Argonne to study fuel cell catalysts

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Argonne National Laboratory will receive $3 million over three years for basic science studies that may lead to improved catalysts for hydrogen fuel cells.

The funding, from the U.S. Department of Energy's Office of Basic Energy Sciences, will be used to study the molecular basis of catalysis, with a particular interest in the oxygen reduction reaction in fuel cells.

“We are looking to understand the behavior of oxygen in the low-temperature fuel cell cathodes,” said Hoydoo You, leader of the group project. “The project builds on Argonne's scientific strengths, bringing collaboration between physicists and chemists, between theorists and experimentalists.”

The high-intensity X-rays from the Advanced Photon Source and nanoscale science at the Center for Nanoscale Materials are key enabling resources. The project includes researchers from Argonne's Materials Science, Chemistry and Chemical Engineering divisions as well as researchers from Kent State University and the University of Minnesota.

The fundamental research is expected eventually to lead to longer-lasting and more efficient catalysts, You said. “Currently, one of the best fuel cell catalysts is a platinum alloy, but platinum is both rare and expensive. With a full understanding of how the oxygen reduction reaction occurs on this catalyst, we may be able to develop new catalysts with little or no platinum.”

Finding a substitute for the platinum in the catalyst should improve the development process for new catalysts and help lead to the long-term goal of securing a clean, abundant supply of energy for the future, You said.

Source: Argonne National Laboratory