

Scientists discover record-breaking hydrogen storage materials for use in fuel cells

Scientists at the University of Virginia have discovered a new class of hydrogen storage materials that could make the storage and transportation of energy much more efficient — and affordable — through higher-performing hydrogen fuel cells.

Bellave S. Shivaram and Adam B. Phillips, the U.Va. physicists who invented the new materials, will present their finding today at the International Symposium on Materials Issues in a Hydrogen Economy at the Omni Hotel in Richmond, Va.

“In terms of hydrogen absorption, these materials could prove a world record,” Phillips said. “Most materials today absorb only 7 to 8 percent of hydrogen by weight, and only at cryogenic [extremely low] temperatures. Our materials absorb hydrogen up to 14 percent by weight at room temperature. By absorbing twice as much hydrogen, the new materials could help make the dream of a hydrogen economy come true.”

In the quest for alternative fuels, U.Va.’s new materials potentially could provide a highly affordable solution to energy storage and transportation problems with a wide variety of applications. They absorb a much higher percentage of hydrogen than predecessor materials while exhibiting faster kinetics at room temperature and much lower pressures, and are inexpensive and simple to produce.

“These materials are the next generation in hydrogen fuel storage materials, unlike any others we have seen before,” Shivaram said. “They have passed every litmus test that we have performed, and we believe they have the potential to have a large impact.”

The inventors believe the novel materials will translate to the marketplace and are working with the U.Va. Patent Foundation to patent their discovery.

“The U.Va. Patent Foundation is very excited to be working with a material that one day may be used by millions in everyday life,” said Chris Harris, senior licensing manager for the U.Va. Patent Foundation. “Dr. Phillips and Dr. Shivaram have made an incredible breakthrough in the area of hydrogen absorption.”

Source: University of Virginia

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