

Supporting Information

A Sulfone-functionalized Molecular Triangle as A Strong Anion Receptor Driven by Anion- π Interactions

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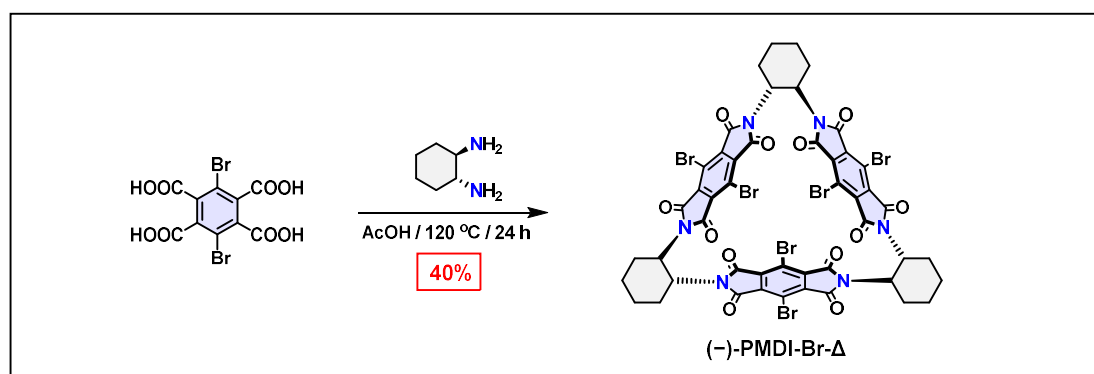
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Section A. General Methods

All reagents were purchased from commercial suppliers and used without further purification. Thin-layer chromatography (TLC) was performed on silica gel HSGF254. UV-Vis Spectra were recorded in a quartz cell (light path 10 mm) on a Cary 100 UV-Vis spectrophotometer equipped with a Cary dual cell Peltier accessory. Nuclear magnetic resonance (NMR) spectra were recorded on Agilent DD2 500 and on Bruker Avance III 400 spectrometers, with working frequencies of 400 MHz for ^1H , as well as 100 MHz for ^{13}C nuclei, respectively. Chemical shifts are reported in ppm relative to the signals corresponding to the residual non-deuterated solvents (CDCl_3 : $\delta_{\text{H}} = 7.26$ ppm and $\delta_{\text{C}} = 77.0$ ppm). High-resolution electrospray ionization-mass spectra (HR-ESI-MS) were recorded on a Bruker Apex IV Fourier transformation mass spectrometer. Fluorescence measurements were recorded in a conventional quartz cell (light path 10 mm) on a Cary Eclipse equipped with a Cary single-cell Peltier accessory.

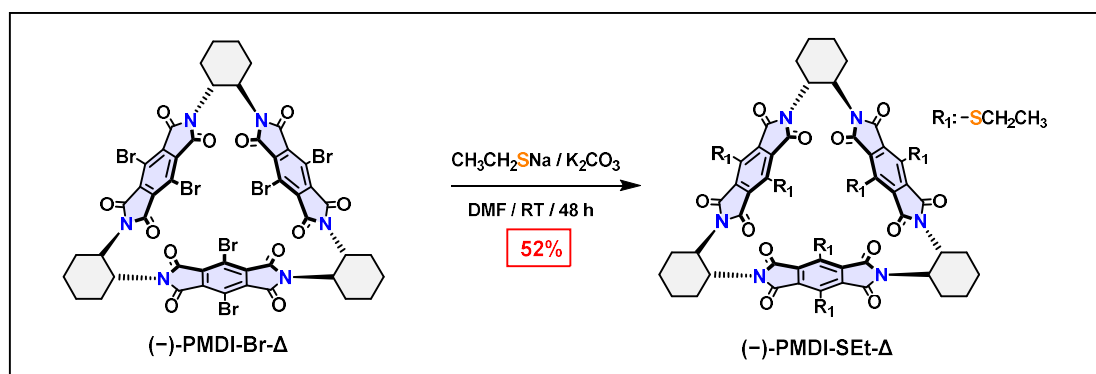
Section B. Synthetic Protocols

Scheme S1. Synthesis of (-)-PMDI-SO₂Et- Δ .



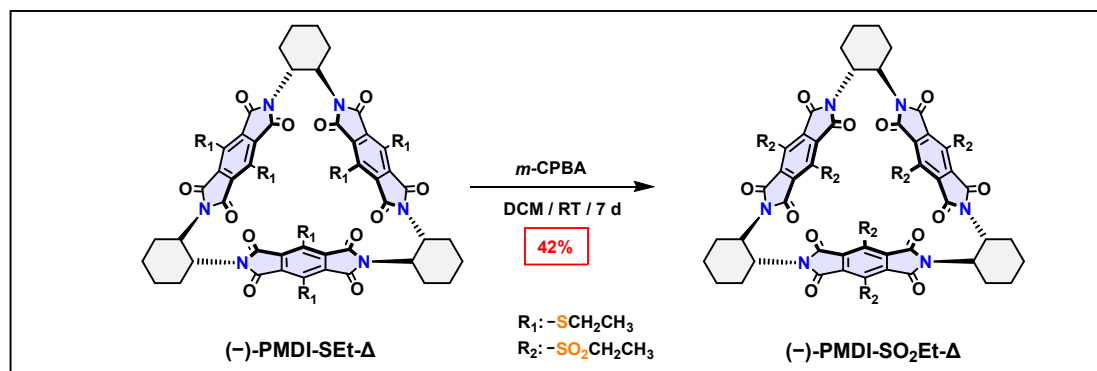
(-)-PMDI-Br- Δ : (-)-PMDI-Br- Δ was prepared using an improved protocol based on the method reported in the literature.¹ 3,6-Dibromobenzene-1,2,4,5-

tetracarboxylic acid (1.00 g, 2.42 mmol) was dissolved in 200 mL of AcOH. Over the course of one hour, (*RR*)-1,2-cyclohexanediamine (0.276 g, 2.42 mmol) was gradually added, ensuring complete dissolution with each successive addition. The reaction mixture was then heated up to reflux at 120 °C for 24 h. After completion, the reaction mixture was cooled and concentrated under reduced pressure to a final volume of approximately 50 mL. The resulting precipitate was filtered off, affording (-)-**PMDI-Br-Δ** as a white powder with a yield of 40%. $^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm): $\delta_{\text{H}} = 5.25 - 5.13$ (s, 6H), 2.18 - 1.82 (s, 18H), 1.59 - 1.50 (m, 6H). $^{13}\text{C NMR}$ (100 MHz, CDCl_3 , ppm): $\delta = 162.88, 162.22, 135.52, 135.43, 114.22, 51.32, 30.64, 24.95$.



(-)-PMDI-SEt-Δ: A Schlenk tube containing (-)-**PMDI-Br-Δ** (200 mg, 0.147 mmol) and K_2CO_3 (160 mg, 1.16 mmol) was evacuated and backfilled with nitrogen. Degassed DMF (30 mL) and sodium ethanethiolate (75 mg, 0.892 mmol) were then added, and the mixture was stirred at room temperature for 48 h. Upon completion, the mixture was poured into cold water and extracted with CH_2Cl_2 . The combined organic layers were dried over anhydrous Na_2SO_4 and concentrated under reduced pressure. The crude product was purified by silica gel column chromatography ($\text{CH}_2\text{Cl}_2 / \text{EtOAc} = 40 / 1$) to afford (-)-**PMDI-SEt-Δ** as an orange red solid (96 mg, 52% yield). $^1\text{H NMR}$ (400 MHz, CDCl_3 , ppm): $\delta_{\text{H}} = 5.18 - 5.10$ (m, 6H), 3.21 - 2.90 (m, 12H), 2.19 - 1.92 (m, 12H), 1.91 - 1.82 (m, 6H), 1.58 - 1.46 (m, 6H), 1.03 - 0.97 (m, 18H). $^{13}\text{C NMR}$ (100 MHz, CDCl_3 , ppm): $\delta = 164.35, 163.54, 136.23, 135.91, 134.50, 51.32, 31.25$,

30.73, 25.10, 14.42. **HR-ESI MS**: found $m/z = 1266.3040$, calculated m/z for $C_{60}H_{60}N_6O_{12}S_6$ $[M+NH_4]^+ = 1266.2932$.



(-)-PMDI-SO₂Et-Δ: **(-)-PMDI-SEt-Δ** (200 mg, 0.16 mmol) was dissolved in DCM (30.0 mL) and cooled to 0 °C. *m*-CPBA (335 mg, 1.94 mmol) was added in portions over the course of 1 h. The mixture was then allowed to stir at room temperature for 7 days. After completion, the mixture was poured into cold water and extracted with CH₂Cl₂. The combined organic layers were dried over anhydrous Na₂SO₄ and concentrated under reduced pressure. The crude product was purified by silica gel column chromatography (CH₂Cl₂ / MeOH = 20 / 1) to afford **(-)-PMDI-SO₂Et-Δ** as a white solid (98 mg, 42% yield). **¹H NMR** (400 MHz, CDCl₃, ppm): $\delta_H = 5.12 - 4.96$ (m, 6H), 3.80 – 3.64 (m, 12H), 2.18 – 2.01 (m, 12H), 1.96 – 1.85 (m, 6H), 1.56 – 1.41 (m, 24H). **¹³C NMR** (100 MHz, CDCl₃, ppm): $\delta_H = 161.27, 160.62, 140.83, 138.51, 137.83, 52.77, 50.00, 30.22, 24.87, 6.03$. **HR-ESI MS**: found $m/z = 1458.2312$, calculated m/z for $C_{60}H_{60}N_6O_{24}S_6$ $[M+NH_4]^+ = 1458.2322$.

