GMAG NEWSLETTER – February 2011
http://units.aps.org/units/gmag/

Note From the Chair

Much has happened since the last GMAG Newsletter. Abstracts for the March Meeting have been sorted and organized, new APS Fellows confirmed, student award winners selected, and the GMAG election results are in.

The 2011 March Meeting organization has been completed thanks to the efforts of Andy Kent (currently serving as the GMAG chair-elect and program chair), the Focus Topic organizers, the many GMAG members who submitted nominations for invited speakers / symposia, and those members who volunteered at the abstract sorting meeting in early December. Please take a moment to thank each of them when you see them at the March Meeting for the time and effort they have invested in making the GMAG program another success. A summary of the magnetism-related abstract submission and details of the GMAG program and related activities are found later in this Newsletter.

In addition, this Newsletter includes information on the following:

- GMAG Election results: new Officers / Executive Committee members for 2011
- New APS Fellows nominated by GMAG / confirmed by APS Council
- Student Dissertation Award
- Student Travel Awards
- GMAG Annual Business Meeting: 5:45 pm Tuesday, March 22, Room D171 Convention Ctr.

As always, if you have additional ideas about how GMAG can support the magnetism and physics community with activities and programs, or have a suggestion for a new Focus Topic, feel free to contact any member of the GMAG Executive Committee.

Berry Jonker, GMAG Chair

GMAG Election Results

We are fortunate to have many talented members who are willing to be nominated and volunteer their time and expertise by serving as officers and committee members to help formulate and steer our topical group. The GMAG online ballot closed February 15, and the results are:

- Vice Chair: **Mark Stiles** (NIST Gaithersburg)
- Secretary Treasurer: **Shireen Adenwalla** (University of Nebraska)
- Members-at-Large: **Kristen Buchanan** (Colorado State)
  Olle Heinonen (Argonne National Lab)

Congratulations to each, and many thanks in advance for your service to GMAG!

Note that the Vice-chair is chair of the Fellowship Nomination Cmte the first year. He/she becomes Chair Elect and Program Chair the second year, which involves coordination of the GMAG March Meeting program. He/she succeeds to Chair the third year and Past Chair the fourth year. We thank the outgoing Officers and Executive Committee members for their years of service: Axel Hoffmann, Past Chair; Maria Varela, secretary/treasurer; John Freeland, member-at-large; and Evgeny Tsymbal, member-at-large.

New 2010 APS Fellows Confirmed from GMAG

It is a pleasure to recognize our members who have recently been elected to APS Fellowship upon nomination by the Topical Group on Magnetism and its Applications (GMAG). GMAG nominated five outstanding candidates to the APS Council for consideration, and all five were confirmed. Their names and citations are listed below. Congratulations to one and all!

We encourage all GMAG members to begin thinking about nominating outstanding candidates for the 2011 class of APS Fellows. GMAG nominates 3–5 people (0.5% of our membership) for APS Fellowship each year. The deadline for submission is **June 1, 2011**, and newly elected Vice Chair Mark Stiles serves as Fellowship Committee Chair (mark.stiles@nist.gov). The nomination form is relatively short, and instructions for preparing nominations are available at: http://www.aps.org/programs/honors/fellowships/nominations.cfm

- **Gerrit E. W. Bauer**, Delft University of Technology
  For exposition of the interaction between spin transport, magnetization dynamics, charge and heat transport, and mechanical motion.

- **Burkard Hillebrands**, University of Kaiserslautern
  For contributions to the understanding of dynamic magnetic excitations in confined magnetic structures, linear and nonlinear spin-wave propagation phenomena, and his pioneering work on the development of space- and time-resolved Brillouin light scattering techniques.

- **Zi Q. Qiu**, University of California, Berkeley
  For outstanding experiments to understand the two-dimensional magnetic origin, anisotropy and quantum size effect in magnetic nanostructures, and for the development of novel approaches involving wedged samples, curved substrates and the surface magneto-optic Kerr effect.

