

ONAMI: Collaboration for the institute between UO, OSU began in 2000

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serve Oregon as a resource in these sciences, according to its Web site.

History of ONAMI

Collaboration among OSU's Center for Microtechnology-Based Energy, Chemical and Biological Systems and the University's Materials Science Institute and Center for Advanced Materials Characterization in Oregon began in 2000.

University chemistry professor Jim Hutchison said this collaboration, called Multi-Scale Materials and Devices, began when OSU professor Kevin Drost approached the University and asked whether nanoscience could improve the performance of microtechnology. The results of this initial collaboration were microscale reactors. In contrast to large flasks, which have trouble cooling down while chemicals mix inside, microscale reactors are a series of tiny tubes strapped together and lined with nanoscale materials that encourage speedy reactions.

In 2003, PSU's Center for Emerging

Technologies joined the collaboration, and the 2003 Oregon State Legislature established ONAMI with a \$21 million investment, according to ONAMI's Web site.

Hutchison is now a member of the institute's Leadership Team.

"In that role, I probably think about ONAMI every day," he said.

ONAMI Executive Director Skip Rung said University chemistry professor Dave Johnson and Drost had been working with industry for some time already, but formal collaboration began in 2002 when Rung and OVP Venture Partners partner Dave Chen began inviting industry representatives to meetings. Rung said Sen. Ron Wyden, D-Ore., expressed support for this move.

Intel; Hewlett-Packard; FEI Company; Electro Scientific Industries; LSI Logic/Nantero; OVP Venture Partners; Schwabe, Williamson & Wyatt; Pacific Northwest National Laboratory; Xerox; Molecular Probes; and Bend Research are ONAMI's major industry affiliates, Rung said.

"They're major technology employers in the state that have an

interest in a healthy education system," Rung said.

Hutchison said other companies can be involved with ONAMI at lesser levels.

"ONAMI is pretty open," he said. "Lots of people can contribute."

Rung added that the list of companies involved continues to grow.

"We just haven't gotten around to everyone yet," he said.

One possible future collaborator is long-time University supporter Nike.

"Nike has had some interaction with the Materials Science Institute through our polymer internship program," Hutchison said. "They've been fairly interested in our green chemistry program."

Green chemistry, which Hutchison and fellow chemistry professor Ken Doxsee developed at the University, focuses on reducing, recycling or eliminating the use of toxic chemicals in chemistry.

"We have a lot of mutual interest in green chemistry because Nike was one of the first companies in the world to embrace green chemistry,"

Hutchison said.

Hutchison said Nike's involvement with ONAMI is not direct but is restricted to University organizations that feed into ONAMI.

"They haven't taken a strong leadership role in (ONAMI)," Hutchison said. "They're participating but not leading. Their participation is growing. We would very much like them to continue to be interested in ONAMI and keep working along these lines."

ONAMI's benefits

Linton said the state of Oregon is limited in its ability to direct financial resources to universities, and ONAMI will economically help the universities and the state in general.

"We're looking for ways to connect our research more directly to the economic vitality of the state," Linton said. "It takes that kind of combined effort to move us forward as a state in that area."

Linton said the University contributes about one-third of ONAMI's \$20 million budget, mostly in the form of federal grants to University faculty.

"Sum all that together, the University's been investing multiple millions of dollars in the past few years to support the ONAMI effort," Linton said.

Linton added in an e-mail that ONAMI as a whole receives more than \$10 million per year in non-state funds, mostly in the form of grants from federal agencies such as the National Science Foundation, and the University receives at least \$5 million in grants per year for equipment, faculty research, graduate student training and initiatives such as green chemistry.

Funding for ONAMI research affects University students even at the undergraduate level.

"It broadens the possibility for students to get mentors, to find experts to solve a problem, to put together an awesome research team that's world-class," Hutchison said. "That's really what ONAMI is all about."

"Because ONAMI influences the research of all its participants, any student who's doing research will be influenced by ONAMI or have opportunities with ONAMI," Hutchison said, adding that most undergraduate chemistry majors do research at some point in their time at the University.

These research opportunities are likely to continue, as the state government is making plans to fund ONAMI for the next biennium.

"The Governor's proposed (fiscal year) 05-07 budget includes an additional \$7 million in state funds for the statewide ONAMI programs, and is included in Senate Bill 838," Linton wrote in the e-mail.

Rung said ONAMI has already had positive effects on Oregon's economy by providing research contracts with funds that help educate graduate students.

"One of the most strategic things we do is employ graduate students," Rung said. "Those are jobs, but they turn into degrees."

Rung said patents are another economic benefit ONAMI provides to the state, citing two patents Hutchison recently received as examples.

"ONAMI has the potential to help the universities with patenting costs," said Don Gerhart, director of the University's Office of Technology Transfer.

The Office of Technology Transfer, which makes University-developed innovations available to the private sector to bring the innovations into societal use, received 40 invention disclosures during the 2004 fiscal year. Invention disclosures have the potential to become patents after years of paperwork.

ONAMI's applications

The institute's research focuses on the integration of nanotechnology and microtechnology, according to its Web site. The field is divided into four types of activity: integration of nanomaterials and nanostructures into microscale systems to greatly enhance performance; using microtechnology for the efficient large-scale manufacturing of nanomaterials; interaction between functional nanoparticles and living cells; and attaching nanoparticles to biomolecules to build electronic systems for microtechnology.

Applications for this work include cell-based biosensors for homeland security and drug discovery, medical diagnostics, facilitating the absorption of medicines within the human body and the world's first transparent transistors.

Linton said ONAMI does work on sensing devices that the Department of Homeland Security could use in inspecting borders and ports. He added that while the Department of Homeland Security does not directly fund ONAMI, the two organizations benefit from each other indirectly.

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