IEEE Magnetics Society
NEWSLETTER

Gareth Hatch, Editor

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From The President

By Takao Suzuki, President of the Magnetics Society

Welcome to the first issue of 2011! I am pleased to write my message as the incoming president (2011-2012) of the Magnetics Society. Since this is the first issue since I became Society President, my message this time is rather formal in many ways, but I will try to be less formal in my messages in future issues. I plan to give an update in each issue of the progress of our Society as well as IEEE activity, and hope this will help you work and cooperate for making our Society better so that all of us will benefit from being members of our Society.

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New IEEE Fellows

By Bruce Gurney, Honors and Awards Committee Chair

Please join me in congratulating Magnetics Society members Amr Adly, Ching-Ray Chang, John Chapman, Horia Chiriac, Bernard Dieny, John Moreland, and Ed Schlessenger for being elevated to the grade of IEEE Fellow. They have been selected by the IEEE along with distinguished members from other IEEE Societies for this distinction. In any given year only one tenth of one percent of the membership can be so honored. The new Fellows have made contributions in areas ranging from measurement techniques to spintronic devices. Each is given a citation outlining their special contributions.

The grade of Fellow is nearly 100 years old. Originally established for those who had "demonstrated outstanding proficiency and achieved distinction in their profession", the grade of fellow has expanded to include those with an "extraordinary record of accomplishment in any of the IEEE fields". In order to become a Fellow a member must, in addition to exemplary accomplishments and contributions, hold IEEE Senior membership and have been a IEEE member for five years or more. Nominations are accepted throughout the year, and the deadline for the class of 2012 is March 1, 2011.

For more information about becoming a Fellow see **http://www.ieee.org/membership_services/membership/fellows/index.html**.

For information about becoming a Senior Member please visit **http://www.ieee.org/membership_services/membership/senior/index.html**.

Special thanks to Giorgio Bertotti and his Fellows Evaluation Committee who assist the IEEE in evaluating the technical accomplishments of nominees and to Vince Harris and his Fellows Nomination Committee who assist in the preparation of nominations.

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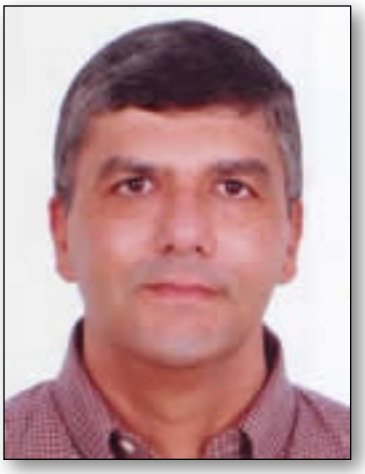
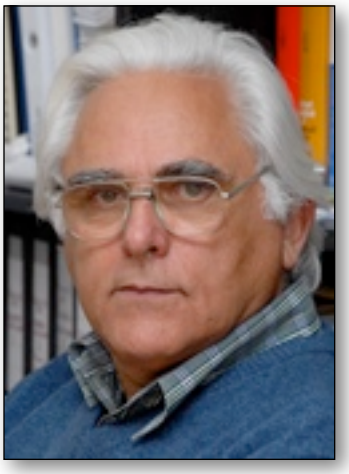
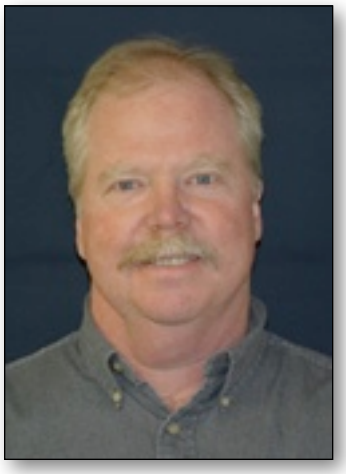


Above (l to r): Amr Adly, Ching-Ray Chang, John Chapman and Horia Chiriac.
Below (l to r): Bernard Dieny, John Moreland and Ed Schlessenger.


2011 IEEE Magnetics Society Summer School

By Albrecht Jander, Education Committee Chair

The fourth annual IEEE Magnetics Society Summer School will be held **May 22-28, 2011** in New Orleans, on the campus of the University of New Orleans. The school is designed for graduate students studying magnetism and related areas. It will consist of lectures by international experts and will include poster presentations by participating graduate students. The program will cover fundamentals and advanced topics in magnetism. The school is free to admitted students and most travel costs are reimbursed. **Application Deadline: Jan 31, 2011 -** visit **http://summerschool.ieeemagnetics.org** for more details.

Jimmy Zhu Receives 2011 Achievement Award

By Bruce Gurney, Honors and Awards Committee Chair

Professor Jimmy Zhu receives the 2011 IEEE Magnetics Society Achievement Award for "contributions to magnetic storage devices through magnetic modeling".

