

Supplementary Information for

**A Colorimetric and Ratiometric Fluorescence Sensor
for Sensitive Detection of Fluoride Ions in Water and
Toothpaste**

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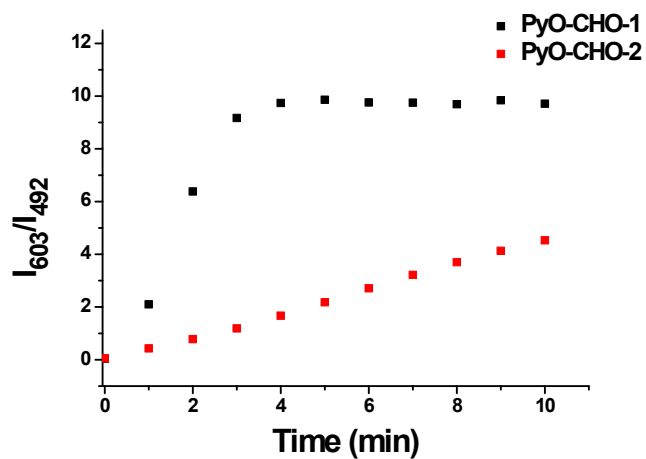
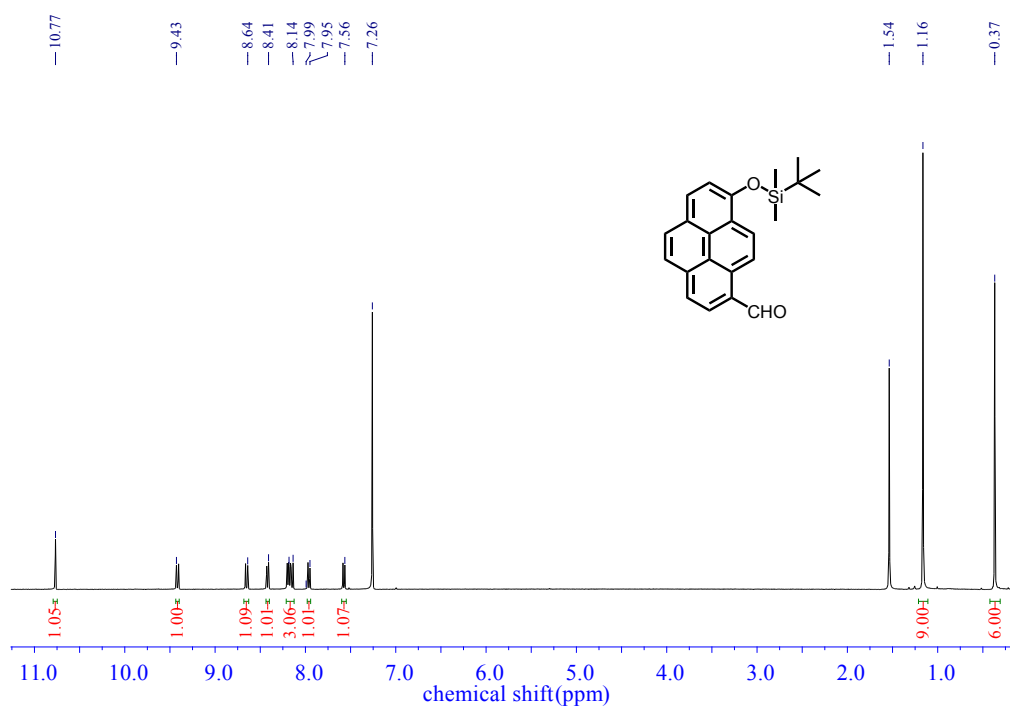


Figure S1. Fluorescence intensity ratio (I_{603}/I_{492}) of **PyO-CHO-1** and **PyO-CHO-2** solution at different time after addition of 5 ppm F^- . $\lambda_{ex} = 443$ nm.



e S2. 1H NMR spectrum (400 MHz) of **PyO-CHO-1** in $CDCl_3$.

