikoetxea[2], E. Fernández[3,2] and J. Barandiaran[2,1] *1. Departamento de Electricidad y Electrónica, Universidad del País Vasco, UPV/EHU, Leioa, Spain; 2. Basque Center for Materials, Applications and Nanostructures, BCMaterials, Derio, Spain; 3. Department of Material Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

11:45

ED-11. **Effect of current annealing on magnetic anisotropy in glass-coated amorphous microwires with positive magnetostriction.** *A. Adam*[1,2], M.M. Salem[1,3], M.G. Nematov[4], A. Uddin[5] and L.V. Panina[5,6] *1. Technology for Electronic Materials, National University of Science and Technology, Moscow, Russian Federation; 2. Physics Department, Faculty of Science, Sohag University, Sohag, Egypt; 3. Physics Department, Faculty of Science, Tanta University, Tanta, Egypt; 4. Technology for Electronic Materials, National University of Science and Technology, Moscow, Russian Federation; 5. Technology for Electronic Materials, National University of Science and Technology, Moscow, Russian Federation; 6. Institute for Design Problems in Microelectronics RAS, Moscow, Moscow, Russian Federation*

THURSDAY MORNING 9:00 | LIFFEY MEETING ROOM 2

Session EE
RECORDING MEDIA: MATERIALS

Gaspare Varvaro, Chair
nM2-Lab, Istituto di Struttura della Materia - CNR, Monterotondo Scalo (Roma), Italy

9:00

EE-01. **Controlling FePt Grain Size with a Granular MgO-C Interlayer in $L1_0$ FePt-C Media.** B. Varaprasad[1], B. Zhou[1], T. Mo[1], D.E. Laughlin[1] and *J. Zhu*[1] *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

9:15

EE-02. **Large lattice mismatch-induced evolution of microstructural properties in FePt films.** *J. Deng*[1], K. Dong[2], P. Yang[3], Y. Peng[4], G. Ju[4], G. Chow[1] and J. Chen[1] *1. Materials Science and Engineering, National University of Singapore, Singapore, Singapore; 2. China University of Geoscience, Wuhan, China; 3. Singapore Synchrotron Light Source, Singapore, Singapore; 4. Seagate Technology, Fremont, CA*

9:30

EE-03. **Origin of in-plane component for $L1_0$-FePt granular films deposited on MgO single crystal substrate.** ***(Invited)*** *J. Wang*[1], Y. Takahashi[1], H. Sepehri Amin[1] and K. Hono[1] *1. Research Center for Magnetic and Spintronic Materials, Magnetic Materials Group, National Institute for Materials Science (NIMS), Tsukuba, Japan*

10:00

EE-04. **Probing thermal transport and layering in disk media using scanning thermal microscopy.** S. Poon[1], J. Spièce[2], A. Robson[2], O.V. Kolosov[2] and *S. Thompson*[1] *1. Physics, University of York, York, United Kingdom; 2. Physics, University of Lancaster, Lancaster, United Kingdom*

10:15

EE-05. **Methodology for indentifying the Curie temperature distributions of magnetic granular systems.** *J.M. Waters*[1], A. Berger[2], G. Ju[3], D. Kramer[1], H. Fangohr[1] and O. Hovorka[1] *1. Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 2. CIC nanoGUNE Consolider, Donostia-San Sebastian, Spain; 3. Seagate Technology, Fremont, CA*

10:30

EE-06. **Magnetically decoupled $L1_0$-FePt/spacer/$L1_0$-FePt trilayers for 3D magnetic recording.** *A. Kaidatzis*[1], G. Giannopoulos[1], G. Varvaro[2], G. Dimitrakopulos[3], V. Psycharis[1], J. Garcia-Martin[4], A. Testa[2], G. Barucca[5], T. Karakostas[3], P. Komninou[3] and D. Niarchos[1] *1. NCSR Demokritos, Aghia Paraskevi, Greece; 2. ISM-CNR, Roma, Italy; 3. Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece; 4. Instituto de Microelectronica de Madrid, Tres Cantos, Spain; 5. Università Politecnica delle Marche, Ancona, Italy*

10:45

EE-07. **High switching efficiency in FePt bilayer media with exchange control layers.** *T. Dutta*[1,2], M. Saifullah[2], S.N. Piramanayagam[3] and C.S. Bhatia[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), Singapore, Singapore; 3. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

11:00

EE-08. **DC noise reduction in HAMR media: the effect of an FeRh interlayer in composite Fe/FePt grains.** *C. Vogler*[1], C. Abert[1], F. Bruckner[1] and D. Suess[1] *1. Institute of Solid State Physics, TU Wien, Vienna, Austria*

11:15

EE-09. **First order reversal curve diagram analysis of ion irradiated bit patterned MnGa film.** *D. Oshima*[1], T. Kato[2] and S. Iwata[1] *1. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 2. Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan*

11:30

EE-10. **High Density Shingled Heat Assisted Recording Using Bit Patterned Media Subject to Track Misregistration.** *A. Venugopal*[1] *1. Electrical Engineering, University of Minnesota, Minneapolis, MN*

11:45

EE-11. **High Energy Density Plasma Based Carbon Overcoat on the CoCrPt-Oxide Perpendicular Recording Media.** S. Bhatti[1], B. Ouyang[2], M. Ranjbar[1], R. Rawat[2] and *S.N. Piramanayagam*[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Natural Sciences and Science Education, National Institute of Education, Nanyang Technological University, Singapore, Singapore*

THURSDAY MORNING 9:00 — WICKLOW HALL 1

Session EF
GIANT AND TUNNELING MAGNETORESISTANCE II

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

9:00

EF-01. **Heusler Alloys for Spintronic Applications.** ***(Invited)*** *W.H. Butler*[1,2], J. Ma[3], V.I. Hegde[4], A.W. Ghosh[3] and C. Wolverton[4] *1. Department of Physics and Astronomy, University of Alabama, Tuscaloosa, AL; 2. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL; 3. Department of Electrical and Computer Engineering, University of Virginia, Charlottesville, VA; 4. Department of Materials Science and Engineering, Northwestern University, Evanston, IL*

9:30

EF-02. **Strain engineering in MgO magnetic tunnel junctions.** L. Loong[1], W. Lee[2], X. Qiu[1], H. Kawai[3], M. Saeys[4], J. Ahn[2] and *H. Yang*[1] *1. National University of Singapore, Singapore, Singapore; 2. Yonsei University, Seoul, The Republic of Korea; 3. Institute of Materials Research and Engineering, Singapore, Singapore; 4. Ghent University, Ghent, Belgium*

9:45

EF-03. **Epitaxial magnetic tunnel junctions with a low barrier height spinel $MgGa_2O_4$.** *H. Sukegawa*[1], Y. Kato[2], M. Belmoubarik[1], P. Cheng[1,3], T. Daibou[2], N. Shimomura[2], Y. Kamiguchi[2], J. Ito[2], H. Yoda[2], T. Ohkubo[1], S. Mitani[1,3] and K. Hono[1,3] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Toshiba Corporation, Kawasaki, Japan; 3. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan*

10:00

EF-04. **Influence of the MgO Thickness and MgO Interface on the Thermovoltage of a Magnetic Tunnel Junction.** *T. Boehnert*[1], R. Dutra[2], R.L. Sommer[2], E. Paz[1], S.S. Serrano-Guisan[1], R. Ferreira[1] and P. Freitas[1] *1. Spintronics, International Iberian Nanotechnology Laboratory (INL), Braga, Portugal; 2. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil*

10:15

EF-05. **Negative TMR induced by an oxygen vacancy gradient in MgO tunnel barriers.** E. Monteblanco[1], F. Schleicher[2], B. Taudul[2], *F. Montaigne*[1], U. Halisdemir[2], E. Beaurepaire[2], S. Boukari[2], M. Alouani[2], D. Lacour[1], M. Hehn[1] and M. Bowen[2] *1. Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France; 2. Institut de Physique et Chimie des Matériaux de Strasbourg, Strasbourg, France*

10:30

EF-06. **Ultra High TMR Magnetic Tunnel Junction Nano-Pillar with CoFe Insertion Layer Between MgO and CoFeB.** *Y. Zhang*[1,2], J. Adam[2], W. Cai[1], K. Cao[1,3], G. Agnus[2], Y. Zhang[1], C. Zhao[1,3], D. Ravelosona[2] and W. Zhao[1,2] *1. Fert Beijing Institute, BDBC, Beihang University, Beijing, China; 2. Centre de Nanosciences et de Nanotechnologies (C2N–Orsay), University of Paris-Sud, Orsay, France; 3. Institute of Microelectronics, Chinese Academy of Science, Beijing, China*

10:45

EF-07. **Magnetic Tunnel Junctions with MgO Tunnel Barrier Formed by Post-Oxidation Process for STT-MRAM.** *H. Tomita*[1], K. Ando[2], Y. Tanaka[1], K. Nagasaka[1], K. Nakamura[1], S. Furukawa[1], H. Kubota[3], A. Fukushima[3], K. Yakushiji[3], S. Yuasa[3], H. Maehara[2] and N. Watanabe[1] *1. Tokyo Electron Yamanashi Limited, Nirasaki, Japan; 2. Tokyo Electron Limited, Yamanashi, Japan; 3. AIST Spintronics Research Center, Tsukuba, Japan*

11:00

EF-08. **Metallic Spin Filtering Ferromagnet-Graphene-Ferromagnet Junctions up to Room Temperature.** ***(Invited)*** *E. Cobas*[1] *1. U.S. Naval Research Laboratory, Washington, DC*

11:30

EF-09. **Spintronics devices with 2D materials: MoS_2.** *M. Galbiati*[1], A. Vecchiola[2], S. Mañas-Valero[1], S. Tatay Aguilar[1], A. Forment-Aliaga[1], R. Mattana[2], P. Seneor[2] and E. Coronado[1] *1. Instituto de Ciencia Molecular, Universidad de Valencia, Paterna, Spain; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France*

11:45

EF-10. **Time-resolved measurement of absolute temperature induced in magnetic tunnel junctions by ultrafast optical excitation.** *H. Yang*[1], X. Hu[1], N. Liebing[1], T. Boehnert[2], J.D. Costa[2], R. Ferreira[2], S. Sievers[1], M. Bieler[1] and H.W. Schumacher[1] *1. Physikalisch-Technische Bundesanstalt, Braunschweig, Germany; 2. International Iberian Nanotechnology Laboratory, Braga, Portugal*

THURSDAY MORNING 9:00 — WICKLOW HALL 2A

Session EG
MICROMAGNETISM AND MULTISCALE MODELING II
Gino Hrkac, Chair
University of Exeter, Exeter, United Kingdom

9:00

EG-01. **A fast finite-difference algorithm for topology optimization.** *C. Abert*[1], C. Huber[1], F. Bruckner[1], C. Vogler[1] and D. Suess[1] *1. Institute of Solid State Physics, TU Wien, Wien, Austria*

9:15

EG-02. **Fast coarse grid demagnetization tensor computation with local refinement for micromagnetics.** *M.J. Donahue*[1] *1. Applied and Computational Mathematics Division, National Institute of Standards and Technology, Gaithersburg, MD*

9:30

EG-03. **Simultaneous resolution of the micromagnetic and spin transport equations applied to current-induced domain wall dynamics.** ***(Invited)*** M. Sturma[1,2], C. Bellegarde[1], J. Toussaint[2] and *D. Gusakova*[1] *1. SPINTEC, Univ. Grenoble Alpes/CEA/CNRS, Grenoble, France; 2. Institut Néel, Univ. Grenoble Alpes/CNRS, Grenoble, France*

10:00

EG-04. **Analysis of Thermal Switching and Chaotic Dynamics in AC-Driven Magnetic Nanoparticles.** *M. d'Aquino*[1], C. Serpico[2], G. Bertotti[3], A. Quercia[2], S. Perna[2], I.D. Mayergoyz[4] and P. Ansalone[3] *1. Engineering Department, University of Naples "Parthenope", Naples, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy; 3. Istituto Nazionale di Ricerca Metrologica, Turin, Italy; 4. ECE Department, University of Maryland, College Park, MD*

10:15

EG-05. **Coercivity improvement through nano-structuring of rare-earth free $L1_0$ FeNi magnet.** *A. Kovacs*[1], J. Fischbacher[1], H. Özelt[1], T. Schrefl[1], A. Kaidatzis[2], R. Salikhov[2], M. Farle[2], G. Giannopoulos[2] and D. Niarchos[2] *1. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 2. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece*

10:30

EG-06. **Description of statistical switching in perpendicular STT-MRAM within a numerical micromagnetic framework.** *G. Siracusano*[1], R. Tomasello[2], M. d'Aquino[3], V. Puliafito[4], A. Giordano[4], B. Azzerboni[4], P. Braganca[5], G. Finocchio[4] and M. Carpentieri[6] *1. Department of Computer Engineering and Telecommunications, University of Catania, Catania, Italy; 2. Department of Engineering, Polo Scientifico Didattico di Terni, University of Perugia, Terni, Italy; 3. Department of Engineering, University of Naples, Naples, Italy; 4. Department of Engineering, University of Messina, Messina, Italy; 5. HGST, San Jose, CA; 6. Department of Electrical and Information Engineering, Politecnico of Bari, Bari, Italy*

10:45

EG-07. **Conjugate gradient methods for micromagnetics.** ***(Invited)*** *T. Schrefl*[1], J. Fischbacher[1] and L. Exl[2,3] *1. Danube University Krems, Wiener Neustadt, Austria; 2. Faculty of Mathematics, University of Vienna, Vienna, Austria; 3. Institute of Solid State Physics, TU Wien, Vienna, Austria*

11:15

EG-08. **Current induced configurations in composite spring magnets.** *C.A. Lambert*[1,2], M. Kuteifan[3,4], M. Lubarda[4,5], E. Fullerton[3,4], V. Lomakin[3,4] and S. Mangin[2] *1. EECS, UC Berkeley, Berkeley, CA; 2. Institut Jean Lamour, Vandoeuvre les Nancy, France; 3. EECS, UC San Diego, La Jolla, CA; 4. Center for Magnetic Recording Research, UC San Diego, La Jolla, CA; 5. University of Donja Gorica, Podgorica, Montenegro*

11:30

EG-09. **Atomistic modelling of laser induced ultrafast reversal of inhomogeneous ferrimagnetic GdFeCo.** *Z. Fu*[1,2], S. Ruta[2], T. Ostler[3], T. Liu[4], T. Rasing[5], H. Dürr[4], R.F. Evans[2] and R. Chantrell[2] *1. Tongji University, Shanghai, China; 2. Physics Department, University of York, York, United Kingdom; 3. University of Liège, Liège, Belgium; 4. Stanford Institute for Materials and Energy Sciences, SLAC National Accelerator Laboratory, Menlo Park, CA; 5. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands*

11:45

EG-10. **Effect of Finite Tunneling Magneto-Resistance for the Switching Dynamics in the Spin Transfer Torque Magnetic Tunneling Junctions.** *C. You*[1] and H. Kim[2] *1. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Deagu, The Republic of Korea; 2. Department of Electrical Engineering, Kwangwoon University, Seoul, The Republic of Korea*

Session EH
MOTORS, GENERATORS AND ACTUATORS VI
Jing Zhao, Chair
Beijing Institute of Technology, Beijing, China

9:00

EH-01. **Cogging torque of fractional-slot permanent magnet motors due to even harmonics of pole pair originated from non-uniform magnetization of permanent magnet.** *J. Song*[1], K. Kang[1], C. Kang[1] and G. Jang[1] *1. Department of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea*

9:15

EH-02. **Design and Analysis of a Linear Halbach Magnetic Actuator for an Aerospace Vehicle.** *V.R. Bommadevara*[1] *1. Electrical Engineering, IIT Hyderabad, Hyderabad, India*

9:30

EH-03. **Optimization for 4/4 Stator/Rotor Single-Phase Asymmetric-Stator-Poles Doubly Salient Permanent Magnet Machine.** *W. Xu*[1], M. He[1] and C. Ye[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China*

9:45

EH-04. **Analysis of Electromagnetic Performance of Doubly Salient Brushless DC Generator with Distributed Field Magnetomotive Force.** *L. Sun*[1], Z. Zhang[1], L. Yu[1] and W. Geng[1] *1. Department of Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China*

10:00

EH-05. **A novel linear machine with amorphous primary core.** ***(Invited)*** *J. Ou*[1] *1. Karlsruhe Institute of Technology, Karlsruhe, Germany*

10:30

EH-06. **Electromagnetic Performance of Wound Field Salient Rotor Flux Switching Machine.** F. Khan[1], *E. Sulaiman*[2] and M. Ahmad[2] *1. Electrical Engineering, COMSATS Institute of Information Technology, Abbottabad, Pakistan; 2. University Tun Hussein Onn Malaysia, Johor, Malaysia*

10:45

EH-07. **Formalism and finite element study of actuator with toothed coupling.** *P. Enrici*[1], N. Ziegler[2], J. Jac[2], F. Dumas[1], N. Bekka[2], P. Kenfack[1] and D. Matt[1] *1. Institut D'Electronique et des Systèmes, Université de Montpellier, Montpellier, France; 2. ERNEO Society, Montpellier, France*

11:00

EH-08. **A Novel Asymmetric and Unconventional Stator Winding Configuration and Placement for Dual Three-Phase Surface PM Motor.** *Y. Demir*[1,2] and M. Aydin[1,2] *1. MDS Motor Ltd., Kocaeli, Turkey; 2. Dept. of Mechatronics Eng., Kocaeli Uni., Koaceli, Turkey*

11:15

EH-09. **Investigation of the Key Dimension Parameters of the Co-Axial Dual-Mechanical-Port Flux-Swithing PM Machine for Fuel-Based Extended Range Electric Vehicles.** L. Zhou[1] and *W. Hua*[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

11:30

EH-10. **Experimental Evaluation of the Static Characteristics of Multi-Degree-of-Freedom Spherical Actuators.** *K. Takahara*[1], K. Hirata[1], N. Niguchi[1], Y. Nishiura[1] and Y. Sakaidani[1] *1. Osaka University, Suita-city, Japan*

11:45

EH-11. **Air-Gap Force and Vibration of an Advanced PM Vernier Machine.** *H. Fang*[1], R. Qu[1], D. Li[1] and J. Li[1] *1. Huazhong University of Science and Technology, Wuhan, China*

THURSDAY MORNING 8:30 | THE FORUM

Session EM
MAGNETIZATION DYNAMICS III (Poster Session)
Martina Ahlberg, Chair
University of Gothenburg, Gothenburg, Sweden

EM-01. **Creep turns linear in narrow ferromagnetic nanostrips.** *J. Leliaert*[1], B. Van de Wiele[2], A. Vansteenkiste[1], L. Laurson[3], G. Durin[4,5], L. Dupré[2] and B. Van Waeyenberge[1] *1. Dept. of Solid State Sciences, Ghent University, Ghent, Belgium; 2. Dept. of Energy Systems and Automation, Ghent University, Ghent, Belgium; 3. Dept. of Applied Physics, Aalto University, Espoo, Finland; 4. INRIM, Turin, Italy; 5. ISI Foundation, Turin, Italy*

EM-02. **Magnetization dynamics triggered by surface acoustic waves: systematic study of magnetoelastic interaction in thin films of iron gallium.** *C. Hepburn*[1], M. Marangolo[1], M. Eddrief[1], L. Thevenard[1], L. Becerra[1] and J. Duquesne[1] *1. Paris Institute of Nanosciences, Paris, France*

EM-03. **Pulse laser-induced spin dynamics with electric field bias in a micron sized tunnel junction.** *Y. Sasaki*[1,2], K. Suzuki[1], A. Sugihara[1], A. Kamimaki[1,2], S. Iihama[2], Y. Ando[2] and S. Mizukami[1] *1. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Department of Applied Physics, Tohoku University, Sendai, Japan*

EM-04. **A theoretical approach to strain-mediated nanomagnet reversal through spin-transfer torque.** *N. Kani*[1], J. Heron[2] and A. Naeemi[1] *1. Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA; 2. Materials Science and Engineering, University of Michigan, Ann Arbor, MI*

EM-05. **Comparative study of CoFeAlB and CoFeB FMR properties for spin torque devices.** *A. Conca*[1], T. Meyer[1], T. Nakano[2], Y. Ando[2] and B. Hillebrands[1] *1. Physics, FB Physik and Landesforschungszentrum OPTIMAS, TU Kaiserslautern, Germany, Kaiserslautern, Germany; 2. Department of Applied Physics, Tohoku University, Japan, Sendai, Japan*

EM-06. **Large spin Hall angle in β-tungsten thin films stabilized on CoFeB.** *R. Bansal*[1], G. Nirala[1], A. Kumar[1], S. Chaudhary[1] and P. Muduli[1] *1. Physics, Indian Institute of Technology, New Delhi, Delhi, India*

EM-07. **Effects of Field Annealing on Gilbert Damping of Polycrystalline CoFe Thin Films.** *Z. Jing*[1], S. Chen[1], W. Lin[1], Q. Qin[1], L. Liu[1], S. He[2] and J. Chen[1] *1. Material Science & Engineering, National University of Singapore, Singapore, Singapore; 2. Data Storage Institution (DSI), Singapore, Singapore*

EM-08. **Nano-Surfaces and Layers Characterized Using Spin-Polarized Electrons.** *J. Williams*[1], S. Samarin[1] and O. Artamonov[2] *1. Physics, University of Western Australia, Perth, WA, Australia; 2. Physics, Research Institute Physics St Petersburg, St Petersburg, Russian Federation*

EM-09. **Micron sized tapered spin Hall oscillators under the influence of external microwave signals.** *K. Wagner*[1,2], A. Smith[3], T. Hache[1], J. Lindner[1], I. Krivorotov[3] and H. Schultheiss[1,2] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden - Rossendorf, Dresden, Germany; 2. Institute for Physics of Solids, TU Dresden, Dresden, Germany; 3. Department of Physics and Astronomy, University of California, Irvine, CA*

EM-10. **Composition dependent magnetodynamic properties of Pt/Ni_xFe_{1-x} nano-constrictions.** *M. Haidar*[1], P. Dürrenfeld[1,2] and J. Åkerman[1,3] *1. Physics Department, University of Gothenburg, Gothenburg, Sweden; 2. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 3. Materials and Nano Physics, School of ICT, KTH Royal Institute of Technology, Kista, Sweden*

EM-11. **Numerical analysis of a scalable synchronization of spin-Hall oscillators.** *V. Puliafito*[1], A. Giordano[2], A. Laudani[3], F. Garescì[1], M. Carpentieri[4], B. Azzerboni[1,5] and G. Finocchio[2,5] *1. Department of Engineering, University of Messina, Italy, Messina, Italy; 2. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Italy, Messina, Italy; 3. Department of Engineering, University of Roma Tre, Roma, Italy; 4. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 5. Istituto Nazionale di Geofisica e Vulcanologia (INGV), Roma, Italy*

EM-12. **Spin wave switch using giant nonreciprocal emission of spin waves in Ta/Py.** *J. Yoon*[1], J. Lee[1], J. Kwon[1], P. Deorani[1], J. Sinha[2], K. Lee[3], M. Hayashi[4] and H. Yang[1] *1. National University of Singapore, Singapore, Singapore; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Korea University, Seoul, The Republic of Korea; 4. The University of Tokyo, Tokyo, Japan*

EM-13. **Prospects of non-equilibrium magnetic phenomena in the light of a seeded free electron laser.** *M. Malvestuto*[1] *1. Elettra Sincrotrone Trieste, Trieste, Italy*

EM-14. **Spin-current manipulation of photoinduced magnetization dynamics in Ta/CoFeB based nanostructures.** *S. Wittrock*[1,2], D. Meyer[2], M. Müller[2], H. Ulrichs[2], J. Walowski[3], U. Martens[3] and M. Münzenberg[3] *1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Physikalisches Institut, Georg-August-Universität Göttingen, Göttingen, Germany; 3. Institut für Physik, Ernst-Moritz-Arndt-Universität Greifswald, Greifswald, Germany*

EM-15. **Room-temperature nanosecond spin relaxation in few-layer Weyl semimetal WTe_2 and $MoTe_2$.** *Q. Wang*[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

EM-16. **Angular dependence of spin-orbital torque induced magnetization switching in synthetic antiferromagnetic structures.** *S. Krishnia*[1], P. Sethi[1], W. Gan[1], Q. Wong[1] and W. Lew[1] *1. SPMS, Nanyang Technological University, Singapore, Singapore*

EM-17. **Effects of the in-plane rotation of weak stripe domains on the dynamic properties of FeN thin films.** I. Camara[1], L. Garnier[1,2], S. Tacchi[3], G. Carlotti[4,5], M. Eddrief[1,6] and *M. Marangolo*[1,6] *1. Institut des Nanosciences de Paris, Université Pierre et Marie Curie, Paris, France; 2. LISV, Universite Versailles St-Quentin, Versailles, France; 3. Istituto Officina dei Materiali del CNR, CNR, Perugia, Italy; 4. Dipartimento Fis & Geol, Univ Perugia, Perugia, Italy; 5. NANO, CNR, Modena, Italy; 6. INSP, CNRS, Paris, France*

EM-18. **Effect of ferromagnetic interlayer coupling on magnetisation dynamics in $[Co/Pd]_8$-NiFe thin films using VNA-FMR.** *A. Johansson*[1] *1. School of Computer Science, University of Manchester, Manchester, United Kingdom*

Session EN
MAGNETIZATION DYNAMICS IV (Poster Session)

Ahmad Awad, Chair
University of Gothenburg, Gothenburg, Sweden

EN-01. **Spin-transfer driven dynamics of magnetic vortices and antivortices in dots with crystalline cubic anisotropy.** *A. Janutka*[1] and P. Gawronski[2] *1. Department of Theoretical Physics, Wroclaw University of Science and Technology, Wroclaw, Poland; 2. Department of Applied Informatics and Computational Physics, AGH University of Science and Technology, Krakow, Poland*

EN-02. **Non-Degeneracy and Effects of Asymmetries in Strongly Coupled Vortex Pairs.** *E. Holmgren*[1], A. Bondarenko[1,2], B. Koop[1], B. Ivanov[2] and V. Korenivski[1] *1. Nanostructure Physics, KTH, Stockholm, Sweden; 2. Institute of Magnetism, Kiev, Ukraine*

EN-03. **Effect of annealing on domain wall mass in amorphous FeCoMoB microwires.** P. Klein[1], *R. Varga*[2,1], J. Onufer[3], J. Ziman[3], G.A. Badini-Confalonieri[4] and M. Vázquez[4] *1. RVmagnetics, a.s., Kosice, Slovakia; 2. Institute of Physics, Faculty of Sciences, UPJS, Kosice, Slovakia; 3. Department of Physics, TU Kosice, Kosice, Slovakia; 4. ICMM CSIC, Madrid, Spain*

EN-04. **Current and magnetic field induced domain wall creep motion in a (Ga,Mn)(As,P) thin film.** *R. Diaz Pardo*[1], N. Moisan[1], A. Lemaitre[2] and V. Jeudy[1] *1. Laboratoire de Physique des Solides, University Paris-Sud Orsay, Orsay, France; 2. Centre de Nanosciences et de Nanotechnologies (C2N), CNRS, Orsay, France*

EN-05. **Trajectories of skyrmions in the presence of pinning centers.** *C. Navau*[1], N. Del-Valle[1] and A. Sanchez[1] *1. Department of Physics, Universitat Autònoma de Barcelona, Bellaterra, Spain*

EN-06. **Excitation modes of nucleation-controlled spin structures in permalloy nanodisks.** *M. Vanatka*[1], M. Urbánek[1,2], L. Flajsman[1], V. Uhlir[1] and T. Sikola[1,2] *1. CEITEC BUT, Brno University of Technology, Brno, Czech Republic; 2. Institute of Physical Engineering, Brno University of Technology, Brno, Czech Republic*

EN-07. **Current-driven skyrmion dynamics in disordered ultra-thin films.** *J. Kim*[1] and M. Yoo[1] *1. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Univ. Paris-Sud, Universite Paris-Saclay, Orsay, France*

EN-08. **Hysteretic Synchronization in Magnetic Vortex Spin-Torque Nano-Oscillators.** M. d'Aquino[1], *S. Perna*[2], A. Quercia[2], V. Scalera[2] and C. Serpico[2] *1. Engineering Department, University of Naples "Parthenope", Naples, Italy; 2. DIETI, University of Naples Federico II, Naples, Italy*

EN-09. **Walker Breakdown Behavior of Bloch-Point Domain Wall in Cylindrical Ferromagnetic Nanowire.** *H. Piao*[1], Y. Zhao[1], X. Ma[1,2], M. Liu[1], D. Kim[2] and L. Pan[1] *1. Physics, China Three Gorges University, Yichang, China; 2. Physics, Chungbuk National University, Cheongju, The Republic of Korea*

EN-10. **Characterization of turbostratic graphene non-local spin valve device geometries and investigation of domain wall motion.** *F. Musseau*[1], M. Voto[2], A. Pfeiffer[1,3], R.M. Reeve[1], L. Lopez-Diaz[2] and M. Kläui[1,3] *1. Physics, Johannes Gutenberg University, Mainz, Germany; 2. Departamento de Física Aplicada, Salamanca, Spain; 3. Graduate School of Excellence Materials Science in Mainz (MAINZ), Mainz, Germany*

EN-11. **Strong inertia on harmonic excitations of a skyrmion gyration.** T. Shiino[1], H. Han[2], B. Park[1] and *K. Lee*[2] *1. Materials Science and Engineering, KAIST, Daejeon, The Republic of Korea; 2. Materials Science and Engineering, Ulsan National Institute of Science and Technology (UNIST), Ulsan, The Republic of Korea*

EN-12. **Dynamic domain wall depinning in disordered ultra-thin Co films.** *S. Moretti*[1], M. Voto[1], K. Shahbazi[2], C.H. Marrows[2] and E. Martinez[1] *1. Applied Physics Department, University of Salamanca, Salamanca, Spain; 2. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom*

EN-13. **Domain wall kinetics and micro-structural parameter determination for Cr^{3+} - substituted polycrystalline yttrium iron garnet.** K.B. Modi[1], P.U. Sharma[2], *P.Y. Raval*[1], P.R. Pansara[1], K.G. Saija[1] and K.B. Zankat[3] *1. Department of Physics, Saurashtra University, Rajkot, India; 2. Physics, M N College, Visnagar, India; 3. Physics, Goverment Science College, Gandhinagar, India*

EN-14. **Simultaneous characterization of the effective fields of spin-orbit torque in in-plane magnetic anisotropy structures.** *F. Luo*[1], S. Goolaup[1], W. Law[1], S. Li[1], F. Tan[1], C. Engel[1] and W. Lew[1] *1. School of Physical and Mathematical Sciences, Nangyang Technological University, Singapore, Singapore*

EN-15. **Chiral Antisymmetric Contribution in Domain Wall Speed.** *D. Kim*[1], M. Park[1], Y. Park[1,2], D. Kim[1], J. Kim[1], Y. Nam[1], B. Min[2] and S. Choe[1] *1. Physics, Seoul National University, Seoul, The Republic of Korea; 2. Korea Institute of Science and Technology, Seoul, The Republic of Korea*

EN-16. **Interplay between spin waves and the chiral domain wall in perpendicular magnetic anisotropy materials with the Dzyaloshinskii-Moriya interaction.** *L. Chang*[1], M. Kao[1], L. Tsai[1], J. Liang[2] and S. Lee[1] *1. Institute of Physics, Academia Sinica, Taipei, Taiwan; 2. Department of Physics, Fu Jen Catholic University, New Taipei city, Taiwan*

Session EO

MICROWAVE AND MAGNETO-OPTIC MATERIALS (Poster Session)

Taichi Goto, Chair
Toyohashi University of Technology, Toyohashi, Japan

EO-01. **Radiation from Pseudo-Traveling Wave Resonators Composed of Nonreciprocal Composite Right/Left-Handed Transmission Lines Operating in Guided-Wave Region.** K. Yoshida[1], *T. Ueda*[1] and T. Itoh[2] *1. Kyoto Institute of Technology, Kyoto, Japan; 2. Univeristy of California, Los Angeles, CA*

EO-02. **FeCoNi coated glass fabric/polycarbonate composite sheets for electromagnetic absorption and shielding.** *J. Lee*[1], B. Jung[2], S. Lee[2], S. Lee[2] and K. Kim[1] *1. Physics, Yeungnam University, Gyeongsan, The Republic of Korea; 2. Composites Research Division, Korea Institute of Materials Science, Changwon, The Republic of Korea*

EO-03. **Characterization of UHF band LC filter with RF spiral inductor using carbonyl-iron-particle/epoxy composite magnetic and chip capacitor.** *M. Sonehara*[1,2], Y. Miyajima[2], S. Yamaguchi[2] and T. Satou[1,2] *1. Spin Device Technology Center, Shinshu University, Nagano, Japan; 2. Department of Electorical and Computer Eng., Shinshu University, Nagano, Japan*

EO-04. **Magneto-Optical Spectroscopy and Spectroscopic Ellipsometry of $Co_{60}Fe_{20}B_{20}$ Thin Films.** *A. Sharma*[1], M. Almeida[2], P. Matthes[3], R. Ecke[3], D. Zahn[1], S. Schulz[2,3] and G. Salvan[1] *1. Semiconductor Physics, Chemnitz University of Technology, Chemnitz, Germany; 2. Center for Microtechnologies, Chemnitz University of Technology, Chemnitz, Germany; 3. Department Back-End of Line, Fraunhofer Institute for Electronic Nanosystems, Chemnitz, Germany*

EO-05. **Quasi-periodic regimes of spin-wave self-generation in ferrite-film active ring oscillator.** *A.B. Ustinov*[1], A. Kondrashov[1] and B.A. Kalinikos[1] *1. Department of Physical Electronics and Technology, St. Petersburg Electrotechnical University, St. Petersburg, Russian Federation*

EO-06. **The Measurement of Mn-Zn Particle Orientation in a Polymer Matrix due to Thermoforming Using Magnetic Permeability.** *K. Miura*[1], H. Okubo[1] and H. Osada[1] *1. Faculty of Science and Engineering, Iwate University, Morioka, Japan*

EO-07. **Magnetic Reversal and All-Optical Switching Properties of Nanostructured Tb-Fe Alloy Thin Films.** *S. Arekapudi*[1,2], C. Schubert[1], C. Riedel[3], J. Osten[3], B. Hebler[2], A. Hassdenteufel[1], F. Radu[4], O. Hellwig[1,3], H. Schultheiss[3] and M. Albrecht[2] *1. Institute of Physics, Technische Universität Chemnitz, Chemnitz, Germany; 2. Institute of Physics, University of Augsburg, Augsburg, Germany; 3. Institute for Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany*

EO-08. **Architecture and magnetic properties of hybrid composites based on gold and magnetite nanoparticles.** *O. Moscoso Londono*[1,2], D. Muraca[1,3], P. Tancredi[4,5], L. Souza da Costa[6], S.K. Sharma[7], F. Garcia[8], D. Zanchet[6], L. Socolovsky[4,5] and M. Knobel[1,9] *1. Institute of Physics Gleb Wataghin, University of Campinas, Campinas, Brazil; 2. Engineering Faculty, Autonomous University of Manizales, Manizales, Colombia; 3. Center for Natural and Human Sciences, Federal University of ABC, Santo Andre, Brazil; 4. Engineering Faculty, University of Buenos Aires, Buenos Aires, Argentina; 5. National Scientific and Technical Research Council (CONICET), Buenos Aires, Argentina; 6. Institute of Chemistry, University of Campinas, Campinas, Brazil; 7. Federal University of Maranhao, Department of Physics, Sao Luis, Brazil; 8. Brazilian Center for Research in Physics, Rio de Janeiro, Brazil; 9. Brazilian Nanotechnology National Laboratory, Campinas, Brazil*

EO-09. **FMR measurements of highly bismuth-substituted neodymium iron garnet thin films.** G. Lou[1], T. Kato[2], S. Iwata[2] and *T. Ishibashi*[1] *1. Nagaoka University of Technology, Niigata, Japan; 2. Nagoya University, Nagoya, Japan*

EO-10. **Multi-Level Magneto-Optic Three-Dimensional Display.** *H. Takagi*[1], T. Goto[1,2], P. Lim[1], H. Uchida[1] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. PRESTO, Kawaguchi, Japan*

EO-11. **Experimental demonstrations of unpinning domains in a saturated bismuth-substituted iron garnet.** *L. Bauer*[1], N. Prabhu Gaunkar[1], M. Mina[1] and R. Weber[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA*

EO-12. **Investigations of sharp plasmon resonances in periodically arranged nickel nanocylinders.** *O. Loiselet*[1], L. Vila[2] and J. Bellessa[1] *1. ILM UMR5306 CNRS, Villeurbanne, France; 2. SPINTEC, CEA, Grenoble, France*

EO-13. **Faraday effect in one-dimensional bi-periodic photonic-magnonic crystal.** *M. Krawczyk*[1], Y. Dadoenkova[2,3], N. Dadoenkova[2,3], I. Lyubchanskii[3] and J. Klos[1] *1. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland; 2. Ulyanovsk State University, Ulyanovsk, Russian Federation; 3. Donetsk Physical and Technical Institute of the National Academy of Sciences of Ukraine, Donetsk, Ukraine*

EO-14. **Garnet-based magnetoplasmonic heterostructures with 1D photonic crystals for highly effective chemo- and biosensing.** D. Ignatyeva[1,2], S. Sekatskii[3], P. Kapralov[1,4], G.A. Knyazev[1,2], *A. Kalish*[1,2], M. Nur-E-Alam[5], M. Vasiliev[5], K. Alameh[5] and V. Belotelov[1,2] *1. Russian Quantum Center, Skolkovo, Russian Federation; 2. Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Institute of the Physics of Biological Systems, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 4. Prokhorov General Physics Institute of RAS, Moscow, Russian Federation; 5. Electron Science Research Institute, Edith Cowan University, Joondalup, WA, Australia*

EO-15. **Magneto-optical study of strain influence on electronic transitions in ultra-thin layers of $La_{2/3}Sr_{1/3}MnO_3$.** *M. Zahradník*[1,2], T. Maroutian[2], G. Kurij[2], G. Agnus[2], P. Lecoeur[2], L. Beran[1] and M. Veis[1] *1. Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic; 2. Centre de Nanosciences et de Nanotechnologies, Universite Paris-Sud XI, Orsay Cedex, France*

EO-16. **Photostructurable sol-gel material doped with magnetic nanoparticles for magneto-optical applications.** *D. Berling*[1], C. Bidaud[1,2], E. Gamet[2], F. Royer[2], S. Neveu[3], D. Jamon[2] and O. Soppera[1] *1. Institut de Science des Matériaux de Mulhouse - UMR 7361 - CNRS, Université de Haute Alsace, Mulhouse, France; 2. Laboratoire Hubert Curien - UMR 5516 - CNRS, Université Jean Monnet, Saint Etienne, France; 3. Laboratoire PHENIX - UMR 8234 - CNRS, Université Pierre et Marie Curie, France, France*

EO-17. **Enhancement for High Speed Switching of Magneto-Optic Fiber-Based Routing Using Single Magnetizing Coil.** *J. Selvaraj*[1] and M. Mina[1] *1. Electrical and Computer Engineering, Iowa State University, Ames, IA*

EO-18. **Effect of anisotropy on magnetic properties of crystalline Tb_xFe_{100-x} ($0 \leq x \leq 100$) thin films.** *P. Rajasekhar*[1] and G. Markandeyulu[1] *1. Indian Institute of Technology Madras, Chennai, India*

THURSDAY
MORNING
8:30

THE FORUM

Session EP

FERRITES, GARNETS AND OTHER MATERIALS (Poster Session)

