Construction of a robust pillared-layer framework based on the rare paddlewheel subunit $[Mn^{II}_2(\mu\text{-}O_2CR)_4L_2]$: synthesis, crystal structure and magnetic properties†

Vijay Gupta#[a], Sadhika Khullar#[b], Sandeep Kumar[a] and Sanjay K. Mandal*[a]

[a]*Department of Chemical Sciences, Indian Institute of Science Education and Research, Mohali, Sector 81, Manauli PO, S.A.S. Nagar, Mohali (Punjab) 140306, INDIA*

[b]*Department of Chemistry, DAV University, Jalandhar, Punjab 144001, INDIA*

#These authors contributed equally to this work.

Electronic Supplementary Information

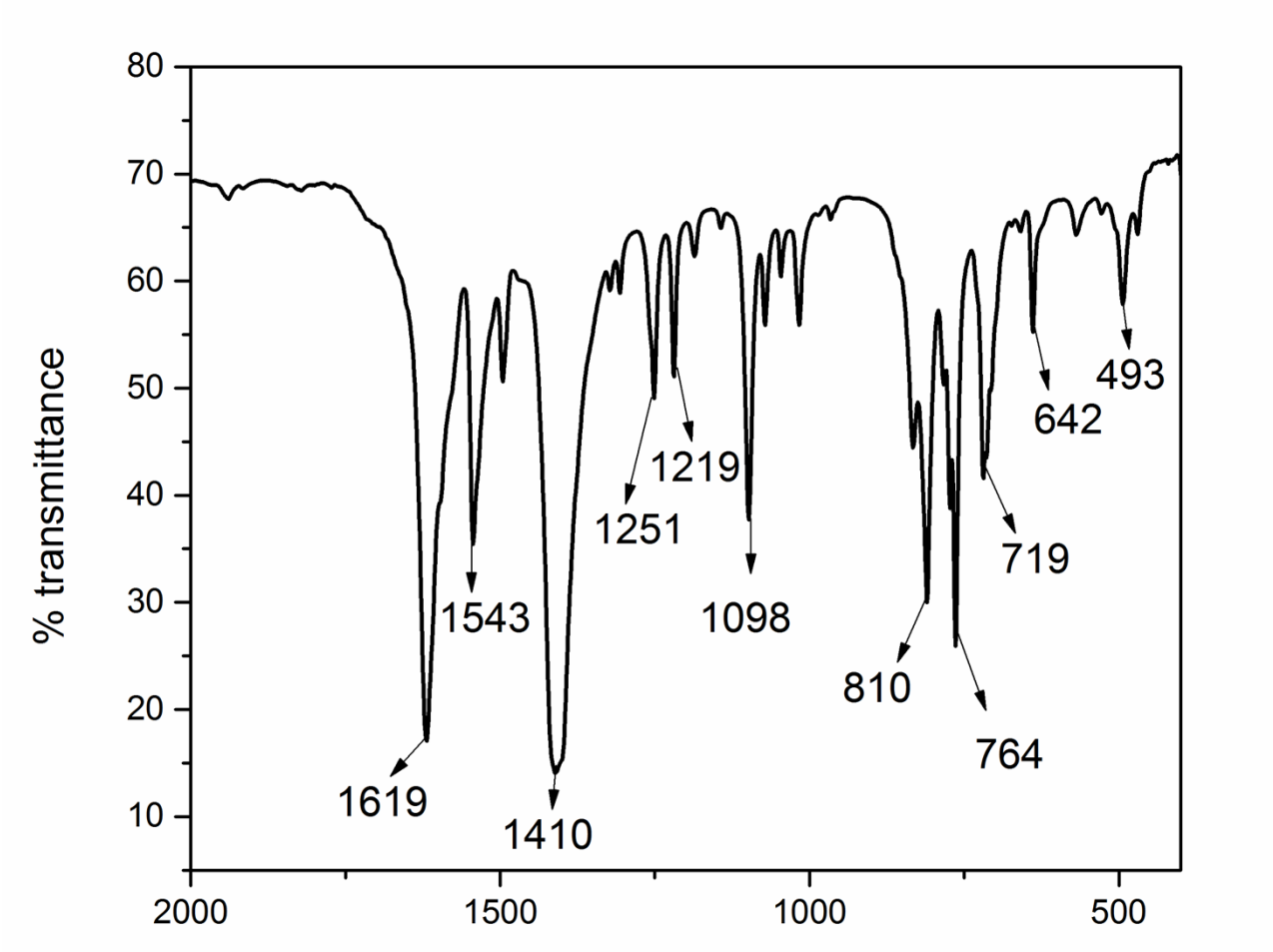

Fig S1. FTIR spectrum of **1**.

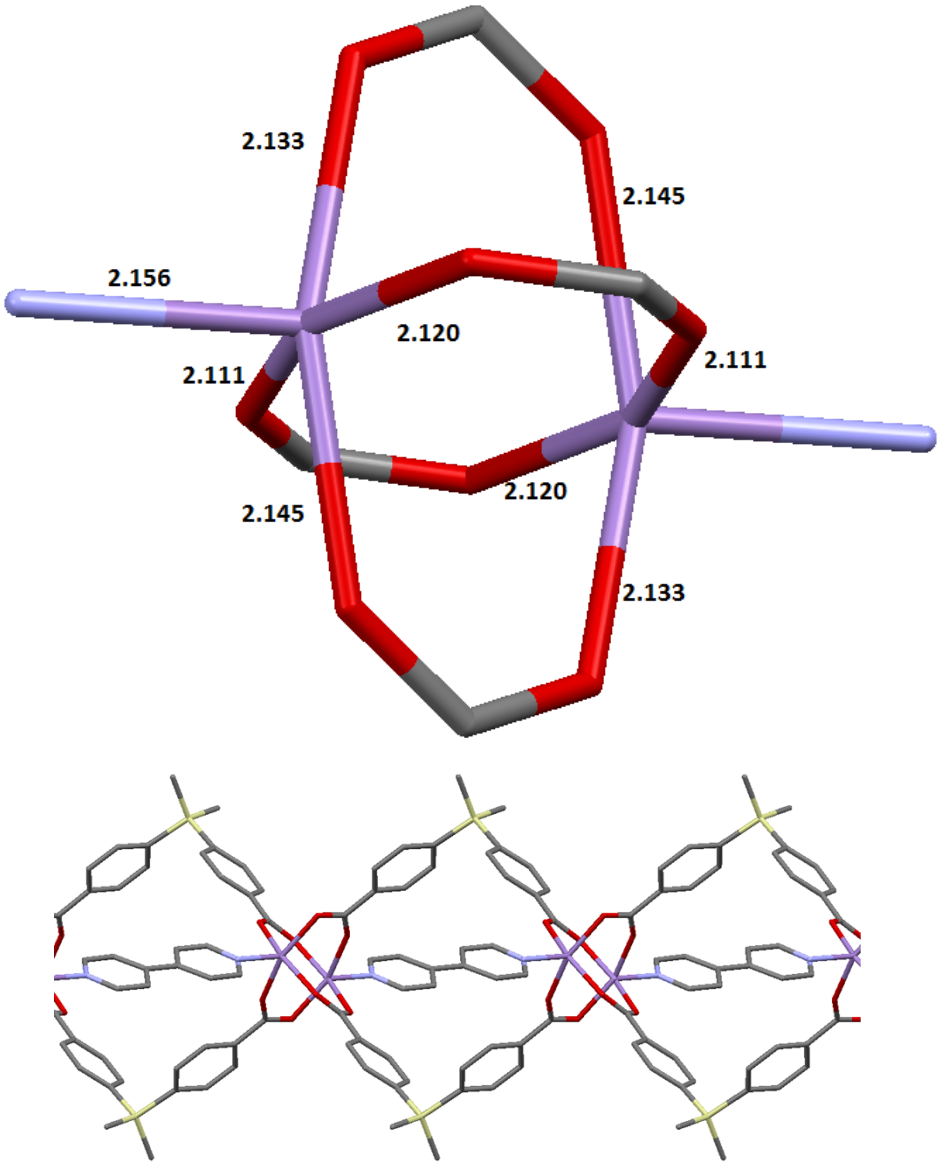

Fig S2. A view of the dinuclear subunit in **1** with structural parameters.

