

Ce^{III}-Promoted oxidation. Efficient aerobic one-pot eco-friendly synthesis of oxidized bis(indol-3-yl)methanes and cyclic tetra(indolyl)dimethanes

Claudio C. Silveira,^{a*} Samuel R. Mendes,^b Marcos A. Villetti,^a Davi F. Back^a and Teodoro S. Kaufman^{c*}

^a Departamento de Química, Universidade Federal de Santa Maria 97105-900, Santa Maria, RS, Brazil, Tel/Fax: +55-55-3220-8754; E-mail: silveira@quimica.ufsm.br

^b Departamento de Química, Universidade do Estado de Santa Catarina, 89219-710, Joinville, SC, Brazil E-mail: samuel.mendes@udesc.br

^c Instituto de Química Rosario (CONICET-UNR), Suipacha 531, S2002LRK, Rosario, SF, Argentina. Tel/Fax: +54-341-4370477; E-mail: kaufman@iquir-conicet.gov.ar

Table of Contents

Description	Page N°
¹ H and ¹³ C NMR spectra of compound 12a	S-2
¹ H and ¹³ C NMR spectra of compound 12b	S-3
¹ H and ¹³ C NMR spectra of compound 12c	S-4
¹ H and ¹³ C NMR spectra of compound 12d	S-5
¹ H and ¹³ C NMR spectra of compound 12e	S-6
¹ H and ¹³ C NMR spectra of compound 12f	S-7
¹ H and ¹³ C NMR spectra of compound 17a	S-8
¹ H and ¹³ C NMR spectra of compound 17b	S-9
COSY spectrum of 17b	S-10
COSY spectrum of 17b . Expansion plot	S-11
¹ H and ¹³ C NMR spectra of compound 17c	S-12
HETCOR spectrum of 17c	S-13
HETCOR spectrum of 17c . Expansion plot	S-14
HMBC spectrum of 17c	S-15
¹ H and ¹³ C NMR spectra of compound 17d	S-16
¹ H and ¹³ C NMR spectra of compound 18b1	S-17

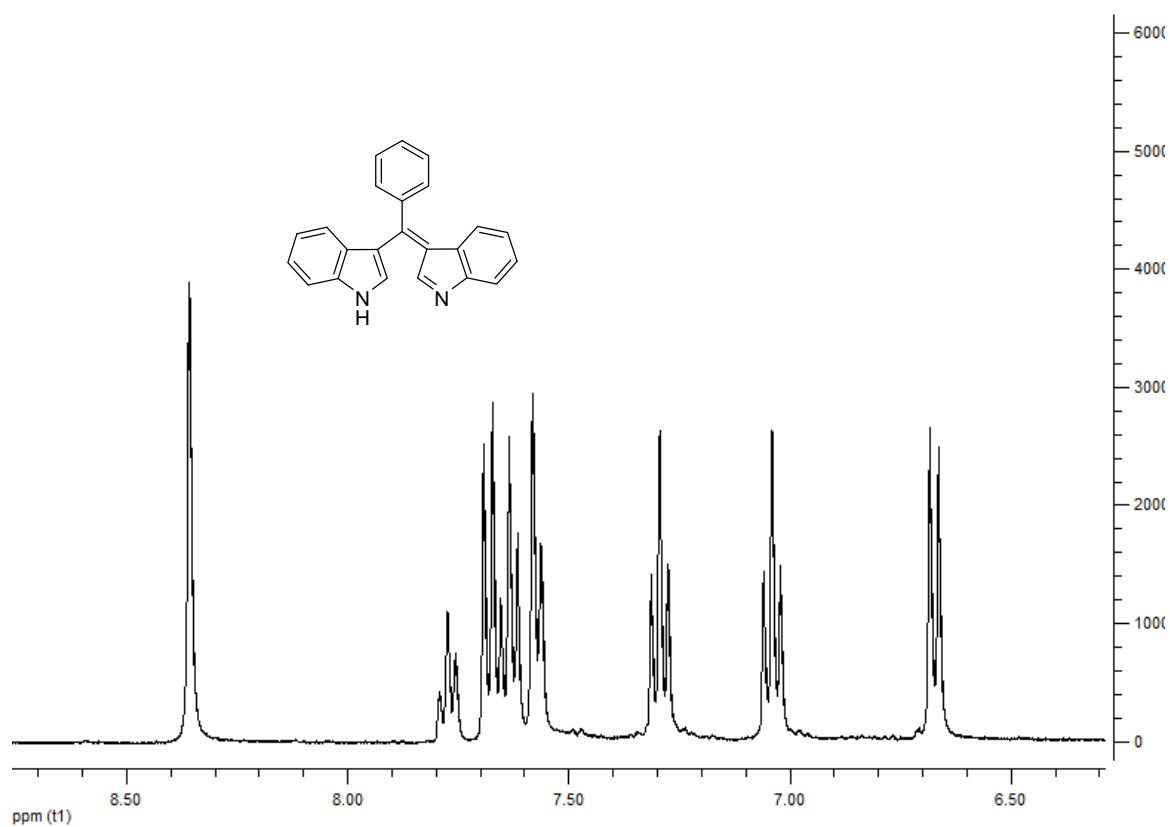


Figure S1. 400 MHz ^1H NMR spectrum of **12a** in $\text{DMSO-}d_6$.

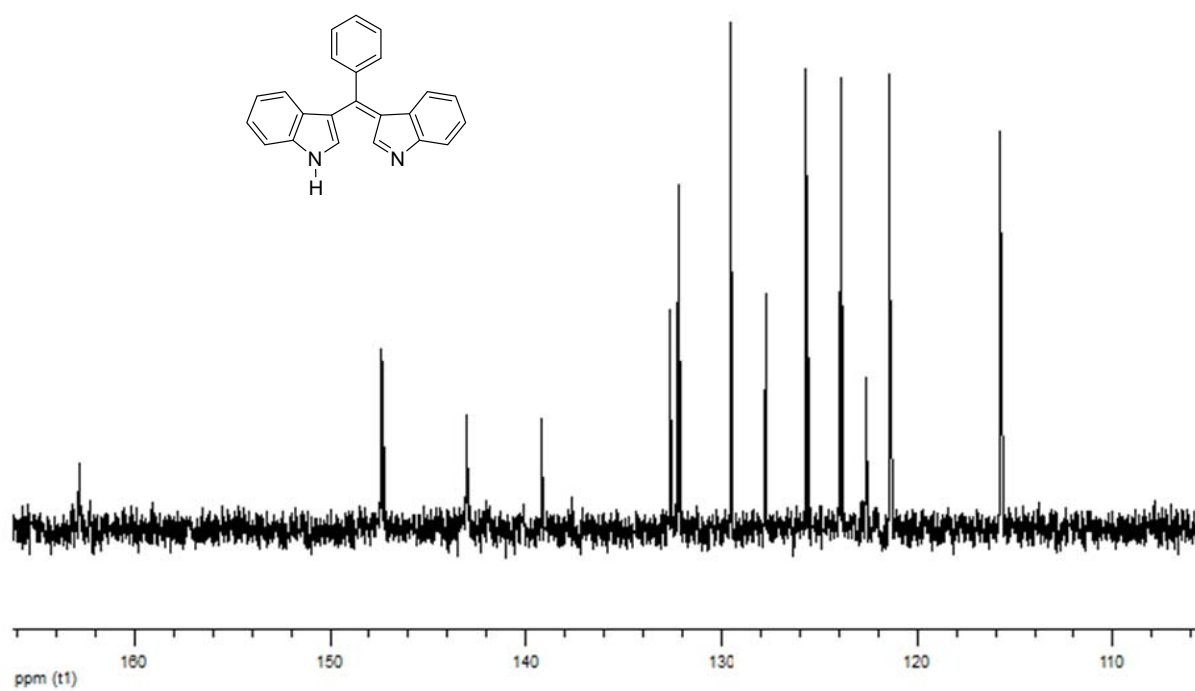


Figure S2. 100 MHz ^{13}C NMR spectrum of **12a** in $\text{DMSO-}d_6$.

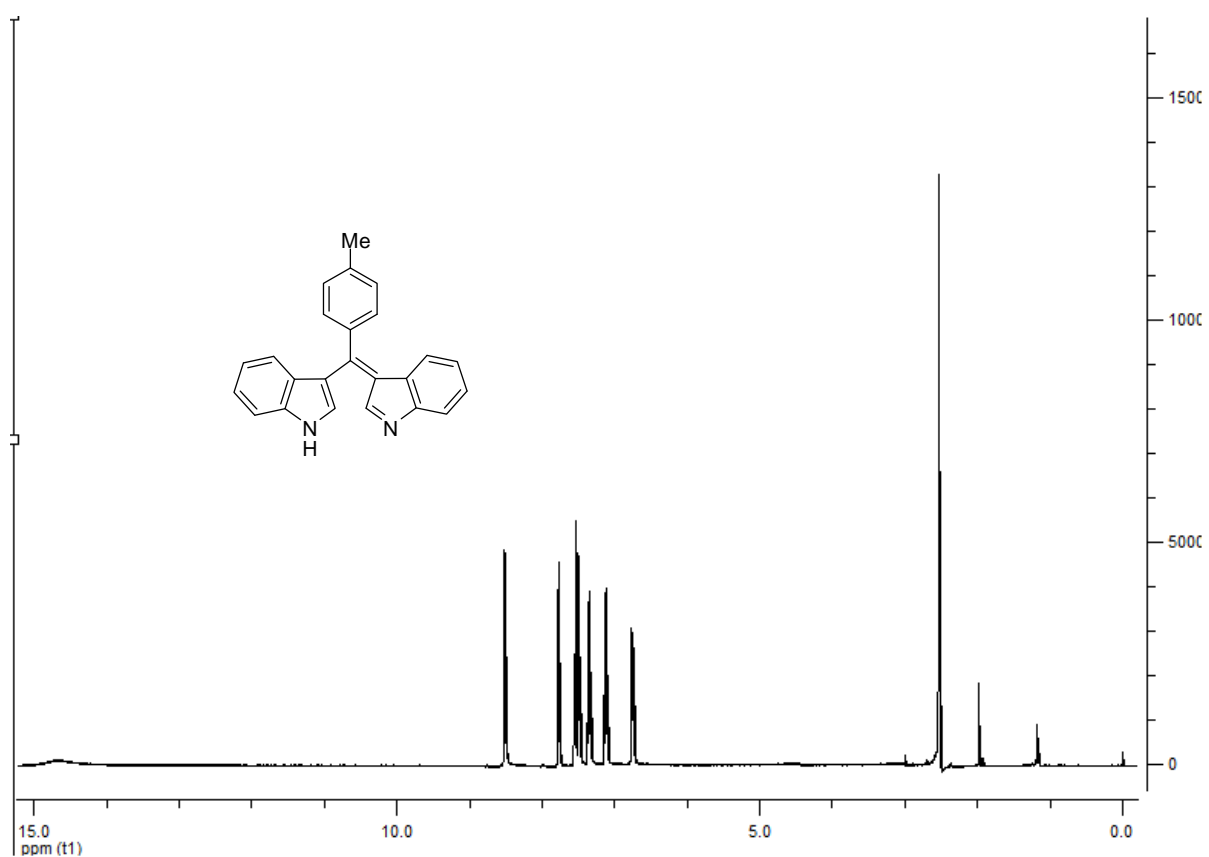


Figure S3. 400 MHz ^1H NMR spectrum of **12b** in $\text{DMSO-}d_6$.

