Zero- to three-dimensional iron(II) spin crossover coordination compounds – from ligand design to tunable spin switching behaviour

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Synthetic expertise acquired by the preparation of zero- to three-dimensional iron(II) coordination compounds based on N1-functionalized tetrazole ligands is helping to establish building principles aiming for a rational design and tunable spin switching behavior. Homologous series of halogen-substituted mononuclear complexes are evaluated with respect of electronic and steric effects on the spin transition temperature, *e.g.* the 3-halo-substituted propyltetrazole (3X-3tz) with X= F, Cl, Br and I (see Figure 1). Furthermore, a comparative study of polynuclear chain-type compounds with modified bridging ligand design is presented (see Figure 2) showing the impact of ligand rigidity on the spin transition behavior.

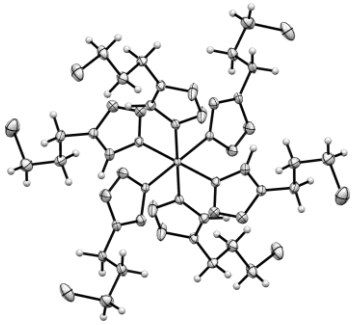

Figure 1: [Fe(*3Cl-3tz*)$_6$](BF$_4$)$_2$

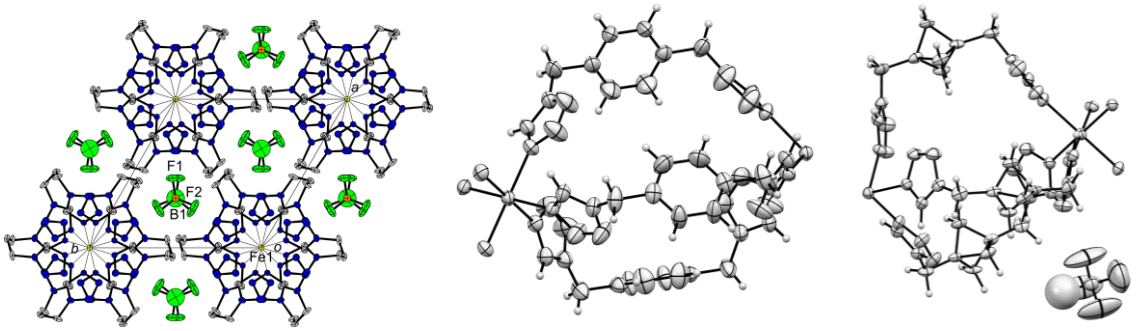

Figure 2: [Fe(*3ditz*)$_3$](BF$_4$)$_2$[1] (left), [Fe(*p-xylditz*)$_3$](BF$_4$)$_2$ (center) and [Fe(*pptz*)$_3$](BF$_4$)$_2$ (right)

References: [1] D. Müller, C. Knoll, B. Stöger, W. Artner, M. Reissner and P. Weinberger, *Eur. J. Inorg. Chem.*, **5-6** (2013) 984–991.