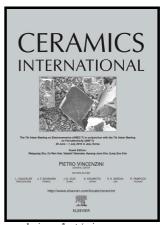
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ACCEPTED MANUSCRIPT

Gd³⁺ doping induced enhanced upconversion luminescence in Er³⁺/Yb³⁺ co-doped transparent oxyfluoride glass ceramics containing NaYF₄ nanocrystals

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Abstract

In this article, transparent oxyfluoride glass ceramics containing β -NaYF₄ nanocrystals were successfully prepared via Gd³⁺ doping. Compared to conventional non-doped glasses, the thermal treatment temperature required for the precipitation of β -NaYF₄ nanocrystals can be lowered with the doping of Gd³⁺. Furthermore, under the same thermal treatment condition, more β -NaYF₄ nanocrystals were precipitated in Gd³⁺ doped ones, which greatly improves the luminescence efficiency of rare earth doped glass ceramics. Possible mechanism for the Gd³⁺ doping induced enhanced upconversion luminescence phenomenon was proposed, based on thorough structural and optical characterizations. The results revealed that the doping of Gd³⁺ ions could

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