

Supplementary Material

One-Pot Green Synthesis of Nanohybrid Structures: Gold

Nanoparticles in Poly(γ -Glutamic Acid) Copolymer Nanoparticles

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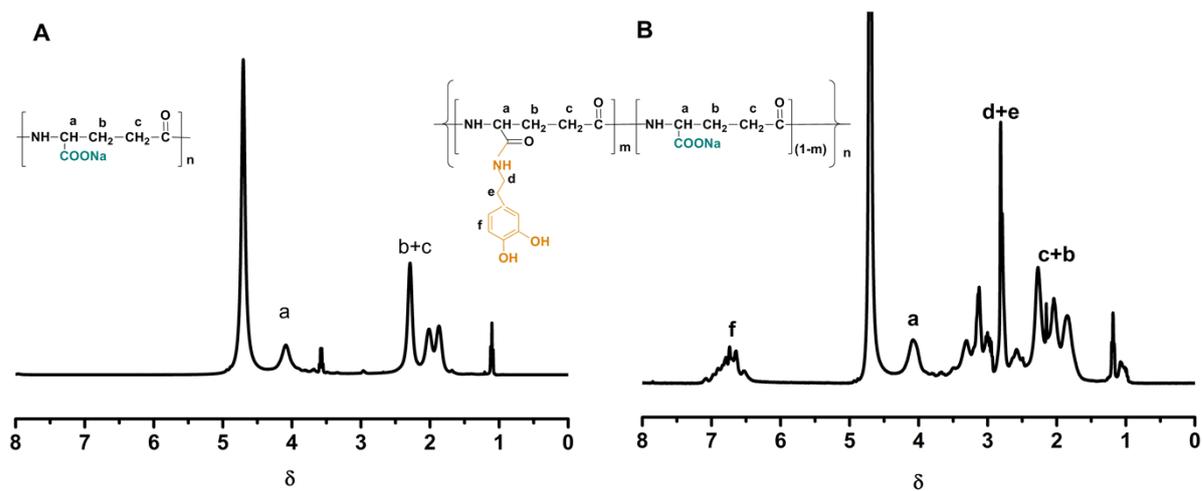


Figure S1. ^1H NMR spectra of γ -PGA (A) and γ -PGA-g-DA-28 copolymer (B) in D_2O .

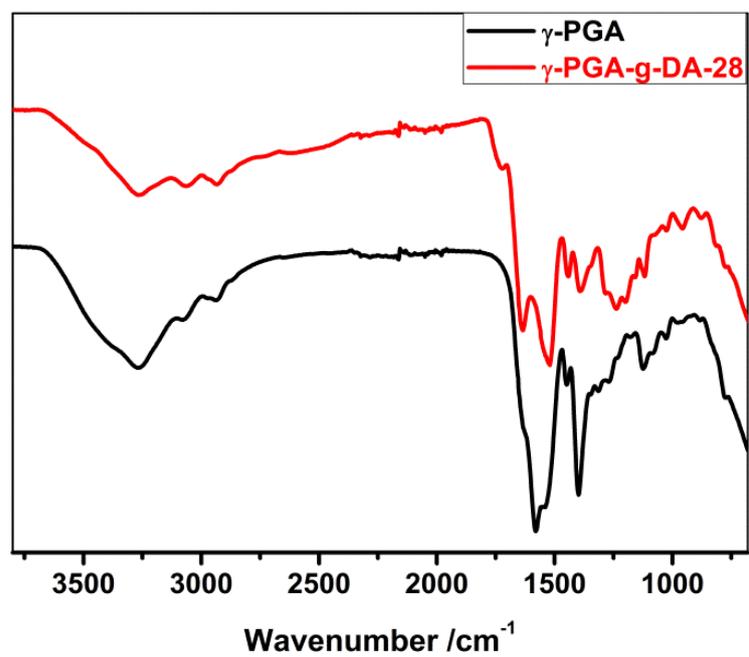


Figure S2. IR spectra of γ -PGA and γ -PGA-g-DA-28 copolymer.

