Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supplementary information

The phase evolution of NBT-100xBFO ceramics is shown in Fig.S1. XRD patterns of unpoled samples indicate that all the compositions exhibit a single-phase perovskite structure.

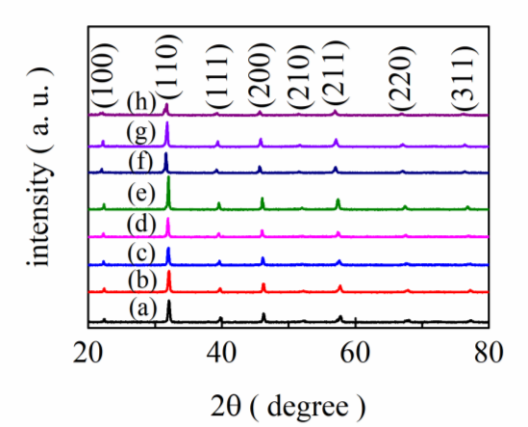
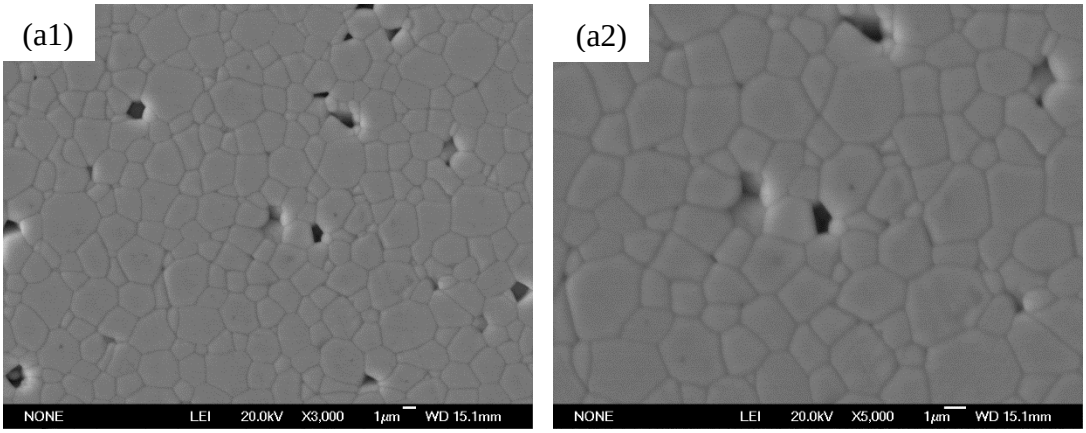
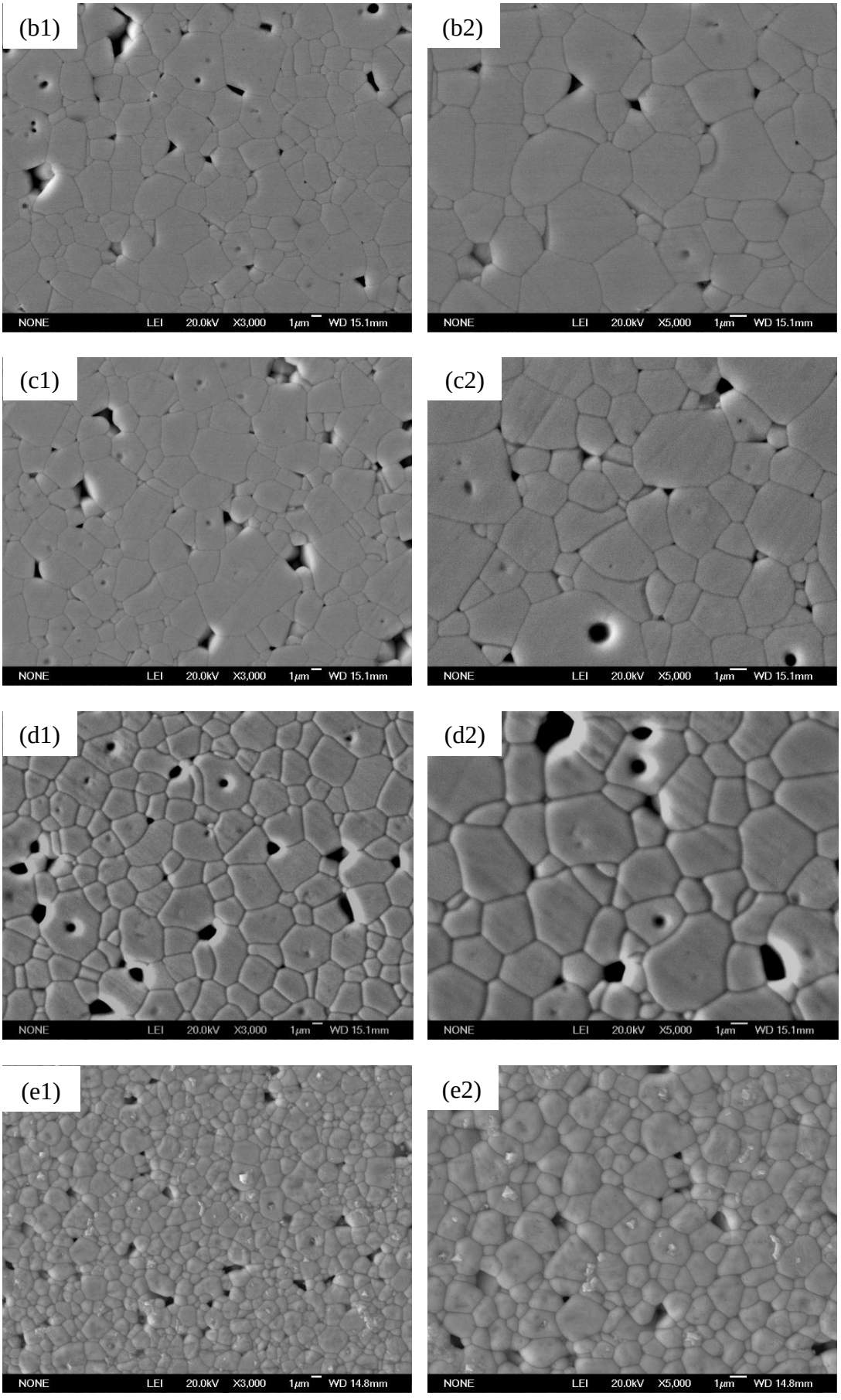


