Supporting Information for Electrocaloric refrigeration capacity in BNT-based ferroelectrics benefiting from low depolarization temperature and high breakdown electric field

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Table S1: Lattice parameters and refined structure parameters of BNT-BZ$_x$T: yAlN (x = 0.1-0.3, y = 0, 0.2, 0.25, 0.3 wt%) ceramics.

Sample	Space group	a (Å)	c (Å)	Sig	R_{wp} (%)
x = 0.1, y = 0	*P*4mm (52.4%)	3.9055	3.9515	1.643	6.503
	*R*3c (47.6%)	5.5499	13.4678		
x = 0.2, y = 0	*P*4mm (42.6%)	3.9165	3.9549	1.404	5.974
	*R*3c (57.4%)	5.5507	13.3292		
x = 0.3, y = 0	*P*4mm (42%)	3.9262	3.9571	1.37	5.943
	*R*3c (58%)	5.5237	13.6079		
x = 0.2,	*P*4mm (43.4%)	3.9145	3.9547	1.568	6.3
y = 0.2 wt%	*R*3c (56.6%)	5.5374	13.4187		
x = 0.2,	*P*4mm (43.4%)	3.9117	3.9531	1.531	6.39
y = 0.25 wt%	*R*3c (56.6%)	5.5309	13.4138		
x = 0.2,	*P*4mm (38.8%)	3.9137	3.9583	1.578	6.42
y = 0.3 wt%	*R*3c (61.2%)	5.5363	13.3927		

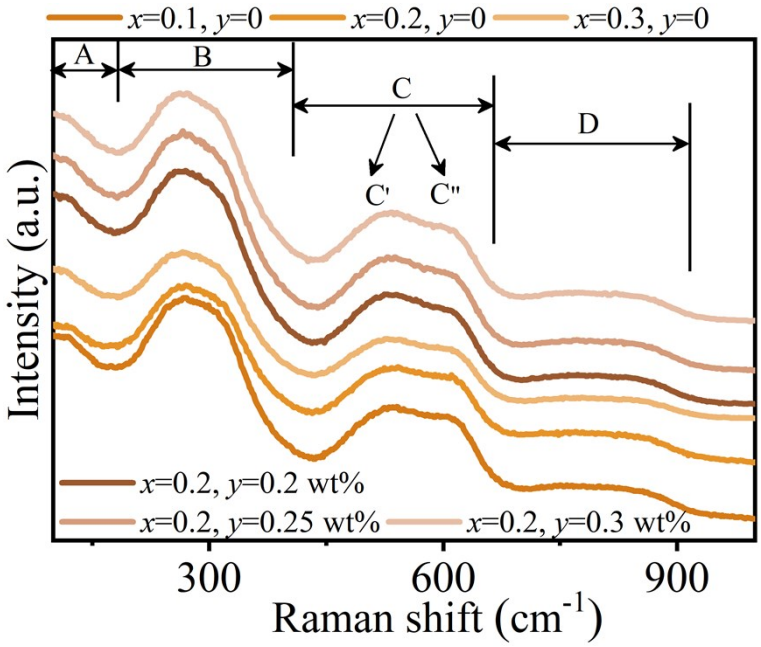

Fig. S1. Raman spectra of BNT-BZ$_x$T: yAlN (x = 0.1-0.3, y = 0, 0.2, 0.25, 0.3 wt%) ceramics.

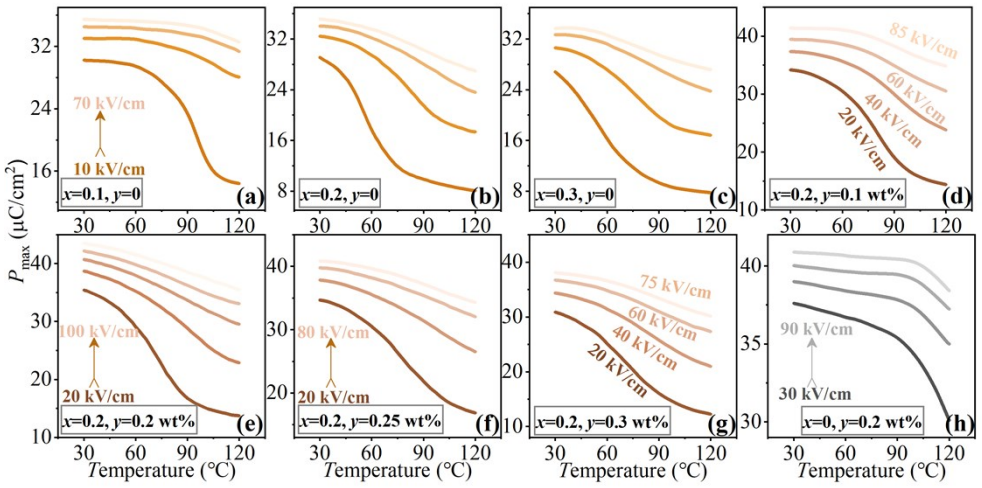

Fig. S2. P_{max}-T curves for BNT-BZ$_x$T: yAlN ceramics with (a) x = 0.1, y = 0, (b) x = 0.2, y = 0, (c) x = 0.3, y = 0, (d) x = 0.2, y = 0.1 wt%, (e) x = 0.2, y = 0.2 wt%, (f) x = 0.2, y = 0.25 wt%, (g) x = 0.2, y = 0.3 wt%, and (h) x = 0, y = 0.2 wt% under different electric fields.

