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SANTA CLARA UNIVERSITY

CENTER FOR Nanostructures



“ THE CENTER FOR
NANOSTRUCTURES
is a great place to
expose students to
cutting-edge science,
to educate them on how
the science develops
into new technologies,
and to sharpen their
analytical and hands-on
skills in the process.”

CARY YANG, FOUNDING DIRECTOR

For further information, please contact

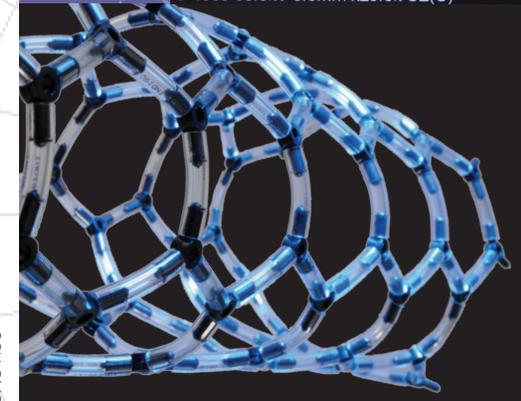
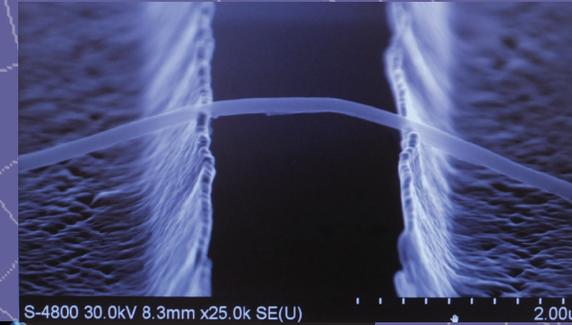
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The Jesuit University in Silicon Valley



Nanotechnology

Nanoscale science and technology is a new frontier in engineering and science dealing with the creation of functional materials, devices, and systems at a length scale of less than ten-thousandth of a millimeter, or about 100,000 times thinner than a human hair.

Research in this burgeoning field focuses on understanding the novel properties—physical, chemical, biological, electrical, magnetic, mechanical, and optical—of various nanomaterials and how those properties can be exploited for a wide variety of applications. Examples of nanotechnology relate to enhanced performance and increased reliability in electronic systems, advancements in bioengineering and functionally novel materials.

Center for Nanostructures

Located in the heart of Silicon Valley, a region with a history of innovation and a locus for nanotechnology and its advances, the Center for Nanostructures (CNS) promotes interdisciplinary research by bringing together engineering and science faculty and students to collaborate on various projects. CNS also supports University courses with enhanced laboratory opportunities, further educating students and faculty in nanotechnology. CNS positions Santa Clara University as a national center of innovation in nanostructures research and education.

Research

CNS has a history of innovative projects and externally funded support. The center has contributed to the advancement of science with recognized high-quality publications.

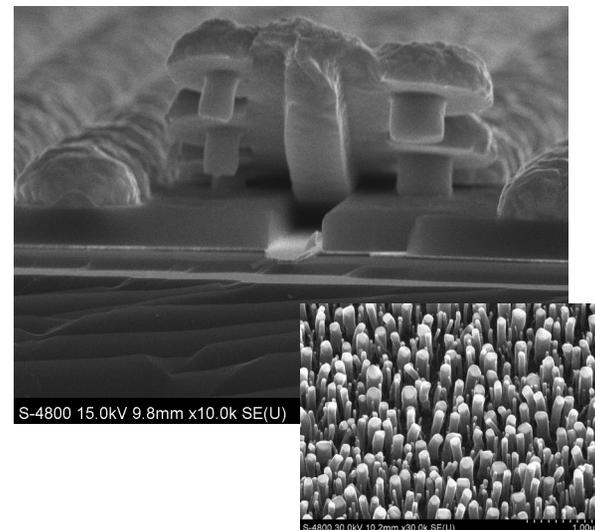
CNS supports a growing number of projects including studies of

- thermal interface materials for improved heat dissipation,
- novel electrical interconnect materials for enhanced performance,
- polymer nanocomposites for tissue engineering and regenerative medicine,
- stability and structure of polymer-based solar cells,
- sensitive biosensors for pathogen detection, and
- human health and environmental implications of nanoparticles.

Undergraduate and graduate students in CNS carry out experiments on materials synthesis, device fabrication, electrical characterization, and electron microscopy. The CNS research environment allows continuous interaction among students, faculty, and full-time and visiting researchers.

The CNS facility houses state-of-the-art technology and equipment in a class 100 clean room.

Major equipment includes a high-resolution Hitachi S-4800 Field Emission Scanning Electron Microscope equipped with a Zyvex Nanoprobe System, an electrical measurement system consisting of a CASCADE Microtech Summit 12000 Series Probe Station and DC and AC parameter analyzers, and a Veeco Dimension 3100 Scanning Probe/Atomic Force Microscope System.



**Carbon-based nanostructures
for next-generation
computer chip technology**

Education and Outreach

Nanoscience/technology is a highly interdisciplinary field incorporating all biological and physical sciences and engineering. CNS supports education programs and curricula at both undergraduate and graduate levels to complement its research activities. The Santa Clara University School of Engineering offers courses in nanoscale science and technology, nanomaterials, and nanoelectronics in synergy with the research and educational mission of CNS.

Recognizing and addressing the critical need for cultivating the next generation of engineers, CNS has sponsored summer fellowships for high school teachers under the Industry Initiatives for Science and Math Education (IISME) Program. The Center for Nanostructures regularly hosts local middle and high school students participating in various science- and technology-related programs in Silicon Valley, introducing them to nanoscience and the exciting opportunities available in this field.