

Division of Materials Research
National Science Foundation

Ian Robertson



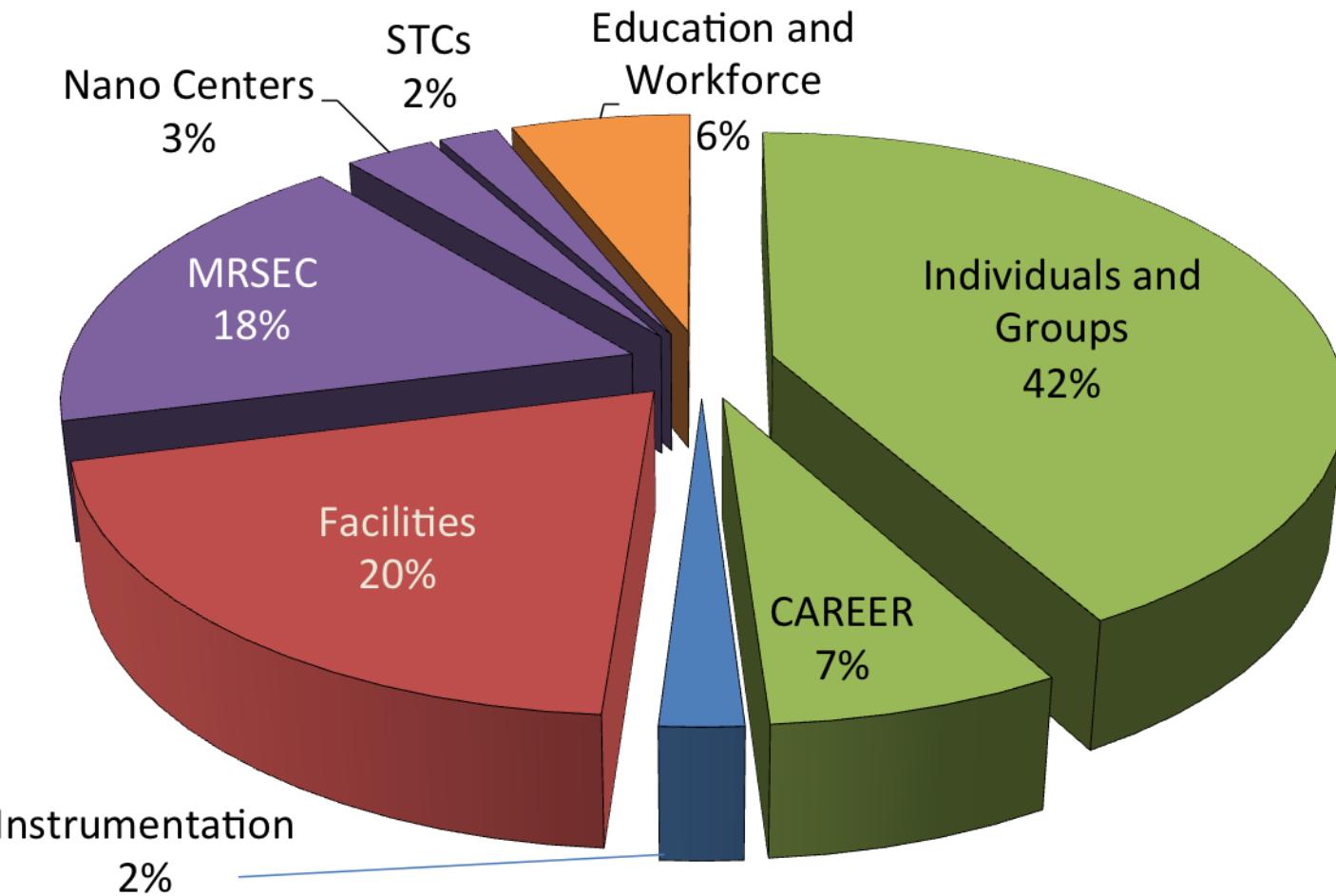
DMR Funding FY 12 Request

DMR Funding
(Dollars in Millions)

