Supporting information

An organic-inorganic hybrid semiconductor material based on lindqvist polyoxomolybdate and tetra-nuclear copper complex containing two different ligands

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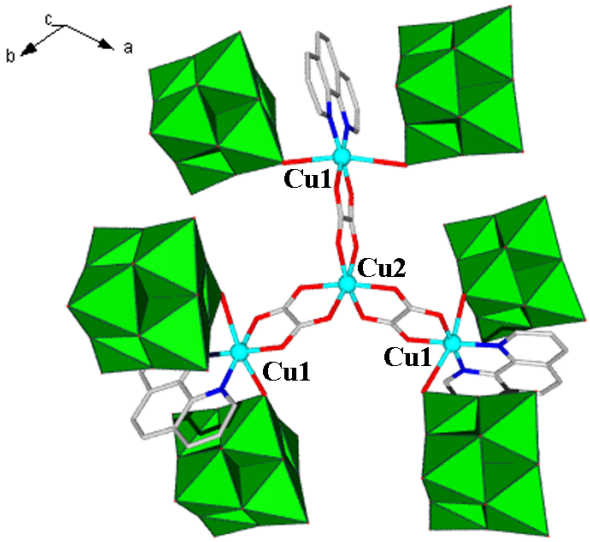
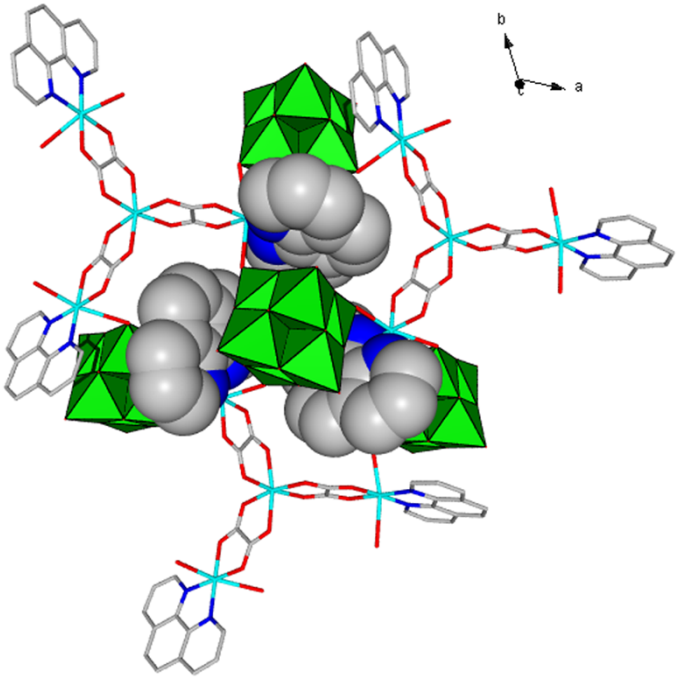


FigureS1 The coordination entironment of hexad-connected tetranuclear copper(II) complexes unit



FigureS2 The apertures of the open network are filled by barrier-liked phen

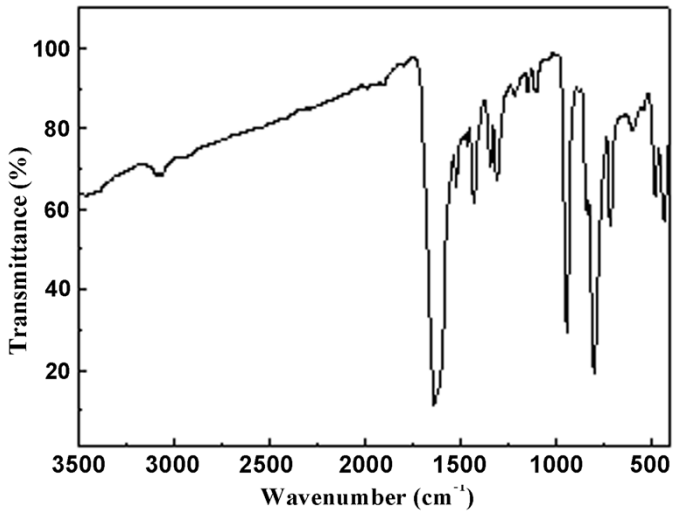


Fig. S3 IR spectra of compound **1**.

