**Engineering with a Mission**

Santa Clara University’s mission is to educate the whole person, instilling competence, compassion, and conscience. Through this approach, students are empowered to excel at their studies, and to use their knowledge and skills to create a more just, humane, and sustainable world.

The School of Engineering at Santa Clara University is dedicated to providing impactful experiences in and out of the classroom.

Working as a community, students from the School of Engineering have served in solidarity with many people around the globe. From designing and building a bicycle-powered water purification system in Guatemala, to running satellite operations for NASA, Santa Clara students have been collaborating on impactful projects all over the world.

All graduate mechanical engineering students engage in culminating research, either by writing a formal thesis or by participating in structured and course-based projects.

One particularly exciting course within the School of Engineering is **Experiments in Materials Science**. During this course, students perform experiments with highly advanced instruments and techniques to examine the structural and physical properties of materials.

One of these techniques is called **Atomic Force Microscopy**, which scientists use to study a material’s surface at the atomic level.

Imagine how a turntable needle passes over small bumps in a record and translates these into sound. Atomic force microscopy works in a similar way, except on a much smaller scale: a sharp tip is run over a material and its motion is recorded, which can be translated into information about the material’s properties.

Typically, this technique is used to measure a material’s surface topography, but other properties such as mechanical stiffness, electrical conductivity and magnetisation can also be determined.

In an exciting culminating research project lead by Dr Starostina, two students recently validated a new way to examine the surface of a ‘twinned’ alloy material. Using atomic force microscopy allowed them to measure the dihedral angle between two twinning planes that intersect the material’s surface.

Knowing these angles can help engineers and scientists to determine otherwise hard-to-measure fundamental parameters when developing new materials for countless practical applications. The students’ paper has since been peer-reviewed and published in a scientific journal.

And this is just one example of how Santa Clara University provides students with the training and opportunities they need to positively influence the world around them.

Through **Experiments in Materials Science** and other courses within the School of Engineering, Santa Clara’s values-based approach to education nurtures students to become competent and compassionate leaders, who are well-equipped to solve the engineering and ethical challenges of the future.

**REACH OUT TO US!**

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