

Supporting Information

Synthesis, structures, and optical properties of *N*-heterocycle and amino acid ester-coordinated B₃H₇

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1. Experimental Section

1.1. General Procedures. A Schlenk line and a glovebox filled with high-purity nitrogen were needed for some manipulations and the corresponding manipulations can be found in the section of Synthesis of the product **1**. The ^{11}B NMR and $^{11}\text{B}\{^1\text{H}\}$ NMR spectra were recorded on a 193 MHz spectrometer and externally referenced to $\text{BF}_3 \cdot \text{OEt}_2$ in C_6D_6 ($\delta = 0.00$ ppm). The ^1H NMR and $^1\text{H}\{^{11}\text{B}\}$ NMR spectra were obtained by a 600 MHz spectrometer. The $^{13}\text{C}\{^1\text{H}\}$ NMR spectra were obtained at a 151 MHz spectrometer. The IR spectra were measured by a Spectrum 400F. The high-resolution mass spectra (HRMS) were recorded on a Bruker Mass spectrometer using ESI-TOF (electrospray ionization-time of flight). Fluorescence spectral measurements were carried out using a Hitachi F-7000 fluorescence spectrophotometer and Shimadzu UV-2550 spectrophotometers.

Single-crystal X-ray diffraction analysis of compounds was recorded on an Agilent SuperNova Dual diffractometer using graphite monochromated Cu $K\alpha$ radiation, $\lambda = 1.54184$ Å. All the structures were solved by Shelxt routine, then refined by Shelxl-2019 program by full matrix least square on F^2 . The positions of H atoms attached to N and C atoms were located by theoretical calculations, those to B atoms were found and resided from difference Fourier map. Difference-map plots are consistent with all H atoms in structures being correctly placed. The crystal data and selected bond distances of **3**, **31**, **34**, and **59** were summarized in Tables S1-S8. Further details on the crystal structure investigation can be obtained free of charge from The Cambridge Crystallographic Data Centre *via* www.ccdc.cam.ac.uk/data_request/cif by quoting the depository number **CCDC-2365394**, **2365379**, **2365387**, **2405543**.

The formula of **3** possesses only one molecule, while two crystallographically independent molecules in the asymmetric unit. The molecule of **31** lies on a mirror plane, with unit-occupancy B1 off the plane and bonded to mirror-symmetry-related B1a. Atom B2 lies on the mirror plane is reported as being bonded to two unit-occupancy H atoms of H2 and mirror-symmetry-related H2a (Fig. S1).

The starting materials $\text{NMe}_4[\text{B}_3\text{H}_8]$, $\text{NMe}_4[^{10}\text{B}_3\text{H}_8]$, oxidants, *N*-heterocycles, and amino acid esters were used as received. All solvents were distilled from standard

drying agents and degassed before use.

1.2. Synthesis of the product 1 (Table 1, Entry 7). In a glovebox filled with high-purity nitrogen, $\text{NMe}_4[\text{B}_3\text{H}_8]$ (0.23 g, 2 mmol) and Pyridine (0.16 mL, 2 mmol) were added to a 25 mL Schlenk flask. The flask was connected with a Schlenk line, and 10 mL THF was injected. Then, a THF solution of I_2 (5 mL, 0.254 g, 1 mmol) was also injected to the flask. The reaction solution was stirred for 30 min at room temperature under N_2 atmosphere. Then, the reaction mixture was filtered (this manipulation and the subsequent manipulations are not need the N_2 atmosphere). The removal of THF from the filtrate under a dynamic vacuum resulted in the crude product **1**. Then, the crude product **1** was purified by flash chromatography (silica gel, petroleum ether: $\text{CH}_2\text{Cl}_2 = 2:1$) to give the pure product **1** (0.22 g, 93%). Complexes **2-83** were also synthesized following the same procedure.

2. Supporting Results

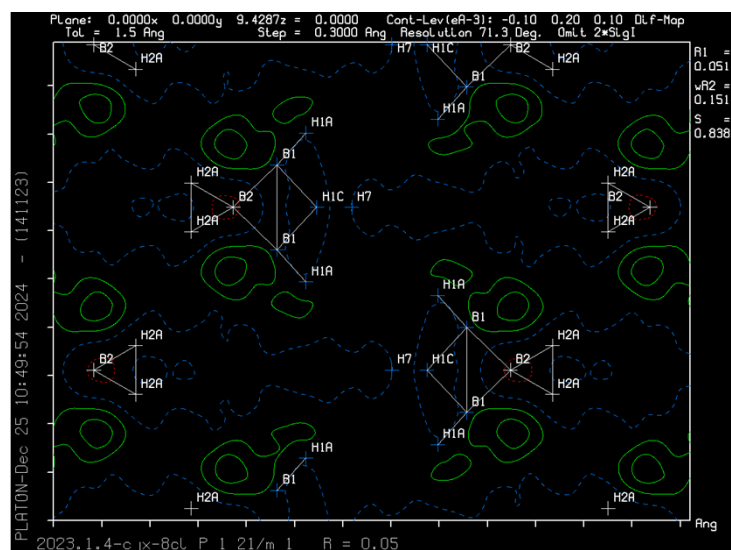


Fig. S1 Difference-map of compound **31**.

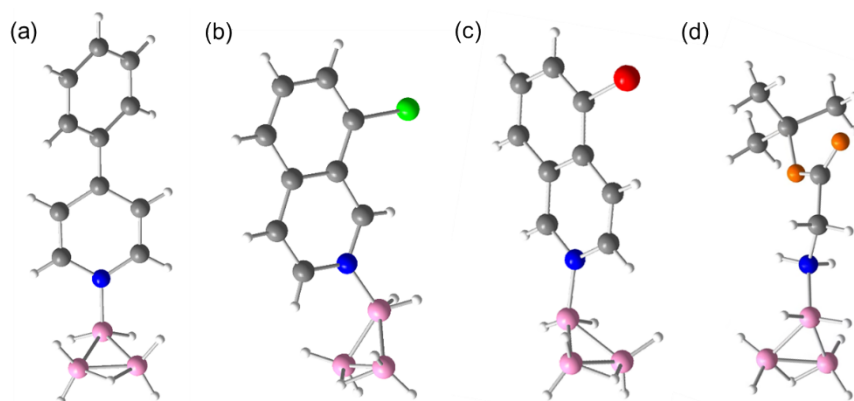


Fig. S2 Single-crystal structures of (a) **3**, (b) **31**, (c) **34**, and (d) **59**. Colors: B, pink; C, gray; N, blue; H, white; Cl, green; Br, red; O, orange.

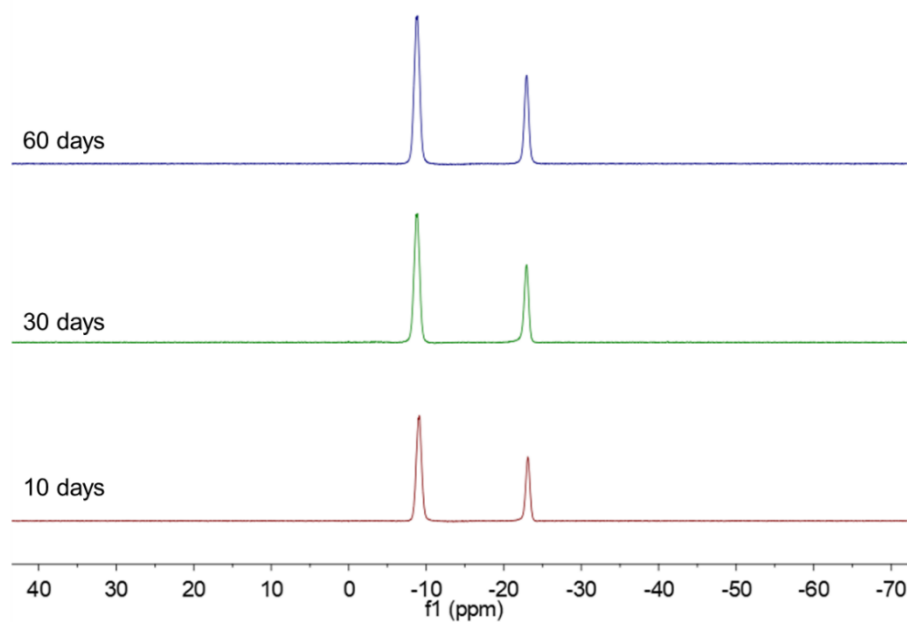


Fig. S3 The ^{11}B NMR spectra of the prepared **5** in CDCl_3 . The product **5** was exposed to air for 10, 30, and 60 days and then dissolved in CDCl_3 .

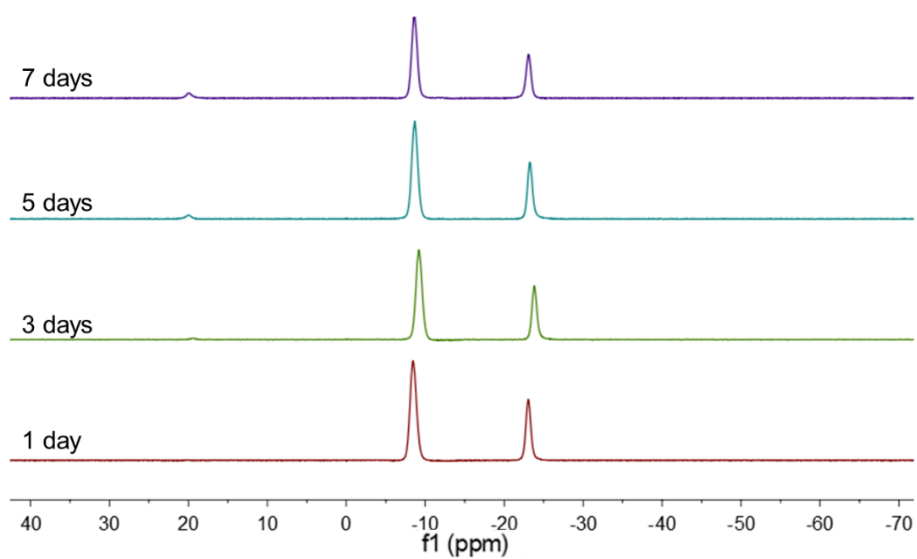


Fig. S4 The ^{11}B NMR spectra of the prepared **5** in H_2O for 1, 3, 5, and 7 days.

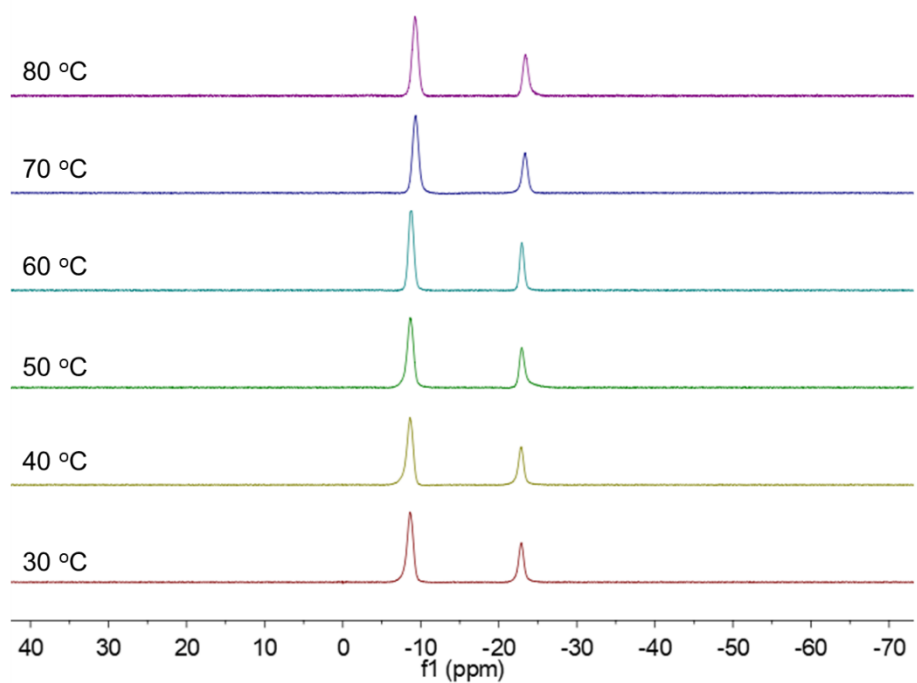


Fig. S5 The ^{11}B NMR spectra of the prepared **5** in CDCl_3 . The product **5** was heated at 30, 40, 50, 60, 70, and 80 °C for 10 min, and then dissolved in CDCl_3 .

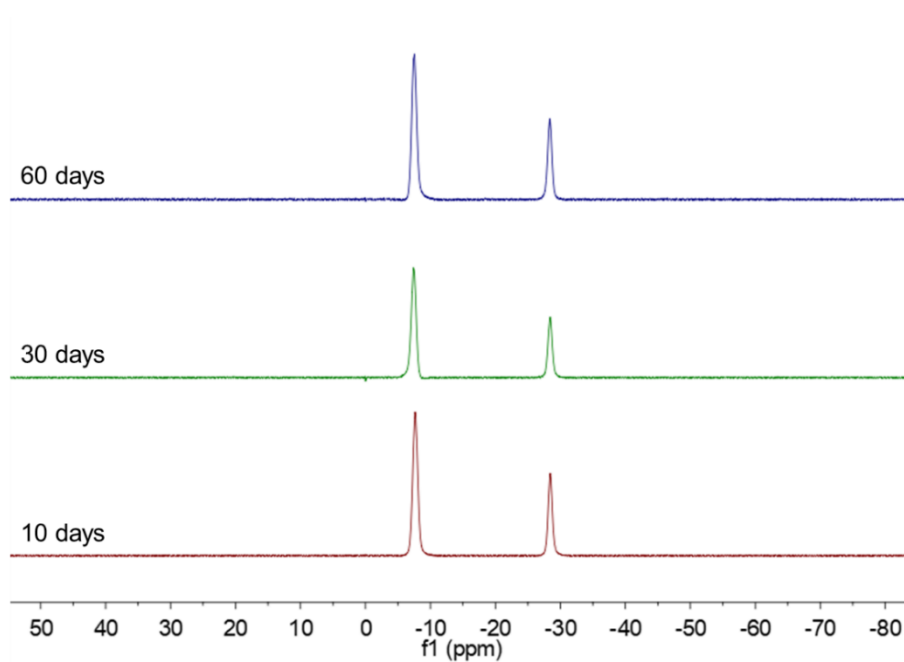


Fig. S6 The ^{11}B NMR spectra of the prepared **59** in CDCl_3 . The product **59** was exposed to air for 10, 30, and 60 days and then dissolved in CDCl_3 .

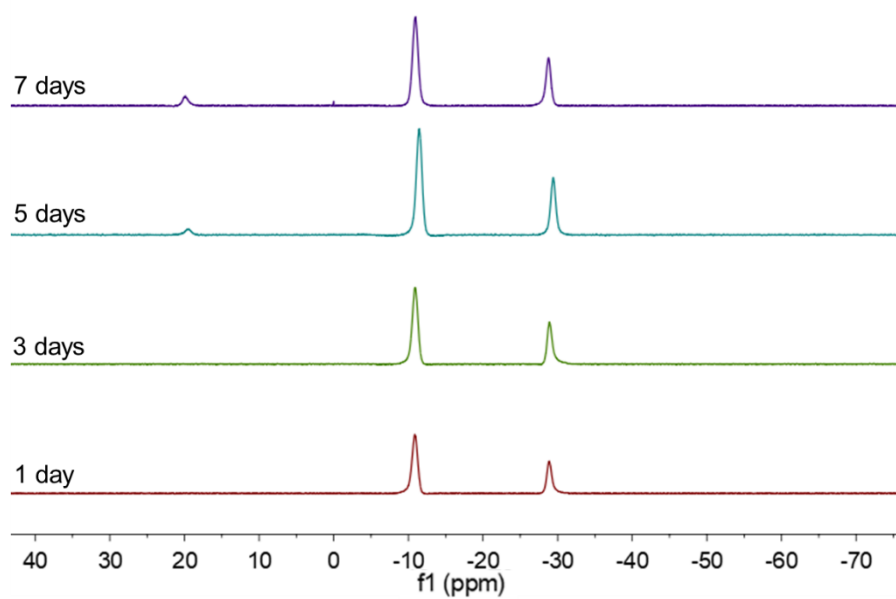


Fig. S7 The ^{11}B NMR spectra of the prepared **59** in H_2O for 1, 3, 5, and 7 days.

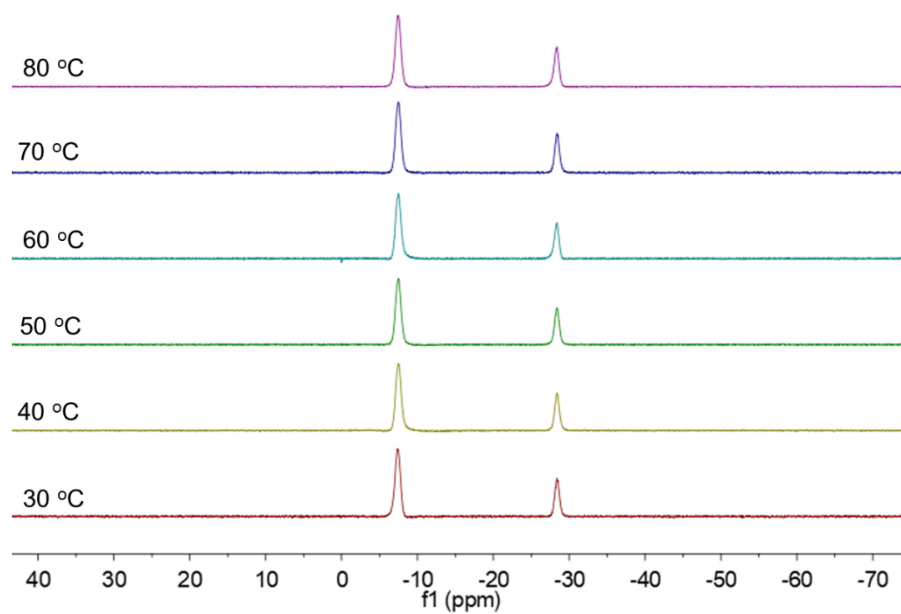


Fig. S8 The ^{11}B NMR spectra of the prepared **59** in CDCl_3 . The product **59** was heated at 30, 40, 50, 60, 70, and 80 °C for 10 min, and then dissolved in CDCl_3 .

Quantum Yield Results

for 'Multi Scans'

Excitation Range: 420.00 to 444.00 nm

Luminescence Range: 445.00 to 738.00 nm

$$\text{QY} = 59.50\%$$

Fig. S9 The quantum yield of **28** in THF.

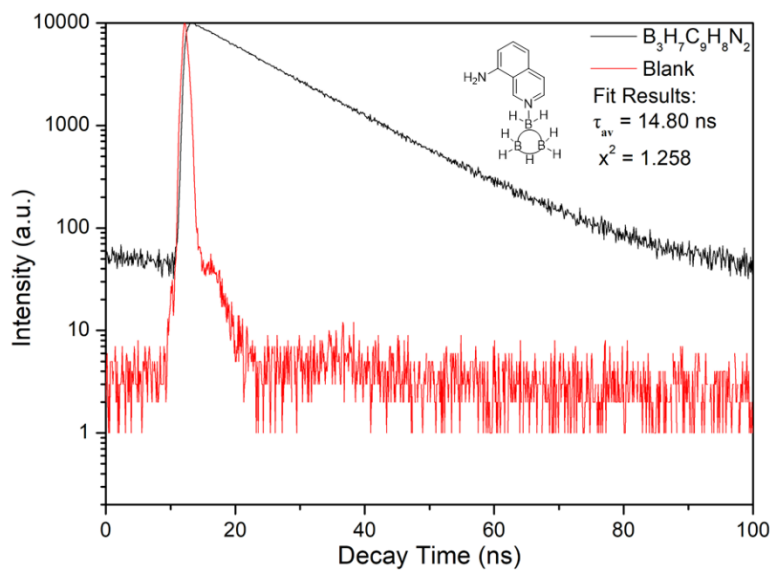


Fig. S10 The fluorescence lifetime of **28** in THF.

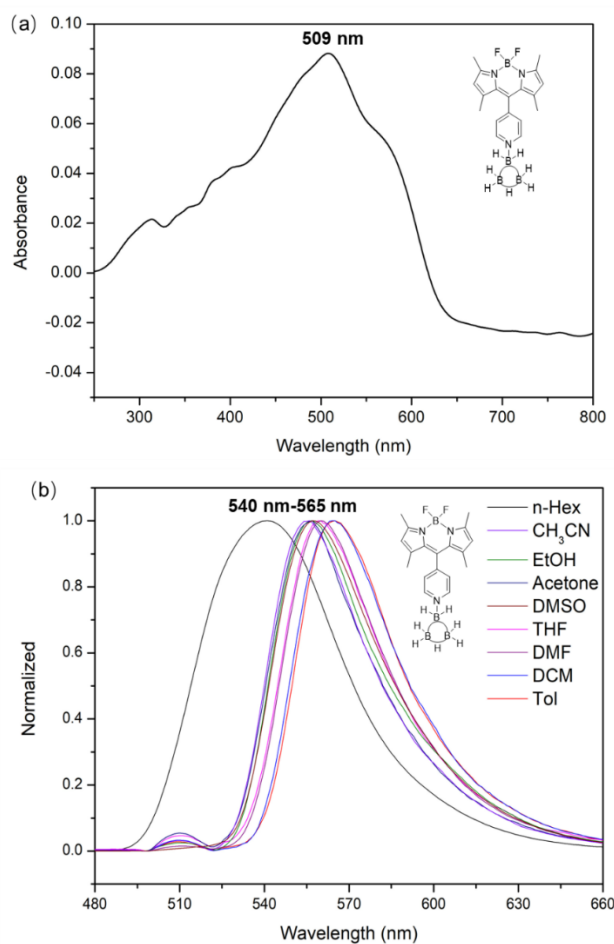


Fig. S11 (a) The UV/Vis absorption of **16** (2 mg mixed with 200 mg $BaSO_4$). (b) Emission spectra of **16** in different solvents (4.5×10^{-4} mol/L in corresponding solutions, $\lambda_{ex} = 509$ nm).

3. Tables

Table S1 Experimental and crystallographic details for **3**.

Formula sum	C ₁₁ H ₁₆ B ₃ N
Formula weight	194.68
Temperature	298K
Crystal system	triclinic
Space group	P-1
	a=8.9433(4) Å
	b=9.1729(3) Å
	c=15.5599(5) Å
	α=100.947(3)°
	β=106.184(4)°
	γ=96.479(3)°
Cell Volume	1184.83(8) Å ³
Z	4
ρ _{calc}	1.091 g/cm ³
μ	0.438 mm ⁻¹
F(000)	416.0
Crystal size	0.1 × 0.1 × 0.1 mm ³
Radiation	Cu Kα (λ = 1.54184)
2θ range for data collection	9.976 to 142.628°
Index ranges	-10 ≤ h ≤ 10, -8 ≤ k ≤ 11, -19 ≤ l ≤ 16
Reflections collected	8764
Independent reflections	4485 [R _{int} = 0.0171, R _{sigma} = 0.0253]
Data/restraints/parameters	4485/0/327
Goodness-of-fit on F ²	1.047
Final R indexes [I ≥ 2σ (I)]	R ₁ = 0.0444, wR ₂ = 0.1148
Final R indexes [all data]	R ₁ = 0.0504, wR ₂ = 0.1204
Largest diff. peak/hole	0.15/-0.17 e Å ⁻³

Table S2 Selected bond distances (Å) for crystal structure of **3**.

Distance(Å)			
N1-C1	1.3450(17)	N2-C12	1.3431(16)
N1-C5	1.3413(16)	N2-C16	1.3394(16)
N1-B2	1.5907(18)	N2-B5	1.5907(17)
C1-C2	1.3694(18)	C12-C13	1.3703(17)
C2-C3	1.3949(18)	C13-C14	1.3920(17)
C3-C4	1.3918(18)	C14-C15	1.3905(17)
C3-C6	1.4784(17)	C14-C17	1.4788(16)
C4-C5	1.3704(18)	C15-C16	1.3703(17)
C6-C7	1.3915(19)	C17-C18	1.3888(18)
C6-C11	1.3903(19)	C17-C22	1.3873(18)
C7-C8	1.386(2)	C18-C19	1.3823(19)
C8-C9	1.381(3)	C19-C20	1.375(2)
C9-C10	1.374(2)	C20-C21	1.378(2)
C10-C11	1.3813(19)	C21-C22	1.3837(19)
B1-B2	1.825(3)	B4-B5	1.838(2)
B1-B3	1.700(3)	B4-B6	1.714(3)
B2-B3	1.817(3)	B5-B6	1.836(2)

Table S3 Experimental and crystallographic details for **31**.

Formula sum	C ₉ H ₁₃ B ₃ ClN
Formula weight	203.08
Temperature	293 K
Crystal system	monoclinic
Space group	P2 ₁ /m
	a=8.6443(4) Å
	b=6.7370(3) Å
	c= 10.0988(5) Å
	α=90°
	β=110.990(5)°
	γ=90°
Cell Volume	549.09(5) Å ³
Z	2
ρ _{calc}	1.228 g/cm ³
μ	2.679 mm ⁻¹
F(000)	212.0
Crystal size	0.1 × 0.1 × 0.1 mm ³
Radiation	Cu Kα (λ = 1.54184)
2θ range for data collection	9.38 to 142.576°
Index ranges	-10 ≤ h ≤ 10, -4 ≤ k ≤ 8, -12 ≤ l ≤ 9
Reflections collected	2202
Independent reflections	1140 [R _{int} = 0.0175, R _{sigma} = 0.0248]
Data/restraints/parameters	1140/0/103
Goodness-of-fit on F ²	1.079
Final R indexes [I ≥ 2σ (I)]	R ₁ = 0.0505, wR ₂ = 0.1392
Final R indexes [all data]	R ₁ = 0.0547, wR ₂ = 0.1452
Largest diff. peak/hole	0.26 and -0.26 e / Å ⁻³

Table S4 Selected bond distances (Å) for crystal structure of **31**.

Distance(Å)			
C11-C3	1.725(3)	C4-C5	1.397(5)
N8-C1	1.325(3)	C5-C6	1.362(5)
N8-C9	1.375(3)	C6-C7	1.411(4)
N8-B2	1.590(3)	C7-C8	1.412(4)
C1-C2	1.401(3)	C8-C9	1.347(4)
C2-C3	1.421(4)	B1-B1 ¹	1.753(14)
C2-C7	1.417(4)	B1-B2	1.739(4)
C3-C4	1.366(4)		

Table S5 Experimental and crystallographic details for **34**.

Formula sum	C ₉ H ₁₃ B ₃ BrN
Formula weight	247.54
Temperature	293K
Crystal system	monoclinic
Space group	P2 ₁ /c
	a=7.0276(2) Å
	b=14.8744 (4) Å
	c=11.0026(3) Å
	α=90°
	β=92.063(2)°
	γ=90°
Cell Volume	1149.37 (5) Å ³
Z	4
ρ _{calc}	1.431 g/cm ³
μ	4.495 mm ⁻¹
F(000)	496.0
Crystal size	0.1 × 0.1 × 0.1 mm ³
Radiation	Cu Kα (λ = 1.54184)
2Θ range for data collection	10.004 to 142.422°
Index ranges	-8 ≤ h ≤ 8, -18 ≤ k ≤ 14, -10 ≤ l ≤ 13
Reflections collected	4457
Independent reflections	2176 [R _{int} = 0.0217, R _{sigma} = 0.0268]
Data/restraints/parameters	2176/0/127
Goodness-of-fit on F ²	1.028
Final R indexes [I ≥ 2σ (I)]	R ₁ = 0.0470, wR ₂ = 0.1245
Final R indexes [all data]	R ₁ = 0.0502, wR ₂ = 0.1282
Largest diff. peak/hole	0.77/-1.12 e Å ⁻³

Table S6 Selected bond distances (Å) for crystal structure of **34**.

Distance(Å)			
Br1-C6	1.893(4)	C4-C5	1.391(6)
N1-C1	1.322(4)	C5-C6	1.365(5)
N1-C9	1.368(3)	C6-C7	1.419(4)
N1-B3	1.597(4)	C7-C8	1.402(4)
C1-C2	1.403(4)	C8-C9	1.352(5)
C2-C3	1.410(4)	B1-B2	1.720(8)
C2-C7	1.417(4)	B1-B3	1.802(6)
C3-C4	1.386(6)	B2-B3	1.796(6)

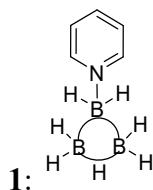
Table S7 Experimental and crystallographic details for **59**.

Formula sum	C ₆ H ₂₀ B ₃ NO ₂
Formula weight	170.66
Temperature	298K
Crystal system	monoclinic
Space group	P2 ₁ /c
	a=8.6344(9) Å
	b=18.1239(16) Å
	c=7.5131(7) Å
	α=90°
	β=91.852(9)°
	γ=90°
Cell Volume	1175.10(19) Å ³
Z	4
ρ _{calc}	0.965 g/cm ³
μ	0.496 mm ⁻¹
F(000)	376.0
Crystal size	0.014 × 0.012 × 0.01 mm ³
Radiation	Cu Kα (λ = 1.54184)
2θ range for data collection	9.76 to 142.586°
Index ranges	-10 ≤ h ≤ 9, -22 ≤ k ≤ 13, -8 ≤ l ≤ 8
Reflections collected	4533
Independent reflections	2207 [R _{int} = 0.0361, R _{sigma} = 0.0445]
Data/restraints/parameters	2207/0/148
Goodness-of-fit on F ²	1.053
Final R indexes [I ≥ 2σ (I)]	R ₁ = 0.0822, wR ₂ = 0.2398
Final R indexes [all data]	R ₁ = 0.0998, wR ₂ = 0.2685
Largest diff. peak/hole	0.29/-0.36 e Å ⁻³

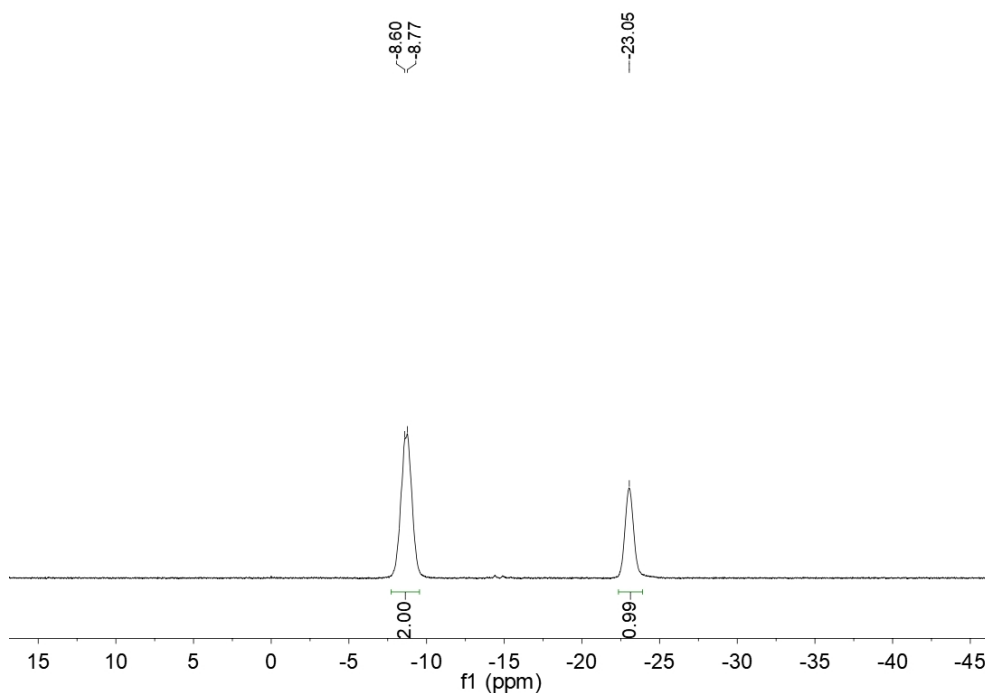
Table S8 Selected bond distances (Å) for crystal structure of **59**.

Distance(Å)			
O1-C2	1.199(3)	C3-C4	1.517(4)
O2-C2	1.319(3)	C3-C5	1.506(4)
O2-C3	1.496(3)	C3-C6	1.513(4)
N1-C1	1.471(3)	B1-B2	1.824(5)
N1-B1	1.601(3)	B1-B3	1.817(5)
C1-C2	1.509(3)	B2-B3	1.722(6)

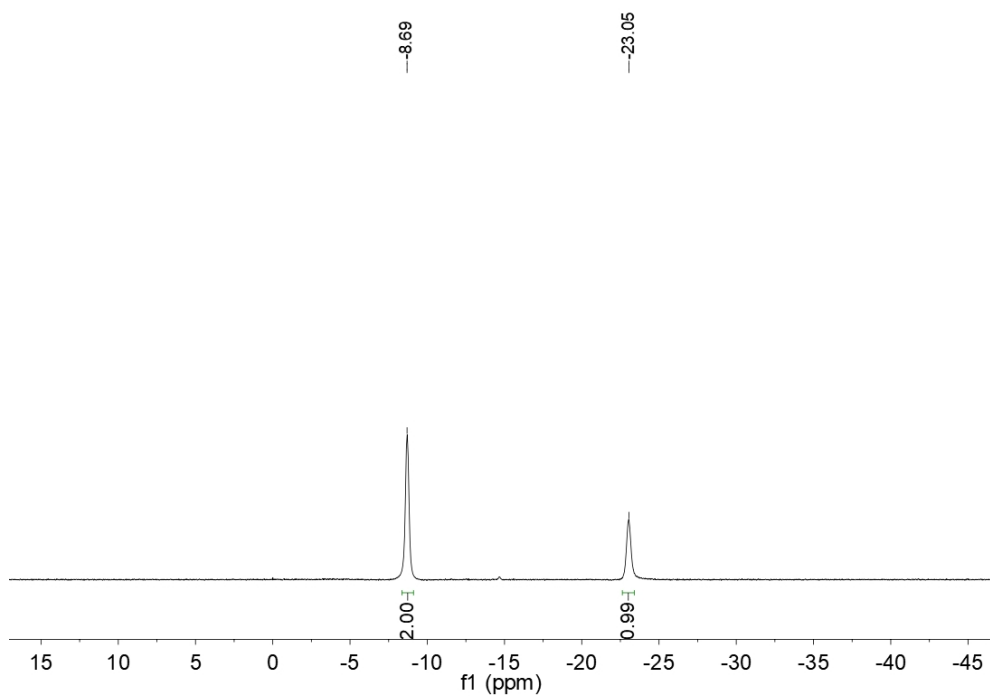
4. Characterization Data



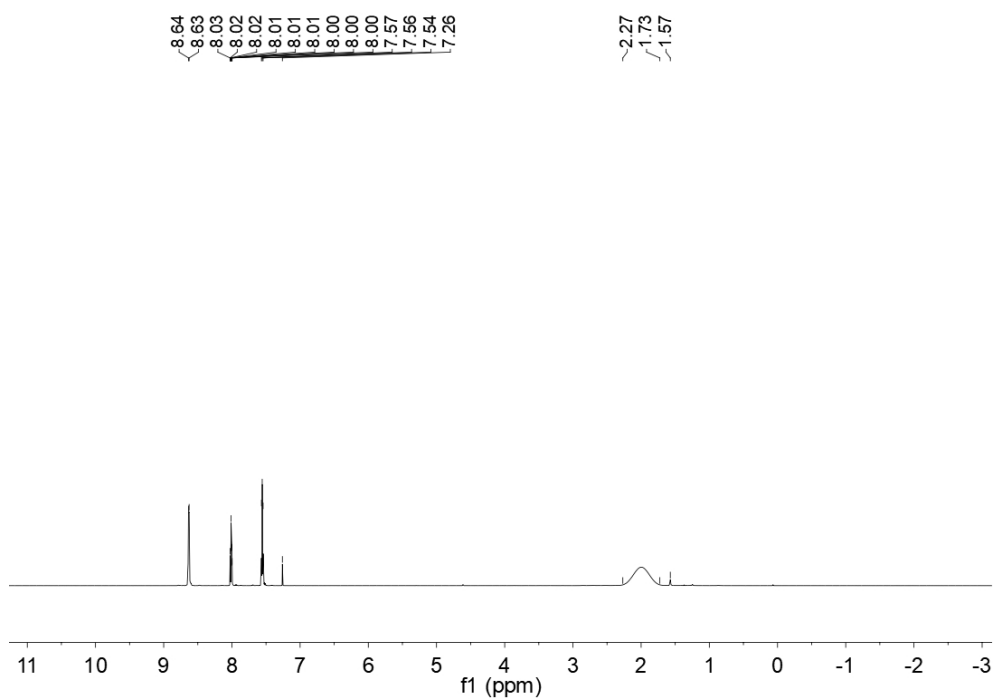
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 93%, white solid, melting point: 33-34 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.69 (*br*, 2 B of **BHB**), -23.03(*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.69 (*s*, 2 B of **BHB**), -23.05 (*s*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.64 (*d*, 2 H of **CH**), 8.01 (*m*, H of **CH**), 7.56 (*t*, 2 H of 2 **CH**), 2.27-1.73 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.64 (*d*, 2 H of 2 **CH**), 8.01 (*t*, H of **CH**), 7.55 (*t*, 2 H of 2 **CH**), 2.00 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 147.38 (*s*, 2 C), 140.60 (*s*, C), 125.30 (*s*, 2 C) ppm. IR (cm^{-1}): 362 (*w*), 3136 (*w*), 2057 (*s*), 2429 (*s*), 1694 (*m*), 1538 (*w*), 1482 (*w*), 1426 (*m*), 1383 (*m*), 1263 (*m*), 1200 (*w*), 1094 (*s*), 1030 (*s*), 966 (*m*), 810 (*s*), 761 (*s*), 655 (*w*), 606 (*w*), 556 (*w*). HRMS *m/z* calcd for $\text{C}_5\text{H}_{12}\text{B}_3\text{N}$ [$\text{M}+\text{Na}$] $^+$: 142.1143, found: 142.1147.



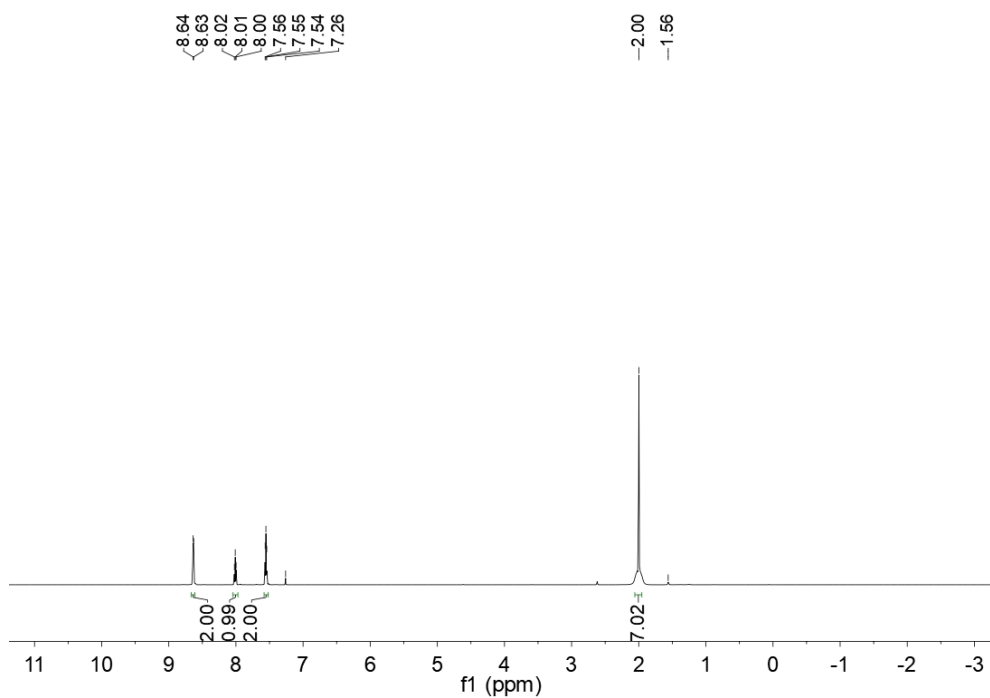
The ^{11}B NMR spectrum of the prepared **1** in CDCl_3 .



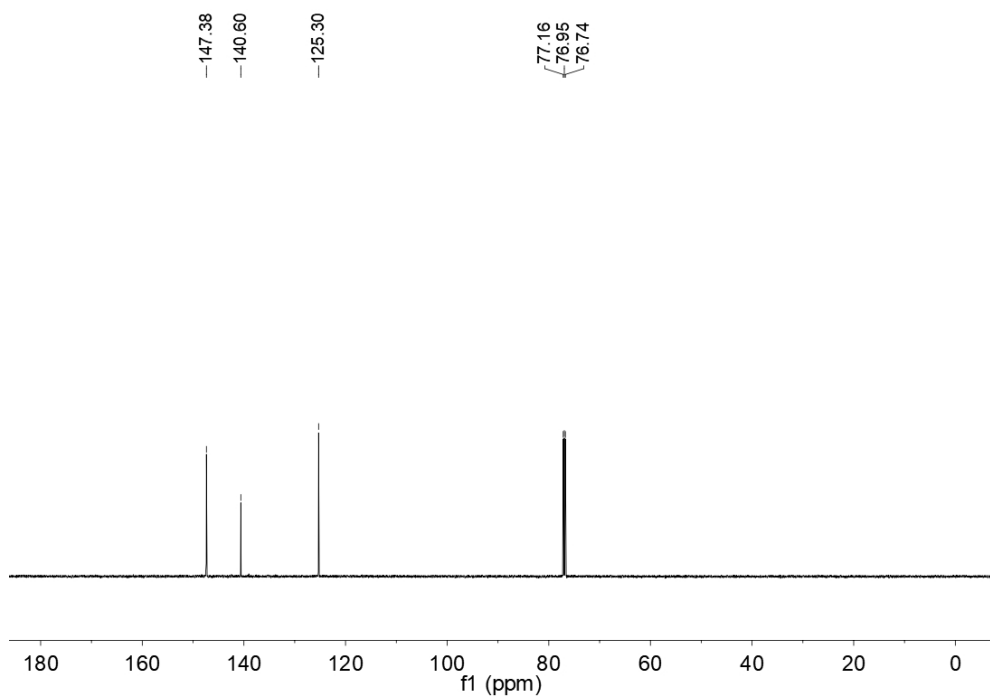
The ¹¹B{¹H} NMR spectrum of the prepared **1** in CDCl₃.



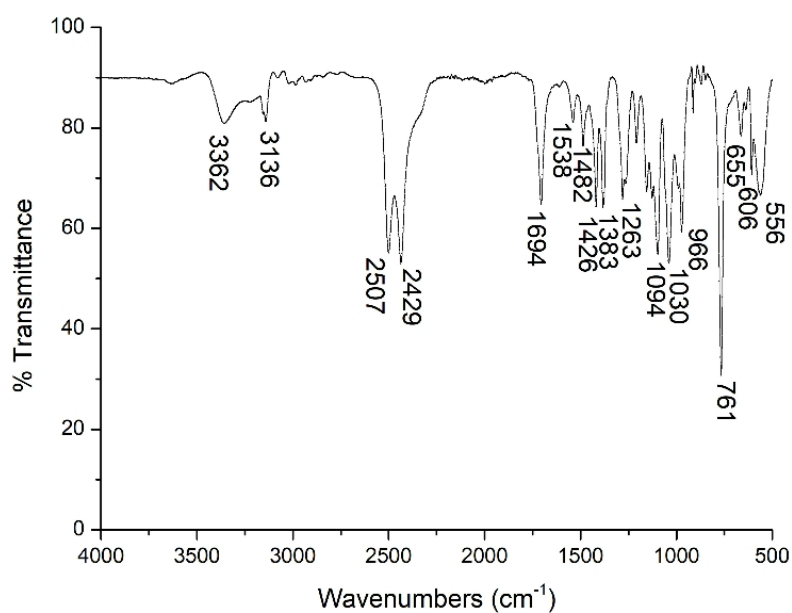
The ¹H NMR spectrum of the prepared **1** in CDCl₃.



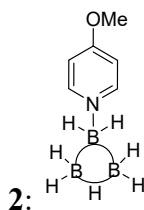
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **1** in CDCl_3 .



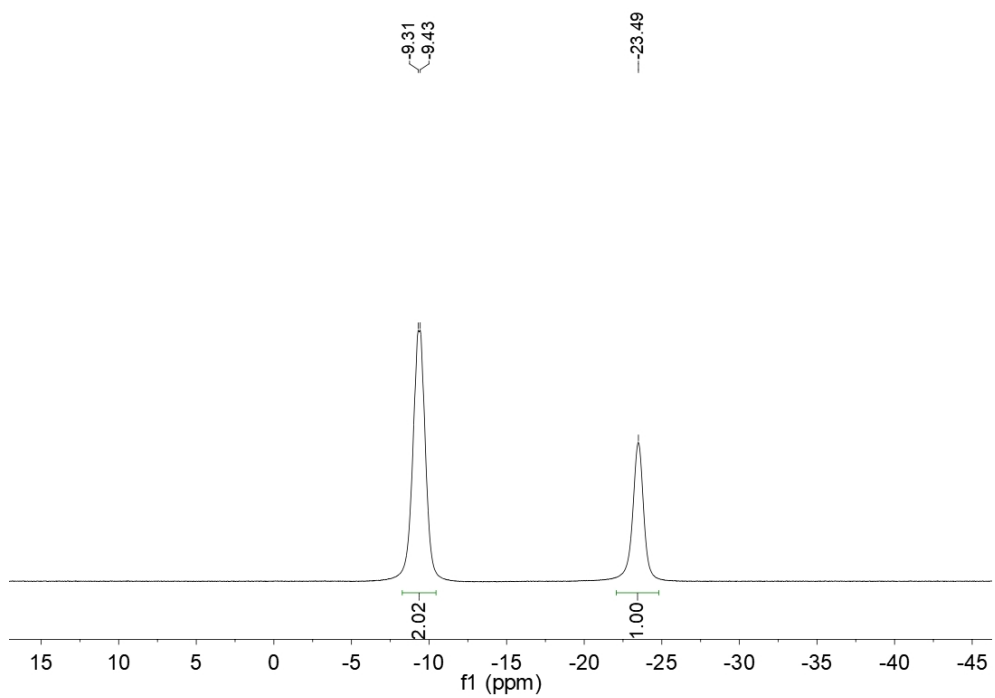
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **1** in CDCl_3 .



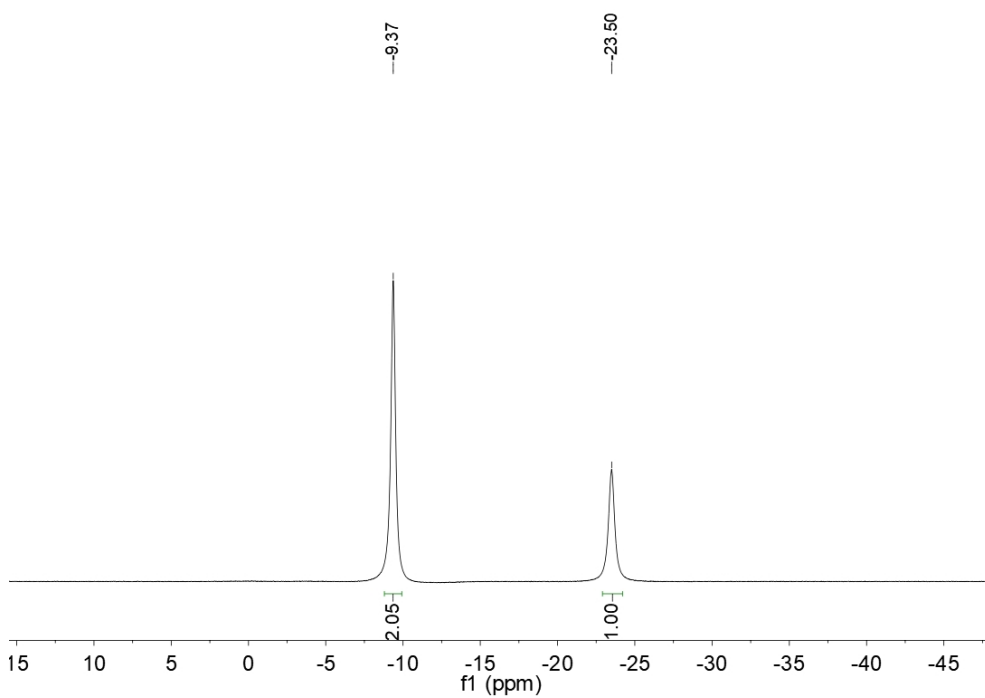
The IR spectrum of the prepared **1**.



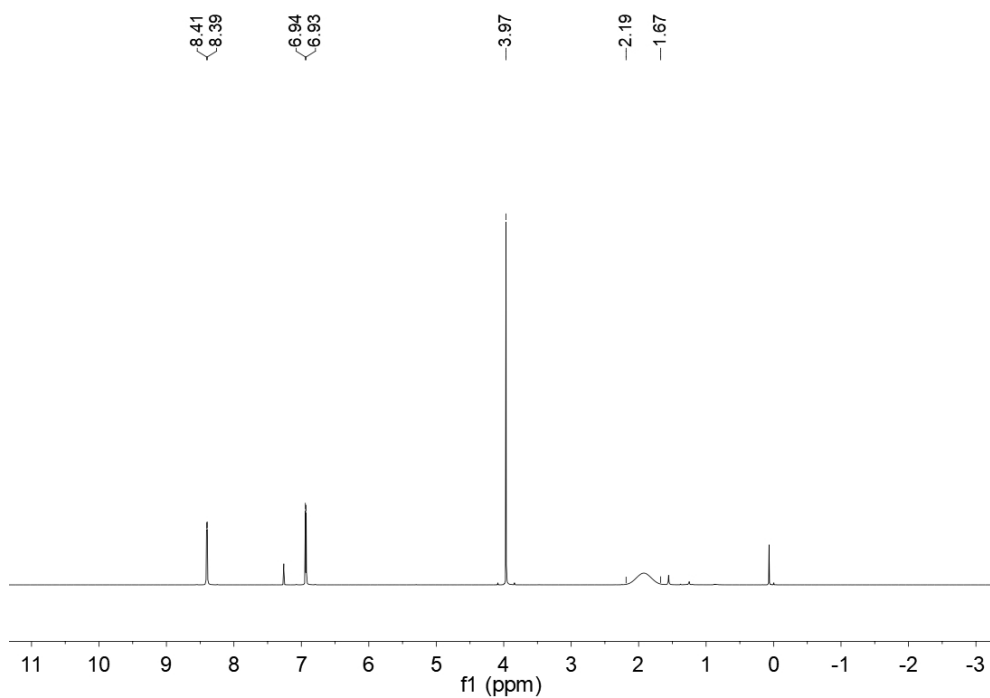
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 82%, white solid, melting point: 53-54 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of **BHB**), -23.49 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of **BHB**), -23.50 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.40 (*d*, 2 H of 2 **CH**), 6.94 (*d*, 2 H of 2 **CH**), 3.97 (*s*, 3 H of **CH₃**), 2.19-1.67 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.40 (*d*, 2 H of 2 **CH**), 6.94 (*d*, 2 H of 2 **CH**), 3.97 (*s*, 3 H of **CH₃**), 1.93 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.34 (1 C), 148.92 (2 C), 110.95 (2 C), 56.54 (1 C) ppm. IR (cm^{-1}): 2854 (w), 2501 (s), 2441 (s), 2292 (w), 1633 (s), 1568 (m), 1514 (s), 1443 (m), 1305 (s), 1209 (m), 1155 (m), 1089 (w), 1017 (m), 910 (m), 820 (s), 706 (w), 521 (s). HRMS *m/z* calcd for $\text{C}_6\text{H}_{14}\text{B}_3\text{NO}$ $[\text{M}+\text{Na}]^+$: 172.1250, found: 172.1250.



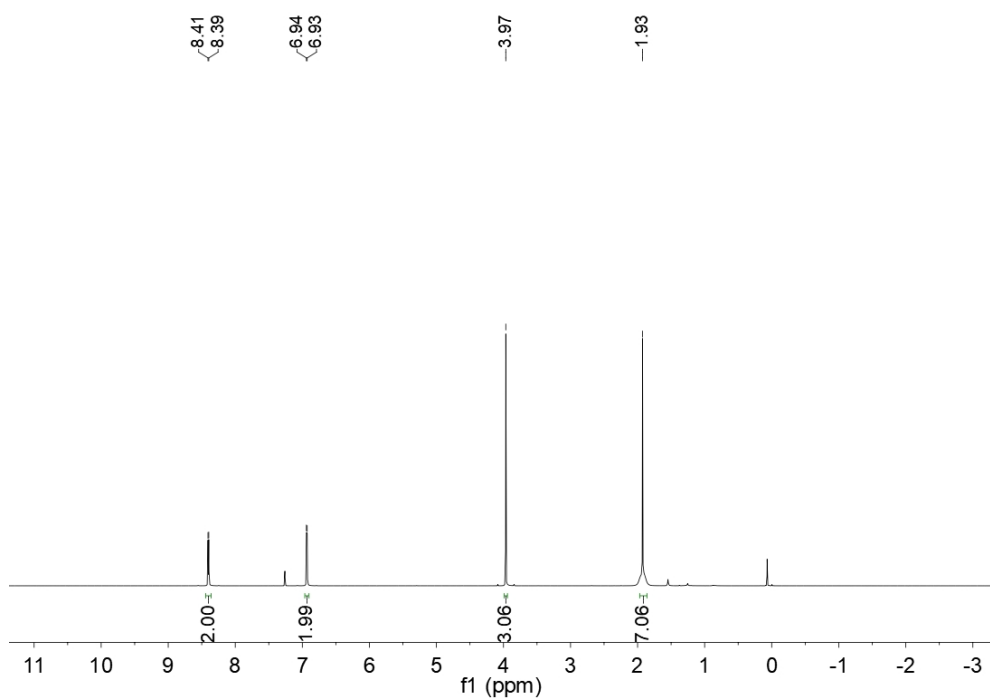
The ^{11}B NMR spectrum of the prepared **2** in CDCl_3 .



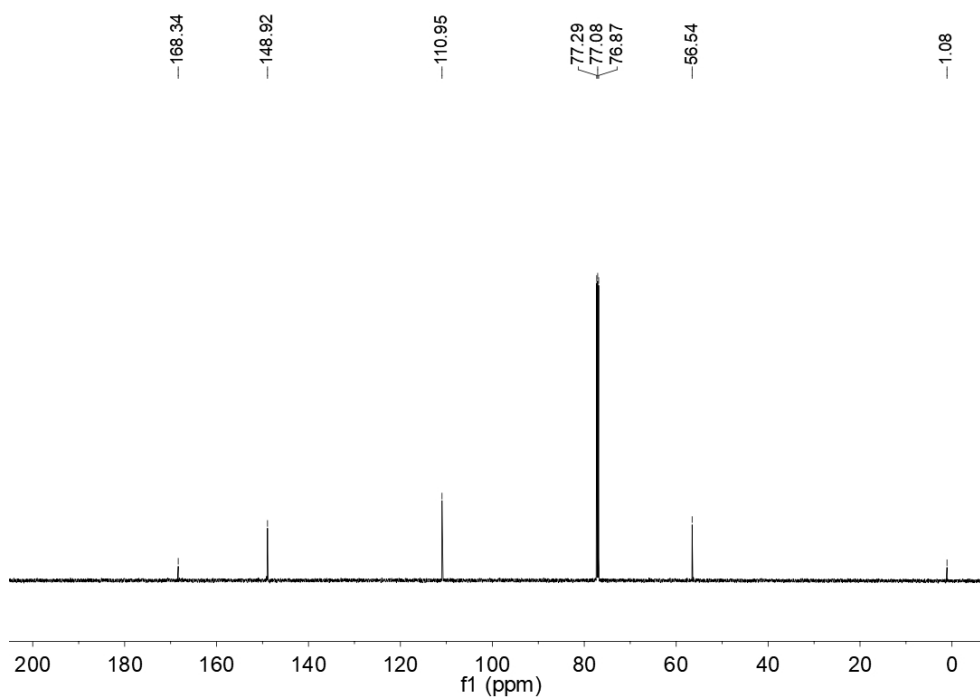
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **2** in CDCl_3 .



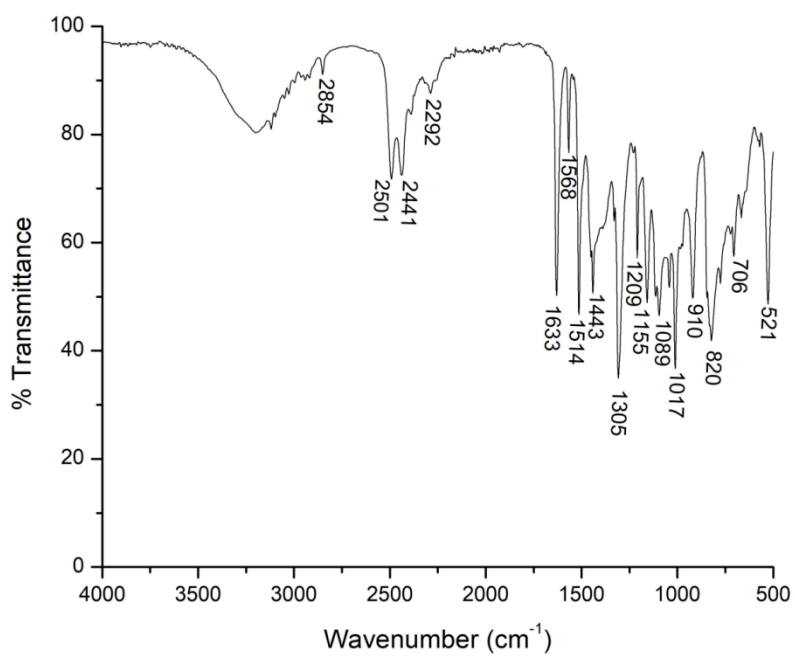
The ^1H NMR spectrum of the prepared **2** in CDCl_3 .



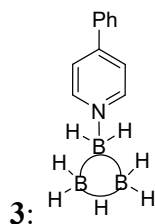
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **2** in CDCl_3 .



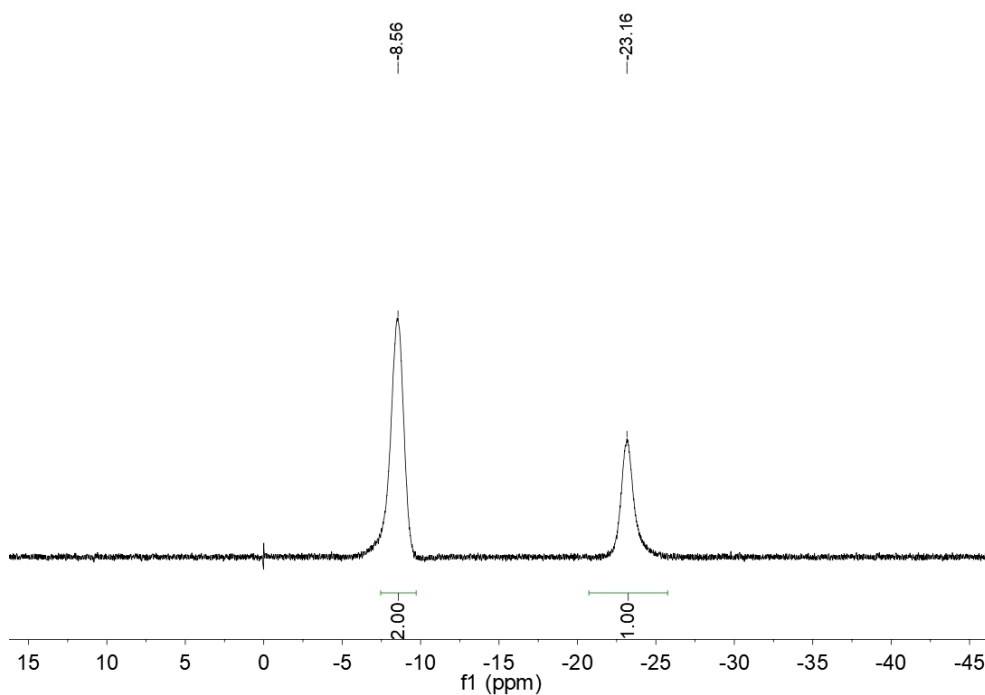
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **2** in CDCl_3 .



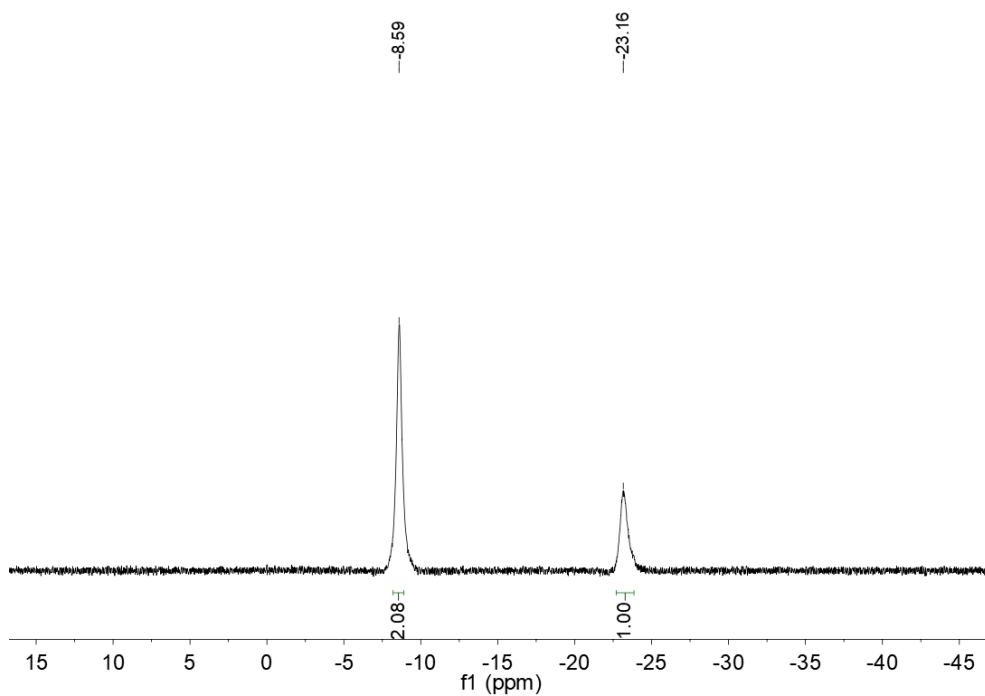
The IR spectrum of the prepared **2**.



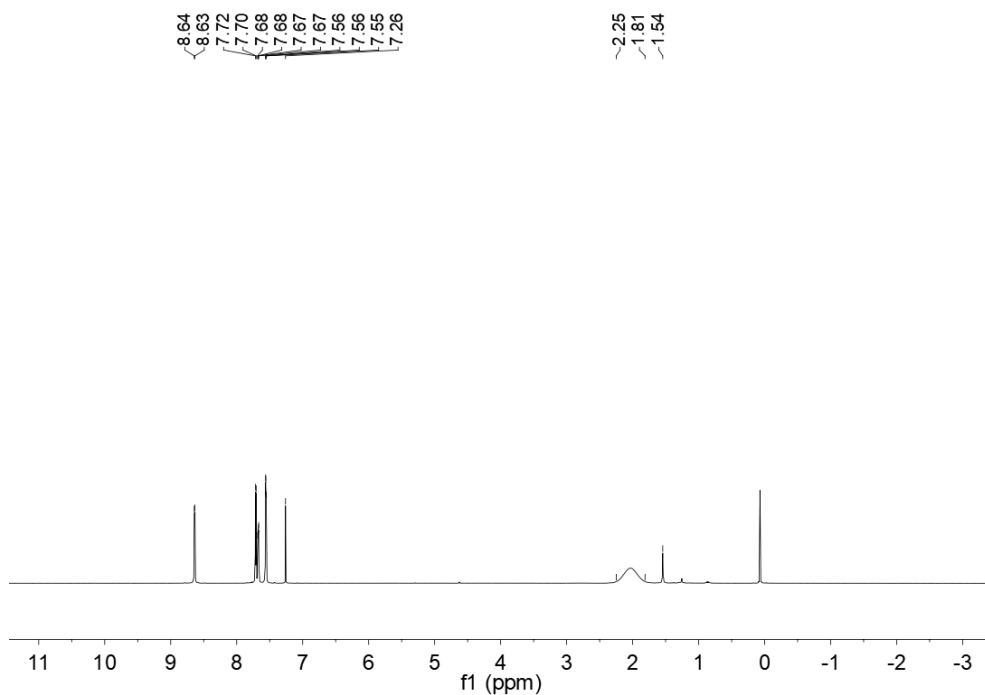
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 89%, white solid, melting point: 88-89 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.58 (*br*, 2 B of **BHB**), -23.16 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.59 (*br*, 2 B of **BHB**), -23.16 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.64 (*d*, 2 H of 2 **CH**), 7.71 (*d*, 2 H of 2 **CH**), 7.68 (*m*, 2 H of 2 **CH**), 7.56 (*m*, 3 H of 3 **CH**), 2.25-1.81 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 8.64 (*d*, 2 H of 2 **CH**), 7.71 (*d*, 2 H of 2 **CH**), 7.68 (*m*, 2 H of 2 **CH**), 7.56 (*m*, 3 H of 3 **CH**), 2.03 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 152.97 (1 C), 147.56 (2 C), 135.21 (1 C), 131.06 (1 C), 129.67 (2 C), 127.25 (2 C), 122.75 (2 C) ppm. IR (cm⁻¹): 3111 (w), 2501 (s), 2447 (s), 1628 (s), 1544 (w), 1479 (m), 1424 (m), 1287 (w), 1149 (m), 1101 (m), 970 (m), 844 (s), 766 (s), 701 (s), 658 (w), 569 (m). HRMS *m/z* calcd for C₁₁H₁₆B₃N [M+Na]⁺: 218.1460, found: 218.1460.



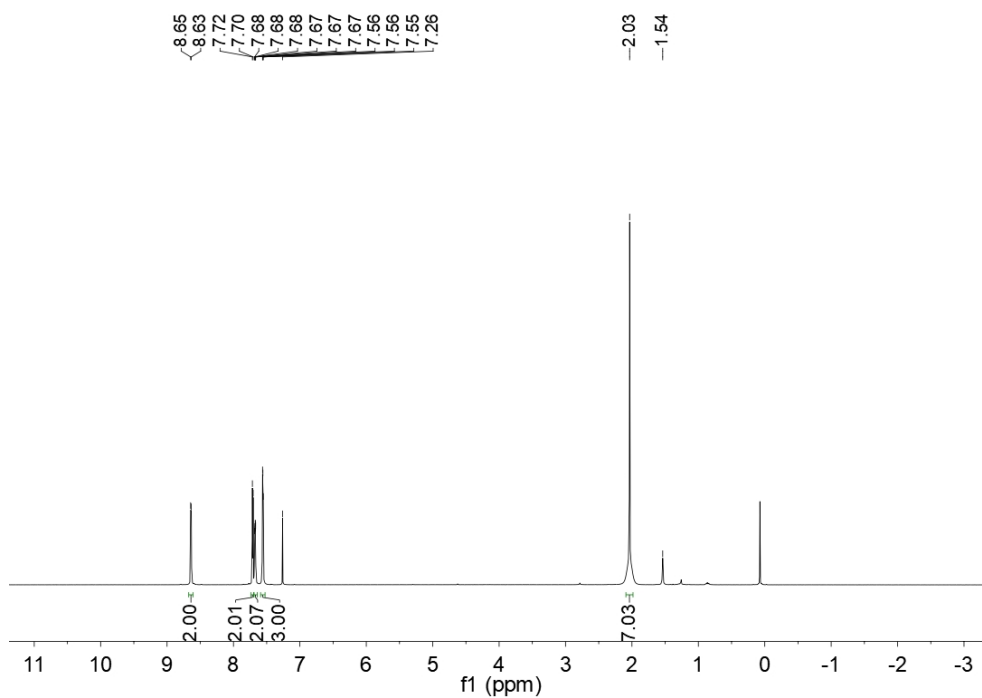
The ¹¹B NMR spectrum of the prepared **3** in CDCl₃.



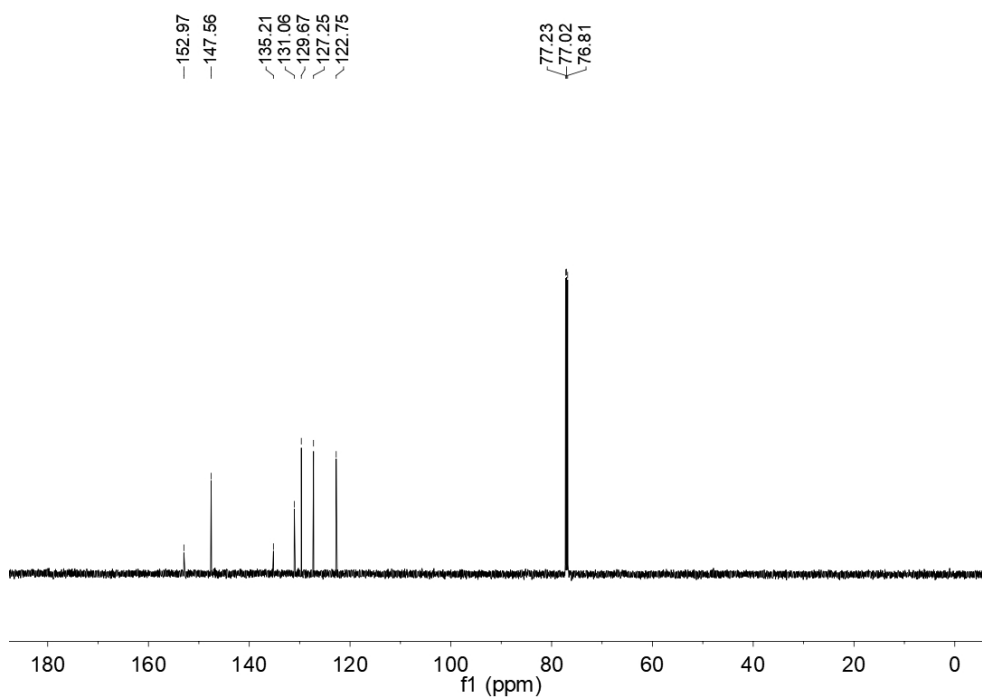
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **3** in CDCl_3 .



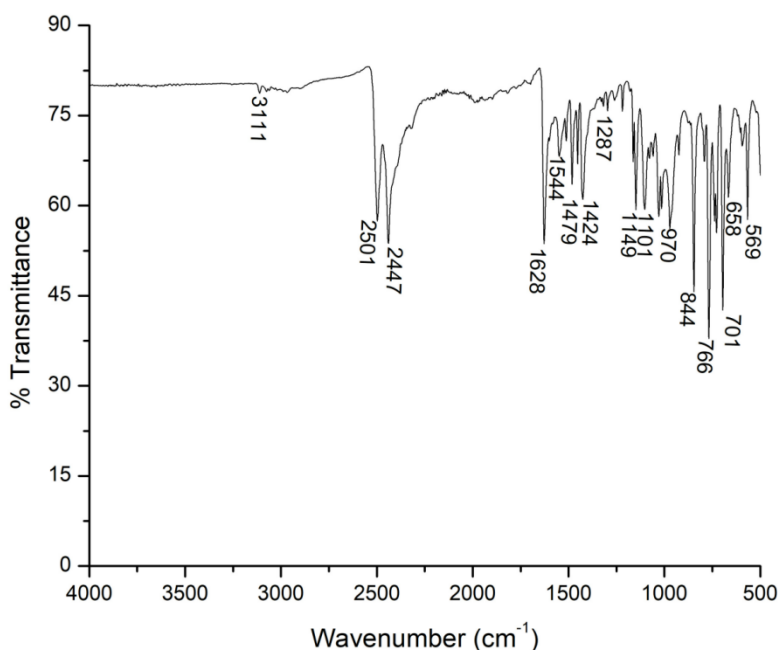
The ^1H NMR spectrum of the prepared **3** in CDCl_3 .



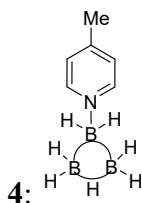
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **3** in CDCl_3 .



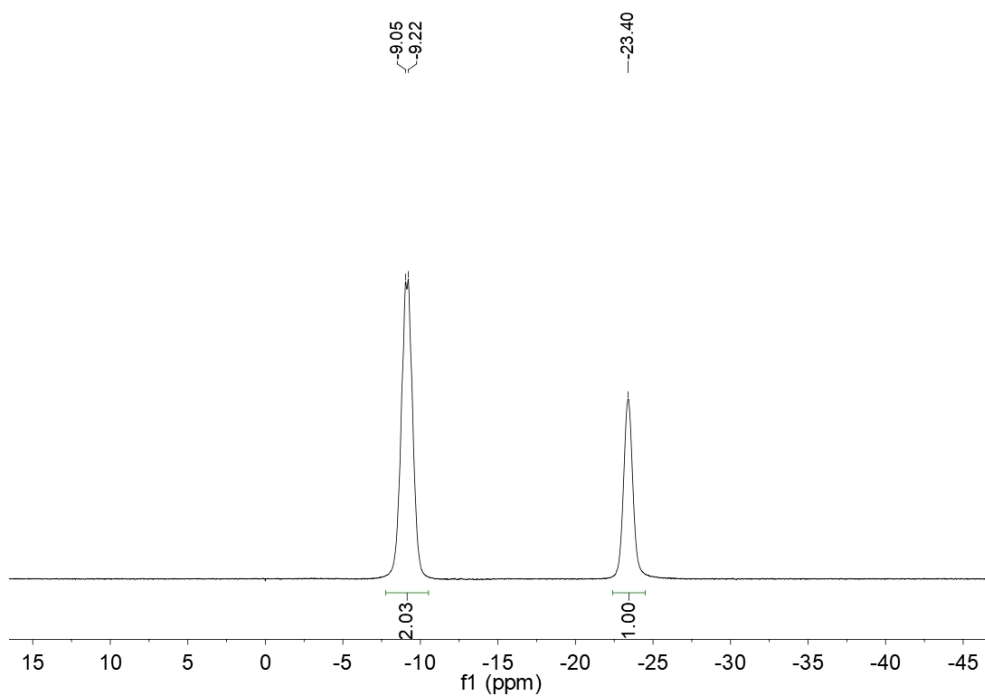
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **3** in CDCl_3 .



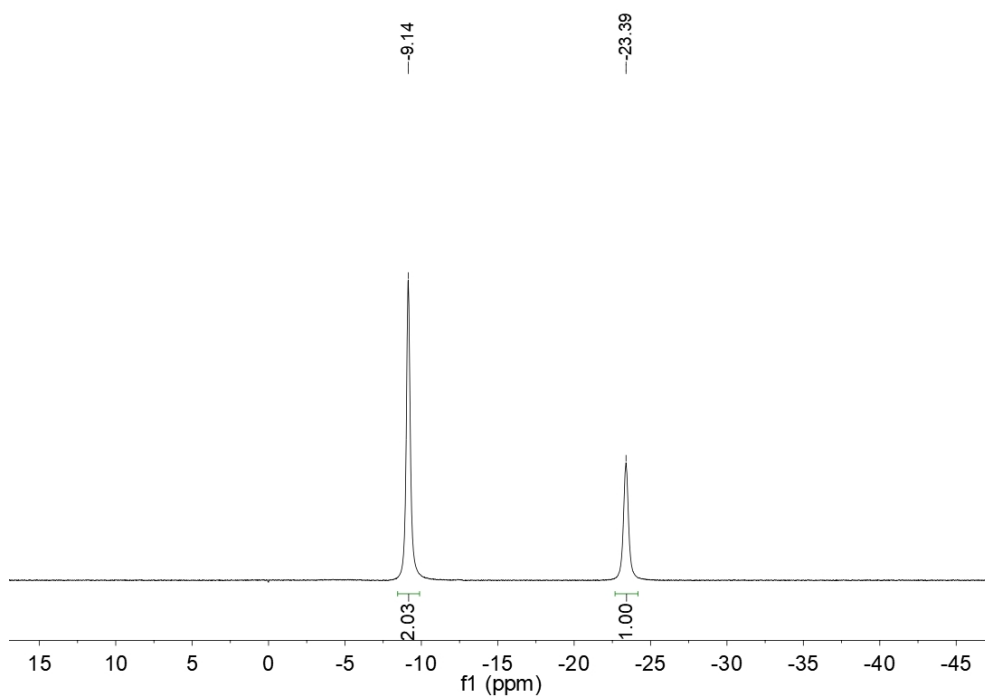
The IR spectrum of the prepared **3**.



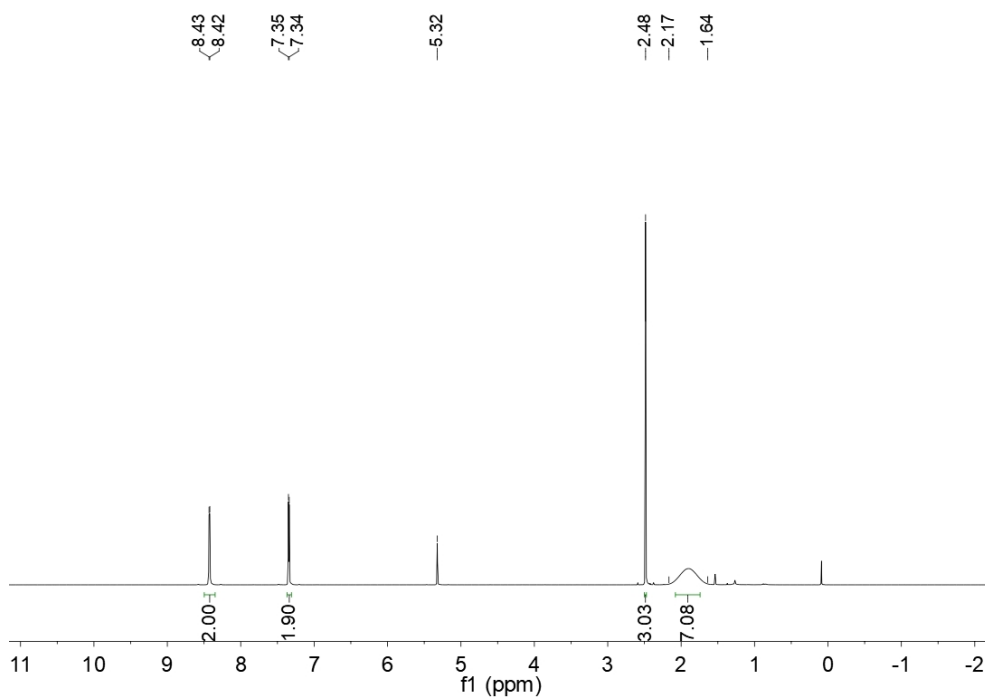
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 86%, white solid, melting point: 24-25 °C. ^{11}B NMR (193 MHz, CD_2Cl_2): δ -9.13 (*br*, 2 B of **BHB**), -23.40 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CD_2Cl_2): δ -9.14 (*br*, 2 B of **BHB**), -23.39 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CD_2Cl_2): δ 8.43 (*d*, 2 H of 2 **CH**), 7.35(*d*, 2 H of 2 **CH**), 2.48 (*s*, 3 H of **CH₃**), 2.17-1.64 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CD_2Cl_2): δ 8.43 (*d*, 2 H of 2 **CH**), 7.35 (*d*, 2 H of 2 **CH**), 2.48 (*s*, 3 H of **CH₃**), 1.90 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CD_2Cl_2): δ 154.56 (*s*, 1 C), 147.22 (*s*, 2 C), 126.71 (*s*, 2 C), 21.75 (*s*, 1 C) ppm. IR (cm^{-1}): 3219 (*w*), 2510 (*s*), 2429 (*s*), 1628 (*s*), 1514 (*w*), 1430 (*m*), 1149 (*m*), 1096 (*w*), 976 (*m*), 808 (*s*), 701 (*m*), 630 (*s*). HRMS *m/z* calcd for $\text{C}_6\text{H}_{14}\text{B}_3\text{N}$ $[\text{M}+\text{Na}]^+$: 156.1300, found: 156.1302.



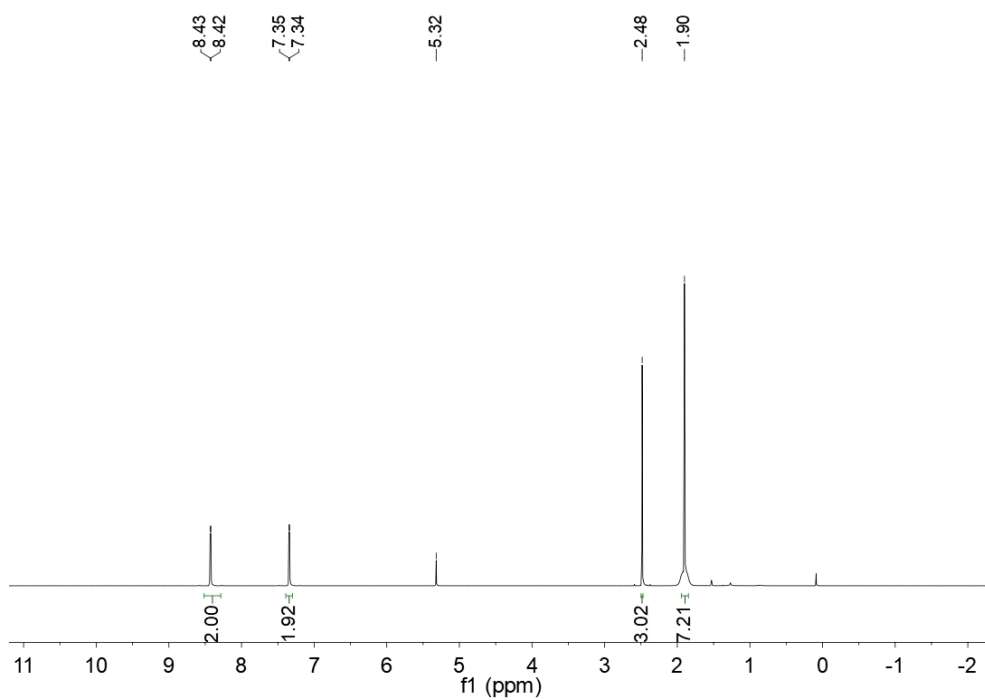
The ^{11}B NMR spectrum of the prepared **4** in CD_2Cl_2 .



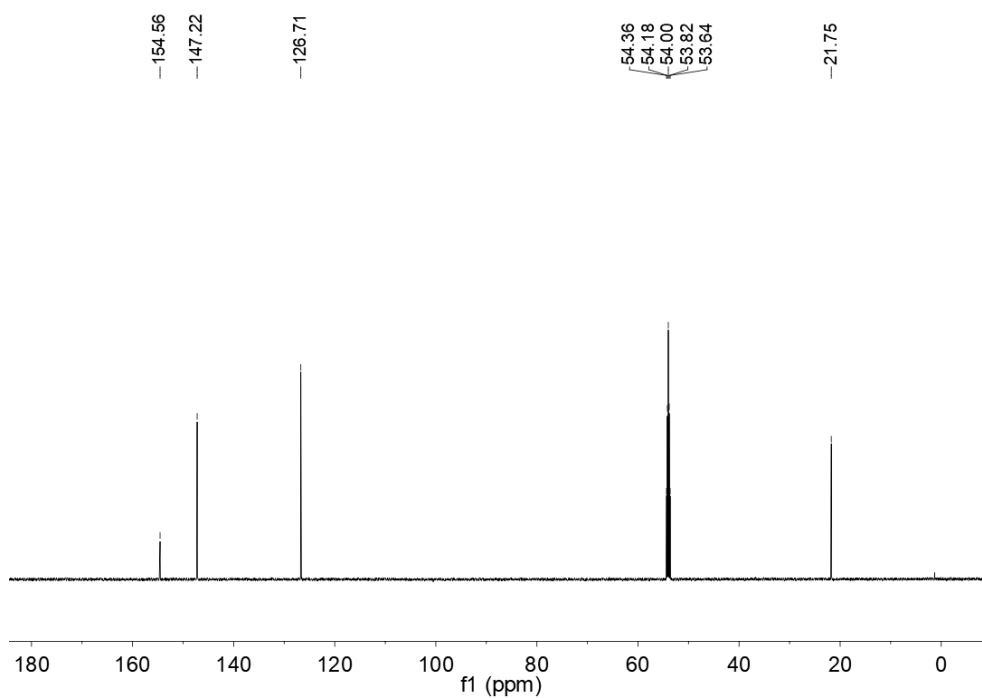
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **4** in CD_2Cl_2 .



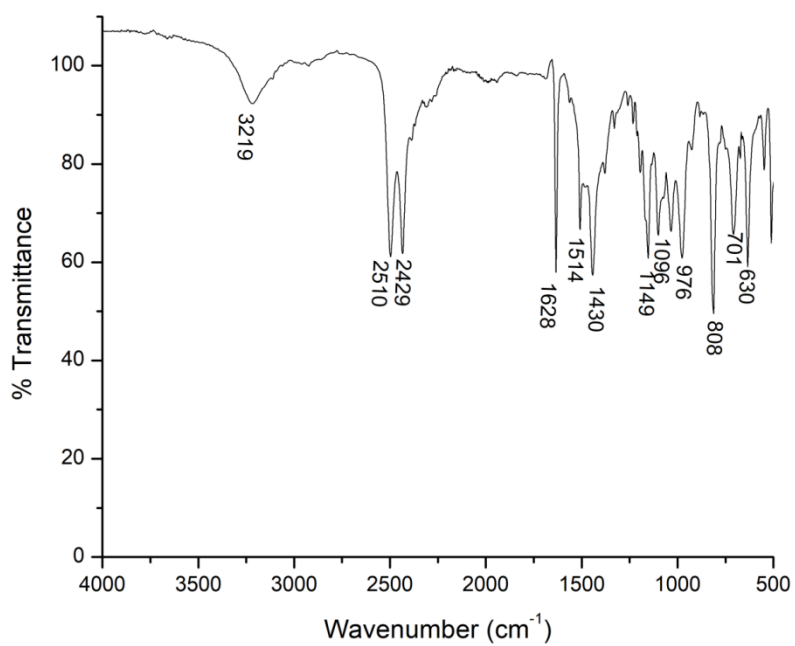
The ^1H NMR spectrum of the prepared **4** in CD_2Cl_2 .



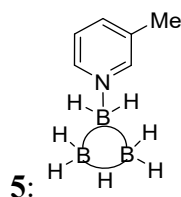
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **4** in CD_2Cl_2 .



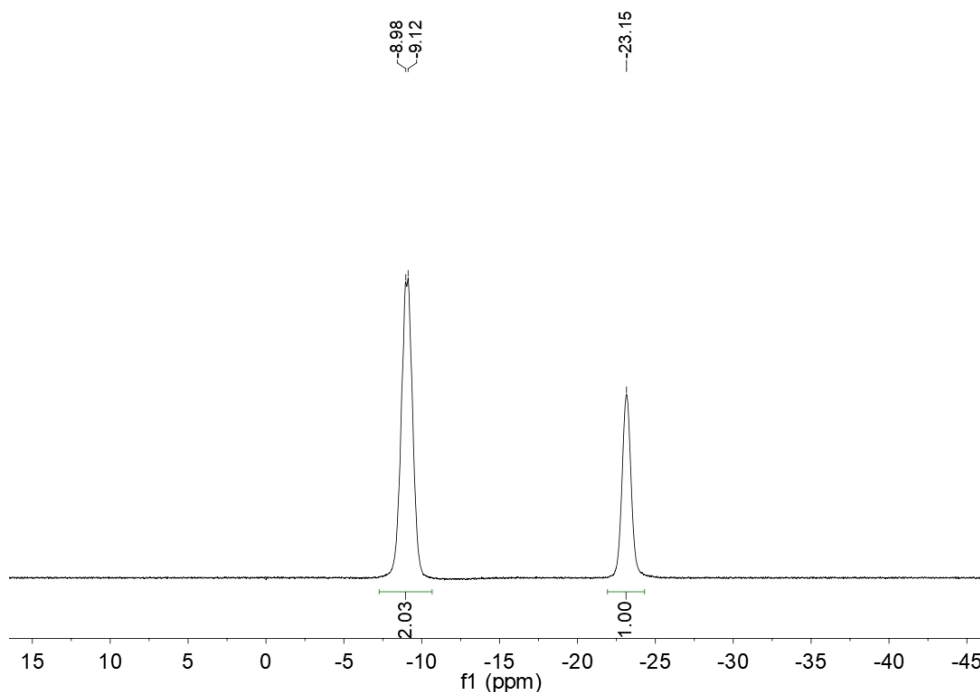
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **4** in CD_2Cl_2 .



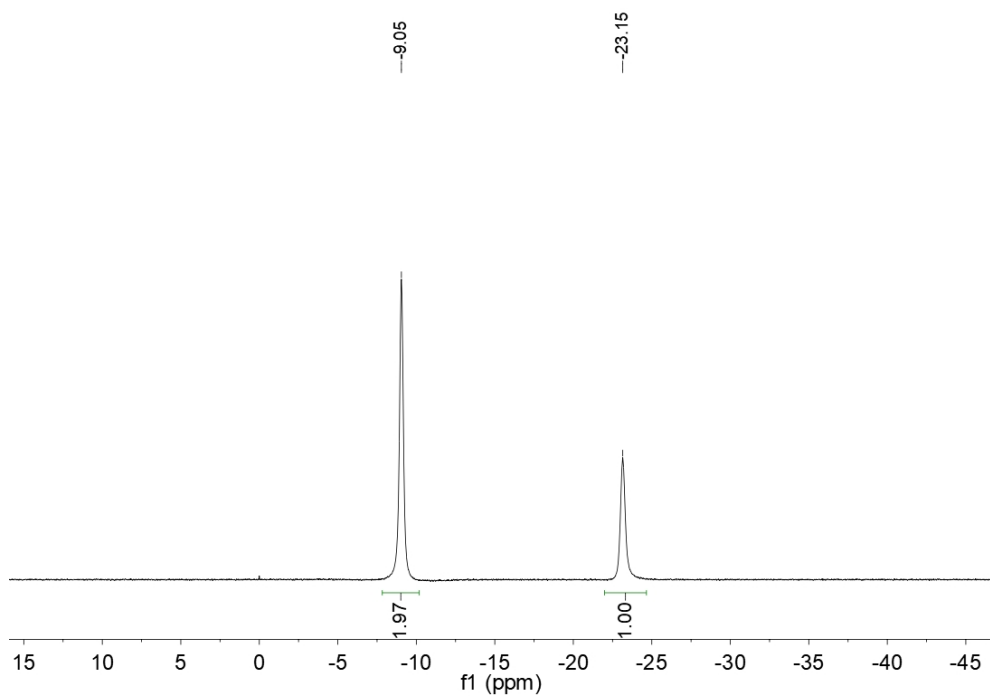
The IR spectrum of the prepared **4**.



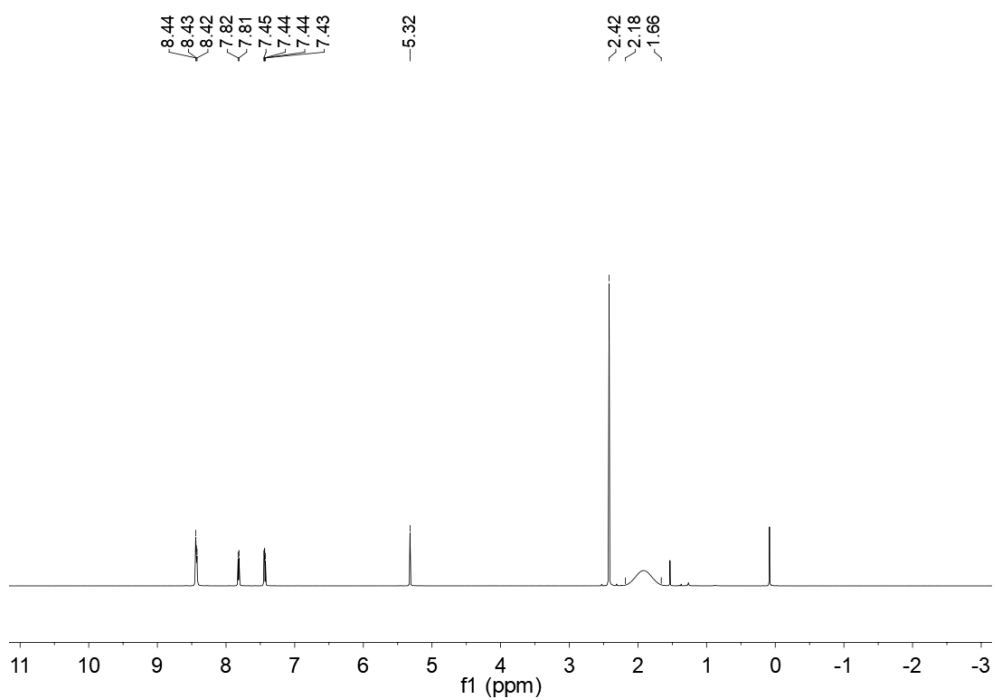
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 81%, white solid, melting point: 48-49 °C. ^{11}B NMR (193 MHz, CD_2Cl_2): δ -9.05 (*br*, 2 B of **BHB**), -23.15 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CD_2Cl_2): δ -9.05 (*br*, 2 B of **BHB**), -23.15 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CD_2Cl_2): δ 8.43 (*t*, 2 H of 2 **CH**), 7.82 (*d*, H of **CH**), 7.44 (*dd*, H of **CH**), 2.42 (*s*, 3 H of **CH₃**), 2.18-1.66 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CD_2Cl_2): δ 8.43 (*t*, 2 H of 2 **CH**), 7.82 (*d*, H of **CH**), 7.44 (*dd*, H of **CH**), 2.42 (*s*, 3 H of **CH₃**), 1.92 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CD_2Cl_2): δ 147.99 (*s*, 1 C), 145.19 (*s*, 1 C), 141.97 (*s*, 1 C), 136.80 (*s*, 1 C), 125.47 (*s*, 1 C), 18.83 (*s*, 1 C) ppm. IR (cm^{-1}): 3099 (*w*), 3058 (*w*), 2483 (*s*), 2441 (*s*), 1988 (*w*), 1622 (*m*), 1485 (*m*), 1431 (*m*), 1387 (*m*), 1137 (*m*), 1053 (*m*), 970 (*m*), 796 (*s*), 682 (*s*), 557 (*w*). HRMS *m/z* calcd for $\text{C}_6\text{H}_{14}\text{B}_3\text{N}$ [$\text{M}+\text{Na}$] $^+$: 156.1300, found: 156.1304.



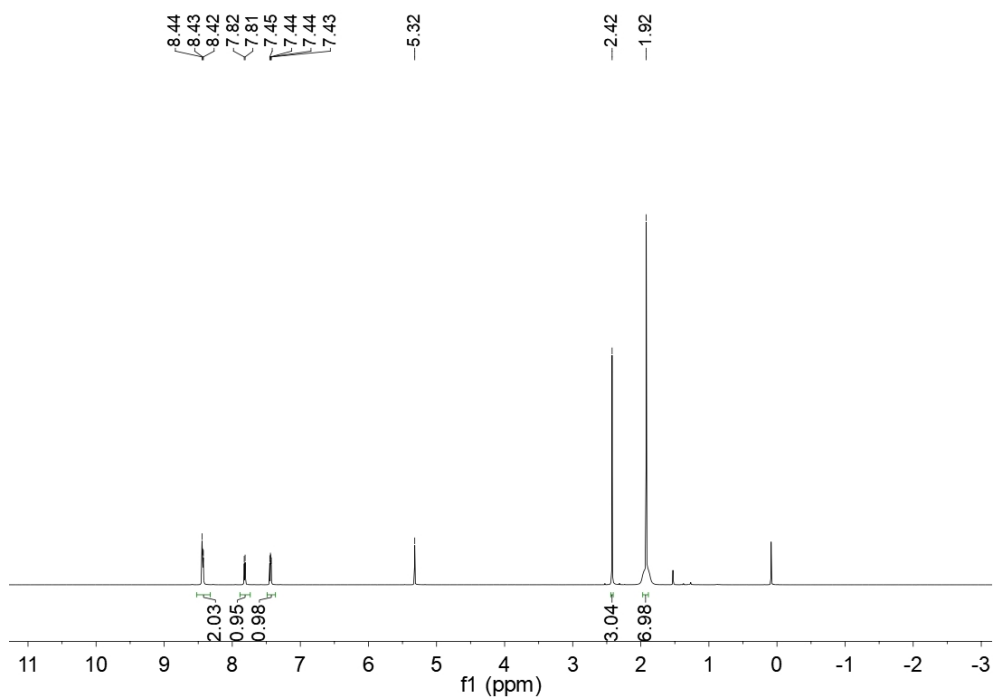
The ^{11}B NMR spectra of the prepared **5** in CD_2Cl_2 .



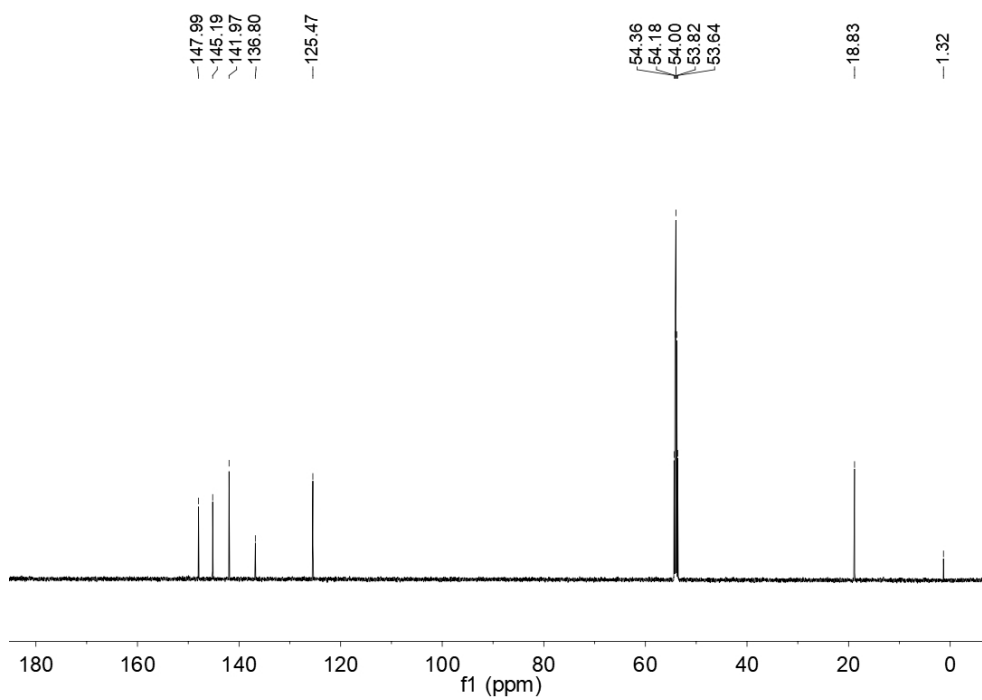
The ¹¹B{¹H} NMR spectra of the prepared **5** in CD₂Cl₂.



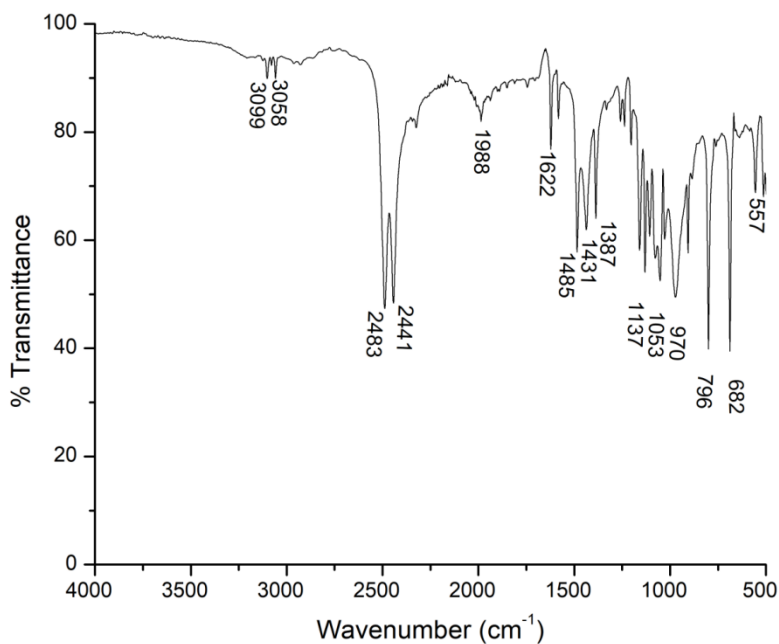
The ¹H NMR spectra of the prepared **5** in CD₂Cl₂.



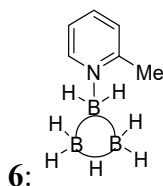
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectra of the prepared **5** in CD_2Cl_2 .



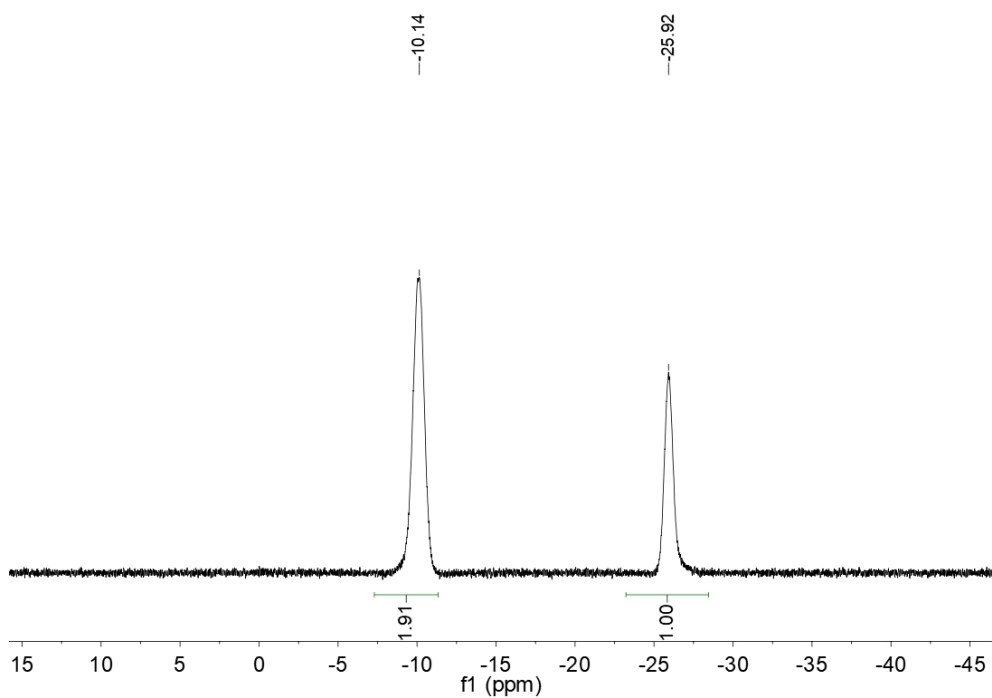
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **5** in CD_2Cl_2 .



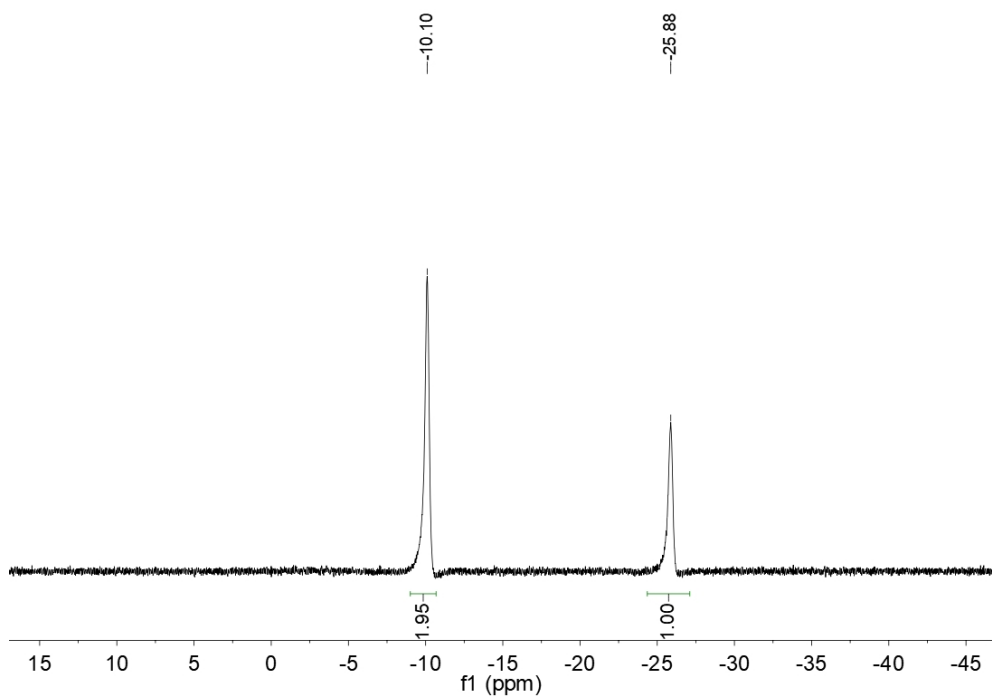
The IR spectrum of the prepared **5**.



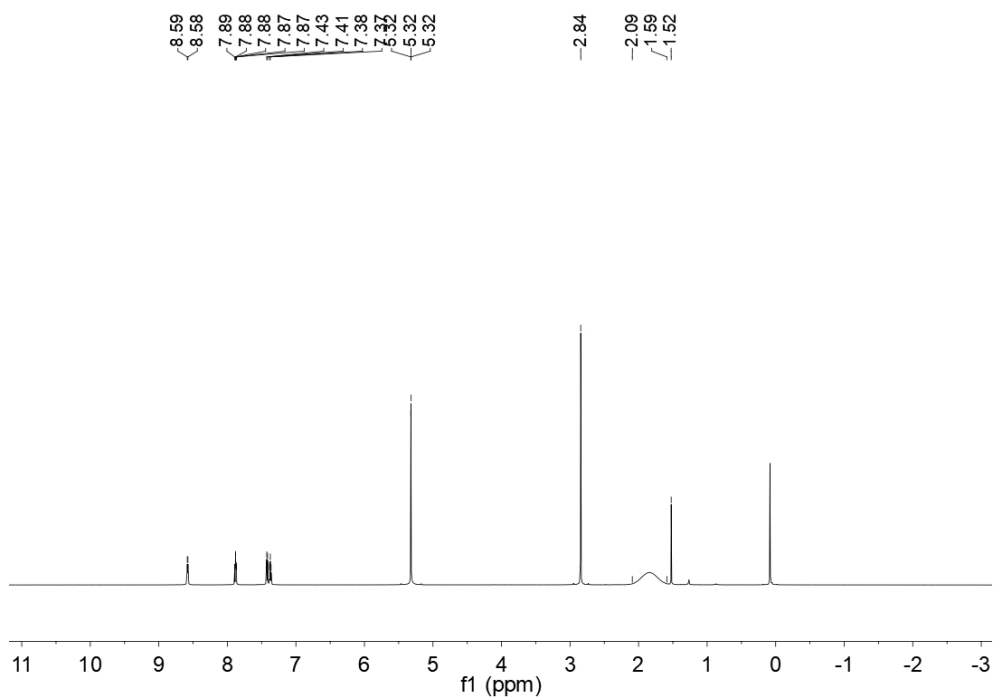
Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 2:1$). Yield 59%, white solid, melting point: 50-51 °C. ^{11}B NMR (193 MHz, CD_2Cl_2): δ -10.14 (*br*, 2 B of **BHB**), -25.92 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CD_2Cl_2): δ -10.10 (*br*, 2 B of **BHB**), -25.88 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CD_2Cl_2): δ 8.59 (*d*, H of **CH**), 7.88 (*t*, H of **CH**), 7.42 (*d*, H of **CH**), 7.37 (*t*, H of **CH**), 2.84 (*s*, 3 H of **CH₃**), 2.09-1.59 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CD_2Cl_2): δ 8.59 (*d*, H of **CH**), 7.88 (*t*, H of **CH**), 7.42 (*d*, H of **CH**), 7.37 (*t*, H of **CH**), 2.85 (*s*, 3 H of **CH₃**), 1.84 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CD_2Cl_2): δ 159.27 (*s*, 1 C), 147.79 (*s*, 1 C), 141.07 (*s*, 1 C), 127.99 (*s*, 1 C), 123.22 (*s*, 1 C), 23.93 (*s*, 1 C) ppm. IR (cm^{-1}): 3130 (*w*), 3094 (*w*), 2501 (*s*), 2441 (*s*), 1969 (*w*), 1628 (*m*), 1568 (*w*), 1490 (*m*), 1460 (*m*), 1412 (*w*), 1305 (*w*), 1161 (*s*), 1096 (*s*), 1036 (*m*), 958 (*w*), 772 (*s*), 718 (*w*), 587 (*w*). HRMS m/z calcd for $\text{C}_6\text{H}_{14}\text{B}_3\text{N}$ $[\text{M}+\text{Na}]^+$: 156.1300, found: 156.1309.



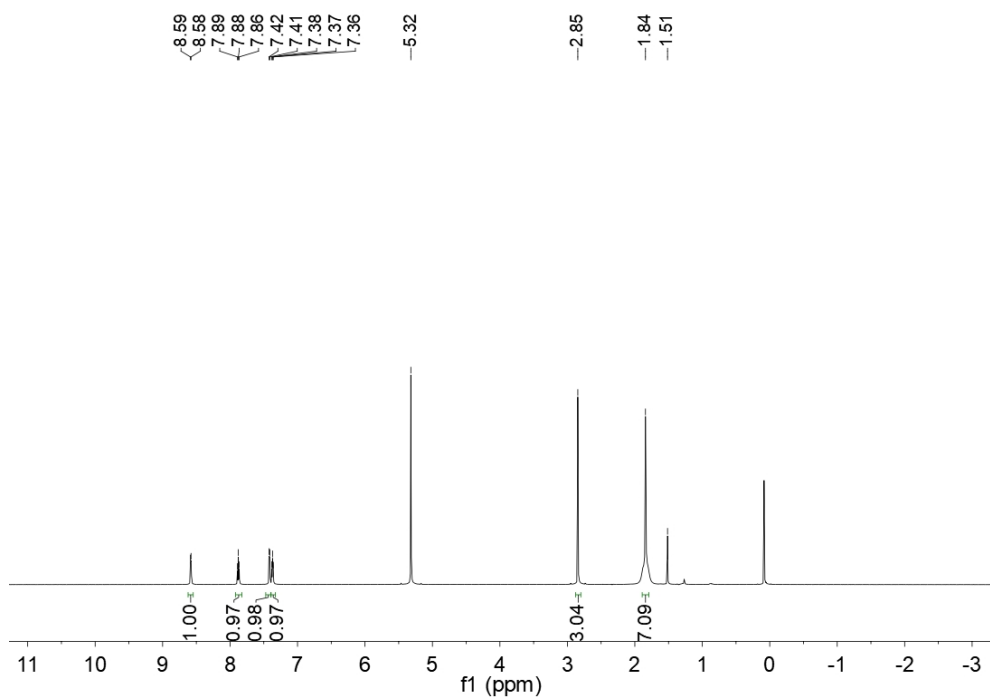
The ^{11}B NMR spectrum of the prepared **6** in CD_2Cl_2 .



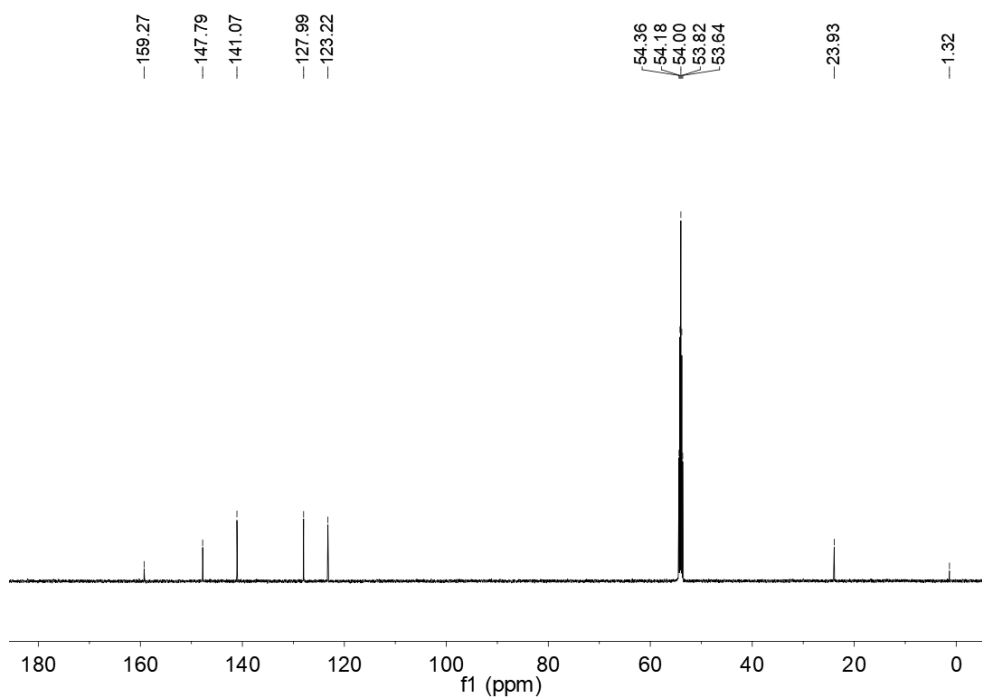
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **6** in CD_2Cl_2 .



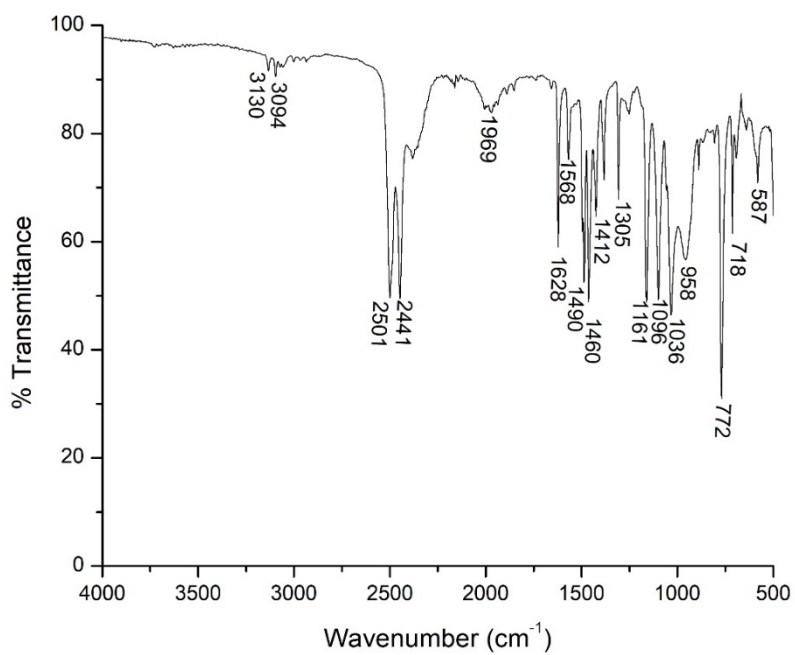
The ^1H NMR spectra of the prepared **6** in CD_2Cl_2 .



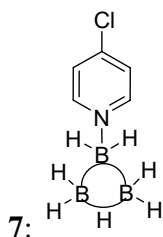
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **6** in CD_2Cl_2 .



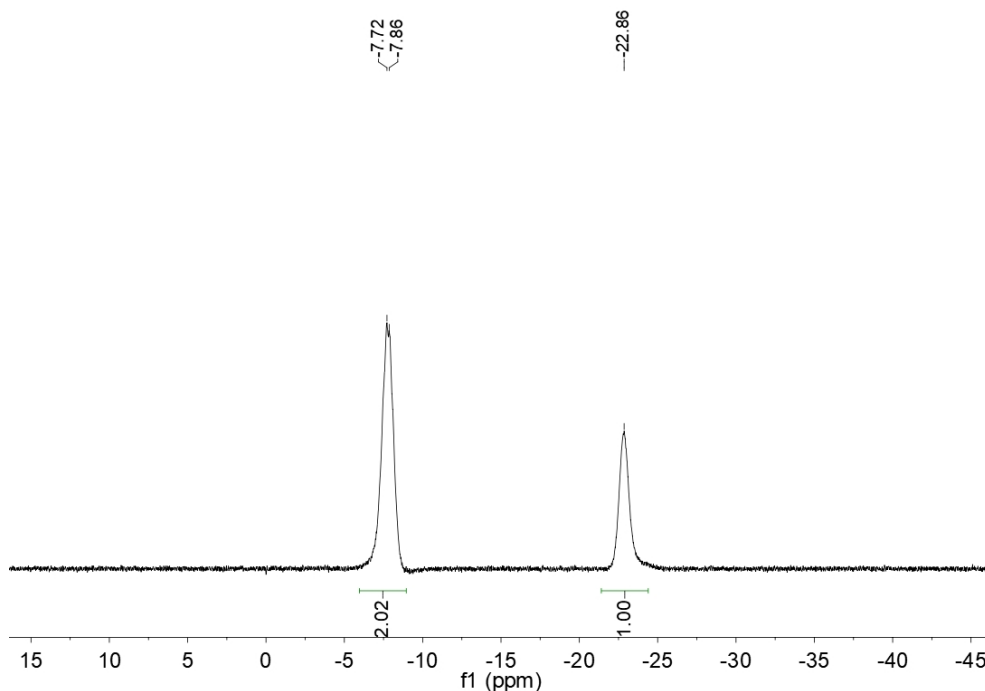
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **6** in CD_2Cl_2 .



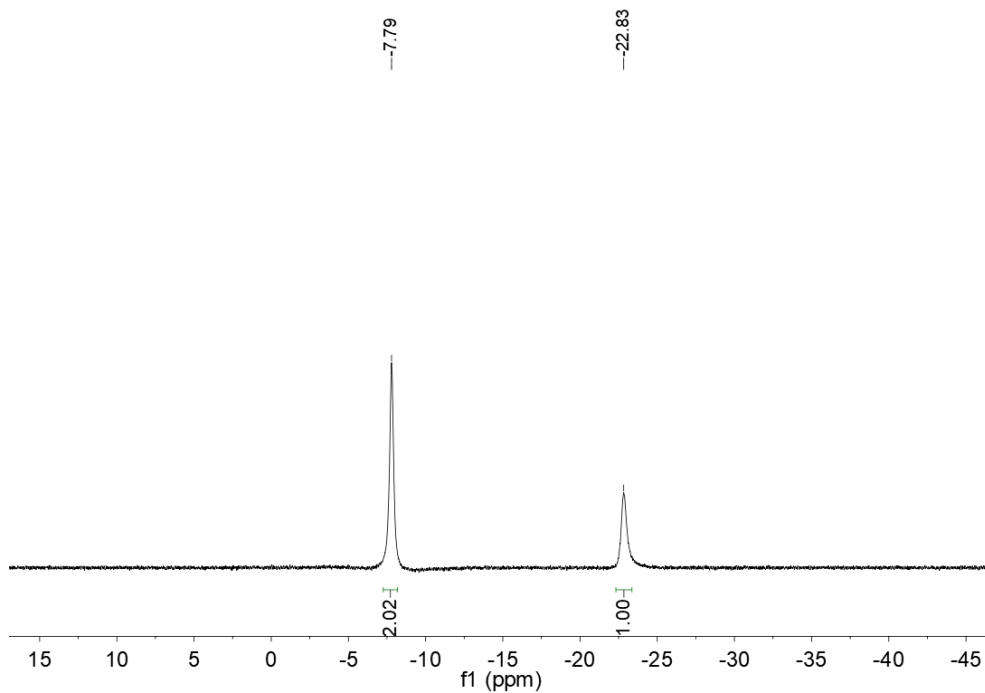
The IR spectrum of the prepared **6**.



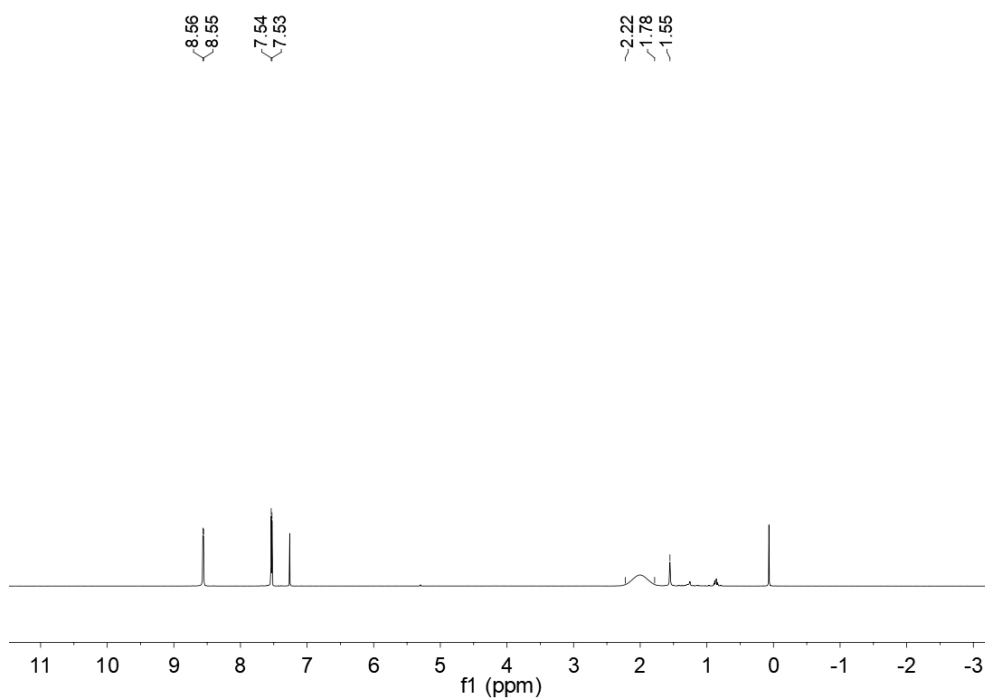
Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 2:1$). Yield 71%, white solid, melting point: 61-62 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.79 (*br*, 2 B of **BHB**), -22.86 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.79 (*br*, 2 B of **BHB**), -22.83 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.56 (*d*, 2 H of 2 **CH**), 7.54 (*d*, 2 H of 2 **CH**), 2.22-1.78 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.56 (*d*, 2 H of 2 **CH**), 7.54 (*d*, 2 H of 2 **CH**), 2.00 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 149.58 (1 C), 148.28 (2 C), 125.81 (2 C) ppm. IR (cm^{-1}): 3106 (m), 2926 (w), 2507 (s), 2429 (s), 2301 (w), 1610 (s), 1550 (w), 1491 (s), 1424 (s), 1251 (w), 1155 (w), 1089 (m), 976 (s), 826 (s), 790 (m), 730 (w). HRMS m/z calcd for $\text{C}_5\text{H}_{11}\text{B}_3\text{NCl}$ $[\text{M}+\text{Na}]^+$: 176.0756, found: 176.0759.



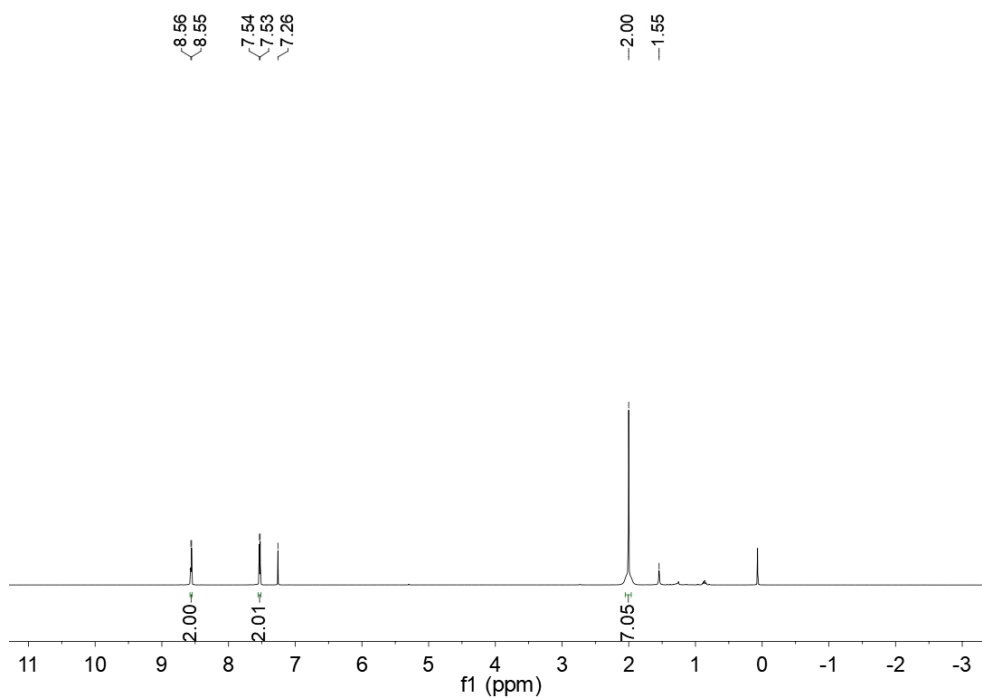
The ^{11}B NMR spectrum of the prepared **7** in CDCl_3 .



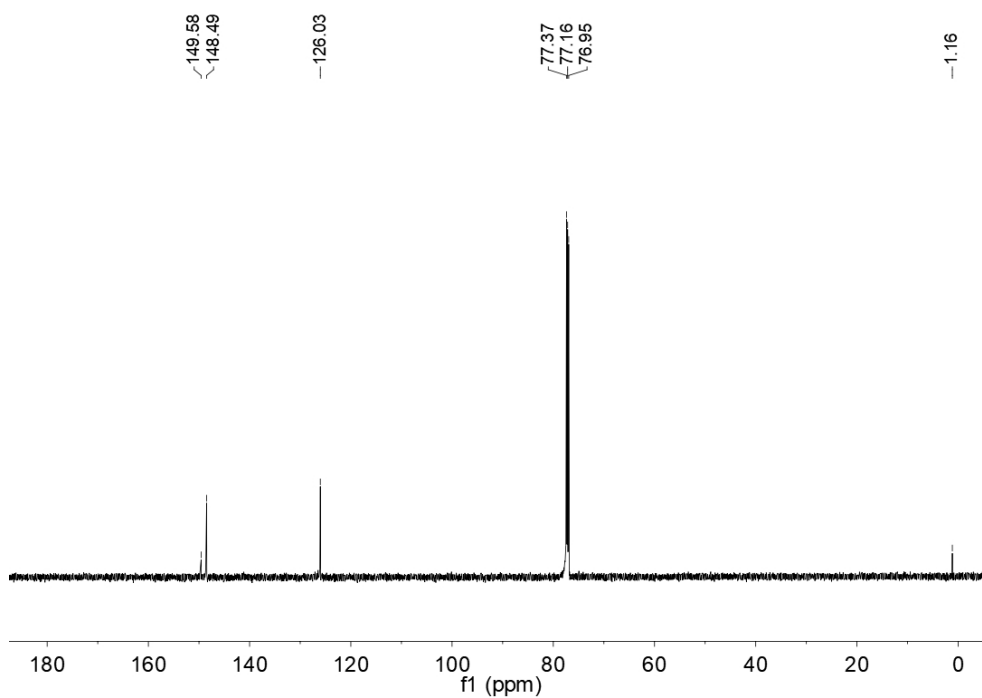
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **7** in CDCl_3 .



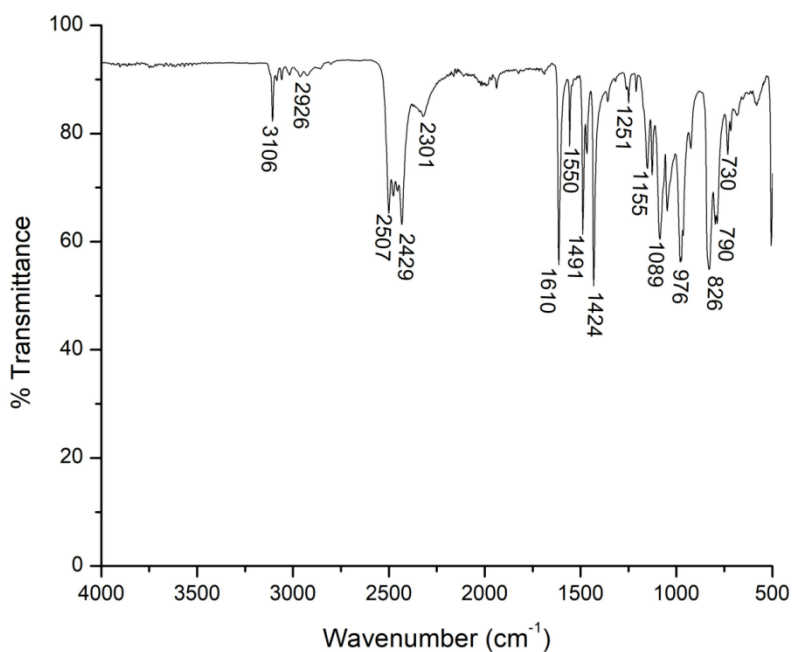
The ^1H NMR spectrum of the prepared **7** in CDCl_3 .



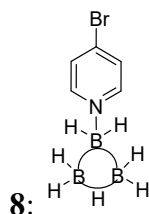
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **7** in CDCl_3 .



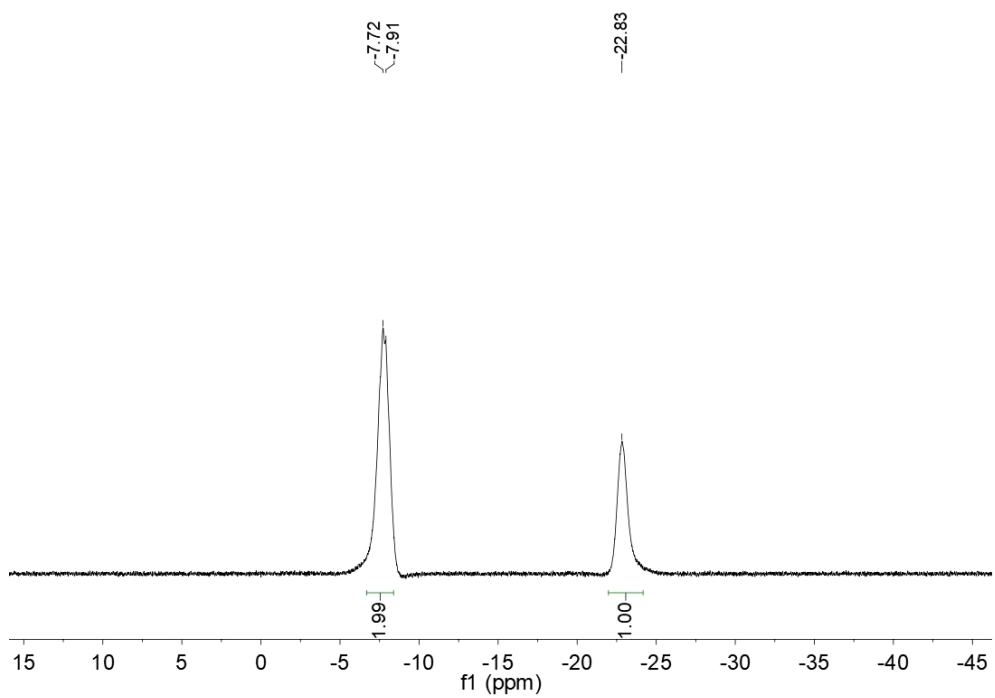
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **7** in CDCl_3 .



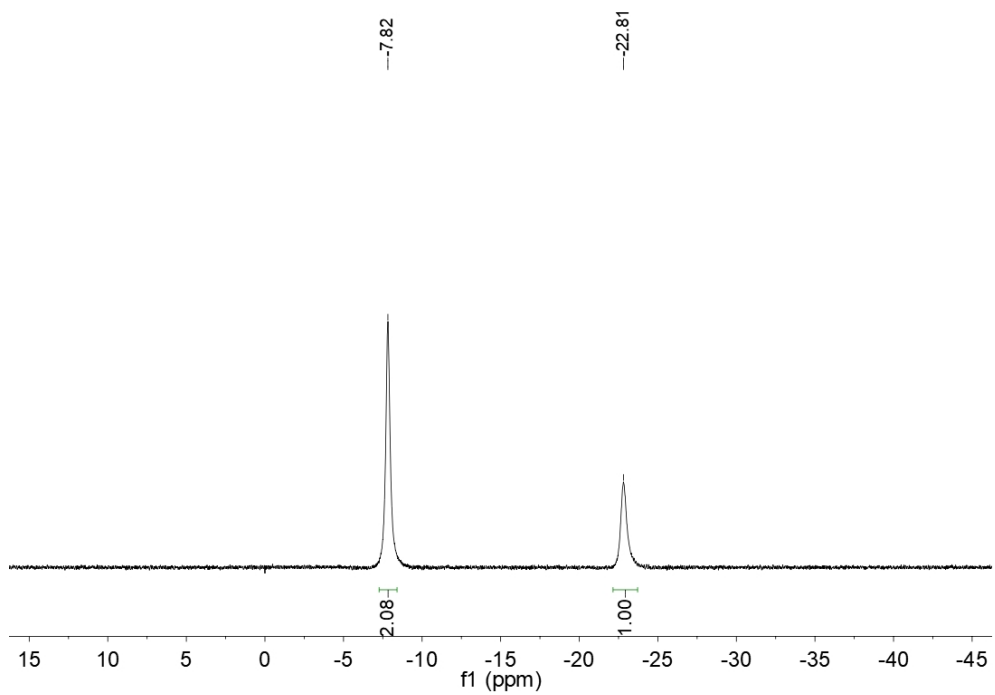
The IR spectrum of the prepared **7**.



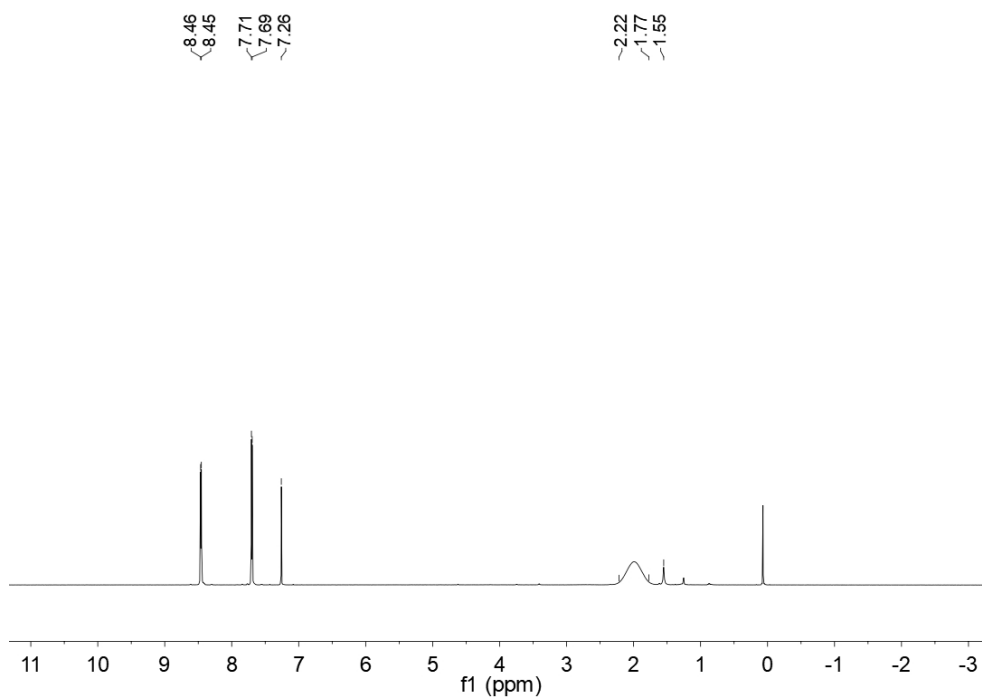
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 77%, white solid, melting point: 73-74 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.82 (*br*, 2 B of **BHB**), -22.83 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.82 (*br*, 2 B of **BHB**), -22.81 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.46 (*d*, 2 H of 2 **CH**), 7.70 (*d*, 2 H of 2 **CH**), 2.22-1.77 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.47 (*d*, 2 H of 2 **CH**), 7.70 (*d*, 2 H of 2 **CH**), 1.99 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 148.27 (2 C), 138.44 (1 C), 129.02 (2 C) ppm. IR (cm^{-1}): 3099 (m), 2495 (s), 2435 (s), 1981 (w), 1604 (s), 1550 (w), 1479 (m), 1419 (s), 1251 (w), 1155 (m), 1077 (w), 970 (w), 826 (s), 778 (m), 720 (w), 569 (w). HRMS m/z calcd for $\text{C}_5\text{H}_{11}\text{B}_3\text{NBr}$ [$\text{M}+\text{Na}$] $^+$: 197.0358, found: 197.0348.



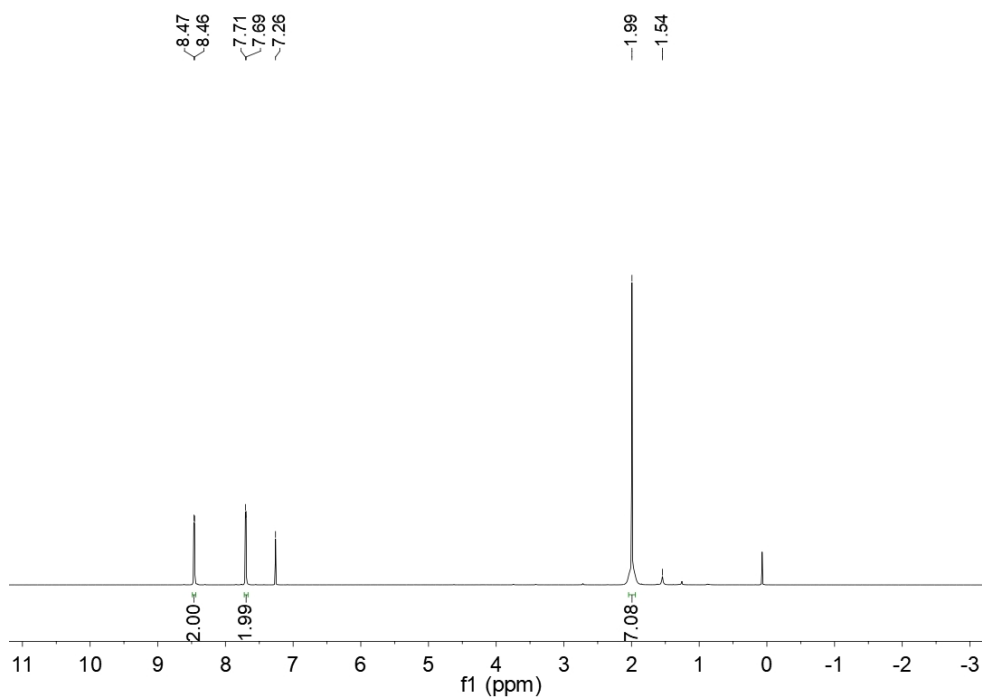
The ^{11}B NMR spectrum of the prepared **8** in CDCl_3 .



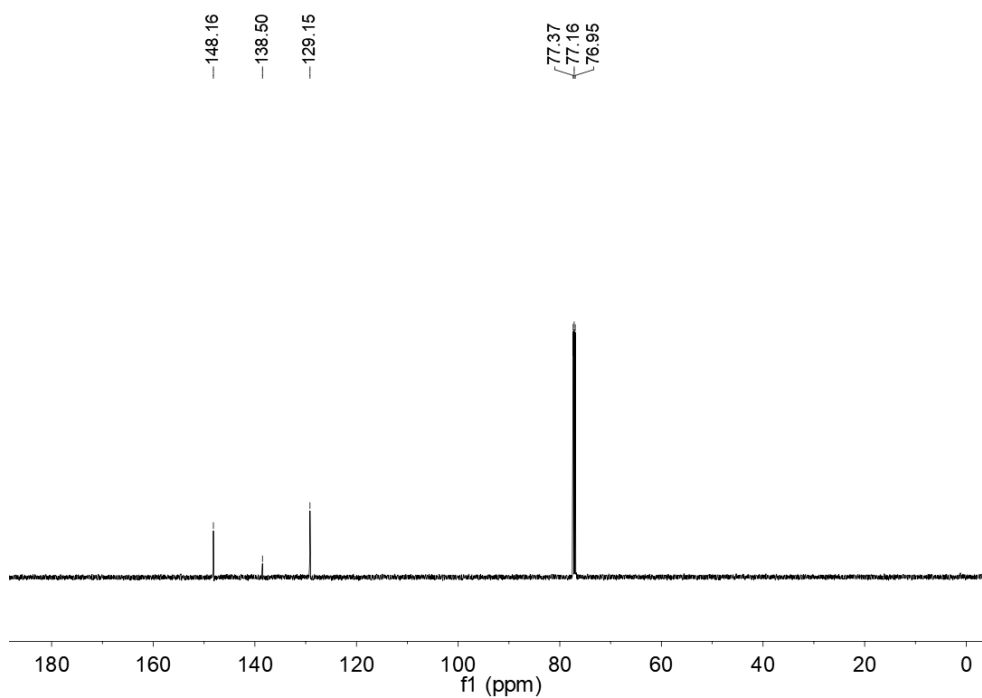
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **8** in CDCl_3 .



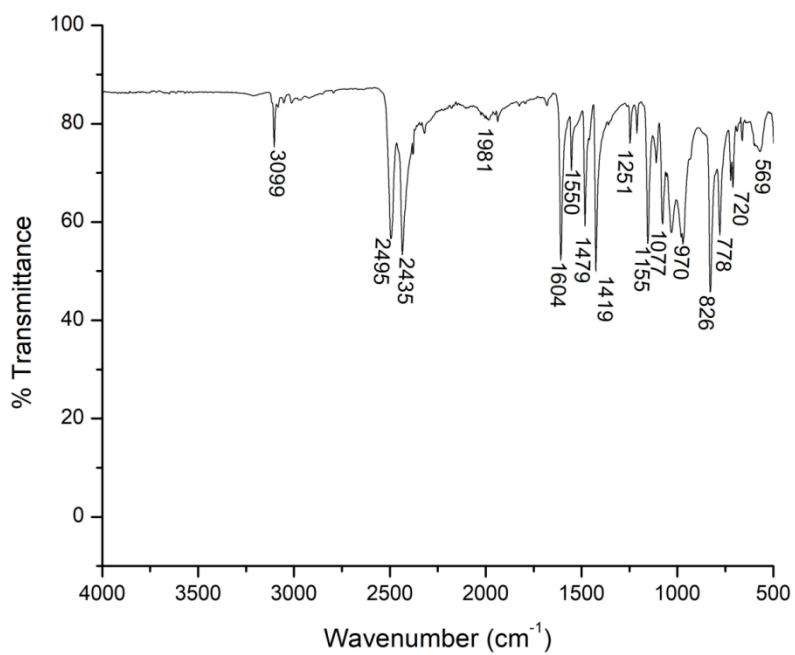
The ^1H NMR spectrum of the prepared **8** in CDCl_3 .



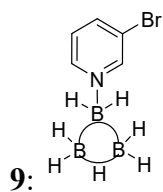
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **8** in CDCl_3 .



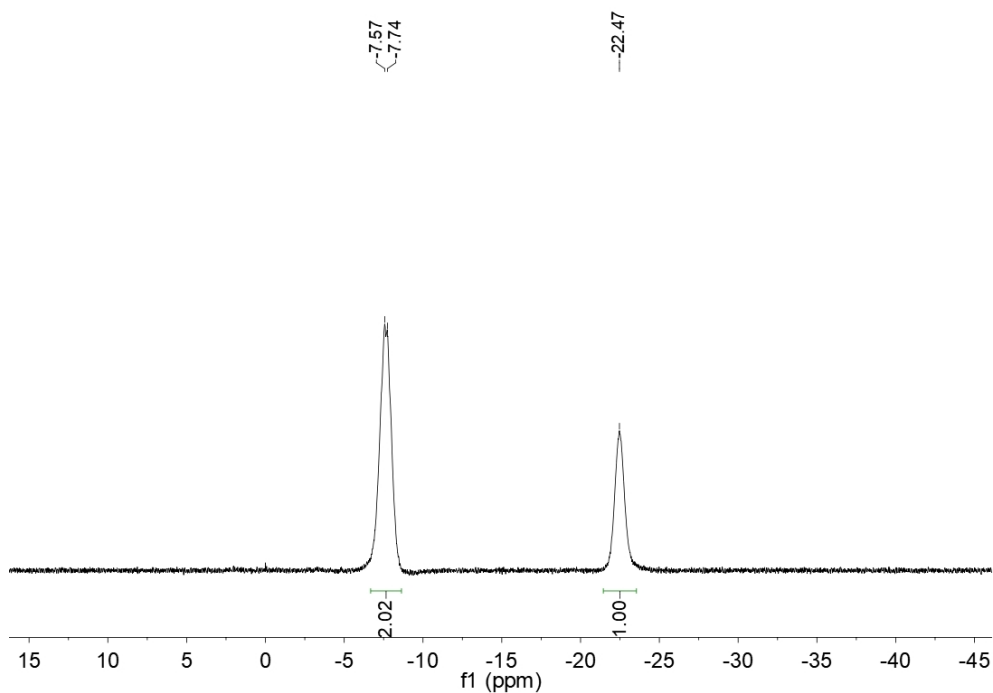
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **8** in CDCl_3 .



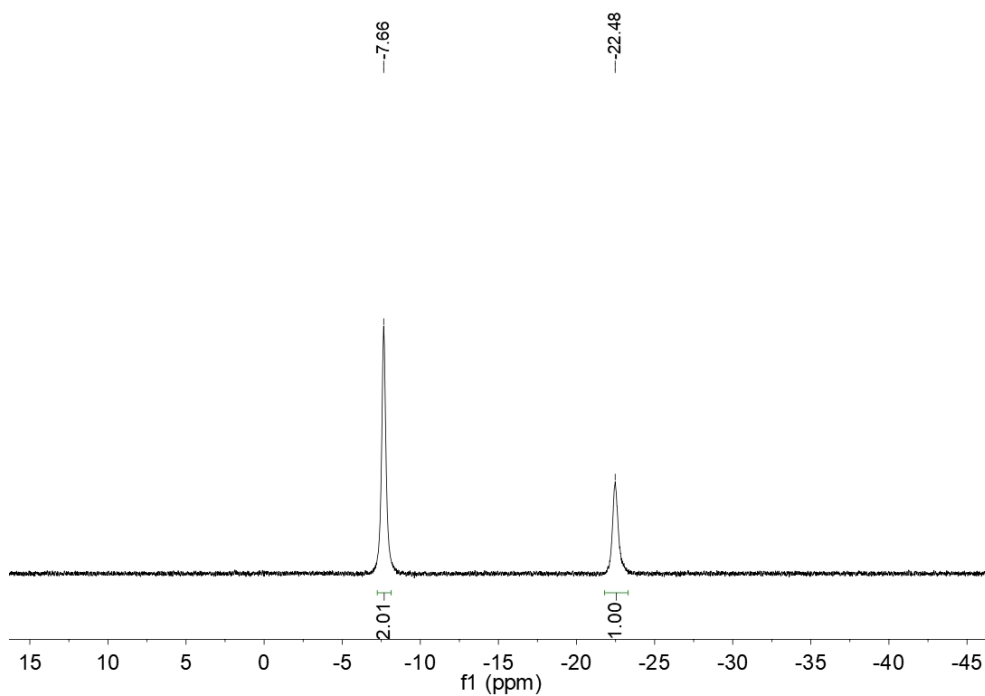
The IR spectrum of the prepared **8**.



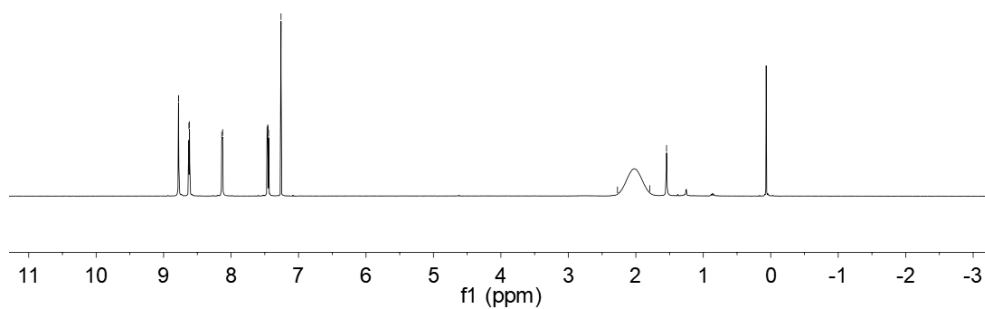
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 75%, white solid, melting point: 50-51 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -7.66 (*br*, 2 B of **BHB**), -22.47 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.66 (*br*, 2 B of **BHB**), -22.48 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.78 (*s*, H of **CH**), 8.63 (*d*, H of **CH**), 8.13 (*d*, H of **CH**), 7.46 (*dd*, H of **CH**), 2.27-1.79 (*br*, 7 H of B_{3**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): 8.78 (*s*, H of **CH**), 8.63 (*d*, H of **CH**), 8.13 (*d*, H of **CH**), 7.45 (*dd*, H of **CH**), 2.03 (*s*, 7 H of B_{3**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 149.33 (1 C), 146.41 (1 C), 143.73 (1 C), 126.38 (1 C), 121.45 (1 C) ppm. IR (cm⁻¹): 3111 (*w*), 2510 (*m*), 2431 (*s*), 1612 (*w*), 1551 (*m*), 1478 (*s*), 1157 (*m*), 1103 (*m*), 1018 (*w*), 963 (*m*), 799 (*s*), 678 (*s*), 532 (*m*). HRMS *m/z* calcd for C₅H₁₁B₃NBr [M+Na]⁺: 220.0256, found: 220.0260}}



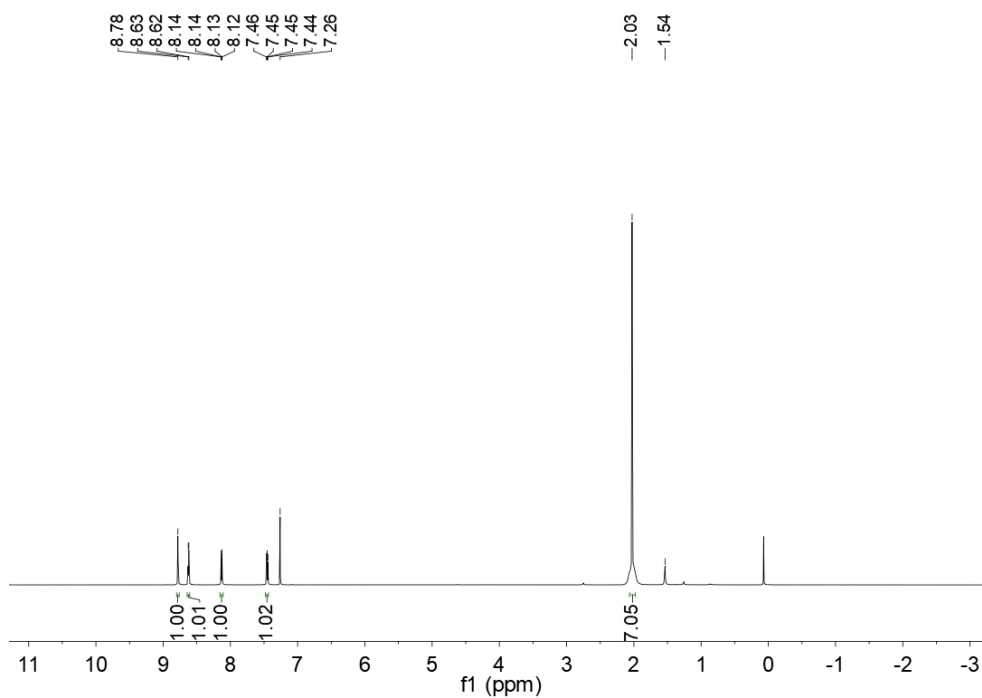
The ¹¹B NMR spectrum of the prepared **9** in CDCl₃.



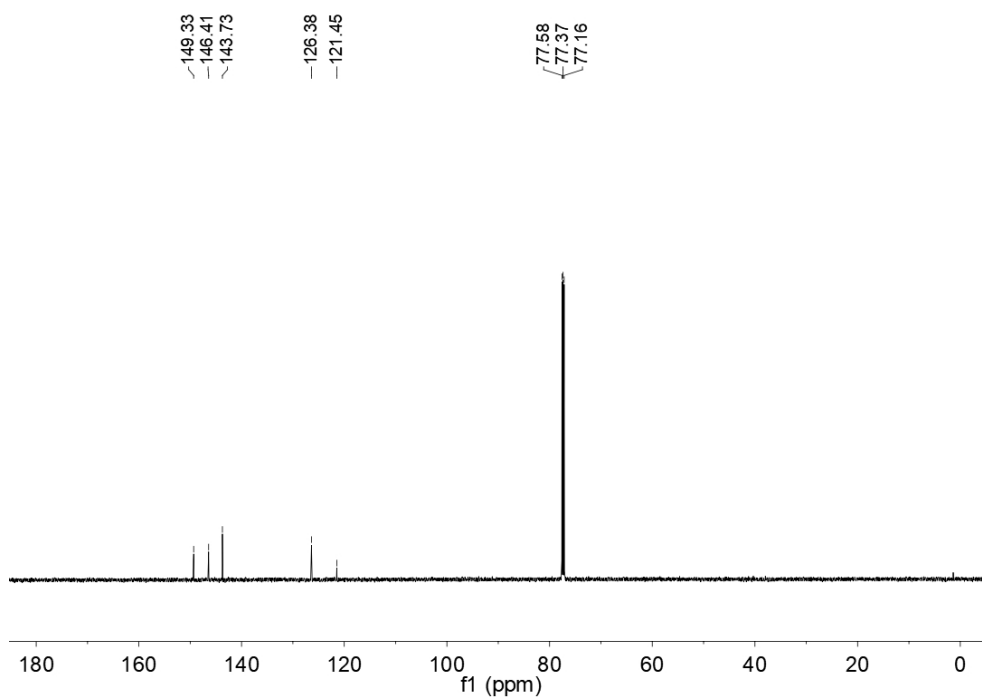
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **9** in CDCl_3 .



