

# DMR response to the goals and recommendations of the report “Developing a vision for the infrastructure and facility needs of the materials community: Report of the NSF Materials 2022.” August, 2012

[http://www.nsf.gov/attachments/124926/public/DMR\\_Materials\\_2022\\_Report.pdf](http://www.nsf.gov/attachments/124926/public/DMR_Materials_2022_Report.pdf)

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# Goals for a successful program of investments in instrumentation and facilities:

- To provide sustained financial investment that makes cutting edge instrumentation, especially essential, new and unique instrumentation, accessible to university-based research programs.
- To promote research on development of new instrumentation that advances experimental frontiers, maintains an inventive culture and enables new discoveries.
- To provide access to a full range of cutting edge commercial instrumentation.
- To provide geographically distributed access to a full range of equipment capabilities for materials synthesis, characterization and processing.
- To play a crucial role in the education of successive generations of instrument and facility users, developers and operators.
- To enable access to unique experimental capabilities that are beyond the scale of individual investigator laboratories.

DMR agrees with and supports each and every goal



# Recommendations

- DMR should increase funding for MRI proposals and develop a mechanism for the acquisition and stewardship of equipment in the \$100,000 - \$500,000 range, in addition to a (smaller) number of mid-size equipment (\$500k to \$5M range), and allow for the possibility of bundling smaller pieces of equipment together in a single proposal to fulfill a suite of related characterization problems.
- DMR should recognize and facilitate the critical role that professional staffing plays in the successful operation of instrumentation and characterization tools.
- DMR should provide small-scale funding to provide to instrument developers during this gestation period of University-based research, before commercial interest is attracted.
- DMR should act on the long-standing idea originally from other sources, advanced here again, to develop a network of centers, termed Materials Discovery Centers.
- Investment in instrumentation and facilities should be well aligned with national initiatives.
- DMR must consider the stewardship of instrumentation to be as important as the acquisition of the equipment.
- DMR should recognize the need for the expanded usage of equipment and facilities beyond the PI's host institution. Promotion of equipment availability, capabilities and usage information is key.

## Key points

Instrument acquisition

Professional staffing

Instrumentation R&D

Materials Discovery and  
Innovation Network

Instrumentation stewardship

Accessibility and availability  
of equipment



# DMR responses and actions.

1. Supporting instrumentation acquisition at the individual PI level

Office of Materials Instrumentation and National Facilities (OMINAF) will co-fund instrumentation requests over \$50,000 in successful IIA proposals.

Short-term plan.

OMINAF will support supplement requests to the IIA programs for the repair of critical equipment used in funded research. Short-term plan

Launch a broad instrumentation program. Long-term plan.

Initial investment ~ \$3-4M, with growth to \$10 – \$12M

2. Supporting instrumentation for shared equipment facilities

OMINAF will augment the MRI program and support EAGER instrument development proposals..

3. Materials Discovery and Innovation Network

Maintaining professional staff expertise.

DMR will seek to establish a Materials Discovery and Innovation Network that would create specialized nodes for characterization, modeling, synthesis, and processing of new materials as well as development of new capabilities.

Community involvement in building process.

FY15 MPS budget request mid-scale instrumentation program for DMR. Fully funded \$30M

4. National User Facilities

Large-scale facilities investment by DMR will follow the guideline expressed in the report and will provide stewardship of facilities that provide unique capabilities not available elsewhere.

