Supporting Information

Enzymatic Preparation of Plasmonic-Fluorescent Quantum Dot-Gold Hybrid Nanoprobes for Sensitive Detection of Glucose and Alkaline Phosphatase and Dual-Modality Cell Imaging

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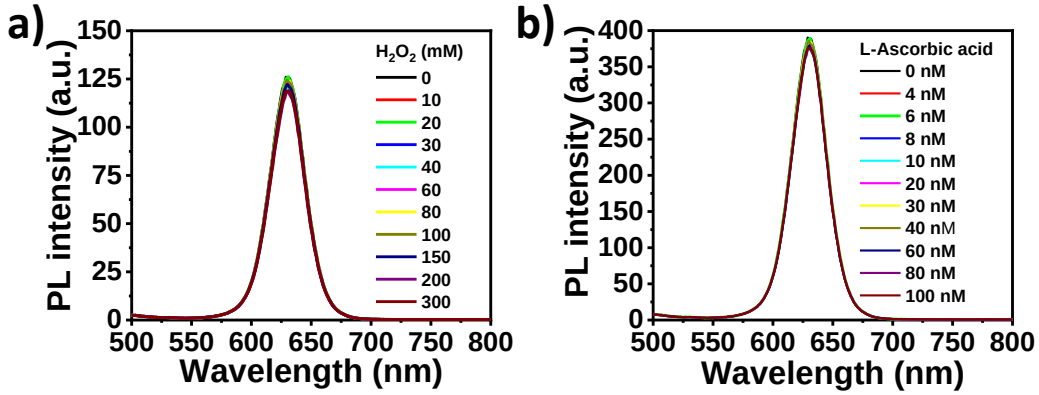

Figure S1. The PL intensities of polymer-coated QDs against chemical oxidation and L-ascorbic acid etching, in the presence of increasing concentrations of H_2O_2 and L-ascorbic acid.

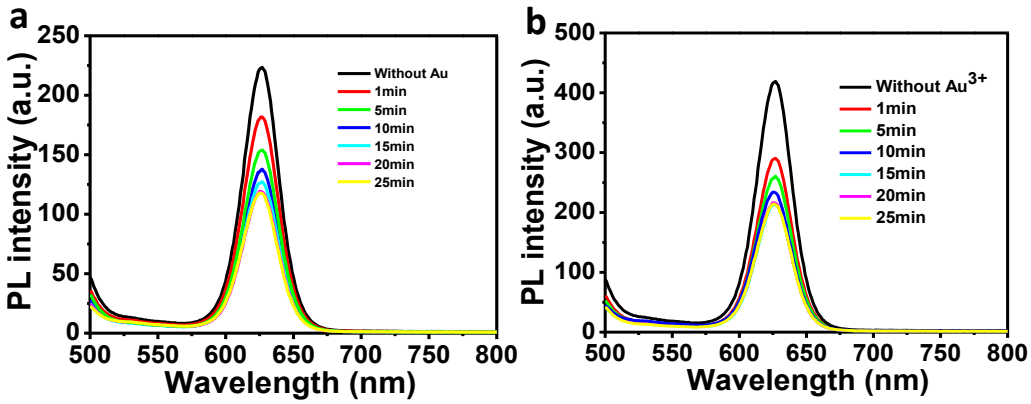

Figure S2. The time evolution fluorescence emission spectra of the QD- polymer-GOx and QD-polymer-AAP solution after adding $HAuCl_4$ solution(10 μL, w/w 1%).

