

Incorporation of persistent luminescence particles in glasses via viscous flow sintering

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Highlights

- Optical properties and microstructural characterization of persistent luminescence particles are investigate before and after its incorporation in glasses.

Abstract

Given the accelerated technological expansion, there is a growing interest in basic and applied research in physics, chemistry, and materials engineering focused on studying new materials and techniques for modern applications. To contribute even more to a future advanced society, a proactive approach to the emerging applications of these materials is needed in developing new compositions with varied functions, material, and process design, making a more outstanding contribution to technological demands and realizing future applications. In this work, we studied the incorporation of persistent luminescence particles in glass through a process little explored for optical applications known as viscous flow sintering. In particular, we characterize the persistent luminescence particles to compare the form parameters (size and shape), their distribution, and the optical properties before and after the persistent luminescence particles incorporation in the glasses. Furthermore, to check whether persistent luminescence particles dissolve into the glass - this might act as an impurity and promote glass crystallization and lose the materials' transparency. The results will be presented and discussed based on particle size and optical and microstructural characterizations.

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