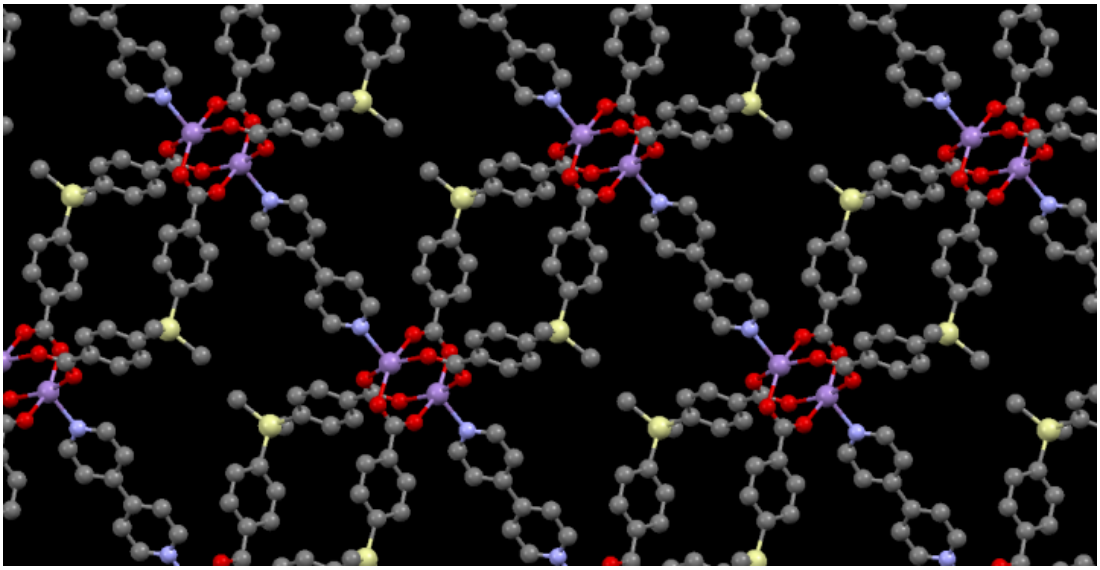

Fig S3. Another view of **1** showing the orientations of dimetal subunits and the dicarboxylate linkers that connect such subunits.

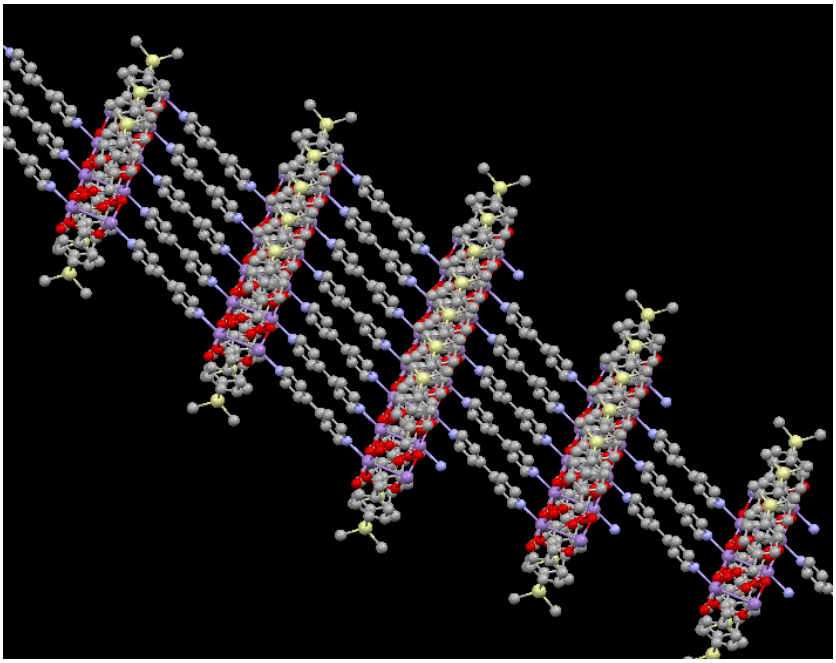

Fig S4. A view of **1** with 4,4'-bpy pillars connecting the paddle-wheel subunits.

