UC SANTA BARBARA

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Sonia Fernandez

Six for Six

UC Santa Barbara's Materials Research Laboratory (MRL) has received its sixth consecutive multimillion-dollar grant from the National Science Foundation (NSF) to fund six years of operation as an NSF Materials Research Science and Engineering Center (MRSEC). UCSB is one of eight institutions to receive such an award this year.

"These awards are representative of the incredibly broad, highly multidisciplinary research portfolio spanning all of the division-supported research areas," said Linda Sapochak, director of the NSF Division of Materials Research. "These multidisciplinary awards will be forging new materials research frontiers through team-based development of novel electronic and photonic materials relevant to future high-tech applications."

Materials science is an interdisciplinary field that incorporates knowledge from several disciplines, including physics, chemistry, life science and engineering, to gain a better understanding of how the micro- and nano-scale structure of materials can influence their function and performance. Incorporated into these studies is research into processing and fabrication, and the development of new, high-tech materials.

"We had anticipated that the competition would be intense, and the successful outcome is really a testament to the hard work put in by all of the proposal participants," said Ram Seshadri, UCSB's Fred and Linda R. Wudl Chair in Materials Science and director of the MRL. "The renewed center reflects the collaborative spirit and the pride in collective success that define UCSB faculty."

At UCSB, 24 researchers from six different departments came together to propose interdisciplinary research groups (IRGs) to study and develop a variety of materials, and to establish and improve techniques for their preparation, characterization and understanding. For this funding cycle, three IRGs have been established to conduct research into hard magnetic intermetallic materials and their microstructures; chemistry and engineering of novel polymer materials; and biomaterials and bioinspired processing.

“We were pleased to see that the IRGs reflect not only the diversity of materials-driven research at UCSB, but also the strong connectivity amongst researchers spanning multiple departments,” said Ania Jayich, professor of physics and associate director of the MRL.

The six-year, $23.1 million grant will go toward funding the interdisciplinary work that the campus is known for, as various researchers from different departments team up in pursuit of the research goals of each IRG using the shared, state-of-the-art facilities at the MRL. Scientists and engineers may also compete for two years’ worth of seed funding for smaller projects, bringing in new investigators who may take the research in new directions. A key component of the grant is to support and sustain the world-class characterization facilities — where materials are analyzed and examined — that is accessible not only to all everyone at UCSB, but to the local community as well. Indeed, numerous startup companies that have sprung from research carried out at UCSB rely on these facilities to refine their products and ready them for market.

Scientists of the future can get a glimpse of their potential careers through grade-level appropriate activities provided to K-12 students by MRL, which also offers learning opportunities for undergraduate students interested in the many facets of materials science.

“Our education and outreach programs provide opportunities for diverse audiences to learn about materials and for students of all ages to further their interest and education in science,” said Dorothy Pak, education director for the UCSB MRSEC.

Since the first MRSEC award to UCSB in 1994, the Materials Research Laboratory has received continuous funding from the NSF to conduct collaborative materials research. The MRL also works closely with industry partners including the Dow Materials Institute and the Mitsubishi Chemical Center for Advanced Materials to

accelerate research and innovation. It is one of only two NSF MRSECs on the West Coast.

“The Materials Research Laboratory is world-renowned for its interdisciplinary approach to understanding materials at multiple length scales,” said Meredith Murr, assistant vice chancellor in the UCSB Office of Research. “This award will allow the Materials Research Lab to continue pushing the frontiers of materials science, engaging the community with their outstanding education and outreach programs, and impacting industry in the Central Coast and beyond with their world-class shared experimental facilities.”

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.