Welcome to the 17th APS Topical Conference on Shock Compression of Condensed Matter.

The Renaissance Chicago Downtown is the site of all technical sessions, and provides lodging accommodations to participants. The conference hotel is located at the end of Chicago’s Magnificent Mile, with convenient access to Chicago public transportation.

The full conference registration fee includes the Sunday and poster session receptions, Thursday banquet, continental breakfast each morning, two drink tickets, and eight coffee breaks. Student registration includes all the above except for the Thursday banquet. However, tickets for the banquet are available for students who wish to attend. Companion registration includes the Sunday reception and companion breakfast. Additional companion activities and the banquet must be registered for separately.

To be identified as a registered attendee, please wear your name badge for all conference events. Specific dietary arrangements may be made with advance notice. No part of the registration fee will be refunded for unused conference-provided meals.

All participants will receive copies of the abstract book (the present volume) and hardbound proceedings (published by AIP) along with a CD of the proceedings.

Onsite Registration

Burnham Office (adjacent to the Grand Ballroom)

Hours are as follows:

- Sunday, June 26 .......... 2:00 pm – 8:00 pm
- Monday, June 27 .......... 7:00 am – 5:00 pm
- Tuesday, June 28 .......... 7:30 am – 11:00 am
- Wednesday, June 29 ........ 7:30 am – 5:00 pm
- Thursday, June 30 ........ 7:30 am – 3:30 pm
- Friday, July 1 ............... Closed

A poster board in the registration area will be available for various communications (e.g. babysitting needed or offered, coordinating rides, messages, etc.). Please check this board occasionally.

Electronic Conference Tools

For up-to-date information (including any updates to this Preamble), please check our website at: http://www.marquette.edu/aps2011/.

Bringing your iPhone, iPad, iTouch, or Droid to the Meeting? We’ve got an app for you! The APS Meetings Department has an app for your iPhone, iPad, iTouch, or Droid. The SHOCK11 Meeting app contains the scientific program of abstracts. You can sort the talks by session. You can to read the abstracts, view the speaker index and see floor plans of the Renaissance Chicago Downtown. To get the app, you can:

- Download the app from iTunes.
- Search for APS SHOCK 2011 in the App Store or Market
- See the information on the conference website on getting the app.
The scientific focus of the Conference is on fundamental and applied research topics related to dynamic compression of condensed matter. This multidisciplinary field of research encompasses areas of physics, chemistry, materials science, mechanics, geophysics and planetary physics, and applied mathematics. Experimental, computational and theoretical studies all play important roles.

Plenary, oral and poster sessions will be featured during the five days of the Conference. The program contains 688 papers. These papers have been distributed over five plenary sessions, 90 oral sessions, and a poster session. The parallel and poster sessions have been planned around Topical Areas, each overseen by a member of the Technical Program Committee. Following a technical review, papers presented at the conference will be published by the American Institute of Physics, both as a bound volume and a CD-ROM. For the first time, the conference proceedings will also be made available as open-access papers. Thus, anyone will be able to download the papers at no charge, making your research more readily available to the scientific community.

Each day of the Conference begins with a plenary lecture. Additional highlights during the week include two special sessions and 40 invited talks embedded in the parallel sessions. The program has been arranged so it is possible to attend all of the invited talks.

A simplified meeting time-plan and hotel floor plan are provided at the end of the Bulletin. The time-plan includes plenary, parallel and poster sessions, special events and the GSCCM Business Meeting. Times and alphanumeric codes for the plenary talks are given below.
SPECIAL SESSIONS

