

CALL FOR PAPERS



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2007 SEM Annual Conference & Exposition on Experimental and Applied Mechanics

Experimental Mechanics Applied to Advanced Materials and Systems

**Sheraton Springfield Monarch Place Hotel
Springfield, Massachusetts USA**

Sunday, June 3 - Wednesday, June 6, 2007

Abstracts Due: October 16, 2006

2007 SEM Annual Conference Tracks and Symposium:

Mechanical and Microstructural Analyses of Biological and Bio-inspired Systems and Materials
Digital Image Correlation: Developments, Applications and Measurements from Macroscale to Nanoscale
Inverse Problems in Experimental Mechanics
Experimental and Applied Mechanics
8th International Symposium on MEMS and Nanotechnology



Organized by the
**Society for
Experimental Mechanics, Inc.**
7 School Street
Bethel, Connecticut 06801 USA
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Track 1: Mechanical and Microstructural Analyses of Biological and Bio-inspired Systems and Materials

Sponsored by the SEM Biological Systems and Materials Technical Division

Organized by: K. Jane Grande-Allen, Rice University; Hugh A. Bruck, University of Maryland; Ken Perry, ECHOBIO; Michael Peterson, University of Maine

Mechanical and microstructural analyses of biological systems and materials represent a growing area of broad interest to SEM. This track reflects our efforts to bring together researchers interested in developing novel tools and translating established mechanical techniques to address biological and bio-inspired problems in society, human health, and the natural world. Papers are sought in the following areas:

- Animal Biomechanics
- Bio-inspired Materials and Biomimetic Composites
- Bio-MEMS or MEMS for Biological Applications
- Dynamic Testing of Biological Tissues and Biomaterials
- Experimental Mechanics of the Natural World
- Fracture and Fatigue of Biomaterials
- Hard Tissue Analysis
- High Strain Rate Testing of Biological and Soft Materials
- Kinematics of Motion
- Nanomechanics in Nature
- Optics for Biomechanics
- Tracking Motion Displacement of Blood Vessels
- Uncertainty in Biological Systems and Materials

Track 2: Digital Image Correlation: Developments, Applications and Measurements from Macroscale to Nanoscale

Organized by: Michael A. Sutton, University of South Carolina; John L. Turner, Bridgestone-Firestone; Jean-Jose Orteu, Ecole des Mines d'Albi

Recent advances in computer vision and associated image analysis methodologies provide the fundamental basis for converting digital images of a deforming object into full-field shape and deformation measurements on objects ranging from meters to sub-microns in physical size. Emphasis in this track will be to highlight the breadth and depth of research being conducted by investigators in academics, national laboratories and industry using image analysis to extract accurate material/structural response data. Though not exclusive, contributions using image correlation or related image analysis methods in areas such as the following are welcome.

Reduced Length Scale Measurements:

- AFM and STM studies
- SEM and TEM studies
- Optical Microscopy and applications
- Optical Stereo-microscopy and applications
- Volumetric imaging methods (e.g. CAT, MRI) and applications
- Novel methods at reduced length scales and applications of the methods

Macro-scale Measurements:

- 2D computer vision developments and applications in all fields
- 3D computer vision developments and applications in all fields
- Model validation using 2D or 3D data
- Bio-medical developments and applications, including 2D, 3D and volumetric imaging

Track 3: Inverse Problems in Experimental Mechanics

Sponsored by the SEM Inverse Problem Methodologies in Experimental Mechanics Technical Division

Organized by: Jaime F. Cárdenas-García, University of Texas at Brownsville; Fabrice Pierron, Ecole Nationale Supérieure d'Arts et Métiers

The use of Inverse Problem Methodologies in experimental mechanics benefits from the use of experimental techniques that generate full-field digital results and their seamless integration with analytical/numerical models. Their use is really the beginning of the age-old dream of experimentalists to effortlessly converse and collaborate in interdisciplinary teams with analytical/numerical model builders in a common language, and which is natural to their joint practice in mechanics. Contributions are sought in the following areas:

- Bio-inspired Materials and Systems
- Composite Materials
- Dynamic Behavior
- Elasticity/Plasticity
- Fracture and Fatigue
- Material Identification
- MEMS/NEMS
- Model Validation/Verification
- Novel Techniques
- Optical Methods
- Residual Stresses
- Time Dependent Materials
- Vibration

Track 4: Experimental and Applied Mechanics

Organized by: Kristin B. Zimmerman, General Motors Public Policy Center; Arkady Voloshin, Lehigh University; Emmanuel E. Gdoutos, Democritus University of Thrace

Experimental and Applied Mechanics covers the wide variety of subjects that are related to the broad field of experimental or applied mechanics. Both research and application papers are requested. Papers will be organized into sessions based on a specific discipline.

- Acoustoelasticity
- Applications
- Applied Photoelasticity
- Biological Systems and Materials
- Composite Materials
- Dynamic Behavior of Materials
- Education
- Electronic Packaging
- Experimental Fluid Mechanics
- Fiber Optic Sensors
- Fracture and Fatigue
- Hybrid Techniques
- Inverse Problems
- MEMS and Nanotechnology
- Modal Analysis/Dynamic Systems
- Model Validation
- Numerical and Finite Element Solutions
- Optical Methods
- Research in Progress
- Residual Stresses
- Smart Structures
- Strain Gages
- Structural Testing
- Thermal Methods
- Time Dependent Materials
- Sensors and Instrumentation
- Uncertainty Quantification
- Wood and Wood Based Composites

Please be sure to check the other tracks and symposium to best allocate your abstract.

8th International Symposium on MEMS and Nanotechnology

Sponsored by the MEMS and Nanotechnology Technical Division

Organized by: Cosme Furlong, Worcester Polytechnic Institute; Gordon A. Shaw, National Institute of Standards and Technology; Ryszard J. Pryputniewicz, Worcester Polytechnic Institute

Microelectromechanical systems (MEMS) and Nanotechnology are revolutionary enabling technologies. These technologies merge the functions of sensing, actuation, and controls with computation and communication to affect the way people and machines interact with the physical world. This is done by integrating advances in various multidisciplinary fields to produce very small devices that use very low power and operate in many different environments. Today, developments in MEMS and Nanotechnology are being made at an unprecedented rate, driven by both technology and user requirements. These developments depend on micromechanical and nanomechanical analyses, and characterization of structures comprising nanophase materials.

To provide a forum for an up-to-date account of the advances in the fields of MEMS and Nanotechnology and to promote an alliance of governmental, industrial, and academic practitioners, SEM initiated a Symposium Series on MEMS and Nanotechnology. The 2007 Symposium will be the eighth in the series and will address pertinent issues relating to design, analysis, fabrication, testing, optimization, reliability, and applications of MEMS and Nanotechnology, especially as these issues relate to experimental mechanics of the microscale and nanoscale structures. Papers are sought in the following and related areas:

- Bio MEMS
- Composite MEMS
- Computational methods
- Deformation and damage at the nanoscale
- Design, analysis, and fabrication methods
- Education in MEMS and Nanotechnology
- Fatigue and fracture in MEMS and NEMS
- Influence of design and fabrication methods on reliability and durability of MEMS and NEMS
- Integration of MEMS and Nanotechnology into systems
- MEMS and NEMS for extreme environments and Homeland Security
- MEMS applications in telecommunications and wireless systems: health monitoring of structures
- MEMS in flight and aerospace applications
- MEMS packaging
- Metrology, including full-field and local testing and characterization based on electrical, mechanical, optical, and other methods
- Microfluidics, biofluidics, and Lab-on-a-chip
- Micromechanics and Nanomechanics
- Micromechanics and Nanomechanics of high-density data storage technologies (i.e., millipede system)
- Nanoscale strain and stress measurements
- Novel applications of MEMS and NEMS
- Novel materials, their characterization, and applications
- Optical MEMS
- RF MEMS
- Scaling effects
- Sensors: temperature, pressure, humidity flow, motion, etc.
- Standardization

Electronic Submissions

SEM will only accept electronic submissions for the 2007 SEM Annual Conference. Details about submitting abstracts and the electronic submission form are on the SEM website:

sem.org

All abstracts will be received electronically. No copies are required for electronic submission. Do not fax. Do not send duplicate submissions. Accepted papers will also be received electronically, per guidelines on the SEM website, and only a CD-ROM Proceedings will be available for the 2007 SEM Annual Conference.

