Supporting Information

Distance-dependent metal-enhanced quantum dots fluorescence analysis in solution by capillary electrophoresis and its application to DNA detection

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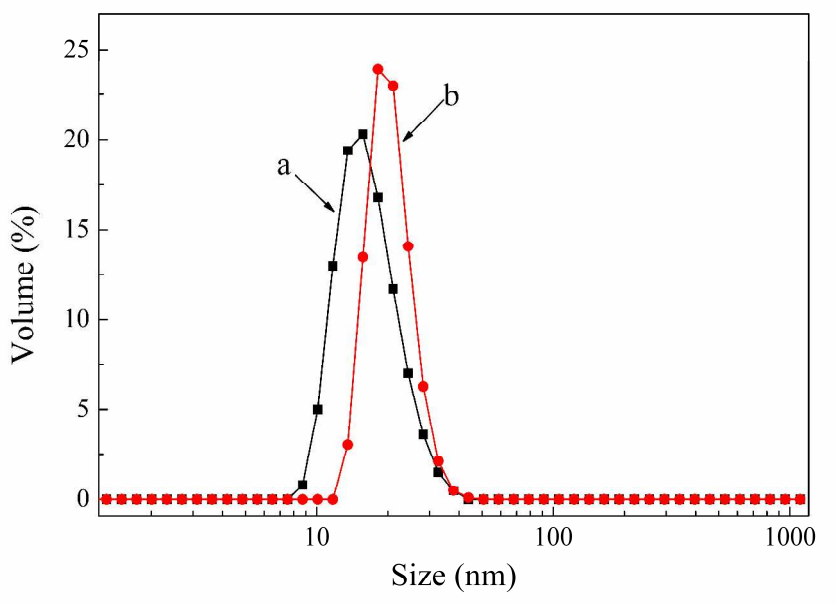

Figure S1. Hydrodynamic diameters of Au NPs (a) and Au-$B_{3.4}$ conjugate (b) in water measured by means of DLS.

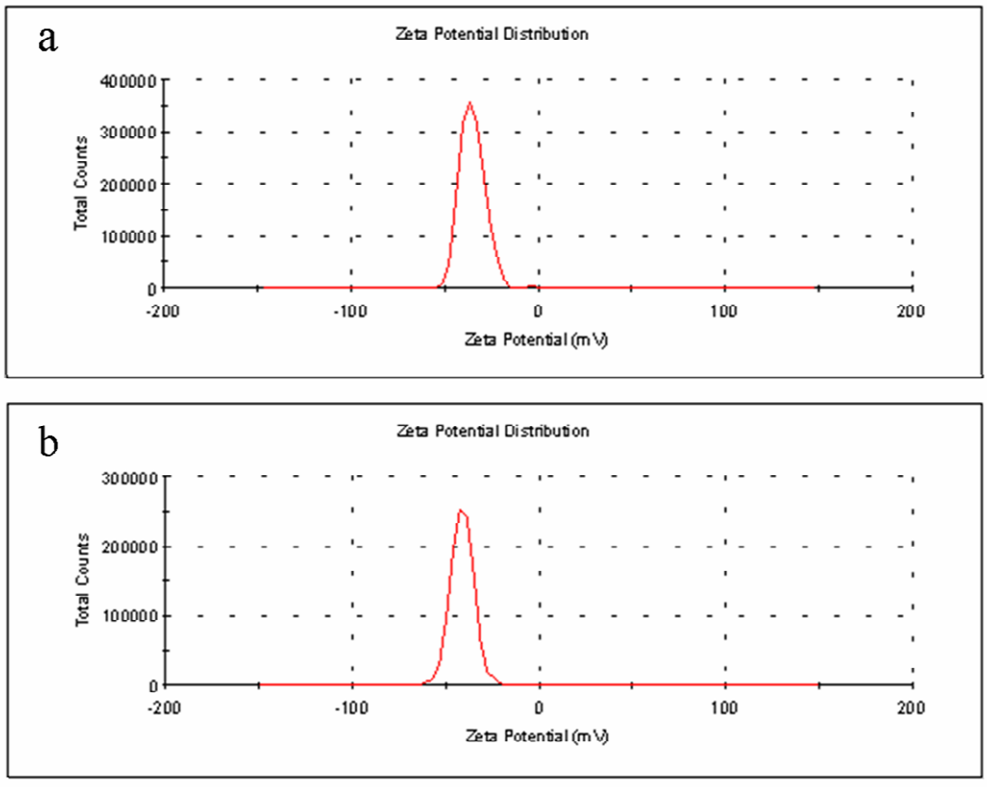

Figure S2. Zeta potentials of Au NPs (a) and Au-$B_{3.4}$ conjugate (b) in water.

