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A single electric relaxation time in $Ba_{1-x}Sr_xTiO_3$ nanoparticles at low temperatures LIYUAN ZHANG, JUN ZHOU, ZHONGLIN WANG, DRAGOMIR DAVIDOVIC, Georgia Institute of Technology — It is shown that the dielectric response of $Ba_{0.77}Sr_{0.23}TiO_3$ nanoparticles at temperatures below 200K has a frequency and temperature dependence in agreement with the Debye theory with a single relaxation time, which exhibits the Arrhenius law. By contrast, at temperature above 210K the dielectric response exhibits broad range of relaxation times characteristic of relaxor-ferroelectrics. We suggest that the single relaxation time at low temperature indicates frustrated ferroelectricity, analogous to frustrated antiferromagnetism.

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