

Supporting Information

Catalyst-free and Solvent-free Hydroboration of Alkynes

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Table of Contents

I. Copies of NMR spectra	S1– S38
II. Chemoselective hydroboration of phenyl acetylene over ester	S39
III. References	S40

I. Copies of NMR spectra

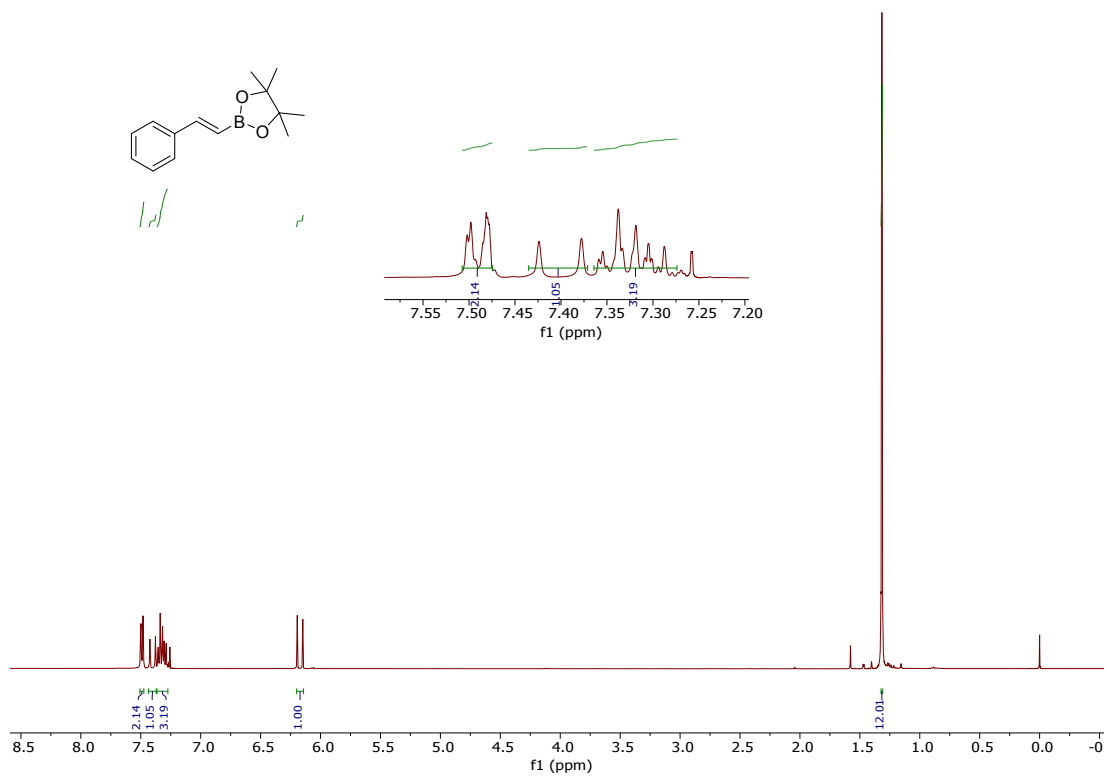


Figure S1: ¹H NMR of (*E*)-4,4,5,5-tetramethyl-2-styryl-1,3,2-dioxaborolane (**2a**)¹

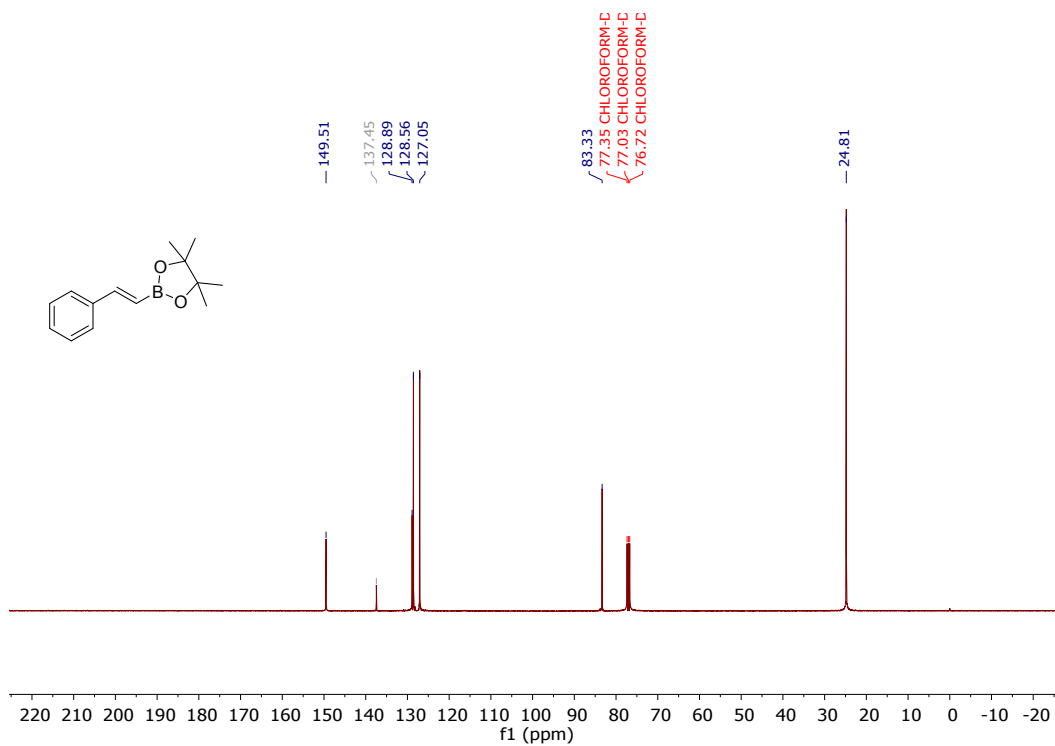


Figure S2: ¹³C NMR of (*E*)-4,4,5,5-tetramethyl-2-styryl-1,3,2-dioxaborolane (**2a**)¹

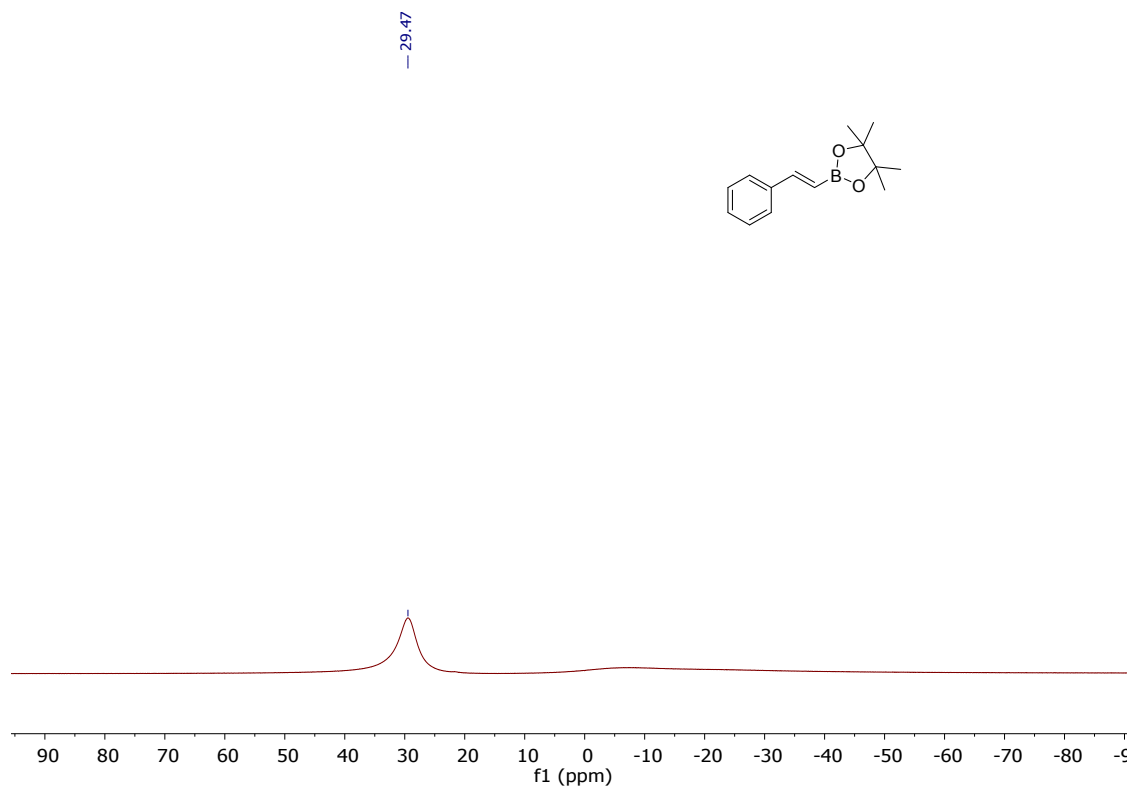


Figure S3 : ^{11}B NMR of (*E*)-4,4,5,5-tetramethyl-2-styryl-1,3,2-dioxaborolane (**2a**)¹²

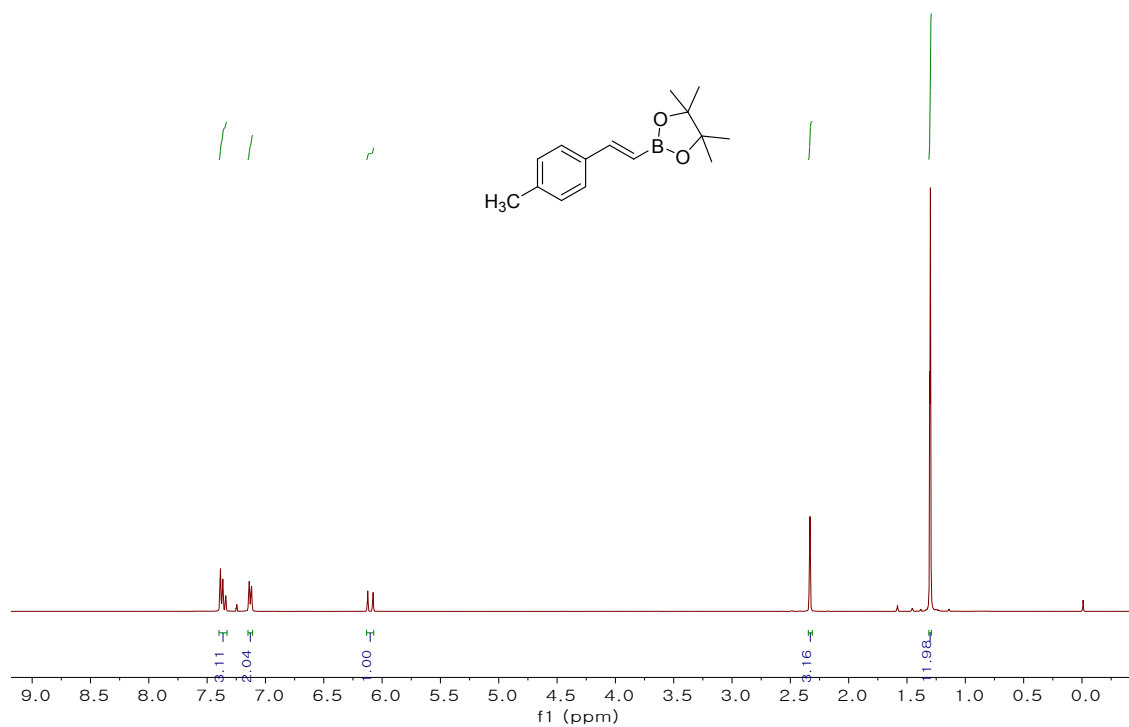


Figure S4: ^1H NMR of (*E*)-4,4,5,5-tetramethyl-2-(4-methylstyryl)-1,3,2-dioxaborolane (**2b**)²

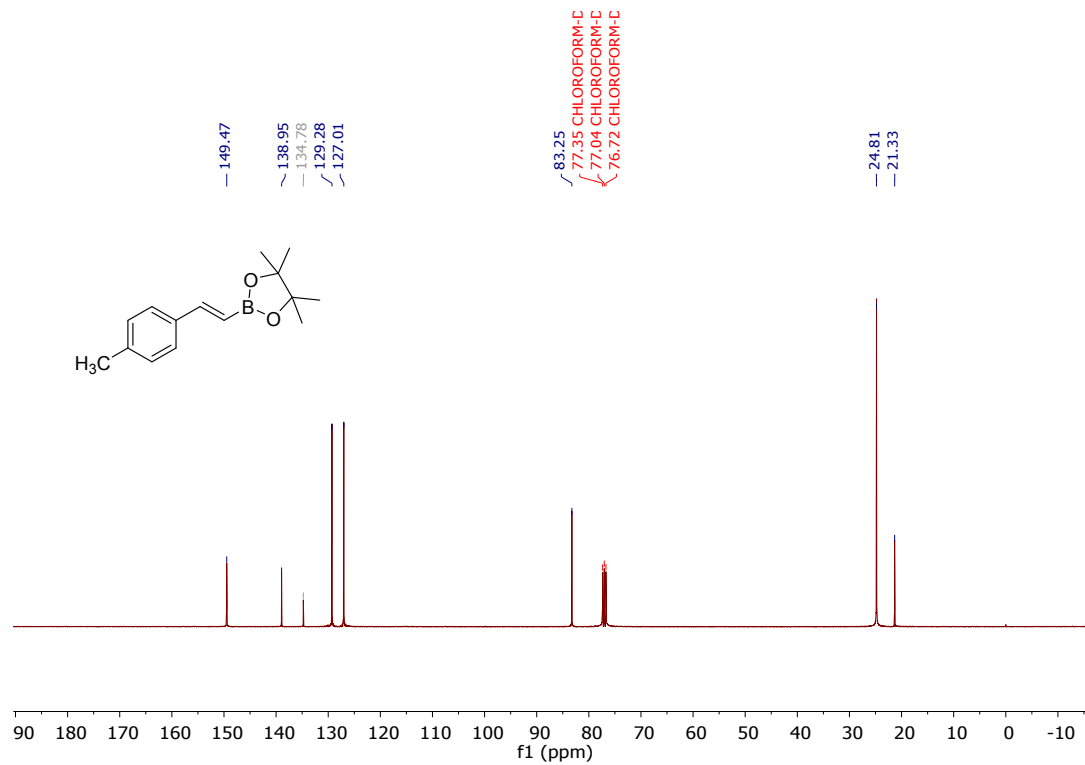


Figure S5: ¹³C NMR of *(E)*-4,4,5,5-tetramethyl-2-(4-methylstyryl)-1,3,2-dioxaborolane (**2b**)²

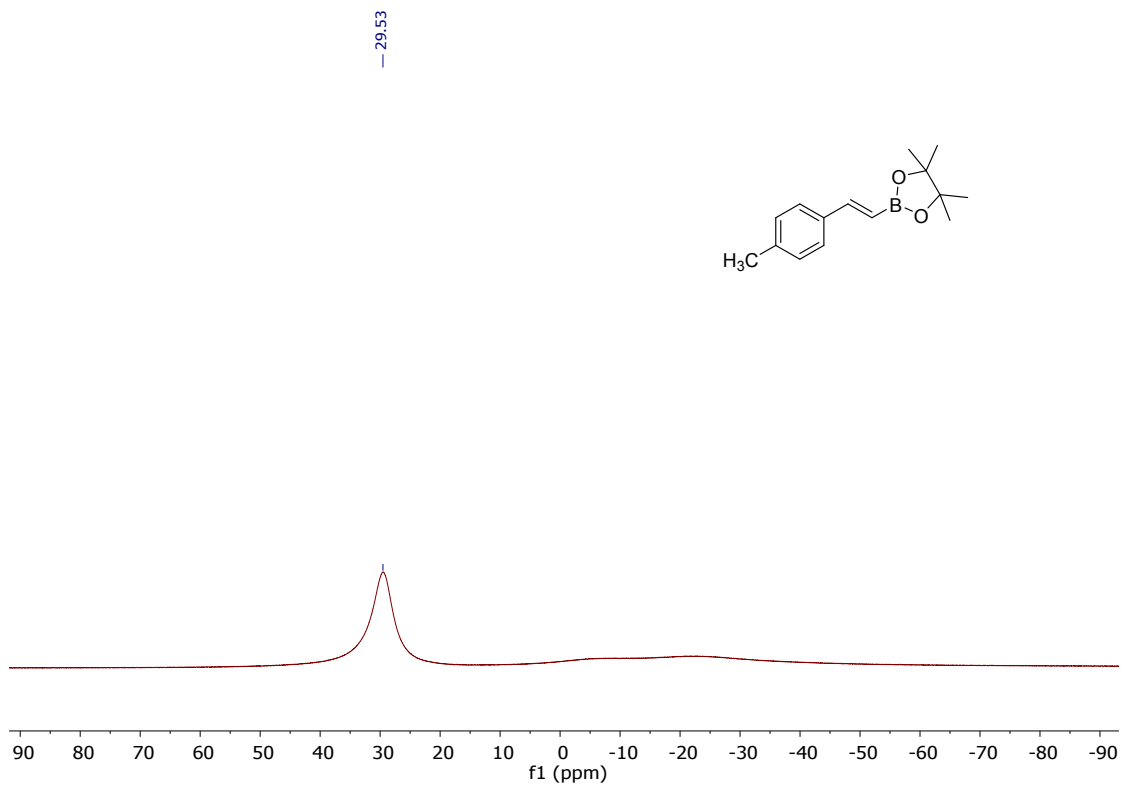


Figure S6: ¹¹B NMR of *(E)*-4,4,5,5-tetramethyl-2-(4-methylstyryl)-1,3,2-dioxaborolane (**2b**)¹²

