

Employment of Michael Addition Reaction for Carborane Functionalization

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1. The ^1H , ^{11}B and ^{13}C NMR spectra of 1-benzyl-2-(2-cyanoethyl)-*o*-carborane (5)

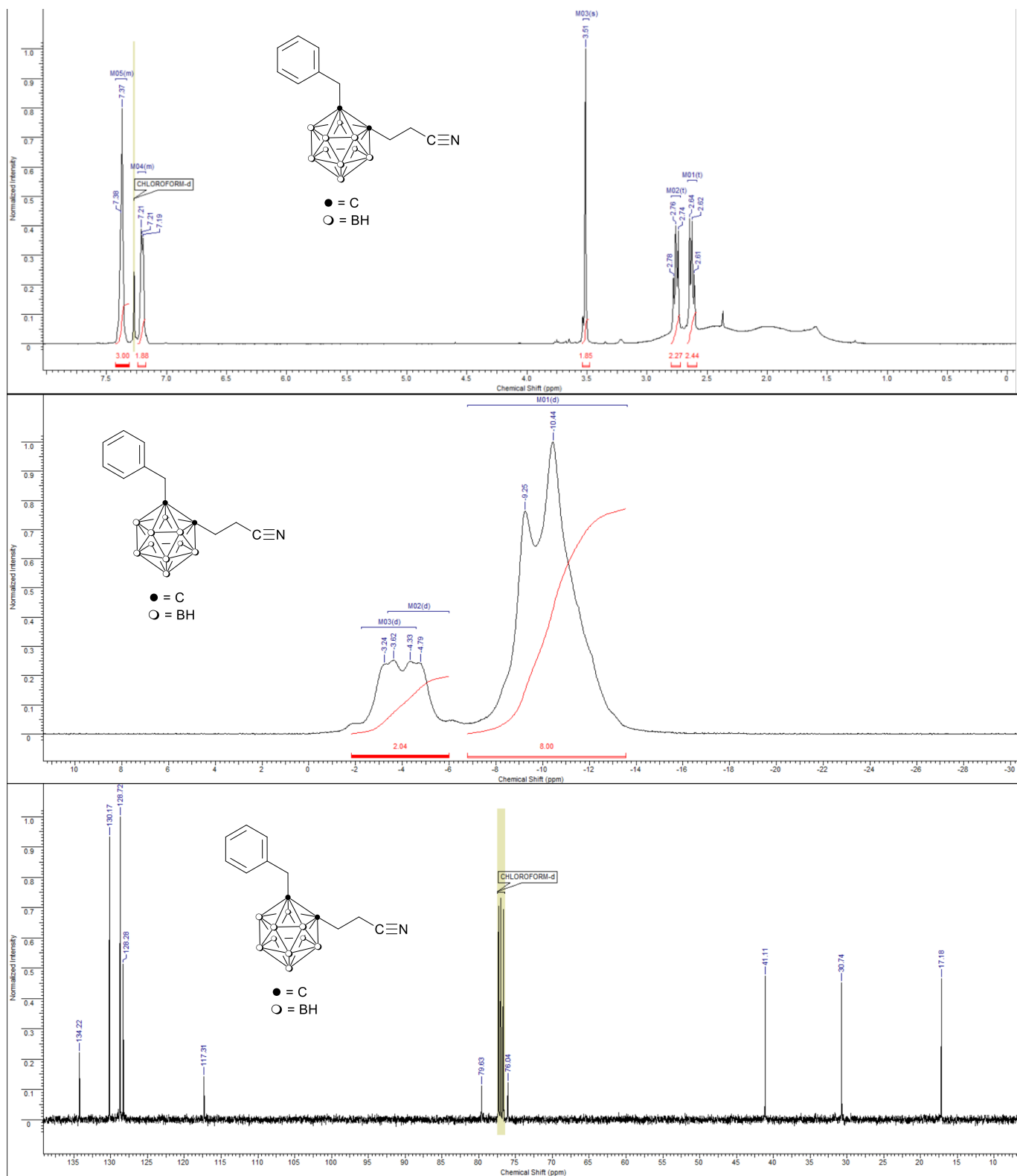


Figure S1. The ^1H , ^{11}B , ^{13}C NMR spectra of 5 in CDCl₃.

2. The ^1H and ^{11}B NMR spectra of 1-(4-nitrophenyl)-2-(2-cyanoethyl)-*o*-carborane (6)

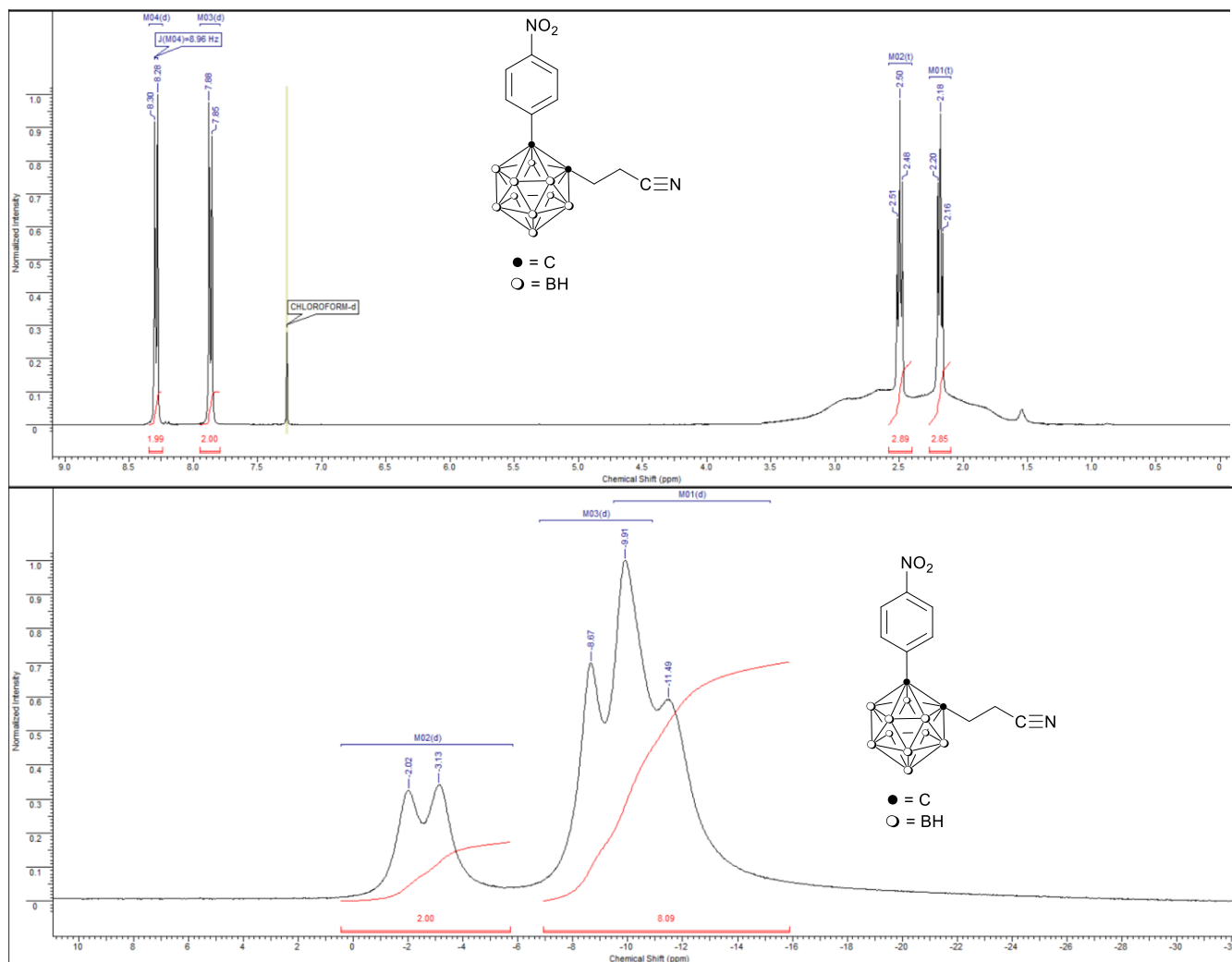
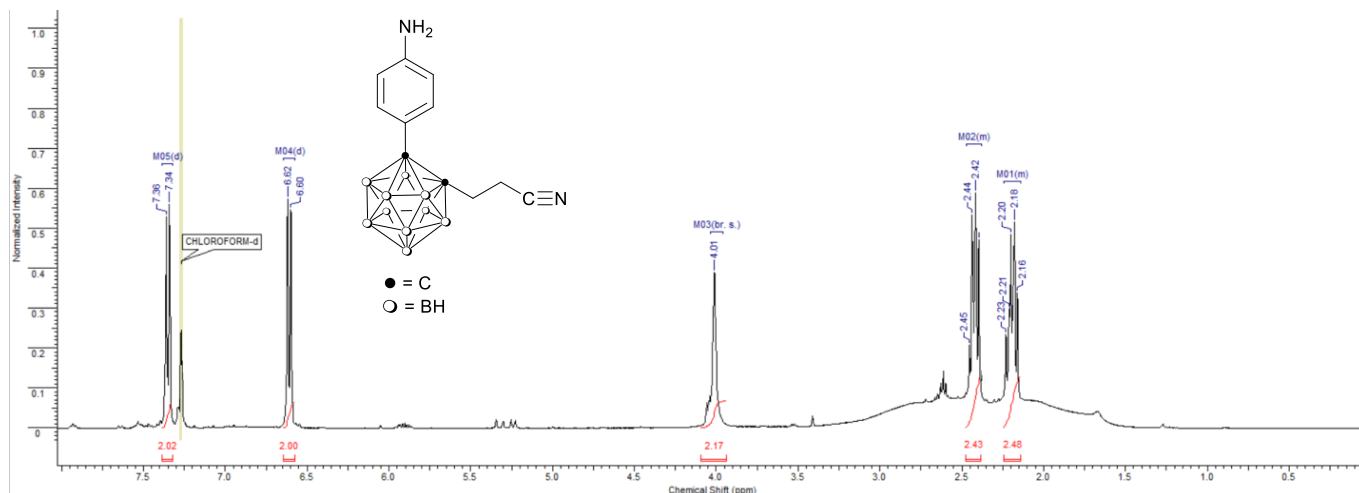


Figure S2. The ^1H , ^{11}B NMR spectra of 6 in CDCl_3 .