Paola Tiberto, Chair
Istituto Nazionale di Ricerca Metrologica, Turin, Italy

EP-01. **High-frequency magnetic and dielectric properties of Ca-substituted Z-type barium hexaferrites.** *Z. Zheng*[1], Q. Feng[1], Y. Chen[2] and V. Harris[2] *1. School of Information Science and Technology, Southwest Jiaotong University, Chengdu, China; 2. Department of Electrical and Computer Engineering, Northeastern University, Boston, MA*

EP-02. **Intrinsic and induced magnetic anisotropies in NiZn and NiZnCo spinel ferrites: a determination of their respective contributions by using either microwave (FMR) or static (Single Point Detection) measuring methods.** *J. Mattei*[1], A. Maalouf[1], V. Laur[1] and A. Chevalier[1] *1. Functional Materials, Lab-STICC, Brest, France*

EP-03. **A double-negative waveguide metacomposite enabled by ferromagnetic microwires.** *Y. Luo*[1], F. Qin[1], F. Scarpa[2], M. Ipatov[3], A. Zhukov[3] and H. Peng[1] *1. Zhejiang University, Hangzhou, China; 2. University of Bristol, Bristol, United Kingdom; 3. Universidad del Pais Vasco, San Sebastian, Spain*

EP-04. **Altering Magnetic Properties in Nickel Ferrite Through Patterning and pH.** *A. Cruz*[1] *1. Material Science, North Carolina State University, Raleigh, NC*

EP-05. **Topological Phase Transitions in Iron Garnets Crystals with a Magnetic Compensation Temperature.** L.A. Pamyatnykh[1], *L.Y. Agafonov*[1] and I.E. Belskiy[1] *1. Institute of Natural Sciences and Mathematics, Ural Federal University (named after the first President of Russia B.N.Yeltsin), Ekaterinburg, Russian Federation*

EP-06. **Effect of Zn doping on the magnetic and dielectric properties of nanocrystalline $GaFeO_3$.** *T. Han*[1], C. Yen[1], Y. Chung[1] and Y. Lee[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

EP-07. **Synthesis and magnetic properties of FeCo/edge-oxidized graphene nanocomposites.** *K. Kim*[1], J. Kim[1] and J. Lee[1] *1. Physics, Yeungnam University, Gyeongsan, The Republic of Korea*

EP-08. **Time evolution of magnetic properties of $MgFe_2O_4$: role of cation distribution.** S. Raghuvanshi[1], F. Mazaleyrat[2], A. Pasko[2] and *S. Kane*[1] *1. School of Physics, Devi Ahilya University, Indore, India; 2. SATIE, ENS Cachan, CNRS, Universite Paris-Saclay, Cachan, France*

EP-09. **Enhanced photocatalytic activity of core-shell $ZnFe_2O_4$@ZnO nanoparticles for visible light photodegradation.** *S. Lee*[1], K. Seo[1], K. Choi[2], B. Park[2] and J. Jung[1] *1. Chemistry, Gangneung-Wonju National University, Gangneung, The Republic of Korea; 2. Department of Electrical and Biological Physics, Kwangwoon University, Seoul, The Republic of Korea*

EP-10. **Hyperthermic effects of FeCoNi coated glass fibers in alternating magnetic field.** *J. Kim*[1], B. Jung[2], S. Lee[2] and K. Kim[1] *1. Physics, Yeungnam University, Gyeongsan, The Republic of Korea; 2. Composites Research Division, Korea Institute of Materials Science, Changwon, The Republic of Korea*

EP-11. **Magnetic properties of pure iron soft magnetic composites coated by manganese phosphates.** *S. Lee*[1], M. Choi[1] and J. Kim[1] *1. Hanyang University, Ansan-si, The Republic of Korea*

EP-12. **Structural characterization and magnetic properties of Zn-doped Fe_3O_4 nanoparticles for biomedical applications.** *H. Choi*[1], S. Kim[1], E. Hahn[2] and C. Kim[1] *1. Department of Physics, Kookmin University, Seoul, The Republic of Korea; 2. Department of Physics, Suwon University, Suwon, The Republic of Korea*

EP-13. **Uncharacteristic magnetic moment in nanocrystalline $Co_{0.3}Zn_{0.7}Fe_2O_4$ thin films.** *P. Rajagiri*[1], B. Sahu[1], V. Narayanan[2], S. Prasad[1] and R. Krishnan[3] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India; 3. CNRS/ Universite de Versailles-St-Quentin, Versailles Cedex, France*

EP-14. **Hyperfine structure and magnetic properties of $BaSrCo_2(Fe_{1-x}Al_x)_{12}O_{22}$ synthesized by polymerizable complex method.** *J. Lim*[1], I. Shim[1], B. Lee[2] and C. Kim[1] *1. Kookmin University, Seoul, The Republic of Korea; 2. Hankuk University of Foreign Sutdies, Yongin, The Republic of Korea*

EP-15. **Effect of deposition rate on morphology and magnetic properties of cobalt ferrite films grown by pulsed laser deposition.** *F. Eskandari*[1,2], P. Kameli[1], M. Venkatesan[2], M. Coey[2] and H. Salamati[1] *1. Department of Physics, Isfahan University of Technology, Isfahan, The Islamic Republic of Iran; 2. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland*

EP-16. **Evaluation of Exchange Stiffness from Temperature Dependent Magnetization in $ZnFe_2O_4$ Thin Films.** B. Sahu[1], P. Rajagiri[1], V. Narayanan[2], *S. Prasad*[1] and R. Krishnan[3] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India; 3. CNRS/Universite de Versailles-St-Quentin, Versailles, France*

EP-17. **Effects of Mixed Solvents on Morphologies, Cation Distribution and Magnetic Properties of $ZnFe_2O_4$ Nanoparticle by the Hydrothermal Method.** *K. Hyun Sung*[1], D. Kim[1], C. Liu[1] and B. Lee[1] *1. Department of Physics and Oxide Research Center, Hankuk University of Foreign Studies, Yongin-si, The Republic of Korea*

EP-18. **Comparison of Limiting Loop Model and Elemental Operator Model for Magnetic Hysteresis of Ferromagnetic Material.** W. Xu[1], N. Duan[1], Y. Li[2], *S. Wang*[1], Y. Guo[3] and J. Zhu[3] *1. Xi'an Jiaotong University, Xi'an, China; 2. Hebei University of Technology, Tianjin, China; 3. University of Technology Sydney, Sydney, NSW, Australia*

Session EQ
FUNCTIONAL MAGNETIC MATERIALS AND SUPERCONDUCTIVITY (Poster Session)

Fabrice Wilhelm, Chair
ESRF, Grenoble, France

EQ-01. **Spin-Wave Propagation in Waveguides Formed by Circular and Linear Chains of Discrete Magnetic Elements.** *S. Nikitov*[1,2], Y. Barabanenkov[1], S. Osokin[1,2] and D. Kalyabin[1,2] *1. IRE RAS, Moscow, Russian Federation; 2. MIPT, Moscow, Russian Federation*

EQ-02. **A Polymer Based Air Gap Length Prediction Method with Current Injection and Fuzzy Logic Observer.** *E. Cheng*[1] and Y. Zou[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

EQ-03. **Phase coexistence and magnetic glass like phase associated with the Morin type spin reorientation phase transition in $SmCrO_3$.** *M. Tripathi*[1], R.J. Choudhary[1] and D.M. Phase[2] *1. Thin Film Magnetization, UGC DAE Consortium for Scientific Research, Indore, India; 2. Pulsed Laser Deposition, UGC DAE Consortium for Scientific Research, Indore, India*

EQ-04. **Building block magneto-luminescent nanomaterials of iron-oxide/ZnS@LaF_3:Ce^{3+},Gd^{3+},Tb^{3+} with green emission.** N. Shrivastava[1], L. Khan[2], Z. Khan[3], J. Vargas[4], C. Ospina[5], H. Brioto[2], M. Knobel[5], M. Felinto[6], A. Menezes[1], Y. Javed[7] and *S.K. Sharma*[1] *1. Physics, Federal University of Maranhao, Sao Luis, Brazil; 2. Institute of Chemistry, University of São Paulo, Sao Paulo, Brazil; 3. Institute of Biomedical Sciences-IV, Sao Paulo, Brazil; 4. Bariloche Atomic Center (CNEA), Balseiro Institute (U.N. Cuyo), Bariloche, Argentina; 5. Brazilian Nanotechnology National Laboratory, Sao Paulo, Brazil; 6. Nuclear and Energy Research Institute, IPEN, University of Sao Paulo, Sao Paulo, Brazil; 7. Physics, University of Agriculture, Faislabad, Pakistan*

EQ-05. **Withdrawn**

EQ-06. **Interplay between epitaxial strain and low dimensionality effects in a ferrimagnetic oxide.** *E. Popova*[1], M. Deb[1], L. Bocher[2], A. Gloter[2], O. Stéphan[2], B. Warot-Fonrose[3], B. Berini[1], Y. Dumont[1] and N. Keller[1] *1. CNRS-UVSQ, GEMaC, Versailles, France; 2. LPS, Orsay, France; 3. CEMES, Toulouse, France*

EQ-07. **Interplay of ferromagnetism and superconductivity in Ni nanowires with Nb leads.** *H. Ren*[1,2], S. Manna[1,3] and E. Fullerton[1] *1. Center for Memory Recording Research, University of California San Diego, La Jolla, CA; 2. Materials Science and Engineering, University of California San Diego, La Jolla, CA; 3. Nanoengineering, University of California San Diego, La Jolla, CA*

EQ-08. **The electronic structure of FeSe superconductor probed by soft x-ray spectroscopy and density functional theory.** *I.O. Perez Lopez*[1] *1. Physics and Mathematics, Universidad Autónoma de Ciudad Juárez, Juárez, Mexico*

EQ-09. **3D New Calculation Principle of Levitation Force Between Permanent Magnet and Hard Type-II Superconductor Using Integral Approach.** A. Azzouza[1], A. Hicham[1], *J. Yonnet*[2] and P. Tixador[2] *1. L2EI Laboratory, University of Jijel, Jijel, Algeria; 2. G2E Lab, St Martin d'Heres, France*

EQ-10. **Spin Diffusion Length in Ferromagnet/Superconductor Bilayers.** *S. Cheng*[1,2], T.H. Chuang[2] and J.G. Lin[1] *1. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 2. Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan*

EQ-11. **A New Thin Approximation Simulation Method of Screening Current in REBCO Tape Considering Tape's Thickness.** *S. Noguchi*[1,2], A. Ishiyama[3] and H. Ueda[4] *1. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan; 2. National High Magnetic Field Laboratory, Tallahassee, FL; 3. Waseda University, Tokyo, Japan; 4. Oayama University, Okayama, Japan*

EQ-12. **Improved flux pinning in Mn-doped $YBa_2Cu_3O_{7-x}$ thin film by low fluorine MOD.** Z. Dong[1,2], *H. Gu*[1,2], F. Ding[1,2], H. Zhang[1,2], H. Zhang[1,2] and F. Qu[1,2] *1. Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China; 2. Key Laboratory of Applied Superconductivity, Chinese Academy of Sciences, Beijing, China*

EQ-13. **Magnetic Vortex Resonance in Hybrid Ferromagnetic/Superconducting Structures.** S. Lendinez[1], J. Ding[1], P. Lapa[1,2], G. Karapetrov[3], A.Y. Smirnov[4] and *V. Novosad*[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics and Astronomy, Texas A&M University, College Park, TX; 3. Department of Physics, Drexel University, Philadelphia, PA; 4. National University of Science and Technology ("MISiS"), Moscow, Russian Federation*

Session ER
ELECTROMAGNETIC COMPATIBILITY AND MOTORS (Poster Session)

Yasushi Endo, Chair
Tohoku University, Sendai, Japan

ER-01. **Magnetic Circuit Evaluation of Conductive and Near-Field Noise Suppression using Co-Zr-Nb Film.** *S. Muroga*[1] and Y. Endo[2] *1. Electrical and Electronics Engineering, National Institute of Technology, Toyota College, Toyota, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan*

ER-02. **Radiated EMI Modeling and Performance Analysis for PWM PMSM Drive System Based on Field-Circuit Coupled FEM.** Y. Huangfu[1,2], *S. Wang*[1] and L. Di Rienzo[2] *1. State Key Laboratory of Electrical Insulation and Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China; 2. Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Milano, Italy*

ER-03. **Suspension Force Modeling for a Novel Bearingless Flux-Switching Permanent Magnet Motor.** *C. Zhao*[1], H. Zhu[1] and Y. Qin[1] *1. Jiangsu University, Zhenjiang, China*

ER-04. **An Electromagnet-Assisted Ferrite Magnet Motor.** *T. Fukami*[1], K. Motoki[1], R. Kirihata[1], K. Shima[1], M. Koyama[1], T. Mori[2] and M. Nakano[2] *1. Division of Electrical Engineering, Kanazawa Institute of Technology, Nonoichi, Japan; 2. Advanced Technology R&D Center, Mitsubishi Electric Corporation, Amagasaki, Japan*

ER-05. **A Novel Dual-Stator Vernier Permanent Magnet Machine.** *Y. Gao*[1], R. Qu[1], D. Li[1] and J. Li[1] *1. Huazhong University of Science and Technology, Wuhan, China*

ER-06. **A Partitioned-Stator Flux-Switching Permanent-Magnet Machine with Mechanical Flux Adjusters for Hybrid Electric Vehicles.** *C. Lee*[1] *1. Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA*

ER-07. **A Novel Approach for 2D Electromagnetic Field Analysis of Surface-Mounted Permanent Magnet Synchronous Motor Taking into Account Axial End Leakage Flux.** *J. Jung*[1], H. Park[1], B. Lee[2] and J. Hong[3] *1. Hyundai Mobis, Yongin, The Republic of Korea; 2. Korea Automotive Technology Institute, Daegu, The Republic of Korea; 3. Hnayang University, Seoul, The Republic of Korea*

ER-08. **Modeling and Analysis of Spoke-Type Permanent Magnet Vernier Machine Based on Equivalent Magnetic Network Method.** S. Jiang[1], *G. Liu*[1], L. Xu[1] and Q. Chen[1] *1. Jiangsu University, Zhenjiang, China*

ER-09. **Parametric Model of Electrical Machines with Air Gap Windings Based on Bivariate Fourier Approximations of Air Gap Flux Density.** *N. Borchardt*[1] *1. Otto von Guericke University, Magdeburg, Germany*

ER-10. **Characteristic Analysis of Surface Permanent Magnet Vernier Motor with Concentrated Winding According to Pole Ratio and Winding Pole Number.** *H. Shi*[1] and K. Hirata[1] *1. Osaka University, Suita, Japan*

ER-11. **Iron Loss Reduction of Permanent Magnet Synchronous Motor by Use of Stator Core Made of Nanocrystalline Magnetic Material.** *N. Denis*[1], M. Inoue[2], K. Fujisaki[1], H. Itabashi[3] and T. Yano[4] *1. Toyota Technological Institute, Nagoya, Japan; 2. Hitachi Metals, Yasugi, Japan; 3. Hitachi Metals, Tottori, Japan; 4. Japan Aerospace Exploration Agency, Sagamihara, Japan*

ER-12. **Torque Improvement of Dual Three-Phase Permanent Magnet Machine Using Zero Sequence Components.** *K. Wang*[1], J. Zhang[1], Z. Gu[1] and H. Sun[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

ER-13. **Reluctance Torque Ripple Reduction in High-Saliency-Ratio V-Type Interior Permanent Magnet Synchronous Machines by Rotor Design.** *W. Ren*[1] and Q. Xu[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China*

ER-14. **Cogging Torque Prediction in Permanent Magnet Machines with Axial-Varying Rotor Eccentricity by Superposition Method.** *Y. Li*[1] and Z.Q. Zhu[1] *1. The University of Sheffield, Sheffield, United Kingdom*

ER-15. **Tooth Tip Step-Shift for Cogging Torque and Torque Ripple Reduction in Permanent Magnet Machines with Segmented Stators.** *L. Wu*[1,2], R. Qu[2] and H. Fang[2] *1. School of Automation and Electrical Engineering, Linyi University, Linyi, China; 2. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China*

ER-16. **Demagnetization Fault Detection for PMSM Based Marine Propulsion Motors Using Search Coils in the Stator Slots.** *K. Ahsanullah*[1], S.K. Panda[1] and J. Elango[1] *1. Electrical and Communication Engineering, National University of Singapore, Singapore, Singapore*

ER-17. **Research on Effect of Rotor Geometry on Irreversible Demagnetization in Permanent Magnets of Interior Permanent Magnet Machine.** *L. Guo*[1], C. Xia[1] and Z. Wang[2] *1. School of Electrical Engineering and Automation, Tianjin University, Tianjin, China; 2. Tianjin Engineering Center of Electric Machine System Design and Control, Tianjin, China*

ER-18. **Influence of Magnetic Slot Wedge Defect on Starting Performance of High Voltage Line-Start Permanent Magnet Synchronous Motor.** W. Li[1], Z. Cao[1], J. Li[2], *X. Zhang*[1] and J. Cao[1] *1. School of Electrical Engineering, Beijing Jiaotong University, Beijing, China; 2. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

Session ES
MOTORS, GENERATORS AND ACTUATORS VII (Poster Session)
Peter Rasmussen, Chair
Aalborg University, Aalborg, Denmark

ES-01. **A Novel Split Translator Secondary Stator Permanent Magnet Linear Generator for Oceanic Wave Energy Conversion.** *M.R. Islam*[1], O. Farrok[2], Y. Guo[3] and J. Zhu[3] *1. Department of Electrical and Electronic Engineering, Rajshahi University of Engineering and Technology, Rajshahi, Bangladesh; 2. Department of Electrical and Electronic Engineering, Ahsanullah University of Science and Technology, Dhaka, Bangladesh; 3. Faculty of Engineering and Information Technology, University of Technology Sydney, Sydney, NSW, Australia*

ES-02. **Improved Rotor Structures for Increasing Flux per Pole of PMSM.** *H. Kim*[1] and J. Moon[1] *1. Rotating Machinery Center, Korea Testing Certification, Gunpo-si, The Republic of Korea*

ES-03. **Design and Analysis of Electromagnetic Gears with Variable Gear Ratios.** *L. Cao*[1], K. Chau[1], C. Lee[2,1] and W. Li[1] *1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong; 2. Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, MA*

ES-04. **Stator Shape Design Method for Improving Power Density in PM Motor.** *N. Soda*[1] and M. Enokizono[2] *1. Ibaraki University, Hitachi, Japan; 2. Vector Magnetic Characteristic Technical Laboratory, Usa, Japan*

ES-05. **Cogging Torque Analysis of BLDC Motor Considering Oriented Electrical Steel Sheet.** *J. Lee*[1], K. Lee[1], S. Rhyu[1] and I. Jung[1] *1. Korea Electronics Technology Institute, Bucheon-si, Gyeonggi-do, The Republic of Korea*

ES-06. **Analytical Modeling and Experimental Verification for Electromagnetic Performance Analysis of Magnetic Geared Permanent Magnet Machines.** *K. Shin*[1], H. Park[2], H. Cho[3] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Advanced Brake Engineering Team, Hyundai Mobis, Yongin-si, The Republic of Korea; 3. Dept. of Electric, Electronic and Communication Engineering Edu., Chungnam National University, Daejeon, The Republic of Korea*

ES-07. **Comparative study of E-core and C-core modular PM linear machines with different slot/pole combinations.** *Y. Yao*[1], Q. Lu[1] and Y. Ye[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

ES-08. **An Improved Equivalent Magnetic Circuit Model of Coreless Axial Flux Permanent Magnet Synchronous Machine.** G. Zhao[1], *J. Zhao*[1] and L. Yang[1] *1. School of Automation, Beijing Institute of Technology, Beijing, China*

ES-09. **Modular Dual Three-Phase Fractional-Slot Overlapping Windings for Reducing Rotor Losses of Permanent Magnet Synchronous Machines.** K. Wang[1], H. Lin[1], H. Yang[1], *J. Jiang*[1], S. Fang[1], Y. Huang[1], X. Zhao[2], J. Xia[2] and D. Wang[2] *1. Engineering Research Center for Motion Control of MOE, Southeast University, Nanjing, China; 2. Goldwind Science and Creation Wind Power Equipment Co., Ltd., Beijing, China*

ES-10. **Design Optimization of High Speed Machines for Underwater Thrusting System Considering Magnetic Flux Density Distribution in Stator.** *J. Park*[1,2], K. Lee[2], S. Lee[2] and S. Jung[1] *1. School of Electronics and Electrical Engineering, Sungkyunkwan University, Suwon, The Republic of Korea; 2. Korea Institute of Industrial Technology, Gwangju, The Republic of Korea*

ES-11. **A practical approach to iron loss analysis of PMSMs.** *S. Hall*[1], R. Andersson[1] and A. Reinap[1] *1. Industrial Electrical Engineering and Automation, Lund, Sweden*

ES-12. **A Fast Algorithm for Computation of Efficiency Map of Permanent Magnet Synchronous Machines Accounting for Different Control Strategies.** W. Li[1,2] and *W. Fu*[2] *1. Electrical Engineering, Tongji University, Shanghai, China; 2. Hong Kong Polytechnic University, Hong Kong, Hong Kong*

ES-13. **Modeling of Hysteresis Loops to Use the B-H Curve Characteristic in Electrical Steel Sheet.** *J. Park*[1,2], K. Lee[2], S. Lee[2] and S. Jung[1] *1. School of Electronics and Electrical Engineering, Sungkyunkwan University, Suwon, The Republic of Korea; 2. Korea Institute of Industrial Technology, Gwangju, The Republic of Korea*

THURSDAY MORNING 8:30 — THE FORUM

Session ET
POWER AND CONTROL MAGNETICS (Poster Session)

Cheng-Tsung Liu, Chair
National Sun Yat-Sen University, Kaohsuing, Taiwan

ET-01. **Energy-Encrypted Contactless Charging for Swarm Robots.** J. Wang[1], Z. Liang[1] and *Z. Zhang*[1] *1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China*

ET-02. **Decoupling control for a magnetic levitation wind turbine using neural network inverse scheme plus model reference adaptive controllers.** *Y. Yu*[1] *1. Jiangsu University, Zhenjiang, China*

ET-03. **Flux Weakening Performance of Permanent Magnet Synchronous Motors with a Conical Rotor.** F. Chai[1], K. Zhao[1,2], Z. Li[1] and *L. Gan*[1] *1. Harbin Institute of Technology, Harbin, China; 2. Jiamusi University, Jiamusi, China*

ET-04. **A strategy of wheel torque control by co-simulation in railway vehicle with independently rotating wheelsets.** *Y. Oh*[1], J. Won[1], S. Cho[2] and H. Hong[1] *1. Hanyang University, Seoul, The Republic of Korea; 2. Korea Automotive Technology Institute, Cheonan-si, The Republic of Korea*

ET-05. **Analysis of a Novel Doubly-Fed Doubly-Salient Transverse-Flux Machine for Wind Power Application.** *X. Zhao*[1] and S. Niu[1] *1. The Hong Kong Polytechnic University, Kowloon, Hong Kong*

ET-06. **Initial Rotor Position Detection for Sensorless Interior PMSM with Square-Wave Voltage Injection.** *X. Wu*[1], S. Huang[1] and X. Liu[1] *1. College of Electrical and Information Engineering, Hunan University, ChangSha, China*

ET-07. **Comparison and Analysis of Bearingless Permanent Magnet Synchronous Motor with Different Magnetized Rotor.** *Z. Tao*[1,2] *1. Faculty of Automation, Huaiyin Institute of Technology, Huaian, China; 2. School of Electrical and Computer Engineering, Royal Melbourne Institute of Technology, Melbourne, VIC, Australia*

ET-08. **Decoupling Control for Bearingless Synchronous Reluctance Motor Based on Support Vector Machine Inverse Optimized by Ant Colony Algorithm.** *X. Diao*[1] and H. Zhu[1] *1. Jiangsu University, Zhenjiang, China*

ET-09. **Automatic ball balancer using permanent magnets to reduce transient vibration.** *Y. Cho*[1] and G. Jang[1] *1. Department of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea*

ET-10. **Investigation on the Coordinate Control of Drive and Flux-Regulation for Hybrid Permanent Magnet Axial Field Flux-Switching Memory Machine.** G. Yang[1], *M. Lin*[1], N. Li[1] and K. Liu[1] *1. Engineering Research Center for Motion Control of MOE, Southeast University, Nanjing, China*

ET-11. **Design of Position Estimation Strategy of Sensorless Interior PMSM at Standstill Using Minimum Voltage Vector Injection Method.** *X. Wu*[1], S. Huang[1] and X. Liu[1] *1. College of Electrical and Information Engineering, Hunan University, ChangSha, China*

Session FA

MAGNETIC MICRO- AND NANO-ACTUATORS AND ROBOTS

Andreas Berger, Co-Chair
CIC nanoGUNE, San Sebastian, Spain
Riccardo Bertacco, Co-Chair
Politecnico di Milano, Milano, Italy

2:00

FA-01. **Modeling, Characterization and Control of Multiple Superparamagnetic Bolus-Type Microrobots Navigating in Microfluidic Channels.** ***(Invited)*** *A. Ferreira*[1] *1. Laboratoire PRISME, INSA Centre Val de Loire, Bourges, France*

2:30

FA-02. **Magnetically Guided Microrobots for Medical Applications.** ***(Invited)*** *B. Nelson*[1] *1. Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland*

3:00

FA-03. **Tri-segmented magnetic nanowires with antiparallel alignment: suitable platforms for biomedical applications with minimized agglomeration?** ***(Invited)*** *J. Sort*[1,2], J. Zhang[1], S. Agramunt[1], N. Del-Valle[1], C. Navau[1], S. Estradé[3], F. Peiró[3], S. Pané[4], ÀLVAR. Sánchez[1], E. Pellicer[1] and J. Nogues[2,5] *1. Physics, Universitat Autonoma de Barcelona, Bellaterra, Spain; 2. ICREA, Barcelona, Spain; 3. Universitat de Barcelona, Barcelona, Spain; 4. ETH, Zurich, Switzerland; 5. ICN2, Bellaterra, Spain*

3:30

FA-04. **Nanoactuated magneto-mechanical systems.** ***(Invited)*** *P. Vavassori*[1,2], M. Pancaldi[1], M.J. Perez-Roldan[1,3], A. Chuvilin[1,2] and A. Berger[1] *1. CIC nanoGUNE, San Sebastian, Spain; 2. Ikerbasque, Bilbao, Spain; 3. FEI Electron Optics, Eindhoven, Netherlands*

4:00

FA-05. **Magnetoelectric small-scale robots: a step towards highly integrated machines.** ***(Invited)*** *S. Pané*[1] *1. Mechanical and Process Engineering, ETH Zurich, Zurich, Switzerland*

4:30

FA-06. **Magnetic nanoactuation in fluids and nanorobots that penetrate tissue.** ***(Invited)*** *P. Fischer*[1,2] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Inst. of Physical Chemistry, University of Stuttgart, Stuttgart, Germany*

Session FB
NOVEL MAGNETIC MATERIALS AND EMERGING TOPICS

Solveig Felton, Chair
Queen's University Belfast, Belfast, United Kingdom

2:00

FB-01. **Point Contact Andreev Reflection and the Measurement of Spin Polarization – Towards Higher Fields and Temperatures.** K. Borisov[1], M. Gregor[2], A. Plecenik[2] and *P.S. Stamenov*[1] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland; 2. Department of Experimental Physics, Comenius University, Bratislava, Slovakia*

2:15

FB-02. **Magneto-transport in ultra-thin two-dimensional superconducting Mo_2C crystals.** *N. Kang*[1], L. Wang[1], C. Xu[2] and W. Wen[2] *1. Department of Electronics, Peking University, Key Laboratory for the Physics and Chemistry of Nanodevices, Beijing, China; 2. Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China*

2:30

FB-03. **Ferromagnet-nanodiamond platform for enhanced solid state qubit coupling and nanoscale sensing.** ***(Invited)*** *P. Andrich*[1], C. de las Casas[1], X. Liu[1], H. Bretscher[1], J. Berman[1], F. Heremans[1,2], P. Nealey[1,2] and D. Awschalom[1,2] *1. Institute for Molecular Engineering, University of Chicago, Chicago, IL; 2. Materials Science Division, Argonne National Laboratory, Argonne, IL*

3:00

FB-04. **Macrospin reversals and spin wave softening in isolated nodes of Kagome-like structures: statics and dynamics.** *F. Montoncello*[1], L. Giovannini[1], J.B. Ketterson[2], W. Bang[2], L.E. DeLong[3] and B. Farmer[3] *1. Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy; 2. Department of Physics and Astronomy, Northwestern University, Evanston, IL; 3. Department of Physics and Astronomy, University of Kentucky, Lexington, KY*

3:15

FB-05. **A new artificial spin system: the four state dipolar Potts model.** D. Louis[1], *F. Montaigne*[1], D. Lacour[1], M. Hehn[1] and T. Hauet[1] *1. Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France*

3:30

FB-06. **Novel magnetic order induced in Gd-C60 complexes.** *T. Moorsom*[1], P. Gargiani[2], M. Valvidares[2], B.J. Hickey[1] and O. Cespedes[1] *1. University of Leeds, Leeds, United Kingdom; 2. ALBA Synchrotron, Barcelona, Spain*

3:45

FB-07. **Engineering the magnetic coupling at the molecule-magnetic surface interface in molecular spintronic devices.** *J. Moussy*[1], L. Tortech[2], V. Campbell[3], Q. Arnoux[2], Y. Dappe[1], A. Smogunov[1] and T. Mallah[3] *1. SPEC, CEA, Gif-sur-Yvette, France; 2. IPCM, Université Pierre et Marie Curie, Paris, France; 3. ICMMO, Université Paris Sud, Orsay, France*

4:00

FB-08. **Direct magnetic anisotropy manipulation through piezoelectromagnetism in a magnetic insulator (Ga,Mn)N.** *M. Sawicki*[1], D. Sztenkiel[1], M. Foltyn[1], G.P. Mazur[1], R. Adhikari[2], K. Kosiel[3], K. Gas[4,1], M. Zgirski[1], R. Kruszka[3], R. Jakiela[1], T. Li[1], A. Piotrowska[3], A. Bonanni[2] and T. Dietl[1,5] *1. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 2. Institut für Halbleiter- und Festkörperphysik, Johannes Kepler University, Linz, Austria; 3. Institute of Electron Technology, Warsaw, Poland; 4. Institute of Experimental Physics, University of Wroclaw, Wroclaw, Poland; 5. WPI-Advanced Institute for Materials Research, Tohoku University, Sendai, Japan*

4:15

FB-09. **Turbulence-driven macroscopic magnetic self-assembly with adjustable level of agitation.** *T.A. Hageman*[1,2], P.A. Löthman[1,2], M. Dirnberger[3], M. Elwenspoek[2], A. Manz[1] and L. Abelmann[1,2] *1. KIST Europe, Saarbrücken, Germany; 2. University of Twente, Enschede, Netherlands; 3. Max Planck Institute for Informatics, Saarbrücken, Germany*

4:30

FB-10. **Imaging current-induced switching of antiferromagnetic domains in CuMnAs.** *M.J. Grzybowski*[1,2], P. Wadley[1], K. Edmonds[1], R. Beardsley[1], V. Hills[1], R. Campion[1], B. Gallagher[1], J. Chauhan[1], V. Novak[3], T. Jungwirth[3,1], F. Maccherozzi[4] and S. Dhesi[4] *1. School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom; 2. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 3. Institute of Physics ASCR, Praha, Czech Republic; 4. Diamond Light Source, Didcot, United Kingdom*

4:45

FB-11. **Atomistic Study of Transition Metals Doped Topological Insulators.** *A. Ghasemi*[1], D. Kepaptsoglou[2], Q. Ramasse[2], T. Hesjedal[3] and V.K. Lazarov[1] *1. Department of Physics, University of York, York, United Kingdom; 2. SuperSTEM Laboratory, SciTech Daresbury Campus, Daresbury, United Kingdom; 3. Department of Physics, University of Oxford, Oxford, United Kingdom*

Session FC
SPIN-ORBIT TORQUES AND SPIN-ORBIT EFFECTS III

Can Onur Avci, Chair
Massachusetts Institute of Technology, Cambridge, MA

2:00

FC-01. **Interfacial and bulk spin-orbit effects in Pt/Co(t)/AlO_x probed by the ferromagnetic thickness dependence.** *G. Vijay Karnad*[1], R. Lo Conte[1,2], E. Martinez[3], K. Lee[1], N. Kim[4], D. Han[5], J. Kim[4], S. Prenzel[1], T. Schulz[1], C. You[4], H. Swagten[5] and M. Kläui[1,2] *1. Johannes Gutenberg University - Mainz, Mainz, Germany; 2. MAINZ Graduate School, Mainz, Germany; 3. Universidad de Salamanca, Salamanca, Spain; 4. DGIST, Daegu, The Republic of Korea; 5. Eindhoven University of Technology, Eindhoven, Netherlands*

2:15

FC-02. **Minimizing the critical current for spin-orbit torque switching in Co_xTb_{1-x} ferrimagnetic alloys.** T. Pham[1], *S. Je*[2,3], P. Vallobra[1], T. Fache[1], M. Cyrille[4], O. Boulle[2], G. Gaudin[2], D. Lacour[1], G. Malinowski[1], M. Hehn[1], J. Rojas-Sanchez[1] and S. Mangin[1] *1. Institut Jean Lamour, UMR 7198 CNRS-Université de Lorraine, Nancy, France; 2. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, Grenoble, France; 3. Université de Lorraine, Nancy, France; 4. CEA-LETI, Grenoble, France*

2:30

FC-03. **Time- and space-resolved spin-orbit torque induced magnetization switching of Pt/Co/AlO_x dots. *(Invited)*** *M. Baumgartner*[1], K. Garello[1,2], J. Mendil[1], E. Grimaldi[1], C. Avci[1], C. Murer[1], J. Feng[1], C. Stamm[1], M. Gabureac[1], Y. Acremann[3], S. Finizio[4], S. Wintz[4], J. Raabe[4] and P. Gambardella[1] *1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. IMEC, Leuven, Belgium; 3. Laboratory for Solid State Physics, ETH Zurich, Zurich, Switzerland; 4. Paul Scherrer Institut, Villigen, Switzerland*

3:00

FC-04. **Enhancement of Spin Orbit Torque in Ultra-Thin Chromium.** *A. Bose*[1], S.S. Bhuktare[1], H. Singh[1] and A. Tulapurkar[1] *1. Electrical Engineering, Indian Institute of Technology Bombay, India, Mumbai, India*

3:15

FC-05. **Under Layer Effect on Perpendicular Magnetic Anisotropy Energies in $Co_{20}Fe_{60}B_{20}$\MgO.** *P.J. Chen*[1] and R. Shull[1] *1. National Institute of Standards and Technology, Gaithersburg, MD*

3:30

FC-06. **Spin Hall magnetoresistance in FeMn/Pt bilayers and multilayers.** *Y. Yang*[1], Z. Luo[1], Y. Xu[1,2], B. Xu[2] and Y. Wu[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Data Storage Institute, Singapore, Singapore*

3:45

FC-07. **Analysis of spin Hall effects in CuPt alloy.** *R. Ramaswamy*[1], Y. Wang[1], M. Elyasi[1], M. Motapothula[2], T. Venkatesan[1,2], X. Qiu[3] and H. Yang[1,2] *1. Dept. of ECE, National University of Singapore, Singapore, Singapore; 2. NUSNNI-Nanocore, National University of Singapore, Singapore, Singapore; 3. Institute of Solid State Physics and School of Physics Science, Tongji University, Shanghai, China*

4:00

FC-08. **Electrical detection of spin Hall effect torques induced auto-oscillations in nanometer thick YIG/Pt stripe.** *M. Collet*[1], L. Soumah[1], P. Bortolotti[1], M. Muñoz[2], V. Cros[1] and A. Anane[1] *1. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. IMM-Instituto de Microelectronica de Madrid (CNM-CSIC), PTM, Tres Cantos, Madrid, Spain*

4:15

FC-09. **Temperature dependence of the spin Hall angle and switching current in the nc-W(O)/CoFeB/MgO system with perpendicular magnetic anisotropy.** N. Lukas[1], D. Meier[1], J.M. Schmalhorst[1], K. Rott[1], G. Reiss[1] and *M. Meinert*[1] *1. Faculty of Physics, Bielefeld University, Bielefeld, Germany*

4:30

FC-10. **Phase-Resolved Detection of the Spin-orbit Torques by Optical Ferromagnetic Resonance in Ultra-Thin Perpendicularly Magnetized Films.** *A. Capua*[1,2], T. Wang[1,3], T. Phung[1,3], S. Yang[1], C. Rettner[1] and S. Parkin[1,2] *1. IBM Almaden Research Center, San Jose, CA; 2. Micro-Structure Physics, Max Planck Institute, Halle, Germany; 3. International Center for Quantum Materials, Peking University, Beijing, China*

4:45

FC-11. **Propagating spin wave spectroscopy for spin-orbitronics.** O. Gladii[1], M. Collet[2], K. Garcia-Hernandez[2], C. Cheng[2], S. Xavier[3], P. Bortolotti[2], V. Cros[2], J. Kim[4], A. Anane[2], Y. Henry[1] and *M. Bailleul*[1] *1. Institut de Physique et Chimie des Matériaux de Strasbourg, CNRS-Université de Strasbourg, Strasbourg, France; 2. UMPhy CNRS Thales, Palaiseau, France; 3. Thales RT, Palaiseau, France; 4. Centre de Nanosciences et de Nanotechnologies, Orsay, France*

Session FD
MAGNETIC IMAGING
Peter Fischer, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA

2:00

FD-01. **Stripes Rotation in $Fe_{78}Si_9B_{13}$ Thin Films with Perpendicular Anisotropy by Field-Dependent Magnetic Force Microscopy.** *M. Coisson*[1], G. Barrera[1], F. Celegato[1] and P. Tiberto[1]
1. Nanoscience and Materials, INRIM, Torino, Italy

2:15

FD-02. **Controllable multi-stable probes with low/high magnetic moment.** *O. Kazakova*[1], V. Panchal[1], H. Corte-León[1], B. Gribkov[1,2], L.A. Rodriguez[3], E. Snoeck[3] and V. Neu[4]
1. NPL, Teddington, United Kingdom; 2. Institute for Physics of Microstructures RAS, Nizhny Novgorod, Russian Federation; 3. CEMES-CNRS, Toulouse, France; 4. Leibniz Institute for Solid State and Materials Research, Dresden, Germany

2:30

FD-03. **Magnetic Imaging and Manipulation of Molecular-Based Nanoparticles on a Surface.** ***(Invited)*** *A. Forment-Aliaga*[1], E. Pinilla-Cienfuegos[1,2], S. Mañas-Valero[1] and E. Coronado[1]
1. Instituto de Ciencia Molecular, Paterna, Spain; 2. Centro de Tecnología Nanofotónica de Valencia, Universidad Politécnica de Valencia, Valencia, Spain

3:00

FD-04. **Nano-imaging of magnetic domain walls in GaMnAs with a scanning NV magnetometer.** *T. de Guillebon*[1], T. Hingant[1], L. Martinez[2], V. Jeudy[3], S. Rohart[3], A. Thiaville[3], A. Lemaitre[4], C. Ulysse[4], L. Rondin[1], V. Jacques[2] and J. Roch[1] *1. Laboratoire Aime Cotton, CNRS, Universite Paris-Sud and ENS Cachan, Orsay, France; 2. Laboratoire Charles Coulomb, Universite de Montpellier and CNRS, Montpellier, France; 3. Laboratoire de Physique des Solides, Universite Paris-Sud, CNRS UMR 8502, Orsay, France; 4. Laboratoire de Photonique et Nanostructures, LPN/CNRS, Marcoussis, France*

3:15

FD-05. **A platform for time-resolved scanning Kerr microscopy in the near-field.** *P.S. Keatley*[1], T.H. Loughran[1], E. Hendry[1], W. Barnes[1], R.J. Hicken[1], J.R. Childress[2] and J.A. Katine[2]
1. Department of Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. San Jose Research Center, HGST, a Western Digital Company, San Jose, CA

