Xiaonan Shan, assistant professor of electrical and computer engineering, received the Ralph E. Powe Junior Faculty Enhancement Award from Oak Ridge Associated Universities (ORAU). The award will help fund Shan’s research into developing a novel plasmonic imaging system to map the local photocatalytic efficiency of nanomaterials.

Shan is one of 36 recipients out of 125 applicants for the one-year award, which provides seed money to junior faculty at ORAU-associated institutions. The award is designed to enrich the research and professional growth of young faculty and result in new funding opportunities.

Shan is the second UH faculty member to receive the prestigious award. Another UH electrical and computer engineering professor, Yan Yao, received the award in 2013.

“I feel very honored to be one of the applicants chosen for this award and to bring it back to the University of Houston,” said Shan. “I hope that this will open doors and give me the opportunity to collaborate with other researchers and national labs.”

Shan is the principal investigator of the Advanced Imaging and Sensing Lab, where he focuses on solving critical problems in energy and biomedical research by developing novel optical imaging and sensing techniques. He hopes to expand the capabilities of optical imaging microscopes to measure and map the local electrical, mechanical, chemical and thermal properties of biological and nano samples in ways that were previously not possible.

The traditional approach to determining the catalytic activity of a nanoparticle is to measure the average response of a large number of particles, but this method does not recognize individual particle differences such as size, shape and surface sites. Shan’s novel imaging system will use light to visualize and map the local catalytic reactions of water splitting, a chemical reaction in which water is split into a single oxygen molecule and a single hydrogen molecule. Once Shan masters splitting water molecules, he hopes to use the same approach.
to quite literally shed new light on how nanomaterials perform as catalysts.

Shan joined the Cullen College of Engineering in August of 2016. Previously, he was an assistant research professor at Arizona State University's Biodesign Institute.

"Xiaonan has been an excellent addition to our department and we feel that this award is a public recognition of the quality and promise of his research," said Badri Roysam, chair of the department of electrical and computer engineering.

Oak Ridge Associated Universities is a university consortium that combines the scientific strength of 121 major research institutions to advance science and education by partnering with national laboratories, government agencies and private industry.

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