3. The ^1H and ^{11}B NMR spectra of 1-(4-aminophenyl)-2-(2-cyanoethyl)-*o*-carborane (7)



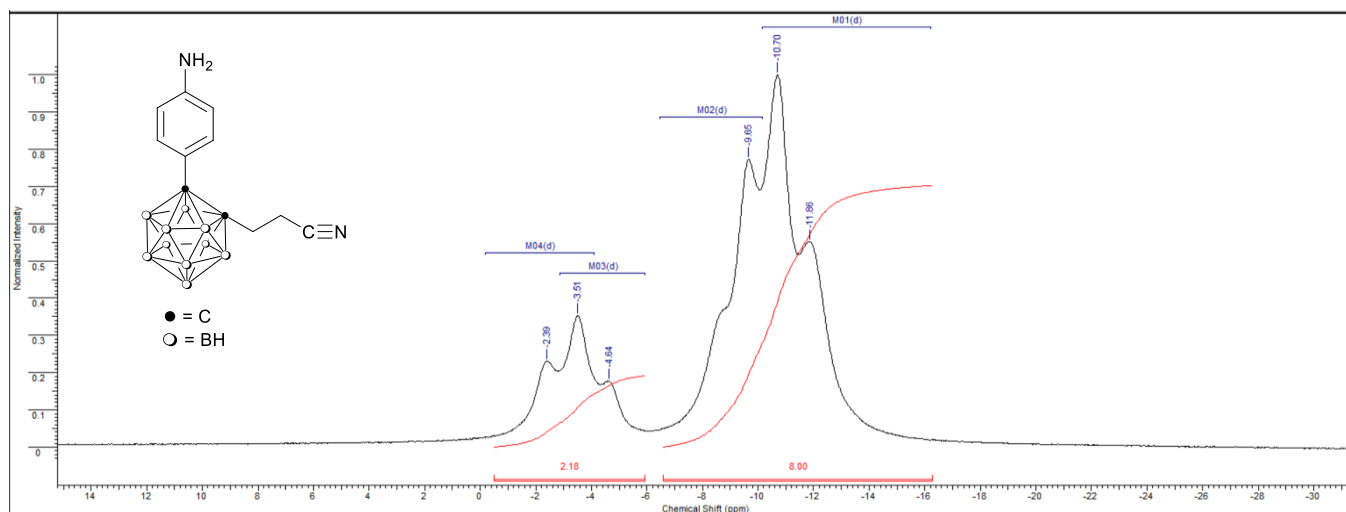


Figure S3. The ^1H and ^{11}B NMR spectra of **7** in CDCl_3 .

4. The ^1H and ^{11}B NMR spectra of 1,2-bis(2-cyanoethyl)-9-bromo-*o*-carborane (**12**)

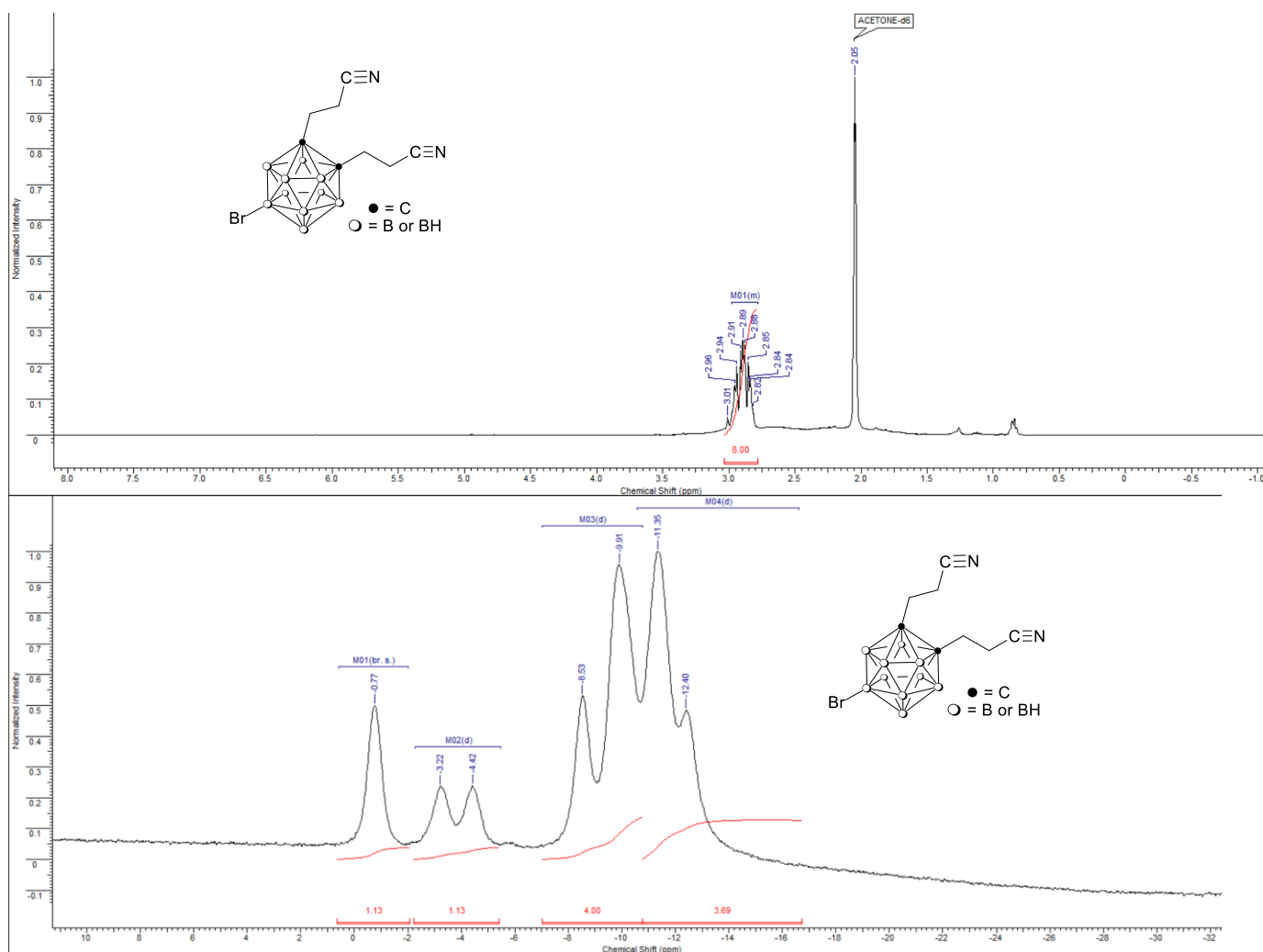


Figure S4. The ^1H , ^{11}B NMR spectra of **12** in $(\text{CD}_3)_2\text{CO}$.

