ECE Seminar: MEMS and Metamaterials: A Perfect Marriage at Terahertz Frequencies
Professor Xin Zhang, Boston University
Friday, November 20, 2015; 12:30 p.m. (Pizza served at noon!)
Location: W122

Short biography: Xin Zhang is currently Professor of Mechanical Engineering at Boston University. Her research has focused on fundamental and applied aspects of micro-- and nanoelectromechanical systems (MEMS/NEMS or micro/nanosystems). Specifically, she seeks to understand and exploit interesting characteristics of micro/nanomaterials, micro/nanomechanics, and micro/nanomanufacturing technologies with forward--looking engineering efforts and practical applications ranging from energy to health care to homeland security. Dr. Zhang is a Fellow of American Society of Mechanical Engineers (ASME) and a Fellow of the Optical Society (OSA). IN 2009, she was named the inaugural Distinguished Faculty Fellow, an honor given to tenured College of Engineering faculty at Boston University who is on a clear trajectory toward exemplary leadership career in all dimensions of science and engineering.

Abstract: Metamaterials have ignited a world--wide flurry of research based in part on the realization of negative refractive index, and the idea of coordinate--transformation design of materials leading to exotic phenomena such as electromagnetic cloaking or energy concentration. The implementation of such ideas is exciting, but is most likely a long--term proposition in terms real--world applications. Briefly, metamaterials are sub--wavelength composites where the electromagnetic response originates from oscillating electrons in highly conducting metals allowing for a design specific resonant response of the electrical permittivity or magnetic permeability. This is especially important for the technologically relevant terahertz frequency regime where there is a strong need to create components to realize applications ranging from spectroscopic identification of hazardous materials to noninvasive imaging. In this talk, I will explore creating active structures and devices to enhance our ability manipulate and detect far--infrared, or terahertz, radiation by combining electromagnetic metamaterials with Microelectromechanical Systems (MEMS) technologies.

ALL Engineering and NSM Students are INVITED!