

Abstract Submitted
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Nonlinear Absorption in Nanoparticle Suspensions and Aerogels¹

YI HUANG, Liquid Crystal Institute, KSU, ASHISH AGARWAL, University of Michigan, PIOTR LESIAK, Warsaw University of Technology, NICK KOTOV, University of Michigan, DAVID CARROLL, Wake Forest University, PETER PALFFY-MUHORAY, Liquid Crystal Institute, LIQUID CRYSTAL INSTITUTE TEAM, WAKE FOREST UNIVERSITY TEAM, UNIVERSITY OF MICHIGAN TEAM, WARSAW UNIVERSITY OF TECHNOLOGY TEAM — Nonlinear optics can be used to study materials structure by inferring material properties from characteristics of the mechanisms responsible for the nonlinear response. We have carried out ns and ps Z-scan experiments to determine the nonlinear absorption and refraction in pure and dye containing aqueous solutions of Au nanorods and self-assembled polymer coated Ag nanowire glass gels. The enhancement of nonlinear absorption by the presence of nanoparticles can be related to the nanoparticle shape, linear response as well as concentration. We present our results for nonlinear refraction as well as nonlinear absorption, and discuss our results in terms of simple models.

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