

Track for the SEM 2010 Annual Meeting in Indianapolis

“Application of imaging techniques to mechanics of materials and structures”

**Organizers: Prof. F. Pierron (Arts et Métiers ParisTech, France)
Prof. M. A. Sutton (University of South Carolina, USA)**

The main objective of this track is to gather contributions in the fast developing area of **imaging techniques applied to mechanics of materials and structures**. Such imaging techniques can be (non inclusive):

- Standard surface image correlation, grid, speckle or moiré interferometry
- Advanced imaging techniques for volume deformation measurements (X-ray tomography, optical coherence tomography, magnetic resonance imaging, ultrasounds etc...)
- Infrared imaging techniques
- High and ultra-high speed imaging for high strain rate testing.

The track will focus mainly on applications of these techniques and how they can improve the understanding, the modelling and the identification of the behaviour of materials and structures. Applications can be (but are not restricted to):

- Engineering materials (metals and alloys, composites, polymers etc...)
- Heterogeneous materials (welds, damaged materials, multi materials, functionally graded materials etc...)
- Soft and biological materials and tissues
- Smart materials (auxetics, active materials and structures...)
- High strain rate testing
- Micro and nanoscale testing
- Etc.

Specific sessions within the Track (not exclusive)

- **Inverse Problems**
 - Identification from full-field measurements: elasto-plasticity and metals
 - Organizers: Dr Marco Rossi, Arts et Metiers ParisTech, France
 - Dr Dimitri Debruyne, Ghent University, Belgium
 - Identification from full-field measurements: defects and flaws
 - Organizer: Dr John Considine, USDA, Forest Service, USA
- **Optical Methods**
 - Application of volumetric measurement in experimental mechanics
 - Organizers: Dr Phillip Reu, Sandia Laboratory, USA
 - Dr Fabrice Pierron, Arts et Métiers ParisTech, France
 - Infrared imaging and thermomechanics
 - Organizers: Dr Hervé Louche, Savoie University, France
 - Dr John Shaw, University of Michigan at Ann Arbor, USA
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- **Dynamic behaviour of materials / Optical Methods**
 - High speed imaging, high strain rate testing, dynamics
 - Organizers: Dr Marco Sasso, Università Politecnica delle Marche, Italy
 - Dr Richard Rohrer, NIST, USA
 - Dr Kathryn Dannemann, SWRI, USA
 - Dr Phillip Reu, Sandia Laboratory, USA
 - Dr Fabrice Pierron, Arts et Métiers ParisTech, France
- **Biological Materials**
 - Advanced imaging and identification techniques for mechanical testing of biological tissues
 - Organizers: Dr Cosme Furlong, WPI, USA
 - Dr Jane Grande-Allen, Rice University, USA
 - Dr Stéphane Avril, ENSM St-Etienne, France
 - Dr Bart Prorok, Auburn University, USA
 - Dr François Barthelat, McGill University, Canada
- **Composites**
 - Application of imaging techniques to the mechanics of composite materials and structures
 - Organizer: Dr Peter Ifju, University of Florida, USA
- **Micro and nano scales**
 - Imaging techniques at the micro and nano scales
 - Organizer: Dr Michael A. Sutton, University of South Carolina, USA