Electronic Supplementary Information (ESI)

For

Fabrication of multiple molecular logic gates made of fluorescent DNA templated-Au nanoclusters

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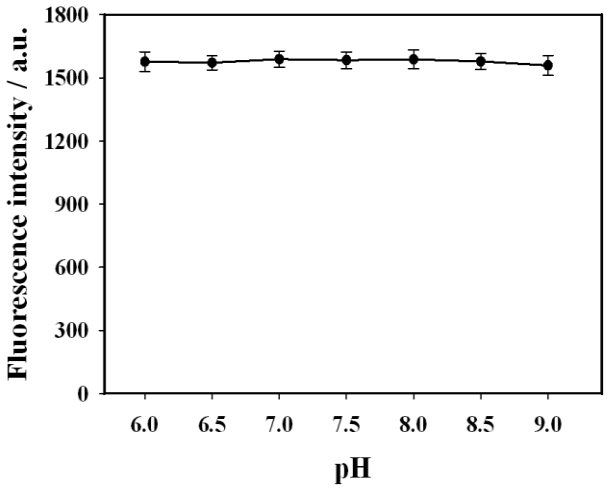

Fig. S1 The effect of pH value on the fluorescence intensity of A30 DNA-AuNCs.

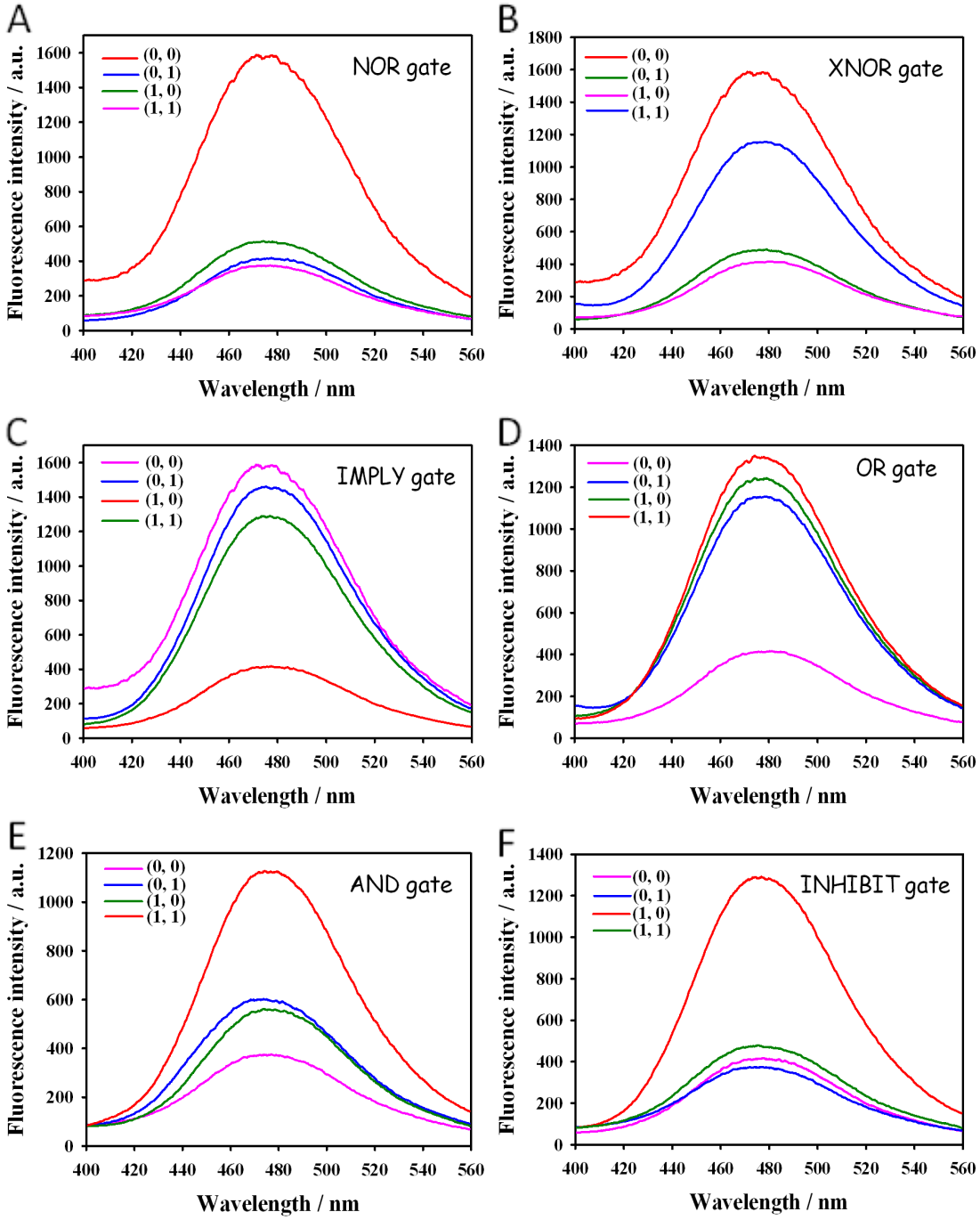

Fig. S2 (A) The fluorescence emission spectra for the NOR gate triggered by using Hg^{2+} and Cu^{2+} as inputs. (B) The fluorescence emission spectra for the XNOR gate triggered by using Hg^{2+} and biothiols as inputs. (C) The fluorescence emission spectra for the IMPLY gate triggered by using Hg^{2+} and melamine as inputs. (D) The fluorescence emission spectra for the OR gate triggered by using biothiols and melamine as inputs. (E) The fluorescence emission spectra for the AND gate triggered by using melamine and ppi as inputs. (F) The fluorescence emission spectra for the INHIBIT gate triggered by using Cu^{2+} and melamine as inputs.

