## **Supporting Information**

Reversible metal-organic polymers template enhances platinum nanoparticles selfassemblies and accelerates POD-like catalysis for rapid and ultrasensitive multiple forms mercury detection

Fan Zhang<sup>a,b,e</sup>, Tianyu Guo<sup>c</sup>, Liwen Feng<sup>g</sup>, Yaobin Lu<sup>b,c</sup>, Jiewei Deng<sup>a,b,e</sup>, Tiangang

Luan<sup>b,c,d,f\*</sup>

<sup>a</sup> School of Biomedical and Pharmaceutical Sciences, Guangdong University of Technology, Guangzhou 510630, PR China

<sup>b</sup> Guangdong Provincial Laboratory of Chemistry and Fine Chemical Engineering Jieyang Center, Jieyang 515200, China

<sup>c</sup> Guangdong Provincial Key Laboratory of Water Quality Improvement and Ecological Restoration for Watersheds, School of Ecology, Environment and Resources, Guangdong University of Technology, Guangzhou 510006, China

<sup>d</sup> School of Environmental and Chemical Engineering, Wuyi University, Jiangmen 529020, China

<sup>e</sup> Smart Medical Innovation Technology Center, Guangdong University of Technology,
Guangzhou 510006, China

<sup>f</sup> School of Life Sciences, Sun Yat-Sen University, Guangzhou 510275, China

<sup>g</sup> Boji Pharmaceutical Research Center, Boji Medical Biotechnological Co. Ltd., Guangzhou 510630, PR China

\*Corresponding authors: cesltg@mail.sysu.edu.cn (T. Luan)



Figure S1. The TEM images of 2D metal-organic polymers formed by the triazineimine type ligand and Pt<sup>2+</sup> observed at different scales.



Figure S2. The TEM images of irregular Pt NPs aggregates formed by 4pyridinecarboxaldehyde and Pt<sup>2+</sup> observed at different scales.



Figure S3. The <sup>1</sup>H-NMR spectra of imine-triazinebenzylpyridine ligand in solution (400 MHz, DMF-d<sub>7</sub>, 25 °C):  $\delta = 8.93$  (d, J = 6.2 Hz, 6H, PhH), 8.87 (s, 3H, CH=N), 8.85 (d, J = 4.4 Hz, 6H, PhH), 7.98 (d, J = 4.4 Hz, 6H, PhH), 7.63 (d, J = 6.2 Hz, 6H, PhH) ppm.



Figure S4. Zeta potential of PNAs(HCl).



Figure S5. The UV-vis spectra of PNAs(HCl) in H<sub>2</sub>O at R.T.

C <sub>Hg2+</sub> (nM)	0.001	0.005	0.01	0.02	0.04	0.08	0.1
RSD (%)	1.350	1.148	1.263	1.471	1.699	2.411	3.078

Figure S6. RSD values of different Hg<sup>2+</sup> concentrations samples detected by PNAs(HCl)-based colorimetric method.

Blank sample	A <sub>652nm</sub> (a.u.)		
1	1.5838		
2	1.5834		
3	1.5834		
4	1.5834		
5	1.5836		
6	1.5835		
7	1.5838		
8	1.5832		
9	1.5833		
10	1.5833		
SD value (σ)	0.000206		

Figure S7. The absorbance of the blank sample (50  $\mu$ g mL<sup>-1</sup> PNAs, 0.12 mg mL<sup>-1</sup> TMB and 2.04 mg mL<sup>-1</sup> H<sub>2</sub>O<sub>2</sub> contained) at 652 nm.



Figure S8. Hg<sup>2+</sup> distribution in the six investigated sample locations.



Figure S9. Organic Hg distribution in the six investigated sample locations.