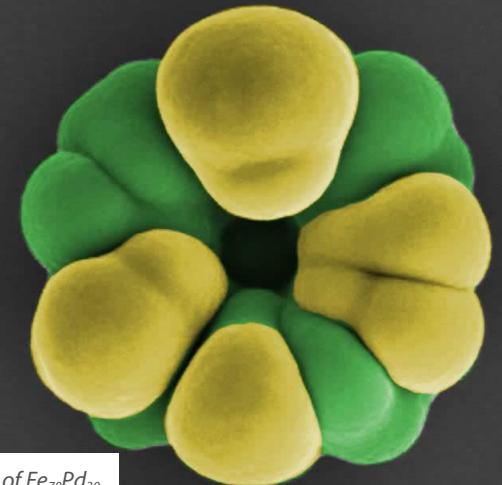
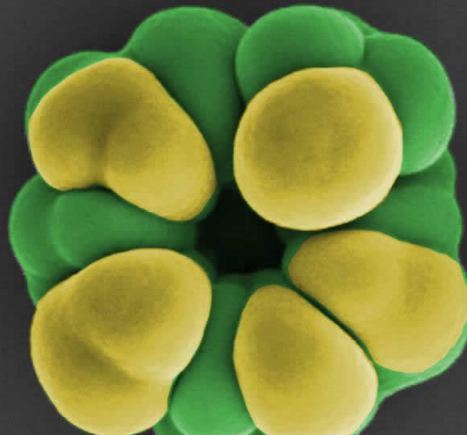
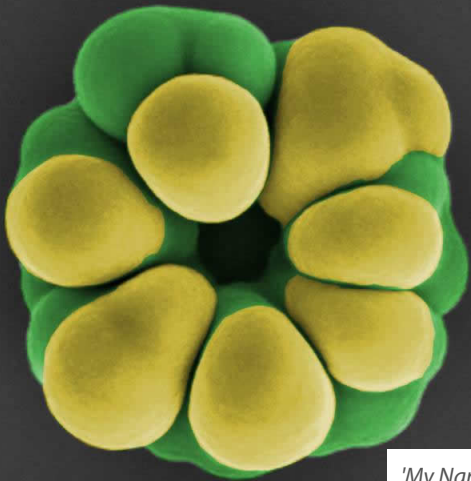
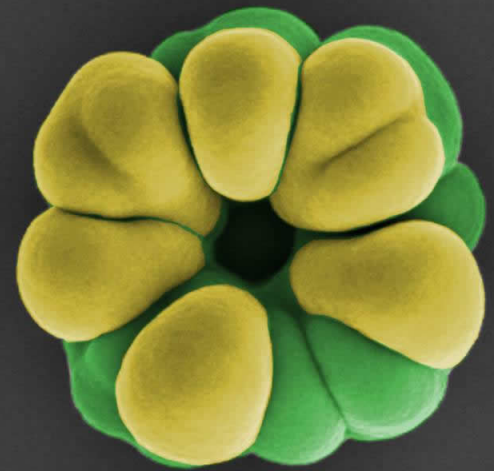
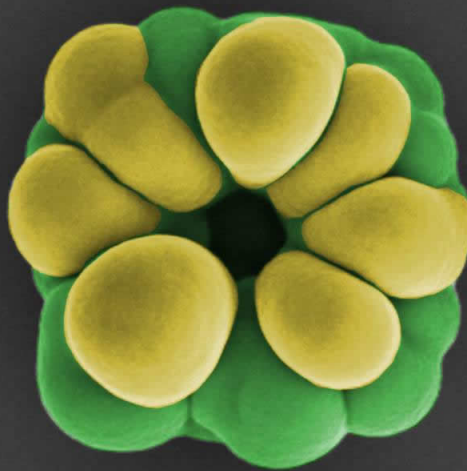


Newsletter

January 2019



'My Nano Sunflowers': colorized SEM image of sub-micron structures of $\text{Fe}_{70}\text{Pd}_{30}$.
Credit: Matteo Cialone (INRIM, Nanoscience and Materials Division, Italy).

