Electronic Supplementary Material (ESI) for Dalton Transactions.

Electronic supplementary information

Structural diversity and magnetic properties of six cobalt coordination polymers based on 2,2'-phosphinico-dibenzoate ligand

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Table S1. Selected Bond Distances (Å) and Angles (deg) for **1**−**6**.

			1		
Co(1)-O(5A)	2.037(3)	Co(1)-O(42)	2.053(3)	Co(1)-O(38)	2.235(3)
Co(1)-O(41)	2.069(3)	Co(1)-O(17)	2.096(3)	Co(1)-O(40)	2.119(3)
Co(2)-O(9)	2.020(3)	Co(2)-O(6A)	2.027(3)	Co(2)-O(8)	2.157(3)
Co(2)-O(17)	2.096(3)	Co(2)-O(16)	2.110(3)	Co(2)-O(38)	2.188(3)
Co(3)-O(3)	1.969(3)	Co(3)-O(12)	2.018(3)	Co(3)-O(1)	2.082(3)
Co(3)-O(31)	2.034(3)	Co(3)-O(10)	2.048(3)		
Co(4)-O(37)	2.063(3)	Co(4)-O(2)	2.095(3)	Co(4)-O(15)	1.991(3)
Co(4)-O(30)	2.122(3)	Co(4)-O(43)	2.163(3)	Co(4)-O(14)	2.251(3)
Co(5)-O(39)	2.075(3)	Co(5)-O(10)	2.116(3)	Co(5)-O(37)	2.060(3)
Co(5)-O(16)	2.123(3)	Co(5)-O(8)	2.143(3)	Co(5)-O(32)	2.196(3)
Co(6)-O(39)	1.978(3)	Co(6)-O(7)	2.002(3)	Co(6)-O(33)	1.931(3)
Co(6)-O(19)	2.027(3)	Co(6)-O(32)	2.335(3)		
Co(7)-O(39)	2.020(3)	Co(7)-O(37)	2.046(3)	Co(7)-O(14)	2.317(3)
Co(7)-O(29)	2.047(3)	Co(7)-O(27)	2.116(3)	Co(7)-O(34)	2.184(3)
Co(8)-O(22)	1.998(3)	Co(8)-O(26)	2.008(3)	Co(8)-O(20)	2.062(3)
Co(8)-O(13)	2.047(3)	Co(8)-O(27)	2.052(3)		
Co(9)-O(24B)	2.038(3)	Co(9)-O(36)	2.062(3)	Co(9)-O(28)	2.023(3)
Co(9)-O(29)	2.083(3)	Co(9)-O(34)	2.136(3)	Co(9)-O(44)	2.195(3)
Co(10)-O(45)	2.077(3)	Co(10)-O(46)	2.088(3)	Co(10)-O(23B)	2.052(3)
Co(10)-O(47)	2.094(3)	Co(10)-O(36)	2.128(3)	Co(10)-O(44)	2.181(3)
Co(1)-O(17)-Co(2)	99.60(11)	Co(2)-O(38)-Co(1)	92.77(10)	Co(2)-O(16)-Co(5)	100.84(11)
Co(3)-O(10)-Co(5)	113.62(12)	Co(4)-O(14)-Co(7)	89.65(10)	Co(5)-O(37)-Co(4)	123.90(13)
