

## DESIGNING Fe(II) SPIN-CROSSOVER COMPLEXES FOR SURFACE

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Certain complexes of 3d<sup>4</sup>-3d<sup>7</sup> transition metal ions exhibit spin crossover (SCO), a transition from the low spin (LS) to high spin (HS) state. In recent years, considerable attention has been devoted to multifunctional materials that combine SCO with such properties as conductivity or luminescence. The achievement of this goal relies on the ability to functionalize the periphery of ligands that surround the SCO center.

We report the preparation of four Fe(II) complexes of non-alkylated and alkylated biimidazoles, their crystal structures and magnetic properties. [Fe(TPMA)(BIM)](ClO<sub>4</sub>)<sub>2</sub> (TPMA = tris(2-pyridylmethyl)amine) shows a gradual HS-LS transition with T<sub>1/2</sub> = 186 K. This transition is strongly dependent on the nature of interstitial solvent. [Fe(TPMA)(XBIM)](ClO<sub>4</sub>)<sub>2</sub> (XBIM = 1,1'-( $\alpha,\alpha'$ -o-xylyl)-2,2'-biimidazole) exhibits an abrupt HS-LS transition with T<sub>1/2</sub> = 197 K and ~14 K thermal hysteresis. Mössbauer spectroscopy confirms the spin transition, in accord with magnetic and structural data. We also discuss structural aspects of SCO in these complexes.