5. The ^1H and ^{11}B NMR spectra of 1,2-bis(2-cyanoethyl)-9-iodo-*o*-carborane (13)

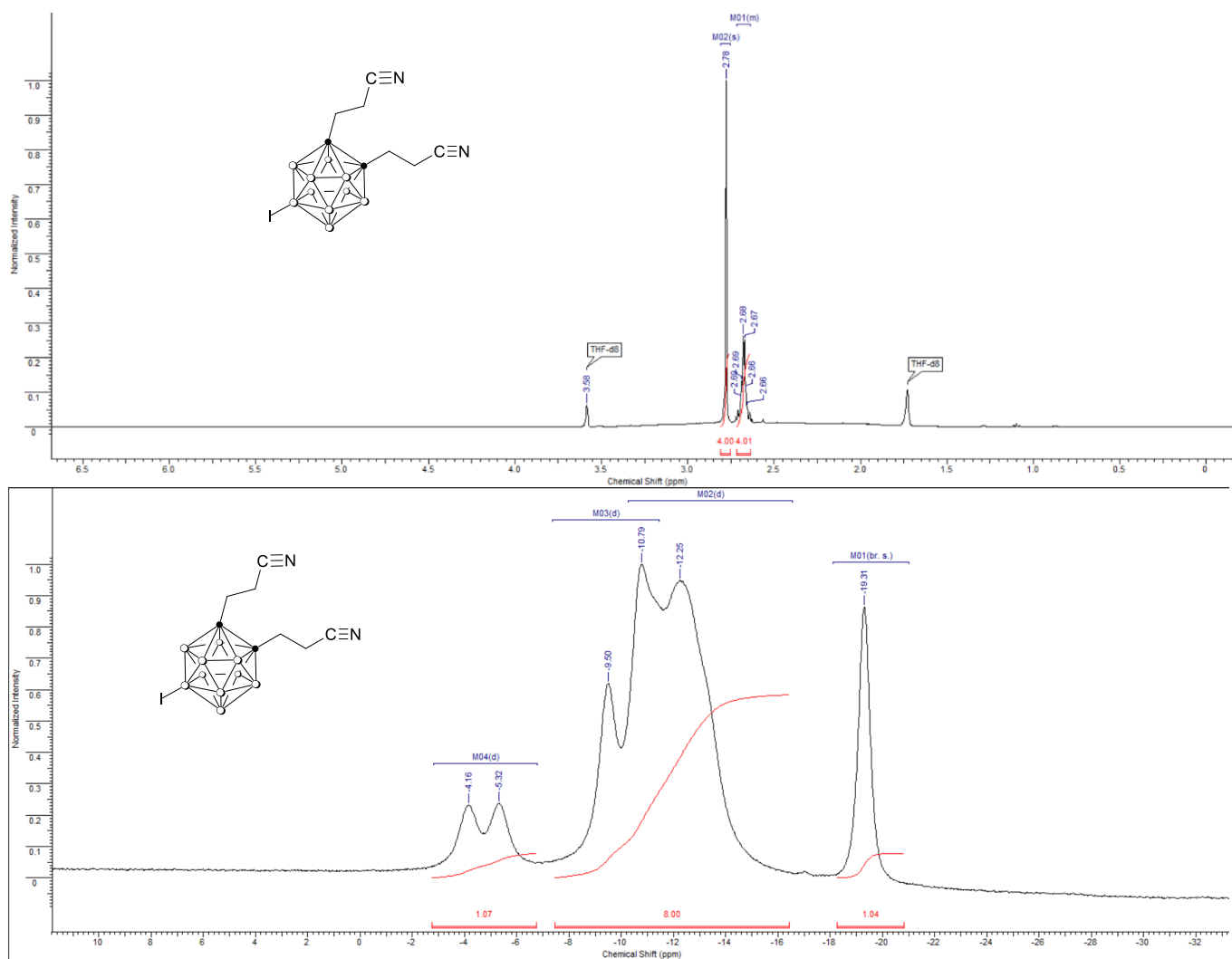
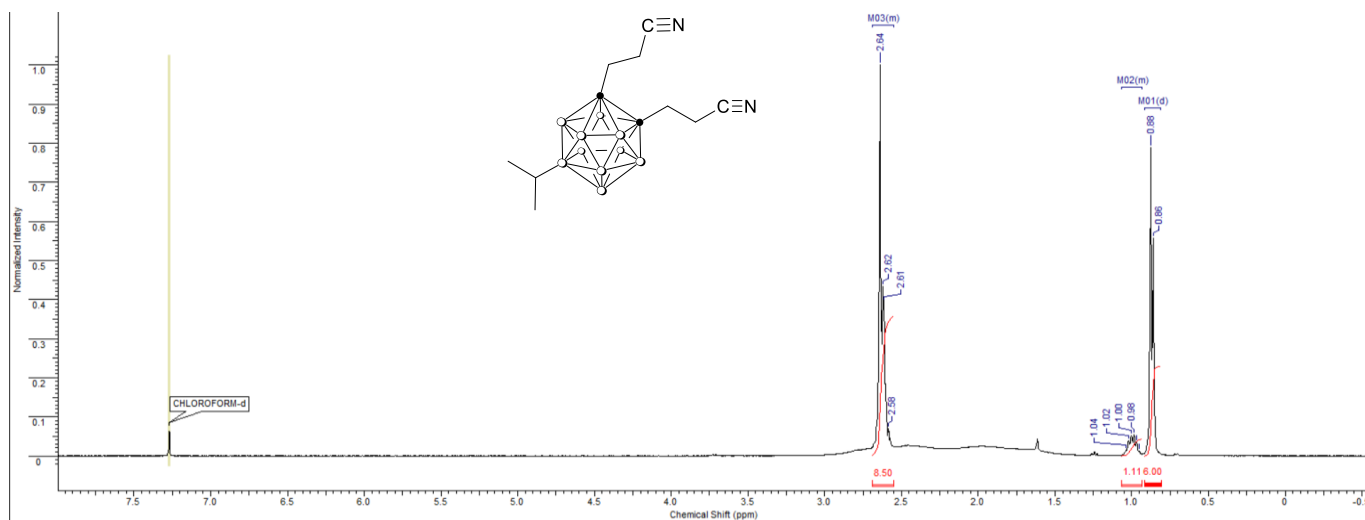


Figure S5. The ^1H and ^{11}B NMR spectra of 13 in THF- d_8 .

6. The ^1H , ^{11}B and ^{13}C NMR spectra of 1,2-bis(2-cyanoethyl)-9-*i*-propyl-*o*-carborane (14)



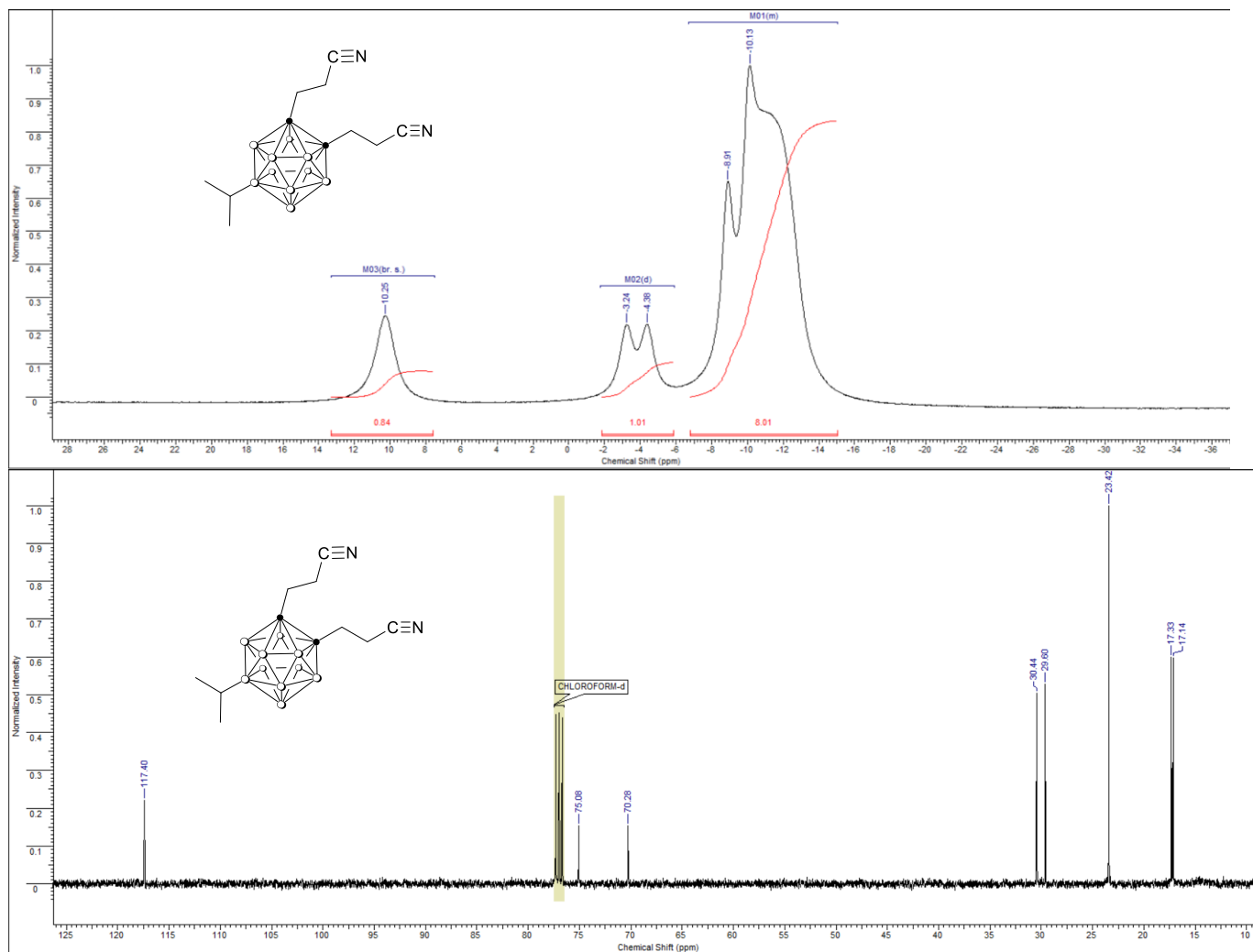
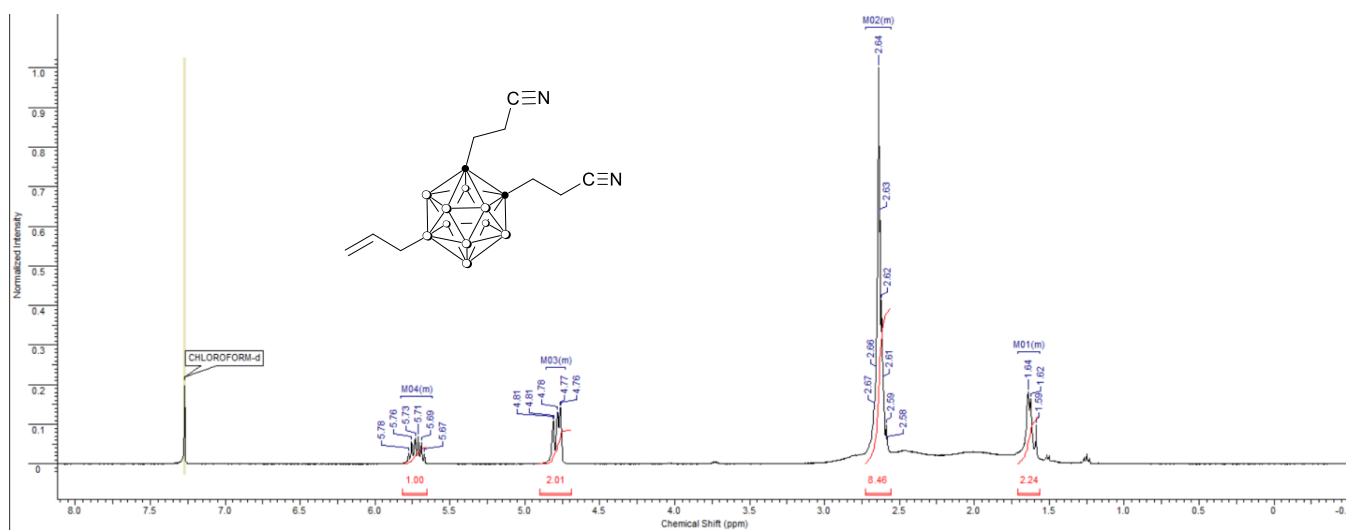


Figure S6. The ^1H , ^{11}B , ^{13}C NMR spectra of **14** in CDCl_3 .