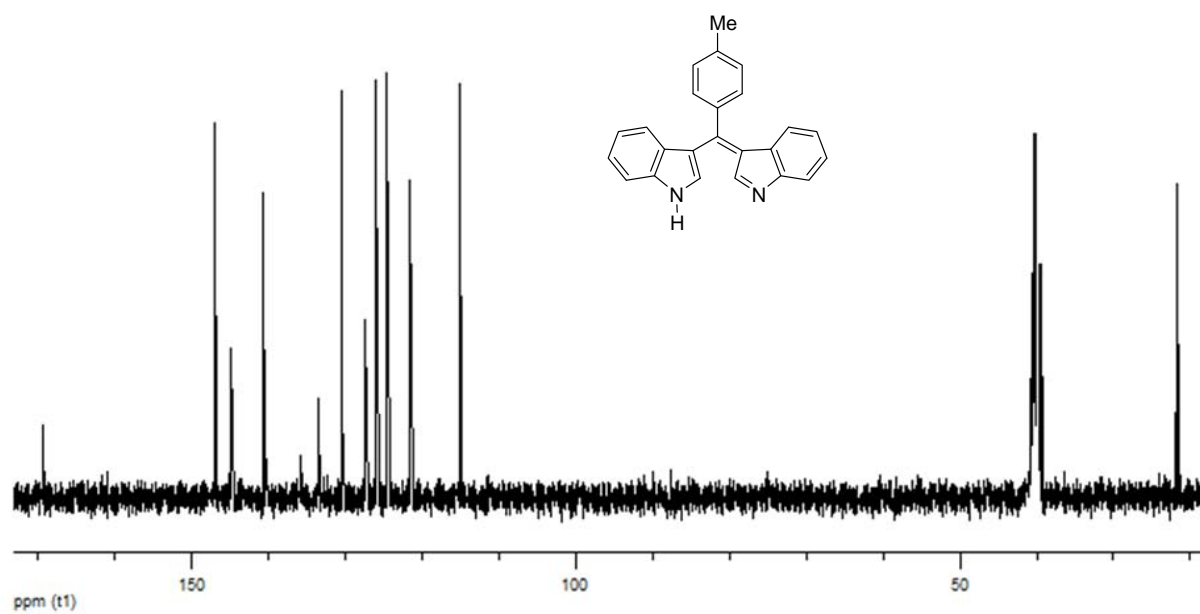


Figure S4. 100 MHz ^{13}C NMR spectrum of **12b** in $\text{DMSO-}d_6$.

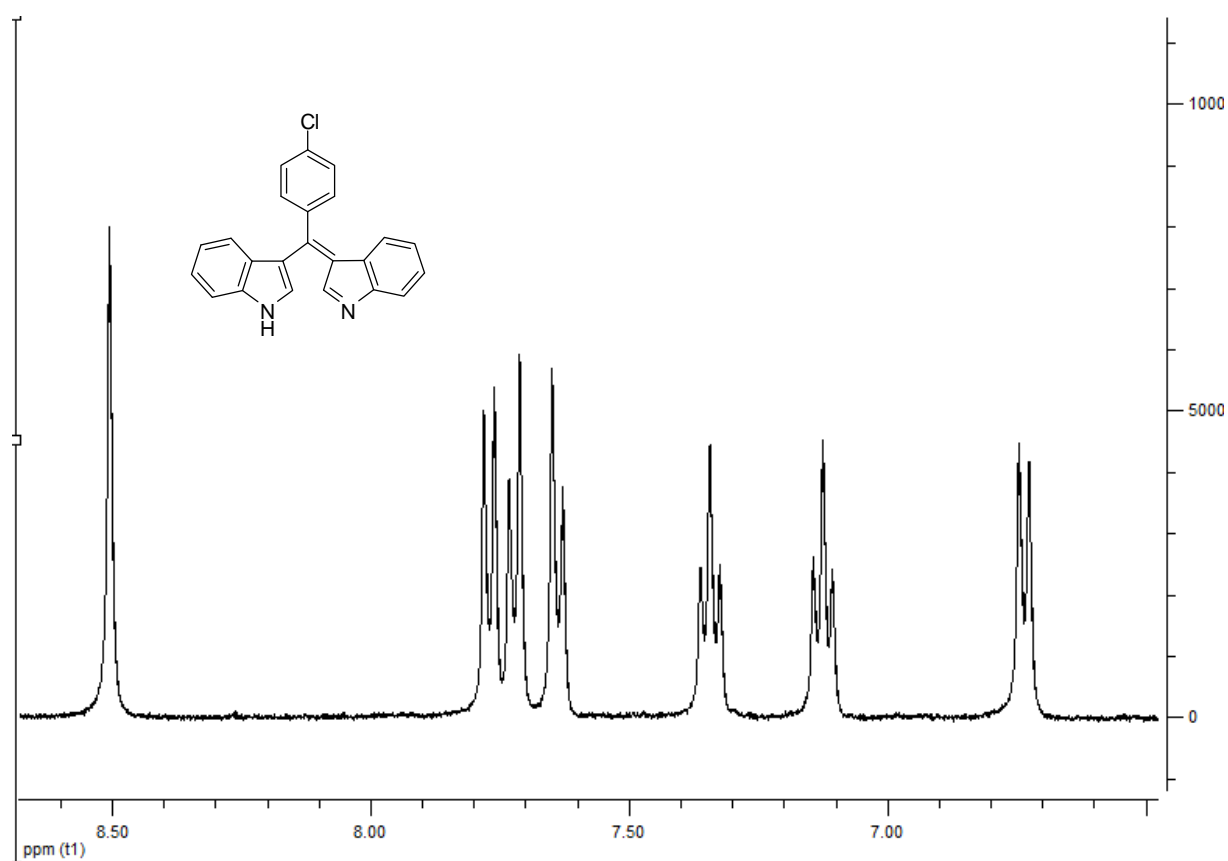


Figure S5. 400 MHz ^1H NMR spectrum of **12c** in $\text{DMSO-}d_6$.

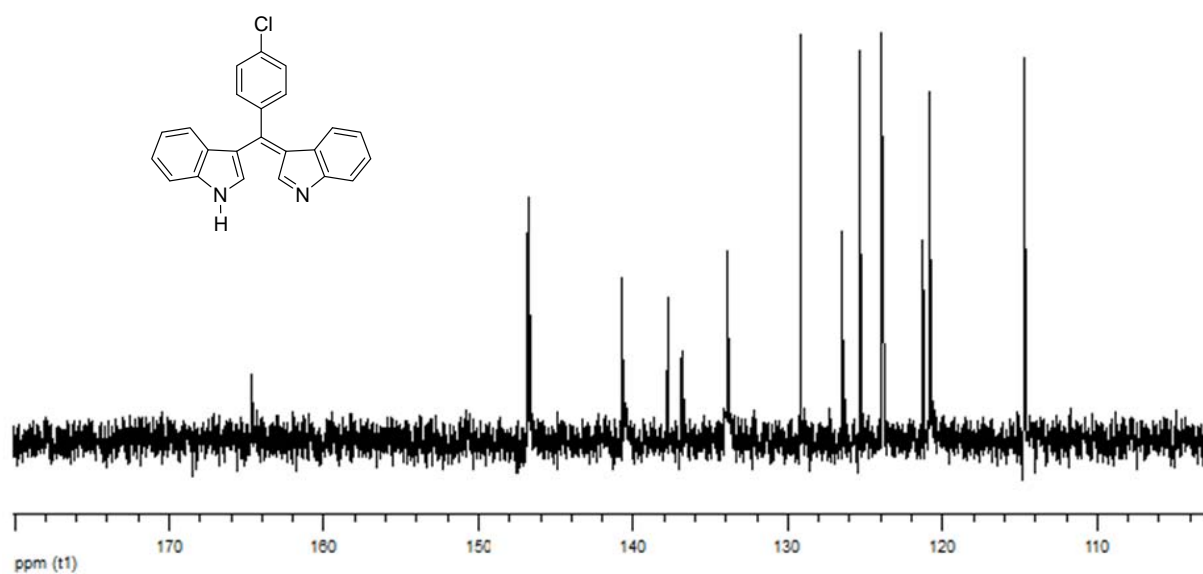
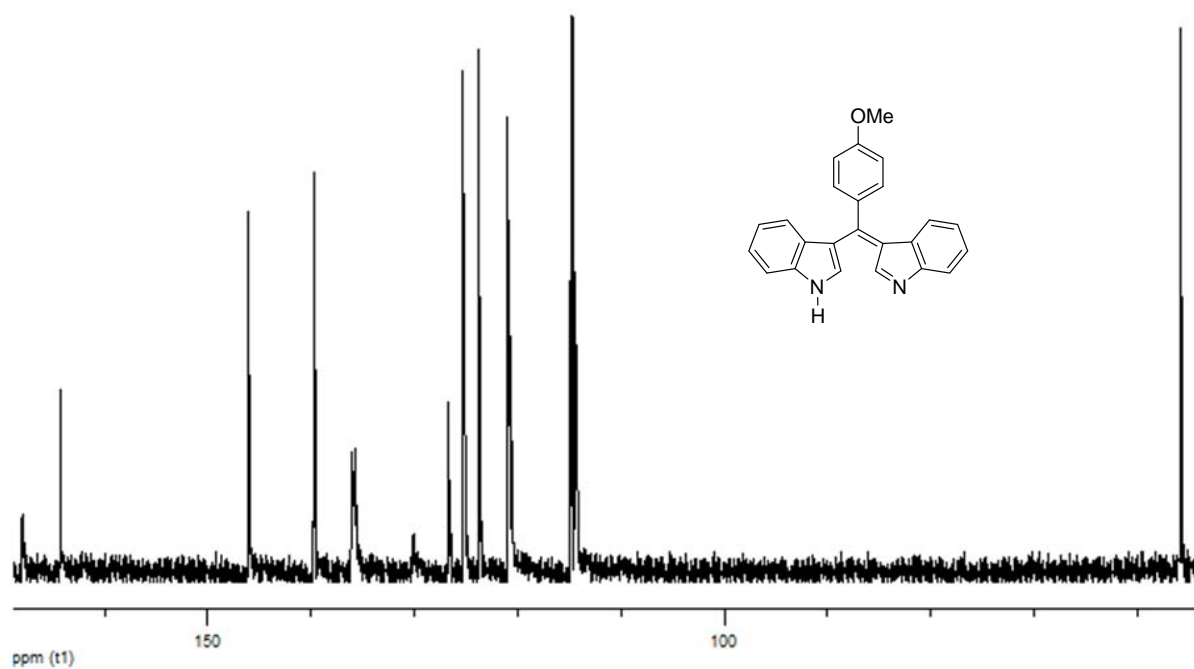
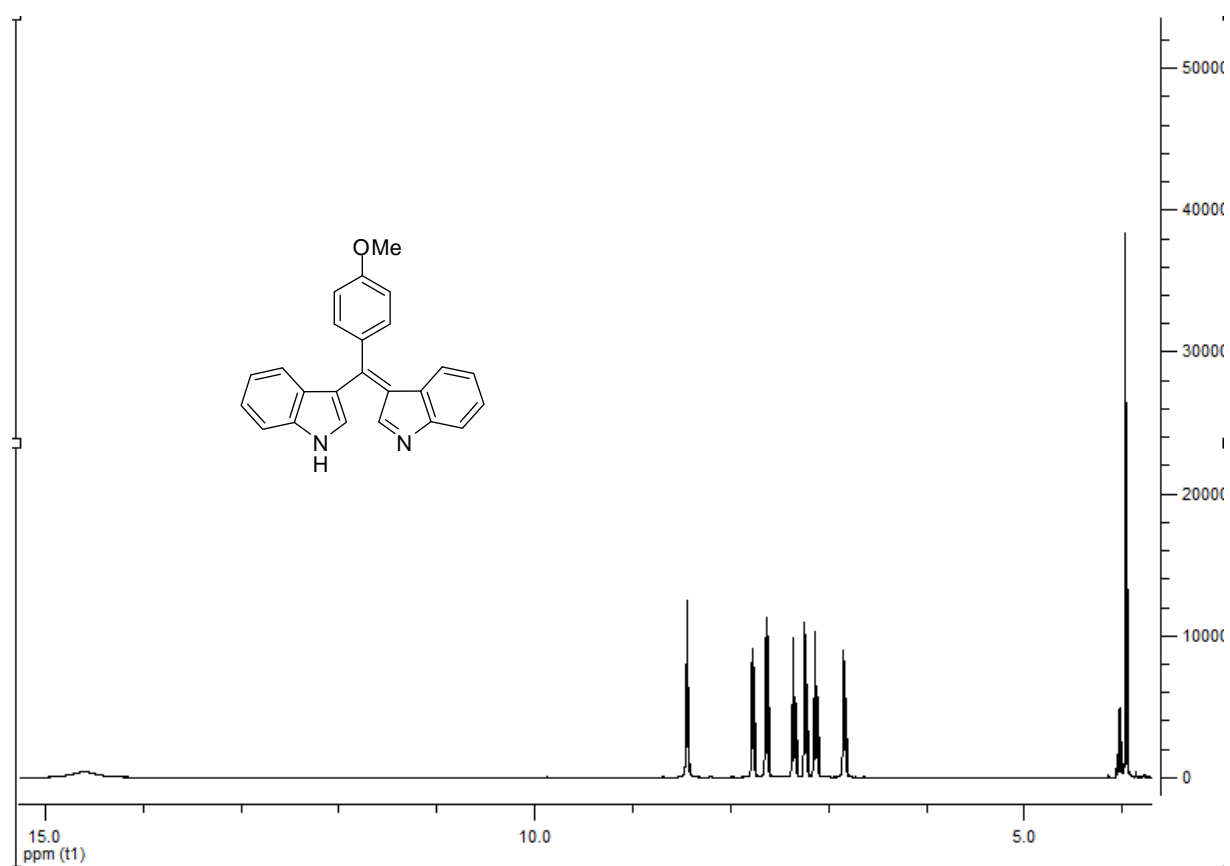


