
A Ratiometric Fluorescent Chemosensor for Fluoride Ions based on Proton Transfer Signaling Mechanism

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Supplementary Information

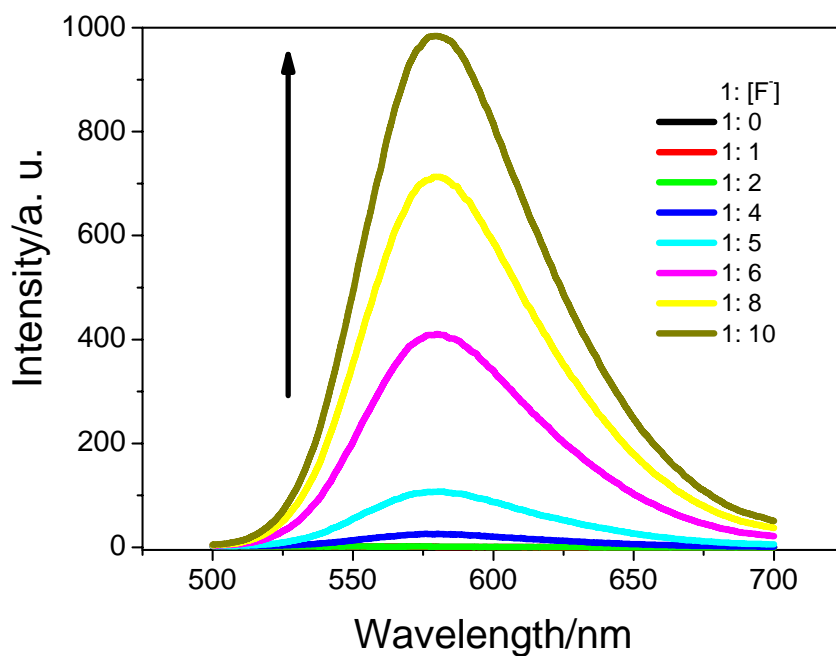


Figure S1. Fluorescence titration spectra of 4-benzoamide-N-butyl-naphthalimide **1** (10^{-5} mol/L) with TBAF in CH_3CN . Excitation wavelength: 490 nm.

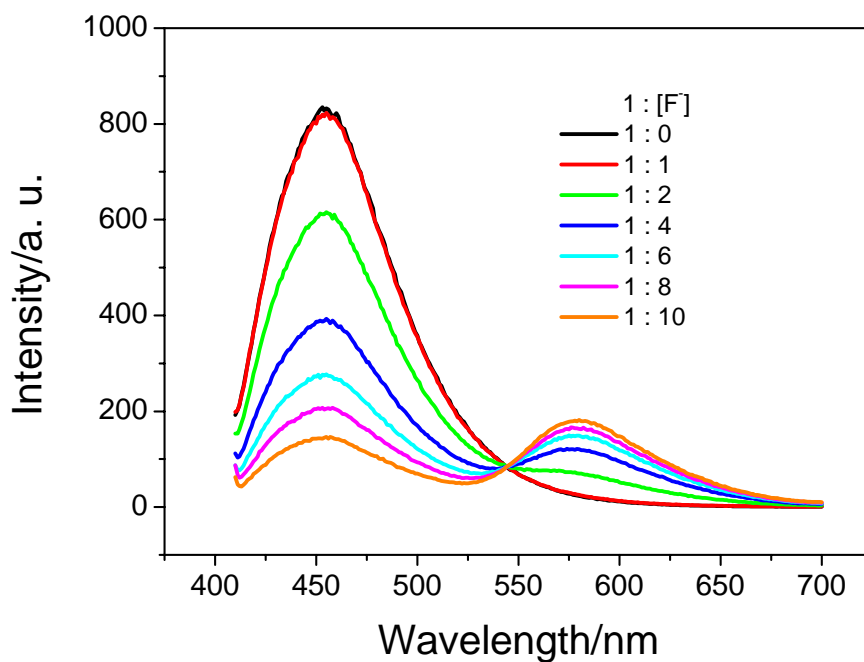


Figure S2. Fluorescence titration spectra of 4-benzoamide-N-butyl-naphthalimide **1** (10^{-5} mol/L) with TBAF in CH_3CN . Excitation wavelength: 400 nm, another isosbestic wavelength.