Dr. Jian-Gang (Jimmy) Zhu is a recognized world leader in the modeling of magnetic devices, especially for magnetic recording. He is well known for his contributions to micromagnetic modeling of longitudinal and perpendicular magnetic media, and through extensions of his modeling of read and write heads to topics of current interest including heat assisted magnetic recording and microwave assisted magnetic recording. The understanding of magnetization reversal in nanoscale pillars he developed has lead to structures used today in magnetic random access memories. He has either authored or co-authored more than 250 journal publications, has written six book chapters and has given over 70 invited papers at various international conferences. He holds twelve U.S. patents.

Professor Zhu is the Director at the Data Storage Systems Center and a Professor in the Department of Electrical and Computer Engineering at Carnegie Mellon University, where he holds the endowed chair of ABB Professor in the College of Engineering. He holds courtesy appointments as a Professor in the Department of Material Science and Engineering and as a Professor in the Department of Physics. He also holds the Cheung Kong Chair Professorship in Huazhong University of Science and Technology, China. He has graduated 30 Ph.D. students and many more M.S. students, in the fields of Electrical Engineering, Physics, or Material Science.

Professor Zhu has served the Magnetics Society as a Distinguished Lecturer, and as local chair and publication chair of The Magnetic Recording Conferences, and publication chair of Magnetism and Magnetic Recording Conferences. He was also a member of the Technical Activities Committee. He is a Fellow of the IEEE.

Professor Zhu received his B.S. degree in Physics from Huazhong University of Science and Technology in China in 1982, and M.S. degree and Ph.D. degrees, both in Physics, from the University of California at San Diego in 1983 and 1989, respectively. He was a faculty member as an assistant professor and later associate professor in the Department of Electrical Engineering at University of Minnesota from 1990 to 1996 prior coming to Carnegie Mellon, where he became a full professor in 1998.

His previous recognitions include being a recipient of the 1993 National Science Foundation Presidential Young Investigator Award and receiving the McKnight Land Grant Professorship from the University Minnesota Board of Regents in 1993. He is a co-inventor of the CPP/GMR read sensor patent, for which he received the 1996 R&D Magazine Top 100 Award.

Professor Zhu joins a distinguished list of past recipients: Fred Luborsky 1981, Herb Storm 1982, Harold Lord 1984, Joe Suozzi 1985, Fritz Friedlaender 1986, Andrew Bobeck 1987, Floyd Humphrey 1988, Paul Biringer 1989, Daniel Gordon 1990, Emerson Pugh 1991, Yoshifumi Sakurai 1992, William Doyle 1993, Richard Barker 1994, Mark Kryder 1995, Koosuke Harada 1996, Gordon Slemon 1997, Stan Charap 1998, Dave Thompson 1999, Denis Mee 2000, Fred Hagedorn 2001, Sun-ichi Iwasaki 2002, Carl Patton 2003, Yutaka Sugita 2004, Robert Fontana 2005, Neal Bertram 2006, John C. Mallinson 2007, Jack H. Judy 2008, Roger Wood 2009, and Isaak Mayergoyz 2010.

New Senior Members

Senior Member is the highest grade for which IEEE members can apply. The following members of the IEEE Magnetics Society were recently elevated to the grade of Senior Member. Congratulations!

October 2010: Paolo Ferracin.

November 2010: Ko-Wei Lin, Vincent Mazauric, Yutaka Nonomura, Hendrik Ohldag and Rajasekaran Swaminathan

For further information, visit the IEEE Web site at:

http://www.ieee.org/membership_services/membership/grade_elevation.html

From The President *continued from page 1*

First of all, I would like to express my sincere gratitude to all the Magnetics Society's members for their support. Also, I would like to acknowledge the Past President, Randy Victora, for his strong leadership and contributions to our Society. During his presidency, our Society has made significant accomplishments through various programs. Our Society has been recognized as one of the most active and financially sound societies in the IEEE organization. Thanks, Randy, for your great job! My special thanks go to all the committee chairs and members, the AdCom members, and the officers of our Society, who have worked throughout the years on our Society's activities. Also, I would like to thank Diane Melton for her continuous hard work as Executive Director of our Society.

Secondly, I would like to talk about "What is the mission of our Magnetics Society?" To me as the president, of course this is very important. Simply stated, our mission must be to provide maximum benefits for the members – to help each of them to stay current within our field of technology (magnetism, magnetic materials and its applications), to keep in touch with peers, and to develop their professional careers. Then, "How do we achieve it?" Our Society has been providing multi-fold activities such as publications (IEEE Transaction on Magnetics, IEEE Magnetics Letters, Magnetics Society Newsletter), conferences (International Magnetics Conference (Intermag) and Magnetism and Magnetic Materials (MMM) Conference), the Distinguished Lecturer Program, summer schools, various community services through local chapters and many other benefits to members within our specialty areas. The summer schools were held in Colorado Springs, Nanjing, and Dresden in 2008, 2009 and 2010 respectively, and the four Distinguished Lecturers per year have been giving lectures all around the world, averaging more than 30 lectures each. The off-shore Intermags have rotated in location every three years, and this year's is in Taipei. So our Society is indeed very internationally oriented in its activity. I believe we have done as much as we could up to now.

