

Impact of Particle and Crystallite Size of $\text{Ba}_{0.6}\text{Sr}_{0.4}\text{TiO}_3$ on the Dielectric Properties of BST/P(VDF-TrFE) Composites in Fully Printed Varactors

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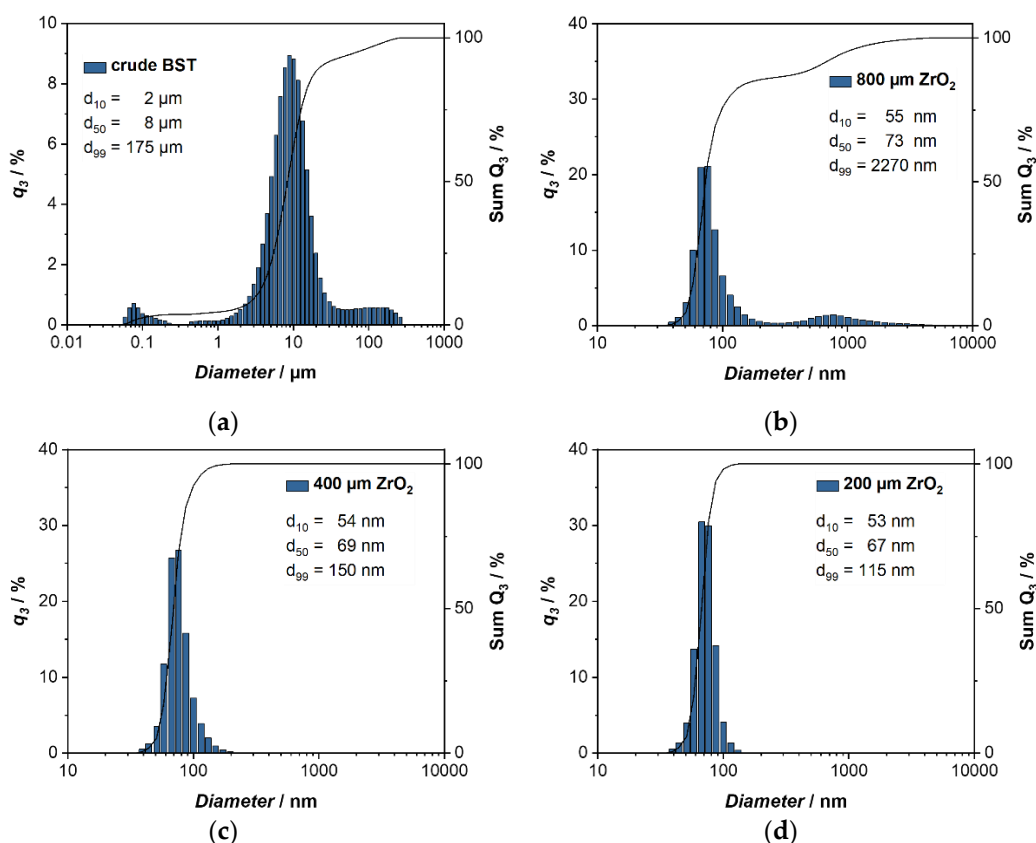


Figure S1. Particle size distribution of (a) the crude BST and the suspensions milled with (b) 800 μm , (c) 400 μm and (d) 200 μm ZrO_2 grinding media.

