

NANO HIGHLIGHT

CPN Outreach Partnership with The National Hispanic University

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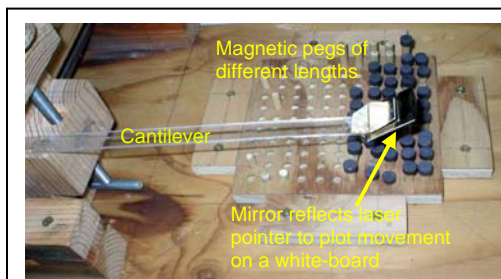
STANFORD
UNIVERSITY



THE NATIONAL
HISPANIC UNIVERSITY

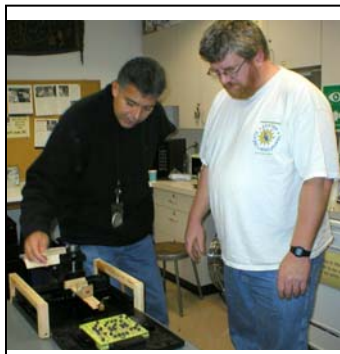
The Nanoscale Science and Engineering Center for Probing the Nanoscale (CPN) is a collaborative research effort that focuses on the development of novel devices for visualizing and controlling nanoscale objects and phenomena. In addition to performing cutting-edge research, the Center is dedicated to creating a scientifically literate community through outreach programs such as the Summer Institute for Middle School Teachers and through partnerships with teachers at local institutions such as The National Hispanic University. By focusing outreach efforts on teacher development, the Center will be able to reach more students in a greater variety of communities to have a significant impact on their engagement in science.

The National Hispanic University (NHU) is an accredited institution in San Jose that provides a multicultural educational experience to a diverse array of community members, including latinos and other minorities. The CPN has also established ties with teachers at the Latino College Preparatory Academy (LCPA), a charter high school that works closely with NHU to train teachers and pilot-test curriculum. LCPA was established to provide an alternative learning environment for students who do not do well in traditional high schools because of language differences.



Prototype model of magnetic force microscope built by Prof. William Cruz and Andy del Hierro of NHU/LCPA.

The partnership between the CPN and NHU/LCPA began through the Research Experience for Teachers (RET) program and has grown into an on-going effort to develop nanoscience learning modules. Recent collaborative efforts have focused on making demonstration models of scanning probes, such as the magnetic force microscope (MFM) and scanning tunneling microscope (STM). These models can be effective tools for teaching both students and the general public about nanotechnology devices. For example, the MFM model can be used to demonstrate the general principles of both forces and magnetism, while enhancing the student's understanding of how very small objects are visualized.



Prof. William Cruz demonstrates how an MFM model could be used as a basis for guided inquiry at an Exploratorium Teacher's Institute session focused on nanoscience.

Curriculum being designed for the Summer Institute for Middle School Teachers will use scanning probe models to explicitly address the California State Science Content Standards for 8th grade. For example, an STM module is being developed that targets Forces 2.1, 2.3-6 and Structure of Matter 3.3, 3.5. The goal is to provide alumni teachers access to a lending-library of demonstration models as well as continuing technical support on how to use them.