A question may be raised, however: should we do something new/different from the past to maximize benefits for our members? My belief is that we need to do something new and different. The reason for this is simply because things are no longer the same as, say, 5 years ago. For example, most of the participants at Intermag and MMM conferences are not from the USA/Canada, but now Europe and Asia/Pacific regions. This trend will continue for some years to come. We need to make our strategy responsive to this fact. China dominates the rare-earth permanent-magnet industry, and we expect many Chinese students and engineers are looking for opportunities to join our Society if our Society is interested in them. In other words, we need to look into better ways to provide membership benefits from the global point of view.

Needless to say, our Magnetics Society is an international organization, having members of many nationalities. As of December, 2010, 56% of the current total members (about 3,000) are non-US members, and we predict that more from Asia and Europe will join our Society. Our society is no longer for the US only but for the entire world. What this means is certainly we must be ready to do what needs to be done to maximize benefits for them. Not only the diversity of the membership, but also the diversity of the AdCom members and the committee chairs must be mentioned. We have 10 committees (Publication, Technical, Honors/Awards, Education, Membership, Publicity, Finance, Chapter, Nominations, and Conference Executive committees), the chairs of which are from all around the world. Yet, we need more improvement in our Magnetics Society, just as in the wider society around us. That is, I may say that we need more involvement of female volunteers as well those from developing countries, such as China.

In order to improve our Society's activity, responding to a dynamical rapid change in the world, several of our committees have been discussing the issues, first to identify problems, then to solve them. The Planning Committee is one of them, and another one is the so-called Ad Hoc Committee. The planning Committee discusses near-term issues, and the Ad Hoc Committee is to discuss long-term problems. One of the near-term issues relates to internationalization and collaboration with other magnetics societies. The collaboration policy with other societies has been well established within the IEEE. The IEEE has already set forth a "National Society Agreement (NSA)" and "Sister Society Agreement" (SSA) with other societies. Our society has now both an NSA and an SSA with the Taiwan Association for Magnetic Technology (TAMT) and the Korean Magnetics Society (KMS). This allows our members to join the sister society at a discount reciprocal membership fee and also provides opportunities to work jointly, such as for conferences and publications. Also, this collaboration gives us feedback from the other society to improve our activity. We are planning to extend our collaboration with other countries, including Japan, Singapore and those in Europe.

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From The President *continued from page 4*

Another near-term issue is the one related to the selection of the officers, Adcom members, and committee chairs. All the activities are based on volunteer efforts, yet we need very professionally oriented and devoted people for the Society. It is very important to solicit and find active participants from all over the world for our Society. There has been discussion about improving the current election system so as to reflect the voices of the membership. The Planning Committee, led by Liesl Folks, will handle some other issues. The Ad Hoc Committee, which is an advisory committee to the President, has just started, in November, 2010. The committee is led by Burkard Hillebrands and I am very much looking forward to its feedback.

Our membership has slightly decreased (about 7%) from the year 2009. This is mainly due to the decrease in USA membership. Maintaining our membership requires that we provide maximum benefits for our members. If we fail doing this, we will lose more members. I believe we are going in the right direction for the community, and therefore we will continue doing so. But at the same time, we will adjust ourselves to serve the members based on their needs.

I believe that we should devote more effort to recruiting students and junior engineers. About 8-10% of the total members are students – this should be at least 20%. Three years ago, we started our "Summer School", which has supported more than 100 students each year from around the world. The schools were well organized by the Education Committee (led by Albrecht Jander) and received excellent feedback from the students who attended. I do believe this effort should be continued, and will bring more students into our Society.

The IEEE established in 1996 a so-called GOLD program. This "IEEE Graduates of the Last Decade (GOLD) "is a membership program to help students transition to young professionals within the larger IEEE community." IEEE young professionals are automatically added to the GOLD member community as they graduate. This program is specifically intended to assist young engineers and scientists after graduation from university in terms of employment searches, new jobs, professional growth, and career development (for more details, see http://www.ieee.org/membership_services/membership/gold/index.html). The Membership Committee, led by Peter Fischer, will try to increase our membership, in collaboration with the Chapters Committee, led by Hiroaki Muraoka.

We have now 33 chapters (16 in USA/Canada/Brazil, 8 Europe/Middle East/Africa) and 9 in Asia/Pacific). I would like to emphasize the effort made by the outgoing Chapters Committee chair, Kaizhong Gao, who is now the Technical Committee chair. Kaizhong worked hard to help those in China establish two chapters (Nanjing and Beijing). The role of the local chapters is to offer opportunities to local people, especially students and junior engineers, to be exposed to the most up-to-date technologies and science in our fields. Some of the activities include arranging the Distinguished Lecturers' talks, students' workshops, and tutorials. We need more chapters in different areas such as India, Australia, and South America. In conjunction with the issue of strategy for increasing the membership, I must note that the IEEE recently asked each Society to develop a membership program with a reduced membership fee (with fewer benefits) for developing countries. We will discuss this matter at the AdCom meeting.