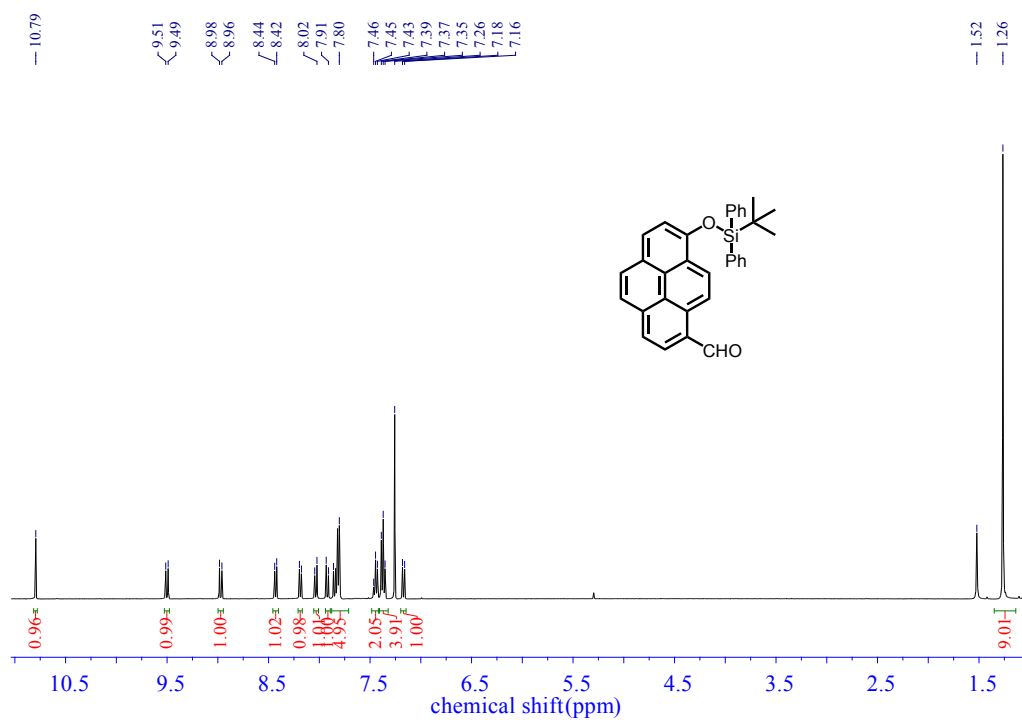


Figure S3. ¹H NMR spectrum (400 MHz) of **PyO-CHO-2** in CDCl₃.

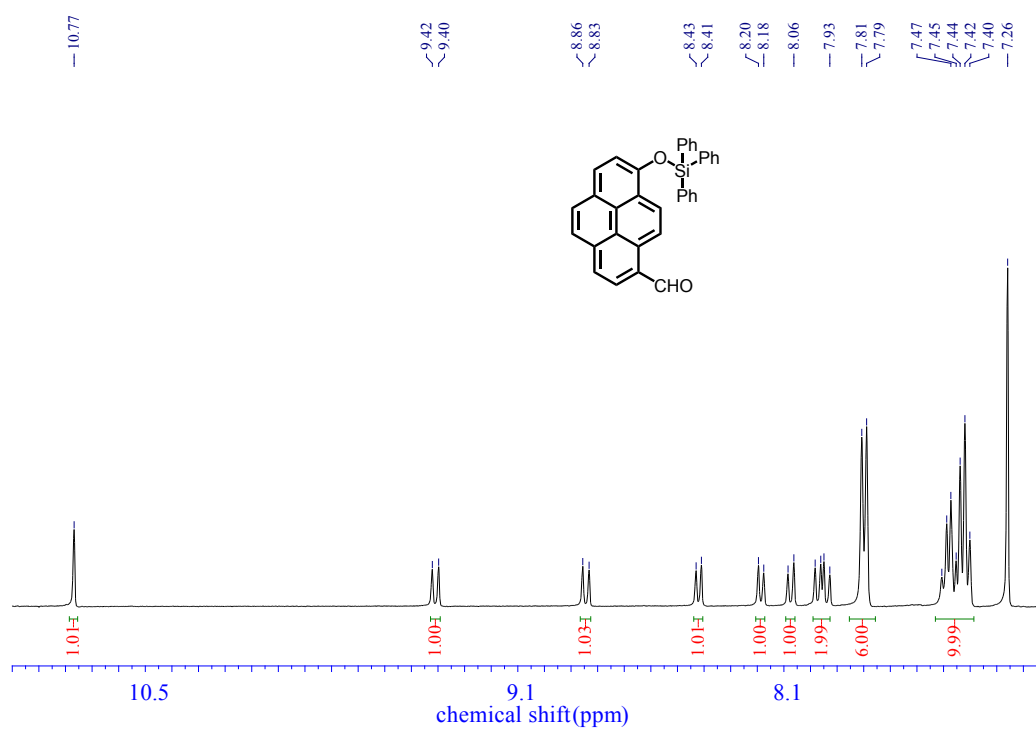


Figure S4. ¹H NMR spectrum (400 MHz) of **PyO-CHO-3** in CDCl₃.

