

9

Em

2025



PennState
Materials Research
Institute

E-materials

IN THIS ISSUE

⇒ "Atoms, ja, atoms!": Physics pioneer key to microscopy 'revolution in resolution' ⇒

⇒ Can nanobots play follow the leader? ⇒

⇒ Doing a lot with a little: New AI system helps explain laser welding defects ⇒

⇒ New sensor is a breath of fresh air for diagnosing diabetes ⇒

⇒ \$3M grant seeks bioprinted solution for reconstructive surgery's blood problem ⇒

⇒ CHIMES celebrates third year of next-generation semiconductor innovation ⇒

⇒ Penn State researcher awarded \$1.6 million for additive manufacturing project ⇒

⇒ Materials Day 2025: REGISTER TODAY! ⇒

FEATURED STORY



'Atoms, ja, atoms!': PHYSICS PIONEER KEY

to microscopy 'revolution in resolution'



PENN STATE COMMEMORATES 70 YEARS SINCE FACULTY MEMBER ERWIN MÜLLER BECAME THE FIRST PERSON TO 'SEE' ATOMS

Seventy years ago, in Osmond Laboratory on Penn State's University Park campus, Erwin W. Müller, Evan Pugh Research Professor of Physics, became the first person to "see" an atom. In doing so, Müller cemented his legacy, not only at Penn State, but also as a pioneer in the world of physics and beyond.

[READ THE LEAD STORY](#)

OTHER NEWS



Can nanobots play follow the leader?

LEAD: PROF. AYUSMAN SEN

A group of tiny particles followed “breadcrumbs” left behind by a different group of particles in new experiments demonstrating the first steps in creating intelligent communicating systems involving active particles — sometimes called nanobots — that perform specialized tasks.

[Read More](#)

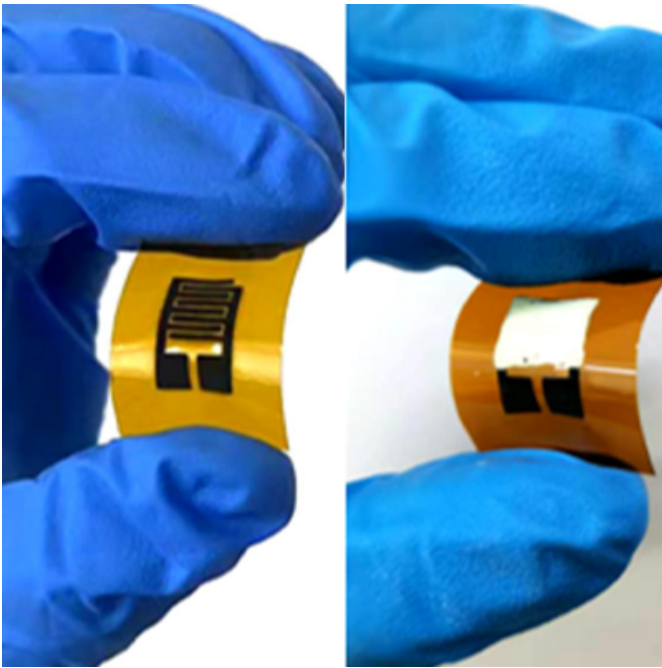


Doing a lot with a little: New AI system helps explain laser welding defects

LEAD: PROF. JINGJING LI

Artificial intelligence-powered large language models (LLM) need to be trained on massive datasets to make accurate predictions — but what if researchers don't have enough of the right type of data? A team at Penn State recently developed an integration framework that uses minimal new experimental data to identify relevant information in existing scientific literature.

[Read More](#)

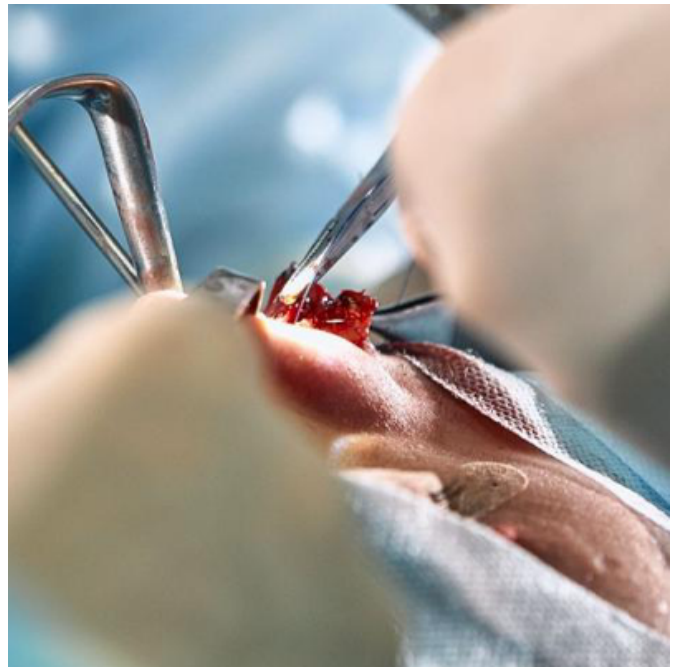


New sensor is a breath of fresh air for diagnosing diabetes

LEAD: ASSOC. PROF. HUANYU (LARRY) CHENG

In the U.S., one in five of the 37 million adults who has diabetes doesn't know it. Current methods of diagnosing diabetes and prediabetes usually require a visit to a doctor's office or lab work, both of which can be expensive and time-consuming. Now, diagnosing diabetes and prediabetes may be as simple as breathing.