Our Magnetic Society has annual revenue of roughly $2,000,000. The major portion of the revenue has been spent for supporting the activities mentioned above, and a "tax" of about 20% goes to IEEE. In particular, the support for Chapter activities, the Distinguished Lecturer Program and the Summer School are worthy of mention. I will keep you informed of our spending and appreciate your feedback as well.

Finally, I would like to introduce the new leadership of our Magnetics Society, which is listed in the table on Page 6. We have new chairs for the standing committees. They are K. Gao (Technical), who was the chapter chair, P. Fischer (Membership), C-H. Lai (Publicity), who was the membership chair, H.Muraoka (Chapter), R.Victora (Nomination), who is the past president, and B.Hillebrands (Ad Hoc committee). Also, V. Harris is the new Distinguished Lecturer Coordinator. I would like to thank J. Katine, P. Daghat, K. O'Grady and R. Chantrell for their leadership and dedicated work as committee chairs.

Looking forward to hearing from you about your viewpoints and keep in touch!

Takao Suzuki can be reached via: ***takaosuzuki@mint.ua.edu***

Remembering W. James Carr Jr.

By Alex I Braginski, James Parker, Jr., Michael S. Walker and James L. Carr

Walter James ("Jim") Carr, Jr. – versatile and creative theorist, engineer, inventor, manager and mentor, in fields ranging from the physics of magnetism and magnetic materials, to AC loss theory in superconducting composites and its practical application to the design of large-scale superconducting apparatus – died at home in Pittsburgh, Pennsylvania, on November 16, 2010, at age 92. He was a Fellow of both the American Physical Society and the IEEE.

Jim was born on May 6, 1918 in Knob Noster, Missouri. He earned a BS on full scholarship in electrical engineering at the Missouri School of Mines and Metallurgy in 1940 and an MS in electrical engineering under Frederick Terman at Stanford in 1942. The Westinghouse Research Laboratories subsequently hired Jim to help with the wartime effort and then sponsored his work on magnetostriction under Roman Smoluchowski for a DSc in physics at Carnegie Tech in 1951.

Jim coupled a strong capability in mathematics with a deep and intuitive understanding of physics. He had a penchant for starting from first principles, but he also had an eye for the practical and worked equally well with theorists and design engineers. Until about 1970, magnetostriction and anisotropy of iron and alloys continued to be his interest as documented by many publications, while he also significantly contributed to the understanding of direct exchange in two and many-electron systems in the 1960s, finally suggesting (Phys. Rev. 1986) superconducting behavior in solid hydrogen based on direct electron-phonon coupling.

In the 1960s Jim also supported theoretically an extensive experimental investigation of magnetic and superconducting tellurides (especially the SnTe-MnTe system) and derived a macroscopic theory of superconductivity in the framework generally used for magnetic materials, one that he considered important for the development of thermodynamics related to type-II superconductors (Phys. Rev. 1981).

In the early 1970's, Jim developed "The Anisotropic Continuum Model", an elegantly derived theory of AC losses in twisted multifilament composite superconductors. This facilitated practical tradeoffs in the design of large scale superconducting devices ranging from high energy physics accelerators to generators, motors, transformers, transmission lines and fusion reactors [1]. This forged an ongoing collaboration between Jim and a community of developers within and beyond Westinghouse that lasted the rest of his life. Jim retired at age 67, after 43 years at the Westinghouse R&D Center. This period included a six-month sabbatical at the Atomic Energy Research Establishment in Harwell, U.K. He had become by then a Consulting Scientist, the highest non-managerial rank and a rare distinction at Westinghouse.

After the new high-Tc superconductors were discovered early in the 1990s, Jim began to address AC losses for the coated tape geometry, working with others to devise transposed striated forms and, starting in about 2000, finding conduction and hysteresis losses to involve a surface charge distribution. These ideas are incorporated in his last paper, "Basic Theory of an All-Superconducting Generator" (IEEE Trans. Appl. Supercond., 2007). He received 13 patents in his lifetime, ranging from metallic weapons detectors to superconducting devices. A W. James Carr, Jr. Memorial Lecture series has been established at the Department of Physics, University of Maryland, in his honor.

Those of us who knew and worked with Jim admired his sharp and creative mind, his impeccably logical reasoning and his fine way of working with people. We will very much miss this most courteous and gentle colleague and friend.

Alex I Braginski
Research Center Jülich, Jülich, Germany

James Parker, Jr. & Michael S. Walker
Westinghouse R&D Center (retired), Pittsburgh, PA

James L. Carr
Carr Astronautics, Washington, D.C.

[1] A comprehensive presentation of the theory is given in Jim's monograph: W. J. Carr, Jr. *AC-loss and Macroscopic Theory of Superconductors*, Gordon and Breach, 1983 (second edition in 2001).