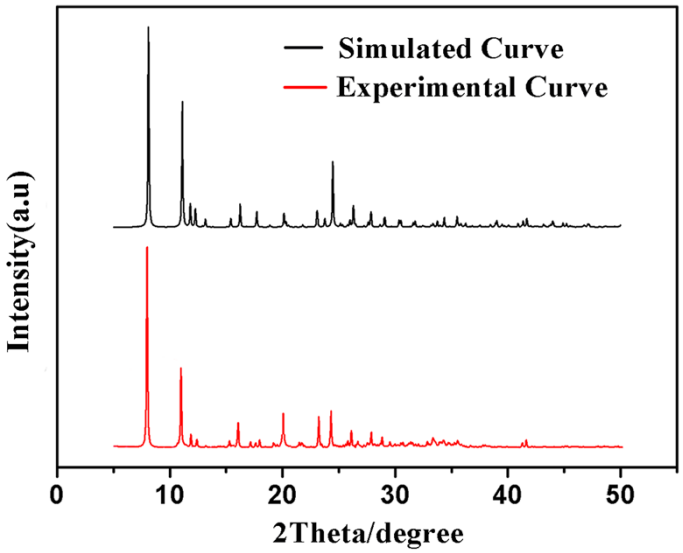


Fig. S4 The PXRD contrast curves of **1**

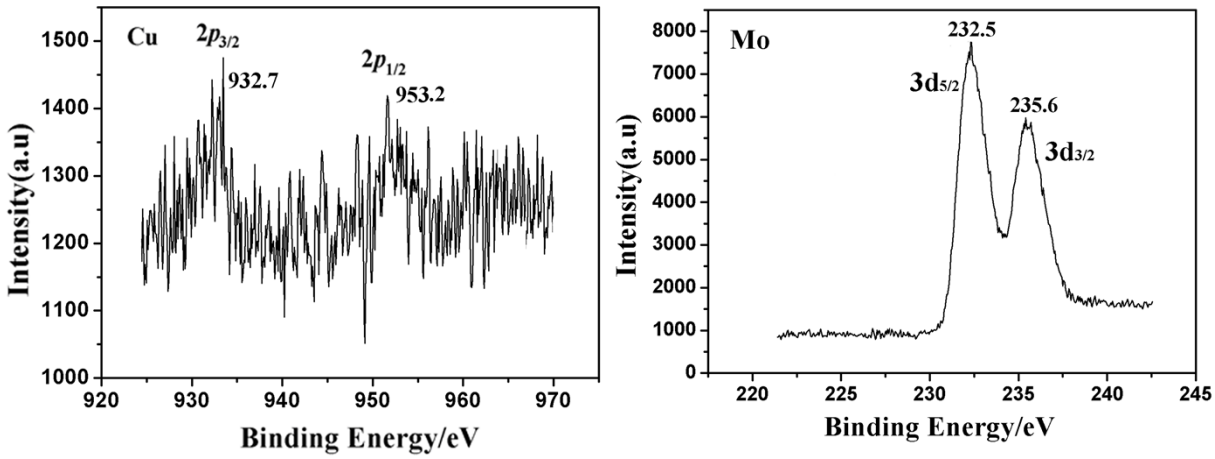


Fig. S5 The XPS spectra of Cu^{2+} and Mo^{6+}.

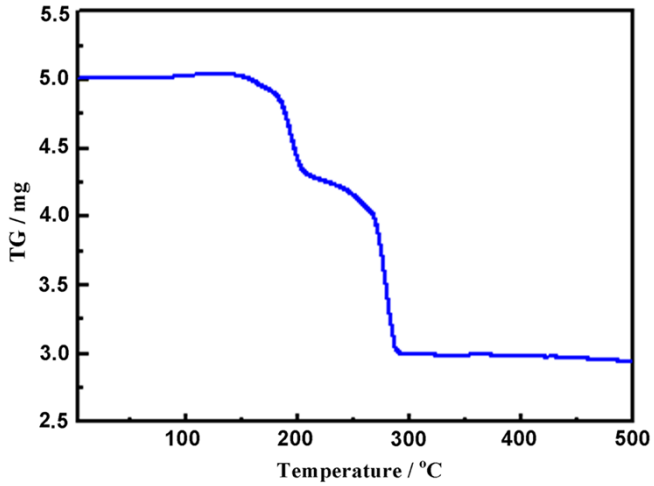


Fig. S6 The TG curve of compound **1**.

