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**NIST FY07 Budget Request
 Totals \$581.3 Million**

The U.S. National Institute of Standards and Technology (NIST) is slated to receive \$535 million for laboratory research and facility upgrades, plus another \$46.3 million for industrial technology services, under President George W. Bush's American Competitiveness Initiative, according to the FY 2007 budget request submitted to Congress in February. That budget proposal includes an additional \$104 million—a more than 24% increase—for NIST laboratory programs and facilities. NIST is a part of the U.S. Commerce Department's Technology Administration, which also includes the National Technical Information Service (NTIS).

The budget request for NIST is divided into three appropriations:

- \$467 million for scientific and technical research and services (STRS), including \$459.4 million for NIST's laboratory research and \$7.6 million for the Baldrige National Quality Program. This category includes a major research initiative with 12 main components:

- Enabling Nanotechnology from Discovery to Manufacture (+\$20M);
- NIST Center for Neutron Research (NCNR) Expansion and Reliability Improvements: A National Need (+\$10M);

- Enabling the Hydrogen Economy (+\$10M);
- Manufacturing Innovation through Supply Chain Integration (+\$2M);
- Quantum Information Science: Infrastructure for 21st-Century Innovation (+\$9M);
- Structural Safety in Hurricanes, Fires, and Earthquakes (+\$2M);
- Synchrotron Measurement Science and Technology: Enabling Next-Generation Materials Innovation (+\$5M);
- International Standards and Innovation: Opening Markets for American Workers and Exporters (+\$2M);
- Innovations in Measurement Science (+\$4M);
- Bioimaging: A 21st-Century Toolbox for Medical Technology (+\$4M);
- Cyber Security: Innovative Technologies for National Security (+\$2M); and
- Biometrics: Identifying Friend or Foe (+\$2M).
- \$68 million for construction of research facilities (CRF), including resources for safety, maintenance, repair, and facilities upgrades. The CRF request would fund:
 - Construction and renovations at the NCNR, tied in with the parallel research and development initiative in STRS (\$12M);
 - Increases in NIST's safety, capacity,

maintenance, and major repair budget to repair aging facilities (\$10M); and

- Renovations at the agency's Boulder, Colo., site (\$10.1M).

- \$46.3 million for Industrial Technology Services to fund the Hollings Manufacturing Extension Partnership program, which is a reduction of \$58.3 million from the FY 2006 level. NIST will focus the FY 2007 funding to maintain an effective network of centers with an emphasis on activities that promote innovation and competitiveness in small manufacturers. The FY 2006 appropriations and estimated recoveries will be sufficient to meet all existing obligations of the Advanced Technology Program and to phase it out; no FY 2007 funds are requested.

These appropriations bring the NIST budget request to a total of \$581.3 million (see Table I).

Within the next 10 years, at least half of the newly designed advanced materials and manufacturing processes are expected to be products of nanotechnology. The global impact of nanotechnology is predicted to exceed \$1 trillion by 2015. NIST had been selected as the lead agency for nanotech instrumentation, metrology, and standards research by the National Nanotechnology Initiative (NNI). The Center for Nanoscale Science and Technology (CNST) will allow NIST and its

**Table I. Technology Administration Appropriation Summary
 FY 2005–FY 2007
 (Dollars in thousands)**

National Institute of Standards and Technology (NIST)	FY 2005 Enacted ^a	FY 2006 Enacted ^b	FY 2007 Proposed
Scientific and Technical Research and Services (STRS)			
NIST Laboratories	373,372	387,471	459,439
Baldrige National Quality Program (BNQP)	5,392	7,291	7,563
Subtotal, STRS	378,764	394,762	467,002
Construction of Research Facilities (CRF)	72,518	173,651	67,998
NIST Core Subtotal (STRS + CRF)	451,282	568,413	535,000
NIST Core, Excluding Congressionally Directed Projects^{a,b}	399,582	431,147	535,000
FY 2007 requested Increase			24%
Industrial Technology Services (ITS)			
Advanced Technology Program (ATP)	140,339	78,978	0
Hollings Manufacturing Extension Partnership (MEP)	107,544	104,646	46,332
Subtotal, ITS	247,943	183,624	46,332
NIST Total	699,225	752,037	581,332

^aReflects across-the-board rescissions enacted in PL 108-447, FY 2005 Consolidated Appropriations Act (TA, \$87 thousand; NIST, \$9.5 million). Does not reflect ATP unobligated balances rescission of \$3.9 million. The amounts for NIST Laboratories and for the Construction of Research Facilities appropriation include \$8.8 million and \$42.9 million congressionally directed projects, respectively.

^bReflects across-the-board rescissions enacted in PL 109-108, FY 2006 Science, State, Justice, and Commerce Appropriations Act and in PL 109-148, FY 2006 Defense Appropriations Act (TA, \$77 thousand; NIST, \$9.7 million). Does not reflect MEP unobligated balances rescission of \$7 million. The amounts for NIST Laboratories and for the Construction of Research Facilities appropriation include \$11.9 million and \$125.4 million congressionally directed projects, respectively.

partners to develop measurement and fabrication technologies to bridge the gap between nanoscience in the laboratory and nanotechnology in production.