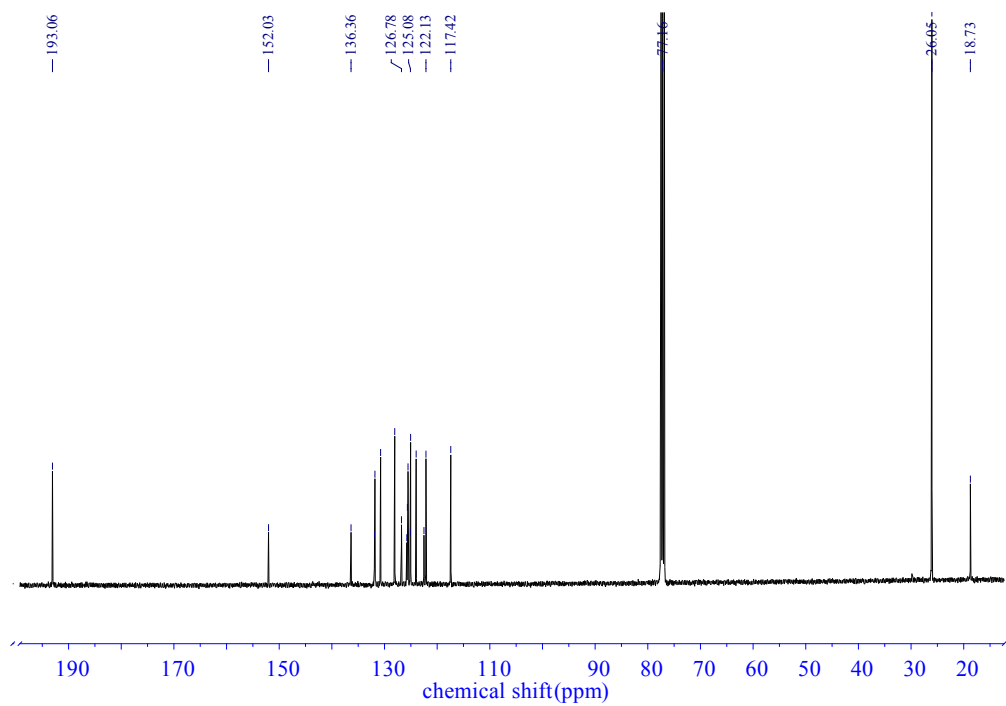


Figure S5. ¹³C NMR spectrum (100 MHz) of **PyO-CHO-1** in CDCl₃.

