

Supplementary Information

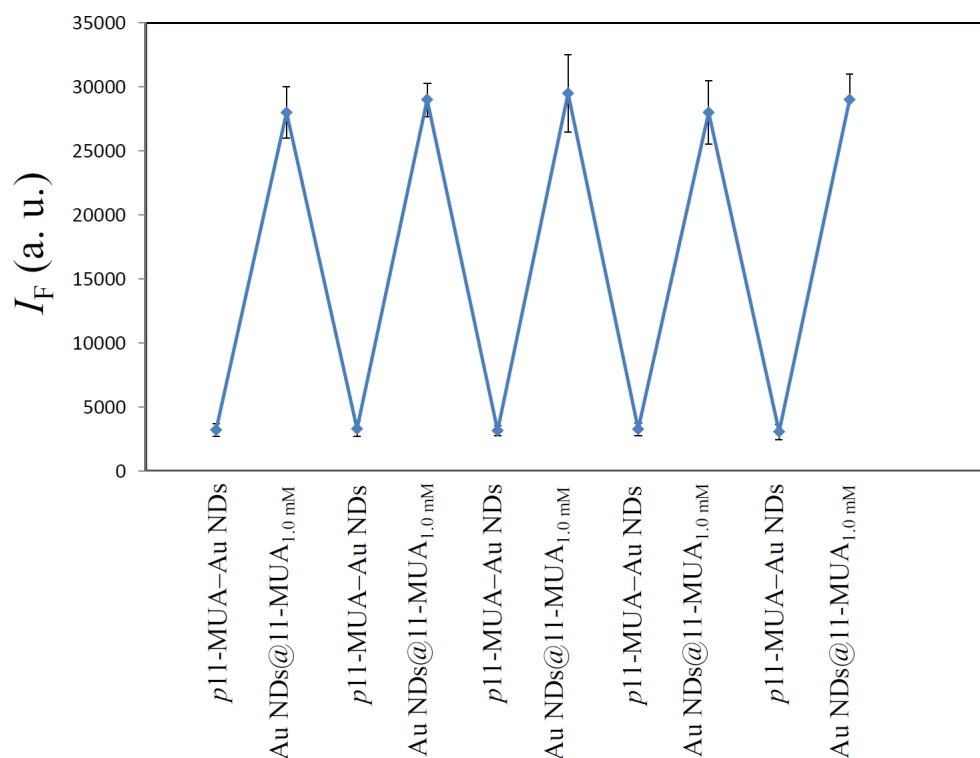


Fig. S1 Validation of the reversible control of fluorescence intensity of Au NDs. Other conditions were the same as those described in Figure 1.