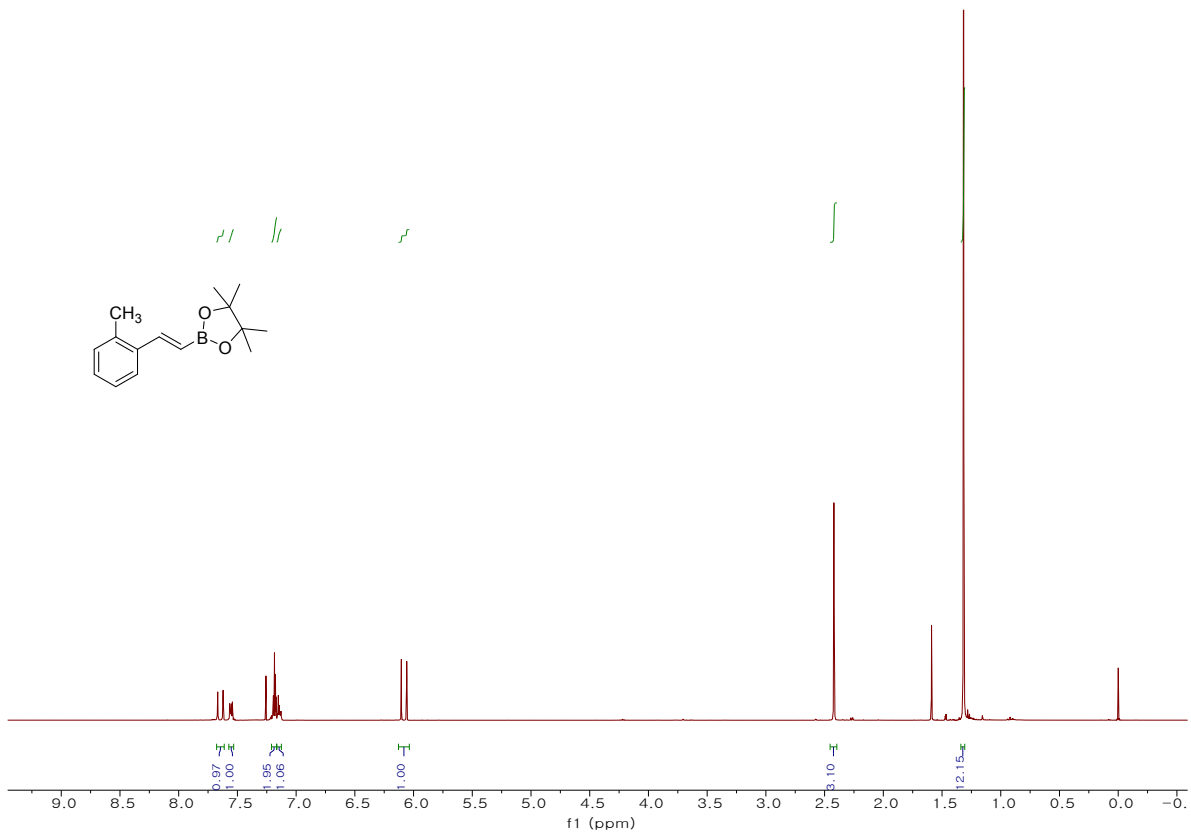


Figure S7: ¹H NMR of (*E*)-4,4,5,5-tetramethyl-2-(2-methylstyryl)-1,3,2-dioxaborolane (**2c**)⁷

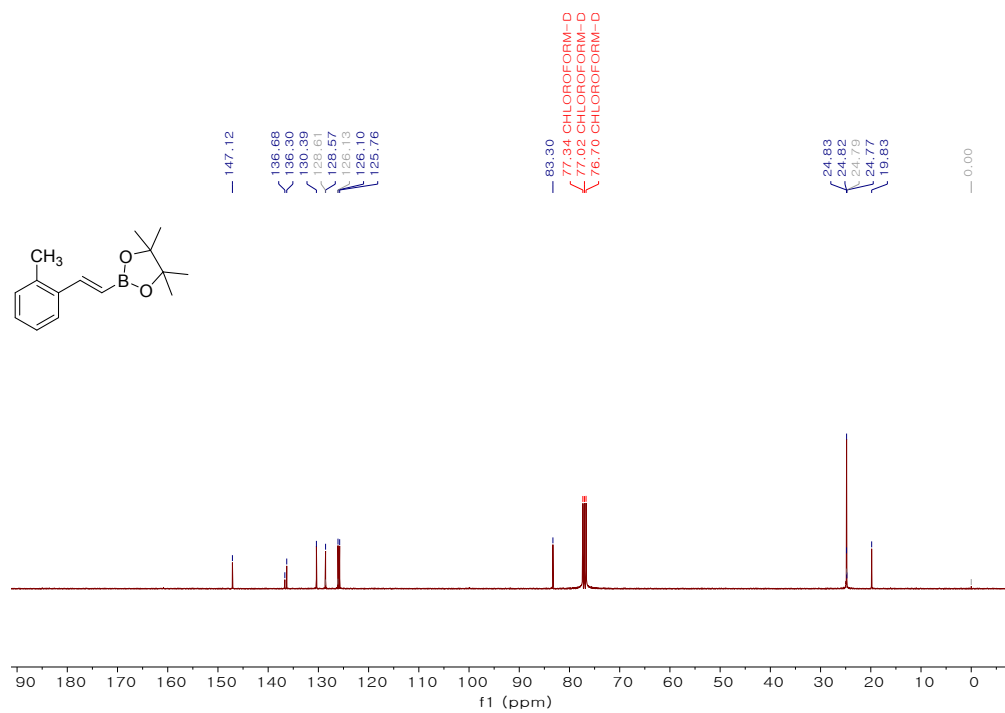


Figure S8: ¹³C NMR of (*E*)-4,4,5,5-tetramethyl-2-(2-methylstyryl)-1,3,2-dioxaborolane (**2c**)⁷

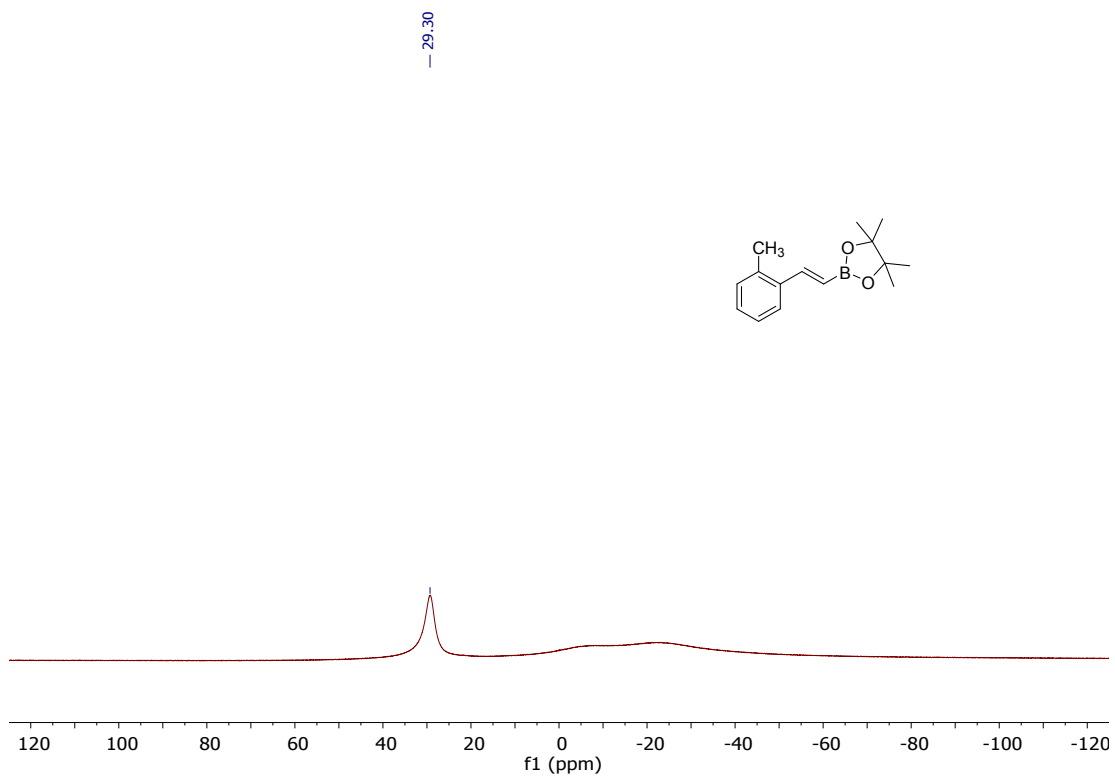


Figure S9: ^{11}B NMR of (*E*)-4,4,5,5-tetramethyl-2-(2-methylstyryl)-1,3,2-dioxaborolane (**2c**)¹²

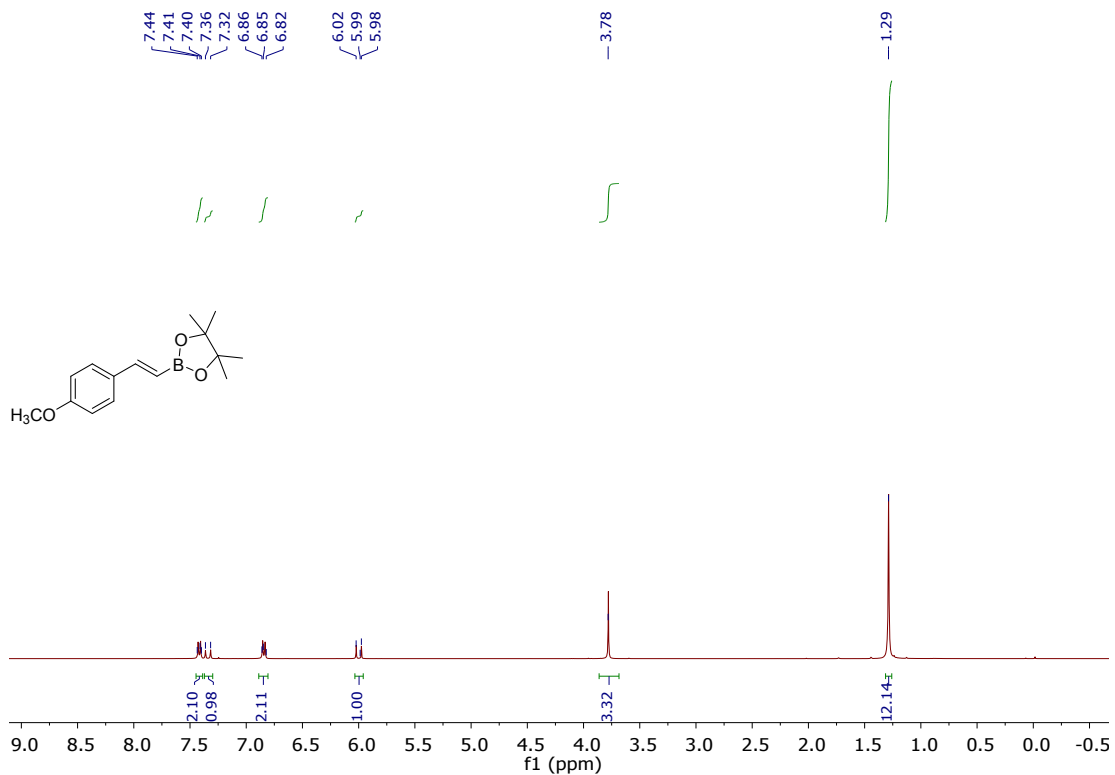


Figure S10: ^1H NMR of (*E*)-2-(4-methoxystyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2d**)¹

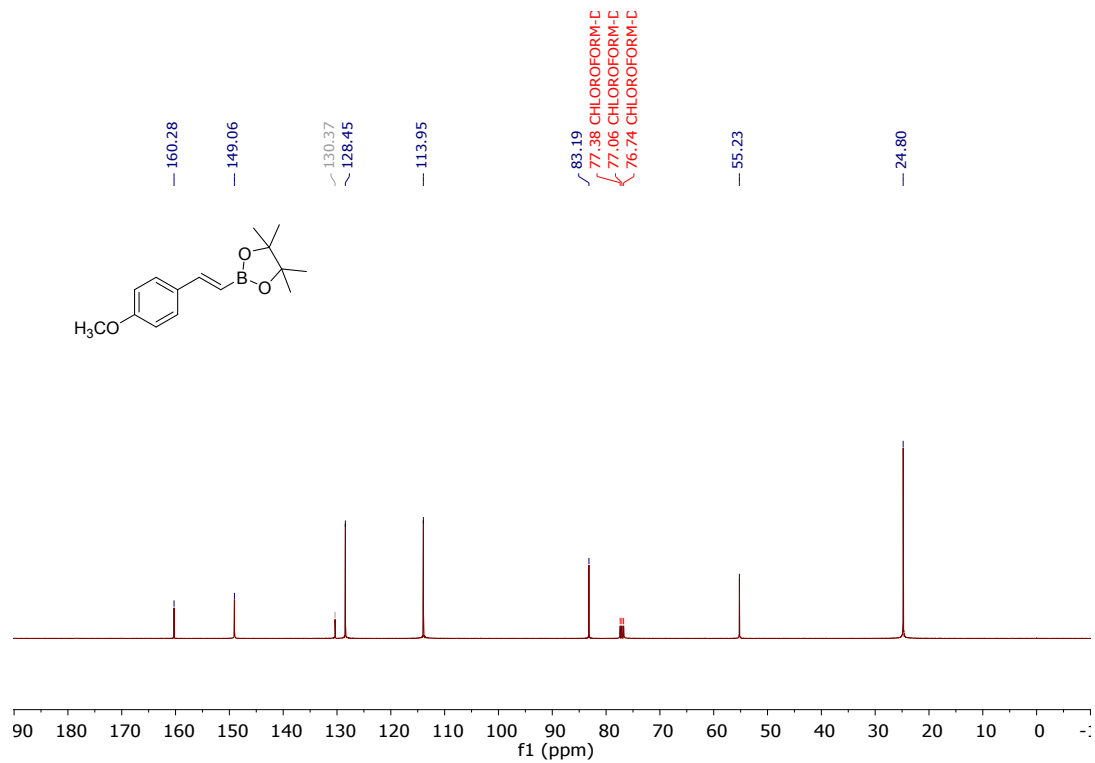


Figure S11: ^{13}C NMR of *(E)*-2-(4-methoxystyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2d**)¹

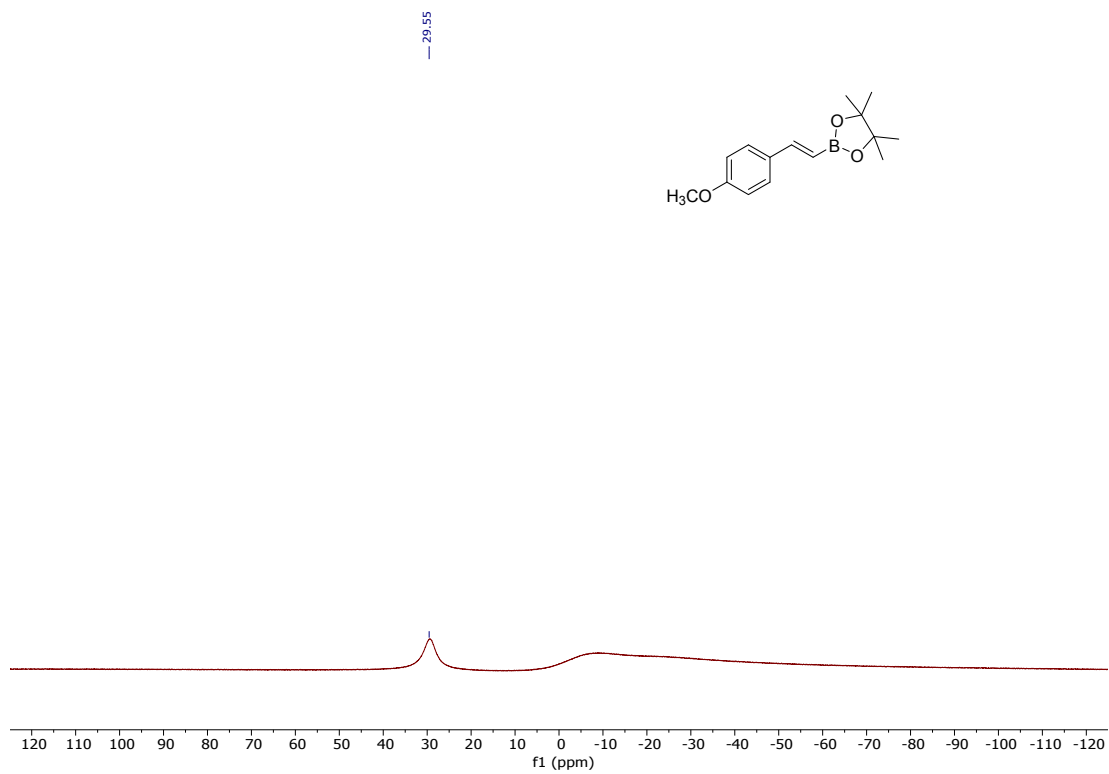


Figure S12: ^{11}B NMR of *(E)*-2-(4-methoxystyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2d**)¹²

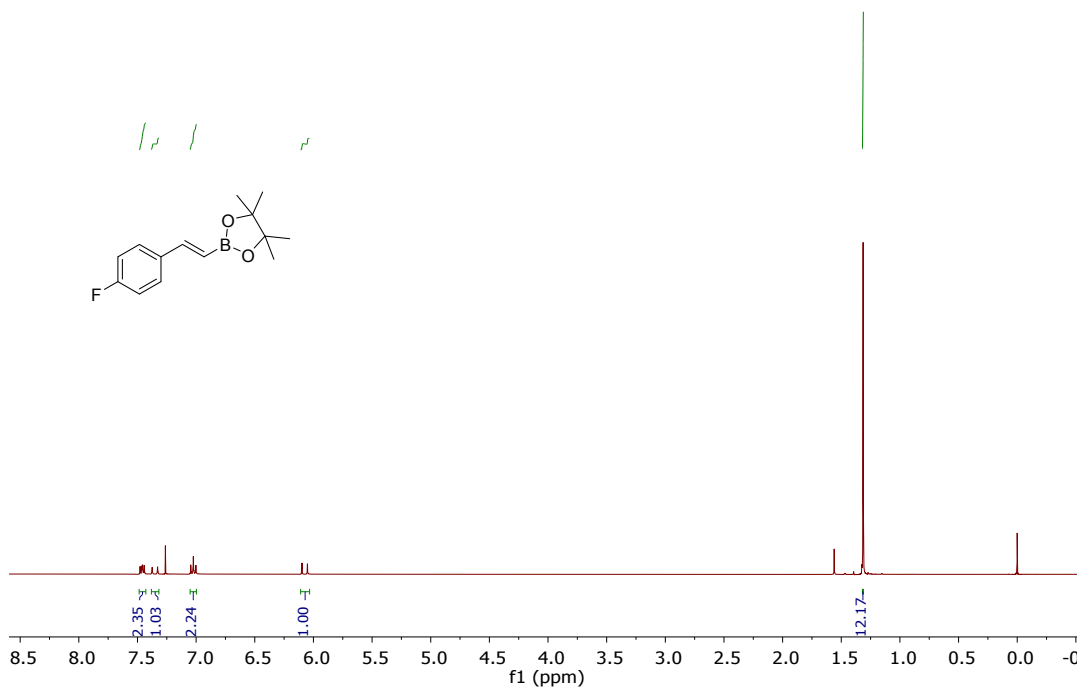


Figure S13: ¹H NMR of (*E*)-2-(4-fluorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2e**)¹