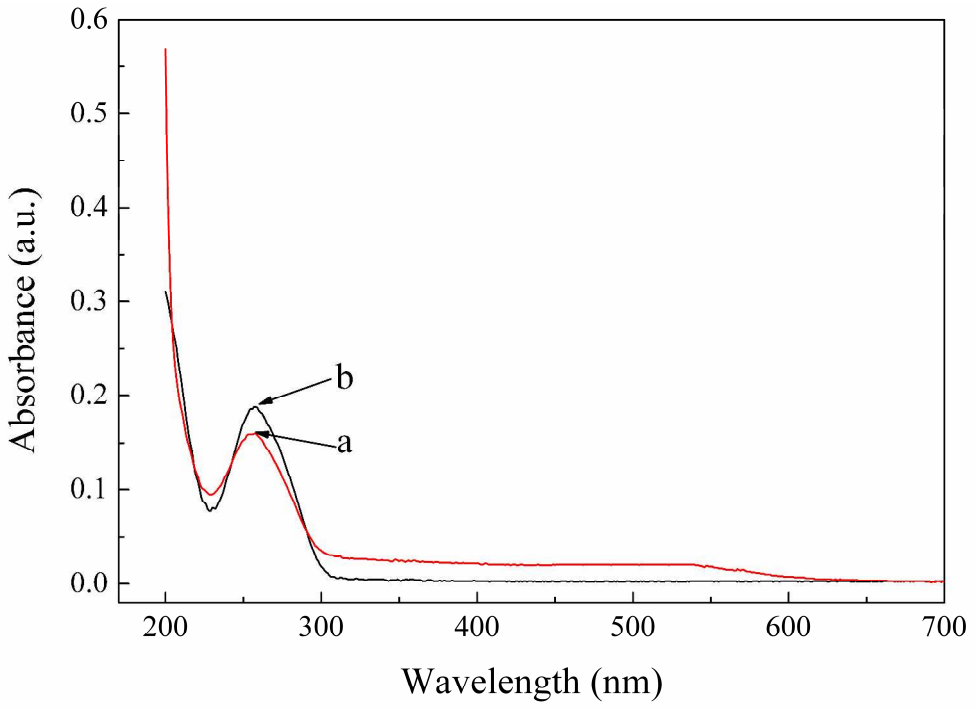

Figure S3. UV-Vis absorption spectra of filtrate collected during the preparation of Au-$B_{3.4}$ conjugate (a), and 3 OD of $B_{3.4}$ treated by the same dilution procedure in control experiment (b).

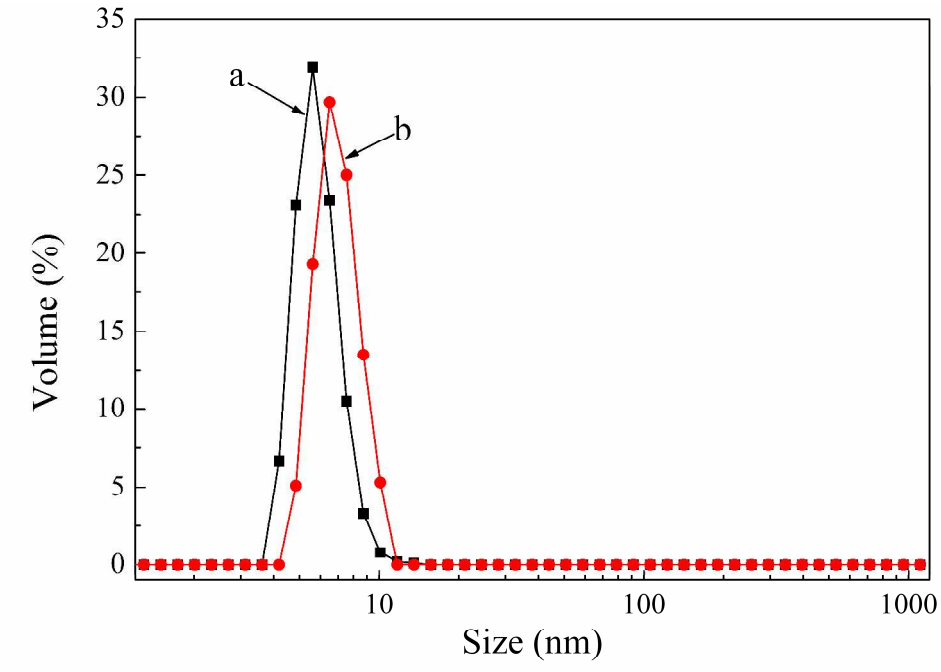

Figure S4. Hydrodynamic diameters of CdSe/ZnS QDs (a) and CdSe/ZnS QD-$A_{3.4}$ conjugate (b) in PBS buffer (10 mM, pH 7.4) measured by means of DLS.