	FY 2010 Omnibus Actual	FY 2010 Enacted/ Annualized FY 2011 CR	FY 2012 Request	Change Over FY 2010 Enacted Amount	Change Over FY 2010 Enacted Percent
DMR	\$302.57	\$302.67	\$320.79	\$18.12	6.0%
Research	224.27	225.26	254.14	28.88	12.8%
<i>CAREER</i>	20.20	14.19	15.59	1.40	9.9%
<i>Centers Funding (total)</i>	67.97	72.33	65.88	-6.45	-8.9%
<i>Materials Research Centers</i>	52.49	56.70	57.00	0.30	0.5%
<i>Nanoscale Science & Engr. Centers</i>	8.16	8.31	4.88	-3.43	-41.3%
<i>STC 2002: Materials and Devices for Inform. Tech. Res.</i>	3.32	3.32	-	-3.32	-100.0%
<i>STC 2006: Center for Layered Polymeric Systems</i>	4.00	4.00	4.00	-	-
Education	11.72	9.48	9.00	-0.48	-5.1%
Infrastructure	66.58	67.93	57.65	-10.28	-15.1%
<i>Nat'l Nanotech. Infra. Network (NNIN)</i>	2.99	2.65	2.28	-0.37	-14.0%
<i>Nat'l High Magn. Field Lab (NHMFL)</i>	36.50	31.50	31.80	0.30	1.0%
<i>Cornell High Energy Synchr. (CHESS)</i>	9.51	9.00	15.47	6.47	71.9%
<i>Research Resources</i>	6.35	13.06	-	-13.06	-100.0%
<i>Other MPS Facilities¹</i>	6.93	7.02	3.90	-3.12	-44.4%

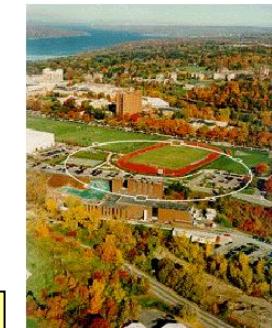
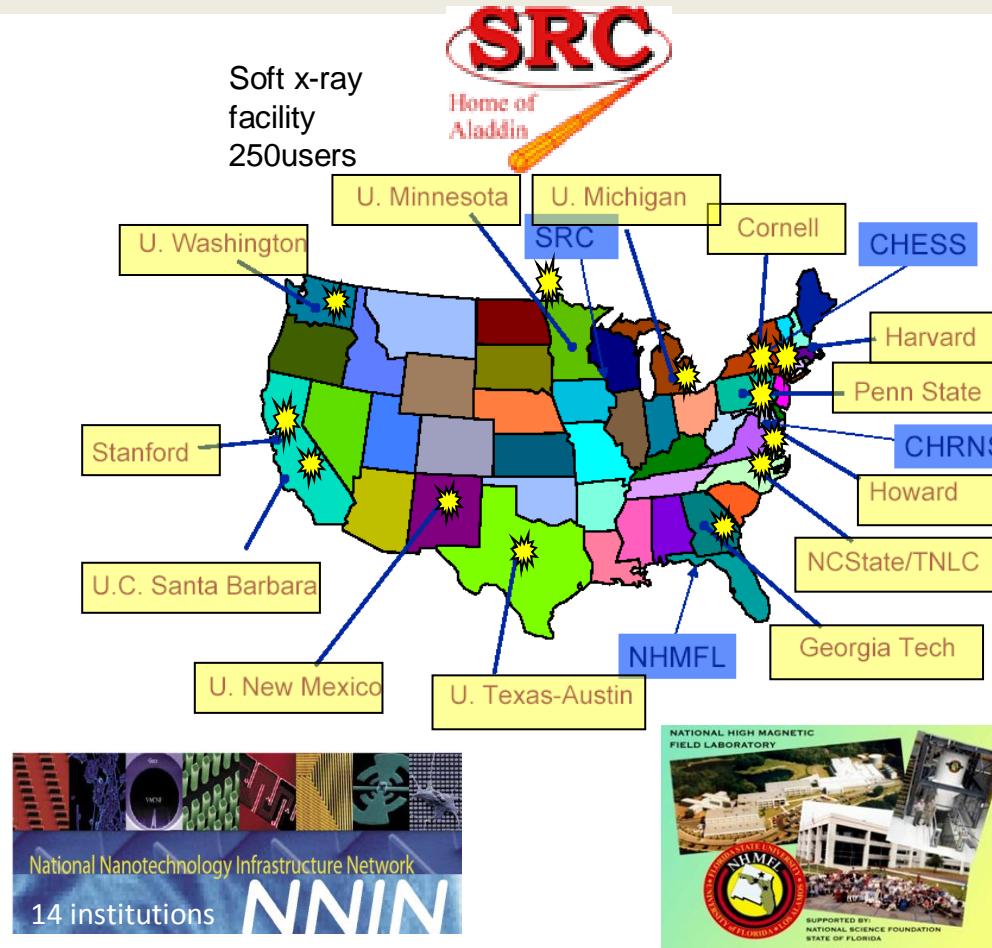
¹ Other MPS Facilities: Synchrotron Radiation Center, Center for High Resolution Neutron Scattering, and CheMatCars.

