

Supporting Information for:

A Naphthalimide-based fluorescent sensor for halogenated solvents

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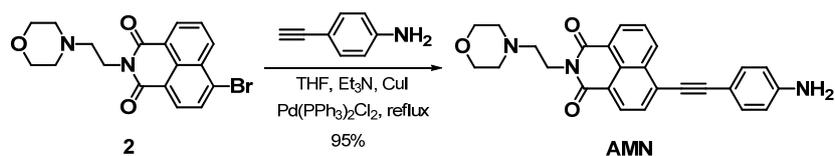
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Materials and Instruments: Unless otherwise stated, all reagents were purchased from commercial suppliers and used without further purification. $^1\text{H-NMR}$ and $^{13}\text{C-NMR}$ spectra were recorded on a Bruker 400 spectrometer, using TMS as an internal standard. Chemical shifts were given in ppm and coupling constants (J) in Hz. Mass spectrometry data were obtained with a HP1100LC/MSD mass spectrometer and a LC/Q-TOF MS spectrometer. UV—vis absorption spectra were collected on an Agilent Cary 60 UV-Vis Spectrophotometer. Fluorescence measurements were performed on a VAEIAN CARY Eclipse fluorescence spectrophotometer equipped with a Single Cell Peltier temperature controller. For temperature dependence studies, the cuvettes were tightly sealed with a cap to prevent solvent evaporation; the temperature was held for 20—30 min to ensure that the solution in the cuvettes reached thermal equilibrium before data collection.

Synthesis:



A suspension of compound **2** (3.89 g, 10.00 mmol), $\text{Pd(PPh}_3)_2\text{Cl}_2$ (36.79 mg, 0.03 mmol), and CuI (7.62 mg, 0.04 mmol) in a mixture of THF and Et_3N (50 mL each) was degassed with nitrogen for 15 min at room temperature. 4-ethynylaniline (1.18 g, 10.10 mmol) in THF (50 mL) that was degassed with nitrogen was added to the mixture with stirring. The mixture was stirred at reflux for 12 h, and then the volatile solvents were removed under reduced pressure. The residue was purified by column chromatography packed with silica gel using dichloromethane/petroleum ether (10 : 1, v/v) as eluent to afford pure product **AMN** as an orange solid. Yield: 4.04 g, 95%. $^1\text{H NMR}$ (400 MHz, CDCl_3): $\delta_{\text{H}} = 8.74\text{--}8.76$ (d, $J = 7.80$ Hz, 1H), $8.62\text{--}8.64$ (d, $J = 6.60$ Hz, 1H), $8.52\text{--}8.54$ (d, $J = 7.20$ Hz, 1H), $7.89\text{--}7.91$ (d, $J = 7.20$ Hz, 1H), 7.82 (t, $J = 7.20$ Hz, 1H), $7.48\text{--}7.50$ (d, $J = 8.40$ Hz, 2H), $6.70\text{--}6.72$ (d, $J = 8.40$ Hz, 2H), 4.35 (t, $J = 6.90$ Hz, 2H), 3.99 (b, 2H), 3.70 (b, 4H), 2.72 (t, $J = 6.90$ Hz, 2H), 2.61 (b, 4H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ ppm = 37.4, 53.9, 56.2, 67.1, 84.9, 100.9, 114.6, 122.7, 127.0, 128.5, 129.9, 130.4, 131.3, 132.5, 133.4, 147.6, 163.6, 163.9. MS (EI) m/z : calcd for $\text{C}_{26}\text{H}_{23}\text{N}_3\text{O}_3$ 425.17, found 425.19. Anal. Calcd for $\text{C}_{26}\text{H}_{23}\text{N}_3\text{O}_3$: C, 73.39; H, 5.45; N, 9.88. Found: C, 73.28; H, 5.39; N, 9.78.