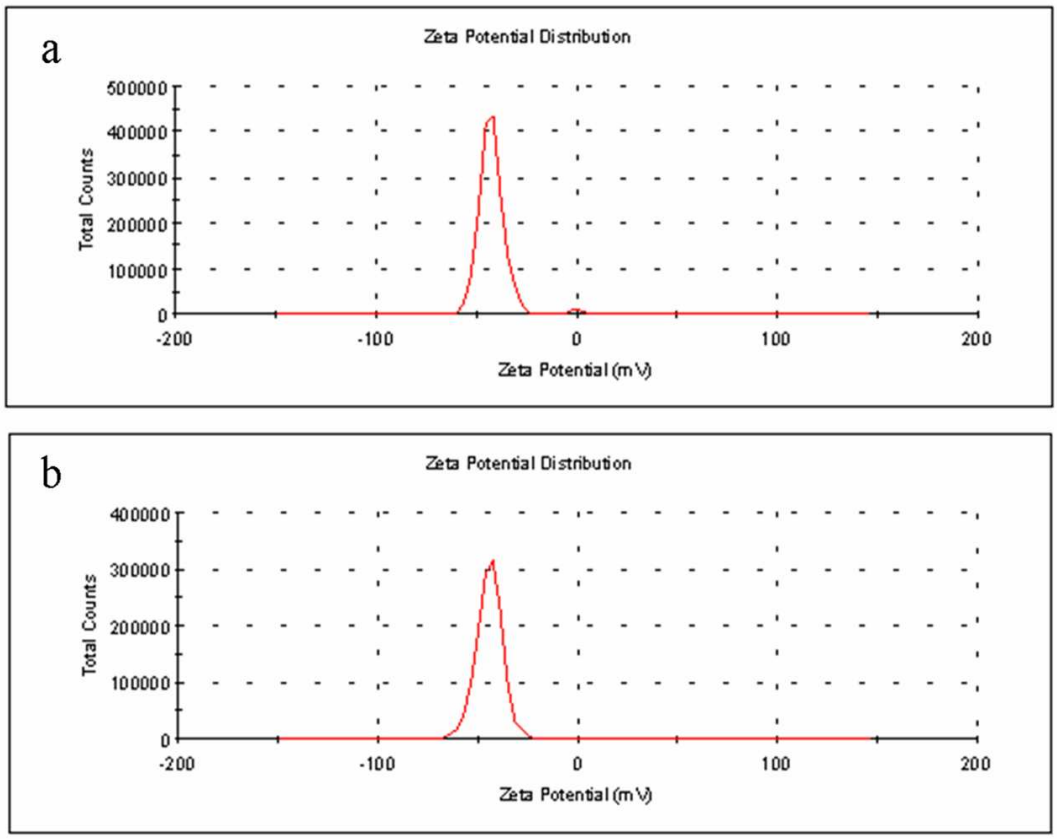

Figure S5. Zeta potentials of CdSe/ZnS QDs (a) and CdSe/ZnS QD-$A_{3.4}$ conjugate (b) in PBS buffer (10 mM, pH 7.4).

