MSE on the Move

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Planned Institute for Critical Technology and Applied Science Building

The new Institute for Critical Technology and Applied Science (ICTAS) will attract top faculty and students, foster collaboration between researchers, increase research funding, and provide infrastructure and space to facilitate these aims. The ICTAS Initiative at Virginia Tech (led by the College of Engineering) will involve the construction of several new buildings comprising a multi-disciplinary research laboratory and a 15,000 ft^2 state-of-the-art Advanced Materials Characterization Facility (AMCF). The AMCF facility will be formed by a collection of new and existing tools for processing, characterizing, and testing materials at the macro, micro, and nanometer scales. Of the expected cost of $12M in equipment for the AMCF, the University has already provided $3.2M to purchase a High-Resolution Transmission Electron Microscope (HRTEM) and an ion microprobe. The equipment to be housed in the AMCF includes:

- Electron Microscopes
  - Scanning Electron Microscope
  - HRTEM
  - Environmental Scanning Electron Microscope
- Secondary Ion Mass Spectroscope
- Nano-Indenter, Nano-Structure Manipulator, and Nano-Lithography Systems
- Ferromagnetic/Ferroelectric Properties Measurement Systems
- Ion Miller
- Focused Ion Beam
- Optical Microscopes
- Atomic Force Microscopes
  - Nano-Manipulation Capabilities
- X-ray Diffractometers
- X-ray Tomograph
- X-ray Photoelectron Spectrometer
- Zeta Potentiometer
- Clean Room Facility
  - Plasma Etching, Film Deposition
  - Mask Aligners, Film Thickness Tester
  - Wet Benches, Spin Casters
  - Annealing/Doping Furnaces
- Thermal Analysis
  - Differential Thermal Analyzer
  - Differential Scanning Calorimeter
  - Thermogravimetric Analyzer
  - Dynamic Mechanical Analysis Dilatometer
- Plasma Spray
- Spectrometer
  - Ultraviolet-Visible-Near Infrared
  - Fourier Transform Infrared
- Dielectric Properties Measurement System
- Nuclear Magnetic Resonance
- Ellipsometer
- Particle Size Analyzer
- Surface Area/Pore Analyzer
- Laser Ablation System
- Cryo-Mill
- Fluid Energy Mill
- Rapid Prototyping Instrument
- Metallorganic Chemical Vapor Deposition Facility
  - MOCVD Hot Wall Reactor
  - Wet Benches
  - Sample Testing