

Proceedings

Photophysical Properties and Applications of Lanthanide Complexes Using Time-Resolved Fluorescence and Transient Absorption Spectroscopy †

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Abstract: In this presentation transient absorption, steady-state and time-resolved fluorescence spectroscopy were used to investigate and characterize the photophysical properties of lanthanide complexes, as well as for applications by studying fluorescence quenching process. Also, we used different mechanisms such as dynamic quenching, ground-state complex formation, excited-state reactions, molecular rearrangements, and energy transfer.

We chose to approach the characterization and investigation of lanthanide complexes for the theoretical information, and also sensors for applications resulting from this study.

In order to better characterize the intermediate that appears at longer times, the metal complexes were studied by flash photolysis, with excitation at 355 nm. The lifetime, around 0.0001 s for each metal complexes was calculated by the analysis of the decays with and without oxygen. The measurements for quantum yield and lifetime were in powders, solution and film. The lifetime and quantum yield are dependent on the substitution on metal ions.

Also, a new application of the compounds investigated for the detection of heavy metals from water was obtain.

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