Figure S6. 100 MHz ^{13}C NMR spectrum of **12c** in $\text{DMSO-}d_6$.



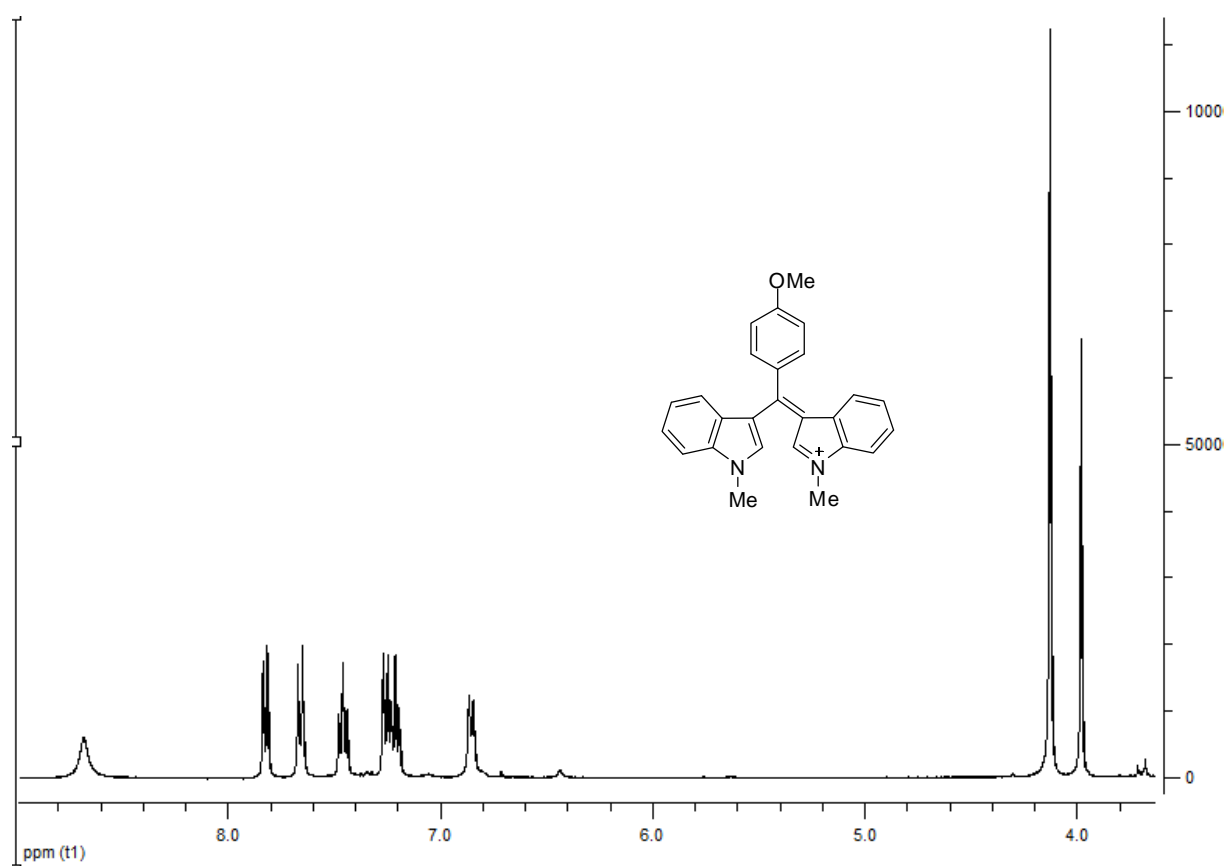


Figure S9. 400 MHz ^1H NMR spectrum of **12e** in $\text{DMSO-}d_6$.

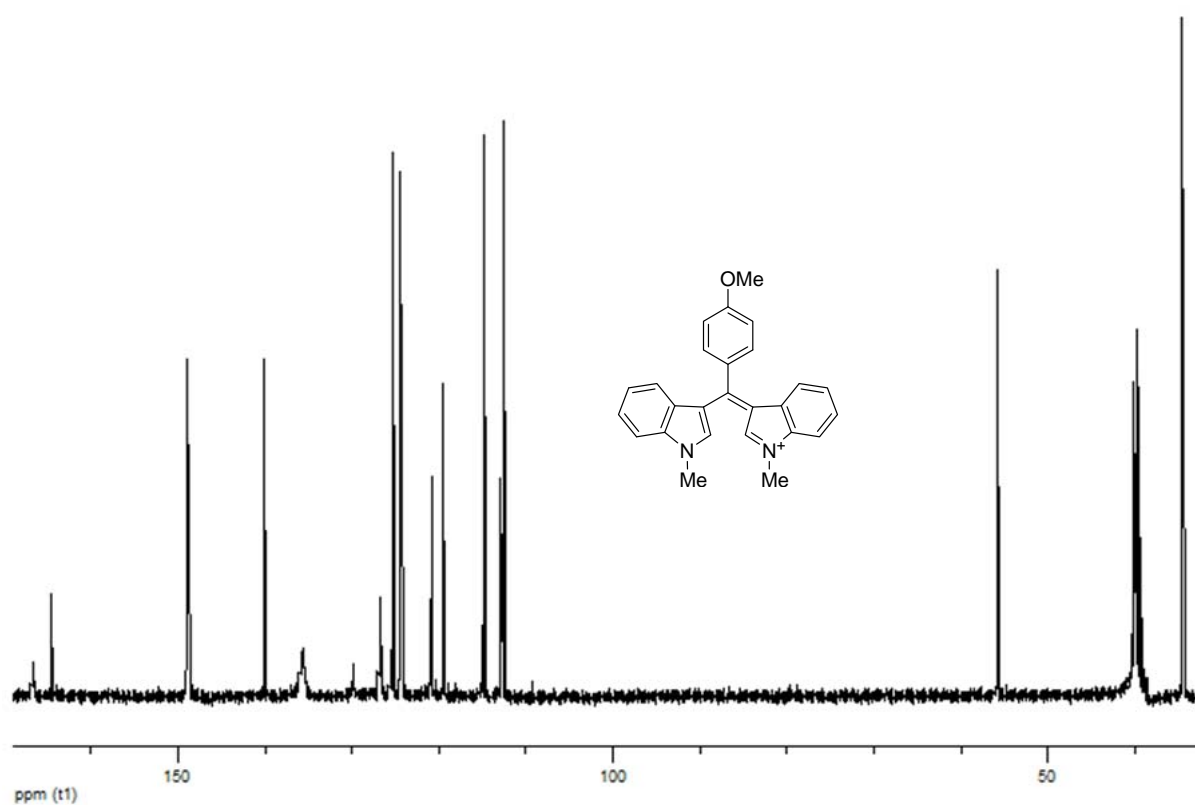


Figure S10. 100 MHz ^{13}C NMR spectrum of **12e** in $\text{DMSO-}d_6$.

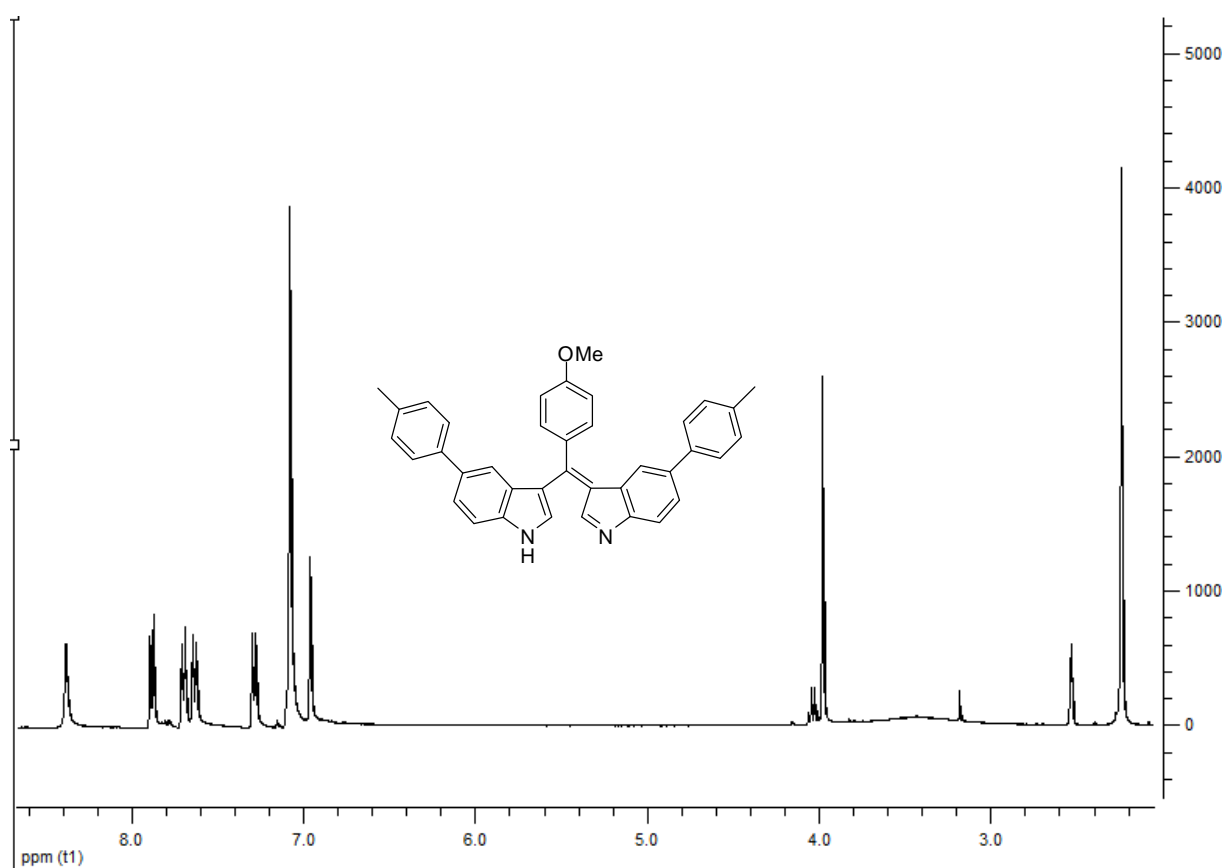


Figure S11. 400 MHz ^1H NMR spectrum of **12f** in $\text{DMSO-}d_6$.

