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Supplementary Informations:

Enhanced energy storage properties in a novel lead-free ceramic with multilayer structure

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Table S1 Comparison the energy storage properties of lead free ceramics that prepared by different methods

Methods	Composition	W_{rec} (J/cm^3)	E_b (kV/cm)	η (%)	Ref.
Ion substitutions or solid solution	$Na_{1/2}(Bi_{0.98}Gd_{0.02})_{1/2}TiO_3$	0.85	90	65	[40]
	$[Bi_{0.5}(Na_{0.82}K_{0.18})_{0.5}]_{0.97}La_{0.03}Ti_{0.97}Zr_{0.03}O_3$	0.84	80	-	[41]
	$Bi_{0.4}La_{0.1}(Na_{0.82}K_{0.18})_{0.5}Ti_{0.96}Zr_{0.02}Sn_{0.02}O_3$	1.95	155	71	[42]
	$0.90(Bi_{0.5}Na_{0.5}TiO_3\text{-}BaTiO_3)\text{-}0.10NaTaO_3$	1.2	100	74.8	[32]
	$0.5SrTiO_3\text{-}0.5(0.95Bi_{0.5}Na_{0.5}TiO_3\text{-}0.05BaAl_{0.5}Nb_{0.5}O_3)$	1.89	190	77	[11]
	$0.75Bi_{0.5}Na_{0.5}TiO_3\text{-}0.25BaSnO_3$	1.91	190	86.4	[43]
	$0.92(0.65BaTiO_3\text{-}0.35Bi_{0.5}Na_{0.5}TiO_3)\text{-}0.08Na_{0.73}Bi_{0.09}NbO_3$	1.70	172	82	[44]
Additives	$0.55Bi_{0.5}Na_{0.5}TiO_3\text{-}0.45Ba_{0.85}Ca_{0.15}Ti_{0.85}Zr_{0.1}Sn_{0.05}O_3$-5wt%MgO	1.62	189.7	79.51	[45]
	$0.95(Na_{0.5}Bi_{0.5})TiO_3\text{-}0.05BaTiO_3$+3 mol%($BaO\text{-}B_2O_3\text{-}SiO_2$)	0.68	65	71	[46]
	$Bi_{0.487}Na_{0.427}K_{0.06}Ba_{0.026}TiO_3$-x wt%$CeO_2$	0.94	75	54	[13]
Composites	$SrTiO_3/(0.94Bi_{0.5}Na_{0.5}TiO_3\text{-}0.06BaTiO_3)$	2.41	237	68	This work

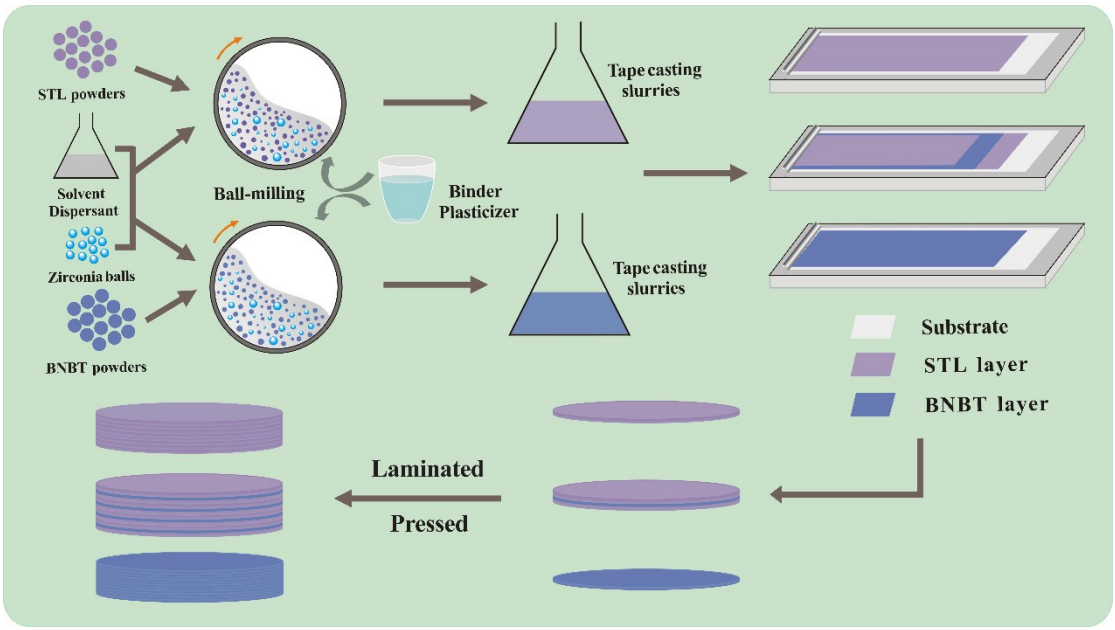

Figure S1 Schematic drawing of the fabrication process for STL ceramic, BNBT ceramic and STL/BNBT multilayer ceramic

