

# **Newsletter of the APS Shock Compression of Condensed Matter Topical Group**

**Welcome** to the first issue of the American Physical Society Shock Compression of Condensed Matter Topical Group Newsletter. This quarterly newsletter is intended to update the topical group membership of things going on within the group as well as other things that might be of interest. As you will see we are including conference announcements, job advertisements, profiles of award winners, obituaries, and articles on the history of the field from the membership. The newsletter is being headed up by Tracy Vogler (Sandia National Laboratory) who is the current Secretary-Treasurer in conjunction with Eric Brown (Los Alamos National Laboratory), John Borg (Marquette), Jennifer Jordan (Eglin AFB), Bill Proud (Cambridge), Gerrit Sutherland (NSWC-IH), and Kevin Vandersall (Lawrence Livermore National Laboratory). Issues will have revolving Lead Editor, with current issue has been compiled by Eric Brown. Jennifer Jordan will serve as the Lead Editor for the May issue, please email her you comments and contributions at [jennifer.jordan@eglin.af.mil](mailto:jennifer.jordan@eglin.af.mil).

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## **“Note from the Chair”**

Aloha from Los Alamos! 2007 is shaping up to be a fine year for our Topical Group, with the March meeting around the corner and our APS Conference soon to follow. First, let me congratulate and thank the following folks, for their recent selections as officers of the topical group and their willingness to serve:

Vice Chair: Marcus Knudson, Sandia National Laboratory  
Secretary/Treasurer: Tracy J. Vogler, Sandia National Laboratory

Executive Committee Members at Large:

Zbigniew Dreger, Washington State University  
Joel Carney, NSWC, Indian Head

In addition, I would like to give a big thank you to Mike Boteler, the 2006 Chair, and Ricky Chau, the secretary/treasurer over the past several years. Mike and Ricky's behind the scenes efforts have helped keep this topical group strong and we all owe them a debt of gratitude! Thank you gentlemen!

I would like to pass along some information regarding rumors that many of you may have heard regarding

Department of Energy, Defense Programs (DOE DP) participation at this years meeting in Hawaii. Holding our conference in Hawaii provides us an opportunity to discuss our scientific endeavors in a wonderful venue, but with that comes increased scrutiny and sensitivity by many of our sponsors. This said, for those of us that work for DOE, we have been given guidance that we should be sensitive to this issue and a request has been made that we restrict our attendance by those funded out of DOE DP to approximately 100 individuals. (The topical group leadership has worked out the site splits based primarily on historical participation.) We do, however, have the flexibility of folks traveling on non-DP funded projects, but we expect that the overall attendance from the DOE funded laboratories will be down from the Baltimore meeting. This has caused the topical group leadership some concern, but we believe that the total number of participants may only be down slightly, since the Pacific Rim participation should pick up with the chosen venue. In any event, the conference program is exciting and I am looking forward to this years meeting.

We will soon be sending out the agenda for the business meeting in Hawaii. This year, we would like to discuss the addition of permanent responsibilities to the various officer's assignments. As an example, we would like the Vice-chair to head up a committee for the annual APS March meeting, to ensure that we have strong participation at this important APS event.

Finally, the 2009 Topical Group Conference Venue and dates have been set. Bill Anderson, Bill Proud, and Mike Furnish will host the Shock Compression of Condensed Matter - 2009 (the 16th Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter), at the Gaylord Opryland Resort, Nashville, Tennessee, June 28 - July 3, 2009.

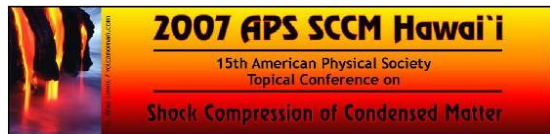
Aloha, and see you in Hawaii!

Dave

David J. Funk, 2007 Topical Group Chair

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## Hawaii Conference



**ALOHA FROM HAWAII!**  
**MARK YOUR CALENDARS FOR JUNE 24-29,**  
**2007!**

**REGISTER ONLINE AT:**  
**<http://www.apshawaii07.com>**  
**Early Registration Deadline March 24th**

**Make your HOTEL reservations NOW! (Space is limited for special conference rates!)**

APS 2007 American Physics Society 15th APS Topical Conference on Shock Compression of Condensed Material