Allocation of resources within the Division of Materials Research, FY 10. Budget ~ \$300M



Major Research Instrumentation Program – MRI (FY 10)- \$16.1 M (5.6% of DMR budget and 18.9 % of total MRI budget). Note the percentage allocated is driven by proposal pressure!

Research infrastructure support – Facilities and Instrumentation



Hard X-ray facility 600 users



CHRNS 450 users

FSU, UF, LANL 1000 users

- + User facilities supported through 59% (16 of 27) MRSEC centers and the Materials Research Facilities Network www.mrfn.org (\$7-9 M), instrumentation at MRSECs and through instrumentation support in individual investigator programs (\$3M annually for instruments costing <\$100k.)

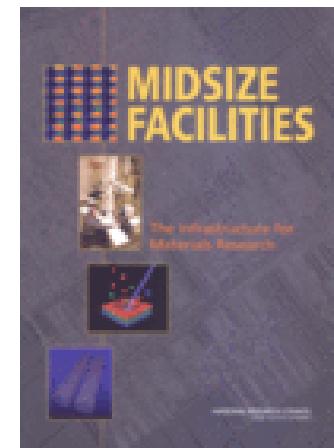
What are the materials research infrastructure needs for the future. Challenge 1.

Instrumentation for Materials Research

The IMR Program supports the acquisition and/or development of research instruments that will provide new capability and/or advance current capability to: (1) discover fundamental phenomena in materials; (2) synthesize, process, and/or characterize the composition, structure, properties, and performance of materials; and (3) improve the quality, expand the scope, and foster and enable the integration of research and education in research-intensive environments.

Midscale Instrumentation Program (IMR-MIP) Major Instrumentation

Projects (IMR-MIP) program in the Division of Materials Research provides support for the design and construction of major instruments costing more than \$4 million but less than \$20 million



NSF-wide Major Research Instrumentation (MRI) program

Challenge is determining the optimum portfolio balance to support the needs of the materials community

Spanning the range of NSF strategic goals – MRSEC program

- Stimulate interdisciplinary education and the development of human resources Cooperative programs involving minority and non-minority institutions are strongly encouraged.
- Active cooperation with industry, to stimulate and facilitate knowledge transfer among the participants and strengthen the links between university-based research and its application; cooperation and collaboration with other academic institutions and other sectors.
- Active efforts to establish research collaborations and education activities at the international levels are strongly encouraged. Cooperative activities
- Shared experimental facilities, properly staffed, equipped and maintained, and accessible to users from the Center, the participating institutions, and other institutions and sectors.

Competition in progress for the first awards under the new structure

No name change for centers

27 MRSECs

- 71 Interdisciplinary Research Groups (IRGs)

