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NUSNNI FOE Seminar

Nanostructured Materials Enabled by Electrospinning

Speaker:

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VENUE : Blk EA#02-11 Executive Seminar Room, Faculty of Engineering

Abstract

Electrospinning is a simple and versatile technique for producing fibers with nanoscale diameters and long lengths. Traditionally this method is used to create randomly oriented non-woven mats of organic fibers from polymer solutions or melts. By co-spinning sol-gel precursors with an alcohol soluble polymer, we have extended this technique to the fabrication of composite and ceramic fibers with excellent size control down to tens of nanometers. Additionally, we have made a number of important modifications to the electrospinning setup. Using a coaxial spinneret, we have been able to manufacture porous, hollow, and core-sheath nanofibers and control the surface chemistry of resultant fibers by tuning the core and sheath solutions. We have also used patterned collectors to uniaxially align arrays of nanofibers. These arrays could be readily stacked into structures for device fabrication and tissue engineering. This talk will cover these advances, with a focus on the fabrication of functional nanofibers and architectures relevant to various applications.

About the Speaker

Younan Xia is a Professor of Chemistry at the University of Washington (UW) in Seattle. His research interests include development of new methodologies for shape-controlled synthesis of nanomaterials and fabrication of functional nanostructures and devices. He received a B.S. degree in chemical physics from the University of Science and Technology of China (USTC) in 1987 and worked as a graduate student at the Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences. He came to the United States in 1991, received a M.S. degree from the University of Pennsylvania (with Professor Alan G. MacDiarmid) in 1993, and a Ph.D. degree in physical chemistry from Harvard University (with Professor George M. Whitesides) in 1996. He joined the UW faculty as an Assistant Professor of Chemistry in 1997, and was tenured in 2002 and then promoted to Professor in 2004. He has received a number of awards, including an NIH Director's Pioneer Award (2006) and a David and Lucile Packard Fellowship in Science and Engineering (2000).

~ All are welcome ~

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