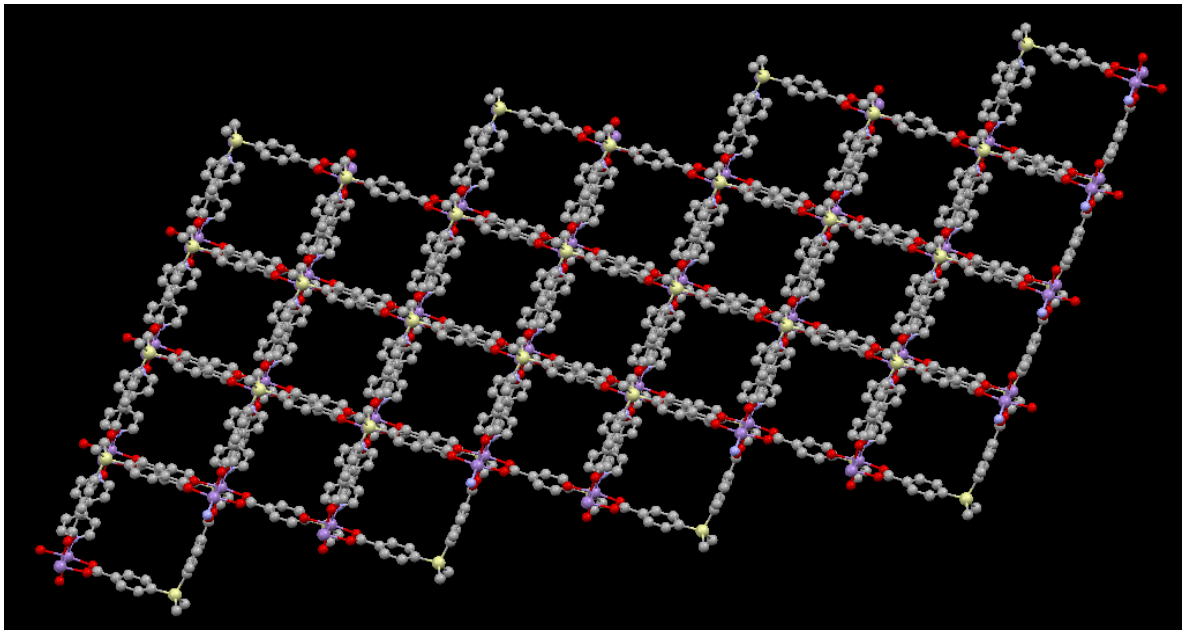

Fig S5. A square-grid view of **1**.