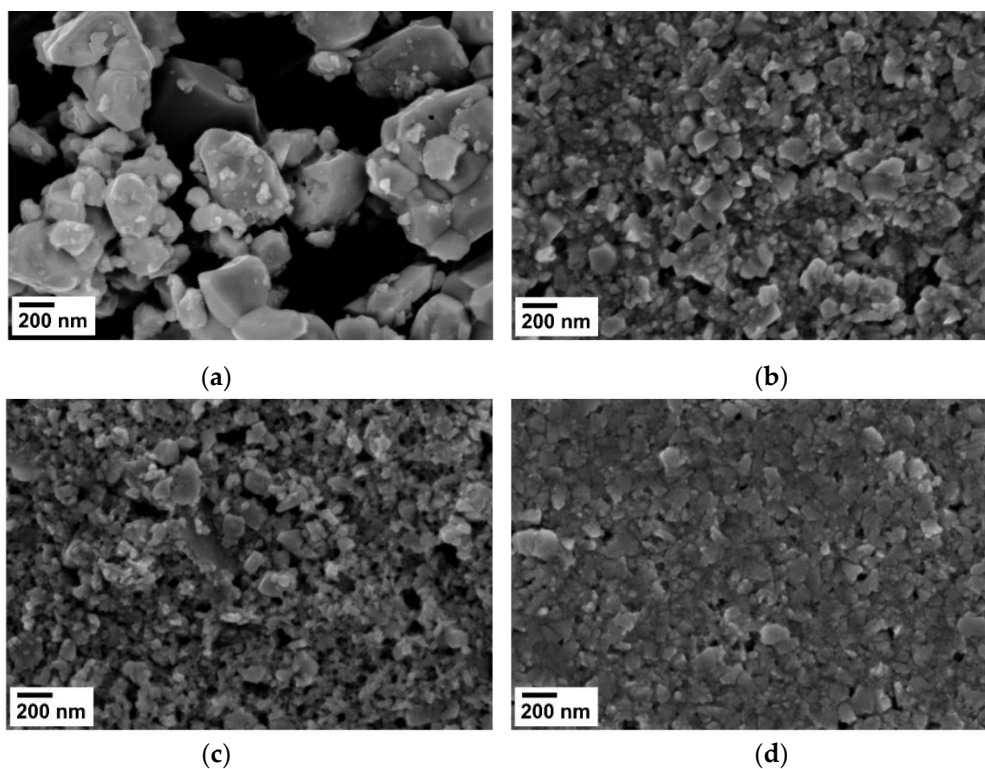


Figure S2. SEM images of (a) the crude BST and the powders milled with (b) 800 μm , (c) 400 μm and (d) 200 μm ZrO_2 grinding media.

Table S1. Thermal treatment tests ranging from RT and 500 – 1100 $^{\circ}\text{C}$ with crystallite sizes and lattice constants for BST particles milled by 400 μm ZrO_2 grinding media.

Temperature / $^{\circ}\text{C}$	Crystallite size / nm	Lattice constant / \AA
RT	19 ± 0.2	3.965
500	20 ± 0.1	3.965
600	24 ± 0.2	3.965
700	29 ± 0.2	3.967
800	33 ± 0.3	3.968
900	41 ± 0.5	3.969
1000	53 ± 0.8	3.969
1100	73 ± 1.3	3.970

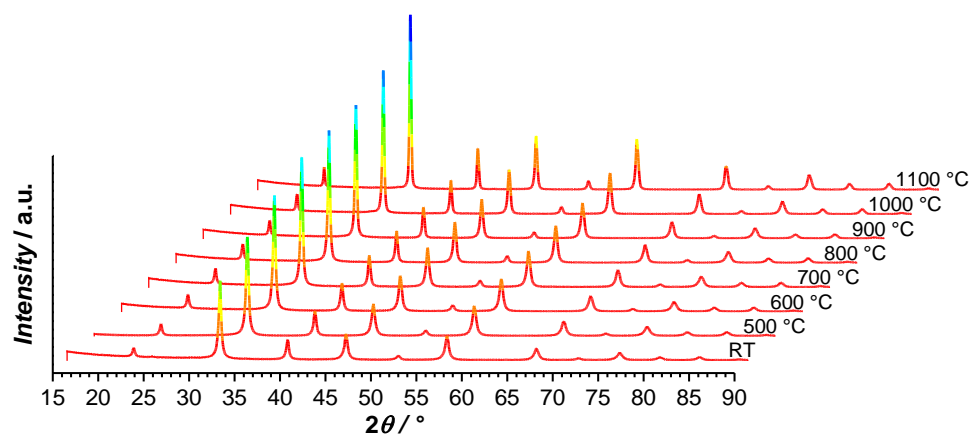


Figure S3. XRD data of the thermal treatment tests ranging from RT and 500 – 1100 °C for BST particles milled by 400 μm ZrO_2 grinding media.

