

Supplementary Information

Exceptional Dielectric and Varistor Properties of Sr, Zn and Sn Co-doped Calcium Copper Titanate Ceramics

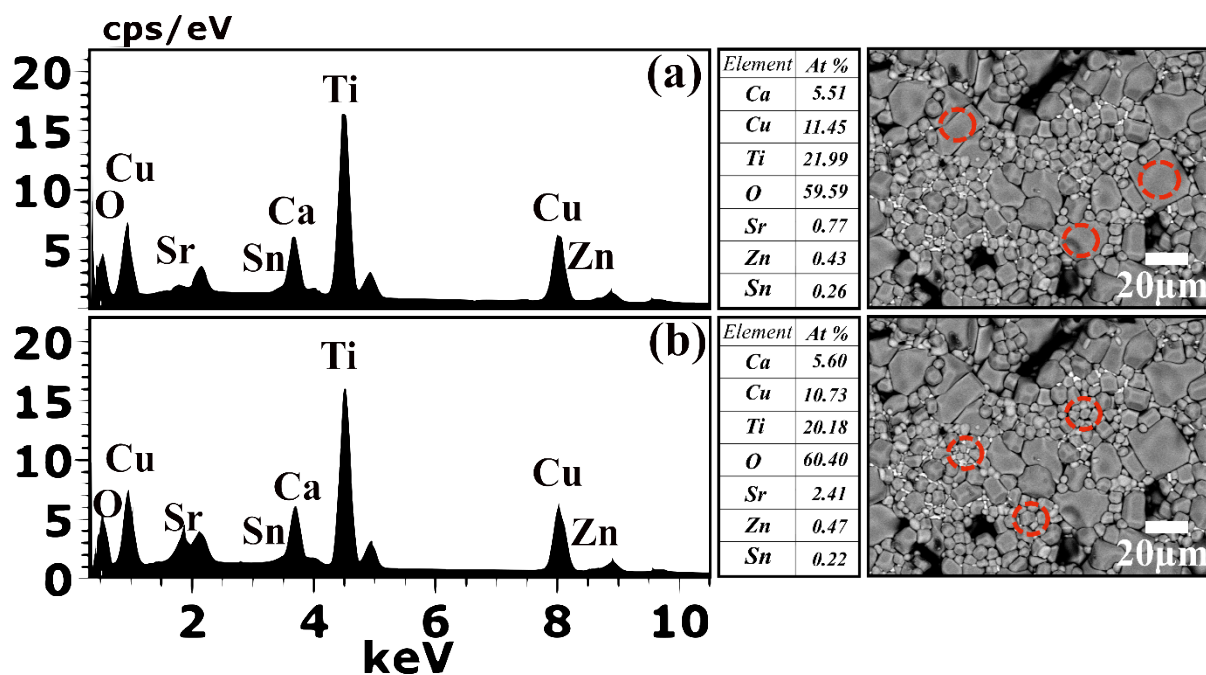


Fig. S1 EDS spectra of SZS1 ceramics obtained at (a) bigger grains, (b) smaller grain regions. The marked regions in SEM images correspond to EDS spectra recorded and At% of the corresponding elements presented here.

