Development of a Facile and Sensitive Method for Detecting Alkaline Phosphatase Activity in Serum with Fluorescent Gold Nanoclusters based on the inner filter effect

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![Fluorescence emission spectra of the AuNCs at various excitation wavelengths.](image)

**Figure S1.** Fluorescence emission spectra of the AuNCs at various excitation wavelengths.

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**Figure S2.** Au 4f XPS spectrum of AuNCs. Blank line: experimental spectrum; red line: fitted spectrum.

**Figure S3.** MALDI-TOF/TOF MS spectrum of the AuNCs using DCTB as a matrix in the negative-ion mode.
**Figure S4.** (A) Absorption spectrum of (a) p-nitrophenylphosphat, (b) p-nitrophenol and fluorescence (c) excitation spectrum, (d) emission spectrum of AuNCs. (B) The fluorescence change of AuNCs upon addition of various concentrations of PNPP from 0 to 3 mM.

**Figure S5.** Time-resolved decay curves of AuNCs in the absence and presence of PNPP (1 mM), and in the presence of PNPP (1 mM) with ALP (5 U/L).
Figure S6. Fluorescence spectra of AuNCs (black line) in the presence of 1.0 mM PNPP (red line), 5.0 U/L ALP (blue line) and 1.0 mM PNPP + 5.0 U/L ALP (green line).

Figure S7. Fluorescence intensity change of AuNCs at different excitation wavelengths. $F_0$ and $F$ are the fluorescence intensities of AuNCs in the absence and presence of ALP (5 U/L), respectively.
**Figure S8.** Fluorescence intensity change of AuNCs at different pH of Tris-HCl buffer.

**Figure S9.** Optimization of the concentration of PNPP.
Figure S10. Incubation time in the presence of ALP.

Table S1. Influence of PNPP and PNPP+ALP on fluorescence lifetime of AuNCs

<table>
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<th>System</th>
<th>(a_1)</th>
<th>(\tau_1) (µs)</th>
<th>(a_2)</th>
<th>(\tau_2) (µs)</th>
<th>(&lt;\tau&gt;) (µs)</th>
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<tr>
<td>AuNCs</td>
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<td>0.42</td>
<td>4.8</td>
<td>2.69</td>
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<tr>
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<td>0.38</td>
<td>4.91</td>
<td>2.65</td>
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<tr>
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<td>1.21</td>
<td>0.37</td>
<td>5.15</td>
<td>2.67</td>
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