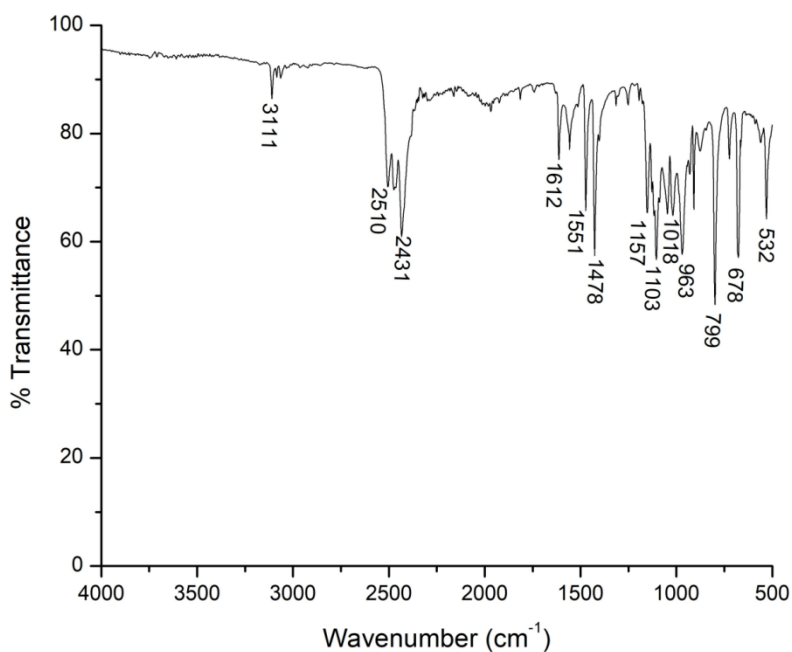
The ^1H NMR spectrum of the prepared **9** in CDCl_3 .



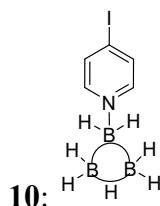
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **9** in CDCl_3 .



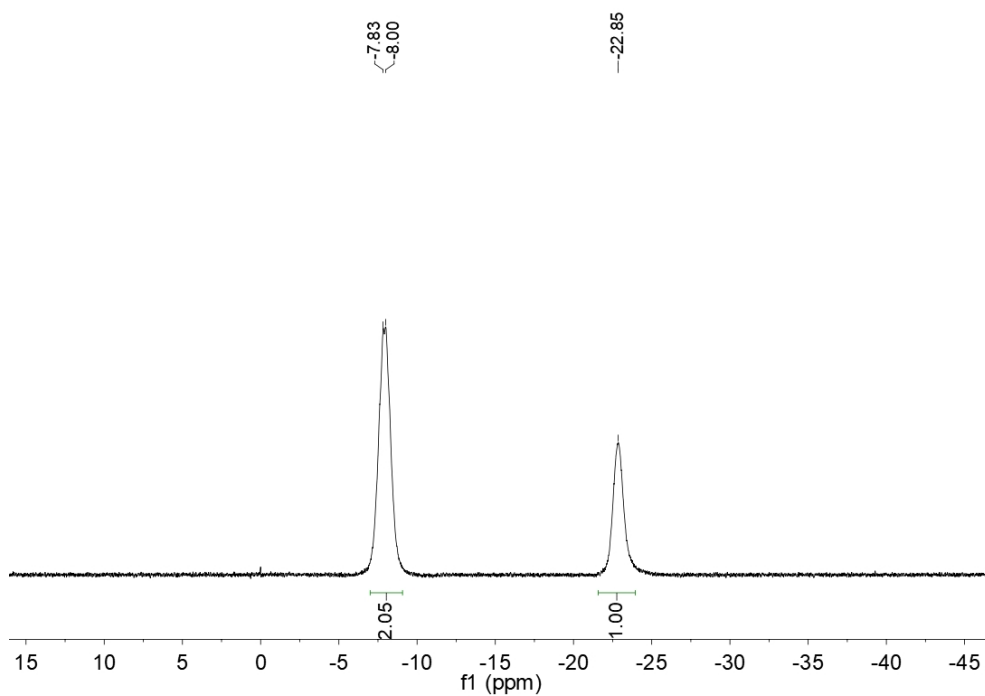
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **9** in CDCl_3 .



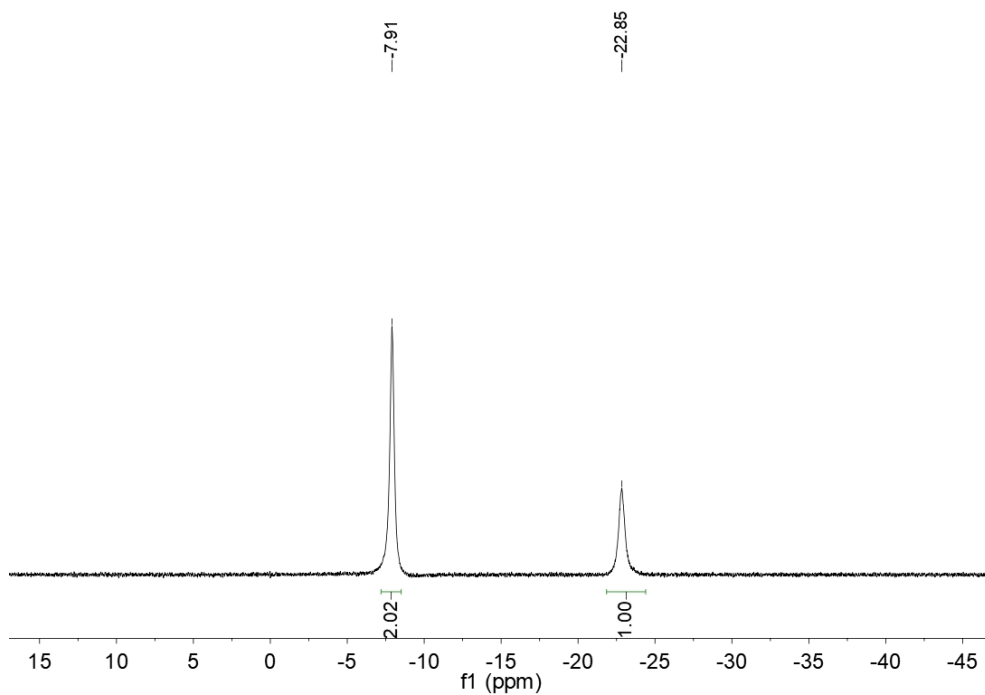
The IR spectrum of the prepared **9**.



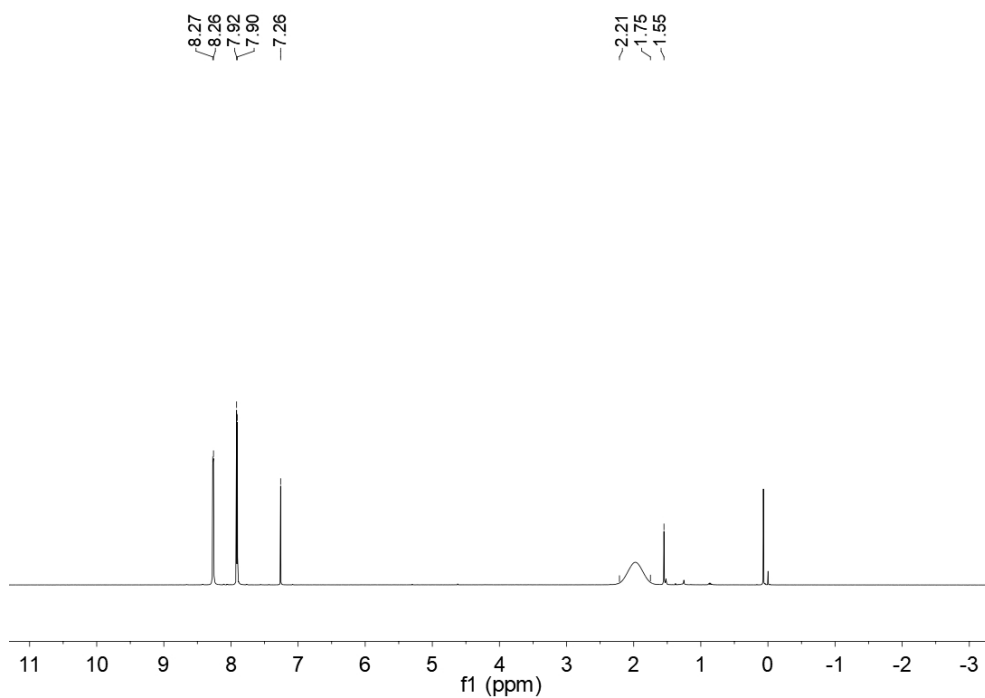
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 79%, white solid, melting point: 96-97 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.91 (*br*, 2 B of **BHB**), -22.85 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.91 (*br*, 2 B of **BHB**), -22.85(*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.27 (*d*, 2 H of 2 **CH**), 7.91(*d*, 2 H of 2 **CH**), 2.21-1.75 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.27 (*d*, 2 H of 2 **CH**), 7.91(*d*, 2 H of 2 **CH**), 1.98 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 147.42 (2 C), 135.17 (2 C), 111.41 (1 C) ppm. IR (cm^{-1}): 3111 (*m*), 2501 (*m*), 2441 (*s*), 1987 (*w*), 1604 (*s*), 1550 (*w*), 1472 (*m*), 1419 (*s*), 1215 (*w*), 1155 (*s*), 1108 (*m*), 1089 (*w*), 1024 (*w*), 964 (*w*), 820 (*s*), 772 (*m*), 701 (*w*). HRMS *m/z* calcd for $\text{C}_5\text{H}_{11}\text{B}_3\text{NI}$ [$\text{M}+\text{Na}$] $^+$: 246.0290, found: 246.0291.



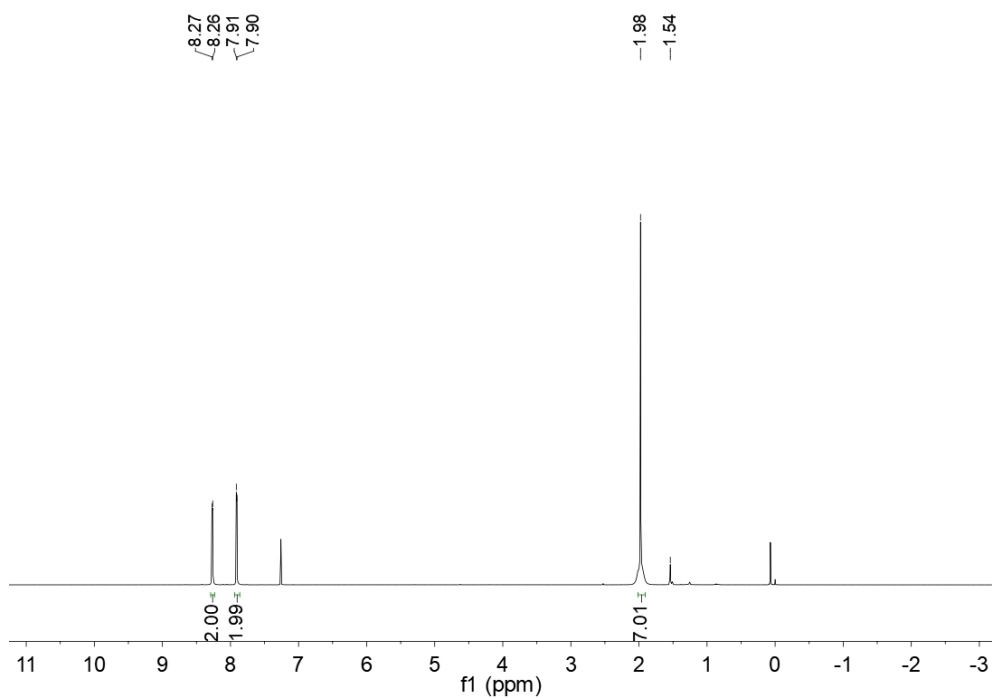
The ^{11}B NMR spectrum of the prepared **10** in CDCl_3 .



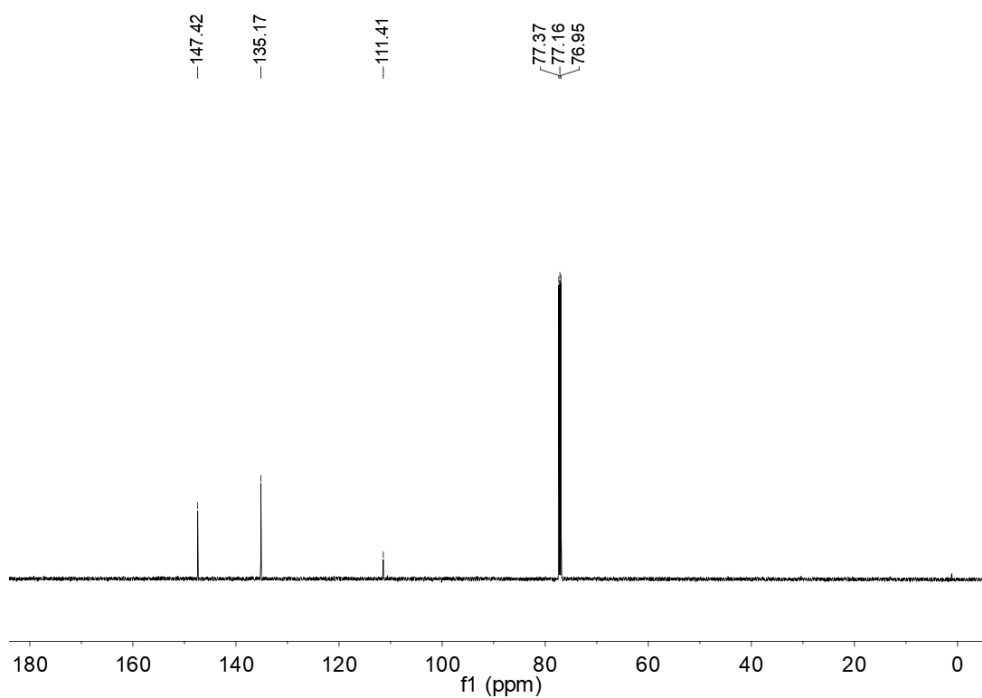
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **10** in CDCl_3 .



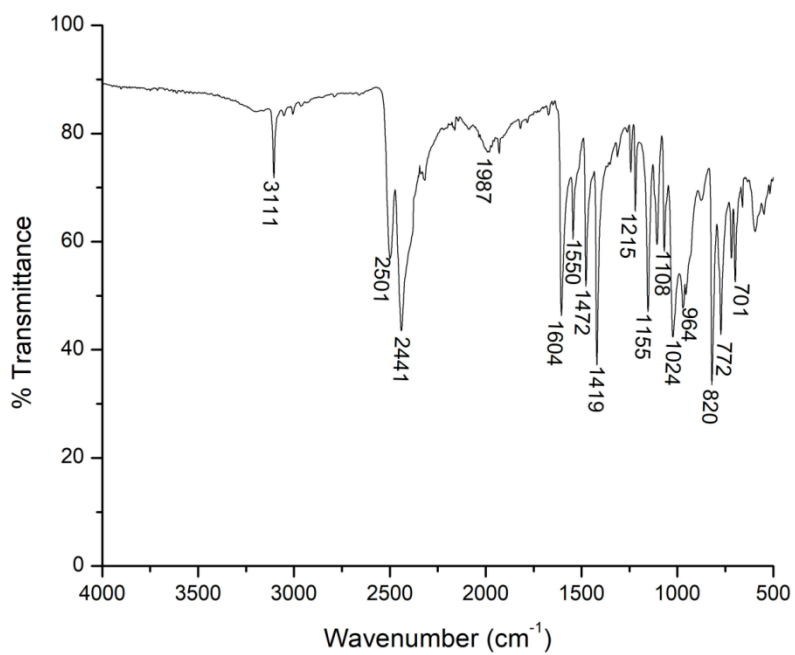
The ^1H NMR spectrum of the prepared **10** in CDCl_3 .



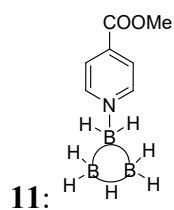
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **10** in CDCl_3 .



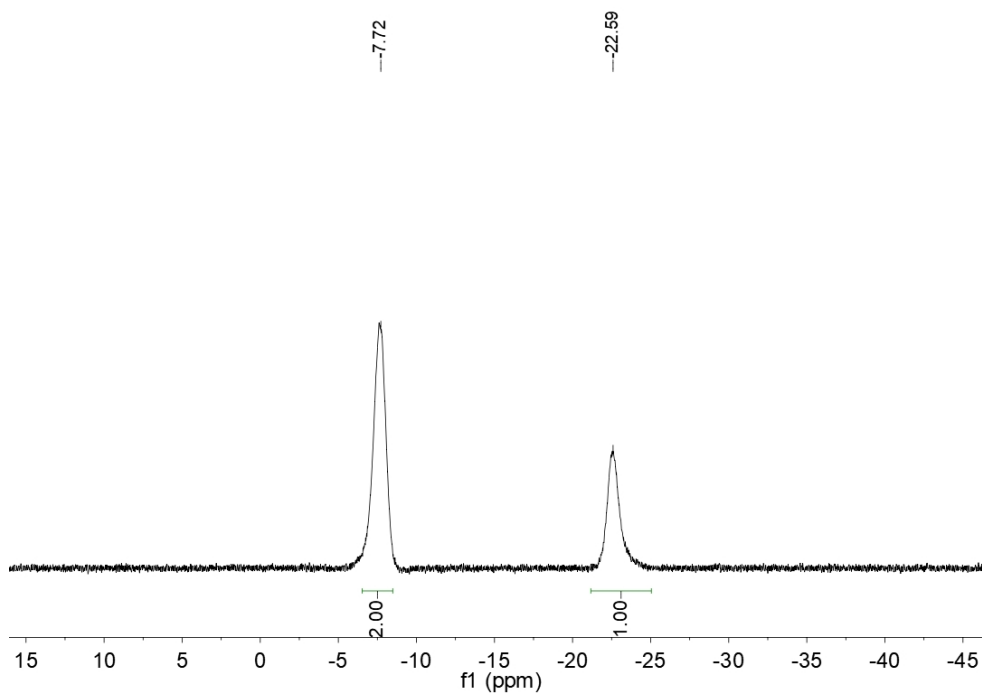
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **10** in CDCl_3 .



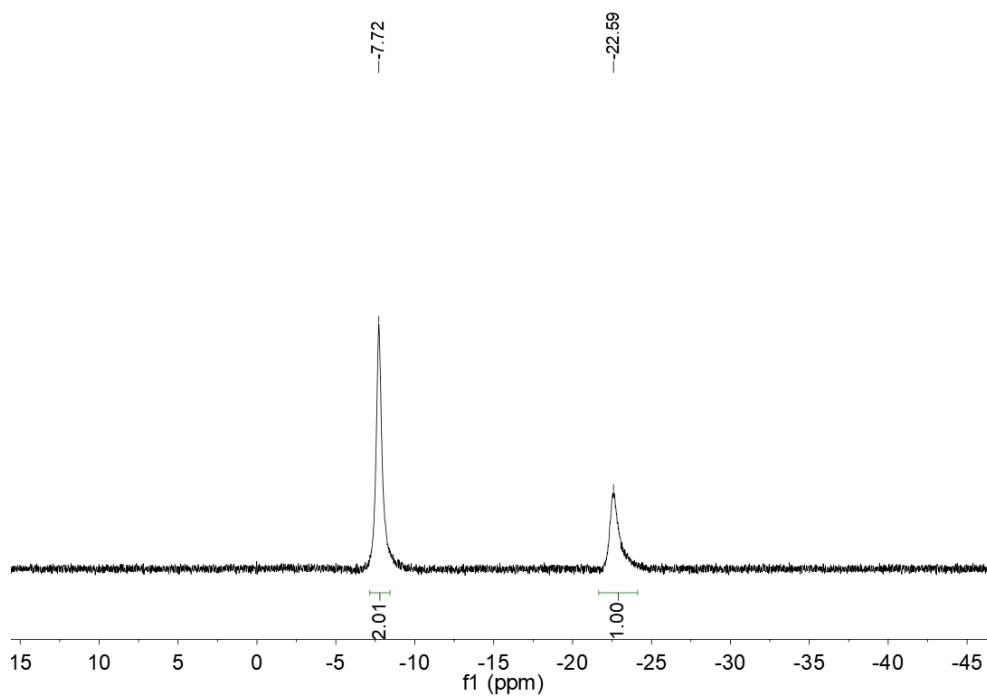
The IR spectrum of the prepared **10**.



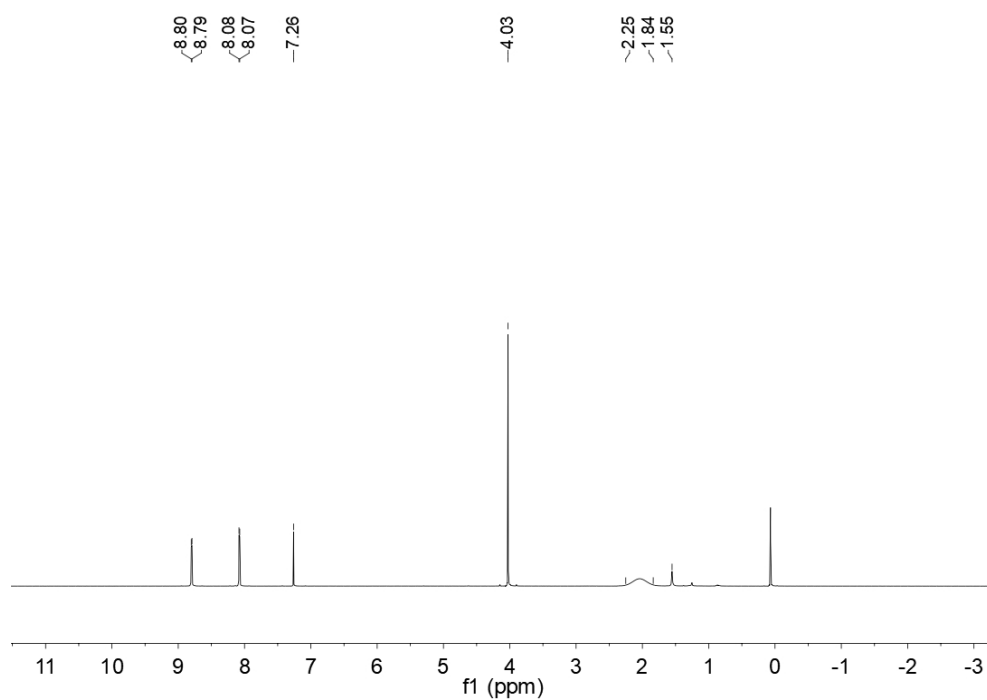
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:1). Yield 73%, white solid, melting point: 51-52 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -7.72 (*br*, 2 B of **BHB**), -22.59 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.72 (*br*, 2 B of **BHB**), -22.59 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.80 (*d*, 2 H of 2 **CH**), 8.08 (*d*, 2 H of 2 **CH**), 4.03 (*s*, 3 H of **CH**₃), 2.25-1.84 (*br*, 7 H of B_{3**H**₇) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 8.80 (*d*, 2 H of 2 **CH**), 8.08 (*d*, 2 H of 2 **CH**), 4.03 (*s*, 3 H of **CH**₃), 2.05 (*s*, 7 H of B_{3**H**₇) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 163.34 (1 C), 148.77 (2 C), 141.48 (1 C), 125.32 (2 C), 53.99 (1 C) ppm. IR (cm⁻¹): 3111 (w), 2962 (w), 2498 (m), 2437 (m), 2333 (w), 1736 (s), 1636 (w), 1570 (w), 1432 (s), 1294 (s), 1156 (m), 1084 (m), 963 (m), 863 (m), 758 (s), 686 (s). HRMS *m/z* calcd for C₇H₁₄B₃NO₂ [M+Na]⁺ : 200.1197, found: 200.1197.}}



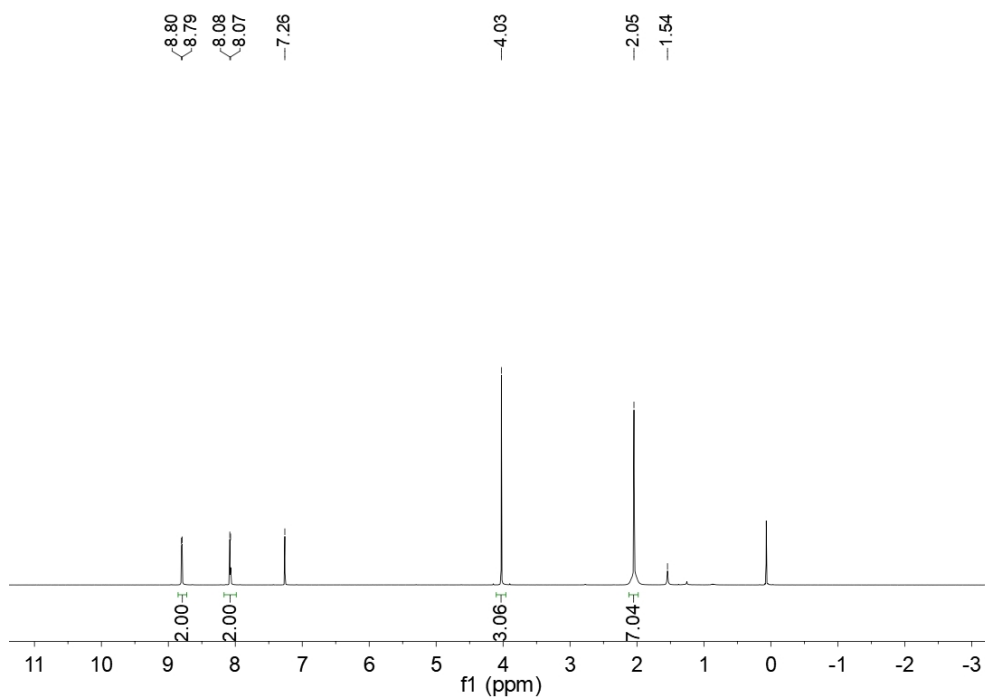
The ¹¹B NMR spectrum of the prepared **11** in CDCl₃.



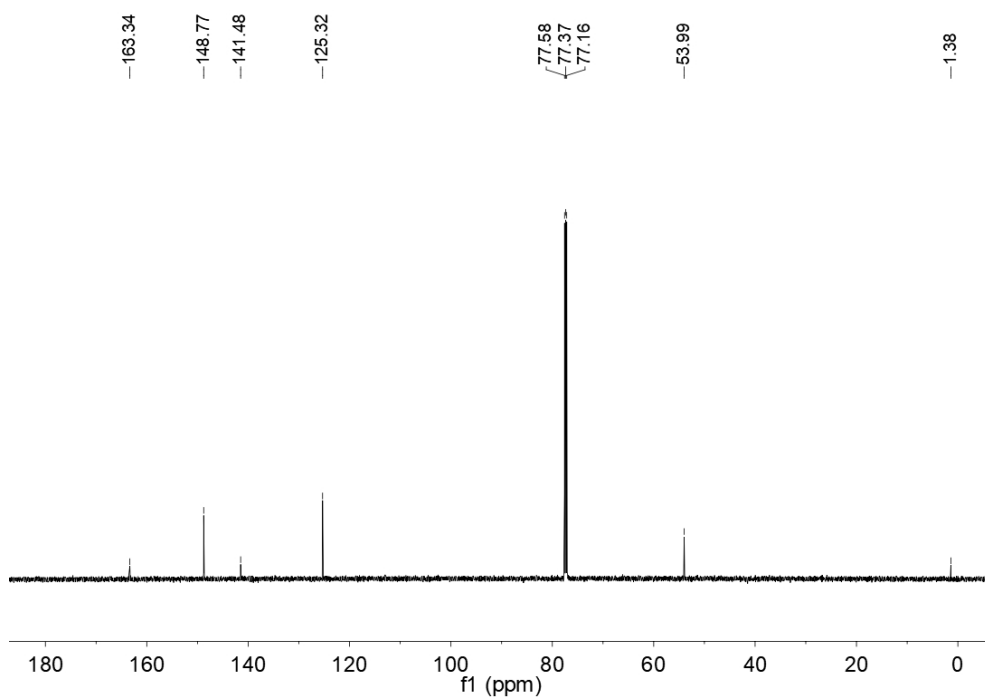
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **11** in CDCl_3 .



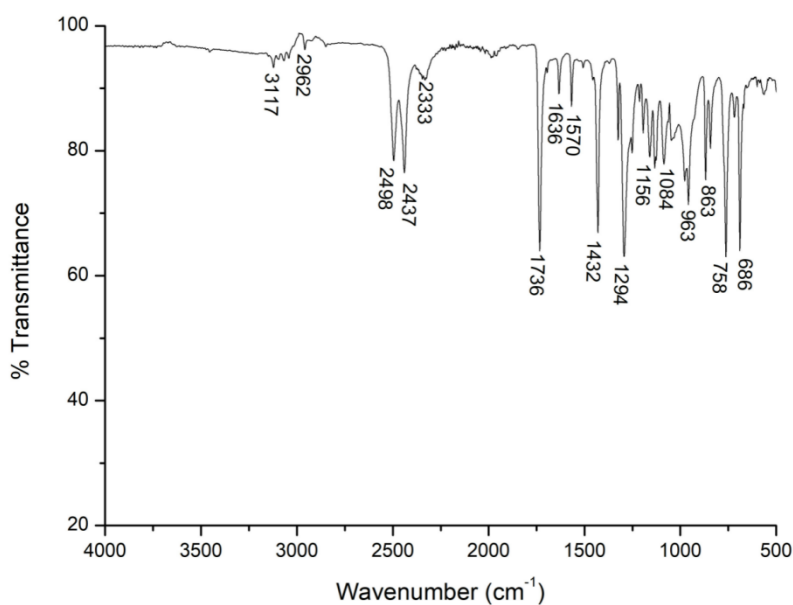
The ^1H NMR spectrum of the prepared **11** in CDCl_3 .



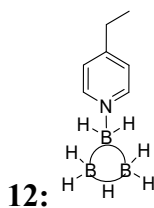
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **11** in CDCl_3 .



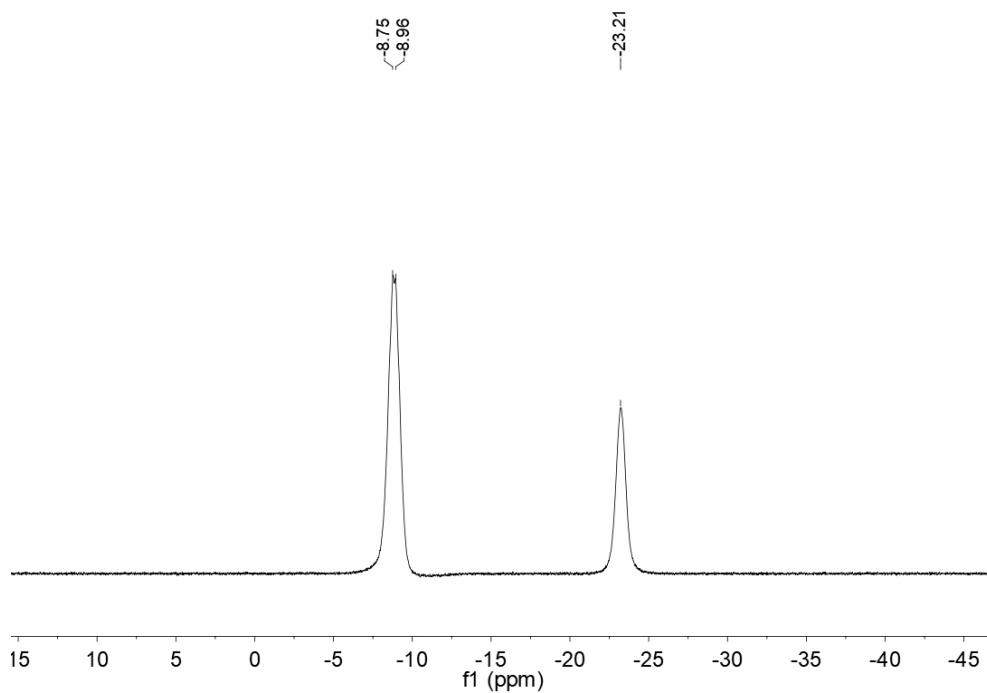
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **11** in CDCl_3 .



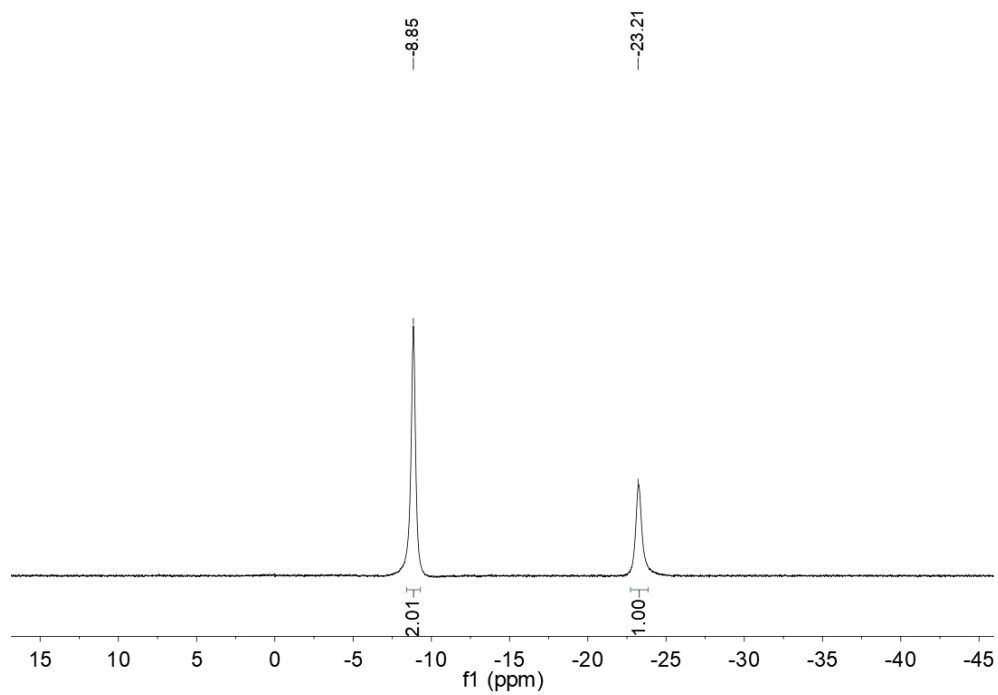
The IR spectrum of the prepared **11**.



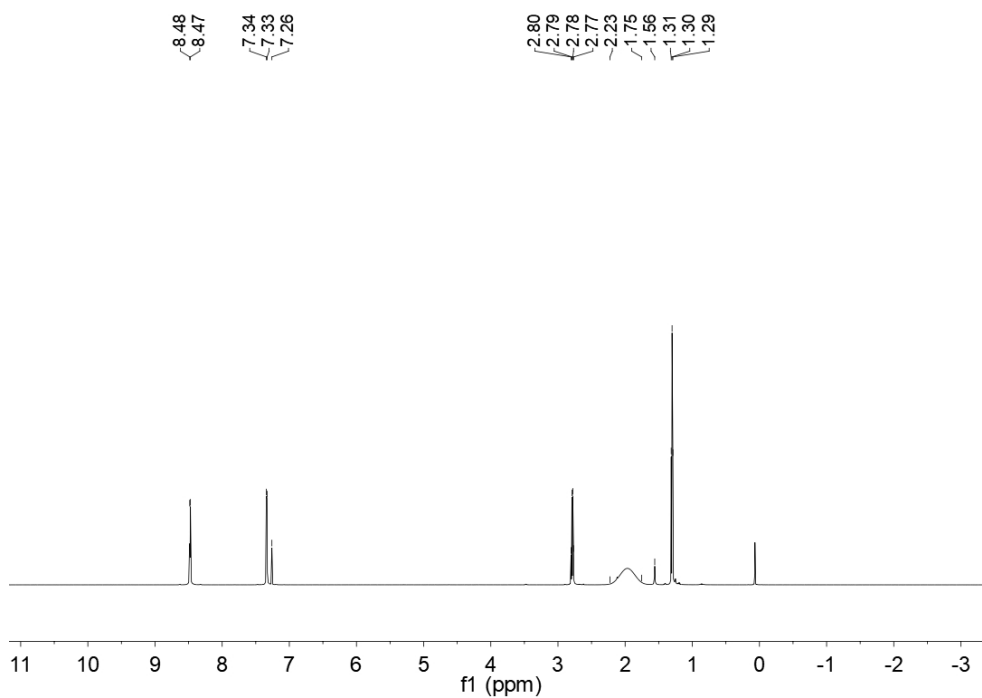
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 82%, white solid, melting point: 21-22 °C. ^1H NMR (600 MHz, CDCl_3): δ 8.48 (*d*, 2 H of 2 **CH**), 7.34 (*d*, 2 H of 2 **CH**), 2.79 (*q*, 2 H of **CH**₂), 2.23-1.75 (*br*, 7 H of **B**_{3**H**₇), 1.30 (*t*, 3 H of **CH**₃) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.48 (*d*, 2 H of 2 **CH**), 7.33 (*d*, 2 H of 2 **CH**), 2.79 (*q*, 2 H of **CH**₂), 1.97 (*s*, 7 H of **B**_{3**H**₇), 1.30 (*t*, 3 H of **CH**₃) ppm. ^{11}B NMR (193 MHz, CDCl_3): δ -8.85 (*br*, 2 B of **BHB**), -23.21 (*br*, B of **BH**₂) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.85 (*br*, 2 B of **BHB**), -23.21 (*br*, B of **BH**₂) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 159.41 (1 C), 147.33 (2 C), 125.10 (2 C), 28.71 (1 C), 14.00 (1 C) ppm. IR (cm^{-1}): 2973 (w), 2493 (s), 2431 (s), 1636 (s), 1504 (w), 1443 (s), 1222 (w), 1150 (m), 1034 (w), 979 (m), 840 (s). HRMS *m/z* calcd for $\text{C}_7\text{H}_{16}\text{B}_3\text{N}$ $[\text{M}+\text{Na}]^+$: 170.1457, found: 170.1455.}}



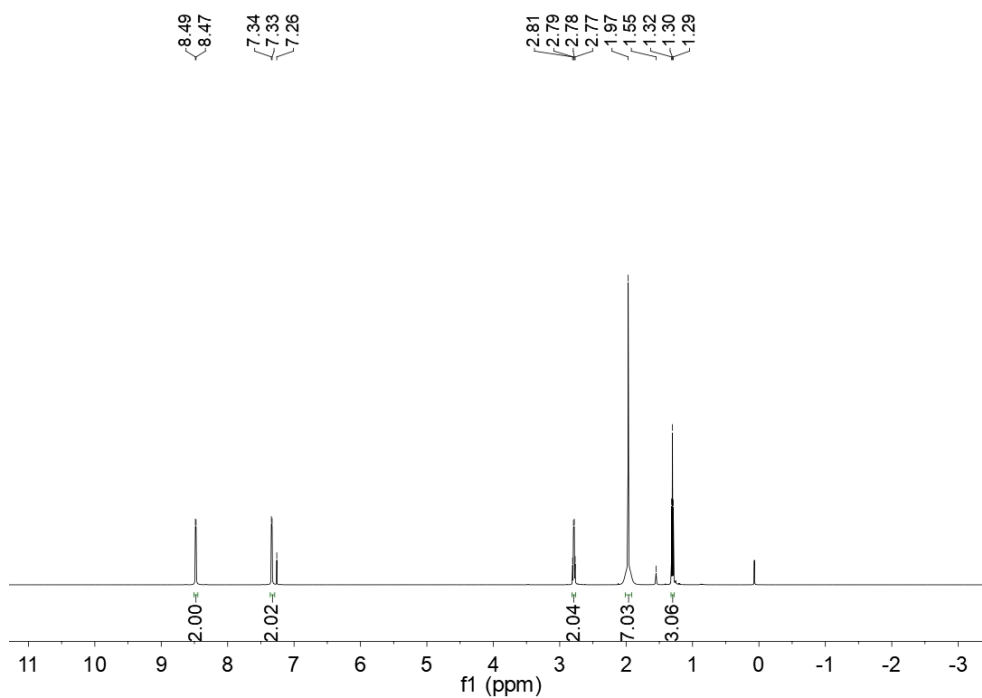
The ^{11}B NMR spectrum of the prepared **12** in CDCl_3 .



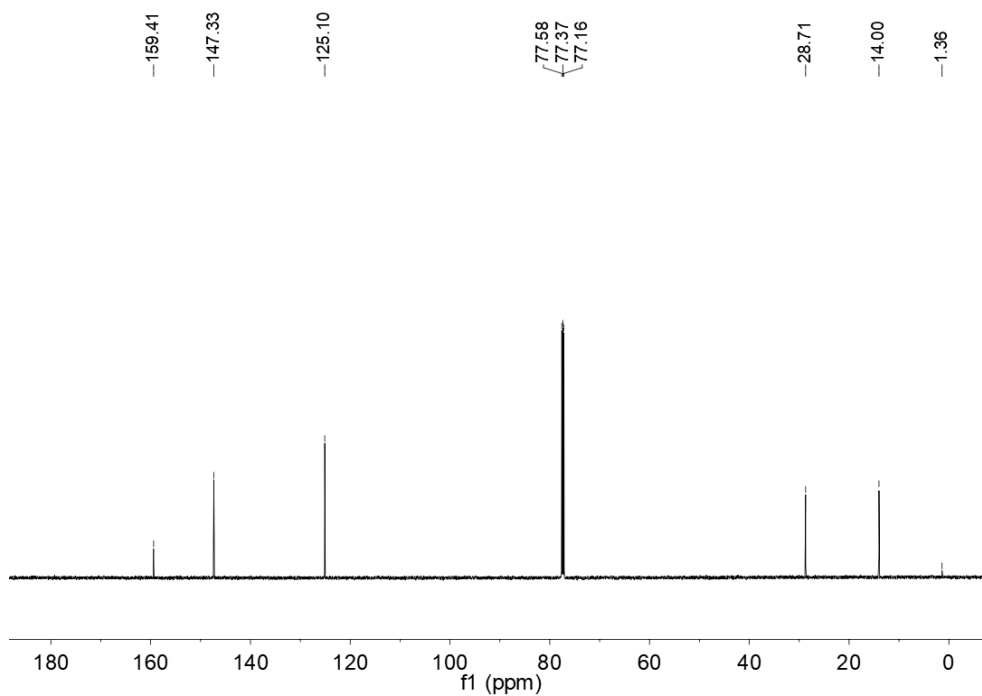
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **12** in CDCl_3 .



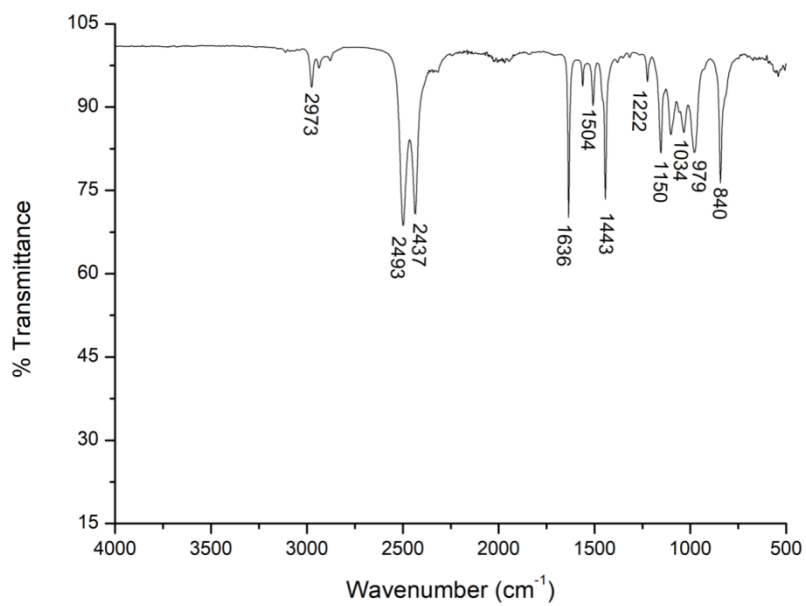
The ^1H NMR spectrum of the prepared **12** in CDCl_3 .



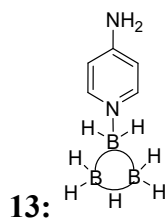
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **12** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **12** in CDCl_3 .

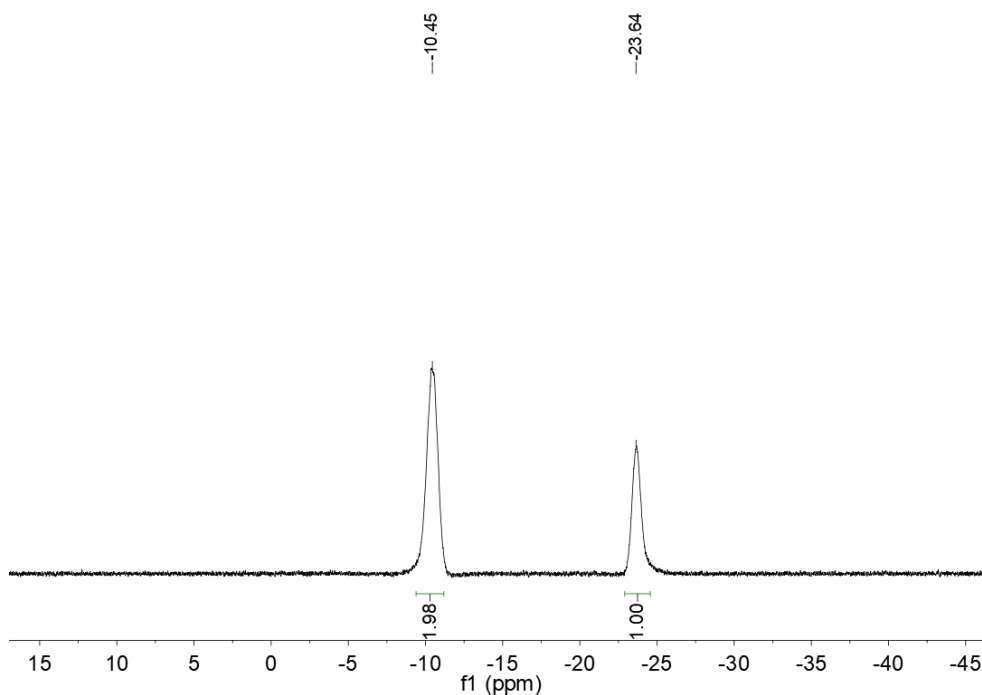


The IR spectrum of the prepared **12**.

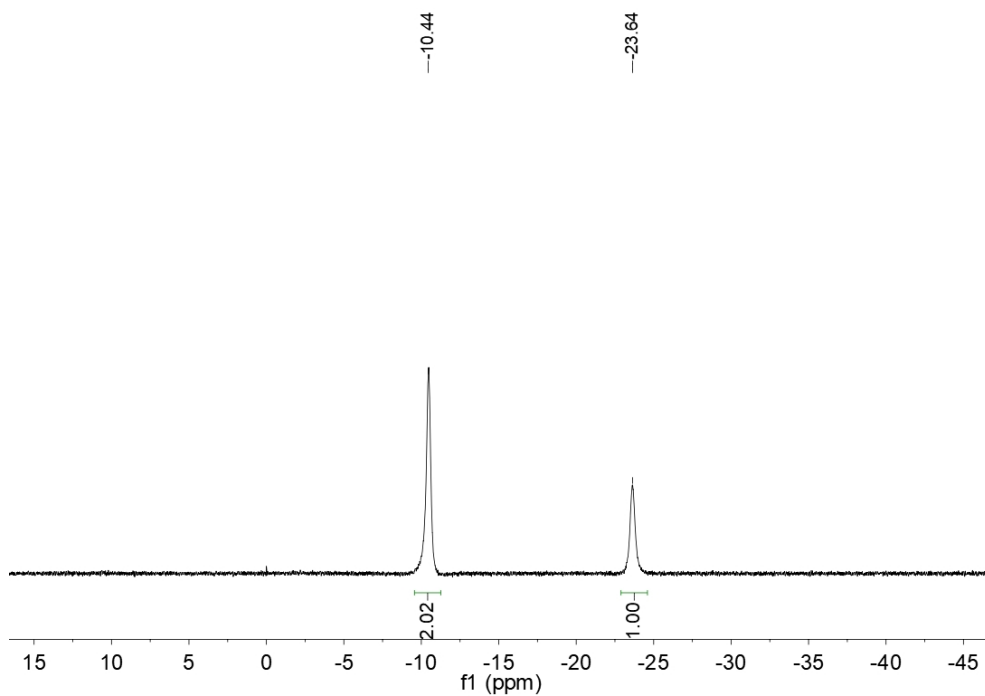


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:2). Yield 68%, white

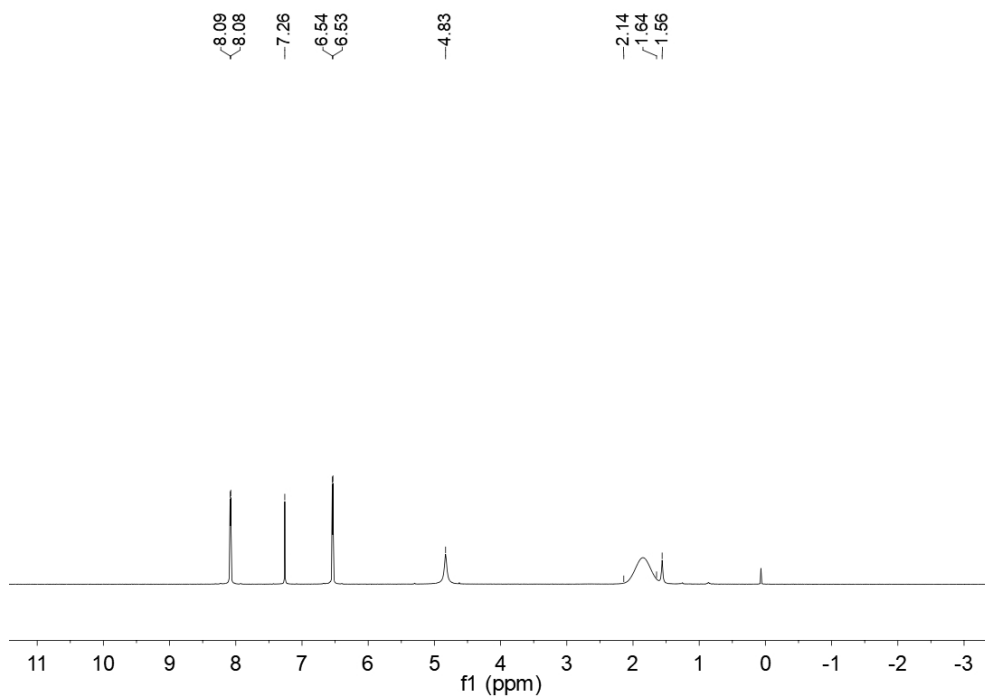
solid, melting point: 97-98 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -10.45 (*br*, 2 B of **BHB**), -23.64 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.44 (*br*, 2 B of **BHB**), -23.64 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.09 (*d*, 2 H of 2 **CH**), 6.54 (*d*, 2 H of 2 **CH**), 4.83 (*br*, 2 H of **NH₂**), 2.14-1.64 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.09 (*d*, 2 H of 2 **CH**), 6.54 (*d*, 2 H of 2 **CH**), 4.83 (*br*, 2 H of **NH₂**), 1.85 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 155.43 (1 C), 147.75 (2 C), 109.51 (2 C) ppm. IR (cm^{-1}): 3481 (m), 3370 (m), 3221 (w), 2476 (m), 2426 (m), 1436 (s), 1526 (s), 1482 (w), 1360 (w), 1310 (w), 1123 (m), 976 (m), 835 (m), 520 (m). HRMS m/z calcd for $\text{C}_5\text{H}_{13}\text{B}_3\text{N}_2$ $[\text{M}+\text{Na}]^+$: 157.1252, found: 157.1254.



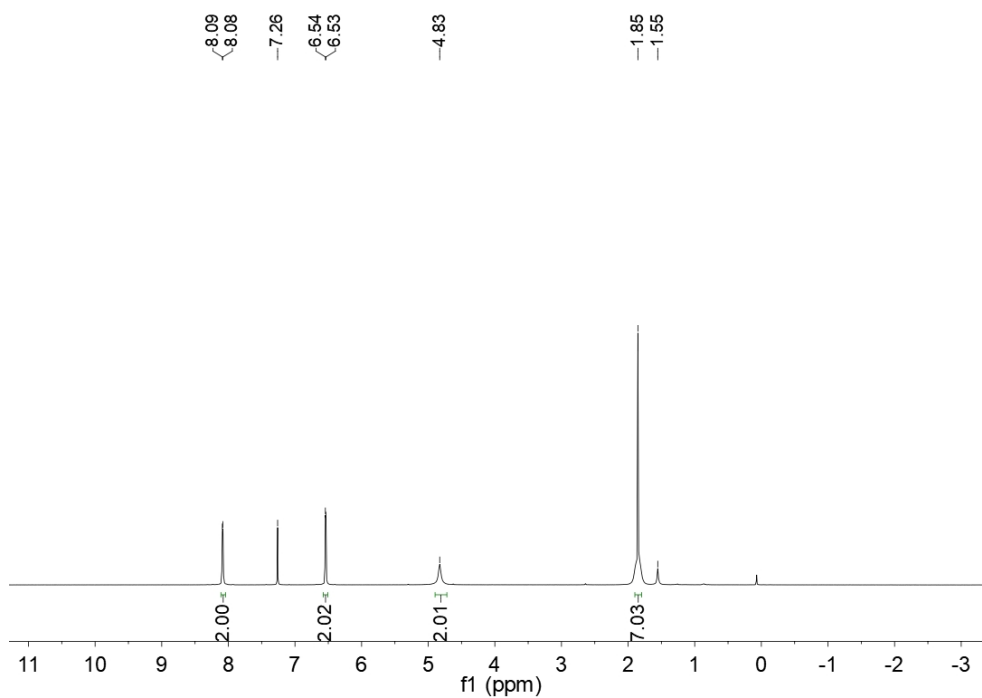
The ^{11}B NMR spectrum of the prepared **13** in CDCl_3 .



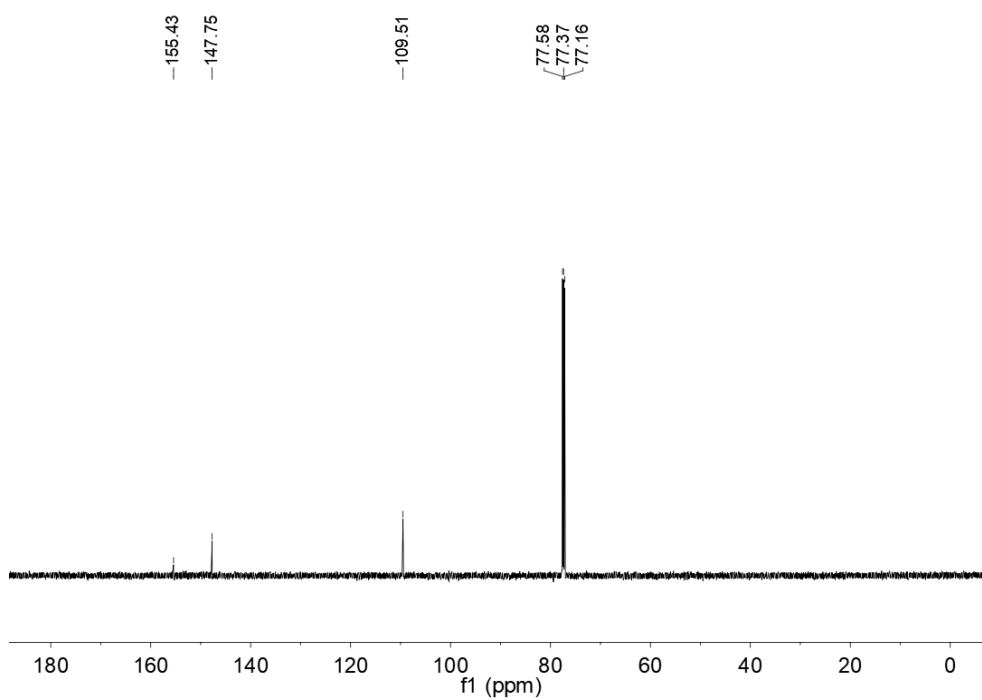
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **13** in CDCl_3 .



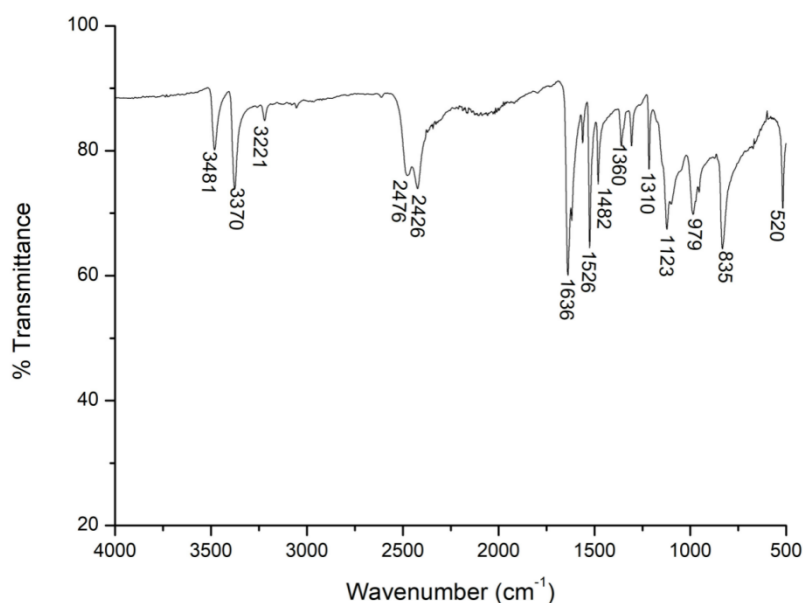
The ^1H NMR spectrum of the prepared **13** in CDCl_3 .



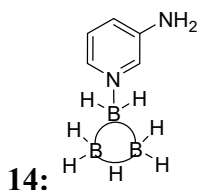
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **13** in CDCl_3 .



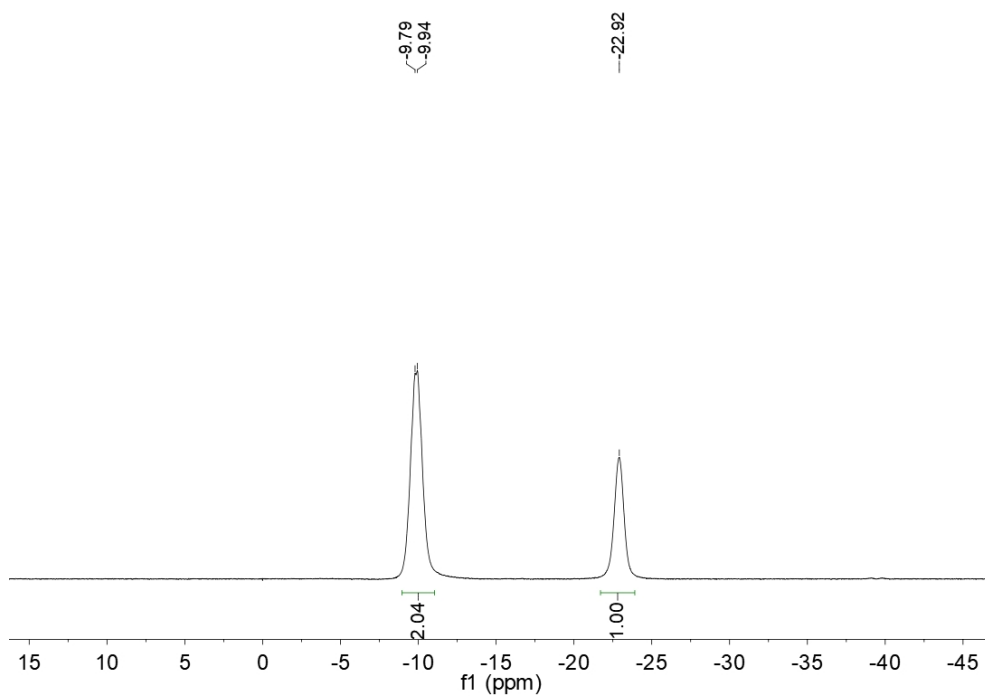
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **13** in CDCl_3 .



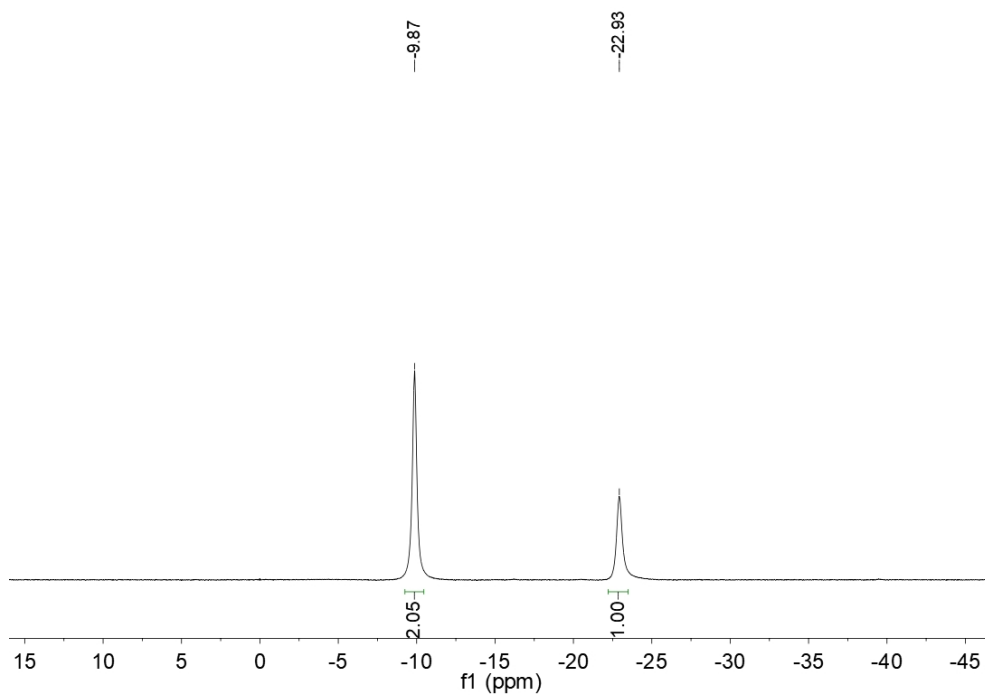
The IR spectrum of the prepared **13**.



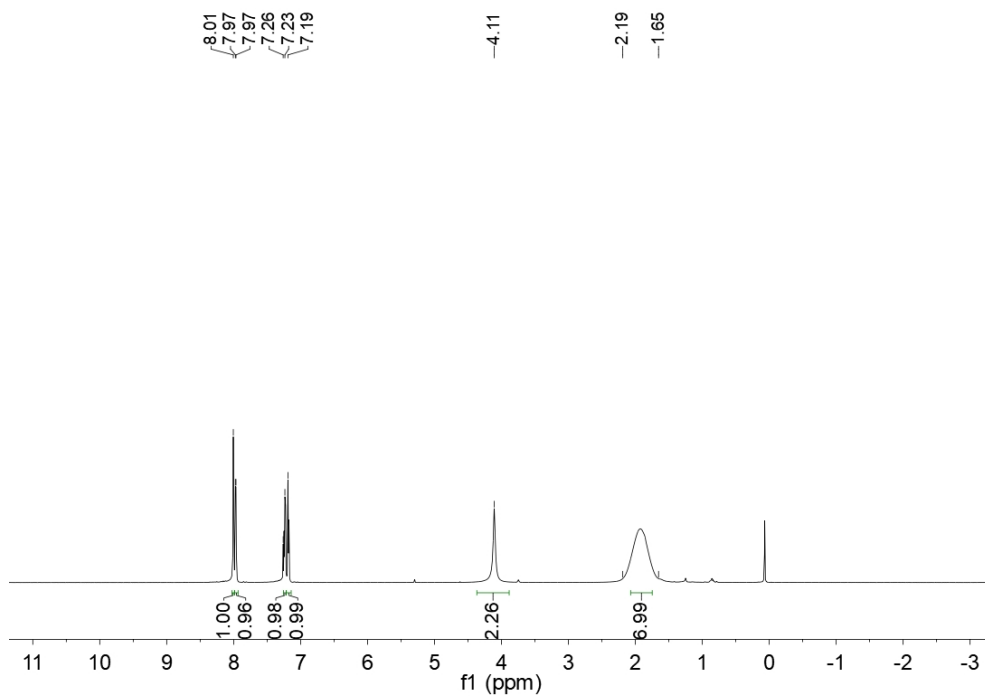
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:2). Yield 64%, white solid, melting point: 48-49 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.87 (*br*, 2 B of **BHB**), -22.92 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.87 (*br*, 2 B of **BHB**), -22.93 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.01 (*s*, H of **CH**), 7.97 (*d*, H of **CH**), 7.24 (*t*, H of **CH**), 7.18 (*d*, H of **CH**), 4.11 (*br*, 2 H of **NH₂**), 2.19-1.65 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.01 (*s*, H of **CH**), 7.98 (*d*, H of **CH**), 7.24 (*t*, H of **CH**), 7.18 (*d*, H of **CH**), 4.10 (*br*, 2 H of **NH₂**), 1.92 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 144.38 (1 C), 137.26 (1 C), 133.92 (1 C), 125.58 (1 C), 125.15 (1 C) ppm. IR (cm^{-1}): 3476 (m), 3376 (m), 3210 (w), 3067 (w), 2498 (s), 2432 (s), 1619 (s), 1575 (m), 1493 (s), 1448 (m), 1316 (m), 1288 (w), 1150 (m), 1028 (m), 963 (m), 874 (w), 796 (s), 680 (s). HRMS m/z calcd for $\text{C}_5\text{H}_{13}\text{B}_3\text{N}_2$ $[\text{M}+\text{Na}]^+$: 157.1252, found: 157.1253.



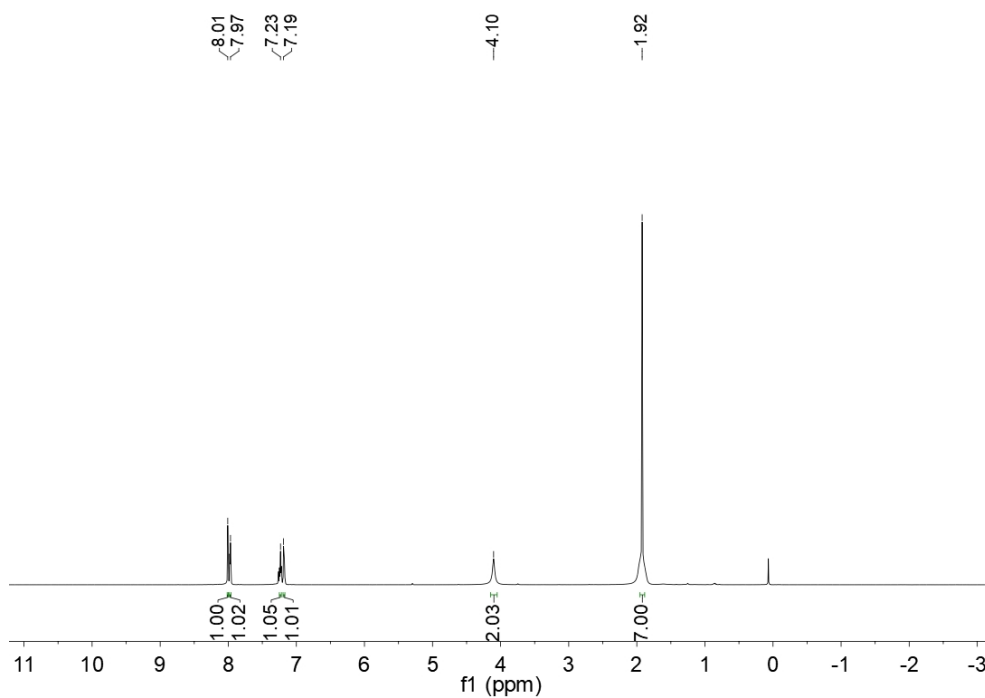
The ^{11}B NMR spectrum of the prepared **14** in CDCl_3 .



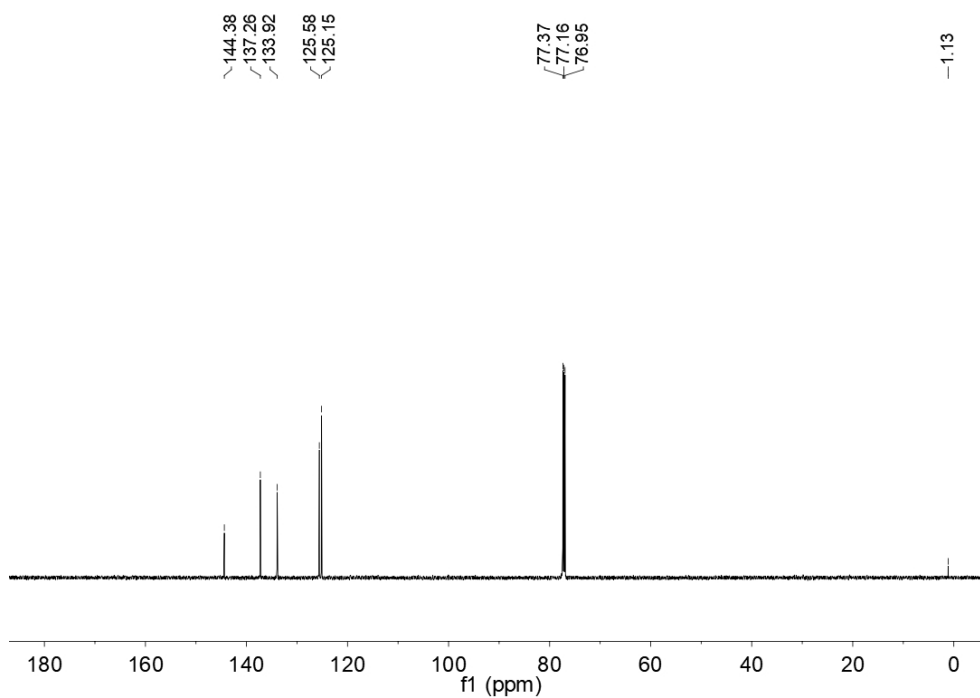
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **14** in CDCl_3 .



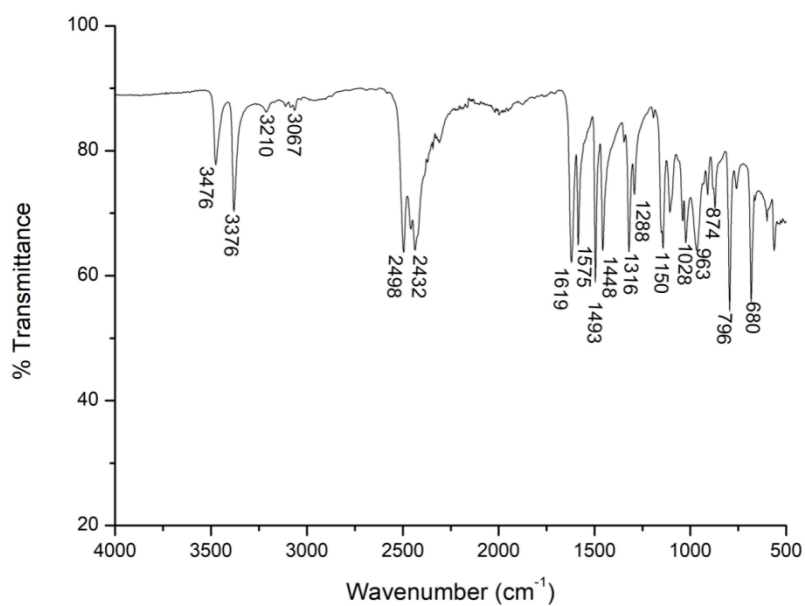
The ^1H NMR spectrum of the prepared **14** in CDCl_3 .



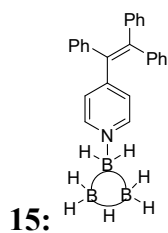
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **14** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **14** in CDCl_3 .

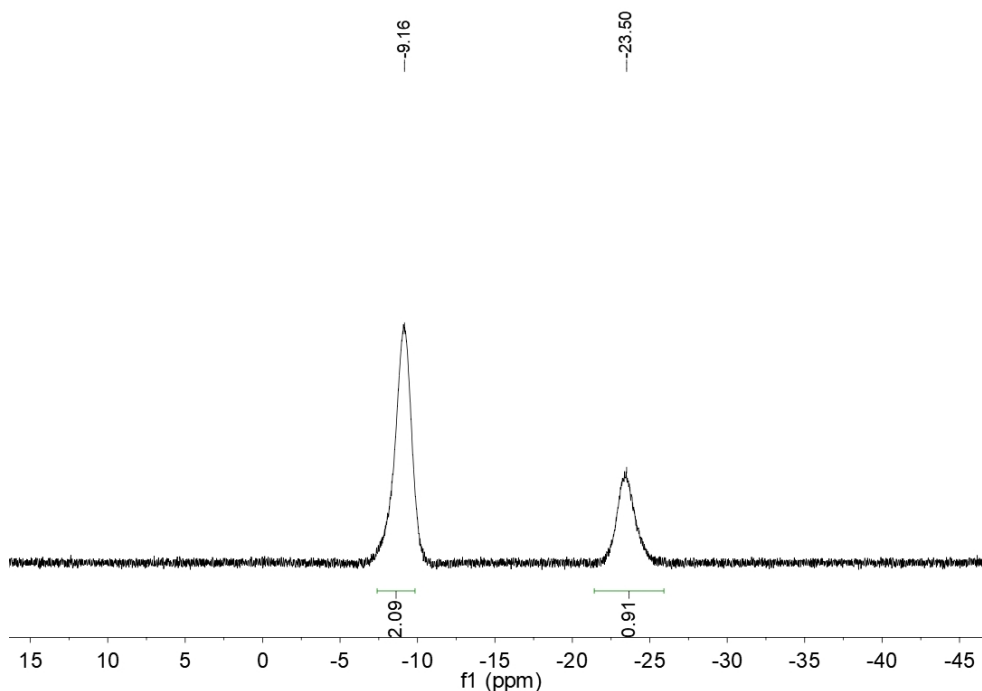


The IR spectrum of the prepared **14**.

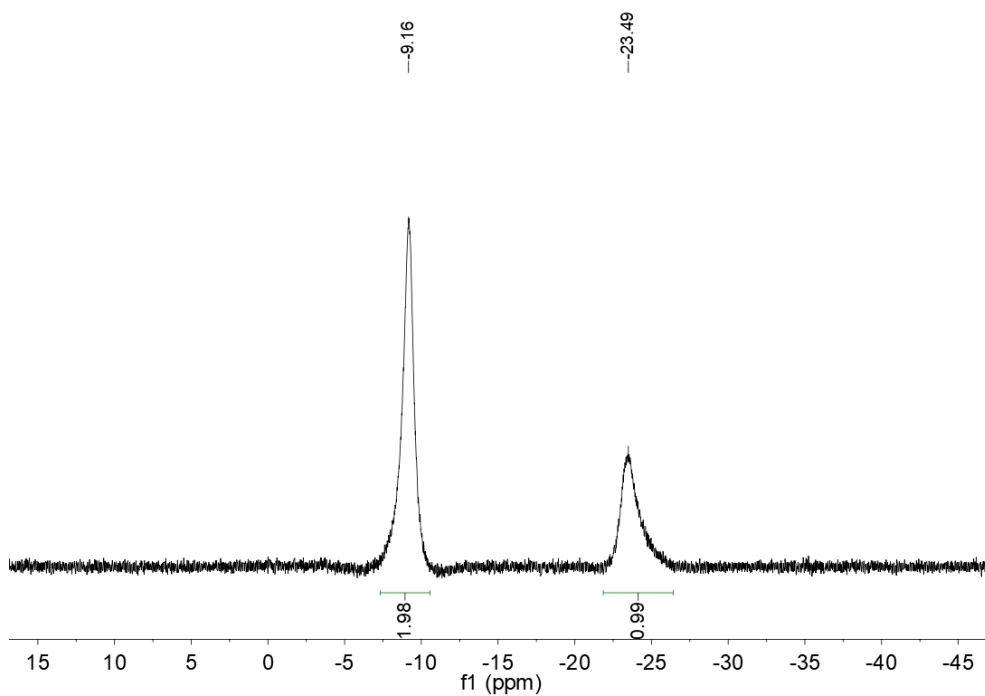


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 4:1). Yield 63%, yellow

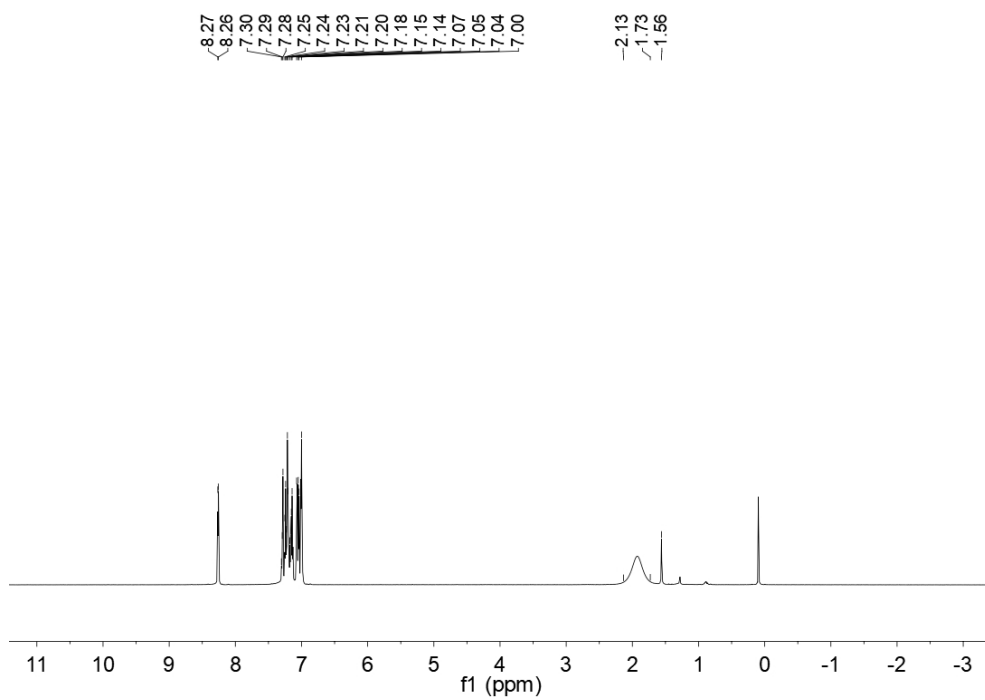
solid. ^{11}B NMR (193 MHz, CDCl_3): δ -9.16 (*br*, 2 B of **BHB**), -23.50 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.16 (*br*, 2 B of **BHB**), -23.49 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.27 (*d*, 2 H of 2 **CH**), 7.15 (*m*, 17 H of 17 **CH**), 2.13-1.73 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.28 (*d*, 2 H of 2 **CH**), 7.16 (*m*, 17 H of 17 **CH**), 1.93 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 157.07 (1 C), 147.64 (1 C), 146.44 (2 C), 141.93 (1 C), 141.57 (1 C), 141.24 (1 C), 136.15 (1 C), 131.37 (2 C), 131.17 (2 C), 131.15 (2 C), 128.75 (2 C), 128.67 (2 C), 128.61 (1 C), 128.03 (2 C), 127.96 (1 C), 127.88 (1 C), 127.42 (2 C) ppm. IR (cm^{-1}): 3050 (w), 2498 (m), 2443 (m), 1625 (s), 1493 (m), 1437 (m), 1150 (m), 1067 (m), 973 (m), 747 (s), 703 (s), 625 (s). HRMS m/z calcd for $\text{C}_{25}\text{H}_{26}\text{B}_3\text{N}$ $[\text{M}+\text{Na}]^+$: 396.2249, found: 396.2247.



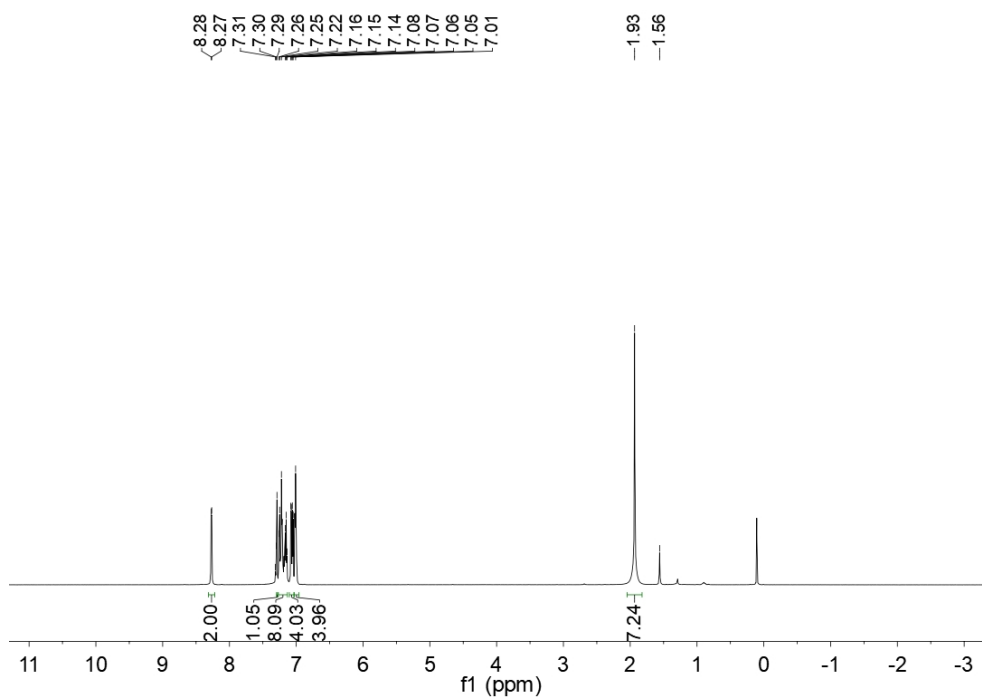
The ^{11}B NMR spectrum of the prepared **15** in CDCl_3 .



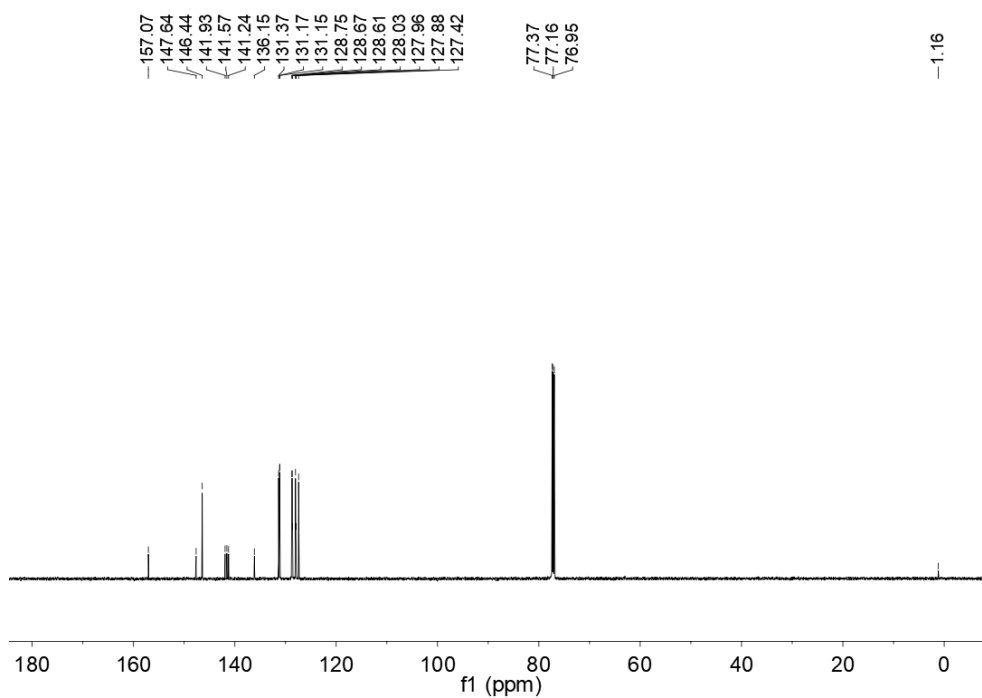
The ¹¹B{¹H} NMR spectrum of the prepared **15** in CDCl₃.



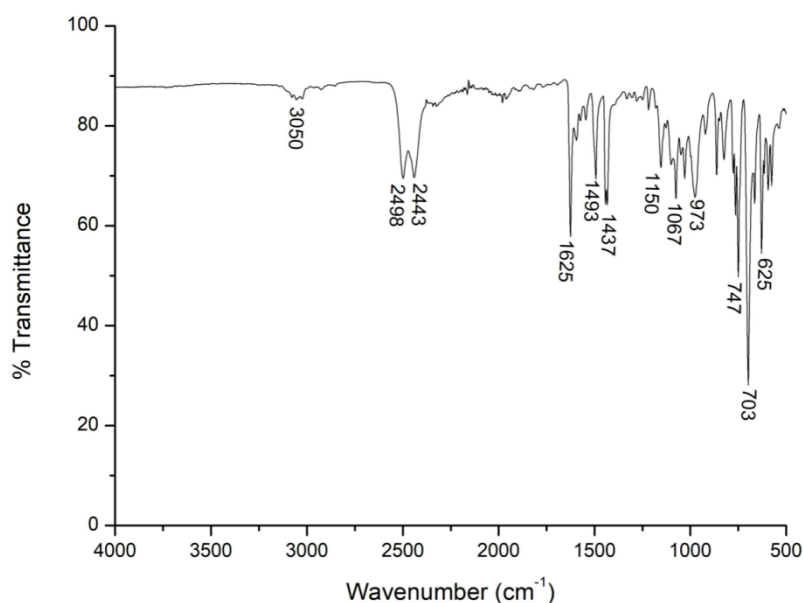
The ¹H NMR spectrum of the prepared **15** in CDCl₃.



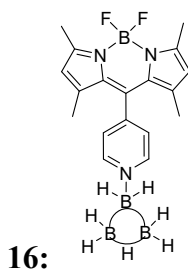
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **15** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **15** in CDCl_3 .

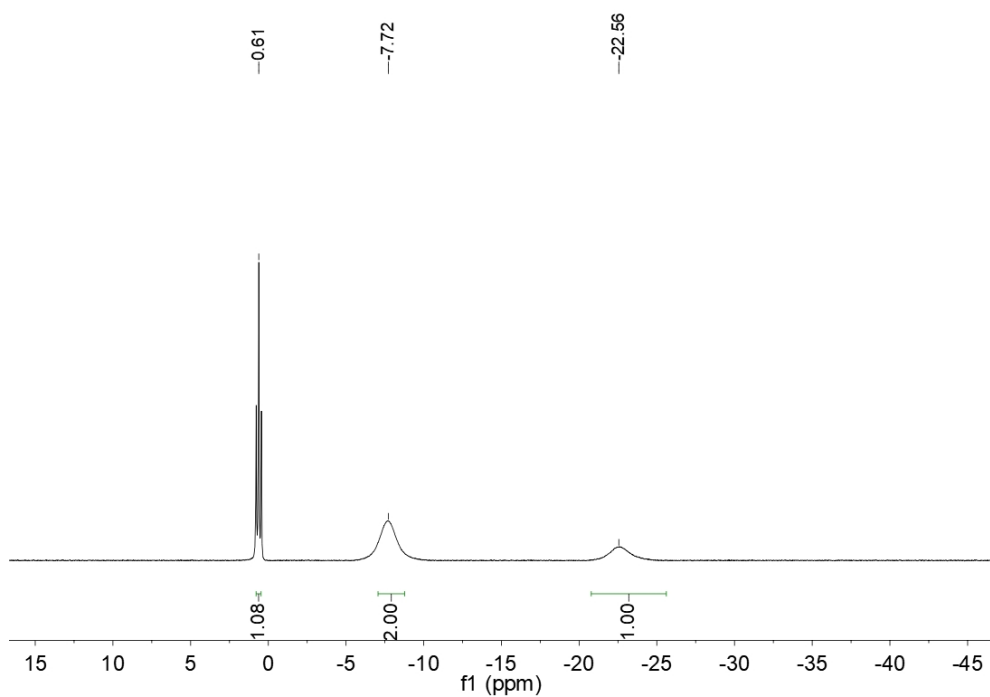


The IR spectrum of the prepared **15**.

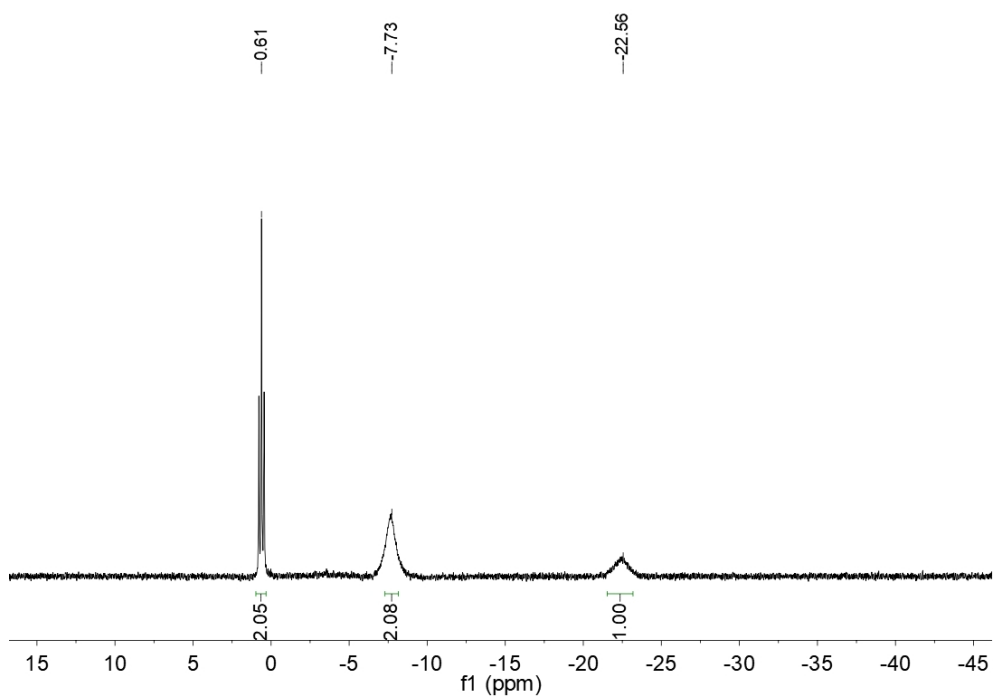


Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 3:1$). Yield 51%, red solid. ^{11}B NMR (193 MHz, CDCl_3): δ 0.61 (*t*, B of BF_2), -7.72 (*br*, 2 B of BHB), -22.56 (*br*, B of BH_2) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ 0.61 (*t*, B of BF_2), -7.72 (*br*, 2 B of BHB), -22.56 (*br*, B of BH_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.83 (*d*, 2 H of 2 CH), 7.58 (*d*, 2 H of 2 CH), 6.05 (*s*, 2 H of 2 CH), 2.57 (*s*, 6 H of 2 CH_3), 2.23-1.93 (*br*, 7 H of B_3H_7), 1.39 (*d*, 6 H of 2 CH_3) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.83 (*d*, 2 H of 2 CH), 7.58 (*d*, 2 H of 2 CH), 6.05 (*s*, 2 H of 2 CH), 2.57 (*s*, 6 H of 2 CH_3), 2.08 (*s*, 7 H of B_3H_7), 1.40 (*d*, 6 H of 2 CH_3) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 158.00 (*s*, 2 C), 149.18 (*s*, 2 C), 148.29 (*s*, 2 C), 142.08 (*s*, 1 C), 134.37 (*s*, 1 C), 129.73 (*s*, 2 C), 125.88 (*s*, 2 C), 122.72 (*s*, 2 C), 15.07 (*s*, 2 C), 14.86 (*s*, 2 C) ppm. IR (cm^{-1}): 3110 (*w*), 2964 (*w*), 2924 (*w*), 2499 (*m*), 2448 (*m*), 1631 (*m*), 1541 (*s*), 1507 (*s*), 1412 (*m*), 1311 (*m*), 1260 (*w*), 1188 (*s*), 1160 (*s*), 1042 (*s*), 970 (*s*), 807 (*m*), 711 (*m*), 588 (*w*). HRMS m/z calcd for $\text{C}_{18}\text{H}_{25}\text{B}_4\text{N}_3\text{F}_2$ $[\text{M}+\text{Na}]^+$: 388.2293, found:

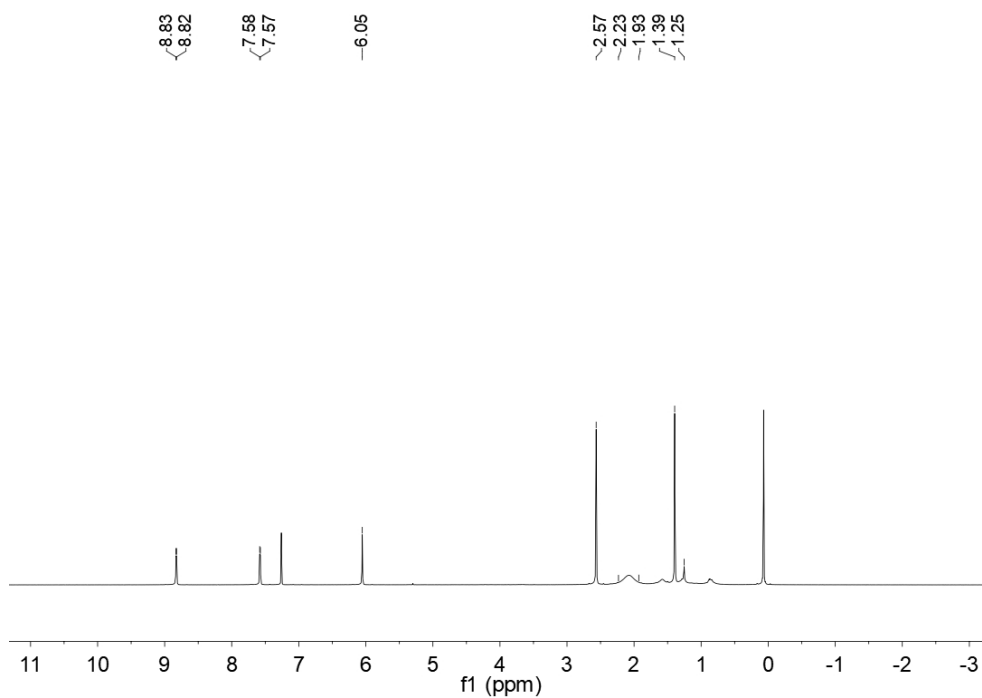
388.2293.



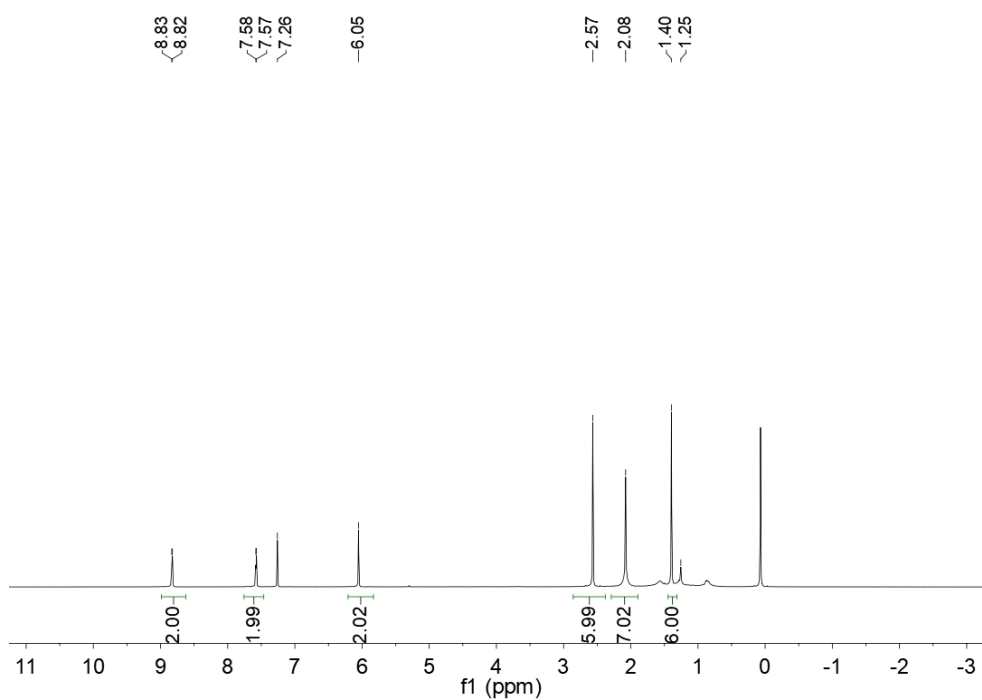
The ¹¹B NMR spectrum of the prepared **16** in CDCl₃.



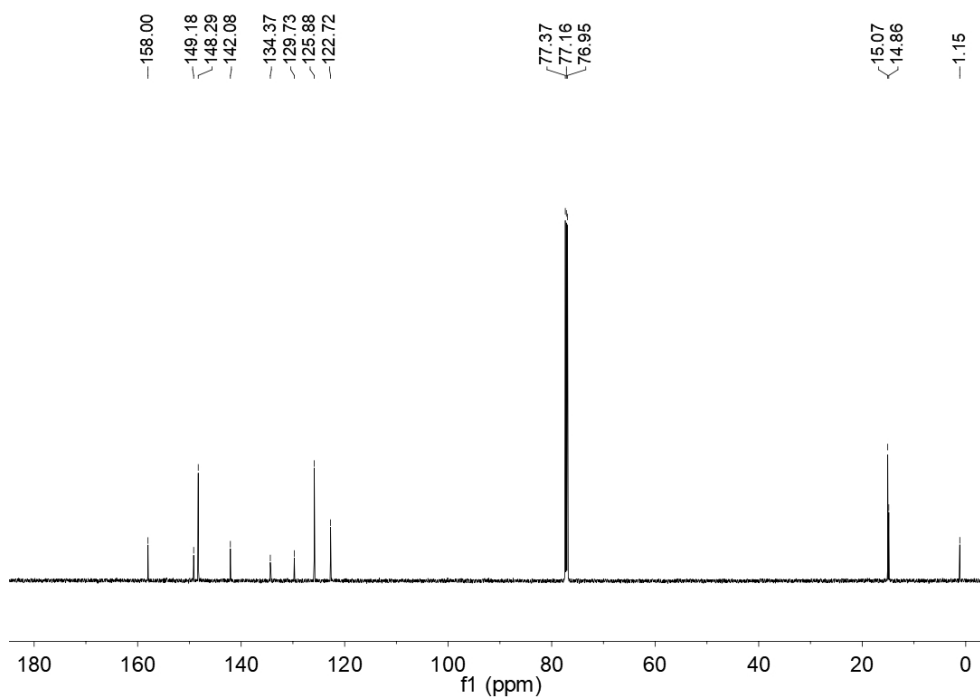
The ¹¹B{¹H} NMR spectrum of the prepared **16** in CDCl₃.



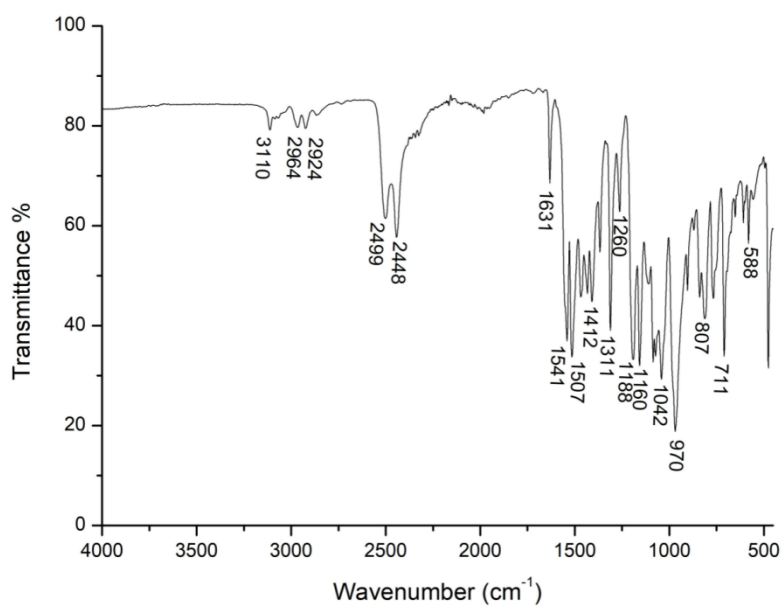
The ^1H NMR spectrum of the prepared **16** in CDCl_3 .



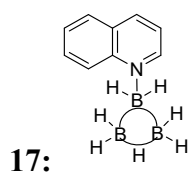
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **16** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **16** in CDCl_3 .

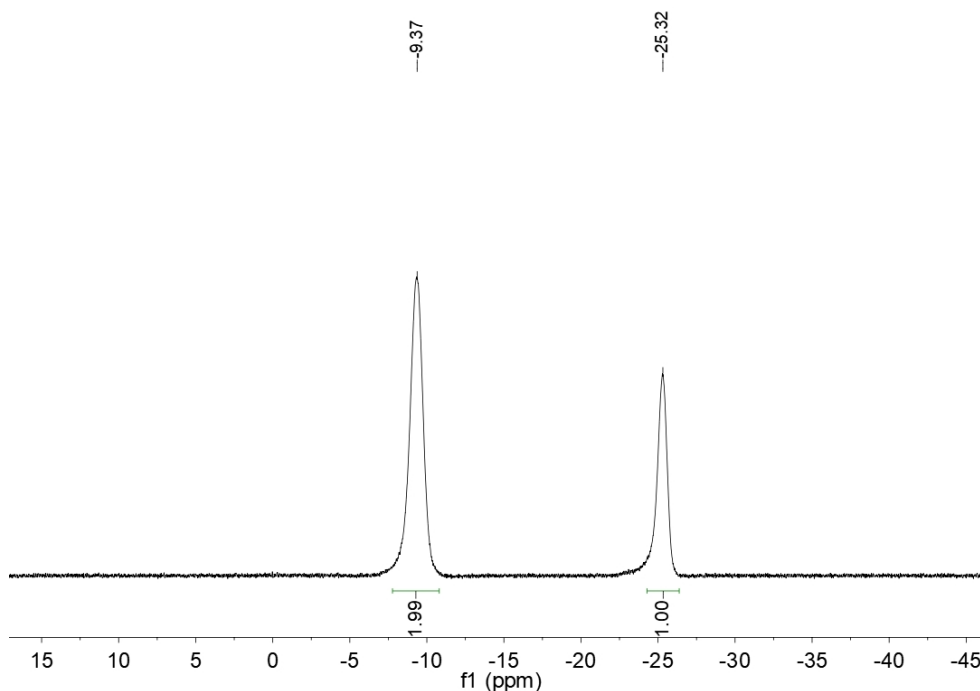


The IR spectrum of the prepared **16**.

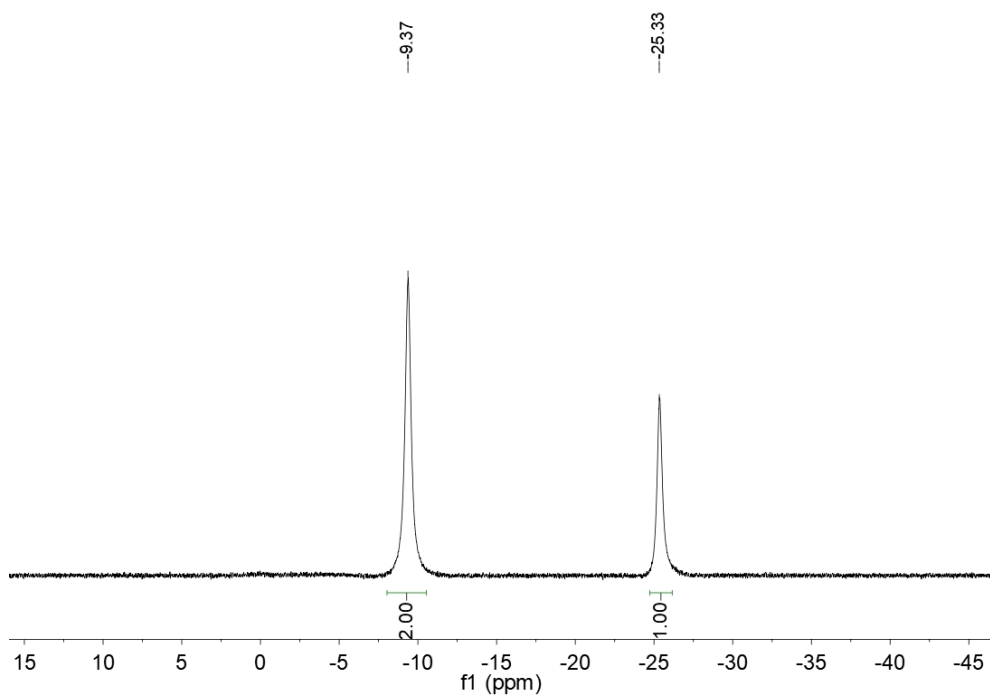


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 83%, white solid, melting point: 114-115 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of

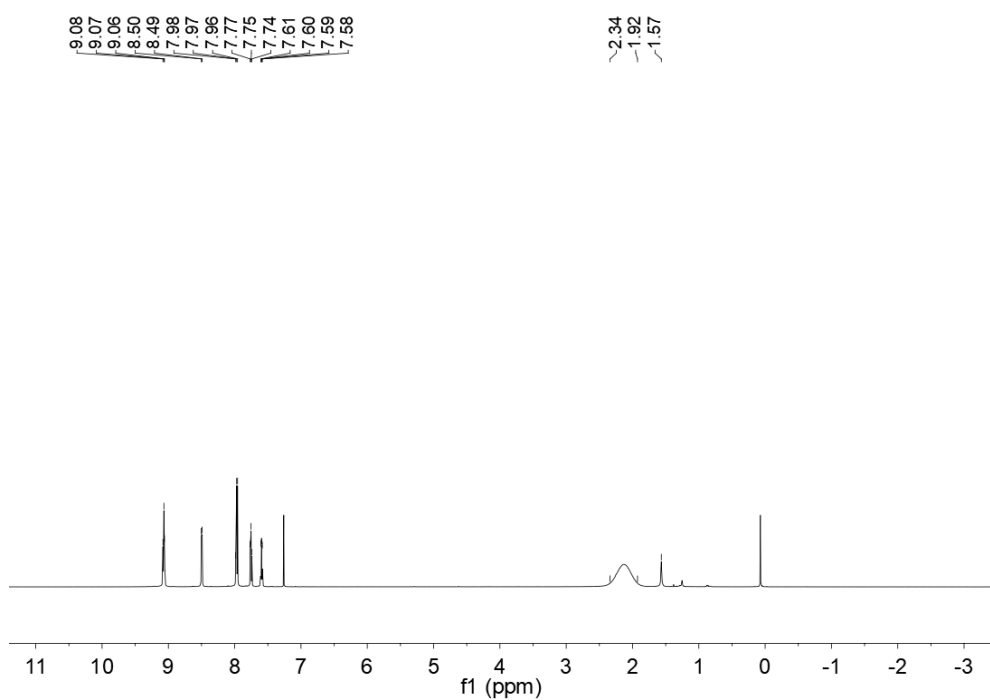
BHB), -25.32 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -9.37 (*br*, 2 B of **BHB**), -25.33 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.07 (*m*, 2 H of 2 **CH**), 8.50 (*d*, H of **CH**), 7.97 (*m*, 2 H of 2 **CH**), 7.75 (*t*, H of **CH**), 7.60 (*dd*, H of **CH**), 2.34-1.92 (*br*, 7 H of B₃**H**₇) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.08 (*m*, 2 H of 2 **CH**), 8.50 (*d*, H of **CH**), 7.98 (*m*, 2 H of 2 **CH**), 7.75 (*t*, H of **CH**), 7.60 (*dd*, H of **CH**), 2.13 (*s*, 7 H of B₃**H**₇) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 149.94 (1 C), 143.46 (1 C), 142.58 (1 C), 132.85 (1 C), 129.18 (1 C), 128.94 (1 C), 128.59 (1 C), 124.65 (1 C), 120.54 (1 C) ppm. IR (cm⁻¹): 3106 (w), 3061 (w), 2493 (s), 2437 (s), 2365 (w), 1619 (w), 1592 (m), 1509 (s), 1393 (w), 1316 (m), 1156 (m), 1100 (m), 1028 (m), 952 (w), 791 (s), 758 (s), 654 (m), 565 (m). HRMS *m/z* calcd for C₉H₁₄B₃N [M+Na]⁺: 192.1302, found: 192.1302.



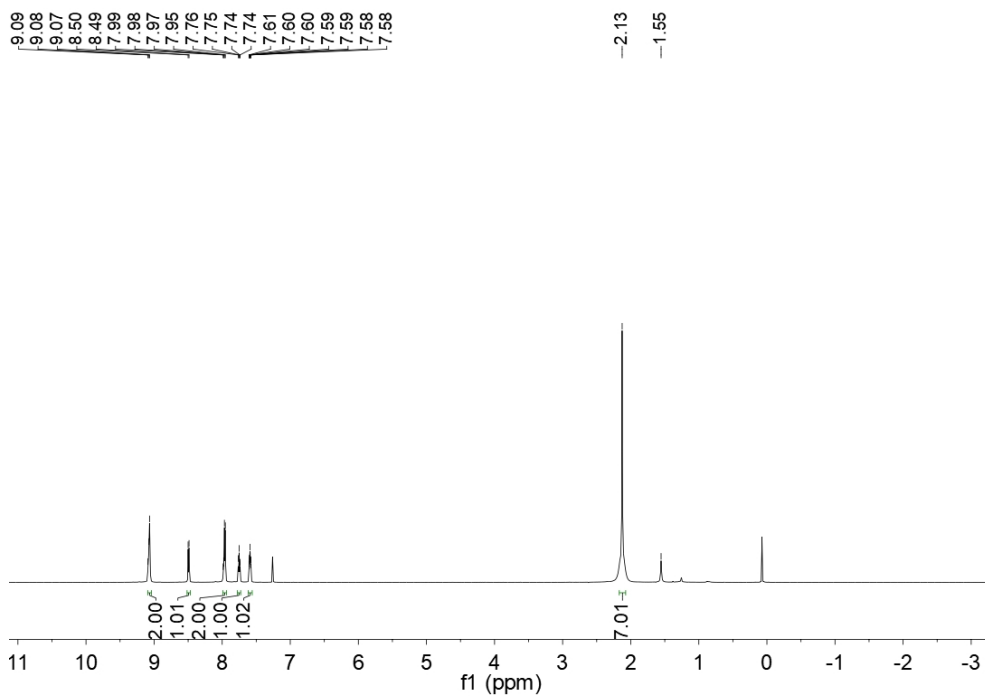
The ¹¹B NMR spectrum of the prepared **17** in CDCl₃.



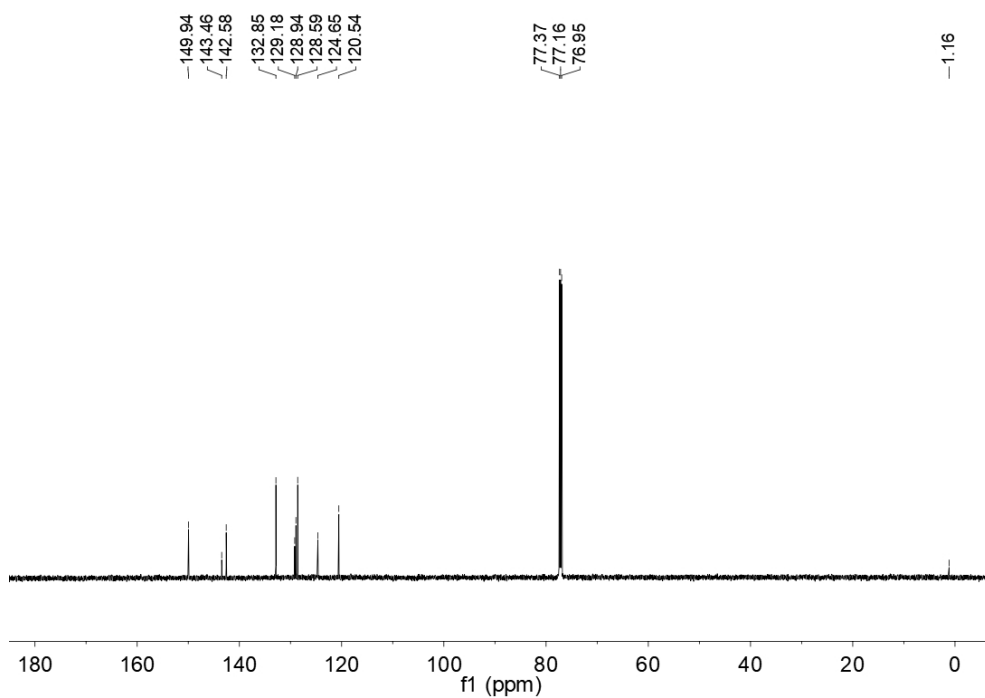
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **17** in CDCl_3 .



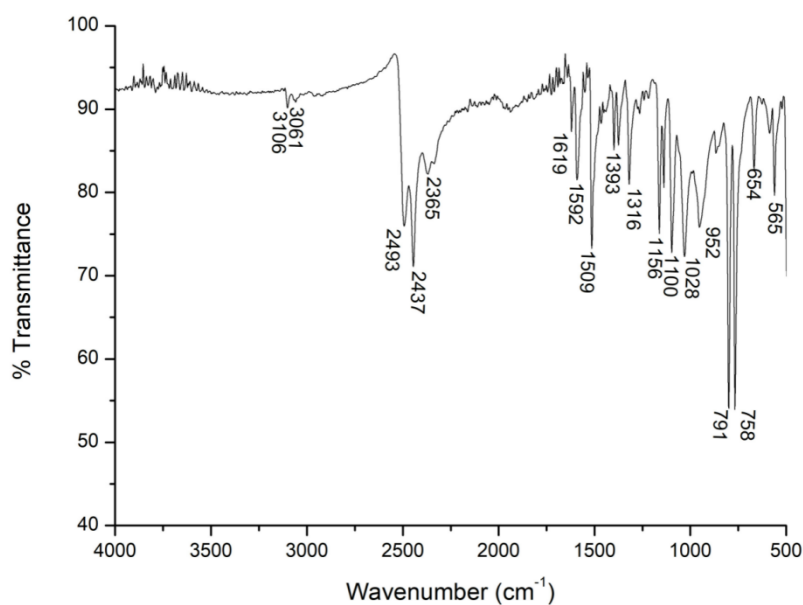
The ^1H NMR spectrum of the prepared **17** in CDCl_3 .



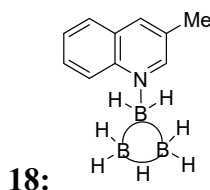
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **17** in CDCl_3 .



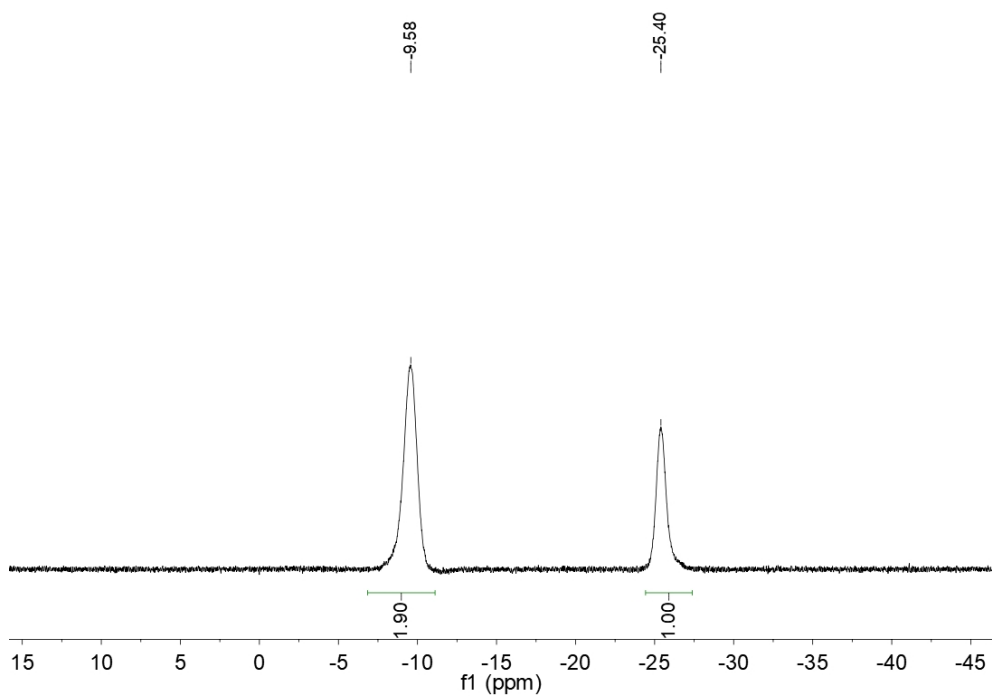
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **17** in CDCl_3 .



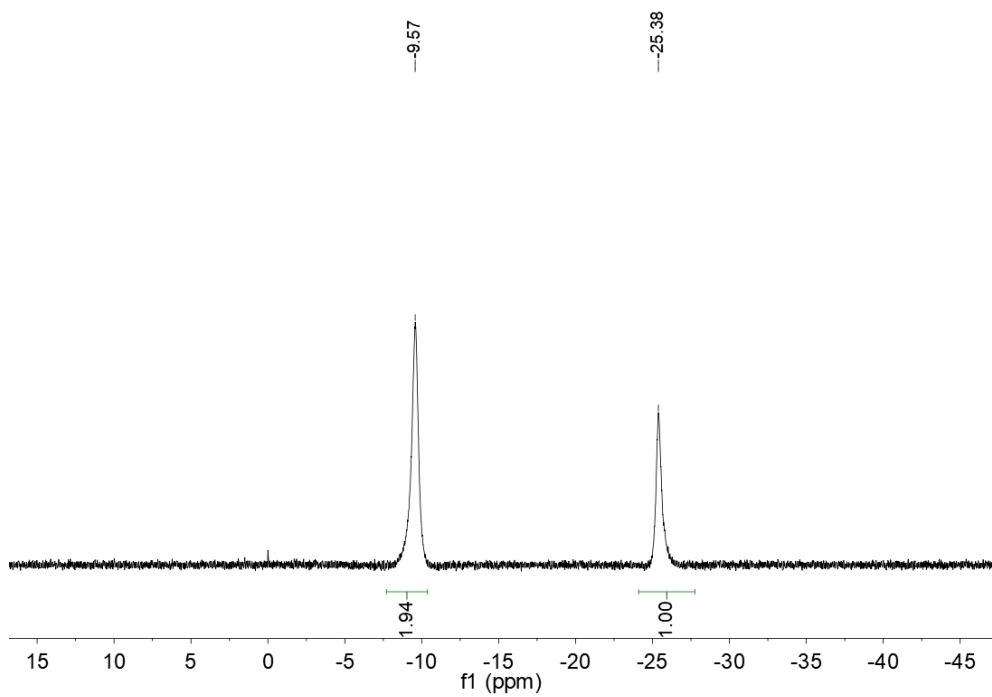
The IR spectrum of the prepared **17**.



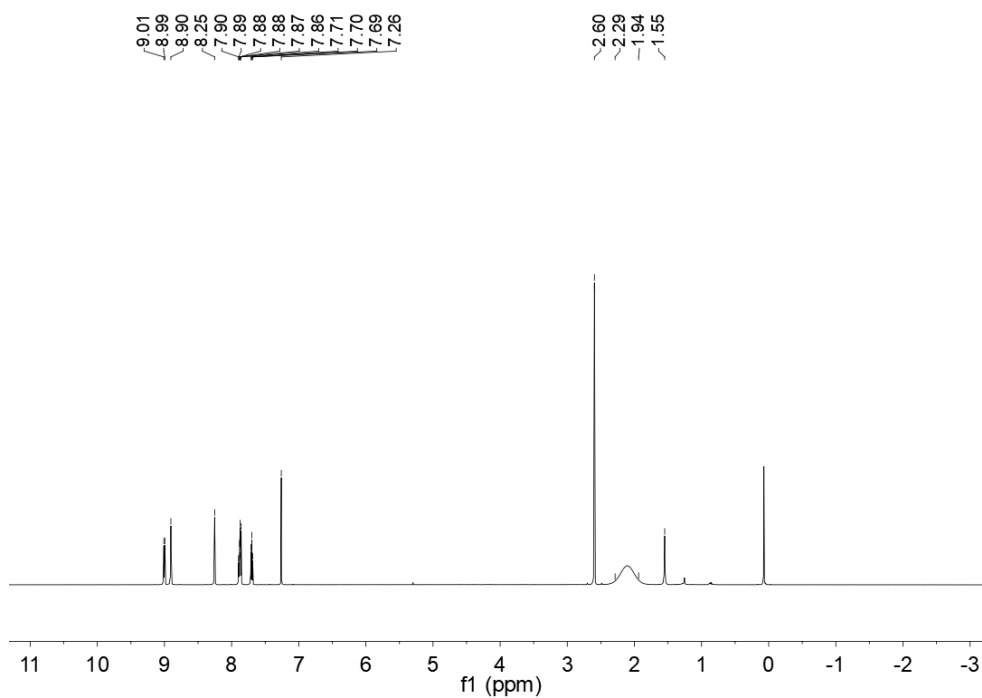
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 =2:1). Yield 82%, white solid, melting point: 158-159 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.58 (*br*, 2 B of **BHB**), -25.40 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.57 (*br*, 2 B of **BHB**), -25.38 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.00 (*d*, H of **CH**), 8.90 (*s*, H of **CH**), 8.25 (*s*, H of **CH**), 7.88 (*m*, 2 H of 2 **CH**), 7.70 (*t*, H of **CH**), 2.60 (*s*, 3 H of **CH₃**), 2.29-1.94 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.00 (*d*, H of **CH**), 8.91 (*s*, H of **CH**), 8.25 (*s*, H of **CH**), 7.88 (*m*, 2 H of 2 **CH**), 7.70 (*t*, H of **CH**), 2.59 (*s*, 3 H of **CH₃**), 2.11 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 151.57 (*s*, 1 C), 142.13 (*s*, 1 C), 141.63 (*s*, 1 C), 131.94 (*s*, 1 C), 130.85 (*s*, 1 C), 129.35 (*s*, 1 C), 128.74 (*s*, 1 C), 128.42 (*s*, 1 C), 124.63 (*s*, 1 C), 124.54 (*s*, 1 C), 19.09 (*s*, 1 C) ppm. IR (cm^{-1}): 2493 (*s*), 2443 (*s*), 2371 (*w*), 1581 (*m*), 1509 (*m*), 1371 (*m*), 1327 (*m*), 1249 (*w*), 1150 (*m*), 1084 (*m*), 1045 (*s*), 957 (*w*), 896 (*m*), 863 (*w*), 747 (*s*), 630 (*w*), 537 (*w*). HRMS *m/z* calcd for $\text{C}_{10}\text{H}_{16}\text{B}_3\text{N}$ [$\text{M}+\text{Na}$] $^+$: 206.1459, found: 206.1455.



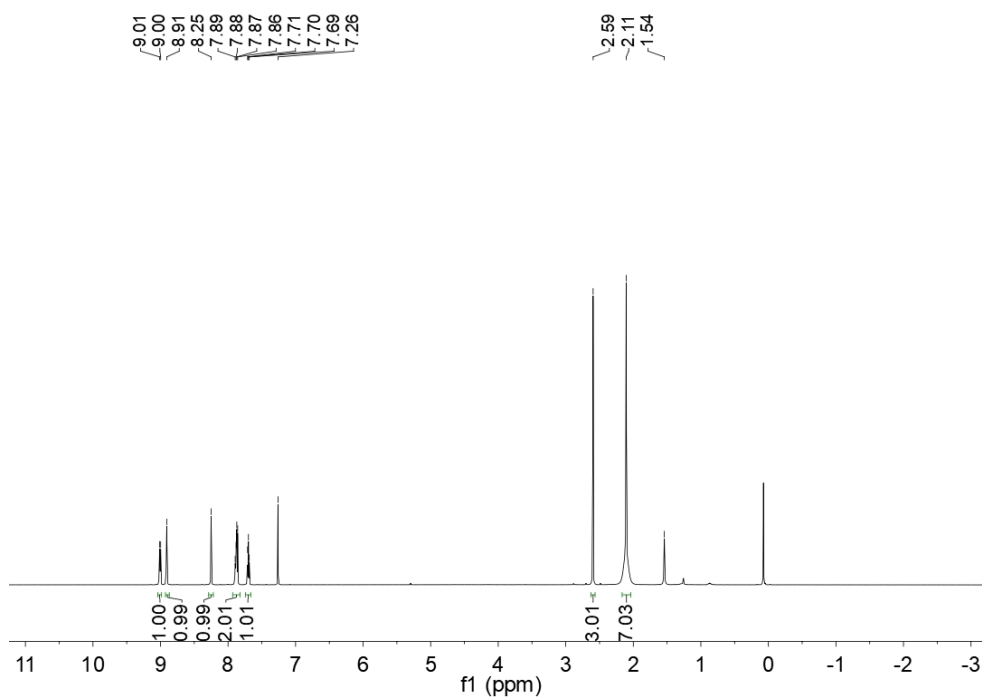
The ^{11}B NMR spectrum of the prepared **18** in CDCl_3 .



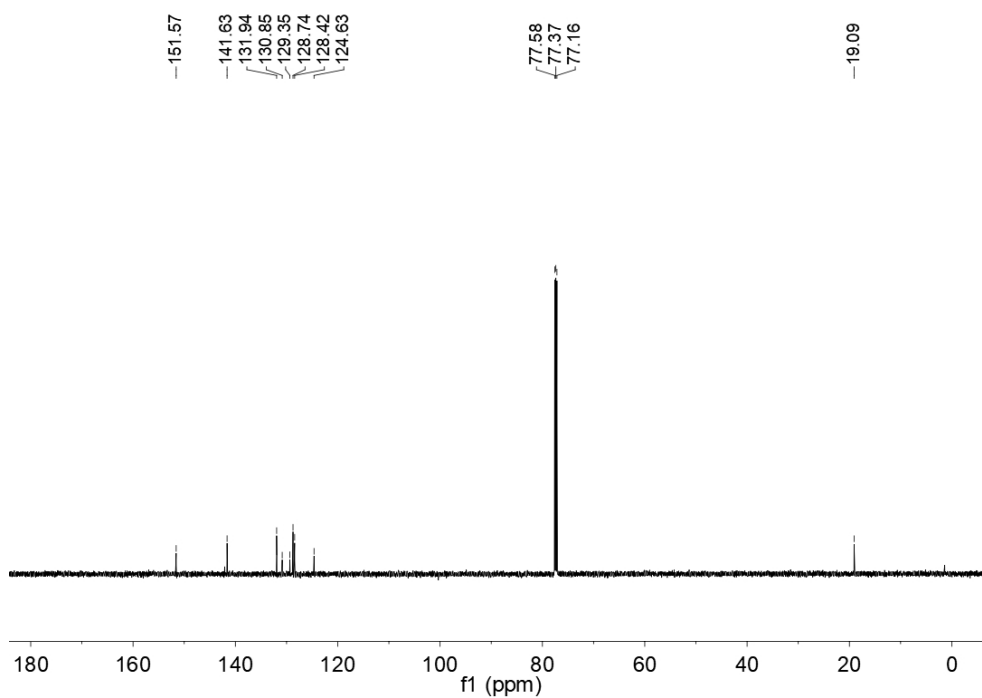
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **18** in CDCl_3 .



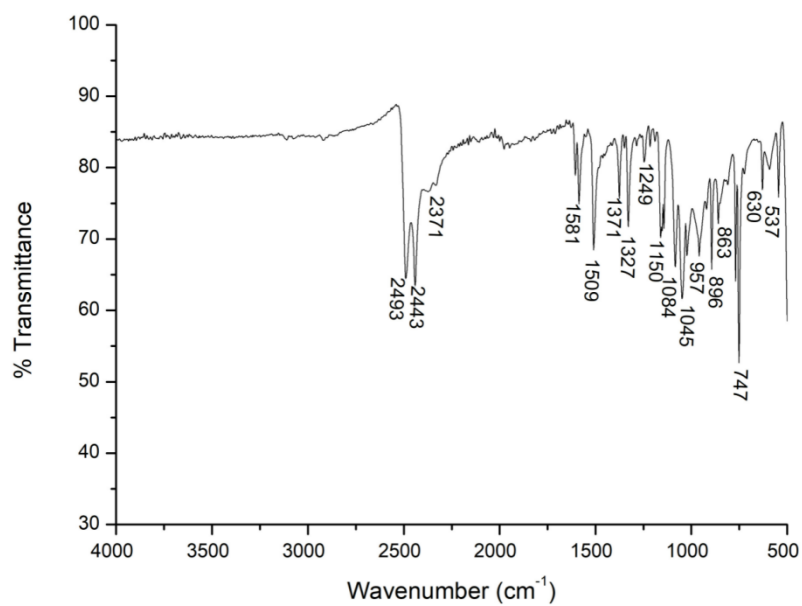
The ^1H NMR spectrum of the prepared **18** in CDCl_3 .



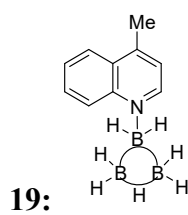
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **18** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **18** in CDCl_3 .

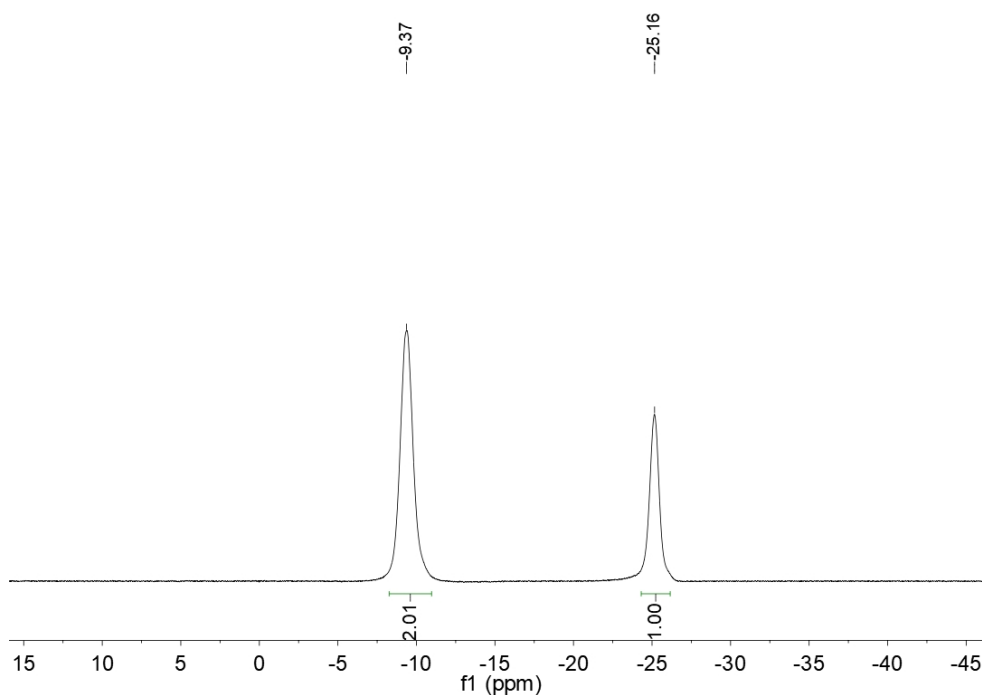


The IR spectrum of the prepared **18**.

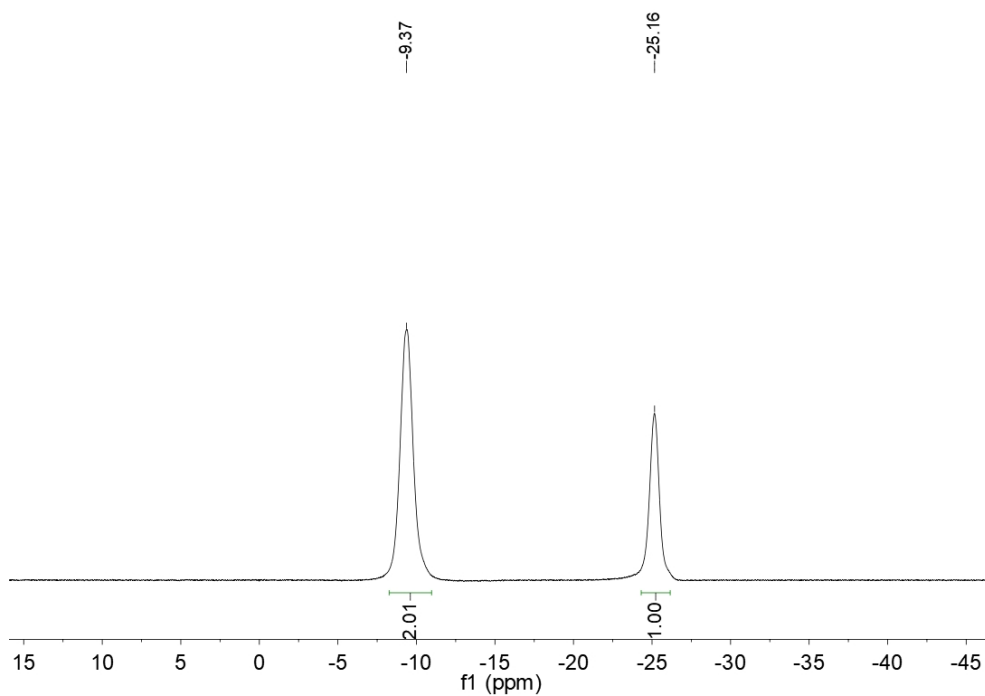


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 3:1). Yield 82%, white

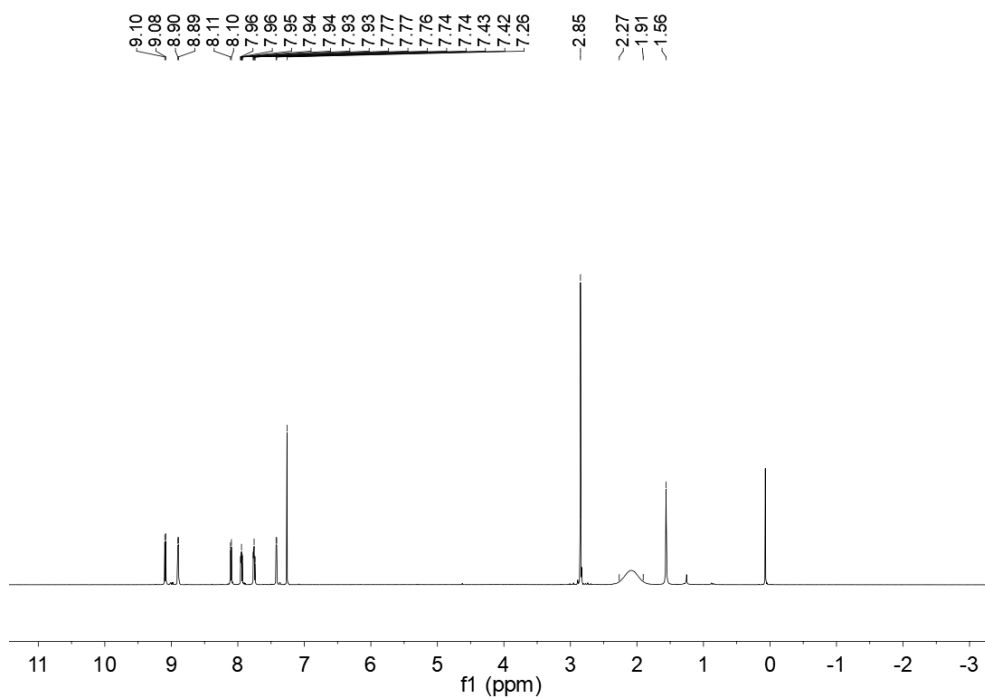
solid, melting point: 154-155 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of **BHB**), -25.16 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of **BHB**), -25.17 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.09 (*d*, H of **CH**), 8.90 (*d*, H of **CH**), 8.11 (*d*, H of **CH**), 7.95 (*t*, H of **CH**), 7.76 (*t*, H of **CH**), 7.43 (*d*, H of **CH**), 2.85 (*s*, 3 H of **CH₃**), 2.27-1.91 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.10 (*d*, H of **CH**), 8.90 (*d*, H of **CH**), 8.11 (*d*, H of **CH**), 7.95 (*t*, H of **CH**), 7.75 (*t*, H of **CH**), 2.85 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 154.78 (*s*, 1 C), 150.16 (*s*, 1 C), 142.60 (*s*, 1 C), 133.16 (*s*, 1 C), 129.46 (*s*, 1 C), 128.87 (*s*, 1 C), 125.95 (*s*, 1 C), 124.82 (*s*, 1 C), 122.49 (*s*, 1 C), 20.25 (*s*, 1 C) ppm. IR (cm^{-1}): 2498 (*s*), 2437 (*s*), 2365 (*w*), 1973 (*w*), 1913 (*w*), 1597 (*s*), 1515 (*m*), 1426 (*w*), 1398 (*m*), 1277 (*w*), 1156 (*s*), 1034 (*s*), 940 (*m*), 824 (*s*), 753 (*s*), 581 (*w*). HRMS m/z calcd for $\text{C}_{10}\text{H}_{16}\text{B}_3\text{N}$ $[\text{M}+\text{Na}]^+$: 206.1459, found: 206.1455.



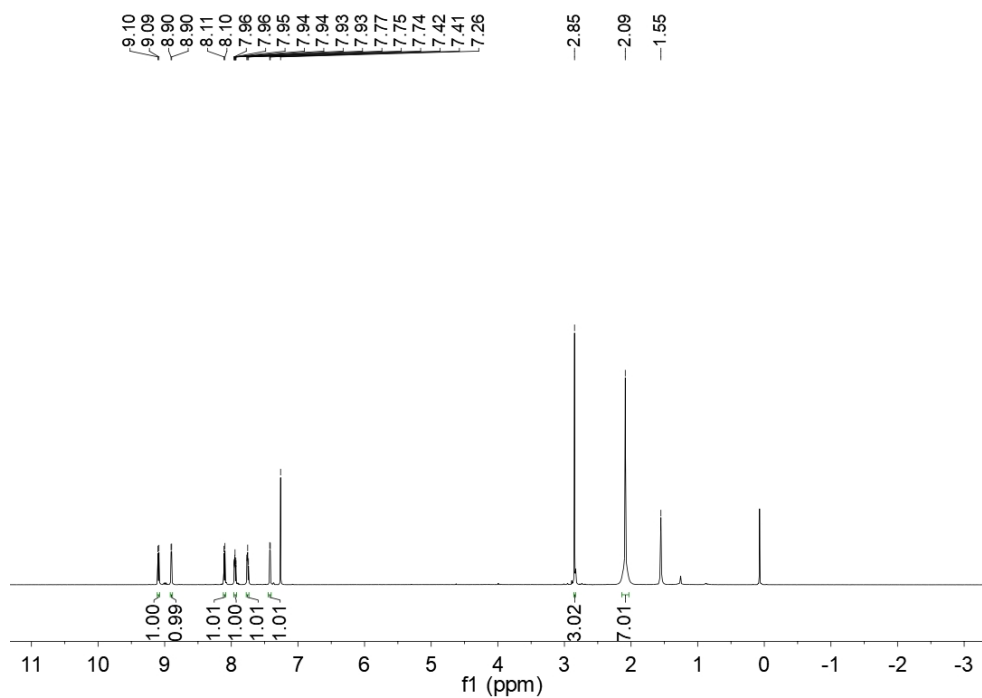
The ^{11}B NMR spectrum of the prepared **19** in CDCl_3 .



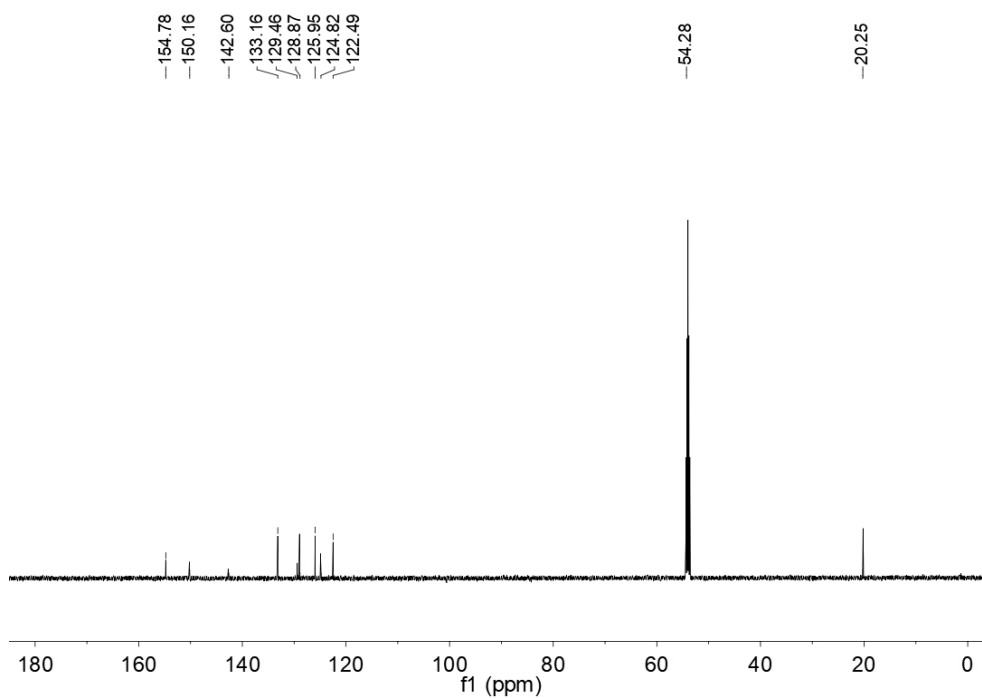
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **19** in CDCl_3 .



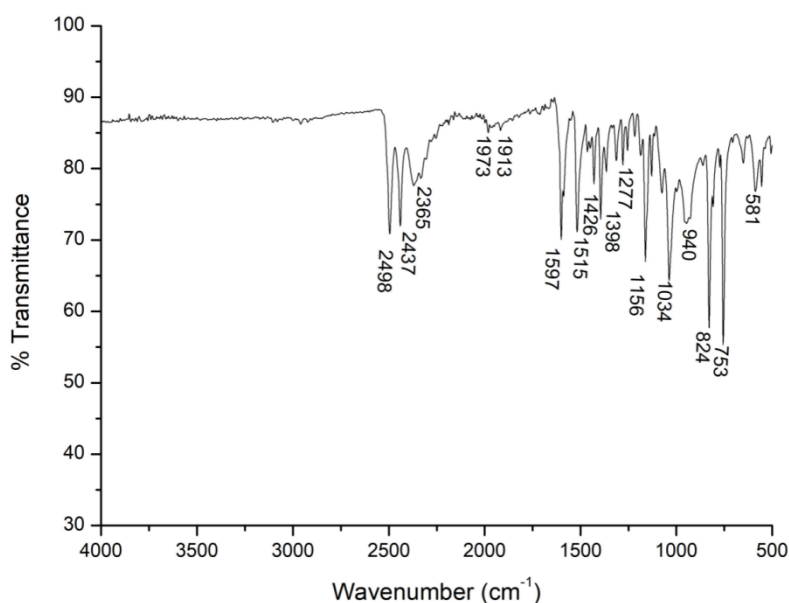
The ^1H NMR spectrum of the prepared **19** in CDCl_3 .



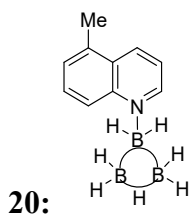
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **19** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **19** in CDCl_3 .

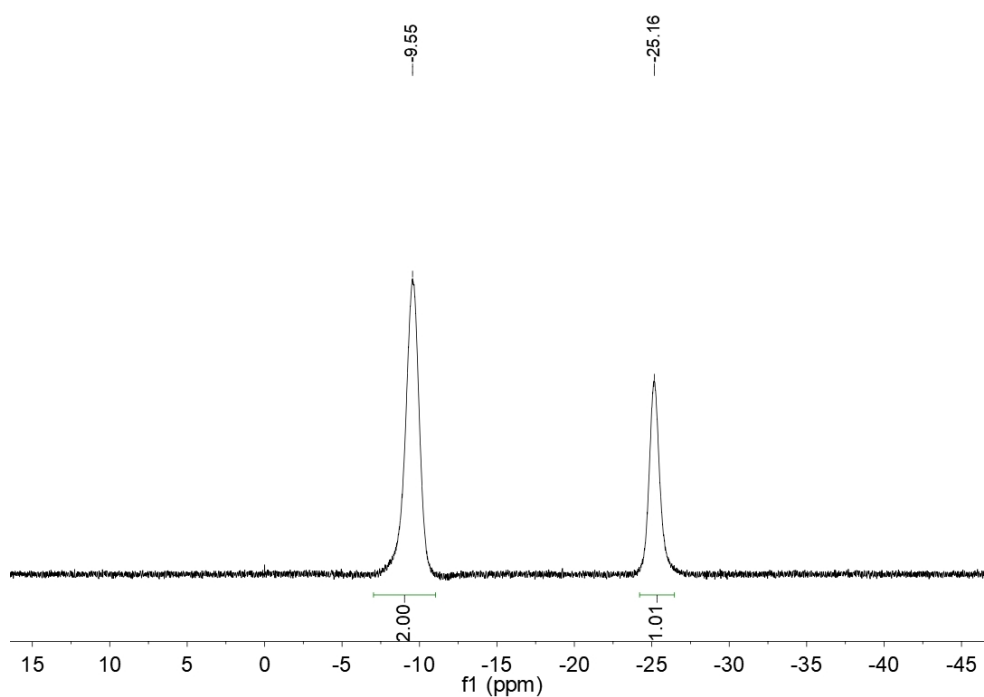


The IR spectrum of the prepared **19**.

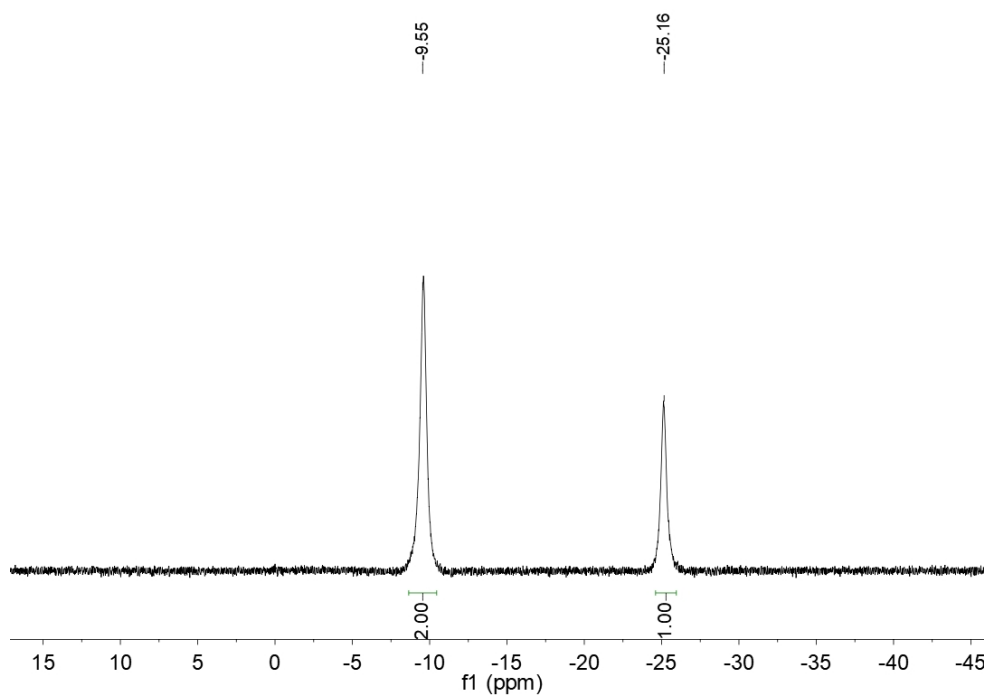


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 3:1). Yield 88%, white solid, melting point: 155-156 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.55 (*br*, 2 B of **BHB**), -25.16 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.55 (*br*, 2 B of **BHB**), -25.16 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.05 (*d*, H of **CH**), 8.95 (*d*, H of **CH**), 8.70 (*d*, H of **CH**), 7.83 (*t*, H of **CH**), 7.60 (*dd*, H of **CH**), 7.57 (*d*, H of **CH**), 2.77 (*s*, 3 H of **CH₃**), 2.30-1.92 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.06 (*d*, H of **CH**), 8.96 (*d*, H of **CH**), 8.70 (*d*, H of **CH**), 7.88 (*t*, H of **CH**), 7.60 (*dd*, H of **CH**), 7.57 (*d*, H of **CH**), 2.77 (*s*, 3 H of **CH₃**), 2.11 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 149.32 (*s*, 1 C), 144.01 (*s*, 1 C), 138.77 (*s*, 1 C), 135.97 (*s*, 1 C), 132.45 (*s*, 1 C), 129.11 (*s*, 1 C), 128.76 (*s*, 1 C), 122.84 (*s*, 1 C), 119.99 (*s*, 1 C), 19.26 (*s*, 1 C) ppm. IR (cm^{-1}): 2962 (*w*), 2924 (*w*), 2493 (*s*), 2448 (*s*), 2382 (*w*), 1957 (*w*), 1597 (*m*), 1520 (*m*), 1398 (*w*), 1310 (*m*), 1255 (*w*), 1161 (*m*), 1106 (*m*), 1028 (*m*), 952 (*w*), 791 (*s*), 730 (*w*), 581 (*w*). HRMS m/z calcd for $\text{C}_{10}\text{H}_{16}\text{B}_3\text{N}$

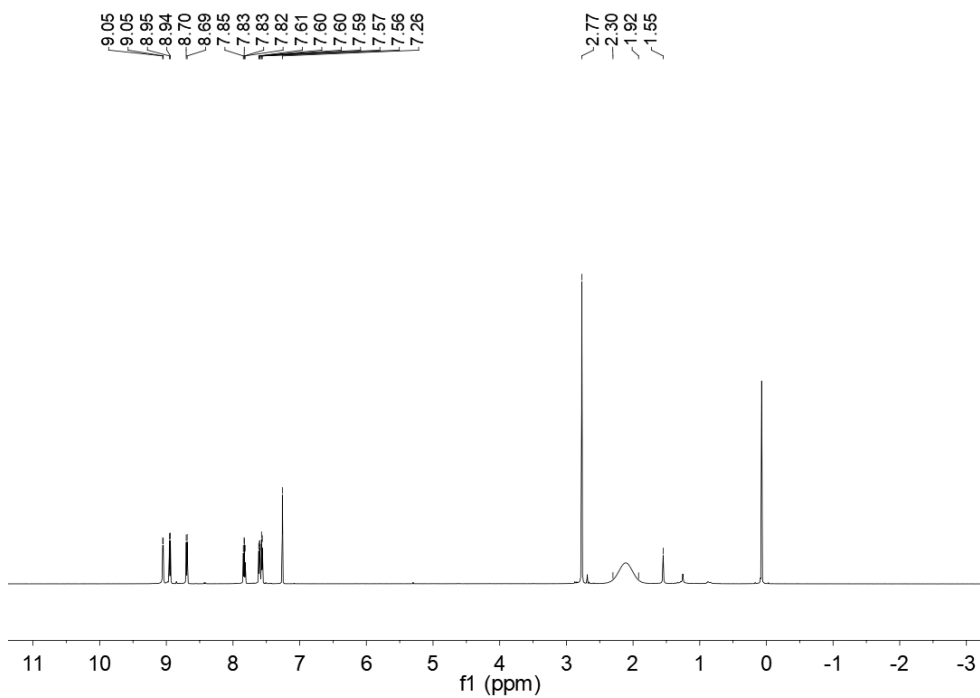
[M+Na]⁺: 206.1459, found: 206.1453.



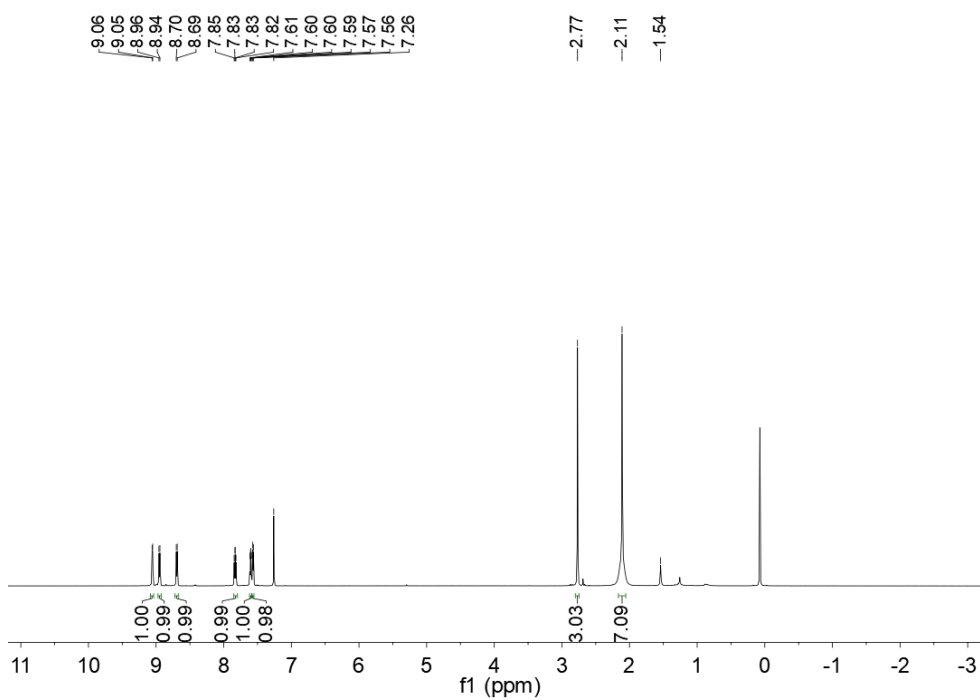
The ¹¹B NMR spectrum of the prepared **20** in CDCl₃.



