

Eu³⁺ doped hydroxyapatite as a fluorescent material for biomedical applications

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The present study is based on obtaining a contrast agent but improved with a mineralogical phase for hard tissue medical imaging. In this sense, Eu³⁺ is used for the contrast agent part, because of the luminescent properties and for the action part on bone regeneration the hydroxyapatite is used. The obtained mix focuses on the promotion of information regarding the development of new bone tissue, which is evidenced by the luminescent Eu³⁺. Using a simple method of synthesis, it was obtained a luminescent europium-doped nanohydroxyapatite which was characterized by physico-chemical and biological point of view. With the SEM, TEM and XRD equipment's the morphological and structural properties were analyzed. Also, to evaluate the luminescent features of the obtained material it was subjected to the UV-Vis and photoluminescence (PL) spectra. Because of the fact that the material has application in medical investigation and not only, it was performed a biocompatibility test (MTT assay) and fluorescent microscopy. The results can be a promising start due to its characteristics, in such manner the Eu³⁺ doped hydroxyapatite can be used as a fluorescent material for biomedical applications [1].

Keywords: *hydroxyapatite, fluorescent materials, biomedical applications, Eu³⁺.*

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Conflicts of Interest

The authors declare no conflict of interest.

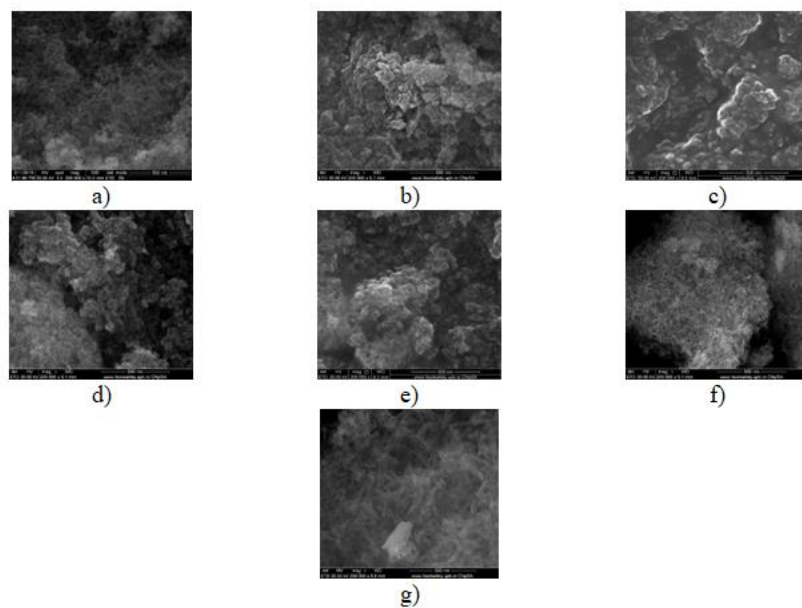


Figure 1. The SEM images of pure HAp and EuXHAp samples (a) HAp, (b) Eu0.5HAp, (c) Eu1HAp, (d) Eu1.5HAp, (e) Eu2HAp, (f) Eu10HAp, (g) Eu50HAp.

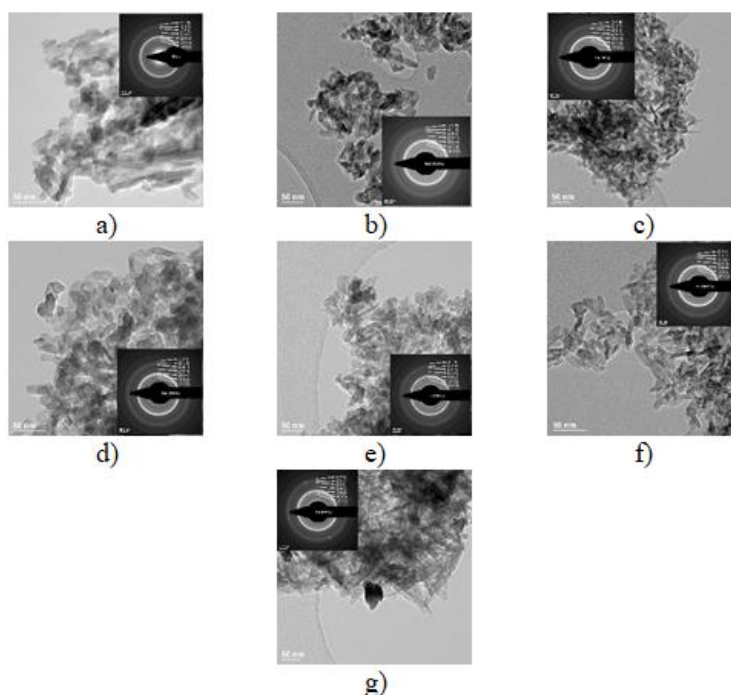


Figure 2. The TEM images, SAED patterns of pure HAp and Eu-HAp samples (a) HAp, (b) Eu0.5HAp, (c) Eu1HAp, (d) Eu1.5HAp, (e) Eu2HAp, (f) Eu10HAp, (g) Eu50HAp.

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