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Synthesis, characterization and spectroscopic properties of a new Nd³⁺-doped Co-picromerite-type Tutton salt

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Abstract

Single crystals of Nd³⁺-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}→4I_{9/2}, 4F_{3/2}→4I_{9/2} and 4F_{3/2}→4I_{11/2} transitions were observed. The luminescence decay curve was analyzed in the

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