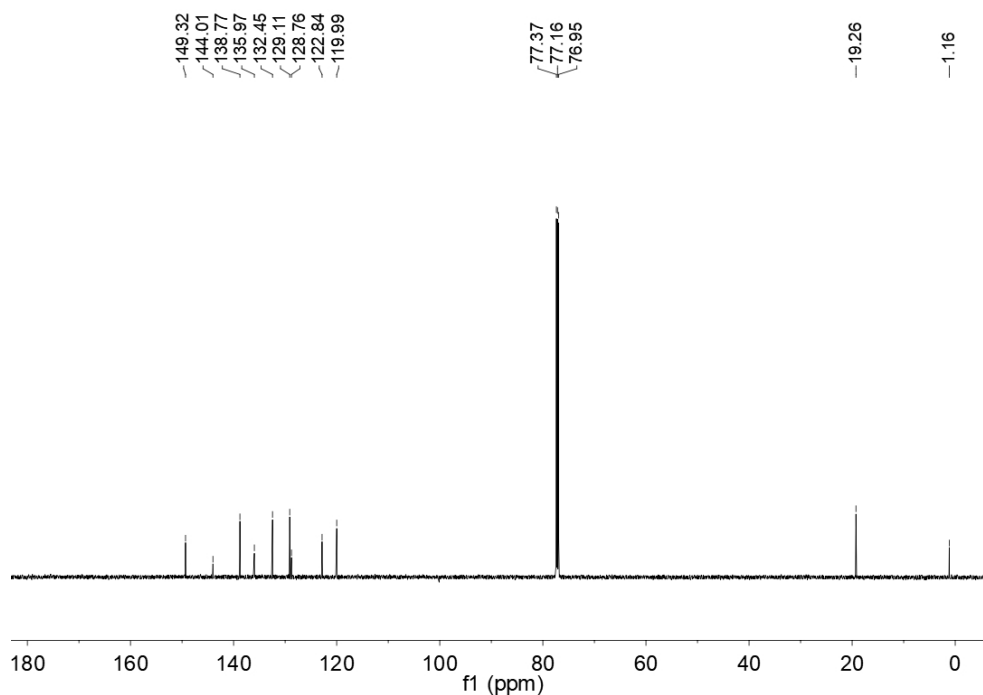
The ¹¹B{¹H} NMR spectrum of the prepared **20** in CDCl₃.



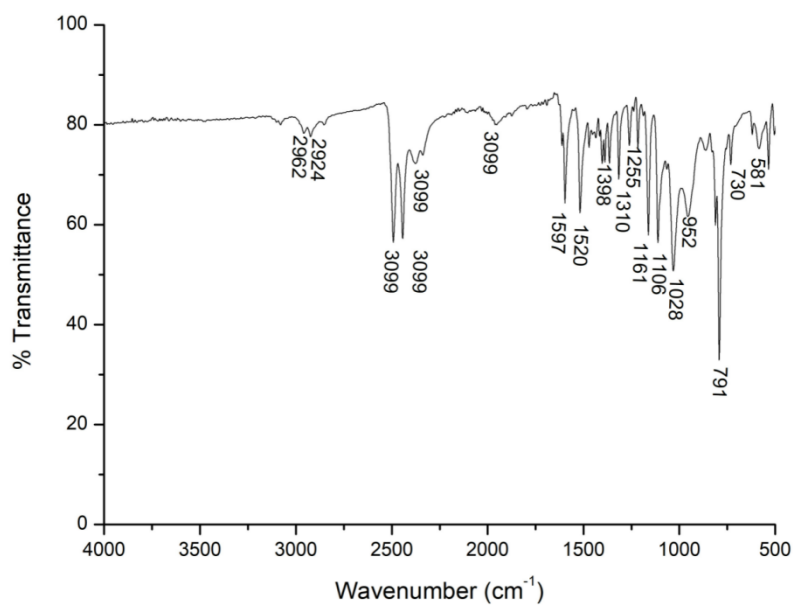
The ^1H NMR spectrum of the prepared **20** in CDCl_3 .



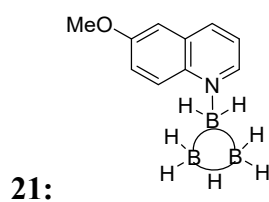
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **20** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **20** in CDCl_3 .

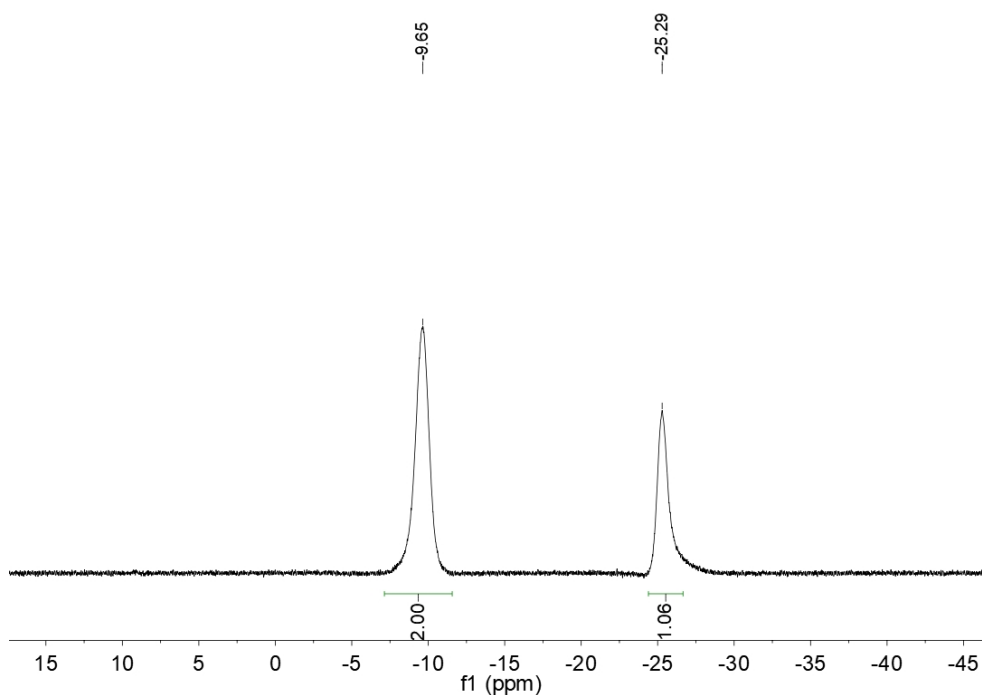


The IR spectrum of the prepared **20**.

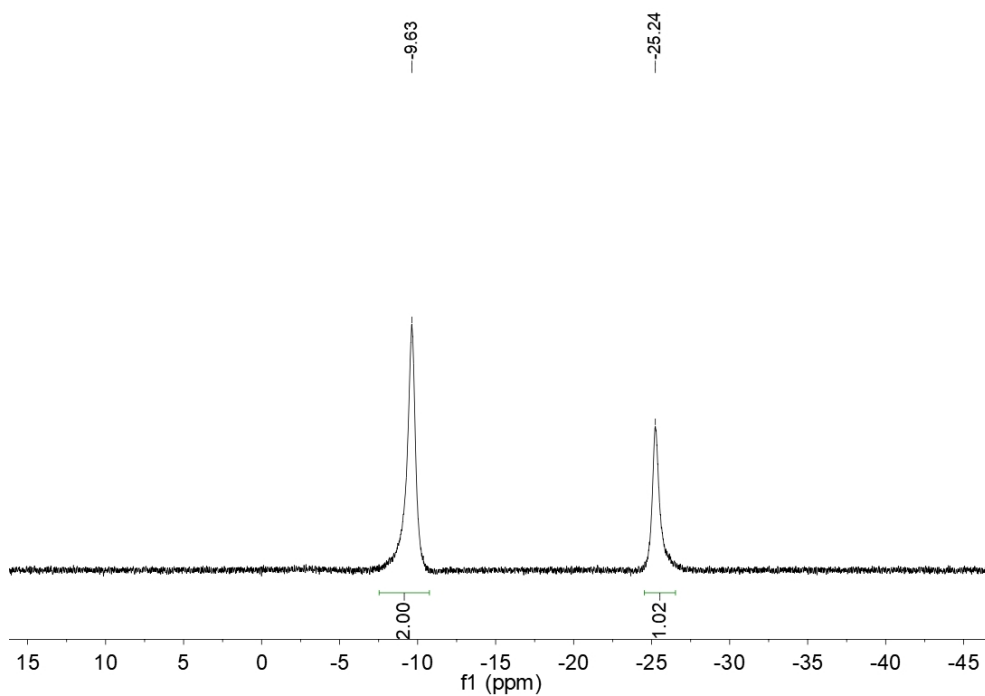


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 3:1). Yield 89%, white solid, melting point: 102-103 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.65 (*br*, 2 B of

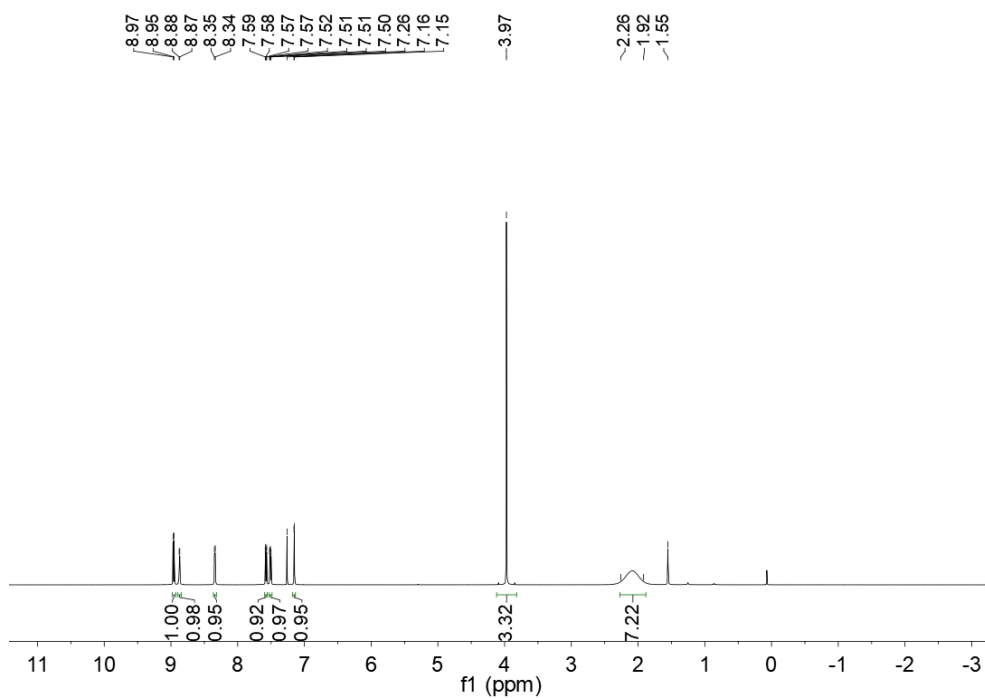
BHB), -25.29 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -9.63 (*br*, 2 B of **BHB**), -25.24 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.96 (*d*, H of **CH**), 8.88 (*d*, H of **CH**), 8.35 (*d*, H of **CH**), 7.58 (*m*, H of **CH**), 7.51 (*dd*, H of **CH**), 7.16(*d*, H of **CH**), 3.97 (*s*, 3 H of **CH**₃), 2.26-1.92 (*br*, 7 H of B_{3**H**₇) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 8.97 (*d*, H of **CH**), 8.88 (*d*, H of **CH**), 8.34 (*d*, H of **CH**), 7.58 (*m*, H of **CH**), 7.51 (*dd*, H of **CH**), 7.16(*d*, H of **CH**), 3.97 (*s*, 3 H of **CH**₃), 2.09 (*s*, 7 H of B_{3**H**₇) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 158.76 (*s*, 1 C), 146.97 (*s*, 1 C), 140.63 (*s*, 1 C), 139.22 (*s*, 1 C), 130.63 (*s*, 1 C), 125.93 (*s*, 1 C), 125.24 (*s*, 1 C), 120.68 (*s*, 1 C), 105.68 (*s*, 1 C), 55.77 (*s*, 1 C) ppm. IR (cm⁻¹): 2962 (*w*), 2498 (*s*), 2432 (*s*), 1619 (*m*), 1592 (*m*), 1509 (*m*), 1398 (*s*), 1322 (*w*), 1255 (*s*), 1139 (*m*), 1023 (*m*), 984 (*s*), 940 (*w*), 824 (*s*), 796 (*s*), 758 (*m*), 680 (*w*), 570 (*w*). HRMS *m/z* calcd for C₁₀H₁₆B₃NO [M+Na]⁺: 222.1408; found: 222.1407.}}



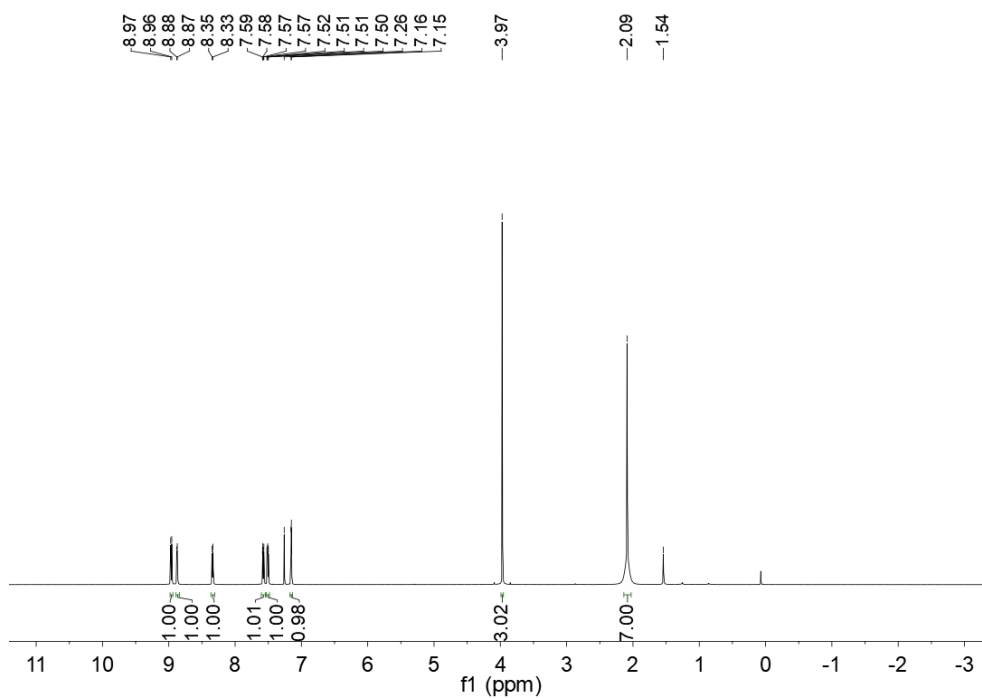
The ¹¹B NMR spectrum of the prepared **21** in CDCl₃.



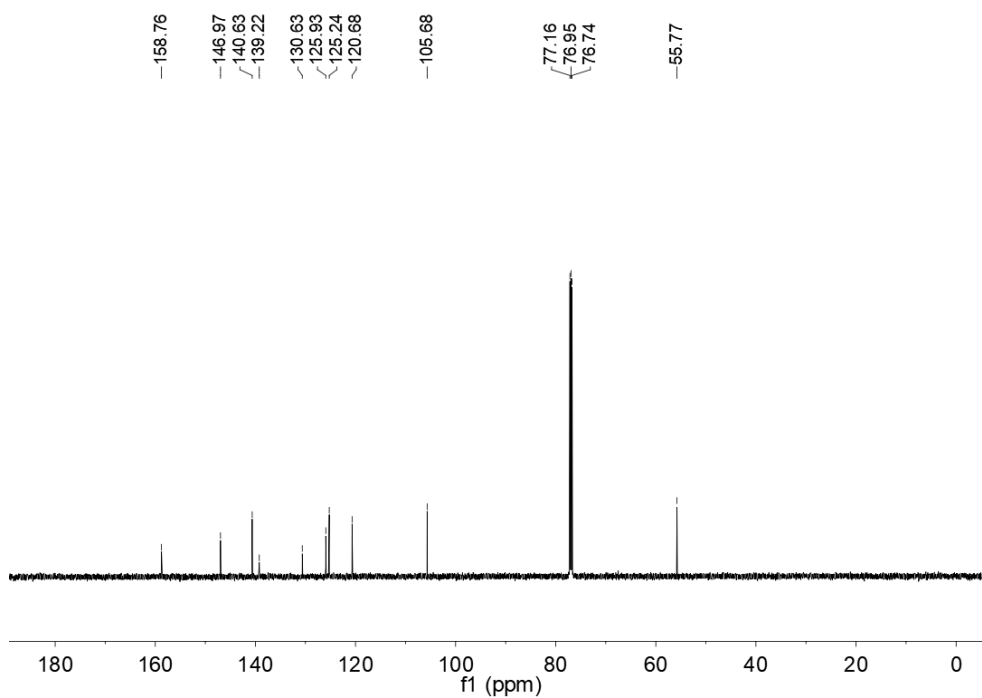
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **21** in CDCl_3 .



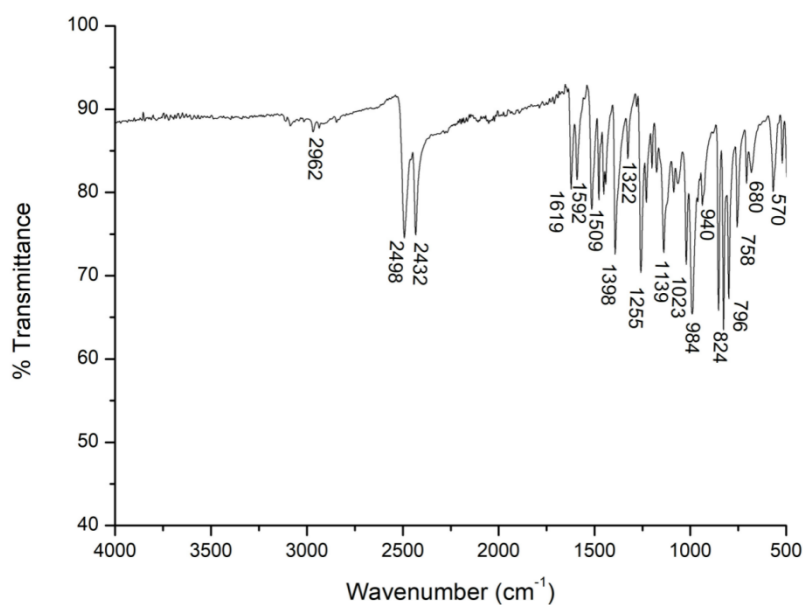
The ^1H NMR spectrum of the prepared **21** in CDCl_3 .



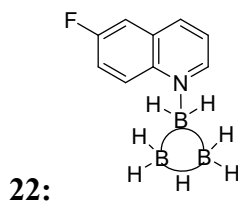
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **21** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **21** in CDCl_3 .

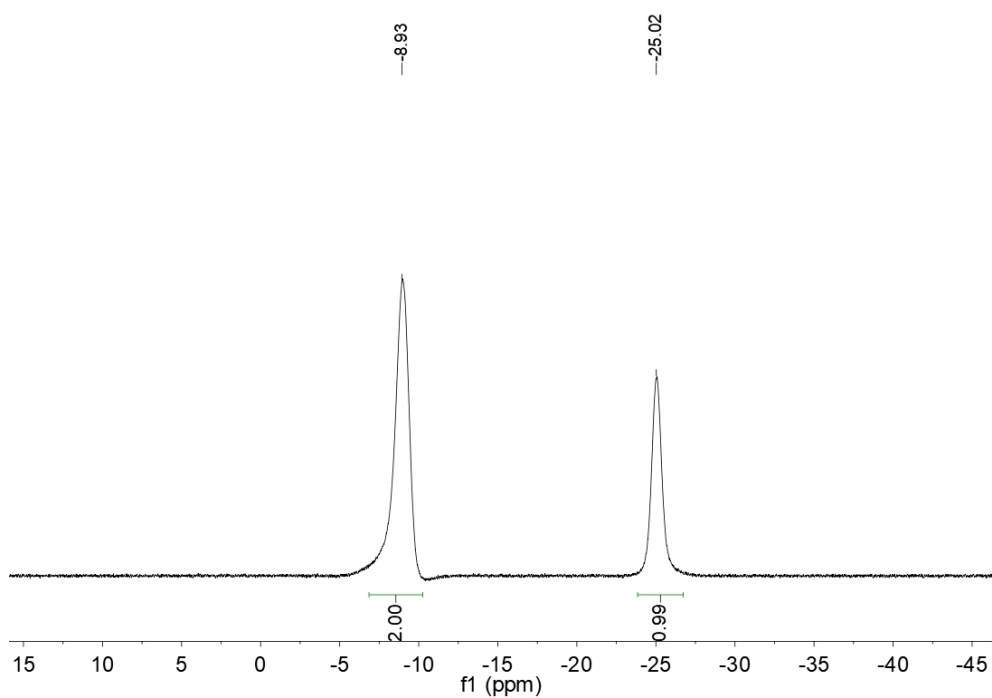


The IR spectrum of the prepared **21**.

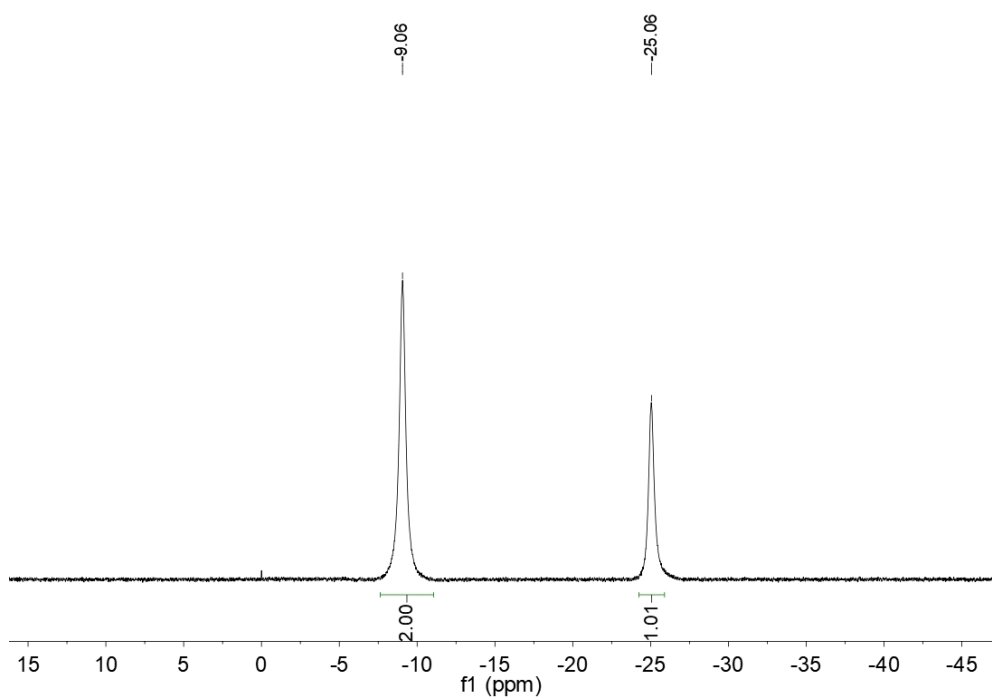


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 3:1). Yield 81%, white solid, melting point: 106-107 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.93 (*br*, 2 B of **BHB**), -25.02 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.06 (*br*, 2 B of **BHB**), -25.06 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.13 (*m*, H of **CH**), 9.05 (*d*, H of **CH**), 8.45 (*d*, H of **CH**), 7.73 (*t*, H of **CH**), 7.63 (*t*, H of **CH**), 7.59 (*d*, H of **CH**), 2.38-1.86 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.13 (*m*, H of **CH**), 9.05 (*d*, H of **CH**), 8.45 (*d*, H of **CH**), 7.73 (*t*, H of **CH**), 7.63 (*t*, H of **CH**), 7.59 (*d*, H of **CH**), 2.12 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 161.82 (*s*, 1 C), 160.13 (*s*, 1 C), 149.53 (*s*, 1 C), 141.67 (*s*, 1 C), 140.32 (*s*, 1 C), 130.00 (*s*, 1 C), 127.54 (*s*, 1 C), 122.66 (*s*, 1 C), 121.33 (*s*, 1 C), 111.75 (*s*, 1 C) ppm. IR (cm^{-1}): 3110 (*w*), 2493 (*s*), 2443 (*s*), 2359 (*w*), 1950 (*w*), 1631 (*m*), 1590 (*m*), 1519 (*s*), 1469 (*m*), 1322 (*m*), 1249 (*m*), 1154 (*m*), 1098 (*m*), 1031 (*m*), 869 (*s*), 796 (*s*), 751 (*m*), 672 (*m*), 570 (*m*), 510 (*m*). HRMS *m/z* calcd for $\text{C}_9\text{H}_{13}\text{B}_3\text{NF}$ [$\text{M}+\text{Na}$] $^+$: 210.1208,

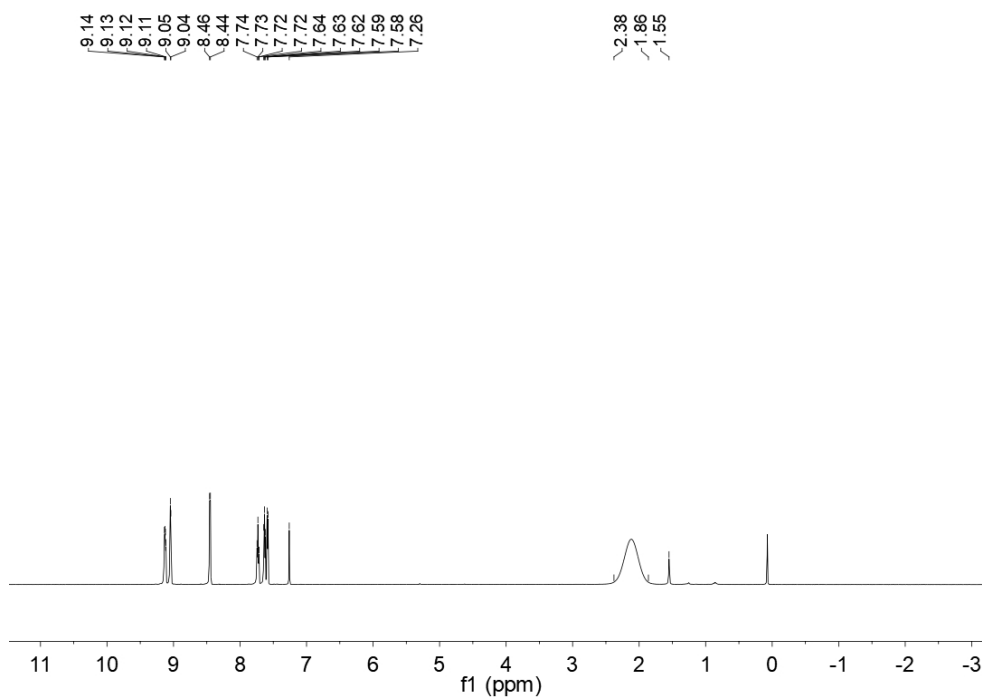
found: 210.1205.



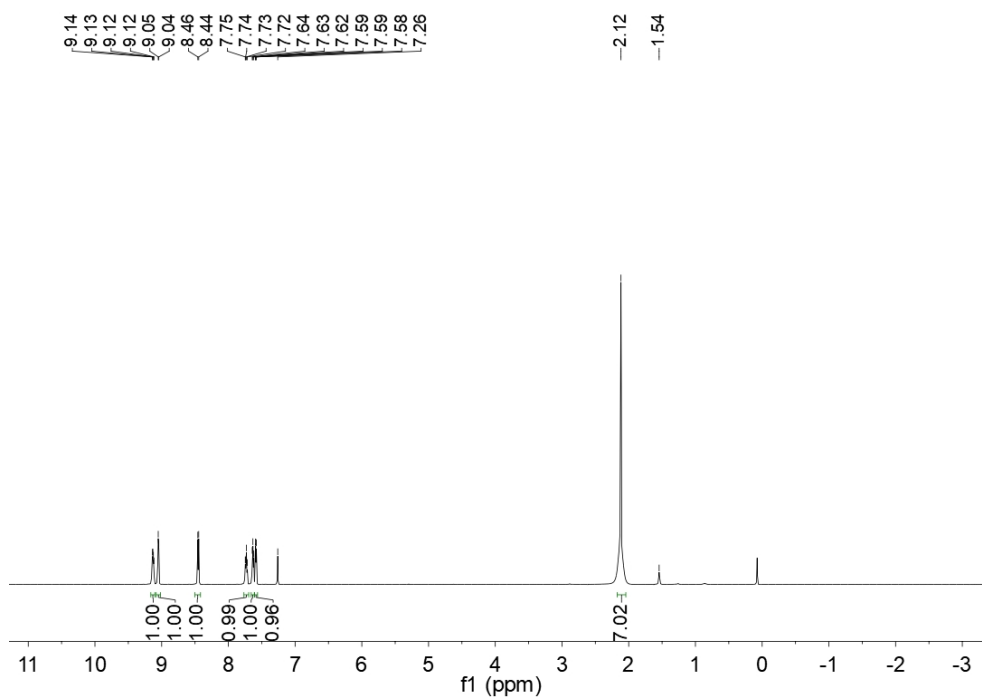
The ^{11}B NMR spectrum of the prepared **22** in CDCl_3 .



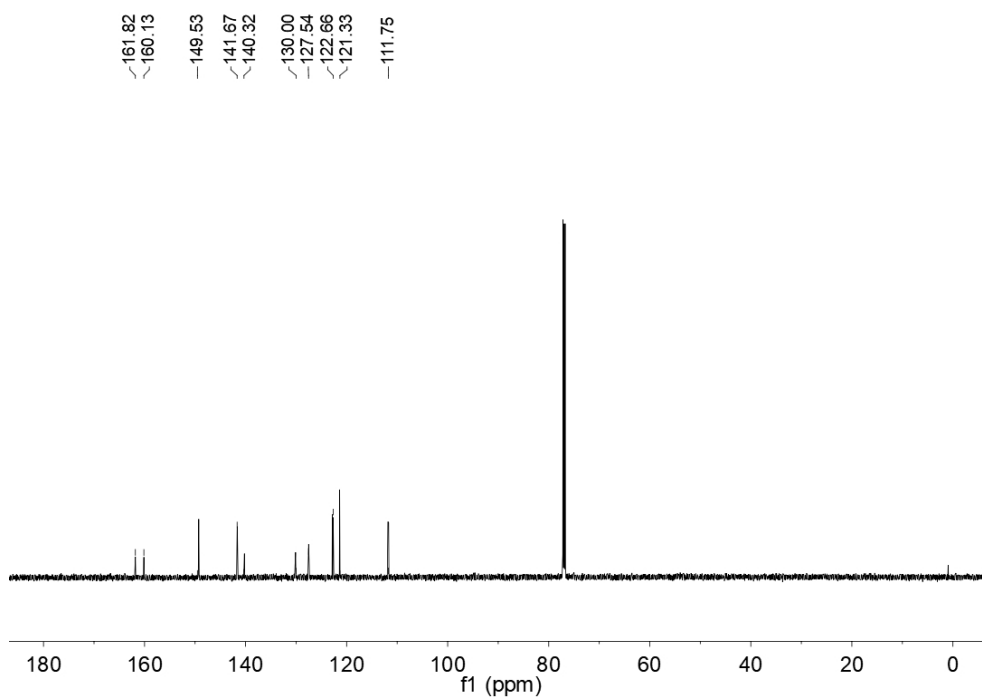
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **22** in CDCl_3 .



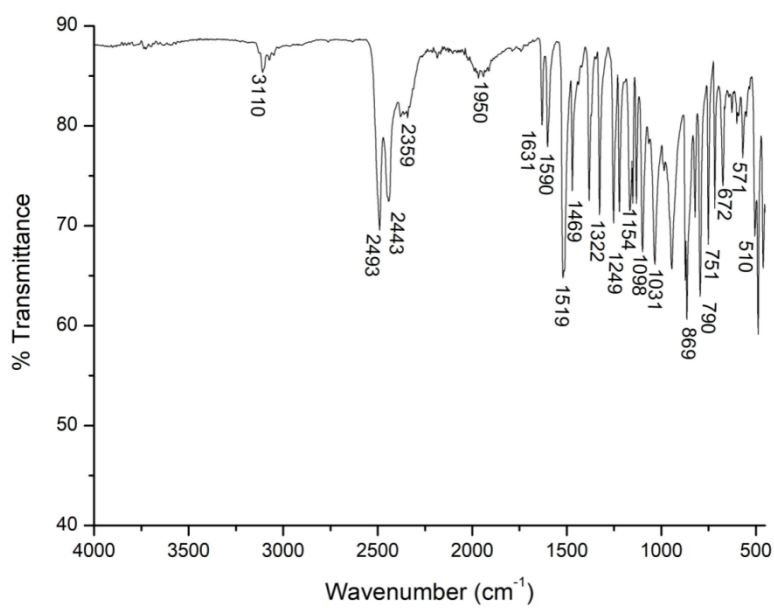
The ^1H NMR spectrum of the prepared **22** in CDCl_3 .



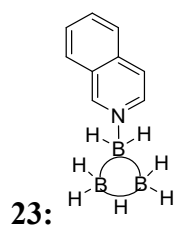
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **22** in CDCl_3 .



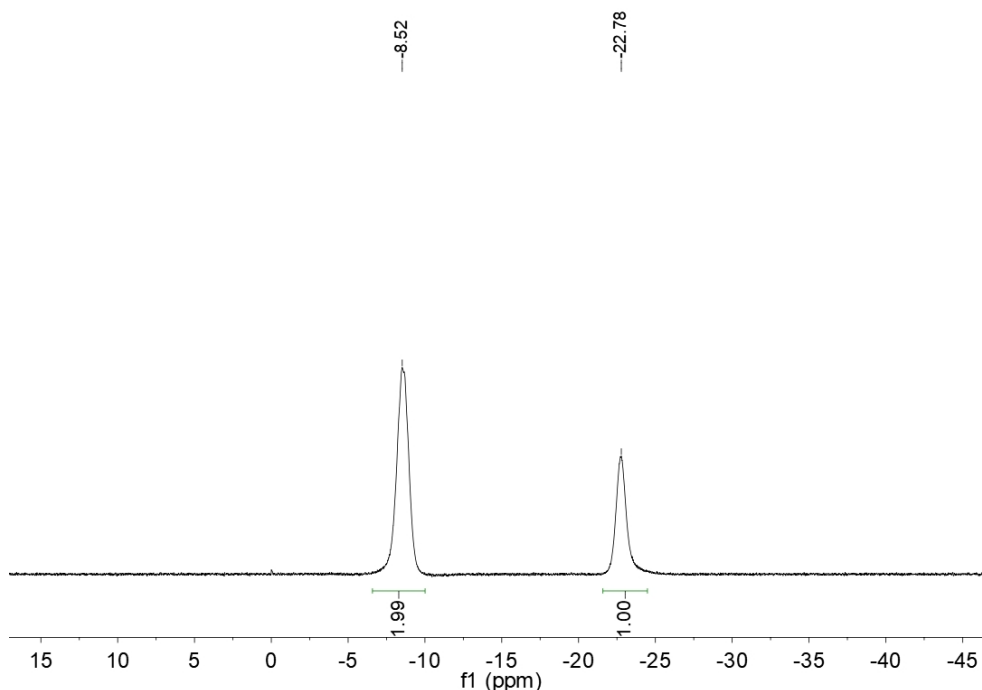
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **22** in CDCl_3 .



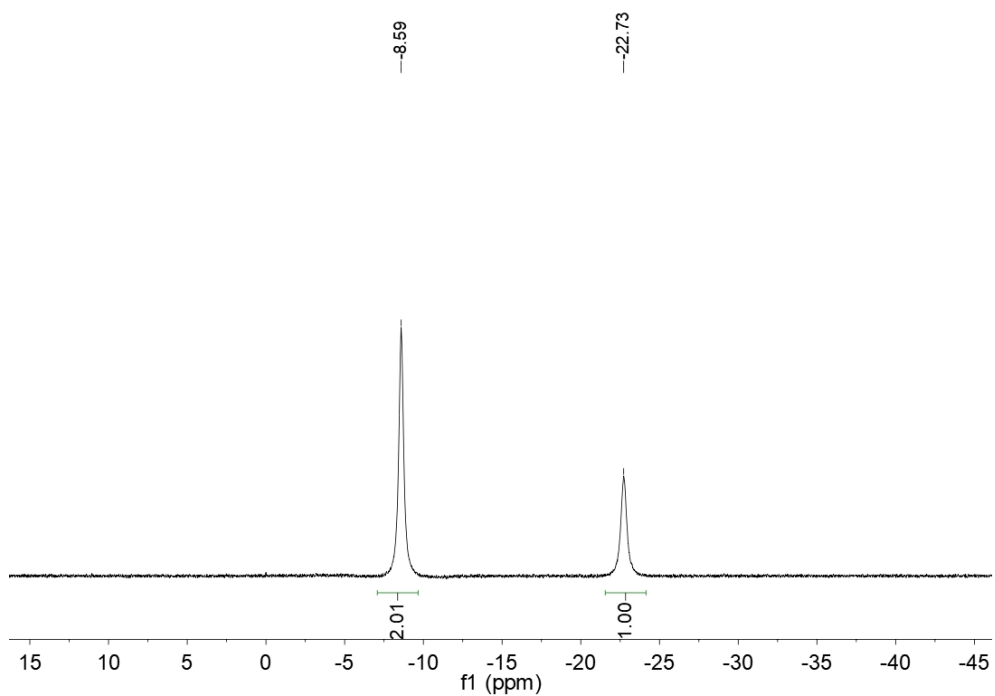
The IR spectrum of the prepared **22**.



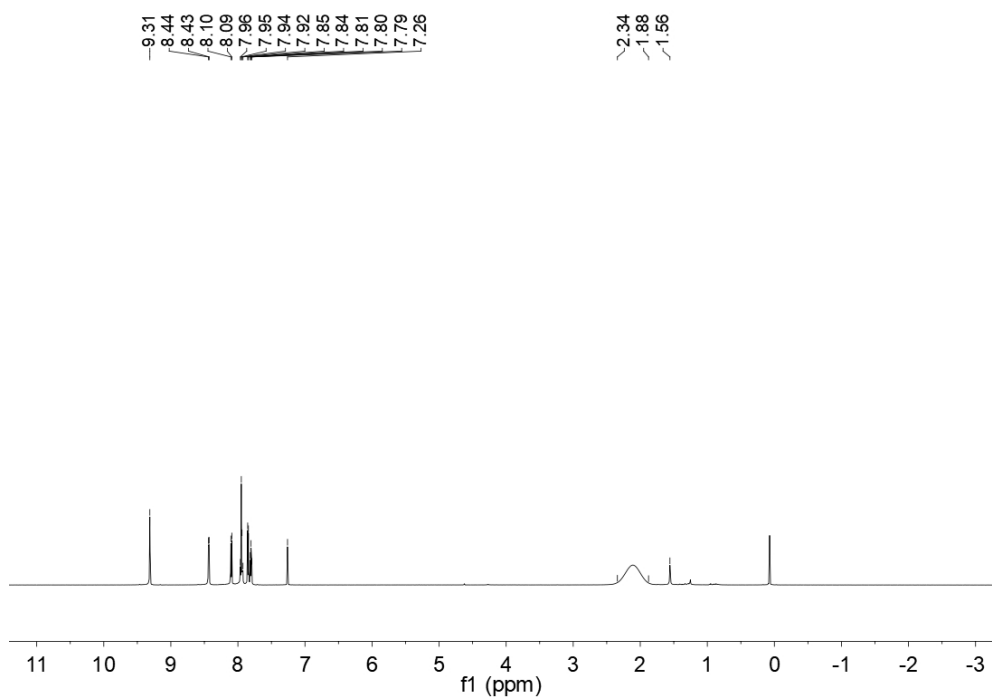
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 86%, white solid, melting point: 114-115 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.52 (*br*, 2 B of **BHB**), -22.78 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.59 (*br*, 2 B of **BHB**), -22.74 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.31 (*s*, H of **CH**), 8.44 (*d*, H of **CH**), 8.10 (*d*, H of **CH**), 7.94 (*m*, 2 H of 2 **CH**), 7.85 (*d*, H of **CH**), 7.80 (*t*, H of **CH**), 2.34-1.88 (*br*, 7 H of B_{3**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.31 (*s*, H of **CH**), 8.44 (*d*, H of **CH**), 8.10 (*d*, H of **CH**), 7.95 (*m*, 2 H of 2 **CH**), 7.85 (*d*, H of **CH**), 7.80 (*t*, H of **CH**), 2.11 (*s*, 7 H of B_{3**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 151.14 (*s*, 1 C), 139.38 (*s*, 1 C), 136.59 (*s*, 1 C), 134.47 (*s*, 1 C), 129.87 (*s*, 1 C), 129.20 (*s*, 1 C), 127.87 (*s*, 1 C), 126.75 (*s*, 1 C), 123.04 (*s*, 1 C) ppm. IR (cm⁻¹): 3084 (w), 2924 (w), 2481 (s), 2437 (s), 2327 (w), 1636 (m), 1603 (w), 1443 (w), 1382 (s), 1277 (m), 1156 (m), 1084 (s), 1039 (w), 963 (m), 868 (m), 813 (s), 747 (s). HRMS *m/z* calcd for C₉H₁₄B₃N [M+Na]⁺: 192.1302, found: 192.1302.}}



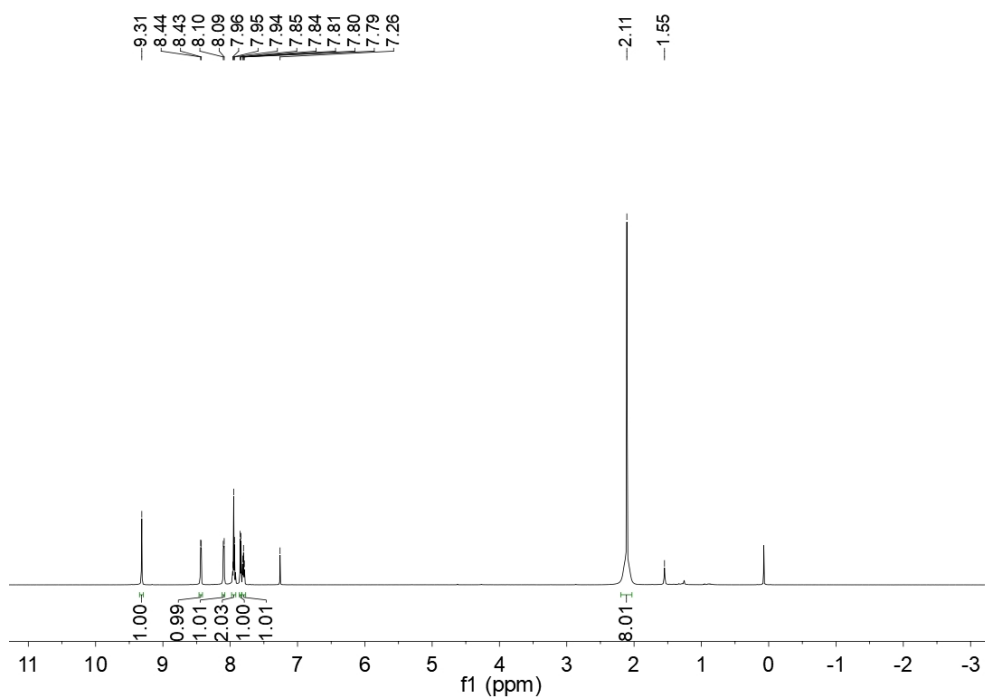
The ¹¹B NMR spectrum of the prepared **23** in CDCl₃.



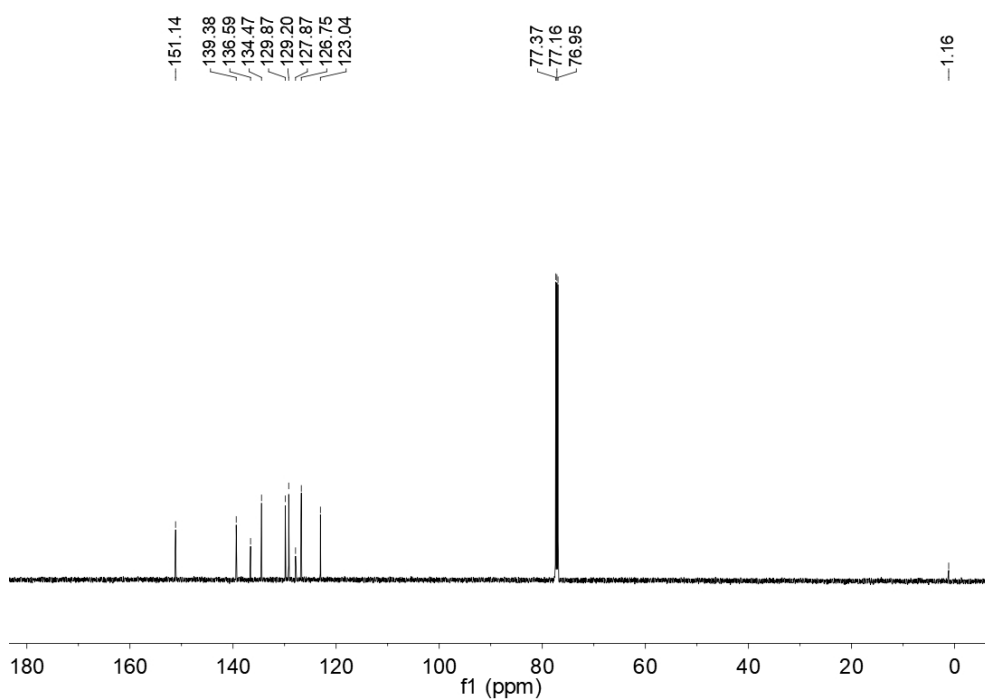
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **23** in CDCl_3 .



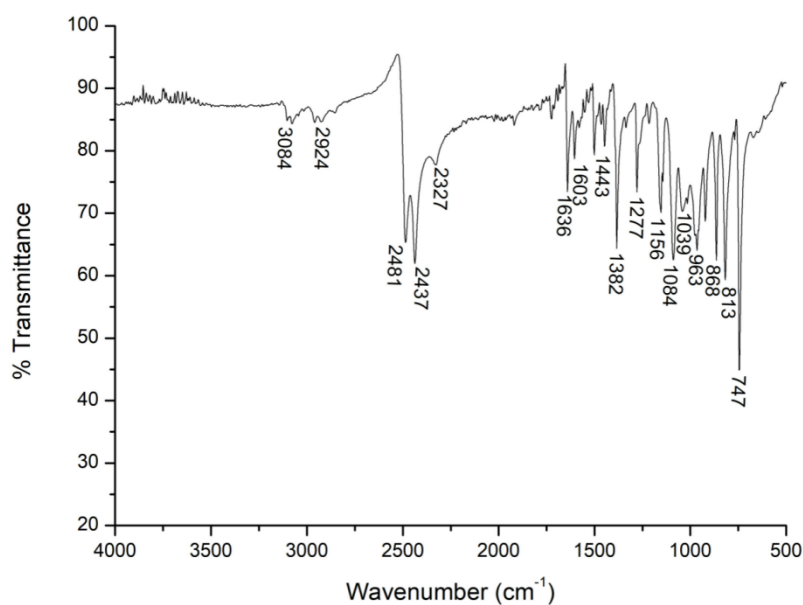
The ^1H NMR spectrum of the prepared **23** in CDCl_3 .



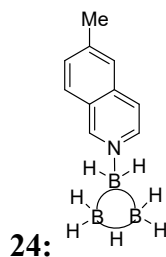
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **23** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **23** in CDCl_3 .

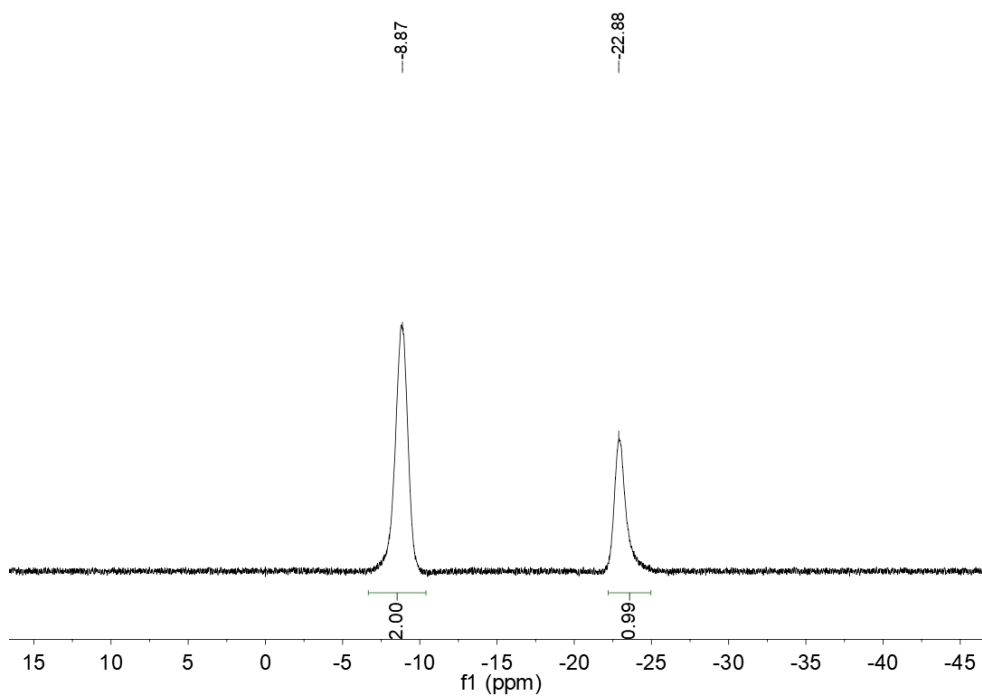


The IR spectrum of the prepared **23**.

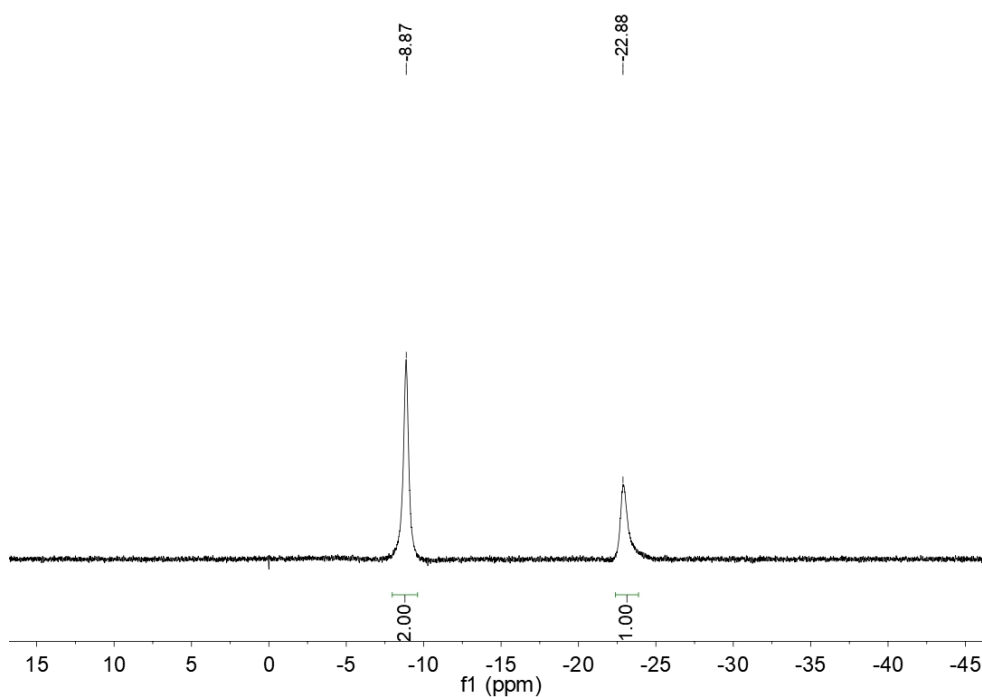


Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 79%, white solid, melting point: 138-139 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.87 (*br*, 2 B of **BHB**), -22.88 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.87 (*br*, 2 B of **BHB**), -22.88 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.22 (*s*, H of **CH**), 8.37 (*d*, H of **CH**), 7.98 (*d*, H of **CH**), 7.72 (*t*, 2 H of 2 **CH**), 7.62 (*d*, H of **CH**), 2.63 (*s*, 3 H of **CH₃**), 2.29-1.87 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.22 (*s*, H of **CH**), 8.37 (*d*, H of **CH**), 7.98 (*d*, H of **CH**), 7.72 (*t*, 2 H of 2 **CH**), 7.62 (*d*, H of **CH**), 2.63(*s*, 3 H of **CH₃**), 2.08 (*s*, 7 H of B₃**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 150.35 (*s*, 1 C), 145.73 (*s*, 1 C), 139.19 (*s*, 1 C), 136.70 (*s*, 1 C), 131.94 (*s*, 1 C), 128.69 (*s*, 1 C), 126.06 (*s*, 1 C), 125.49 (*s*, 1 C), 122.08 (*s*, 1 C), 22.40 (*s*, 1 C) ppm. IR (cm⁻¹): 3084 (*w*), 2476 (*s*), 2432 (*s*), 2327 (*w*), 1642 (*m*), 1382 (*m*), 1283 (*w*), 1150 (*s*), 1084 (*m*), 968 (*m*), 879 (*s*), 802 (*s*), 758 (*w*), 636 (*w*). HRMS *m/z* calcd for

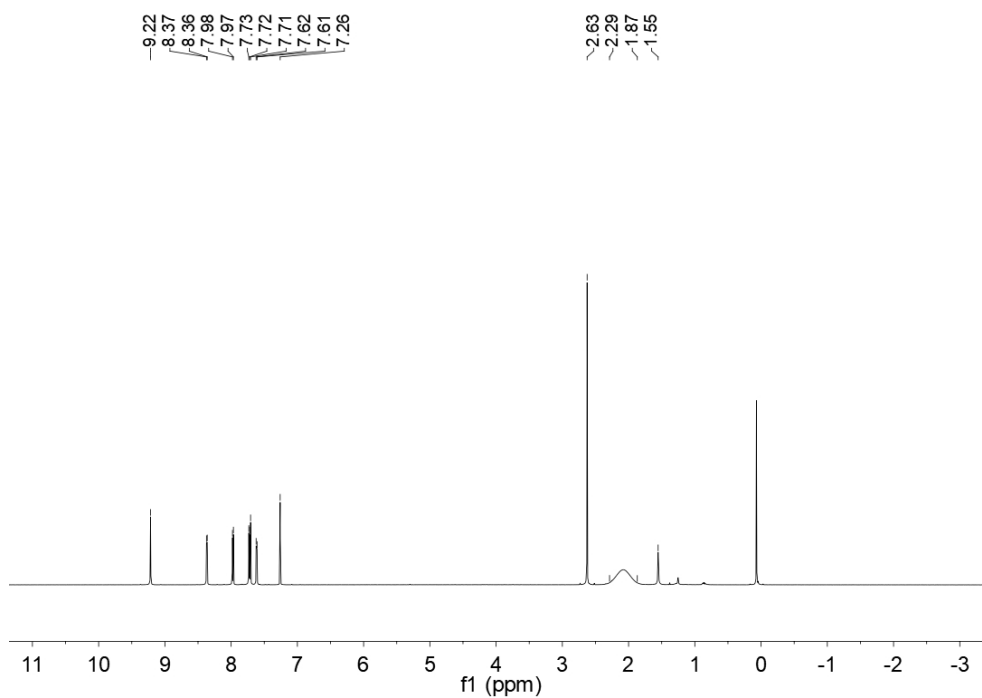
$C_{10}H_{16}B_3N [M+Na]^+$: 206.1459, found: 206.1458.



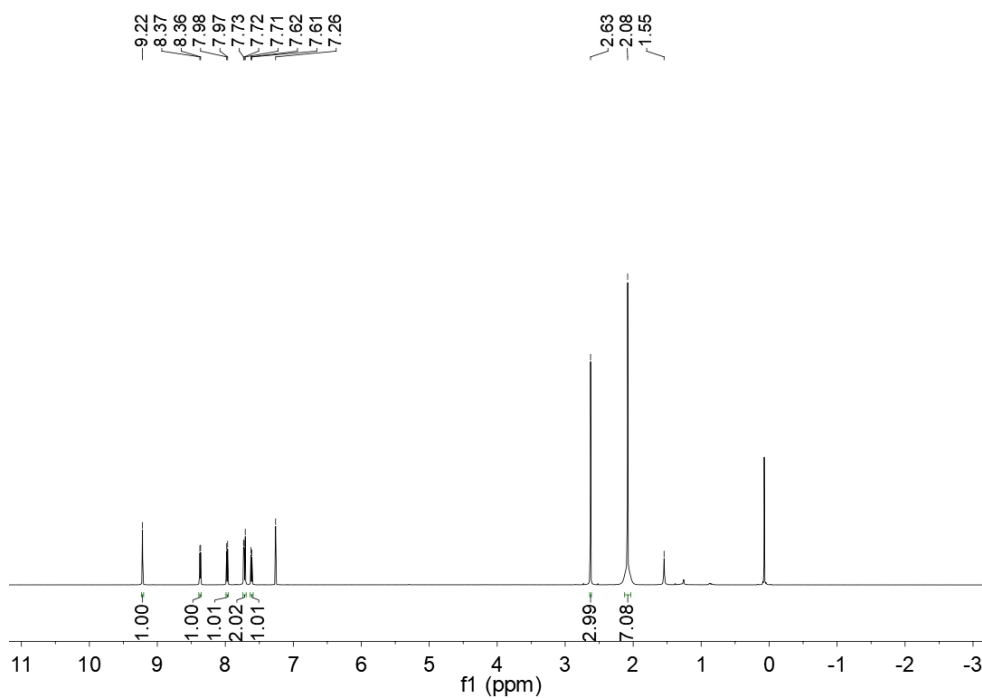
The ^{11}B NMR spectrum of the prepared **24** in $CDCl_3$.



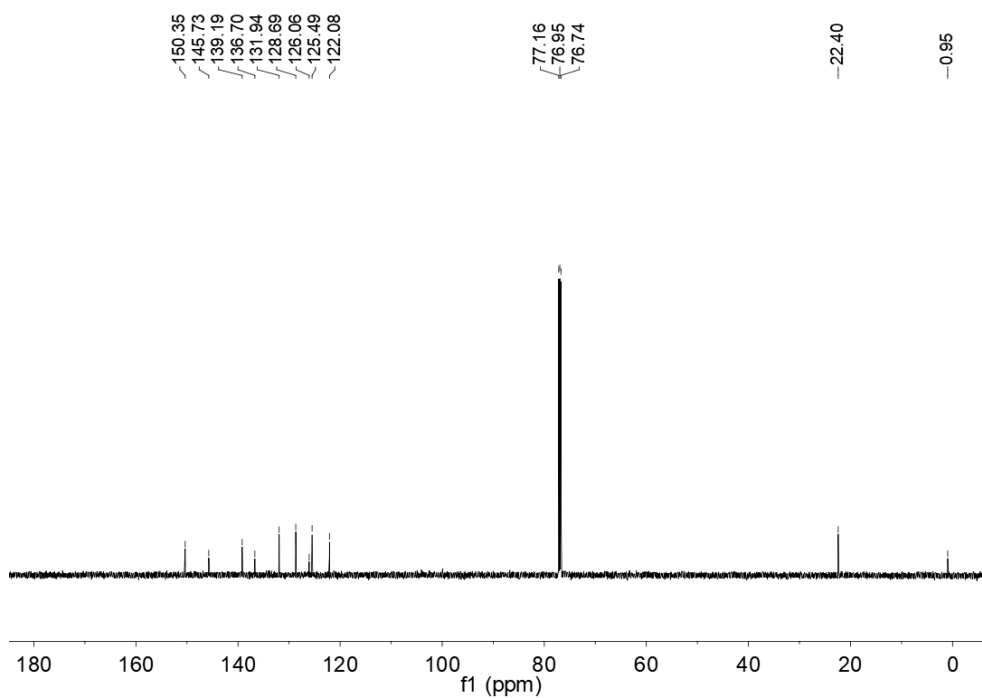
The $^{11}B\{^1H\}$ NMR spectrum of the prepared **24** in $CDCl_3$.



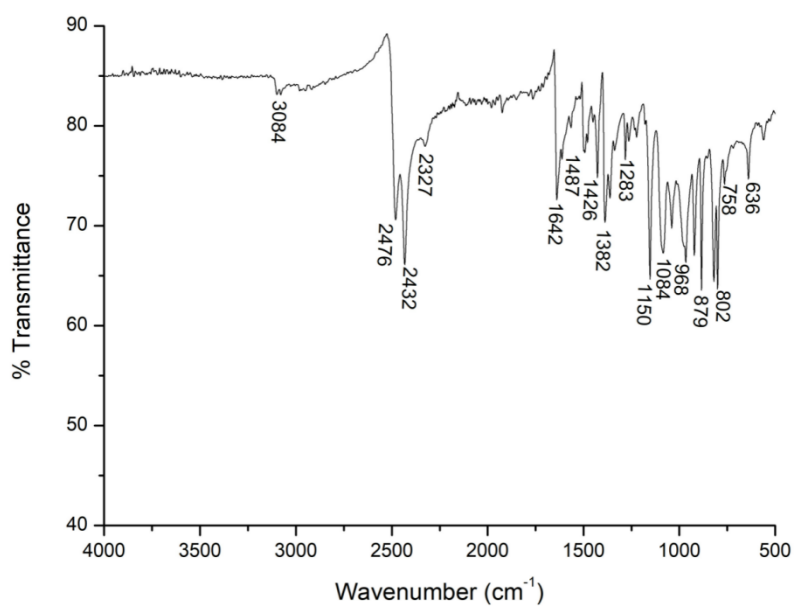
The ^1H NMR spectrum of the prepared **24** in CDCl_3 .



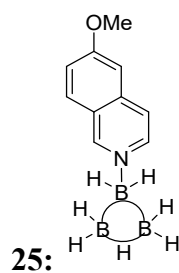
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **24** in CDCl_3 .



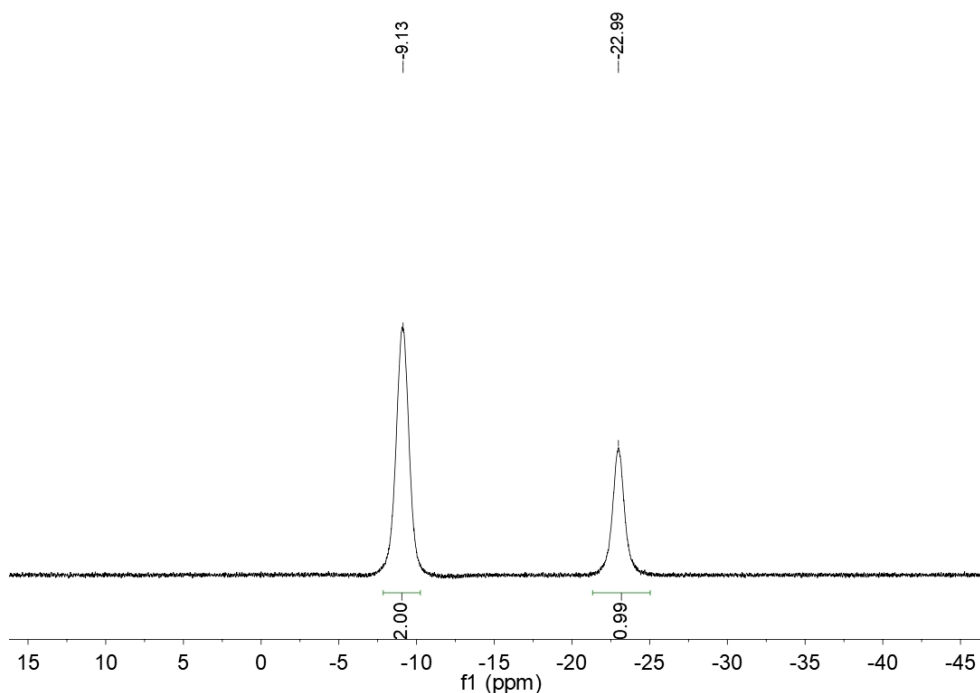
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **24** in CDCl_3 .



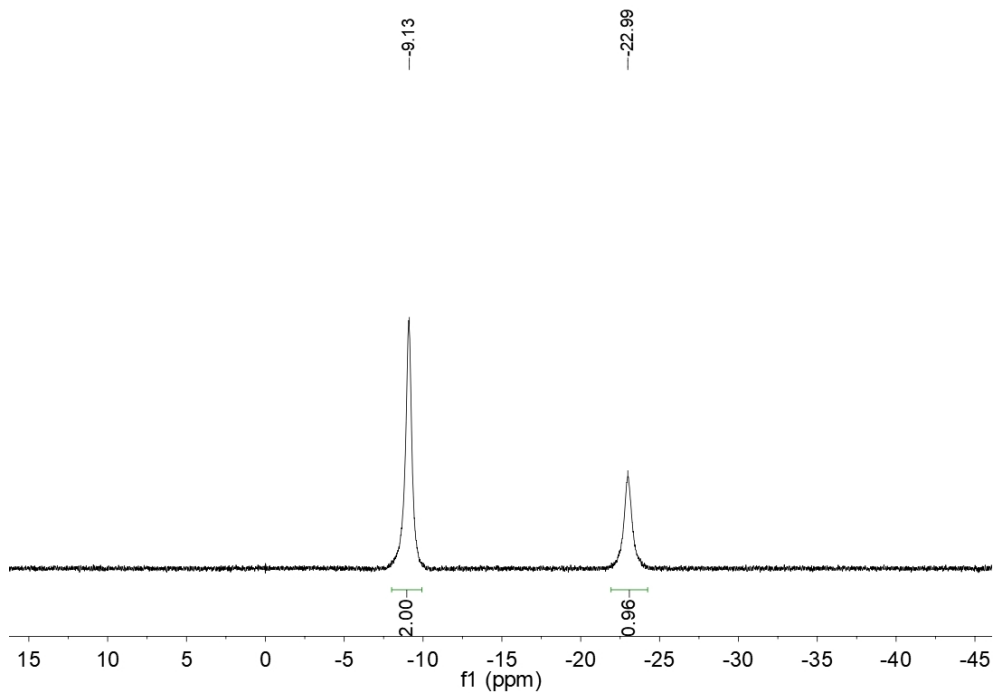
The IR spectrum of the prepared **24**.



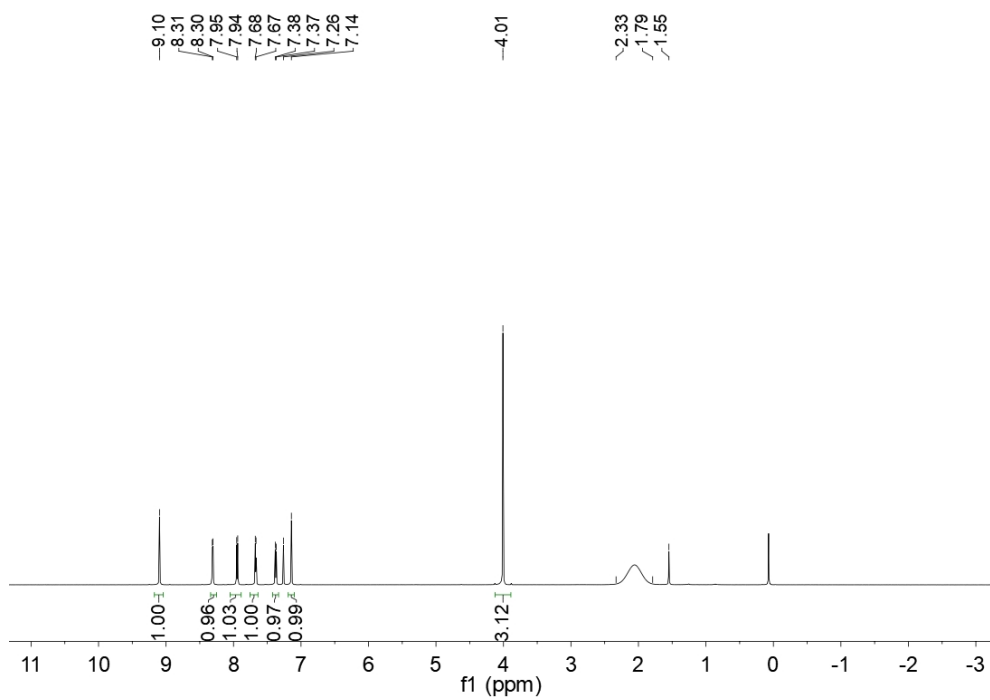
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 87%, white solid, melting point: 110-111 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -9.13 (*br*, 2 B of **BHB**), -22.99 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -9.13 (*br*, 2 B of **BHB**), -22.99 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.10 (*s*, H of **CH**), 8.31 (*d*, H of **CH**), 7.95 (*d*, H of **CH**), 7.68 (*d*, H of **CH**), 7.38 (*d*, H of **CH**), 7.14 (*s*, H of **CH**), 4.01 (*s*, 3 H of **CH₃**), 2.33-1.79 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.10 (*s*, H of **CH**), 8.31 (*d*, H of **CH**), 7.95 (*d*, H of **CH**), 7.68 (*d*, H of **CH**), 7.38 (*d*, H of **CH**), 7.14 (*s*, H of **CH**), 4.10 (*s*, 3 H of **CH₃**), 2.06 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 164.28 (*s*, 1 C), 149.73 (*s*, 1 C), 139.73 (*s*, 1 C), 139.21 (*s*, 1 C), 130.82 (*s*, 1 C), 123.43 (*s*, 1 C), 123.12 (*s*, 1 C), 121.58 (*s*, 1 C), 104.41 (*s*, 1 C), 56.09 (*s*, 1 C) ppm. IR (cm⁻¹): 2984 (*w*), 2481 (*m*), 2437 (*m*), 1624 (*m*), 1603 (*m*), 1482 (*s*), 1398 (*m*), 1272 (*s*), 1233 (*s*), 1134 (*m*), 1073 (*w*), 1012 (*s*), 929 (*w*), 852 (*s*), 818 (*m*), 764 (*w*), 664 (*w*). HRMS *m/z* calcd for C₁₀H₁₆B₃NO [M+Na]⁺: 222.1408; found: 222.1408.



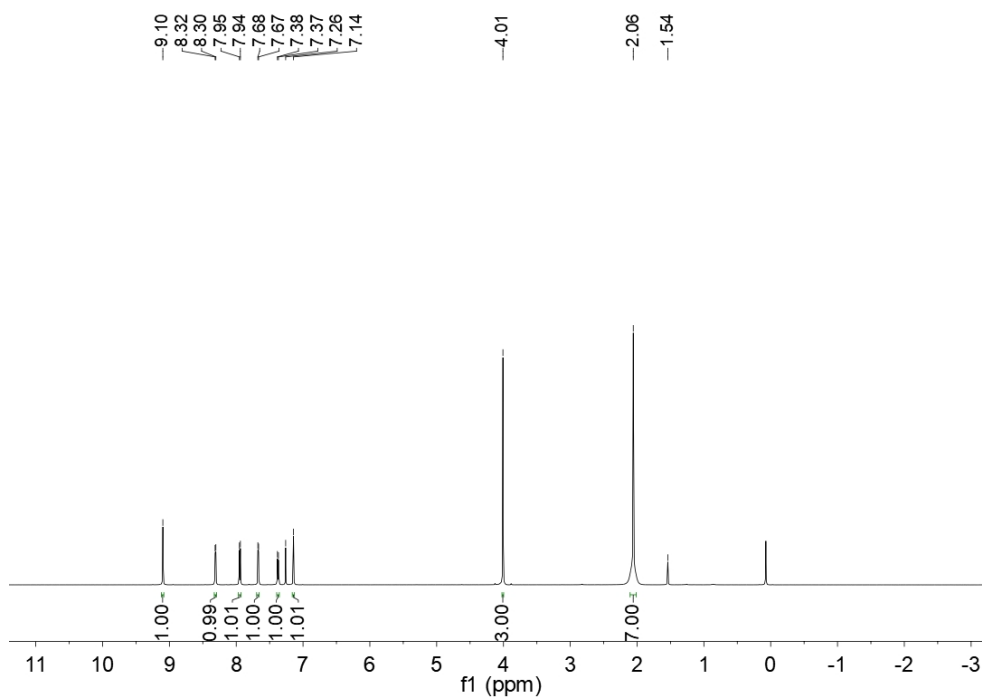
The ¹¹B NMR spectrum of the prepared **25** in CDCl₃.



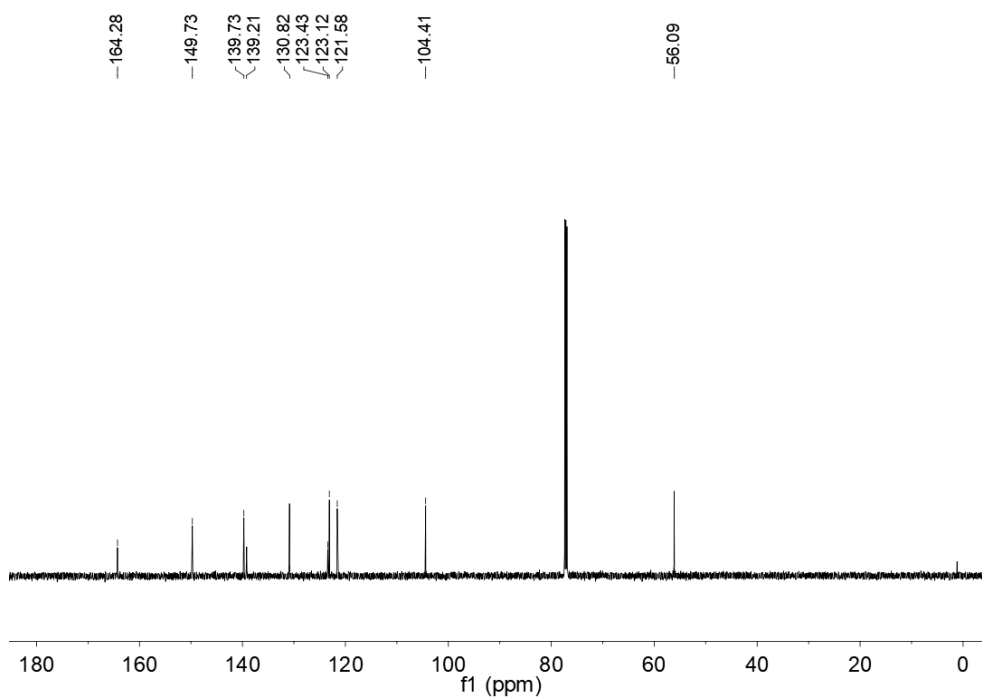
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **25** in CDCl_3 .



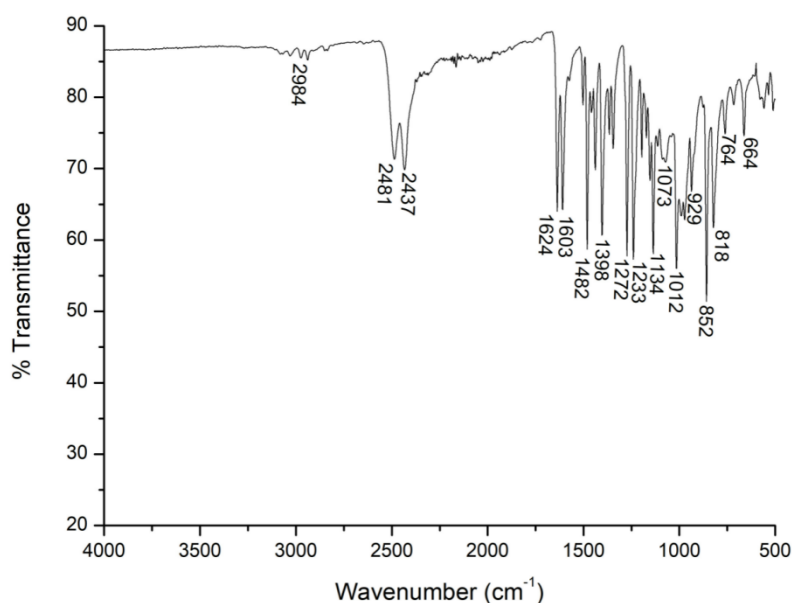
The ^1H NMR spectrum of the prepared **25** in CDCl_3 .



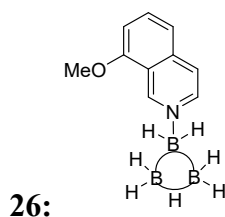
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **25** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **25** in CDCl_3 .

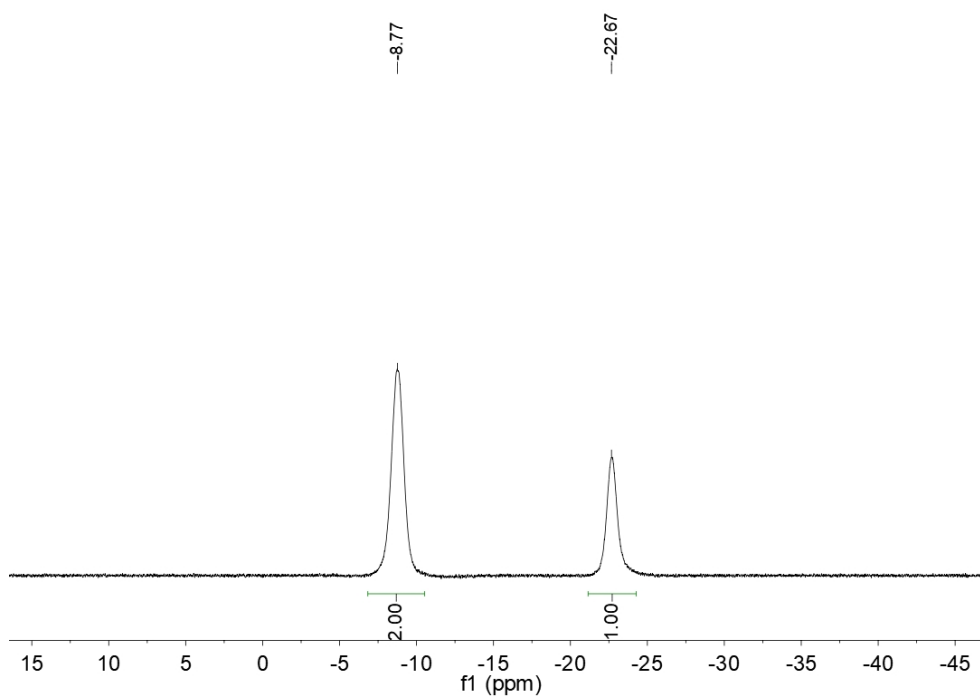


The IR spectrum of the prepared **25**.

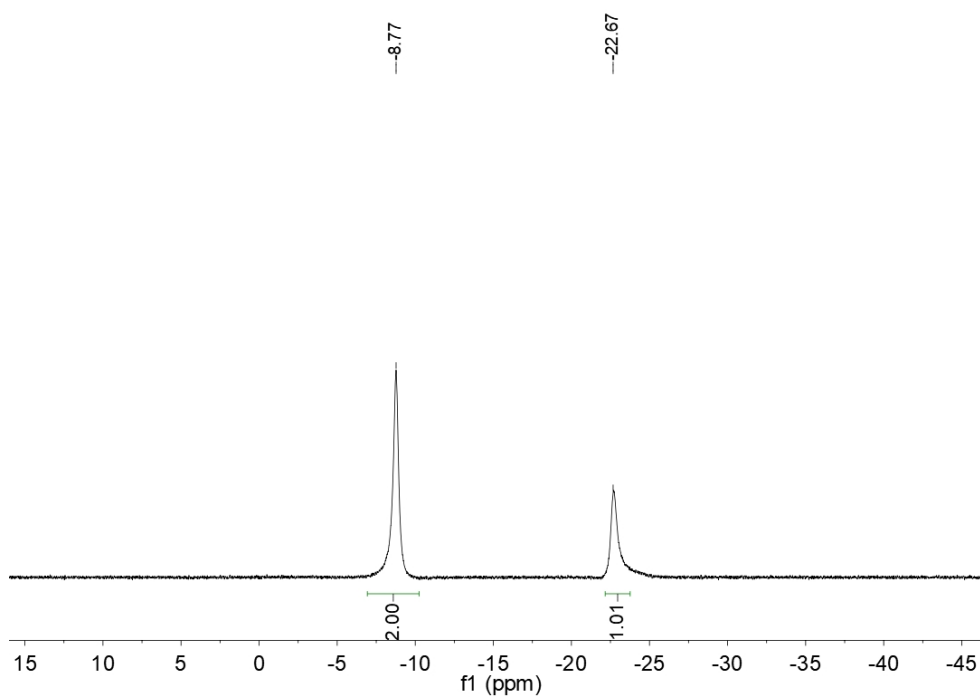


Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 5:1). Yield 83%, white solid, melting point: 123-124 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.77 (*br*, 2 B of **BHB**), -22.67 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.77 (*br*, 2 B of **BHB**), -22.67 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.63 (*s*, H of **CH**), 8.38 (*d*, H of **CH**), 7.81 (*t*, H of **CH**), 7.74 (*d*, H of **CH**), 7.44 (*d*, H of **CH**), 7.03 (*d*, H of **CH**), 4.08 (*s*, 3 H of **CH₃**), 2.29-1.89 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.64 (*s*, H of **CH**), 8.39 (*d*, H of **CH**), 7.81 (*t*, H of **CH**), 7.74 (*d*, H of **CH**), 7.43 (*d*, H of **CH**), 7.03 (*d*, H of **CH**), 4.08 (*s*, 3 H of **CH₃**), 2.09 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 157.22 (*s*, 1 C), 147.12 (*s*, 1 C), 139.60 (*s*, 1 C), 137.54 (*s*, 1 C), 135.60 (*s*, 1 C), 122.34 (*s*, 1 C), 120.32 (*s*, 1 C), 118.22 (*s*, 1 C), 107.48 (*s*, 1 C), 56.24 (*s*, 1 C) ppm. IR (cm⁻¹): 3100 (*w*), 2951 (*w*), 2481 (*s*), 2432 (*s*), 1642 (*m*), 1570 (*m*), 1459 (*m*), 1382 (*s*), 1288 (*s*), 1249 (*m*), 1123 (*m*), 995 (*s*), 835 (*s*), 747 (*s*), 636 (*w*). HRMS *m/z* calcd for C₁₀H₁₆B₃NO [M+Na]⁺: 222.1408, found:

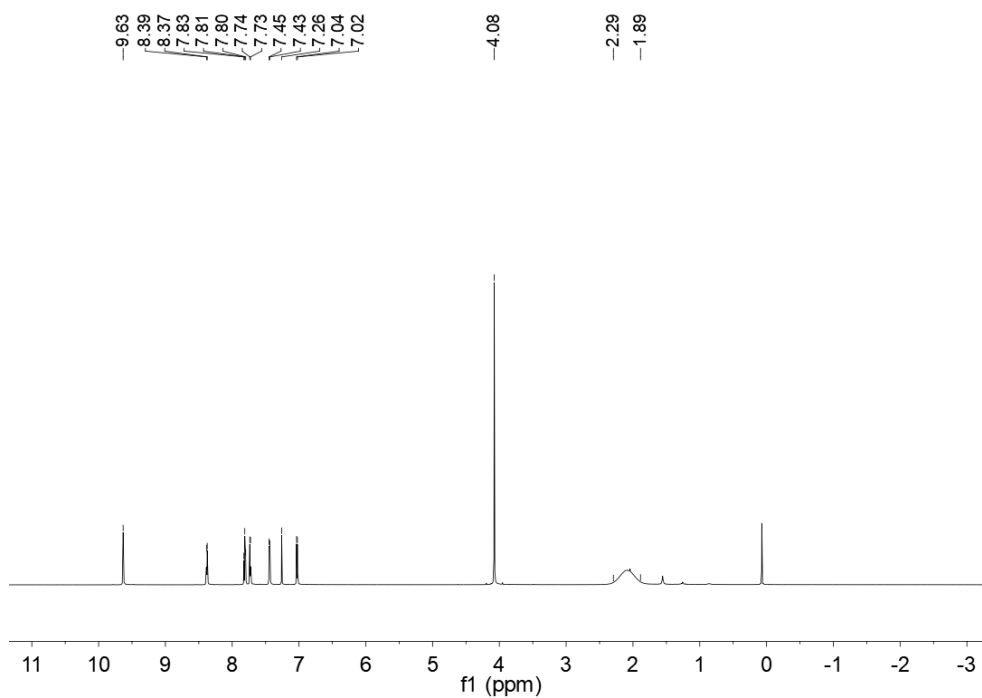
222.1408.



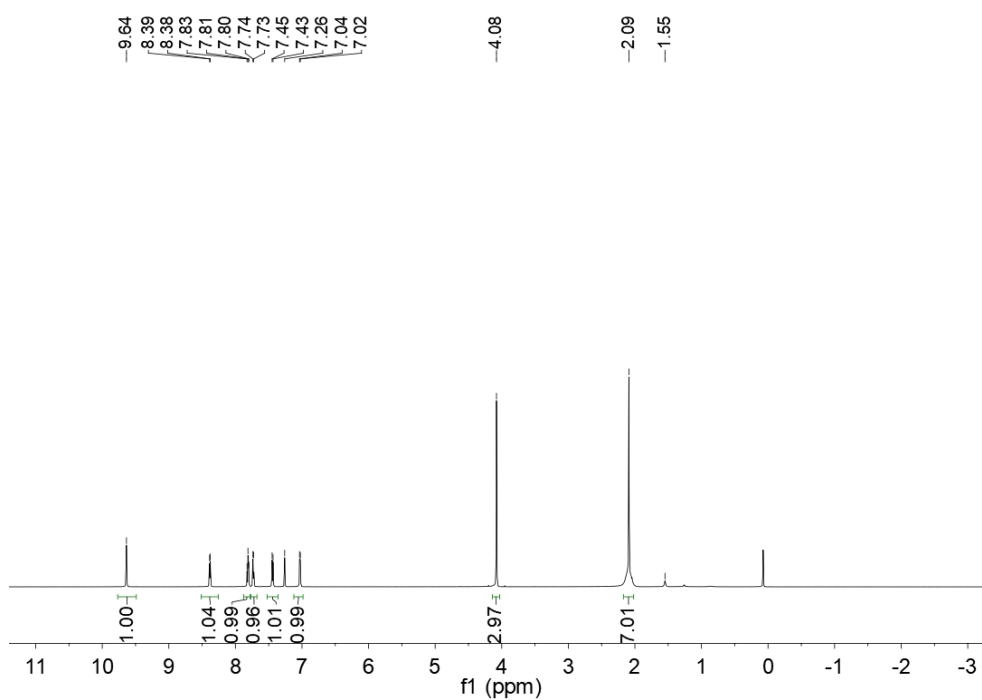
The ^{11}B NMR spectrum of the prepared **26** in CDCl_3 .



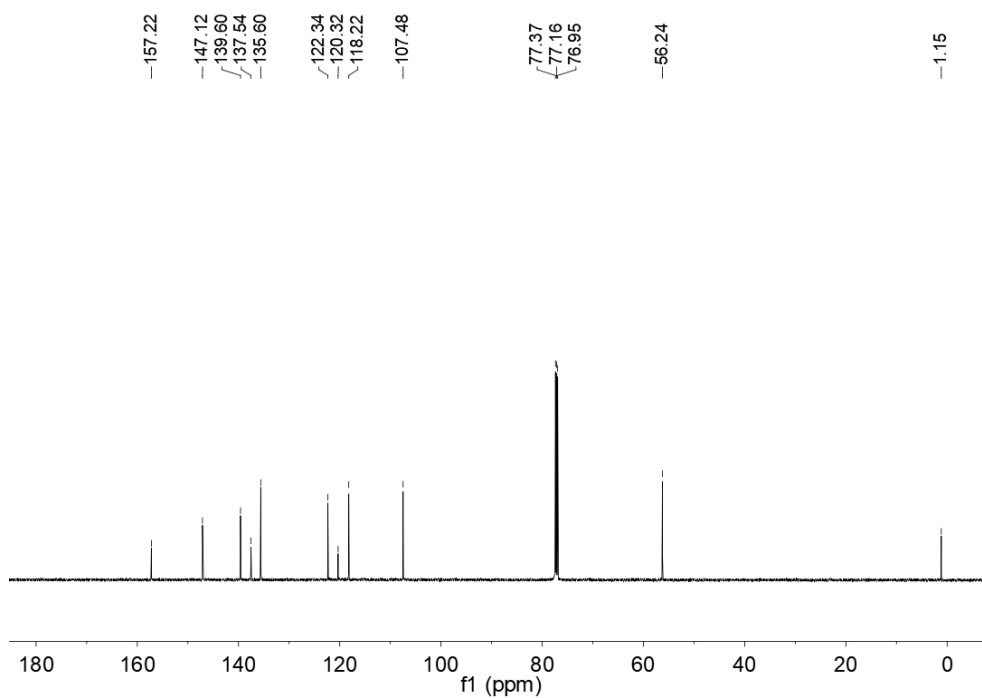
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **26** in CDCl_3 .



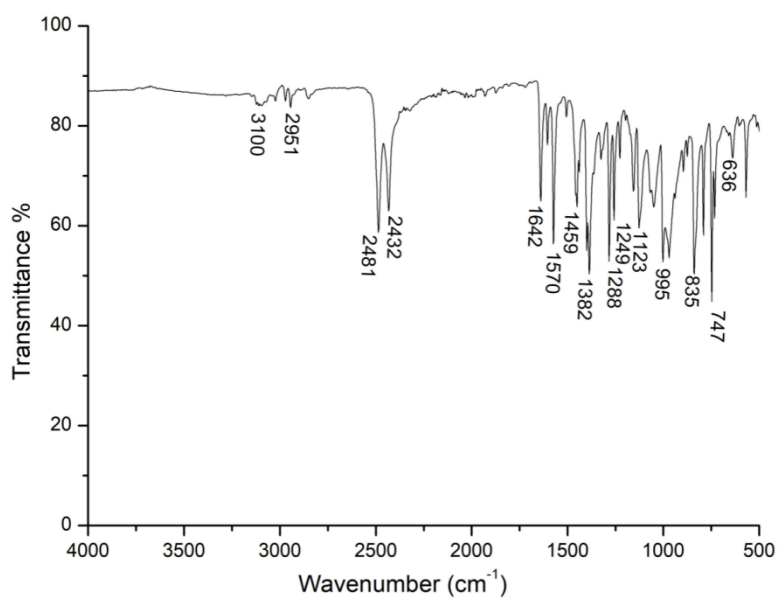
The ^1H NMR spectrum of the prepared **26** in CDCl_3 .



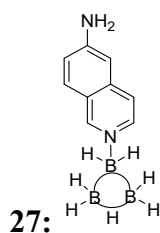
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **26** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **26** in CDCl_3 .

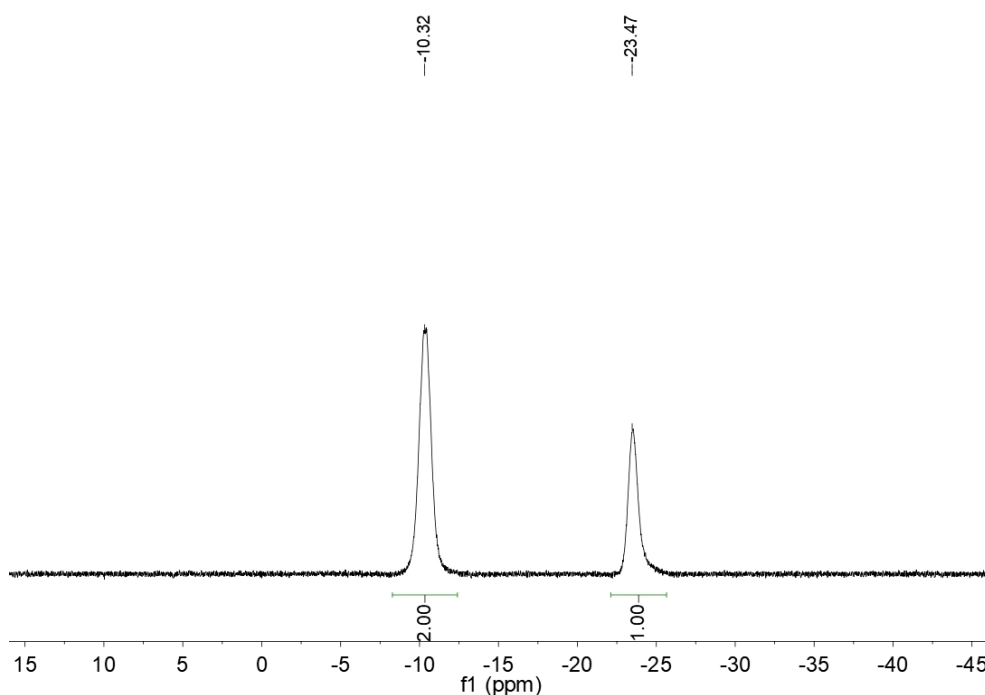


The IR spectrum of the prepared **26**.

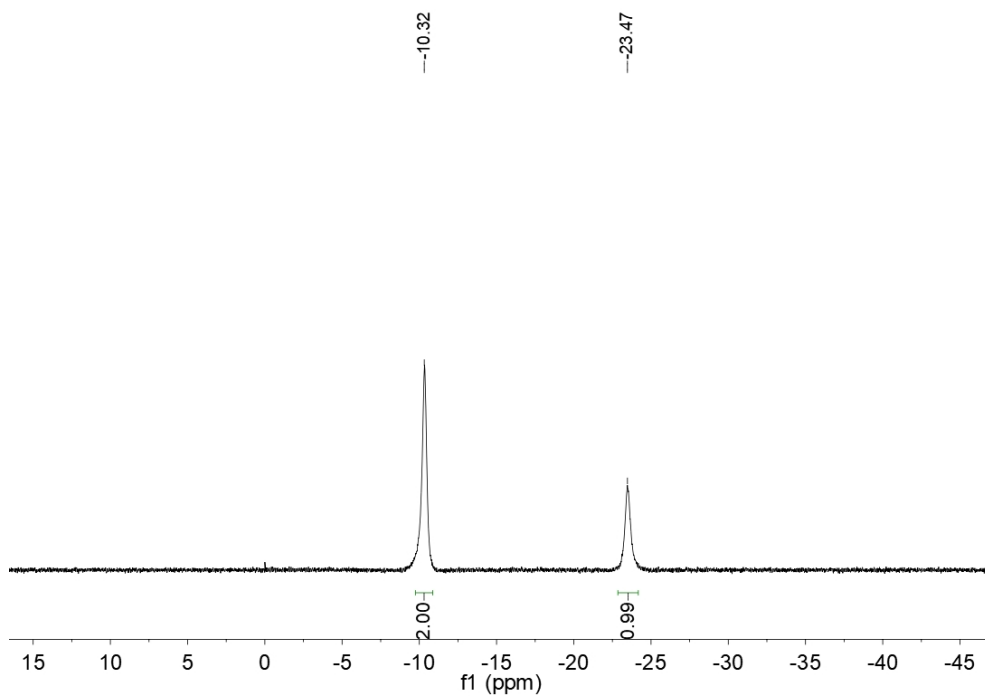


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:2). Yield 79%, white

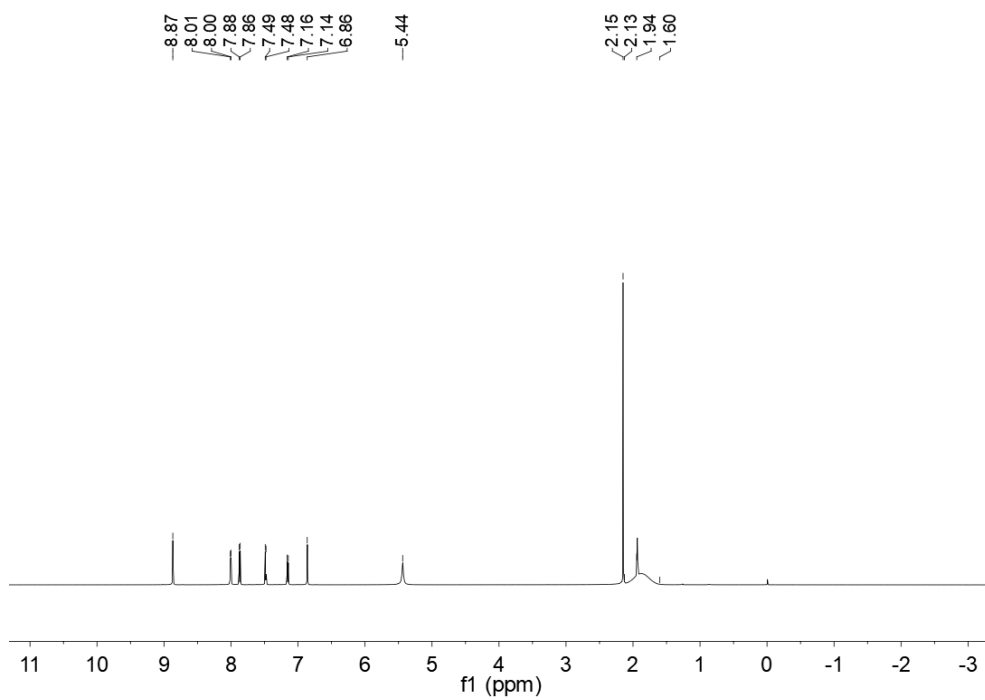
solid, melting point: 113-114 °C. ^{11}B NMR (193 MHz, CD_3CN): δ -10.32 (*br*, 2 B of **BHB**), -23.47 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CD_3CN): δ -10.32 (*br*, 2 B of **BHB**), -23.47 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CD_3CN): δ 8.87 (*s*, H of **CH**), 8.01 (*d*, H of **CH**), 7.87 (*d*, H of **CH**), 7.49 (*d*, H of **CH**), 7.15 (*d*, H of **CH**), 6.86 (*d*, H of **CH**), 5.44 (*s*, 2 H of **NH₂**), 2.13-1.60 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CD_3CN): δ 8.87 (*s*, H of **CH**), 8.01 (*d*, H of **CH**), 7.87 (*d*, H of **CH**), 7.49 (*d*, H of **CH**), 7.16 (*d*, H of **CH**), 6.86 (*s*, H of **CH**), 5.43 (*s*, 2 H of **NH₂**), 1.87 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CD_3CN): δ 154.78 (*s*, 1 C), 150.03 (*s*, 1 C), 140.20 (*s*, 1 C), 139.40 (*s*, 1 C), 132.03 (*s*, 1 C), 121.96 (*s*, 1 C), 121.83 (*s*, 1 C), 120.74 (*s*, 1 C), 104.42 (*s*, 1 C) ppm. IR (cm^{-1}): 3454 (*m*), 3370 (*m*), 3216 (*w*), 2465 (*m*), 2409 (*s*), 2117 (*w*), 1625 (*s*), 1482 (*m*), 1415 (*m*), 1299 (*m*), 1249 (*w*), 1150 (*s*), 1100 (*s*), 990 (*m*), 863 (*s*), 813 (*m*), 658 (*w*). HRMS *m/z* calcd for $\text{C}_9\text{H}_{15}\text{B}_3\text{N}_2$ $[\text{M}+\text{Na}]^+$: 207.1411, found: 207.1408.



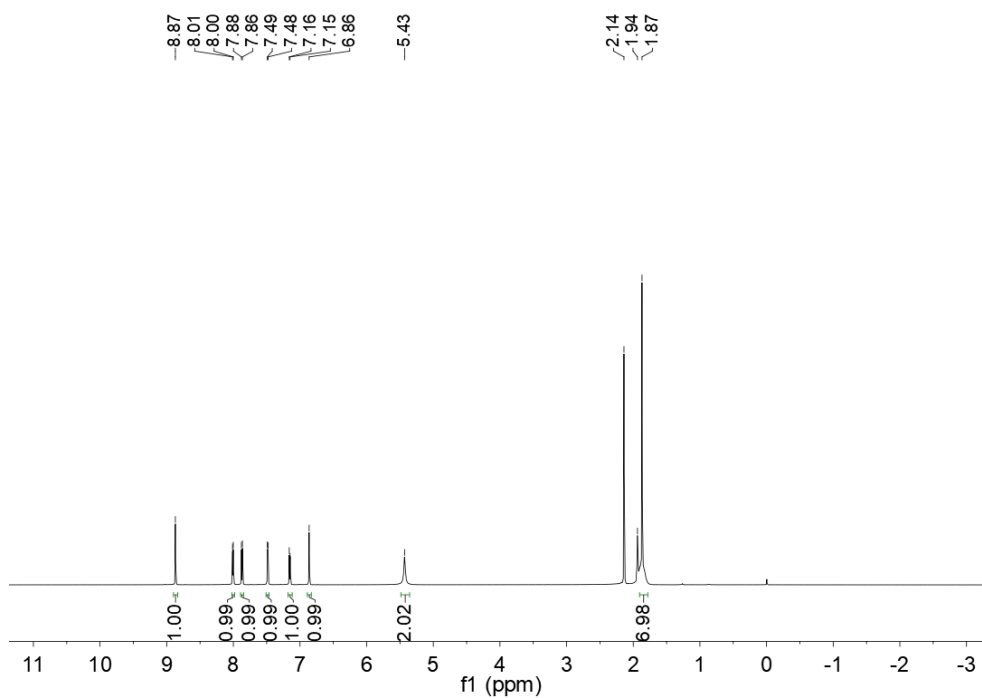
The ^{11}B NMR spectrum of the prepared **27** in CD_3CN



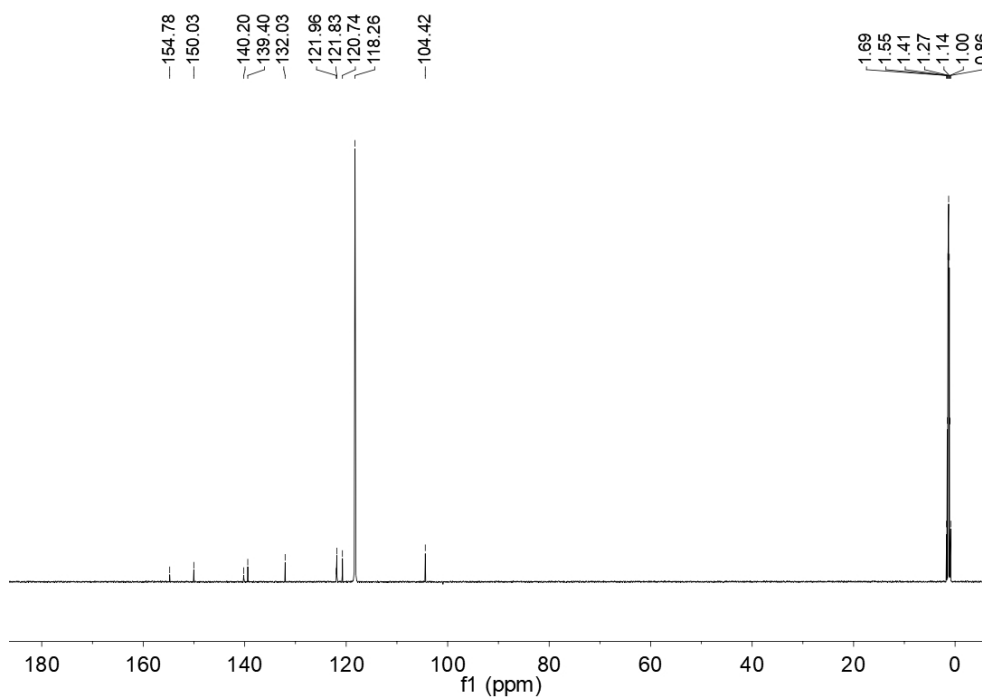
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **27** in CD_3CN .



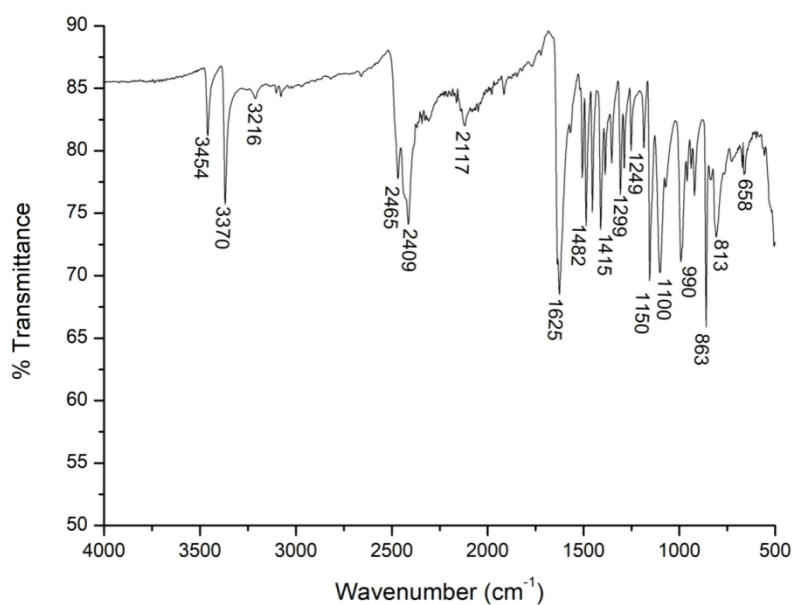
The ^1H NMR spectrum of the prepared **27** in CD_3CN .



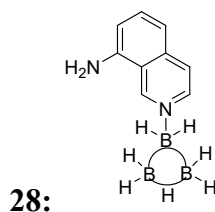
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **27** in CD_3CN .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **27** in CD_3CN .

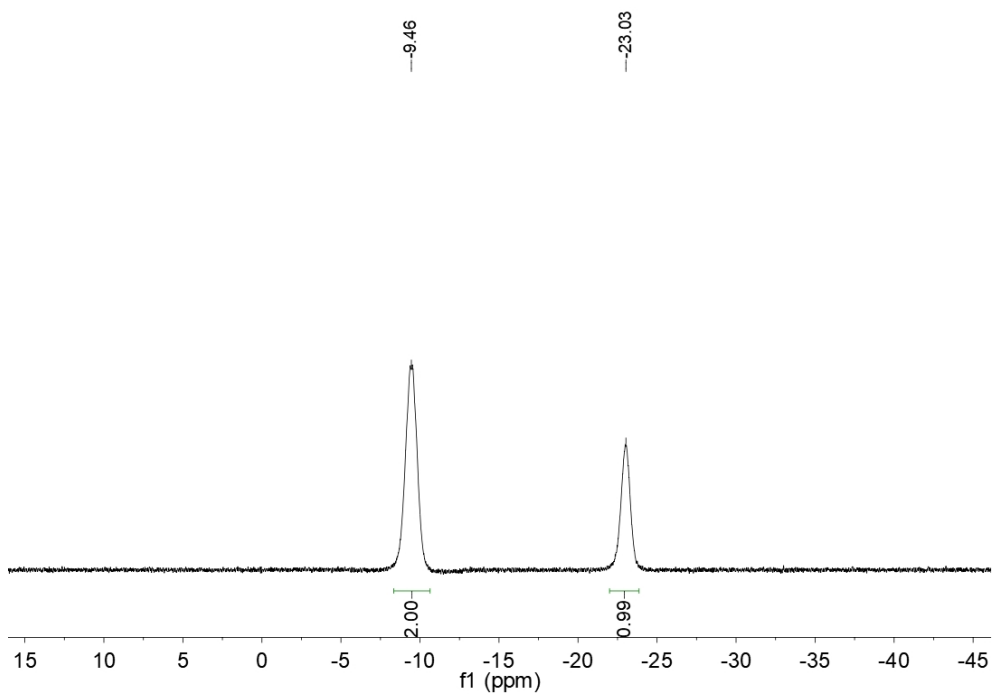


The IR spectrum of the prepared **27**.

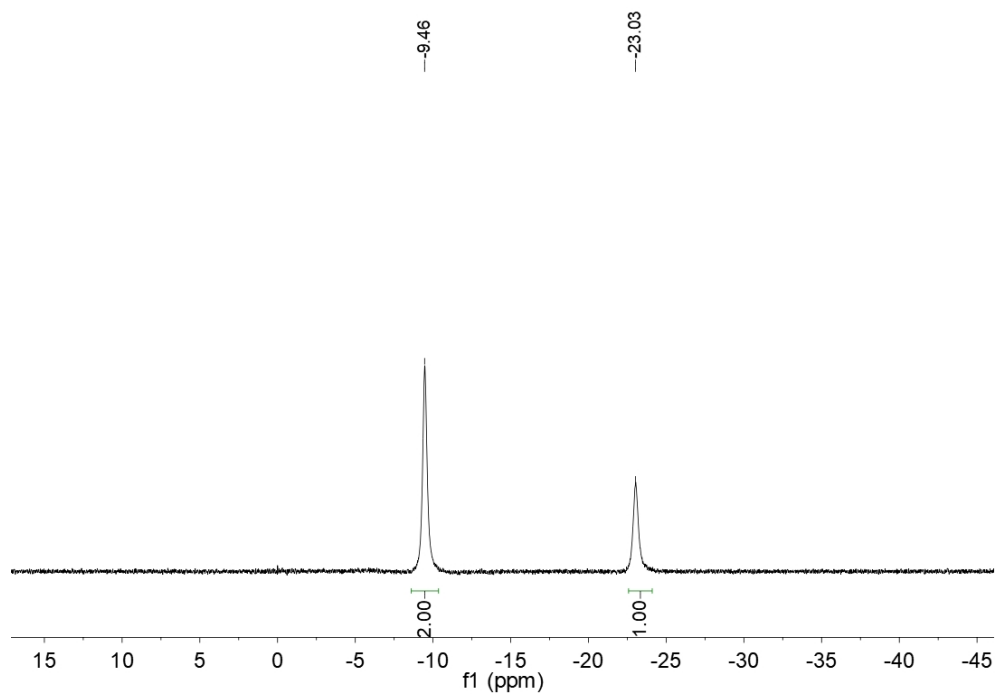


Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:2). Yield 75%, yellow solid, melting point: 140-141 °C. ¹¹B NMR (193 MHz, CD₃CN): δ -9.46 (*br*, 2 B of **BHB**), -23.03 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CD₃CN): δ -9.46 (*br*, 2 B of **BHB**), -23.03 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CD₃CN): δ 9.34 (*s*, H of **CH**), 8.17 (*d*, H of **CH**), 7.74 (*d*, H of **CH**), 7.64 (*t*, H of **CH**), 7.19 (*d*, H of **CH**), 6.92 (*d*, H of **CH**), 5.44 (*s*, 2 H of **NH₂**), 2.21-1.72 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CD₃CN): δ 9.35 (*s*, H of **CH**), 8.18 (*d*, H of **CH**), 7.75 (*t*, H of **CH**), 7.66 (*t*, H of **CH**), 7.20 (*t*, H of **CH**), 6.93 (*d*, H of **CH**), 5.45 (*s*, 2 H of **NH₂**), 1.96 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, DMSO): δ 148.63 (*s*, 1 C), 147.52 (*s*, 1 C), 137.11 (*s*, 1 C), 136.88 (*s*, 1 C), 136.64 (*s*, 1 C), 123.05 (*s*, 1 C), 116.15 (*s*, 1 C), 112.38 (*s*, 1 C), 111.17 (*s*, 1 C) ppm. IR (cm⁻¹): 3498 (*m*), 3398 (*m*), 3238 (*w*), 2481 (*m*), 2437 (*s*), 1619 (*s*), 1575 (*m*), 1470 (*m*), 1377 (*s*), 1322 (*m*), 1277 (*w*), 1150 (*w*), 1067 (*m*), 973 (*m*), 824 (*s*), 753 (*s*), 653 (*w*). HRMS *m/z* calcd for C₉H₁₅B₃N₂ [M+Na]⁺: 185.1592,

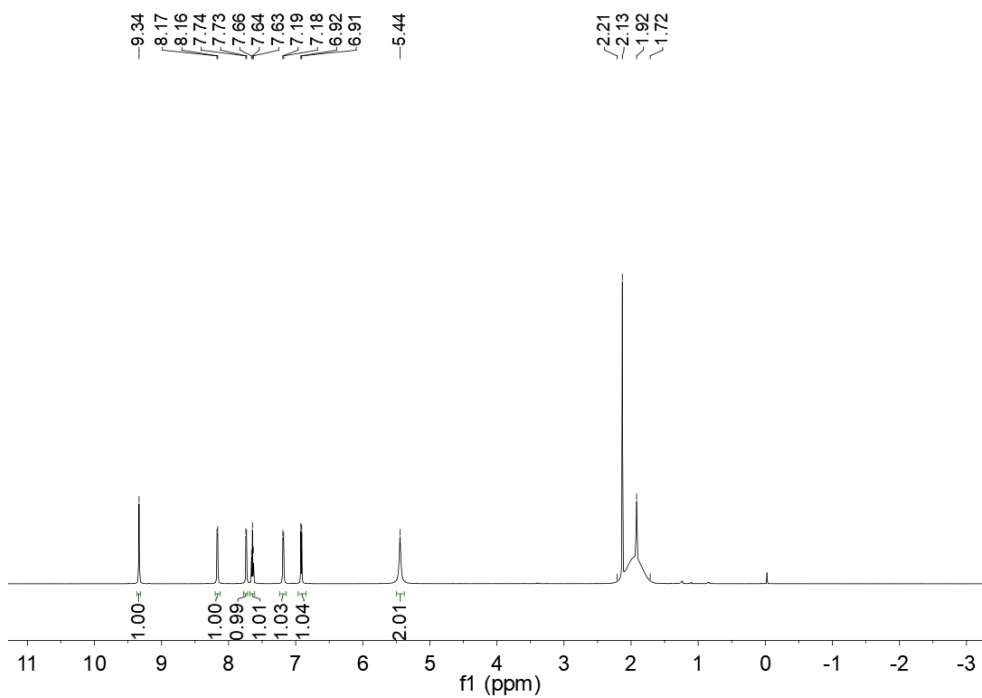
found: 185.1584.



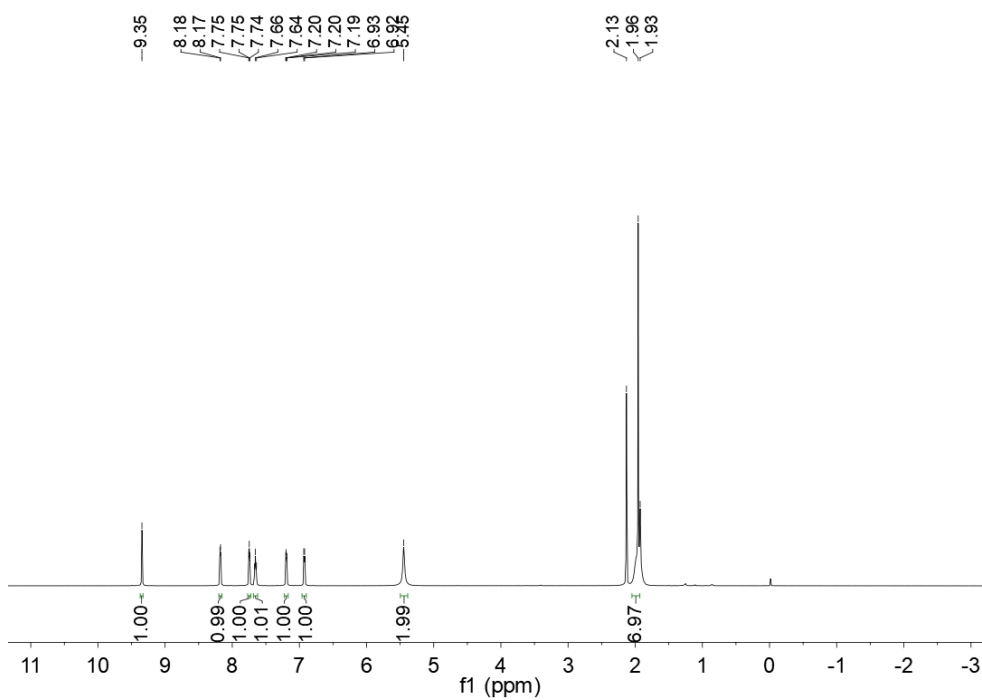
The ^{11}B NMR spectrum of the prepared **28** in CD_3CN .



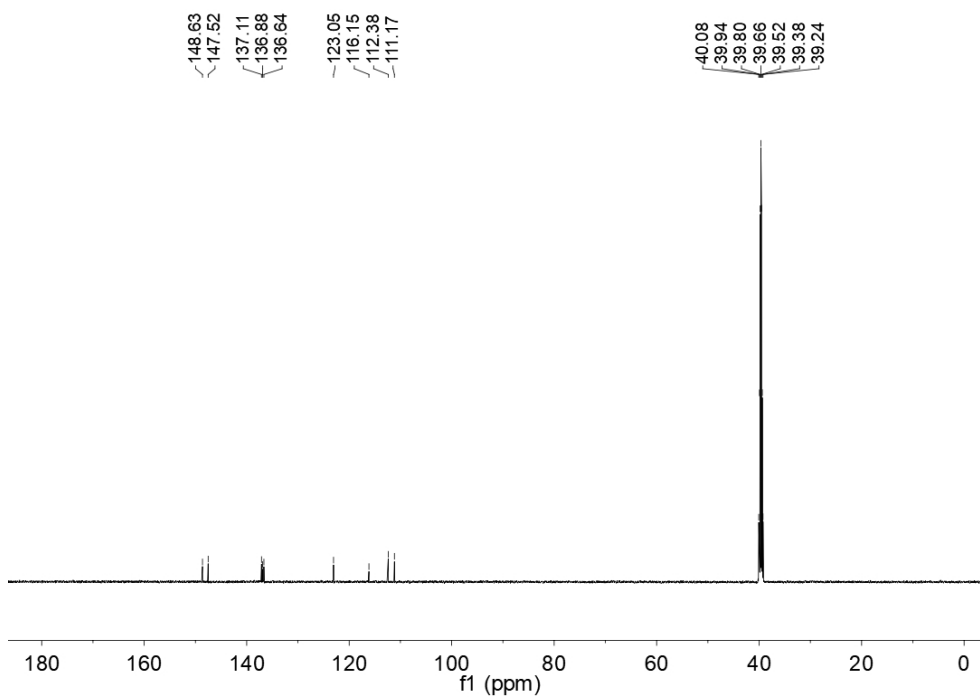
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **28** in CD_3CN .



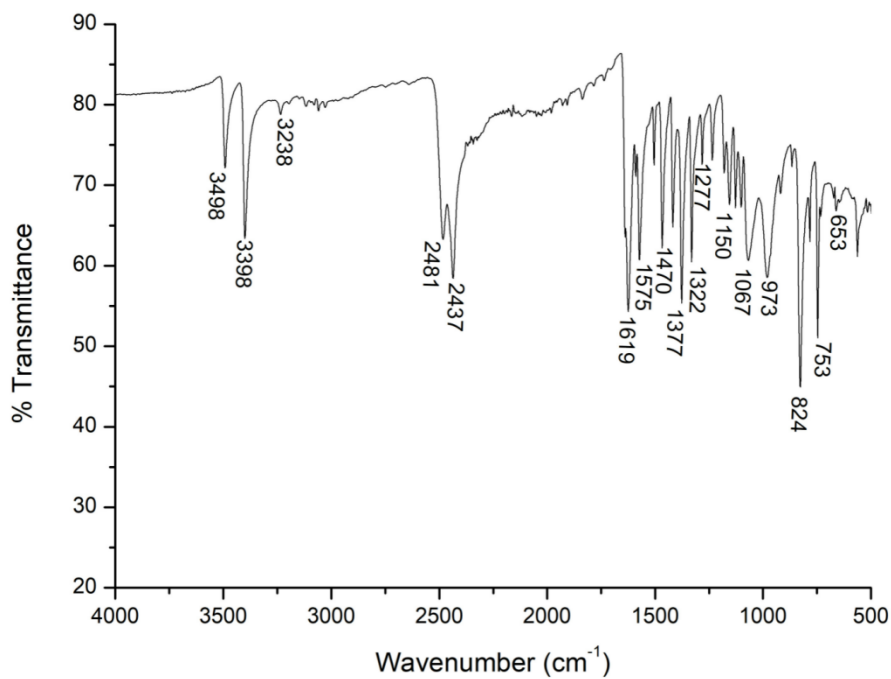
The ^1H NMR spectrum of the prepared **28** in CD_3CN .



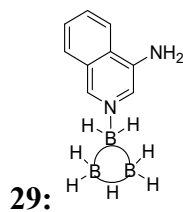
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **28** in CD_3CN .



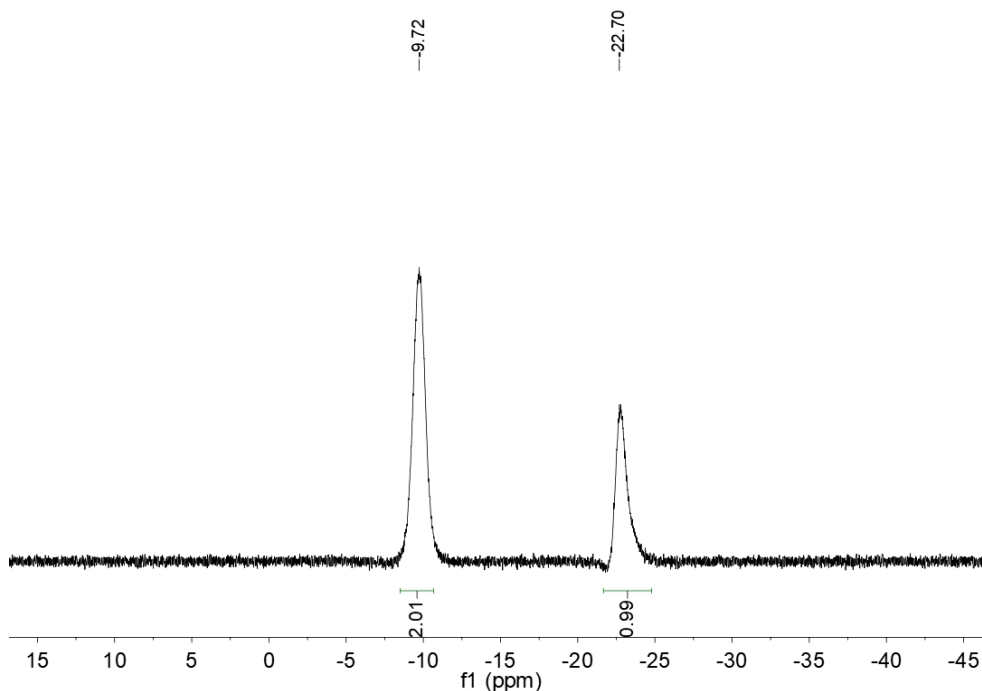
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **28** in DMSO.



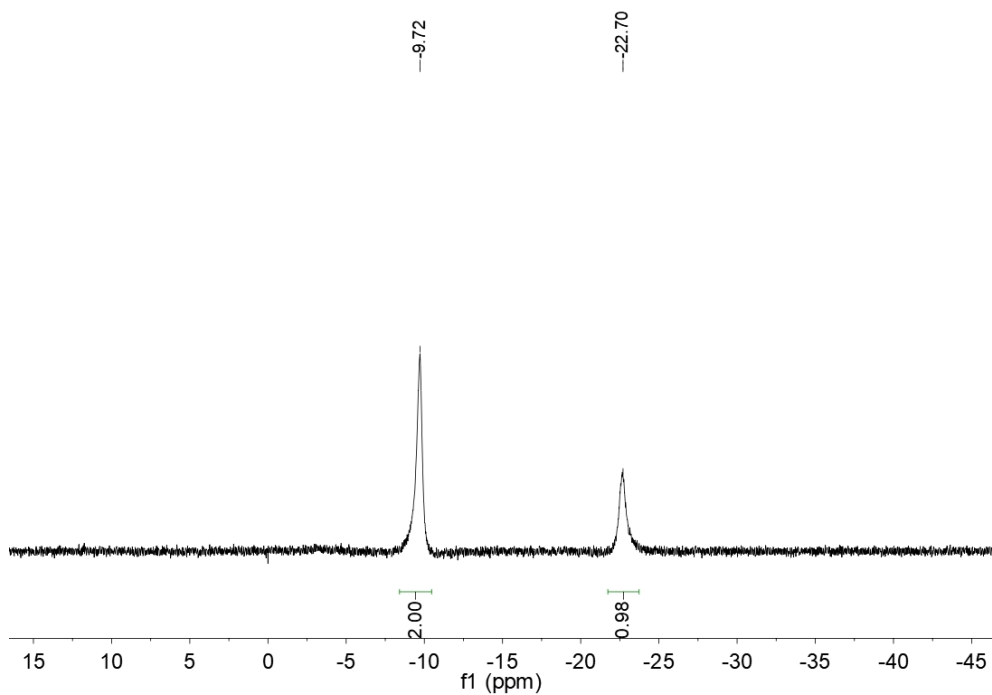
The IR spectrum of the prepared **28**.



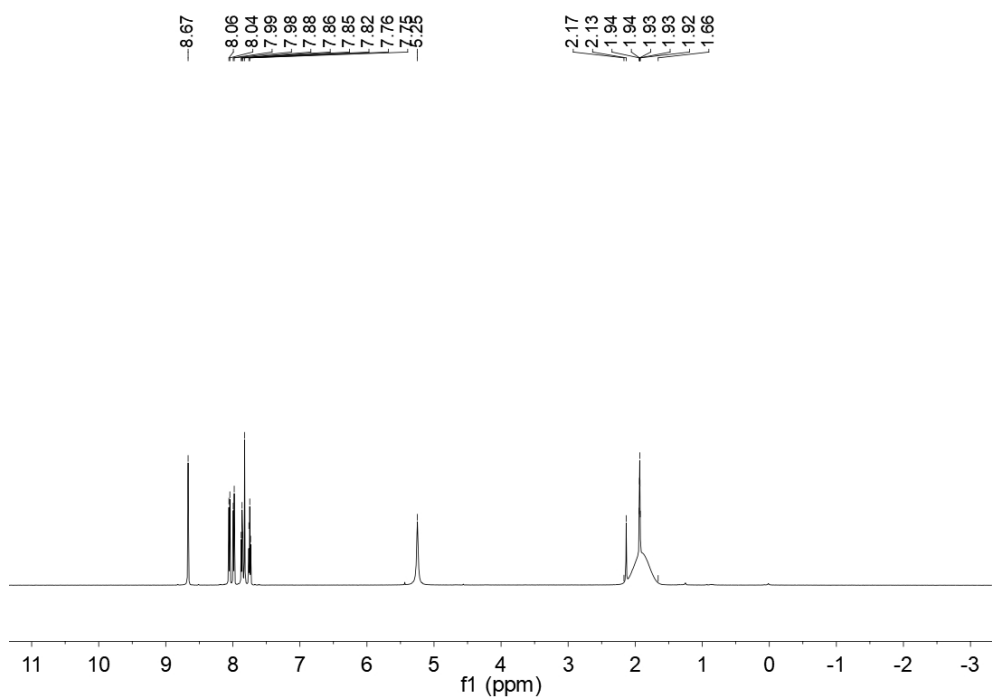
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:2). Yield 80%, white solid. ¹¹B NMR (193 MHz, CD₃CN): δ -9.72 (*br*, 2 B of **BHB**), -22.70 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CD₃CN): δ -9.72 (*br*, 2 B of **BHB**), -22.70 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CD₃CN): δ 8.67 (*s*, H of **CH**), 8.05 (*d*, H of **CH**), 7.99 (*d*, H of **CH**), 7.86 (*t*, H of **CH**), 7.82 (*s*, H of **CH**), 7.75 (*t*, H of **CH**), 5.25 (*s*, 2 H of **NH₂**), 2.17-1.66 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CD₃CN): δ 8.67 (*s*, H of **CH**), 8.06 (*d*, H of **CH**), 7.99 (*t*, H of **CH**), 7.87 (*t*, H of **CH**), 7.83 (*t*, H of **CH**), 7.75 (*t*, H of **CH**), 5.25 (*s*, 2 H of **NH₂**), 1.91 (*s*, 7 H of B₃**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CD₃CN): δ 142.50 (*s*, 1 C), 140.38 (*s*, 1 C), 133.19 (*s*, 1 C), 130.38 (*s*, 1 C), 129.96 (*s*, 1 C), 129.26 (*s*, 1 C), 126.94 (*s*, 1 C), 122.86 (*s*, 1 C), 121.94 (*s*, 1 C) ppm. IR (cm⁻¹): 3480 (*w*), 3378 (*w*), 2482 (*m*), 2425 (*m*), 1620 (*s*), 1507 (*m*), 1428 (*s*), 1343 (*w*), 1151 (*m*), 1100 (*m*), 992 (*m*), 845 (*m*), 776 (*s*), 743 (*m*), 590 (*w*). HRMS *m/z* calcd for C₉H₁₅B₃N₂ [M+Na]⁺: 207.1411, found: 207.1410.



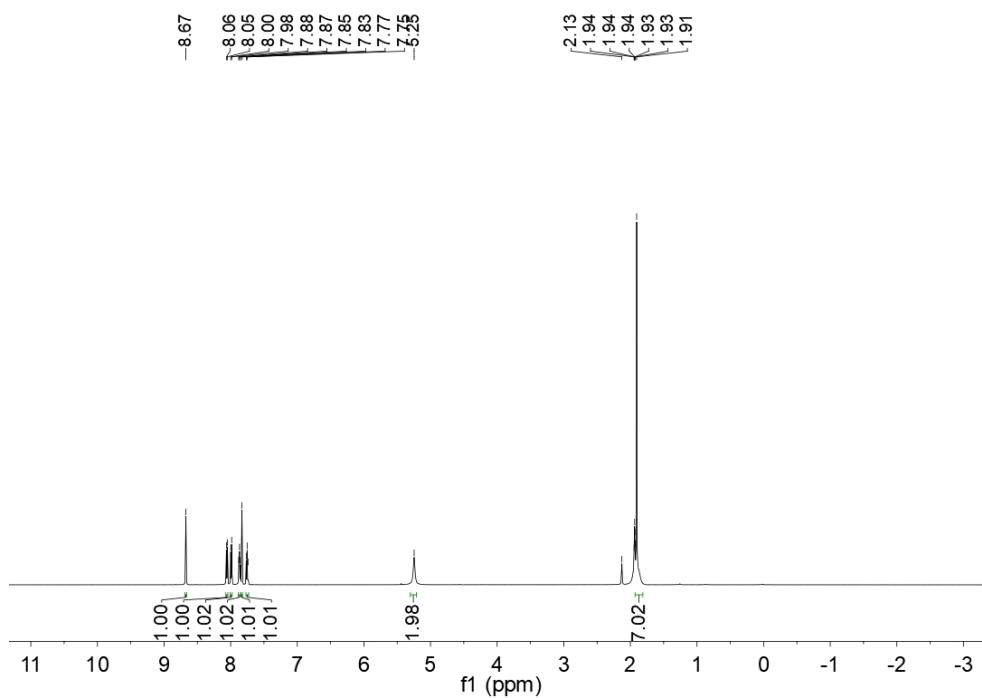
The ¹¹B NMR spectrum of the prepared **29** in CD₃CN.



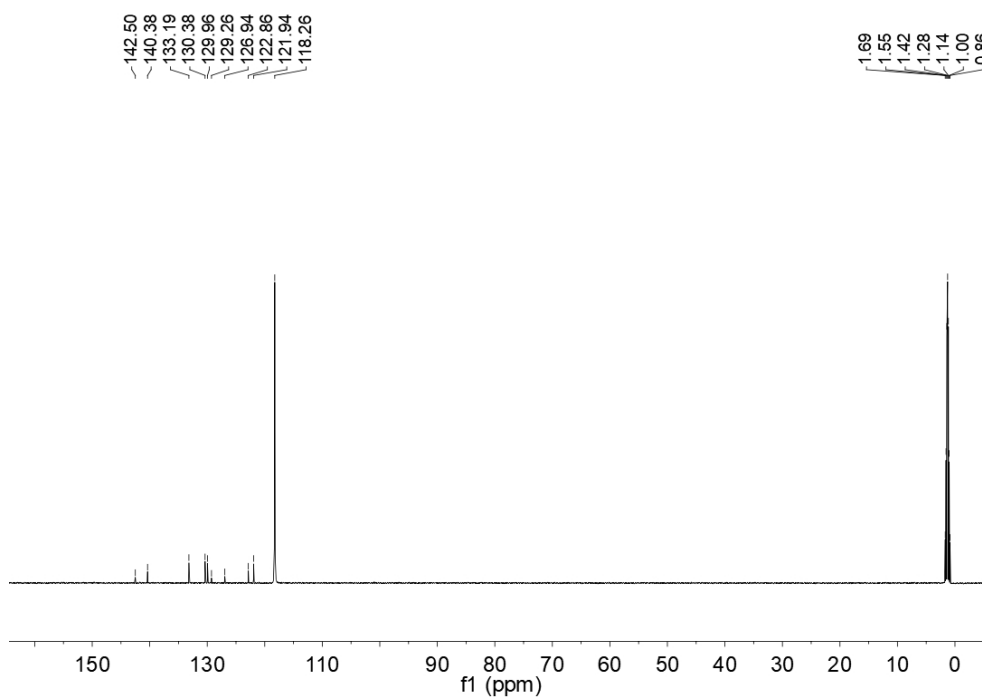
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **29** in CD_3CN .



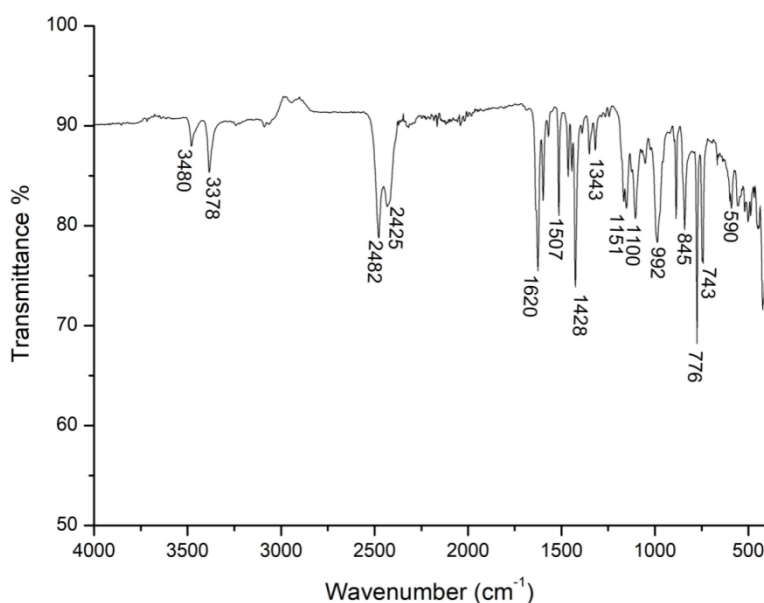
The ^1H NMR spectrum of the prepared **29** in CD_3CN .



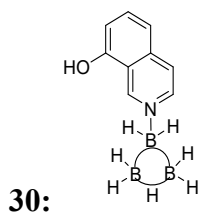
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **29** in CD_3CN .



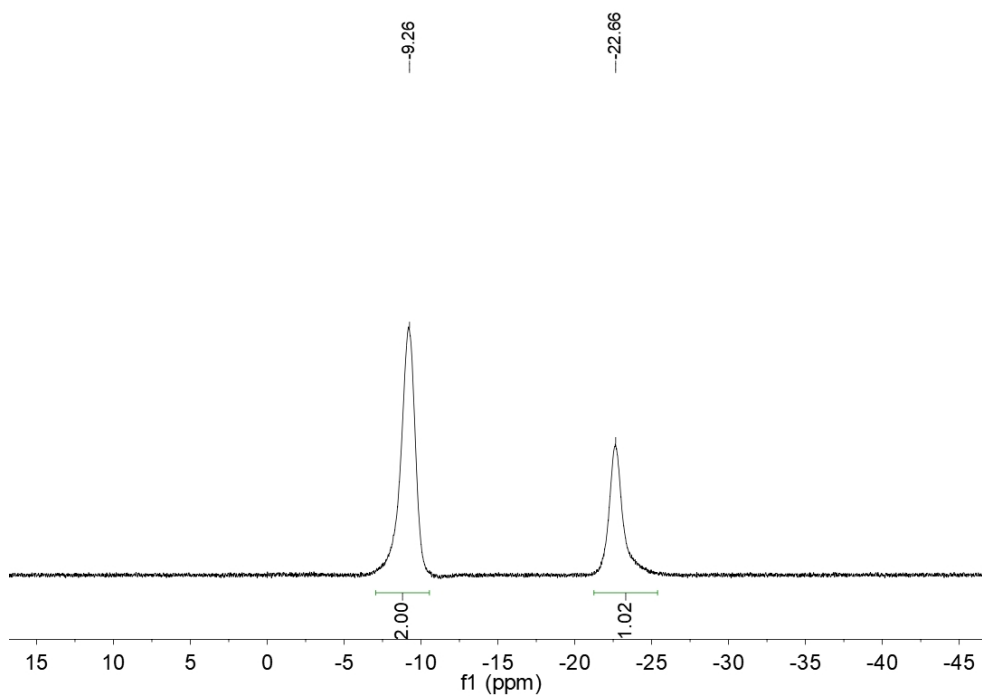
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **29** in CD_3CN .



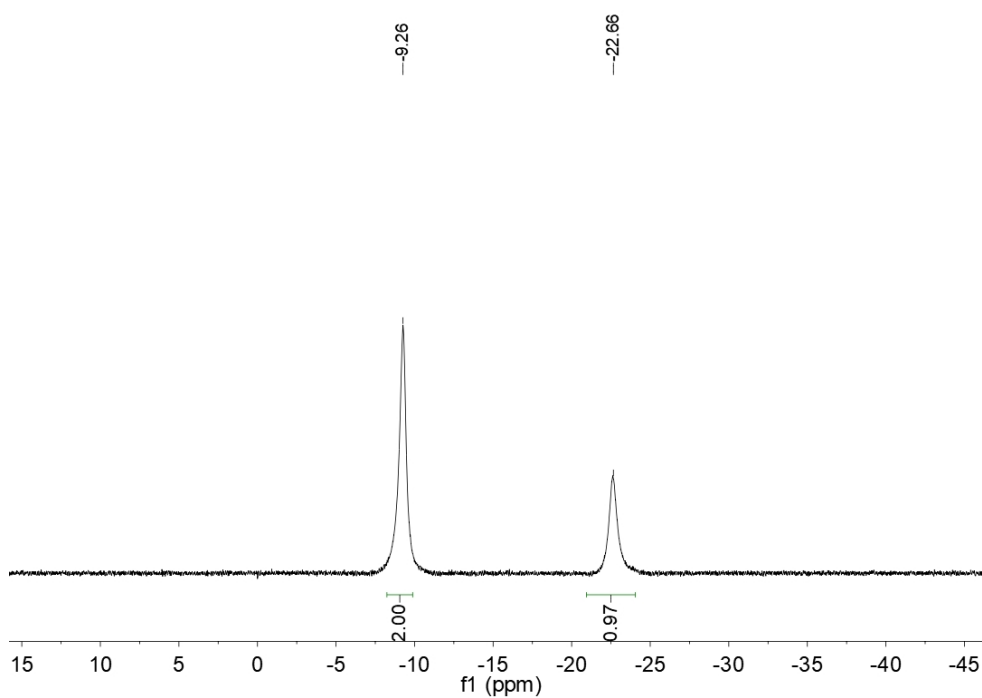
The IR spectrum of the prepared **29**.



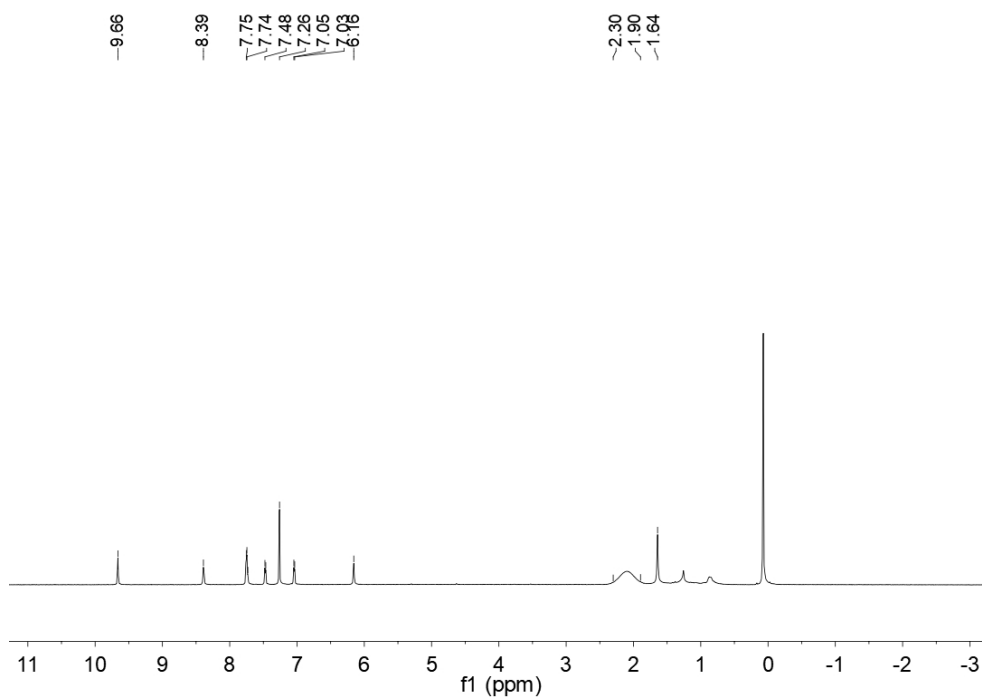
Flash chromatography (silica gel, CH₂Cl₂). Yield 73%, white solid, melting point: 105-106 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -9.26 (*br*, 2 B of **BHB**), -22.66 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -9.26 (*br*, 2 B of **BHB**), -22.66 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.66 (*s*, H of **OH**), 8.39 (*s*, H of **CH**), 7.74 (*m*, 2 H of 2 **CH**), 7.47 (*d*, H of **CH**), 7.04 (*d*, H of **CH**), 6.16 (*s*, H of **CH**), 2.30-1.90 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.66 (*s*, H of **OH**), 8.39 (*d*, H of **CH**), 7.74 (*m*, 2 H of 2 **CH**), 7.47 (*d*, H of **CH**), 7.04 (*d*, H of **CH**), 6.12 (*s*, H of **CH**), 2.10 (*s*, 7 H of B₃**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 153.84 (*s*, 1 C), 147.38 (*s*, 1 C), 139.32 (*s*, 1 C), 137.47 (*s*, 1 C), 135.49 (*s*, 1 C), 122.48 (*s*, 1 C), 119.37 (*s*, 1 C), 118.72 (*s*, 1 C), 112.26 (*s*, 1 C) ppm. IR (cm⁻¹): 3476 (*m*), 2962 (*w*), 2493 (*s*), 2432 (*s*), 1636 (*m*), 1570 (*m*), 1476 (*w*), 1377 (*s*), 1333 (*m*), 1255 (*m*), 1089 (*m*), 1023 (*m*), 957 (*w*), 829 (*s*), 742 (*m*), 658 (*w*). HRMS *m/z* calcd for C₉H₁₄B₃NO [M+Na]⁺: 208.1251, found: 208.1251.



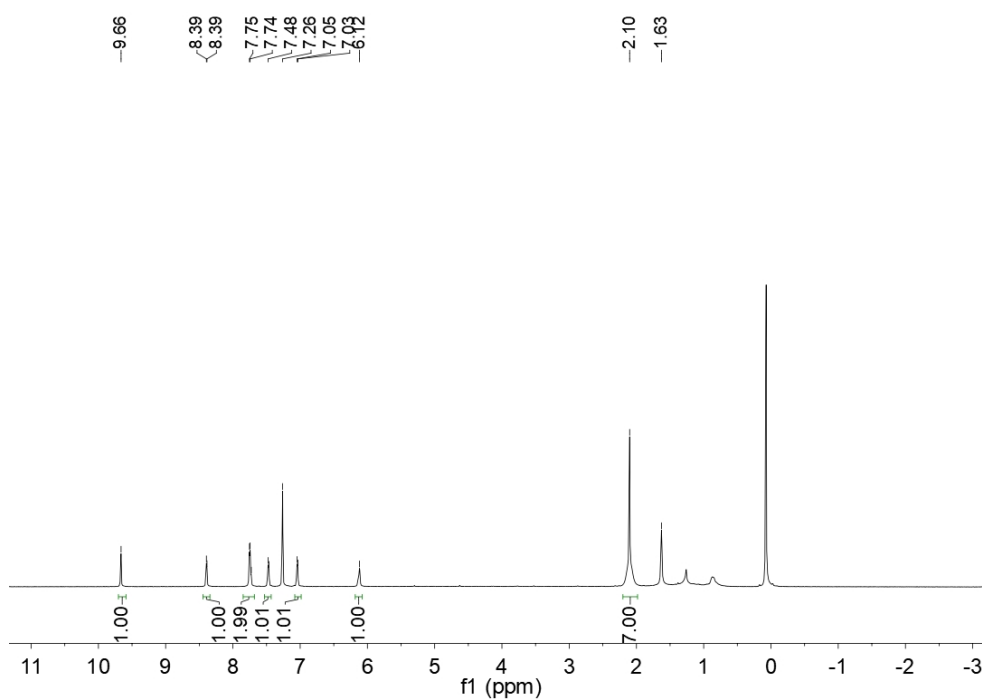
The ^{11}B NMR spectrum of the prepared **30** in CDCl_3 .



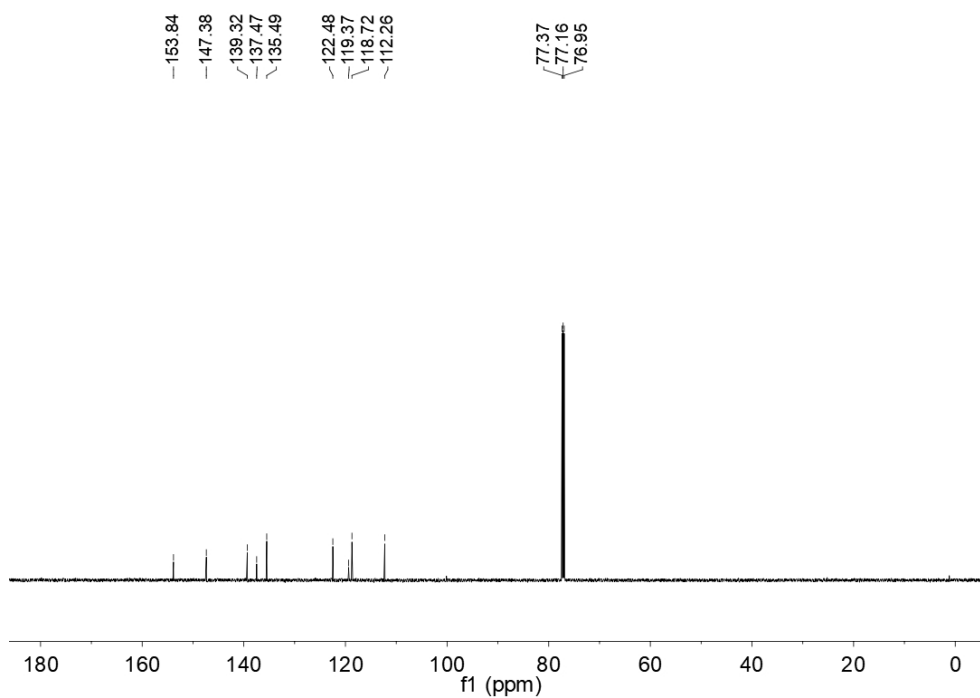
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **30** in CDCl_3 .



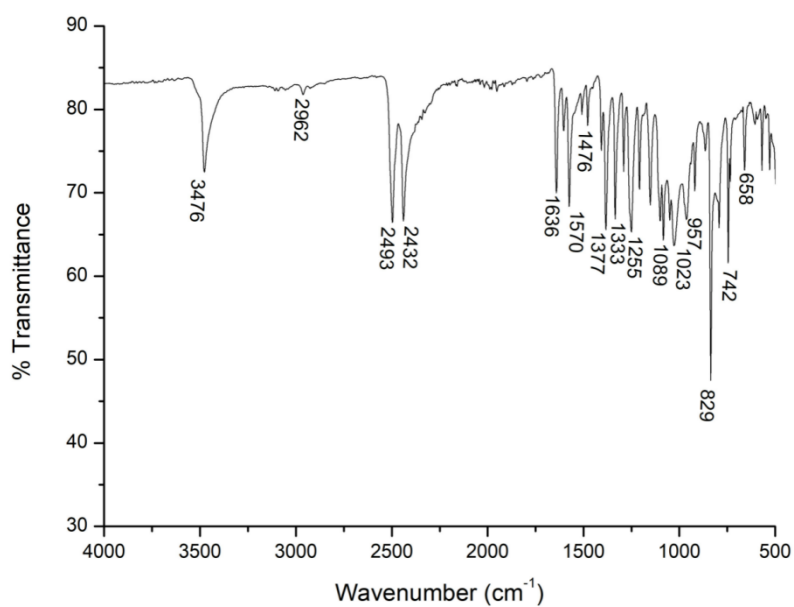
The ^1H NMR spectrum of the prepared **30** in CDCl_3 .



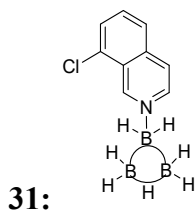
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **30** in CDCl_3 .



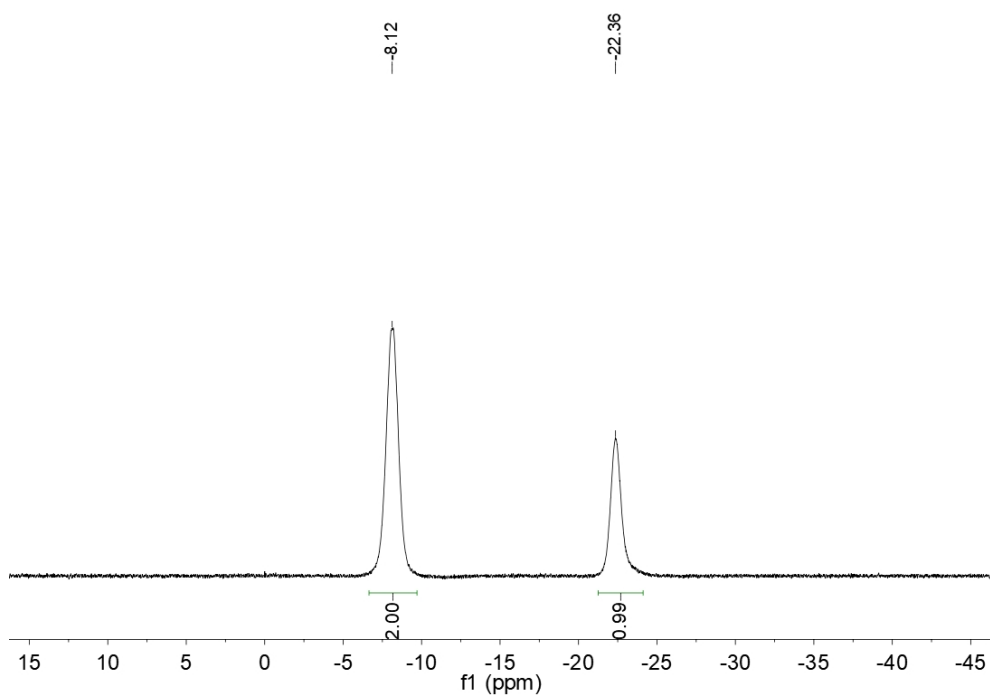
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **30** in CDCl_3 .



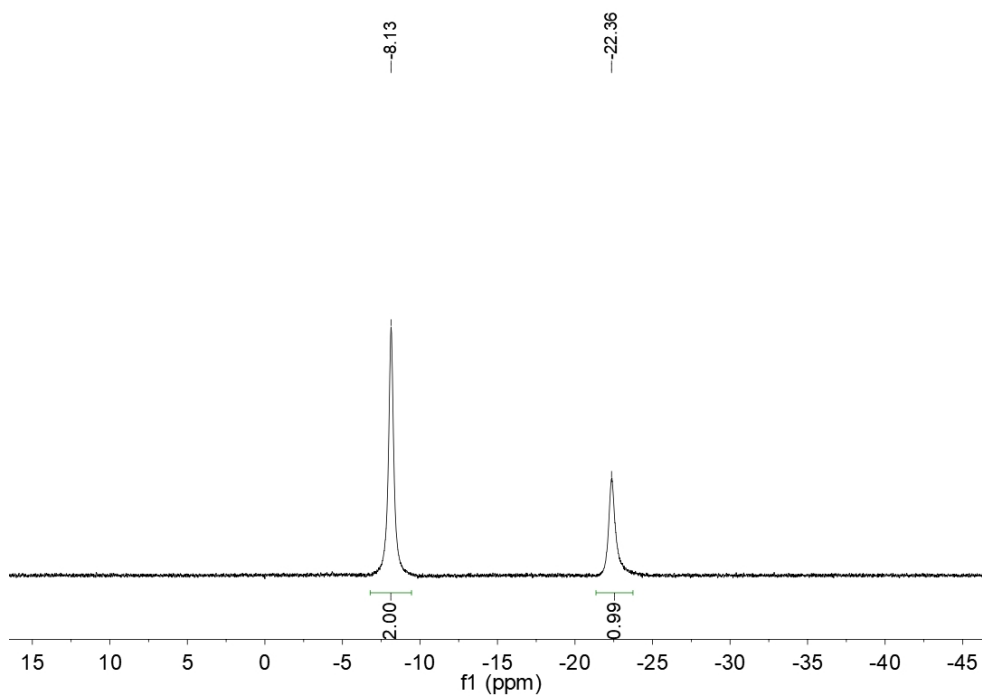
The IR spectrum of the prepared **30**.