Section C. NMR Spectroscopy

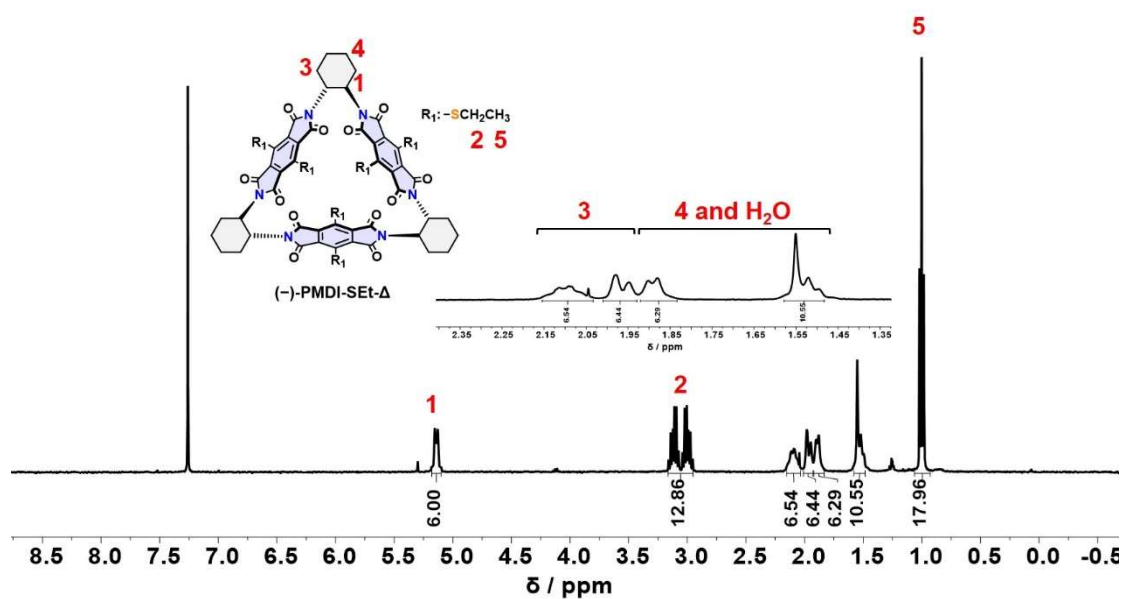


Figure S1 ^1H NMR Spectrum (400 MHz / CDCl_3 / 298 K) of (-)-PMDI-SEt- Δ

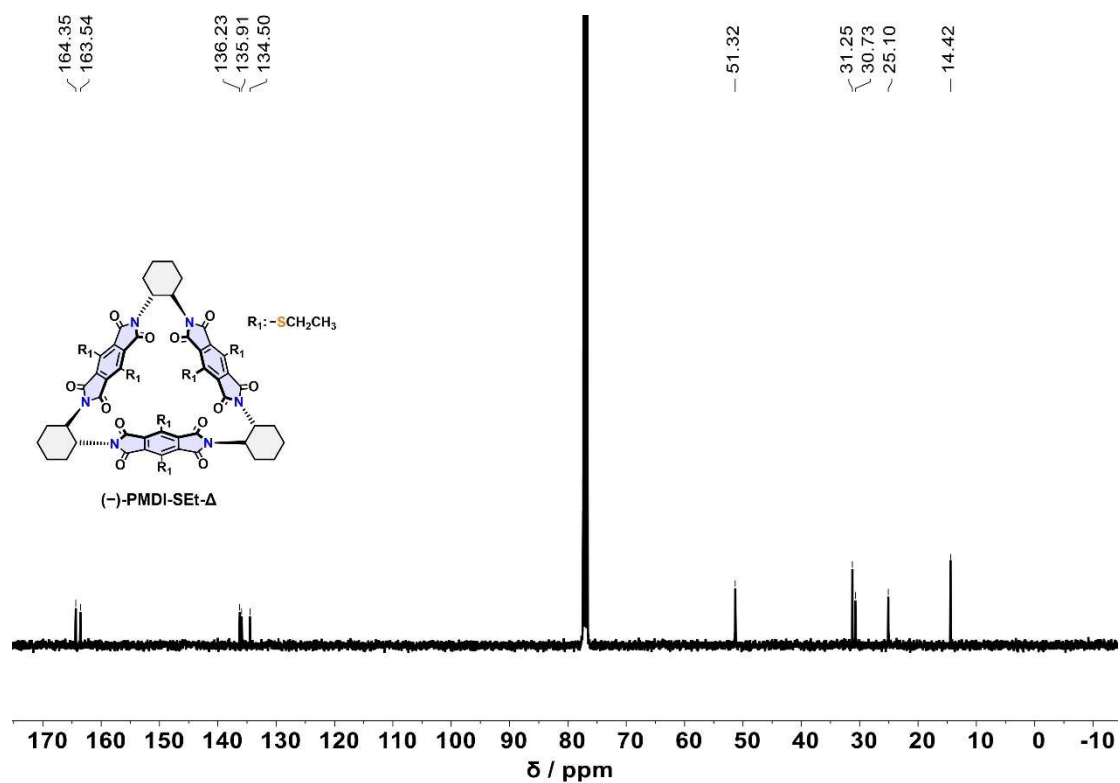


Figure S2 ^{13}C NMR Spectrum (100 MHz / CDCl_3 / 298 K) of (-)-PMDI-SEt- Δ

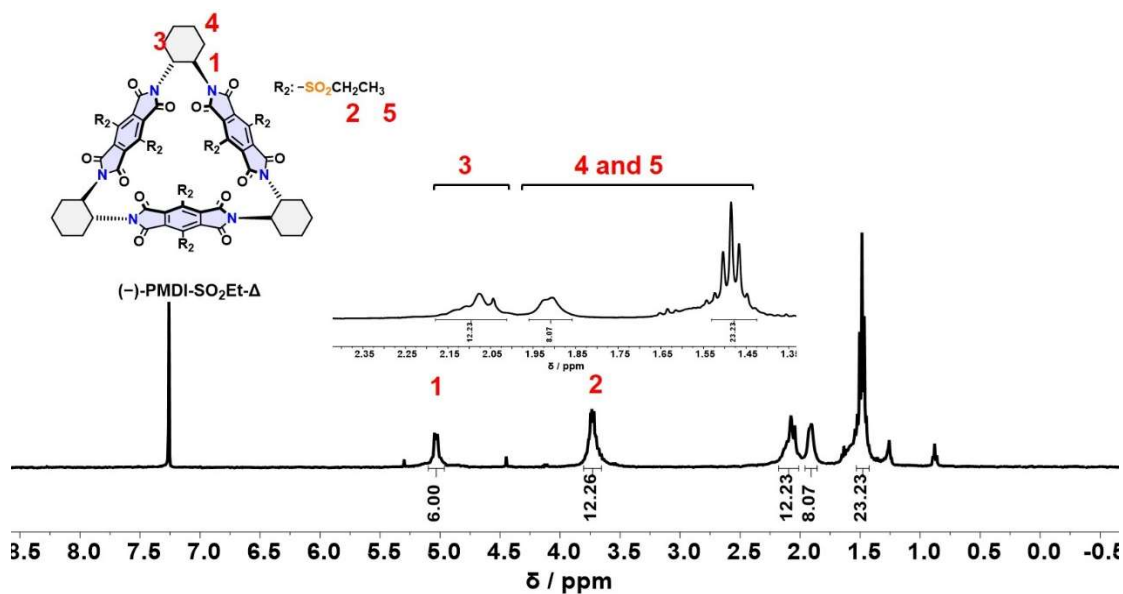


Figure S3 ¹H NMR Spectrum (400 MHz / CDCl₃ / 298 K) of **(-)-PMDI-SO₂Et-Δ**

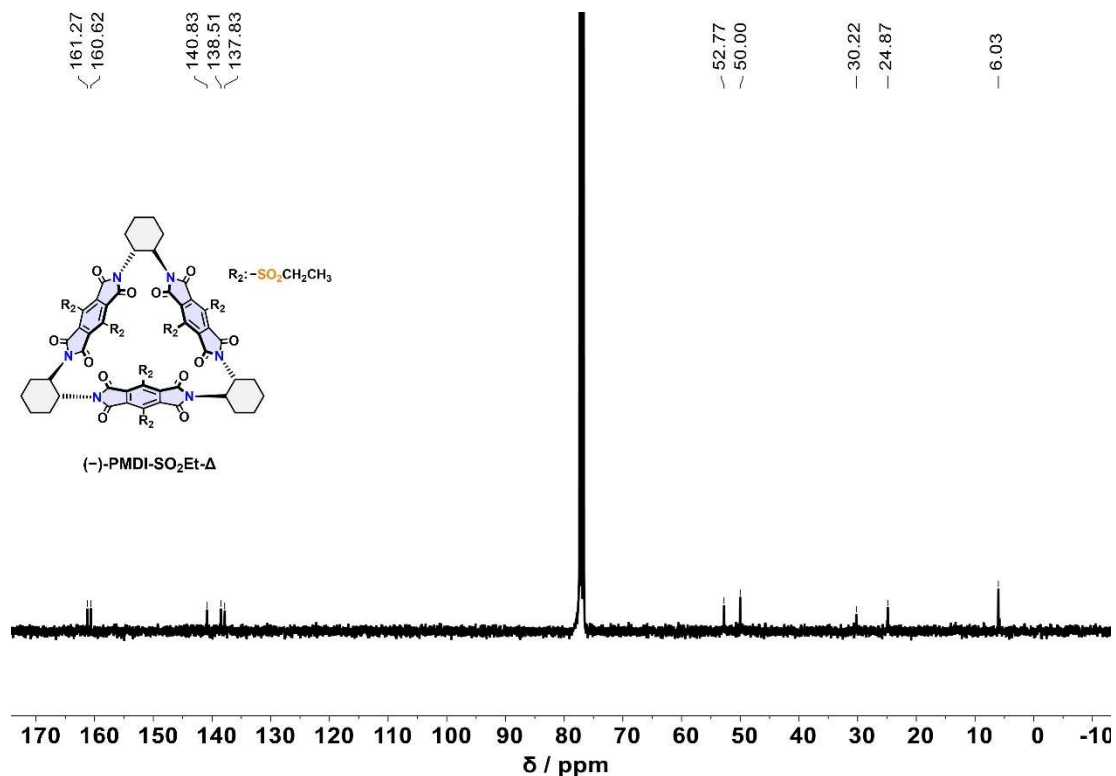


Figure S4 ¹³C NMR Spectrum (100 MHz / CDCl₃ / 298 K) of **(-)-PMDI-SO₂Et-Δ**

Section D. UV-Vis Titrations

UV-Vis titration experiments were conducted to monitor the absorbance changes of **(-)-PMDI-SO₂Et-Δ** and **(-)-PMDI-Δ** upon the incremental addition of various equivalents of guests. The absorbance intensity at a selected

wavelength was plotted against guest concentration and fitted to a 1:1 binding model based on a nonlinear least-squares fitting equation² using Origin Lab 9.1 software, affording the binding constant (K_a). As suggested by a reviewer, we also re-analyzed all the data using BindFit (<http://supramolecular.org/>), and the results were in good agreement with those obtained from Origin. The BindFit fitting results have been included as hyperlinks in Section F for reference.