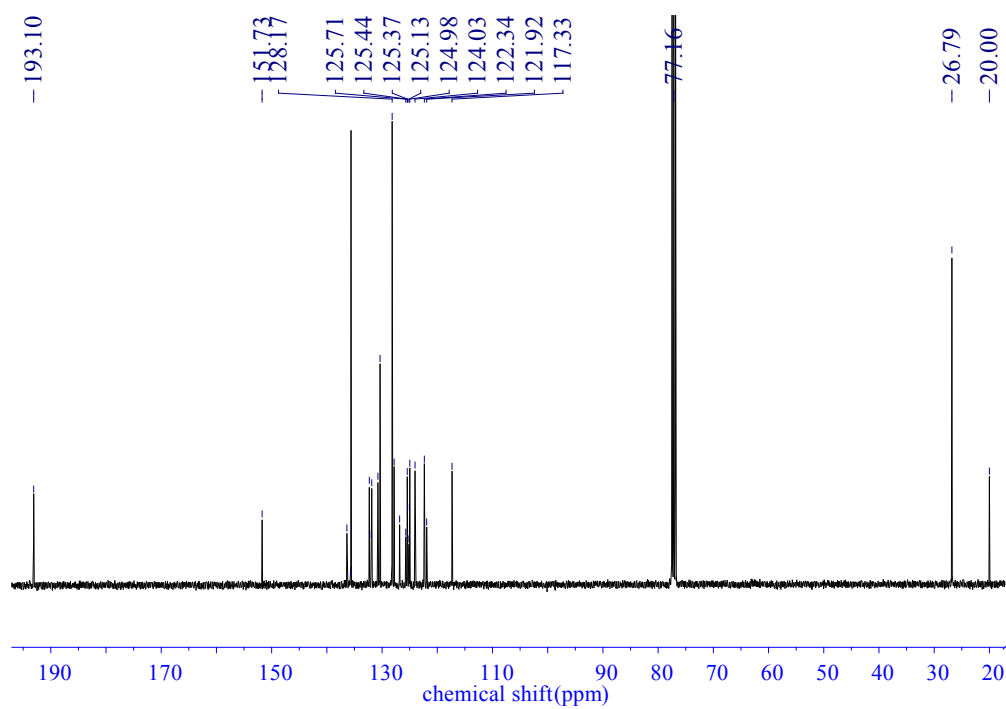


Figure S6. ¹³C NMR spectrum (100 MHz) of **PyO-CHO-2** in CDCl₃.

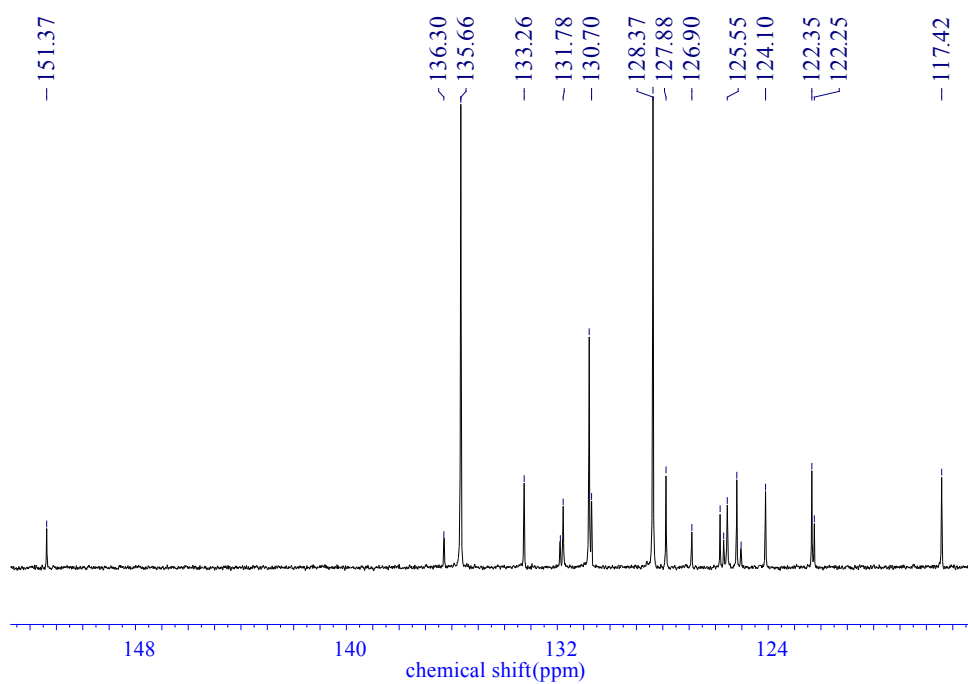


Figure S7. ^{13}C NMR spectrum (100 MHz) of **PyO-CHO-3** in CDCl_3 .

