

## Spin crossover properties of Fe(III) complexes in [Fe (bzacen)(tvp)]BPh<sub>4</sub>·nSolv chain structures: EPR study

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### Abstract

© 2020 John Wiley & Sons, Ltd. Two types of Fe(III) polynuclear iron(III) 1D-chain coordination compounds of the general formula [Fe (L)(tvp)]BPh<sub>4</sub> nSolv, where L = dianion of N,N'-ethylenebis (benzoylacetylaceton)2,2'-imine (bzacen), tvp = 1,2-di(4-pyridyl)ethylene were synthesized and studied by the electron paramagnetic resonance (EPR) and magnetic susceptibility methods in the temperature range (100–300) K. Two types of spin-variable complexes are formed depending on the time of precipitation of the complexes from the same solution leading to differently solvated species. They have different characteristics of the local ligand field and the spin transition behavior. The thermodynamic parameters of spin transitions were determined from the temperature dependence of the EPR signals integral intensity. The energy levels splitting values obtained by analyzing g-factors of low-spin Fe(III) centers evidenced not only on the crucial role of low-symmetry distortions on the principal possibility of spin-crossover processes, but also on the temperature peculiarities of spin transitions.

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### Keywords

EPR spectroscopy, iron(III) complexes, local ligand field, spin-crossover transition

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