

Note From the Chair

*Greetings from GMAG! We have already begun planning the magnetism portion of the 2013 APS March Meeting, which will be held in Baltimore, Maryland, from March 18 – 22, 2013. This newsletter explains how you can be involved in planning this meeting, including suggesting invited speakers in focus topic sessions (there are eight magnetism related focus topics sessions planned) and symposium proposals (GMAG sponsors up to five symposia). Note that the deadline for these suggestions is **September 4, 2012**. We also encourage applications for Ph.D. student dissertation awards, March Meeting student travel awards, and potential outreach activities. GMAG decided at the 2012 March Meeting to provide additional funding for outreach initiated by its members. Further information and all the deadlines for these and other opportunities to assist GMAG are given in the following pages of this newsletter. We always welcome suggestions for new activities and programs you would like to see GMAG initiate. Please feel free to contact me or any member of the GMAG executive committee with your ideas. I encourage you to actively participate in planning the March Meeting and in GMAG's activities.*

–Paul Crowell, GMAG Chair
crowell@umn.edu

March Meeting Program

Mark Stiles (mark.stiles@nist.gov), the Chair-Elect of GMAG, is the Program Chair for the 2013 March Meeting in Baltimore, Maryland. He is coordinating the organization of both GMAG sponsored (or co-sponsored) Focus Topics and the GMAG invited symposia. Note that suggestions of invited speakers for focus topics and symposia are welcome before the deadline of **September 4, 2012**. The deadline for submission of meeting abstracts is **November 9, 2012**.

Focus Topics-Nominations for invited speakers

For the 2013 meeting, GMAG is co-sponsoring eight focus topics. Each focus topic consists of multiple sessions of contributed talks based on a common theme. Each session can also include one invited talk. Suggestions for invited speakers are welcome and should be sent by email to one of the organizers of the focus topic (see below) (~~see <http://www.aps.org/units/gmag/>~~) before September 4, 2012. Contributed talks relating to

a focus topic should be submitted under the focus topic sorting category (number given below). The GMAG focus topics (co-sponsoring units are shown in parentheses) for 2013 are listed below, and the detailed descriptions appear on the following pages.

- 10.1.1 Magnetic Nanostructures: Materials and Phenomena (DMP/GMAG)** – Organized by: Kristen Buchanan, Colorado State University (Kristen.Buchanan@colostate.edu) and Z. Q. Qiu, University of California at Berkeley (qiu@socrates.berkeley.edu)
- 10.1.2 Emergent Properties in Bulk Complex Oxides (DMP/GMAG)** – Organized by: Laurent Chapon, Rutherford Appleton Laboratory (chapon@ill.fr), Tsuyoshi Kimura, Osaka University (kimura@mp.es.osaka-u.ac.jp), and Jeff Lynn, National Institute of Standards and Technology (jeffrey.lynn@nist.gov)
- 10.1.3 Magnetic Oxide Thin Films and Heterostructures (DMP/GMAG)** – Organized by: Anand Bhattacharya, Argonne National Laboratory (anand@anl.gov), Chris Leighton, University of Minnesota (leighton@umn.edu), and Yayoi Takamura, University of California at Davis (ytakamura@ucdavis.edu)
- 10.1.4 Spin Transport & Magnetization Dynamics in Metal Based Systems (GMAG/DMP/FIAP) – Organized by: Jordan Katine, HGST (Jordan.Katine@hgst.com), Jonathan Sun, IBM Research (jonsun@us.ibm.com), and Joo-Von Kim, CNRS (joo-von.kim@u-psud.fr)**
- 10.1.5 Spin Dependent Phenomena in Semiconductors (GMAG/ DMP/FIAP)** – Organized by: Jean Heremans, Virginia Tech (heremans@vt.edu), Hideo Ohno, Tohoku University, (ohno@riec.tohoku.ac.jp), and Jairo Sinova, Texas A&M University (sinova@physics.tamu.edu)
- 10.1.6 Frustrated Magnetism (GMAG/ DMP)** – Organized by: Collin Broholm, Johns Hopkins University, (broholm@jhu.edu), Andreas Läuchli, Universität Innsbruck (andreas.lauechli@uibk.ac.at), and Ashvin Vishwanath, University of California at Berkeley (ashvinv@socrates.berkeley.edu)
- 10.1.7 Spin Dependent Physics in Carbon Based Materials (GMAG/ DMP)** – Organized by: Christoph Boehme, University of Utah (boehme@physics.utah.edu), Gernot Guntherodt, RWTH Aachen (gernot.guentherodt@physik.rwth-aachen.de), and Minn-Tsong Lin, National Taiwan University, (mtlin@phys.ntu.edu.tw)

