

THE Current

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UCSB Receives \$1.6 Million from DOE to Develop New Hybrid Technology

Imagine an electric hybrid vehicle that charges in only a couple of minutes instead of hours. The energy storage device in this new vehicle would conceivably last longer than the life of the car.

The science behind this vision emerged out of Galen Stucky's chemistry lab at UC Santa Barbara. Moving forward with the university's Institute for Energy Efficiency, the idea has captured the attention of the U.S. Department of Energy. DOE's Advanced Research Projects Agency – Energy (ARPA-E) has committed \$1.6 million over three years to develop the technology. The award is one of 66 energy technology projects across the country to be funded by the agency this year.

David Auston, executive director of UCSB's Institute for Energy Efficiency, explained that ARPA-E will work very closely with UCSB on all phases of the work, from "research, to development, to deployment." The agency has asked UCSB to move beyond research to commercialization and to begin collaborating with industry in the U.S. as soon as possible.

"This ARPA-E award will fund research to develop a new electro-chemical energy storage device that combines the best features of batteries and capacitors and thereby can have a transformative impact on hybrid electric vehicles," said Auston. "It will have higher power capacity, faster charging times, and longer lifetime than lithium ion batteries."

According to ARPA-E, the new energy storage device "could charge within minutes, deliver more power, and have a longer life expectancy compared to today's electric vehicle batteries."

Auston explained that not everyone is driving hybrid vehicles today for several reasons: The current batteries are expensive; they do not last as long as the vehicle; and, charging them takes several hours.

Spearheaded by UCSB, the project is a collaboration among three universities. The two principal investigators from UCSB are Auston and Stucky, professor in the Department of Chemistry and Biochemistry. The two additional principal investigators are David Ji, an assistant professor with Oregon State University, and Shannon Boettcher, an assistant professor at the University of Oregon. Ji and Boettcher previously worked in Stucky's lab.

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