

Supporting Information:

Single particle technique for one-step homogenous detection of cancer
marker using gold nanoparticle probes

Tao Lan, Chaoqing Dong, Xiangyi Huang and Jicun Ren*

College of Chemistry & Chemical Engineering, State Key Laboratory of Metal Matrix Composites,
Shanghai Jiaotong University

E-mail: jicunren@sjtu.edu.cn

Supporting Figures:

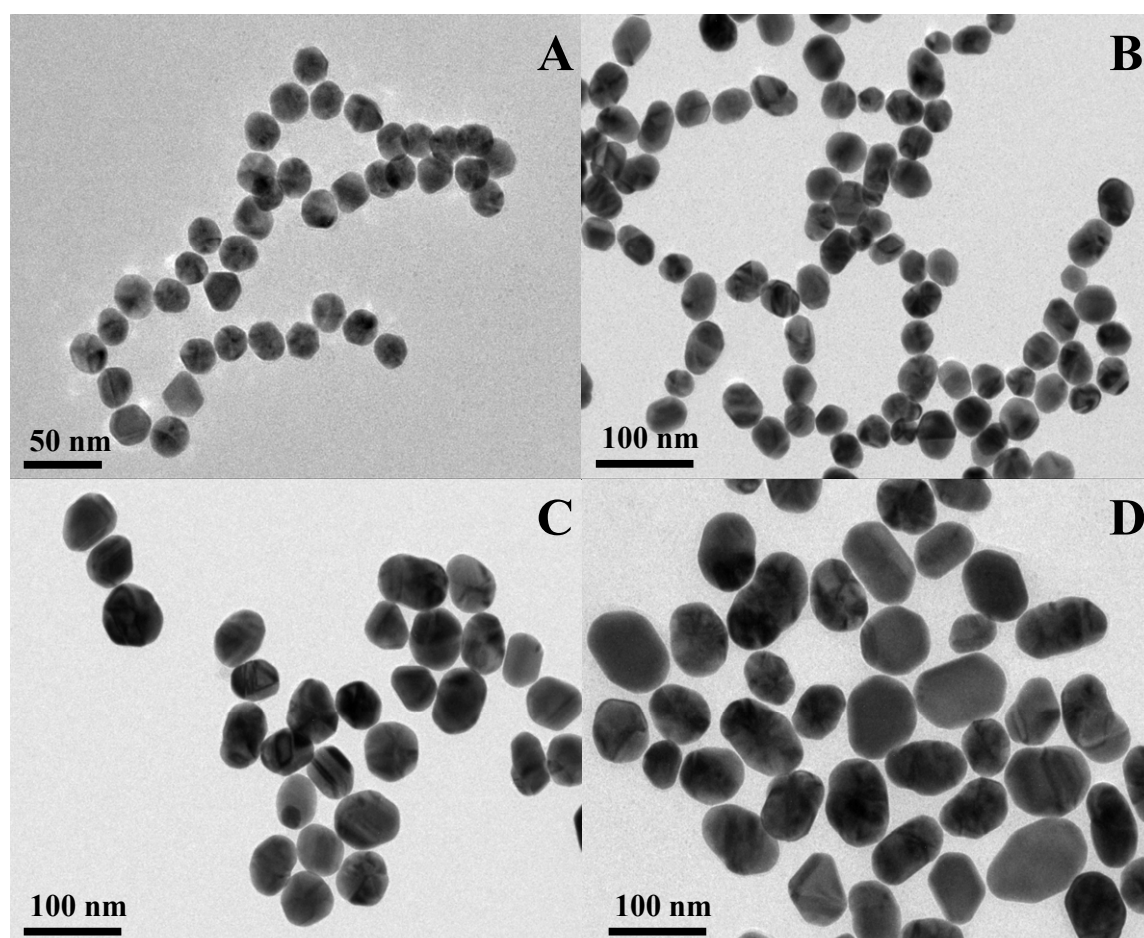


Figure S1 Transmission electron microscope (TEM) images of GNPs. GNPs diameters in this study are 16 ± 3 nm (A), 30 ± 4 nm (B), 45 ± 4 nm (C) and 55 ± 8 nm (D), respectively.

