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**Howard Levinson\*** (levh@umich.edu). *Imaging from the Inside Out – Inverse Scattering in Fluorescence Microscopy.*

We propose a novel method to reconstruct the optical properties of a scattering medium with subwavelength resolution. The method is based on the solution to the inverse scattering problem with photoactivated internal sources. Numerical simulations of three-dimensional structures demonstrate that a resolution of approximately  $\lambda/25$  is achievable. An iterative algorithm that solves both the source localization and the inverse scattering problem will be discussed along with numerical results. (Received August 20, 2018)