



Module: Introduction to Material Science
Focus: *Atomic Force Microscope*
Duration: 43 minute period



- Objectives:**
1. Students will be able to define the term “nanoscience.”
 2. Students will develop a working understanding of the Atomic Force Microscope (AFM).

Materials:

- Laser Pointer
- Flexible Ruler
- Small Mirror
- Tape
- Various Beanie Babies
- Ring Stand & Clamp

- Procedures:**
1. Review the Atomic Force Microscope.
 2. Students will complete a lab on the AFM.

Assignment: 1. Complete lab write up.

Assessment: 1. Laboratory Journal, Classroom Participation, Quizzes & Test.

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Teacher Notes:

Before class, tape a small mirror on the end of your flexible ruler. Connect the laser pointer onto the ring stand so that the laser beam will hit off the mirror at the end of the ruler and reflect onto a wall, or ceiling, that is visible to all the students.

After a quick review of the Atomic Force Microscope, introduce today's teacher led lab on the AFM. In this lab, the students will be the "computer" that has to interpret the data sent by the reflected laser beam from the cantilever. I will drag various Beanie Babies under the ruler. Each student is to observe and record the pattern the laser beam is reflected off each of the various Beanie Babies.

When that stage of the lab is complete, the teacher is to place an object that blocks the view of the Beanie Baby from the class but does not interfere with the reflected laser beam. The students now have to observe each of the reflected laser patterns and try to correctly identify which Beanie Baby is responsible for each.

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