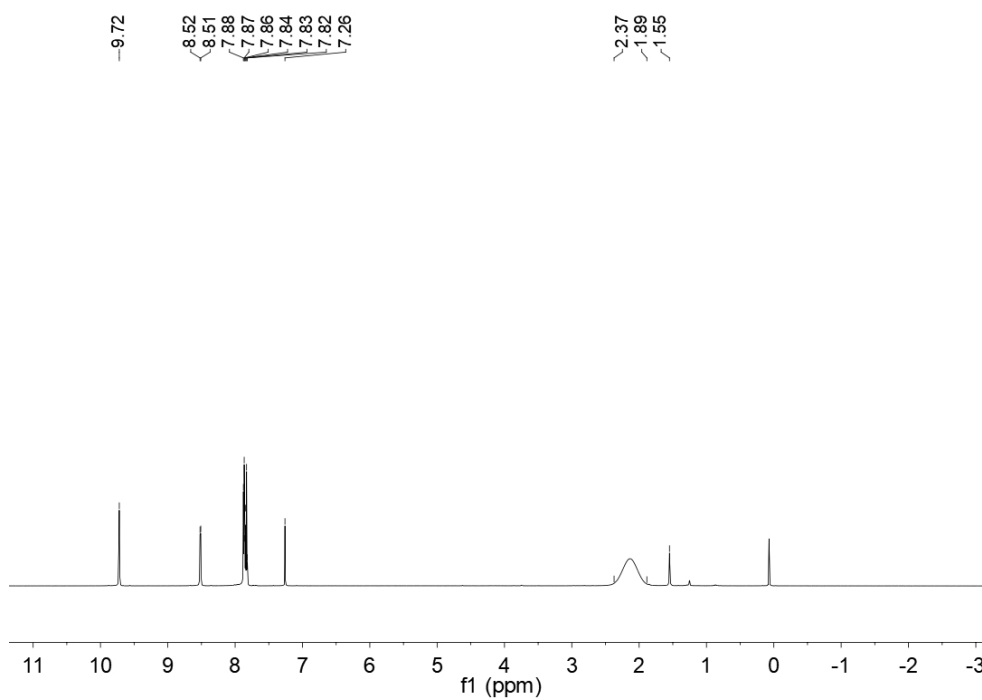
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 3:1). Yield 81%, white solid, melting point: 99-100 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.12 (*br*, 2 B of **BHB**), -22.36 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.13 (*br*, 2 B of **BHB**), -22.36 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.72 (*s*, H of **CH**), 8.52 (*d*, H of **CH**), 7.85 (*m*, 4 H of 4 **CH**), 2.39-1.89 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.72 (*s*, H of **CH**), 8.52 (*d*, H of **CH**), 7.85 (*m*, 4 H of 4 **CH**), 2.13 (*s*, 7 H of B₃**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 148.81 (*s*, 1 C), 140.24 (*s*, 1 C), 137.96 (*s*, 1 C), 134.49 (*s*, 1 C), 134.00 (*s*, 1 C), 130.10 (*s*, 1 C), 125.85 (*s*, 1 C), 125.74 (*s*, 1 C), 123.12 (*s*, 1 C) ppm. IR (cm⁻¹): 3122 (*w*), 3067 (*w*), 2481 (*s*), 2426 (*s*), 1630 (*m*), 1548 (*m*), 1498 (*w*), 1377 (*s*), 1316 (*w*), 1266 (*m*), 1145 (*m*), 1067 (*m*), 979 (*s*), 929 (*m*), 829 (*s*), 753 (*m*), 686 (*m*), 630 (*m*). HRMS *m/z* calcd for C₉H₁₃B₃NCl [M+Na]⁺: 226.0914; found: 226.0915.



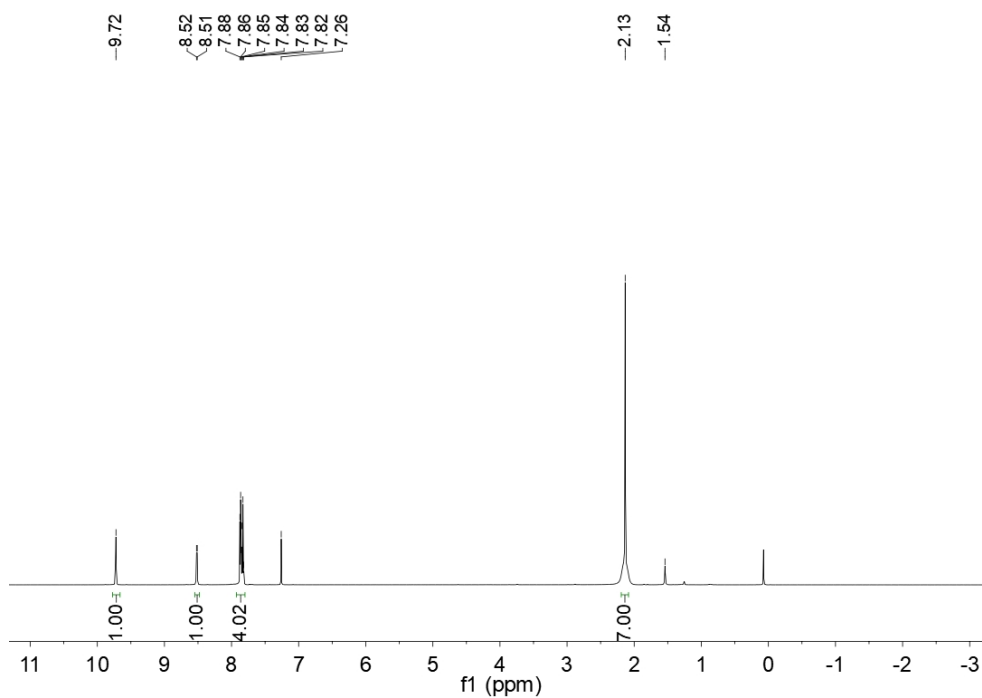
The ¹¹B NMR spectrum of the prepared **31** in CDCl₃.



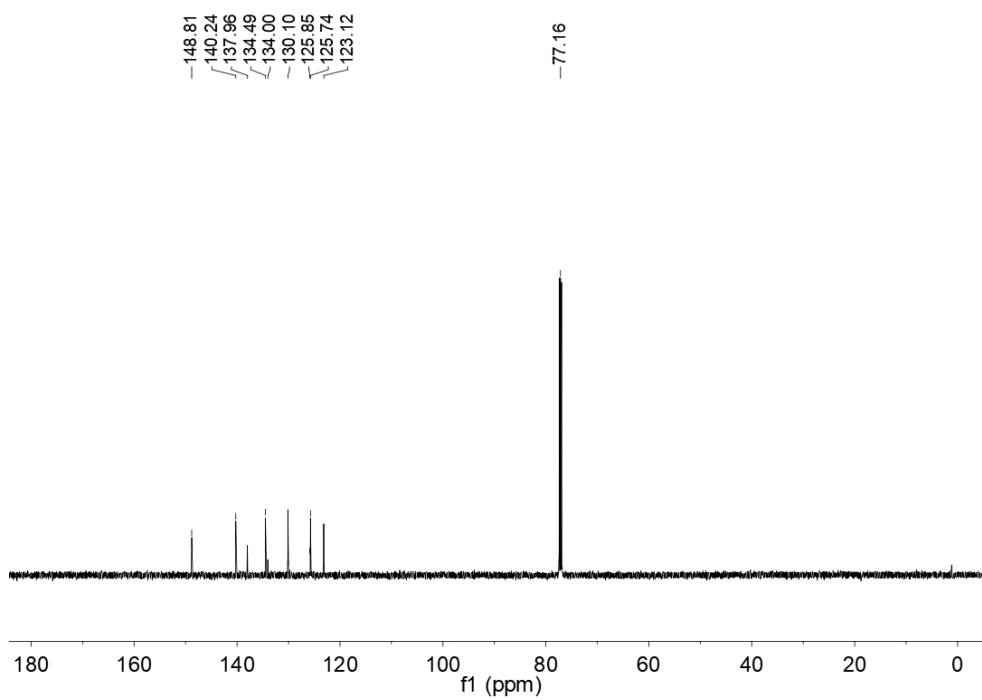
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **31** in CDCl_3 .



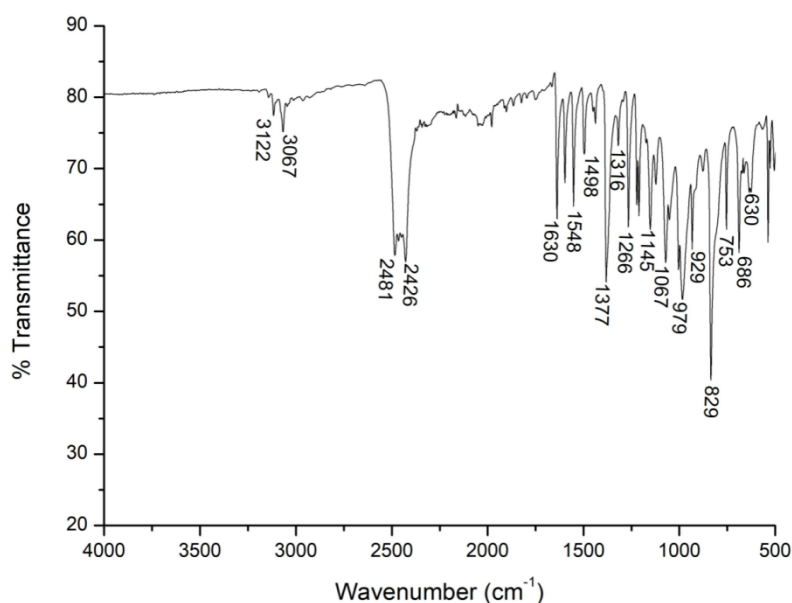
The ^1H NMR spectrum of the prepared **31** in CDCl_3 .



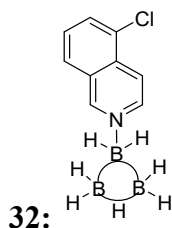
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **31** in CDCl_3 .



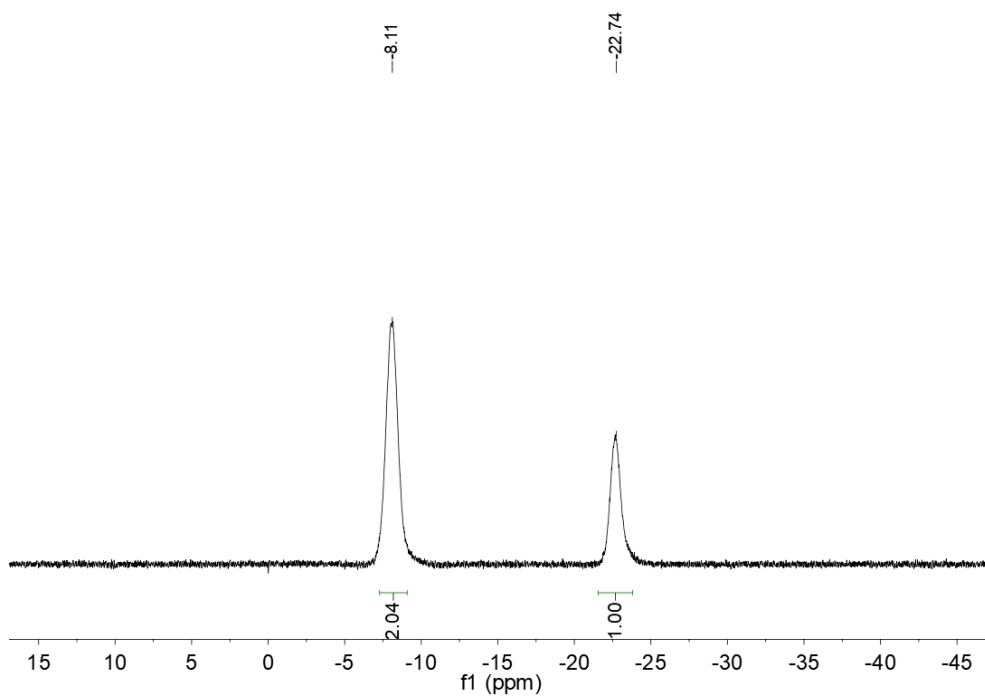
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **31** in CDCl_3 .



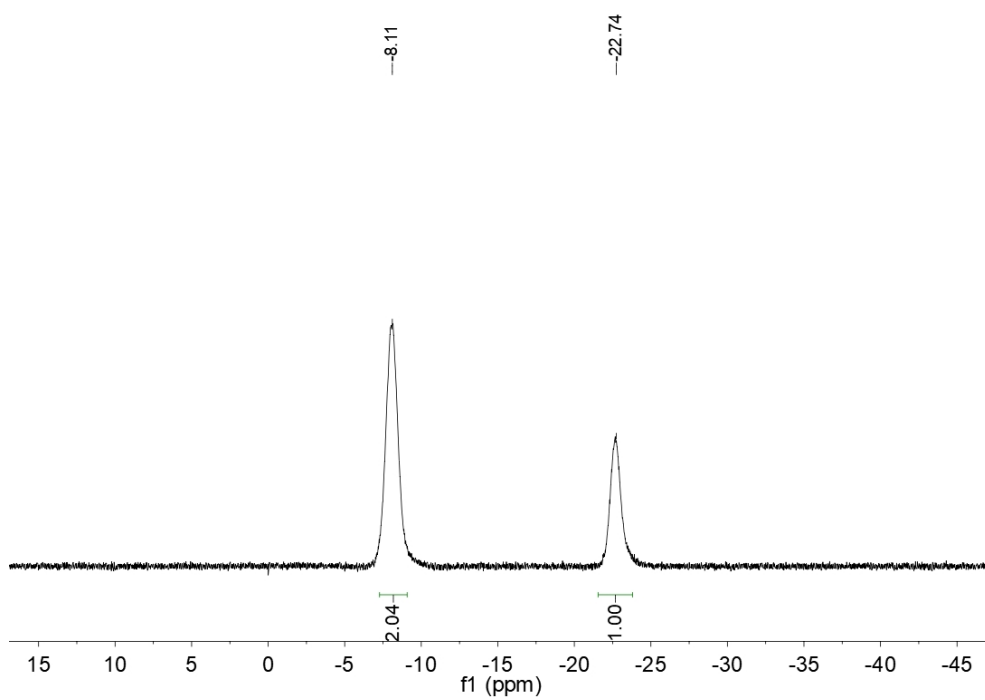
The IR spectrum of the prepared **31**.



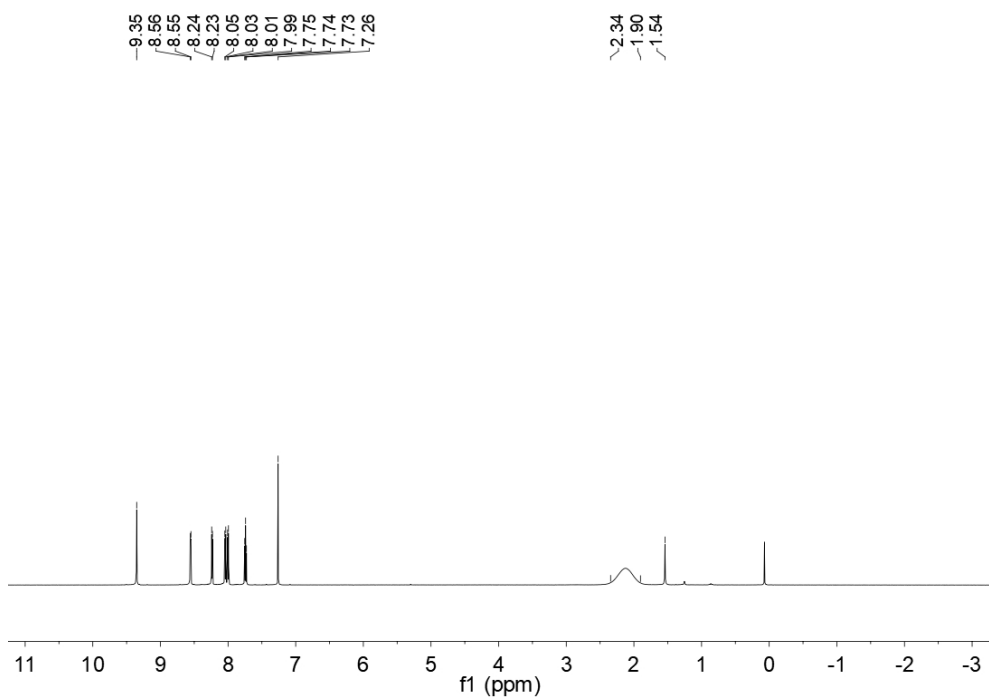
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 3:1). Yield 75%, white solid, melting point: 92-93 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.11 (*br*, 2 B of **BHB**), -22.74 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.11 (*br*, 2 B of **BHB**), -22.74 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.35 (*s*, H of **CH**), 8.56 (*d*, H of **CH**), 8.24 (*d*, H of **CH**), 8.04 (*d*, H of **CH**), 8.00 (*d*, H of **CH**), 7.74 (*t*, H of **CH**), 2.34-1.90 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.35 (*s*, H of **CH**), 8.56 (*d*, H of **CH**), 8.24 (*d*, H of **CH**), 8.04 (*d*, H of **CH**), 8.00 (*d*, H of **CH**), 7.74 (*t*, H of **CH**), 2.12 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 151.23 (*s*, 1 C), 140.57 (*s*, 1 C), 134.60 (*s*, 1 C), 134.14 (*s*, 1 C), 131.82 (*s*, 1 C), 130.03 (*s*, 1 C), 128.88 (*s*, 1 C), 128.03 (*s*, 1 C), 120.07 (*s*, 1 C) ppm. IR (cm⁻¹): 3099 (*w*), 2487 (*s*), 2437 (*s*), 2327 (*w*), 1636 (*m*), 1592 (*m*), 1487 (*m*), 1371 (*s*), 1327 (*m*), 1266 (*m*), 1156 (*s*), 1084 (*m*), 1039 (*m*), 973 (*m*), 907 (*m*), 791 (*s*), 753 (*s*), 692 (*m*). HRMS *m/z* calcd for C₉H₁₃B₃NCl [M+Na]⁺: 226.0914, found: 226.0914.



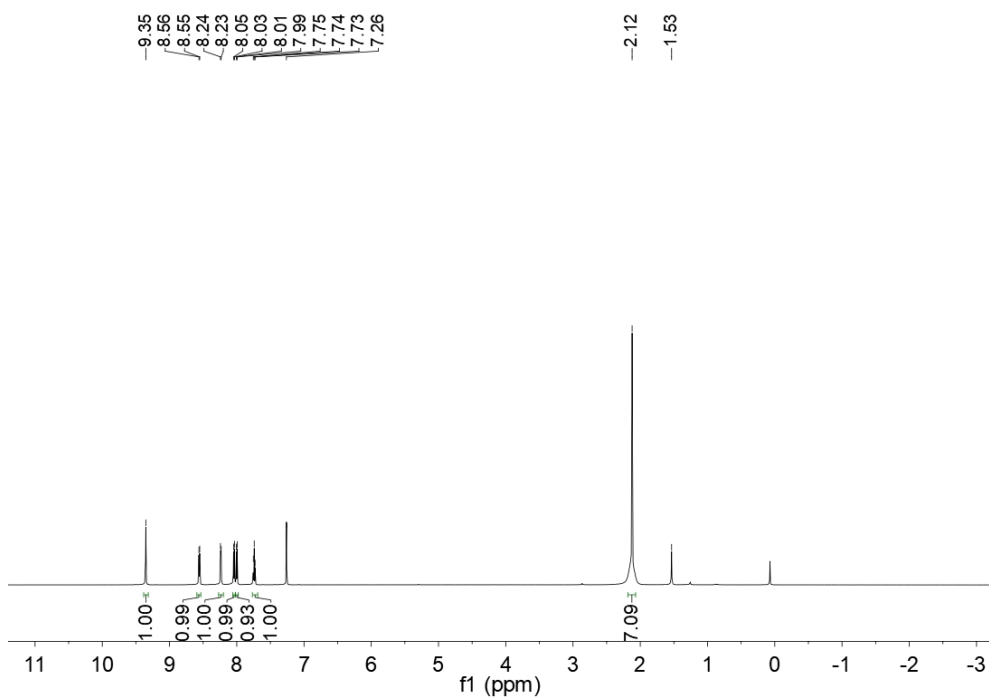
The ^{11}B NMR spectrum of the prepared **32** in CDCl_3 .



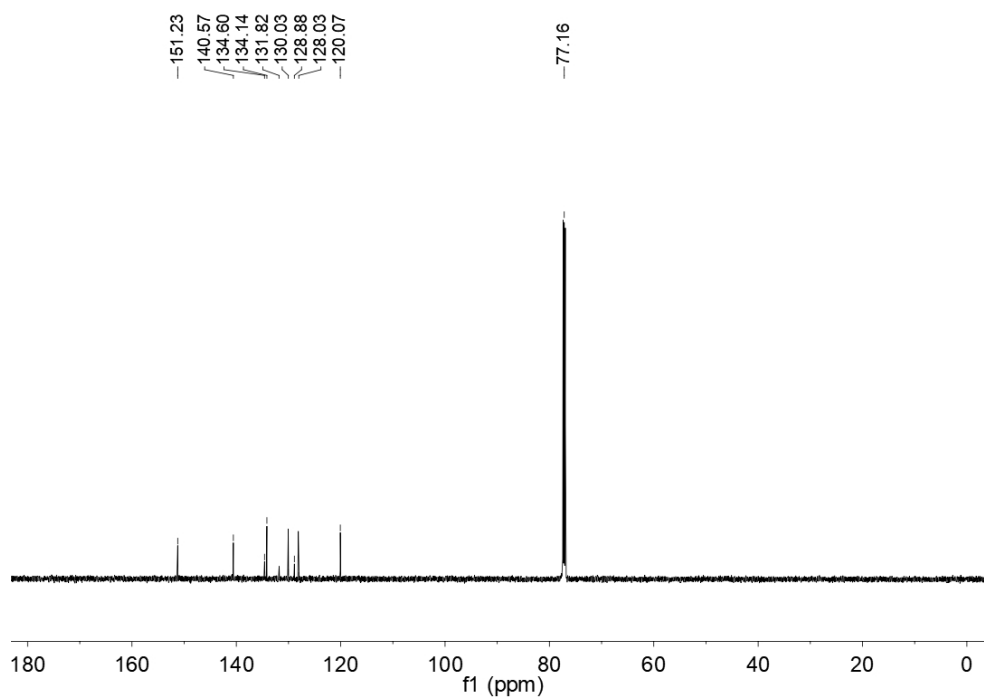
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **32** in CDCl_3 .



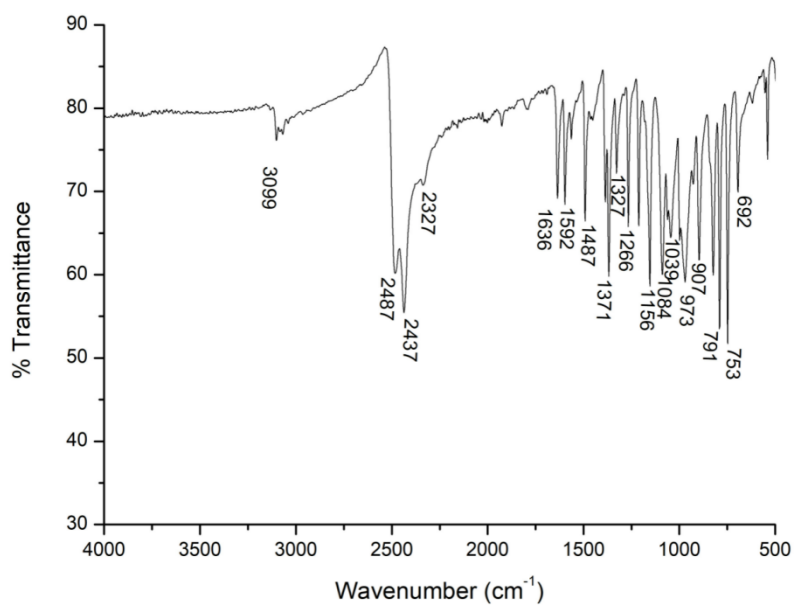
The ^1H NMR spectrum of the prepared **32** in CDCl_3 .



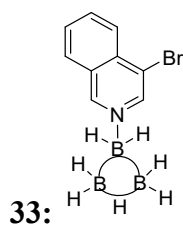
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **32** in CDCl_3 .



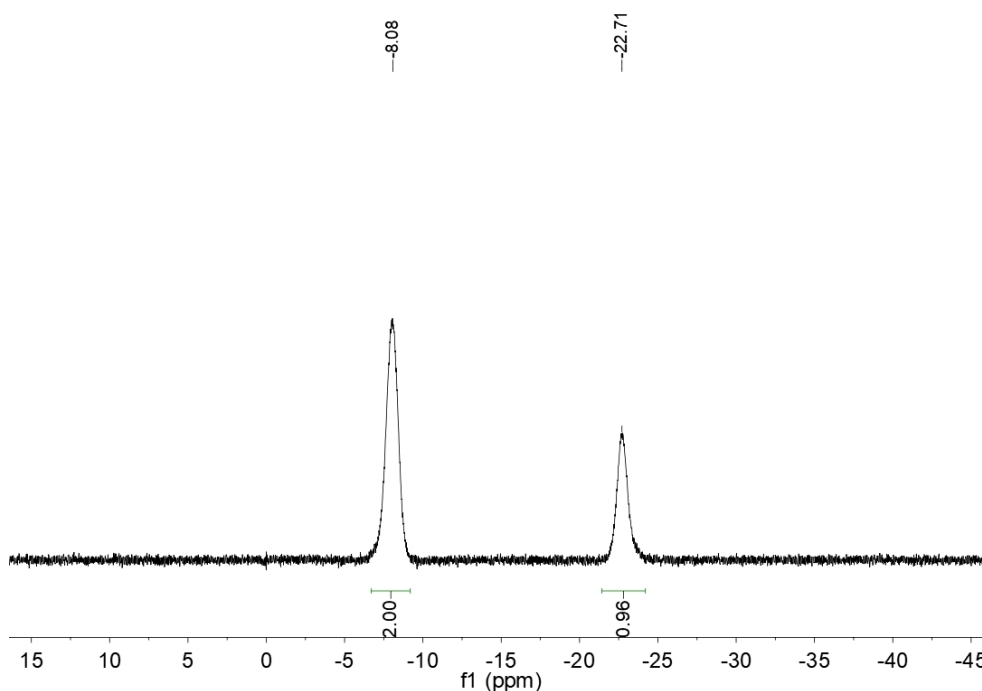
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **32** in CDCl_3 .



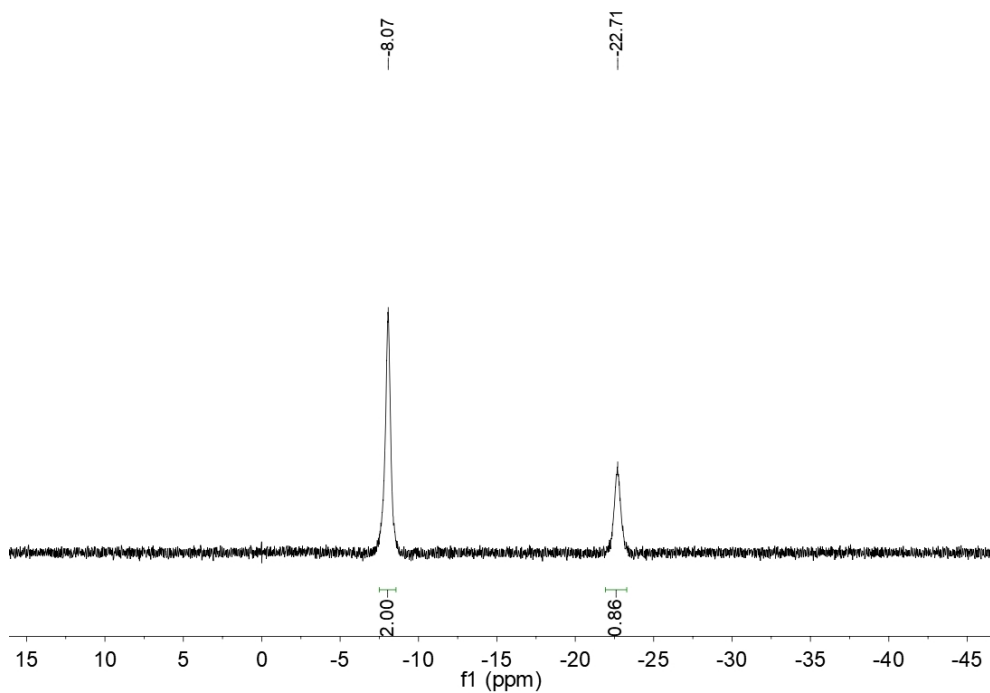
The IR spectrum of the prepared **32**.



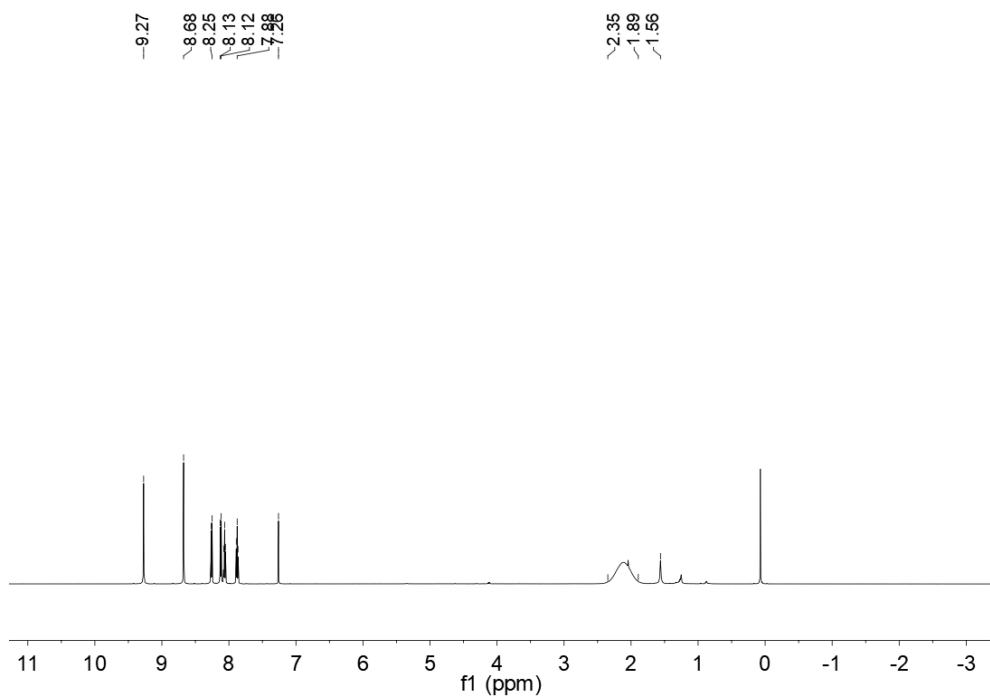
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 3:1). Yield 77%, white solid, melting point: 99-100 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.08 (*br*, 2 B of **BHB**), -22.71 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.07 (*br*, 2 B of **BHB**), -22.71 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.27 (*s*, H of **CH**), 8.68 (*s*, H of **CH**), 8.26 (*d*, H of **CH**), 8.13 (*d*, H of **CH**), 8.06 (*t*, H of **CH**), 7.88 (*t*, H of **CH**), 2.35-1.89 (*br*, 7 H of B_{3**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.27 (*s*, H of **CH**), 8.68 (*s*, H of **CH**), 8.26 (*d*, H of **CH**), 8.12 (*d*, H of **CH**), 8.06 (*t*, H of **CH**), 7.88 (*t*, H of **CH**), 2.11 (*s*, 7 H of B_{3**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 150.47 (*s*, 1 C), 140.84 (*s*, 1 C), 135.88 (*s*, 1 C), 135.78 (*s*, 1 C), 130.75 (*s*, 1 C), 129.72 (*s*, 1 C), 128.17 (*s*, 1 C), 126.40 (*s*, 1 C), 120.59 (*s*, 1 C) ppm. IR (cm⁻¹): 3092 (*w*), 2915 (*w*), 2497 (*s*), 2431 (*s*), 2333 (*w*), 1987 (*w*), 1757 (*w*), 1624 (*m*), 1557 (*w*), 1423 (*m*), 1375 (*s*), 1326 (*w*), 1266 (*m*), 1163 (*m*), 1096 (*w*), 957 (*m*), 878 (*m*), 841 (*w*), 756 (*s*), 697 (*w*), 538 (*m*). HRMS *m/z* calcd for C₉H₁₃B₃NBr [M+Na]⁺: 270.0414, found: 270.0414.}}



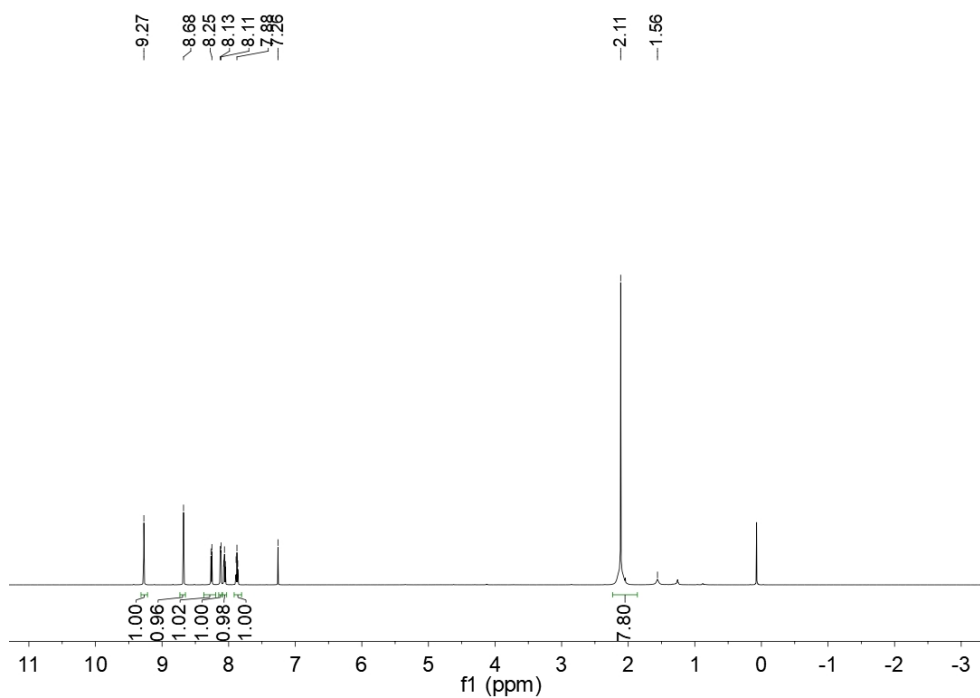
The ¹¹B NMR spectrum of the prepared **33** in CDCl₃.



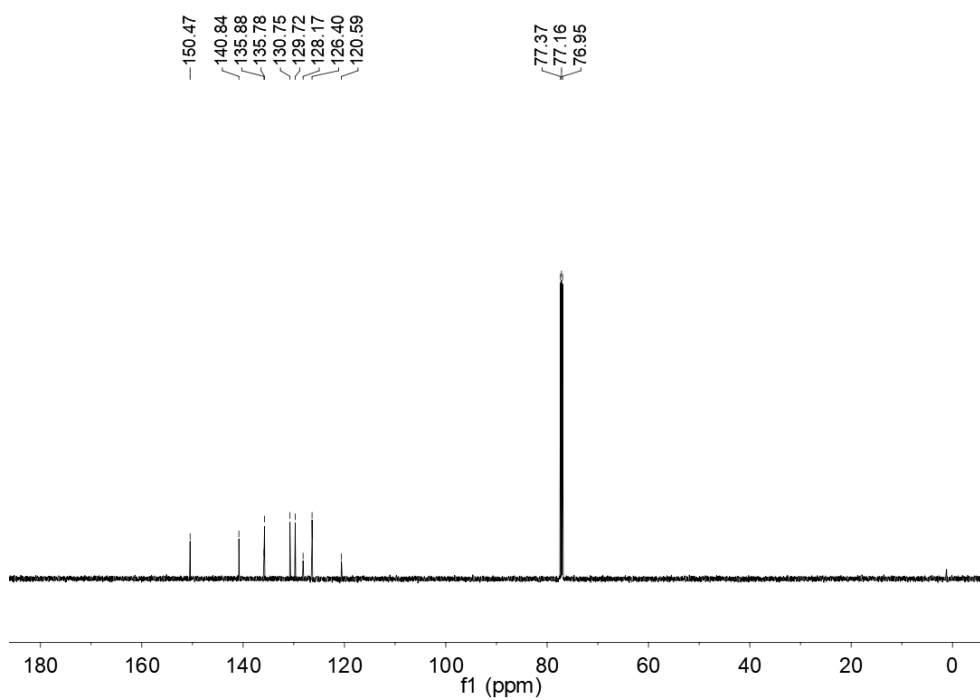
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **33** in CDCl_3 .



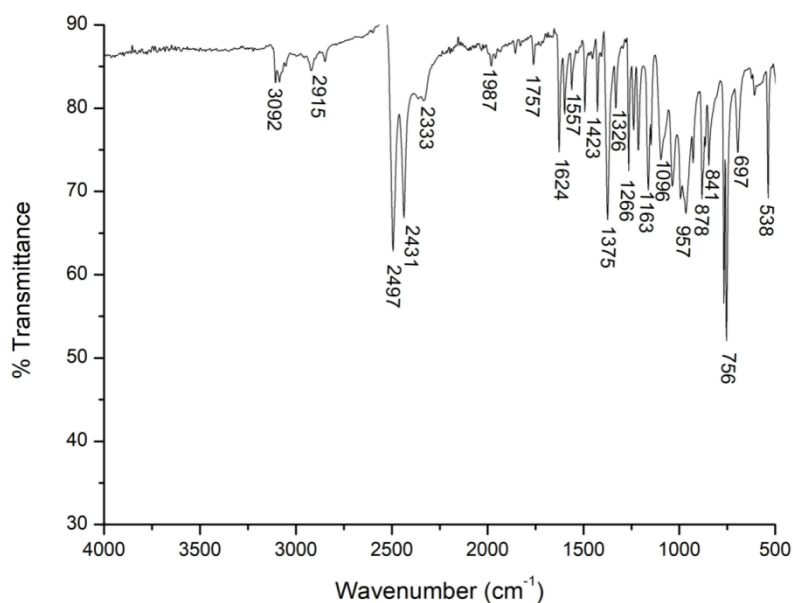
The ^1H NMR spectrum of the prepared **33** in CDCl_3 .



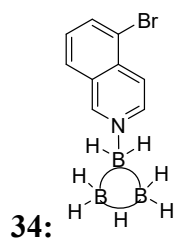
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **33** in CDCl_3 .



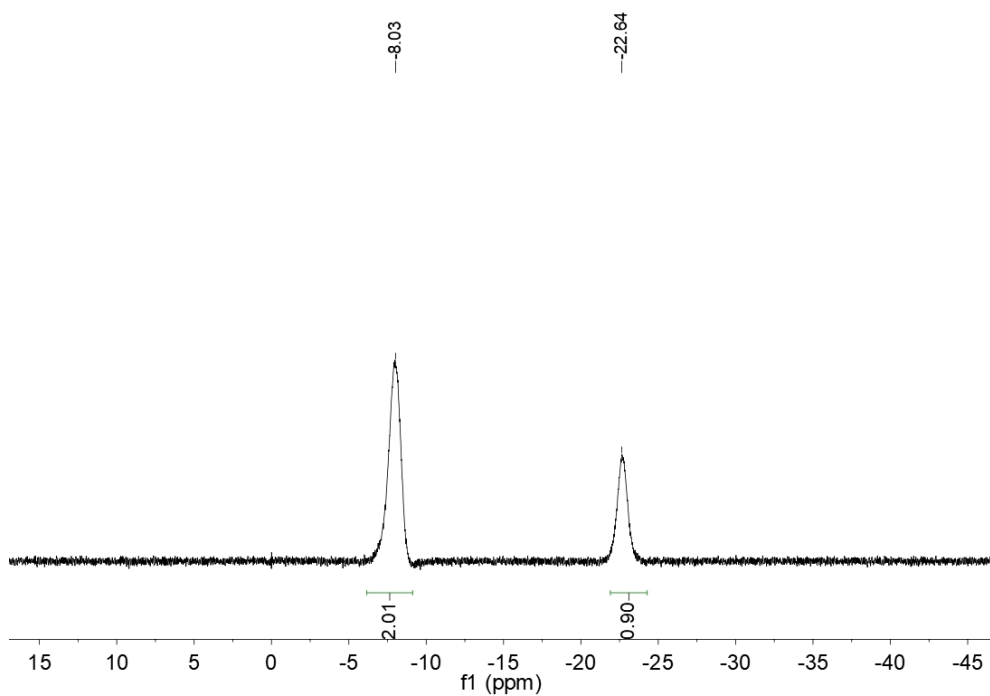
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **33** in CDCl_3 .



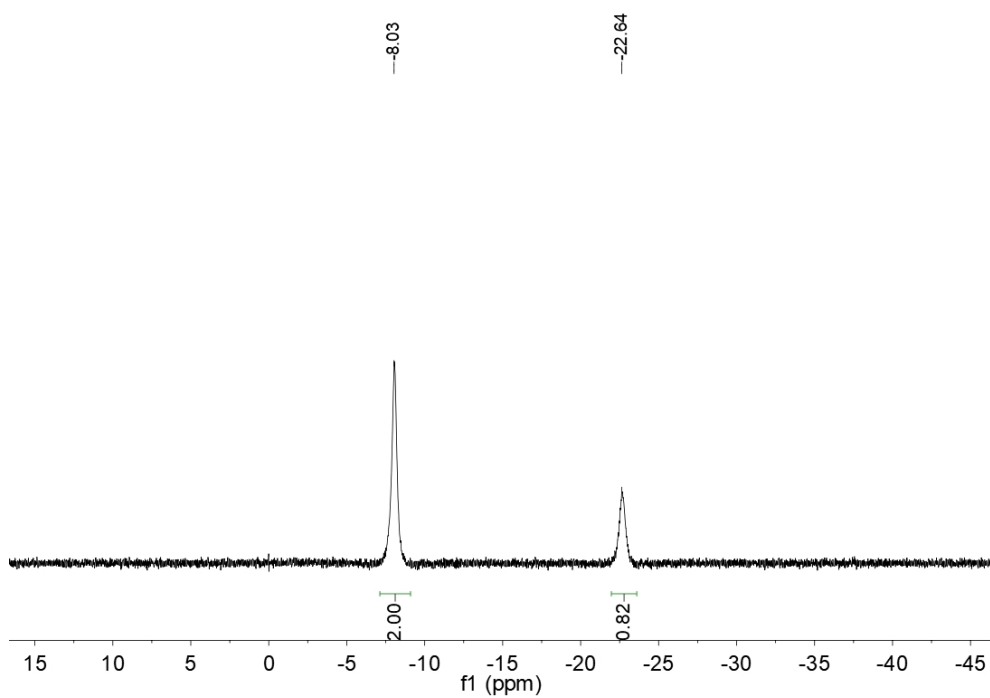
The IR spectrum of the prepared **33**.



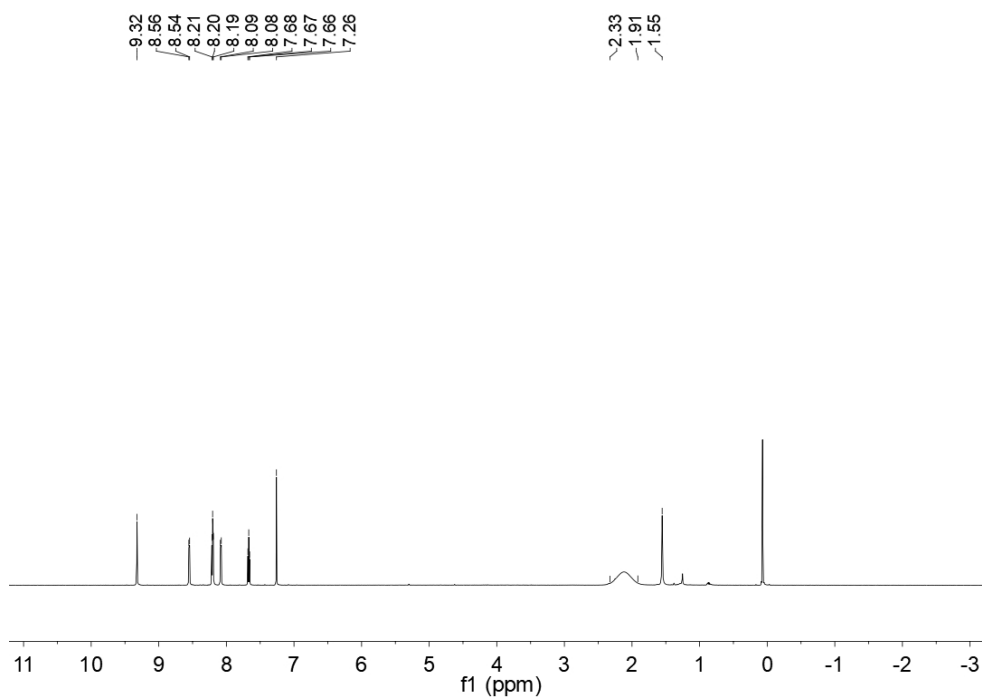
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 3:1). Yield 78%, white solid, melting point: 94-95 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.03 (*br*, 2 B of **BHB**), -22.64 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.03 (*br*, 2 B of **BHB**), -22.64 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.32 (*s*, H of **CH**), 8.55 (*s*, H of **CH**), 8.20 (*t*, 2 H of 2 **CH**), 8.09 (*d*, H of **CH**), 7.67 (*t*, H of **CH**), 2.33-1.91 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.32 (*s*, H of **CH**), 8.56 (*d*, H of **CH**), 8.21 (*t*, 2 H of 2 **CH**), 8.09 (*d*, H of **CH**), 7.67 (*t*, H of **CH**), 2.12 (*s*, 7 H of B₃**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 151.29 (*s*, 1 C), 140.75 (*s*, 1 C), 137.87 (*s*, 1 C), 135.93 (*s*, 1 C), 130.39 (*s*, 1 C), 128.94 (*s*, 1 C), 128.86 (*s*, 1 C), 122.56 (*s*, 1 C), 121.85 (*s*, 1 C) ppm. IR (cm⁻¹): 3116 (*w*), 3037 (*w*), 2491 (*s*), 2425 (*s*), 2303 (*w*), 1630 (*m*), 1587 (*m*), 1490 (*m*), 1447 (*w*), 1363 (*m*), 1302 (*m*), 1205 (*m*), 1145 (*s*), 1053 (*m*), 957 (*m*), 823 (*m*), 786 (*s*), 738 (*s*), 671 (*s*). HRMS *m/z* calcd for C₉H₁₃B₃NBr [M+Na]⁺: 270.0414, found: 270.0414.



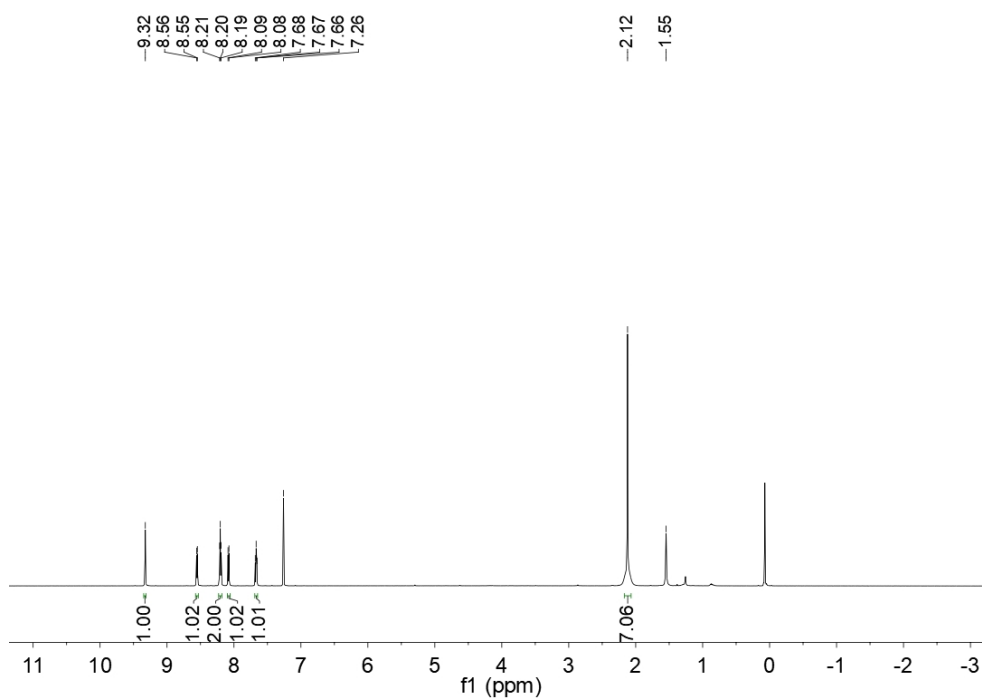
The ^{11}B NMR spectrum of the prepared **34** in CDCl_3 .



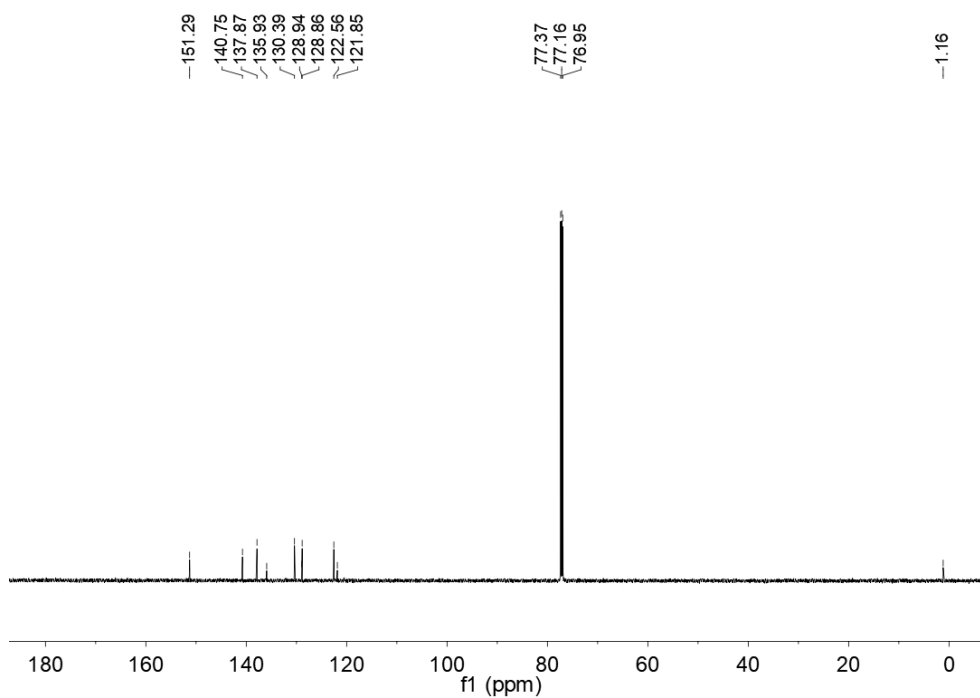
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **34** in CDCl_3 .



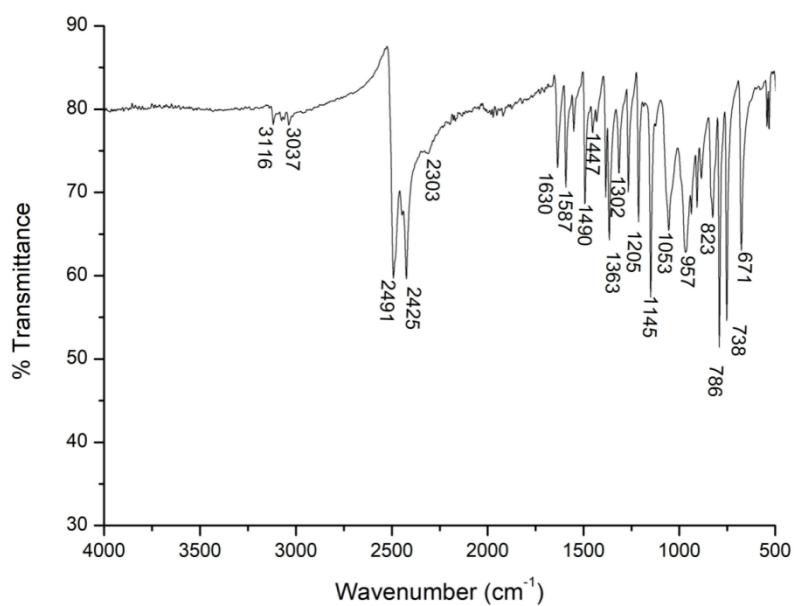
The ^1H NMR spectrum of the prepared **34** in CDCl_3 .



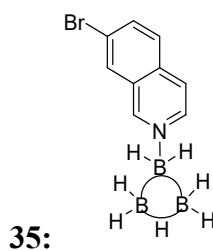
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **34** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **34** in CDCl_3 .

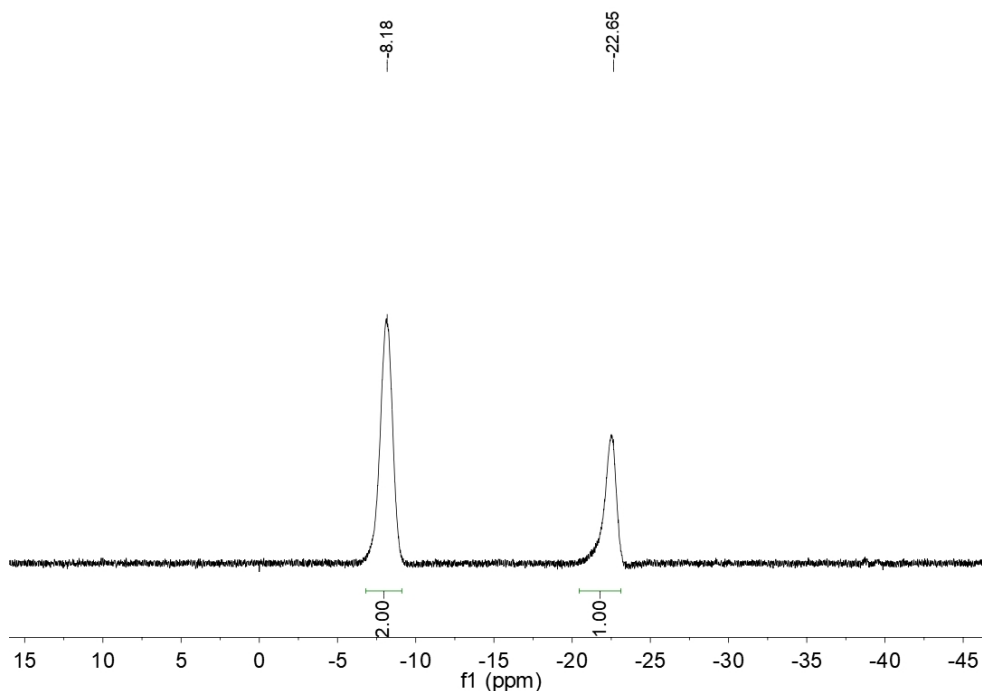


The IR spectrum of the prepared **34**.

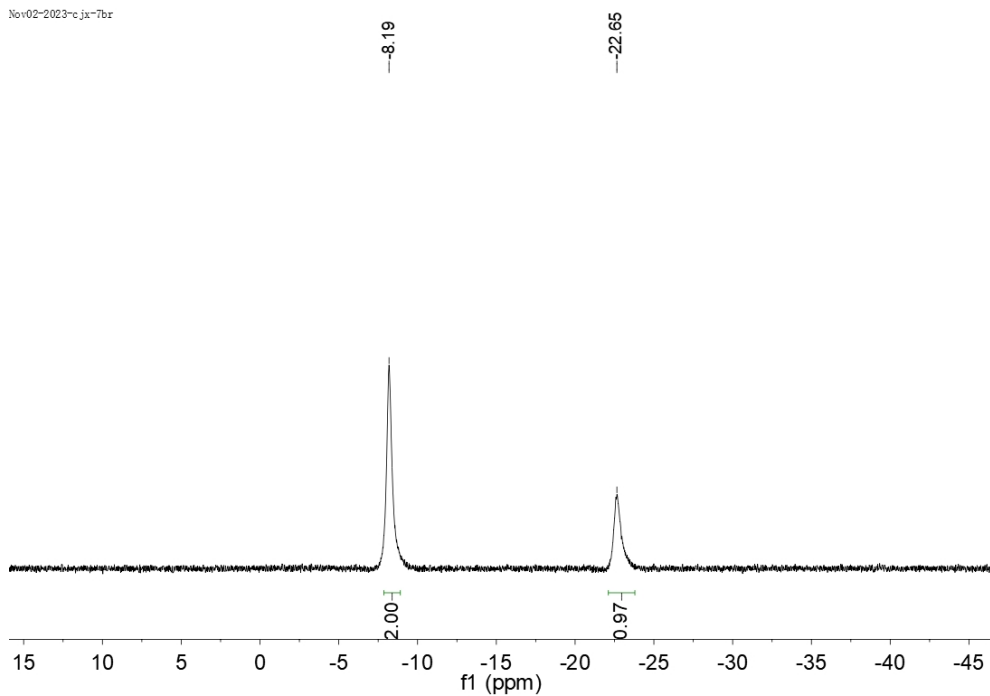


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 3:1). Yield 81%, white

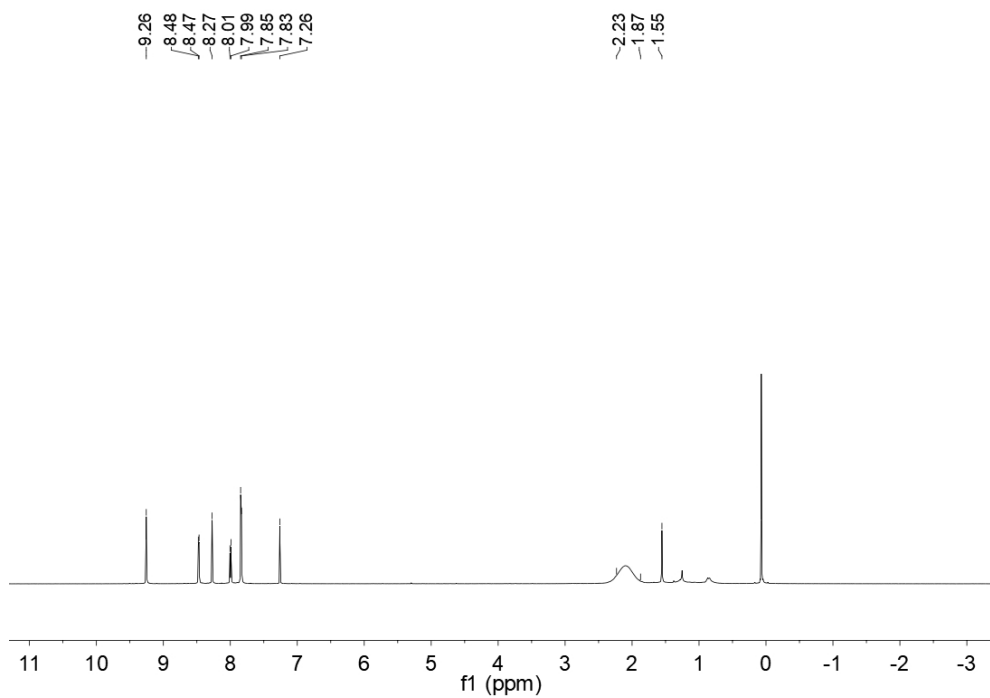
solid, melting point: 129-130 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.18 (*br*, 2 B of **BHB**), -22.65(*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.18 (*br*, 2 B of **BHB**), -22.65 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.26 (*s*, H of **CH**), 8.48 (*d*, H of **CH**), 8.27 (*s*, H of **CH**), 8.00 (*d*, H of **CH**), 7.84 (*d*, 2 H of 2 **CH**), 2.23-1.87 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.26 (*s*, H of **CH**), 8.48 (*d*, H of **CH**), 8.27 (*s*, H of **CH**), 8.00 (*d*, H of **CH**), 7.84 (*d*, 2 H of 2 **CH**), 2.10 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 150.09 (*s*, 1 C), 139.98 (*s*, 1 C), 138.00 (*s*, 1 C), 135.09 (*s*, 1 C), 131.07 (*s*, 1 C), 128.86 (*s*, 1 C), 128.29 (*s*, 1 C), 124.01 (*s*, 1 C), 123.01 (*s*, 1 C) ppm. IR (cm^{-1}): 3067 (*w*), 2493 (*m*), 2432 (*m*), 1592 (*w*), 1393 (*w*), 1272 (*w*), 1156 (*w*), 979 (*w*), 852 (*m*), 697 (*m*). HRMS m/z calcd for $\text{C}_9\text{H}_{13}\text{B}_3\text{NBr}$ $[\text{M}+\text{Na}]^+$: 270.0414, found: 270.0417.



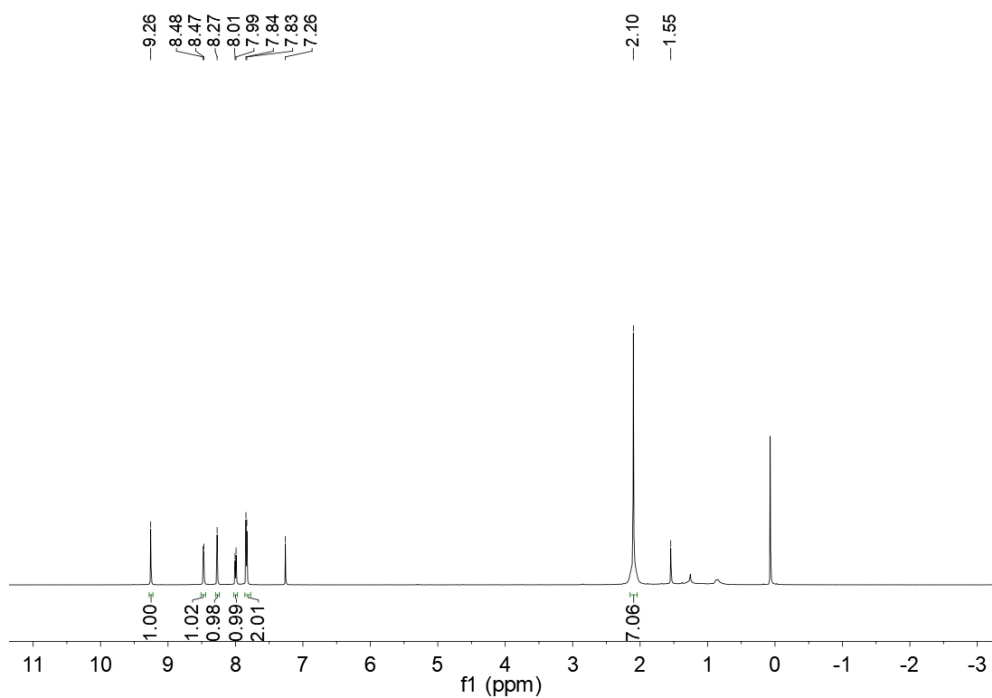
The ^{11}B NMR spectrum of the prepared **35** in CDCl_3 .



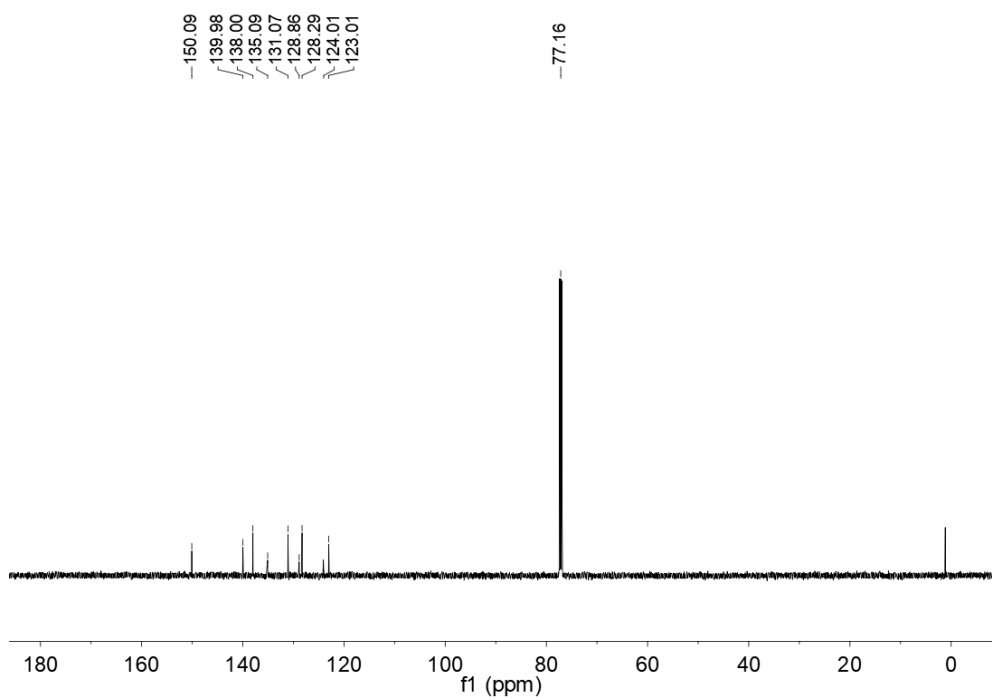
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **35** in CDCl_3 .



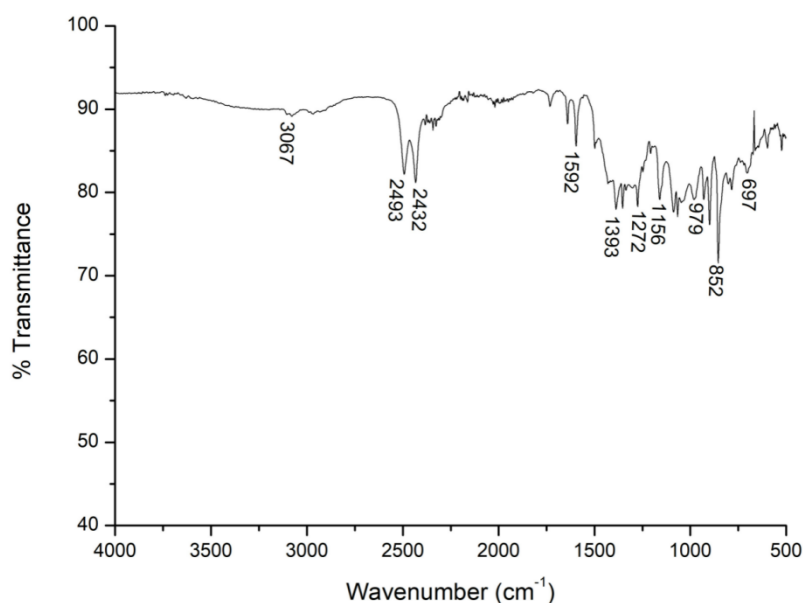
The ^1H NMR spectrum of the prepared **35** in CDCl_3 .



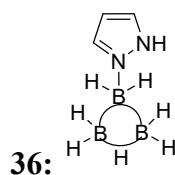
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **35** in CDCl_3 .



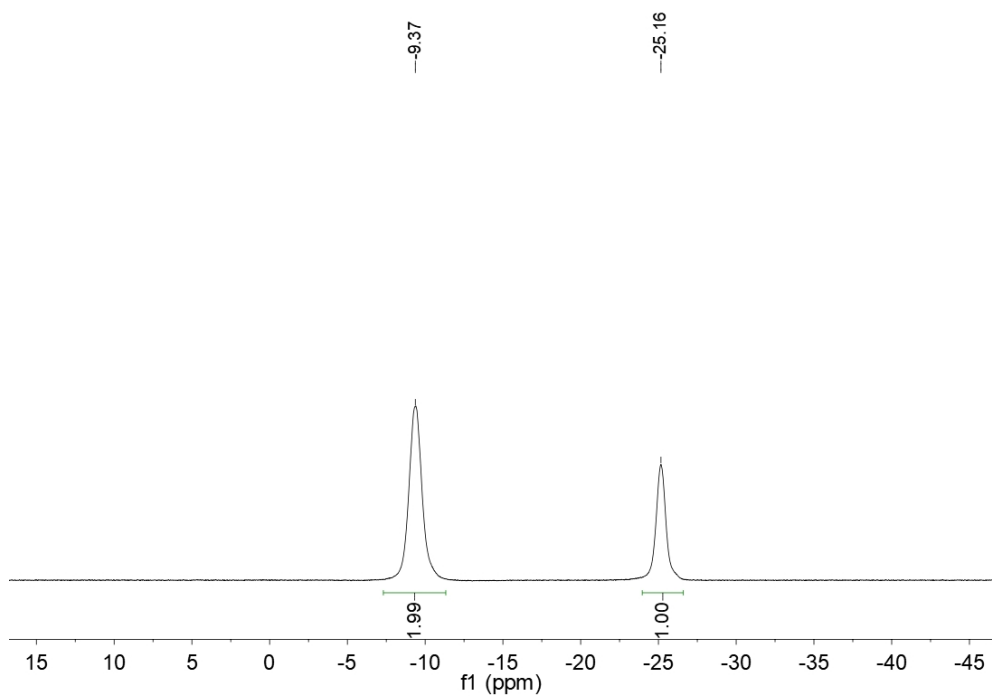
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **35** in CDCl_3 .



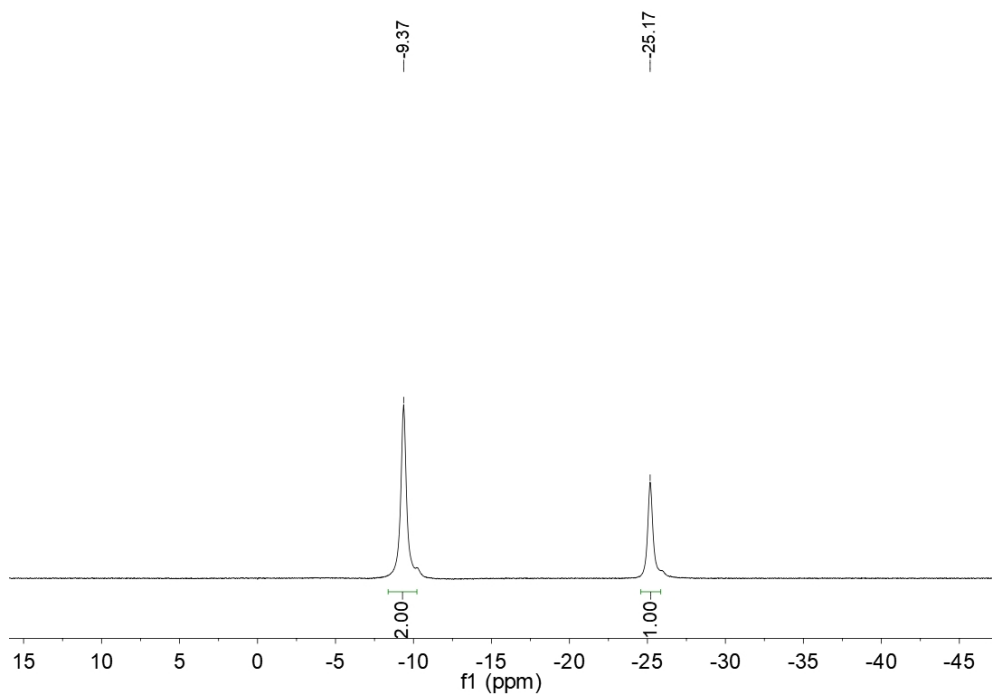
The IR spectrum of the prepared **35**.



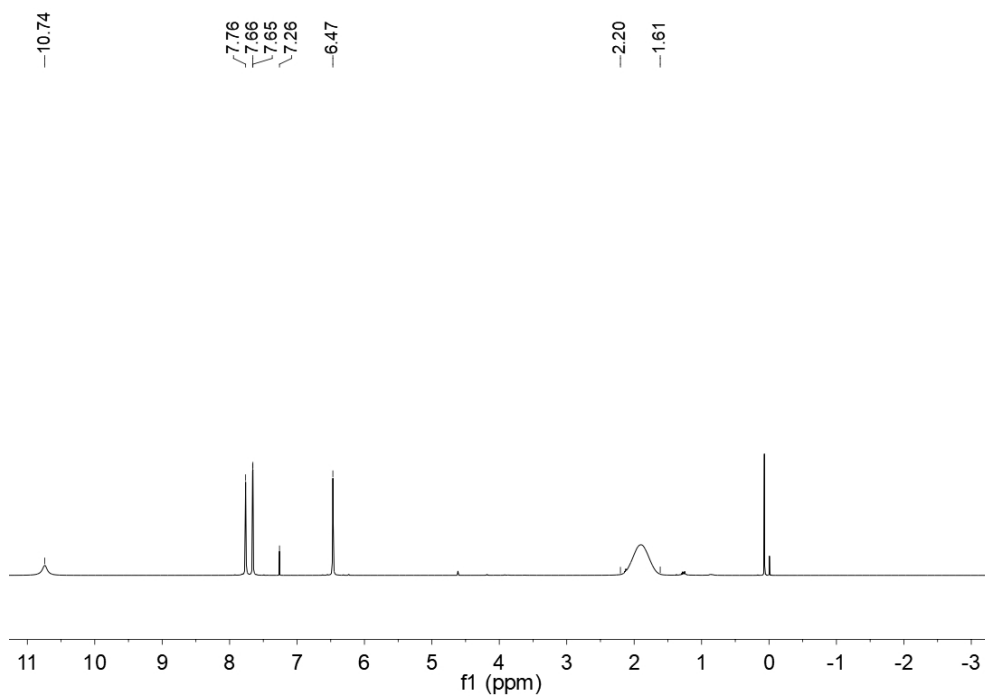
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 83%, white solid, melting point: 26-27 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of **BHB**), -25.16 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -9.37 (*br*, 2 B of **BHB**), -25.17 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 10.74 (*br*, H of **NH**), 7.76 (*s*, H of **CH**), 7.66 (*d*, H of **CH**), 6.47 (*s*, H of **CH**), 2.20-1.61 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 10.74 (*br*, H of **NH**), 7.76 (*s*, H of **CH**), 7.66 (*d*, H of **CH**), 6.47 (*s*, H of **CH**), 1.90 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 138.67 (*s*, 1 C), 130.60 (*s*, 1 C), 107.71 (*s*, 1 C) ppm. IR (cm^{-1}): 3129 (*s*), 2507 (*m*), 2422 (*m*), 1702 (*m*), 1538 (*w*), 1482 (*w*), 1411 (*m*), 1383 (*m*), 1277 (*m*), 1094 (*s*), 1036 (*s*), 966 (*s*), 903 (*w*), 754 (*s*), 655 (*w*), 606 (*w*), 549 (*w*). HRMS *m/z* calcd for $\text{C}_3\text{H}_{11}\text{B}_3\text{N}_2$ [$\text{M}+\text{K}$] $^+$:147.0835, found:147.0835.



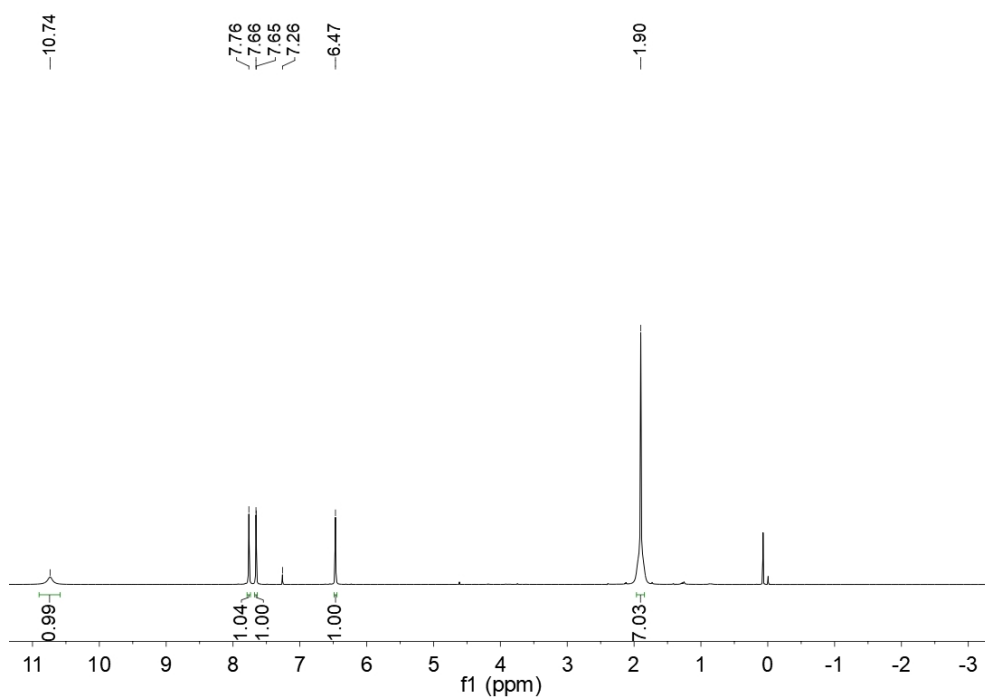
The ^{11}B NMR spectrum of the prepared **36** in CDCl_3 .



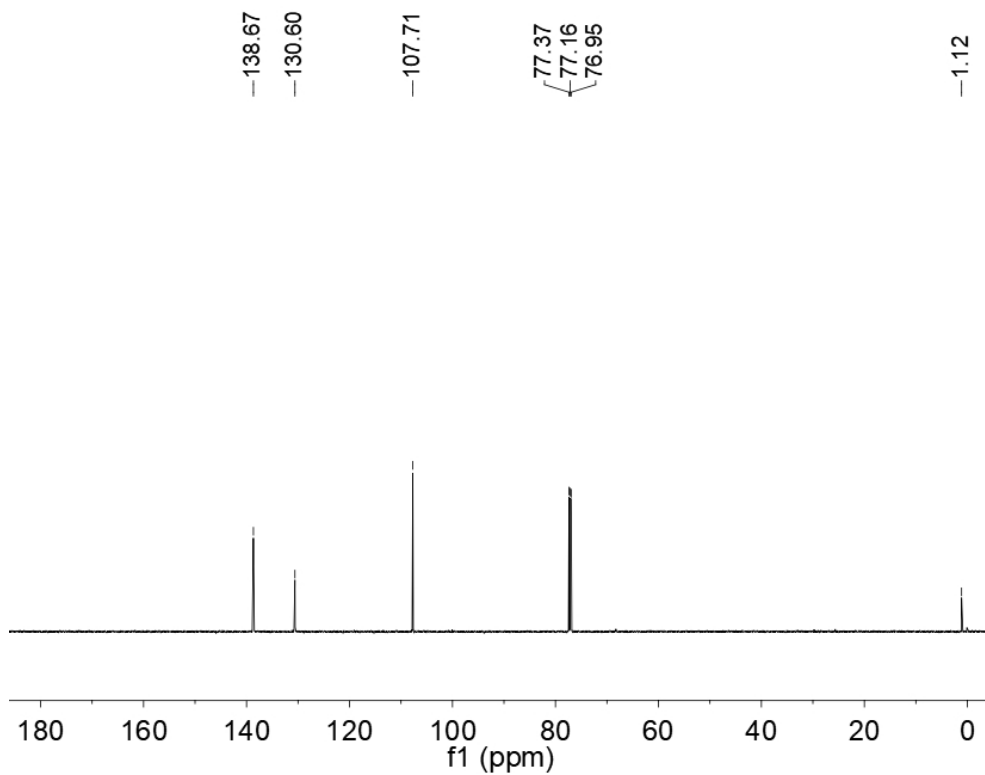
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **36** in CDCl_3 .



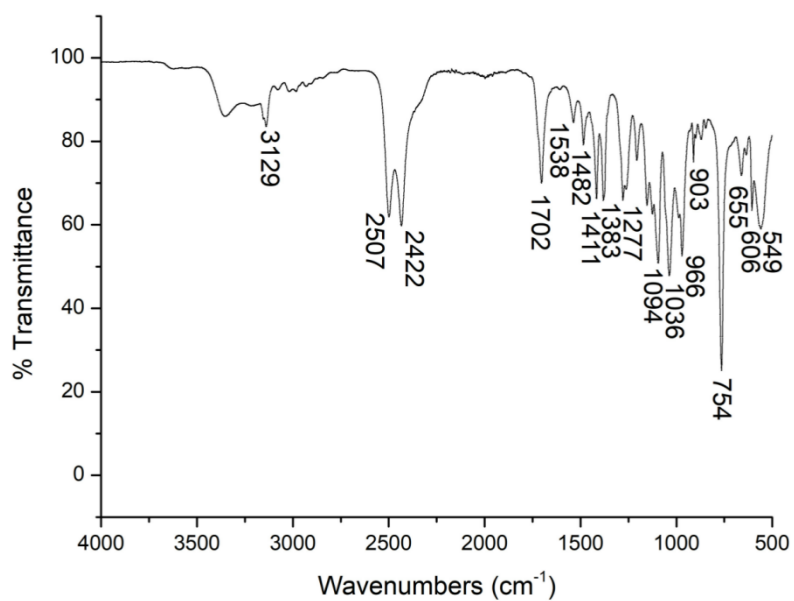
The ^1H NMR spectrum of the prepared **36** in CDCl_3 .



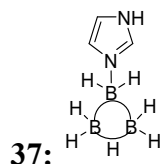
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **36** in CDCl_3 .



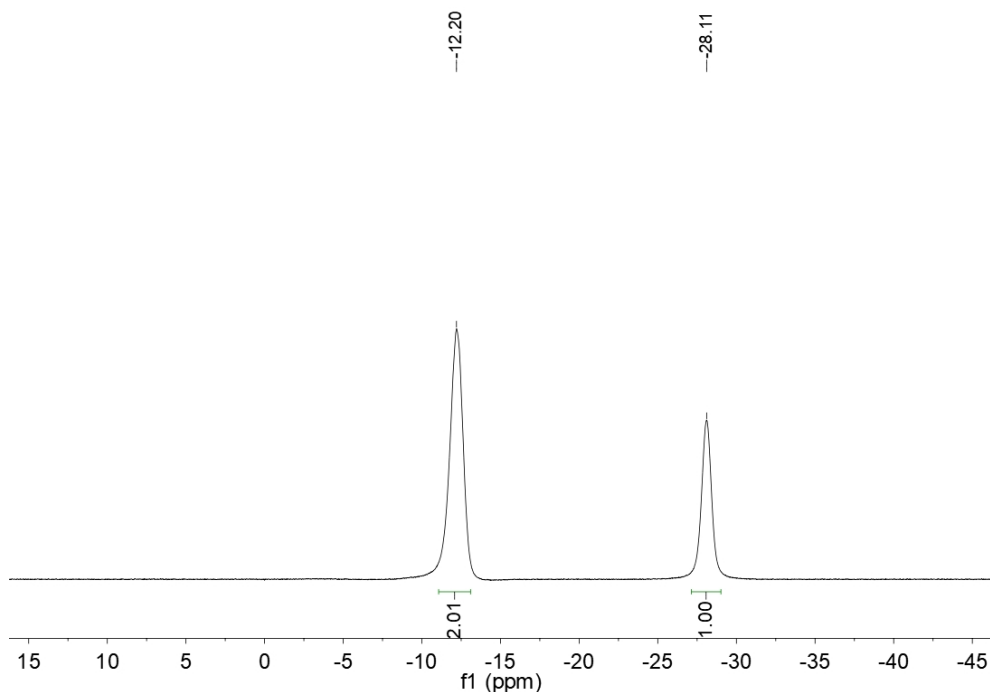
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **36** in CDCl_3 .



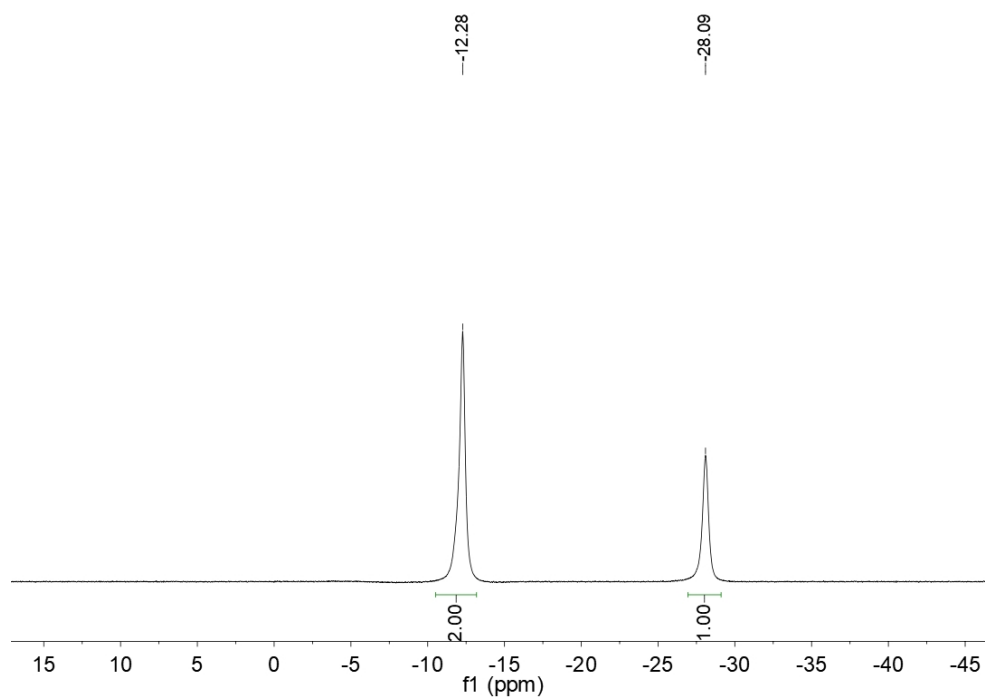
The IR spectrum of the prepared **36**.



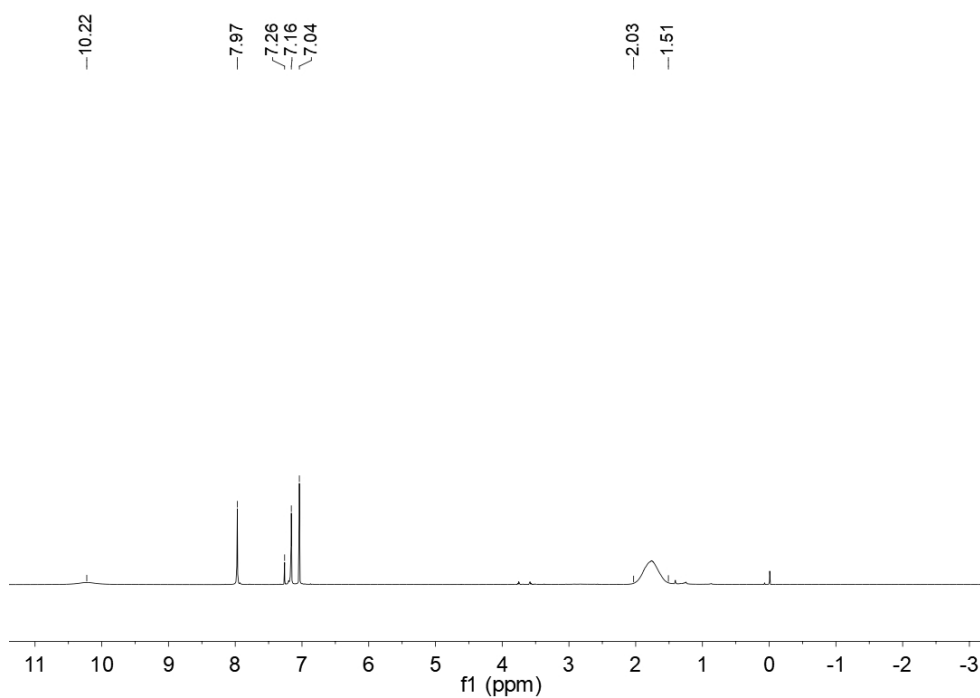
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 86%, white solid, melting point: 24-25 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -12.20 (*br*, 2 B of **BHB**), -28.11 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -12.28 (*br*, 2 B of **BHB**), -28.09 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 10.22 (*br*, H of **NH**), 7.97 (*s*, H of **CH**), 7.16 (*s*, H of **CH**), 7.04 (*s*, H of **CH**), 2.03-1.51 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 10.21 (*br*, H of **NH**), 7.97 (*s*, H of **CH**), 7.16 (*t*, H of **CH**), 7.04 (*s*, H of **CH**), 1.77 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 135.26 (*s*, 1 C), 126.42 (*s*, 1 C), 117.21 (*s*, 1 C) ppm. IR (cm^{-1}): 3391 (*s*), 3150 (*s*), 2974 (*w*), 2860 (*w*), 2486 (*s*), 2436 (*s*), 2119 (*w*), 1687 (*w*), 1609 (*m*), 1553 (*s*), 1524 (*s*), 1426 (*s*), 1314 (*m*), 1263 (*m*), 1220 (*s*), 1065 (*s*), 980 (*s*), 917 (*w*), 839 (*m*), 768 (*s*), 676 (*s*), 606 (*s*). HRMS m/z calcd for $\text{C}_3\text{H}_{11}\text{B}_3\text{N}_2$ $[\text{M}+\text{Na}]^+$: 131.1095, found: 131.1090.



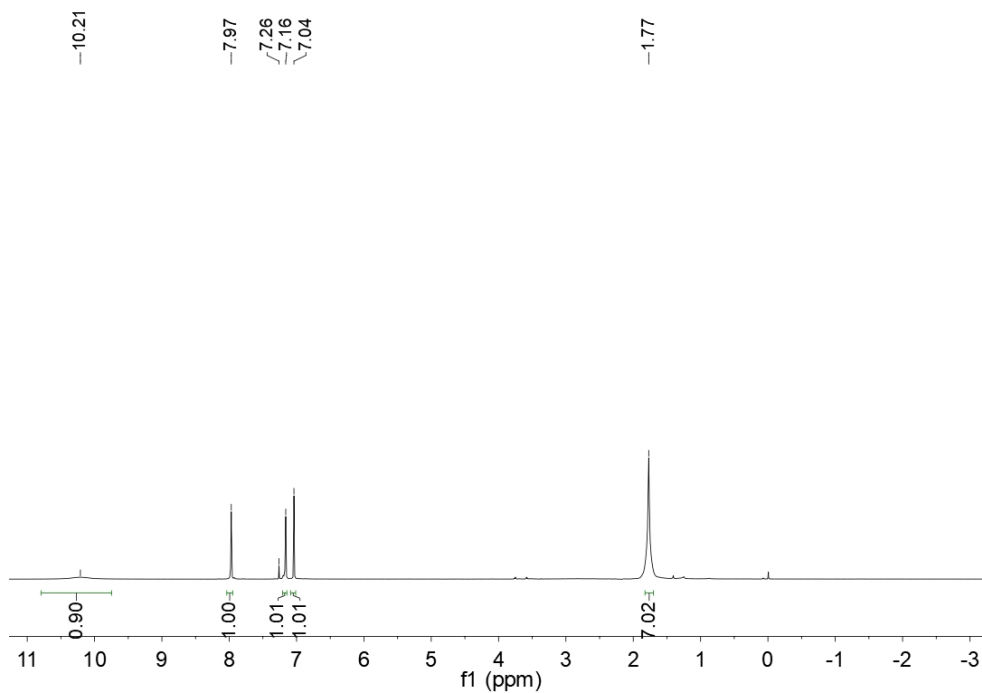
The ^{11}B NMR spectrum of the prepared **37** in CDCl_3 .



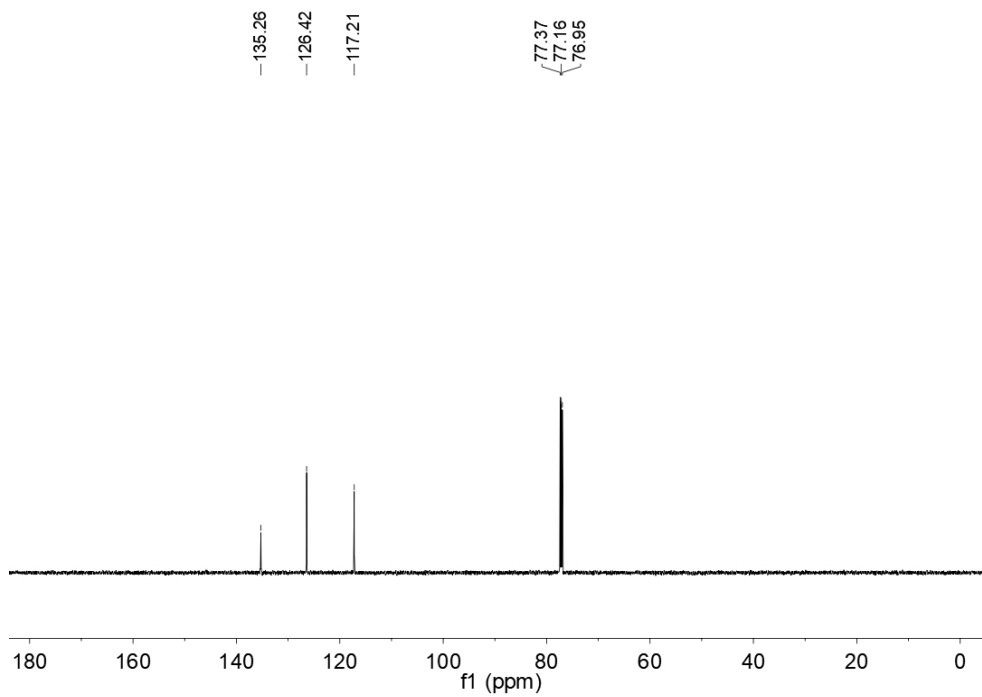
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **37** in CDCl_3 .



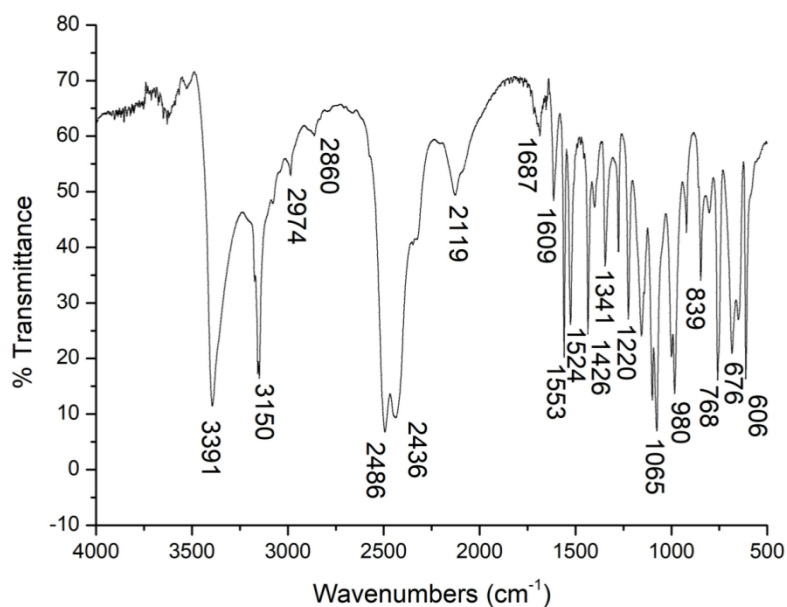
The ^1H NMR spectrum of the prepared **37** in CDCl_3 .



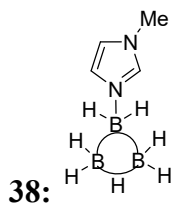
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **37** in CDCl_3 .



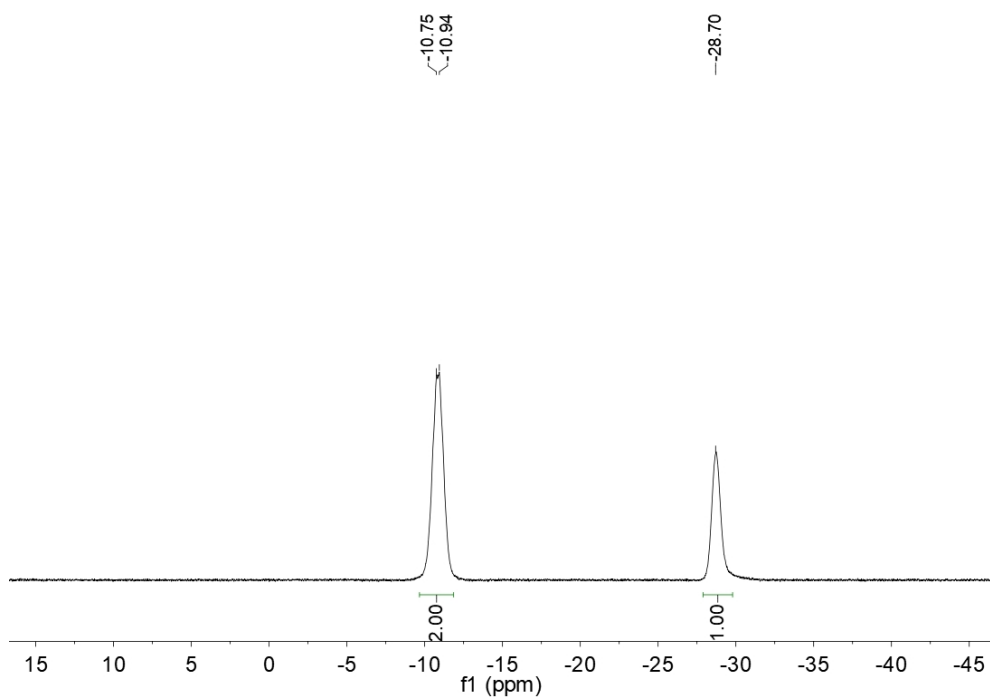
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **37** in CDCl_3 .



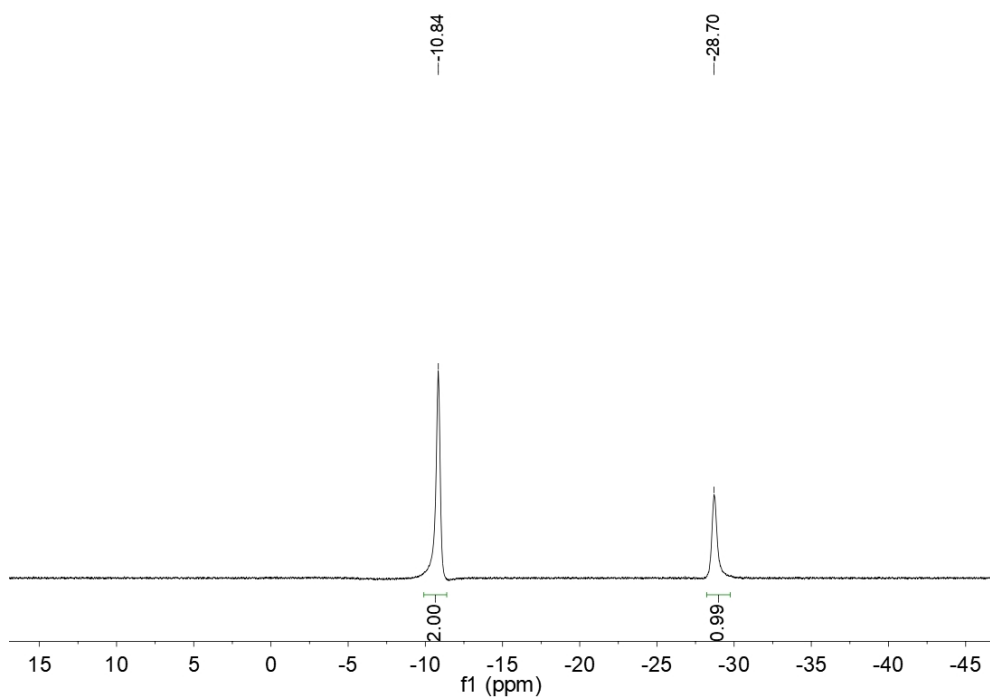
The IR spectrum of the prepared **37**.



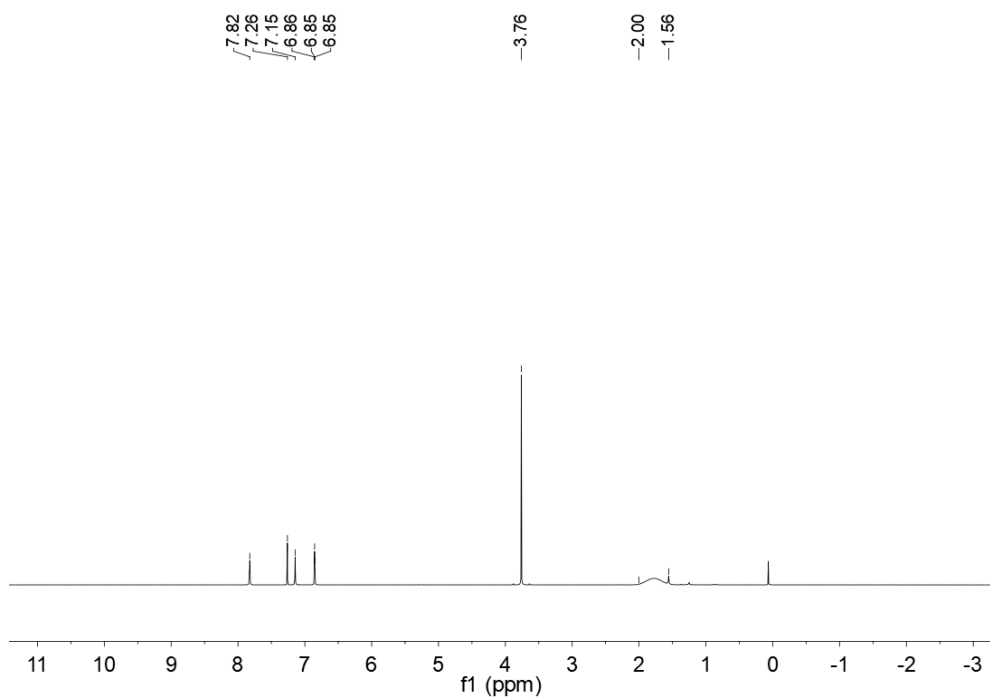
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 88%, white solid, melting point: 27-28 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -10.84 (*br*, 2 B of **BHB**), -28.70 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.84 (*br*, 2 B of **BHB**), -28.70 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 7.82 (*s*, H of **CH**), 7.15 (*s*, H of **CH**), 6.85 (*t*, H of **CH**), 3.76 (*s*, 3 H of **CH₃**), 2.00-1.56 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 7.82 (*s*, H of **CH**), 7.15 (*s*, H of **CH**), 6.85 (*t*, H of **CH**), 3.76 (*s*, 3 H of **CH₃**), 1.78 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 137.16 (*s*, 1 C), 127.63 (*s*, 1 C), 121.13 (*s*, 1 C), 35.77 (*s*, 1 C) ppm. IR (cm^{-1}): 3150 (*m*), 2945 (*w*), 2487 (*s*), 2426 (*s*), 1548 (*s*), 1426 (*w*), 1299 (*m*), 1255 (*m*), 1134 (*s*), 1039 (*w*), 979 (*m*), 835 (*m*), 742 (*s*), 674 (*m*), 619 (*s*). HRMS *m/z* calcd for $\text{C}_4\text{H}_{13}\text{B}_3\text{N}_2$ [$\text{M}+\text{Na}$] $^+$: 145.1252, found: 145.1253.



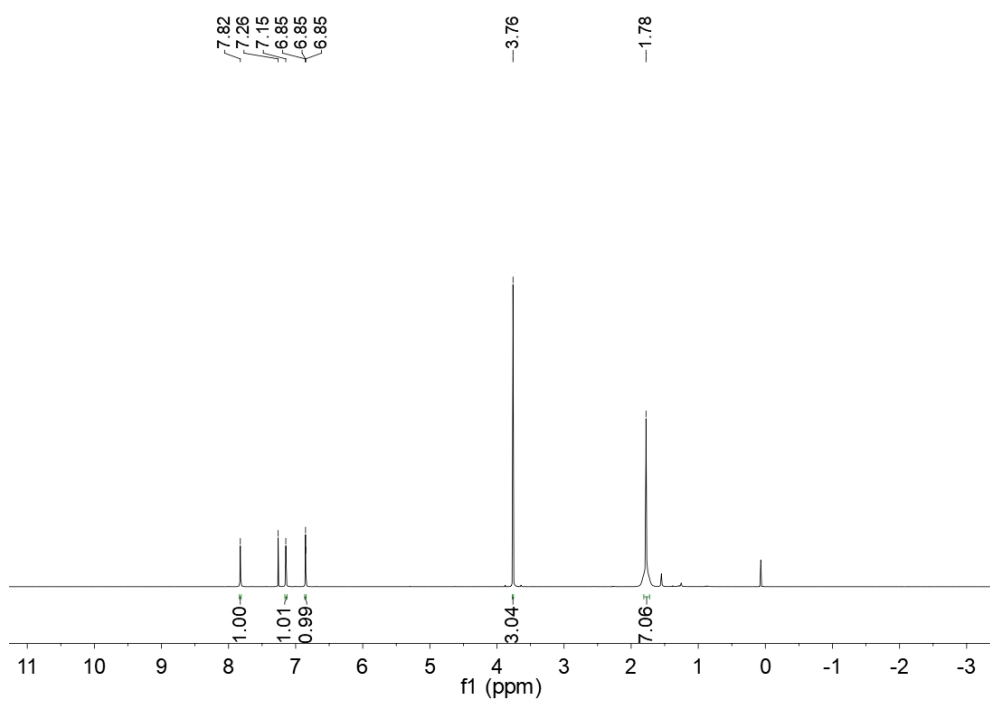
The ¹¹B NMR spectrum of the prepared **38** in CDCl₃.



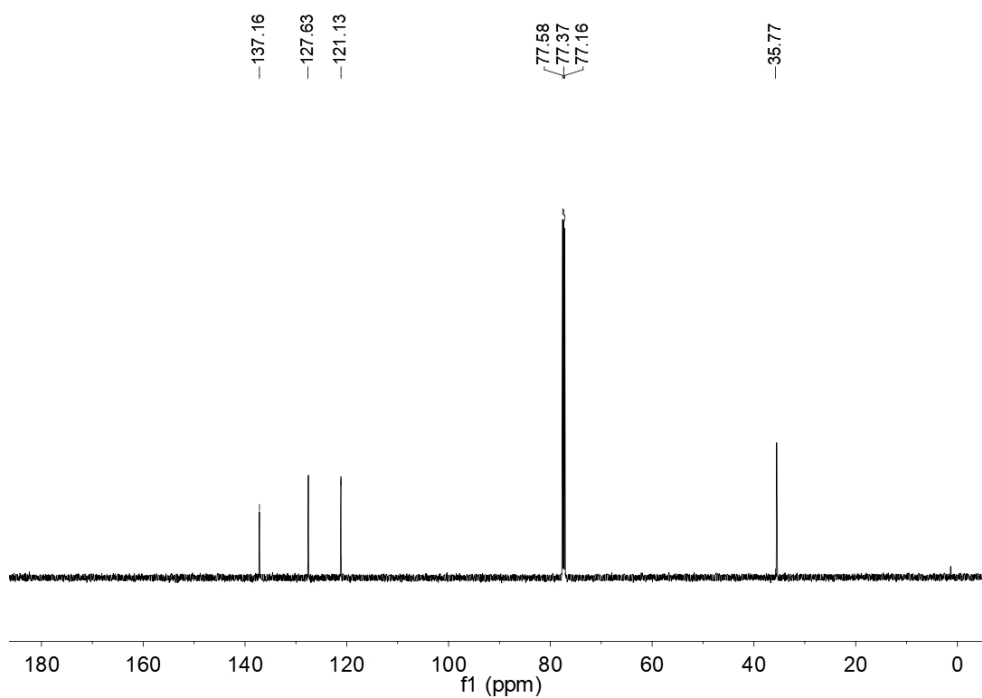
The ¹¹B{¹H} NMR spectrum of the prepared **38** in CDCl₃.



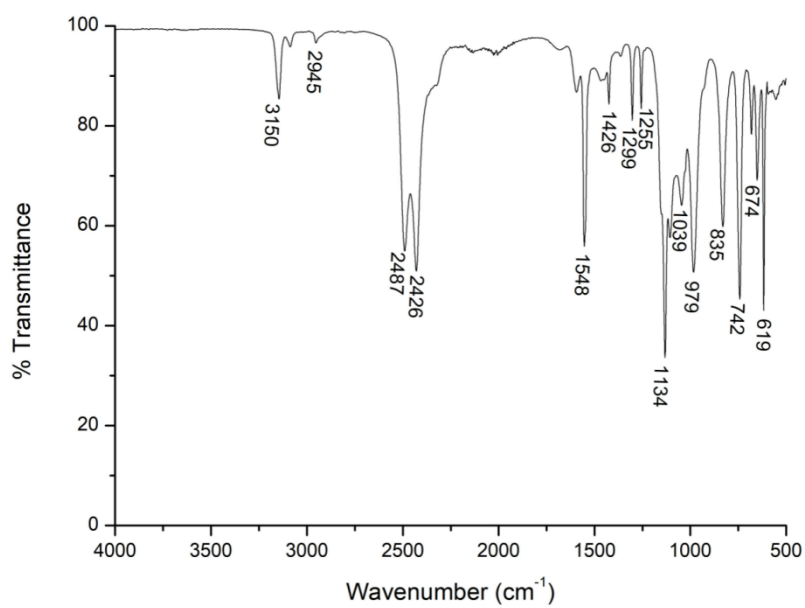
The ^1H NMR spectrum of the prepared **38** in CDCl_3 .



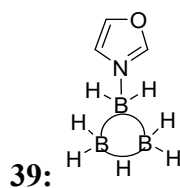
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **38** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **38** in CDCl_3 .

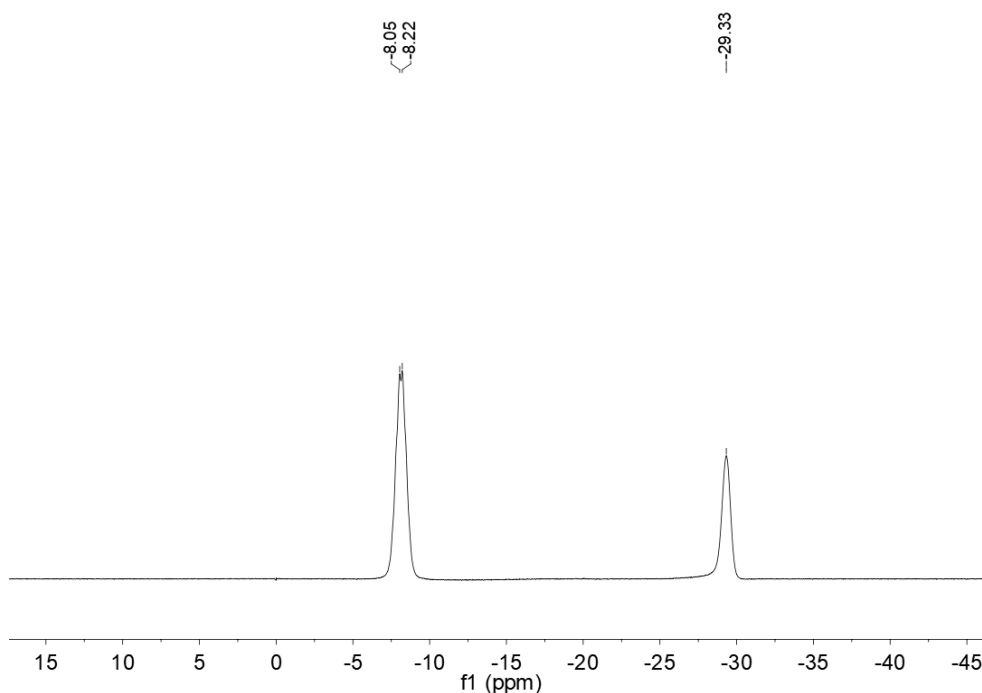


The IR spectrum of the prepared **38**.

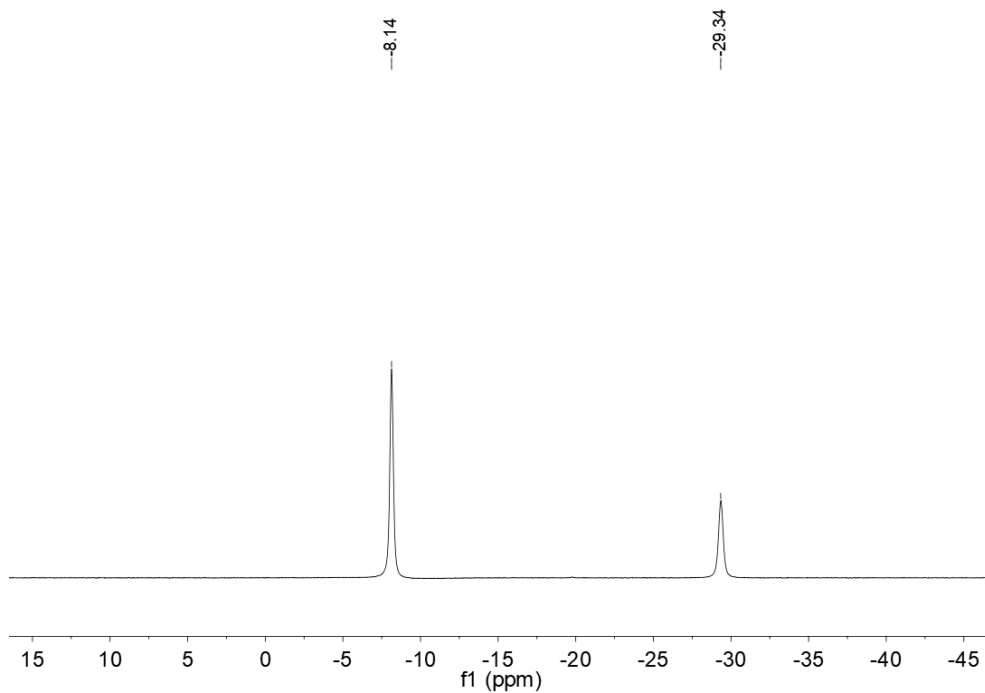


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 83%, white solid, melting point: 26-27 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.14 (*br*, 2 B of **BHB**),

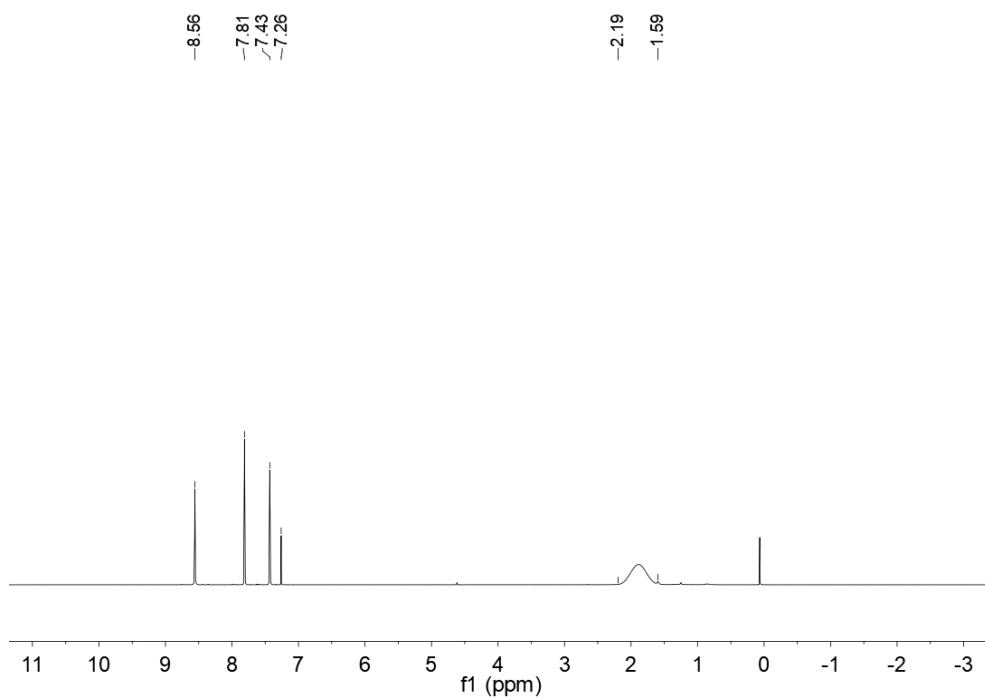
-29.33 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.14 (*br*, 2 B of **BHB**), -29.34 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.56 (*s*, H of **CH**), 7.81 (*s*, H of **CH**), 7.43 (*s*, H of **CH**), 2.19-1.59 (*br*, 7 H of B_{3**H**₇) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 8.56 (*s*, H of **CH**), 7.81 (*s*, H of **CH**), 7.43 (*s*, H of **CH**), 1.89 (*s*, 7 H of B_{3**H**₇) ppm. ¹³C{¹H} NMR (600 MHz, CDCl₃): δ 152.79 (*s*, 1 C), 141.08 (*s*, 1 C), 125.85 (*s*, 1 C) ppm. IR (cm⁻¹): 3155 (*m*), 3078 (*w*), 2509 (*s*), 2432 (*s*), 1586 (*m*), 1526 (*m*), 1338 (*m*), 1205 (*m*), 1167 (*s*), 1106 (*m*), 1034 (*s*), 973 (*m*), 896 (*s*), 852 (*m*), 758 (*m*), 608 (*m*). HRMS *m/z* calcd for C₃H₁₀B₃NO [M+Na]⁺: 132.0935, found: 132.0939.}}



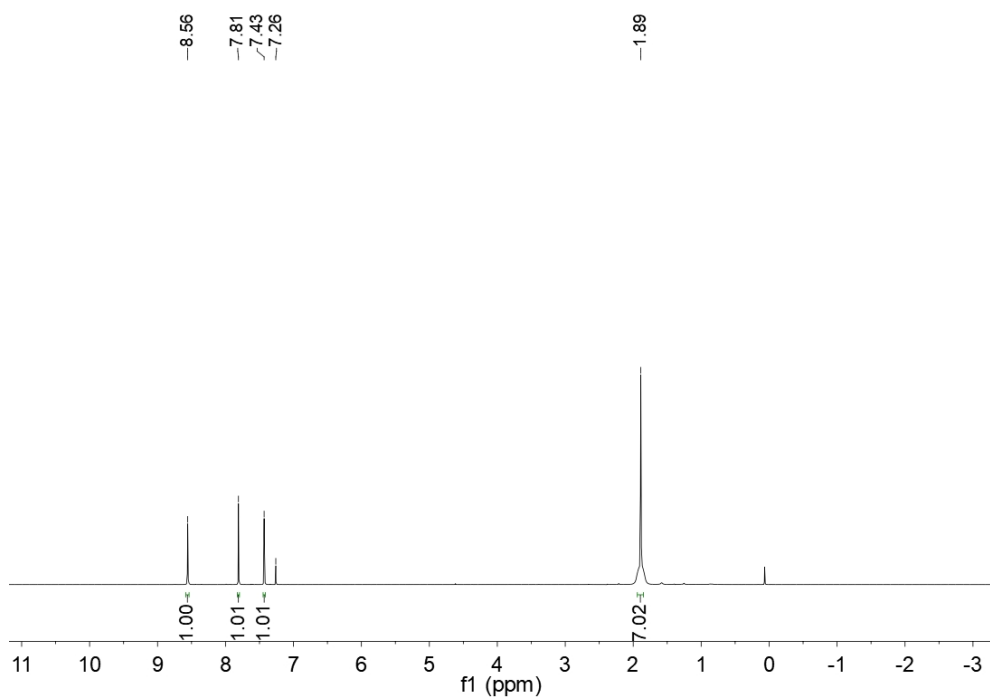
The ¹¹B NMR spectrum of the prepared **39** in CDCl₃.



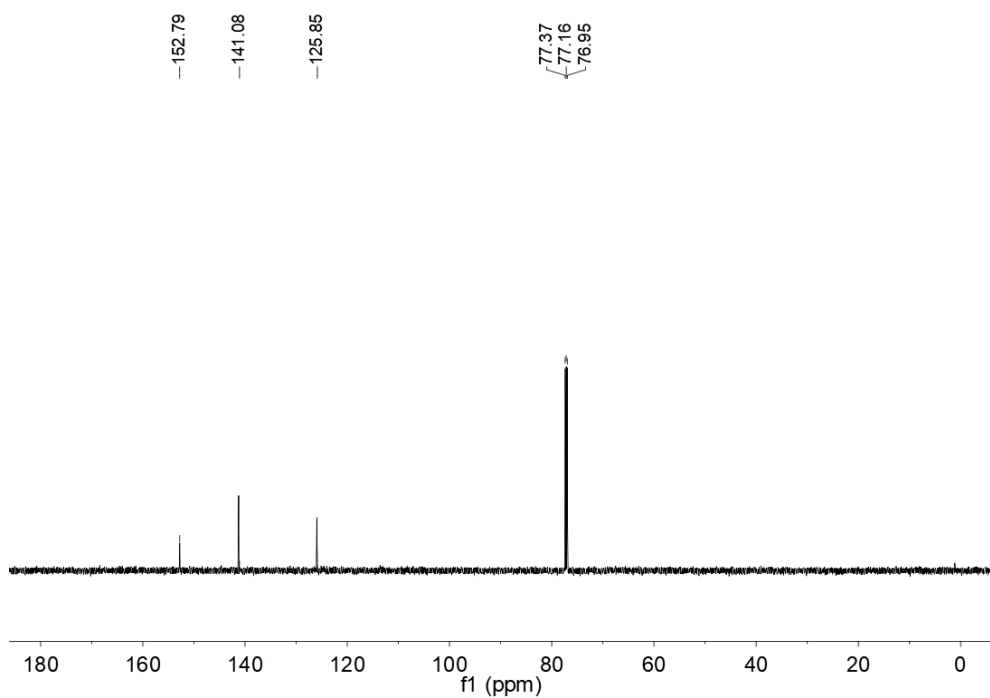
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **39** in CDCl_3 .



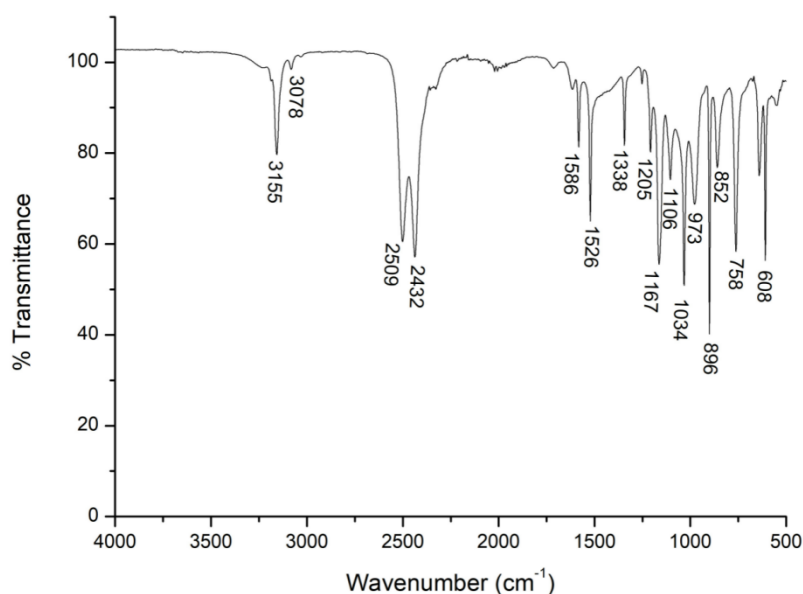
The ^1H NMR spectrum of the prepared **39** in CDCl_3 .



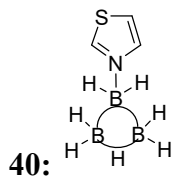
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **39** in CDCl_3 .



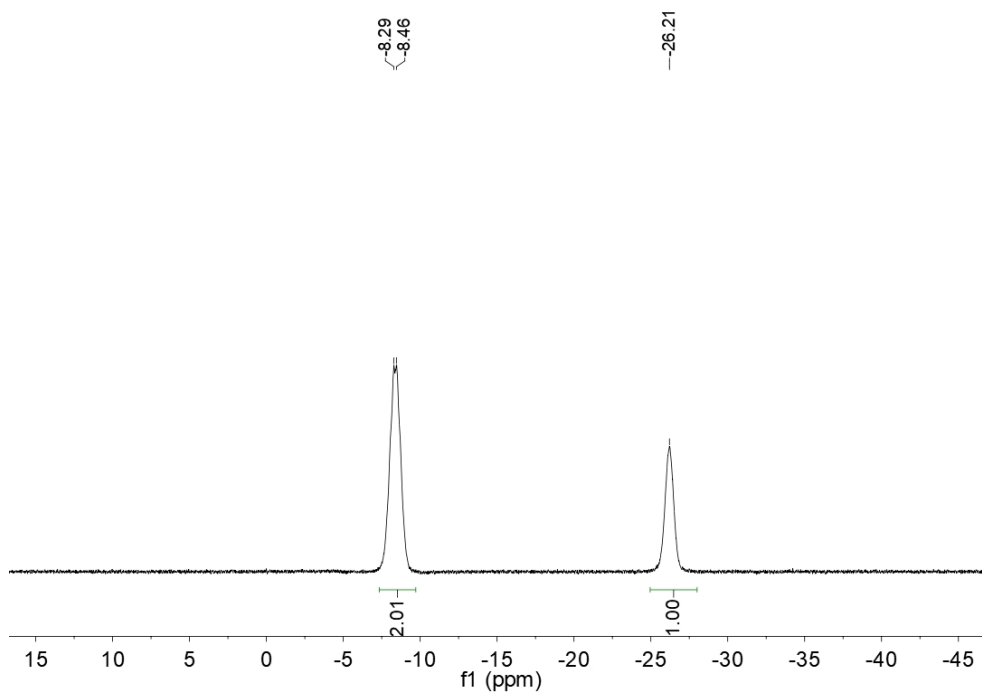
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **39** in CDCl_3 .



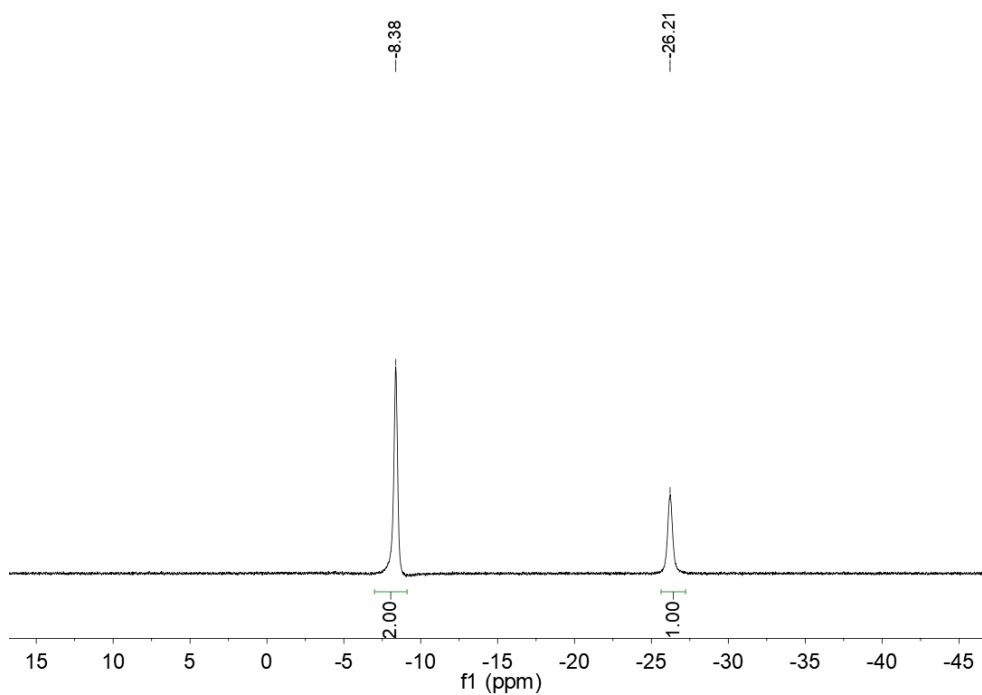
The IR spectrum of the prepared **39**.



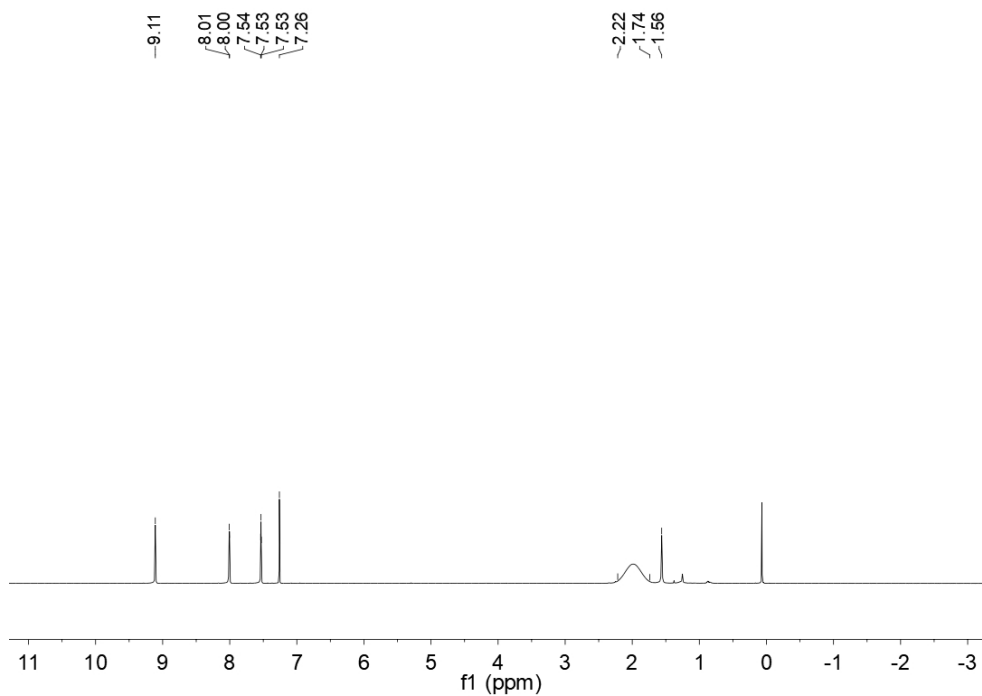
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 84%, white solid, melting point: 56-57 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.38 (*br*, 2 B of **BHB**), -26.21 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.38 (*br*, 2 B of **BHB**), -26.21 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.11 (*s*, H of **CH**), 8.01 (*d*, H of **CH**), 7.53 (*t*, H of **CH**), 2.22-1.74 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.11 (*s*, H of **CH**), 8.01 (*d*, H of **CH**), 7.53 (*t*, H of **CH**), 1.98 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 155.68 (1 C), 142.30 (1 C), 121.16 (1 C) ppm. IR (cm^{-1}): 3129 (w), 3101 (m), 2910 (w), 2486 (s), 2429 (s), 1532 (m), 1397 (m), 1326 (m), 1241 (m), 1150 (m), 1086 (s), 1023 (s), 959 (m), 903 (m), 810 (s), 726 (s), 613 (m). HRMS m/z calcd for $\text{C}_3\text{H}_{10}\text{B}_3\text{NS}$ [$\text{M}+\text{Na}$] $^+$: 148.0707, found: 148.0709.



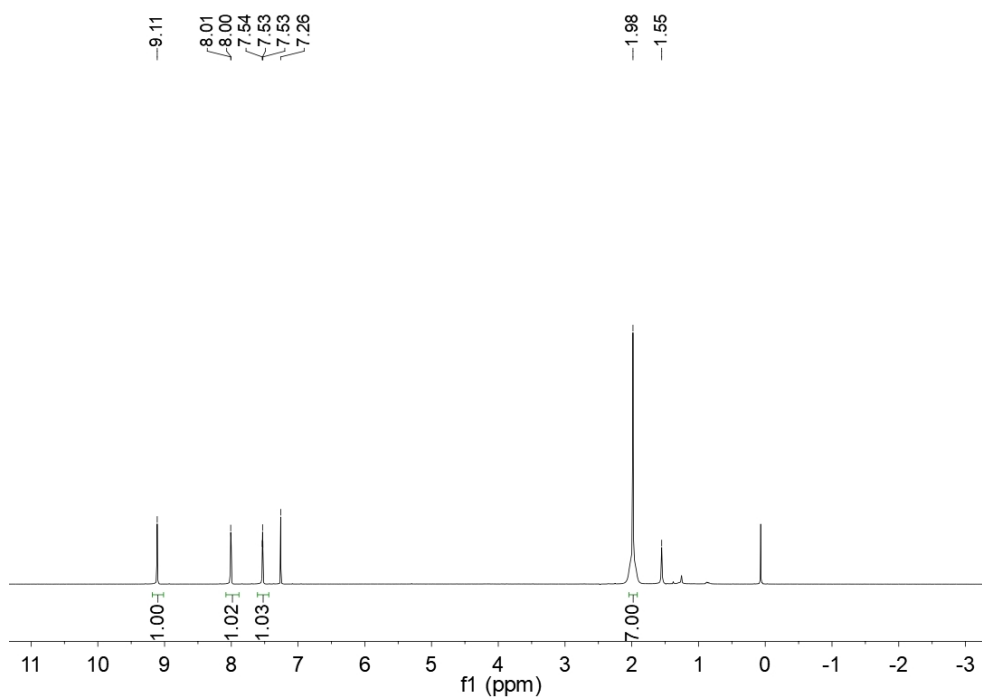
The ¹¹B NMR spectrum of the prepared **40** in CDCl₃.



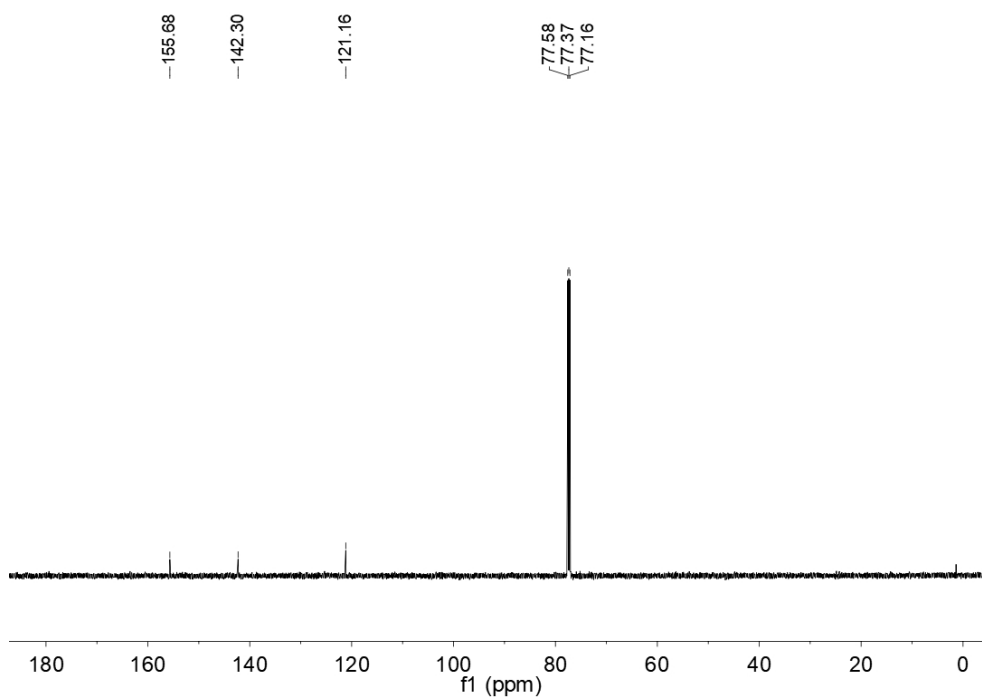
The ¹¹B{¹H} NMR spectrum of the prepared **40** in CDCl₃.



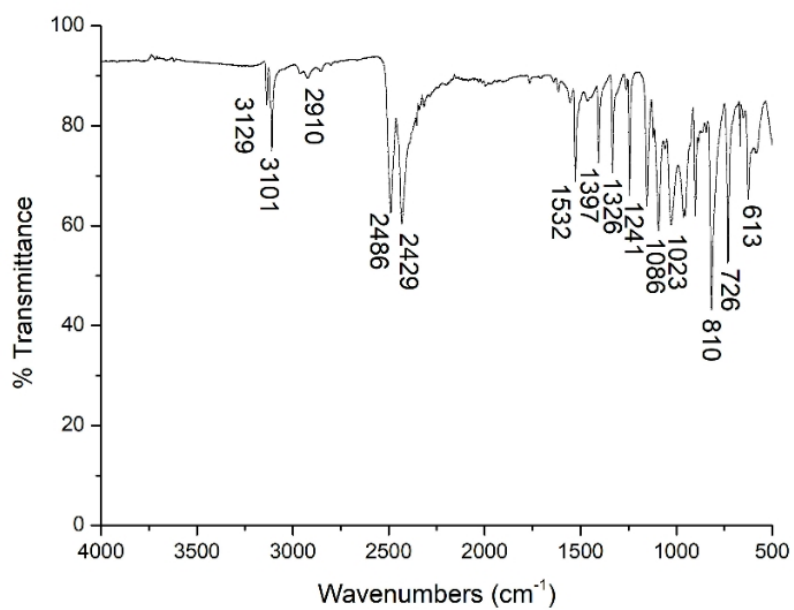
The ^1H NMR spectrum of the prepared **40** in CDCl_3 .



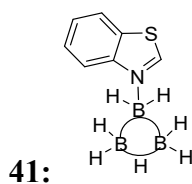
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **40** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **40** in CDCl_3 .

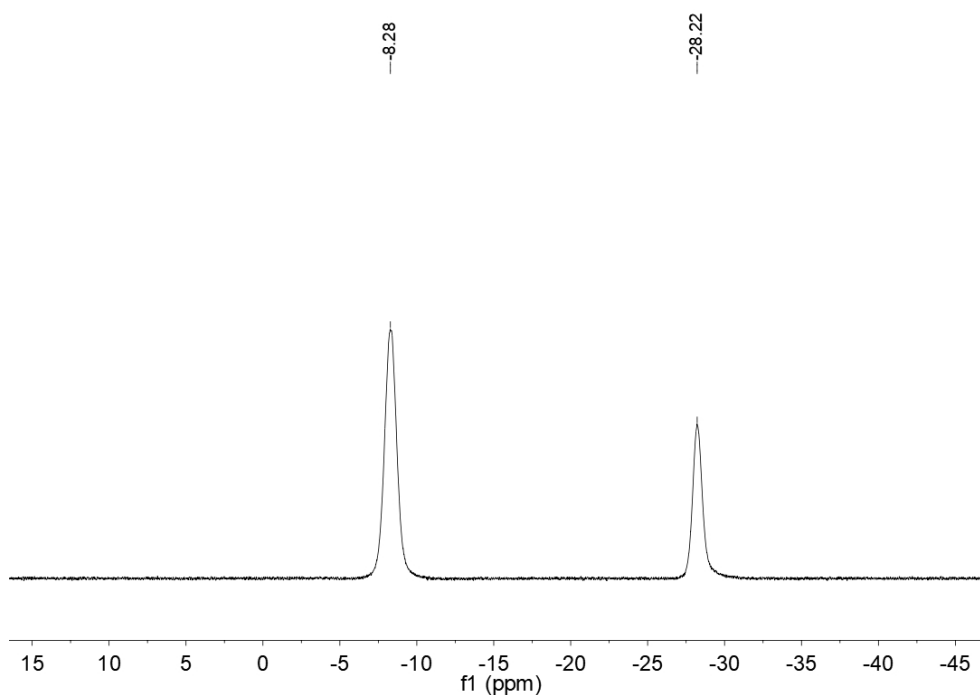


The IR spectrum of the prepared **40**.

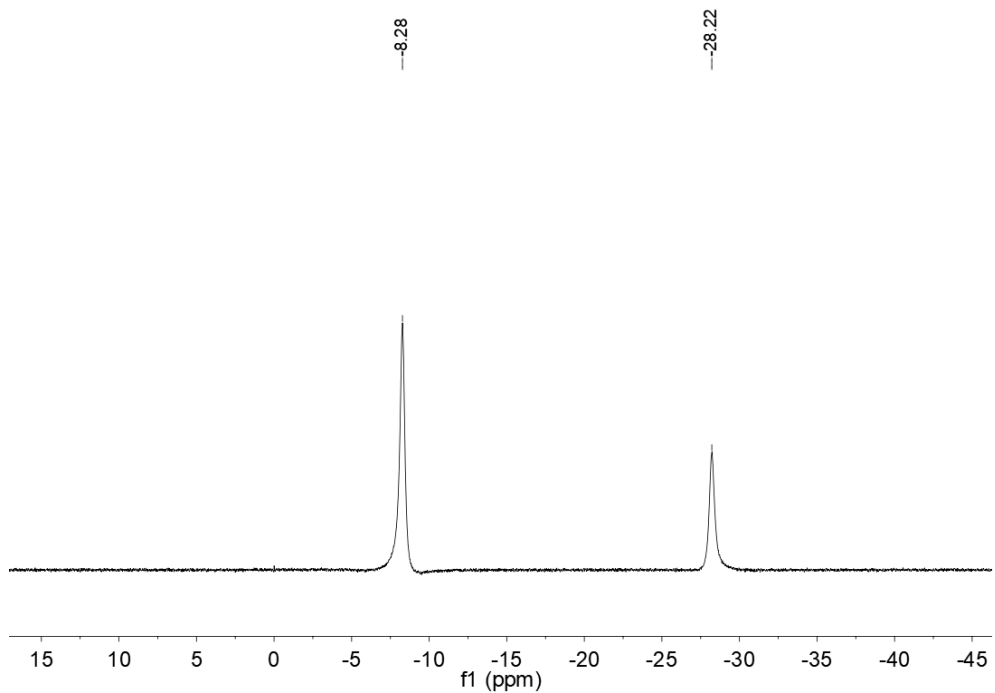


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 77%, white solid, melting point: 115-116 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.28 (*br*, 2 B of

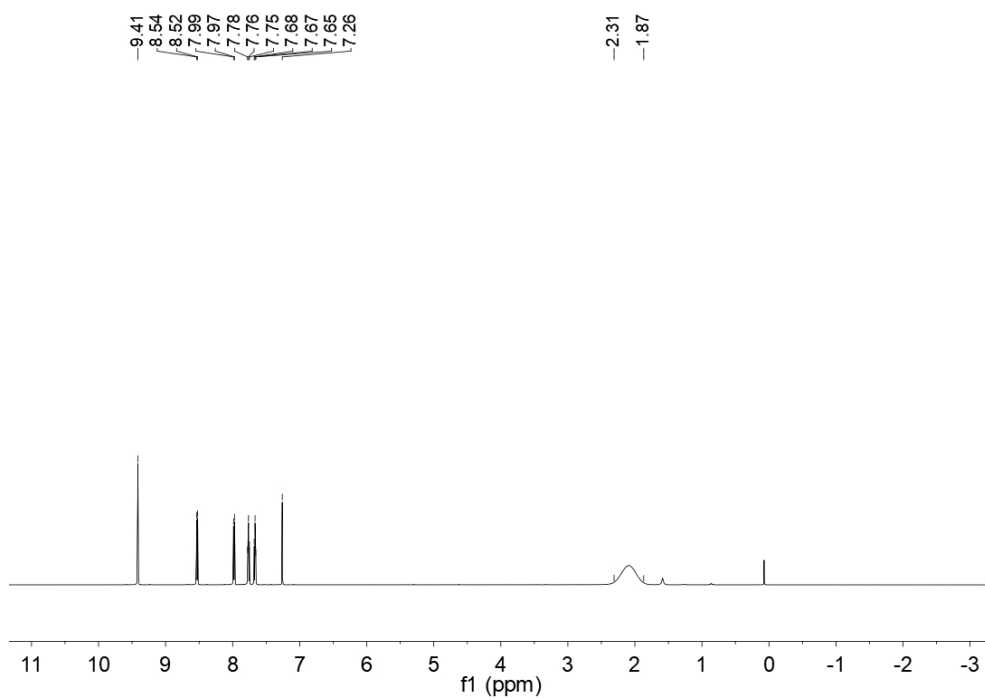
BHB), -28.22 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.28 (*br*, 2 B of **BHB**), -28.22 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.41 (*s*, H of **CH**), 8.53 (*d*, H of **CH**), 7.98 (*d*, H of **CH**), 7.76 (*t*, H of **CH**), 7.67 (*d*, H of **CH**), 2.31-1.87 (*br*, 7 H of B_{3**H**₇) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 9.42 (*s*, H of **CH**), 8.53 (*d*, H of **CH**), 7.98 (*d*, H of **CH**), 7.76 (*t*, H of **CH**), 7.67 (*t*, H of **CH**), 2.09 (*s*, 7 H of B_{3**H**₇) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 158.60 (*s*, 1 C), 146.15 (*s*, 1 C), 131.31 (*s*, 1 C), 128.71 (*s*, 1 C), 127.95 (*s*, 1 C), 122.69 (*s*, 1 C), 121.48 (*s*, 1 C) ppm. IR (cm⁻¹): 3111 (*m*), 2487 (*s*), 2443 (*s*), 1984 (*w*), 1570 (*w*), 1487 (*m*), 1426 (*s*), 1316 (*m*), 1266 (*m*), 1167 (*m*), 1045 (*s*), 968 (*m*), 829 (*s*), 758 (*s*), 719 (*s*), 554 (*m*). HRMS *m/z* calcd for C₇H₁₂B₃NS [M+Na]⁺: 198.0866, found: 198.0857.}}



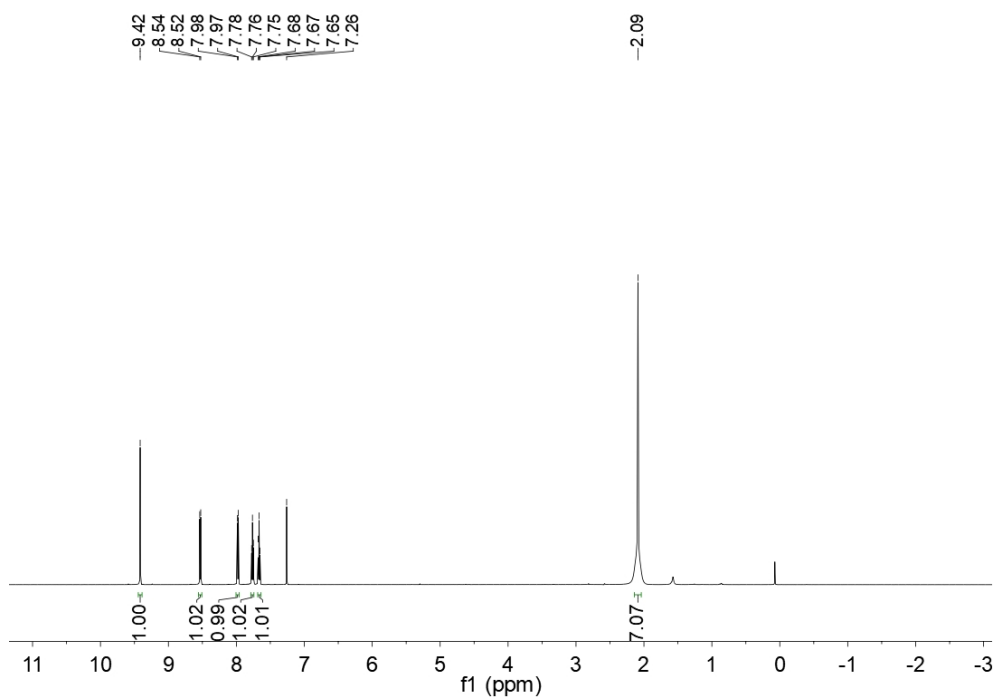
The ¹¹B NMR spectrum of the prepared **41** in CDCl₃.



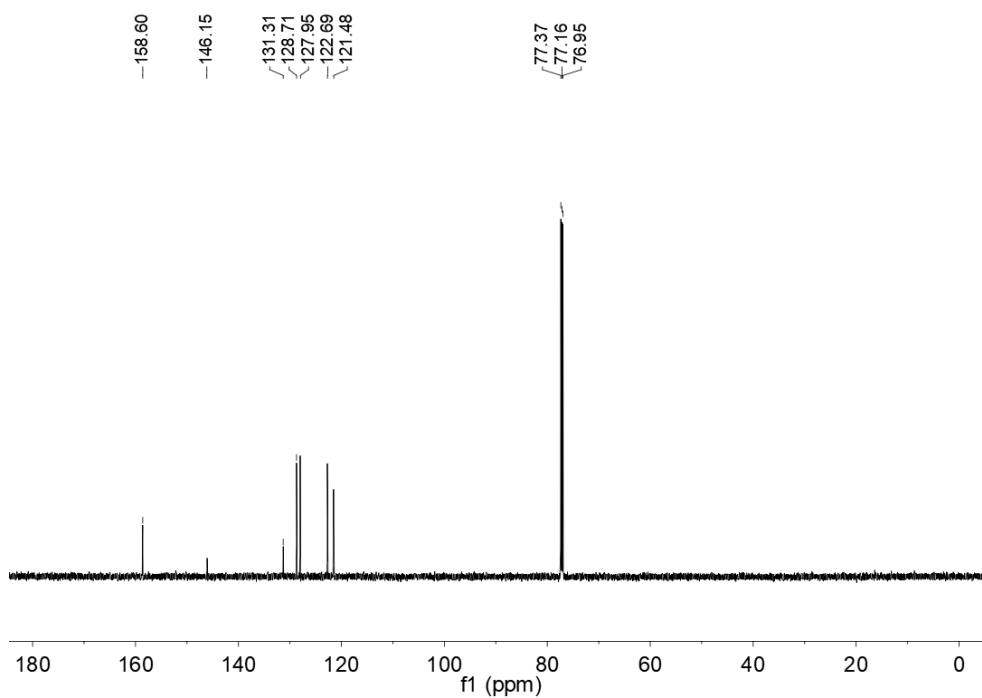
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **41** in CDCl_3 .



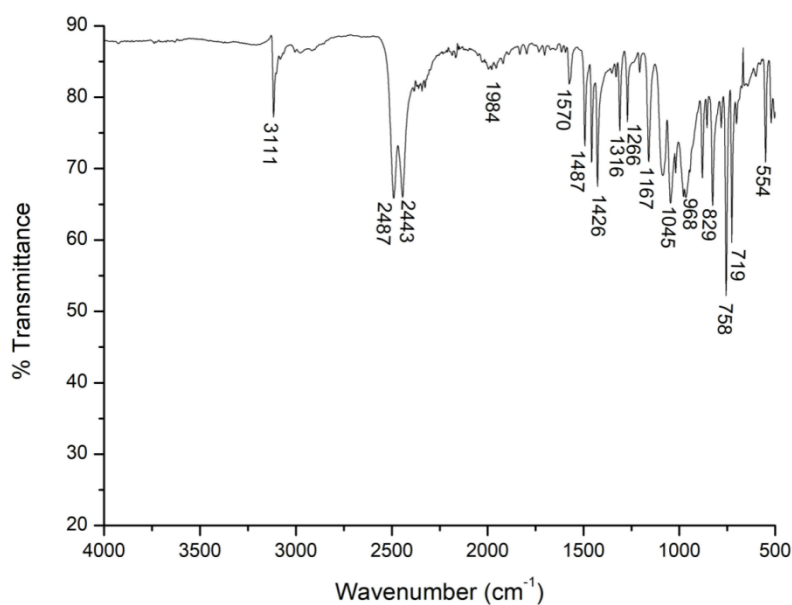
The ^1H NMR spectrum of the prepared **41** in CDCl_3 .



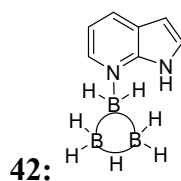
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **41** in CDCl_3 .



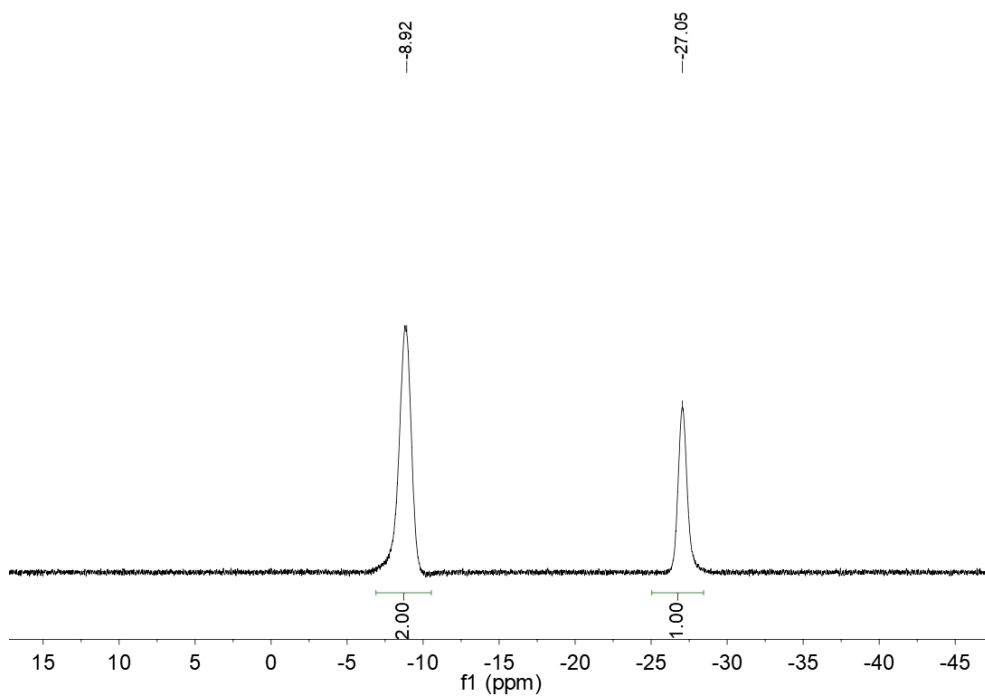
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **41** in CDCl_3 .



