Student Sampling Using the STM

Objective(s)

The student will obtain atomic resolution using the scanning tunneling microscope

Materials

- Computer with Easy Scan software – installed
- Scanning tunneling microscope and interface
- Platinum wire
- Mounted graphite and gold samples
- Forceps
- Wire cutters
- Needle nose pliers
- Magnifying glass

Engagement

- Discussion of STM technology by Dr. Art Smith
- Prior use of Easy Scan Simulation software

Exploration

- Students will use Easy Scan software to duplicate the simulation software image exercise (to atomic resolution)

Explanation

- Teacher will provide additional assistance for techniques not covered in the simulation (cutting tips, loading the sample, and obtaining tunneling voltage)

Evaluation

- Students will achieve atomic resolution and will make measurements as completed in the student simulation

Extension

- The student will share articles related to nanotechnology
- The student will participate in a field trip to see STM’s in use at Ohio University
- The student will participate in a long-term project or discussions concerning nanotechnology via the ATOMS discussion forum