

Supporting Information for

(1,6)Pyrenophanes containing crown ether moieties as fluorescence sensors for metal and ammonium ions. Formation of sandwich, dumbbell, and pseudorotaxane complexes

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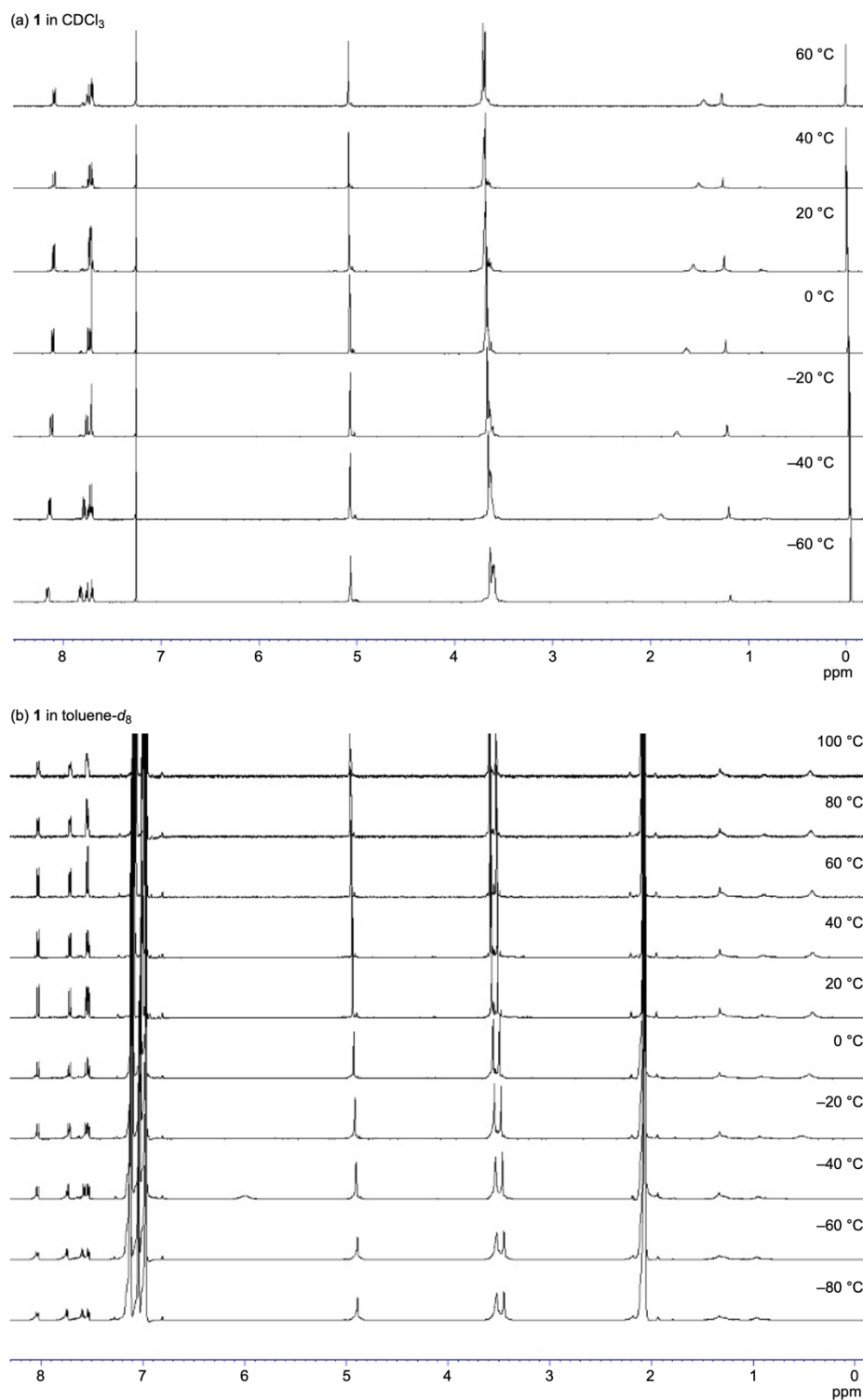


Fig. S1 Variable-temperature 500 MHz ¹H NMR spectra of **1** in (a) CDCl₃ and (b) toluene-*d*₈.

