$CoMn_2O_4$ Spinel from a MOF:

Synthesis, structure and magnetic Studies

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ELECTRONIC SUPPLEMENTARY INFORMATION

Table S1: Selected bond angle observed in $[CoMn_2\{C_6H_3(COO)_3\}_2]$, **I**.

Angle	Amplitude (º)	Angle	Amplitude
O(1)#1-Mn(1)-O(2)#2	83.86(19	O(6)#1-Mn(2)-O(3)	88.06(19)
O(1)#1-Mn(1)-O(5)#3	90.96(18)	O(6)#5-Mn(2)-O(3)#6	88.06(19)
O(2)#2-Mn(1)-O(5)#3	130.38(19)	O(6)#1-Mn(2)-O(3)#6	91.94(19)
O(1)#1-Mn(1)-O(3)	98.35(18)	O(3)-Mn(2)-O(3)#6	180.000(1)
O(2)#2-Mn(1)-O(3)	146.87(19)	O(6)#5-Co(1)-O(4)#6	84.41(19)
O(5)#3-Mn(1)-O(3)	82.73(17)	O(6)#1-Co(1)-O(4)#6	95.59(19)
O(1)#1-Mn(1)-O(4)#4	156.03(19)	O(3)-Co(1)-O(4)#6	93.64(17)
O(2)#2-Mn(1)-O(4)#4	87.68(18)	O(3)#6-Co(1)-O(4)#6	86.36(17)
O(5)#3-Mn(1)-O(4)#4	77.59(16)	O(6)#5-Co(1)-O(4)	95.59(19)
O(3)-Mn(1)-O(4)#4	100.93(16)	O(6)#1-Co(1)-O(4)	84.41(19)
O(1)#1-Mn(1)-O(5)#4	144.44(18)	O(3)-Co(1)-O(4)	86.36(17)
O(2)#2-Mn(1)-O(5)#4	81.72(19)	O(3)#6-Co(1)-O(4)	93.64(17)
O(5)#3-Mn(1)-O(5)#4	122.86(14)	O(4)#6-Co(1)-O(4)	180.000(1)
O(3)-Mn(1)-O(5)#4	77.53(16)	Mn(1)#3-O(5)-Mn(1)#9	111.53(19)
O(4)#4-Mn(1)-O(5)#4	55.10(16)	Co(1)-O(4)-Mn(1)#9	131.1(2)
O(6)#5-Mn(2)-O(6)#1	180.0	Co(1)-O(3)-Mn(1)	98.43(18)
O(6)#5-Mn(2)-O(3)	91.94(19)		

Symmetry operations used to generate equivalent atoms for **I**: #1 x+1/2,-+1/2,z-1/2 #2 -x+1/2,y-1/2,-z+1/2

#3 -x+1,-y+1,-z+1 #4 x-1/2,-y+1/2,z-1/2 #5 -x+1/2,y-1/2,-z+3/2 #6 -x+1,-y,-z+1 #9 x+1/2,-y+1/2,z+1/2

