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An absorption electronic spectral study for the interaction of Er(III) ion systems involving some biologically important ligands in DMF stereo medium

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ABSTRACT

The electronic spectral parameters viz. Oscillator strength (P) , Judd-Ofelt (T_λ^1) , Racah parameter (E^k), Slater - Condon parameter (F_k) , Bonding parameters ($b_{1/2}$), Nephelauxetic ratio (β) , Percent covalency (δ) and rms deviation (σ) have been evaluated for some (eight) biological important ligands (N,O,S) with Er(III) in DMF solvent. The change in symmetry (stereo environment) around the doped Er (III) ion has been studied with respect to f-f transition involved in the system. A constant amount of $Er(NO_3)_3.6H_2O$ salt (0.0443 gm) has been added to DMF solvent at 298 K. Er (III) spectra is measured in 350-700 nm region and it gives ten bands in visible region. The study infers the change in symmetry around doped Er (III) ion $_4F^{11}$ and M-L interaction. The greater change in symmetry is observed when Er (III) biotin system has taken in this investigation.

Keywords: Doped system, electronic spectra, nephelauxetic effects, symmetry change.
