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Lability of spin state of Fe(III) complexes with tetradentate Schiff's bases

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Abstract

© 2016, Pleiades Publishing, Ltd. [FeLX₂]Y [L = N,N'-ethylenebis(salicylimine) (salen), N,N'-ethylenebis(acetylacetylonylimine) (acen), or N,N'-ethylenebis(3-methyloxysalicylimine) (vanen); X = imidazole or N-methylimidazole; Y = BF₄, ClO₄, or BPh₄] compounds have been prepared and studied by means of EPR and magnetic susceptibility measurements at 5–300 K. It has been shown that the different electron-donating properties of acen and salen planar ligands result in different spin states of Fe(III) ions. Intermolecular π -interactions of the outer-sphere BPh₄ ion affect the complexes spin state as well.

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Keywords

EPR spectroscopy, Fe(III) complex, magnetic susceptibility, variable spin properties