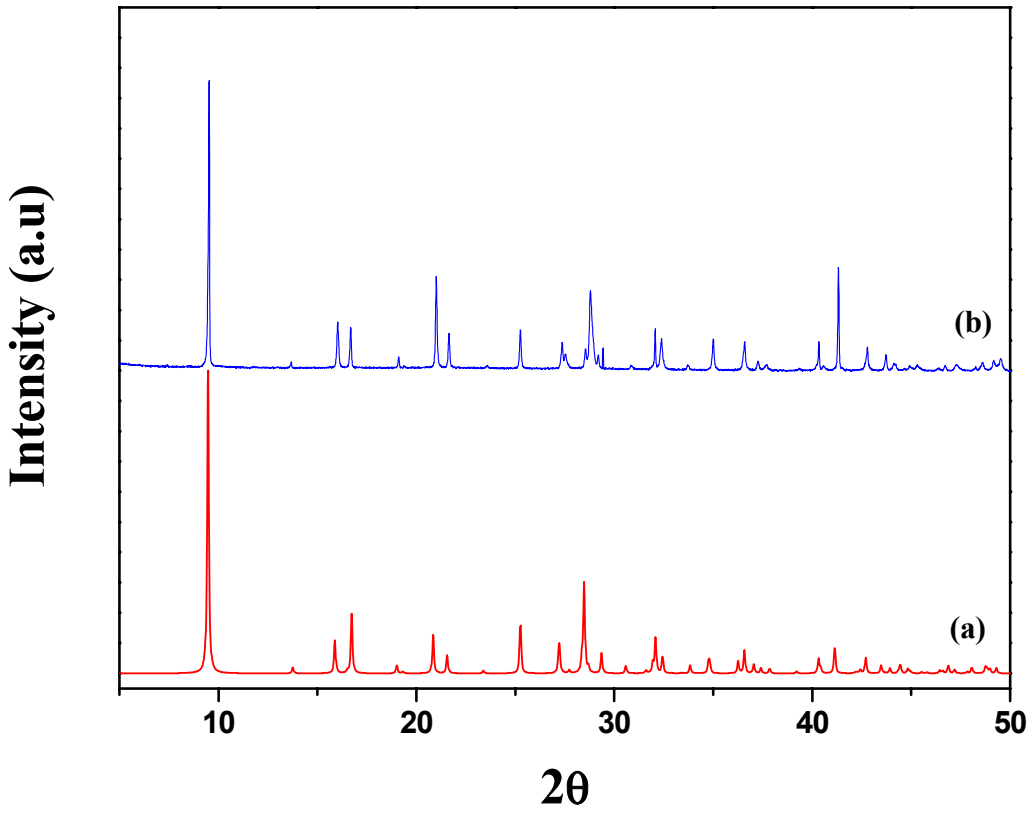


Fig. S1. Powder X-ray diffraction pattern (Cu Kα) of $[CoMn_2\{C_6H_3(COO)_3\}_2]$, **I** : (a) simulated and (b) experimental.

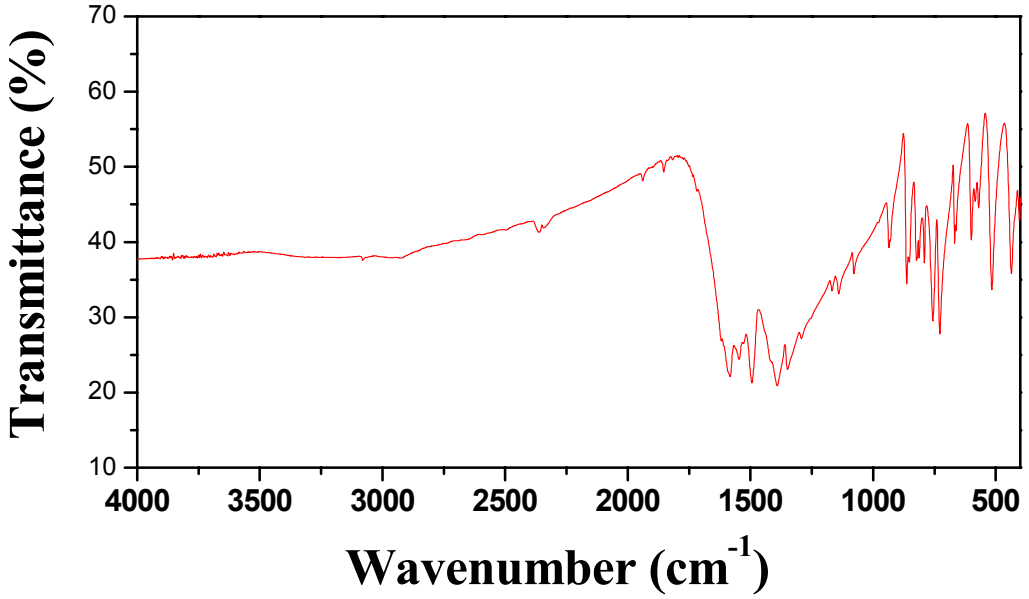


Fig. S2. IR spectra of $[CoMn_2\{C_6H_3(COO)_3\}_2]$, **I**.

