Supporting Information

Investigation of CeTi$_2$O$_6$- and CaZrTi$_2$O$_7$-containing glass-ceramic composite materials

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Figure S1: XRD patterns from the composite materials containing 10, 20, 30, and 40 wt% loading of CeTi$_2$O$_6$ in Fe-Al borosilicate glass annealed at (a) 750 or (b) 1100 °C are shown.
Figure S2: XRD patterns from the composite materials containing 10, 20, 30, and 40 wt% loading of CaZrTi$_2$O$_7$ in Fe-Al borosilicate glass annealed at (a) 750 or (b) 1100 °C are shown.
Figure S3: (a) A backscattered image and EDX maps of (b) Si, (c) Ce, and (d) Ti from the composite material containing 30 wt% loading of CeTi$_2$O$_6$ in borosilicate glass annealed at 750 °C are shown. The scale bar in each image is 10 µm.
Figure S4: (a) A backscattered image and EDX maps of (b) Si, (c) Ce, and (d) Ti from the composite material containing 30 wt% loading of CeTi_2O_6 in borosilicate glass annealed at 1100 °C are shown. The scale bar in each image is 10 µm.
Figure S5: Ti K-edge XANES spectra from borosilicate glass and Fe-Al borosilicate glass composite materials containing a 30 wt% loading of CeTi$_2$O$_6$ annealed at (a) 750 or (b) 1100 °C are shown.
Figure S6: Ti K-edge XANES spectra from borosilicate glass and Fe-Al borosilicate glass composite materials containing a 30 wt% loading of CaZrTi$_2$O$_7$ annealed at (a) 750 or (b) 1100 °C are shown.
Figure S7: Si L_{2,3}-edge XANES spectra from (a) BG-CeTi$_2$O$_6$-1100 °C containing 10, 20 and 30 wt% loading of CeTi$_2$O$_6$ and (b) BG-CaZrTi$_2$O$_7$-1100 °C containing 10, 20, and 30 wt% loading of CaZrTi$_2$O$_7$ are shown. The spectra are compared to the spectrum from borosilicate glass.
**Figure S8:** Al L\(_{2,3}\)-edge XANES spectra from the composite materials containing 10 and 20 wt% loading of CeTi\(_2\)O\(_6\) in Fe-Al borosilicate glass annealed at 750 °C and 20 wt% loading of CeTi\(_2\)O\(_6\) in Fe-Al borosilicate glass annealed at 1100 °C are shown. The spectrum from the Fe-Al borosilicate glass is also presented.