Synthesis of lanthanide phosphates (Eu3+, Tb3+, Er3+, Yb3+) for applications in agriculture

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Rare Earth compounds are broadly used for many applications due to their unique features. The complexes of rare earths (especially lanthanide ones) using β-diketone as ligands are interessant for studying because they are efficient on energy transfer in intramolecular scale, from ligand to lanthanide trivalent ion (Ln3+) [1]. One of the most used ligand is 2-Thenoylfluoracetone (tta), together with a counterion MethylTriphenylPhosphonium, produces a complex with high quantum wield. This complex if pass through thermal decomposition, produces lanthanide phosphate. For this work, the tetrakis complex MTPP[Eu(tta)4] was used for obtain Europium phosphate, that presents high chemical, thermal stability and is no toxic for biological applications, such as agriculture area [3]. The preliminary results in FTIR spectra show the main bands for the phosphate group, around 540 to 570 cm-1, 965 and 1050 cm-1, tha comparassin with the literature [2], indicates the formation of phosphate group.

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