

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

**NASHVILLE – SCCM 2009**  
JUNE 28<sup>TH</sup> – JULY 3<sup>RD</sup>

The biennial Shock Compression of Condensed Matter meeting was held at the Gaylord Opryland Hotel in Nashville. The 2,800 room hotel includes air-conditioned forests, boat rides and, being Nashville, regular live music acts. This background did not distract the 450+ delegates, accompanying persons and industrial exhibitors from the scientific programme. 545 presentations were made - 429 oral and 116 posters. Days had either four or five parallel sessions, running from 8:00 am until 5:30 pm – with breaks for tea and lunch. There were a range of invited talks including three plenary talks and the Duvall Award talk. The conference supported a large number of students, who enthusiastically helped out in the computer ready room.

A full programme of cultural and tourist events were laid on for conference companions. Unbeknownst to the conference organisers the annual battle of the bands was arranged for the same night as the conference trip and this proved definitively that there is more musical styles in Nashville than country and Western! More traditional fare was available at the conference banquet with a selection of Tennessee food and C&W.

The 2009 organisers -William Anderson (LANL) Mike Furnish (SNL) William Proud (Cambridge) Mark Elert (USNA) and William Buttler (LANL) (Publications Co-Chairs) Tony Zocher (LANL) (International Advisor) Jack Wise (SNL) (Treasurer) David Moore (LANL) Kathy Prestridge (LANL) - would like to thank

everyone, a very large number of people from a multiplicity of organisations, who helped with the conference and for making it a smooth-run operation.



*The Gaylord on a quiet evening*

## **SHOCK PHYSICS AWARD**

Don Curran of SRI International gave the Duvall Award talk on Mesomechanical Modeling of Fracture. This reviewed the efforts of Don and his colleagues over the past four decades to develop mesomechanical models of material failure. in particular a procedure known as Nucleation and Growth to Fragmentation. This was linked to experiments in which the evolution of microstructural damage was measured pre- and post- test as a function of stress, time-at-stress, temperature, and other environmental parameters. This is a prestigious award for a scientist who has made a great contribution in this field.



*The Grand Ole Opry in full flow...*

The six poster prizes were awarded – voted on by members of the SCCM committee, their names and organisations are listed below. The decision was a close one – all students did a great job!

	MONDAY	TUESDAY
1 <sup>st</sup>	Paul Specht, Georgia Inst Technology	Nate Sanchez, Los Alamos National Lab
2 <sup>nd</sup>	Francois-Xavier Jetté, McGill University	Christopher Wehrenberg, Georgia Inst. Technology
3 <sup>rd</sup>	Kit Neel, Georgia Inst. Technology	John Addiss, University of Cambridge

**Poster Prize Winners 2009**

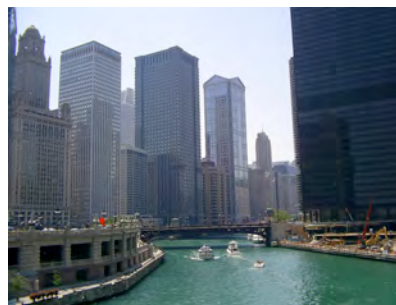
**A note on Wizards** – some will have noticed the International Brotherhood of Magicians conference took place next door to the SCCM. They had a plenary session on “Levitation”. Some APS members attended and when they raised some boisterous questions as to the contents, a member of the APS was mysteriously levitated into a fountain!

**DO NOT FORGET**

**2011 APS Shock Compaction of Condensed Matter Topical Group Meeting**

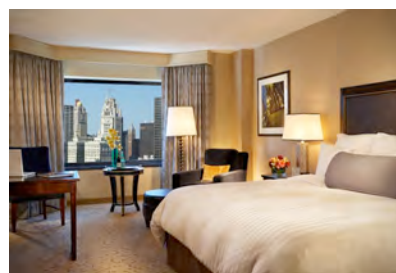
The 2011 APS-GSCCM meeting will be held at the Chicago-Renaissance Hotel located in the heart of downtown Chicago, IL, June 26 through July 1, 2011. The APS-GSCCM conference is a well-attended international venue (over 550 presentations in 2009) which includes a variety of shock loading and high strain rate behavior presentations and posters. The conference topics include, but are not limited to, the dynamic behavior of materials,

theory and simulation of energetic materials and shock loaded materials, and energetic material characterization. The research presented range in scale from atomistic to continuum and system level.



