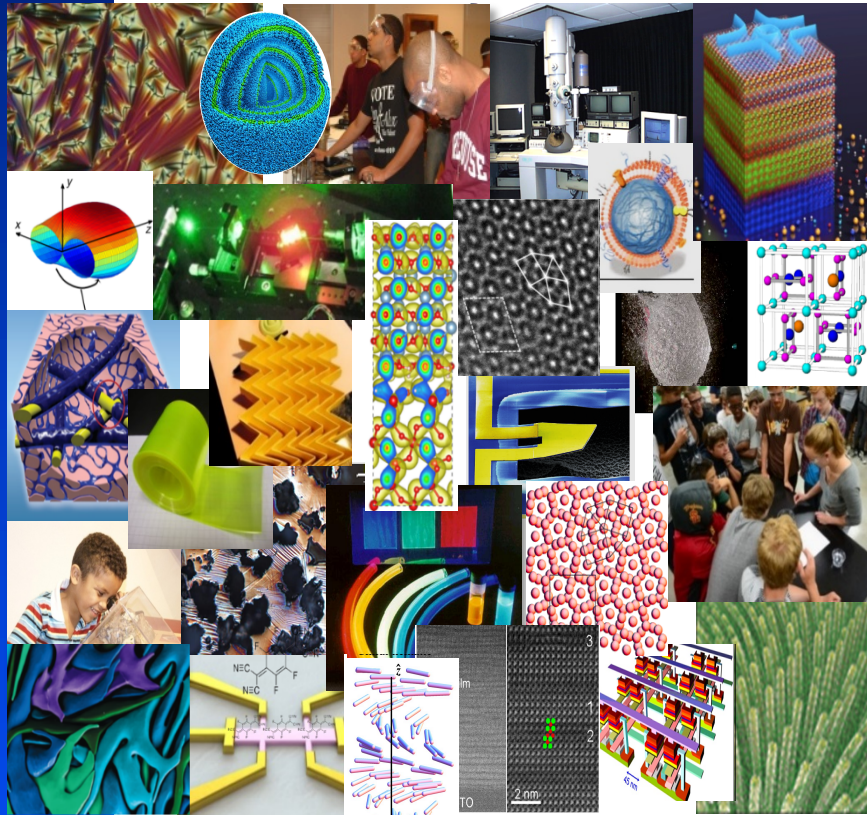




2021 MRSEC Directors Meeting and Emerging Frontiers Panel



National Science Foundation



MATERIALS RESEARCH SCIENCE AND
ENGINEERING CENTERS

Where Materials Begin & Society Benefits!



DMR DIVISION OF
MATERIALS RESEARCH
DIRECTORATE FOR MATHEMATICAL AND PHYSICAL SCIENCES

*MRSEC Directors 1st Virtual Meeting
January 28-29, 2021*



Welcome / Thank you

Welcome

Jennifer Lewis (Harvard) and Eric Stach
(U Penn)

Thomas Epps (Delaware), Xiaoqing Pan
(UC Irvine), Michael Sailor (UC San Diego)

Syeda Sehrish Shah (DMR MRSEC)

Thank you

David Weitz (Harvard) and Arjun Yodh (U
Penn)





Also, THANKS

- Meeting Organizers: Mark Hersam and William Kung, Northwestern, and Miriam Deutsch, DMR MRSEC
- Emerging Frontiers Panel Presenters: Crespi, Gardel, Hammel, Lewis, Lodge, Seshadri
- All MRSEC Presenters





Division of Materials Research (DMR)

OFFICE OF THE DIVISION DIRECTOR



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Division Director

Alex Karamanos
Acting Deputy Division Director

Naila Colon-Jefferson
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Maria Magruder
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Mimi Bowen
Contractor

PROGRAM DIRECTORS

National Facilities and Instrumentation



Leonard Spina

Oushe X. Tezema

Charles Ying

Materials Research Science and Engineering Centers



Daniela Finotello

Miriam Deutsch

Partnerships for Research and Education in Materials



Debasis Majumdar

Designing Materials to Revolutionize and Engineer our Future



John Schuster

Peter Anderson

Last Updated: 10/26/2020

Condensed Matter Physics



Tamara Darabienka

Elizabeth Mann

Tom Odeh

Electronic and Photonic Materials



James Edgar

Paul Lane

Condensed Matter and Materials Theory



Daryl W. Hess

David Raboun

Serdar Ogut

Solid State and Materials Chemistry



Elvira Schwitzer

Robert Meulenborg

Metals and Metallic Nanostructures



Judith

Biomaterials



Steve Smith

Emily Burton

Ceramics



Lyunette Madison

Cross-Cutting Activities

Divisional

Polymers



Andrew J. Lovinger

Bryan Rodriguez

Additional Scientific Staff



Krystle Wilson

Germano Immacchiato

Shadi Moushghi

Topical Materials Research Programs (TMRPs)

Program Director Searches:

BMAT
CMMT
MMN
Facilities





High Impact / Diversity

20 MRSECs 2020 (2019) Output 51 IRGs

950 (843) IRG pubs (42.8% 2+ authors; range 16%-97%); 182 (107) SEED pubs.