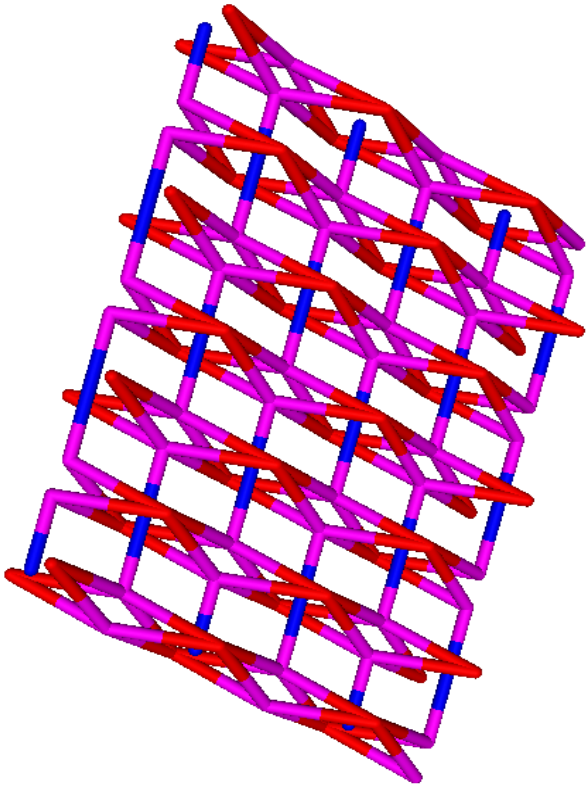

Fig S6. A topological view of **1**.

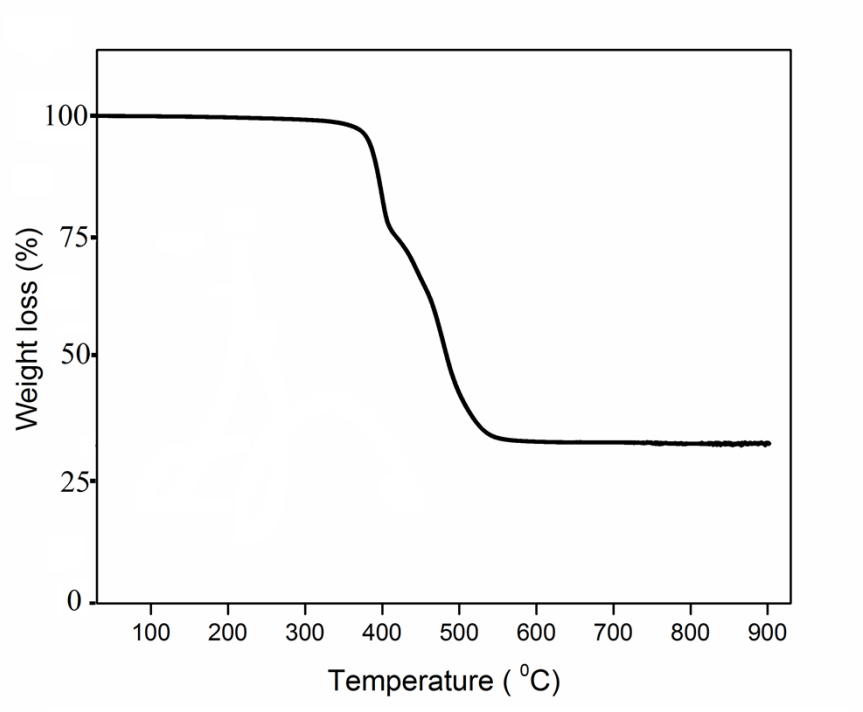

Fig S7. TGA scan of **1**.

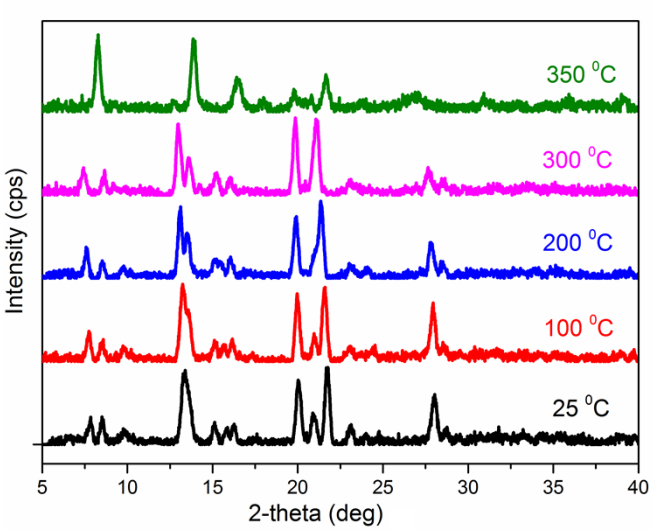

Fig S8. Variable temperature powder diffraction patterns of **1** indicating its thermal stability.

