Electronic Supplementary Material (ESI) for Analytical Methods.

Supporting information

Terbium(III)-based coordination polymer for time-resolved determination of hydrogen sulfide in human serum via displacement of copper(II)

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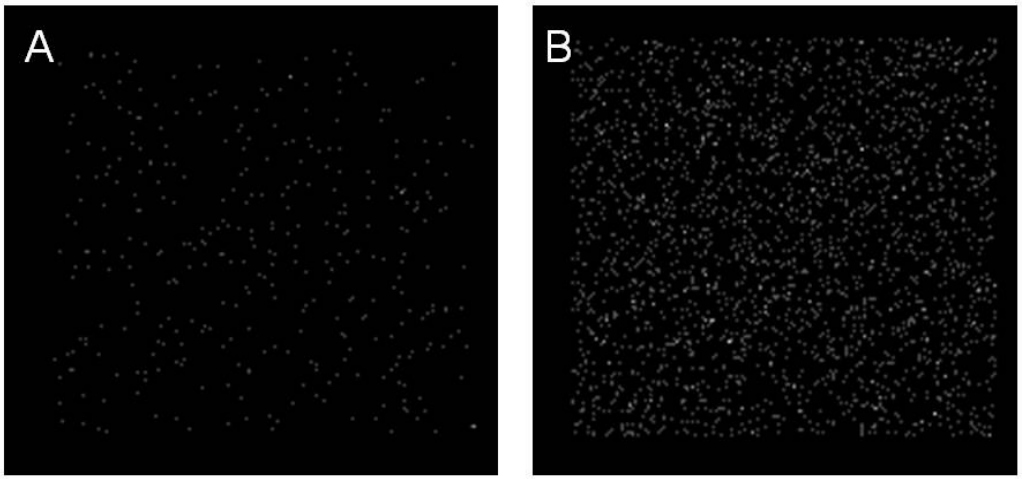

Fig. 1S EDS mapping of Cu^{2+} (a) and Tb^{3+}(b) in GMP/Tb/OX-Cu CP.

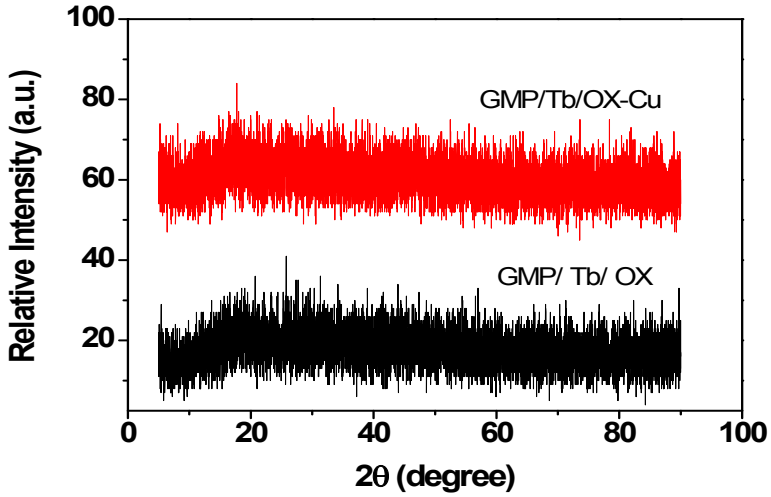

Fig. S2. X-ray diffraction (XRD) spectra of GMP/Tb/OX CP, and GMP/Tb/OX-Cu CP.