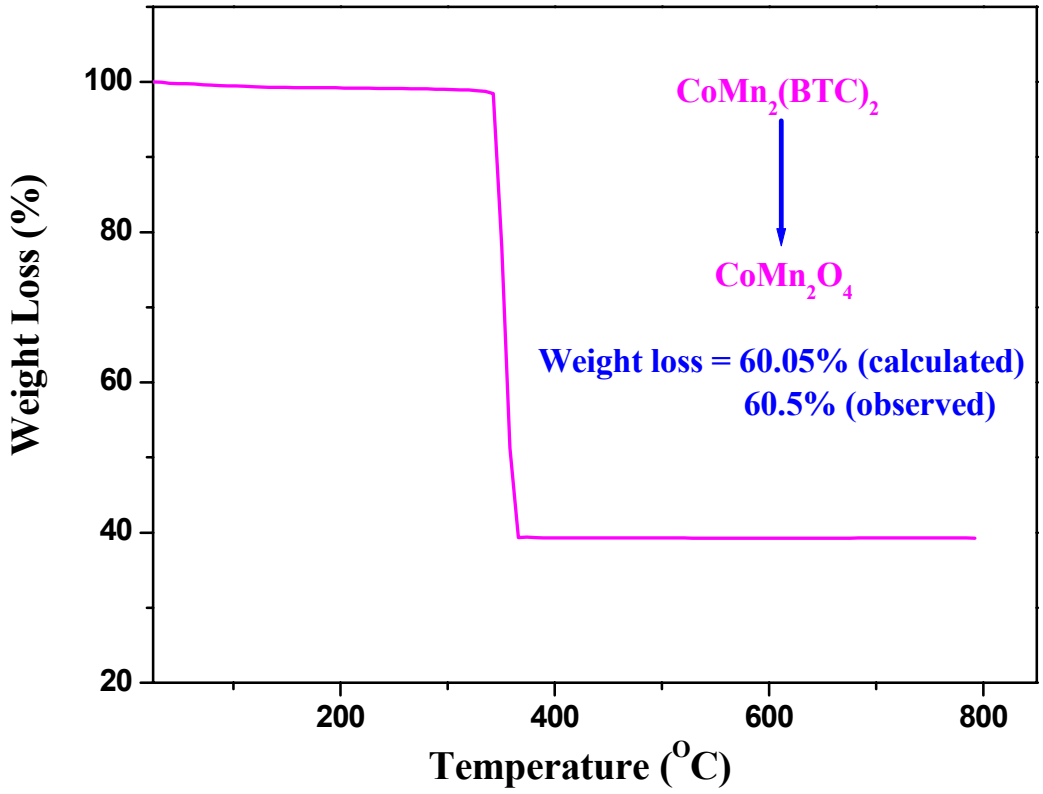


Fig. S3. The TGA studies of $[CoMn_2\{C_6H_3(COO)_3\}_2]$, **I**, in oxygen atmosphere.