Fig. S1 XRD patterns of unpoled NBT-100xBFO: (a) x=0, (b) x=0.05, (c) x=0.1, (d) x=0.2, (e) x=0.3, (f) x=0.4, (g) x=0.5 and (h) x=0.6. The XRD data were obtained from crushed and annealed powders (annealing at 500 ºC for 30 min).

Fig.S2 depicts SEM images obtained from the polished and thermally-etched surface of NBT-100xBFO ceramics. All the samples demonstrate dense surface morphology.




(b1)
NONE LEI 20.0kV X3,000 1μm WD 15.1mm
(b2)
NONE LEI 20.0kV X5,000 1μm WD 15.1mm
(c1)
NONE LEI 20.0kV X3,000 1μm WD 15.1mm
(c2)
NONE LEI 20.0kV X5,000 1μm WD 15.1mm
(d1)
NONE LEI 20.0kV X3,000 1μm WD 15.1mm
(d2)
NONE LEI 20.0kV X5,000 1μm WD 15.1mm
(e1)
NONE LEI 20.0kV X3,000 1μm WD 14.8mm
(e2)
NONE LEI 20.0kV X5,000 1μm WD 14.8mm

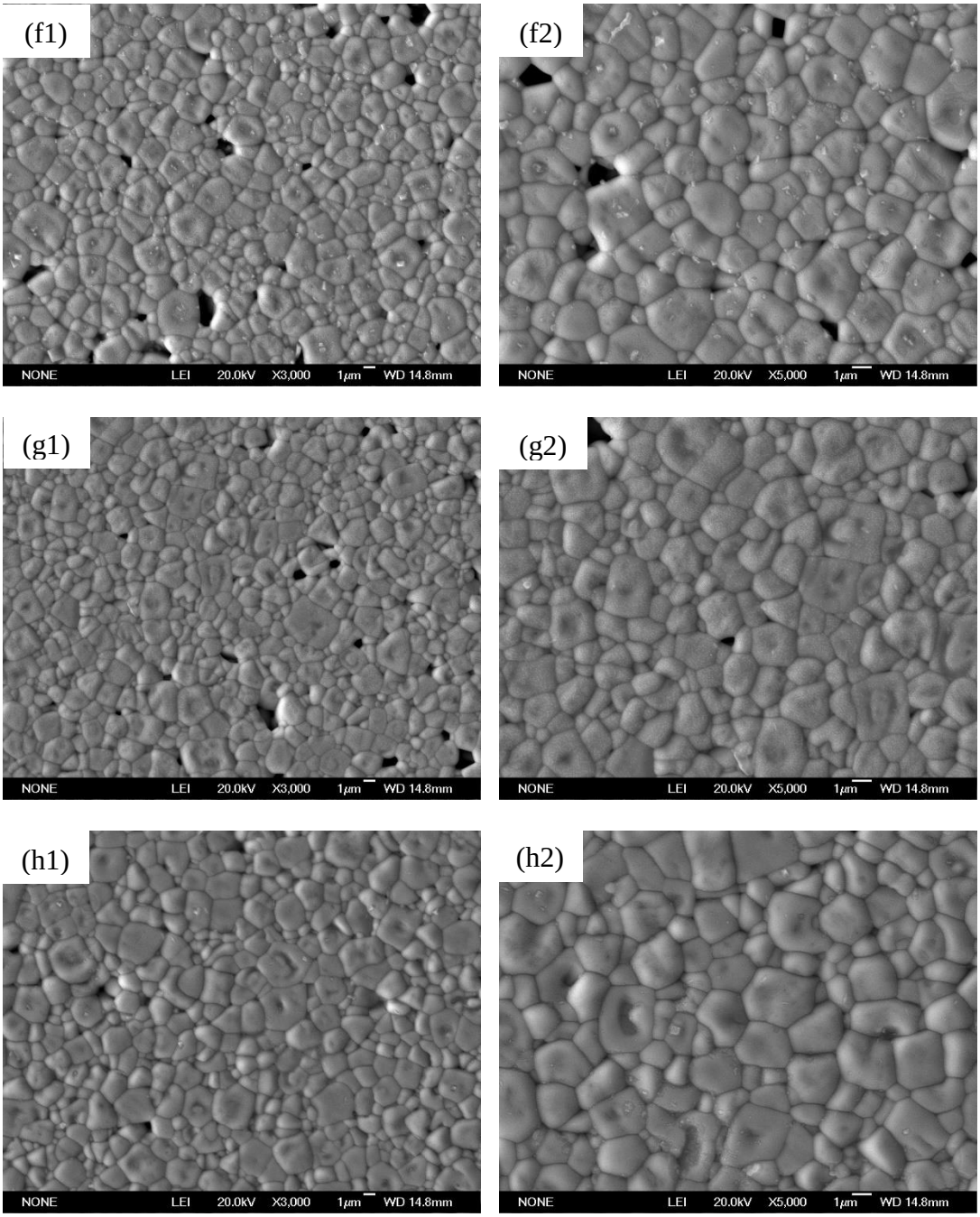


Fig. S2 SEM images of (a1, a2) NBT, (b1, b2) NBT-5BFO, (c1, c2) NBT-10BFO, (d1, d2) NBT-20BFO, (e1, e2) NBT-30BFO, (f1, f2) NBT-40BFO, (g1, g2) NBT-50BFO and (h1, h2) NBT-60BFO.

