

**DANIEL J. EPSTEIN DEPARTMENT OF  
INDUSTRIAL AND SYSTEMS ENGINEERING**

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**EPSTEIN INSTITUTE SEMINAR • ISE 651 SEMINAR**

***Scalable Nanomanufacturing of High  
Performance Metallic Nanomaterials***

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**ABSTRACT**

Research activities on nanoscience and nanotechnology have enjoyed an explosive growth over the last 10 years, while the transition from nanoscience to scale-up nanomanufacturing (high volume nanoproduction) has been the major bottleneck for nanotechnology to realize its tremendous potential. Incorporation of nanoelements (e.g. nanoparticles, nanotubes, nanofibers, and nano-platelets) into various functional materials can obtain unusual physical, chemical, and mechanical properties. However, it is extremely difficult to realize scale-up nanomaterials manufacturing. This talk will discuss about various scientific and technological aspects that are crucial for forging nanoscience and manufacturing processes to realize scalable nanomaterials manufacturing. It will particularly focus on our research activities on Solidification Nanoprocessing, a novel scalable nanomanufacturing process, for fabrication of light weight metallic nanomaterials. Bulk aluminum and magnesium based nanomaterials with superior structural and functional properties have been successfully fabricated. High performance metallic nanomaterials will significantly improve energy efficiency for numerous applications/systems, reducing use of nonrenewable fuels and lowering greenhouse gas emissions. Solidification Nanoprocessing promises to become a transformational technology for economical production of high performance nanomaterials.

**TUESDAY, APRIL 3, 2012  
ANDRUS GERONTOLOGY BLDG (GER) ROOM 309  
3:30 – 4:50 PM**

**Bio:**



**Xiaochun Li** is a professor in the Department of Mechanical Engineering and Materials Science Program at University of Wisconsin-Madison (UW-Madison). He received his Ph.D. in Mechanical Engineering at Stanford University in 2001. He currently serves as the founding Director of Nano-Engineered Materials Processing Center (NEMPC) at UW-Madison. Dr. Li received NSF CAREER award in 2002, Jiri Tlustý Outstanding Young Manufacturing Engineer Award from Society of Manufacturing Engineers in 2003, and 2008 Howard F. Taylor Award from American Foundry Society (AFS).