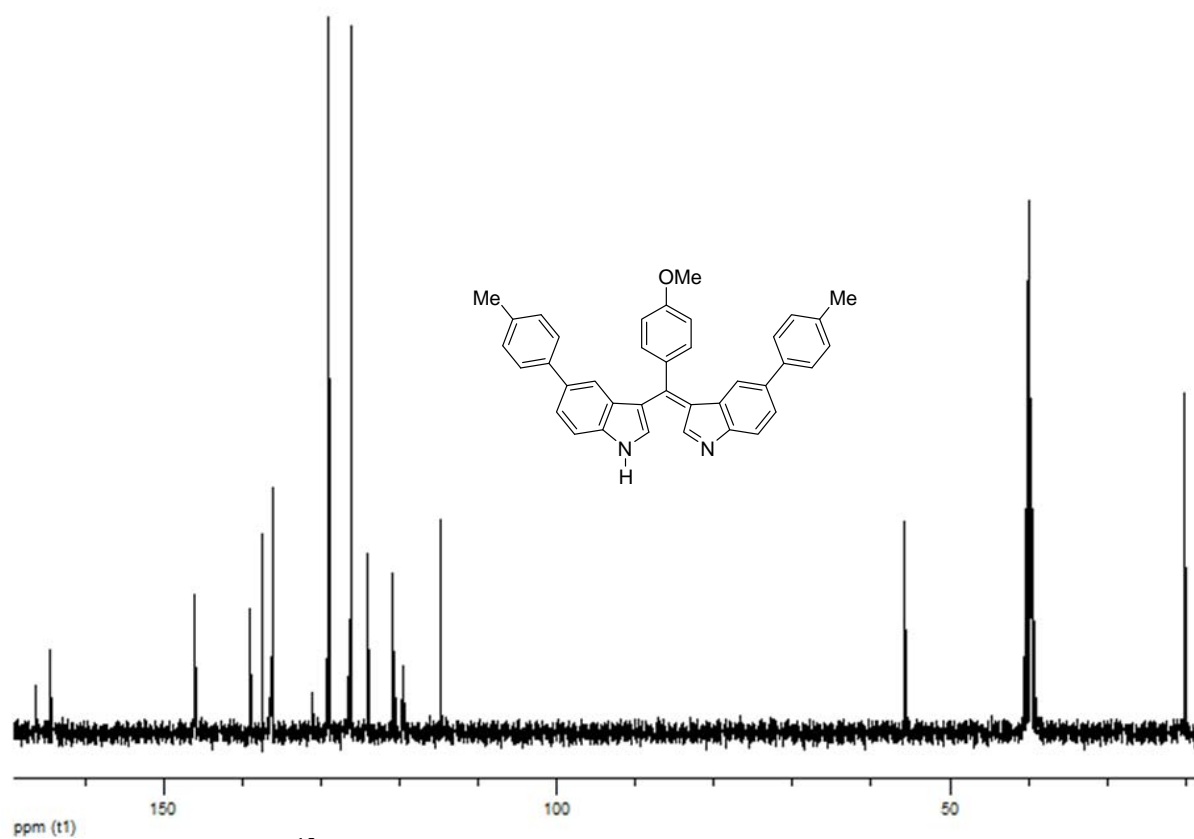


Figure S12. 100 MHz ^{13}C NMR spectrum of **12f** in $\text{DMSO-}d_6$.

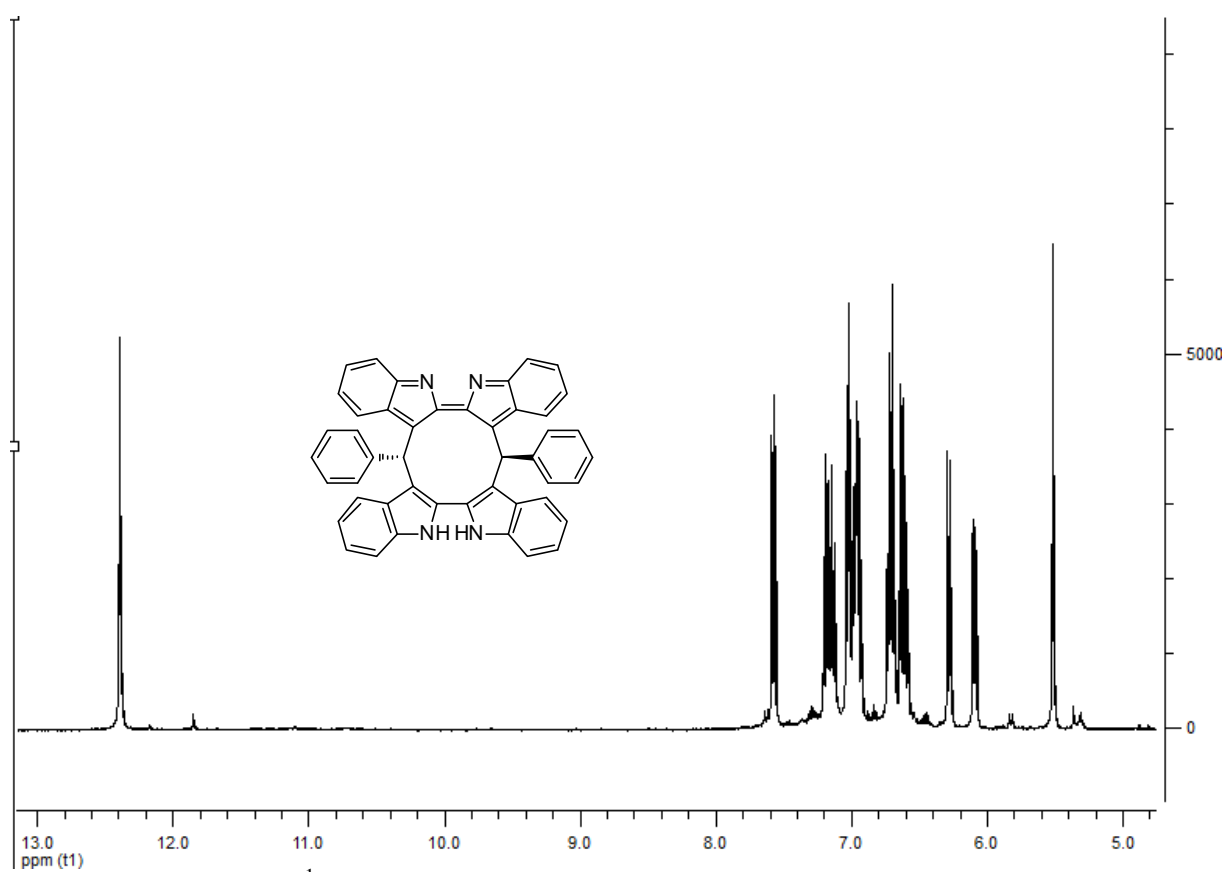


Figure S13. 400 MHz ^1H NMR spectrum of **17a** in $\text{DMSO-}d_6$.

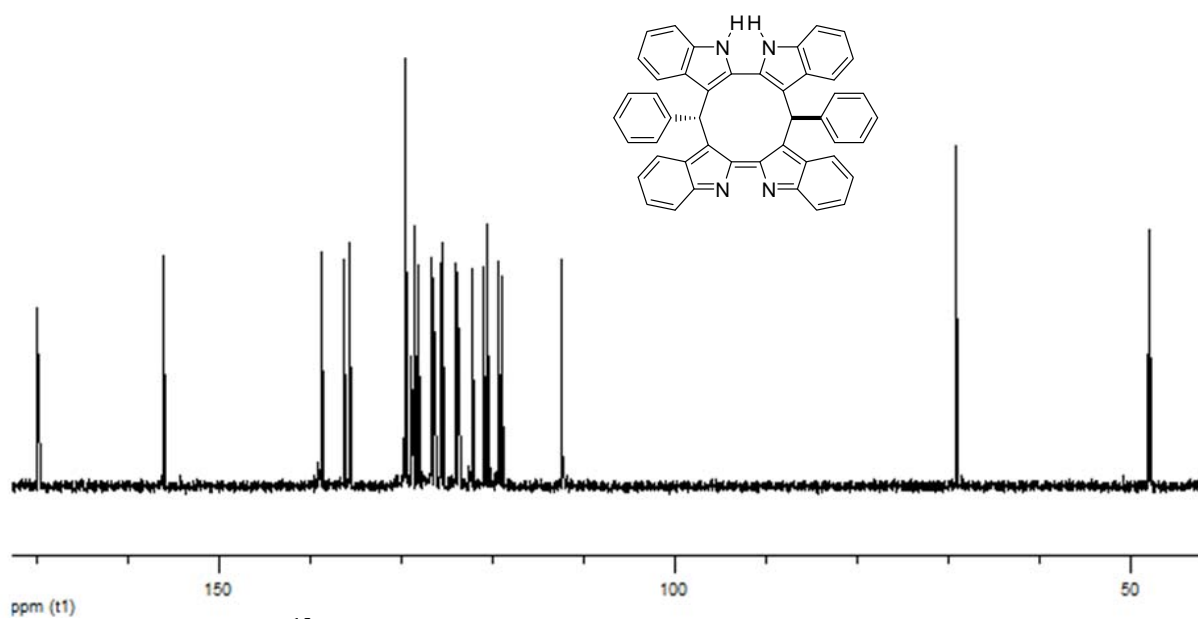


Figure S14. 100 MHz ^{13}C NMR spectrum of **17a** in $\text{DMSO-}d_6$.