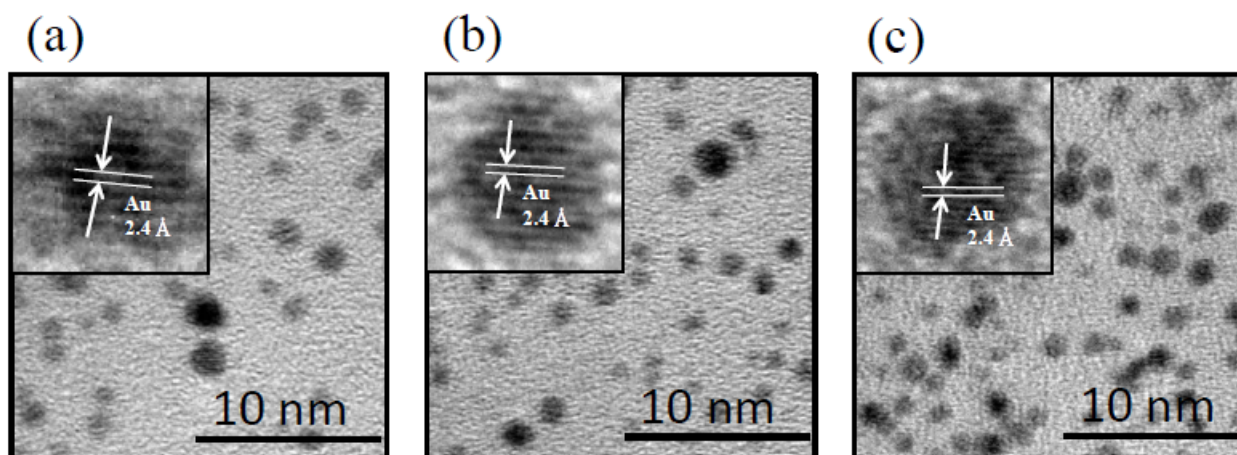


Fig. S2 Transmission electron microscopy (TEM) images of (a) 11-MUA–Au NDs, (b) *p*11-MUA–Au NDs, and (c) Au NDs@11-MUA_{1.0 mM}. From analyses of these TEM images, we estimated that the Au NDs (from counts of 100 particles) in (a–c) had average sizes of 1.8 (± 0.3), 1.8 (± 0.4), and 1.7 (± 0.3) respectively. Other conditions were the same as those described in Figure 1.

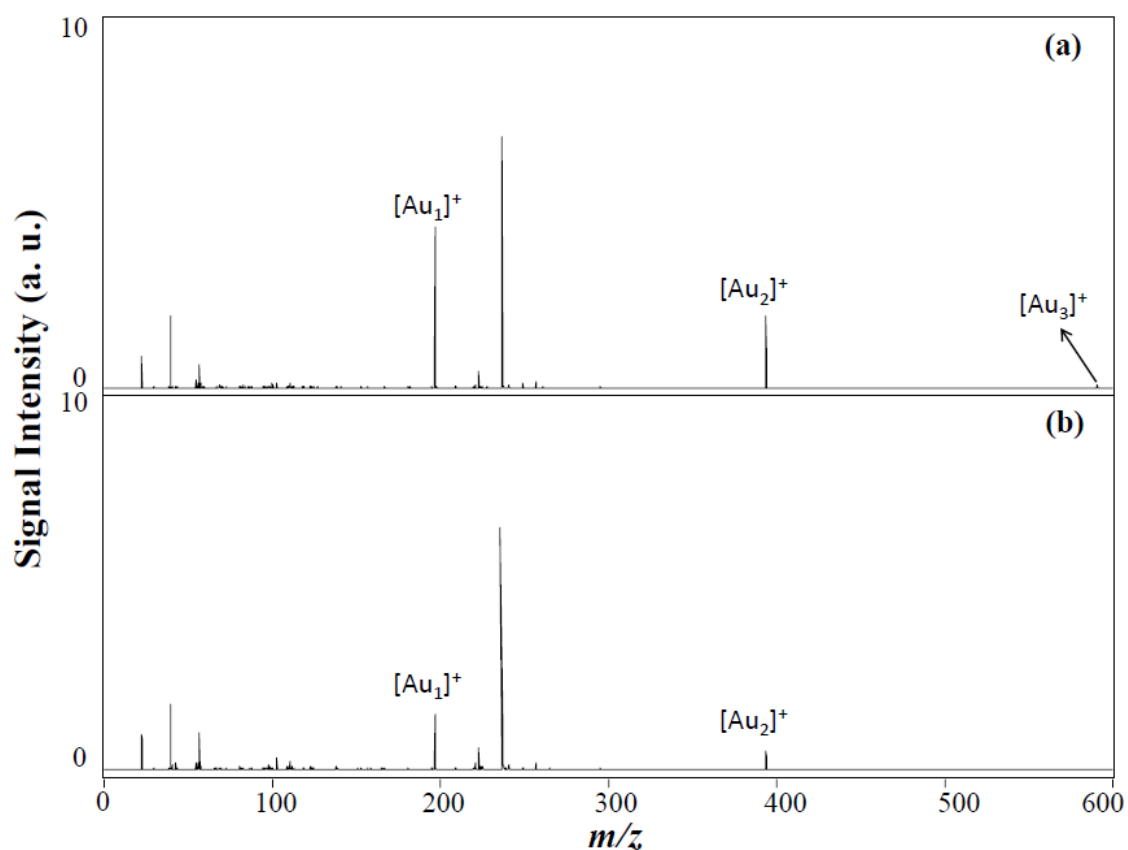


Fig. S3 SALDI mass spectra of (a) *p*11-MUA-Au NDs and (b) Au NDs@11-MUA_{1.0} mM. The peaks at m/z 196.97, 393.93, and 590.90 were assigned to $[Au_1]^+$, $[Au_2]^+$, and $[Au_3]^+$ ions, respectively. Other conditions were the same as those described in Figure 1.

