

# WAYNE STATE UNIVERSITY

## The WSU Program for Traumatic Brain Injury Research

presents a Special Topic Seminar

### Hui Mao, PhD

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## “Engineered and Functionalized Magnetic Nanoparticles for Magnetic Resonance Imaging and Theranostics”

**Abstract:** Magnetic nanoparticles, especially iron oxide nanoparticles, have been engineered and functionalized as platforms for the development of novel MR molecular imaging probes and multifunctional theranostic systems. Sensitive detection and quantitative assessment of magnetic nanoparticles in vivo are increasingly important considerations in designing new magnetic nanoparticles and their molecular imaging and MRI-guided drug delivery applications.

This presentation will discuss the dependences of MRI contrast on the physical and chemical properties of size and surface tunable magnetic iron oxide nanoparticles and constructs as well as a range of MRI contrast enhancing mechanisms offered by magnetic nanoparticles. Furthermore, we will use the examples of receptor targeted magnetic iron oxide nanoparticle MRI probes and other theranostic nano-constructs developed in our program to demonstrate the applications of various MRI methods, including a ultra-short TE imaging method, for imaging of tumor targeted magnetic nanoparticles in experimental animal models of cancers. The newly developed sub-5 nm magnetic iron oxide nanoparticles and novel coating materials for reducing non-specific uptake of nanoparticles and improving targeting and drug delivery will also be introduced.

**Date:** Tuesday March 18, 2014

**Time:** 12:00pm – 1:00 pm

**Location:** Margherio's Family Conference Center  
320 E. Canfield, Detroit, MI 48201



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