Supporting Information for

A highly sensitive and selective fluorescent probe for N_2H_4 in air and living cells

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1. Effect of pH values on fluorescence of NAA
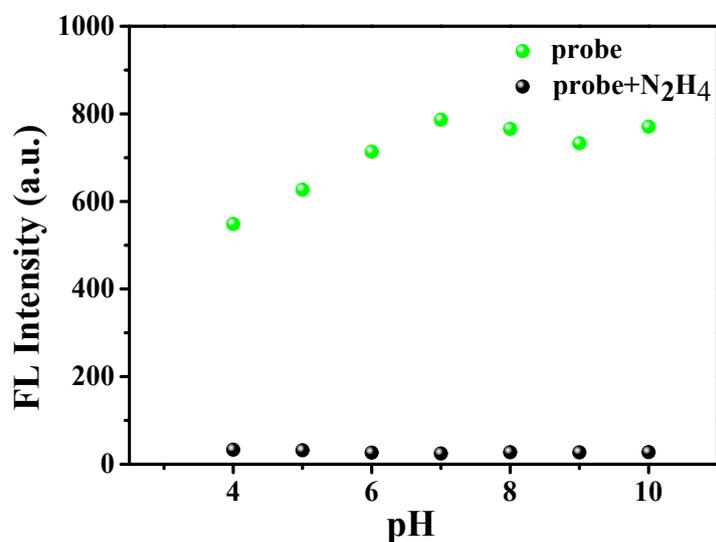
Figure S1. In the absence and presence of N_2H_4 (50 μM), the fluorescence intensity of probe NAA (5 μM) varies with the pH values of PBS solution. The fluorescence intensity was measured at 500 nm, with excitation at 430 nm.

2. The effect of reaction time on fluorescence of NAA
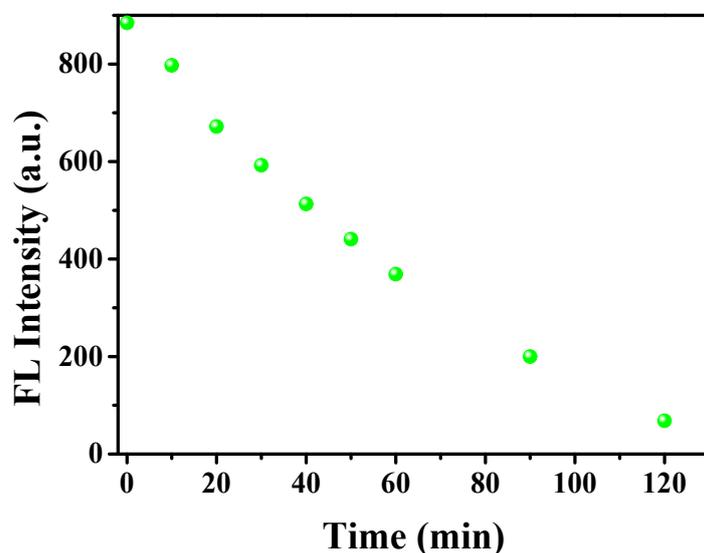
Figure S2. Upon addition of N_2H_4 (50 μM), the fluorescence intensity of probe NAA (5 μM) was changed with the reaction time in 120 min. All experiments were performed in PBS solution (pH=7.4, PO_4^{3-}=10 mM, V_{DMSO}: V_{H2O} =1:4). The fluorescence intensity was measured at 500 nm, with excitation at 430 nm.

3. Calculation of detection limits

The detection limit was calculated based on the fluorescence titration results. In the absence of N_2H_4, the fluorescence emission of NAA was measured fifteen times and the standard deviation of blank measurements was achieved. To gain the slope, the curve of the fluorescence intensity at 500 nm versus the concentrations of N_2H_4 (0 μM to 8 μM) was plotted. The detection limit was calculated with the following equation:

$$\text{Detection limit} = 3\sigma/k,$$

where σ is the standard deviation of blank measurements, and k is the slope of the plot of fluorescence intensity ratio versus N_2H_4 concentration.

4. The photostability of NAA
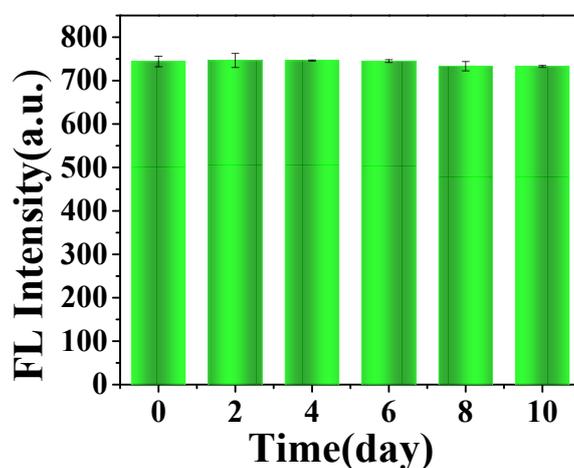
Figure S3. Fluorescence spectra of NAA (5 μM) in PBS solution (pH=7.4, PO_4^{3-}=10 mM, $V_{DMSO}:V_{H2O}$=1:4) placed for 0, 2, 4, 6, 8, 10 days, respectively . The fluorescence intensity was measured at 500 nm, with excitation at 430 nm.

