Electronic Supplementary Information (ESI)

Shape Dependent Sensing Behaviour of Gold Nanoparticles in Etching based Multicolorimetric Plasmonic-ELISA

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Table S1. UV-Vis absorbance of TMB^{2+} observed/recorded at 450 nm and corresponding concentrations calculated using Beer-Lambert law.

S. No.	Absorbance (a.u.)	Concentrations of the TMB^{2+} (µM)
1.	1.6	27 µM
2.	1.8	30 µM
3.	1.0	16 µM

According to Beer-Lambert law:

$$A = \varepsilon c l$$

$$c = \frac{A}{\varepsilon l}$$

where A = absorbance, c = solute molar concentration in M, l = the length of the path travelled by the light through the sample in centimeters (cm) and ε = molar extinction coefficient in $M^{-1}cm^{-1}$.

For example in case 1 from the table S1:

$$\varepsilon^{TMB^{2+}} = 5.9 \times 10^4 \ M^{-1} cm^{-1}$$

$$l = 1 \ cm$$

$$A = 1.6 \ a.u.$$
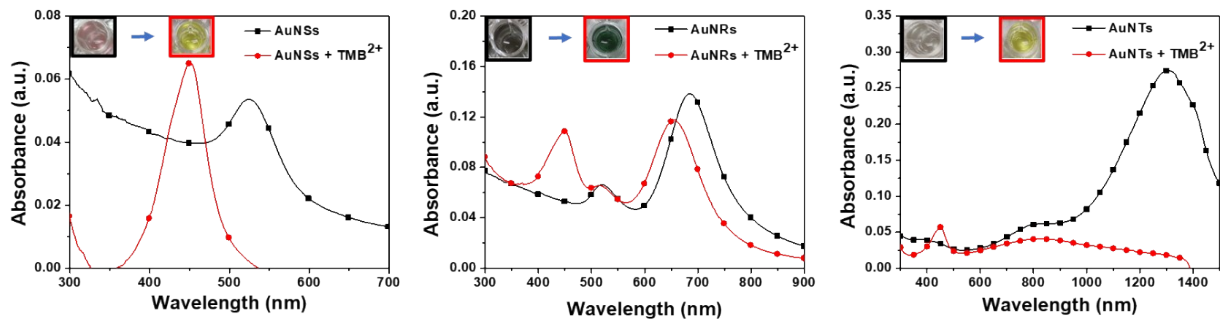
$$c = \frac{1.6}{5.9 \times 10^4 \times 1} = 27 \ \mu M$$

Fig. S1. UV-Vis spectra of all three types of MNPs before (black curve) and after interaction with TMB^{2+} (conc. = 65 μM) (red curve).

Table S2. The supplement data and the relative standard deviation for the developed indirect competitive p-ELISA.

HIgG concentration	Average absorbance value at 688nm (mean ± SD)	%SD value of Average
1 fg/mL	0.078 ± 0.002	2.56
10 fg/mL	0.092 ± 0.014	15.21
100 fg/mL	0.116 ± 0.004	3.44
1 pg/mL	0.140 ± 0.006	4.28

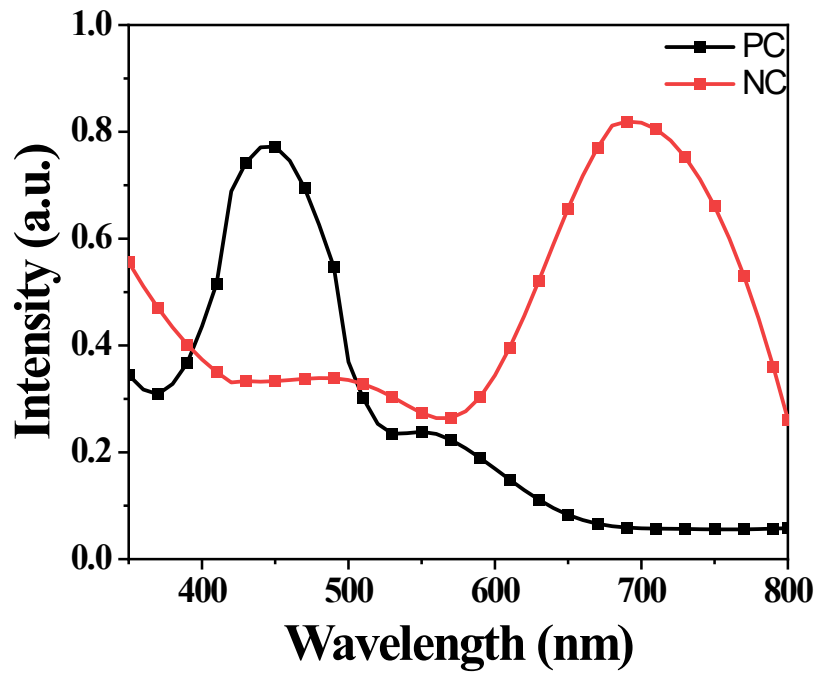|		
10 pg/mL	0.150 ± 0.014	9.33

Fig. S2. UV-Vis absorption spectra of AuNRs obatiend from the positive control (PC, black) and negative control (NC, red) control study.
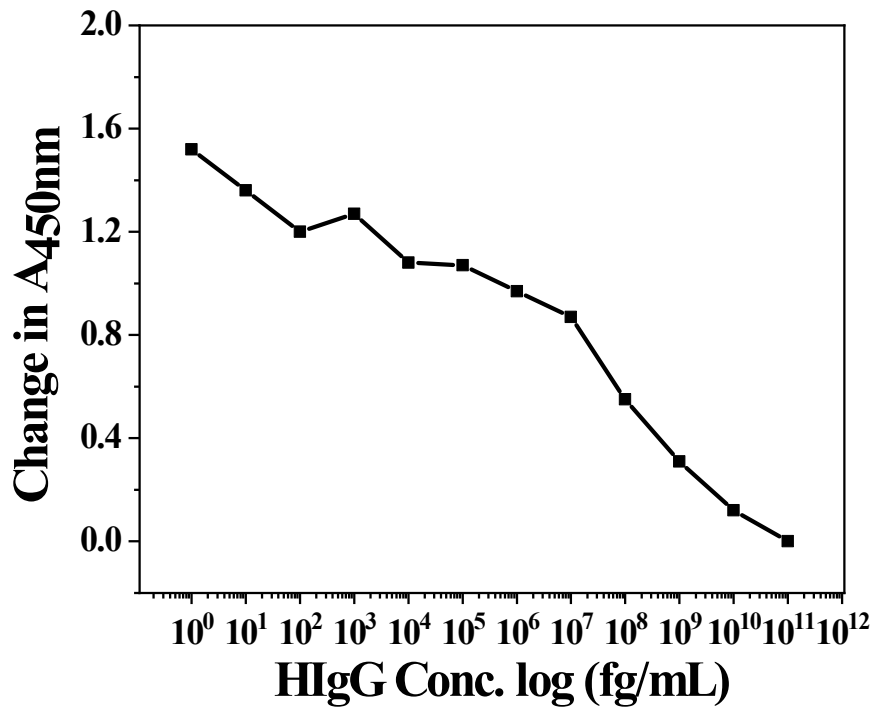
Fig. S3. UV-Vis spectra of change in the absorbance value at 450 nm as a function of sample HIgG concentration.