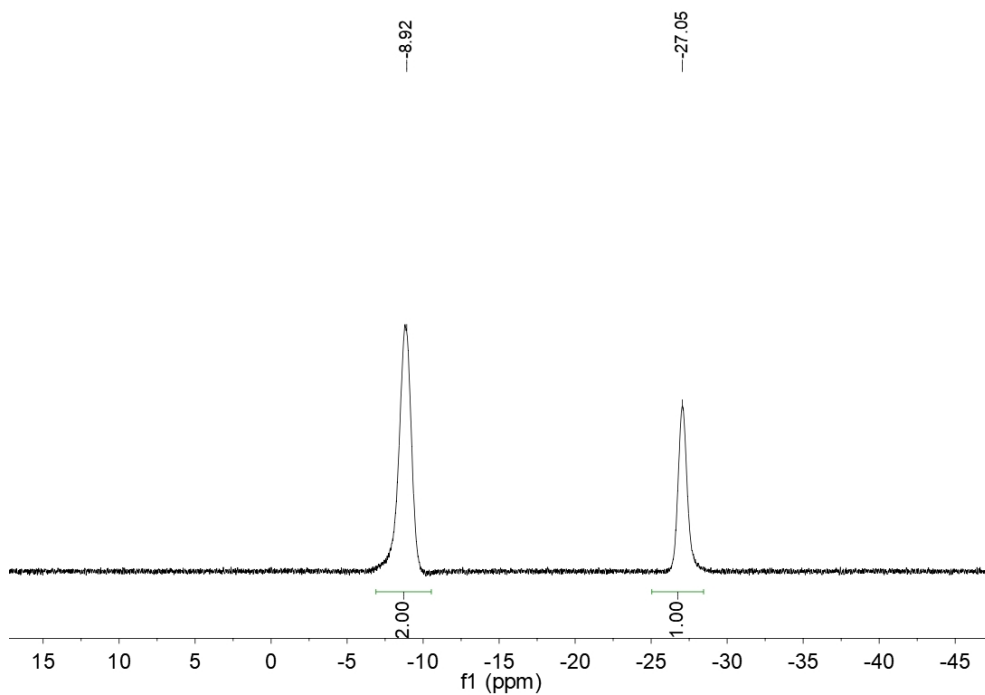
The IR spectrum of the prepared **41**.



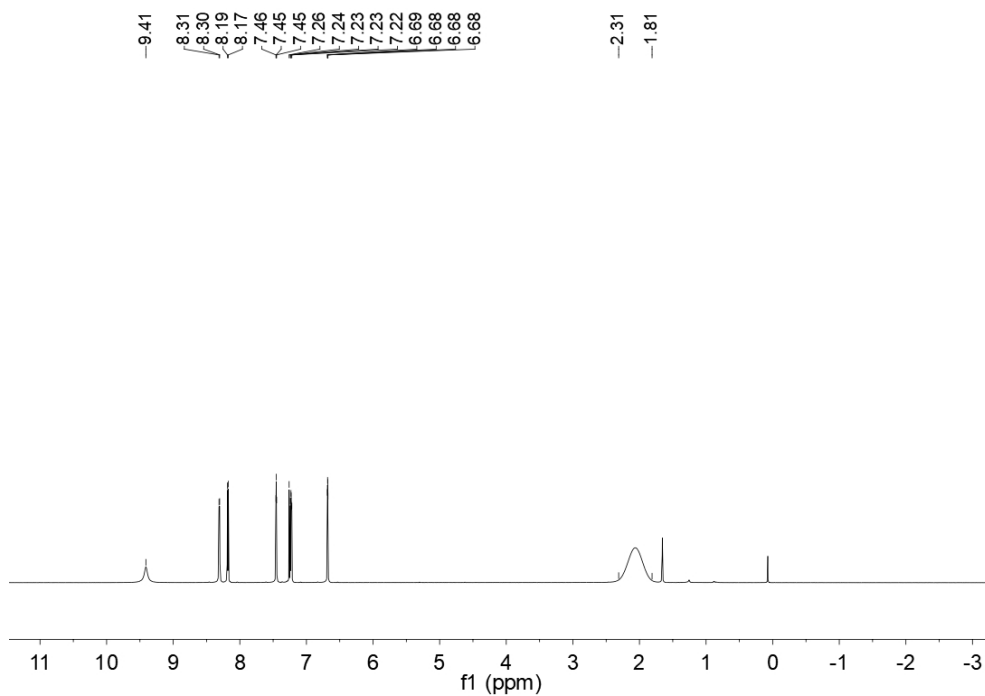
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 76%, white solid, melting point: 118-119 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.92 (*br*, 2 B of **BHB**), -27.05 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.92 (*br*, 2 B of **BHB**), -27.05 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.41 (*br*, H of **NH**), 8.31 (*d*, H of **CH**), 8.18 (*d*, H of **CH**), 7.45 (*t*, H of **CH**), 7.23 (*dd*, H of **CH**), 6.68 (*dd*, H of **CH**), 2.31-1.81 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.41 (*br*, H of **NH**), 8.32 (*d*, H of **CH**), 8.18 (*d*, H of **CH**), 7.45 (*t*, H of **CH**), 7.23 (*dd*, H of **CH**), 6.68 (*dd*, H of **CH**), 2.06 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 143.22 (*s*, 1 C), 140.00 (*s*, 1 C), 133.49 (*s*, 1 C), 126.45 (*s*, 1 C), 123.81 (*s*, 1 C), 115.66 (*s*, 1 C), 102.90 (*s*, 1 C) ppm. IR (cm^{-1}): 3454 (*m*), 2498 (*m*), 2448 (*m*), 2333 (*w*), 1603 (*m*), 1487 (*m*), 1448 (*m*), 1344 (*m*), 1277 (*m*), 1156 (*m*), 1084 (*s*), 963 (*m*), 885 (*w*), 802 (*s*), 730 (*s*), 581 (*m*). HRMS *m/z* calcd for $\text{C}_7\text{H}_{13}\text{B}_3\text{N}_2$ [$\text{M}+\text{Na}$] $^+$: 181.1253, found: 181.1254.



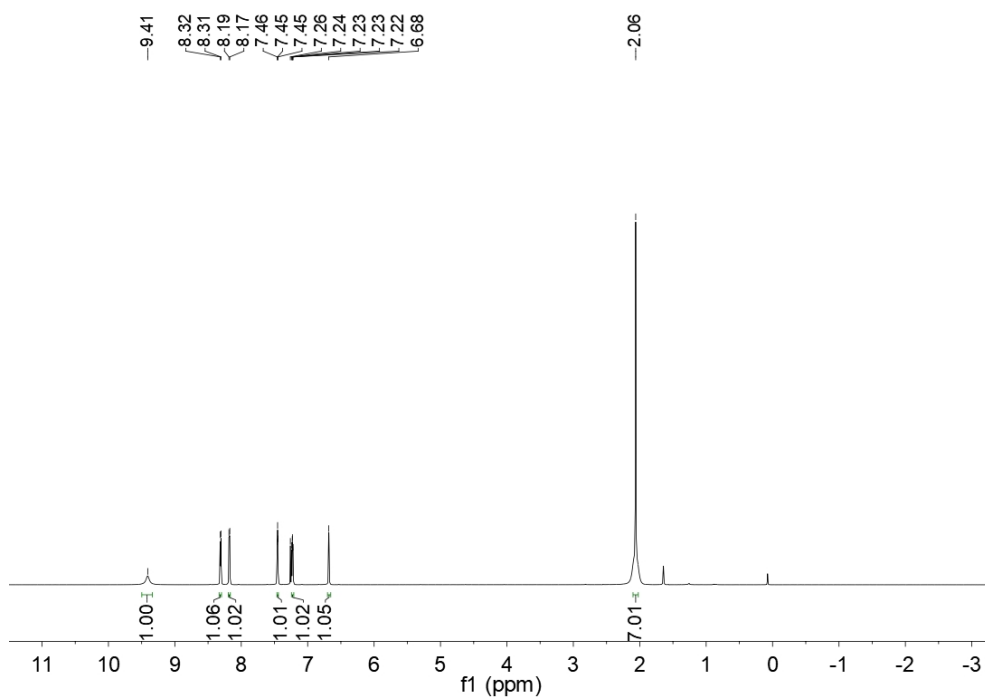
The ^{11}B NMR spectrum of the prepared **42** in CDCl_3 .



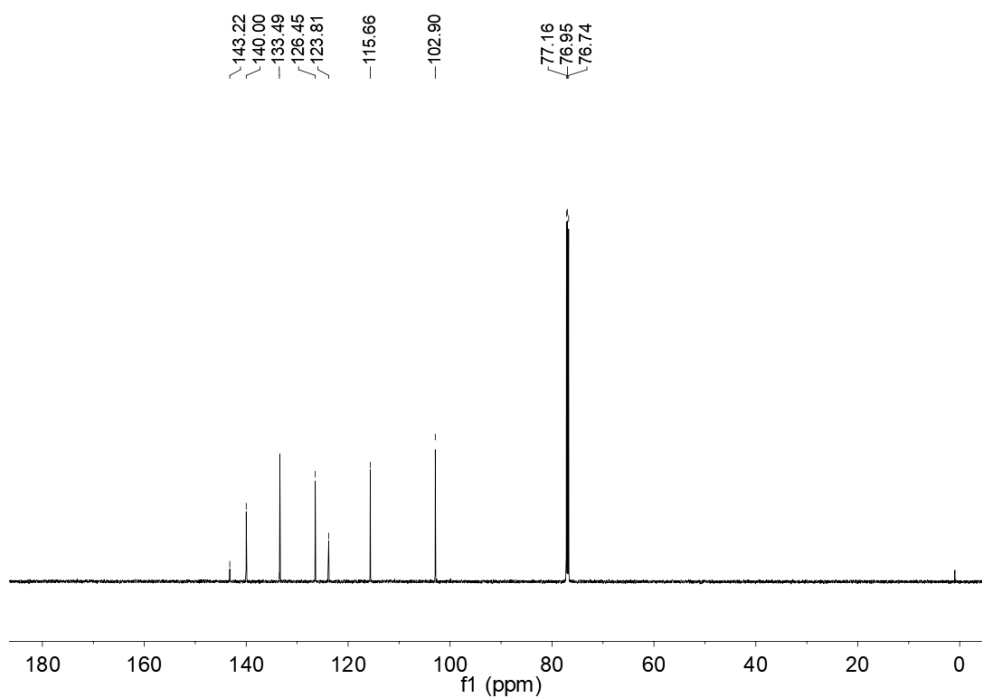
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **42** in CDCl_3 .



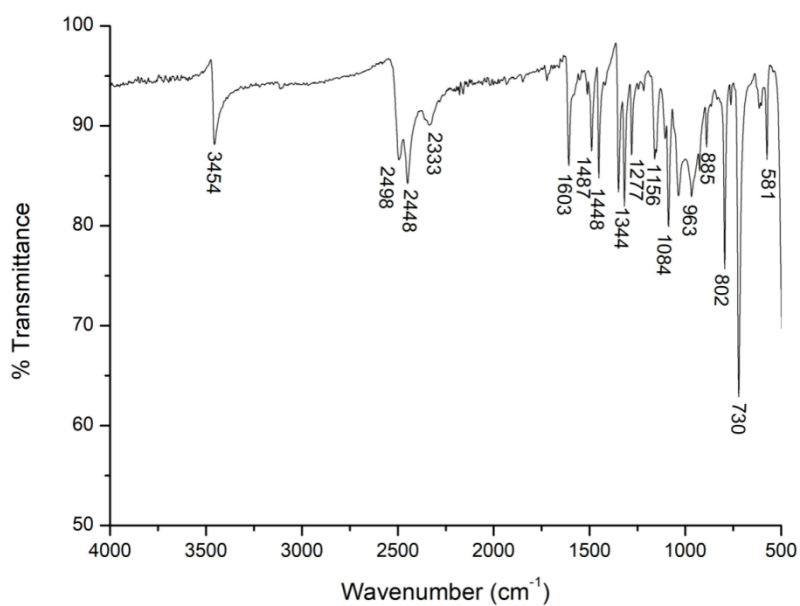
The ^1H NMR spectrum of the prepared **42** in CDCl_3 .



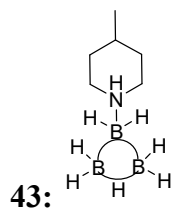
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **42** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **42** in CDCl_3 .

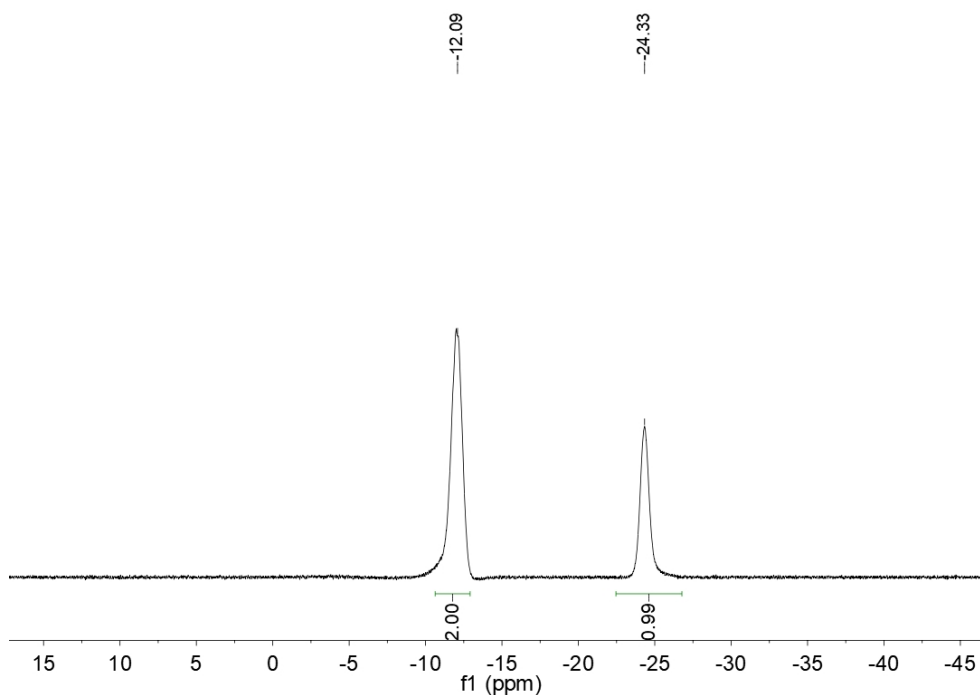


The IR spectrum of the prepared **42**.

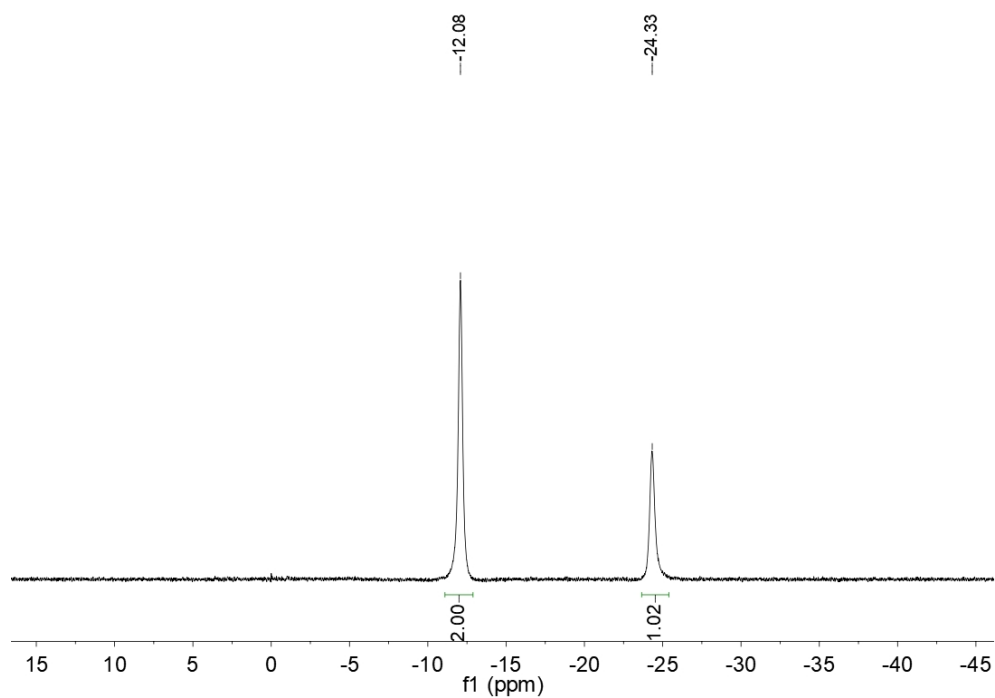


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 79%, white solid, melting point: 43-44 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -12.09 (*br*, 2 B of **BHB**),

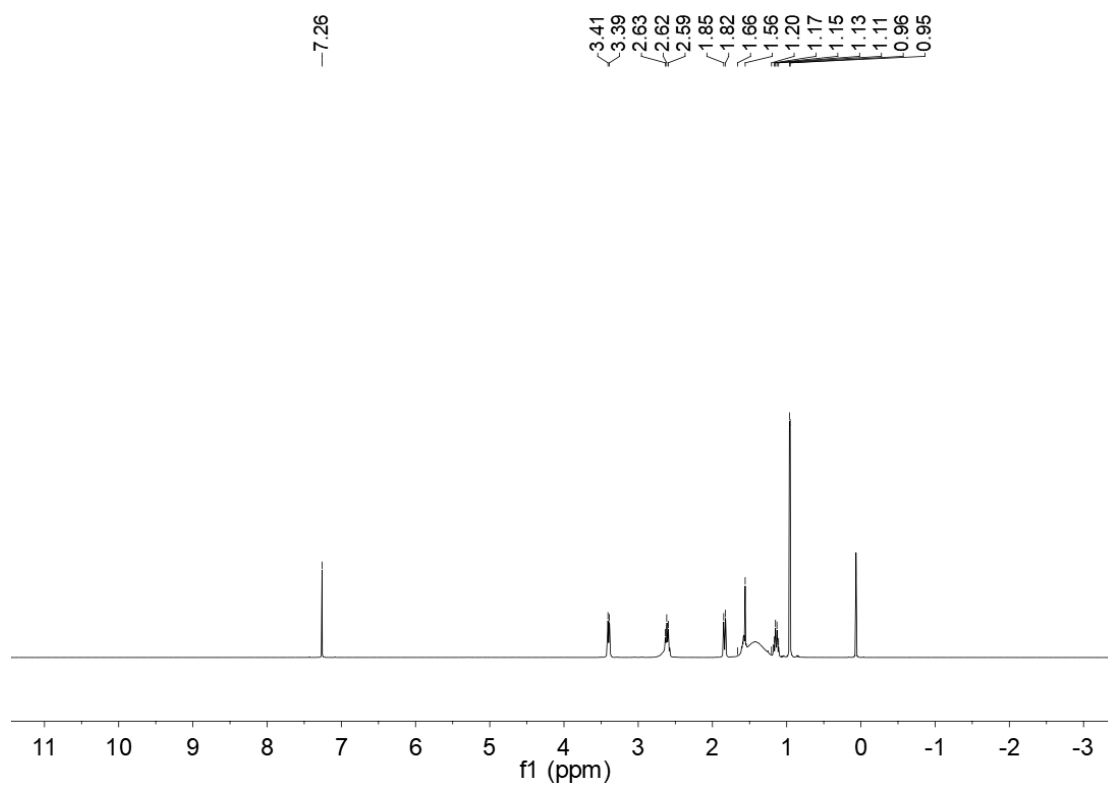
-24.33 (*br*, B of BH_2) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -12.08 (*br*, 2 B of BHB), -24.33 (*br*, B of BH_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 3.40 (*s*, 2 H of CH_2), 2.62 (*m*, 2 H of CH_2 , H of NH), 1.84 (*d*, 2 H of CH_2), 1.58 (*m*, H of CH), 1.66-1.20 (*s*, 7 H of B_3H_7), 1.15 (*dd*, 2 H of 2 CH), 0.96 (*d*, 3 H of CH_3) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 3.40 (*s*, 2 H of CH_2), 2.62 (*m*, 2 H of CH_2 , H of NH), 1.84 (*d*, 2 H of CH_2), 1.58 (*m*, H of CH), 1.43 (*s*, 7 H of B_3H_7), 1.14 (*dd*, 2 H of 2 CH), 0.96 (*d*, 3 H of CH_3) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 53.60 (*s*, 2 C), 34.38 (*s*, 2 C), 29.51 (*s*, 1 C), 21.86 (*s*, 1 C) ppm. IR (cm^{-1}): 3199 (*w*), 2951 (*w*), 2299 (*w*), 2260 (*w*), 1619 (*w*), 1371 (*m*), 1294 (*s*), 1161 (*m*), 1006 (*m*), 907 (*s*), 775 (*s*), 697 (*m*). HRMS m/z calcd for $\text{C}_6\text{H}_{20}\text{B}_3\text{N}$ [M-H] $^-$: 138.1794, found:138.1792.



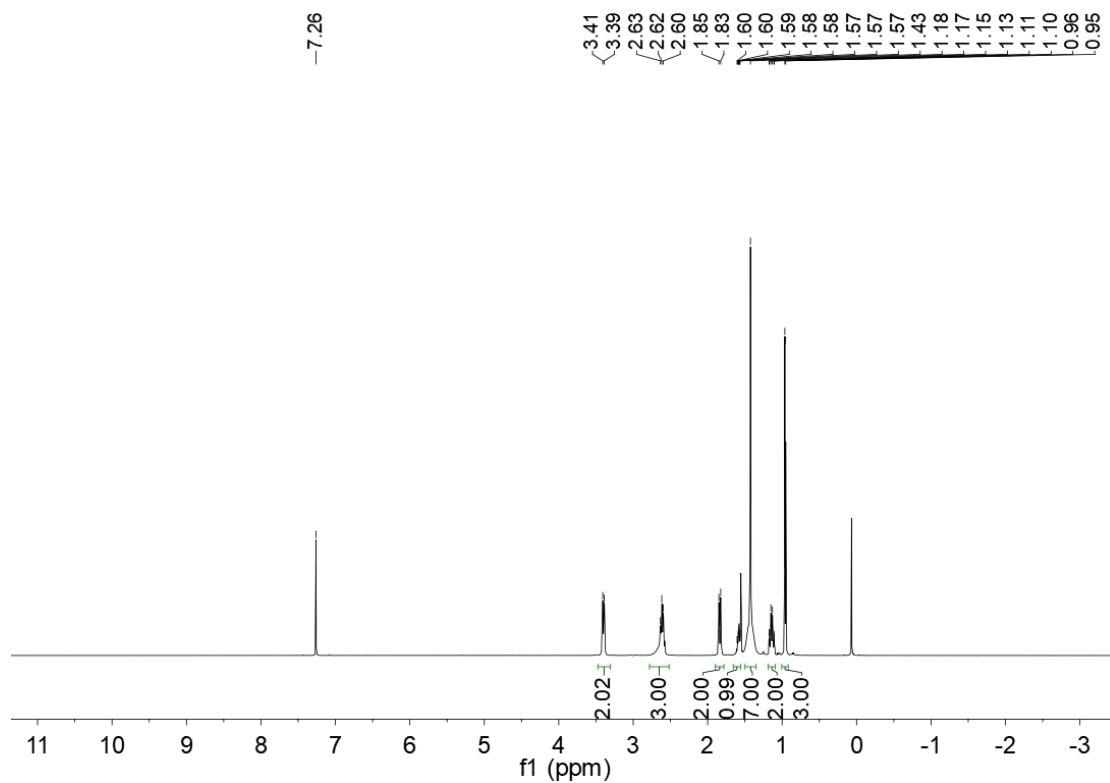
The ^{11}B NMR spectrum of the prepared **43** in CDCl_3 .



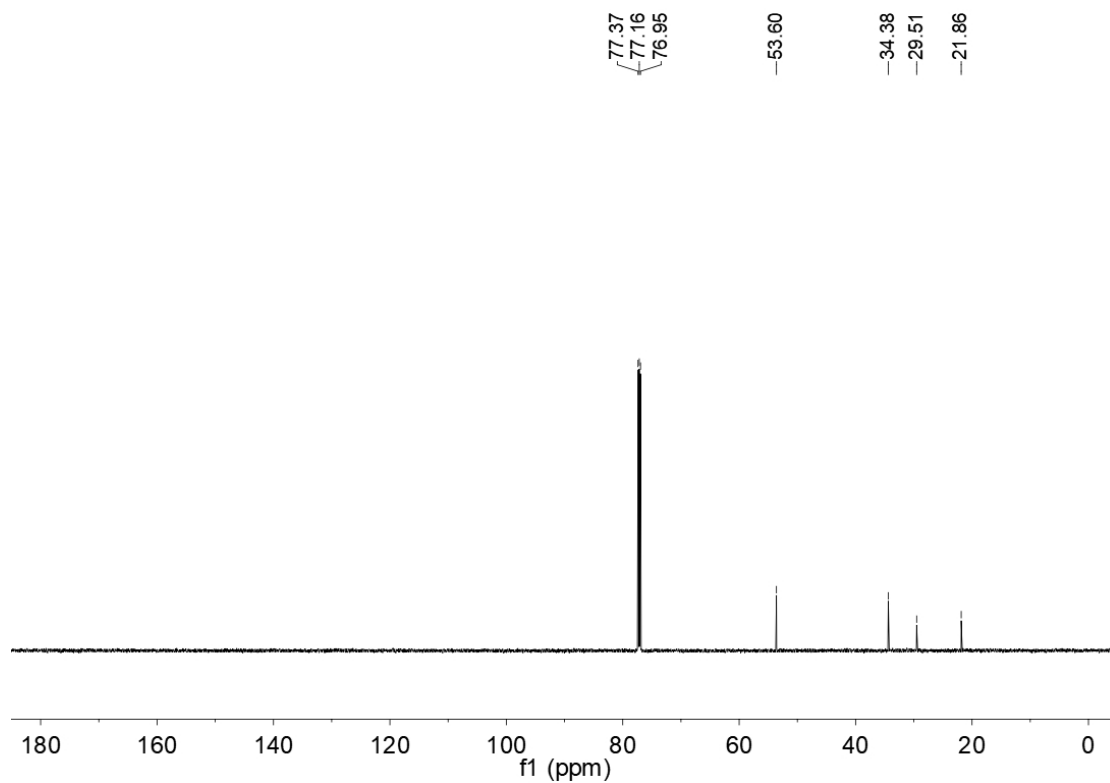
The ¹¹B{¹H} NMR spectrum of the prepared **43** in CDCl₃.



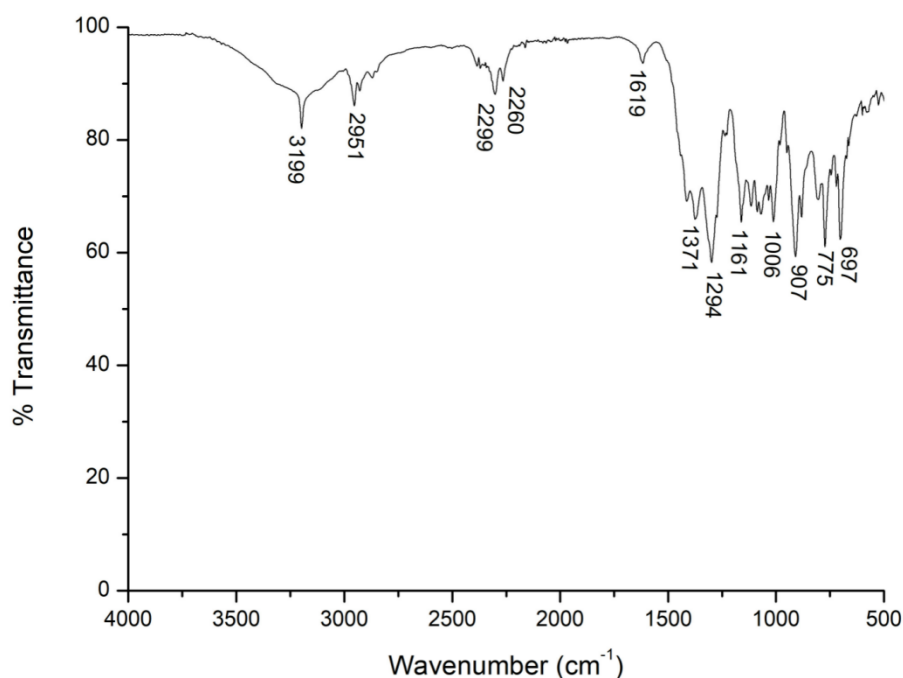
The ¹H NMR spectrum of the prepared **43** in CDCl₃.



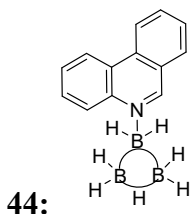
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **43** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **43** in CDCl_3 .

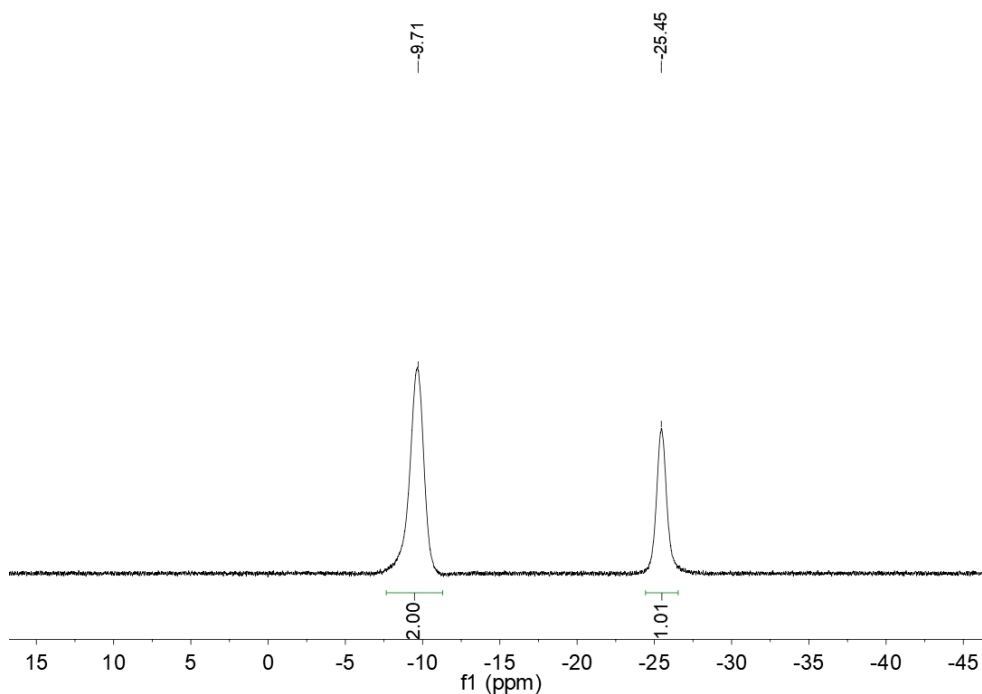


The IR spectrum of the prepared **43**.

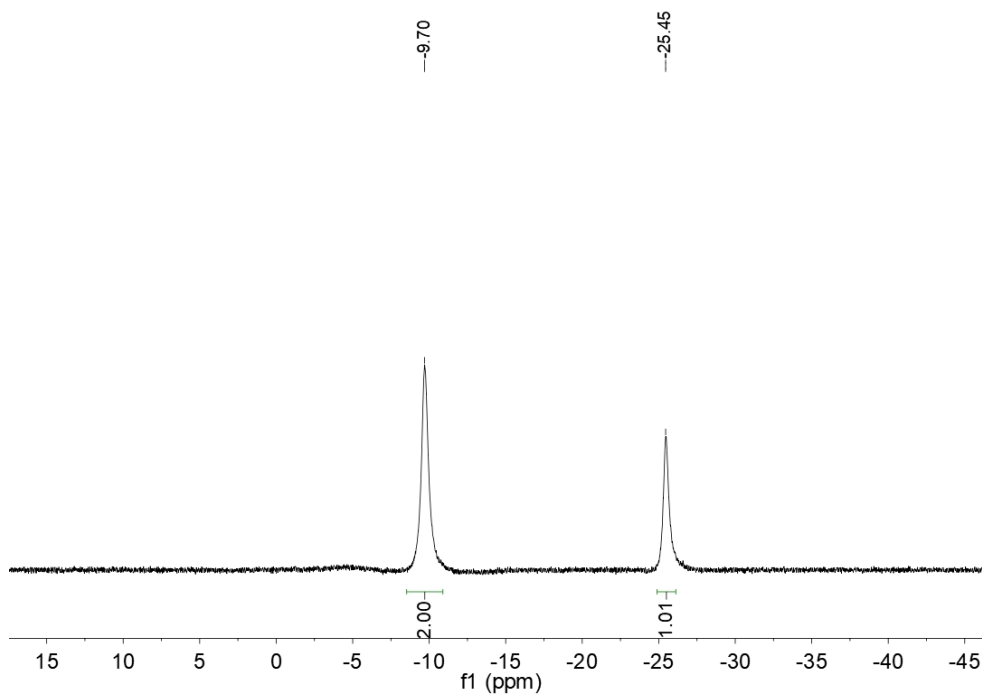


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 78%, white solid, melting point: 146-147 °C. ^{11}B NMR (193 MHz, CD_2Cl_2): δ -9.71 (*br*, 2 B of **BHB**), -25.45 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CD_2Cl_2): δ -9.70 (*br*, 2 B of **BHB**), -25.45 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CD_2Cl_2): δ 9.45 (*s*, H of **CH**), 9.11 (*d*, H of **CH**), 8.65 (*t*, 2 H of 2 **CH**), 8.18 (*d*, H of **CH**), 8.08 (*t*, H of **CH**), 7.91 (*t*, H of **CH**), 7.85 (*dd*, 2 H of 2 **CH**), 2.39-1.87 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CD_2Cl_2): δ 9.45 (*s*, H of **CH**), 9.12 (*d*, H of **CH**), 8.65 (*t*, 2 H of 2 **CH**), 8.19 (*d*, H of **CH**), 8.08 (*t*, H of **CH**), 7.91 (*t*, H of **CH**), 7.85 (*dd*, 2 H of 2 **CH**), 2.13 (*br*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CD_2Cl_2): δ 155.03 (*s*, 1 C), 139.46 (*s*, 1 C), 135.77 (*s*, 1 C), 134.54 (*s*, 1 C), 131.63 (*s*, 1 C), 130.60 (*s*, 1 C), 129.58 (*s*, 1 C), 129.28 (*s*, 1 C), 125.69 (*s*, 1 C), 125.63 (*s*, 1 C), 124.92 (*s*, 1 C), 123.41 (*s*, 1 C), 122.59 (*s*, 1 C) ppm. IR (cm^{-1}): 3106 (*m*), 3073 (*m*), 2498 (*s*), 2443 (*s*), 1957 (*w*),

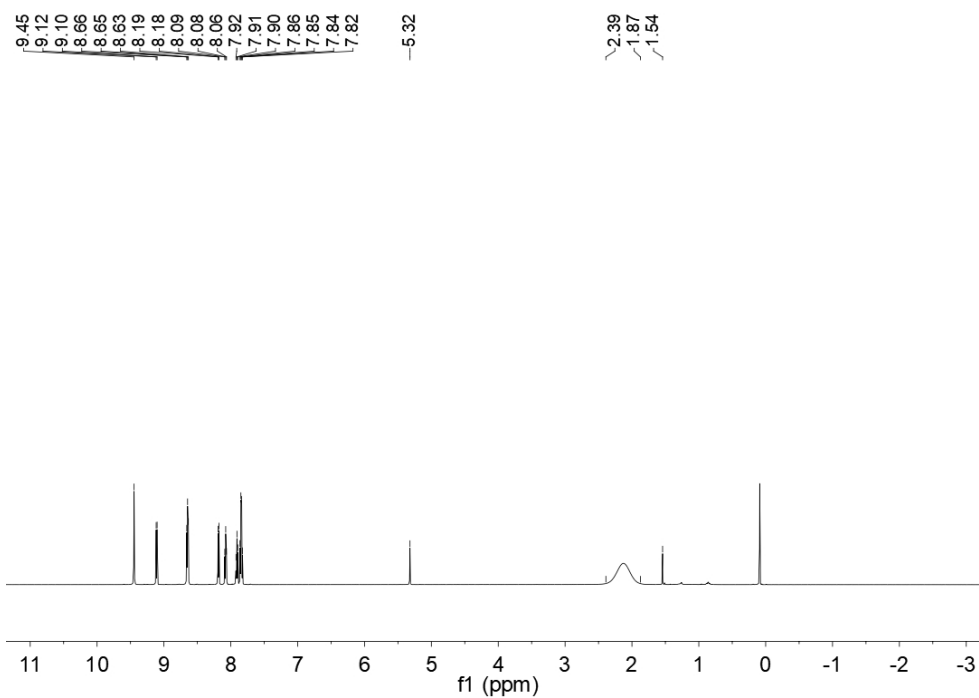
1619 (m), 1526 (m), 1443 (m), 1837 (m), 1249 (m), 1156 (s), 1034 (s), 963 (m), 852 (m), 742 (s), 703 (s), 614 (m). HRMS m/z calcd for $C_{13}H_{16}B_3N$ $[M+Na]^+$: 242.1461, found: 242.1462.



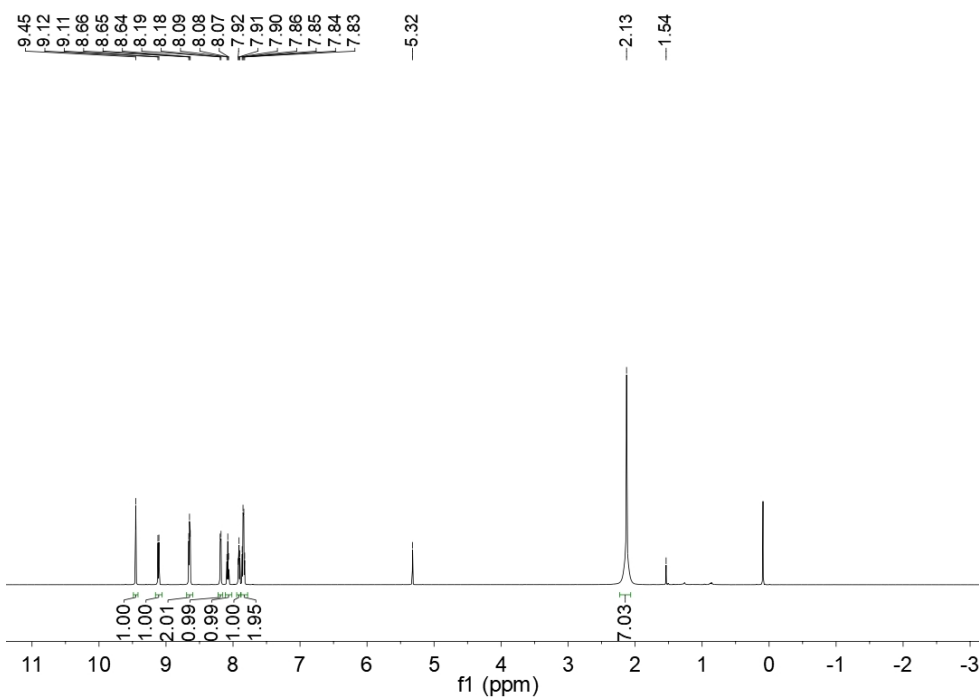
The ^{11}B NMR spectrum of the prepared **44** in CD_2Cl_2 .



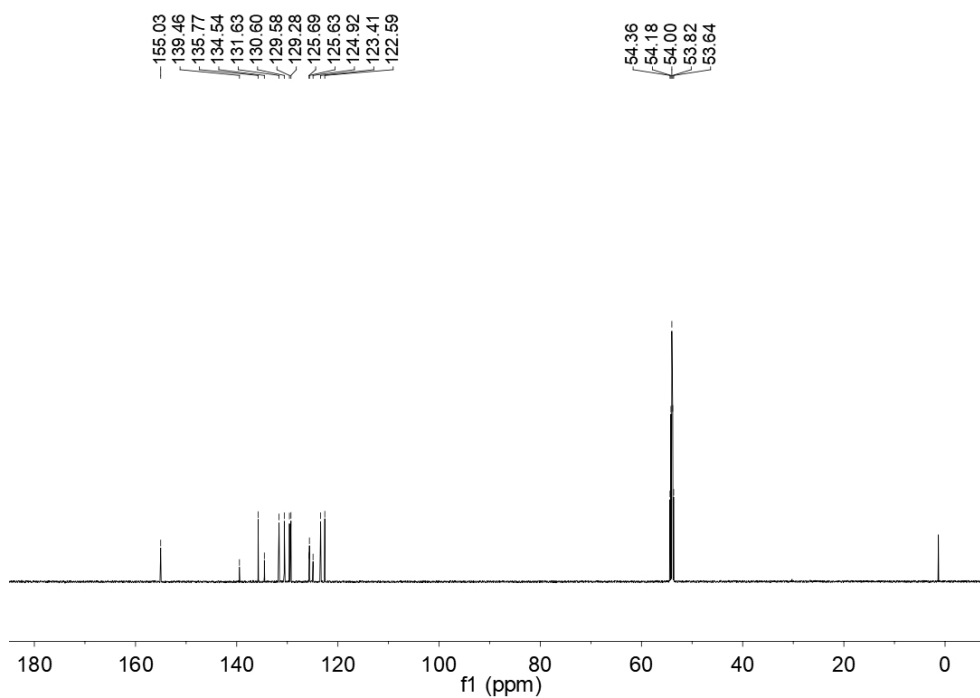
The $^{11}B\{^1H\}$ NMR spectrum of the prepared **44** in CD_2Cl_2 .



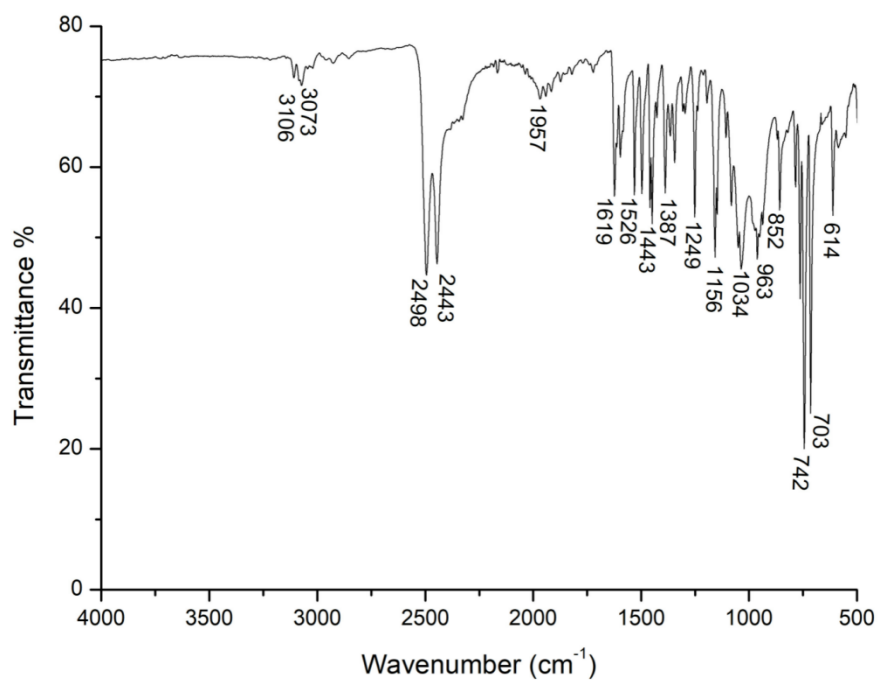
The ¹H NMR spectrum of the prepared **44** in CD₂Cl₂.



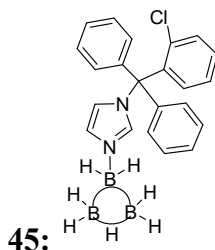
The ¹H{¹¹B} NMR spectrum of the prepared **44** in CD₂Cl₂.



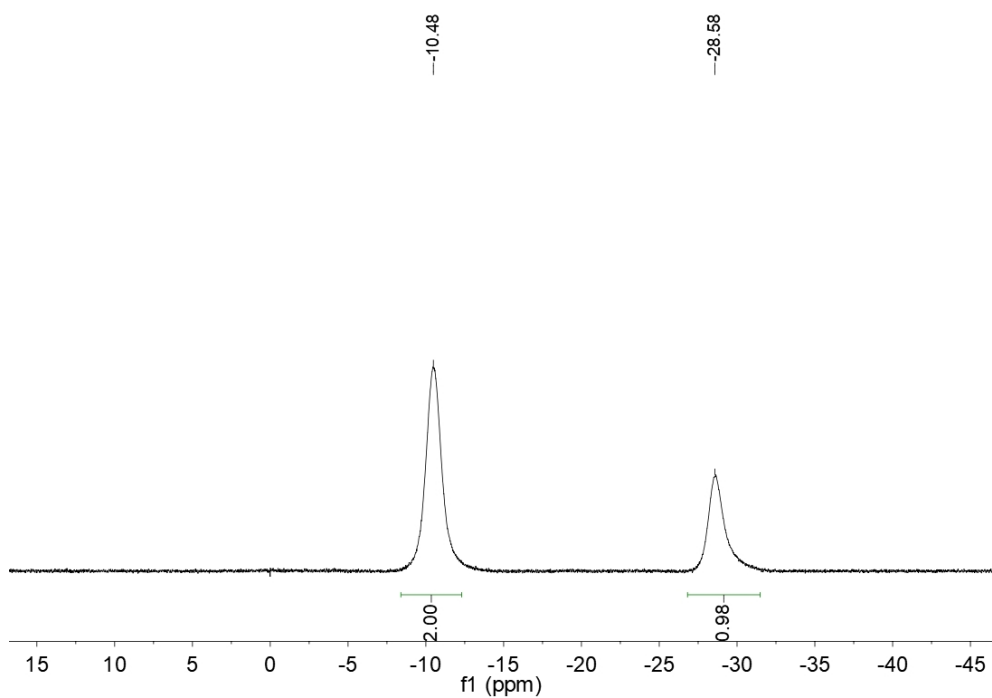
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **44** in CD_2Cl_2 .



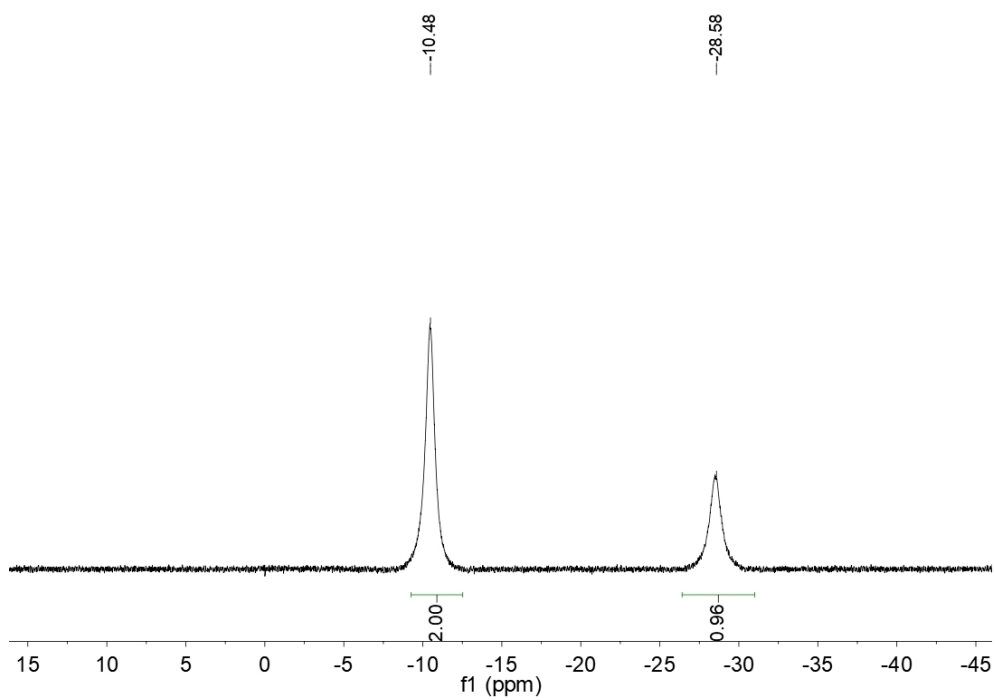
The IR spectrum of the prepared **44**.



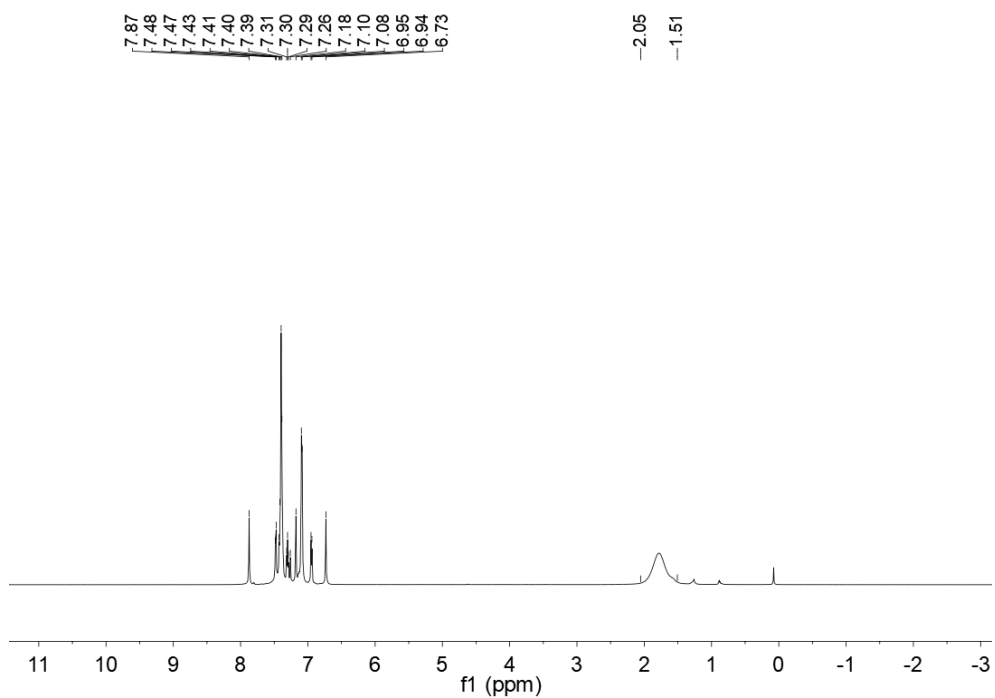
Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 2:1$). Yield 66%, white solid, melting point: 109-110 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -10.48 (*br*, 2 B of **BHB**), -28.58 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.48 (*br*, 2 B of **BHB**), -28.58 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 7.87 (*s*, H of **CH**), 7.48 (*d*, H of **CH**), 7.41 (*m*, 7 H of 7 **CH**), 7.30 (*t*, H of **CH**), 7.18 (*s*, H of **CH**), 7.09 (*d*, 4 H of 4 **CH**), 6.95 (*d*, H of **CH**), 6.73 (*s*, H of **CH**), 2.05-1.51 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 7.87 (*s*, H of **CH**), 7.48 (*d*, H of **CH**), 7.41 (*m*, 7 H of 7 **CH**), 7.30 (*t*, H of **CH**), 7.18 (*s*, H of **CH**), 7.10 (*d*, 4 H of 4 **CH**), 6.95 (*d*, H of **CH**), 6.73 (*s*, H of **CH**), 1.78 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 139.05 (*s*, 2 C), 138.78 (*s*, 1 C), 138.68 (*s*, 1 C), 135.66 (*s*, 1 C), 132.89 (*s*, 1 C), 130.93 (*s*, 1 C), 130.77 (*s*, 1 C), 129.93 (*s*, 4 C), 129.15 (*s*, 2 C), 128.73 (*s*, 4 C), 127.53 (*s*, 1 C), 126.09 (*s*, 1 C), 122.01 (*s*, 1 C), 100.09 (*s*, 1 C) ppm. IR (cm^{-1}): 3190 (*m*), 2498 (*m*), 2425 (*m*), 1497 (*m*), 1448 (*s*), 1254 (*w*), 1163 (*m*), 1108 (*s*), 1042 (*m*), 981 (*m*), 829 (*w*), 744 (*s*), 702 (*s*), 659 (*m*), 409 (*m*). HRMS *m/z* calcd for $\text{C}_{22}\text{H}_{24}\text{B}_3\text{N}_2\text{Cl}$ $[\text{M}+\text{Na}]^+$: 407.1812, found: 407.1810.



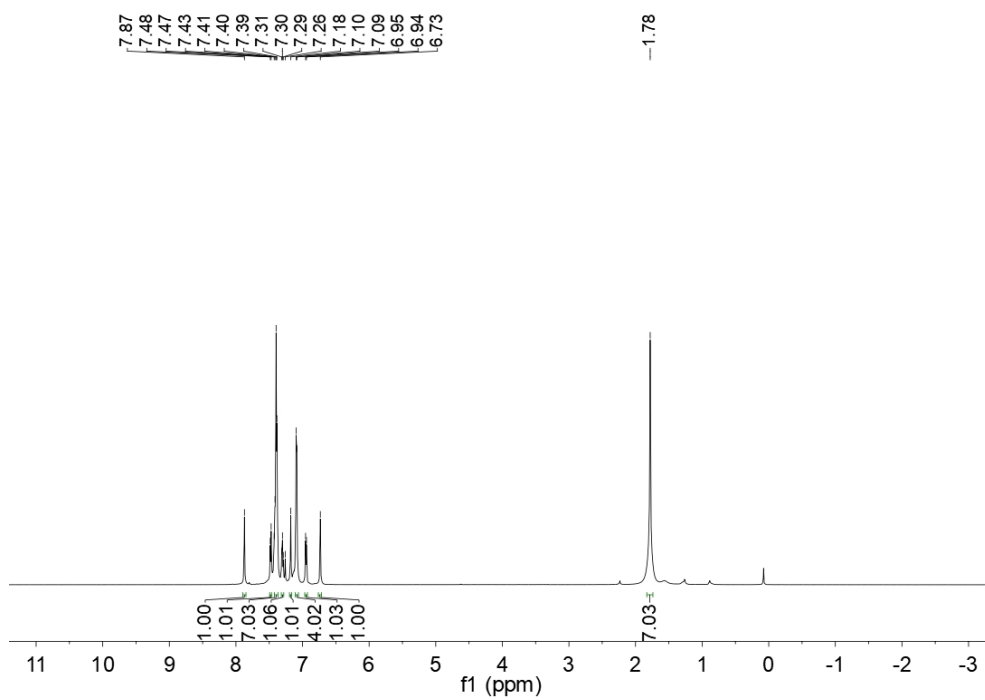
The ¹¹B NMR spectrum of the prepared **45** in CDCl₃.



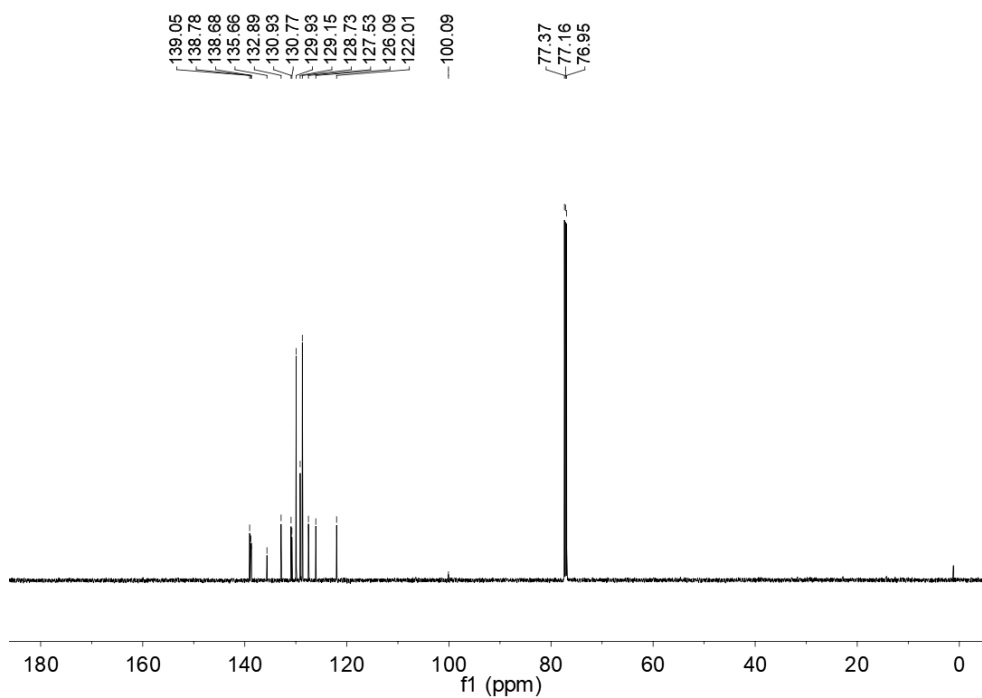
The ¹¹B{¹H} NMR spectrum of the prepared **45** in CDCl₃.



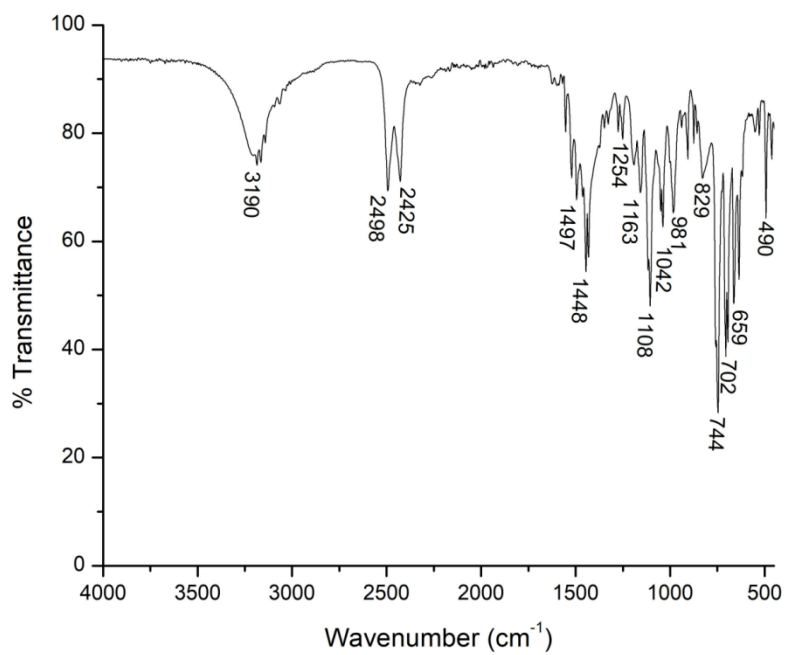
The ^1H NMR spectrum of the prepared **45** in CDCl_3 .



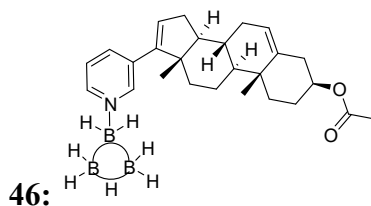
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **45** in CDCl_3 .



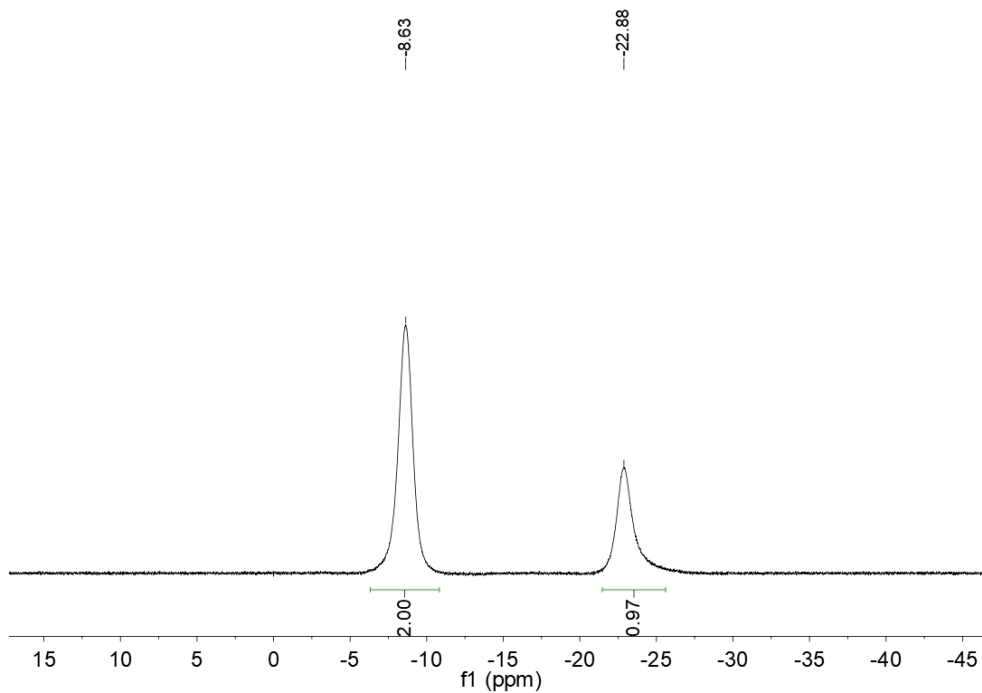
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **45** in CDCl_3 .



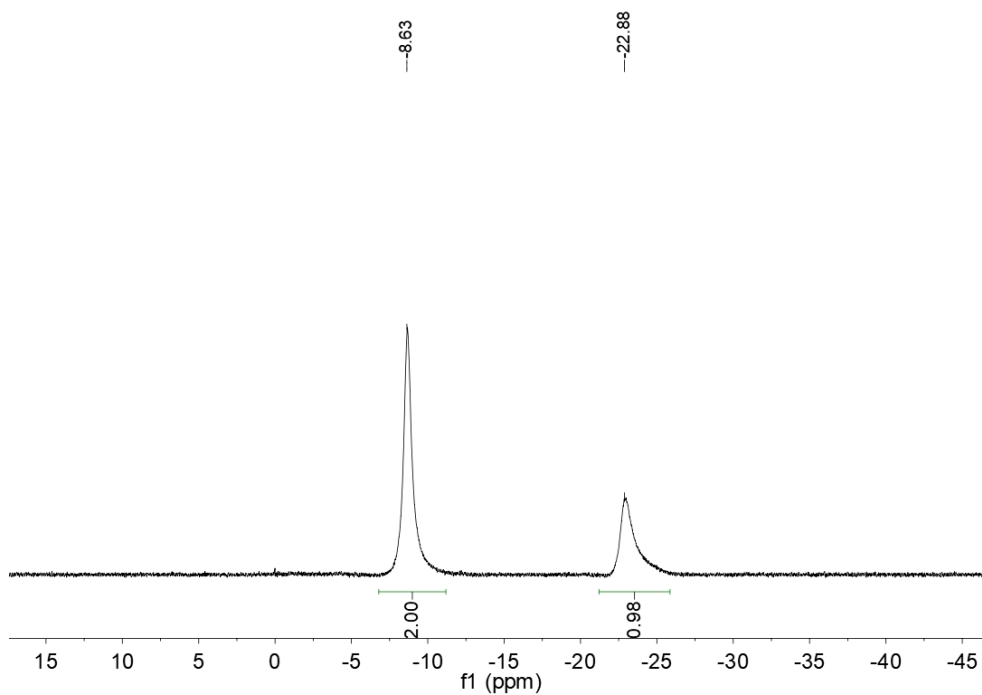
The IR spectrum of the prepared **45**.



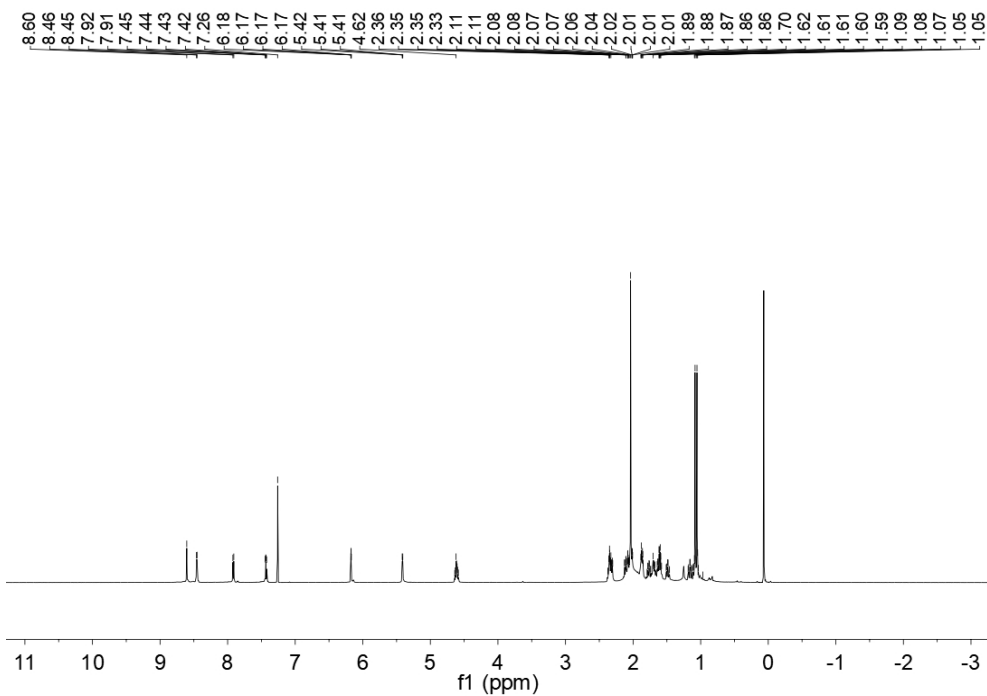
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 60%, white solid, melting point: 149-150 °C. ¹¹B NMR (193 MHz, CDCl₃): δ -8.63 (*br*, 2 B of **BHB**), -22.88 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -8.63 (*br*, 2 B of **BHB**), -22.88 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.60 (*s*, 1 H), 8.46 (*d*, 1 H), 7.92 (*d*, 1 H), 7.44 (*m*, 1 H), 6.18 (*q*, 1 H), 5.42 (*t*, 1 H), 4.62 (*m*, 1 H), 2.34 (*m*, 3 H), 2.10 (*m*, 2 H), 2.04 (*s*, 3 H), 2.01 (*m*, 7 H of B_{3H₇), 1.87 (*m*, 2 H), 1.69 (*m*, 6 H), 1.49 (*m*, 1 H), 1.11 (*m*, 9 H) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 8.61 (*s*, 1 H), 8.46 (*d*, 1 H), 7.92 (*d*, 1 H), 7.43 (*m*, 1 H), 6.18 (*d*, 1 H), 5.42 (*m*, 1 H), 4.64 (*m*, 1 H), 2.34 (*m*, 3 H), 2.10 (*m*, 2 H), 2.04 (*s*, 3 H), 2.00 (*s*, 7 H of B_{3H₇), 1.87 (*m*, 2 H), 1.69 (*m*, 6 H), 1.49 (*m*, 1 H), 1.11 (*m*, 9 H) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 170.56 (*s*, 1 C), 149.12 (*s*, 1 C), 145.12 (*s*, 1 C), 145.01 (*s*, 1 C), 140.14 (*s*, 1 C), 137.96 (*s*, 1 C), 135.34 (*s*, 1 C), 133.36 (*s*, 1 C), 124.89 (*s*, 1 C), 122.11 (*s*, 1 C), 73.82 (*s*, 1 C), 57.46 (*s*, 1 C), 50.15 (*s*, 1 C), 47.45 (*s*, 1 C), 38.17 (*s*, 1 C), 36.95 (*s*, 1 C), 36.82 (*s*, 1 C), 35.00 (*s*, 1 C), 32.09 (*s*, 1 C), 31.44 (*s*, 1 C), 30.35 (*s*, 1 C), 27.77 (*s*, 1 C), 21.49 (*s*, 1 C), 20.83 (*s*, 1 C), 19.30 (*s*, 1 C), 16.65 (*s*, 1 C) ppm. IR (cm⁻¹): 2935 (*m*), 2846 (*w*), 2498 (*m*), 2437 (*m*), 1730 (*s*), 1597 (*s*), 1432 (*m*), 1366 (*m*), 1238 (*s*), 1156 (*w*), 1028 (*s*), 973 (*w*), 802 (*m*), 686 (*m*), 598 (*w*). HRMS *m/z* calcd for C₂₆H₄₀B₃NO₂ [M+Na]⁺: 454.3243, found: 454.3242.}}



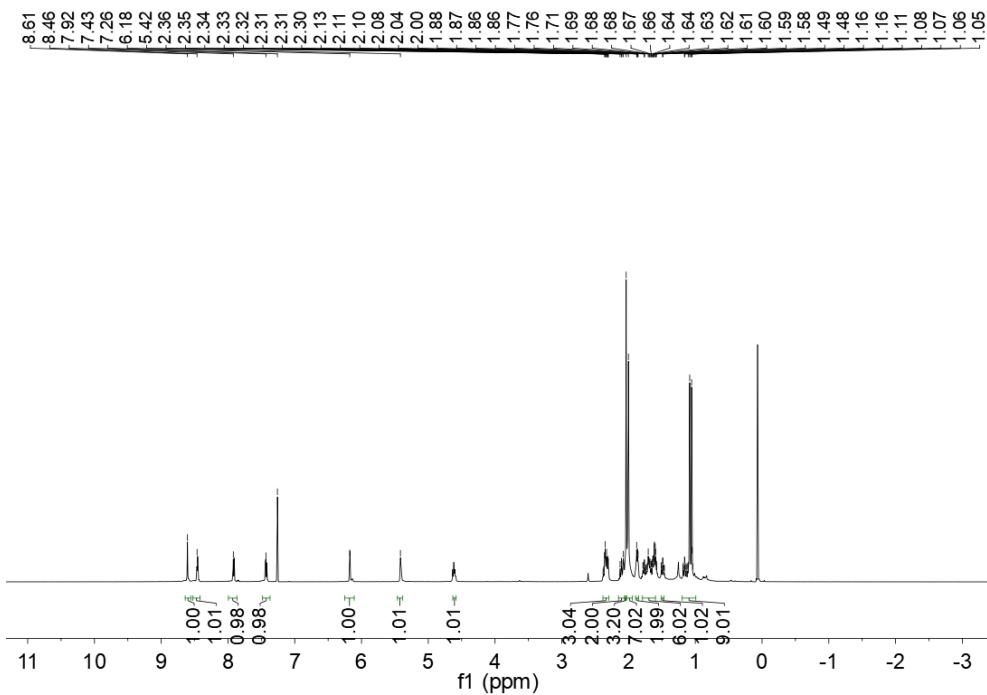
The ^{11}B NMR spectrum of the prepared **46** in CDCl_3 .



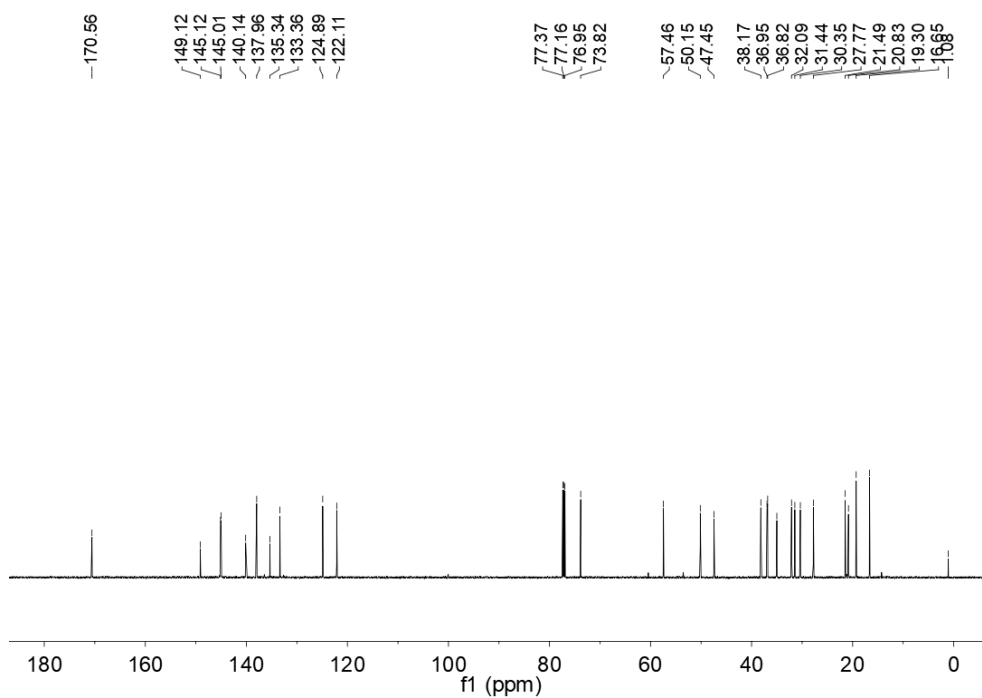
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **46** in CDCl_3 .



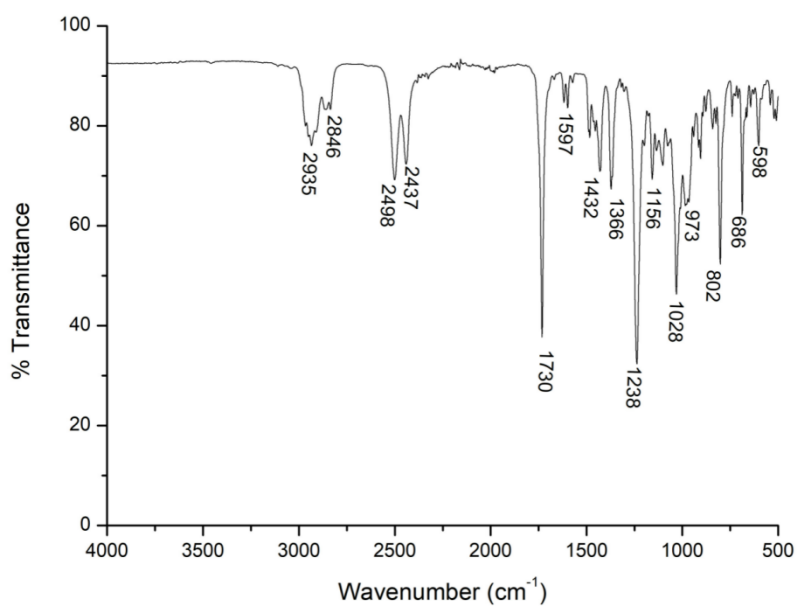
The ^1H NMR spectrum of the prepared **46** in CDCl_3 .



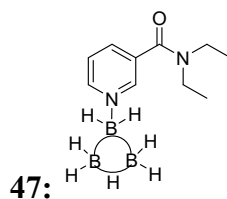
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **46** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **46** in CDCl_3 .

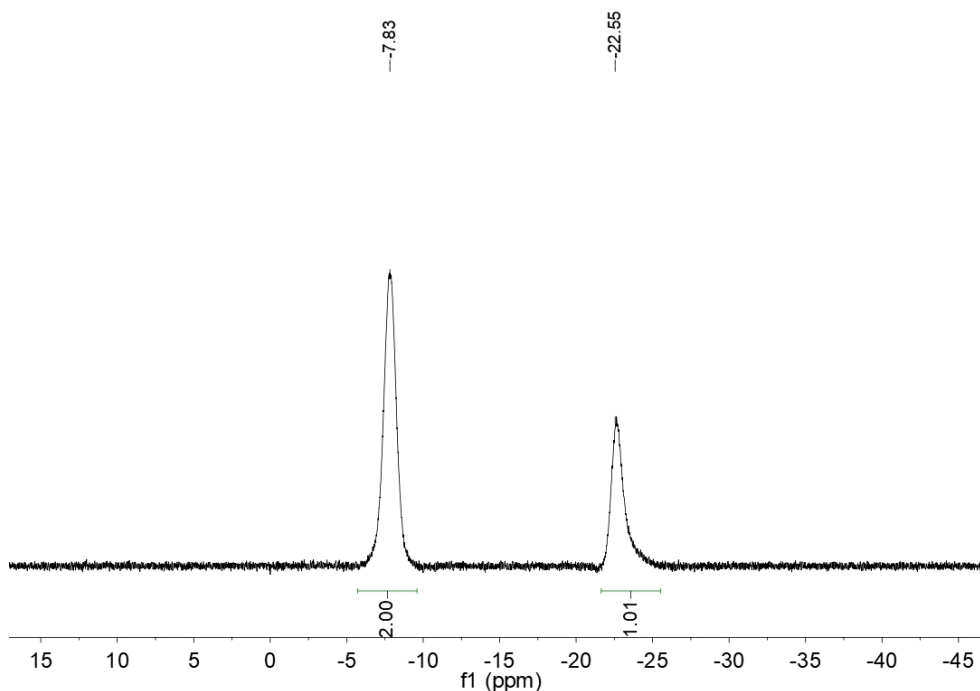


The IR spectrum of the prepared **46**.

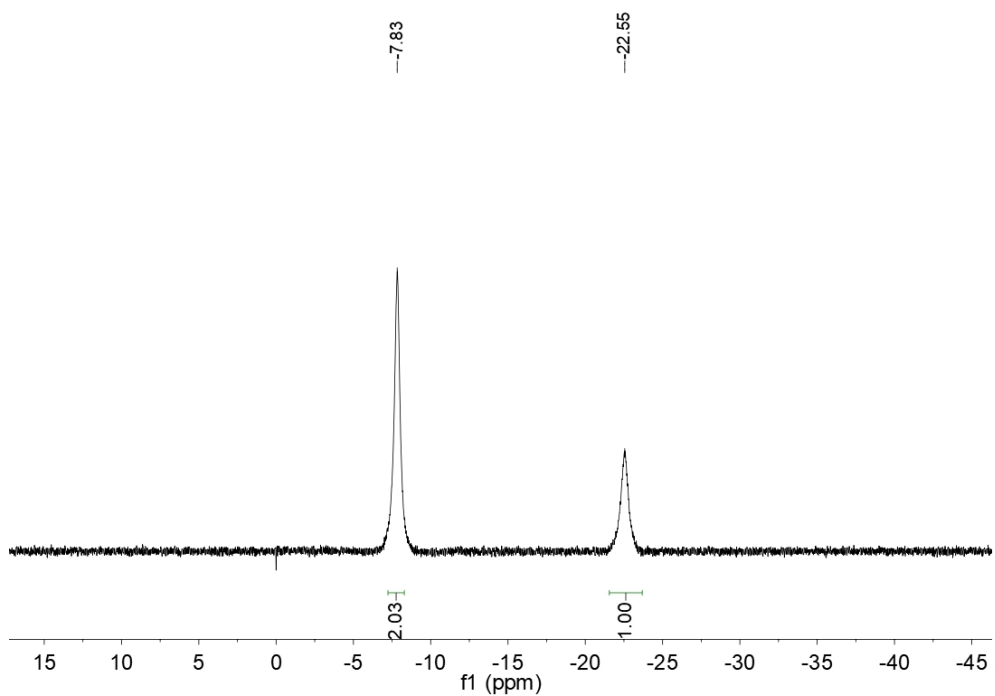


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:10). Yield 55%, white solid, melting point: 152-153 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.83 (*br*, 2 B of

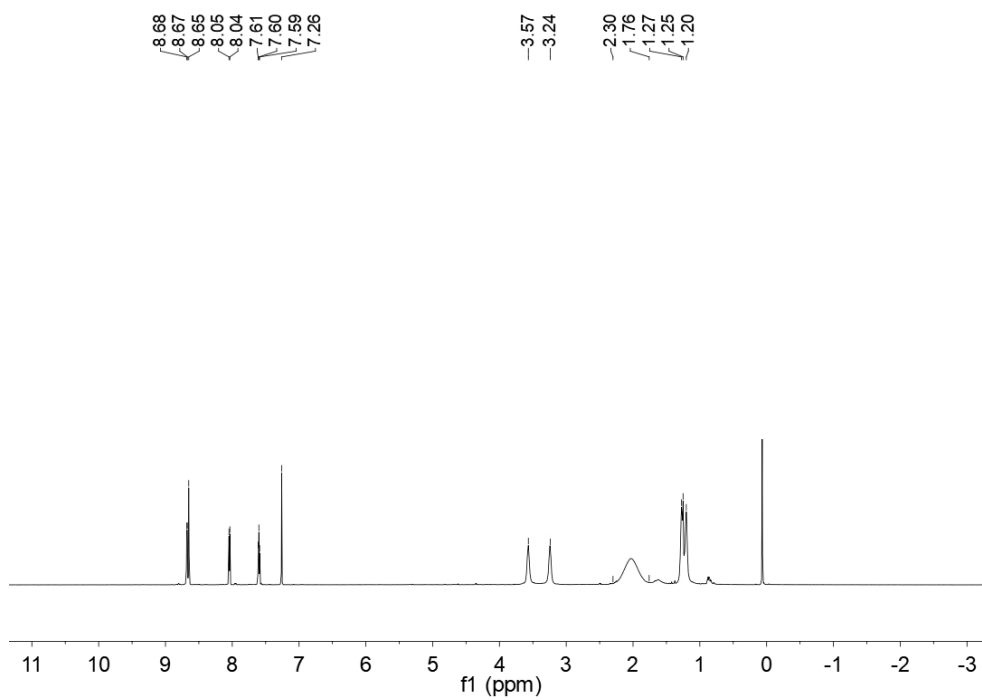
BHB), -22.55 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.83 (*br*, 2 B of **BHB**), -22.55 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 8.68 (*d*, H of **CH**), 8.65 (*s*, H of **CH**), 8.05 (*d*, H of **CH**), 7.60 (*t*, H of **CH**), 3.57 (*s*, 2 H of **CH**₂), 3.24 (*s*, 2 H of **CH**₂), 2.30-1.76 (*br*, 7 H of B_{3**H**₇), 1.24 (*m*, 6 H of 2 **CH**₃) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 8.68 (*d*, H of **CH**), 8.65 (*s*, H of **CH**), 8.04 (*d*, H of **CH**), 7.60 (*t*, H of **CH**), 3.57 (*s*, 2 H of **CH**₂), 3.25 (*s*, 2 H of **CH**₂), 2.03 (*s*, 7 H of B_{3**H**₇), 1.24 (*m*, 6 H of 2 **CH**₃) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 165.58 (*s*, 1 C), 148.21 (*s*, 1 C), 145.43 (*s*, 1 C), 139.58 (*s*, 1 C), 135.36 (*s*, 1 C), 125.67 (*s*, 1 C), 44.05 (*s*, 1 C), 40.62 (*s*, 1 C), 14.83 (*s*, 1 C), 13.22 (*s*, 1 C) ppm. IR (cm⁻¹): 2978 (*w*), 2504 (*m*), 2437 (*m*), 1630 (*s*), 1426 (*s*), 1288 (*s*), 1150 (*w*), 1100 (*m*), 918 (*m*), 775 (*m*), 697 (*m*), 642 (*w*). HRMS *m/z* calcd for C₁₀H₂₁B₃N₂O [M+Na]⁺: 241.1830, found: 241.1831.}}



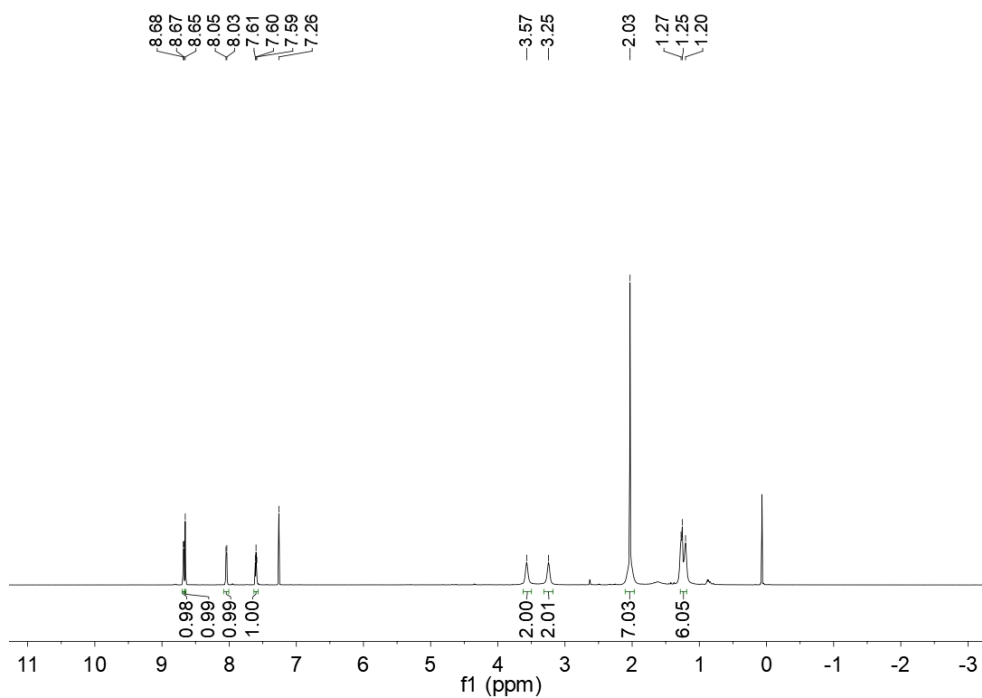
The ¹¹B NMR spectrum of the prepared **47** in CDCl₃.



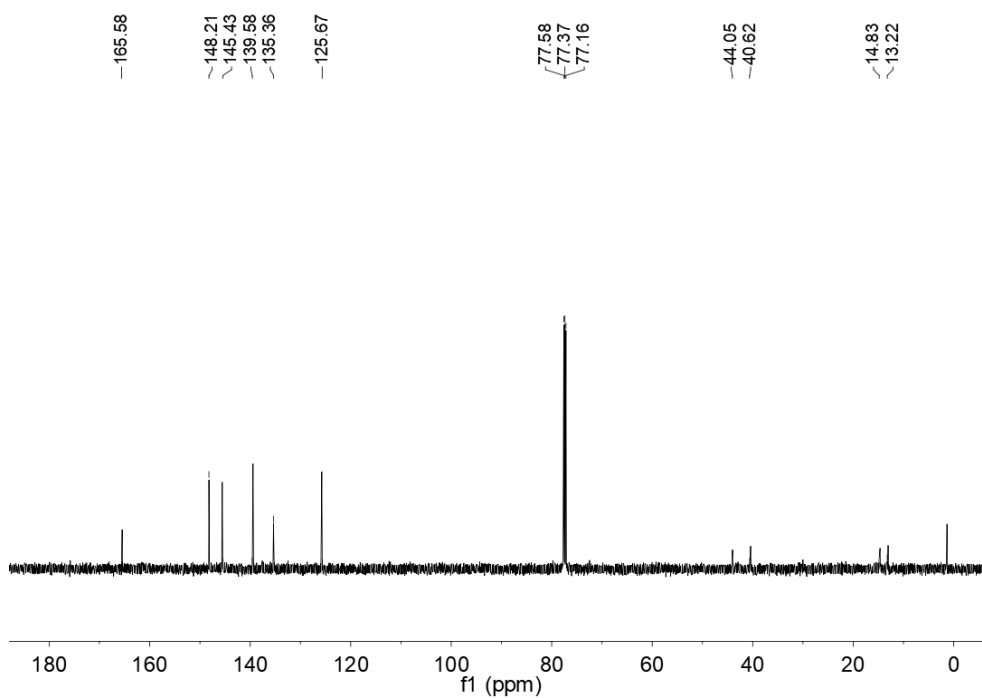
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **47** in CDCl_3 .



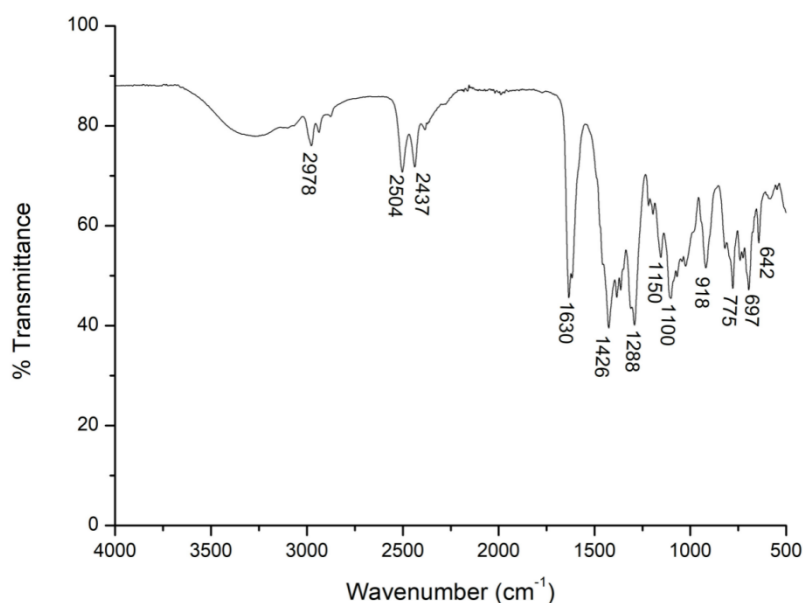
The ^1H NMR spectrum of the prepared **47** in CDCl_3 .



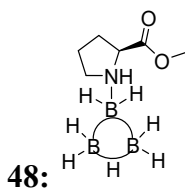
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **47** in CDCl_3 .



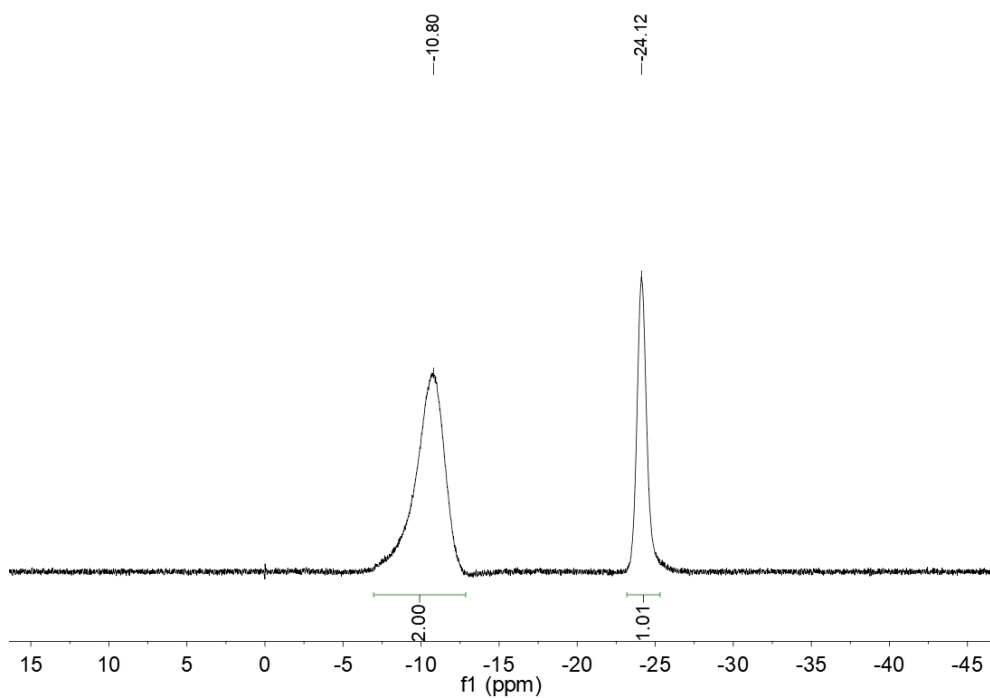
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **47** in CDCl_3 .



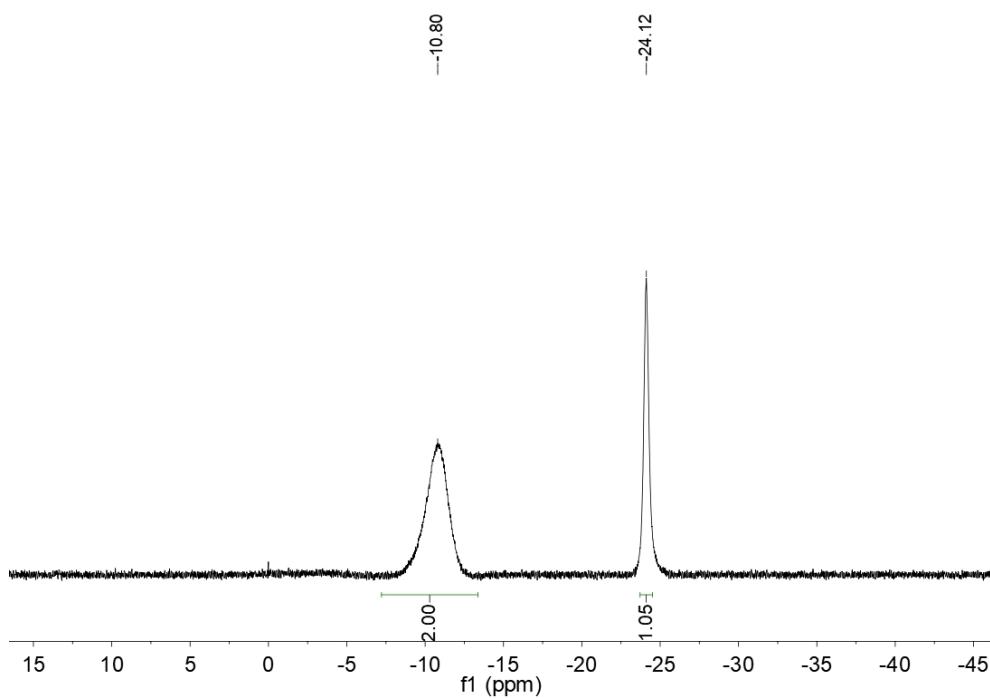
The IR spectrum of the prepared **47**.



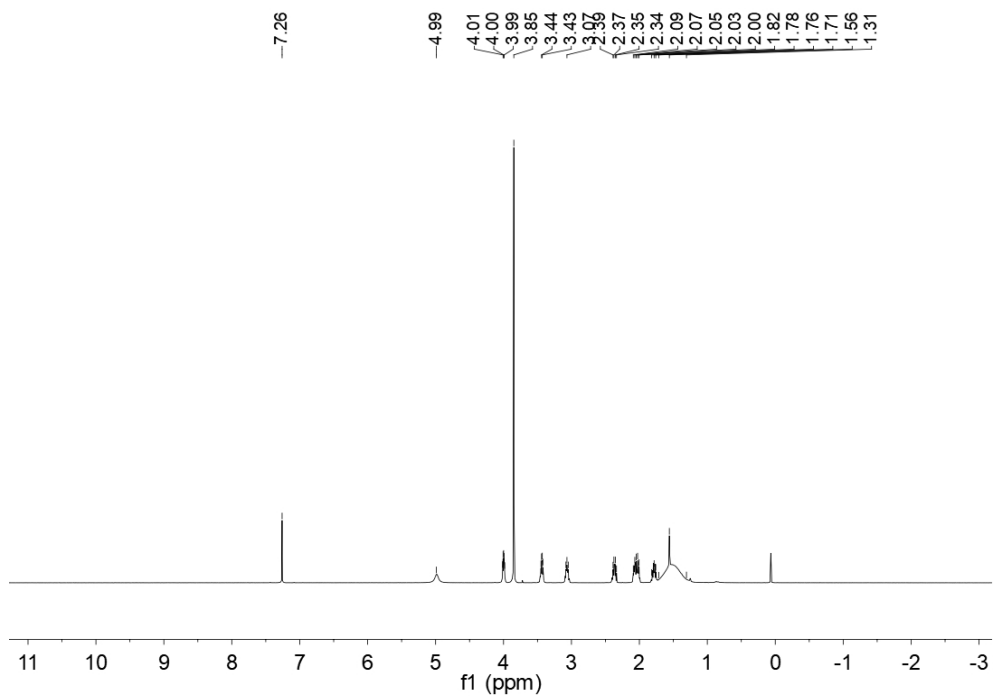
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 76%, white solid, melting point: 30-31 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -10.80 (*br*, 2 B of **BHB**), -24.12 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.80 (*br*, 2 B of **BHB**), -24.12 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.99 (*br*, H of **NH**), 4.00 (*m*, H of **CH**), 3.85 (*s*, 3 H of **CH₃**), 3.44 (*m*, H of **CH**), 3.07 (*m*, H of **CH**), 2.37 (*m*, H of **CH**), 2.05 (*m*, 2 H of 2 **CH**), 1.79 (*m*, H of **CH**), 1.71-1.31 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.98 (*br*, H of **NH**), 4.00 (*m*, H of **CH**), 3.85 (*s*, 3 H of **CH₃**), 3.44 (*m*, H of **CH**), 3.07 (*m*, H of **CH**), 2.37 (*m*, H of **CH**), 2.05 (*m*, 2 H of 2 **CH**), 1.79 (*m*, H of **CH**), 1.51 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 172.25 (*s*, 1 C), 66.85 (*s*, 1 C), 56.09 (*s*, 1 C), 53.91 (*s*, 1 C), 29.79 (*s*, 1 C), 24.85 (*s*, 1 C) ppm. IR (cm^{-1}): 3216 (*m*), 2382 (*w*), 2321 (*w*), 1736 (*m*), 1619 (*w*), 1371 (*m*), 1294 (*s*), 1156 (*m*), 1012 (*m*), 907 (*s*), 769 (*s*), 703 (*s*). HRMS *m/z* calcd for $\text{C}_6\text{H}_{18}\text{B}_3\text{NO}_2$ [$\text{M}+\text{Na}$] $^+$: 169.1614, found: 169.1614.



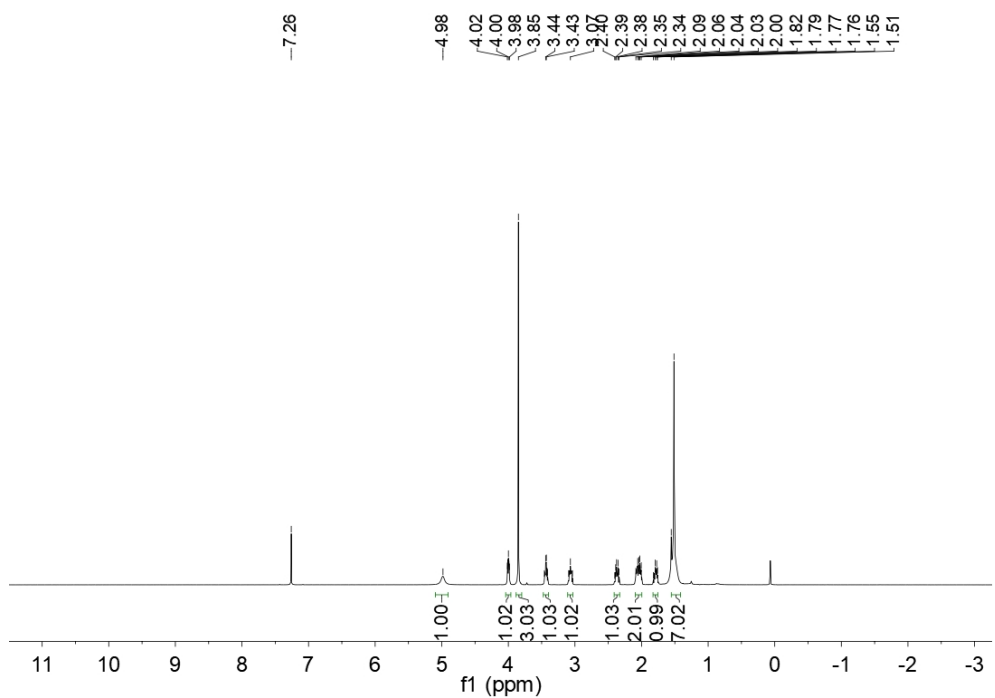
The ^{11}B NMR spectrum of the prepared **48** in CDCl_3



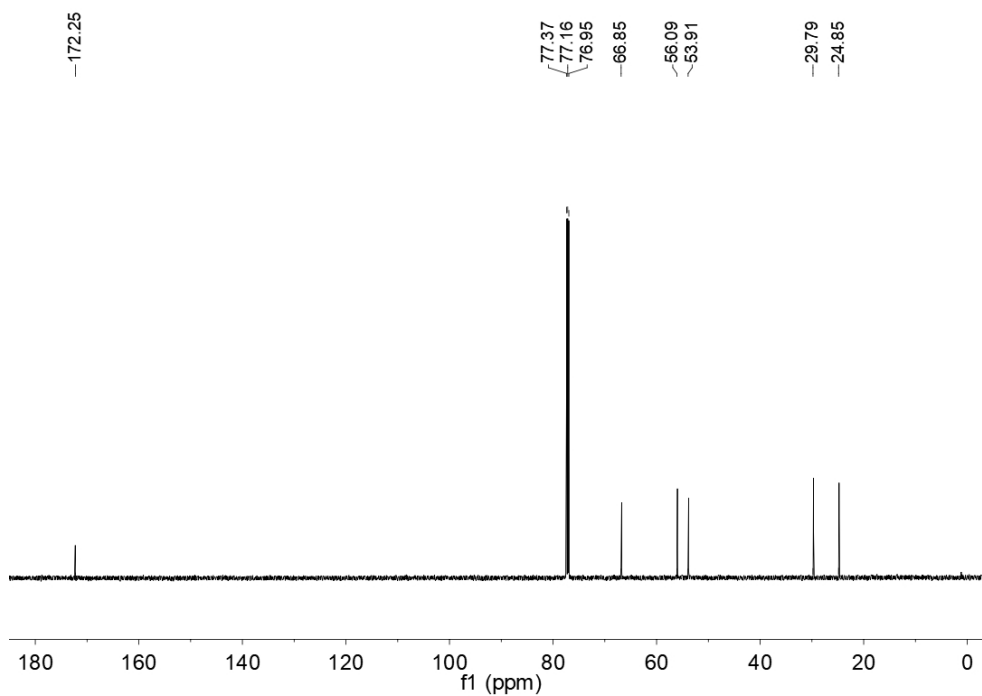
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **48** in CDCl_3 .



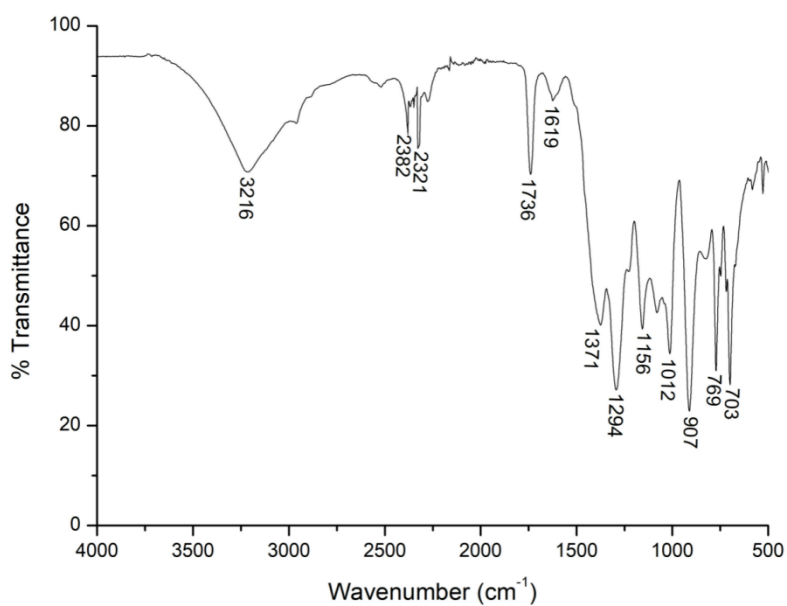
The ^1H NMR spectrum of the prepared **48** in CDCl_3 .



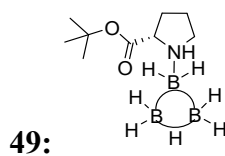
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **48** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **48** in CDCl_3 .

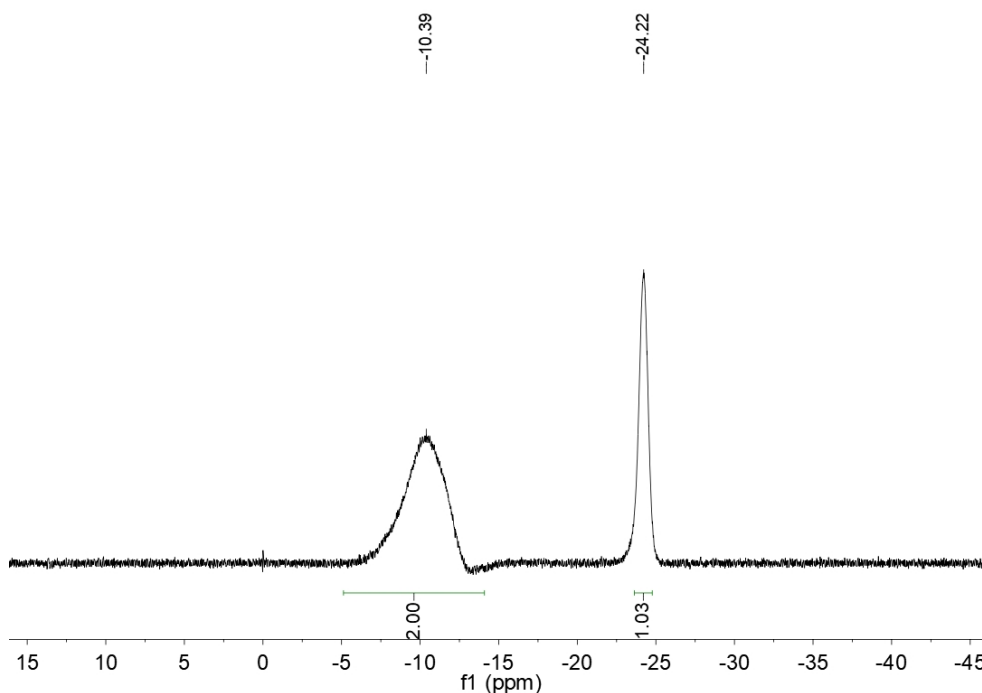


The IR spectrum of the prepared **48**.

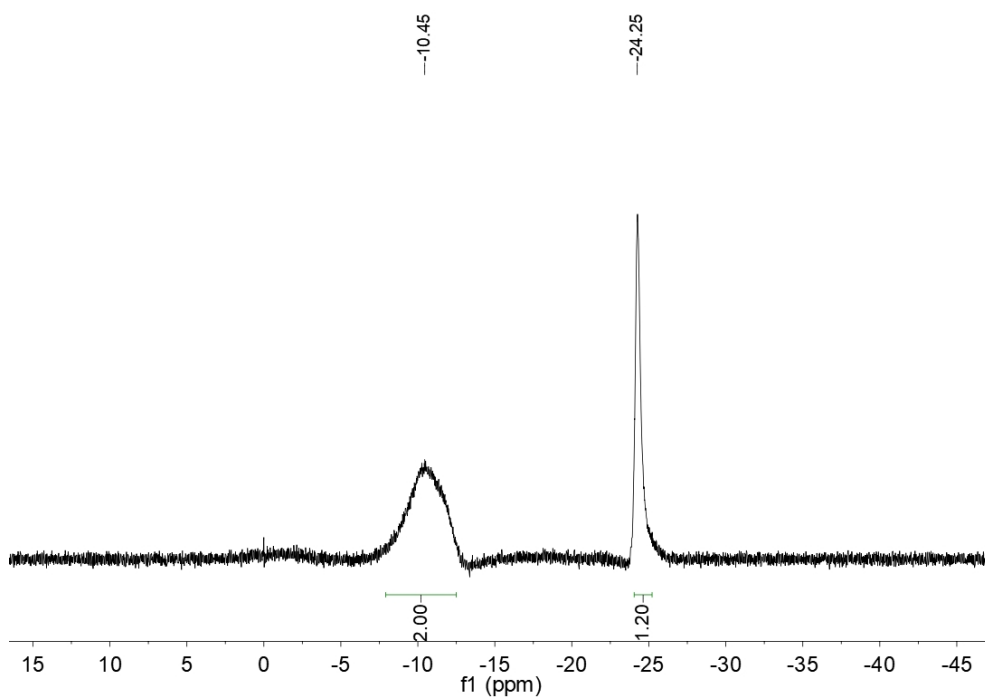


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 79%, white solid, melting point: 63-64 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -10.45 (*br*, 2 B of **BHB**),

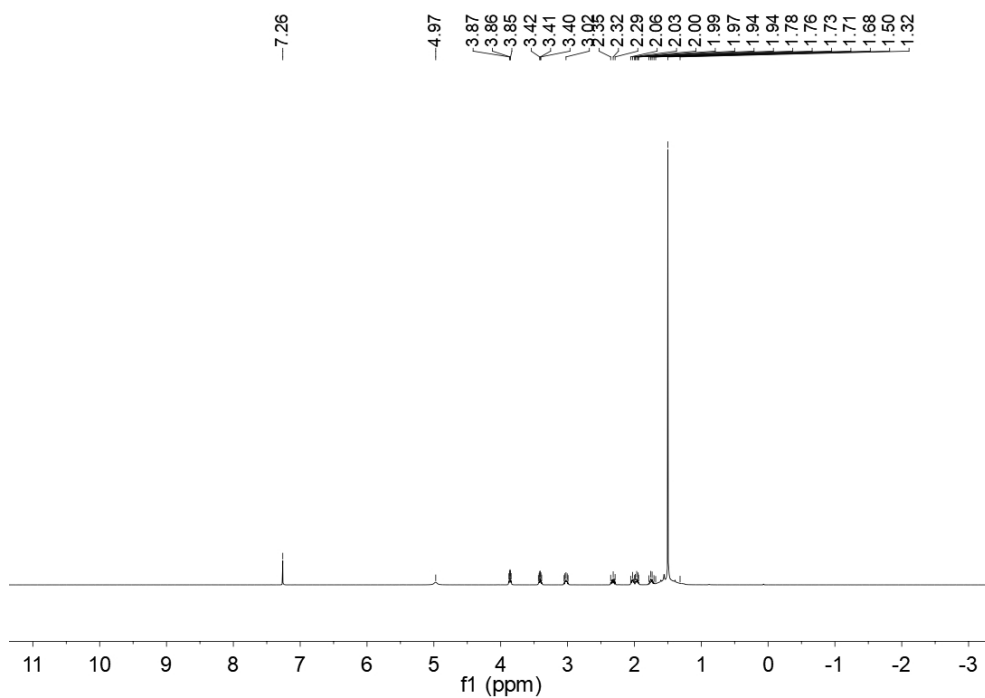
-24.25 (*br*, B of BH_2) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.45 (*br*, 2 B of BHB), -24.25 (*br*, B of BH_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.97 (*br*, H of NH), 3.86 (*m*, H of CH), 3.42 (*m*, H of CH), 3.02 (*m*, H of CH), 2.32 (*m*, H of CH), 2.00 (*m*, 2 H of 2 CH), 1.73 (*m*, H of CH), 1.50 (*s*, 9 H of 3 CH_3), 1.68-1.32 (*br*, 7 H of B_3H_7) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.97 (*br*, H of NH), 3.87 (*m*, H of CH), 3.41 (*m*, H of CH), 3.03 (*m*, H of CH), 2.32 (*m*, H of CH), 2.00 (*m*, 2 H of 2 CH), 1.75 (*m*, H of CH), 1.50 (*s*, 9 H of 3 CH_3 , 7 H of B_3H_7) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 170.86 (*s*, 1 C), 84.45 (*s*, 1 C), 67.34 (*s*, 1 C), 55.99 (*s*, 1 C), 29.96 (*s*, 1 C), 28.01 (*s*, 3 C), 24.81 (*s*, 1 C) ppm. IR (cm^{-1}): 2973 (*w*), 1730 (*w*), 1366 (*m*), 1288 (*m*), 1150 (*m*), 1023 (*w*), 913 (*m*), 780 (*w*), 708 (*w*). HRMS m/z calcd for $\text{C}_9\text{H}_{24}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 234.1983, found: 234.1982.



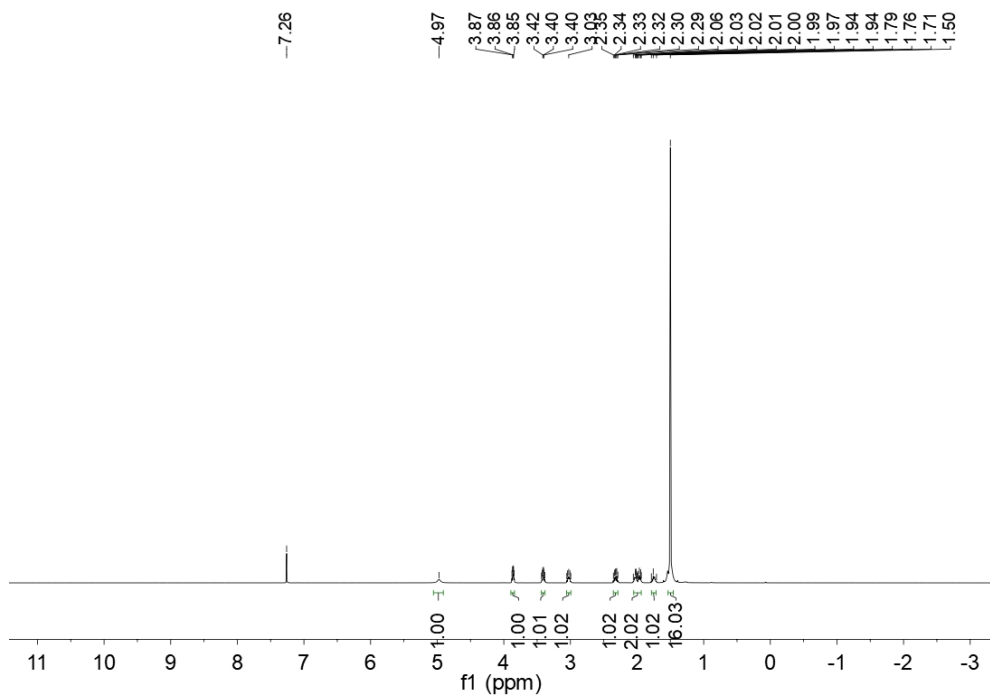
The ^{11}B NMR spectrum of the prepared **49** in CDCl_3



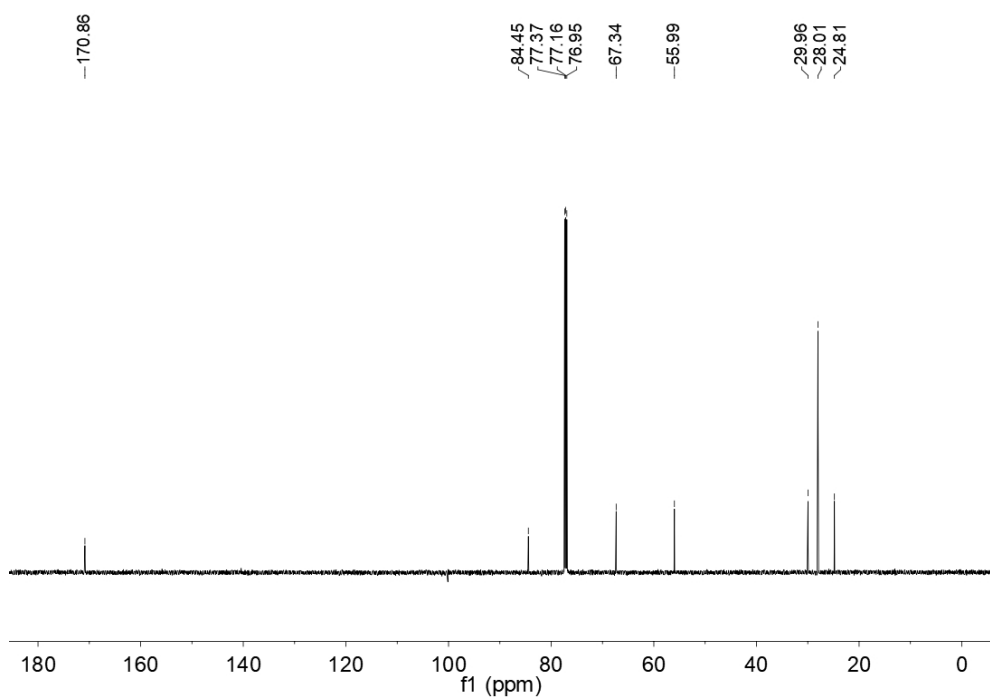
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **49** in CDCl_3 .



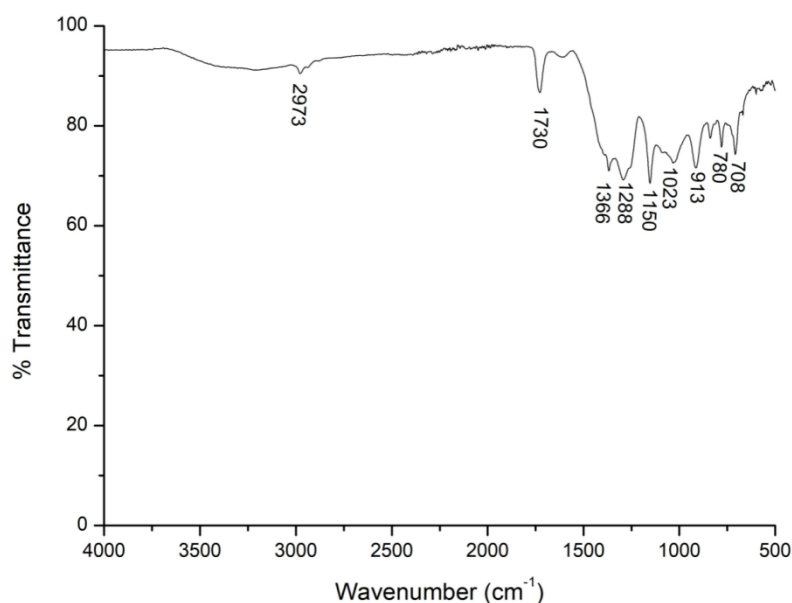
The ^1H NMR spectrum of the prepared **49** in CDCl_3 .



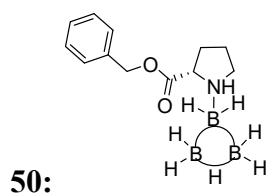
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **49** in CDCl_3 .



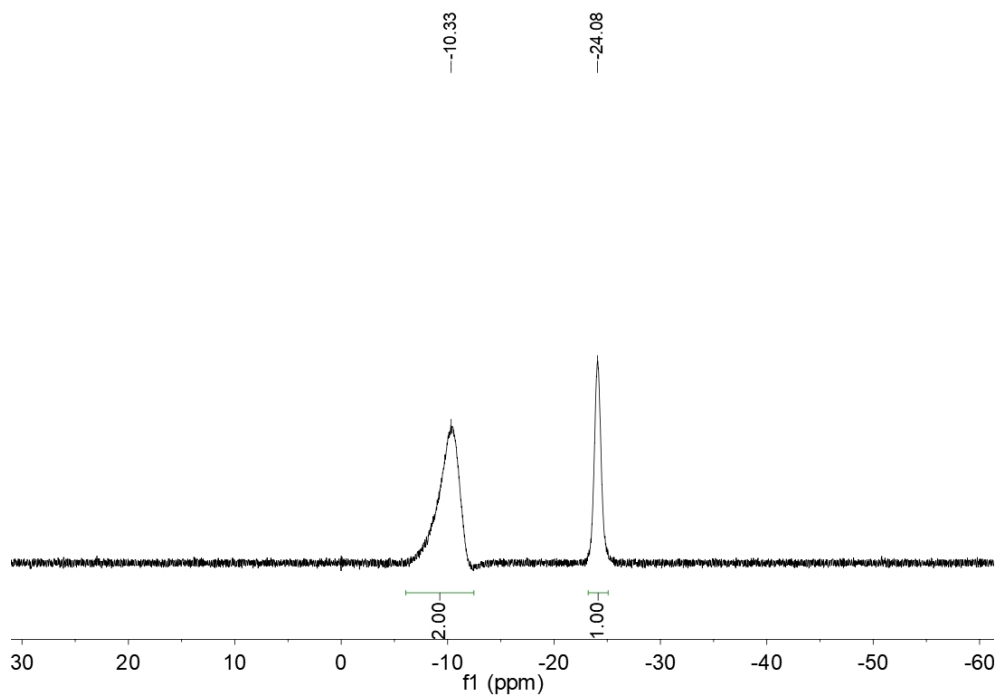
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **49** in CDCl_3 .



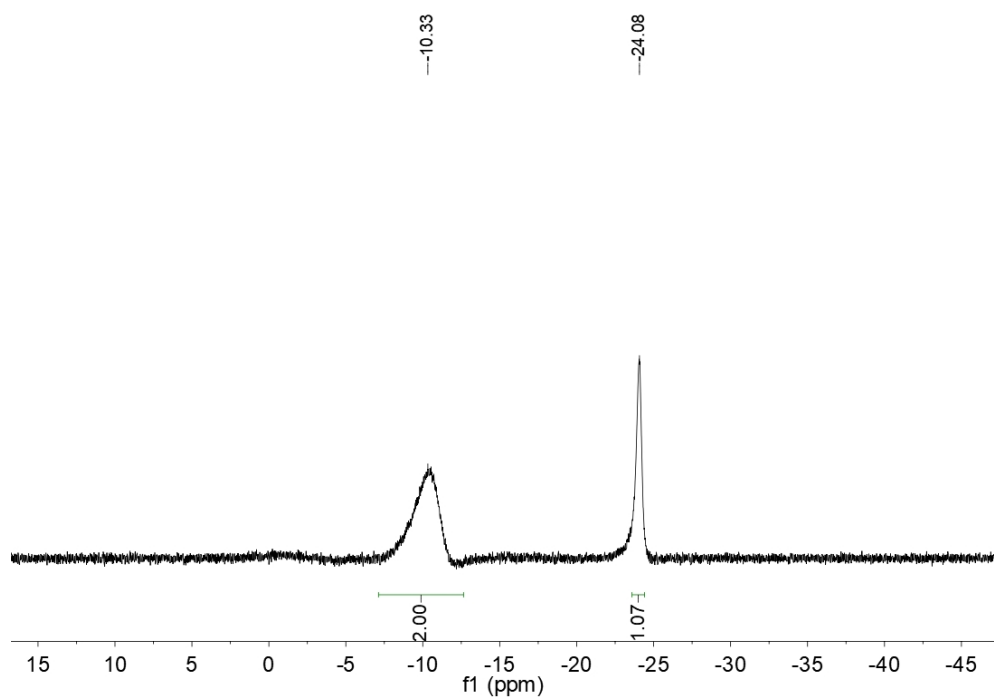
The IR spectrum of the prepared **49**.



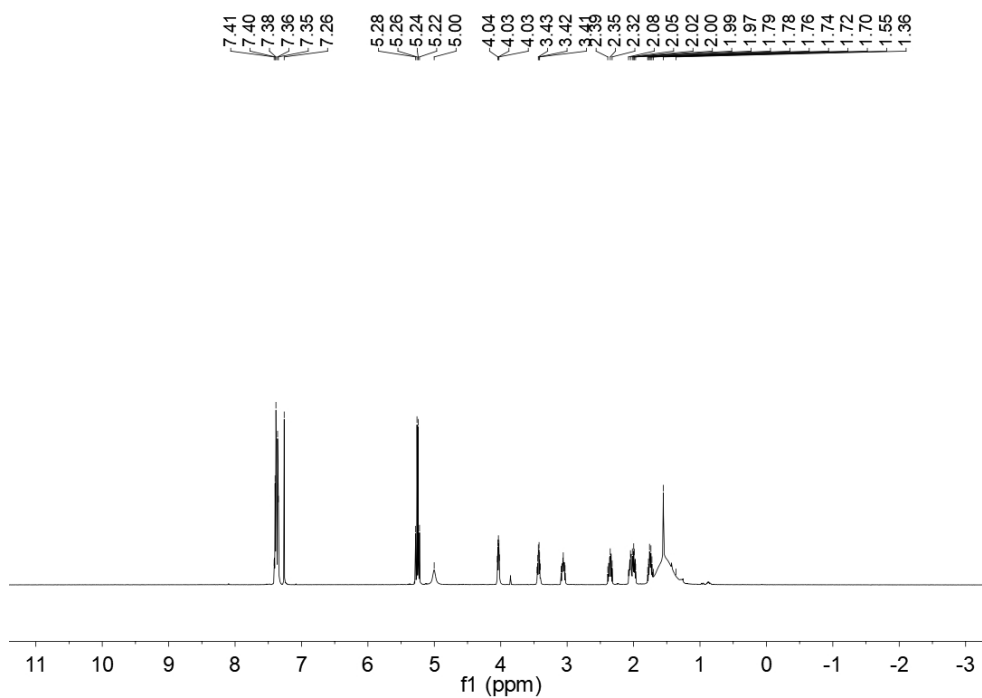
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 78%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -10.33 (*br*, 2 B of **BHB**), -24.08 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -10.33 (*br*, 2 B of **BHB**), -24.08 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 7.38 (*m*, 5 H of 5 **CH**), 5.25 (*q*, 2 H of **CH**₂), 5.00 (*br*, H of **NH**), 4.04 (*m*, H of **CH**), 3.43 (*m*, H of **CH**), 3.06 (*m*, H of **CH**), 2.36 (*m*, H of **CH**), 2.01 (*m*, 2 H of 2 **CH**), 1.75 (*m*, H of **CH**), 1.70-1.36 (*br*, 7 H of B₃**H**₇) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 7.38 (*m*, 5 H of 5 **CH**), 5.25 (*q*, 2 H of **CH**₂), 5.00 (*br*, H of **NH**), 4.04 (*m*, H of **CH**), 3.43 (*m*, H of **CH**), 3.06 (*m*, H of **CH**), 2.36 (*m*, H of **CH**), 2.01 (*m*, 2 H of 2 **CH**), 1.75 (*m*, H of **CH**), 1.53 (*s*, 7 H of B₃**H**₇) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 171.68 (*s*, 1 C), 134.49 (*s*, 1 C), 129.10 (*s*, 1 C), 128.95 (*s*, 1 C), 128.63 (*s*, 1 C), 68.79 (*s*, 3 C), 66.84 (*s*, 1 C), 56.00 (*s*, 1 C), 29.70 (*s*, 1 C), 24.74 (*s*, 1 C) ppm. IR (cm⁻¹): 3199 (*w*), 2973 (*w*), 2498 (*s*), 2432 (*s*), 1730 (*s*), 1459 (*m*), 1266 (*m*), 1210 (*s*), 1156 (*m*), 957 (*m*), 753 (*s*), 697 (*s*), 576 (*w*). HRMS *m/z* calcd for C₁₂H₂₂B₃NO₂ [M+Na]⁺: 268.1828, found: 268.1830.



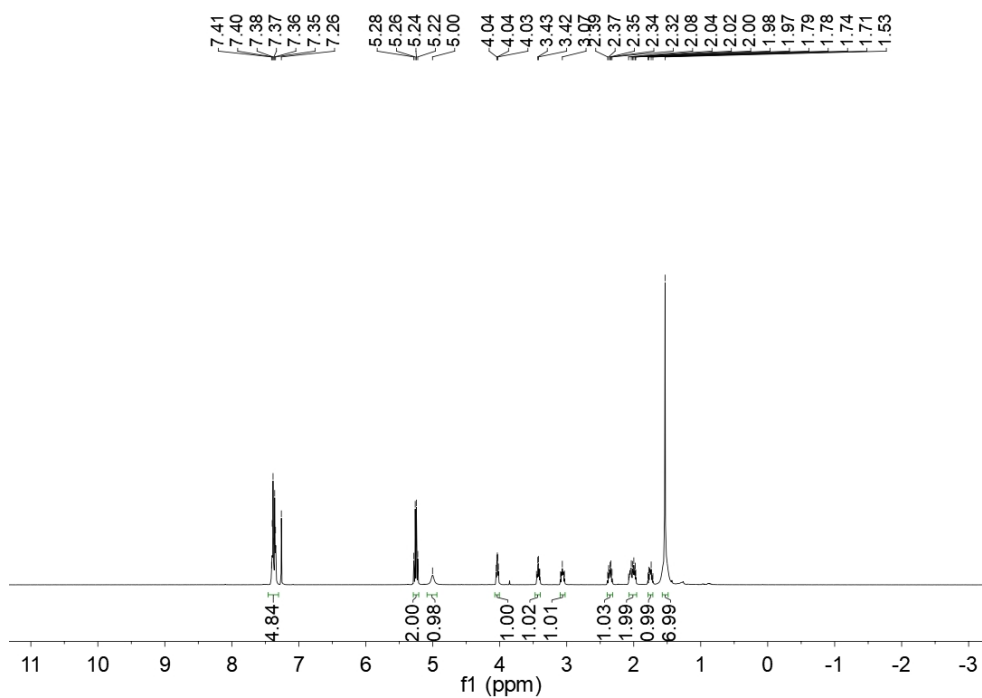
The ^{11}B NMR spectrum of the prepared **50** in CDCl_3



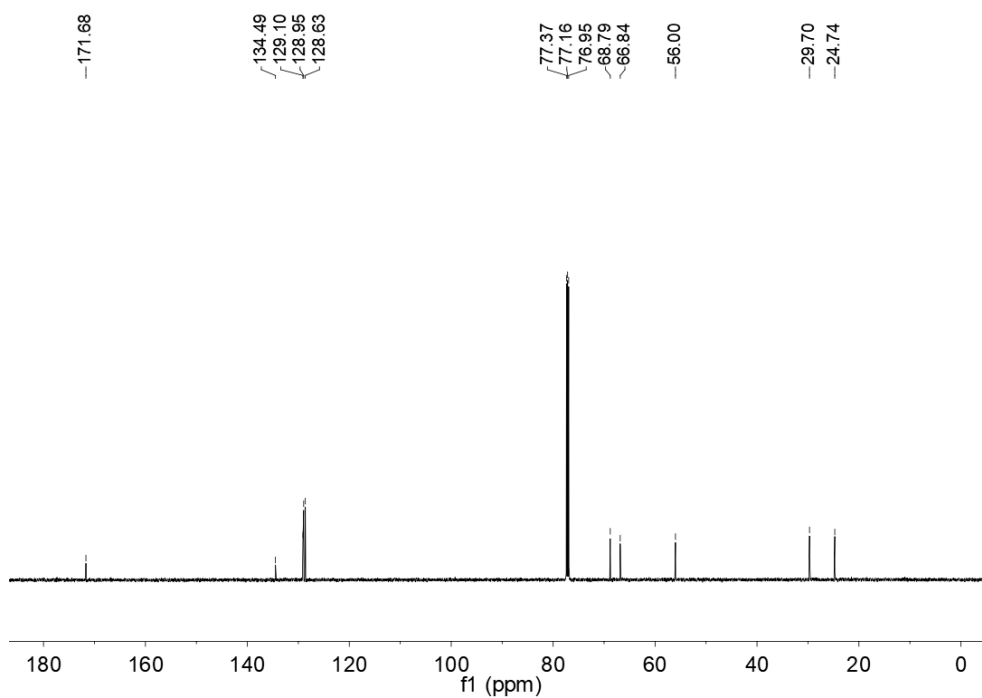
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **50** in CDCl_3 .



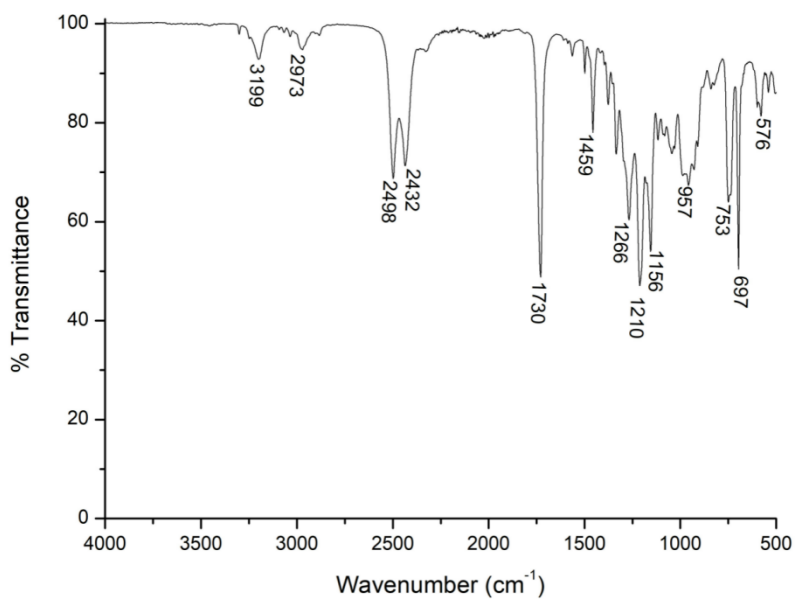
The ^1H NMR spectrum of the prepared **50** in CDCl_3 .



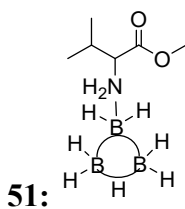
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **50** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **50** in CDCl_3 .

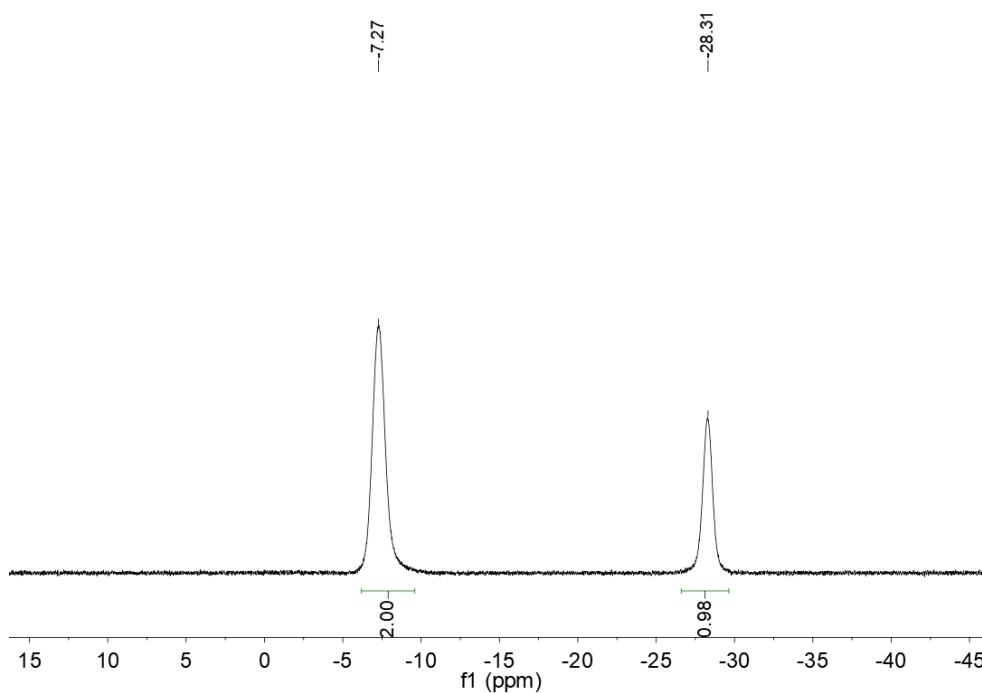


The IR spectrum of the prepared **50**.

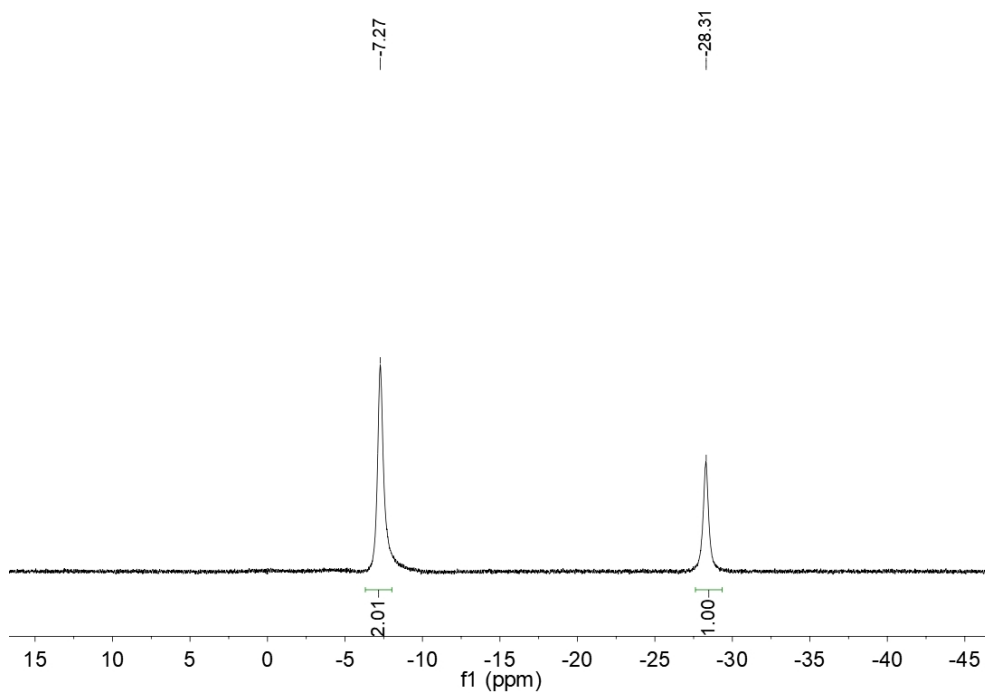


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 61%, colorless

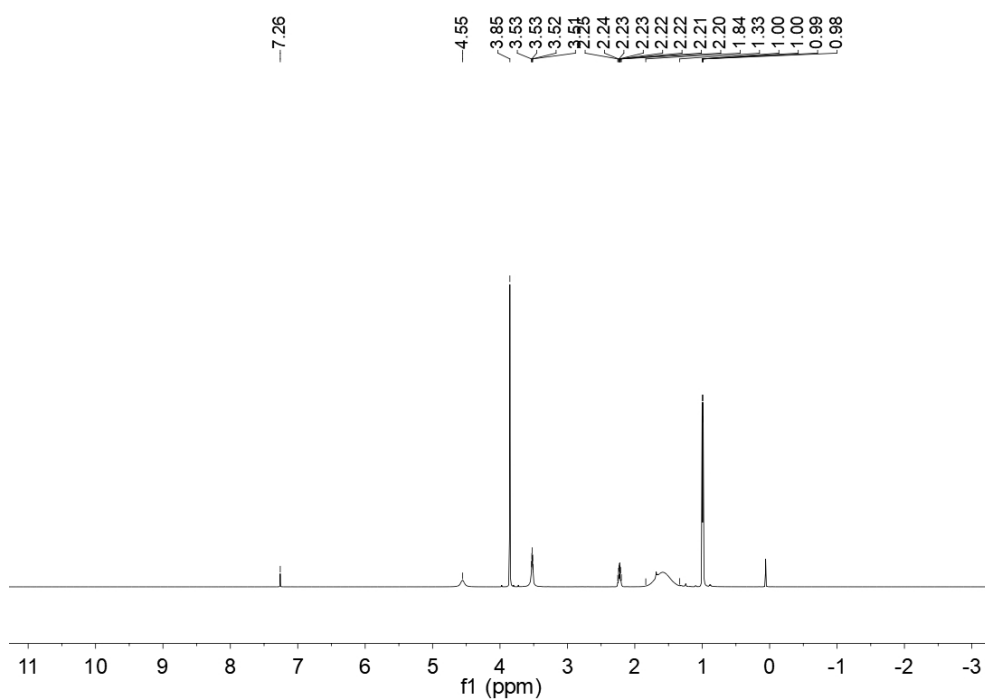
oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.27 (*br*, 2 B of **BHB**), -28.31 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.27 (*br*, 2 B of **BHB**), -28.31 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.55 (*br*, 1 H of **NH₂**), 3.85 (*s*, 3 H of **CH₃**), 3.52 (*m*, 1 H of **NH₂**, 1 H of **CH**), 2.23 (*m*, H of **CH**), 1.84-1.33 (*br*, 7 H of **B₃H₇**), 1.00 (*dd*, 6 H of 2 **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.55 (*br*, 1 H of **NH₂**), 3.85 (*s*, 3 H of **CH₃**), 3.52 (*m*, 1 H of **NH₂**, 1 H of **CH**), 2.23 (*m*, H of **CH**), 1.59 (*s*, 7 H of **B₃H₇**), 1.00 (*dd*, 6 H of 2 **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 170.52 (*s*, 1 C), 66.34 (*s*, 1 C), 53.39 (*s*, 1 C), 30.38 (*s*, 1 C), 18.18 (*s*, 1 C), 18.05 (*s*, 1 C) ppm. IR (cm^{-1}): 3277 (*w*), 3233 (*w*), 2967 (*w*), 2504 (*m*), 2462 (*m*), 1730 (*s*), 1564 (*m*), 1443 (*m*), 1260 (*s*), 1150 (*m*), 979 (*m*), 846 (*w*). HRMS m/z calcd for $\text{C}_6\text{H}_{20}\text{B}_3\text{NO}_2$: $[\text{M}+\text{Na}]^+$: 194.1668, found: 194.1659.



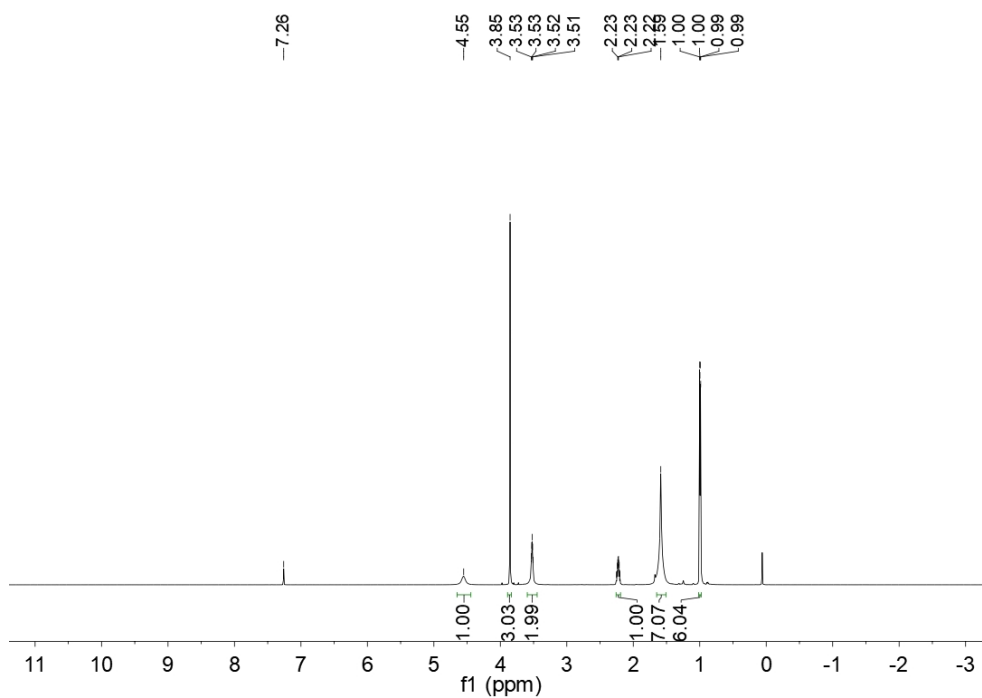
The ^{11}B NMR spectrum of the prepared **51** in CDCl_3



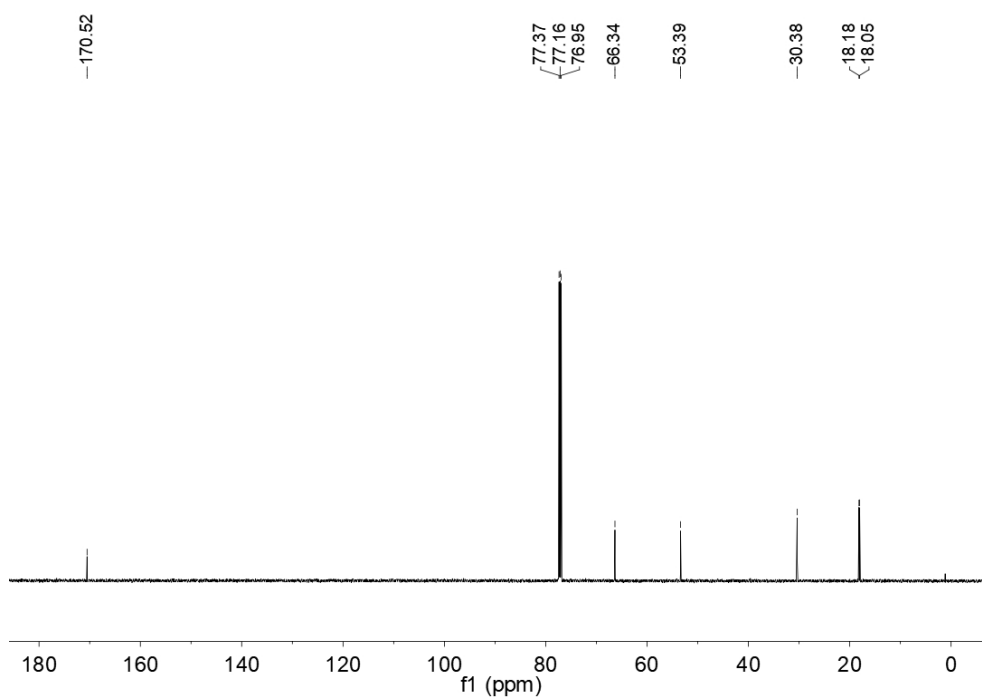
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **51** in CDCl_3 .



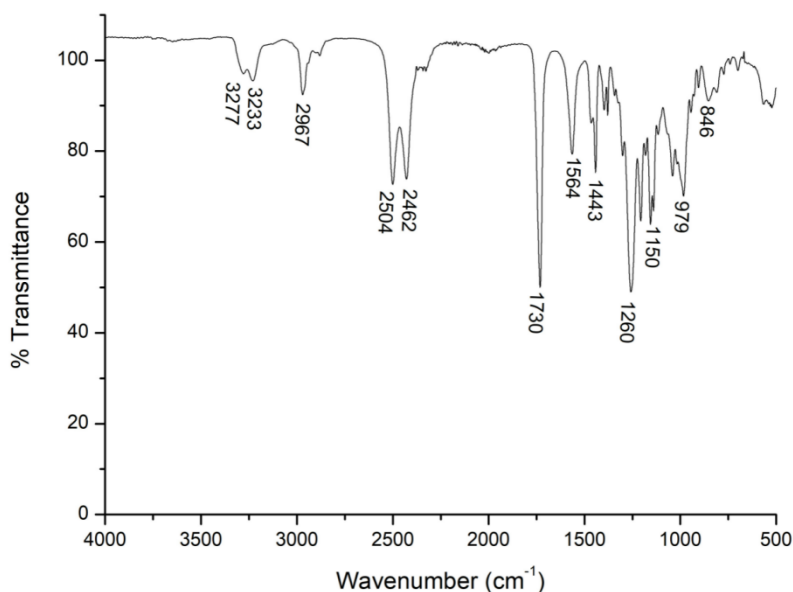
The ^1H NMR spectrum of the prepared **51** in CDCl_3 .



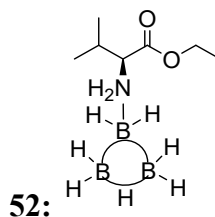
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **51** in CDCl_3 .



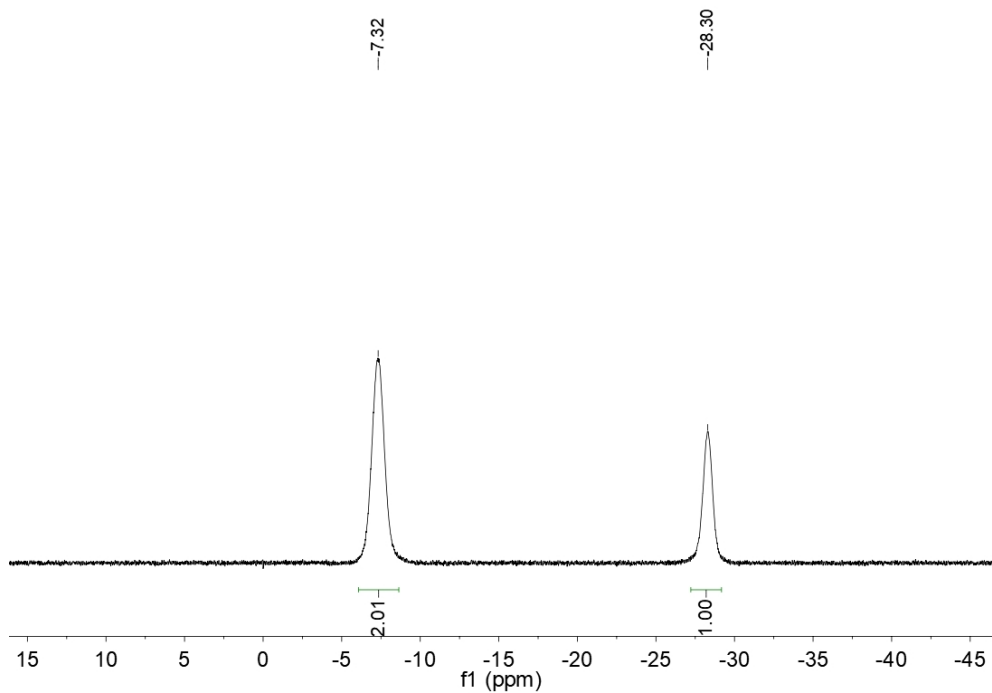
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **51** in CDCl_3 .



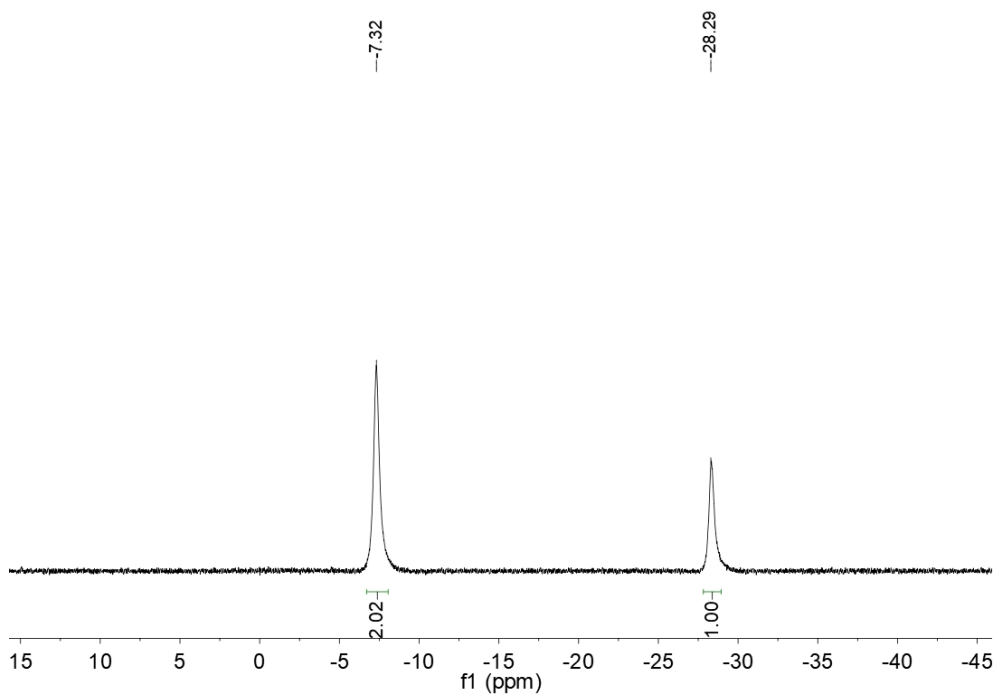
The IR spectrum of the prepared **51**.



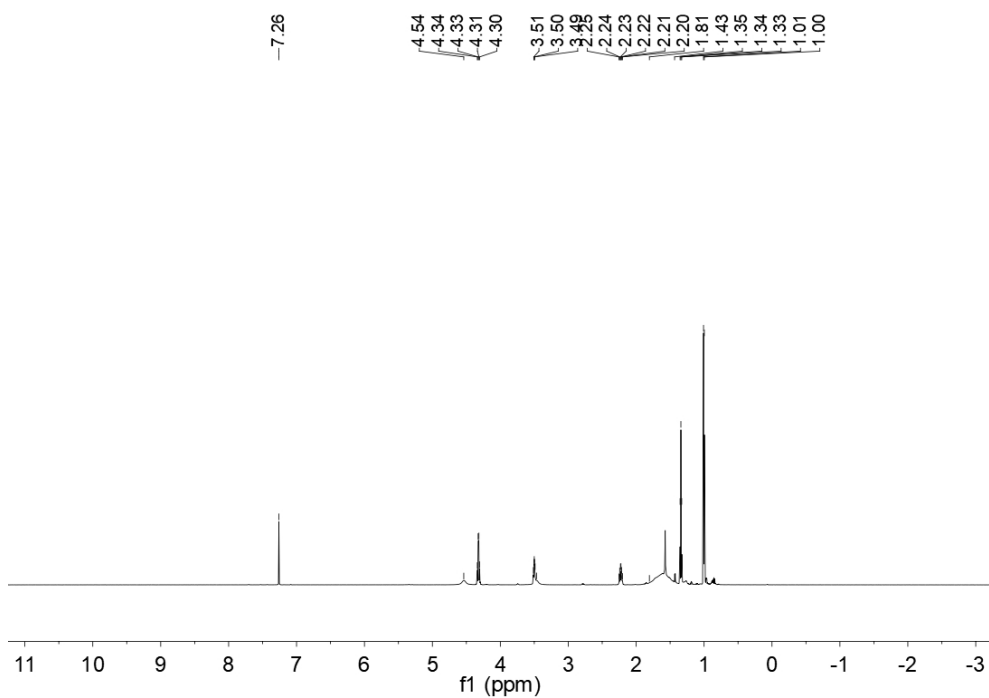
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:1). Yield 61%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.32 (*br*, 2 B of **BHB**), -28.30 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.32 (*br*, 2 B of **BHB**), -28.29 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 4.54 (*br*, 1 H of **NH₂**), 4.32 (*q*, 2 H of **CH₂**), 3.50 (*m*, H of **CH**), 3.47 (*br*, 1 H of **NH₂**), 2.23 (*m*, H of **CH**), 1.81-1.43 (*br*, 7 H of **B₃H₇**), 1.34 (*t*, 3 H of **CH₃**), 1.01 (*d*, 6 H of 2 **CH₃**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 4.54 (*br*, 1 H of **NH₂**), 4.32 (*q*, 2 H of **CH₂**), 3.50 (*m*, H of **CH**), 3.46 (*br*, 1 H of **NH₂**), 2.23 (*m*, H of **CH**), 1.62 (*s*, 7 H of **B₃H₇**), 1.34 (*t*, 3 H of **CH₃**), 1.01 (*d*, 6 H of 2 **CH₃**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 169.97 (*s*, 1 C), 66.32 (*s*, 1 C), 62.91 (*s*, 1 C), 30.37 (*s*, 1 C), 18.16 (*s*, 1 C), 18.05 (*s*, 1 C), 14.29 (*s*, 1 C) ppm. IR (m⁻¹): 3233 (*w*), 2973 (*w*), 2504 (*m*), 2420 (*m*), 1725 (*s*), 1559 (*m*), 1465 (*w*), 1249 (*s*), 1200 (*m*), 1017 (*m*), 846 (*w*). HRMS *m/z* calcd for C₇H₂₂B₃NO₂ [M+Na]⁺: 208.1825, found: 208.1833.



