Division of Chemistry (CHE)

Mission

The mission of the Division of Chemistry is to promote the health of academic chemistry and to enable basic research and education in the chemical sciences. Modes of support include single-investigator and multi-investigator awards, as well as funding for shared instrumentation, instrumentation development, and educational projects that leverage the division's research investments to build research capacity. The Division supports research in all traditional areas of chemistry and in multidisciplinary fields that draw upon the chemical sciences. Projects that help build infrastructure and workforce and partnerships that advance the chemical sciences are also supported.

Funding Modalities

The Division is sensitive to the chemistry community's concern about preserving the single investigator method of research but is also receptive to an increasing number of investigators who favor research work in small and large groups. The Division's plan is to continue to offer the chemistry community the possibility of submitting their best scientific research ideas through one of three modalities: as single investigators, as small groups (collaboratives) and as larger groups (centers).

Establishing interdisciplinary centers for chemical research is important as centers offer a means to increase funding and visibility for Chemistry, facilitate strong scientific synergism, and achieve the goals of the American Competitiveness Initiative.

Workforce Development and Broadening Participation

In March 2007, the Division approved an aggressive and ambitious broadening participation plan with the ultimate goal of having the face of America represented internally at NSF and externally in the chemistry community. The plan can be viewed on the CHE web site.

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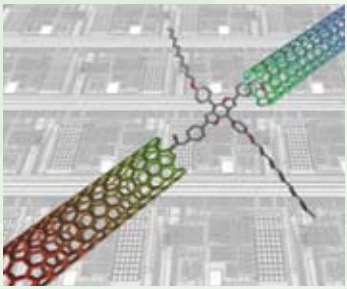


Credit: Support for this work was provided by the Nanoscale Science and Engineering Initiative of the NSF under Grant No. CHE-0117752 and by the New York State Office of Science, Technology, and Academic Research (NYSTAR).

A nanotube electrode developed for directly measuring the conductance of single molecules.

Programs in Chemistry

Individual Investigator Programs

Organic and Macromolecular Chemistry: Organic Dynamics; Organic Synthesis
Inorganic, Bioinorganic, and Organometallic Chemistry
Analytical and Surface Chemistry
Physical Chemistry: Experimental Physical Chemistry; Theoretical and Computational Chemistry

Integrative Chemistry Activities

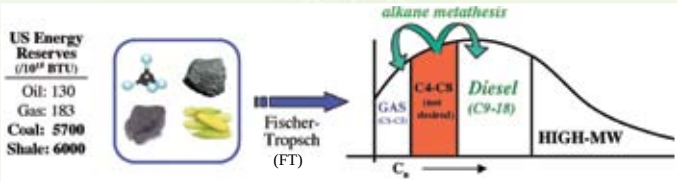
Chemical Bonding Centers
Collaborative Research in Chemistry
Chemical Research and Instrumentation and Facilities
Research Experiences for Undergraduates
Undergraduate Research Collaboratives

A Guide to Programs / Browse Funding Opportunities is available at http://www.nsf.gov/funding/browse_all_funding.jsp.

The **Chemical Bonding Centers (CBC)** program supports centers that address major, long-term basic chemical research problems. Appropriate research problems are high-risk but potentially high-impact and will attract broad scientific and public interest. Center teams may be connected through cyberinfrastructure, will respond rapidly to emerging opportunities and may include researchers from academia, industry, government laboratories and international organizations. Centers are selected through a multi-stage peer-review process. Phase I awards are $1.5 million for 3 years. Successful Phase I awards may compete for Phase II funding, which is approximately $3 to $4 million per year for 5 to 10 years.

Chemistry and the Global Community

The Division has a successful partnership with the German Research Foundation (DFG) and is working to expand its collaborations with other countries in Europe, Asia, and Central and South America.

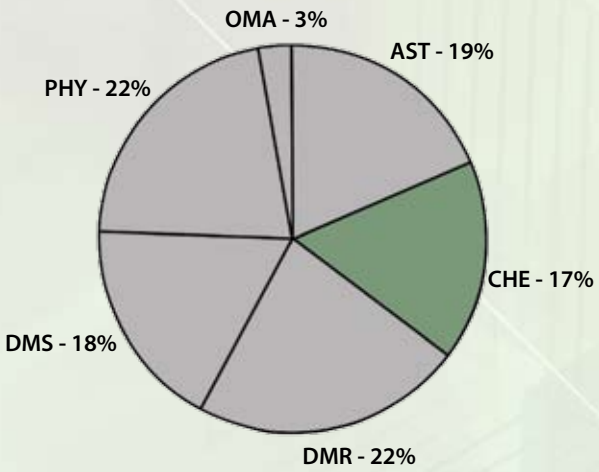


Credit: Alan Goldman (Rutgers University) and Maurice Brookhart (University of North Carolina), the Center for Enabling Novel Technologies through Catalysis (CENTC).