10.1.8 Low-Dimensional and Molecular Magnetism (GMAG/DMP) – Organized by: Stephen Hill, Florida State University (shill@magnet.fsu.edu), Stefano Carretta, University of Parma (stefano.carretta@unipr.it), Sebastian Loth, Max-Planck Institute for Solid State Research (sebastian.loth@mpsd.cfel.de)

- Student's speaking ability
- Year the student began graduate school
- Student expected completion date (must be after September 1, 2012, but before September 1, 2013 to be eligible for the 2013 APS March Meeting);
- Assessment of the student's future potential as a research scientist

Nominations for GMAG Symposia

GMAG may sponsor up to five invited symposia at the March Meeting. GMAG members are encouraged to recommend topics for these symposia, each of which includes five speakers. Please send nominations to the GMAG program chair, Mark Stiles (mark.stiles@nist.gov) before **September 4, 2012**. A nomination should consist of a single file and should include: (1) Nominator's name and contact information; (2) Suggested title of the symposium; (3) A paragraph describing the theme of the symposium and its justification; (4) A list of 5 speakers with the following for each: (a) full contact information, (b) a tentative title, (c) a brief description and justification, including references where available; (5) names and contacts of one or two potential back-up speakers.

Submission of a complete nomination package is essential for the review process, which is competitive. Last year there were fourteen nominations for the five GMAG-symposia. The justification and breadth of interest of the symposium are important to a successful proposal.

Please note that APS rules do not allow speakers to give invited talks at consecutive March meetings, and there is a searchable index of invited talks at the 2012 meeting available at http://meeting.aps.org/Meeting/MAR12/APS_Invited.

Nominations for GMAG Officers and Members of the Executive Committee

Each year GMAG requests nominations for Vice-Chair (who succeeds to Chair-Elect, Chair, and Past Chair) and for two new at-large members of the Executive Committee. Nominations for these positions should be sent to Chris Hammel (hammel@mps.ohio-state.edu), chair of the GMAG Nominating Committee, before **September 30, 2012**.

Nomination for GMAG Student Dissertation Awards

In order to encourage students working in magnetism, every year GMAG sponsors Outstanding Dissertation in Magnetism Awards. GMAG will present up to three dissertation awards at the next APS March Meeting. These awards will recognize students who have conducted outstanding research leading to their dissertation and will 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. 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 will 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

Nominations should be sent by email as a single PDF file to Paul Crowell (crowell@umn.edu) by **October 10, 2012**. Evaluation of the nominations will be conducted by the GMAG Executive Committee.

The 2012 recipients of the GMAG Dissertation Award were

Wei Han, UC Riverside

Spin Injection and Relaxation in Graphene

and

Srikant Srinivasan, Purdue University

All Spin Logic -- Multimagnet Networks interacting via Spin Currents

Congratulations!

GMAG Student Travel Award

To increase student participation and involvement in activities essential to GMAG and APS as a whole, GMAG will sponsor four Student Travel Awards for the March Meeting. The award will consist 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 student must be a presenter at the March Meeting, and should submit an application, which can be downloaded from the GMAG website (<http://www.aps.org/units/gmag/>) after September 1, by email to Yves Idzerda (idzerda@physics.montana.edu) by **December 1, 2012**.

GMAG Focus Topic Descriptions and Organizers:

10.1.1 Magnetic Nanostructures: Materials and Phenomena (GMAG/DMP)

This topic focuses on magnetic nanostructures and the novel properties that arise in magnetic materials at the nanoscale. Magnetic nanostructures of interest include thin films, multilayers, superlattices, nanoparticles, nanowires, nanorings, nanocomposite materials, hybrid nanostructures, spin phenomena in nanoscale organics, magnetic point contacts and self-assembled as well as patterned magnetic arrays. Sessions will include talks on the methods used to synthesize such nanostructures, the variety of materials used, and the latest, original theoretical and experimental advances. Synthesis and characterization techniques that demonstrate nano- or atomic-scale control of properties will be featured. Phenomena and properties of interest include: magnetization dynamics, magnetic interactions, magnetic quantum confinement, spin tunneling and spin crossover, proximity and structural disorder effects, strain

effects, microwave resonance and microwave assisted reversal, magnetic anisotropy, and thermal and quantum fluctuations.

