

Near Infrared Luminescent 4-(2-tetrathiafulvalenyl-ethenyl)pyridine Radical Cation-based-tetrakis(β -diketonate)Nd(III) Compounds

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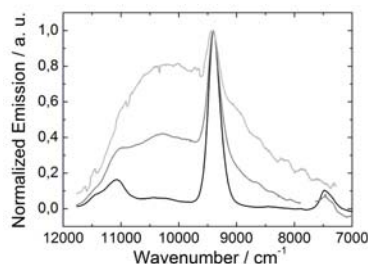
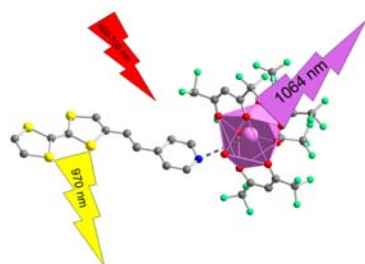
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In the last decade, Tetrathiafulvalene derivatives have been associated to d metal ions to elaborate multifunctional materials which possess magnetic and electrical properties. The f block elements, namely lanthanides, show peculiar magnetic properties with respect to d block elements due to the strong spin-orbit coupling. In addition to their magnetism, the $4f$ ions exhibit exiting specific luminescent properties. In particular, lanthanide complexes with β -diketonates have focused a large attention in the last three decades due to their potential applications in the design of chelate lasers, efficient organic light emitting diodes (OLEDs) and polymer light emitting diodes (PLEDs), as NMR shift reagents in analytical applications.

The reaction between the $[\text{Nd}(\text{hfac})_3(\text{H}_2\text{O})_3]$ precursor and the 4-(2-tetrathiafulvalenyl-ethenyl)pyridine (TTF-CH=CH-Py) donor leads to two different crystal forms of the $\{[\text{Nd}(\text{hfac})_4(\text{H}_2\text{O})][(\text{TTF-CH=CH-Py})^{\bullet+}]\}_2$ complex [1]. Structural, magnetic and optical properties have been intensively studied to determine the possible organic antenna role of the donor for the complex.



Crystal structure and emission spectrum of the fragment $[\text{Nd}(\text{hfac})_4(\text{H}_2\text{O})][(\text{TTF-CH=CH-Py})^{\bullet+}]$.

[1] F. Pointillart *et al.*, submitted to *J. Mater. Chem.*