Clean Diesel - from "anything." The energy content of U.S. coal is comparable to that of the entire world's reserves of petroleum. Agricultural and waste biomass also comprise enormous domestic sources of energy. These and virtually any other sources of carbon can be converted to hydrocarbons of various chain lengths using "FT" chemistry. Chains that are 9 to 18 carbons long constitute "FT Diesel," a clean-burning transportation fuel that yields at least 30% more miles per gallon than conventional gasoline. A newly developed system for catalytic "alkane metathesis" has the potential to convert the shorter carbon chains that are also produced by FT chemistry (which are not useful as transportation fuel) into a combination of FT Diesel and heating gas, thereby improving the total yield and economics of biomass- or coal-to-liquid conversion.

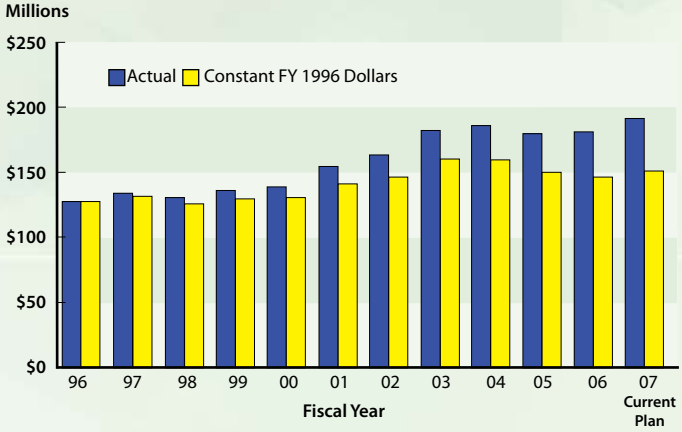
Division of Chemistry (CHE)

MPS Funding FY 2007 Current Plan



Pie chart showing divisional portions of MPS total budget for FY 2007. CHE will spend $191 million in FY 2007, which is 17% of the total MPS budget. *Totals may not add due to rounding.*

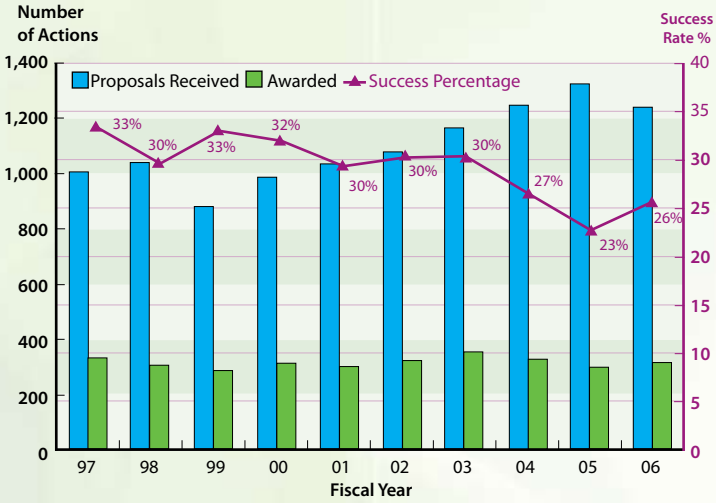
Budget in Actual and Constant FY 1996 Dollars



CHE annual budgets in actual and constant FY 1996 dollars. Constant dollars show the purchasing power of the CHE budget. Over this 12-year period, the constant dollar budget for CHE has increased 18%.

Data provided from FY 1998 to 2008 NSF Budget Requests to Congress, http://www.nsf.gov/about/budget/. Constant 1996 Dollar Deflator from Section 10 of the Gross Domestic Product and Implicit Outlay Deflators, Historical Tables of the U.S. Budget, FY 2005, http://www.whitehouse.gov/omb/budget/fy2008/pdf/hist.pdf.

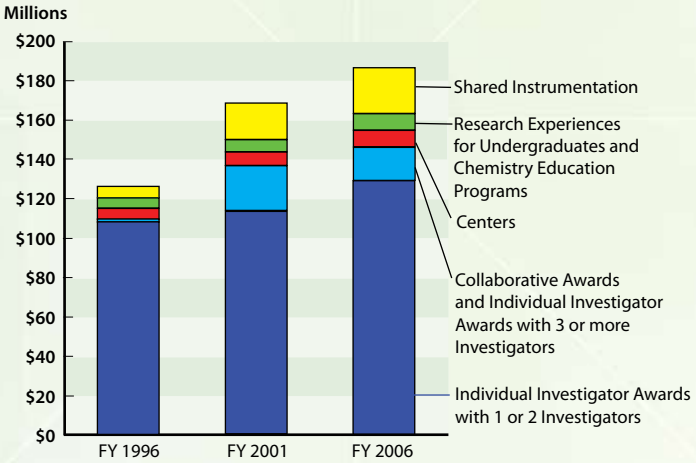
Success Rates and Number of Actions



Graph shows number of proposals submitted versus awarded for Research Grants as defined by NSF and resultant success rates. Success rate is defined as the number of new or renewal proposals awarded funding divided by the total number of proposals received. The number of proposals received by CHE in 2006 was 23% higher than in 1997.

Note: the distribution of success rates reflects the average for the Chemistry Division and may not represent success rates in individual programs.

Modes of Support



Bar charts showing CHE modes of support for FY 1996, 2001 and 2006.