The Nanomaterials Core Characterization Facility (NCC) is an open access, nationally ranked collaborative materials analysis facility where researchers from universities and industry have access to the capabilities of our state-of-the-art instrumentation and expert advice.

The NCC offers technologies that benefit multi-disciplinary industrial and scholarly research in a broad range of sciences from: regenerative medicine, biotechnology, biology, forensic science, chemistry, pharmaceuticals, materials science, aerospace and microelectronics.

WHAT THE NCC CAN DO FOR YOU:

• Imaging of samples using electron, optical, or x-ray methods
• Elemental mapping of structural features
  - Complete surface analysis
  - Chemical mapping
  - Depth profiling
  - Elemental Speciation
  - Surface Roughness
  - Magnetic properties measurement
• Variety of sample preparation tools

Nanomaterials Core Characterization Facility
630 West Cary Street, Richmond, Virginia 23224
804-828-3925 (Dean’s office), 804-727-7020 (direct lab line)
nano@vcu.edu

The NCC is a research core facility of the VCU Office of Research and located in the Institute for Engineering and Medicine. The NCC is also a partnership between the VCU School of Engineering and the VCU College of Humanities and Sciences. As a research facility, resources and contract services are available to both university faculties and industry.

The NCC offers technologies that benefit multi-disciplinary industrial and scholarly research in a broad range of sciences to modify, manipulate or tailor the surface, size, or shape of a particular material.

With the NCC you gain access to over $11 million in sophisticated materials characterization equipment and analytical services unique to the mid-Atlantic region.

To learn more about NCC and what we can do for you, please visit us online at www.nano.vcu.edu.

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About VCU School of Engineering
Founded in 1894, the School of Engineering at Virginia Commonwealth University teaches 1,652 undergraduate and 285 graduate students. Driven to be the national model for innovation in engineering and research, the school offers B.S., M.S. and Ph.D. degrees in mechanical, nuclear, biomedical, electrical, computer and chemical and life science engineering, computer science and the country’s only hybrid mechanical and nuclear engineering doctoral program. Cross-disciplinary focus areas include: Sustainability and Energy Engineering, Micro and Nano Electronic Systems, Pharmaceutical Engineering, Mechanosensing and Regenerative Medicine, Security and Mining of Big Data, and Device Design and Development.

Interdisciplinary research opportunities are offered through the school’s Nanomaterials Core Characterization Facility, the Institute for Engineering and Medicine, the Da C. Kenneth and Dianne Harris Wright Virginia Microelectronics Center, the Translational Research Innovation Projects Facility, the Zhou’s Undergraduate Research Initiative, and the da Vinci Center.

To learn more, go to www.egr.vcu.edu.

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VCU Innovation Gateway website:
research.vcu.edu/ott/
In 2009, through assistance from federal and state grants and private donations, VCU began building a state-of-the-art instrumentation facility to support characterization and development in materials science, especially nano-related materials and research.

Today we are continuing to expand our suite of instruments, which are unique to the Mid-Atlantic region. The staff at the NCC has extensive experience in developing protocols for analysis of your materials characterization requirements and interpretation of findings. We are here to assist you!

To learn more, visit www.nano.vcu.edu.

THE NANOMATERIALS CORE CHARACTERIZATION FACILITY IS EQUIPPED WITH STATE-OF-THE-ART INSTRUMENTATION.

- **Hitachi SU-70 FE-SEM**
  - Spatial resolution of 1 nm
  - Elemental analysis using EDS
  - E-beam lithography
  - STEM mode

- **Zeiss Libra 120 Transmission Electron Microscope**
  - Lower acceleration voltage results in less sample damage while maintaining spatial resolution of ~0.4 nm
  - An array of analytical tools to provide elemental identification and mapping

- **Zeiss Auriga FIB-SEM**
  - High resolution SEM (1.0 nm at 15 kV) and FIB (2.5 nm resolution at 30 kV)
  - Precision milling and nanofabrication abilities
  - FIB-SE Nanopatterning and Visualization Engine
  - EDS, EBSD
  - Correlative imaging (with LSM 710)

- **Zeiss LSM 710 Laser Scanning Microscope**
  - Wide range of QUASAR detector configuration options
  - 34-channel parallel imaging
  - Laser lines: 405, Argon (458, 488, 514), 561, 633 nm
  - Full incubation control
  - Shuttle and Feed holders to transition to the Zeiss Auriga FIB-SEM

- **Bruker SkyScan 1173 High Energy Micro-CT**
  - 130 kV microfocus X-ray source
  - Distortion-free flat panel detector
  - Better than 7 µm 3D spatial resolution (small samples)
  - Continuous scanning for long objects
  - 2D/3D image analysis and realistic visualization

- **PANalytical MDX X’Pert Pro**
  - Versatile powder diffraction system
  - Phase identification
  - Crystal change with temperature
  - Very small sample volumes

- **ThermoFisher ESCAlab 250**
  - Multi-mode surface characterization system
  - Single monolayer sensitivity
  - 19 µm spatial resolution
  - Surface changes with temperature

- **Veeco ICON Atomic Force Microscope**

- **HORIBA LabRAM HR Evolution Confocal Raman Microscope**

- **Quantum Design VersaLab Platform**

- **Vicstek SPCMax**

- **Rame-Hart Contact Angle**

- **PANalytical X-ray Fluorescence Spectrometer**

For our complete list of instrumentation capabilities, schedules and fees, please contact Everett Carpenter, Ph.D. (804-828-7508).