Integrating Nanotechnology with Cell Biology and Neuroscience

INCBN IGERT Seminar

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Scanning Probe Microscopy Applications in Science and Engineering

Atomic force microscope (AFM) has become an essential research tool in science and applied science. There are many commercially available room-temperature AFMs based on the laser beam bounce detection scheme due to ease of operation. However, low-temperature and high-temperature AFMs are rare and expensive, so research on a variety of interesting phenomena arising either at low or high temperatures is limited. Low temperature AFM can be applied for measuring material properties such as electric, magnetic, and physical properties in nanoscale at low temperatures, and also be applied for manipulating a nanoscale system. In this talk, a variety of AFM capabilities will be presented, and how these capabilities can be applied for interesting materials such as superconductivity, colossal magnetoresistance materials, and metal-insulator transition materials. AFM applications in biological systems will be also discussed.

Classical vortex

Quantum vortex