Supporting Information

One-dimensional coordination polymers of antiferromagnetically-coupled $[Mn_4]$ Single-Molecule Magnets

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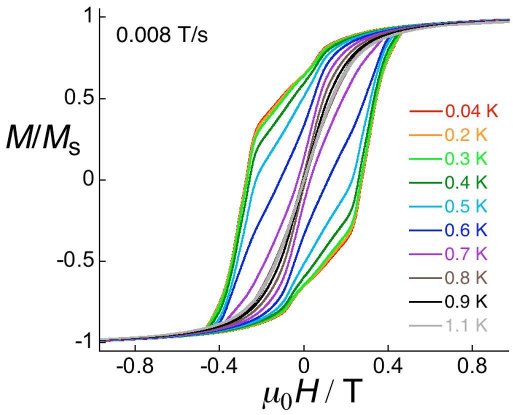

Figure S1. *M* vs. *H* hysteresis loops measured on an oriented single crystal of **3** at different temperatures with a field sweep rate of 0.008 T/s. The applied field is here oriented in the average easy direction of the single crystal. The data are normalized to the saturation magnetization (M_S) at 1.4 T.

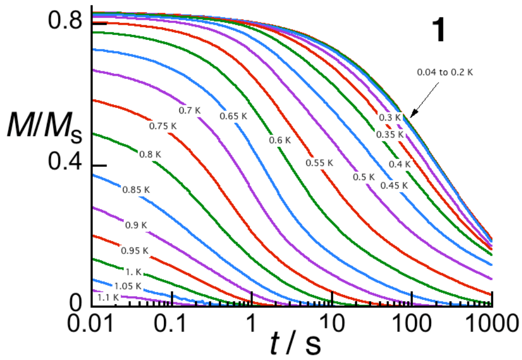

Figure S2. Relaxation of the magnetization of **1** at different temperatures. Data are normalized to the saturation magnetization (M_S) at 1.4 T.

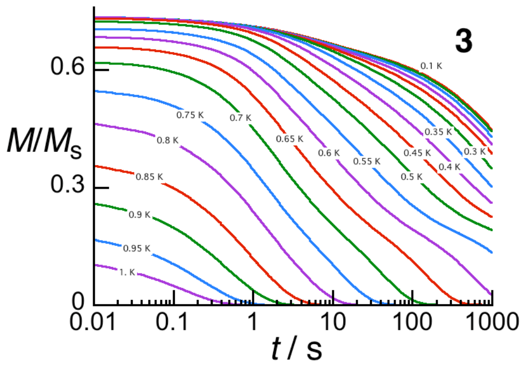

Figure S3. Relaxation of the magnetization of **3** at different temperatures. Data are normalized to the saturation magnetization (M_S) at 1.4 T.

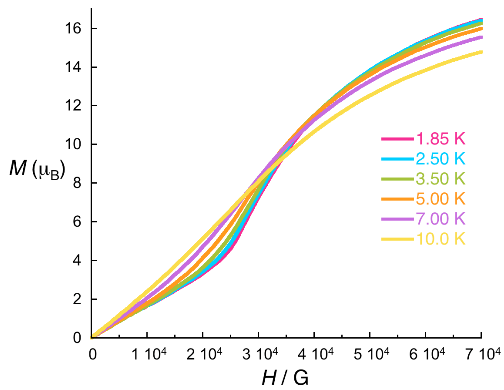

Figure S4. Magnetization vs dc magnetic field data on a powder sample of **4** at increasing temperatures.

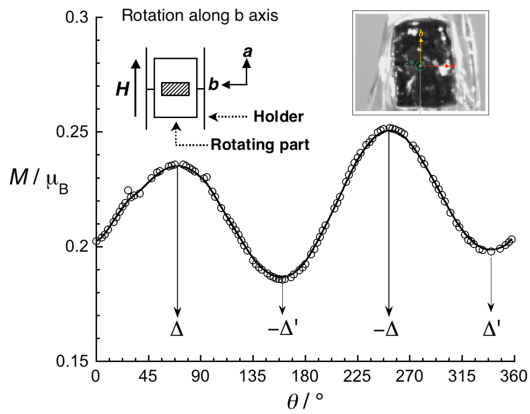

Figure S5. Rotation figure around the monoclinic magnetic *b* axis for a single crystal of **4** at 1000 Oe and 1.8 K.

