

NANO HIGHLIGHT

The Summer Institute for Middle School Teachers 2006

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SUMMER 2006: The Summer Institute for Middle School Teachers (SIMST) aims to educate teachers about nanoscale science in exciting, simple terms while increasing their knowledge of physical science. Teachers are provided practical, explicit activities and low-cost kits to illustrate the action of nanoproboscopes at a humanly-accessible length-scale. The CPN offered a pilot SIMST in June (19th-21st) of 2006. Teachers worked closely with CPN scientists on inquiry-based modules that were designed to explicitly address

California's 8th grade physical science content standards. In addition to lectures and hands-on activities, teachers participated in lab tours where they operated a state-of-the-art scanning tunneling microscope (STM) capable of imaging and manipulating matter at the atomic level. Teachers also received a stipend and Continuing Studies Credits to meet their professional development requirements. Sixteen teachers came from a broad range of middle schools in northern California with 38% of the teachers serving Title I schools.



A diverse group of teachers attended SIMST in June 2006, Stanford.

Why Middle School? Middle school is a crucial time for students to form an interest in science, or conversely to lose interest in science. It is the beginning of the science and engineering pipeline problem but it is also an opportunity to fix a leak in the pipeline by capturing students' interests with exciting cutting-edge science.



Teachers were allowed to operate some advanced nanoproboscopes. In this picture a teacher (Connie Biehle) is using a scanning tunneling microscope to move individual carbon monoxide atoms across a copper surface.

Why teachers?

Teachers can reach hundreds of students each year and they have a profound influence on their students' interests. By inspiring and educating teachers we hope to make a broad and deep impact on 8th grade science education. We seek to build long-term relationships with teachers by following up during the school year.



During lab tours teachers received simple explanations of the underlying principles of nanoscience and technology. This teacher (Dixie Sinkovitz) is looking into the sample chamber of a scanning tunneling microscope.