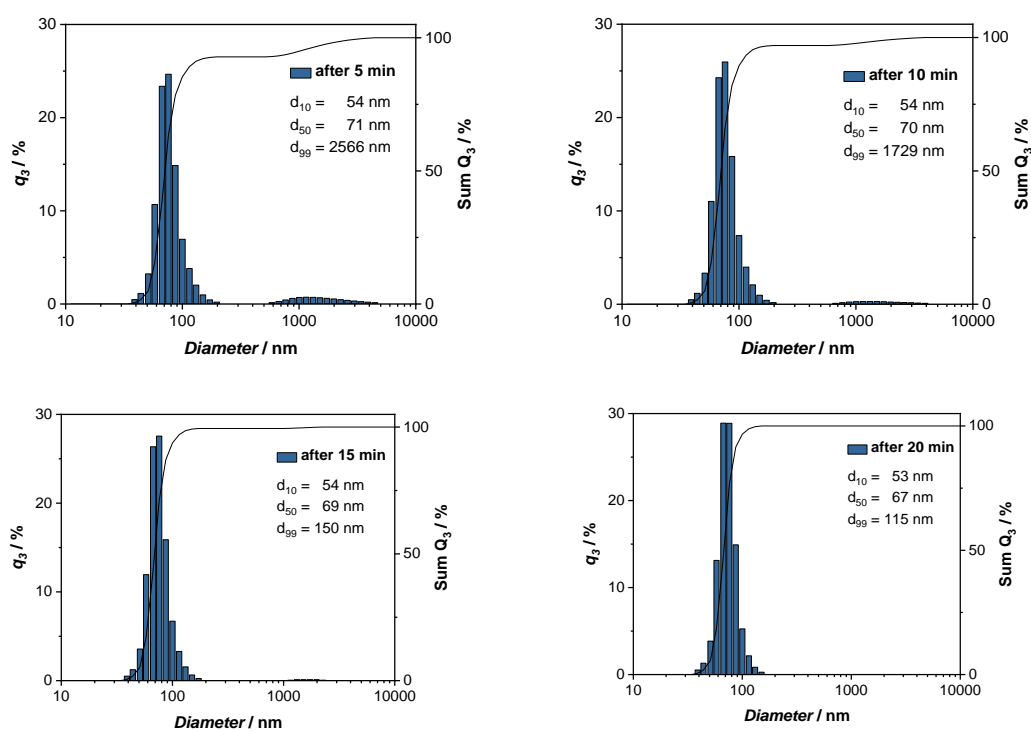


Figure S4. Development of the particle size distribution of BST-A1 over time.

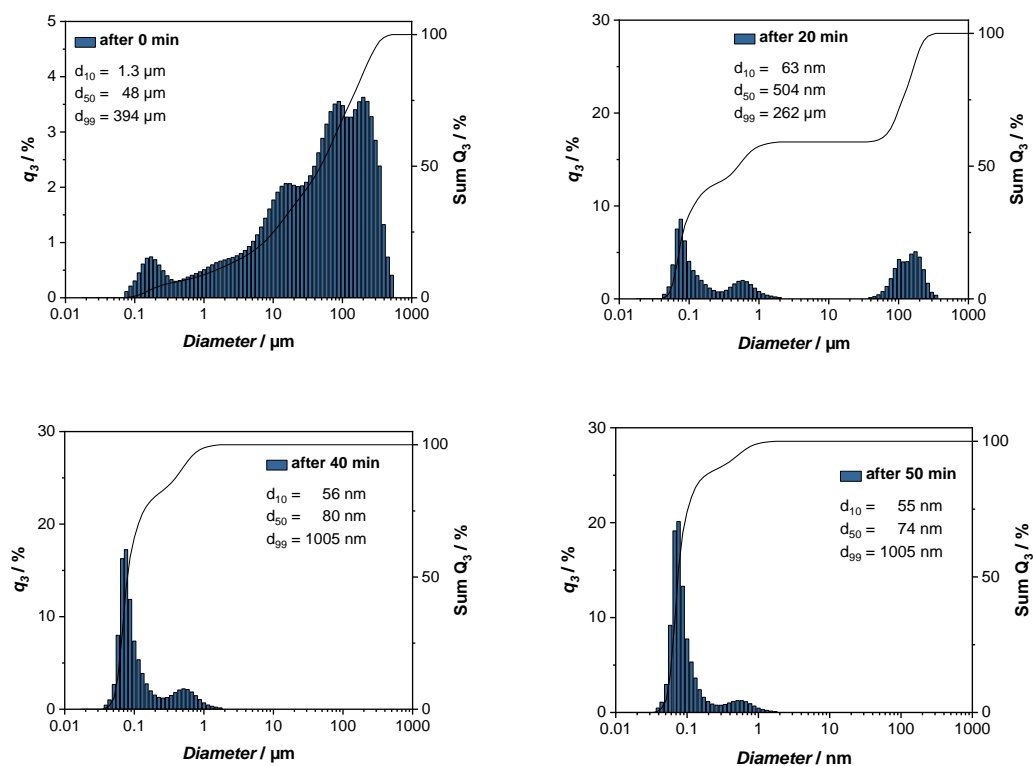


Figure S5. Development of the particle size distribution of BST-C3 over time.