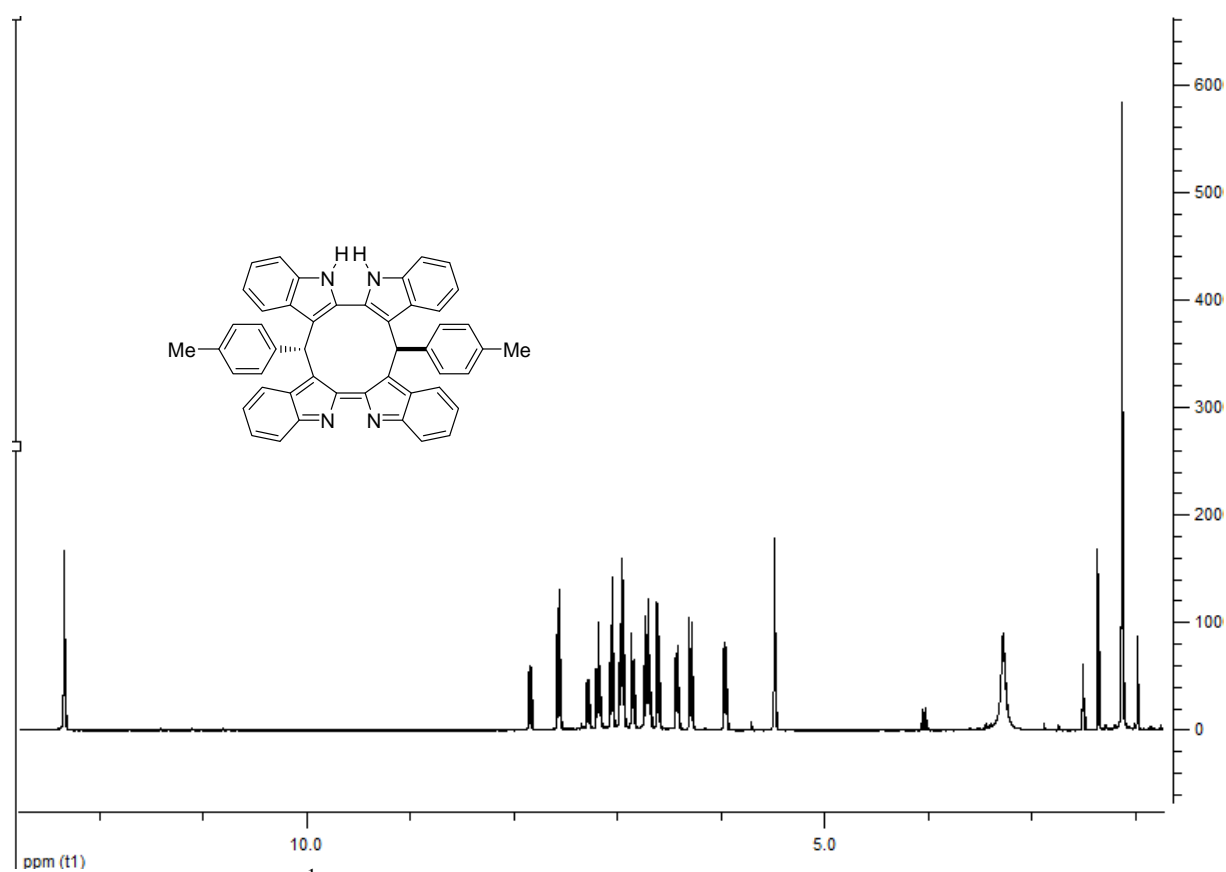


Figure S15. 400 MHz ^1H NMR spectrum of **17b** in $\text{DMSO-}d_6$.

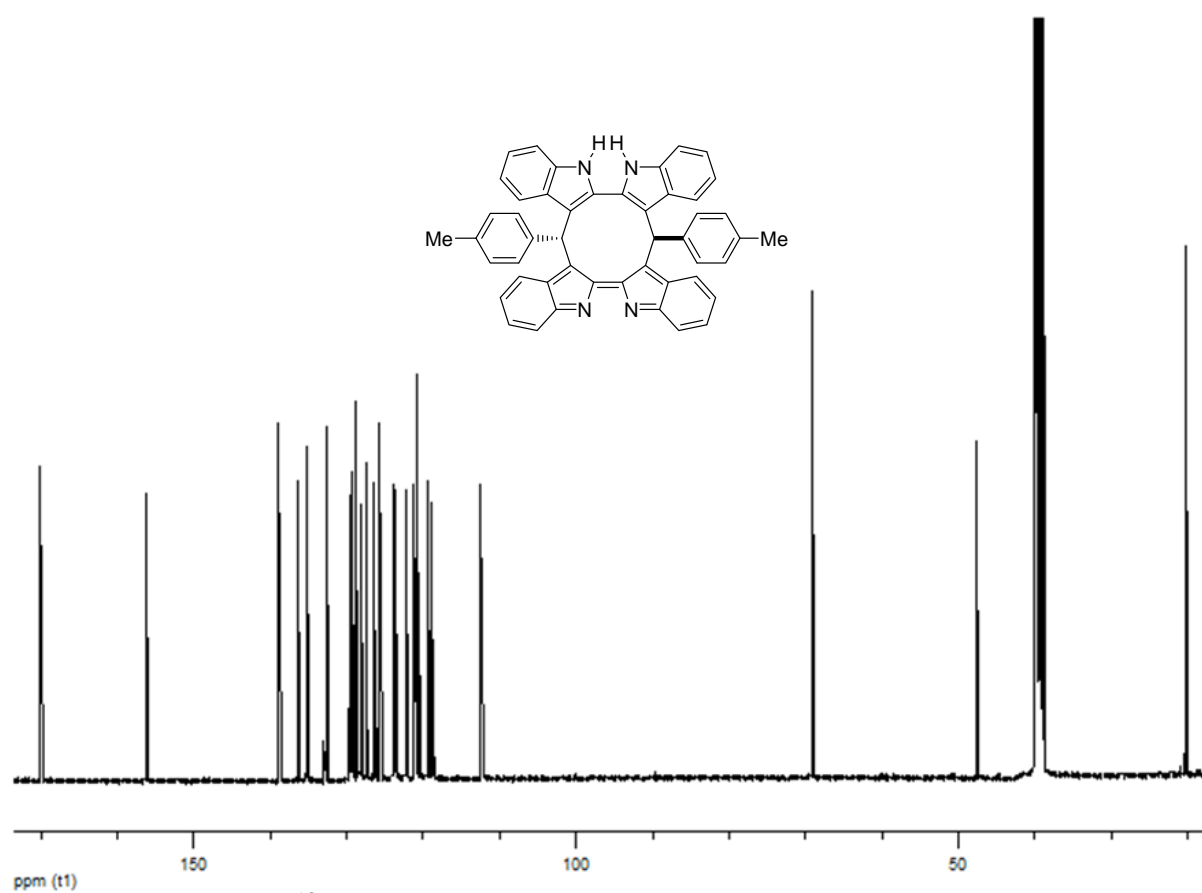


Figure S16. 100 MHz ^{13}C NMR spectrum of **17b** in $\text{DMSO-}d_6$.

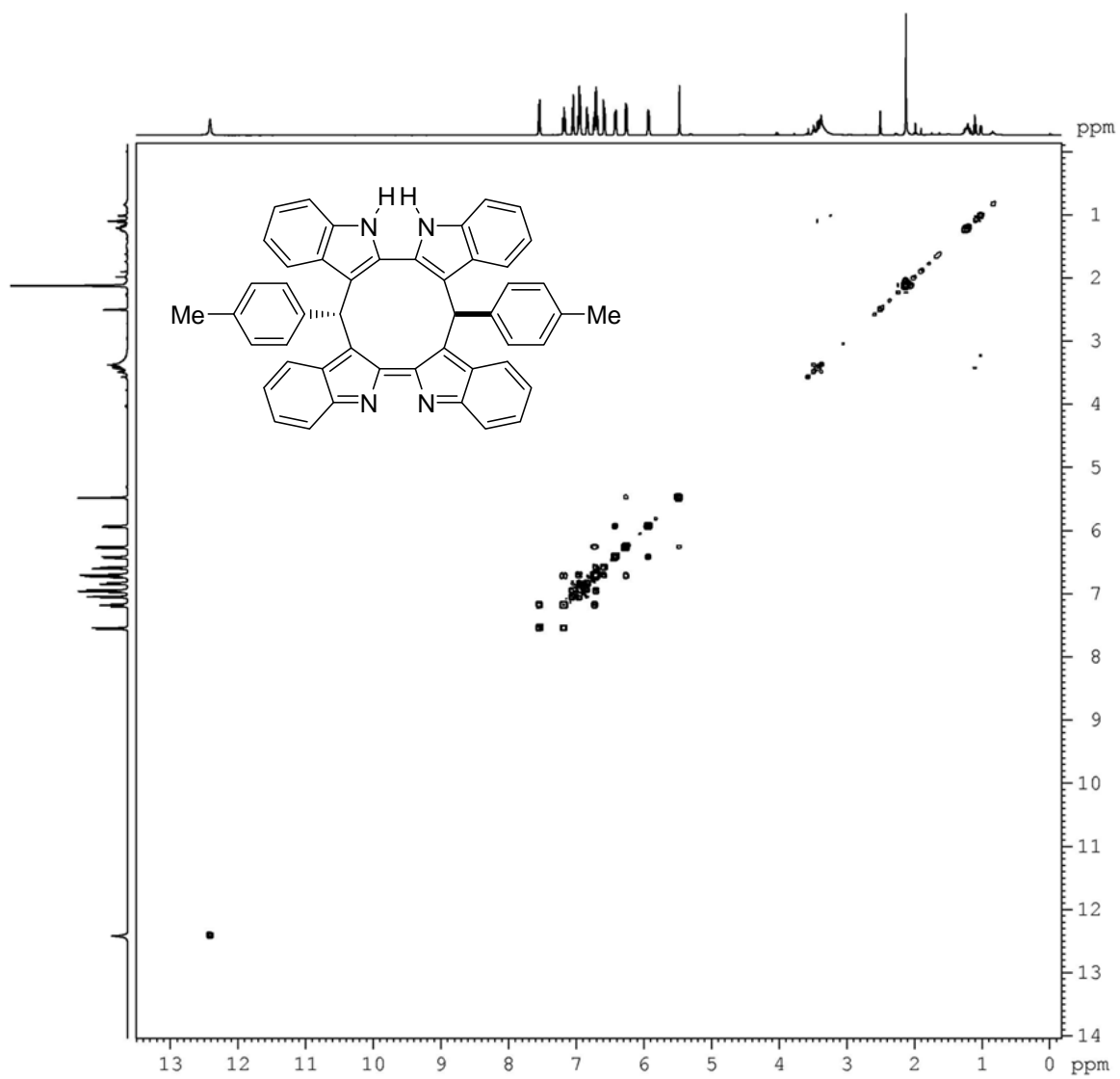


Figure S17. COSY spectrum of **17b** in DMSO-*d*₆.