807 Faculty participants

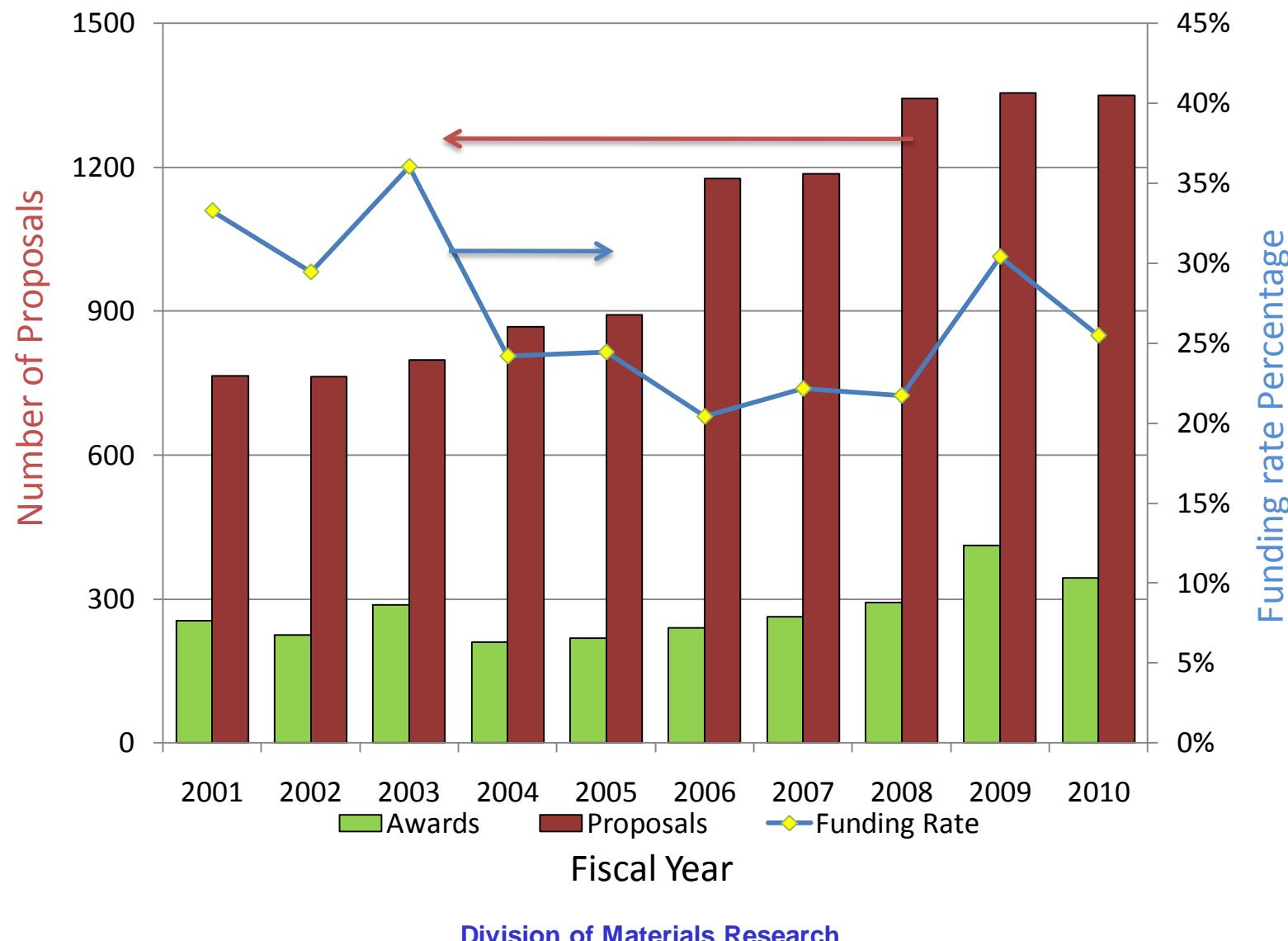
- Physics, Chemistry, Materials Science, Engineering, Bio, Math

Annual Science Output

- 224 Ph.D.s awarded
- 145 Post-docs completed
- 1620 publications
- 57 patents issued