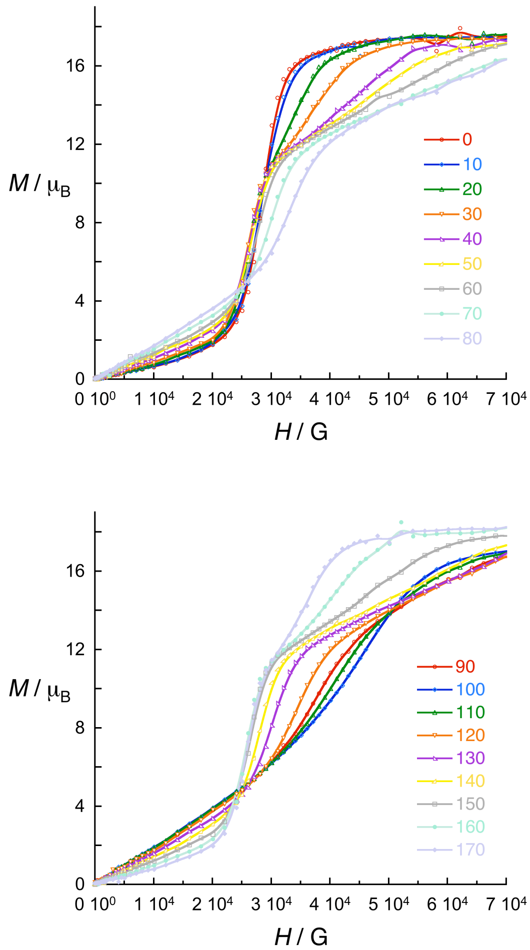

Figure S6. Magnetization vs. dc magnetic field data for various orientations (□, defined in the text) of the applied field in the (b, Δ) plane perpendicular to Δ' hard axis of a single crystal of **4** at 1.8 K.

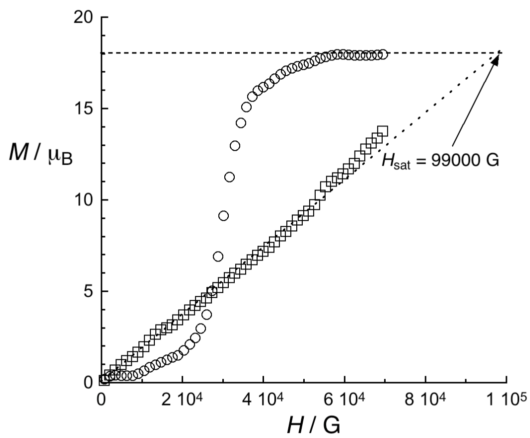

Figure S7. Magnetization vs. dc magnetic field data in the easy and hard directions for a single crystal of **5** at 1.85 K. Extrapolation of the hard direction data to the saturation value of 18 □$_B$ gives a saturation field H_{sat} of 9.9 T.

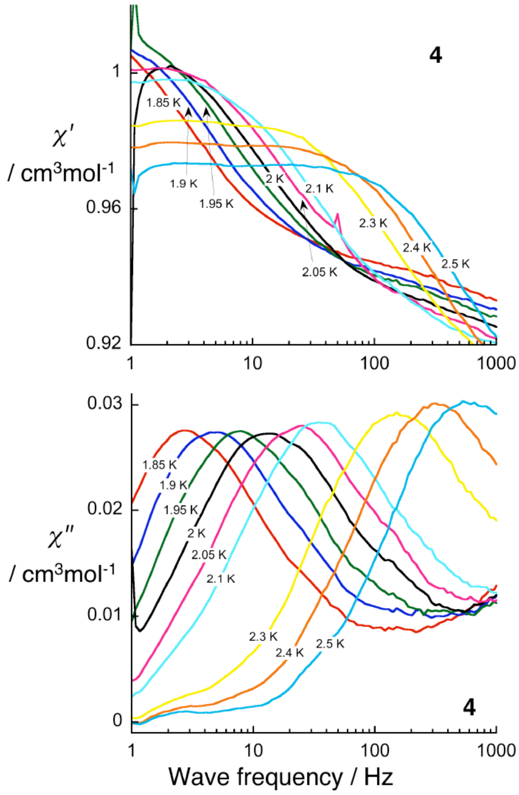

Figure S8. Frequency dependence of the real (top) and imaginary (bottom) ac susceptibilities of **4** at various temperatures.

Analytical expression used for the fitting of temperature dependent magnetic properties of [Mn_4].

