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Spectroscopic Study of a Eu-Complex Containing Hybrid Material

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Abstract : The Eu(TTA)3(H2O)2 complex (TTA = thenoyltrifluoroacetone) pure (EuTTA) and incorporated in an organicinorganic hybrid material (EuTTA-hyb) are revisited, this time from the crystal field parameters (CFP) and Judd-Ofelt intensity parameters (Ωλ) point of view. A detailed analysis of the emission spectra revealed that the EuTTA phase still remains in the hybrid phase. Sparkle Model calculations of the EuTTA ground state geometry have been performed and satisfactorily compared to the X-ray structure. The observed weaker crystal field strength of the phase generated by the incorporation is promptly interpreted through the existing EXAFS results of the EuTTA-hyb structure. Satisfactory predictions of the CFP, of the 7F1 level splitting and of the Ωλ in all cases were obtained by using the charge factors and polarizabilities as degrees of freedom of non-parametric models.

Keywords : crystal field parameters, europium complexes, Judd-Ofelt intensity parameters
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