

Study of spin crossover of $\text{K}[\text{Fe}(\text{5Cl-thsa})_2] \cdot \text{H}_2\text{O}$

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Abstract

According to the magnetism measurement, iron complex $\text{K}[\text{Fe}(\text{5Cl-thsa})_2] \cdot \text{H}_2\text{O}$ has a magnetic transition with the hysteresis around 230 K. And the result also suggests it has low spin state at low temperature and high spin state at 300 K.

By Fe L-edge extended X-ray absorption fine structure (EXAFS) spectra and K-edge XANES spectra, we studied the spin crossover of $\text{K}[\text{Fe}(\text{5Cl-thsa})_2] \cdot \text{H}_2\text{O}$. The results of EXAFS allow us to define the bond lengths in the first coordination sphere of Fe(III). Our results reveal that elongation distortion has important impact on spin crossover.

Keywords: Spin crossover, $\text{K}[\text{Fe}(\text{5Cl-thsa})_2] \cdot \text{H}_2\text{O}$, XANES, EXAFS