1039 Invited Presentations (19 MRSEC reporting).

61 (42) patents awarded; 35 (36) patents licensed.

20 MRSEC (2019) Diversity

960 (624 NSF supported participants) (23.7% F (23.9%); 4.5% (5.2%) URM)

318 Post-docs (26.1% F, 6.9% URM (from 4.6%))

931 GS (30.4% F, 8.4% (from 7.1%) URM)

151 UGS (37.1% F, 13.9% URM)





MRFN Statistics
 19 centers
 1222 instruments

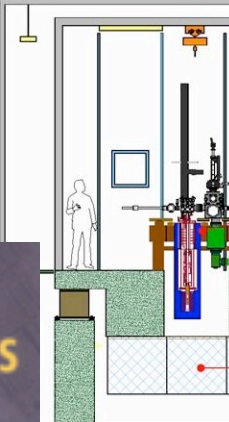
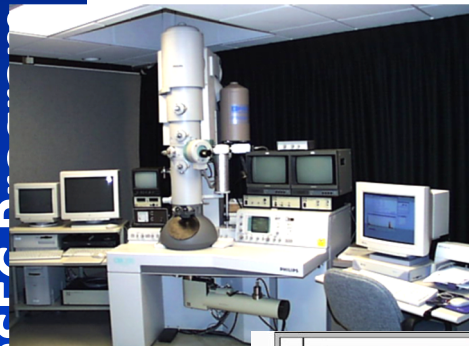
Infrastructure mrfn.org/instruments

**Yearly Users of MRSEC Facilities
 (non MRSEC Participants)**

- > 1443 Academic
- > 544 Industry
- > 47 National Labs

**980 (635) Publications
 acknowledged MRSEC SF in 19/20**

- 69 MRSEC Technical Staff in SEFs
- 13 Other Technicians
- 41 Administrative Staff
- 42 Education Staff



DMR MRSEC



Materials Research Facilities Network





Innovation

MRSEC Startups / Patents 00-20

DMR MRSEC Program



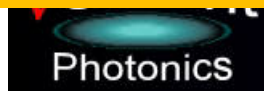
ARRAYX
A HAEMONETICS Company



Better Pharmaceuticals
Through Biophysical Chemistry



LIQCRYTECH
FUTURE GLASS



Photonics



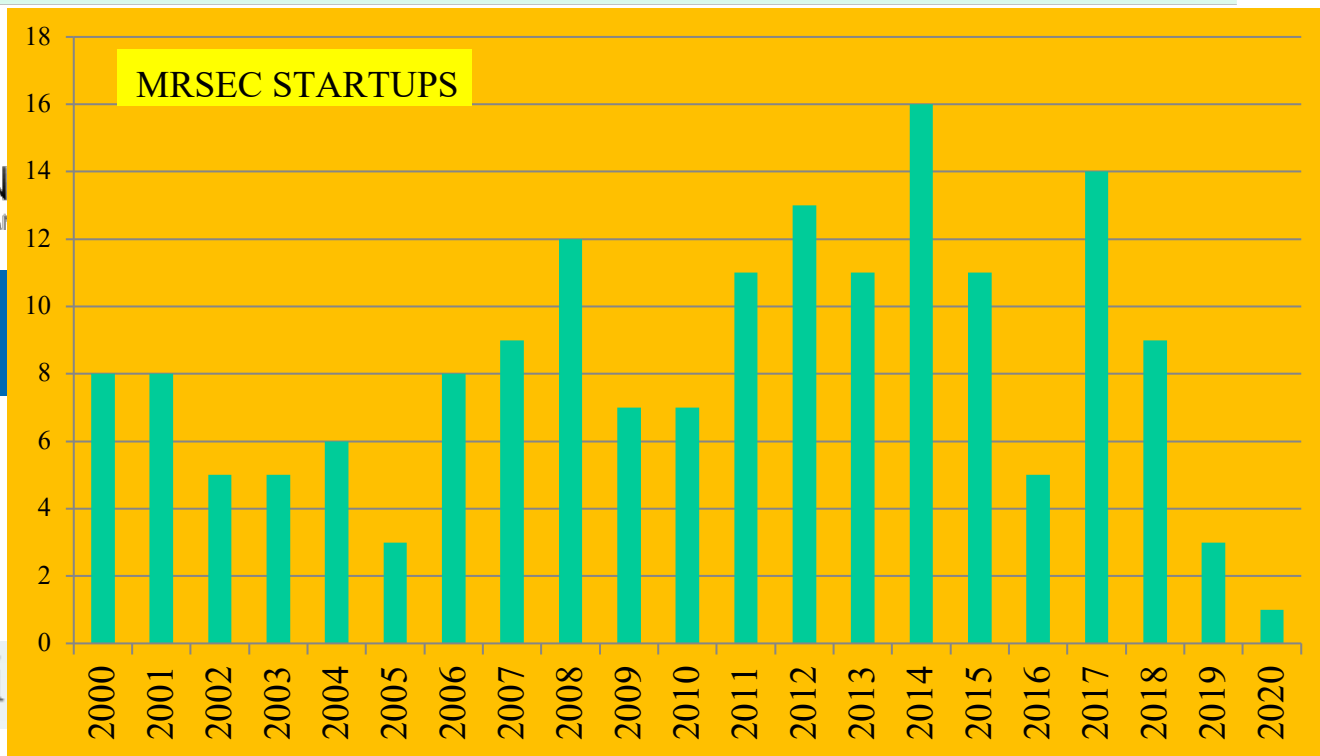
NanoSelect, Inc.



