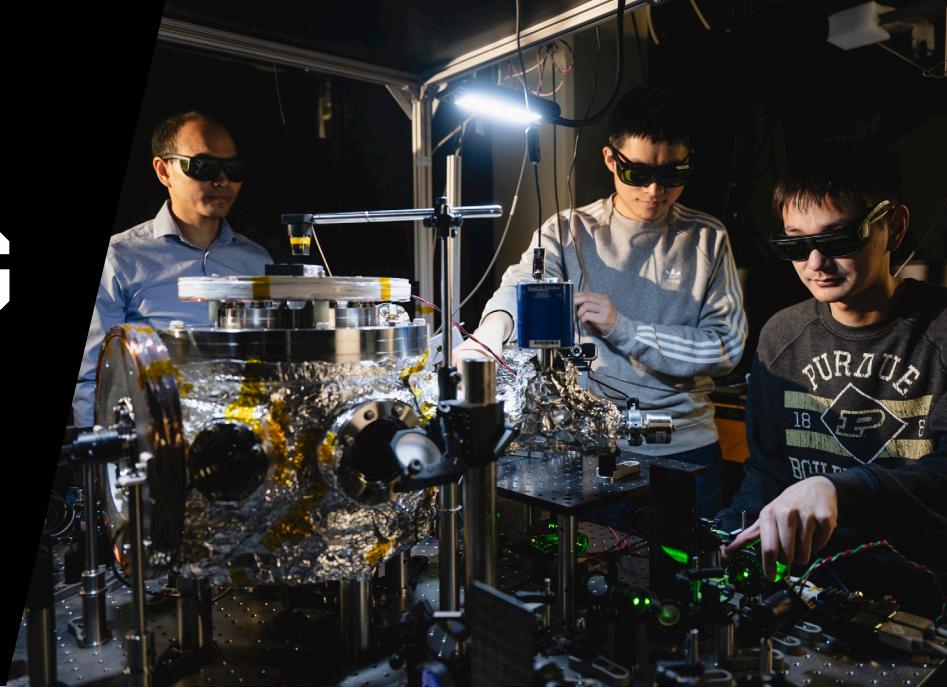


TRANSFORMING QUANTUM TECHNOLOGIES



Purdue is at the forefront of the quantum revolution, which will reshape entire sectors, including healthcare, finance, manufacturing and cybersecurity.

By fostering cross-disciplinary collaboration, the Purdue Quantum Science and Engineering Institute (PQSEI) develops discovery science to advance quantum technologies. PQSEI, the hub for quantum research at Purdue, convenes leading quantum researchers in state-of-the-art facilities to revolutionize the way we communicate, compute and sense the world around us. PQSEI's researchers and engineers investigate quantum phenomena and develop chip-scale quantum systems, connecting with stakeholders across industry, government and academia to drive scientific innovation and economic growth.



Purdue University and federal and agency representatives celebrate plans for \$100 million of renovations at Birck Nanotechnology Center and its clean room, the Scifres Nanofabrication Laboratory. From left, Zhihong Chen, director of Birck Nanotechnology Center; Sethuraman Panchanathan, NSF director; U.S. Sen. Todd Young, R-Ind.; Mung Chiang, Purdue University president; and Karen Plaut, Purdue executive vice president for research. (Purdue University photo/Kelsey Lefever)

60+

FACULTY MEMBERS WITH EXPERTISE IN QUANTUM RESEARCH

RESEARCH STRENGTHS

- Quantum photonics
- Quantum chemistry
- Quantum devices
- Quantum informatics
- Quantum control
- Quantum materials
- Atomic, molecular and optical physics

CENTRAL TECHNOLOGIES

- Quantum Computing
- Quantum Sensing
- Quantum Communication

EDUCATION AND WORKFORCE DEVELOPMENT

Meeting the demand for a quantum-ready workforce is central to the PQSEI mission. A significant number of engineers and scientists are needed to meet the demand for developing quantum technologies that promise to revolutionize the way we communicate, compute and sense the world around us. These efforts demystify quantum technology and inspire the next generation of quantum scientists, ensuring a steady pipeline of skilled professionals.

Forging connections and creating an employment pipeline are at the core of the Quantum Science Center's annual Quantum Summer School, hosted by PQSEI. The event brings together dozens of industry, academia and government experts who interact with each other and with graduate and postdoctoral students. Research talks, demonstrations of emerging technologies, panel discussions and poster sessions broaden personal and business networks.

The Center for Quantum Technologies connects faculty and students with industry and government to work on real-world research projects. The mentorship and experience helps students make an immediate impact when they transition to the workforce.

- Quantum studies, well-established in advanced degree programs at Purdue, are emerging in undergraduate programs like the quantum technology certification for electrical engineering.
- In partnership with the online learning platform edX, Purdue offers a four-course MicroMasters® Program for students and industry professionals to learn the fundamentals of emerging quantum computing, sensing and detector technology.



Graduate students present research and network with peers, faculty and industry partners during the annual Quantum Summer School. (Purdue University photo/Dave Mason)

PARTNERSHIPS

Purdue is a sought-after partner among other universities, government laboratories and companies.

- Chicago Quantum Exchange
- Quantum Science Center
- Center for Quantum Technologies
- Innovation in Quantum Pedagogy, Application and its Relation to Culture (IQ-PARC)
- Quantum Collaborative at Arizona State University
- Midwest Quantum Collaboratory
- Quantum Economic Development Consortium
- Eli Lilly and Company
- Amazon Web Services
- Quantum Corridor
- Peraton
- Air Force Research Laboratory
- Entanglement
- Cummins
- Toyota
- Hewlett Packard Enterprise
- D-Wave Systems
- Microsoft



Researcher Sam Peana, right, discusses his work focused on nanostructured single photon emitters with Sethuraman Panchanathan, director of the National Science Foundation, during a campus visit. (Purdue University photo/Kelsey Ann Lefever)