- **Thomas J. Silva**, National Institute of Standards and Technology, Boulder
  For his fundamental contributions to the experimental studies of the spin-torque oscillators, their interactions, and collective states, and for the development of new quantitative experimental methods for the investigation of magnetization dynamics in thin films and nanostructures.

- **Ralph Skomski**, University of Nebraska, Lincoln
  For his significant contributions to our understanding of magnetic materials, especially permanent magnets and magnetic nanostructures.

Student Dissertation Awards for 2011

In order to encourage students working in magnetism, every year GMAG sponsors **Outstanding Dissertation in Magnetism Awards**. These awards recognize students who have conducted outstanding research leading to their dissertation, and consist of an invited talk in an appropriate session at the APS March Meeting, a $500 prize to the student, and up to $250 toward his/her travel expenses to the APS March Meeting.

This year's winner is **Zoe Boekelheide** from the University of California, Berkeley (advisor Prof. Frances Hellman) for her dissertation entitled "*Effects of Nanoscale Structure on the Magnetism and Transport Properties of Chromium and Chromium-Aluminum Alloys*". Congratulations to Zoe for her outstanding work, and we look forward to her future contributions in GMAG! See her invited talk **D19.00001**.

Information for future nominations

GMAG awards up to three student dissertation awards at each APS March Meeting. The student must be in the final year before graduating with a Ph.D., and both the student and the advisor must be current members of GMAG. Nominations consist of a nominating letter; an extended abstract of the research; the student's CV and publication list; and contact information for the student, all submitted by the student's advisor or another senior researcher who knows the student's work well. The nominating letter must address the following issues:

- Quality and independence of the student's work;
- Student's speaking ability;
- Year the student began graduate school;
- Student expected completion date (must be after September 1, 2010, but before September 1, 2011 to be eligible for the 2011 APS March Meeting);
- Assessment of the student's future potential as a research scientist.

Nominations should be sent by email as a single PDF file to the GMAG secretary / treasurer, Shireen Adenwalla (sadenwalla1@unlnotes.unl.edu). Evaluation of the nominations is conducted by the GMAG Executive Committee.

Student Travel Awards for 2011

To increase student participation and involvement in activities essential to GMAG and APS as a whole, GMAG sponsors up to four Student Travel Awards for the March Meeting. The award consists of $250 in travel assistance to attend the meeting. The student will have lunch with a GMAG Executive Committee member, and is expected to attend the GMAG business meeting and serve one shift at the "Contact Congress" booth to support the APS outreach for congressional support for scientific research. The winners and corresponding talks this year are as follows:

- **Andrew Balk** (Penn State University), *Measurements of nanoscale domain wall flexing in a ferromagnetic thin film* (P16.00002)

- **Jimmy Kan** (University of California, San Diego), *Magnetic properties of single crystal nickel nanowires* (A16.00003)

- **Bo Wen** (City University of New York), *Local magnetic susceptibility study of long-range order in Mn12-ac* (T18.00006)

- **Shu Yan** (University of South Carolina), *Optimal field sweep rate in magnetic switching of a single domain particle* (B19.00007)

Congratulations to Andrew, Jimmy, Bo and Shu! We look forward to their continued involvement and future contributions to GMAG.

Information for future nominations

The student must be a presenter at the 2012 March Meeting, and should submit the following information to the GMAG secretary / treasurer, Shireen Adenwalla (sadenwalla1@unlnotes.unl.edu) by December 1, 2011: name, advisor, abstract submitted to March meeting, and ~100 word justification. Further details will be distributed in the future. There is a limit of two applicants per advisor. Evaluation of the nominations is conducted by the GMAG Executive Committee.

GMAG Annual Business Meeting

5:45 pm Tuesday, March 22, Room D171 of the Dallas Convention Center.
All GMAG members are encouraged to attend our annual business meeting, where we report on GMAG program activities, budget, and recognize our new Fellows and award winners. The following items will be included in the agenda.