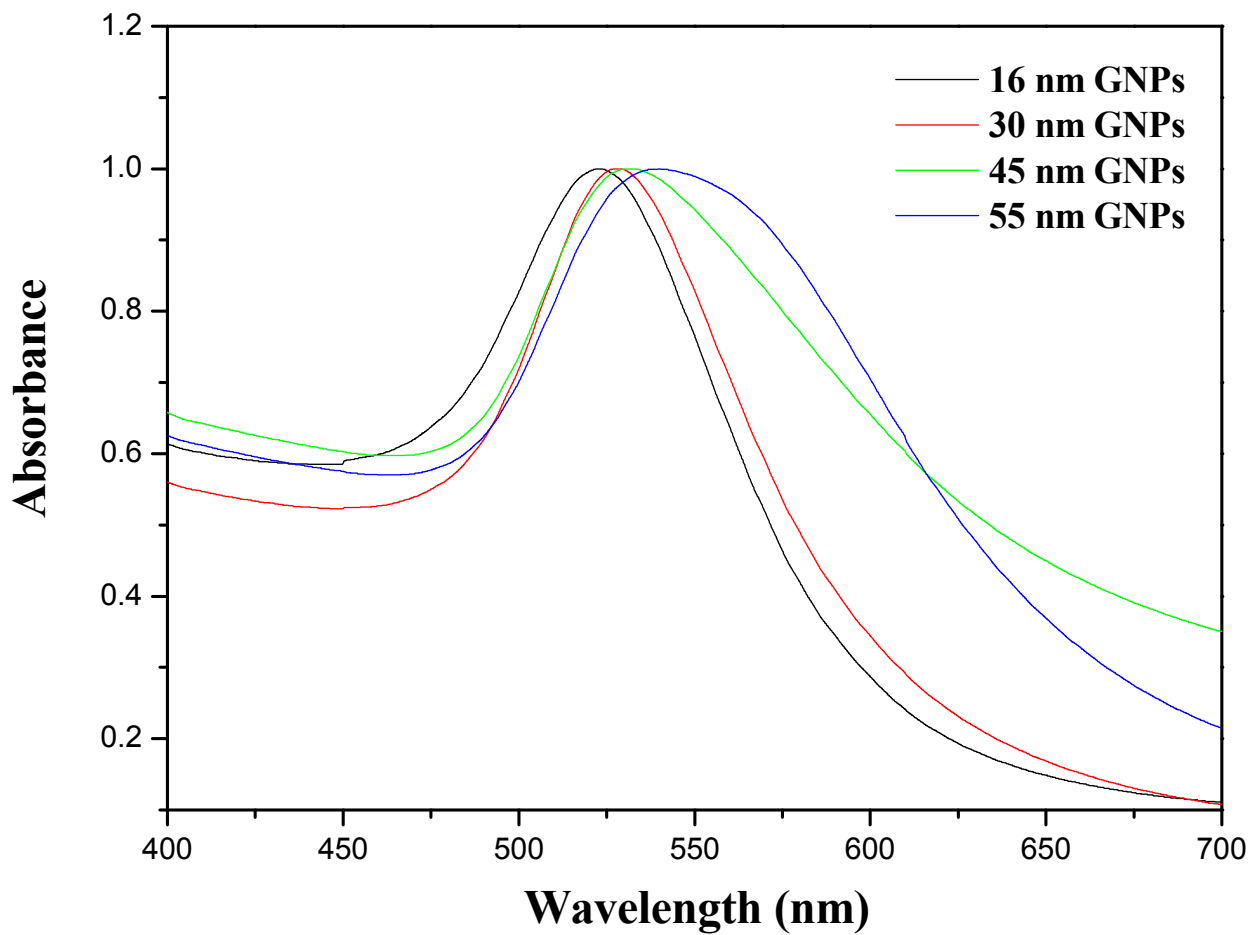


Figure S2 UV absorption spectra of GNPs.

