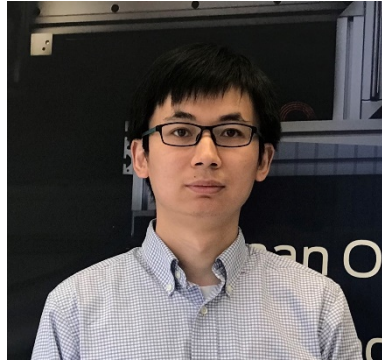


The Department of Mechanical Engineering
College of Engineering and Applied Sciences
Stony Brook University

Mechanical Engineering Seminar



Dr. Hongyi Xu

**Assistant Professor, Department of Mechanical Engineering
University of Connecticut**

**Lecture Title: Uncertainty Quantification Methods for Stochastic Microstructure
Characterization, Reconstruction, and Modeling**

Friday, October 25, 2019 at 1:30 PM, Room 173 Light Engineering Building

Abstract

Computational material engineering accelerates the process of discovery and development of new materials of superior performances that are not available in the traditional materials. However, analysis and design of microstructural materials are challenging due to the heterogeneous, spatially correlated uncertainties distributed in the microstructure-mesostructure-structure system. In this talk, the speaker will introduce two enablers of computational materials design: (i) statistical characterization of heterogeneous microstructures based on microscopic images, (ii) stochastic reconstruction of random but statistically equivalent 3D digital microstructures, and (iii) structure performance analysis considering uncertainties at multiple length scales.

Biography

Dr. Hongyi Xu joined the UConn Department of Mechanical Engineering as an Assistant Professor in February 2019. His research focuses on developing design optimization and uncertainty quantification methods for the analysis and design of heterogeneous microstructural materials. His research interests also include Design for Additive Manufacturing (DfAM) and data mining-enhanced multi-disciplinary optimization. Prior to joining UConn, Dr. Xu worked in Ford Research and Advanced Engineering (2014-2019). He led and participated in a variety of research projects, including structure optimization for lightweight vehicle design, Integrated Computational Materials Engineering (ICME) of carbon fiber composites, Lithium-ion battery impact safety, and design of mesostructure-structure systems for Additive Manufacturing. He received his B.S. in Mechanical Engineering from Northeastern University, China (2008), M.S. in Mechanical Engineering from Tsinghua University, China (2010), and Ph.D. in Mechanical Engineering from Northwestern University, USA (2014).

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