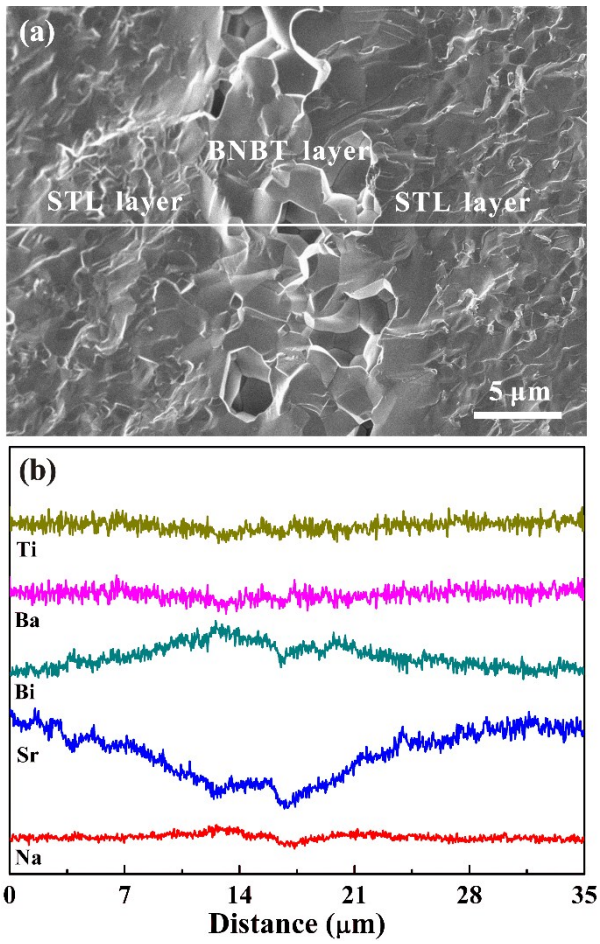

Figure S2(a) SEM and (b) EDS analysis results of STL/BNBT multilayer ceramic

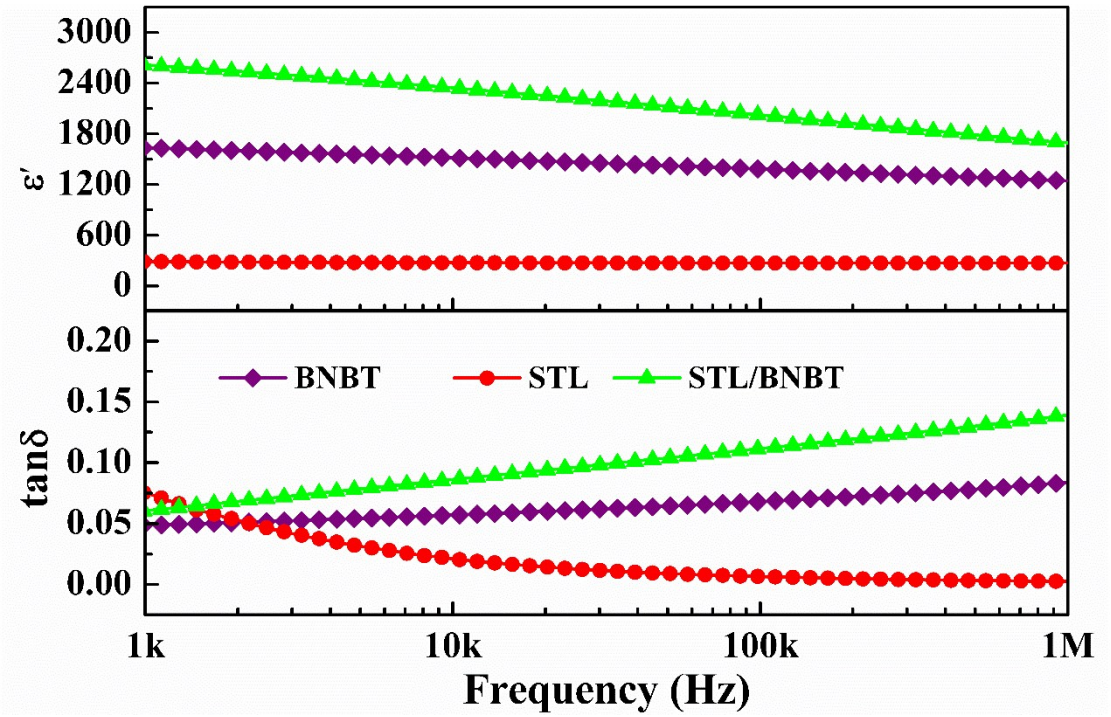

Figure S3 Frequency dependent dielectric constant (ε′) and dielectric loss (tanδ) for STL ceramic, BNBT ceramic and STL/BNBT multilayer ceramic at room temperature