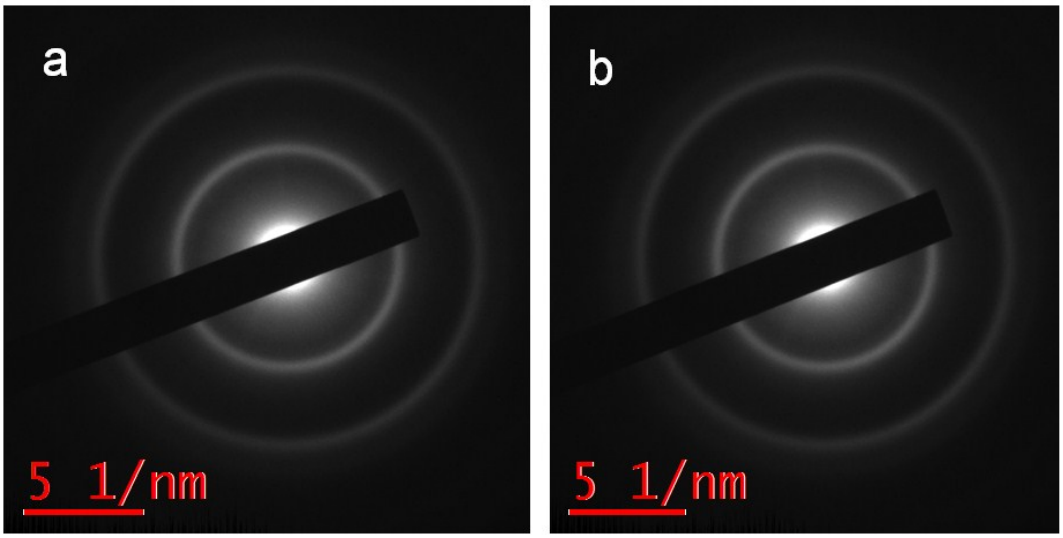

Fig. S3 Selected area electron diffraction (SAED) images of GMP/Tb/OX CP (a), and GMP/Tb/OX-Cu CP (b)

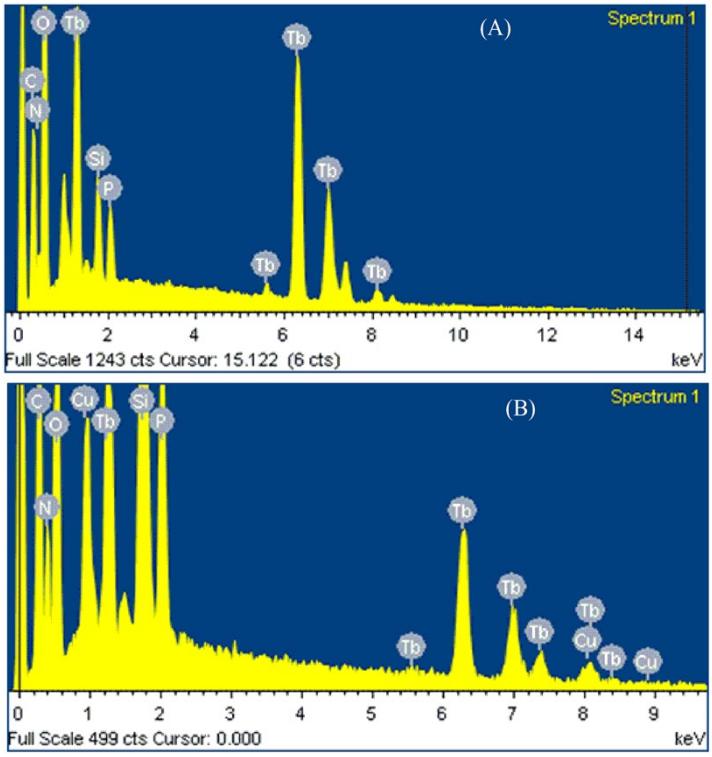

Fig. S4. EDS Spetrum of GMP/Tb/OX CP in the absence (A) and presence (B) of 15 μM Cu^{2+}.