3:30

FD-06. **Evolution of Magnetic States from Bubble Skyrmions to Radial Vortices.** *V. Karakas*[1], A. Gokce[1], A.T. Habiboglu[1], S. Arpaci[1], K. Ozbozduman[1], I. Cinar[1,2], G. Siracusano[3], R. Tomasello[4], M. Carpentieri[5], S. Tacchi[6], G. Finocchio[7] and O. Ozatay[1] *1. Department of Physics, Bogazici University, Istanbul, Turkey; 2. Physics, Karamanoglu Mehmetbey University, Karaman, Turkey; 3. Department of Computer Engineering and Telecommunications, University of Catania, Catania, Italy; 4. Department of Engineering, Polo Scientifico Didattico di Terni, University of Perugia, Perugia, Italy; 5. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 6. IOM-CNR, Perugia, Italy; 7. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

3:45

FD-07. **Nanoscale Mallison-Halbach Effect Based on Chiral Thin Film Multilayer with Interfacial DMI.** *H.J. Hug*[1,2], M.A. Marioni[1], M. Penedo[1] and M. Bacani[1] *1. Nanoscale Materials Science, Empa, Swiss Federal Laboratories for Materials Science and Technology, Duebendorf, Switzerland; 2. Department of Physics, University of Basel, Basel, Switzerland*

4:00

FD-08. **Direct observation of room temperature antiferromagnetism in individual goethite nanoparticles.** *D.M. Bracher*[1], T.M. Savchenko[1], M. Wyss[2], G. Olivieri[3], M.A. Brown[3], F. Nolting[1], M. Poggio[2] and A. Kleibert[1] *1. Paul Scherrer Institut, Villigen, Switzerland; 2. Department of Physics, University of Basel, Basel, Switzerland; 3. Department of Materials, ETH Zürich, Zürich, Switzerland*

4:15

FD-09. **Detection of Spin Hall Effect Switching by Conductive Atomic Force Microscopy.** B. Parks[1], S.D. Oberdick[1], M. Bapna[1] and *S. Majetich*[1] *1. Carnegie Mellon University, Pittsburgh, PA*

4:30

FD-10. **Skyrmion spin profiles and supporting Dzyaloshinskii-Moriya interaction by quantitative magnetic force microscopy.** *M.A. Marioni*[1], M. Baćani[1], J. Schwenk[1,2] and H.J. Hug[1,2] *1. Empa, Materials Science and Technology, Duebendorf, Switzerland; 2. Department of Physics, University of Basel, Basel, Switzerland*

4:45

FD-11. **Magnetic force microscopy imaging using a domain wall.** *H. Corte-León*[1,2], L. Rodriguez[3], M. Pancaldi[4], D. Cox[1,5], E. Snoeck[3], V. Antonov[2], P. Vavassori[4,6] and O. Kazakova[1] *1. TQEM, National Physical Laboratory, Teddington, United Kingdom; 2. Physics, Royal Holloway University of London, Egham, United Kingdom; 3. CEMES-CNRS, Toulouse, France; 4. CIC nanoGUNE, Donostia, Spain; 5. University of Surrey, Guildford, United Kingdom; 6. IKERBASQUE, Bilbao, Spain*

Session FE
RECORDING HEADS AND MATERIALS, PLUS RECORDING PHYSICS AND MODELLING

Simon Greaves, Chair
Tohoku University, Sendai, Japan

2:00

FE-01. **Analysis of Reader Induced "Skew" Effect in Shingled Magnetic Recording (SMR).** *Y. Liu*[1], W.R. Cross[2] and M.M. Dovek[1] *1. Headway Technologies, Inc., Milpitas, CA; 2. Seagate Technology, Longmont, CO*

2:15

FE-02. **Control of hybrid domain wall states in recessed trilayer synthetic antifferomagnet TGMR reader by tuning RKKY exchange coupling strengths.** *A. Dobrynin*[1], D. O'Donnell[1] and K. McNeill[1] *1. Research and Development, Seagate Technology, Derry, United Kingdom*

2:30

FE-03. **Fabrication of Single Crystalline Magnetoresistive Sensors on Polycrystalline Electrode Using Three-Dimensional Integration Technology.** *J. Chen*[1,2], Y. Sakuraba[2], J. Liu[2], K. Yakushiji[3], H. Takagi[3], N. Watanabe[3], A. Fukushima[3], K. Kikuchi[3], S. Yuasa[3] and K. Hono[2,1] *1. Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan; 2. National Institute for Materials Science, Tsukuba, Japan; 3. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

2:45

FE-04. **Data Rate Effects on Transition and Remanence Noise in a Modeled Heat Assisted Magnetic Recording System.** *S. Hernandez*[1], P. Krivosik[1], P. Huang[1], W. Eppler[1], T. Rausch[1] and E. Gage[1] *1. Seagate Technology, Shakopee, MN*

3:00

FE-05. **Importance of high magnetic field for HAMR SNR.** *S. Bance*[1], M. Gubbins[1], S. Hernandez[2] and P. Huang[3] *1. R&D, Seagate Technology, Derry, United Kingdom; 2. R&D, Seagate Technology, Shakopee, MN; 3. R&D, Seagate Technology, Fremont, CA*

3:15

FE-06. **Acceleration of HAMR simulations on granular media with precomputed switching probabilities based on the Landau-Lifshitz-Bloch equation.** *C. Vogler*[1], C. Abert[1], F. Bruckner[1], F. Slanovc[1] and D. Suess[1] *1. Institute of Solid State Physics, TU Wien, Vienna, Austria*

3:30

FE-07. **Dual Freelayer Reader for Improved Linear Density.** *M. Kief*[1], T. Boonstra[1], D. Dimitrov[1] and D. Song[1] *1. Seagate Technology, Bloomington, MN*

3:45

FE-08. **High-Frequency Modes of the Dual Free Layer Sensor.** *E. Auerbach*[1], S. Gider[2], G. Albuquerque[2], N. Leder[3], H. Arthaber[3] and D. Süss[1] *1. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria; 2. Recording Head Modeling, Western Digital Corporation, San Jose, CA; 3. Institute of Electrodynamics, Microwave, and Circuit Engineering, Vienna University of Technology, Vienna, Austria*

4:00

FE-09. **A model of spin torque transfer in a non-zero temperature system described by most probable path.** *J. Talbot*[1] and J. Miles[1] *1. Computer Science, University of Manchester, Manchester, United Kingdom*

4:15

FE-10. **Heusler Alloys with Tungsten Seed Layers for CPP-GMR Junctions.** *W.J. Frost*[1] and A. Hirohata[1] *1. Department of Electronics, University of York, York, United Kingdom*

THURSDAY AFTERNOON 2:00 — WICKLOW HALL 1

Session FF
SENSORS AND MEMS: DEVICES AND APPLICATIONS I

Weinong Fu, Chair
The Hong Kong Polytechnic University, Hong Kong, Hong Kong

2:00

FF-01. **A miniaturized force sensor based on hair-like flexible magnetized cylinders deposited over a giant magnetoresistive sensor.** *P.M. Ribeiro*[1,2], A. Alfhadel[3], J. Kosel[3], F. Franco[1,2], S. Cardoso[1,2], A. Bernardino[4], L. Jamone[5] and J. Santos-Victor[4] *1. INESC - Microssistemas e Nanotecnologias and IN, Lisbon, Portugal; 2. Physics Department, Instituto Superior Técnico, Lisbon, Portugal; 3. Computer, Electrical and Mathematical Sciences and Engineering Division, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 4. Instituto de Sistemas e Robótica, Instituto Superior Técnico, Lisbon, Portugal; 5. Advanced Robotics Centre, Queen Mary University, London, United Kingdom*

2:15

FF-02. **Ferromagnetic swimmer: A microfluidic pump prototype.** *J.K. Hamilton*[1], P.G. Petrov[1], C.P. Winlove[1], A.D. Gilbert[2], M.T. Bryan[1] and F. Ogrin[1] *1. Department of Physics, University of Exeter, Exeter, United Kingdom; 2. Department of Mathematics, University of Exeter, Exeter, United Kingdom*

2:30

FF-03. **Contactless piston position transducer with axial excitation.** *P. Ripka*[1], A. Chirtsov[1] and V. Grim[1] *1. Czech Technical University, Prague, Czech Republic*

2:45

FF-04. **Foil Sensors for Magnetic Off-Plane Flux Detection Between Inner Laminations of Machine Cores.** *G. Shilyashki*[1], H. Pfützner[1], M. Palkovits[1], A. Windischhofer[1] and M. Giefing[1] *1. EMCE, TU Wien, Vienna, Austria*

3:00

FF-05. **Battery-less Hall sensor operated by energy harvesting from a single Wiegand pulse.** ***(Invited)*** N. Fujinaga[1], A. Takebuchi[1], T. Yamada[1] and *Y. Takemura*[1] *1. Yokohama National University, Yokohama, Japan*

3:30

FF-06. **A Room-Temperature Resettable Thermomagnetic-Piezoelectric MEMS Magnetic Sensor.** T. Chung[1,2], C. Tseng[1] and *C. Chen*[1] *1. Department of Mechanical Engineering, National Chiao Tung University, Hsinchu, Taiwan; 2. International College of Semiconductor Technology, National Chiao Tung University, HsinChu, Taiwan*

3:45

FF-07. **Improved guiding efficiency of magnetic flux concentrators through a double layer architecture with vertical tapering.** *J. Valadeiro*[1,2], D.C. Leitao[1,2], S. Cardoso[1,2] and P. Freitas[1,3] *1. INESC - Microsystems and Nanotechnologies, Lisboa, Portugal; 2. Physics Department, Instituto Superior Técnico, Lisbon, Portugal; 3. INL, Braga, Portugal*

4:00

FF-08. **High Performance Single Element MI Magnetometer with Peak-to-Peak Voltage Detector by Synchronized Switching.** *J. Ma*[1] and T. Uchiyama[1] *1. Graduate School of Engineering, Nagoya University, Nagoya, Japan*

4:15

FF-09. **Fabrication and Performance of Integrated Fluxgate for Current Sensing Applications.** *D. Lee*[1], M. Eissa[2], A. Gabrys[1], B. Shulver[2], E. Mazotti[1], S. Lavangkul[2], S. Chevacharoenkul[2], N. Murphy[2], F. Wang[2], Y. Zhang[2], W. French[1], M. Jenson[2] and R. Jackson[2] *1. Texas Instruments Incorporated, Santa Clara, CA; 2. Texas Instruments Incorporated, Dallas, TX*

4:30

FF-10. **A Novel Magnetic Sensor Based on the Love-Type Surface-Acoustic Wave Resonator.** *X. Liu*[1], X. Yang[1], S. Chen[1], J. Ouyang[1], Z. Guo[1], B. Zhu[1] and Y. Zhang[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

4:45

FF-11. **Detection of inner cracks in thick steel plates using non-saturated AC magnetic flux leakage testing with a magnetic resistance gradiometer.** *K. Tsukada*[1], Y. Majima[1], Y. Nakamura[1], T. Yasugi[1], K. Sakai[1] and T. Kiwa[1] *1. Okayama University, Okayama, Japan*

THURSDAY AFTERNOON 2:00 | WICKLOW HALL 2A

Session FG

CE SUBSTITUTION, RECYCLING AND NOVEL PERMANENT MAGNETS

Dimitris Niarchos, Chair
NCSR Demokritos, Athens, Greece

2:00

FG-01. **Manufacturing of die-upset rare earth – iron – boron magnets with (Ce,La)-mischmetal.** A. Gabay[1] and *G. Hadjipanayis*[1] *1. University of Delaware, Newark, DE*

2:15

FG-02. **Spectroscopic valence of cerium in Ce-La-Fe-B compounds.** *M. Ito*[1,2], M. Yano[1,2], T. Shoji[1,2], A. Manabe[2], N. Dempsey[3,4] and D. Givord[3,4] *1. Toyota Motor Corporation, Susono, Japan; 2. Technology Research Association of Magnetic Materials for High-Efficiency Motors (MagHEM) Higashifuji-Branch, Susono, Japan; 3. CNRS, Institut Néel, Grenoble, France; 4. Univ. Grenoble Alpes, Institut Néel, Grenoble, France*

2:30

FG-03. **Mössbauer study on nanocrystalline $(Ce_{1-x}Nd_x)_{16}Fe_{78}B_6$ alloys.** *L. Zhao*[1,2], H. Yu[1], Z. Liu[1] and J. Greneche[2] *1. School of Materials Science and Engineering, South China University of Technology, Guangzhou, China; 2. Institut des Molécules et Matériaux du Mans CNRS UMR-6283, Université du Maine, Le Mans, France*

2:45

FG-04. **Cerium-substituted Nd-Fe-B anisotropic permanent magnet powders produced by HDDR treatment using strip-cast precursor alloys.** *I. Poenaru*[1,2], A. Lixandru[1,2], A. Malfliet[3], I. Škulj[4], K. Güth[1], R. Gauss[1] and O. Gutfleisch[2,1] *1. Fraunhofer ISC, Project Group IWKS, Hanau, Germany; 2. Functional Materials, Technische Universität Darmstadt, Darmstadt, Germany; 3. Research Group for Thermodynamics in Materials Engineering, Katholieke Universiteit Leuven, Leuven, Belgium; 4. Magneti, Ljubljana, Slovenia*

3:00

FG-05. **Microstructural influence on surface and bulk magnetisation behaviour in hexagonal ferrites observed by *in-situ* Magnetic Force Microscopy (MFM) and SQUID magnetometry.** *T.O. Helbig*[1], F. Rhein[1,2], V. Neu[3], M. Krispin[2] and O. Gutfleisch[1] *1. Materials Science, TU Darmstadt, Darmstadt, Germany; 2. Corporate Technology, Siemens AG, Munich, Germany; 3. IFW Dresden, Dresden, Germany*

3:15

FG-06. **High Coercive Rare Earth-Free Magnets for Medium Temperature Applications: from Quasi-Isotropic to Highly Textured MnBi Films.** *E. Céspedes*[1], M. Villanueva[1], F.J. Mompeán[2], C. Navío[1], J. Rial[1], A. Inchausti[1], P. Pedraz[1], M.R. Osorio[1], M. García-Hernández[2] and A. Bollero[1] *1. IMDEA Nanoscience, Madrid, Spain; 2. Instituto de Ciencia de Materiales de Madrid – ICMM-CSIC, Madrid, Spain*

3:30

FG-07. **RE-free iron-based systems containing refractory metals as candidates for permanent magnets.** ***(Invited)*** *D. Goll*[1], R. Loeffler[1], T. Gross[1], T. Grubesa[1], U. Pflanz[1] and G. Schneider[1] *1. Materials Research Institute, Aalen University, Aalen, Germany*

4:00

FG-08. **Synthesis and magnetic properties of $(Fe,Co)_3B$ based semi-hard magnets.** *S.K. Pal*[1], L.V. Diop[1], K. Skokov[1], S. Ener[1] and O. Gutfleisch[1] *1. Institut für Materialwissenschaft, Technische Universität Darmstadt, Darmstadt, Germany*

4:15

FG-09. **Structural transformations during an environmentally friendly process for recycling Nd-Fe-B permanent magnets.** *V. Nachbaur*[1], N. Maat[1], S. Jouen[1] and J. Le Breton[1] *1. Groupe de Physique des Materiaux, Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Rouen, France*

4:30

FG-10. **Closing the loop: approaches and progress in recycling of Nd-Fe-B sintered magnets employing hydrogen decrepitation and melt-spinning processes.** *E. Brouwer*[1], O. Diehl[1], M. Schönfeldt[1], A. Dirks[1], K. Rachut[1], J. Gassmann[1], K. Güth[1], A. Buckow[1], R. Stauber[1] and O. Gutfleisch[1,2] *1. Fraunhofer Project Group Materials Recycling and Resource Strategies IWKS, Hanau, Germany; 2. Functional Materials, Technische Universität Darmstadt, Darmstadt, Germany*

4:45

FG-11. **Microstructure and Magnetic Properties of Recycled NdFeB Magnets with Blending Addition of Ce-Rich Alloy.** *H. Feng*[1], Y. Zhang[1], A. Li[1], Y. Zhao[1] and W. Li[1] *1. Division of Functional Materials, China Iron and Steel Research Institute Group, Beijing, China*

THURSDAY AFTERNOON 2:00 — WICKLOW HALL 2B

Session FH

SHIELDING, LEVITATION AND PROPULSION WITH MOTORS, GENERATORS AND ACTUATORS

Mochimitsu Komori, Co-Chair
Kyushu Institute of Technology, Kitakyushu, Japan
Masatsugu Takemoto, Co-Chair
Hokkaido University, Sapporo, Japan

2:00

FH-01. **Torque Quality and Skin/Proximity Effect Investigation of a Fractional Slot PM Assisted Synchronous Reluctance Motors.** O.F. Payza[1] and *M. Aydin*[1] *1. Kocaeli University, Kocaeli, Turkey*

2:15

FH-02. **A Novel Torque Quality Improvement of an Asymmetric Windings Permanent Magnet Synchronous Motor.** *E. Yolacan*[1], M. Guven[2] and M. Aydin[1] *1. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey; 2. Schlumberger, Sugar Land, TX*

2:30

FH-03. **Design and Optimization of Direct Drive 8/6 External-Rotor Switched Reluctance Motor (Ex-R SRM) for Low Speed Application.** R.M. Azhagar[1] and *A. Kavitha*[1] *1. Electrical and Electronics Engineering, College of Engineering, Anna University, Chennai, India*

2:45

FH-04. **Design and Experimental Testing of a Magnetically Geared Lead Screw.** M. Bahrami Kouhshahi[1], *J.Z. Bird*[1], J. Kadel[2] and W. Williams[2] *1. Department of Electrical and Computer Engineering, Portland State University, Portland, OR; 2. Department of Electrical and Computer Engineering, University of North Carolina at Charlotte, Charlotte, NC*

3:00

FH-05. **A Novel Brushless Dual-Mechanical-Port Dual-Electrical-Port Machine.** *X. Ren*[1], D. Li[1] and R. Qu[1] *1. Huazhong University of Science and Technology, Wuhan, China*

3:15

FH-06. **Anisotropic Magnetic Shielding Effectiveness of Magnetic Shielded Package.** *K. Yamada*[1] *1. Wireless System Laboratory, Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

3:30

FH-07. **Design Principles of a Magnetic-Passive and Sliding Conjugated Bearing.** ***(Invited)*** *R.A. Pavani*[1] and O. Horikawa[1] *1. Escola Politécnica of University of São Paulo, São Paulo, Brazil*

4:00

FH-08. **An Improved Magnetic Circuit Model of a 3-DOF Magnetic Bearing Considering Leakage and Cross Coupling Effects.** *Y. Zhong*[1], L. Wu[1], X. Huang[1], Y. Fang[1] and J. Zhang[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

4:15

FH-09. **Magnetic Bearing with Uniaxial Control Using Radial Layers Repulsive Type Magnetic Bearing.** R.I. Yamamoto[1] and *O. Horikawa*[1] *1. Escola Politécnica da USP, São Paulo, Brazil*

4:30

FH-10. **Analysis of Acceleration Characteristics in Single Stage Electromagnetic Theta Gun.** Y. Chen[1], *X. Bao*[1], Y. Zhou[1], P. Fu[2] and L. Yang[2] *1. School of Electrical Engineering and Automation, Hefei University Of Technology, Hefei, China; 2. Institute of Plasma Physics, Chinese Academy of Science, Hefei, China*

4:45

FH-11. **Study on Electromagnetic Force Characteristics Acting on Levitation/Guidance Coils of a Superconducting Maglev Vehicle System.** *T. Yonezu*[1], K. Watanabe[1], E. Suzuki[1] and T. Sasakawa[2] *1. Electromagnetic Systems Laboratory, Maglev Systems Technology Division, Railway Technical Research Institute, Tokyo, Japan; 2. Maglev Systems Technology Division, Railway Technical Research Institute, Tokyo, Japan*

Session FM

BIO-MEDICAL MAGNETIC THERAPIES III (Poster Session)

Jeyadevan Balachandran, Co-Chair
The University of Shiga Prefecture, Hikone, Japan
Yuko Ichiyanagi, Co-Chair
Yokohama National University, Yokohama, Japan

FM-01. **Tuning applied field characteristics to improve the efficiency of magnetic hyperthermia.** *O. Laslett*[1], R. Woodward[2], H. Fangohr[1] and O. Hovorka[1] *1. Computational Engineering and Design, University of Southampton, Southampton, United Kingdom; 2. Department of Physics, University of Western Australia, Perth, WA, Australia*

FM-02. **Modeling Analysis and Estimation of Thyroid Gland Tissue Temperature Distribution for Electromagnetic Induction Ablation Using Thermotherapy Needle.** Y. Chen[1], C. Chen[2], *C. Tai*[1], Y. Du[3] and Y. Liu[4] *1. Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan; 2. Medical Devices and Opto-Electronics Equipment Department, Metal Industries Research & Development Centre, Kaohsiung, Taiwan; 3. National Cheng Kung University Hospital, Tainan, Taiwan; 4. Kaohsiung Medical University Hospital, Kaohsiung, Taiwan*

FM-03. **Sub/Supraliminal Stimulus with Pseudo-"Blindsight" under Exposure to ELF fields.** *H. Nakagawa*[1] and S. Ueno[2] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Adachi-ku, Japan; 2. Department of Applied Quantum Physics, Kyushu University, Fukuoka, Japan*

FM-04. **Quadruple Butterfly Coil with Passive Magnetic Shielding for Focused Transcranial Magnetic Stimulation.** *P. Rastogi*[1], Y. Tang[1], B. Zhang[1], E.G. Lee[2], R. Hadimani[3,1] and D. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA; 2. Department of Psychiatry, Massachusetts General Hospital, Harvard Medical School, Boston, MA; 3. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA*

FM-05. **Synthesis, structural, physical and chemical characterization of hybrid magnetic liposome nanocarriers of novel antioxidants for targeted drug delivery.** E. Halevas[1,2], T.A. Papadopoulos[3], A. Hatzidimitriou[4], D. Reid[5], A. Salifoglou[2] and *G. Litsardakis*[1] *1. Electrical and Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece; 2. Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece; 3. Department of Natural Sciences, University of Chester, Chester, United Kingdom; 4. Department of Chemistry, Aristotle University of Thessaloniki, Thessaloniki, Greece; 5. Department of Chemistry, University of Cambridge, Cambridge, United Kingdom*

FM-06. Improving Reliability of High-Current Magnetic Field Generator (HCMFG) for Transcranial Magnetic Stimulation. *J. Selvaraj*[1], P. Rastogi[1] and M. Mina[1] *1. Electrical and Computer Engineering, Iowa State University, Ames, IA*

FM-07. Magnetohydrodynamic Study for Magnetic Therapy. *H. Nakagawa*[1] and M. Ohuchi[1] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Adachi-ku, Japan*

FM-08. Brain Responses Evoked by Different-Mode Magnetic Stimulation of Acupuncture Point. *L. Fu*[1], G. Xu[1], H. Yu[2] and S. Tian[1] *1. Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Biomedical Engineering, Hebei University of Technology, Tianjin, China*

FM-09. Magnetically Targeted Stem Cell Delivery in Spinal Cord Injury: Rat Model. *A. Dejneka*[1], V. Zablotskii[1], O. Lunov[1] and S. Kubinova[1,2] *1. Department of Optics, Institute of Physics CAS, Prague, Czech Republic; 2. Institute of Experimental Medicine AS CR, Prague, Czech Republic*

FM-10. Effects of organic coating on hyperthermic efficiencies. *M. Cobianchi*[1,2], A. Lascialfari[1,3], V. Kusigerki[4], A. Mrakovic[4], N. Knezevic[5], D. Peddis[4,6] and E. Illes[4] *1. Fisica, Università degli studi di Pavia, Pavia, Italy; 2. INSTM, Pavia, Italy; 3. Università degli studi di Milano, Milano, Italy; 4. The Vinca Institute, Belgrade, Serbia; 5. Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia; 6. Istituto di Struttura della Materia, CNR, Roma, Italy*

FM-11. Targeting of TRAIL-conjugated maghemite nanoparticles for cancer therapy. *H. Belkahla*[1,2], E. Mazario[2], C. Whilem[3], O. Micheau[4], S. Ammar[2], M. Hemadi[2] and T. Gharbi[1] *1. nanomedicineLab, Université Franche Comté, Besançon, France; 2. ITODYS Laboratoy, Université Paris Diderot, Paris, France; 3. MSC Laboratory, Université Paris Diderot, Paris, France; 4. Lipides Nutrition Cancer, Facultés de Médecine et de Pharmacie, INSERM, UMR-866, Université de Bourgogne, Dijon, France*

FM-12. Numerical study of the temperature field in the magnetic hyperthermia. I. Astefanoaei[1], H. Chiriac[2] and *A. Stancu*[1] *1. Department of Physics and CARPATH Center, Alexandru Ioan Cuza" University, Iasi, Romania; 2. National Institute of Research & Development for Technical Physics, Iasi, Romania*

FM-13. Effect of Transcranial Magnetic Stimulation on Demyelinated Neuron Populations. *F. Syeda*[1], A. El-Gendy[1] and R.L. Hadimani[1] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Glen Allen, VA*

FM-14. Factors Affecting the Measurement of Magnetic Hyperthermia in Nanoparticle Suspensions. *G. Vallejo-Fernandez*[1], A. Drayton[1], J. Zehner[1], J. Timmis[2], V. Patel[2] and K. O'Grady[1,2] *1. University of York, York, United Kingdom; 2. Liquids Research Limited, Bangor, United Kingdom*

FM-15. **Magnetic Nanoparticles Coated with Anti-Tumor Drug for Hyperthermia-Boosted Cancer Therapy.** H. Chiriac[1], *D. Herea*[1], E. Radu[1,2], E. Carasevici[3,4], C. Tiron[4], F. Zugun-Eloae[3,4], O. Nedelcu[1,2] and N. Lupu[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. University "Al. I. Cuza", Iasi, Romania; 3. University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania; 4. Regional Institute of Oncology, Iasi, Romania*

FM-16. **Reversible Permeabilization of Cancer Cells by High Pulsed Sub-Microsecond Magnetic Field.** *V. Novickij*[1], I. Girkontaite[2], A. Grainys[1], A. Zinkeviciene[2], E. Lastauskiene[3], A. Paskevicius[4], J. Svediene[4], S. Markovskaja[5] and J. Novickij[1] *1. Institute of High Magnetic Fields, Vilnius Gediminas Technical University, Vilnius, Lithuania; 2. Department of Immunology, State Research Institute Centre for Innovative Medicine, Vilnius, Lithuania; 3. Department of Microbiology and Biotechnology, Vilnius University, Vilnius, Lithuania; 4. Laboratory of Biodeterioration Research, Nature Research Centre, Vilnius, Lithuania; 5. Laboratory of Mycology, Nature Research Centre, Vilnius, Lithuania*

FM-17. **In vitro magneto-mechanical cancer cell destruction efficacy under biaxial DC pulsed magnetic field.** *D. Wong*[1], W. Gan[1], N. Liu[1] and W. Lew[1] *1. Physics and Applied Physics, Nanyang Technological University, Singapore, Singapore*

FM-18. **Multifunctionality of maghemite nanoparticles functionalized by HSA for drug delivery.** J. Hai[1], H. Piraux[1], E. Mazario[1], J. Volatron[2], N. Ha-Duong[1], P. Decorse[1], A. Espinosa[2], C. Whilem[2], P. Verbeke[3], F. Gazeau[2], S. Ammar[1], J. El Hage Chahine[1] and *M. Hemadi*[1] *1. ITODYS Laboratoy, Université Paris Diderot, Paris, France; 2. MSC Laboratory, Université Paris Diderot, Paris, France; 3. UMR 1149 Inserm, Université Paris Diderot, Paris, France*

THURSDAY AFTERNOON 1:30 — THE FORUM

Session FN
MAGNETIC NANOPARTICLES, NANOWIRES, AND 3D STRUCTURES II (Poster Session)

Oscar Iglesias, Chair
University of Barcelona, Barcelona, Spain

FN-01. **Microstructure and magnetic properties of CoFeV nanosprings.** *D. Nam*[1], S. Kim[1], Y. Jeon[1] and Y.K. Kim[1] *1. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

FN-02. **Morphology and magnetic properties of α”-$Fe_{16}N_2$ nanoparticles synthesized from iron hydroxide with various kinds of shape.** *M. Tobise*[1], H. Amano[2], Y. Yamaguchi[2], Y. Nomura[2] and S. Saito[1] *1. Tohoku University, Sendai, Japan; 2. Taiyo Nippon Sanso Corp., Yamanashi, Japan*

FN-03. **Magnetic field dependence of Ni nanorod Brownian relaxation.** *H. Remmer*[1], M. Gratz[2], A. Tschoepe[2] and F. Ludwig[1] *1. Institute of Electrical Measurement and Fundamental Electrical Engineering, TU Braunschweig, Braunschweig, Germany; 2. Experimentalphysics, Universität des Saarlandes, Saarbrücken, Germany*

FN-04. **Magneto-plasmonic nanoparticles embedded in a matrix synthesized by cluster deposition.** *O. Loiselet*[1], F. Tournus[1], V. Dupuis[1] and J. Bellessa[1] *1. ILM UMR5306 CNRS, Villeurbanne, France*

FN-05. **Cubic chemically ordered FeRh and FeCo nanomagnets prepared by mass-selected low energy clusters beam deposition, a comparative study.** *V. Dupuis*[1] and A. Robert[1] *1. iLM CNRS/University Lyon, Villeurbanne, France*

FN-06. **Tetragonalization of (Cu,Co)Fe_2O_4 particles via the Jahn-Teller effect induced by Cu^{2+} ions.** *H. Latiff*[1], M. Kishimoto[1], S. Sharmin[1], E. Kita[1], H. Yanagihara[1] and T. Nakagawa[2] *1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. Department of Management of Industry and Technology, Graduate School of Engineering, Osaka University, Suita, Japan*

FN-07. **Magnetic particle spectrometry of Fe_3O_4 nanoclustered particles.** *L. Abelmann*[1,2], A. Blaudszun[1], M. Ledwig[3], L. Pan[4], B. Park[4] and Y. Kim[4] *1. KIST Europe, Saarbrücken, Germany; 2. University ot Twente, Enschede, Netherlands; 3. Pure Devices, Würzburg, Germany; 4. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea*

FN-08. **The anisotropy of the ac susceptibility of immobilized magnetic nanoparticles – the influence of intra-potential-well contribution on the ac susceptibility spectrum.** *F. Ludwig*[1], C. Balceris[1] and C. Johansson[2] *1. Institute of Electrical Measurement and Fundamental Electrical Engineering, TU Braunschweig, Braunschweig, Germany; 2. Acreo Swedish ICT AB, Göteborg, Sweden*

FN-09. **Porous iron oxide particles with heat generation ability under alternating magnetic field.** *S. Fujieda*[1], Y. Imaizumi[1], Y. Hayasaka[1], T. Akiyama[1], K. Shinoda[1], J. Balachandran[2] and S. Suzuki[1] *1. Tohoku University, Sendai, Japan; 2. The University of Shiga Prefecture, Hikone, Japan*

FN-10. **Morphological controlled synthesis and magnetic studies of ferrite nanoparticles.** *Y. Eom*[1] and C. Kim[1] *1. Emerging Materials Science, DGIST, Daegu, The Republic of Korea*

FN-11. **Direct synthesis of $L1_0$ nanoparticle alloys from salt layered precursor: an in-situ XAS study.** A. Capobianchi[1], G. Varvaro[1], P. Imperatori[2], F. D'Acapito[3] and *S. Laureti*[1] *1. nM2-Lab, Istituto di Struttura della Materia - CNR, Monterotondo Scalo, Italy; 2. Istituto di Struttura della Materia, CNR, Monterotondo Scalo, Italy; 3. CNR-IOM-OGG c/o ESRF, GILDA CRG, Grenoble, France*

FN-12. **Morphology Control of Magnetic Properties in Cobalt Nanowires.** H. Xu[1], *Q. Wu*[1], M. Yue[1], C. Li[1] and H. Li[1] *1. Beijing University of Technology, Beijing, China*

FN-13. **Spin, orbital moment and magnetic ordering in Fe_3O_4 nanoparticles assemblies.** *K. Chesnel*[1] *1. Physics and Astronomy, BYU, Provo, UT*

FN-14. **Magnetic Core-Size Distribution of Magnetic Nanoparticles Estimated from Magnetization, AC Susceptibility and Relaxation Measurements.** *A.L. Elrefai*[1,2], T. Sasayama[1], T. Yoshida[1] and K. Enpuku[1] *1. Electrical and Electronic Engineering, Kyushu University, Fukuoka, Japan; 2. Electrical Power and Machines, Cairo University, Giza, Egypt*

FN-15. **Magnetism and structure of $Co_{80}Tb_{20}$ nanoclusters.** *A. Robert*[1], A. Tamion[1], D. Le Roy[1] and V. Dupuis[1] *1. iLM CNRS/University Lyon, Villeurbanne, France*

FN-16. **Preparation of Oxidatively Stable Metal Nanoparticles.** *J. Timmis*[1], I. Jones[1], S. Wells[1], V. Patel[1] and K. O'Grady[2] *1. Liquids Research Ltd, Bangor, United Kingdom; 2. Department of Physics, University of York, York, United Kingdom*

FN-17. **Organization and magnetic properties of FePt nanoparticles on moiré pattern.** *P. Capiod*[1], F. Tournus[1], L. Bardotti[1], G. Renaud[2] and V. Dupuis[1] *1. iLM CNRS/University Lyon, Villeurbanne, France; 2. ESRF, CEA / INAC, Grenoble, France*

FN-18. **Application of Asymmetric Flow Field-Flow Fractionation Coupled to Magnetic Particle Spectroscopy for Characterization of Magnetic Nanoparticles.** *N. Löwa*[1], R. Welz[2], F. Meier[2], T. Klein[2] and F. Wiekhorst[1] *1. Physikalisch-Technische Bundesanstalt, Berlin, Germany; 2. Postnova Analytics GmbH, Landsberg, Germany*

Session FO

AMORPHOUS AND NANOCRYSTALLINE ALLOYS II (Poster Session)

Alexander Chizhik, Chair
Universidad del Pais Vasco, San Sebastian, Spain

FO-01. **NANOMET® and FINEMET®: Investigation on the crystallization mechanism between different kinds of Fe-based soft magnetic nano-composite alloys.** *Y. Zhang*[1], Y. Wang[1] and A. Makino[2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Tohoku University, Sendai, Japan*

FO-02. **Magnetic and structural peculiarities of rapidly solidified glass-coated FINEMET nanowires.** H. Chiriac[1], N. Lupu[1], G. Stoian[1], S. Corodeanu[1] and *T.A. Ovari*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

FO-03. **Determination of the effects of oblique angle on the damping factor of nanogranular FeCoTiO magnetic films.** Y. He[1], Y. Wang[1], Z. Zhong[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, China*

FO-04. **Effect of manganese on the microstructure and magnetic properties of Fe-Mn-Nb-B glassy ribbons.** L. Whitmore[1], G. Ababei[1], L.C. Budeanu[1,2], M. Grigoras[1], H. Chiriac[1] and *N. Lupu*[1] *1. MDM, National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Faculty of Physics, "Al.I. Cuza" University, Iasi, Romania*

FO-05. **Highly textured FeCo thin films deposited by low temperature Pulsed Laser Deposition.** G. Varvaro[1], D. Peddis[1], G. Barucca[2], P. Mengucci[2], V.V. Rodionova[3], K. Chichay[3], A. Testa[1], E. Agostinelli[1] and *S. Laureti*[1] *1. nM2-Lab, Istituto di Struttura della Materia - CNR, Monterotondo Scalo, Italy; 2. Dipartimento SIMAU, Università Politecnica Delle Marche, Ancona, Italy; 3. Innovation Park and Institute of Physics and Technology, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation*

FO-06. **Investigation of the magnetization reversal mechanism on thick magnetic wire using the dynamic FORC: experiment and theory.** *I. Dumitru*[1], D. Cimpoesu[1] and A. Stancu[1] *1. Department of Solid State and Theoretical Physics, "Alexandru Ioan Cuza" University, Iasi, Romania*

FO-07. **Comparison Between Magnetic Behavior of FINEMET Cold Drawn and Glass-Covered Microwires.** *A. Damian*[1,2], S. Corodeanu[1], H. Chiriac[1], N. Lupu[1] and T.A. Ovari[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Faculty of Physics, Alexandru Ioan Cuza University, Iasi, Romania*

FO-08. **Effect of chloride salts in plating baths on soft magnetic properties of electroplated Fe-Ni films.** *K. Koda*[1], K. Sugihara[1], K. Eguchi[1], K. Takashima[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

FO-09. **Quasistatic AC FORC Measurements for Soft Magnetic Materials and their Differential Interpretation.** *M. Rivas*[1], J.C. Martínez-García[1] and P. Gorria[1] *1. Physics Department, Universidad de Oviedo, Gijón, Spain*

FO-10. **High frequency magnetic properties of stripe patterned FeCoSiB/SiO_2/FeCoSiB multilayer films.** *Y. Liu*[1] *1. graduate student, ChengDu, China*

FO-11. **Performance factor comparison of nanocrystalline, amorphous and crystalline soft magnetic materials for medium frequency applications.** *T. Kauder*[1] and K. Hameyer[1] *1. Institute of Electrical Machines (IEM), Aachen, Germany*

FO-12. **Effect of additives in DES-based plating baths on structural and magnetic properties of Fe-Ni films.** *T. Yamaguchi*[1], T. Akiyoshi[1], K. Azuma[1], K. Takashima[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

FO-13. **Effects of Silicon Content on Properties of Gas-Atomized Fe-Si-Cr Powders.** *P. Jang*[1] and G. Choi[2] *1. Department of Optical Engineering, Cheongju University, Cheongju, The Republic of Korea; 2. Central R&D Center, Changsung Corp., Incheon, The Republic of Korea*

FO-14. **Surface conditions on magnetic properties of Fe-based amorphous ribbon.** *M. Kim*[1], J. Lee[1] and K. Kim[1] *1. Physics, Yeungnam University, Gyeongsan, The Republic of Korea*

THURSDAY AFTERNOON 1:30 — THE FORUM

Session FP

MAGNETOELASTIC MATERIALS I (Poster Session)

Franca Albertini, Co-Chair
IMEM-CNR, Parma, Italy
Arcady Zhukov, Co-Chair
University of Basque Country and Ikerbasque, San Sebastian, Spain

FP-01. **Design of a velocity-driven magnetostrictive device based on Galfenol alloy for automotive and railways applications.** D. Davino[1], D. Leone[1] and *C. Visone*[1] *1. University of Sannio, Benevento, Italy*

FP-02. **Voltage controlled magnetisation reversal in magnetostrictive bilayer thin films.** *D.P. Pattnaik*[1], K. Edmonds[1] and A. Rushforth[1] *1. School of Physics and Astronomy, University of Nottingham, Nottingham, United Kingdom*

FP-03. **Experimental characterization of a three rods magnetostrictive device for energy harvesting.** *C.S. Clemente*[1], D. Davino[1] and C. Visone[1] *1. Department of Engineering, University of Sannio, Benevento, Italy*

FP-04. **Structural health monitoring using magnetostrictive sensors.** Z. Leung[1], A. Al-Taher[1], L. Chan[1], N. Walters[1], M. McGahan[1], S. Hayes[1], N. Lupu[2], I. Murgulescu[2] and *N. Morley*[1] *1. Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom; 2. National Institute of Research and Development for Technical Physics, Iasi, Romania*

