Supporting Information for:

## **Metal-Organic Framework Magnets**

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$\mathbf{A}^{+}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
$(Pr_4N)^+$	FiM	44.5	Néel N-type FiM order with $T_{comp} = 34 \text{ K}$	1
$(Bu_4N)^+$	FiM	45	Néel N-type FiM order with $T_{\text{comp}} = 31.5 \text{ K}$ ; magnetic hysteresis at 40 K with $H_c = 400 \text{ Oe}$	1–3
$(Bu_3BzN)^+$	FiM	44	Néel N-type FiM order	3
$(Pe_4N)^+$	FiM	46	Néel N-type FiM order with $T_{\rm comp} = 29.5 \text{ K}$	1,3
PNP <sup>+</sup>	FiM	43	Néel N-type FiM order with $T_{comp} = 30.5 \text{ K}$	1,3
$(Bu_4P)^+$	FiM	44.5	Néel N-type FiM order with $T_{comp} = 33.5 \text{ K}$	1,3
$(Ph_4P)^+$	FiM	34	Spin glass behavior below $T_c$ ; magnetic hysteresis at 20 K with $H_c = 541$ Oe	1–3
$(Ph_3PrP)^+$	FiM	42(1)	Néel N-type FiM order	4
$(Ph_3BuP)^+$	FiM	44(1)	Néel N-type FiM order	4
$(Ph_3PeP)^+$	FiM	44(1)	Néel N-type FiM order	4
$(Ph_3HxP)^+$	FiM	44(1)	Néel N-type FiM order	4
$(Ph_{3}HpP)^{+}$	FiM	48(1)	Néel N-type FiM order	4
$(Ph_4As)^+$	FiM	36	Spin glass behavior below $T_{\rm c}$	1,3

**Table S1.** Magnetic data for 2D oxalate frameworks with honeycomb topology of formula  $(A)[Fe^{II}Fe^{III}(ox)_3]$ .

$\mathbf{A}^{+}$	Type of magnetic order <sup>a</sup>	$T_{\rm c}({ m K})$	Ref.
$(Pr_4N)^+$	CAFM	28	3
$(Bu_4N)^+$	CAFM	28	3,5
$(Bu_3BzN)^+$	CAFM	26	3
$(Pe_4N)^+$	CAFM/FiM	27	3,6
$PNP^+$	CAFM	29	3
$(Bu_4P)^+$	CAFM	26	3
$(Ph_4P)^+$	CAFM	25	3
$(Ph_3PrP)^+$	FiM	32.5(2)	4
(Ph <sub>3</sub> BuP) <sup>+</sup>	FiM	30.0(2)	4
$(Ph_3PeP)^+$	FiM	33.2(2)	4
$(Ph_3HxP)^+$	FiM	33.0(2)	4
$(Ph_{3}HpP)^{+}$	FiM	32.9(2)	4
$(Ph_4As)^+$	CAFM	27	3

**Table S2.** Magnetic data for 2D oxalate frameworks with honeycomb topology of formula  $(A)[Mn^{II}Fe^{III}(ox)_3]$ .

<sup>*a*</sup>The first studies reported CAFM order for these compounds, however, subsequent studies found that the uncompensated magnetic moment more likely originated from  $Mn^{II}$  vacancies, corresponding to FiM order. Here, we report the type of order that the authors speculated at the time of publication.