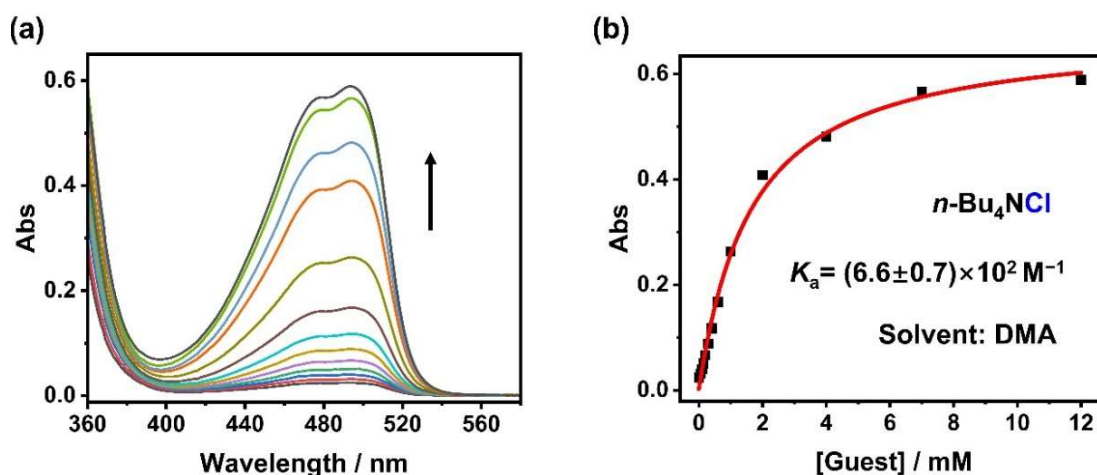


Figure S5 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.20 mM in DMA) upon the addition of *n*-Bu₄NCl (up to 12.0 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 492$ nm, fitted according to a 1:1 binding model.

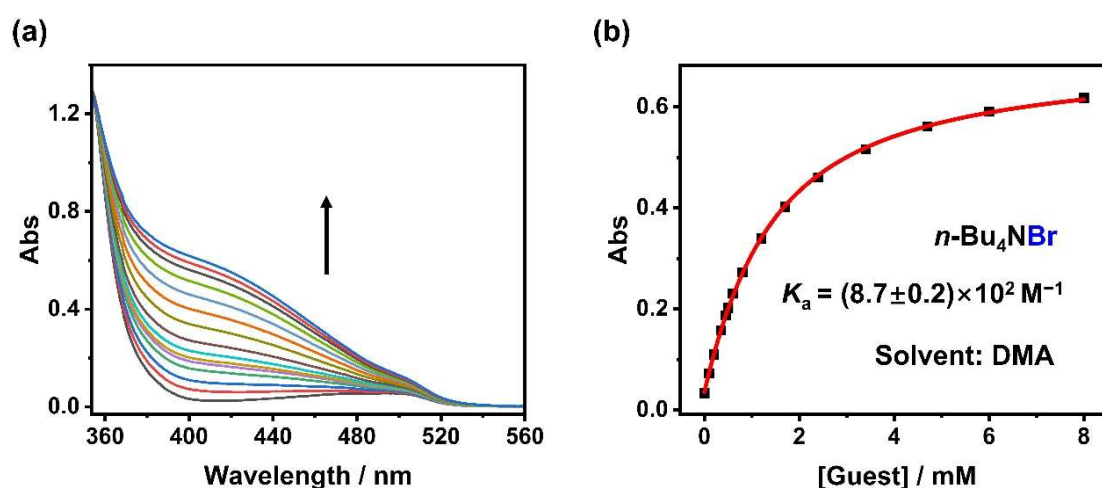


Figure S6 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.50 mM in DMA) upon the addition of *n*-Bu₄NBr (up to 8.0 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 400$ nm, fitted according to a 1:1 binding model.

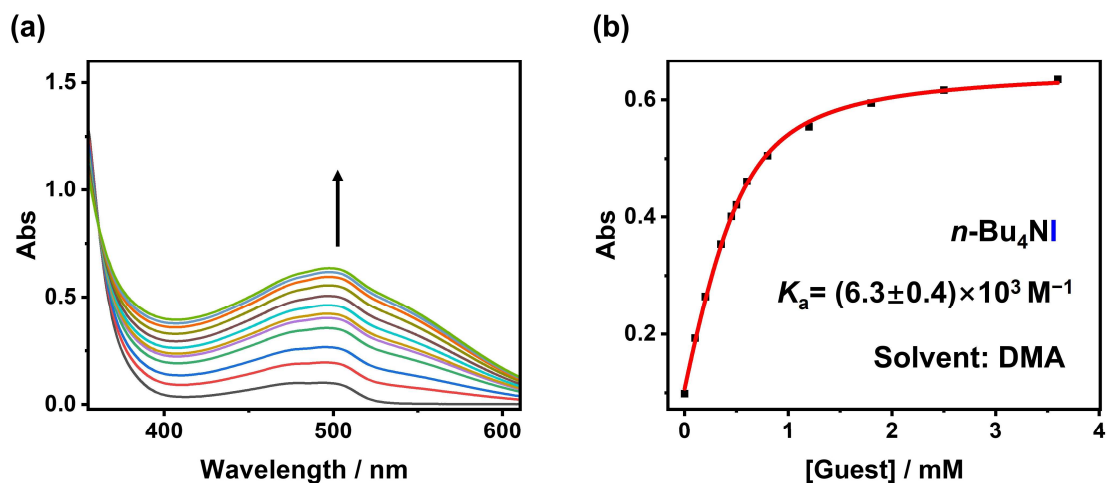


Figure S7 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.50 mM in DMA) upon the addition of *n*-Bu₄NI (up to 3.6 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 500$ nm, fitted according to a 1:1 binding model.

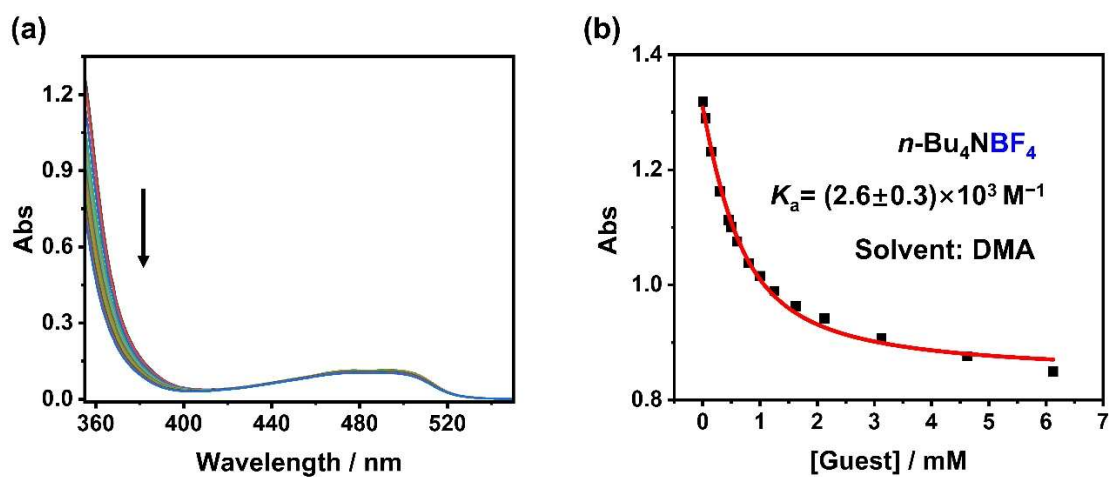


Figure S8 (a) UV–Vis titration of (–)-PMDI-SO₂Et-Δ (0.50 mM in DMA) upon the addition of *n*-Bu₄NBF₄ (up to 6.125 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 363$ nm, fitted according to a 1:1 binding model.