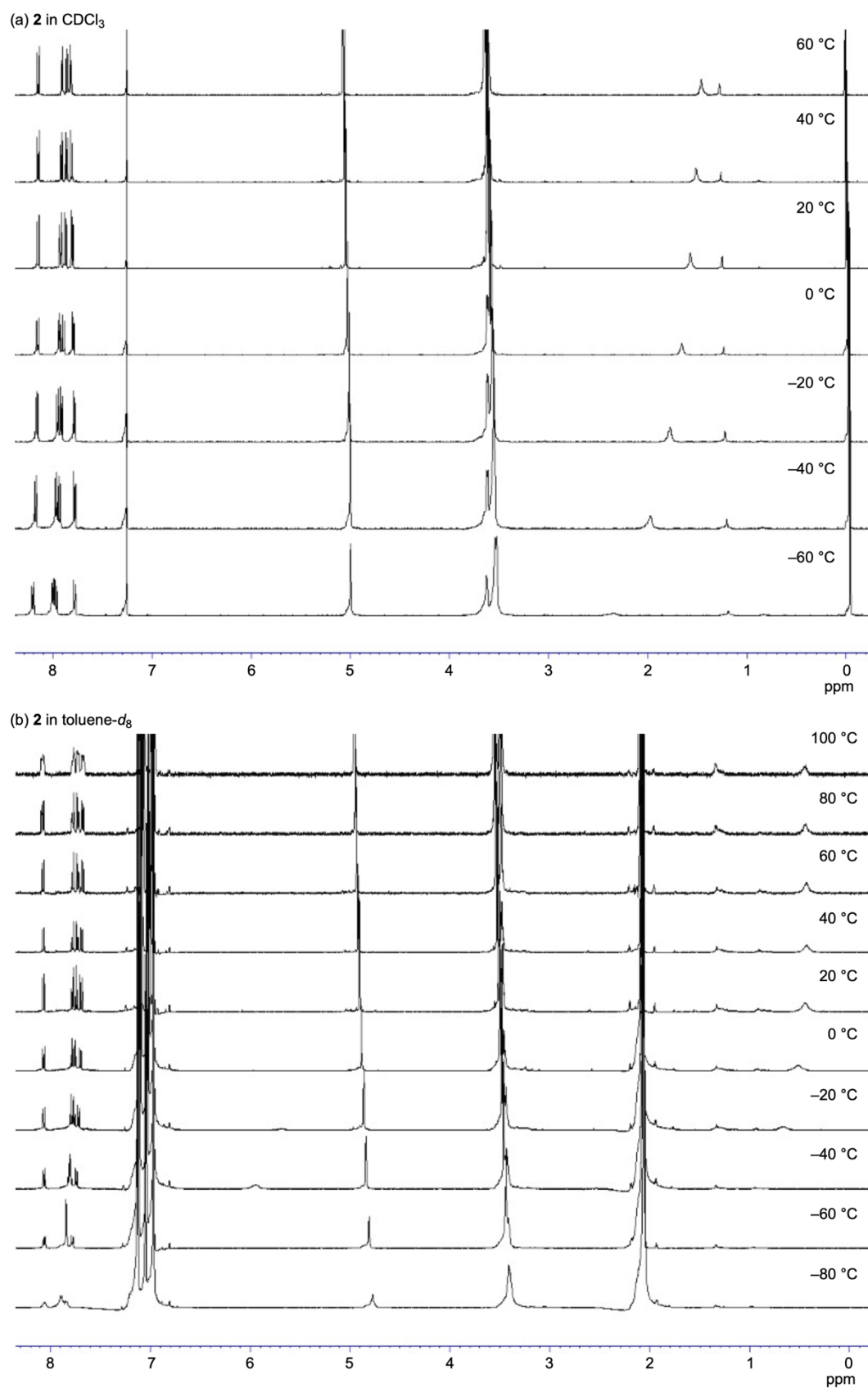


Fig. S2 Variable-temperature 500 MHz ¹H NMR spectra of **2** in (a) CDCl₃ and (b) toluene-*d*₈.

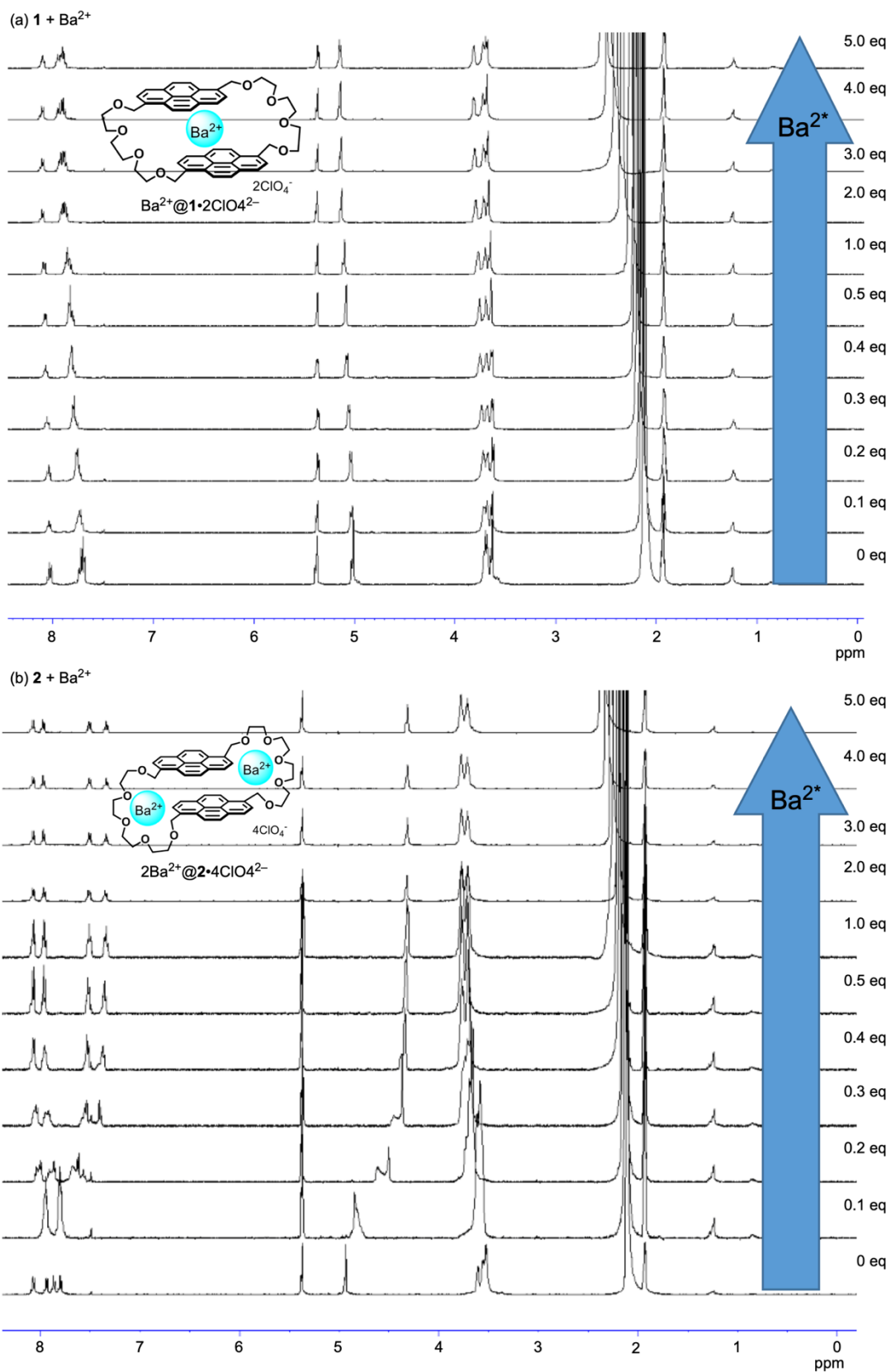


Fig. S3 500 MHz ¹H NMR spectra of (a) **1** and (b) **2** upon addition of Ba(ClO₄)₂.