Wednesday, June 29

L4: Post Shock Turbulence I
9:15 am Ren Ballroom C

M4: Post Shock Turbulence II
11:00 am Ren Ballroom C

P4: Post Shock Turbulence III
2:00 pm Ren Ballroom C

Wednesday, June 29

P3: High Pressure Strength I
2:00 pm Ren Ballroom AB

Q3: High Pressure Strength II
4:00 pm Ren Ballroom AB

Thursday, June 30

S3: High Pressure Strength III
9:00 am Ren Ballroom AB

T3: High Pressure Strength IV
11:00 am Ren Ballroom AB

V2: High Pressure Strength V
4:00 pm Grand Ballroom IV-V

Friday, July 1

Y1: High Pressure Strength VI
9:00 am Grand Ballroom I-III

Z1: High Pressure Strength V
11:00 am Grand Ballroom I-III

PRESENTATION GUIDELINES

Oral Presentations

All oral sessions will be equipped with an LCD projector with switched input, laptop computer, overhead projector, screen, lavaliere microphone, and pointer. The laptop computer will open Microsoft Windows-compatible PowerPoint presentations, Windows Media movies, and PDF files. If you plan to use your own laptop, please ensure the screen resolution is set at a maximum of 1024 x 768. Macintosh users must bring the necessary converters/cords to connect your laptop to the projector. If your presentation is on a thumb drive or CD, please visit the Speaker-Ready Room (Bridgeport) the day before your talk to load it into the correct session.

Speaker-Ready Room: Bridgeport

The speaker ready room will be open:
Sunday, June 26 ..................4:00 pm – 6:00 pm
Monday, June 27 ..................7:30 pm – 9:00 pm
Tuesday, June 28 ..................5:30 pm – 7:30 pm
Wednesday, June 29 ...............5:30 pm – 7:30 pm
Thursday, June 30 .................5:30 pm – 7:30 pm
Friday, July 1 .........................Closed

Plenary talks will be 50 minutes plus 10 minutes for discussion and questions. Invited talks will be 25 minutes plus five minutes for discussion and questions. Contributed talks will be 12 minutes plus three minutes for discussion and questions. Session chairs have been asked to keep strictly to the schedule to maintain synchronization between the parallel sessions.

Please remember that this is a time to communicate the science of your work to your audience. The person in the last row came to hear what you have to say and see what you have to show. Slides should be designed to be readable from anywhere in the room; print smaller than 14 point may be difficult to see. Proper use of the microphone is important as well. Comprehensive presentations of data should be left to publications. As well, please rehearse the presentation ahead of time. For an interesting discussion of what makes a successful scientific talk, see Stephen Benka’s article, Who is listening? What do they hear? (Physics Today, 61, 49-53, 2008).
Poster Presentations

Poster sessions will be held in the Grand Ballroom IV-VI. Each poster will be allowed a poster board space of 47” x 47” (120 cm x 120 cm), and it may extend down from the bottom of the poster board (maximum length 6’). The boards allow fastening by thumbtack or VELCRO fastening strips. Thumbtacks will be available. The boards will be assigned numbers corresponding to the presentation numbers, i.e. F1.0002 – F1.00209. Authors may display their posters beginning at 3:30 pm on Monday, June 27. Posters must be removed at the end of the poster session or they will be discarded.

The poster session is Monday evening 5:30-7:30 pm. During this time, the authors will be required to stand by their posters. Light hors d’oeuvres and beverages will be available during the poster sessions.

As with the oral presentations, this is a time to communicate the science of your work to your audience. During preparation, time spent devising a sensible flow of thoughts is well spent, including a clear summary. Posters should be readable from a distance of at least five feet.

SESSION CHAIR GUIDELINES

The session chairs play the vital role of ensuring that the technical sessions are quality venues for scientific communication. Authors should be able to present their work in an orderly manner and others able to ask relevant questions or make suggestions for improvement of the work discussed. You hold the keys to a successful conference.

Prior to your session, please check both the Corrigenda distributed with the Bulletin and the on-site program changes board located near meeting registration to see if there are any last minute changes or withdrawals affecting your session. Arrive at the meeting room about 15 minutes prior to the start of the session. Familiarize yourself with the controls for lights, microphones, A-V equipment and the timer. If you encounter problems, you should immediately alert the Registration Desk.

