

# 10 Weeks with DOE

## UNH students land internships

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TAN DAO '21 WORKING IN A UNH LAB. (PHOTO: ALI ASGHAR)

The expression “a cast of thousands” could be applied to the volume of applicants the Department of Energy (DOE) receives each year for internships at one of its 17 laboratories. So the fact that not one but five UNH students have been offered positions at DOE sites is a pretty big deal.

The [Science Undergraduate Laboratory Internships](#) (SULI) summer program has undergraduate and recent students working with a DOE mentor on a research project under the guidance of lab scientists or engineers.

Junior Greg Novotny will spend his summer at the Brookhaven National Laboratory (BNL) in Upton, New York. The 5,300-acre campus specializes in nuclear and high energy physics, energy science and technology, environmental and bioscience, nanoscience and national security. Novotny will be working on battery physics and science.

## The 10-week internship program aims to ready students for a career in STEM (science, technology, engineering, and mathematics) fields.

"I don't yet have all the details, but I will be researching the physics and engineering relationships of materials synthesis and composition for electrochemical storage applications," Novotny, a [chemical engineering](#) major, says. "I'm excited to be working in materials science and engineering, as my research at UNH has focused largely on materials science. Working with battery physics will give me a good chance to explore electrochemical engineering."

The 10-week internship program aims to ready students for a career in STEM (science, technology, engineering, and mathematics) fields. SULI also offers 16-week fall and spring internships.

"I've been interested in the SULI program since late in my freshman year when I first determined that I wanted to go into the energy field. I've always wanted to go to graduate school, so competitive research internships appealed to me as excellent opportunities to gain research experience and to figure out what research is like outside of UNH," Novotny, of Derry, New Hampshire, says.

Lihy Buchbinder '21 will also be interning at Brookhaven National Laboratory. She learned of the DOE program from her research advisor.

"Another undergraduate who worked in my lab (at UNH) did this internship and had a very positive experience," Buchbinder says. "Since I did research at a university last summer, this time I wanted to try a national lab."

A [physics](#) major, Buchbinder wanted to add to her research skills before she furthers her education. "In the future I'd like to attend graduate school, and afterwards have a research component in my career, either as faculty or in a lab. I'm hoping this internship, besides being a great stand-alone experience, will give me some insight about what it's like to be a researcher at a national lab," she says.

Brookhaven National Lab was her top choice of the two labs she applied to because the research topics appealed to her, and she wanted to stay close to New England.

"During the internship, I'll be working on an individual research project called Novel 2D-nanomaterials," says Buchbinder, who is from Israel but now lives in New Hampshire. "The plan is to prepare new materials of interest, characterize them with microscopy and spectroscopy techniques and study their interactions with small molecules."

Tan Dao '21, also a physics major, received his internship offer from the Lawrence Berkeley National Laboratory in Berkeley Hills near Berkeley, California. Thirteen scientists at the Berkeley Lab, as it is known, have received the National Medal of Science. Born in Vietnam, Dao moved to the U.S. when he was 11. His goal is to be a scientist; his lab internship will allow him to experience what it is like working at a national laboratory and to work with scientists, he says.

"At the lab, I will be adjusting experimental conditions including electron beam intensity and energy and collect measurement data through user interfaces based on digital and analog controls. Electron energy spectra and electron-electron pair correlation data will be compared for electron beams emitted at different temperatures of the niobium tip," Dao says. "The main goal is to measure how much these data change when the temperature of the niobium tip is above versus below the superconducting transition. I will learn electron beam physics and experimental physics skills."

Ben Antognetti '22 will be at the Princeton Plasma Physics lab (PPPL) in Princeton, New Jersey. The laboratory is a world-class fusion energy research facility that develops the scientific and technological knowledge base for fusion energy as a safe, economical and environmentally attractive energy source for the world's long-term energy requirements.

"I'll be working on plasma and fusions sciences research. I hope to be working on creating simulations for fusion sciences, but I'd really be happy working on many different projects there," the physics major says. "I have learned in my time working with professor Amy Keese here at UNH over the past year that plasma physics is a complex and far reaching topic. Now I have been given the chance to work at PPPL and expand my knowledge in another related direction. I feel that one of the most important factors when choosing research to work on is choosing what interests you, and this work definitely interests me."

Nathaniel Nichols '22, a chemical engineering major, also has received an offer from the Brookhaven National Lab.

Dao and Novotny have both been nominated for Goldwater Scholarships from the Goldwater Scholarship Foundation, which provides funding of up to \$7,500 a year to help cover college costs associated with tuition, mandatory fees, books and room and board. Goldwater is viewed as the premier scholarship for sophomore and junior STEM students who plan to pursue a Ph.D. and have a career in research. Schools are only allowed to nominate four students. Winners regularly have an average GPA of 3.85 or above. Recipients will be named at the end of March.

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