

NSF Requests 19% Increase for Fiscal 1989

The National Science Foundation's FY 1989 budget request of \$2.05 billion reflects a 19% increase over FY 1988. The increased amount is \$333 million.

The request provides for real growth in disciplinary research support programs and for continued growth in science and engineering education. It also includes a new \$150 million appropriation for Science and Technology Centers to provide fully upfront funding for 10-15 centers for periods of up to five years. The FY 1989 request for support of center and group research totals \$439 million, an increase of \$187 million over FY 1988. The Science and Technology Centers initiative is a component of this request.

More than \$1.2 billion is included in the FY 1989 budget request for support of disciplinary research programs and their supporting facilities. This is about 8% more than in FY 1988 and includes increases in average award size, provision of needed equipment, and continued support for developing and improving major research facilities and instruments.

Programs addressing under-representation at advanced levels of science and engineering total almost \$49 million in FY 1989. The increase, nearly 30% over 1988, encompasses minorities, women, persons with disabilities, and under-represented institutions or geographic areas.

Undergraduate programs are up in the FY 1989 budget from \$40 million to \$65 million, and graduate fellowships are marked to increase by 100 new offers to 869. The Presidential Young Investigator program is slated to make 200 new awards for a total of about 800 active awards in FY 1989.

[The information above was taken from the inaugural issue of *NSF Directions*, a new bimonthly newsletter from the National Science Foundation. It is published by the NSF Office of Legislative and Public Affairs, 1800 G Street NW, Washington, DC 20550.]

DOE Notes

Pilot Centers Established for High T_c Superconductivity Research

Three DOE laboratories have been designated Superconductivity Pilot Centers to collaborate with industry in advancing high temperature superconductivity technologies: Los Alamos National Laboratory, New Mexico; Argonne National Laboratory, Illinois; and Oak Ridge National Laboratory, Tennessee. The pilot centers will facilitate collaboration between the laboratories and industry by speeding up the contracting and project approval process and the transfer of patent rights and other intellectual property.

10 Labs to Pursue Practical High T_c Superconductivity Research on Wires, Conductors, Power System Devices

Ten Department of Energy laboratories have been selected for funding from its Office of Energy Storage and Distribution to pursue expanded research in the development of practical high temperature superconductors: Ames Laboratory, Argonne National Laboratory, Brookhaven National Laboratory, Lawrence Berkeley Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Pacific Northwest Laboratory, Sandia National Laboratory, and the Solar Energy Research Institute.

The research will include development of superconducting wire and thick- and thin-film conductors, new concepts in processing and fabrication, and new approaches for producing special devices for power systems. Research teams will be necessarily composed equally of representatives from the private sector, universities, and government laboratories. The teams will plan and carry out the development of the conductors into practical power system devices.

Ames Laboratory (Iowa) will explore a process for fabricating extremely small diameter high T_c superconducting microfilaments which will then be combined with a normal conducting metal such as copper to create a flexible wire. FY 1988 funding is \$100,000.

Argonne National Laboratory (Illinois) will develop improved high T_c superconducting wires and tapes with higher current carrying capability, greater flexibility, and improved chemical stability. Conductors of high T_c superconducting thin films will also be investigated. FY 1988 funding is \$500,000.

Brookhaven National Laboratory (New York) will investigate several methods for fabricating practical high T_c superconducting conductors that can be scaled to long lengths. Studies will also begin on the practical operational problems of applying high T_c superconducting conductors to devices such as magnets. FY 1988 funding is \$350,000.

Los Alamos National Laboratory (New Mexico) will investigate high T_c superconducting conductor fabrication options that promise improved current carrying capacity, including melt-texturing, power consolidation, and vapor deposition. The methods will address known current flow barriers in bulk high T_c superconducting material due to interference at grain boundaries. FY 1988 funding is \$300,000.

Lawrence Berkeley Laboratory (California) will investigate several processes for developing thin film high T_c superconducting conductors, including sputtering, pulsed-laser ablation, and sol-gel processing. FY 1988 funding is \$400,000.

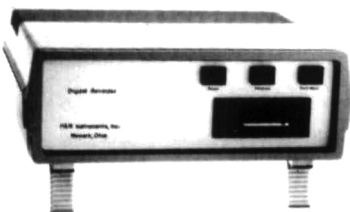
Lawrence Livermore National Laboratory (California) will explore two approaches to producing improved high T_c superconducting conductors: forming a wire by explosive compaction of high T_c superconducting powder, and fabricating the conductor under high oxygen pressure. FY 1988 funding is \$300,000.

Oak Ridge National Laboratory (Tennessee) will focus on eliminating grain boundary interference to current flow in bulk high T_c superconducting conductors. Microwave processing will be explored as a means to eliminate grain boundary problems. FY funding is \$300,000.

Pacific Northwest Laboratory (Washington) will conduct a system study to identify and characterize the potential of high T_c superconducting equipment in the U.S. electric utility industry through the year 2020. The feasibility of replacing or augmenting conventional equipment with high T_c superconducting options will be addressed. FY 1988 funding is \$100,000.

Sandia National Laboratory (New Mexico) will explore ways to resolve the forma-

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tion of an insulating layer of barium carbonate at the grain boundaries in bulk high T_c superconducting materials. A systems analysis study will assess opportunities and impediments to high T_c superconducting applications, emphasizing advanced electric energy technologies including renewable energy and particle beam and magnetically confined fusion technology. FY 1988 funding is \$100,000.

Academy President Calls on U.S. Scientists to Set Funding Priorities

In a policy address during the 125th annual meeting of the National Academy of Sciences held April 26, 1988, Academy president Frank Press called on U.S. scientists to settle their differences about budget issues and to assist the federal government in setting funding priorities among scientific fields.

Press proposed that the highest funding priority go to three areas: (1) training and research grants reaching the largest number of scientists, engineers, and clinical researchers; (2) responses to national crises, such as AIDS research and restoring the nation's space launch capacity; and (3) "extraordinary scientific breakthroughs," such as high temperature superconductivity.

Secondary priority, said Press, should go to large-scale projects such as the proposed superconducting super collider and the mapping and sequencing of the human genome. He recommended making available sufficient funds to maintain such projects until "large-scale commitments can be made."

Press also urged the federal government to assure a "cross-cutting" review that would consider "how the aggregate science and technology budget serves such national goals as competitiveness, health, security, and world position."

"Nowhere in the federal budget-making process is there an evaluation of the complete federal budget for science and technology and its overall rationale in terms of national goals," he said. Press suggested that the President's science adviser, working with the Office of Management and Budget, conduct such a review for the executive branch and that the House and Senate budget committees do the same for Congress.

The complete text of Press' address is available from the Office of News and Public Information, National Academy of Sciences, 2101 Constitution Avenue NW, Washington, DC 20418; telephone (202) 334-2000. □

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