

Supporting Information

Nanoporous Gold Based Optical Sensor for Sub-ppt Detection of Mercury Ions

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Table S1. Sensitivities of various optical methods for Hg²⁺ ions detection.

Method	Detection limit	Reference
UV-vis optical absorption	1 nM	8
FRET, DNAzyme	2.4 nM	9
FRET, aptamer	5 nM	21
Gold based surface Plasmon resonance spectroscopy	0.5 nM (0.1 ppb)	12
Gold nanoparticle enhanced fluorescence	1 nM (0.2 ppb)	22
Gold nanoparticles based SERS	25 nM (5 ppb)	16
Gold nanoparticles based SERS	5 nM	15
Fluorescence, Rhodamine-based probe	5nM (1 ppb)	11
NPG SERRS	1 pM (0.2 ppt)	This work

Note: FRET, Fluorescence resonance energy transfer.

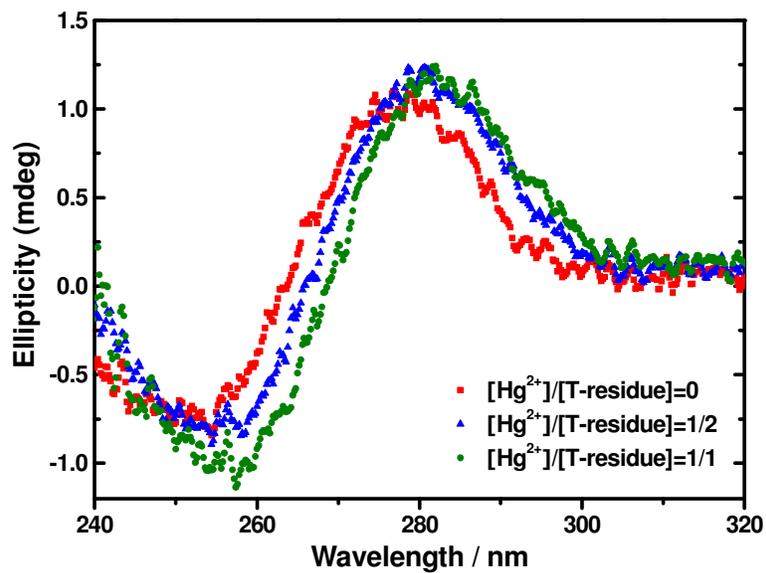


Figure S1. Circular dichroism (CD) spectra of Apt8 with various Hg^{2+} ion additions. Spectra were recorded by a J-820 spectropolarimeter (JASCO, Japan) in a buffer (33 mM, pH=6.9) containing 0.5 M NaCl, 0.1 M NaClO_4 after the addition of mercury ions for 30 min to. The addition of Hg^{2+} lead to the shift of bands at 254 and 278 nm to higher wavelength, indicating the formation of T- Hg^{2+} -T pairs.^{30, 31}

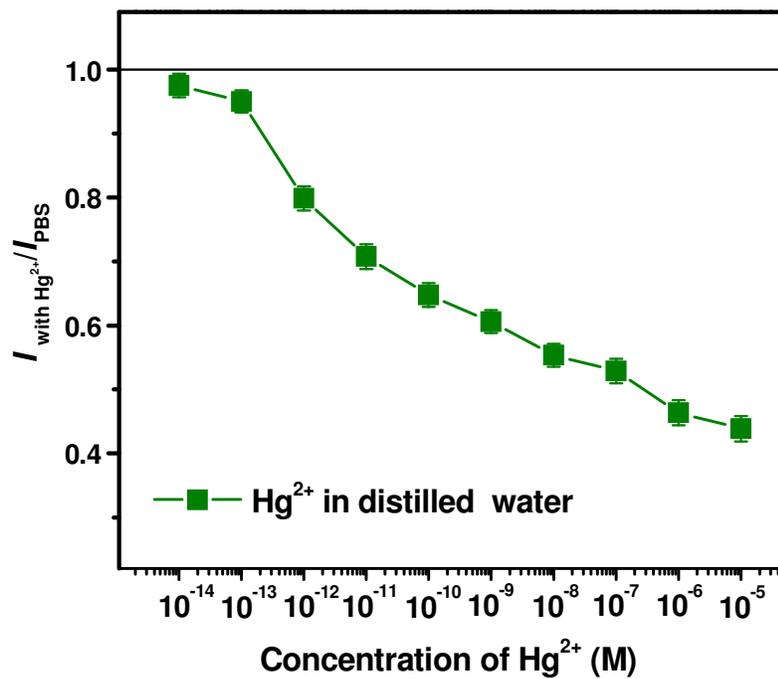


Figure S2. Stability test of the NPG/aptamer SERRS sensor. Hg^{2+} ion detection after the sensor was kept in PBS buffer for one month. The lines guide for eyes.