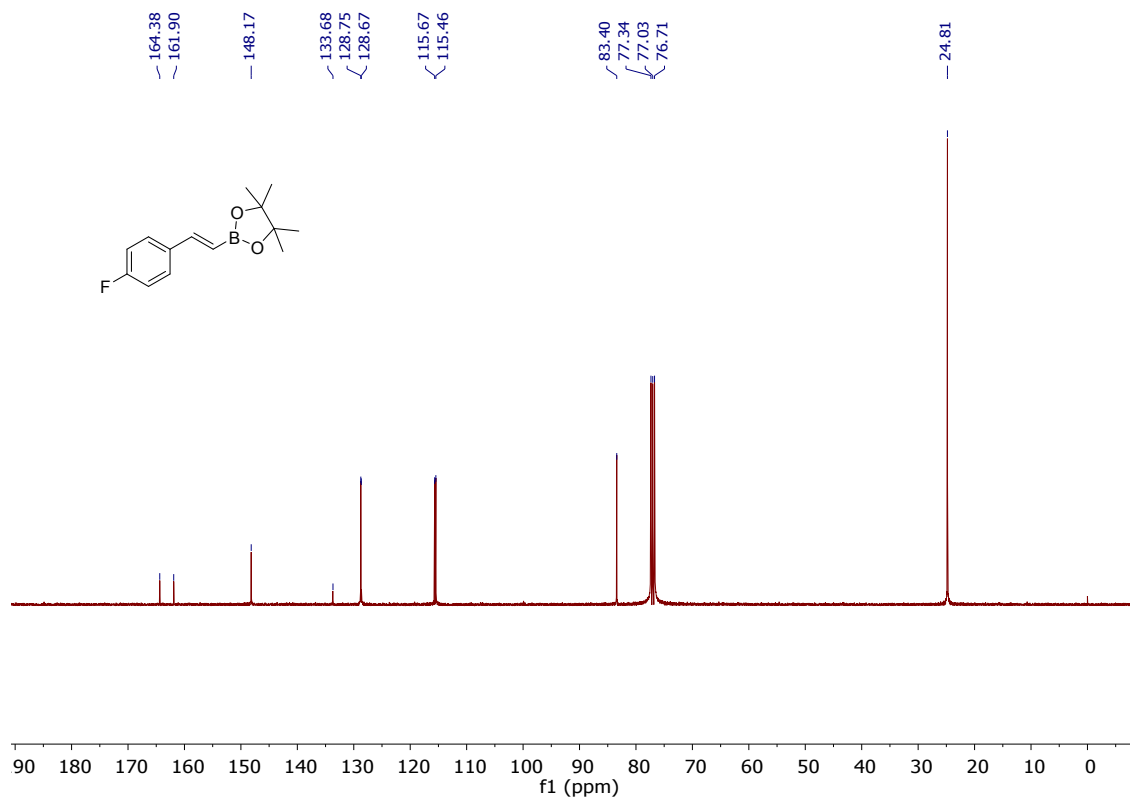


Figure S14: ¹³C NMR of (*E*)-2-(4-fluorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2e**)¹

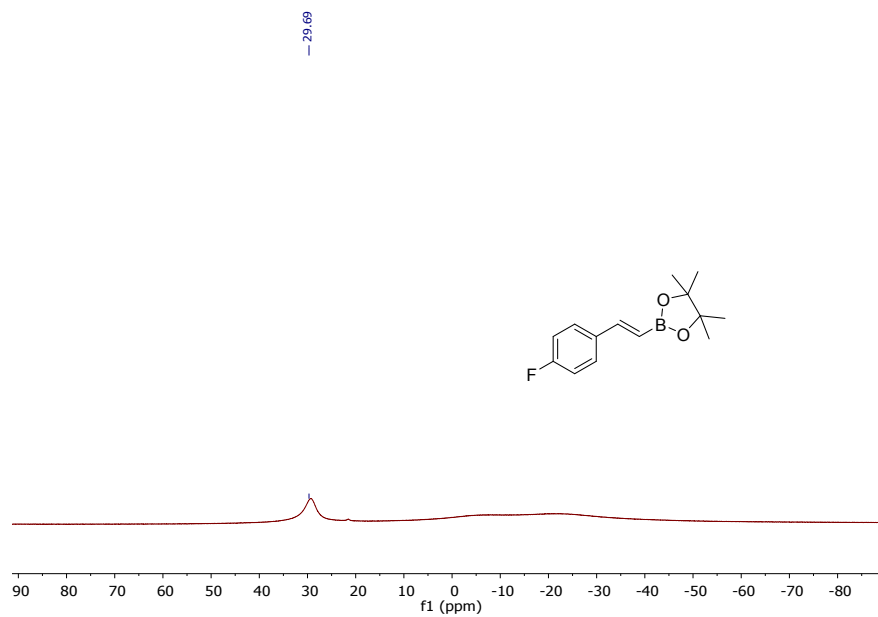


Figure S15: ^{11}B NMR of (*E*)-2-(4-fluorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2e**)¹²

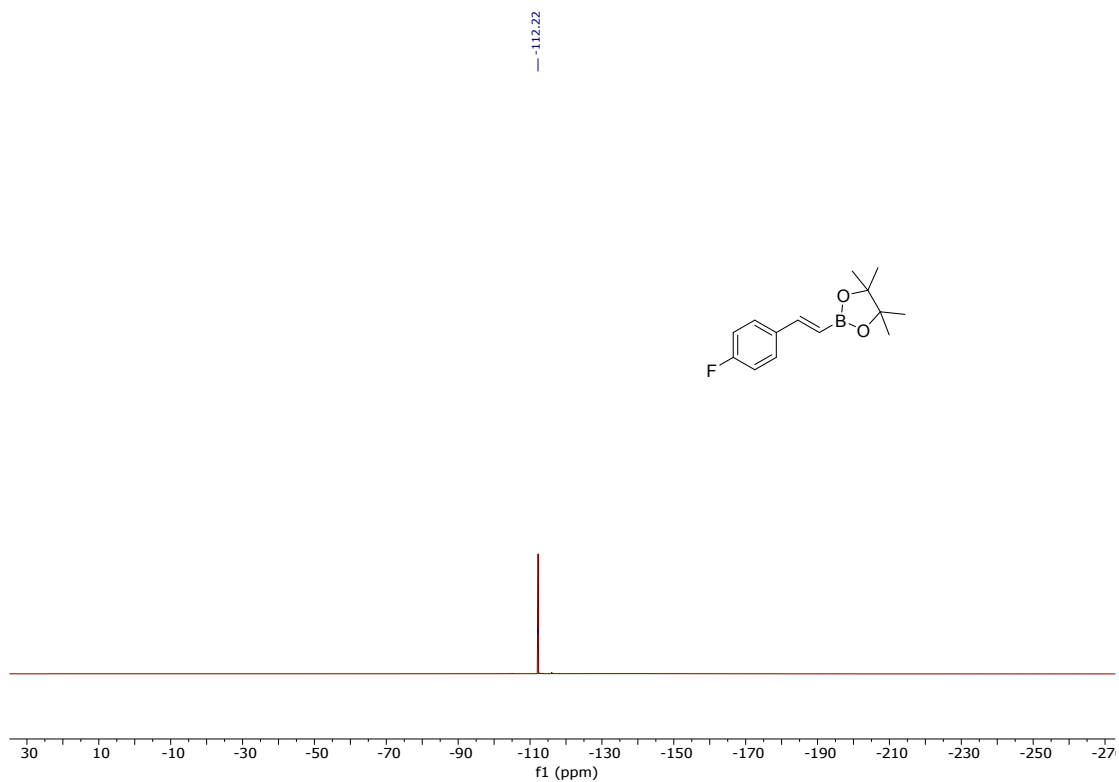


Figure S16: ^{19}F NMR of (*E*)-2-(4-fluorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2e**)¹²

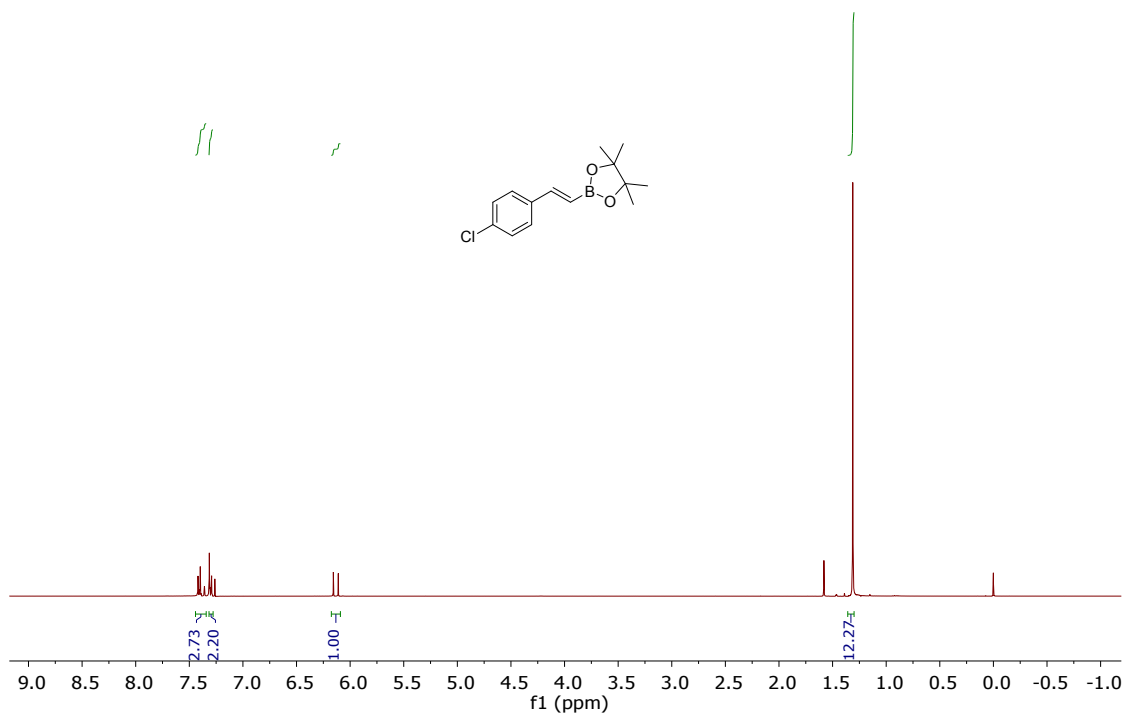


Figure S17: $^1\text{H NMR}$ of (*E*)-2-(4-chlorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2f**)¹⁴

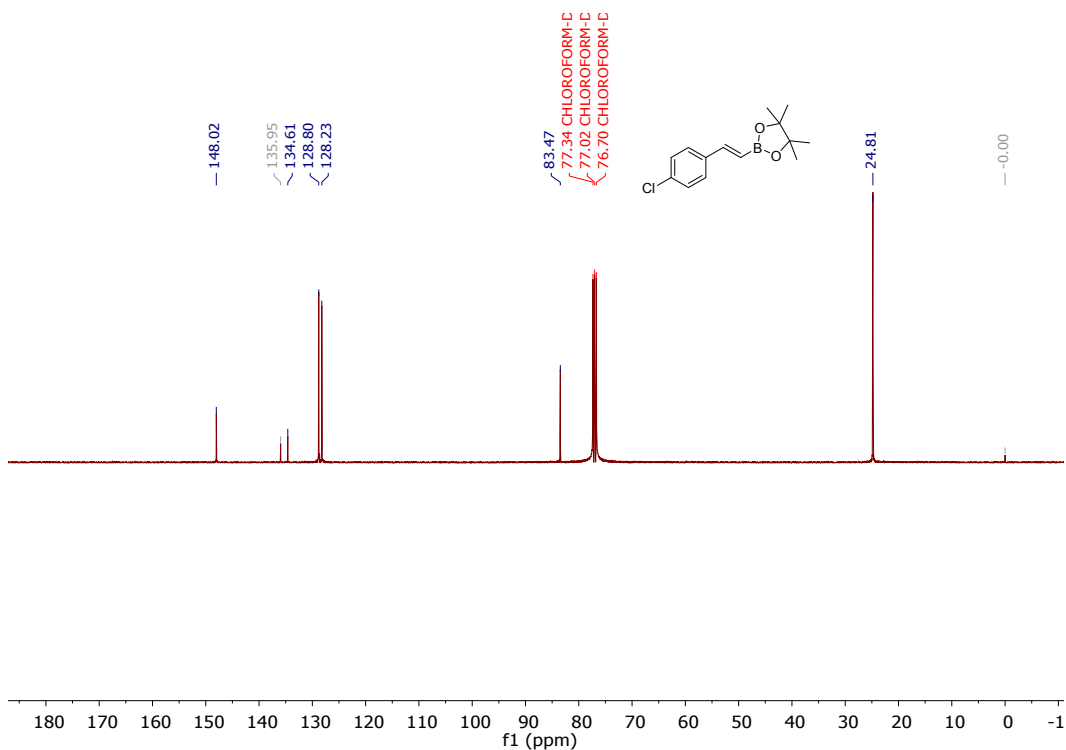


Figure S18: $^{13}\text{C NMR}$ of (*E*)-2-(4-chlorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2f**)¹⁴

- 29.69

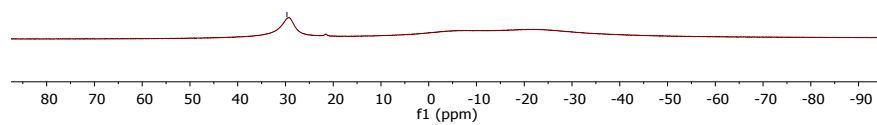
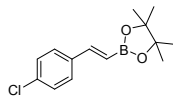


Figure S19: ¹¹B NMR of (*E*)-2-(4-chlorostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2f**)¹³

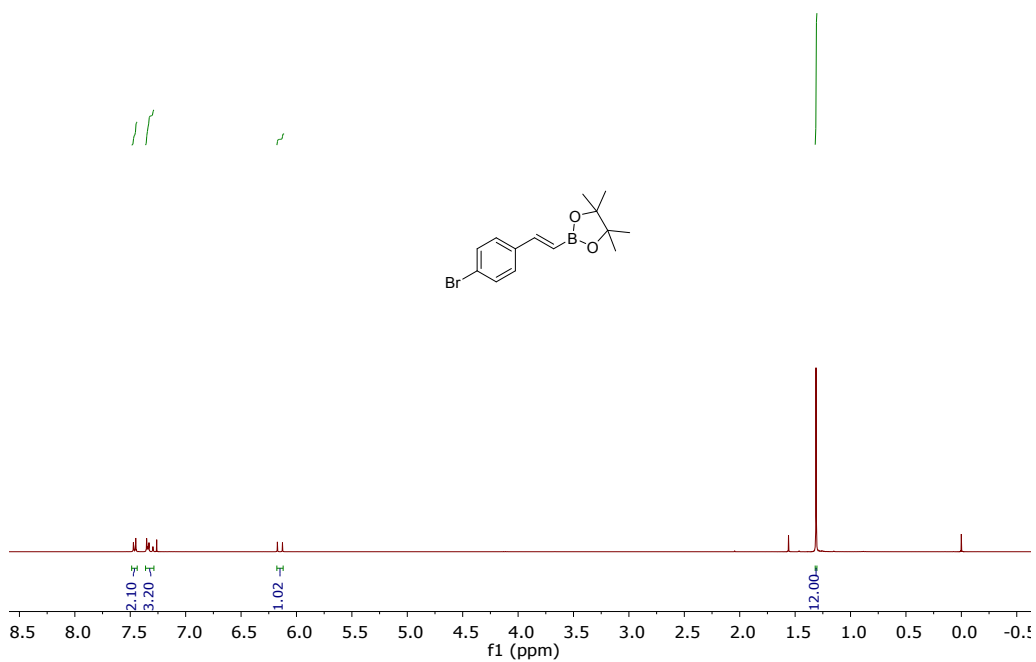


Figure S20: ¹H NMR of (*E*)-2-(4-bromostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2g**)⁹

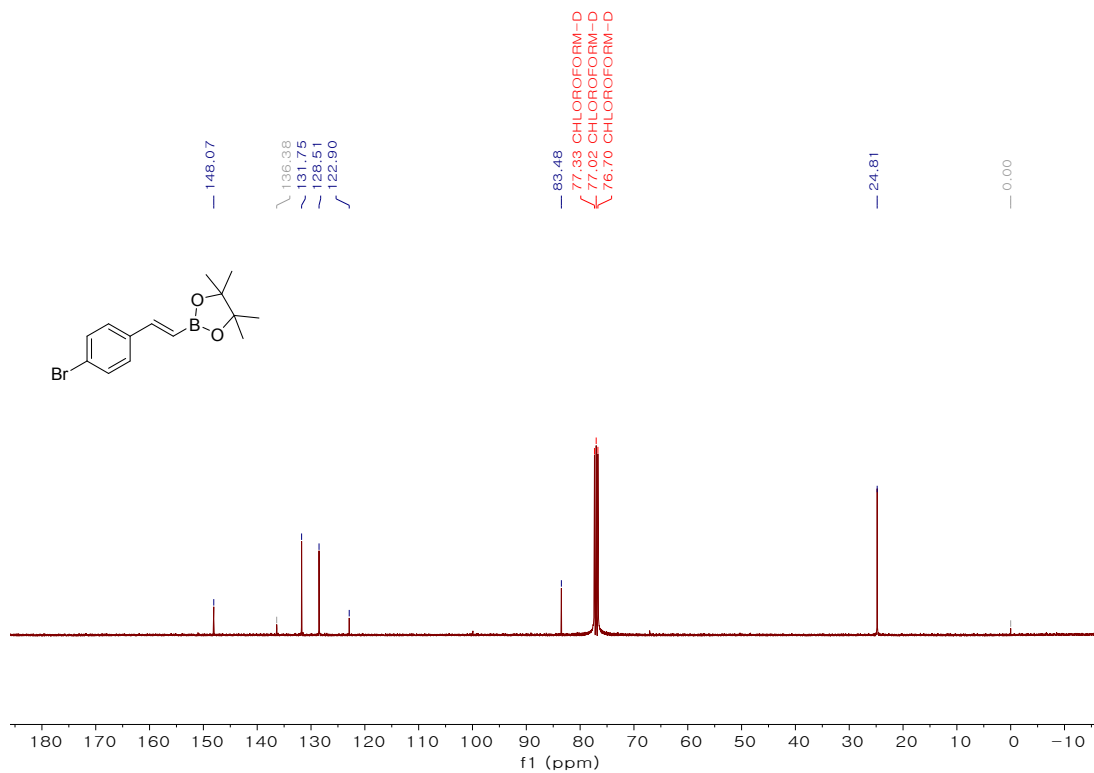


Figure S21: ¹³C NMR of *(E)*-2-(4-bromostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2g**)⁹

