Supporting Information

A highly sensitive fluorescent nanoprobe for amplified detection of formaldehyde

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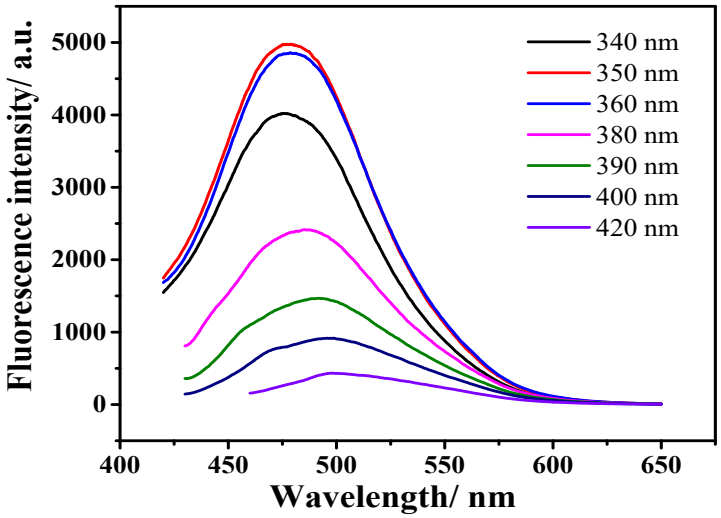

Fig. S1 Fluorescence spectra of PEI-PNPs (prepared with 50 mg mL^{-1} of PEI) in 10 mM pH 7.0 PB buffer at different excitation wavelengths.

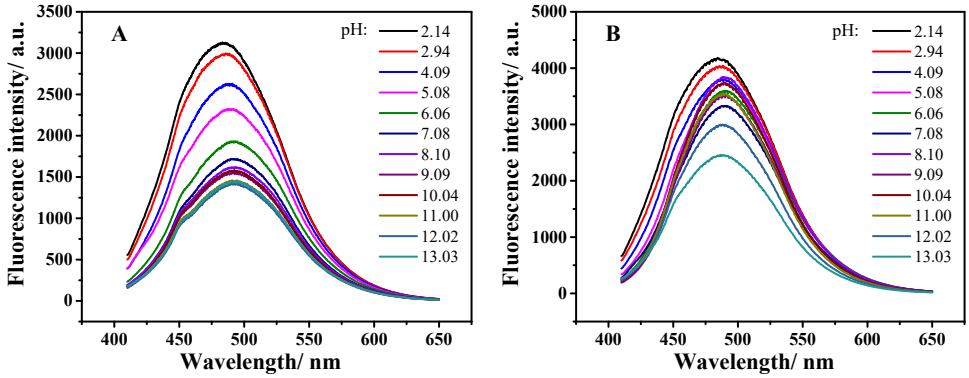

Fig. S2 (A) Fluorescence spectra of the PEI-PNPs at different pH values in the absence of FA; (B) Fluorescence spectra of the PEI-PNPs at different pH values in the presence of 150 μg mL^{-1} of FA for 10 min. (the excitation wavelength was set at λex = 390 nm).

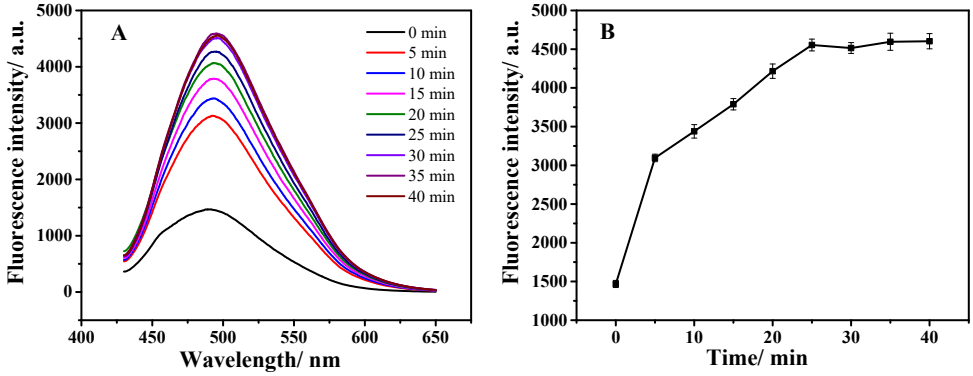

Fig. S3 Fluorescence spectra (A) and intensities change (B) of the PEI-PNPs with increase of time upon addition of 200 μg mL^{-1} of FA (the excitation wavelength was set at λex = 390 nm).