Co(5)-O(8)-Co(2)	98.67(11)	Co(5)-O(32)-Co(6)	87.18(10)	Co(6)-O(39)-Co(5)	100.89(11)
Co(6)-O(39)-Co(7)	120.89(13)	Co(7)-O(37)-Co(5)	96.12(11)	Co(7)-O(37)-Co(4)	103.21(11)
Co(7)-O(29)-Co(9)	104.39(11)	Co(7)-O(39)-Co(5)	96.49(11)	Co(8)-O(27)-Co(7)	115.18(12)
Co(9)-O(34)-Co(7)	98.11(10)	Co(9)-O(36)-Co(10)	98.66(11)	Co(10)-O(44)-Co(9)	93.18(10)
			2		
Co(1)-O(3A)	2.006(2)	Co(1)-O(3)	2.006(2)	Co(1)-O(2)	2.119(3)
Co(1)-O(2A)	2.119(3)	Co(1)-N(6B)	2.169(3)	Co(1)-N(6C)	2.169(3)
Co(2)-O(4)	1.964(3)	Co(2)-O(1D)	2.021(3)	Co(2)-O(5E)	2.109(3)
Co(2)-N(1)	2.129(3)	Co(2)-O(6E)	2.258(3)		
			3		
Co(1)-N(1)	2.187(2)	Co(1)-O(2)	2.135(2)	Co(1)-O(2A)	2.2908(19)
Co(1)-O(3)	2.0187(19)	Co(1)-O(7)	2.051(2)	Co(1)-O(8)	2.117(3)
Co(2)-O(4)	2.054(2)	Co(2)-O(4B)	2.054(2)	Co(2)-O(5)	2.0589(19)
Co(2)-O(5B)	2.059(2)	Co(2)-O(9B)	2.153(2)	Co(2)-O(9)	2.153(2)
Co(1)-O(2)-Co(1A)	103.68(8)				
			4		
Co(1)-N(1)	2.2281(18)	Co(1)-O(2)	2.1222(16)	Co(1)-O(2C)	2.2625(15)
Co(1)-O(3)	2.0079(15)	Co(1)-O(7)	2.0621(15)	Co(1)-O(8)	2.1337(16)
Co(2)-N(2)	2.160(2)	Co(2)-N(2B)	2.160(2)	Co(2)-O(4)	2.0767(15)
Co(2)-O(4B)	2.0767(15)	Co(2)-O(5)	2.0404(15)	Co(2)-O(5B)	2.0404(15)
Co(1)-O(2)-Co(1C)	104.90(6)				
			5		
Co(1)-N(2)	2.167(3)	Co(1)-N(3B)	2.137(3)	Co(1)-O(4)	1.9956(15)
Co(1)-O(4A)	1.9956(15)	Co(1)-O(5)	2.1580(15)	Co(1)-O(5A)	2.1580(15)
Co(2)-N(1)	2.1014(19)	Co(2)-O(1C)	2.2242(16)	Co(2)-O(2C)	2.0938(16)
Co(2)-O(3)	1.9783(15)	Co(2)-O(6D)	2.0282(16)		
			6		
Co(1)-O(6)	2.0755(17)	Co(1)-O(6A)	2.0755(17)	Co(1)-O(9)	2.1043(19)
Co(1)-O(9A)	2.1043(19)	Co(1)-O(10A)	2.0625(17)	Co(2)-N(1)	2.023(2)
Co(2)-O(2B)	1.9656(18)	Co(2)-O(4)	1.9220(18)	Co(2)-O(10)	2.0173(18)
Co(3)-O(3B)	1.9584(17)	Co(3)-O(5A)	2.0504(18)	Co(3)-O(8C)	1.9481(19)
Co(3)-O(10)	2.0027(17)				
Co(3)-O(10)-Co(2)	104.79(8)	Co(3)-O(10)-Co(1)	117.00(8)	Co(2)-O(10)-Co(1)	106.62(8)

