Reconstructing the optical properties of a medium from the coupled physics PAT/OCT system.

We consider the inverse problem of reconstructing the electric susceptibility of a sample placed in a multi-modal PAT/OCT system. The dielectric medium is characterized by the frequency dependent electric susceptibility and the Grüneisen parameter. We present a reconstruction method for recovering both parameters from multi-frequency measurements under the Born approximation. The combined system is equivalently transformed to a Fredholm type integral equation whose unique solvability depends on the PAT data. We present numerical examples for simulated data. This is a joint work with P. Elbau and O. Scherzer. (Received September 05, 2018)