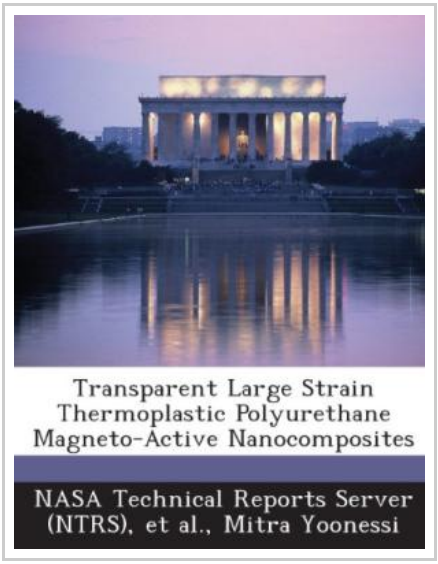

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Transparent Large Strain Thermoplastic Polyurethane Magneto-Active Nanocomposites

By Mitra Yoonessi

Bibliogov, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Smart adaptive materials are an important class of materials which can be used in space deployable structures, morphing wings, and structural air vehicle components where remote actuation can improve fuel efficiency. Adaptive materials can undergo deformation when exposed to external stimuli such as electric fields, thermal gradients, radiation (IR, UV, etc.), chemical and electrochemical actuation, and magnetic field. Large strain, controlled and repetitive actuation are important characteristics of smart adaptive materials. Polymer nanocomposites can be tailored as shape memory polymers and actuators. Magnetic actuation of polymer nanocomposites using a range of iron, iron cobalt, and iron manganese nanoparticles is presented. The iron-based nanoparticles were synthesized using the soft template (1) and Sun s (2) methods. The nanoparticles shape and size were examined using TEM. The crystalline structure and domain size were evaluated using WAXS. Surface modifications of the nanoparticles were performed to improve dispersion, and were characterized with IR and TGA. TPU nanocomposites exhibited actuation for approximately 2wt nanoparticle loading in an applied magnetic field. Large deformation and fast recovery were observed. These nanocomposites represent a promising potential...

Reviews

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