Magnetics Society Leadership Team	2011	2010
President	Takao Suzuki	Randy Victora
Vice President	Liesl Folks	Takao Suzuki
Past President	Randy Victora	Carl Patton
Treasurer / Secretary	Bruce Terris	Liesl Folks
Executive Director	Diane Melton	Diane Melton
Publications	Massimo Pasquale & Ron Goldfarb (Associate)	Massimo Pasquale & Ron Goldfarb (Associate)
Technical	Kaizhong Gao	Jordan Katine
Honors / Awards	Bruce Gurney	Bruce Gurney
Education	Albrecht Jander	Albrecht Jander
Membership	Peter Fischer	Chi-Huang Lai
Publicity	Chih-Huang Lai	Pallavi Dhagat
Finance	Jan-Ulrich Thiele & Tom Thomson (Associate)	Jan-Ulrich Thiele
Chapters	Hiroaki Muraoka	Kaizhong Gao
Nominations	Randy Victora	Kevin O'Grady
Conference Executive	Doug Lavers	Doug Lavers
Ad Hoc*	Burkhard Hillebrands	N/A
DL Coordinator*	Vince Harris	Roy Chantrell
IEEE Transactions on Magnetics*	David Jiles & Pavel Kabos (Associate)	David Jiles
IEEE Magnetics Letters*	Ron Goldfarb	Ron Goldfarb
IEEE Magnetics Society Newsletter*	Gareth Hatch	Gareth Hatch

Chapters & Technical Committee News

By Kaizhong Gao, Technical Committee Chair

The Society established six new chapters during the past two years, in Hong Kong, Germany, Beijing, Nanjing, Toronto and Alabama. Now we have 33 active chapters; more than 70% of Society members belong to these chapters. In addition, we have two joint chapters started in year 2010 and a couple of the new chapters in the process of start. For year 2011-2012, Prof. Muraoka from Tohuku Univ. will become IEEE Magnetics Society Chapters Chair. For any chapter related issue, please contact him directly.

Starting from Jan., I will serve Magnetics Society as Technical Committee Chair, after Dr. Jordan Katine, who was the Technical Committee Chair over the past two years. He will continue serve as Technical Committee member and give me advice moving forward. If you are currently interested to join technical committee, please contact me along with your CV and a one page keynote of your field of expertise.

2011 Distinguished Lecturers

The IEEE Magnetics Society selected four Distinguished Lecturers (DLs) for 2011. They are:

- Masaaki Futamoto (Chuo University, Japan);
- Axel Hoffmann (Argonne National Lab, USA);
- Peter Fischer (Lawrence Berkeley National Lab, USA);
- Oliver Gutfleisch (IFW Dresden, Germany).

Each DL makes his own schedule, so contact them early, via the email addresses below.

IEEE Magnetics Society 2011 Distinguished Lecturer

Magnetic Soft X-Ray Microscopy: a Path Towards Imaging Magnetism Down to Fundamental Length and Time Scales

Peter Fischer - Lawrence Berkeley National Laboratory, Berkeley, USA

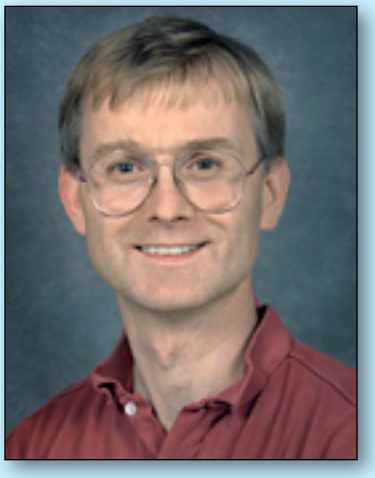
One of the scientific and technological challenges in nanomagnetism research is to image magnetism down to fundamental magnetic length and time scales with elemental sensitivity in advanced multicomponent materials. Magnetic soft X-ray microscopy is a unique analytical technique combining X-ray magnetic circular dichroism (X-MCD) as element specific magnetic contrast mechanism with high spatial and temporal resolution. Fresnel zone plates used as X-ray optical elements provide a spatial resolution down to currently 10nm thus approaching fundamental magnetic length scales such as magnetic exchange lengths. Images can be recorded in external magnetic fields giving access to study magnetization reversal phenomena on the nanoscale and its stochastic character with elemental sensitivity. Utilizing the inherent time structure of current synchrotron sources fast magnetization dynamics such as current induced wall and vortex dynamics in ferromagnetic elements can be performed with a stroboscopic pump-probe scheme with 70ps time resolution, limited by the lengths of the electron bunches.

With a spatial resolution approaching the <10nm regime, soft X-ray microscopy at next generation high brilliant fsec X-ray sources will make snapshot images of nanoscale ultrafast spin dynamics become feasible.

Dr. Peter Fischer received his PhD in Physics (Dr.rer.nat.) from the Technical University in Munich, Germany in 1993 and his habilation from the University in Wuerzburg in 2000 based on his pioneering work on magnetic soft X-ray microscopy.

Since 2004 Dr. Fischer is a Staff Scientist at the Center for X-ray Optics within the Materials Science Division at Lawrence Berkeley National Laboratory in Berkeley CA. His current research program is focused on the use of polarized synchrotron radiation for the study of fundamental problems in nanomagnetism. He is involved in developing the scientific case for a next generation soft X-ray free electron laser at LBNL.

Dr. Fischer has published 125+ peer reviewed papers and has given 135+ invited presentations at national and international conferences.



