

Louisiana Tech University, LA-SiGMA help teachers transform materials science

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Teachers from school districts in north Louisiana are helping to advance the frontiers of science by conducting research with faculty from Louisiana Tech University's College of Engineering and Science and using supercomputers made available through the Louisiana Optical Network Initiative (LONI).

Through a Research Experiences for [Teachers](#) (RET) summer program, these junior high and [high school teachers](#) are engaging in research projects in the branch of science known as "materials science." This area is concerned with the development of [novel materials](#) by exploiting the properties of atoms and molecules. Past advances in materials science has given us faster computers, stain-resistant fabrics, and improved solar panels.

These activities are being funded by a \$20 million grant from the National Science Foundation to the Louisiana Board of Regents' EPSCoR program, which helped to create the Louisiana Alliance for Simulation-Guided Materials Applications (LA-SiGMA).

"The LA-SiGMA RET program allows classroom teachers to gain a fresh, new perspective into the process of the exciting, [cutting-edge research](#) happening right here in our own part of the state" said Jim Kircus, a [mathematics teacher](#) at West Ouachita High School.

The main goal of the LA-SiGMA summer RET program is to help teachers refresh their science foundations and to expose them to

research projects that involve computational modeling. The teachers will also be able to take back to the classrooms molecule building kits and other kits that will demonstrate the real-life uses of [materials science](#).

"This interaction with LA-SiGMA researchers will help the teachers convey the possibilities and excitement of scientific research to their students," said Dr. Melanie Watson, external engagement and assessment coordinator for LA-SiGMA at Louisiana Tech.

Dr. Ramu Ramachandran, associate dean for research at Louisiana Tech and one of the leaders of LA-SiGMA added, "The goal is to make this excitement contagious, and encourage at least a few students to choose a science or engineering major in college."

Area teachers are working with faculty members, graduate students, and undergraduate students on challenging computational problems dealing with materials at the nanometer scale.

"One of the great challenges is to understand how properties like superconductivity emerge from collections of individual atoms and molecules," Ramachandran said. "Novel computer architectures based on new types of processors, which will have the computing power to address such questions, are becoming available. One of the main tasks of LA-SiGMA is to develop the tools for materials simulations that take full advantage of these emerging paradigms in computing."

LA-SiGMA is made up of Louisiana Tech, LSU, Tulane University, University of New Orleans, Southern University, Xavier University, and Grambling State University.

Provided by Louisiana Tech University

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