

Abstract Submitted
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Ferroelectric nanoparticles and their use in disparate optical devices DEAN EVANS, SERGEY BASUN, CARL LIEBIG, IGHODALO IDEHENRE, Air Force Research Laboratory — The fabrication [1] and “harvesting” [2] of stressed ferroelectric nanoparticles and the characterization of these materials will be discussed. Due to the induced surface stress in <10 nm size nanoparticles, a strong spontaneous polarization is achieved (4-5 times greater than found in the bulk for the case of BaTiO₃) [3,4]. These materials have been characterized in both isotropic and anisotropic liquids. The benefits of using these nanoparticles have been demonstrated by a significant enhancement in the field sensitivity (display) and optical gain (hybrid photorefractive) liquid crystal systems.

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[2] G. Cook, J. L. Barnes, R. F. Ziolo, A. Ponce, V. Yu. Reshetnyak, A. Glushchenko, S. A. Basun, P. P. Banerjee, D. R. Evans, *J. Appl. Phys.* **108**, 064309 (2010).

[3] S. A. Basun, G. Cook, V. Yu. Reshetnyak, A. V. Glushchenko, and D. R. Evans. *Phys. Rev. B*, **84**, 024105 (2011).

[4] D. R. Evans, S. A. Basun, G. Cook, I. P. Pinkevych, and V. Yu. Reshetnyak, *Phys. Rev. B*, **84**, 174111 (2011).

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