*The famous river view of Chicago*

The Renaissance is one of Chicago’s premier hotels centrally located on the Chicago River at the foot of the Magnificent Mile. In addition to the indoor swimming pool and day spa, the Renaissance provides an excellent launching point from which to explore all that Chicago has to offer, including the Navy Pier, theater district, a multitude of museums (History, Science, Field, and Children’s Museum) and Adler Planetarium. In addition, Chicago offers a vibrant nightlife, including a variety of jazz and comedy clubs, as well as a multitude of world-class restaurants.



*Your room....*

Chicago is well served by O’Hare International and Midway airports and is best traveled to and explored using its extensive public transportation system. For the latest information regarding this conference see <http://www.marquette.edu/aps2011/> To contact the organisers the conference e-mail address is [aps2011@marquette.edu](mailto:aps2011@marquette.edu)



**DYMAT 2009 – ARUSSELS**  
**7-11 SEPTEMBER**

The triennial International DYMAT Conference took place in the Royal Military Academy, Brussels. This conference draws together scientists interested in the intermediate to shock regime. It is effectively the European equivalent of the SCCM.

The conference runs as a single session and so the balance is much the reverse of that seen at the SCCM: 83 oral presentations of 20 minutes and 177 posters. Full conference proceedings were available to all registrants. The six themes of the conference were experimental techniques, industrial applications, biomechanics, micro-structural effects, constitutive modeling and numerical simulations. Copies of the proceedings, on paper and CD or access to the proceedings on-line can be obtained through the DYMAT website.

The location, close to the centre of the Belgian capital, provided a wide range of activities for attendees, with the iconic Grand-Place forming the hub of most social activity. The conference tour took in Bruges and provided a welcome break in a packed conference schedule.

DYMAT now hosts the **John Rinehart Award**. Previous recipients, many well known in the shock community, include Don Shockey and Don Curran (both in 2000). The 2009 recipients of this award are John Field of the Cavendish Laboratory, Cambridge and Marc Meyers of the University of California, San Diego. The awards cite their contributions to the understanding of high-rate loading of materials.

If you are interested in seeing what a DYMAT conference is like, please note the **2012 International DYMAT Conference** will be held in Freigberg, Germany. More details are on

the DYMAT website. Membership is open to all who are interested in dynamic properties of materials.



*Triumphal Arch .... near the DYMAT venue*

**IMPERIAL COLLEGE LONDON**

**INSTITUTE OF SHOCK PHYSICS – STAFF  
APPOINTED**

The AWE-supported Institute of Shock Physics (ISP) has completed its staff-grade appointments. The director of the institute, appointed last year, is Prof Stephen Rose, an expert in laser shocks and high-speed diagnostics. Dr. William Proud was appointed as reader in shock physics, leaving the Cavendish Laboratory to take up this post: he will concentrate on gas-gun studies and associated diagnostics. Dr Simon Bland and Dr. Daniel Eakins, of Imperial College London and LANL respectively, have been appointed as lecturers. The ISP is very much a multi-centre organisation with the hub in Imperial College London but strong links to Cranfield University (Shrivenham), University College London with other organisations soon to join. Dr. David Williamson will take over the leadership of the Fracture and Shock Physics Group in the Cavendish Laboratory which will also interact with the ISP.



*Imperial College London and the Royal Albert Hall*

### FOR THE BOOKSHELF

#### Textbook - **Non-linear Modeling and Analysis of Solids and Structures**

Steen Krenk, *Technical University of Denmark, Lyngby, Cambridge University Press.*

**Hardback** (ISBN-13:9780521830546), Published August 2009 Cost - **£40.00**

This book presents a theoretical treatment of nonlinear behaviour of solids and structures in such a way that it is suitable for numerical computation, typically using the Finite Element Method.