Symmetry codes: A: x-1, y, z; B: x+1, y, z (**1**); A: -x+1, -y, -z+1; B: x+1/2, -y+1/2, z-1/2; C: -x+1/2, y-1/2, -z+3/2; D: -x+1, -y+1, -z+1; E: x, y+1, z (**2**); A: -x+1, -y, -z; B: -x+1, -y+1, -z; C: -x, -y, -z+1 (**3**); A: -x+1, -y, -z+2; B: -x, -y+1, -z+1; C: -x, -y, -z+1 (**4**); A: -x, y, -z+1/2; B: x, y-1, z; C: x, -y, z+1/2; D: -x, -y, -z+1 (**5**); A: -x+1, -y+1, -z+1; B: x+1, y, z; C: x, -y+1/2, z-1/2 (**6**).

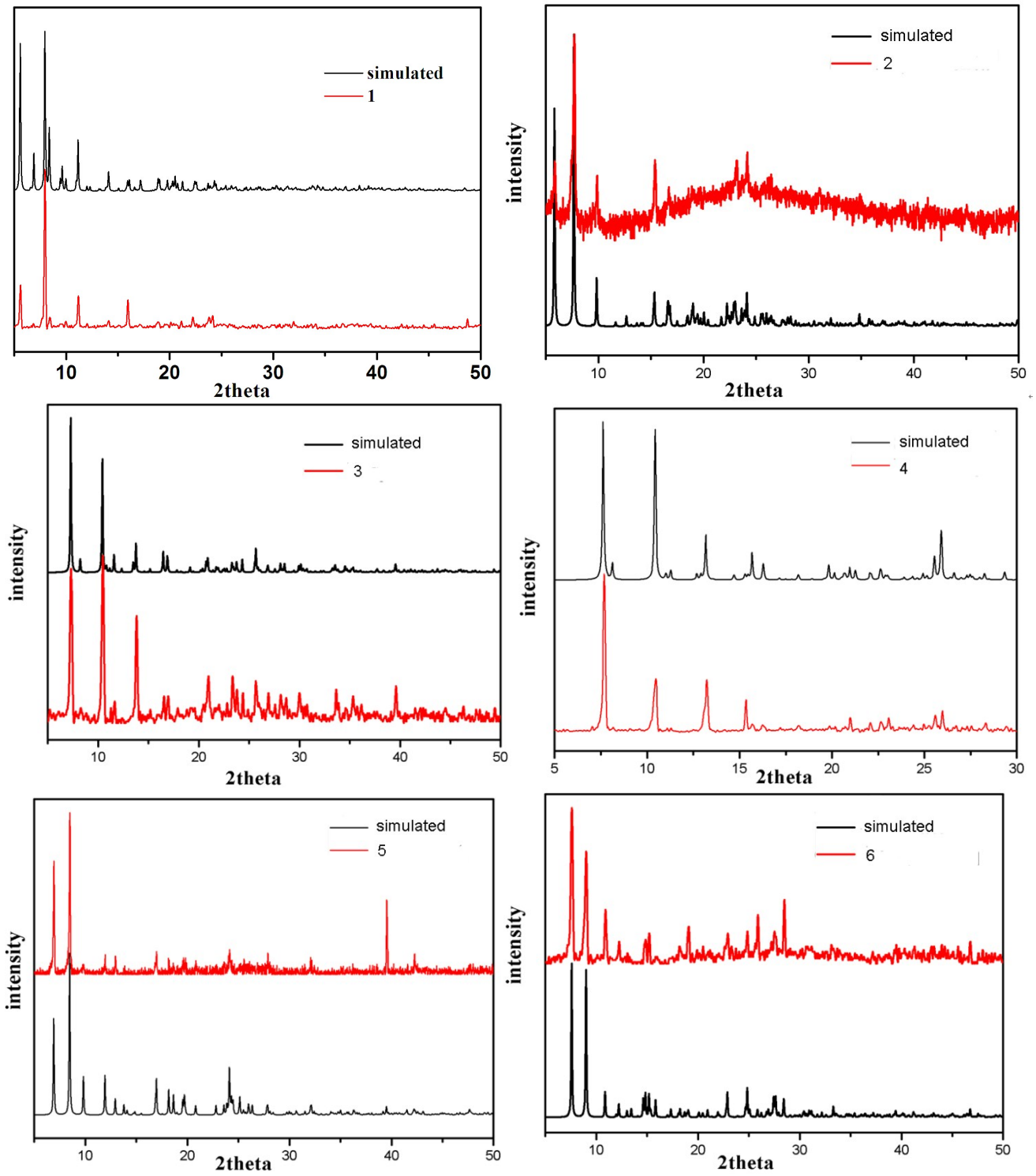

Fig. S1. PXRD patterns of **1-6**.