Newsletter of the IEEE Magnetics Society

Volume 59 | Issue 1 | January 2019

Editor: Gareth Hatch



In this Issue:

- 1 **From the President** by Pallavi Dhagat
- 1 **New Senior Members** submitted by Gareth Hatch
- 2 **Magnetics Society New IEEE Fellows for 2019** submitted by Gareth Hatch
- 2 **Joint Meeting of the Society's Spanish Chapter and the Spanish Magnetism Club** by Alfredo García-Arribas
- 3 **Two Successful Society MRAM Events Held at IEDM 2018 in San Francisco** by Bernard Diény
- 4 **IEEE Magnetics Society 2019 Summer School** submitted by Ravi L. Hadiman
- 5 **Conference Calendar** by Gareth Hatch
- 5 **About the Newsletter** by Gareth Hatch

From the President

By **Pallavi Dhagat**, *President of the IEEE Magnetics Society*

I would like to begin my message with greetings for the New Year. I hope it is filled with joy and peace for all of our members, and that the field of magnetism, the love for which brings us together, grows richer with new discoveries.



As I assume the role of President for our Society, I must thank my predecessor, Manuel Vázquez, for his thoughtful leadership. I inherit a Society that is robust in all aspects, as was evident during the five-year review of our operations by the IEEE last November. We were commended for our strong conference portfolio; our initiatives to promote participation by students and early career professionals in our conferences; and the gender and geographic balance in the makeup of our administrative and technical committees. We have grown our Chapter activity in Russia, Canada and the USA and introduced a new, small conference on frontiers in magnetism.

This excellent report card is the outcome of a careful and strategic investment of our efforts and finances, and the hard work of many volunteers over the last several years. I would like to thank them all. In particular, I express my deep gratitude to Diane Melton who, after serving as Director of Operations for our Society and Manager for our INTERMAG and MMM Conferences for over thirty years, retired this month. Diane was synonymous with our Society's operations, in her thorough professionalism, attention to detail and ability to work with one and all.

I would also like to acknowledge the outgoing committee chairs: Mingzhong Wu, who as Finance Chair maintained our budget and spending. He is replaced by Mark Kief. Burkard Hillebrands served as Honors and Awards Chair, helping institute a Distinguished Service Award and an Early Career Award that respectively recognize a Society member for her/his

voluntary service to the advancement of the Society's mission and outstanding scientific accomplishments within five years of completing a PhD degree. Jürgen Fassbender now assumes this position. Laura Lewis led the Technical Committee, invigorating next-generation magneticians to take an active role in the organization of conferences. As Laura steps down to focus on other activities, Mingzhong Wu will lead this committee. I include the roster for our current committee chairs:

- Petru Andrei – Publications Committee;
- Oksana Chubykalo-Fesenko – Chapters Committee;
- Jürgen Fassbender - Honors and Awards Committee;
- Mark Kief - Finance Committee;
- Brian Kirby - Education Committee;
- Philip Pong – Publicity Committee;
- Rudolf Schaefer – Conference Executive Committee;
- Bethanie Stadler – Distinguished Lecturer Committee;
- Manuel Vázquez – Nominations Committee;
- Dan Wei – Membership Committee;
- Mingzhong Wu – Technical Committee; and
- Masahiro Yamaguchi – Planning Committee.

I would also like to thank our outgoing elected Administrative Committee (AdCom) members – Kaizhong Gao, Ganping Ju, Vincent Mazauric, Massimo Pasquale and Robert Stamps – whose participation ensured that our decision-making benefitted from a broad and diverse input in providing value to our global membership.