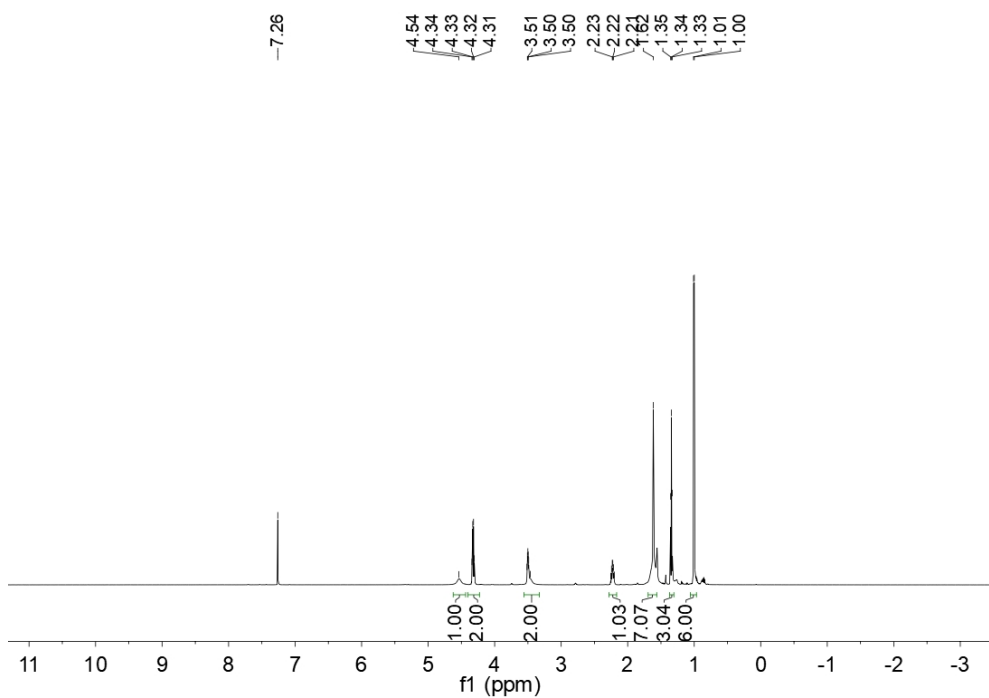
The ^{11}B NMR spectrum of the prepared **52** in CDCl_3



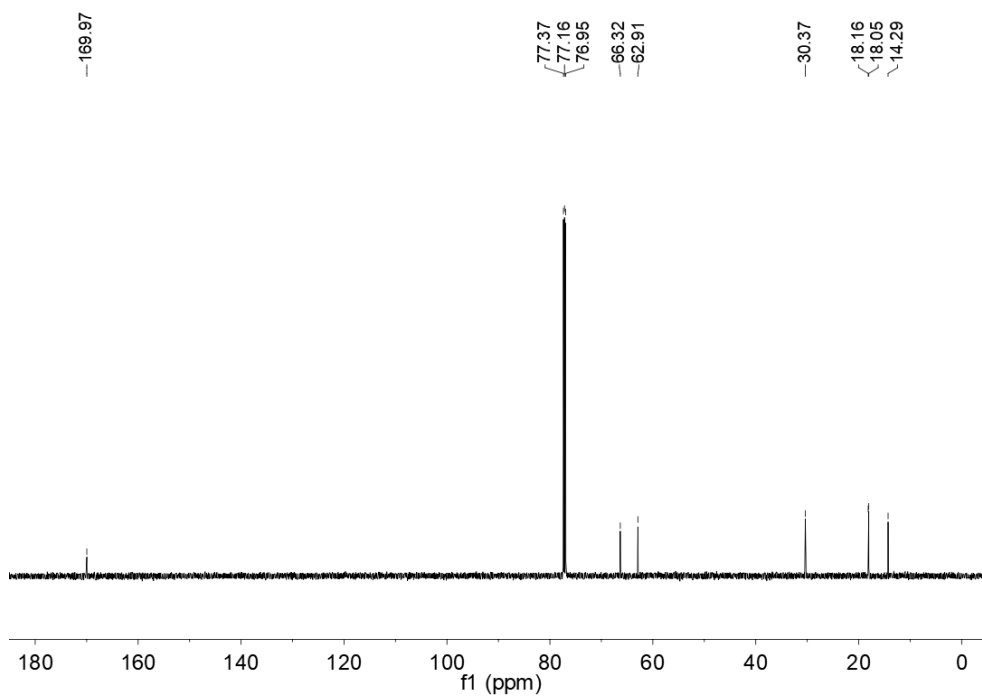
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **52** in CDCl_3 .



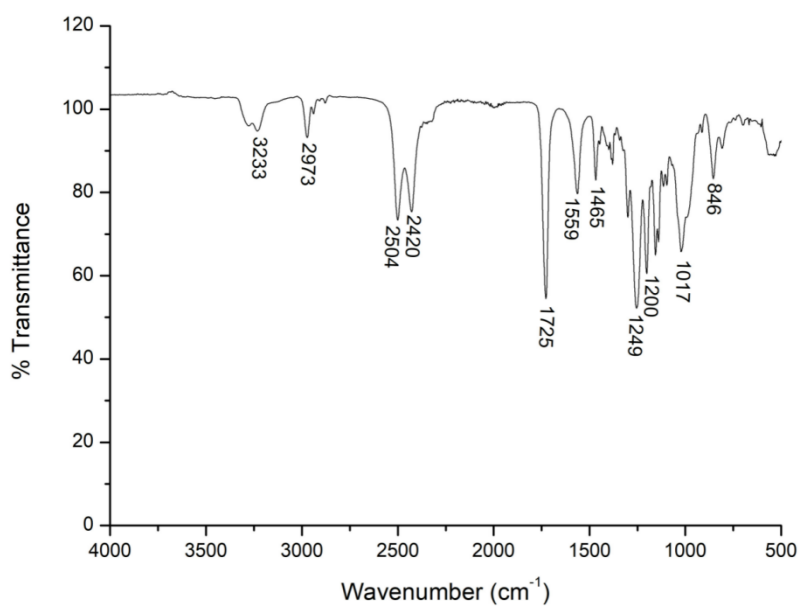
The ^1H NMR spectrum of the prepared **52** in CDCl_3 .



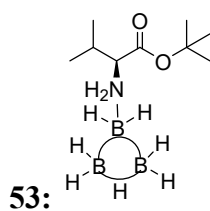
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **52** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **52** in CDCl_3 .

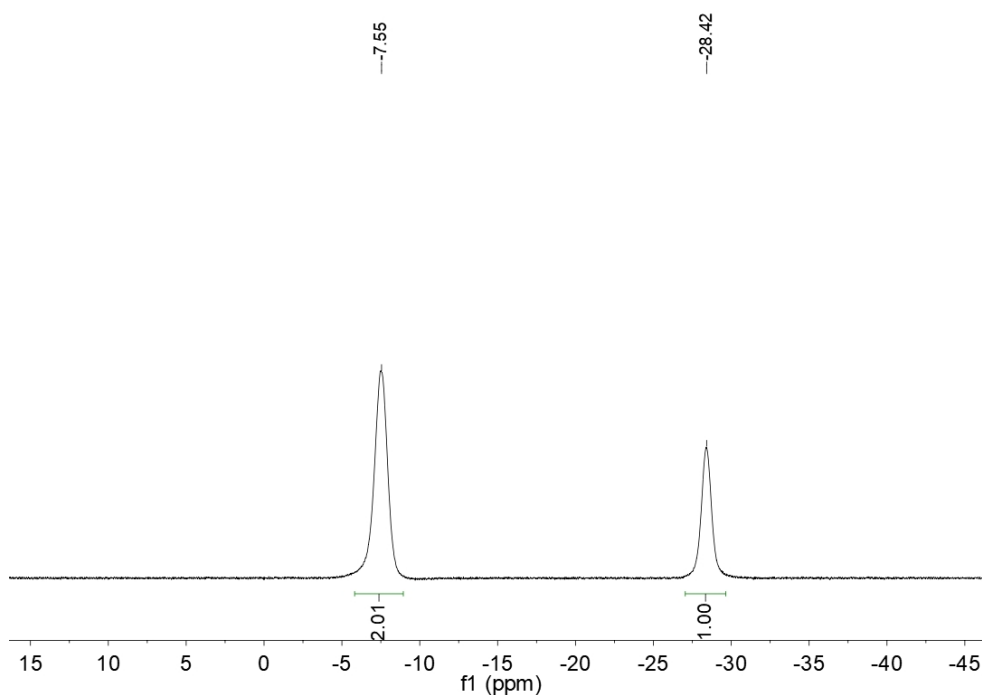


The IR spectrum of the prepared **52**.

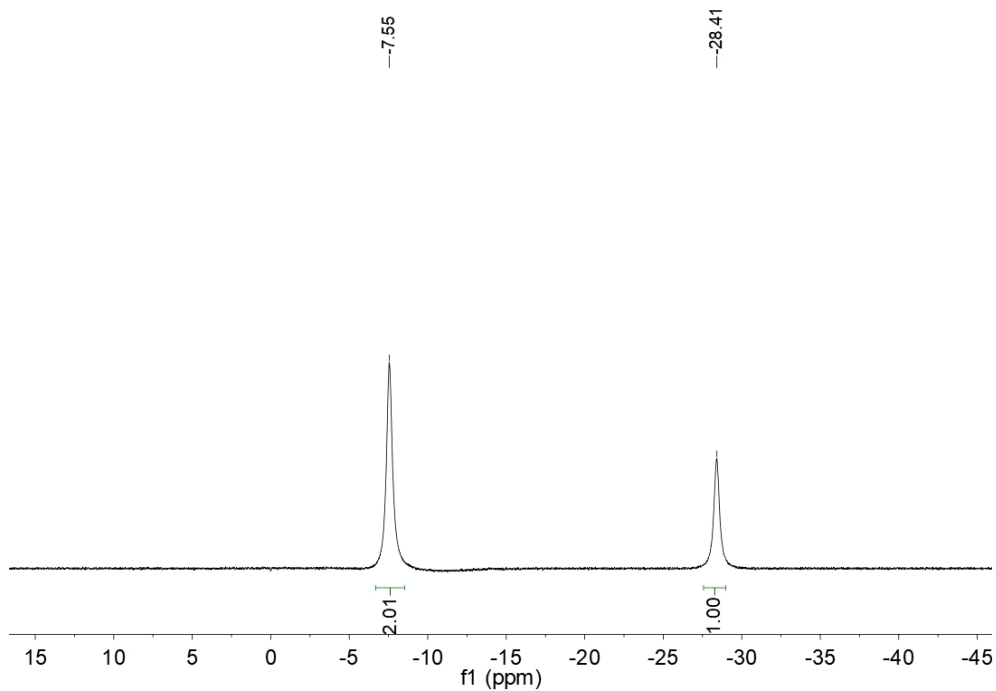


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 66%, white

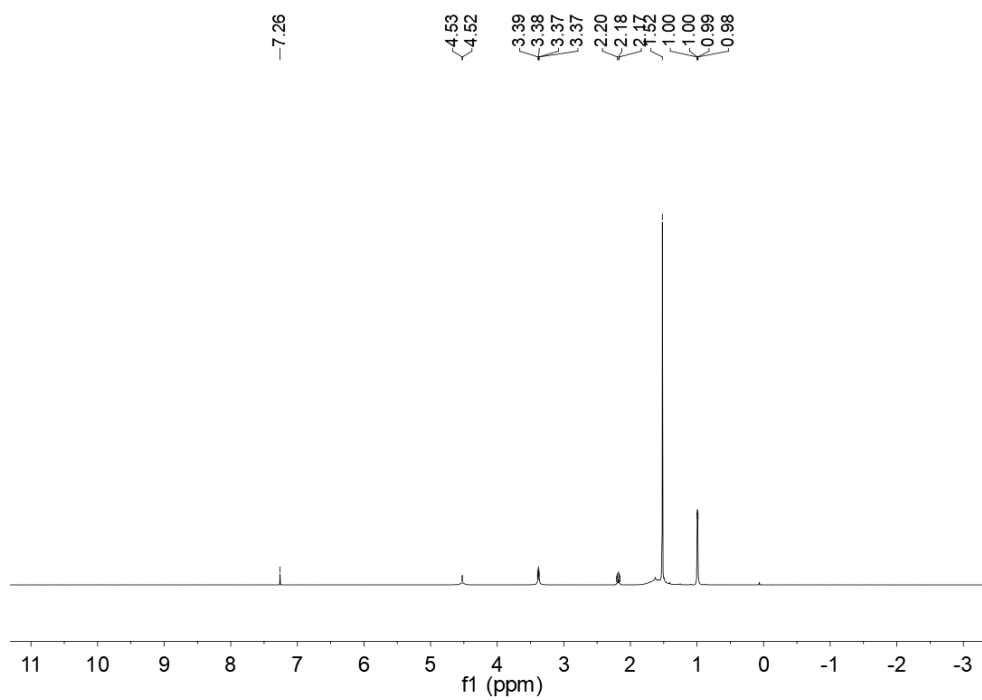
solid, melting point: 65-66 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.55 (*br*, 2 B of **BHB**), -28.42 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.55 (*br*, 2 B of **BHB**), -28.41 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.52 (*br*, 1 H of **NH₂**), 3.38 (*m*, 1 H of **CH**, 1 H of **NH₂**), 2.19 (*m*, H of **CH**), 1.81-1.39 (*br*, 7 H of **B₃H₇**), 1.52 (*s*, 9 H of 3 **CH₃**), 0.99 (*q*, 6 H of 2 **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.52 (*br*, 1 H of **NH₂**), 3.38 (*m*, 1 H of **CH**, 1 H of **NH₂**), 2.19 (*m*, H of **CH**), 1.60 (*s*, 7 H of **B₃H₇**), 1.52 (*s*, 9 H of 3 **CH₃**), 1.00 (*q*, 6 H of 2 **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.90 (*s*, 1 C), 84.59 (*s*, 1 C), 66.68 (*s*, 1 C), 30.42 (*s*, 1 C), 28.11 (*s*, 3 C), 18.13 (*s*, 1 C), 18.04 (*s*, 1 C) ppm. IR (cm^{-1}): 3299 (*w*), 3238 (*w*), 2973 (*w*), 2504 (*m*), 2437 (*m*), 1725 (*s*), 1559 (*s*), 1459 (*w*), 1371 (*m*), 1299 (*s*), 1249 (*m*), 1156 (*s*), 1039 (*m*), 968 (*m*), 835 (*m*), 730 (*w*), 543 (*s*). HRMS m/z calcd for $\text{C}_9\text{H}_{26}\text{B}_3\text{NO}_2$: $[\text{M}+\text{Na}]^+$: 236.2139, found: 236.2139 .



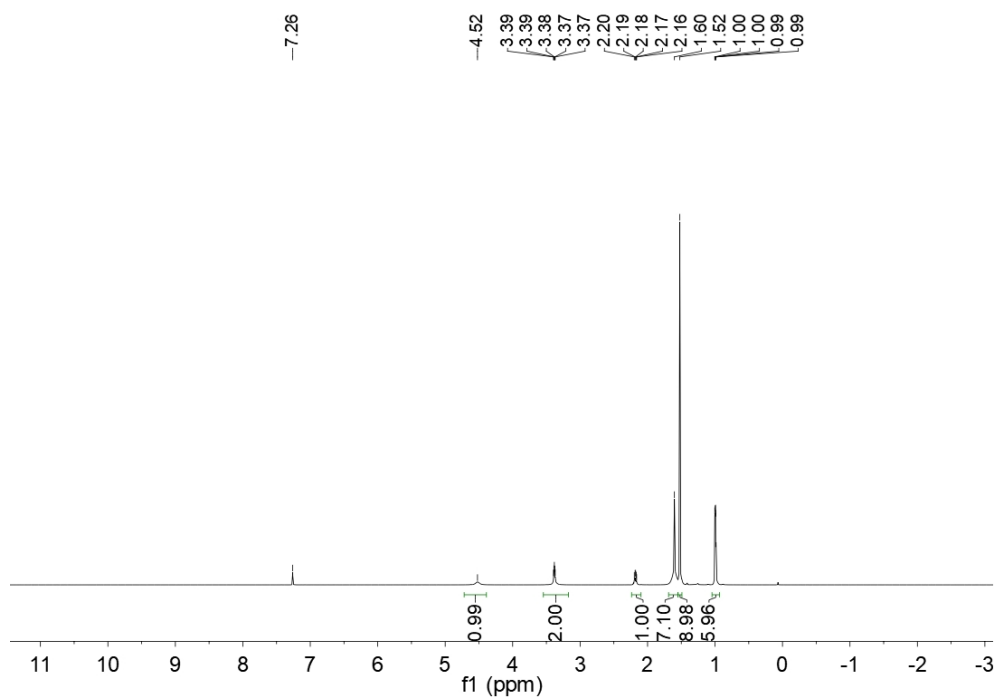
The ^{11}B NMR spectrum of the prepared **53** in CDCl_3



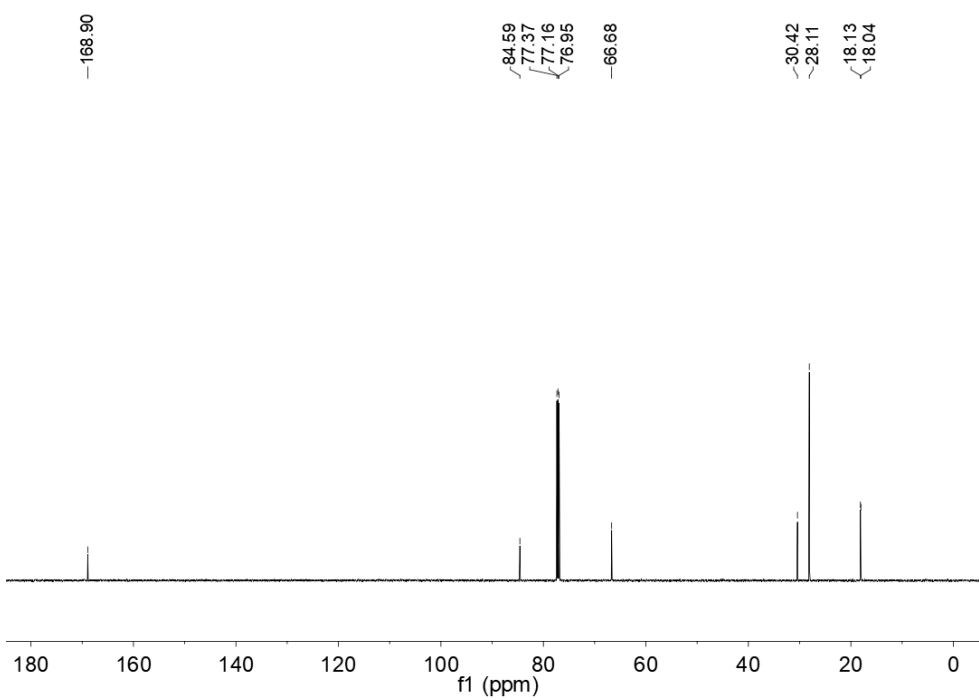
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **53** in CDCl_3 .



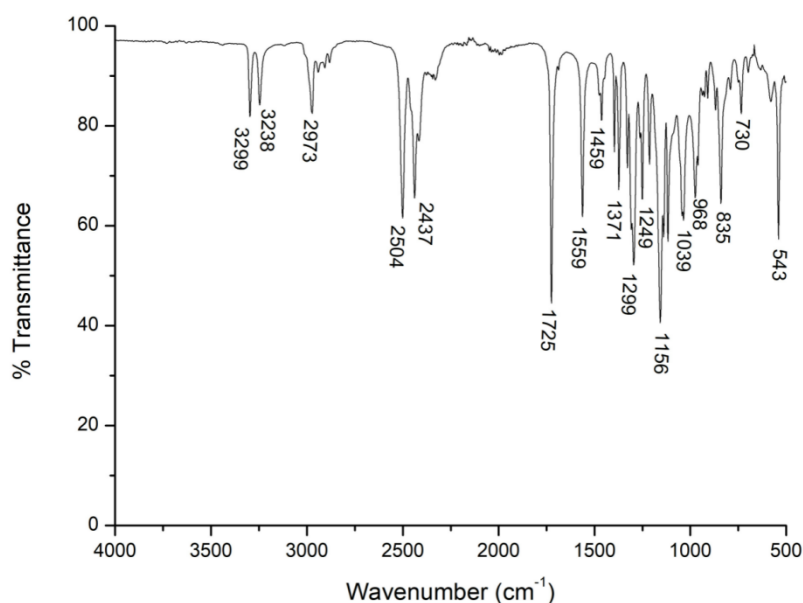
The ^1H NMR spectrum of the prepared **53** in CDCl_3 .



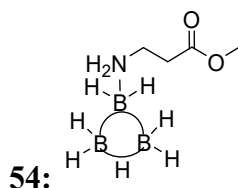
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **53** in CDCl_3 .



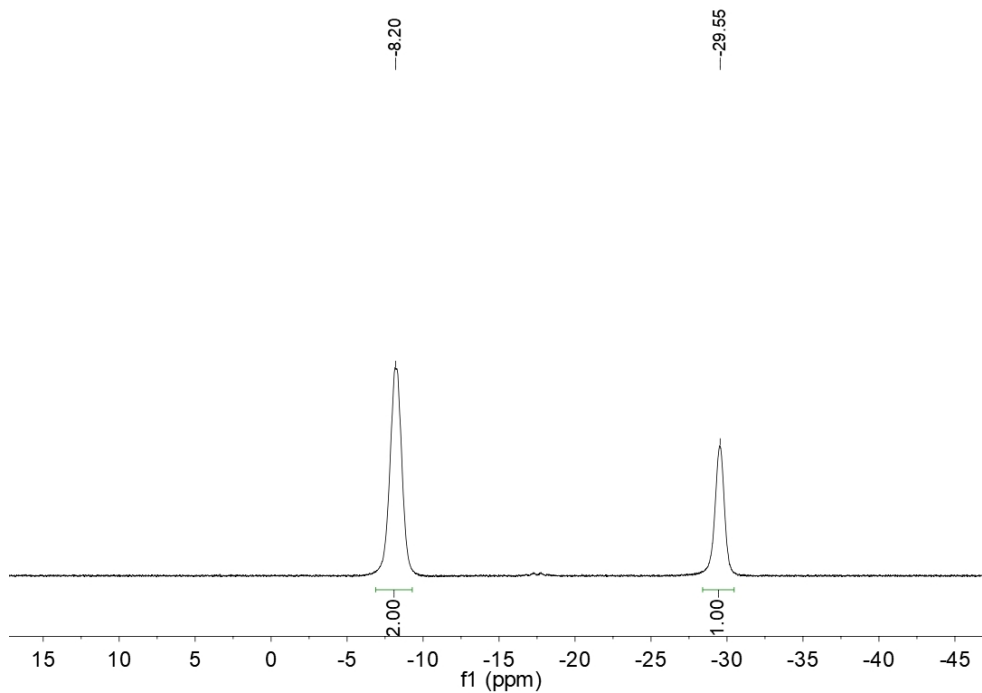
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **53** in CDCl_3 .



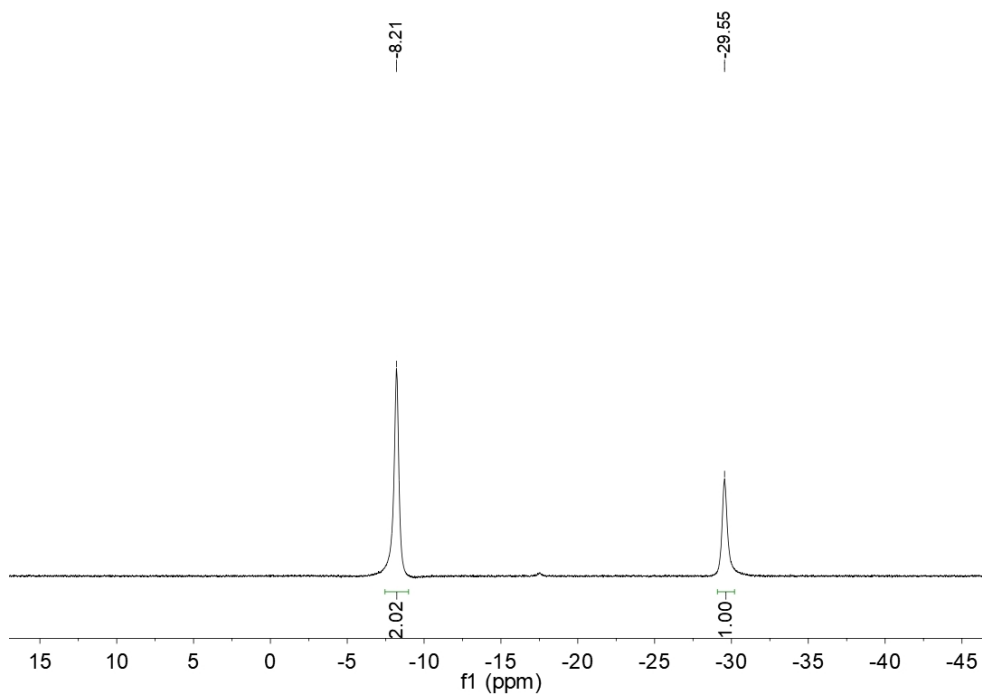
The IR spectrum of the prepared **53**.



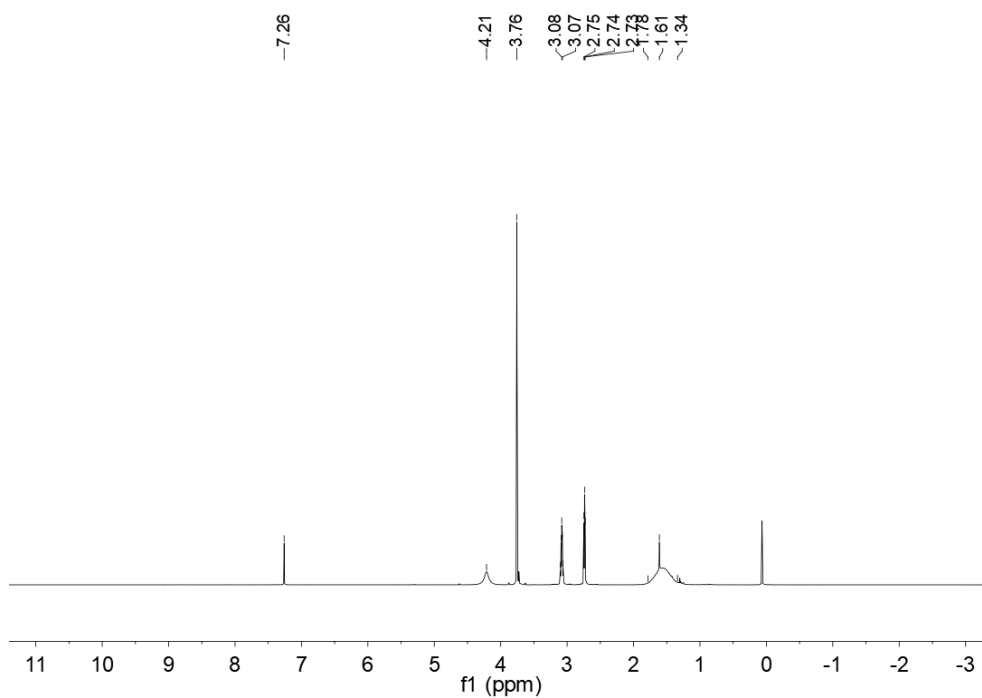
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:2). Yield 63%, white solid, melting point: 35-36 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.20 (*br*, 2 B of **BHB**), -29.55 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.20 (*br*, 2 B of **BHB**), -29.55 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.21 (*br*, 2 H of **NH₂**), 3.76 (*s*, 3 H of **CH₃**), 3.08 (*m*, 2 H of **CH₂**), 2.74 (*t*, 2 H of **CH₂**), 1.78-1.34 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.21 (*br*, 2 H of **NH₂**), 3.76 (*s*, 3 H of **CH₃**), 3.08 (*m*, 2 H of **CH₂**), 2.74 (*t*, 2 H of **CH₂**), 1.56 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 172.82 (*s*, 1 C), 52.63 (*s*, 1 C), 43.69 (*s*, 1 C), 30.40 (*s*, 1 C) ppm. IR (cm^{-1}): 3283 (*w*), 3244 (*w*), 2951 (*w*), 2498 (*s*), 2426 (*s*), 1719 (*s*), 1586 (*m*), 1443 (*m*), 1255 (*m*), 1250 (*s*), 984 (*s*), 835 (*w*), 570 (*w*). HRMS *m/z* calcd for $\text{C}_4\text{H}_{16}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 166.1354, found: 166.1351.



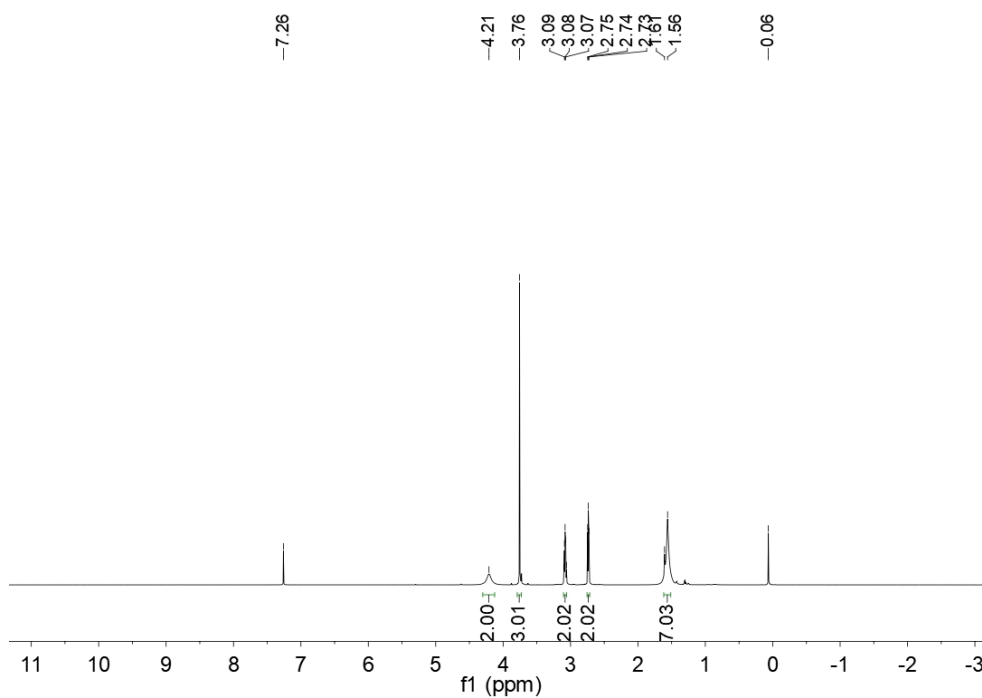
The ^{11}B NMR spectrum of the prepared **54** in CDCl_3



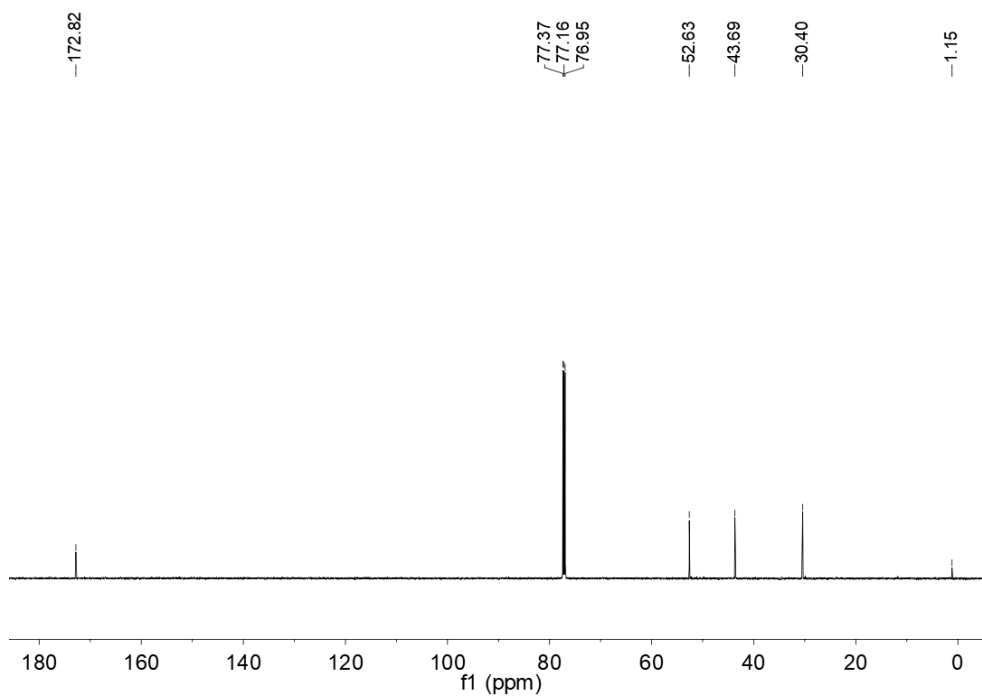
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **54** in CDCl_3 .



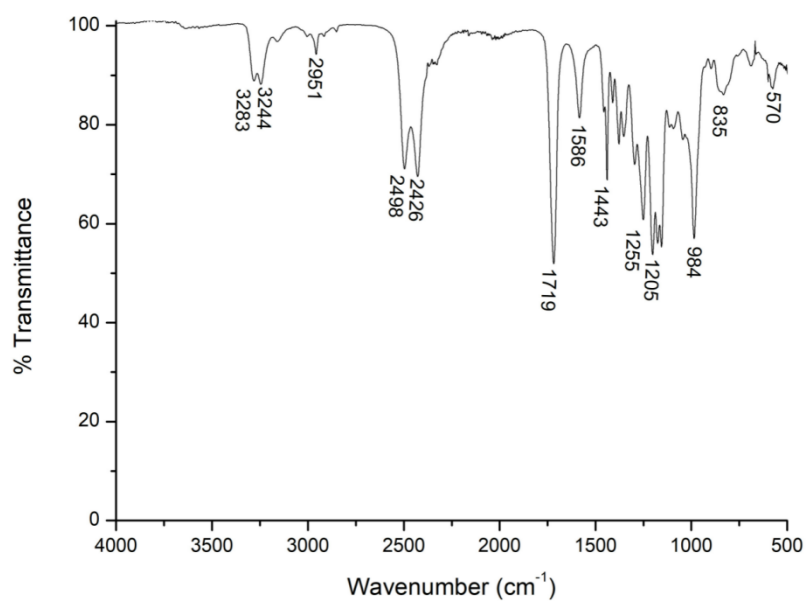
The ^1H NMR spectrum of the prepared **54** in CDCl_3 .



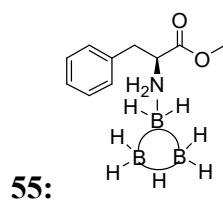
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **54** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **54** in CDCl_3 .

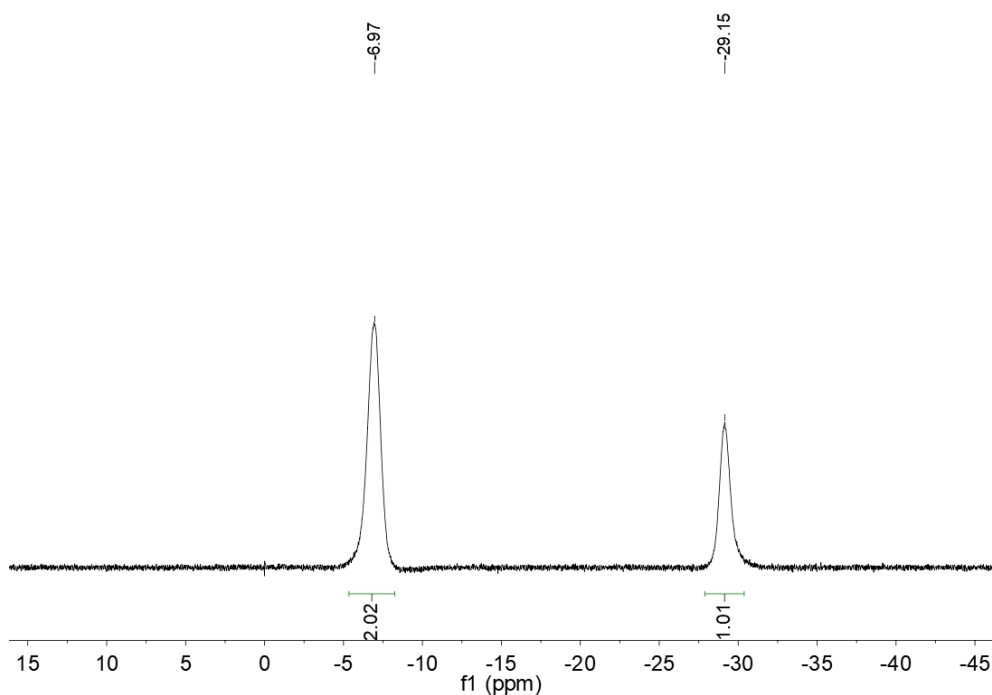


The IR spectrum of the prepared **54**.

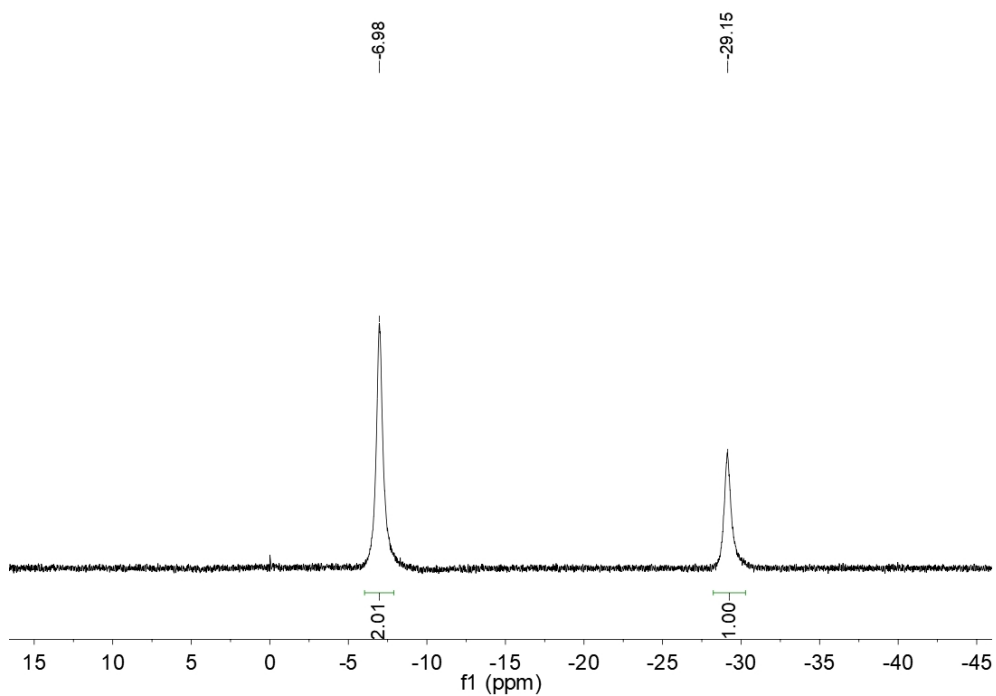


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 69%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -6.97 (*br*, 2 B of **BHB**), -29.15 (*br*, B of **BH₂**) ppm.

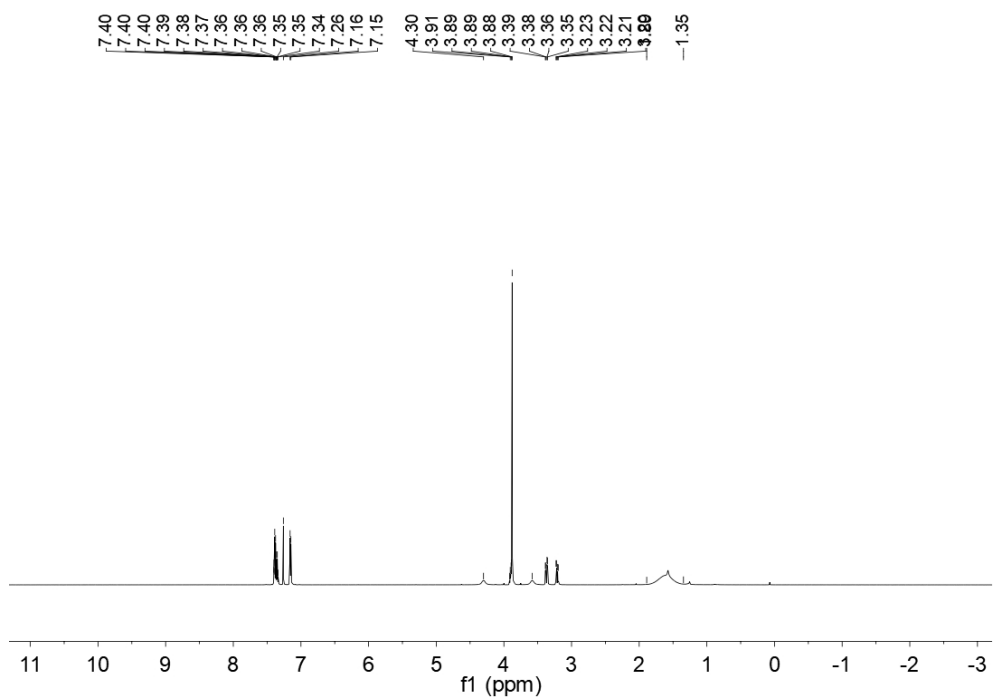
$^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -6.98 (*br*, 2 B of **BHB**), -29.15 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 7.37 (*m*, 3 H of 3 **CH**), 7.16 (*d*, 2 H of 2 **CH**), 4.30 (*br*, 1 H of **NH₂**), 3.91 (*m*, H of **CH**), 3.88 (*s*, 3 H of **CH₃**), 3.58 (*br*, 1 H of **NH₂**), 3.37 (*dd*, 1 H of **CH₂**), 3.22 (*dd*, 1 H of **CH₂**), 1.89-1.35 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 7.37 (*m*, 3 H of 3 **CH**), 7.16 (*d*, 2 H of 2 **CH**), 4.30 (*br*, 1 H of **NH₂**), 3.91 (*m*, H of **CH**), 3.88 (*s*, 3 H of **CH₃**), 3.58 (*br*, 1 H of **NH₂**), 3.37 (*dd*, 1 H of **CH₂**), 3.22 (*dd*, 1 H of **CH₂**), 1.62 (*br*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 170.61 (*s*, 1 C), 132.61 (*s*, 1 C), 129.88 (*s*, 2 C), 129.29 (*s*, 2 C), 128.75 (*s*, 1 C), 60.81 (*s*, 1 C), 53.57 (*s*, 1 C), 35.07 (*s*, 1 C) ppm. IR (cm^{-1}): 3271 (*w*), 3227 (*w*), 2956 (*w*), 2498 (*s*), 2426 (*s*), 1736 (*s*), 1570 (*w*), 1443 (*m*), 1260 (*s*), 1156 (*m*), 1089 (*m*), 979 (*w*), 742 (*m*), 697 (*s*). HRMS m/z calcd for $\text{C}_{10}\text{H}_{20}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 242.1670, found: 242.1670.



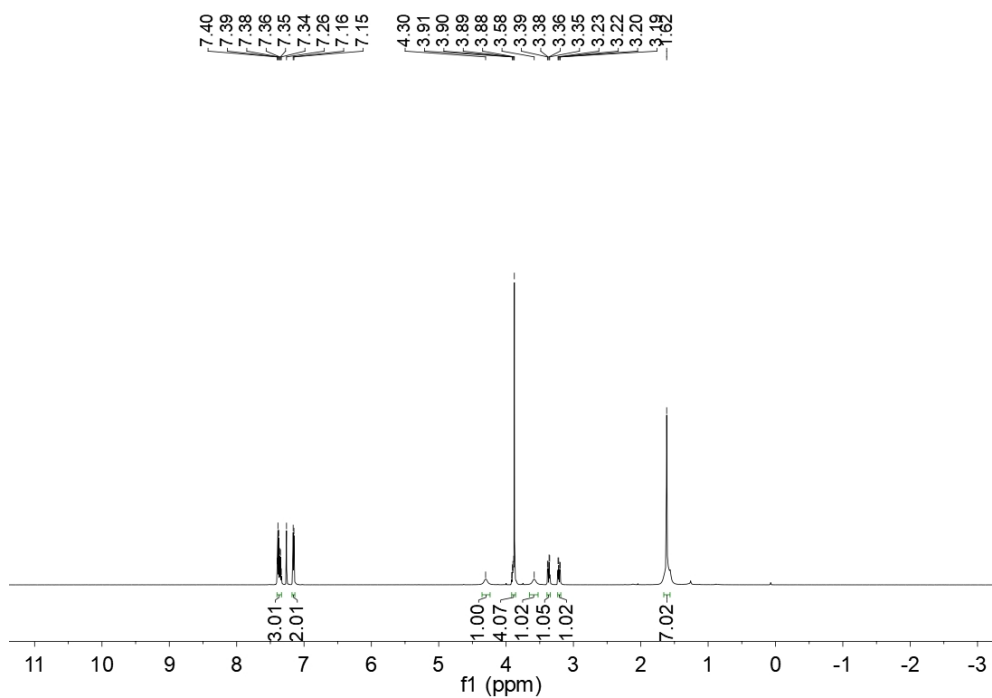
The ^{11}B NMR spectrum of the prepared **55** in CDCl_3



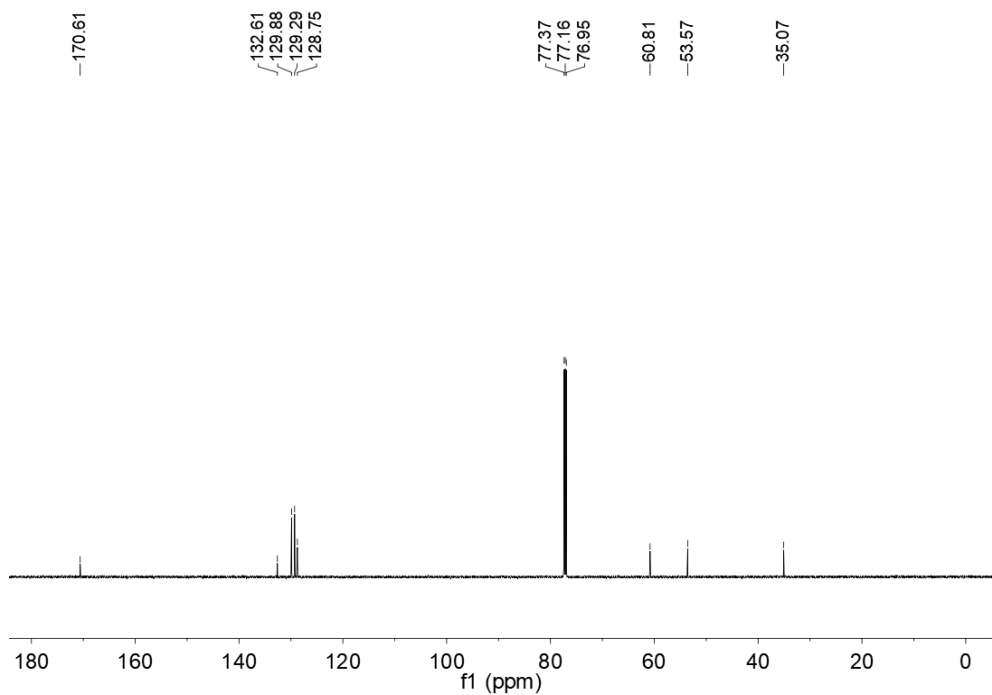
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **55** in CDCl_3 .



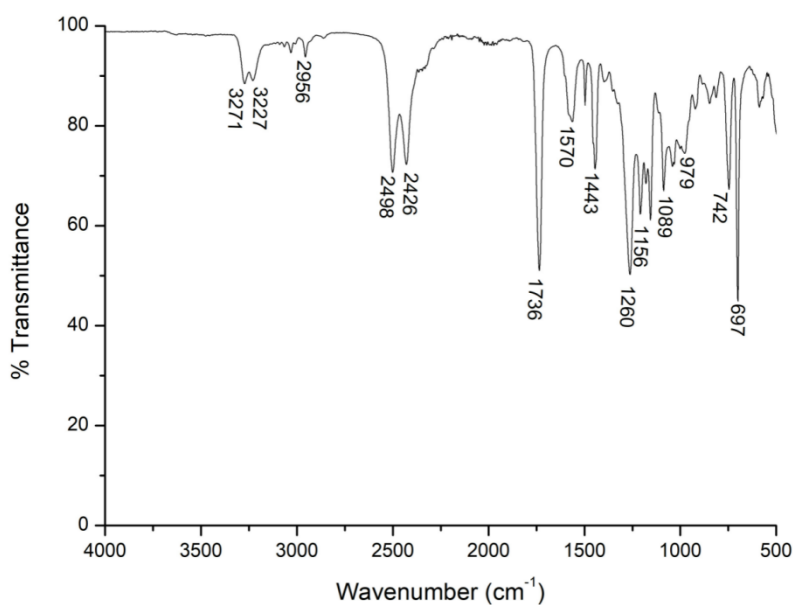
The ^1H NMR spectrum of the prepared **55** in CDCl_3 .



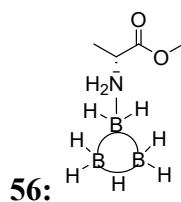
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **55** in CDCl_3 .



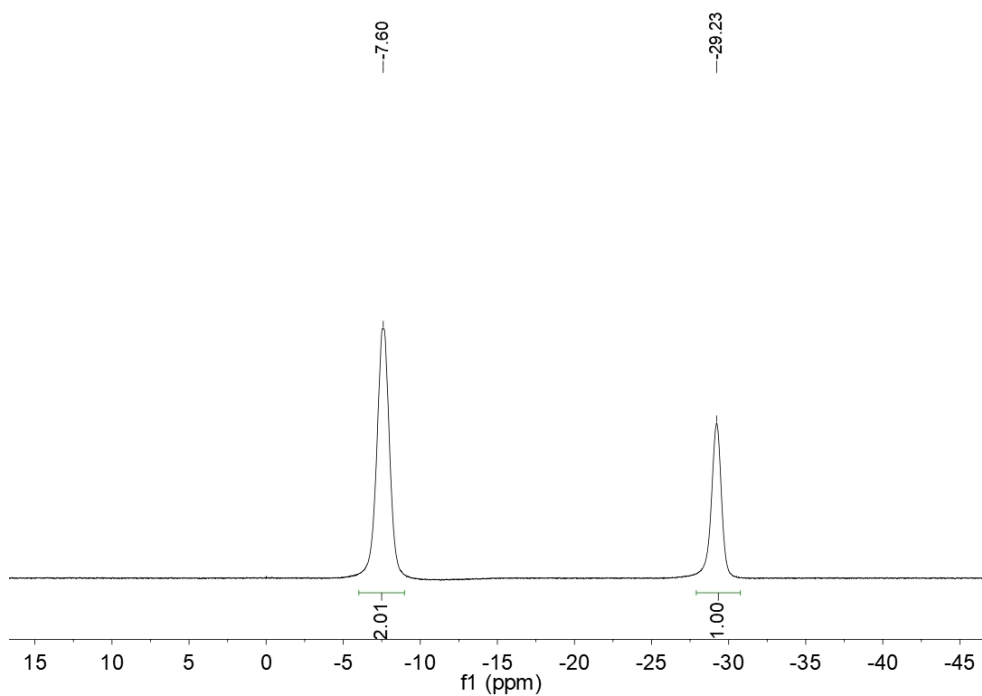
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **55** in CDCl_3 .



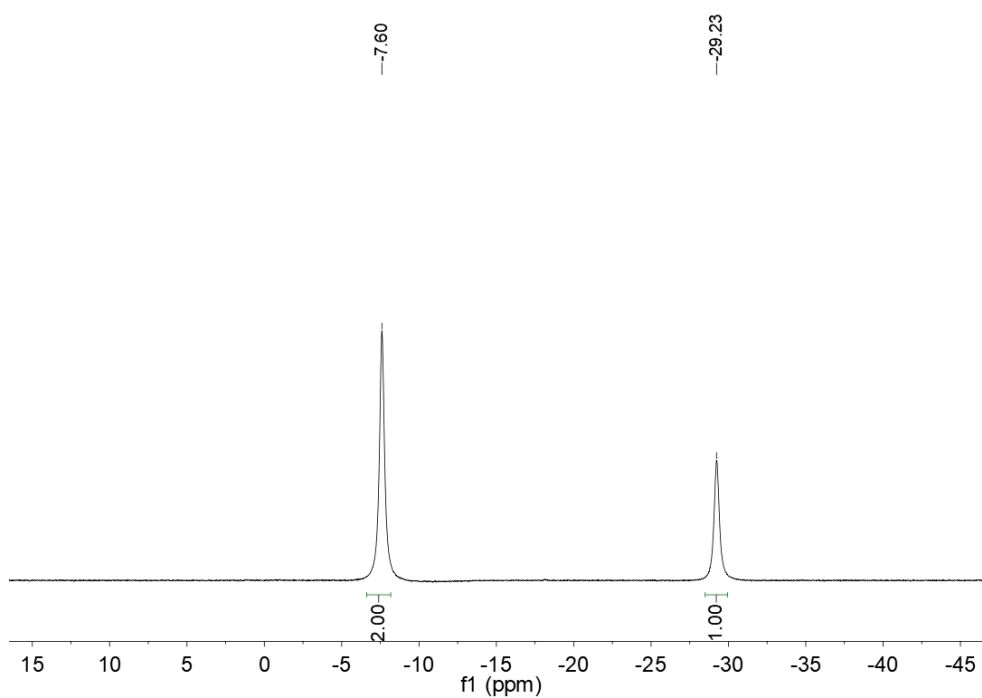
The IR spectrum of the prepared **55**.



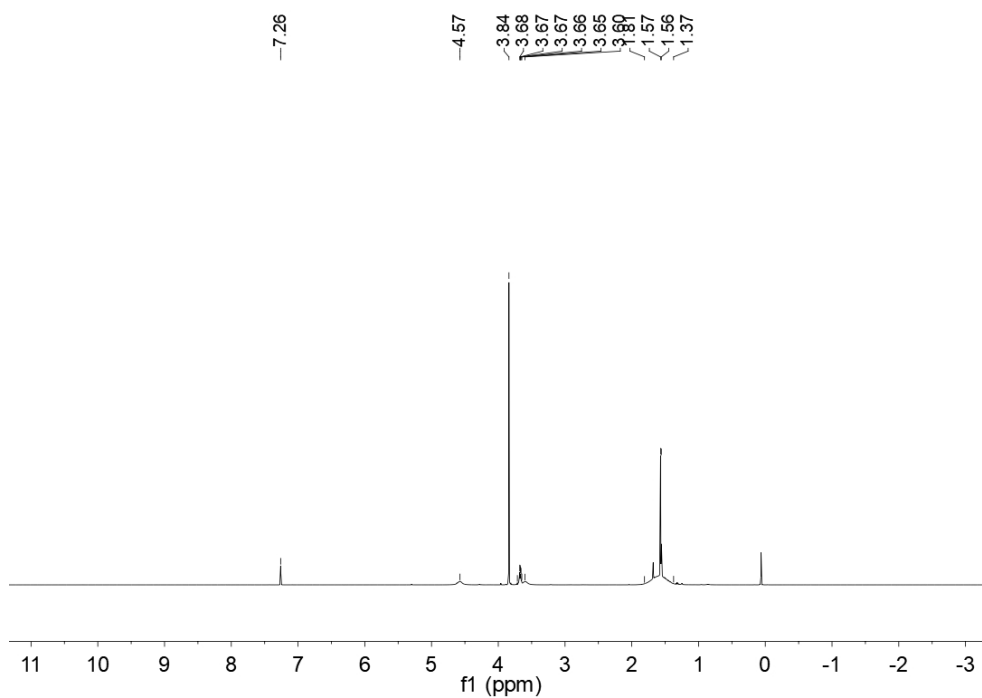
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:2). Yield 61%, white solid, melting point: 85-86 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -8.20 (*br*, 2 B of **BHB**), -29.55 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.20 (*br*, 2 B of **BHB**), -29.55 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.57 (*br*, 1 H of **NH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.67 (*m*, 2 H of **CH₂**), 3.60 (*br*, 1 H of **NH₂**), 1.81-1.37 (*br*, 7 H of **B₃H₇**), 1.57 (*t*, 3 H of **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.57 (*br*, 1 H of **NH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.67 (*m*, H of **CH**), 3.59 (*br*, 1 H of **NH₂**), 1.59 (*s*, 7 H of **B₃H₇**), 1.57 (*t*, 3 H of **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 172.82 (*s*, 1 C), 52.63 (*s*, 1 C), 43.69 (*s*, 1 C), 30.40 (*s*, 1 C) ppm. IR (cm^{-1}): 3260 (*m*), 3194 (*m*), 3122 (*w*), 2493 (*m*), 2437 (*m*), 1725 (*s*), 1575 (*m*), 1443 (*m*), 1338 (*m*), 1272 (*m*), 1134 (*m*), 973 (*m*), 852 (*w*), 758 (*w*). HRMS *m/z* calcd for $\text{C}_4\text{H}_{16}\text{B}_3\text{NO}_2$ [$\text{M}+\text{Na}$] $^+$: 166.1354, found: 166.1355.



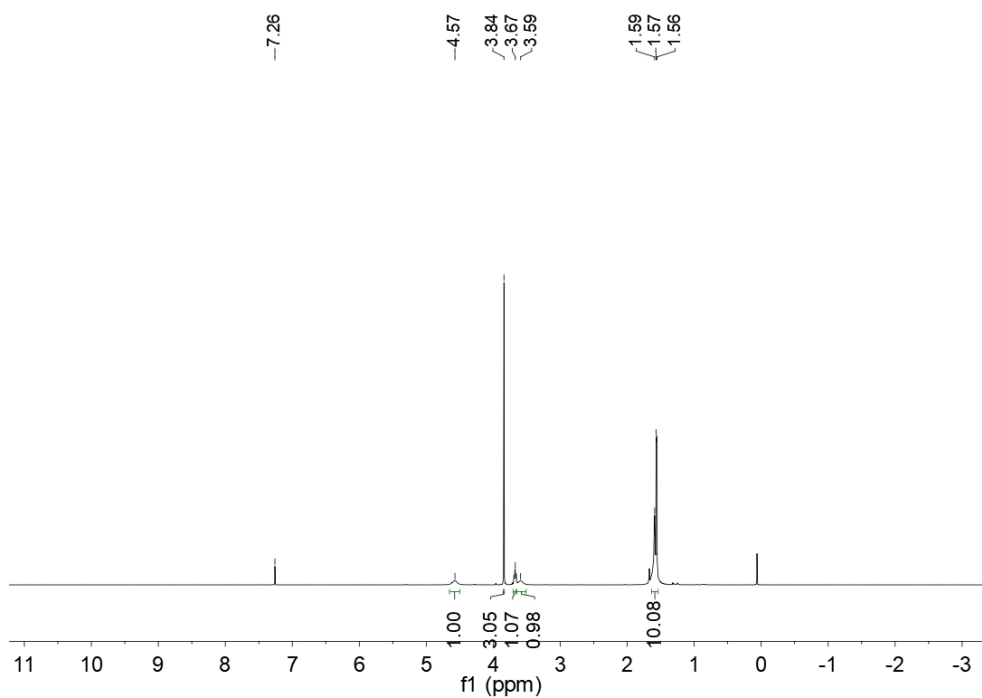
The ^{11}B NMR spectrum of the prepared **56** in CDCl_3



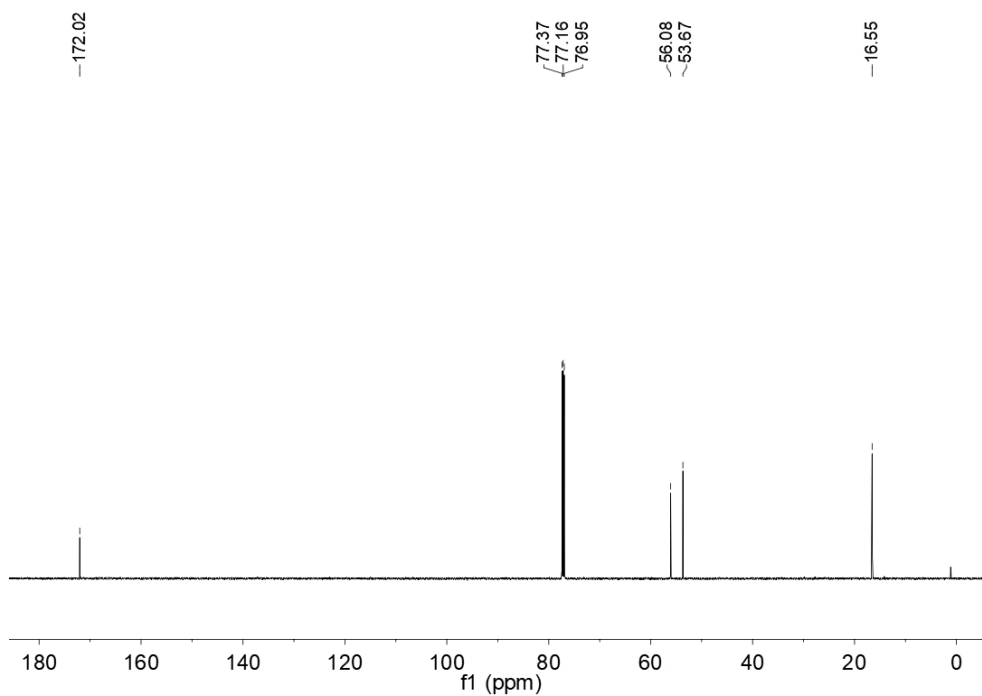
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **56** in CDCl_3 .



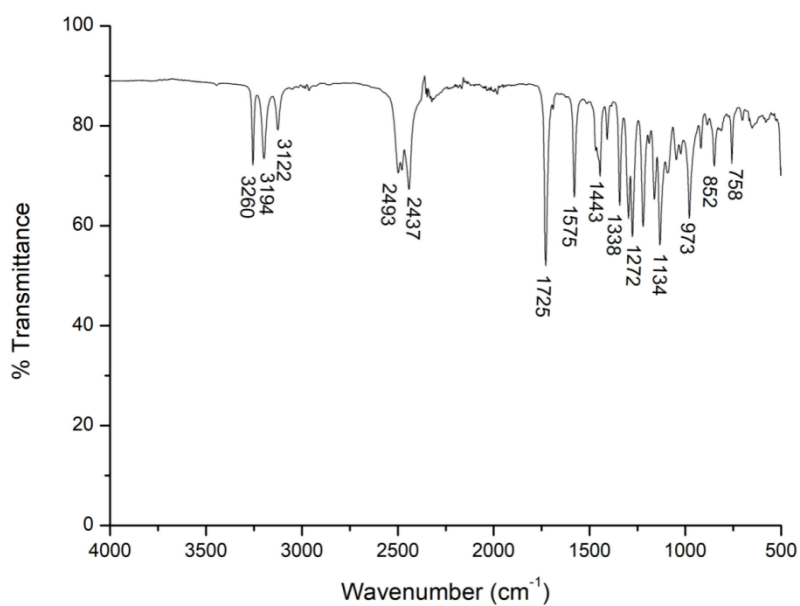
The ^1H NMR spectrum of the prepared **56** in CDCl_3 .



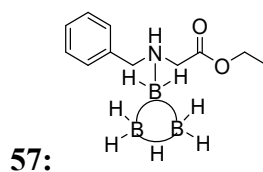
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **56** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **56** in CDCl_3 .

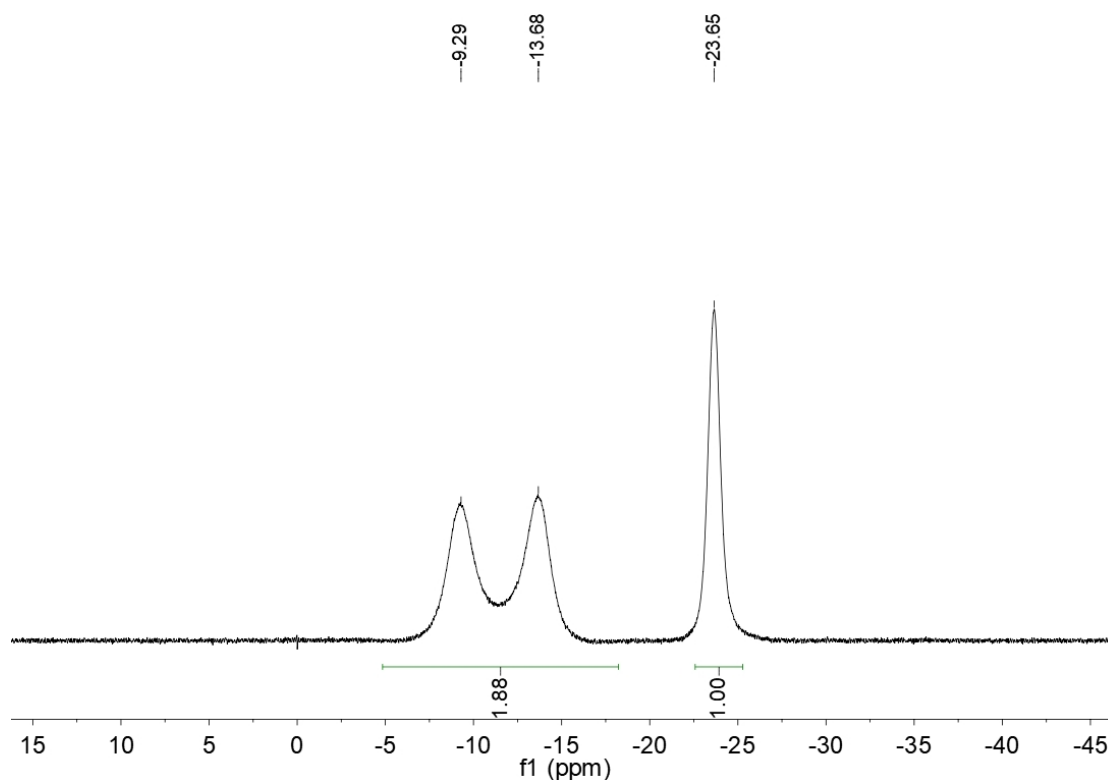


The IR spectrum of the prepared **56**.

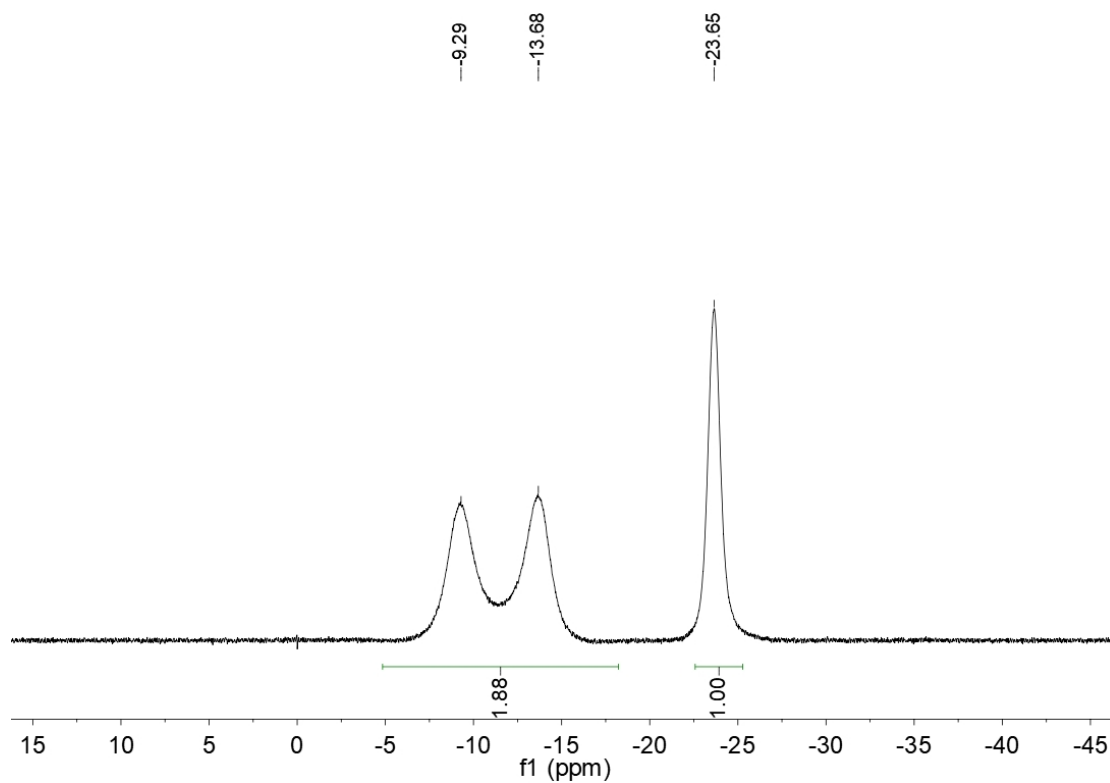


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 64%, white solid, melting point: 63-64 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -11.47 (*br*, 2 B of **BHB**),

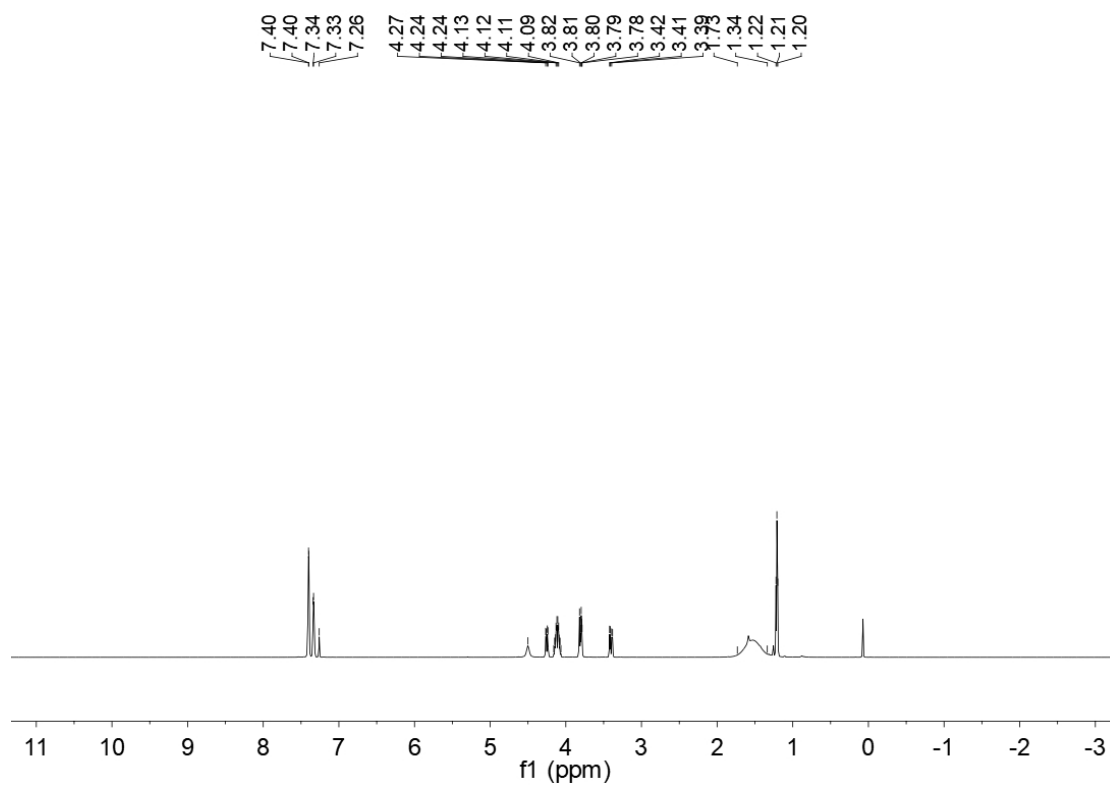
-23.65 (*br*, B of \mathbf{BH}_2) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -11.48 (*br*, 2 B of \mathbf{BHB}), -23.65 (*br*, B of \mathbf{BH}_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 7.40 (*d*, 3 H of 3 \mathbf{CH}), 7.33 (*s*, 2 H of 2 \mathbf{CH}), 4.50 (*br*, H of \mathbf{NH}), 4.26 (*dd*, 1 H of \mathbf{CH}_2), 4.10 (*m*, 2 H of \mathbf{CH}_2), 3.81 (*m*, 2 H of \mathbf{CH}_2), 3.41 (*dd*, 1 H of \mathbf{CH}_2), 1.73-1.34 (*br*, 7 H of $\mathbf{B}_3\mathbf{H}_7$), 1.21 (*t*, 3 H of \mathbf{CH}_3) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 7.03 (*d*, 2 H of 2 \mathbf{CH}), 6.84 (*d*, 2 H of 2 \mathbf{CH}), 4.93 (*br*, H of \mathbf{NH}), 4.26 (*dd*, 1 H of \mathbf{CH}_2), 4.10 (*m*, 2 H of \mathbf{CH}_2), 3.81 (*m*, 2 H of \mathbf{CH}_2), 3.41 (*dd*, 1 H of \mathbf{CH}_2), 1.53 (*br*, 7 H of $\mathbf{B}_3\mathbf{H}_7$), 1.21 (*t*, 3 H of \mathbf{CH}_3) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.16 (*s*, 1 C), 131.90 (*s*, 1 C), 130.21 (*s*, 2 C), 129.29 (*s*, 2 C), 129.31 (*s*, 1 C), 62.75 (*s*, 1 C), 60.59 (*s*, 1 C), 54.21 (*s*, 1 C), 14.06 (*s*, 1 C) ppm. IR (cm^{-1}): 3177 (*s*), 2989 (*w*), 2509 (*m*), 2459 (*m*), 2420 (*m*), 2034 (*w*), 1730 (*s*), 1459 (*w*), 1415 (*m*), 1382 (*m*), 1249 (*s*), 1205 (*m*), 1028 (*s*), 902 (*m*), 747 (*s*), 703 (*s*), 603 (*w*). HRMS m/z calcd for $\text{C}_{11}\text{H}_{22}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 256.1827, found: 256.1827.



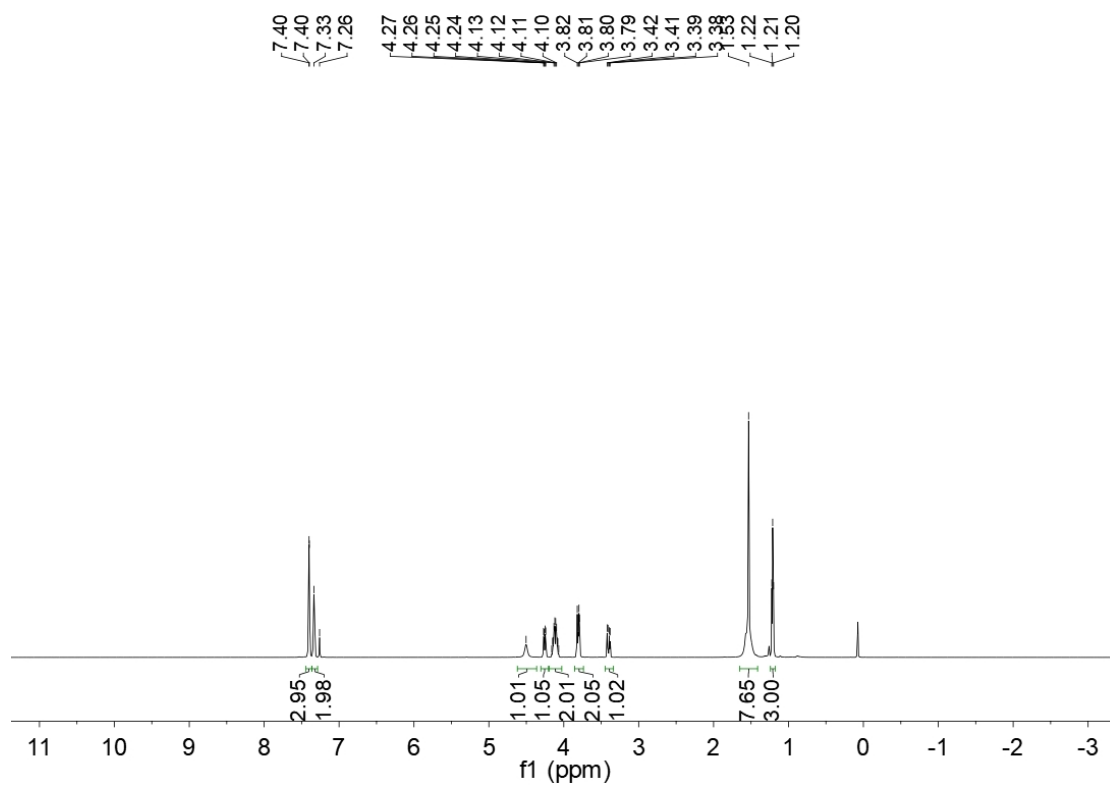
The ^{11}B NMR spectrum of the prepared **57** in CDCl_3



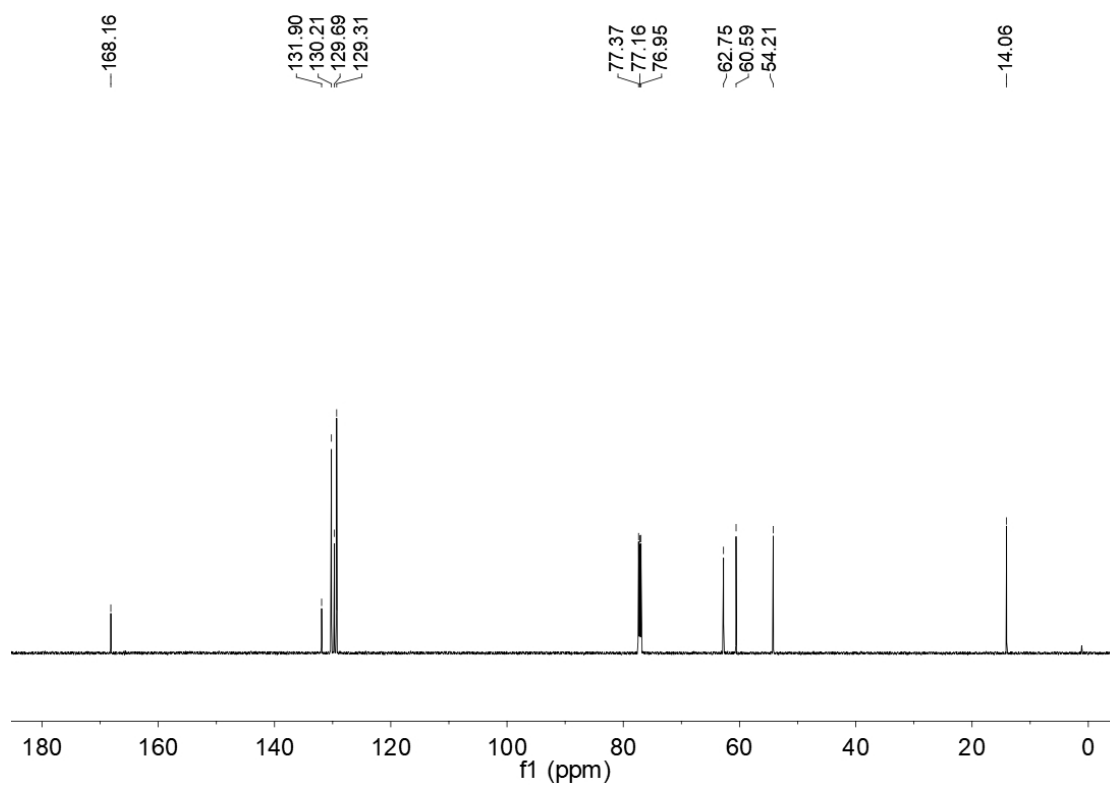
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **57** in CDCl_3 .



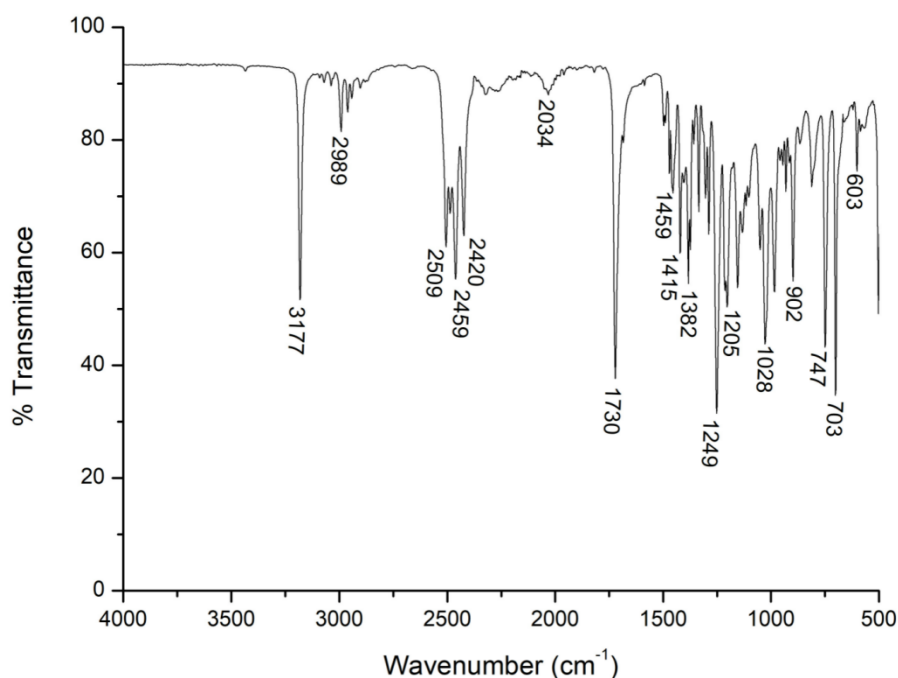
The ^1H NMR spectrum of the prepared **57** in CDCl_3 .



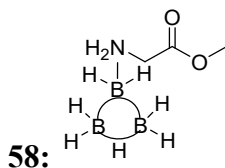
The $^1\text{H}\{^1\text{B}\}$ NMR spectrum of the prepared **57** in CDCl_3 .



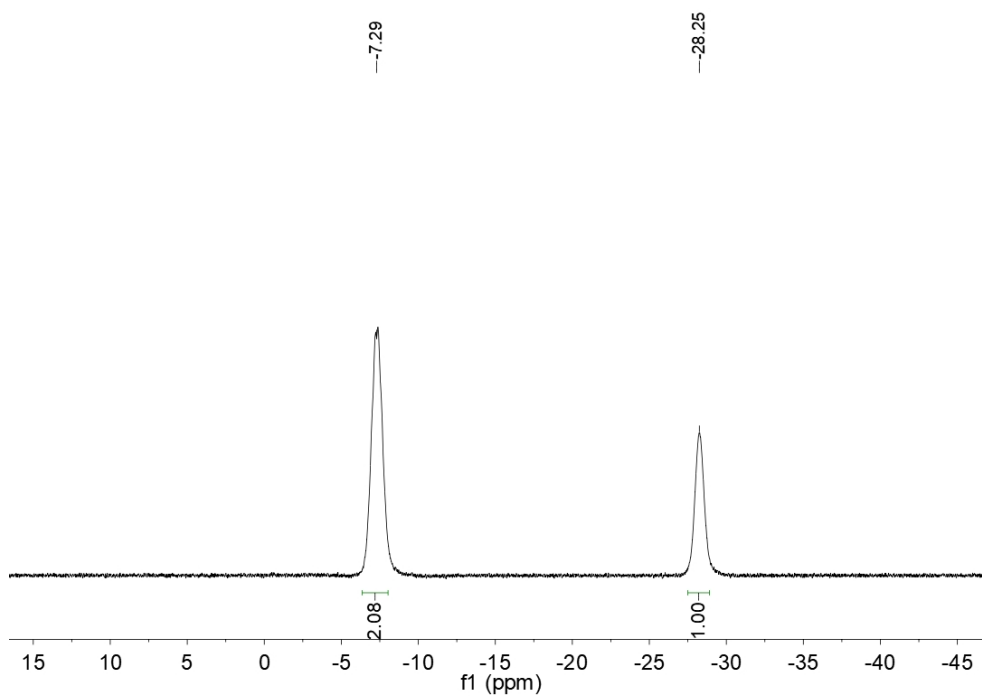
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **57** in CDCl_3 .



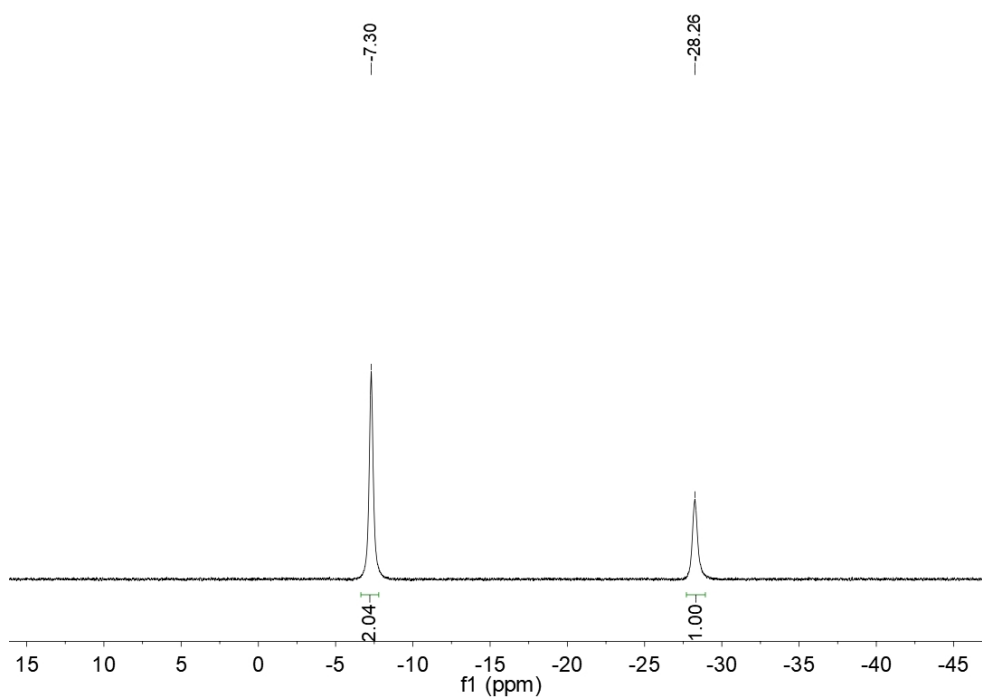
The IR spectrum of the prepared **57**.



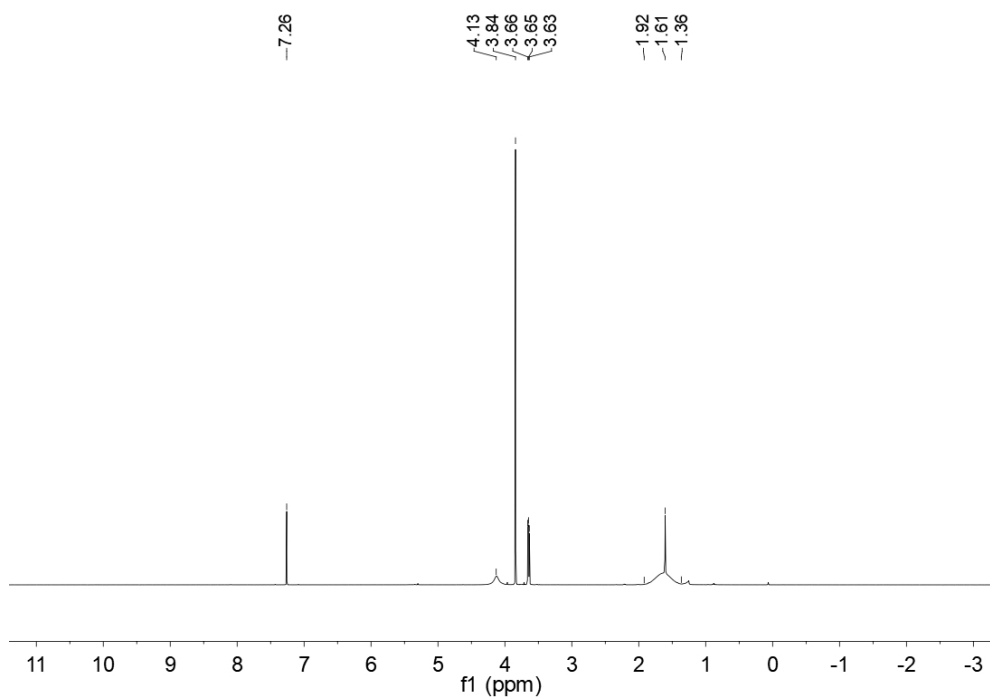
Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 1:3$). Yield 57%, white solid, melting point: 65-66 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.29 (*br*, 2 B of **BHB**), -28.25 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.30 (*br*, 2 B of **BHB**), -28.26 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.13 (*br*, 2 H of **NH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.65 (*t*, 2 H of **CH₂**), 1.92-1.36 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.12 (*br*, 2 H of **NH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.65 (*t*, 2 H of **CH₂**), 1.64 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.88 (*s*, 1 C), 53.51 (*s*, 1 C), 48.75 (*s*, 1 C) ppm. IR (cm^{-1}): 3271 (m), 3233 (m), 2951 (w), 2504 (m), 2437 (m), 1719 (s), 1586 (m), 1420 (m), 1272 (s), 1222 (m), 1067 (m), 846 (w), 576 (w). HRMS m/z calcd for $\text{C}_3\text{H}_{14}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 152.1197, found: 152.1193.



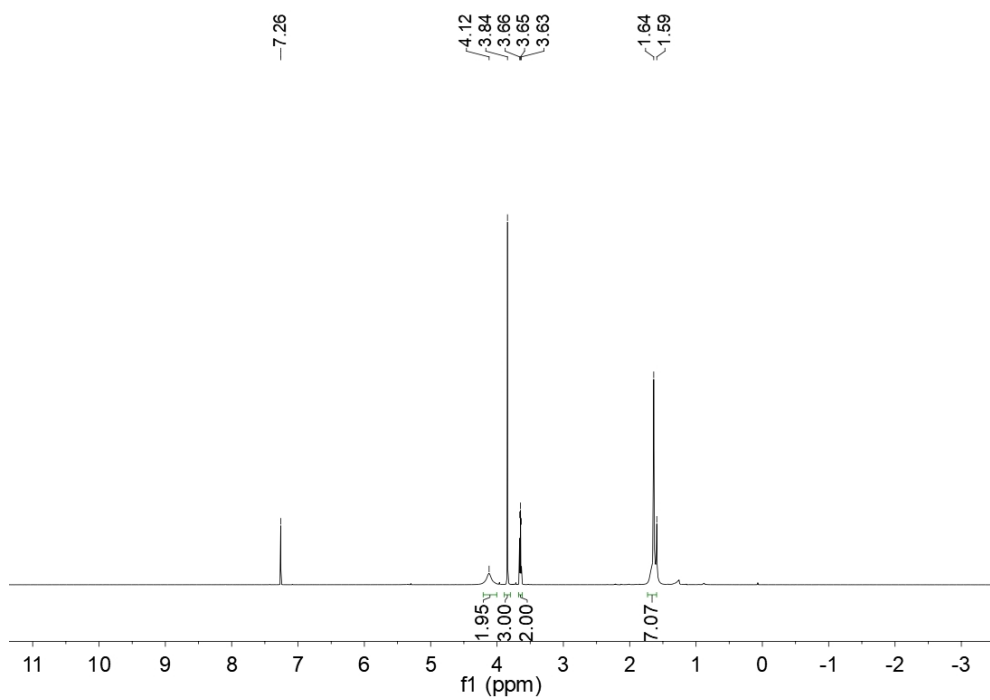
The ^{11}B NMR spectrum of the prepared **58** in CDCl_3 .



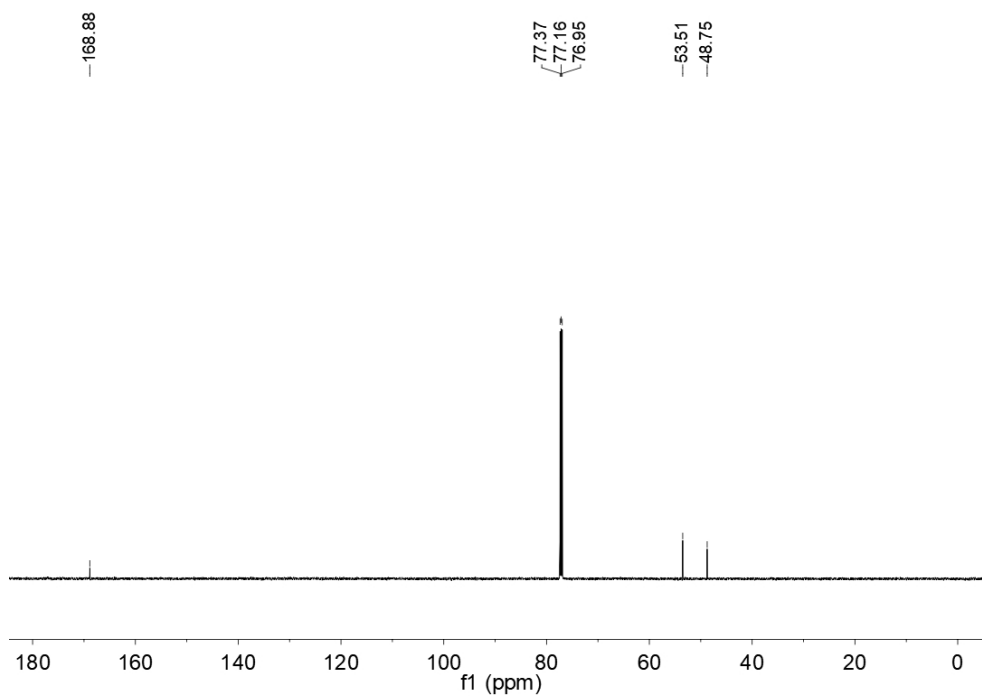
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **58** in CDCl_3 .



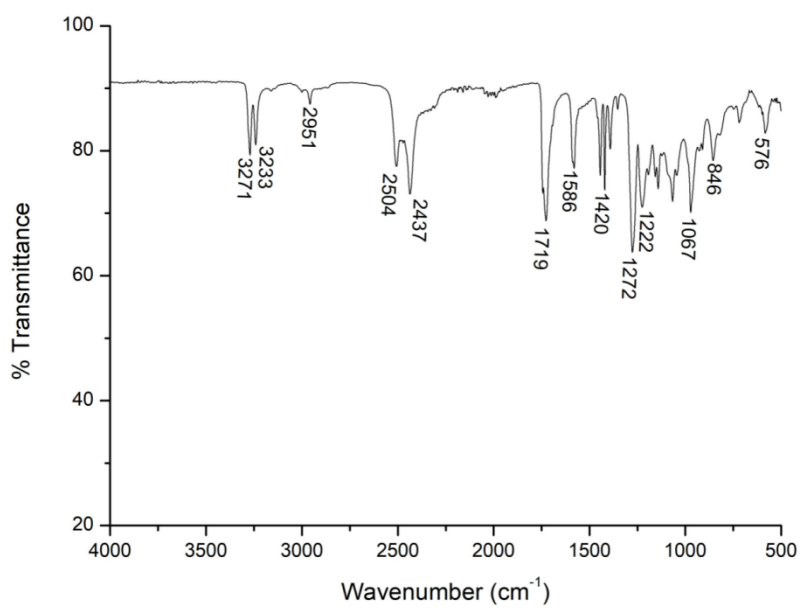
The ^1H NMR spectrum of the prepared **58** in CDCl_3 .



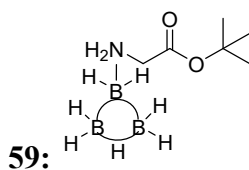
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **58** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **58** in CDCl_3 .

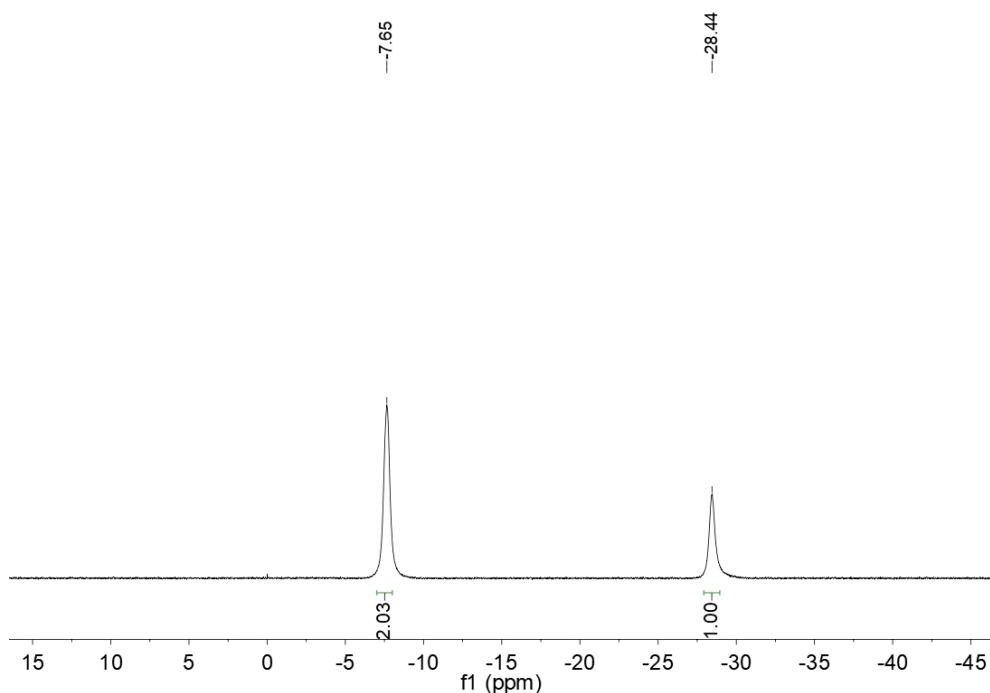


The IR spectrum of the prepared **58**.

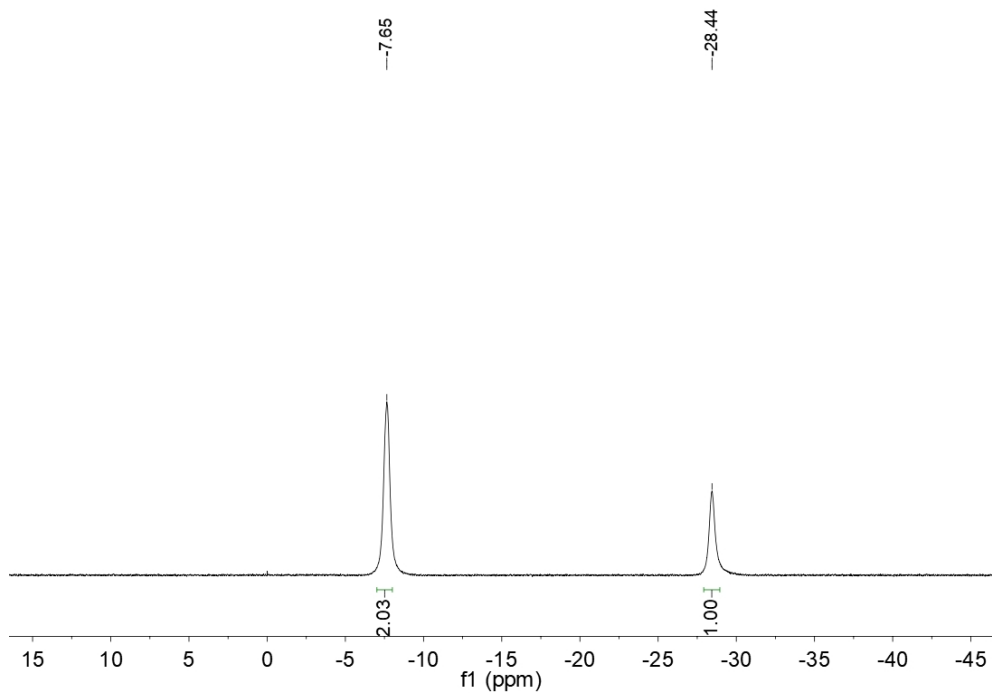


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 60%, white solid, melting point: 68-69 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.65 (*br*, 2 B of **BHB**),

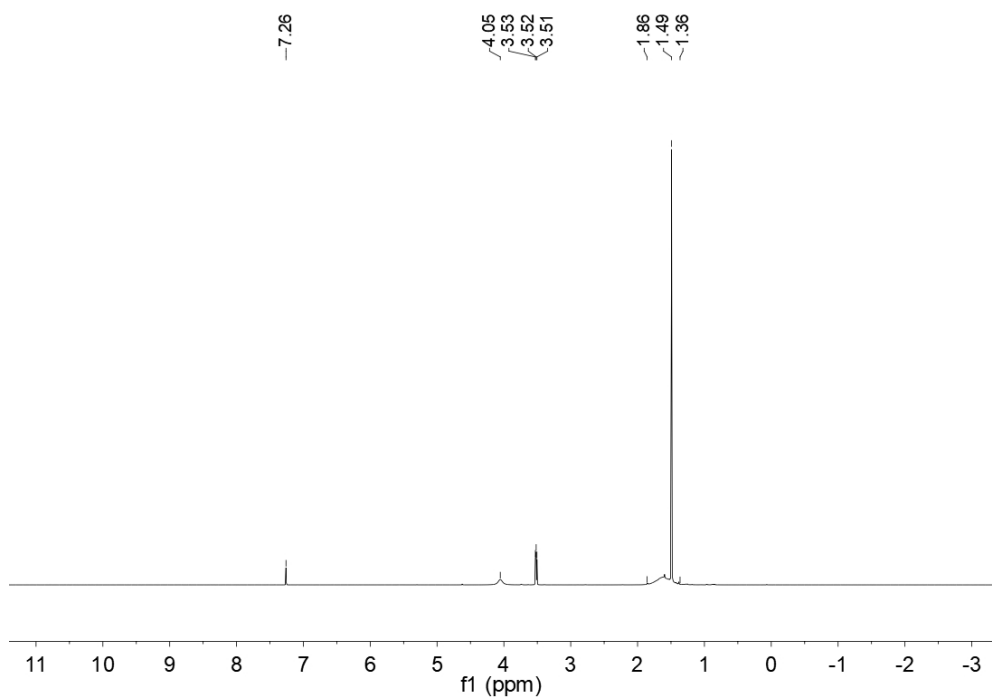
-28.44 (*br*, B of \mathbf{BH}_2) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.65 (*br*, 2 B of \mathbf{BHB}),
-28.44 (*br*, B of \mathbf{BH}_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.05 (*br*, 2 H of \mathbf{NH}_2), 3.52
(*t*, 2 H of \mathbf{CH}_2), 1.86-1.36 (*br*, 7 H of $\mathbf{B}_3\mathbf{H}_7$), 1.49 (*s*, 9 H of 3 \mathbf{CH}_3) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR
(600 MHz, CDCl_3): δ 4.05 (*br*, 2 H of \mathbf{NH}_2), 3.52 (*t*, 2 H of \mathbf{CH}_2), 1.61 (*br*, 7 H of
 $\mathbf{B}_3\mathbf{H}_7$), 1.49 (*t*, 9 H of 3 \mathbf{CH}_3) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 167.45 (*s*, 1
C), 84.77 (*s*, 1 C), 49.52 (*s*, 1 C), 28.09 (*s*, 3 C) ppm. IR (cm^{-1}): 2973 (*w*), 1736 (*w*),
1316 (*m*), 1150 (*w*), 1056 (*m*), 802 (*w*), 692 (*w*). HRMS m/z calcd for $\text{C}_6\text{H}_{20}\text{B}_3\text{NO}_2$
[$\text{M}+\text{Na}$] $^+$: 194.1668, found: 194.1670.



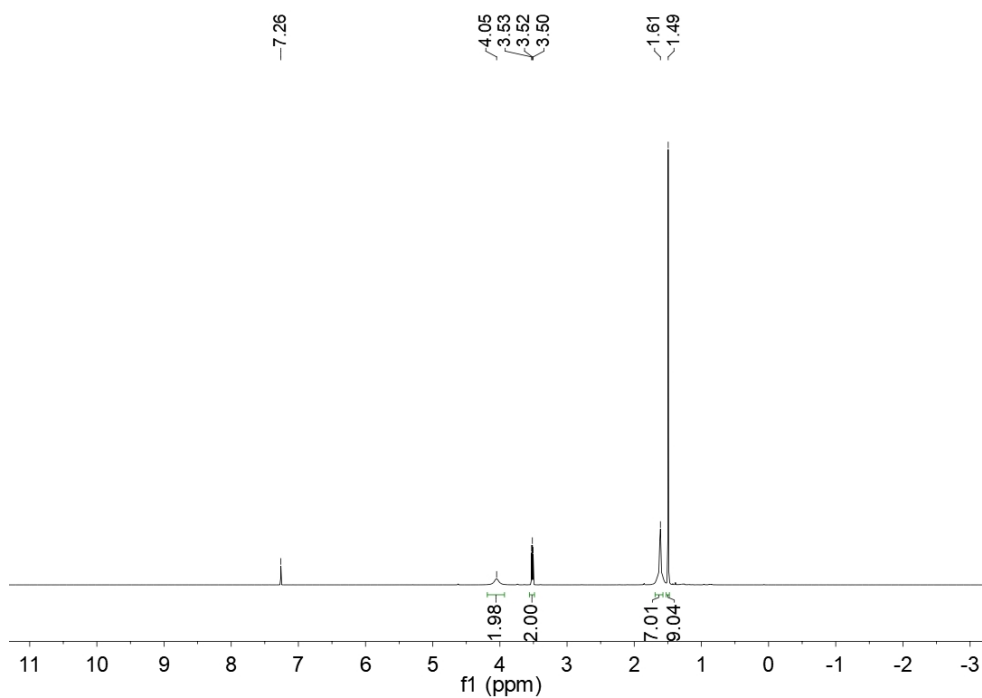
The ^{11}B NMR spectrum of the prepared **59** in CDCl_3



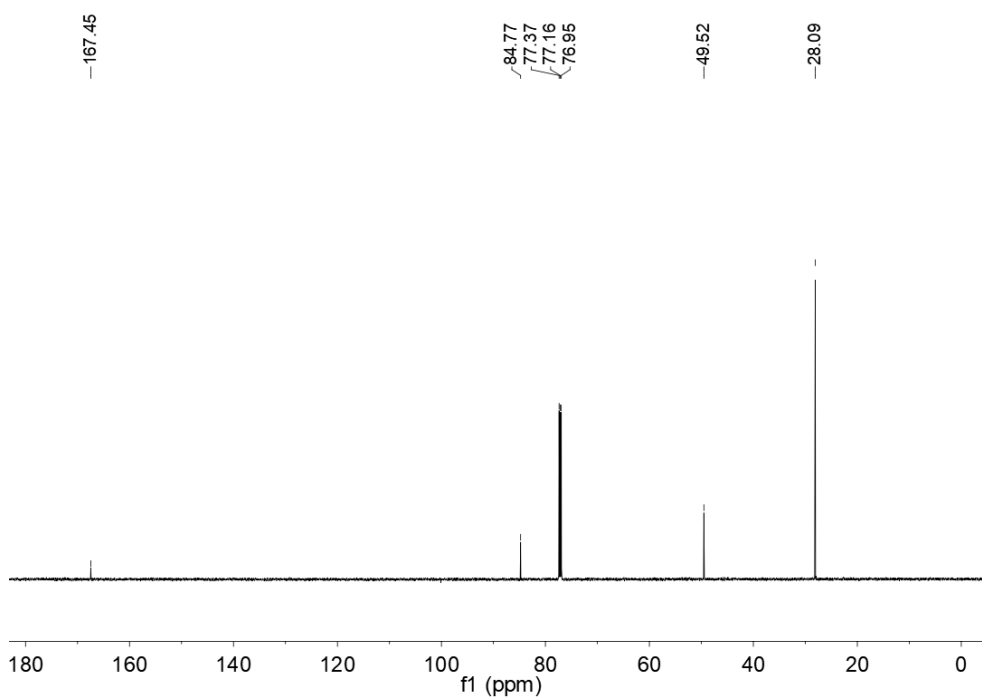
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **59** in CDCl_3 .



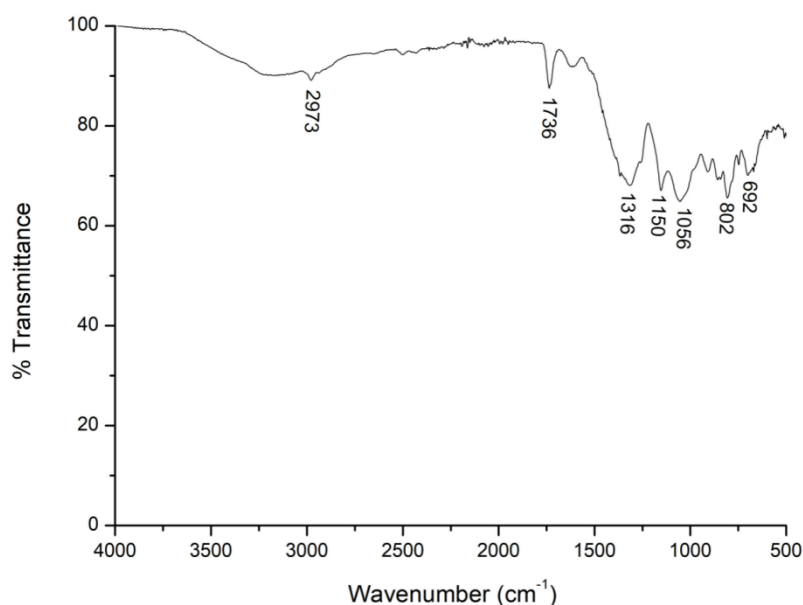
The ^1H NMR spectrum of the prepared **59** in CDCl_3 .



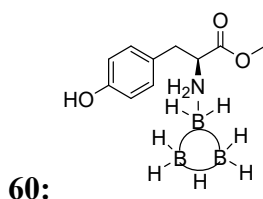
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **59** in CDCl_3 .



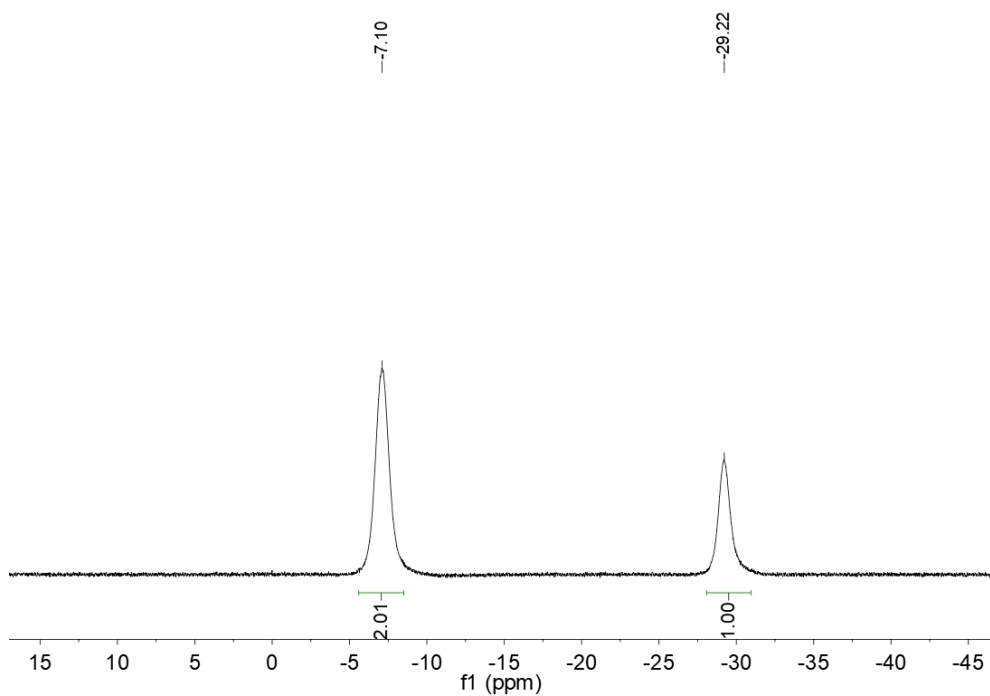
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **59** in CDCl_3 .



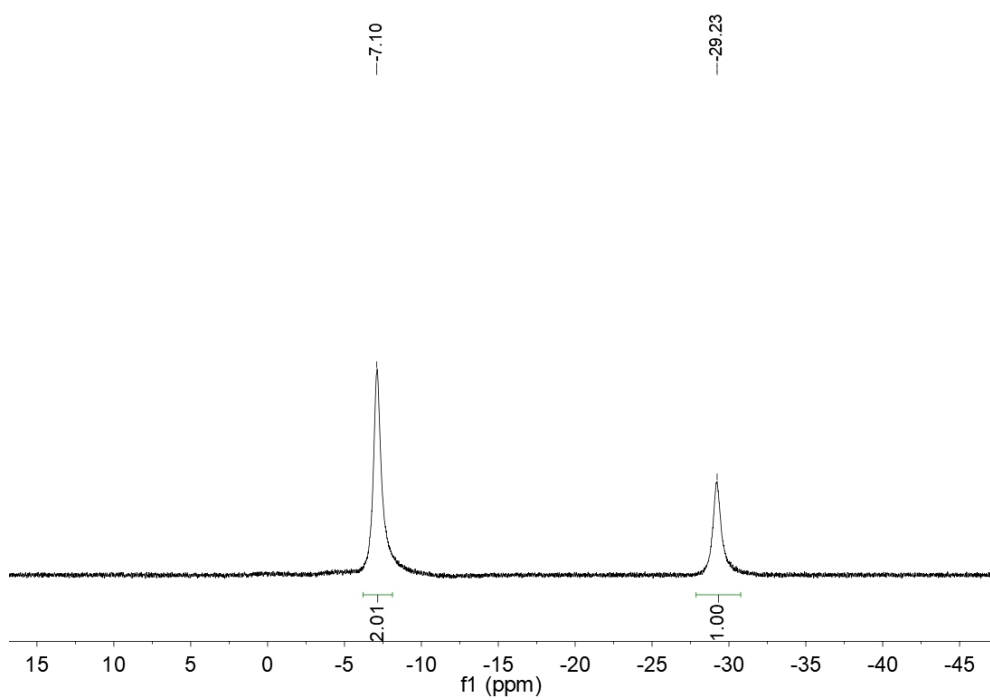
The IR spectrum of the prepared **59**.



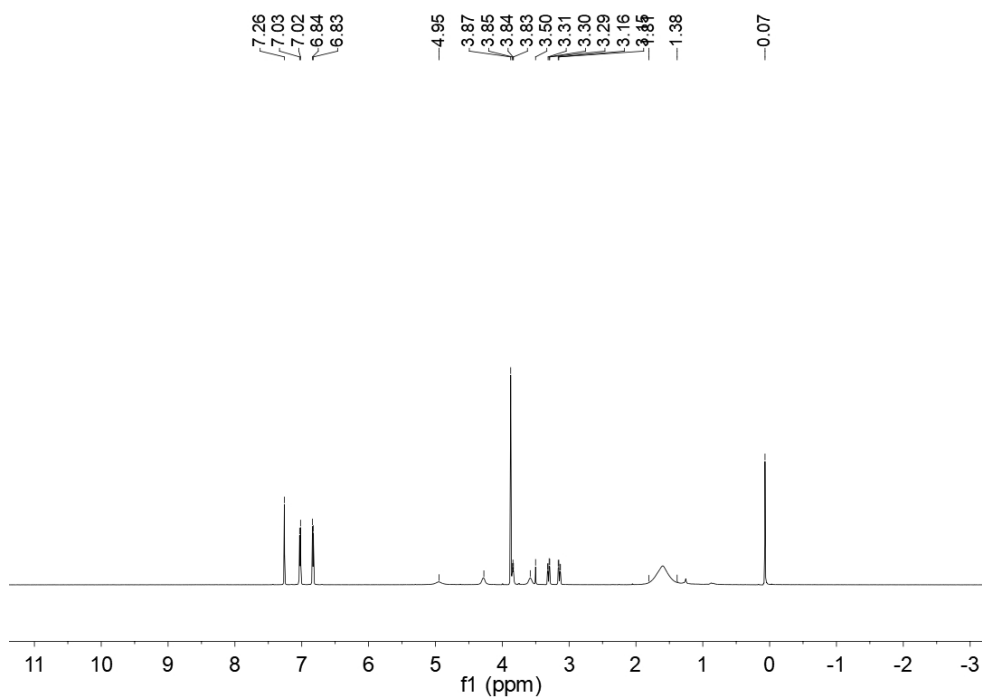
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:10). Yield 51%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.10 (*br*, 2 B of **BHB**), -29.22 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.10 (*d*, 2 B of **BHB**), -29.23 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 7.03 (*d*, 2 H of 2 **CH**), 6.84 (*d*, 2 H of 2 **CH**), 4.95 (*br*, H of **OH**), 4.28 (*br*, 1 H of **NH₂**), 3.87 (*s*, 3 H of **CH₃**), 3.84 (*m*, H of **CH**), 3.58 (*br*, 1 H of **NH₂**), 3.31 (*dd*, H of **CH**), 3.15 (*dd*, H of **CH**), 1.81-1.38 (*br*, 7 H of B_{3**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 7.03 (*d*, 2 H of 2 **CH**), 6.84 (*d*, 2 H of 2 **CH**), 4.93 (*br*, H of **OH**), 4.29 (*br*, 1 H of **NH₂**), 3.87 (*s*, 3 H of **CH₃**), 3.84 (*m*, H of **CH**), 3.58 (*br*, 1 H of **NH₂**), 3.31 (*dd*, H of **CH**), 3.15 (*dd*, H of **CH**), 1.61 (*s*, 7 H of B_{3**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 170.75 (*s*, 1 C), 155.89 (*s*, 1 C), 130.68 (*s*, 1 C), 124.44 (*s*, 1 C), 116.71 (*s*, 1 C), 60.87 (*s*, 1 C), 53.57 (*s*, 1 C), 34.18 (*s*, 1 C) ppm. IR (cm⁻¹): 3266 (*w*), 3227 (*w*), 2950 (*w*), 2504 (*m*), 2432 (*m*), 1730 (*s*), 1614 (*m*), 1515 (*s*), 1443 (*m*), 1260 (*s*), 1172 (*s*), 1112 (*m*), 829 (*m*). HRMS *m/z* calcd for C₁₀H₂₀B₃NO₃ [M+Na]⁺: 258.1620, found: 258.1622.}}



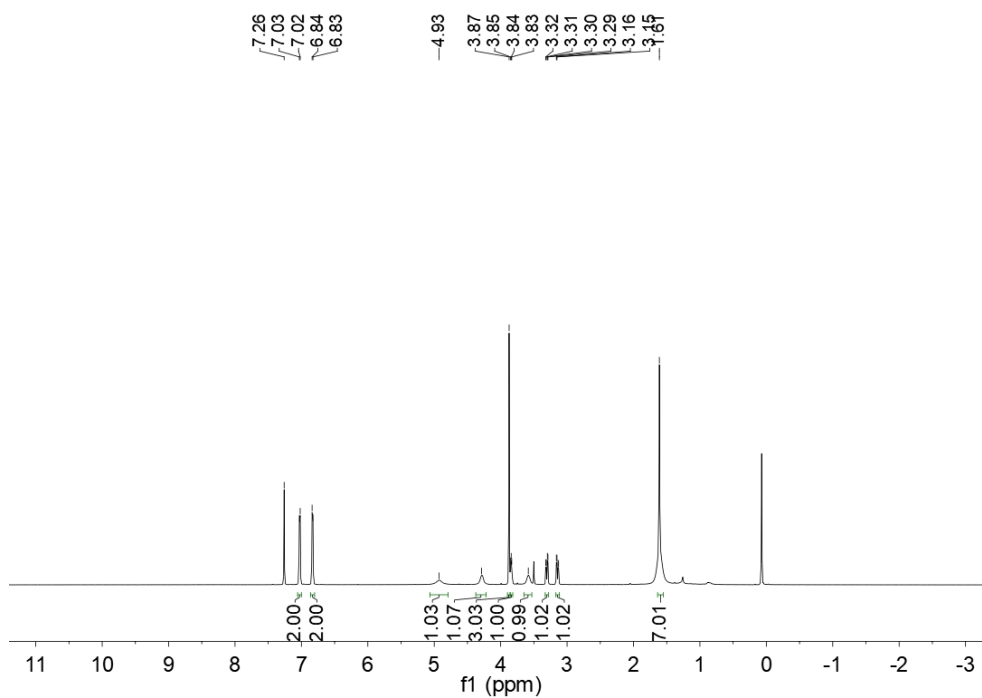
The ^{11}B NMR spectrum of the prepared **60** in CDCl_3



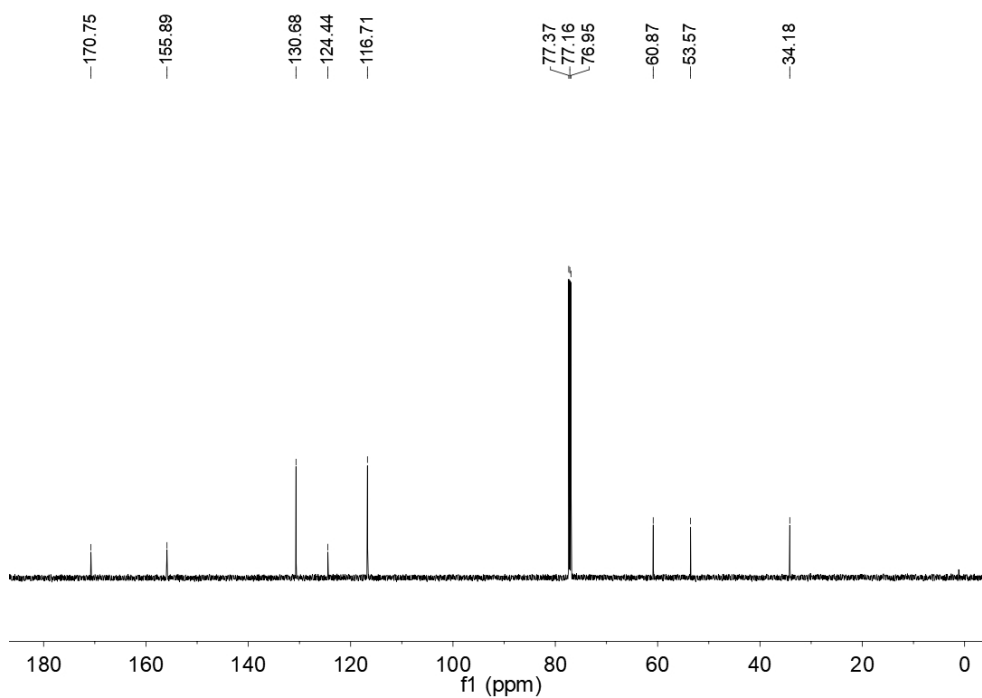
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **60** in CDCl_3 .



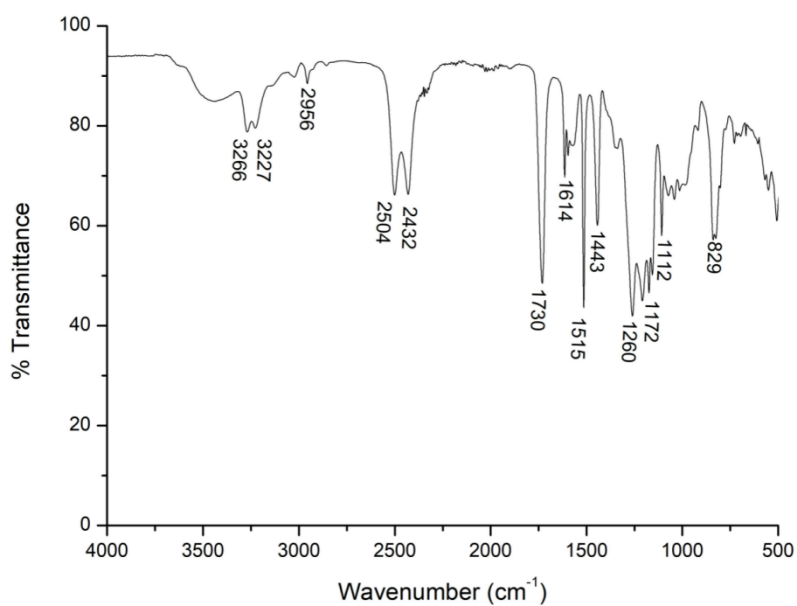
The ^1H NMR spectrum of the prepared **60** in CDCl_3 .



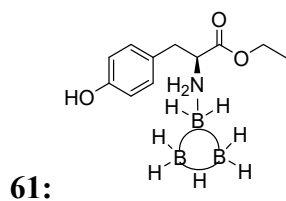
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **60** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **60** in CDCl_3 .

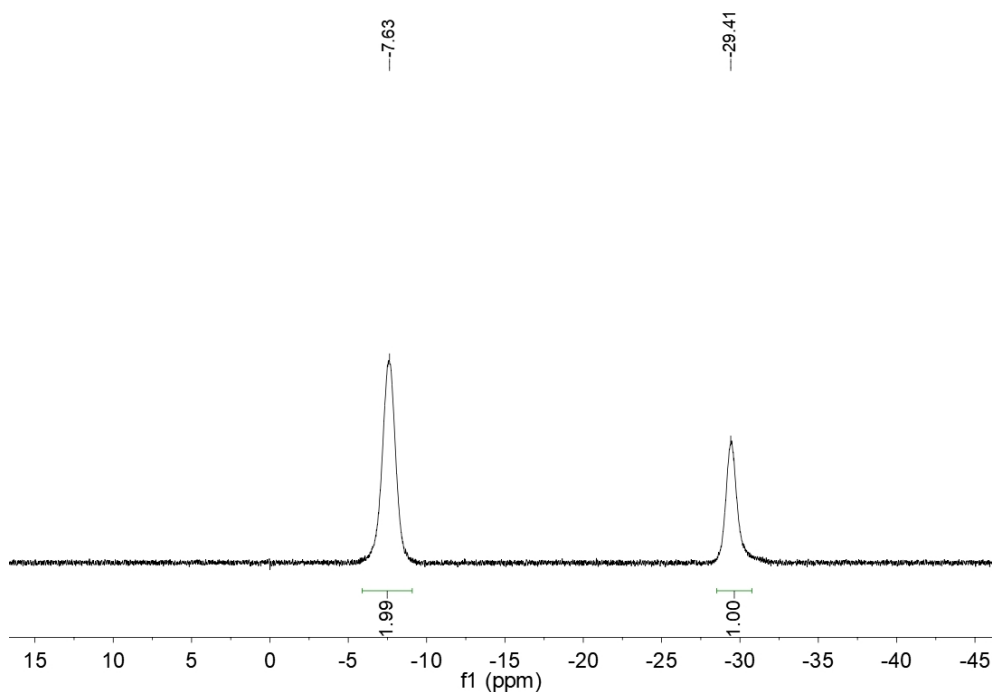


The IR spectrum of the prepared **60**.

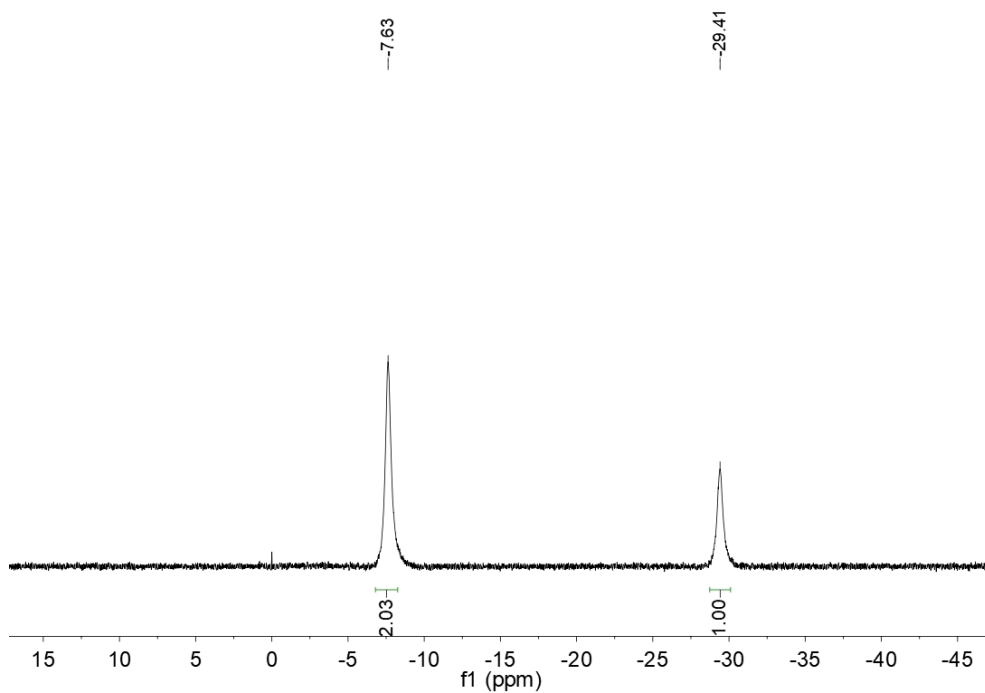


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:10). Yield 50%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.63 (*br*, 2 B of **BHB**), -29.41 (*br*, B of

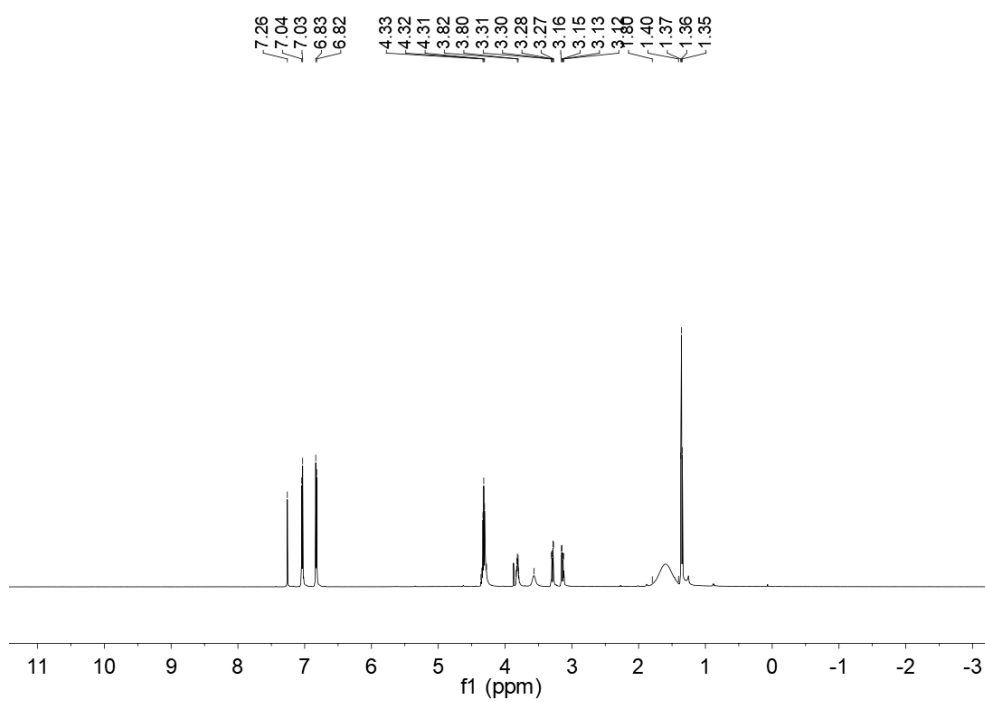
BH_2) ppm. $^{11}B\{^1H\}$ NMR (193 MHz, $CDCl_3$): δ -7.63 (*d*, 2 B of **BHB**), -29.41 (*br*, B of BH_2) ppm. 1H NMR (600 MHz, $CDCl_3$): δ 7.04 (*d*, 2 H of 2 **CH**), 6.83 (*d*, 2 H of 2 **CH**), 4.32 (*m*, 2 H of CH_2 , 1 H of NH_2), 3.81 (*m*, H of **CH**), 3.57 (*br*, 1 H of NH_2), 3.29 (*dd*, 1 H of CH_2), 3.14 (*dd*, 1 H of CH_2), 1.80-1.40 (*br*, 7 H of B_3H_7), 1.38 (*t*, 3 H of CH_3) ppm. $^1H\{^{11}B\}$ NMR (600 MHz, $CDCl_3$): δ 7.04 (*d*, 2 H of 2 **CH**), 6.83 (*d*, 2 H of 2 **CH**), 4.32 (*m*, 2 H of CH_2 , 1 H of NH_2), 3.82 (*m*, H of **CH**), 3.57 (*br*, 1 H of NH_2), 3.29 (*dd*, 1 H of CH_2), 3.14 (*dd*, 1 H of CH_2), 3.15 (*dd*, H of **CH**), 1.60 (*s*, 7 H of B_3H_7), 1.36 (*t*, 3 H of CH_3) ppm. $^{13}C\{^1H\}$ NMR (151 MHz, $CDCl_3$): δ 170.29 (*s*, 1 C), 155.84 (*s*, 1 C), 130.72 (*s*, 2 C), 124.56 (*s*, C), 116.65 (*s*, 2 C), 63.18 (*s*, 1 C), 60.94 (*s*, 1 C), 34.30 (*s*, 1 C), 14.24 (*s*, 1 C) ppm. IR (cm^{-1}): 3271 (*w*), 3221 (*w*), 2984 (*w*), 2504 (*m*), 2432 (*m*), 1725 (*m*), 1614 (*w*), 1509 (*s*), 1443 (*w*), 1255 (*s*), 1200 (*s*), 1017 (*m*), 829 (*m*). HRMS m/z calcd for $C_{11}H_{22}B_3NO_3$ $[M+Na]^+$: 272.1777, found: 272.1777.



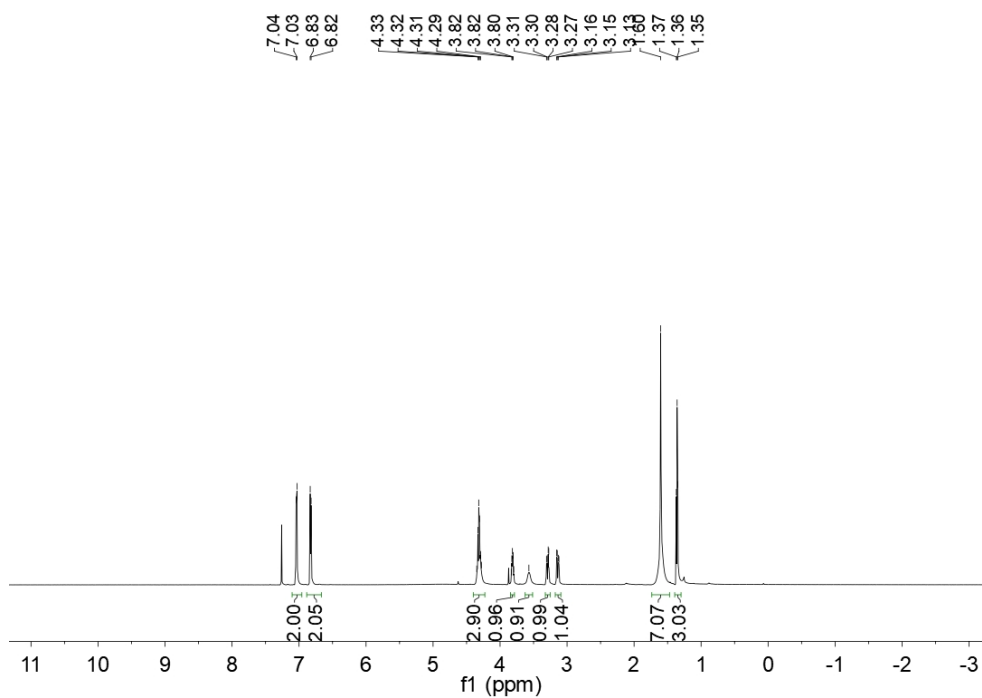
The ^{11}B NMR spectrum of the prepared **61** in $CDCl_3$



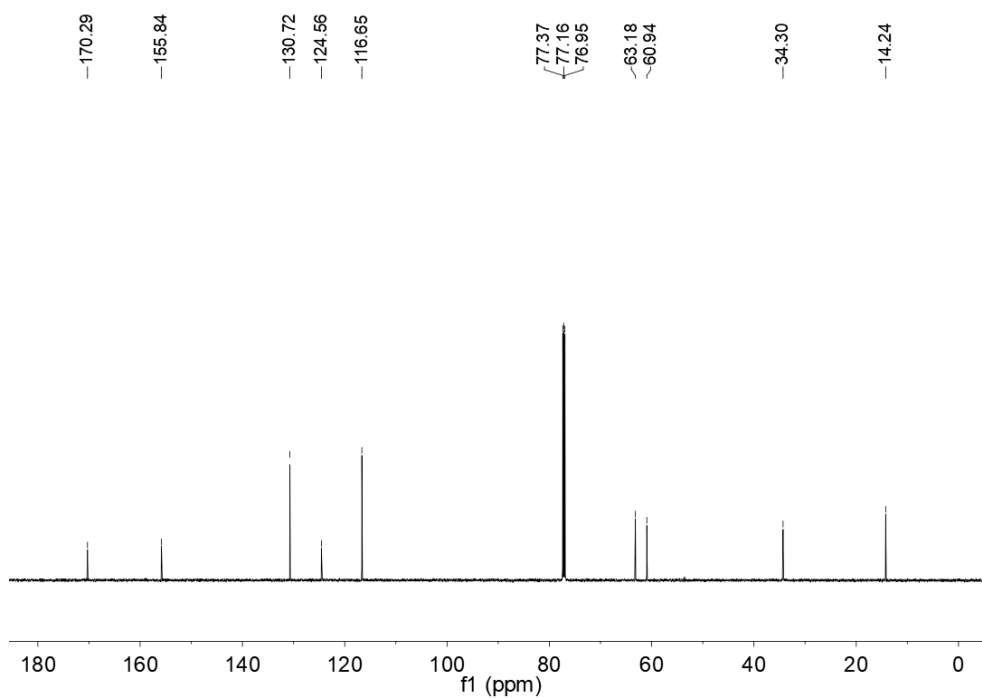
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **61** in CDCl_3 .



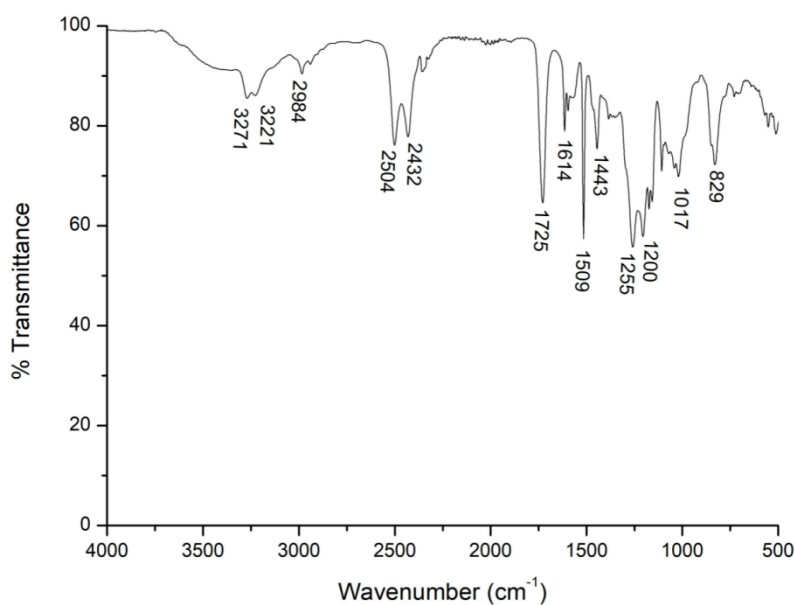
The ^1H NMR spectrum of the prepared **61** in CDCl_3 .



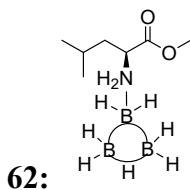
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **61** in CDCl_3 .



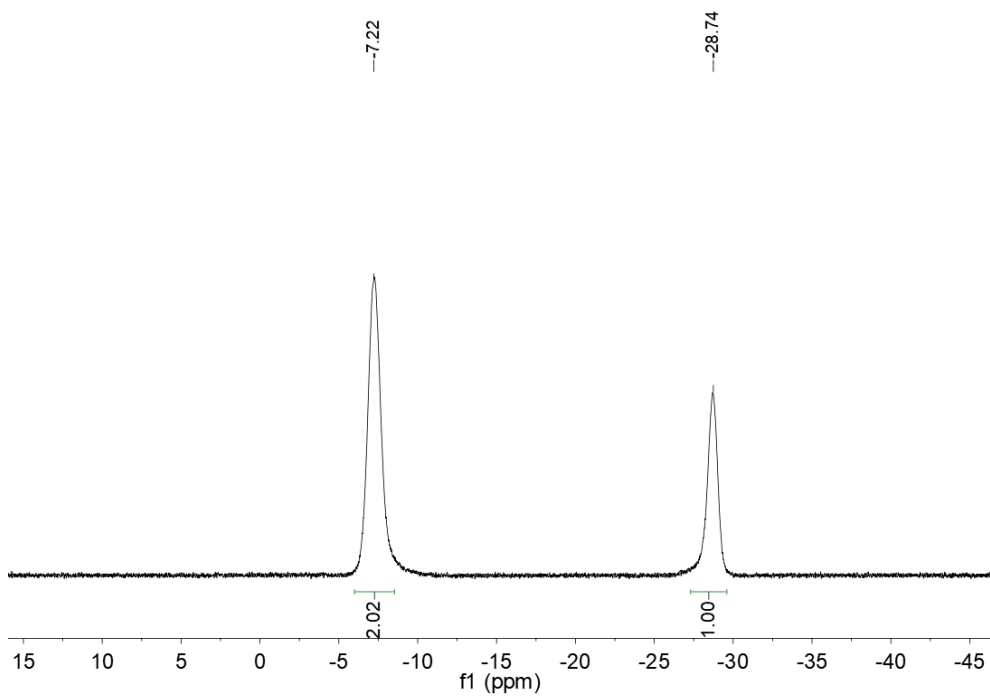
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **61** in CDCl_3 .



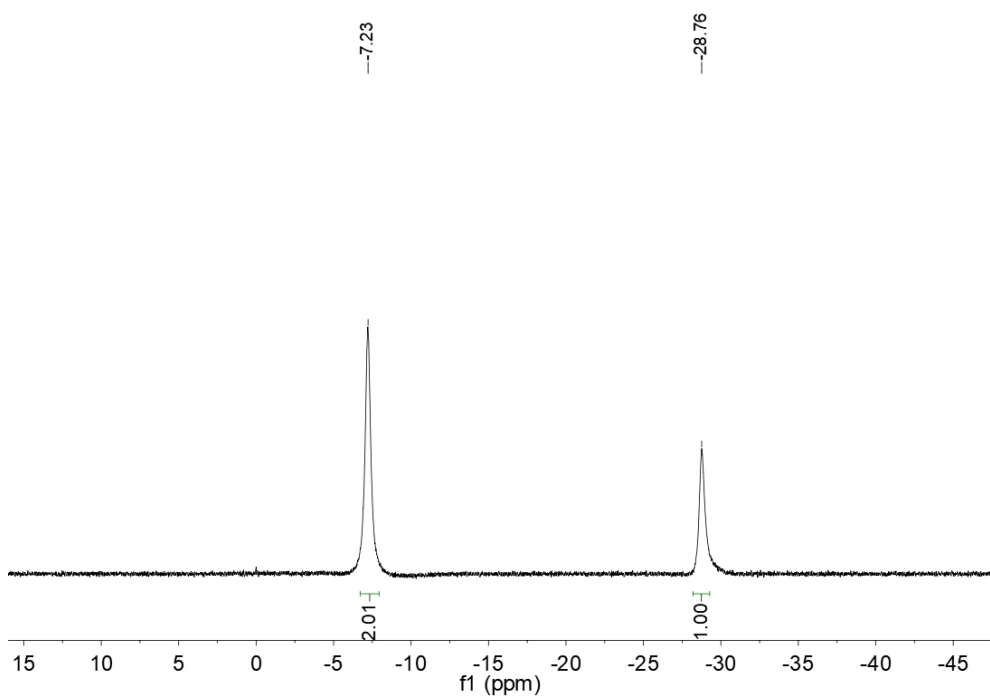
The IR spectrum of the prepared **61**.



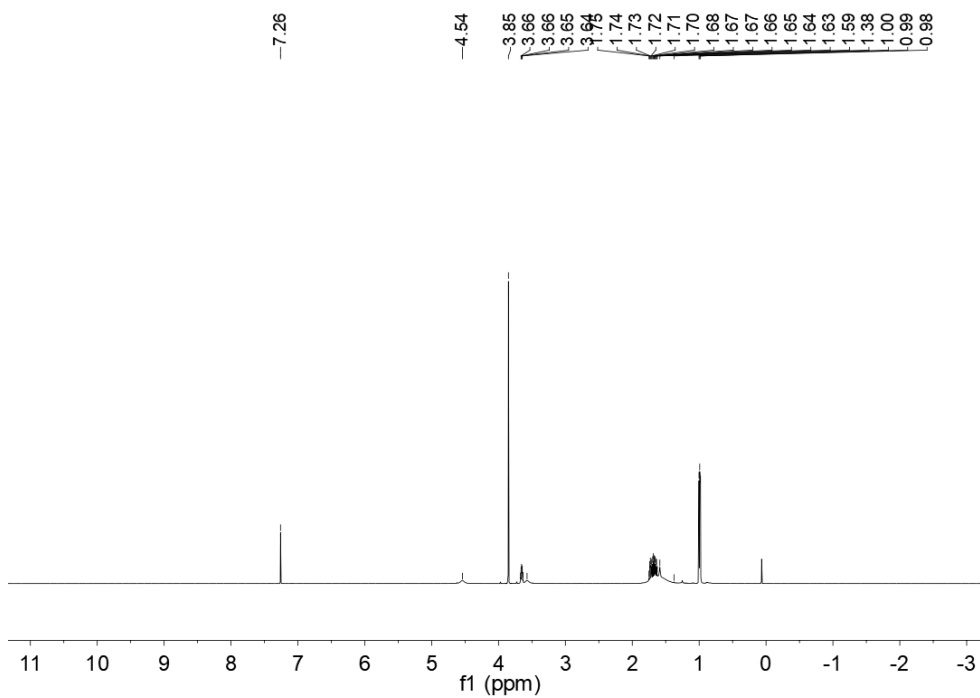
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:1). Yield 62%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.22 (*br*, 2 B of **BHB**), -28.74 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.23 (*br*, 2 B of **BHB**), -28.76 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 4.54 (*br*, 1 H of **NH₂**), 3.85 (*s*, 3 H of **CH₃**), 3.66 (*m*, H of **CH**), 3.57 (*br*, 1 H of **NH₂**), 1.75-1.38 (*m*, 2 H of **CH₂**, H of **CH**, 7 H of **B₃H₇**), 0.99 (*t*, 3 H of **CH₃**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 4.53 (*br*, 1 H of **NH₂**), 3.85 (*s*, 3 H of **CH₃**), 3.66 (*m*, H of **CH**), 3.57 (*br*, 1 H of **NH₂**), 1.68 (*m*, 2 H of **CH₂**, H of **CH**, 7 H of **B₃H₇**), 0.99 (*t*, 3 H of **CH₃**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 171.69 (*s*, 1 C), 59.45 (*s*, 1 C), 53.52 (*s*, 1 C), 40.76 (*s*, 1 C), 24.95 (*s*, 1 C), 22.38 (*s*, 1 C), 22.26 (*s*, 1 C) ppm. IR (cm⁻¹): 3227 (*w*), 2962 (*m*), 2504 (*m*), 2432 (*m*), 1736 (*s*), 1564 (*m*), 1443 (*m*), 1255 (*s*), 1156 (*m*), 1045 (*w*), 840 (*w*). HRMS *m/z* calcd for C₇H₂₂B₃NO₂ [M+Na]⁺: 208.1825, found: 208.1825.



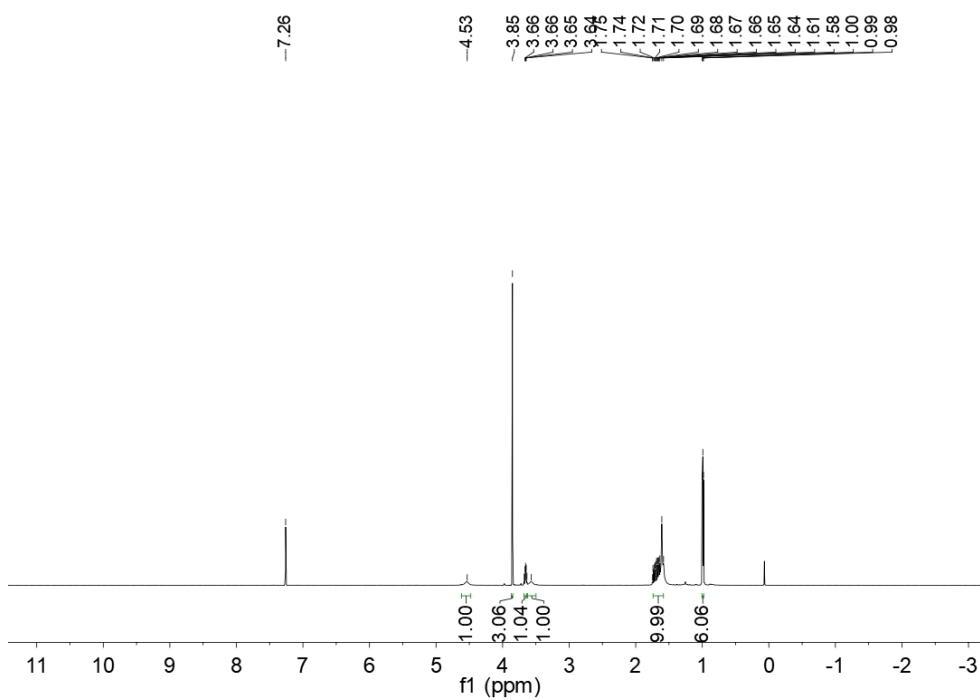
The ^{11}B NMR spectrum of the prepared **62** in CDCl_3



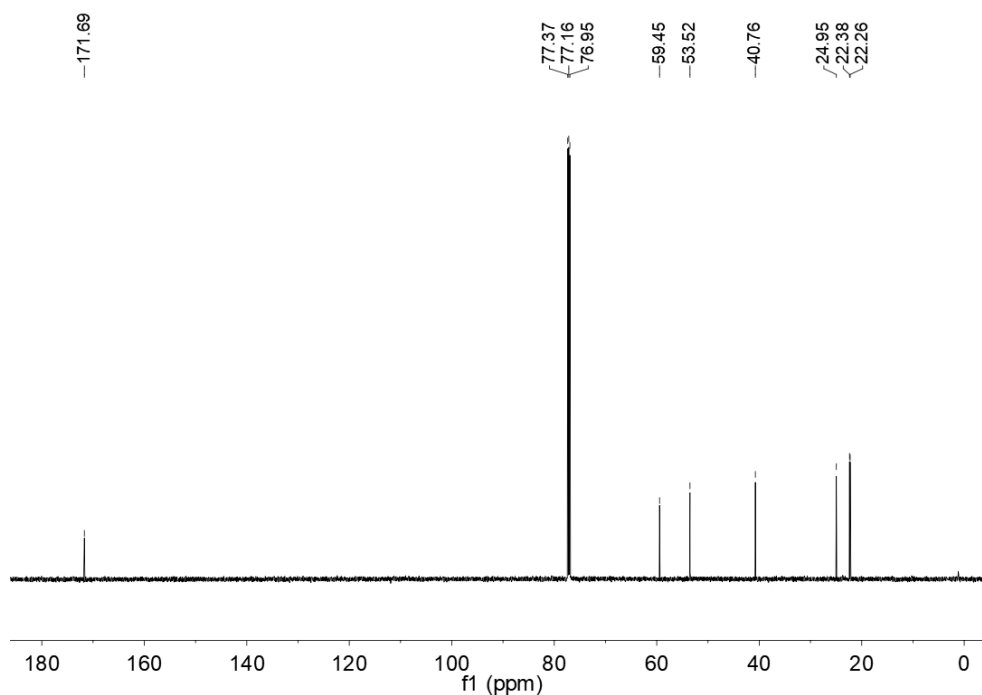
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **62** in CDCl_3 .



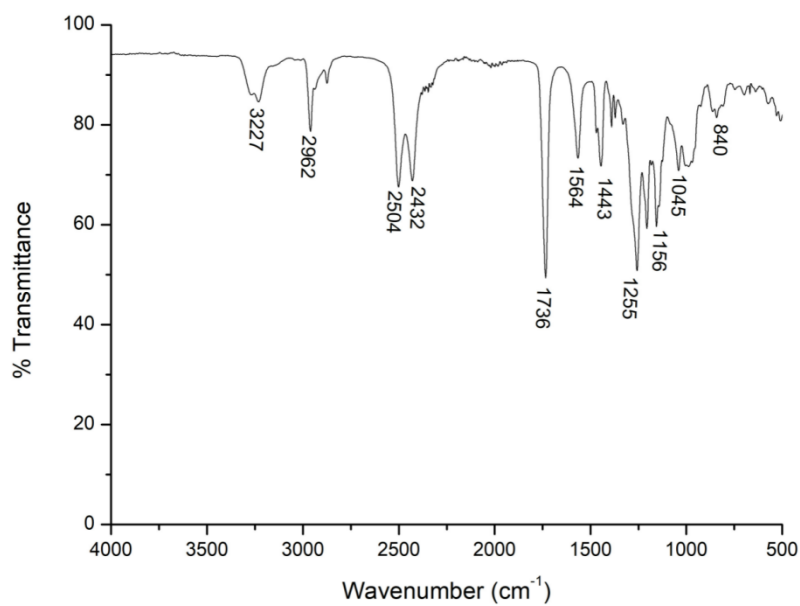
The ^1H NMR spectrum of the prepared **62** in CDCl_3 .



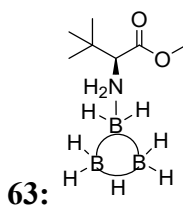
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **62** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **62** in CDCl_3 .

