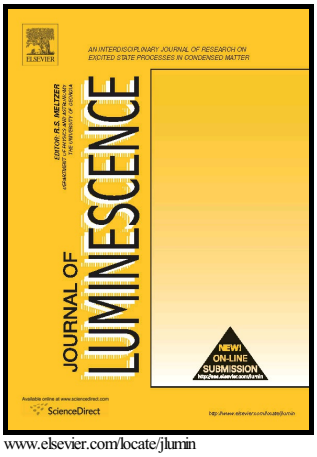

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Synthesis, characterization and spectroscopic properties of a new Nd^{3+}-doped Co-picromerite-type Tutton salt

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Abstract

Single crystals of Nd^{3+}-doped Co-picromerite has been synthesized by the slow evaporation method. After two weeks on hold, the crystals obtained were characterized by different techniques, indeed X-ray powder diffraction (XRPD) shows that these compounds crystallize in the monoclinic system with space group P21/a. Complete dehydration of the double salt was obtained before reaching 200 °C with a phase transition of KS around 570° C. The IR spectroscopic study confirms the vibrational modes of the sulfate groups and water molecules. Exciting at 473 nm, the emission peaks associated with the $4F_{5/2}\rightarrow4I_{9/2}$, $4F_{3/2}\rightarrow4I_{9/2}$ and $4F_{3/2}\rightarrow4I_{11/2}$ transitions were observed. The luminescence decay curve was analyzed in the