Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting Information

Phenalenyl-based Nickel Catalyst for Hydroboration of Olefins under Ambient Conditions

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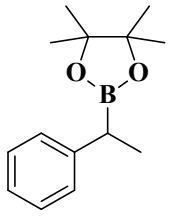
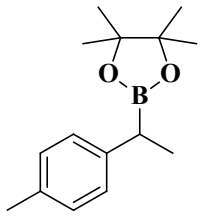
Spectroscopic data of products in catalytic hydroboration of vinylarenes

4,4,5,5-tetramethyl-2-(1-phenylethyl)-1,3,2-dioxaborolane[1]



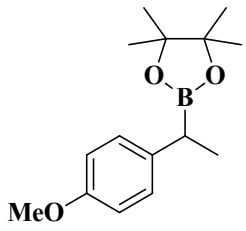
^{1}H NMR (500 MHz, $CDCl_3$): δ 7.29–7.7.17 (m, 4H), 7.16-7.13 (m, 1H), 2.44 (q, J = 7.5 Hz, 1H), 1.36 (d, J = 7.5 Hz, 3H), 1.21 (d, J = 5.3 Hz, 12H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 144.9 (C_q), 128.2 (CH), 127.7 (CH), 125.0 (CH), 83.2 (C_q), 24.6 (CH), 24.5 (CH_3), 17.0 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.59 ppm.

4,4,5,5-tetramethyl-2-(1-*p*-tolylethyl)-1,3,2-dioxaborolane[2]



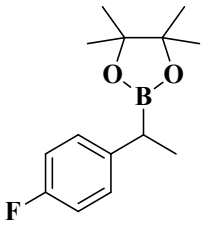
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.12 (d, J = 8.2 Hz, 2H), 7.08 (d, J = 8.2 Hz, 2H), 2.38 (q, J = 7.5 Hz, 1H), 2.30 (s, 3H), 1.32 (d, J = 7.5 Hz, 3H), 1.21 (s, 6H), 1.20 (s, 6H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 141.8 (C_q), 134.37 (C_q), 129.0 (CH), 127.6 (CH), 83.2 (C_q), 24.6 (CH), 24.5 (CH_3), 20.9 (CH_3), 17.2 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.6 ppm.

2-(1-(4-methoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[1]



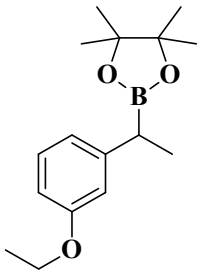
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.14 (d, J = 8.7 Hz, 2H), 6.82 (d, J = 8.7 Hz, 2H), 3.78 (s, 3H), 2.38 (q, J = 7.5 Hz, 1 H), 1.29 (d, J = 7.5 Hz, 3H), 1.20 (d, J = 5.3 Hz, 12H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 157.2 (C_q), 137.0 (C_q), 128.6 (CH), 113.7 (CH), 83.2 (C_q), 55.1 (CH_3), 24.6 (CH), 24.5 (CH_3), 17.3 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.55 ppm.

2-(1-(4-fluorophenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[3]



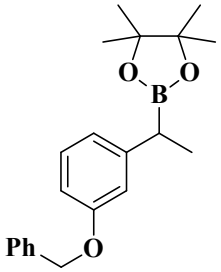
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.18–7.15 (m, 2H), 6.96–6.92 (m, 2H), 2.42 (q, J = 7.5 Hz, 1H), 1.32 (d, J = 7.5 Hz, 3H), 1.21 (s, 6H), 1.20 (s, 6H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 161.8, (d, J = 126.9 Hz, C_q), 140.5 (C_q), 129.0 (d, J = 7.5 Hz, CH), 115.0 (d, J = 20 Hz, CH), 83.3 (C_q), 24.6 (CH), 24.5 (CH_3), 17.1 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.5 ppm. ^{19}F NMR (376 MHz. $CDCl_3$): δ-118.9 ppm.

2-(1-(3-ethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane



^{1}H NMR (500 MHz, $CDCl_3$) δ 7.17 (dd, J = 7.4, 1.3 Hz, 1H), 7.11 (td, J = 7.9, 1.6 Hz, 1H), 6.88 (t, J = 7.4 Hz, 1H), 6.80 (d, J = 8.1 Hz, 1H), 4.04 (qd, J = 7.0, 2.7 Hz, 2H), 2.55 (q, J = 7.5 Hz, 1H), 1.42 (t, J = 7.0 Hz, 3H), 1.30 (d, J = 7.6 Hz, 3H), 1.23 (d, J = 3.4 Hz, 12H). ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 156.2 (C_q), 134.1 (C_q), 128.7 (CH), 126.0 (CH), 120.5 (CH), 110.8 (CH), 82.9 (C_q), 63.3 (CH_2), 24.7 (CH), 24.6 (CH_3), 15.1 (CH_3), 14.9 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.0 ppm. ESI-MS: (m/z): calcd for $C_{16}H_{25}BNO_3H$, $[M+H]^+$: 277.1975; found, 277.1972.

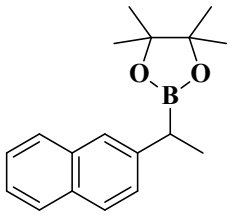
2-(1-(3-(benzyloxy)phenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane



^{1}H NMR (500 MHz, $CDCl_3$) δ 7.49 (d, J = 7.5 Hz, 2H), 7.39 (t, J = 7.6 Hz, 2H), 7.23 (dd, J = 7.5, 1.6 Hz, 1H), 7.16 – 7.09 (m, 1H), 6.94 (td, J = 7.5, 0.9 Hz, 1H), 6.86 (d, J = 8.1 Hz, 1H), 5.12 (s, 2H), 2.65 (q, J = 7.5 Hz, 1H), 1.38 (d, J = 7.5 Hz, 3H), 1.13 (s, 12H). ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 155.9 (C_q), 137.4 (C_q), 134.1 (C_q), 128.4 (CH), 128.3 (CH), 126.9 (CH), 126.1 (CH), 120.9 (CH), 111.1 (CH), 83.0

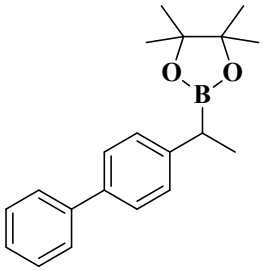
(C_q), 69.6 (CH_2), 24.6 (CH), 24.5 (CH_3), 15.16 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.0 ppm. ESI-MS: (m/z): calcd for $C_{21}H_{27}BO_3H$, $[M+H]^+$: 339.2132; found, 339.2128.

4,4,5,5-tetramethyl-2-(1-(naphthalen-2-yl)ethyl)-1,3,2-dioxaborolane[1]



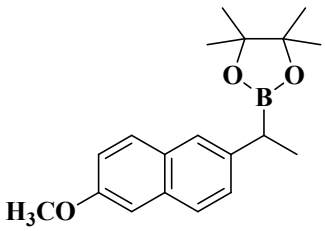
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.80–7.74 (m, 3H), 7.65 (s, 1H), 7.45–7.37 (m, 3H), 2.63 (q, J = 7.5 Hz, 1H), 1.43 (d, J = 7.5 Hz, 3H), 1.21 (s, 6H), 1.20 (s, 6H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 142.7 (C_q), 134.0 (C_q), 131.8 (C_q), 127.8 (CH), 127.6 (CH), 127.5 (CH), 127.3 (CH), 125.8 (CH), 125.4 (CH), 124.9 (CH), 83.5 (C_q), 24.8 (CH), 24.7 (CH_3), 17.0 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.49 ppm.

2-(1-(biphenyl-4-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[1]



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.60-7.58 (m, 2H), 7.52-7.50 (m, 2H), 7.43-7.40 (m, 2H), 7.32-7.29 (m, 3H), 2.48 (q, J = 7.6 Hz, 1H), 1.37 (d, J = 7.6 Hz, 3H), 1.23 (s, 6H), 1.21 (s, 6H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 144.1 (C_q), 141.2 (C_q), 137.9 (C_q), 128.6 (CH), 128.1 (CH), 127.0 (CH), 126.9 (CH), 126.8 (CH), 83.3 (C_q), 24.6 (CH), 24.6 (CH_3), 17.0 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.58 ppm.

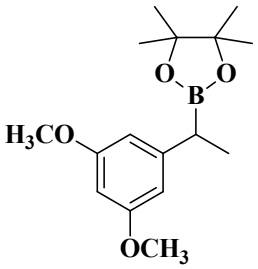
2-(1-(6-methoxynaphthalen-2-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[4]



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.69-7.65 (m, 2H), 7.59 (m, 1H), 7.38-7.35 (m, 1H), 7.13-7.1 (m, 2H), 3.92 (s, 3H), 2.60 (q, J = 4.8 Hz, 1H), 1.43 (d, J = 4.8 Hz, 3H), 1.22 (s, 6H), 1.21 (s, 6H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 156.9 (C_q), 140.2 (C_q), 132.6 (C_q), 129.3 (C_q), 128.9 (CH), 127.6 (CH),

126.5 (CH), 125.1 (CH), 118.3 (CH), 105.6 (CH), 83.3 (C_q), 55.2 (CH_3), 24.6 (CH), 24.5 (CH_3), 16.9 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.37 ppm.

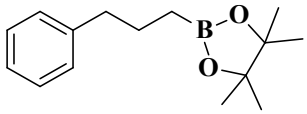
2-(1-(3,5-dimethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 6.40 (s, 2H), 6.26 (s, 1H), 3.77 (s, 6H), 2.38 (q, J = 7.5 Hz, 1H), 1.30 (d, J = 7.5 Hz, 3H), 1.22 (s, 6H), 1.21 (s, 6H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 160.6 (C_q), 147.4 (C_q), 105.9 (CH), 97.4 (CH), 83.3 (C_q), 55.1(CH_3), 24.6 (CH), 24.6 (CH_3), 16.9 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 33.4 ppm. ESI-MS: (m/z): calcd for $C_{16}H_{25}BO_4H$, $[M+H]^+$: 293.1924; found, 293.1929.

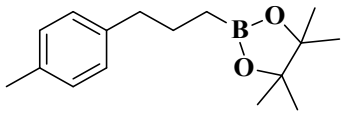
Spectroscopic data of products in catalytic hydroboration of aliphatic alkenes.

2-(3-Phenylpropyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[5]



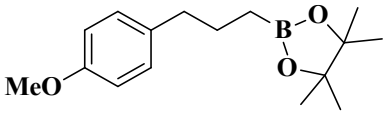
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.25 (d, J = 7.3 Hz, 2H), 7.18 – 7.16 (m, 3H), 2.61 (t, J = 7.7 Hz, 2H),), 1.77 – 1.69 (m, 2H), 1.24 (s, 12H), 0.83 (t, J = 7.9 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 142.7 (C_q), 128.5 (CH), 128.1 (CH), 125.5 (CH), 82.9 (C_q), 38.5 (CH_2), 26.0 (CH_2CH_2), 24.8 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.1 ppm.

4,4,5,5-tetramethyl-2-(3-p-tolylpropyl)-1,3,2-dioxaborolane



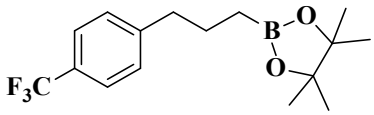
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.07 (s, 4H), 2.58 – 2.55 (m, 2H), 2.30 (s, 3H), 1.74 – 1.67 (m, 2H), 1.24 (d, J = 6.0 Hz, 12H), 0.81 (t, J = 7.9 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 139.6 (C_q), 134.9 (C_q), 128.8 (CH), 128.4 (CH), 82.91 (C_q), 38.1 (CH_2), 26.2 (CH_2CH_2), 24.8 (CH_3), 20.9 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.1 ppm. ESI-MS: (m/z): calcd for $C_{16}H_{25}BNaO_2$, $[M+Na]^+$: 283.1845; found, 283.1841.

2-(3-(4-Methoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[6]



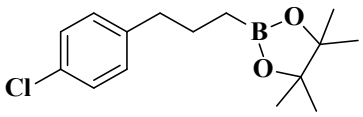
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.09 (d, J = 8.2, 2H), 6.81 (d, J = 8.2, 2H), 3.78 (s, 2H), 2.55 (t, J = 7.6, 2H), 1.72- 1.68 (m, 2H), 1.24 (s, 12H), 0.81 (t, J = 8.0, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 157.6 (C_q), 134.8 (C_q), 129.3 (CH), 113.6 (CH), 82.9 (C_q), 55.2 (CH_3), 37.6 (CH_2), 26.2 (CH_2CH_2), 24.8 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.08 ppm.

4,4,5,5-Tetramethyl-2-(3-(4-trifluoromethylphenyl)propyl)-1,3,2-dioxaborolane[6]



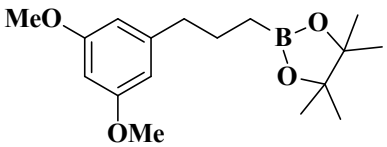
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.51 (d, J = 8.0 Hz, 2H), 7.27 (m, 2H), 2.66 (t, J = 7.7 Hz, 2H), 1.78 – 1.70 (m, 2H), 1.24 (s, 12H), 0.82 (t, J = 7.8 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 146.7 (C_q), 128.8 (CH), 128.1 (q, $J_{C\text{-}F}$ = 32.2, C_q) 125.1 (q, $J_{C\text{-}F}$ = 3.8, CH), 124.0 (q, $J_{C\text{-}F}$ = 271.6, CF_3), 83.0 (C_q), 38.2 (CH_2), 25.7 (CH_2CH_2), 24.8 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.0 ppm. ^{19}F NMR (376 MHz. $CDCl_3$): δ -62.1 ppm.

2-(3-(4-chlorophenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.24–7.18 (m, 2H), 7.09 (d, J = 8.3 Hz, 2H), 2.57 (t, J = 7.7 Hz, 2H), 1.73–1.66 (m, 2H), 1.24 (s, 12H), 0.80 (t, J = 7.9 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 141.0 (C_q), 131.2 (C_q), 129.8 (CH), 128.2 (CH), 82.9 (C_q), 37.8 (CH_2), 25.9 (CH_2CH_2), 24.8 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.0 ppm. ESI-MS: (m/z): calcd for $C_{15}H_{22}BClNaO_2$, $[M+Na]^+$: 303.1299; found, 303.1295.

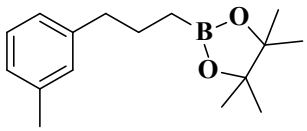
2-(3-(3,5-dimethoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 6.34 (d, J = 2.0 Hz, 2H), 6.29 (s, 1H), 3.77 (s, 6H), 2.55 (t, J = 7.7 Hz, 2H), 1.77–1.65 (m, 2H), 1.24 (s, 12H), 0.82 (t, J = 7.9 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 160.6 (C_q), 145.1 (C_q), 106.6 (CH), 97.7 (CH), 82.8 (C_q), 55.2 (CH_3), 38.9 (CH_2), 25.8 (CH_2CH_2),

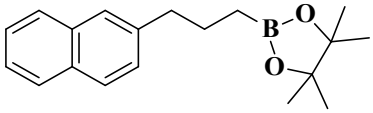
24.8 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.14 ppm. ESI-MS: (m/z): calcd for $C_{17}H_{27}BNaO_4$, $[M+Na]^+$: 329.1900; found, 329.1906.

4,4,5,5-tetramethyl-2-(3-m-tolylpropyl)-1,3,2-dioxaborolane



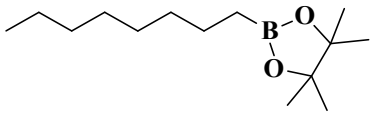
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.15 (t, J = 7.5 Hz, 1H), 6.99 (d, J = 4.6 Hz, 2H), 6.97 (s, 1H), 2.57 (t, J = 7.7 Hz, 2H), 2.32 (s, 3H), 1.72 (m, 2H), 1.24 (s, 12H), 0.83 (t, J = 7.9 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 142.6 (C_q), 137.6 (C_q), 129.3 (CH), 128.0 (CH), 126.2 (CH), 125.5 (CH), 82.9 (C_q), 38.5 (CH_2), 26.0 (CH_2CH_2), 24.8 (CH_3), 21.3 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.1 ppm. ESI-MS: (m/z): calcd for $C_{16}H_{25}BNaO_2$, $[M+Na]$+: 283.1845; found, 283.1841.

4,4,5,5-tetramethyl-2-(3-(naphthalen-2-yl)propyl)-1,3,2-dioxaborolane[7]



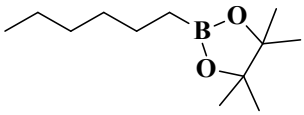
^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 7.78–7.73 (m, 3H), 7.62 (s, 1H), 7.46–7.38 (m, 2H), 7.34 (d, J = 8.3 Hz, 1H), 2.79 (t, J = 7.7 Hz, 2H), 1.87–1.79 (m, 1H), 1.24 (s, 12H), 0.88 (t, J = 7.8 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 140.2 (C_q), 133.6 (C_q), 131.9 (C_q), 127.6 (CH), 127.5 (CH), 127.5 (CH), 127.4 (CH), 126.4 (CH), 125.7 (CH), 124.9 (CH), 82.9 (C_q), 38.6 (CH_2), 25.9 (CH_2CH_2), 24.8 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.11 ppm.

4,4,5,5-tetramethyl-2-octyl-1,3,2-dioxaborolane[8]



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 1.43 – 1.34 (m, 2H), 1.29 – 1.24 (m, 22H), 0.86 (q, J = 6.6 Hz, 3H), 0.76 (t, J = 7.8 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 82.8 (C_q), 32.4 (CH_2), 31.9 (CH_2), 29.3 (CH_2), 29.2 (CH_2), 24.8 (CH_3), 24.0 (CH_2), 22.6 (CH_2CH_2), 14.1 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.17 ppm.

2-hexyl-4,4,5,5-tetramethyl-1,3,2-dioxaborolane[6]



^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ 1.41-1.39 (m, 2H), 1.31 – 1.24 (m, 18H), 0.86 (t, J = 6.8 Hz, 3H), 0.76 (t, J = 7.7 Hz, 2H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$, 25 °C): δ 82.8 (C_q), 32.1 (CH_2), 31.6 (CH_2), 24.7 (CH_3), 23.9 (CH_2), 22.5 (CH_2CH_2), 14.0 (CH_3) ppm. ^{11}B NMR (160 MHz, $CDCl_3$, 25 °C): δ 34.16 ppm

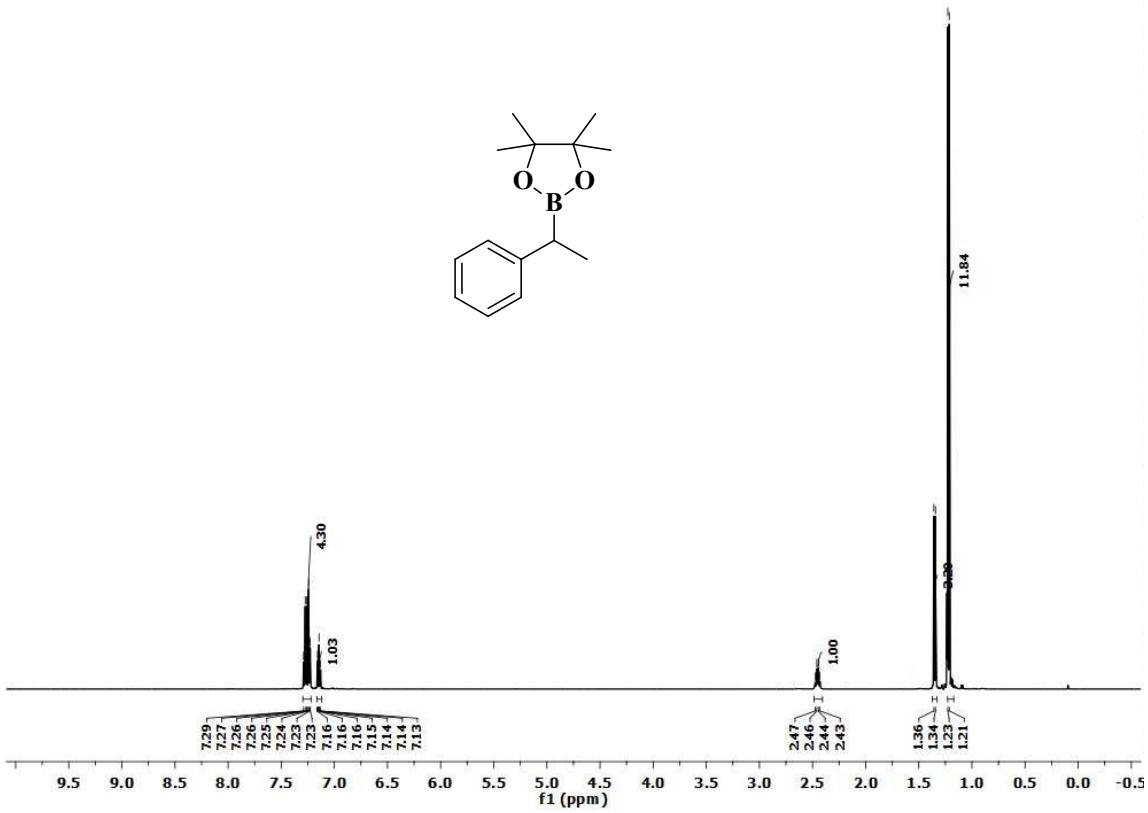


Figure S1. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-phenylethyl)-1,3,2-dioxaborolane

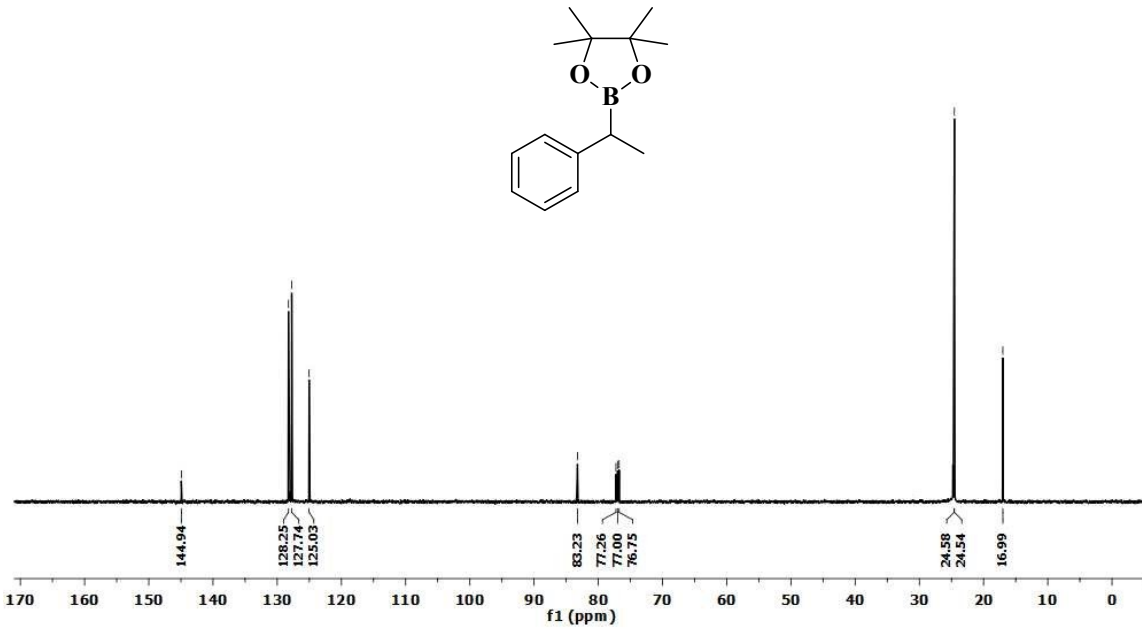


Figure S2. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-phenylethyl)-1,3,2-dioxaborolane