Please submit a short abstract of the paper (not more than 200 words) electronically by October 16, 2006. Do not include photos or equations in your abstract. Abstract submissions for the MEMS Symposium must include 5 keywords.

Please Note: Once you have successfully submitted your abstract, a confirmation message will appear on the screen. This is the only confirmation that you will receive. If you have questions or concerns about abstract submittal, please contact SEM at 203-790-6373 or abstract@sem1.com.

Authors will be notified, via email, whether the abstract has been accepted or not by December 9, 2006. Accepted authors will be required to submit the finished paper electronically by March 16, 2007. NOTE: If you have not received notification regarding your abstract by January 3, 2007 please contact Kathy Ramsay or Shari Matthews at 203-790-6373, or abstract@sem1.com.

Presentation slots in the final program are guaranteed **only** for authors who submit a written paper by March 16, 2007.

Keep checking the SEM website for more details: sem.org

Important Dates

October 16, 2006	Abstracts due to SEM
December 9, 2006	Authors notified of acceptance/rejection
March 16, 2007	Accepted authors are required to submit a complete paper to SEM
June 3-6, 2007	2007 SEM Annual Conference & Exposition on Experimental and Applied Mechanics

2006 SEM Exposition

A comprehensive exposition of testing and analysis equipment will be a highlight of the 2007 SEM Annual Conference and Exposition. Please contact Joni Normandin to reserve your booth today, (860) 484-4387 (*NOTE: NEW Phone Number*), joninormandin007@aol.com.

Following is a list of Exhibitors from the 2006 SEM Annual Exposition held in Saint Louis, Missouri, June 5-7, 2006:

- ASME
- Bertec Corporation
- Blackwell Publishing, Inc.
- Bose Corporation – ESG
- Cambridge University Press
- Capacitec, Inc.
- Correlated Solutions Inc.
- DRS Data & Imaging Systems, Inc.
- HPI – Hitec Products, Inc.
- HITEC Corporation
- Hysitron, Inc.
- IOS Press
- LaVision Inc.
- MTS Nano Instruments
- Optical Metrology Innovations
- PCB Piezotronics, Inc.
- Springer
- Stress Photonics Inc.
- Texas Measurements, Inc.
- Trillion Quality Systems
- Xstream Software Inc.

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Location

Sheraton Springfield Monarch Place Hotel

One Monarch Place, Springfield, MA 01144-1689 USA
(800) 426-9004 in US/Canada
(413) 781-1010; Fax (413) 734-3249



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HOTEL RESERVATION DEADLINE: May 10, 2007

Hotel Rates:

\$129.00 per night for Single/Double, plus applicable taxes.
Government Rate available upon request with ID shown upon arrival.

The Sheraton Springfield Hotel is located 18 miles from Bradley International Airport in Windsor Locks, CT. Peter Pan bus transportation from the airport is available but with a limited schedule. Please refer to the hotel website for more information, www.sheraton-springfield.com.

General Location Information

Springfield, Massachusetts offers a host of attractions. The Basketball Hall of Fame, Six Flags New England, Springfield Symphony Hall, The Ranch Golf Club and The Eastern States Exposition - home of the Big E - are all conveniently located. Springfield is also home to many museums and musical venues, the Dr. Seuss National Memorial Sculpture Garden, the Indian Motorcycle Museum and Hall of Fame, the Zoo in Forest Park, and the Springfield Science Museum are only some of the exciting attractions located close by.

Important Notice: You must tell the hotel you are with the SEM Conference when you register. If you do not do so, your rate may be significantly higher.

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