## Abstract Submitted for the MAS15 Meeting of The American Physical Society

Raman spectroscopic investigation of lithium niobate nanocrystals<sup>1</sup> KEITH VEENHUIZEN, Lehigh University, GREG STONE, Pennsylvania State University, BASTIAN KNABE, Department of Microsystems Engineering (IMTEK), KARSTEN BUSE, Fraunhofer Institute for Physical Measurement Techniques, VOLKMAR DIEROLF, Lehigh University — There is an emerging interest in investigating the properties of ferroelectric materials in confined geometries (nanocrystals, crystal lines in glass, and thin films, for instance). In this work, batches of lithium niobate nanocrystals have been synthesized from various initial ratios of lithium to niobium using the sol-gel method. The batches were analyzed via Raman spectroscopy, SEM imaging, and energydispersive X-ray spectroscopy to gain information about particle size, morphology, stoichiometry, and defect content. The nanocrystals are very sensitive to the initial stoichiometric ratio in the synthesis step. It was found that high quality spherical nanocrystals can be synthesized at certain initial stoichiometric ratios. Raman spectra reveal nanocrystal stoichiometry depends on the starting stoichiometry, and the spectra also indicate the nanocrystals have a preferred orientation within the optical trap of the Raman confocal microscope.

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