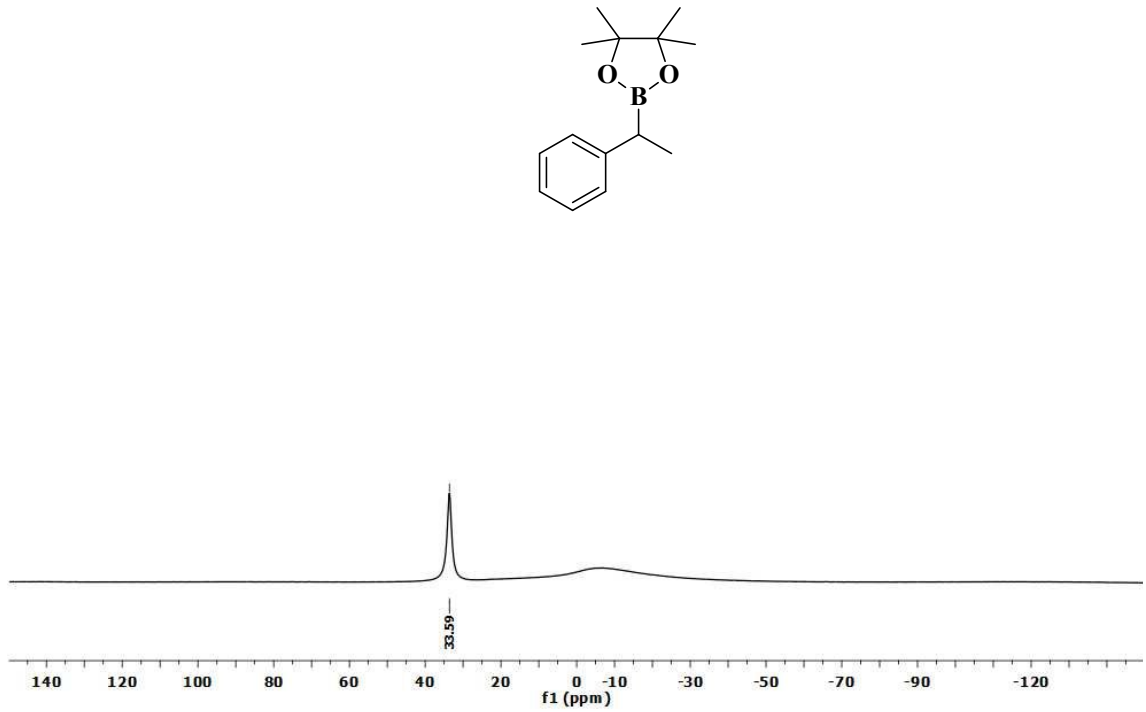


Figure S3. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-phenylethyl)-1,3,2-dioxaborolane

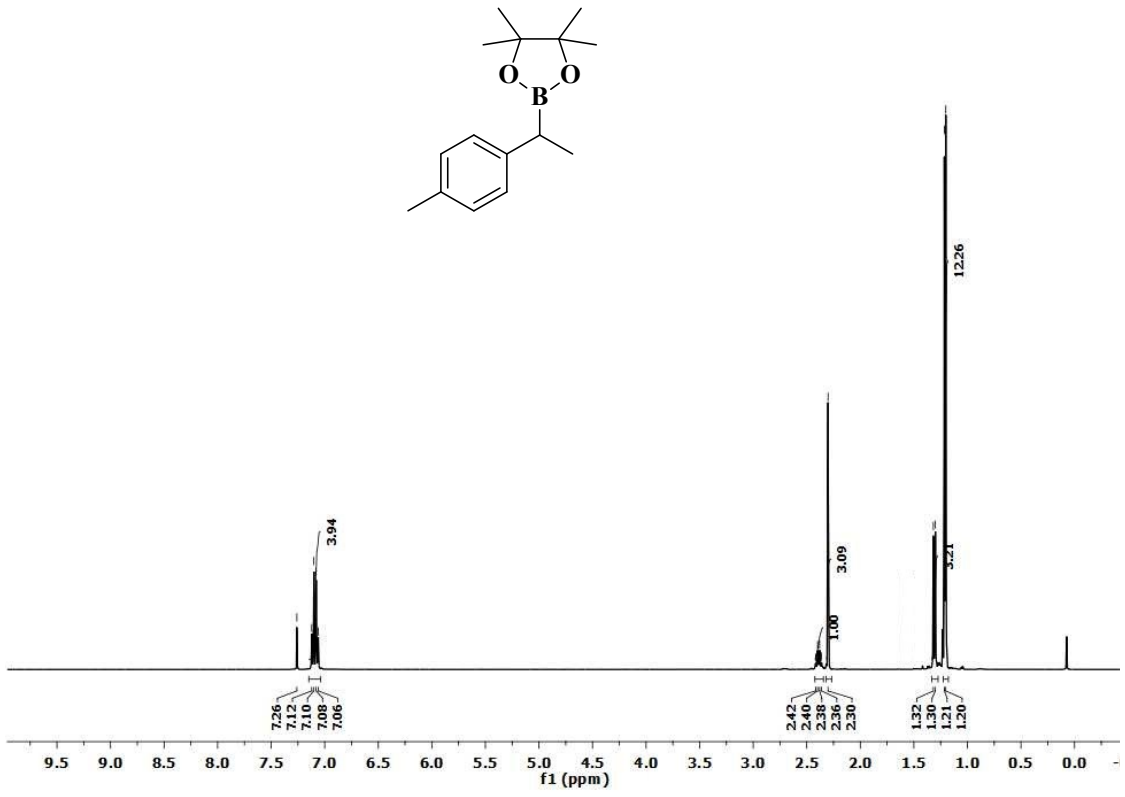


Figure S4. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-*p*-tolylethyl)-1,3,2 dioxaborolane.

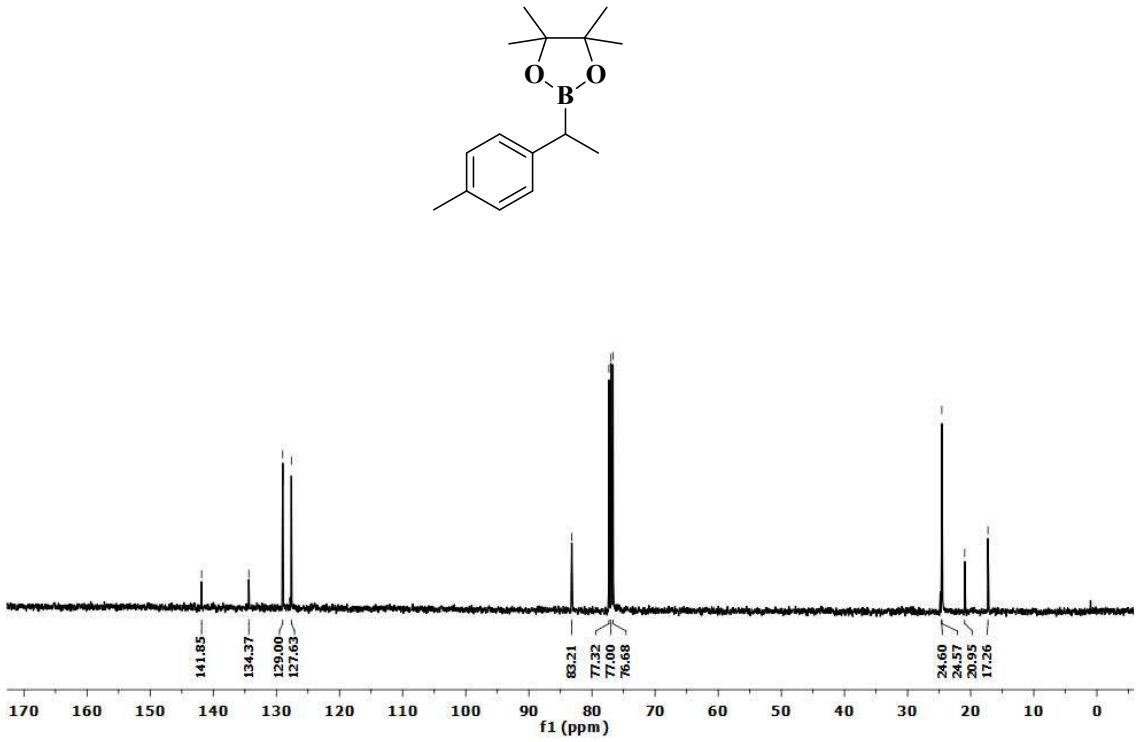


Figure S5. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-*p*-tolylethyl)-1,3,2 dioxaborolane.

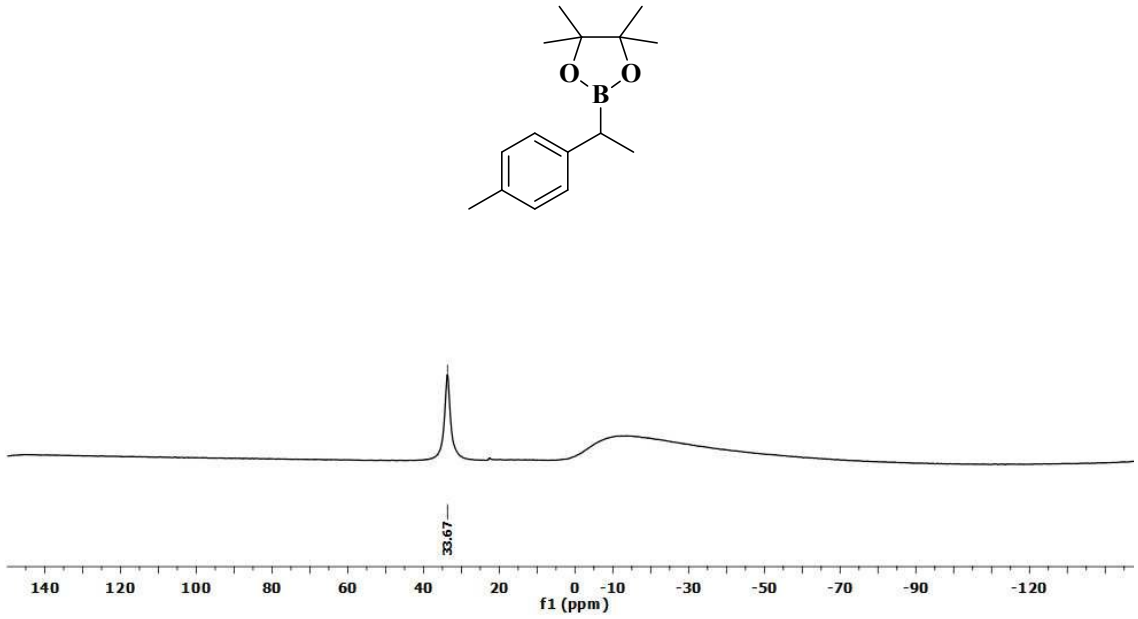


Figure S6. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-*p*-tolylethyl)-1,3,2 dioxaborolane

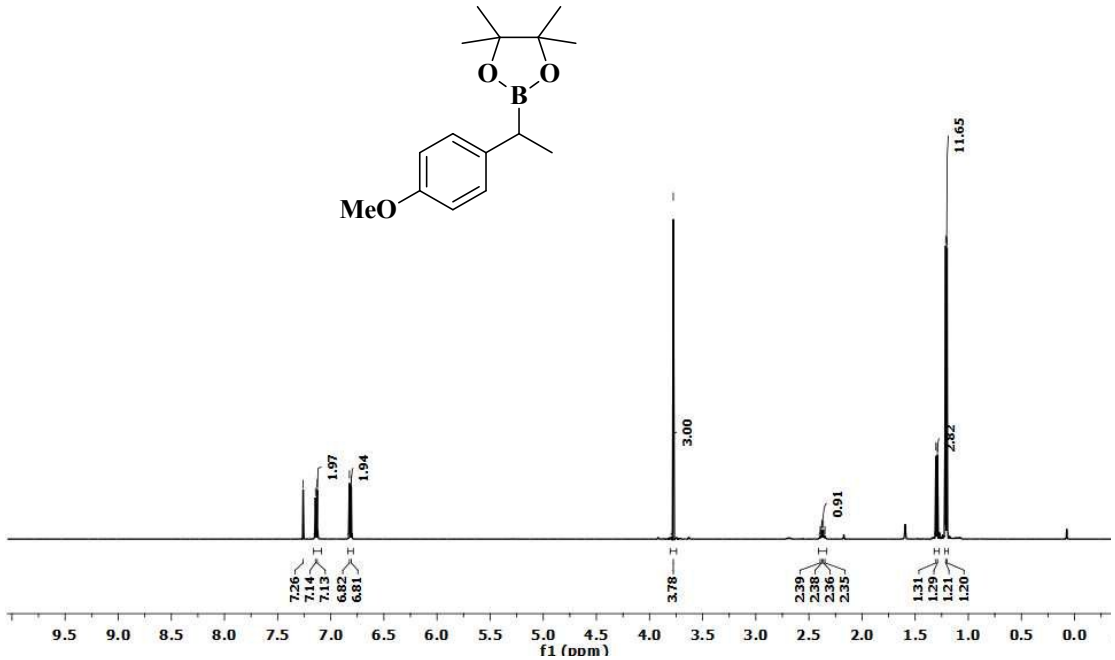


Figure S7. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(4-methoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

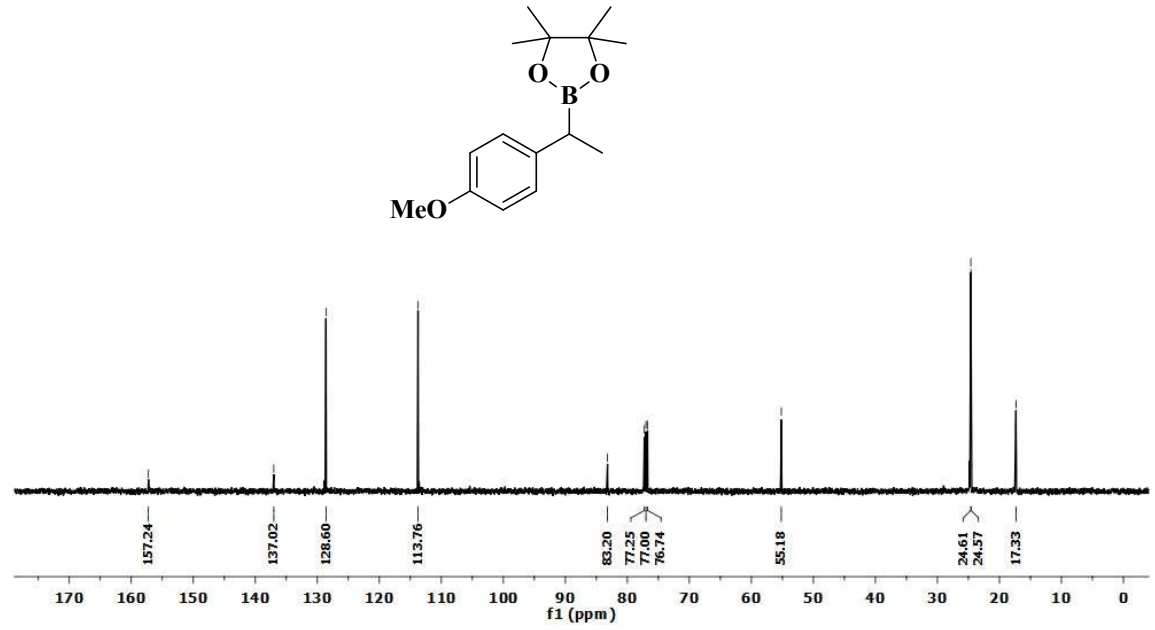


Figure S8. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(4-methoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

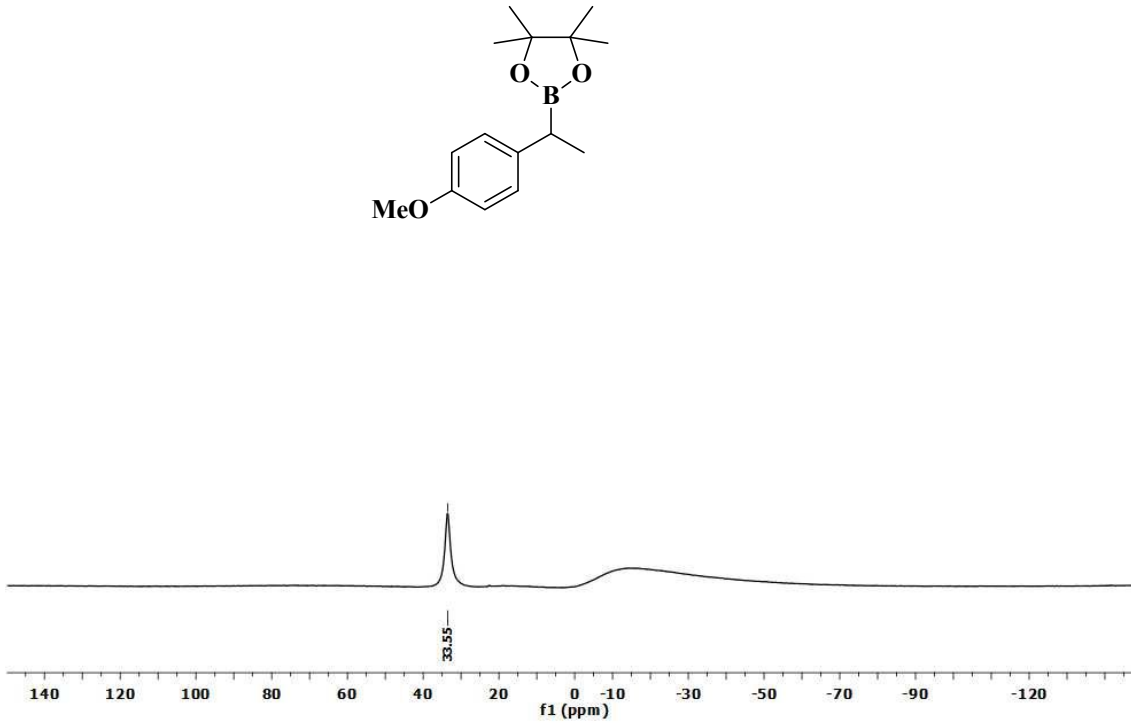


Figure S9. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(4-methoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

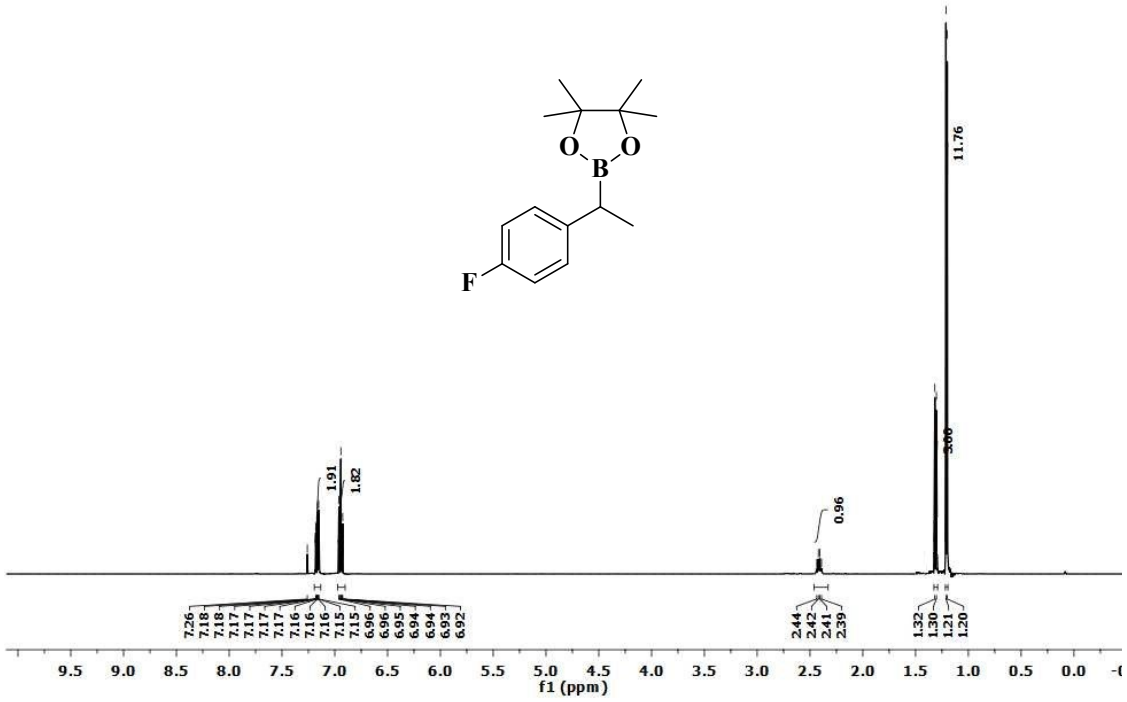


Figure S10. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(4-fluorophenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