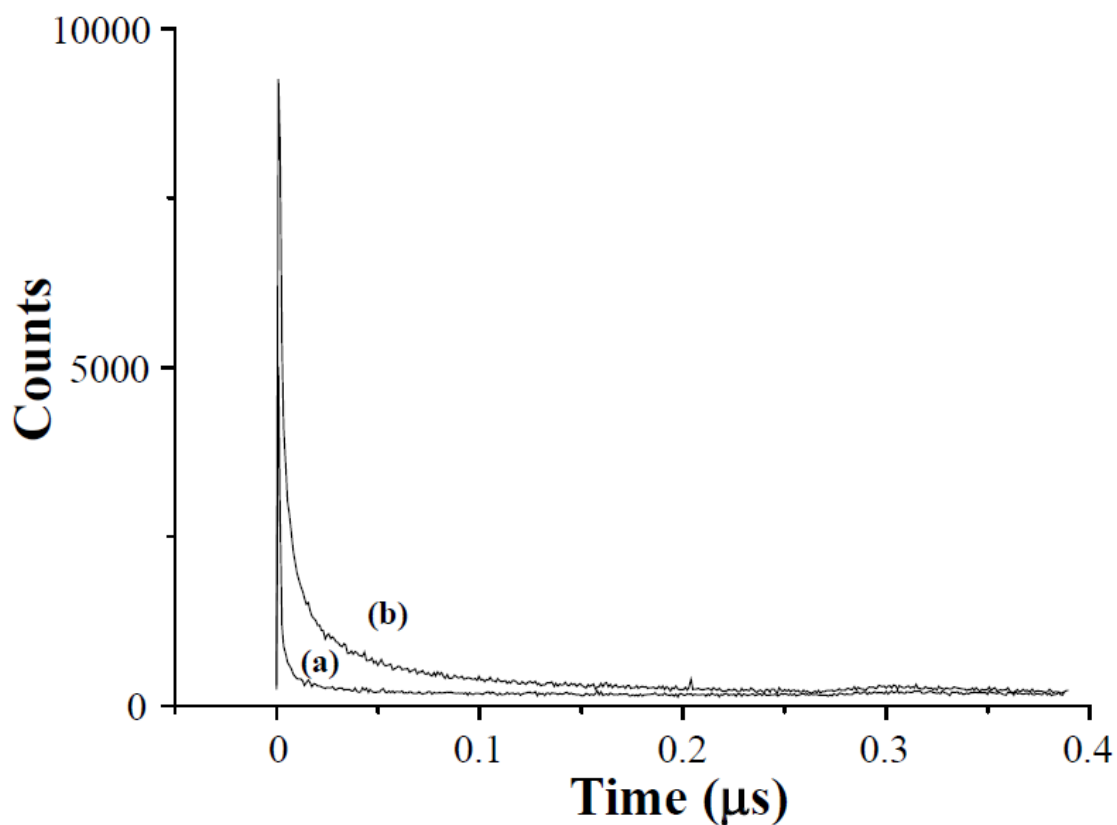


Fig. S4 PL lifetimes of the (a) *p*11-MUA-Au NDs and (b) Au NDs@11-MUA_{1.0} mM. Data were obtained after excitation at 375 nm. The luminescence decay was fitted to a biexponential decay. Other conditions were the same as those described in Figure 1.

