Electronic Supplementary Material (ESI) for Analytical Methods.

Supporting Information

Selective and colorimetric detection of pyruvic acid using conformation switch of i-motif DNA and unmodified gold nanoparticles

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Optimization of C-rich DNA concentration

To achieve the best sensing performance, the concentration of C-rich DNA was preliminarily optimized. Different volumes of 12 μM C-rich DNA were mixed with 400 μL of 3 nM AuNPs, and appropriate amounts of double distilled water (DDW) were added to give a final volume of 500 μL. Fig.S2 shows the UV-vis absorption spectra of the AuNPs suspensions containing different volumes of C-rich DNA after the addition of salt. With the increase of the concentration of C-rich DNA, the absorbance at 520 nm increased. No further change was observed with the volume of C-rich DNA being increased over 15 μL. In addition, the inset of Fig. S2 shows the photographic images of AuNPs in the presence of C-rich DNA with different concentrations after the addition of salt. It is obvious that distinct color change from blue to purple occurred at a volumes of 5 μL (the inset of Fig.S2b) and turned to red by further increasing the volume up to 10 μL (the inset of Fig. S2c). No further color change was observed by naked eyes with the concentration of C-rich DNA being increased over 15 μL. Thus, 15 μL of 12 μM C-rich DNA was selected in the following experiments.

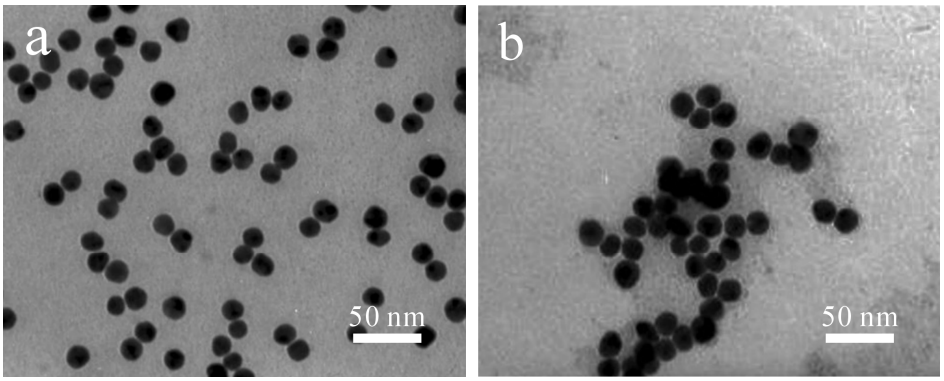

Fig. S1 TEM images of AuNPs containing C-rich DNA in the presence of (a) PDC and PA and (b) PA only.

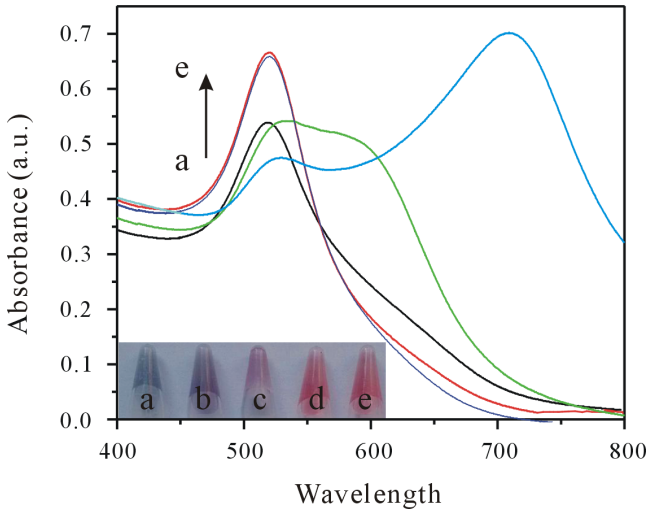

Fig. S2 The corresponding UV–vis absorption spectra of AuNPs containing different volumes of 12 μM C-rich DNA after the addition of salt: (a) 0, (b) 5 μL, (c) 10 μL, (d) 15 μL, (e) 20 μL; Inset is the corresponding photographic images of the AuNPs suspensions.