

# Plasma device could revolutionize energy generation and storage (w/ video)

April 16 2013

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University of Missouri engineer Randy Curry and his team have developed a method of creating and controlling plasma that could revolutionize American energy generation and storage. Besides liquid, gas and solid, matter has a fourth state, known as plasma. Fire and lightning are familiar forms of plasma. Life on Earth depends on the energy emitted by plasma produced during fusion reactions within the sun. However, Curry warns that without federal funding of basic research, America will lose the race to develop new plasma energy technologies. The basic research program was originally funded by the Office of Naval Research, but continued research has been funded by MU.

Curry's device launches a ring of plasma as far as two feet. The plasma doesn't emit [radiation](#), and it is completely safe for humans to be in the same room with it, although the plasma reaches a temperature hotter than the surface of the sun. The secret to Curry's success was developing a way to make the plasma form its own self-[magnetic field](#), which holds it together while it travels through the air.

"Launching plasma in open air is the 'Holy Grail' in the field of physics," said Curry, professor of electrical and computer engineering in the University of Missouri's College of Engineering. "Creating plasma in a vacuum tube surrounded by powerful electromagnets is no big deal; dozens of labs can do that. Our innovation allows the plasma to hold itself together while it travels through regular air without any need for

containment."

The plasma device at MU could be enlarged to handle much larger amounts of energy, according to Curry. With sufficient funding, they could develop a system within three to five years that would also be considerably smaller. He noted that they used old technologies to build the current prototype of the plasma-generating machine. Using newer, miniaturized parts, he suggests they could shrink the device to the size of a bread box.

"We have a world-class team at MU's Center for Physical & Power Electronics, but that team will evaporate without funding," Curry said. "Department of Defense funding for basic research led to our [plasma](#) innovation. The sequester's funding cuts threaten America's ability to compete in the future of energy technology. Not only will research not be advanced, a new generation of Americans won't be trained to take the reins of American engineering leadership."

Curry is the Logan Distinguished Professor of Electrical & Computer Engineering and Director of the Center for Physical & Power Electronics.

Provided by University of Missouri-Columbia

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