

Preface

Symposium on Time Dependent Constitutive Behavior and Failure/Fracture Processes represents one of six tracks of technical papers presented at the Society for Experimental Mechanics Annual Conference & Exposition on Experimental and Applied Mechanics, held at Indianapolis, Indiana, June 7-10, 2010. The full proceedings also include volumes on: Dynamic Behavior of Materials, Role of Experimental Mechanics on Emerging Energy Systems and Materials, Application of Imaging Techniques to Mechanics of Materials and Structures, Experimental and Applied Mechanics, along with the 11th International Symposium on MEMS and Nanotechnology.

Each collection presents early findings from experimental and computational investigations on an important area within Experimental Mechanics. The current volume on the *Symposium on Time Dependent Constitutive Behavior and Failure/Fracture Processes* includes studies on:

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; 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; physical aging; rheological properties; temperature, pressure, and moisture effects on time dependence; damping.

The papers in the Symposium address constitutive, time (rate)-dependent constitutive and fracture/failure behavior of a broad range of materials systems, including prominent researchers in both applied and experimental mechanics. Solicited papers involve non-negligible time-dependent mechanical response in cases incorporating non-mechanical fields. Papers address modeling and experimental aspects of the subject areas.

The organizers thank the presenters, authors and session chairs for their participation in this symposium.

The Society would like to thank the organizers of the track, H. Jerry Qi, *University of Colorado*; Richard B. Hall, *Air Force Research Laboratory*; Hongbing Lu, *University of North Texas*; Gyaneshwar P. Tandon, *University of Dayton Research Institute*; Bonnie R. Antoun, *Sandia National Laboratories*; Y. Charles Lu, *University of Kentucky* for their efforts.

Bethel, Connecticut

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Society for Experimental Mechanics, Inc

Time Dependent Constitutive Behavior and
Fracture/Failure Processes, Volume 3
Proceedings of the 2010 Annual Conference on
Experimental and Applied Mechanics
Proulx, T. (Ed.)
2011, X, 406 p., Hardcover
ISBN: 978-1-4419-9498-1