Electronic Supplementary Information for Dalton Transactions

Electronic Supplementary Information

Combination of lacunary polyoxometalates and high-nuclear transition-metal clusters under hydrothermal conditions: first $6^5 \cdot 8$ $CdSO_4$-type 3-D framework built by hexa-Cu^{II} sandwiched polyoxotungstates

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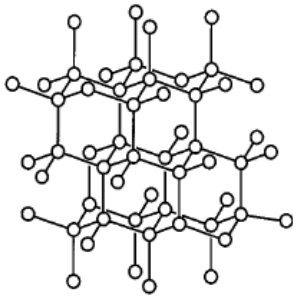
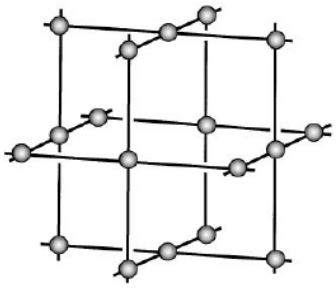
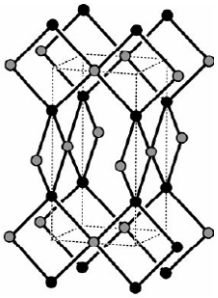


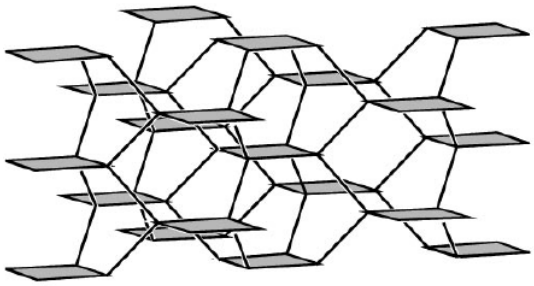
a) The diamond net.



b) The fragment of the NbO net.



c) The PtS (cooperite) net (S, filled circles; Pt, shaded circles)



d) The CrB_4 net, 4-rings (squares) are shaded.

Manifesto: Fig. S1a-d are extracted from: M. O'Keeffe, M. Eddaoudi, H. Li, T. Reineke and O. M. Yaghi, *J. Solid State Chem.*, 2000, **152**, 3.

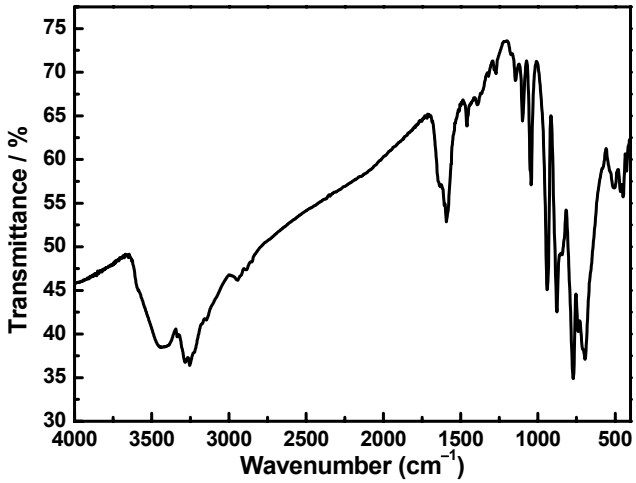


Fig. S2 The IR spectrum of **1** performed in the range of 4000–400 cm^{-1}.

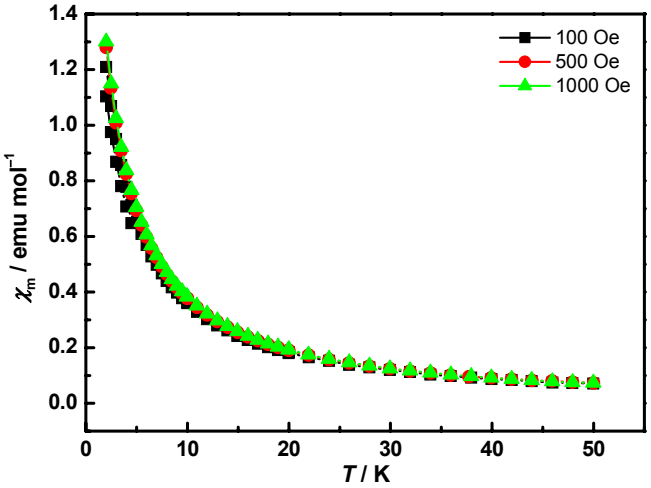


Fig. S3 The χ_m plot at various applied fields for **1** (H = 100, 500, 1000 Oe). The solid line is simply to guide the eye.