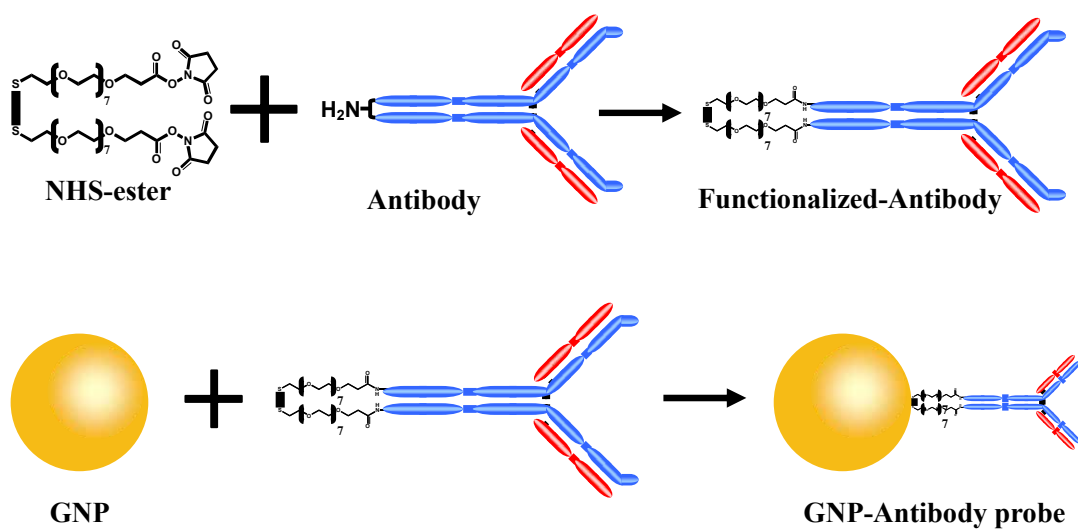


Figure S3 The procedure for conjugation of GNPs to antibodies. NHS-ester expresses 4, 7, 10, 13, 16, 19, 22, 25, 32, 35, 38, 41, 44, 47, 50, 53-hexadeca-28, 29- dithiahexapentacontanedioic acid di-N-succinimidyl ester and GNP is gold nanoparticle.

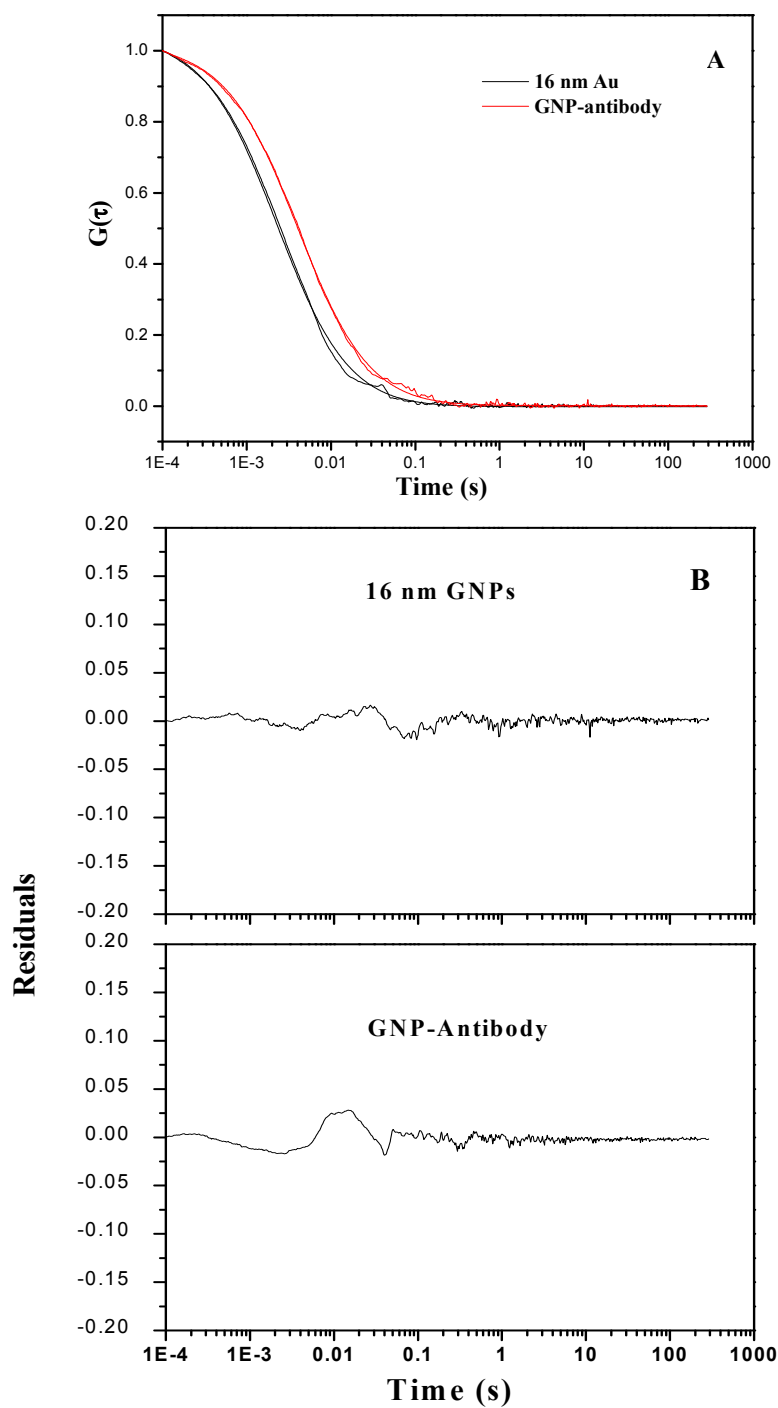


Figure S4 Characterization of GNP-antibody conjugates by RLSCS. The panel A shows the autocorrelation curves and fitting curves of GNPs and GNP-antibody conjugates. The panel B shows the fitting residuals of autocorrelation curves.

