

Title: Superparamagnetic Nanoparticles for Imaging and Therapeutics  
Type: Student  
Awardee: Nathan Kohler  
Mentors: M. Zhang – UW; Glen E. Fryxell – PNNL  
Description: Superparamagnetic nanoparticles have many biomedical applications (e.g. cell separation, contrast enhancement in magnetic resonance imaging (MRI), drug delivery, hypothermic therapies at the cellular level, and magnetic-field-assisted radionuclide therapy). The goal of this research is to develop novel liposome/nanoparticles-conjugate/drug systems with combined cancer diagnostic and therapeutic functions. These “smart” nanoparticle conjugates or liposome’s are designed to recognize tumor-specific markers and target only individual tumor cells. These particles will enable doctors to detect tumors wit MRI at the cellular level in very early stages and measure the therapeutic efficiency of hyperthermia simultaneously.