

# Supplementary Materials: Effect of Al<sub>2</sub>O<sub>3</sub> and ZrO<sub>2</sub> Filler Material on the Microstructural, Thermal and Dielectric Properties of Borosilicate Glass-Ceramics

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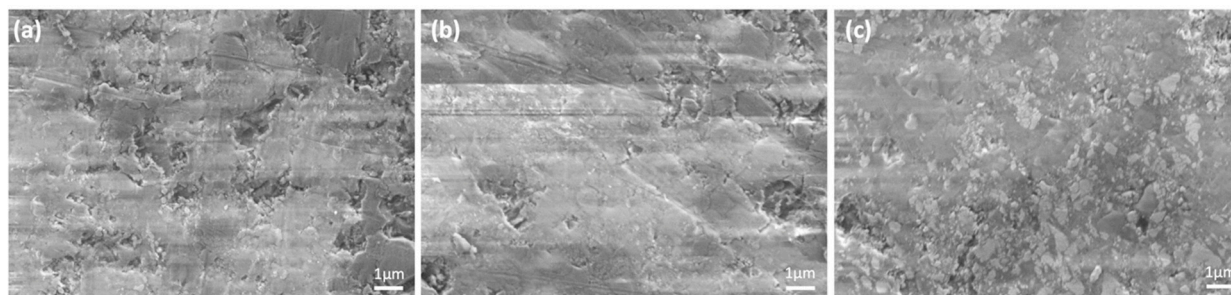
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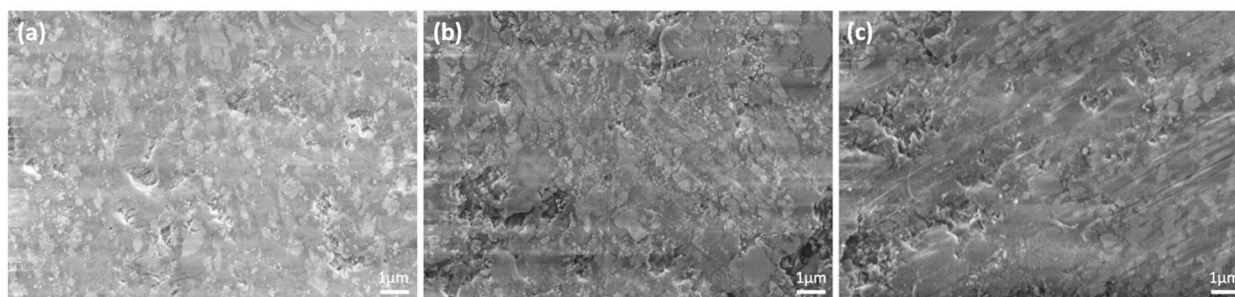
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**Table S1.** PDF card numbers and their corresponding crystal structures.

PDF card number	Chemical formula	Mineral name	Crystal structure
9007635	Al <sub>2</sub> O <sub>3</sub>	Corundum	Hexagonal
9006525	Al <sub>2</sub> O <sub>5</sub> Si	Silimanite	Orthorhombic
8104264	ZrO <sub>2</sub>	-	Monoclinic
9000713	Al <sub>2</sub> O <sub>5</sub> Si	Silimanite	Orthorhombic



**Figure S1.** SEM images of sintered glass ceramics at 20.00 KX a) 30Al-O, b) 40Al-O, c) 50Al-O.



**Figure S2.** SEM images of sintered glass ceramics at 20.00 KX a) 30Zr-Ar, b) 40Zr-Ar, c) 50Zr-Ar.

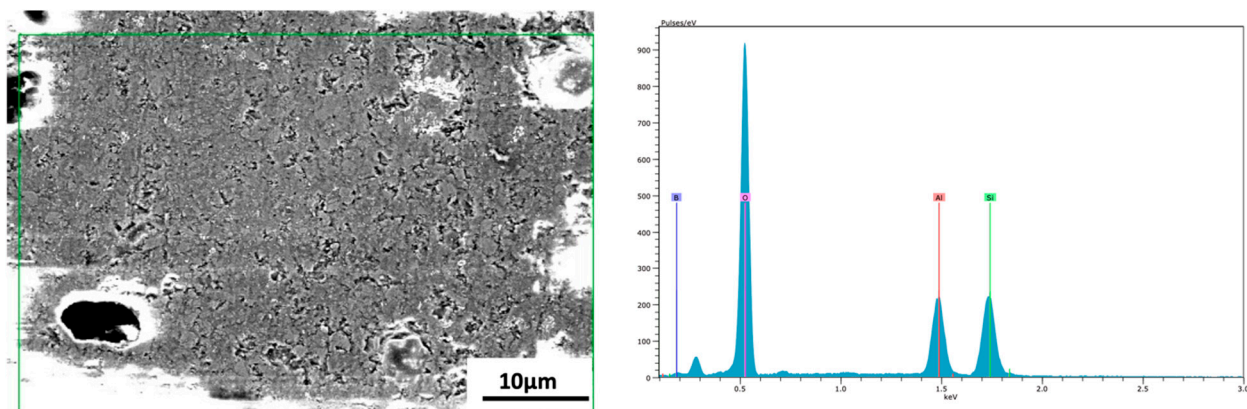


Figure S3. EDS analysis of the 30Al-O sample.

