
Synthesis by SPS of new glass matrix composite with functional properties - toward self-healing glass

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Abstract

Dense glass matrix particulate composites containing 2 %V of magnetic Fe₃O₄ particles, 70 nm size in average, were synthesized by means of Spark Plasma Sintering (SPS). We show in this study that a temperature as high as 330°C can be induced in the composite by applying an alternating magnetic field for a few minutes. This finding opens new possibilities for crack-healing and health recovery in damaged glassy materials. The elaboration, the magnetic, and the mechanical properties of this novel functional glass-based composite are presented.

Keywords: Composite, magnetism, Fe₃O₄, Self, healing, glass

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