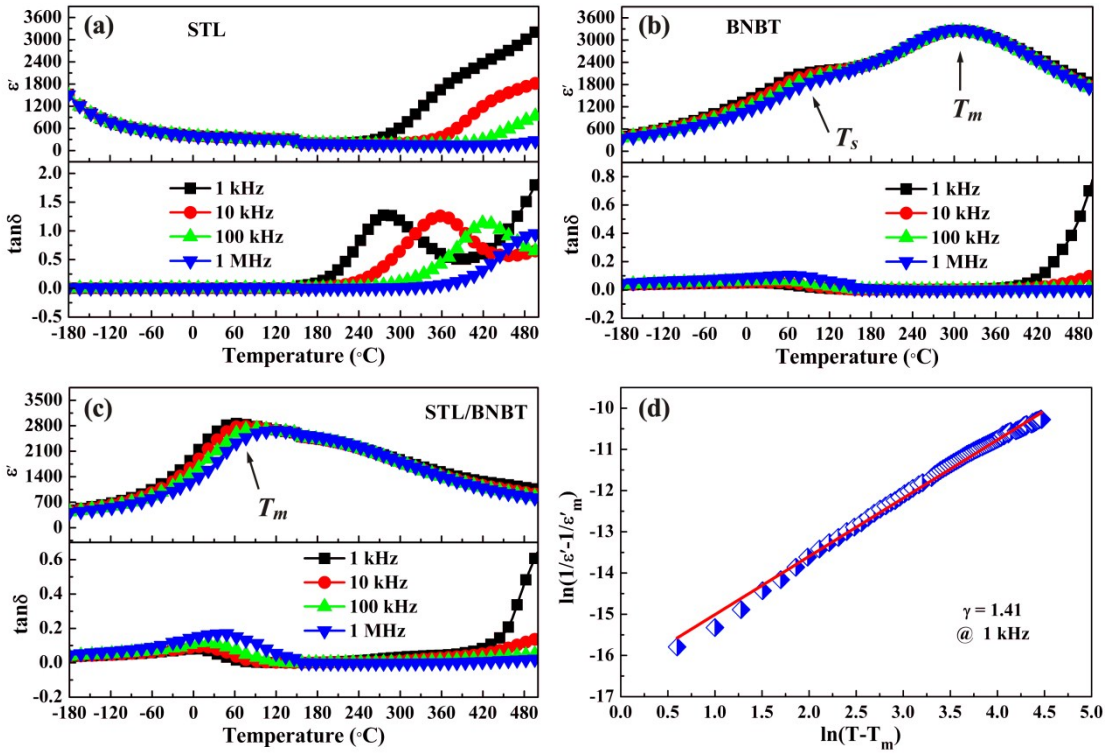

Figure S4(a)-(c) Temperature dependent dielectric constant (ε′) and dielectric loss (tanδ) for STL ceramic, BNBT ceramic and STL/BNBT multilayer ceramic at room temperature from 1 kHz to 1 MHz; (d) Plot of $ln(1/\varepsilon'-1/\varepsilon'_m)$ as a function of $ln(T-T_m)$ for STL/BNBT multilayer ceramic (Symbols: experimental date; solid line: fit)

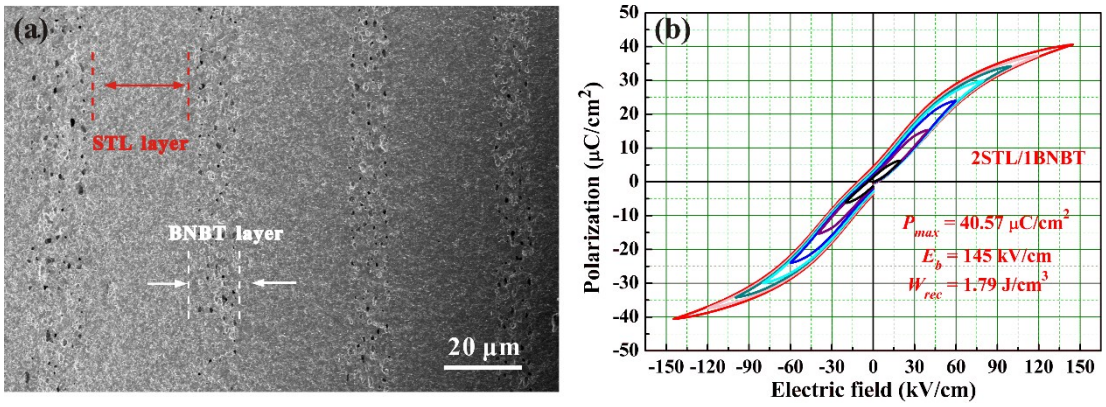

Figure S5 (a) Cross-section image of the 2STL/1BNBT multilayer ceramic; (b) *P-E* loops of the 2STL/1BNBT multilayer ceramic