### Upcoming Conferences

#### 10<sup>th</sup> International Conference Zababakhin Scientific Talks

15-19 March 2010, Snezhinsk, Chelyabinsk Region, Russia.

Organised by Russian Federal Nuclear Centre.

Website - [www.vniitf.ru](http://www.vniitf.ru)

#### 14th International Detonation Symposium

11-16, April 2010, Coeur d'Alene Resort, Idaho, USA  
Co-Chairs Blaine Asay (LANL), Suhithi Peiris (DTRA)  
and Chris Boswell (IHDIV-NSWC).

Website - [www.intdetsymp.org/detsymp2010/default.aspx](http://www.intdetsymp.org/detsymp2010/default.aspx)

#### SPIE, Defense, Security, and Sensing

5 - 9 April 2010, Orlando World Center Marriott Resort

& Convention Center

Organised by SPIE

#### 8th International Conference "New Models and Hydrocodes for Shock Wave Processes in Condensed Matter"

24-28 May 2010, FIAP Jean Monnet, Paris, France.

Organized by the Commissariat à l'Énergie Atomique (France) and Los Alamos National Laboratory (USA)

Website- under construction

#### 2010 SEM Annual Conference & Exposition.

7 - 9 June 2010, Hyatt Crowne Plaza Hotel & Conference Center, Historic Union Station Indianapolis, Indiana USA

Organised by Society for Experimental Mechanics

This has many sessions of particular interest to GSCCM members including

- High-Pressure and Shear Response of Materials
- Dynamic Properties of Low Impedance Materials
- Explosives and explosive applications

Website- <http://sem.org/CONF-AC-TOP.asp>



*The Union Station, Indianapolis*

12th International Ceramics Congress. 6-11 June 2010, and

5th Forum on New Materials, 13-18 June 2010

Both at Montecatini Terme, Florence, Italy

Organised by CIMTEC 2010

Website - <http://www.cimtec-congress.org/2010/>

#### US National Congress Theoretical and Applied Mechanics (USNCTAM)

June 27 - July 2, 2010, Pennsylvania State University in University Park, PA.

Organised by US National Committee on Theoretical and Applied Mechanics.

Website

<http://www.conferencetoolbox.org/USNCTAM2010>

**14<sup>th</sup> International Conference on Experimental Mechanics**

4-9 July 2010, Poitiers, France.

Organised by EuraSEM.

Includes a number of sessions of relevance to the dynamic properties community

Website- [www.icem14.fr](http://www.icem14.fr)

**18th International Conference On Composites and Nano Engineering**

4-10 July 2010, Ankorage, USA

Organised by International Community for Composites Engineering.

Website - [www.uno.edu/~enr/composite](http://www.uno.edu/~enr/composite)

**Symposium on Dynamic Behavior of Materials**

**First International TMS- ABM Congress on**

**Advanced Materials**

26-30 July, 2010, Rio de Janeiro, Brazil

Organised by TMS

Website – [www.tms.org/meetings/speciality/ABM-](http://www.tms.org/meetings/speciality/ABM-TMS/home.aspx)

[TMS/home.aspx](http://www.tms.org/meetings/speciality/ABM-TMS/home.aspx)

**16th International Conference on Composite**

**Structures (ICCS/16)**

28-30 June 2011, University of Porto, Porto, Portugal,

Organised by Prof. Antonio Ferreira, Faculdade de

Engenharia da Universidade do Porto

Website – <http://paginas.fe.up.pt/~iccs16/index.html>



*The Bridges and Old Town of O Porto*

**APS SCCM Newsletter Editorial Staff**

**CHANGES TO THE EDITORIAL TEAM**

Welcome to the new editors –

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Sept newsletter editor

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**NEXT NEWSLETTER editor –**

**John Borg, Marquette University,**

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*Our full thanks to our departing editors –*

*Eric Brown and Jennifer Jordan*

**Late News.** It is with great sadness that we have received notice of the recent death of Jack Gilman. Our sympathy goes to his family, friends and many colleagues throughout this community.