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Supporting Information for

A Ladder Type Iron(II) Coordination Polymer with Enhanced Spin-Crossover Behavior

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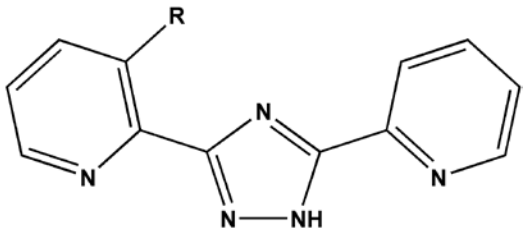
Contents of the Supporting Information



R = H bptH
R = CH_3 MebptH

Scheme S1. The molecular structures of the ligands.

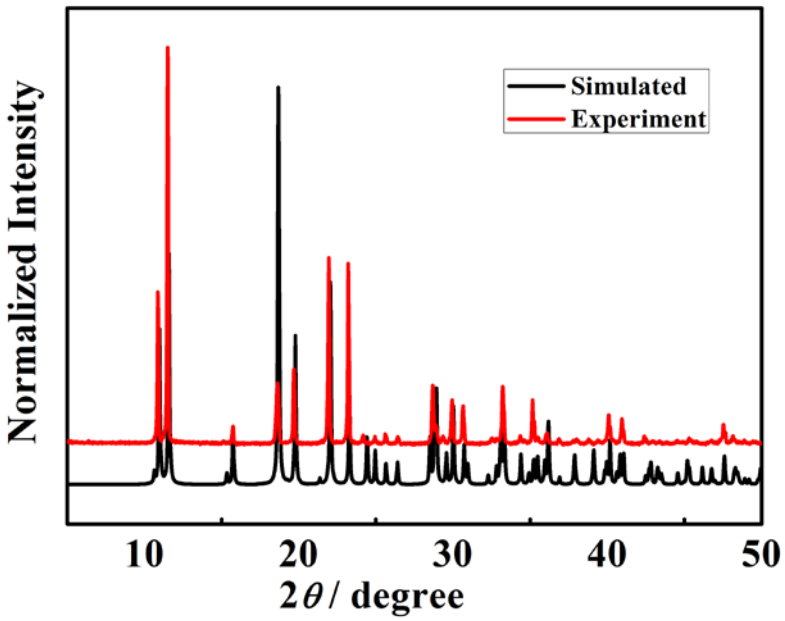


Figure S1. The PXRD spectrum of **2.**

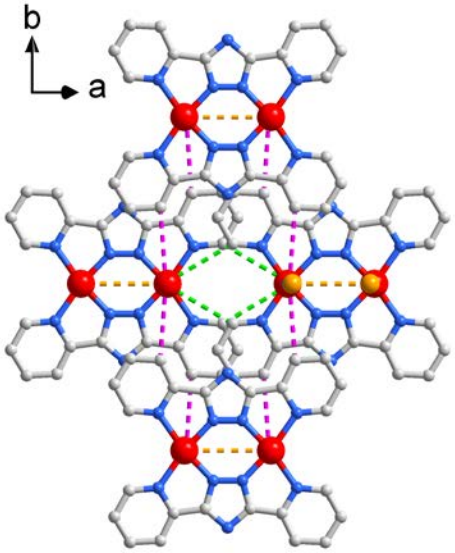


Figure S2. Structural illustrations of **2** at 298 K along the *c* axis: crystal packing of two adjacent 1D chains highlighting the interchains C-H···C (green and purple dashed lines represent 3.659 and 3.529 Å, respectively) interactions and the intrachains Au---Au (orange dashed lines, 3.591 Å) interactions. Hydrogen atoms have been omitted for clarity.