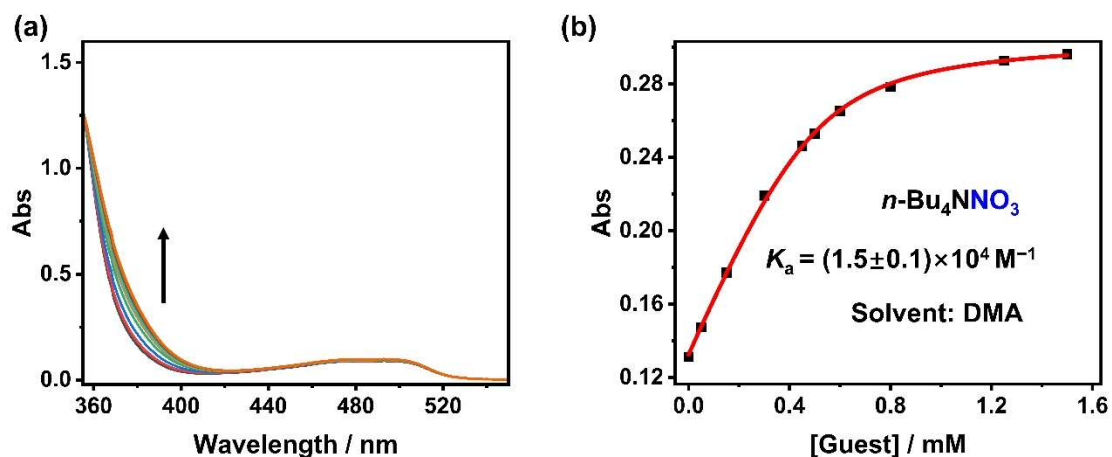


Figure S9 (a) UV-Vis titration spectra of **(-)-PMDI-SO₂Et-Δ** (0.50 mM in DMA) upon the addition of *n*-Bu₄NNO₃ (up to 1.5 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 383$ nm, fitted according to a 1:1 binding model.

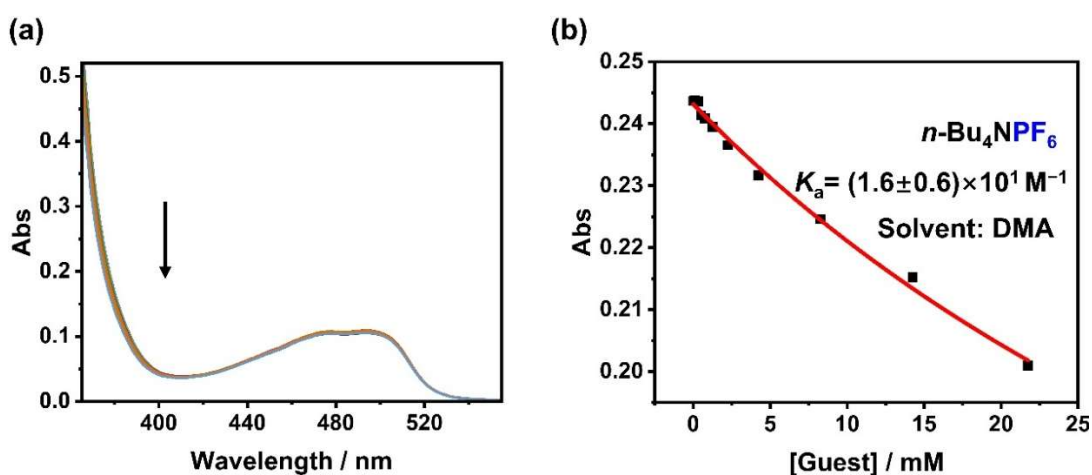


Figure S10 (a) UV-Vis titration of **(-)-PMDI-SO₂Et-Δ** (0.50 mM in DMA) upon the addition of *n*-Bu₄NPF₆ (up to 21.75 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 375$ nm, fitted according to a 1:1 binding model.

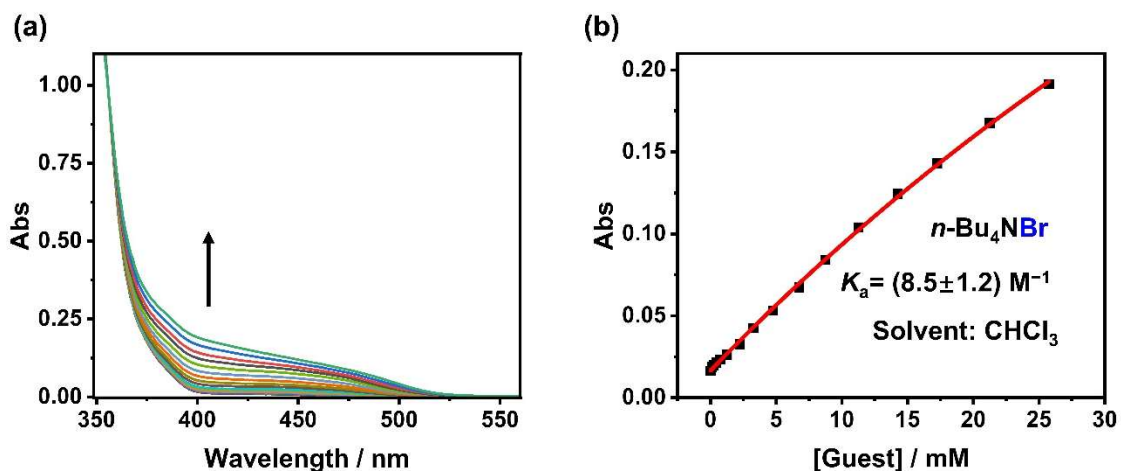


Figure S11 (a) UV-Vis titration spectra of (-)-PMDI-SO₂Et- Δ (0.50 mM in CHCl₃) upon the addition of *n*-Bu₄NBr (up to 25.75 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 400$ nm, fitted according to a 1:1 binding model.

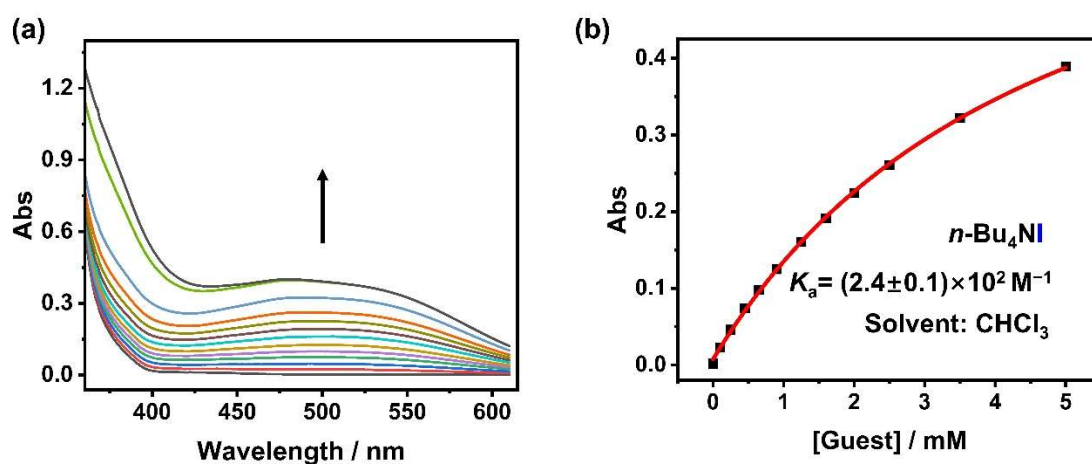


Figure S12 (a) UV-Vis titration spectra of (-)-PMDI-SO₂Et- Δ (0.50 mM in CHCl₃) upon the addition of *n*-Bu₄NI (up to 5.0 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 500$ nm, fitted according to a 1:1 binding model.

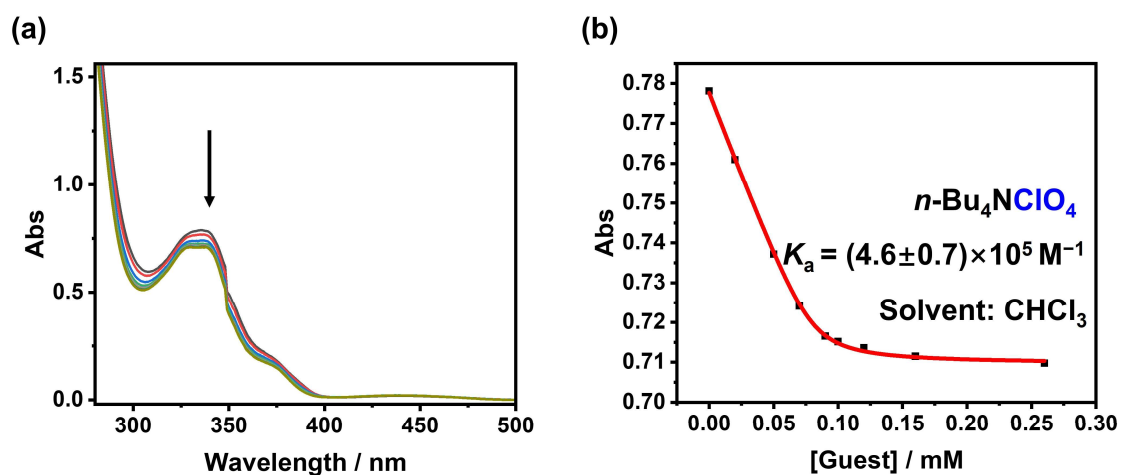


Figure S13 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.08 mM in CHCl₃) upon the addition of *n*-Bu₄NClO₄ (up to 0.26 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 330$ nm, fitted according to a 1:1 binding model.

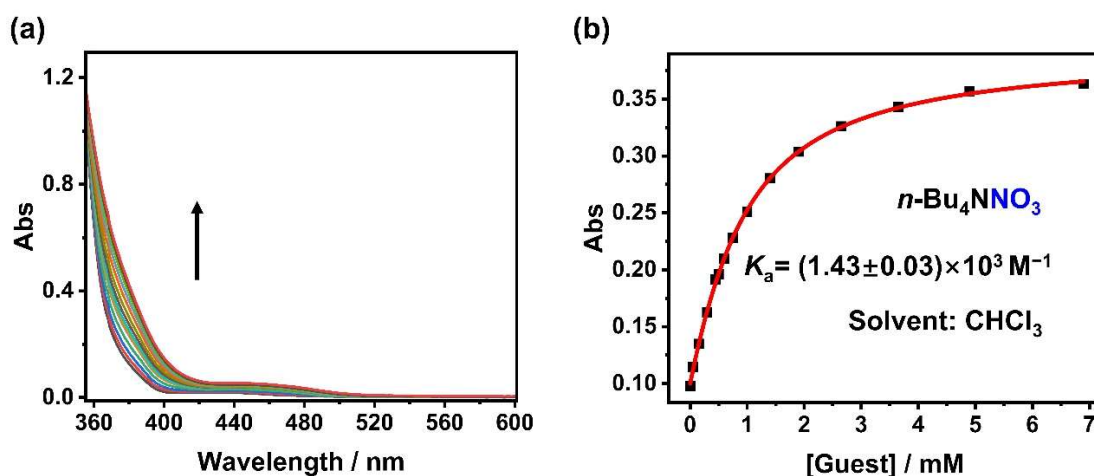


Figure S14 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.50 mM in CHCl₃) upon the addition of *n*-Bu₄NNO₃ (up to 6.9 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 367$ nm, fitted according to a 1:1 binding model.

