

**Supporting Information**

**A study of the electronic structure and structural stability of  $Gd_2Ti_2O_7$  based glass-ceramic  
composites**

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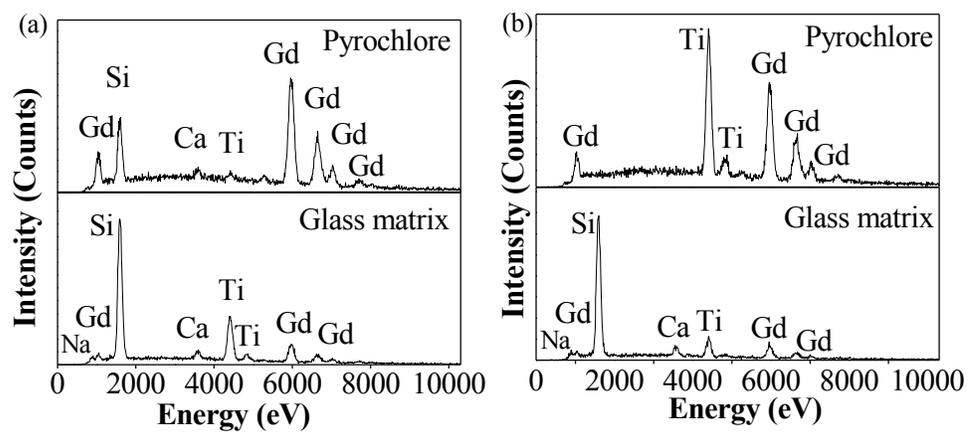


Figure S1: EDX spectra from (a) BG-Gd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>-1100°C and (b) BG-Gd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>-750°C containing 40 wt% loading of Gd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub> are shown.

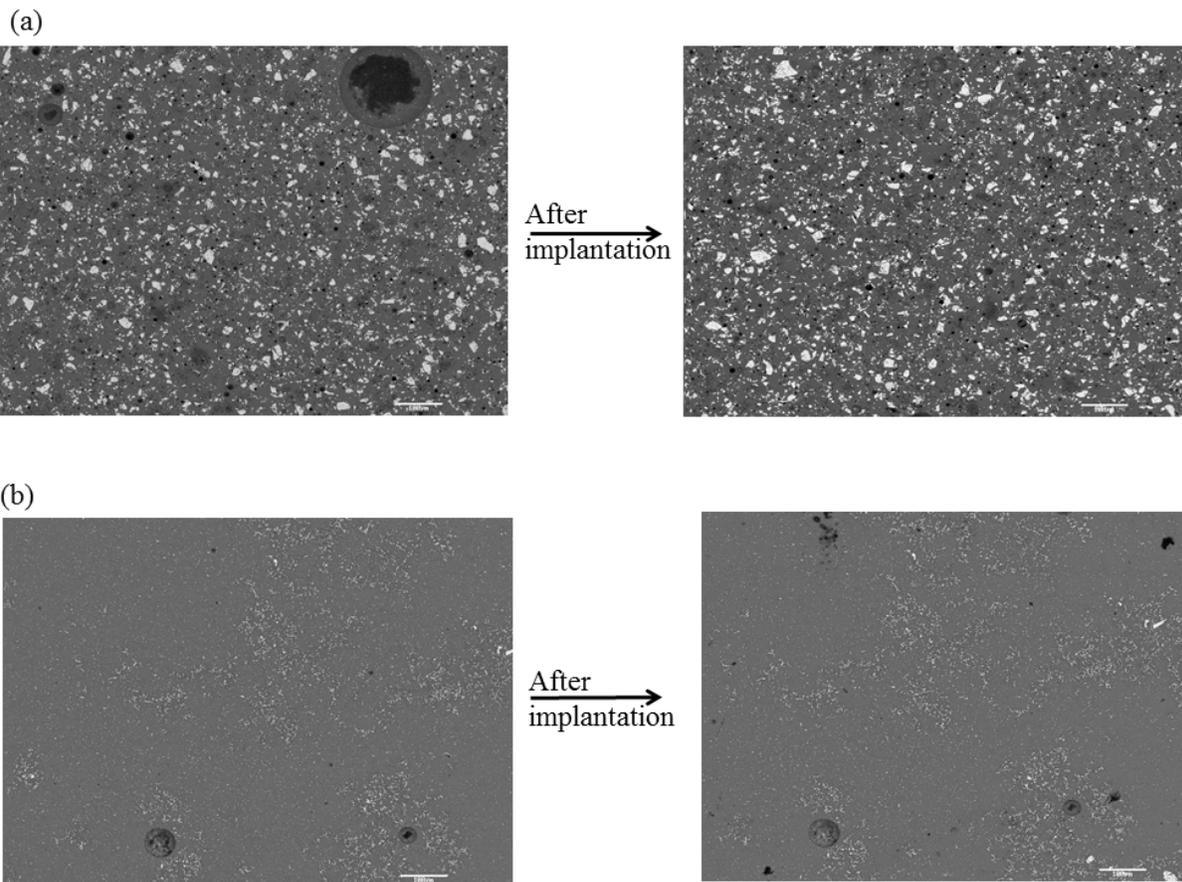


Figure S2: Backscattered electron images from the borosilicate glass composite materials (40 wt% , loading of  $Gd_2Ti_2O_7$ ) annealed at (a) 750°C and at (b) 1100°C, respectively, before (left) and after (right) ion implantation. No changes in morphology or grain size of the  $Gd_2Ti_2O_7$  crystallites (bright area) were observed as a result of ion implantation. The images were collected using a magnification of 100X and the scale bar is 100 μm.

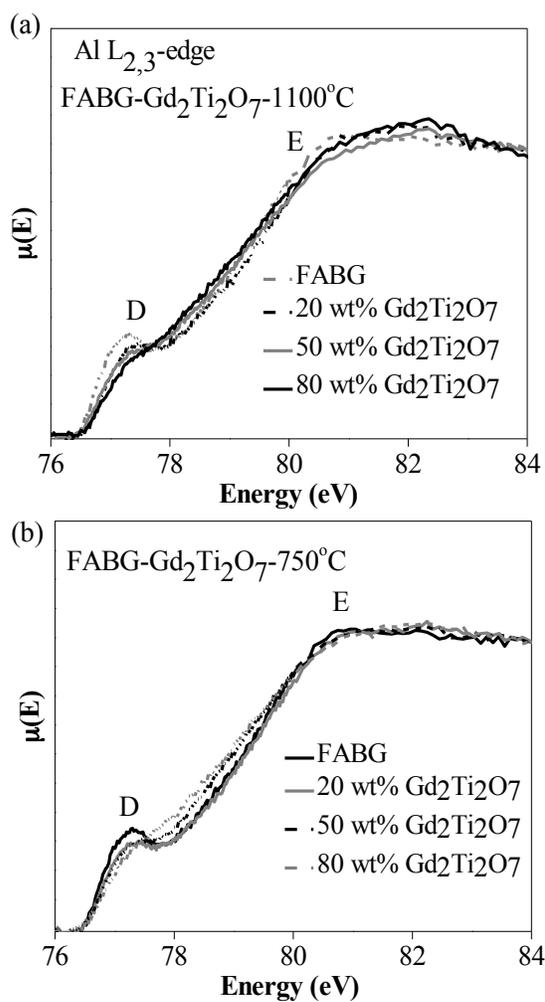


Figure S3: Al  $L_{2,3}$ -edge XANES spectra from (a) FABG-Gd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>-1100°C and (b) FABG-Gd<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>-750°C are shown.