

**DEPARTMENT OF PHYSICS
College of Arts and Sciences**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: MARCH 1, 2004

The Department of Physics is pleased to offer the following research project(s) for the summer of 2004. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be, and if possible, develop a timetable for the twelve-week research period.

Optical and STM Investigation of Nanostructured Materials

Professor David B. Mast

684 ERC (513) 556-0548 FAX: (513) 556-3425

E-Mail: David.Mast@UC.edu

The development and use of scanning probe microscopes (SPM) have provided researchers with breathtaking images of materials down to atomic length scales. This research involves a novel approach to combining two such SPM's, an Evanescent Optical Microscope (EOM) and a Scanning Tunneling Microscope (STM), into one sensor device. This EOM/STM would allow for the first time the simultaneous scanning of both the optical and the electrical properties of a sample (i.e., at the same exact location and at the same time) with sub-micron spatial resolution. Materials that will be investigated include carbon nanotubes and DNA.