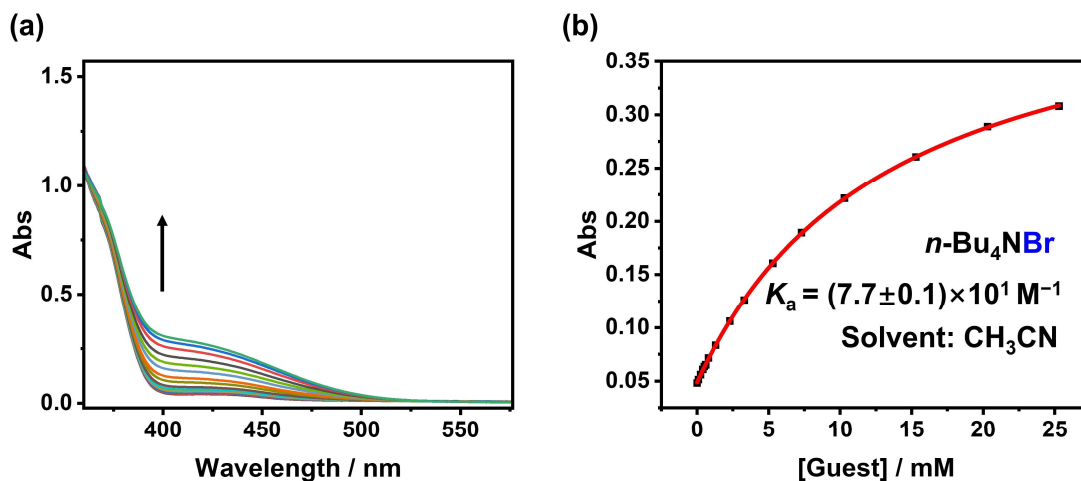


Figure S15 (a) UV-Vis titration spectra of (-)-PMDI-SO₂Et-Δ (0.50 mM in CH₃CN) upon the addition of *n*-Bu₄NBr (up to 25.3 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 400$ nm, fitted according to a 1:1 binding model.

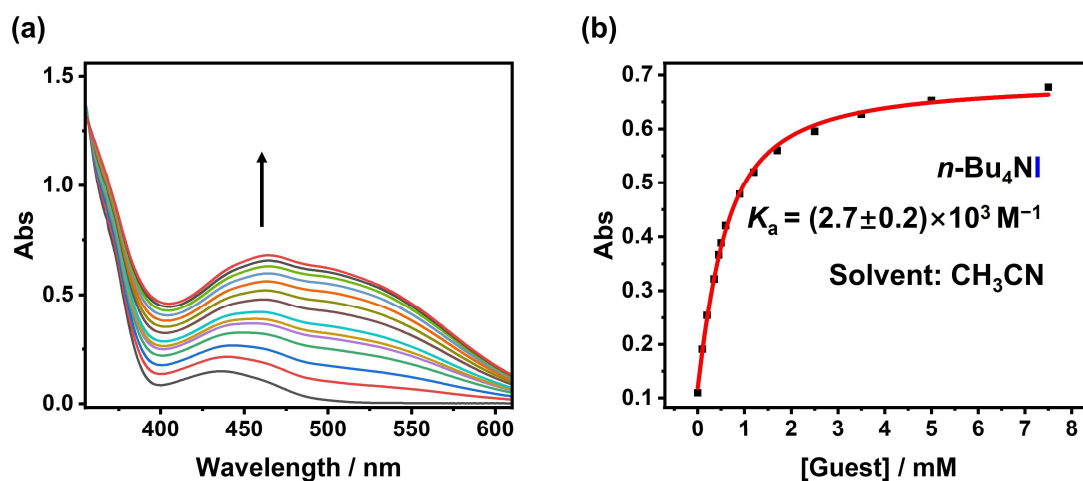


Figure S16 (a) UV-Vis titration spectra of (-)-PMDI-SO₂Et-Δ (0.40 mM in CH₃CN) upon the addition of *n*-Bu₄NI (up to 7.5 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 460$ nm, fitted according to a 1:1 binding model.

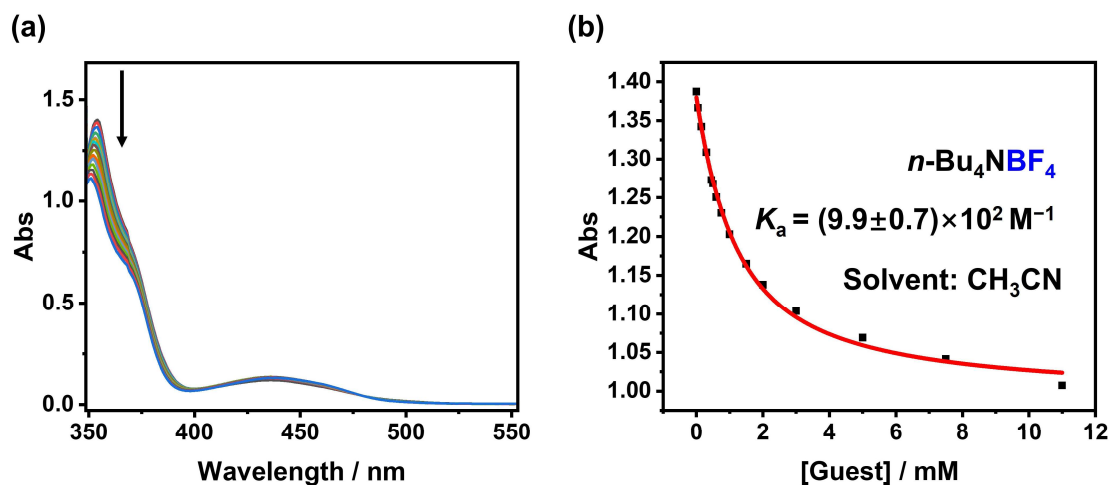


Figure S17 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.40 mM in CH₃CN) upon the addition of *n*-Bu₄NBF₄ (up to 11.0 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 355$ nm, fitted according to a 1:1 binding model.

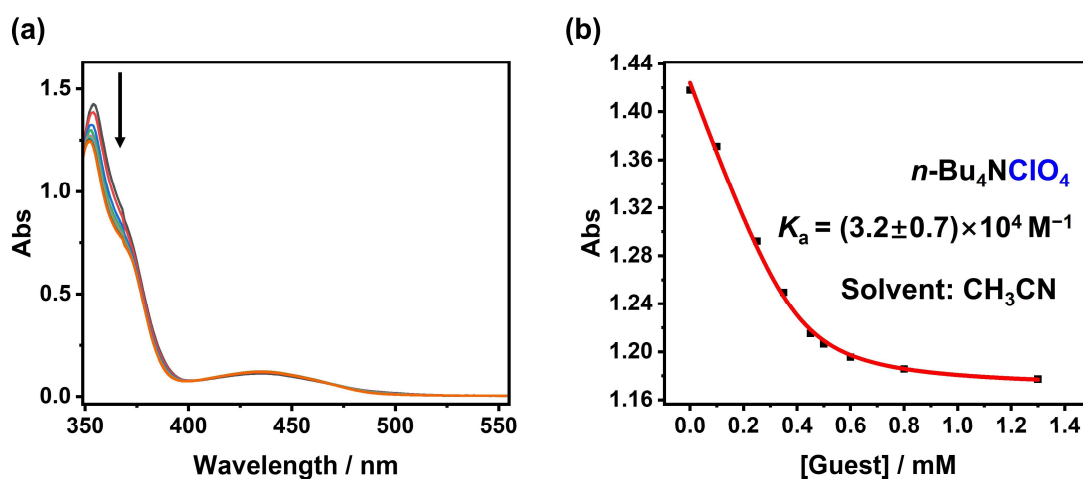


Figure S18 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.40 mM in CH₃CN) upon the addition of *n*-Bu₄NClO₄ (up to 1.3 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 355$ nm, fitted according to a 1:1 binding model.

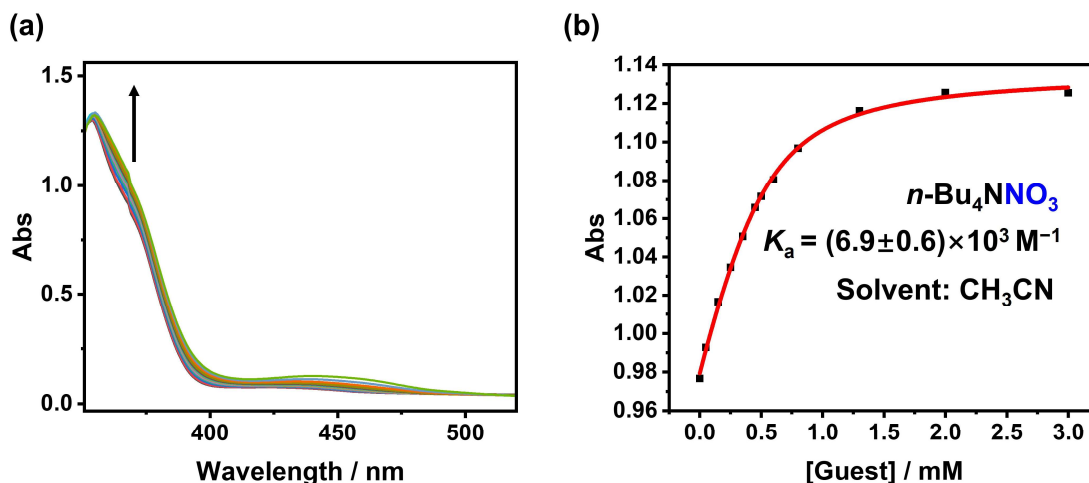


Figure S19 (a) UV–Vis titration spectra of (–)-PMDI-SO₂Et-Δ (0.50 mM in CH₃CN) upon the addition of *n*-Bu₄NNO₃ (up to 3.0 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 365$ nm, fitted according to a 1:1 binding model.