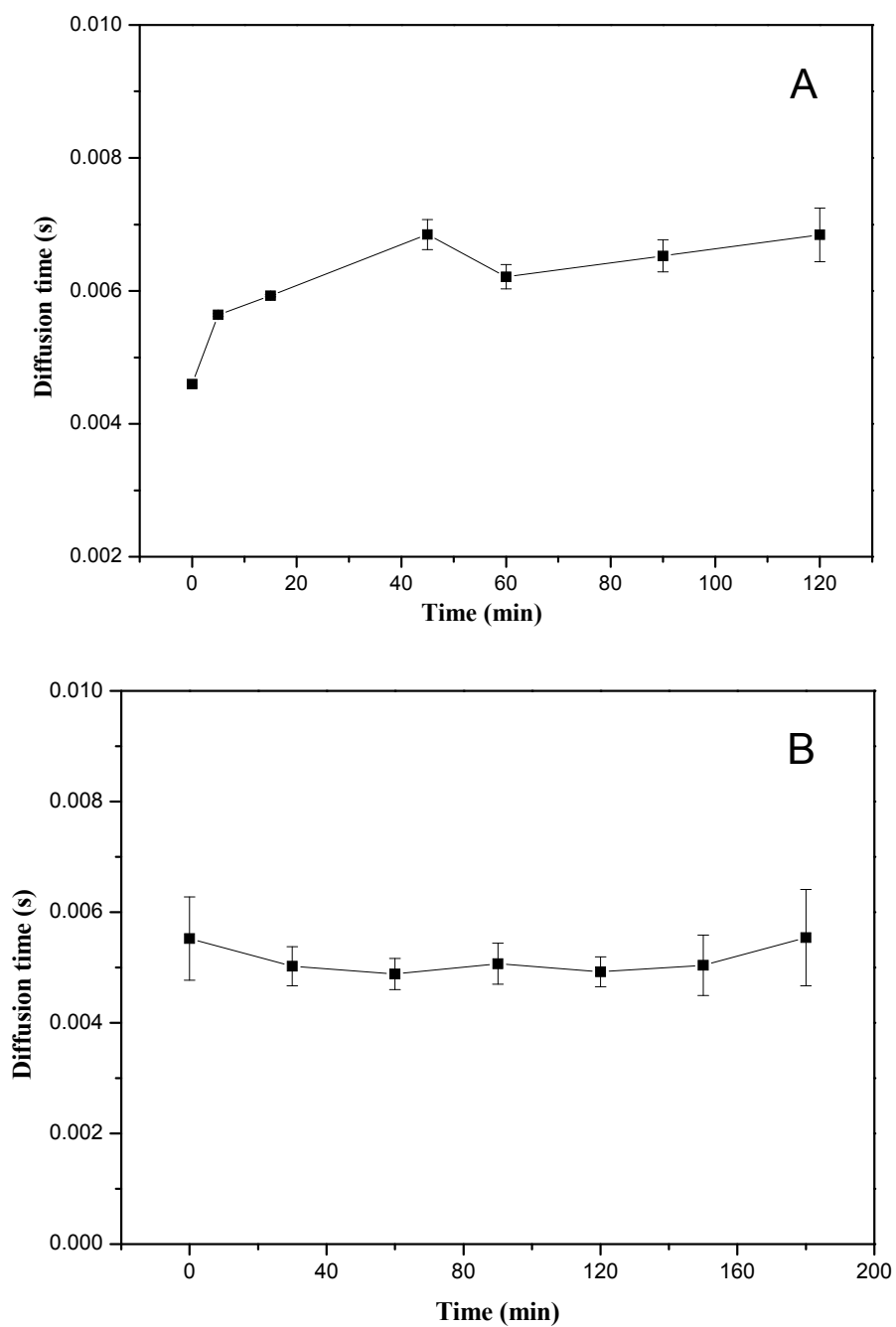


Figure S5 Effects of immune reaction time (A) and the stability of immunocomplexes (B).

In the panel A, the concentrations of GNP-antibodies (1 and 2) were 85 pM, the concentration of AFP was 61 pM, and the incubation temperature was 37 °C. In the panel B, the concentrations of GNP-antibodies (1 and 2) were 85 pM, the concentration of AFP was 6.1 pM, and the incubation temperature was 37 °C.

Supporting Table:

Table S1 Recovery results of AFP immunoassays by RLSCS

| Samples | Original amount (M) | Added amount (M) | Founded amount(M) | Recovery (%) (n = 3) | RSD (%) (n = 3) |
|---------|------------------------|-----------------------|------------------------|-------------------------|--------------------|
| No 1 | 3.08×10^{-13} | 1.0×10^{-12} | 1.23×10^{-12} | 92.3 | 9.5 |
| No 2 | 4.66×10^{-13} | 1.0×10^{-12} | 1.38×10^{-12} | 91.7 | 8.5 |