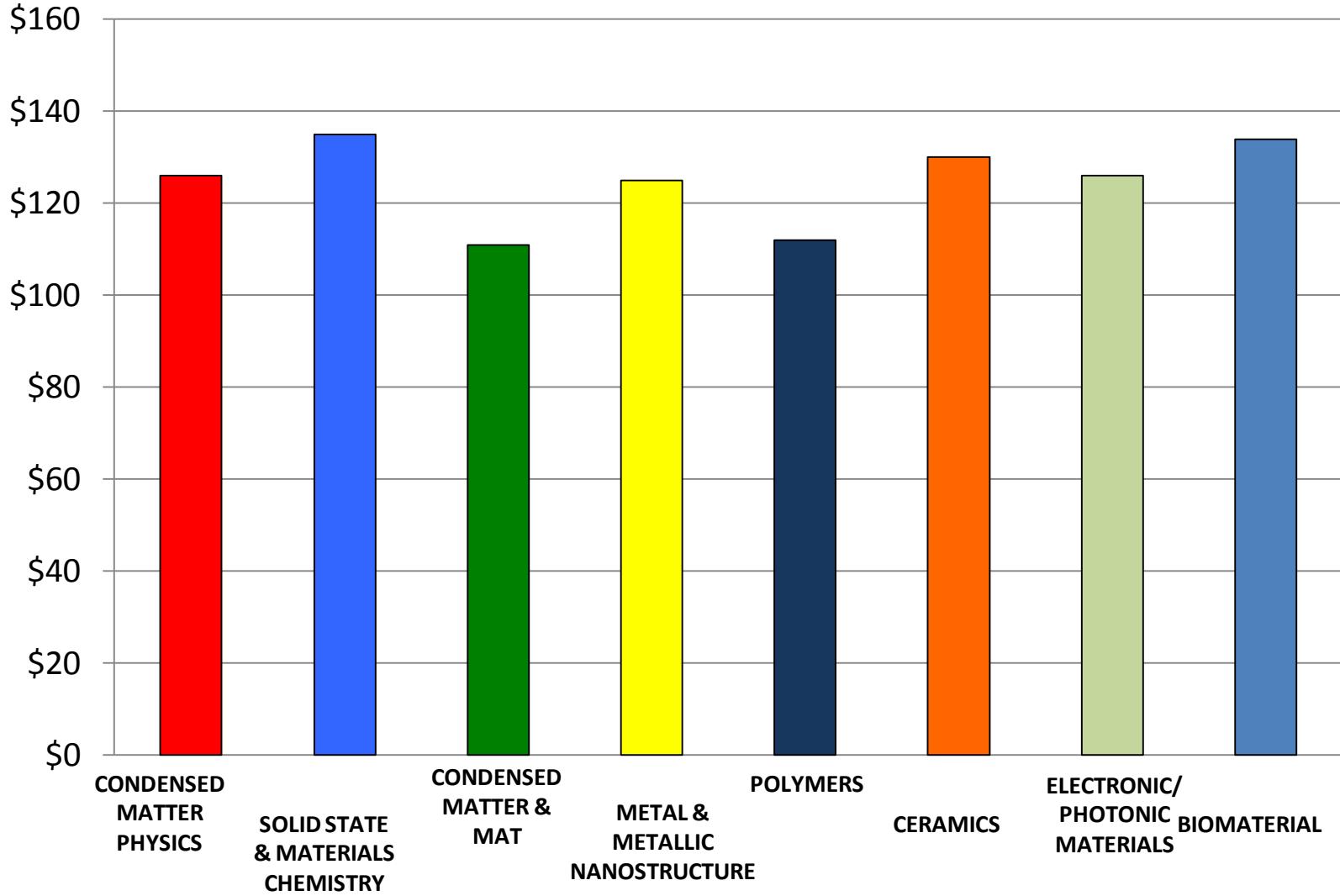


Historical Trend of Proposals Submitted/Awards Made and Success Rate for Division of Materials Research Individual Investigator Awards



Division of Materials Research Annualized Average Research Grant Size by Program (FY2010)

Thousands
of Dollars

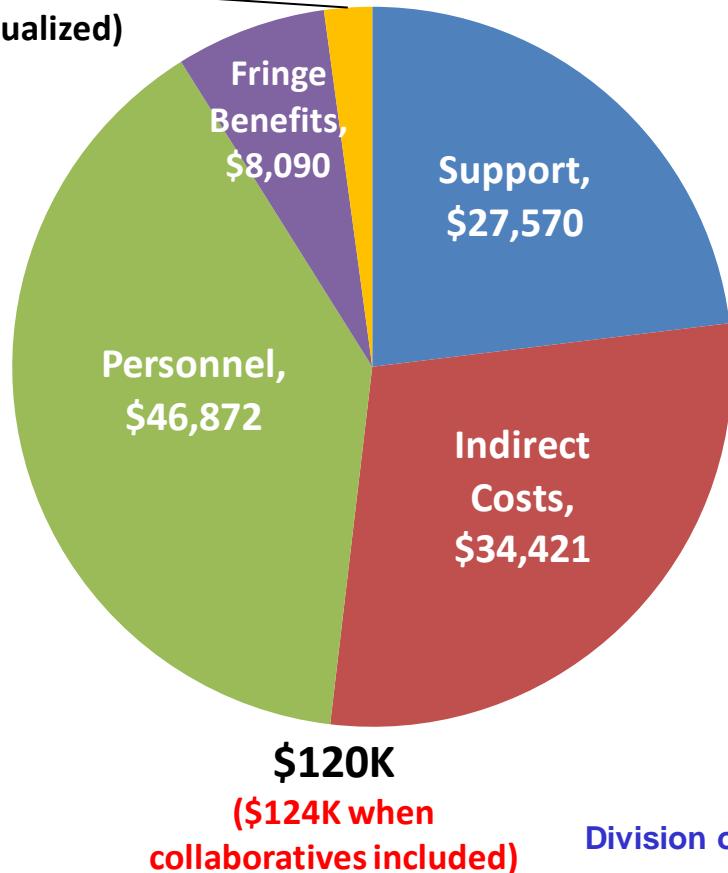


How far does an average individual investigator award extend?

