CRISP Research Experiences for Undergraduates Program

Center for Research on Interface Structures and Phenomena
Materials Research Science and Engineering Center-Yale/SCSU/BNL

SCSU Materials Research Group – Special Opportunity*
Scanning Electron Microscopy Workshop Series

Workshop summary: Offered during the Fall 2005 semester, this laboratory workshop series introduces students to the use of the scanning electron microscope (SEM), as well as associated techniques and equipment.

SEM workshop description: Scanning electron microscopes permit the examination of surface features of materials at high magnification. In these hands-on workshops, students learn how to prepare specimens for electron microscopic study and how to use the SEM to examine and photograph these specimens. In addition to learning how to adjust SEM parameters for optimal imaging and data collection, sample preparation techniques will be taught. These may include carbon evaporative coating, gold or gold/palladium sputter coating, tripod polishing, critical point drying (for hydrated specimens), and x-ray microanalysis for elemental composition determinations. The theory behind these techniques and the use of the SEM will also be considered. This workshop series is ideal for students interested in independent research.

Format: SEM Workshop participants will meet once a week for a 3-hour lecture/lab period from 6:30 to 9:30 PM, on Thursday evenings. Tuesday evenings (same time) may also be used as an alternate. Once they are checked out on the instrumentation (approximately 7 weeks into the semester), students may choose to spend additional time on the SEM and support instrumentation to work on independent projects. The text is "Scanning Electron Microscopy: A Handbook for Students" by Postek et al. Supplemental readings and handouts will also be assigned.

Prerequisites: Pre-reqs include patience, persistence, and preferably at least one prior science lab course experience.

Instructors: Ann Lehman, Project Manager, CRISP NanoCharacterization Facility at SCSU, Christine Broadbridge, Professor of Physics, SCSU