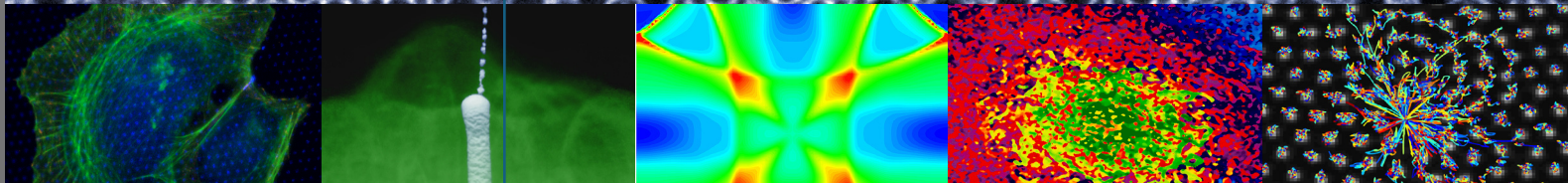




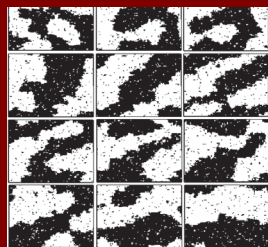
A unique resource for discovery and expertise in new materials



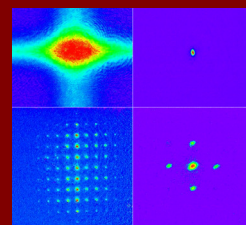
The Materials Research Science and Engineering Center (MRSEC) at the University of Chicago incubates innovative research to produce the design principles for the next generation of materials.

The research is focused on investigating materials formed far from equilibrium, exploring new paradigms for materials fabrication and response, and exploiting feedback between structure and dynamics. Senior investigators represent seven departments and five institutes at the University of Chicago, and two divisions at Argonne National Laboratory.

HIGHLIGHTS...



Computer simulation of a model of a fluid under shear by the Dinner group.



Representations of Cesium atoms trapped and cooled to temperatures half a millionth degree above absolute zero by the Chin group.

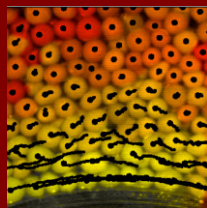


Recently, the Nagel group discovered the splashing of a liquid drop on impact with a dry, smooth substrate is a strongly air-dependent phenomena. At sufficiently low pressures, splashing can be completely suppressed.

University of Chicago
MRSEC

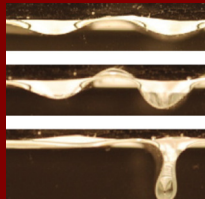
Director: Ka Yee Lee
<http://mrsec.uchicago.edu>

Research at the Chicago Materials Research Center is organized into four interdisciplinary research groups (IRGs).



The IRG on Jamming and Slow Relaxation in Materials Far from Equilibrium considers the factors causing flowing systems to become rigid and trapped far from equilibrium. Its goal is to pursue new types of materials processing to exploit effects of aging and memory common to jammed and glassy materials.

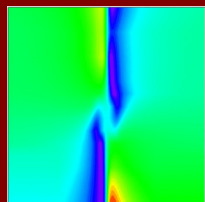
The IRG on Dynamic Transitions of Material Sheets focuses on the dynamics of interfaces, such as on the surface of a droplet or a membrane. The goal is to use the instabilities at interfaces to shape materials to create structure where explicit shaping is impractical.



The IRG on Rational Design of Nanoparticle and Molecule-Based Functional Materials develops tools to create new classes of materials based on the large assortment of nanometer-sized particles now available. Goals include understanding the fundamentals of nanoparticle self-organization to tune array properties.



The IRG on Macroscopic Quantum Coherence seeks to establish control of materials by addressing fundamental issues in quantum materials engineering. The goal is to create macroscopically coherent states by focusing on systems that can be finely tuned to enable precise control of the complex quantum dynamics for the creation of useful devices.



“ Building connections between research & education is integral to our mission. ”

-Ka Yee Lee
MRSEC Director



The Chicago MRSEC

In addition to training a diverse group of graduate and undergraduate students, the Chicago MRSEC brings science inquiry experiences to underserved students in neighboring communities on Chicago's south side including special internship and enrichment programs for high school students, professional

development for teachers and after-school science clubs. The MRSEC provides summer research opportunities to undergraduate students from all over the U.S. through its REU program. As part of its outreach to the general public, the MRSEC collaborates with Chicago's Museum of Science and

Industry and the Exploratorium in San Francisco to develop materials science exhibits and hosts the Physics with a Bang! holiday show. The MRSEC has research collaborations with universities in Holland and Chile and a Partnership in Research and Education with CCNY.



More information about the education and outreach activities at the University of Chicago MRSEC can be found at <http://mrsec.uchicago.edu/educational>