- Recognition of new Fellows
- Presentation of Student Awards
- GMAG Elections
- Secretary / Treasurer's report (Maria Varela)
- Program Chair report (Andy Kent): March meeting summary
- Fellowship Cmte Report (Paul Crowell)
- Education Outreach program
- New Business

If you have items you would like to discuss at the business meeting, please email them to the GMAG Chair, Berry Jonker (jonker@nrl.navy.mil) by March 14 for consideration.

March 2011 Meeting Program

The APS 2011 March Meting will be held March 21-25 in Dallas, TX. As in the past, sorting category 6 (magnetism) is one of the largest topics of the meeting, with 642 abstracts submitted and an additional 105 abstracts submitted to related categories co-sponsored by GMAG. GMAG is sponsoring 5 Invited Symposia and 8 Focus Session Topics, comprising 81 invited speakers and 58 regular sessions. The Chair-Elect and GMAG program chair, **Andy Kent** (andy.kent@nyu.edu), and numerous volunteers have done a fantastic job in coordinating an excellent program. The GMAG Focus Topics, Invited Symposia and the magnetism sorting categories are summarized below, and a complete description of the Focus Topics is found near the end of this Newsletter.
** If you have suggestions for new Focus Topics or March Meeting activities, please send them to the new GMAG Chair-Elect, Paul Crowell (crowell@physics.umn.edu).

Lunch with Experts

GMAG is pleased to announce that it will be sponsoring four Graduate Student Lunch with the Experts sessions at the APS March Meeting. These will be held on Wednesday, March 23, 2011 from 12:00 noon to 1:30 pm in the Dallas Convention Center. Students must register on-site in the conference registration area beginning at 1 pm on Monday, March 21. Group size will be limited, and registration is on a first-come, first-served basis.

1. Synchrotron-based Studies of Magnetic Materials and Complex Oxides
   Darío Alejandro Arena, Brookhaven National Laboratory (darena@bnl.gov)

2. Complex Oxide Interfaces
   John W. Freeland, Argonne National Laboratory (freeland@anl.gov)

3. Magnetic Recording Technologies
   Eric Fullerton, University of California, San Diego (efullerton@ucsd.edu)

4. Life as a Physicist in an Industrial Research Lab - Pros and Cons!
   Olav Hellwig, Hitachi Global Storage Technologies (Olav.Hellwig@HitachiGST.com)

Focus Topics

GMAG is co-sponsoring eight focus topics for the 2011 meeting. Each focus topic consists of multiple sessions of contributed and invited talks addressing a common theme. A special thanks to our volunteer Focus Topic organizers who have worked hard to coordinate and organize each topic.

6.14.1 *Magnetic Nanostructures: Materials and Phenomena* (DMP/GMAG)
Stephane Mangin, Nancy-Universite, stephane.mangin@lpm.u-nancy.fr
Tiffany Santos, Argonne National Laboratory, tsantos@anl.gov

6.14.2 *Bulk Properties of Complex Oxides* (DMP/GMAG)
Rongying Jin, Louisiana State University, rjin@lsu.edu
Michelle Johannes, Naval Research Labs, michelle.johannes@nrl.navy.mil
Dmitry Reznik, University of Colorado, dmitry.reznik@colorado.edu

6.14.3 *Magnetic Oxide Thin Films* (DMP/GMAG)
Manuel Bibes, CNRS-National Center for Scientific Research, manuel.bibes@thalesgroup.com
Anand Bhattacharya, Argonne National Laboratory, anand@anl.gov
John Freeland, Argonne National Laboratory, freeland@anl.gov
Lane Martin, University of Illinois, Urbana-Champaign, lwmartin@illinois.edu

6.14.4 *Spin Transport & Magnetization Dynamics in Metal Based Systems* (GMAG/DMP/FIAP)
Shufeng Zhang, University of Arizona, zhangs@physics.arizona.edu
Tom Silva, NIST-Boulder, thomas.silva@nist.gov
Goran Mihajlovic, Hitachi Global Storage Technologies, goran.mihajlovic@hitachigst.com

