

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Optical/MRI Multimodality Molecular Imaging¹ LIXIN MA, Department of Radiology and International Institute for Nano and Molecular Medicine, University of Missouri-Columbia, CHARLES SMITH, Department of Radiology and Radiopharmaceutical Sciences Institute, University of Missouri-Columbia, PING YU, Department of Physics and Astronomy, University of Missouri-Columbia — Multimodality molecular imaging that combines anatomical and functional information has shown promise in development of tumor-targeted pharmaceuticals for cancer detection or therapy. We present a new multimodality imaging technique that combines fluorescence molecular tomography (FMT) and magnetic resonance imaging (MRI) for in vivo molecular imaging of preclinical tumor models. Unlike other optical/MRI systems, the new molecular imaging system uses parallel phase acquisition based on heterodyne principle. The system has a higher accuracy of phase measurements, reduced noise bandwidth, and an efficient modulation of the fluorescence diffuse density waves. Fluorescent Bombesin probes were developed for targeting breast cancer cells and prostate cancer cells. Tissue phantom and small animal experiments were performed for calibration of the imaging system and validation of the targeting probes.

¹This work was supported by NIH P50-CA-103130.

Ping Yu
Department of Physics and Astronomy, University of Missouri-Columbia

Date submitted: 22 Nov 2006

Electronic form version 1.4