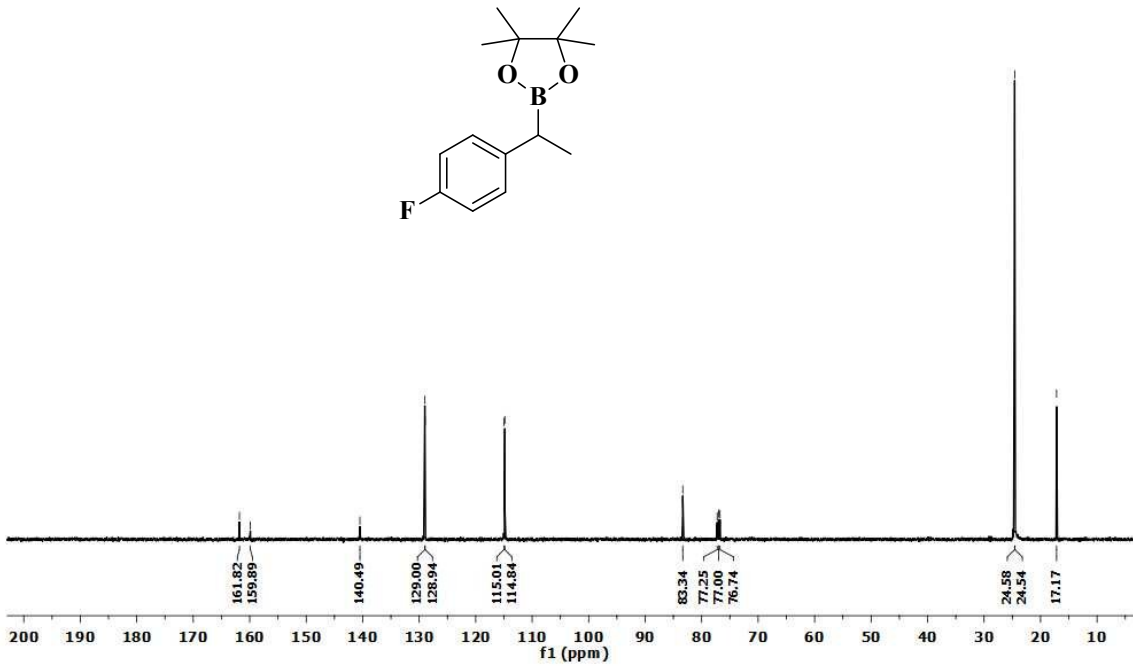


Figure S11. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(4-fluorophenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

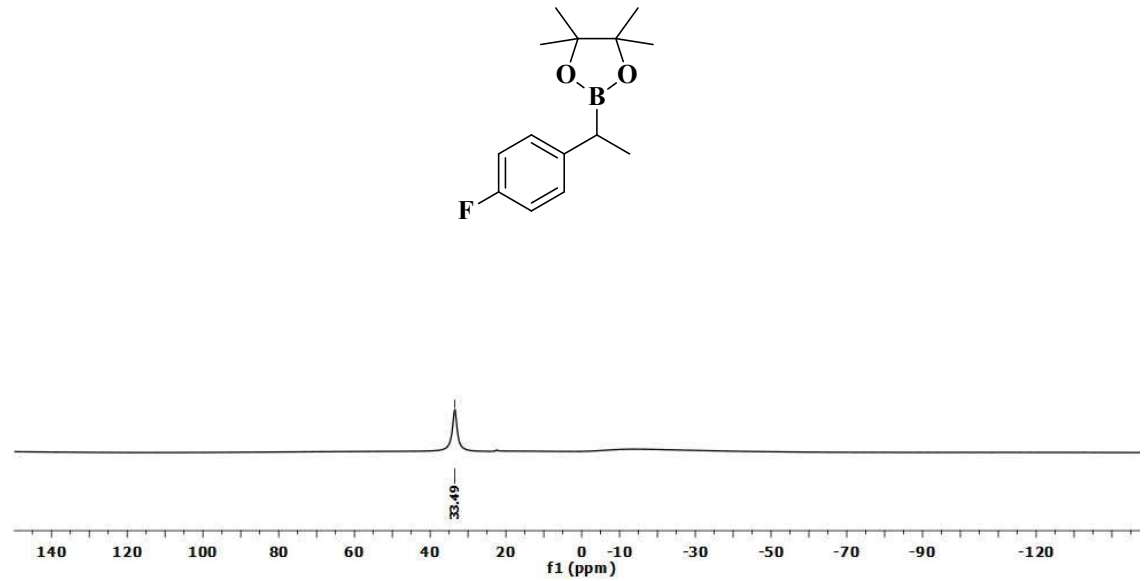


Figure S12. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(4-fluorophenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

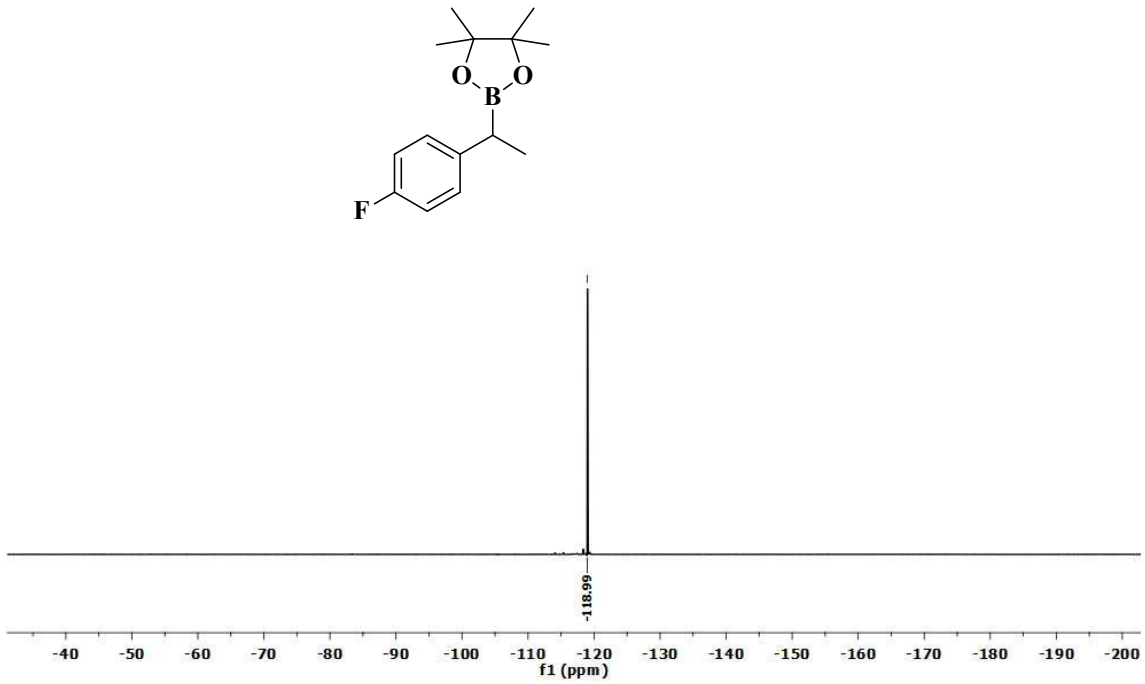


Figure S13. ^{19}F NMR spectrum ($CDCl_3$) of 2-(1-(4-fluorophenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane

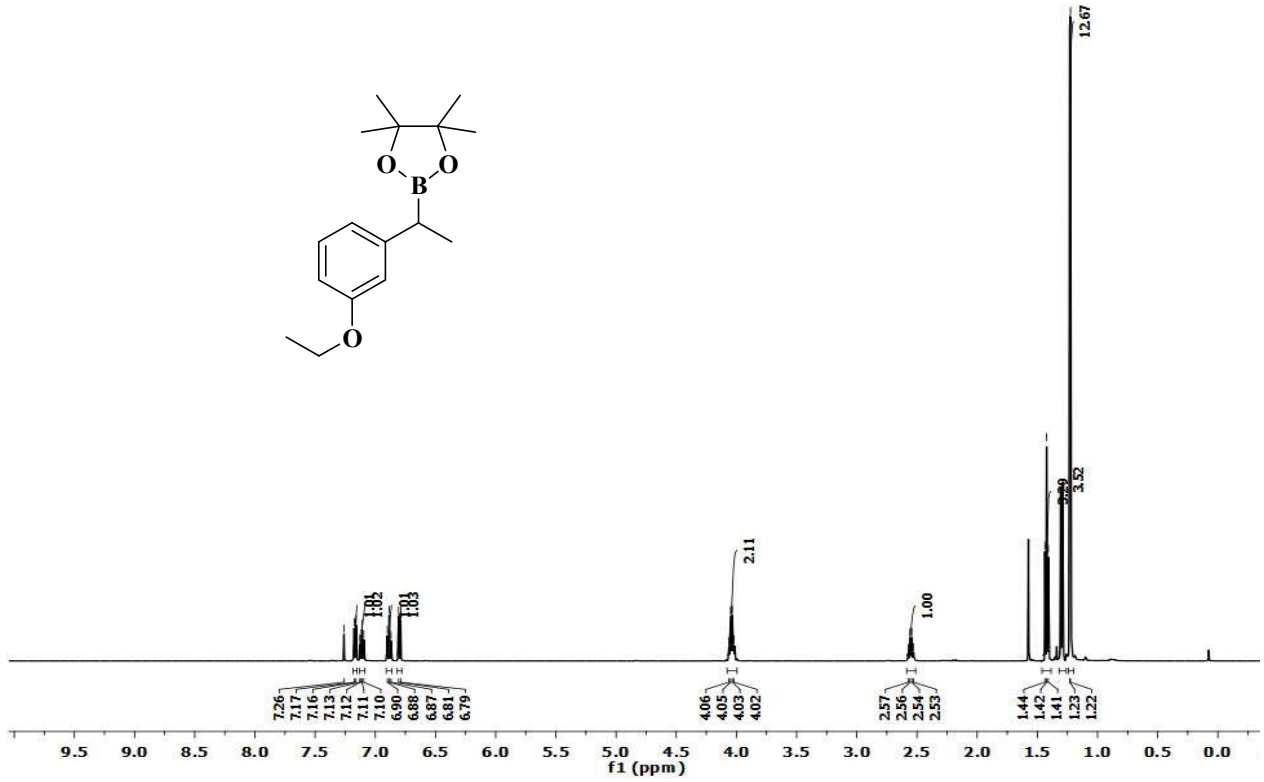


Figure S14. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(3-ethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

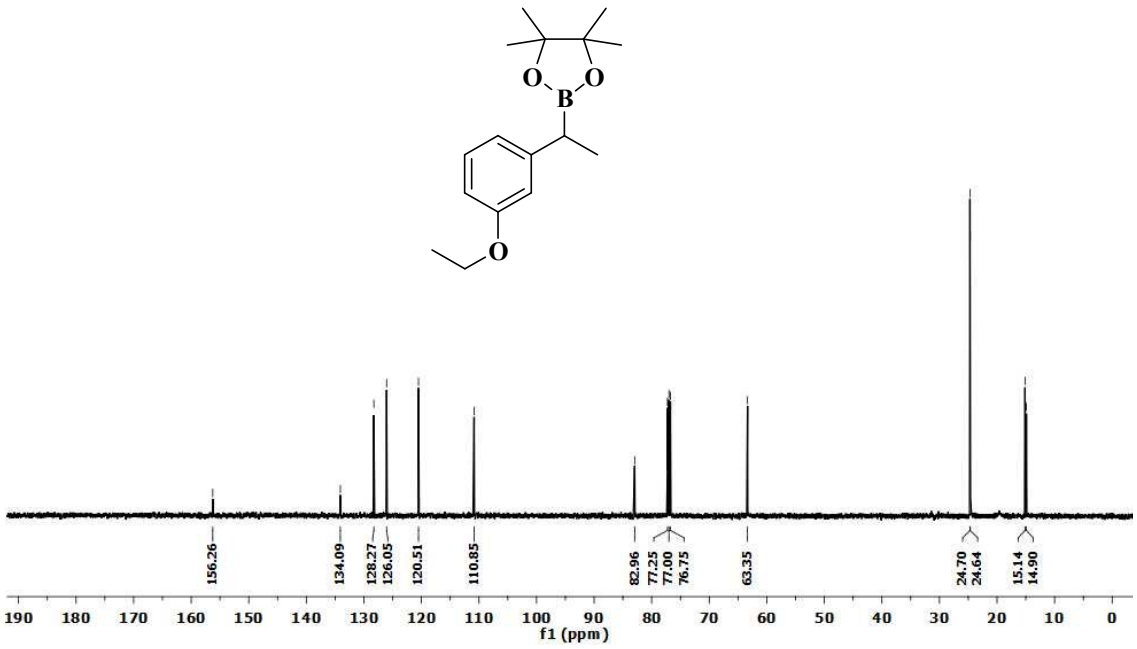


Figure S15. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(3-ethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

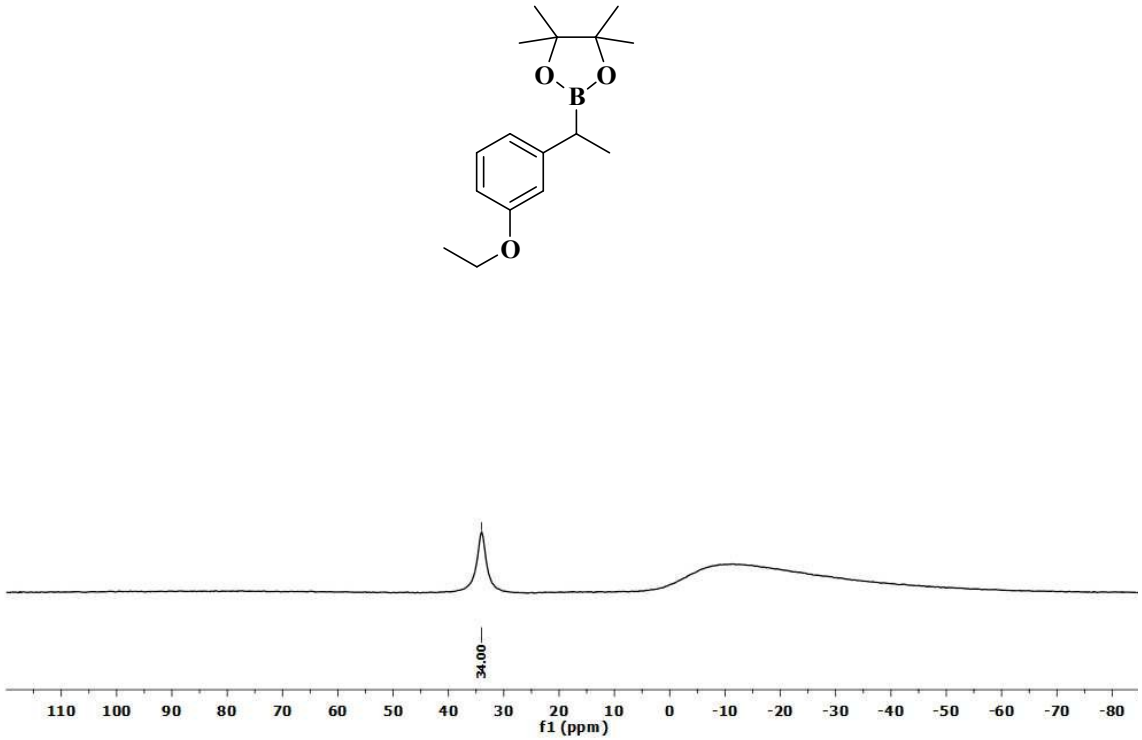


Figure S16. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(3-ethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

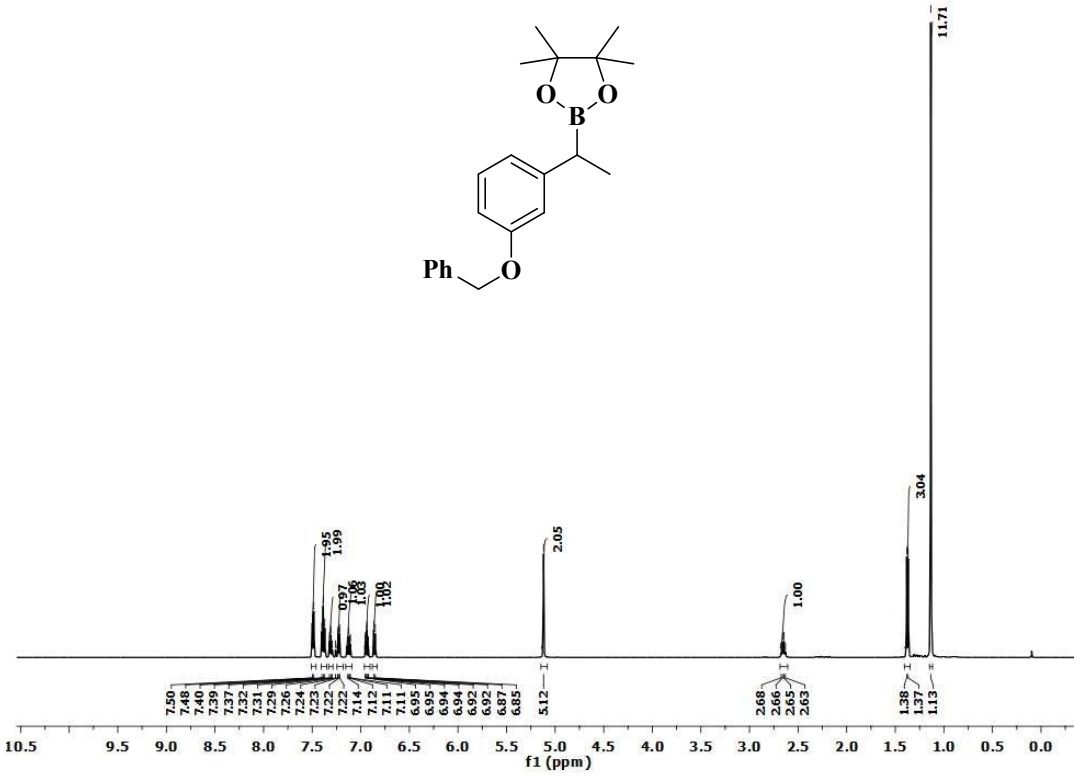


Figure S17. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(3-(benzyloxy)phenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

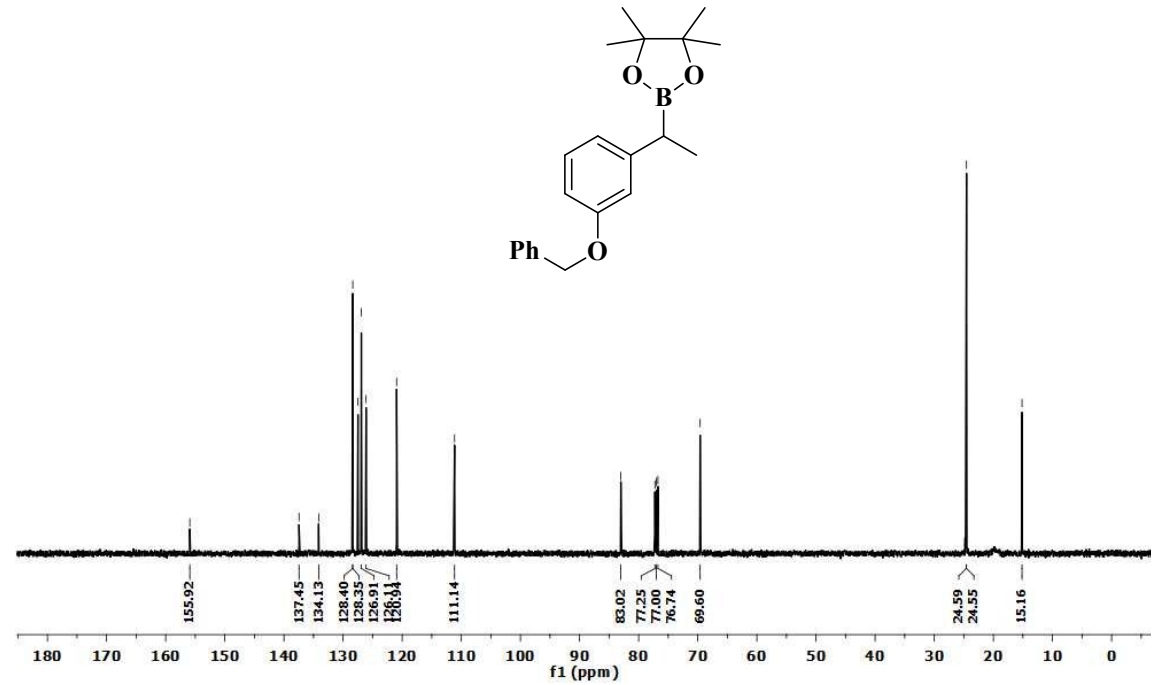


Figure S18. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(3-(benzyloxy)phenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

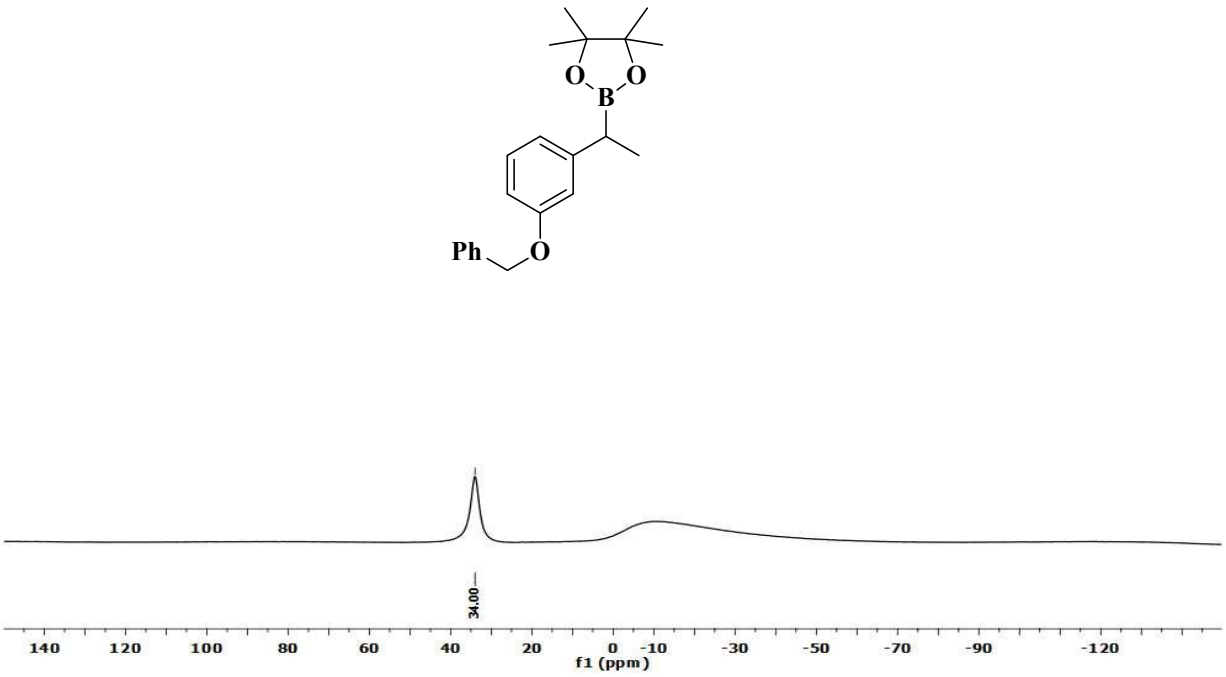


Figure S19. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(3-(benzyloxy)phenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

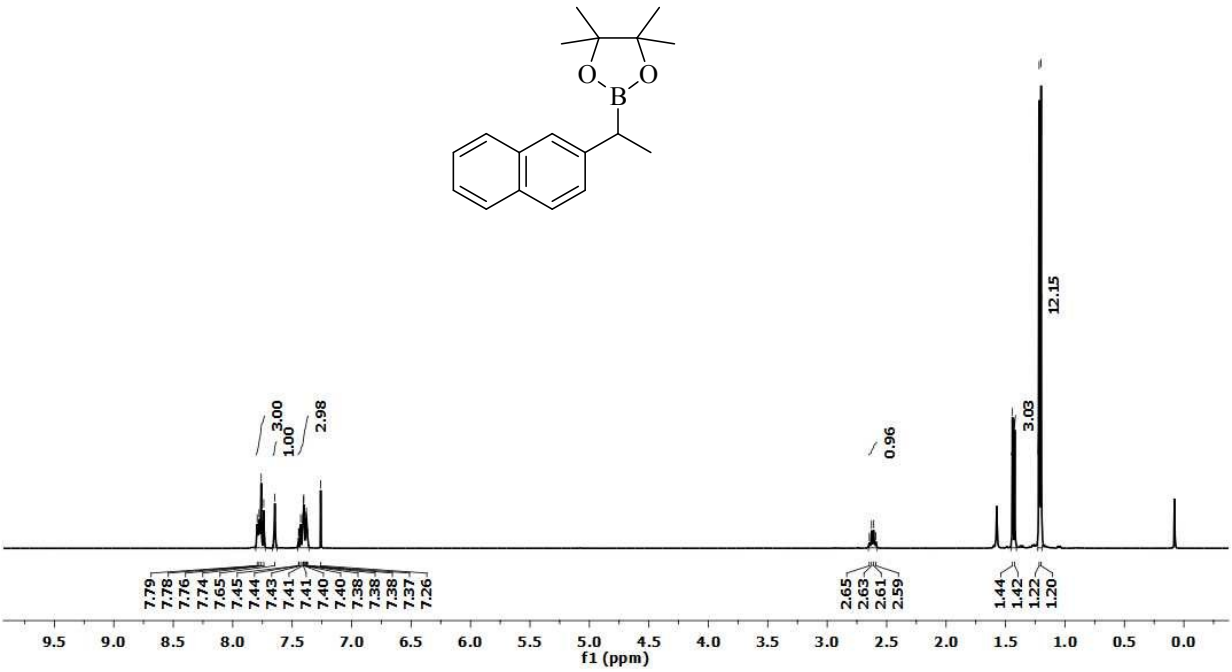


Figure S20. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-(naphthalen-2-yl)ethyl)-1,3,2-dioxaborolane.

