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News

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Nanoimprint Lithography NSF Grant Awarded to Micro Device Lab at Stevens

[Dr. Eu-Hyeok \(EH\) Yang](http://www.stevens.edu/research/research_profile.php?fac_id=120) (http://www.stevens.edu/research/research_profile.php?fac_id=120), Associate Professor of [Mechanical Engineering \(/ses/me\)](/ses/me) and Director of the [Micro Device Laboratory \(http://www.stevens.edu/nanoelectronics/lab.html\)](http://www.stevens.edu/nanoelectronics/lab.html) (MDL) at Stevens Institute of Technology, **The Innovation University™**, will receive funding from the **National Science Foundation** (NSF) for the acquisition of a **Nanoimprint Lithography System** (NIL) for the purpose of nanoscience research and education based on low-dimensional materials at Stevens. The Co-PIs of the project are Drs. Besser, Choi, Cappelleri and Strauf. This equipment acquisition is an important step in achieving Dr. Yang's goal of integrating research and education in nanotechnology at the MDL. In addition, nanoimprint lithography will benefit local institutions searching for nearby solutions for nanopatterning. "The system will be an open local resource for researchers," Yang says.

"The NIL system is the latest piece of equipment in completing the fabrication process flow for micro/nano devices at Stevens," Yang says. "The MDL's capabilities for research and education increase significantly with this system."

The grant funds the acquisition of a Nanonex 1000 Nanoimprint Lithography System, a whole-wafer (4-inch) nanoimprinter for thermoplastic resins that has high-resolution (~10 nm) and high-throughput (~60 sec) capabilities. This acquisition will strengthen the exploration of high-throughput nanoscale patterning as a key part of the research projects funded by NSF, DARPA, US Army, AFOSR, and ONR. These inter-disciplinary, high-risk, high-payoff research projects will provide a consistently growing user base and cultivate a multidisciplinary research-intense learning environment in nanotechnology at Stevens along with collaborators in the New York City metropolitan area.

This research capability also supports cross-disciplinary educational initiatives already underway at Stevens. It provides hands-on experience to students in the [Nanotechnology Graduate Program \(http://www.stevens.edu/nano/\)](http://www.stevens.edu/nano/) and undergraduates alike. One of Yang's undergraduate [senior design \(/ses/academics/undergraduate/senior_design.html\)](/ses/academics/undergraduate/senior_design.html) teams plans create an Intra Ocular Pressure Relief Valve, used to treat glaucoma by releasing fluid when pressure builds up in the eye. The nanoimprint lithography system will greatly benefit their fabrication process.

"The MDL is an integral component of the Nanotechnology research thrust at Stevens," says **Michael Bruno**, Dean of the Charles. V. Schaefer School of Engineering and Science. "The NIL acquisition enhances Stevens' capabilities for nanotechnology research in the area and simultaneously offers outside organizations a solution for their nanotechnology research needs."

Researchers at Stevens previously relied on an external nanoimprint lithography facility at the Center for Functional Nanomaterials (CFN) at the Brookhaven National Laboratory in Upton, NY. Therefore, the availability of the in-house nanoimprint lithography system will significantly increase the efficiency and output of work done in the laboratory, increase the training capabilities for Stevens staff and students, and enable many undergraduate and graduate educational initiatives. Investigators from and outside of Stevens will have easy access to nanoimprint lithography in the Micro Device Laboratory on the Stevens campus. Professor Ioana Voiculescu at City College of New York is listed as Senior Personnel of the Project.

“Over the next few years we will be a major force in nanotechnology research as this facility, along with future acquisitions, continues to grow,” says Dr. Constantin Chassapis, Professor, Deputy Dean of the School of Engineering & Science, and Director of the Department of Mechanical Engineering.

Learn more about Nanotechnology at Stevens by visiting the [Nanotechnology Graduate Program \(http://www.stevens.edu/nano/\)](http://www.stevens.edu/nano/) or [Micro Device Laboratory \(http://www.stevens.edu/nanoelectronics/lab.html\)](http://www.stevens.edu/nanoelectronics/lab.html) web sites. Find out more about Dr. Yang on his [group web site \(http://www.stevens.edu/nanoelectronics/\)](http://www.stevens.edu/nanoelectronics/).

Nanotechnology brings together professors from five different programs in the [Charles V. Schaefer, Jr. School of Engineering and Sciences \(/ses/\)](#); [Chemical, Chemical Biology, and Biomedical Engineering \(/ses/ccbbme\)](#); [Civil, Environmental, and Ocean Engineering \(/ses/ceoe\)](#); [Mechanical Engineering \(/ses/me\)](#); [Chemical Engineering and Material Science \(/ses/cems\)](#); and [Physics and Engineering Physics \(/ses/physics/\)](#).

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Based in Hoboken, N.J. and with a location in Washington, D.C., Stevens offers baccalaureate, master's, certificates and doctoral degrees in engineering, the sciences and management, in addition to baccalaureate degrees in business and liberal arts. Stevens has been recognized by both the US Department of Defense and the Department of Homeland Security as a National Center of Excellence in the areas of systems engineering and port security research. The University has a total enrollment of more than 2,200 undergraduate and 3,700 graduate students with almost 450 faculty. Stevens' graduate programs have attracted international participation from China, India, Southeast Asia, Europe and Latin America as well as strategic partnerships with industry leaders, governments and other universities around the world. Additional information may be obtained at [www.stevens.edu \(http://www.stevens.edu/\)](http://www.stevens.edu) and [www.stevens.edu/news \(/news\)](http://www.stevens.edu/news).

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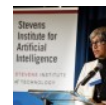
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Stevens Institute of Technology

1 Castle Point Terrace

Hoboken, NJ 07030

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[201.216.5000 \(tel:+12012165000\)](tel:+12012165000)

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