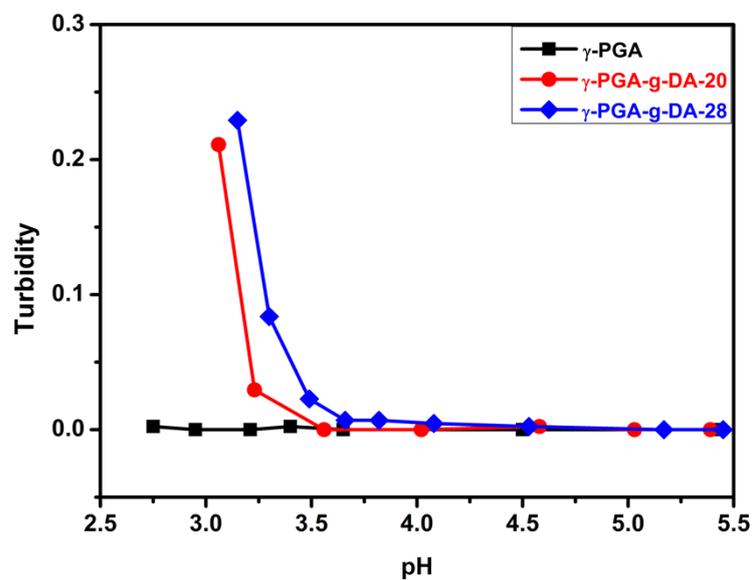


Figure S3. Turbidities of aqueous solutions of γ -PGA and γ -PGA-g-DA as a function of solutions pH value at 550 nm. The concentration of the γ -PGA and γ -PGA-g-DA aqueous solution was 0.1 mg/mL.

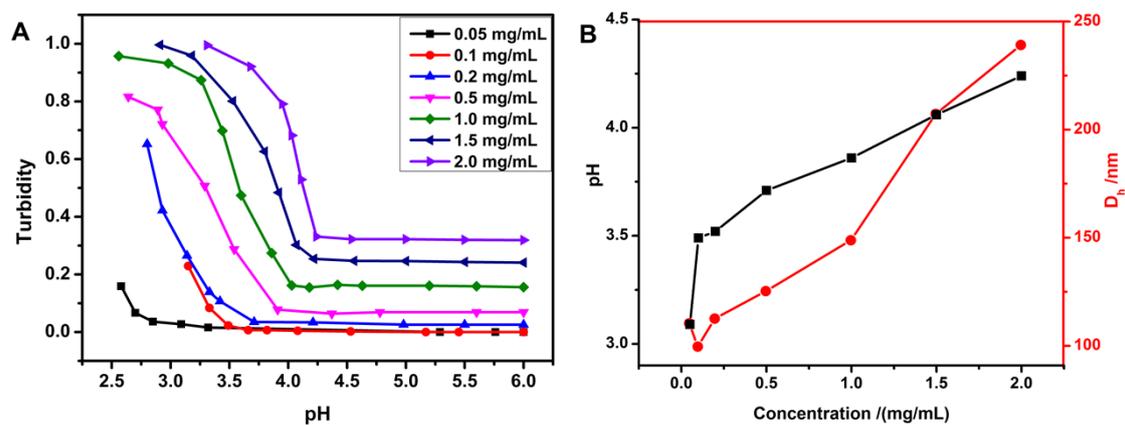


Figure S4. Turbidities of aqueous solutions of γ -PGA-g-DA-28 with different concentrations as a function of solution pH value at 550 nm. (A) The pH values at which γ -PGA-g-DA-28 formed and the sizes of γ -PGA-g-DA-28 NPs as a function of γ -PGA-g-DA-28 concentration. (B)