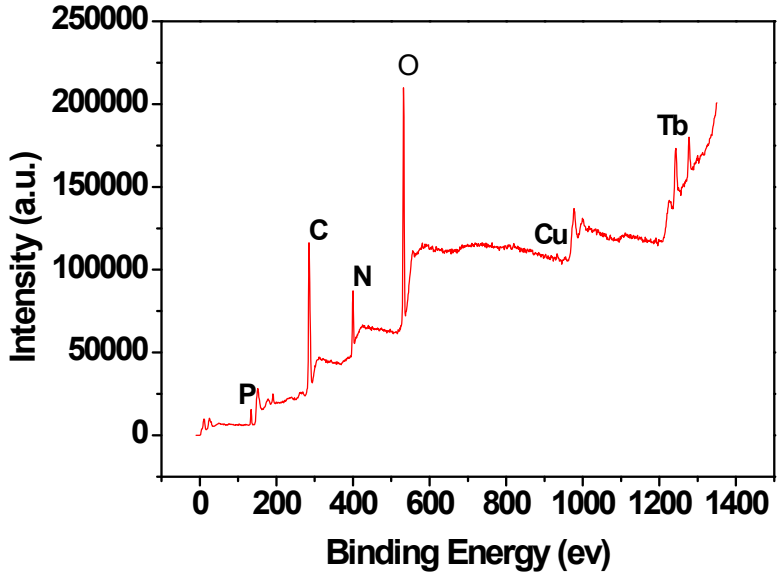

Fig. S5 The X-ray photoelectron spectra (XPS) of GMP/Tb/OX-Cu.

Table 1S The element weight and atomic percent in GMP/ Tb/OX

Element	Atomic %	Weight %
Tb	1.56	15.23
P	2.77	5.27
C	56.7	41.78
N	10.85	9.33
O	27.86	27.37
Cu	0.26	1.02