7. The ^1H and ^{11}B NMR spectra of 1,2-bis(2-cyanoethyl)-9-allyl-*o*-carborane (**15**)



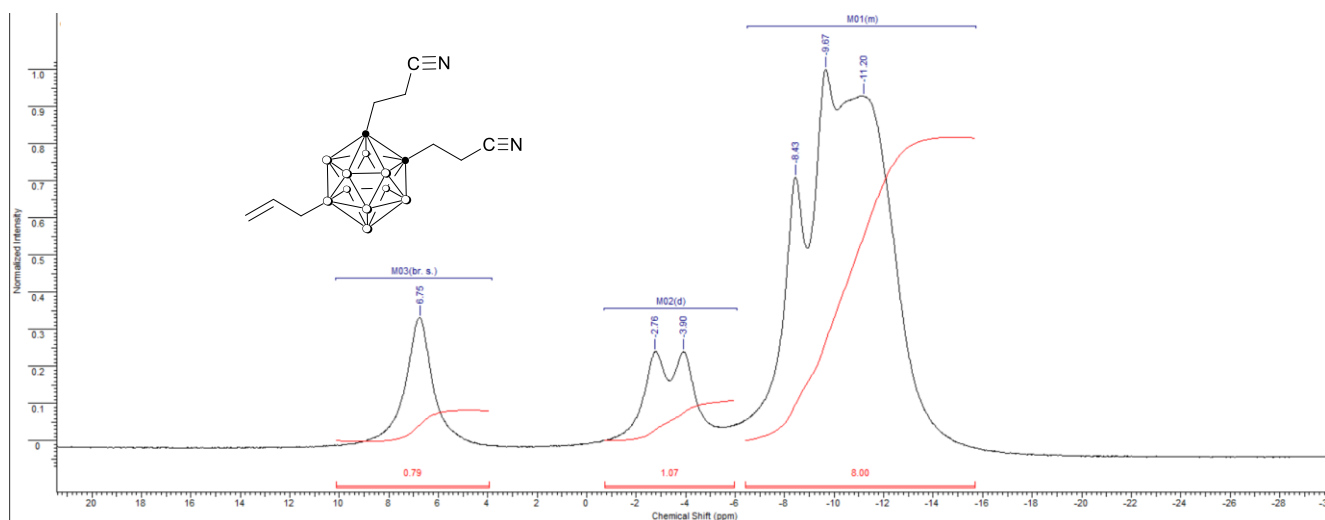


Figure S7. The ^1H and ^{11}B NMR spectra of **15** in CDCl_3 .

8. The ^1H and ^{11}B NMR spectra of ethyl ester **16**

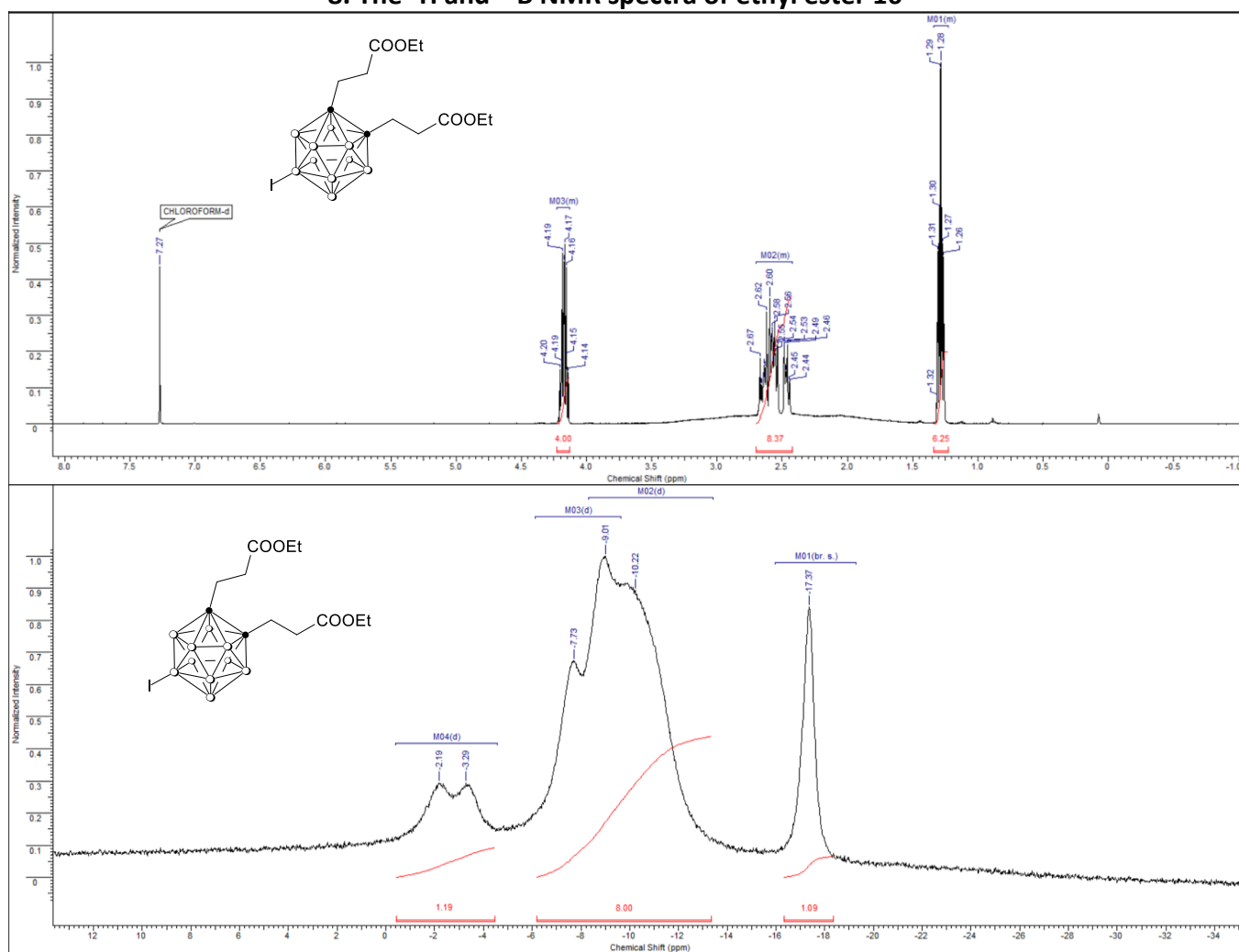


Figure S8. The ^1H and ^{11}B NMR spectra of **16** in CDCl_3 .

9. The ^1H , ^{11}B and ^{13}C spectra of 3-amino-2-(2-cyanoethyl)-1-methyl-*o*-carborane (19)

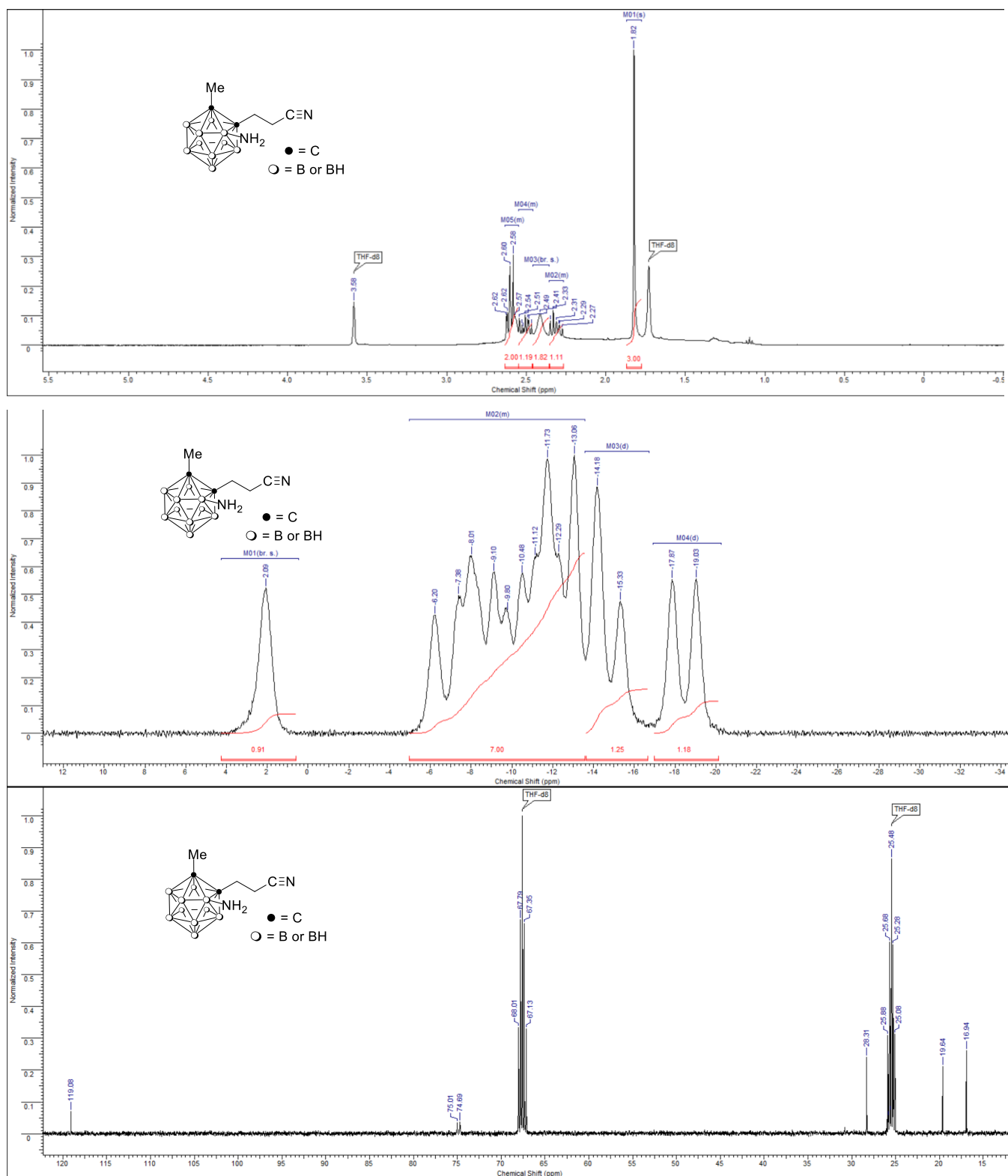


Figure S9. The ^1H , ^{11}B , ^{13}C NMR spectra of **19** in THF- d_8 .