FP-05. **Correct estimation of surface acoustic wave amplitude for efficient magnetization control.** *L. Thevenard*[1], I. Camara[1], L. Largeau[2], J. Duquesne[1], C. Gourdon[1], P. Rovillain[1] and B. Croset[1] *1. Institut des Nanosciences de Paris, UPMC CNRS, Paris, France; 2. Centre de Nanosciences et de Nanotechnologies, CNRS, Universite Paris Sud, Orsay, France*

FP-06. **Structural and magnetostriction properties of FeCo films with different thicknesses.** *S. Baco*[1], Q. Abbas[1], T. Hayward[1] and N. Morley[1] *1. Material Science and Engineering, The University of Sheffield, Sheffield, United Kingdom*

FP-07. ***Ab initio* study of magnetic properties of $Fe_{1-x}Ga_x$ alloys.** M. Matyunina[1], V. Sokolovskiy[1,2], *M.A. Zagrebin*[1,3] and V. Buchelnikov[1] *1. Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. National University of Science and Technology 'MIS&S', Moscow, Russian Federation; 3. National Research South Ural State University, Chelyabinsk, Russian Federation*

FP-08. **Consolidation of magnetostrictive (001)-oriented Fe-Ga flakes for 3D printing powder materials.** *S. Na*[1], J.D. Galuardi[2] and A.B. Flatau[1,2] *1. Aerospace Engineering, University of Maryland, College Park, MD; 2. Materials Science and Engineering, University of Maryland, College Park, MD*

FP-09. **Effect of Ta and B Addition on the Magnetic and Mechanical Properties of Fe-Ni-Co-Al -Based Rapidly Quenched Superelastic Microwires.** *F. Borza*[1], N. Lupu[1], I. Murgulescu[1], V. Dobrea[1], G. Stoian[1], G. Ababei[1], M. Grigoras[1] and H. Chiriac[1] *1. National Institute of R&D for Technical Physics, Iasi, Romania*

FP-10. **Temperature driven changes of electronic structure through the phase transition in magnetocaloric compound $Mn_{1.1}Fe_{0.9}P_{0.6}As_{0.4}$.** *J. Kubacki*[1,2], K. Balin[1,2], J. Goraus[1,2], M. Kulpa[1,2], L. Hawelek[3], P. Wlodarczyk[3], P. Zackiewicz[3], M. Kowalczyk[4] and J. Szade[1,2] *1. A. Chelkowski Institute of Physics, University of Silesia, Katowice, Poland; 2. Silesian Center for Education and Interdisciplinary Research, Chorzów, Poland; 3. Institute of Non-Ferrous Metals, Gliwice, Poland; 4. Faculty of Materials Science and Engineering, Techincal University of Warsaw, Warsaw, Poland*

FP-11. **Magnetic field controlled stiffness coefficient in $Fe_{82}Ga_{13.5}Al_{4.5}$ spring.** *M. Li*[1], J. Li[1], X. Gao[1] and Y. Liu[1] *1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing, China*

FP-12. **An Experimental Observation of the Rotational Motion of a Magnetostrictive Motor about an Arbitrary Axis.** H. Lee[1], *Y. Park*[1], E. Yoo[1] and M.D. Noh[1] *1. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea*

FP-13. **Composition and ferromagnetic properties of sputtered Fe-Ga thin films for magnetostrictive applications.** *D.B. Gopman*[1], V. Sampath[2], H. Ahmed[2], S. Bandyopadhyay[2] and J. Atulasimha[2] *1. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD; 2. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA*

FP-14. **Influence of shape anisotropy and temperature on magnetostrictive behaviors in single crystal Galfenol alloys.** *A. Orr*[1], J.R. Downing[1], H. Kim[2], J. Paglione[2], S. Na[3] and A.B. Flatau[3,1] *1. Materials Science and Engineering, University of Maryland, College Park, MD; 2. Department of Physics, University of Maryland, College Park, MD; 3. Aerospace Engineering, University of Maryland, College Park, MD*

FP-15. **Magnetostriction Properties of Polycrystalline $CoFe_2O_4$ under Compressive and Tensile Stresses.** *J. Wang*[1], X. Gao[1], J. He[1], Z. Guo[1] and M. Zhang[2] *1. University of Science and Technology Beijing, Beijing, China; 2. Yangzhou University, Yangzhou, China*

FP-16. **Magnetostriction of non-modulated Ni-Mn-Ga.** *V. Khovaylo*[1], I. Tereshina[2], G. Politova[2], A. Karpenkov[3], S.V. Taskaev[4] and T. Palewski[5] *1. National University of Science and Technology "MIS&S", Moscow, Russian Federation; 2. Baikov Institute of Metallurgy and Materials Science RAS, Moscow, Russian Federation; 3. Tver State University, Tver, Russian Federation; 4. Chelyabinsk State University, Chelyabinsk, Russian Federation; 5. International Laboratory for High Magnetic Fields and Low Temperatures, Wroclaw, Poland*

FP-17. **Exchange bias and spin glass transition of the magnetic ground state in quaternary MnCuNiSn Heusler alloy.** *C. Jing*[1], C. Liu[1], Y. Liu[1], J. Sun[1], Y. Zhang[1,2], Y. Huang[1], B. Kang[1], D. Deng[1], Z. Feng[1] and Z. Li[1,2] *1. Department of Physics, Shanghai University, Shanghai, China; 2. Qujing Normal University, Qujing, China*

Session FQ
MICROMAGNETISM AND MULTISCALE MODELING III (Poster Session)

Jonathan Leliaert, Co-Chair
Ghent University, Ghent, Belgium
Mykola Dvornik, Co-Chair
University of Gothenburg, Gothenburg, Sweden

FQ-01. **Ground state skyrmion and helical states in confined FeGe nanostructures.** *R. Pepper*[1], M. Beg[1], D.I. Cortes[1], R. Carey[1], W. Wang[2], M. Albert[1], D. Chernyshenko[1] and H. Fangohr[1] *1. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 2. Faculty of Science, Ningbo University, Ningbo, China*

FQ-02. **Modelling compensated antiferromagnetic interfaces with Mumax^3.** *J. De Clercq*[1] and B. Van Waeyenberge[1] *1. DyNaMat, Solid State Sciences, Ghent University, Gent, Belgium*

FQ-03. **Clustering effect on frequency dependent magnetic properties of FeCo micro hollow fiber composites.** *M. Choi*[1], S. Lee[1] and J. Kim[1] *1. Materials Engineering, Hanyang University, Ansan, The Republic of Korea*

FQ-04. **Micromagnetic simulation of Co nanowires array.** H. Li[1], *M. Yue*[1], Y. Peng[1], Y. Li[1], Q. Wu[1], W. Liu[1] and D. Zhang[1] *1. Materials Science and Engineering, Beijing University of Technology, Beijing, China*

FQ-05. **Micromagnetic Studies at Finite Temperature on FePt-C Granular Films.** *J. Song*[1], J. Wang[2], D. Wei[1], Y. Takahashi[2] and K. Hono[2] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

FQ-06. **Spin waves in periodic antidot waveguide of complex base.** *S. Pan*[1], J. Klos[2], S. Mieszczak[2], A. Barman[1] and M. Krawczyk[2] *1. S. N. Bose National Centre for Basic Sciences, Kolkata, India; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

FQ-07. **Large-scale micromagnetic simulation of thermally demagnetized state and initial magnetization process in Nd-Fe-B hot-deformed nanocrystalline permanent magnet.** *H. Tsukahara*[1], K. Iwano[1], C. Mitsumata[2], T. Ishikawa[1] and K. Ono[1] *1. High Energy Accelerator Research Organization, Tsukuba, Japan; 2. NIMS, Tsukuba, Japan*

FQ-08. **Numerical study on a novel Curie temperature controlled hybrid thermo-magnetic structure for magnetic random access memories.** *K. Machida*[1], Y. Sonobe[2] and Y. Nakatani[1] *1. University of Electro-Communications, Chofu, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan*

FQ-09. **Petascale-native solution for accelerated computations in micromagnetics and spintronics - PETASPIN.** A. Giordano[1], *S. Chiappini*[2], A. Messina[2], G. Siracusano[3] and G. Finocchio[1,2] *1. Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 2. Instituto Nazionale di Geofisica e Vulcanologia, Messina, Italy; 3. University of Catania, Catania, Italy*

FQ-10. **Relation Between Damping Constant and Switching Time Distribution in Magnetic Tunnel Junctions.** *J. Moon*[1], T. Lee[2] and C. You[3] *1. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 2. SK hynix, Icheon, The Republic of Korea; 3. Department Emerging Materials Science, DGIST, Daegu, The Republic of Korea*

FQ-11. **Universal depinning behaviour of magnetic domain walls driven by spin-orbit torque.** *H. Whang*[1] and S. Choe[1] *1. Department of Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea*

FQ-12. **Micromagnetic Simulation of Spatial Distribution of Magnetization in Ultra-Thin Cobalt Layers with Gradient of Magnetic Anisotropy.** M. Kisielewski[1], *J. Kisielewski*[1], I. Sveklo[1], A. Wawro[2] and A. Maziewski[1] *1. Faculty of Physics, University of Bialystok, Bialystok, Poland; 2. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

FQ-13. **Influence of Interfacial Dzyaloshinskii-Moriya Interaction on Spin-Torque Oscillators.** *Y. Xu*[1] *1. Nanjing University, Nanjing, China*

FQ-14. **Big data analytics for ultra-large-scale micromagnetic simulation of permanent magnets.** *K. Ono*[1], H. Tsukahara[1], A. Asahara[2], H. Morita[2], H. Hayashi[2] and E. Umino[3] *1. High Energy Accelerator Research Organization, Tsukuba, Japan; 2. Hitachi Ltd., Tokyo, Japan; 3. Hitachi Solutions Ltd., Tokyo, Japan*

FQ-15. **Modelling inter-grain exchange coupling in recording media.** *M.O. Ellis*[1,2], R.V. Ababei[1], R.W. Wood[3], R.F. Evans[1] and R. Chantrell[1] *1. Department of Physics, University of York, York, United Kingdom; 2. CRANN and School of Physics, Trinity College Dublin, Dublin, Ireland; 3. Recording Systems, Western Digital Corp., San Jose, CA*

FQ-16. **Magnetization reversal and spin dynamics in patterned ferromagnetic dots.** J. Ding[1], S. Lendínez[1], P. Lapa[1,2], T. Khaire[1], J. Pearson[1], A. Hoffmann[1] and *V. Novosad*[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics and Astronomy, Texas A&M University, College Station, TX*

FQ-17. **Study of the magnetic Bloch skyrmion configuration in magnetic dots as a function of the uniaxial perpendicular anisotropy.** *S. Allende*[1] and M. Castro[1] *1. Universidad de Santiago de Chile, Santiago, Chile*

FQ-18. **Micromagnetic Studies of Time-Dependent Coercivity.** *J. Miao*[1], D. Wei[1] and C. Liu[2,3] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China; 2. Center for High Energy Physics, School of Physics, Peking University, Beijing, China; 3. Collaborative Innovation Center of Quantum Matter, Beijing, China*

THURSDAY AFTERNOON 1:30 — THE FORUM

Session FR
SENSING, MAGNETOIMPEDANCE, MAGNETODYNAMICS (Poster Session)

Andrei Slavin, Co-Chair
Oakland University, Rochester Hills, MI
Vasil Tiberkevich, Co-Chair
Oakland University, Rochester, MI

FR-01. **High frequency properties of compacted Fe-4.5 wt% Si powders with insulating layer synthesized by modified dew point treatment.** *K. Lee*[1], M. Choi[1] and J. Kim[1] *1. Materials Engineering, Hanyang University, Ansan, The Republic of Korea*

FR-02. **Chemically synthesized Co-Fe-B amorphous nanoparticles for high frequency applications.** *G. Ababei*[1], M. Gaburici[1], L.C. Budeanu[1], M. Grigoras[1], N. Lupu[1] and H. Chiriac[1] *1. MDM, National Institute of Research and Development for Technical Physics, Iasi, Romania*

FR-03. **Effect of DC bias current on sensitivity of thin-film magnetoimpedance element.** *C. Sumida*[1], H. Kikuchi[1], S. Hashi[2], K. Ishiyama[2] and T. Nakai[3] *1. Iwate University, Morioka, Japan; 2. Tohoku University, Sendai, Japan; 3. Industrial Technology Institute, Miyagi Prefectural Government, Sendai, Japan*

FR-04. **Investigation of bending stress effect in diagonal and off-diagonal GMI sensors.** J. Nabias[1,2], *A. Asfour*[1,2] and J. Yonnet[1,3] *1. Grenoble Electrical Engineering Lab (G2ELab), Grenoble, France; 2. University Grenoble Alpes, Grenoble, France; 3. CNRS, Grenoble, France*

FR-05. **Numerical analysis on spin dynamics in multilayer nanodots with interlayer antiferromagnetic coupling.** *X. Ya*[1], T. Tanaka[1] and K. Matsuyama[1] *1. Kyushu University, Fukuoka, Japan*

FR-06. **On the origin of multi-peak and asymmetric behaviour of microstructured thin-film Permalloy GMI devices in the high frequency regime.** *G. Büttel*[1] and U. Hartmann[1] *1. University of Saarland, Saarbrücken, Germany*

FR-07. **Temperature dependent magnetic properties of substituted Co lithium ferrites.** *A. Adenot-Engelvin*[1], N. Vukadinovic[2], R. Lebourgeois[3], N. Najmi[4] and N. Malléjac[1] *1. CEA Le Ripault, Monts, France; 2. Dassault Aviation, Saint Cloud, France; 3. Thales TRT, Palaiseau, France; 4. CRITT Strasbourg, Strasbourg, France*

FR-08. **Decoupling Soft Ferromagnetic Fe-Co-Hf-N Films from WC-Co Substrates for Sensor Applications.** *S. Beirle*[1] *1. Institute for Applied Materials (IAM-AWP), Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, Germany*

FR-09. **Broadband Permeability Spectra of Flake-Shaped Ferromagnetic Particle Composites.** Z. Raolison[1], Q. Clément[2], A. Adenot-Engelvin[3], N. Malléjac[3], C. Lefevre[1], G. Pourroy[1], F. Boust[4] and *N. Vukadinovic*[2] *1. IPCMS, UMR 7504, CNRS Université de Strasbourg, Strasbourg, France; 2. Dassault Aviation Company, Saint-Cloud, France; 3. CEA-DAM Le Ripault, BP16, Monts, France; 4. Onera-The French Aerospace Lab, Palaiseau, France*

FR-10. **Effect of Film Thickness on High Frequency Magnetic Properties of Polycrystalline Fe-Ga Films.** *Y. Endo*[1,2], T. Sakai[3], T. Miyazaki[4] and Y. Shimada[1] *1. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 3. Department of Electrical, Information and Physics Engineering, Tohoku University, Sendai, Japan; 4. Technical Division, School of Engineering, Tohoku University, Sendai, Japan*

FR-11. **An instrument for measurement of spin-wave excitation via thermoelectric detection.** *I. Turčan*[1], L. Flajsman[2], M. Vanatka[2], T. Sikola[1,2] and M. Urbánek[1,2] *1. Institute of Physical Engineering, Brno University of Technology, Brno, Czech Republic; 2. CEITEC BUT, Brno University of Technology, Brno, Czech Republic*

FR-12. **Spin Hall effect induced SOT fields in perpendicular magnetized Co/Ni multilayer systems.** *S. Li*[1], S. Goolaup[1], F. Luo[1] and W. Lew[1] *1. School of Physics and Physical Science, Nanyang Technological University, Singapore, Singapore*

FR-13. **High frequency magnetic properties of multistripe patterned FeCoBSi thin films.** X. Weng[1], *H. Zheng*[1], L. Zhang[1], W. Zhu[1], M. Li[1], M. Zhang[1], Y. Liu[1], X. Wang[1], N. Wang[1], J. Xie[1] and L. Deng[1] *1. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China*

FR-14. **Thickness dependence of magnetization dynamics of an in-plane anisotropy ferromagnet under a crossed spin torque polarizer.** *N. Rahman*[1] and R. Sbiaa[1] *1. Sultan Qaboos University, Muscat, Oman*

FR-15. **Atomic scale simulations (LLG and MC) of magnetization reversal at finite temperatures.** *S. Miyashita*[1,2], M. Nishino[2,3], Y. Toga[2], A. Sakuma[4], S. Hirosawa[2], T. Miyake[5,2], H. Akai[6,2] and S. Doi[6,2] *1. Physics, University of Tokyo, Tokyo, Japan; 2. ESCIMM, NIMS, Tsukuba, Japan; 3. MANA, NIMS, Tsukuba, Japan; 4. Applied Physics, Tohoku University, Sendai, Japan; 5. CD-DMat, AIST, Tsukuba, Japan; 6. ISSP, University of Tokyo, Kashiwa, Japan*

FR-16. **Microscale Magnetization Dynamics in a Soft Nanocrystalline Ribbon.** *A. Stupakov*[1], O. Perevertov[1] and Y. Melikhov[2] *1. Institute of Physics CAS, Prague, Czech Republic; 2. Cardiff University, Cardiff, United Kingdom*

FR-17. **Pump-induced damping term in thin CoFeB film.** *L. Bo*[1], X. Ruan[1] and Y. Xu[1,2] *1. Nanjing University, Nanjing, China; 2. University of York, York, United Kingdom*

THURSDAY AFTERNOON 1:30 | THE FORUM

Session FS
SHIELDING, LEVITATION AND PROPULSION (Poster Session)

Masahide Oshima, Chair
Tokyo University of Science, Suwa, Tokyo, Japan

FS-01. **Sensorless Direct Torque Control of Permanent Magnet Synchronous Motor Drives Using Polynomial Chaos Theory.** Z. Zhang[1], R. Tong[1] and *H. Yu*[1] *1. School of Electrical and Information Engineering, Tianjin University, Tianjin, China*

FS-02. **Performance Comparison Between the Normal-Conducting Magnet and the Superconducting Magnet in LSM for High-Speed Propulsion.** *C. Park*[1] *1. Department of Railway Operation System Engineering, Korea National University of Transprotation, Uiwang-si, The Republic of Korea*

FS-03. **Analysis and Experimental Verification of Normal Force of Linear Induction Motor for Maglev Vehicle.** *J. Lim*[1], J. Jeong[2], C. Kim[1], C. Ha[1] and D. Park[1] *1. KIMM, Daejeon, The Republic of Korea; 2. Chungnam National University, Daejeon, The Republic of Korea*

FS-04. **Influence of Inductance Properties on a Magnetic Levitation for Thin Steel Plates.** *Y. Takada*[1], T. Kimura[1] and T. Nakagawa[1] *1. Department of Electrical and Electronic Engineering, Tokyo City University, Setagaya, Japan*

FS-05. **Modeling and Analysis of a Magnetic Levitation Vibration Isolation System Using Passive Magnetic Gravity Compensators.** *Y. Zhou*[1], B. Kou[1], X. Yang[1] and J. Luo[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

FS-06. **Maximum Limit of Superconducting Persistent Current for Superconducting Magnetic Suspension System.** *M. Komori*[1], A. Minoda[1], K. Nemoto[1], K. Asami[1] and N. Sakai[1] *1. Kyushu Institute of Technology, Kitakyushu, Japan*

FS-07. **Reduction of Eddy Current Loss in Flux-Switching Permanent-Magnet Machines Using Rotor Magnetic Flux Barriers.** *J. Luo*[1], J. Ji[1] and Y. Zhang[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

FS-08. **A High-Speed Magnetic-Geared Machine for Electric Unmanned Aerial Vehicles.** *C. Liu*[1] and J. Yu[1] *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, China*

FS-09. **Design of a High Force Density Linear Electromagnetic Actuator Based on Magnetic Screw.** *W. Zhao*[1], Z. Ling[1] and J. Ji[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

FS-10. **Quantitative Design and Comparison of Two Types of Permanent Magnet Transmission Device.** M. Yang[1], X. Zhu[1], Z. Xiang[1], D. Fan[1] and *W. Wu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

FS-11. **A Proposal of an One-Axis Active Control Type Bearingless Motor Integrating Radial Passive Magnetic Bearings and a Thrust Active Magnetic Bearing.** T. Kobayashi[1], *M. Takemoto*[1], S. Ogasawara[1], K. Orikawa[1] and A. Chiba[2] *1. Graduate School of Information Science and Technology, Hokkaido University, Sapporo, Japan; 2. Tokyo Institute of Technology, Tokyo, Japan*

FS-12. **Hybrid radial magnetic-bearing design with reduced electromagnetic loss.** C. Han[1,2], J. Ahn[1,2], *T. Bang*[2], C. Park[3] and J. Choi[2] *1. R&D Dept, Magnetar, Daejeon, The Republic of Korea; 2. Chungnam National University, Daejeon, The Republic of Korea; 3. Advanced Manufacturing Systems Research Division, KIMM, Daejeon, The Republic of Korea*

FS-13. **Control and Analysis of Magnetic Levitation Device Based on Induced Eddy Current.** Y. Jin[1], *S. Wang*[1], K. Qiu[2], P. Yu[1], P. Hao[1] and H. Li[1] *1. Xi'an Jiaotong University, Xi'an, China; 2. Shenzhen Power Supply Bureau Co., Ltd., Shenzhen, China*

FS-14. **Analysis and Experimental Verification of the Levitation and Guidance Electromagnets Force Performance in Semi-High-Speed Maglev Trains Considering Fringing Flux.** *J. Jeong*[1], C. Ha[2], C. Kim[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Magnetic Levitation and Linear Drive, Korea Institute of Machinery and Materials, Daejeon, The Republic of Korea*

FS-15. **Analysis and Control of Electromagnetic Coupling Effect of Levitation and Guidance Systems for Semi-High-Speed Maglev Train Considering Current Direction.** *J. Jeong*[1], C. Ha[2], J. Lim[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Magnetic Levitation and Linear Drive, Korea Institute of Machinery and Materials, Daejeon, The Republic of Korea*

FS-16. **Design of hybrid thrust magnetic bearing for heavy rotating shaft considering self-weight compensation according to axial load.** *J. Ahn*[1,2], C. Han[1,2], C. Kim[2], C. Park[3] and J. Choi[2] *1. R&D, MAGNETAR, Daejeon, The Republic of Korea; 2. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 3. Advanced Manufacturing Systems Research Division, Korea Institute of Machinery and Materials, Daejeon, The Republic of Korea*

FS-17. **Trial of Linear Motor Using Superconducting Coil for Cryogenic Pump.** *M. Komori*[1], H. Sagara[1], K. Asami[1] and N. Sakai[1] *1. Kyushu Institute of Technology, Kitakyushu, Japan*

FS-18. **Robust Air-Gap Control for Magnetic Levitation Systems Considering Disturbance Force from Propulsion System.** C. Kim[1] and *J. Won*[2] *1. Electricity, Vision College of Jeonju, Jeonju, The Republic of Korea; 2. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea*

THURSDAY
AFTERNOON
1:30

THE FORUM

Session FT

MOTORS, GENERATORS AND ACTUATORS WITH SHIELDING, LEVITATION AND PROPULSION (Poster Session)

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

FT-01. **A Novel Design of the Rotary Electromagnetic Actuator and the Analysis of Critical Demagnetization State for its Permanent Magnet.** *J. You*[1], R. Wang[1], H. Chen[1], F. Chen[2] and H. Liang[1] *1. Electrical Engineering and Automatization, Harbin Institute of Technology, Harbin, China; 2. Research and Design Cernter, Zhenhua Qunying Relay Co., Ltd., GuiYang, China*

FT-02. **Modeling and Analysis of Demagnetization Characteristics in PWM-Fed IPMSM Considering Armature Reaction using Inductance Variation and Parameter Estimation Techniques.** *A. Balamurali*[1] and N.C. Kar[1] *1. University of Windsor, Windsor, ON, Canada*

FT-03. **Application of Underactuated Mechanism Motor Control in Ball and Beam System.** *C. Hsu*[1,2], C. Chang[3], M. Hsieh[4], Y. Huang[2] and C. Tao[5] *1. Research and Development Center, Fortune Electric Company, Taoyuan, Taiwan; 2. Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan; 3. Department of Information and Telecommunications Engineering, Ming Chuan University, Taoyuan, Taiwan; 4. Department of Systems and Naval Mechatronic Engineering, National Cheng Kung University, Taoyuan, Taiwan; 5. Department of Electrical Engineering, National Ilan University, Taoyuan, Taiwan*

FT-04. **A New 9-Phase Permanent Magnet Synchronous Motor with Consequent Pole Rotor for High Power Traction Applications.** M. Onsal[1,2], Y. Demir[1,2] and *M. Aydin*[1,2] *1. MDS Motor Ltd., Kocaeli, Turkey; 2. Kocaeli Uni., Kocaeli, Turkey*

FT-05. **Permanent Magnet Flux Linkage Variation Monitoring Based on Torque Ripple Order Tracking Filtering.** *M. Zhu*[1], W. Hu[2], M. Kelly[3] and N.C. Kar[1] *1. Electrical and Computer Engineering, University of Windsor, Windsor, ON, Canada; 2. Great Wall Motor, Baoding, China; 3. D&V Electronics Ltd., Woodbridge, ON, Canada*

FT-06. **The Effect of Modulating Ring Design on Magnetic Gear Torque.** D.Z. Abdelhamid[1] and *A. Knight*[1] *1. Electrical and Computer Engineering, University of Calgary, Calgary, AB, Canada*

FT-07. **Partial Demagnetization Detection in Surface Mounted PMSMs Through Co-Analysis of *dq*-Axis Current Ripple.** *M. Zhu*[1], W. Hu[2,1], J. Tjong[3] and N.C. Kar[1] *1. Electrical and Computer Engineering, University of Windsor, Windsor, ON, Canada; 2. Great Wall Motor, Baoding, China; 3. Ford Motor Company, Windsor, ON, Canada*

FT-08. **Analysis and Experimental Study of Permanent Magnet Machine for Detecting Rotor Eccentricity.** *K. Shin*[1], J. Choi[1] and H. Cho[1] *1. Chungnam National University, Yuseong-gu, The Republic of Korea*

FT-09. **Withdrawn.**

FT-10. **Field-Weakening Capability of Interior Permanent Magnet Machines with Salient Pole Shoe Rotors.** *N. Zhao*[1] and N. Schofield[1] *1. Electrical and Computer Engineering, McMaster University, Hamilton, ON, Canada*

FT-11. **Comparison of Magnetic Characteristics of Three Ironless BLDC Machines.** *H. Hu*[1] and J. Zhao[1] *1. School of Automation, Beijing Institute of Technolog, Beijing, China*

FT-12. **Investigation and Analysis of a Shaded-Pole Main Exciter for Aircraft Starter-Generator.** *J. Li*[1], Z. Zhang[1], J. Lu[1], H. Li[1] and Z. Chen[1] *1. Nanjing University of Aeronautics and Astronautics, Nanjing, China*

FT-13. **A new electro-magnetic brake for actuator locking mechanism in aerospace vehicle.** *V.R. Bommadevara*[1] *1. Electrical Engineering, IIT Hyderabad, Hyderabad, India*

FT-14. **Common-Mode Voltage Supression of Dual Y Shift 30° Six-Phase Electric Machine.** *J. Zheng*[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, China*

FT-15. **Dual Three-Phase Permanent Magnet Synchronous Machine Investigation for Battery Electric Vehicle Power-train.** *N. Zhao*[1] and N. Schofield[1] *1. Electrical and Computer Engineering, McMaster University, Hamilton, ON, Canada*

FT-16. **Design and Analysis of a Dual-Stator Permanent Magnet Machine for the Refrigerator Linear Compressor.** *F. Zhao*[1] and L. Li[2] *1. Harbin Institute of Technology, Shenzhen, Shenzhen, China; 2. Harbin Institute of Technology, Harbin, China*

FT-17. **Accurate Real-time Control Model for Maglev Plane Motor Based on Two-Dimensional Interpolation Method.** *F. Xing*[1], B. Kou[1], L. Zhang[1] and Y. Zhou[1] *1. Harbin Institute of Technology, Harbin, China*

FT-18. **A New Hybrid Permanent Magnet Synchronous Motor with Two Different Rotor Sections.** *O. Ocak*[1] and M. Aydin[2] *1. R&D, Akim Metal A.S., Istanbul, Turkey; 2. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey*

THURSDAY AFTERNOON 1:30 | THE FORUM

Session FU
MOTORS, GENERATORS AND ACTUATORS VIII (Poster Session)

Jean-Paul Yonnet, Chair
G2E Lab, St Martin d'Heres, France

FU-01. **Development of Prototype Gd-Ba-Cu-O-Based HTS Electromagnet for Superconducting Linear Synchronous Motor.** *C. Lee*[1] *1. Korea Railroad Research Institute, Uiwang-si, The Republic of Korea*

FU-02. **Design and Analysis of a Double Layer Magnetic Circuit Structure for High Force Density Hybrid Fuel Injector.** *H. Liu*[1], H. Hong[1], J. Won[1] and H. Lee[2] *1. Hanyang University, Seoul, The Republic of Korea; 2. Department of Electric Automatization, Institute of Science and Technology, Busan, The Republic of Korea*

FU-03. **Magnetic-Thermal Coupling Analysis of the Forward Converter Designed with Magnetic Integration Technology.** *D. Yuan*[1,2], S. Wang[1], H. Li[1], S. Wang[1], A. Wang[3] and K. Liu[3] *1. Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China; 2. State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an, China; 3. Lanzhou Institute of Physics, CAST, Lanzhou, China*

FU-04. **Design of Cryogenic Induction Motor for Liquid Nitrogen Pump.** *H. Kim*[1], K. Lee[1], D. Kim[2], J. Park[2] and G. Park[1] *1. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea; 2. Taeyang Electric Corporation, Gimpo, The Republic of Korea*

FU-05. **The study of $Fe_{83}Ga_{17}$ films act as magnetostrictive actuator on PZT substrate.** *J. Shi*[1] and J. Zhu[1] *1. State Key Laboratory for Advanced Metals and Materials, University of Science and Technology Beijing, Beijing, China*

FU-06. **Novel Stator-Magnet Moving-Iron Transversal-Flux Hybrid-Magnetic-Circuit Linear Oscillatory Machine.** W. Xu[1], *X. Li*[1] and C. Ye[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China*

FU-07. **Design and Analysis of a Memory Motor for Wide-Speed-Range Linear Drive.** *Y. Liu*[1,2], S. Niu[2] and W. Fu[2] *1. Huaqiao University, Xiamen, China; 2. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

FU-08. **Research on a field-modulated tubular linear generator with quasi-Halbach magnetization for ocean wave energy conversion.** *T. Xia*[1], H. Yu[1] and X. Liu[1] *1. Southeast University, Nanjing, China*

FU-09. **Analysis and Experiment of the Operating Capability of Low Speed Single-Sided Linear Induction Motor.** *J. Jeong*[1], J. Choi[1], S. Sung[2] and J. Park[2] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Offshore Plant Research Division, Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea*

FU-10. **An Innovative Off-Grid Permanent Magnet Flux Switching Generator for Micro Gas Turbine in Rural Areas.** *S. Syed Othman*[1], M. Jenal[1] and E. Sulaiman[1] *1. Research Centre for Applied Electromagnetics, Universiti Tun Hussein Onn Malaysia, Batu Pahat, Malaysia*

FU-11. **Eddy Current Brake with Two Layer Structure: Calculation and Characterization of Braking Performance.** *S. Cho*[1], D. Jung[1], H. Jun[1], J. Lee[1] and H. Lee[2] *1. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Railway Vehicle System Engineering, Korea National University of Transportation, Uiwang, The Republic of Korea*

FU-12. **Torque Sensitivity Analysis and Experimental Testing of an Eddy Current Brake with Permanent Magnets using Analytical Method considering Thermal Behavior.** *K. Shin*[1], H. Park[2], H. Cho[3] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Advanced Brake Engineering Team, Hyundai Mobis Co., Ltd., Yongin-si, The Republic of Korea; 3. Dept. of Electric, Electronic and Communication Engineering Edu., Chungnam National University, Daejeon, The Republic of Korea*

FU-13. **Power Generation Properties with a Mixture of Magnetic Nanofluid and Bubbles in Circulating System for Flow Energy Harvesting.** *S. Kim*[1], J. Park[1] and S. Lee[1] *1. Department of Electrical Engineering, Kyungpook National University, Daegu, The Republic of Korea*

FU-14. **Power Loss Compensation of Magnetic Steel Sheets in a Rotational Magnetic Field with Sensing Coil Angle Error searched by PSO Algorithm.** *J. Park*[1], B. Xia[1], D. Um[1] and C. Koh[1] *1. Chungbuk National University, Chungju-si, The Republic of Korea*

THURSDAY EVENING 5:30 — THE LIFFEY B

Session YA

SPECIAL SESSION: 50 YEARS OF RARE EARTH PERMANENT MAGNETS

Dominique Givord, Chair
CNRS, Grenoble, France

5:30

YA-01. **Development of Sm-Co permanent magnets.** ***(Invited)*** A. Gabay[1] and *G. Hadjipanayis*[1] *1. University of Delaware, Newark, DE*

5:50

YA-02. **Nd-Fe-B magnet-past, present and future.** ***(Invited)*** *M. Sagawa*[1,2] *1. Intermetallcs Co., Ltd., Kyoto, Japan; 2. Daido Steel, Nagoya, Japan*

6:10

YA-03. **The use of hydrogen in the processing of RE-TM magnets.** ***(Invited)*** *I.R. Harris*[1] and A. Walton[1] *1. University of Birmingham, Birmingham, United Kingdom*

FRIDAY MORNING 9:00 — THE LIFFEY B

Session GA

STT-MRAM: TOWARD VOLUME PRODUCTION

Bernard Dieny, Chair
Spintec, Grenoble, France

9:00

GA-01. **Low Switching Current Spin-Transfer-Torque MRAM.** ***(Invited)*** *D. Worledge*[1], G. Hu[1], J. Nowak[1], G. Lauer[1], J. Sun[1], A.J. Annunziata[1], S. Brown[1], M. Hopstaken[1], Y. Kim[1], C. Kothandaraman[1], J.H. Lee[1], N. Marchack[1], D. Neumayer[1], E.J. O'Sullivan[1], J. Park[1], M. Reuter[1], R.P. Robertazzi[1], S. Rossnagel[1], P.L. Trouilloud[1] and Y. Zhu[1] *1. IBM-Samsung MRAM Alliance, IBM TJ Watson Research Center, Yorktown Heights, NY*

9:30

GA-02. **Advancing STT-MRAM technology towards manufacturable embedded memory.** ***(Invited)*** *J. Park*[1], W. Kim[1], Y. Kim[1], W. Lim[1], J. Kim[1], Y. Song[1], J.H. Lee[1], K. Kim[1], U. Pi[1], S. Oh[1], J. Park[1], S. Park[1], G. Koh[1], G. Jeong[1], K. Hwang[1], H. Kang[1] and E. Jung[1] *1. Samsung Electronics, Hwaswong-si, The Republic of Korea*

10:00

GA-03. **Spin-Torque MRAM Product Status and Technology for 40nm, 28nm and 22nm Nodes.** ***(Invited)*** *J.M. Slaughter*[1], K. Nagel[1], R. Whig[1], S. Deshpande[1], S. Aggarwal[1], M. DeHerrera[1], J. Janesky[1], M. Lin[1], H. Chia[1], M. Hossain[1], S. Ikegawa[1], F. Mancoff[1], G. Shimon[1], J. Sun[1], M. Tran[1], T. Andre[1], S. Alam[1], F. Poh[2], J. Lee[2], Y. Chow[2], Y. Jiang[2], H. Liu[2], C. Wang[2], S. Noh[2], T. Tahmasebi[2], S. Ye[2] and D. Shum[2] *1. Everspin Technologies, Inc, Chandler, AZ; 2. GLOBALFOUNDRIES Singapore Pte, Ltd., Singapore, Singapore*

10:30

GA-04. **Development of STT-MRAM for embedded memory applications.** ***(Invited)*** *P. Wang*[1], G. Jan[1], L. Thomas[1], A. Wang[1], T. Zhong[1], T. Torng[1], Y. Lee[1], H. Liu[1], J. Zhu[1], S. Le[1], S. Serrano-Guisan[1], R. Tong[1], J. Haq[1], J. Teng[1], D. Shen[1], R. He[1] and V. Lam[1] *1. TDK-Headway Technologies, Inc., Milpitas, CA*

11:00

GA-05. **4Gb perpendicular STT-MRAM with compact cell structure and beyond.** ***(Invited)*** *T. Kishi*[1], M. Yoshikawa[1], T. Nagase[1], H. Aikawa[1], S. Chung[2], J. Park[2], H. Kanaya[1], K. Park[2], G. Kim[2], M. Lee[2], K. Sunouchi[1], A. Yamamoto[1], K. Rho[2], K. Tsuchida[1], S. Chung[2], J. Yi[2], H. Kim[2], Y. Chun[2], S. Hong[2] and H. Oyamatsu[1] *1. Toshiba Electronics Korea Corporation, Seoul, The Republic of Korea; 2. SK hynix Inc., Icheon-si, The Republic of Korea*

11:30

GA-06. **STT-MRAM is moving to large scale commercialization (at last!).** ***(Invited)*** *Y. de Charentenay*[1] *1. Yole Developpement, Villeurbanne, France*

Session GB
MAGNETIC NANOPARTICLES, NANOWIRES, AND 3D STRUCTURES III

Sara Majetich, Chair
Carnegie Mellon University, Pittsburgh, PA

9:00

GB-01. **Towards Comprehension of the True Magnetic Properties of Magnetite at Nanoscales.** ***(Invited)*** *J. Balachandran*[1], H. Fukumoto[1] and H. Mamiya[2] *1. Materials Science, The University of Shiga Prefecture, Hikone, Japan; 2. National Institute of Materials Science, Tsukuba, Japan*

9:30

GB-02. **Analysis of AC susceptibility spectra for the characterization of magnetic nanoparticles.** *F. Ludwig*[1], C. Balceris[1], C. Jonasson[2] and C. Johansson[2] *1. Institute of Electrical Measurement and Fundamental Electrical Engineering, TU Braunschweig, Braunschweig, Germany; 2. Acreo Swedish ICT AB, Göteborg, Sweden*

9:45

GB-03. **Magnetic size-dependent properties of Co-ferrite nanoparticles and strongly exchange coupled core|shell nanoparticles with high magnetic anisotropy: a novel strategy towards Rare Earth - free permanent magnets.** *A. López-Ortega*[1,2], E. Lottini[2], G. Bertoni[3], S. Turner[4], M. Meledina[4], G. Van Tendeloo[4], C. de Julian Fernandez[3] and C. Sangregorio[5] *1. Nanomagnetism, CIC nanoGUNE, Donostia – San Sebastian, Spain; 2. Chemistry Department, INSTM and University of Florence, Sesto Fiorentino, Italy; 3. IMEM-CNR, Parma, Italy; 4. University of Antwerp, Antwerp, Belgium; 5. INSTM and CNR-ICCOM, Sesto Fiorentino, Italy*

10:00

GB-04. **Mapping the structure and chemical composition of nanoparticles with wide size distributions: a ferromagnetic nuclear resonance study of cobalt based nanoparticles.** *C. Meny*[1], Y. Shin[1], Y. Liu[2] and C. Pham Huu[2] *1. DMONS, IPCMS, Strasbourg, France; 2. ICPEES, ECPM, Strasbourg, France*

10:15

GB-05. **Effect of Particle Size on the Properties of As-Made $L1_0$ FePt Nanoparticles Doped with Bi Made by Chemical Synthesis.** *F.M. Abel*[1], V. Tzitzios[1] and G. Hadjipanayis[1] *1. Physics and Astronomy, University of Delaware, Newark, DE*

10:30

GB-06. **Aligned iron nanoparticles with in-plane magnetic anisotropy by epitaxial electrodeposition.** *K. Leistner*[1], Y. Mingze[2], S. Oswald[1], A. Petr[1], K. Nielsch[1] and K.L. Kavanagh[2] *1. IFW Dresden, Dresden, Germany; 2. Department of Physics, Simon Fraser University, Burnaby, BC, Canada*