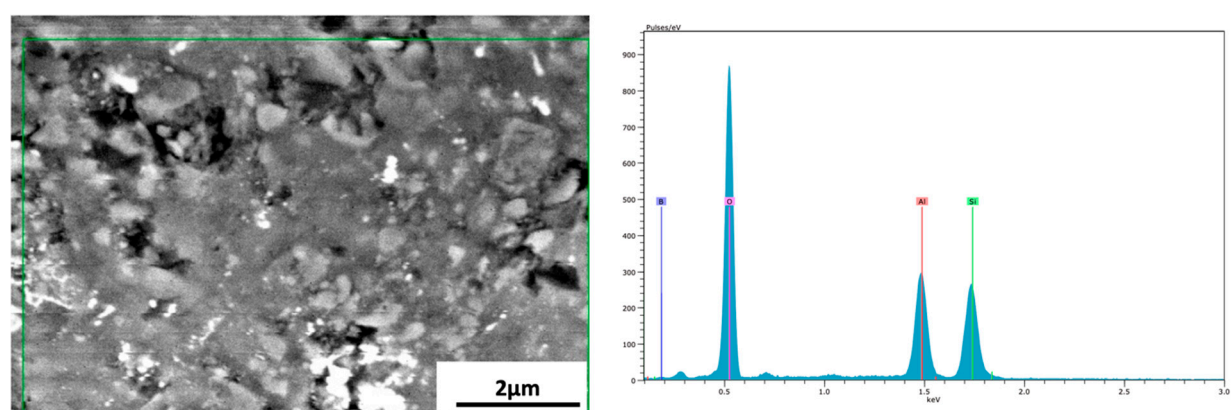


Figure S4. EDS analysis of the 40Al-O sample.

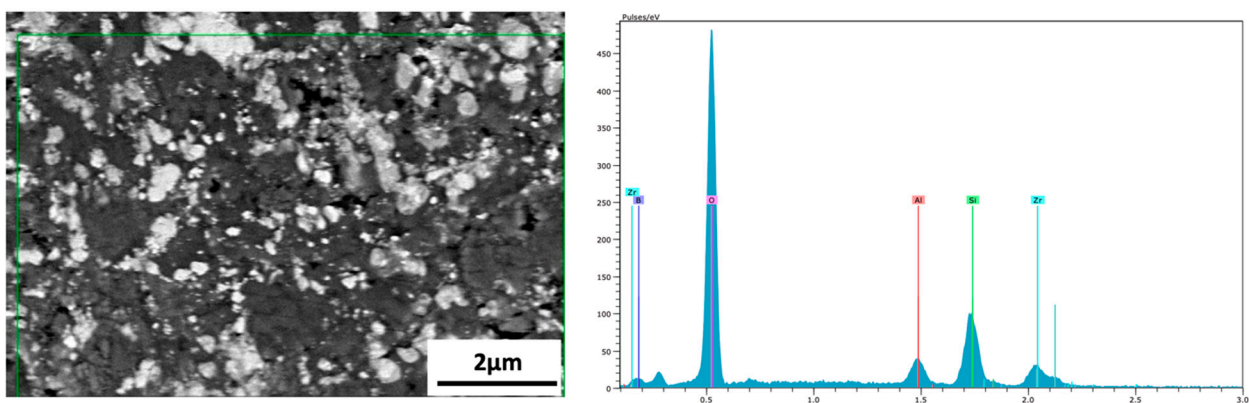
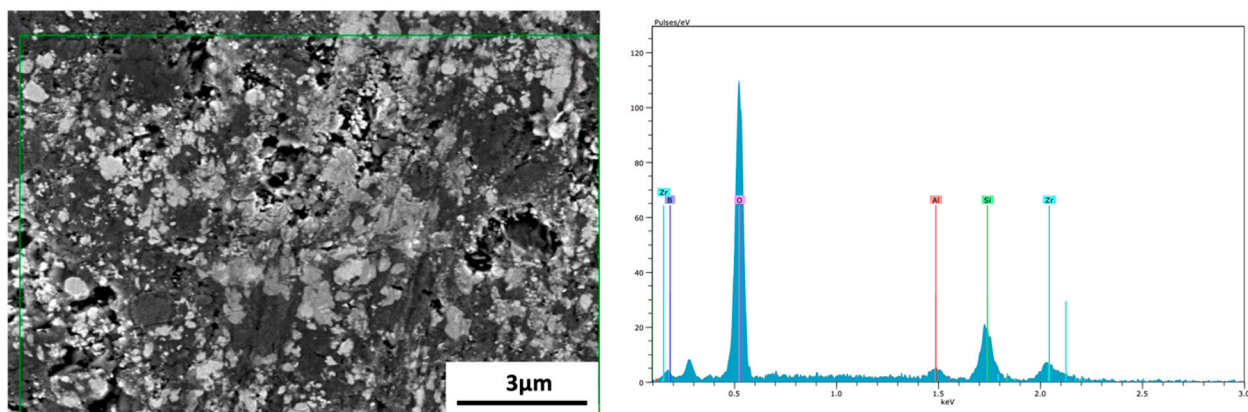
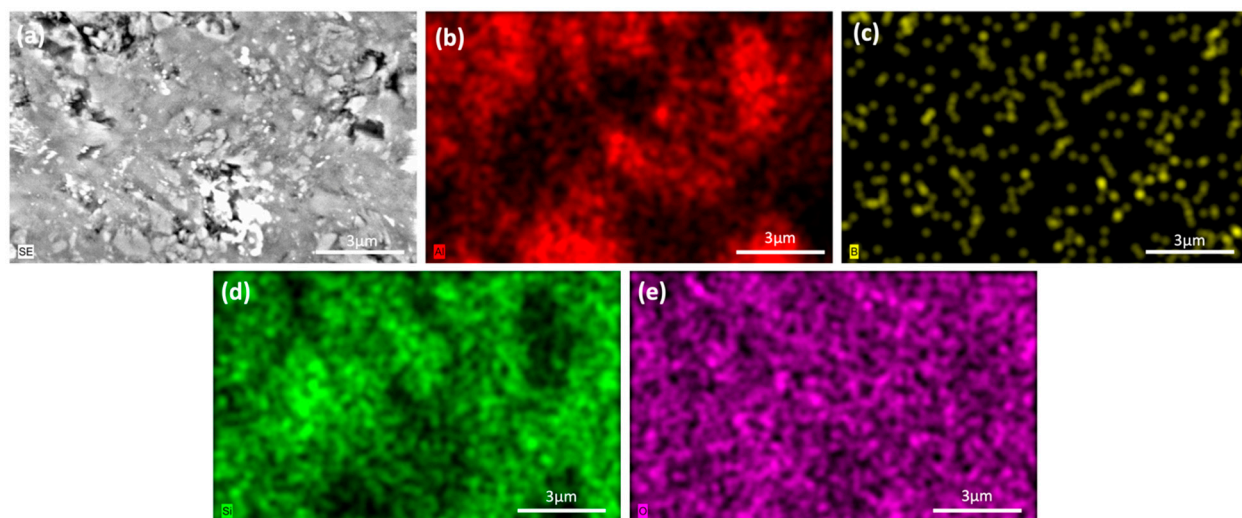


