



# **MRSEC Facilities Workshop**

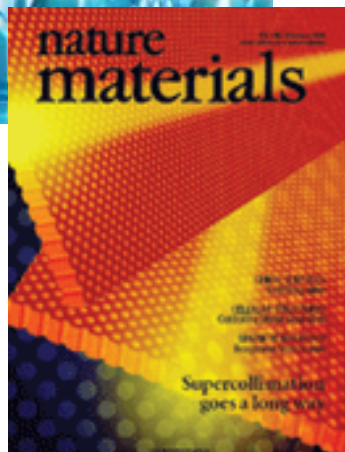
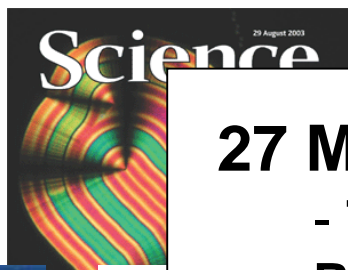
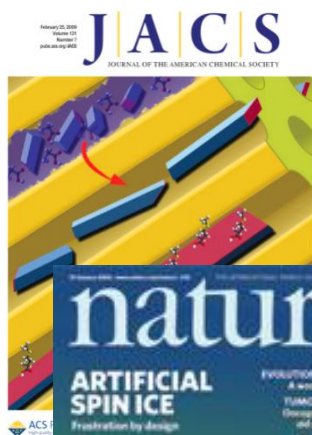
November 1-2, 2011

NSF Division of Materials Research

Mary Galvin, Sean Jones, Thomas Rieker, and Charles Ying



# High Visibility / High Impact



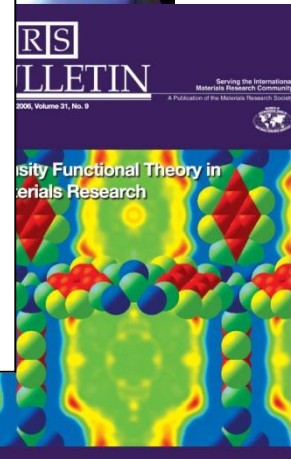
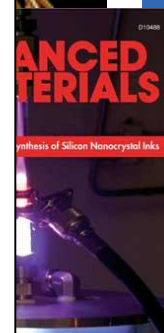
**27 MRSECs**  
- 71 Interdisciplinary  
Research Groups (IRGs)

**910 Faculty participants**

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

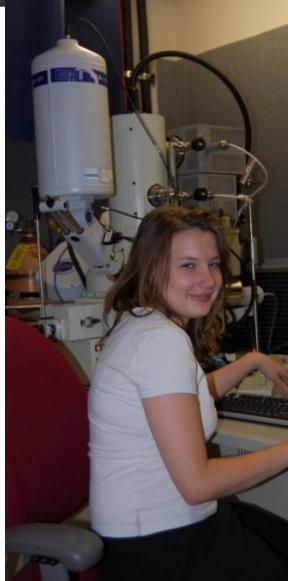
**Annual Science Output**

- 224 Ph.D.s awarded
- 129 Post-docs completed
- 1500 publications
- 76 patents issued





# Broader Impacts



## **Extensive Education Programs**

REU (459), RET (96)

10,000's impacted by K12 + Outreach

## **Broadening Participation**

Diversity Strategic Plan

PREM

## **Extensive Collaborations**

1400 Academic

273 Industry

274 National Labs

166 International w/ 32 countries

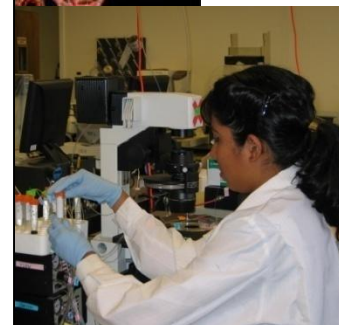
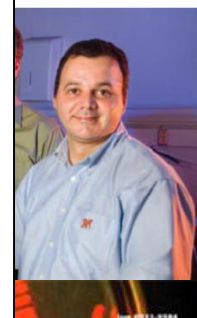
## **Research and Education Infrastructure**