6.14.5 *Spin Dependent Phenomena in Semiconductors* (GMAG/DMP/FIAP)
Michael Flatte, University of Iowa, michael_flatte@mailaps.org
Nitin Samarth, Penn State University, nsamarth@psu.edu

6.14.6 *Frustrated and Low Dimensional Magnetism* (GMAG/DMP)
Jason Gardner, NIST, jason.gardner@nist.gov
Stephen Nagler, Oak Ridge National Laboratory, naglerse@ornl.gov
Myriam Sarachik, CCNY, msarachik@sci.ccny.cuny.edu

6.14.7 *Spin Dependent Physics in Organic-based Materials* (GMAG/DMP)
Jing Shi, UC Riverside, USA jsjshi@gmail.com
Luis Hueso, CIC nanoGUNE, Spain, l.hueso@nanogune.eu
Barbaros Ozylimaz, NUS, Singapore, barbaros.oezyilmaz@gmail.com

6.14.8 *Novel Magnetic Devices* (DMP/GMAG)
Peter Fischer, CXRO/LBNL, Berkeley CA, USA, PJFischer@lbl.gov
Dafine Ravelosona, IEF, Orsay, France, dafine.ravelosona@u-psud.fr
William Rippard, NIST-Boulder, USA, william.rippard@nist.gov

Invited Symposia

GMAG sponsors five invited symposia at the March Meeting – this number is based upon the number of current GMAG members. The symposia are selected by the Executive Committee from those suggested by the GMAG membership, and provide a great opportunity for members to determine the program emphasis from year to year. Twelve nominations were received this year, and we thank those

members who took the time to submit a suggestion. A Symposium consists of 4-5 invited speakers, and is intended to highlight a "hot topic" and/or address an area which spans more than one focus topic. The five Symposia selected for 2011 are as follows:

- ***Bose-Einstein Condensation of Magnons and Related Phenomena***

will highlight different realization of magnetic BECs, from spin-currents in He3 to quantum magnets.

- ***Collective Effects in Molecular Magnets***

While previous sessions have addressed one-molecule effects, this symposium will focus on collective effects that arise due to interactions between molecules and their environment.

- ***Ultrafast Magnetization Dynamics: Where are We Today?***

will highlight recent experimental advances in this field using laser and x-ray sources.

- ***Spin Currents***

will feature talks on the transport, detection and uses of spin-currents in semiconductors.

- ***New Developments in Organic Spintronics***

will feature talks on spin effects in organic semiconductors: injection and detection of spin, spin-diffusion and dynamics.

Tutorials of interest to GMAG members

The tutorials at the APS March Meeting are not directly organized by GMAG (although many GMAG members are involved as organizers and lecturers). There are several magnetism-related tutorials that will be of interest to the GMAG membership. **You must preregister for the tutorials**. Detailed information on all eight tutorials including the lecturers and topics covered can be found at http://www.aps.org/meetings/march/events/tutorials/index.cfm

Several tutorials are highlighted below, and run in parallel on Sunday, March 20, 8:30am – 12:30pm:

- Tutorial #1: ***Spintronics*** (organized by Arne Brataas and Gerrit Bauer)
- Tutorial #2: ***Complex Oxides*** (organized by Nicola Spaldin)
- Tutorial #3: ***Topological Insulators*** (organized by Xiao-Liang Qi)

Other GMAG News & Business

APS Endorses MMM Conference

APS has recently agreed to endorse the ***Conference on Magnetism and Magnetic Materials***.
APS endorsement of a conference does not entail any financial or legal obligation on the part of APS. The purpose of endorsement is to assist conferences with their publicity, especially to APS members. In order for APS endorsements to be of value, it is important that we restrict them to conferences of high quality and sufficient interest.

Background: When APS receives a request for an endorsement of a conference, they write to the Chair of the appropriate APS Unit for advice. If the Unit recommends endorsement, the request is forwarded to the APS Executive Officer, Kate Kirby, who makes the final decision. GMAG was happy to strongly recommend endorsement, as the MMM conference is well-known as a high quality conference of great interest to our membership.

