Magnetic properties of a europium(III) complex – possible multiplet crossover

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Streszczenie

A dinuclear complex $[(H_2O)Zn(LH)Eu(NO_3)_3]$ containing a hexadentate Schiff-base $\{N_2O_4\}$-donor ligand LH^{2-} was prepared and characterized by X-ray structural analysis and IR, electronic and fluorescence spectroscopy. DC magnetic data show that upon heating the diamagnetic complex with the ground state Eu(III)–$^7F_0$ and Zn(II)–^1S switches to paramagnetic species due to the population of ^7F_J (J = 1 to 6) magnetic multiplets. The magnetic susceptibility increases from zero, passes through a maximum, and then decreases upon heating. This behaviour can be explained using a spin–orbit Hamiltonian with an axial distortion term. There is an alternative interpretation of the susceptibility data based on a two-level model similar to that used in the spin crossover theory.

Adres publiczny

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