


>>> Partially organic robot could be useful for critical search and locate tasks.

Victoria Webster, a PhD student in the Department of Mechanical and Aerospace Engineering, led the team that created this unique piece of technology. The robot is built around a single muscle from a sea slug's mouth, which provides the movement—the robot can crawl when stimulated by an external electrical field. The researchers hope to control future iterations by incorporating living neurons into the robot as well.

Webster worked with Roger Quinn, the Arthur P. Armington Professor of Engineering and director of Case Western Reserve's Biologically Inspired Robotics Laboratory; biology professor Hillel Chiel; Ozan Akkus, the Leonard Case Jr. Professor in the Department of Mechanical and Aerospace Engineering; Umut Gurkan, assistant professor of mechanical and aerospace engineering, undergraduate researchers Emma L. Hawley and Jill M. Patel and recent master's graduate Katherine J. Chapin.



>>>> >>> NEWS AND BREAKTHROUGHS >>>>>>>>>>>>
FROM THE CASE SCHOOL OF ENGINEERING
AT CASE WESTERN RESERVE UNIVERSITY

next

CWRU launches institute
dedicated to IoT, data science,
cybersecurity, networks and more.

The Internet of Things—the network of billions of physical devices that can connect to the internet and each other—is generating data at an exponential rate; this new institute, led by the Case School of Engineering, will help the university leverage its strengths in sensors and electronics, networks and communications, systems and control, data science and analytics, and more to operate on the leading edge of this rapidly growing area of research.

engineering.case.edu



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COMPUTER-AIDED DIAGNOSES

Computer program
outperforms doctors at
spotting cancer.

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A computer program developed by biomedical engineering researchers at Case Western Reserve University has outperformed human clinicians in accurately diagnosing brain cancer.

The program, created by assistant professor of biomedical engineering Pallavi Tiwari and Anant Madabhushi, the F. Alex Nason Professor II of biomedical engineering, was nearly twice as accurate as two neuroradiologists in evaluating abnormal tissue seen on magnetic resonance images (MRI) and differentiating between dead brain cells caused by radiation and recurrent cancer cells.

Learn more at engineering.case.edu/computer-program-cancer-diagnosis.

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INTERNATIONAL POLYMER PROGRAM

Case Western Reserve launches dual PhD program in Brazil

Polymer science students in Brazil can take advantage of Case Western Reserve's field-leading polymer expertise, thanks to a new dual PhD program launched this year.

Funded by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, or CAPES—the Brazilian equivalent of the National Science Foundation—the program will reach a steady state of supporting 40 PhD students in polymer science. Students will start the program at their home institution in Brazil, conduct their second and third years in residence at Case Western Reserve, and complete the program in a fourth year back at home.

The first 12 students started the program this spring and another seven joined this fall. The partner institutions expect to expand the program to biomedical engineering students as well.

Learn more at engineering.case.edu/Brazil/polymer-program.

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ADVANCED MANUFACTURING


Researchers explore how to improve performance of lightweight materials.

Materials researchers at Case Western Reserve University are collaborating on two projects within Lightweight Innovations for Tomorrow (LIFT)—part of the Obama administration’s National Network for Manufacturing Innovation program, recently renamed Manufacturing USA—aiming to improve the production and performance of lightweight materials. John Lewandowski, the Arthur P. Armington Professor II, is leading a team in carrying out multiple validation experiments to ensure the reliability of aluminum-lithium alloys in critical applications. And Matthew Willard, associate professor of materials science, is heading a project dedicated to exploring methods to maintain the performance of aluminum matrix-silicon carbide composites while reducing costs. Both projects have important ramifications for next-generation aerospace and automotive applications.




>>> **GRAND OPENING** >>>>>>

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>> **GRAND OPENING** >>>>>>



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>> **GRAND OPENING** >>>>>>



>> GRAND OPENING >>>>>>

Civil engineering students and faculty at Case Western Reserve have a new, state-of-the-art space in which to study and make discoveries—a suite of renovated labs dedicated to geotechnical engineering education and research.

