

NIST Update

William Jeffrey

Director, NIST

Visiting Committee on Advanced Technology

September 13, 2005

Outline of VCAT Agenda

September 13, 2005

- NIST Update
- USMS Status Report
- Laboratory Tours
 - Large Fire Metrology Laboratory
 - Weapons and Protective Systems for Law Enforcement
- Strategic Planning for Measurements and Standards Support for Homeland Security
- Response to VCAT Recommendations in FY 2004 Annual Report

NIST Update Agenda

- Staff Changes and Recognition
- Safety
- Accomplishments
- Strategic Planning
- Outreach Activities

DOC Staff Changes



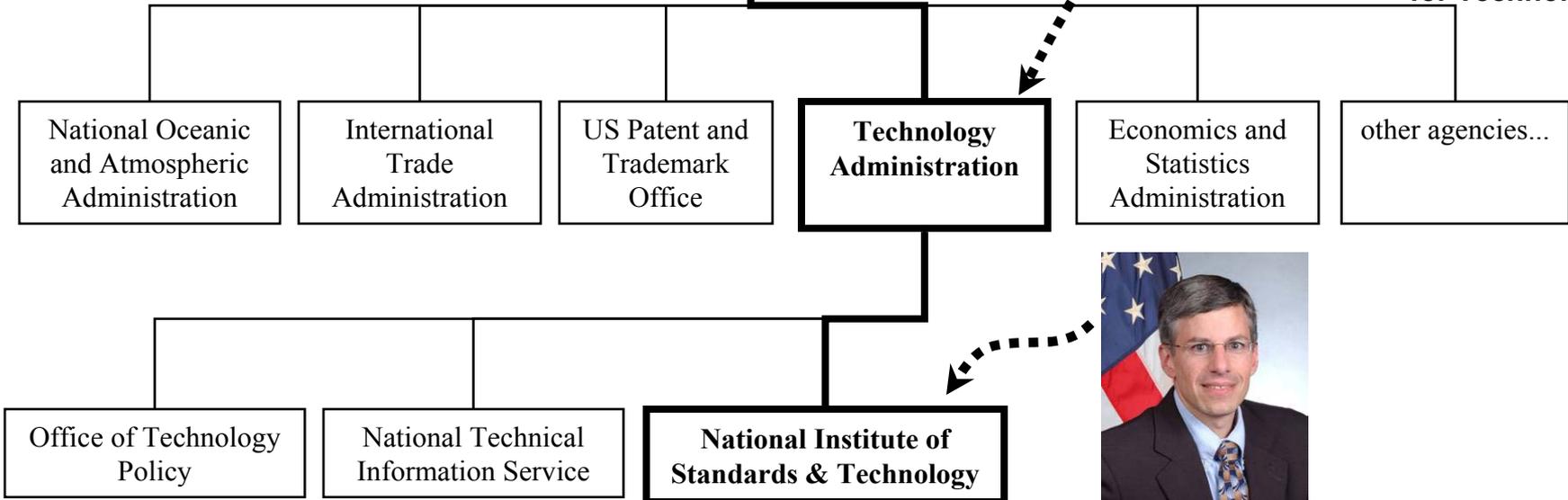
Carlos Gutierrez
Secretary



David A. Sampson
Deputy Secretary



Michelle O'Neill
Acting Under Secretary
for Technology



William Jeffrey
NIST Director

NIST Staff Changes



Staff Recognition

IEEE Computer Society Technical Achievement Award

Shashi Phoha (Information Technology Laboratory)



EPA Scientific & Technical Achievement Award

Cynthia Howard-Reed (Building and Fire Research Laboratory)



