

# Effect of A- or B-Site Sc Doping on Sintering Temperature, Crystal Structure, Microstructure, and Properties of $\text{BaZr}_x\text{Ti}_{1-x}\text{O}_3$ Ceramics

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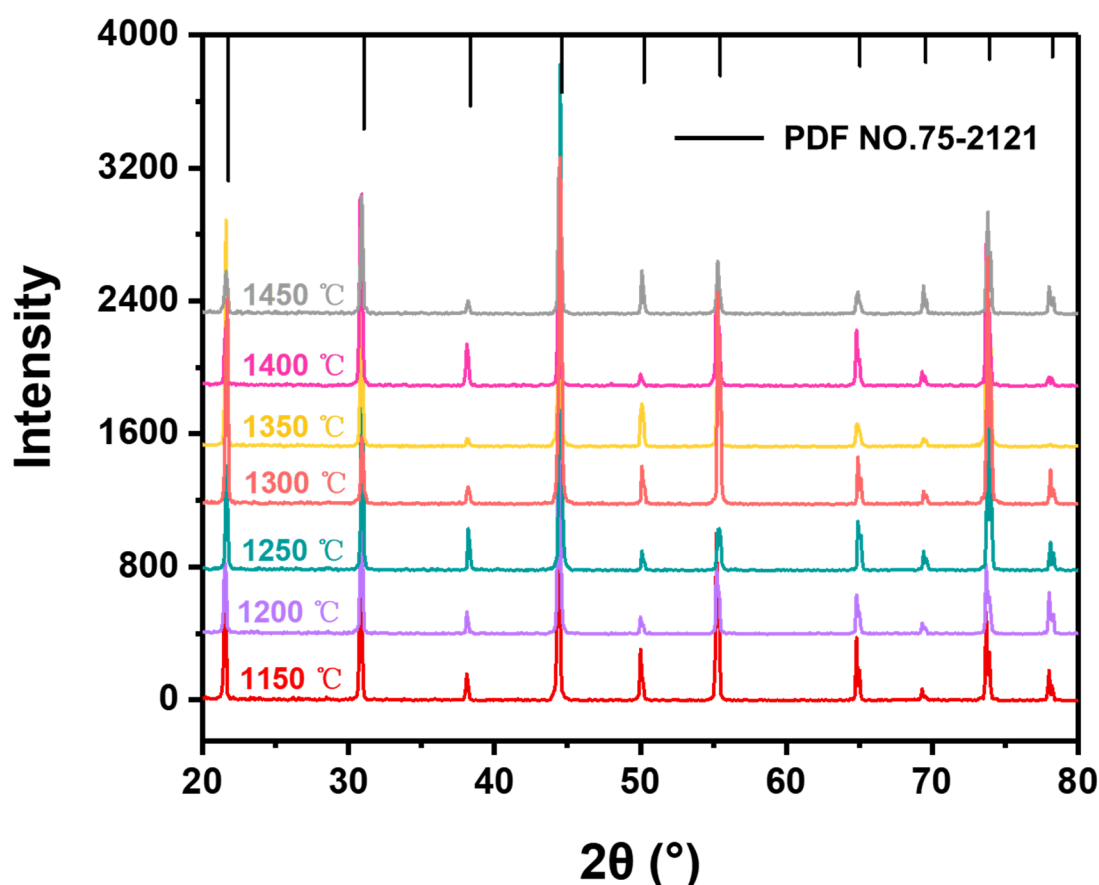
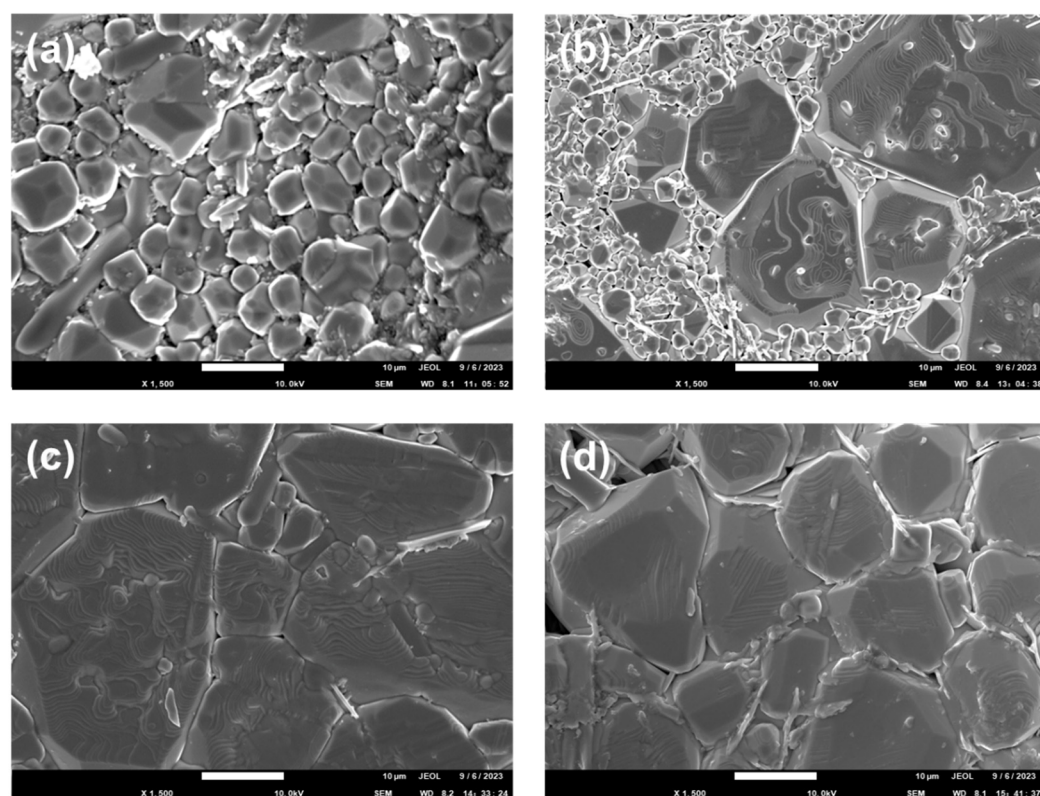
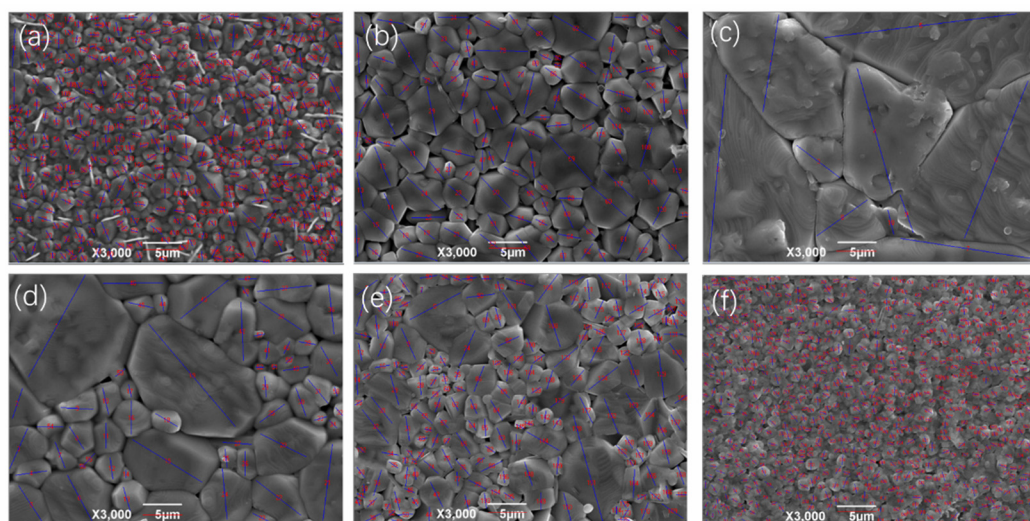
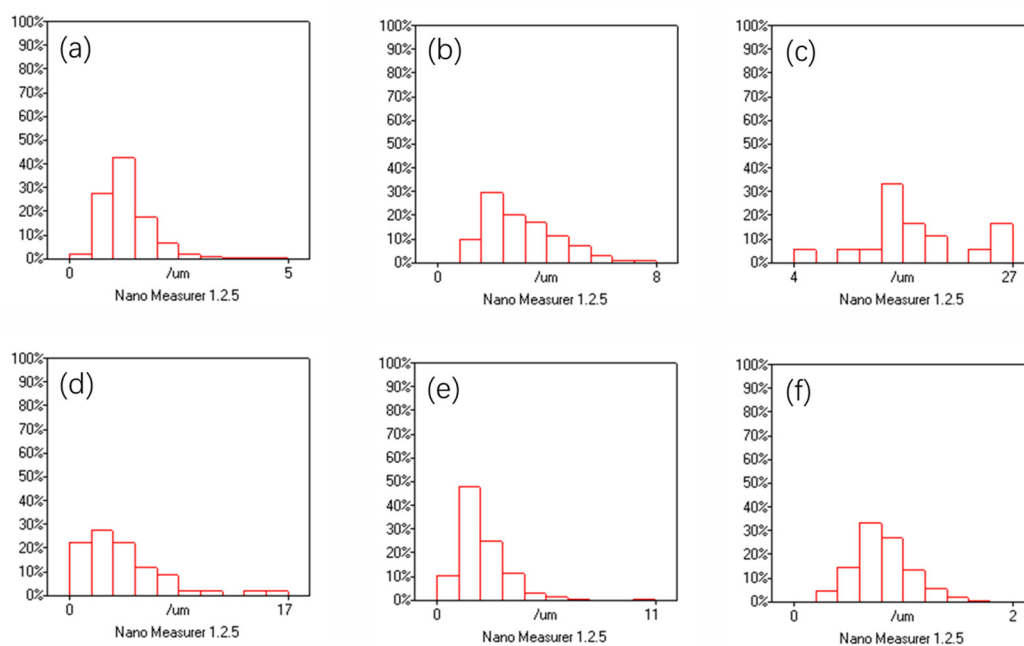