10:45

GB-07. **Using FMR to study nanoparticle alignment in magnetic dispersions.** *E. Wetterskog*[1], P. Bender[2], A. Castro[3], L. Bogart[4], L. Nilsson[3], L. Zeng[5], E. Olsson[5], D. Heinke[6], L. Fernández Barquín[2], Q. Pankhurst[4], M. Morales[7], N. Gehrke[6] and P. Svedlindh[1] *1. Engineering Sciences, Uppsala University, Uppsala, Sweden; 2. Universidad de Cantabria, Santander, Spain; 3. Solve Research and Consultancy AB, Lund, Sweden; 4. University College London, London, United Kingdom; 5. Chalmers University of Technology, Gothenburg, Sweden; 6. NanoPET GmbH, Berlin, Germany; 7. CSIC, Madrid, Spain*

11:00

GB-08. **Instrument-Based Noise Analysis of First Order Reversal Curve (FORC) Measurements.** *C. Dennis*[1], S. Lund[1], R. Shull[1], C. Schopphoven[2] and A. Tschoepe[2] *1. NIST, Gaithersburg, MD; 2. Universität des Saarlandes, Saarbrücken, Germany*

11:15

GB-09. **Asymmetric hysteresis loop shifts in exchange bias coupled Ni core - $Ni(OH)_2$ shell nano particles.** *T. Maity*[1] and S. Roy[1] *1. Tyndall National Institute, Cork, Ireland*

11:30

GB-10. **Assessment of a biocompatible nanovehicle with adjustable magnetic properties.** *P. Granitzer*[1], K. Rumpf[1], P. Poelt[2] and M. Reissner[3] *1. Institute of Physics, University of Graz, Graz, Austria; 2. Institute for Electron Microscopy, University of Technology Graz, Graz, Austria; 3. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria*

11:45

GB-11. **Co nanorods: large-scale synthesis and compaction into nano-structured permanent magnets.** *L. Lacroix*[1], E. Anagnostopoulou[1], S. Ener[2], M. Pousthomis[1], F. Ott[3], O. Gutfleisch[2] and G. Viau[1] *1. LPCNO, Toulouse, France; 2. Institut für Materialwissenschaft, TU Darmstadt, Darmstadt, Germany; 3. Lab. Léon Brillouin, CEA/CNRS Centre d'Etudes de Saclay, Gif-sur-Yvette, France*

Session GC

ULTRA-FAST AND ALL-OPTICAL SWITCHING

Markus Münzenberg, Chair
Greifswald University, Greifswald, Germany

9:00

GC-01. **Optical-helicity-driven magnetization dynamics in metallic ferromagnets.** *G. Choi*[1] *1. Korea Institute of Science and Technology, Seoul, The Republic of Korea*

9:15

GC-02. **Relaxation-Free and Inertial Switching in Synthetic Antiferromagnets Subject to Super-Resonant Excitation.** B. Koop[1], T. Descamps[1], *E. Holmgren*[1] and V. Korenivski[1] *1. Nanostructure Physics, KTH, Stockholm, Sweden*

9:30

GC-03. **Surface acoustic waves for magnetization switching in precessional geometry: effect of the wave frequency.** *L. Thevenard*[1], I. Camara[1], N. Biarrotte[1], J. von Bardeleben[1], L. Becerra[1], A. Lemaitre[2], C. Gourdon[1] and J. Duquesne[1] *1. Institut des Nanosciences de Paris, UPMC CNRS, Paris, France; 2. Centre de Nanosciences et de Nanotechnologies, CNRS, Universite Paris Sud, Orsay, France*

9:45

GC-04. **Towards ultrafast spintronics: picosecond electrical control of magnetism.** *J. Gorchon*[1,2], Y. Yang[3], R.B. Wilson[4], C. Lambert[2], S. Salahuddin[1,2] and J. Bokor[1,2] *1. Lawrence Berkeley National Lab, Berkeley, CA; 2. EECS, UC Berkeley, Berkeley, CA; 3. Material Sciences Department, UC Berkeley, Berkeley, CA; 4. Mechanical Engineering, UC Riverside, Riverside, CA*

10:00

GC-05. **All-optical magnetization switching of FePt magnetic recording medium.** ***(Invited)*** *M. Münzenberg*[1] *1. Institut of Physics, Greifswald University, Greifswald, Germany*

10:30

GC-06. **All-optical magnetization reversal through spin-dependent diffusive transport and spin-orbit interaction.** *M. Elyasi*[1] and H. Yang[2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Electrical and Computer Engineering Department, National University of Singapore, Singapore, Singapore*

10:45

GC-07. **SOT induced magnetization reversal in Pt/[Co/Ni]$_2$/Co/Ta multilayer Hall bars without external magnetic field.** *S. Li*[1], S. Goolaup[1], W. Gan[1] and W. Lew[1] *1. School of Physics and Physical Science, Nanyang Technological University, Singapore, Singapore*

11:00

GC-08. **Influence of Spin Reorientation Transition on Ultra-Fast Spin Dynamics in Ferrimagnetic $DyCo_5$.** *A. Donges*[1], S. Khmelevskyi[2], A. Deak[3], R. Abrudan[4,5], F. Radu[4], I. Radu[4,6], L. Szunyogh[3] and U. Nowak[1] *1. Fachbereich Physik, Universität Konstanz, Konstanz, Germany; 2. Center for Computational Materials Science, Institute for Applied Physics, Vienna University of Technology, Vienna, Austria; 3. Department of Theoretical Physics and MTA-BME Condensed Matter Research Group, Budapest University of Technology and Economics, Budapest, Hungary; 4. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; 5. Institut für Experimentalphysik/ Festkörperphysik, Ruhr-Universität Bochum, Bochum, Germany; 6. Max-Born Institute, Berlin, Germany*

11:15

GC-09. **Tunable narrow-band spintronic THz emitters.** *N. Awari*[1,2], S. Kovalev[1], C. Fowley[1], K. Rode[3], Y. Lau[3], D. Betto[3], N. Thiyagarajah[3], B. Green[1], O. Yildirim[1], J. Lindner[1], J. Faßbender[1], M. Coey[3], A. Deac[1] and M. Gensch[1] *1. Radiation Physics, Helmholtz Zentrum Dresden Ross, Dresden, Germany; 2. Optical Condensed Matter Physics, Zernike Institute for Material Science, University of Groningen, Groningen, Netherlands; 3. CRANN, AMBER and School of Physics, Trinity College Dublin, Dublin, Ireland*

11:30

GC-10. **Magnetisation manipulation with light and electrons femto-second pulses.** ***(Invited)*** *S. Mangin*[1] *1. Institut Jean Lamour, Universite de Lorraine, Vandoeuvre-lès-Nancy, France*

FRIDAY
MORNING
9:00

LIFFEY HALL 1

Session GD
SKYRMIONS AND DOMAIN WALLS BASED DEVICES

Ricardo Ferreira, Chair
INL - International Nanotechnology Laboratory, Braga, Portugal

9:00

GD-01. **Accurate model of the stripe domain phase of perpendicularly magnetized multilayers.** *I. Lemesh*[1], F. Buettner[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

9:15

GD-02. **Complete phase diagram of skyrmions in ferromagnetic films with perpendicular anisotropy.** *F. Buettner*[1], I. Lemesh[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

9:30

GD-03. **Thermal stability and topological protection of skyrmions in nanotracks.** *D.I. Cortes*[1], W. Wang[1,2], M. Beg[1], R. Pepper[1], M. Bisotti[1], R. Carey[1], M. Vousden[1], T. Kluyver[1], O. Hovorka[1] and H. Fangohr[1] *1. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 2. Department of Physics, Ningbo University, Ningbo, China*

9:45

GD-04. **Spin Torque Efficiency of Skyrmion Racetrack Memory.** *D. Suess*[1], C. Vogler[1], F. Bruckner[1] and C. Abert[1] *1. TU - Wien, Vienna, Austria*

10:00

GD-05. **The skyrmion switch: turning magnetic skyrmion bubbles on and off with an electric field.** ***(Invited)*** *A. Bernand-Mantel*[1,2], M. Schott[1,2], L. Ranno[1,2], S. Pizzini[1,2], J. Vogel[1,2], H. Béa[3,4], C. Baraduc[3,4], S. Auffret[3], G. Gaudin[3,4] and D. Givord[1,2] *1. Institut Néel, Grenoble, France; 2. Université Grenoble Alpes, Grenoble, France; 3. Spintec, Grenoble, France; 4. CEA/INAC, Grenoble, France*

10:30

GD-06. **Electrical signature of individual skyrmions in thin magnetic films with interfacial DMI.** *D. Maccariello*[1], W. Legrand[1], N. Reyren[1], K. Garcia-Hernandez[1], C. Moreau-Luchaire[1], K. Bouzehouane[1], V. Cros[1] and A. Fert[1] *1. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

10:45

GD-07. **Observation of skyrmionic bubbles in Ta/FeCoB/TaO_x structures with different oxidation conditions.** *T. Srivastava*[1], M. Schott[1,2], A. Bernand-Mantel[2], L. Ranno[2], A. Hallal[1], M. Chshiev[1], S. Auffret[1], C. Baraduc[1] and H. Béa[1] *1. SPINTEC, Univ. Grenoble Alpes / CEA-INAC / CNRS, Grenoble, France; 2. Insitute Néel, Univ. Grenoble Alpes / CNRS, Grenoble, France*

11:00

GD-08. **Tunable skyrmion confinement in Ir/Fe/Co/Pt nanodots.** *P. Ho*[1], A.L. Gonzalez Oyarce[1], A. Tan[2], L. Huang[1], M. Raju[2], F. Ernult[1], A. Soumyanarayanan[1,2] and C. Panagopoulos[2] *1. A*STAR Data Storage Institute, Singapore, Singapore; 2. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

11:15

GD-09. **Effect of nanopatterning on magnetic texture in multilayers with lack of inversion symmetry.** *C. Bouard*[1], P. Warin[1], V. Pham[1], J. Attané[1], L. Vila[1] and A. Marty[1] *1. SPINTEC, Univ. Grenoble Alpes/CEA/CNRS, Grenoble, France*

11:30

GD-10. **Anisotropic Dzyaloshinskii-Moriya interaction in ultra-thin epitaxial films.** *L. Camosi*[1], S. Rohart[2], O. Fruchart[3], S. Pizzini[1], M. Belmeguenai[4], Y. Roussigné[4] and J. Vogel[1] *1. Institut Néel (CNRS), Grenoble, France; 2. LPS, Orsay, France; 3. SPINTEC, Grenoble, France; 4. LSPM-CNRS, Villetaneuse, France*

11:45

GD-11. **An Artificial Neural Network with an Analogue Spin-Orbit Torque Device.** *W.A. Borders*[1], H. Akima[1], S. Fukami[1], S. Moriya[1], S. Kurihara[1], A. Kurenkov[1], Y. Horio[1], S. Sato[1] and H. Ohno[1] *1. Tohoku University, Sendai, Japan*

FRIDAY MORNING 9:00 — LIFFEY MEETING ROOM 2

Session GE
MICROSCOPY AND SPECTROSCOPY
Agustina Asenjo, Chair
CSIC, Madrid, Spain

9:00

GE-01. **Magnetic resonance spectroscopy with torsional optomechanics.** ***(Invited)*** *M.R. Freeman*[1,2] *1. Physics, University of Alberta, Edmonton, AB, Canada; 2. National Institute for Nanotechnology, Edmonton, AB, Canada*

9:30

GE-02. **Closure domain signatures in striped magnetic pattern in $Fe_{1-x}Ga_x$ thin films: a synchrotron study.** *J. Milano*[1,2], C. Hepburn[3], L. Lounis[3], M. Eddrief[3], M. Marangolo[3] and M. Sacchi[3] *1. Consejo Nacional de Investigaciones Científicas y Técnicas, San Carlos de Bariloche, Argentina; 2. Instituto Balseiro, Universidad Nacional de Cuyo, San Carlos de Bariloche, Argentina; 3. Institut des Nanosciences de Paris, Paris, France*

9:45

GE-03. **Direct observation of spin waves in nickel oxide using resonant inelastic soft x-ray scattering.** *D. Betto*[1], Y. Peng[2], G.C. Ghiringhelli[2], S.B. Porter[3], F. Ciccacci[2], A. Calloni[2], G. Bussetti[2] and N. Brookes[1] *1. ESRF, Grenoble, France; 2. Politecnico di Milano, Milano, Italy; 3. Trinity College Dublin, Dublin, Ireland*

10:00

GE-04. **Sub-resolution imaging of low-dimensional magnetic objects by magneto-optical Kerr microscopy.** *I. Soldatov*[1] and R. Schäfer[1] *1. Magnetic Microstuctures, IFW-Dresden, Dresden, Germany*

10:15

GE-05. Quadratic magneto-optic Kerr effect investigations of Fe(100) grown on Ir(100). *A.V. Pradeep*[1], S. Ghosh[1], K.G. Ajesh[1] and P.S. Anil Kumar[1] *1. Physics, Indian Institute of Science, Bangalore, India*

10:30

GE-06. Characterization of the interfacial Dzyaloshinskii-Moriya interaction in Pt/$Co_2FeAl_{0.5}Si_{0.5}$ ultra-thin films by Brillouin light scattering. *M. Belmeguenai*[1], M. Gabor[2], Y. Roussigné[1], S.M. Chérif[1], A. Stachkevitch[1], T. Petrisor, Jr.[2], R. Mos[2] and C. Tiusan[2] *1. Université Paris 13, LSPM, Villetaneuse, France; 2. Technical University of Cluj-Napoca, Cluj-Napoca, Romania*

10:45

GE-07. High-throughput measurement of x-ray magnetic circular dichroism spectroscopy with machine learning. *T. Ueno*[1,2], H. Hino[3], A. Hashimoto[2], Y. Takeichi[2] and K. Ono[2] *1. National Institute for Materials Science, Tsukuba, Japan; 2. High Energy Accelerator Research Organization, Tsukuba, Japan; 3. University of Tsukuba, Tsukuba, Japan*

11:00

GE-08. AMR and ME response reconstruction via 2nd order magneto-optical effects. N.O. Urs[1] and *J. McCord*[1] *1. Institute for Materials Science, Kiel University, Kiel, Germany*

11:15

GE-09. Probing a device's active atoms. M. Studniarek[1], U. Halisdemir[1], F. Schleicher[1], B. Taudul[1], E. Urbain[1], M. Hervé[2], C. Lambert[3], A. Hamadeh[3], S. Petit-Watelot[3], O. Zill[1], D. Lacour[3], S. Boukari[1], L. Joly[1], F. Scheurer[1], G. Schmerber[1], V. Da Costa[1], A. Dixit[1], P. Guitard[4], M. Acosta[1], F. Leduc[1], F. Choueikani[5], E. Otero[5], W. Wulfhekel[2], *F. Montaigne*[3] and E. Monteblanco[3] *1. Institut de Physique et Chimie des Matériaux de Strasbourg, Strasbourg, France; 2. Karlsruhe Institute of Technology, Karlsruhe, Germany; 3. Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France; 4. CEA, Saclay, France; 5. Synchrotron SOLEIL, Gif-sur-Yvette, France*

11:30

GE-10. 3D magnetometry in micrometer-wide and nanometer-thick magnetite crystals using XMCD-PEEM. *S. Ruiz-Gomez*[1,2], L. Perez[2,1], A. Quesada[3], P. Prieto[4], I. Palacio[5], L. Martin-Garcia[6], M. Foerster[7], L. Aballe[7] and J. de la Figuera[6] *1. Fisica de Materiales, Universidad Complutense, Madrid, Spain; 2. Unidad Asociada IQFR(CSIC)-UCM, Universidad Complutense, Madrid, Spain; 3. Instituto de Ceramica y Vidrio, CSIC, Madrid, Spain; 4. Dpto. de Física Aplicada, Universidad Autonoma de Madrid, Madrid, Spain; 5. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain; 6. Instituto de Química Física "Rocasolano, CSIC, Madrid, Spain; 7. Alba Synchrotron Light Facility, CELLS, Barcelona, Spain*

11:45

GE-11. **Imaging magnetic domains and vortices in continuous and patterned Ni films under voltage control via ferroelectric substrates.** *M. Ghidini*[1,2], R. Mansell[3], J. Hu[4], F. Maccherozzi[2], D. Pesquera[1], X. Moya[1], L. Phillips[1], S. Farokhipoor[1], B. Nair[1], W. Yan[1], R. Cowburn[3], C. Barnes[3], S. Dhesi[2] and N.D. Mathur[1] *1. Materials Science, University of Cambridge, Cambridge, United Kingdom; 2. Diamond Light Source, Didcot, United Kingdom; 3. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 4. Materials Science and Enginnering, University of Wisconsin-Madison, Madison, WI*

FRIDAY
MORNING
9:00

WICKLOW HALL 1

Session GF

THEORY OF HYSTERESIS AND COERCIVITY II

Antonio Faba, Chair
University of Perugia, Perugia, Italy

9:00

GF-01. **Magnetic structures and low frequency dynamics of cubic nanoparticles: vortex line networks and vortex line dances.** *J.S. Levy*[1] *1. Physics, University Paris Diderot, Paris, France*

9:15

GF-02. **Effect of Canting in the Domains on Magnetic Domain Wall Motion.** *S. Nasseri*[1], E. Martinez[2] and G. Durin[1,3] *1. ISI Foundation, Torino, Italy; 2. Applied Physics, University of Salamanca, Salamanca, Spain; 3. Istituto Nazionale di Ricerca Metrologica (INRiM), Torino, Italy*

9:30

GF-03. **Periodic production of magnetic textures via spin currents.** *M. Sitte*[1], K. Everschor-Sitte[1], T. Valet[1], D.R. Rodrigues[2], J. Sinova[1,3] and A. Abanov[2] *1. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 2. Department of Physics and Astronomy, Texas A&M University, College Station, TX; 3. Institute of Physics, Academy of Sciences of the Czech Republic, Praha, Czech Republic*

9:45

GF-04. **Implementation of the Anisotropic Stoner-Wohlfarth Model for Rotational Magnetization.** *H. ElBidweihy*[1] *1. Department of Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD*

10:00

GF-05. **Magnetic Field Analysis for Dimensional Resonance in Mn-Zn Ferrite Core and Comparison with Permeability Measurement.** *A. Furuya*[1], Y. Uehara[1], K. Shimizu[1], J. Fujisaki[1], T. Ataka[1], T. Tanaka[1] and H. Oshima[2] *1. Fujitsu Ltd., Kawasaki, Japan; 2. Fujitsu Laboratories Ltd., Atsugi, Japan*

10:15

GF-06. **In-Plane Magnetic Anisotropy Detection for Crystal Grain Orientation in Goss-Textured Ferromagnets.** E. Cardelli[1], D. Candeloro[2], A. Faba[1], M. Pompei[1] and *S. Quondam Antonio*[1] *1. Department of Engineering, University of Perugia, Spoleto, Italy; 2. University of Perugia, Perugia, Italy*

10:30

GF-07. **Separating magnetic contributions with Preisach model: a system of two phases.** *F.M. Rhen*[1,2] and F.P. Missell[3] *1. Physics, University of Limerick, Limerick, Ireland; 2. Bernal Institute, University of Limerick, Limerick, Ireland; 3. Centro de Ciências Exatas e Technologia, Universidade de Caxias do Sul, Caxias do Sul, Brazil*

10:45

GF-08. **Elman neural network-based identification of Krasnosel'skii-Pokrovskii model for magnetic shape memory alloys actuator.** R. Xu[1] and *M. Zhou*[1] *1. Department of Control Science and Engineering, Jilin University, ChangChun, China*

11:00

GF-09. **A New Anisotropic Vector Hysteresis Model Based on Play Hysterons.** *D. Lin*[1], P. Zhou[1] and M. Rahman[2] *1. Ansys Inc., Pittsburgh, PA; 2. Memorial University of Newfoundland, St. John's, NL, Canada*

11:15

GF-10. **Modeling of hysteresis in nanocrystalline ribbons annealed under transverse field.** *N. Boust*[1,2], O. Geoffroy[1], H. Chazal[1] and J. Roudet[1] *1. Madea, G2ELab, Grenoble Cedex 1, France; 2. Alloys Amilly, APERAM, Amilly, France*

11:30

GF-11. **Modeling of Dynamic Iron Loss in Grain-Oriented Soft Magnetic Steel Sheets.** *M. Petrun*[1], S. Steentjes[2], K. Hameyer[2] and D. Dolinar[1] *1. FERI, University of Maribor, Maribor, Slovenia; 2. IEM, RWTH Aachen University, Aachen, Germany*

FRIDAY MORNING 9:00

WICKLOW HALL 2A

Session GG
MAGNETOELASTIC MATERIALS II
Kelly Morrison, Chair
Loughborough University, Loughborough, United Kingdom

9:00

GG-01. **When does magnetostriction not conserve volume?** *Y. He*[2], P.S. Stamenov[1], C. Jiang[2] and M. Coey[1] *1. School of Physics, Trinity College Dublin, Dublin, Ireland; 2. Beihang University, Beijing, China*

9:15

GG-02. **Magnetic gas sensing exploiting a magneto-elastically coupled nanostructured hybrid heterostructures.** *R. Ciprian*[1], G. Vinai[2], P. Torelli[2], B. Ressel[3], R. Ciancio[2] and M. Malvestuto[1] *1. Magnedyn Beamline, Elettra Sincrotrone di Trieste, Trieste, Italy; 2. Instituto Officina dei Materiali - CNR, Trieste, Italy; 3. University of Nova Gorica, Ajdovščina, Slovenia*

9:30

GG-03. **An Engineering Model for Fe-Ga Magnetostrictive Strain Sensor.** *J. Yoo*[1] and N.J. Jones[1] *1. Carderock Division, Naval Surface Warfare Center, West Bethesda, MD*

9:45

GG-04. **Demagnetizing Field Effect on the Detection Range of a Galfenol-Based Magnetic Field Sensor.** V. Apicella[1], M. Caponero[2], C. Cianfrani[2], D. Davino[1], A. Polimadei[2] and *C. Visone*[1] *1. Engineering Department, University of Sannio, Benevento, Italy; 2. Enea C.R., Frascati, Italy*

10:00

GG-05. **Sensing dynamic forces by Fe-Ga in compression.** *M. Zucca*[1], P. Mei[2], E. Ferrara[3] and F. Fiorillo[3] *1. Metrology for Quality of Life Dept., INRiM, Torino, Italy; 2. Dipartimento Energia, Politecnico di Torino, Torino, Italy; 3. Nanoscience and Materials Dept., INRiM, Torino, Italy*

10:15

GG-06. **Crystal orientation dependence of magnetization and magnetostriction behaviors in highly textured Galfenol and Alfenol thin sheets.** *S. Na*[1], J. Eng-Morris[2], J.R. Downing[2] and A.B. Flatau[1,2] *1. Aerospace Engineering, University of Maryland, College Park, MD; 2. Materials Science and Engineering, University of Maryland, College Park, MD*

10:30

GG-07. **Quantifying the magnetostrictive role of fcc Co on electrically tuned perpendicular anisotropy in [Co/Ni] / PMN-PT multiferroic composites.** *D.B. Gopman*[1], P. Chen[1], C. Dennis[1], P. Finkel[2], M. Staruch[2] and R. Shull[1] *1. Materials Science and Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD; 2. US Naval Research Laboratory, Washington, DC*

10:45

GG-08. **Development of Amorphous FeGaSiB Films.** *Q. Abbas*[1], C. Barton[2], T. Thomson[2] and N. Morley[1] *1. Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom; 2. School of Computer Science, University of Manchester, Manchester, United Kingdom*

11:00

GG-09. **Piezomagnetic performance of a stress annealed FeAlB alloy.** *C. Bormio-Nunes*[1] and M. de Souza Dias[1] *1. Engenharia de Materiais, Universidade de São Paulo - Escola de Engenharia de Lorena, Lorena, Brazil*

11:15

GG-10. **Magnetoelastic properties of the epitaxially grown layers of $Co_2Fe_{0.4}Mn_{0.6}Si$ and $Co_2FeGa_{0.5}Ge_{0.5}$ Heusler alloys.** *O.M. Chumak*[1,2], A. Nabialek[1], R. Zuberek[1], L.T. Baczewski[1], I. Radelytskyi[1], H. Szymczak[1], T. Yamamoto[3], T. Seki[3,4] and K. Takanashi[3,4] *1. Institute of Physics, Polish Academy of Science, Warsaw, Poland; 2. O. Galkin Donetsk Institute for Physics and Engineering, National Academy of Science of Ukraine, Kyiv, Ukraine; 3. Institute for Materials Research, Tohoku University, Sendai, Japan; 4. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

11:30

GG-11. **Magnetic properties of Ni-Mn-Ga-Co-Cu single crystals exhibiting magnetic shape memory effect.** *L. Straka*[1,2], O. Heczko[1,2], M. Rames[1], A. Soroka[3], K. Ullakko[3] and A. Sozinov[3] *1. Institute of Physics CAS, Prague, Czech Republic; 2. Charles University in Prague, Prague, Czech Republic; 3. Material Physics Laboratory, Lappeenranta University of Technology, Savonlinna, Finland*

11:45

GG-12. **The new multiferroic composite materials consisted of ferromagnetic, ferroelectric and polymer components.** L.A. Makarova[1], Y.A. Alekhina[1], T.S. Rusakova[1], V.V. Rodionova[2], A.S. Omelyanchik[2] and *N.S. Perov*[1] *1. Faculty of Physics, Lomonosov MSU, Moscow, Russian Federation; 2. Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation*

FRIDAY MORNING 9:00 — WICKLOW HALL 2B

Session GH
MOTORS, GENERATORS AND ACTUATORS IX
Luc Dupré, Chair
Universiteit Gent, Ghent, Belgium

9:00

GH-01. **A novel three dimensional lift platform based on direct-drive coordinated linear switched reluctance machines.** *N. Cheung*[1] and B. Zhang[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

9:15

GH-02. **Optimal Design of Electromagnetic Energy Harvester Using Analytic Field Equations.** *M.D. Noh*[1], H. Lee[2] and Y. Park[1] *1. Mechatronics Engineering, Chungnam Natl Univ, Daejeon, The Republic of Korea; 2. Advanced Circuit Substrate Engineering, Chungnam National University, Daejeon, The Republic of Korea*

9:30

GH-03. **A basic theory of induction heating for wind powered thermal energy system.** *T. Matsuo*[1] and T. Okazaki[2] *1. Kyoto University, Kyoto, Japan; 2. The Institute of Applied Energy, Tokyo, Japan*

9:45

GH-04. **Dynamic Analysis of High-Speed Three-Degree-of-Freedom Electromagnetic Actuator for Image Stabilization.** *A. Heya*[1], K. Hirata[1], N. Niguchi[1], T. Yoshimoto[2] and T. Ota[2] *1. Department of Adaptive Machine Systems, Osaka University, Suita, Japan; 2. Panasonic Corporation, Kadoma, Japan*

10:00

GH-05. **Electromagnetic Torque Coupling Analysis of a Parallel Hybrid Excitation Machine with Axial Paralleling of Permanent Magnet Part and Variable Reluctance Part.** *Z. Miao*[1], Z. Zhang[1], W. Geng[1] and Y. Liu[1] *1. College of Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China*

10:15

GH-06. **Ambient Temperature Influence on Temperature of MCCB Bimetal.** S. Lv[1] and *M. Zong*[1] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

10:30

GH-07. **Direct Torque Control of Open Winding Brushless Doubly-Fed Machine.** S. Jin[1], M. Li[1], L. Zhu[1,2], G. Liu[1] and *Y. Zhang*[3] *1. Shenyang University of Technology, Shenyang, China; 2. University of Science and Technology Liaoning, Anshan, China; 3. Queens University Belfast, Belfast, United Kingdom*

10:45

GH-08. **Optimal Coordination for Multiple Linear Switched Reluctance Machines.** *E. Cheng*[1], N. Cheung[1] and J. Pan[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

11:00

GH-09. **Iron Loss Calculation for High-Speed PM Machine Based on 3D Orthogonal Magnetic Field.** G. Liu[1], M. Liu[1], S. Jin[1] and *Y. Zhang*[2] *1. Shenyang University of Technology, Shenyang, China; 2. Queens University Belfast, Belfast, United Kingdom*

11:15

GH-10. **A Low Cost Magnetically Geared Lead Screw.** M. Bahrami Kouhshahi[1] and *J. Bird*[1] *1. Electrical and Computer Engineering, Portland State University, Portland, OR*

11:30

GH-11. **Magnetically Geared Machines for Electrical Vehicle and Renewable Energy Applications. *(Invited)*** *P.O. Rasmussen*[1], R.K. Holm[1], N.I. Berg[1] and T.V. Frandsen[2] *1. Energy Technology, Aalborg University, Aalborg, Denmark; 2. JW Industri 2015 A/S, Ikast, Denmark*

FRIDAY
MORNING
8:30

THE FORUM

Session GM
BIO-MEDICAL DIAGNOSIS AND IMAGING (Poster Session)

Ning Gu, Co-Chair
Southeast University, Nanjing, China
Héctor Corte-León, Co-Chair
National Physical Laboratory, Teddington, United Kingdom

GM-01. **Frequency-based spintronic detection of magnetic particles.** *M. Sushruth*[1], J. Fried[1], S. Xavier[2], A. Anane[3], C. Deranlot[3], K. Yakushiji[4], A. Fukushima[4], H. Kubota[4], V. Cros[3], S. Yuasa[4] and P. Metaxas[1] *1. School of Physics, University of Western Australia, Perth, WA, Australia; 2. Thales Research and Technology, Palaiseau, France; 3. Unité Mixte de Physique CNRS/Thales, Université Paris-Sud and Université Paris-Saclay, Palaiseau, France; 4. Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

GM-02. **Innovative No-Wash Immunoassay Combining Magnetic Nanoparticles and Micro-Magnets.** *S. Delshadi*[1,2], G. Blaire[2], P. Kauffmann[2], M. Fratzl[2,3], T. Devillers[3], M. Weidenhaupt[4], N. Dempsey[3], F. Bruckert[4], O. Cugat[2] and P.N. Marche[1] *1. Institute of Advanced Bioscience, Grenoble, France; 2. G2Elab, Grenoble, France; 3. Institut Néel, Grenoble, France; 4. LMGP, Grenoble, France*

GM-03. **Estimation of Magnetocardiography Current Sources Using Reconstructed Magnetic Field Data.** *W. Sun*[1] and K. Kobayashi[1] *1. Iwate University of Japan, Morioka, Japan*

GM-04. **Construction and analysis of brain functional network based on EEG by transcranial magnetic stimulation on motor cortex.** *Y. Geng*[1], Y. Xing[1], C. Wang[1], H. Yu[1] and G. Xu[1] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin, China*

GM-05. **Development and Evaluation of Tip Position Estimation System of Gastric Tube for Practical Applications.** *T. Sasayama*[1], Y. Gotoh[2] and K. Enpuku[1] *1. Kyushu University, Fukuoka, Japan; 2. Oita University, Oita, Japan*

GM-06. **High frequency magnetic response of microfabricated magnetic discs.** *P.A. Löthman*[1,2], T. Janson[1], Y. Klein[2], A. Blaudszun[1], M. Ledwig[3] and L. Abelmann[1,2] *1. KIST Europe, Saarbrücken, Germany; 2. University of Twente, Enschede, Netherlands; 3. Pure Devices, Würzburg, Germany*

GM-07. **Mn-Zn ferrite nanoparticles with silica and titania coatings: synthesis, MRI properties and cytotoxicity.** O. Kaman[1], *J. Kulickova*[1], M. Marysko[1], P. Veverka[1], V. Herynek[2], R. Havelek[3], K. Kralovec[4], D. Kubaniova[5], J. Kohout[5] and Z. Jirák[1] *1. Institute of Physics, AS CR, Praha, Czech Republic; 2. Institute for Clinical and Experimental Medicine, Praha, Czech Republic; 3. Faculty of Medicine in Hradec Kralove, Charles University, Hradec Kralove, Czech Republic; 4. Faculty of Chemical Technology, University of Pardubice, Praha, Czech Republic; 5. Faculty of Mathematics and Physics, Charles University, Praha, Czech Republic*

GM-08. **Mapping and estimating magnetic field variations due to a one-sided magnet.** *N. Prabhu Gaunkar*[1], M. Mina[1], R. Weber[1] and D. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA*

GM-09. **Analysis of the hyperthermia efficiency and MRI quality trade off in PMMA-based bone cements loaded with magnetic nanoparticles.** *N. De Geeter*[1], M. Harabech[1], G. Crevecoeur[1] and L. Dupré[1] *1. Department Electrical Energy, Systems and Automation (EESA), Ghent University, Ghent, Belgium*

GM-10. **Controlled manipulation and monitoring of particles/cells via magnetophoretic transport system.** *B. Lim*[1], S. Torati[1] and C. Kim[1] *1. EMS, DGIST, Deagu, The Republic of Korea*

GM-11. **Monte Carlo Method for Uncertainty Propagation in Magnetic Resonance-based Electric Properties Tomography.** *A. Arduino*[1,2], F. Pennecchi[2], L. Zilberti[2], O. Bottauscio[2] and M. Chiampi[1] *1. Dipartimento Energia, Politecnico di Torino, Torino, Italy; 2. Istituto Nazionale di Ricerca Metrologica, Torino, Italy*

GM-12. **Development of Compact Ultra-Low-Field MRI System Using an Induction Coil.** *D. Oyama*[1], Y. Adachi[1], M. Higuchi[1], N. Tsuyuguchi[2] and G. Uehara[1] *1. Kanazawa Institute of Technology, Kanazawa, Japan; 2. Asahikawa Medical University, Asahikawa, Japan*

GM-13. **Magnetic Properties and MR Effect of $Co_xFe_{3-x}O_4$ Nanoparticles.** *Y. Ichiyanagi*[1], K. Miike[1], A. Usui[2], Y. Hosokai[2], T. Ishikawa[1], Y. Machida[2] and H. Saito[2] *1. Yokohama National University, Yokohama, Japan; 2. Tohoku University, Sendai, Japan*

GM-14. **Magnetically Engineered MnMg-Nanoferrite Particles and its Application to an Agent of Miniaturized-Nuclear Magnetic Resonance Biosensor for Highly Sensitive Detection of Biomarkers.** *M. Jeun*[1], S. Park[1,2], H. Lee[3] and K. Lee[1,2] *1. Centor for Biomaterials, Biomedical Research Institute, Korea Institute of Science and Technology, Seoul, The Republic of Korea; 2. Department of Biomedical Engineering, Korea University of Science and Technology (UST), Seoul, The Republic of Korea; 3. Centor for Systems Biology, Massachusetts General Hospital, Harvard Medical School, Boston, MA*

GM-15. **Withdrawn**

GM-16. **Identification of biogenic magnetic nanoparticles in *Sus domestica* lung tissue using EPR spectroscopy.** S. Gorobets[1], *O. Gorobets*[1], O. Medviediev[1], V. Golub[2] and L. Kuzminykh[1] *1. National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine; 2. Institute of Magnetism NASU and MESYSU, Kyiv, Ukraine*

GM-17. **Detection of biogenic magnetic nanoparticles in human's aortic aneurysms.** Y.A. Darmenko[1], S. Gorobets[1], *O. Gorobets*[1], I. Sharau[2] and O. Lazarenko[3] *1. Faculty of Biotechnology and Biotechnics, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kiev, Ukraine; 2. Institute of Magnetism NASU and MES of Ukraine, Kiev, Ukraine; 3. State Scientific Institution "SPCPCM", Kiev, Ukraine*

GM-18. **Room temperature ferromagnetic Gd_5Si_4 nanoparticles as T2 contrast agents for MRI.** *A. El-Gendy*[1,2], V. Vijayaragavan[3], S.M. Harstad[1], S. Gupta[4], V. Pecharsky[4,5], J. Zweit[3] and R. Hadimani[1] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 2. Nanotechnology and Nanometrology, National Institute for Standards, Giza, Egypt; 3. Radiology, Virginia Commonwealth University, Richmond, VA; 4. Materials Science and Engineering, Ames Laboratory, Ames, IA; 5. Materials Science and Engineering, Iowa State University, Ames, IA*

FRIDAY
MORNING
8:30

THE FORUM

Session GN
FUNDAMENTAL PROPERTIES WITH RELEVANCE TO APPLICATIONS II
(Poster Session)

Taro Wakamura, Chair
University Paris-Sud, Orsay, France

GN-01. **Drag Friction Control in Laminar Airflow in Circular Pipe Using Permanent Magnets.** *H. Tani*[1], T. Matsui[2], S. Koganezawa[1] and N. Tagawa[1] *1. Mechanical Engineering Dept., Kansai University, Suita-shi, Japan; 2. Graduate School of Kansai University, Suita-shi, Japan*

GN-02. **Analysis of Submarine Magnetic Signature Using 2D Fourier Transform.** *J. Zhou*[1], J. Chen[1] and Z. Shan[1] *1. Naval Aeronautical Engineering Institute, Yantai, China*

GN-03. **Synchrotron radiation spectroscopy study of the electronic structure of Prussian blue analogue: (Rb,Ba)Mn[Fe(CN)$_6$].** E. Lee[1], H. Kim[1], S. Seong[1], J. Kang[1], S. Yusuf[2], B. Kim[3] and *B.I. Min*[3] *1. Physics, The Catholic University of Korea, Bucheon, The Republic of Korea; 2. Solid State Physics, Bhabha Atomic Research Centre, Mumbai, India; 3. Physics, POSTECH, Pohang, The Republic of Korea*

GN-04. **High temperature magnetic susceptibility study of oxygen-induced magnetic moment in single crystal $LaMnO_3$.** *T. Ou-Yang*[1] *1. CCMS, NTU, Taipei, Taiwan*

GN-05. **Soft Cobalt Ferrite: Tuning the Magnetic Properties of Cobalt Ferrite by Controlling the Nanoscale Architecture.** *S. Robbennolt*[1], A. Buditama[2], H. Kang[2], P. Nordeen[3], G. Carman[3] and S. Tolbert[2] *1. Department of Physics, Universitat Autònoma de Barcelona, Bellaterra, Spain; 2. Department of Chemistry and Biochemistry, UCLA, Los Angeles, CA; 3. Department of Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA*

GN-06. **Monte Carlo Investigation of the Magnetoelectric Properties of Frustrated Delafossite Oxides $CuCr_{1-x}Ga_xO_2$ ($0 \leq x \leq 0.3$).** *A. Albaalbaky*[1], Y. Kvashnin[2], D. Ledue[1], R. Patte[1] and R. Frésard[3] *1. Normandie Univ., INSA Rouen, UNIROUEN, CNRS, GPM, Rouen, France; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Normandie Univ., ENSICAEN, UNICAEN, CNRS, CRISMAT, Caen, France*

GN-07. **Electric field tunable Landau levels of Weyl semimetals in the absence of magnetic fields.** *C. Yesilyurt*[1], Z. Siu[1], S. Tan[2,1], G. Liang[1] and M.B. Jalil[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Data Storage Institute, Agency of Science, Technology and Research (A*STAR), Singapore, Singapore*

GN-08. **Magnetic and structural studies of $Mg_2Fe_xSi_{1-x}$ – hydrides.** *T.T. Trinh*[1,2] *1. Nuclear Physics, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. TU Dresden, Dresden, Germany*

GN-09. **Effect of cooling rate on the structural and magnetic properties of Mn_2NiGa Heusler alloys.** M. Vagadia[1], K. Priolkar[2] and *A.K. Nigam*[1] *1. Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Mumbai, India; 2. Department of Physics, Goa University, Goa, India*

