



## ***Directed Assembly on Patterned Polymer Substrates: From Photonics to Soft Robotics***

Wednesday, January 31, 2007

**\*\*ROOM CHANGE\*\***

**Babbio 321, 11:00am**

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University of Pennsylvania

As beautifully exemplified in diatoms, butterflies, lotus leaves and gecko feet, biological systems provide an ideal inspiration to the development of new functional hybrid materials. They often possess both nano- and microstructures with remarkable optical, mechanical, wetting and adhesion properties. Our interest is to learn from the biological design and reformulate it into a synthetic context. In my talk, I will discuss the patterning of various periodic structures, including ripple and herringbone structures, high-aspect-ratio nanopillar arrays, and 3D photonic crystals from different polymer systems. On such patterned polymer surfaces, we demonstrate dynamic tuning of the wetting and adhesion behaviors, and directed assembly of inorganic nanoparticles.

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**Shu Yang** is Skirkanich Assistant Professor in Materials Science & Engineering at University of Pennsylvania. Her research interests include the convergence of top-down and bottom-up approaches for assembly of complex, multi-functional structures from polymers and organic-inorganic nanocomposites toward applications in photonics, surface, soft robotics, energy, and biotechnology. Yang received her BS degree from Fudan University, China in 1992, and Ph. D. degree from Chemistry and Chemical Biology under the supervision of Professor Christopher K. Ober in Materials Science and Engineering at Cornell University in 1999. She then joined Bell Laboratories, Lucent Technologies as a Member of Technical Staff till 2004. She has co-authored 40 technical papers, held more than 20 patents issued and pending, presented made more than 50 invited talks, and edited 2 books. She is a recipient of ICI (1999) and Unilever award (2001) for outstanding research in polymer science and engineering from ACS. She was selected to "Frontier of Engineering by the National Academy of Engineering (2002). She and the Bell Labs team received 'Technical Insights' Excellence in Research award from Frost and Sullivan on "Microfluidics in Photonics" (2003). She was selected by MIT's Technology Review as one of the world's top 100 young innovators under age of 35 (2004). She received the prestigious Faculty Early Career Development (CAREER) award from NSF in 2006.

**Light refreshments will be served prior to seminar**

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