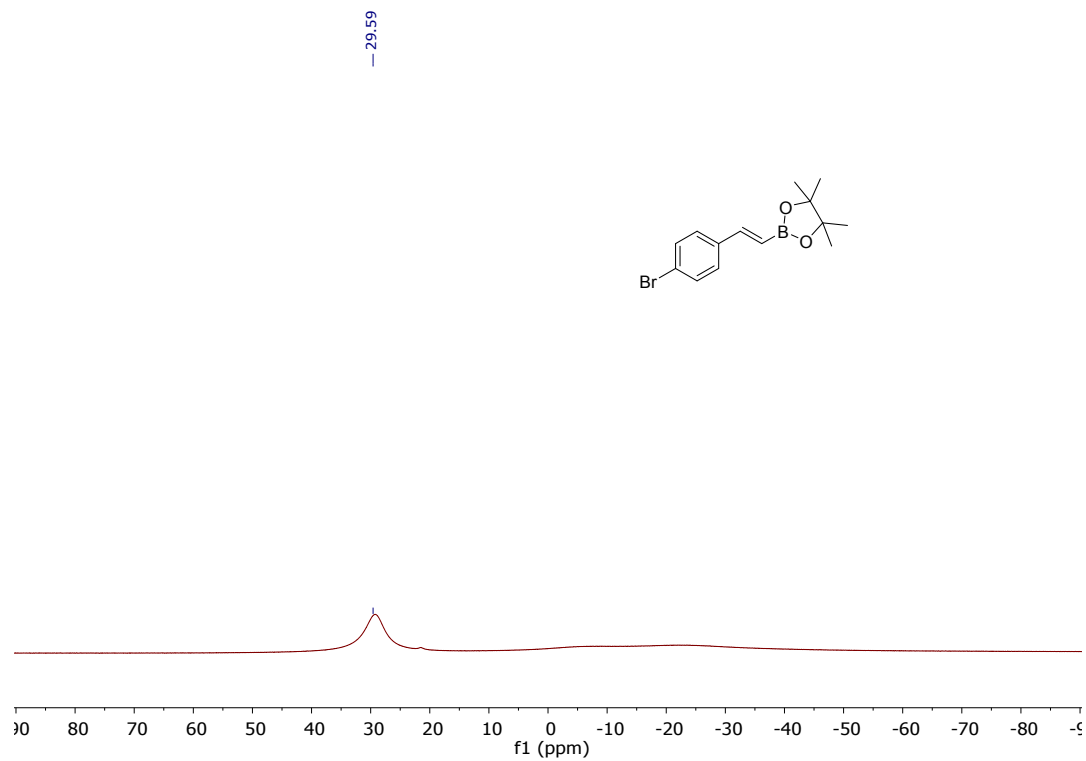


Figure S22: ¹¹B NMR of *(E)*-2-(4-bromostyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2g**)¹²

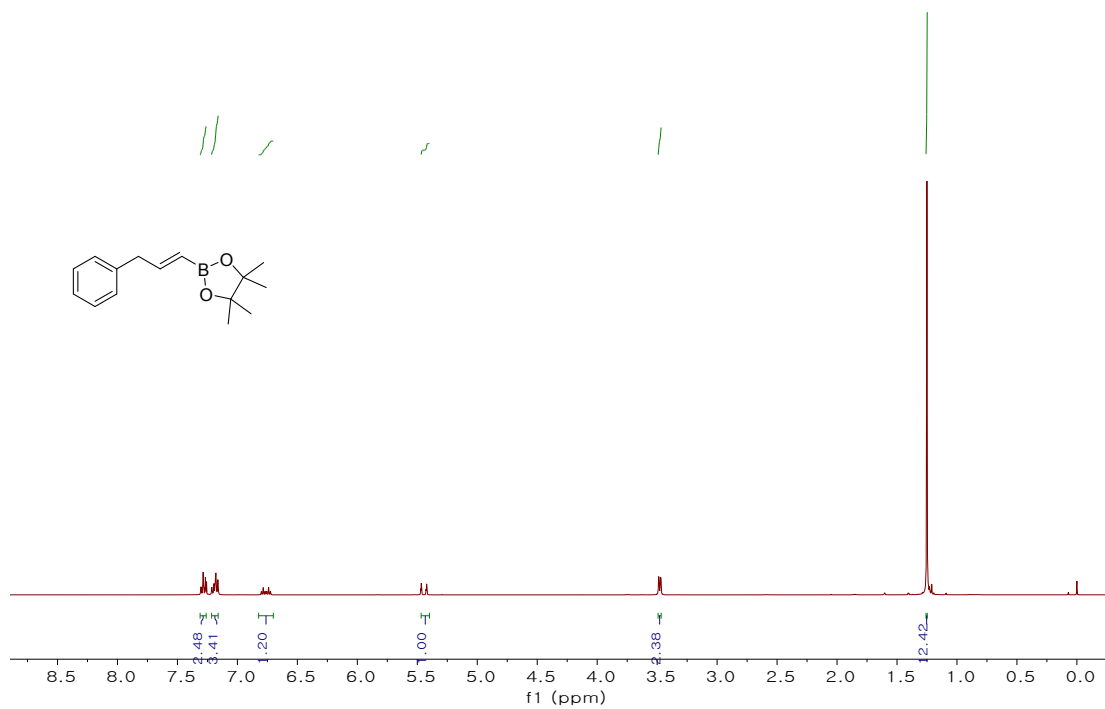


Figure S23: ¹H NMR of (*E*)-4,4,5,5-tetramethyl-2-(3-phenylprop-1-en-1-yl)-1,3,2-dioxaborolane (**2h**)²

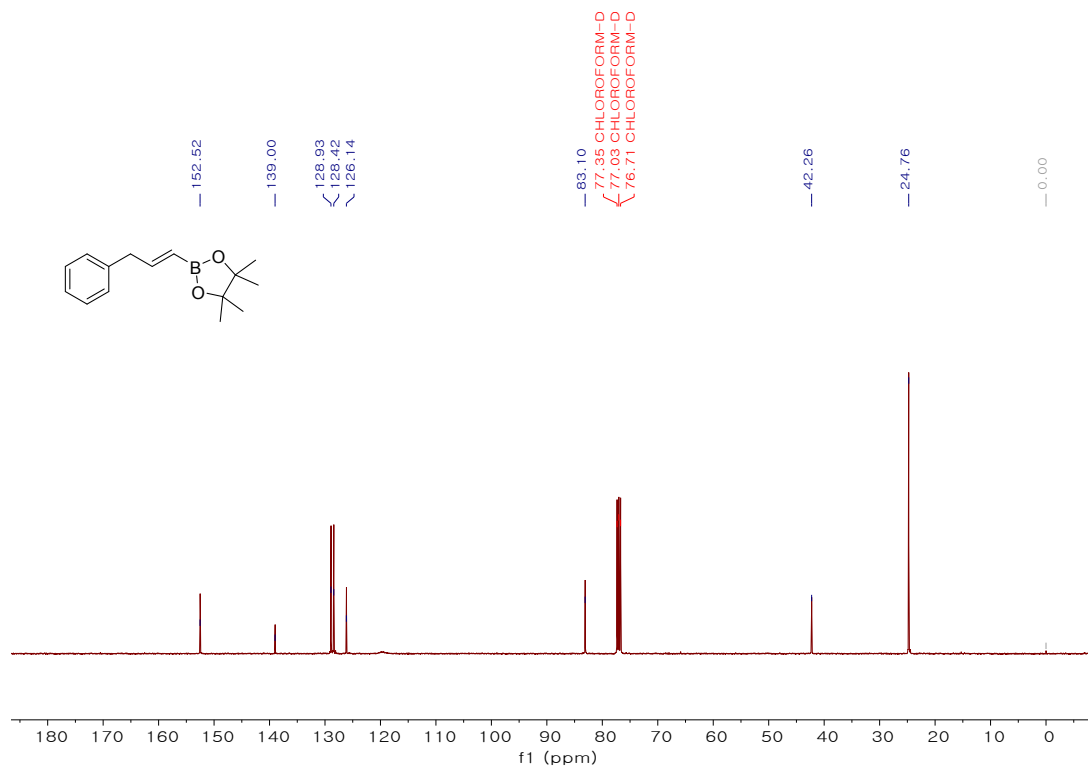


Figure S24: ¹³C NMR of (*E*)-4,4,5,5-tetramethyl-2-(3-phenylprop-1-en-1-yl)-1,3,2-dioxaborolane (**2h**)²

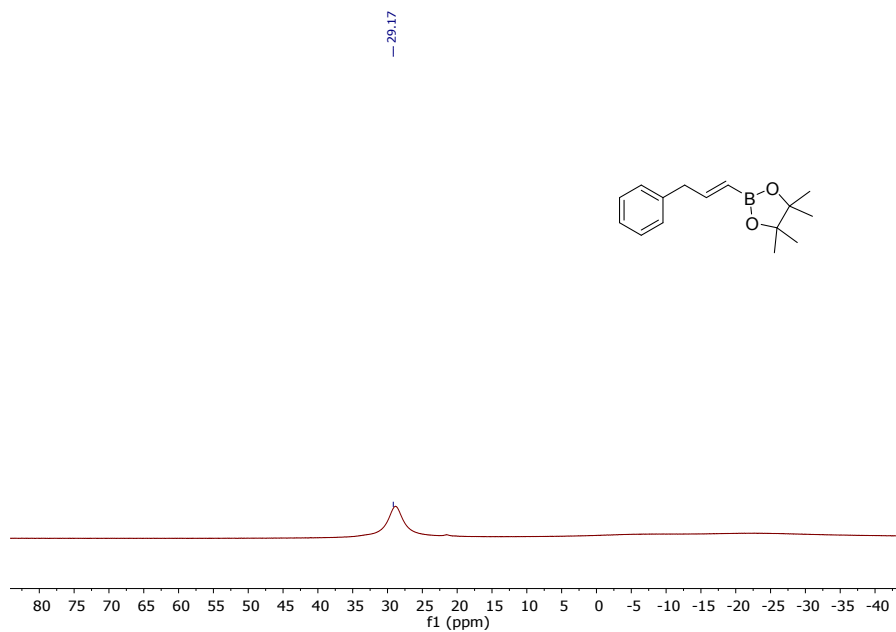


Figure S25: ^{11}B NMR of (*E*)-4,4,5,5-tetramethyl-2-(3-phenylprop-1-en-1-yl)-1,3,2-dioxaborolane (**2h**)

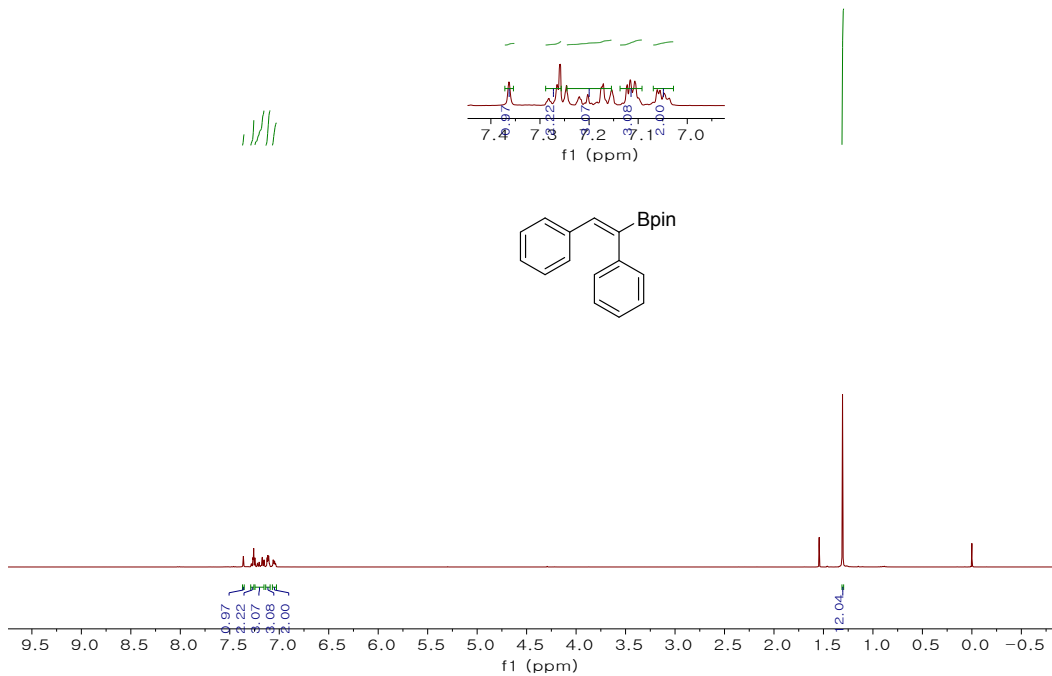


Figure S26: ^1H NMR of (*Z*)-4,4,5,5-Tetramethyl-2-(1,2-diphenyl-1-enyl)-1,3,2-dioxaborolane (**2j**)¹

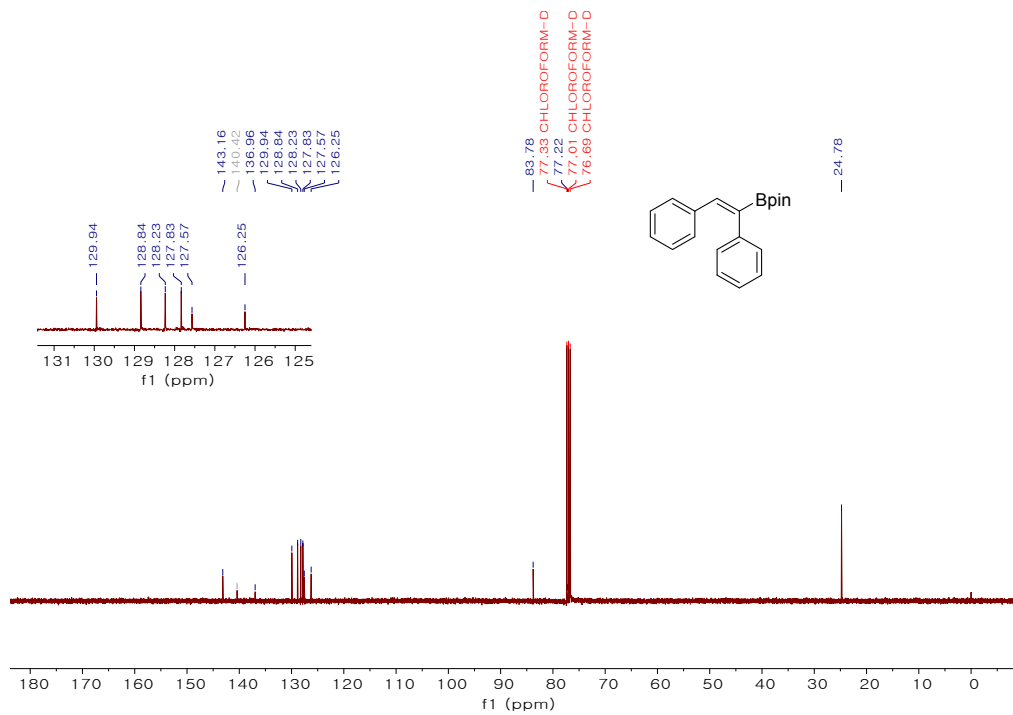


Figure S27: ¹³C NMR of (Z)-4,4,5,5-Tetramethyl-2-(1,2-diphenyl-1-enyl)-1,3,2-dioxaborolane (**2j**)¹

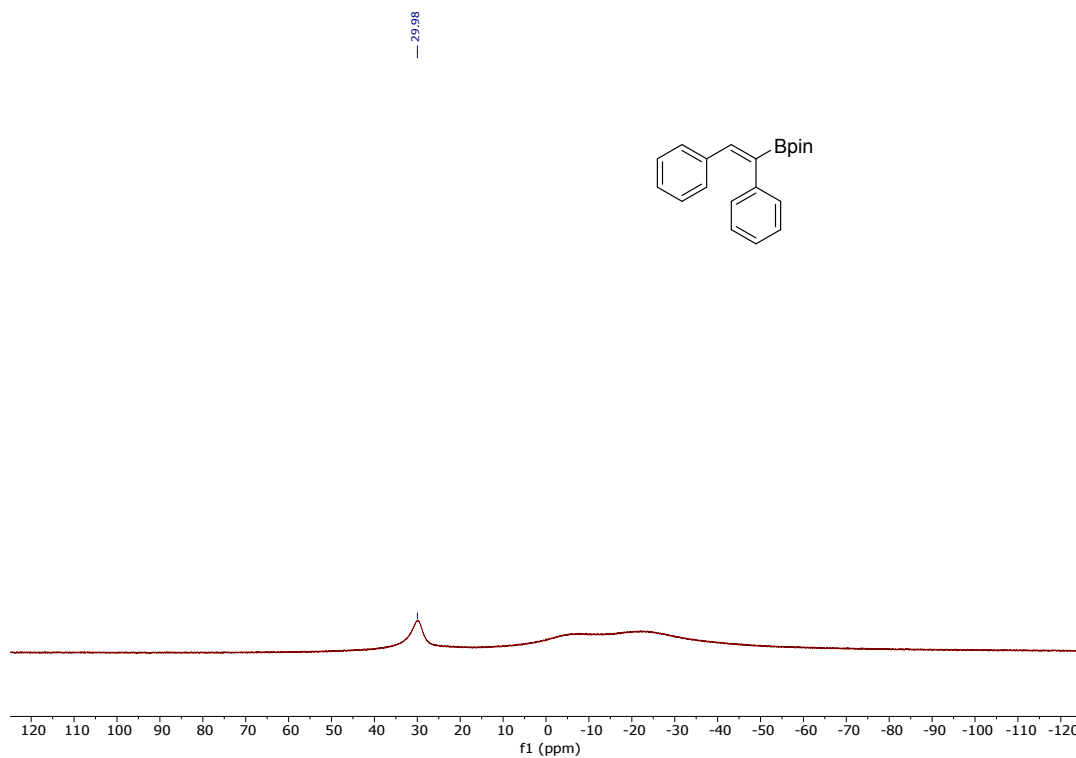


Figure S28: ¹¹B NMR of (Z)-4,4,5,5-Tetramethyl-2-(1,2-diphenyl-1-enyl)-1,3,2-dioxaborolane (**2j**)