GN-10. **Spin polarization and magnetotransport properties of Ne^+ ion irradiated $Fe_{60}Al_{40}$ thin films: the role of the *s-d* exchange coupling.** *K. Borisov*[1], R. Bali[2], C. Fowley[2], J. Ehrler[2], S. Cornelius[2], K. Potzger[2], J. Lindner[2], J. Faßbender[2] and P.S. Stamenov[1] *1. School of Physics, CRANN and AMBER, Trinity College Dublin, Dublin, Ireland; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Denmark*

Session GO

VOLTAGE-CONTROLLED MAGNETISM/ MAGNETORESISTIVE AND HALF-METALLIC MATERIALS I (Poster Session)

Hiroshi Imamura, Co-Chair
AIST, Tsukuba, Japan
Karsten Rode, Co-Chair
Trinity College, Dublin, Dublin, Ireland

GO-01. **Voltage-controlled magnetization switching in elliptical pMTJ.** *J. Deng*[1], G. Gupta[1] and G. Liang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

GO-02. **Electric field control of spin-orbit torque polarity in ferromagnets.** *R. Mishra*[1], X. Qiu[2] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. School of Physics Science and Engineering, Tongji University, Shanghai, China*

GO-03. **Piezo Voltage Controlled Planar Hall Effect Devices.** *B. Zhang*[1] *1. Institute of Semiconductors, CAS, Beijing, China*

GO-04. **Electric-field control of magnetism in multiferroic heterostructures.** *Y. Zhao*[1], Y. Liu[1], P. Li[1], X. Han[2], D. Pierce[3], J. Unguris[3], H. Piao[4], H. Luo[5], S. Li[6], X. Zhang[4] and C. Nan[4] *1. Physics, Tsinghua University, Beijing, China; 2. Beijing National Laboratory for Condensed Matter Physics, Chinese Academy of Sciences, Beijing, China; 3. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD; 4. School of Materials Science and Engineering and Key Laboratory of Advanced Materials (MOE), Tsinghua University, Beijing, China; 5. Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China; 6. State Key Laboratory of Surface Physics and Department of Physics, Fudan University, Shanghai, China*

GO-05. **Electric field-induced multi-jump magnetic switching.** *Z. Guo*[1], X. Yang[1], B. Yan[1], X. Liu[1], J. Ou-yang[1], B. Zhu[1], S. Chen[1] and Y. Zhang[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

GO-06. **Pure electric-field driven domain wall motion in perpendicularly magnetized multilayers.** D. López González[1], B. Van de Wiele[2], Y. Shirahata[3], K. Franke[1], *A. Casiraghi*[1,4], T. Taniyama[3] and S. van Dijken[1] *1. Aalto University, Espoo, Finland; 2. Ghent University, Ghent, Belgium; 3. Tokyo Institute of Technology, Yokohama, Japan; 4. ISI Foundation, Turin, Italy*

GO-07. **Electric on/off switching of magnetism in iron/iron oxide nanostructures at room temperature.** *K. Duschek*[1], A. Petr[1], K. Nielsch[1,2] and K. Leistner[1,2] *1. IFW Dresden, Dresden, Germany; 2. TU Dresden, Dresden, Germany*

GO-08. **Tuning magnetic anisotropy in CoFeB/MgO thin films by ionic liquid gating.** *Y. Liu*[1], S. Oho[2], J. Adam[1], J. Langer[3], B. Ocker[3], D. Ravelosona[1] and L. Herrera Diez[1] *1. Centre de Nanosciences et de Nanotechnologies, Orsay, France; 2. Central Research Institute of Electric Power Industry, Yokosuka, Japan; 3. Singulus Technology, Kahl am Main, Germany*

GO-09. **Electric Field Control of Magnetic Anisotropy in Ultra-Thin FeRh/MgO Bilayers Across the Metamagnetic Transition.** *N.G. Kioussis*[1], G. Zheng[2], J. Kim[1], S. Ke[2], R. Ramesh[3] and M. Miao[1] *1. Physics, California State University, Northridge, Northridge, CA; 2. School of Physics Science and Engineering, Tongji University, Shanghai, China; 3. Materials Science, University of California Berkeley, Berkeley, CA*

GO-10. **Voltage-controlled magnetic anisotropy in Tb-Fe-Co/MgO/Gd-Fe MTJ devices.** *N. Funabashi*[1], H. Kinjo[1], T. Ueno[2], S. Aso[1], D. Kato[1], K. Aoshima[1], K. Kuga[1], M. Motohashi[2] and K. Machida[1] *1. Science and Technology Research Laboratories, Japan Broadcasting Corporation (NHK), Tokyo, Japan; 2. Graduate School of Engineering, Tokyo Denki University, Tokyo, Japan*

GO-11. **Doping of perpendicularly magnetized ferrimagnetic Mn_3Ge thin films.** J. Balluff[1], *M. Meinert*[1] and G. Reiss[1] *1. Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany*

GO-12. **Electrical control of nuclear spin polarization: experimental and quantitative modeling.** *M. Rasly*[1], Z. Lin[1] and T. Uemura[1] *1. Hokkaido University, Sapporo, Japan*

GO-13. **Analysis of conductive electron spin-polarization in half-metallic $Co_2FeGa_{0.5}Ge_{0.5}$ thin films having different compositions and chemical orderings.** *Y. Sakuraba*[1], S. Kokado[2], T. Nakatani[1], S. Li[1], T. Furubayashi[1], H. Tajiri[3], Y. Miura[1,4] and K. Hono[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Graduate School of Engineering, Shizuoka University, Hamamatsu, Japan; 3. Japan Synchrotron Radiation Research Institute/SPring-8, Aioi, Japan; 4. Kyoto Insititute of Technology, Kyoto, Japan*

GO-14. **Study of the effect of annealing on the properties of Mn_2Ru_xGa thin films.** *K.E. Siewierska*[1], G. Atcheson[1], K. Rode[1] and M. Coey[1] *1. Physics, University of Dublin, Trinity College, Dublin, Ireland*

GO-15. **Magnetic properties of ferrimagnetic $(Mn_{1-x}Co_x)_2VAl$ full-Heusler epitaxial thin films.** *K. Fukuda*[1], M. Oogane[1] and Y. Ando[1] *1. Department of Applied Physics, Graduate School of Engineering, Tohoku University, Sendai, Japan*

GO-16. **Magnetic and magnetotransport properties of Co_2MnGa thin films grown by pulsed laser deposition.** *C. Emeny*[1,2] *1. Physics and Astronomy, University of Canterbury, Christchurch, New Zealand; 2. The MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand*

GO-17. **Growth and Characterisation of Antiferromagnetic Polycrystalline Mn_3Ga Films.** *H. Wu*[1], I. Sudoh[2], J. Kim[1], G. Vallejo-Fernandez[1] and A. Hirohata[3] *1. Department of Physics, University of York, York, United Kingdom; 2. Extreme Energy-Density Research Institute, Nagaoka University of Technology, Nagaoka, Japan; 3. Department of Electronics, University of York, York, United Kingdom*

GO-18. **Surface structure of (110) terminated half-metallic magnetite.** *B. Walls*[1], O. Lübben[1], K. Palotás[2,3], K. Fleischer[1], K. Walshe[1] and I.V. Shvets[1] *1. School of Physics and Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN), Trinity College Dublin, Dublin, Ireland; 2. Department of Theoretical Physics, Budapest University of Technology and Economics, Budapest, Hungary; 3. Slovak Academy of Sciences, Institute of Physics, Bratislava, Slovakia*

FRIDAY MORNING 8:30 — THE FORUM

Session GP
SENSORS AND MEMS: DEVICES AND APPLICATIONS II (Poster Session)

Thibaut Devillers, Co-Chair
CNRS Grenoble /Univ. Grenoble Alpes, Grenoble, France
Marie Frénéa-Robin, Co-Chair
Ampere Laboratory, Ecully, France

GP-01. **Slack inspection method of high tension bolt using electromagnetic field without influence of lift-off between bolt head and inspection sensor.** *Y. Gotoh*[1], N. Shigematsu[1] and T. Yamaguchi[1] *1. Mechanical and Energy Systems Engineering, Oita University, Oita, Japan*

GP-02. **Calibration system for magnetometer in low magnetic field range.** *P. Park*[1,2], W. Kim[1,2], S.M. Amran[1,2] and V.Y. Shifrin[3] *1. Korea Research Institute of Standards and Science (KRISS), Daejeon, The Republic of Korea; 2. University of Science and Technology, Daejeon, The Republic of Korea; 3. D. I. Mendeleyev Institute for Metrology (VNIIM), St. Petersburg, Russian Federation*

GP-03. **4-sensor Yokeless Electric Current Transducer.** *P. Ripka*[1] *1. Czech Technical University, Prague, Czech Republic*

GP-04. **Orthogonal fluxgate gradiometer with multiple coil pairs.** *M. Butta*[1] and M. Janosek[1] *1. Czech Technical University, Czech Republic*

GP-05. **A long baseline fluxgate gradiometer with electrical alignment and its calibration method.** *Y. Adachi*[1], D. Oyama[1], H. Toba[2] and G. Uehara[1] *1. Applied Electronics Laboratory, Kanazawa Institute of Technology, Kanazawa, Japan; 2. DAIWA Exploration & Consulting Co., Ltd., Tokyo, Japan*

GP-06. **A New Sensitive Excitation Technique in Nondestructive Inspection for Underground Pipelines by Using Differential Coils.** *H. Kim*[1] and G. Park[1] *1. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea*

GP-07. **New Process of the Eddy Current Probe Impedance Calculation for Plate Inspection Using Bidimensional Magnetically Coupled Elements.** A. Belhamri[1], A. Hicham[2], *J. Yonnet*[3] and M. Chebout[2] *1. Electrical Engineering Laboratory of Bejaia, Bejaia University, Bejaia, Algeria; 2. L2EI Laboratory, University of Jijel, Jijel, Algeria; 3. G2E Lab, St Martin d'Heres, France*

GP-08. **Proposal of Thickness Measurement Method of Steel Plate with High Lift-Off Using Pulsed Magnetic Field.** *S. Yoshioka*[1], Y. Gotoh[1] and K. Shimamoto[1] *1. Oita University, Oita, Japan*

GP-09. **Miniature tri-axis magnetometer with in-plane GMR sensors.** *X. Trinh*[1], J. Jeng[1], M. Lan[1], B. Chen[1], V. Luong[2] and C. Lu[2] *1. Department of Mechanical Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan; 2. Institute of Mechatronic Engineering, National Taipei University of Technology, Taipei, Taiwan*

GP-10. **Improvement of detection accuracy of magnetic marker of wireless magnetic motion capture system using multi-excitation method.** *S. Hashi*[1], Y. Osaki[1], S. Yabukami[2], H. Kanetaka[3] and K. Ishiyama[1] *1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Department of Electrical Engineering and Information Technology, Tohoku-Gakuin University, Tagajo, Japan; 3. Graduate School of Dentistry, Tohoku University, Sendai, Japan*

GP-11. **A Novel Compact AC/DC Current Sensor.** *Y. Wang*[1], F. Niu[1,2], S. Huang[1], L. Ge[3] and K. Li[1] *1. School of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. School of Electrical Engineering, Zhejiang University, Hangzhou, China; 3. School of Electrical Engineering and Automation, Tianjin University, Tianjin, China*

GP-12. **Current Reconstruction of Bundle Conductors Based on Tunneling Magnetoresistive Sensors.** G. Zhao[1], J. Hu[1], S. Zhao[1], *Z. Wang*[1], S.X. Wang[2] and J. He[1] *1. Tsinghua University, Beijing, China; 2. Stanford University, Stanford, CA*

GP-13. **Application of High Permeability Magnetic Core Sensor for IoTs Device.** *C. Hsu*[1,2], Y. Huang[2] and M. Hsieh[3] *1. Research and Development Center, Fortune Electric Company, Taoyuan, Taiwan; 2. Department of Mechanical Engineering, National Central University, Taoyuan, Taiwan; 3. Department of Systems and Naval Mechatronic Engineering, National Cheng Kung University, Taoyuan, Taiwan*

GP-14. **Output characteristic model of cantilever-like tactile sensor based on the inverse magnetostrictive effect.** *L. Wan*[1], B. Wang[1], Y. Sun[1], L. Weng[1], W. Huang[1] and S. Cao[1] *1. Hebei University of Technology, Tianjin, China*

GP-15. **Novel magnetic tactile sensor design using flexible magnetoresistive sensor array.** *M. Neto*[1], R. Dias[2], J. Gaspar[2], A. Bernardino[3,4], S. Cardoso[1,4] and P. Freitas[2] *1. Instituto de Engenharia de Sistemas e Computadores – Microsistemas e Nanotecnologias (INESC MN), Lisbon, Portugal; 2. Iberian Nanotecnology Laboratory (INL), Braga, Portugal; 3. Institute for Systems and Robotics (ISR), Lisbon, Portugal; 4. Instituto Superior Técnico (IST), Lisbon, Portugal*

GP-16. **Magnetic energy harvesting property of a nonlinear resonant electrodynamic scavenger.** *Z. Wang*[1], J. Hu[1] and G. Zhao[1] *1. Electrical Engineering, Tsinghua University, Beijing, China*

GP-17. **Heterogeneous integrated wireless displacement sensor.** *M.G. Kisic*[1], N. Blaz[1], L. Zivanov[1] and M.S. Damnjanovic[1] *1. Department of Power, Electronic and Telecommunication Engineering, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia*

GP-18. **A simple process for fabricating flat composite micromagnet arrays based on PDMS and rare earth magnetic powders.** D. Royet[1], J. Marchalot[1], A. Seth[1], N. Dempsey[2], T. Devillers[2], S. Le Denmat[2] and *M. Frénéa-Robin*[1] *1. Univ Lyon, ECL, Insa Lyon, UCB Lyon 1, CNRS, Ampère, Villeurbanne, France; 2. Univ. Grenoble Alpes - CNRS, Inst Néel, Grenoble, France*

FRIDAY
MORNING
8:30

THE FORUM

Session GQ
MOTOR AND GENERATORS
(Poster Session)

Jiang Quan, Co-Chair
Data Storage Institute, Singapore, Singapore
Chunhua Liu, Co-Chair
City University of Hong Kong, Hong Kong, Hong Kong

GQ-01. **New Single Phase Flux Switching Axial Flux Permanent Magnet Motor.** *Q. Syed*[1], H. Kurtovic[1] and I. Hahn[1] *1. Electrical Drives and Machines, University of Erlangen-Nürnberg, Erlangen, Germany*

GQ-02. **Novel Single Inverter Fed Brushless Wound Rotor Synchronous Machine.** *A. Hussain*[1] and B. Kwon[1] *1. Department of Electronic Systems Engineering, Hanyang University, Ansan, The Republic of Korea*

GQ-03. **A Novel Structure Single-Phase Tubular Switched Reluctance Linear Motor.** *H. Chen*[1], R. Nie[1] and W. Yan[1] *1. China University of Mining and Technology, Xuzhou, China*

GQ-04. **2D Coupled Spectral Element Model for Magnetic-Thermal Analysis of Linear Synchronous Motors.** M. Curti[1], *T. van Beek*[1], B.L. Gysen[1], H. Jansen[1], J. Paulides[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

GQ-05. **Analysis of Variable Flux Memory Motor according to Rotor Structure Using Magnetic Equivalent Circuit.** *J. Song*[1], J. Lee[1], Y. Kim[2] and S. Jung[1] *1. Electronic, Electrical and Computer Engineering, Sungkyunkwan University, Suwon, The Republic of Korea; 2. Department of Electrical Engineering, Chosun University, Gwangju, The Republic of Korea*

GQ-06. **Analysis of Suspension Characteristics of New Bearingless Reluctance Machine with Independent DC Bias Winding.** L. Yu[1], *Z. Zhang*[1], W. Lu[1] and Y. Shi[1] *1. Department of Electrical Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China*

GQ-07. **A Novel Heteropolar Radial Hybrid Magnetic Bearing with Low Rotor Core Loss.** W. Xu[1], *R. Zhu*[1] and C. Ye[1] *1. School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, China*

GQ-08. **Force Characteristic Analysis of a Linear Magnetic Bearing with Rhombus Magnet Array for Magnetic Levitation Positioning System.** *Y. Zhou*[1], B. Kou[1], X. Yang[1] and J. Luo[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

GQ-09. **A Design of Field Circuit for Improvement of Running Efficiency by Circular Rotating Field in Single-Phase Induction Motor.** *K. Kim*[1], H. Kim[1] and G. Park[1] *1. Electrical and Computer Engineering, Pusan National University, Busan, The Republic of Korea*

GQ-10. **Analysis of Electromagnetic Torque with Two Different Double Skewed Rotors Induction Motor.** J. Fang[1] and *X. Bao*[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

GQ-11. **Doubly Salient Dual-PM Linear Machines for Regenerative Shock Absorbers.** H. Fan[1], *K. Chau*[1], C. Liu[2] and W. Li[1] *1. Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong Island, Hong Kong; 2. School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong*

GQ-12. **Analysis of a Direct Drive Two Dimensional Hybrid-Flux Planar Generator for Wave Energy Conversion.** E. Cheng[1], N. Cheung[1] and *J. Pan*[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

GQ-13. **Analysis of a Fall-Back Transverse Flux Permanent Magnet Generator.** *M.A. Patel*[1] and S.C. Vora[1] *1. Department of Electrical Engineering, Institute of Technology, Nirma University, Ahmedabad, India*

GQ-14. **Characteristics of Synchronous Generator with Wound Excitation and Permanent-Magnet Exciting Cores.** *N. Naoe*[1] *1. Dept. of Electrical and Electronic Engineering, Kanazawa Technical College, Kanazawa, Japan*

GQ-15. **Quantitative discrimination of dynamic eccentricity in induction motor considering Carter's coefficient.** Y. Zhou[1] and *X. Bao*[1] *1. School of Electrical Engineering and Automation, Hefei University Of Technology, Hefei, China*

GQ-16. **Reduction of Iron Loss on Laminated Electrical Steel Sheet Cores by Means of Secondary Current Heating Method.** *Y. Tsuchida*[1], N. Yoshino[1] and M. Enokizono[2,3] *1. Oita University, Oita, Japan; 2. Vector Magnetic Characteristic Technical Laboratory, Usa, Japan; 3. Nippon Bunri University, Oita, Japan*

GQ-17. **Experimental Analysis for Core Losses Prediction in Electric Machines by Using Soft Magnetic Composite.** S. Lee[1], Y. Kim[2], K. Lee[1] and *S. Kim*[2] *1. Automotive Components and Materials Group, Korea Institute of Industrial Technology, Gwangju, The Republic of Korea; 2. Electrical Engineering, Chosun University, Gwangju, The Republic of Korea*

GQ-18. **Iron Loss Model under DC Dias Flux Density Considering Temperature Influence.** *S. Xue*[1], J. Feng[2], S. Guo[2], Z. Chen[2], J. Peng[2], W. Chu[2], L. Huang[1] and Z.Q. Zhu[1] *1. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; 2. CRRC Zhuzhou Institute Co. Ltd., Zhuzhou, China*

FRIDAY MORNING 8:30 — THE FORUM

Session GR
MOTORS, GENERATORS AND ACTUATORS X (Poster Session)

Min-Fu Hsieh, Co-Chair
National Cheng Kung University, Tainan, Taiwan
Ping Zheng, Co-Chair
Harbin Institute of Technology, Harbin, China

GR-01. **Study on Correlation Between Rotor Vibration and Mechanical Stress in Ultra-High-Speed Permanent Magnet Synchronous Motor.** *J. Ahn*[1,2], C. Han[1,2], C. Kim[2], C. Park[3], T. Yoon[1] and J. Choi[2] *1. R&D, MAGNETAR, Daejeon, The Republic of Korea; 2. Electrical Engineering Department, Chungnam National University, Daejeon, The Republic of Korea; 3. Advanced Manufacturing Systems Research Division, Korea Institude of Machinery and Materials, Daejeon, The Republic of Korea*

GR-02. **Axial unbalanced magnetic force in permanent magnet motors due to skewed magnet and rotor eccentricity.** K. Kang[1], C. Kang[1], J. Song[1], S. Sung[1] and *G. Jang*[1] *1. Dept of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea*

GR-03. **Influence of Rotor Structure on End Effects of High-Speed Permanent Magnet Synchronous Generators Using 3D Finite Element Analysis.** *K. Shin*[1], J. Choi[1] and H. Cho[2] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Dept. of Electric, Electronic and Communication Engineering Edu., Chungnam National University, Daejeon, The Republic of Korea*

GR-04. **Integrated Motor Propulsor Magnet Design with Hybrid Halbach Array for Torque Ripple Reduction.** *J. Ahn*[1,2], C. Han[1,2], C. Kim[2], C. Park[3] and J. Choi[2] *1. R&D, MAGNETAR, Daejeon, The Republic of Korea; 2. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 3. Advanced Manufacturing Systems Research Division, Korea Institute of Machinery and Materials, Daejeon, The Republic of Korea*

GR-05. **Characteristic Analysis of Eddy Current Loss in Permanent Magnet Linear Synchronous Generator Considering Tapped Holes in Movers using 3D Analytical Method.** *G. Jang*[1], M. Koo[1], J. Kim[1], K. Kim[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Offshore Plant Research Division, Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea*

GR-06. **Characteristics Analysis of LIM and PMLSM Capability Hybrid Operating System in Port Search System using Analytical Method.** *G. Jang*[1], J. Jeong[1], S. Seo[1] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

GR-07. **Development and Analysis of a Slot-less Linear Motor with Quasi-Halbach Permanent Magnets for Aircraft Actuation Applications.** *Q. Wang*[1], F. Gao[1], H. Lan[1] and J. Zou[1] *1. Dept. of Electrical Engineering, Harbin Institute of Technology, Harbin, China*

GR-08. **Cogging Torque Reduction by Elementary-Cogging-Unit Shift for Permanent Magnet Machines.** J. Gao[1], G. Wang[1], *X. Liu*[1], W. Zhang[2] and S. Huang[1] *1. College of Electrical and Information Engineering, Hunan University, Changsha, China; 2. Changsha University, Changsha, China*

GR-09. **Capability Characteristic Analysis Considering End-Effect of Linear Induction Motor Using Analytical Method.** *G. Jang*[1], J. Jeong[1], S. Sung[2] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Dept. of Offshore Plant Research Division, Korea Research Institute of Ships and Ocean Engineering, Daejeon, The Republic of Korea*

GR-10. **Optimization Design of PMSM with Hybrid Type Permanent Magnet Considering Irreversible Demagnetization.** *C. Jeong*[1] and J. Hur[1] *1. Incheon National University, Incheon, The Republic of Korea*

GR-11. **Analysis on Eddy Current Formation Characteristic in a Rotor Assembly Including Retaining Plate with Pole Slot Combinations.** *H. Jun*[1], D. Jung[1], H. Liu[1] and S. Kim[2] *1. Electric Engineering Department, Hanyang University, Seoul, The Republic of Korea; 2. Korea Testing Certification, Kunpo, The Republic of Korea*

GR-12. **Design and Analysis of a Less-Rare-Earth Flux-Intensifying Permanent Magnet Motor Utilizing Partitioned-Flux-Barrier Rotor.** F. Liu[1], X. Zhu[1], L. Quan[1], Z. Xiang[1] and *W. Wu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

GR-13. **Demagnetization Investigation for Partitioned Rotor Permanent Magnet Flux Switching Machines Response to Three-Phase Symmetrical Short-Circuit Faults.** D. Fan[1], X. Zhu[1], L. Quan[1], Z. Xiang[1] and *W. Wu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

GR-14. **Quantitative design of a high performance permanent magnet vernier generator.** A. Tounzi[1], *J. Zhang*[1], V. Leontidis[2], P. Delarue[1], F. Piriou[1], G. Caignaert[2], A. Dazin[2] and A. Libaux[3] *1. L2EP, University Lille 1 - L2EP, Villeneuve d'Ascq, France; 2. LML, ENSAM, Lille, France; 3. EDF, Lille, France*

GR-15. **Magnetic field distribution prediction of the linear tubular field-modulated permanent magnet generator for ocean wave energy conversion.** *T. Xia*[1], H. Yu[1], L. Huang[1] and X. Liu[1] *1. Southeast University, Nanjing, China*

GR-16. **Design of 3x Magnetizer and Rotor of Spoke-Type PMSM Considering Post-Assembly Magnetization.** *H. Seol*[1], H. Jun[1], H. Liu[1], D. Jung[1] and J. Lee[1] *1. Hanyang University, Seoul, The Republic of Korea*

GR-17. **Optimal Current Trajectory Control of PMSM Considering Cross Saturation Effects.** *H. Li*[1] *1. Hunan University, Changsha, China*

GR-18. **Optimization of Vibration Noise Characteristics of Skewed Permanent Brushless Direct Current Motor.** *C. Lee*[1] and D. Kang[1] *1. Electrical Engineering, Keimyung University, Daegu, The Republic of Korea*

Session GS
MOTORS, GENERATORS AND ACTUATORS XI
(Poster Session)

Chang-Chou Hwang, Chair
Feng Chia University, Taichung City, Taiwan

GS-01. **Dynamic Characteristic Analysis of Permanent Magnet Linear Oscillatory Actuator Considering Resonance Frequency.** *J. Kim*[1], J. Choi[1], K. Lee[1,2] and S. Lee[2] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Automotive Components and Materials Group, Korea Institute of Industrial Technology, Gwangju, The Republic of Korea*

GS-02. **Withdrawn.**

GS-03. **Magnetic Field Analysis in Notched Air Gap of IPMSM Using Conformal Mapping.** *Y. Ko*[1], Y. Kim[2] and S. Jung[1] *1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Chosun University, Gwangju, The Republic of Korea*

GS-04. **A Novel Hybrid-Excited Electrical Continuously Variable Transmission System.** Y. Mao[1] and *S. Niu*[1] *1. The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

GS-05. **Design and optimization of *d*-axis inductance-enhanced PMBL machine capable of wide speed range.** J. Huang[1], X. Zhu[1], Z. Xiang[1] and *W. Wu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

GS-06. **Electrical-Thermal Two-Way Coupling Analysis of an Outer-Rotor I-Shaped Flux-Switching Permanent Magnet Motor.** C. Liu[1], X. Zhu[1], L. Quan[1], D. Fan[1] and *W. Wu*[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

GS-07. **Design and Electromagnetic Field Characteristic Analysis of High-Speed Permanent Magnet Synchronous Generator for Unmanned Aerial Vehicle.** *J. Kim*[1], C. Kim[1], S. Jang[1] and J. Choi[1] *1. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

GS-08. **Reduced Q Axis Nonlinear MEC Model for Single Layer IPM.** *H. Gurleyen*[1] and E. Mese[2] *1. Yildiz Technical University, Istanbul, Turkey; 2. Ege University, Izmir, Turkey*

GS-09. **Impact of Mechanical Stresses on Flat Double Sided Linear Electric Motor Multi-Air Gap Structure Guided or Friction Plates.** P. Kenfack[1], D. Matt[1], *P. Enrici*[1] and M. François[2] *1. Institut D'Electronique et des Systèmes, Université de Montpellier, Montpellier, France; 2. Hekyom, Palaiseau, France*

GS-10. **Slip Frequency Control of Linear Induction Motor Considering Normal Force in Semi-High Speed MAGLEV Train.** *H. Seo*[1], G. Choe[2], J. Lim[3] and J. Jeong[4] *1. R&D, VCTech, Gunpo-si, The Republic of Korea; 2. Electrical Engineering, Konkuk University, Seoul, The Republic of Korea; 3. KIMM, Seoul, The Republic of Korea; 4. Electrical Engineering, Chungnam National University, Seoul, The Republic of Korea*

GS-11. **A Hybrid-Excited Vernier Permanent-Magnet Machine Using Homopolar Topology.** W. Li[1], *T. Ching*[1] and K. Chau[2] *1. University of Macau, Taipa, Macao; 2. The University of Hong Kong, Hong Kong, Hong Kong*

GS-12. **Development of a High-Speed Induction Motor for Active Magnetic Bearing Compressors.** *C. Wang*[1], T. Hsiao[1] and C. Liu[1] *1. ITRI, Hsinchu, Taiwan*

GS-13. **A High Force Density HTS Tubular Vernier Machine.** *N. Baloch*[1], S. Khaliq[1] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, The Republic of Korea*

GS-14. **Detection of Inter-Turn Stator Faults in Induction Motors Using Short Term Averaging of Forwards and Backwards Rotating Stator Current Phasors for Fast Prognostics.** *D.G. Dorrell*[1] and K. Makhoba[1] *1. Discipline of Electrical, Electronics and Computer Engineering, University of KwaZulu-Natal, Durban, South Africa*

GS-15. **A New Regenerative Electromagnetic Retarder for Electric Vehicle Applications.** *M. Gulec*[1] and M. Aydin[1] *1. Mechatronics Engineering, Kocaeli University, Kocaeli, Turkey*

GS-16. **Analysis of Vibration and Performance Considering Demagnetization Phenomenon of the Interior Permanent Magnet Motor.** *D. Kang*[1] *1. Electrical Energy Engineering, Keimyung University, Daegu, The Republic of Korea*

GS-17. **DNN Predictive Magnetic Flux Control for Harmonics Compensation in Magnetically Unbalanced Induction Motor.** *E. Ghosh*[1], A. Mollaeian[1], S. Kim[1] and N.C. Kar[1] *1. Department of Electrical and Computer Engineering, University of Windsor, Windsor, ON, Canada*

GS-18. **Acoustic Noise Based Permanent Magnet Flux Reduction Diagnosis and Current Compensation in PMSM.** *Q. Xie*[1], M. Zhu[1], J. Tjong[2] and N.C. Kar[1] *1. Electric and Computer Department, University of Windsor, Windsor, ON, Canada; 2. Ford Motor Company, Windsor, ON, Canada*

Session GT
MOTORS AND ACTUATORS (Poster Session)

Christopher Donaghy-Spargo, Chair
Durham University, Durham, United Kingdom

GT-01. **A New Mover Separated Linear Magnetic-Field Modulated Motor for Long Stroke Applications.** *S. Wang*[1], W. Zhao[1] and J. Ji[1] *1. Jiangsu University, Zhenjiang, China*

GT-02. **A Novel Linear Permanent Magnet Vernier Machine with Consequent Poles and Halbach Permanent Magnet Array.** *C. Shi*[1], R. Qu[1], Y. Gao[1], D. Li[1] and Y. Huo[1] *1. Huazhong University of Science and Technology, Wuhan, China*

GT-03. **A Novel Linear Wound Field Vernier Machine with Separated Armature and Field Windings.** *J. Faiz*[1] and A. Nematsaberi[1] *1. Electrical and Computer Engineering, University of Tehran, Tehran, The Islamic Republic of Iran*

GT-04. **HTS Dual-Stator Spoke-Type Linear Vernier Machine for Leakage Flux Reduction.** *N. Baloch*[1], S. Khaliq[1] and B. Kwon[1] *1. Electronic Systems Engineering, Hanyang University, Ansan, South korea, Ansan, The Republic of Korea*

GT-05. **A Linear Hybrid Switched Reluctance Motor with Zero Cogging Force.** *N. Cheung*[1] and Y. Zou[2,1] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

GT-06. **Design and Optimization of a Novel Linear Flux-Reversal Permanent Magnet Machines with Large Mover Slot Opening.** *C. Shi*[1], R. Qu[1], Y. Gao[1], D. Li[1] and Y. Huo[1] *1. Huazhong University of Science and Technology, Wuhan, China*

GT-07. **Analysis of a Novel Linear Doubly Salient Slot Permanent Magnet Motor.** *Y. Shen*[1], Q. Lu[1] and Y. Ye[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

GT-08. **A Position Estimation Method for Linear Switched Reluctance Motor Based on Fuzzy Logic Observer.** *E. Cheng*[1] and Y. Zou[2,1] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

GT-09. **Design and Analysis of a New HTS Electromagnetic Screw for Artificial Heart.** *J. Ji*[1], Z. Ling[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

GT-10. **The Research on Equivalent Finite Element Models of Magnet Screw.** *F. Gao*[1], Q. Wang[1] and J. Zou[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China*

GT-11. **Magnetic Modelling of a Linear Synchronous Machine with Spectral Element Method.** *M. Curti*[1], J. Paulides[1] and E. Lomonova[1] *1. Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands*

GT-12. **Modelling, Design Optimization and Verifications of Permanent Magnet Linear Actuators for Structural Vibration Mitigation Applications.** *Q. Wang*[1], J. Wang[2] and F. Gao[1] *1. Dept. of Electrical Engineering, Harbin Institute of Technology, Harbin, China; 2. University of Sheffield, Sheffield, United Kingdom*

GT-13. **Characteristic Analysis of Linear Oscillatory Actuator Based on Subdomain Analytical Model Considering End-Effect.** *K. Shin*[1], H. Park[2], H. Cho[3] and J. Choi[1] *1. Department of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Advanced Brake Engineering Team, Hyundai Mobis, Yongin-si, The Republic of Korea; 3. Department of Electric, Electronic, and Communication Engineering Education, Chungnam National University, Daejeon, The Republic of Korea*

GT-14. **Analysis of the eddy current loss of a linear-rotary permanent magnet actuator.** K. Guo[1], S. Fang[1], H. Lin[1], *J. Jiang*[1] and Y. Huang[1] *1. Southeast University, Nanjing, China*

GT-15. **Torque Actuator Control of 2-Phase Outer Coreless Rotor for Hybrid Multi-DOF System.** *K. Joo*[1], J. Won[1], H. Hong[1] and S. Kim[2] *1. Electrical Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Yuhan University, Bucheon, The Republic of Korea*

GT-16. **Distributed Parameter Model for Electromagnetic Valve Actuator with Permanent Magnet.** *K. Zhang*[1], H. Liang[1], J. You[1] and H. Yu[1] *1. Harbin Institute of Technology, Harbin, China*

GT-17. **A Disturbance Compensation Control for Linear Resonant Actuator Based on the Law of Energy Conservation.** *M. Kato*[1], K. Hirata[1] and Y. Asai[2] *1. Osaka University, Suita-shi, Japan; 2. Panasonic Corporation, Kadoma-shi, Japan*

GT-18. **Influence of End-Effect on Direct and Quadrature Inductances in Linear Electromagnetic Actuators.** B.B. Boff[1], A.P. Zanatta[1], A.F. Flores Filho[1], D.G. Dorrell[2] and *P.R. Eckert*[1] *1. Post-Graduate Program in Electrical Engineering, Federal University of Rio Grande do Sul, Porto Alegre, Brazil; 2. University of KwaZulu-Natal, Howard College Campus, Durban, South Africa*

Session HA

SPIN-DEPENDENT PHENOMENA IN 2D MATERIALS AND VAN DER WAALS HETEROSTRUCTURES

Connie Li, Chair
U.S. Naval Research Laboratories, Washington, DC

2:00

HA-01. **Direct electrical detection of spin-momentum locking in topological insulators and Rashba 2DEG states.** ***(Invited)*** *C. Li*[1] *1. Naval Research Laboratory, Washington, DC*

2:30

HA-02. **Graphene-based heterostructures as spintronic devices.** ***(Invited)*** *F. Casanova*[1,2] *1. CIC nanoGUNE, Donostia-San Sebastian, Spain; 2. Ikerbasque, Bilbao, Spain*

3:00

HA-03. **Giant Spin−Orbit Splitting of the Graphene Dirac States in Graphene/Topological Insulator van der Waals heterostructure.** ***(Invited)*** *L. Li*[1] *1. Physics and Astronomy, West Virginia University, Morgantown, WV*

3:30

HA-04. **Electrical generation and control of the valley carriers in a monolayer transition metal dichalcogenid.** ***(Invited)*** *Y. Ye*[1] and X. Zhang[2] *1. Peking Univsersity, Beijing, China; 2. UC Berkeley, Berkeley, CA*

4:00

HA-05. **Highly-crystalline 2D superconductors protected by spin-valley locking.** ***(Invited)*** *Y. Saito*[1] *1. Department of Applied Physics, The University of Tokyo, Bunkyo-ku, Japan*

4:30

HA-06. **Multifunctional 2D Spintronics.** ***(Invited)*** *R. Kawakami*[1] *1. Physics, Ohio State University, Columbus, OH*

Session HB
COMPOSITES, NANOPARTICLES, AND MODELING

Carlo Ragusa, Chair
Politecnico di Torino, Torino, Italy

2:00

HB-01. **MEMS-based Magnetoelectric Magnetic Field Sensors. *(Invited)*** *E. Quandt*[1] *1. Materials Science, University of Kiel, Kiel, Germany*

2:30

HB-02. **Implementation of the single hysteron model in a finite element scheme.** E. Cardelli[1], *A. Faba*[1], A. Laudani[2], G. Lozito[2], S. Quondam Antonio[1], F. Riganti Fulginei[2] and A. Salvini[2] *1. Department of Engineering, University of Perugia, Perugia, Italy; 2. Roma Tre University, Roma, Italy*

2:45

HB-03. **Magnetite Nanoparticles Assembled in Flower-Like Structures with Tunable Magnetic Properties from Superparamagnetic to Ferrimagnetic.** *H. Gavilán*[1], E. Hernández-Sánchez[1], L. Asín[2], M.E. Brollo[1], C.J. Serna[1], S. Veintemillas-Verdaguer[1], L. Gutiérrez[3,1] and M. Morales[1] *1. Energy, Enviroment and Health, Institute of Material Science of Madrid (ICMM-CSIC), Madrid, Spain; 2. Departamento 4: Materiales multifuncionales y biomateriales, ICMA, Zaragoza, Spain; 3. Dept. Química Analítica, Instituto de Nanociencia de Aragón, Universidad de Zaragoza, Zaragoza, Spain*

3:00

HB-04. **Properties of soft magnetic composite compacts produced by spark plasma sintering from pseudo core-shell powders like Me@MeFe$_2$O$_4$ type.** *I. Chicinas*[1], T. Marinca[1], F. Popa[1], B. Neamtu[1], V. Pop[2] and O. Isnard[3,4] *1. Materials Science and Engineering, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; 2. Faculty of Physics, Babes-Bolyai University, Cluj-Napoca, Romania; 3. Université Grenoble-Alpes, Grenoble, France; 4. Institut Néel, CNRS, Grenoble, France*

3:15

HB-05. **Novel Metacomposites Containing Carbon Nanotube-Ferromagnetic Microwire Hybrid Fibers.** D. Estevez[1], *F. Qin*[1], H. Wang[1] and H. Peng[1] *1. Institute for Composites Science Innovation (InCS), School of Materials Science and Engineering, Zhejiang University, Hangzhou, China*

3:30

HB-06. **Intrinsic permeability of composites filled with sendust powders.** *S.N. Starostenko*[1], A.N. Lagarkov[1], K.N. Rozanov[1], A.O. Shiryaev[1] and A.N. Shalygin[2] *1. Institute for Theoretical and Applied Electromagnetics, Moscow, Russian Federation; 2. Physical Faculty, Moscow State University, Moscow, Russian Federation*

3:45

HB-07. **Effect of waiting time in the reversal points of dynamic FORCs.** *D. Cimpoesu*[1], I. Dumitru[1] and A. Stancu[1] *1. Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania*

4:00

HB-08. **Numerical Modeling on Initial Magnetization of Fe-Based Soft Magnetic Composites Considering Saturation.** W. Guan[1], F. Fang[1] and *Y. Gao*[2] *1. Wuhan University, Wuhan, China; 2. Saga University, Saga, Japan*

4:15

HB-09. **Effect of Ni Doping on Particle Magnetic Moment of Antiferromagnetic Ferrihydrite Nanoparticles.** *C. Rana*[1] and S. Tiwari[1] *1. Thapar University Patiala, Patiala, India*

FRIDAY
AFTERNOON
2:00

THE LIFFEY A

Session HC
MICROWAVE, MAGNETO-OPTIC AND NEW MATERIALS
Massimo Pasquale, Chair
INRIM, Torino, Italy

