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**The President's FY 2007 Budget Request for  
the National Institute of Standards and Technology...**  
**Part of the President's American Competitiveness Initiative**

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**William Jeffrey**  
Director

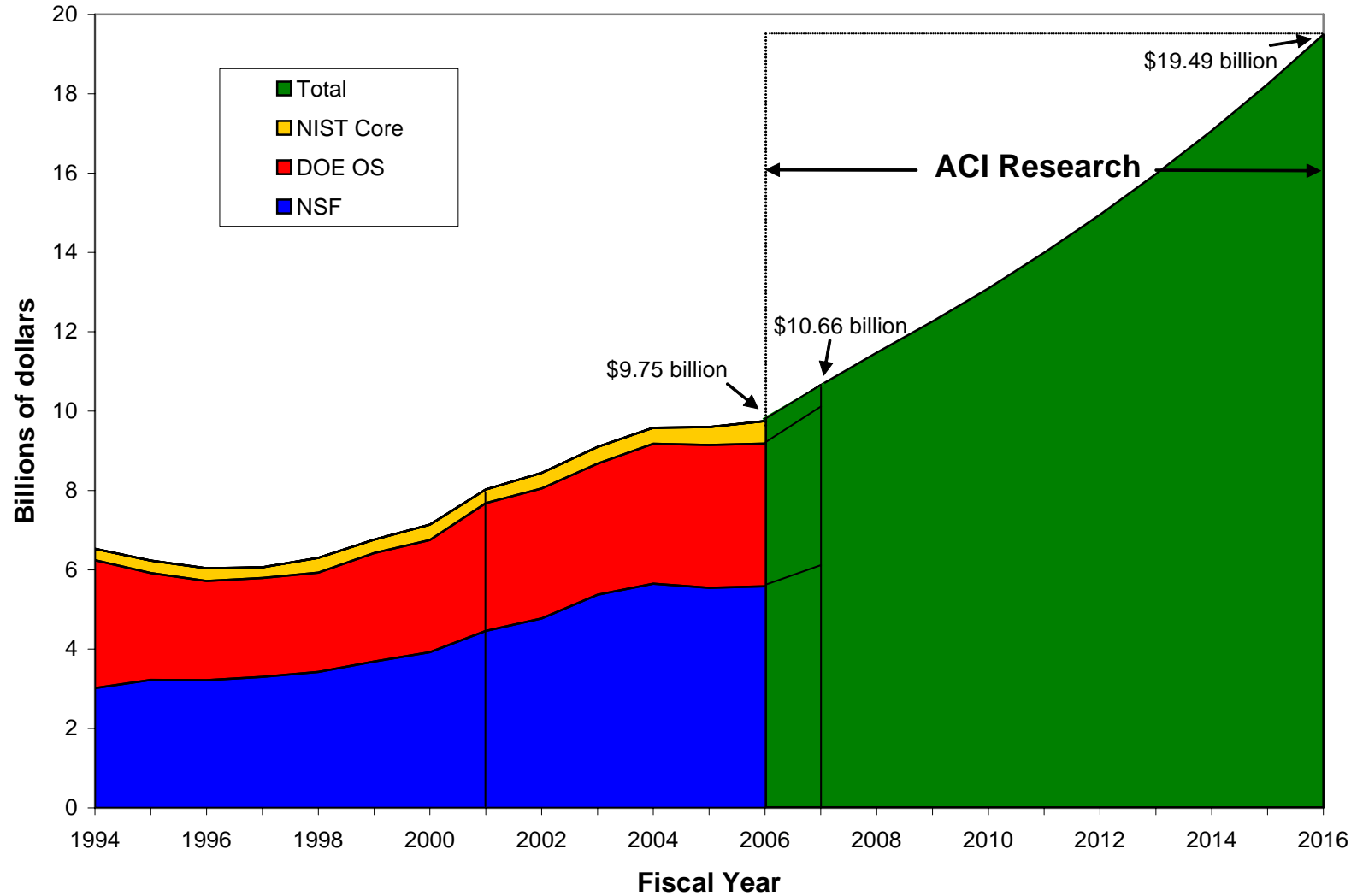
**NIST**  
**National Institute of  
Standards and Technology**  
Technology Administration  
U.S. Department of Commerce

