

## Spin crossover with thermal hysteresis in iron(III) complexes

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Novel iron(III) mononuclear complex [Fe(3,5-Cl-salpet)(NCSe)] with a pentadentate Schiff base ligand 3,5-Cl-salpet and NCSe<sup>-</sup> as a coligand exhibits a thermally induced cooperative spin crossover between 123 K (warming) and 99 K (cooling) with hysteresis width of 24 K. The other complexes of [Fe(3,5-X-salpet)(Y)] type with X = Cl<sup>-</sup> or Br<sup>-</sup> and Y = NCS<sup>-</sup>, NCSe<sup>-</sup> and N<sub>3</sub><sup>-</sup> are high-spin over the whole temperature region.

The magnetic data for the complex showing a thermally induced spin crossover was analyzed by using Ising-like model with vibrations (equivalent to the thermodynamic regular solution model) yielding the enthalpy  $\Delta H$  and entropy  $\Delta S$  of the spin transition along with the critical temperature  $T_{1/2}$  and the solid-state cooperativeness  $\Gamma$ .

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