The new suite includes the Frank E. Gerace Geotechnical Teaching Lab, the Warren C. Gibson Library, the Saada Family Geotechnical Research Labs and the Richard A. Saada Intelligent Geosystems Lab.



Photo by Eric Hanson

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Photo by Eric Hanson

DRINK UP

>>> BURNING TO LEARN >>>

Largest ever fire experiment in space helps with safety and materials development.

Two aerospace engineering researchers at Case Western Reserve—professor James T'ien and assistant professor Ya-Ting Liao—teamed up with NASA Glenn Research Center along with scientists around the world to perform the largest fire-safety experiment ever conducted in space when the unmanned Cygnus cargo module disembarked from the International Space Station earlier this summer.

The experiment, called Saffire-I, was the first in a series of six to be conducted over the next five years that will give scientists valuable data on how large-scale fires grow and spread. The results will aid in the development of new materials for the ISS and future manned Mars missions.

Learn more at engineering.case.edu/Saffire.

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>>>SECRETS BEHIND STATIC>>>>>>

NSF-funded project will examine mysteries of static electricity.

Chemical engineering researchers at Case Western Reserve won funding from the National Science Foundation to study the common—but little understood—phenomenon behind static electricity, an everyday occurrence with serious consequences in almost every industry.

Daniel Lacks, chemical and biomolecular engineering department chair, and Mohan Sankaran, the Leonard Case Professor of Engineering, are seeking to advance the scientific community's understanding of triboelectric charging—the process responsible for the shock that follows shuffling across a carpet and touching a doorknob.

The work builds on a 10-year collaboration between the two scientists, which includes a second recent project to study triboelectric charging in wind storms in China.

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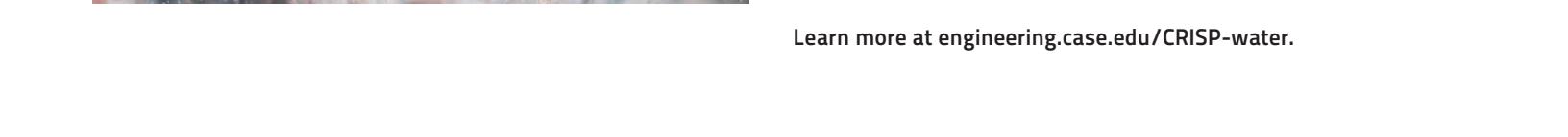
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Four Case School of Engineering junior faculty members won National Science Foundation CAREER grants: Jennifer Carter, materials science and engineering; Umut Gurkan, mechanical and aerospace engineering; Nicole Seiberlich, biomedical engineering; and Xiang Zhang, electrical engineering and computer science.



HELPING STUDENT ENTREPRENEURS SHINE

Innovators secure millions in external funding for startup companies, personal projects and more.

Students and other users of the Larry Sears and Sally Zlotnick Sears think[box] and LaunchNET at Case Western Reserve University have raised more than \$5.7 million in external funding for startup companies, individual projects, commercialized research and more. This includes funding like grants, crowd-sourcing, sales, pre-sales and private funding.

Sears think[box] users have been taking advantage of the facility's full ecosystem of innovation to develop projects like a teddy bear that doles out virtual hugs (pictured here with student innovator Xyla Foxlin), a stylish wristband that secures digital devices and a plasma-injecting device that seeks to save on jet fuel consumption. Resources available include business and legal advice from CWRU LaunchNET and the university's IP Venture Clinic, in addition to project space, state-of-the art prototyping equipment, entrepreneurial expertise and incubation space.

Explore more of the innovative projects developed at Sears think[box] at thinkbox.case.edu.



Photo by Russell Lee

#NATIONOFMAKERS



Adam Savage (right) tours Sears think[box] with manager Ian Charnas. Photo by Kevin Kopanski.

It's a fact—Adam Savage, former host of the popular TV series “Mythbusters,” visited Case Western Reserve University’s Sears think[box] this spring. Organized with the White House Office of Science and Technology Policy, the visit was part of a national initiative to promote the maker movement and the kickoff of a national tour of maker hotspots. Check out highlights at engineering.case.edu/Adam-Savage-visit-highlights.

next

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