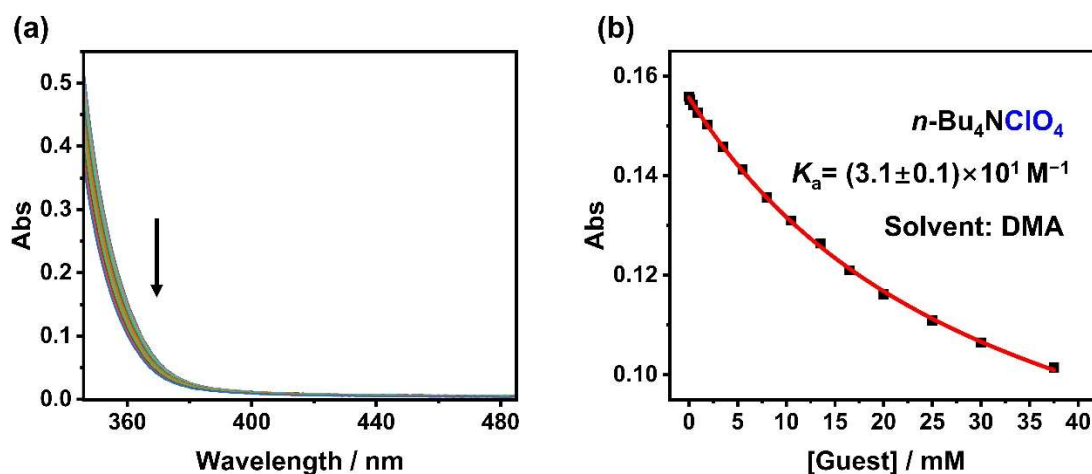


Figure S20 (a) UV–vis titration spectra of (–)-PMDI-Δ (0.50 mM in DMA) upon the addition of *n*-Bu₄NClO₄ (up to 37.5 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 360$ nm, fitted according to a 1:1 binding model.

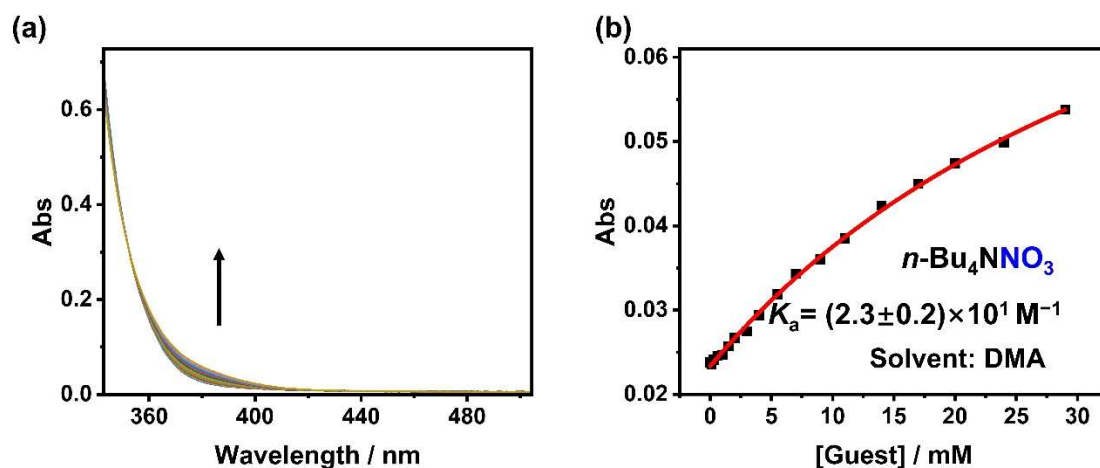


Figure S21 (a) UV–Vis titration spectra of (–)-PMDI- Δ (0.50 mM in DMA) upon the addition of n -Bu₄NNO₃ (up to 29.0 mM). (b) The corresponding titration curve at $\lambda_{\text{abs}} = 382$ nm, fitted according to a 1:1 binding model.

Section E. ¹H NMR Titrations

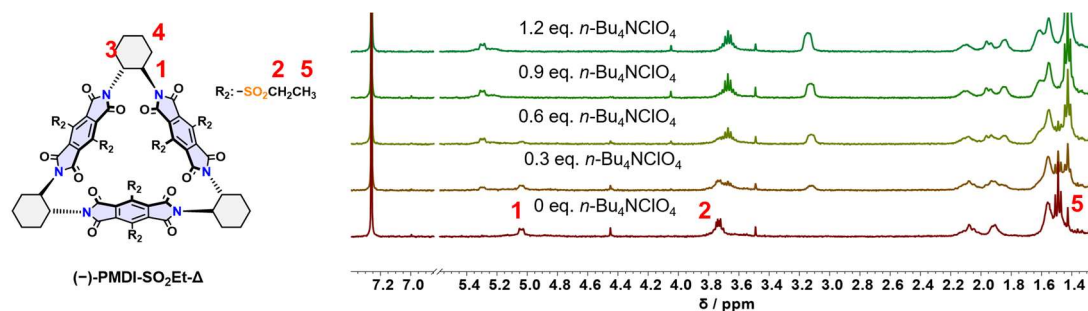


Figure S22 ¹H NMR titration spectra of (–)-PMDI-SO₂Et- Δ (1.0 mM in CDCl₃) upon addition of n -Bu₄NClO₄ (up to 1.2 mM).

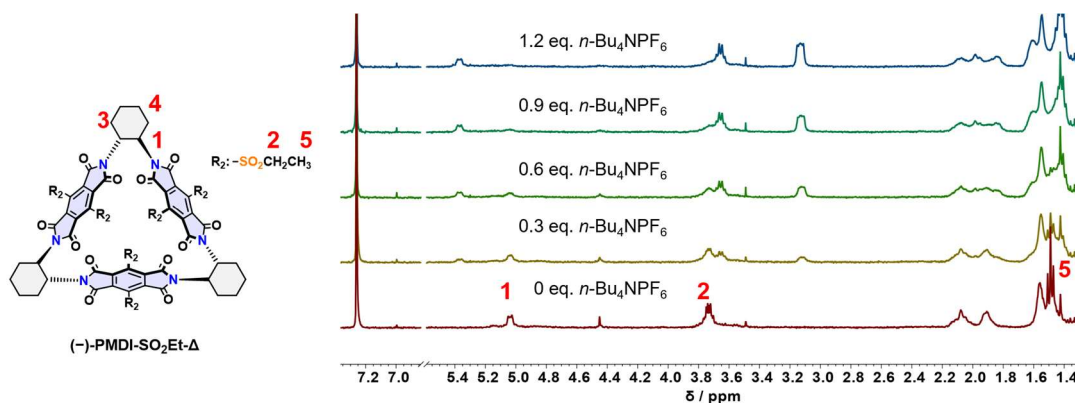


Figure S23 ¹H NMR titration spectra of (–)-PMDI-SO₂Et- Δ (1.0 mM in CDCl₃) upon addition of n -Bu₄NPF₆ (up to 1.2 mM).

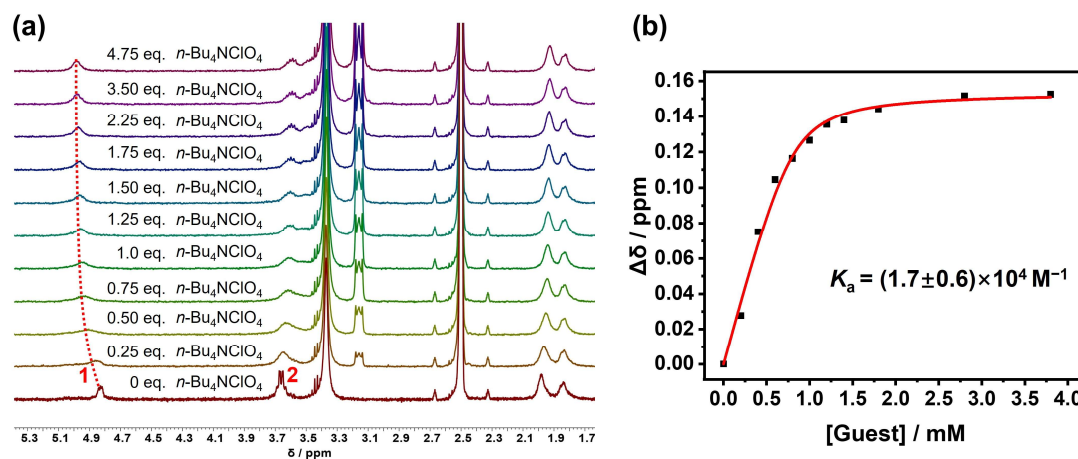


Figure S24 (a) ¹H NMR titration spectra of (-)-PMDI-SO₂Et-Δ (0.80 mM in DMSO-d₆) upon addition of *n*-Bu₄NClO₄ (up to 3.8 mM). (b) The corresponding titration curve at chemical shift of the protons 1 of (-)-PMDI-SO₂Et-Δ, fitted according to a 1:1 binding model.