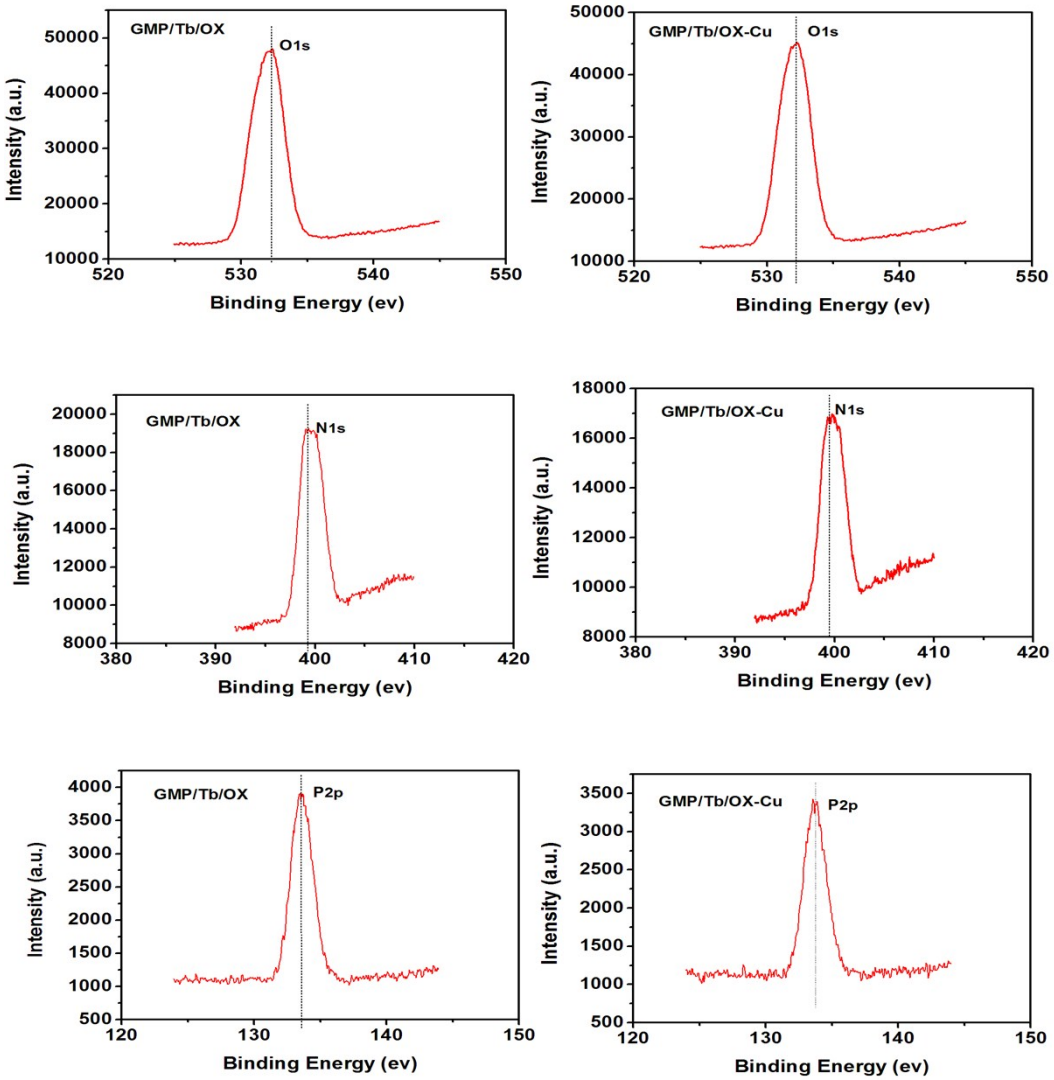

Fig. S6 The X-ray photoelectron spectra (XPS) of GMP/Tb/OX and GMP/Tb/OX-Cu

To verify the binding sites of Cu^{2+} with GMP/Tb/OX CP, we conducted an XPS analysis. The results are shown in the Fig. 4S and Fig. 5S. Compared with that of GMP/Tb/OX CP, the peaks of O1s, N1s and P2p of GMP/Tb/OX-Cu CP shifted from 532.11, 399.7 and 133.69 ev to 532.07, 399.47 and 133.58 ev, respectively. These results confirm that the addition of Cu^{2+} shows little effect on the network structure of GMP/Tb/OX CP. The reason may be that the low atomic ratio of Tb: Cu in GMP/Tb/OX-Cu CP is about 6:1, resulting in negligible effect of Cu^{2+} on the structure of GMP/Tb/Ox CP.

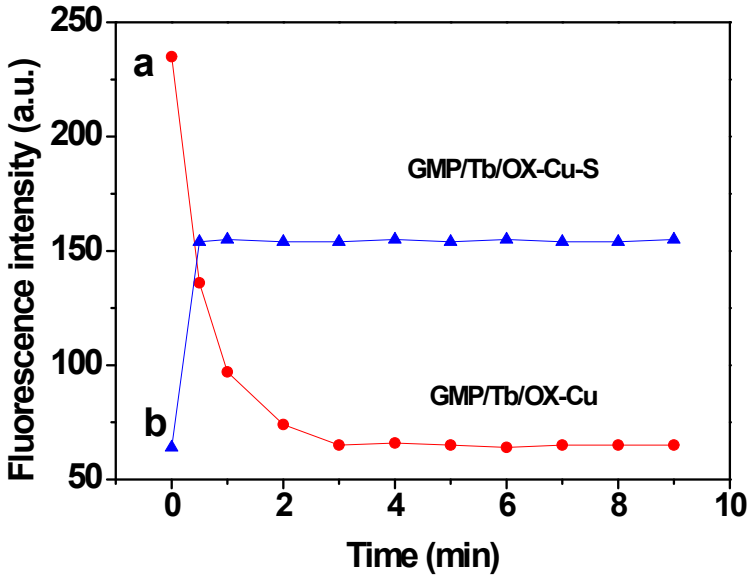

Fig. S7. Effect of reaction time on the fluorescence intensity of GMP/Tb/OX CP in the presence (a) of 15 μM Cu^{2+}, (b) as well as subsequent addition of 50 μM S^{2-}.

Table 2S

Determination of H_2S in human serum samples

Serum sample	Endogenous sulfide[a] (μM)	Added sulfide (μM)	Measured sulfide (μM)	Recovery (%)	RSD (%, n=3)
1	3.52	5.00	8.46	98.80	1.12
2	6.28	10.00	16.35	100.70	2.23
3	8.50	15.00	23.76	101.73	0.85
4	12.60	20.00	32.88	101.40	0.47
5	16.15	20.00	35.96	99.05	1.58

a. The classic methylene blue method (MB) with a minor modification was applied to monitor the concentration of endogenous sulfide[1].

1 L. M. Siegel, Anal. Biochem. 1965, **11**, 126−132.