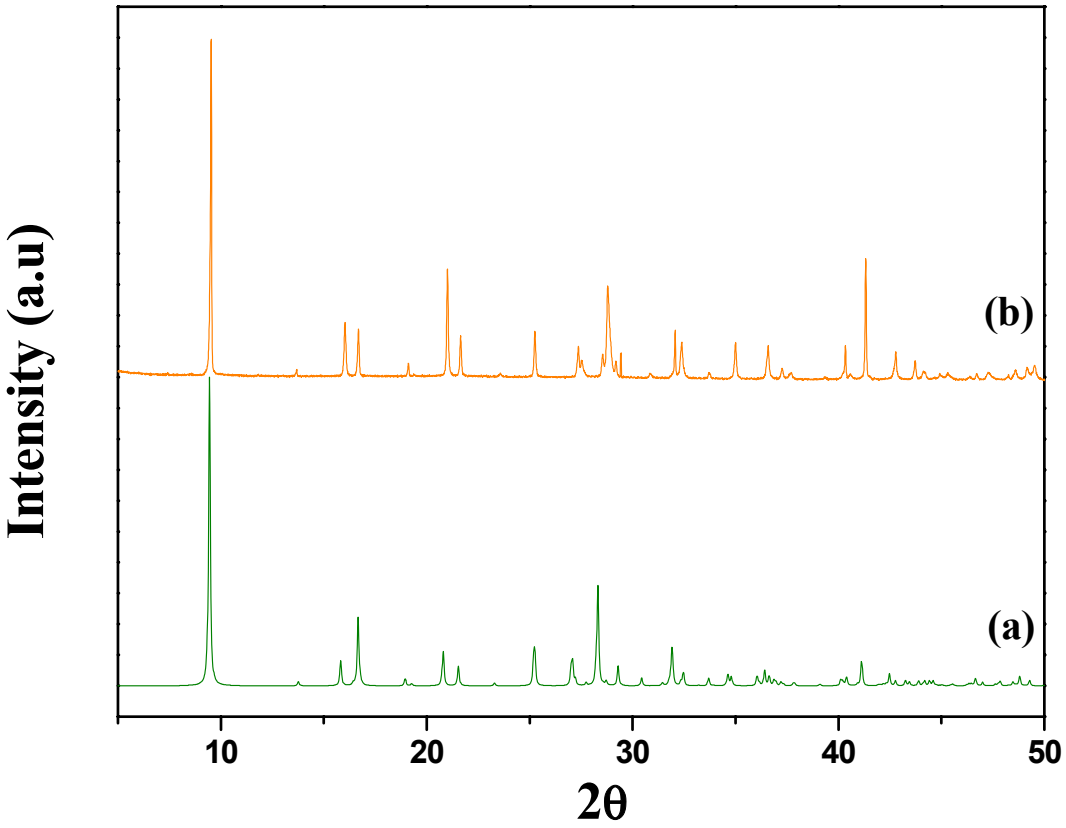


Fig. S4. Powder X-ray diffraction pattern (Cu Kα): (a) simulated of $[Mn_3\{C_6H_3(COO)_3\}_2]$ (Reference 21) and (b) experimental of **I**.