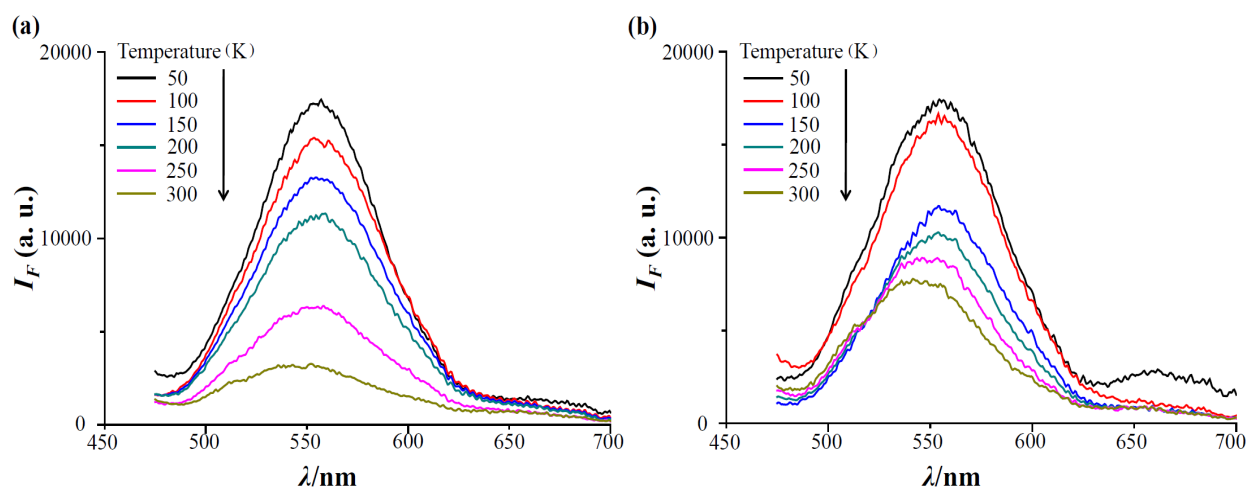


Fig. S5 Temperature-dependent emission spectra of (a) *p*11-MUA–Au NDs and (b) Au NDs@11-MUA_{1.0 mM} at 50–300 K. Other conditions were the same as those described in Figure 1.

