Supporting Information

Chemical redox-regulated mesoporous silica-coated gold nanorods for colorimetric probing of Hg^{2+} and S^{2-}

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I. TEM characterization of MS AuNRs

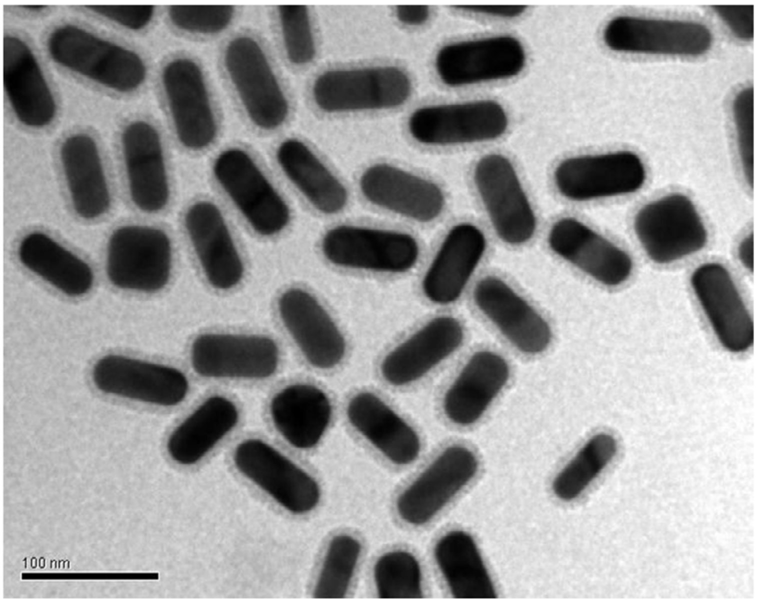

Figure S1. TEM photograph of the as-synthesized MS AuNRs. The MS AuNRs appeared to be monodisperse, with average lengths of 65 ± 4.5 nm and widths of 26 ± 1.8 nm for the AuNR cores and 8 nm-thick mesoporous silica nanoshells.

II. pH effect on the sensing of Hg^{2+} using MS AuNRs

Figure S2 reveals that the absorption change of the AA-MS AuNRs in the presence of Hg^{2+} (10 μM) is maximized at pH 8.0 or 9.0. At lower pH values (<8.0), relatively slight absorption change of AA-MS AuNRs was obtained as a result of the lower reducibility of AA. At higher values of pH (>9.0), the absorption change of MS AuNRs also went to decrease mainly because other mercury species such as $Hg(OH)_2$ also forms, which renders a lower oxidation potential.

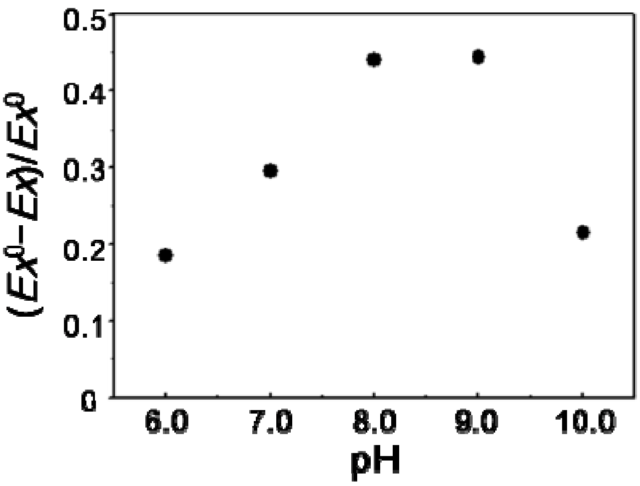

Figure S2. Effect of pH (6.0−10.0) on the values of $(Ex^0-Ex)/Ex^0$ of the AA-MS AuNRs solutions in the presence of 10 μM Hg^{2+}.

III. Results for Hg^{2+} analysis in real samples

The analysis procedure for Hg^{2+} in tap water is shown in the main manuscript.

Table S1. Analytical results for the determination of Hg^{2+} in tap water. The Hg^{2+} concentrations were determined by the present approach from three measurements.

Sample	Spiked Hg^{2+} concentration in tap water / nM	Obtained Hg^{2+} concentration by present method / nM	Recovery / %
Sample 1	1.0	1.26 ± 0.12	126.0 ± 12.0
Sample 2	5.5	4.84 ± 0.87	88.0 ± 15.8
Sample 3	37.5	44.77 ± 3.66	119.4 ± 9.7