## **Building a National Network**

Annual Directors' Meetings

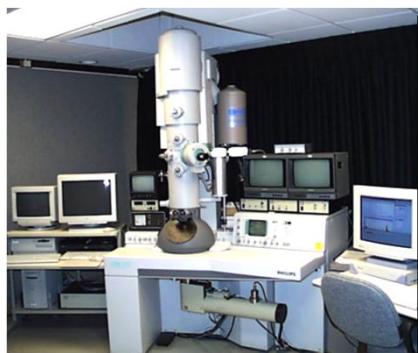
Education Coordinators Network

Materials Research Facilities Network





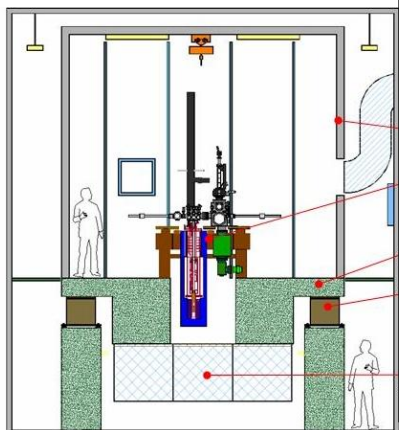
# Infrastructure



## Users of MRSEC Facilities

- 2000 Academic
- 578 Industry
- 107 National Labs

**Resulting in 530 Publications**



## Support for:

- Technicians
- Administrative staff
- Instrument Development

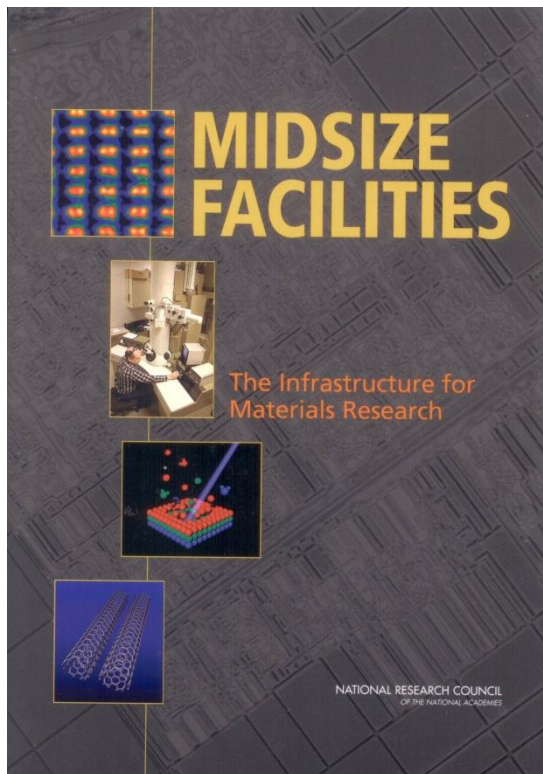


**Materials Research Facilities Network**

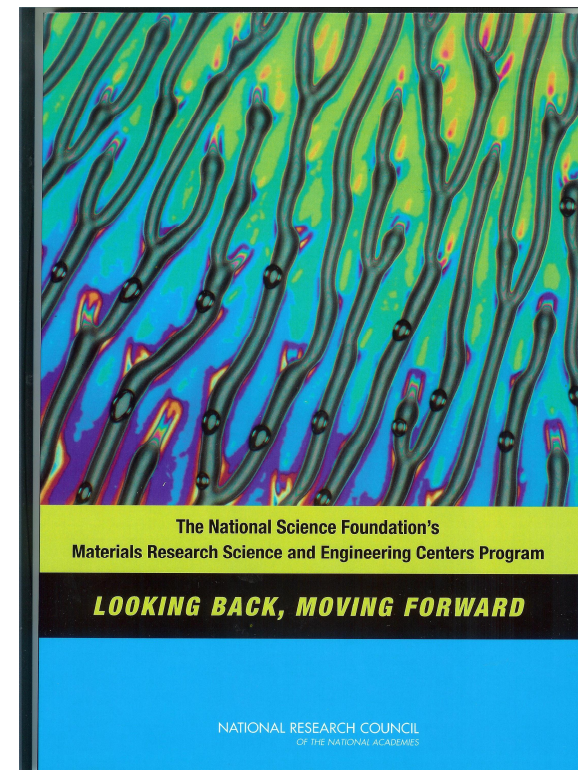




# National Academy Reports

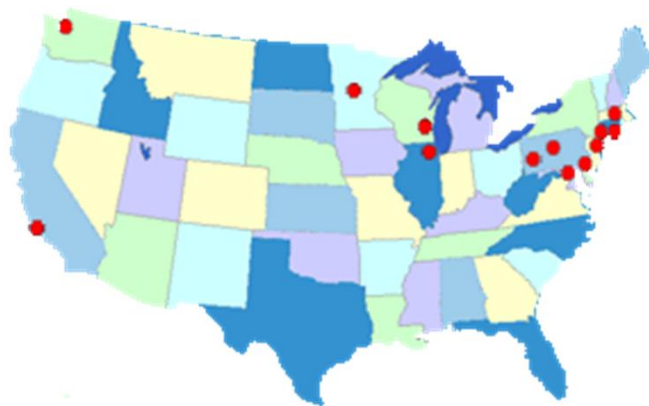


2005



2007

## Materials Research Facilities Network



The Materials Research Facilities Network (MRFN) has recently been established and is currently in operation at ca. 50% of MRSEC sites. The goal of the MRFN is to maximize the usage of MRSEC facilities and is directed towards the efficient and strategic development of materials characterization within the United States. By providing easy access through its wide geographical distribution to small and large universities not in the MRSEC program, the MRFN will substantially contribute to the education and mentoring of a wide diversity of students and further promote collaborative research in materials.