Figure S1. XRD patterns for the BZT-1.5mol % ceramics at different sintering temperatures.

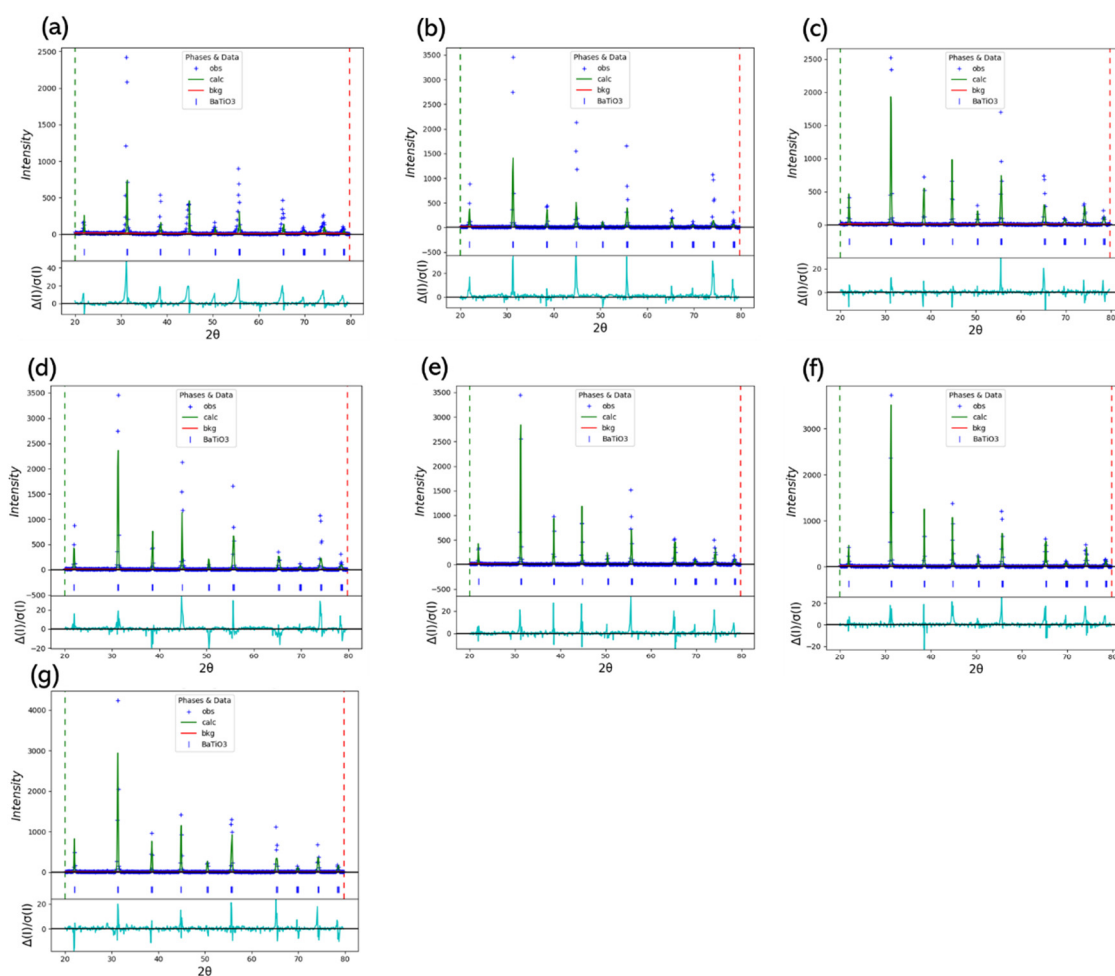


**Figure S2.** SEM images of BZT-1.5 % mol ceramics at sintering temperature of (a) 1150, (b) 1200, (c) 1250 and (d) 1350 °C.