Budget Breakdown for DMR FY 2010 Individual Investigator Awards
(New and Renewal Grants Only; **Collaboratives Treated as Separate Awards**)

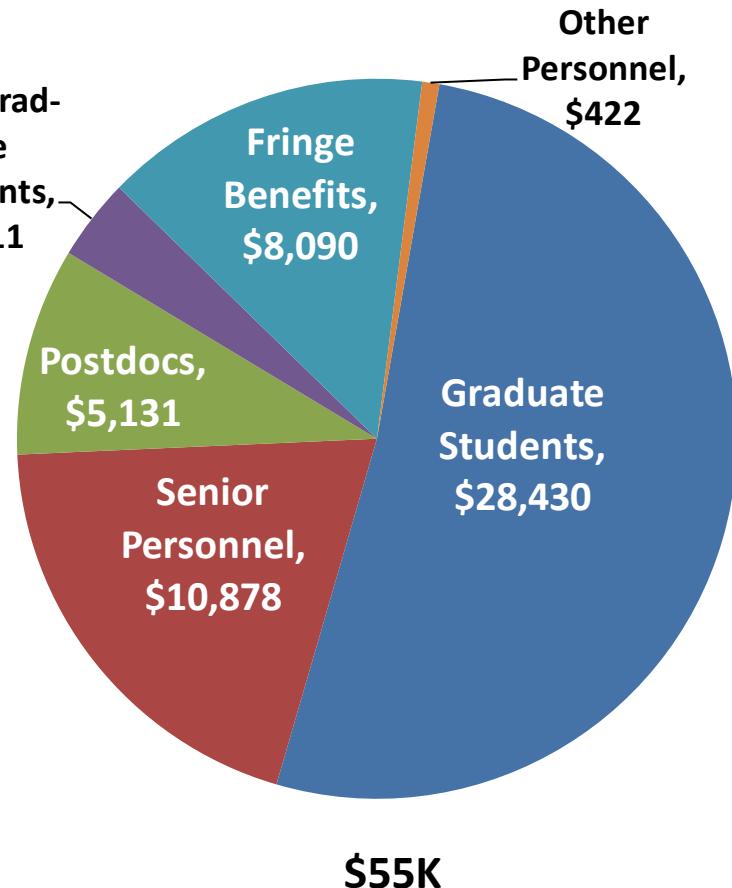
Average Annualized Grant

Permanent Equipment,
\$2,566
(~\$8K if not annualized)



Salaries, Wages, and Fringe Benefits

Undergrad-
uate
Assistants,
\$2,011



Challenge 2: Balancing the division portfolio between the various activities

Challenge 3: Providing appropriate levels of funding to enable high risk and potentially high payoff work to be conducted. This is especially challenging in the current budget climate.



Challenges

Challenge 1: determining the optimum portfolio balance to support the needs of the materials community

Challenge 2: Balancing the division portfolio between the various activities

Challenge 3: Providing appropriate levels of funding to enable high risk and potentially high payoff work to be conducted. This is especially challenging in the current budget climate.

Challenge 4: appropriate data management plans but more importantly how to enable data-driven science

Challenge 5: Broadening participation and broader impacts

Challenge 6: Open access publishing



Division of Materials Research



Ian Robertson
Division Director



Janice Hicks
Deputy Division Director

Office and Centers

Office of Materials Instrumentation and National Facilities



Charles
Bouldin



Guebre X.
Tessema

Office of Special Programs



Carmen
I. Huber

Ceramics



Lynnette
Madsen

Electronic and Photonic Materials



Nadia El-Masry

Polymers



Z. Charles Ying

Polymers



Andrew
Loveringer

Biomaterials



Joseph
Akkara

David Brant



Condensed Matter and Materials Theory



Daryl Hess



Serdar Ogut

Materials Research Centers and Teams



Sean L.
Jones

Thomas P Rieker



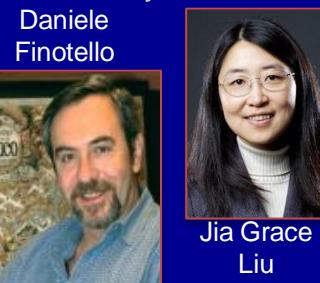
Mary
Galvin

Metal and Metallic Nanostructures

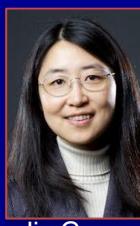


Alan Ardell

Condensed Matter Physics



Daniele
Finotello



Jia Grace
Liu

Solid State and Materials Chemistry



Linda
Sapochak



Michael
Scott