# President's 10-Year American Competitiveness Initiative

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- **Announced in the State of the Union address**
- **Doubles, over 10 years, investment in:**
  - NIST laboratory and construction (STRS and CRF)
  - National Science Foundation
  - DOE Office of Science
- **Commits \$50 billion of new funding to these key agencies**
- **Makes permanent and updates the R&D Tax Credit**
- **Increases math and science education (K-12) and increases the number of math and science teachers**
- **Increases worker training and retraining opportunities**
- **Reforms immigration policies to attract and retain the best and brightest from around the world**

# American Competitiveness Initiative Research: FY 2007 – FY 2016



## NIST Mission

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To promote U.S. innovation and industrial competitiveness by advancing

measurement science,  
standards, and  
technology

in ways that enhance economic security and improve our quality of life

# NIST FY 2007 President's Budget Request

(in millions of dollars)

|                                   | FY 2005<br>Enacted | FY 2006<br>Enacted    | FY 2007<br>Request |
|-----------------------------------|--------------------|-----------------------|--------------------|
| <b>STRS</b> (w/o directed grants) | <b>\$370.0</b>     | <b>\$382.9</b>        | <b>\$467.0</b>     |
| Labs                              | 364.6              | 375.6                 | 459.4              |
| Baldrige                          | 5.4                | 7.3                   | 7.6                |
| <b>CRF</b> (w/o directed grants)  | <b>29.6</b>        | <b>48.3</b>           | <b>68.0</b>        |
| <b>TOTAL</b> (STRS + CRF)         | <b>399.6</b>       | <b>431.2</b>          | <b>535.0</b>       |
|                                   |                    | <b>+\$104 million</b> | <b>+24%</b>        |
| <b>ITS</b>                        | <b>247.9</b>       | <b>183.6</b>          | <b>46.3</b>        |
|                                   | (MEP/ATP)          | (MEP/ATP)             | (MEP)              |
| <b>Directed Grants</b>            | <b>51.7</b>        | <b>137.3</b>          | <b>N/A</b>         |

# NIST Increase in the FY 2007 President's Budget Request

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## ***Targeting the most strategic and rapidly developing technologies (+\$45 million)***

- Nano Discovery to Manufacture
- Enabling the Hydrogen Economy
- Quantum Information Science – Infrastructure for 21<sup>st</sup> Century
- Innovations in Measurement Science
- Cybersecurity: Innovative Technologies for National Security

## ***Increasing the capacity and capability of critical national assets (+\$27 million)***

- NIST Center for Neutron Research (NCNR) Capacity and Capability
- Synchrotron Measurement Science and Technology

## ***Meeting the Nation's most immediate needs (+\$12 million)***

- Manufacturing Innovation through Supply Chain Integration
- Structural Safety in Hurricanes, Fires, and Earthquakes
- International Standards and Innovation: Opening Markets
- Bioimaging: A 21<sup>st</sup> Century Toolbox for Medical Technology
- Biometrics: Identifying Friend or Foe

## ***NIST facilities improvement plan (+\$20.1 million)***

- Design and renovation of 2 buildings in Boulder, CO
- Safety, Capacity, Maintenance and Major Repairs
- NCNR initiative mentioned earlier includes construction funds

# Enabling Nanotechnology from Discovery to Manufacture (+\$20 million)

- **Nanotech market predicted to exceed \$1 trillion by 2015**
- **NIST brings:**
  - multidisciplinary measurement expertise
  - world-class Advanced Measurement Lab
  - national user facility experience
- **Expand the Center for Nanoscale Science and Technology (CNST)**
  - work with industry, universities, and other agencies to bridge the gap between science and production
- **Expand NIST research efforts to support industry through nanoscale measurement science and standards**

