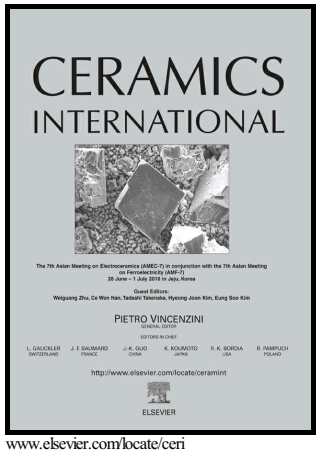

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Effect of europium concentration on the photoluminescent and thermoluminescent properties of $HfO_2:Eu^{3+}$ nanocrystals

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Abstract

This work **is aimed to determine** the influence of the europium concentration on the photoluminescent and thermoluminescent properties of the $HfO_2:Eu^{3+}$ synthesized by hydrothermal method. Samples were prepared at **Eu^{3+} contents** of 0, 1, 3, 5 and 7 at%. The structural, morphological, photoluminescent and thermoluminescent characteristics of the material, as well as the **kinetic parameters** of the glow curve when it was exposed to UV radiation at 254 nm **are presented**. **The maximum response for the photoluminescence and thermoluminescence properties, with an integrated signal more than six times greater than the signal obtained for the intrinsic sample, was found for the sample with 5 at% Eu^{3+}.** Nanocrystal sizes of 28 nm were obtained for the pure sample and 46 nm for the sample doped with the highest concentration of Eu^{3+}.