Мп	M <sup>III</sup>	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Mn	Cr	FM	3.5		7,8
Fe	Cr	FM	8	Magnetic hysteresis at 2 K with $H_c = 130$ Oe and $M_r = 2.32 \ \mu_B \ mol^{-1}$	8
Co	Cr	FM	6	Magnetic hysteresis at 2 K with $H_c = 170$ Oe and $M_r = 3.69 \ \mu_B \ mol^{-1}$	8
Ni	Cr	FM	4.5	Magnetic hysteresis at 2 K with $H_c = 790$ Oe and $M_r = 4.50 \ \mu_B \ mol^{-1}$	8
Cu	Cr	FM	3.2		8
Mn	Fe	CAFM	14	Magnetic hysteresis at 2 K with $H_c = 180$ Oe and $M_r = 1.14 \ \mu_B \ mol^{-1}$	8
Fe	Fe	FiM	25.5		8
Co	Fe	FiM	16	Magnetic hysteresis at 2 K with $H_c = 1.53$ T and $M_r = 0.95 \ \mu_B \ mol^{-1}$	8
Ni	Fe	FiM	11.5	Magnetic hysteresis at 2 K with $H_c = 230$ Oe and $M_r < 0.01 \ \mu_B \ mol^{-1}$	8

**Table S3.** Magnetic data for 2D oxalate frameworks with honeycomb-like topology of formula [K(18-<br/>crown-6)] $_3$ [M<sup>II</sup> $_3$ (H<sub>2</sub>O) $_4$ (M<sup>III</sup>(ox) $_3$ ) $_3$ ].

$\mathbf{M}^{\mathbf{II}}$	$\mathbf{M}^{\mathrm{III}}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Со	Cr	FM	7.4	Magnetic hysteresis at 2 K with $H_c = 160$ Oe and $M_r = 2.3 \ \mu_B \ mol^{-1}$	9,10
Mn	Cr	FM	3.6	Magnetic hysteresis at 2 K with $H_c < 100$ Oe and $M_r < 0.1 \ \mu_B \ mol^{-1}$	10
Mn/Ni	Cr	FM	6.8	Magnetic hysteresis at 2 K with $H_c = 200$ Oe and $M_r = 2.4 \ \mu_B \ mol^{-1}$	10
Co/Ni	Cr	FM	6.8	Magnetic hysteresis at 2 K with $H_c = 200$ Oe and $M_r = 1.4 \ \mu_B \ mol^{-1}$	10
Mn/Fe	Fe	FiM	19.5	Magnetic hysteresis at 2 K with $H_c < 100$ Oe and $M_r < 0.1 \ \mu_B \ mol^{-1}$	10
Mn/Co	Fe	FiM	9.4	Magnetic hysteresis at 2 K with $H_c = 6300$ Oe and $M_r = 0.3 \ \mu_B \ mol^{-1}$	10
Fe	Fe	FiM	12.2	Magnetic hysteresis at 2 K with $H_c = 1100$ Oe and $M_r < 0.1 \ \mu_B \ mol^{-1}$	10
Fe/Ni	Fe	FiM	20.0	Magnetic hysteresis at 2 K with $H_c = 160$ Oe and $M_r = 0.1 \ \mu_B \ mol^{-1}$	10

**Table S4.** Magnetic data for neutral 2D oxalate frameworks of formula  $[M^{II}(H_2O)_2]_3[M^{III}(ox)_3]_2 \cdot 2(18 - crown-6).$ 

М <sup>II</sup>	$\mathbf{M}^{\mathbf{III}}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Mn	Cr	FM	5.3	Magnetic hysteresis at 2 K with $H_c = 20$ Oe and $M_r = 0.15 \ \mu_B \ mol^{-1}$	11,12
Fe	Cr	FM	13.0	Magnetic hysteresis at 2 K with $H_c = 1100$ Oe and $M_r = 3.60 \ \mu_B \ mol^{-1}$	11,12
Co	Cr	FM	9.0	Magnetic hysteresis at 2 K with $H_c = 130$ Oe and $M_r = 1.20 \ \mu_B \ mol^{-1}$	11,12
Ni	Cr	FM	14.5	Magnetic hysteresis at 5 K with $H_c = 250$ Oe	12
Cu	Cr	FM	7.0	Magnetic hysteresis at 2 K with $H_c = 180$ Oe and $M_r = 1.50 \ \mu_B \ mol^{-1}$	11,12
Mn	Fe	CAFM	28.4	Magnetic hysteresis at 2 K with $H_c = 120$ Oe and $M_r = 0.10 \ \mu_B \ mol^{-1}$	11,12
Fe	Fe	FiM	43.3	Magnetic hysteresis at 2 K with $H_c = 370$ Oe and $M_r = 0.02 \ \mu_B \ mol^{-1}$	11,12
Co	Fe	FiM	19.5		12
Fe	Ru	FM	13.8	Magnetic hysteresis at 2 K with $H_c = 2210$ Oe and $M_r = 2.5 \ \mu_B \ mol^{-1}$	13
Co	Ru	FM	3.1		13

