Supporting Information for

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

Zheng Yan,a,b,* Long-Feng Zhu,b Lian-Wen Zhu,b Yan Meng,c Md. Najbul Hoque,a Jun-Liang Liu,a Yan-Cong Chen,a Zhao-Ping Ni,a,* Ming-Liang Tonga,*

a Key Laboratory of Bioinorganic and Synthetic Chemistry of Ministry of Education, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, P. R. China.
b College of Biological, Chemical Sciences and Engineering, Jiaxing University, Jiaxing 314001, P. R. China
c Anhui Key Laboratory of Functional Coordination Compounds, Anqing Normal University, Anqing 246011, P. R. China.

e-mail: yzheng158@163.com, nizhp@mail.sysu.edu.cn, tongml@mail.sysu.edu.cn

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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 $\text{1-H}_2\text{O}$ upon warming. The full lines are the best fit to the domain model.

Figure S5. Crystal packing of $\text{2}$ in the $ab$ plane. The different Fe···Fe projection distances are given for LS $\text{2}$. 
Figure S6. Crystal packing of $\text{1} \cdot \text{H}_2\text{O}$ in the $ac$ plane. The different Fe···Fe projection distances are given for LS $\text{1} \cdot \text{H}_2\text{O}$.

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

<table>
<thead>
<tr>
<th></th>
<th>Fe···Fe projection distances</th>
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<tbody>
<tr>
<td></td>
<td>along $a$</td>
<td>along $b$</td>
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<tr>
<td><strong>2</strong></td>
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<tr>
<td>LS</td>
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<td><strong>$\text{1} \cdot \text{H}_2\text{O}$</strong></td>
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<tr>
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<td>0.319</td>
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**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$_2$O: 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.