

Biomedical nanomagnetism: advances in *in vivo* imaging and therapy

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This talk will describe the development of multifunction platforms for imaging and therapy based on functionalized, biocompatible, theranostic magnetic nanoprobe. I will discuss magnetic relaxation dynamics on the nanoscale followed by the optimization of tracers for the emerging technique of magnetic particle imaging using both real- and frequency-space approaches to image reconstruction. Further, localized heating of functionalized magnetic nanoparticles as a therapeutic modality as well as triggered drug release and if time permits, issues of biodistribution and cytotoxicity, critical for any *in vivo* application, will also be discussed.

This work was supported by NIH grants 1R01EB013689-01/NIBIB & 1R41EB013520-01