10. The ^1H , ^{11}B and ^{13}C NMR spectra of 3-amino-1,2-bis(2-cyanoethyl)-*o*-carborane (20)

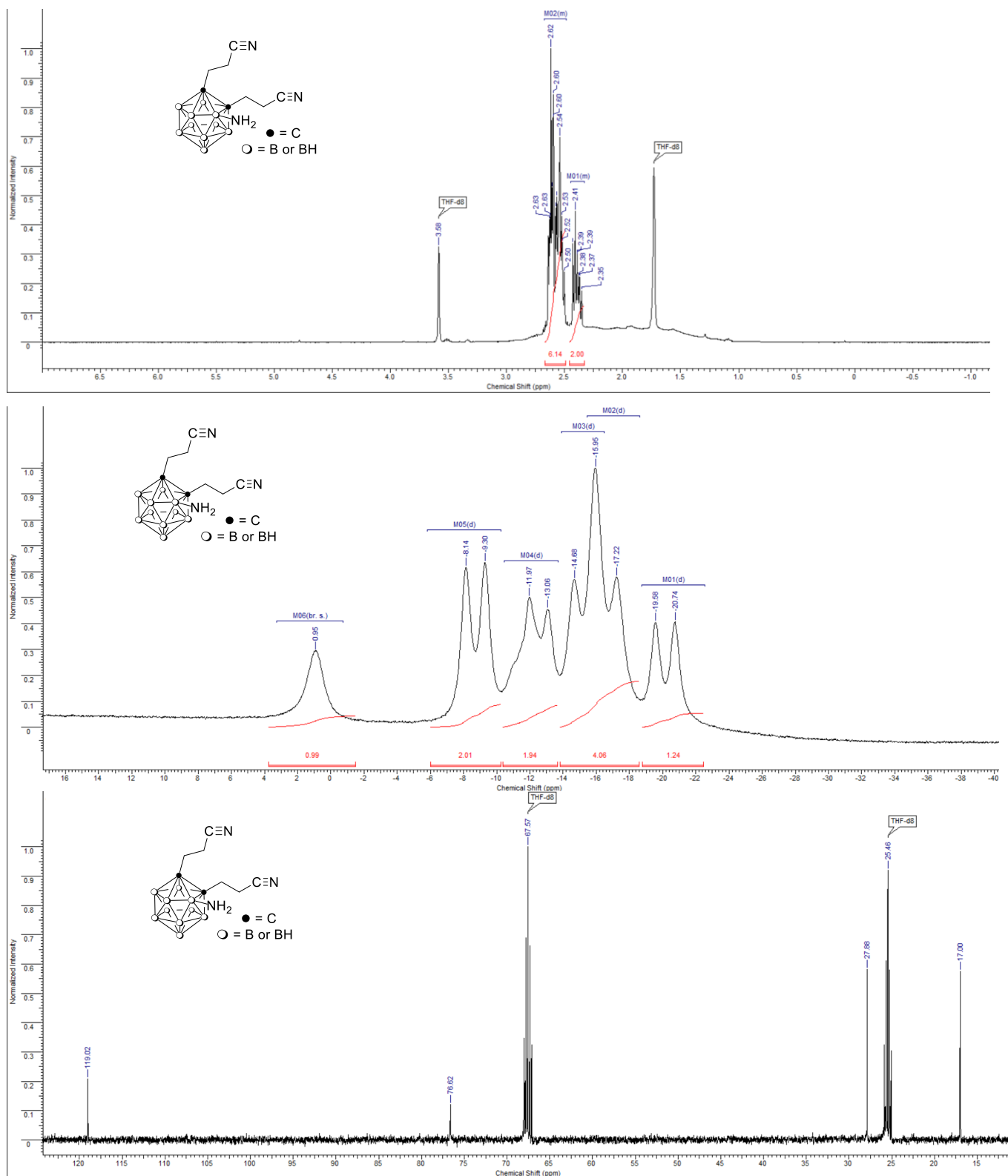


Figure S10. The ^1H , ^{11}B , ^{13}C NMR spectra of 20 in THF-d₈.

11. The ^1H and ^{11}B NMR spectra of compound **22**

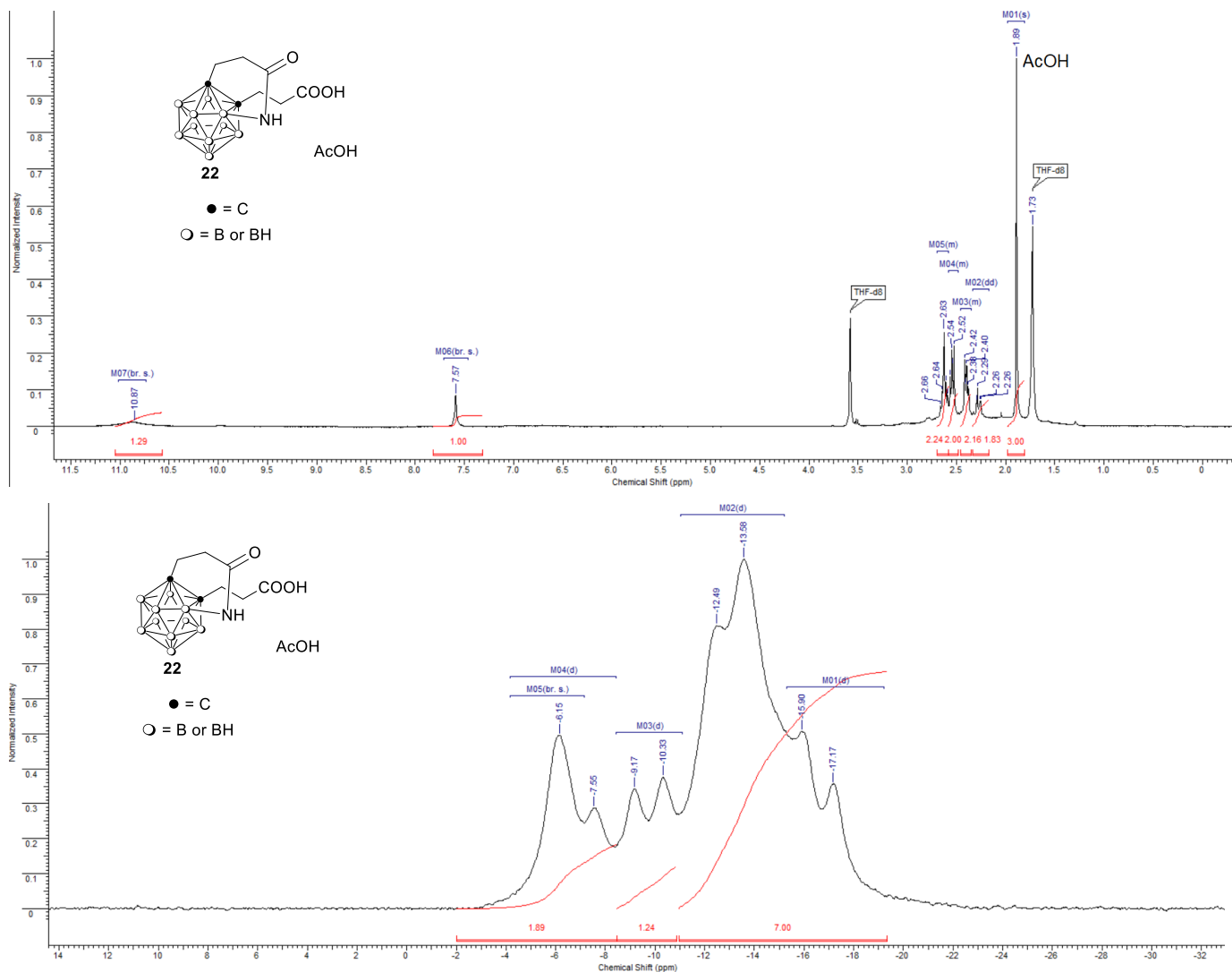
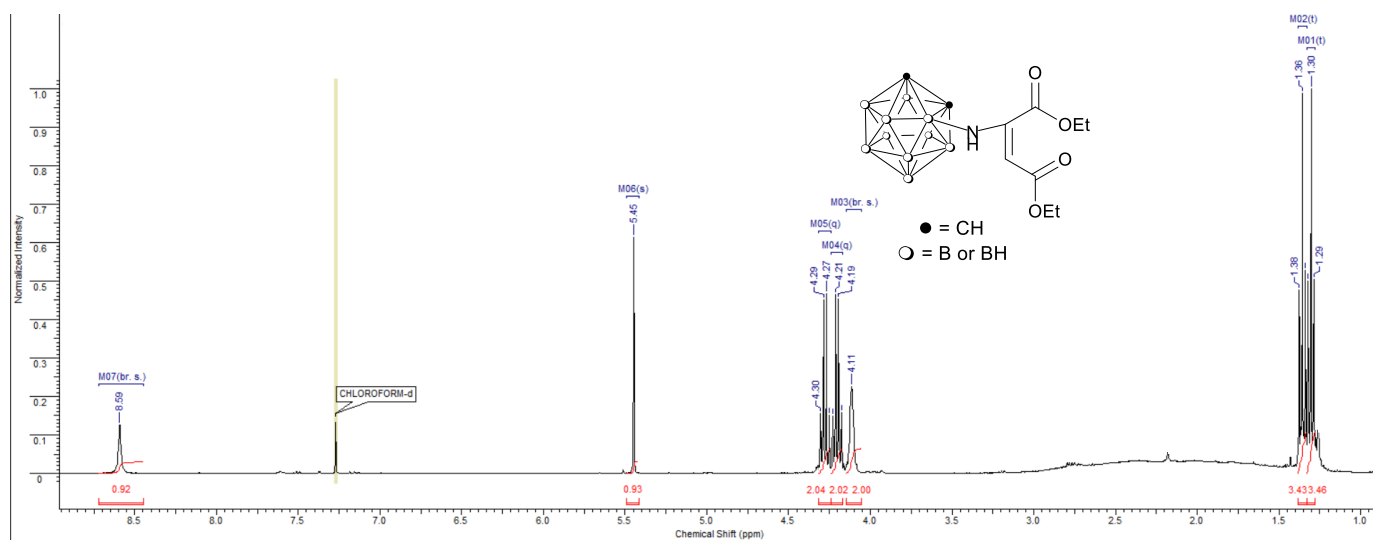


