

# Long-lived metastable states in transition metal compounds

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Octahedral coordination compounds of transition metal ions having a  $d^4 - d^7$  electronic configuration are well-known for the phenomenon of spin-crossover. For iron(II) complexes the transition occurs between the low-spin state with total spin quantum number  $S = 0$  to the high-spin state with  $S = 2$ . It can be induced thermally, by applying pressure or by irradiation with light of appropriate wavelengths [1]. Since its discovery some 18 years ago, the light-induced spin transition has formed the basis for an increasingly large number of research projects world wide. The lecture will begin with an introduction into the basic phenomena associated with spin-crossover, in particular with regard to the photophysical properties and the ensuing relaxation processes in spin-crossover compounds. The importance of cooperative effects in the solid state leading to hysteresis behaviour in the thermal spin transition, non-exponential relaxation curves and light-induced bistability, will be discussed [2].

[1] S. Decurtins, P. Güttlich, C. P. Köhler, H. Spiering, A. Hauser, *Chem. Phys. Lett.* **105** (1984) 1.

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[2] A. Hauser, J. Jeftic, H. Romstedt, R. Hinek, H. Spiering, *Coord. Chem. Rev.* **190-192** (1999) 471.

A. Hauser, *Topics in Current Chemistry* **234** (eds P. Güttlich, H. A. Goodwin), Springer, Berlin 2004, p. 155.