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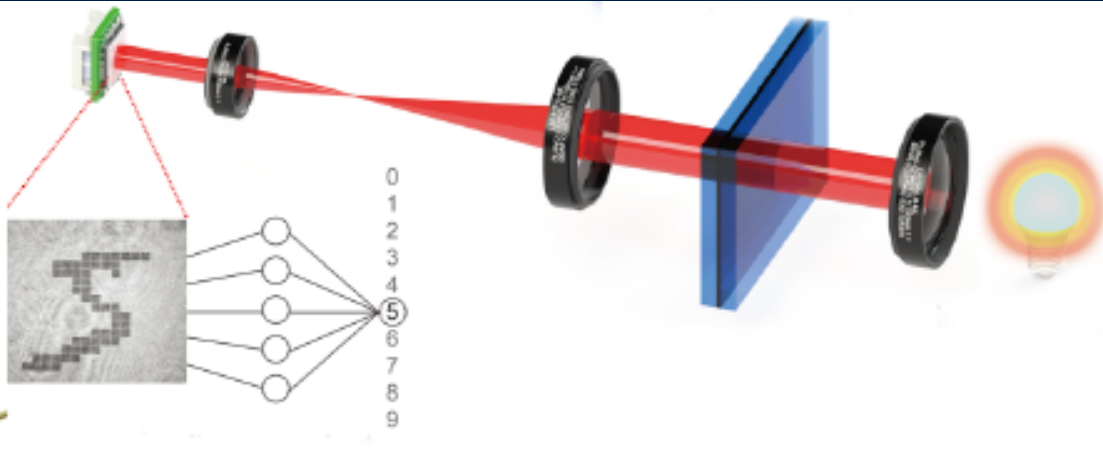
**PennState**  
Materials Research  
Institute

E-materials

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## FEATURED STORY



# Q&A: COULD LIGHT-POWERED computers reduce AI's energy use?

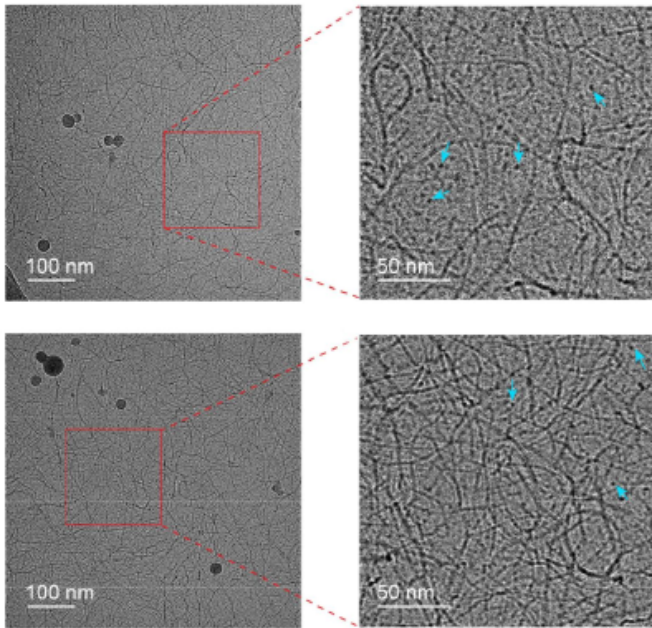


## LEAD: ASSOC. PROF. XINGJIE NI

A key problem facing artificial intelligence (AI) development is the vast amount of energy the technology requires, with some experts projecting AI datacenters to be responsible for over 13% of global electricity usage by 2028. According to Xingjie Ni, associate professor of electrical engineering at the Penn State School of Electrical Engineering and Computer Science, the key to addressing this roadblock could lie in computers powered by light instead of circuitry.

[READ THE LEAD STORY](#)