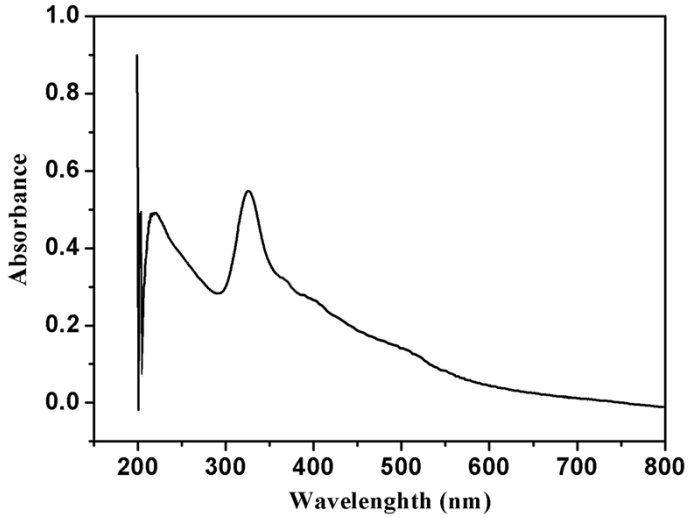


Fig. S7 The UV-vis-NIR absorption spectrum of compound **1**.

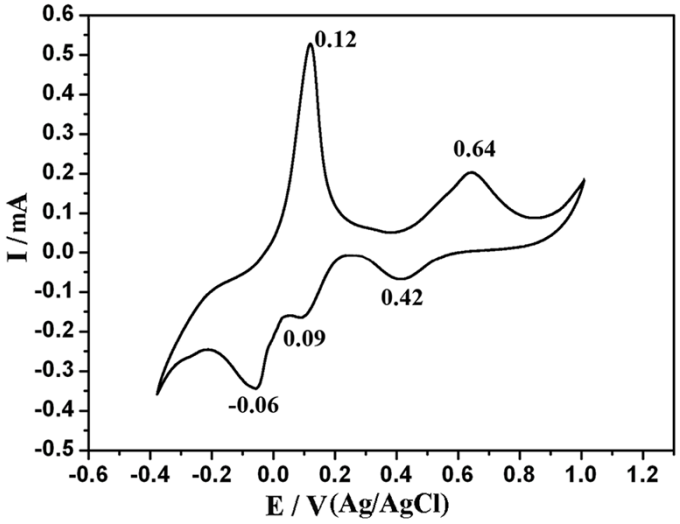


Figure S8 The cyclic voltammograms of the **1**-CPE in 1 M H_2SO_4 at 20 mV· s^{-1} scan rates

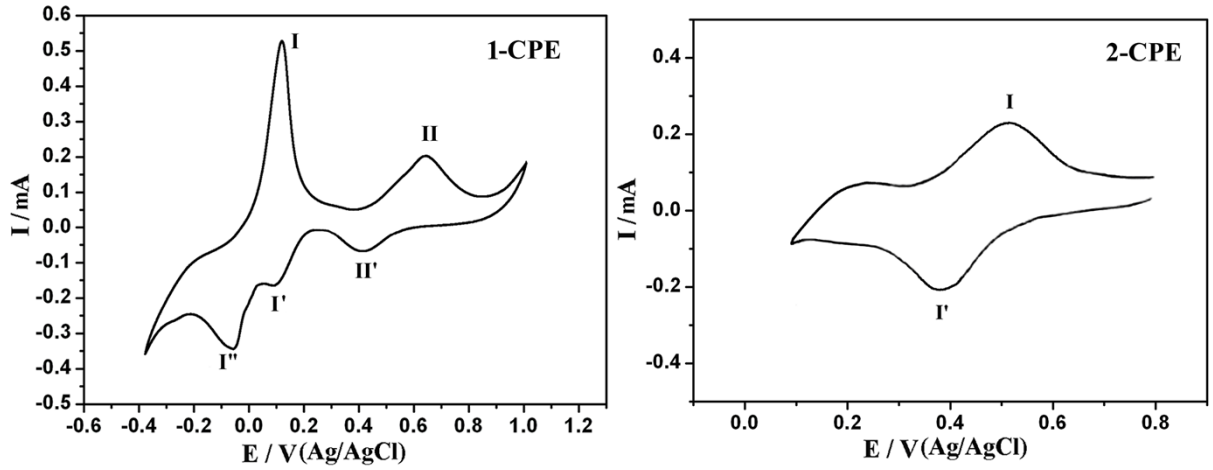


Figure S9 The cyclic voltammograms of (a) the **1**-CPE and (b) the **2**-CPE ($[Mo_6O_{19}][N(C_4H_9)_2]_2$ (**2**)) in 1 M H_2SO_4 at 20 mV· s^{-1} scan rates