Start the session on time. Briefly introduce yourself, announce the first paper and author, and start the timer. Please adhere to the time schedule listed in the Bulletin so that simultaneous sessions are as closely synchronized as possible. Many attendees move from session to session in order to hear specific papers. Note: Any time used by the speaker and/or technicians to set up laptops for Power Point presentations is deducted from the time allocated for that talk.

The allotted time for contributed papers is 15 minutes; for invited papers, 30 minutes. If you are chairing a session that includes both contributed and invited papers please be aware of the respective time allocations, and time as follows:

Contributed papers: Give initial warning at 10 minutes and the final warning at 12 minutes. When this time is up, allow 3 additional minutes for questions relating to the paper, thank the speaker, and promptly introduce the next paper and speaker. If the speaker uses more than 12 minutes of speaking time, reduce questions accordingly.

Invited papers: Give initial warning at 20 minutes and the final warning at 25 minutes. When this time is up, allow 5 additional minutes for questions relating to the paper, thank the speaker, and promptly introduce the next paper and speaker. If the speaker uses more than 25 minutes of speaking time, reduce questions accordingly.

Explain the timing system to the audience prior to the start of the session and as often during the session as you think necessary.

Session chairs should courteously, but firmly, ask speakers to stop when their allotted time is up. The session must end on time and that the last speaker has just as much right to an audience as the first speaker.

Should a speaker fail to appear, you may allow the preceding discussion to continue, or recess the session until it is time for the next scheduled paper. It is important NOT to call the next scheduled paper before its scheduled time. At the end of the session, call again for the regularly scheduled paper, if time allows.

If any problems arise that you are unable to handle relative to successfully chairing the session, go immediately to the registration desk to alert the staff.

You will likely be asked by editors of the proceedings to review manuscripts. Thank you for working with them to make possible the quick publication of a high quality proceedings.
ADVANCED PHOTON SOURCE TOUR

During the free afternoon on Tuesday, a tour of the Advanced Photon Source (APS) at Argonne National Laboratory has been arranged. This will provide an opportunity for the shock physics community to learn about the closely related field of static high-pressure measurements using X-ray diffraction. Buses will transport participants to APS and return them to the hotel following the tour. Pre-registration is required.

BUSINESS MEETING

Please plan to attend the GSCCM Business Meeting where issues affecting the future course of the Topical Group will be discussed. This meeting will be held at 12:30 pm on Wednesday, June 29 in the Renaissance D Ballroom.

This meeting is to discuss items relevant to the topical group operation, policy and direction of the topical group. It is the place to make suggestions on what you think the topical group should be addressing, to formulate new ideas for promoting the group, and to discuss how the topical group can effectively represent the shock physics community. It is open to all conference attendees and needs your input. Please come along and help set the future direction of our topical group.

PROCEEDINGS

As with recent SCCM Conferences, all manuscripts for the 17th APS Topical Conference on Shock Compression of Condensed Matter will be submitted electronically. You are strongly encouraged to submit a manuscript of your presentation. The Proceedings will be published by the American Institute of Physics (AIP) as a bound volume, as a CD-ROM, and freely available on-line as open access papers. The open access model will allow for the broadest possible dissemination of your work. Details on manuscript submission can be found through the conference website. Manuscripts need to be submitted through the Proceedings website by August 3, 2011.

COMPANY SHOWCASE

The shock community is heavily dependent on state of the art high-speed data capture systems, and complex analysis programs, with expertise and consultancy playing a major role. To assist in generating contacts between suppliers and the research community we have organized the company showcase.

We have reserved booths and meeting spaces Monday – Thursday for a number of interested companies who will be present at the Conference. A document giving details of the companies attending is available in your registration packet. We encourage you to speak to the companies and see what new and exciting products they have available.