Table S5. Magnetic data for 2D oxalate frameworks with honeycomb topology of formula  $[Cp_{2}^{*}Fe^{III}][M^{II}M^{III}(ox)_{3}].$ 

Мп	$\mathbf{M}^{\mathbf{III}}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Mn	Cr	FM	5.1	Magnetic hysteresis at 2 K with $H_c = 40$ Oe and $M_r = 0.3 \ \mu_B \ mol^{-1}$	11
Fe	Cr	FM	12.7	Magnetic hysteresis at 2 K with $H_c = 1940$ Oe and $M_r = 3.5 \ \mu_B \ mol^{-1}$	11
Co	Cr	FM	8.2	Magnetic hysteresis at 2 K with $H_c = 250$ Oe and $M_r = 1.3 \ \mu_B \ mol^{-1}$	11
Cu	Cr	FM	6.7	Magnetic hysteresis at 2 K with $H_c = 200$ Oe and $M_r = 1.7 \ \mu_B \ mol^{-1}$	11
Mn	Fe	CAFM	25.4	Magnetic hysteresis at 2 K with $H_c = 150$ Oe and $M_r < 0.01 \ \mu_B \ mol^{-1}$	11
Fe	Fe	FiM	44.0	Magnetic hysteresis at 2 K with $H_c = 100$ Oe and $M_r < 0.01 \ \mu_B \ mol^{-1}$	11
Fe	Ru	FM	12.8	Magnetic hysteresis at 2 K with $H_c = 3200$ Oe and $M_r = 2.0 \ \mu_B \ mol^{-1}$	13
Co	Ru	FM	2.8		13

**Table S6.** Magnetic data for 2D oxalate frameworks with honeycomb topology of formula $[Cp^*_2Co^{III}][M^{II}M^{III}(ox)_3].$ 

Мп	$\mathbf{M}^{\mathbf{III}}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other notes	Ref.
Mn	Cr	FM	5.9	$\mathbf{R} = \mathbf{E}\mathbf{t},  x = 2$	14
Fe	Cr	FM	11.0	$\mathbf{R} = \mathbf{E}\mathbf{t}, \ x = 2$	14
Fe	Fe	FiM	42–44	R = Et, $x = 2$ ; Néel N-type FiM order with $T_{\text{comp}} \approx 33 \text{ K}$	14
Mn	Cr	FM	5.6	$\mathbf{R} = \mathbf{B}\mathbf{u},  x = 0$	14
Fe	Cr	FM	11.5	$\mathbf{R} = \mathbf{B}\mathbf{u},  x = 0$	14
Fe	Fe	FiM	42–44	R = Bu, $x = 0$ ; Néel N-type FiM order with $T_{comp} \approx 33$ K	14

**Table S7.** Magnetic data for 2D oxalate frameworks with honeycomb topology of formula  $(R_3(CH_2COOH)N)[M^{II}M^{III}(ox)_3] \cdot xH_2O.$ 

