

**MATERIALS RESEARCH**

**\$324,590,000**

The FY 2009 Request for the Materials Research Division (DMR) is \$324.59 million, an increase of \$64.37 million, or 24.7 percent, over the FY 2008 Estimate of \$260.22 million.

**Materials Research Funding**

(Dollars in Millions)

	FY 2007 Actual	FY 2008 Estimate	FY 2009 Request	Change over	
				FY 2008 Estimate Amount	Percent
<b>Materials Research</b>	<b>\$257.27</b>	<b>\$260.22</b>	<b>\$324.59</b>	<b>\$64.37</b>	<b>24.7%</b>
Major Components:					
Research and Education Grants	146.96	149.51	192.88	43.37	29.0%
Centers Programs	70.19	70.69	79.69	9.00	12.7%
Facilities	40.12	40.02	52.02	12.00	30.0%
National High Magnetic Field Laboratory (NHMFL)	25.00	25.00	30.00	5.00	20.0%
National Nanofabrication Infrastructure Network (NNIN)	2.55	2.55	2.55	-	-
Other MPS Facilities	12.57	12.47	19.47	7.00	56.1%

Totals may not add due to rounding.

**About DMR:**

The Division of Materials Research advances the intellectual frontiers of materials research. The activities supported are a critical ACI component. DMR awards enable the science and engineering community to make new discoveries about the fundamental behavior of matter and materials; to create new materials and new knowledge about materials phenomena; to address questions about materials that often transcend traditional scientific and engineering disciplines and lead to new technologies; to prepare the next generation of materials researchers; to develop and support the instruments and facilities that are crucial to advance the field; and to share the excitement and significance of materials and condensed-matter science with the public at large.

- The division maintains a balanced portfolio of research topics through individual investigator grants, small groups, centers, and awards for instrumentation and user facilities, with considerable emphasis on interagency and international partnerships to advance materials research and education. DMR also supports six International Materials Institutes (IMI) based at U.S. universities to enhance international cooperation in materials, and a program to support the acquisition and development of instrumentation for materials research. Ten awards for Partnerships for Research and Education in Materials (PREM) are aimed at broadening participation in the materials research field. Both PREM and IMI competitions are planned for FY 2009.
- DMR Centers address major interdisciplinary problems in materials and condensed-matter science. DMR plans to support up to 29 Materials Research Science and Engineering Centers (MRSECs) in FY 2009; three MRSECs were phased out in FY 2007 based on results of the FY 2005 MRSEC competition. The division also supports three Nanoscale Science and Engineering Centers, provides partial support for a further seven NSECs, and supports two Science and Technology Centers.
- DMR supports world-class facilities for high magnetic fields, synchrotron radiation, and neutron scattering, and provides partial support for the National Nanofabrication Infrastructure Network. Researchers use these facilities to address challenging problems across a very broad range of disciplines

including materials and condensed-matter science, physics, chemistry, biology, geosciences, and many areas of engineering.

Budget constraints in FY 2008 impacted primarily the following activities: The planned increase for the National High Magnetic Field Laboratory (NHMFL) and the planned support of new MRSECs for the FY 2008 competition could not be made. The requested FY 2009 budget will allow significant investments in these activities.

Approximately 15 percent of the funds requested for DMR in FY 2009 will be available for new competitive research grants; 4 percent will be available for new facility and instrumentation awards and 1 percent will support the planned increase in the funding for NHMFL. In addition, about 2.5 percent of the funds will be available for fully funding awards made in the FY 2009 MRSEC competition. An additional 2 percent of funds will support new transformative group awards that complement current DMR group and center awards. Remaining funds will support continuing commitments from prior years, facilities, instrumentation, and education and outreach. In FY 2007, DMR received 1,352 research proposals and made 301 research grants for a success rate of 22 percent for research grants.

#### **DMR Priorities for FY 2009:**

**Support for materials research programs that explore new phenomena, develop novel materials, and undergird technological innovation.** These programs include awards to individual investigators, interdisciplinary teams, and centers. Emphasis will be given to research on materials and phenomena at the nanoscale and the FY 2009 MPS and NSF-wide investments. Increased emphasis on international activities will lead to additional support for IMIs and enhanced support for research connections in the Pacific Rim.

**Broadening participation in materials research.** DMR will provide strong support for the participation of undergraduates, pre-college students, and pre-college teachers in research, and for increasing the support for partnerships that strengthen the links between institutions serving under-represented groups and DMR-supported research teams, centers, and facilities.

**Maintaining support for world-class user facilities,** while enabling the development of future user facilities and major instrumentation for synchrotron radiation, neutron scattering, and high magnetic fields.

#### **Changes from FY 2008:**

DMR will increase support for **research and education grants** by \$43.37 million to a total of \$192.88 million. Additional support will allow creation of the first set of transformative materials research groups that effectively bridge the gap between small groups of individual investigators and centers. There will be increased support for ACI Fellows.

DMR will increase support for **centers** by \$9.0 million to a total of \$79.69 million. This will provide full support for awards made as a result of the FY 2008 MRSEC competition and supplementary support for the Center for Environmental Issues in Nanotechnology expected to be awarded in FY 2008.

DMR will increase funding for facilities by \$12.33 million to a total of \$52.40 million. This will allow support of the NHMFL at the planned level. It will enable continued operational support for X-ray, neutron, and nanofabrication user facilities, and support for research and development necessary for the next generation of light source facilities.