Figure S11. The ^1H , ^{11}B NMR spectra of **22** in THF-d_8 .

12. The ^1H and ^{11}B NMR spectra of 3-(1,4-diethoxy-1,4-dioxobut-2-en-2-yl)-amino-*o*-carborane (**25**)



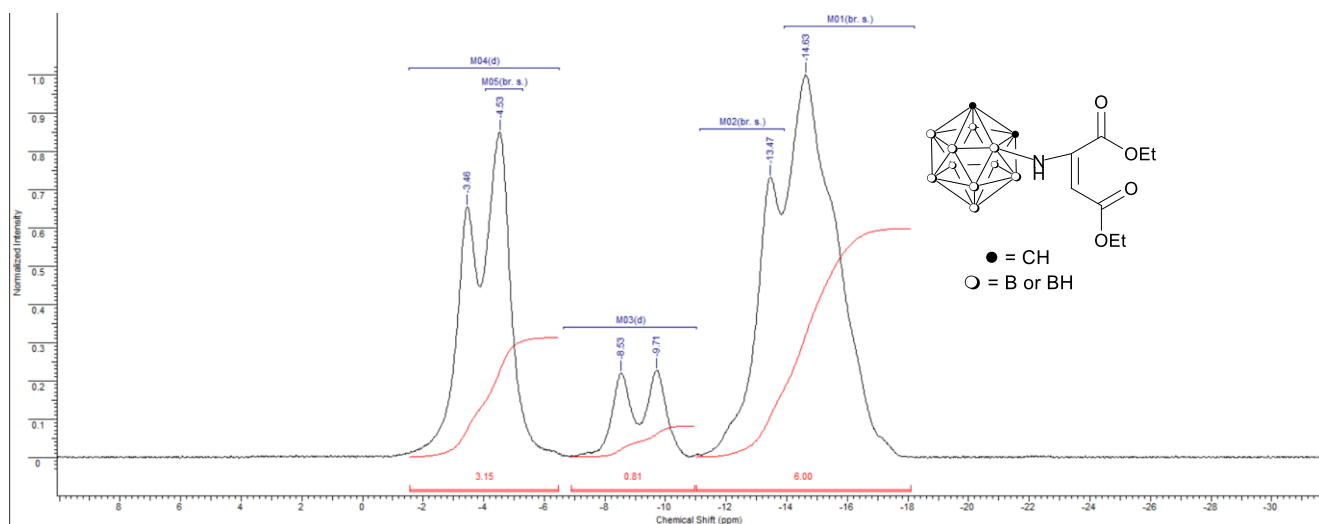


Figure S12. The ^1H and ^{11}B NMR spectra of **25** in CDCl_3 .

13. The ^1H and ^{11}B NMR spectra of 1,2-bis(2-cyanoethyl)-9-(2-cyanoethylthio)-*o*-carborane (28**)**

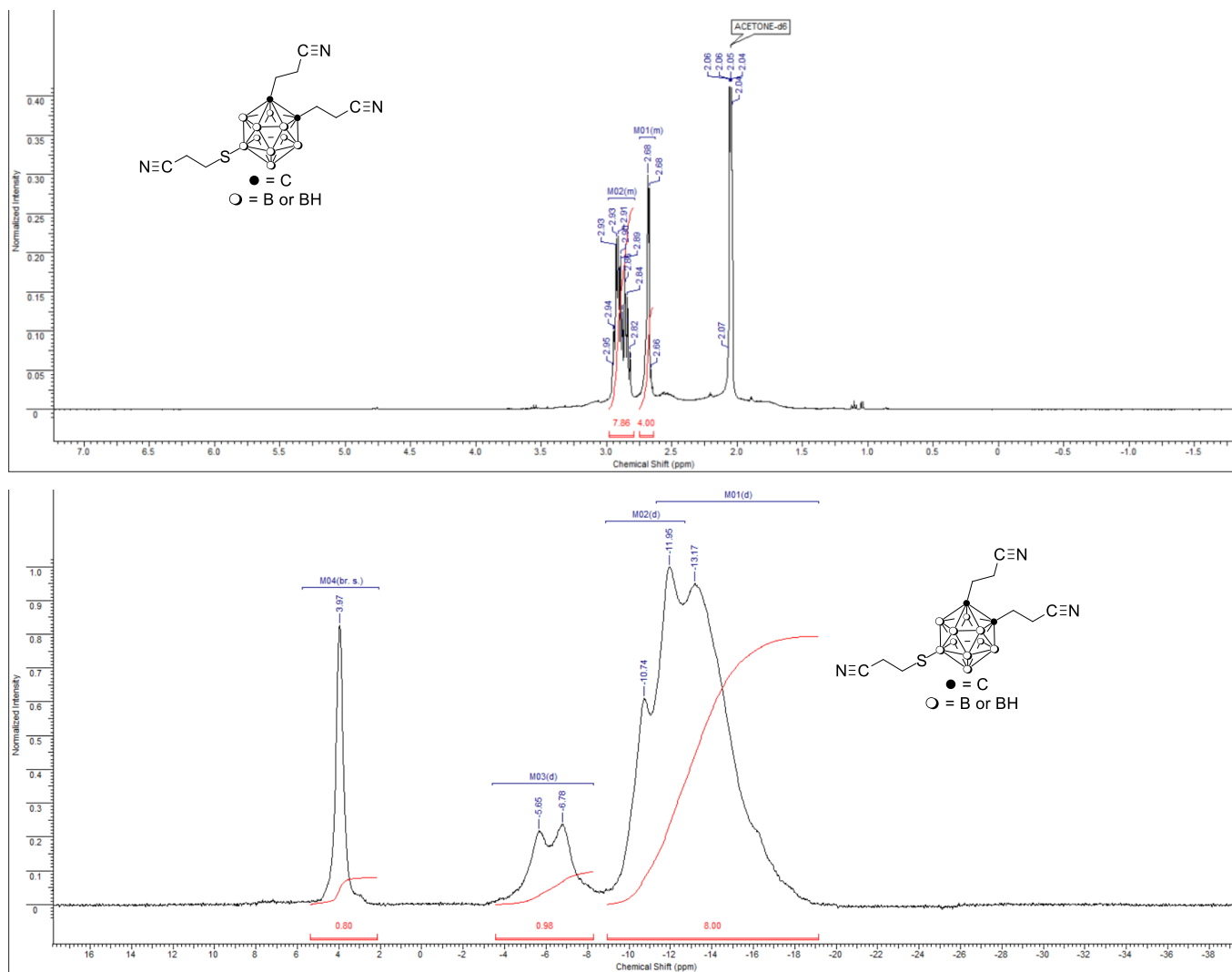


Figure S13. The ^1H and ^{11}B NMR spectra of **28** in $(\text{CD}_3)_2\text{CO}$.