For his achievements of "hitting the 10nm resolution milestone with soft X-ray microscopy" he was co-awarded with the Klaus Halbach Award at the Advanced Light Source in 2010.

Contact: Dr. Peter Fischer, Center for X-ray Optics, Lawrence Berkeley National Laboratory, Berkeley, CA 94720 U.S.A. phone: +1 510 486 7052, email: PJFischer@lbl.gov, website: http://pjfischer.lbl.gov

IEEE Magnetics Society 2011 Distinguished Lecturer

Growth Control and Microstructure Characterization of Magnetic Thin Films: Application to High-Density Perpendicular-Magnetic-Recording Media

Masaaki Futamoto - Chuo University, Tokyo, Japan

Various magnetic thin films are used for recording media and heads of hard disk drives. The magnetic properties have been greatly improved to cope with a continuous areal density increase of more than 104 times over the past quarter century. The improvement has been realized by tailoring the composition and the microstructure of magnetic thin films.

This lecture covers the technology and the physics for controlling the microstructure of magnetic thin films, focusing mainly on perpendicular recording media and related magnetic materials. Initially, technological developments will be briefly reviewed and then the following topics will be discussed: (1) nucleation and growth of magnetic thin films through heteroepitaxy on nonmagnetic underlayers, (2) nanostructure and nano-composition characterization, (3) application to perpendicular magnetic recording media, (4) magnetization structure analysis, (5) epitaxial growth of single-crystal magnetic thin films with metastable and ordered crystal structures, and (6) patterned-type perpendicular recording media for higher densities.

The relationships between film microstructure and magnetic properties will also be discussed.

Prof. Masaaki Futamoto received the B.E., M.E., and Dr degrees in material science from Osaka University in 1971, 1973, and 1982, respectively. He joined Central Research Laboratory, Hitachi Ltd., in 1973 and worked on electron emissive materials. From 1982 to 1983, he was a visiting scientist at the University of Sussex, U.K. From 1983 to 2003, he has engaged in the research and development of high density magnetic recording, in particular the development of perpendicular magnetic recording media. From 1996 to 2001, he served as the leader of a research group in a Japanese National Project that was established to develop future-oriented magnetic recording technologies. In 2004, he was appointed as a professor of the Faculty of Science and Engineering, Chuo University.

His research interests include high-density magnetic recording, magnetic recording media, thin film heads, epitaxial growth of thin films, structure and composition characterization of magnetic thin films, and magnetic imaging. He has authored more than 250 scientific papers in the fields of surface science, crystal growth, magnetic recording, and thin film technologies. He is also an inventor of 350 issued patents and patent applications. Professor Futamoto has given invited talks at major international conferences: Intermag, MMM, TMRC, PMRC, MRS, etc.

Prof. Futamoto is a Fellow of the IEEE since 2002. He has served as the chairman of the Technical Committee of Magnetic Recording of IEICE (2000-2002), a member of Committee 144 (Magnetic Recording) of the Japan Society of Promotion of Science (1989-present), and the editorial director for the Magnetics Society of Japan (2003-2007).

Contact: Prof. Masaaki Futamoto, Faculty of Science and Engineering, Chuo University, Bunkyo-ku, Tokyo 112-8551, Japan; telephone: +81-3-3817-1862; fax: +81-3-3817-1847; Email: futamoto@elect.chuo-u.ac.jp

IEEE Magnetics Society 2011 Distinguished Lecturer

Pure Spin Currents: Discharging Spintronics

Axel Hoffmann - Argonne National Laboratory, Argonne, USA

As semiconducting electronic devices are miniaturized to ever-smaller dimensions, power dissipation becomes an ever-increasing problem due to leakage charge currents. Spintronics may help addressing some of these issues by utilizing besides the charge degree of freedom also the electron spin. Conventional spintronics approaches are used for non-volatile devices, such as magnetic random access memory, where spin currents are mainly considered as spin-polarized charge currents and as a result the spin and charge currents are in parallel and directly coupled. Looking further into the future, the question arises, whether eliminating charge currents altogether could provide additional benefits for applications. Towards addressing this question, non-local device geometries allow for separating spin and charge currents, which in turn enables the investigation and use of pure spin currents [1]. This approach opens up new opportunities to study spin-dependent physics and gives rise to novel approaches for generating and controlling angular momentum flow.

In this lecture, I will discuss different approaches for generating pure spin currents, such as non-local electrical injection from a ferromagnet, charge-to-spin current conversion via spin Hall effects, and spin pumping from ferromagnetic resonance. Furthermore, I will show how spin currents can then be used for gaining new insights into spin dependent phenomena. In particular, the temperature dependence of spin and charge relaxation times allows to identify different spin relaxation mechanisms [2]. In addition, spin pumping facilitates the generation of macroscopically large pure spin currents. This permits to quantify spin Hall effects with great precision, even in materials where these effects are relatively weak [3,4]. Finally, I will conclude with a brief outlook on the current scientific and future technological opportunities for pure spin currents.

[1] A. Hoffmann, Phys. Stat. Sol. (c) 4, 4236 (2007).