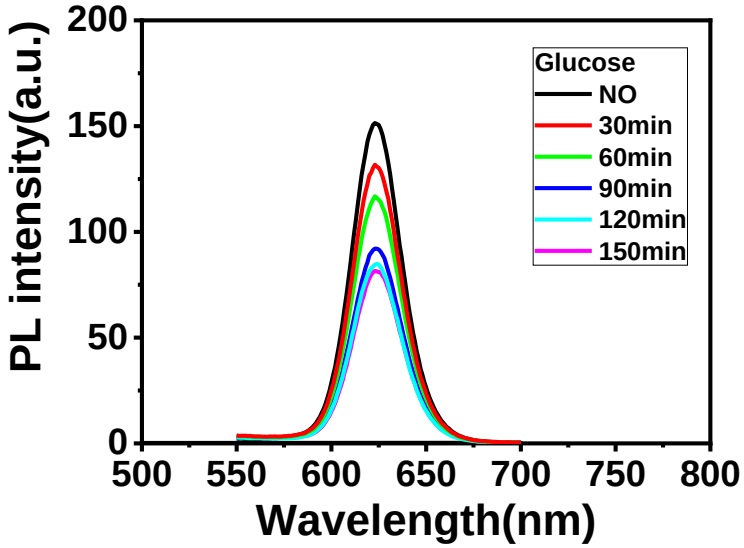

Figure S3. The time evolution fluorescence emission spectra of the QD- polymer-GOx solution in the presence of $HAuCl_4$ after adding 20 μL of glucose (2×10^{-3} M).

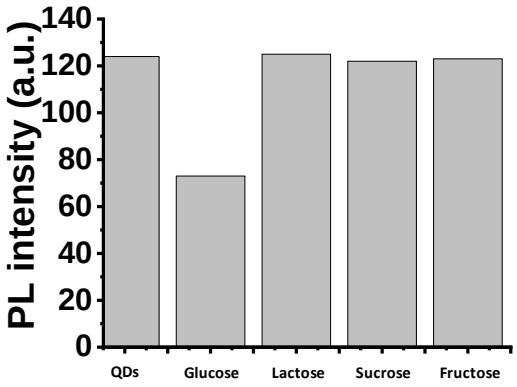

Figure S4. Selectivity analysis for glucose detection by the PL intensity of the QD-GOx NSs after 2 h incubation with glucose (2×10^{-3} M), lactose (4×10^{-3} M), sucrose(4×10^{-3} M), and fructose(4×10^{-3} M), respectively.

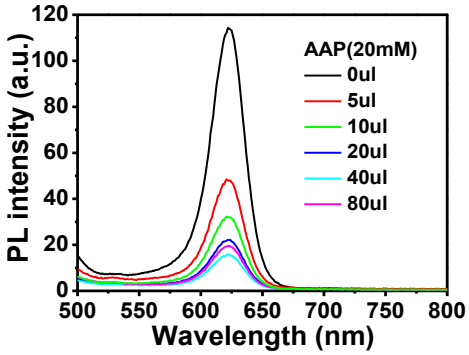

Figure S5. The fluorescence emission spectra of the QD-polymer-ALP solution after adding different concentrations of AAP in PBS (pH 7.4, 10 mM).

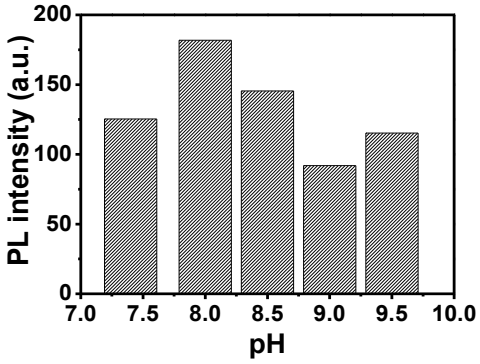

Figure S6. The fluorescence intensity of the ALP sensing system as a function of the pH values (10 mM Tris-HCl). ALP, 0.05 mU/mL; incubation at room temperature (25-30°C) for 30 min. λex = 450 nm.

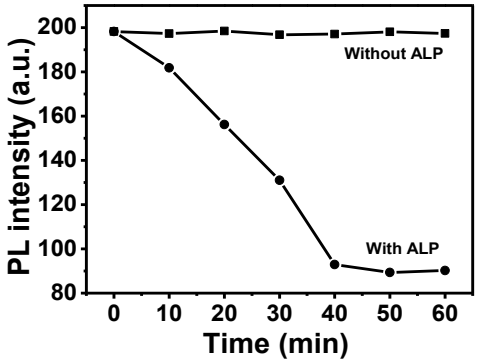

Figure S7. The fluorescence intensity of the ALP sensing system as a function of the enzymatic reaction time in the presence and absence of ALP, 0.05 mU/mL; pH 9.0 (10 mM Tris-HCl); incubation at room temperature (25-30 ^{o}C) . λex = 450 nm.