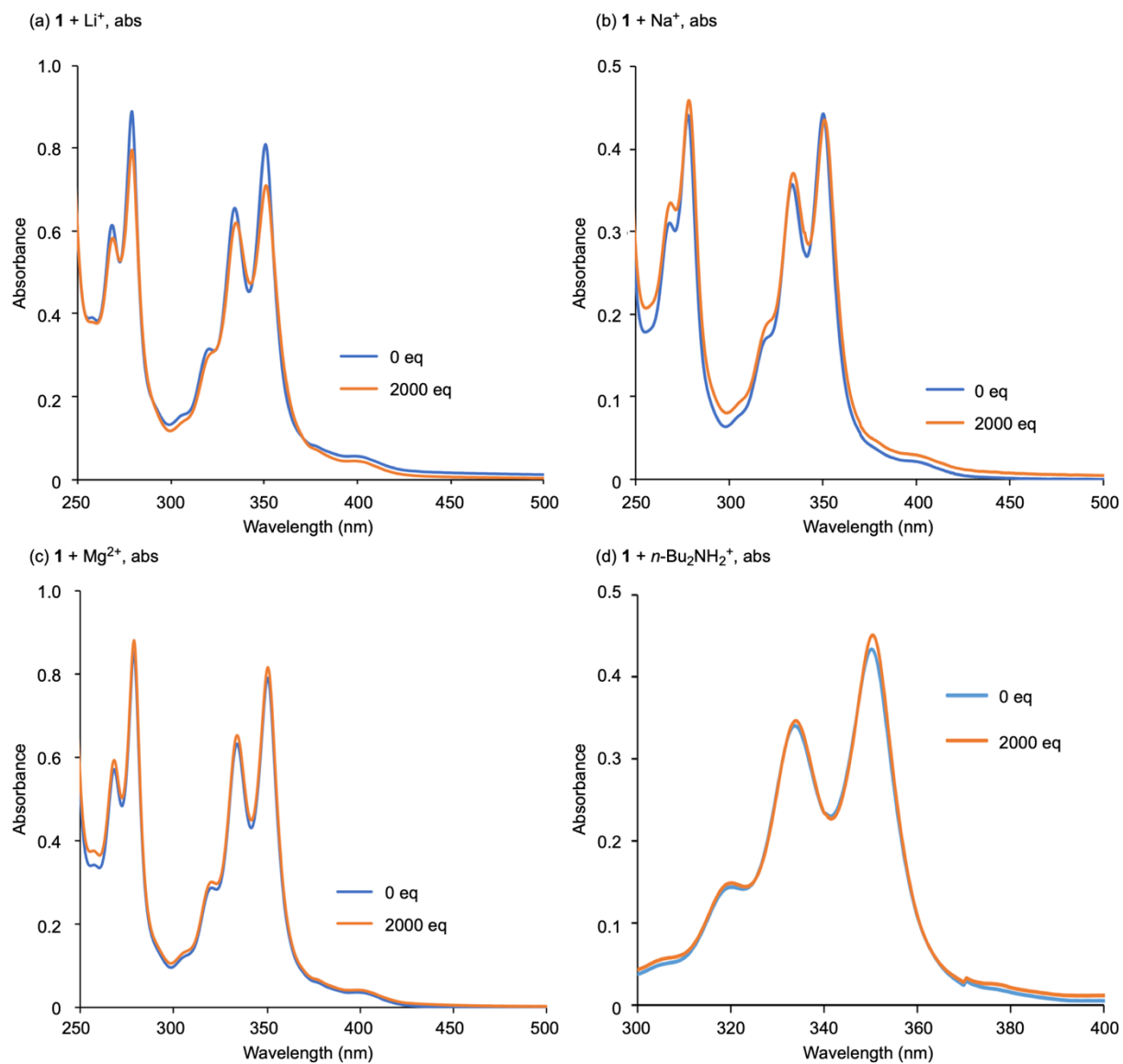


Fig. S4 Absorption spectra of **1** (1.0×10^{-5} M in $\text{CH}_2\text{Cl}_2 : \text{CH}_3\text{CN} = 1 : 1$) upon addition of (a) LiClO_4 (0-2000 equiv), (b) NaClO_4 (0-2000 equiv), (c) $\text{Mg}(\text{ClO}_4)_2$ (0-2000 equiv), and (d) $n\text{-Bu}_2\text{NH}_2^+\text{PF}_6^-$ (0-2000 equiv).