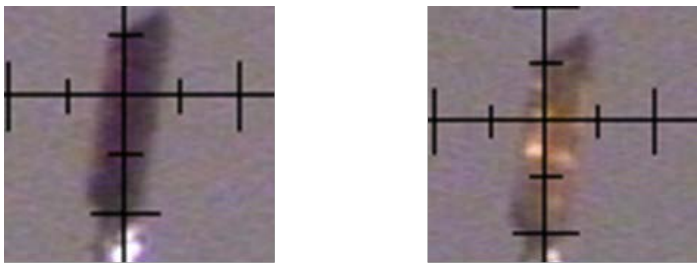


Figure S3. Photographs of single crystal of **2.**

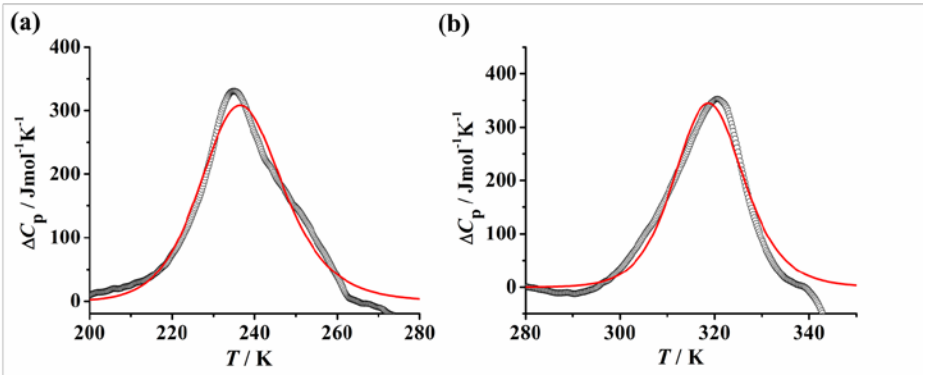


Figure S4. Excess heat capacity associated with the SCO transition for **1·H$_2$O** upon warming. The full lines are the best fit to the domain model.

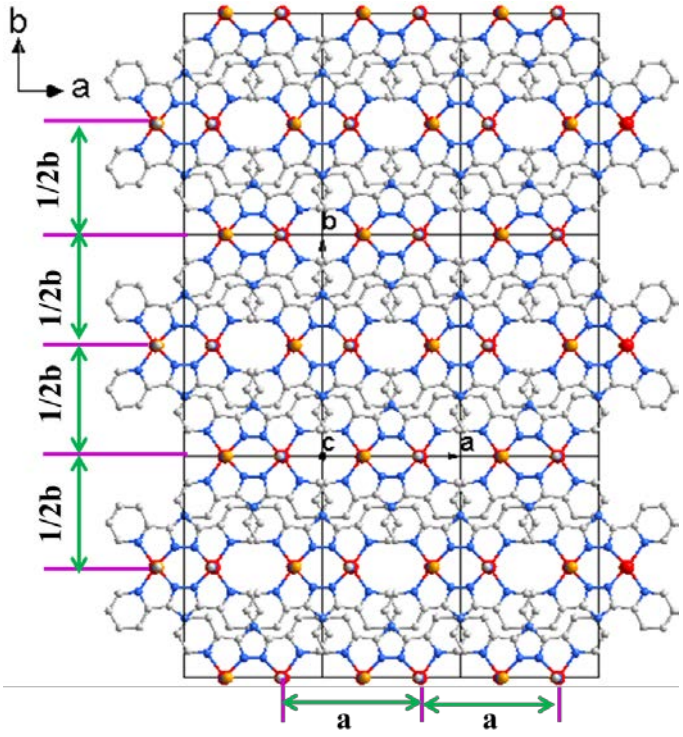


Figure S5. Crystal packing of **2** in the *ab* plane. The different Fe···Fe projection distances are given for LS **2**.