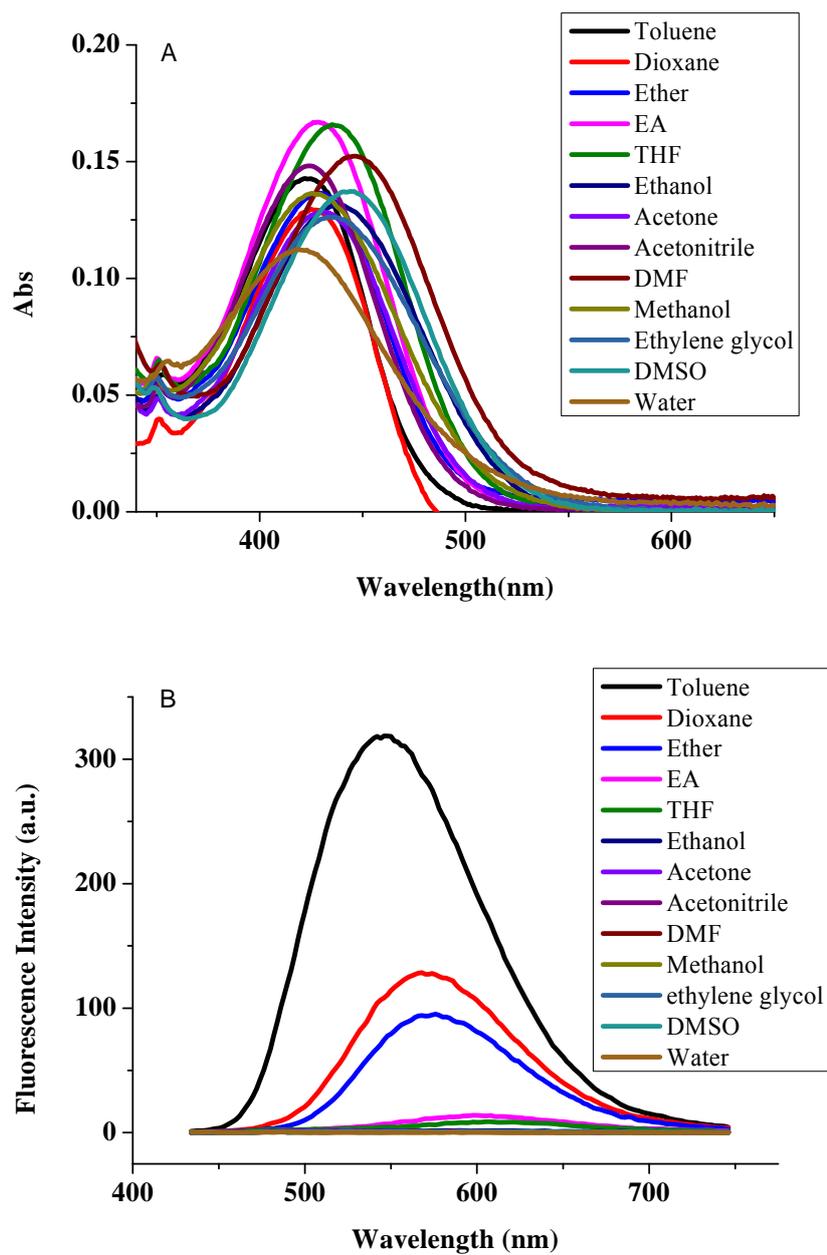


Figure S1. The UV-Vis absorption spectra (A) and Fluorescence emission spectra (B) of AMN (1×10^{-5} M) in different non-halogenated solvents ($\lambda_{\text{ex}} = 420$ nm).