I take this opportunity to welcome our new Secretary/Treasurer, Atsufumi Hirohata, as well as our new AdCom members, Elke Arenholz, David Jiles, Olga Kazakova, Nicoleta Lupu, Katsuji Nakagawa, Johannes Paulides, Günter Reiss and Shinji Yuasa. I also express my deep gratitude to Hiraoki Muraoka for his long years of service as the International Relations Coordinator for the Society and welcome Yizheng Wu in his place.

I am looking forward to working with the new volunteer team and will strive to ensure that our Society's activities will continue to serve the best interest of our members.

Earlier this month, we received the sad news of the passing of Magnetics Society members Edward Della Torre, former Society President; and Douglas Adam, IEEE Fellow. Ed is recognized for his many contributions to the understanding of magnetic hysteresis. Doug pioneered device technologies related to microwave acoustics and magnetic signal processing; and held numerous patents for both Westinghouse and Northrop Grumman in these areas.

While deeply saddened by the loss of these luminaries, we celebrate their accomplishments alongside those of the recipients of the 2019 Society awards. Bernard Dieny (SPINTEC, France) received the Achievement Award for his contributions

New Senior Members

The following members of the IEEE Magnetics Society were recently elevated to the grade of Senior Member:

November 2018: Antonello Tamburrino, Gerrit E Bauer, Nimitkumar Sheth, Katayun Barmak, Nicola Morley, Ji-Young Lee and Alexandra Garraud.

For more information on elevation to Senior Member, visit the [IEEE Senior Member Grade Web page](#).

to spintronics applications, including spin-valves and MRAM, and for strengthening the relationship between magnetism and microelectronic communities. Davide Bossini (Technical University of Dortmund, Germany) was recognized with the Early Career Award for demonstrating coherent manipulation of high-energy, short-wavelength magnons in anti-ferromagnets and ultrafast activation of magneto-electricity. David Jiles (Iowa State University) received the Distinguished Service Award for twenty years of leadership as Editor and Editor-in-Chief of the IEEE Transactions on Magnetism and as an elected AdCom member.

On behalf of our community, I thank and congratulate our awardees for their contributions to the field of magnetism and their service to our Society. I also felicitate the 2019 IEEE Magnetism Society Fellows: Antonio Della Corte, David Dorrell, Kaizhong Gao, Chi-huang Lai, Mark Lantz, Jonathan Sun, Jan-Ulrich Thiele and Weisheng Zhao.

I take this opportunity to welcome our Distinguished Lecturers for 2019; Victorino Franco, Justin Shaw, Hari Srikanth and Hyunsoo Yang. I am excited about the range of topics in emerging applications of magnetic materials that will be covered by their presentations.

I also acknowledge the excellent work of the outgoing Chapter Chairs, Satoshi Iwata (Nagoya), Mitsumata Chiharu (Tokyo), Eric Fullerton (San Diego), Shin Saito (Sendai/Sapporo), Bernard Dieny (France), and Zhaoqiang Bai (Santa Clara Valley/San Francisco), in maintaining and strengthening our grassroots-level member outreach.

Finally, I would be remiss if I did not congratulate Prem Piramanayagam and Sara Majetich, General co-Chairs for the 2018 INTERMAG Conference held in Singapore, on its success. The technical program and professional development opportunities were well balanced in every regard. And I admit, I took particular advantage of the multi-cultural cuisine on the menu!

Congratulations are also due to Suzanne te Velthuis, Chair of the 2019 Joint MMM Conference, for a wonderful conference in January. The program featured excellent speakers and special sessions that were very well received by the attendees.

In closing, I am excited about the road that lies ahead for our Society. I am deeply honored to have the opportunity to help navigate this road as President, and look to each one of our members to be engaged in the dialogue necessary to take our Society from strength to strength. I invite you to participate in our Annual Society Meetings held during the Intermag conferences and to get in touch with me with your thoughts and feedback.

Pallavi Dhagat can be contacted via email: dhagat@ieee.org.

