1135-78-3001 **Sean Horan*** (sthoran@uci.edu), **Adam Gardner**, **Rolf Saager**, **Anthony Durkin** and **Vasan Venugopalan**. *Use of a novel radiative transport solver to recover optical properties of layered media from Spatial Frequency Domain Imaging data.*

The scattering and absorption spectra of biological tissue carries physiological information relevant to tissue structure and composition. Spatial Frequency Domain Imaging provides a method to probe tisses at various depth, but extraction of layered specific optical properties in systems with characteristic thicknesses comparable to, or smaller than, the transport mean free path of light is difficult using conventional analytic or stochastic methods.

We emply a spherical harmonic decomposition approach to solving the radiative transport equation to predict the SFDI data in conjunction with a multi-stage inversion algorithm to extract optical absorption and scattering properties of a two layered medium.

This method is verified using layered tissue phantoms simulating the absorption and reduced scattering spectra of deoxyhemoglobin of various concentrations, with top layers either 90 and 300 um thick dyed using napthol green. We show the ability to extract top and bottom layer absorption and scattering properties with accuracies of +/- 5% for bottom layer scattering, 8% for bottom layer absorption, 15% for top layer scattering and 10% for top layer absorption within 500 to 800 nm. (Received September 26, 2017)