SOCIAL PROGRAM

Events for conference attendees and their companions:

Sunday, June 26

Welcome Reception
6:00 - 8:00 pm
Chicago Skyline Terrace

After registering, SCCM11 attendees and companions are cordially invited to a Welcome Reception to be held on the Chicago Skyline Terrace from 6:00 to 8:00 pm to make new acquaintances and renew old ones. Hors d’oeuvres and drinks will be served. The terrace entrance is adjacent to the Gold Coast room on the third floor.

Tuesday, June 28

Thomas J. Ahrens Memorial Reception
6:00 pm
Bucktown Room

Friends, colleagues, and former students of Thomas J. Ahrens are invited to a reception in his honor at 6:00 pm in the Bucktown room. Please see Paul Asimow, Sarah Stewart, or Bill Nellis if you are interested in attending.
Wednesday, June 29

Conference Social Event

6:30 pm
Boat Dock

Our conference social on Wednesday evening will take us on a magical tour of the architecture along the Chicago River. While we enjoy our box salad or sandwich dinners, the captain will give a running narration of all of the fascinating sites we are passing. Our evening will culminate out on the Lake with a front-row view of the fireworks at Navy Pier.

Meet at the dock by 6:30 pm so you don’t miss the boat! The dock is 3 blocks east of the hotel – just past Michigan Avenue – on the north side of Wacker Drive. See http://www.cruisechicago.com/directions.php for a map.

Tickets for this event are available for conference attendees, companions, and families, but should be purchased prior to the conference.

Thursday, June 30

Conference Banquet

6:30 pm
Grand Ballroom Foyer

Conference attendees and companions are invited to enjoy the Conference Banquet, scheduled to take place beginning with a cocktail hour at 6:30 pm Thursday evening in the Grand Ballroom Foyer. Tickets are included in the full Conference registration. Additional tickets for students and companions are available for purchase until Monday morning.

COMPANION PROGRAM

A varied and reasonably-priced set of trips and activities is planned for SCCM11 companions. Companions interested in these activities should have already signed up for these activities. There may be limited space available on these tours at the conference registration on Sunday, June 26th. Although participation in these activities is not limited to companions who register, registration provides 1) the Registration Social, 2) Companions’ Kick-off Breakfast, 3) name badge on lanyard, and 4) a conference bag. Questions or concerns may be emailed to apscompanions@comcast.net prior to the Conference.

Monday, June 27

Companions’ Kick-off Breakfast

8:00 am
Gold Coast

Registered companions are cordially invited to gather in the Michigan at 08:00 for a light breakfast, conversation and an information session. The Companions’ Kick-off Breakfast is an excellent chance to get acquainted/reacquainted with your fellow companions attending this meeting.

Chicago Trolley and Double Decker

We’re purchasing three day group tickets for the Chicago Trolley and Double Decker Co. tours. The tickets are good for three days of Chicago sightseeing and transportation. Meet up at the Companion breakfast to get your tickets and find a group to travel with. Additional information about the Chicago Trolley and Double Decker can be found at https://www.chicagotrolley.com

Tuesday, June 28

Companion Tour (capacity: 56 people)

On Tuesday morning, we will head off early to the Chicago Botanic Garden. This all-day tour includes transportation, beverages, entrance fee and lunch. The Chicago Botanic Garden is world-renowned for its beauty and variety. It is an amazing gem to visit so close to Chicago.
CONFERENCE ORGANIZERS

Co-Chairs:
John Borg, Marquette University
Jennifer Jordan, Air Force Research Laboratory
Tracy Vogler, Sandia National Laboratories

Treasurer:
Sunil Dwivedi, University of Florida

Poster Session Chairs:
Nicola Bonora, University of Cassino, Italy
Eric Herbold, Lawrence Livermore National Laboratory

Publications Chairs:
Mark Elert, United States Naval Academy
(Proceedings) William Buttler, Los Alamos National Laboratory

International Advisor:
Tony Zocher, Los Alamos National Laboratory

Student Outreach:
Dana Dattelbaum, Los Alamos National Laboratory
Mike Hopson, NSWC - Dahlgren

