Semiconductors, Advanced Materials, and Devices

Accelerating Workforce Development and Research

Since 1998, the University of Oregon has prepared students for jobs in Oregon's semiconductor industry through its industry internship program.

Now, the University of Oregon is poised to develop the next generation of innovative materials and devices including semiconductors and related applications.

Our training programs directly engage industry partners to prepare a diverse Oregon workforce.

We offer research expertise, facilities, and programming needed to recruit students from across Oregon and connect them with semiconductor and advanced manufacturing industries in need of this talent. Oregon industry will rapidly expand through CHIPS & Science Act funding—but that success relies on parallel growth of our state's workforce, facilities, and R&D that the UO is ready to rapidly expand.

University of Oregon Research and Innovation – February 2024
research.uoregon.edu

UNIVERSITY OF OREGON | Office of the Vice President for Research and Innovation

Cashing in our CHIPS

2022

AUGUST
CHIPS & Science Act becomes law.

2023

APRIL
Oregon State Legislature creates a $200 million fund to support semiconductor work.

MAY
UO becomes a member of three NSF Regional Innovation Engines planning awards, one of which is focused on semiconductors.

JUNE
UO becomes a founding member of the Northwest Semiconductor Network.

SEPTEMBER
State of Oregon Higher Education Coordinating Commission award to UO to expand the semiconductor internship program.

OCTOBER
UO becomes a partner in US Department of Energy Pacific Northwest Clean Hydrogen Hub partnership.

NOVEMBER
UO becomes a partner in US Economic Development Administration Microfluidics Tech Hub partnership planning award with OSU.

2024

Request to the Oregon State Legislature for investments in workforce development.

Training a Diverse, Expert Workforce for Oregon

Our industry-focused programs in semiconductors, materials, devices, and related fields create a robust ecosystem that aligns our efforts with the needs of businesses in Oregon and beyond to address the workforce talent gap by recruiting diverse students.

The **Knight Campus Graduate Internship Program (KCGIP)** is an accelerated master's program with a nine-month paid internship. Program tracks include optical materials and devices, photovoltaics and semiconductors, and polymer science.

UO's **Electrochemistry Master's Program** is the first of its kind in the nation and places 20+ students per year in industry positions across the US and in Oregon.

The **Advanced Materials Analysis and Characterization (AMAC) Master's Program** provides high-level, technical skill training on major research instruments. AMAC is situated in the **Center for Advanced Materials Characterization in Oregon (CAMCOR)**. Established in 2010 through state investment, CAMCOR is a full service, comprehensive materials characterization center that serves as a national resource for researchers, a training ground for students, and industry partnership for unique instrumentation.

In fall 2024, we will introduce a hands-on **Quantum Technologies Master's Program** focused on building experimental skills needed by the quantum technology workforce.

With funding from NSF, the **Oregon Pathways to Industrial Research Careers** project develops pathways to UO internship programs for community college students at Umpqua, Lane, and Central Oregon community colleges to pursue industrial research careers.

UO by the numbers

~1,000
STEM undergraduate degrees conferred annually

#1 nationally
grantor of MS degrees in applied physics

#5 nationally
grantor of MS degrees in applied chemistry

250%
increase in enrollment of women and underrepresented scholars in KCGIP since program launch in 1998

Advancing Research in Materials and Devices

Using new approaches in biotech, advanced manufacturing, quantum computing, and more, our leading-edge research translates into myriad industries including semiconductors for next-generation devices.

UO Intellectual Expertise

Polymers and synthetic chemistry
Research responds to the semiconductor industry's reliance on advanced polymers across fabrication, advanced packaging, and testing processes.

Soft electronics and biomaterials
Our bioengineers develop soft electronics and biomaterials for use in both semiconductors and human health.

Green and electrochemistry
Faculty discover new, sustainable methods of energy production, catalysis, and material manufacturing, including in electrodeposition for advanced semiconductor processing.

Photonics and quantum devices
Quantum materials and devices represent the next major leap forward in computing and communication technology.

Resources and facilities promote innovative engineering advances
The Phil and Penny Knight Campus for Accelerating Scientific Impact boasts a Class 1000 cleanroom to support the fabrication of next-generation micro- and nano-scale devices on traditional semiconductor substrates and soft materials. This facility supports integrated microsystems development, bioengineering devices, and work in broad areas of nanotechnology.