Supplementary Material (ESI) for Chemical Communications


# Supporting Information

## Oligonucleotide-stabilized silver clusters as novel fluorescence probes for the highly selective and sensitive detection of mercury (II) ion

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## Experiment Section

**Materials.** Oligonucleotide with specific sequence (d12, 5' CCCCCCCCCCCC 3') was synthesized by Shanghai Sangon Biotechnology Co. Ltd. (Shanghai, China). Other chemicals were commercially available and at least analytical grade. All the solutions were prepared with water purified by a Milli-Q system (Millipore, Bedford, MA, USA) and stored at 4 °C.

**Instrumentation.** The PL spectra were recorded by a Perkin-Elmer LS55 Luminescence Spectrometer (Perkin-Elmer Instruments U.K.) using a 1-cm path length quartz cell at room temperature. The slot widths of the excitation and emission were set at 10.0 and 15.0 nm respectively. UV/Vis absorption spectra were recorded

by a CARY 500 UV/Vis–near-IR Varian spectrophotometer. Photoluminescence decay was measured on a Photon Technology International (PTI) Timemaster fluorescence lifetime spectrometer equipped with GL-302 dye laser pumped by PTI GL-3300 nitrogen laser and a GL-303 frequency doubler.

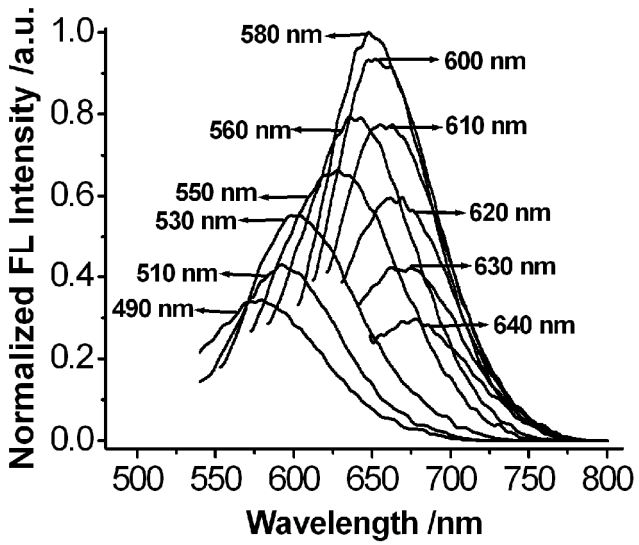


**Figure S1.** Fluorescence emission spectra from obtained Ag clusters under different excitation light wavelengths.

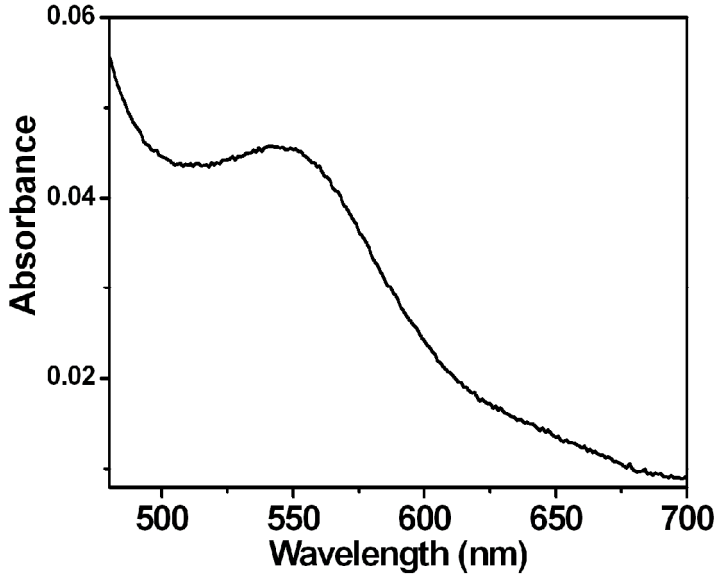


**Figure S2** The absorption spectrum of obtained Ag clusters. At the given wavelength range, an obvious absorption peak appeared at about 550 nm, and a weak absorption peak appeared at about 650 nm.

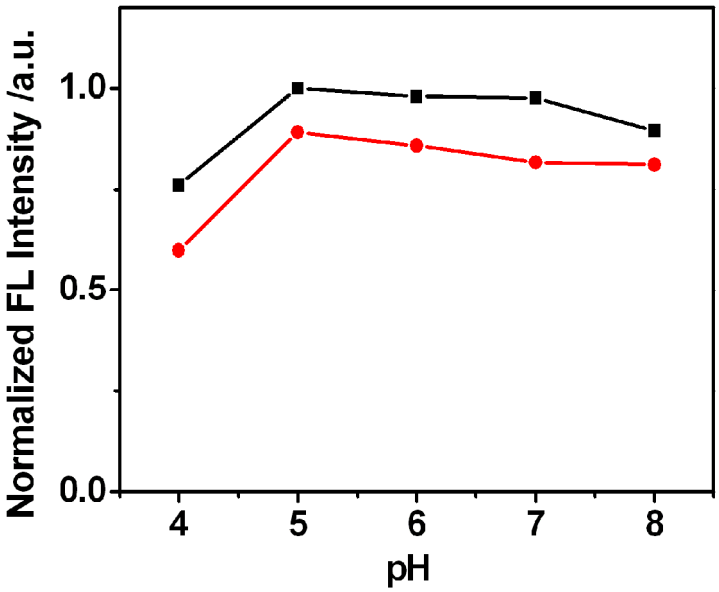


**Figure S3.** The influences of pH values on the FL intensity of silver clusters in the absence (black line) and presence of 100 nM $Hg^{2+}$ ions (red line), respectively. (Resulting oligonucleotide concentration, 10 μM; 100 mM ammonium acetate buffer, the pH value was adjusted by acetic acid or NaOH; scan rate, 500nm/min; excitation wavelength, 580 nm; emission wavelength, 650 nm)

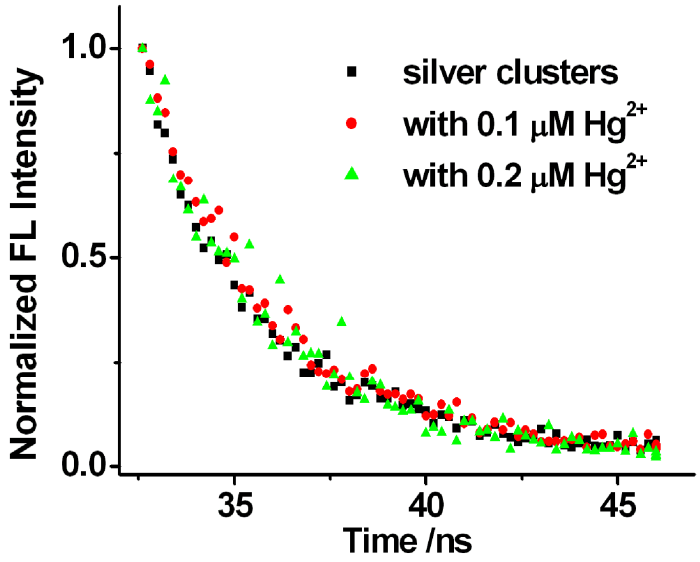


**Figure S4.** Fluorescence decay as a function of time of the fluorescent silver clusters in the presence of $Hg^{2+}$ ions with different concentrations. (40 mM ammonium acetate buffer, pH 7.0)