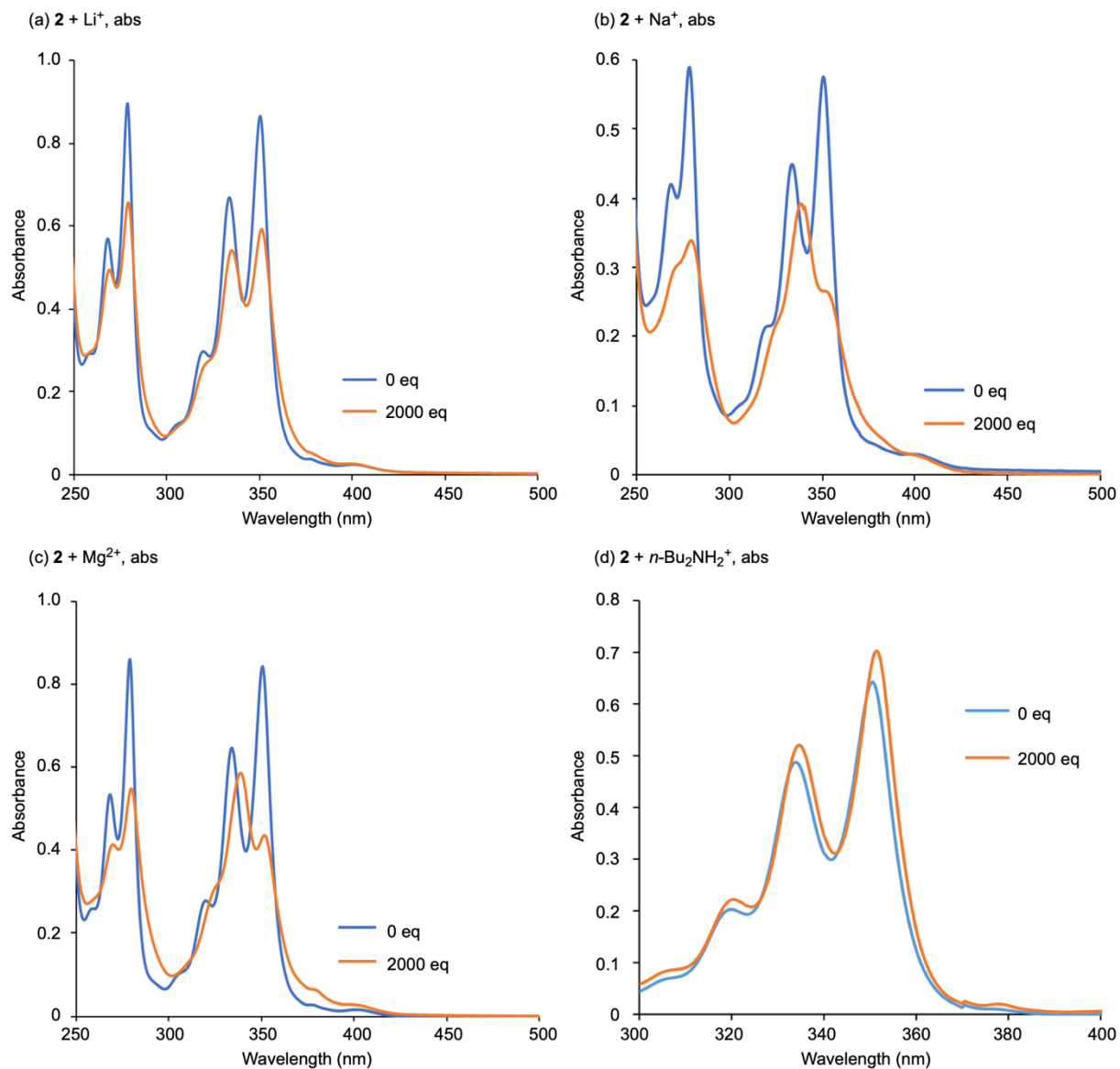


Fig. S5 Absorption spectra of **2** (1.0×10^{-5} M in $\text{CH}_2\text{Cl}_2 : \text{CH}_3\text{CN} = 1 : 1$) upon addition of (a) LiClO_4 (0-2000 equiv), (b) NaClO_4 (0-2000 equiv), (c) $\text{Mg}(\text{ClO}_4)_2$ (0-2000 equiv), and (d) $n\text{-Bu}_2\text{NH}_2+\text{PF}_6^-$ (0-2000 equiv).

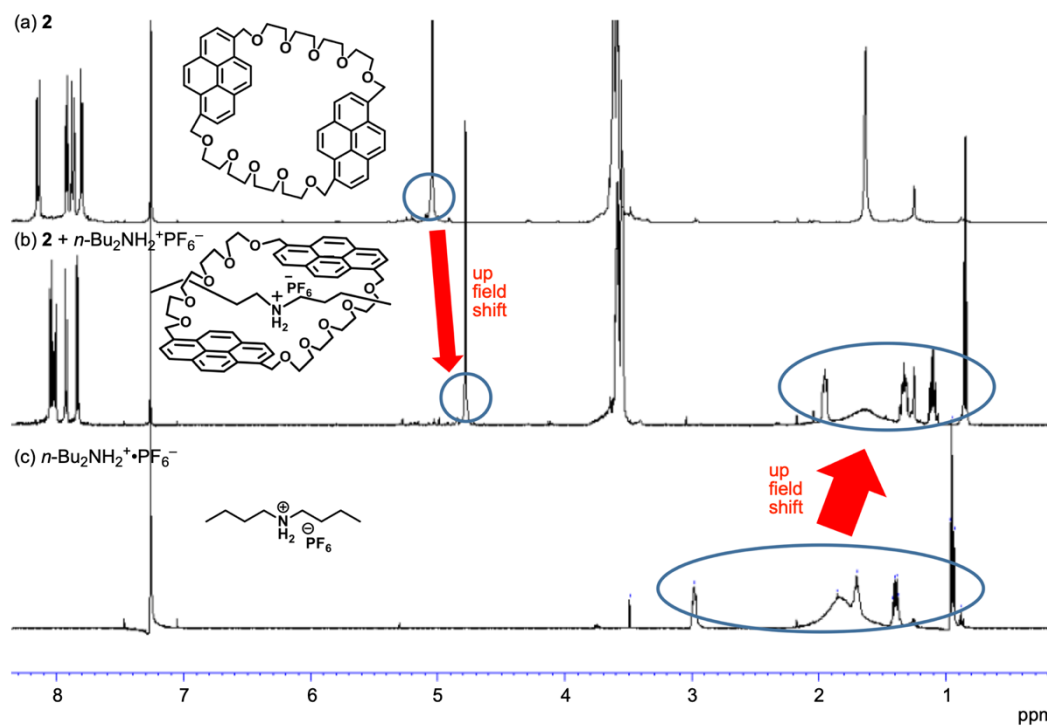
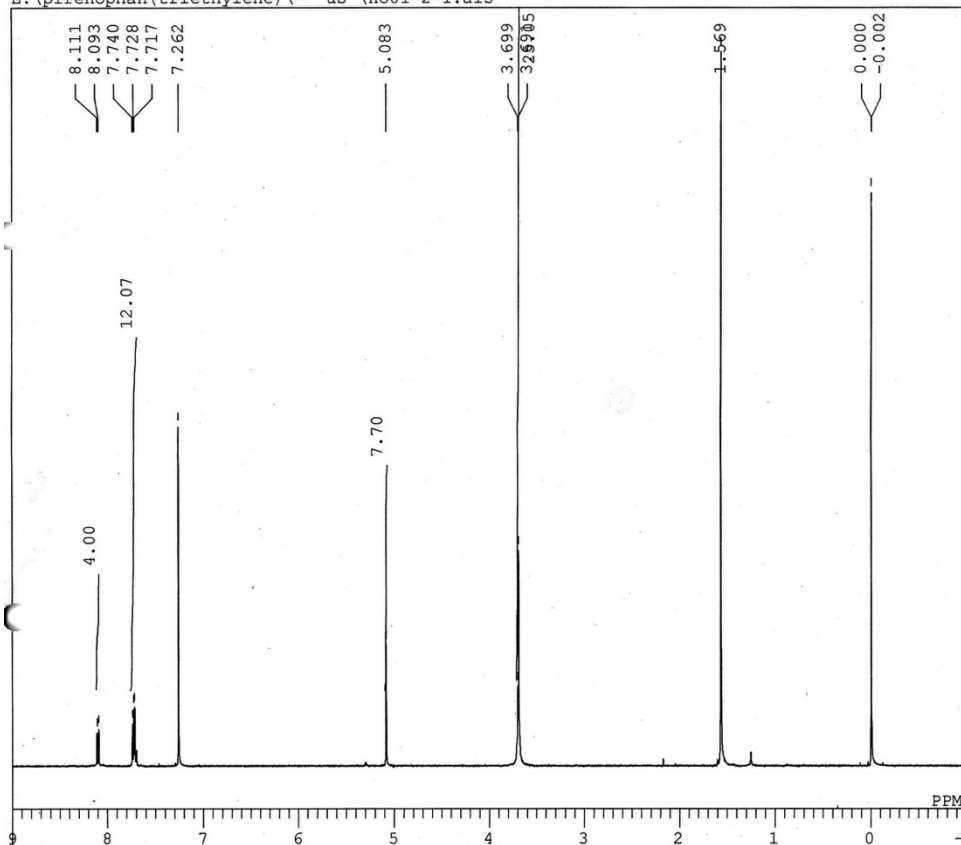