2:00

HC-01. **Magnetic and dielectric properties in UHF band of half-dense NiZnCo ferrites ceramics with Fe-excess and Fe-deficiency.** *J. Mattei*[1], D. Souriou[1] and A. Chevalier[1] *1. Lab-STICC, Functional Materials, Université de Bretagne Occidentale, Brest, France*

2:15

HC-02. **A low phase noise magnetoacoustic oscillator.** *A. Litvinenko*[1], R. Khymyn[2], V. Tikhonov[1], A.N. Slavin[3], V.S. Tiberkevich[3], S.V. Grishin[1] and S. Nikitov[1,4] *1. Laboratory of Metamaterials, Saratov State University, Saratov, Russian Federation; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. Department of Physics, Oakland University, Rochester Hills, MI; 4. Kotel'nikov Institute of Radioengineering and Electronics, Moscow, Russian Federation*

2:30

HC-03. **Magnetooptical Q-switch lasers generating kW order pulses based on domain motions in rare-earth iron garnet.** ***(Invited)*** *T. Goto*[1,2], R. Morimoto[1], J. Pritchard[3], H. Takagi[1], Y. Nakamura[1], H. Uchida[1], M. Mina[3], T. Taira[4] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST PRESTO, Kawaguchi, Japan; 3. Iowa State University, Ames, IA; 4. Institute for Molecular Science, Okazaki, Japan*

3:00

HC-04. **Plasmon-enhanced magneto-optical response: from mechanism to tunable waveplate.** A. Shaimanov[1,2], K. Khabarov[1,3] and *A. Baryshev*[1,4] *1. All-Russia Research Institute of Automatics, Moscow, Russian Federation; 2. Moscow State University, Moscow, Russian Federation; 3. Moscow Institute of Physics and Technology, Moscow, Russian Federation; 4. Ioffe Physical-Technical Institute, Saint-Petersburg, Russian Federation*

3:15

HC-05. **Magnetic graphene enabled by N-doping for microwave absorbing application.** *L. Quan*[1], F. Qin[1], H. Wang[1] and H. Peng[1] *1. Zhejiang University, Hangzhou, China*

3:30

HC-06. **All-optical switching behaviours in synthetic ferrimagnetic heterostructures with different ferromagnetic-layer Curie temperatures.** *J. Liao*[1], P. Vallobra[2], D. Petit[1], T. Vemulkar[1], L. O'Brien[1], G. Malinowski[2], M. Hehn[2], S. Mangin[2] and R. Cowburn[1] *1. Department of Physics, University of Cambridge, Cambridge, United Kingdom; 2. Institute Jean Lamour, UMR CNRS 7198, Universite de Lorraine, Vandoeuvre-les-Nancy, France*

3:45

HC-07. **Nickel Zinc Ferrite and Nickel Zinc Cobalt Ferrite Thick Films Created via Tape Casting Method for Wide-bandwidth Conformal Antennae.** *T. Kittel*[1] and J. Schwartz[1] *1. Materials Science and Engineering, North Carolina State University, Raleigh, NC*

4:00

HC-08. **Substrate integrated waveguide based on ferromagnetic nanowires.** *V. Van Kerckhoven*[1,2] *1. Institute of Condensed Matter and Nanosciences, Université Catholique de Louvain, Louvain-la-Neuve, Belgium; 2. Institute of Information and Communication Technologies, Electronics and Applied Mathematics, Université Catholique de Louvain, Louvain-la-Neuve, Belgium*

4:15

HC-09. **Two micron pixel pitch magneto-optical spatial light modulator.** *H. Kinjo*[1], N. Funabashi[1], K. Aoshima[1], T. Usui[1], S. Aso[1], D. Kato[1], K. Machida[1], K. Kuga[1], T. Ishibashi[2] and H. Kikuchi[1] *1. Japan Broadcasting Corporation, Tokyo, Japan; 2. Nagaoka University of Technology, Niigata, Japan*

4:30

HC-10. **TEM Investigation of RF Sputtered YIG Thin Film Crystallization.** *T. Gage*[1], D. Flannigan[1] and B. Stadler[1] *1. University of Minnesota, Minneapolis, MN*

4:45

HC-11. **Dynamic Magnetic Properties of Ferrites Prepared by Sol-Gel Autocombustion Method.** M. Coisson[1], G. Barrera[1], F. Celegato[1], L. Martino[1], S. Kane[2], S. Raghuvanshi[2] and *P. Tiberto*[1] *1. Nanoscience and Materials, INRIM, Torino, Italy; 2. Physics, Devi Ahilya University, Indore, India*

FRIDAY
AFTERNOON
2:00

LIFFEY HALL 1

Session HD
DOMAIN WALL MOTION

Olga Kazakova, Co-Chair
National Physical Laboratory, Teddington, United Kingdom
Sebastian Gliga, Co-Chair
University of Glasgow, Glasgow, United Kingdom

2:00

HD-01. **Droplet solitons in magnetic nanowires.** *M. Ahlberg*[1], M. Ranjbar[1,2], P. Dürrenfeld[1,3], S. Mohseni[4], S. Chung[5,6] and J. Åkerman[1,5] *1. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 2. School of Electrical, Computer and Energy Engineering, Arizona State University, Tempe, AZ; 3. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 4. Department of Physics, Shahid Beheshti University, Tehran, The Islamic Republic of Iran; 5. Materials Physics, KTH Royal Institute of Technology, Stockholm, Sweden; 6. Department of Physics, Uppsala University, Uppsala, Sweden*

2:15

HD-02. **Observation of abnormal switching-back phenomena in spin-orbit torque devices due to domain wall reflection.** *J. Yoon*[1], S. Lee[2], J. Kwon[1], J. Lee[1], J. Son[1], X. Qiu[3], K. Lee[2,4] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Department of Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 3. Shanghai Key Laboratory of Special Artificial Microstructure Materials & School of Physics Science and Engineering, Tongji University, Shanghai, China; 4. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea*

2:30

HD-03. **Current-driven domain wall dynamics in exchange-coupled ferromagnetic layers by a synthetic antiferromagnet: A micromagnetic study.** V. Raposo[1], O. Alejos[2], R. Tomasello[3], G. Finocchio[4] and *E. Martinez*[1] *1. Applied Physics, University of Salamanca, Salamanca, Spain; 2. University of Valladolid, Valladolid, Spain; 3. University of Perugia, Perugia, Italy; 4. University of Messina, Messina, Italy*

2:45

HD-04. **Straight domain wall instability triggered by in-plane magnetic field in films with perpendicular magnetic anisotropy and interfacial Dzyaloshinskii-Moriya interaction.** *J. Adam*[1], R. Soucaille[1], F. Garcia-Sanchez[1], J. Kim[1] and T. Devolder[1] *1. Centre des Nanosciences et des Nanotechnologies, Université Paris-Sud/CNRS, Orsay, France*

3:00

HD-05. **Observation of domain wall segment jump among quenched disorders.** *T. Taniguchi*[1], K. Kim[1,2], T. Koyama[3], D. Chiba[3] and T. Ono[1] *1. Institute for Chemical Research, Kyoto University, Kyoto, Japan; 2. Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 3. The University of Tokyo, Tokyo, Japan*

3:15

HD-06. **Magnetoelectric control of domain wall position or velocity in magnetoelastic nanostripes.** *T. Mathurin*[1], S. Giordano[1], Y. Dusch[1], N. Tiercelin[1], P. Pernod[1] and V. Preobajenski[1] *1. IEMN, Lille, France*

3:30

HD-07. **Performance of synthetic antiferromagnetic racetrack memory: domain wall vs skyrmion.** *R. Tomasello*[1], V. Puliafito[2], E. Martinez[3], A. Manchon[4], M. Ricci[1], M. Carpentieri[5] and G. Finocchio[6] *1. Department of Engineering, University of Perugia, Terni, Italy; 2. Department of Engineering, University of Messina, Messina, Italy; 3. Department of Fisica Aplicada, University of Salamanca, Salamanca, Spain; 4. Physical Science and Engineering Division (PSE), King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 5. Department of Electrical and Information Engineering, Technical University of Bari, Bari, Italy; 6. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

3:45

HD-08. **Reliable and simultaneous control of circularity and polarity for an effective reconfiguration of vortex arrays.** *M. Im*[1], H. Han[2], M. Jung[3], W. Chao[1], Y. Yu[1], P. Fischer[1], G. Meier[4], J. Hong[3] and K. Lee[2] *1. LBNL, Berkeley, CA; 2. UNIST, Ulsan, The Republic of Korea; 3. DGIST, Daegu, The Republic of Korea; 4. MPI, Hamburg, Germany*

4:00

HD-09. **Evaluation of Dzyaloshinskii-Moriya interaction from thermally activated and flow regime domain wall motion.** *S. Duttagupta*[1,2], C. Zhang[2], S. Fukami[3,4] and H. Ohno[2,5] *1. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 3. Center for Spintronics Integrated Systems, Tohoku, Sendai, Japan; 4. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 5. WPI-AIMR, Tohoku University, Sendai, Japan*

4:15

HD-10. **Fast Domain Wall Motion Induced by Antiferromagnetic Spin Dynamics at Angular Momentum Compensation Temperature of Ferrimagnets.** K. Kim[1,2], S. Kim[3], T. Tono[1], S. Oh[4], T. Okuno[1], W. Ham[1], Y. Hirata[1], S. Kim[1], G. Go[4], Y. Tserkovnyak[3], A. Tsukamoto[5], T. Moriyama[1], *K. Lee*[4] and T. Ono[1] *1. Kyoto University, Kyoto, Japan; 2. KAIST, Daejon, The Republic of Korea; 3. UCLA, LA, CA; 4. Korea University, Seoul, The Republic of Korea; 5. Nihon University, Chiba, Japan*

4:30

HD-11. **Field- and Current-Driven Domain Wall Motion in Epitaxial Pt/Co/$Pt_{1-x}Au_x$ Trilayers with Controlled Broken Inversion Symmetry.** *K. Shahbazi*[1], A. Hrabec[1,2], S. Moretti[3], T.A. Moore[1], E. Martinez[3] and C.H. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. LPS, Universités Paris-Sud, Orsay, France; 3. University of Salamanca, Salamanca, Spain*

4:45

HD-12. **Current Controlled Domain Wall Velocity in Amorphous Microwires.** S. Corodeanu[1], *H. Chiriac*[1], N. Lupu[1] and T.A. Ovari[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

FRIDAY
AFTERNOON
2:00

LIFFEY MEETING ROOM 2

Session HE
MULTIFERROICS: MATERIALS AND PHENOMENA

Martina Müller, Chair
Research Center Jülich, Jülich, Germany

2:00

HE-01. **Bismuth iron garnet $Bi_3Fe_5O_{12}$: a room temperature magnetoelectric material.** E. Popova[1], A. Shengelaya[2,3], D. Daraselia[2], D. Japaridze[2], S. Cherifi-Hertel[4], L. Bocher[5], A. Gloter[5], O. Stéphan[5], Y. Dumont[1] and *N. Keller*[1] *1. GEMaC, CNRS-UVSQ, Versailles, France; 2. Department of Physics, Tbilisi State University, Tbilisi, Georgia; 3. Andronikashvili Institute of Physics, I. Javakhishvili Tbilisi State University, Tbilisi, Georgia; 4. IPCMS, CNRS-UNISTRA, Strasbourg, France; 5. LPS, CNRS-Université Paris Sud, Orsay, France*

2:15

HE-02. **Magnetic field induced spin-structure transitions in epitaxially strained multiferroic $BiFeO_3$ thin films.** A. Agbelele[1], D. Sando[2], R. Rüffer[3], B. Dkhil[4], M. Cazayous[5], A. Zvezdin[6,7], J. Le Breton[1], A. Barthélémy[8], *J. Juraszek*[1] and M. Bibès[8] *1. GPM, Université de Rouen Normandie, Saint Etienne du Rouvray, France; 2. School of Materials Science and Engineering, University of New South Wales, Sydney, NSW, Australia; 3. ESRF, Grenoble, France; 4. Centrale-Supelec, Univ. Paris Sud, Univ Paris-Saclay, Châtenay-Malabry, France; 5. Univ. Paris-Diderot, LMPQ, Paris, France; 6. Prokhorov General Physics Institute, Russian Academy of Sciences, Moscow, Russian Federation; 7. Russian Quantum Center, Moscow, Russian Federation; 8. CNRS Thalès, Univ. Paris Sud, Univ Paris-Saclay, Palaiseau, France*

2:30

HE-03. **High Temperature Giant Magnetoelectric Coupling in $BaTiO_3$:Fe Auto-Composites.** *C.D. Amorim*[1], F. Figueiras[1,2], J.S. Amaral[1,2], J.N. Gonçalves[1], P.B. Tavares[3], M.D. Rosário[4], A. Baghizadeh[5] and V.B. Amaral[1] *1. Physics Department and CICECO, University of Aveiro, Aveiro, Portugal; 2. IFIMUP-IN, Science Faculty, Porto University, Aveiro, Portugal; 3. Chemistry Center, Tras-os-Montes and Alto-Douro University, Vila Real, Portugal; 4. Physics Department and I3N, University of Aveiro, Aveiro, Portugal; 5. Department of Materials and Ceramic Engineering and CICECO, University of Aveiro, Aveiro, Portugal*

2:45

HE-04. **Magnetoelectric coupling at the Co/Pb(Zr,Ti)O_3(001) interface.** *R. Arras*[1], R. Jarrier[2], F. Scheurer[2], P. Ohresser[3] and S. Cherifi-Hertel[2] *1. CEMES-CNRS, Toulouse, France; 2. IPCMS, Strasbourg, France; 3. Synchrotron SOLEIL, Gif-sur-Yvette, France*

3:00

HE-05. **Artificial Ferroic Systems: Bloch Points, Monopoles and Magnetic Metamaterials.** ***(Invited)*** *L. Heyderman*[1] *1. ETH Zurich - Paul Scherrer Institute, Villigen-PSI, Switzerland*

3:30

HE-06. **Manipulation of antiferromagnetic distributions in $BiFeO_3$ studied by second harmonic generation imaging.** *J. Chauleau*[1], E. Haltz[1], M. Viret[1], S. Fusil[2] and C. Carretero[2] *1. DRF/IRAMIS/SPEC, CEA/CNRS, Saclay, France; 2. Unite mixte de Physique CNRS/Thales, Palaiseau, France*

3:45

HE-07. **Enhancement of the magnetoelectric effect in multiferroic $CoFe_2O_4$/PZT bilayer by induced uniaxial magnetic anisotropy.** *A. Aubert*[1], V. Loyau[1], F. Mazaleyrat[1] and M. Lo Bue[1] *1. SATIE UMR 8029, ENS Cachan, Cachan, France*

4:00

HE-08. **Electric Field Induced Non-Linear Magnetoelectric Effects in M-type Single Crystal Strontium Hexaferrite.** I. Zavislyak[1], M. Popov[1] and *G. Srinivasan*[2] *1. Department of Radiophysics, Electronics and Computer Systems, Taras Shevchenko National University of Kyiv, Kyiv, Ukraine; 2. Physics, Oakland University, Rochester, MI*

4:15

HE-09. **Magnetoelectric coupling between ultra-thin Fe films and Pb ($Mg_{1/3}Nb_{2/3}$) O_3] (1-x)-[$PbTiO_3$] x, x=0.32 (001) (PMN-PT) using x-ray magnetic circular dichroism.** *S. Avula Venkata*[1], J. Heidler[1], J. Dreiser[1], J. Vijayakumar[1], L. Howald[1], F. Nolting[1] and C. Piamonteze[1] *1. Microscopy and Magnetism, Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland*

4:30

HE-10. **New route to design vertically aligned multiferroic nanocomposites.** *S. Basov*[1,2] *1. BSMA, Institute of Condensed Matter and Nanosciences, Louvain-la-Neuve, Belgium; 2. ICMCB, CNRS, Université de Bordeaux, Pessac, France*

4:45

HE-11. **Magnetoelectric coupling in multiferroic $ErFeO_3$ nanoparticles with excellent photocatalytic activity.** *M. Alam*[1] *1. Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Coochbehar, India*

FRIDAY
AFTERNOON
2:00

WICKLOW HALL 1

Session HF
VOLTAGE-CONTROLLED MAGNETISM/ MAGNETORESISTIVE AND HALF-METALLIC MATERIALS II

François Montaigne, Chair
Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France

2:00

HF-01. **Nanoscale Imaging of Electrically Controlled Magnetization in Artificial Multiferroics and Spin Hall Effect Devices.** ***(Invited)*** *I. Gilbert*[1] *1. National Institute of Standards and Technology, Gaithersburg, MD*

2:30

HF-02. **Tenfold Improvement of the Write-Error Rate of Voltage-Control Spintronics Memory (VoCSM) by Controlling Switching Energy Barrier Height.** *T. Inokuchi*[1], H. Yoda[1], S. Shirotori[1], Y. Kato[1], N. Shimomura[1], K. Koi[1], Y. Kamiguchi[1], K. Ikegami[1], H. Sugiyama[1], M. Shimizu[1], S. Oikawa[1], M. Ishikawa[1], A. Buyandalai[1], T. Ajay[1], Y. Ohsawa[1], Y. Saito[1] and A. Kurobe[1] *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan*

2:45

HF-03. **Huge voltage-induced magnetic anisotropy change of 5*d* transition-metals on Fe(001) and Co(0001).** *M. Tsujikawa*[1,2] and M. Shirai[1,2] *1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

3:00

HF-04. **Composition dependence of voltage-induced perpendicular magnetic anisotropy change in Ta/$(Co_xFe_{100-x})_{80}B_{20}$/MgO multilayers.** *Y. Shiota*[1], T. Nozaki[1], S. Tamaru[1], K. Yakushiji[1], H. Kubota[1], A. Fukushima[1], S. Yuasa[1] and Y. Suzuki[1,2] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

3:15

HF-05. **Magnetization switching using voltage-induced changes of magnetic anisotropy and Dzyaloshinskii-Moriya interaction.** *H. Imamura*[1], T. Nozaki[1], S. Yuasa[1] and Y. Suzuki[2,1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

3:30

HF-06. **Electric field modulation of the non-linear areal magnetic anisotropy energy in CoFeB/MgO.** *Y. Lau*[1,2], P. Sheng[2], S. Mitani[2], D. Chiba[3] and M. Hayashi[1,2] *1. Department of Physics, The Univeristy of Tokyo, Tokyo, Japan; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Department of Applied Physics, The University of Tokyo, Tokyo, Japan*

3:45

HF-07. **Enhanced CPP-GMR effect by improved B2-order of $Co_2(Mn_{0.6}Fe_{0.4})Ge$ Heusler layer deposited on amorphous CoFeBTa underlayer: a quantitative estimation of site-disordering by anomalous x-ray diffraction.** S. Li[1], *T. Nakatani*[1], Y. Sakuraba[1], H. Tajiri[2], T. Furubayashi[1] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Japan Synchrotron Radiation Research Institute, Sayo, Japan*

4:00

HF-08. **Atomic and spin-electronic structure of antiphase boundary in the full Heusler alloy $Co_2Fe(Al_{0.5}Si_{0.5})$.** *Z. Nedelkoski*[1], A. Sanchez[2], A. Ghasemi[1], K. Hamaya[3], R.F. Evans[1], G. Bell[2], A. Hirohata[4] and V.K. Lazarov[1] *1. Physics, University of York, York, United Kingdom; 2. Physics, University of Warwick, Coventry, United Kingdom; 3. Systems Innovation, Osaka University, Osaka, Japan; 4. Electronics, University of York, York, United Kingdom*

4:15

HF-09. **Layer Thickness Dependence of CPP-GMR in $Co_2Fe_{0.4}Mn_{0.6}Si$ | $L1_2$–type Ag-Mg | $Co_2Fe_{0.4}Mn_{0.6}Si$ Devices.** *T. Kubota*[1,2], Y. Ina[1], Z. Wen[2,1] and K. Takanashi[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

4:30

HF-10. **High field magnetotransport in half-metallic ferrimagnetic $MnRu_xGa$ thin films.** *C. Fowley*[1], K. Rode[2], R. Gallardo[3], N. Thiyagarajah[2], Y. Lau[2], K. Borisov[2], D. Betto[2], G. Atcheson[2], E. Kampert[4], Z. Wang[4], J. Lindner[1], M. Coey[2], P.S. Stamenov[2] and A. Deac[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. AMBER and School of Physics, Trinity College Dublin, Dublin, Ireland; 3. Universidad Técnica Federico Santa María, Valparaíso, Chile; 4. High Magnetic Field Laboratory, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

4:45

HF-11. **Withdrawn**

FRIDAY AFTERNOON 2:00 — WICKLOW HALL 2A

Session HG
MICROSTRUCTURE AND MAGNETIC CHARACTERIZATION

Alicia Forment-Aliaga, Chair
Instituto de Ciencia Molecular, Paterna, Spain

2:00

HG-01. **Unravelling atomic structure and domain wall pinning in samarium-cobalt based permanent magnets.** *L. Molina-Luna*[1], M. Duerrschnabel[1], M. Yi[2], K. Uestuener[3], M. Liesegang[3], M. Katter[3], H. Kleebe[1], B. Xu[2] and O. Gutfleisch[4] *1. Department of Material- and Geosciences, TU Darmstadt, Darmstadt, Germany; 2. Department of Material- and Geosciences, Mechanics of Functional Materials, TU Darmstadt, Darmstadt, Germany; 3. Vacuumschmelze GmbH & Co. KG, Hanau, Germany; 4. Department of Material- and Geosciences, Functional Materials, TU Darmstadt, Darmstadt, Germany*

2:15

HG-02. **Control of the magnetic vortex core dynamics in magnetostrictive microstructured elements through the Magneto-Elastic coupling.** *S. Finizio*[1], S. Wintz[1,2], E. Kirk[1], A. Suszka[1], S. Gliga[3] and J. Raabe[1] *1. Paul Scherrer Institut, Villigen PSI, Switzerland; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. University of Glasgow, Glasgow, United Kingdom*

2:30

HG-03. **Imaging and Analysis of Buried Defects at Interfaces. *(Invited)*** *A. Hirohata*[1], E. Jackson[1], Y. Yamamoto[2], B. Murphy[3], A. Vick[3], S. Duttagupta[4], S. Fukami[4], H. Ohno[4], T. Kubota[5] and K. Takanashi[5] *1. Department of Electronics, University of York, York, United Kingdom; 2. JEOL, Akishima, Japan; 3. Department of Physics, University of York, York, United Kingdom; 4. Research Institute of Electrical Communications, Tohoku University, Sendai, Japan; 5. Institute for Materials Research, Tohoku University, Sendai, Japan*

3:00

HG-04. **Enhanced Magnetic Coercivity in RF-Sputtered Oxide $BaMnO_3$ Thin Film on Si.** *S. Mirzadeh Vaghefi*[1], A. Baghizadeh[2], A.A. Lourenço[1] and V.B. Amaral[1] *1. Department of Physics and CICECO, University of Aveiro, Aveiro, Portugal; 2. Department of Engineering of Materials and Ceramics and CICECO, University of Aveiro, Aveiro, Portugal*

3:15

HG-05. **Reversal Processes in CoCrPt thin films with Perpendicular Magnetic Anisotropy.** *D. Navas*[1], N. Soriano[2], F. Beron[3], C.T. Sousa[1], K.R. Pirota[3], C. Redondo[2], R. Morales[4,5] and C.A. Ross[6] *1. IFIMUP-IN and Departamento de Física e Astronomia, Universidade do Porto, Porto, Portugal; 2. Department of Chemical-Physics, University of the Basque Country, Leioa, Spain; 3. Instituto de Fisica Gleb Wataghin, Universidade Estadual Campinas, Campinas, Brazil; 4. Department of Chemical-Physics & BCMaterials, University of the Basque Country, Leioa, Spain; 5. Ikerbasque, Basque Foundation for Science, Bilbao, Spain; 6. Materials Science and Engineering Department, MIT, Cambridge, MA*

3:30

HG-06. **An Approach to Investigate Relation Between Magnetic Domains and Applied Magnetic Fields: Evaluation Mechanism of The Branching Domains.** *T. Gunes*[1] and R. Schäfer[2] *1. Energy Systems Engineering, University of Yalova, Yalova, Turkey; 2. Magnetic Materials, Leibniz Institute for Solid State and Materials Research, Dresden, Germany*

3:45

HG-07. **Super high frequency (SHF) detectors based on the spin-wave driven expulsion of the vortex core in magnetic tunnel junctions.** *A. Jenkins*[1], P. Bortolotti[2], R. Lebrun[2], S. Menshawy[2], K. Merazzo[3,4], L. Vila[3], M. Cyrille[4], U. Ebels[3], V. Cros[2], D. Costa[1], E. Paz[1], R. Ferreira[1] and P. Freitas[1] *1. International Iberian Nanotechnology Laboratory, Braga, Portugal; 2. Unité Mixte de Physique CNRS, Thales and Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France; 3. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France; 4. CEA-LETI, MINATEC, Grenoble, France*

4:00

HG-08. **On the Understanding of the Microstructure and the Magnetic Properties of Fe-Implanted 6H-SiC at Fine Scale by Atom Probe Tomography.** *L. Diallo*[1], M. Diallo[1], L. Lechevallier[1,2], A. Fnidiki[1], M. Viret[3], M. Marteau[4], D. Eyidi[4], A. Declemy[4], F. Cuvilly[1] and I. Blum[1] *1. Normandie Univ., INSA Rouen, UNIROUEN, CNRS, GPM, Rouen, France; 2. Département de GEII, Université de Cergy-Pontoise, Cergy-Pontoise, France; 3. Service de Physique de l'Etat Condensé (DSM/IRAMIS/SPEC), UMR 3680 CNRS, Bât. 772, Orme des Merisiers, CEA Saclay, Gif-sur-Yvette, France; 4. Institut PPRIME, UPR 3346 CNRS, Université de Poitiers, ENSMA, SP2MI, Futuroscope, Chasseneuil, France*

4:15

HG-09. **Twinning-induced large mechanical strains in directionally oriented FeGa samples.** *N.J. Jones*[1], Y. Amanuel[2], J. Dukes[2], P.K. Lambert[3] and J. Yoo[1] *1. Physical Metallurgy and Fire Protection Branch, Naval Surface Warfare Center, Carderock Division, Bethesda, MD; 2. Criteria and Assessment, Naval Surface Warfare Center, Carderock Division, Bethesda, MD; 3. Materials Science and Engineering, Johns Hopkins University, Bethesda, MD*

4:30

HG-10. **Magnetic Imaging System in Smartphones Based on Built-In Magnetometer.** *A.B. Suksmono*[1], D. Danudirdjo[1], A.D. Setiawan[1] and D. Rahmawati[1] *1. School of Electrical Engineering and Informatics, Institut Teknologi Bandung, Bandung, Indonesia*

4:45

HG-11. **Magnetic domain wall creep dynamics in perpendicularly magnetised CoFeB/MgO microstructures.** *L. Herrera Diez*[1], G. Durin[2], V. Jeudy[3], Y. Liu[1], B. Sarma[2], G. Agnus[1], J. Langer[4], B. Ocker[4] and D. Ravelosona[1] *1. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Université Paris-Sud, Université Paris- Saclay, Orsay, France; 2. ISI Foundation, Torino, Italy; 3. Laboratoire de Physique des Solides, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 4. Singulus Technology AG, Kahl am Main, Germany*

FRIDAY AFTERNOON 2:00 | WICKLOW HALL 2B

Session HH
MOTORS AND GENERATORS
Jianguo Zhu, Chair
University of Technology Sydney, Sydney, Australia

2:00

HH-01. **3D FEM Computation of Axial Flux in a Brushless Doubly-Fed Induction Machine.** *F. Wani*[1], X. Wang[1], D. Lahaye[1] and H. Polinder[1] *1. TU Delft, Delft, Netherlands*

2:15

HH-02. **Slotted Permanent-Magnet Machines: Fourier-Based Analytical Modeling Considering Finite Permeability of Teeth.** *P. Pfister*[1], Q. Wang[1], X. Qin[1] and Y. Fang[1] *1. College of Electrical Engineering, Zhejiang University, Hangzhou, China*

2:30

HH-03. **Vector Magnetic Hysteresis Measurement of Non-Oriented Electrical Steel Sheets under Unidirectional Compressive Stress Applied by Piezo Actuators.** ***(Invited)*** *H. Kawano*[1], H. Oshima[1], J. Fujisaki[2], A. Furuya[2], Y. Uehara[2] and T. Matsuo[3] *1. Fujitsu Laboratories Ltd., Atsugi, Japan; 2. Fujitsu Limited, Kawasaki, Japan; 3. Kyoto University, Kyoto, Japan*

3:00

HH-04. **Iron Loss Model for Electrical Machines Fed by Low Switching Frequency PWM.** S. Xue[1], J. Feng[2], S. Guo[2], Z. Chen[2], J. Peng[2], *W. Chu*[2], P. Xue[1] and Z.Q. Zhu[1] *1. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; 2. CRRC Zhuzhou Institute Co. Ltd, Sheffield, United Kingdom*

3:15

HH-05. **Power loss and demagnetization research for high speed permanent magnet electrical machine.** *Y. Zhang*[1], S. McLoone[1] and W. Cao[2] *1. Queens University Belfast, Belfast, United Kingdom; 2. Aston University, Birmingham, United Kingdom*

3:30

HH-06. **Analysis of Unipolar Leakage Flux in Series-Hybrid Permanent Magnet Machines.** Z.Q. Zhu[1], *H. Hua*[1], A. Pride[2], R. Deodhar[2] and T. Sasaki[2] *1. Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; 2. IMRA Europe S.A.S., U.K. Research Center, Brighton, United Kingdom*

3:45

HH-07. **Loss analysis for the hybrid linear switched reluctance motor with no cogging force.** N. Cheung[1], E. Cheng[1] and *J. Pan*[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

4:00

HH-08. **Teeth Analysis and Optimization for Linear Switched Reluctance Motor.** *N. Cheung*[1], W. Fu[1], E. Cheng[1] and J. Pan[2] *1. Electrical Engineering, Hong Kong Polytechnic University, Hong Kong, Hong Kong; 2. Shenzhen Key Laboratory of Electromagnetic Control, Shenzhen University, Shenzhen, China*

4:15

HH-09. **Modeling a Ironless Permanent-Magnet Actuator for 6-DOF Magnetic Levitation Systems.** *M. Lahdo*[1], T. Ströhla[2] and S. Kovalev[1] *1. Department of Electrical Engineering and Mechatronics, University of Applied Sciences Mittelhessen Friedberg, Friedberg, Germany; 2. Department of Mechatronics, University of Technology Ilmenau, Ilmenau, Germany*

4:30

HH-10. **Study of a Linear Halbach Passive Magnetic Damper.** *M. Parekh*[1], A. Bissal[2], J. Magnusson[1,2] and G. Engdahl[1] *1. Electromagnetic Engineering (ETK), KTH Royal Institute of Technology, Stockholm, Sweden; 2. ABB AB Corporate Research, Västerås, Sweden*

4:45

HH-11. **Analysis of Low-Speed IPMMs with Distributed and Fractional Slot Concentrated Windings Designed for Wind Energy Applications.** *K. Ahsanullah*[1], R. Dutta[1] and F. Rahman[1] *1. Electrical and Communication Engineering, University of New South Wales, Sydney, NSW, Australia*

FRIDAY
AFTERNOON
1:30

THE FORUM

Session HM
BIO- AND CHEMICAL MAGNETISM AND MAGNETIC FLUIDS (Poster Session)

Eiji Kita, Chair
University of Tsukuba, Tsukuba, Japan

HM-01. **Magnetic orientational properties of monosodium urate crystals.** *Y. Takeuchi*[1], M. Sekiya[1], A. Hamasaki[2], M. Iwasaka[3] and M. Matsuda[1] *1. Muroran Institute of Technology, Muroran, Japan; 2. Department of Chemistry, Shinshu University, Matsumoto, Japan; 3. RNBS, Hiroshima University, Higashi-hiroshima, Japan*

HM-02. **ELF Magnetic Control of Axolotl Metamorphosis Inspired by Administration of Thyroid Hormone.** *H. Nakagawa*[1] and M. Ohuchi[1] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Adachi-ku, Japan*

HM-03. **Analysis of Magneto-Mechanical Coupling System on Adjustable Magnetic Fluid Damper.** X. Yang[1], Q. Yang[1,2], *W. Yang*[1], B. Guo[1] and L. Chen[1] *1. Hebei University of Technology, Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Tianjin, China; 2. Tianjin Key Laboratory of Advanced Electrical Engineering and Energy Technology, Tianjin Polytechnic University, Tianjin, China*

HM-04. **Synthesis carbon dots on magnetic Fe_3O_4 nanoparticles.** Y. Ju[1], K. Lin[1], C. Liao[1] and *A. Sun*[1] *1. Chemical Engineering and Material Science, Yuan-Ze University, Taoyuan City, Taiwan*

HM-05. **Transcranial Magnetic Stimulation Increases Proliferation of Dopaminergic Neurons.** *X. Zhong*[1], J. Luo[2], A. Kanthasamy[2] and D. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA; 2. Department of Biomedical Sciences, Iowa State University, Ames, IA*

HM-06. **Computation of magnetic liquid free surface shape in a quasi-homogeneous magnetic field with Differential Evolution.** *M. Trbušić*[1] and A. Hamler[1] *1. Faculty of Electrical Engineering and Computer Science, University of Maribor, Slovenia, Maribor, Slovenia*

HM-07. **The stability of the magnetic properties of dry magnetically controlled biosorbent on basis of yeast *Sacharomyces cerevisiae*.** K.A. Hetmanenko[1], S. Gorobets[1], *O. Gorobets*[1] and A. Kovalyov[1] *1. Faculty of Biotechology and Biotechnics, Kyiv Polytechnic Institute, Kyiv, Ukraine*

HM-08. **Carbonyl Iron Suspension with Magnetic $CoFe_2O_4$ Nanoparticle Additive and Its Magnetorheological Characteristics.** Y. Dong[1], S. Piao[1], K. Zhang[2] and *H. Choi*[1] *1. Dept. of Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea; 2. School of Chemical Engineering and Technology, Harbin Institute of Technology, Harbin, China*

HM-09. **Magnetic force microscopy of the ethmoid bones of migratory and non-migratory fishes.** M. Bulaevska[1], S. Gorobets[1], *O. Gorobets*[1] and I. Sharau[2] *1. Faculty of Biotechnology and Biotechnics, Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine; 2. Institute of Magnetism NAS of Ukraine and MESYS of Ukraine, Kyiv, Ukraine*

HM-10. **The Development of the Multi-Channel TMS Device.** J. Li[1], *H. Cao*[1], Z. Zhao[1], M. Zheng[1], Z. Ren[1], Y. Sun[1], Y. Liu[1] and J. He[1] *1. Xi'an Jiaotong University, Xi'an, China*

HM-11. **Theoretical Energy Dissipation and Numerical Calculation of Passive Magnetic Fluid Damper.** X. Yang[1], Q. Yang[1,2], L. Chen[1], B. Guo[1] and *W. Yang*[1] *1. Hebei University of Technology, Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Tianjin, China; 2. Tianjin Key Laboratory of Advanced Electrical Engineering and Energy Technology, Tianjin Polytechnic University, Tianjin, China*

HM-12. **Novel thermal switch based on magnetic nanofluids with remote activation.** M.M. Dias[1,2], J. Puga[1], B. Bordalo[1,2], D. Silva[1,2], J.H. Belo[1,2], J. Araújo[1,2], J. Oliveira[3], A. Pereira[1,2] and *J. Ventura*[1,2] *1. Material Physics Institute of the University of Porto, Porto, Portugal; 2. Physics and Astronomy Department, University of Porto, Porto, Portugal; 3. CFP, Department of Engineering Physics, FEUP, Porto, Portugal*

HM-13. **Design of a New Sandwiched Wireless Charging System for Micro Medical Robotics on Cardiac Pacemaker.** J. Song[1] and *C. Liu*[1] *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, Hong Kong*

HM-14. **Metamorphic Behaviors of T_4-Administrated Mexican Axolotl under Exposure to Gradient Magnetic Field.** *H. Nakagawa*[1] and M. Ohuchi[1] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Adachi-ku, Japan*

HM-15. **Iron Oxide Silica Core-Shell Nanoparticles Conjugated with Bovine Serum Albumin.** *Y. Teng*[1] and P. Pong[1] *1. Electrical and Electronical Engneering, The University of Hong Kong, Hong Kong, Hong Kong*

HM-16. **Magnetorheology of Snowman-Like Anisotropic Microparticle Added Carbonyl Iron Suspension.** H. Kim[1], S. Kwon[1] and *H. Choi*[1] *1. Dept. of Polymer Science and Engineering, Inha University, Incheon, The Republic of Korea*

HM-17. **Effects of Magnetic Stimulation of Acupuncture Point on Brain Network.** *L. Fu*[1], G. Xu[1] and H. Yu[2] *1. Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Biomedical Engineering, Hebei University of Technology, Tianjin, China*

HM-18. **Experimental Verification on Effects in an Emergency Stop by Installation of Magneto Rheological Fluid Damper to an Elevator.** *N. Kobayashi*[1], K. Kawase[2], S. Sato[1] and T. Nakagawa[3] *1. Electrical and Electronic Engineering, Tokyo City University, Tokyo, Japan; 2. Department of Electrical and Electronic Engineering, Tokyo City University, Tokyo, Japan; 3. Electrical and Electronic Engineering, Tokyo City University, Tokyo, Japan*

FRIDAY AFTERNOON 1:30 — THE FORUM

Session HN
MAGNETIC NANOPARTICLES, NANOWIRES, AND 3D STRUCTURES IV (Poster Session)

Veronique Dupuis, Co-Chair
iLM CNRS/University Lyon, Villeurbanne France
Erik Wetterskog, Co-Chair
Uppsala University, Uppsala, Sweden

HN-01. **Spin-glass-like freezing of inner and outer surface layers in hollow Fe_2O_3 nanoparticles.** H. Khurshid[1], P. Lampen-Kelley[1], *O. Iglesias*[2], J. Alonso[1,3], M. Phan[1], C. Sun[4], M. Saboungi[5,3] and H. Srikanth[1] *1. Department of Physics, University of South Florida, Tampa, FL; 2. Condensed Matter Physics, University of Barcelona, Barcelona, Spain; 3. BCMaterials, Derio, Spain; 4. Argonne National Lab, Argonne, IL; 5. IMPMC, Univ. Pierre et Marie Curie, Paris, France*

HN-02. **Core-shell magnetic structure of $La_{1-x}Sr_xMnO_{3+\delta}$ nanocrystallites.** N.M. Belozerova[1], S. Kichanov[1], D.P. Kozlenko[1], Z. Jirák[2] and *O. Kaman*[2] *1. Joint Institute for Nuclear Research, Dubna, Russian Federation; 2. Institute of Physics, AS CR, Praha, Czech Republic*

HN-03. **Effects of 3D-Printed Structural Characteristics on Magnetic Properties.** L. Bollig[1], M. Patton[1], A. Otto[1], G. Mowry[2] and *B. Nelson-Cheeseman*[1] *1. Mechanical Engineering, University of St. Thomas, Saint Paul, MN; 2. Electrical Engineering, University of St. Thomas, Saint Paul, MN*

HN-04. **Magnetic Properties of Fe_3O_4 Nanocube Assemblies: Dilute, 2D, and 3D Arrays.** C. Moya[1], A. Abdelgawad[1], N. Nambiar[1] and *S. Majetich*[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA*

HN-05. **Magnetic changes in $CoFe_2O_4$@SiO_2 nanoparticles stemming from interfaces.** *B. Rivas-Murias*[1] and V. Salgueiriño[1] *1. Applied Physics, Universidade de Vigo, Vigo, Spain*