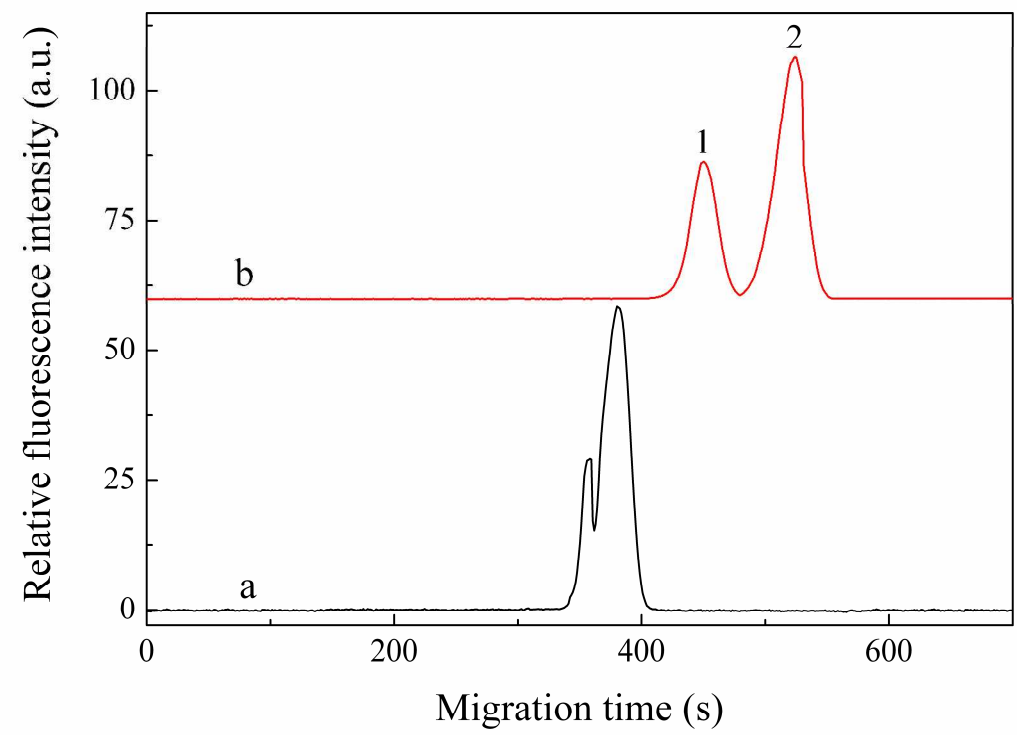

Figure S6. Effect of polymer additive on the separation of hybridization mixture of QD-$A_{3.4}$ and

Au-$B_{3.4}$ conjugates. Sample: 50 µL QD-$A_{3.4}$ + 200 µL Au-$B_{3.4}$. Separation buffers: (a) 25 mM $Na_2B_4O_7$, pH 9.0; (b) 25 mM $Na_2B_4O_7$ + 0.5% HEC, pH 9.0. Coated capillary with 40 cm effective (60 cm total) length and 50 µm I.D. was used. Applied voltage was -20 kV, and hydrodynamic injection was carried out by siphoning at 15 cm height differences for 20 s. The relative standard deviations (%RSD) for the migration time of peaks 1 and 2 in curve a and b (three repeat experiments) were 0.54% and 0.55%, 0.57% and 0.59%, respectively, while the %RSD for their peak areas were 1.89% and 1.98%, 1.86% and 1.89%, respectively.

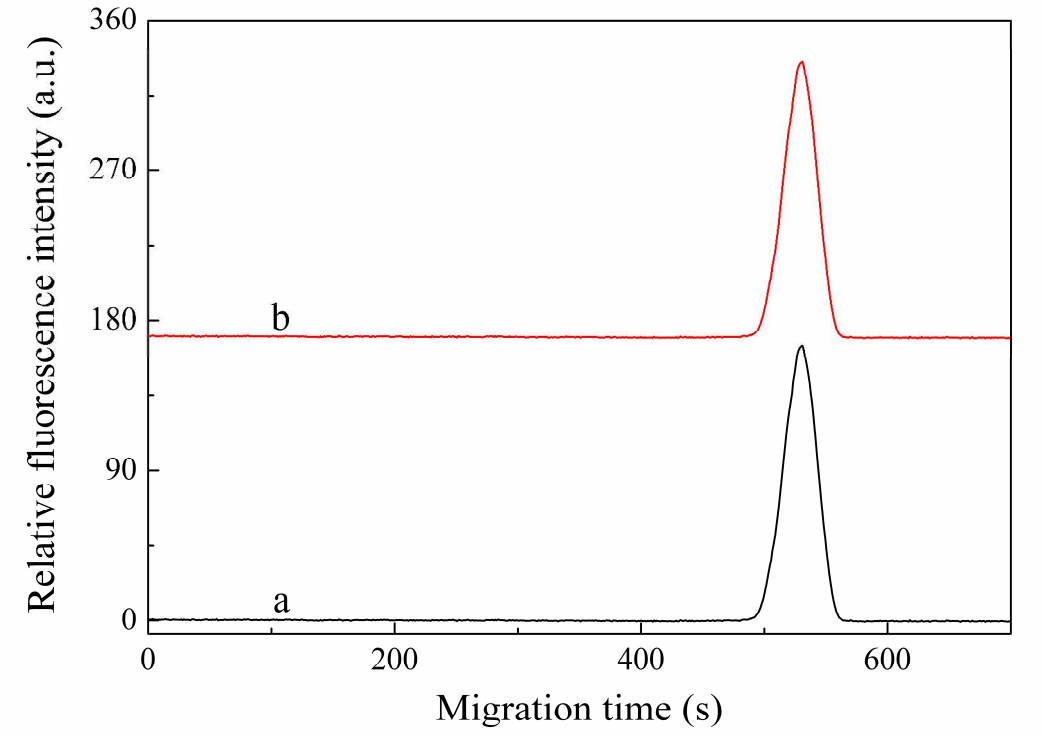

Figure S7. Electropherograms for the QD-$A_{11.9}$~$B_{11.9}$-Au system (50 µL QD-$A_{11.9}$ + 250 µL Au-$B_{11.9}$, a), and the mixture of QD-$A_{11.9}$~$B_{11.9}$-Au system and 150 nM non-target DNA (b). The temperature and time of the competition reaction were 37 ºC and 1.5 h, respectively. Other conditions were same as described in Figure S6. The %RSD for the migration time of peaks in curve a and b (three repeat experiments) were 0.61% and 0.62%, respectively, while the %RSD for their peak areas were 1.83% and 1.84%, respectively.