Compound	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
$[Fe(sal_2-trien)]_2[Mn^{II}_2(ox)_3] \\ \cdot 4H_2O \cdot DMF$	CAFM	8.1	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 48$ Oe	15
$[In(sal_2-trien)]_2[Mn^{II}_2(ox)_3]$ $\cdot 3H_2O \cdot MeOH$	CAFM	8.1	Magnetic hysteresis at 2 K with $H_c = 660$ Oe	15
[Fe(sal <sub>2</sub> -trien)] [Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]·CH <sub>2</sub> Cl <sub>2</sub>	FM	5.4	Near complete spin-crossover with $T_{1/2} = 255$ K; LIESST effect with $T_{\text{LIESST}} = 41$ K; magnetic hysteresis at 2 K with $H_c = 20$ Oe	16–18
[Fe(sal <sub>2</sub> -trien)] [Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]·CHCl <sub>3</sub>	FM	5.6	Near complete spin-crossover with $T_{1/2} =$ 180 K; LIESST effect with $T_{\text{LIESST}} = 58$ K; magnetic hysteresis at 2 K with $H_c =$ 10 Oe	18
[Fe(sal <sub>2</sub> -trien)] [Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]·CHBr <sub>3</sub>	FM	5.6	Partial spin-crossover with $T_{1/2} = 140$ K; LIESST effect with $T_{\text{LIESST}} = 62$ K; magnetic hysteresis at 2 K with $H_c = 30$ Oe	18
$[Fe(sal_2-trien)] \\ [MnIICrIII(ox)_3] \cdot CH_2Br_2$	FM	5.6	Complete spin-crossover with $T_{1/2} = 230$ K; LIESST effect with $T_{\text{LIESST}} = 45$ K; magnetic hysteresis at 2 K with $H_c = 10$ Oe	18
$[Fe(4-Br-sal_2-trien)]$ $[Mn^{II}Cr^{III}(ox)_3]_{0.67}Cl_{0.33}$ $\cdot MeOH \cdot solvent$	FM	5.2	Near complete spin-crossover; magnetic hysteresis at 2 K with $H_c = 70$ Oe	19
$[Fe(3-Br-sal_2-trien)]$ $[Mn^{II}Cr^{III}(ox)_3] \cdot 2MeCN$	FM	5.4	High-spin Fe <sup>III</sup>	19
[Fe(3-Cl-sal <sub>2</sub> -trien)] [Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]·2MeCN ·2MeOH	FM	5.0	Partial spin-crossover	19
$[Fe(3-OMe-sal_2-trien)]$ $[Mn^{II}Cr^{III}(ox)_3] \cdot MeOH$ $\cdot 1.5H_2O \cdot 0.5CH_2Cl_2$	FM	5.4	Partial spin-crossover	19
$[Fe(5-NO_2-sal_2-trien)] \\ [Mn^{II}Cr^{III}(ox)_3] \cdot MeNO_2 \\ \cdot 0.5H_2O$	FM	5.6	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 5$ Oe	20
[Fe(pmha) <sub>2</sub> ][Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]	FM	5.5	High-spin Fe <sup>III</sup>	21

**Table S8.** Magnetic data for 2D oxalate frameworks with intercalated spin-crossover Fe<sup>III</sup> complexes or diamagnetic In<sup>III</sup> analogues.

Compound	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
$(Pr_4N)[Mn^{II}Cr^{III}(ox)_3]$	FM	6		5
$(Ph_4P)[Mn^{II}Cr^{III}(ox)_3]$	FM	5.9		22
(dams)[Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]	FM	5.8		21
(4-BuAmNO)[Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]	FM	5.7	Magnetic hysteresis at 2 K with $H_c = 50$ Oe and $M_r = 0.6 \ \mu_B \ mol^{-1}$	23
$[Mn^{III}(saltmen)(MeOH) (MeCN)][Mn^{II}Cr^{III}(ox)_3] \cdot MeOH$	FM	5.6	Magnetic hysteresis at 2 K with $H_c = 13$ Oe	24
$\begin{split} & [Mn^{II}(H_2O)_2(MeOH)_2][Mn^{II} \\ & (H_2O)(MeOH)]_2[Cr^{III}(ox)_3]_2 \\ & \cdot (18\text{-}crown\text{-}6) \end{split}$	FiM	5.5	Thin magnetic hysteresis loop at 2 K	25
$[Mn^{III}((X)-salmen)(MeOH) (MeCN)][Mn^{II}Cr^{III}(ox)_3] \cdot 0.5MeOH \cdot 1.25MeCN$	FM	5.5	Magnetic hysteresis at 2 K with $H_c = 8$ Oe ( $X = R$ ) and 2 Oe ( $X = S$ )	24

