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**Reconstruction of the optical properties of a dielectric medium from combined
PAT-OCT measurements**

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Abstract: Photoacoustic Tomography (PAT) and Optical Coherence Tomography (OCT) are non-invasive imaging techniques producing high-resolution images of biological tissues. In this work, we consider the problem of recovering the properties of a medium (electric susceptibility and Grüneisen parameter) from measurements obtained by the dual-modal system. Using only one modality does not allow unique solvability for both optical properties. The combined system is modelled as an inverse electromagnetic scattering problem. For a weakly scattering medium, the problem reduces to solving a Fredholm type integral equation of the first kind. Numerical results are also presented in the case of focused illumination.