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Supporting Information

Ferroelectric monodisperse Ln-doped barium titanate cuboidal nanocrystals prepared by a solvothermal route

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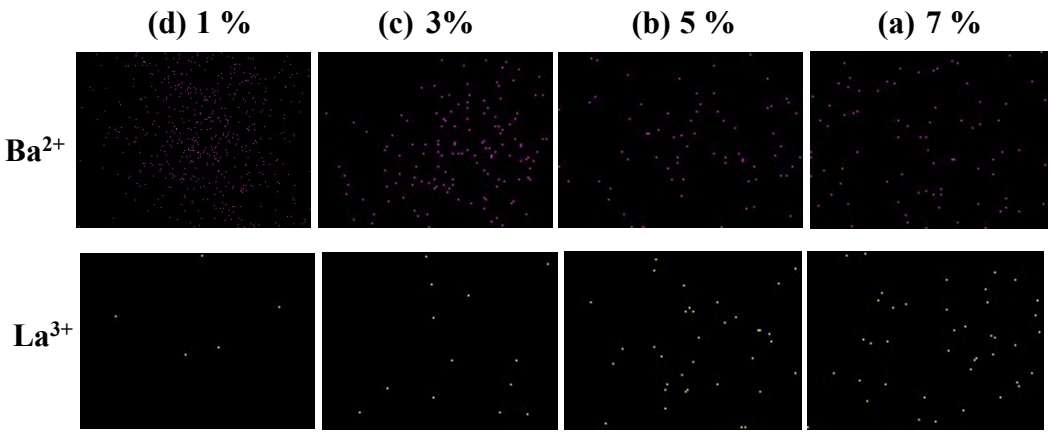

Figure S1. TEM-EDS maps of (a) 1 %, (b) 3 %, (c) 5 %, and (d) 7 % La-doped $BaTiO_3$ nanocrystals. As expected, the intensity of the signals in the maps relatively increases with increasing La concentration