CalCon 2005-2006 Hugh H. Huffman Memorial Award

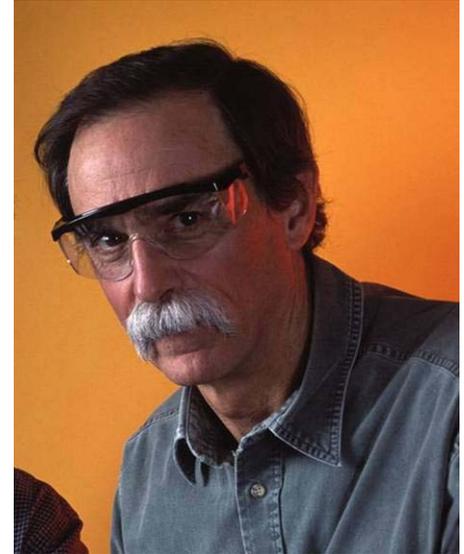
Michael Frenkel (Chemical Science and Technology Laboratory)



Staff Recognition

Presidential Rank Award for Distinguished Senior Professional

David Wineland (Physics Laboratory)



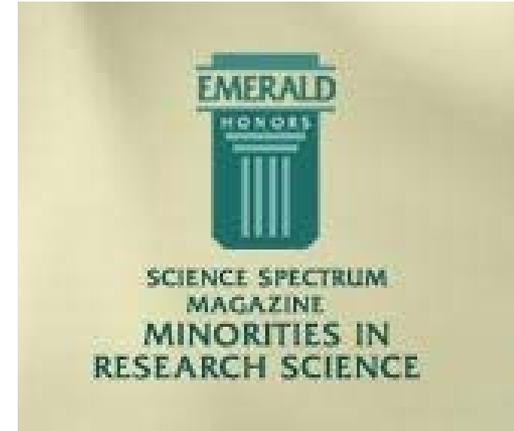
Bertrum Warren Diffraction Physics Award

Charles Majkrzak (NIST Center for Neutron Research)



