1106-65-472   **Ying Li*** (`yli@francis.edu`), Department of Mathematics, Saint Francis University, Loretto, PA 15940. *Inverse Scattering Approach on Tomography Problem Using Multi-frequency Problem.*

An inverse scattering problem is formulated for reconstructing optical properties of biological tissues. A recursive linearization algorithm is used to solve the inverse scattering problem. We employed the idea of finite element boundary integral method and added suitable boundary conditions on the surface of the domain. The initial guess is obtained by Born approximation based on the fact of weak scattering. The reconstruction is then improved each time by an increment on wave number. Finite element method is used for the interior domain containing inhomogeneity. Nystrom method is used for setting up the boundary conditions and jump conditions. Two numerical examples are presented. (Received August 29, 2014)