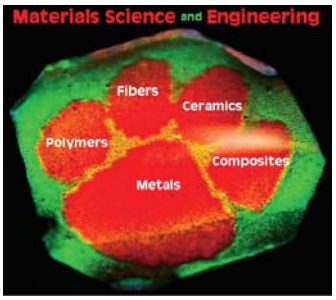
Seminar Series

Sponsored by
School of Materials Science and Engineering
Thursday, September 11, 2008, 5:00 PM
Room 200 Olin Hall



AFM Workshop Abstract

September 11th 2008, 5:00 PM

Olin Hall 200

In the early 1980's surface energy became a useful way to affect the materials currently then in use. It was also in this decade that Gerd Binnig and Heinrich Rohrer were awarded the Nobel Prize for the invention of the Scanning Tunneling Microscope. The similar AFM was developed shortly after that. These instruments ushered in the era of instrumental surface analysis and alteration at the atomic scale. The invention of Scanning Tunneling Microscopy (STM) in 1982 eliminated the use of optical lenses and replaced conventional optical microscopes with a new class of microscopes called the Scanning Probe Microscopes (SPM). Because of their unique characteristics such as higher resolution and acquisition of nano-scale images without affecting the physical properties of the sample, they have found wide applications in a variety of scientific disciplines such as biology, material science, and electrochemistry. The AFM/STM has evolved as a tool of nanomanipulation and nanofabrication. It operates in two modes: constant current mode and constant height mode. Nanoindentation was developed as an offshoot of AFM technology. In fact, some AFMs are useable as crude nanoindenters. Also known as indentation, it is a nondestructive technique that provides depth-dependent mechanical property data on any sample.