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Synthesis of Lead free Ceramics and their Dielectrical and Piezoelectrical Properties

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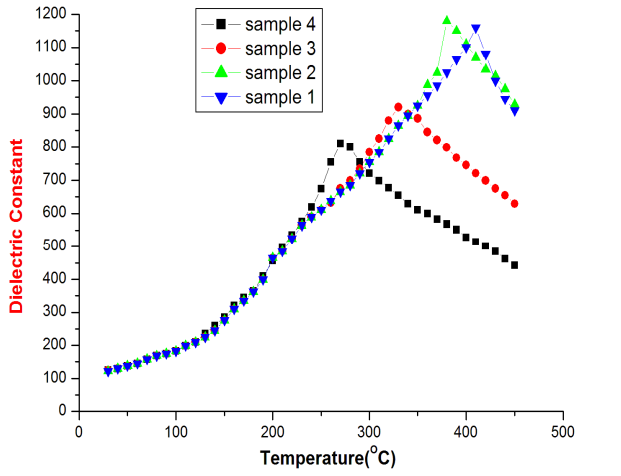
ABSTRACT

Sodium Potassium niobate ($Na_{0.5}K_{0.5}NbO_3$) ceramics with Perovskite structure are widely used for piezoelectric applications. The low dielectric constants and improved piezoelectric activity make these materials desirable for transducer applications. These materials are synthesized by solid state reaction technique. The main objective of this work is to study the effect of rare earth ion Pr^{3+} on dielectric and piezoelectric proprieties of $Na_{0.5}$ $K_{0.5}NbO_3$ceramics with the formula Na_xK_{X-3Y} $Re^{3+}NbO_3$ with X=0.05 and Y=0, 0.05, 0.10 and 0.15.It reports that sample-1 showing a sharp transition temperature at Tc=410°C and it also found that increase of rare earth ions decreased the transition temperature.

Graphical Abstract



Temperature Vs Dielectric constant of undoped and doped $NaKNbO_3$ ceramics

Keywords: Solid state method, Sintering, Dielectric and Piezoelectric studies.