Electronic Supplementary Material (ESI) for Sensors & Diagnostics.


# Supporting Information

## Discriminative 'turn-on' fluorescent sensing of volatile halogenated solvents using a cleft-shaped 4-amino-1,8-naphthalimide Tröger's base fluorophore

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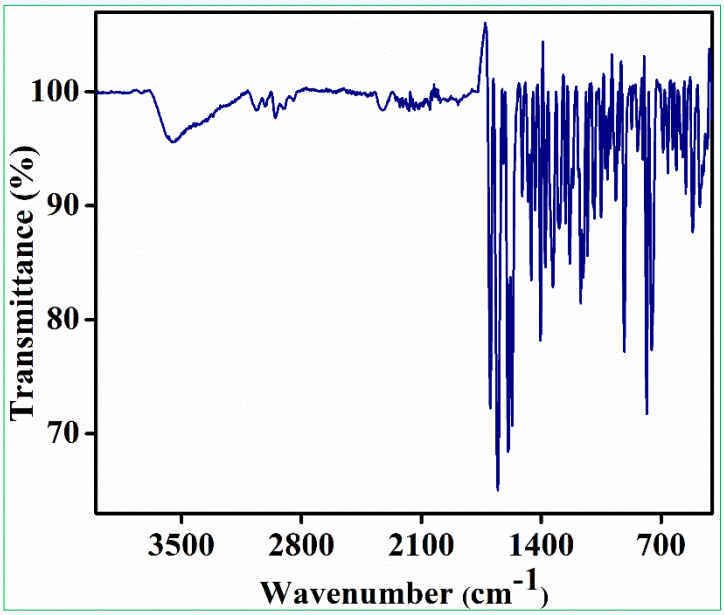


**Fig. S1**. FT-IR spectrum of **TBNap**.

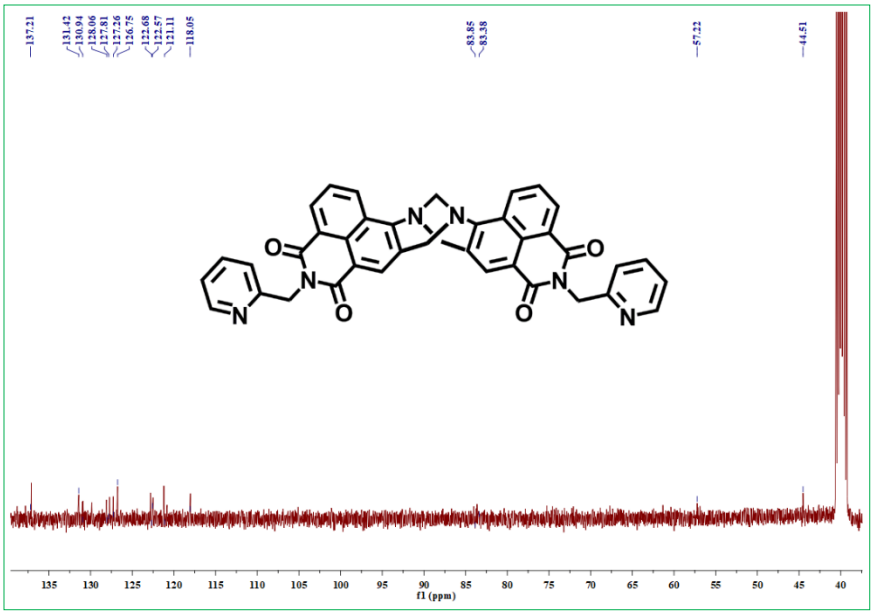


**Fig. S2.** $^{13}$C NMR spectrum of **TBNap** (400 MHz, DMSO-$d_6$). Several attempts were made to obtain well resolved and high-intensity spectrum of the **TBNap** sensor. However, an increase in the concentration of **TBNap** in the DMSO medium was found to be precipitating/aggregating after a few minutes of preparing the NMR sample. Therefore, we were unable to produce a high-quality $^{13}$C NMR spectrum. Nevertheless, $^{1}$H NMR and HRMS unambiguously confirm the formation and purity of **TBNap**.

