

## SYNTHESIS, STRUCTURAL, DIELECTRIC AND MAGNETIC STUDIES OF La DOPED 95BFO - 5BT CERAMICS

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### ABSTRACT

Lanthanum doped 95BiFeO<sub>3</sub>-5BaTiO<sub>3</sub> (95BLFO-5BT) multiferroic ceramic was prepared by a PVA Sol-Gel method. A deep study of dielectric properties of La doped 95BiFeO<sub>3</sub>-5BaTiO<sub>3</sub> (95BFO-5BT) ceramics with the help of comprehensive analysis of temperature and frequency dependent dielectric behavior, ac impedance and magnetodielectric (MD) properties is reported in this paper. We have reported nano-crystalline, single phase microstructure of mixed perovskite 95BLFO-5BT compound by scanning electron microscopy (SEM). XRD studies showed secondary phase formation in synthesis due to unstable behavior of Bi and Fe charge fluctuation. Dielectric properties of 95BLFO-5BT ceramics were studied at various temperature and frequency. It was also found that doping of 95BiFeO<sub>3</sub>-5BaTiO<sub>3</sub> by Lanthanum improved dielectric and ferromagnetic properties. The dielectric constant was found to be very high ( $\epsilon' > 103$ , for  $T > 150$  °C), whereas remnant polarization ( $P_r$ ) was found to be  $> 7 \mu\text{C}/\text{cm}^2$ .

**Keywords:** Ceramic, Sol-Gel, Dielectric, XRD, SEM