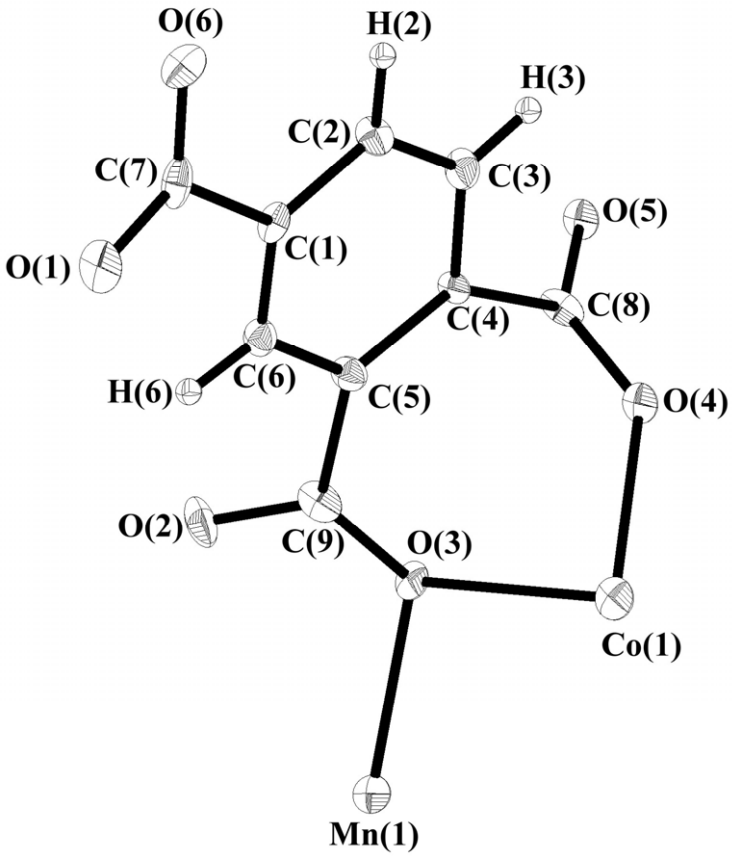


Fig. S5. The asymmetric unit of compound **I**.

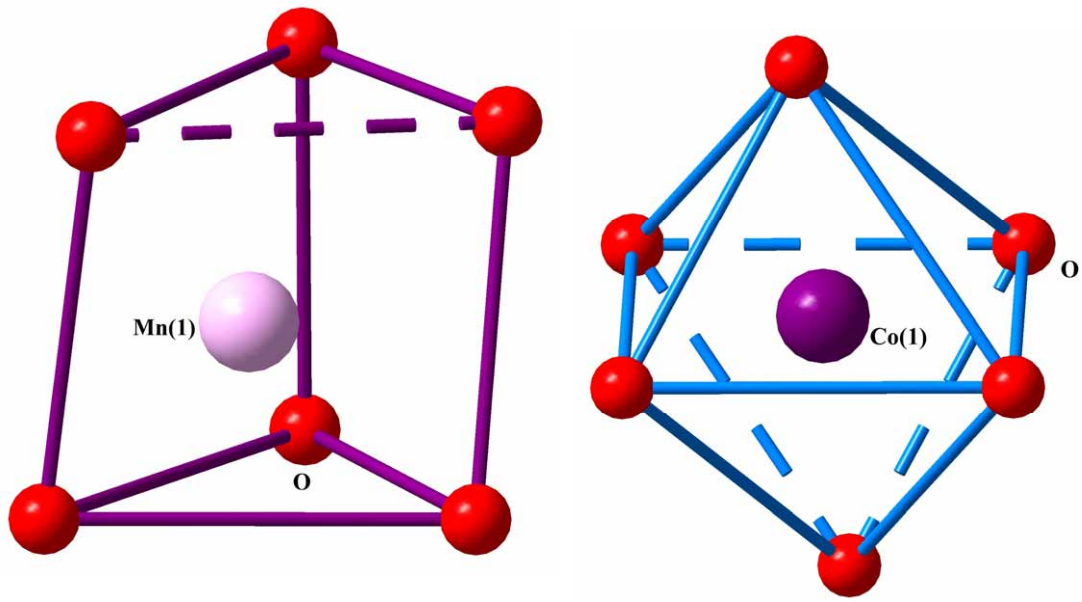


Fig. S6. Figure shows the trigonal prismatic environment of Mn^{2+} and the octahedral environment of Co^{2+} in compound **I**.

