Supporting Information

Reversible DNA-silver nanoclusters-based molecular fluorescence switch and its use for logic gate operation

Figure S1. (a) Absorption spectra and (b) fluorescence emission spectra upon the excitation of 540 nm of PAA-templated AgNCs (black) and tr-DNA 1-AgNCs (red).

Figure S2. Fluorescence emission spectra of tr-DNA 1-AgNCs upon the excitation of 540nm at different pH conditions.
Figure S3. CD spectra of random DNA-AgNCs at pH 7.5 (black) and 5.0 (red), respectively. DNA sequence: dTATCCGTGGGGACGGATA.

Figure S4. Fluorescent spectra of AgNCs-based molecular INHIBIT gate with different combinations of the input: no input (black line); INHIBIT -input-1(H⁺, red line, pH6.0); INHIBIT -input-2 (OH⁻, blue line, pH8.0); INHIBIT -input-1 (H⁺) and INHIBIT -input-2 (OH⁻, green line) when excited at a wavelength of 540 nm.
Figure S5. Fluorescent spectra of AgNCs-based XOR gate with different combinations of the input: no input (black line); XOR-input-1 (H⁺, red line, pH 5.0); XOR-input-2 (OH⁻, blue line, pH 9.0); XOR-input-1 (H⁺) and XOR-input-2 (OH⁻, green line) when excited at a wavelength of 580 nm.

Figure S6. Fluorescence intensities at 601 nm (540 nm excitation) of PAA-templated AgNCs, tr-DNA 1-AgNCs and te-DNA 1-AgNCs as a function of pH.
Figure S7. Irreversible change of fluorescence properties of te-DNA-1-AgNCs upon pH switching.