[Read More](#)



\$3M grant seeks bioprinted solution for reconstructive surgery's blood problem

LEAD: PROF. IBRAHIM OZBOLAT

When patients undergo reconstructive surgery for devastating injuries, one of the biggest obstacles surgeons face is restoring blood supply to the repaired tissue. Without a functioning vascular system, new grafts cannot survive. With a new \$3 million grant from the National Institutes of Health, researchers at Penn State are taking on this challenge by combining advanced 3D bioprinting with a novel surgical method, known as micropuncture.

[Read More](#)



CHIMES celebrates third year of next-generation semiconductor innovation

LEAD: PROF. MADHAVAN SWAMINATHAN

The event welcomed over 140 attendees, bringing the CHIMES team together with industry liaisons and representatives from the SRC and DARPA to discuss the center's research and next steps. Students displayed their research through lightning talks, 60 poster presentations and demos featuring software and hardware innovations.

[Read More](#)



Penn State researcher awarded \$1.6 million for additive manufacturing project

LEAD: ASSOC. PROF. GUHA MANOGHARAN

The Defense Advanced Research Projects Agency (DARPA) awarded Penn State \$1.6 million in funding to the project titled by the team as One Part And Life (OPAL) through DARPA's Structures Uniquely Resolved to Guarantee Endurance (SURGE) program. Manogharan will apply his additive manufacturing expertise and the state-of-the-art machinery available through CIMP-3D to investigate the qualification approach.

[Read More](#)



MATERIALS DAY 2025



Materials Day 2025

October 28

REGISTRATION IS STILL OPEN!

October 28, 2025

Get ready for an exciting day of discovery and innovation at Materials Day 2025: an open house event! Whether you're a student, researcher, industry professional, or just curious about cutting-edge science!

This is more than just a one-day open house material science event — it's a launchpad for future collaborations between Penn State, industry, and government. Don't miss this opportunity to connect, learn, and be inspired!

[REGISTER TO ATTEND](#)

A SNEAK PEEK OF VARIOUS FLASH TALKS



Surface Roughness Measurements: Choice of Technique and Analysis Method

PRESENTED BY:
Tim Tighe, Associate Research Professor, Surface Analysis

In this flash talk, Tim will briefly present techniques for measuring and analyzing surface roughness and why values between techniques won't often agree.

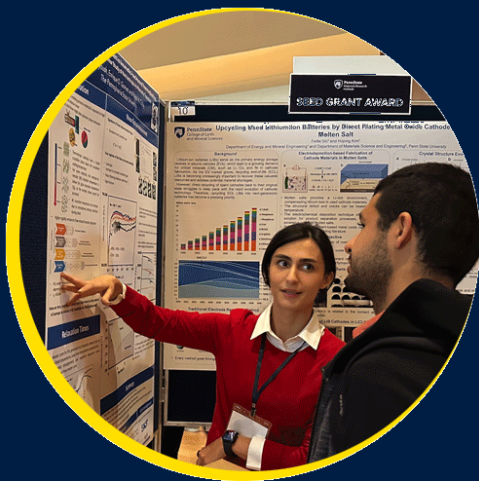
Beyond the Diffraction Limit: Illuminating Surfaces and Interfaces with AFM-IR

PRESENTED BY:
Maxwell Wetherington, Assistant Research Professor, Molecular Spectroscopy

In this flash talk, Max will highlight how AFM-IR advances our understanding of materials by revealing structure–property relationships inaccessible through conventional methods.



OTHER FEATURED EVENTS



Interactive poster sessions happening throughout the day: Meet graduate students and faculty members representing many research groups from across Penn State and dive into emerging materials science breakthroughs.

Guided and self-guided tours of the MSC: See our cutting-edge facilities up close with live demonstrations!

Plenty of networking opportunities: Reconnect with colleagues and meet new potential collaborators from across disciplines, **like in past Materials Day events, with a few new twists.**

LIKE AND FOLLOW US:



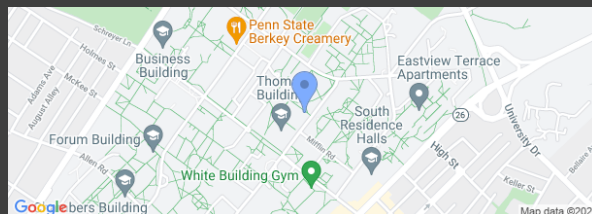
Copyright © 2025

Penn State Materials Research Institute, All rights reserved.

You are receiving this email because you indicated you would like to receive information from the Materials Research Institute at Penn State.

This publication is available in alternative media on request. Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status. UBR RES 25-27

Want to change how you receive these emails?
You can [update your preferences](#) or [unsubscribe](#) to be globally removed from all communications.



Our mailing address is:
Penn State Materials Research Institute
N-315 Millennium Science Complex
University Park, PA 16802