**Fig. S1.** The photoluminescence excitation and emission spectra. FA: 20 μM; HCl: 20 mM; NaNO₂: 10 μM; the volume of 1 M NaOH: 20 μL; incubation time: 10 min; UV radiation time: 5 min.

**Fig. S2.** The fluorescence spectra of FA under different UV radiation time with other conditions being fixed. FA: 20 μM; NaNO₂: 0.5 μM; HCl: 10 mM; the volume of 1 M NaOH: 10 μL; incubation time: 10 min; the number of UV radiation: (A): 254 nm; (B): 365 nm.
**Fig. S3.** Absorbance spectra of FA with different conditions. Folic acid: 16 μM, HCl: 10 mM; the volume of 1 M NaOH: 10 μL; incubation time: 10 min; UV radiation time: 3 min.

**Fig. S4.** The fluorescence spectra of FA with the addition of different concentrations of NO$_2^-$ after UV exposure for 5 min. Folic acid: 16 μM, HCl: 10 mM; the volume of 1 M NaOH: 10 μL; incubation time: 10 min.
Fig. S5. ESI mass spectrum of the products after the reaction in the negative mode.