Staff Recognition

Science Spectrum Magazine Minorities in Research Science Awards

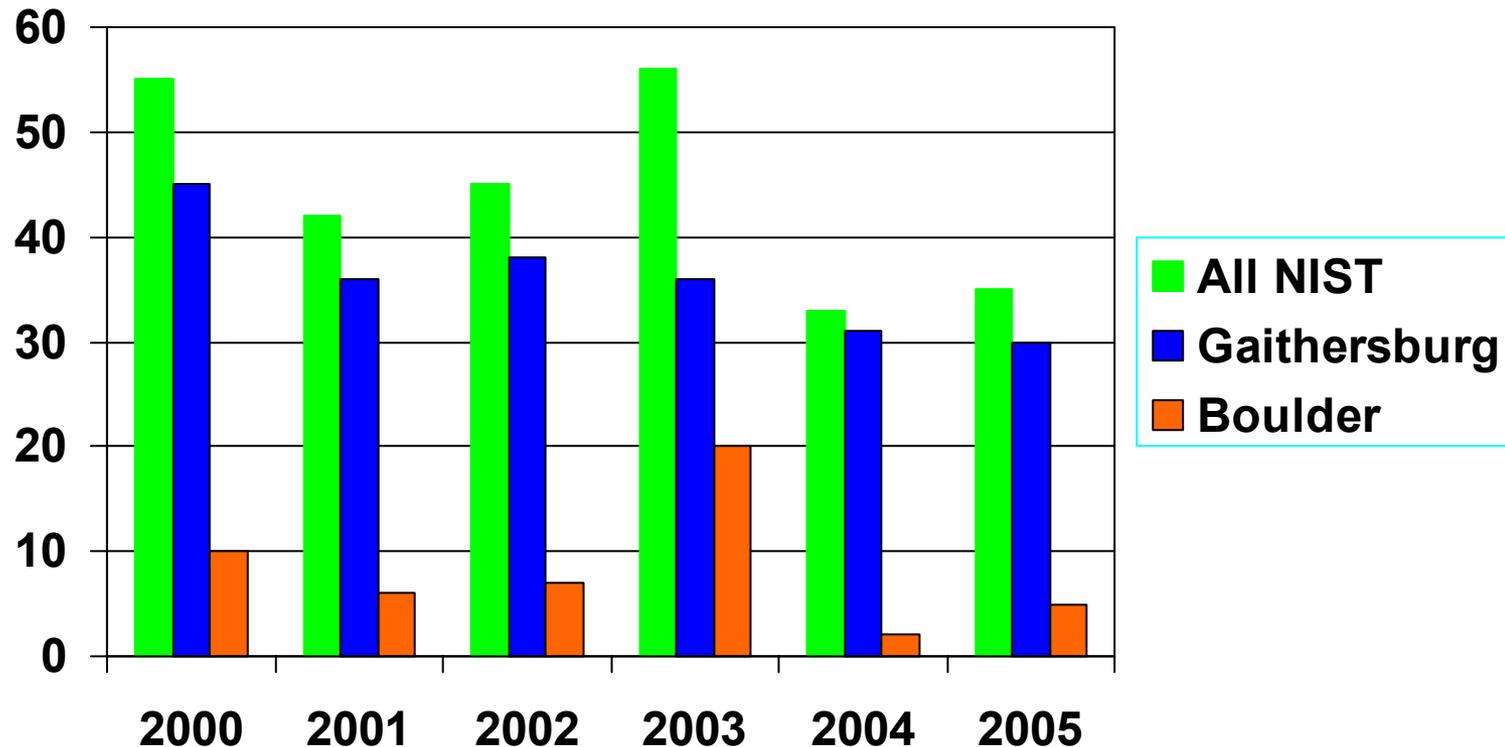


Fern Hunt, ITL

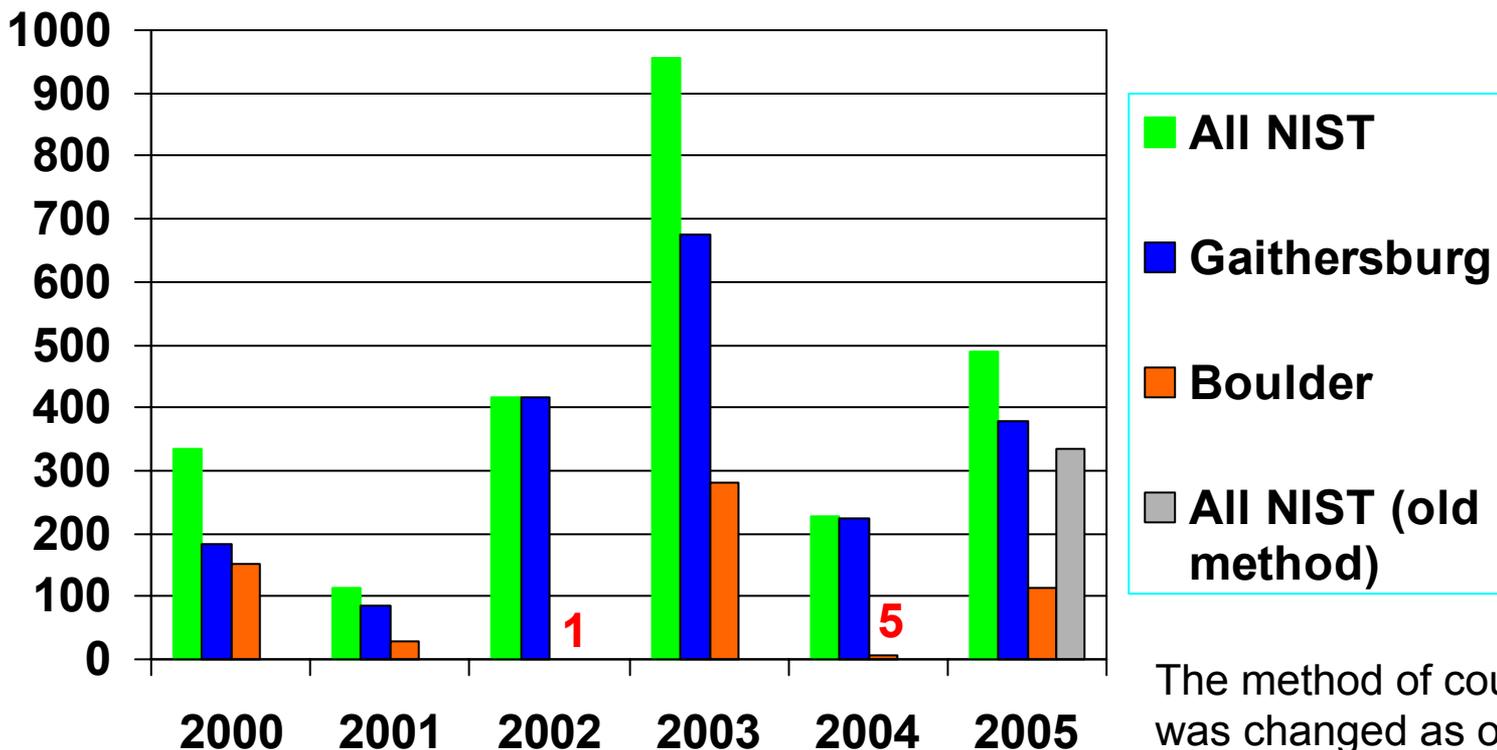


Willie May, CSTL

All Recordable Incidents FY 2000 Through FY 2005 To Date (August 31)



All Lost Work Days FY 2000 Through FY 2005 To Date (August 31)



The method of counting was changed as of Jan 2005

Benchmarks vs. Other Institutions

Total Case Rate and Lost Workday Rate for FY 2004

<u>Agency</u>	<u>Total Case Rate*</u>	<u>LWIFR</u>
NIST	0.80	0.20
DOE	2.73	0.73
NIH	1.66	0.76
FDA	0.98	0.44
NOAA	1.49	0.52
CDC	1.55	0.76
Federal Govt.	4.43	2.03

*Includes medical treatment and lost work day incidents

Benchmarks vs DOE Labs

Total Case Rate and Lost Workday Rate for FY 2004

<u>Agency</u>	<u>Total Case Rate*</u>	<u>LWIFR</u>
NIST	0.80	0.20
DOE	2.73	0.73
Argonne East	0.90	0.90
Argonne West	0.90	0.00
Lawrence Livermore	1.80	0.40
Los Alamos	2.50	0.80
Sandia	3.20	0.90
Fermilab	1.10	0.80

*Includes medical treatment and lost work day incidents

Safety at NIST

- Personal Protective Equipment Policy finalized
- Divisions updating safety plans & hazard assessments
- Environmental Management System Awareness training offered on-line
- New safety training classes being offered under contract with HHS