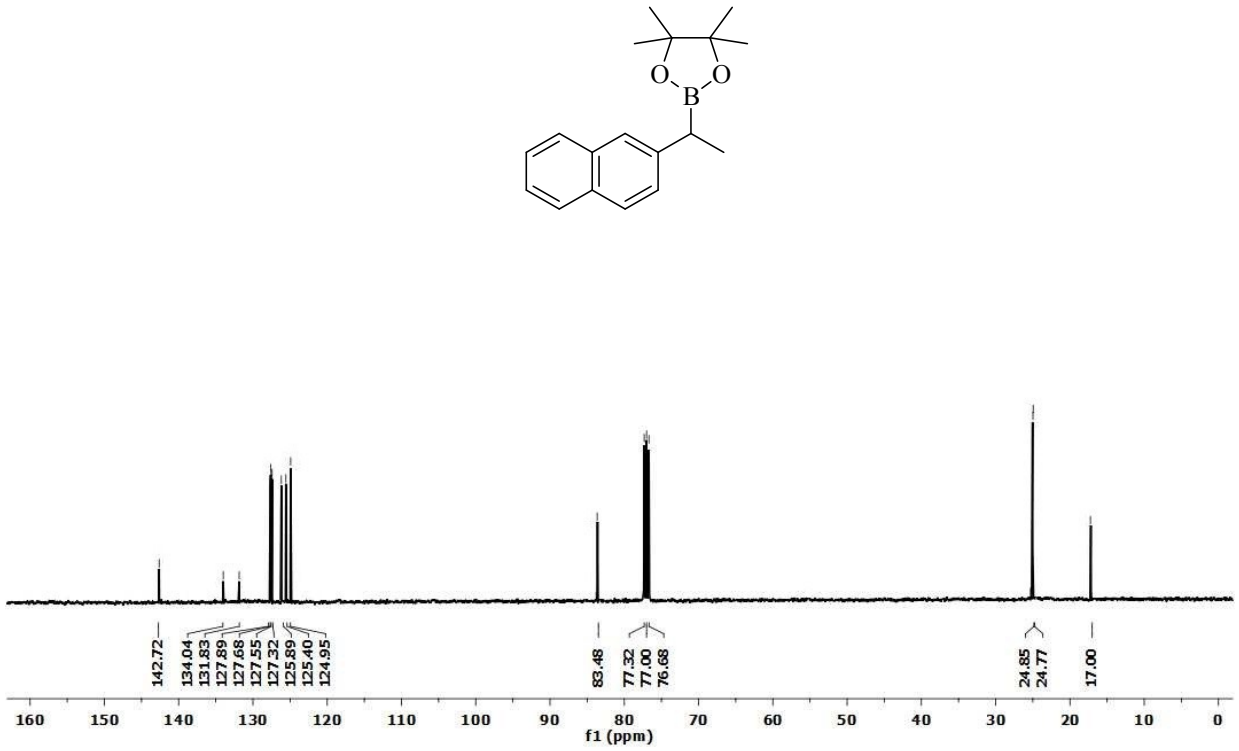


Figure S21. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-(naphthalen-2-yl)ethyl)-1,3,2-dioxaborolane.

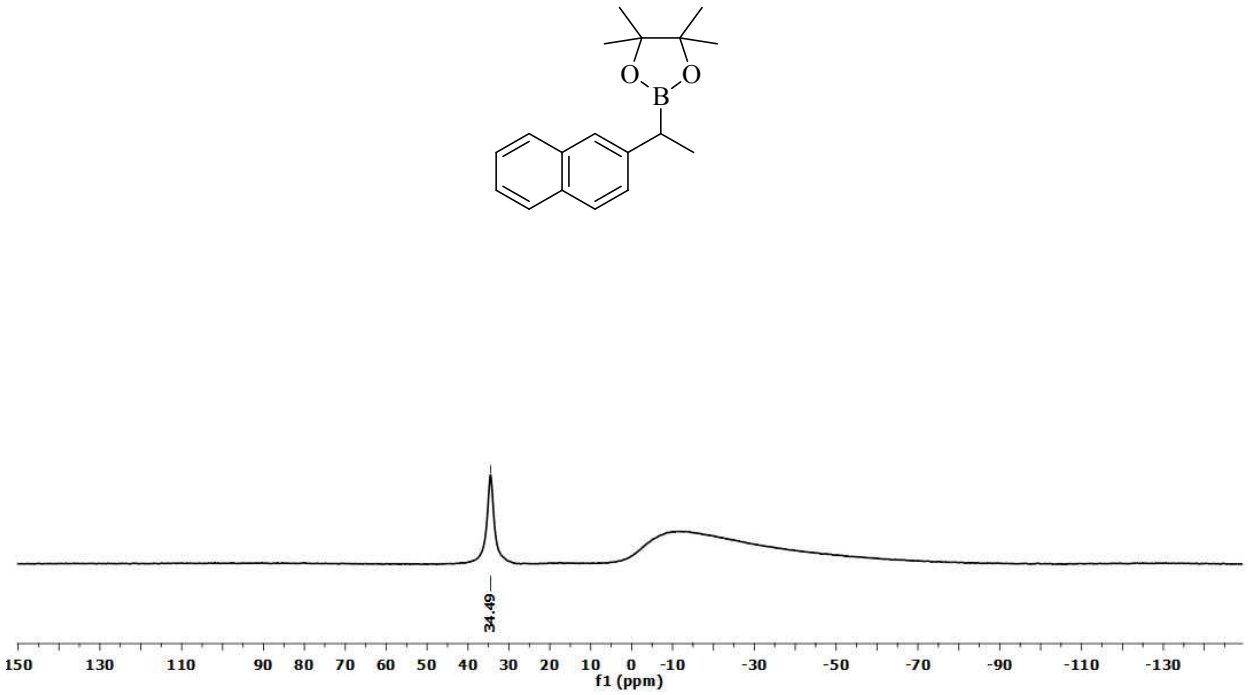


Figure S22. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(1-(naphthalen-2-yl)ethyl)-1,3,2-dioxaborolane.

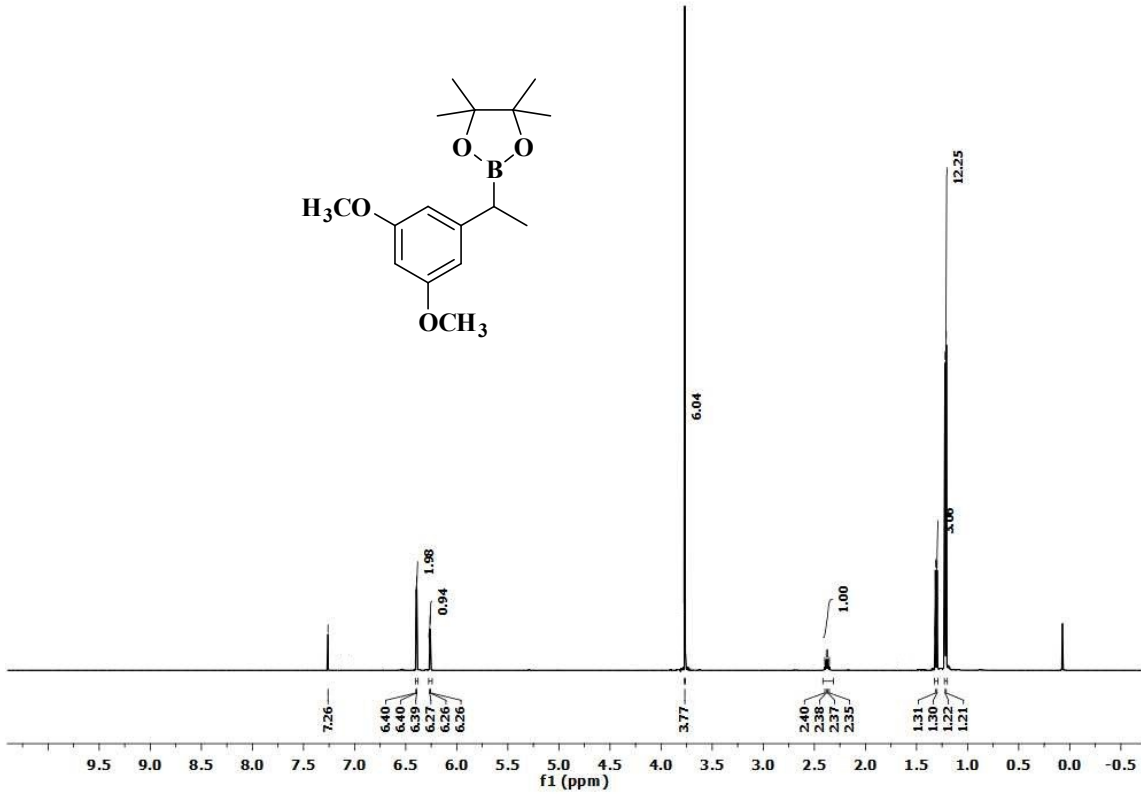


Figure S23. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(3,5-dimethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

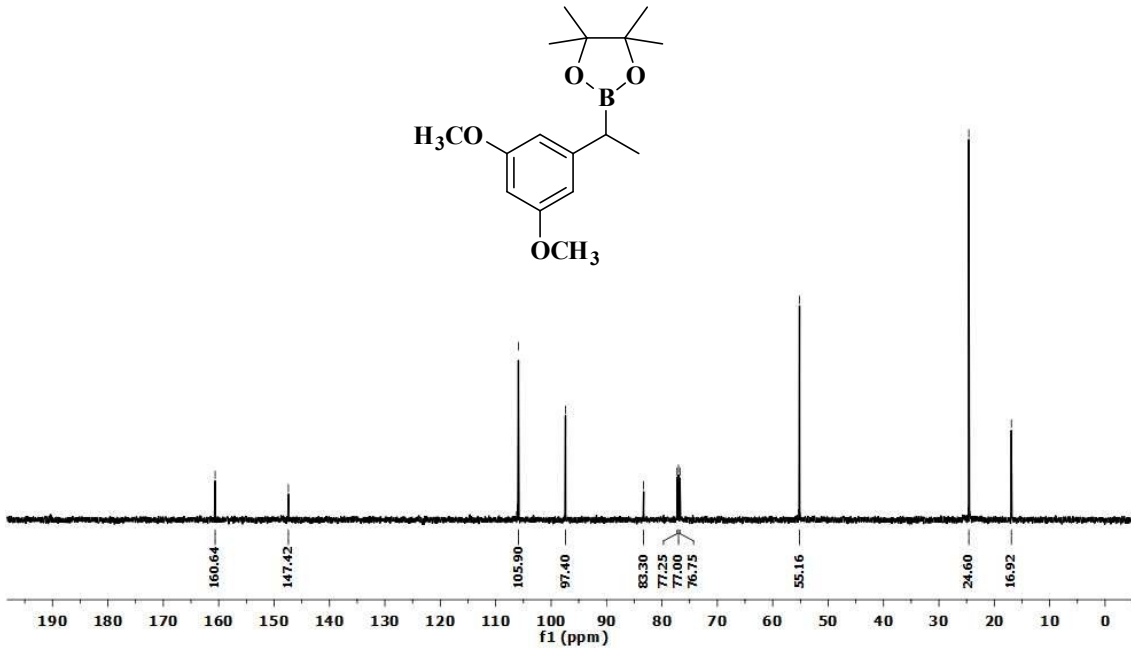


Figure S24. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(3,5-dimethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

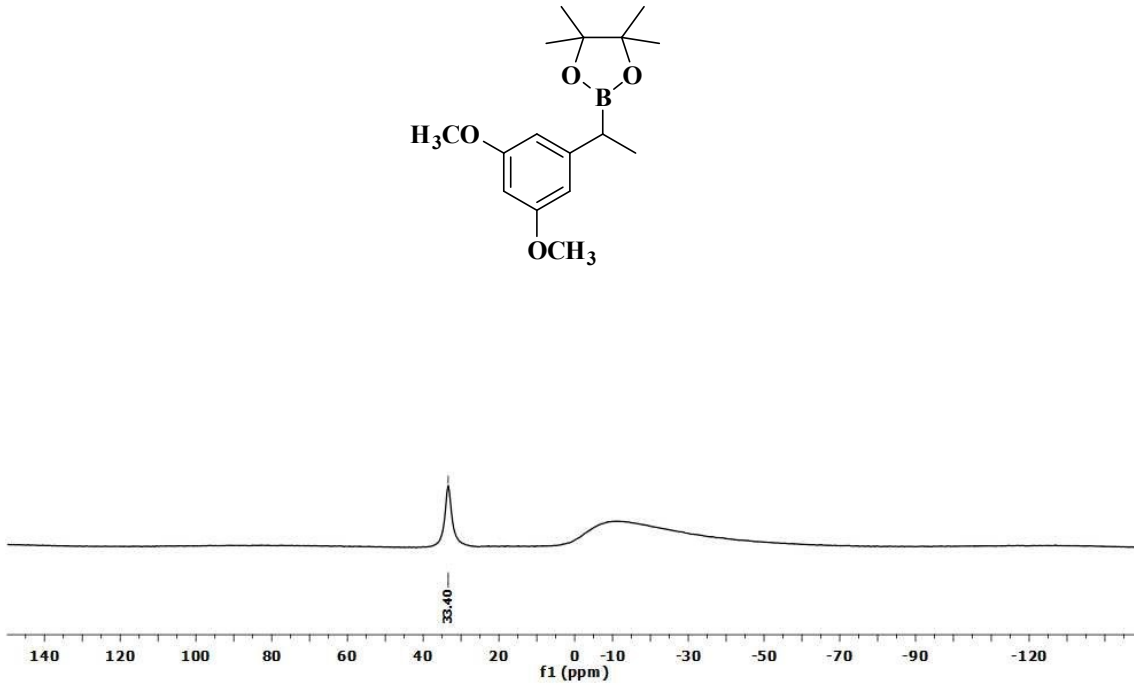


Figure S25. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(3,5-dimethoxyphenyl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

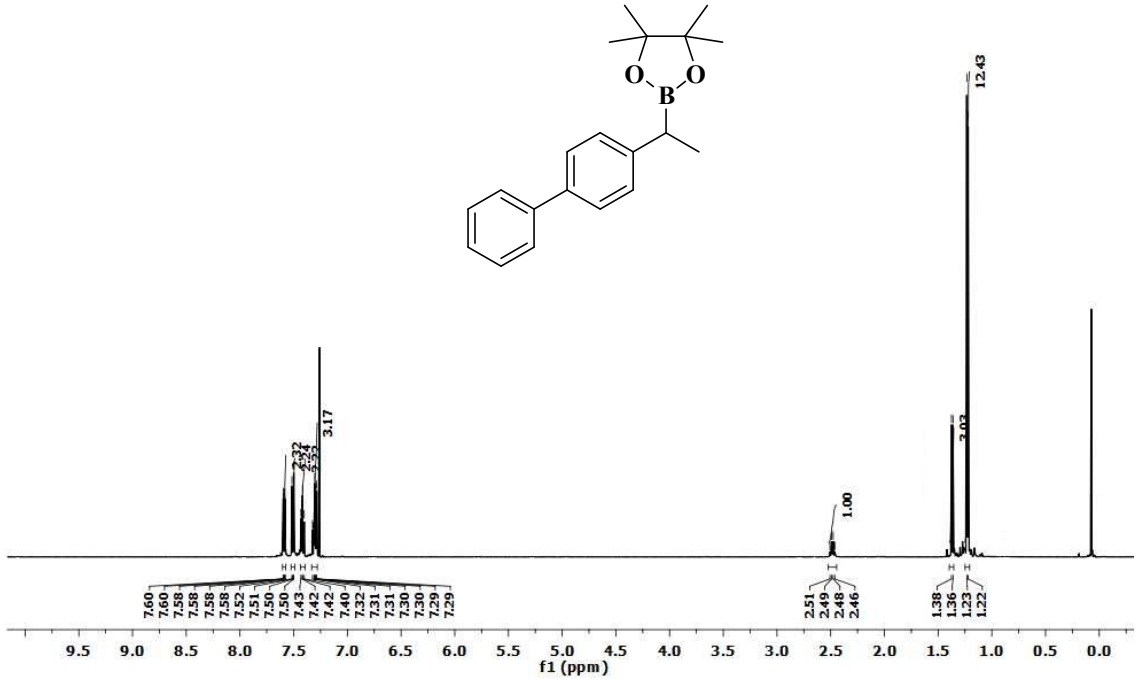


Figure S26. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(biphenyl-4-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

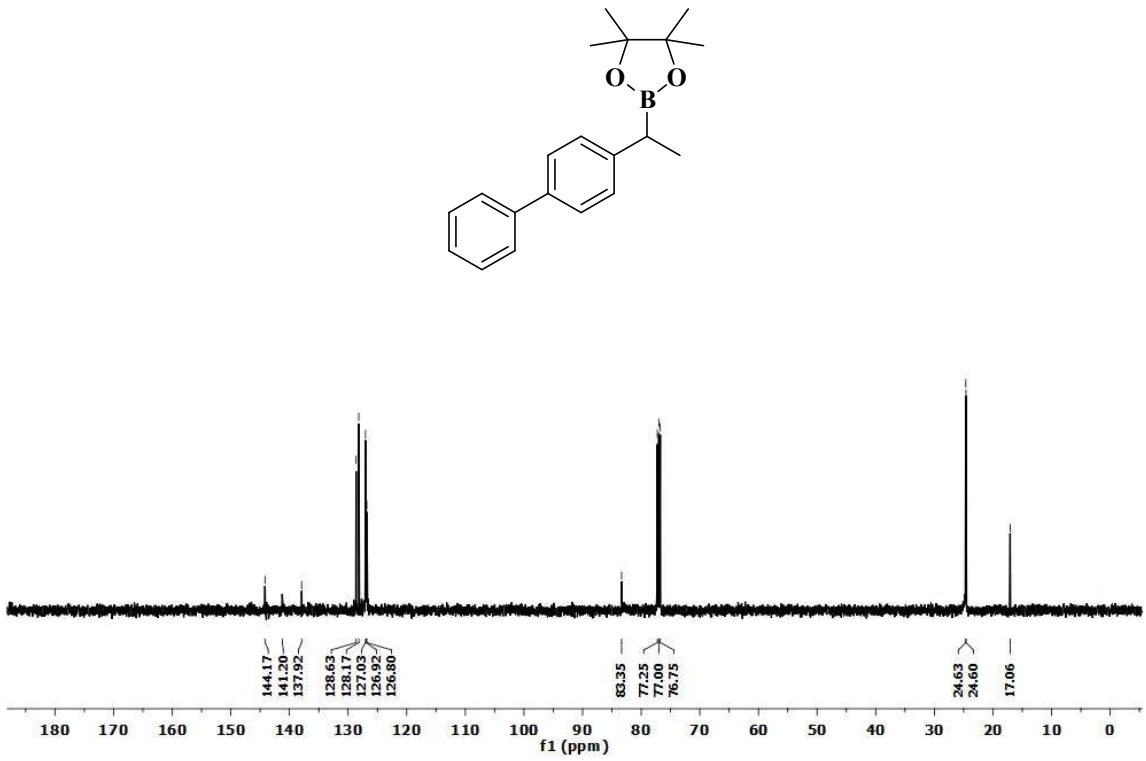


Figure S27. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(biphenyl-4-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

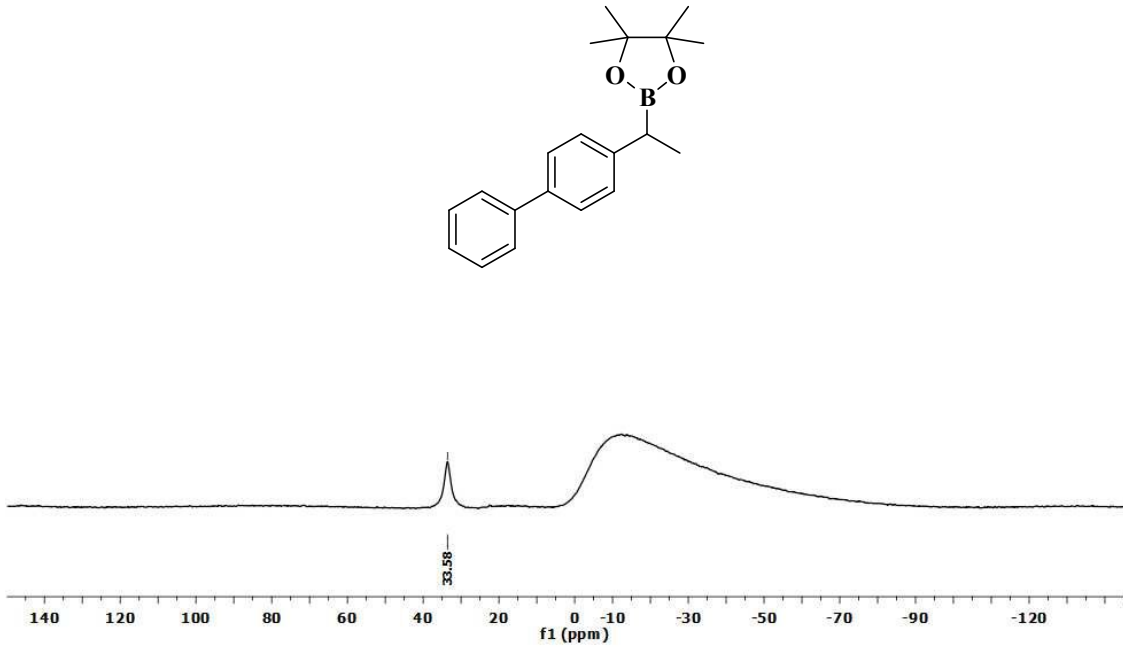


Figure S28. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(biphenyl-4-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

