



Presented By:

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Department of
Civil and Environmental
Engineering

Civil Engineering Seminar Series

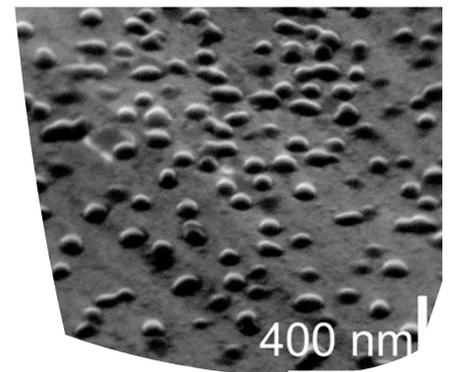
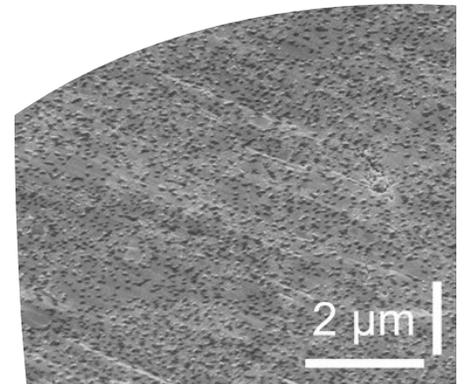
Thursday, February 16th, 2017

MDEA

2:00PM - 3:00PM

Super Metals With Self-Dispersed Nanoparticles

High performance metals offer tremendous potential to improve energy efficiency and system performance for numerous applications. However, conventional processing methods have reached certain limits in further improving the properties of metals. Nanoparticles can be used to further improve the performance of light metals. Unfortunately, there is a long standing challenge in nanoparticle dispersion and stabilization in molten metals, preventing mass solidification processing of bulk super metals containing populous nanoparticles. Here we show a newly discovered mechanism of nanoparticle self-dispersion and stabilization to achieve a uniform self-dispersion of high loading nanoparticles in various molten metals to deliver unprecedented properties for Super Metals, such as strength, stiffness, plasticity and high temperature stability. This talk will specifically discuss our recent progress on super metals produced by solidification processing and laser additive manufacturing. This approach of Super Metals paves a revolutionary way to enhance the performance of all metals to meet energy and sustainability challenges in today's society.



Professor Xiaochun Li is the Raytheon Endowed Chair in Manufacturing Engineering in the Departments of Mechanical and Aerospace Engineering & Materials Science and Engineering at University of California, Los Angeles (UCLA). He currently serves as the Chief Technology Officer for the California Smart Manufacturing Center, DOE Clean Energy Smart Manufacturing Innovation Institute. He received his Ph.D. at Stanford University in 2001. He is a holder of multiple best paper awards and patents, including five of those licensed by industry. Dr. Li received National Science Foundation 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). Dr. Li was previously a professor in the Department of Mechanical Engineering and Materials Science Program at University of Wisconsin-Madison (UW-Madison) from 2001 to 2013. He served as the Director of Nano-Engineered Materials Processing Center (NEMPC) at UW-Madison between 2009 and 2013. Dr. Li has been elected Fellows in American Society of Mechanical Engineers and the International Society for Nanomanufacturing.

Questions? - cee@uci.edu - (949) 824-7548