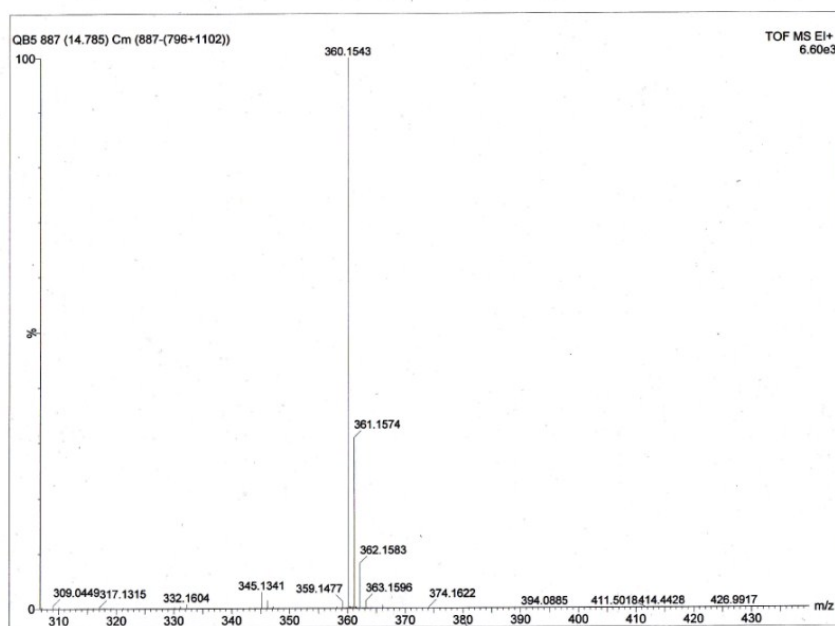


Figure S8. EI-TOF mass spectrum of **PyO-CHO-1**.

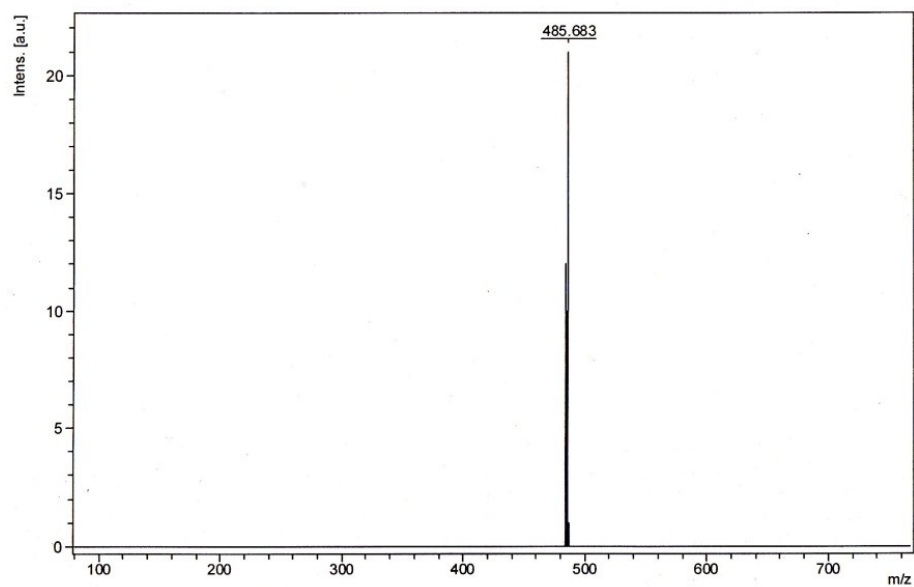


Figure S9. MALDI-TOF mass spectrum of **PyO-CHO-2**.

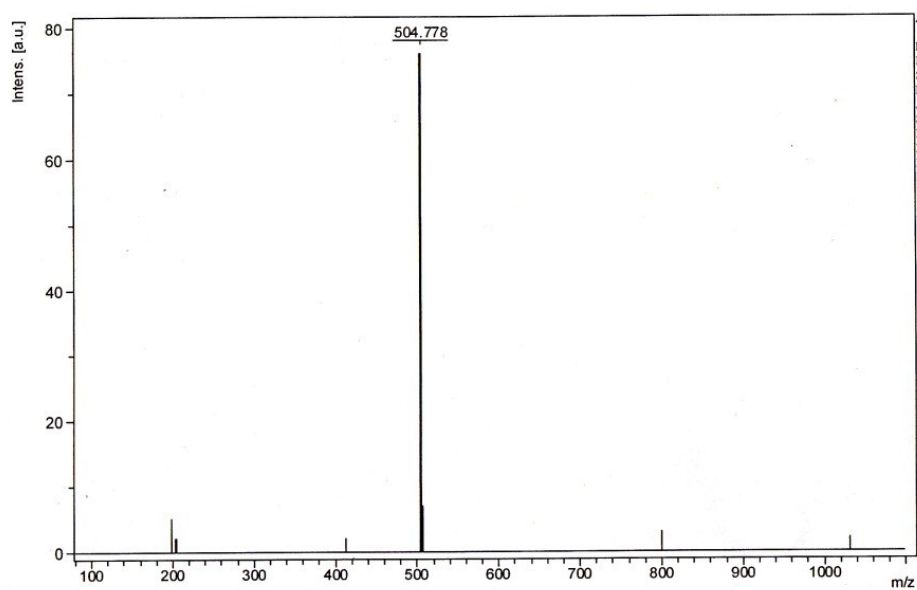


Figure S10. MALDI-TOF mass spectrum of **PyO-CHO-3**.