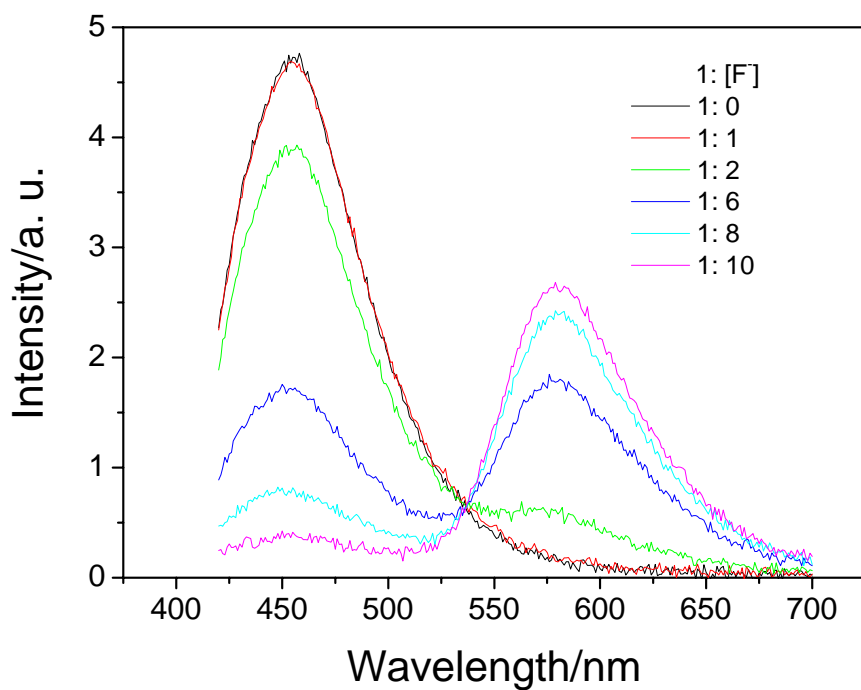


Figure S3. Fluorescence titration spectra of 4-benzoamide-N-butyl-naphthalimide **1** (10^{-5} mol/L) with TBAF in CH_3CN . Excitation wavelength: 410 nm.