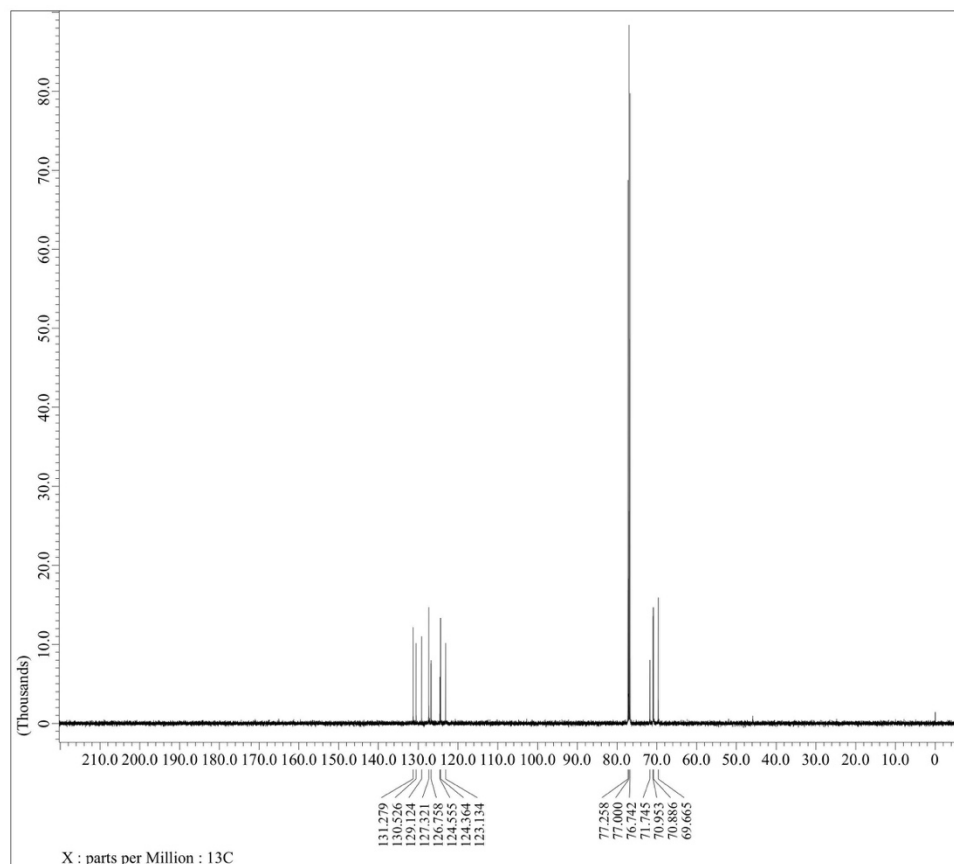
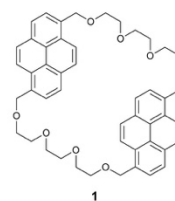
Fig. S6 500 MHz ^1H NMR spectra of (a) **2**, (b) a mixture of **2** with $n\text{-Bu}_2\text{NH}_2^+\text{PF}_6^-$, and (c) $n\text{-Bu}_2\text{NH}_2^+\text{PF}_6^-$ in CDCl_3 .

E:\pirenophan(triethylene)\-3'uš\·no81-2-1.als



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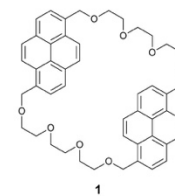


Fig. S7 500 MHz ^1H and 125 MHz ^{13}C NMR spectra of **1** in CDCl_3 .