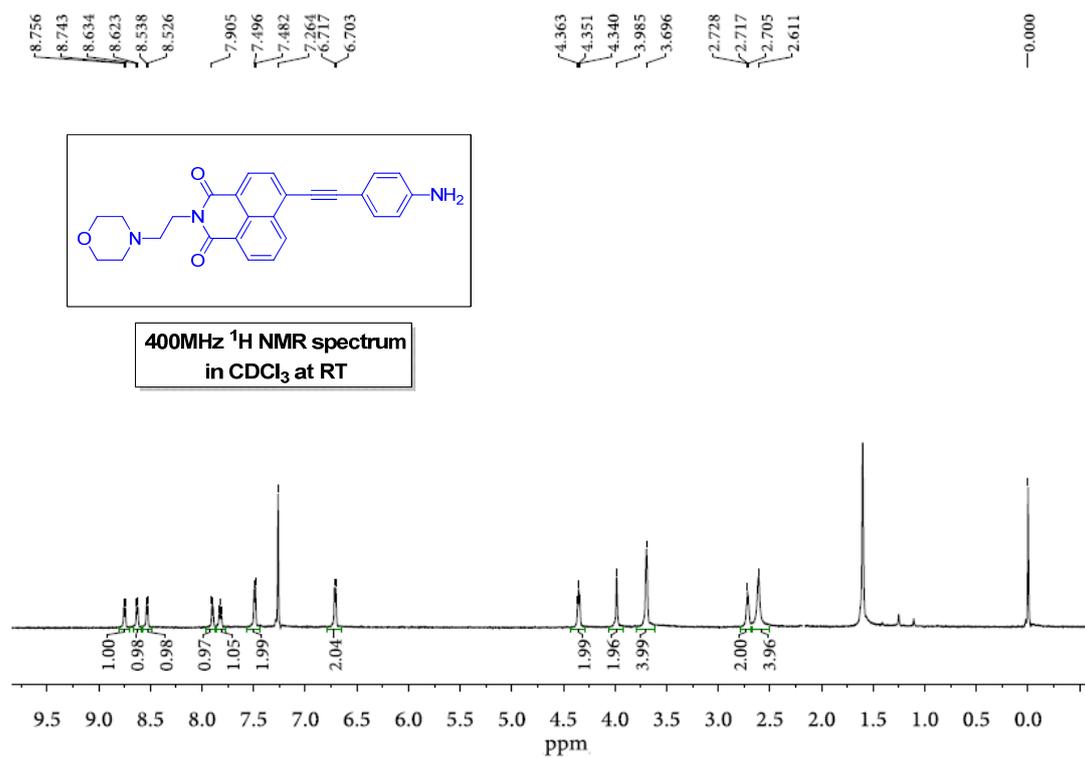


Fig S2. ^1H -NMR spectra of AMN in CDCl_3 .