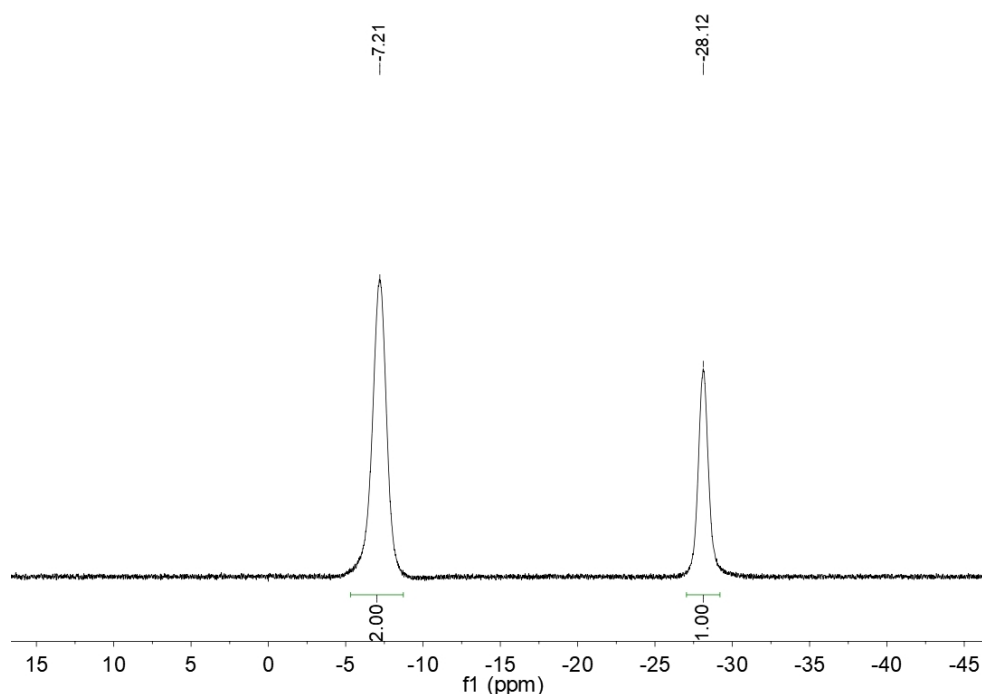


The IR spectrum of the prepared **62**.

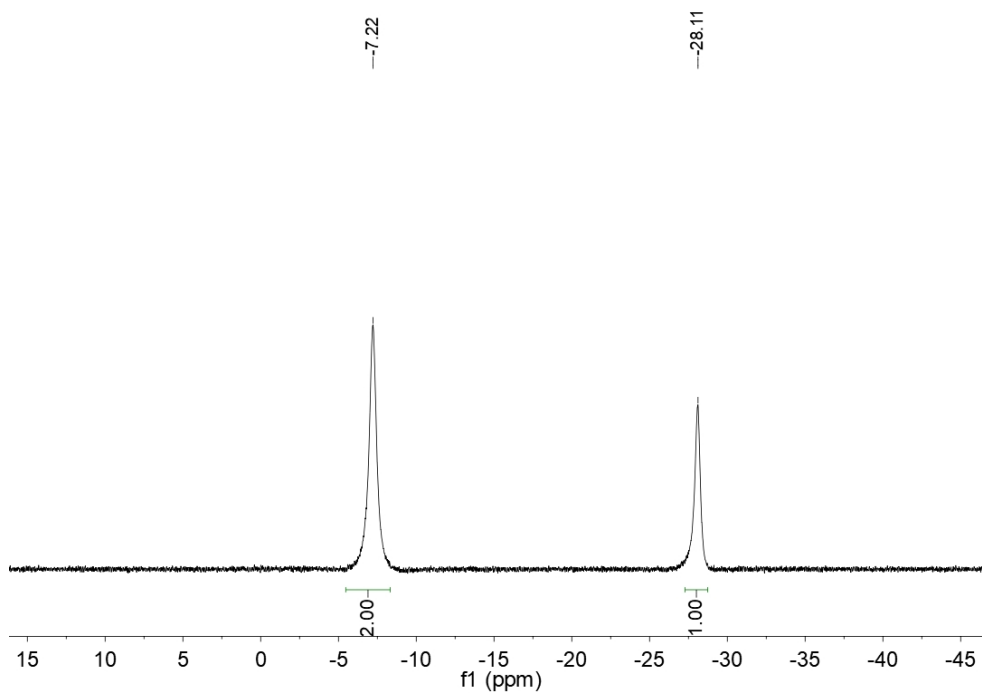


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 64%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.21 (*br*, 2 B of **BHB**), -28.12 (*br*, B of **BH₂**) ppm.

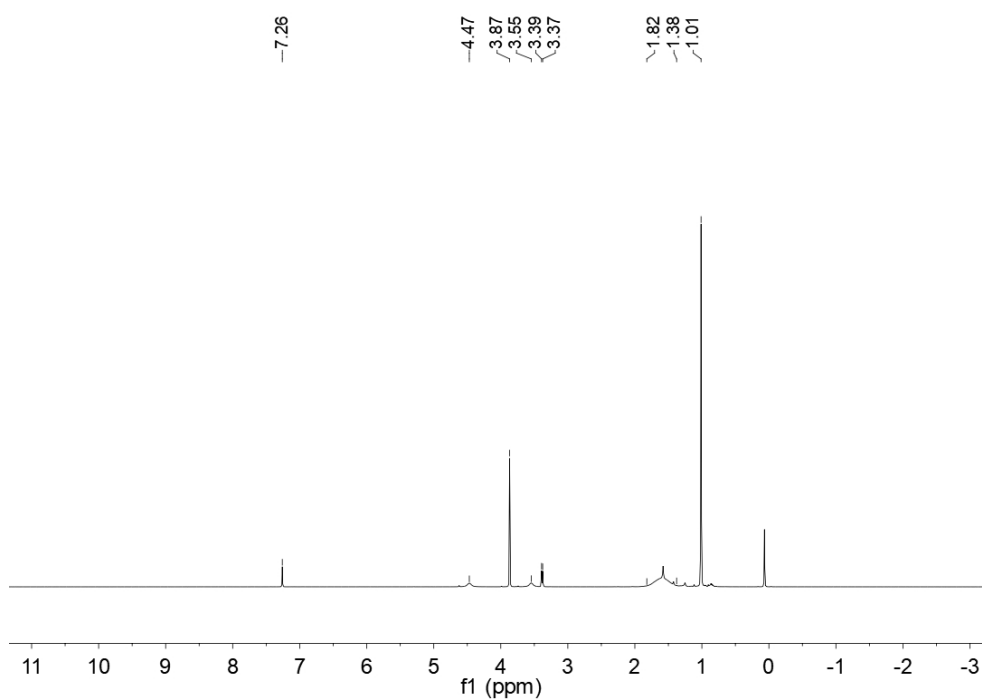
$^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.22 (*d*, 2 B of **BHB**), -28.11 (*br*, B of **BH₂**) ppm.
 ^1H NMR (600 MHz, CDCl_3): δ 4.47 (*br*, 1 H of **NH₂**), 3.87 (*s*, 3 H of **CH₃**), 3.55 (*br*, 1 H of **NH₂**), 3.38 (*d*, H of **CH**), 1.82-1.38 (*br*, 7 H of **B₃H₇**), 1.01 (*s*, 9 H of 3 **CH₃**) ppm.
 $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.47 (*br*, 1 H of **NH₂**), 3.87 (*s*, 3 H of **CH₃**), 3.55 (*br*, 1 H of **NH₂**), 3.39 (*d*, H of **CH**), 1.60 (*s*, 7 H of **B₃H₇**), 1.01 (*s*, 9 H of 3 **CH₃**) ppm.
 $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 169.89 (*s*, 1 C), 70.29 (*s*, 1 C), 53.14 (*s*, 1 C), 34.08 (*s*, 1 C), 26.31 (*s*, 3 C) ppm. IR (cm^{-1}): 3310 (w), 3233 (w), 2962 (w), 2504 (m), 2426 (m), 1730 (s), 1564 (m), 1443 (m), 1371 (m), 1260 (s), 1227 (s), 1167 (m), 973 (m), 807 (w). HRMS m/z calcd for $\text{C}_7\text{H}_{22}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 208.1825, found: 208.1826.



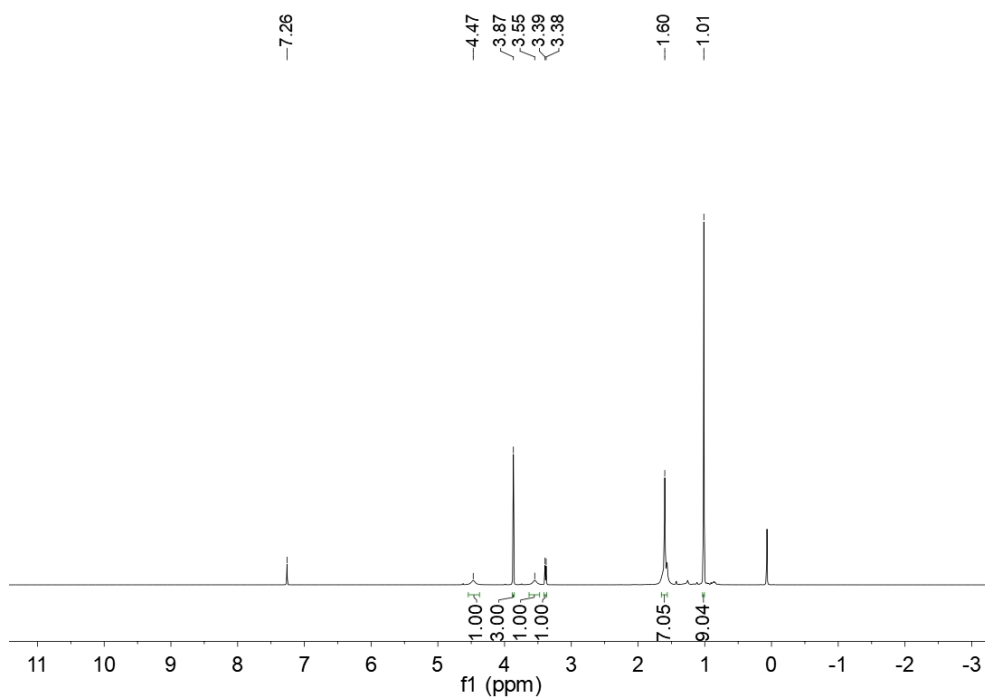
The ^{11}B NMR spectrum of the prepared **63** in CDCl_3



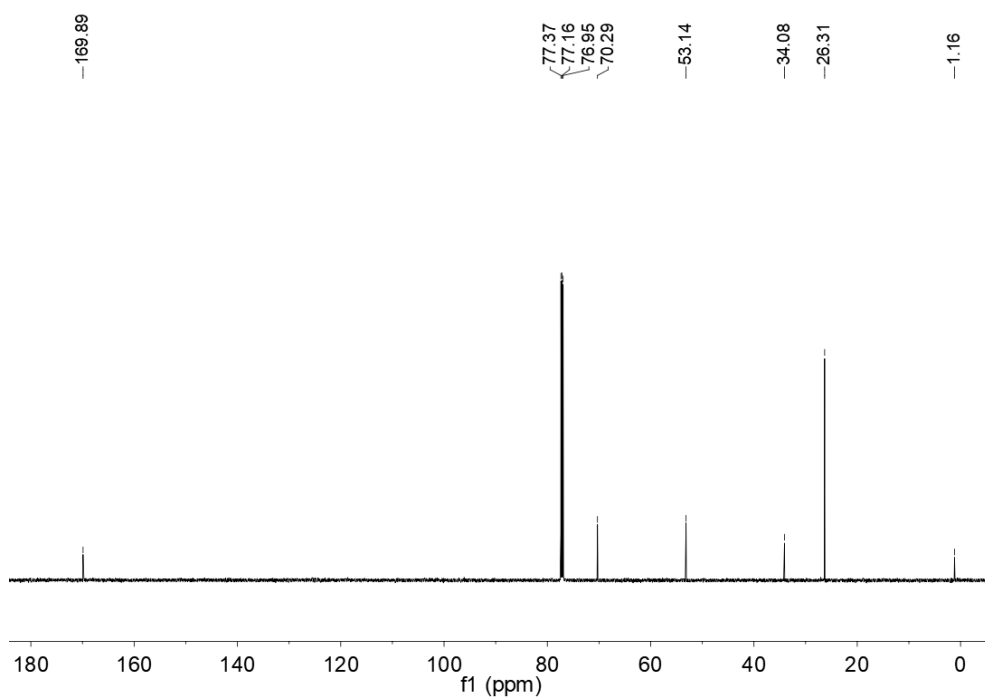
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **63** in CDCl_3 .



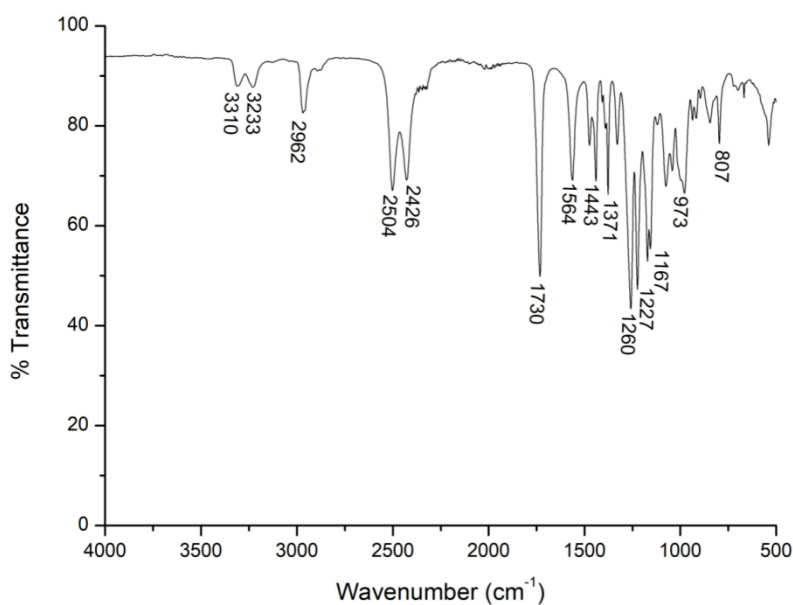
The ^1H NMR spectrum of the prepared **63** in CDCl_3 .



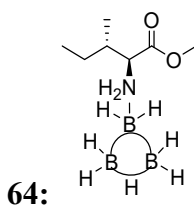
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **63** in CDCl_3 .



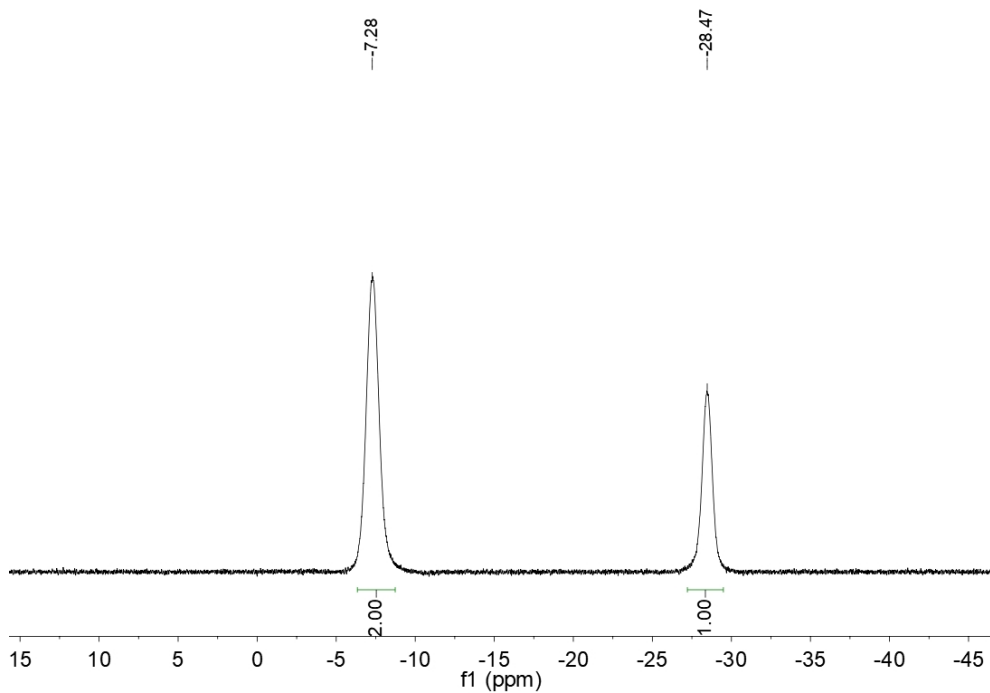
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **63** in CDCl_3 .



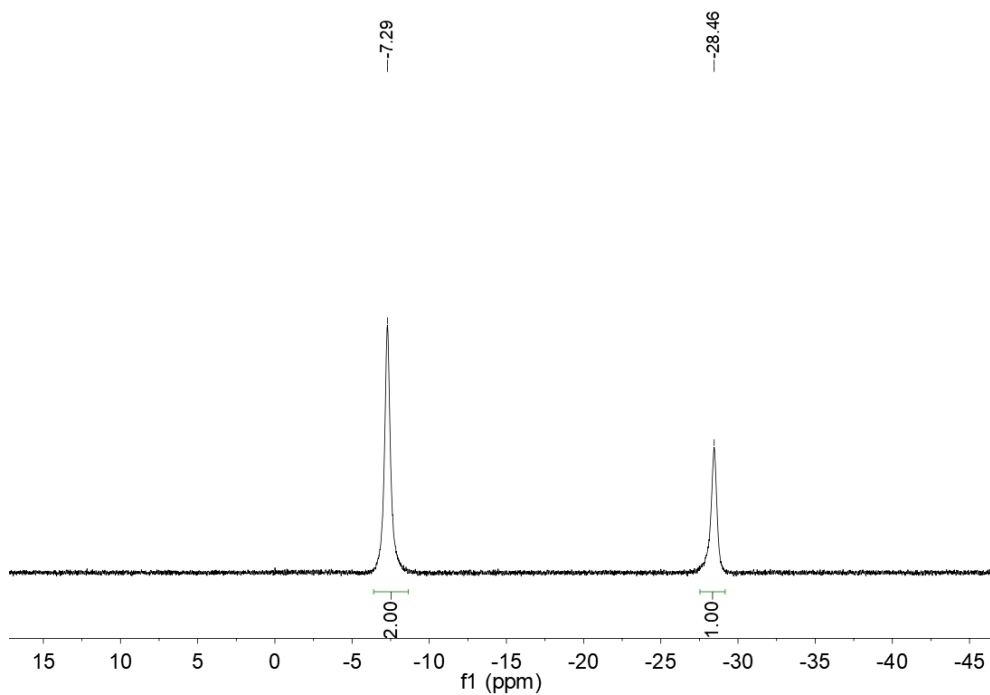
The IR spectrum of the prepared **63**.



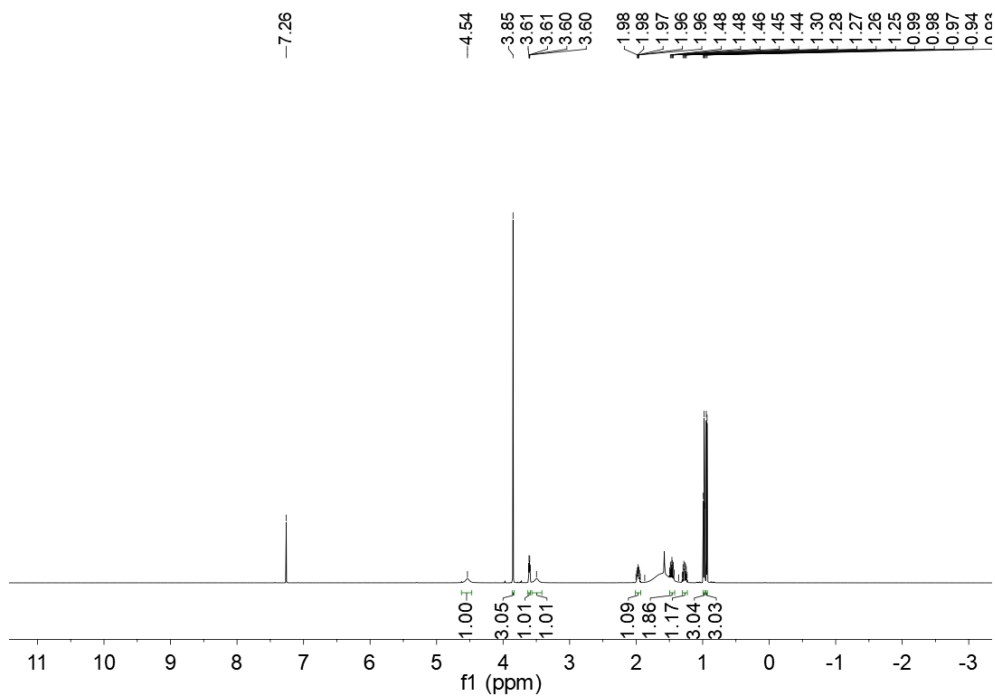
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 62%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.28 (*br*, 2 B of **BHB**), -28.47 (*br*, B of **BH**₂) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.29 (*d*, 2 B of **BHB**), -28.46 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 4.54 (*br*, 1 H of **NH**₂), 3.85 (*s*, 3 H of **CH**₃), 3.61 (*m*, H of **CH**), 3.49 (*br*, 1 H of **NH**₂), 1.98 (*m*, H of **CH**), 1.87-1.36 (*br*, 7 H of **B**_{3**H**₇), 1.46 (*m*, 1 H of **CH**₂), 1.27 (*m*, 1 H of **CH**₂), 0.98 (*t*, 3 H of **CH**₃), 0.94 (*d*, 3 H of **CH**₃) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 4.54 (*br*, 1 H of **NH**₂), 3.85 (*s*, 3 H of **CH**₃), 3.61 (*m*, H of **CH**), 3.49 (*br*, 1 H of **NH**₂), 1.97 (*m*, H of **CH**), 1.61 (*s*, 7 H of **B**_{3**H**₇), 1.46 (*m*, 1 H of **CH**₂), 1.27 (*m*, 1 H of **CH**₂), 0.98 (*t*, 3 H of **CH**₃), 0.94 (*d*, 3 H of **CH**₃) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 170.56 (*s*, 1 C), 69.05 (*s*, 1 C), 53.32 (*s*, 1 C), 36.99 (*s*, 1 C), 25.76 (*s*, 1 C), 14.78 (*s*, 1 C), 11.55 (*s*, 1 C) ppm. IR (cm⁻¹): 3233 (*w*), 2962 (*w*), 2504 (*m*), 2462 (*m*), 1745 (*s*), 1559 (*m*), 1437 (*m*), 1249 (*s*), 1150 (*m*), 979(*m*), 852 (*w*). HRMS *m/z* calcd for C₇H₂₂B₃NO₂ [M+Na]⁺: 208.1825, found: 208.1826.}}



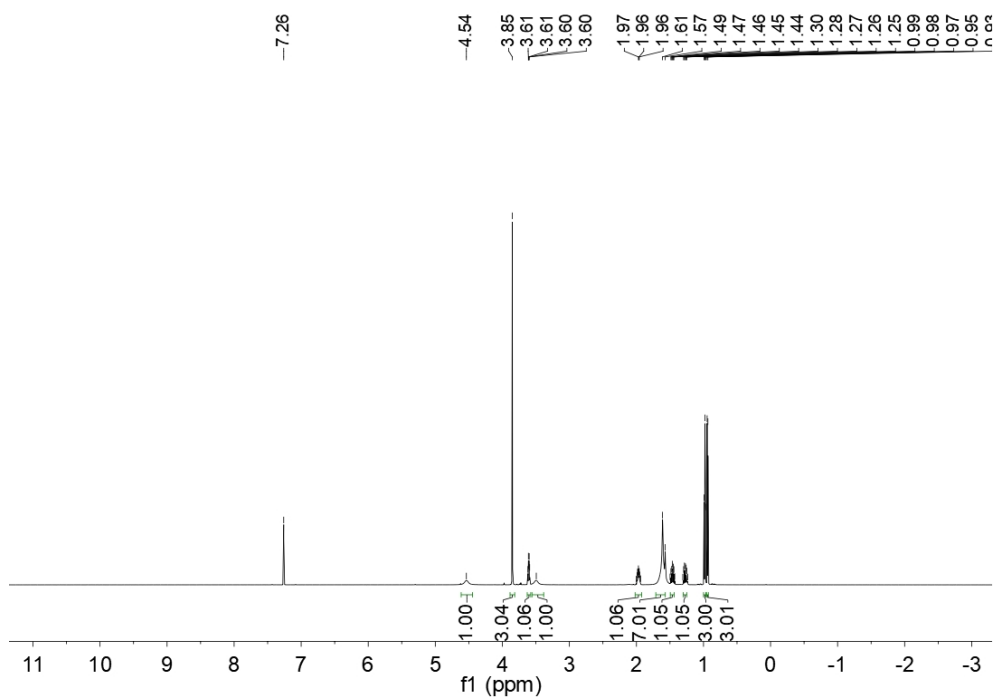
The ^{11}B NMR spectrum of the prepared **64** in CDCl_3



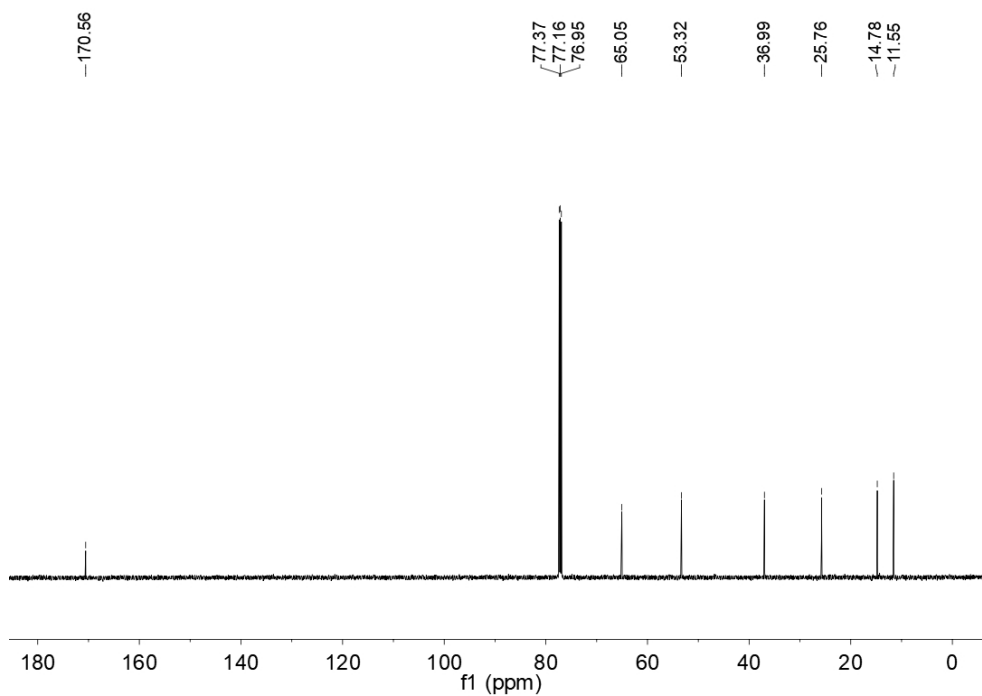
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **64** in CDCl_3 .



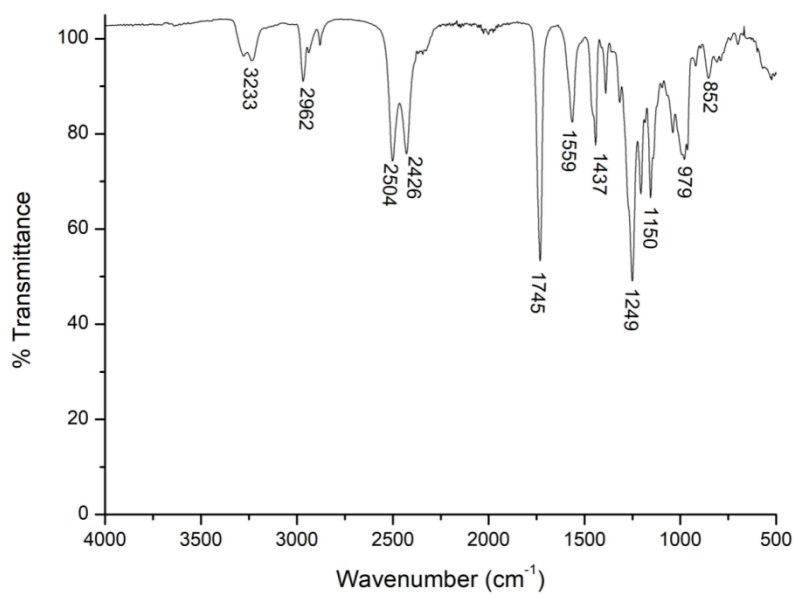
The ^1H NMR spectrum of the prepared **64** in CDCl_3 .



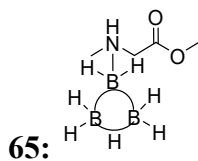
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **64** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **64** in CDCl_3 .

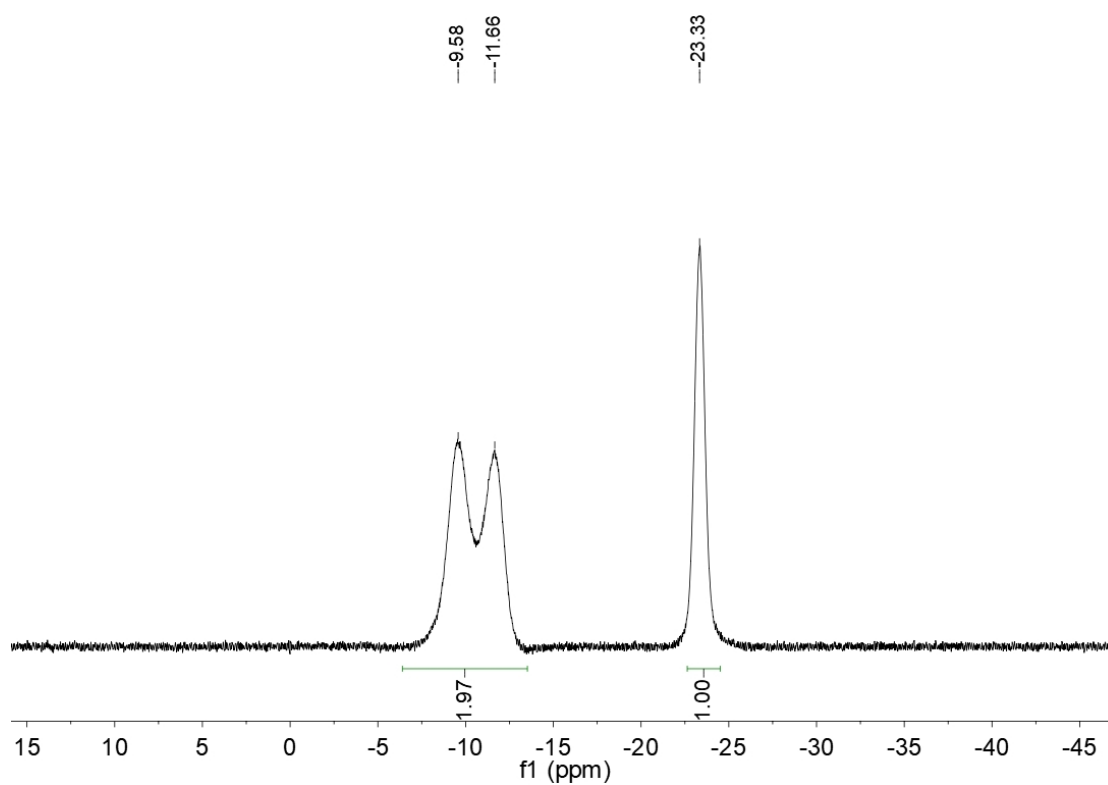


The IR spectrum of the prepared **64**.

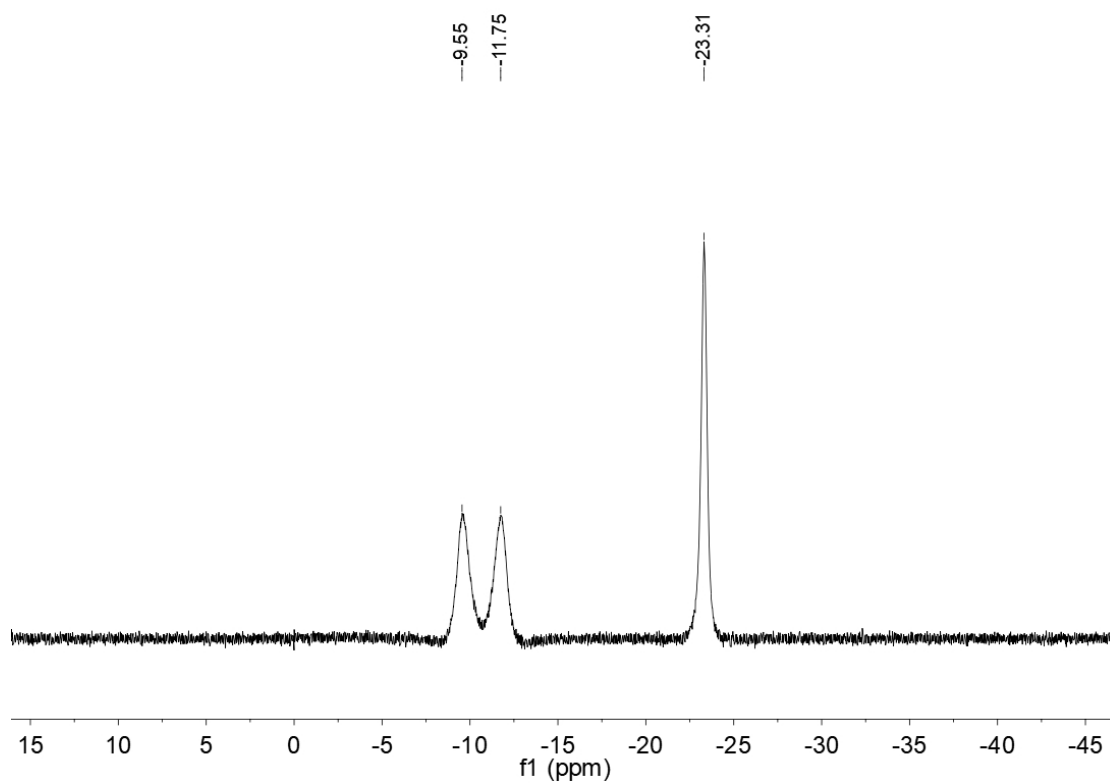


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 65%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -10.62 (*d*, 2 B of **BHB**), -23.33 (*br*, B of **BH₂**) ppm.

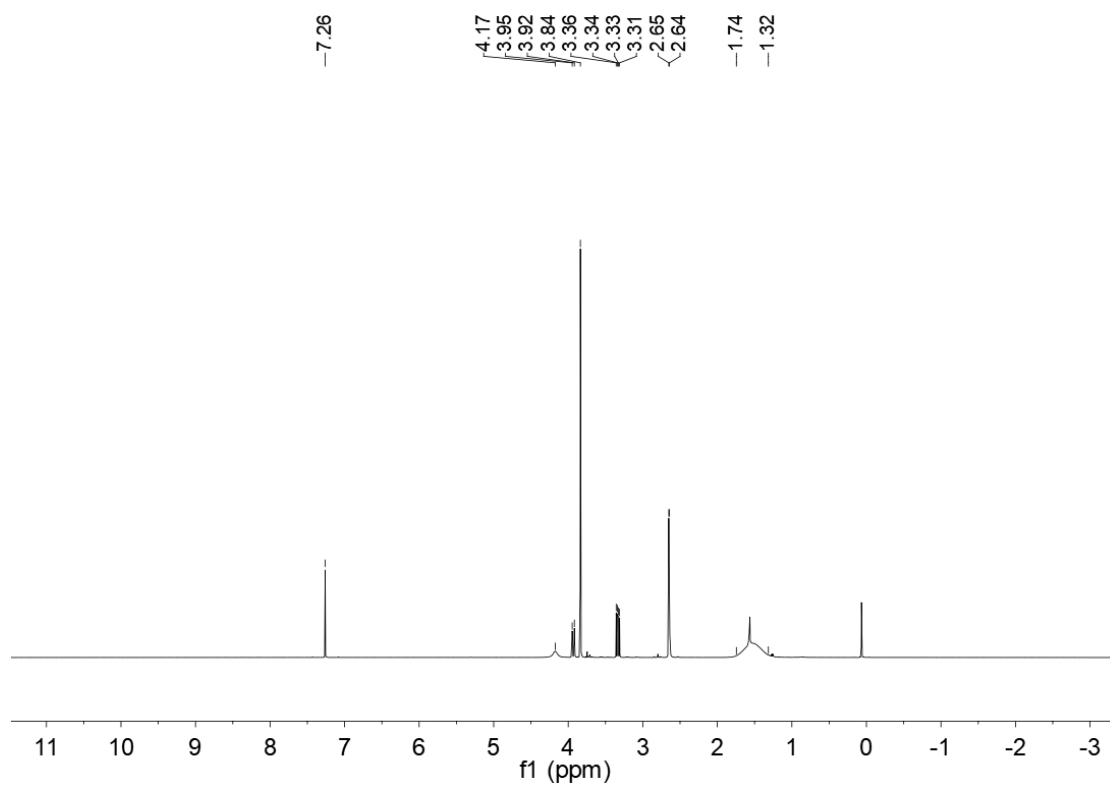
$^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.68 (*d*, 2 B of **BHB**), -23.31 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.17 (*br*, H of **NH**), 3.94 (*d*, 1 H of **CH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.34 (*q*, 1 H of **CH₂**), 2.65 (*d*, 3 H of **CH₃**), 1.74-1.32 (*dr*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.17 (*br*, H of **NH**), 3.94 (*d*, 1 H of **CH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.34 (*q*, 1 H of **CH₂**), 2.65 (*d*, 3 H of **CH₃**), 1.53 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.54 (*s*, 1 C), 56.96 (*s*, 1 C), 53.36 (*s*, 1 C), 43.44 (*s*, 1 C) ppm. IR (cm^{-1}): 3216 (w), 2951 (w), 2498 (m), 2426 (m), 1736 (s), 1437 (m), 1366 (m), 1249 (s), 1161 (m), 995 (m), 902 (m), 807 (w). HRMS *m/z* calcd for $\text{C}_4\text{H}_{16}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 166.1354, found: 166.1363.



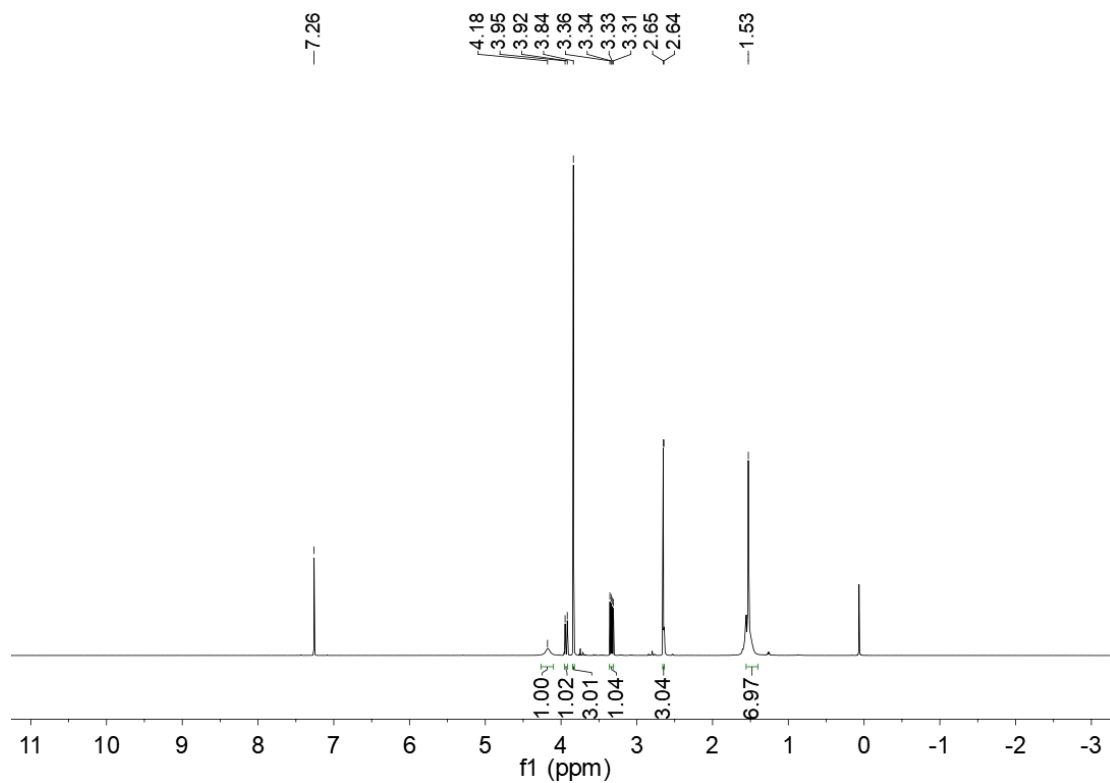
The ^{11}B NMR spectrum of the prepared **65** in CDCl_3



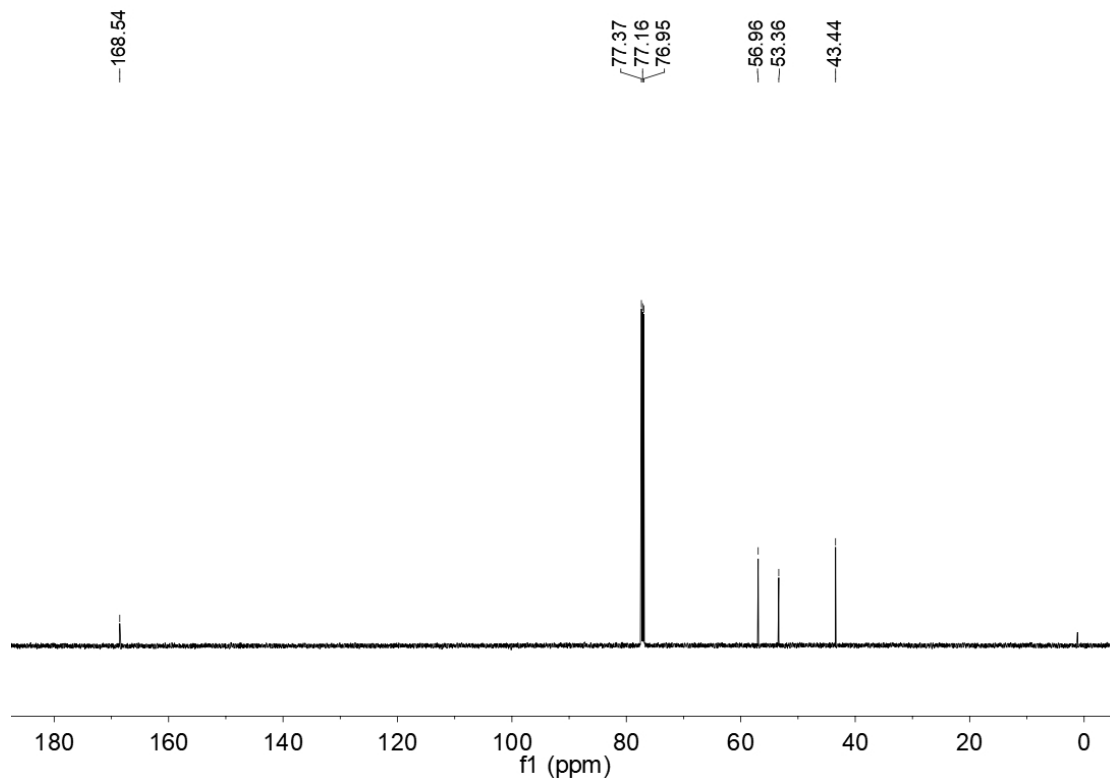
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **65** in CDCl_3 .



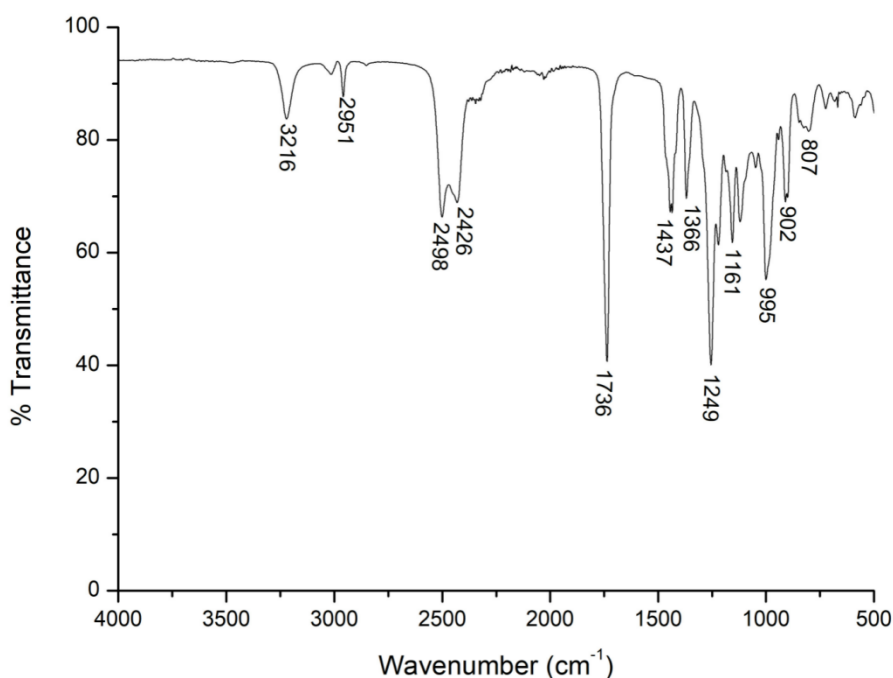
The ^1H NMR spectrum of the prepared **65** in CDCl_3 .



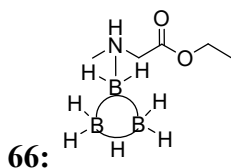
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **65** in CDCl_3 .



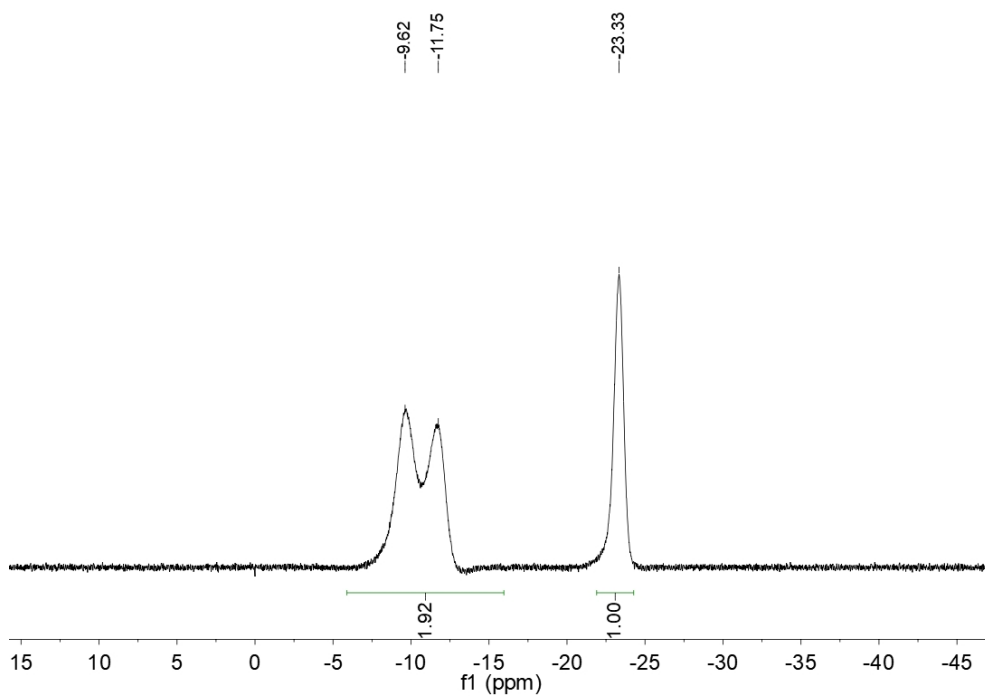
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **65** in CDCl_3 .



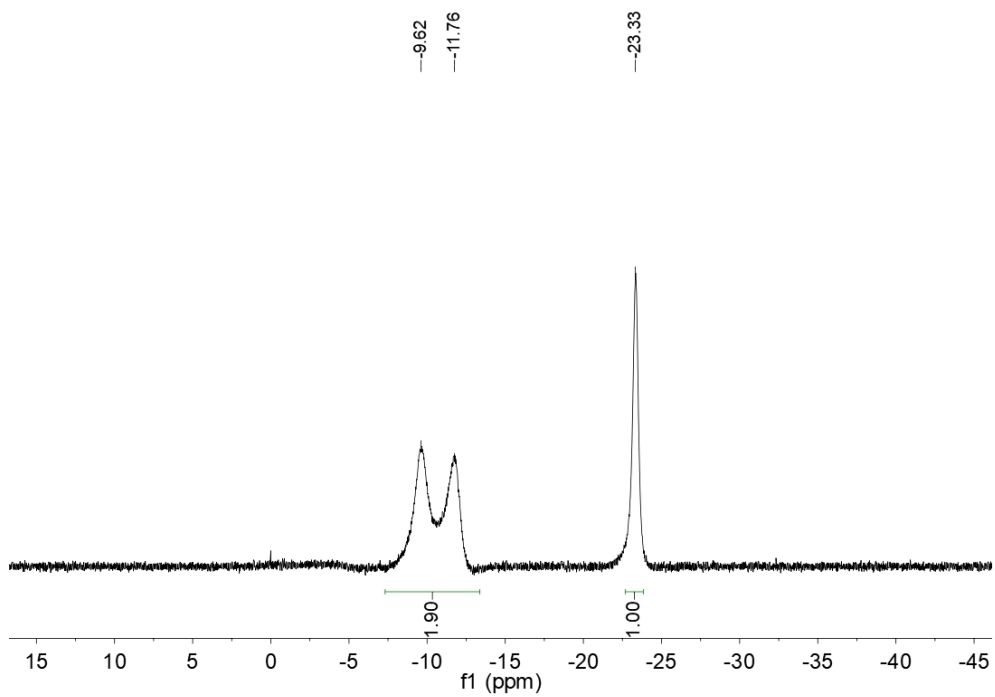
The IR spectrum of the prepared **65**.



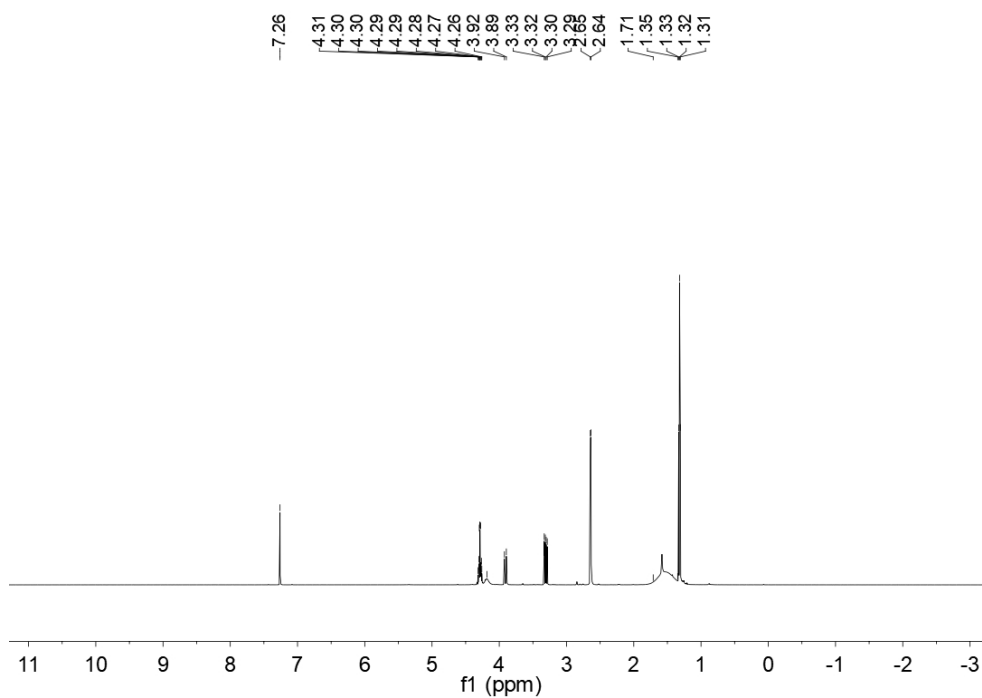
Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 2:1$). Yield 63%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -10.69 (*d*, 2 B of **BHB**), -23.33 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.69 (*d*, 2 B of **BHB**), -23.33 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.29 (*m*, 2 H of **CH₂**), 4.18 (*br*, H of **NH**), 3.91 (*d*, 1 H of **CH₂**), 3.31 (*q*, 1 H of **CH₂**), 2.63 (*d*, 3 H of **CH₃**), 1.71-1.35 (*dr*, 7 H of **B₃H₇**), 1.32 (*t*, 3 H of **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.29 (*m*, 2 H of **CH₂**), 4.18 (*br*, H of **NH**), 3.91 (*d*, 1 H of **CH₂**), 3.31 (*q*, 1 H of **CH₂**), 2.65 (*d*, 3 H of **CH₃**), 1.53 (*s*, 7 H of **B₃H₇**), 1.32 (*t*, 3 H of **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.07 (*s*, 1 C), 62.90 (*s*, 1 C), 57.15 (*s*, 1 C), 43.41 (*s*, 1 C), 14.18 (*s*, 1 C) ppm. IR (cm^{-1}): 3221 (*w*), 2989 (*w*), 2504 (*m*), 2432 (*m*), 1736 (*s*), 1470 (*w*), 1377 (*m*), 1249 (*s*), 1210 (*w*), 1112 (*w*), 1012 (*s*), 907 (*w*). HRMS *m/z* calcd for $\text{C}_5\text{H}_{18}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 180.1511, found: 180.1513.



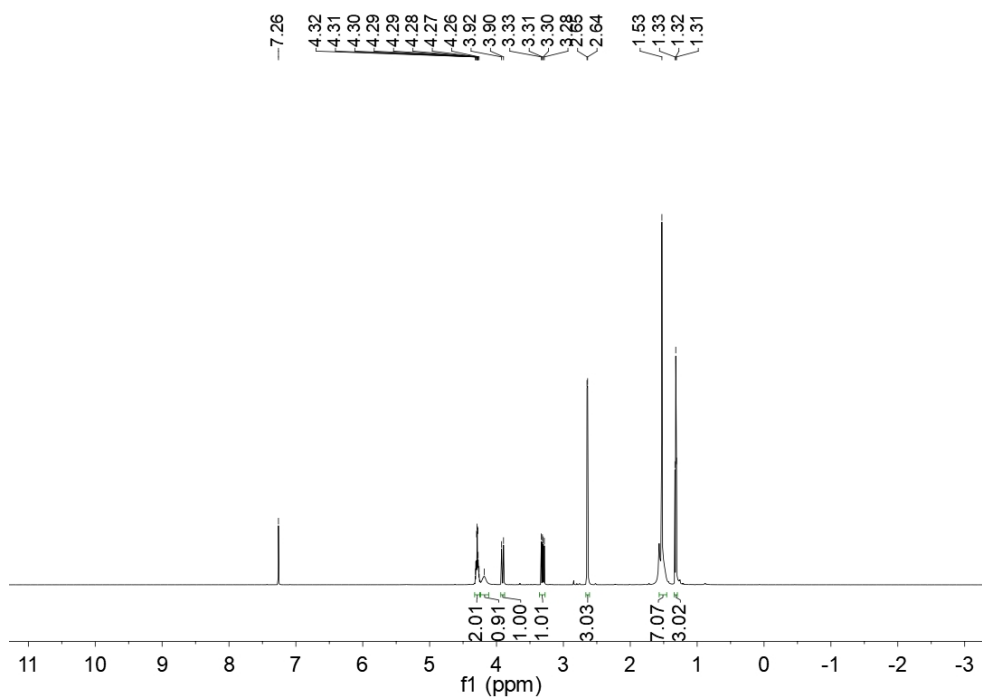
The ^{11}B NMR spectrum of the prepared **66** in CDCl_3 .



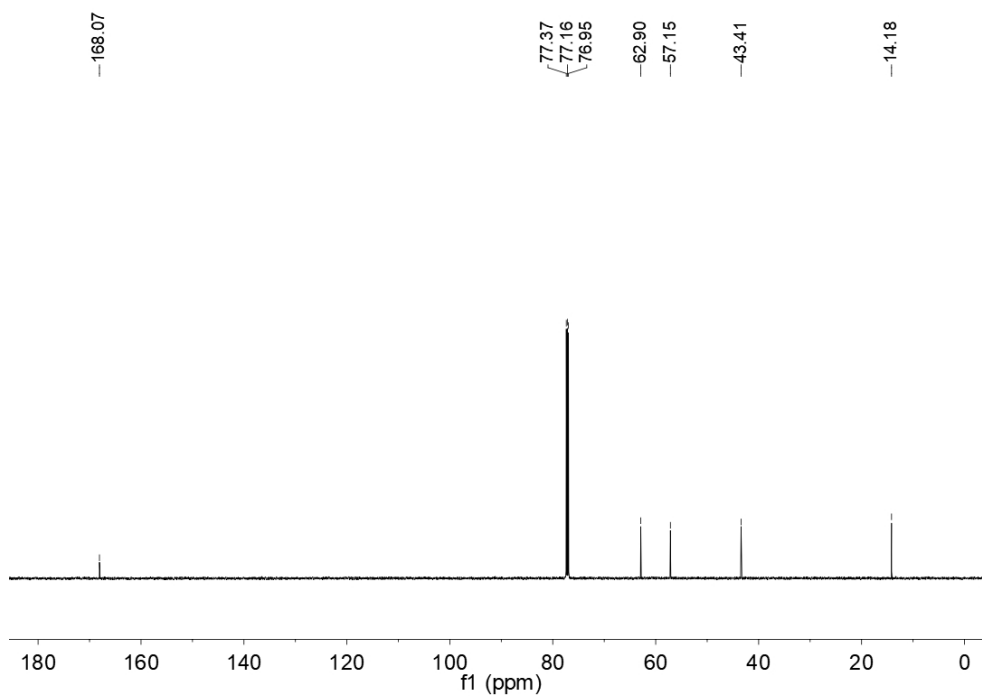
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **66** in CDCl_3 .



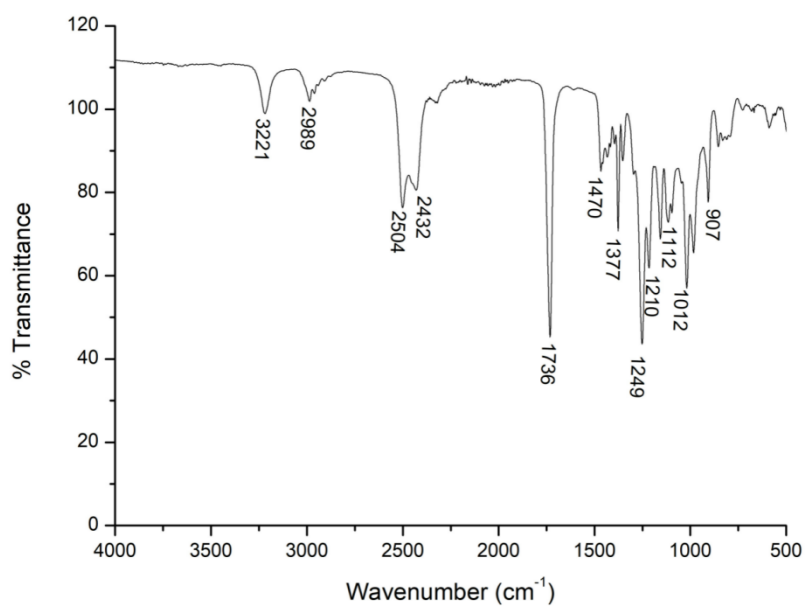
The ^1H NMR spectrum of the prepared **66** in CDCl_3 .



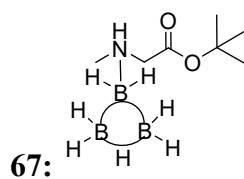
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **66** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **66** in CDCl_3 .

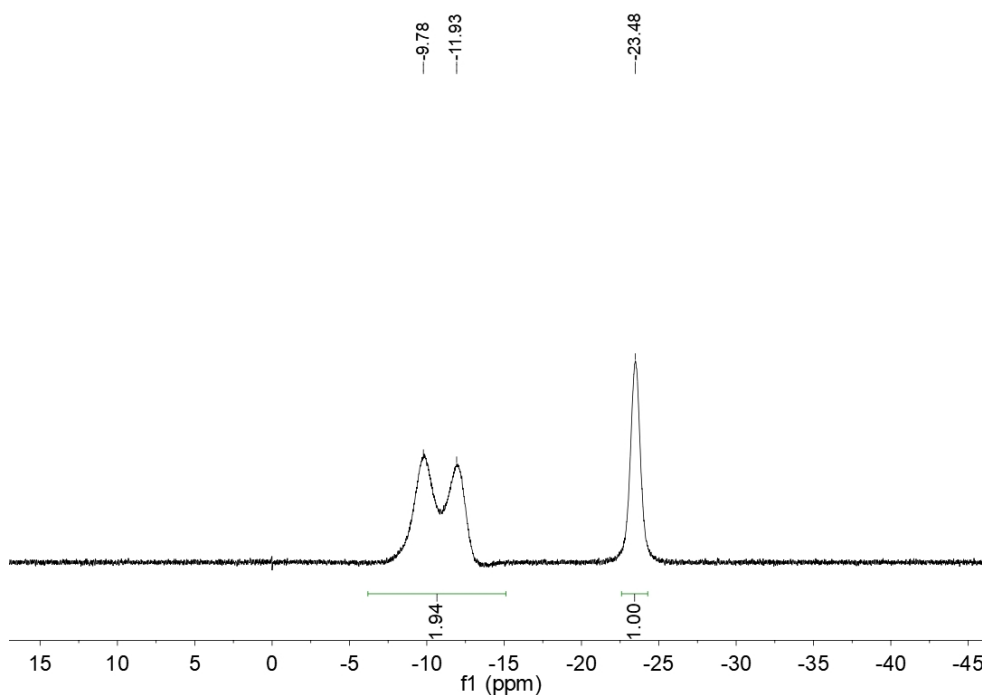


The IR spectrum of the prepared **66**.

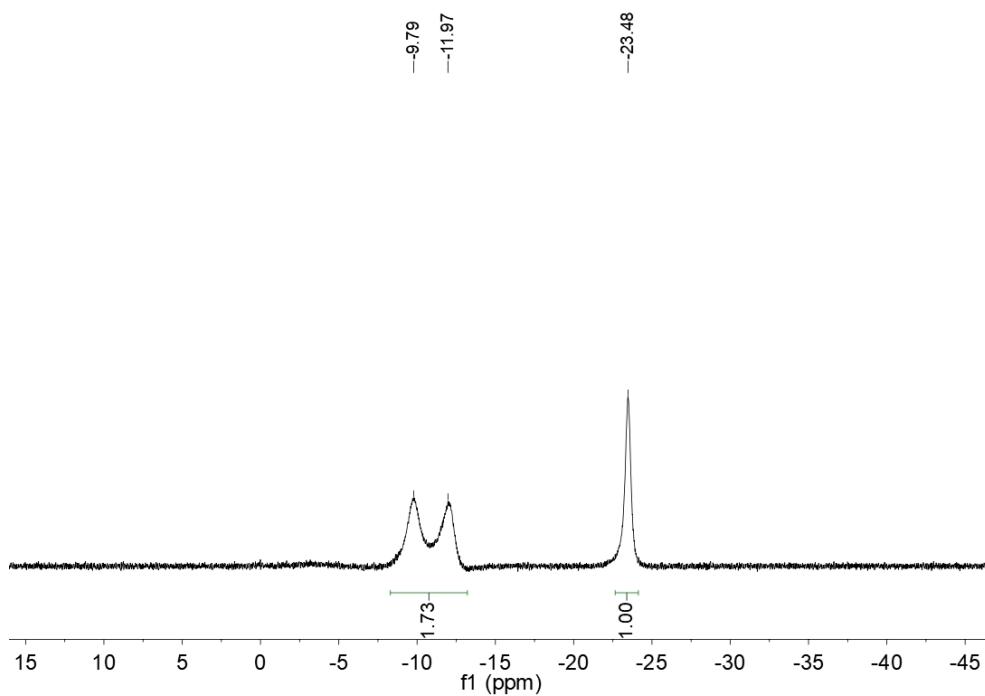


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 3:1). Yield 69%, white solid, melting point: 63-64 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -10.86 (*d*, 2 B of *BHB*),

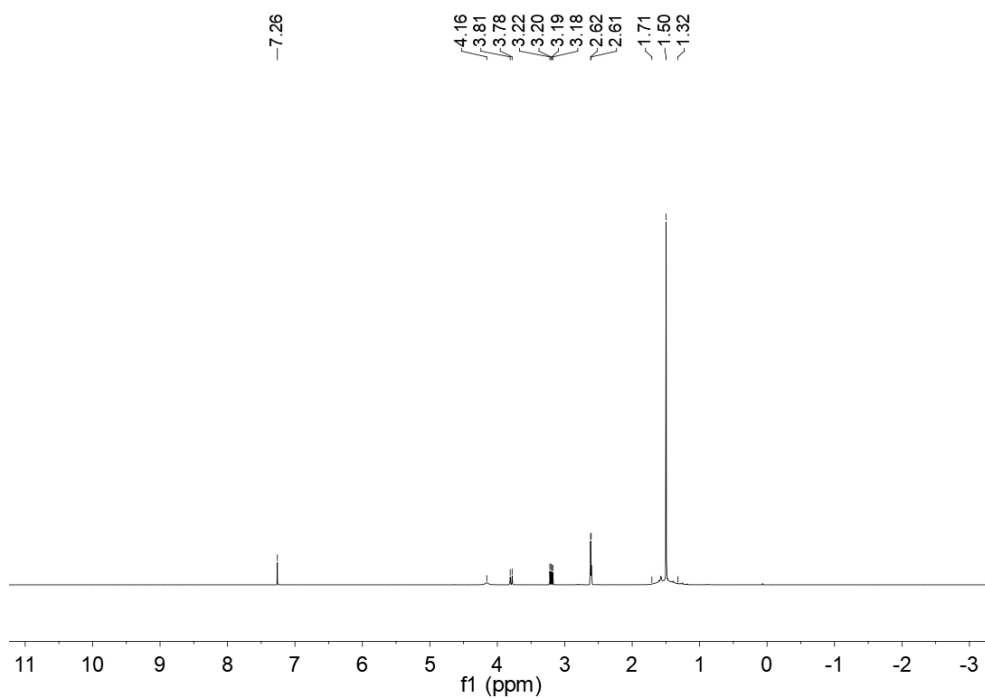
-23.48 (*br*, B of \mathbf{BH}_2) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -10.88 (*d*, 2 B of \mathbf{BHB}), -23.48 (*br*, B of \mathbf{BH}_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.16 (*br*, H of \mathbf{NH}), 3.80 (*d*, 1 H of \mathbf{CH}_2), 3.20 (*q*, 1 H of \mathbf{CH}_2), 2.62 (*d*, 3 H of \mathbf{CH}_3), 1.71-1.32 (*br*, 7 H of $\mathbf{B}_3\mathbf{H}_7$), 1.50 (*s*, 9 H of 3 \mathbf{CH}_3) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.15 (*br*, H of \mathbf{NH}), 3.80 (*d*, 1 H of \mathbf{CH}_2), 3.20 (*q*, 1 H of \mathbf{CH}_2), 2.62 (*d*, 3 H of \mathbf{CH}_3), 1.51 (*s*, 7 H of $\mathbf{B}_3\mathbf{H}_7$), 1.50 (*s*, 9 H of 3 \mathbf{CH}_3) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 167.14 (*s*, 1 C), 84.70 (*s*, 1 C), 57.89 (*s*, 1 C), 43.30 (*s*, 1 C), 28.12 (*s*, 3 C) ppm. IR (cm^{-1}): 3216 (*w*), 2989 (*w*), 2515 (*m*), 2404 (*m*), 2321 (*w*), 1708 (*s*), 1465 (*m*), 1371 (*s*), 1288 (*s*), 1156 (*s*), 1106 (*m*), 990 (*m*), 907 (*m*), 829 (*m*), 747 (*w*). HRMS m/z calcd for $\text{C}_7\text{H}_{22}\text{B}_3\text{NO}_2$ $[\text{M}+\text{H}]^+$: 186.2006, found: 186.2006.



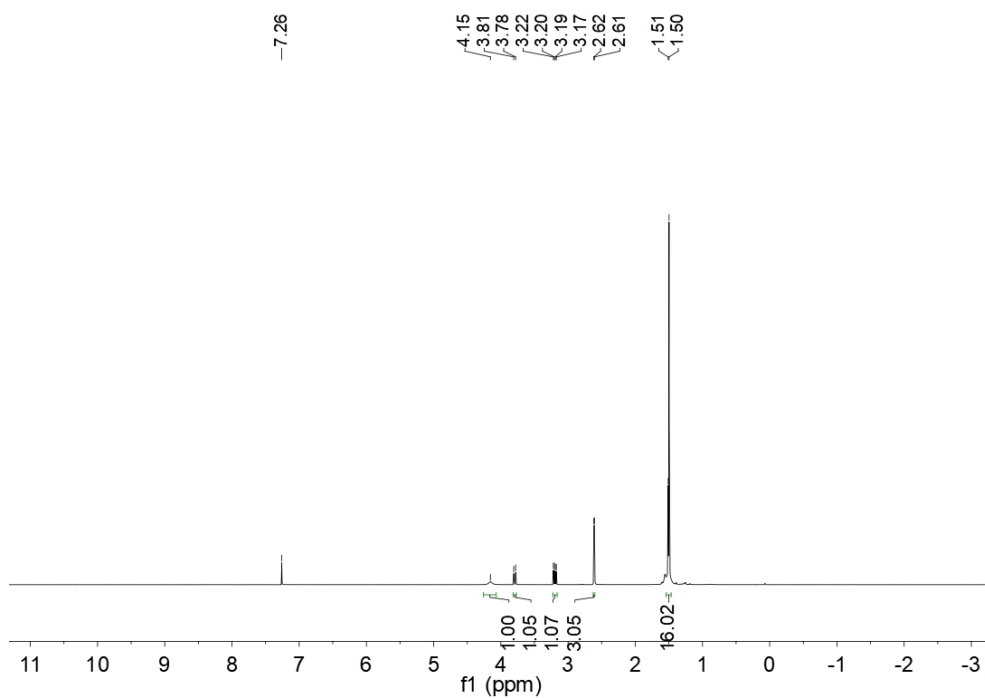
The ^{11}B NMR spectrum of the prepared **67** in CDCl_3



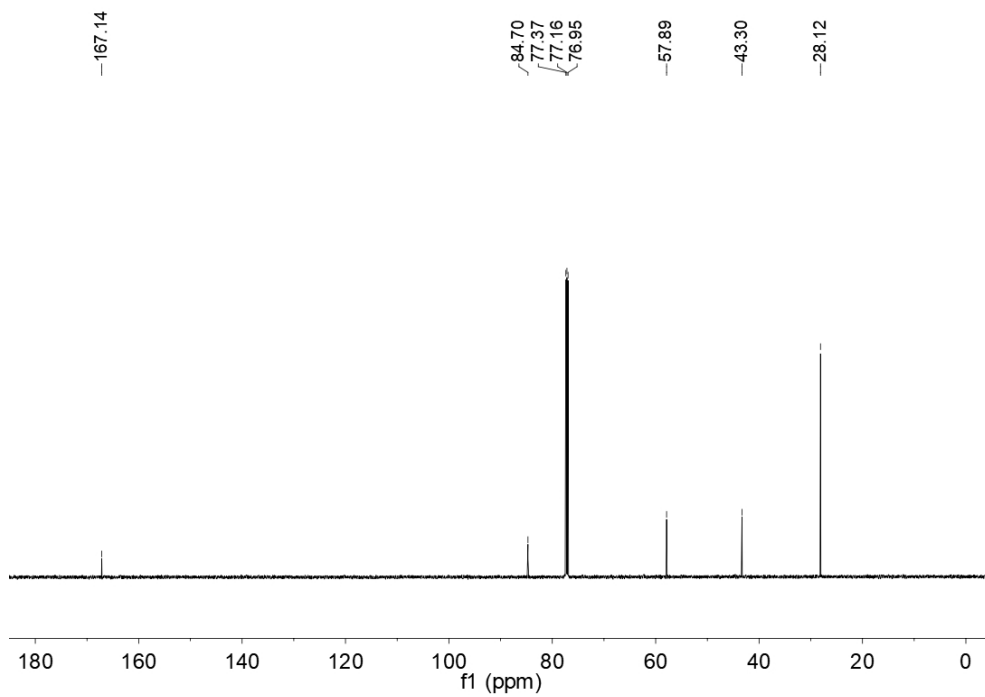
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **67** in CDCl_3 .



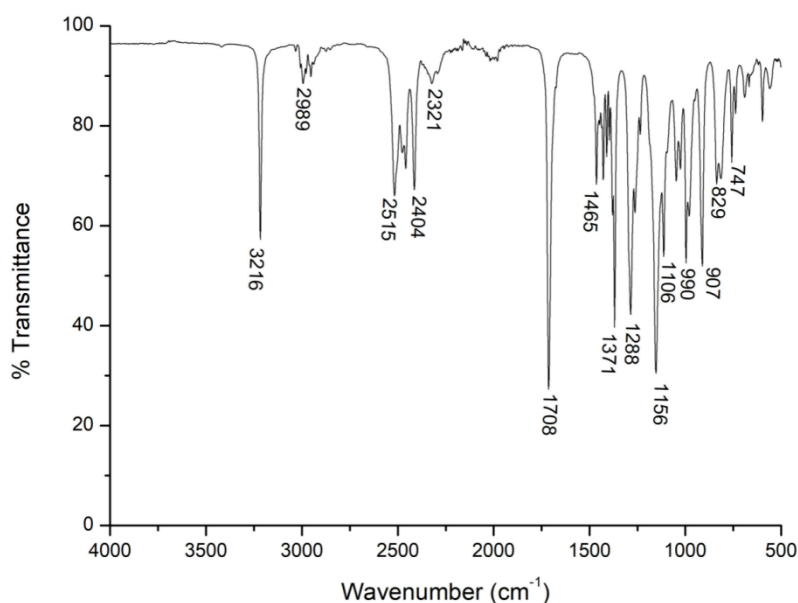
The ^1H NMR spectrum of the prepared **67** in CDCl_3 .



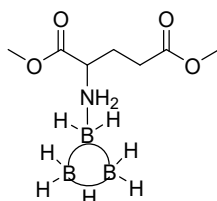
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **67** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **67** in CDCl_3 .

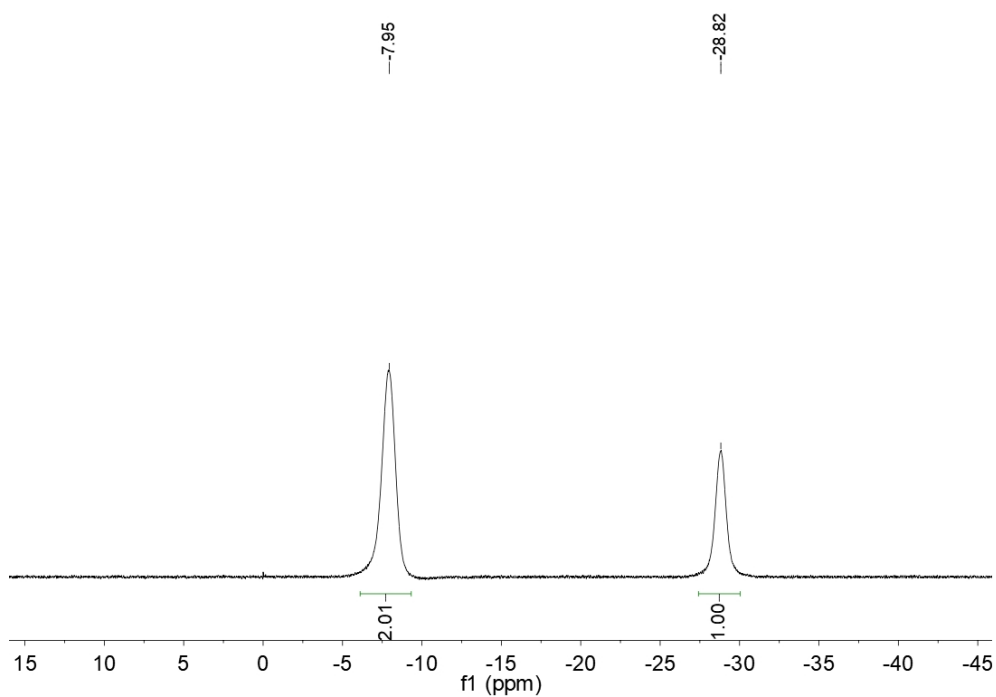


The IR spectrum of the prepared **67**.

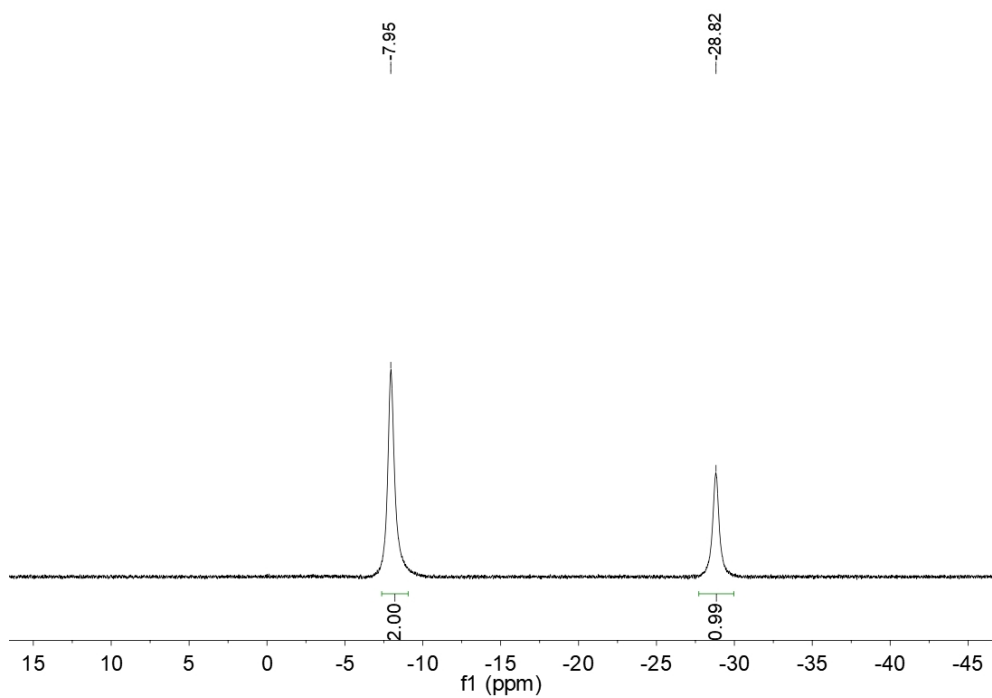


Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 1:3$). Yield 62%, white solid, melting point: 62-63 °C. ^{11}B NMR (193 MHz, CDCl_3): δ -7.95 (*br*, 2 B of *BHB*), -28.82 (*br*, B of *BH*₂) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.95 (*br*, 2 B of *BHB*), -28.82 (*br*, B of *BH*₂) ppm. ^1H NMR (600 MHz, CDCl_3): δ 5.31 (*br*, 1 H of *NH*₂), 4.50 (*br*, 1 H of *NH*₂), 3.85 (*s*, 3 H of *CH*₃), 3.74 (*s*, 3 H of *CH*₃), 3.70 (*m*, H of *CH*), 2.56 (*m*, 2 H of *CH*₂), 2.25 (*m*, 1 H of *CH*₂), 2.15 (*m*, 1 H of *CH*₂), 1.83-1.31 (*br*, 7 H of *B*₃*H*₇) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 5.30 (*br*, 1 H of *NH*₂), 4.50 (*br*, 1 H of *NH*₂), 3.85 (*s*, 3 H of *CH*₃), 3.74 (*s*, 3 H of *CH*₃), 3.70 (*m*, H of *CH*), 2.55 (*m*, 2 H of *CH*₂), 2.25 (*m*, 1 H of *CH*₂), 2.15 (*m*, 1 H of *CH*₂), 1.57 (*s*, 7 H of *B*₃*H*₇) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 174.38 (*s*, 1 C), 170.86 (*s*, 1 C), 60.43 (*s*, 1 C), 53.69 (*s*, 1 C), 52.84 (*s*, 1 C), 30.56 (*s*, 1 C), 25.18 (*s*, 1 C), 25.14 (*s*, 1 C) ppm. IR (cm^{-1}): 3221 (*m*), 3139 (*m*), 2951 (*w*), 2501 (*m*), 2443 (*m*), 1719 (*s*), 1592 (*m*), 1448 (*m*), 1377 (*m*), 1277 (*m*), 1216 (*m*), 1156 (*m*), 1078 (*w*), 963 (*m*), 829 (*w*), 742 (*w*).

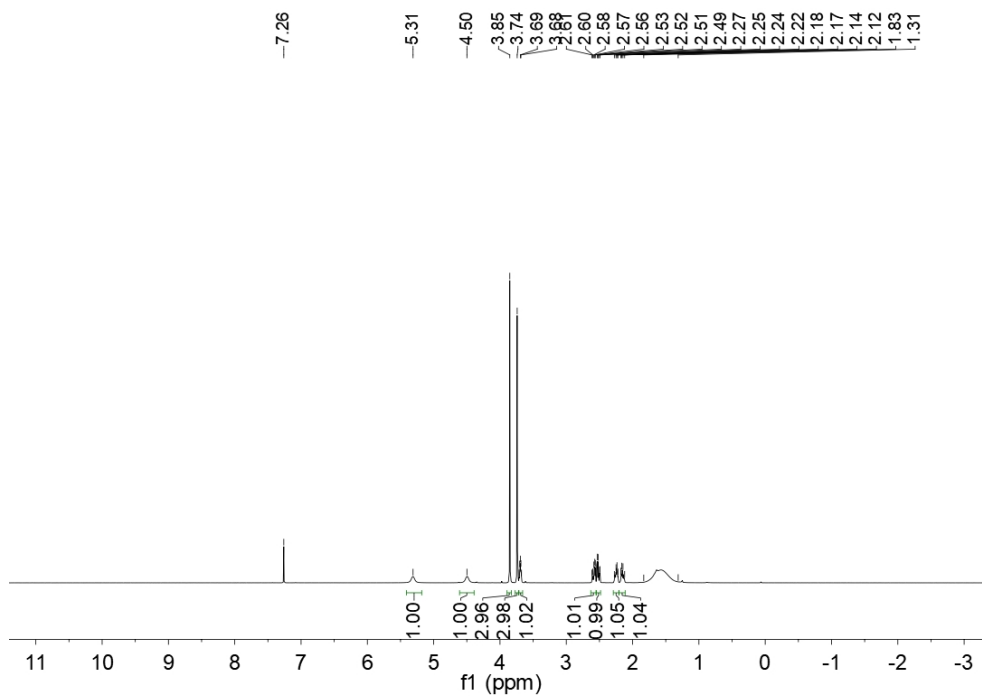
HRMS m/z calcd for $C_7H_{20}B_3NO_4 [M+Na]^+$: 238.1567, found: 238.1564.



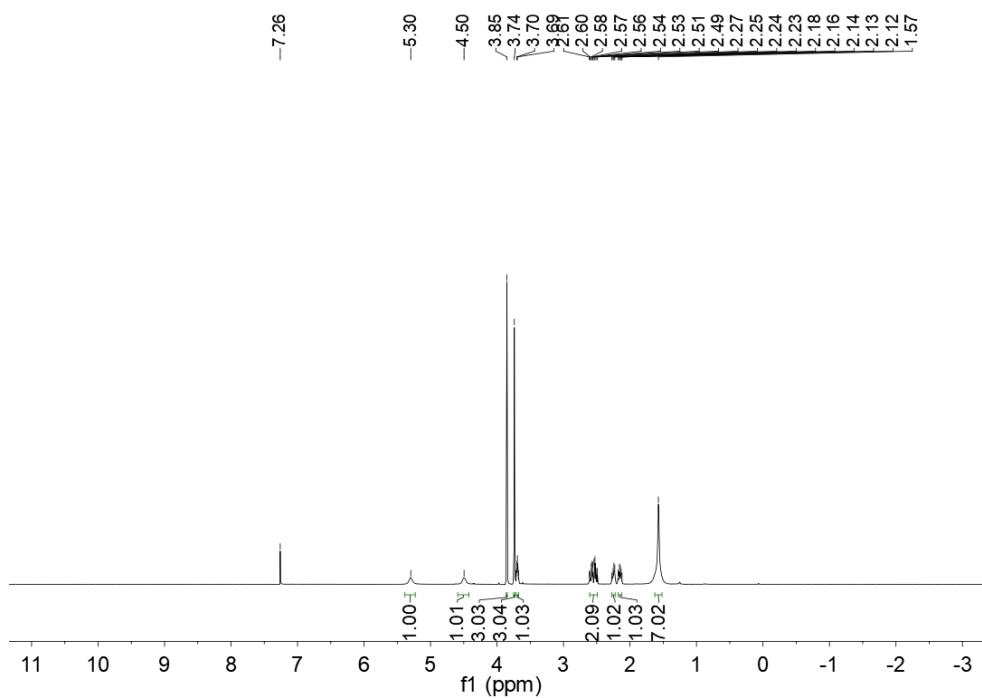
The ^{11}B NMR spectrum of the prepared **68** in $CDCl_3$



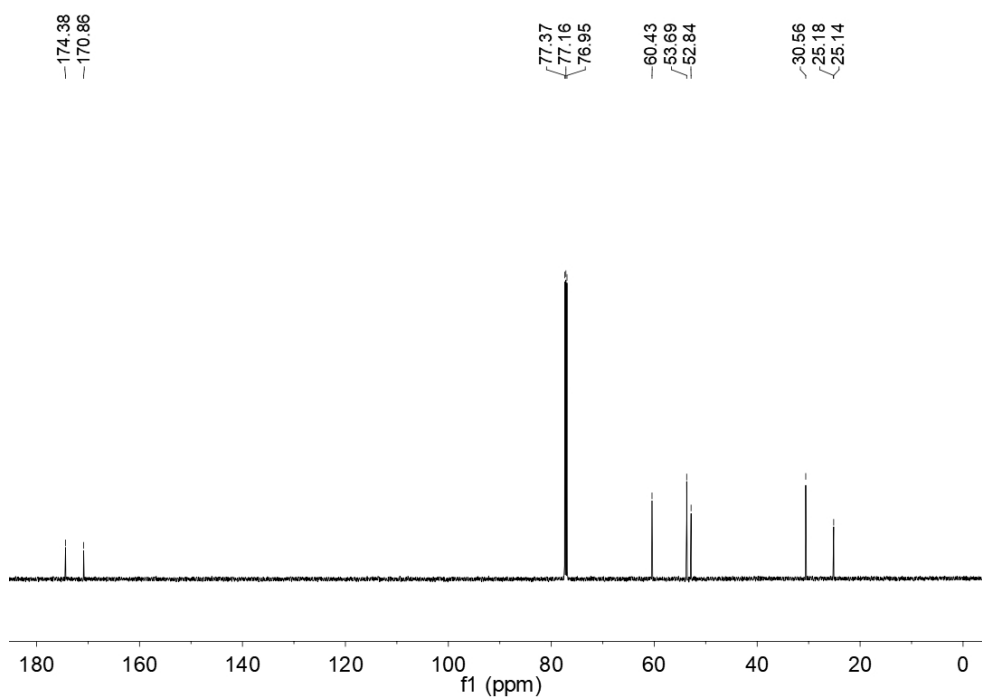
The $^{11}B\{^1H\}$ NMR spectrum of the prepared **68** in $CDCl_3$.



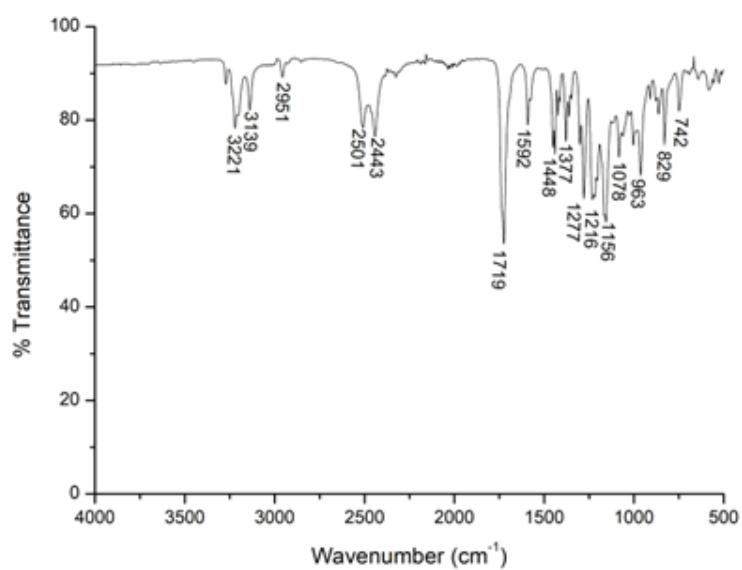
The ^1H NMR spectrum of the prepared **68** in CDCl_3 .



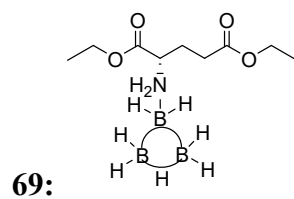
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **68** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **68** in CDCl_3 .

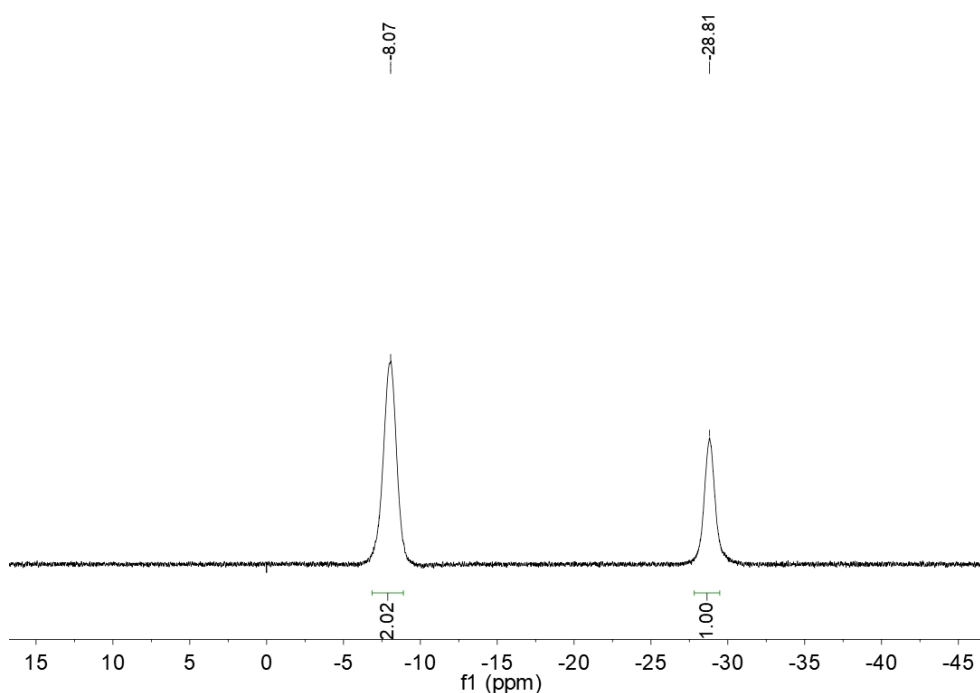


The IR spectrum of the prepared **68**.

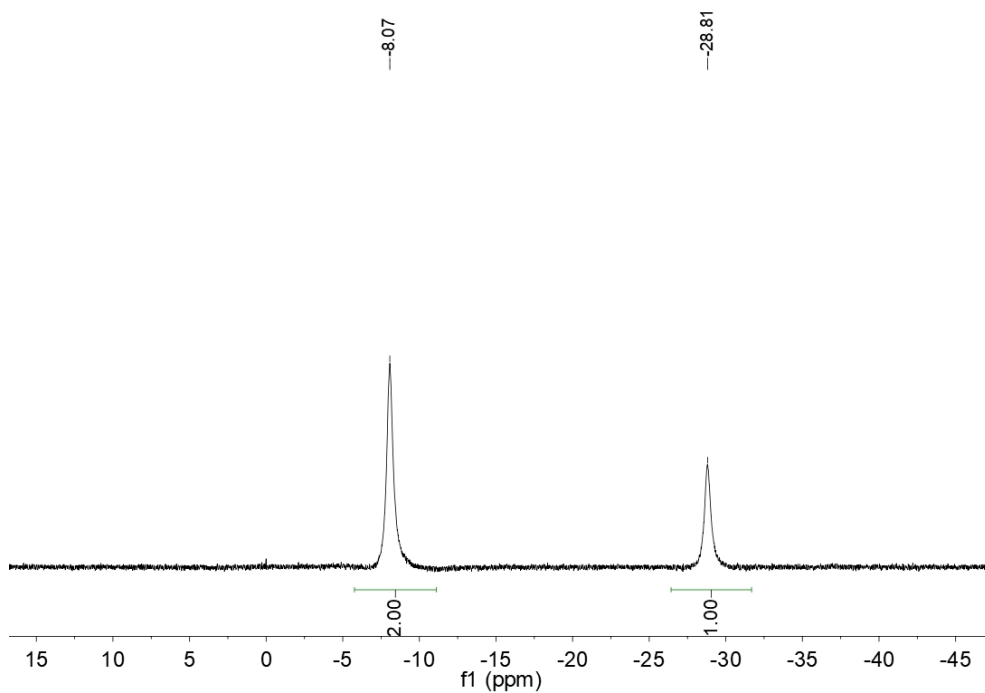


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:3). Yield 66%, colorless

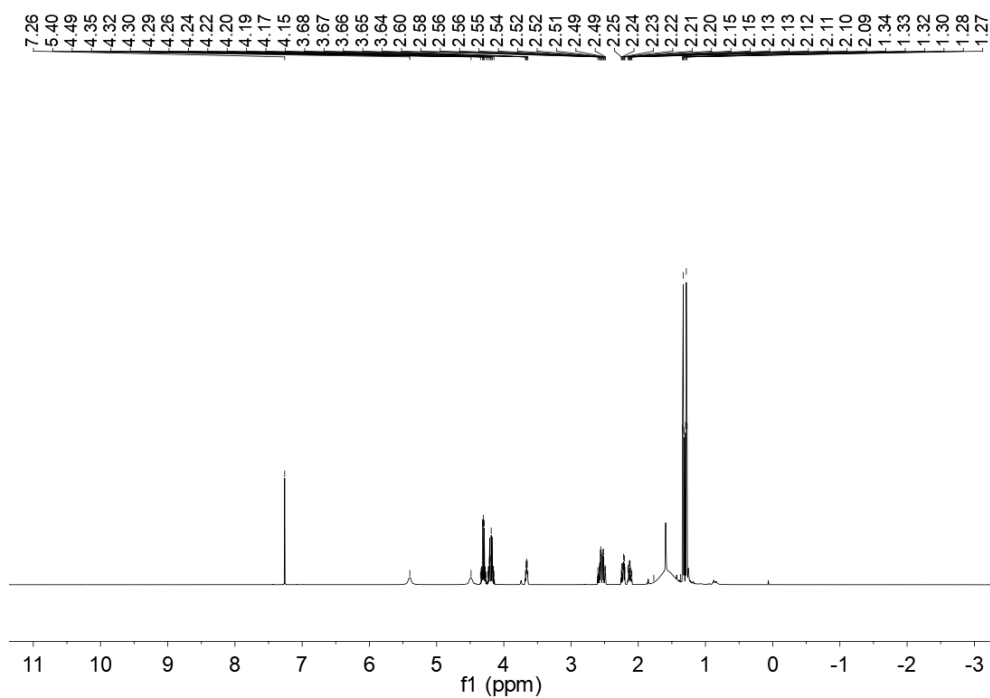
oil. ^{11}B NMR (193 MHz, CDCl_3): δ -8.07 (*br*, 2 B of **BHB**), -28.81 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -8.07 (*br*, 2 B of **BHB**), -28.81 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 5.40 (*br*, 1 H of **NH₂**), 4.49 (*br*, 1 H of **NH₂**), 4.30 (*m*, 2 H of **CH₂**), 4.18 (*m*, 2 H of **CH₂**), 3.66 (*m*, H of **CH**), 2.55 (*m*, 2 H of **CH₂**), 2.17 (*m*, 2 H of **CH₂**), 1.77-1.37 (*br*, 7 H of **B₃H₇**), 1.33 (*t*, 3 H of **CH₃**), 1.28 (*t*, 3 H of **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 5.37 (*br*, 1 H of **NH₂**), 4.49 (*br*, 1 H of **NH₂**), 4.30 (*m*, 2 H of **CH₂**), 4.18 (*m*, 2 H of **CH₂**), 3.66 (*m*, H of **CH**), 2.55 (*m*, 2 H of **CH₂**), 2.18 (*m*, 2 H of **CH₂**), 1.57 (*s*, 7 H of **B₃H₇**), 1.33 (*t*, 3 H of **CH₃**), 1.28 (*t*, 3 H of **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 174.04 (*s*, 1 C), 170.41 (*s*, 1 C), 63.17 (*s*, 1 C), 62.04 (*s*, 1 C), 60.62 (*s*, 1 C), 30.89 (*s*, 1 C), 25.25 (*s*, 1 C), 14.22 (*s*, 1 C), 14.21 (*s*, 1 C) ppm. IR (cm^{-1}): 3238 (*w*), 2989 (*w*), 2504 (*m*), 2426 (*m*), 1719 (*s*), 1575 (*w*), 1377 (*w*), 1260 (*m*), 1200 (*s*), 1167 (*m*), 1012 (*m*), 857 (*w*). HRMS m/z calcd for $\text{C}_9\text{H}_{24}\text{B}_3\text{NO}_4$ $[\text{M}+\text{Na}]^+$: 266.1881, found: 266.1881.



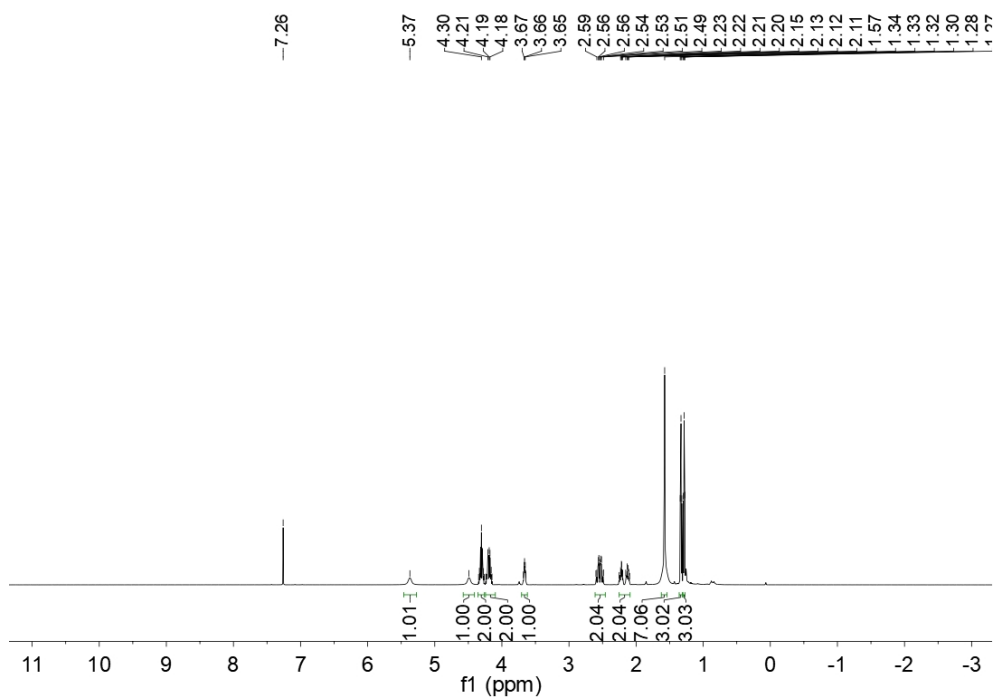
The ^{11}B NMR spectrum of the prepared **69** in CDCl_3 .



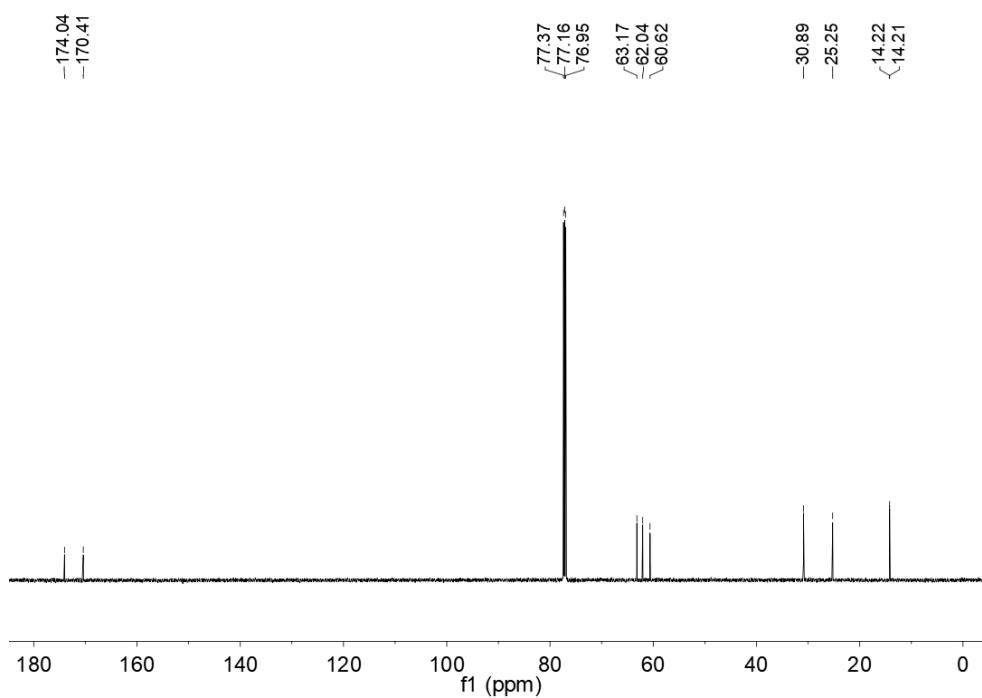
The ¹¹B{¹H} NMR spectrum of the prepared **69** in CDCl₃.



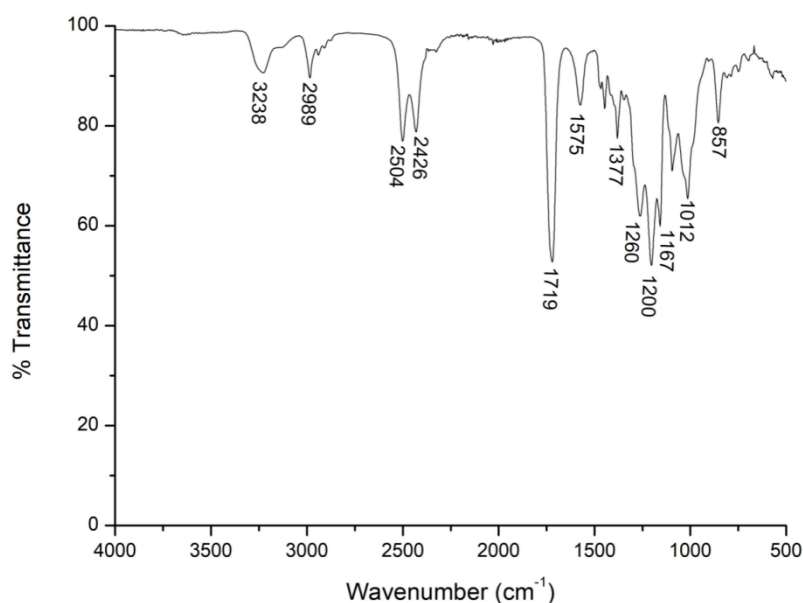
The ¹H NMR spectrum of the prepared **69** in CDCl₃.



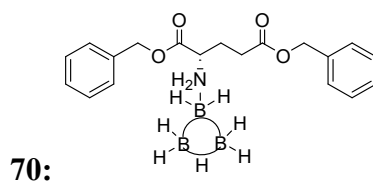
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **69** in CDCl_3 .



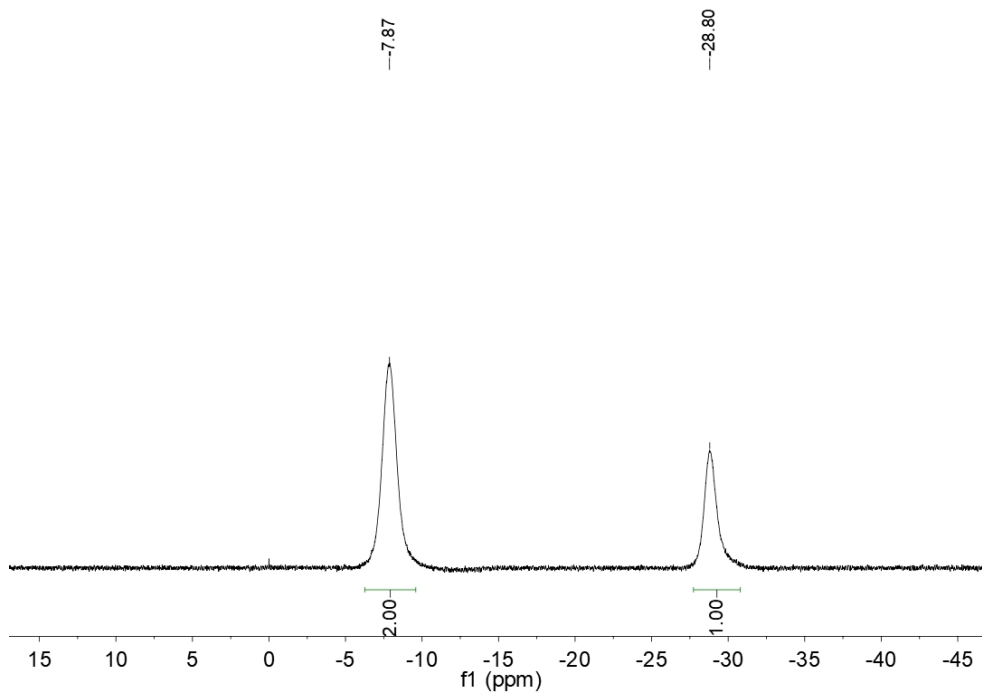
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **69** in CDCl_3 .



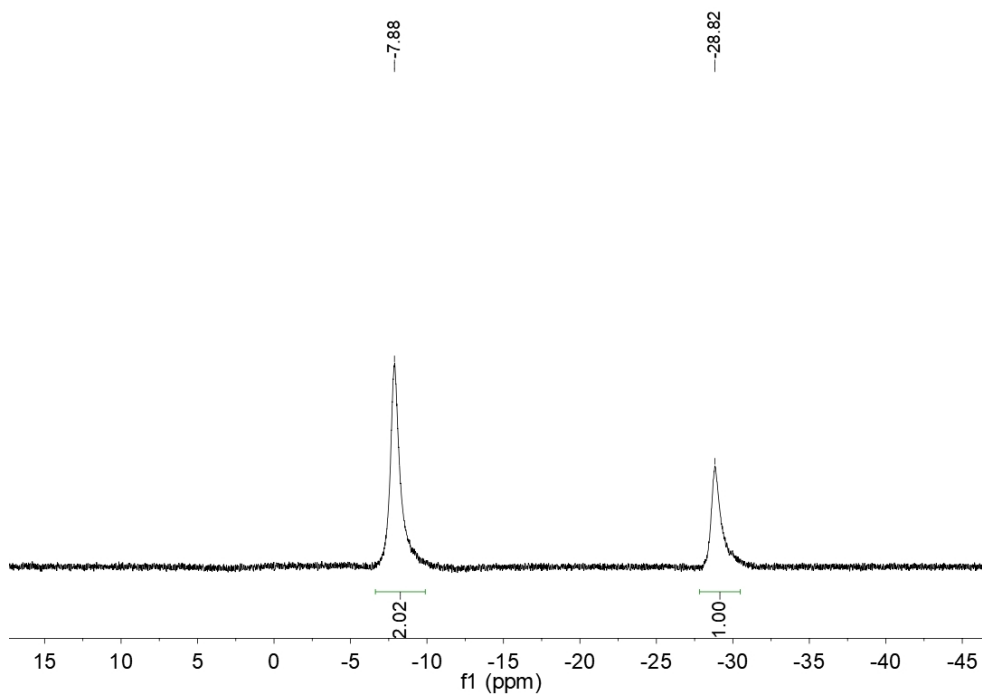
The IR spectrum of the prepared **69**.



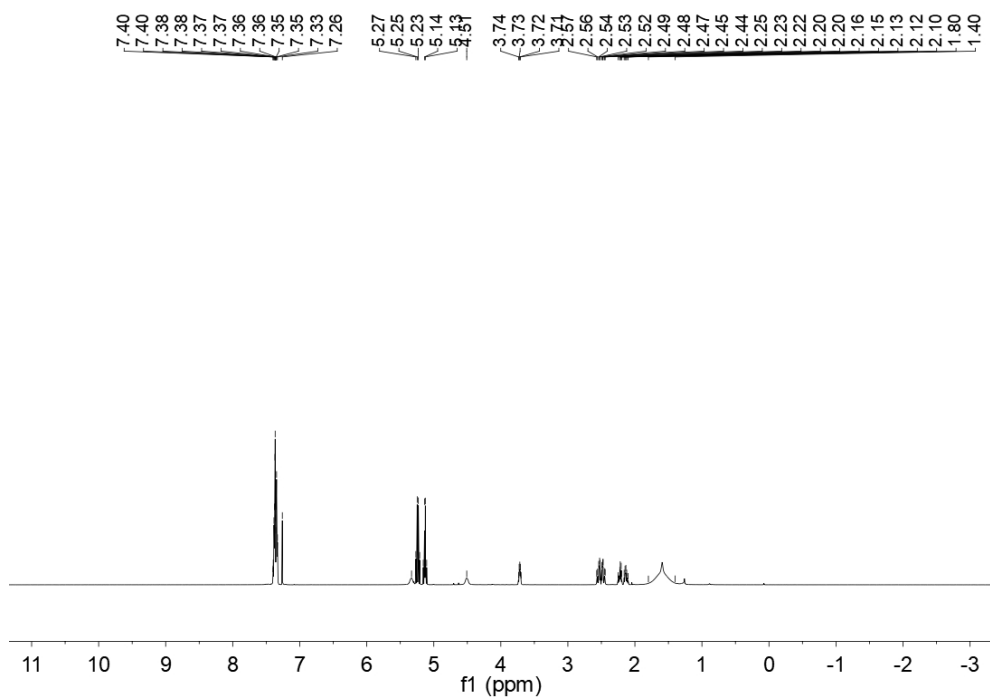
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:3). Yield 53%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.87 (*br*, 2 B of **BHB**), -28.80 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.88 (*br*, 2 B of **BHB**), -28.82 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 7.37 (*m*, 10 H of 10 **CH**), 5.33 (*br*, 1 H of **NH₂**), 5.24 (*q*, 2 H of **CH₂**), 5.14 (*q*, 2 H of **CH₂**), 4.51 (*br*, 1 H of **NH₂**), 3.72 (*m*, H of **CH**), 2.51 (*m*, 2 H of **CH₂**), 2.18 (*m*, 2 H of **CH₂**), 1.80-1.40 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 7.37 (*m*, 10 H of 10 **CH**), 5.30 (*br*, 1 H of **NH₂**), 5.24 (*q*, 2 H of **CH₂**), 5.14 (*q*, 2 H of **CH₂**), 4.51 (*br*, 1 H of **NH₂**), 3.72 (*m*, H of **CH**), 2.51 (*m*, 2 H of **CH₂**), 2.18 (*m*, 2 H of **CH₂**), 1.60 (*s*, 7 H of B₃**H₇**) ppm. ¹³C {¹H} NMR (151 MHz, CDCl₃): δ 173.80 (*s*, 1 C), 170.27 (*s*, 1 C), 129.22 (*s*, 1 C), 128.98 (*s*, 2 C), 128.85 (*t*, 5 C), 128.71 (*s*, 2 C), 68.80 (*s*, 1 C), 67.76 (*s*, 1 C), 60.47 (*s*, 1 C), 30.70 (*s*, 1 C), 25.18 (*s*, 1 C) ppm. IR (cm⁻¹): 3238 (*w*), 2962 (*w*), 2498 (*m*), 2426 (*m*), 1725 (*s*), 1570 (*w*), 1459 (*m*), 1260 (*m*), 1189 (*s*), 963 (*w*), 742 (*s*), 697 (*s*), 576 (*w*). HRMS *m/z* calcd for C₁₉H₂₈B₃NO₄ [M+Na]⁺: 390.2199, found: 390.2199.



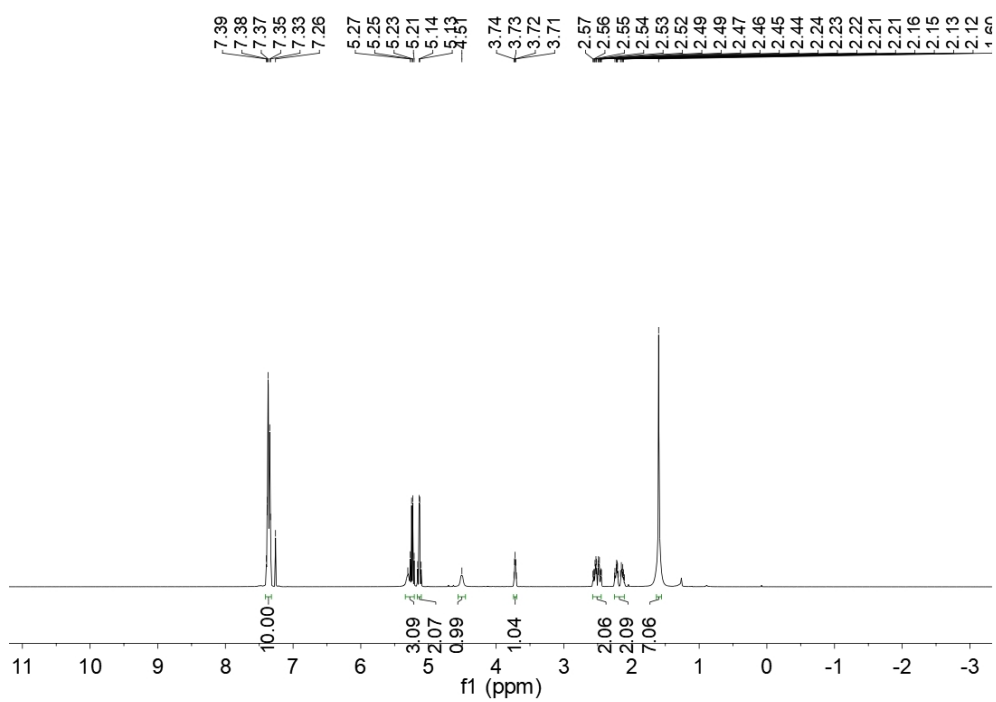
The ^{11}B NMR spectrum of the prepared **70** in CDCl_3



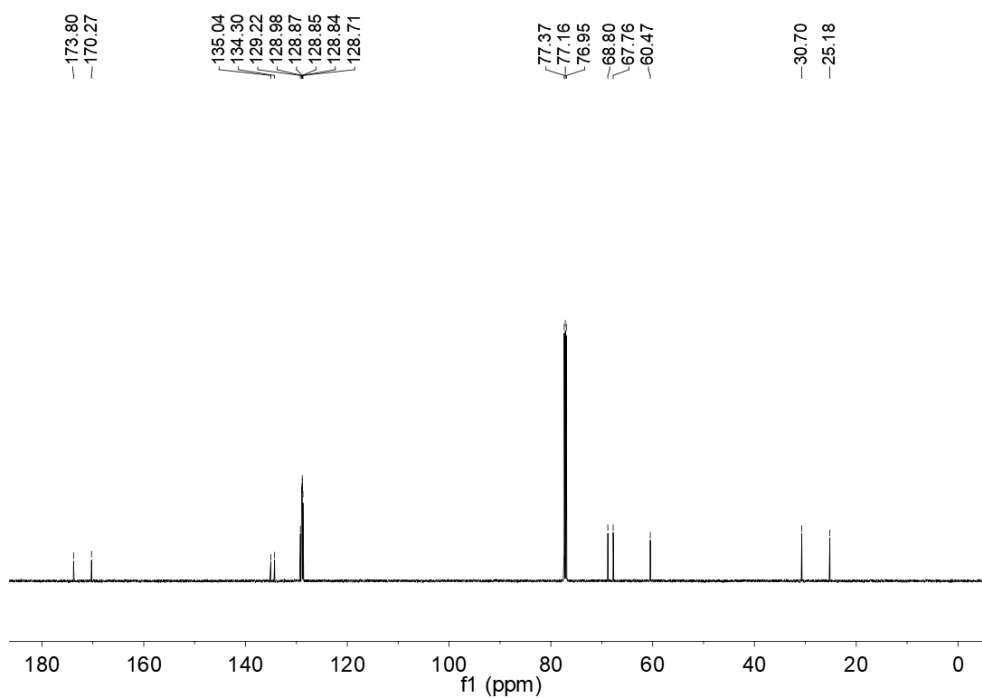
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **70** in CDCl_3 .



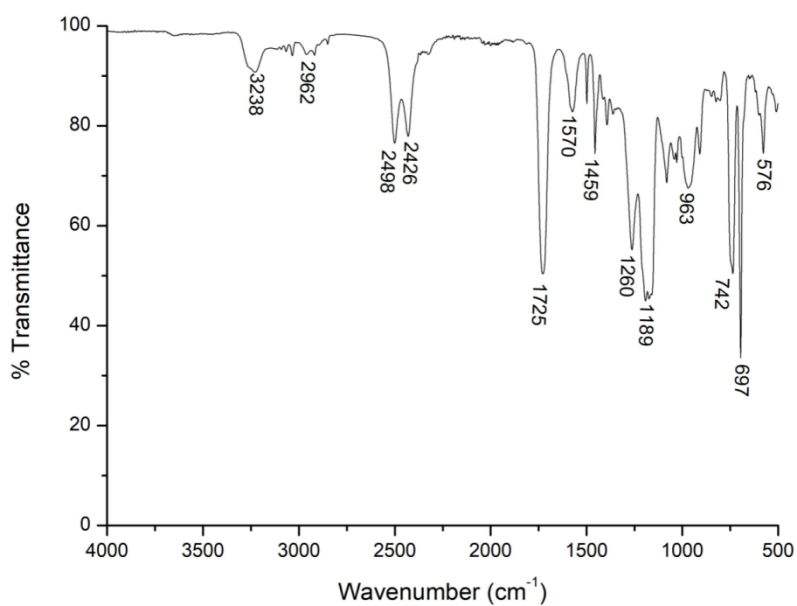
The ^1H NMR spectrum of the prepared **70** in CDCl_3 .



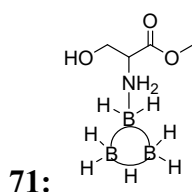
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **70** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **70** in CDCl_3 .

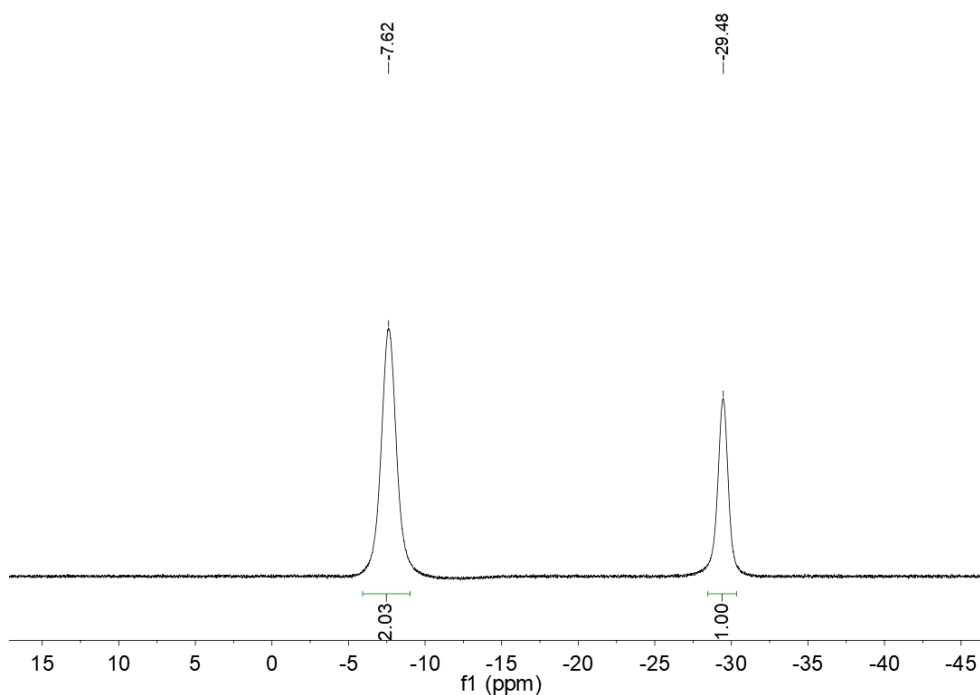


The IR spectrum of the prepared **70**.

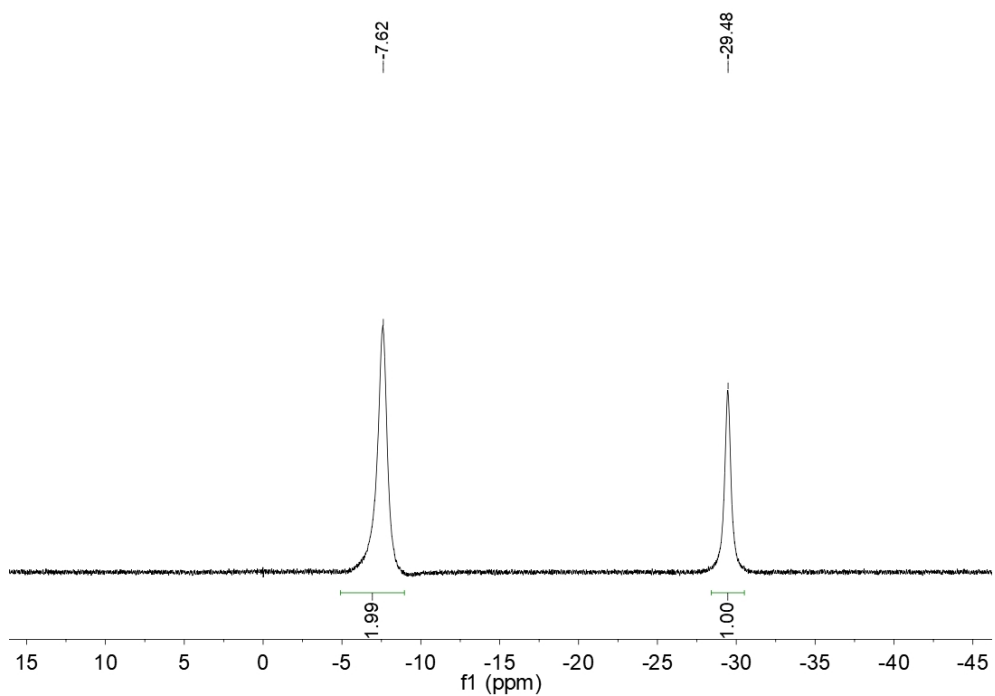


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:15). Yield 57%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.62 (*br*, 2 B of **BHB**), -29.48 (*br*, B of

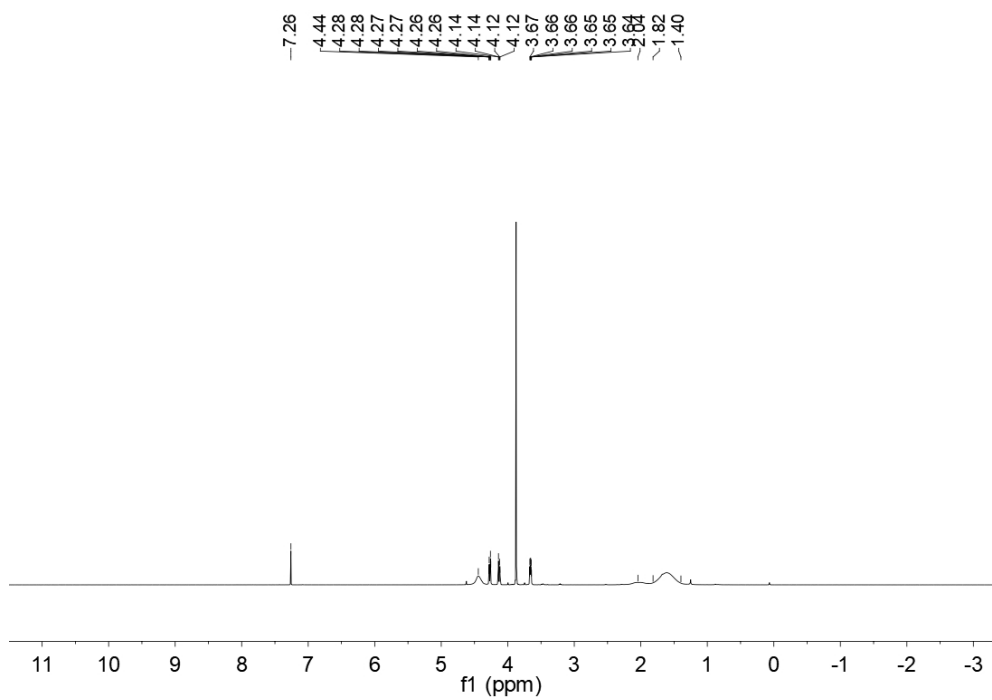
BH_2) ppm. $^{11}B\{^1H\}$ NMR (193 MHz, $CDCl_3$): δ -7.62 (*br*, 2 B of **BHB**), -29.48 (*br*, B of BH_2) ppm. 1H NMR (600 MHz, $CDCl_3$): δ 4.44 (*br*, 2 H of NH_2), 4.27 (*m*, 1 H of CH_2), 4.13 (*m*, 1 H of CH_2), 3.87 (*s*, 3 H of CH_3), 3.66 (*m*, H of CH), 2.04 (*br*, H of OH), 1.82-1.40 (*br*, 7 H of B_3H_7) ppm. $^1H\{^{11}B\}$ NMR (600 MHz, $CDCl_3$): δ 4.44 (*br*, 2 H of NH_2), 4.27 (*m*, 1 H of CH_2), 4.13 (*m*, 1 H of CH_2), 3.87 (*s*, 3 H of CH_3), 3.66 (*m*, H of CH), 2.02 (*br*, H of OH), 1.61 (*s*, 7 H of B_3H_7) ppm. $^{13}C\{^1H\}$ NMR (151 MHz, $CDCl_3$): δ 169.68 (*s*, 1 C), 61.16 (*d*, 1 C), 58.72 (*s*, 1 C), 53.94 (*s*, 1 C) ppm. IR (cm^{-1}): 3231 (*w*), 2956 (*w*), 2497 (*m*), 2431 (*m*), 1735 (*s*), 1580 (*w*), 1436 (*m*), 1276 (*s*), 1105 (*w*), 1044 (*s*), 984 (*m*), 702 (*w*). HRMS m/z calcd for $C_4H_{16}B_3NO_3 [M+Na]^+$: 182.1303, found: 182.1305.



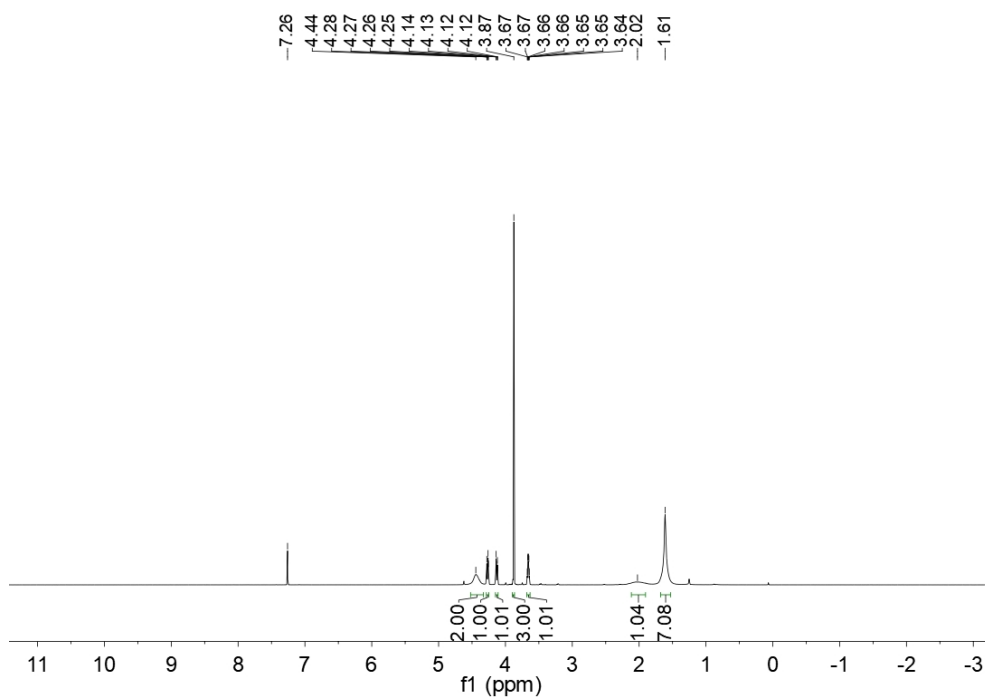
The ^{11}B NMR spectrum of the prepared **71** in $CDCl_3$



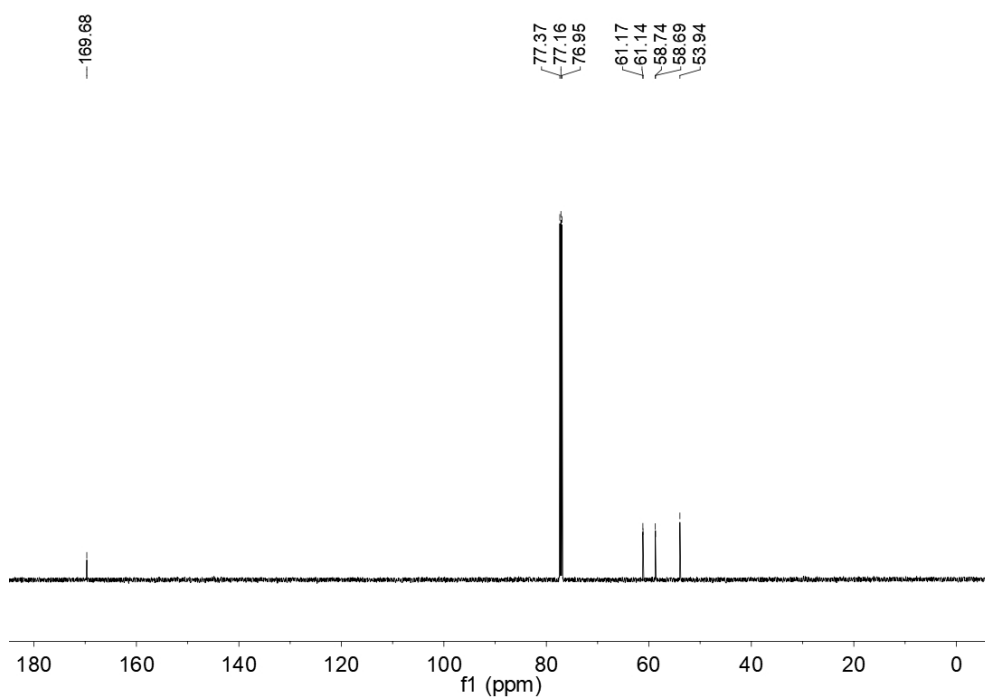
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **71** in CDCl_3 .



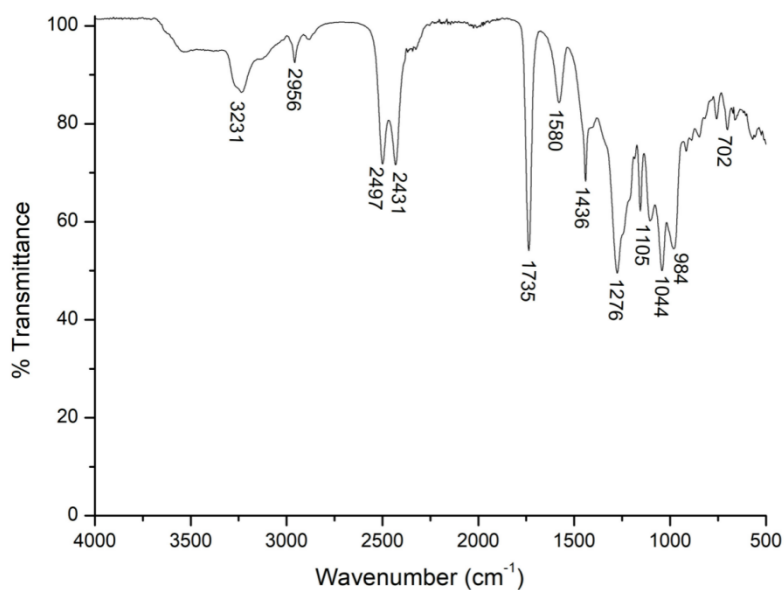
The ^1H NMR spectrum of the prepared **71** in CDCl_3 .



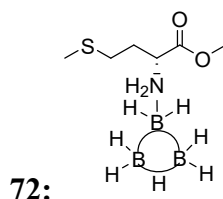
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **71** in CDCl_3 .



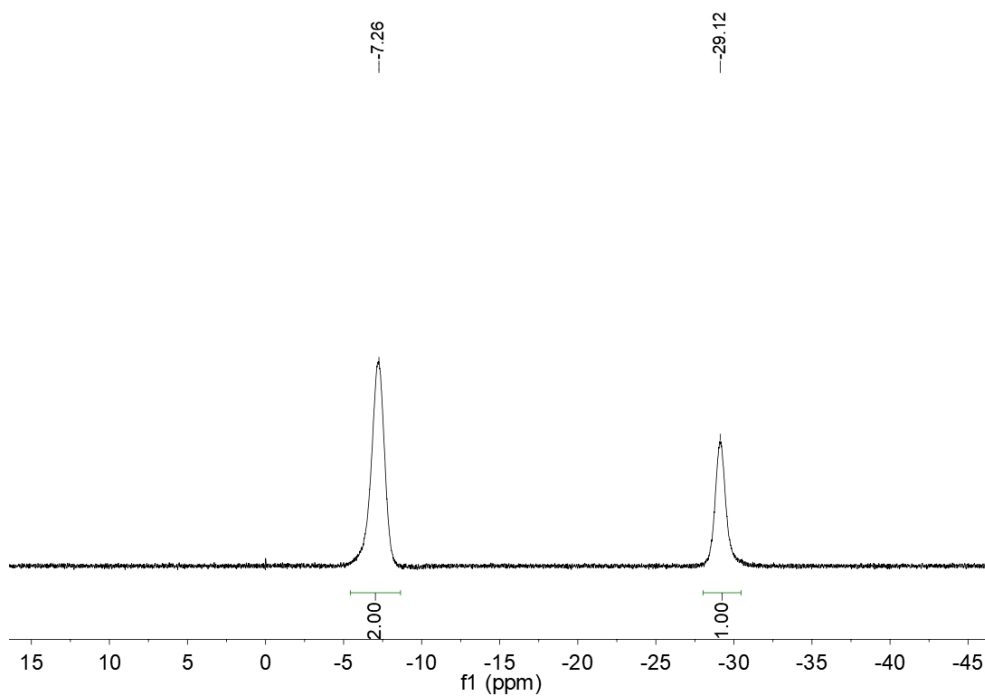
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **71** in CDCl_3 .



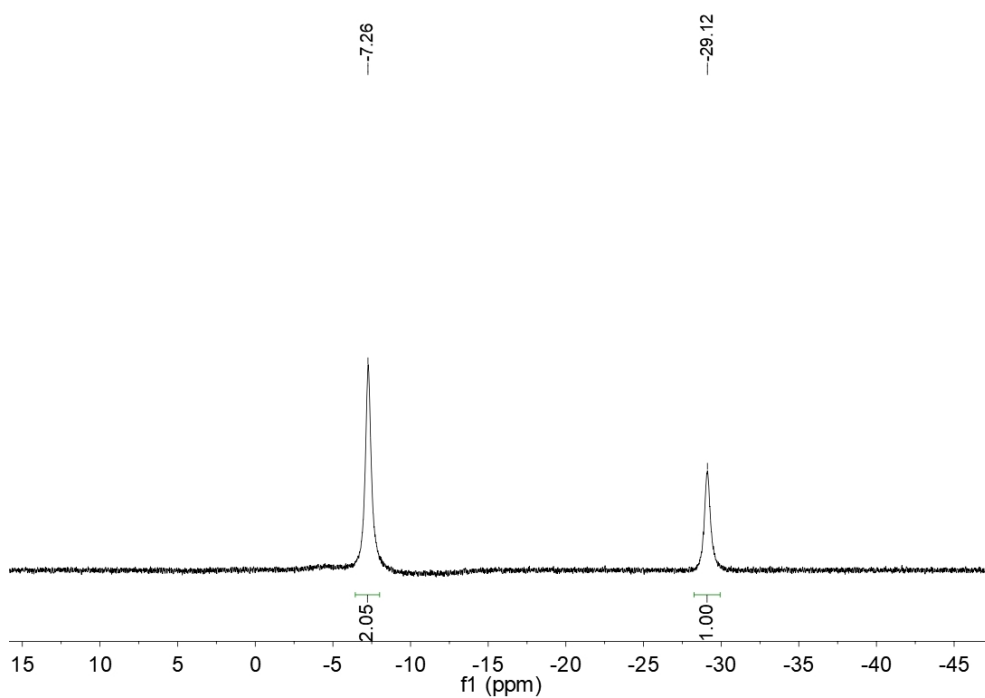
The IR spectrum of the prepared **71**.



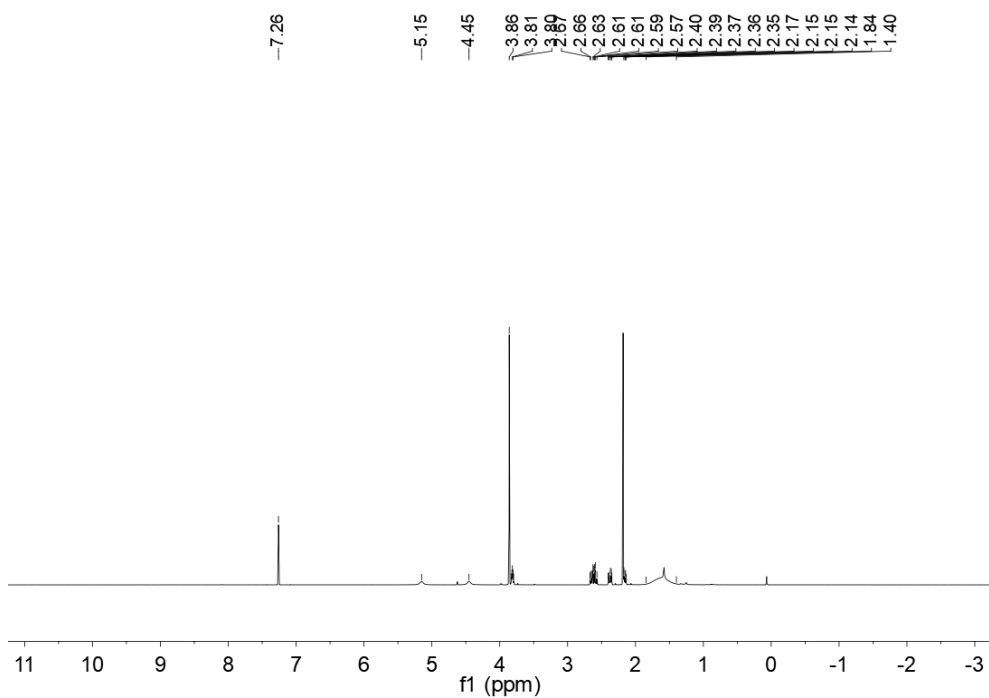
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:3). Yield 60%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.26 (*br*, 2 B of **BHB**), -29.12 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.26 (*br*, 2 B of **BHB**), -29.12 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 5.15 (*br*, 1 H of **NH₂**), 4.45 (*br*, H of **NH₂**), 3.86 (*s*, 3 H of **CH₃**), 3.82 (*m*, 1 H of **CH**), 2.62 (*m*, 2 H of **CH₂**), 2.38 (*m*, 1 H of **CH₂**), 2.17 (*s*, 3 H of **CH₃**), 2.15 (*m*, 1 H of **CH₂**), 1.84-1.40 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 5.14 (*br*, 1 H of **NH₂**), 4.45 (*br*, H of **NH₂**), 3.86 (*s*, 3 H of **CH₃**), 3.82 (*m*, 1 H of **CH**), 2.62 (*m*, 2 H of **CH₂**), 2.38 (*m*, 1 H of **CH₂**), 2.18 (*s*, 3 H of **CH₃**), 2.16 (*m*, 1 H of **CH₂**), 1.62 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 170.88 (*s*, 1 C), 60.49 (*s*, 1 C), 53.68 (*s*, 1 C), 30.12 (*s*, 1 C), 26.59 (*s*, 1 C), 15.63 (*s*, 1 C) ppm. IR (cm⁻¹): 3244 (*w*), 2956 (*w*), 2918 (*w*), 2498 (*m*), 2426 (*m*), 1741 (*s*), 1564 (*w*), 1443 (*m*), 1266 (*s*), 1161 (*s*), 979 (*w*), 730 (*m*). HRMS *m/z* calcd for C₆H₂₀B₃NO₂S [M+Na]⁺: 226.1389, found: 226.1387.



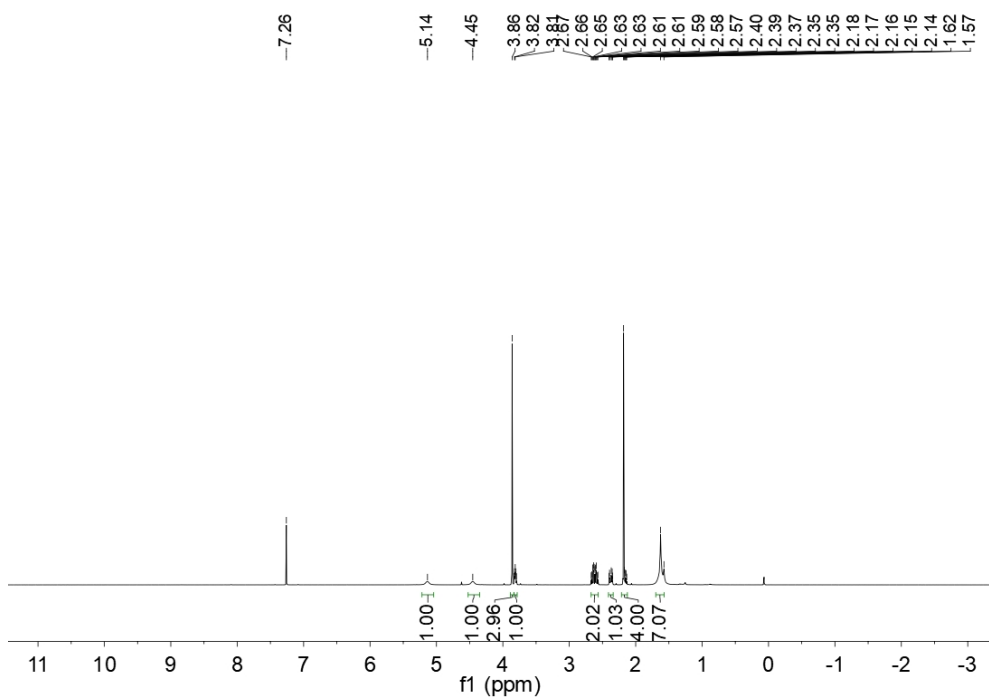
The ^{11}B NMR spectrum of the prepared **72** in CDCl_3



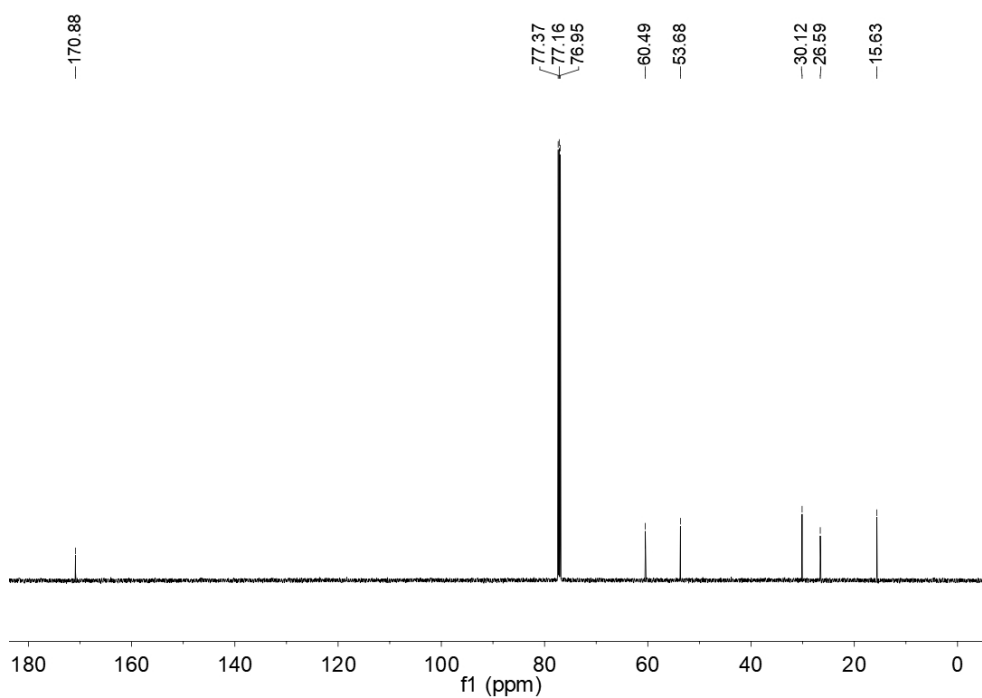
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **72** in CDCl_3 .



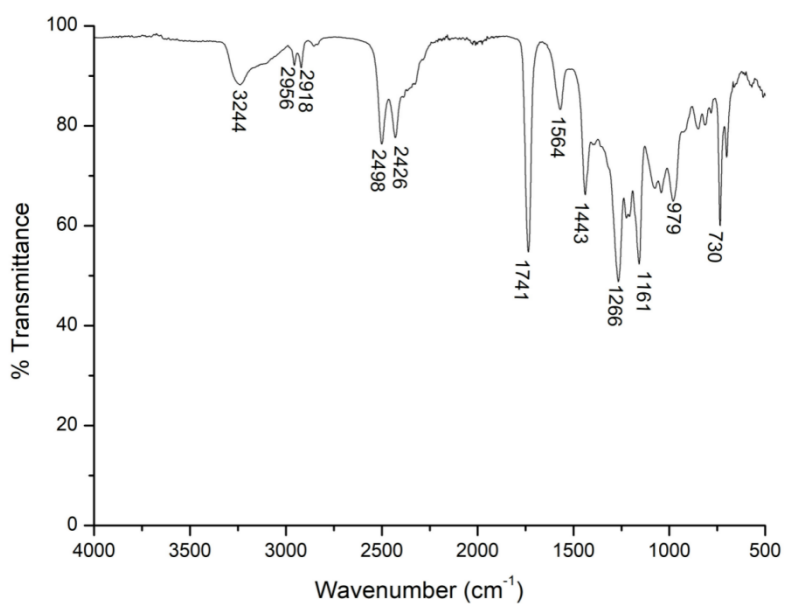
The ^1H NMR spectrum of the prepared **72** in CDCl_3 .



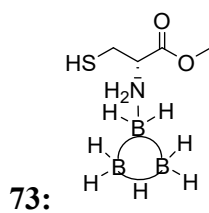
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **72** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **72** in CDCl_3 .

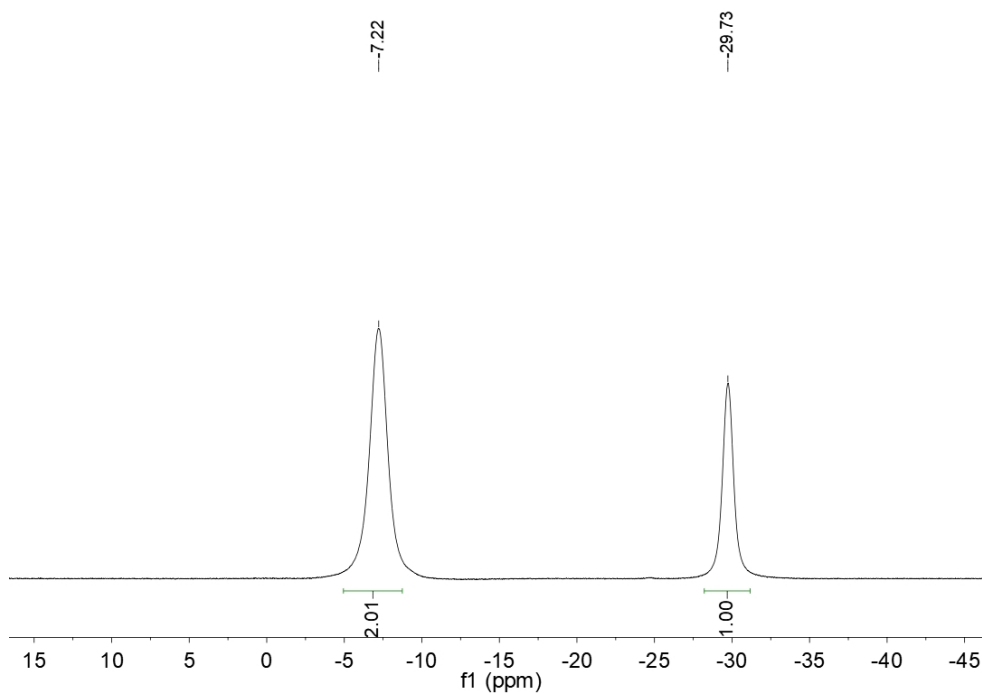


The IR spectrum of the prepared **72**.

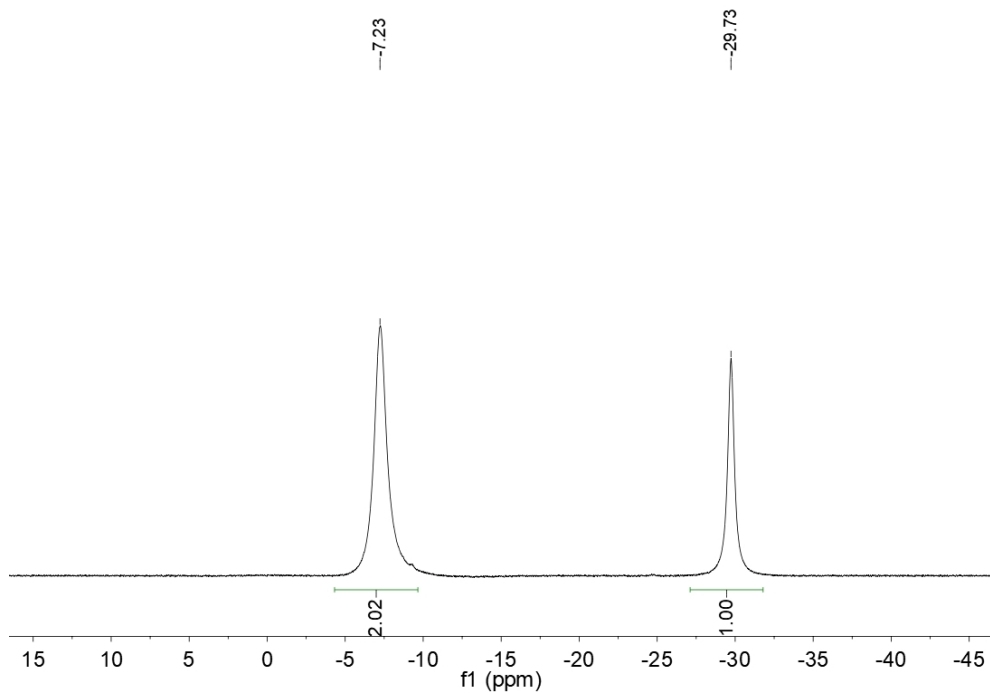


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:3). Yield 55%, colorless

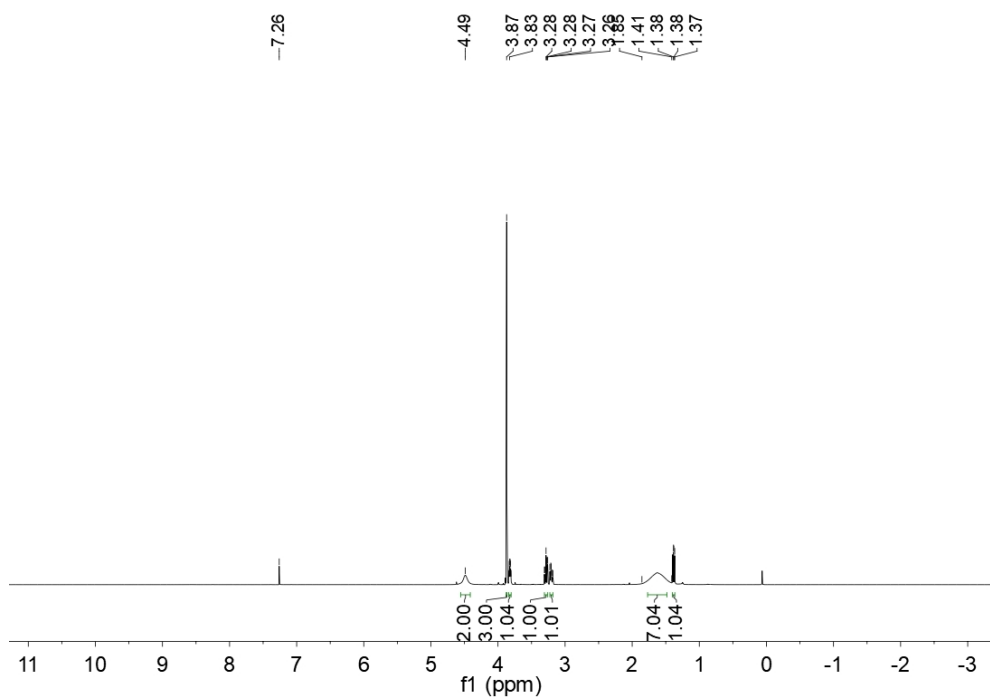
oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.22 (*br*, 2 B of **BHB**), -29.73 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.23 (*br*, 2 B of **BHB**), -29.73 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.49 (*br*, 2 H of **NH₂**), 3.87 (*s*, 3 H of **CH₃**), 3.83 (*m*, H of **CH**), 3.29 (*m*, 1 H of **CH₂**), 3.21 (*m*, 1 H of **CH₂**), 1.85-1.41 (*br*, 7 H of **B₃H₇**), 1.38 (*dd*, H of **SH**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.49 (*br*, 2 H of **NH₂**), 3.87 (*s*, 3 H of **CH₃**), 3.83 (*m*, H of **CH**), 3.29 (*m*, 1 H of **CH₂**), 3.22 (*m*, 1 H of **CH₂**), 1.62 (*s*, 7 H of **B₃H₇**), 1.39 (*dd*, H of **SH**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 169.18 (*s*, 1 C), 60.10 (*s*, 1 C), 54.05 (*s*, 1 C), 23.63 (*s*, 1 C) ppm. IR (cm^{-1}): 3238 (*w*), 2965 (*w*), 2498 (*m*), 2420 (*m*), 1741 (*s*), 1570 (*w*), 1443 (*m*), 1266 (*s*), 1150 (*m*), 1034 (*m*), 857 (*w*), 703 (*w*). HRMS m/z calcd for $\text{C}_4\text{H}_{16}\text{B}_3\text{NO}_2\text{S}$ $[\text{M}+\text{Na}]^+$: 198.1075, found: 198.1072.



