Kinetic effects on double hysteresis in spin crossover molecular magnets analyzed with first order reversal curve diagram technique.

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Streszczenie

In this paper, we analyze two types of hysteresis in spin crossover molecular magnets compounds in the framework of the First Order Reversal Curve (FORC) method. The switching between the two stable states in these compounds is accompanied by hysteresis phenomena if the intermolecular interactions are higher than a threshold. We have measured the static thermal hysteresis (TH) and the kinetic light induced thermal hysteresis (LITH) major loops and FORCs for the polycrystalline Fe(II) spin crossover compound $[Fe_{1-x}Zn_x(bbtr)_3](ClO_4)_2$ (bbtr = 1,4-di(1,2,3-triazol-1-yl)butane), either in a pure state (x = 0) or doped with Zn ions (x = 0.33) considering different sweeping rates. Here, we use this method not only to infer the domains distribution but also to disentangle between kinetic and static components of the LITH and to estimate the changes in the intermolecular interactions introduced by dopants. We also determined the qualitative relationship between FORC distributions measured for TH and LITH.

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