Iron(II) Spin Crossover Compounds Based on Bidentate Azole Ligands

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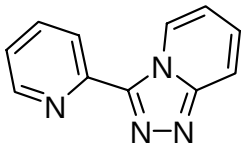
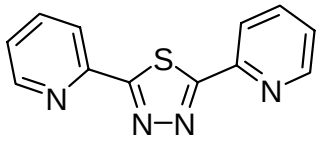
Spin crossover (SCO) compounds have attracted considerable interest in recent years considering their great potential for a number of applications, especially in the field of information technology.[1] Amongst others magnetic properties of iron(II) complexes incorporating various 3,5-di-(2-pyridyl)-1,2,4-triazoles as ligands have been reported.[2] However, related neutral ligands, based on the 1,2,4-triazole core[3] or 1,3,4-thiadiazole systems, have rarely been used in SCO research so far.[4] The coordination behaviour of the bidentate azole ligands 3-(2-pyridyl)-[1,2,4]triazolo[4,3-*a*]pyridine (**I**) and 2,5-di-(2-pyridyl)-1,3,4-thiadiazole (**II**) has been studied and complexes with iron(II), cobalt(II), nickel(II) and copper(II) have been structurally characterized. The SCO phenomenon is observed in iron(II) complexes of **I** and **II** and related bidentate azole-based ligands.



I



II

References:

[1] J. Zarembowitch, O. Kahn, *New J. Chem.*, **1991**, *15*, 181; O. Kahn, J. Kröber, C. Jay, *Adv. Mater.*, **1992**, *4*, 718; O. Kahn, C. J. Martinez, *Science*, **1998**, *279*, 44; J.-F. Létard, P. Guionneau, L. Goux-Capes, *Top. Curr. Chem.*, **2004**, *235*, 221. [2] J. A. Kitchen, S. Brooker, *Coord. Chem. Rev.*, **2008**, *252*, 2072. [3] M. H. Klingele, S. Brooker, *Coord. Chem. Rev.*, **2003**, *241*, 119. [4] J. Klingele, D. Kaase, J. Hilgert, G. Steinfeld, M. H. Klingele, J. Lach, Dalton Trans, *39*, 4495; J. Klingele, D. Kaase, M. H. Klingele, J. Lach, S. Demeshko, Dalton Trans, *39*, 1689.