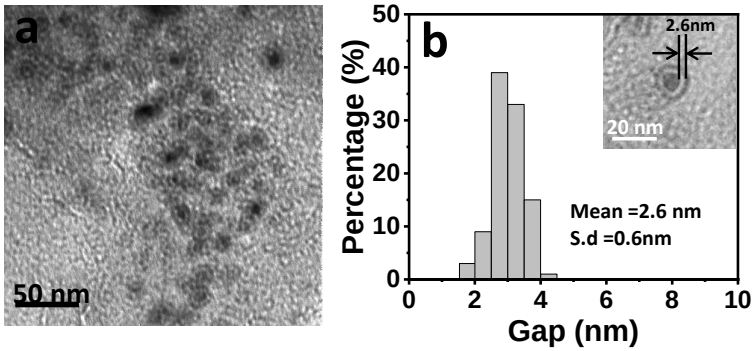

Figure S8. a) Representative TEM images of the QD–gold core–shell nanoparticles with layers of polyelectrolyte spacers. b) Histograms of the core–shell separation distribution of particles with polyelectrolytes layers. Each histogram was plotted based on >100 nanoparticles. Insets show the TEM measurements of representative particles.

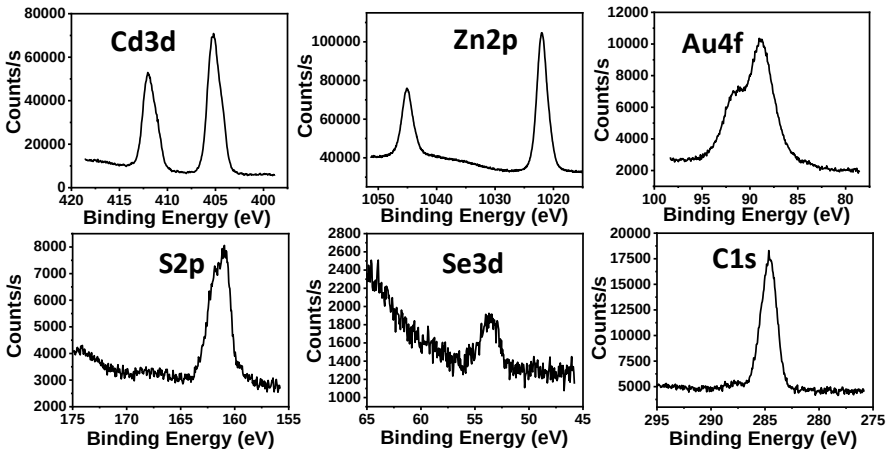

Figure S9. The representative XPS spectra of the QD-Au NPs prepared by ALP enzymatic reaction.

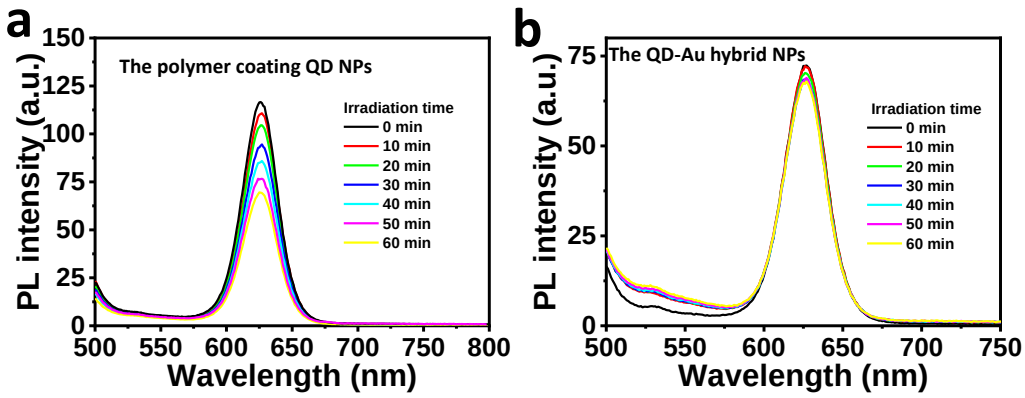

Figure S10. The fluorescence intensities of water-soluble polymer-coated QDs and QD-Au core-shell NPs. Under identical illumination conditions (450 nm laser).