A Naphthalimide–Benzothiazole Conjugate as Colorimetric and Fluorescent Sensor for Selective Trinitrophenol Detection

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Supplementary Information

Figure S1. ¹H NMR of compound 1.
Figure S2. $^{13}$C NMR of compound 1.

Figure S3. ESI mass of compound 1.
Figure S4. ESI- HRMS of compound 1.

Figure S5. FT-IR of compound 1.
Figure S6. Absorption spectra of receptor 1, TNP (A1) and 1:A1 complex.

Figure S7. Job’s plot obtained from fluorescence emission spectral data ($\lambda_{ex} = 413$ nm); G- analyte TNP (A1) and H- receptor 1.
**Figure S8.** Time resolved decay (tau) of compound 1 in the presence and absence of TNP (A1) @ 416 nm, 424 nm and 425 nm.

**Figure S9.** Stern-Volmer plot for TNP with 1. The relative fluorescence intensity is linear with TNP concentration in the range of 0–2 equivalents.
Figure S10. Zoomed image of $^1$H NMR of probe 1, TNP and complex between 1 and TNP (A1).

Figure S11. Competitive experimental spectra for each analyte ($\lambda_{ex} = 365$ nm).
Figure S12. (a) UV-vis titration experiment of 1 in the presence of DNP (A15) and (b) Fluorescence titration experiment of 1 in the presence of DNP (A15) ($\lambda_{ex} = 365$ nm).
Figure S13. Job's plot obtained from fluorescence emission spectral data ($\lambda_{ex} = 413$ nm); G- analyte DNP (A15) and H- receptor 1.

Figure S14. Benesi-Hildebrand plot of 1 for DNP (A15) (G).
Figure S15. Absorption intensity at 425 nm of 1 versus increasing concentration of DNP (A15).
Figure S16. (a) UV-vis titration experiment of 1 in the presence of A16, A17, A18, A19 and (b) Fluorescence titration experiment of 1 in the presence of A16, A17, A18, A19 ($\lambda_{ex} = 365$ nm).

Table S1. The time resolved decay (tau) values of 1, 1:A1 (1 equiv.) and 1:A2 (2 equiv.).

<table>
<thead>
<tr>
<th>Sample Code</th>
<th>$\tau_1$ (ns)</th>
<th>Contribution (%)</th>
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<tbody>
<tr>
<td>1</td>
<td>1.0195</td>
<td>100</td>
</tr>
<tr>
<td>1+A1 1eq</td>
<td>1.0087</td>
<td>100</td>
</tr>
<tr>
<td>1+A1 2eq</td>
<td>0.9546</td>
<td>100</td>
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Scheme S1. The aromatic (A15 to A19) structures used in sensing study.