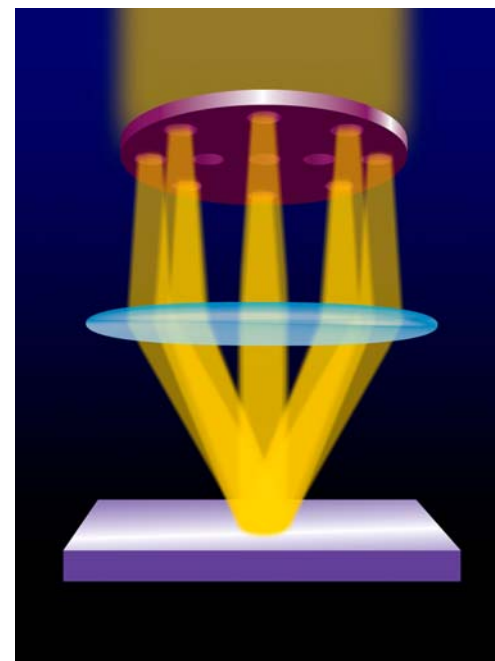


Illustration by Beanie Young

# Enabling the Hydrogen Economy

(+\$10 million)

- **Hydrogen fuels benefits**

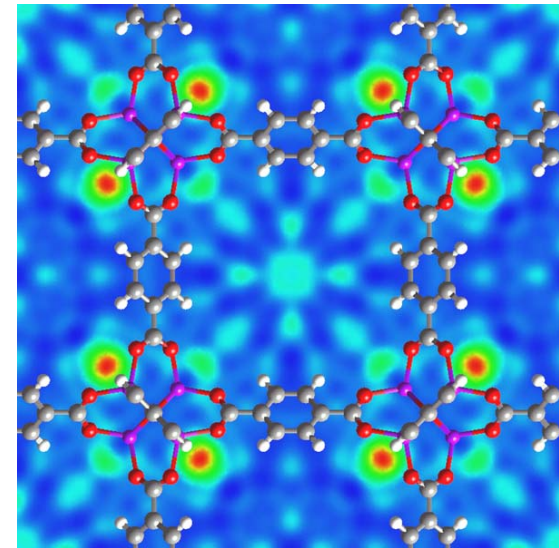
- reduced dependence on foreign energy sources
- lower environmental impact

- **NIST brings:**

- 50 years of technical expertise
- Congressional mandates for weights and measures, pipeline safety

- **NIST will:**

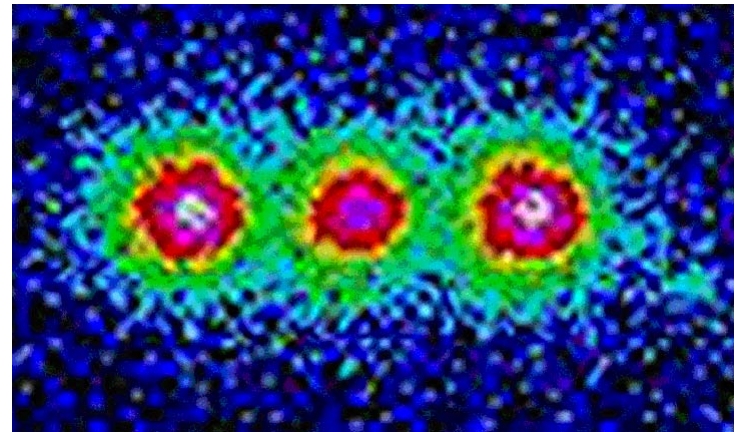
- improve efficiency, durability, manufacture of hydrogen fuel cells
- develop standards for pipeline safety and reliability
- develop standards, calibrations for equitable trade of hydrogen <sub>8</sub>