14. The ^1H , ^{11}B and ^{13}C NMR spectra of 9-(2-cyanoethylthio)-*o*-carborane (29)

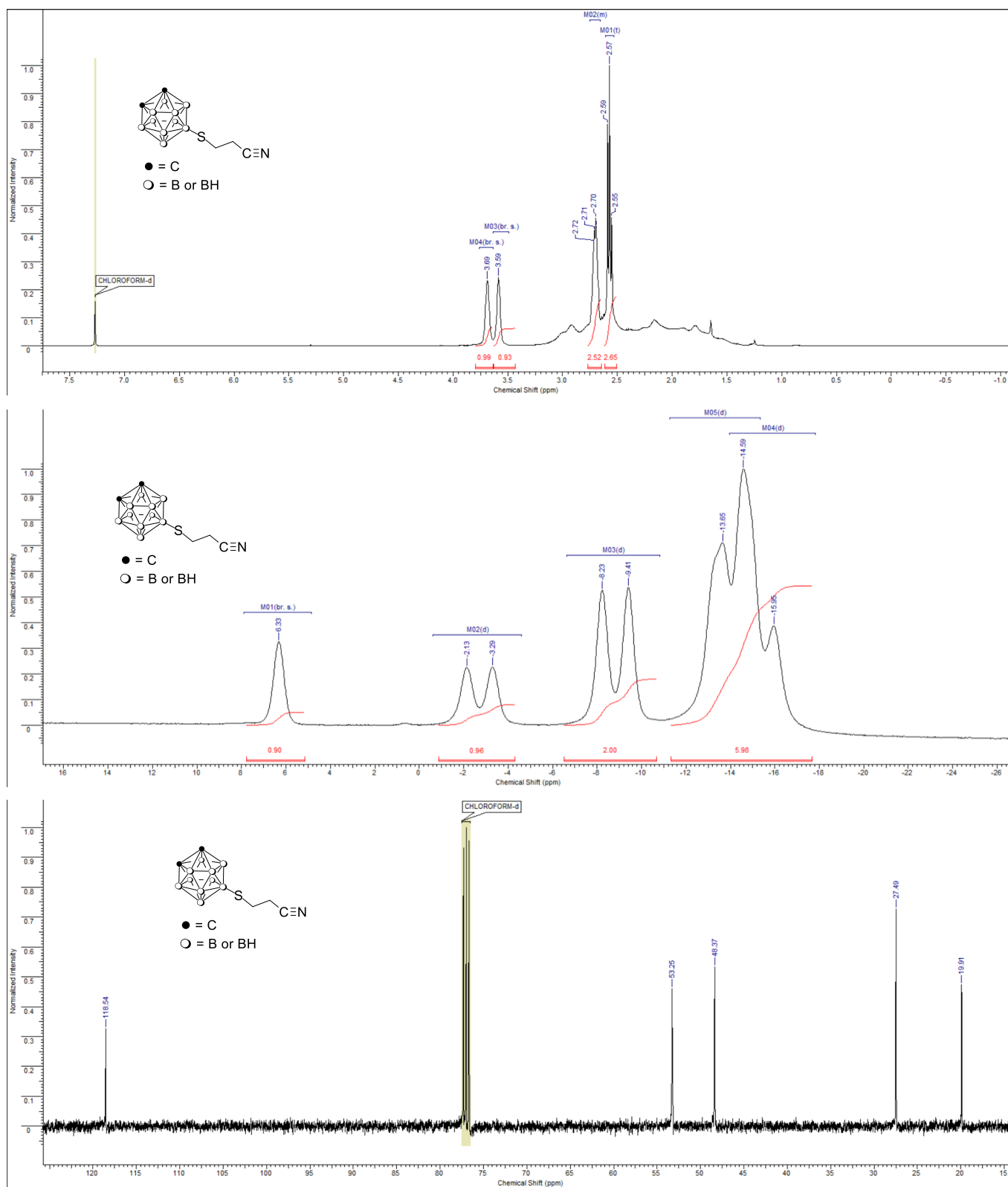


Figure S14. The ^1H , ^{11}B , ^{13}C NMR spectra of **29** in CDCl_3 .

15. The ^1H and ^{11}B NMR spectra of acid 30

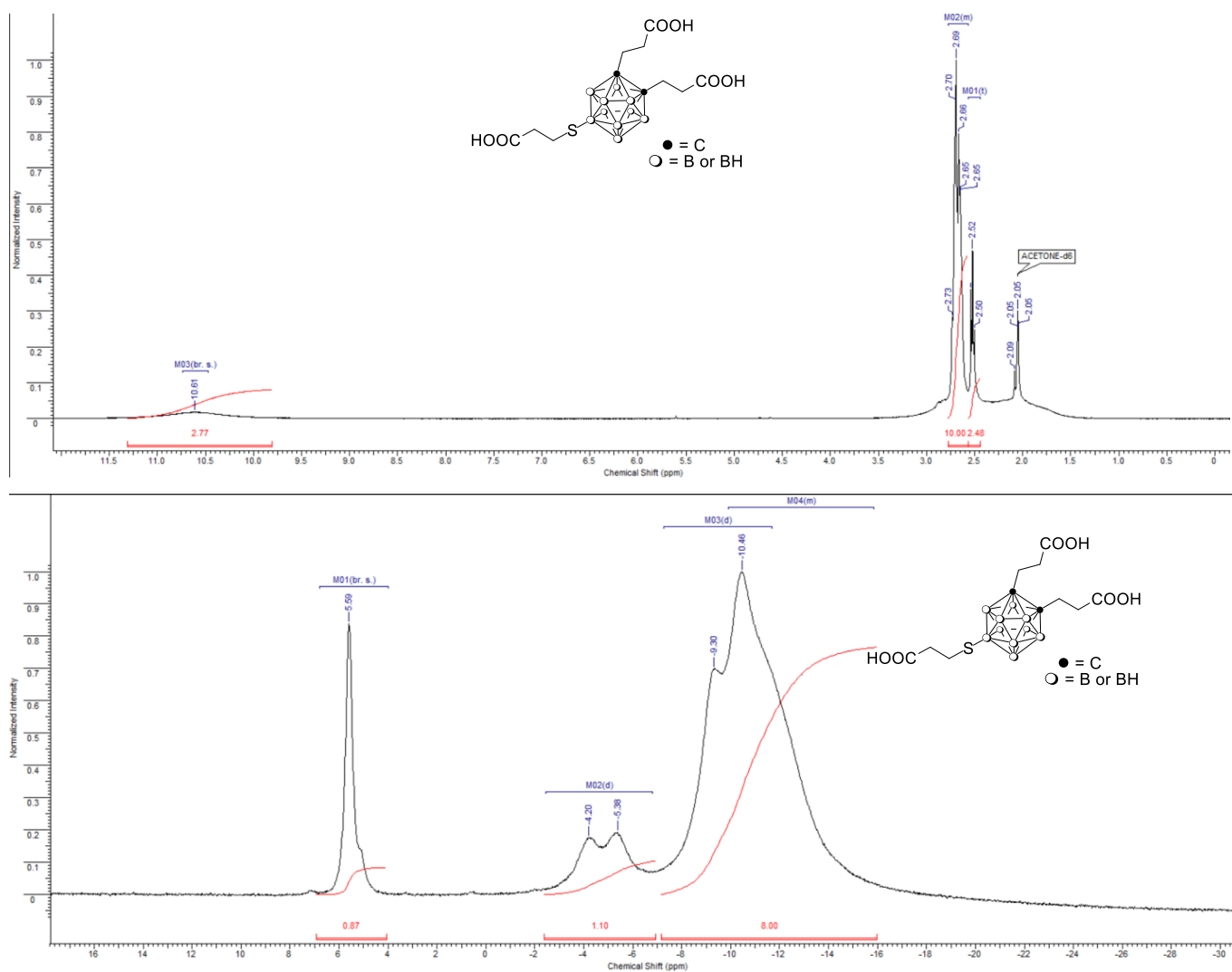
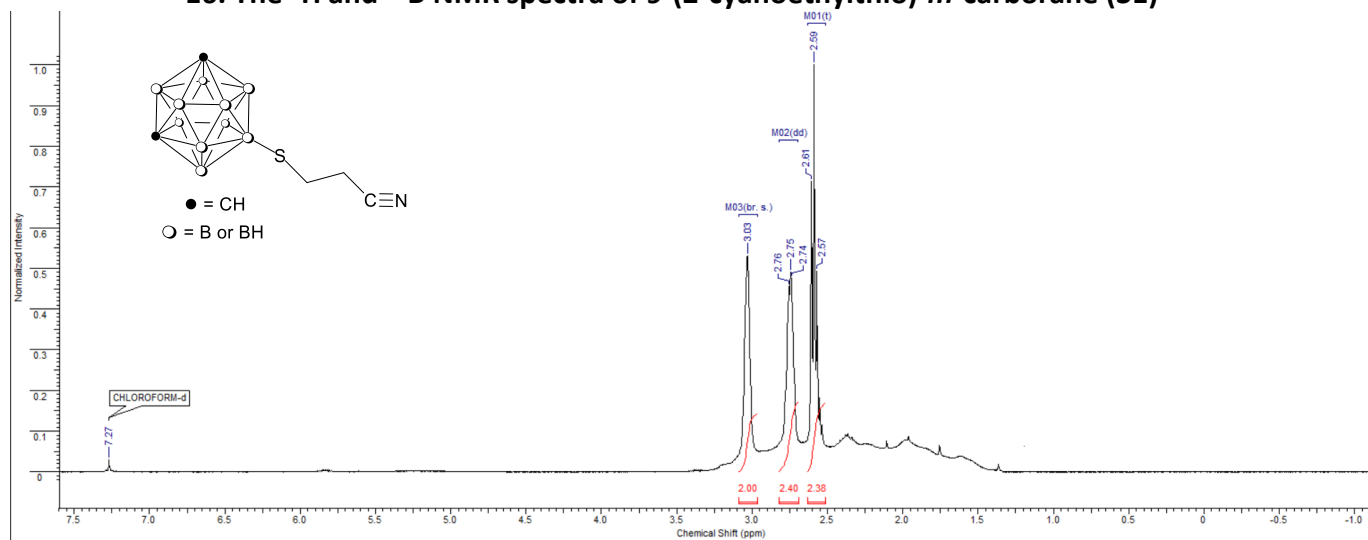


Figure S15. The ^1H and ^{11}B NMR spectra of 30 in $(\text{CD}_3)_2\text{CO}$.

