

The National Nanotechnology Initiative

Briefing for PCAST
3 March 2003

What is Nanotechnology?

- Nanotechnology is the ability to engineer at atomic, molecular or supramolecular levels in the length scale of approximately 1 to 100 nanometers.
- Nanoscale science and engineering are not just additional steps towards miniaturization. Nanoscale systems exhibit physical and chemical properties quite different from those found at the micro- and macro-scale.

The FY 2004 Investment

NNI agencies	2003*	2004	Difference from 2003 to 2004	Percent Difference from 2003* to 2004
NSF	221	249	286	12.7%
DOD	243	222	-20	-8.3%
DOE	133	197	64	48.1%
NIH	65	70	5	7.7%
NIST	69	62	-7	-10.1%
NASA	33	31	-2	-6.1%
Agriculture	1	10	9	900.0%
EPA	6	5	-1	-16.7%
DHS	2	2	0	0.0%
Justice	1	1	0	0.0%
TOTAL*	774	849	76	9.8%

* Funding levels represent those in the President's FY 2003 *request*

National Science and Technology Council

Science Committee

Technology Committee

Environment & Natural Resources Committee

Homeland & National Security Committee

Technology Development Subcommittee

Networking & Information Technology Subcommittee

Nanoscale Science, Engineering & Technology Subcommittee

Biotechnology Subcommittee

Aerospace Subcommittee

Infrastructure Subcommittee

NITRD Working Group

NSET Working Group

NITRD
National Coordination Office

NSET
National Coordination Office

Also reports to Science Committee

Also reports to HS/NS Committee

Federal nanotechnology investment is currently divided into five categories

- Fundamental research
- Grand Challenges
- Research Infrastructure - provides basic tools for research
- Centers of Excellence - provides central user facilities
- Societal implications, education, workforce training

Current Grand Challenges

- Advanced Chem/Bio/Rad and Explosives Detection
- Manufacturing at the nanoscale
- Nanoscale instrumentation and metrology
- Nanostructured materials by design
- Nano-electronics, -photonics and -magnetics
- Healthcare, Therapeutics and Diagnostics
- Energy conversion and storage
- Microcraft and Robotics
- Nanoscale processes for environmental improvement

The NRC review of the NNI

- Needs clear, compelling overarching strategy
- Needs to encourage interagency/interdisciplinary collaborations
- Needs external advisory board (PCAST)
- Better technology transfer/industrial participation needed