Hazard Communications

Lockout/Tag out

Machine Guarding

Personal Protective Equipment

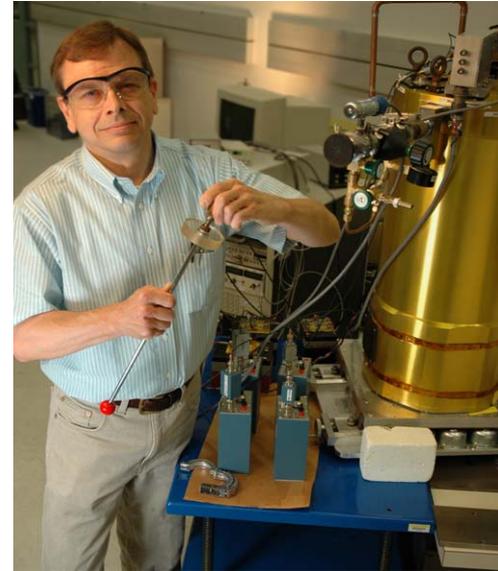
Respiratory Protection

Electrical Safety Awareness

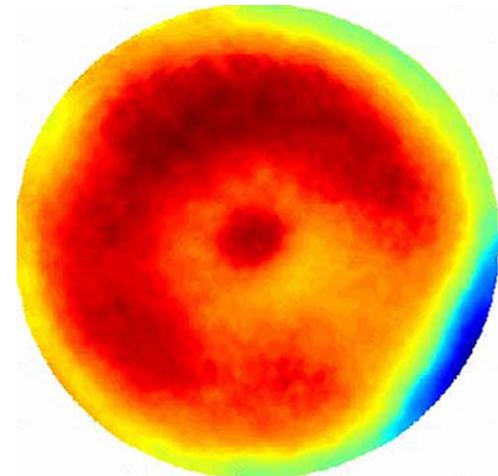


Measurement Science Accomplishments

- Temperature Control Improves NIST X-ray Detector



- New Infrared Tool Measures Silicon Wafer Thickness



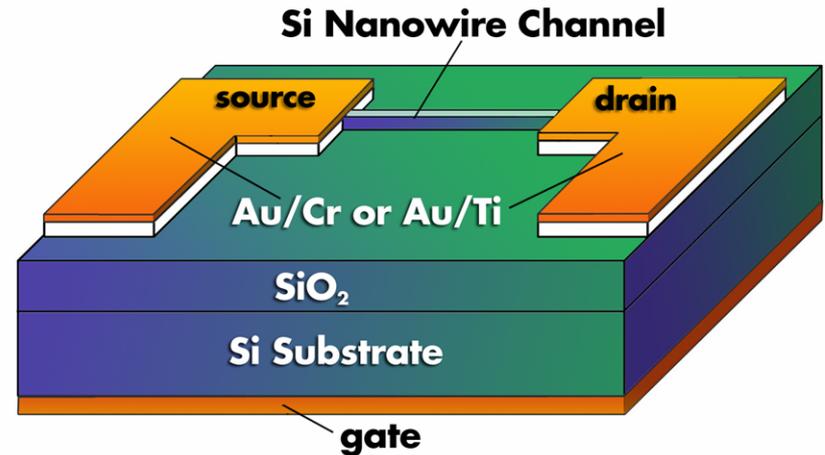
Standards Accomplishments

- Tandem ions may lead to better atomic clocks
- Bioagent Detector Guide Aids First Responder Purchasing