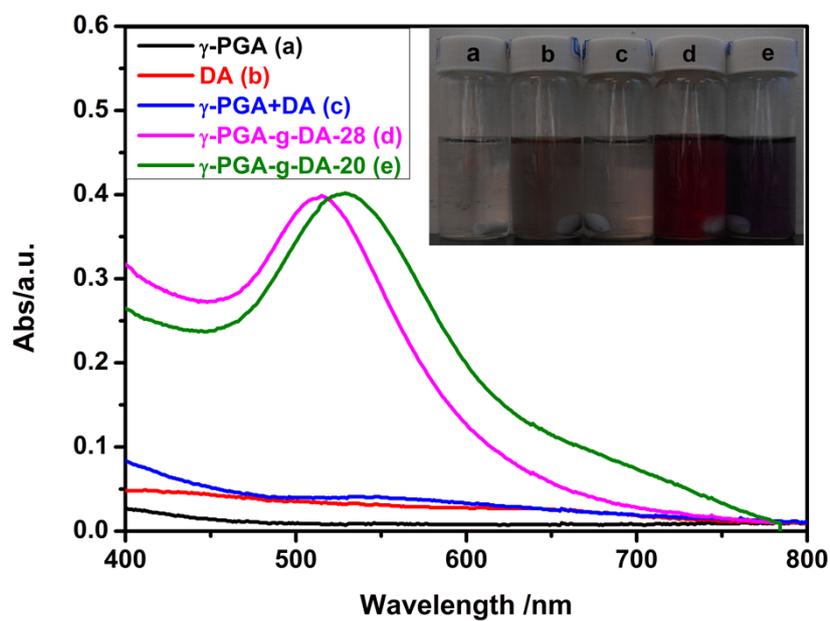


Figure S5 UV-vis absorption spectra and the characteristic colors (inset) for nanohybrids with different copolymers with L_{Au} 0.30. (a) γ -PGA, (b) dopamine, (c) mixture of γ -PGA with dopamine, (d) γ -PGA-g-DA-28, (e) γ -PGA-g-DA-20.

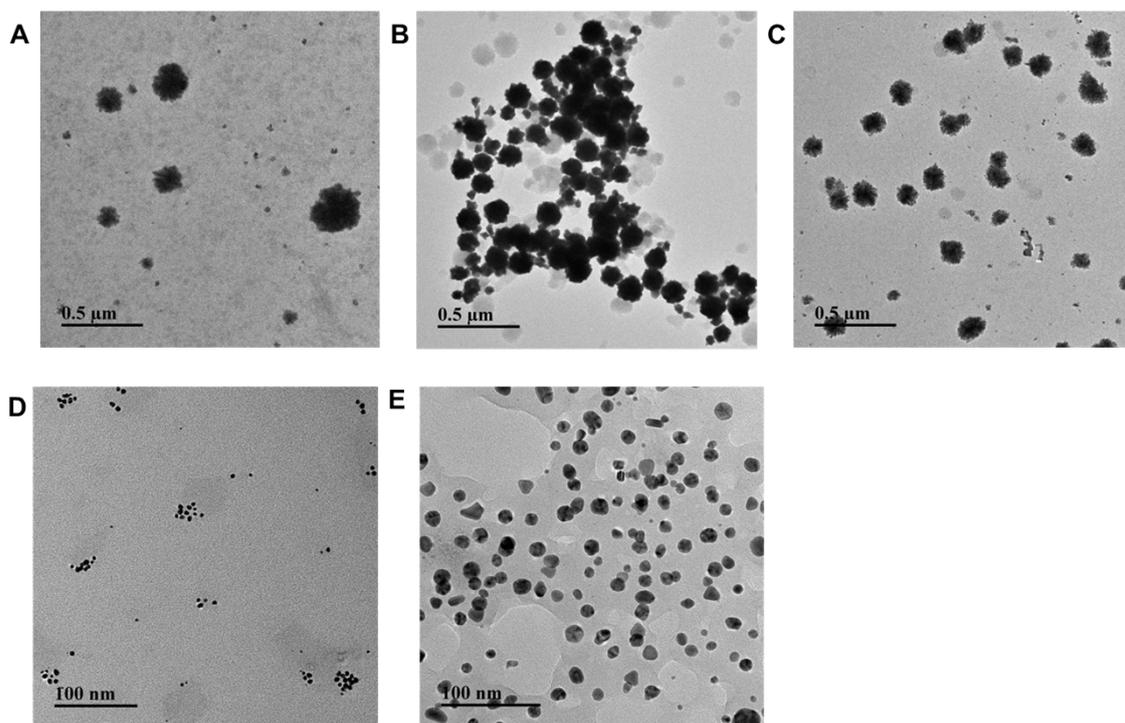


Figure S6 TEM images of nanohybrids prepared from different copolymers with L_{Au} 0.30. (A) γ -PGA, (B) dopamine, (C) mixture of γ -PGA with dopamine, (D) γ -PGA-g-DA-28, (E) γ -PGA-g-DA-20.

