Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Application of near infrared sensitive multifunctional nanophosphors in optical and photoacoustic imaging FRANCISCO PEDRAZA, AJITH KUMAR, LAWRENCE MIMUN, JING YONG YE, DHIRAJ SARDAR, Univ of Texas, San Antonio — Though there are several contrast agents available in the biomedical industry for non-invasive imaging, many of them are not capable of providing in-depth information with high signal to noise ratio. Because of the extremely high scattering processes in the biological medium, most of the optical imaging techniques fail to provide sufficient resolution in deep tissue. An alternate way to circumvent this difficulty is to integrate multiple imaging modalities such as optical, magnetic, and photoacoustic (PA) in a single contrast agent. Trivalent rare earth doped inorganic nanophosphors are found to be the most suitable candidates for this purpose due to their excellent NIR spectral properties. In addition, by controlling the non-radiative processes through various emission channels, it is possible to generate strong PA signals that would help us explore the wavelength dependent PA imaging features. Furthermore, magnetic imaging can be added by incorporating paramagnetic (Gd) or ferromagnetic (Fe) ions suitable lattice positions. In this work we explore the NIR sensitive optical and PA imaging features of rare-earth doped phosphors and compare their capabilities with other metallic nanoparticle-based PA imaging agents.

Francisco Pedraza
Univ of Texas, San Antonio

Date submitted: 14 Nov 2014 Electronic form version 1.4