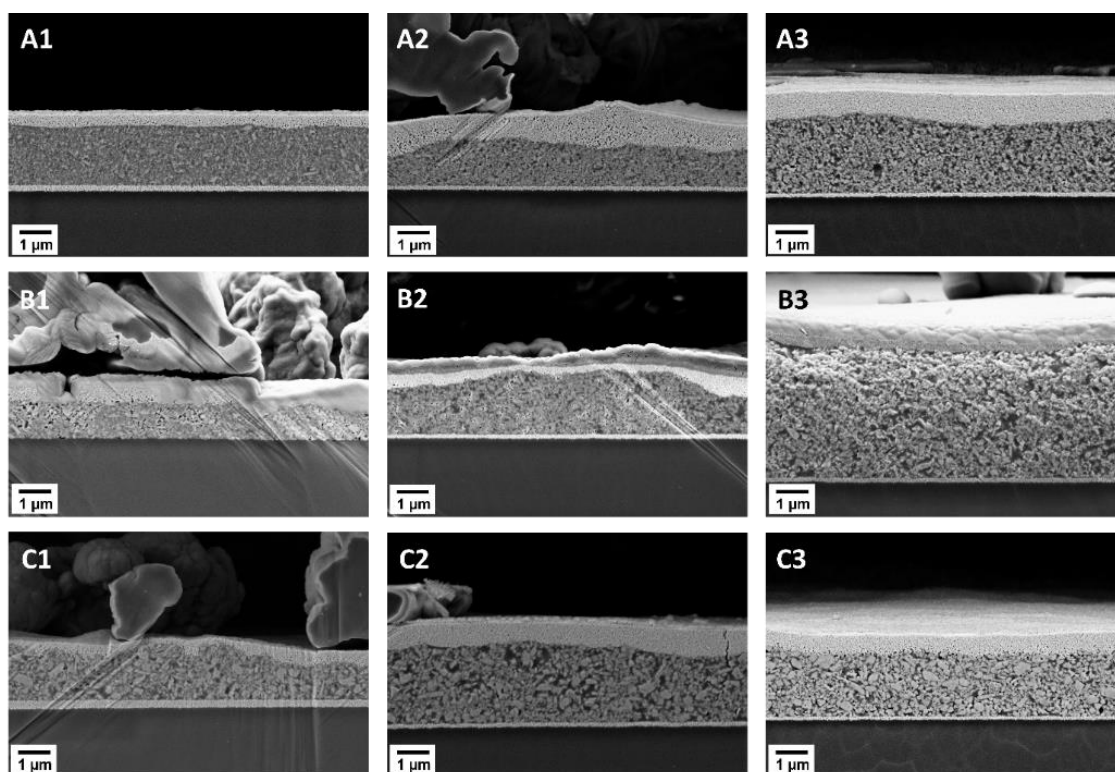


Figure S6. Summary of the cross section of the varactors A1 – C3.

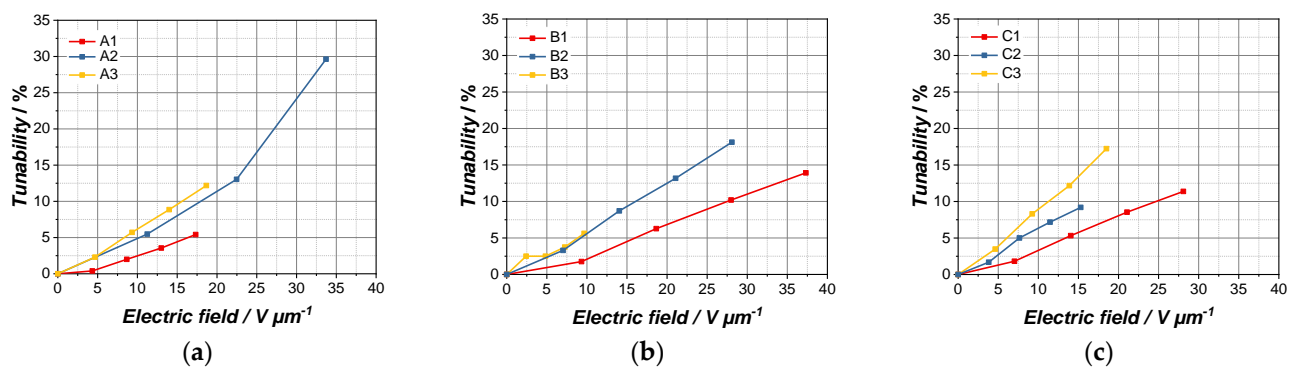


Figure S7. Depiction of the tunabilities of the varactors dependent on the electric field for the (a) A-group, (b) B-group and (c) C-group.