Magnetism Society New IEEE Fellows for 2019

*Submitted by **Gareth Hatch**, Newsletter Editor*

Eight members of the IEEE Magnetism Society were recently elected as 2019 IEEE Fellows:

- **Antonio Della Corte**, for leadership in superconducting magnets;
- **David Dorrell**, for contributions to time efficient design methodology of rotating electrical machines;
- **Kaizhong Gao**, for contributions to data storage technologies;
- **Chi-huang Lai**, for contributions to magnetic information storage and spintronic devices;
- **Mark Lantz**, for contributions to digital magnetic tape recording;
- **Jonathan Sun**, for contributions to spin-transfer-torque magnetic random access memory;
- **Jan-Ulrich Thiele**, for contributions to magnetic recording; and
- **Weisheng Zhao**, for contributions to spintronic integrated circuit design.

Joint Meeting of the Society's Spanish Chapter and the Spanish Magnetism Club

By Alfredo García-Arribas, Spanish Chapter Secretary / Treasurer

During November 29-30, 2018 the Annual Meeting of the Society's Spanish Chapter was held in Gijón, Spain. As in the past, this meeting was joint with the annual meeting of our sister society, the Spanish Magnetism Club (**CEMAG**). The event took place in the magnificent environment of the Universidad Laboral, hosted by our colleague Montserrat Rivas (University of Oviedo).

The intensive program of the meeting started on the afternoon of November 29, 2018 with a Scientific Session from Young Researchers in Magnetism, and consisted of 17 lectures presented by doctoral students or post-doctoral researchers. The lectures covered a wide range of current research topics in magnetism, ranging from multi-functional materials to spintronics and biomagnetic applications. In many cases, these talks represent the first opportunity for the students to present their work and results in front of an experienced audience. The event was a success because of the motivation of the students and the quality of their presentations.

The day was completed with the celebration of the Annual Assembly of the Society's Spanish Chapter, attended by 22 members and at which Chapter President Victorino Franco

(University of Seville) and Chapter Secretary / Treasurer Alfredo García-Arribas (University of the Basque Country) informed the attendees of the activities developed by the Chapter during the year. Among them stood out a call for students to attend the Magnetism Course organized by CEMAG, to be held during July 1-6, 2019 in Miraflores de la Sierra, Madrid).



Attendees of the Joint Meeting.

On November 30, 2018 we had another Scientific Session with interesting lectures by senior researchers. Alison B. Flatau (University of Maryland), a 2018 IEEE Distinguished Lecturer gave us her talk titled "Structural magnetostrictive alloys: from flexible sensors to energy harvesters and magnetically controlled auxetics."

Luis Fernández Barquín (University of Cantabria) spoke about rare-earth nanoparticles in his lecture "New perspectives in rare earth metallic nanoparticles: spin glass phases, crystal fields and Kondo decoherence." Finally, JiaYan Law (University of Seville) spoke about phase transitions in magnetocaloric materials, in his lecture "Field dependence of magnetocaloric effect identifies first-order phase transition".

To finalize the meeting, the CEMAG Assembly took place. One of the most relevant items was the request for renewal of the cooperative agreement of the Club with the Society's Spanish Chapter.

Two Successful Society MRAM Events Held at IEDM 2018 in San Francisco

By Bernard Dieny, Chair of IEDM 2018 MRAM Poster Session and 10th MRAM Global Innovation Forum

IEDM is the main annual conference of the IEEE Electron Devices Society and took place in San Francisco, California during December 3-5, 2018. This year, 18 presentations related to spin electronics and in particular to magnetic random-access memory (MRAM) were presented - twice the number presented in the previous two years. Samsung, Global Foundries and Intel reported successful integration of eMRAM on 28 nm, 22 nm FD-SOI and 22 nm FinFet technology respectively.

Two MRAM-related events were organized by the IEEE Magnetics Society to strengthen the relationship between the two Societies and thereby foster the development of the MRAM technology.