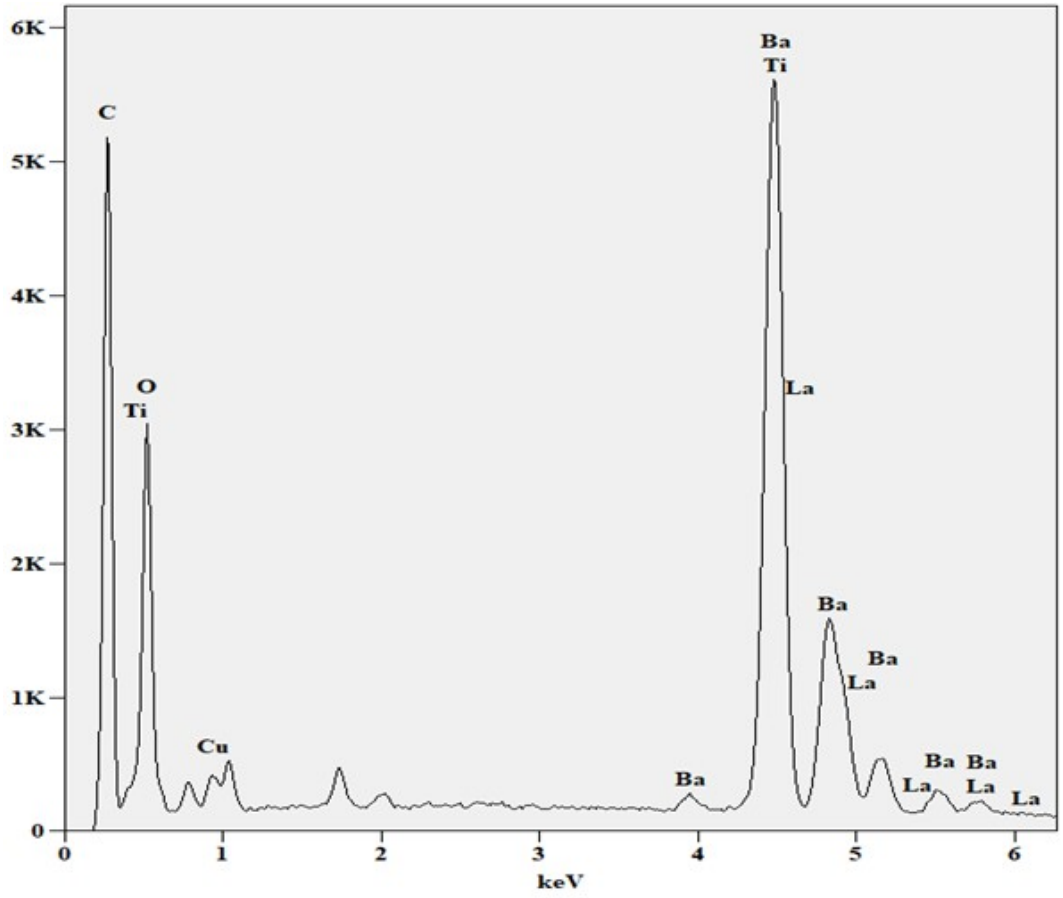

Figure S2. TEM-EDS spectra of 5% La-doped $BaTiO_3$ nanocrystals

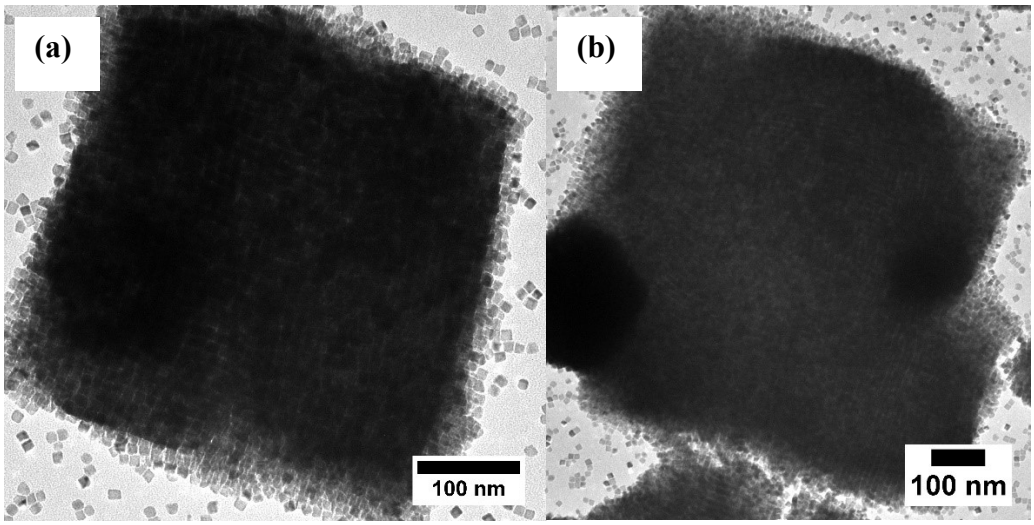

Figure S3. TEM micrographs of superparticles fabricated by using solvent-assisted assembly of 5 % La-doped $BaTiO_3$ nanocrystals. As seen in the micrographs, the cross-section of the superparticles was estimated to be; (a) 0.75 microns, and (b) 0.80 microns

The superparticles were fabricated by dispersing 60.00 mg of the as-prepared 5% La-doped $BaTiO_3$ wet powder in 1-pentanol and hexane mixture (1-pentanol/hexane; 2.5 volume ratio). The resulting solution was sonicated for 10 minutes and allowed to stand for 24 h. A volume of 2.0 mL of the supernatant colloidal dispersion was collected and transferred into a 5.0 mL scintillation vial. A TEM copper-grid was inserted and the solution was covered with a filter paper and allowed to stand for 16 h to allow for slow evaporation of the 1-pentanol/hexane solvent at room temperature. The copper-grid template was collected for imaging.

