Cashew gun resin doped with $Eu(tta)_3 \cdot (TPPO)_2$ and $Eu(dbm)_3 \cdot (TPPO)$ nanoparticle acting as biomaker.

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Anacardium occidentale L., a tree species from the Anacardiaceae family, is native in Brazil growing mostly in the northeastern region. Cashew gum (CG) is one such versatile naturally occurring biopolymer that is finding increasing applications in the pharmaceutical and biotechnology industry. It has been used successfully for many years in the food and beverage industry as a thickening agent and a colloidal stabilizer. Recently, the role of these gums in enveloping controlled drug delivery systems has increased significantly and CG has achieve lot of attraction towards this application [1].

In this work, nanoparticles of $Eu(tta)_3 \cdot (TPPO)_2$ and $Eu(dbm)_3 \cdot (TPPO)$ were tryed to solubilize in the CG water solution improving the dispersion of the nanoparticle complexes, and giving the opportunity to use these materials as biomarker. An 1%(w/w) of the $Eu(tta)_3 \cdot (TPPO)_2$ or $Eu(dbm)_3 \cdot (TPPO)$ nanoparticles were dispersed in a water solution of CG resin. After that, these materials were dried and the products obtained were films. These materials were characterized by infrared spectroscopy, XPD, TGA, SEM, absorption and photoluminescence spectroscopy. The results showed that the materials are crystalline and when doped increase the thermal stability of the CG resin. These films were soluble in water They also have intense luminescence, with emission spectra presenting characteristic internal transitions of $4f^6$-$4f^6$ configuration of the Eu^{3+} ion even in water solution (Fig. 1). The addition of Ag^0 in the solution improve the intensity of the fluorophore in solution. Intensity parameters in solid phase were determined and the quantum efficiency η~57% corroborate with the idea of use this green material as a biomarker[2].

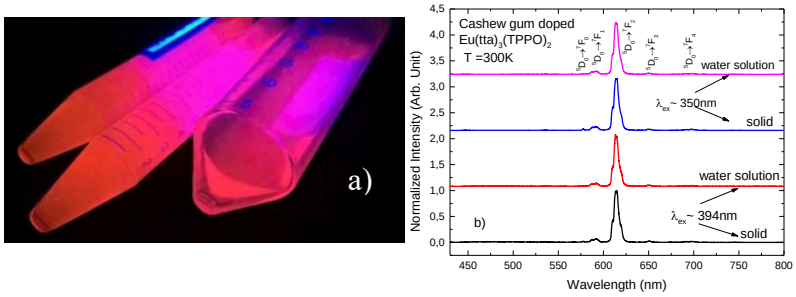

Fig.1. Cashew gum resin doped with the Eu^{3+}-complexes dissolved with water and under excitation of 366 nm UV-light (a) and emission spectra of $1\%Eu(tta)_3(tppo)_2$@CG solid and dispersed in H_2O (b).

Keywords: Europium luminescence, cashew gun, biological application.

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