Companion Program Chair:
Linn Furnish

TECHNICAL PROGRAM COMMITTEE

BG: Biological Materials
Horacio Espinosa, Northwestern University

BL: Ballistic Studies
David Lambert, Air Force Research Laboratory
Clive Siviour, Oxford University

CP: Polymers and Composites
Joel Carney, NSWC – Indian Head

DC: Detonations and Shock-Induced Chemistry
Elizabeth Glascoe, Lawrence Livermore National Laboratory

ED: Experimental Developments
Tom Ao, Sandia National Laboratories
Fabrice Llorca, CEA
Kathy Prestridge, Los Alamos National Laboratory
Gilles Roy, CEA

EM: Energetic Materials
Dan Hooks, Los Alamos National Laboratory
Richard Lee, NSWC – Indian Head

EOS: Equation of State
Lorin Benedict, Lawrence Livermore National Laboratory

GS: Geophysics and Planetary Science
Kanani Lee, Yale University
Seiji Sugita, University of Tokyo

HD: High Energy Density Physics & Warm Dense Matter
Michael Dejarlais, Sandia National Laboratories

ID: Inelastic Deformation, Fracture and Spall
Daniel Casem, Army Research Laboratory
Thibaut de Resseguiuer, Futuroscope

MD: First-Principles and Molecular Dynamics
Ivan Oleynik, University of South Florida

MS: Materials Science
Ellen Cerreta, Los Alamos National Laboratory

PC: Physics and Chemistry at High Pressure
Choong-Shik Yoo, Washington State University

PM: Particulate and Porous Materials
William Cooper, Air Force Research Laboratory

PS: Phase Transitions
Geoff Cox, AWE

SO: Spectroscopy and Optical Studies
Evan Reed, Stanford University

TUR: Special Session on Turbulence at the Meso and Macro Scales
Su Peiris, Defense Threat Reduction Agency
D. Scott Stewart, University of Illinois

HPS: Focus Session on High Pressure Strength
James Asay, Sandia National Laboratories
G.T. Rusty Gray, Los Alamos National Laboratory
Adam Schwartz, Lawrence Livermore National Laboratory
Russ Hemley, Carnegie Institute of Washington

It is not possible to acknowledge here all of the others
who have contributed to SCCM11, but the Conference
would not be possible without them.

GSCCM OFFICERS FOR 2011

Chair:
Neil Bourne, AWE

Chair-Elect:
Dana Dattelbaum, Los Alamos National Laboratory

Vice Chair:
Tracy Vogler, Sandia National Laboratories

Past-Chair:
David Moore, Los Alamos National Laboratory

Secretary / Treasurer:
Michael Furnish, Sandia National Laboratories

Webmaster:
E. Ray Lemar, Naval Surface Warfare Center (IHMD)

Executive Committee:
Ellen Cerreta, Los Alamos National Laboratory
Daniel Eakins, Imperial College London
Elizabeth Glascoe, Lawrence Livermore National Laboratory
Su Peiris, Defense Threat Reduction Agency

Award Committee Chair:
Su Peiris, Defense Threat Reduction Agency APS
**SUMMARY OF EVENTS**

**SCCM Business Meeting**  
*Wednesday, June 29 12:30 pm*  
*Renaissance D*  
A light lunch will be provided for business meeting attendees.

**Advanced Photon Source Tour**  
*Tuesday, June 28*  
Meet in the Hotel Lobby. Buses will begin loading at 12:45 and depart at 1:15. They will return between 5 and 6 pm.