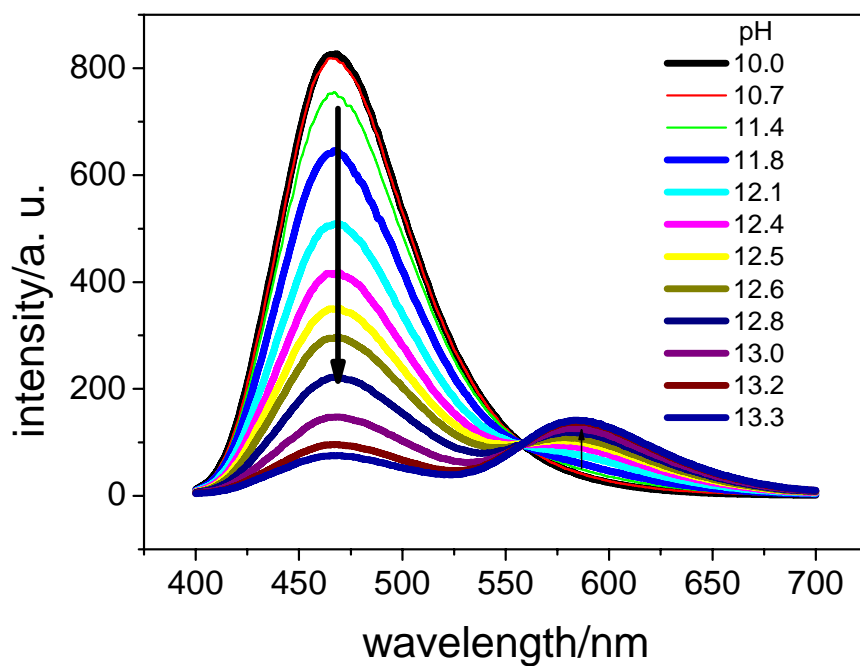


Figure S4. Dependence of the emission spectra of 4-benzoamide-N-butyl-naphthalimide (1.53×10^{-5} M, acetonitrile: water=1:1[v/v], 298K) on pH ($\lambda_{\text{ex}} = 385$ nm). The pH was controlled using minimum volumes of sodium hydroxide and hydrochloric acid solutions.

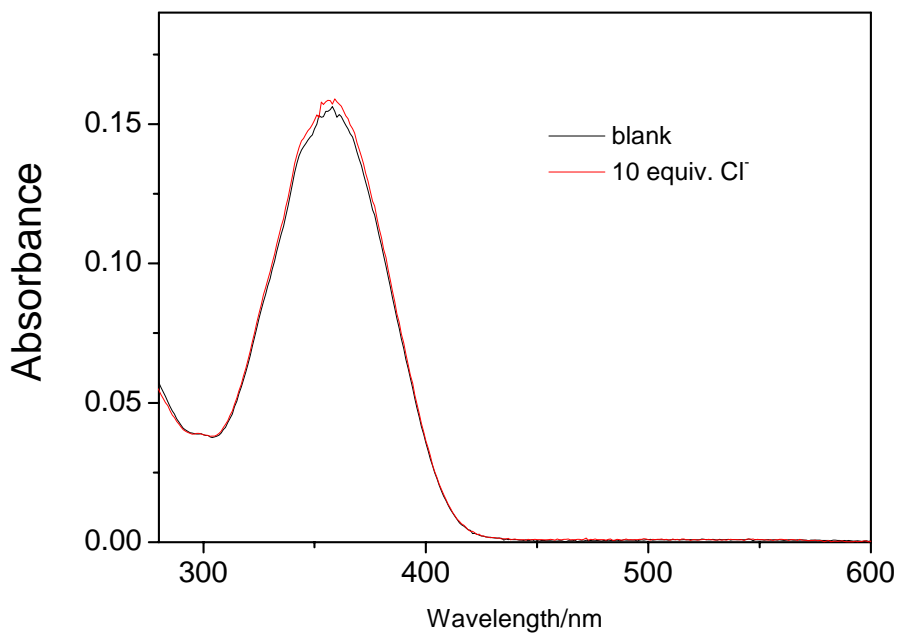


Figure S5. Absorption titration spectra of 4-benzoamide-N-butyl-naphthalimide (10^{-5} mol/L) with Cl^- in CH_3CN at 20°C .