Figure S5. EDS analysis of the 30Zr-Ar sample.

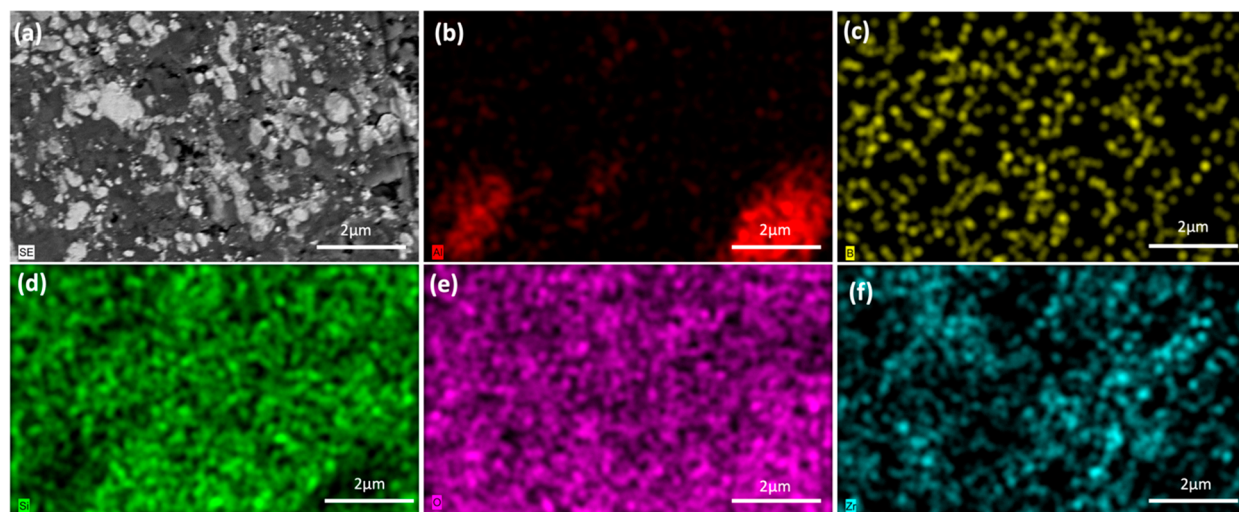




**Figure S6.** EDS analysis of the 40Zr-Ar sample.



**Figure S7.** SEM/EDX analyses of the 40Al-O sample (a) SEM image, (b) EDX mapping of Al, (c) EDX mapping of B, (d) EDX mapping of Si, (e) EDX mapping of O.



**Figure S8.** SEM/EDX analyses of the 30Zr-Ar sample (a) SEM image, (b) EDX mapping of Al, (c) EDX mapping of B, (d) EDX mapping of Si, (e) EDX mapping of O, (f) EDX mapping of Zr.