Supplementary Materials

Gold Nanoparticle Size-Dependent Enhanced Chemiluminescence for Ultra-Sensitive Haptoglobin Biomarker Detection

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Average diameter (nm)		
Planned	**Before PDT cross-linking**	**After PDT cross-linking**
2.6	5.2	237.5
8	9.4	63.0
13	10.9	50.7
25	30.5	47.3
38	39.9	68.1

Table S1. The average diameter of the produced GNPs before and after PDT cross-linking obtained by DLS.

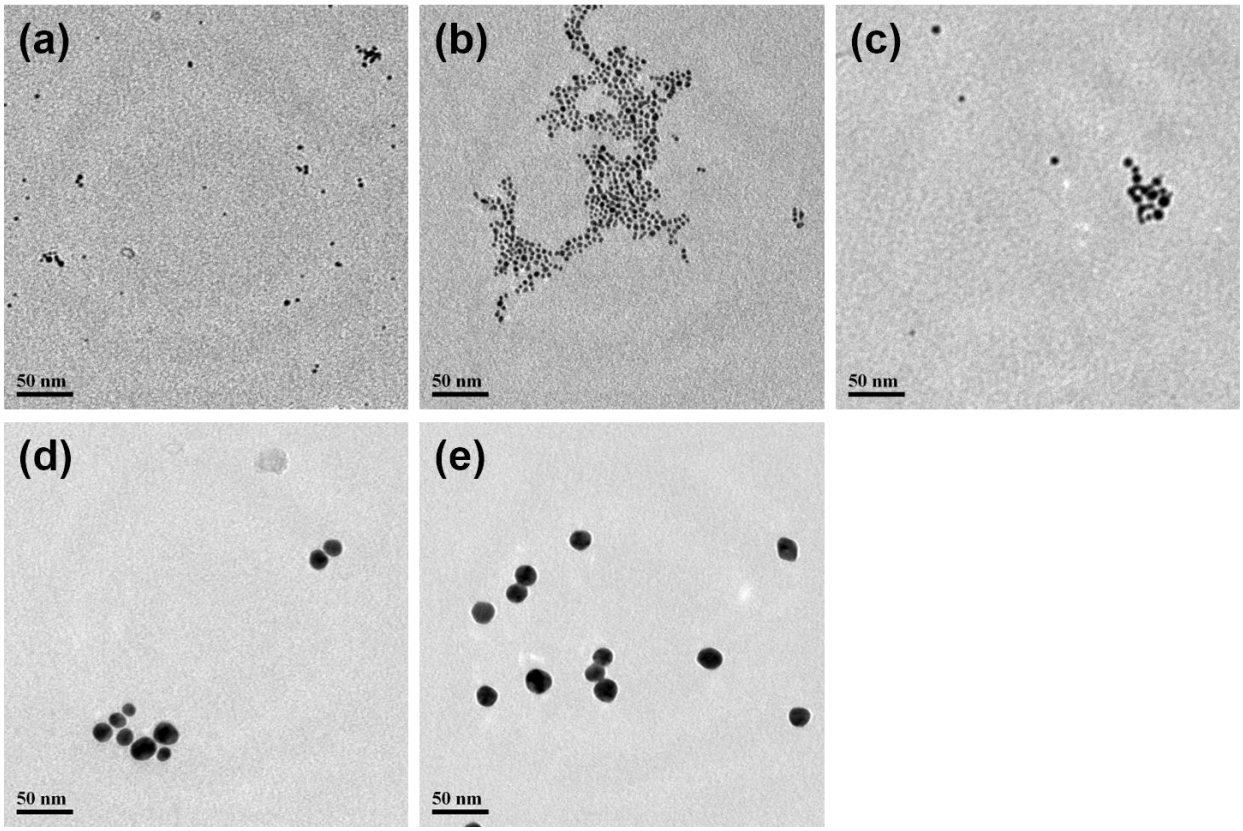

Figure S1. TEM images of the produced GNPs (before PDT cross-linking): (a) 2.6 nm; (b) 8 nm; (c) 13 nm; (d) 25 nm; (e) 38 nm.

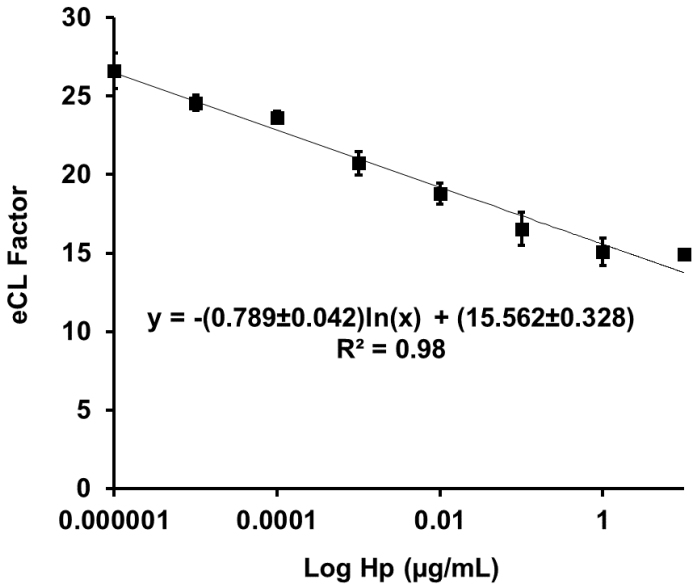

Figure S2. Calibration curve of eCL factor for standard Hp concentrations with optimal GNPs-PDT. Data are reported as mean ± standard deviation (n=3).

Table S2. Analytical performance of optical techniques utilizing nanoparticles for haptoglobin detection

Sensing platform	Optical technique	Dynamic range	Detection Limit	Ref.
Magnetic nanobeads immunoassay	Capillary electrophoretic laser-induced fluorescence	0.2–3.0 mg mL^{-1}	N/A	[1]
CdTe QDs immunoassay	Fluorescence resonance energy transfer	0.1–0.6 nM	0.02nM	[2]
Gold nano layer	Surface plasmon resonance	N/A	1.1 μg mL^{-1}	[3]
Gel electrophoresis	Chemiluminescence	0.1-13.3 μg mL^{-1}	0.08 μg mL^{-1}	[4]
Enzyme-linked immunosorbent assay	Absorbance	N/A	0.01 μg mL^{-1}	[5]
GNPs/CdTe-QDs/SWCNTs/Chitosan nanocomposite	Electro-chemiluminescence	0.1 pg mL^{-1} to 10 ng mL^{-1}	0.1 pg mL^{-1}	[6]
Cross-linked GNPs	Chemiluminescence	1 pg mL^{-1} to 10 μg mL^{-1}	0.19 pg mL^{-1}	This work

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