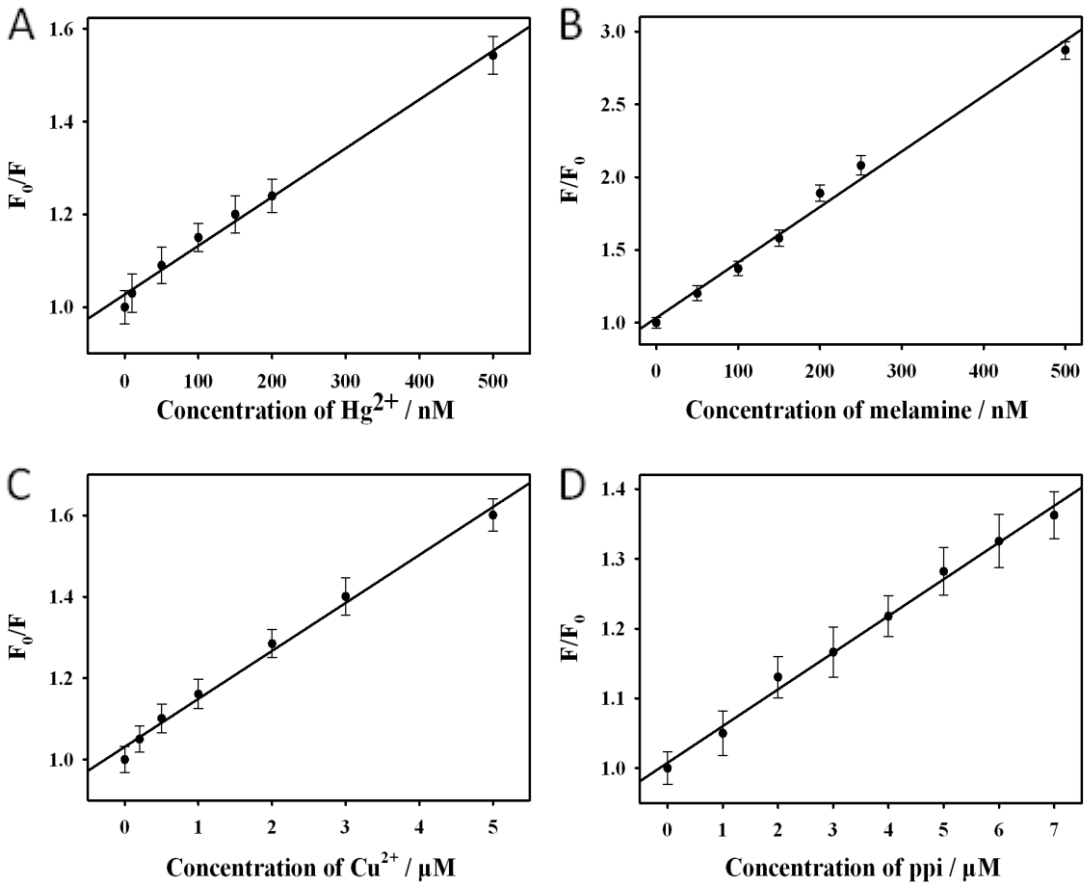

Fig. S3 (A) The calibration plot between fluorescence response (F_0/F) and Hg^{2+} concentrations. (B) The calibration plot between fluorescence response (F/F_0) and melamine concentrations. (C) The calibration plot between fluorescence response (F_0/F) and Cu^{2+} concentrations. (D) The calibration plot between fluorescence response (F/F_0) and ppi concentrations.

Fig. S3 displays the good linear relationship between fluorescence response and target (including Hg^{2+}, melamine, ppi and Cu^{2+}) concentrations. Based on the rule of signal to noise (S/N) ratio of 3, the limit of detection of DNA-AuNCs for Hg^{2+}, melamine, Cu^{2+} and ppi were calculated to be 3 nM, 15 nM, 60 nM, 350 nM, respectively.