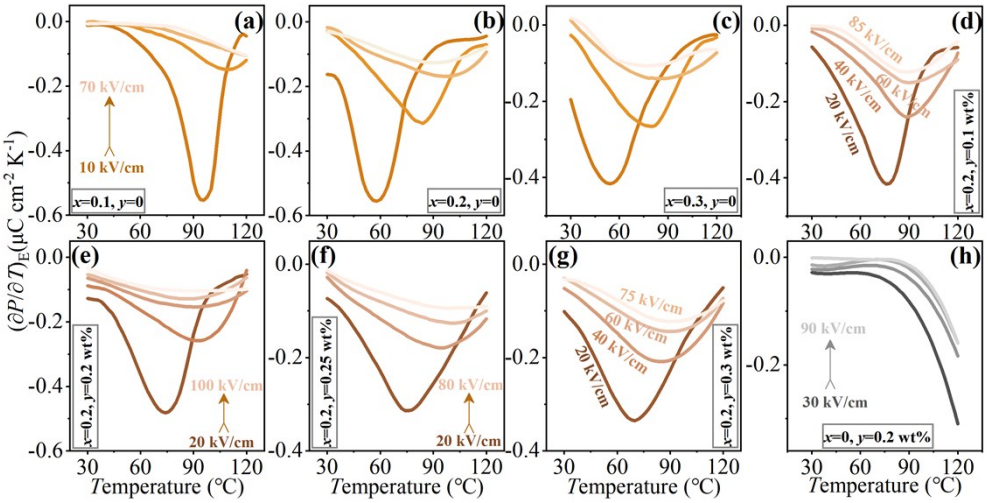

Fig. S3. Plots of $(\partial P/\partial T)_E$-$T$ for BNT-BZ$_x$T: yAlN ceramics with (a) x = 0.1, y = 0, (b) x = 0.2, y = 0, (c) x = 0.3, y = 0, (d) x = 0.2, y = 0.1 wt%, (e) x = 0.2, y = 0.2 wt%, (f) x = 0.2, y = 0.25 wt%, (g) x = 0.2, y = 0.3 wt%, and (h) x = 0, y = 0.2 wt% under different electric fields.

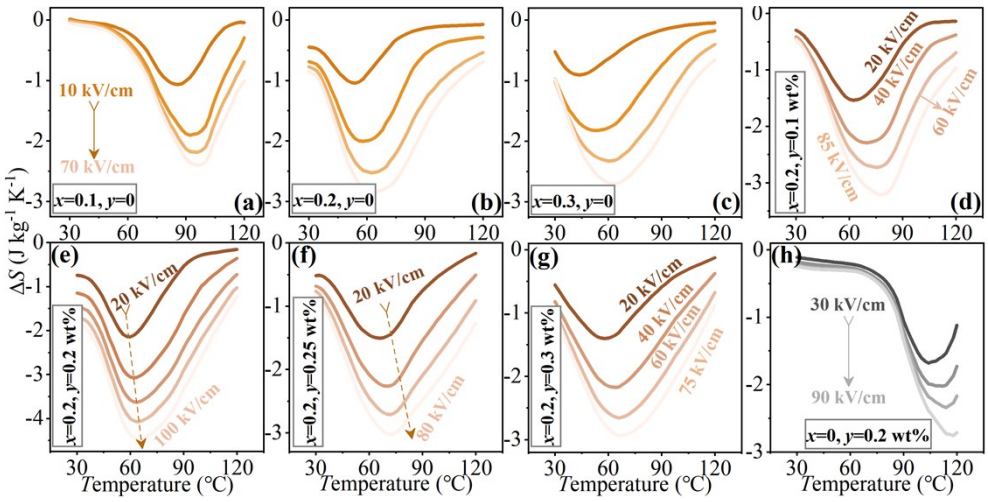

Fig. S4. Plots of Δ*S*-*T* for BNT-BZ$_x$T: *y*AlN with (a) $x = 0.1$, $y = 0$, (b) $x = 0.2$, $y = 0$, (c) $x = 0.3$, $y = 0$, (d) $x = 0.2$, $y = 0.1$ wt%, (e) $x = 0.2$, $y = 0.2$ wt%, (f) $x = 0.2$, $y = 0.25$ wt%, (g) $x = 0.2$, $y = 0.3$ wt%, and (h) $x = 0$, $y = 0.2$ wt% under different electric fields.