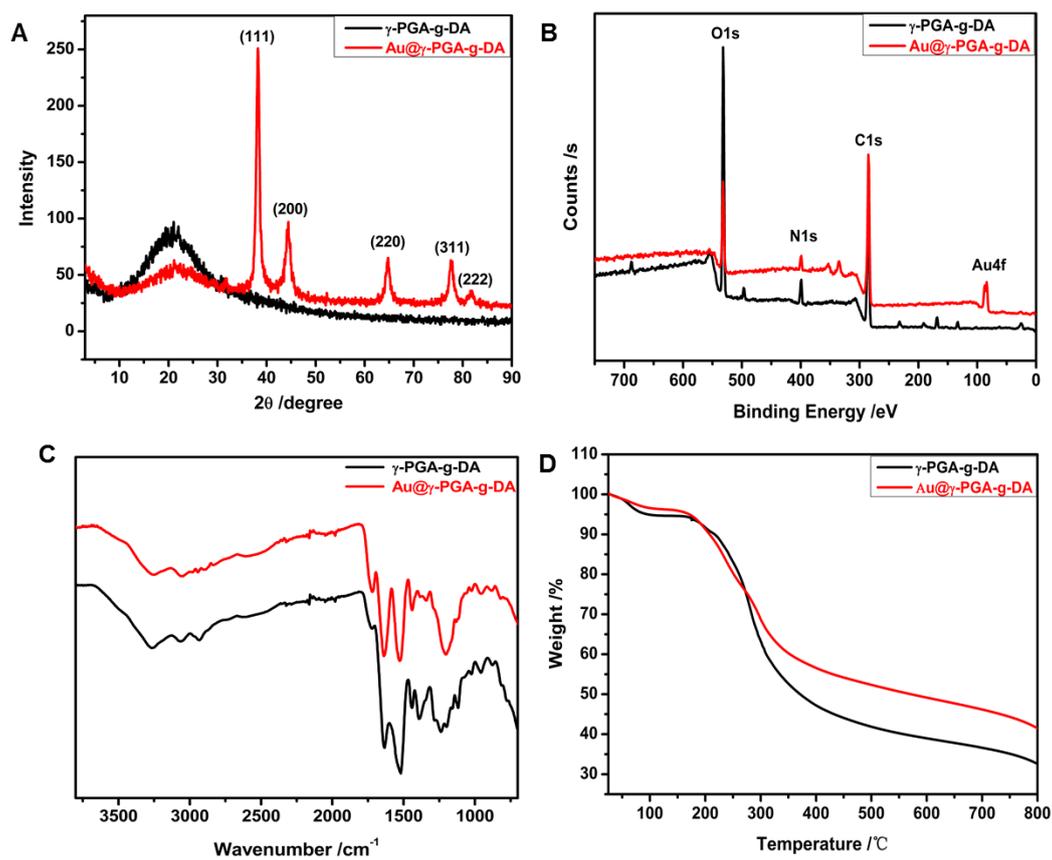


Figure S7. XRD patterns (A), XPS survey spectra (B), IR spectra (C) and TGA curves (D) of γ -PGA-g-DA bulk powder and Au@ γ -PGA-g-DA nanohybrids nanohybrids with L_{Au} 0.30.