Nominations for Prizes/Awards

APS prize descriptions and nomination deadlines appear at http://www.aps.org/praw/. Several prizes of interest to the GMAG membership and the corresponding deadline are noted below.

- **Oliver E. Buckley Condensed Matter Prize (July 1)**

To recognize and encourage outstanding theoretical or experimental contributions to condensed matter physics. The prize consists of $10,000 and a certificate citing the contributions made by the recipient or recipients.

- **Lars Onsager Prize (July 1)**

To recognize outstanding research in theoretical statistical physics including the quantum fluids. The prize consists of $10,000 as well as a certificate citing the contribution made by the recipient.

- **James C. McGroddy Prize for New Materials (July 1)**

To recognize and encourage outstanding achievement in the science and application of new materials. This shall include the discovery of new classes of materials, the observation of novel phenomena in known materials leading to both fundamentally new applications and scientific insights, and shall also include theoretical and experimental work contributing significantly to the understanding of such phenomena. The prize consists of $10,000 plus a certificate citing the contribution of the recipient and an allowance for travel to the meeting of the Society at which the award is presented.

- **Prize for a Faculty Member for Research in an Undergraduate Institution (July 1)**

To honor a physicist whose research in an undergraduate setting has achieved wide recognition and contributed significantly to physics and who has contributed substantially to the professional development of undergraduate physics students. The prize consists of a $5,000 stipend to the prize recipient and a separate $5,000 unrestricted grant for the research to the prize recipient's institution. An additional allowance will be provided for travel expenses to the APS meeting at which the prize ceremony will take place and a certificate citing the contributions by the recipient. The prize is presented annually.

Request for Magnetism Outreach Proposals

For several years GMAG has made funds available to its members to support outreach activities. Funds up to $2500 per project are available to cover supplies and expenses associated with activities, which aim to educate non-scientists about magnetism and its applications. Preference will be given to innovative activities that will be documented so that they can be reproduced elsewhere. The outcome of the activities are then disseminated to the GMAG membership through the GMAG Newsletter (for an example see the August 2008 GMAG Newsletter) and to the broader magnetism community through the GMAG website. Interested GMAG members should prepare a 1-2 page summary of the proposed activity (including expected duration and outcome) along with a 1 page CV and a list of anticipated expenses. These should be mailed as a single file in PDF format to the GMAG Chair, Berry Jonker (jonker@nrl.navy.mil). The GMAG Executive Board will review proposals on an ongoing basis.

Important Deadlines 2011

Date	Reason	Contact
June 1	APS Fellowship Nomination	http:www.aps.org/fellowship/
July 1	Oliver E. Buckley Condensed Matter Prize	http://www.aps.org/praw/
July 1	Lars Onsager Prize	http://www.aps.org/praw/
July 1	C. McGroddy Prize for New Materials	http://www.aps.org/praw/
July 1	Undergrad Inst. Faculty Research Prize	http://www.aps.org/praw/
Ongoing	Outreach Proposals	Berry Jonker jonker@nrl.navy.mil

Thanks for being involved with GMAG and please do not hesitate to get actively involved in the many activities described above.

The GMAG Executive Committee:

Chair: Berend Jonker (jonker@nrl.navy.mil)
Chair-Elect: Andrew Kent (andy.kent@nyu.edu)
Vice-Chair: Paul Crowell (crowell@physics.umn.edu)
Past Chair: Axel Hoffmann (hoffmann@anl.gov)
Secretary-Treasurer: Maria Varela (mvarela@ornl.gov)
Members-at-Large: Peter Fischer, John Freeland, Eric Fullerton, Olav Hellwig, Evgeny Tsymbal and Shufeng Zhang.

