

Newsletter of the APS Shock Compression of Condensed Matter Topical Group

Welcome to the fourth issue of the American Physical Society Shock Compression of Condensed Matter Topical Group Newsletter. This quarterly newsletter includes conference announcements, job advertisements, profiles of award winners, obituaries, and articles on the history of the field from the membership. Issues have revolving Lead Editor, with current issue has been compiled by Gerrit Sutherland. Kevin Vandersall will serve as the Lead Editor for the September issue, please email comments and contributions at vandersall1@lnl.gov.

Note from Chairman

The annual business meeting of the GSCCM was held on Mar. 11, 2008 at the New Orleans APS meeting. Tracy Vogler presented a financial report the election results, and updates on the 2009 conference to be held in Nashville.

It was decided that it would be desirable to have more student representation on GSCCM, and to that end, we want to try to add a nonvoting student to the executive committee. The student would liaise with the Forum on Graduate Student Affairs, attend the Feb. Unit Convocation at APS and help increase student involvement in GSCCM by voicing student concerns and help possibly establish new student-oriented awards.

If you are a student or if you have a student interested in this position, please contact Prof. Dana Dlott (dlott@scs.uiuc.edu) as soon as possible.

Dana D. Dlott
[Dlott@scs.uiuc.edu](mailto:dlott@scs.uiuc.edu)

Treasurer's Report

We ended 2007 with an account balance of \$68,833.91, down \$53,592.04 from where we began the year. Notable items include \$7,800 in membership money from APS and earnings on the account, a net loss of \$13,761 for the 2007 shock conference, and a \$42,550 expense for 31 travel grants for students attending the

2007 shock conference. This puts us at a level near the historical average for the group. While Hawaii was a lot of fun, it wasn't cheap for the group and we're looking for the 2009 conference to be more affordable for the group.

Tracy Vogler
Secretary-Treasurer APS GSCCM
tjvogle@sandia.gov

George Duval Award

Nominations are now being solicited for the APS George E. Duval Shock Compression Science Award. Information regarding the award, nominations and deadlines can be found at: <http://www.aps.org/programs/honors/awards/shock.cfm>

The deadline for submission of nominations for the 2009 award is: JULY 1, 2008

Purpose:

To recognize contributions to understanding condensed matter and non-linear physics through shock compression.

Nature:

This award is to be presented biennially in odd-numbered years and consists of a cash award of \$5,000, a plaque citing the accomplishments of the recipient, and an allowance for travel to the meeting at which it is to be presented.

Rules & Eligibility:

All members of the scientific community are eligible for nomination. A single award will normally be given to no more than one individual and will be presented at the biennial Topical Group Conference. Nominations are active for three consecutive reviews.

Guidelines for Nominations:

Anyone (not a member of the committee making the selection) may submit one nomination or seconding letter for each prize or award in any given year. A nomination should include:

A letter of not more than 1,000 words evaluating the nominee's qualifications in the light of the particular

features of the prize or award and identifying the specific work to be recognized. THERE IS NO NOMINATION FORM for prizes and awards, so this letter is considered the nomination "application".

- A biographical sketch (optional)
- A list of the most important publications.
- At least two, but no more than four, seconding letters and up to five reprints or preprints.

Five copies of the complete nomination package should be mailed to the chair of the selection committee.

After a nomination has expired (three consecutive review cycles without being selected for most prizes and awards), a completely new and updated nomination package must be submitted for the nominee to continue to be considered.

More information on nomination guidelines can be found at

<http://www.aps.org/programs/honors/nomination.cfm>

Again, the deadline for submission of nominations for the 2009 Prize is: JULY 1, 2008.

Five (5) copies of nominations and supporting documentation should be sent to the Chair of the 2009 Selection Committee:

Ramon Ravelo
University of Texas
Department of Physics
El Paso, TX 79968
Phone (915) 747-5620
Fax (915) 747-5447
Email ravelo@psci.utep.edu

Index of Topical Conference Proceedings

At the topical group's business meeting in Hawaii, a suggestion came from Gerrit Sutherland (NSWC-IH) that the group develop a database and index of all the papers from the shock conference proceedings over the years so that the information would be more readily available to researchers in the field. Bill Proud (Cambridge) informed the meeting that such a database already existed through the efforts of Stephen Walley and others at the Cavendish Laboratory at Cambridge. They have graciously agreed to share that database with the group. It has been posted to the group's website (www.shockphysics.org) and can be downloaded in

Endnote or Excel formats. Thanks to Stephen and the Cavendish Laboratory!

As it currently exists, the database does not include keywords that would allow you to search for all work on a topic such as lithium fluoride, for example. Therefore, I would like to ask for volunteers from the group to add that information to the data base. Rather than give one individual or organization the task of tackling the whole database (unless someone really wants to do that), I suggest we break the 13 (14 once the 2007 volume is published) volumes into 3-6 chunks that are more manageable. If you or your organization would be able to help with this, please let me know.