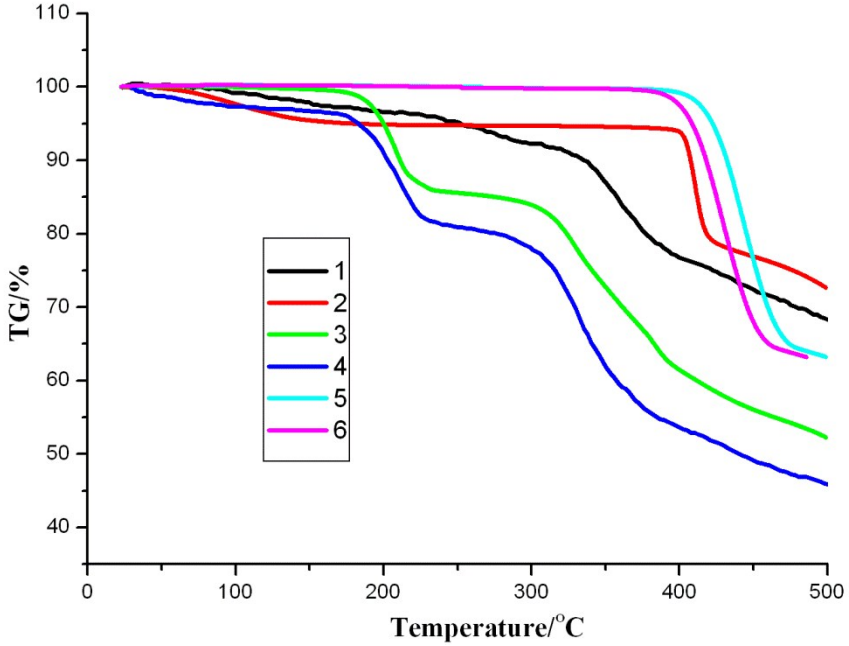

Fig. S2. Thermogravimetric curves of compounds **1**-**6**.

