

## Effects of Sintering Temperature on Structure, ferroelectric and Piezoelectric Properties of 0.71BF-0.29BT Ceramic

Jian-xin Wei<sup>1</sup>, Jin-rong Cheng<sup>1</sup>, and Jian-guo Chen<sup>1,\*</sup>

<sup>1</sup>School of Materials Science and Engineering, Shanghai University, Shangda Road 99, Shanghai, China

\* Jian-guo Cheng: chenjianguo@shu.edu.cn

0.71BiFeO<sub>3</sub>-0.29BaTiO<sub>3</sub>+1.0MnO<sub>2</sub> ceramics were synthesized by the conventional solid state reaction method. Effect of different sintering temperatures (from 940 to 1020 °C) on the structure, ferroelectric and piezoelectric properties were investigated. X-ray diffraction (XRD) analysis indicated that all samples exhibited pure perovskite structure without any secondary phases. The ferroelectric and piezoelectric properties were sensitive to the sintering temperature. When the sintering temperature increased from 940 °C to 1000 °C, the piezoelectric constant increased from 60 pC/N to 160pC/N and the remanant polarization (P<sub>r</sub>) from 10 to 37. Values of  $T_C$ ,  $T_d$ ,  $d_{33}$ ,  $k_p$ , for 0.71BF-0.29BT ceramics are 496 °C, 403°C, 160pC/N, 0.4, respectively with sintering at 1000°C. The whole set of results indicated that the 0.71BF-0.29BT+1.0MnO<sub>2</sub> ceramics sintered at the temperature of 1000°C showed potential applications for high temperature piezoelectric devices.