## OTHER NEWS

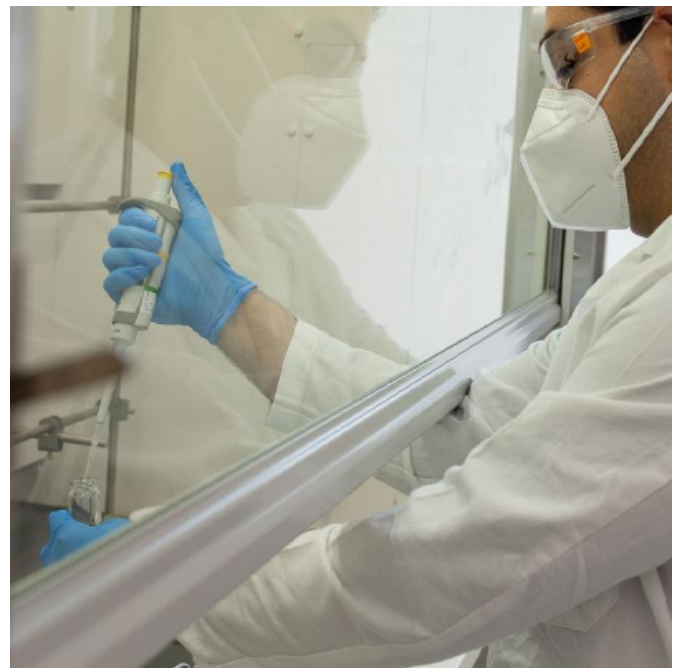


## Stretchy plastics conduct electricity via tiny, whisker-like fibers

**LEAD: PROF. ENRIQUE GOMEZ**

Using advanced imaging technology to examine a stretchy material commonly used in soft robotics and touchscreens known as PEDOT:PSS, Gomez and his team found that adding different salt additives and water enabled the material to grow hair-like fibers capable of effectively conducting electricity.

[Read More](#)



## Plant-based material offers sustainable method of recovering rare earth element

**LEAD: ASSOC. PROF. AMIR SHEIKHI**

Using a material derived from plants, researchers at Penn State have devised a renewable and sustainable approach to separating and recovering dysprosium, a heavy rare earth element used in semiconductor manufacturing and more.

[Read More](#)

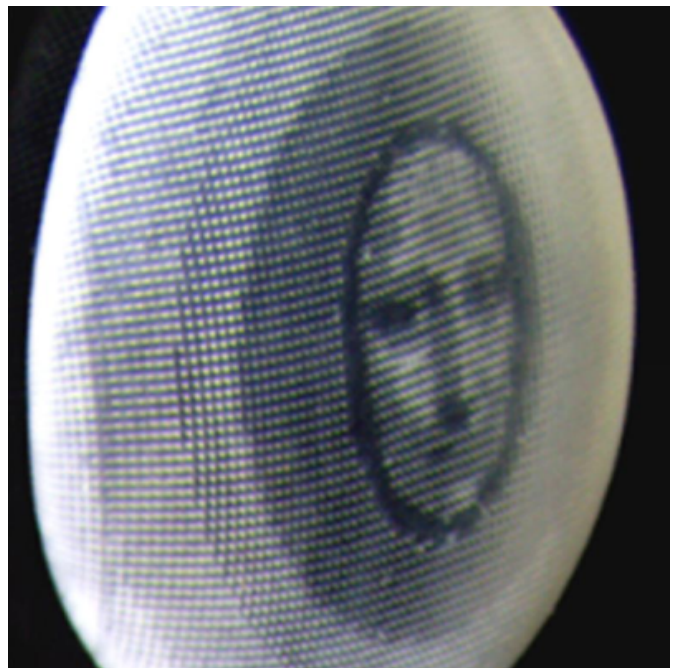


## New plastic material could solve energy storage challenge, researchers report

**LEAD: PROF. LI LI**

A team led by Penn State researchers reported a novel material made of cheap, commercially available plastics that can handle four times the energy of a typical capacitor at temperatures up to 482 F.

[Read More](#)

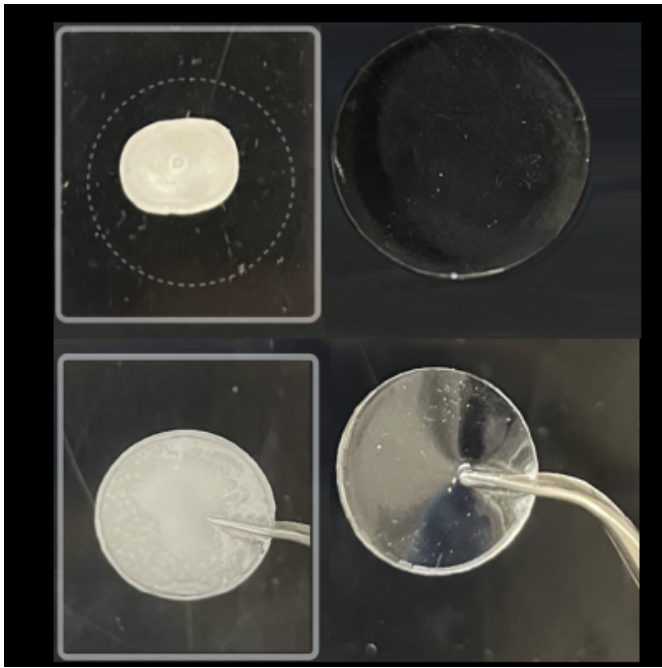


## Team develops smart synthetic material inspired by octopus skin

**LEAD: ASST. PROF. HONGTAO SUN**

Researchers have developed a fabrication method that can print multifunctional “smart synthetic skin” — configurable materials that can be used to encrypt or decrypt information, enable adaptive camouflage, power soft robotics and more.