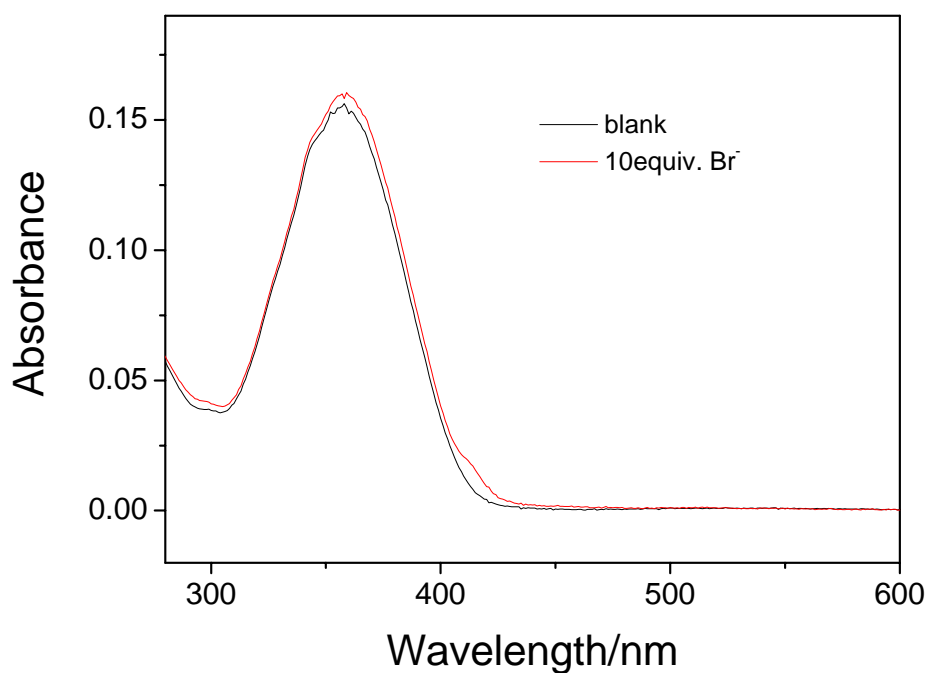


Figure S6. Absorption titration spectra of 4-benzoamide-N-butyl-naphthalimide (10^{-5} mol/L) with Br^- in CH_3CN at 20°C .

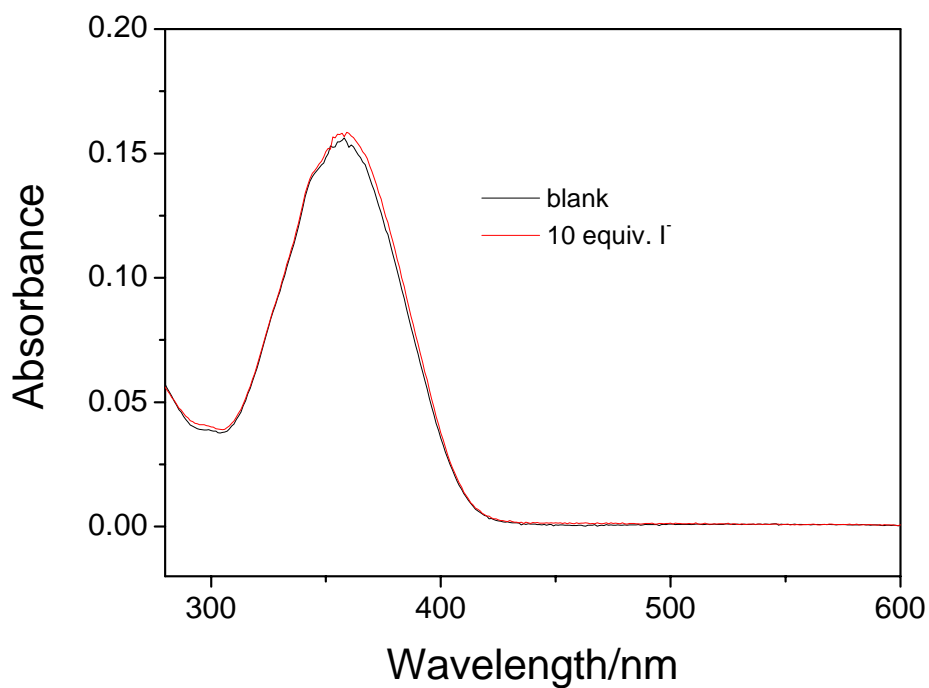


Figure S7. Absorption titration spectra of 4-benzoamide-N-butyl-naphthalimide (10^{-5} mol/L) with I^- in CH_3CN at 20°C .