Plenary Speaker: *Kazuyoshi Takayama from Tohoku University*

Shockwave Award Winner: *Dennis Grady*

Fairmont Orchid Hotel, Waikoloa, Hawai'i

**ENROLLMENT LIMITED! REGISTER NOW AT:**  
**<http://www.apshawaii07.com/fieldtrips.html>**

5 extraordinary field trips! Snorkeling In Kealakekua Bay, Hawai'i Volcanoes National Park Tours, Historical Kailua-Kona Self-Guided Tour, Mauna Kea Summit & Stargazing Adventures, and Historic Hawi, Kapa'au, & Waimea Tour



## New Officers

Chair: David J. Funk, Los Alamos National Laboratory  
Chair-Elect: Dana Dlott, University of Illinois, Urbana-Champaign  
Vice Chair: Ricky Chau Lawrence Livermore National Laboratory  
Secretary-Treasurer: Tracy J. Vogler, Sandia National Laboratory

## APS March Meeting

*By David J. Funk, LANL*

Each year, the topical group is asked to participate in the March Meeting of the APS. Historically, we have had difficulty with significant numbers of participants in the years that the Topical Group Shock Conference occurs. To alleviate this problem, I would like to setup a committee, populated on a rotating basis, with members of the topical group that will help us promote and maintain a presence at the March meeting, with a push for a dedicated session on shock phenomena. This year, our professional interests have been captured in the focus session being run by Lars Sixtrude and Russ Hemley (see below).

I propose that we discuss this issue at the business meeting in Hawaii. In the meantime, I am looking for volunteers for the March '08 meeting. If you are willing to help out or could recommend some one, please drop me a line: [djf@lanl.gov](mailto:djf@lanl.gov).

## Focus Topic description for APS 2007 March Meeting:

### ***Earth and Planetary Materials***

This focus topic on Earth and Planetary Materials will highlight new experimental, computational, and theoretical approaches for understanding a variety of naturally occurring materials, from the core to the surface of solar and extra-solar planets. The main interest lies in the exploration of ices, fluids, minerals, and liquids and related complex and/or imperfect materials over the wide range of relevant thermodynamics conditions. Recent advances in theoretical and experimental techniques have led to breakthroughs in our understanding of the physical and chemical properties of Earth and planetary materials that were deemed inconceivable only a few years ago. For example, progress in laser-based spectroscopy, the second- and third-generation synchrotron sources, static and dynamic compression techniques, and advanced theoretical methods combined with rapidly increasing computer power has fundamentally altered how we investigate these materials and their interaction with the environment. This focus topic also encompasses advances in shock-wave techniques, diagnostics, and computation on all classes of materials. Of particular importance is

that we now have in situ methods capable of determining the properties and behavior of materials under conditions ranging from the pressures and temperature of giant planetary interiors to ambient conditions. The goal of these sessions will be to explore the science and the technological advances that inspire research in this area.

#### **Organizers**

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#### **News on Group Members**

##### **2006 APS Fellows named in the topical group**

##### **George T. "Rusty" Gray III (Los Alamos National Laboratory)**

Gray was selected for "important contributions to the understanding of defect generation and storage in materials subjected to shock loading and for advancing the state-of-the-art of shock recovery techniques to benefit shock physics." Gray earned his bachelor's and master's degrees in metallurgical engineering from South Dakota School of Mines and Technology and his doctorate in metallurgical engineering from Carnegie Mellon University. He received the Los Alamos National Laboratory Fellow's Prize for Research in 1996 and was appointed a Laboratory Fellow in 2002.

##### **Robert S. Hixson (Los Alamos National Laboratory)**

Hixson was selected for "sustained technical contributions towards dynamic properties measurements on materials of broad scientific importance and vital interest to national defense needs, and for leadership in the field of shock physics." He has a bachelor's degree in physics from California State University at Hayward, a master's degree in physics from the College of William and Mary, and a doctorate in physics from Washington State University. He received the Laboratory's Fellow's Prize for research in 2003 and was appointed a Lab Fellow in 2003.