[2] G. Mihajlović, J. E. Pearson, S. D. Bader, and A. Hoffmann, Phys. Rev. Lett. 104, 237202 (2010).

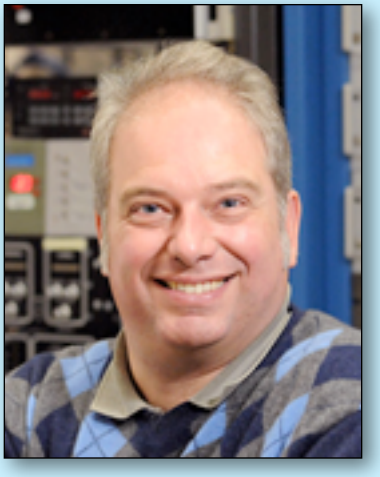
[3] O. Mosendz, J. E. Pearson, F. Y. Fradin, G. E. W. Bauer, S. D. Bader, and A. Hoffmann, Phys. Rev. Lett. 104, 046601 (2010).

[4] O. Mosendz, V. Vlaminck, J. E. Pearson, F. Y. Fradin, G. E. W. Bauer, S. D. Bader, and A. Hoffmann, Phys. Rev. B (to be published 1 November 2010).

Axel Hoffmann received his Diploma degree with honors from the RWTH Aachen in 1994 and his Ph.D. in Physics from the University of California – San Diego in 1999. After receiving his doctorate he was a postdoctoral fellow at the Los Alamos National Laboratory working on neutron scattering from magnetic heterostructures.

In 2001 Dr. Hoffmann joined the Materials Science Division of the Argonne National Laboratory, where he is currently a staff member in the Magnetic Thin Film Group. His research interests encompass a wide variety of magnetism-related subjects, including basic properties of magnetic heterostructures, spin-transport in novel geometries, and biomedical applications of magnetism. His main research focus has recently been on pure spin currents investigated by magnetotransport and magnetization dynamic measurements.

Dr. Hoffmann has more than 100 publications, four book chapters, and three magnetism-related U.S. patents. In the past he served as the chair for the Topical Group on Magnetism and its Applications of the American Physical Society and the chair of Technical Committee for the IEEE Magnetics Society.



Currently he is an associate editor for the Journal of Applied Physics, a senior IEEE member and a member of the Advisory Committee for the IEEE Magnetics Society. Dr. Hoffmann has been active in many Intermag and Magnetism and Magnetic Materials Conferences, including serving as a publication co-chair for the 2007 Joint MMM/Intermag conference and a program co-chair of the MMM conference in 2010. In 2013 he will be the general chair for the MMM Conference.

Contact: Dr. Axel Hoffmann, Materials Science Division, Argonne National Laboratory, Argonne, IL, USA. Email: hoffmann@anl.gov

IEEE Magnetics Society 2011 Distinguished Lecturer

Magnetic Materials in Sustainable Energy

Oliver Gutfleisch - IFW Dresden, Dresden, USA

A new energy paradigm, consisting of greater reliance on renewable energy sources and increased concern for energy efficiency in the total energy lifecycle, has accelerated research in energy-related technologies. Due to their ubiquity, magnetic materials play an important role in improving the efficiency and performance of devices in electric power generation, conversion and transportation. Magnetic materials are essential components of energy applications (i.e. motors, generators, transformers, actuators, etc.) and improvements in magnetic materials will have significant impact in this area, on par with many "hot" energy materials efforts (e.g. hydrogen storage, batteries, thermoelectrics, etc.).

The lecture focuses on the state-of-the-art hard and soft magnets and magnetocaloric materials with an emphasis on their optimization for energy applications. Specifically, the impact of hard magnets on electric motor and transportation technologies, of soft magnetic materials on electricity generation and conversion technologies, and of magnetocaloric materials for refrigeration technologies, will be discussed.

The synthesis, characterization, and property evaluation of the materials, with an emphasis on structure-property relationships, will be examined in the context of their respective markets as well as their potential impact on energy efficiency.

Finally, considering future bottle-necks in raw materials and in the supply chain, options for recycling of rare-earth metals will be analysed.

O. Gutfleisch, J.P. Liu, M. Willard, E. Brück, C. Chen, S.G. Shankar, Magnetic Materials and Devices for the 21st Century: Stronger, Lighter, and More Energy Efficient (review), Adv. Mat., in press.

CV

1991: Master in Material Science, Technical University of Berlin, Germany
1995: PhD, School of Metallurgy and Materials, University of Birmingham, UK
1995-1998: Post-doctoral fellow, University of Birmingham, UK
1998- : Research fellow at IFW Dresden, Germany
2001- : Group leader "Functional Magnetic Materials and Hydrides"
2007: Habilitation, Technical University of Dresden, "Functional Materials"
2008: Associate Professor TU Dresden "Materials for Energy Applications"
2010-2011: Visiting Professor Imperial College London, UK
2010-2011: Visiting Advisor NIMS Tsukuba, Japan

>180 publications in refereed journals

Fields of interest: high performance permanent magnets for E-mobility and energy applications, magnetocaloric materials and magnetic cooling, ferromagnetic shape memory alloys, solid state hydrogen storage.