The first was an MRAM poster session hosted by IEDM and technically organized by our Society. 32 posters were presented covering MRAM materials, phenomena, technology, testing, hybrid CMOS/magnetic technology and circuits and spin logic.

The second event was the 10th MRAM Global Innovation Forum which was held on December 6 in San Francisco. For the second time, this event was organized by our Society for the day after IEDM 2018 to allow the attendees to join the Forum. It is entirely supported by a donation made by Samsung Semiconductor to our Society. This year, 300 people attended the Forum including 55 from academia and 245 from industry. This strong attendance by industry reflects the growing interest of the microelectronics industry in this new technology.

The Forum consisted of seven invited talks from industry (Samsung, Everspin, Numem, Avalanche Technology, Spin Memory, IBM and TDK/Headway), three from academia (SPINTEC, Cornell University and Korea University) and a panel discussion titled "The MRAM roadmap?" Embedded MRAM is now entering in production at foundries to be used as a substitute for eFLASH and possibly SRAM.



Attendees at the IEDM 2018 MRAM Poster Session.

IEEE MAGNETICS SOCIETY SUMMER SCHOOL June 2-7, 2018

Virginia Commonwealth University College of Engineering in the historic city of Richmond, Virginia, has been chosen as the international host site for the **2019 IEEE Magnetics Society Summer School**. The school includes a tour of the National Institute of Standards and Technology (NIST) in nearby Gaithersburg, Maryland. An evening tour of Washington D.C. organized by the Washington D.C. and Northern Virginia Magnetics Society Chapter is planned. A panel discussion from industrial experts and federal research institutions will be held to provide an exposure to magnetics research, jobs and future trends in magnetics.

About 90 Ph.D. students will have the opportunity to present posters and participate in group project proposals. The best student poster and project will be awarded with a certificate and cash prize.

Selected students are invited to submit a paper to **IEEE Magnetics Letters**.

Paper submission deadline: July 1, 2019

egr.vcu.edu/IEEE

For more information contact

Ravi Hadimani, Ph.D., Assistant Professor and Director
of Biomagnetics Laboratory | rhadimani@vcu.edu



VCU College of Engineering

Conference Calendar

By **Gareth Hatch**, Newsletter Editor

Magnetism 2019

April 8-9, 2019 - Leeds, UK

International Conference on Fine-Particle Magnetism (ICFPM19)

May 27-31, 2019 - Gijón, Spain

IEEE Magnetics Society Summer School

June 2-7, 2019 - Richmond, Virginia, USA

Magnetic Frontiers 2019: Magnetic Sensors

June 24-27, 2019 - Lisbon, Portugal

15th International Conference on Magnetic Fluids (ICMF 2019)

July 8-12, 2019 - Paris, France

Frontiers in Biomagnetic Particles

August 5-7, 2019 - Telluride, Colorado, USA

11th International Conference on Magnetic and Superconducting Materials (MSM19)

August 17-24, 2019 - Seoul, South Korea

European School on Magnetism (ESM 2019)

September 2-13, 2019 - Brno, Czech Republic

24th Soft Magnetic Materials Conference (SMM24)

September 4-7, 2019 - Poznan, Poland

Conference on Magnetism and Magnetic Materials (MMM 2019)

November 4-8, 2019 - Las Vegas, Nevada, USA

To list your conference in the Newsletter Conference Calendar, please contact the **Newsletter Editor**.

About the Newsletter

The purpose of the Newsletter of the IEEE Magnetics Society is to publicize activities, conferences, workshops and other information of interest to Society members and other people in the area of applied magnetics.

Contributions are solicited from Society members, Officers & other volunteers, conference organizers, local chapters, and other individuals with relevant material. The Newsletter is published quarterly on the Society webpage at: <http://www.ieeemagnetics.org>

Please send all contributions via email to the Newsletter Editor, Gareth Hatch, at: g.p.hatch@ieee.org

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