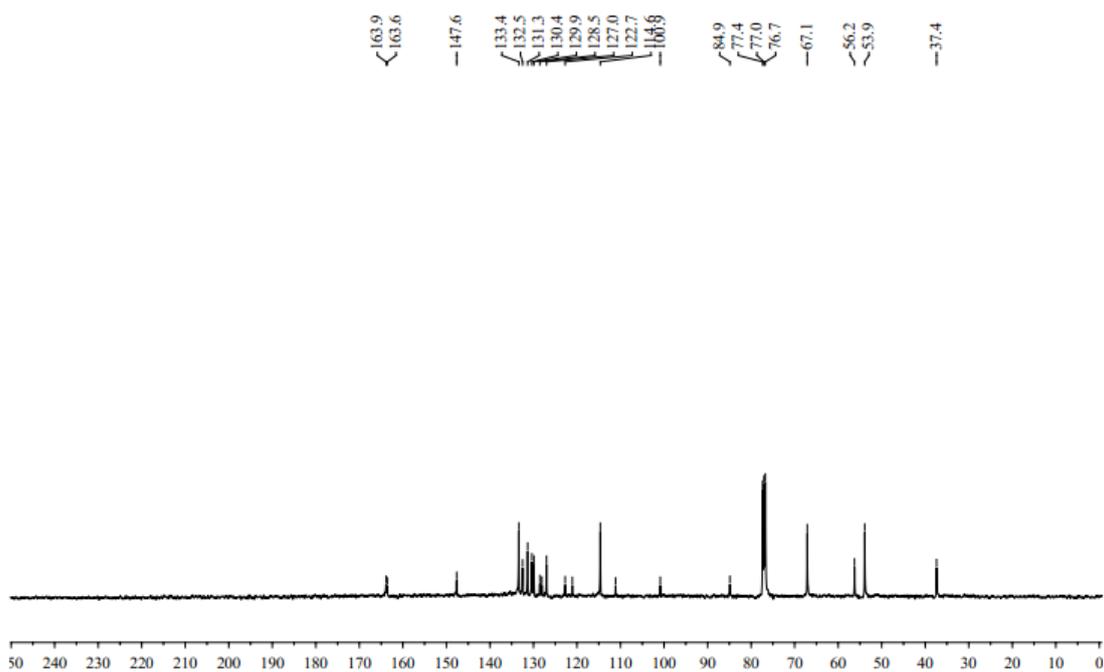


Fig S3. ^{13}C -NMR spectra of AMN in CDCl_3 .

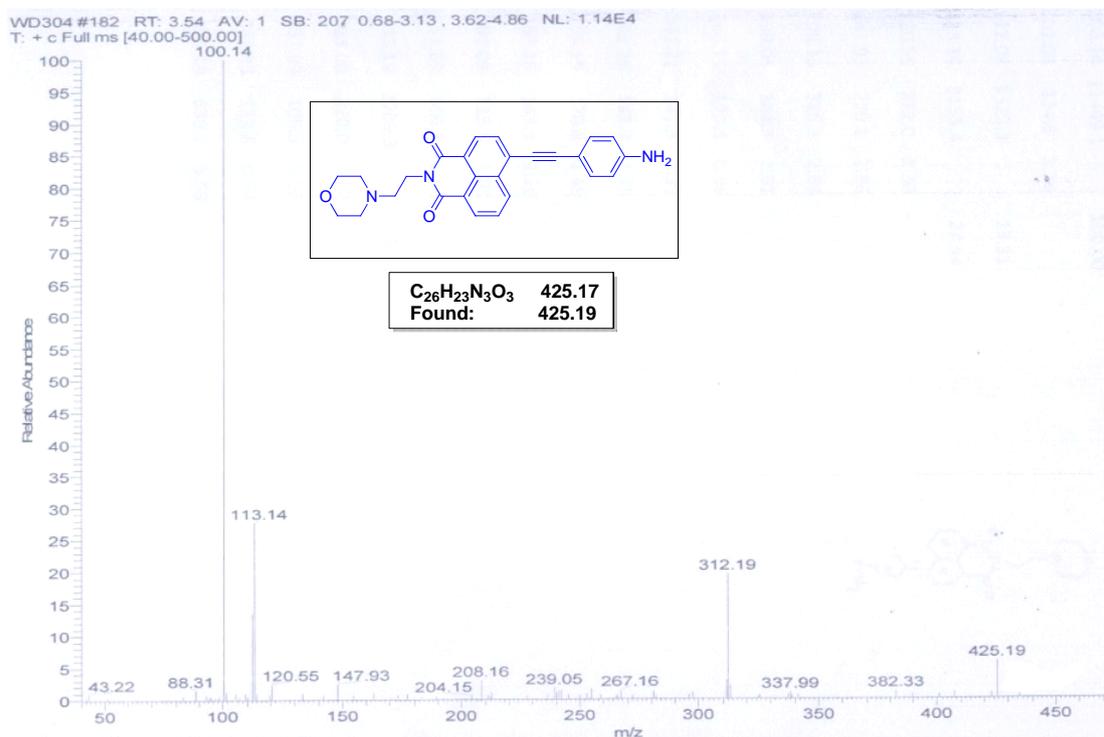


Figure S4. MS spectrum of AMN.