**SOCIAL PROGRAM SUMMARY**

**Welcome Reception**  
*Sunday, June 26 6:00 pm – 8:00 pm*  
*Chicago Skyline Terrace*

**Continental Breakfast**  
*Monday – Friday 7:15 am – 8:00 am*  
*Grand Ballroom Foyer*

**First Lady of Chicago Cruise and Dinner**  
*Wednesday, June 29 6:30 pm – 10:00 pm*

**Conference Banquet**  
*Thursday, June 30 6:30 pm – 10:00 pm*  
*Grand Ballroom and Foyer*

**COMPANION PROGRAM SUMMARY**

**Companions’ Kick-off Breakfast**  
*Monday, June 27 8:00 am – 9:00 am*  
*Gold Coast*

**Chicago Trolley and Double Decker Tour**  
*Monday, June 27 9:00 am*

**REGISTRATION HOURS**

**Burnham Office**  
Sunday, June 26 ..................4:00 pm – 8:00 pm  
Monday, June 27 ..................7:00 am – 5:00 pm  
Tuesday, June 28 ..................7:30 am – 11:00 am  
Wednesday, June 29 .................7:30 am – 5:00 pm  
Thursday, June 30 ..................7:30 am – 3:30 pm

**SPEAKER-READY ROOM HOURS**

**Bucktown**  
Sunday, June 26 ..................4:00 pm – 6:00 pm  
Monday, June 27 ..................7:30 pm – 9:00 pm  
Tuesday, June 28 ..................5:30 pm – 7:30 pm  
Wednesday, June 29 ..................5:30 pm – 7:30 pm  
Thursday, June 30 ..................5:30 pm – 7:30 pm
## Conference Overview

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 26</td>
<td>June 27</td>
<td>June 28</td>
<td>June 29</td>
<td>June 30</td>
<td>July 1</td>
</tr>
</tbody>
</table>

### Session Details

- **7:15-8:00 am**
  - Cont. Breakfast
    - GBR Foyer
  - Plenary Session A1
    - GBR
  - Companion Breakfast
    - Gold Coast

- **9:00-9:15 am**
  - Coffee Break

- **9:15-10:45 am**
  - Session B1-B5
    - ID1, DC1, MD1, ED1, SO1
  - Session H1-H6
    - ID3, EM3, MD5, GS3, PS3, PM1
  - Coffee Break

- **10:45-11:00 am**
  - Break

- **11:00 am-12:30 pm**
  - Session C1-C5
    - ID2, DC2, MD2, ED2, SO2
  - Session J1-J6
    - ID4, EM4, MD6, GS4, BG1, PM2

- **12:30-2:00 pm**
  - Lunch (on own)

- **2:00-3:30 pm**
  - Session D2-D5
    - EM1, MD3, GS1, PS1

- **3:30-4:00 pm**
  - Snack Break

- **4:00-5:30 pm**
  - Session E2-E5
    - EM2, MD4, GS2, PS2

- **6:00-8:00 pm**
  - Welcome Reception
    - Chicago Skyline Terrace

- **5:30-7:30 pm**
  - Poster Session F
    - GBR IV-VI

- **6:00-8:00 pm**
  - T. Ahrens Memorial Reception
    - Bucktown

- **6:30-7:30 pm**
  - Conference Social
    - First Lady of Chicago Boat Tour

- **7:30-10:00 pm**
  - Conference Banquet
    - GBR

### Table of Content Areas

- **BG**: Biological Materials
- **BL**: Ballistic Studies
- **BP**: Polymers and Composites
- **DC**: Detonations and Shock-Induced Chemistry
- **ED**: Experimental Developments
- **EM**: Energetic Materials
- **EOS**: Equation of State
- **GS**: Geophysics and Planetary Science
- **HD**: High Energy Density Physics and Warm Dense Matter
- **ID**: Inelastic Deformation, Fracture and Spall
- **MD**: First-Principles and Molecular Dynamics
- **MS**: Materials Science
- **PC**: Physics and Chemistry at High Pressure
- **PM**: Particulate and Porous Materials
- **PS**: Phase Transitions
- **SO**: Spectroscopy and Optical Studies
- **TUR**: Turbulence at the Meso and Macro Scales
- **DSM**: High Pressure Strength of Materials