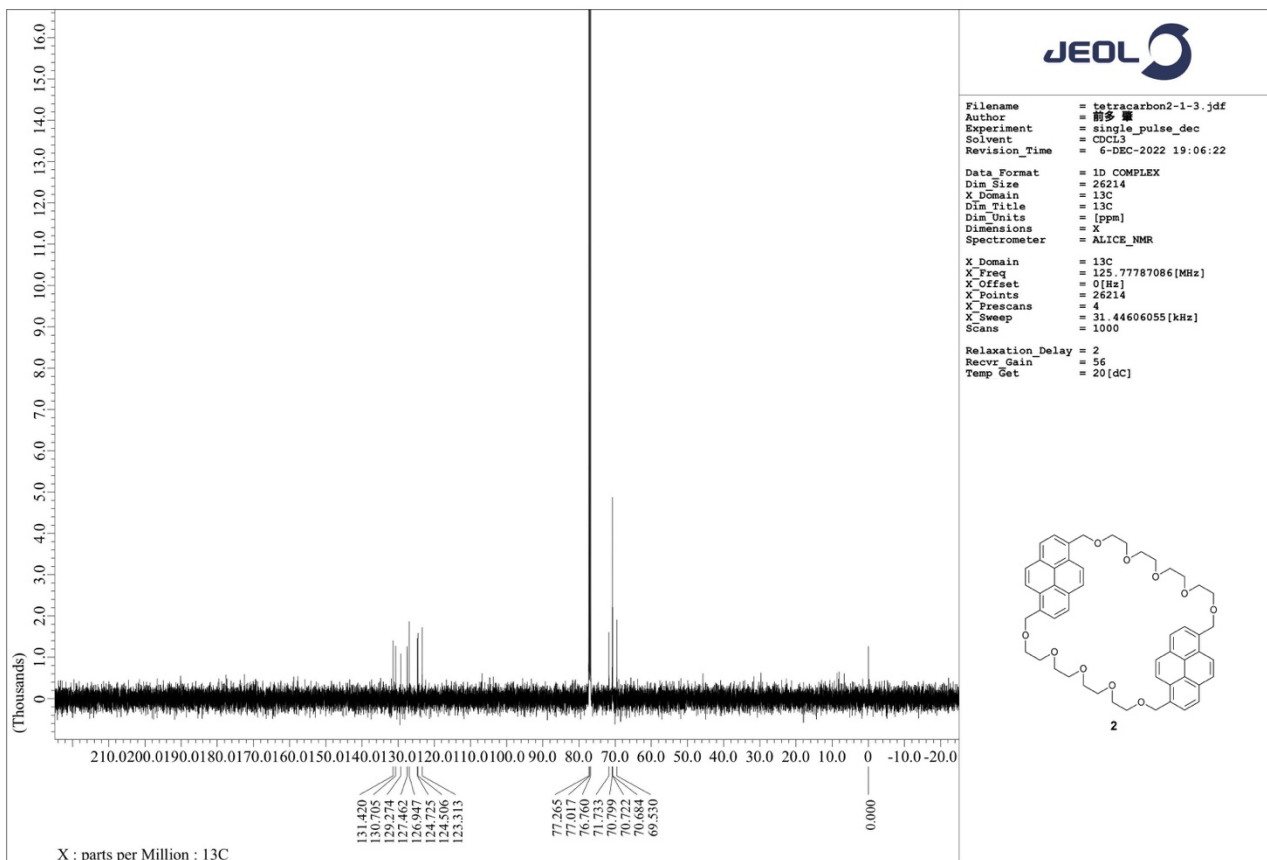
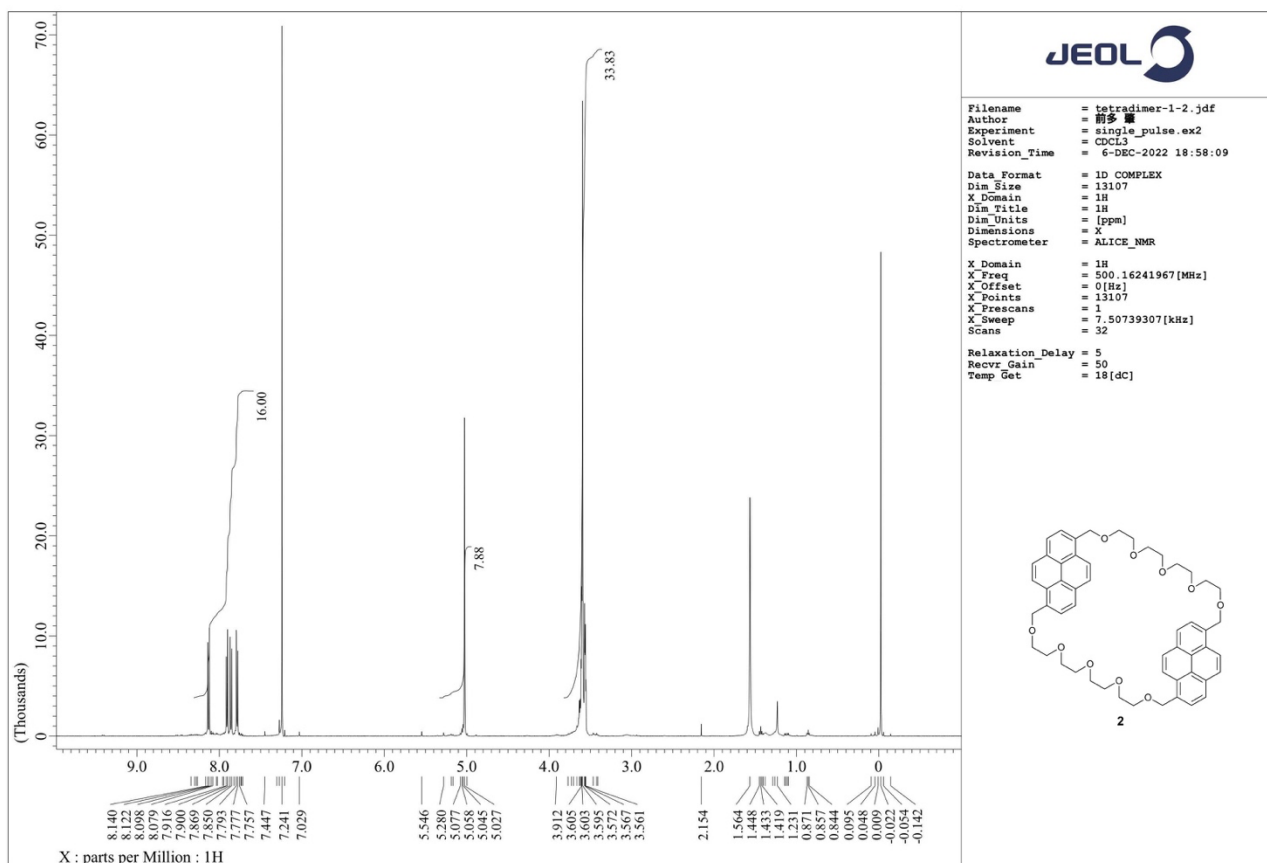