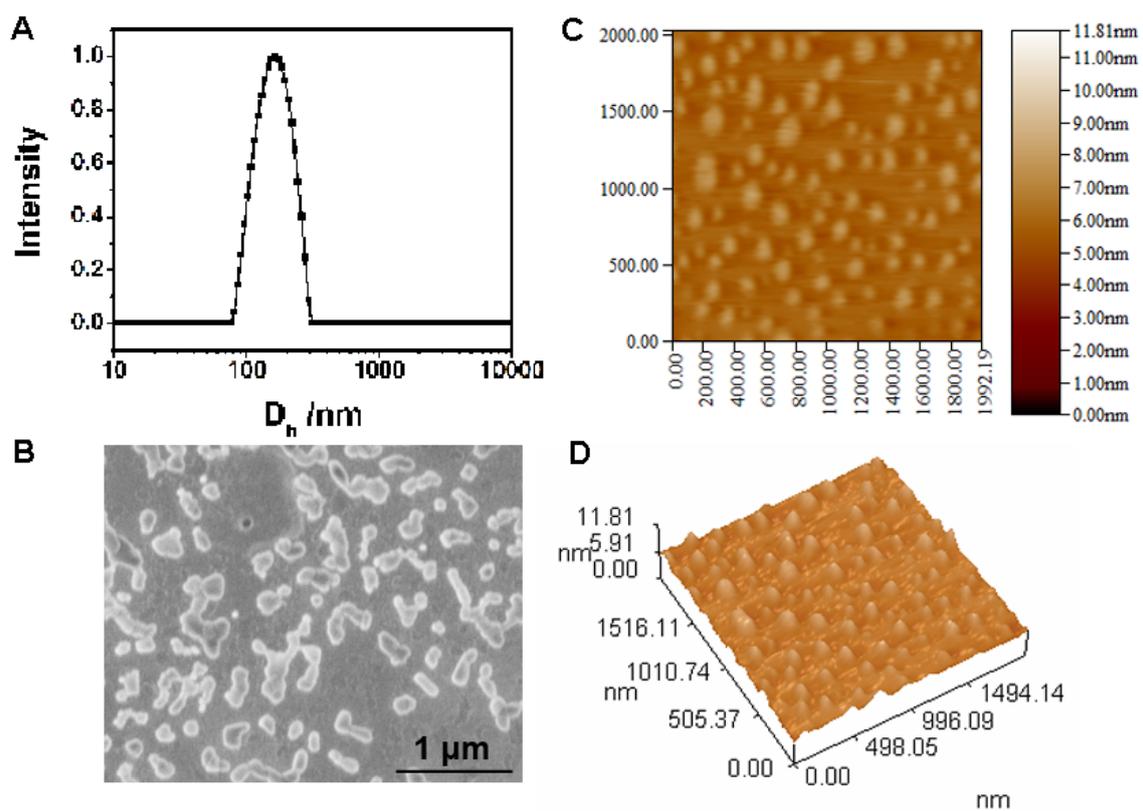


Figure S8. DLS plots (A), SEM image (B) and AFM image (C, D) of Au@ γ -PGA-g-DA nanohybrids with L_{Au} 0.30. L_{Au} is the molar ratio of Au^{3+} to the repeated units of γ -PGA-g-DA.