[Read More](#)

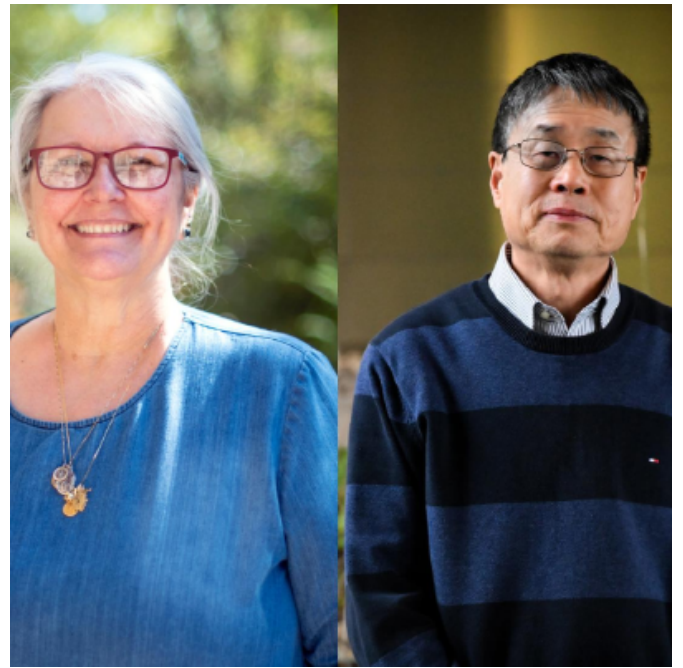


## Electric eel biology inspires powerful gel battery

**LEAD: ASST. PROF. JOSEPH NAJEM**  
**CO-LEAD: ASST. PROF. DEREK HALL**

The team used a state-of-the-art fabrication method to layer multiple types of hydrogels — a water-rich material capable of conducting electricity — in a specific pattern that mimics the ionic processes electric eels use to generate electrical bursts. Their approach produces power sources with higher power densities than other hydrogel-based designs, while remaining flexible, support-free, environmentally stable and biologically compatible.

[Read More](#)



## Two Penn State professors elected to National Academy of Engineering

**PROF. BARBARA J. ARNOLD**  
**PROF. QIMING ZHANG**

Two Penn State faculty members have been elected to the National Academy of Engineering (NAE). Members of the class of 2026 include Barbara J. Arnold, chair and professor of practice of mining engineering in the John and Willie Leone Family Department of Energy and Mineral Engineering, and Qiming Zhang, Harvey F. Brush Chair and Professor of Electrical Engineering.

[Read More](#)



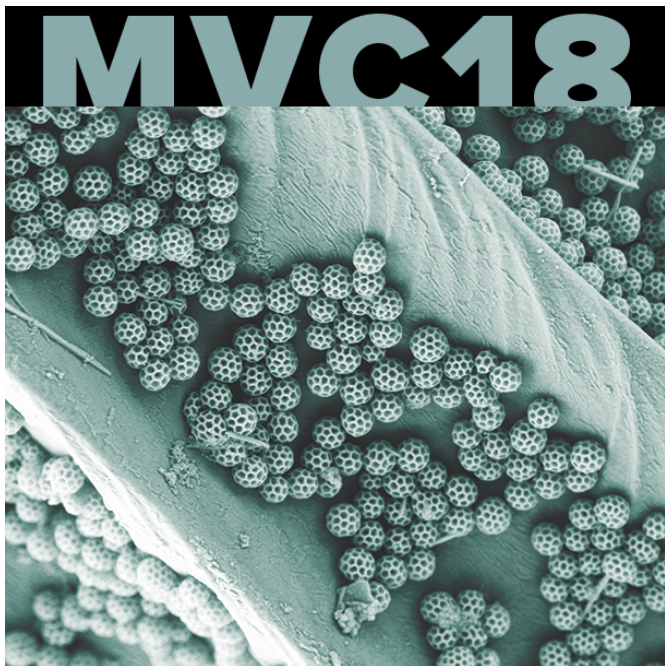
## EVENTS & OPPORTUNITIES



## MVC: Materials Visualization Competition is now open for students, faculty, and staff

**What is the Materials Visualization Competition?**

Created to celebrate the quality of research in



materials at Penn State, this competition increases awareness of materials science through the creativity and visualization of our students, faculty, and staff researchers.