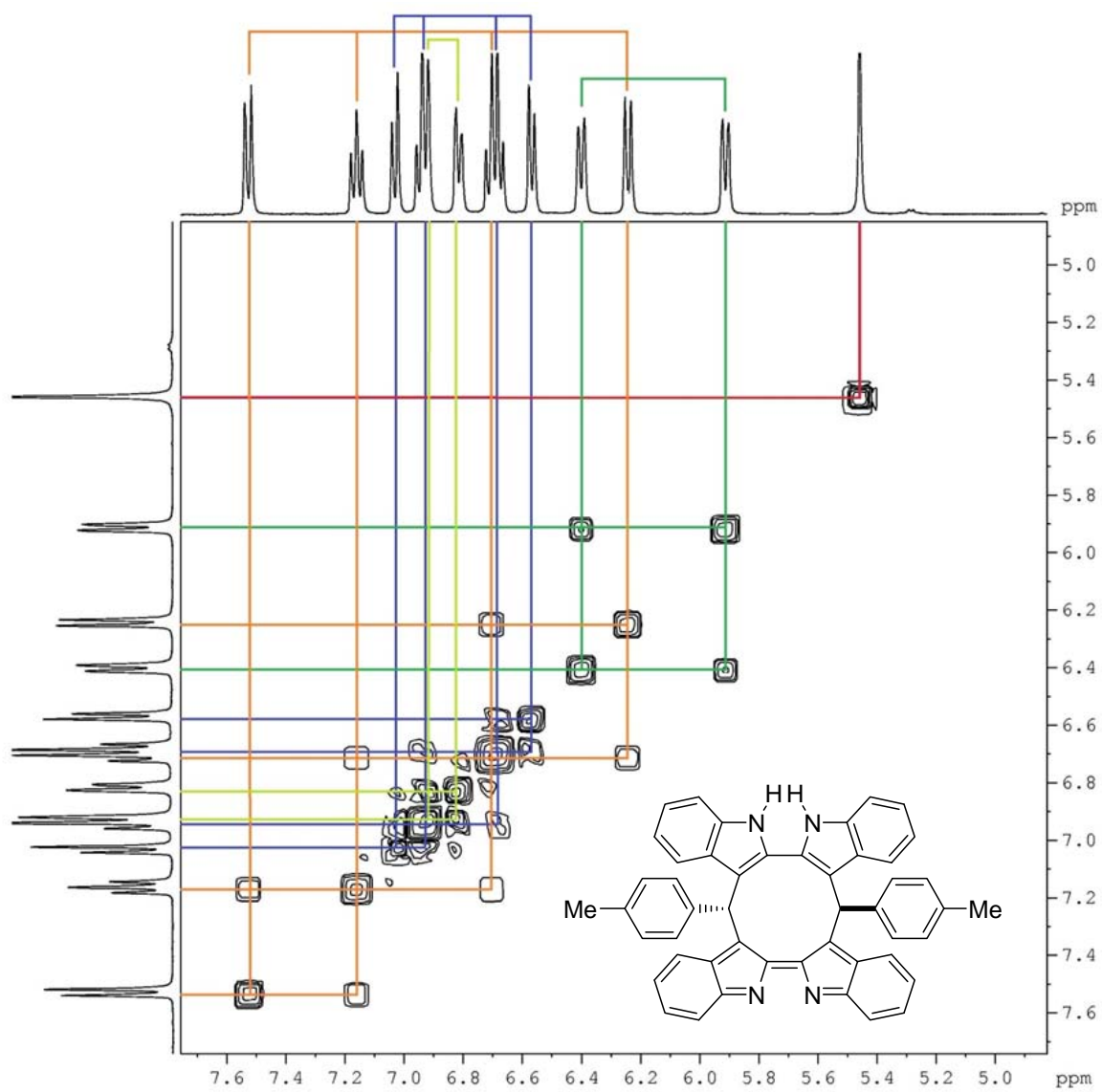


Figure S18. COSY spectrum of **17b** in DMSO-*d*₆. Expansion plot.

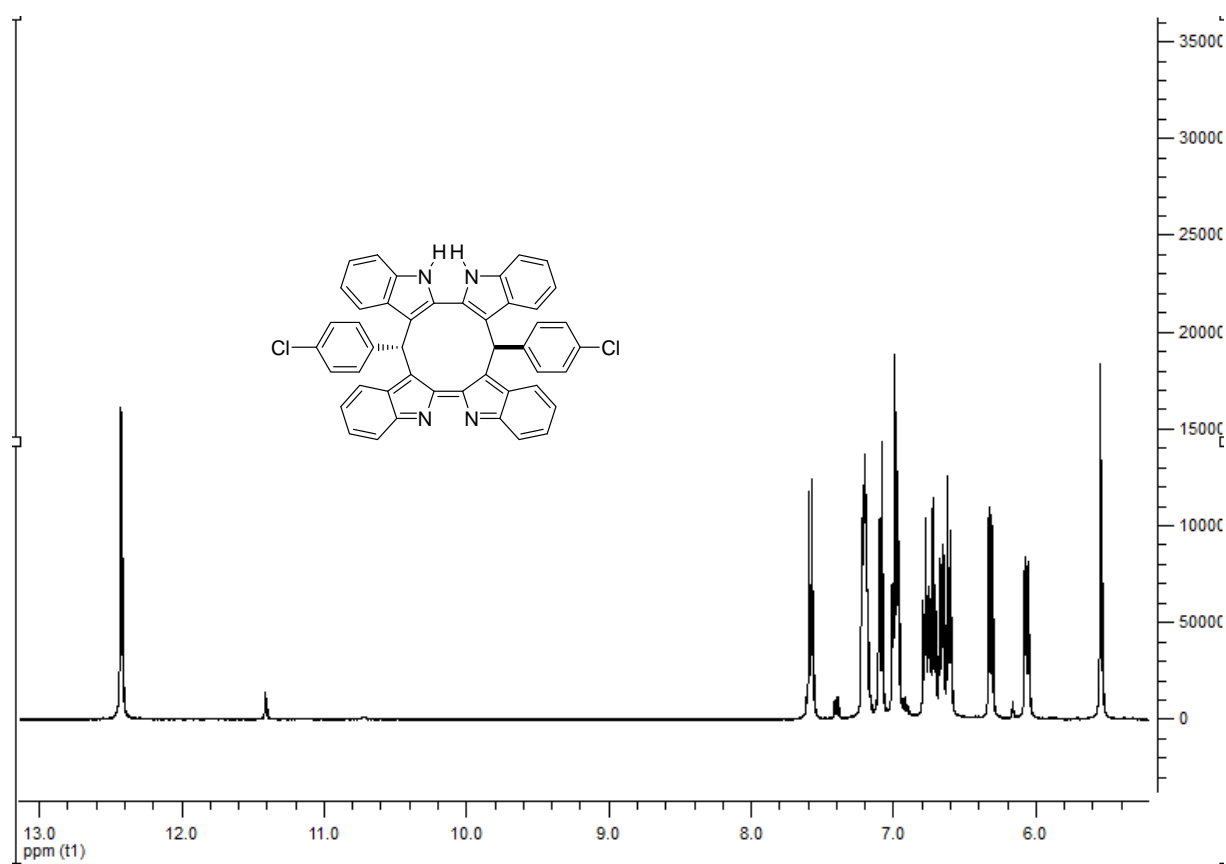


Figure S19. 400 MHz ^1H NMR spectrum of **17c** in $\text{DMSO-}d_6$.

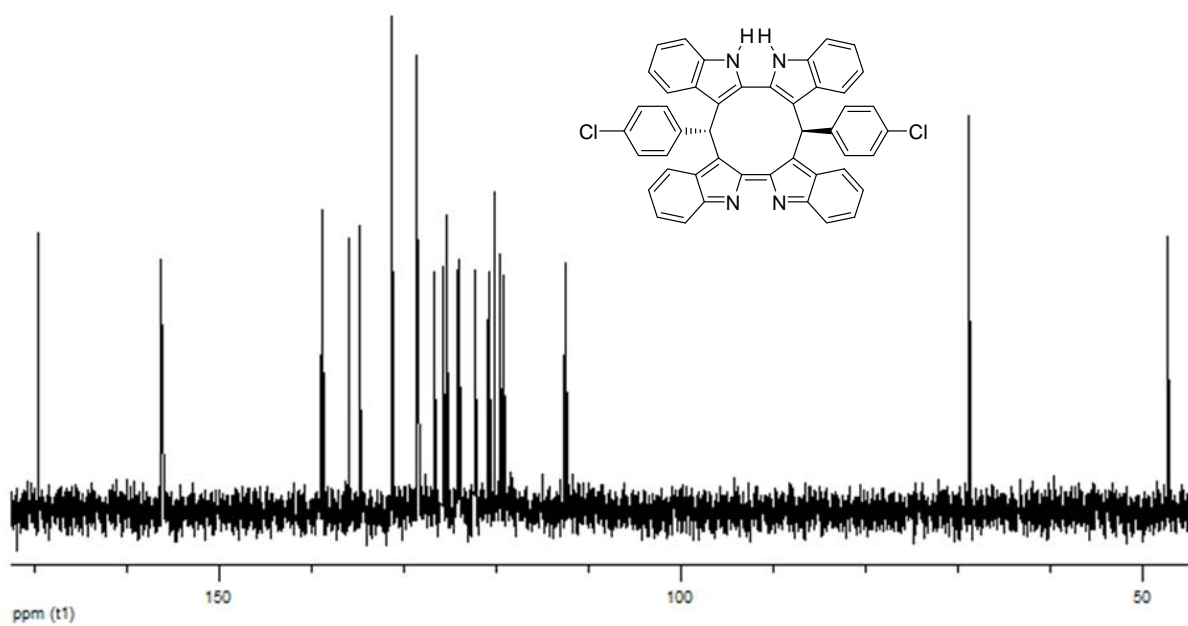


Figure S20. 100 MHz ^{13}C NMR spectrum of **17c** in $\text{DMSO-}d_6$.

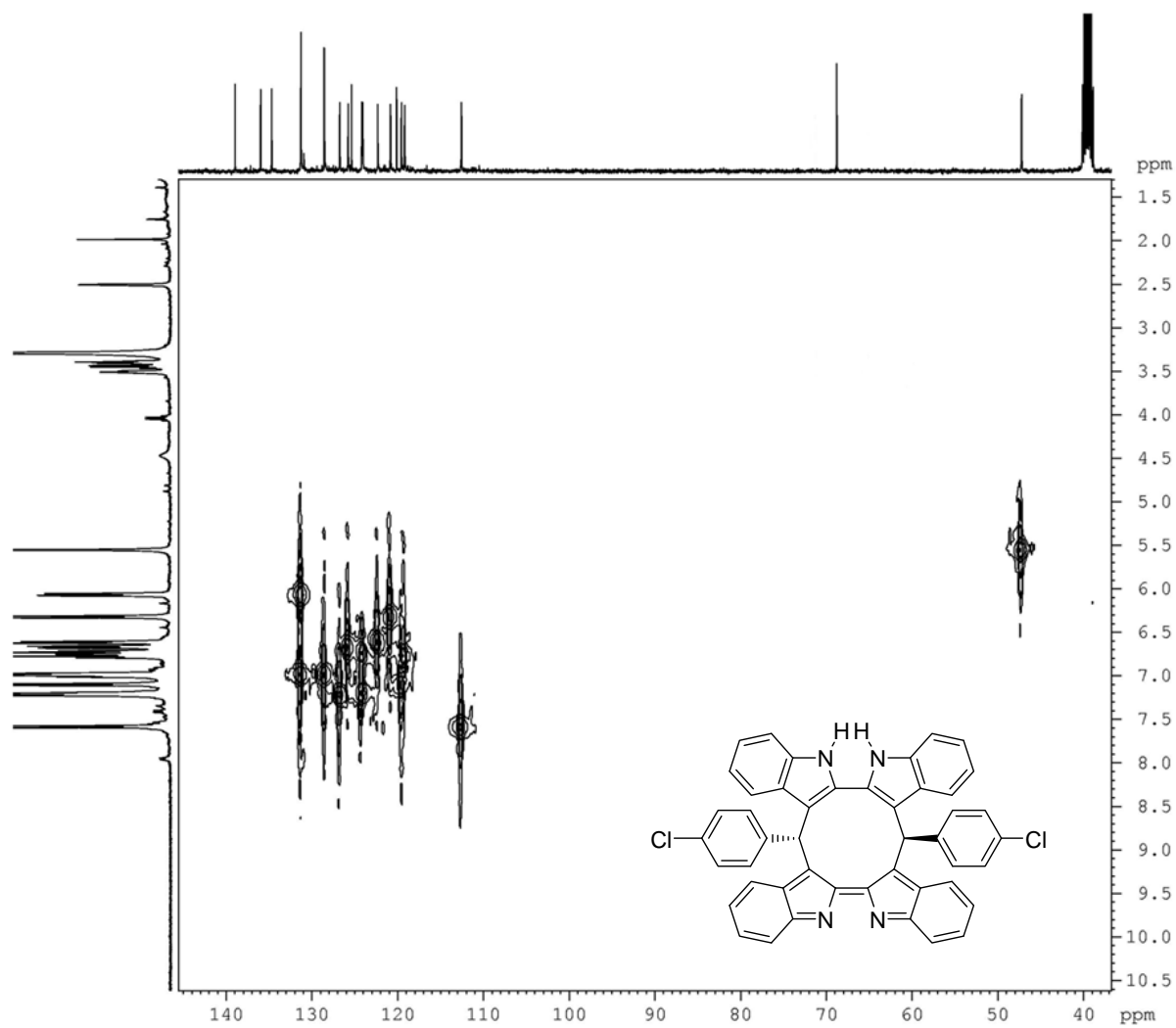


Figure S21. HETCOR spectrum of **17c** in DMSO-*d*₆.