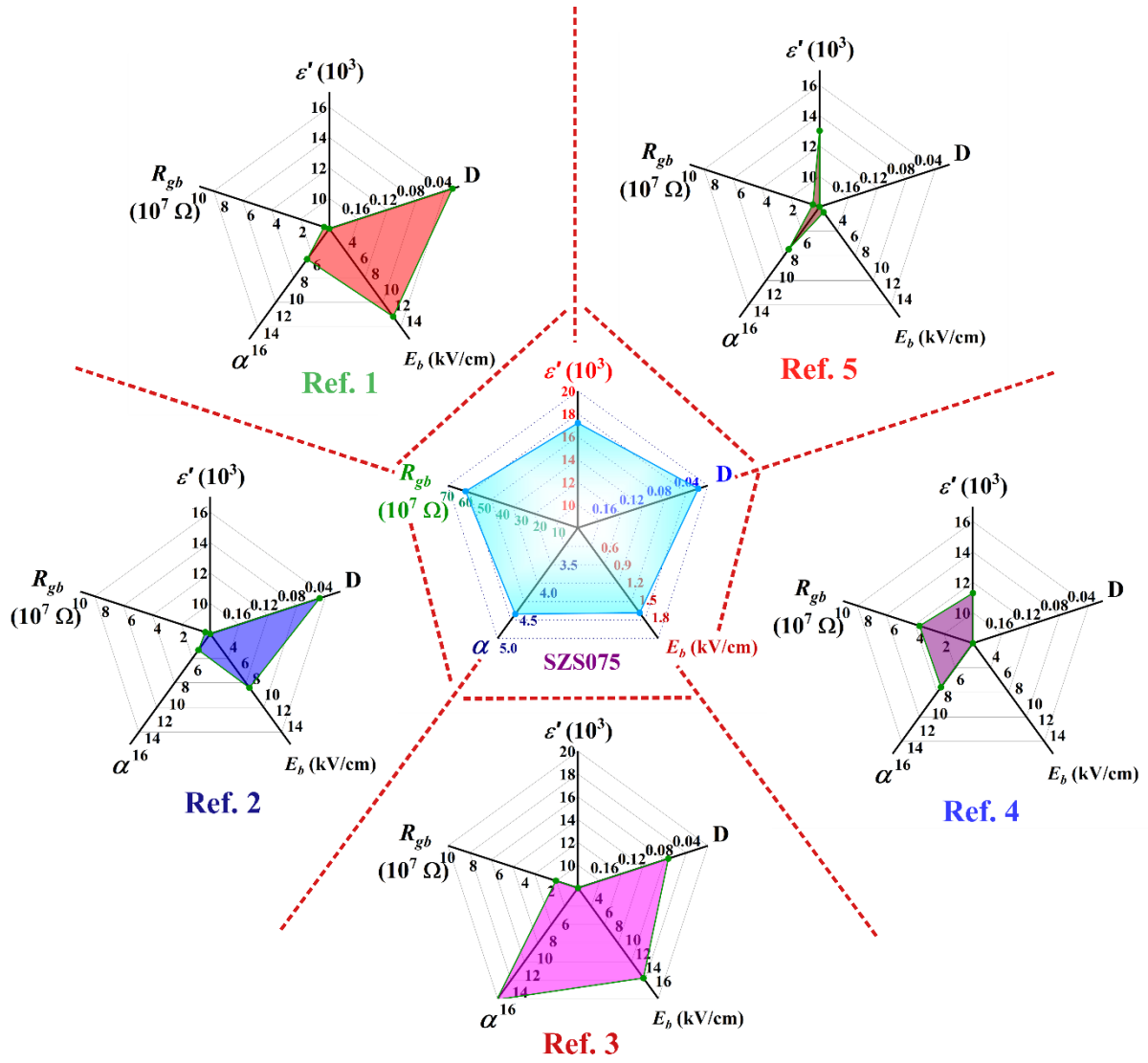


Fig. S2 Radar charts generated based on the recent literature and current experimental data SZS075.

Table S1. Dielectric constant, Dielectric loss and non-linear coefficient values of the present work and CCTO related materials reported recently.

Reference	ϵ'	$D(1\text{kHz})$	$R_{gb}(\Omega)$	α	$E_b(\text{kV/cm})$
Ref. 1	3000	0.02	4.0×10^6	6.59	12.13
Ref. 2	4020	0.04	3.8×10^6	4.91	7.83
Ref. 3	2000	0.068	1.7×10^7	16.11	14.03
Ref. 4	11352	0.2	4.1×10^7	8.16	1.0
Ref. 5	13000	0.1	5.2×10^6	8	1.7
Present work (SZS075)	17100	0.024	6.05×10^8	4.56	1.56

References

- (1) C. Xu, X. Zhao, L. Ren, J. Sun, L. Yang, J. Guo and R. Liao, *J. Alloys Compd.* 2019, **792**, 1079–1087.
- (2) L. Ren, L. Yang, C. Xu, X. Zhao and R. Liao, *J. Alloys Compd.* 2018, **768**, 652–658.
- (3) P. Mao, J. Wang, L. He, L. Zhang, A. Annadi, F. Kang, Q. Sun, Z. Wang and H. Gong, *ACS Appl. Mater. Interfaces*, 2020, **12**, 48781–48793.
- (4) E. C. Grzebielucka, J. F. Leandro Monteiro, E. C. de Souza, C. P. Ferreira Borges, A. V. de Andrade, E. Cordoncillo, H. Beltrán-Mir and S. R. Antunes, *J. Mater. Sci. & Technology*, 2020, **41**, 12–20.
- (5) S. Rhouma, A. Megriche, M. El Amrani, S. Said, S. Roger and C. Autret-Lambert, *J. Mater. Sci. Mater. Electron.* 2022, **33**, 4535–4549.