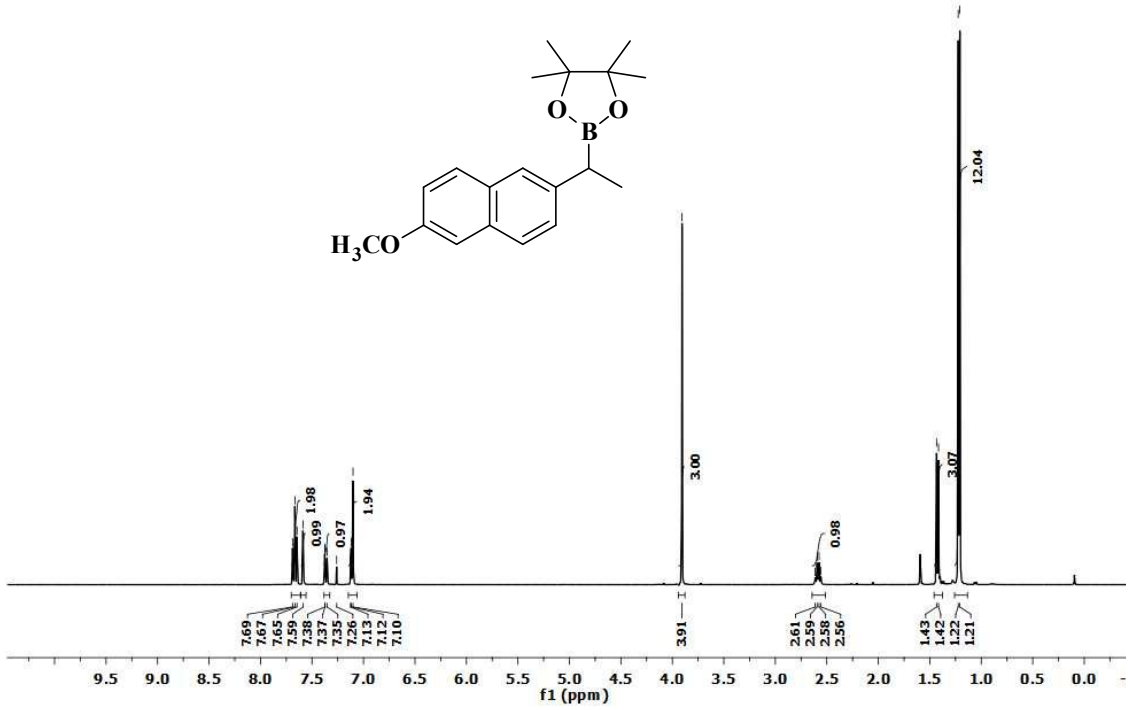


Figure S29. ^{1}H NMR spectrum ($CDCl_3$) of 2-(1-(6-methoxynaphthalen-2-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

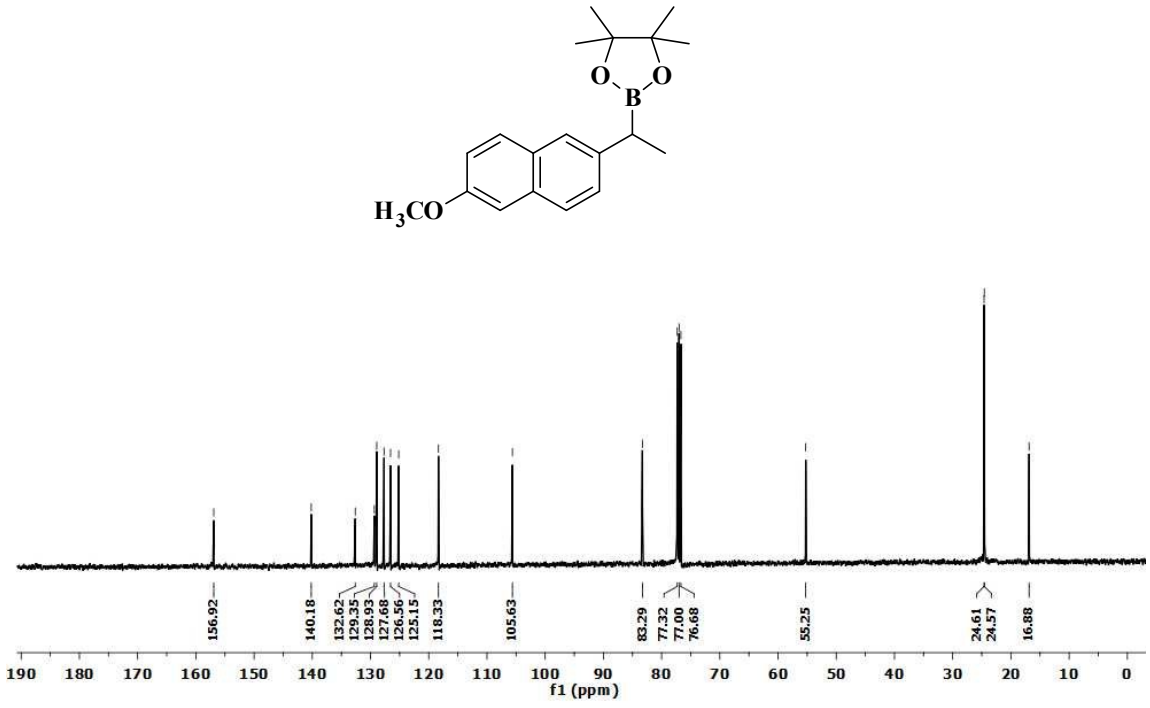


Figure S30. ^{13}C NMR spectrum ($CDCl_3$) of 2-(1-(6-methoxynaphthalen-2-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

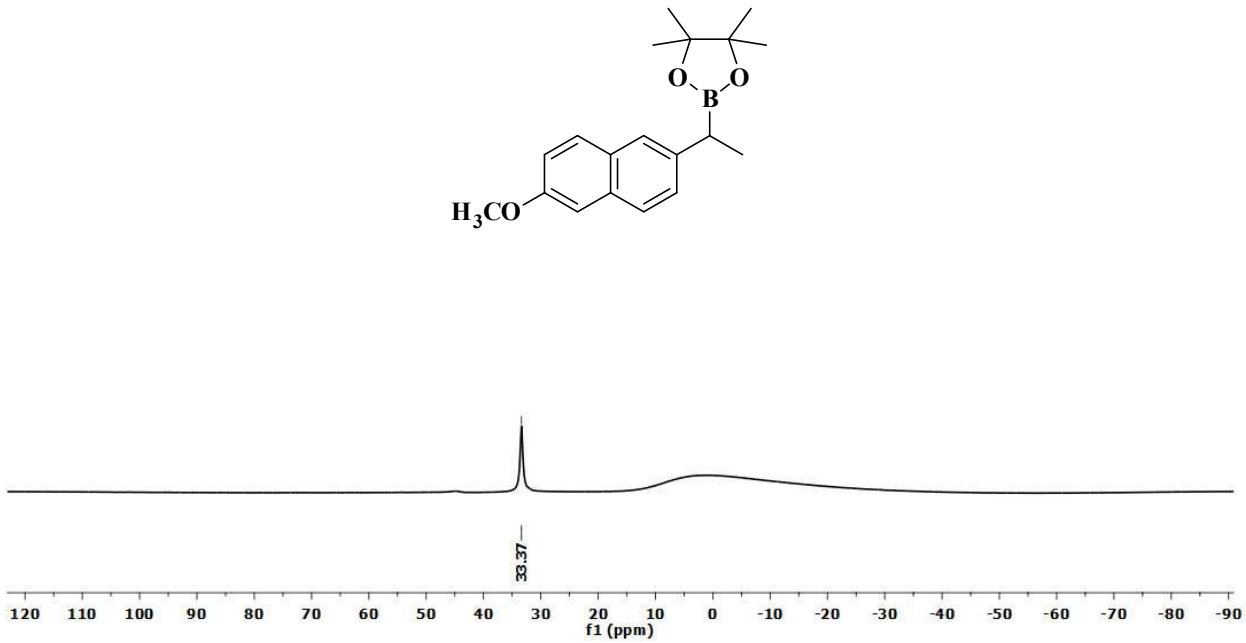


Figure S31. ^{11}B NMR spectrum ($CDCl_3$) of 2-(1-(6-methoxynaphthalen-2-yl)ethyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

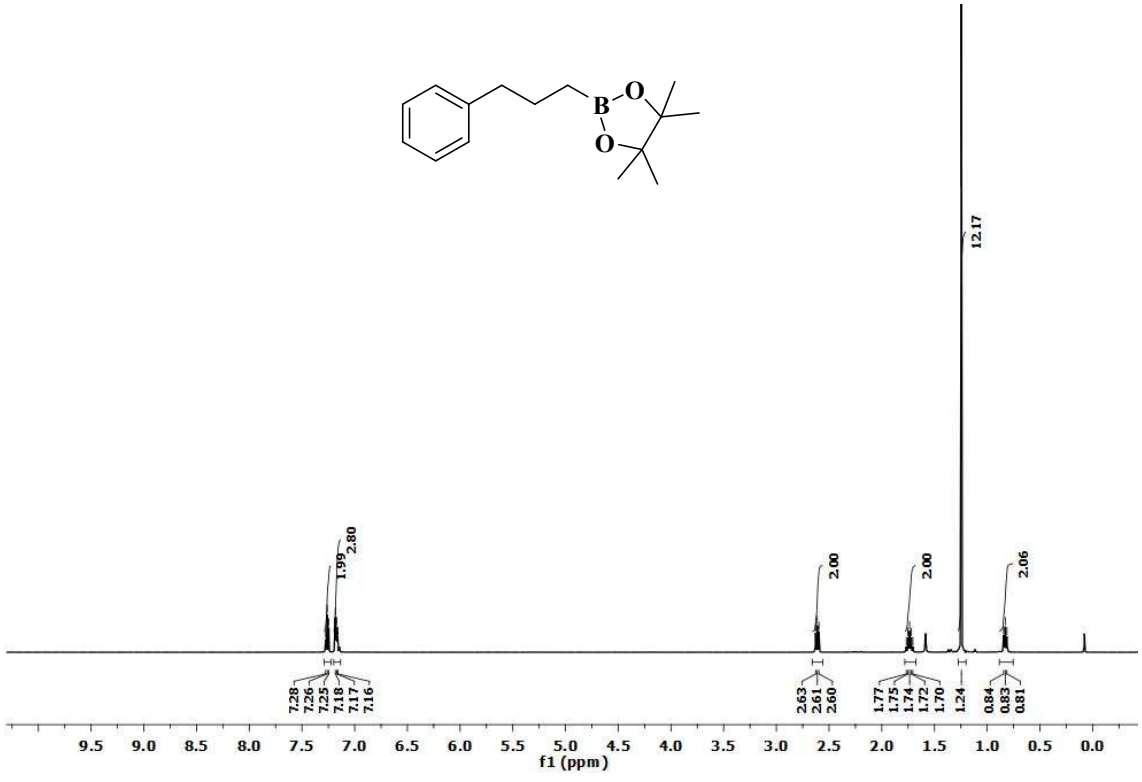


Figure S32. ^{1}H NMR spectrum ($CDCl_3$) of 2-(3-Phenylpropyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

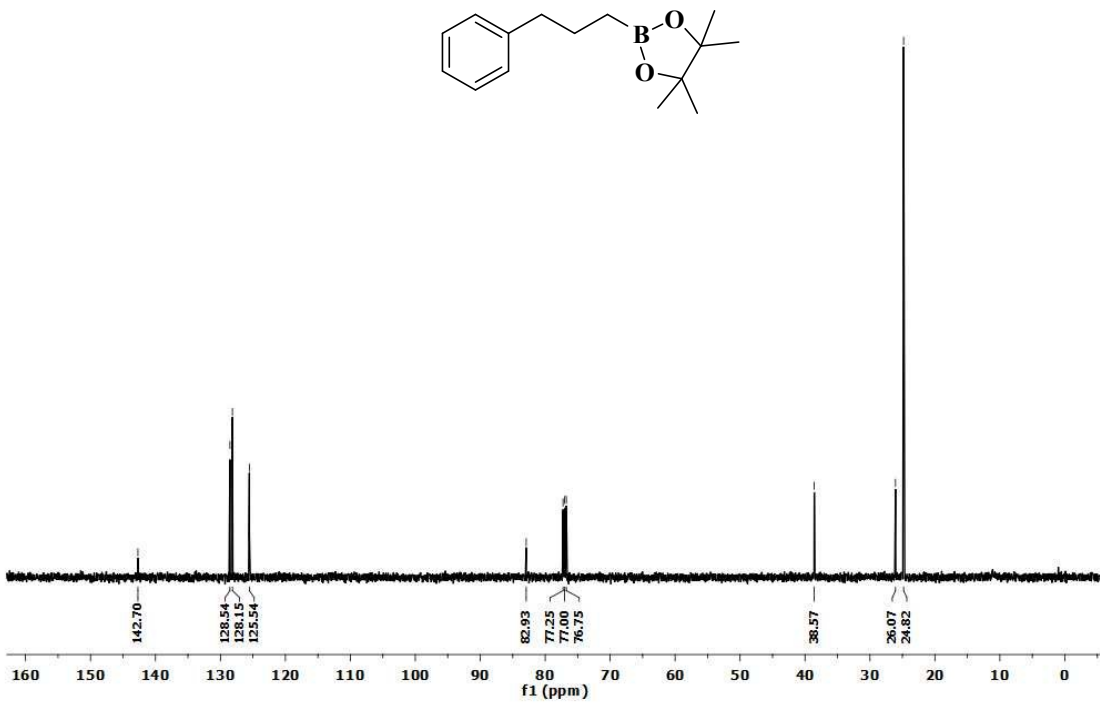


Figure S33. ^{13}C NMR spectrum ($CDCl_3$) of 2-(3-Phenylpropyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

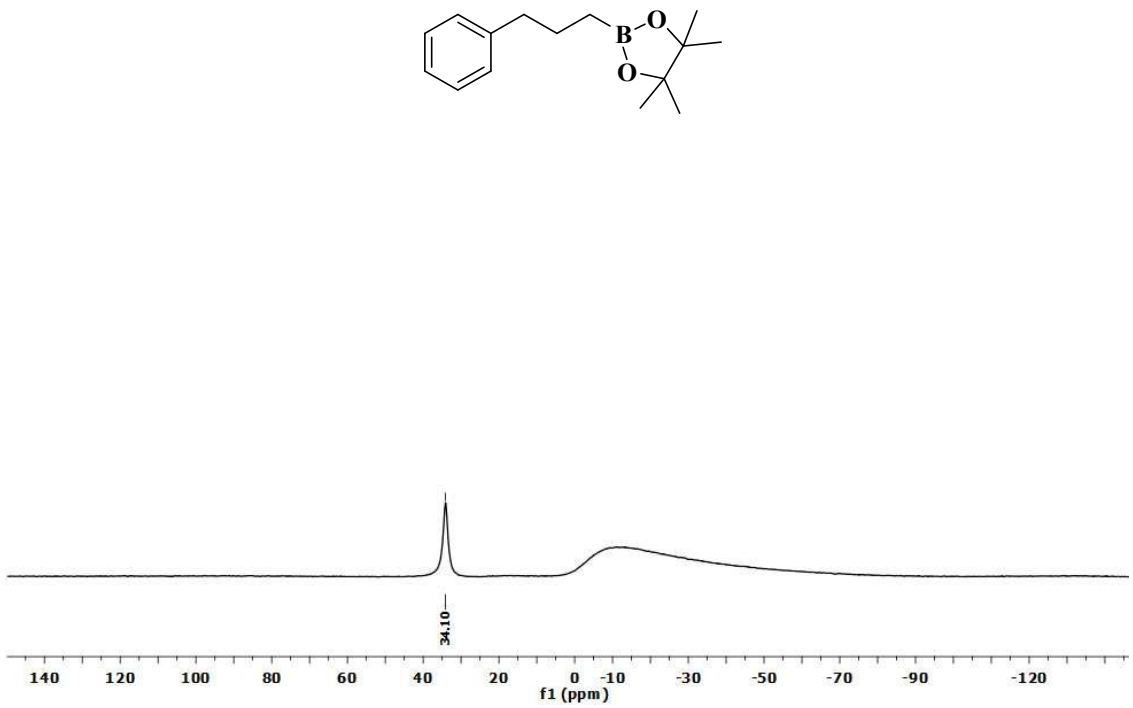


Figure S34. ^{11}B NMR spectrum ($CDCl_3$) of 2-(3-Phenylpropyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

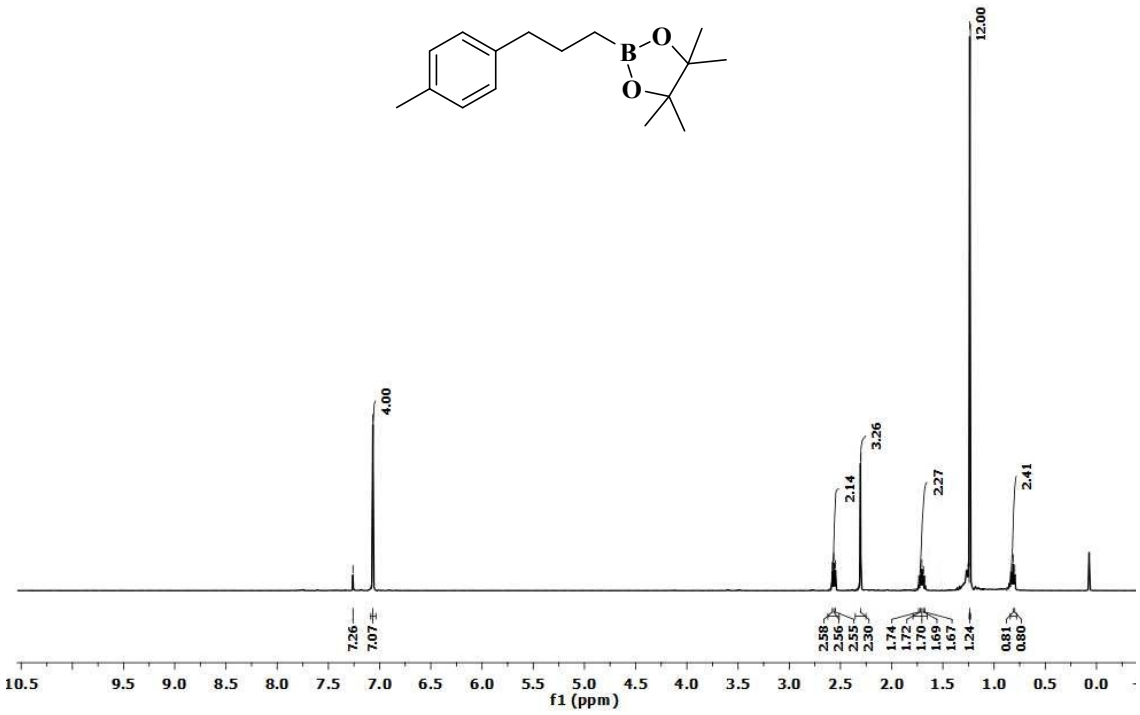


Figure S35. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-p-tolylpropyl)-1,3,2-dioxaborolane.

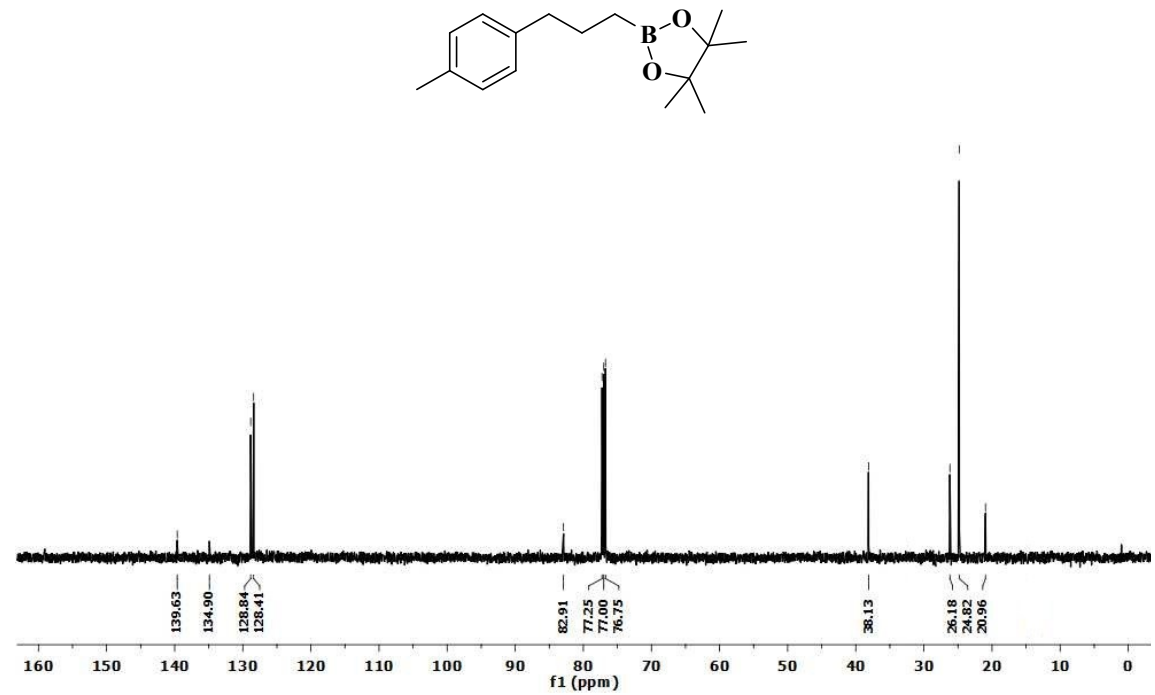


Figure S36. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-p-tolylpropyl)-1,3,2-dioxaborolane.