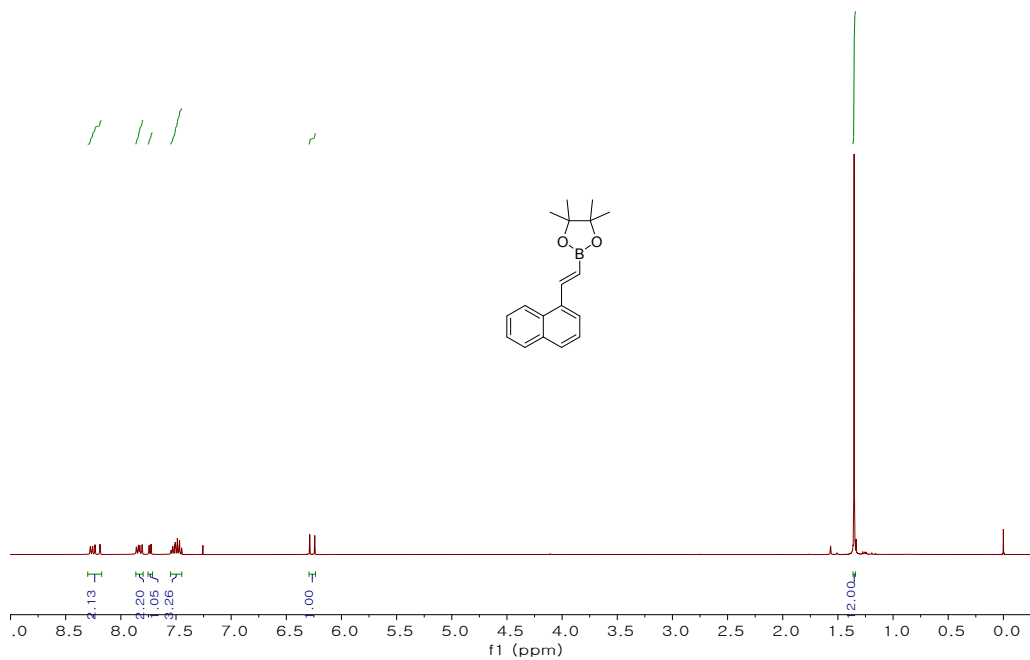


Figure S29: ¹H NMR of *(E)*-4,4,5,5-tetramethyl-2-(2-(naphthalen-1-yl)vinyl)-1,3,2-dioxaborolane (**2k**)⁶

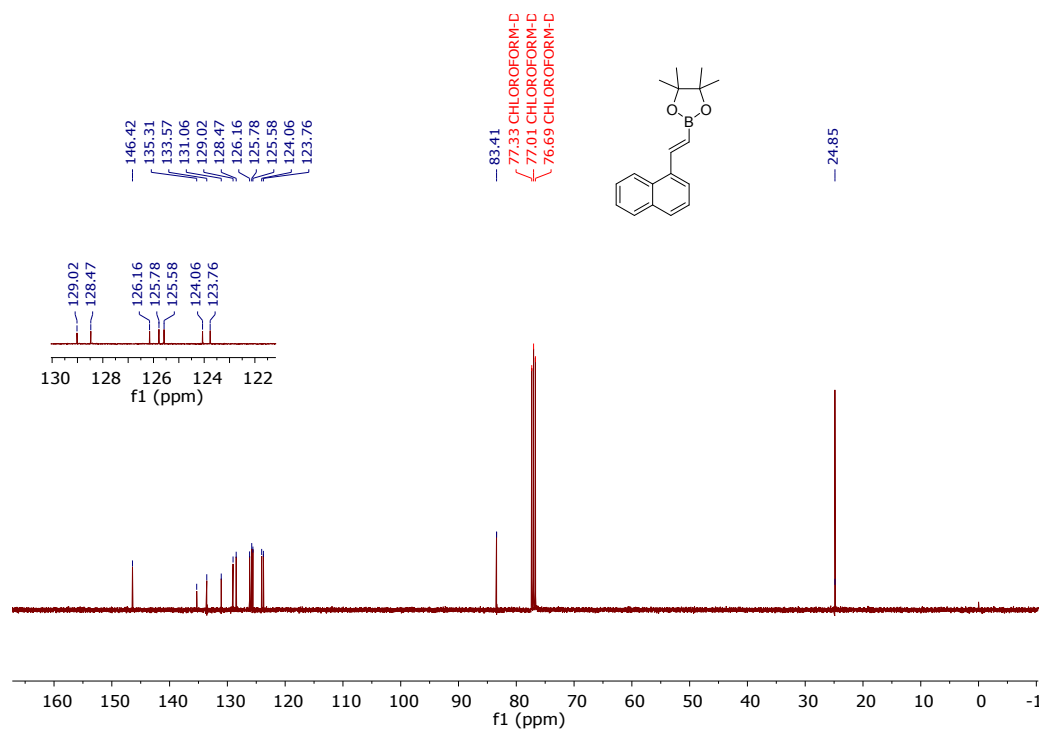


Figure S30: ¹³C NMR of *(E)*-4,4,5,5-tetramethyl-2-(2-(naphthalen-1-yl)vinyl)-1,3,2-dioxaborolane (**2k**)⁶

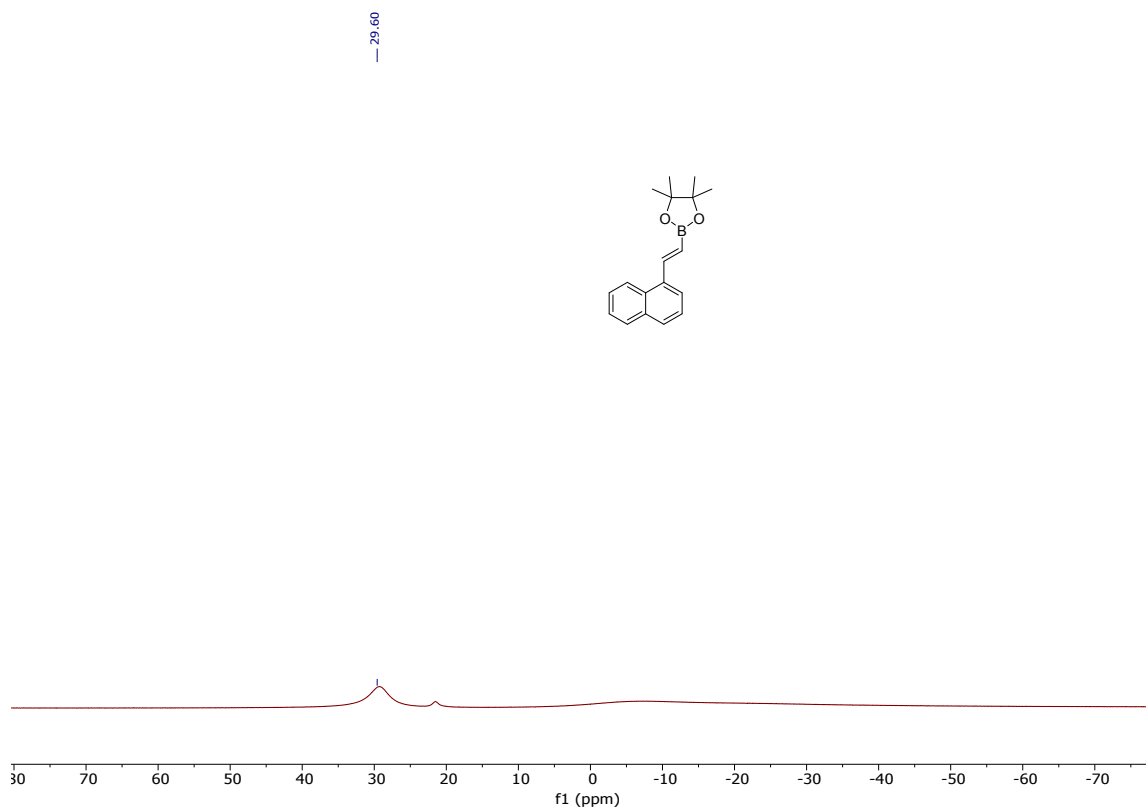


Figure S31: ^{11}B NMR of (*E*)-4,4,5,5-tetramethyl-2-(2-(naphthalen-1-yl)vinyl)-1,3,2-dioxaborolane (**2k**)⁶

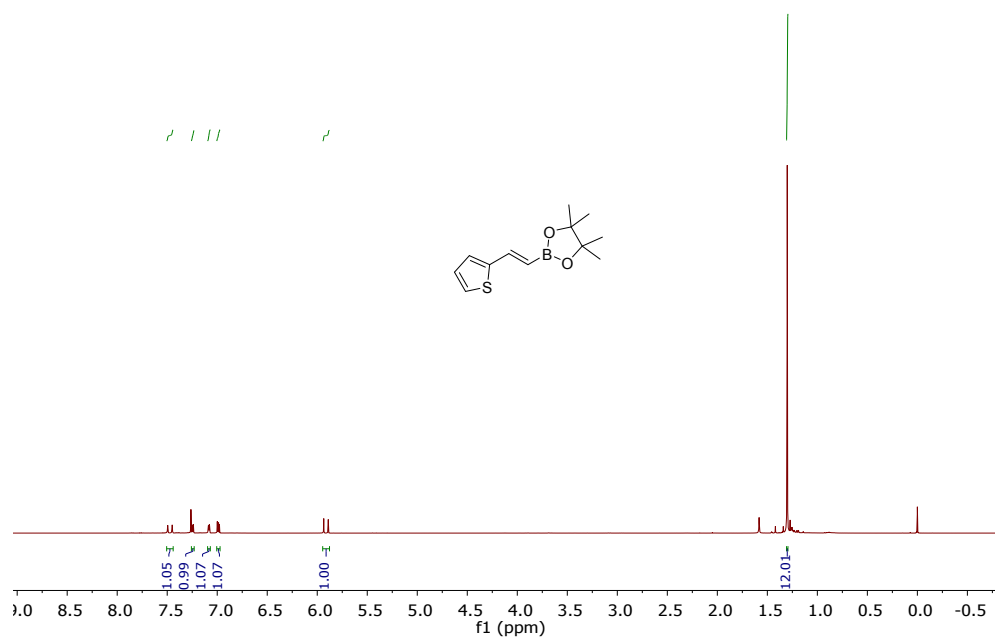


Figure S32: ^1H NMR of (*E*)-4,4,5,5-tetramethyl-2-(2-(thiophen-2-yl)vinyl)-1,3,2-dioxaborolane (**21**)¹⁴

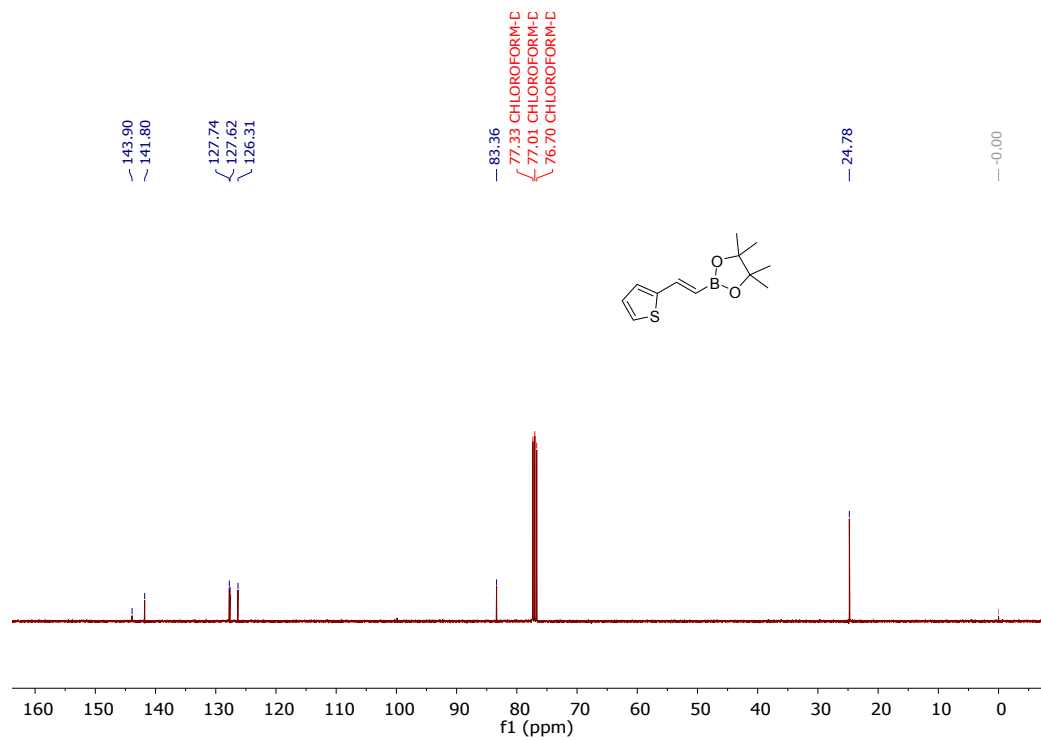


Figure S33: ^{13}C NMR of (*E*)-4,4,5,5-tetramethyl-2-(2-(thiophen-2-yl)vinyl)-1,3,2-dioxaborolane (**21**)¹⁴

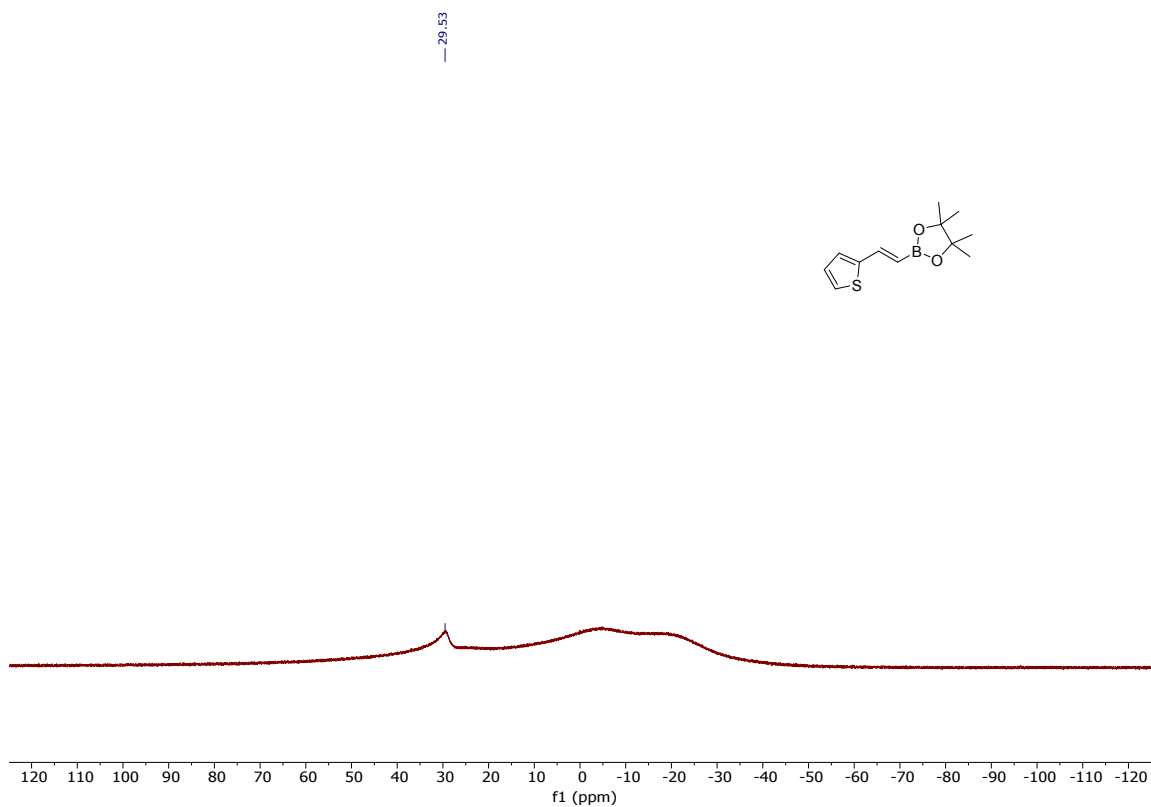


Figure S34: (*E*)-4,4,5,5-tetramethyl-2-(2-(thiophen-2-yl)vinyl)-1,3,2-dioxaborolane (**2l**)

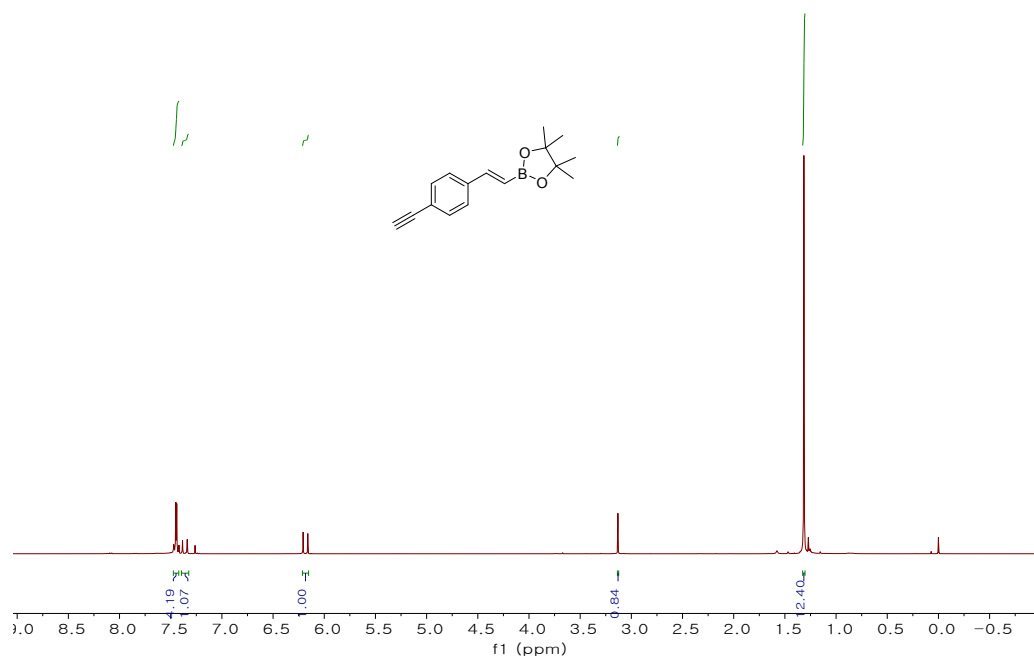


Figure S35: ^1H NMR of (*E*)-2-(4-ethynylstyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2m**)¹²