nanoterra



nanosys



Since 1985: 176 (55 in 2014-2019) companies in 22 states plus 5 abroad, employing ~ 3380 individuals; More than 1000 patents awarded, ~400 since 2013





Activities & Funding in 2019/20

MRSEC Competition: Full Proposals (January 2020) and Virtual Reverse Site Visits (March/April 2020)

11 Awards including 3 New MRSECs

EPSCoR and OMA \$6.5M co-funding: \$57M total yearly budget (up from \$56M)

19 MRSECs with 42 IRGs

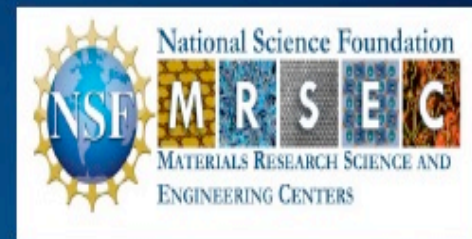




Materials Research Science & Engineering Centers (MRSEC) Program - \$57M

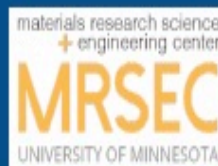
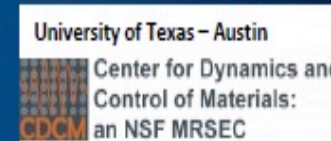


Dan Finotello
Miriam Deutsch



DMR MRSEC Program

First-Time MRSECs



MRSEC Competition
FY2020





Current MRSEC Portfolio

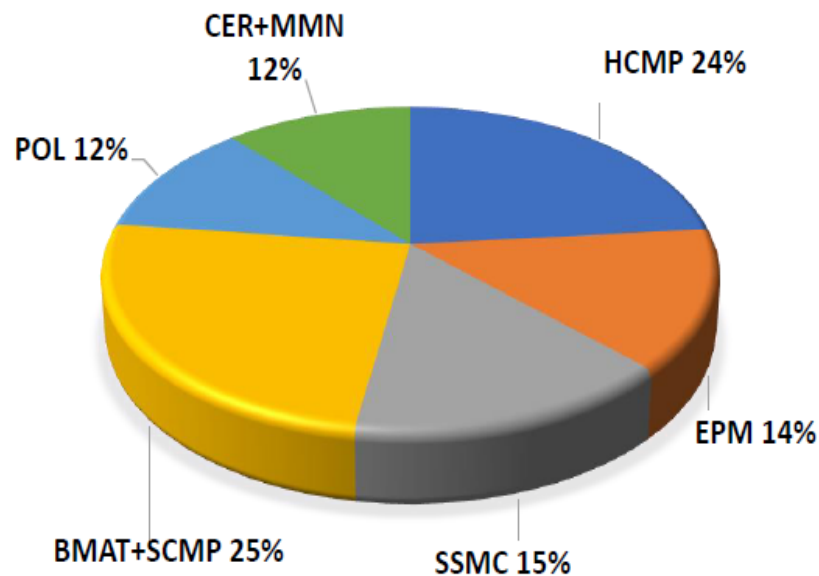
Class of 2017, 8 Awards: Cornell, Northwestern, UPenn, UCSB, Wisconsin, **UIUC, U Washington, UT Austin**; **19 IRGs in total**

Class of 2020, 11 Awards: Brandeis, Chicago, Columbia, Harvard, Princeton, Minnesota, Ohio State, Penn State, **UCSD, U Delaware, UCI**; **23 IRGs in total**

In total: **19 MRSECs** comprising a total of **42 IRGs**

Learn more at <https://mrsec.org/>

Current MRSEC program balance, as a share of the DMR topical program portfolio:



HCMP = Hard Condensed Matter Physics
EPM = Electronic and Photonic Materials
SSMC = Solid State and Materials Chemistry
BMAT = Biomaterials
SCMP = Soft Condensed Matter Physics
POL = Polymers
CER = Ceramics
MMN = Metals and Metal Nanostructures





Upcoming Activities

- **Eight 4th Year Site Visits, Virtual**

April to June 2021

- **31 Annual Reports / 19 \$\$\$**

May to June 2021

- **2022/23 MRSEC Competition**

Solicitation: Fall 2021

