Nanoparticle susceptibilities and the bianisotropic formalism$^1$

JEREMY NEAL, PETER PALFFY-MUHORAY, Liquid Crystal Institute, KSU, LIQUID CRYSTAL INSTITUTE TEAM — Since the spatial extent of nanoparticles is not negligible compared to the wavelength of light, non-local effects may be expected in the electric and magnetic response of nanoparticles at optical frequencies. It has been suggested that such spatially non-local response may be taken into account via the bianisotropic formalism for the constitutive equations. We have calculated the susceptibilities of pairs of nanowires as a function of orientation relative to the incident fields using the discrete dipole approximation. We compare the results of our simulations with predictions of the bianisotropic description, and summarize our observations.

$^1$This work was supported by the AFOSR under MURI grant FA9550-06-1-0337.

Michele Moreira
Liquid Crystal Institute

Date submitted: 02 Dec 2006