*George T. Gray III and Robert S. Hixson*

#### **Other Upcoming Conferences**

##### **Workshop on Modeling Concrete under High-Impulsive Loadings**

Austin, Texas – March 20-21, 2007  
[www.ahpcrc.org/conferences/concwks](http://www.ahpcrc.org/conferences/concwks)

##### **10<sup>th</sup> Int. Seminar on 'New Trends in Research of Energetic Materials**

Pardubice, (Czech Rep.) – April 25-27, 2007  
[www.ntrem.co](http://www.ntrem.co)

##### **PLASTICITY 2007**

"13<sup>th</sup> International Symposium on Plasticity"  
Alyeska Prince Hotel, Alaska – June 2-6, 2007  
[www.neat-plasticity.com](http://www.neat-plasticity.com)

##### **ASME Applied Mechanics and Materials Conference (McMat)**

Austin, Texas – June 3-7, 2007. Abstract deadline Feb. 16, 2007,  
<http://www.ae.utexas.edu/MCMAT07/>

##### **SEM Annual Conference on Experimental and Applied Mechanics**

Springfield, Massachusetts - June 3-6 2007  
[www.sem.org](http://www.sem.org)

##### **Multi-phases and multi-components materials under dynamic loading**

Kazimier Dolny (Poland) – June 11-14, 2007  
[www.lmt.ens-cachan.fr/emmc10](http://www.lmt.ens-cachan.fr/emmc10)

##### **ICEM 13 International Conference on Experimental Mechanics**

Alexandroupolis (Greece) – July 1-6, 2007  
[www.icem13.gr](http://www.icem13.gr)

**21<sup>st</sup> Int. Colloquium on the Dynamics of Explosions and Reactive Systems**

Poitiers (France) - July 23-27, 2007

[www.icders2007-poitiers.org](http://www.icders2007-poitiers.org)

**IMPLAST'07 9<sup>th</sup> International Symposium on Plasticity and Impact Mechanics**

Bochum (Germany) – August 21-24, 2007

[www.tm.bi.rub.de/implast07](http://www.tm.bi.rub.de/implast07)

**DYMAT - 17<sup>th</sup> Technical Meeting, The High Rate Mechanical Properties of Energetic Materials, their Binders or Simulants**

CAMBRIDGE (UK) – September 6-7, 2007

[www.dymat.org](http://www.dymat.org)

**Hypervelocity Impact Symposium**

Williamsburg, Virginia - September 23-27, 2007

[http://www.hvis.org/HVIS\\_07/index.html](http://www.hvis.org/HVIS_07/index.html)

**Sixth Int. Symp. on Impact Engineering**

Daejeon (Korea) - September 16- 19, 2007

**High Speed Industrial Manufacturing Processes**

Senlis (France) – November 13 -15, 2007

[www.hsimp.com](http://www.hsimp.com)

**ASME International Mechanical Engineering Congress and Exposition (IMECE07)**

Seattle, Washington –November 10-16, 2007. Abstract deadline March 5, 2007.

<http://www.asmeconferences.org/congress07/>

**Workshop on “Constitutive relations and numerical simulation of industrial dynamic processes”**

Metz (France) – November 2007

[rusinek@lpmm.sciences.univ-metz.fr](mailto:rusinek@lpmm.sciences.univ-metz.fr)

**6<sup>th</sup> International Conference on Mechanics of Time-Dependent Materials 2008**

Monterey, California – March 30 - April 1, 2008. Abstract deadline March 20, 2007

<http://www.ae.utexas.edu/MTDM08/>

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**Jobs**

**POSITION AVAILABLE**

Institute for Advanced Technology at the University of Texas-Austin, TX is seeking candidates for Post Doctoral and Engineering Scientist Associate positions in impact physics and electrodynamics areas. Responsibilities: (a) Impact physics area: Conduct theoretical and numerical analysis of high speed impact events; (b) Electrodynamics area: Conduct scientific and engineering research in

electromechanics to support development of electromagnetic launchers and associated components. Required Qualifications: Doctoral degree in engineering, or physics for post-doctoral position, and Bachelor degree in engineering or physics for ESA position. Familiarity with computational methods and modelling. Must be US Citizen to receive security clearance required by sponsor. Preferred Qualifications: Relevant experience in numerical modelling and code development, or impact physics and hydrocodes, or electromechanics. Functions Conduct theoretical and numerical analysis, work with experimentalists on design and data analysis. Email [lovell@iat.utexas.edu](mailto:lovell@iat.utexas.edu) for more details and to apply for the positions. Security sensitive position; conviction verification conducted on applicant selected. Equal Opportunity / Affirmative Action Employer.

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**Obituaries**

**George A. Samara**, a world-class physicist honored for his research as well as his management abilities at Sandia National Laboratories, died Dec. 30. Samara, 70, had been at Sandia National Laboratory for nearly 45 years and, in that time, was internationally renowned for developing measuring techniques that used pressure to alter and understand the properties and physics of solid materials. He was also honored for his work as a manager in physics and chemistry research, positions that, according to a Sandia newsletter article, "involved oversight of research in condensed matter physics, electronic materials and phenomena, advanced materials and nanoscience." "He was a world-class-stature scientist," said Bruno Morosin, a former colleague. "I really think Sandia is going to miss his hard work, his integrity and his judgment and ethical standards. ... I'd rank him as the best of the bunch that I worked with out there for 46 years."