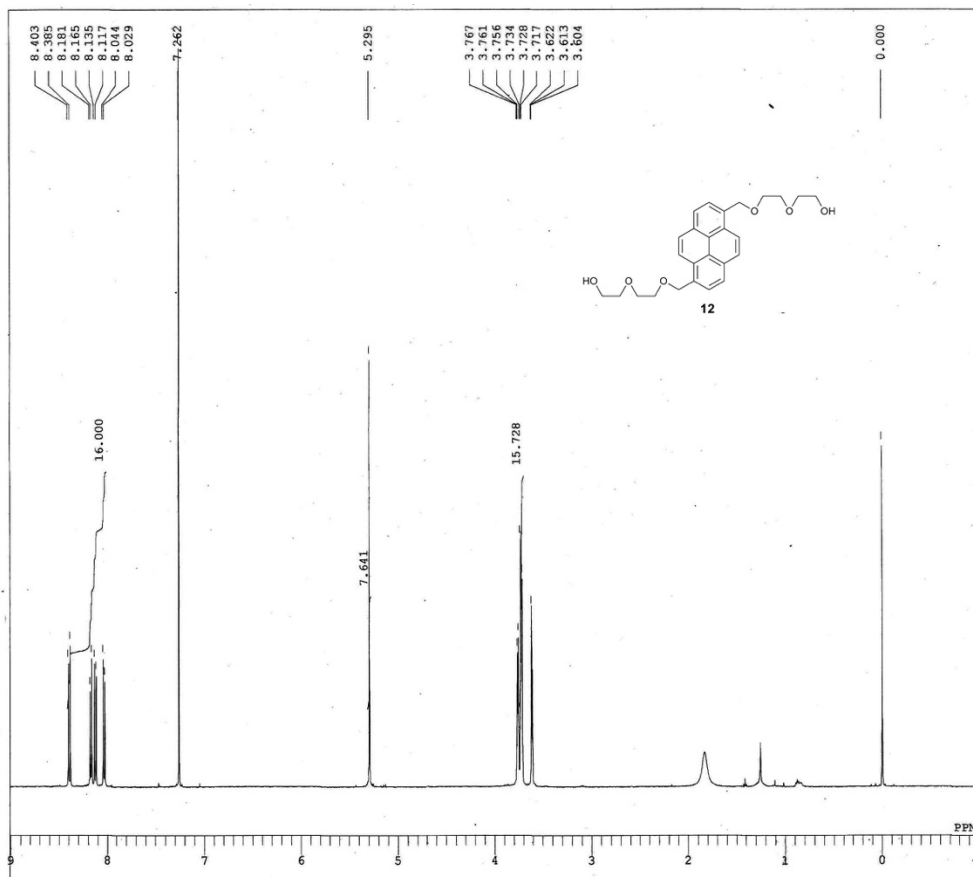
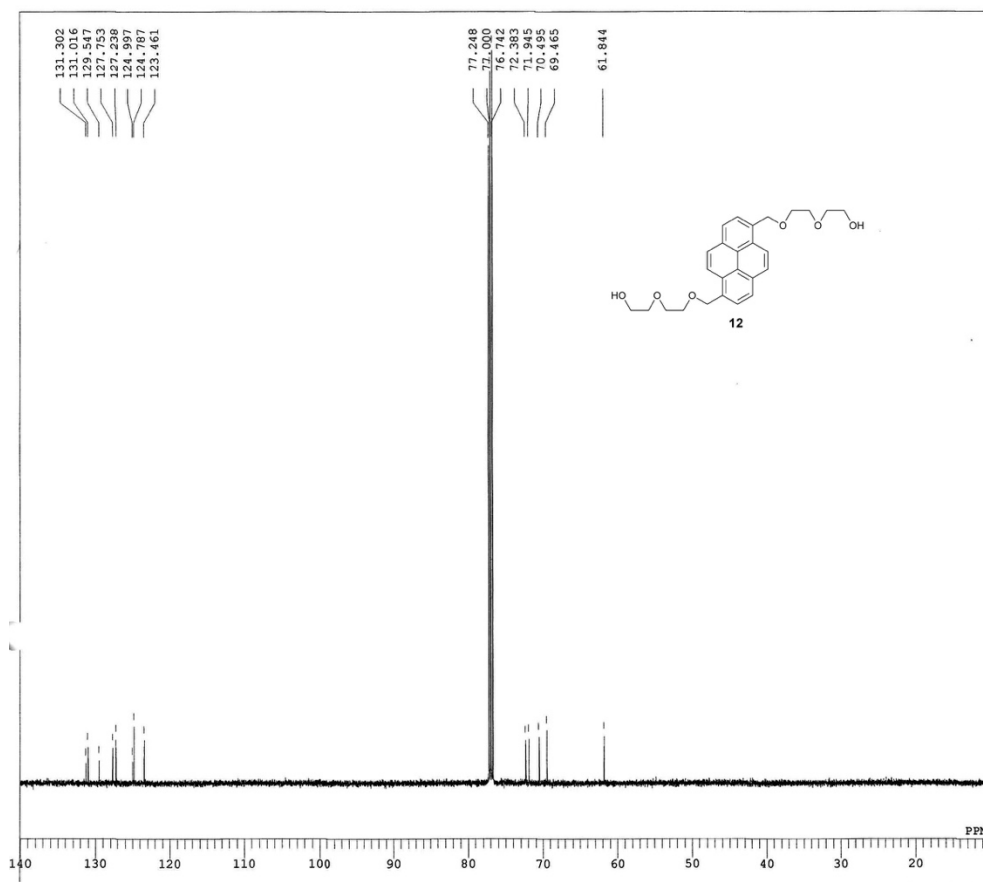