Organized by:

Kristen Buchanan, Kristen.Buchanan@colostate.edu
Colorado State University

Z. Q. Qiu, qiu@socrates.berkeley.edu
University of California at Berkeley)

10.1.2 Emergent Properties in Bulk Complex Oxides (GMAG/DMP)

The emergence of exotic states of matter from the intricate coupling of the electronic and lattice degrees of freedom is a unique feature in strongly correlated electron systems. Included in this class are the complex oxides of 3-, 4-, and 5-d transition metal compounds that exhibit a wide range of novel physical properties stemming from the complex nature of the competing interactions and nearly degenerate multiple ground states. Associated with this complexity is a tendency for new forms of order such as the formation of stripes, ladders, checkerboards, or phase separation, and an enhanced response to external influences. This Focus Topic explores the nature of various exotic 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. Note there is some overlap in topic with other DMP and GMAG sessions on oxides. The organizers of all of the related focus sessions will share information and work together to make an optimal meeting program.

Organized by:

Laurent Chapon, chapon@ill.fr
Rutherford Appleton Laboratory

Tsuyoshi Kimura, kimura@mp.es.osaka-u.ac.jp
Osaka University

Jeff Lynn, jeffrey.lynn@nist.gov
National Institute of Standards and Technology

10.1.3 Magnetic Oxide Thin Films and Heterostructures (GMAG/DMP)

Magnetism in complex oxides has long been a rich field of study in condensed matter physics due to the strong interactions between the spin, charge, lattice, and orbital degrees of freedom. When magnetic oxides are prepared in the form of thin films they can exhibit additional effects due to epitaxial strain, reduced dimensionality, interfacial charge transfer, electronic reconstruction, proximity effects, etc. These effects gen-

erate exciting new prospects both for discovery of fundamental physics and development of technological applications. This Focus Topic is dedicated to developments in the understanding of the electronic and magnetic properties of oxide thin films, heterostructures, superlattices, and nanostructures, with an emphasis on synthesis, characterization, theoretical modeling, and novel device physics. Specific areas of interest include, but are not limited to, growth of oxide materials, control of their magnetic properties and ordering, magnetotransport, strongly correlated or “Mott” systems, strong spin-orbit coupling effects, and recent developments in theoretical prediction and materials-design approaches. Advances in techniques to probe and image magnetic order in complex oxide thin films (including optical and electron-probes, and neutron/synchrotron-based techniques) are also emphasized. Note that overlap exists with other DMP and GMAG focus sessions. As a rule of thumb, if magnetism plays a key role in the investigation or the properties observed, then the talk is appropriate for this focus topic. The organizers of all of the related focus sessions will share information and work together with the March Meeting Program Committee to ensure an optimal meeting program.

Organized by:

Anand Bhattacharya, anand@anl.gov
Argonne National Laboratory

Chris Leighton, leighton@umn.edu
University of Minnesota

Yayoi Takamura, ytakamura@ucdavis.edu
University of California Davis

10.1.4 Spin Transport and Magnetization Dynamics in Metals-Based Systems (GMAG/DMP/FIAP)

Spin-related effects in metals and in ferromagnetic heterostructures are generally robust and observable at room temperature. Discoveries such as giant and tunnel magnetoresistance and spin-transfer torque are moving from discovery to applications rapidly. Fundamental spin-dependent transport physics, novel materials and thin film structures are being actively explored in metallic multilayer-based junctions and magnetic tunnel junctions for deeper understanding and potentially new functional materials and devices. This Focus Topic aims to capture new developments in these areas, including experimental and theoretical aspects of spin transport and magnetization dynamics in mostly 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: (i) 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; (ii) Theoretical predictions and/or 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 valve structures) based on half-metallic materials; (iii) Effects of spin-orbit interaction on steady-state and dynamic properties of nanostructures including: the (inverse) spin-Hall and anomalous-Hall effects, microscopic mechanisms of magnetization damping, the effects of interface spin-orbit interaction, and spin-orbit interaction as a means for spin-current generation; (iv) Electric field control of magnetic properties (e.g. anisotropy, phase transition, exchange bias,...), including but not limited to: hybrid metals/oxide structures, piezoelectric layer coupled to ferromagnetic films, electrolyte/ferromagnetic systems; (v) Ultrafast magnetization response to (and reversal by) intense laser pulses; magnetization dynamics at elevated temperatures and thermally assisted magnetization reversal; (vi) Thermoelectric spin phenomena such as giant-magneto thermopower and Peltier effects, spin-Seebeck effect, spin and anomalous Nernst and Ettingshausen effects (spin caloritronics); (vii) Thermal gradient and/or RF driven magnonic magnetization dynamics in nanostructures including spin wave excitation, propagation, and detection. Interactions between electronic spin-current and magnon propagations in thin film and device structures; (viii) General considerations of spin-angular momentum current flow, energy flow, and entropy flow, conservation laws and Onsager-reciprocal relationships.

