



NATIONAL SCIENCE FOUNDATION

Since 2001, the Administration:

- Advanced all fields of science, engineering, and mathematics by funding 59,000 grants at the National Science Foundation through a competitive, merit-based process;
- Strengthened the foundations of the science and engineering workforce by directly supporting 69,000 graduate students and 28,000 undergraduate students;
- Supported particle physics, supercomputing, and research on earthquakes and the atmosphere by fully funding the construction of four major research facilities; and
- Enabled breakthroughs with significant scientific and economic impact by committing to doubling the funding over 10 years for key basic research agencies, including the National Science Foundation, through the President's American Competitiveness Initiative.

The President's 2008 Budget:

- Dramatically improves the National Science Foundation's efforts to build and sustain U.S. global leadership in the physical sciences, engineering, computer science, and many other fields of science and engineering;
- Provides enhanced infrastructure and tools to strengthen research capabilities in physics, astronomy, the oceans, and environmental research;
- Supports the U.S. role in the International Polar Year by providing \$59 million for polar observations, research, and analysis, coordinated across other countries and agencies, to improve understanding of the key roles of the polar regions in the earth's dynamics, and to explore new frontiers of Arctic and Antarctic science; and
- Helps attract more of the most promising American students into graduate level science and engineering by funding over 200 additional graduate fellowships in 2008.

FOCUSING ON THE NATION'S PRIORITIES

Doubling Research through the American Competitiveness Initiative

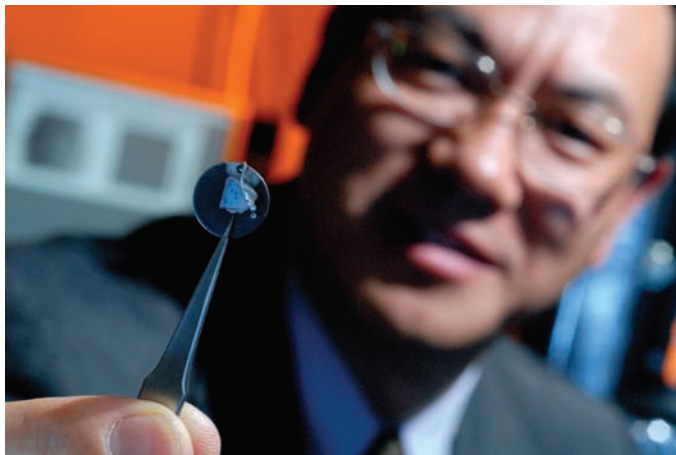
As part of the President's American Competitiveness Initiative (ACI), the 2008 Budget provides an increase of 6.8 percent over the 2007 Budget for the National Science Foundation (NSF), continuing a 10-year commitment to double critical basic research investments across key agencies in the physical sciences, engineering, and related fields. NSF research builds the foundations for innovative technologies that drive economic growth and enhance quality of life. A broad portfolio of basic research—from the fields at the heart of ACI, such as physics, chemistry, mathematics, engineering, and computer science, to other fields, such as the geological, biological, behavioral, and social sciences—will energize science broadly and sustain the productivity of the Nation's science and engineering enterprise and keep America at the forefront of world discovery and innovation. Past NSF research has contributed to the development of the Internet and Internet search engines, fiber-optics, color plasma displays, magnetic resonance imaging, and other advances that now help each of us in our daily lives.

Working with other agencies as part of the National Nanotechnology Initiative, NSF's nanotechnology research will continue to advance fundamental understanding of materials at the subatomic, atomic, and molecular levels and will enable the development of capabilities to design, manipulate, and construct revolutionary devices and materials with unprecedented properties. The Budget provides \$390 million in 2008 for NSF's nanotechnology research investments, an increase of 4.5 percent from the level proposed in 2007, including funding for a new NSF center to address environmental, health, and safety research needs for nano-materials.

NSF has significant roles in the Networking and Information Technology Research and Development (NITRD) program. The Budget provides \$994 million of NITRD funding, an increase of 10 percent from the level proposed in 2007. This investment will support fundamental research in information, computer, and communications sciences, laying the groundwork for next-generation technologies. NSF programs will also support access to cutting-edge computing and networking infrastructure essential for America's scientists, engineers, and students to remain at the forefront of discovery. Funding for both nanotechnology and information technology research supports education and training for the next generation of researchers and the science, engineering, and technology workforce.

