

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Dielectric properties of Ca- and Ba-doped SrTiO₃ LI-CHUN TUNG, Department of Physics, University of California, Riverside, CA 92521, TUSON PARK, JOHN SARRAO, ALEX LACERDA, Los Alamos National Laboratory, Los Alamos, NM 87545, WARD BEYERMANN, Department of Physics, University of California, Riverside, CA 92521 — Dielectric properties of high quality polycrystalline Ca- and Ba- doped SrTiO₃ perovskite were studied by means of dielectric constant, dielectric loss and ferroelectric hysteresis measurements. Low frequency dispersion of the dielectric constant was found to be very small and a simple relaxor model may not be able to explain its dielectric behavior. A few relaxation modes were found in these samples and they were all interpreted as thermally activated dipolar re-orientation across energy barriers. In Sr_{1-x}Ca_xTiO₃ (x=0-0.3), two modes were found and its concentration dependence implies a competition between these two relaxation processes. In Sr_{1-x}Ba_xTiO₃ (x=0-0.25), relaxation modes were found to be related to the structural transitions and the relaxation modes existed even at low doping levels (x<0.1) at which the structural ordering were not identified by previous Neutron scattering studies. Application of various models was discussed and both of the Ca- and Ba-doped samples can be understood qualitatively.

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Date submitted: 20 Dec 2004

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