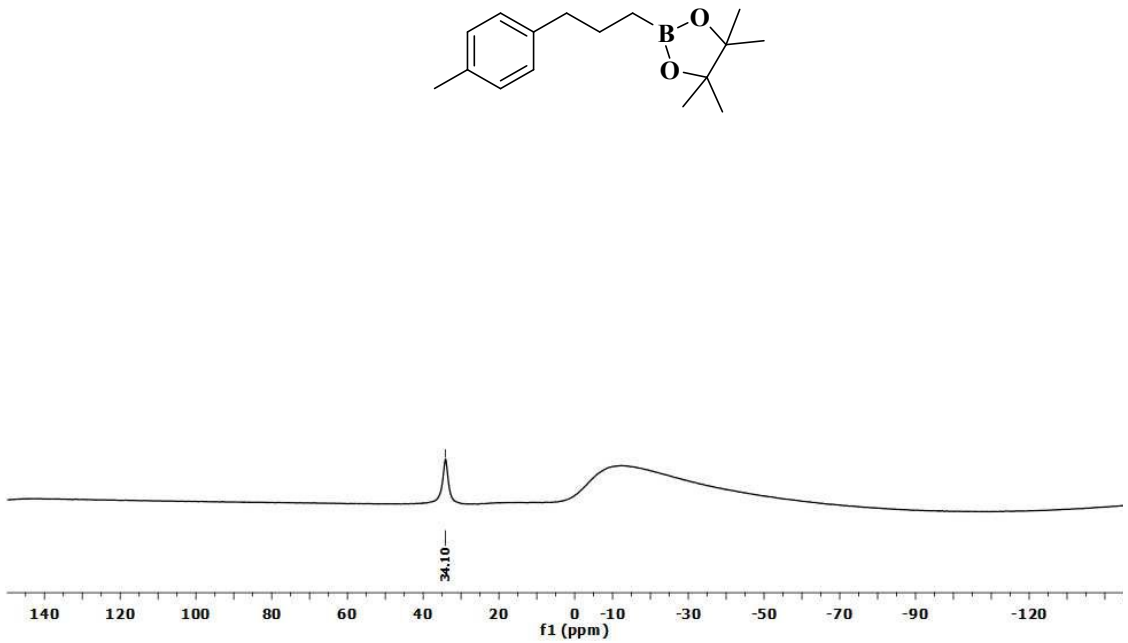


Figure S37. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-p-tolylpropyl)-1,3,2-dioxaborolane.

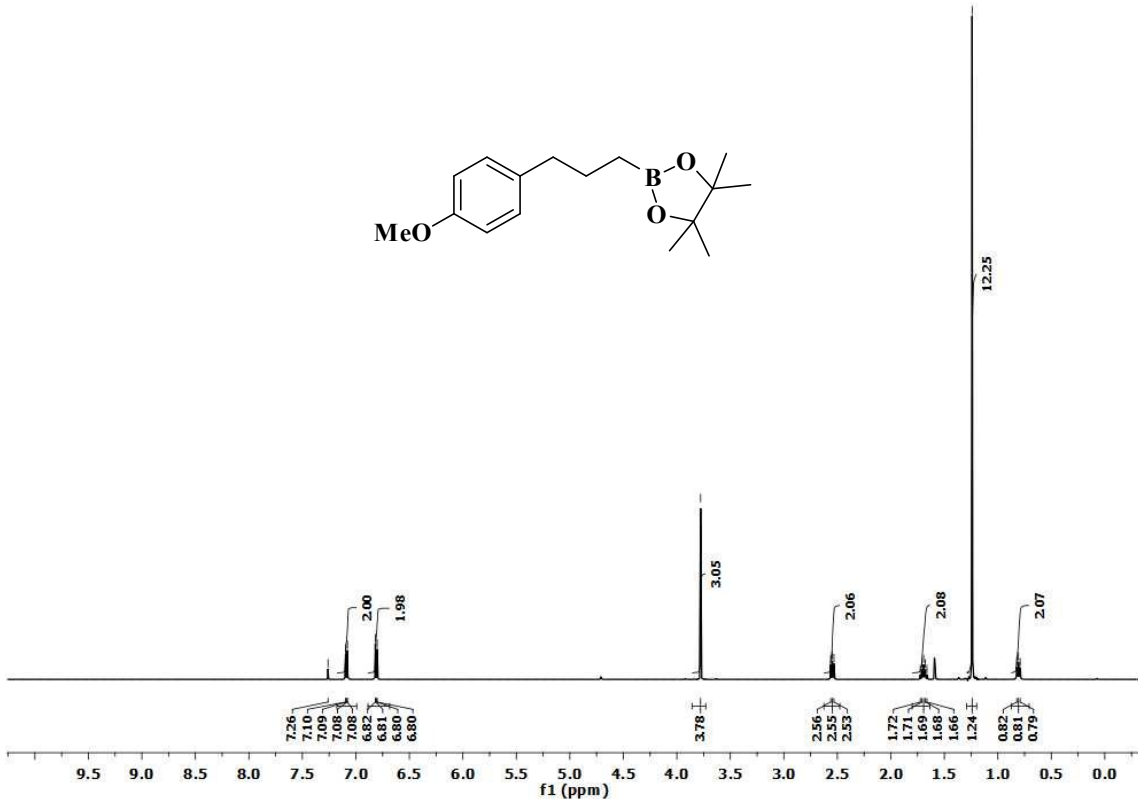


Figure S38. ^{1}H NMR spectrum ($CDCl_3$) of 2-(3-(4-Methoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

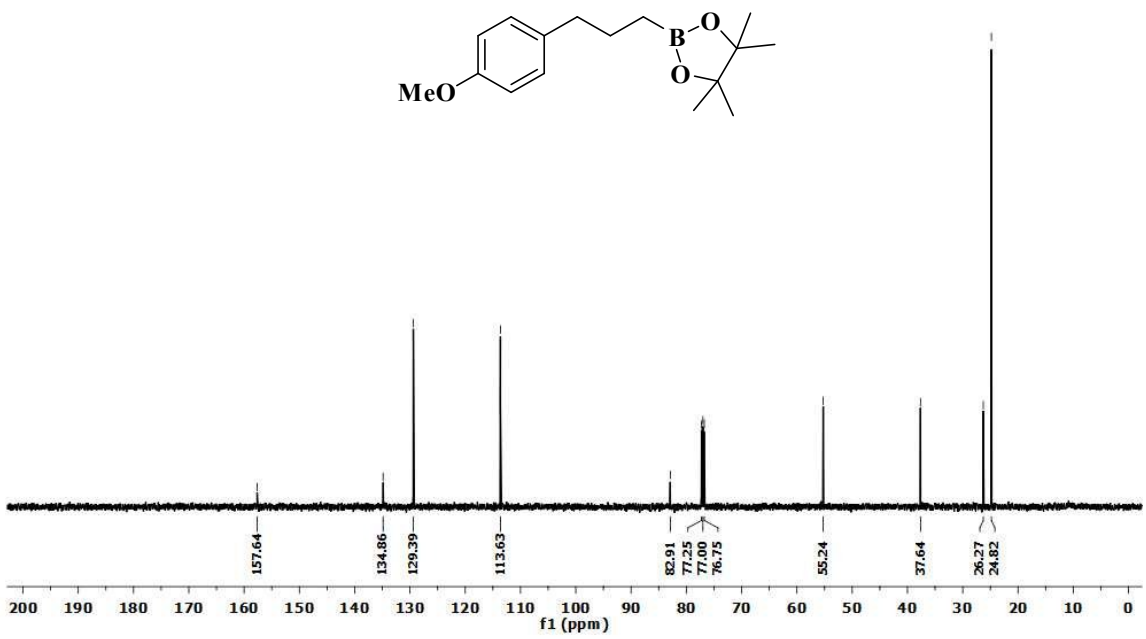


Figure S39. ^{13}C NMR spectrum ($CDCl_3$) of 2-(3-(4-Methoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

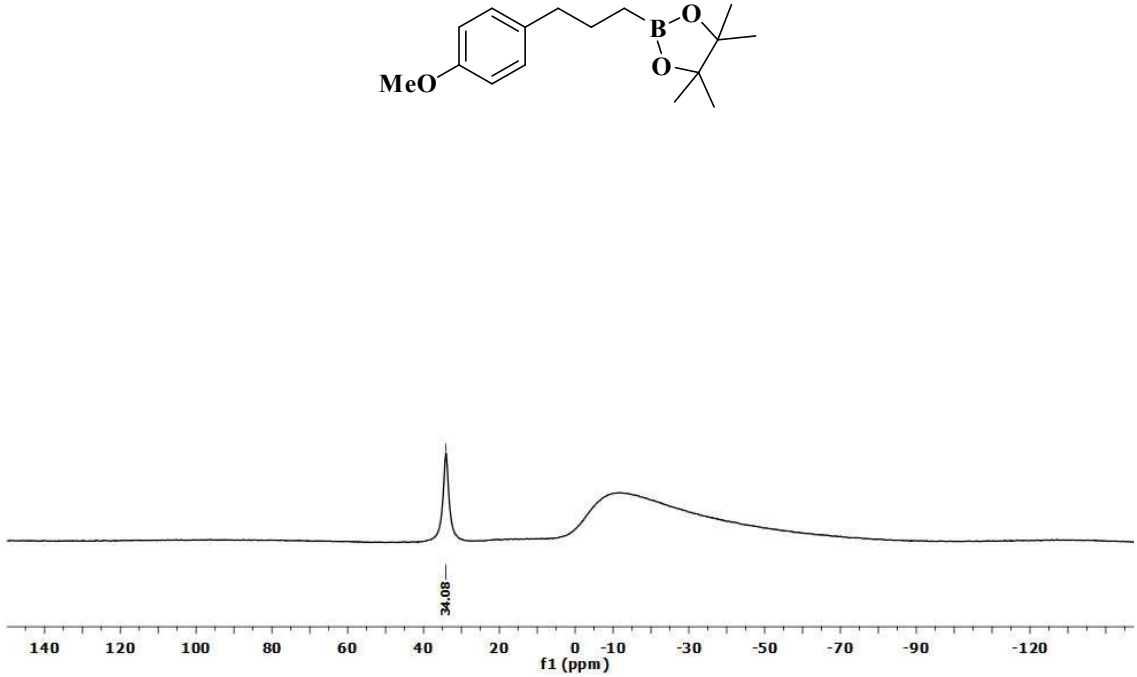


Figure S40. ^{11}B NMR spectrum ($CDCl_3$) of 2-(3-(4-Methoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

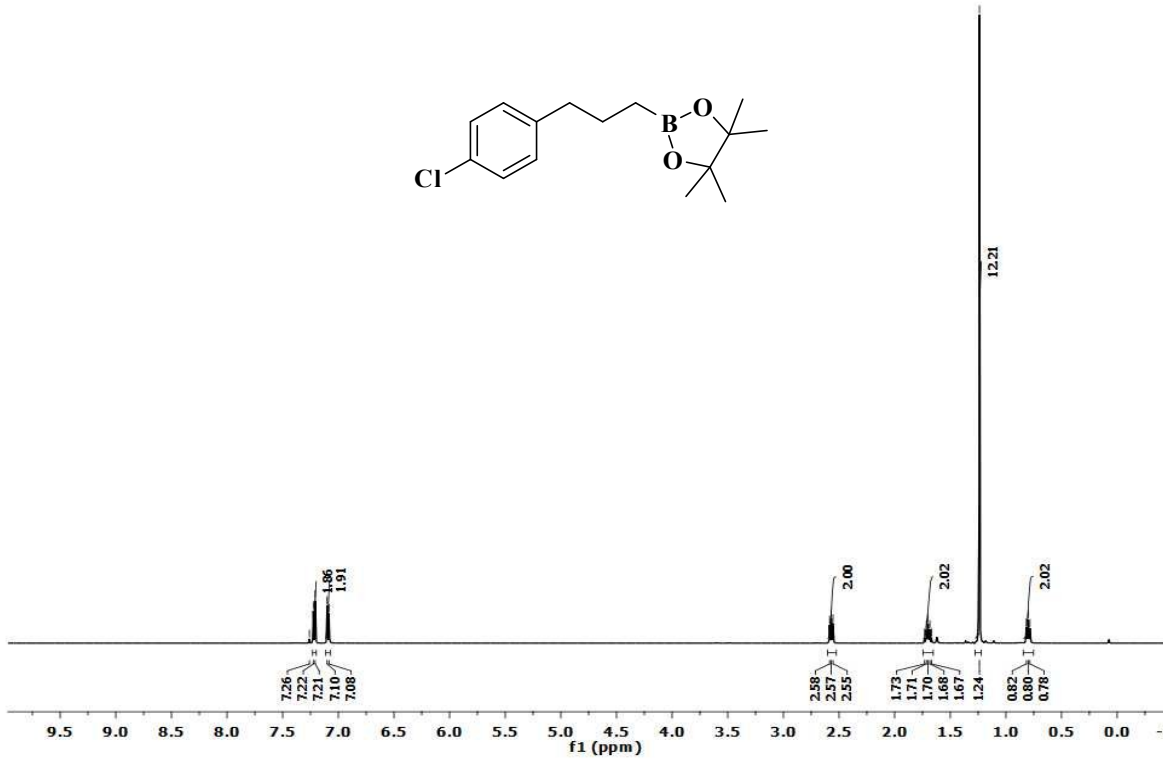


Figure S41. ^{1}H NMR spectrum ($CDCl_3$) of 2-(3-(4-chlorophenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

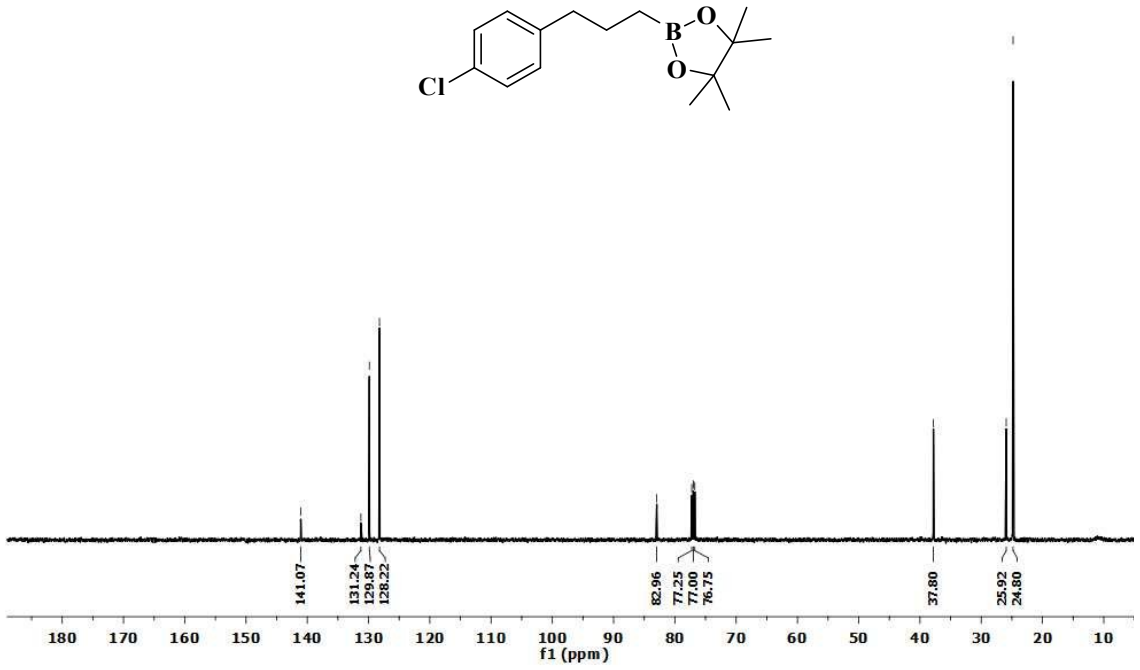


Figure S42. ^{13}C NMR spectrum ($CDCl_3$) of 2-(3-(4-chlorophenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

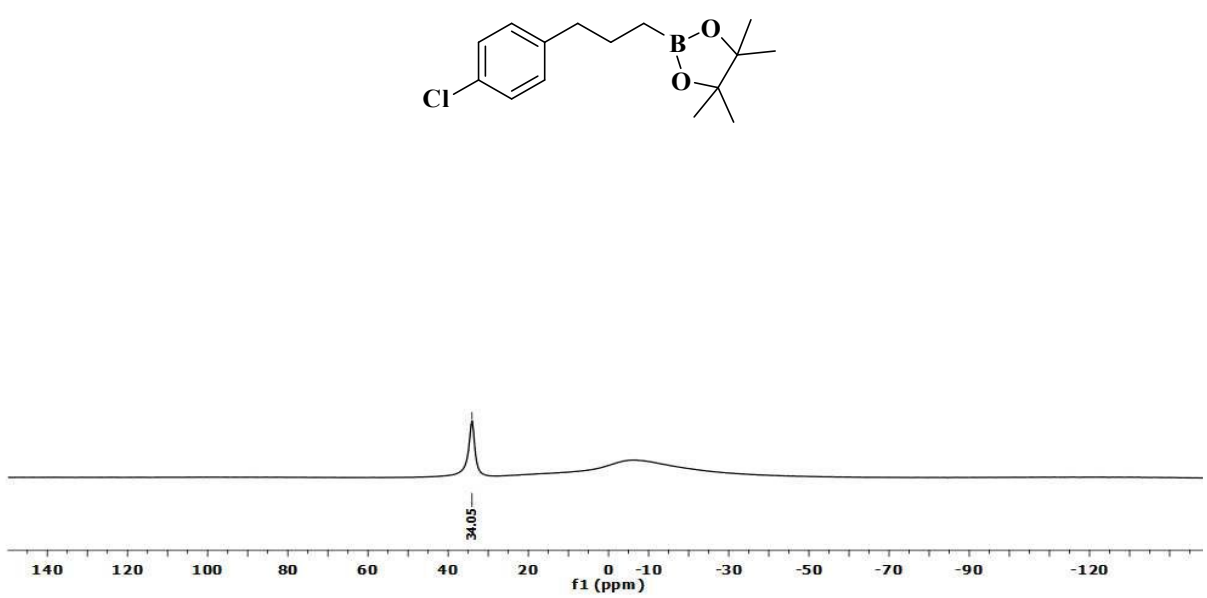


Figure S43. ^{11}B NMR spectrum ($CDCl_3$) of 2-(3-(4-chlorophenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

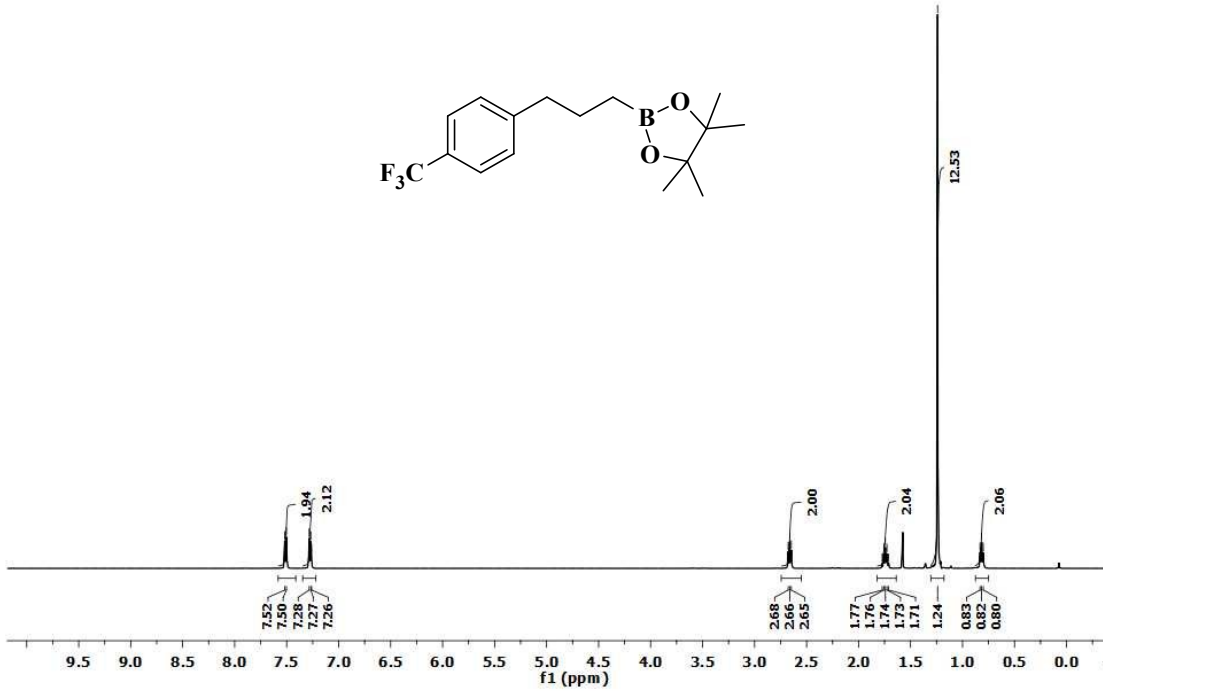


Figure S44. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-Tetramethyl-2-(3-(4-trifluoromethylphenyl)propyl)-1,3,2-dioxaborolane.

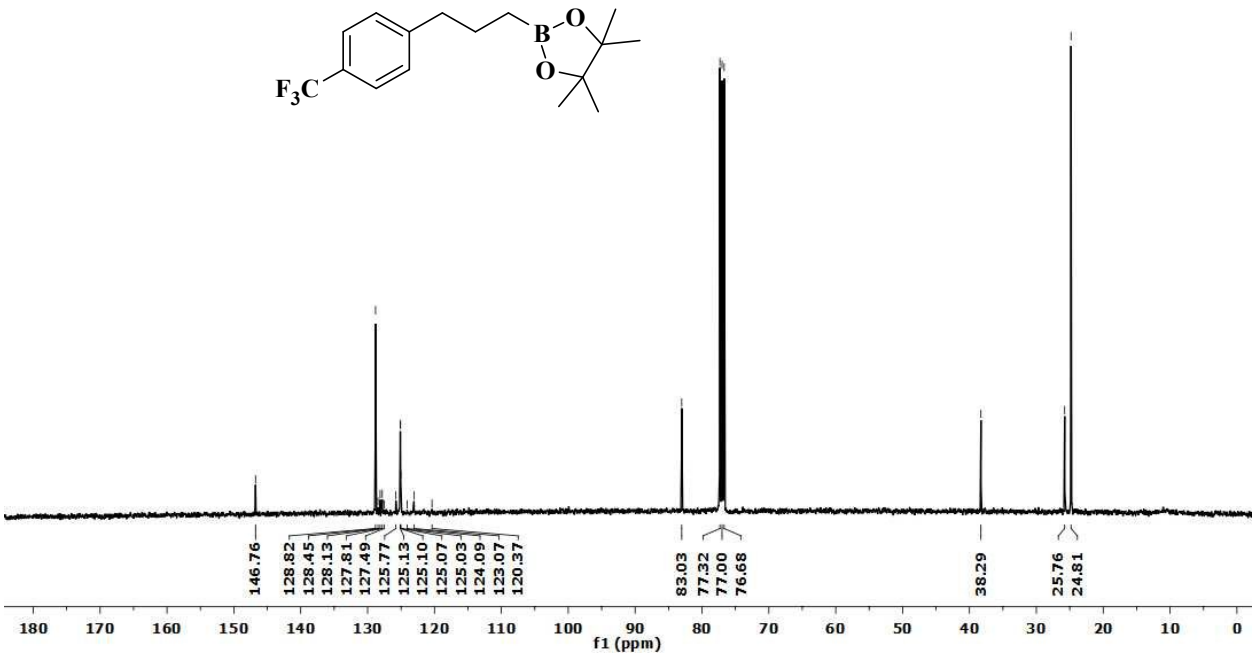
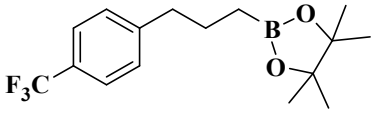


Figure S45. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-Tetramethyl-2-(3-(4-trifluoromethylphenyl)propyl)-1,3,2-dioxaborolane.