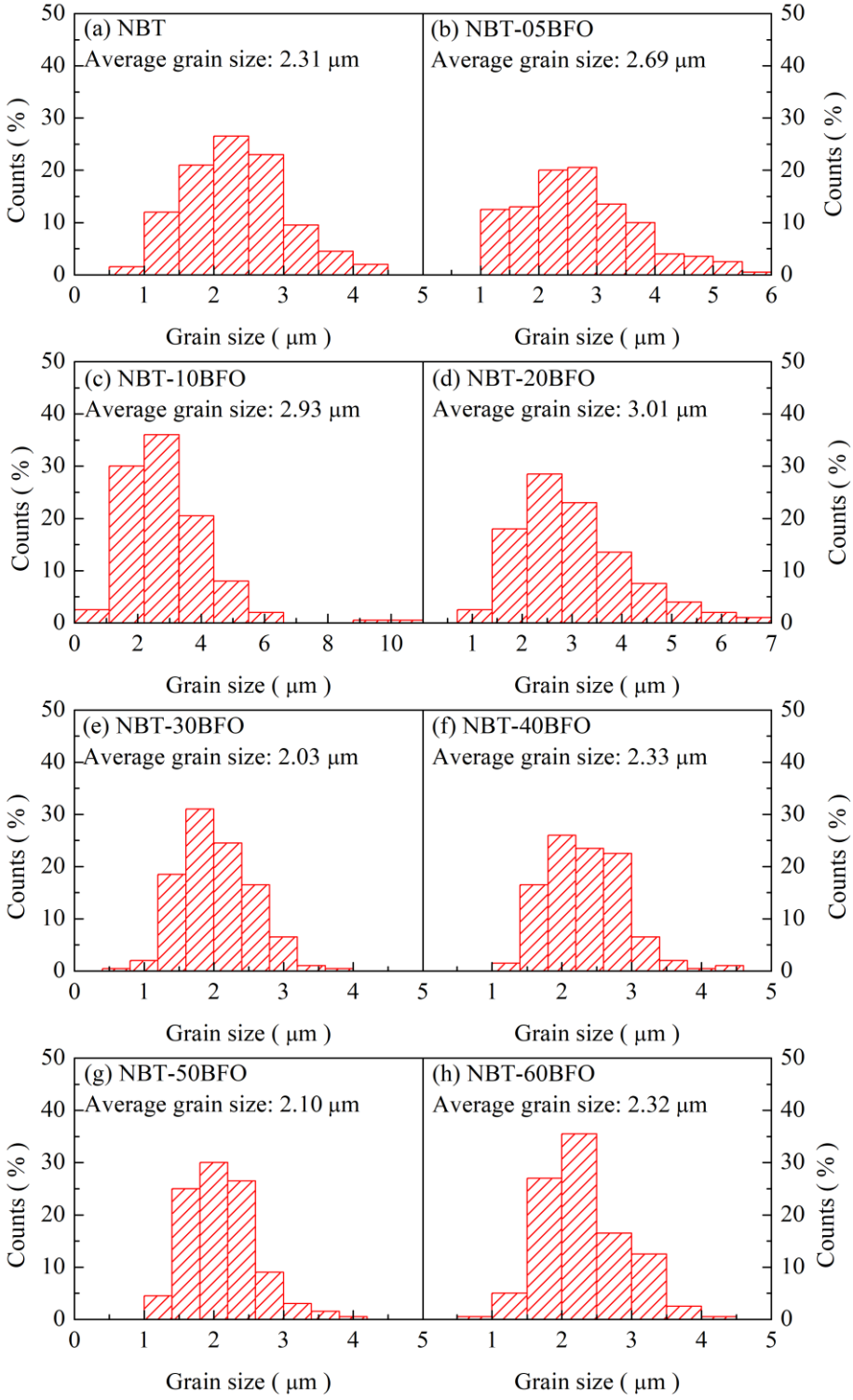


Fig. S3 Grain size distribution of (a) NBT, (a) NBT-5BFO, (c) NBT-10BFO, (d) NBT-20BFO, (e) NBT-30BFO, (f) NBT-40BFO, (g) NBT-50BFO and (h) NBT-60BFO.