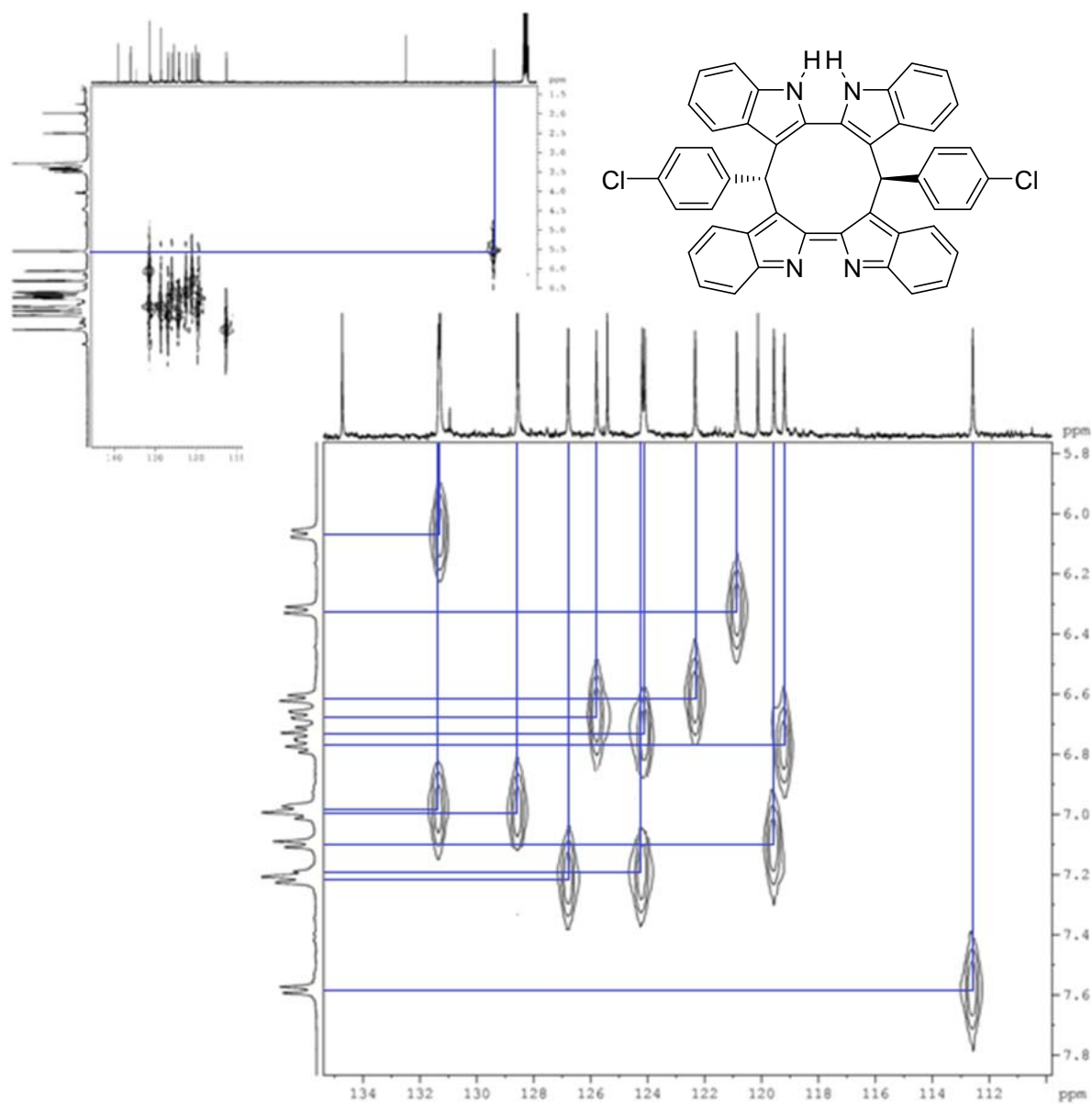


Figure S22. HETCOR spectrum of **17c** in DMSO-*d*₆. Expansion plot.

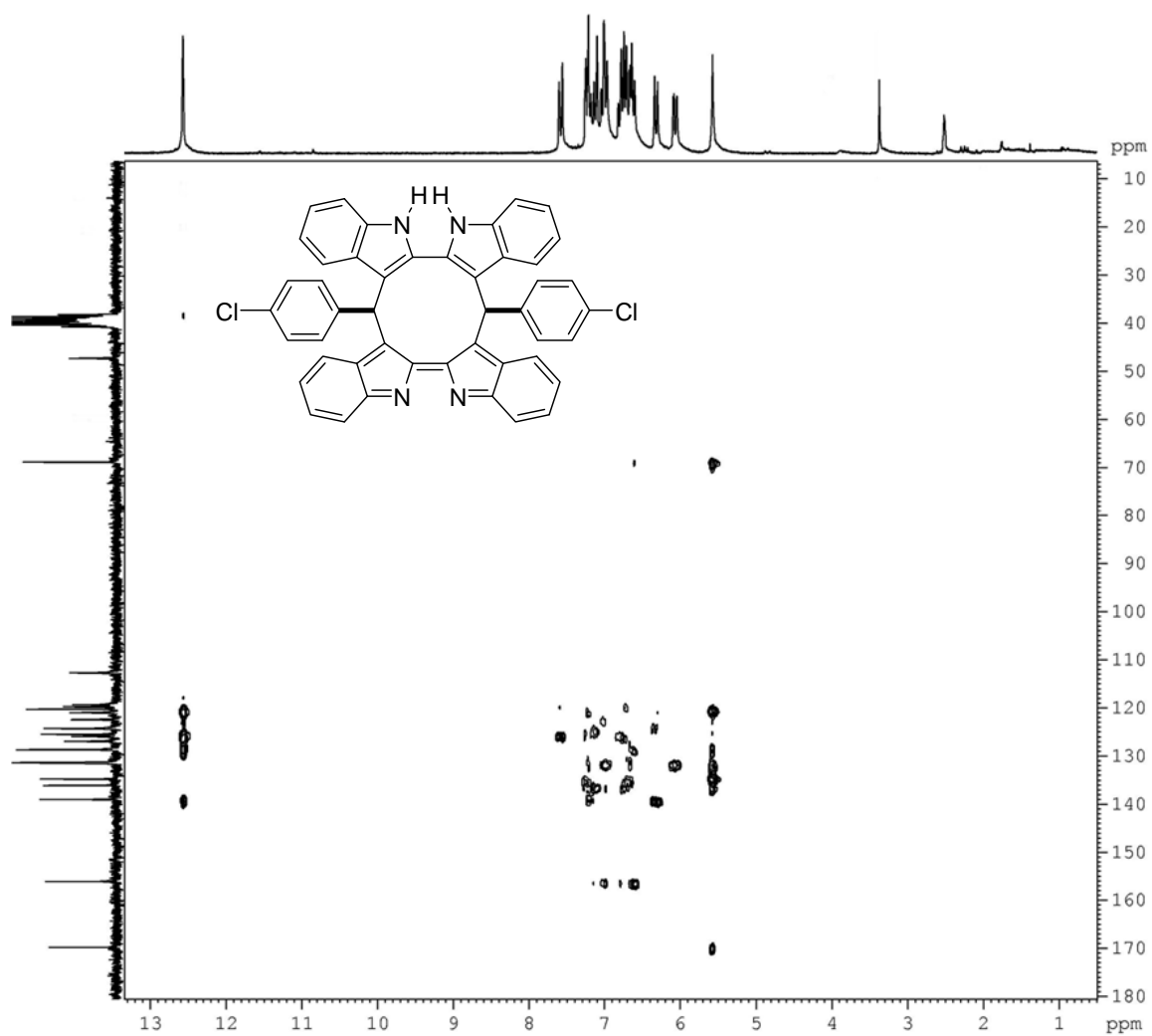


Figure S23. HMBC spectrum of **17c** in DMSO-*d*₆.

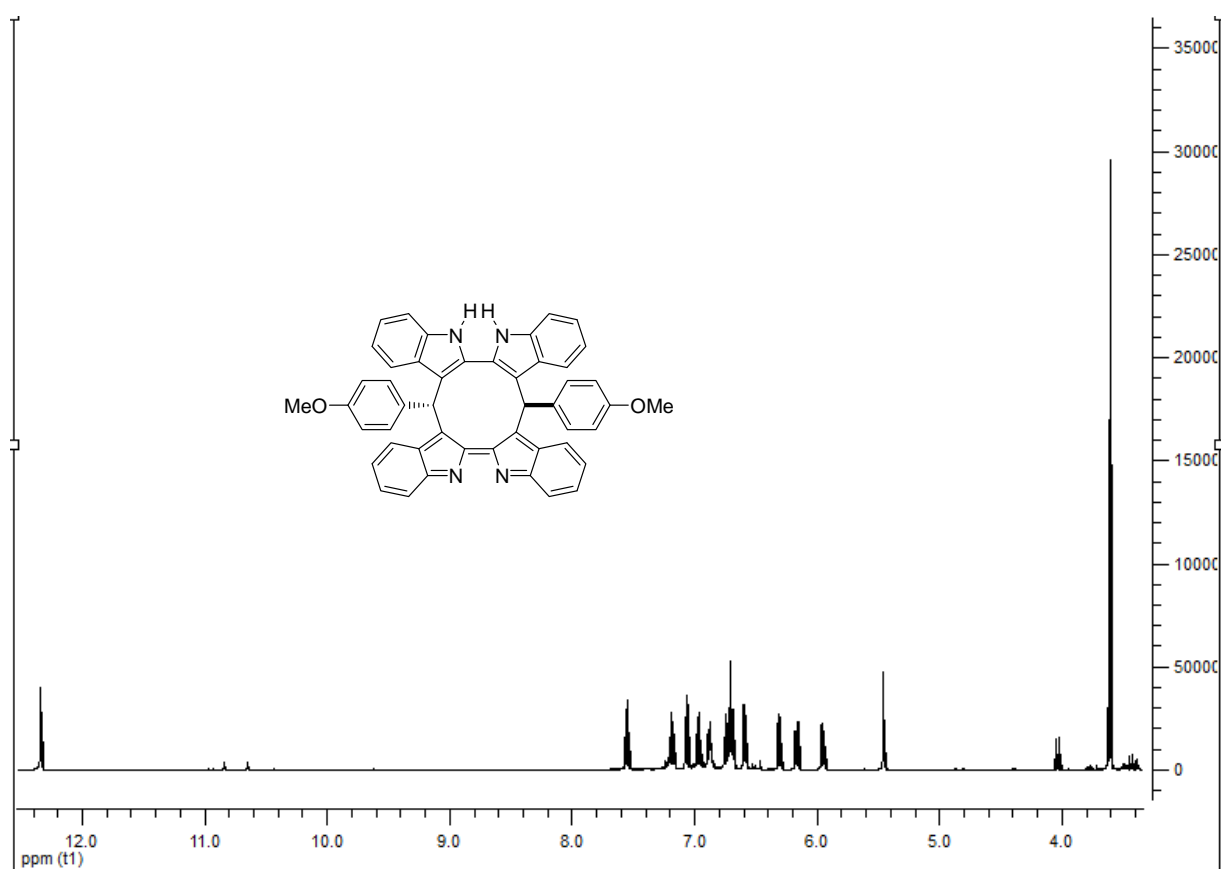


Figure S24. 400 MHz ^1H NMR spectrum of **17d** in $\text{DMSO-}d_6$.

