

2014 SEM Conference & Exposition on Experimental & Applied Mechanics

Hyatt Regency Greenville, Greenville, SC USA
June 2-5, 2014

Abstract Deadline: 10/01/2013

Abstract submission:

<http://www.sem.org/Conference-Abstract-Submission.cfm?ConfNumber=94840>

Track 2: Challenges in Mechanics of Time-Dependent Materials

Sponsored by the SEM Time Dependent Materials and Composite, Hybrid and Multifunctional Materials Technical Divisions

Organized by: H. Jerry Qi, *Georgia Institute of Technology*; Bonnie Antoun, *Sandia National Laboratories*; Richard Hall, *Air Force Research Laboratory*; Hongbing Lu, *University of Texas-Dallas*; Alex Arzoumanidis, *Psylotech*; Meredith Silberstein, *Cornell University*; Jevan Furmanski, *ExxonMobil*; Alireza Amirkhizi, *University of California at San Diego*; Joamin Gonzalez, *University of Ljubljana*.

We are soliciting papers involving constitutive, time (rate)-dependent behavior of all materials, including metals, biomaterials, polymeric materials, non-metallic materials and organic materials and modeling of the mechanics of processing/fabrication of all materials. The materials systems' time-dependent mechanical responses should be non-negligible in cases involving non-mechanical fields.

Papers dealing with modeling and experimental aspects of the subject area are sought. A wide range of topics are solicited and organized. Papers in the following general technical research areas are included:

- Metallic, Polymeric and Composite Materials
 - Effects of Extreme Environments including Radiation Resistance, Damage, and Aging
 - Challenges in Time-dependent Behavior Modeling of Low, Moderate and High Strain Rates
 - Effects of Inhomogeneities on the Time-Dependent Behavior
 - Time dependent granular materials
- Composite, Hybrid and Multifunctional Materials
 - Challenges in Time-dependent Behavior Modeling Viscoelastoplasticity and Damage
 - Effects of Interfaces and Interphases on the Time-Dependent Behavior
- Mechanics of materials from advanced manufacturing, such as additive manufacturing
 - Property characterization from AM
 - Process modeling and simulations of AM

- Material design using AM
- Time-dependent and Small-scale Effects in Micro/Nano-scale Testing

Possible topics include, but are not limited to: characterization and modeling of behavior at multiple scales; viscoelasticity, viscoplasticity; transport, chemically and electronically active processes; multiphase and biomaterial systems; thermodynamics; shape memory; mechanics of testing; aging effects; radiation effects; dynamic rate-dependent behaviors; large deformations; residual stresses; time (rate)-dependent damage and failure; time (rate)-dependent polycrystalline, single crystal and nanocrystalline behaviors; multifunctional materials; mechanics of processing; design methods; environmental interactions; experimental methods and techniques; linear and non-linear time-dependent behavior; time (rate)-dependent composite materials of all types; numerical analysis; rheological properties; temperature, pressure, and moisture effects on time dependence; damping.

Depending on the paper submitted, we plan to organize a student competition session to reward the best students who are working on mechanics of time-dependent materials.

Keynote Presentations: TBD