

IEM SEMINAR SERIES

TUESDAY
February 7th, 2017

Engineering Multifunctional Nanoparticles for Disease Detection and Treatment



Institute for
Engineering in Medicine

UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

Dr. Gang Bao

Foyt Family Professor in Bioengineering
Director, Nanomedicine Center for
Nucleoprotein Machines
CPRIT Scholar in Cancer Research
Rice University



FREE event, no registration
required.

Pizza and Beverages will be
provided from 11:45 am

12:00PM - 1:00PM
Nils Hasselmo Hall
Room 4-101

For additional information on
Dr. Bao's presentation
please contact:
scot0353@umn.edu

The Institute for Engineering in Medicine (IEM) is pleased to announce a seminar by Dr. Gang Bao, "Engineering Multifunctional Nanoparticles for Disease Detection and Treatment".

The integration of biomolecular engineering, nanotechnology and biology is expected to produce major breakthroughs in medical diagnostics and therapeutics. Due to the size-compatibility of nano-scale structures with proteins and nucleic acids, the design, synthesis and application of nanoprobes, nanocarriers and nanomachines provide unprecedented opportunities for achieving a better control of biological processes, and drastic improvements in disease detection, therapy, and prevention. Recent advances include the development of multi-functional nanoparticles, nano-structured materials and devices, and engineered nucleases for biological and medical applications.

In this talk I will present the recent development and application of magnetic nanoparticles in my lab, including nanocrystal-based signal amplification for biomolecule detection, multi-modality PET/MR/fluorescence imaging contrast agent for disease detection, heat generation by magnetic iron oxide nanoparticles, as well as nanoparticle-based strategies for drug/gene delivery. The opportunities and challenges in nanobioengineering are also discussed.

Gang Bao is a pioneer in nanomedicine, molecular imaging, and the emerging area of genome editing. The nanoscale structures and devices engineered in his lab have broad-based applications in basic biological research toward the understanding of underlying causes of disease, as well as in the translation of nano-scale tools for disease diagnostics and treatment, such as targeted drug/gene and cell-based therapies.

Bao joined Rice University's Department of Bioengineering in March 2015. In addition to his outstanding track record in basic and translational research as a principal investigator at Johns Hopkins and at the Georgia Institute of Technology and Emory University, he brings two decades of significant experience in the development of leading research and education programs in biomedical engineering. Three multidisciplinary centers, directed by Bao at Georgia Tech, have focused on the detection and treatment of cardiovascular disease, the development of engineered nucleases for treating single-gene disorders such as sickle-cell disease, and pediatric nanomedicine approaches for improving children's health.

For more information on the IEM Seminar Series, visit
www.iem/umn.edu/SeminarsLectures/Seminars_index.html