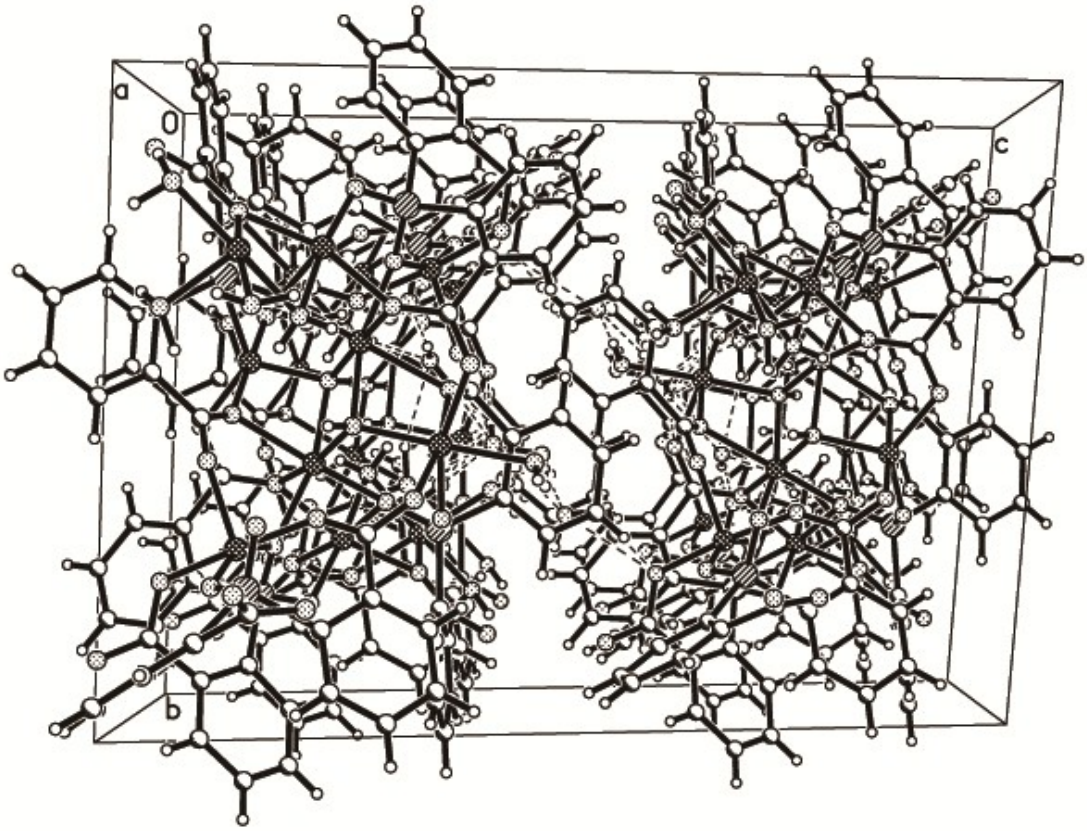

Fig. S3. 3D supramolecular structure of **1**.

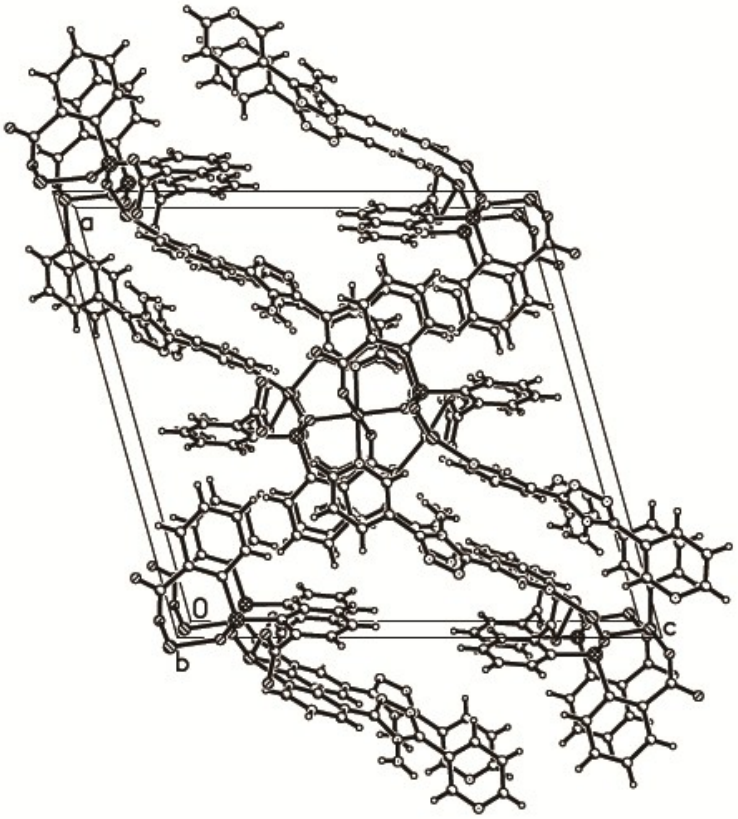

Fig. S4. 3D supramolecular structure of **2**.