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IEEE Magnetics Letters Report

By Ron Goldfarb, Editor

IEEE Magnetics Letters has completed its first year of publication. Articles are available to members of the Magnetics Society and institutional subscribers immediately upon publication at **http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=5165412**. Library print subscribers will receive their printed compilation of Volume 1 in January 2011. Members will receive Volume 1 as part of their annual Transactions + Letters CD-ROM in March 2011. Some Statistics for IML for the past 12 months:

- Average time from submission to assignment to reviewers: 1 day
- Average time from submission to first decision: 11 days
- Average time from submission to final decision: 15 days
- Average time from submission to publication: 60 days (shortest of all IEEE journals except for two that use "Early Access" publication in non-paginated form)
- Article acceptance rate: 24% (I reject some articles because they are outside the scope of the journal)

The scope of IML is the physics and engineering of magnetism, magnetic materials, applied magnetics, design and application of magnetic devices, bio-magnetics, magneto-electronics, and spin electronics. Articles must be current and topical. (IML currently does not accept articles on computational electromagnetics or motors.) Manuscripts are submitted at **http://mc.manuscriptcentral.com/maglet-ieee.** We use a plagiarism detection tool on all incoming manuscripts.

Magnetics Society Members who are interested in joining the IML Editorial Review Board may contact me at **r.goldfarb@ieee.org**.

Reflections on the 2010 Magnetics Summer School

By Juliana Marques Ramos, University of São Paulo - Brazil

The IEEE Magnetics Summer School is a week with lectures on magnetism, extending from basic to advanced topics of current research. The talks are informative and the relaxed atmosphere allows attendees to review and to learn in an accessible way. There are also poster sessions, where one can talk about one's work and receive suggestions for improvement. Some time is also allowed for interesting excursions, to explore the city with the other students from around the world. The summer school this year was in Germany at the University of Dresden, where we visited the laboratories of IFW and FZD to see the advanced techniques that are used there.

The summer school was a fantastic experience because it helped me broaden my knowledge and to better understand the fundamental aspects of magnetism and properties displayed by magnetic materials. I will now have better insight into my work because I received some important suggestions for my research. It was also an opportunity to study the fundamental mechanisms responsible for very interesting magnetic properties of various compounds. Thank to a stipend that was provided by the IEEE Magnetics Society, I was afterwards able to study for three weeks in a laboratory at Bonn University (Germany), a collaboration that will make much difference in my studies and in my career. In Brazil there are many groups doing research in magnetism which include student members of the IEEE Magnetics Society, who certainly are interested in participating in future events such as this.

By Albrecht Jander, Education Committee Chair

The Magnetics Society 2010 Summer School was held last August at the Leibniz Institute for Solid State and Materials Research (IFW) in Dresden, Germany. A total of 60 graduate students from all continents enjoyed a week-long program of lectures by distinguished members of the magnetics research community. Lectures ranged from basic magnetism to advanced topics in recording and spintronics. Between lectures, the students discussed each others' research projects during poster sessions. Daily social events encouraged students and faculty to mingle and network. The success of the event owes much to the fantastic organizational efforts of the local organizers, Drs. Oliver Gutfleisch and Jeffrey McCord as well as many other staff and students that helped out. This was the third annual Summer School, following similar programs in Colorado Springs and Nanjing.

Conference Calendar

Jan 19, 2011	24th Ewing Event: Superconductivity & Magnetics Oxford, UK Web site: www.ukmagsoc.org.uk
Mar 1-2, 2011	Magnetics 2011 San Antonio, TX, USA Web site: www.magneticsmagazine.com
Apr 11-14, 2011	8th International Conference on Computation in Electromagnetics Wroclaw, Poland Web site: www.cem2011.com
Apr 25-29, 2011	International Magnetics Conference INTERMAG 2011 Taipei, Taiwan Web site: www.intermagconference.com/intermag2011/
Aug 21-25, 2011	Moscow International Symposium on Magnetism Moscow, Russia Web site: mism.magn.ru
Oct 30 - Nov 3, 2011	56th Conference on Magnetism & Magnetic Materials MMM 2011 Scottsdale, AZ, USA Web site: www.magnetism.org
May 22-26, 2012	9th International Conference on the Scientific and Clinical Applications of Magnetic Carriers Minneapolis, MN, USA Web site: www.magneticmicrosphere.com

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

About the Newsletter

The purpose of the IEEE Magnetics Society Newsletter is to publicize activities, conferences, workshops and other information of interest to the Society's members and other technical people in the general area of applied magnetics. Manuscripts are solicited from Magnetics Society members, conference organizers, Society Officers & other volunteers, local chapters, and other individuals with relevant material.

The Newsletter is published in January, April, July and October electronically on the Magnetics Society webpage at www.ieeemagnetics.org. Submission deadlines are January 1, April 1, July 1, and October 1 respectively.

Please send articles, letters & other contributions to the Newsletter Editor:

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