



Friday 9th November 2018,
3.30-4.30 pm
113 McBryde Hall

SYNTHESIS AND CHARACTERIZATION OF BORON CARBIDE ONE-DIMENSIONAL NANOSTRUCTURES

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Abstract

In this presentation, our recent progress on synthesis and characterization of boron carbide one-dimensional (1D) nanostructures, a promising class of nanomaterials for thermoelectric energy conversion application, will be reviewed. Results related to material synthesis by low pressure chemical vapor deposition, detailed materials characterization using Transmission Electron Microscopy, study of mechanical properties using in-situ testing within a scanning electron microscope, exploration of thermal transport properties with a unique micro-device will be discussed. For studies of properties, all measurements are done on individual nanostructures, and measured results are correlated to microstructural features, such as nature of defects of the tested nanowires so that clear structure-property relations are being obtained.

Bio-sketch

Dr. Xu is a professor in the Department of Mechanical Engineering and Engineering Science (MEES) at the University of North Carolina at Charlotte (UNC Charlotte). She received her Ph.D. degree from Northwestern University with major in mechanical engineering in 2004. Her research areas include synthesis and characterization of boron-based 1D nanostructures, measurement of mechanical properties of individual nanostructures and exploration of their applications in thermoelectric energy conversion. Her research has been funded by National Science Foundation (NSF) including the CAREER award, Department of Defense (DoD), American Chemical Society – Petroleum Research Fund (ACS-PRF), Lockheed Martin Corporation and others. Her work has been published in high impact journals, such as Nature Nanotechnology, Physical Review Letters and Nano Letters.