16. The ^1H and ^{11}B NMR spectra of 9-(2-cyanoethylthio)-*m*-carborane (31)



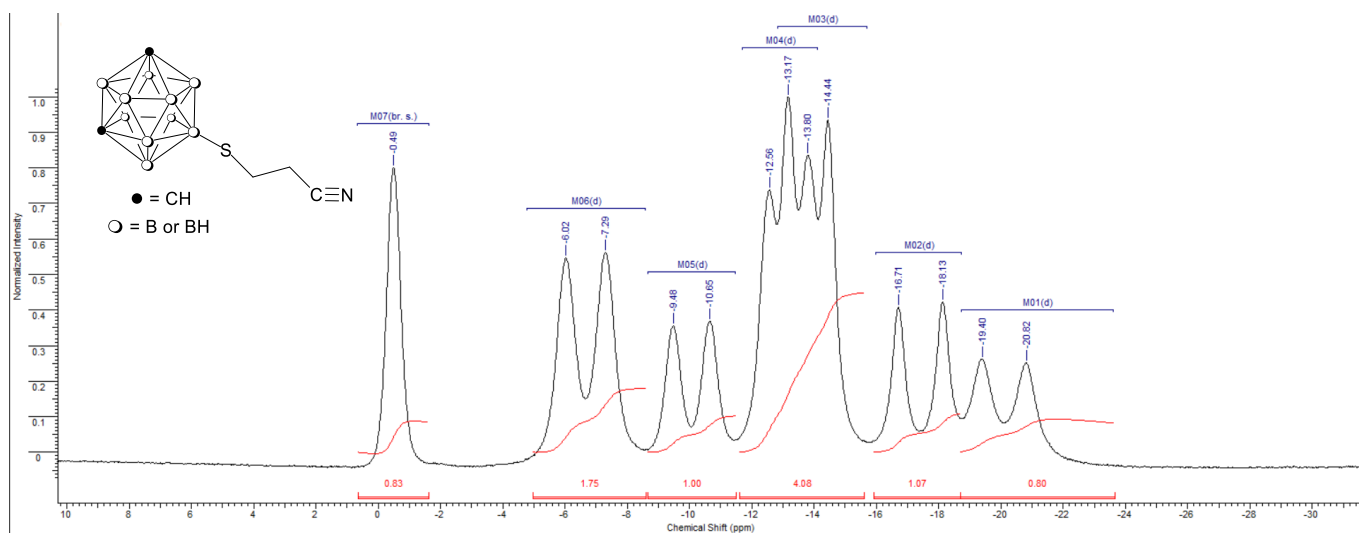


Figure S16. The ¹H and ¹¹B NMR spectra of **31** in CDCl₃.

17. The ¹H and ¹¹B NMR spectra of 3-[(*o*-carboran-9-yl)thio]methylpropanoate (32**)**

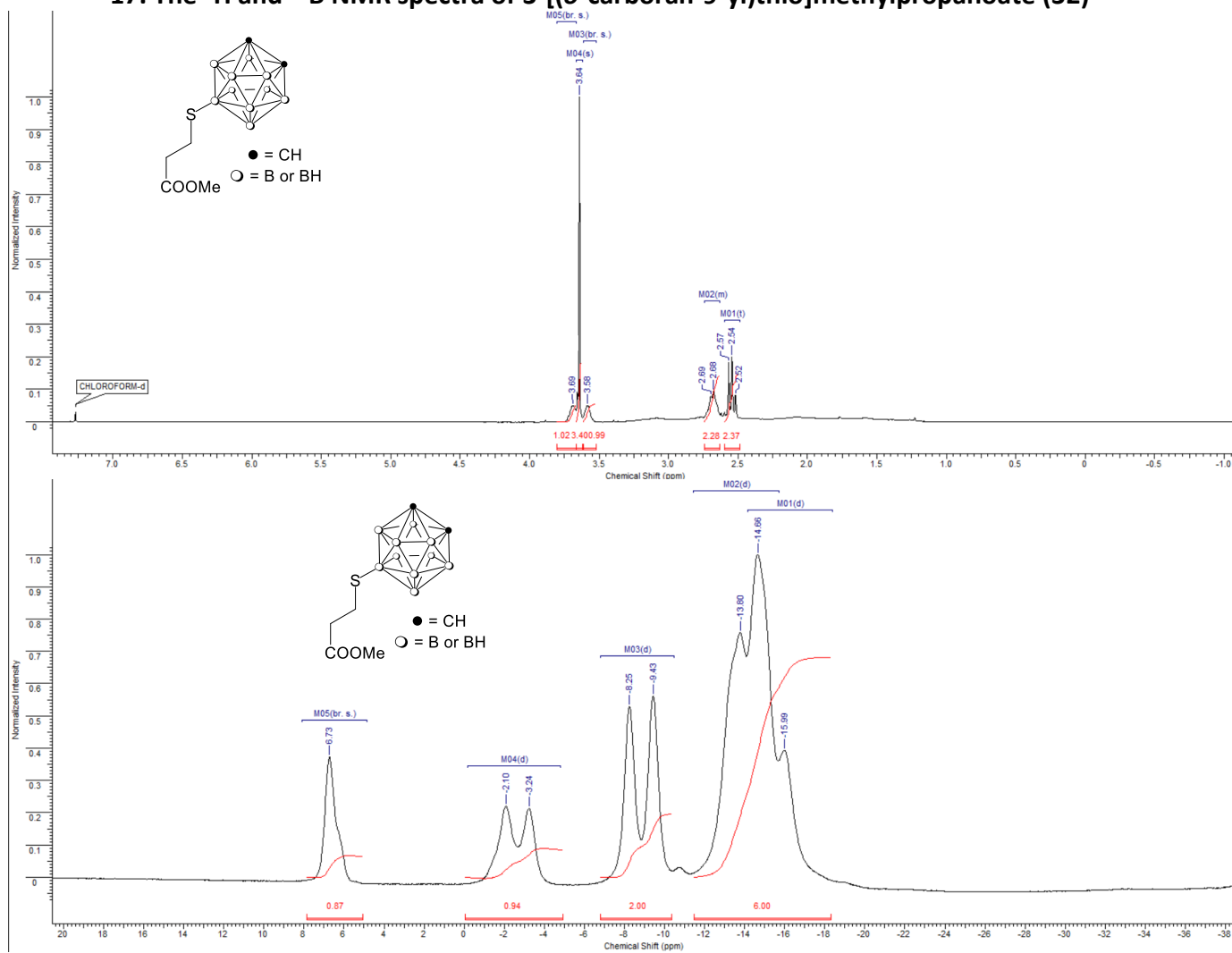


Figure S17. The ¹H and ¹¹B NMR spectra of **32** in CDCl₃.

18. The ^1H , ^{11}B and ^{13}C NMR spectra of 3-[(*m*-carboran-9-yl)thio]methylpropanoate (**33**)

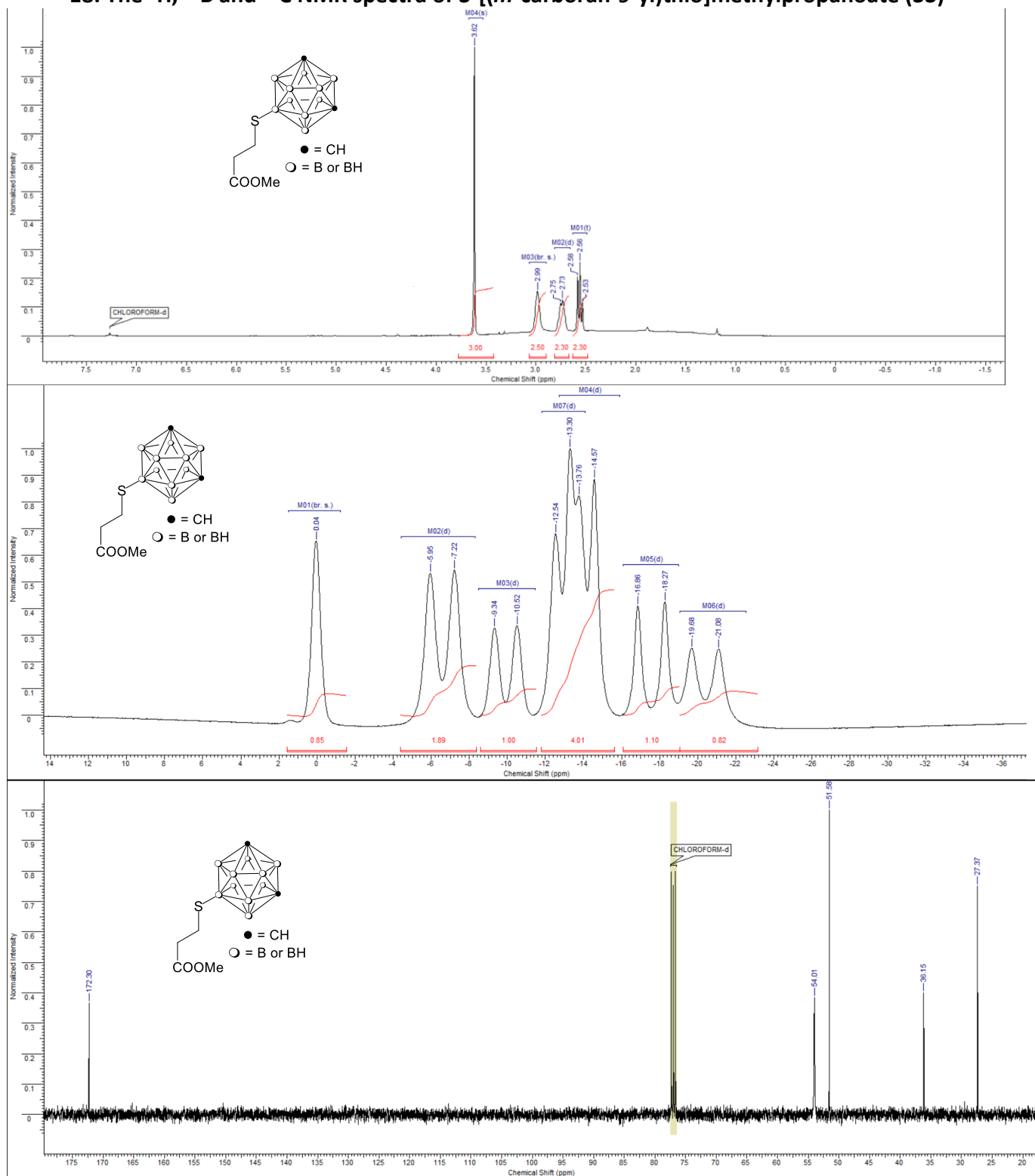


Figure S18. The ^1H , ^{11}B , ^{13}C NMR spectra of **33** in CDCl_3 .