Fig. S8 500 MHz ^1H and 125 MHz ^{13}C NMR spectra of **2** in CDCl_3 .



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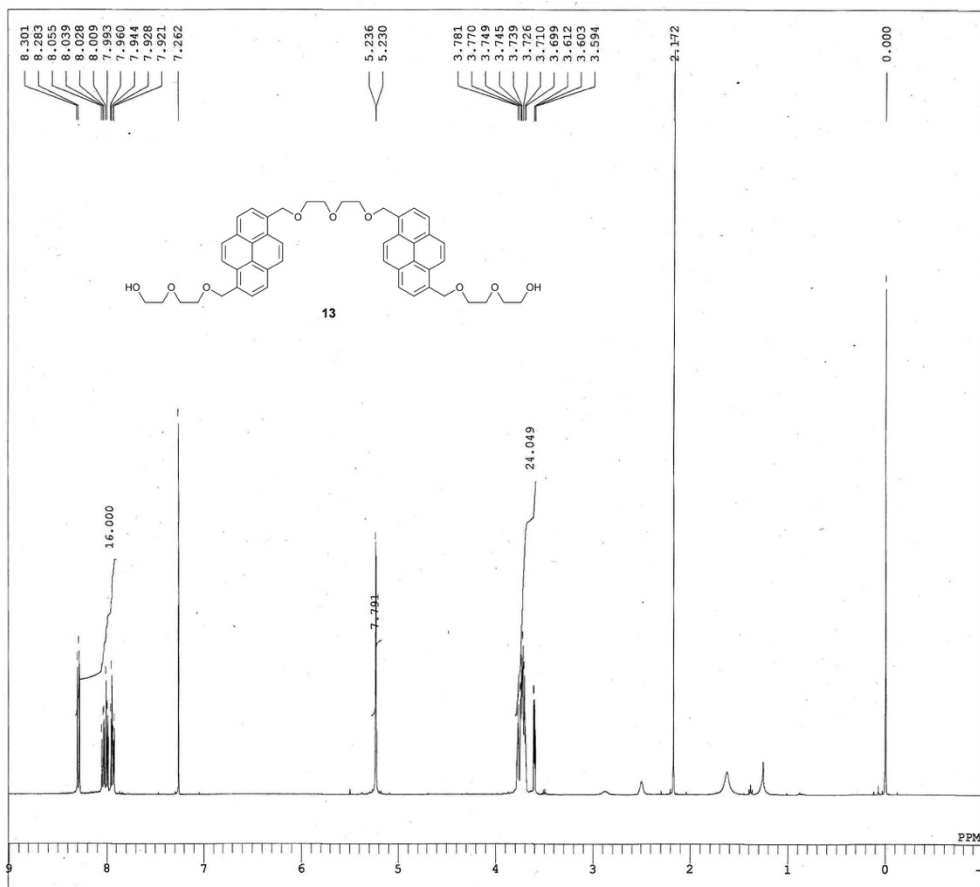
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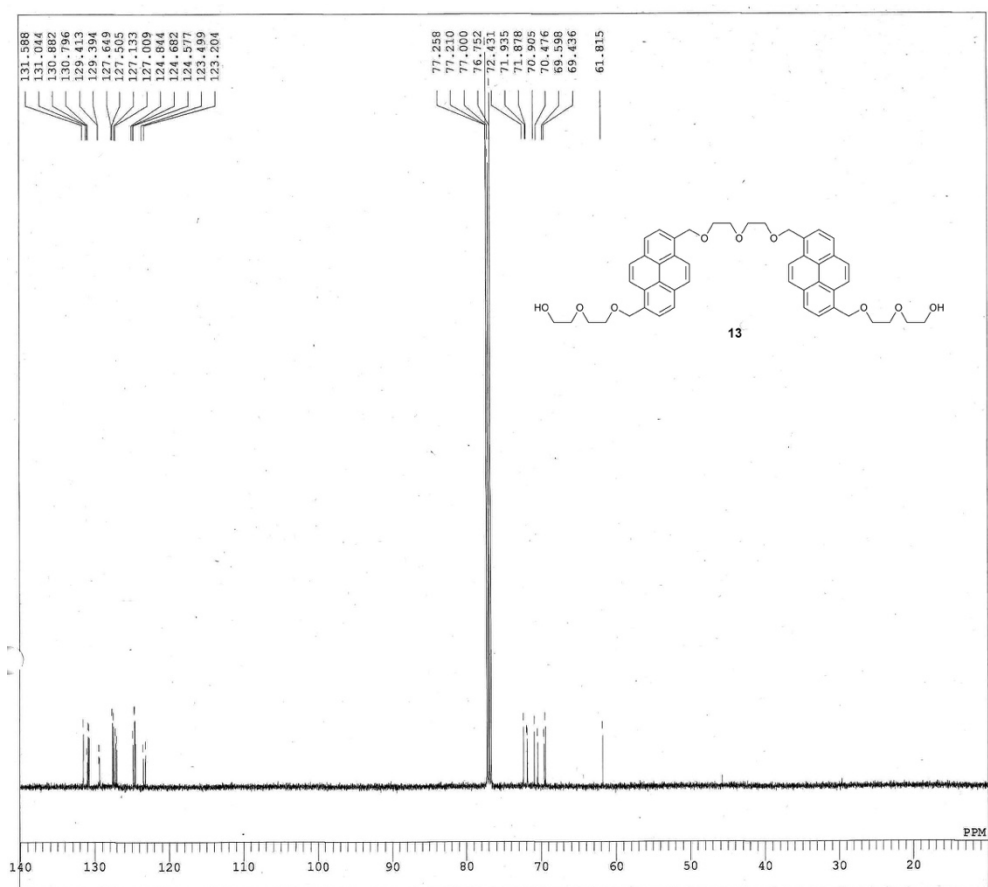
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RGAIN 56
  
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Fig. S10 500 MHz ^1H and 125 MHz ^{13}C NMR spectra of **12** in CDCl_3 .



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 PD 2.0000 sec
 PWL 3.00 usec
 IRNUC 1H
 CTEMP 21.0 c
 SLVNT CDCL3
 EXREF 77.00 ppm
 BF 0.12 Hz
 RGAIN 56

Fig. S11 500 MHz ¹H and 125 MHz ¹³C NMR spectra of **13** in CDCl₃.