Section F. Bindfit URL List of Titrations

Bindfit URL List for (-)-PMDI-SO₂Et-Δ Titrations in DMA

TBA⁺Cl⁻

<http://app.supramolecular.org/bindfit/view/55135d4a-9bf1-4ee7-a565-f5b73e16bf30>

TBA⁺Br⁻

<http://app.supramolecular.org/bindfit/view/f94e4994-7473-4e21-86f7-89d47359fd18>

TBA⁺I⁻

<http://app.supramolecular.org/bindfit/view/e38bfeb9-cdbd-46a0-9874-0e86c33acbb0>

TBA⁺BF₄⁻

<http://app.supramolecular.org/bindfit/view/5378c874-ab7d-4a7b-93c1-0bc8aef9884>

TBA⁺NO₃⁻

<http://app.supramolecular.org/bindfit/view/c13cb480-47ff-443d-8da0-a90c4e726781>

TBA⁺PF₆⁻

<http://app.supramolecular.org/bindfit/view/585a762d-db19-47da-94a0-93926adffcaf>

TBA⁺ClO₄⁻

<http://app.supramolecular.org/bindfit/view/d73b38c2-e8ff-4602-a27d-7356d6b4f535>

Bindfit URL List for (-)-PMDI-SO₂Et-Δ Titrations in CHCl₃

TBA⁺Br⁻

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TBA⁺I⁻

<http://app.supramolecular.org/bindfit/view/7740e202-56f7-4d91-8162-b7789ce600a0>

TBA⁺NO₃⁻

<http://app.supramolecular.org/bindfit/view/6a605b8d-25e8-4d38-9cb2-ed9e7edb67f7>

TBA⁺ClO₄⁻

<http://app.supramolecular.org/bindfit/view/2031e58a-7148-490e-ad71-400480949d7c>

Bindfit URL List for (-)-PMDI-SO₂Et-Δ Titrations in CH₃CN

TBA⁺Br⁻

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TBA⁺I⁻

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TBA⁺BF₄⁻

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TBA⁺NO₃⁻

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TBA⁺ClO₄⁻

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Bindfit URL List for (-)-PMDI-Δ Titrations in DMA

TBA⁺NO₃⁻

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TBA⁺ClO₄⁻

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Section G. Crystallographic Characterization

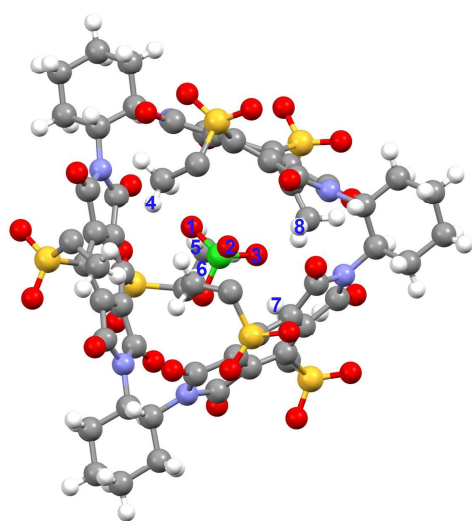
The single crystals of (-)-PMDI-SO₂Et-Δ were obtained by evaporating ethanol into a C₂H₄Cl₂ solution of (-)-PMDI-SO₂Et-Δ slowly at 25 °C. The single crystals of (-)-PMDI-SO₂Et-Δ@*n*-Bu₄NClO₄ complex were obtained by evaporating isopropyl ether into the DMA solution of (-)-PMDI-SO₂Et-Δ@*n*-Bu₄NClO₄ slowly at 25 °C.

Table S1 Summary of x-ray crystallographic data and structure refinement for (-)-PMDI-SO₂Et-Δ and (-)-PMDI-SO₂Et-Δ@*n*-Bu₄NClO₄

| | (-)-PMDI-SO ₂ Et-Δ | (-)-PMDI-SO ₂ Et-Δ@ <i>n</i> -Bu ₄ NClO ₄ |
|-------------------|--|---|
| CCDC number | 2380130 | 2380119 |
| Empirical formula | C ₆₀ H ₆₀ N ₆ O ₂₄ S ₆ ·C ₂ H ₄ Cl ₂ ·H ₂ O | C ₇₆ H ₉₆ ClN ₇ O ₂₈ S ₆ |
| Formula weight | 1558.46 | 1783.40 |
| Temperature/K | 170.00 | 170.00 |
| Crystal system | Monoclinic | Monoclinic |
| Space group | <i>P</i> 2 ₁ | <i>P</i> 2 |
| <i>a</i> /Å | 14.5385(8) | 15.2633(5) |

| | | |
|---|--|--|
| $b/\text{\AA}$ | 20.3950(10) | 16.5145(6) |
| $c/\text{\AA}$ | 17.6470(10) | 17.4282(6) |
| $\alpha/^\circ$ | 90 | 90 |
| $\beta/^\circ$ | 103.576(3) | 90.100(5) |
| $\gamma/^\circ$ | 90 | 90 |
| Volume/ \AA^3 | 5086.4(5) | 4393.0(3) |
| Z | 2 | 2 |
| $\rho_{\text{calc}}/\text{cm}^3$ | 1.018 | 1.348 |
| μ/mm^{-1} | 1.461 | 1.571 |
| $F(000)$ | 1620.0 | 1876.0 |
| Crystal size/ mm^3 | $0.17 \times 0.17 \times 0.05$ | $0.17 \times 0.17 \times 0.056$ |
| Radiation | $\text{GaK}\alpha$ ($\lambda = 1.34139$) | $\text{GaK}\alpha$ ($\lambda = 1.34139$) |
| 2θ range for data collection/ $^\circ$ | 5.44 to 111.022 | 5.036 to 109.874 |
| Index ranges | $-16 \leq h \leq 16, -22 \leq k \leq 22, -19 \leq l \leq 19$ | $-16 \leq h \leq 18, -20 \leq k \leq 19, -21 \leq l \leq 21$ |
| Reflections collected | 77165 | 40157 |
| Independent reflections | 19076 [$R_{\text{int}} = 0.1257, R_{\text{sigma}} = 0.1148$] | 16291 [$R_{\text{int}} = 0.0604, R_{\text{sigma}} = 0.0791$] |
| Data/restraints/parameters | 19076/102/920 | 16291/1005/1294 |
| Goodness-of-fit on F^2 | 0.965 | 1.156 |
| Final R indexes [$I \geq 2\sigma(I)$] | $R_1 = 0.0784, wR_2 = 0.2144$ | $R_1 = 0.1043, wR_2 = 0.2838$ |
| Final R indexes [all data] | $R_1 = 0.1297, wR_2 = 0.2495$ | $R_1 = 0.1425, wR_2 = 0.3174$ |
| Largest diff. peak/hole / $\text{e}\text{\AA}^{-3}$ | 0.35/-0.42 | 1.01/-0.66 |
| Flack parameter | 0.231(16) | 0.101(12) |

Table S2 Bond distances and angles of the hydrogen bonds



| | H \cdots O(\AA) | C-H \cdots O ($^\circ$) |
|------------------|------------------------------|-----------------------------|
| C-H4 \cdots O1 | 2.86 | 161.61 |
| C-H5 \cdots O1 | 2.72 | 161.21 |
| C-H4 \cdots O2 | 2.88 | 117.55 |
| C-H6 \cdots O2 | 2.51 | 154.96 |
| C-H7 \cdots O3 | 2.39 | 158.13 |
| C-H8 \cdots O3 | 2.64 | 162.26 |

Section H. Theoretical Calculations

In this study, all Density Functional Theory (DFT) Calculations were conducted using the Gaussian 09 program.³ Geometry optimization and frequency calculations were carry out at the B3LYP/6-31G(d)⁴⁻⁶ level of theory. No constraints were imposed during the optimization, and the default convergence criteria of the Gaussian 09 program were employed. The optimized geometry exhibited no imaginary frequencies. Electrostatic potential (ESP) and independent gradient model (IGM) analyses were performed using the Multifunctional Wave-function Analyser (Multiwfn)⁷ program and visualized using VMD software⁸ (<http://www.ks.uiuc.edu/Research/vmd/>).

1) Electrostatic potential map

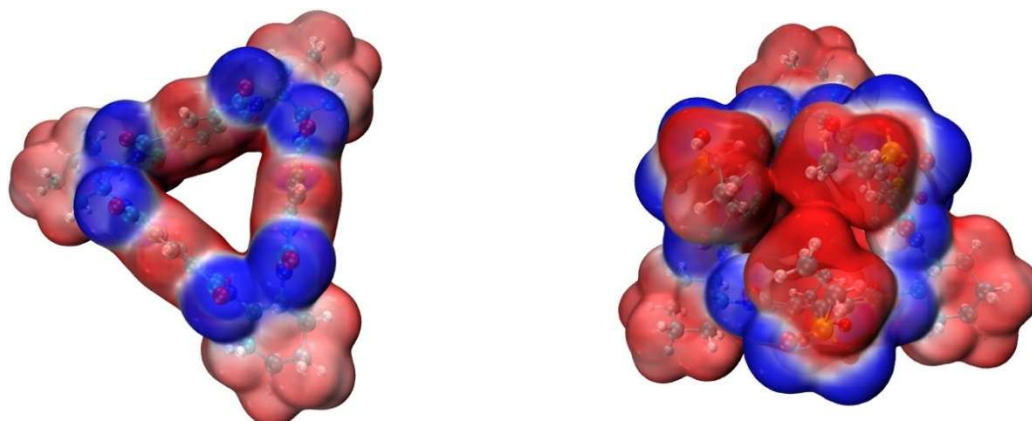


Figure S25. Top-down views of electrostatic potential (ESP) map of (-)-PMDI- Δ (left) and (-)-PMDI-SO₂Et- Δ (right).

