

ACADEMY OF INTEGRATED **SCIENCE** NANOSCIENCE

Nanoscience is the study of materials, phenomena, properties, and applications at the smallest length scale at which we can control matter. A nanometer is one-billionth of a meter, just slightly larger than individual atoms.

Nanoscience and nanotechnology have rapidly growing applications in a wide range of technology areas including electronics, information technology, medicine, renewable energy, aerospace, and advanced materials. The National Science Foundation predicts that by the year 2020, **\$1 trillion of products in the U.S. will contain nanotechnology**. The Bachelor's degree program in Nanoscience at Virginia Tech is **one of only two such programs in the U.S.**

Careers in Nanoscience

Electronics and Semiconductor Industries,
Energy Generation and Storage, Pharmaceuticals,
Auto and Aerospace Industries, Sporting Goods,
Materials Science Medical Devices, Biotechnology,
Environmental Monitoring and Remediation,
& many others

► Covers materials such as fullerenes, nanotubes, quantum dots, and graphene and techniques such as self-assembly, lithography, electron microscopy, and scanning tunneling microscopy.

► Federal government created National Nanotechnology Initiative (www.nano.gov) in 2000, which has invested >\$25 billion in research and development.

► 8 credits of undergraduate research required as part of degree.

► A Nanoscience minor is also available.

Course Offerings



NANOSCIENCE

Intro to Nanoscience
Nanoscience Research Seminar
Nanoscience Research Rotations
Quantum Physics of Nanostructures
Nanoscience & the Environment
Nanoscale Synthesis, Fabrication, & Characterization
Advanced Nanomaterials & Devices
Nanomedicine



BIOLOGY

Cell and Molecular Biology for Engineers



PHYSICS

Foundations of Physics



CHEMISTRY

General Chemistry
Survey of Organic Chemistry



MATH

Elementary Linear Algebra
Calculus of a Single Variable
Intro to Differential Equations