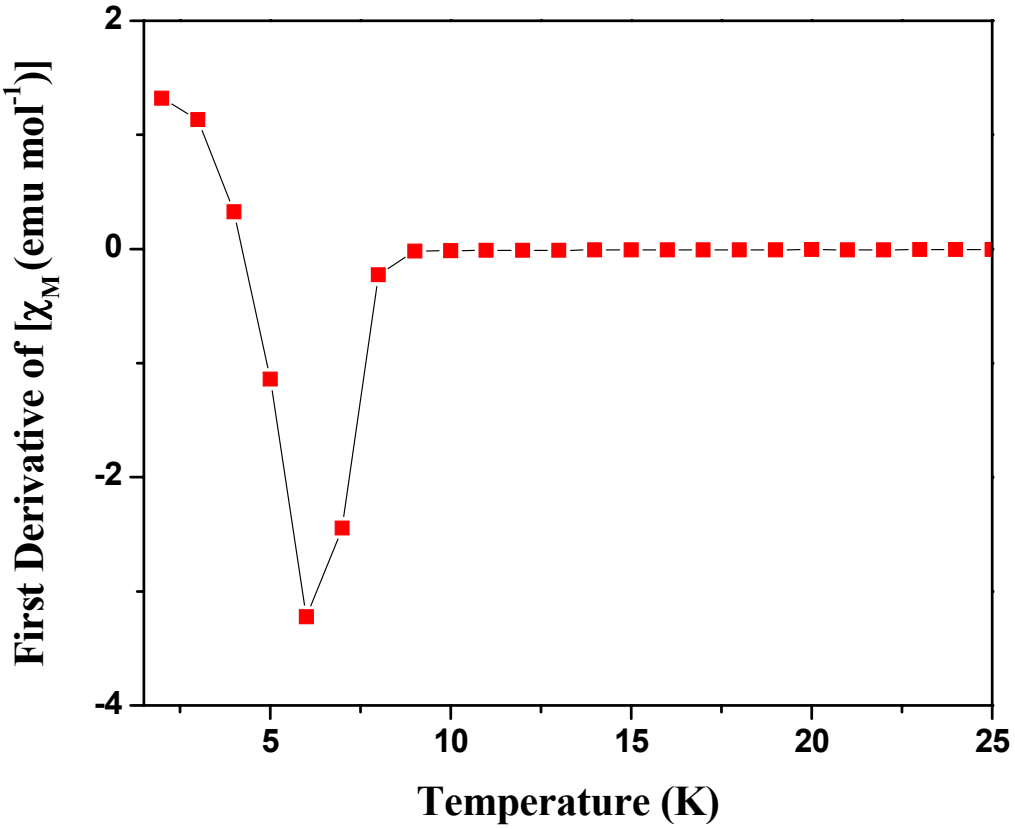


Fig. S7. First derivative of χ_M vs. T plot of **I** (see the minima at 6 K).