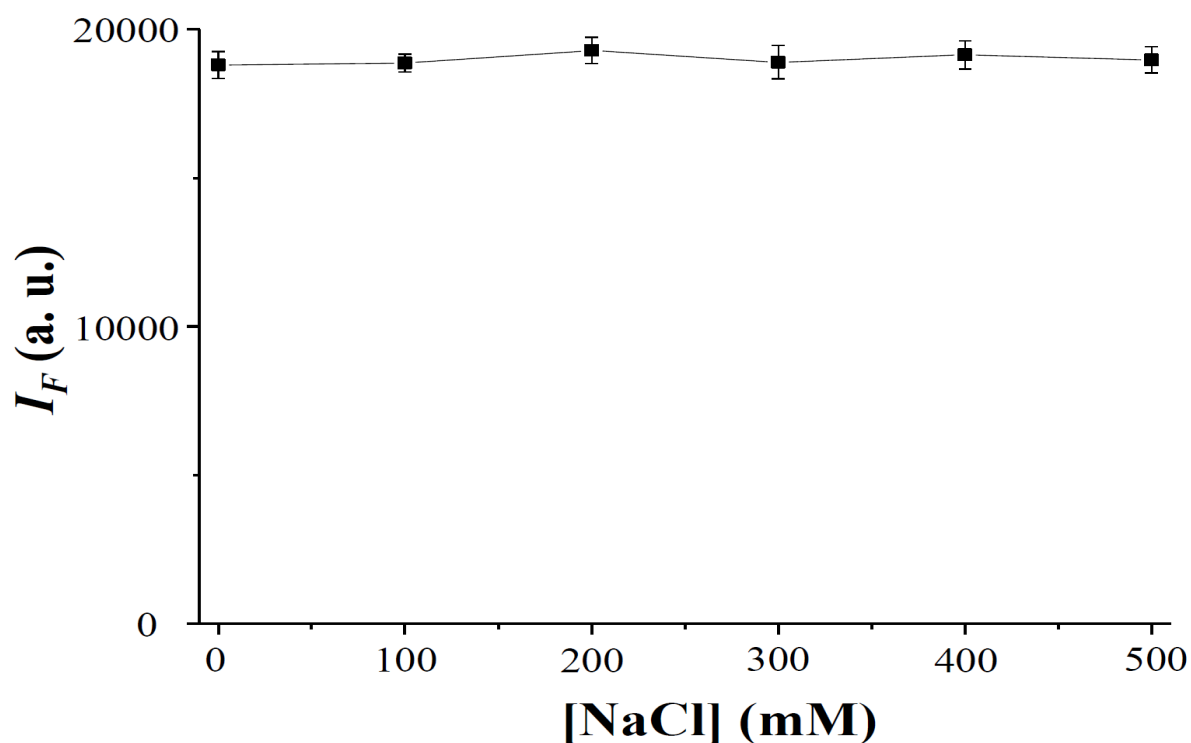


Fig. S6 PL intensities at 525 nm of the Au NDs@11-MUA₁₀ μ M prepared in 5.0 mM sodium phosphate (pH 7.0) containing 0–500 mM NaCl. The PL intensities are plotted in arbitrary units (a. u.); excitation wavelength: 375 nm. Error bars represent standard deviations from four repeated experiments. Other conditions were the same as those described in Figure 1.

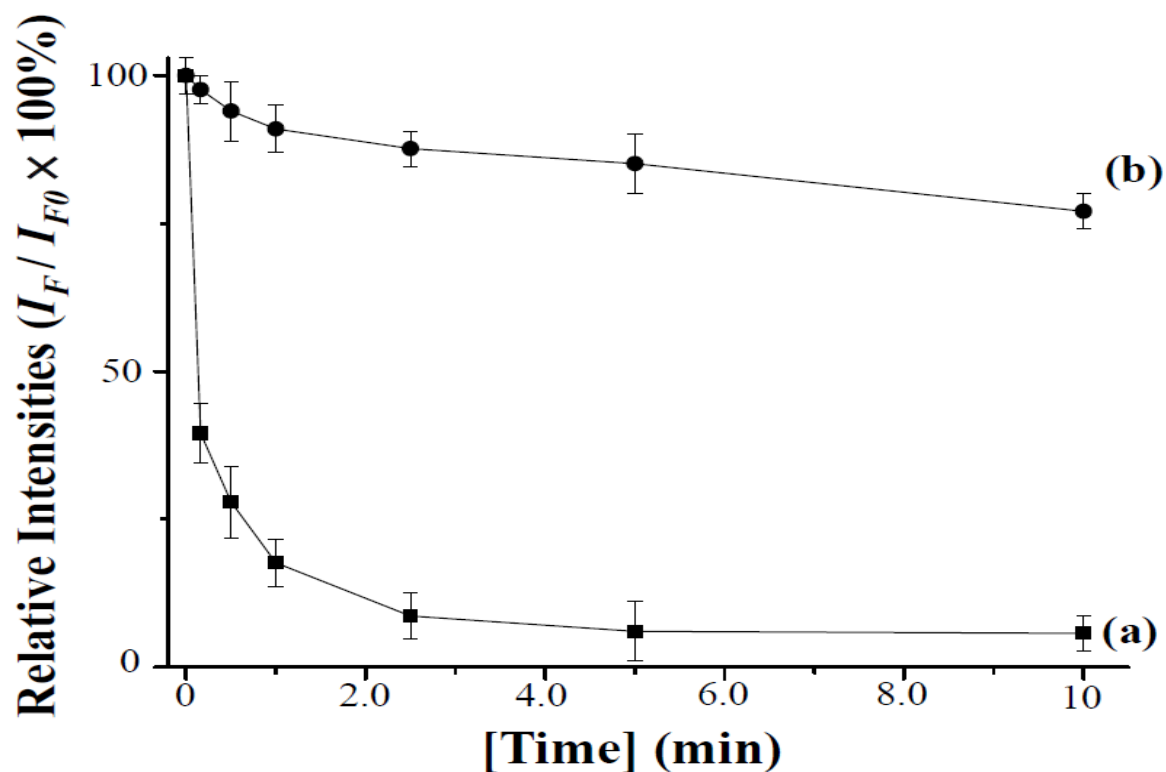


Fig. S7 Time course of relative PL intensities (525 nm) of the (A) *p*11-MUA–Au NDs and (B) Au NDs@11-MUA_{10 μM} in 5.0 mM sodium phosphate (pH 7.0) under UV irradiation (360 nm, 4 mW cm^{−2}). Error bars represent standard deviations from four repeated experiments. Other conditions were the same as those described in Figure 1.