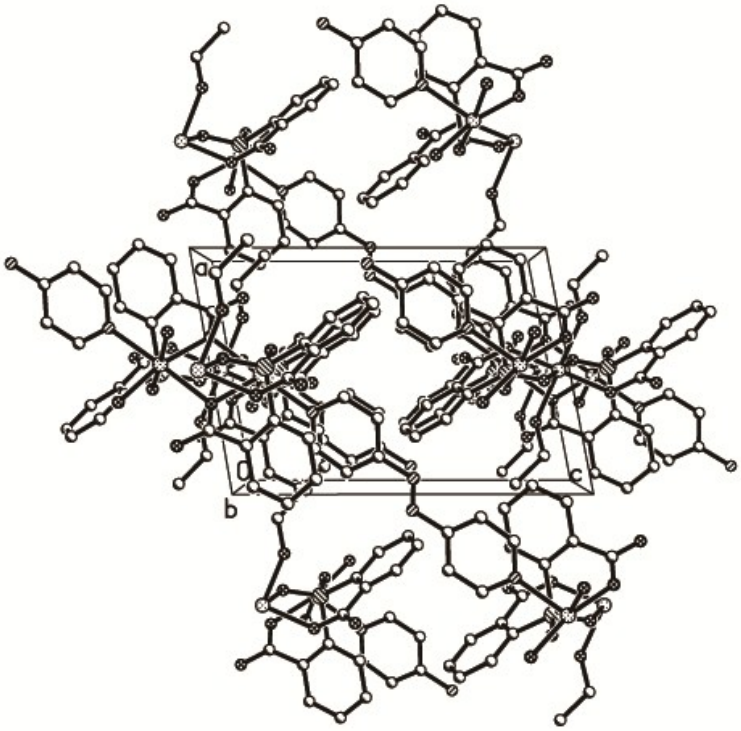

Fig. S5. 3D supramolecular structure of **3**.

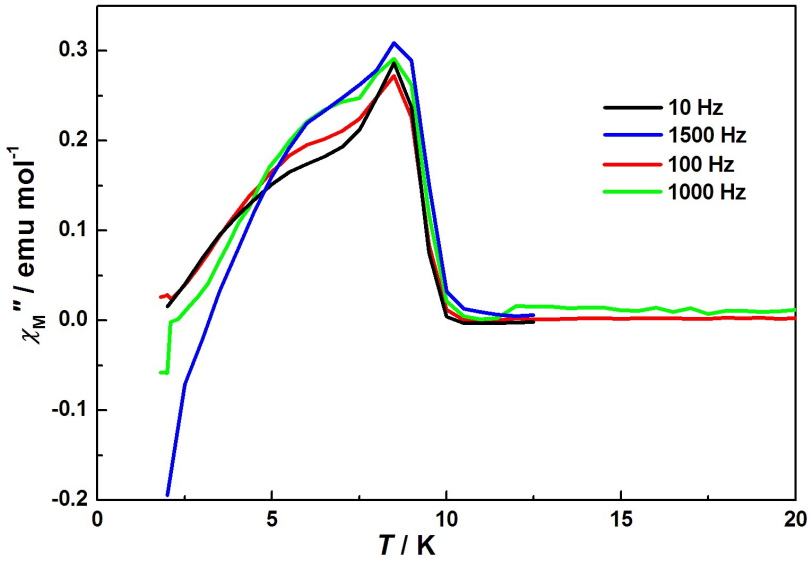

Fig. S6. Temperature dependence of the imaginary parts of **1** measured under various oscillating frequencies with zero field.

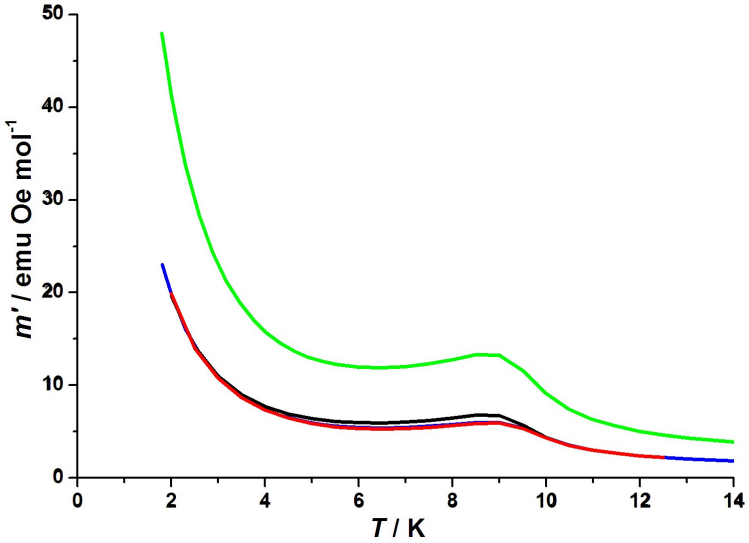

Fig. S7. Temperature dependence of the in-phase of **1** measured under various oscillating frequencies with zero field.