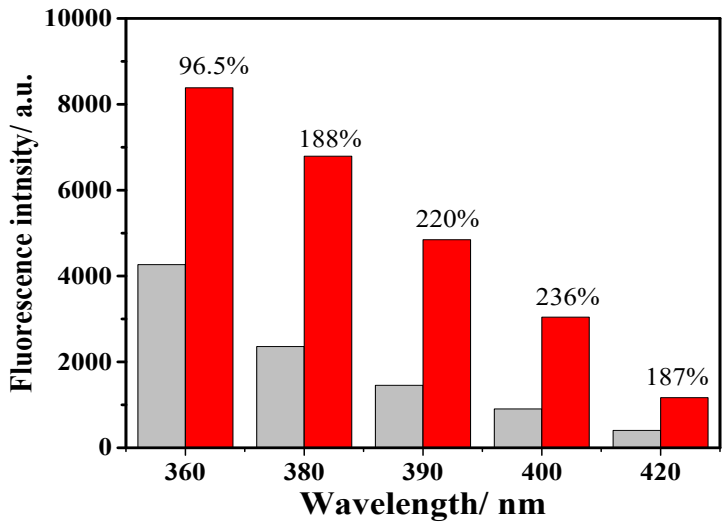

Fig. S4 Fluorescence intensity and change efficiency ($F-F_0/F_0$) of the PEI-PNPs before (gray) and after (red) addition of 200 μg mL^{-1} of FA under the different excitation wavelength.

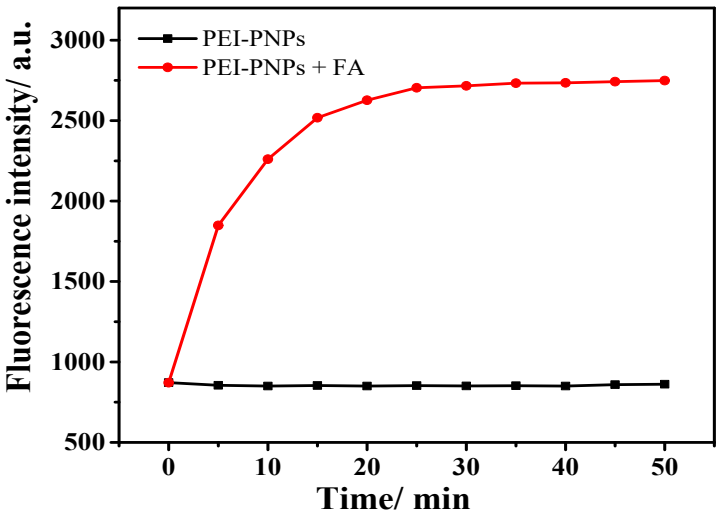

Fig. S5 Time-dependent fluorescence intensity of pristine PEI-PNPs (black) and in the presence of 150 μg mL^{-1} of FA (red) under continuous irradiation at 390 nm in 10 mM pH 7.0 PB buffer.

Table S1 Comparison of fluorescent probes for FA.

Probes	Reagents	Detection limit/μM	Response time/min	Reference
aza-Cope-based probes				
FP1	PBS buffer	10	> 180	J. Am. Chem. Soc., 2015, 137:10890.
FAP-1	PBS buffer	5	> 120	J. Am. Chem. Soc., 2015, 137, 10886.
TPNF	PBS buffer 0.5% DMSO	5	180	Sens. Actuators B Chem., 2017, 241, 1050.
AENO	PBS buffer 20% DMF	0.057	< 150	Talanta, 2016, 160, 645.
Formimine-based probes				
Na-FA	PBS buffer 1% DMSO	0.71	30	Angew. Chem. Int. Ed., 2016, 55, 3356.
Na-FA-Lyso	PBS buffer 1% DMSO	5.02	30	Anal. Chem. ,2016, 88, 9359.
HN-Chitosan	HCl solution	1.66	< 1	ACS Sens., 2018, 3, 2394.
aminal-based probes				
R6-FA	PBS buffer 50% DMF	0.77	< 1	Chem. Commun., 2016, 52, 9582.
PEI-PNPs-based probe	**PB buffer**	**10**	**10**	**This paper**