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$_3$CN. Excitation wavelength: 490 nm.
Figure S2. Fluorescence titration spectra of 4-benzoamide-N-butyl-naphthalimide 1 (10^{-5} \text{ mol/L}) with TBAF in CH$_3$CN. Excitation wavelength: 400 nm, another isosbestic wavelength.

Figure S3. Fluorescence titration spectra of 4-benzoamide-N-butyl-naphthalimide 1 (10^{-5} \text{ mol/L}) with TBAF in CH$_3$CN. Excitation wavelength: 410 nm.
Figure S4. Dependence of the emission spectra of 4-benzoamide-N-butyl-naphthalimide (1.53×10⁻⁵M, acetonitrile: water=1:1[v/v], 298K) on pH (λ<sub>ex</sub>=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 CH₃CN at 20°C.
Figure S6. Absorption titration spectra of 4-benzoamide-N-butyl-naphthalimide (10⁻⁵ mol/L) with Br⁻ in CH₃CN at 20°C.

Figure S7. Absorption titration spectra of 4-benzoamide-N-butyl-naphthalimide (10⁻⁵ mol/L) with I⁻ in CH₃CN 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$_3$CN at 20°C ($\lambda_{em}=583$ nm).