The NIST Center for Neutron Research (NCNR) offers a "cold" (low-energy) neutron source that greatly increases the utility of the neutron beam, particularly in biotech and materials research. In FY 2007, the project will focus on the following:

- development and installation of an improved cold source,
- development of improved neutron beam handling systems to take advantage of the new source,
- development of new instrumentation for the expanded facility, and
- architectural and engineering design for the new guide hall.

To foster the hydrogen economy, the center is also used to research real-time, three-dimensional imaging of hydrogen in operating fuel cells. Knowledge developed at this NIST facility and in other NIST laboratories is focused on reducing existing technical barriers to efficient hydrogen production, storage, and use.

While neutron sources are particularly good at imaging light elements like hydrogen, synchrotron light can be used to probe materials over a wide energy range to produce both microscopic and nanoscale "pictures" of two- and three-dimensional chemical structures and bonding patterns. NIST proposes to accelerate innovation in materials science by creating a diverse set of scientific instruments at the National Synchrotron Light Source (NSLS) at Brookhaven National Laboratory. Three existing NIST beamlines at the NSLS permit structural studies of any material or device at the microscopic scale. Funding of this initiative will allow upgrades to existing instruments as well as the development of two additional beamlines and associated instruments capable of analyzing the electronic, chemical, and structural properties of any material with subnanometer resolution.

President Requests \$6.02 Billion for National Science Foundation

The president's budget for FY 2007 requests \$6.02 billion for the National Science Foundation (NSF)—an increase of \$439 million, or 7.9%, over FY 2006. The increase reflects a 10-year budget-doubling effort for NSF and other agencies as part of the American Competitiveness Initiative that President Bush announced in his State of the Union address in February.

According to NSF, the request will allow the agency to make major contributions to new fundamental knowledge and to underwrite discoveries that affect the

future of science, engineering, and education. In addition, through the foundation's long-standing practice of integrating research and education, the budget will facilitate the transfer of new concepts to the private sector, as students involved in discovery enter the workforce.

The FY 2007 request for NSF's four broad funding categories includes \$1.68 billion for broadly accessible, state-of-the-art science and engineering facilities, tools, and other infrastructure that enable discovery, learning, and innovation and \$1.07 billion for a diverse, competitive, and globally engaged U.S. workforce of scientists, engineers, technologists, and well-prepared citizens.

Key federal investments include networking and information technology research and development at \$904 million, the National Nanotechnology Initiative at \$373 million, the Climate Change Science Program at \$205 million, and homeland security activities at \$384 million.

The nanotechnology initiative investment includes \$65 million for nanoscale interdisciplinary research teams to encourage collaborative approaches to nanoscale research and education themes that require a synergistic blend of expertise.

NSF will also invest \$20 million in fundamental research on new technologies for sensors and sensor systems to improve the detection of explosives as well as to integrate data with information available from other fields and sensing systems.

Total funding for major research equipment and facilities construction is \$240.45 million.

NSF will invest more than \$640 million in FY 2007 in programs aimed at tapping the potential of underrepresented groups in science and engineering—especially minorities, women, and persons with disabilities—and in support of efforts to ensure a strong capability in science and engineering across all regions of the country. Funding for the Experimental Program to Stimulate Competitive Research (EPSCoR) will increase to nearly \$100 million.

"With increased funding in this first year of the doubling process, NSF will be able to capitalize on the many areas of emerging promise already on the horizon. We are on the road. Now we need to engage the journey in earnest," said NSF Director Arden L. Bement Jr.

New Target Areas Announced for Strategic Project Grants in Canada

After extensive consultations with Canada's research community, the Natural Sciences and Engineering Research Council (NSERC) of Canada announced in Janu-

ary the areas of research it will support through the upcoming funding cycle of the Strategic Project Grants (SPG) program. Each year from 2006 to 2010, NSERC will direct approximately \$15 million of SPG funds to research and training in the following areas:

- advanced communications and management of information,
- biomedical technologies,
- competitive manufacturing and value-added products and processes,
- healthy environment and ecosystems,
- quality foods and novel bioproducts,
- safety and security, and
- sustainable energy systems (production, distribution, and utilization).

NSERC also worked closely with the research community to identify, within each target area, specific research topics with the greatest potential impact on Canada's economy and quality of life.

In their proposals, researchers must explain why their research is strategic and how it addresses a given target area. Highest priority will be given to those applications that most closely align with the specified research topics. However, NSERC will also consider, under the label of "exceptional opportunities," a limited number of proposals that fall within the targeted area but that address other topics.

CAS Releases 2006 Science and Society Series

The 2006 *Science and Society Series* of the Chinese Academy of Sciences (CAS), which consists of reports on scientific, high-tech, and sustainable developments, was released in early March.

The reports were written by three research teams on the basis of their independent studies. Since its first publication in 1998, the series has become a key reference on science and technology (S&T) advancements in China.

In the area of high technology, the report gives an overview of progress in the major fields, with a special focus on advances in materials and energy technology made in 2005. It discusses the profound impact of the technology on social development. The chapters of the report include a review of high-tech development in 2005, advancement in materials technology, advancement in energy technology, materials and energy technology foresight, high-tech and society, and an expert forum. □

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