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News Release

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CINT to serve as gateway to Los Alamos and Sandia national labs

Center for Integrated Nanotechnologies receives $75 million DOE go-ahead

ALBUQUERQUE and LOS ALAMOS, N.M. — Sandia and Los Alamos national laboratories will jointly receive $75.8 million for the design and construction of buildings to house the practical yet visionary Center for Integrated Nanotechnologies (CINT).

The Office of Science of the U.S. Department of Energy approved funding in July for two new buildings: a joint core facility in Albuquerque and a smaller gateway building in Los Alamos. Through these facilities, researchers from industry and universities will have access not only to the equipment of CINT, but also to the resources of the two labs. Sandia will use part of an existing building for its gateway.

CINT is one of five new Nanoscale Science Research Centers being created by the Office of Science. Investment in these centers is the largest current national investment into the US scientific infrastructure, with $500 million authorized for 2001 and $620 million 2002.

"Los Alamos and Sandia national laboratories have taken a significant step together to make New Mexico one of the world's premiere centers for the emerging field of

nanotechnology," said Sen. Pete Domenici, R-N.M. "The CINT collaboration represents the ultimate in materials science and should usher in an exciting new age of high technology."

Said Sen. Jeff Bingaman, D-N.M., who chairs the Senate Energy and Natural Resources Committee: "This funding will help emerge technology that will serve as an engine of growth and innovation. I will continue to work to ensure that this Center continues to get strong DOE support."

Sandia's President C. Paul Robinson said, "The creation of CINT is not just a welcome new initiative in our research and development programs, but is the kickoff of what is likely to be an enduring quest. For several years Sandia scientists and engineers have seen the possibility for 'atoms-up engineering' —where we will be able to design and fabricate new materials beginning at the atomic level — and CINT will help advance that research."

According to Los Alamos Director John Browne, "A revolution has begun in science and technology based upon the ability to organize, manipulate, and measure the properties of matter on the nanometer length scale. It is natural for Los Alamos and Sandia to pursue this new field because of the labs' long tradition of multidisiciplinary research to benefit society. In the short term, the new facility should offer new ways to develop sensors, satellites, and security measures to support our nuclear deterrent. In the long term, it could change our lives in ways people can't even begin to imagine."

Terry Michalske of Sandia and Don Parkin of Los Alamos will serve as founding Director and Associate Director, respectively, for CINT.

Of 26 architectural firms that entered bids for the CINT core facility, a short list of five has been selected to compete, with a goal of early August for firm selection and beginning of design. Target date for breaking ground of the Los Alamos gateway is April 2004; for the core facility in Albuquerque it is June 2004.

New Mexico Nanoscience Alliance spokesperson Steve Brueck (who is also head of the University of New Mexico's Center for High Technology Materials) said, "The CINT goal of integrating the unique properties of nanotechnology into the macroscopic world is critically

important if we are to realize the full benefit of nanoscale physics, chemistry, and biology. This new program will be the centerpiece of New Mexico's increasingly important nanotechnology activities. These include strong efforts at New Mexico's graduate degree granting universities (Univerity of New Mexico, New Mexico State University, and New Mexico Tech) as well as at the national laboratories and the Air Force Research Laboratory."

An outside evaluation of the value of the Sandia/Los Alamos CINT collaboration comes from Jean-Charles Guibert, head of strategic programs and partnerships for France's Minatec, that country's corresponding nano-micro effort at Grenoble: "The key feature is the strong relation to be established between CINT and Sandia's/Los Alamos' laboratories and clean rooms. All around the world, you have academic labs working on nano but without application capability, or industrial research sites without strong links to academia. The deliberate inclusion of these links is one basis of the uniqueness of the CINT project."

Sandia National Laboratory is operated by Lockheed Martin Corporation for the National U.S. Department of Energy's Nuclear Security Administration (NNSA). Los Alamos National Laboratory is operated by the University of California for the DOE's NNSA. Los Alamos and Sandia work in partnership with Lawrence Livermore National Laboratory in support of NNSA and its mission.

Images and story are available at www.sandia.gov/news-center/news-releases/2002/mat-chem/nanotechcenter.html

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CINT Fact Sheet

Nanotechnology builds materials up from atoms and molecules rather than whittling down blocks of material from the macro level. Among its potential advantages are smaller components, more precise functionality, lower energy requirements, and reduced waste and exploitation of natural resources. Innovations from this field are expected to bring about improvements in society that include new drug discoveries, innovations in health care, as well as advances in computing, transportation and manufacturing.

Among the Center's distinctive features:

- Half the researchers will come from industry and universities, chosen on the basis of scientific review of proposed projects.
- There will be no charges for visitors to use this facility.
- Core facility will be located outside the classified boundary to promote open access and scientific collaboration.
- Research scientists in chemistry, physics, biology and computers will work together under one roof.
- A vast array of scientific equipment, some not available anywhere else in the world, will be made available to researchers. Examples include an atom tracker that records the movement of atoms in real-time and provides videos of atoms distributing themselves on a surface. Also made available will be a Magnetic Resonance Force Microscope that performs the equivalent of a medical Magnetic Resonance Imager on the scale of individual molecules.

Nanostructured materials can increase the efficiency of energy conversion with enhanced magnetic, light emission or wear resistant properties. Energy generation using nanostructured photovoltaics or nanocluster-driven photocatalysis could fundamentally change the economic viability of renewable energy sources. In addition, the ability to imitate molecular processes found in living organisms may be key to developing highly sensitive and discriminating chemical and biological sensors. Such sensors could greatly expand the range of medical home

testing as well as provide new technologies to counter the spread of chemical and biological weapons. Even the production of chemicals and materials could be revolutionized though the development of molecular reactors that can promote low energy chemical pathways for materials synthesis.

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