Van Vleck expression of the susceptibility:

$$\chi_{tetra} = \frac{\sum S_T\left(S_T+1\right)\left(2S_T+1\right)\exp\left(-E\left(S_T\right)/k_B T\right)}{\sum \left(2S_T+1\right)\exp\left(-E\left(S_T\right)/k_{BT}\right)}$$

with

$$E\left(S_T\right) = -J_{wb}\left[S_T\left(S_T+1\right) - S_A\left(S_A+1\right) - S_B\left(S_B+1\right)\right] - J_{bb}\left[S_A\left(S_A+1\right)\right]$$

and

S	S_T	S_B	S_A	J_{bb}	J_{wb}	Numerator	Denominator
9	9	5	4	40	20	1710	19
8	8	5	4	22	20	1224	17
8	8	5	3	30	12	1224	17
8	8	4	4	32	20	1224	17
7	7	5	4	6	20	840	15
7	7	5	3	14	12	840	15
7	7	5	2	20	60	840	15
7	7	4	4	16	20	840	15
7	7	4	3	24	12	840	15
7	7	3	4	24	20	840	15
6	6	5	4	-8	20	546	13
6	6	5	3	0	12	546	13
6	6	5	2	6	6	546	13
6	6	5	1	10	2	546	13
6	6	4	4	2	20	546	13
6	6	4	3	10	12	546	13
6	6	4	2	16	6	546	13
6	6	3	4	10	20	546	13
6	6	3	3	18	12	546	13
6	6	2	4	16	20	546	13
5	5	5	4	-20	20	330	11
5	5	5	3	-12	12	330	11
5	5	5	2	-6	6	330	11
5	5	5	1	-2	2	330	11
5	5	5	0	0	0	330	11
5	5	4	4	-10	20	330	11
5	5	4	3	-2	12	330	11
5	5	4	2	4	6	330	11
5	5	4	1	8	2	330	11

5	5	3	4	-2	20	330	11
5	5	3	3	6	12	330	11
5	5	3	2	12	6	330	11
5	5	2	4	4	20	330	11
5	5	2	3	12	12	330	11
5	5	1	4	8	20	330	11
4	4	5	4	-30	20	180	9
4	4	5	3	-22	12	180	9
4	4	5	2	-16	6	180	9
4	4	5	1	-12	2	180	9
4	4	4	4	-20	20	180	9
4	4	4	3	-12	12	180	9
4	4	4	2	-6	6	180	9
4	4	4	1	-2	2	180	9
4	4	4	0	0	0	180	9
4	4	3	4	-12	20	180	9
4	4	3	3	-4	12	180	9
4	4	3	2	2	6	180	9
4	4	3	1	6	2	180	9
4	4	2	4	-6	20	180	9
4	4	2	3	2	12	180	9
4	4	2	2	8	6	180	9
4	4	1	4	-2	20	180	9
4	4	1	3	6	12	180	9
4	4	0	4	0	20	180	9
3	3	5	4	-38	20	84	7
3	3	5	3	-30	12	84	7
3	3	5	2	-24	6	84	7
3	3	4	4	-28	20	84	7
3	3	4	3	-20	12	84	7
3	3	4	2	-14	6	84	7
3	3	4	1	-10	2	84	7
3	3	3	4	-20	20	84	7
3	3	3	3	-12	12	84	7
3	3	3	2	-6	6	84	7
3	3	3	1	-2	2	84	7
3	3	3	0	0	0	84	7
3	3	2	4	-14	20	84	7
3	3	2	3	-12	12	84	7
3	3	2	2	0	6	84	7
3	3	2	1	4	2	84	7
3	3	1	4	-10	20	84	7
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3	3	1	2	4	6	84	7
3	3	0	3	0	12	84	7
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2	2	5	3	-36	12	30	5
2	2	4	4	-34	20	30	5
2	2	4	3	-26	12	30	5
2	2	4	2	-20	6	30	5

2	2	3	4	-26	20	30	5
2	2	3	3	-18	12	30	5
2	2	3	2	-12	6	30	5
2	2	3	1	-8	2	30	5
2	2	2	4	-20	20	30	5
2	2	2	3	-12	12	30	5
2	2	2	2	-6	6	30	5
2	2	2	1	-2	2	30	5
2	2	2	0	0	0	30	5
2	2	1	3	-8	12	30	5
2	2	1	2	-2	6	30	5
2	2	1	1	2	2	30	5
2	2	0	2	0	6	30	5
1	1	5	4	-48	20	6	3
1	1	4	4	-38	20	6	3
1	1	4	3	-30	12	6	3
1	1	3	4	-30	20	6	3
1	1	3	3	-22	12	6	3
1	1	3	2	-16	6	6	3
1	1	2	3	-16	12	6	3
1	1	2	2	-10	6	6	3
1	1	2	1	-6	2	6	3
1	1	1	2	-6	6	6	3
1	1	1	1	-2	2	6	3
1	1	1	0	0	0	6	3
1	1	0	1	0	2	6	3
0	0	4	4	-40	20	0	1
0	0	3	3	-24	12	0	1
0	0	2	2	-12	6	0	1
0	0	1	1	-4	2	0	1
0	0	0	0	0	0	0	1