UC SANTA BARBARA
THE Current

June 7, 2016
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Ready for Takeoff

Aiming to develop high-performance materials for use in extreme environments — one of her primary research interests — UC Santa Barbara materials professor Tresa Pollock and her team are collaborating with GE and others to push the effort forward. Their work, supported by the National Science Foundation (NSF), is the subject of a new video produced for the NSF series “Science Nation.”

From the NSF summary:

“When it comes to aircraft engines, rocket motors and nuclear power plants, the “heat” is constantly on to make the parts inside stronger, more reliable and more durable. In fact, when an airplane takes off, the materials in the hottest part of the engine reach about 90 percent of their melting temperature. So, there’s always a desire to find a material that can operate at a higher temperature.

“With support from the National Science Foundation (NSF), UC Santa Barbara materials scientist Tresa Pollock and colleagues are partnering with General Electric and others to develop new multilayered materials designed for high performance in extreme environments. Pollock’s team is pioneering the use of new modeling tools to speed up the development process and using advanced computer algorithms and Big Data analysis to hone their designs before testing them. They’ve also designed and built a custom microscope that combines electron, ion and laser beams to analyze the new materials for defects at the nanometer scale in 3-D. This addition of the laser speeds up the process of gathering the information, so what used to take six to nine months now takes a couple of days.”

“Science Nation” is a video series commissioned by the NSF Office of Legislative and Public Affairs. The series is distributed throughout the world, including to LiveScience.com and other media outlets on the internet, local community TV stations in the U.S. via TelVue Connect Media Exchange, Voice of America for international broadcast distribution, the NSF STEM video portal Science360, the Knowledge Network video stream and Roku channel, and K-12 content distributors in the U.S. and abroad. Some episodes also appear in the nationally distributed PBS documentary series This American Land.

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.