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Electronic and magnetic properties of [Fe(3-Me--Qsal)2]y•n solvent (n = 0,1) complexes

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Abstract

© Kazan Federal University (KFU).[Fe(3-MeO-Qsal)2]Y (Y = PF6, BF4, NCS, NO3, BPh4) compounds were synthesized using the diffusion method and studied by the electron spin resonance and the magnetic susceptibility methods in the temperature range (5-300) K. Coexistence of spatially separated high-spin and low-spin fractions in these compounds was observed. Low-spin fraction of all compounds reveals the antiferromagnetic correlations at low temperatures. High-spin fraction of complexes with Y = PF6 demonstrate the weak ferromagnetic properties due to exchange interaction between complexes in whole temperature range. Influence of outer-sphere anion on the spin state, the electronic properties of low-spin Fe(III) complexes is demonstrated.

Keywords

High-spin and low-spin state, Intermolecular interactions, Outer-sphere anions