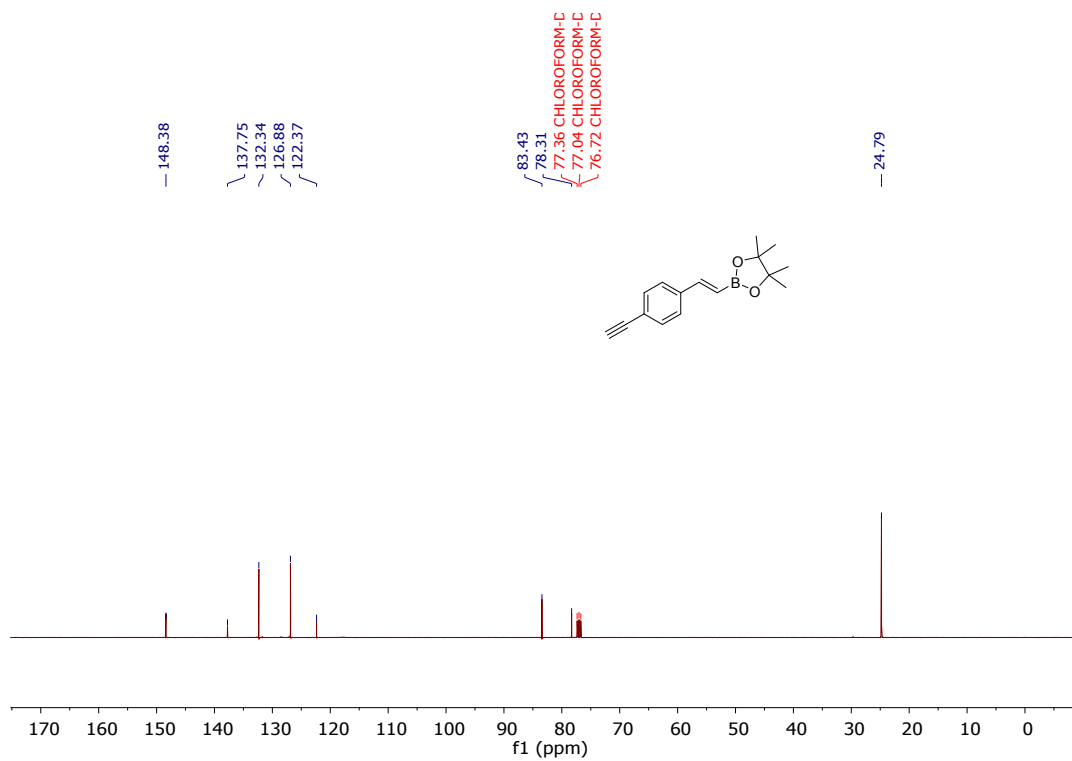


Figure S36: ¹³C NMR of (*E*)-2-(4-ethynylstyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2m**)¹²

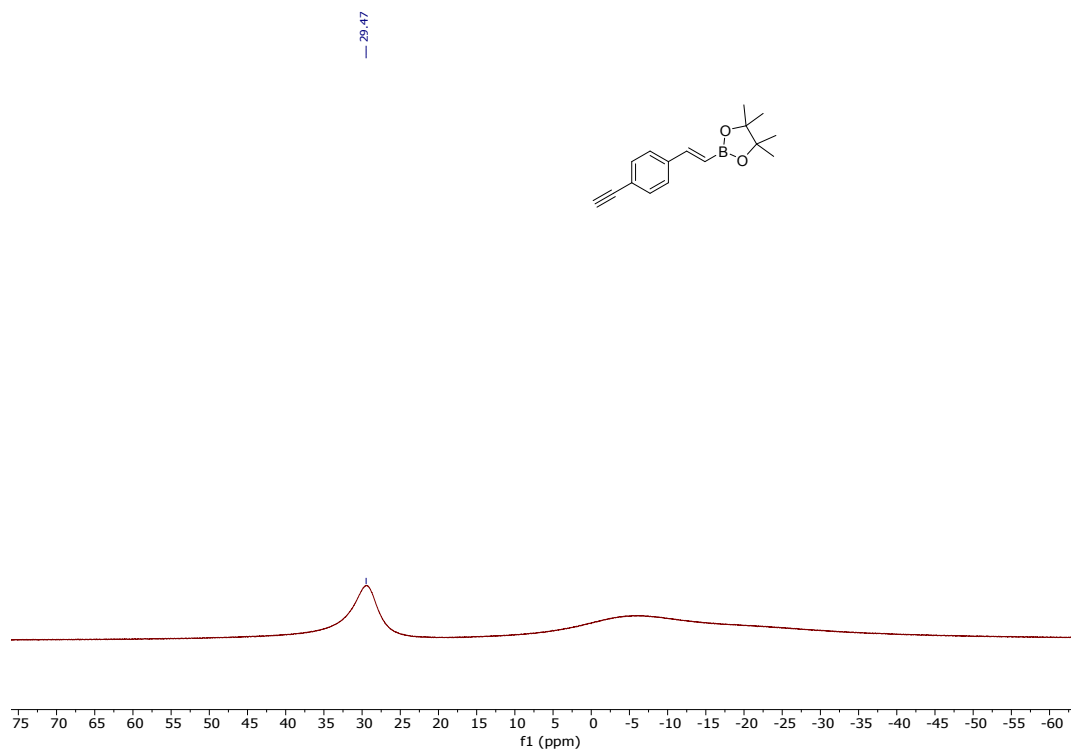


Figure S37: ^{11}B NMR of (*E*)-2-(4-ethynylstyryl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2m**)¹²

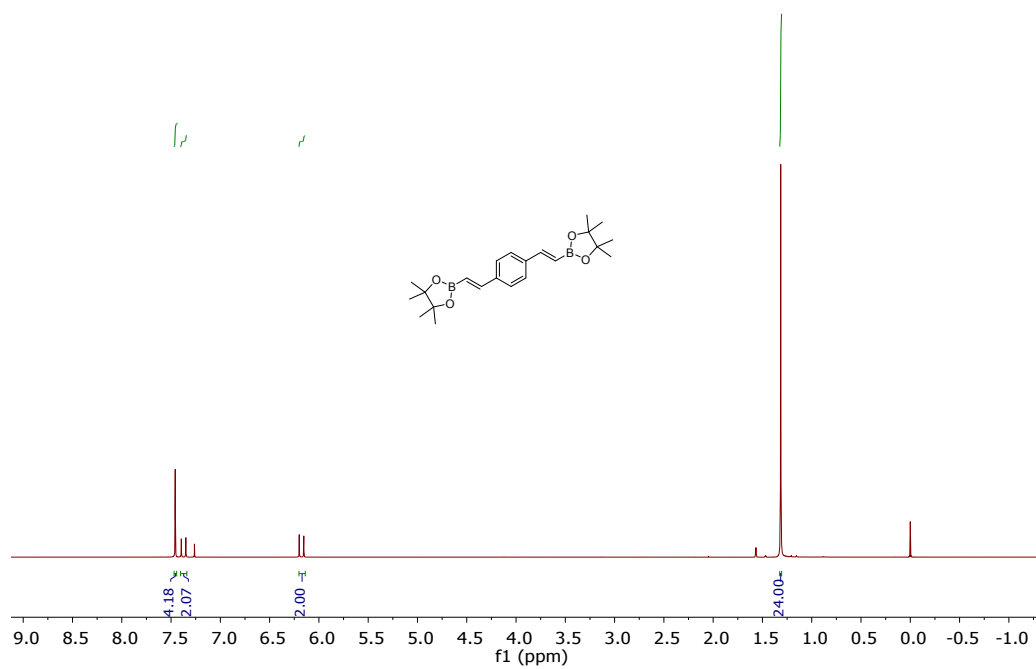


Figure S38: ^1H NMR of 1,4-bis((*E*)-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)benzene (**2n**)¹²

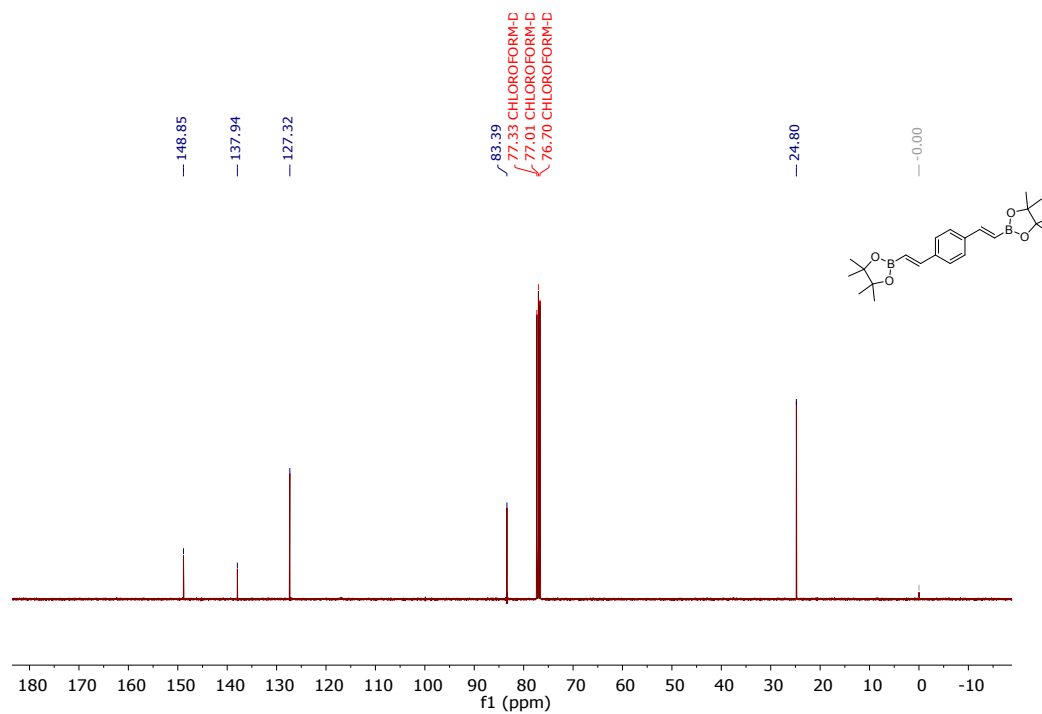


Figure S39: ^{13}C NMR of 1,4-bis(*E*)-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)benzene (**2n**)¹²

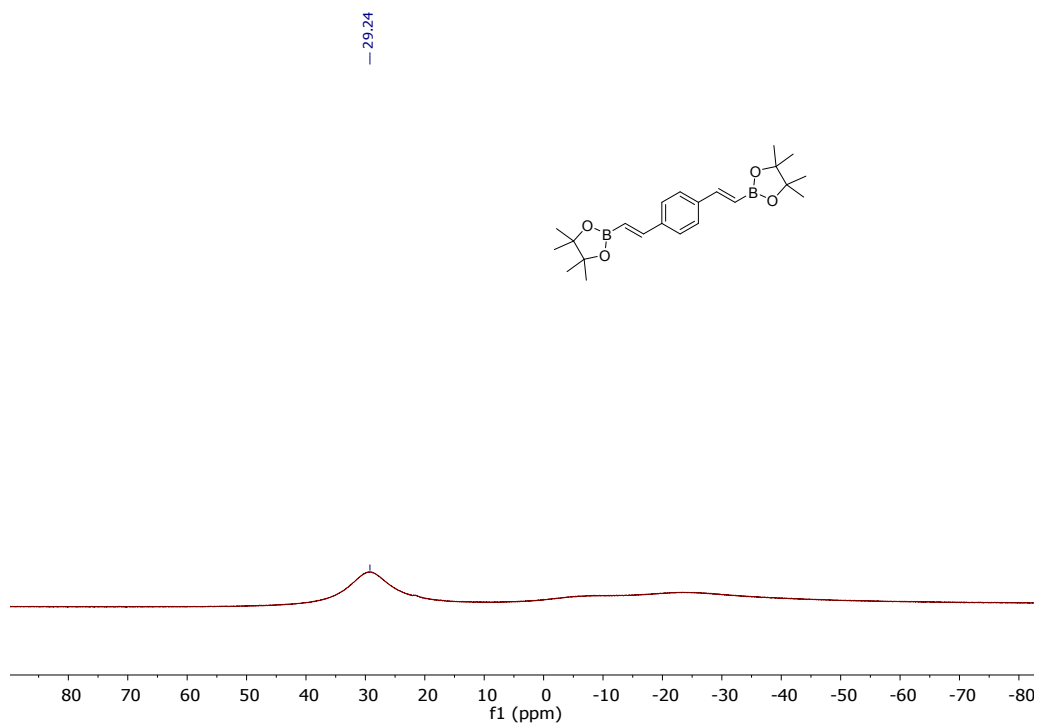


Figure S40: ^{11}B NMR of 1,4-bis(*E*)-2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)benzene (**2n**)¹²

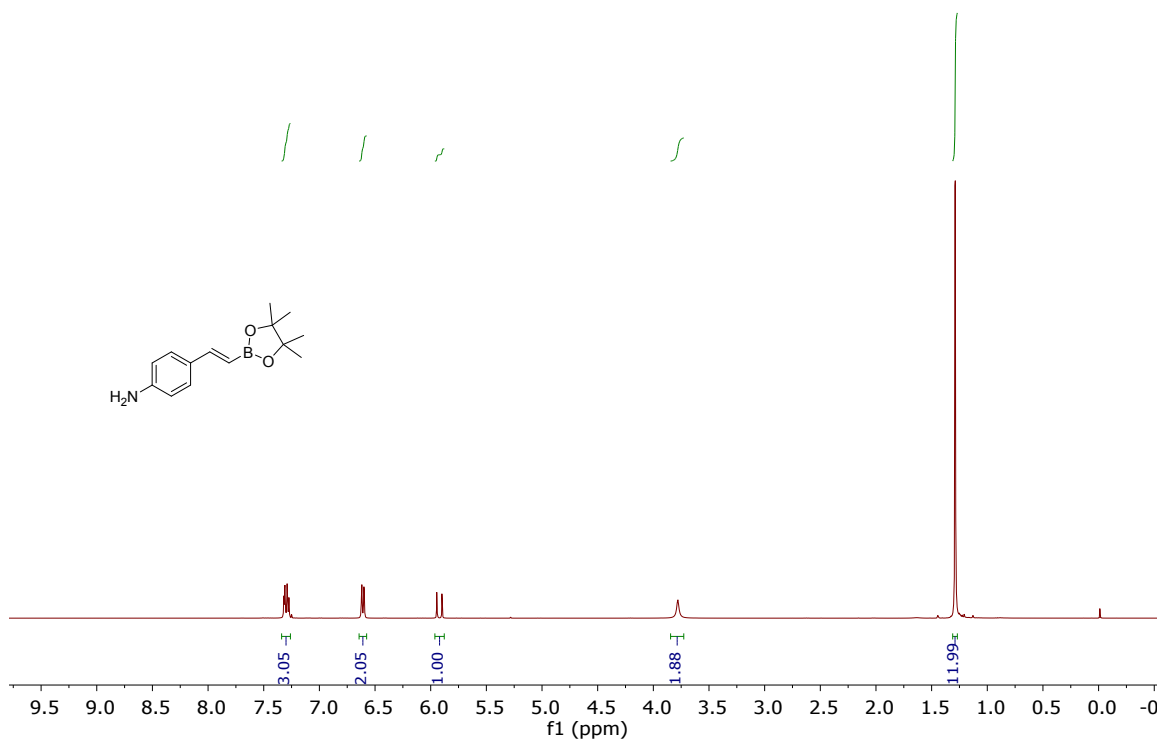


Figure S41: ^1H NMR of *(E)*-4-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)aniline (**2o**)¹⁴

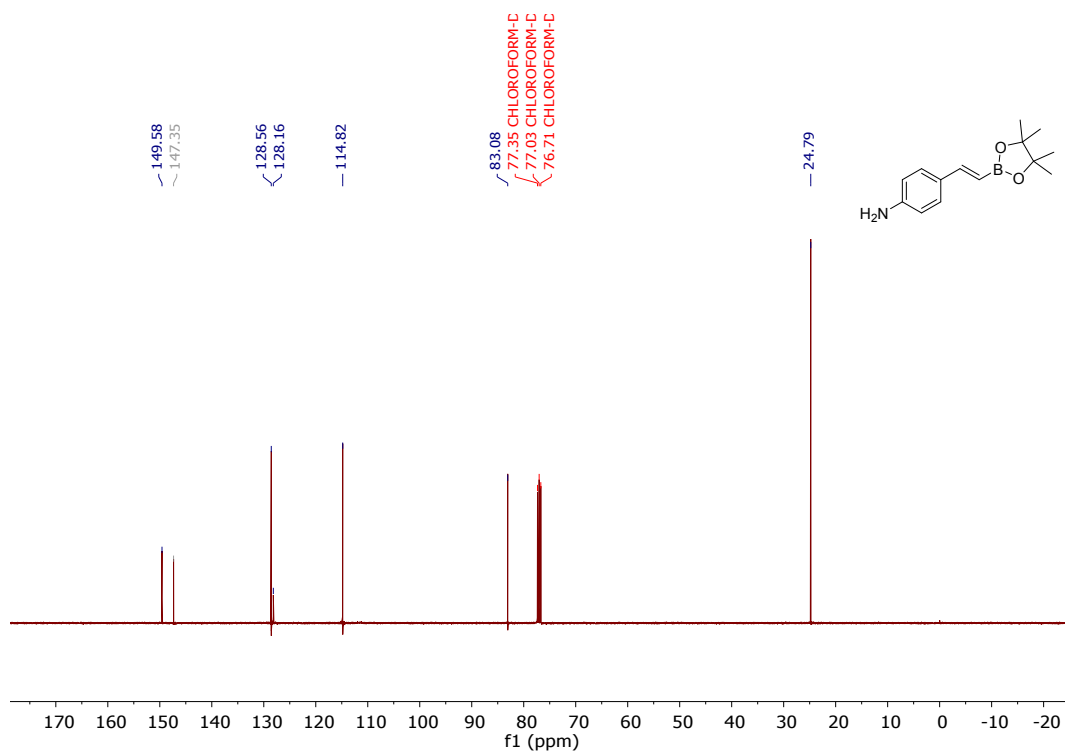


Figure S42: ^{13}C NMR of *(E)*-4-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)aniline (**2o**)¹⁴

