

UC SANTA BARBARA

THE *Current*

January 15, 2014

[Sonia Fernandez](#)

UCSB Joins New Nationwide Research and Manufacturing Consortium

(Santa Barbara, Calif.) — UC Santa Barbara is one of several institutions participating in investigation and innovation at the Next Generation Power Electronics Institute, a newly established research and manufacturing hub aimed at strengthening the U.S. economy. President Obama announced the establishment of this new public-private partnership in remarks made at North Carolina State University (NCSU), the lead university and headquarters of this new consortium.

“This has to be a year of action,” said the president, commenting on his administration’s push to help the country recover from the lean years of the nation’s worst economy since the Great Depression. “Manufacturing is a bright spot in this economy.”

Tying innovation and research to business, the Next Generation Power Electronics Institute is a federally funded institute composed of 18 companies and seven universities and labs working together to further develop and commercialize wide bandgap semiconductors — semiconductor materials that are emerging as the future of power electronics for their energy efficiency, durability and reliability at higher voltages and frequencies. Further development of these semiconductors has the potential for smaller, faster, cheaper and more efficient devices, from smartphones to electric cars, to more responsive and flexible power grids.

“This is just the first step,” said [Umesh Mishra, professor of electrical and computer engineering](#) at UCSB. Mishra is recognized worldwide for his contributions to the development of gallium nitride (GaN) electronics. As one of several directors in the new consortium, his efforts will focus on leading the thrust for research and development of highly efficient GaN-based wide bandgap semiconductors. “I think this institute is going to cause more excitement, more synergies, and people will become more fluent with what we can do.”

Mishra is also the chief technology officer and co-founder of Transphorm, a Goleta-based technology company that specializes in power conversion and energy efficiency. While Transphorm is also one of the companies participating in the partnership, Mishra’s efforts in this consortium will come solely through his work at UCSB. Other companies in the consortium include suppliers and manufacturers such as John Deere, Toshiba International, Delphi and Cree, Inc., a company with locations in both North Carolina and in Goleta.

Led by NCSU, universities and laboratories in the Next Generation Power Electronics Institute also include Arizona State University, Florida State University and Virginia Polytechnic Institute. The National Renewable Energy Laboratory and the U.S. Naval Research Laboratory are the federal research partners in the consortium.

“There are few global challenges greater than the search for less costly, more efficient energy solutions,” said NCSU Chancellor Randy Woodson in a statement. “NC State is a world leader in finding solutions to this challenge, and the new Next Generation Power Electronics Innovation Institute will greatly advance our efforts to quickly bring new technologies to the marketplace and people who need them.”

The Next Generation Power Electronics Institute is the first of three manufacturing institutes planned by the Obama administration with the intention of strengthening the manufacturing sector, creating well paying jobs and training the skilled workers needed to fill these jobs to boost the middle class. President Obama last May launched a competition for these manufacturing institutes with a federal commitment of \$200 million across five federal agencies: Defense, Energy, Commerce, NASA and the National Science Foundation. The additional two institutes — which will focus on digital manufacturing and design innovation, and lightweight modern materials manufacturing — are still in the selection process and will be awarded in the coming weeks.

“We’re thrilled to be part of this,” said Rod Alferness, dean of UCSB’s College of Engineering. “It reflects the high level of esteem and regard that the work here in gallium nitride-based electronics is held here in the community and at the corporate level.”

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.