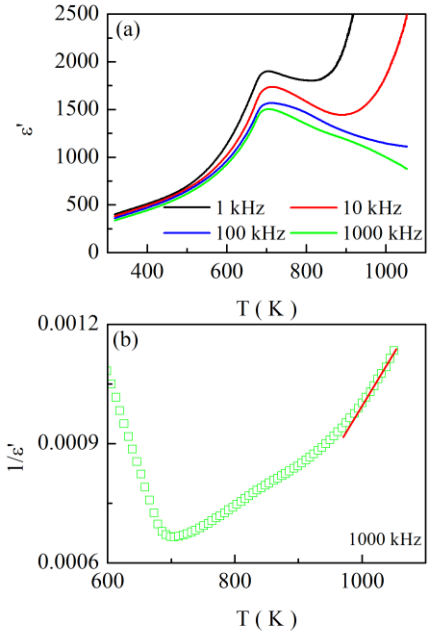


Fig. S4 (a) Temperature dependent ε' of unpoled NBT-50BFO at different frequencies, (b) 1/ε' as a function of temperature. The solid line is the fitting line from the Curie-Weiss law.

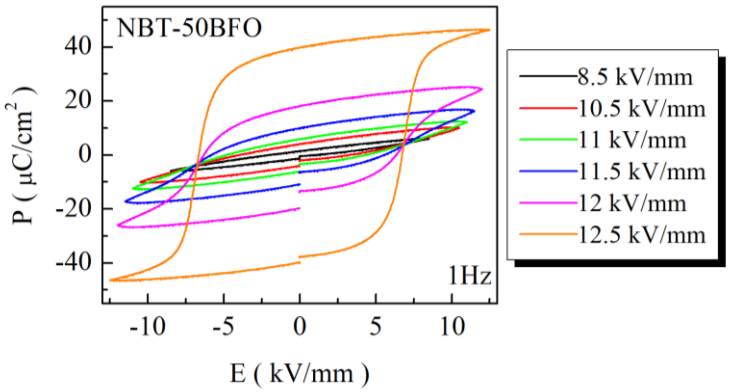


Fig. S5 P-E loops of NBT-50BFO under different electric fields at 1 Hz.

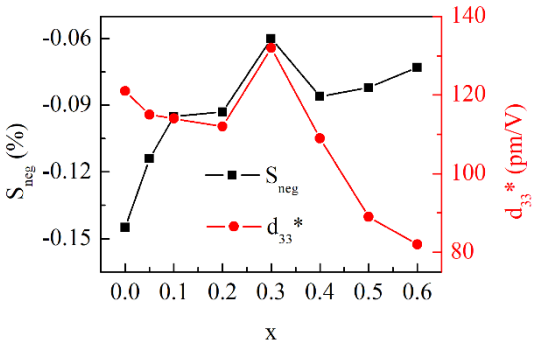


Fig. S6 S_{neg} and d_{33}^* of NBT-100xBFO. d_{33}^* is calculated by dividing S_{max} with E_{max} in Fig. 4.

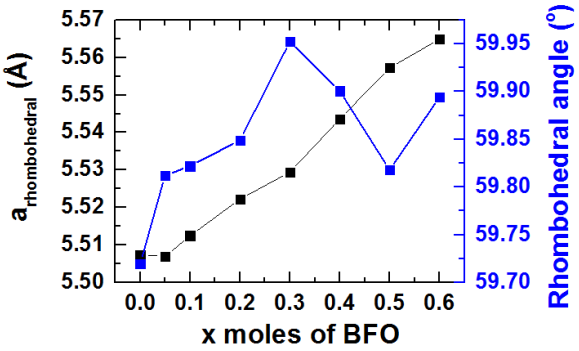


Fig. S7 Rhombohedral lattice parameters obtained from the transformation of the hexagonal setting of *R*3*c*