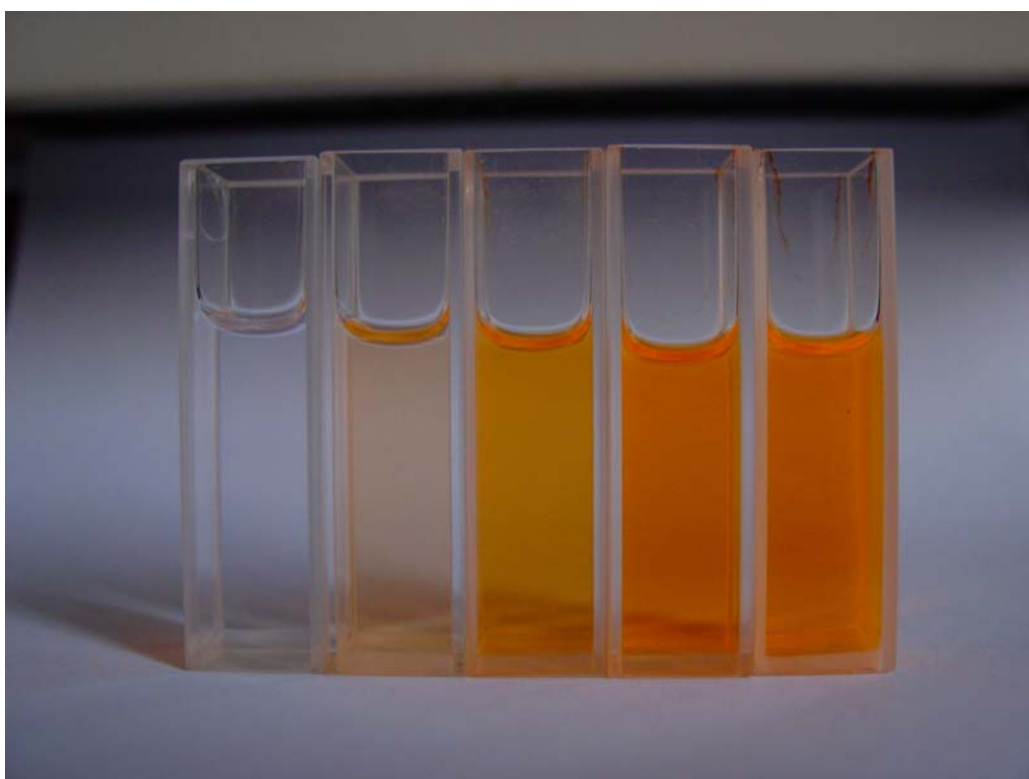


Figure S8. Colour changes observed with the addition of TBAF to an acetonitrile solution of **1**. From left to right: **1**; **1**+F⁻(2equiv.); **1**+F⁻(4equiv.); **1**+F⁻(8equiv.); **1**+F⁻(10equiv.).

