

## Thermal and Light-Induced Polymorphism in Fe(II) Spin Crossover Materials

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In certain Fe(II) complexes, the energy difference between the high spin (HS) and low spin (LS) state is of the order of  $k_bT$ . In these materials it is possible to induce a spin crossover (SCO) by a change of temperature, application of pressure and more interesting for potential applications, by light irradiation [1].

Materials such as  $\text{Fe}[\text{H}_2\text{BPz}_2]_2L$  (Pz = pyrazol  $L = 2,2'$ -bipyridine (**1**) or 1,10-phenanthroline (**2**)) have been shown to exhibit Light-Induced Excited Spin-State Trapping (LIESST) when irradiated at low temperature [2]. In **2**, the thermal SCO is coupled with a structural change from  $C2/c$  to  $P\bar{1}$ , which is retained on irradiation, giving a new high spin structure [3].

Another SCO material, the coordination polymer  $\{\text{Fe}(\text{Bpe})_2[\text{Ag}(\text{CN})_2]_2\}$  (**3**) exhibits an incomplete SCO transition [4], the structural consequences which include an effect complementary to the “Thermal and Light-Induced Polymorphism” seen in **2**.

[1] Kahn, Kröber, Jay, *Adv. Mater.*, 1992, **4**(11), 718. [2] a) Real, Muñoz, Faus, Solans, *Inorg. Chem.*, 1997, **36**, 3008; b) Moliner, et al., *J. Phys. Chem. B*, 2002, **106**, 4276. [3] Thompson, Goeta, Real, Galet, Muñoz, *Chem. Commun.*, 2004, 1390. [4] Niel, Muñoz, Galet, Gaspar, Levchenko, Real, *Chem. Eur. J.*, 2002, **8**(11), 2446.

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