



U N I V E R S I T Y *of* H O U S T O N

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Thesis Announcement

**DEVELOPMENT OF A HIGH SPEED PHASE STABILIZED LOW
COHERENCE INTERFEROMETER FOR BIOMEDICAL RESEARCH**

Ravi Kiran Manapuram

This thesis describes the development of a novel phase resolved system based on swept source optical coherence tomography (SSOCT) for ultra-sensitive imaging and monitoring of gas microbubbles in aqueous and blood simulated media. The developed phase stabilized swept source optical coherence tomography (PhS-SSOCT) has an axial resolution of 10 μm , phase sensitivity of 0.03 radians, imaging depth of up to 6 mm in air, and scanning speed of 20 kHz for a single A-line. The accuracy for measurement of the diameter of gas microbubbles is limited to 10 μm in structural imaging and 0.01 μm in phase-sensitive monitoring. The results from the study indicate that PhS-SSOCT could be used to detect fast-moving microbubbles in aqueous and scattering solutions and ultimately could be applied for rapid assessment in biofluids (e.g. blood) and tissues (e.g. skin) *in vivo*.

Committee Chair: Dr. Kirill Larin

Place: N202-MECE Large conference
room

Committee Members: Dr. Han Le

Date: 05/14/2008

Dr. Valery Kalatsky

Time: 2 PM

Dr. Adrian Glasser