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Synthesis and characterization of calcium phosphates and their effect on Daphnia Magna consumption

The synthesis of hydroxyapatite and calcium phosphate of nanometric and micrometric sizes is carried out respectively. Were doped with erbium and ytterbium,with the aim of creating a biomarker who underwent chronic tests on Dania Magna. The synthesis and characterization of Ca5(PO4)3(OH) (hydroxyapatite or HAp) enriched with Er (III) and Yb (III) ions was carried out. The synthesis of calcium phosphate was carried out by means of the solvent evaporation technique using calcium chloride and phosphorus pentoxide as reagents supplied by Sigma Aldrich.The synthesis of hydroxyapatite was done byhydrosolvothermal.The luminescent properties of HAp:Er (III)/Yb(III) are activated by means of a continuous 980 nm laser producing two types of emissions, Stokes and Anti-Stokes.Stokes emissions occur in the near infrared area 1520 nm due to the interelectron transition 4I13/2 ⟶ 4I15/2. Anti-Stokes emissions also known as upconversion occur in two regions of the visible area of the electromagnetic spectrum, the first in the region from 515 to 565 nm due to the transitions 2H11/2 ⟶ 4I15/2 and 2S3/2 ⟶ 4I15/2 of the Er (III) ions while the second region that comprises from 640 to 680 nm corresponds to the 4F9/2 ⟶ 4I15/2 transition of the Er (III) ions. In the present work a comparison of calcium phosphate and hydroxyapatite as well as their clothing of erbium and Ytterbium, Europium and their reaction in Dafnia Magna is shown.

Keywords

calcium phosphates,erbium, yterbium, daphnia Magna, europium

Reference

Enhanced 1520 nm Photoluminescence from Er3+ Ions in Di-erbium-carbide Metallofullerenes (Er2C2)@C82 (Isomers I, II, and III), Yasuhiro Ito, Toshiya Okazaki, Shingo Okubo, Masahiro Akachi, Yutaka Ohno, Takashi Mizutani, Tetsuya Nakamura, Ryo Kitaura, Toshiki Sugai, and Hisanori Shinohara

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