# Quantum Information Science – Infrastructure for 21<sup>st</sup>-Century Innovation (+\$9 million)

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- **Revolutionary potential, ultrapowerful computers, “unbreakable” code to protect financial transactions**
- **NIST is a world leader in the field**
  - world-renowned scientists, including three Nobel laureates
- **NIST will**
  - expand research on quantum information
  - develop new measurement tools and methods
  - support a Joint Quantum Institute with a university and the National Security Agency



# NIST Center for Neutron Research Expansion and Reliability Improvements (+\$22 million, STRS+CRF)

- **U.S. neutron facilities can't meet current demand**
- **Neutrons offer unique benefits**
  - protein structure/function
  - trace chemical analysis
- **NIST Center for Neutron Research (NCNR)**
  - nation's leading neutron facility
  - serves more users than all other U.S. neutron facilities combined
- **Upgrade NCNR – 5-year plan**
  - add additional cold source and new guide hall
  - provide new generation of world-class instruments
  - serve 500 more researchers each year

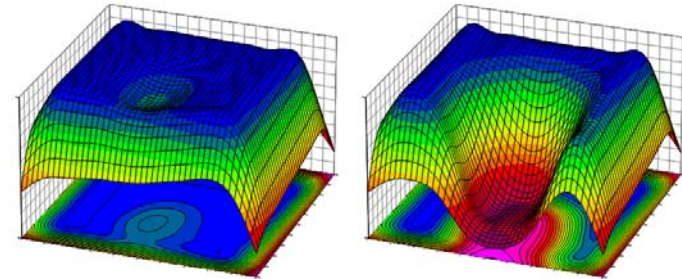


photo © Robert Ralhe

# Synchrotron Measurement Science and Technology (+\$5 million)

- **Synchrotrons complement neutron sources—**

- imaging & analysis of chemical, electronic & structural properties used in developing new, innovative materials

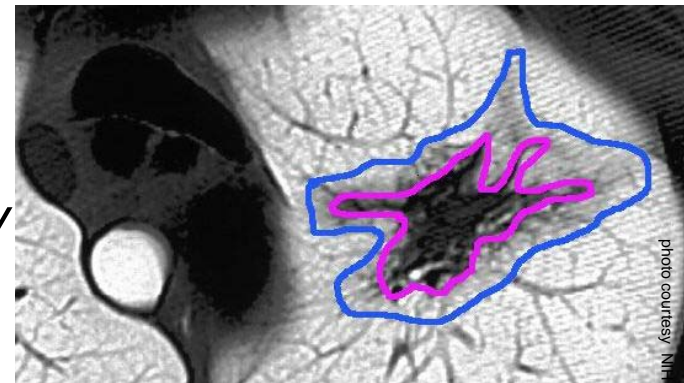


- **National Synchrotron Light Source at Brookhaven National Lab**

- will upgrade three beamlines and establish two new beamlines
- **Will be used by 200 researchers a year**
  - any material, made of any elements, subnanometer resolution

# Bioimaging: A 21st Century Toolbox for Medical Technology (+\$4 million)

- **Vision—to convert pictures into reliable data for diagnosis and analysis**
- **Measurements foundation is lacking—assessments must be accurate, reliable, repeatable**
- **NIST will partner with NIH, bioimaging industry to improve**
  - molecular imaging for understanding bio processes
  - assessment of advanced biomaterials' behavior *in the body*
  - methods and technologies for bioinformatics



# Summary

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- **The American Competitiveness Initiative will:**
  - ensure that America leads the world in opportunity and innovation for decades to come, and
  - improve the lives and livelihoods of generations of Americans.
  
- **The responsibilities for NIST in the ACI are a recognition of our mission to promote U.S. innovation and industrial competitiveness by advancing:**
  - measurement science,
  - standards, and
  - technology

... in ways that enhance economic security and improve the quality of life
  
- **The President's FY 2007 budget will allow NIST to focus on the Nation's most critical measurements and standards needs**