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The Center for Integrated Nanotechnologies (CINT): One scientific community focused on nanoscience integration

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As a lead federal agency for the National Nanotechnology Initiative, the Department of Energy (DOE) is developing a network of Nanoscale Science and Research Centers (NSRC). NSRCs are national user facilities located at DOE National Laboratories providing open access for university, laboratory, and industrial researchers to work together to advance nanoscience. The Center for Integrated Nanotechnologies (CINT), operated jointly by Sandia National Laboratories and Alamos National Laboratory, has a technical vision focused on integrating scientific disciplines and expertise across length scales going from the nano world to the world around us. It is often said that nanotechnology has the potential to change almost everything we do. This prophecy will come to pass only when we can understand, predict, and control the coupling of nanoscale functions with the macroscale world. Building on competencies in nanoelectronics & nanophotonics, complex functional nanomaterials, nanomechanics, nano-bio-micro interfaces, and theory and simulation, CINT provides expertise and tools required to tackle the most challenging scientific problems including energy transfer across multiple length scales, combining top-down and bottom-up assembly, and interfacing biological and synthetic systems. Researchers wishing to explore these important topics can apply to use experimental and computation resources housed in the CINT's 96,000 square foot Core Facility and its two physical Gateway Facilities connecting the CINT community with resources at each laboratory. CINT facilities include an integration lab for nano- and micro-scale patterning, nano-scale synthesis ranging from molecular beam epitaxy to biochemical processes, characterization tools for spatially resolved and ultra-fast time scale measurements, and computational hardware and specialized algorithms. Unique to the CINT user program are microfabricated Discovery Platforms specifically designed to study nanomaterials and their integration with micro-scale architectures. The CINT Gateway Facilities connect the user community to specialized laboratory resources including microfabrication, biosciences, and user facilities for neutron scattering, high magnetic fields studies, and combustion research. Full operation of CINT is planned for 2006.