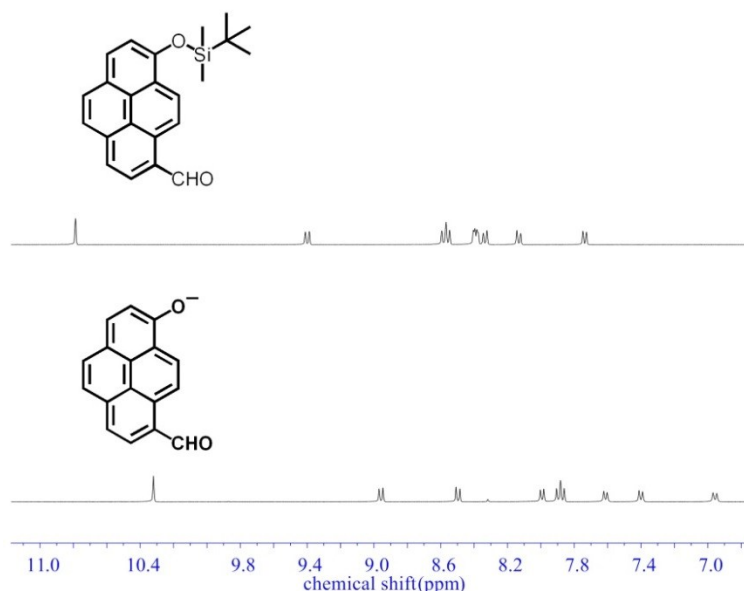


Figure S11. Partial ^1H NMR spectra for PyO-CHO-1 before (top) and after (bottom) the addition of F^- (as its TBA salt) in $\text{DMSO-}d_6$.

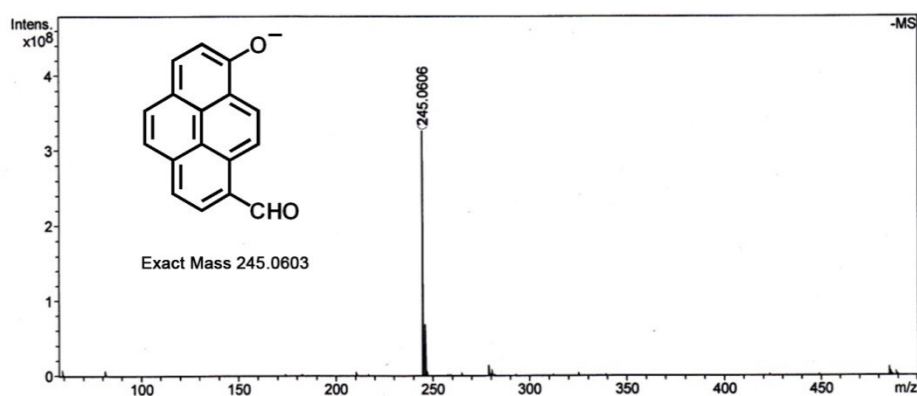


Figure S12. ESI-TOF mass spectrum of PyO-CHO-1 after the addition of F^- .

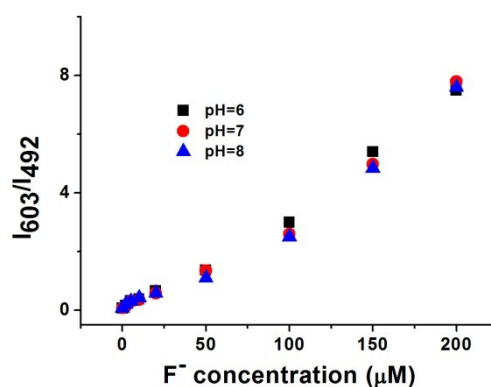


Figure S13. Fluorescence intensity ratio (I_{603}/I_{492}) of PyO-CHO-1 (10 μM in 2M CTAB) versus fluoride concentrations under buffers of different pH values (10 mM HEPES). $\lambda_{\text{ex}} = 443$ nm. The fluorescence response to fluoride ion is not affected in pH region of 6 to 8.