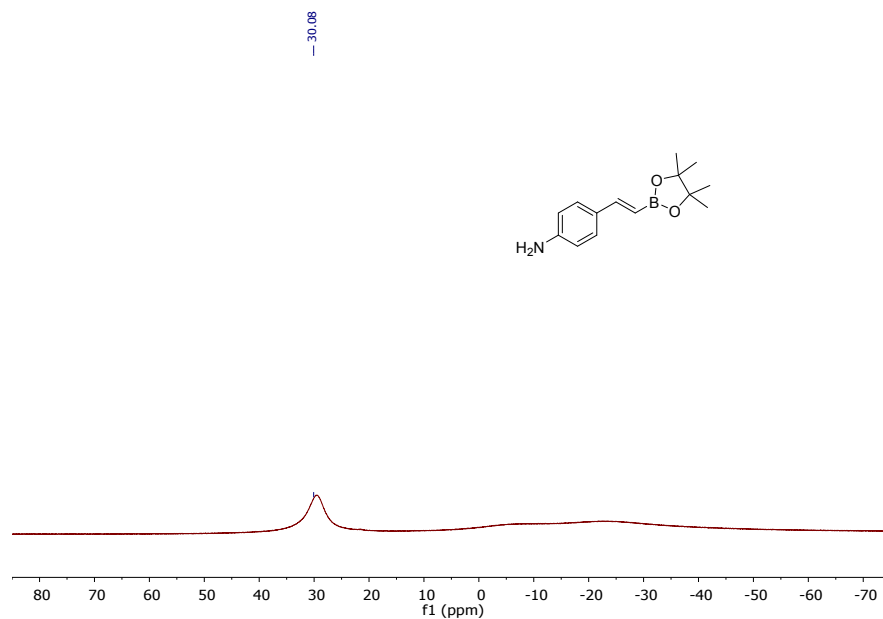


Figure S43: ^{11}B NMR of (*E*)-4-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)aniline (**2o**)¹⁴

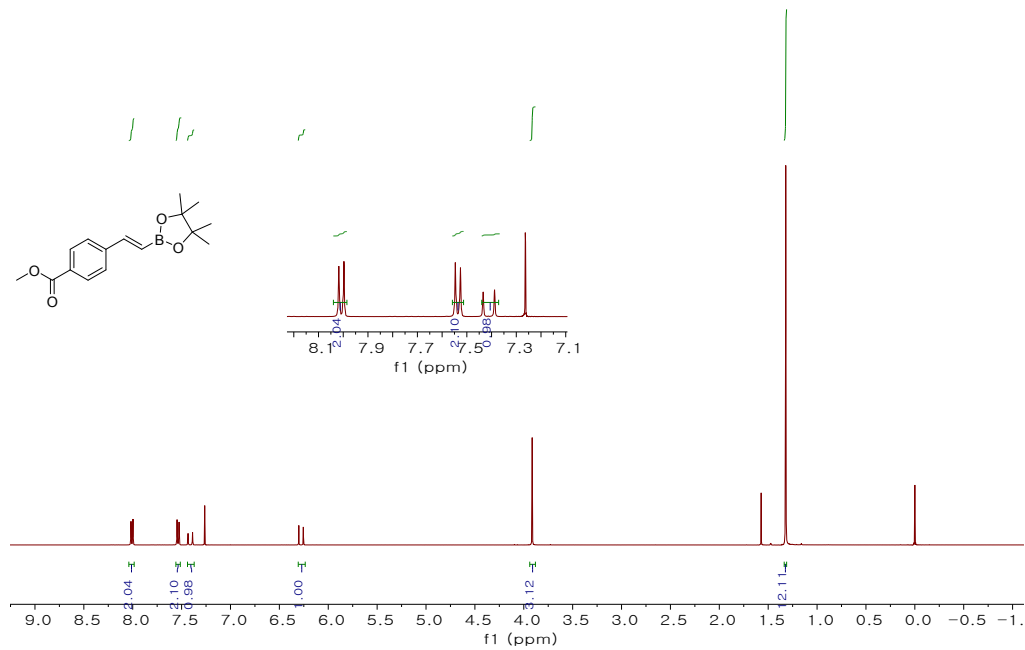


Figure S44: ^1H NMR of methyl (*E*)-4-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)benzoate (**2p**)⁶

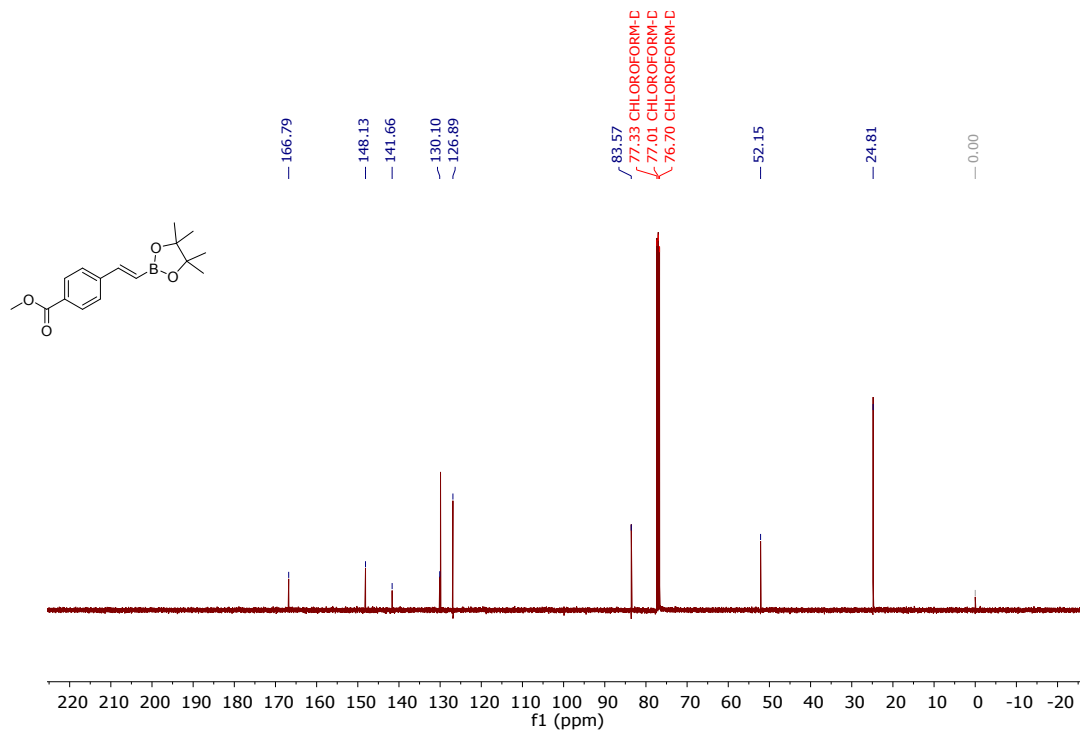


Figure S45: ¹³C NMR of *(E)*-4-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)benzoate (**2p**)⁶

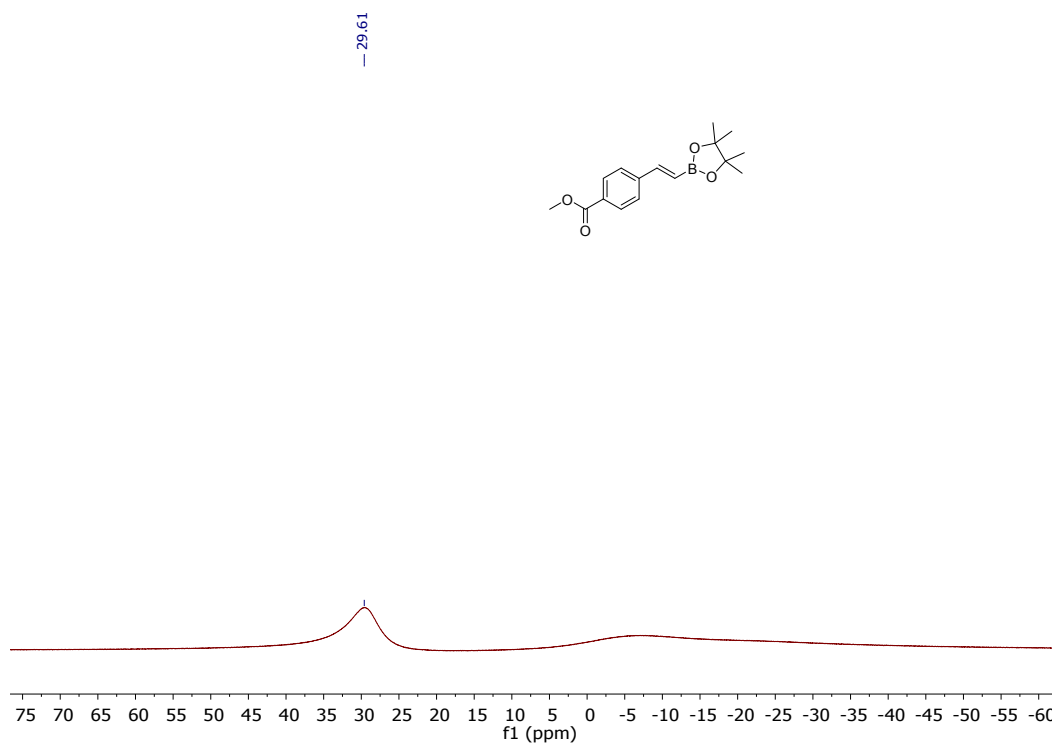


Figure S46: ¹¹B NMR of *(E)*-4-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)benzoate (**2p**)⁶

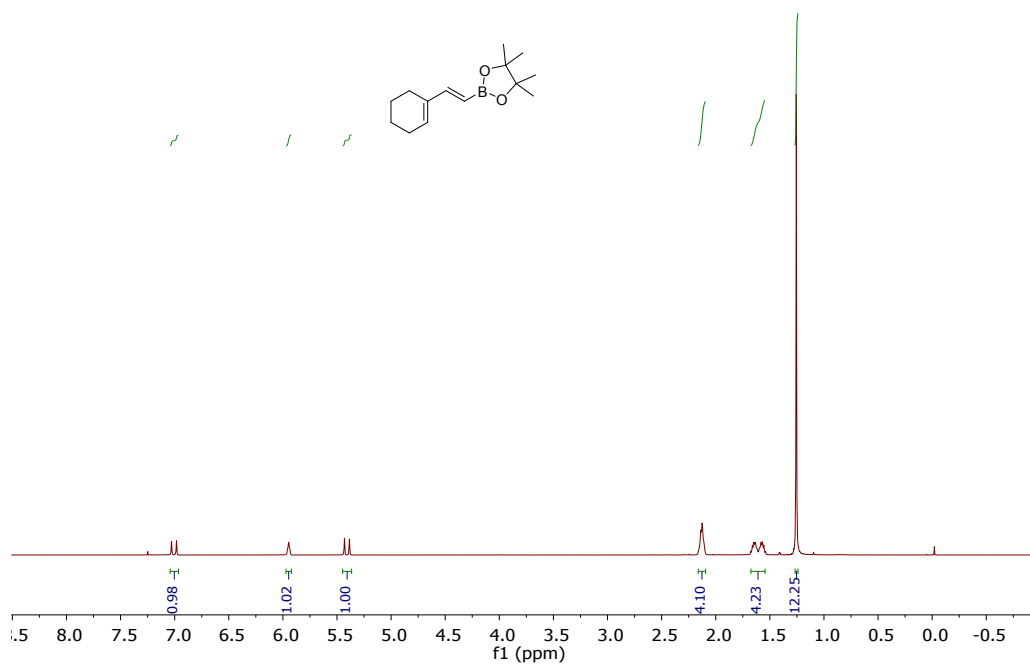


Figure S47: ^1H NMR of (*E*)-2-(2-(cyclohex-1-en-1-yl)vinyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2q**)⁷

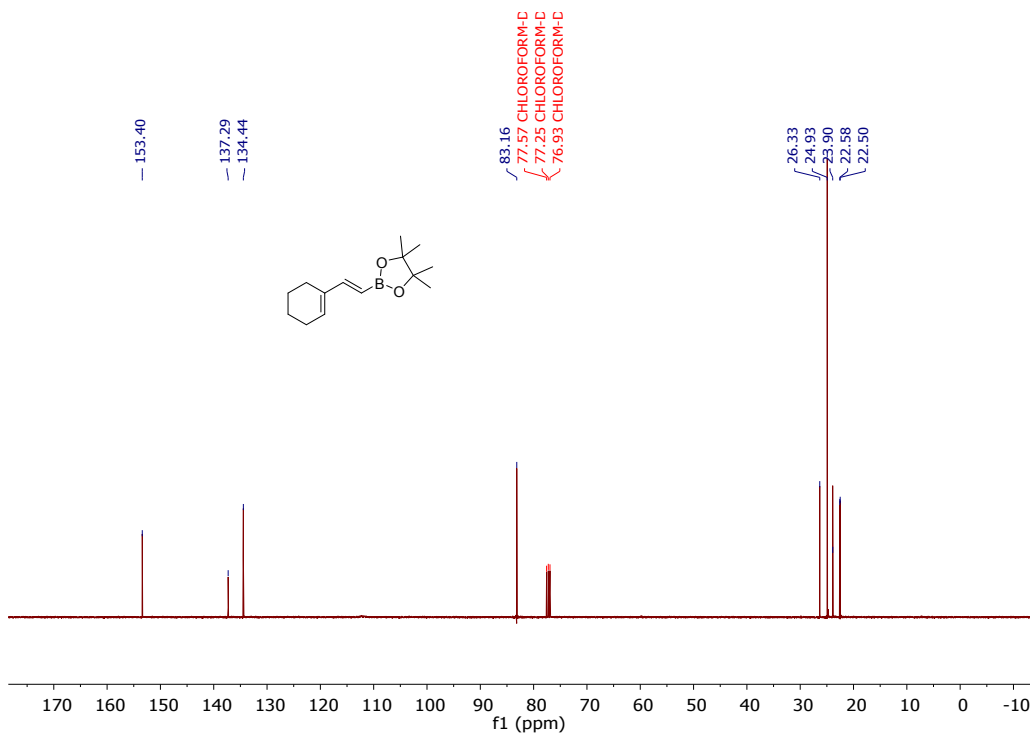


Figure S48: ^{13}C NMR of (*E*)-2-(2-(cyclohex-1-en-1-yl)vinyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2q**)⁷

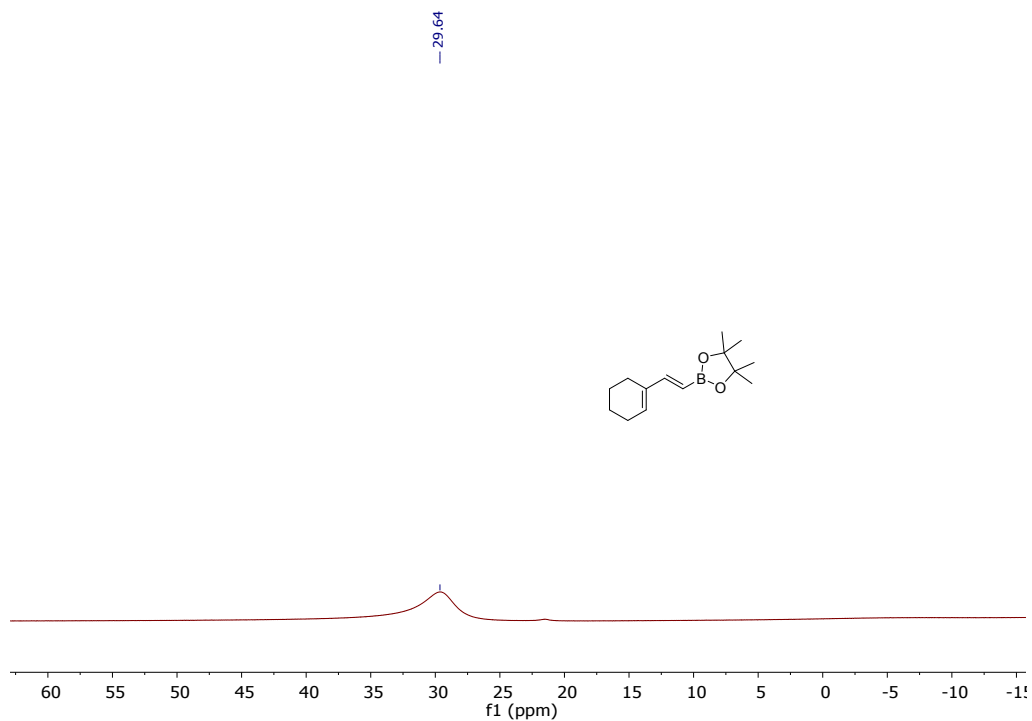


Figure S49: ^{11}B NMR of (*E*)-2-(2-(cyclohex-1-en-1-yl)vinyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2q**)⁷

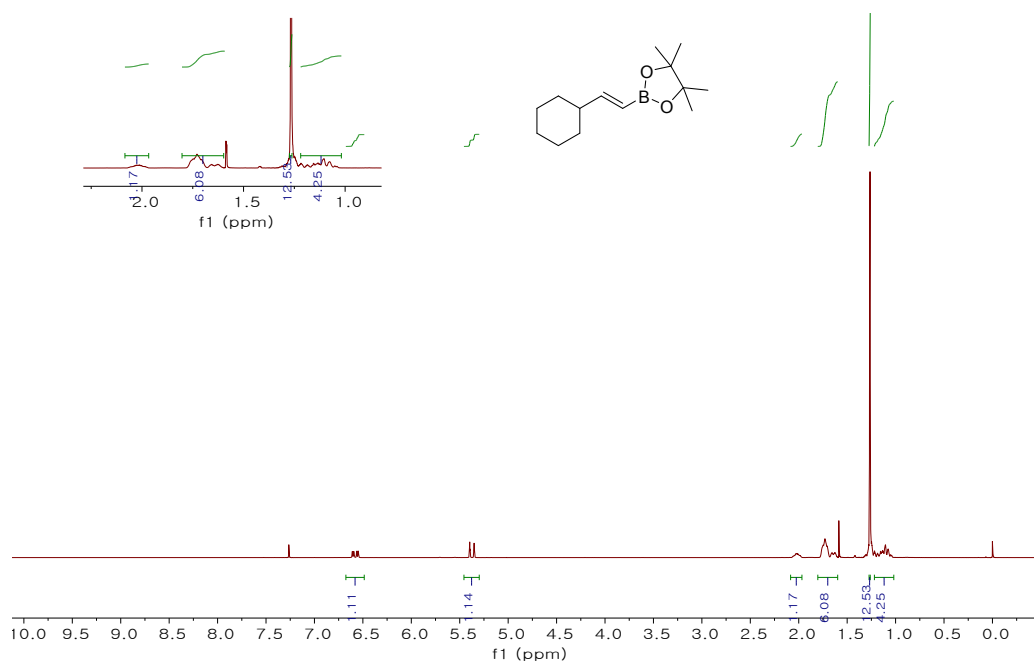


Figure S50: ^1H NMR of (*E*)-2-(2-(cyclohexyl)vinyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2r**)⁴