The Administration's Ocean Research Priorities Plan highlights the importance of greater understanding of ocean processes and ecosystems. The 2008 Budget provides NSF with \$17 million to address near-term ocean research priorities, in addition to other ongoing ocean research activities.

The President's Budget supports the U.S. role in the International Polar Year (IPY) by providing over \$59 million for related research and education activities. NSF will lead the U.S. research community in working with scientists supported by other agencies and countries to advance understanding of the Earth's poles. Major areas of research will include Arctic environmental change, the influence



Georgia Tech; Gary Meek

Georgia Tech Professor Zhong Lin Wang holds a nanowire array that can produce electrical energy from the slightest motions.

of polar ice sheets on global phenomena, and organisms that live in the cold and dark. NSF's IPY research will include a focus on education and outreach to motivate future generations of scientists, engineers, and educators.

Through its new strategic plan, NSF will provide increased emphasis in its goals of discovery, learning, research infrastructure, and stewardship. These priorities, along with NSF's investments supporting basic research across all fields, are central to advancing the vitality of the U.S. research and education enterprise. The Budget enables NSF to work toward these goals with fiscal discipline, maintaining overhead expenses at less than six percent of its total budget.

Providing Facilities and Infrastructure for Science and Engineering

The 2008 Budget supports research facilities, infrastructure, and instrumentation critical to scientists and engineers. The Budget supports the development of state-of-the-art facilities and equipment that substantially enhances research efforts throughout a wide range of fields, including astronomy and research on the oceans and the environment.

Computing and advanced networking tools that broadly benefit the Nation's entire science and engineering community, collectively known as "cyberinfrastructure," have become essential to advancing the frontiers of knowledge through science and engineering. The Budget provides \$644 million for NSF's targeted investments in these tools.

The 2008 Budget proposes a major upgrade for the Laser Interferometer Gravitational Wave Observatory. Being able to detect gravitational waves—first predicted in Einstein's theory of general relativity—would advance understanding of fundamental physics and enable a new window on the universe through gravitational wave astronomy. This investment will dramatically expand the ability to detect gravitational waves, which also significantly increases the potential for discovering completely new phenomena of physics.

NSF's Major Research Instrumentation program provides investments in a diverse portfolio of mid-size tools, such as nanofabrication tools, biological imaging instruments, environmental monitoring stations, very high wattage lasers, and ocean observatories. The Budget provides \$110 million for these and other instrumentation investments in 2008. In addition to enabling and strengthening the research that NSF funds, the development of these tools advances the state of the art for instrumentation and promotes partnerships between academic researchers and private sector instrument developers.

Enhancing Science and Engineering Education

The President's Budget supports NSF's efforts to promote the development of a diverse and well-prepared workforce of scientists, engineers, and educators and a well-informed citizenry. NSF makes strategic investments in K–12, undergraduate, graduate, and postdoctoral education. Consistent with the work of the Administration's Academic Competitiveness Council (ACC), NSF and other agencies that fund science and math education are redoubling their efforts to demonstrate results and improve coordination.

The 2008 Budget will help strengthen the preparation of American students for the science and engineering workforce, with a focus on broadening participation in those fields. The Budget ensures that NSF's Math and Science Partnerships program will continue, with \$29 million of its \$46 million budget available for new awards, in recognition of the program's focus on evaluation and past successes identified by the ACC.

The Budget funds graduate fellowships and traineeships for approximately 5,300 graduate students across the country. NSF funding for basic research at American academic institutions also plays a central role in supporting the education of future American scientists and engineers.

National Science Foundation
(In millions of dollars)

	2006 Actual	Estimate	
		2007	2008
Spending			
Discretionary Budget Authority:			
Research and Related Activities	4,340	4,333	5,132
Education and Human Resources	797	797	751
Major Research Equipment and Facilities Construction	191	234	245
Agency Operations and Award Management	247	247	286
National Science Board.....	4	4	4
Inspector General.....	11	11	12
Total, Discretionary budget authority	5,590	5,626	6,430
Total, Discretionary outlays	5,427	5,728	5,901
Mandatory Outlays:			
H-1B Fee Programs.....	76	103	102
All other	39	29	23
Total, Mandatory outlays	115	132	125
Total, Outlays	5,542	5,860	6,026