Supporting Information

Optimized energy storage performance in $(Ba_{0.8}Sr_{0.2})TiO_3$-based ceramics via $Bi(Zn_{0.5}Hf_{0.5})O_3$-doping

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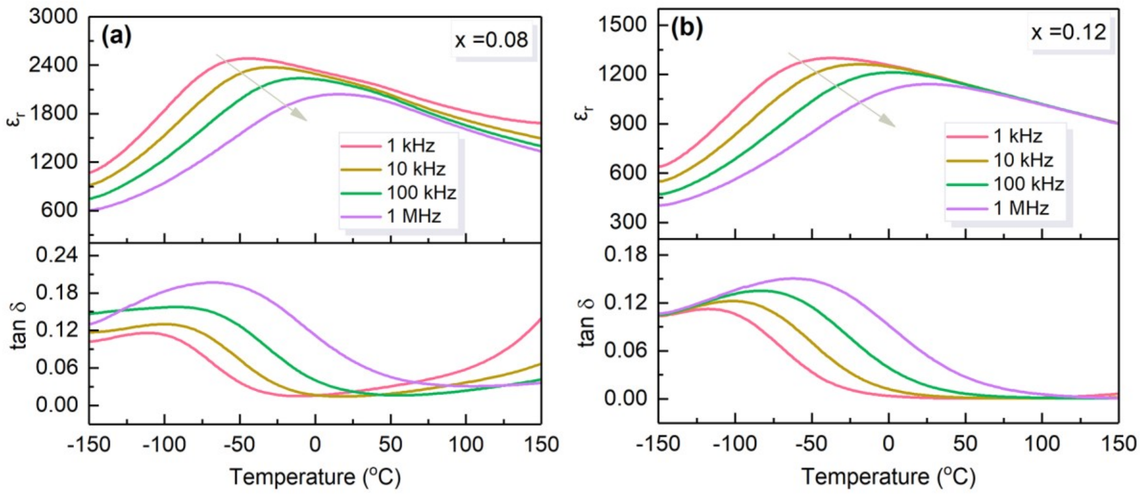

Fig. S1 Temperature-dependent ε_r and tanδ with different frequencies for (a) x = 0.08 and (b) x =0.12 ceramics.

Table S1 Comparison of E_b, W_{rec}, and η between this work and other bulk ceramic capacitors.

Compositions	E_b (kV/cm)	W_{rec} (J/cm^3)	η (%)	Ref.
$Ba_{0.4}Sr_{0.6}TiO_3$	167.2	1.081	73.78	[S1]

$0.75(Ba_{0.4}Sr_{0.6})TiO_3$-$0.25Bi_{0.5}Na_{0.5}TiO_3$	360	3.89	83.8	[S2]
$(Ba_{0.4}Sr_{0.6})TiO_3$-9wt%(Bi_2O_3-B_2O_3-SiO_2)	279	1.98	90.57	[S3]
$0.8Ba_{0.2}Sr_{0.8}TiO_3$-$0.2Bi(Mg_{0.5}Zr_{0.5})O_3$+2%SrO-$B_2O_3$-ZnO	285	2.13	94.1	[S4]
$0.775(Ba_{0.4}Sr_{0.6})TiO_3$-$0.225Bi(Zn_{2/3}Nb_{1/3})O_3$	170	0.62	92.9	[S5]
$Ba_{0.65}Sr_{0.35}TiO_3$	75	0.2812	78.67	[S6]
$0.88Ba_{0.8}Sr_{0.2}TiO_3$-$0.12BiTaO_3$	130	0.526	98	[S7]
$(Ba_{0.4}Sr_{0.6})TiO_3$ (MWS)	180	1.15	82	[S8]
$(Ba_{0.6}Sr_{0.4})_{1-1.5x}Bi_xTi_{1-x}(Mg_{1/3}Nb_{2/3})_xO_3$ (x = 0.9)	390	3.74	77	[S9]
99wt%$Ba_{0.4}Sr_{0.6}TiO_3$-1wt%Al_2O_3	300	1.69	83.6	[S10]
$Ba_{0.3}Sr_{0.7}TiO_3$+2% BBSZ	160	0.63	91.6	[S11]
95wt%$Ba_{0.4}Sr_{0.6}TiO_3$-5wt%MgO	300	1.5	88.5	[S12]
$Ba_{0.3}Sr_{0.7}TiO_3$-3wt% SiO_2	380	1.52	82.2	[S13]
$0.88Ba_{0.4}Sr_{0.6}TiO_3$- $0.12Bi_{0.5}La_{0.5}(Zn_{0.5}Sn_{0.5})O_3$	480	2.76	92	[S14]
99.5wt%$Ba_{0.4}Sr_{0.6}TiO_3$-0.5 wt%SiO_2	134	0.86	79	[S15]
$0.7Ba_{0.55}Sr_{0.45}TiO_3$-$0.3Bi_{0.5}Na_{0.5}TiO_3$	206	1.73	84.4	[S16]
$0.72(0.5(Ba_{0.4}Sr_{0.6}TiO_3)$-$0.5(Bi_{0.5}Na_{0.5}TiO_3))$-$0.28Ca_{0.85}Bi_{0.1}TiO_3$	166	2.2	73.2	[S17]
$0.93Ba_{0.55}Sr_{0.45}TiO_3$- $0.07BiMg_{2/3}Nb_{1/3}O_3$	450	4.55	81.8	[S18]
$0.1Bi(Mg_{2/3}Nb_{1/3})O_3$-$0.9(Ba_{0.8}Sr_{0.2})TiO_3$	250	2.03	96.8	[S19]
$0.9(Ba_{0.9}Sr_{0.1})TiO_3$-$0.1Bi(Mg_{0.5}Zr_{0.5})O_3$	180	2.1	88	[S20]
$Ba_{0.4}Sr_{0.6}(Ti_{0.996}Mn_{0.004})O_3$-2 wt% MgO	300	2.014	88.6	[S21]