**Table S9.** Magnetic data for other 2D oxalate frameworks.

$\mathbf{Z}^{\mathrm{II}+n}$	$\mathbf{M}^{\mathbf{II}}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Fe <sup>II</sup>	Mn	AFM	13.0(5)		26,27
Co <sup>III</sup>	Co	CAFM	8	Magnetic hysteresis at 2 K with $H_c = 500$ Oe and $M_r = 50$ Oe cm <sup>3</sup> mol <sup>-1</sup>	28
Fe <sup>II</sup>	Co	CAFM	6	Magnetic hysteresis at 2 K with $H_c = 300$ Oe and $M_r = 40$ Oe cm <sup>3</sup> mol <sup>-1</sup>	28
$Ru^{II}$	Cu	CAFM	5	Thin magnetic hysteresis loop at 2 K	29
Ru <sup>II</sup>	Ni	CAFM	35	Thin magnetic hysteresis loop at 2 K	29

**Table S10.** Magnetic data for 3D chiral frameworks of formula  $[(Z^{II+n})(2,2'-bpy)_3][M^{II}_2(ox)_3](ClO_4)_n$  with homometallic anionic lattice.

$\mathbf{Z}^{\mathbf{I}+n}$	$\mathbf{M}^{\mathrm{II}}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
[Ru(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Mn	FM	4.2	Thin magnetic hysteresis loop at 2 K	30
[Ru(2,2'-bpy) <sub>2</sub> (ppy)] <sup>+</sup>	Mn	FM	5.8	Thin magnetic hysteresis loop at 2 K	30
[Ru(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Fe	FM	2.5	Magnetic hysteresis at 2 K with $H_c$ = 14 Oe	31
[Ru(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Co	FM	2.8	Magnetic hysteresis at 2 K with $H_c$ = 8 Oe	31
[Ru(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Ni	FM	6.4	Magnetic hysteresis at 2 K with $H_c$ = 22 Oe	31
[Ru(2,2'-bpy) <sub>2</sub> (ppy)] <sup>+</sup>	Ni	FM	11.0	Thin magnetic hysteresis loop at 2 K	30
$[Ru(2,2'-bpy)_3]^{2+}$	Cu	FM	1.9	Magnetic hysteresis at 2 K with $H_c$ = 14 Oe	31
$[Fe(2,2'-bpy)_3]^{2+}$	Mn	FM	3.9		31
$[Fe(2,2'-bpy)_3]^{2+}$	Fe	FM	4.7	Magnetic hysteresis at 2 K with $H_c$ = 80 Oe	31
$[Fe(2,2'-bpy)_3]^{2+}$	Co	FM	6.6	Magnetic hysteresis at 2 K with $H_c$ = 55 Oe	31
[Ni(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Mn	FM	2.3	Magnetic hysteresis at 2 K with $H_c$ = 13 Oe	31
[Ni(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Fe	FM	4.0	Magnetic hysteresis at 2 K with $H_c$ = 28 Oe	31
[Co(2,2'-bpy) <sub>3</sub> ] <sup>2+</sup>	Mn	FM	2.2	Magnetic hysteresis at 2 K with $H_c$ = 13 Oe	31

**Table S11.** Magnetic data for 3D chiral frameworks of formula  $[Z^{I+n}][M^{II}Cr^{III}(ox)_3](ClO_4)_n$  with heterometallic anionic lattice.