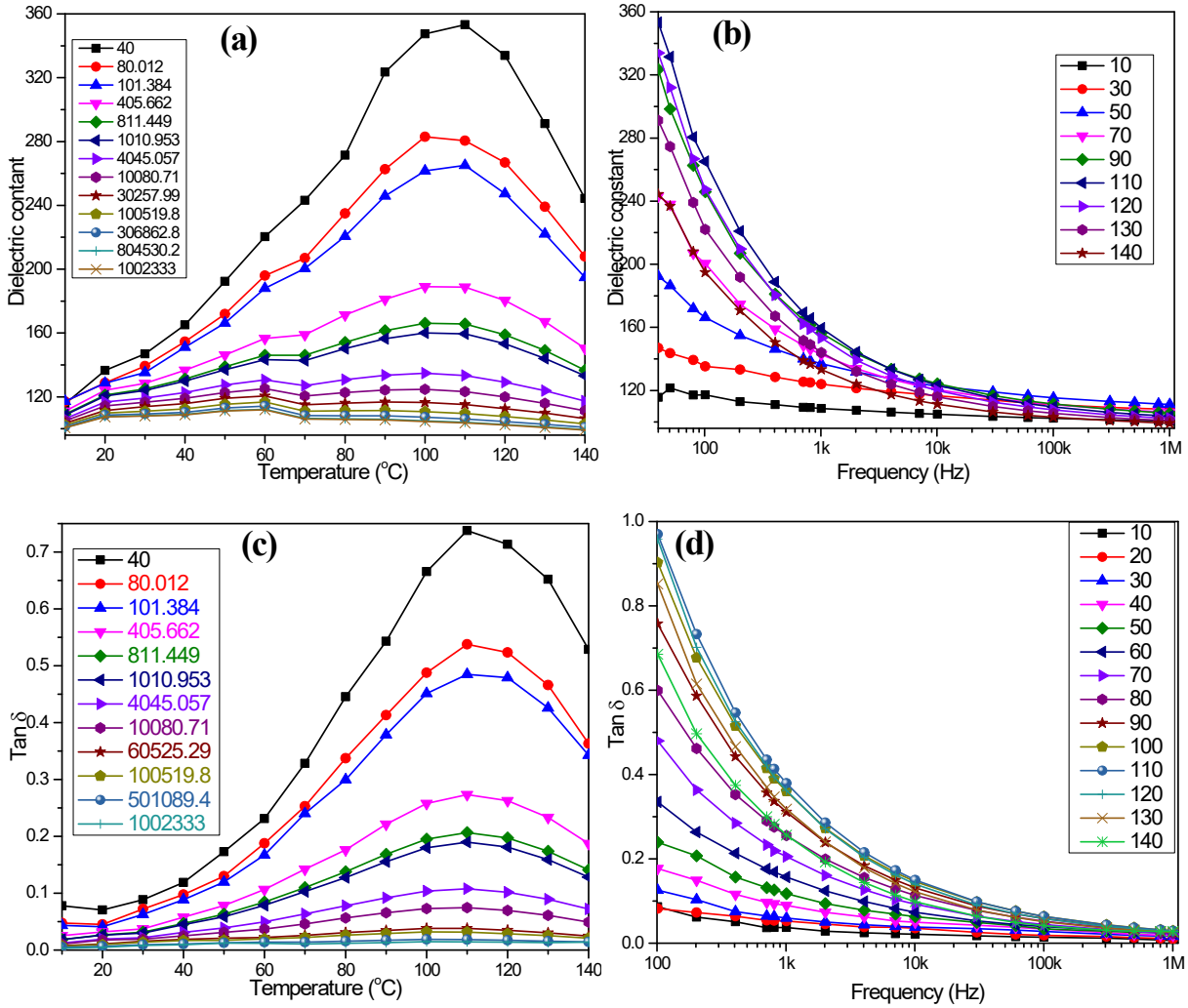

Figure S4. Dielectric spectroscopy of 5% La-doped $BaTiO_3$ nanocrystals pelletized samples as a function of temperature and frequency. Figures a, and b show the plot of dielectric constant as a function of temperature and frequency whereas figures b, and c show the plot of the dissipation factor ($tan\delta$) with temperature and frequency