



* all photos showing unmasked people indoors were taken prior to COVID-19

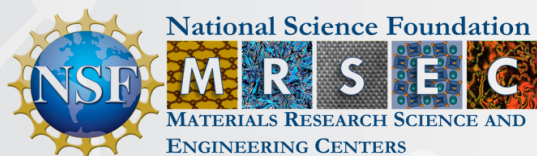
materials research science
+ engineering center

MRSEC

UNIVERSITY OF MINNESOTA

“ it is incredibly energizing when two students from completely different academic backgrounds collaborate and achieve a research breakthrough; this is the enabling power of the MRSEC ”

DIRECTOR TIMOTHY P. LODGE



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integrating **interdisciplinary research** with **innovative outreach** to **inspire excellence** in Materials Science and Engineering



University of Minnesota MRSEC

This multifaceted MRSEC enables important areas of future technology, ranging from applications of electrical control over materials to scale-invariant shape-filling amphiphile network self-assembly. The UMN MRSEC manages an extensive program in education and career development. The MRSEC is bolstered by a broad complement of companies that contribute directly to IRG research through intellectual, technological, and financial support. International research collaborations and student exchanges are pursued with leading research labs in Asia and Europe. The UMN MRSEC benefits from an extensive suite of materials synthesis, characterization and computational facilities.



The research program addresses the meticulous control of composition, structure, and properties in two exciting categories of advanced materials:

- + IRG-1: Ionic Control of Materials
- + IRG-2: Mesoscale Network Materials

Ionic Control of Materials

Our goal is to understand the mechanisms, capabilities, and applications of electrostatic and electrochemical gating. Our vision is to transform the understanding of electrolyte-based electrostatic and electrochemical gating, realizing electrical control over an extraordinary range of electronic phases and function.

Mesoscale Network Materials

The goal of IRG-2 is to discover and exploit scale-invariant shape-filling amphiphile (SFA) motifs to assemble robust, functional network phases and to understand how processing impacts their properties.



PREM: Partnerships for Research and Education in Materials with the University of Texas, Rio Grande Valley

MRFN: Charter member of the Materials Research Facilities Network, to expand the use of Shared Experimental Facilities
Science Museum of Minnesota: Partnership in conceiving, developing, and presenting exhibits

IPrime: Industrial Partnership for Research in Interfacial and Materials Engineering – a broad-based University/Industry partnership supporting fundamental collaborative research on materials

Summer Research Programs:

Collaborative research experiences for undergraduates, pre-college teachers, and college faculty:

- + Research Experiences for Undergraduates (REU)
- + Research Experiences for Teachers (RET)
- + Faculty-Student Teams
- + American Indian Fellows

K12 Outreach Opportunities:

- + American Indian Visit Day
- + American Indian Summer Institute
- + Materials Week Summer camps
- + Energy and U
- + Physics Force
- + Sustainable Chemistry Workshop for High School Teachers