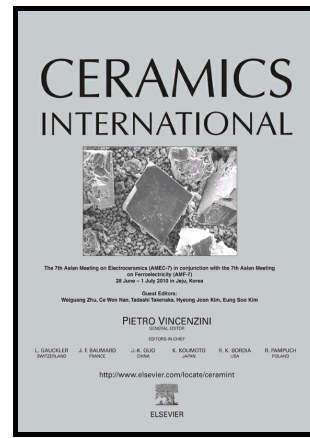


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Transparent sol-gel glass ceramics containing β -NaYF₄:Yb³⁺/Er³⁺ nanocrystals: structure, upconversion luminescent properties and optical thermometry behavior

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Abstract

Transparent bulk glass ceramics (GCs) containing β -NaYF₄:Yb³⁺/Er³⁺ upconversion nanocrystals were successfully prepared via a new sol-gel route for the first time. The structure, composition and morphology of the as-fabricated glass ceramics are characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM), which confirm the segregation of β -NaYF₄ nanocrystals in silica glass matrix with the maintenance of their crystalline phase and microstructure. More significantly, intense upconversion (UC) emissions can be realized for Yb³⁺/Er³⁺ co-doped glass ceramics by profiting from low-phonon-energy environment of

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