Encourage your colleagues to join GMAG

For only $8 additional dues APS members can become GMAG Members with the following benefits (students are free for their first year and then may remain in up to two units for free as long as they are an APS student member):

- GMAG newsletter by email.
- Eligibility for GMAG graduate student awards and sponsorship.
- Potential to increase the number of APS Fellows sponsored by GMAG.
- Potential to increase the number of invited talks on Magnetism at the March Meeting.
- Opportunity to help shape the voice and future of the Magnetism community (your community) in the US.

See the GMAG website: http://www.aps.org/units/gmag. TO JOIN: Go to the APS page for "Membership Units" (http://www.aps.org/membership/units/join-unit.cfm) and follow instructions for adding a unit to your membership. Or call the APS at 301-209-3280 and tell a Membership Rep that you want to join topical group GMAG.

GMAG-sponsored/cosponsored Focus Topics, 2011 March APS Meeting

6.14.1 ***Magnetic Nanostructures: Materials and Phenomena*** **(DMP/GMAG)**
This topic focuses on magnetic nanostructures such as thin films, multilayers, superlattices, nanoparticles, nanowires, nanorings, nanocomposites, core-shell structures, hybrid structures, magnetic point contacts and self-assembled as well as patterned magnetic arrays. The sessions will include methods used to synthesize such nanostructures, the variety of materials used, and the latest, original theoretical and experimental advances. There is a special interest in novel properties that arise at the nanoscale, as well as synthesis and characterization techniques demonstrating nano- or atomic-scale control of properties. Phenomena and properties of interest include: spin-dependent magneto-transport, magnetization dynamics, current and field induced magnetization reversal or domain wall propagation, exchange coupling, magnetic quantum confinement, proximity and structural disorder effects, strain effects, microwave resonance and microwave assisted reversal, magnetic anisotropy, inter-particle interactions and thermal and quantum fluctuations.

6.14.2 ***Bulk Properties of Complex Oxides*** **(DMP/GMAG)**
Transition metal oxides exhibit a wide range of novel phenomena, which originate from the complexity induced by competing interactions and nearly degenerate multiple ground states. Associated with this complexity is a tendency for new forms of orders such as the formation of stripes, ladders, checkerboards, or phase separation, and an enhanced response to external fields that gives rise to giant and colossal effects with potential for applications. This Focus Topic explores the nature of the various ground states observed in bulk specimens of complex oxides and their competing interactions, the ways in which the spin, lattice, charge and orbital degrees of freedom respond on a variety of length scales, and how they interact and compete with each other to produce novel phenomena. It provides a forum to discuss recent developments and results covering basic aspects (new materials synthesis, experiment, theory and simulation) of bulk systems, including 3-, 4-, and 5-*d* transition metal complex oxides. Note there is some overlap in topic with other DMP and GMAG focus sessions. Bulk oxides with interest predominantly for dielectric, ferroelectric or piezoelectric properties should be submitted to the session that focuses on those materials. The organizers of all of the related focus sessions will share information and will work together with the March Meeting Program Committee to create an optimal meeting program.

6.14.3 ***Magnetic Oxide Thin Films*** **(DMP/GMAG)**
Magnetism in complex oxide materials has long been a rich field of study in solid state physics as there are strong interactions between spin, charge, lattice, and orbital degrees of freedom at play in these materials. Furthermore, when magnetic oxide materials are grown as thin films they often exhibit additional effects resulting from epitaxial strain, reduced dimensionality, charge transfer, proximity effects, or phase competition and/or coupling across interfaces. This Focus Topic is dedicated to the investigation of advances in the understanding of electronic and magnetic properties of oxides thin films, heterostructures, superlattices, and nanostructures with an emphasis on growth, characterization, and theoretical modeling. Specific areas of interest include, but are not limited to ferromagnetic, antiferromagnetic, ferrimagnetic, and multiferroic materials. Topics to be discussed include growth of magnetic oxide materials, control of magnetic properties, domain structures, and dynamics with the growth process (i.e., epitaxial strain, interfaces, etc.), state-of-the-art techniques to probe and image different types of magnetic order in complex oxide thin films (including optical and electron-probes and neutron/synchrotron-based techniques), magneto-transport, and recent developments in theoretical property simulation and materials-design approaches to magnetic oxide thin films, superlattices, and nanostructures. Note there is some overlap in topic with other DMP and GMAG focus sessions. As a

rule of thumb, if the magnetism plays a key role in the investigation or the properties observed, then the talk is appropriate for this session. The organizers of all of the related focus sessions will share information and work together with the March Meeting Program Committee to make an optimal meeting program.