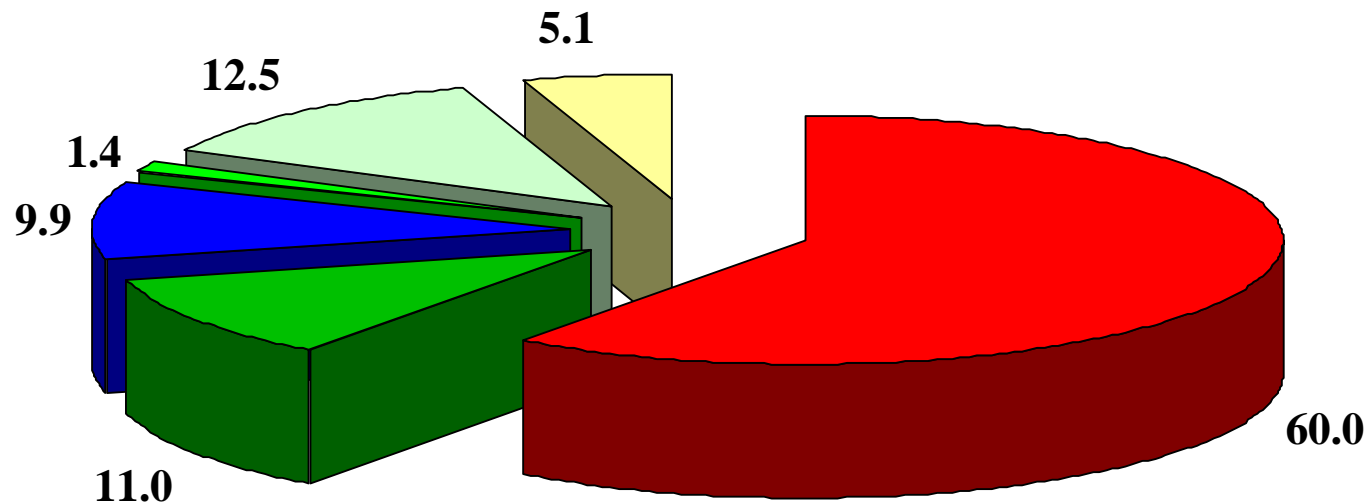


A National Research and Education Resource

Anika Odukale, Craig Hawker



# MRSEC Expenditures 2010-2011 as % of Total Budget, ~ \$54 M/yr



■ IRGs

■ Seeds

■ Education

■ Industry

■ Shared Facilities

■ Administration



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**Questions?**



## Materials Research Facilities Network (MRFN) Virtual Instrumentation Partnership (VIP)

A. A. Odukale, C. J. Hawker

DMR05-20415

**Initiative provides access to analytical instrumentation instruction to Minority Serving and Primarily Undergraduate Institutions through virtual experiences**



- User institution selects technique

- Class can access manuals, laboratories, and view training videos at [www.mrfn.org](http://www.mrfn.org)



- Live session through Skype
- MRFN scientist explains theory and manipulates instrument

- Real time sample analysis

- Students dictate instrument parameters

- Real time question and answer dialogue

- SEM with students from Florida A&M University (below)