Organized by:

Jordan Katine, Jordan.Katine@hgst.com
HGST

Joo-Von Kim, joo-von.kim@u-psud.fr
CNRS

Jonathan Sun, jonsun@us.ibm.com
IBM

10.1.5 Spin Dependent Phenomena in Semiconductors (GMAG/DMP/FIAP)

The field of spin dependent phenomena in semiconductors shows rapid advances as well as challenges in a widening range of new effects and materials systems (e.g. heterostructures, III-Vs, Si and Ge, diamond, graphene and organics), and new structures (e.g. semiconductor quantum structures and nanostructures, wires and carbon nanotubes, hybrid ferromagnetic/semiconductor structures). This focus topic solicits contributions aimed at understanding spin dependent processes in magnetic and non-magnetic structures incorporating semiconducting materials. Topics include: (i) electrical and optical spin injection, spin Hall effects, spin dependent topological effects, spin interference, spin filtering, spin lifetime effects, spin dependent scattering, and spin torque; (ii) growth, characterization, electrical, optical and magnetic properties of (ferro-)magnetic semiconductors, nanocomposites, and hybrid ferromagnet/semiconductor structures, including quantum dots, nanocrystals, and nanowires; (iii) spin dependent transport, spin dependent thermal effects, and dynamical effects in semiconductors with or without spin-orbit interactions; (iv) manipu-

lation, detection, and entanglement of electronic and nuclear spins in quantum systems such as dots, impurities and point defects; (v) ferromagnetism in semiconductors and semiconductor oxides; and (vi) spin dependent devices and device proposals involving ferromagnets and semiconductors.

Organized by:

Jean Heremans, heremans@vt.edu
Virginia Tech

Hideo Ohno, ohno@riec.tohoku.ac.jp
Tohoku University

Jairo Sinova, sinova@physics.tamu.edu
Texas A&M University

10.1.6 Frustrated magnetism (GMAG/DMP)

Simple antiferromagnets on bipartite lattices have well-understood ground states, elementary excitations, thermodynamic phases and phase transitions. At the forefront of current research are frustrated magnets where competing interactions suppress magnetic order and may lead to qualitatively new behavior.

Frustrated magnets may realize novel quantum-disordered ground states with fractionalized excitations akin to those found in one-dimensional antiferromagnets, but with a number of novel features. They are also sensitive to nominally small perturbations and interact in a non-trivial way with orbital and lattice degrees of freedom. This Focus Topic solicits abstracts for presentations that explore both theoretical and experimental aspects of the field. The themes to be represented are united by geometrical frustration: valence-bond solids and other exotic orders, spin ice, quantum spin liquids, order from disorder, magnetoelastic coupling, 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.

Organized by:

Collin Broholm, broholm@jhu.edu
Johns Hopkins University

Andreas Läuchli, andreas.laeuchli@uibk.ac.at
Universität Innsbruck

Ashvin Vishwanath, ashvinv@socrates.berkeley.edu
University of California at Berkeley

10.1.7 Spin-Dependent Physics in Carbon-Based Materials (GMAG/DMP)

This focus topic is on spin transport, spin dynamics and exchange phenomena in carbon-based materials, such as carbon nanotubes, graphene, diamond as well as organic and molecu-

lar solids, organic radical systems, and π -conjugated organic/polymeric systems. These issues are of great current interest because of advances in spin relaxation times in graphene and breakthrough results in the field of ‘organic spintronics’, a new research area focused not only on the traditional topics of spintronics such as spin-polarization and spin-orbit effects but more importantly on spin-selection rules and spin-permutation symmetry effects. Research at the intersection of several forefront areas in condensed-matter and material physics will be covered: spin injection at the metallic ferromagnet to graphene and inorganic to organic interface, the degree of spin polarization attainable by organic based solids, spin coherence and relaxation related to extrinsic spin-orbit coupling effects, hyperfine interaction between the electronic spin and nuclear magnetic moments, as well as magnetic exchange, magnetic ordering and correlation effects. Phenomena, materials of interest and the application for advanced devices include hybrid ferromagnetic/organic structures, spin transport in graphene and carbon nanotubes, spin qubits in diamond, quantum tunneling of the magnetic moment, magnetic field effects (e.g., organic magnetoresistance), singlet/triplet issues, spin resonance in organic semiconductors, organic spin valves and spin-polarized organic light emitting diodes.