$\mathbf{Z}^{\mathrm{II}}$	M <sup>II</sup>	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Fe	Mn	CAFM	20.0	Magnetic hysteresis at 2 K with $H_c$ = 250 Oe	32
Fe	Fe	FiM	9.1	Magnetic hysteresis at 2 K with $H_c$ = 970 Oe	32
Ru	Mn	CAFM	17.2	Magnetic hysteresis at 2 K with $H_c$ = 300 Oe	32
Ru	Fe	FiM	7.9	Magnetic hysteresis at 2 K with $H_c$ = 860 Oe	32

 $\label{eq:constraint} \textbf{Table S12.} \ Magnetic \ data \ for \ 3D \ chiral \ frameworks \ of \ formula \ [Z^{II}(2,2'-bpy)_3][M^{II}Fe^{III}(ox)_3](ClO_4).$ 

Мп	M <sup>III</sup>	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Mn	Cr	FM	5.1	Magnetic hysteresis at 2 K with $H_c$ = 20 Oe	33
Fe	Cr	FM	5.0	Magnetic hysteresis at 2 K with $H_c$ = 40 Oe	33
Co	Cr	FM	5.2	Magnetic hysteresis at 2 K with $H_c$ = 50 Oe	33
Ni	Cr	FM	13.0	Magnetic hysteresis at 2 K with $H_c$ = 30 Oe	33
Fe	Fe	FiM	28.0	Magnetic hysteresis at 2 K with $H_c$ = 300 Oe	33
Mn	Fe	CAFM	31.0	Magnetic hysteresis at 2 K with $H_c$ = 240 Oe	33

**Table S13.** Magnetic data for 3D chiral frameworks of formula  $[Ir^{III}(ppy)_2(2,2'-bpy)][M^{II}M^{III}(ox)_3] \cdot 0.5H_2O.$ 

Compound	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
$[Fe^{III}(sal_2-trien)][Mn^{II}Cr^{III}(ox)_3]$ $\cdot MeOH$	FM	5.2	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 30$ Oe	17
$[In^{III}(sal_2-trien)][Mn^{II}Cr^{III}(ox)_3]$ $\cdot 0.25H_2O \cdot 0.25MeOH \cdot 0.25MeCN$	FM	5.2	Magnetic hysteresis at 2 K with $H_c = 30$ Oe	17
$[In^{III}(sal_2-trien)][Mn^{II}Cr^{III}(ox)_3]$ $\cdot MeNO_2 \cdot 0.5H_2O$	FM	5.0	Magnetic hysteresis at 2 K with $H_c = 30$ Oe	17
[Fe <sup>III</sup> (5-OMe-sal <sub>2</sub> -trien)] [Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ]	FM	5.1	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 60$ Oe	21
$[Fe^{III}(5-Cl-sal_2-trien)][Mn^{II}Cr^{III}(ox)_3]$ $\cdot 0.5MeNO_2$	FM	4.8	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 30$ Oe	34
$[In^{III}(5-Cl-sal_2-trien)]$ $[Mn^{II}Cr^{III}(ox)_3]$	FM	5.0	Magnetic hysteresis at 2 K with $H_c = 10$ Oe	34
$[Fe^{III}(5-Br-sal_2-trien)]$ $[Mn^{II}Cr^{III}(ox)_3]$	FM	4.8	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 30$ Oe	34
[Fe <sup>II</sup> (bppy) <sub>2</sub> ][Mn <sup>II</sup> Cr <sup>III</sup> (ox) <sub>3</sub> ] <sub>2</sub> ·bppy·MeOH	FM	3.0	Minimal spin-crossover	35
$[Fe^{II}(pyimH)_3][Mn^{II}Cr^{III}(ox)_3]_2$ $\cdot$ solvent	FM	4.5	Complete spin-crossover with $T_{1/2}$ = 350 K; LIESST effect below 60 K	36
$[Fe^{II}(im_2-trien)][Mn^{II}(MeOH) Cr^{III}(ox)_3]_2 \cdot 4MeOH \cdot MeCN \cdot H_2O$	FM	5.2	Partial spin-crossover; magnetic hysteresis at 2 K with $H_c = 20$ Oe	37
$[Fe^{II}(tren(6-Mepy)_3)][Mn^{II}Cr^{III}(ox)_3] \\ [Mn^{II}(MeOH)_{0.58}(H_2O)_{0.42}Cr^{III}(ox)_3] \\ \cdot 2MeOH \cdot 0.5MeCN \cdot 0.42H_2O$	FM	4.3	High-spin Fe <sup>II</sup> ; magnetic hysteresis at 2 K with $H_c = 20$ Oe	37
$[Fe^{II}(tren-im_3)]_2[Mn^{II}_{2.5}(MeOH)_3 \\ Cr^{III}_{3}(ox)_9]\cdot 4.75MeOH\cdot 4.25H_2O$	FM	3.8	Partial spin-crossover	37