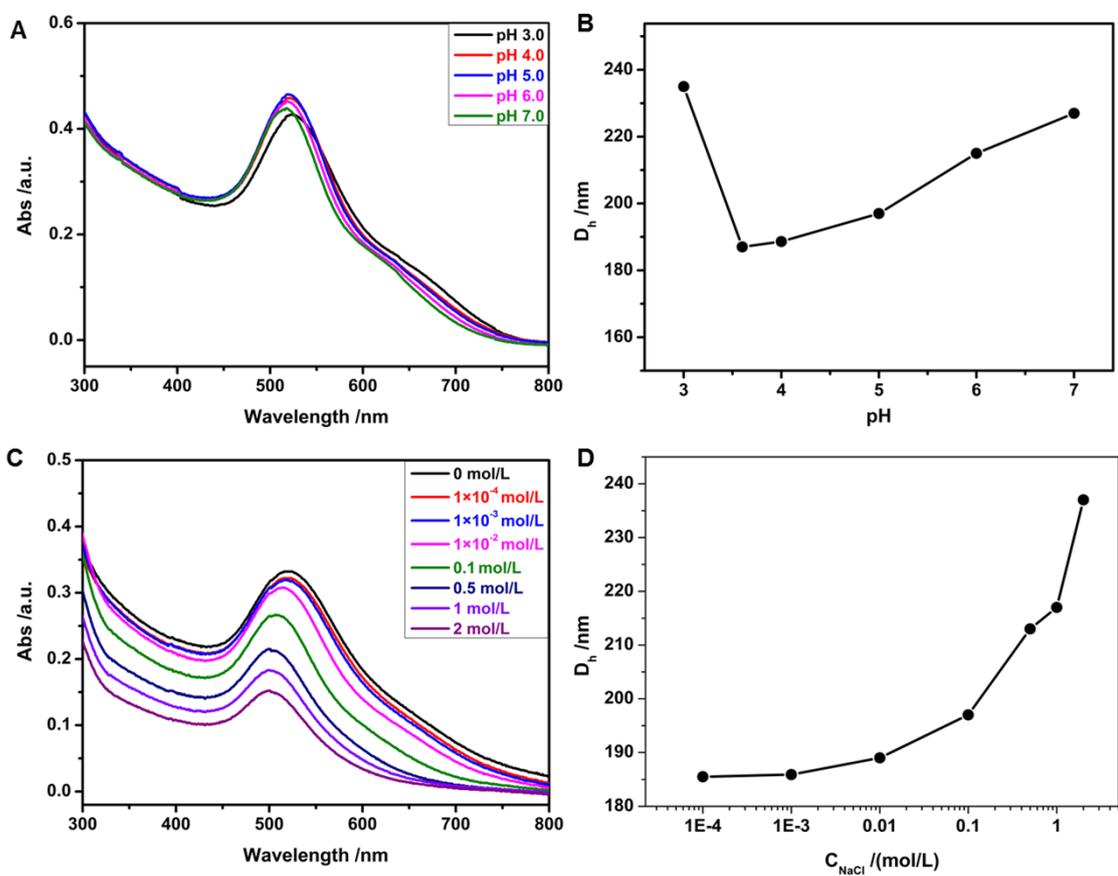


Figure S9 UV-vis spectra (A) and average size (determined by DLS) (B) of Au@ γ -PGA-g-DA nanohybrids with different pH buffers. UV spectra (C) and average size (D) of Au@ γ -PGA-g-DA nanohybrids with different concentration of NaCl.

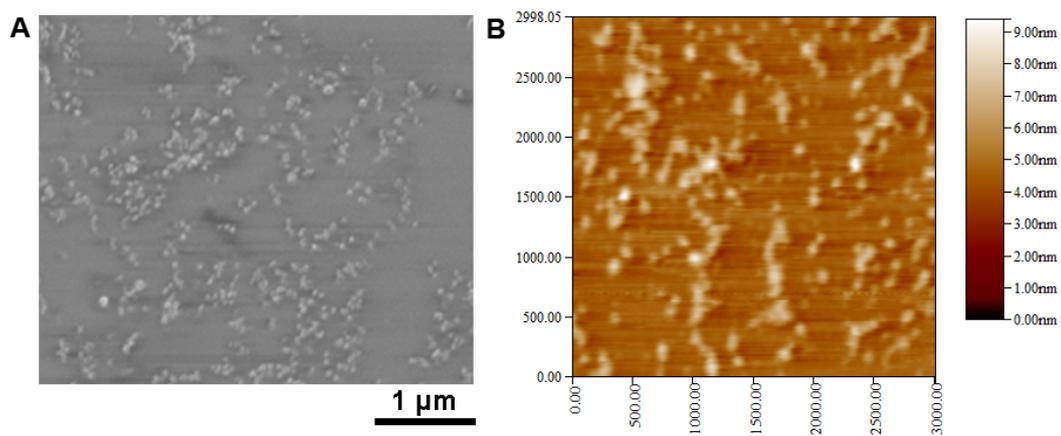


Figure S10. SEM (A) and AFM (B) images of the film formed from Au@ γ -PGA-g-DA nano hybrids.

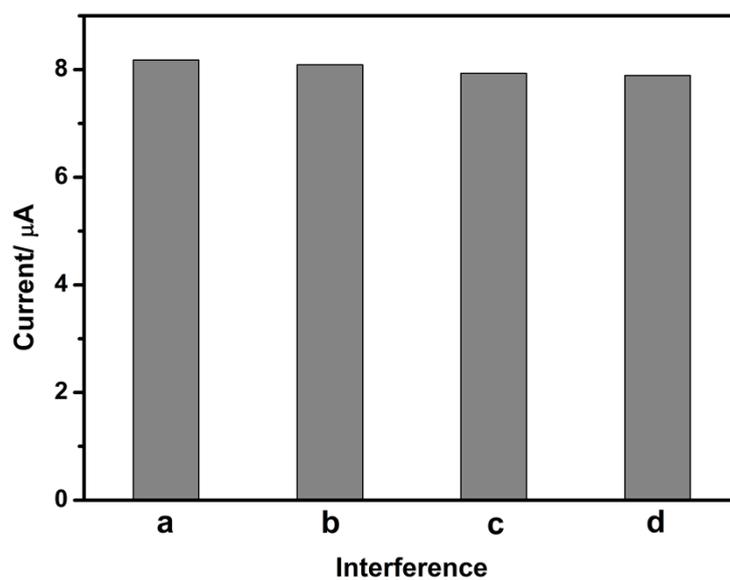


Figure S11. Current response of Au@ γ -PGA-g-DA-modified GCE in 0.1M PBS (pH 7.0) containing 1×10^{-5} mol/L of L-tryptophan (a) and containing 1×10^{-5} mol/L of L-tryptophan and 50-fold concentrations of L-lysine, L-serine, L-phenylalanine, L-histidine, L-glycine, L-alanine, and L-proline (b-d).