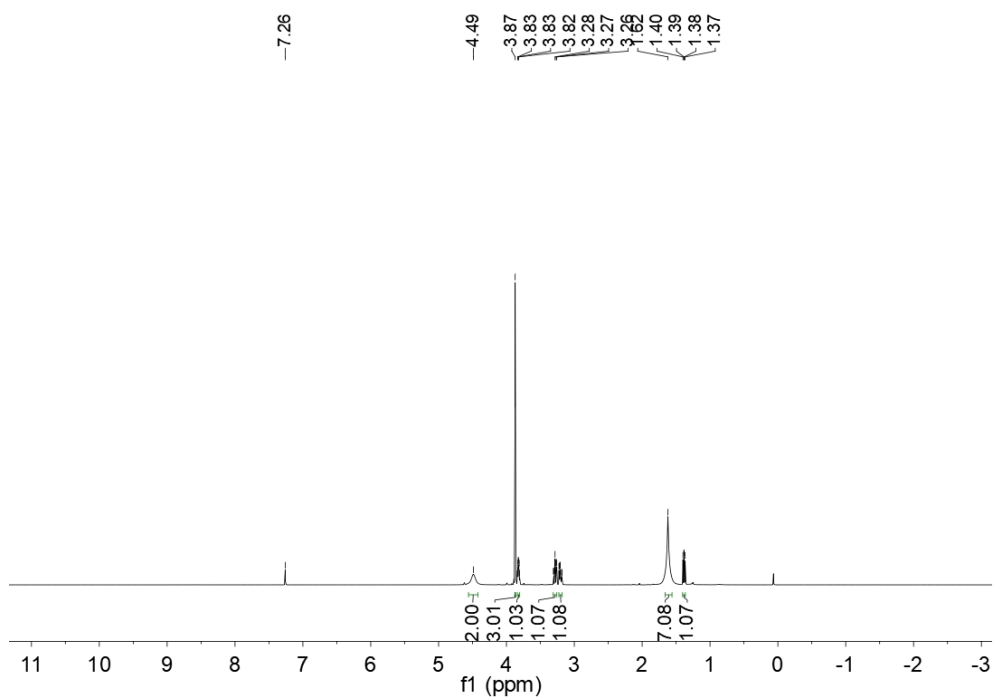
The ^{11}B NMR spectrum of the prepared **73** in CDCl_3



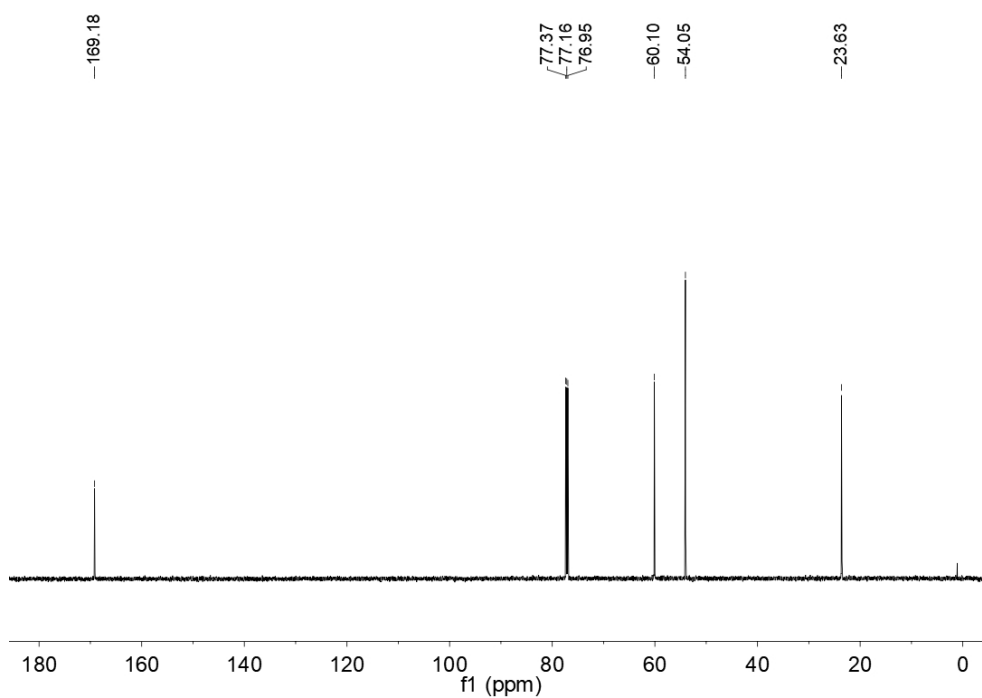
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **73** in CDCl_3 .



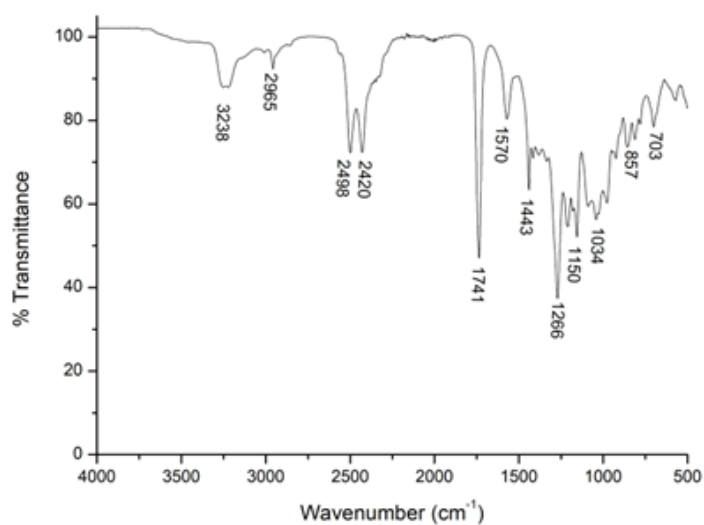
The ^1H NMR spectrum of the prepared **73** in CDCl_3 .



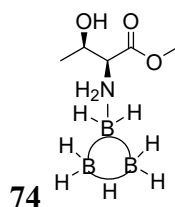
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **73** in CDCl_3 .



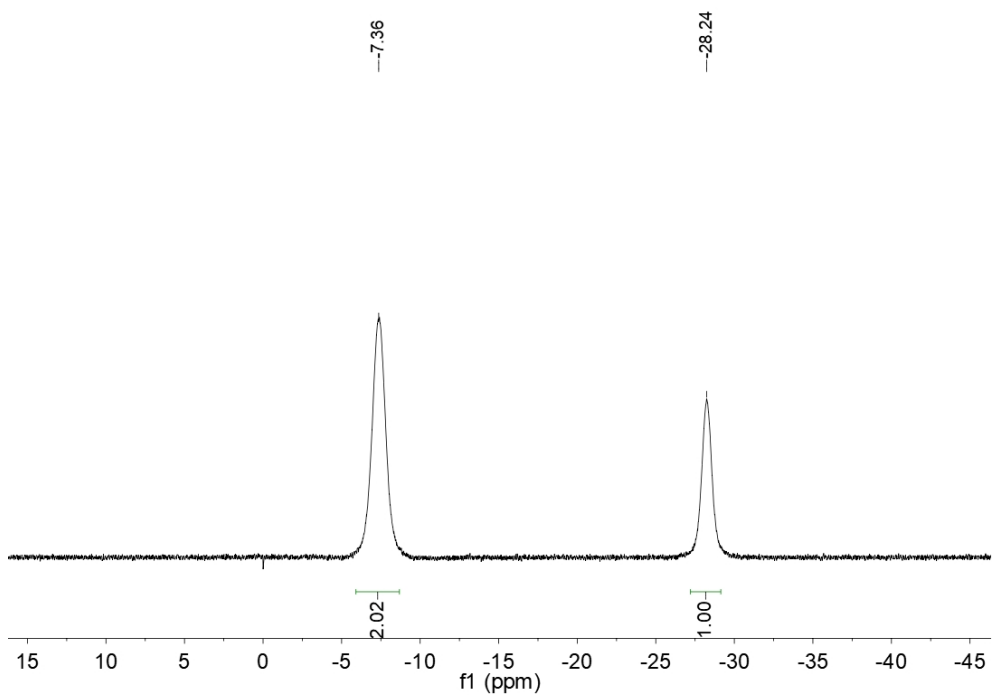
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **73** in CDCl_3 .



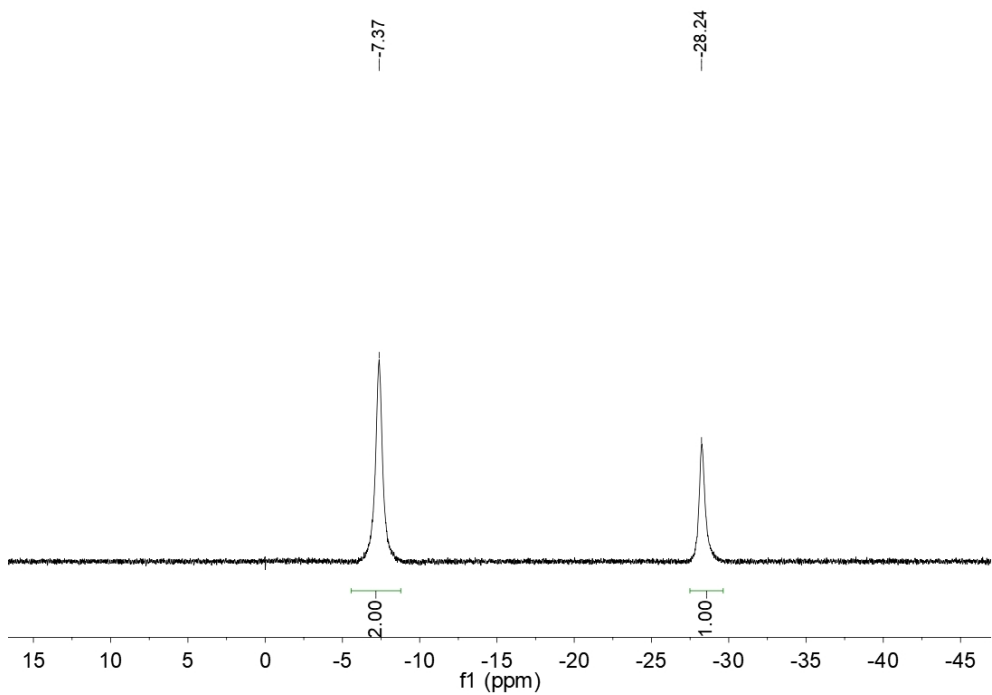
The IR spectrum of the prepared **73**.



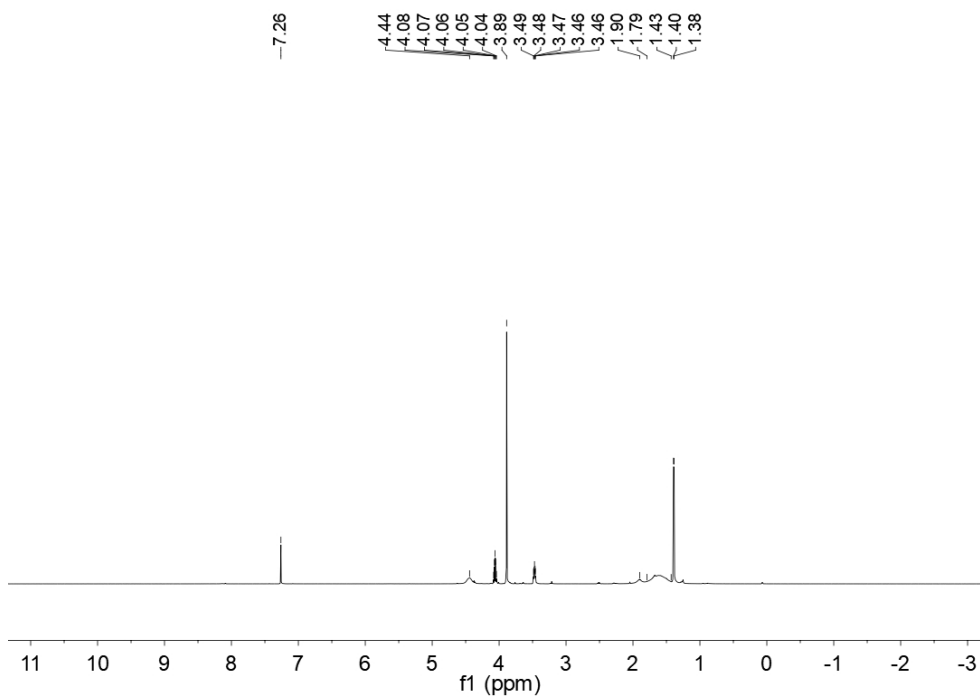
Flash chromatography (silica gel, petroleum ether : $\text{CH}_2\text{Cl}_2 = 1:3$). Yield 53%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.36 (*br*, 2 B of **BHB**), -28.24 (*br*, B of **BH₂**) ppm. $^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.37 (*br*, 2 B of **BHB**), -28.24 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.44 (*br*, 2 H of **NH₂**), 4.06 (*m*, H of **CH**), 3.89 (*s*, 3 H of **CH₃**), 3.48 (*m*, H of **CH**), 1.90 (*br*, H of **OH**), 1.79-1.43 (*br*, 7 H of **B₃H₇**), 1.39 (*d*, 3 H of **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.44 (*br*, 2 H of **NH₂**), 4.06 (*m*, H of **CH**), 3.89 (*s*, 3 H of **CH₃**), 3.48 (*m*, H of **CH**), 1.89 (*br*, H of **OH**), 1.61 (*s*, 7 H of **B₃H₇**), 1.39 (*d*, 3 H of **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 169.25 (*s*, 1 C), 67.10 (*s*, 1 C), 66.62 (*s*, 1 C), 53.81 (*s*, 1 C), 21.09 (*s*, 1 C) ppm. IR (cm^{-1}): 3526 (*w*), 3260 (*w*), 2967 (*w*), 2504 (*m*), 2432 (*m*), 1736 (*s*), 1570 (*m*), 1437 (*m*), 1266 (*s*), 1200 (*w*), 1050 (*w*), 924 (*m*). HRMS *m/z* calcd for $\text{C}_5\text{H}_{18}\text{B}_3\text{NO}_3$ [$\text{M}+\text{H}$] $^+$: 186.1641, found: 186.1646.



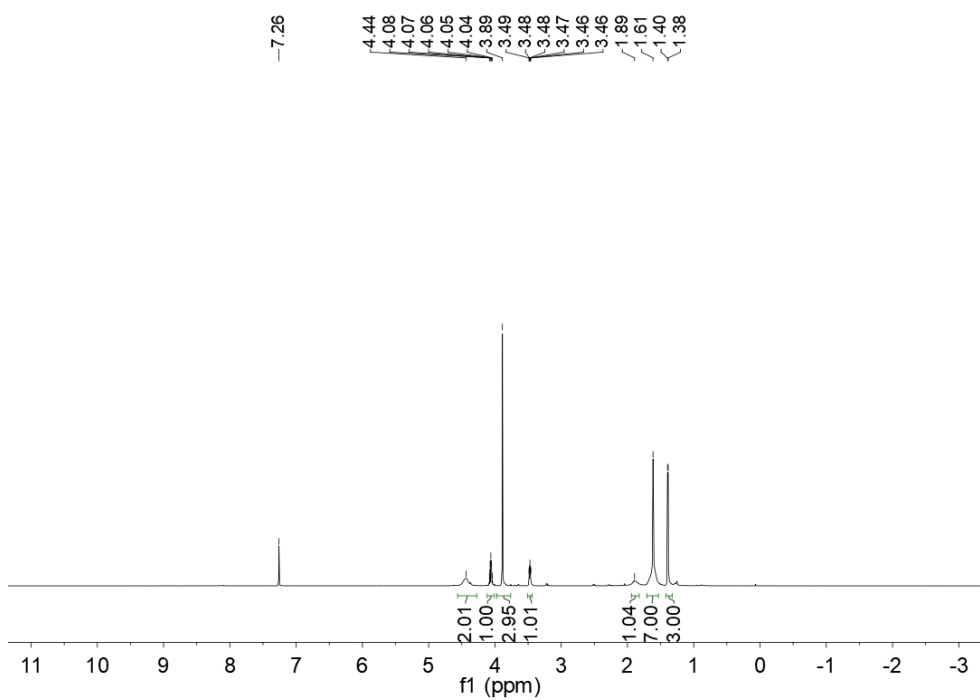
The ¹¹B NMR spectrum of the prepared **74** in CDCl₃



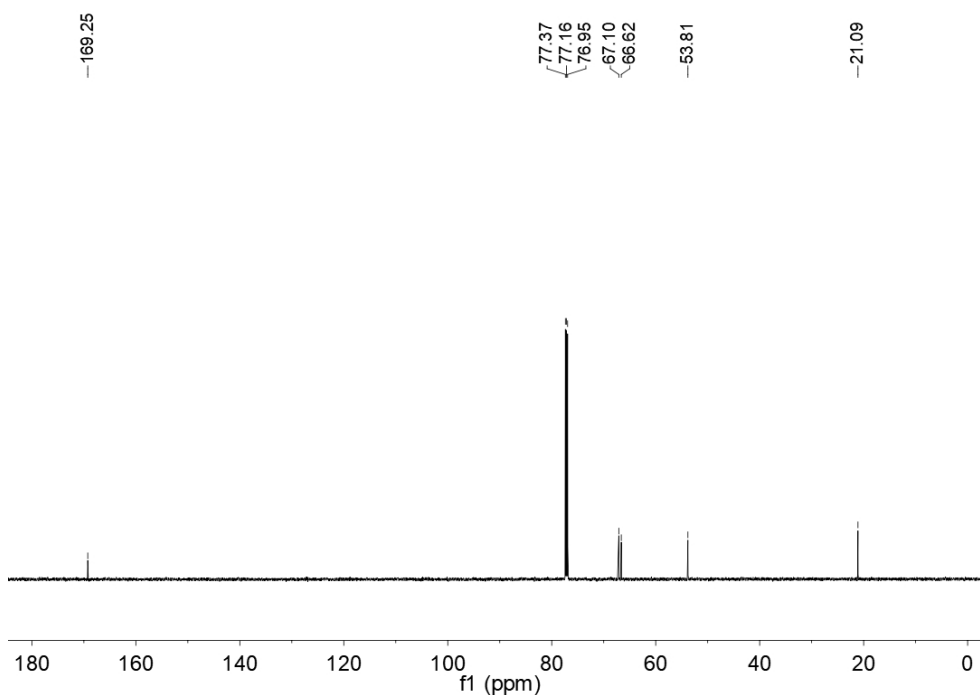
The ¹¹B{¹H} NMR spectrum of the prepared **74** in CDCl₃.



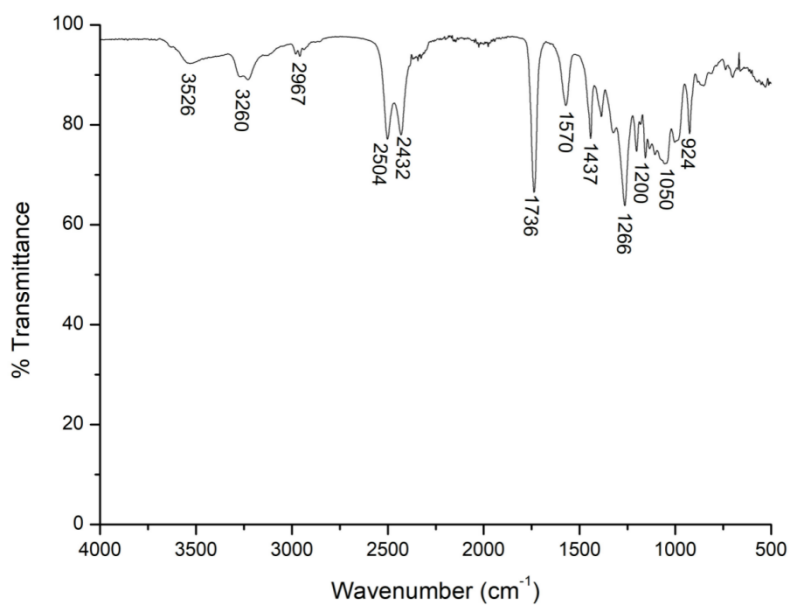
The ^1H NMR spectrum of the prepared **74** in CDCl_3 .



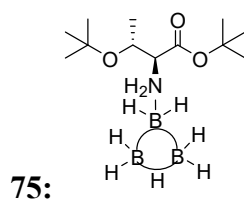
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **74** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **74** in CDCl_3 .

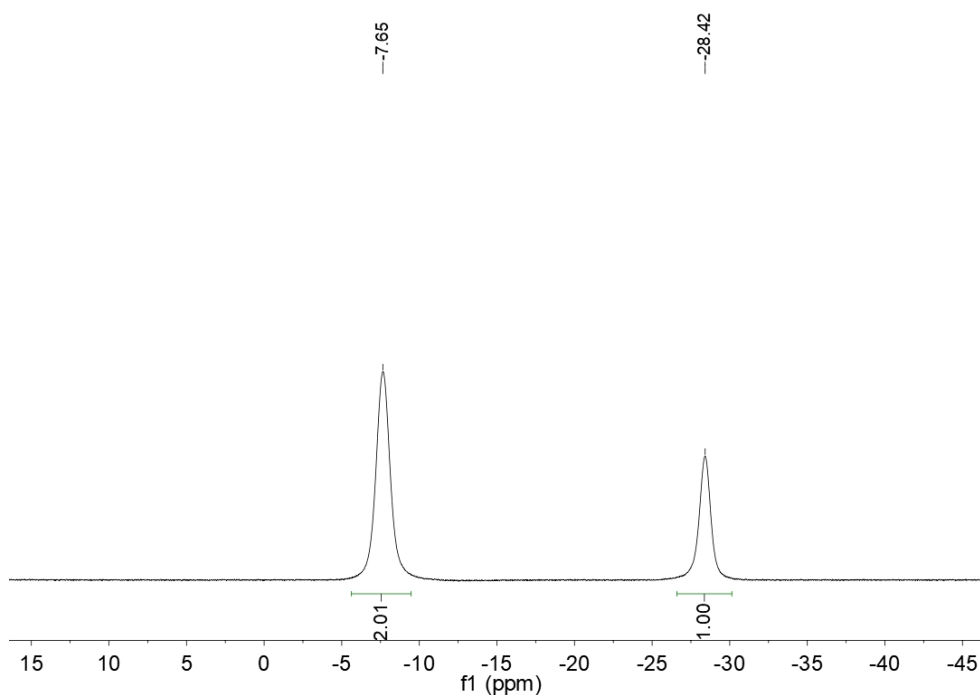


The IR spectrum of the prepared **74**.

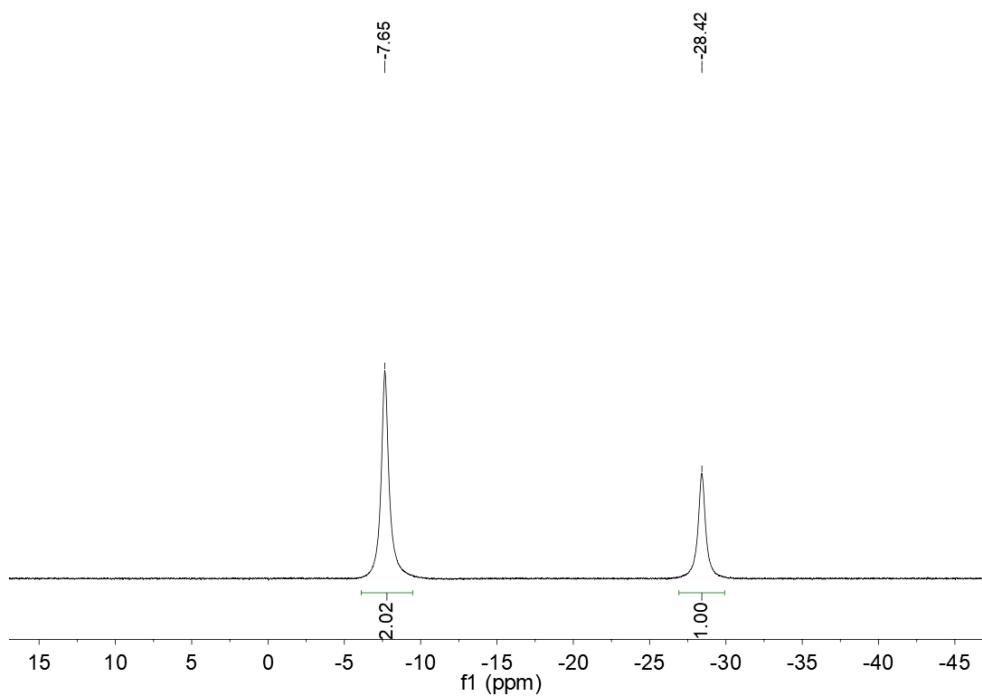


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:3). Yield 53%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.65 (*br*, 2 B of **BHB**), -28.42 (*br*, B of **BH₂**) ppm.

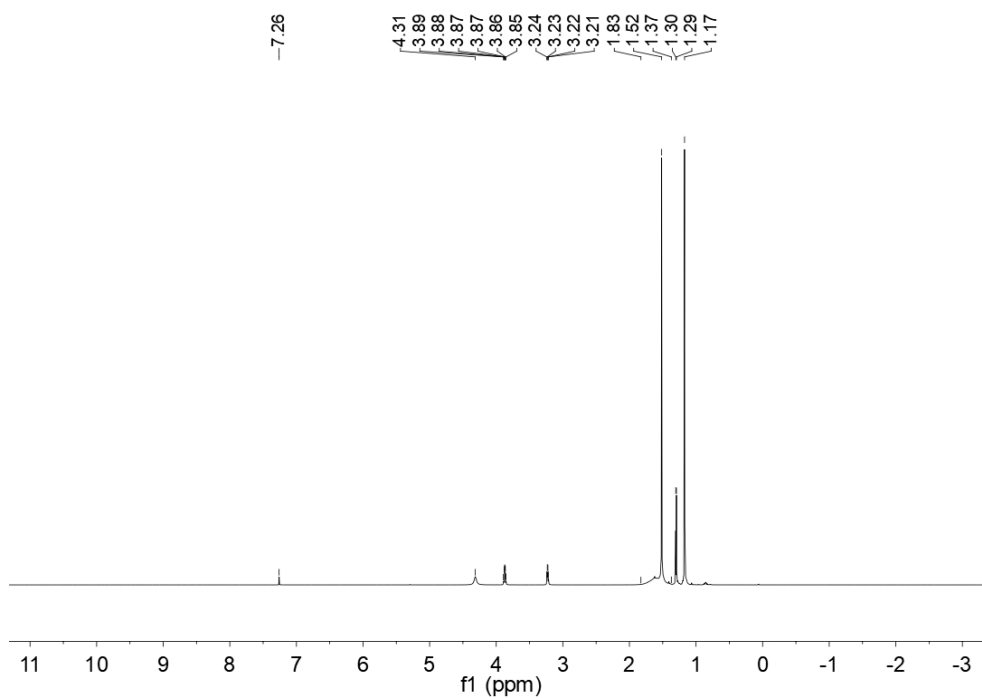
$^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.65 (*br*, 2 B of **BHB**), -28.42 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.31 (*br*, 2 H of **NH₂**), 3.87 (*m*, H of **CH**), 3.23 (*q*, H of **CH**), 1.83-1.37 (*br*, 7 H of **B₃H₇**), 1.52 (*s*, 9 H of 3 **CH₃**), 1.30 (*d*, 3 H of **CH₃**), 1.17 (*s*, 9 H of 3 **CH₃**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.31 (*br*, 2 H of **NH₂**), 3.87 (*m*, H of **CH**), 3.23 (*q*, H of **CH**), 1.60 (*s*, 7 H of **B₃H₇**), 1.52 (*s*, 9 H of 3 **CH₃**), 1.31 (*d*, 3 H of **CH₃**), 1.17 (*s*, 9 H of 3 **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 168.31 (*s*, 1 C), 84.84 (*s*, 1 C), 75.44 (*s*, 1 C), 66.98 (*s*, 1 C), 66.66 (*s*, 1 C), 28.77 (*s*, 3 C), 28.07 (*s*, 3 C), 21.72 (*s*, 1 C) ppm. IR (cm^{-1}): 3216 (*w*), 2978 (*m*), 2509 (*w*), 2415 (*w*), 1719 (*m*), 1366 (*s*), 1255 (*m*), 1161 (*s*), 963 (*w*), 835 (*w*), 714 (*w*). HRMS m/z calcd for $\text{C}_{12}\text{H}_{32}\text{B}_3\text{NO}_3$ $[\text{M}+\text{Na}]^+$: 294.2560, found: 294.2560.



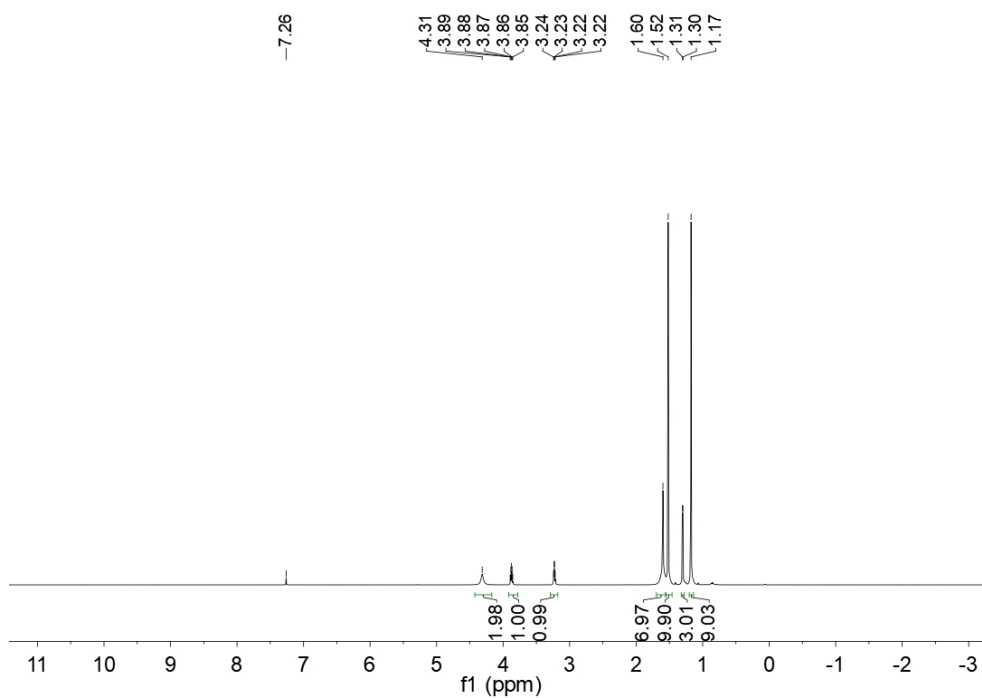
The ^{11}B NMR spectrum of the prepared **75** in CDCl_3



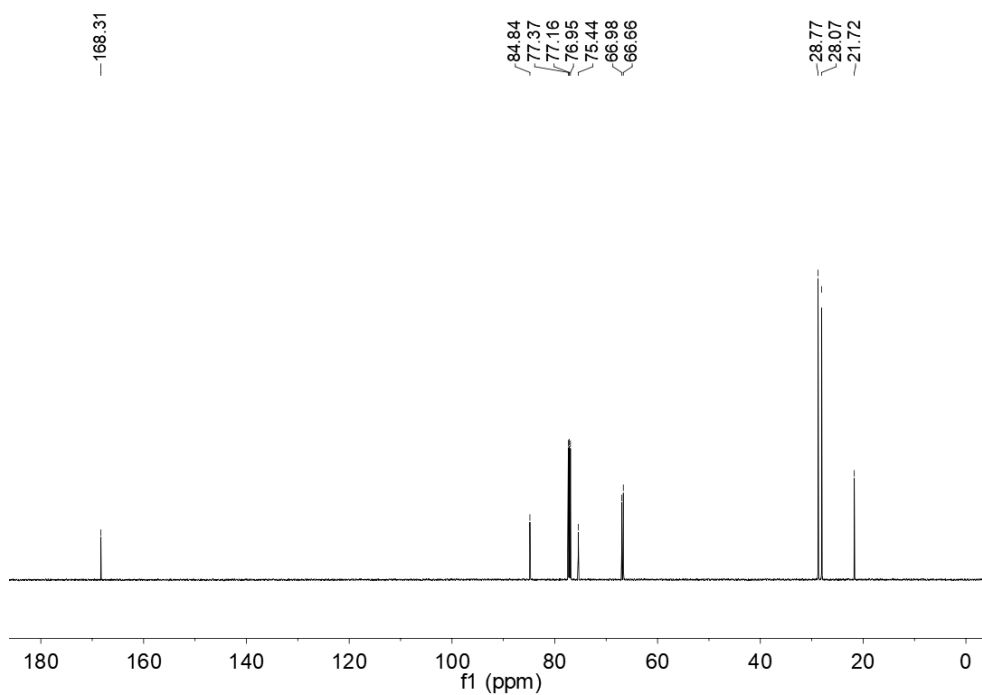
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **75** in CDCl_3 .



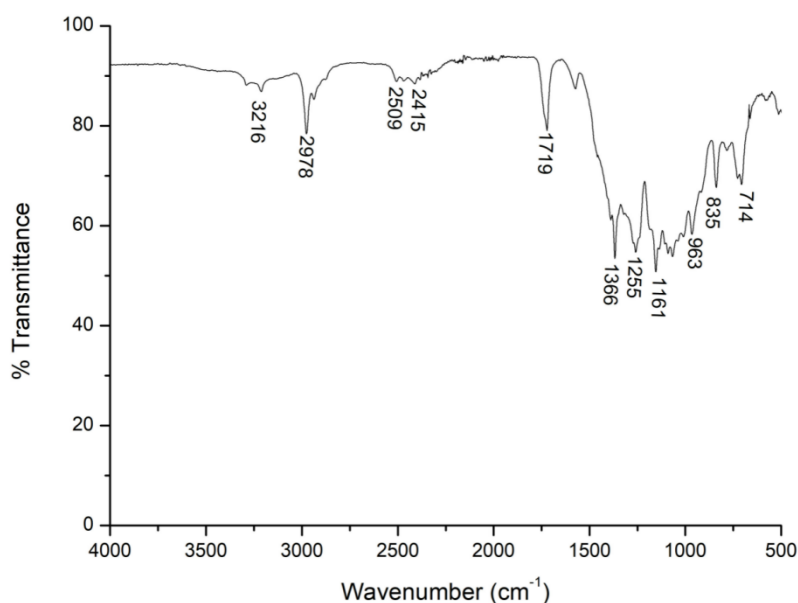
The ^1H NMR spectrum of the prepared **75** in CDCl_3 .



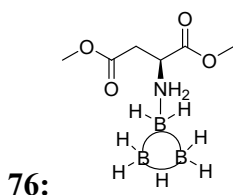
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **75** in CDCl_3 .



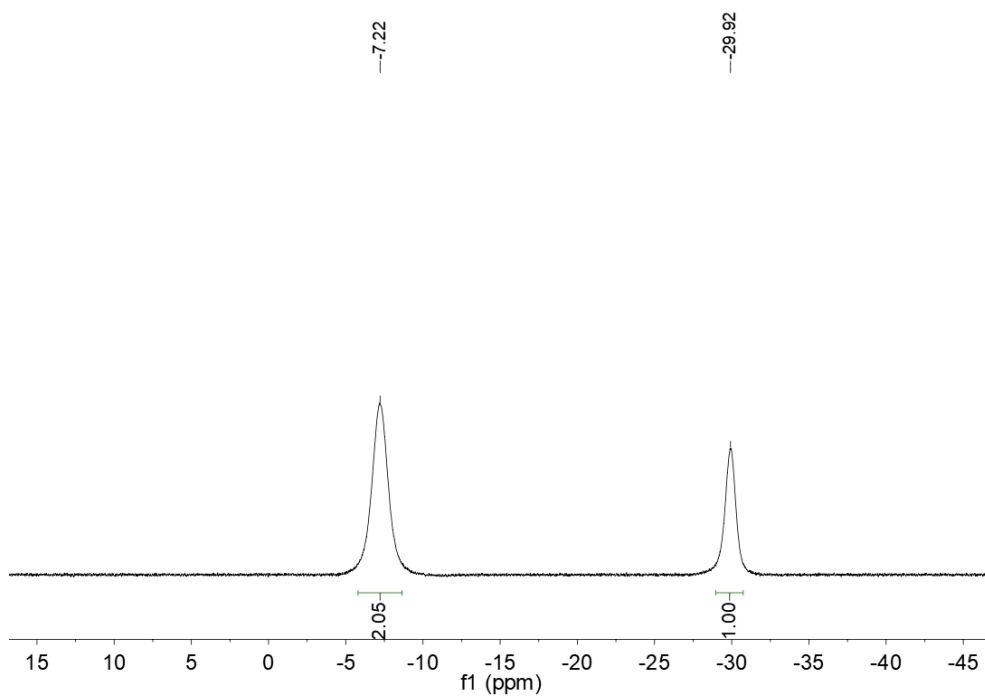
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **75** in CDCl_3 .



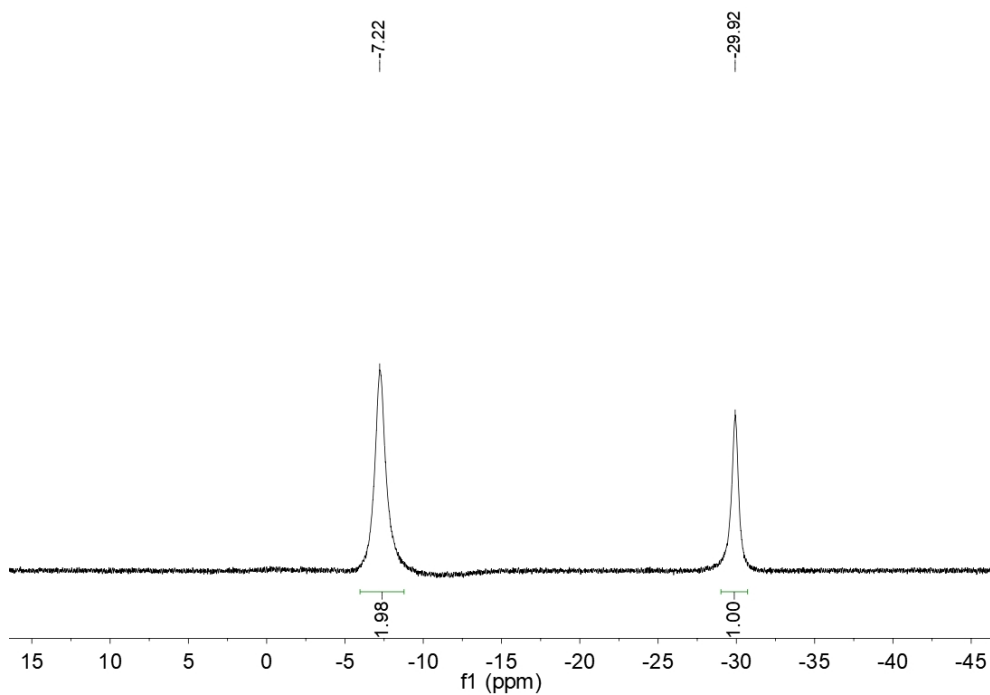
The IR spectrum of the prepared **75**.



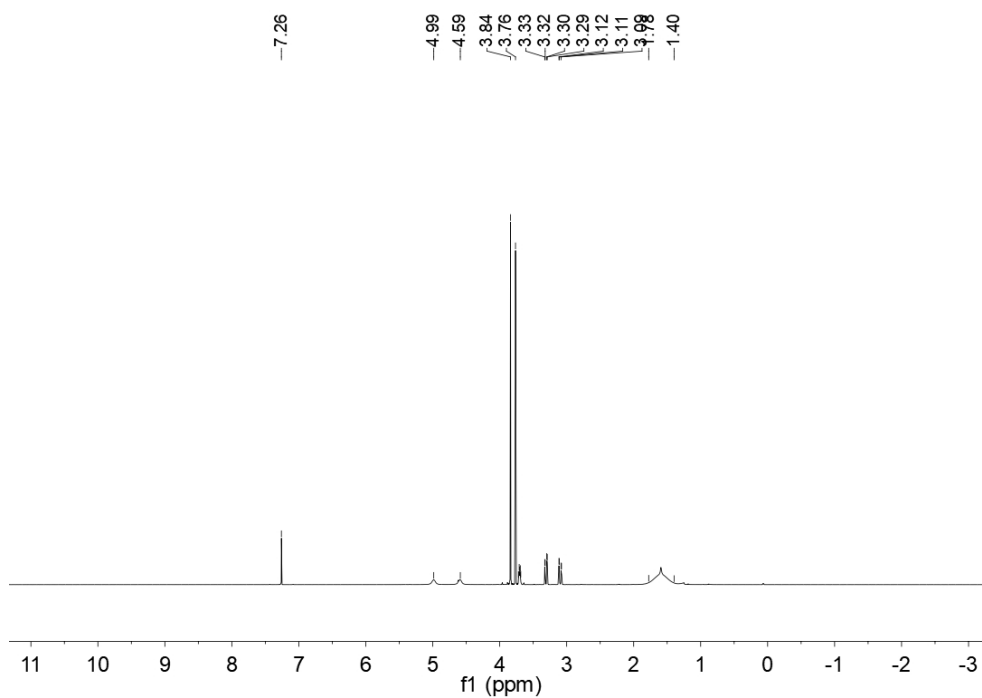
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 1:1). Yield 62%, colorless oil. ¹¹B NMR (193 MHz, CDCl₃): δ -7.22 (*br*, 2 B of **BHB**), -29.92 (*br*, B of **BH₂**) ppm. ¹¹B{¹H} NMR (193 MHz, CDCl₃): δ -7.22 (*br*, 2 B of **BHB**), -29.92 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 4.99 (*br*, 1 H of **NH₂**), 4.59 (*br*, 1 H of **NH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.76 (*s*, 3 H of **CH₃**), 3.71 (*m*, H of **CH**), 3.31 (*dd*, 1 H of **CH₂**), 3.10 (*dd*, 1 H of **CH₂**), 1.78-1.40 (*br*, 7 H of **B₃H₇**) ppm. ¹H{¹¹B} NMR (600 MHz, CDCl₃): δ 4.98 (*br*, 1 H of **NH₂**), 4.60 (*br*, 1 H of **NH₂**), 3.84 (*s*, 3 H of **CH₃**), 3.77 (*s*, 3 H of **CH₃**), 3.71 (*m*, H of **CH**), 3.31 (*dd*, 1 H of **CH₂**), 3.10 (*dd*, 1 H of **CH₂**), 1.59 (*s*, 7 H of **B₃H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 171.69 (*s*, 1 C), 169.42 (*s*, 1 C), 56.10 (*s*, 1 C), 53.98 (*s*, 1 C), 52.95 (*s*, 1 C), 30.74 (*s*, 1 C) ppm. IR (cm⁻¹): 3233 (*w*), 2962 (*w*), 2498 (*m*), 2432 (*m*), 1730 (*s*), 1575 (*w*), 1443 (*s*), 1371 (*m*), 1283 (*s*), 1216 (*s*), 1156 (*s*), 1100 (*w*), 984 (*m*), 846 (*w*). HRMS *m/z* calcd for C₆H₁₈B₃NO₄ [M+Na]⁺: 224.1410, found: 224.1410.



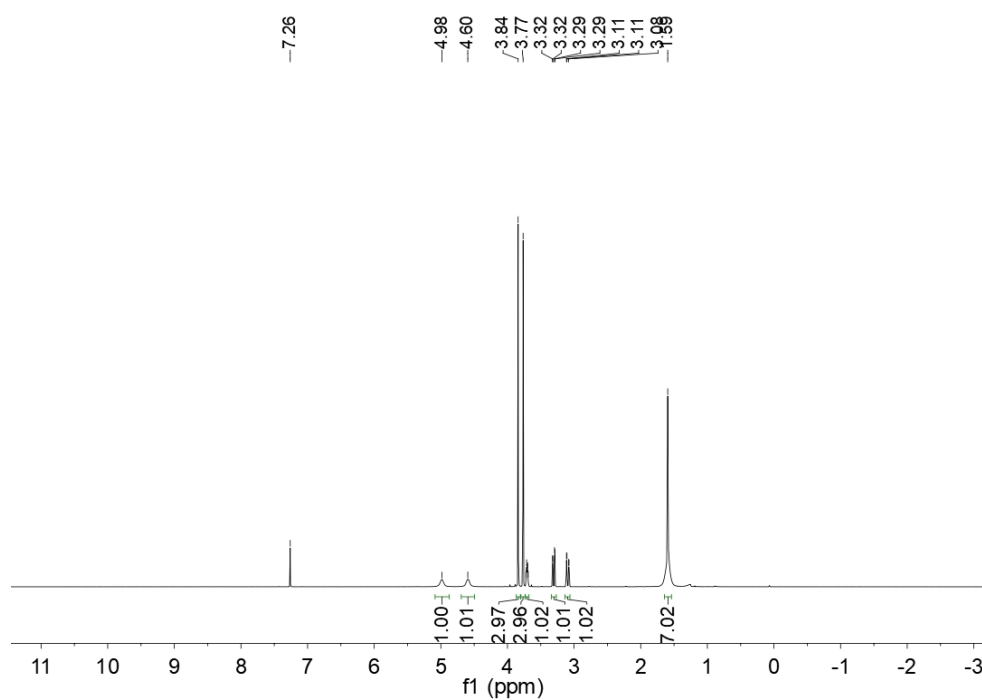
The ^{11}B NMR spectrum of the prepared **76** in CDCl_3



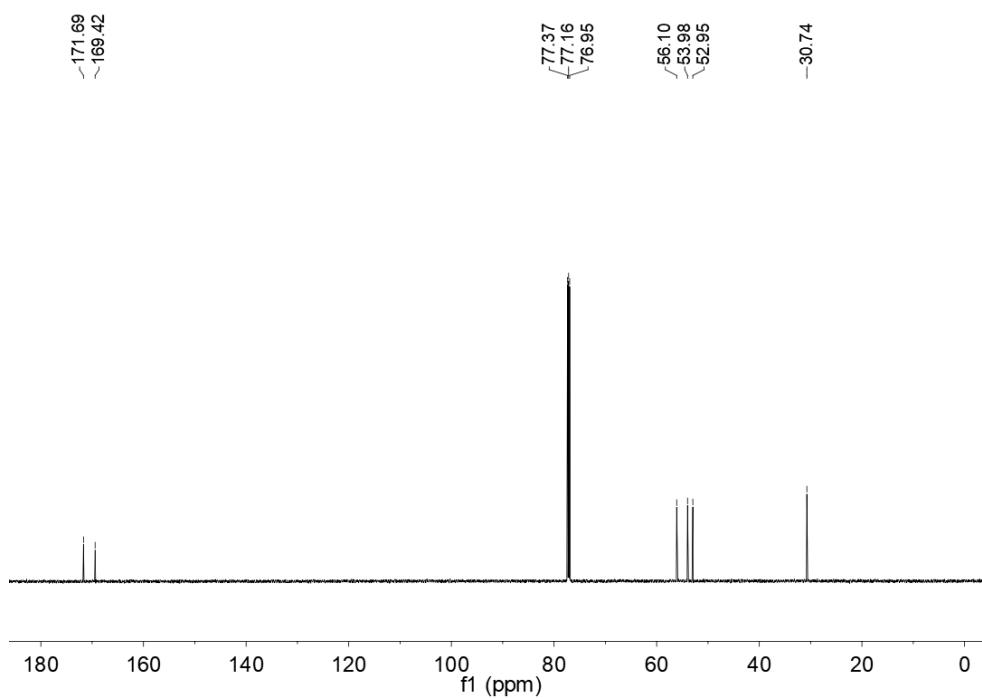
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **76** in CDCl_3 .



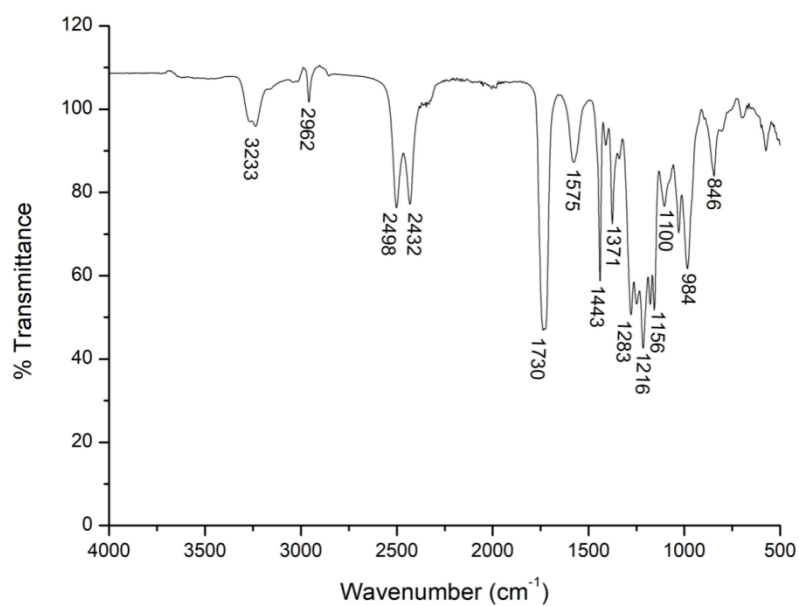
The ^1H NMR spectrum of the prepared **76** in CDCl_3 .



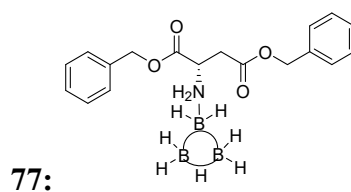
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **76** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **76** in CDCl_3 .

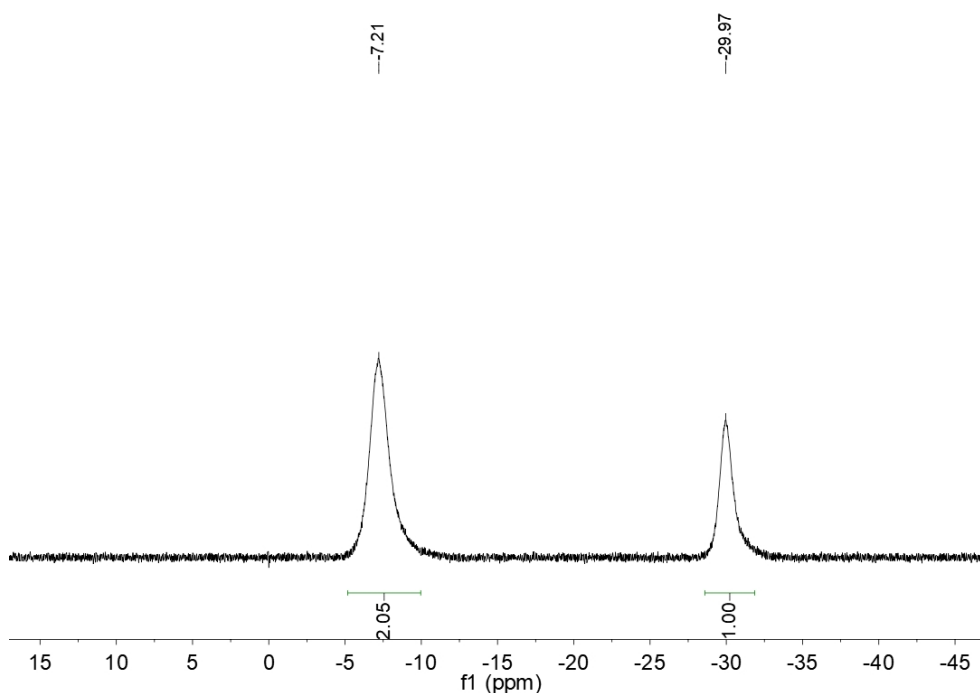


The IR spectrum of the prepared **76**.

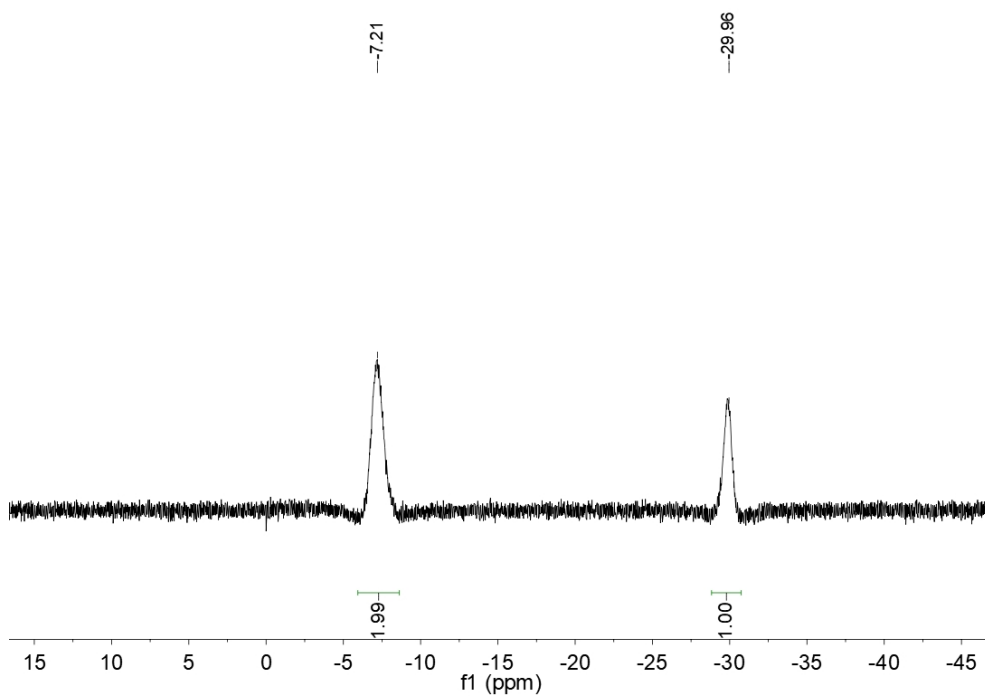


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 54%, colorless oil. ^{11}B NMR (193 MHz, CDCl_3): δ -7.21 (*br*, 2 B of **BHB**), -29.97 (*br*, B of **BH₂**) ppm.

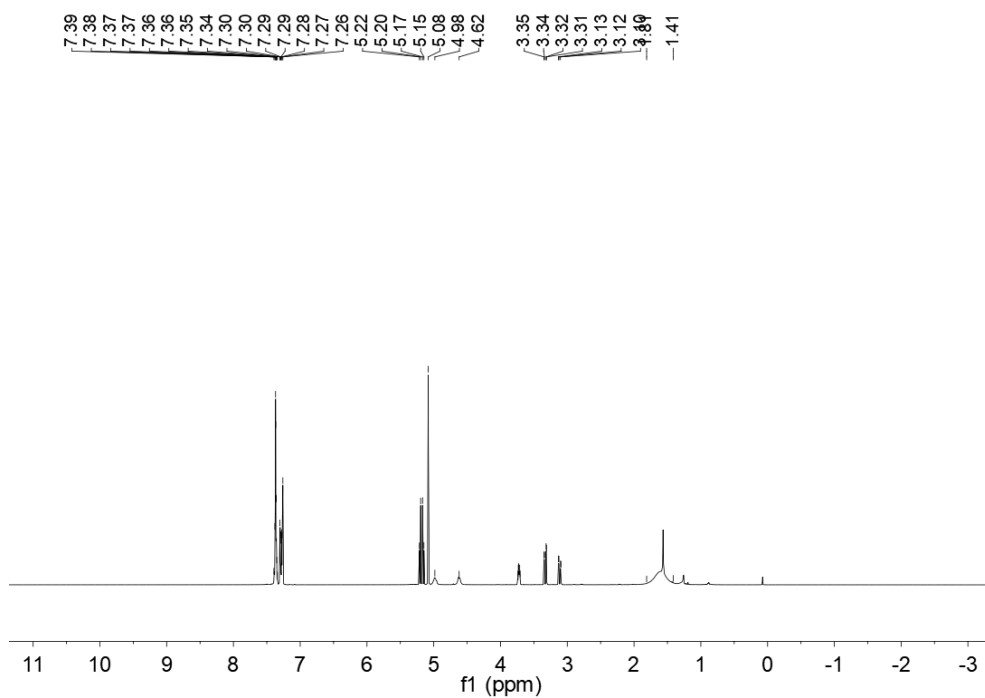
$^{11}\text{B}\{^1\text{H}\}$ NMR (193 MHz, CDCl_3): δ -7.21 (*br*, 2 B of **BHB**), -29.96 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 7.37 (*m*, 6 H of 6 **CH**), 7.28 (*m*, 4 H of 4 **CH**), 5.19 (*q*, 2 H of **CH₂**), 5.08 (*s*, 2 H of **CH₂**), 4.98 (*br*, 1 H of **NH₂**), 4.62 (*br*, 1 H of **NH₂**), 3.73 (*m*, H of **CH**), 3.33 (*dd*, 1 H of **CH₂**), 3.11 (*dd*, 1 H of **CH₂**), 1.81-1.41 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{11}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 7.37 (*m*, 6 H of 6 **CH**), 7.28 (*m*, 4 H of 4 **CH**), 5.19 (*q*, 2 H of **CH₂**), 5.08 (*s*, 2 H of **CH₂**), 4.98 (*br*, 1 H of **NH₂**), 4.62 (*br*, 1 H of **NH₂**), 3.73 (*m*, H of **CH**), 3.33 (*dd*, 1 H of **CH₂**), 3.11 (*dd*, 1 H of **CH₂**), 1.61 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 171.00 (*s*, 1 C), 168.95 (*s*, 1 C), 134.63 (*s*, 1 C), 134.15 (*s*, 1 C), 129.23 (*s*, 1 C), 128.98 (*s*, 1 C), 128.96 (*s*, 2 C), 128.91 (*s*, 2 C), 128.83 (*s*, 2 C), 128.65 (*s*, 2 C), 68.99 (*s*, 1 C), 67.89 (*s*, 1 C), 56.22 (*s*, 1 C), 31.02 (*s*, 1 C) ppm. IR (cm^{-1}): 3244 (*w*), 2956 (*w*), 2498 (*m*), 2432 (*m*), 1730 (*s*), 1586 (*w*), 1459 (*m*), 1355 (*w*), 1277 (*m*), 1172 (*s*), 968 (*m*), 742 (*m*), 692 (*s*), 581 (*w*). HRMS m/z calcd for $\text{C}_{18}\text{H}_{26}\text{B}_3\text{NO}_4$ $[\text{M}+\text{Na}]^+$: 376.2042, found: 376.2047.



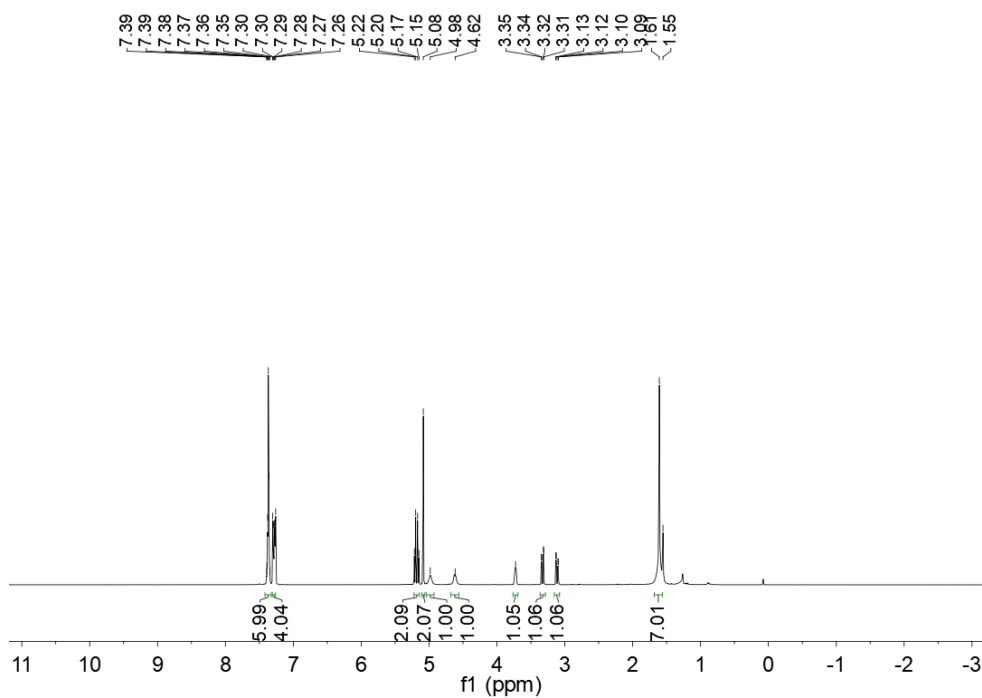
The ^{11}B NMR spectrum of the prepared **77** in CDCl_3



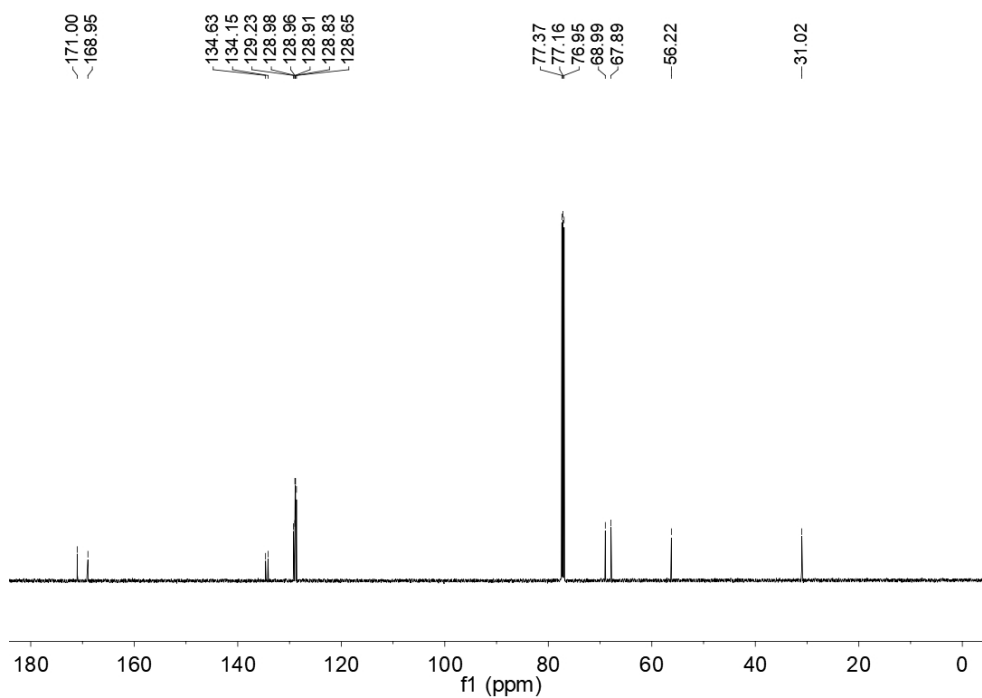
The $^{11}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **77** in CDCl_3 .



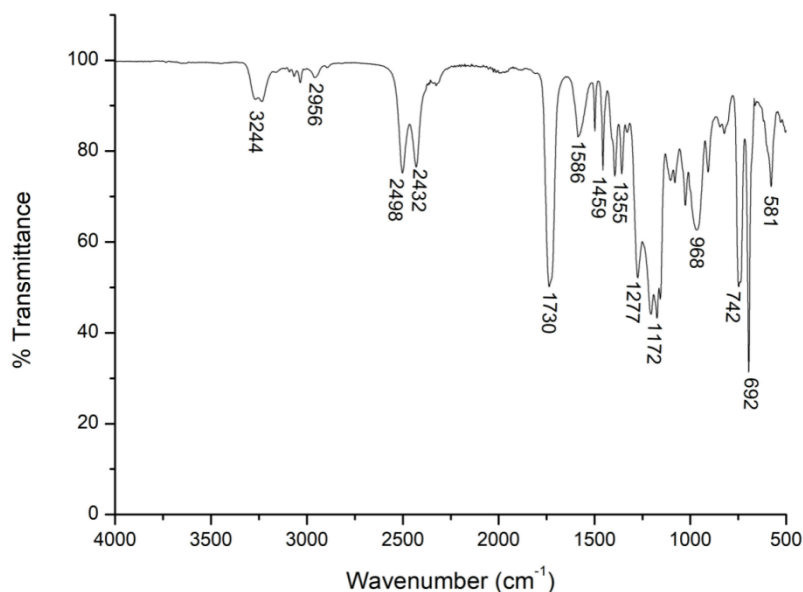
The ^1H NMR spectrum of the prepared **77** in CDCl_3 .



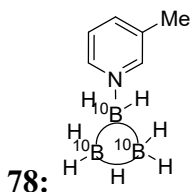
The $^1\text{H}\{^{11}\text{B}\}$ NMR spectrum of the prepared **77** in CDCl_3 .



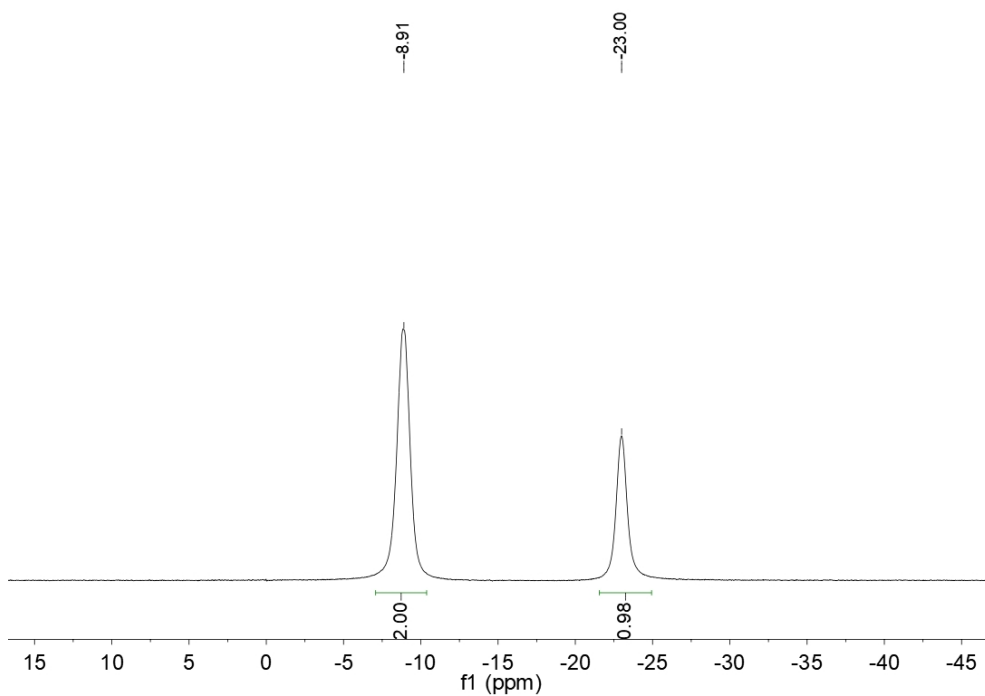
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **77** in CDCl_3 .



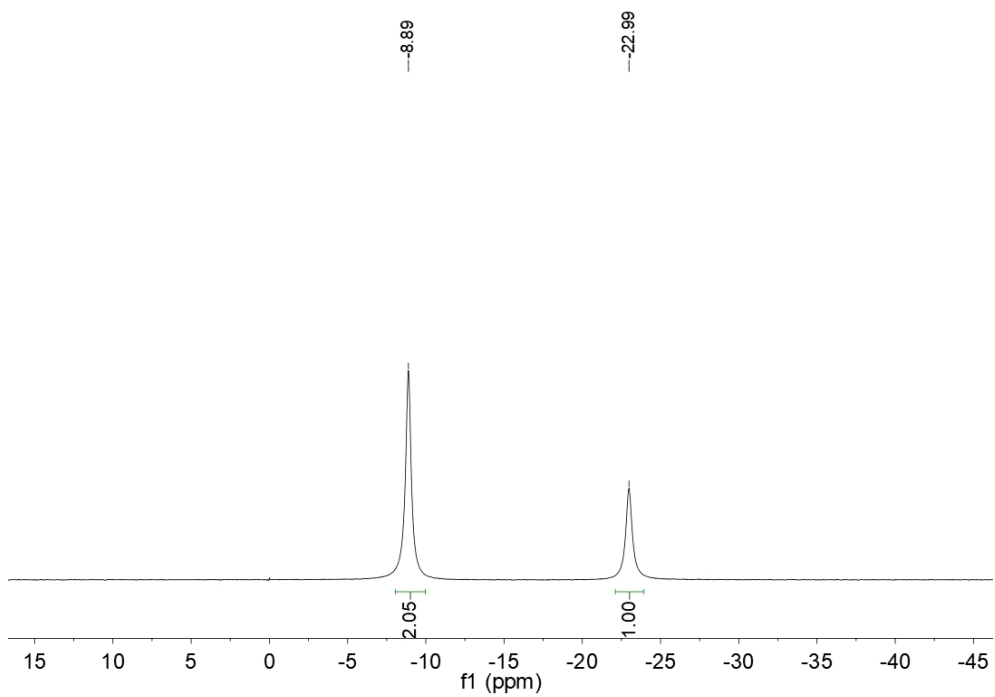
The IR spectrum of the prepared **77**.



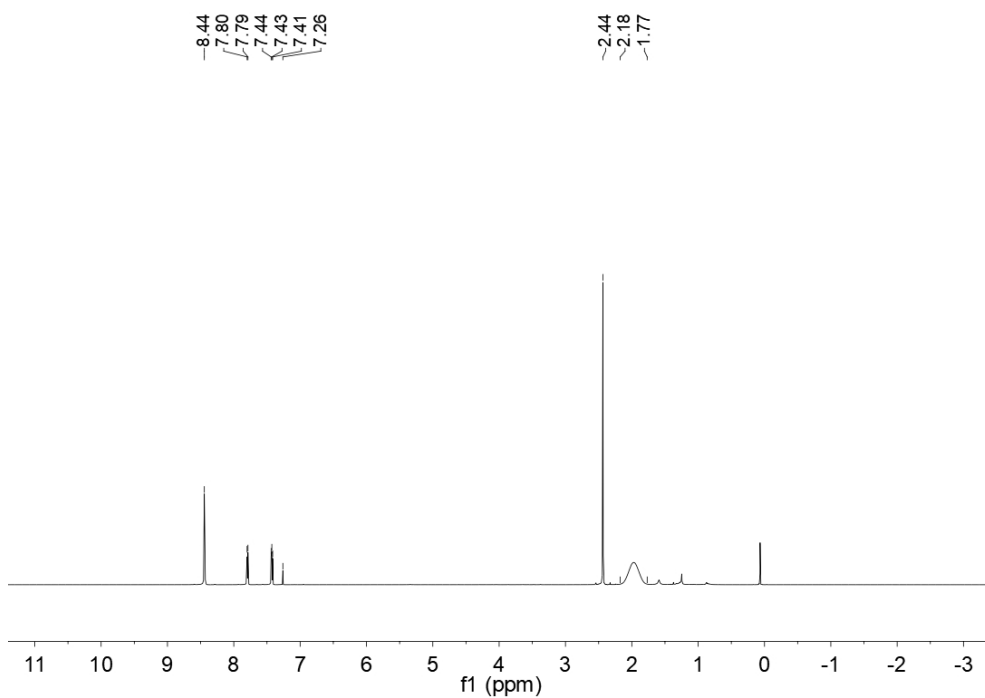
Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 80%, white solid, melting point: 41-42 °C. ^{10}B NMR (64 MHz, CDCl_3): δ -8.91 (*br*, 2 B of **BHB**), -23.00 (*br*, B of **BH₂**) ppm. $^{10}\text{B}\{^1\text{H}\}$ NMR (64 MHz, CDCl_3): δ -8.89 (*br*, 2 B of **BHB**), -22.99 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 8.44 (*d*, 2 H of 2 **CH**), 7.80 (*d*, H of **CH**), 7.43 (*dd*, H of **CH**), 2.44 (*s*, 3 H of **CH₃**), 2.18-1.77 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{10}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 8.43 (*d*, 2 H of 2 **CH**), 7.80 (*d*, H of **CH**), 7.43 (*dd*, H of **CH**), 2.44 (*s*, 3 H of **CH₃**), 1.97 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 147.56 (*s*, 1 C), 144.83 (*s*, 1 C), 141.33 (*s*, 1 C), 136.09 (*s*, 1 C), 124.96 (*s*, 1 C), 18.64 (*s*, 1 C) ppm. IR (cm^{-1}): 3100 (*w*), 3061 (*w*), 2924 (*w*), 2851 (*w*), 2504 (*s*), 2448 (*s*), 1984 (*w*), 1618 (*w*), 1482 (*m*), 1387 (*m*), 1161 (*m*), 1089 (*m*), 973 (*m*), 802 (*s*), 686 (*s*), 559 (*w*). HRMS *m/z* calcd for $\text{C}_6\text{H}_{14}^{10}\text{B}_3\text{N}$ [$\text{M}+\text{Na}$] $^+$: 153.1408, found: 153.1408.



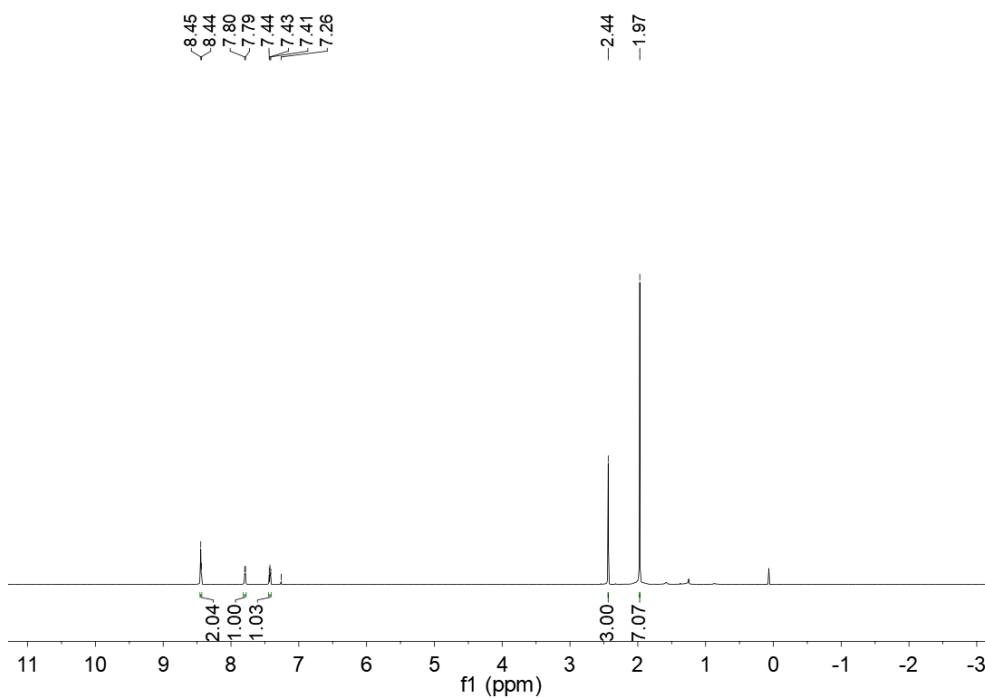
The ^{10}B NMR spectra of the prepared **78** in CDCl_3



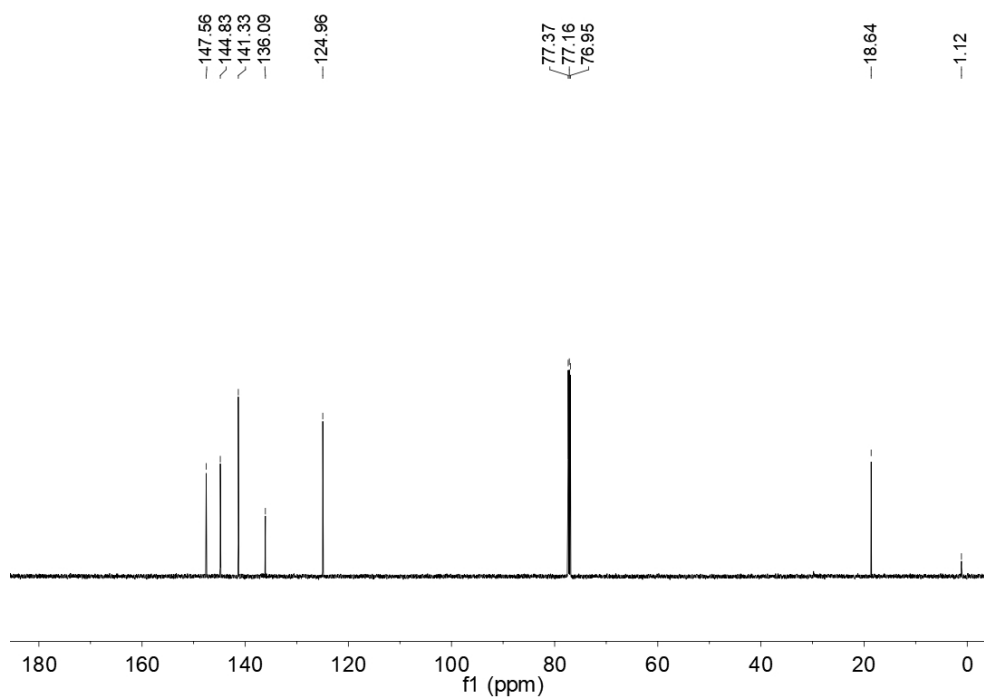
The $^{10}\text{B}\{^1\text{H}\}$ NMR spectra of the prepared **78** in CDCl_3 .



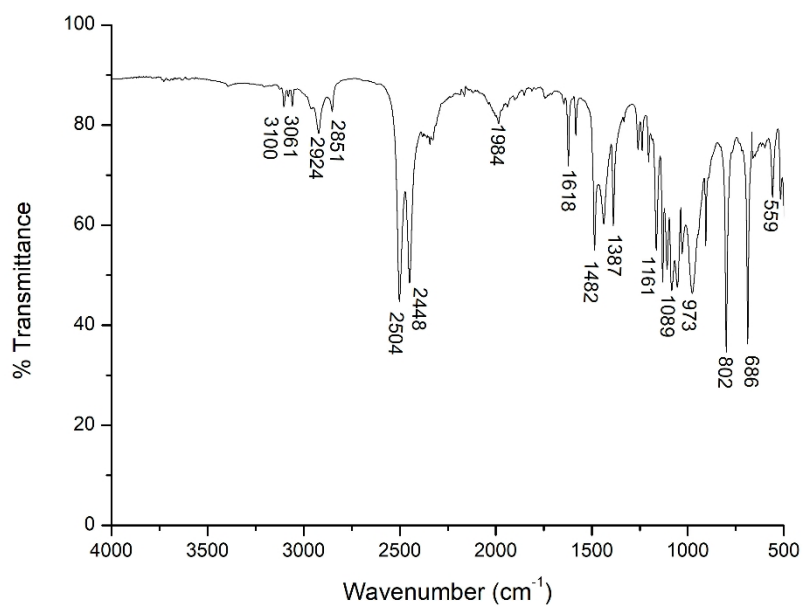
The ^1H NMR spectra of the prepared **78** in CDCl_3 .



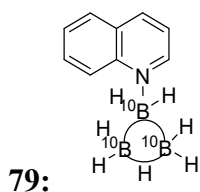
The $^1\text{H}\{^{10}\text{B}\}$ NMR spectra of the prepared **78** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **78** in CDCl_3 .

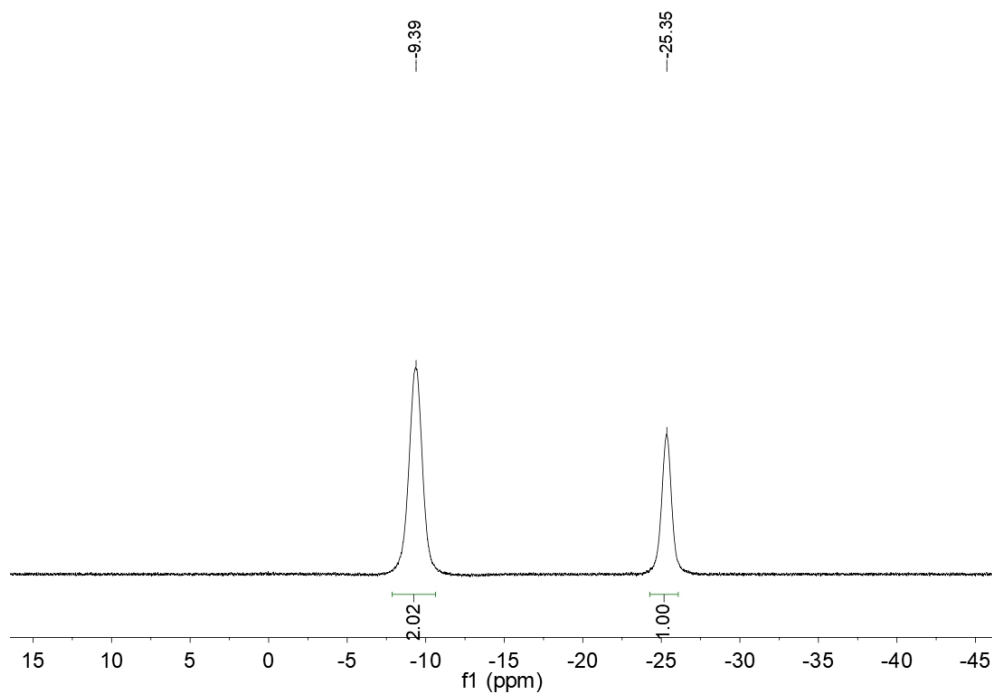


The IR spectrum of the prepared **78**.

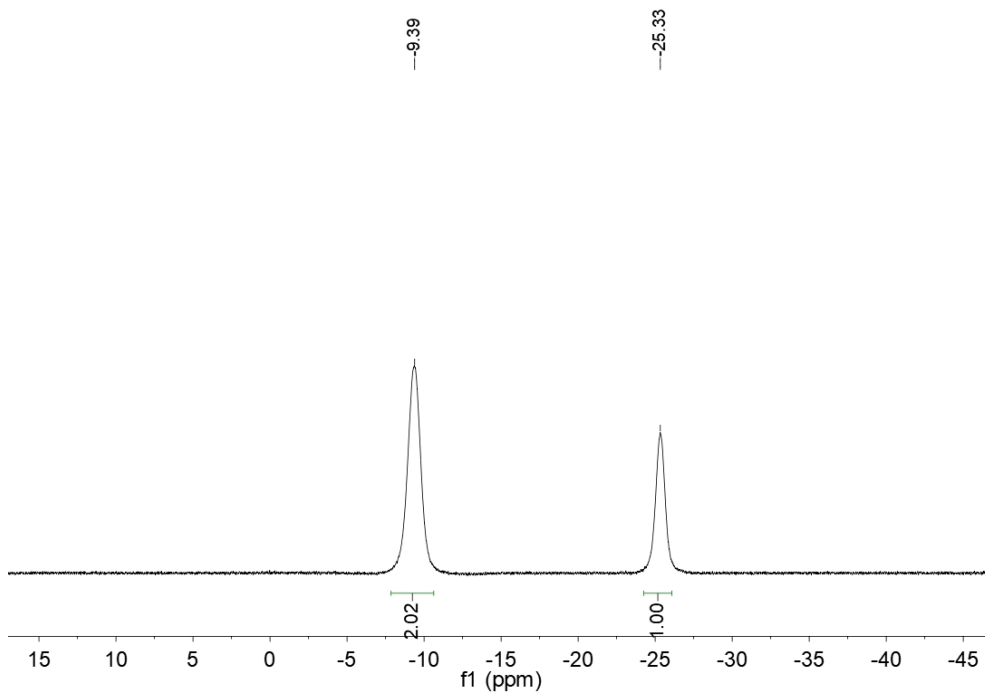


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 77%, white solid, melting point: 113-114 °C. ^{10}B NMR (64 MHz, CDCl_3): δ -9.39 (*br*, 2 B of **BHB**),

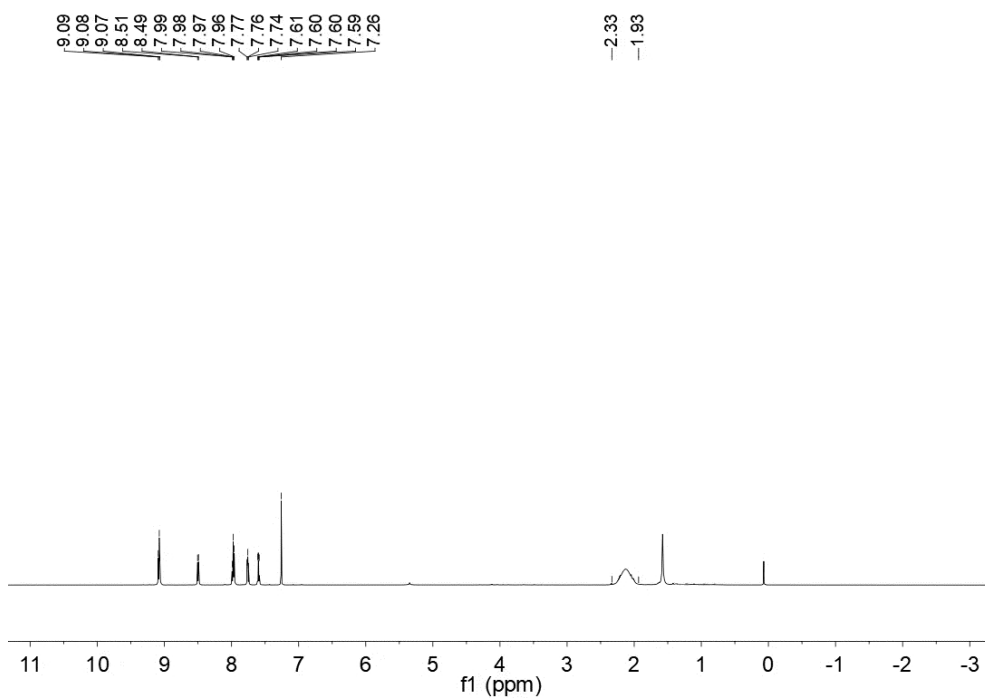
-25.35 (*br*, B of **BH**₂) ppm. ¹⁰B{¹H} NMR (64 MHz, CDCl₃): δ -9.38 (*br*, 2 B of **BHB**), -25.35 (*br*, B of **BH**₂) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.08 (*t*, 2 H of 2 **CH**), 8.50 (*d*, H of **CH**), 7.98 (*m*, 2 H of 2 **CH**), 7.76 (*t*, H of **CH**), 7.60 (*dd*, H of **CH**), 2.33-1.93 (*br*, 7 H of B_{3**H**₇) ppm. ¹H{¹⁰B} NMR (600 MHz, CDCl₃): δ 9.08 (*m*, 2 H of 2 **CH**), 8.50 (*d*, H of **CH**), 7.98 (*m*, 2 H of 2 **CH**), 7.76 (*t*, H of **CH**), 7.60 (*dd*, H of **CH**), 2.13 (*s*, 7 H of B_{3**H**₇) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 149.96 (1 C), 143.49 (1 C), 142.55 (1 C), 132.87 (1 C), 129.20 (1 C), 128.92 (1 C), 128.60 (1 C), 124.69 (1 C), 120.55 (1 C) ppm. IR (cm⁻¹): 3354 (w), 2924 (m), 2846 (w), 2509 (m), 2448 (m), 2349 (w), 1597 (w), 1515 (m), 1322 (w), 1167 (m), 1100 (m), 1039 (m), 952 (w), 796 (s), 764 (s), 570 (w). HRMS *m/z* calcd for C₉H₁₄¹⁰B₃N [M+Na]⁺: 189.1409, found: 189.1410.}}



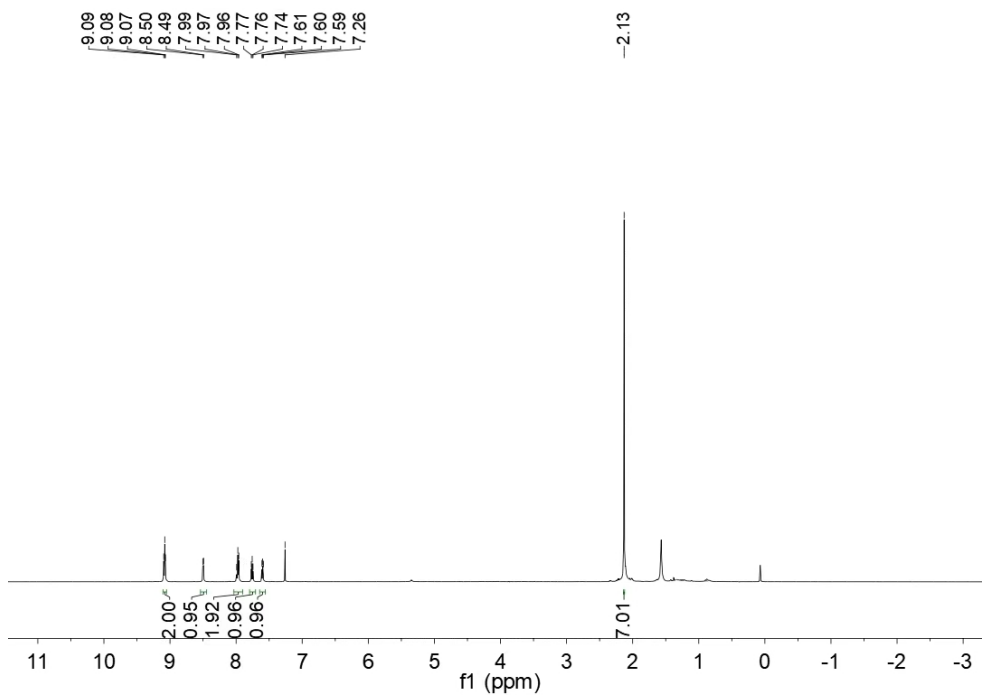
The ¹⁰B NMR spectrum of the prepared **79** in CDCl₃.



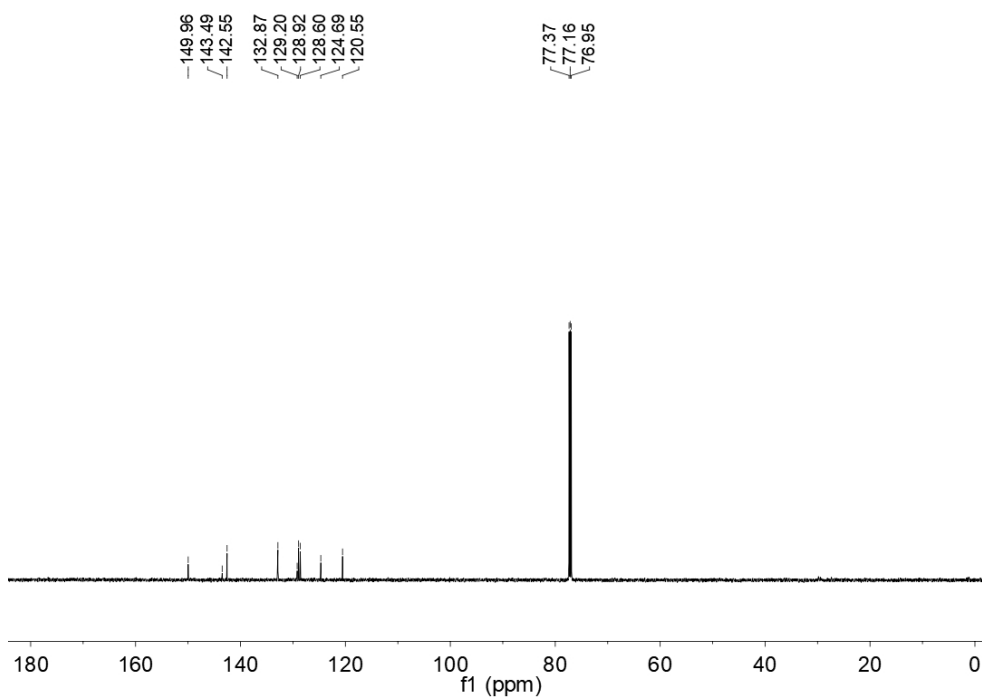
The $^{10}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **79** in CDCl_3 .



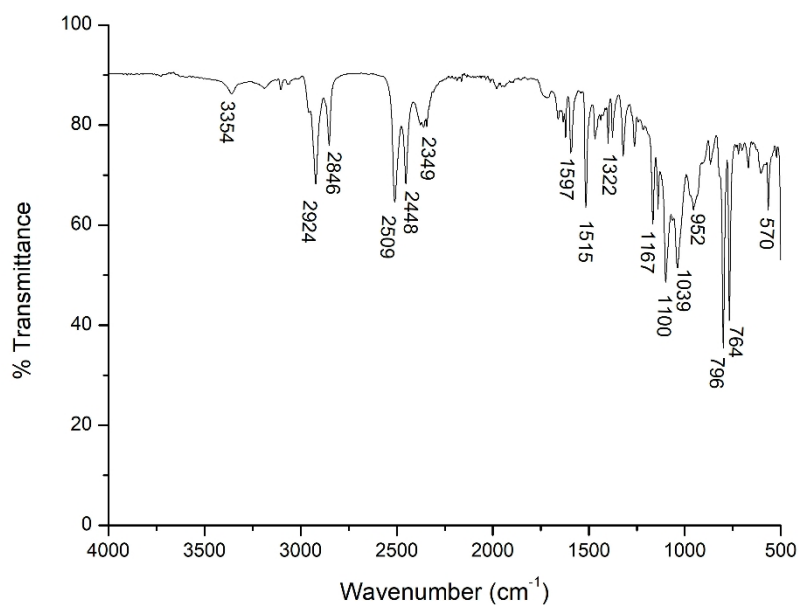
The ^1H NMR spectrum of the prepared **79** in CDCl_3 .



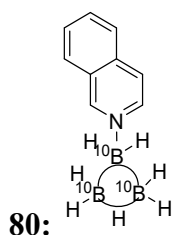
The $^1\text{H}\{^{10}\text{B}\}$ NMR spectrum of the prepared **79** in CDCl_3 .



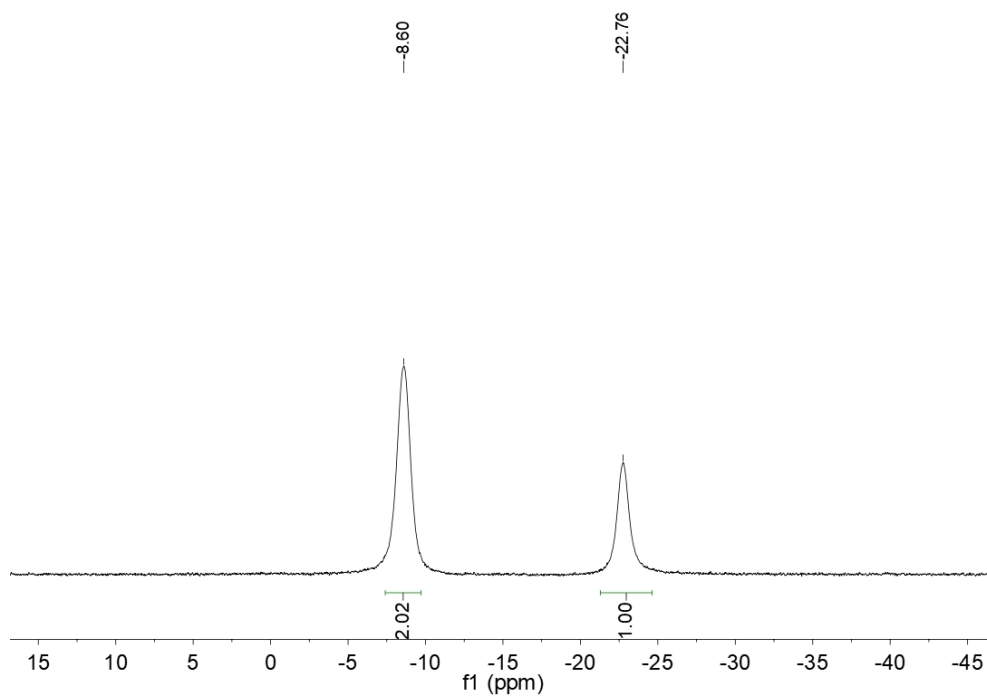
The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **79** in CDCl_3 .



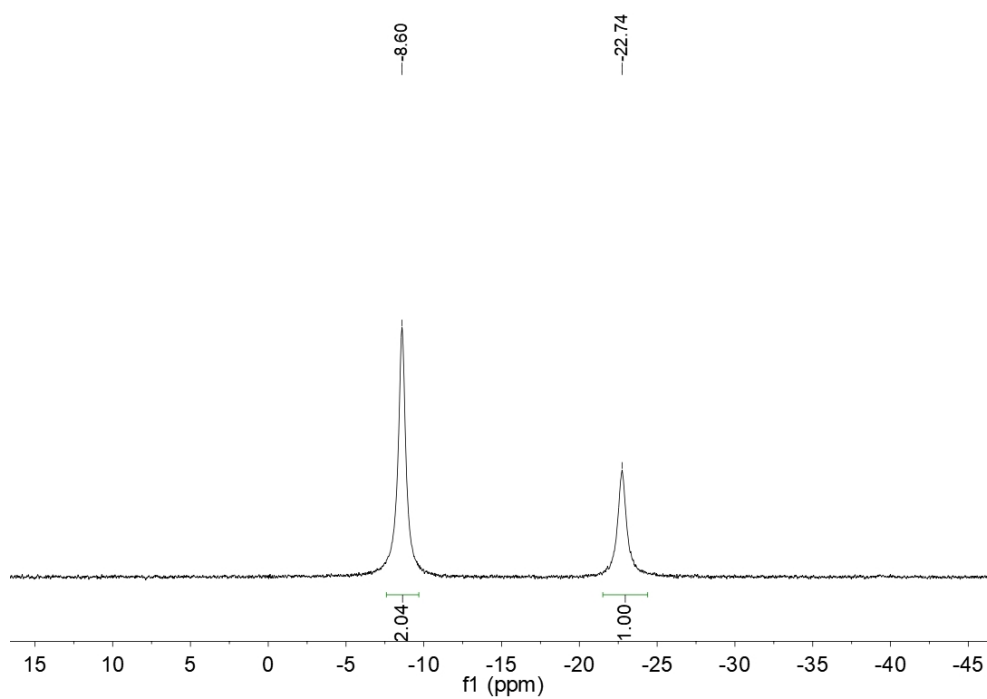
The IR spectrum of the prepared **79**.



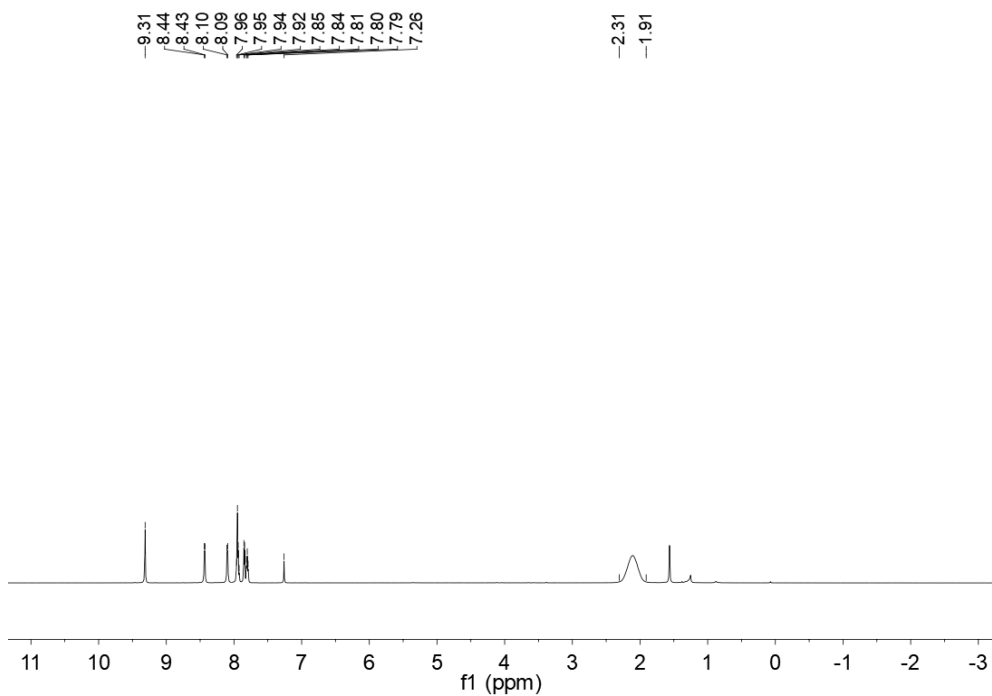
Flash chromatography (silica gel, petroleum ether : CH₂Cl₂ = 2:1). Yield 82%, white solid, melting point: 105-106 °C. ¹⁰B NMR (64 MHz, CDCl₃): δ -8.60 (*br*, 2 B of **BHB**), -22.76 (*br*, B of **BH₂**) ppm. ¹⁰B{¹H} NMR (64 MHz, CDCl₃): δ -8.60 (*br*, 2 B of **BHB**), -22.76 (*br*, B of **BH₂**) ppm. ¹H NMR (600 MHz, CDCl₃): δ 9.31 (*s*, H of **CH**), 8.44 (*d*, H of **CH**), 8.10 (*d*, H of **CH**), 7.94 (*m*, 2 H of 2 **CH**), 7.85 (*d*, H of **CH**), 7.80 (*t*, H of **CH**), 2.31-1.91 (*br*, 7 H of B₃**H₇**) ppm. ¹H{¹⁰B} NMR (600 MHz, CDCl₃): δ 9.31 (*s*, H of **CH**), 8.44 (*d*, H of **CH**), 8.10 (*d*, H of **CH**), 7.95 (*m*, 2 H of 2 **CH**), 7.85 (*d*, H of **CH**), 7.80 (*t*, H of **CH**), 2.11 (*s*, 7 H of B₃**H₇**) ppm. ¹³C{¹H} NMR (151 MHz, CDCl₃): δ 151.15 (*s*, 1 C), 139.39 (*s*, 1 C), 136.60 (*s*, 1 C), 134.47 (*s*, 1 C), 129.86 (*s*, 1 C), 129.20 (*s*, 1 C), 127.87 (*s*, 1 C), 126.75 (*s*, 1 C), 123.04 (*s*, 1 C) ppm. IR (cm⁻¹): 3084 (*w*), 2924 (*w*), 2481 (*s*), 2437 (*s*), 2327 (*w*), 1636 (*m*), 1603 (*w*), 1443 (*w*), 1382 (*s*), 1277 (*m*), 1156 (*m*), 1084 (*s*), 1039 (*w*), 963 (*m*), 868 (*m*), 813 (*s*), 747 (*s*). HRMS *m/z* calcd for C₉H₁₄¹⁰B₃N [M+Na]⁺: 189.1409, found: 189.1409.



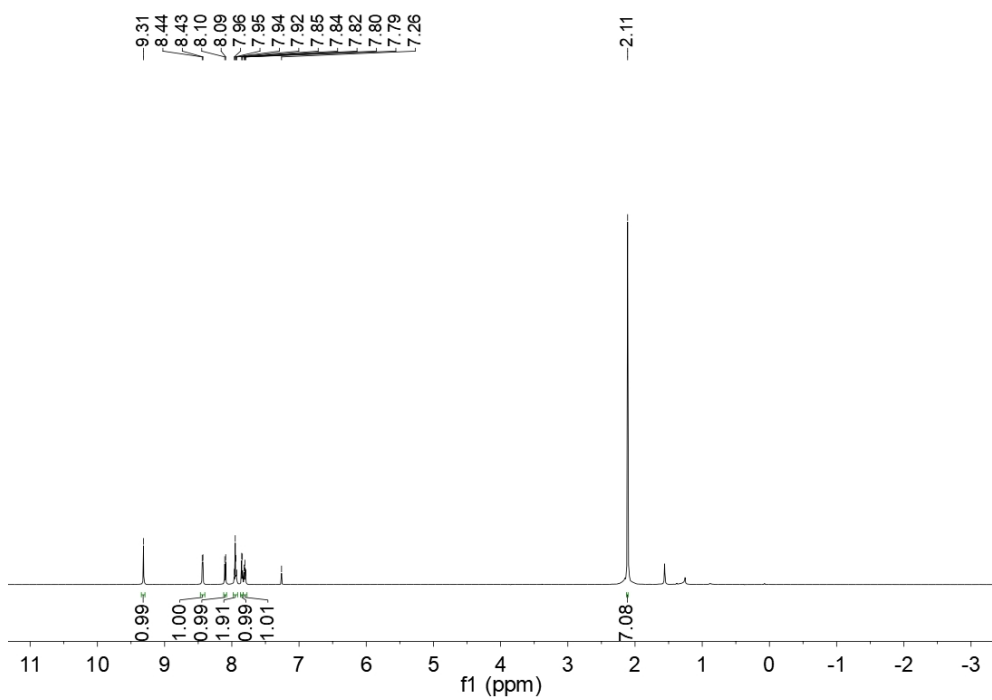
The ^{10}B NMR spectrum of the prepared **80** in CDCl_3 .



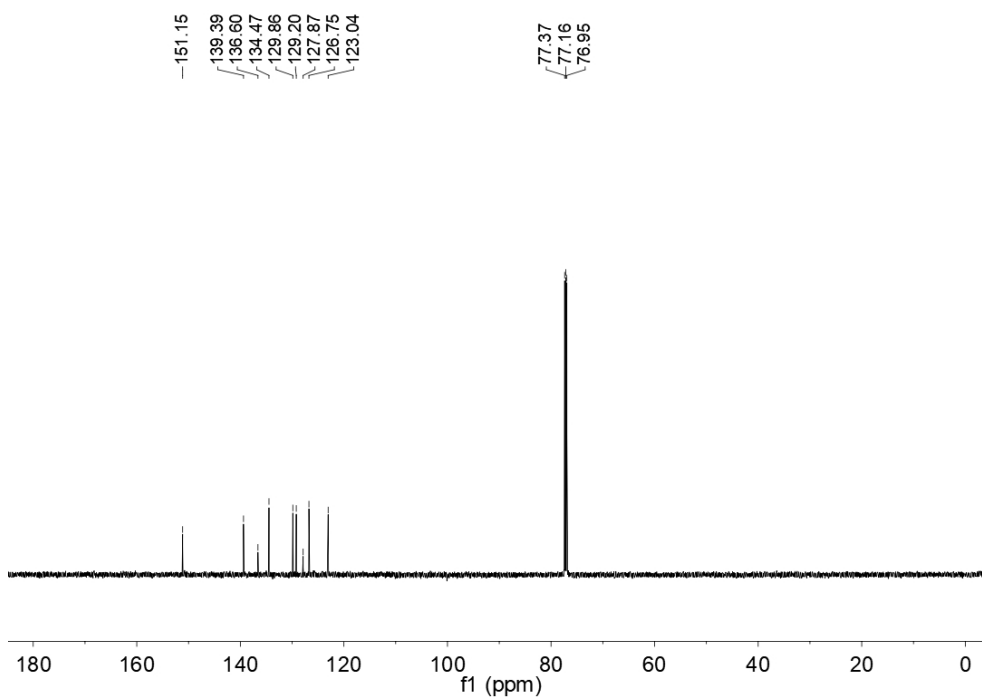
The $^{10}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **80** in CDCl_3 .



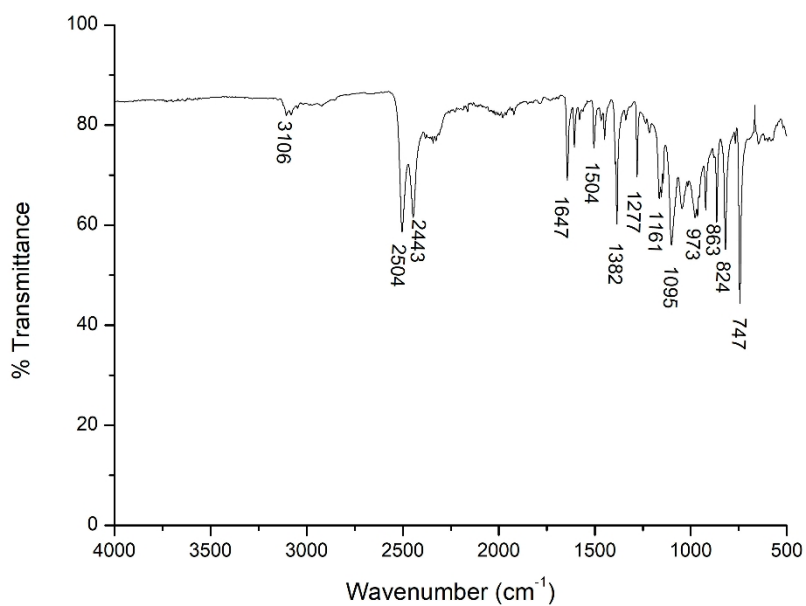
The ^1H NMR spectrum of the prepared **80** in CDCl_3 .



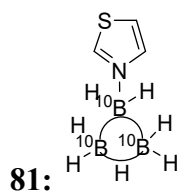
The $^1\text{H}\{^{10}\text{B}\}$ NMR spectrum of the prepared **80** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **80** in CDCl_3 .

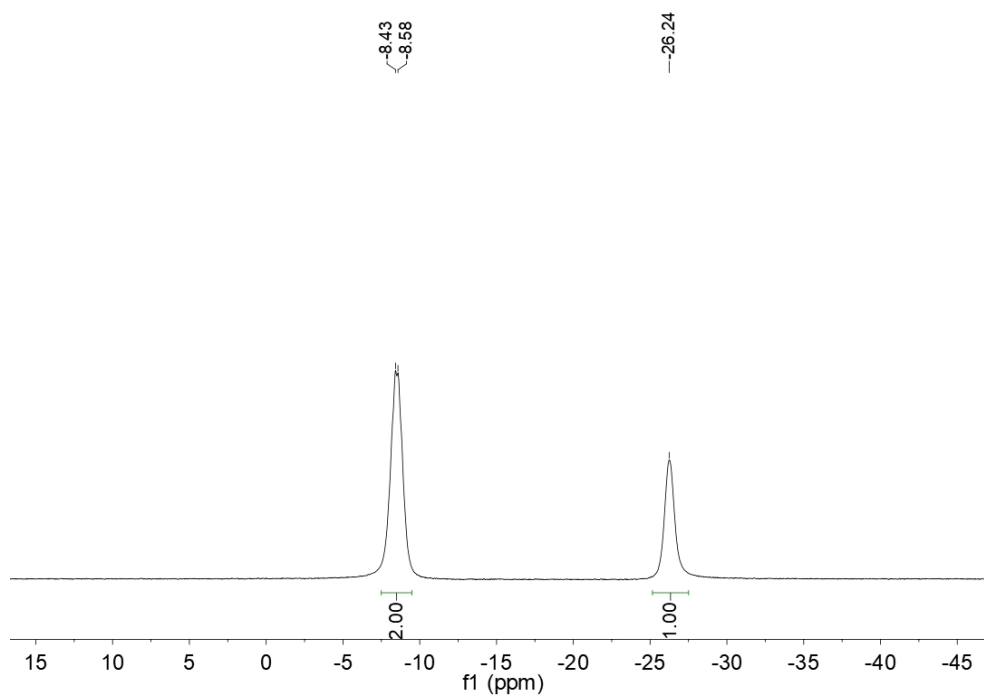


The IR spectrum of the prepared **80**.

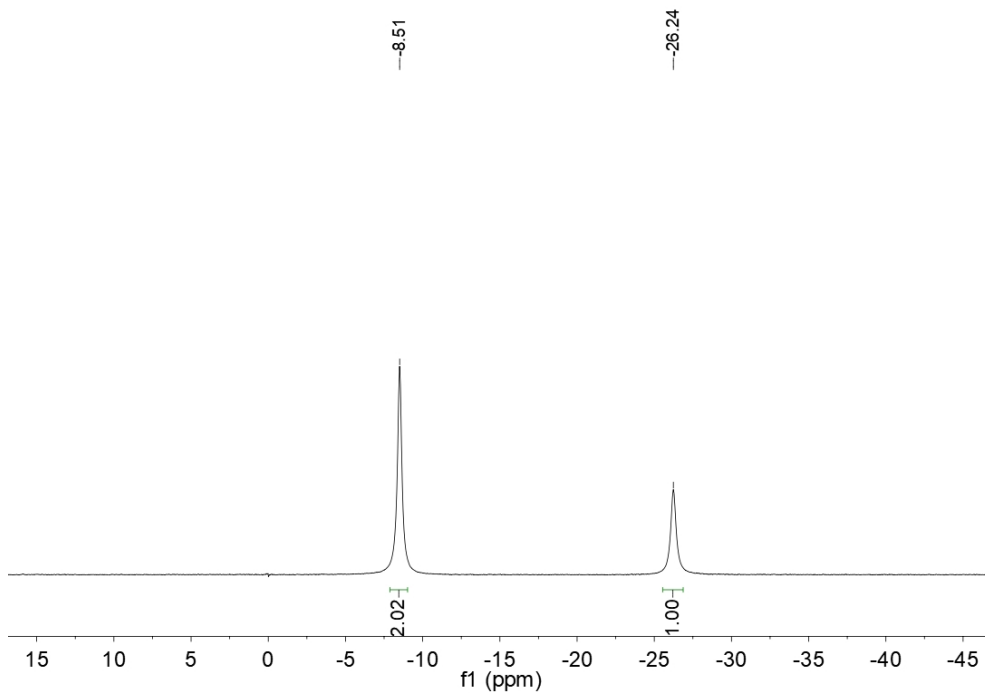


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 79%, white solid, melting point: 53-54 °C. ^{10}B NMR (64 MHz, CDCl_3): δ -8.51 (*br*, 2 B of **BHB**),

-26.24 (*br*, B of \mathbf{BH}_2) ppm. $^{10}\text{B}\{^1\text{H}\}$ NMR (64 MHz, CDCl_3): δ -8.51 (*br*, 2 B of \mathbf{BHB}), -26.24 (*br*, B of \mathbf{BH}_2) ppm. ^1H NMR (600 MHz, CDCl_3): δ 9.10 (*s*, H of \mathbf{CH}), 8.00 (*d*, H of \mathbf{CH}), 7.54 (*t*, H of \mathbf{CH}), 2.17-1.77 (*br*, 7 H of $\text{B}_3\mathbf{H}_7$) ppm. $^1\text{H}\{^{10}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 9.11 (*s*, H of \mathbf{CH}), 8.00 (*d*, H of \mathbf{CH}), 7.54 (*t*, H of \mathbf{CH}), 1.97 (*s*, 7 H of $\text{B}_3\mathbf{H}_7$) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 155.50 (1 C), 142.00 (1 C), 121.03 (1 C) ppm. IR (cm^{-1}): 3144 (*w*), 3111 (*m*), 2504 (*s*), 2432 (*s*), 1526 (*m*), 1404 (*m*), 1333 (*m*), 1249 (*m*), 1100 (*m*), 1034 (*m*), 902 (*m*), 818 (*s*), 736 (*s*), 619 (*m*). HRMS m/z calcd for $\text{C}_3\text{H}_{10}^{10}\text{B}_3\text{NS} [\text{M}+\text{Na}]^+$: 145.0814, found: 145.0813.



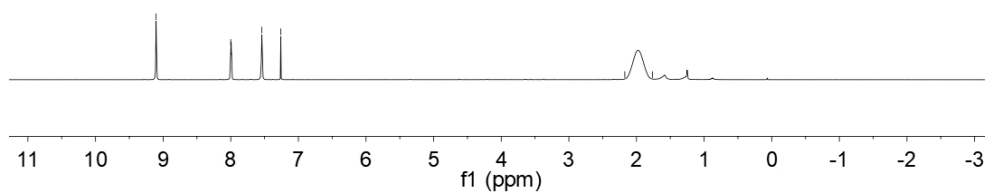
The ^{10}B NMR spectrum of the prepared **81** in CDCl_3 .



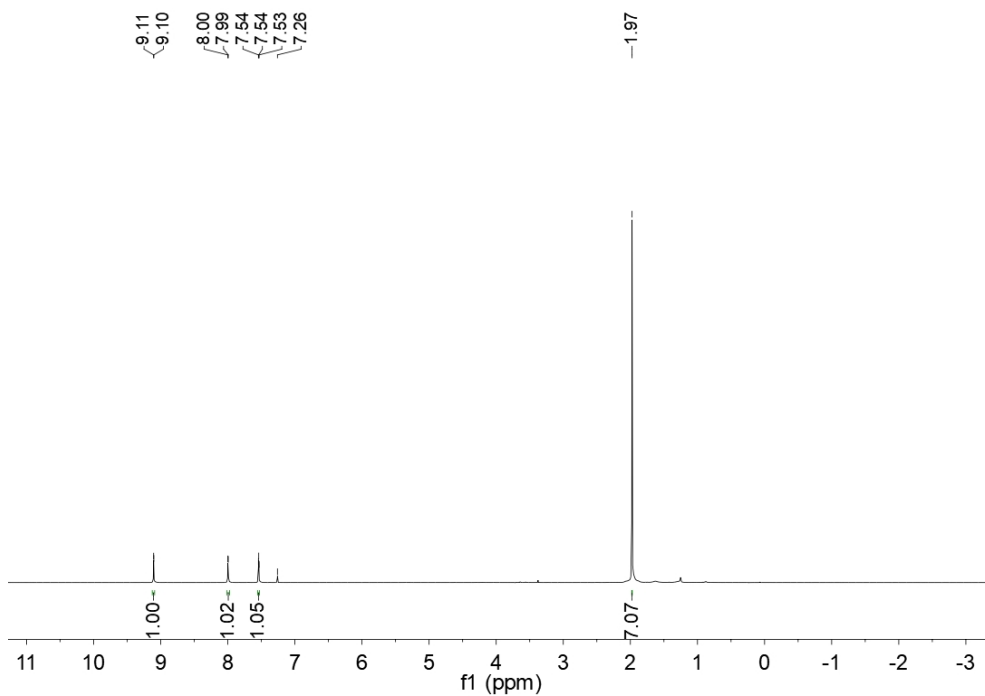
The $^{10}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **81** in CDCl_3 .

-9.10
~8.00
~7.54
~7.26

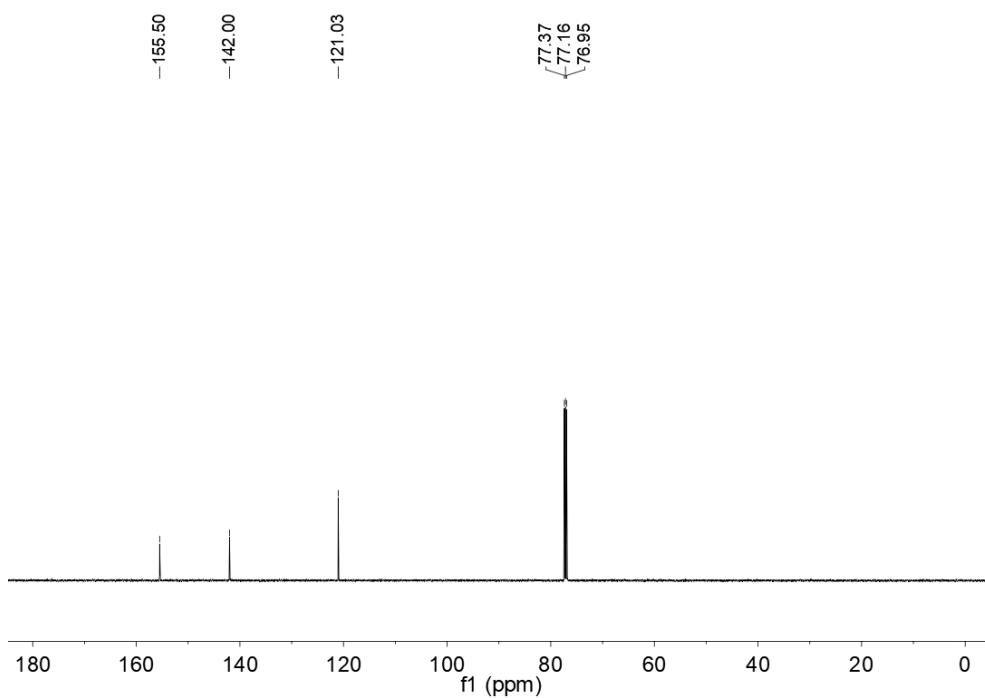
-2.17
-1.77



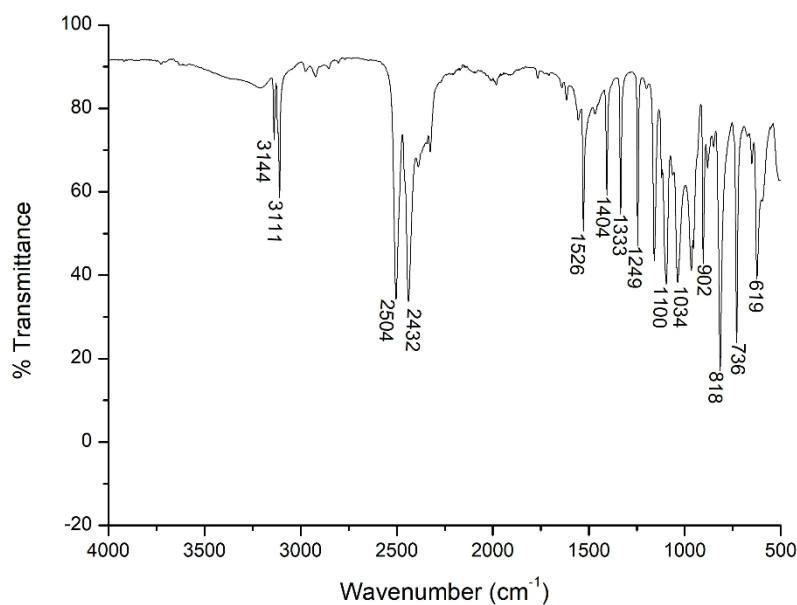
The ^1H NMR spectrum of the prepared **81** in CDCl_3 .



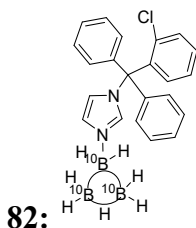
The $^1\text{H}\{^{10}\text{B}\}$ NMR spectrum of the prepared **81** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **81** in CDCl_3 .

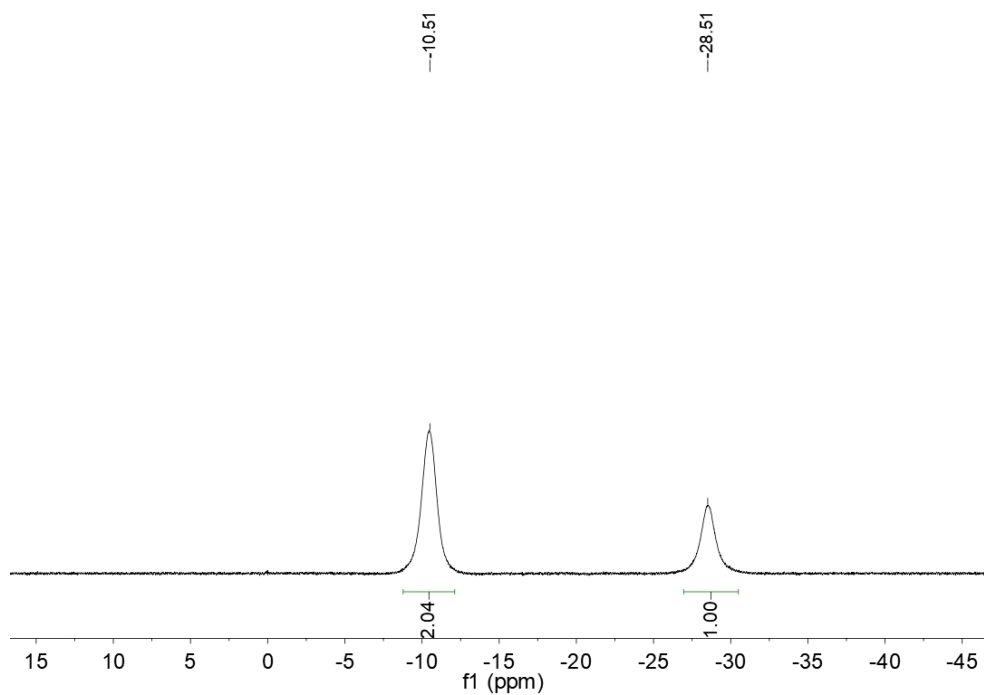


The IR spectrum of the prepared **81**.

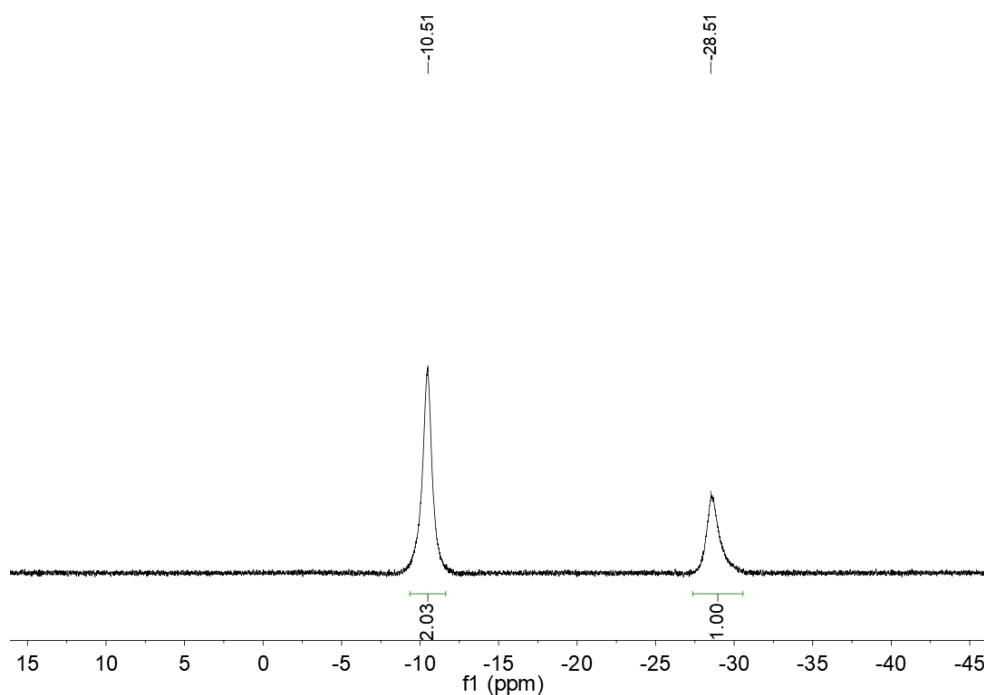


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 2:1). Yield 61%, white solid, melting point: 93-94 °C. ^{10}B NMR (64 MHz, CDCl_3): δ -10.51 (*br*, 2 B of **BHB**), -28.51 (*br*, B of **BH₂**) ppm. $^{10}\text{B}\{^1\text{H}\}$ NMR (64 MHz, CDCl_3): δ -10.51 (*br*, 2 B of **BHB**), -28.51 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 7.87 (*s*, H of **CH**), 7.48 (*d*, H of **CH**), 7.41 (*m*, 7 H of 7 **CH**), 7.30 (*t*, H of **CH**), 7.18 (*s*, H of **CH**), 7.09 (*d*, 4 H of 4 **CH**), 6.95 (*d*, H of **CH**), 6.73 (*s*, H of **CH**), 1.98 -1.58 (*br*, 7 H of **B₃H₇**) ppm. $^1\text{H}\{^{10}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 7.87 (*s*, H of **CH**), 7.48 (*d*, H of **CH**), 7.41 (*m*, 7 H of 7 **CH**), 7.30 (*t*, H of **CH**), 7.18 (*s*, H of **CH**), 7.10 (*d*, 4 H of 4 **CH**), 6.95 (*d*, H of **CH**), 6.73 (*s*, H of **CH**), 1.78 (*s*, 7 H of **B₃H₇**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 139.05 (*s*, 2 C), 138.77 (*s*, 1 C), 138.66 (*s*, 1 C), 135.65 (*s*, 1 C), 132.88 (*s*, 1 C), 130.93 (*s*, 1 C), 130.77 (*s*, 1 C), 129.92 (*s*, 4 C), 129.14 (*s*, 2 C), 128.72 (*s*, 4 C), 127.53 (*s*, 1 C), 126.08 (*s*, 1 C), 122.01 (*s*, 1 C), 100.12 (*s*, 1 C) ppm. IR (cm^{-1}): 3172 (*w*), 2487 (*m*), 2462 (*m*), 1520 (*w*), 1432 (*m*), 1189 (*w*), 1112 (*m*), 1034 (*w*), 979 (*w*), 824 (*w*), 753

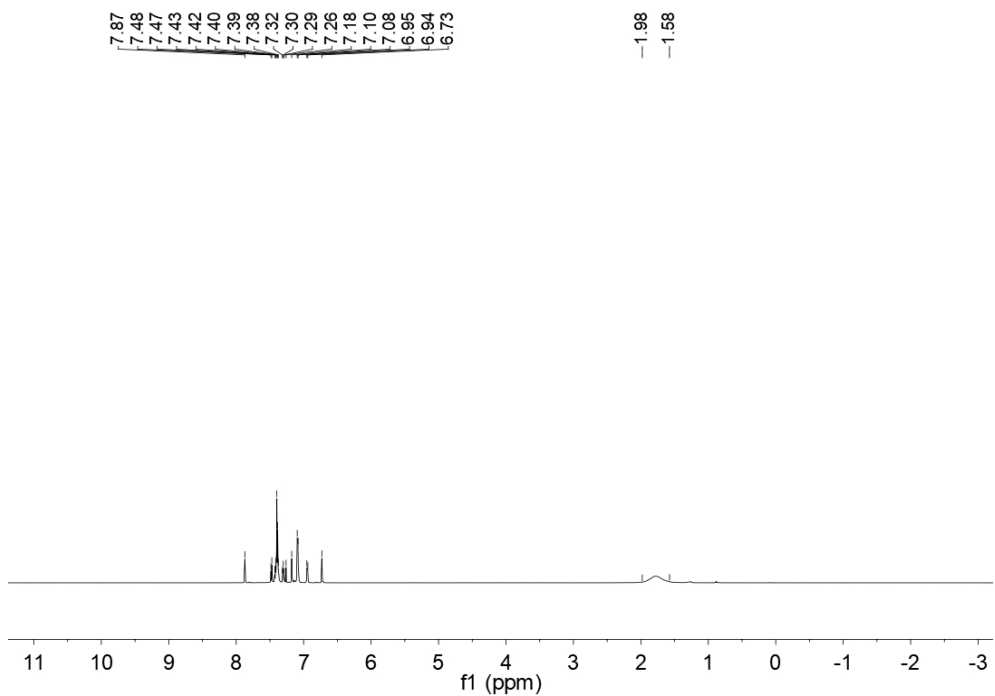
(s), 708 (m), 664 (m). HRMS m/z calcd for $C_{22}H_{24}^{10}B_3N_2Cl [M+Na]^+$: 404.1919, found: 404.1926.



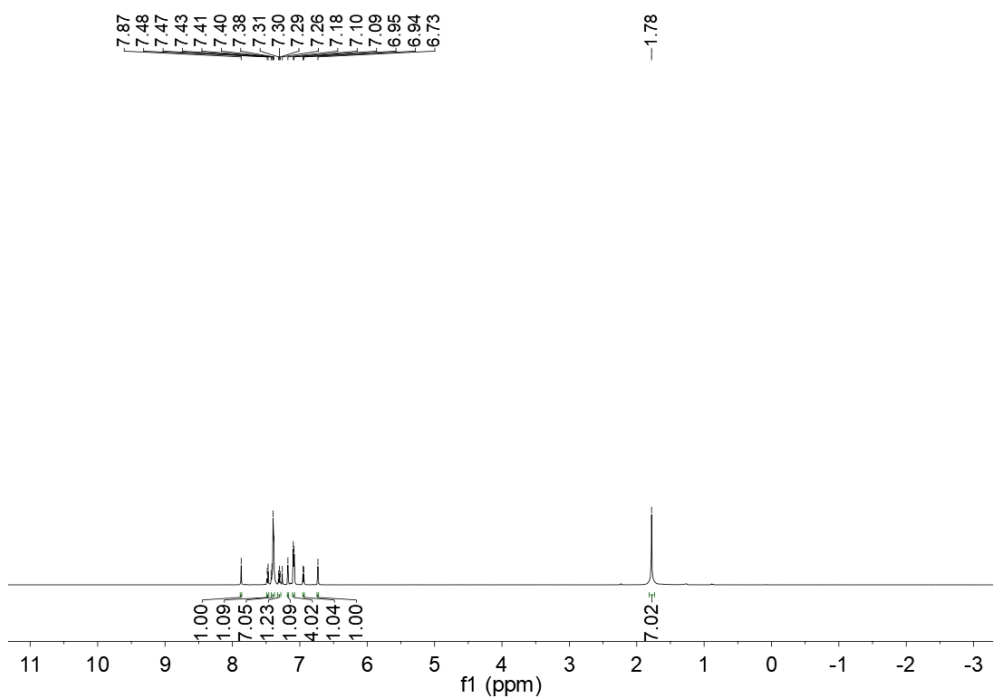
The ^{10}B NMR spectrum of the prepared **82** in $CDCl_3$.



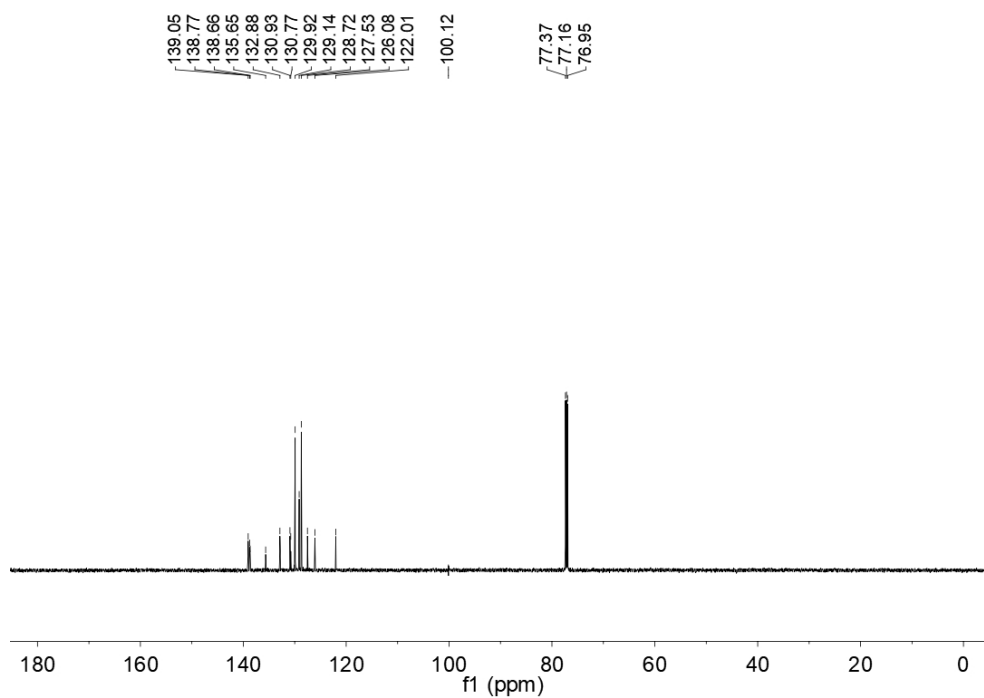
The $^{10}B\{^1H\}$ NMR spectrum of the prepared **82** in $CDCl_3$.



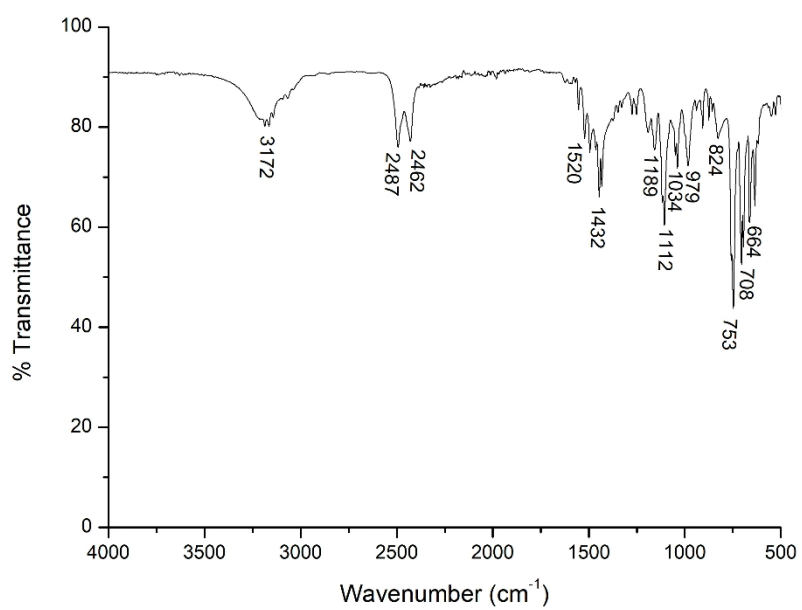
The ^1H NMR spectrum of the prepared **82** in CDCl_3 .



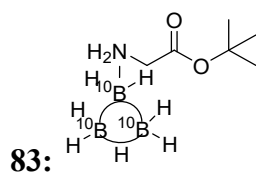
The $^1\text{H}\{^{10}\text{B}\}$ NMR spectrum of the prepared **82** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **82** in CDCl_3 .

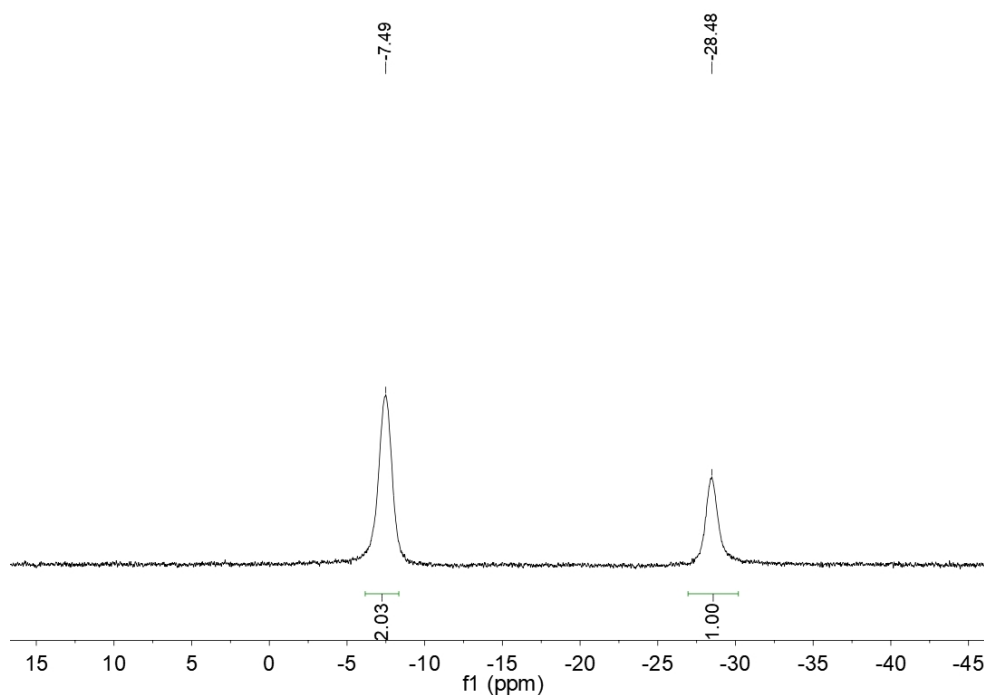


The IR spectrum of the prepared **82**.

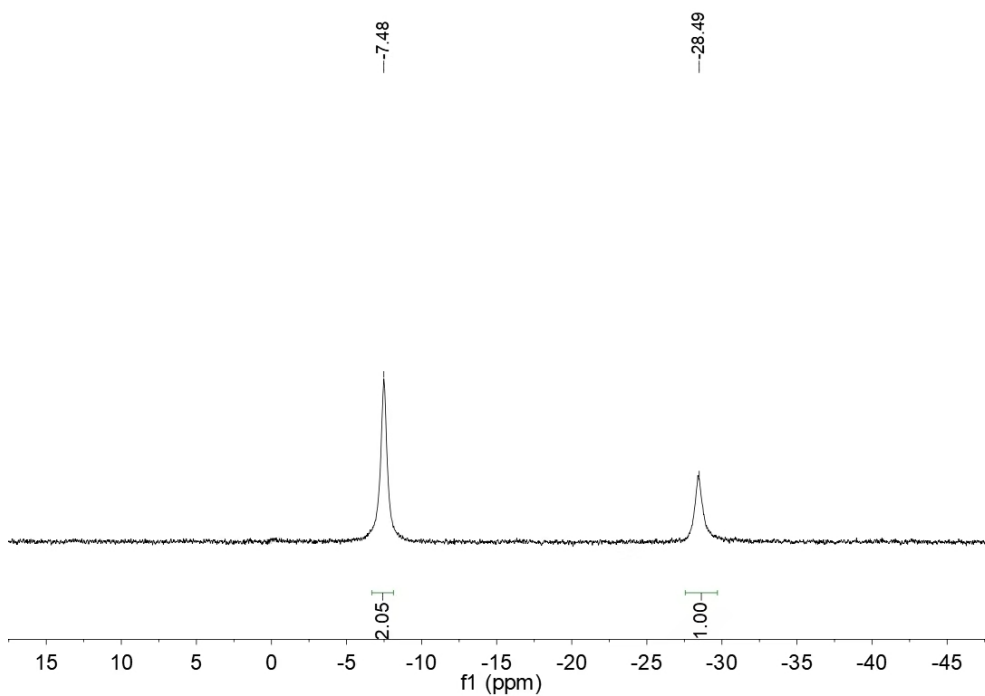


Flash chromatography (silica gel, petroleum ether : CH_2Cl_2 = 1:1). Yield 57%, white

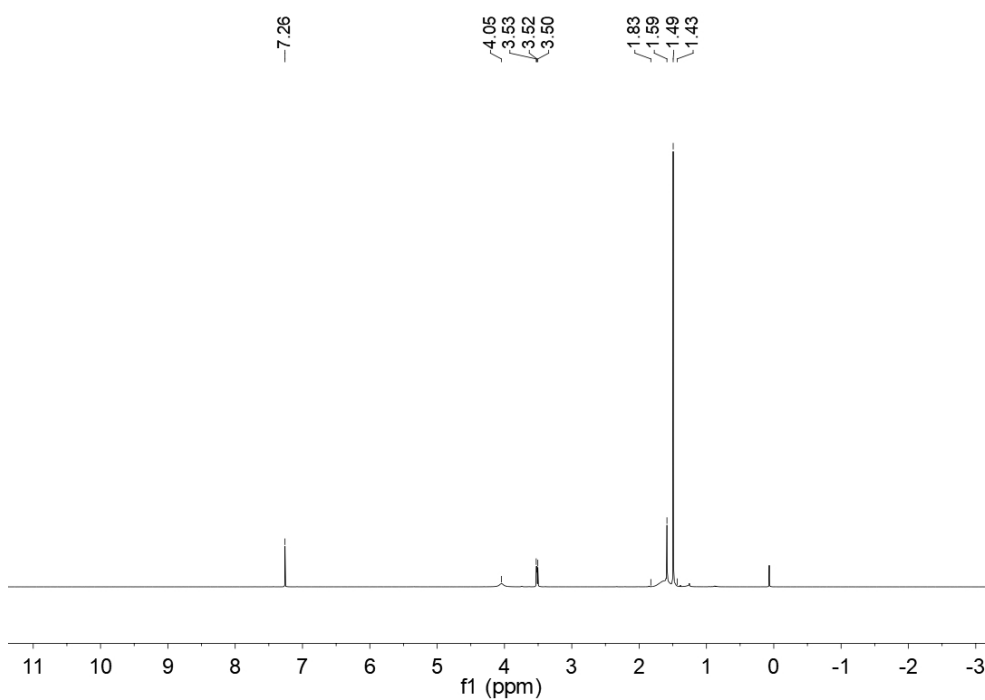
solid, melting point: 65-66 °C. ^{10}B NMR (64 MHz, CDCl_3): δ -7.49 (*br*, 2 B of **BHB**), -28.48 (*br*, B of **BH₂**) ppm. $^{10}\text{B}\{^1\text{H}\}$ NMR (64 MHz, CDCl_3): δ -7.48 (*br*, 2 B of **BHB**), -28.49 (*br*, B of **BH₂**) ppm. ^1H NMR (600 MHz, CDCl_3): δ 4.05 (*br*, 2 H of **NH₂**), 3.52 (*t*, 2 H of **CH₂**), 1.83-1.43 (*br*, 7 H of **B₃H₇**), 1.49 (*s*, 9 H of 3 **CH₃**) ppm. $^1\text{H}\{^{10}\text{B}\}$ NMR (600 MHz, CDCl_3): δ 4.04 (*br*, 2 H of **NH₂**), 3.52 (*t*, 2 H of **CH₂**), 1.63 (*br*, 7 H of **B₃H₇**), 1.49 (*s*, 9 H of 3 **CH₃**) ppm. $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3): δ 167.45 (*s*, 1 C), 84.76 (*s*, 1 C), 49.52 (*s*, 1 C), 28.10 (*s*, 3 C) ppm. IR (cm^{-1}): 3294 (w), 3221 (w), 2984 (w), 2924 (w), 2504 (m), 2437 (m), 1714 (s), 1575 (w), 1371 (w), 1305 (m), 1266 (m), 1150 (s), 1078 (w), 952 (w), 835 (m), 592 (w). HRMS m/z calcd for $\text{C}_6\text{H}_{20}^{10}\text{B}_3\text{NO}_2$ $[\text{M}+\text{Na}]^+$: 191.1775, found: 191.1776.



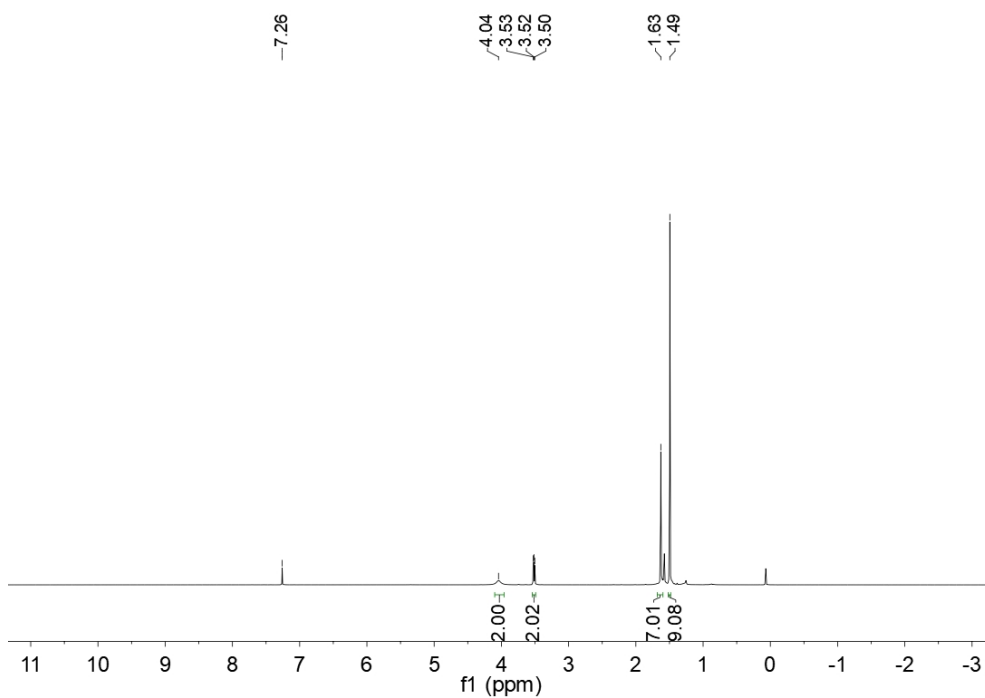
The ^{10}B NMR spectrum of the prepared **83** in CDCl_3



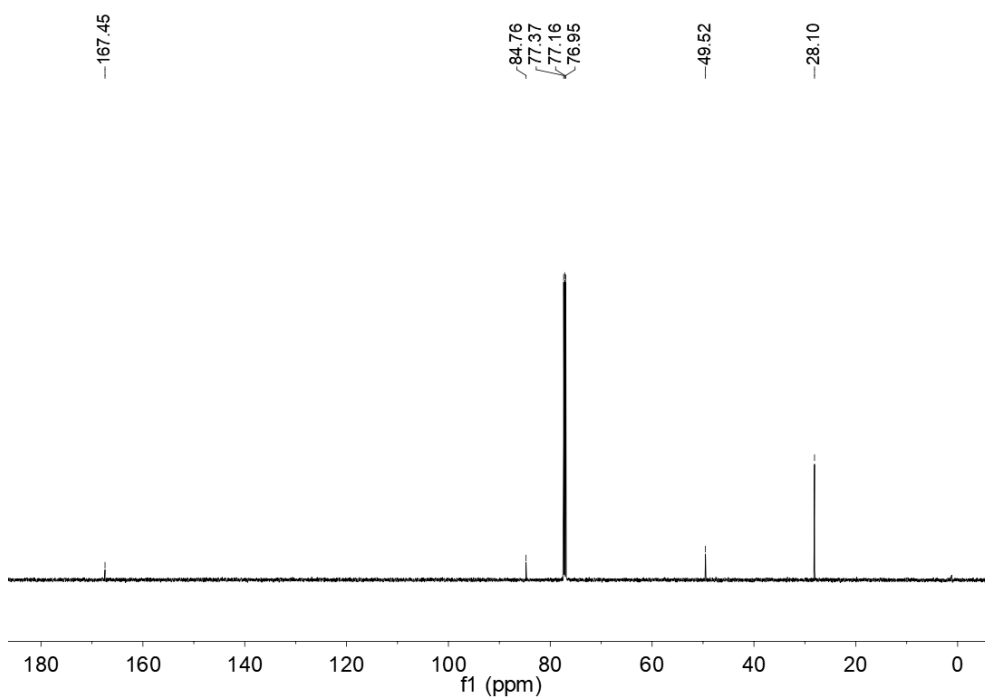
The $^{10}\text{B}\{^1\text{H}\}$ NMR spectrum of the prepared **83** in CDCl_3 .



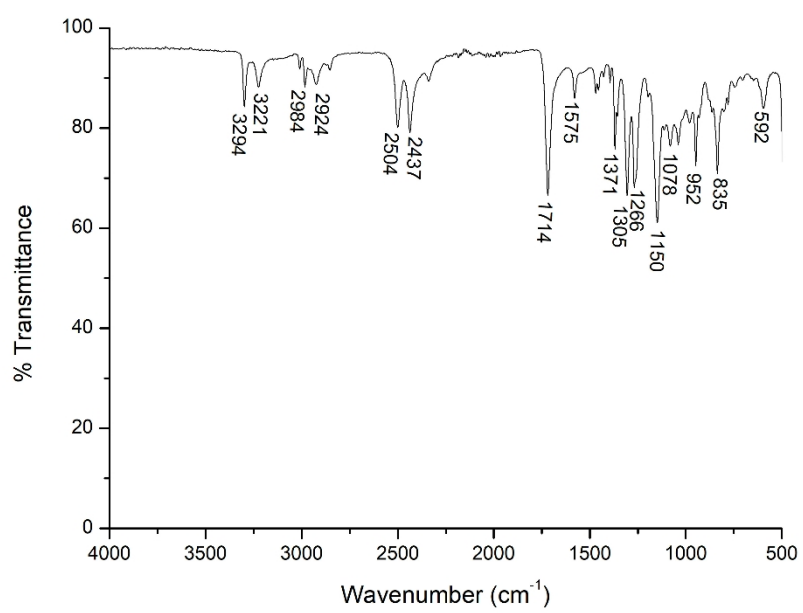
The ^1H NMR spectrum of the prepared **83** in CDCl_3 .



The $^1\text{H}\{^{10}\text{B}\}$ NMR spectrum of the prepared **83** in CDCl_3 .



The $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the prepared **83** in CDCl_3 .



The IR spectrum of the prepared **83**.