

## Call for Papers

### Adaptive Structure Special/Joint Sessions

## **Special Session: Characterization of MR Fluids/Elastomers Materials or MR-based Adaptive Structures**

Magnetorheological fluids (MRF) and elastomers (MRE) are smart materials which their rheological and viscoelastic properties can be instantly and reversibly changed under the application of an applied magnetic field. Due to their unique properties, these materials can provide a seamless interface between mechanical and electronic control system and thus can be effectively utilized for the development of semi-active adaptive structures and devices with low power requirements to control vibration in broad range of frequencies. This session addresses:

- The recent advances in development of new MRF/MRES materials, their experimental characterization and modeling.
- Development, design and modeling of MRF/MRE based devices.
- Integration of MRF/MRE devices with mechanical and structural systems for the purpose of shock and vibration control.

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## **Joint Session between Adaptive Structures and Spacecraft Structures: Adaptive Spacecraft Structures**

There has been an increasing interest in in-orbit deployment, assembly, and control of spacecraft structures and systems by integrating novel active, sensing, and functional materials. Examples include shape correction of apertures, sequential deployment of solar sails, and autonomous assembly of space structures, leading to the benefits of enhanced mass and packaging efficiency, lowered manufacturing complexity, and improved deployment reliability. This session invites research efforts on all aspects of materials, structures, and system integration pertaining to the goal of realizing adaptive spacecraft. Topics of interest include but are not limited to (1) active, sensor, and functional materials to acquire adaptivity in space environments (e.g. lightweight, high actuation strain and/or stress, cryogenic temperatures), (2) structural concepts and architectures with novel shape-change response such as bistability and multistability, (3) strategies of sensing and actuation in spacecraft structures and systems, such as integration of active materials or other means, and (4) design, analysis, fabrication, testing, control of adaptive spacecraft structures and systems.

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