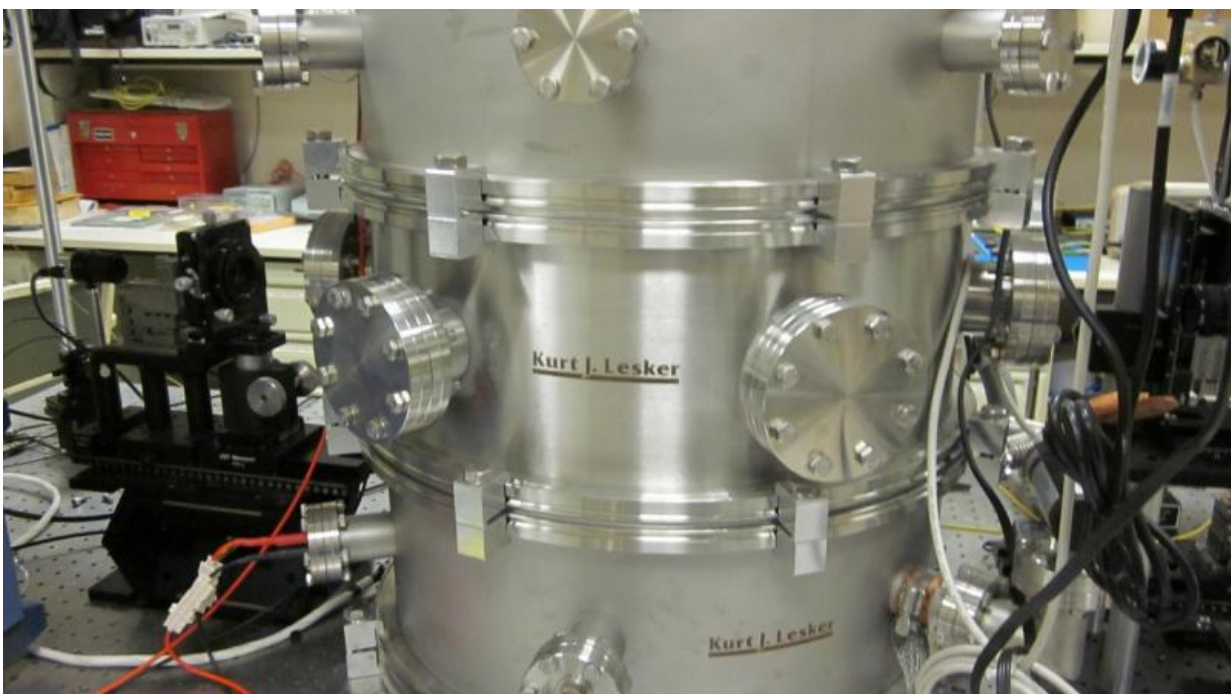


NASA and CWRU Fusion analyze ways to commercialize a promising new water purification technology

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NASA Glenn Research Center scientists and students in Case Western Reserve University's interdisciplinary Fusion program are studying a novel water purification technology and how to commercialize it. Senior researchers at NASA Glenn have developed and tested a promising

technology that reduces organic contaminants to carbon dioxide and clean water. NASA is experimenting with applying high-voltage pulses to fluids to form what is called "non-equilibrium plasma."

Others have experimented with similar technology to purify water for more than a decade, but NASA's approach is considered novel because it uses much less energy and doesn't heat the water. Also, NASA's device is scalable to a specific need, so it can be used at a relatively low cost.

NASA is considering applications as near as Toledo, where the spread of chemically-resistant algae in Lake Erie has become a major health concern, and in space missions, where water purification for reuse is critically needed.

To bring this technology to market, however, NASA needs to collaborate with commercialization partners. Case Western Reserve's Fusion program is assessing ways to make that happen.

Fusion

Launched in 2009, Fusion is an interdisciplinary academic approach that links students from the School of Law, Weatherhead School of Management, Case School of Engineering and STEP (Science and Technology Entrepreneurship/Innovation Programs) in the College of Arts and Sciences in collaborative teams for teaching and learning about technology commercialization.

Fusion introduces students to multi-factor evaluation tools for product and enterprise development that the students will utilize professionally. Each year, Fusion students evaluate leading-edge scientific research outputs with commercial potential.

Ted Theofrastous, who directs the Fusion program, also is managing

attorney for the Case Western Reserve University School of Law's IP Venture Clinic. Theofrastous said the students' analysis will consider alignment of technology to need, cost, scale, competition and the intellectual property landscape.

"Our hope," he said, "is that aspects of the students' work may be useful to NASA in its ongoing commercialization efforts."

The technology

The NASA technology uses high-voltage, high-frequency, electrical pulses to destroy micro-organisms, sterilizing water without using toxic chemicals and filters and without heating water as other purification processes require. The technology can be scaled to meet a range of needs, from small portable units that purify drinking water in disaster relief to much larger industrial applications.

A growing demand exists for water purification—including in the Great Lakes, where the growth of toxic, sometimes treatment-resistant algae blooms in the western basin of Lake Erie is well documented. Globally, according to World Health Organization studies, improved sanitation in the world's impoverished areas can reduce disease and illness linked to micro-organisms and chemicals in the water people drink or otherwise use.

The NASA Glenn technology can offer advantages over other water treatment methods that rely on chemicals and filtration—both of which are expensive and provide less-favorable outcomes, Theofrastous said.

Innovation partners

Robert J. Shaw, NASA Glenn Research Center's director of venture and

partnerships, said the center is pleased to be partnering with Case Western Reserve Fusion students.

"One of our center's strategic goals is to be a better partner within our region and our state, and to play an appropriate role in supporting economic development in the private sector," Shaw said. "By supporting the Fusion project through offering a NASA Glenn-developed technology and providing subject matter experts, we hope we can help create the next generation innovators and entrepreneurs who will grow our economy."

The Cleveland Water Alliance (CWA), a network of Northeast Ohio businesses, academic institutions and public agencies, is also involved in the Fusion project. Fusion students attended a water technology conference at NASA that also involves CWA.

"Fresh water innovation is increasingly driving Northeast Ohio's regional economy," said CWA Executive Director Bryan Stubbs. "The Fusion program is an example of academia at a research institution helping to accelerate [water](#) innovation. My hope would be that we bring a product to market, matching a [technology](#) with a corporate partner."

Provided by Case Western Reserve University

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