



## Synthesis of Lead free Ceramics and their Dielectrical and Piezoelectrical Properties

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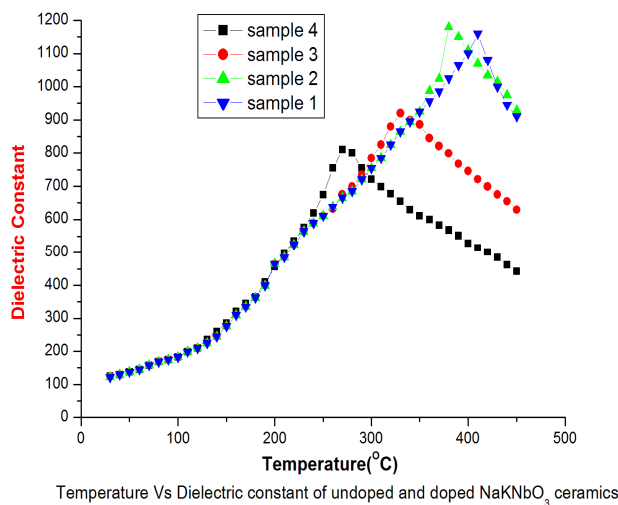
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### ABSTRACT

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 properties 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  $T_c=410^\circ C$  and it also found that increase of rare earth ions decreased the transition temperature.

### Graphical Abstract



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