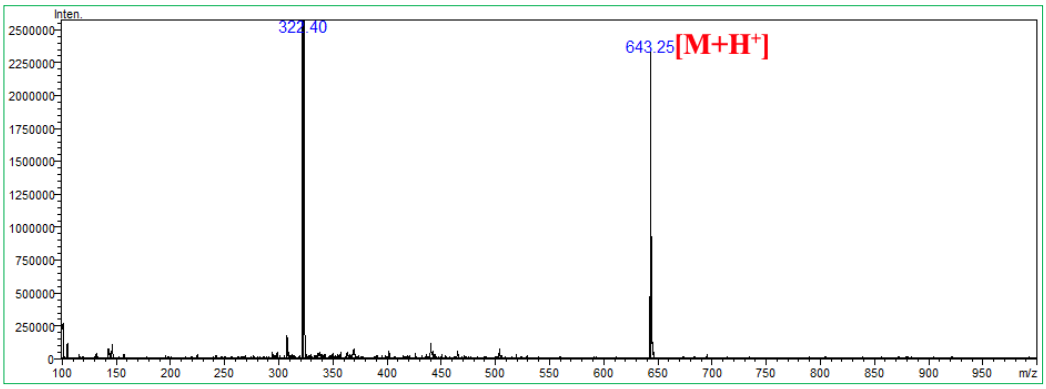


**Fig. S3.** HRMS Spectrum of **TBNap**.

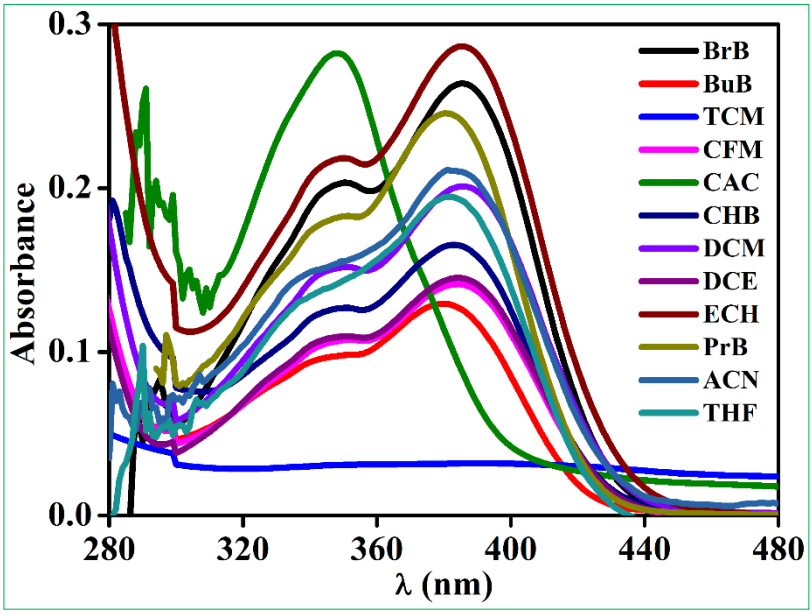


**Fig. S4**. UV-visible absorption spectra of **TBNap** in different organic solvents.

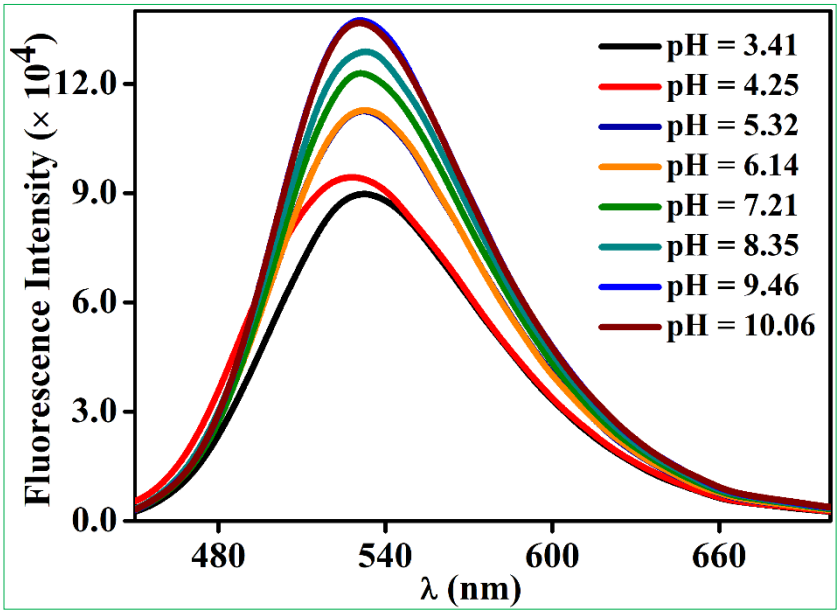


**Fig. S5**. The fluorescence emission spectra of **TBNap** were measured at different pH.

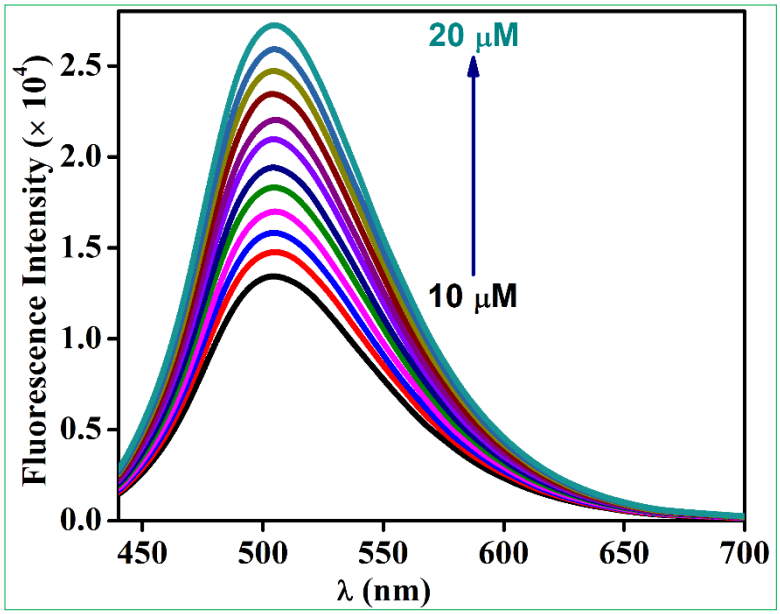


**Fig. S6**. Graph showing the concentration-dependent fluorescence emission studies.

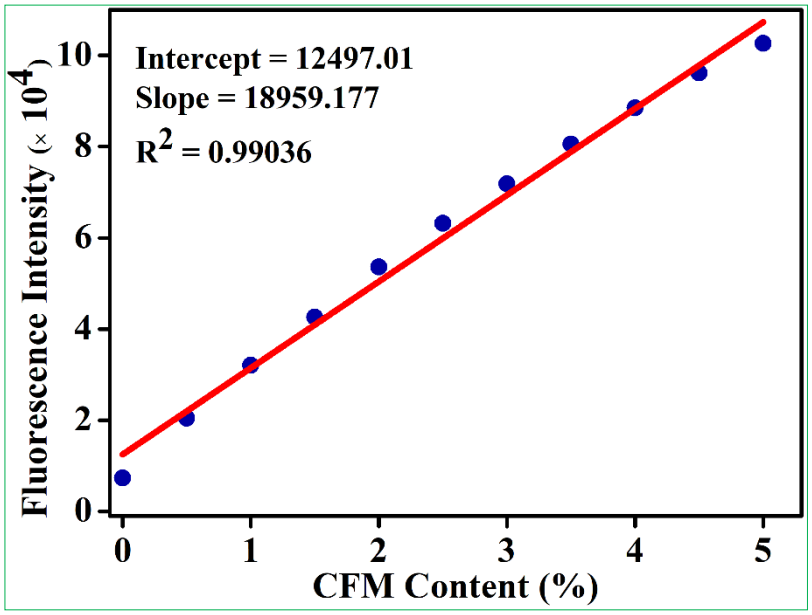


**Fig. S7**. A plot of fluorescence emission intensity *vs.* volume percentage of chloroform showing a leaner curve.

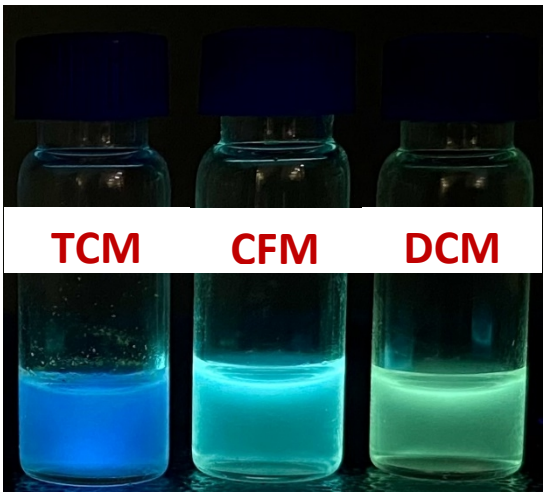


**Fig. S8**. The photograph of the visual color change for **TBNap** was imaged in TCE, CFM, and DCM solvents under UV-light irradiation.

**Table S1.** The measured emission maxima ($\lambda_{max}$) and quantum yield of **TBNap** in the selected different organic solvents and the dielectric constant for different solvents.

| Solvents | Emission Maxima | Quantum Yield (Φ) | Dielectric Constant |
|---|---|---|---|
| CAC | 436 | 0.0459 | - |
| TCM | 480 | 0.576 | 2.24 |
| CFM | 488 | 4.15 | 4.81 |
| CHB | 489 | 2.125 | 7.92 |
| DCM | 501 | 2.728 | 8.93 |
| DCE | 506 | 1.823 | 10.36 |
| ECH | 519 | 0.976 | 22.6 |
| BrB | 492 | 2.89 | 5.39 |
| BuBr | 486 | 2.338 | 6.93 |
| PrBr | 490 | 3.412 | 8.08 |
| THF | 507 | 0.978 | 7.58 |
| ACN | 530 | 0.262 | 37.5 |