Materials Science & MRSEC Seminar

"Designing Nanostructured Materials with Block Copolymer Self Assembly"

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Date:	**Thursday, September 24th, 2015**
Time:	**4:00 PM, Room 265 MS&E Bldg.**
Hosts:	**Prof. Padma Gopalan, Materials Science & Engineering Department**

ABSTRACT:

Block copolymer thin films provide a robust method for generating regular, uniform patterns at length scales in the range of ten nanometers, over arbitrarily large areas. A significant advantage of block copolymer-based patterning is its ease of integration with all other aspects of traditional thin-film processing, including plasma-based etching and metallization.

We have been using block copolymer lithography to design the electronic and optical properties of nanostructured, thin-film materials. For example, I will describe our recent use of this approach to engineer broadband omnidirectional antireflection in silicon for solar devices. Precisely controlling surface texture through block copolymer-based patterning can also render a material superhydrophobic, and able to resist water droplet impacts even in excess of 10 meters per second. Finally, I will show some recent progress fabricating nanostructured plasmonic substrates for high-sensitivity detection of molecules, which we have been using for identification of trace explosives.