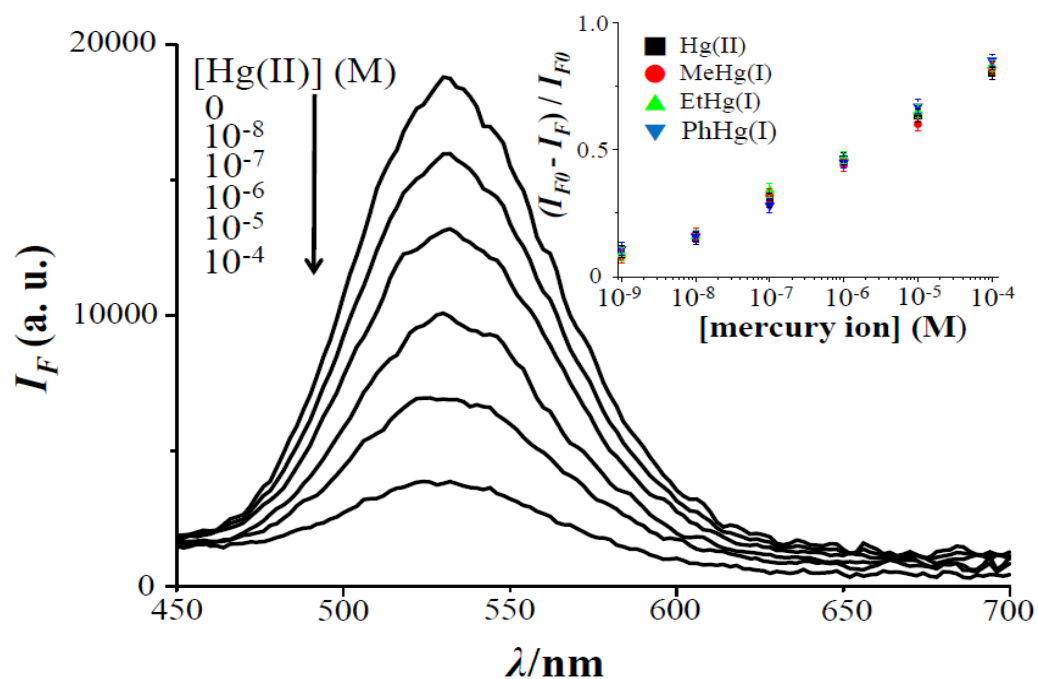


Fig. S8 PL responses of the Au NDs@11-MUA_{10 μM} (10 nM) probe for Hg(II) (0–100 μM) in 5.0 mM sodium phosphate (pH 7.0). Inset: Values of $[(I_{F0} - I_F)/I_{F0}]$ for the responses of the Au NDs@11-MUA_{10 μM} probe toward Hg(II), MeHg(I), EtHg(I), and PhHg(I) (0–100 μM). Error bars represent standard deviations from four repeated experiments. Other conditions were the same as those described in Figure 5.