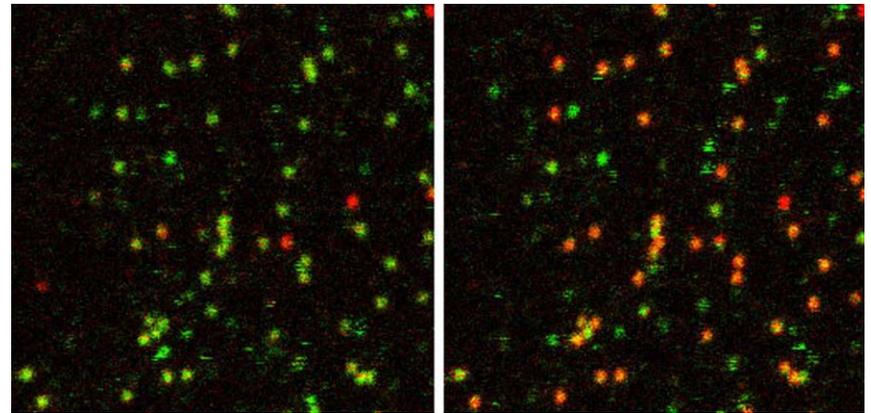


Technology Accomplishments

- New Design Developed for Silicon Nanowire Transistors

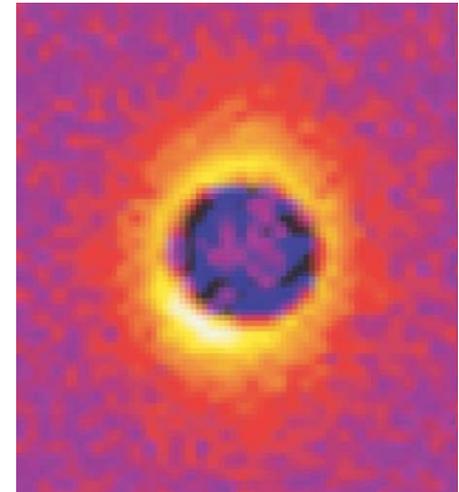


- Study of RNA Dynamics May Help in Drug Design



Technology Accomplishments

- NIST Research Helps Sort Out the Carbon Nanotube Problem



2005 Baldrige Award Ceremony

➤ Award Recipients

- ❖ The Bama Companies
- ❖ Kenneth W. Monfort College of Business
- ❖ Robert Wood Johnson University Hospital Hamilton
- ❖ Texas Nameplate Company

- The 1,000th Baldrige Award application was received this year



Vice President Cheney with Baldrige Award recipients



Demonstrating ATP's Impact

Recent survey of 27 projects shows:

- Projects that totaled \$60.3M in government investment yielded > \$600M in revenues (10:1 return)
- In many instances, significant cost savings accrued to companies and/or customers
 - CombineNet, Inc. alone accounts for > \$1B in customer savings resulting from \$1.9M ATP investment
- Employment growth for many
- Substantial IP generated (102 patents issued or pending)
- Social benefits several times private benefits



MEP Supporting Improvements in Manufacturing Supply Chains

➤ Wisconsin MEP Original Equipment Manufacturer (OEM) Supplier Development Consortium

- Harley-Davidson, John Deere, Milsco Manufacturing and Vulcan Industries collaborated with Wisconsin MEP to develop supply base. Defined Manufacturing Critical-path Time (MCT) will be the metric of Supplier lean-ness.



–Results:

- In 2005 over 60 Supplier Conferences held. Currently 236 suppliers participating. \$2 billion investment by OEMs in Wisconsin.



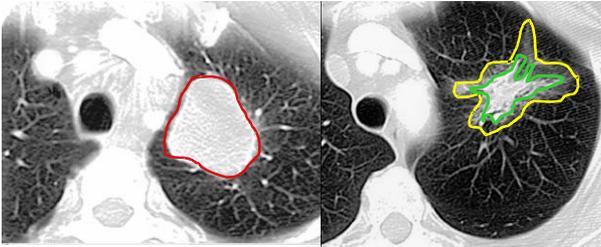
Strategic Planning

- Sharpen mission and goal
- Core competency review
- Focus strategic working groups on investment strategy recommendations
- Policy review on strategic partnerships
- US Measurement System (USMS)

Biosystems & Health Strategic Working Group

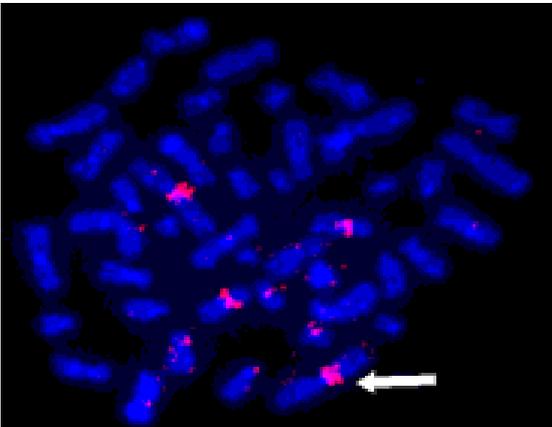
Development of Strategic Plan Recommendations for NIST Growth Areas

Imaging Standards for Lung Cancer Tumors



NCI and FDA are seeking NIST's expertise to consistently measure and digitize tumor boundaries as part of the "Reference Image Database to Evaluate Response to Drug Therapy in Lung Cancer" project.

Methods for Tagging Faulty Genes with Fluorescent Nanodots



Nanoscale imaging technique that could improve the reliability of an important diagnostic test for breast cancer.

