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Raman spectroscopic investigation of lithium niobate nanoparticles KEITH VEENHUIZEN, Lehigh University, GREG STONE, Pennsylvania State University, BASTIAN KNABE, Department of Microsystems Engineering (IMTEK), University of Freiburg, KARSTEN BUSE, Fraunhofer Institute for Physical Measurement Techniques, VOLKMAR DIEROLF, Lehigh University — Recently there has been a large interest in synthesizing nanoscale structures from ferroelectric materials. Due to the tendency of the nanoscale structures to form aggregates, characterizing the properties of isolated nanostructures can be challenging. Through combining Raman spectroscopy with an optical trap, we investigated the properties of lithium niobate nanoparticles synthesized by the sol-gel method. Analysis of the Raman spectrum shows that the stoichiometry of the nanoparticles is dependent on the starting stoichiometric ratio of lithium to niobium in the synthesis step. We also demonstrate the power of this technique to determine the orientation of ferroelectric nanoparticles in an external applied field.

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