Organized by:

Christoph Boehme, boehme@physics.utah.edu
University of Utah

Gernot Guntherodt, gernot.guntherodt@physik.rwth-aachen.de
Aachen University

Minn-Tsong Lin, mtlin@phys.ntu.edu.tw
National Taiwan University

10.1.8 Low-Dimensional and Molecular Magnetism (GMAG/DMP)

The control and manipulation of spin and charge degrees of freedom in nanoscale systems has become a major challenge during the last decades, triggered by exciting applications in emerging technologies such as quantum computation and spintronics among others. For this goal to be accomplished, a complete understanding of the quantum behavior of interacting electronic and even nuclear spins in solid state systems is necessary. For conventional three-dimensional magnetic materials a robust framework for describing the low temperature structures, phase transitions, and excitations exists. However, when fluctuations are enhanced by low dimensionality, qualitatively new behavior can emerge. Low dimensional magnetic systems have become prototype systems in this direction. For example, the synthetic flexibility of molecule-based magnets allows the magnetic quantum response of the system to be engineered. This Focus Topic solicits abstracts that explore inorganic and organic molecule-based as well as solid state systems, and both theoretical and experimental aspects of the field. Topics of interest include: magnetism in zero, one, and two dimensions (e.g. quantum dots, single molecule magnets, spin chains, lat-

tices), order by disorder, the role of magnetoelastic, spin-orbit and exchange couplings, quantum critical low dimensional spin systems, topological excitations, quantum tunneling of magnetization, coherence phenomena and novel field-induced behavior.

Organized by:

Stephen Hill, shill@magnet.fsu.edu
Florida State University

Stefano Carretta, stefano.carretta@unipr.it
University of Parma

Sebastian Loth, sebastian.loth@mpsd.cfel.de
Max-Planck Institute for Solid State Research

Request for Magnetism Outreach Proposals

For several years GMAG has made funds available to its members to support outreach activities. Funds (up to \$5000 per project, although larger proposals may be considered) 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 will be disseminated to the GMAG membership through the 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, Paul Crowell (crowell@umn.edu). The GMAG Executive Board will review proposals on an ongoing basis.

Ask your Colleagues to Join GMAG

For only \$8 additional dues APS members can become GMAG Members with these benefits (students are free for one year):

- Quarterly GMAG newsletter.
- 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 Representative that you want to join topical group GMAG.

Important Deadlines

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

September 4, 2012

Symposia Nominations for March Meeting

Mark Stiles, Mark.Stiles@nist.gov

September 4, 2012

Invited speaker suggestions for focus topics

Focus Topic Organizers

September 30, 2012

Officer and Executive Committee nominations

Chris Hammel, hammel@mps.ohio-state.edu

October 10, 2012

Dissertation Award Nomination

Paul Crowell, crowell@umn.edu

The GMAG Executive Committee:

Chair: Paul Crowell (crowell@physics.umn.edu)

Chair-Elect: Mark Stiles (mark.stiles@nist.gov)

Vice-Chair: Yves Idzerda (idzerda@physics.montana.edu)

Past Chair: Andrew Kent (andy.kent@nyu.edu)

Secretary-Treasurer: Shireen Adenwalla (sadenwalla1@unlnotes.unl.edu)

Members-at-Large:

Olav Hellwig, HGST, a Western Digital Company

Shufeng Zhang, Univ of Arizona

Kristen Buchanan, Colorado State Univ.

Olle Heinonen, Argonne Natl Lab

P. Chris Hammel, Ohio State University

Yumi Ijiri, Oberlin College

November 9, 2012

March Meeting Abstracts

December 1, 2012

March Meeting Student Travel Grants

Yves Idzerda, idzerda@physics.montana.edu

ongoing

Outreach Proposals

Paul Crowell, crowell@umn.edu

Upcoming Conferences

[The 12th Joint MMM/Intermag Conference](#)

January 14-18, 2013

Chicago IL

[APS March Meeting 2013](#)

March 18-22, 2013

Baltimore, MD

[58th Conference on Magnetism and Magnetic Materials](#)

November 4-8, 2013

Denver, CO

APS March Meeting 2014

March 3-7, 2014

Denver, CO

2014 Intermag Conference

May 4-8, 2014

Dresden, Germany

59th Conference on Magnetism and Magnetic Materials

November 3-7, 2014

Honolulu, HI

Send inquiries about APS endorsement of magnetism-related meetings to Paul Crowell (crowell@umn.edu).

