

**Department of Structural Engineering  
University of California, San Diego  
SE 290 Seminar**



**Professor Lizhi Sun**

Department of Civil and Environmental Engineering  
University of California, Irvine

**"Magnetorheological CNT Nanocomposites and Their Viscoelastic Responses"**

Wednesday, May 10, 2017

1:00 pm - 1:50 pm, Pepper Canyon Hall, Room 122

<http://structures.ucsd.edu/node/2126>

**Abstract**

Magnetorheological (MR) elastomer composites with the addition of multi-walled carbon nanotubes (CNTs) are developed. The viscoelastic responses of MR nanocomposites to applied magnetic fields are investigated through dynamic mechanical analysis. It is found that a small amount of carbon nanotubes can effectively improve the mechanical performance of conventional MR elastomers. The MR nanocomposites have shown not only large jumps in zero-field dynamic stiffness and damping, but also higher magnetic-field-induced improvement in these dynamic mechanical properties. In addition, a micromechanics-based viscoelastic constitutive model of nanocomposites was developed with a particular focus on the effect of imperfect interface between matrix polymer and carbon nanotubes.

## **Biography**

Dr. Lizhi Sun is Professor in Department of Civil and Environmental Engineering at University of California, Irvine (UCI). His primary area of research is the micro/nano-mechanics of heterogeneous composite materials, with applications in civil, mechanical, and aerospace engineering. His research has been sponsored by US federal funding agencies such as NSF, Army, Air Force, and Navy. He has published more than 90 peer-reviewed journal papers in the field of mechanics and materials. He wins numerous academic and research awards such as Fellow of ASCE's Engineering Mechanics Institute (2014), UCI Civil and Environmental Engineering Professor of the Year (2013), AFRL Faculty Fellow (2011), UCI School of Engineering Fariborz Maseeh Best Faculty Research Award (2008), Honda Research Initiation Award (2006), and UCLA Engineering School Outstanding Ph.D. Award (1998). Dr. Sun is an editor for International Journal of Damage Mechanics and an associate editor for ASCE's Journal of Engineering Mechanics and Journal of Nanomechanics and Micromechanics. He has organized more than 50 symposia for various societies and served as a reviewer for more than 70 journals and 10 funding agencies (e.g. NSF, NIH, and DoD). Dr. Sun has been the technical committee chair for ASCE-EMI Committee on Inelasticity Modeling and Multiscale Behavior (2009-2011), ASCE-EMI Committee on Nanocomposites (2012-2013), and ASCE-EMI Committee on Nanomechanics and Micromechanics (2014-Present).

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*Sponsored by Professor Kenneth Loh  
For more information on this seminar, contact Lindsay Walton,  
at 858-822-3273 or [lwalton@ucsd.edu](mailto:lwalton@ucsd.edu)*