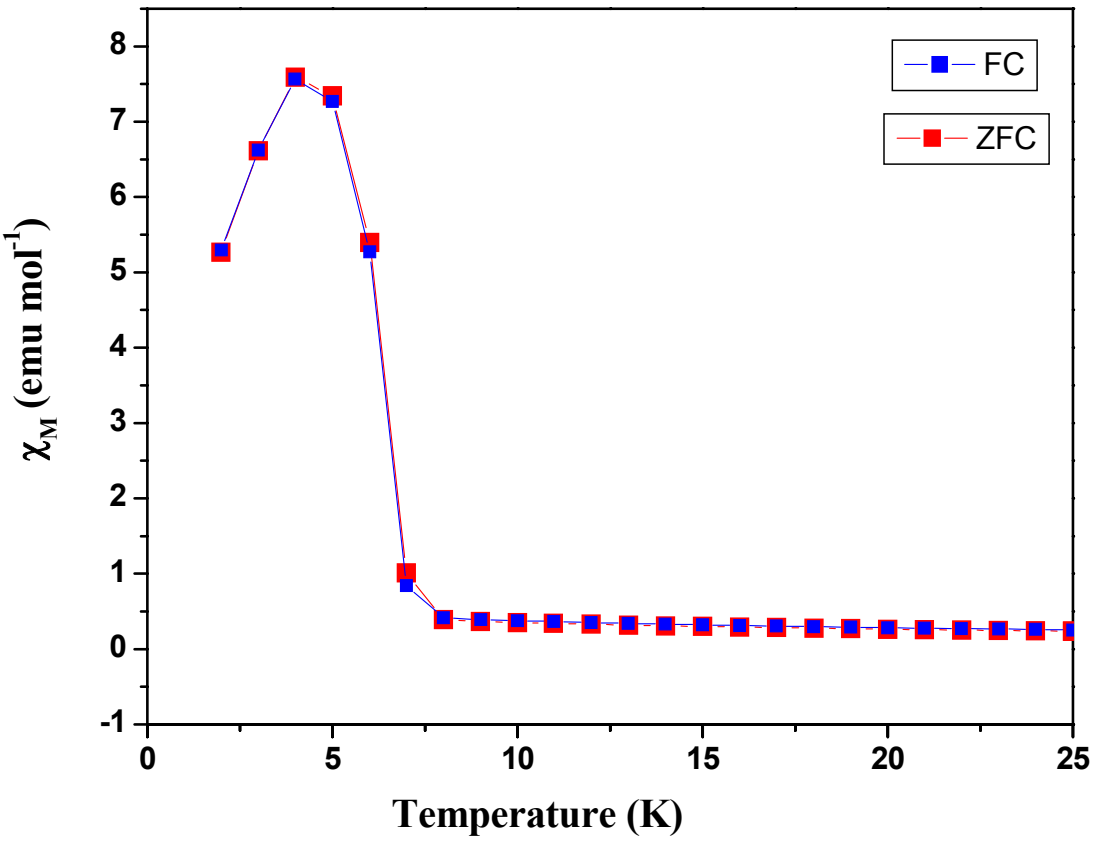


Fig. S8. Field cooled (FC) and zero-field cooled (ZFC) χ_M vs T plot of **I** at H = 50 Oe

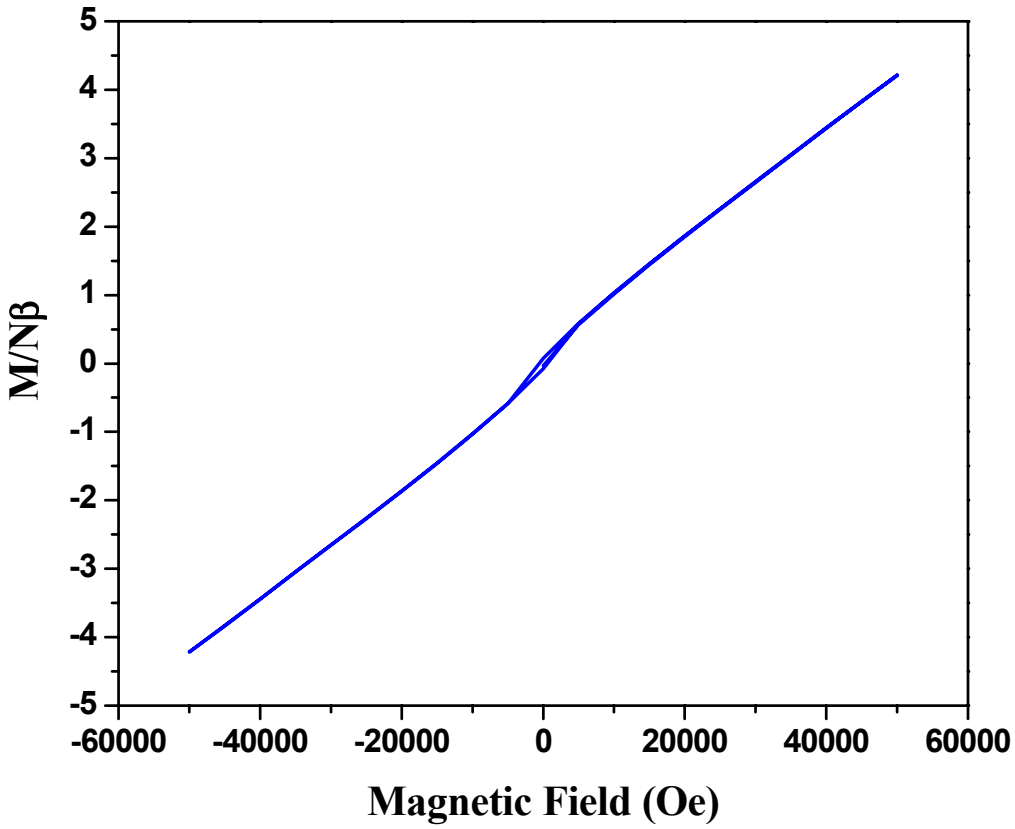
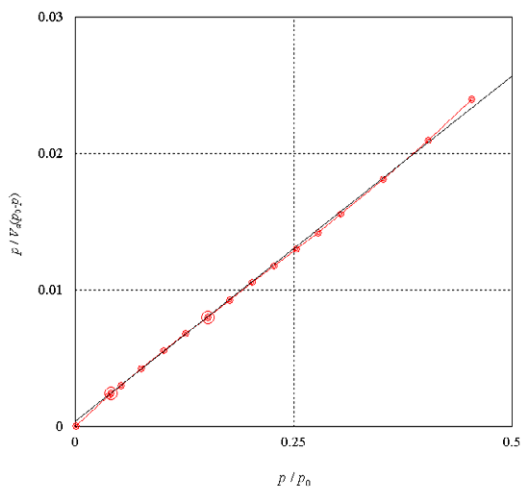
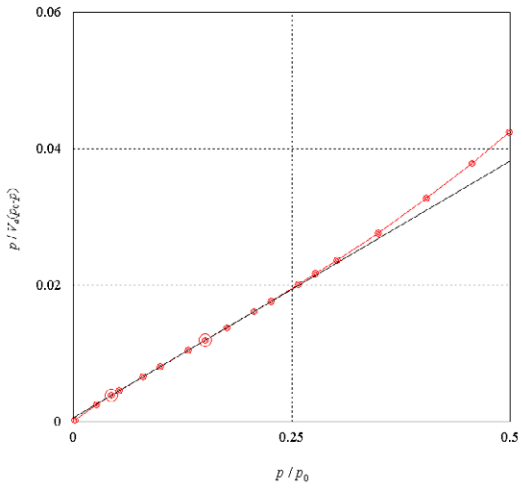