Tracy Vogler
Secretary-Treasurer APS GSCCM
tjvogle@sandia.gov

Obituary

It is with sadness that we announce the death of Professor Anatoly Dremine on January 12th, 2008. His work resulted in significant contributions in the understanding of detonation of explosives and the development of techniques for production of super hard materials. A full obituary appears in Propellants, Explosives, Pyrotechnics 33, No. 2 (2008).

New Equation of State Resource

Gerald Kerley has created a new web site on equation of state theory and modeling, along with various applications. It includes tutorials, publications, and a weblog. If you are interested, you can find it at <http://www.kerleytechnical.com>

Conferences to Come

June 2008

Society For Experimental Mechanics (SEM) 11th International Congress & Exposition on Experimental and Applied Mechanics –

Sessions on Shock and High Pressure Response of Materials -Rosen Plaza Hotel, Orlando, FL June 2-5, 2008 Organizers: Eric N. Brown, (LANL), en_brown@lanl.gov and Tracy J. Vogler (SNL), tjvogle@sandia.gov
http://sem.org/PDF/08s_CFP_web.pdf

Gordon Research Conference on Energetic Materials - TILTON, New Hampshire (USA) – June 15-20, 2008 www.grc.org

August 2008

International Congress on Theoretical and Applied Mechanics Adelaide (Australia) – August 24-30, 2008
<http://ictam2008.adelaide.edu.au/>

September 2008

Dynamic Fracture and Damage of Brittle and Ductile Materials and its Industrial Applications – September 3-5, 2008 Poznan, Poland www.ikb.poznan.pl/workshop2008

DYMAT 18th Technical Meeting – The Behaviour of Bulk Nanomaterials and Metallic Glasses under Dynamic Loading, Bourges, France September 10-12. www.dymat.org

October 2008

Aeroballistic Range Association Annual Conference – Capetown South Africa October 6-10, 2008 – Forum for originations performing work in shock physics and ballistics to discuss results and experimental techniques.
www.aeroballistics.org

November 2008

The 28th International Congress on High-Speed Imaging and Photonics hosted by the School of Aerospace, Civil and Mechanical Engineering, University of New South Wales / Australian Defence

Force Academy, Canberra, Australia - November 9-14, 2008. <http://ichsip28.unsw.adfa.edu.au/>

January 2009

International Symposium on Plasticity and Current Applications – Plasticity 2009, Jan 3-8, 2009 -St. Thomas, U.S. Virgin Islands. Program includes a special session on *Damage Modelling: Effects of Temperature, Pressure, Strain Rate and Geometry*.
<http://www.internationalplasticity.com/>

June/July 2009

2009 Topical Conference

Messages from Chairman

Looking for thoughts and suggestions: The 2009 APS Topical Conference on Shock Compression of Condensed Matter will be held June 28 - July 3, 2009 at the Gaylord Opryland Hotel in Nashville, Tennessee. The Conference Organizers would like your thoughts and suggestions regarding the conference in any of the following areas (or any other aspects of the meeting, for that matter): Plenary speakers, invited speakers, focus sessions, town meetings, paper assignment processes, educational outreach efforts, student participation, entertainment, and audio-visual logistics. Also please let us know if you are interested in participating in planning the Conference. Please contact: William Anderson (LANL; wvanderson@lanl.gov; US 505-667-5460), Michael Furnish (SNL; mdfurni@sandia.gov; US 505-844-2877), or William Proud (Cambridge; wgp1000@cam.ac.uk; UK 44-1223-33725).

General Information

.SCCM 2009 June 29th - July 3rd 2009 - Nashville **The City** - Music City, USA. Settled on Christmas Day, 1779. Capitol of the State of Tennessee. Population (2004) City - 595,805, MSA: 1,541,659 Elevation Lowest: 550 ft (168 m) Highest: 1100 ft (336 m) Central Time Zone. Served by 16 Airlines. **The Sights** - Outdoor 107 City and County Parks, 7 Municipal golf courses, 9 Greenways, 11 State Parks and 3 National Park Service units within 1 hour. Entertainment, Live music (country, jazz, classical, etc.), Live Theatre, Nashville Zoo.

History and Culture - Art Galleries, (Frist Center for the Visual Arts), The Parthenon, Cheekwood Botanical Gardens, The Hermitage (Home of Andrew Jackson), Fort Negley, Stones River National Battlefield. **The Venue - Gaylord Opryland Hotel** - Largest non-gaming hotel property in the United States. Completely enclosed and climate-controlled complex includes 9 acres of gardens. 10 Restaurants and bars. Two outdoor and one indoor swimming pools. Next to Opry Mills, a 1.2 million sq. ft. entertainment and shopping complex. **Co-Chairs** Mike Furnish (Sandia National Laboratory), Bill Anderson (Los Alamos National Laboratory), Bill Proud (Cavendish Laboratory, Cambridge).