$Ba_{0.67-x}Y_xSr_{0.33}Ti_{0.995}Mn_{0.005}O_3$ (x=0.012)	150	0.95	91	[S22]
$0.8Ba_{0.4}Sr_{0.6}TiO_3$-$0.2Sr_{0.7}Bi_{0.2}TiO_3$	300	3.3	85	[S23]
$0.6(Ba_{0.75}Sr_{0.25})TiO_3$–$0.4Bi(Mg_{0.5}Hf_{0.5})O_3$	390	4.3	92	[S24]
$Ba_{0.4}Sr_{0.6}TiO_3$+ZnO-Li_2O	198.8	0.564	87.7	[S25]
$Ba_{0.4}Sr_{0.6}TiO_3$+ Al_2O_3-SiO_2	169	0.39	92.1	[S25]
$0.9Ba_{0.65}Sr_{0.35}TiO_3$–$0.1Bi(Mg_{2/3}Nb_{1/3})O_3$	400	3.34	85.71	[S26]
$0.8Ba_{0.4}Sr_{0.6}TiO_3$–$0.2Bi(Mg_{0.5}Ti_{0.5})O_3$	300	2.118	93	[S27]
$Ba_{0.3}Sr_{0.475}La_{0.12}Ce_{0.03}Ti_{1-x}Mn_xO_3$(x = 0.003)	247	0.953	93	[S28]
$Ba_{0.6}Sr_{0.34}Ce_{0.04}TiO_3$	235	1.75	85	[S29]
$(Ba_{0.3}Sr_{0.7})_{0.5}(Bi_{0.5}Na_{0.5})_{0.5}TiO_3$	100	1.04	77	[S30]
$Ba_{0.4}Sr_{0.6}TiO_3$-8 mol% SiO_2	400	1.6	90.9	[S31]
$Ba_{0.4}Sr_{0.6}TiO_3$ (SPS)	240	1.23	94.52	[S32]
$Ba_{0.4}Sr_{0.6}TiO_3$ + 2 wt% SrO–B_2O_3–SiO_2	90	0.44	67.4	[S33]
$Ba_{0.4}Sr_{0.6}Zr_{0.15}Ti_{0.85}O_3$ + 5 wt% SrO–B_2O_3–SiO_2	127	0.45	88.2	[S34]
$Ba_{0.5}Sr_{0.5}TiO_3$-1 wt% SiO_2	290	2.0	80	[S35]
$0.91(Ba_{0.8}Sr_{0.2})TiO_3$-$0.09Bi(Zn_{2/3}Ta_{1/3})O_3$	460	5.53	93.6	[S36]
$0.90(Ba_{0.8}Sr_{0.2})TiO_3$-$0.10Bi(Zn_{1/2}Hf_{1/2})O_3$	450	4.20	95.5	This work

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