6.14.4 ***Spin Transport & Magnetization Dynamics in Metal Based Systems*** **(GMAG/DMP/FIAP)**
Spin-related effects in metals and in (ferromagnetic) heterostructures are generally robust and readily observed at room temperature. Fundamental discoveries such as the Giant and Tunnel Magnetoresistance and the current-induced spin-transfer torque have moved from discovery to applications in remarkably short times, and this whole field of research is rapidly expanding. This Focus Topic covers the new developments in this field, including experimental and theoretical aspects of spin transport and magnetization dynamics in metal-based systems, such as ultrathin films, lateral nanostructures, perpendicular nanopillars, and tunnel junctions. In particular, contributions describing new results in the following areas are solicited:

- The interplay between spin currents and magnetization dynamics in magnetic nanostructures; spin-transfer, spin pumping and related phenomena, including current-induced magnetization dynamics in heterostructures and domain wall motion in magnetic wires.
- Theoretical predictions and experimental discovery of half-metallic band structures, both in bulk solids and at the surfaces of thin films. Spin transport and magnetization dynamics in magnetic nanostructures (e.g. TMR, CPP-GMR and lateral spin valves) based on half-metallic materials.
- Effects of the spin-orbit interaction on steady-state and dynamical properties of nanostructures including: the (inverse) spin and anomalous Hall effects, microscopic mechanisms of magnetization damping, magnetic anisotropy manipulation by electric fields, and the effects of interface spin-orbit interaction.
- Ultrafast magnetization response to (and reversal by) intense laser pulses; magnetization dynamics at elevated temperatures and thermally assisted magnetization reversal.
- Thermoelectric spin phenomena such as giant-magneto thermopower and Peltier effects, spin-Seebeck effect, spin and anomalous Nernst and Ettingshausen effects (spin caloritronics).
- Magnetization dynamics in (composite) nanostructures including spin wave excitation, propagation, and detection (magnonics), as well as vortices.

6.14.5 ***Spin Dependent Phenomena in Semiconductors*** **(GMAG/DMP/FIAP)**
The field of spin-dependent phenomena in semiconductors is developing rapidly, with significant advances and challenges in a widening range of material systems (e.g., oxides, silicon, diamond, graphene and organics), in semiconductor nanostructures (e.g., self-assembled and lithographically defined quantum dots, quantum wires and carbon nanotubes), and in hybrid ferromagnetic/semiconductor device structures. This series of Focus Sessions solicits contributions aimed at understanding spin-dependent processes in magnetic and non-magnetic structures incorporating semiconducting materials. Topics include: (i) growth, characterization, electrical, optical and magnetic properties of (ferro-)magnetic semiconductors, nanocomposite and hybrid ferromagnet/semiconductor structures including quantum dots, nanocrystals, and nano wires; (ii) high temperature ferromagnetism in semiconductors and semiconductor oxides (iii) transport and dynamical effects in semiconductors with or without spin-orbit interactions; (iv) electrical and optical spin injection, spin Hall effects, spin interference, spin filtering, spin lifetime effects, spin dependent scattering, and spin torque; (v) manipulation, detection, and entanglement of electrical and nuclear spins in quantum systems such as dots, impurities and point defects; and (vi) spin-dependent devices and device proposals involving ferromagnets and semiconductors.

