

Special Issue on
Magnetorheological Elastomer Composites in Smart Materials

CALL FOR PAPERS

Smart materials are materials with properties that can be significantly altered in a controlled fashion by external stimuli, such as stress, temperature, pH, moisture, and electric or magnetic fields. Magnetorheological Elastomers (MREs) belong to a class of materials known as smart materials. An elastomer comprising a matrix interspersed with micron sized ferromagnetic particles is known as a Magnetorheological Elastomer (MRE). The rheological properties of MREs (the deformation and flow behavior under stress) are altered by the application of an external magnetic field. The characteristic response will be influenced by many factors including the elastomer matrix, the size, distribution, composition, and percentage volume of the ferromagnetic particles, and whether the ferromagnetic particles are aligned in chains or randomly dispersed. Besides magnetically controlled smart materials, magnetic composites such as magnetorheological elastomers and fluids have also demonstrated a high potential for damper applications and are especially promising if the magnetic field generation can be configured to be lightweight and flexible devices for shock absorber in damping capacitors. Owing to their benefits that include low mass, flexibility, nongeometric constraints, cost effectiveness, and miniaturization, soft actuators configured in a thin film are potentially available for use in various sectors.

The aim of the issue is to collect articles focusing on the synthesis, characterization, and applications of Magnetorheological Elastomer Composites as well as the mechanisms and kinetics of polymerization processes in composites. This special issue will cover physical, mechanical, and magnetomechanical coupling interactions of filler incorporated elastomer composites in the area of smart polymer materials.

Potential topics include but are not limited to the following:

- ▶ The design and implementation of iron filler or carbonyl iron filler based smart materials of magnetorheological elastomer composite
- ▶ Microstructure-property relationship of MREs composites and 3D micro computed tomography characterization
- ▶ Static and dynamic magnetomechanical properties of filler distribution of MREs composite and its applications

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/ijps/smma/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

Lead Guest Editor

Sneha M Samal, Institute of Physics of Czech academy of Science, Prague, Czech Republic
samal@fzu.cz

Guest Editors

Ignazio Blanco, Department of Civil Engineering and Architecture, University of Catania, Catania, Italy
iblanco@dii.unict.it

Agnieszka Kaczmarek-Pawelska, Institute of Machine Construction and Operations Engineering, University of Zielona Góra, Zielona Góra, Poland
a.kaczmarek@ibem.uz.zgora.pl

Submission Deadline

Friday, 18 January 2019

Publication Date

June 2019