

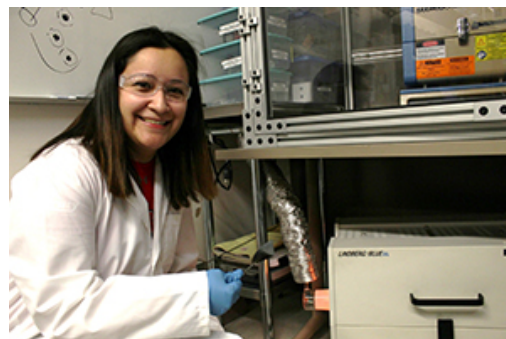
UNDERGRADUATE AWARDED \$1,000 TO TRANSFORM NANOSTRUCTURES

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University of Utah senior Dinorah Segovia is putting her love of math, engineering and the community together.

"I actually didn't really like that there wasn't enough math in healthcare and so now electrical engineering is a great option to help people in a different way," she said. "I really like to solve problems and build things.

It's more of a hands-on thing."



With U electrical and computer engineering assistant professor Heayoung Yoon as her advisor and \$1,000 in capstone funding from the U, Segovia aims to expand the list of uses of nanotechnology by improving the optical sensitivity of nanopillars.

"The nanopillars that we're building can be used for biosensors and chemical detections," Segovia said. "You can do a lot of things with them and especially in the field of integrated biomedical systems."

Segovia is taking over a million silicone nanopillars per square centimeter, covering them in pure gold, and diffusing the gold into the nanopillars. By creating metal nanoparticles in the semiconductor nanopillars, the team expects to see a strong enhancement of weak signals from their target molecules.

"You pretty much just shine light onto the nanopillars and see what photons come out of there," she explained. "You'll be able to detect the biomolecules in the sample, find out those optical and electrical properties, and get good enough data to apply them to biosensors, to solar cells, to a lot of different things."

The project was made possible by taking advantage of close collaborations with Utah Nanofab staff engineers Tony Olson and Brian Baker, graduate student Yang Qian, Los Alamos National Laboratory researcher Jinkyong Yoo, and the tools and funding of the University of Utah.

"[Yoon] has really helped me to see that there are a lot of options for research," Segovia said. "She has really pushed me to see that there are opportunities out there and that you just need to go and take them."

Segovia juggles research, a job and full-time school and is still able to make her mark on the scientific community.

"Segovia is an enthusiastic and bright undergrad, and she has the capability to do it," Yoon said. "I think she is making excellent progress for this whole community."