Samara was appointed as a fellow to the American Physical Society (1982), as well as the American Association for the Advancement of Science, elected to the National Academy of Engineering, and awarded the Ipatieff Prize of the American Chemical Society. He served on numerous professional boards and wrote hundreds of published papers. He won the American Chemical Society's Earl B. Barnes award for outstanding leadership in chemical research management. For all that, said his son Michael Samara, his father was modest about the accolades and awards, saying, "No, no, just doing the work is reward enough." And the work, which he loved, was not more important than his family, Michael Samara said. "He was a wonderful father and husband," he said. "He was very engaged in his work but never put us second." That ability, he said, "is really an art in itself, something few can do. He really struck a good balance." Samara was born in southern Lebanon. His father was a

U.S. citizen, and Samara came to this country in his teens, his son said. He visited Lebanon through the years, where he met and married Helen, with whom he celebrated 33 years of marriage on Dec. 27.

George Samara was also a man who enjoyed the arts, particularly music, and gardening. "The backyard was green from the house to the back wall, and everything was growing and producing fruit," Michael Samara said. "It's not an easy feat, to grow a lot in Albuquerque." Michael Samara said his father was "a self-made man." He graduated from the University of Oklahoma and earned a doctorate in chemical engineering at the University of Illinois-Urbana. He joined Sandia in 1962 and was an officer at the U.S. Army Electronics Laboratory in New Jersey for two years. "Citizenship was very important to him," Michael Samara said. "That was what drove him to stay at Sandia through the years. He really was a very great believer in the rights and responsibilities that we have in this country. That was a very important thing to him." Survivors also include a daughter, Vicki; a brother, Emile; and a sister, Leila. Memorial services will be held at 4 p.m. Saturday at Covenant Presbyterian Church, 9315 Candelaria NE. The family asks that instead of flowers, donations be made to Joy Junction, a shelter for homeless individuals and families. "In many ways," the Sandia announcement of Samara's death said, "George served as the champion, standard bearer and guiding spirit behind Sandia's basic science enterprise. His high professional, ethical and scientific standards inspired and set examples for both staff and management. He will be sorely missed."

**Steve Coffey** We are saddened to announce the passing of Dr. Charles Stevens "Steve" Coffey on December 1 due to heart failure. Steve is survived by his wife Frederica ("Rickie"), four children and four grandchildren. Steve's work at the Naval Surface Warfare Center (White Oak and Indian Head) spanned 31 years. The seminal work he contributed on the measurement and modeling of initiation of explosives is well known and respected throughout the world. He made major advances, to the point of changing our way of thinking, in our understanding of the sensitivity of explosives to premature initiation.. His research pursued the premise that plastic deformation from shear is responsible for initiation in crystalline explosives during shock and described it as a quantum mechanical process. In several major papers, he calculated the energy dissipated locally within plastically deforming crystals accounting for initiation via multi-phonon processes. A mathematical model of modified crystal lattice potentials along with his earlier developments in microscopic theory of plastic flow allowed Steve to account for sensitivity as function of particle size, yield strength, temperature and the amplitude of shock or impact. Steve also developed tests to measure the energy required to initiate energetic materials including the Ballistic Impact Chamber test

which has been used at other DOD laboratories. He had a strong collaboration with Dr. Igor Plaskin and the focus of the effort was to develop advanced diagnostics to determine initiation characteristics in explosives. This work will be the subject of an invited talk at our Hawaii meeting. Steve was recognized as the Naval Sea Systems Command Scientist of the Year in 2002.

Dr. Coffey has served our community by serving as session chairman for multiple APS SCCM meetings. He was chairman of the international meeting "New Models and Hydrocodes for Shock Wave Processes" held at the University of Maryland. He also was a graduate student advisor to students that included Patrick Baker now at the Army Research Laboratory and Diana Woody who was formerly at Naval Air Warfare Center, China Lake.

On the personal side, Steve enjoyed his family, travel, trekking up mountains, running, and his church. He was a great story teller, bringing vivid glimpses into his life as a graduate student and father in the sixties as well as early work experiences with nuclear testing. He and Rickie were wonderful hosts who helped bring a sense of family to his co-workers.



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