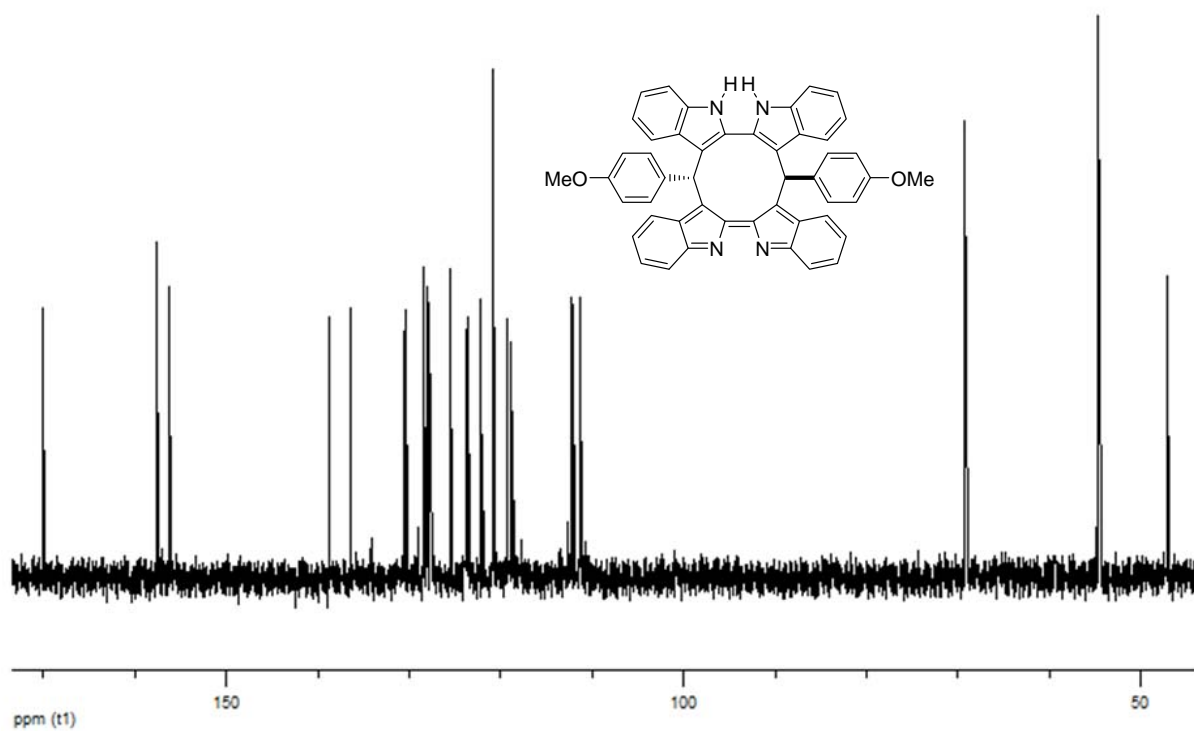


Figure S25. 100 MHz ^{13}C NMR spectrum of **17d** in $\text{DMSO-}d_6$.

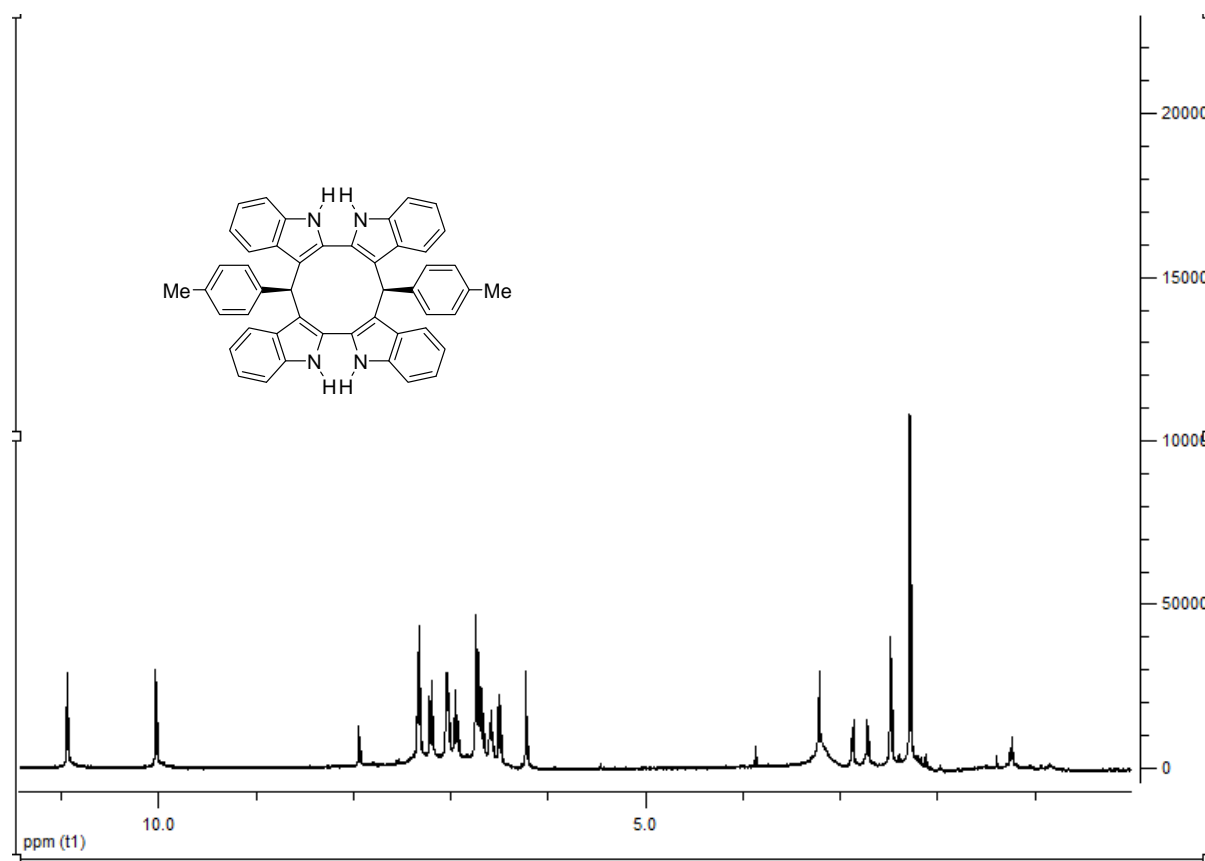


Figure S26. ^1H NMR spectrum of compound **18b1** in $\text{DMSO-}d_6$.

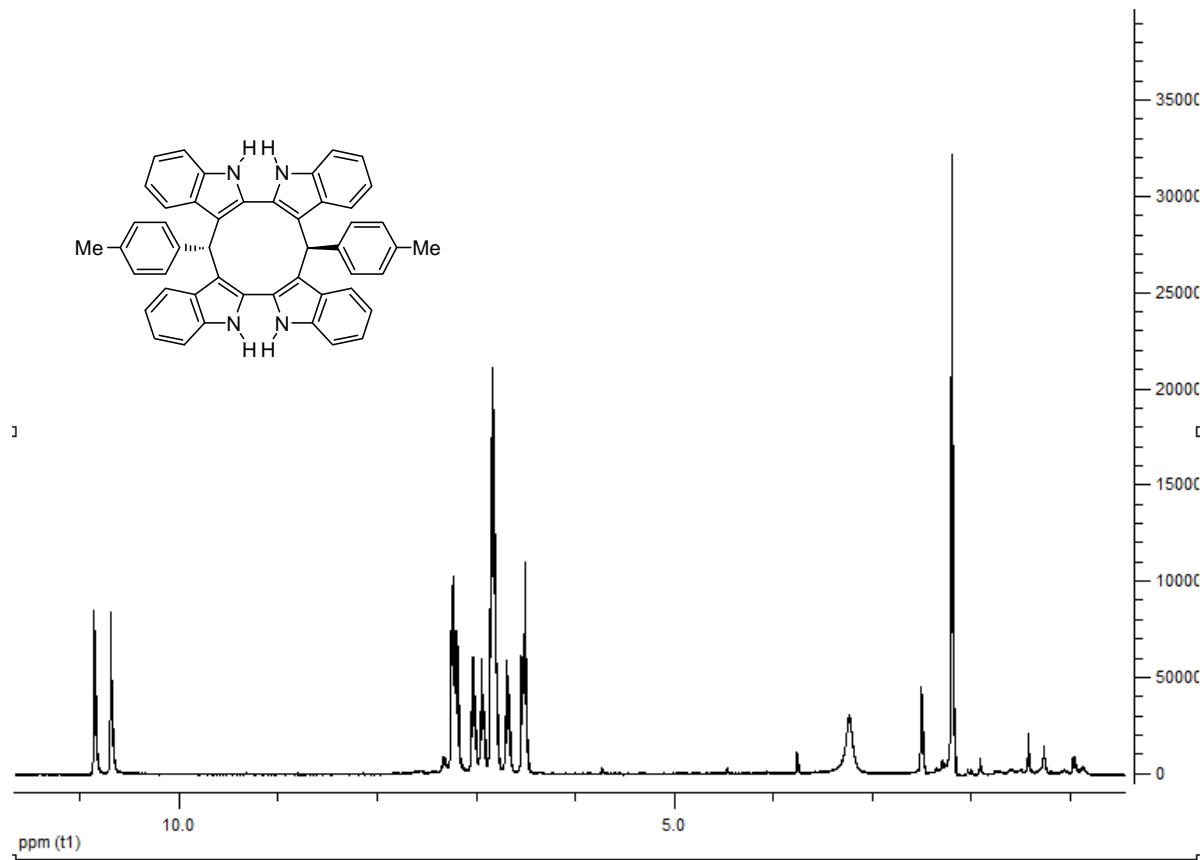


Figure S27. ^1H NMR spectrum of compound **18b2** in $\text{DMSO-}d_6$.