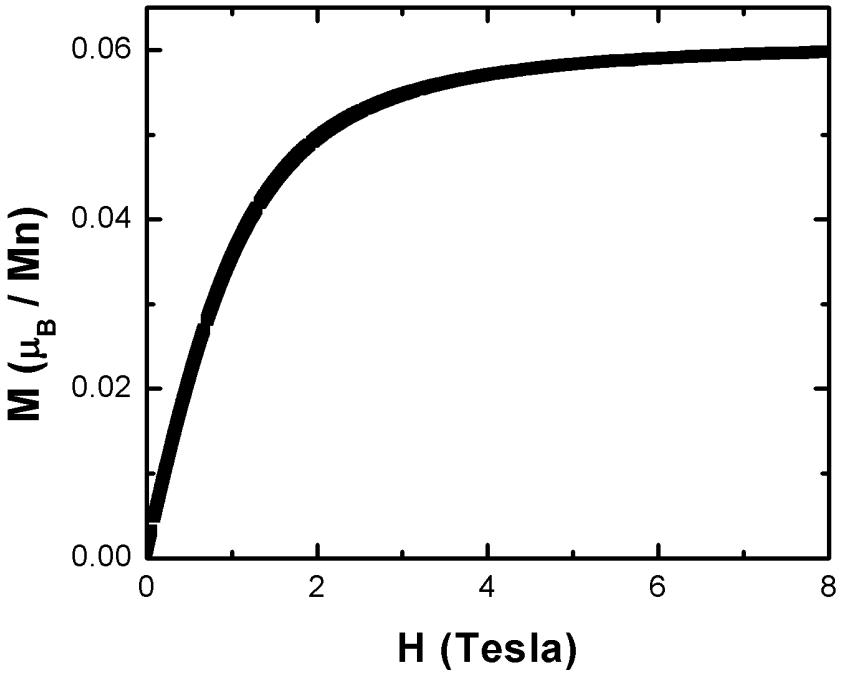

Fig S9. Magnetization M per Mn(II) ion versus field H at 2 K for **1**.

Table S1. Selected bond distances (Å) and angles (degree) for **1**.

at 100 K

Mn1-O2	2.113(7)	Mn1-O4	2.145(6)	Mn1-O3	2.110(7)
Mn1-O1	2.149(7)	Mn1-N1	2.163(8)	Mn1-Mn1	2.989(4)
O3-Mn1-O2	159.8(3)	O3-Mn1-O1	85.8(3)	O1-Mn1-O2	86.4(3)
O2-Mn1-O4	87.5(3)	O4-Mn1-O3	92.8(3)	O1-Mn1-O4	158.1(3)
O3-Mn1-N1	100.4(3)	O2-Mn1-N1	98.5(3)	O1-Mn1-N1	92.1(3)
O4-Mn1-N1	109.6(3)	O2-Mn1-Mn1	77.6(2)	O3-Mn1-Mn1	82.3(2)
O1-Mn1-Mn1	61.8(2)	O4-Mn1-Mn1	96.3(3)	N1-Mn1-Mn1	153.7(2)

at 296 K

Mn1-O3	2.111(4)	Mn1-O4	2.134(4)	Mn1-O2	2.145(5)
Mn1-O1	2.121(4)	Mn1-N1	2.155(5)	Mn1-Mn1	3.005(2)
O3-Mn1-O1	158.9(2)	O3-Mn1-O2	85.6(2)	O1-Mn1-O2	85.89(18)
O3-Mn1-O4	88.06(18)	O4-Mn1-O1	92.45(18)	O2-Mn1-O4	157.4(2)
O3-Mn1-N1	99.11(19)	O1-Mn1-N1	100.6(2)	O2-Mn1-N1	93.3(2)
O4-Mn1-N1	109.1(2)	O3-Mn1-Mn1	77.22(13)	O1-Mn1-Mn1	81.69(13)
O2-Mn1-Mn1	63.37(15)	O4-Mn1-Mn1	94.06(15)	N1-Mn1-Mn1	156.5(2)