Table S1 Selected bond lengths (Å) and angles (°) of **1**

Mo(1)-O(4)	1.692(2)	**Mo(1)-O(2)**	1.884(2)	**Mo(1)-O(3)**	1.885(2)
Mo(1)-O(2)#1	1.969(2)	**Mo(1)-O(3)#2**	1.970(2)	**Mo(1)-O(1)**	2.3221(3)
Mo(2)-O(6)	1.681(3)	**Mo(2)-O(5)**	1.9138(18)	**Mo(2)-O(8)**	1.915(3)
Mo(2)-O(7)	1.9216(18)	**Mo(2)-O(8)#3**	1.935(3)	**Mo(2)-O(9)**	2.3128(3)
Cu(1)-O(10)	1.952(2)	**Cu(1)-O(11)**	1.957(2)	**Cu(1)-N(1)**	1.967(3)
Cu(1)-N(2)	1.981(3)	**Cu(1)-O(4)**	2.495(2)	**Cu(1)-O(6)**	2.667(3)
Cu(2)-O(12)	2.080(2)	**Cu(2)-O(12)#4**	2.080(2)	**Cu(2)-O(12)#5**	2.080(2)
Cu(2)-O(13)#4	2.080(2)	**Cu(2)-O(13)**	2.080(2)	**Cu(2)-O(13)#5**	2.080(2)
O(1)-Mo(1)#6	2.3220(3)	**O(1)-Mo(1)#7**	2.3220(3)	**O(1)-Mo(1)#2**	2.3221(3)
O(1)-Mo(1)#1	2.3222(3)	**O(1)-Mo(1)#8**	2.3222(3)	**O(9)-Mo(2)#3**	2.3127(3)
O(9)-Mo(2)#11	2.3128(3)	**O(9)-Mo(2)#9**	2.3131(3)	**O(9)-Mo(2)#10**	2.3131(3)
O(9)-Mo(2)#12	2.3132(3)	**Mo(5)-O(2)**	2.266(6)	**Mo(6)-O(2)**	2.307(6)
O(4)-Mo(1)-O(2)	105.07(11)	**O(4)-Mo(1)-O(3)**	104.82(11)	**O(4)-Mo(1)-O(2)#1**	102.00(10)
O(4)-Mo(1)-O(3)#2	101.74(11)	**O(4)-Mo(1)-O(1)**	176.73(8)	**O(6)-Mo(2)-O(5)**	101.88(15)
O(6)-Mo(2)-O(8)	104.69(15)	**O(6)-Mo(2)-O(7)**	104.59(15)	**O(6)-Mo(2)-O(8)#3**	102.18(14)
O(6)-Mo(2)-O(9)	177.95(12)	**O(10)-Cu(1)-O(11)**	85.42(9)	**O(10)-Cu(1)-N(1)**	179.26(11)
O(10)-Cu(1)-N(2)	96.86(10)	**O(10)-Cu(1)-O(4)**	89.76(9)	**O(10)-Cu(1)-O(6)**	86.60(11)
O(12)-Cu(2)-O(12)#4	90.30(9)	**O(12)-Cu(2)-O(12)#5**	90.30(9)	**O(12)-Cu(2)-O(13)#4**	169.29(9)
O(12)-Cu(2)-O(13)	81.13(9)	**O(12)-Cu(2)-O(13)#5**	96.13(9)	**Mo(1)#6-O(1)-Mo(1)#7**	90.180(10)
Mo(1)#6-O(1)-Mo(1)#2	90.179(10)	**Mo(1)#6-O(1)-Mo(1)**	89.823(10)	**Mo(1)#6-O(1)-Mo(1)#1**	179.995(1)
Mo(1)#6-O(1)-Mo(1)#8	89.825(10)	**Mo(2)#3-O(9)-Mo(2)**	90.303(13)	**Mo(2)#3-O(9)-Mo(2)#11**	90.302(13)
Mo(2)#3-O(9)-Mo(2)#9	89.781(17)	**Mo(2)#3-O(9)-Mo(2)#10**	179.893(16)	**Mo(2)#3-O(9)-Mo(2)#12**	89.632(18)