2) Optimized geometry coordinates

(-)-PMDI-SO₂Et- Δ

| | | | |
|---|----------|----------|----------|
| S | -4.62447 | 2.89999 | 2.61455 |
| S | -3.30748 | 2.51081 | -3.50258 |
| S | -0.50574 | -4.81855 | -3.13487 |
| O | -5.86446 | 2.12102 | 2.62569 |
| O | -4.6797 | 4.36015 | 2.48852 |

| | | | |
|---|----------|----------|----------|
| O | -5.16449 | -0.42105 | 1.75471 |
| O | -4.00462 | -0.60848 | -2.6664 |
| O | -2.99745 | 3.92056 | -3.74827 |
| O | -4.66237 | 2.00522 | -3.74675 |
| O | -0.78699 | 4.45178 | -2.1459 |
| O | -1.80068 | 4.5872 | 2.31863 |
| O | -3.10694 | -3.04312 | 2.37738 |
| O | -1.61362 | -5.77233 | -3.0253 |
| O | 0.83549 | -5.29201 | -3.4867 |
| O | -3.42229 | -3.67736 | -2.14616 |
| N | -4.87571 | -0.75351 | -0.52002 |
| N | -1.15418 | 4.85898 | 0.10641 |
| N | -3.63201 | -3.41081 | 0.14853 |
| C | -3.6726 | 2.35107 | 1.11313 |
| C | -4.05178 | 1.25439 | 0.32938 |
| C | -4.79123 | -0.02358 | 0.67575 |
| C | -4.21358 | -0.12195 | -1.57497 |
| C | -3.72482 | 1.19452 | -1.03372 |
| C | -3.03164 | 2.2194 | -1.68724 |
| C | -2.12181 | 1.45419 | -4.38294 |
| H | -2.38931 | 0.43356 | -4.09809 |
| H | -2.40385 | 1.60661 | -5.43113 |
| C | -0.66219 | 1.81111 | -4.12425 |
| H | -0.37992 | 1.6219 | -3.08346 |
| H | -0.46345 | 2.86259 | -4.34092 |
| H | -0.02658 | 1.18795 | -4.76281 |
| C | -2.43355 | 3.16495 | -0.8463 |
| C | -1.38994 | 4.22957 | -1.1202 |
| C | -1.9023 | 4.2952 | 1.14778 |

| | | | |
|---|----------|----------|----------|
| C | -2.74384 | 3.21507 | 0.52058 |
| C | -0.25818 | 6.00438 | 0.34519 |
| H | -0.11343 | 6.00526 | 1.42692 |
| C | -0.94675 | 7.31966 | -0.07502 |
| H | -1.12897 | 7.3014 | -1.15773 |
| H | -1.92379 | 7.3738 | 0.41797 |
| C | -0.08926 | 8.53716 | 0.30001 |
| H | -0.01658 | 8.60345 | 1.39463 |
| H | -0.58592 | 9.45413 | -0.03753 |
| C | -5.58448 | -2.03526 | -0.68582 |
| H | -5.37629 | -2.32769 | -1.71714 |
| C | -5.07882 | -3.15508 | 0.25906 |
| H | -5.21947 | -2.83196 | 1.29291 |
| C | -2.78756 | -3.41886 | 1.27443 |
| C | -1.42684 | -3.83303 | 0.76546 |
| C | -1.50054 | -3.88767 | -0.63465 |
| C | -0.37006 | -4.0797 | -1.43567 |
| C | -0.98336 | -3.46605 | -4.24768 |
| H | -1.16665 | -3.99101 | -5.19228 |
| H | -1.9402 | -3.09803 | -3.86882 |
| C | 0.08832 | -2.39047 | -4.38848 |
| H | 1.04404 | -2.81946 | -4.6971 |
| H | 0.24716 | -1.85319 | -3.44773 |
| H | -0.23638 | -1.66473 | -5.14206 |
| C | -2.94319 | -3.68179 | -1.03141 |
| C | -5.86543 | -4.45945 | 0.01233 |
| H | -5.64802 | -4.82193 | -1.00014 |
| H | -5.50329 | -5.21957 | 0.7138 |
| C | -7.3761 | -4.24674 | 0.17893 |

| | | | |
|---|----------|----------|----------|
| H | -7.59668 | -3.98778 | 1.224 |
| H | -7.90217 | -5.18528 | -0.03054 |
| C | -7.87969 | -3.12969 | -0.74305 |
| H | -7.76596 | -3.43945 | -1.79145 |
| H | -8.94902 | -2.95058 | -0.5821 |
| C | -7.10284 | -1.82742 | -0.50618 |
| H | -7.43044 | -1.05043 | -1.2062 |
| H | -7.29776 | -1.45548 | 0.50693 |
| C | -3.60598 | 2.46732 | 4.05368 |
| H | -2.67154 | 3.01754 | 3.91559 |
| H | -4.15733 | 2.93056 | 4.88019 |
| C | -3.42662 | 0.96635 | 4.25427 |
| H | -2.87775 | 0.7978 | 5.18707 |
| H | -2.85481 | 0.51014 | 3.44008 |
| H | -4.389 | 0.45428 | 4.31423 |
| S | 4.99542 | 2.20108 | -2.61513 |
| S | 3.63856 | 2.00879 | 3.50178 |
| S | -0.19714 | -4.83706 | 3.1373 |
| O | 6.10933 | 1.25049 | -2.6254 |
| O | 5.26162 | 3.63782 | -2.48882 |
| O | 5.0461 | -1.16355 | -1.75553 |
| O | 3.87622 | -1.17877 | 2.66685 |
| O | 3.53543 | 3.44854 | 3.74738 |
| O | 4.90644 | 1.31287 | 3.74503 |
| O | 1.42588 | 4.29506 | 2.14569 |
| O | 2.44642 | 4.28045 | -2.31951 |
| O | 2.63353 | -3.46492 | -2.37696 |
| O | 0.76125 | -5.94106 | 3.02888 |
| O | -1.59272 | -5.11129 | 3.48948 |

| | | | |
|---|---------|----------|----------|
| O | 2.85363 | -4.13077 | 2.14766 |
| N | 4.71432 | -1.44966 | 0.5196 |
| N | 1.8461 | 4.64313 | -0.10724 |
| N | 3.09959 | -3.9007 | -0.14738 |
| C | 3.97342 | 1.79603 | -1.11413 |
| C | 4.18974 | 0.65618 | -0.33013 |
| C | 4.73557 | -0.71568 | -0.67643 |
| C | 4.15197 | -0.72819 | 1.57483 |
| C | 3.8585 | 0.64492 | 1.03322 |
| C | 3.32208 | 1.7599 | 1.6867 |
| C | 2.3132 | 1.13487 | 4.38322 |
| H | 2.43116 | 0.08591 | 4.10012 |
| H | 2.61385 | 1.24696 | 5.43132 |
| C | 0.92021 | 1.69761 | 4.12298 |
| H | 0.61402 | 1.54859 | 3.08241 |
| H | 0.87479 | 2.76723 | 4.33725 |
| H | 0.20129 | 1.17384 | 4.76243 |
| C | 2.86701 | 2.78199 | 0.84569 |
| C | 1.98921 | 3.98697 | 1.11967 |
| C | 2.50451 | 3.97683 | -1.14864 |
| C | 3.18045 | 2.78604 | -0.52138 |
| C | 1.12344 | 5.90505 | -0.34633 |
| H | 0.98031 | 5.92634 | -1.42808 |
| C | 1.99293 | 7.10849 | 0.07361 |
| H | 2.17071 | 7.06471 | 1.15632 |
| H | 2.96767 | 7.0223 | -0.41937 |
| C | 1.31823 | 8.43595 | -0.30181 |
| H | 1.25567 | 8.51156 | -1.39645 |
| H | 1.94087 | 9.27265 | 0.0354 |

| | | | |
|---|----------|----------|----------|
| C | 5.23028 | -2.82042 | 0.68591 |
| H | 4.98207 | -3.07911 | 1.71737 |
| C | 4.56812 | -3.85618 | -0.25819 |
| H | 4.7536 | -3.55745 | -1.2923 |
| C | 2.26291 | -3.78833 | -1.27347 |
| C | 0.85654 | -4.00031 | -0.76416 |
| C | 0.92165 | -4.06309 | 0.63604 |
| C | -0.22462 | -4.08829 | 1.43722 |
| C | 0.47082 | -3.56629 | 4.24848 |
| H | 0.57919 | -4.1115 | 5.19317 |
| H | 1.46971 | -3.33873 | 3.86771 |
| C | -0.43627 | -2.34882 | 4.39025 |
| H | -1.44169 | -2.63656 | 4.70488 |
| H | -0.52216 | -1.79741 | 3.4482 |
| H | -0.00783 | -1.67436 | 5.13962 |
| C | 2.3789 | -4.06746 | 1.03281 |
| C | 5.15852 | -5.26022 | -0.01071 |
| H | 4.8915 | -5.5869 | 1.00207 |
| H | 4.69029 | -5.96061 | -0.71156 |
| C | 6.68399 | -5.26771 | -0.17785 |
| H | 6.93926 | -5.04373 | -1.2231 |
| H | 7.06925 | -6.27223 | 0.03194 |
| C | 7.34367 | -4.23457 | 0.74349 |
| H | 7.18659 | -4.52416 | 1.79207 |
| H | 8.42762 | -4.21168 | 0.58234 |
| C | 6.76271 | -2.834 | 0.50601 |
| H | 7.19911 | -2.11202 | 1.20555 |
| H | 7.00906 | -2.4946 | -0.50734 |
| C | 3.92634 | 1.92101 | -4.05537 |

| | | | |
|---|---------|----------|----------|
| H | 3.08006 | 2.5989 | -3.91662 |
| H | 4.53877 | 2.30238 | -4.8807 |
| C | 3.53445 | 0.46153 | -4.2593 |
| H | 2.9674 | 0.3753 | -5.19248 |
| H | 2.90316 | 0.08975 | -3.44615 |
| H | 4.41388 | -0.18254 | -4.32063 |

Section I. References

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