6.14.6 *Frustrated and Low Dimensional Magnetism* (GMAG/DMP)

There is a robust framework for describing the low temperature structures, phase transitions, and excitations of conventional three dimensional magnetic materials. However, when fluctuations are enhanced by low dimensionality or competing interactions, qualitatively new behavior can emerge. This is well established in one and two dimensions where controlled theory and experiment have uncovered phases lacking long-range magnetic order but exhibiting novel statistical and quantum phenomena. Such phenomena include valence bond solids and various forms of spin liquid and spin ice phases. This Focus Topic solicits abstracts for presentations that explore both theoretical and experimental aspects of the field. Topics of interest include: low dimensional quantum magnetism, geometrical frustration and associated effects of quantum spin liquid and spin ice, magnetism in zero dimensions (e.g. quantum dots, single molecule magnets), order by disorder, the role of magnetoelastic coupling, quantum critical low dimensional spin systems, topological excitations, quantum tunneling of magnetization and novel field-induced behavior. Also of interest are the effects of strongly fluctuating spins on properties beyond magnetism including transport, thermal transport and ferroelectricity.

6.14.7 *Spin Dependent Physics in Organic-based Materials* (GMAG/DMP)

This focus topic is on spin transport and exchange in organic and molecular solids including all-carbon systems, transition-metal with and without organic radical systems, as well as π-conjugated polymeric systems. Research at the intersection of several forefront areas in condensed matter and material physics are of interest: spin injection at the inorganic to organic interface, the degree of spin polarization attainable by organic based solids, understanding and demonstrating the low Z attributes to spin transport including hyperfine interaction between the electronic spin and nuclear magnetic moments, and novel forms of magnetic exchange that may be adapted to inorganic dilute magnetic semiconductors. Phenomena and materials of interest include hybrid ferromagnetic/organic structures, spin transport in graphene and carbon nanotubes, Kondo effect, spin qbits in diamond, quantum tunneling, triplet states and coherence in molecular nanomagnetics, organic magnetoresistance and magneto-electroluminescence, and all related topics.

6.14.8 *Novel Magnetic Devices* (DMP/GMAG)

This topic focuses on novel magnetic devices of all kinds, with a special interest in devices that make use of the spin torque effect. Of particular interest are spin torque switching of magnetic nanobits — which could be used in an advanced magnetoresistive random access memory (MRAM) — and spin torque nano-oscillators, both theoretically and experimentally. Other devices of interest include magnetic tunnel junctions, or spin valves with special properties that can enable advanced magnetic technologies such as thermal assisted MRAM, toggle MRAM, high density magnetic recording, or magnetic sensors for field detection and biological sensing. Less mature devices are also of interest, including semiconductor devices that make use of electron spin, magnetic semiconductors, negative resistance to achieve power gain, voltage control of the magnetization, and other novel mesoscopic structures. Also of interest are the results of novel metrology techniques that have been applied to examine the underlying physics of the above devices. Examples of interest include high frequency/ high speed electrical or optical measurements to examine magnetodynamics, and imaging techniques such as XMCD.

Upcoming Conferences (see http://aps.org/units/gmag/meetings/index.cfm)

Magnetics 2011
March 1-2, 2011

APS March Meeting 2011
March 21-25, 2011

Capri 2011 7th Capri Spring School on Transport in Nanostructures: Topological Insulators
April 10-17, 2011

8th International Conference on Computation in Electromagnetics
April 11-14, 2011

INTERMAG Conference
April 25-29, 2011

APS April Meeting 2011
April 30-May 3, 2011

12th International Conference on Muon Spin Rotation, Relaxation and Resonance
May 16-20, 2011

International Materials Research Congress (IMRC) 2011
August 14-18, 2011

Moscow International Symposium on Magnetism
August 21-25, 2011

Nanomaterials Symposia, European Materials Conference (EUROMAT 2011)
September 12-15, 2011

Soft Magnetic Materials 2011
September 18-22, 2011

56th Conference on Magnetism and Magnetic Materials
October 30-November 3, 2011

APS March Meeting 2012
February 27-March 2, 2012

APS April Meeting 2012
April 28-May 1, 2012