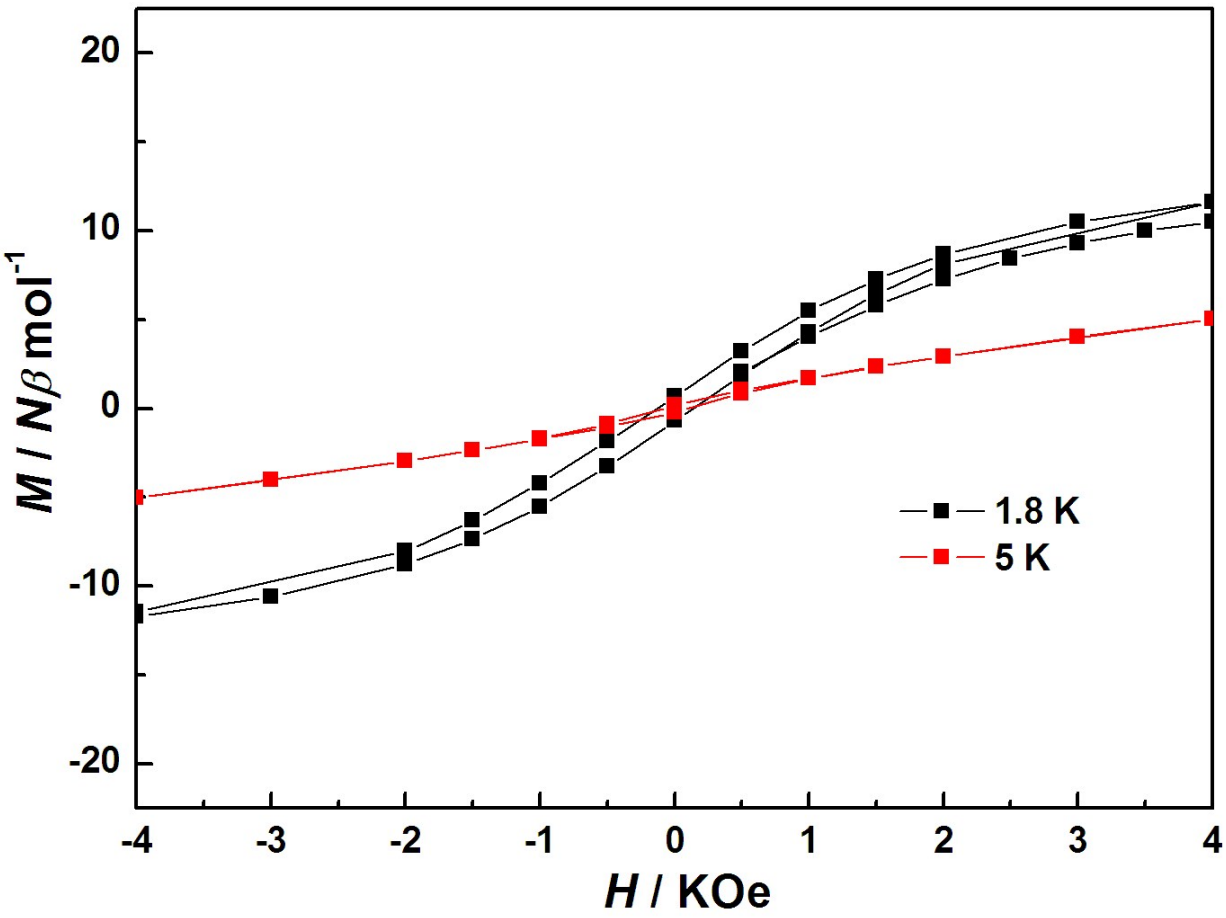

Fig. S8. Hysteresis loop at 1.8 K and 5 K for **1**.