

IMPORTANT DATES

October 3, 2022

Abstracts due to SEM

End of December 2022

Authors notified, via e-mail, of acceptance/rejection

February 22, 2023

Final papers due

WANT TO PARTICIPATE IN THE MICHAEL SUTTON INTERNATIONAL STUDENT PAPER COMPETITION?

Visit sem.org/annual for details.

LOCATION INFORMATION

Direct links to the SEM reservation block will be made available at sem.org/annual by March 2023.

Rosen Plaza Hotel

9700 International Drive, Orlando, FL 32819

(407) 996-9700

www.rosenplaza.com

International Visitors Visa Information

The visa application process to enter the U.S. has become subject to greater degrees of scrutiny than in the past. For this reason, the application process can take up to six months or more. If you plan to attend SEM Annual and will need a visa, we encourage you to apply for your visa as early as possible. Please visit the U.S. Visa Policy Web page for updates on visa procedures: <https://travel.state.gov/content/travel/en/us-visas.html>

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ANNUAL CONFERENCE

**2023 SEM ANNUAL CONFERENCE
AND EXPOSITION ON EXPERIMENTAL
AND APPLIED MECHANICS**

JUNE 5–8, 2023 | ORLANDO, FL USA

CALL FOR PAPERS

TRACKS

The SEM Annual Conference and Exposition focuses on all areas of research and applications pertaining to experimental mechanics, and has evolved to encompass the latest technologies supporting optical methods; additive & advanced manufacturing; dynamic behavior of materials; biological systems; micro-and nano mechanics; fatigue and fracture; composite and multifunctional materials; residual stress; inverse problem methodologies; thermomechanics; and time dependent materials.

This broad focus on experimental mechanics includes topics in digital image and digital volume correlation techniques, speed impacts to shock and blast, durability and extreme environmental effects, model/experiment integration, materials for advanced manufacturing, damage detection and non destructive testing, tools spanning various length scales and new experimental techniques and methods to address real-life applications, research and collaborative efforts across all disciplines complementing experimental mechanics.

IN ADDITION TO THE TRACKS LISTED BELOW, WE ALSO WELCOME ABSTRACTS RELATING TO THE FOLLOWING:

- Applications
- Education
- Research

13TH INTERNATIONAL SYMPOSIUM ON THE MECHANICS OF BIOLOGICAL SYSTEMS & MATERIALS

- Orthopedic and Disease Biomechanics
- Cellular Biomechanics and Mechanobiology
- Material Characterization, Damage, and Fracture of Biomaterials
- Experimental Techniques in Biological and Biomimetic Systems
- Advanced Bioprinting and Lab on a Chip Development
- Optical Methods, Visualization, and Machine Learning in Biological Systems
- Mechanics of Microbes and Biofilms

24TH INTERNATIONAL SYMPOSIUM ON MICRO- AND NANOMECHANICS (ISMAN)

- Mechanics of 1D and 2D Materials
- MEMS Devices for Actuation, Sensing, and Characterization
- Micro- and Nanoscale Deformation Mechanisms
- Nanotribology
- In-situ Nanomechanics
- Instrumentation and Nano-metrology
- Heterogenous / Hybrid material integration

9TH INTERNATIONAL SYMPOSIUM ON THE MECHANICS OF COMPOSITE AND MULTIFUNCTIONAL MATERIALS

- Multifunctional Composites
- Recycled Composites
- Reconfigurable Composites
- Fracture and Failure in Composites
- Biocomposites
- Additive Manufacturing of Composites
- Composites in Extreme Environments

ADDITIVE AND ADVANCED MANUFACTURING

- Mechanics of materials made via additive and advanced manufacturing (including dynamic behavior, fracture and fatigue, residual stresses, microstructure)
- Novel manufacturing approaches for additive and advanced manufacturing (including new processes and repair of existing structures)
- Design and process optimization of additive and advanced manufacturing
- Novel materials for additive and advanced manufacturing (including polymers, composites, biomaterials, recycled materials)
- Topology optimization of structures processed through advanced or additive manufacturing
- Functionally graded materials or structures processed through advanced or additive manufacturing
- Microscale advanced/additive manufacturing with micron-level structures (small scale structures)

