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Optical Second Harmonic and Multiferroic Properties in $LiNbO_3$ and $LiLaNbO_3$ nanoparticles.[1] CARLOS DIAZ, YU DING, AURELIO PAEZ, YONGDONG WANG, CHUNQIANG LI, UTEP Physics Department, JORGE PORTELLES, Universidad de la Habana., ABEL HURTADO, Department of Physics and Astronomy, University of Texas at San Antonio., JORGE LOPEZ, UTEP Physics Department, AND FERROMAGNETIC TEAM, MULTIFERROIC TEAM — We present a solid-state synthesis of lithium niobate ($LiNbO_3$) and lithium lanthanum niobate nanoparticles ($La_{0.05}Li_{0.85}NbO_3$) with their corresponding structural aspects, ferroelectric/ferromagnetic and second harmonic generation properties. $LiNbO_3$ and $La_{0.05}Li_{0.85}NbO_3$ was prepared using lithium carbonate, niobium oxide and lanthanum oxide as precursors, respectively. X-ray diffraction and Raman spectroscopy indicates the formation of ferroelectric/ferromagnetic phase obtained in hydrogen atmosphere with spherical shape as confirmed by TEM micrographs. Hysteresis loop was determinate with the objective to determinate the behavior ferroelectric Relaxor properties with the influence of the La doped new in this system. Fine structures of the material are revealed by studying the Second Harmonic Generation profiles.

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