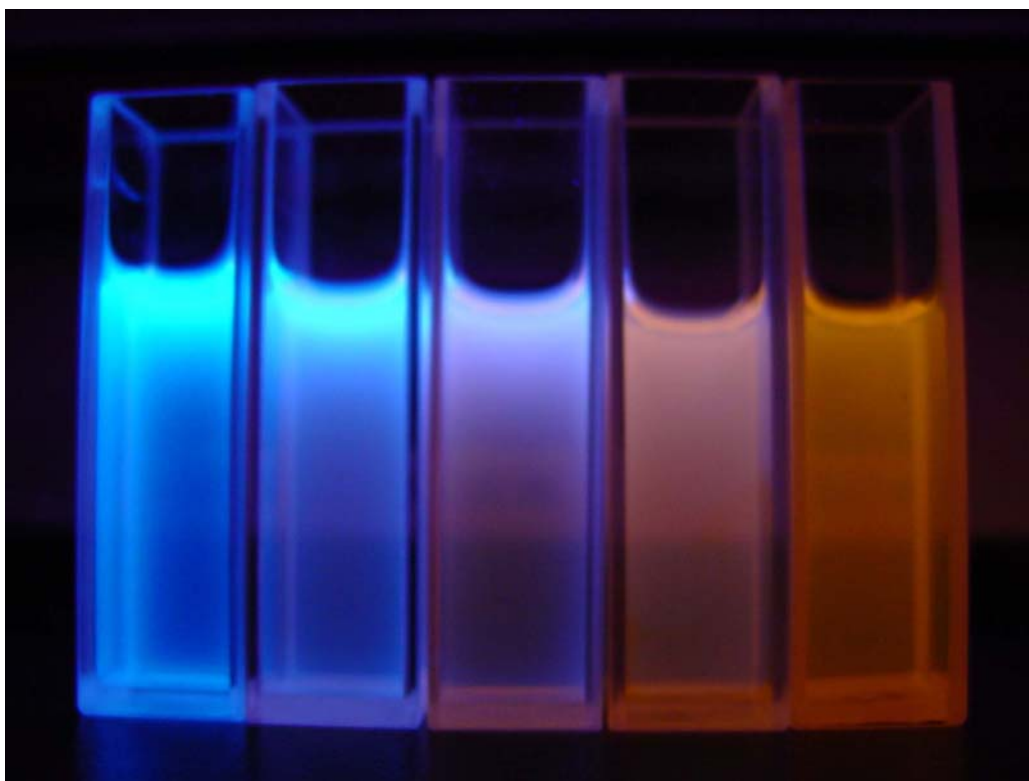


Figure S9. Fluorescent emission colour changes observed with the addition of TBAF to an acetonitrile solution of **1** under UV lamp. From left to right: **1**; **1**+F⁻(2equiv.); **1**+F⁻(4equiv.); **1**+F⁻(8equiv.); **1**+F⁻(10equiv.).

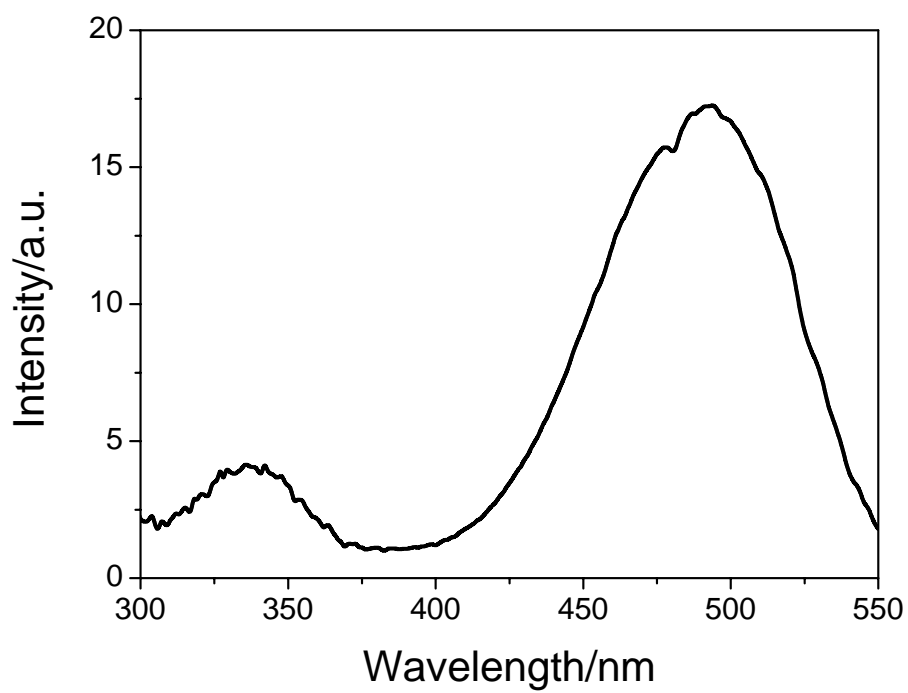


Figure S10. Fluorescence excitation spectra of 4-benzoamide-N-butyl-naphthalimide (10^{-5} mol/L) with 10equiv. F^- in CH_3CN at $20^\circ C$ ($\lambda_{em}=583$ nm).