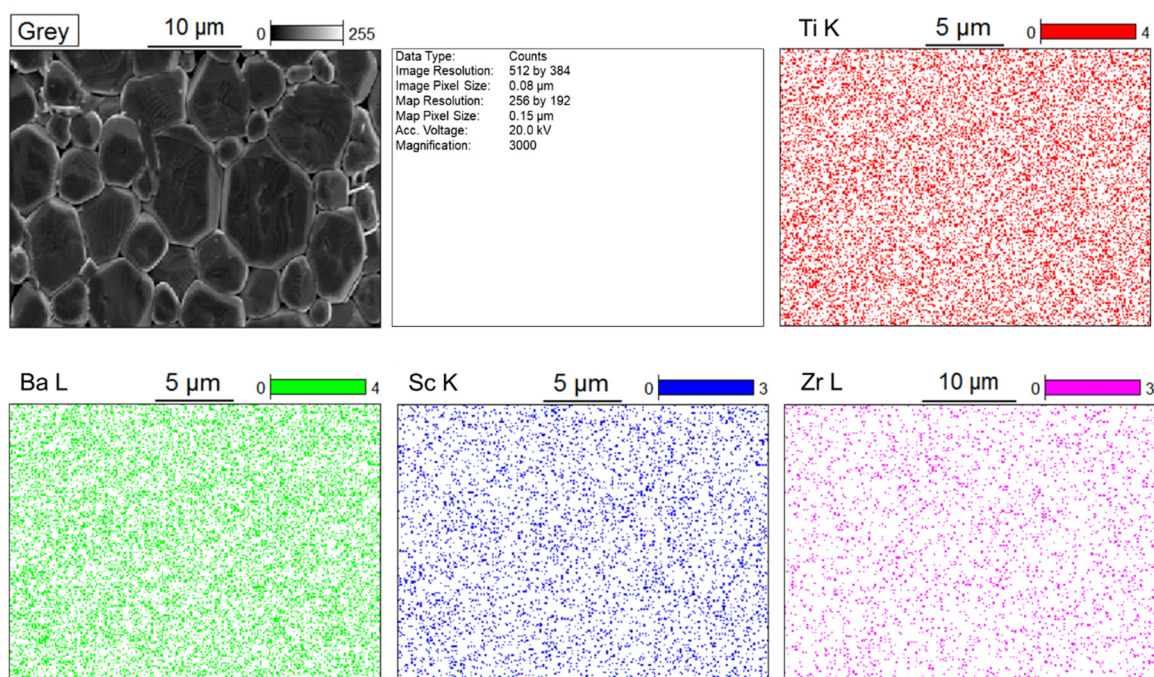




**Figure S3.** SEM images of BZT-x % mol ceramics (a) 0% mol, (b) 0.5% mol, (c) 1.0% mol, (d) 1.5 % mol, (e) 2.0% mol and (f) 2.5 mol and statistical chart.



**Figure S4.** Rietveld refined room temperature XRD patterns for the BZT-x % mol ceramics. (a) 0% mol, (b) 0.25% mol, (c) 0.5% mol, (d) 1.0% mol, (e) 1.5 % mol, (f) 2.0% mol and (g) 2.5 mol.



**Figure S5.** EDX map of 2.0% mol-BZT ceramics and correlation test parameter.

**Table S1.** Lattice constants fitting precision parameters of x-mol-BZT ceramics refined by Rietveld method.

Sc Content (%)	a = b	c	Reliability Factors		
			$R_{wp}$	$R_p$	$\chi^2$
0 mol %	4.026819	4.078185	5.17%	4.26%	5.327
0.25 mol %	4.028764	4.083561	6.18%	4.15%	5.128
0.5 mol %	4.029351	4.096825	5.79%	3.78%	4.462
1.0 mol %	4.030215	4.091254	5.62%	3.53%	3.735
1.5 mol %	4.032451	4.083463	6.27%	3.57%	4.177
2.0 mol %	4.034568	4.076389	5.36%	3.43%	3.642
2.5 mol %	4.035672	4.071268	4.17%	3.17%	2.873

**Table S2.** The content of elements is determined by EDX test.

Element	Weight %	Weight Error (%)
O	17.41	+/- 0.51
Ti	19.06	+/- 0.82
Zr	6.27	+/- 0.43
Ba	56.41	+/- 1.61
Sc	0.85	+/- 0.35
Total	100.00	