ADVANCEMENT OF OPTICAL METHODS IN EXPERIMENTAL MECHANICS

- Innovative 3D/ volumetric measurements
- Optical method for multi-scale and inverse problems
- DIC—method, applications and its challenges
- Photoelasticity and interferometry applications
- Machine learning method on optical analysis
- New Developments in Optical Methods and Fringe Analysis
- Optical method for bio-medical applications

DYNAMIC BEHAVIOR OF MATERIALS

- Dynamic Behavior of Additively Manufactured Materials
- Dynamic Behavior of Geomaterials
- Dynamic Behavior of Low Impedance Materials
- Shock and Blast
- Quantitative Visualization of Dynamic Events
- Inverse Methods in Dynamic Testing
- Dynamic Fracture and Fragmentation

FRACTURE & FATIGUE

- In situ techniques and microscale effects on mechanical behavior
- Fatigue and fracture under extreme environments
- Damage initiation mechanisms and the influence of incipient damage
- Fracture and fatigue in additive manufacturing
- Damage and fracture of highly deformable solids
- Interfacial and mixed-mode fracture, fracture and fatigue in brittle materials
- Advances in mechanics of deformation, plasticity, and failure

INVERSE PROBLEM METHODOLOGIES

- Identification of Heterogeneous Materials
- Plasticity, Viscoelasticity and Other Nonlinear Materials
- Machine Learning
- Test Design for Optimal Results
- Dynamic Behavior

RESIDUAL STRESS

- Measurement techniques
- Inverse Methods
- Applications & Validations
- Effects on integrity and distortion
- Modeling
- Organized Session: Residual stress in additive manufacturing

THERMOMECHANICS AND INFRARED IMAGING

- Advanced thermographic techniques for SHM
- Thermomechanics
- NDE and process monitoring
- Low cost thermography applications

TIME-DEPENDENT MATERIALS

- Data-driven methods in time-dependent materials
- Sustainable materials - time-dependence
- Composites and interfaces - time-dependence
- Time-dependent materials characterization high-throughput to multi-scale
- High temperature metals - time-dependence
- Polyelectrolytes and ionomer functionality
- Viscoelasticity, viscoplasticity, and polymer physics constitutive modeling

MACHINE LEARNING AND DATA SCIENCE

- Machine learning and data science for very large or very small mechanics data sets
- Inverse problems and forward modeling
- Data-driven uncertainty quantification and sensitivity analysis
- Biomechanics-related imaging and image data segmentation and processing
- Reduced-order modeling and digital twinning
- Compressive Sensing and Sparse Datasets in Data Science
- Data Science for Applications, including Additive Manufacturing and Numerical Simulations

SUBMISSION

All abstracts must be submitted electronically via the following abstract submission link: sem.org/annual

Acceptance of a paper is based on the requirement of the author to present the accepted paper at the Conference. Accepted authors will be required to submit per the Track/Topic/Symposium Policy i.e. a full manuscript, extended abstract (must be 2-3 pages, no word limit) presentation materials or oral presentation. Note to all submitting authors: Publication of your Proceedings paper (if submitted) requires that you sign the SEM copyright form found at sem.org. The SEM copyright language grants the author the non-exclusive right to use all or part of the work submitted in any book or article written by the author; provided, that the copyright notice which appears on the journal or proceedings in which the work is first published, and a full citation of the publication is affixed to copies of such book or article so as to give reasonable notice of such copyright. Self plagiarism is not allowed. However, publication in an SEM journal of continuing work covering the same topic as published in the SEM Proceedings is highly encouraged. Submit your abstract now!

ABSTRACT SUBMISSION AND DETAILS CAN BE FOUND AT **SEM.ORG/ANNUAL**