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Dielectric Spectroscopy and conductivity relaxation of PSN-PST relaxor thin films MARGARITA CORREA, NATASAN BASKARAN, RAM KATIYAR, Department of Physics, University of Puerto Rico, San Juan PR00931-3343 — -abstract- Relaxor ferroelectric materials exhibit singular dielectric relaxation. They have large dielectric constant, high piezo and electrostrictive coefficients that make them useful for sensors, actuators and ferroelectric related devices. We have prepared PSN-PST relaxor thin films by pulsed laser deposition technique. Studies of dielectric properties, as a function of temperature (100-650K) and frequency (40 Hz –1 MHz) have shown that the materials have diffuse phase transition along with the frequency dispersion. The magnitude of dielectric constant and the temperature of maximum permitivitty (T_m) differ from those in the bulk form. However, its conductivity behavior follows similar trend in both bulk and thin film forms. The ac conductivity exhibits frequency independent plateau at lower frequencies followed by a dispersion region at higher frequencies. The observed dispersion of conductivity with frequency can be described by a power law $\sigma(\omega) = \sigma_{dc} + A\omega^n$ with n>1. The unusual high n value is due to glassy like nature of the relaxor system and it is explained in terms of polaron assisted ionic mechanism. Detailed results will be presented.

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