**DEADLINE TO ENTER: March 1, 2026**

[Enter to Win](#)



## March 17, 2026 SCIA Industry Advisory Board Meeting

The **Silicon Carbide Innovation Alliance (SCIA)** will convene its Spring 2026 Industry Advisory Board (IAB) meeting at Penn State's Baron Innovation Hub on Tuesday, March 17th, 2026. This alliance supports member-driven research focused on manufacturing single-crystal silicon carbide substrates at the **onsemi SiC3** test-bed facility located on campus. During the IAB meeting, members will receive updates on the five ongoing research projects. SCIA is currently seeking new members to broaden the scope and depth of its research initiatives.

[Event Details](#)

For information on **SCIA memberships**, please contact our Industry Liaison Officer, David Fecko.

[Learn about memberships >>>](#)



## MCL Applied Characterization Experience



### Applied Characterization Experience

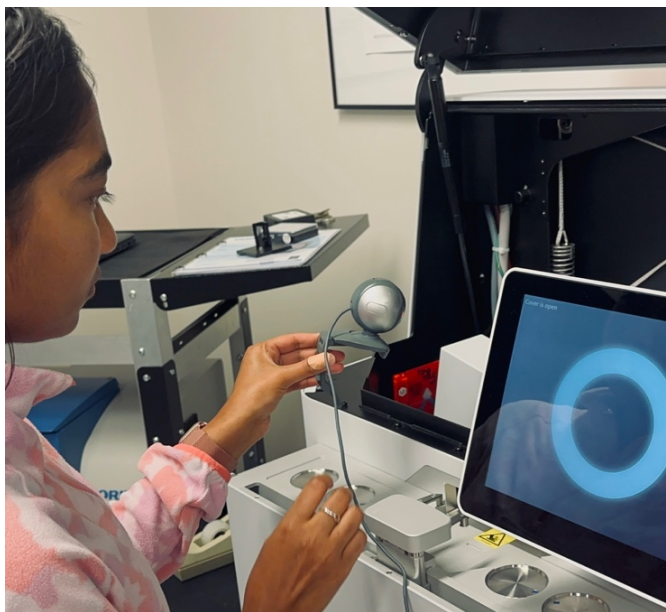
The **Applied Characterization Experience (ACE)** is a hands-on training program run by the **Materials Characterization Lab (MCL)** that provides graduate students with an immersive learning experience using advanced characterization techniques and equipment.

**Sahani Iddawela**, graduate student in chemistry, has worked extensively in the X-ray Diffraction (XRD) Laboratory, collaborating with MCL staff to analyze diverse samples, identify material compositions, and learn best practices for operating and maintaining high-precision instrumentation. A key part of her experience

included supporting MATSE 597, a hands-on XRD course developed and taught by MCL.

Serving as a teaching assistant, Sahani was mentored by Nichole Wonderling, MCL staff scientist and International Centre for Diffraction Data (ICDD) Fellow, and worked alongside fellow ACE participant Alex Leffel, deepening her technical expertise and instructional experience.

*"Being part of MCL through the XRD lab has been an incredible learning opportunity. I was especially struck by the level of care and attention the staff gives to the instrumentation—it far exceeded my expectations. Supporting MATSE 597 allowed me to work closely with Nichole and Alex, and even as a TA, I learned a tremendous amount. As someone whose research background is in electron microscopy, this experience has been extremely valuable for expanding my XRD expertise." - Sahani Iddawela*



This year's ACE program is made possible through the generous support of the **PPG Foundation**, whose philanthropic investment helps graduate students strengthen their technical expertise, scientific rigor, and confidence as emerging researchers.

To learn more about philanthropic opportunities that support high-impact training programs like ACE, please contact **Dave Fecko, director of industry collaborations**.

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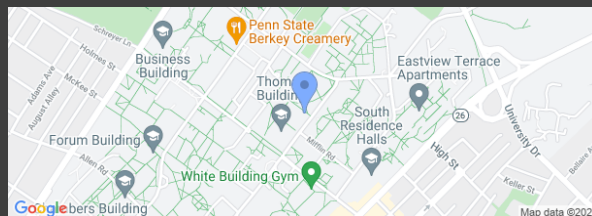
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