

II. MISSION AND CORE VALUES

NSF invests in the best ideas generated by scientists, engineers and educators working at the frontiers of knowledge, and across all fields of research and education. Our mission, vision and goals are designed to maintain and strengthen the vitality of the U.S. science and engineering enterprise.

A. MISSION

To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense (NSF Act of 1950)

This mandate to support American science and engineering, first articulated in *Science, the Endless Frontier*², continues to guide and inspire us to advance the frontiers of science and engineering knowledge.

B. CORE VALUES

The NSF core values are essential and enduring tenets that influence everyone in the organization and support our mission. The distinctive culture they generate gives NSF integrity and unique character. At NSF, we are

- **Visionary:** imagining the future, working at the frontier, realizing the full potential of people, furthering promising ideas wherever

2. Bush, V. (1945). <http://www.nsf.gov/about/history/vbush1945.htm>.

and whenever they arise, and encouraging creativity and initiative.

- **Dedicated to Excellence:** continually improving our ability to identify opportunities; investing optimally the resources entrusted to us; managing a diverse, capable, motivating organization; rewarding accomplishment; and sharing our best insights with others.
- **Broadly Inclusive:** seeking and accommodating contributions from all sources while reaching out especially to groups that have been underrepresented; serving scientists, engineers, educators, students and the public across the nation; and exploring every opportunity for partnerships, both nationally and internationally.
- **Accountable:** operating with integrity and transparency, maintaining quality and relevance in administration, management and oversight.

OUR PARTNERS

NSF draws on the vision of the research and education community for creativity and for innovative ideas that move science and engineering across new frontiers. Equally dedicated to excellence, we work together to review thousands of proposals and identify the exceptional ones that will become part of the NSF investment portfolio. We ask the community to include diverse perspectives as they explore new opportunities and partnerships, while we attempt to broaden our own.

NANOSCIENCE AND NANOTECHNOLOGY

Research advances at the nanoscale continue to inspire new technologies that will have a profound impact on society and will enhance U.S. economic competitiveness, as called for in the ACI. Increasing control of matter and energy at the molecular level is already leading to revolutionary breakthroughs in such critical fields as advanced computing, communications, materials development and medicine:

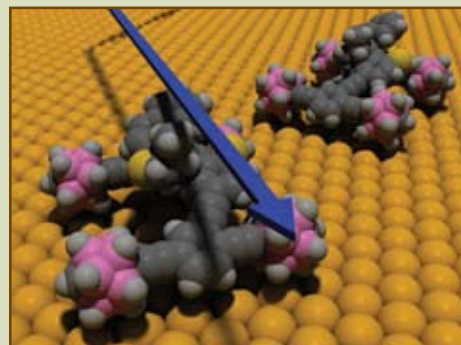
- The nanofabrication of miniature electronic components may revolutionize information processing. From nanowire circuits to quantum dots to single-molecule transistors, recent advances promise a new generation of computing devices far smaller than today's, and with lower power requirements.
- In communications, nanostructures are dramatically reducing the size of signal-processing components and have led to unan-

anticipated new abilities to control light beams for the next wave of photonic equipment.

- In medicine and biology, ultra-miniaturized sensors and fluid channels are ushering in a new era of tiny diagnostic and detection devices that can determine the presence of target compounds, and function as artificial taste and smell organs. Other devices use nanoscale structures to detect specific DNA strands or reagents, producing "laboratories on a chip."

As the lead federal agency for the National Nanotechnology Initiative, NSF provides critical support for efforts in fundamental nanoscale science and engineering, as well as research to understand the likely impacts of nanotechnology on society. The integration of education with research at this nanoscale frontier—whether in relation to the fundamental physical sciences, materials science, engineer-

ing, biological sciences, information science or social sciences—will be essential for developing the full cadre of researchers, technologists, engineers and skilled workers necessary for realizing the maximum benefit from this new field of knowledge.



Rice University's "nanocars," only a few atoms wide, roll across a gold surface on single-molecule wheels.