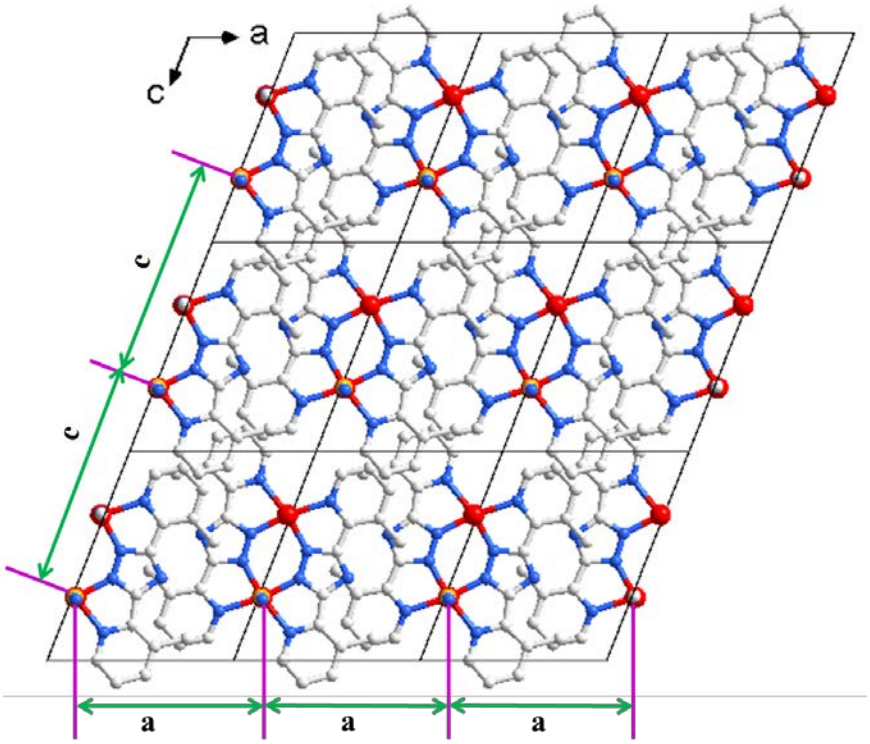


Figure S6. Crystal packing of **1·H$_2$O** in the *ac* plane. The different Fe···Fe projection distances are given for LS **1·H$_2$O**.

Table S1 Fe···Fe projection distances observed in the three different crystallographic axes of the solid state structure of **2** and **1·H$_2$O**, and their variation upon LS ↔ HS transition

2	Fe···Fe projection distances		
Direction	along *a*	along *b*	along *c*
LS	11.562	7.656	10.147
HS	11.604	7.868	10.479
Variation	0.042	0.212	0.332
1·H$_2$O	Fe···Fe projection distances		
Direction	along *a*	along *b*	along *c*
LS	9.328	10.154	10.849
HS	9.616	10.473	10.991
Variation	0.288	0.319	0.142

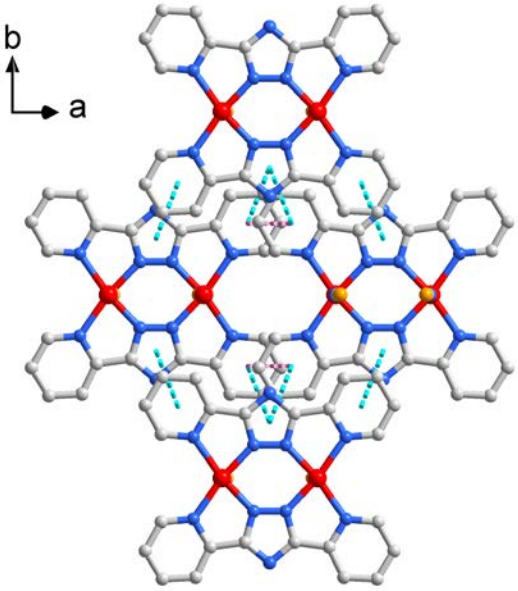


Figure S7. Structural illustrations of **2** along the *c* axis: Crystal packing of two adjacent 1D chains highlighting the interchains offset face-to-face $\pi\cdots\pi$ interactions (turquoise and pink dashed lines represent 4.166 and 3.973 Å, respectively). Hydrogen atoms have been omitted for clarity.

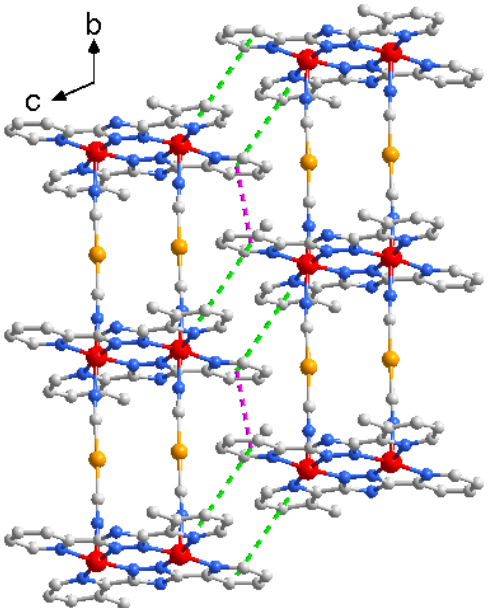


Figure S8. Structural illustrations of **1·H_2O**: Crystal packing of two adjacent 1D chains highlighting the interchains face to face $\pi\cdots\pi$ (green dashed lines, 4.294 Å and purple dashed lines, 3.626 Å) interactions. Hydrogen atoms have been omitted for clarity.