

Abstract Submitted  
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**Numerical simulation of the non-local optical response of nanoparticles**<sup>1</sup> JEREMY NEAL, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU — The interaction of nanoparticles with light is a primary focus of research in negative index materials. When the wavelength of light is comparable to the particle size, significant non-local effects are expected in the electric and magnetic response of the nanoparticles. It has been suggested that the spatially non-local response may be taken into account via the bianisotropic formalism for the constitutive equations. We have carried out computer simulations of the optical response of nanoparticles using both the discrete dipole approximation and the finite integration technique to determine the effectiveness of these bianisotropic constitutive equations. We present our results, which indicate that the approach of Agranovich et al.[1] provides a better description of the non-local optical response than the bianisotropic formalism.

[1] V.M. Agranovich and V.L. Ginzburg, “Spatial dispersion in crystal optics and the theory of excitons”, (Interscience, London, 1966).

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Michele Moreira  
Liquid Crystal Institute

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