

## SANTA BARBARA CITY COLLEGE ADMINISTRATORS EXPLAIN HOW PARTNERSHIPS ARE DEVELOPING CENTRAL CALIFORNIA'S NANOTECH WORKFORCE

Forty-two people from 18 colleges learned about workforce pathways for micro- and nanotechnologies during the spring webinar of [CCPI-STEM's](#) Southwest region.

The May 14 webinar—subtitled Mutual Interest Partnerships Are Key!—featured two [Santa Barbara City College](#) administrators talking about the [California Central-Coast Partnership for Industry-focused Micro-Nanotechnology Education](#). The partnership formally started in 2021 with a \$299,974 [Advanced Technological Education](#) grant from the [National Science Foundation](#) and began to expand in 2024 after the college received another [ATE grant](#) for \$649,927.

Dr. Maria L. Villagómez, vice president and assistant superintendent at Santa Barbara City College, explained that the ATE projects address the needs of regional nanotech employers who told community college administrators and faculty that the lack of nanotechnology skills among the local workforce was “an impediment” to their growth.

“We wanted to build a pathway for students to be workforce-ready with community college-level education alone. And this was especially intended to improve the employment opportunities for our underrepresented students,” she said.

Dr. Pamela T. Luster, president emerita of [San Diego Mesa College](#) and chair of CCPI-STEM's Southwest Regional Network, moderated the one-hour webinar that can be viewed [here](#).

Villagómez explained that the [Central Coast Partnership for Regional Industry-Focused Micro- Nanotechnology Education \(CC-PRIME\)](#), which Santa Barbara City College faculty and staff developed in collaboration with nanotech employers and University of California, Santa Barbara (UCSB) faculty and staff, gives the community college's students hands-on learning experiences in a state-of-the-art cleanroom, awards industry-recognized certifications within an associate degree program, and leads students to direct employment or transfer opportunities.

The webinar includes a testimonial from SBCC student Joaquín Gutiérrez who talked about the pressure sensors he learned to make and how the knowledge he gained led to a part-time job with a high-tech company.

The project team members hope to create a handbook of best practices to guide future nanotech workforce development elsewhere, she said.

Dr. Jens-Uwe Kuhn, dean of Math and Sciences at SBCC and principal investigator of both ATE grants, explained that the community college's leadership of the grant grew from its existing relationships with university personnel and local employers.

The community college does not have a cleanroom, due to the high cost of building and maintaining such facilities. However UCSB, which is 10 miles from SBCC, has the California Nanosystems Institute on its campus.

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The institute has a nano-structures cleanroom that is set up for instruction as well as other nanofabrication facilities.

Many of the region's small and medium-size companies use the institute's nanofabrication and research facilities and interact with institute staff members, who have also worked with CCSB faculty and administrators on projects.

Kuhn said it was institute staff members who initially told CCSB personnel about the industry's "pain point" from the shortage of nanotechnicians. Community college personnel then did a needs assessment with local high-tech employers, many of whom they knew from projects in other disciplines, to learn more about their need for technical workers with knowledge and skills to carry out nanotech and semiconductor manufacturing tasks.

"Because of these existing connections and collaborations on other projects, that's where all of us got together and figured out, is there an opportunity to address this particular challenge and if so, how?" Kuhn said.

"We really feel it's important to talk about how all of this came together," he said, explaining that industry had the need and was willing to share its expertise to develop a curriculum with CCSB faculty; UCSB has the facilities and is willing to accommodate instruction of CCSB students in its cleanrooms; and SBCC has the students and the ability to create new programs and robust career pathways.

Kuhn said CCSB faculty attended professional development workshops at the Support Center for Microsystems Education, an ATE center at the University of New Mexico, and the California Nanosystems Institute. They also utilized resources developed by other ATE nanotech centers and projects to meet the needs of Central California students and companies.

To use SBCC's micro- nanotechnology partnership as a model for success, Villagómez recommended that community colleges work with their local employers to address a technical workforce need that can be utilized for regional impact, develop a collaborative vision with industry and other critical stakeholders, work together out of mutual interest, and build trust for strong, genuine, and ongoing partnerships.



SBCC students hold pressure sensors they fabricated in a cleanroom.

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