

Big City Amenities with a Small Town Feel

I love the location and what Nashville has to offer. It is not too expensive and offers a wide range of off-hour activities. I have a dog, am into music, and do muay thai boxing at a local boxing club. Nashville offers me the ability to pursue many things when I am not working in the lab.

I am surprised at how much I have enjoyed living in Nashville. I've lived in four different neighborhoods, tried many local breweries, seen live music and open mic nights, been hiking, canoeing, and explored neighboring states. And I still find new things to do!

After visiting for my interview, I was so captivated with how beautiful the campus is – and Nashville in general.



VANDERBILT



School of Engineering

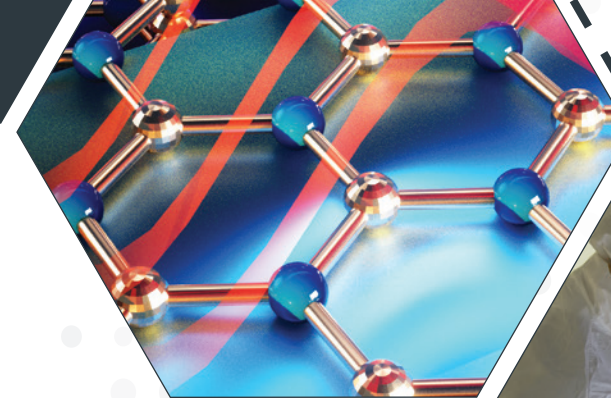
IMS

INTERDISCIPLINARY
MATERIALS SCIENCE
at VANDERBILT UNIVERSITY

IMS at Vanderbilt is different.

The Interdisciplinary Materials Science program at Vanderbilt University offers a unique experience in which students design their own curriculum and collaborate with faculty and students from engineering, chemistry, physics, and medicine. With more than 40 participating faculty members from 10 departments in the College of Arts and Science and the School of Engineering, the program is truly interdisciplinary. As part of our goal to move beyond disciplinary boundaries, all students name co-advisers from two different departments and select a committee with faculty from at least three different departments.

Close ties and physical proximity to Oak Ridge National Laboratory also set the IMS program apart, and co-location with Vanderbilt University Medical Center, a world-class hospital, creates distinctive research paths. Vanderbilt has the facilities and equipment of a much larger university but with a “just right” feel that fosters 1-on-1 relationships with PIs, supportive research groups, and undergraduate mentoring opportunities.





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What IMS students say about the program



Lexi Yates

Advisers: Ethan Lippmann, chemical and biomolecular engineering and Angela Jefferson, neurology

Building stem-cell derived models to study neurodegenerative disease

The IMS program is very diverse in the research students pursue, which makes it interesting when we hang out. We are challenged to explain our research well to each other, and it also makes it easier to *not* talk about our research. There's a strong sense of community and accountability that is really wonderful.



John Williams, II

Advisers: David Cliffler, chemistry, and Kane Jennings, chemical and biomolecular engineering

Novel biohybrid photovoltaics using Photosystem I protein

I appreciate how the program allows students to explore, not just in core classes, but also with the faculty. The opportunity to try so many different things and stay on track is pretty cool. Access to the great tools and techniques at VINSE makes the program that much more valuable.



Jeremy Espano

Advisers: Janet Macdonald, chemistry, and Josh Caldwell, mechanical engineering

Nanoparticle phase control

I have been really impressed by the amount of collaboration, the facilities offered by VINSE, and the welcoming community atmosphere. Vanderbilt isn't too big, or too small, and the program really gives you a great opportunity to connect with individuals from different disciplines.



Elena Kovalik

Advisers: Jason Valentine, mechanical engineering, and David Cliffler, chemistry

Using electrochemical interactions to change the optical properties of materials

IMS is unique in that it is almost a choose-your-own-adventure kind of graduate degree. The program allows for rotations, so students can see different labs and find the best fit. Being surrounded by fellow scientists with different areas of expertise is a very stimulating work environment.

Facilities

The Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) provides training on state-of-the-art fabrication, imaging, and characterization tools.

Facilities include a cleanroom, analytical tools, and an advanced imaging suite. VINSE offers tools for fundamental materials and integrated device investigations across an array of disciplines, while the analytical and imaging suites offer characterization and focused ion beam tools and electron microscopes.

Diverse Careers

Students collaborate with faculty from engineering, physics, chemistry, and medicine, making them highly marketable and positioned for successful careers at a wide range of institutions. Among our graduates, 42% have gone to work in industry, including Johnson & Johnson, Dow, DuPont, Exxon, and biotech start-ups; 35%



have stayed in academia; and 23% work in federal agencies such as the Food and Drug Administration, National Institutes of Health, and national labs.

Application Information

DEADLINES

Apply before December 1 if requesting fee waiver. Initial application reviews begin in November, with final applications due January 8.

FINANCIAL AID

Ph.D. candidates receive full support through scholarships, fellowships, teaching assistantships and research assistantships. Support includes 100 percent of tuition, health insurance and activity and recreation fees, as well as relocation assistance.

Requests for further information and for waivers of the application fee should be directed to the contacts below.

CONTACTS

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Focus Areas

Bio/medical: biomaterials, drug delivery, tissue engineering, biomedical imaging materials, stimuli-response systems

Theory, Modeling and Simulation: computational economics, computational nanoscience, artificial intelligence, scientific computing, modeling and simulation

Optics: biomedical photonics, biomedical optics, ultrafast spectroscopy

Energy: supercapacitors, batteries, energy storage materials synthesis, silicon science, solar energy conversion, nanocrystal-sensitized solar cells

Semiconductors: silicon functionalization, device design, biosensing, micron-scale energy transport designed for energy conversion

Materials Research: structure-property-processing relationship of metals, ceramics, polymers, composites and electronic materials

Materials for Robotics: novel materials for actuation, sensing, and structural design, including elastomers, polymers, super-elastic alloys, meta-materials, magnetic materials