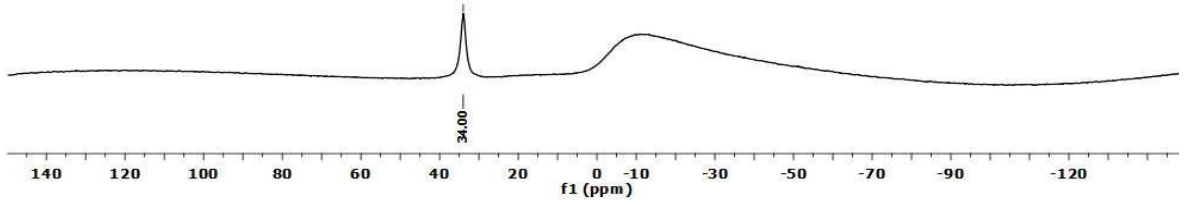


Figure S46. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-Tetramethyl-2-(3-(4-trifluoromethylphenyl)propyl)-1,3,2-dioxaborolane.

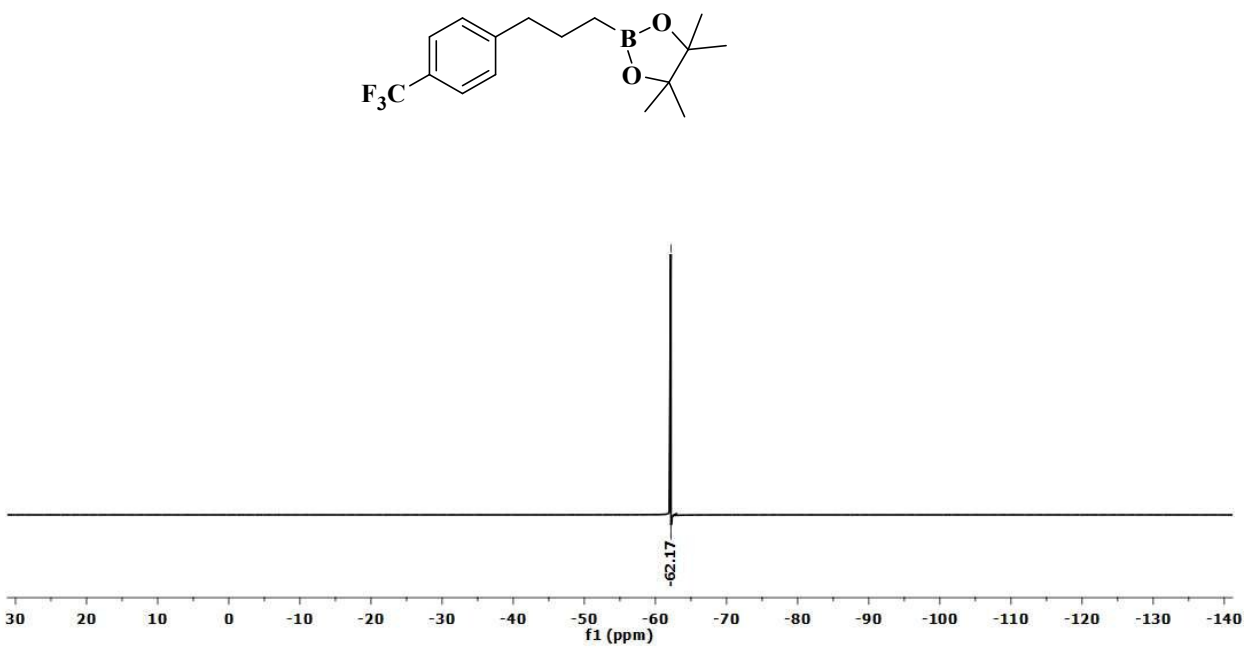


Figure S47. ^{19}F NMR spectrum ($CDCl_3$) of 4,4,5,5-Tetramethyl-2-(3-(4-trifluoromethylphenyl)propyl)-1,3,2-dioxaborolane

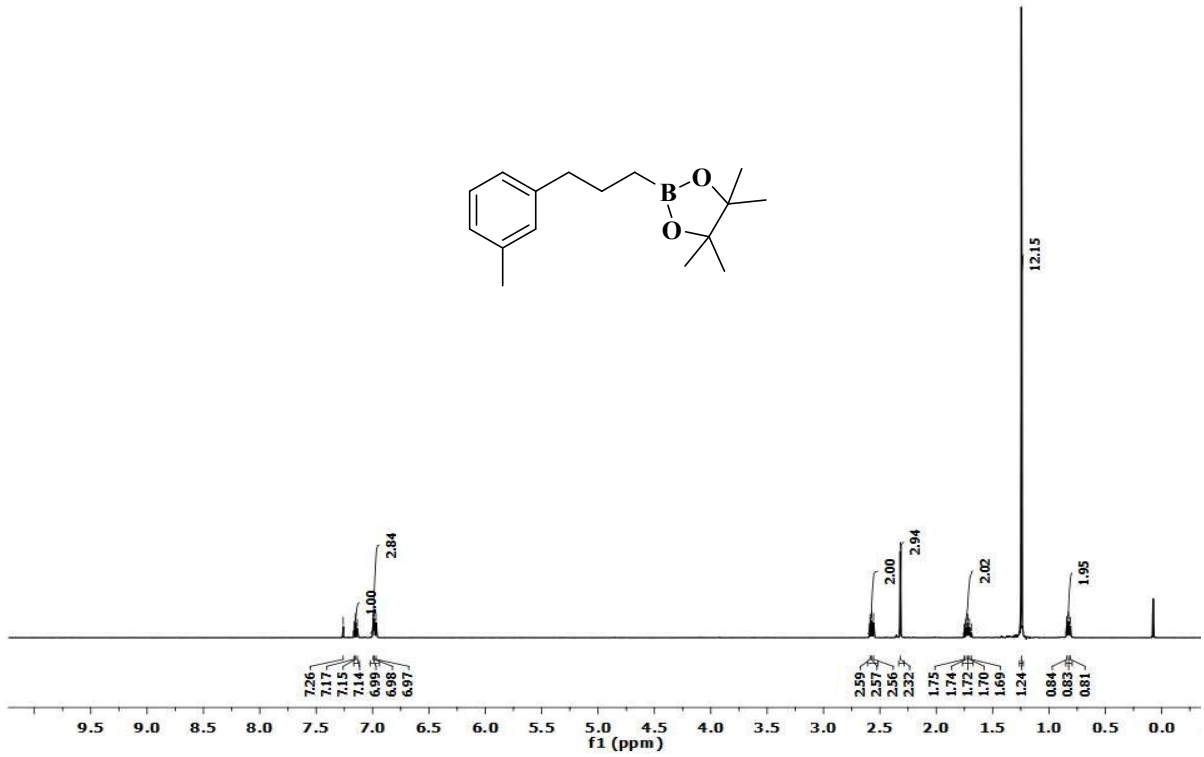


Figure S48. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-m-tolylpropyl)-1,3,2-dioxaborolane.

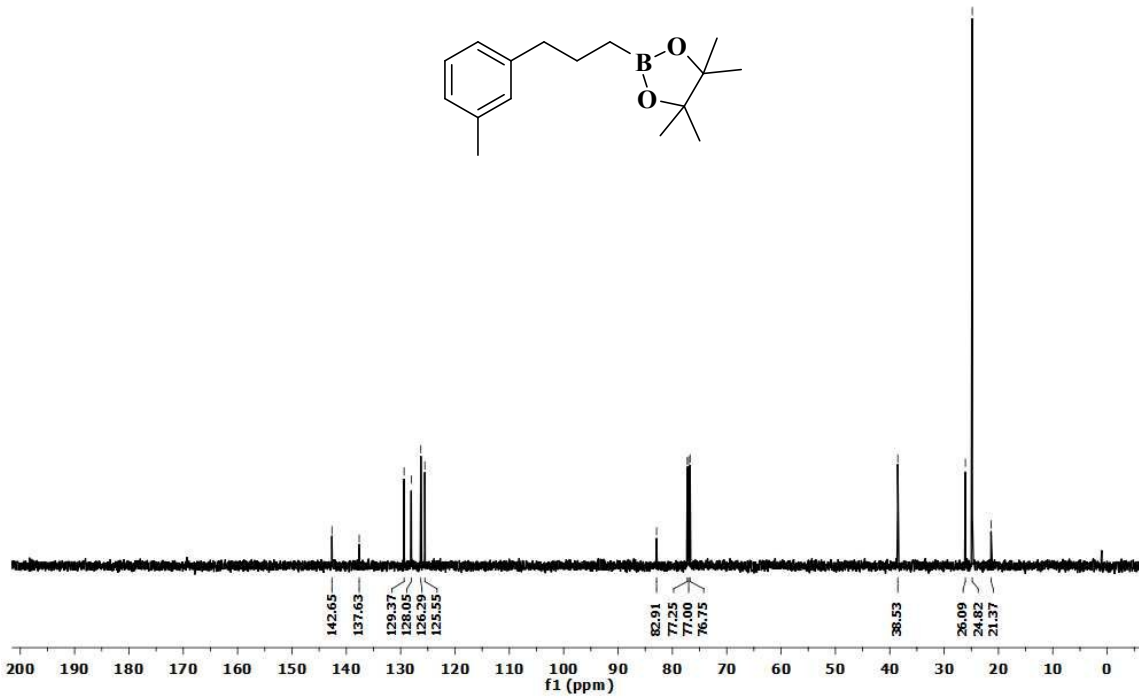


Figure S49. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-m-tolylpropyl)-1,3,2-dioxaborolane.

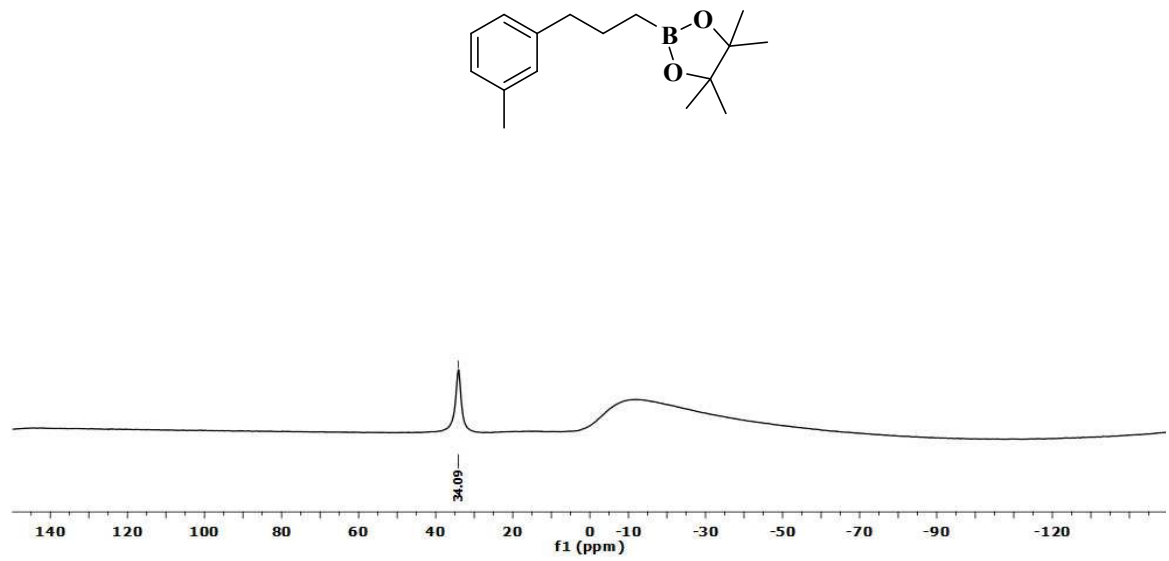


Figure S50. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-m-tolylpropyl)-1,3,2-dioxaborolane.

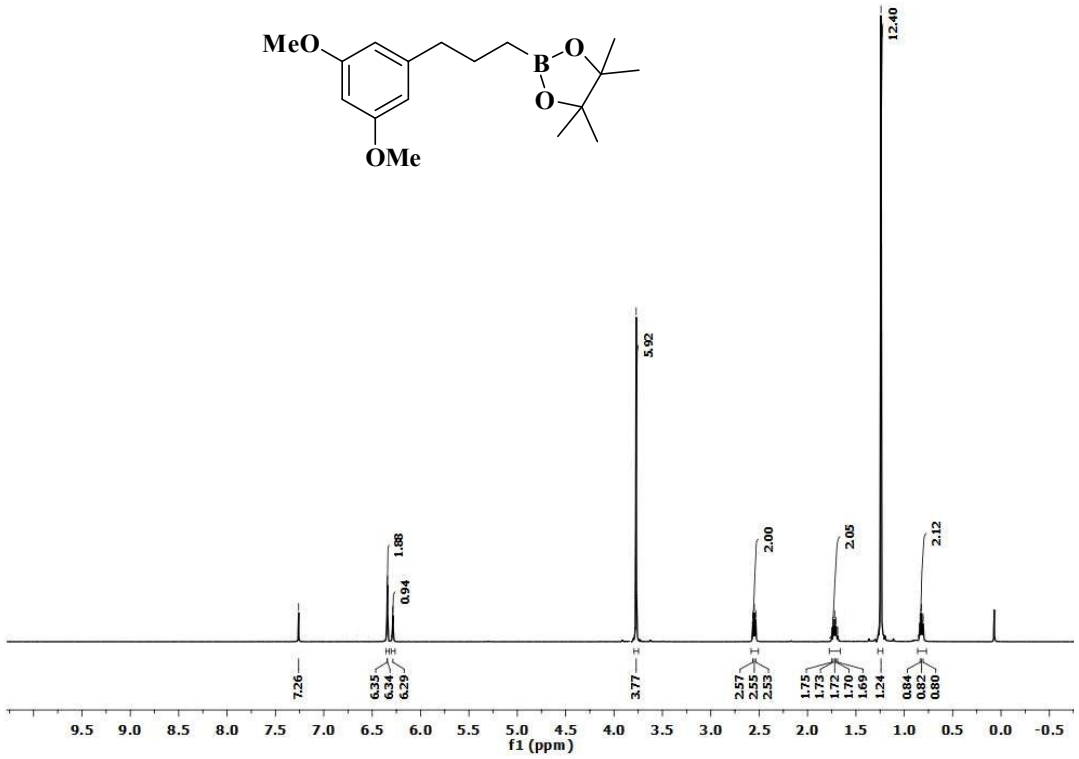


Figure S51. ^{1}H NMR spectrum ($CDCl_3$) of 2-(3-(3,5-dimethoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

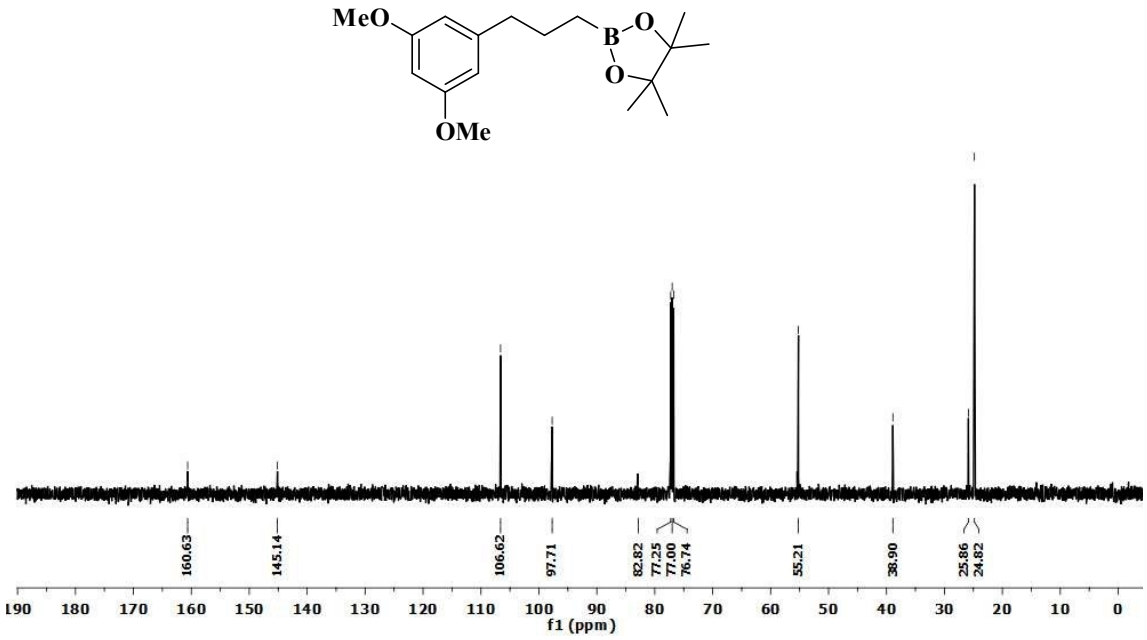


Figure S52. ^{13}C NMR spectrum ($CDCl_3$) of 2-(3-(3,5-dimethoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

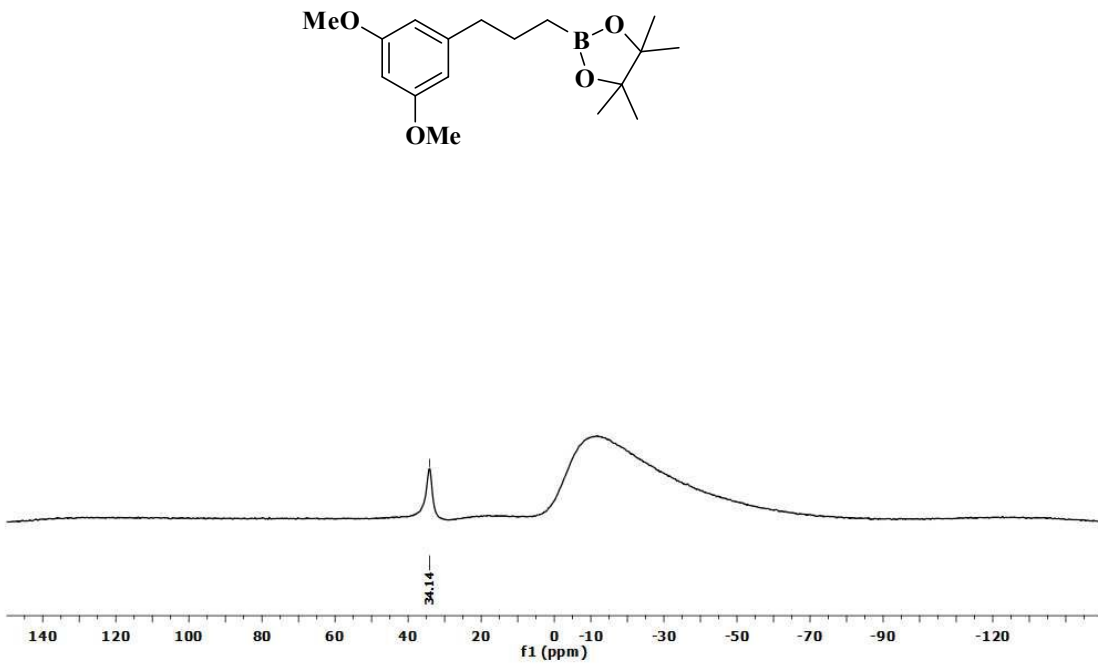


Figure S53. ^{11}B NMR spectrum ($CDCl_3$) of 2-(3-(3,5-dimethoxyphenyl)propyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

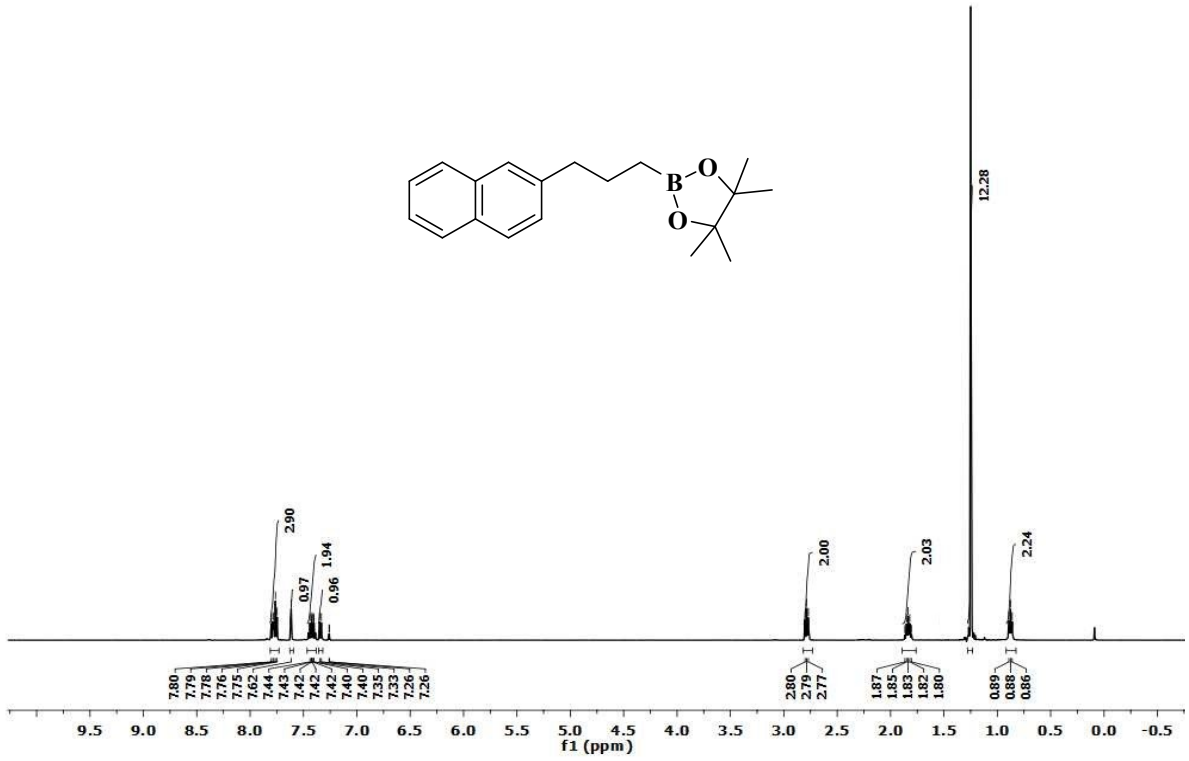


Figure S54. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-(naphthalen-2-yl)propyl)-1,3,2-dioxaborolane.

