

Abstract Submitted
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Z-scan measurement of oriented Au nanoparticle suspensions¹

PIOTR LESIAK, Warsaw University of Technology, MICHELE MOREIRA, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU, NICKOLAS KOTOV, ASHISH AGARWAL, University of Michigan — The Z-scan technique, developed by the CREOL group¹, is a simple and effective method for measuring intensity dependent optical nonlinearities of materials. We have carried out Z-scan measurements of gold nanorods suspended in organic solvents using a CW laser. A low frequency external electric field was used to orient the nanoparticles². We present our experimental results for the real and imaginary parts of the nonlinear phase shift as function of the applied aligning electric field. We consider a variety of possible contributing physical mechanisms, and compare their expected contributions with experimental observations. [1] M. Sheik, A.A. Said, and E.W. Van Stryland, *Opt. Lett.* **14**, 955 (1989). [2] J. Fontana, and P. Palffy-Muhoray, APS March meeting 2008, New Orleans, LA (2008).

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Michele Moreira
Liquid Crystal Institute

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