HN-06. **Controlled tuning of magnetic interactions in silica-covered iron oxide nanoparticles.** *P.C. Rivas Rojas*[1], P. Tancredi[1], O. Moscoso Londono[2] and L. Socolovsky[1] *1. Faculty of Engineering/CONICET/INTECIN, University of Buenos Aires, Buenos Aires, Argentina; 2. Institute of Physics Gleb Wataghin, University of Campinas, Campinas, Brazil*

HN-07. **Magnetic response of hybrid ferromagnetic and antiferromagnetic core-shell nanostructures.** U. Khan[1], W. Li[1], M. Irfan[1], A. Nairan[1], K. Javed[1] and *X. Han*[1] *1. State Key Lab of Magnetism, Institute of Physics, Beijing, China*

HN-08. **Effect of magnetic core size of Fe_3O_4-mesoporous SiO_2 core-shell nanoparticles on removal of heavy metal ions.** S. Jin[1], B. Park[1], W. Ham[1], *L. Pan*[1] and Y.K. Kim[1] *1. Material Science and Engineering, Korea University, Seoul, The Republic of Korea*

HN-09. **Microwave absorption properties of hybrid polyaniline coated Ba ferrite core-shell nanocomposites.** *K. Seo*[1], S. Lee[1], L. Malkinski[2] and J. Jung[1] *1. Chemistry, Gangneung-Wonju National University, Gangneung city, The Republic of Korea; 2. Physics and Material Sceience, University of New Orleans, New Orleans, LA*

HN-10. **Magnetic Properties of Co-B Nanotubes.** *F.M. Rhen*[1,2] and S. Kingston[1,2] *1. Physics, University of Limerick, Limerick, Ireland; 2. Bernal Institute, University of Limerick, Limercik, Ireland*

HN-11. **Diameter dependent anti-ferromagnetic functionality in hybrid core/shell nanowires.** *U. Khan*[1], W. Li[1], A. Nairan[1], M. Irfan[1], C. Wan[1], K. Javed[1] and X. Han[1] *1. State Key Lab of Magnetism, Institute of Physics, Beijing, China*

HN-12. **Magnetic characteristics of $Ca_{0.98}Co_{0.02}MoO_4$ and $Ca_{0.95}Mn_{0.05}MoO_4$ nanoparticles.** *T. Gron*[1], M. Pawlikowska[2], E. Tomaszewicz[2], M. Oboz[1], B. Sawicki[1] and H. Duda[1] *1. Institute of Physics, University of Silesia, Katowice, Poland; 2. Department of Inorganic and Analytical Chemistry, Faculty of Chemical Technology and Engineering, West Pomeranian University of Technology, Szczecin, Poland*

HN-13. **Structural and magnetic properties of ribbons and thin films of Fe_xCu_{1-x} electrochemically treated to create 3D nanoporosity.** H. Zhang[1], *S. Robbennolt*[1], A. Quintana[1], A. Gordó[1], E. Menéndez[1], J. Fornell[1], E. Pellicer[1] and J. Sort[1,2] *1. Department of Physics, Universitat Autònoma de Barcelona, Bellaterra, Spain; 2. Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain*

HN-14. **Domain wall pinning in cylindrical nanowires with modulation in diameter: analytical and micromagnetic models.** *J. Fernandez-Roldan*[1], D. Gusakova[2], J. Toussaint[2,3], R.P. del Real[1], O. Chubykalo-Fesenko[1], O. Fruchart[2,3] and M. Vázquez[1] *1. Institute of Materials Science of Madrid, CSIC, Madrid, Spain; 2. Univ. Grenoble Alpes, SPINTEC; CNRS, CEA, Grenoble, France; 3. Univ. Grenoble Alpes, Institut Néel, CNRS, Grenoble, France*

HN-15. **Complex magnetic domain configurations in cylindrical nanowires.** *C. Bran*[1], E. Palmero[1], J. Fernández-Rodán[1], E. Berganza[1], A. Asenjo[1], A. Fraile Rodríguez[2], R.P. del Real[1], O. Chubykalo-Fesenko[1] and M. Vázquez[1] *1. ICMM Madrid, Madrid, Spain; 2. Universitat de Barcelona, Barcelona, Spain*

HN-16. **Optimization of low-pinning magnetic alloys for domain wall motion in cylindrical nanowires.** *B. Trapp*[1], S. Bochmann[2], A. Wartelle[1], M. Stano[1], L. Cagnon[1], J. Bachmann[2] and O. Fruchart[3,1] *1. Univ. Grenoble Alpes - CNRS, Institute Néel, Grenoble, France; 2. Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany; 3. Univ. Grenoble Alpes - CNRS - CEA, SPINTEC, Grenoble, France*

HN-17. **Arrays of bi-metal nanostructures to control energy product.** *K. Rumpf*[1], P. Granitzer[1], P. Poelt[2] and H. Michor[3] *1. Institute of Physics, University of Graz, Graz, Austria; 2. Institute for Electron Microscopy, University of Technology Graz, Graz, Austria; 3. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria*

HN-18. **MBE Growth and Characterization of Mn-Doped Ge Nanowire.** *I. Gunduz Aykac*[1,2], A. Onel[1], O. Mercan[1] and L. Colakerol Arslan[1] *1. Physics, Gebze Technical University, Kocaeli, Turkey; 2. Physics Engineering, Istanbul Medeniyet University, Istanbul, Turkey*

Session HO
STT- MRAM AND SPIN-FET
(Poster Session)

Stéphane Mangin, Chair
Université de Lorraine, Vandoeuvre-lès-Nancy, France

HO-01. **An interfacial anisotropy and Gilbert damping constant of double (Co)FeB-MgO interface structure of MgO/(Co)FeB/MgO.** *M. Bersweiler*[1], H. Sato[1], S. Fukami[1,2], F. Matsukura[1] and H. Ohno[1] *1. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network (CSRN), Tohoku University, Sendai, Japan*

HO-02. **Impact of sputtering condition for tungsten on magnetic and transport properties of magnetic tunneling junction with CoFeB/W/CoFeB free layer.** *H. Honjo*[1,2], H. Sato[1,3], S. Ikeda[1,3], T. Watanabe[1,2], S. Miura[1,2], T. Nasuno[1,2], Y. Noguchi[1,2], M. Yasuhira[1,2], T. Tanigawa[1,2], H. Koike[1,2], M. Muraguchi[1,4], M. Niwa[1,2], K. Ito[1], H. Ohno[3,5] and T. Endoh[1,4] *1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. JST ACCEL, Saitama, Japan; 3. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan; 4. Graduate School of Engineering, Tohoku University, Sendai, Japan; 5. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*

HO-03. **Withdrawn**

HO-04. **Study of the effect of insert layers (Mo, W, Ta) for double barrier MTJ.** *S. Srivastava*[1], R. Ramaswamy[1], J. Son[1], K. Teo[1] and H. Yang[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

HO-05. **Oscillation of the Tunneling Magnetoresistance of Perpendicular-Magnetic Tunneling Junction Implementing In-Plane Magnetic Layer with Tungsten Nonmagnetic Layer.** *J. Choi*[1], D. Lee[1], K. Kondo[1], J. Baek[2] and J. Park[1] *1. Department of Electronics and Communication Engineering, Hanyang University, Seoul, The Republic of Korea; 2. Department of Nanoscale Semiconductor Engineering, Hanyang University, Seoul, The Republic of Korea*

HO-06. **Significant reduction of critical currents in MRAM designs using dual free layer with dynamical perpendicular and in-plane anisotropy.** *D. Suess*[1], C. Vogler[1], F. Bruckner[1], H. Sepehri Amin[2] and C. Abert[1] *1. TU Wien, Vienna, Austria; 2. National Institute for Materials Science, Tsukuba, Japan*

HO-07. **STT switching performances of perpendicular STT-MRAM comprising a storage layer with easy cone anisotropy.** A. Timopheev[1], B. Teixeira[2], R. Sousa[1], S. Auffret[1], L.D. Buda-Prejbeanu[1], M. Chshiev[1], H. Nguyen[1], N. Sobolev[2,3] and *B. Dieny*[1] *1. SPINTEC, Univ Grenoble Alpes / CEA/ CNRS, Grenoble, France; 2. Physics Department & i3N, University of Aveiro, Aveiro, Portugal; 3. National University of Science and Technology "MISiS", Moscow, Russian Federation*

HO-08. **Thermal stability and switching performance metrics of top-pinned STT-MRAM devices with CMOS-compatible dual MgO MTJ stacks.** *S. Rao*[1], W. Kim[1], S. Couet[1], J. Swerts[1], S. Mertens[1], T. Lin[1], L. Souriau[1], S. Kundu[1], D. Tsvetanova[1], D. Crotti[1], F. Yasin[1], S. Sakhare[1], A. Furnemont[1] and G.S. Kar[1] *1. IMEC, Leuven, Belgium*

HO-09. **Three-state magnetic tunnel junction using double magnetic free layers.** *A. Fukushima*[1], T. Taniguchi[1], K. Yakushiji[1], H. Kubota[1] and S. Yuasa[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

HO-10. **Stability phase diagram of perpendicular magnetic tunnel junction in non-collinear geometry.** *N. Strelkov*[1,2], A. Timopheev[1], R. Sousa[1], M. Chshiev[1], L.D. Buda-Prejbeanu[1] and B. Dieny[1] *1. CEA, INAC-SPINTEC, Grenoble, France; 2. Physics, Lomonosov Moscow State University, Moscow, Russian Federation*

HO-11. **Silicon Non-Linear Effect Assisted Non-Volatile Magnetic Logic-Memory Device.** *X. Zhang*[1] and Z. Luo[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China*

HO-12. **In-Memory Processing Paradigm for Bitwise Logic Operations in STT-MRAM.** *W. Kang*[1], L. Chang[1], Z. Wang[1] and W. Zhao[1] *1. Fert Beijing Research Institute, BDBC, Beihang University, Beijing, China*

HO-13. **Construction of Bit Stream Using Telegraphic Switching of Two-Input Magnetic Tunnel Junction.** *G. Bae*[1], D. Suh[1], Y. Kim[1], H. Lee[1] and W. Park[1] *1. Electronic Engineering, Hanyang University, Seoul, The Republic of Korea*

HO-14. **Reliability-Enhanced Hybrid CMOS/MTJ Logic Circuits.** *D. Zhang*[1,2], L. Zeng[1,2], Y. Zhang[1,2], J. Klein[3] and W. Zhao[1,2] *1. Fert Beijing Institute, BDBC, Beihang University, Beijing, China; 2. School of Electrical and Information Engineering, Beihang University, Beijing, China; 3. Centre de Nanosciences et de Nanotechnologies (C2N–Orsay), University of Paris-Sud, Orsay, France*

HO-15. **Voltage-tunable stochastic computing with magnetic bits.** *S. Rakheja*[1] *1. Electrical and Computer Engineering, New York University, Brooklyn, NY*

HO-16. **A Cascaded Channel Model and Hybrid Decoding for Spin-Torque Transfer Magnetic Random Access Memory (STT-MRAM).** *K. Cai*[1] and K.S. Immink[2] *1. Singapore University of Technology and Design, Singapore, Singapore; 2. Turing Machines Inc, Rotterdam, Netherlands*

HO-17. **An Electrical Model of Spin Field Effect Transistors for Circuits Design and Performance Analysis.** G. Wang[1], Z. Wang[2], J. Klein[1] and *W. Zhao*[2] *1. Centre de Nanosciences et de Nanotechnologies, Université Paris Saclay, Orsay, France; 2. Beihang University, Beijing, China*

HO-18. **Gate-driven pure spin current in graphene.** L. Su[1,2], *X. Lin*[1], Y. Zhang[1], B. Arnaud[2], Y. Zhang[1], J. Klein[2], W. Zhao[1] and A. Fert[1,3] *1. Fert Beijing Research Institute, Beihang University, Beijing, China; 2. Institut d'Electronique Fondamentale, Univ. Paris-Sud, Orsay, France; 3. Unité Mixte de Physique CNRS-Thales, Palaiseau, France*

FRIDAY AFTERNOON 1:30 — THE FORUM

Session HP
SENSORS AND MEMS: MATERIALS AND DEVICES (Poster Session)

Jingsheng Chen, Co-Chair
National University of Singapore, Singapore, Singapore
Jai Lin Tsai, Co-Chair
National Chung Hsing University, Taichung, Taiwan

HP-01. **The magnetic field sensor based on the longitudinal magnetophotonic effect in a magnetoplasmonic crystal.** *A. Kalish*[1,2], M. Kozhaev[1,3], P. Vetoshko[1], S. Dagesyan[2], P. Kapralov[1], G.A. Knyazev[1,2], A. Zvezdin[1,3] and V. Belotelov[1,2] *1. Russian Quantum Center, Skolkovo, Russian Federation; 2. Faculty of Physucs, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Prokhorov General Physics Institute of the Russian Academy of Sciences, Moscow, Russian Federation*

HP-02. **Modeling of the Dynamic Characteristics of the Wheatstone Bridge Configured MgO-MTJ Sensors.** *S. Zhao*[1], Z. Wang[1], J. Hu[1] and G. Zhao[1] *1. Tsinghua University, Beijing, China*

HP-03. **Influence of Geometrical Parameters on Noise in Magnetic Tunnel Junctions.** M. Mouchel[1], L. Prejbeanu[2], Y. Conraux[1], J. Alvarez-Hérault[1], K. Mackay[1] and *C. Baraduc*[2] *1. Crocus Technology, Grenoble, France; 2. SPINTEC, Grenoble, France*

HP-04. **Revival of AlO_x magnetic tunnel junctions: balancing moderate magnetoresistance with process simplicity.** S. Knudde[1,2], *D.C. Leitao*[1,2], S. Cardoso[1,2] and P. Freitas[1] *1. INESC Microsystems and Nanotechnologies, Lisboa, Portugal; 2. Instituto Superior Técnico, Universidade de Lisboa, Lisboa, Portugal*

HP-05. **Metrology of a magnetic nanoparticle sensor using anomalous Nernst effect read-out.** *J. Wells*[1,2], R. Puttock[1], B. Kästner[2], P. Krzysteczko[2], E. Selezneva[1], H.W. Schumacher[2], R. Mansell[3], R. Cowburn[3], A. Cuenat[1] and O. Kazakova[1] *1. National Physical Laboratory, London, United Kingdom; 2. PTB, Berlin, Germany; 3. University of Cambridge, Great Britain, United Kingdom*

HP-06. **Elimination of hysteresis in magnetoelectric DC magnetic field sensors.** *Y.K. Fetisov*[1], D.V. Chashin[1], D.A. Burdin[1], N.A. Ekonomov[1] and L.Y. Fetisov[1] *1. Moscow Technological University, Moscow, Russian Federation*

HP-07. **Enhanced magnetic field sensitivity in magnetoelectric sensor based on positive magnetostrictive/negative magnetostrictive/piezoelectric laminate heterostructure.** *L. Chen*[1] and Y. Wang[2] *1. Key Lab of Computer Vision and Intelligent Information System, Chongqing University of Arts and Sciences, ChongQing, China; 2. Electrical and Computer Engineering Department, Carnegie Mellon University, Pittsburgh, PA*

HP-08. **Magnetoresistive sensor with high sensitivity: self-aligned magnetic structures.** *M. Chinenkov*[1], N. Djuzhev[1], V. Bespalov[1], A. Iurov[1] and N. Mazurkin[1] *1. National Research University of Electronic Technology (MIET), Moscow, Russian Federation*

HP-09. **Field Dependent Noise Characterisation of Spin Valve GMR Sensors Based on Susceptibility Measurements.** *H. Weitensfelder*[1], H. Brueckl[2], A. Satz[3] and D. Suess[1] *1. Institute of Solid State Physics, TU Vienna, Vienna, Austria; 2. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 3. Infineon Technologies Austria AG, Villach, Austria*

HP-10. **Magnetic strain sensor using GMR films with magnetostrictive FeSiB free layer.** *Y. Hashimoto*[1], N. Yamamoto[1], T. Kato[1], D. Oshima[2] and S. Iwata[2] *1. Electrical Engineering and Computer Science, Nagoya University, Nagoya-City, Japan; 2. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya-City, Japan*

HP-11. **Accuracy Improvement in GMR Linear Position Sensor.** *C. Lee*[1] and C. Lai[1] *1. Department of Materials Science and Engineering, National Tsing Hua University, HsinChu City, Taiwan*

HP-12. **GMR-Based Single-Domain Magnetic Sensor for 500nm Single Particle Detection.** *W. Qiu*[1], L. Chang[2,3], Y. Liang[4] and D. Litvinov[2,4] *1. Materials Science and Engineering, University of Houston, Houston, TX; 2. Electrical and Computer Engineering, University of Houston, Houston, TX; 3. Nanofabrication Facility, University of Houston, Houston, TX; 4. Chemical and Biomolecular Engineering, University of Houston, Houston, TX*

HP-13. **Tunable bias magnetic field of nano-granular TMR sensor using FePt film magnet.** S. Koyama[1], *K. Minami*[1], H. Iwama[2], J. Hayasaka[3] and T. Shima[2] *1. Daido Steel Co., Ltd., Nagoya, Japan; 2. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan; 3. Research Institute for Electromagnetic Materials, Sendai, Japan*

HP-14. **Textured micro-flux sources based on single crystalline SmFeN powders.** L. Stermann[1], M. Fratzl[2,1], S. Le Denmat[1], L. Arbenz[3], C. Espanet[3], *T. Devillers*[1] and N. Dempsey[1] *1. Institut Néel, CNRS / Univ. Grenoble Alpes, Grenoble, France; 2. G2Elab, CNRS / Univ. Grenoble Alpes, Grenoble, France; 3. Moving Magnet Technologies, Besançon, France*

HP-15. **Micro-flux concentration patterning of high performance hard magnetic films.** *A. Dias*[1], G. Shaw[1], K. Hasselbach[1], M. Bonfim[2] and N. Dempsey[1] *1. Institut Néel, Grenoble, France; 2. DELT, Universidade Federal do Paraná, Curitiba, Brazil*

HP-16. **Research on Eddy Current Testing of Functional Polymer Composite Material.** Z. Cai[1], J. Song[1] and *C. Liu*[2] *1. East China Jiaotong University, Nanchang, China; 2. Hebei University of Technology, Tianjin, China*

HP-17. **Detection of surface cracks using eddy current method with integrated magnetic tunnel junctions device.** *Z. Jin*[1], M. Abe[1], K. Fujiwara[1], M. Oogane[1] and Y. Ando[1] *1. Applied Physics, Tohoku University, Aoba, Japan*

HP-18. **Linear wireless strain sensor using FeAlB and Metglas.** E. Bastos[1], A. Dalponte[1], *F.P. Missell*[1], G. Fulop[2], M. de Souza Dias[2] and C. Bormio-Nunes[2] *1. CCET, Universidade de Caxias do Sul, Caxias do Sul, Brazil; 2. EEL, Universidade de São Paulo, Lorena, Brazil*

FRIDAY AFTERNOON 1:30 — THE FORUM

Session HQ

CE-BASED AND OTHER RARE EARTH MAGNETS (Poster Session)

Marko Soderznik, Co-Chair
Jozef Stefan Institute, Ljubljana, Slovenia
Aru Yan, Co-Chair
Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China

HQ-01. **Magnetic property enhancement of melt spun YCo_5 ribbons by Fe and C doping.** *H.W. Chang*[1], W. Ou[2], Y. Lee[2], C. Shih[2], W.C. Chang[2], C. Yang[3] and C. Shaw[4] *1. Department of Applied Physics, Tunghai University, Taichung, Taiwan; 2. Department of Physics, National Chung Cheng University, Chia-Yi, Taiwan; 3. Department of Physics, Chung-Yuan Christian University, Chungli, Taiwan; 4. Superrite Electronics Co. Ltd., Taipei, Taiwan*

HQ-02. **Development of precursor for improvement of magnetization of submicron-sized $Sm_2Fe_{17}N_3$ powder.** *S. Okada*[1], K. Suzuki[1], E. Node[1], K. Takagi[1], K. Ozaki[1] and Y. Enokido[2] *1. Magnetic Powder Metallurgy Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan; 2. Materials Development Center, TDK Corporation, Narita, Japan*

HQ-03. **Microstructural Analysis During the Step-Cooling Annealing of Iron-Rich $Sm(Co_{0.65}Fe_{0.26}Cu_{0.07}Zr_{0.02})_{7.8}$ Anisotropic Sintered Magnets.** *K. Song*[1], Y. Fang[1], W. Sun[1], H. Chen[1], N. Yu[1], M. Zhu[1] and W. Li[1] *1. Division of Functional Matericls, Iron and Steel Reasearch Institute, Beijing, China*

HQ-04. **Enhanced Coercivity of Spark Plasma Sintered (La,Ce)FeB Magnets.** *Q. Lu*[1], J. Niu[1], W. Liu[1], M. Yue[1] and Z. Altounian[2] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Physics Department and Centre for the Physics of Materials, McGill University, Montreal, QC, Canada*

HQ-05. **Influence of Ce Content on the Mechanical Properties of Sintered (Ce, Nd)-Fe-B Magnets.** *A. Li*[1], Y. Zhang[1], W. Li[1], H. Feng[1], Y. Zhao[1] and M. Zhu[1] *1. Division of Functional Materials, Central Iron and Steel Research Institute, Beijing, China*

HQ-06. **Magnetic properties of tetragonal $SmFe_{12-X}Mo_X$ in bulk and melt-spun ribbons.** *D. Salazar*[1], B. Rodriguez[1], C. Echevarria-Bonet[1], R. Madugundo[1], G. Hadjipanayis[2] and J. Barandiaran[1] *1. BCMaterials, Derio, Spain; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE*

HQ-07. **Study of magnetocrystalline anisotropy of $Sm_{1-x}Ce_xFe_9Co_2Ti$ by magnetization and Mössbauer measurements.** *A.M. Schönhöbel*[1], D. Salazar[1], A. Martín-Cid[1], L.E. Zamora[2], J.S. Garitaonandia[3], J. Barandiaran[1,4] and G. Hadjipanayis[5] *1. BCMaterials, Derio, Spain; 2. Department of Physics, University of Valle, Cali, Colombia; 3. Department of Applied Physics II, University of the Basque Country, Bilbao, Spain; 4. Department of Electricity and Electronics, University of the Basque Country, Bilbao, Spain; 5. Department of Physics and Astronomy, University of Delaware, Newark, DE*

HQ-08. **Comparative study on the influence of cerium and lanthanum used as substitutes for neodymium in $Nd_2Fe_{14}B$-based melt-spun ribbons and hot-deformed magnets.** *I. Poenaru*[1,2], A. Lixandru[1,2], A. Dirks[1], B. Fayyazi[2], A. Taubel[2], S. Sawatzki[2], K. Güth[1], R. Gauss[1] and O. Gutfleisch[2,1] *1. Fraunhofer ISC, Project Group IWKS, Hanau, Germany; 2. Functional Materials, Technische Universität Darmstadt, Darmstadt, Germany*

HQ-09. **Magnetic property variation between misch-metal and $(La_{0.27}Ce_{0.53}Pr_{0.03}Nd_{0.17})$-metal substitution in Nd-Fe-B sintered magnet.** *X. Yu*[1,2], M. Zhu[2], W. Liu[1], W. Li[2] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Division of Functional Materials, Central Iron and Steel Research Institute, Beijing, China*

HQ-10. **Effects of Cu addition on the magnetic properties and microstructures of Pr-Fe-B thin films.** Y. Lin[1] and *A. Sun*[1] *1. Chemical Engineering and Materials Science, Yuan Ze University, Taoyuan City, Taiwan*

HQ-11. **Abnormal coercivity in $Sm_{1-x}RE_x(Co_{0.695}Fe_{0.2}Cu_{0.08}Zr_{0.025})_{7.2}$ magnets (RE=Nd, Tb) with spin-reorientation-transition cell boundary phases.** *L. Liu*[1], Z. Liu[1], D. Lee[1] and A. Yan[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China*

HQ-12. **The Influence of High Pressure Torsion on Magnetic Properties of Some Ferromagnetic 4f Elements.** *S.V. Taskaev*[1], K. Skokov[2,1], V. Khovaylo[1], D.Y. Karpenkov[1], A. Karpenkov[1] and D. Bataev[1] *1. Physics Dept., Chelyabinsk State University, Chelyabinsk, Russian Federation; 2. FG Funktionale Materialien, TU Darmstadt, Darmstadt, Germany*

HQ-13. **High performance (Ce,Nd)-Fe-B sintered magnets without annealing process.** *L. Song*[1,2], M. Zhu[1], W. Li[1], N. Yu[1,2], X. Shi[1] and Q. Wang[2] *1. Division of Functional Materials, Central Iron and Steel Research Institute, Beijing, China; 2. Key Laboratory of National Education Ministry for Electromagnetic Processing of Materials, Northeastern University, Shenyang, China*

HQ-14. **Ce substituted rare earth balance magnets: magnetocrystalline anisotropy vs. coercivity.** *B. Fayyazi*[1], K. Skokov[1], K. Löwe[1], C. Schwöbel[1] and O. Gutfleisch[1,2] *1. Material- und Geowissenschaften, Technische Universität Darmstadt, Darmstadt, Germany; 2. Fraunhofer-Projektgruppe für Wertstoffkreisläufe und Ressourcenstrategie IWKS, Hanau, Germany*

HQ-15. **X-ray magnetic circular dichroism study of Ce $M_{4,5}$ absorption edges in $CeFe_{11}Ti$ intermetallic.** *S. Tripathi*[1], Y. Chen[1], S. Schuppler[2], P. Nagel[2], F. Groot[3], E. Goering[1] and G. Schütz[1] *1. Modern Magnetic Systems, Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Institute for Solid State Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany; 3. Department of Inorganic Chemistry and Catalysis, Utrecht University, Utrecht, Netherlands*

HQ-16. **Intrinsic magnetic properties of $Ce_2Fe_{14}B$ modified by Al, Ni and Si.** K. Orimoloye[1], *D. Ryan*[2], F.E. Pinkerton[3] and M. Medraj[1] *1. Department of Mechanical Engineering, Concordia University, Montreal, QC, Canada; 2. Physics, McGill University, Montreal, QC, Canada; 3. Chemical and Materials Systems Lab, General Motors R&D Center, Warren, MI*

FRIDAY AFTERNOON 1:30 — THE FORUM

Session HR
RARE EARTH FREE MAGNETS, COMPOSITES AND RECYCLING
(Poster Session)
Allan Walton, Chair
University of Birmingham, Birmingham, United Kingdom

HR-01. **A Simple Process to Obtain Anisotropic Self-Biased Magnets Constituted of Stacked Barium Ferrite Single Domain Particles.** *J. Mattei*[1], N. Le Cong[1], A. Chevalier[1], A. Maalouf[1], N. Noutehou[1] and V. Laur[1] *1. Functional Materials, Lab-STICC, Brest, France*

HR-02. **Synthesis of α”-$Fe_{16}N_2$ Powders with Tunable Size and Structure via Spray Drying.** *Y. Baek*[1] and J. Lee[1] *1. Korea Institute of Materials Science (KIMS), Changwon, The Republic of Korea*

HR-03. **Development and Integration of Micro-Patterned, Thick CoPtP Permanent Magnets for MEMS Applications.** *D. Mallick*[1] and S. Roy[1] *1. Micro-Nano-Systems Center, Tyndall National Institute, Cork, Ireland*

HR-04. **Nanocomposite exchange-spring permanent magnets.** *V. Nachbaur*[1], F. Ayadi[1], K. Nakouri[1] and J. Le Breton[1] *1. Groupe de Physique des Materiaux, Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Rouen, France*

HR-05. **Magnetic properties and microstructures of Zr-Co-Cu-B melt-spun ribbons.** *G. Lee*[1] and J. Kim[1] *1. Materials Engineering, Hanyang University, Ansan, The Republic of Korea*

HR-06. **Direct recycling of high coercivity Fe-Nd-B based sintered magnets by doping with Nd-rich alloy.** *D. Joklitschke*[1], U. Pflanz[1], R. Stein[1], D. Goll[1] and G. Schneider[1] *1. Materials Research Institute Aalen, Aalen University, Aalen, Germany*

HR-07. **Magnetic properties of Fe_5SiB_2 and its alloys with P, S, and Co.** *M. Werwinski*[1,2], S. Kontos[3], K. Gunnarsson[3], P. Svedlindh[3], J. Cedervall[4], V. Hoglin[4], M. Sahlberg[4], A. Edstrom[2], O. Eriksson[2] and J. Rusz[2] *1. Institute of Molecular Physics, Polish Academy of Sciences, Poznan, Poland; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden; 4. Department of Chemistry, Uppsala University, Uppsala, Sweden*

HR-08. **Effect of carbon addition on magnetic order in Mn-Al-C alloys.** M. Tyrman[1,2], *A. Pasko*[1], L. Perriere[3], V. Etgens[2], O. Isnard[4] and F. Mazaleyrat[1] *1. SATIE, ENS Cachan, CNRS, Universite Paris-Saclay, Cachan, France; 2. LISV - Universite de Versailles Saint-Quentin-en-Yvelines, Vélizy, France; 3. ICMPE, CNRS/UPEC, Thiais, France; 4. Institut Néel, CNRS/UGA, Grenoble, France*

HR-09. **Electroplated Co-Pt thick-film-magnets prepared in citric-acid-based plating baths.** *R. Hamamura*[1], J. Honda[1], A. Tomita[2], T. Masaki[1], K. Takashima[1], T. Yanai[1], M. Nakano[1], N. Fujita[2], H. Yamada[2] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan; 2. National Institute of Technology, Nara College, Nara, Japan*

HR-10. **Nd-Fe-B/α-Fe nano-dispersed thick-film magnets prepared on various metal substrates using PLD with high laser energy density above 10 J/cm².** *H. Kondo*[1], A. Yamashita[1], T. Yanai[1], M. Itakura[2], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan; 2. Kyusyu University, Fukuoka, Japan*

HR-11. **Exchanged Coupled $SmCo_5$ /α-Fe Nanocomposite Magnets Obtained by Mechanical Milling and Spark Plasma Sintering.** *R. Hirian*[1], R. Gavrea[1], B.V. Neamtu[2], A. Ferenczi[1], O. Isnard[3,4], I. Chicinas[2] and V. Pop[1] *1. Faculty of Physics, Babes-Bolyai University, Cluj-Napoca, Romania; 2. Materials Sciences and Technology, Technical University of Cluj-Napoca, Cluj-Napoca, Romania; 3. Institut Néel, University Grenoble Alpes, Grenoble, France; 4. Institut Néel, CNRS, Grenoble, France*

FRIDAY AFTERNOON 1:30 | THE FORUM

Session HS
MOTORS AND MAGNETIC GEARS (Poster Session)

Makoto Sonehara, Chair
Shinshu University, Nagano, Japan

HS-01. **Design of a Novel High-Torque-Density In-Wheel Switched Reluctance Motor for Electric Vehicles.** *J. Zhu*[1], K.E. Cheng[1], X. Xue[1] and Y. Zou[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

HS-02. **Fast Optimal Design Method of Variable Flux Reluctance Machines for Maximizing the Average Torque.** *L. Huang*[1], J. Feng[2], S. Guo[2], J. Shi[2], W. Chu[2] and Z.Q. Zhu[1] *1. Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, United Kingdom; 2. CRRC Zhuzhou Institute Co. Ltd, Zhuzhou, China*

HS-03. **A Comparative Study of Flux Switching PM Machine Topologies for Electric Vehicle Applications.** C. Liu[1], *C. Hwang*[2] and C. Hong[2] *1. National Sun Yat-sen University, Kaohsiung, Taiwan; 2. Feng Chia University, Taichung City, Taiwan*

HS-04. **Analysis and Suppression of Cogging Torque in Flux-Reversal Permanent Magnet Machines During Design Stage.** X. Zhu[1] and *W. Hua*[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

HS-05. **Torque analysis of a DC-excited flux-modulated machine.** *J. Ou*[1] *1. Karlsruhe Institute of Technology, Karlsruhe, Germany*

HS-06. **Relationship Between Iron Loss and Pole-Pair Number in Flux-Switching Permanent-Magnet Machines.** J. Ji[1], *J. Luo*[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Zhenjiang, China*

HS-07. **Optimal design of saturated switched reluctance machine for low torque ripple and high average torque.** *X. Cui*[1], J. Sun[1] and C. Gu[1] *1. State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China*

HS-08. **Analysis on Iron Loss of Switched Reluctance Motor under Pulse Width Modulation.** W. Yan[1], *H. Chen*[1], L. Chen[1], K. Wang[1] and M. Sun[1] *1. China University of Mining and Technology, Xuzhou, China*

HS-09. **Optimal Design of the Wound Field Synchronous Reluctance Machines to Improve Torque by Increasing Saliency Ratio.** *W. Chai*[1], W. Zhao[2] and B. Kwon[1] *1. Hanyang University, ANSAN, The Republic of Korea; 2. Shandong University, Jinan, China*

HS-10. **Electromagnetic-Mechanical Design of Machine Rotors with Fine Features.** *C. Donaghy-Spargo*[1] *1. School of Engineering and Computing Sciences, Durham University, Durham, United Kingdom*

HS-11. **A Novel Magnetic Gear with Asynchronous Torque.** Q. Lin[1] and *W. Fu*[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Kow Long, Hong Kong*

HS-12. **Electromagnetic Design and Analysis of a Novel Transmission System Supporting Multi-Path Power Flows for Electric Vehicles.** *Y. Shi*[1], L. Jian[1] and Z. Deng[1] *1. Department of Electrical and Electronic Engineering, Southern University of Science and Technology, Shenzhen, China*

HS-13. **Construction of a Marine Current Power Generation System Based on a Magnetic Gear.** N. Feng[1], H. Yu[1], L. Huang[1], *T. Xia*[1] and M. Hu[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

HS-14. **Analytical Computation of the Magnetic Field Distribution in a Magnetic-Geared Machine.** *X. Zhang*[1], X. Liu[2] and Z. Chen[1] *1. Department of Energy Technology, Aalborg University, Aalborg, Denmark; 2. Hunan University, Changsha, China*

HS-15. **Decoupling Control of Five-Phase Fault-Tolerant Permanent Magnet Motor by Radial Basis Function Neural Network Inverse.** Q. Chen[1,2], *G. Liu*[1,2], X. Cai[1] and G. Xu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu Key Laboratory of Drive and Intelligent Control for Electric Vehicle, Zhenjiang, China*

HS-16. **Time-Division Multiplexing Wireless Power Transfer for Separately Excited DC Motor Drives.** *C. Jiang*[1], K. Chau[1], C. Liu[2] and W. Han[1] *1. The University of Hong Kong, Hong Kong, Hong Kong; 2. The City University of Hong Kong, Hong Kong, Hong Kong*

HS-17. **Study on Operation Modes of Dual-Stator Brushless Doubly-Fed Generator.** H. Liu[1,2], *F. Zhang*[1], X. Ju[1] and T. Tong[1] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China; 2. School of Electrical and Control Engineering, Henan University of Urban Construction, Pingdingshan, China*

HS-18. **Modeling the Field of a Coil Using the Magnetic Charge Method.** *D.T. van Casteren*[1], J. Paulides[1] and E. Lomonova[1] *1. Electrical Engineering/Electromechanics and Power Electronics, Eindhoven University of Technology, Eindhoven, Netherlands*

FRIDAY AFTERNOON 1:30 — THE FORUM

Session HT
MOTORS, GENERATORS AND ACTUATORS XII (Poster Session)

Yu-Seop Park, Chair
Korea National University of Transportation, Chungju-si, The Republic of Korea

HT-01. **A Novel Consequent-Pole Transverse-Flux Machine with Improved Permanent Magnet Utilization.** *X. Zhao*[1] and S. Niu[1] *1. The Hong Kong Polytechnic University, Kowloon, Hong Kong*

HT-02. **Optimal Rotor Design of an 150kW-Class IPMSM by the 3D Voltage-Inductance-Map Analysis Method.** *J. Kim*[1], T. Jeong[1] and J. Lee[1] *1. Energy Conversion Lab, Hanyang University, Seoul, The Republic of Korea*

HT-03. **Rotor Fault Analysis in a Doubly-Fed Induction Generator Using Impedance Matrix Technique.** *D.G. Dorrell*[1], A. Salah[2] and Y. Guo[2] *1. Department of Electrical, Electronics and Computer Engineering, University of KwaZulu-Natal, Durban, South Africa; 2. School of Electrical Engineering, University of Technology Sydney, Sydney, NSW, Australia*

HT-04. **Optimal skew angle for improving electromagnetic torque in induction motor with double skewed rotor.** W. Xu[1] and *X. Bao*[1] *1. School of Electrical Engineering and Automation, Hefei University Of Technology, Hefei, China*

HT-05. **Modulating ring influence in dual air-gap magnetic gear electric machine and its improved structure using 3D printing; with FEA and Experimental validations.** C.U. Ubadigha[1], M. Tsai[1] and *P. Huang*[2] *1. Mechanical Engineering Department, National Cheng Kung University, Tainan, Taiwan; 2. Electrical Motor Technology Research Center, National Cheng Kung University, Tainan, Taiwan*

HT-06. **Design of VCM Actuator with the L-Shape Coil for Smartphone Cameras.** C. Hsieh[1], Y. Chang[1], Y. Chen[1] and *C. Liu*[1] *1. Department of Mechanical Engineering and Advanced Institute of Manufacturing with High-Tech Innovations, National Chung Cheng University, Chiayi County, Taiwan*

HT-07. **A Comparative Study on Topology of Electromagnetic Energy Harvester for Diesel Generators.** H. Lee[1], C. Song[1], Y. Park[2] and *M.D. Noh*[2] *1. Advanced Circuit Substrate Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea*

HT-08. **Torque Ripple Minimization of Variable Flux Reluctance Machines by Rotor Skewing.** *J. Bao*[1], J. Paulides[1], K. Boynov[1] and E. Lomonova[1] *1. Eindhoven University of Technology, Eindhoven, Netherlands*

HT-09. **Analysis of Vibration and Noise for Different Skewed Slot Type Squirrel-Cage Induction Motor.** C. Wang[1], *X. Bao*[1], Y. Zhou[1] and W. Xu[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

HT-10. **Optimal Design of Interior PMSM with Dampers Incorporating Permeance Network Model for Integrated Charging and Traction in Electric Vehicles.** *S. Mukundan*[1], H. Dhulipati[1], K. Iyer[1], K. Mukherjee[2] and N.C. Kar[1] *1. Electrical and Computer Engineering, University of Windsor, Windsor, ON, Canada; 2. Indian Institute of Engineering Science and Technology, Shibpur, India*

HT-11. **Design principle of WFSM based magnetic-thermal equivalent circuit.** *J. Lee*[1] *1. Hyundai Heavy Industries, Gyeonggi-do, The Republic of Korea*

HT-12. **Comparative Study of PM-Assisted SynRM and IPMSM on Constant Power Speed Range for EV Applications.** H.T. Anh[1] and *M. Hsieh*[1] *1. National Cheng Kung University, Tainan, Taiwan*

HT-13. **Design Method for Vernier Motor with Modular Winding Considering Pole Slot Combination.** *D. Kim*[1], J. Song[1], Y. Kim[2] and S. Jung[1] *1. Sungkyunkwan University, Suwon, The Republic of Korea; 2. Chosun University, Gwangju, The Republic of Korea*

HT-14. **Power-Sizing Equations for Novel Rotor-Permanent-Magnet Flux-Switching Machines.** P. Su[1], *W. Hua*[1] and M. Hu[1] *1. Electric Engineering, Southeast University, Nanjing, China*

HT-15. **A Correlation Analysis of Loss Density and Coil Temperature for a Motor Size Design.** *Y. Kim*[1] *1. Hyundai Mobis, Gyeonggi-Do, The Republic of Korea*

HT-16. **Design and Sizing Optimization of the Synchronous Generator for Disused Diesel Engines.** *H. Kim*[1] and J. Moon[1] *1. Rotating Machinery Center, Korea Testing Certification, Gunpo-si, The Republic of Korea*

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