

NANOTECHNOLOGY

**SHAPING THE WORLD
ATOM BY ATOM**



National Science and Technology Council
Committee on Technology
The Interagency Working Group on Nanoscience, Engineering and Technology
September 1999, Washington, D.C.

About the National Science and Technology Council

President Clinton established the National Science and Technology Council (NSTC) by Executive Order on November 23, 1993. This cabinet-level council is the principal means for the President to coordinate science, space and technology policies across the Federal Government. NSTC acts as a "virtual" agency for science and technology (S&T) to coordinate the diverse parts of the Federal research and development (R&D) enterprise. The NSTC is chaired by the President. Membership consists of the Vice President, Assistant to the President for Science and Technology, Cabinet Secretaries and Agency Heads with significant S&T responsibilities, and other White House officials.

An important objective of the NSTC is the establishment of clear national goals for Federal S&T investments in areas ranging from information technologies and health research, to improving transportation systems and strengthening fundamental research. The Council prepares R&D strategies that are coordinated across Federal agencies to form an investment package that is aimed at accomplishing multiple national goals.

To obtain additional information regarding the NSTC, contact 202-456-6100 or see the NSTC web site: http://www.whitehouse.gov/WH/EOP/OSTP/NSTC/html/NSTC_Home.html

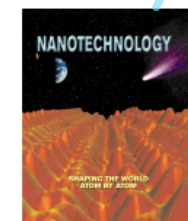
Interagency Working Group on Nanoscience, Engineering and Technology (IWGN)

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Vice-chair: R. Trew, DOD.
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On the cover:
This combination of a scanning tunneling microscope image of a silicon crystal's atomic surface with cosmic imagery evokes the vastness of nanoscience's potential.

L. J. Whitman/Naval Research Laboratory.



NANOTECHNOLOGY R&D ROAST

Post-CMOS Electronics & future computing

Photonics

Energy

Nanomanufacturing (incl. coatings, composites)

Biotech and medicine

Environment, health, and safety

August 19 - 23, 2018 | Boston, MA

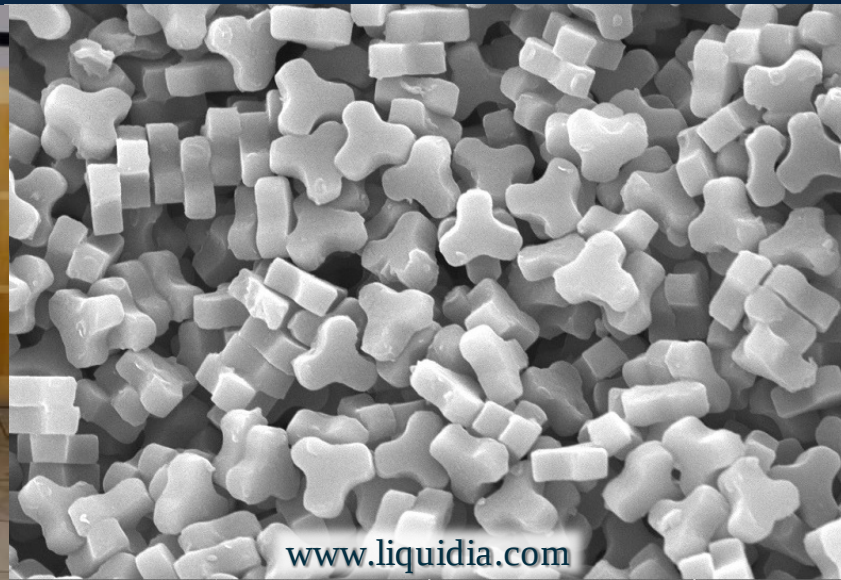
ACS National Meeting & Expo

Nanoscience, Nanotechnology & Beyond

ECONOMIC IMPACT ~~IS~~ GROWING

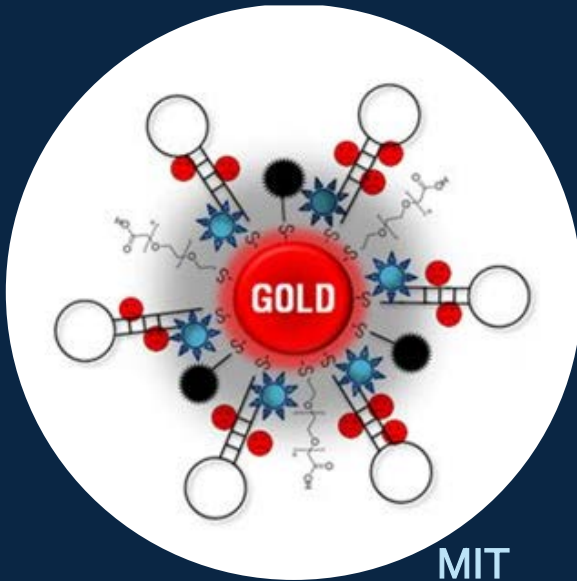
Lux Research: Global nanotech product revenue

\$164 billion in 2008 → *\$1.6 trillion in 2014* → *\$3.7 trillion by 2018*



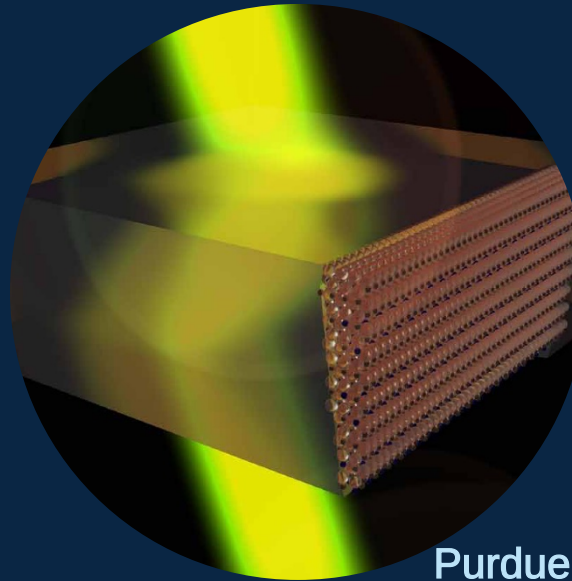
TECHNICAL CHALLENGES

HIGHER COMPLEXITY PRODUCTS



MIT

Manufacture
more than
particles



Purdue

Move
off the
surface



IBM

Make
devices into
systems

POLICY CHALLENGES HIGHER COMPLEXITY PRODUCTS



Nanosystems are
hard to make



Valley of death
narrower, but
still a gap



Intra-agency R&D has
fragmented



Agencies have
nano-fatigue



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**Nanotechnology Research Directions:
IWGN Workshop Report**

Vision for Nanotechnology R&D in the Next Decade

SEPTEMBER 1999

FOUNDATIONAL JUSTIFICATION OF NNI IS STILL VALID

Transcends disciplines

Requires shared infrastructure

Important for U.S. competitiveness