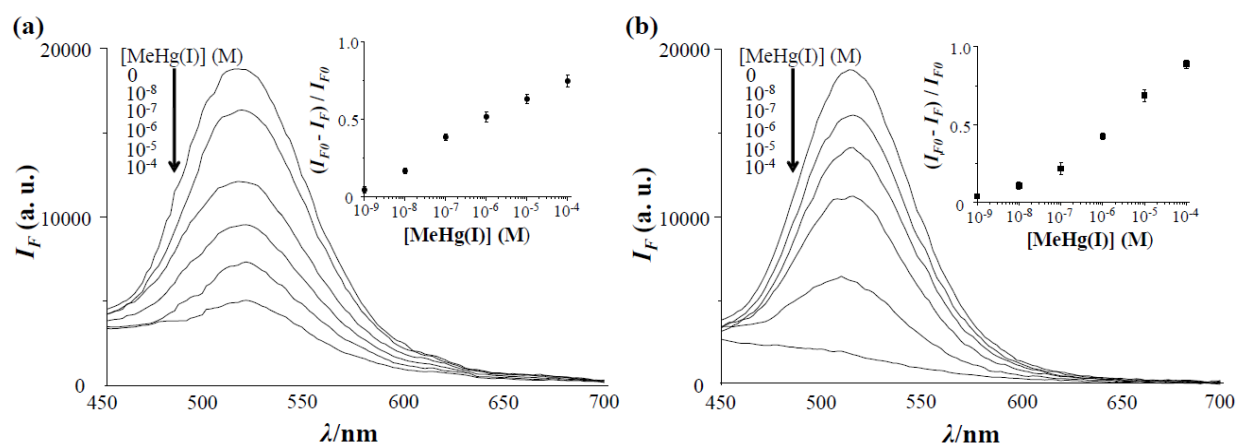


Fig. S9 PL recorded using the Au NDs@11-MUA₁₀ μ M (10 nM) probe for the detection of 0–100 μ M spiked MeHg(I) ions in (a) tenfold-diluted urine and (b) plasma samples. Inset: Values of $[(I_{F0} - I_F)/I_{F0}]$ for the responses of the Au NDs@11-MUA₁₀ μ M probe toward MeHg(I) in (a) urine and (b) plasma samples. Error bars in the inset represent standard deviations from three repeated experiments. Other conditions were the same as those described in Figure 6.

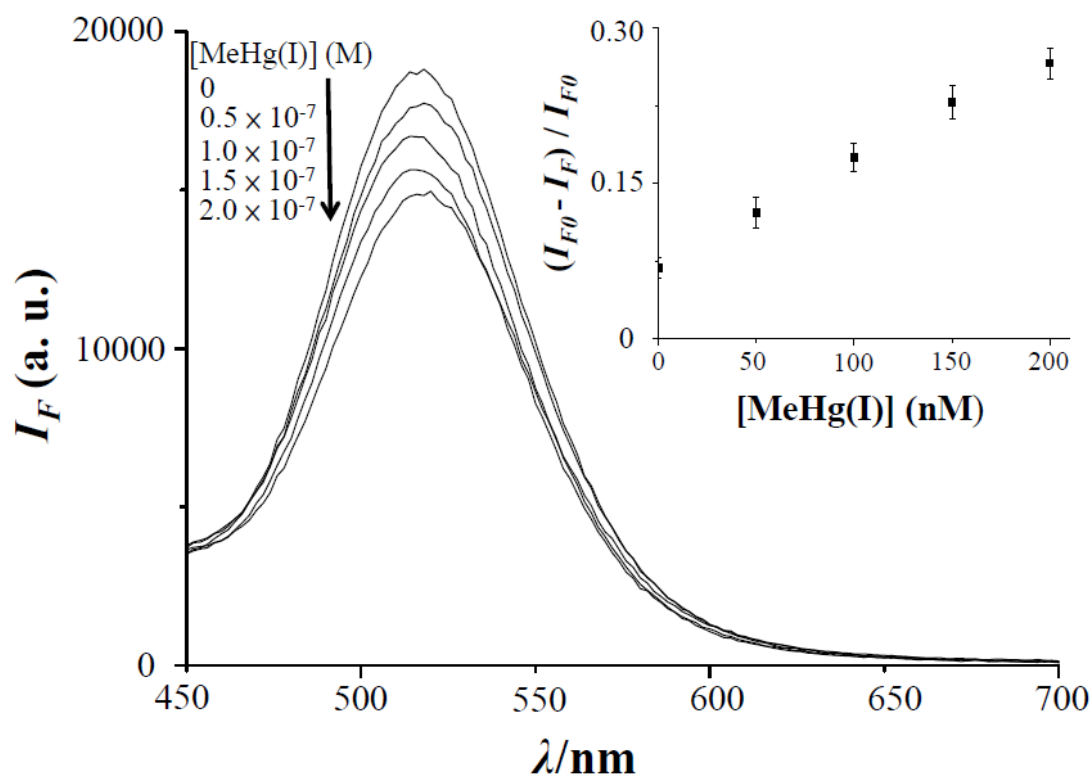


Fig. S10 Analyses of MeHg(I) ions in fish samples (DORM II) using the Au NDs@11-MUA₁₀ μM probe. The samples were spiked with MeHg(I) ions at concentrations of 0–200 nM. Error bars represent standard deviations from five repeated experiments. Other conditions were the same as those described in Figure 6.