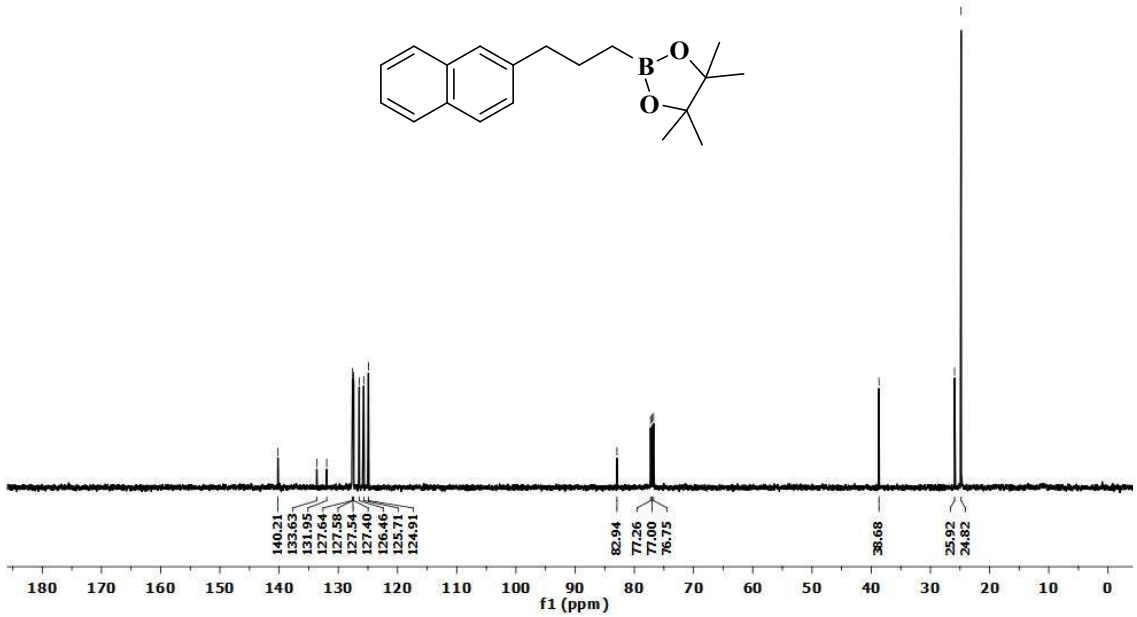


Figure S55. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-(naphthalen-2-yl)propyl)-1,3,2-dioxaborolane.

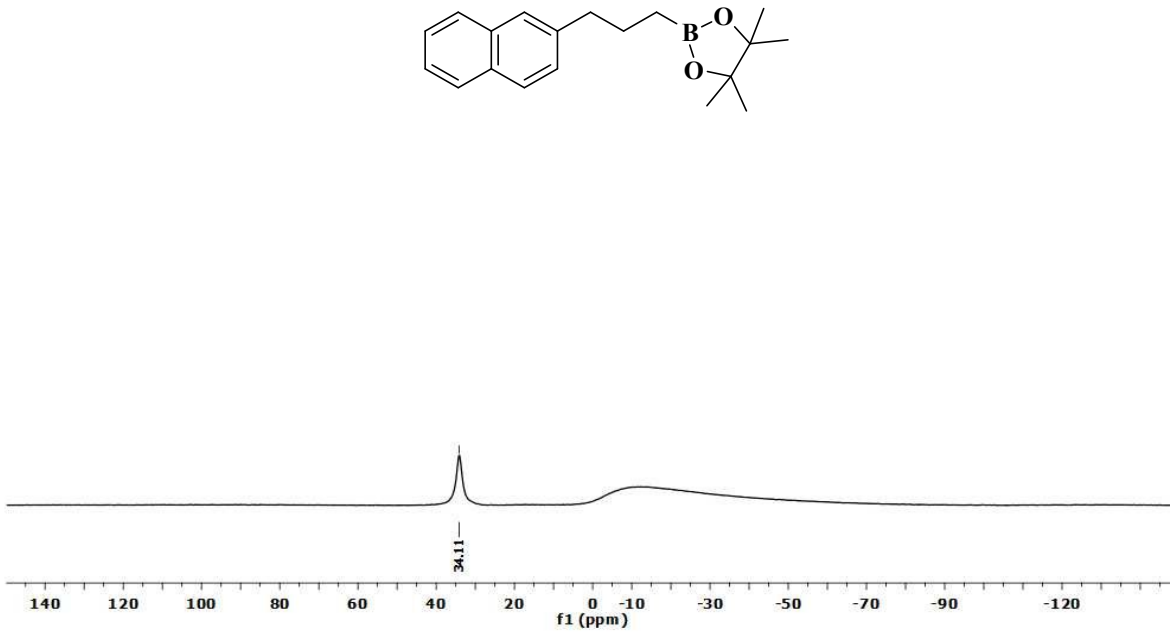


Figure S56. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-(3-(naphthalen-2-yl)propyl)-1,3,2-dioxaborolane.

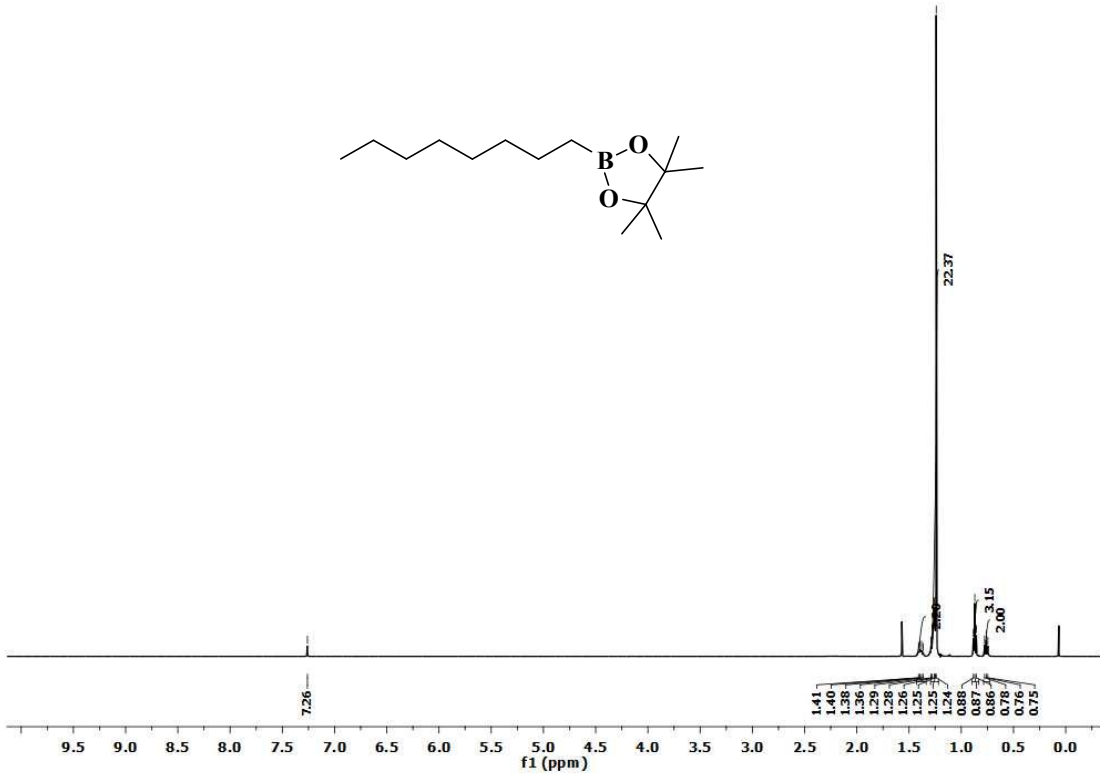


Figure S57. ^{1}H NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-octyl-1,3,2-dioxaborolane.

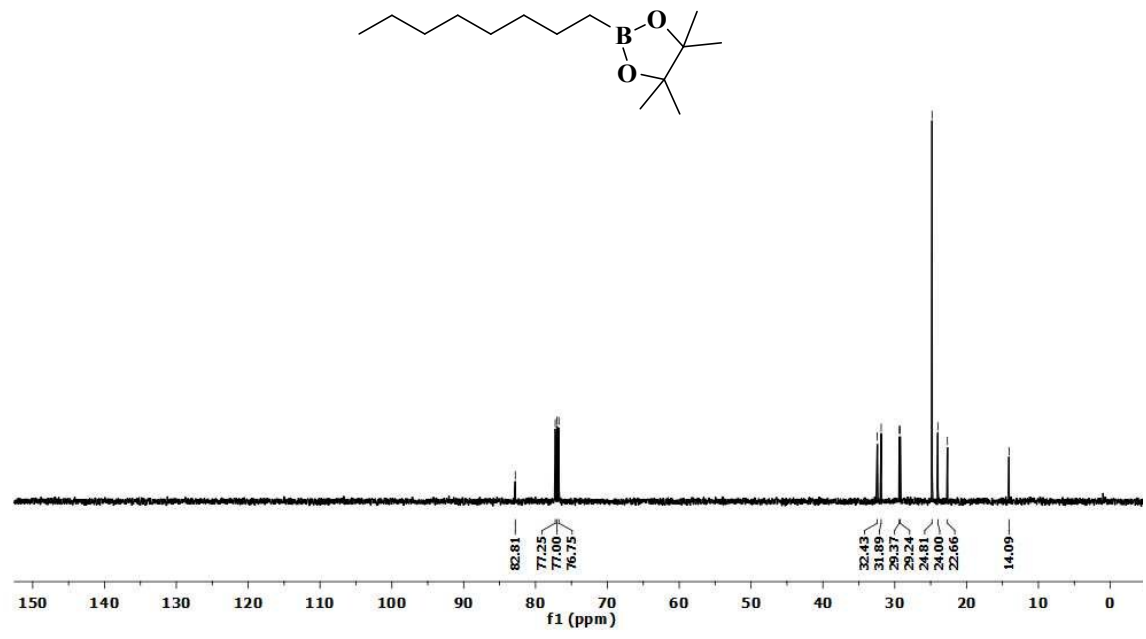


Figure S58. ^{13}C NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-octyl-1,3,2-dioxaborolane

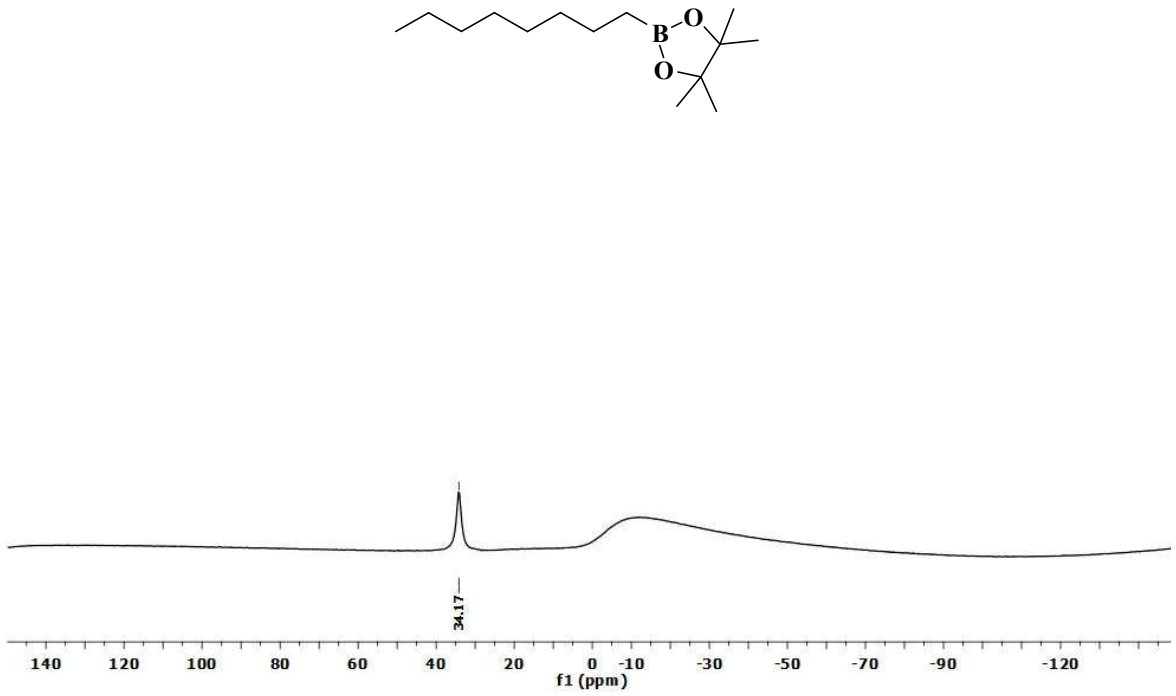


Figure S59. ^{11}B NMR spectrum ($CDCl_3$) of 4,4,5,5-tetramethyl-2-octyl-1,3,2-dioxaborolane.

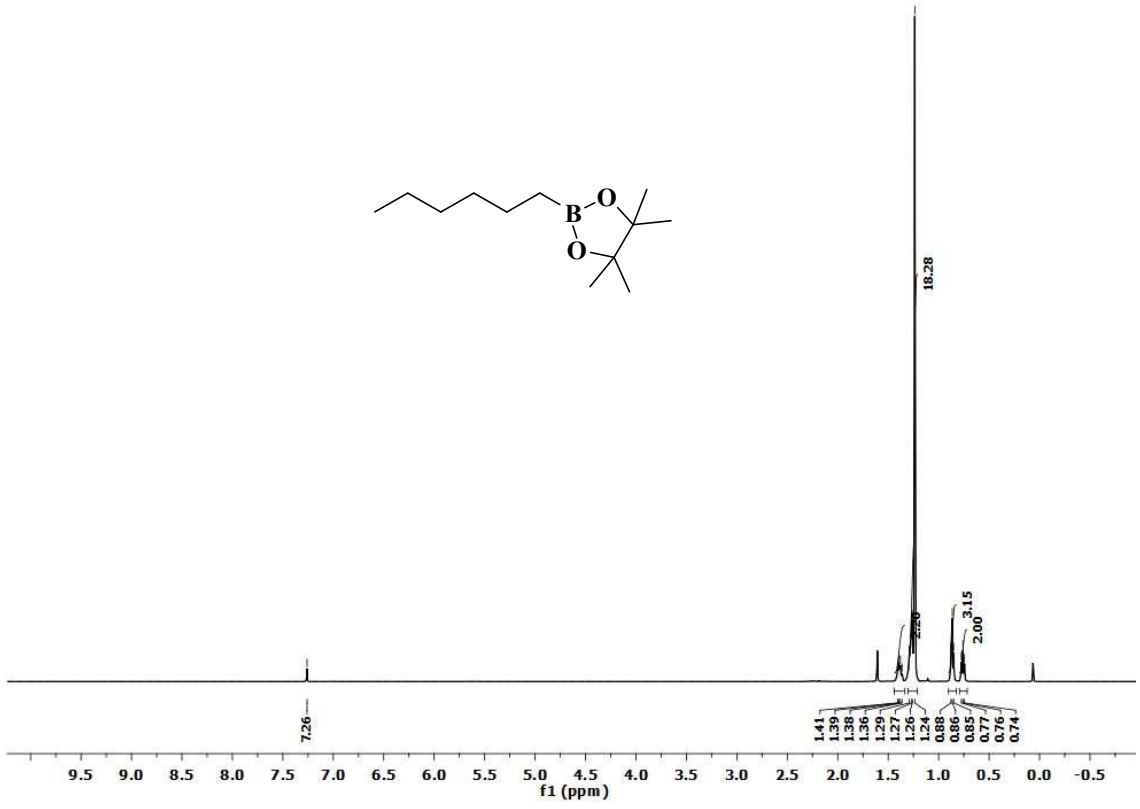


Figure S60. ^{1}H NMR spectrum ($CDCl_3$) of 2-hexyl-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

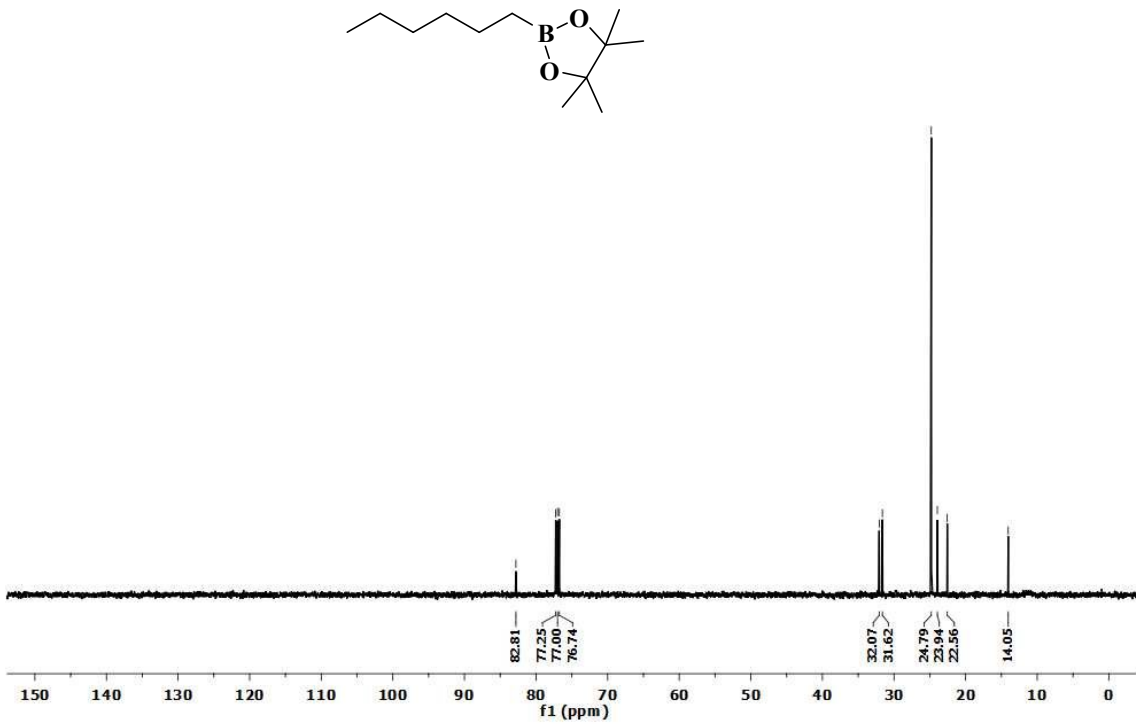


Figure S61. ^{13}C NMR spectrum ($CDCl_3$) of 2-hexyl-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

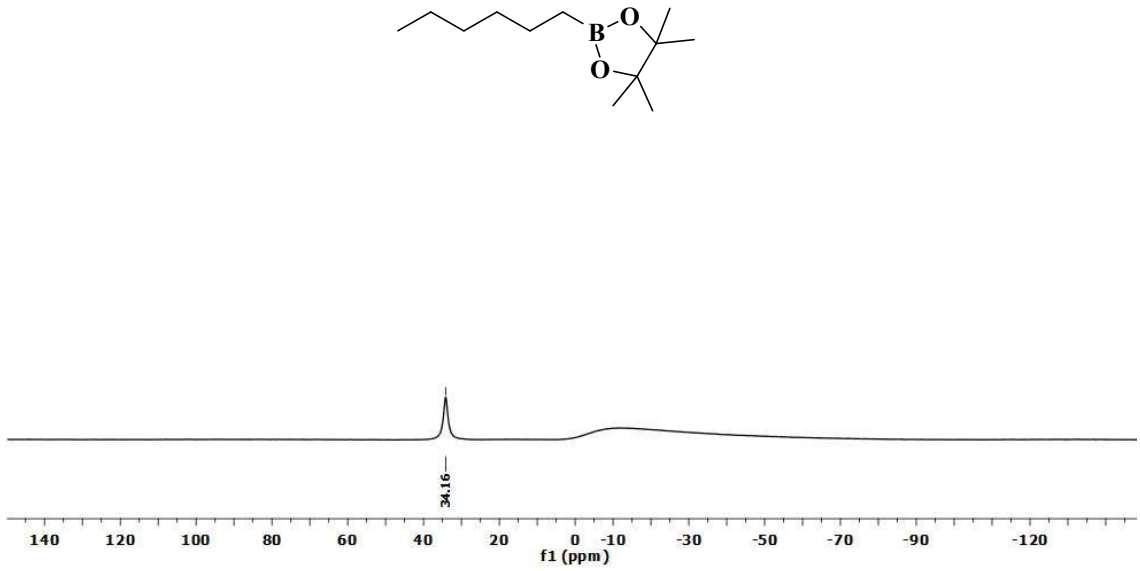


Figure S62. ^{11}B NMR spectrum ($CDCl_3$) of 2-hexyl-4,4,5,5-tetramethyl-1,3,2-dioxaborolane.

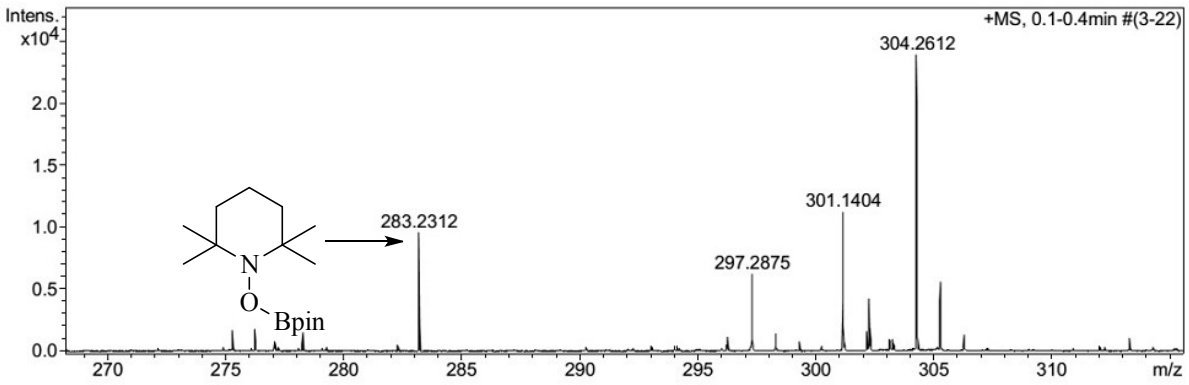


Figure S63. HRMS spectrum of reaction mixture showing formation of **4**

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