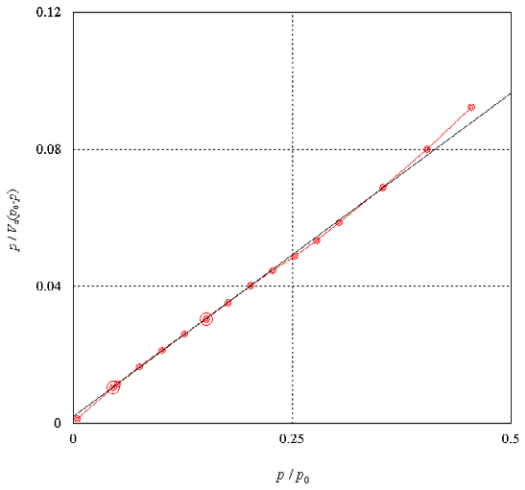
Fig. S9. M Vs H plot of **I** at 5K



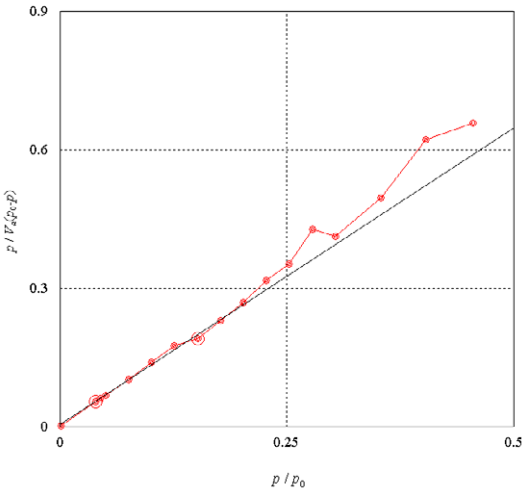
(a)



(b)



(c)



(d)

Fig. S10. BET plot of $CoMn_2O_4$ nano spinels: (a) 10 nm, (b) 15 nm, (c) 20 nm and (d) 45 nm.