Supporting Information:

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

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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 GNP s to antibodies. NHS-ester expresses 4, 7, 10, 13, 16, 19, 22, 25, 32, 35, 38, 41, 44, 47, 50, 53-hexadeca oxa-28, 29- dithiahexacontanedioic acid di-N- succinimidy l 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

<table>
<thead>
<tr>
<th>Samples</th>
<th>Original amount (M)</th>
<th>Added amount (M)</th>
<th>Founded amount(M)</th>
<th>Recovery (%) (n = 3)</th>
<th>RSD (%) (n = 3)</th>
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<td>No 1</td>
<td>$3.08 \times 10^{-13}$</td>
<td>$1.0 \times 10^{-12}$</td>
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<td>No 2</td>
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<td>$1.0 \times 10^{-12}$</td>
<td>$1.38 \times 10^{-12}$</td>
<td>91.7</td>
<td>8.5</td>
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