**Table S14.** Magnetic data for 3D oxalate frameworks with intercalated spin-crossover Fe<sup>II</sup>/Fe<sup>III</sup> complexes or diamagnetic In<sup>III</sup> analogues.

$\mathbf{A}^{+}/\mathbf{A'}^{+}$	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
Li <sup>+</sup>	CAFM	51	Magnetic hysteresis at 2 K with $H_c = 1100$ Oe and $M_r = 0.030 \ \mu_B \ mol^{-1}$	38
Na <sup>+</sup>	CAFM	26	Magnetic hysteresis at 2 K with $H_c = 450$ Oe and $M_r = 0.012 \ \mu_B \ mol^{-1}$	38
$\mathbf{K}^+$	CAFM	38	Magnetic hysteresis at 2 K with $H_c = 1600$ Oe and $M_r = 0.016 \ \mu_B \ mol^{-1}$	38
$(NH_4)^+$	CAFM	40	Magnetic hysteresis at 5 K with $H_c = 4000$ Oe and $M_r = 0.016 \ \mu_B \ mol^{-1}$	39
$(MeNH_3)^+$	CAFM	40	Magnetic hysteresis at 2 K with $H_c = 400$ Oe and $M_r = 0.016 \ \mu_B \ mol^{-1}$	40
$(Me_2NH_2)^+$	CAFM	52	Magnetic hysteresis at 2 K with $H_c = 350$ Oe and $M_r = 0.013 \ \mu_B \ mol^{-1}$	40
$(EtNH_3)^+$	CAFM	56	Magnetic hysteresis at 2 K with $H_c = 85$ Oe	40
(H <sub>3</sub> O) <sup>+</sup> / (EtNH <sub>3</sub> ) <sup>+</sup>	CAFM	70	Magnetic hysteresis at 2 K with $H_c = 2500$ Oe and $M_r = 0.036 \ \mu_B \ mol^{-1}$	41

**Table S15.** Magnetic data for 3D oxalate frameworks of formula  $(A)(A')[Fe^{III}_2O(ox)_2Cl_2] \cdot xH_2O$ .

 Table S16. Magnetic data for other 3D oxalate frameworks.

Compound	Type of magnetic order	<i>T</i> <sub>c</sub> (K)	Other magnetic properties	Ref.
$[Mn^{III}(salpn)(MeOH)_{1.5}$ $(MeCN)_{0.5}][Mn^{II}Cr^{III}(ox)_3]$ $\cdot 0.82MeOH \cdot 0.93H_2O$	FM	5.4	Magnetic hysteresis at 2 K with $H_c = 14$ Oe	24
$[Mn^{III}((X)-salmen)(MeOH)_2]$ $[Mn^{II}Cr^{III}(ox)_3]\cdot 0.375CH_2Cl_2$ $\cdot yMeOH \cdot zH_2O$	FM	5.2	Magnetic hysteresis at 2 K with $H_c = 19$ Oe ( $X = R$ ) and 18 Oe ( $X = S$ )	24

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