September 2009

DYMAT Conference 7-11 September 2009.

DYMAT is an international association for the promotion of research into the dynamic behaviour of materials and its applications. Every three years, an international conference is organized by DYMAT. The last conference took place in Dijon, France (2006). The next international DYMAT conference will take place in Brussels, Belgium. (7-11 September 2009). It is organized at the Belgian Royal Military Academy celebrating its 175 th anniversary in 2009.

For all information regarding the 9th international DYMAT conference on the mechanical and physical behaviour of materials under dynamic loading, please visit <http://www.dymat2009.org> <<http://www.dymat2009.org/>>.

Abstracts for this conference are due by 31 October 2008.

Recent Publications

Ceramic Armour: Design and Defeat Mechanisms, P.J. Hazell, publ. December 2006, Argos Press, Canberra, Australia ISBN 1921138017

Proc. Int. Symp. on Explosion, Shock Waves and Hypervelocity Phenomena. ed. S.I. Itoh, K. Hokamoto, publ. Trans Tech Publications, Zurich, Switzerland (Materials Science Forum, vol. 566, 2008) ISSN 0255-5476

Advances in Ceramic Armor III, ed. L. Franks, ISBN 978-0-470-19536-6 Publ. American Ceramic

Society, December 2007 (Ceram. Engng Sci. Proc., vol. 28, issue 5).

A special thanks to Steven Walley for suggesting recent book selections!

Career Opportunities

University of Florida Research & Engineering Education Facility (UF-REEF)
Florida Institute for Research in Energetics
1350 N. Poquito Road Shalimar, FL 32579

Applications and nominations are invited for Post-Doctoral Research Associates at the Florida Institute for Research in Energetics (FIRE). Candidates must hold a doctorate in an appropriate science, engineering or related discipline, have an excellent research record, and possess strong interpersonal skills. As part of FIRE, Associates will join a research team comprised of scientists and engineers from Eglin Air Force Base and top universities. Researchers will collaborate on topics related to novel and advanced energetics projects in support of the Air Force Research Laboratory, Munitions Directorate and have access to world-class and unique facilities for energetics research. The University of Florida, Georgia Institute of Technology, Purdue University and the University of Illinois at Urbana-Champaign are participating universities. In most cases, positions will be located at Eglin Air Force Base, Florida, or at UF-REEF, Shalimar, Florida. Some positions may carry appointments located at one of the other participating academic institutions. Post-Doctoral research fellowships may be available for qualified candidates. FIRE researchers will also be able to participate in and/or contribute to sponsored workshops and advanced course offerings in energetics.

Candidates are being sought that can contribute to the following areas:

1. Bench top energetics, including high intensity pulsed laser optics, high-vacuum technologies, high resolution time-of-flight mass spectrometry, and/or laser spectroscopy.
2. Modeling chemical ignition of energetic materials, knowledge of and experience with modeling and simulation methods and codes for solid explosives, knowledge of material behavior under high rates of loading, and/or

- knowledge of and experience with statistical and stochastic mathematical methods.
3. Micro- and nano-scale characterization and design of structural nano-energetic materials for strength and energy release, detonation physics, particle technology, and modeling and simulation.
 4. Energetic core-shell nanoparticles, including physical vapor deposition, cluster-beam deposition, buffer-gas condensation, supersonic expansion in vacuum, laser vaporization, optical/infrared spectroscopy, mass-spectrometry, temperature programmed desorption, and/or UHV surface science techniques.
 5. Modeling multiphase reactive flows, knowledge of and experience with CFD and combustion kinetics, and/or knowledge of averaging or statistical sampling methods to generate continuum scale properties.

Applications that include a cover letter referencing position number TBD, a curriculum vitae, and contact information of at least three professional references should be submitted to: jlusk@reef.ufl.edu. The search committee will begin reviewing applications on March 15, 2008, and will continue to accept applications until the positions are filled.

APS SCCM Newsletter Editorial Staff

John P. Borg, Marquette University,
john.borg@marquette.edu

Eric Brown, Los Alamos National Laboratory,
en_brown@lanl.gov

Jennifer L. Jordan, Air Force Research Laboratory,
jennifer.jordan@eglin.af.mi

William Proud, University of Cambridge,
wgp1000@phy.cam.ac.uk

Gerrit Sutherland, May Edition Editor, NSWC –
Indian Head, gerrit.sutherland@navy.mil

Kevin Vandersall, September Edition Editor,
Lawrence Livermore National Laboratory,
vandersall1@llnl.gov

Tracy Vogler, APS-SCCM Secretary, Sandia
National Laboratory, tjvogle@sandia.gov

Thanks to all who contributed to this Newsletter.
Please send any information for the next newsletter to
Kevin Vandersall at vandersall11@llnl.gov.

Gerrit Sutherland
Edition Editor