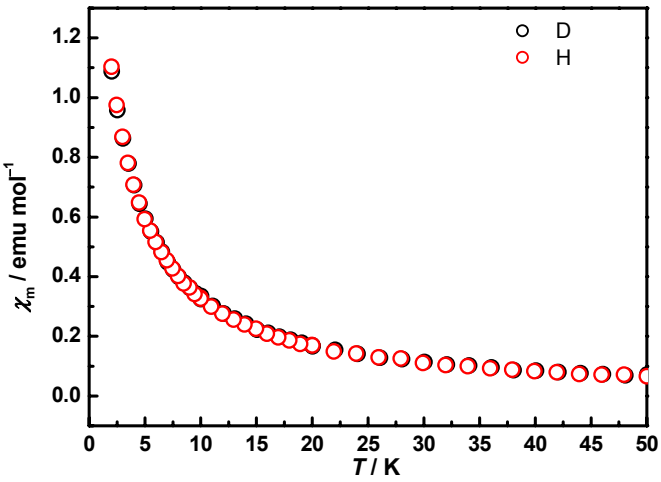


Fig. S4 The field-cooled (FC) and zero-field-cooled (ZFC) magnetization measured under an applied field of 100 Oe for **1**.

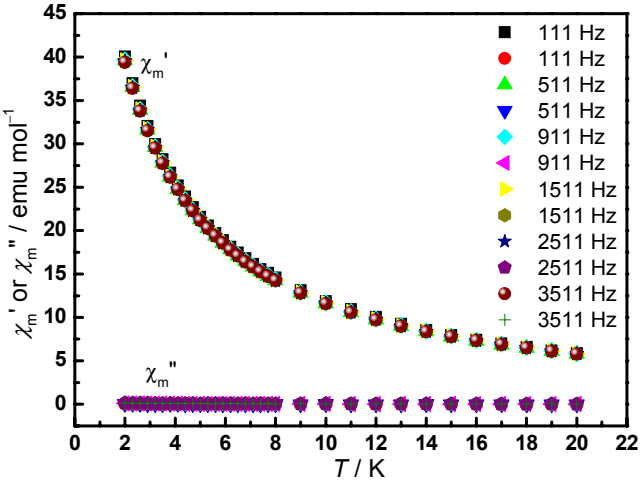


Fig. S5 In-phase ac susceptibility signals (χ_m'), vs T (top) and out-of-phase ac susceptibility signals (χ_m") vs T (bottom)

for **1** at 111, 511, 911, 1511, 2511 and 3511 Hz.

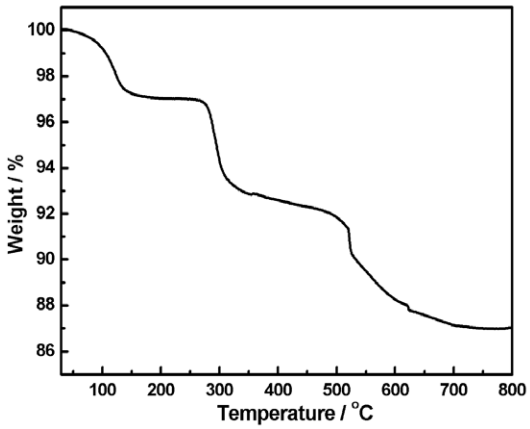


Fig. S6 The TGA curve of **1** performed under air atmosphere from 30 to 800 ºC.

The thermogravimetric behavior of **1** was investigated in the flowing air atmosphere in the temperature range of 30–800ºC (Fig. S6). The TG curve of **1** indicates that the weight loss procedure can be divided into three steps. The first weight loss of 3.02 % from 30 to 266 ºC is assigned to the release of six lattice water and four coordinated water molecules (calc. 3.04%), followed by the second weight loss of 5.25% between 266 and 494 ºC corresponding to the loss of five en ligands (calc. 5.08%). The third weight loss of 4.75% is attributable to the removal of one en and two deta ligands (calc. 4.54%). These observations indicate that the experimental values are in good agreement with the theoretical values.