5. The characterization data of ESI-MS and NMR
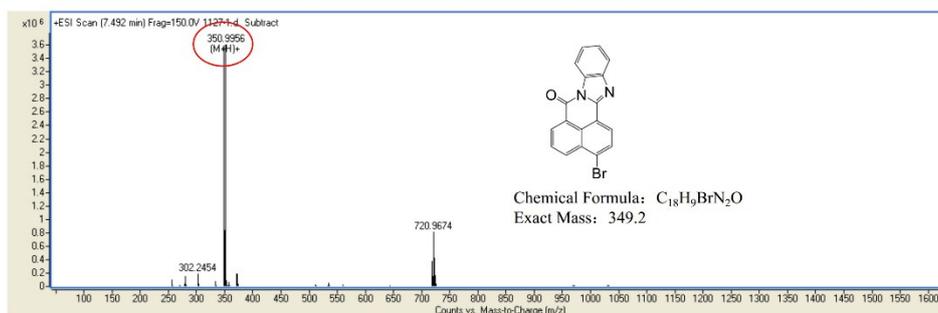
Figure S4. ESI mass spectrum of compound 1
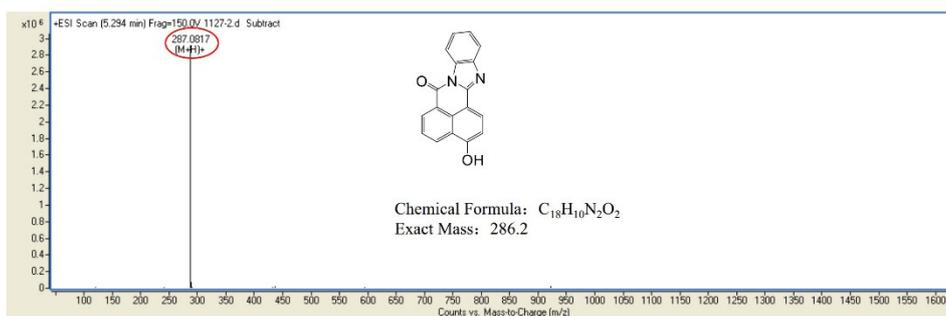
Figure S5. ESI mass spectrum of compound 2
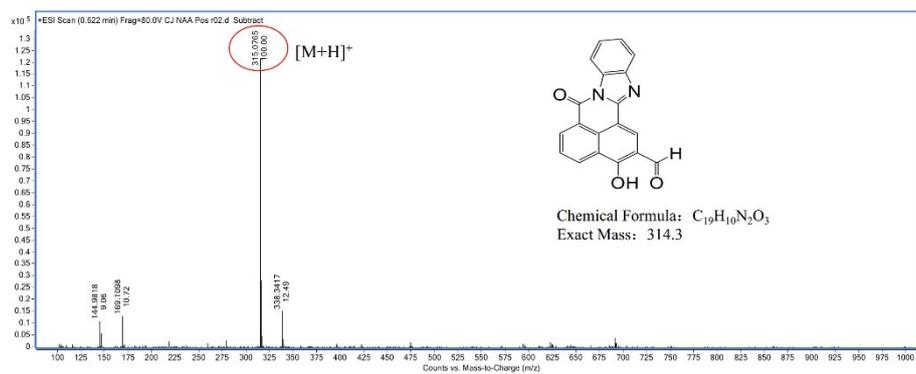
Figure S6. ESI mass spectrum of NAA
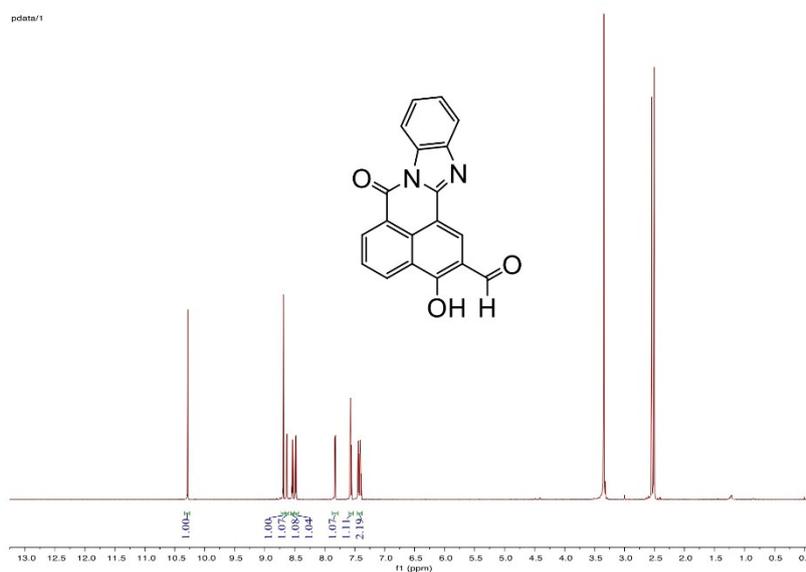
Figure S7. ^{1}H NMR spectrum of NAA

Figure S8. ^{13}C NMR spectrum of NAA

Figure S9. ESI mass spectrum of NAA-N$_2$H$_4$ reaction product

^{1}H NMR (700 MHz, DMSO-d$_6$) 8.69 (s, 1H), 8.62 − 8.55 (m, 2H), 8.45 (d, J = 9.1 Hz, 1H), 8.23 (s, 1H), 7.80 (d, J = 7.9 Hz, 1H), 7.44 (t, J = 7.6 Hz, 1H), 7.42 − 7.39 (m, 1H), 7.35 (t, J = 7.6 Hz, 1H), 6.23 (s, 3H)

Figure S10. ^{1}H NMR spectrum of NAA-N$_2$H$_4$

^{13}C NMR (176 MHz, DMSO-d_6) δ 176.94，160.21 , 150.41 , 144.00 , 139.54 , 132.19 , 131.13, 131.09 , 129.25 , 126.65 , 124.53 , 123.16 , 122.02 , 120.91 , 119.52 , 119.14，118.43, 116.00 , 98.61.

Figure S11. ^{13}C NMR spectrum of NAA-N$_2$H$_4$