Workplan Milestones:

- Completed inventory of NIST projects. Gap Analysis and recommendations (Oct '05)
- Strategy paper outlining need for growth in Nanobiosensing and Bioimaging (Nov '05)
- Stakeholder input to Growth Areas (ongoing)
 - Recommend USMS Workshop in Bioimaging based on industry & other agency input (TBD)
 - Regional Nanotech Meeting (Jan '05)
 - Build higher-level relationships (ongoing)
- Milestones and metrics of success for Bioimaging and Nanobiosensing (mid-Dec '05)
- Strategy papers for 1-2 new Growth Areas (mid-Dec '05)

Nanotechnology SWG

- Co-author and participation in several NNI Publications (Complete)
- Participation in the NAS review of the NNI (Complete)
- Self assessment of nanotechnology projects (SWOT Analysis)
(In process)
- Nanofabrication “super” hire (In process, expected Nov ‘05)
- National Nanomanufacturing and Nanometrology Facility (N³F)
assessment and business plan (Oct ‘05)



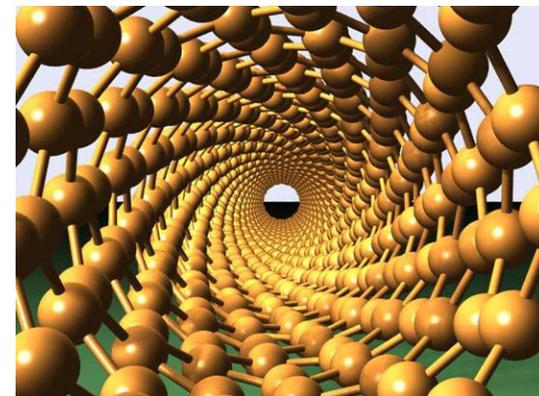
Reports in preparation:

- *Instrumentation and Metrology for Nanotechnology (in publication)*
- *Research Directions II (Dec '05)*

Developing New Measurement Science Competencies

FY 2006 competence projects will focus on strengthening NIST's core strength in measurement science.

A total investment of \$5.1M/year will be made in the following projects for the next five years.



Nanotube Metrology

- **Quantum Optical Metrology with N-Photons**
- **Intrinsic Force Standards based on Atomic and Molecular Interactions**
- **Fundamental Metrology for Carbon Nanotube Science and Technology**
- **Metrology for the “Fate” of Nanoparticles in Biosystems**
- **Vision Science as a Basis for Optical Metrology**
- **An Alternative Approach to Mass Metrology**

Company/Other Agency Outreach

- Visits to NIST or meetings with Director
 - Army Night Vision Laboratory
 - Boeing
 - Fluke
 - Ford
 - HHS'/Health IT Office
 - TEDCO Showcase
- Visits by NIST Senior Management team
 - Agilent
 - Fluke

Key Administration Interactions

- Briefing Dep. Sec. David Sampson regarding Homeland Security Presidential Directive 12 and tour of NIST
- Andrea Petro (New OMB Examiner) and Randy Lyons (OMB Branch Chief)
- Al Frink, Assistant Secretary for Manufacturing and Services, DOC
- Dr. John Marburger & Dr. Michael Salamon, OSTP
- Ellen Herbst, NTIS Director
- Admiral Conrad Lautenbacher Administrator of NOAA
- Dale Klein Assistant to the Secretary of Defense for Nuclear, Chemical and Biological Defense Programs

Key Capitol Hill Interactions

- NIST Acting Director briefed the staff of the House Committee on Science on voting systems guidelines
- NIST Acting Director testified before the Senate Subcommittee on Technology, Innovation, and Competitiveness on "Health Information Technology"
- Staff of the House Appropriations Subcommittee on Science, State, Justice, and Commerce and Related Agencies, visited the NIST/NOAA/NTIA Boulder, CO, laboratories
- Staff of the Senate Appropriations Subcommittee on Commerce, Justice, and Science and the House Science Subcommittee on Environment, Technology and Standards toured the NIST Gaithersburg laboratories
- Senator Wayne Allard visited the Boulder laboratories
- Courtesy Visits by the NIST Director

Thanks to our VCAT Partners

*For providing valuable
insight to guide
positive change
at NIST*