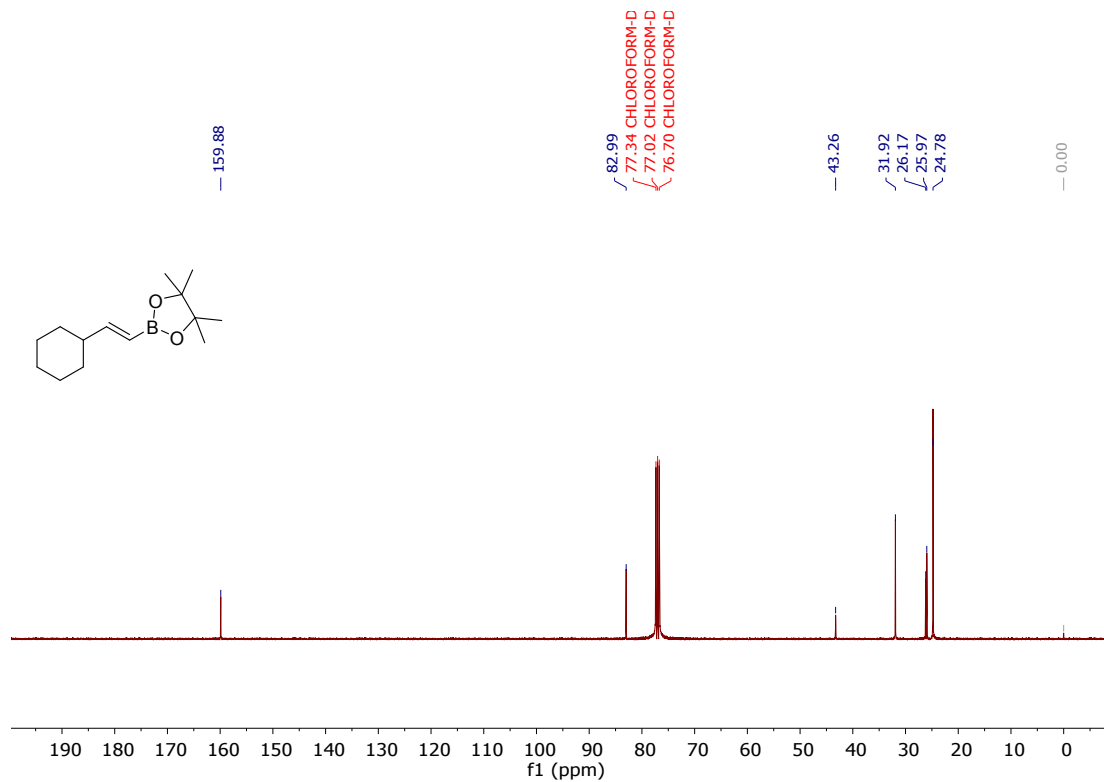


Figure S51: ^{13}C NMR of (*E*)-2-(2-cyclohexylvinyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2r**)⁴

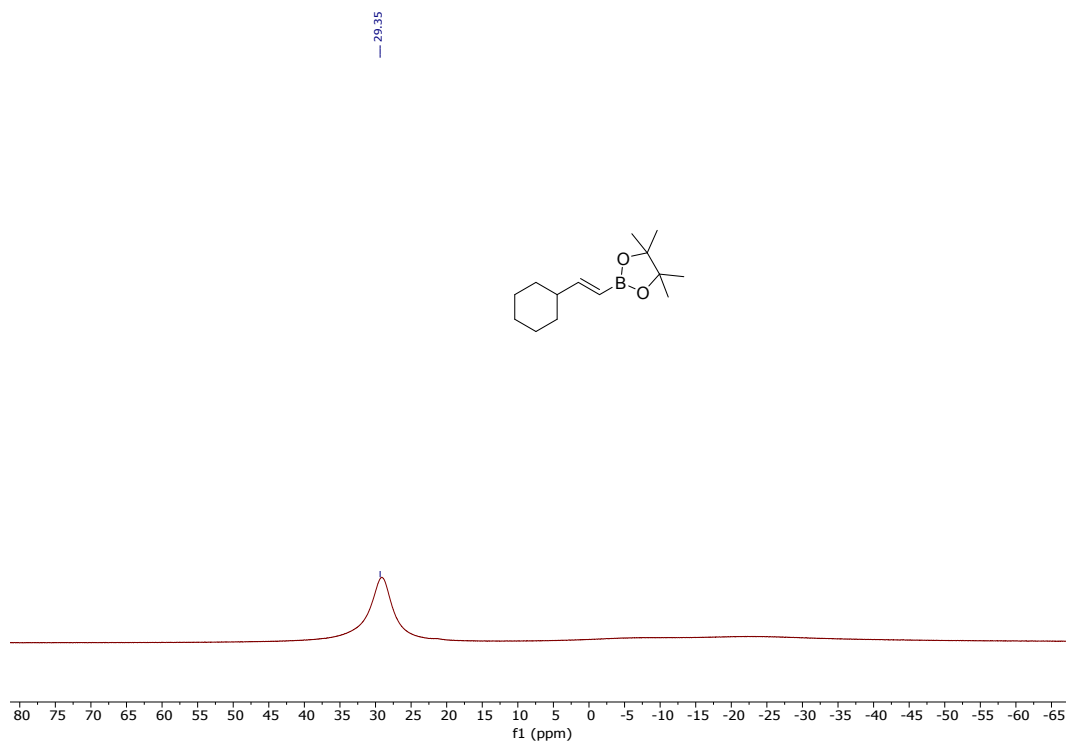


Figure S52: ^{11}B NMR of (*E*)-2-(2-cyclohexylvinyl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2r**)⁴

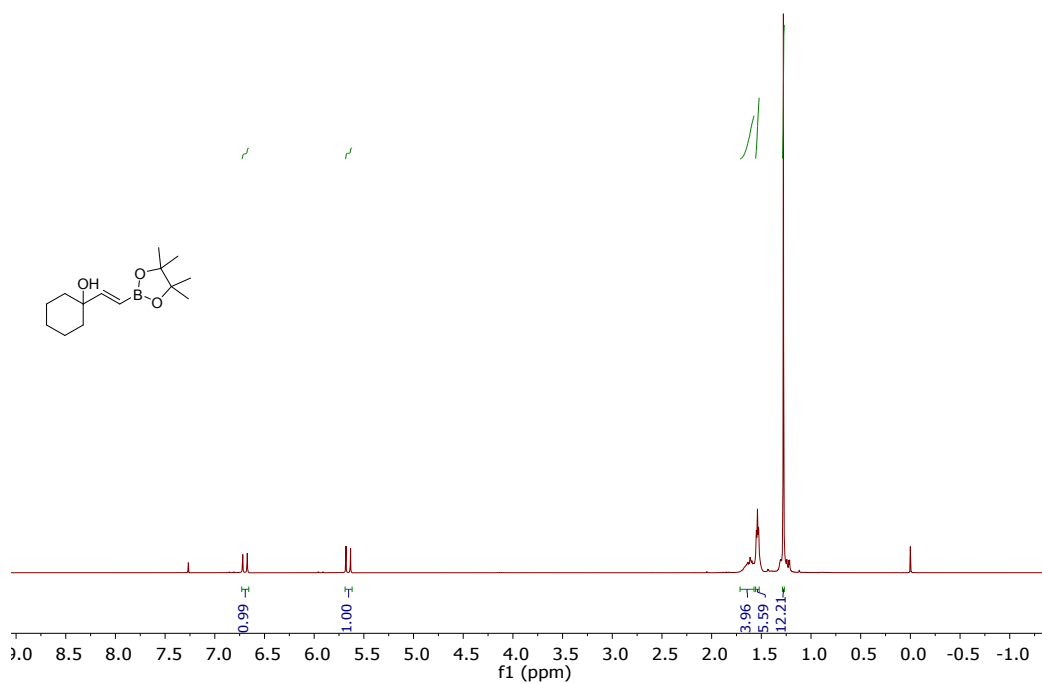


Figure S53: ¹H NMR of *(E)*-1-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)cyclohexan-1-ol (**2s**)⁷

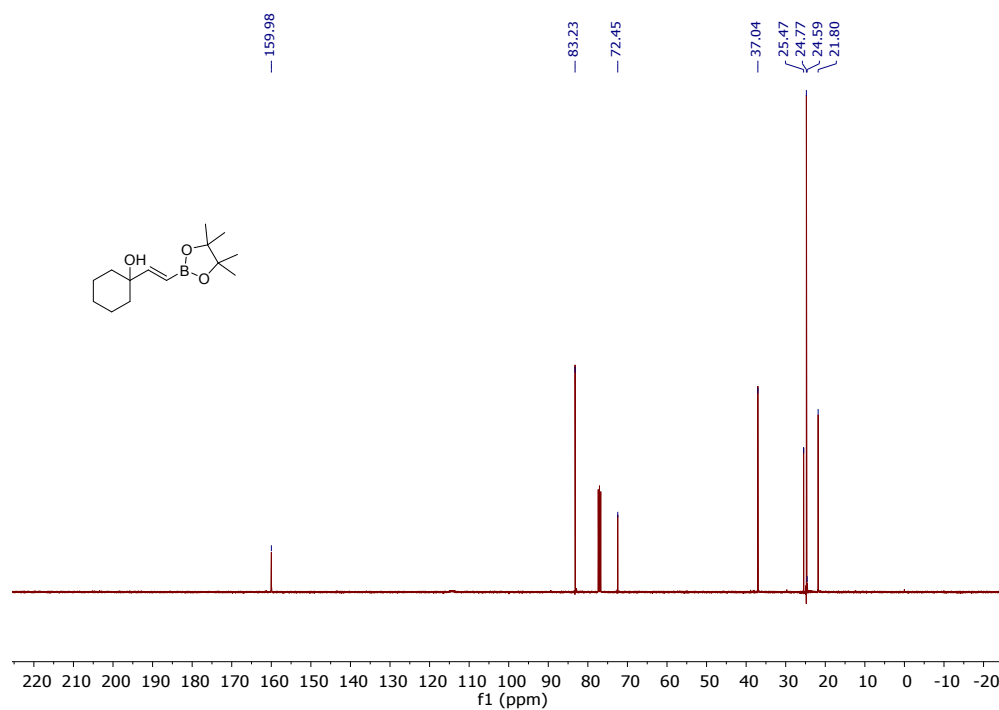


Figure S54: ¹³C NMR of *(E)*-1-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)cyclohexan-1-ol (**2s**)⁷

- 29.37

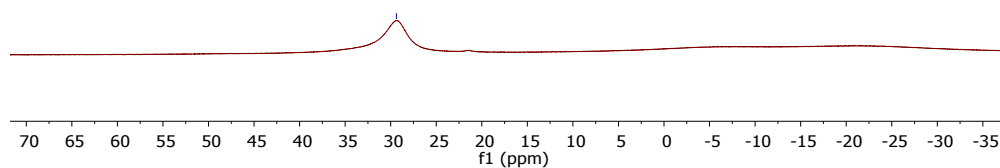
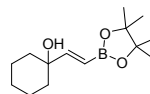


Figure S55: ^{11}B NMR of (*E*)-1-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)cyclohexan-1-ol (**2s**)⁷

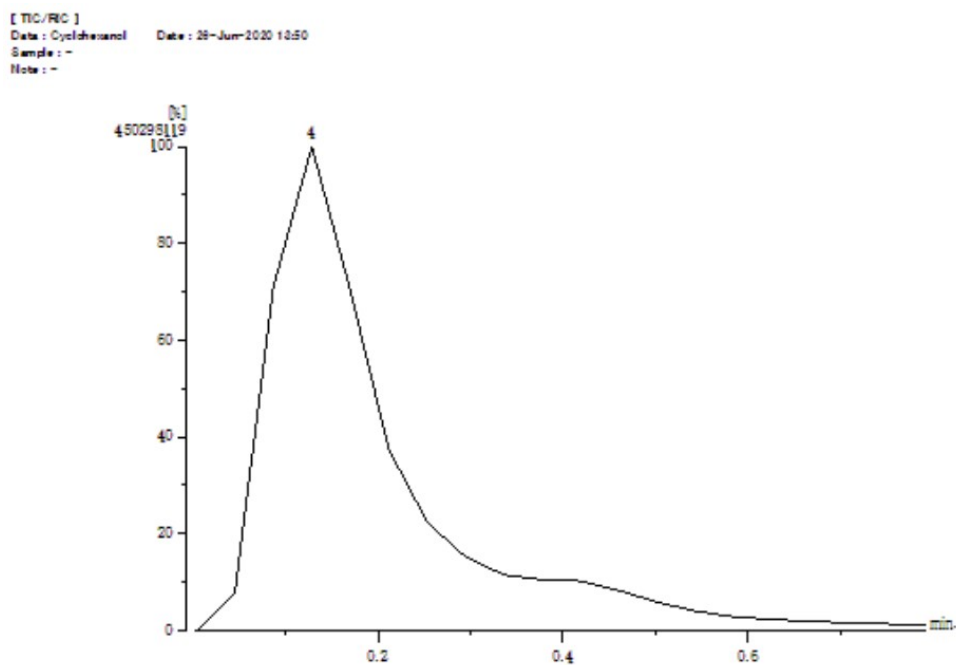


Figure S56: Mass Spectrum of (*E*)-1-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)cyclohexan-1-ol (**2s**)⁷

[Mass Spectrum]
Data : Cyclohexanol Date : 26-Jun-2020 13:50
RT: 0.17 min Scan#: 5-K(13.20) (4-1.0)

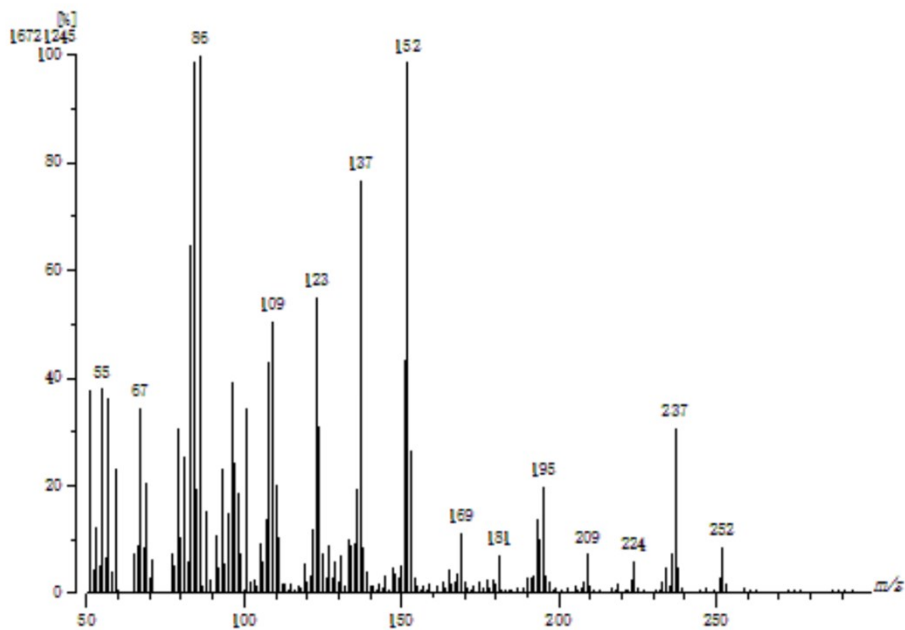


Figure S57: Mass Spectrum of (*E*)-1-(2-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)vinyl)cyclohexan-1-ol (**2s**)⁷

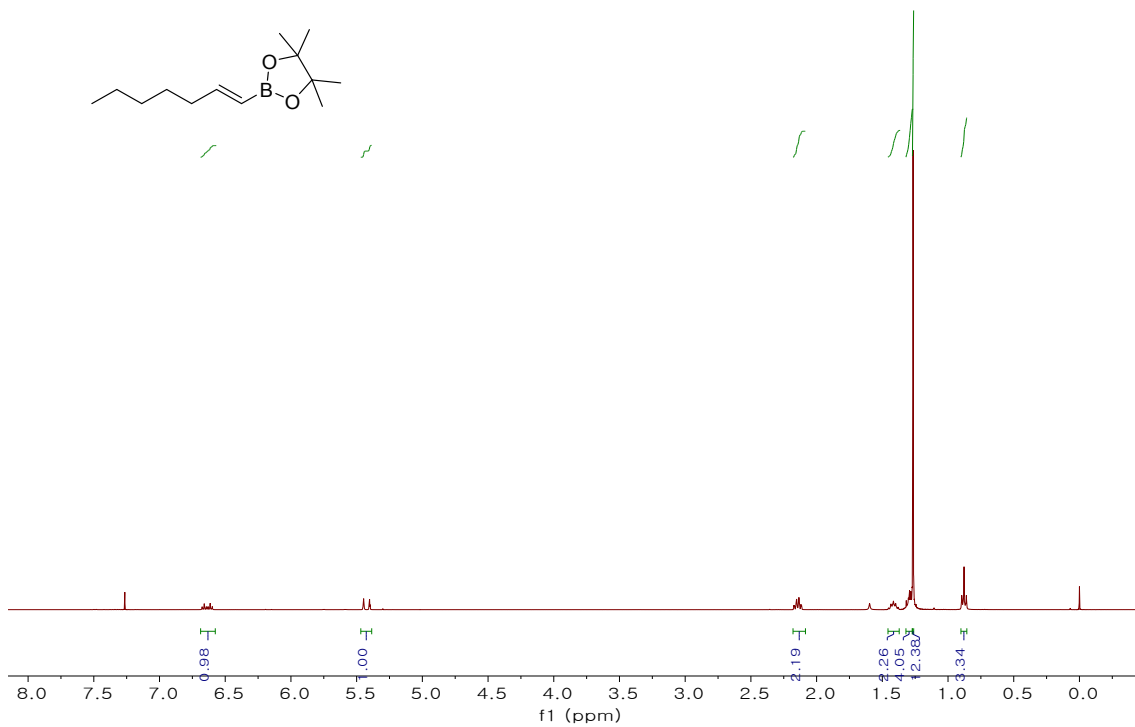


Figure S58: ¹H NMR of (*E*)-2-(hept-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2t**)⁵

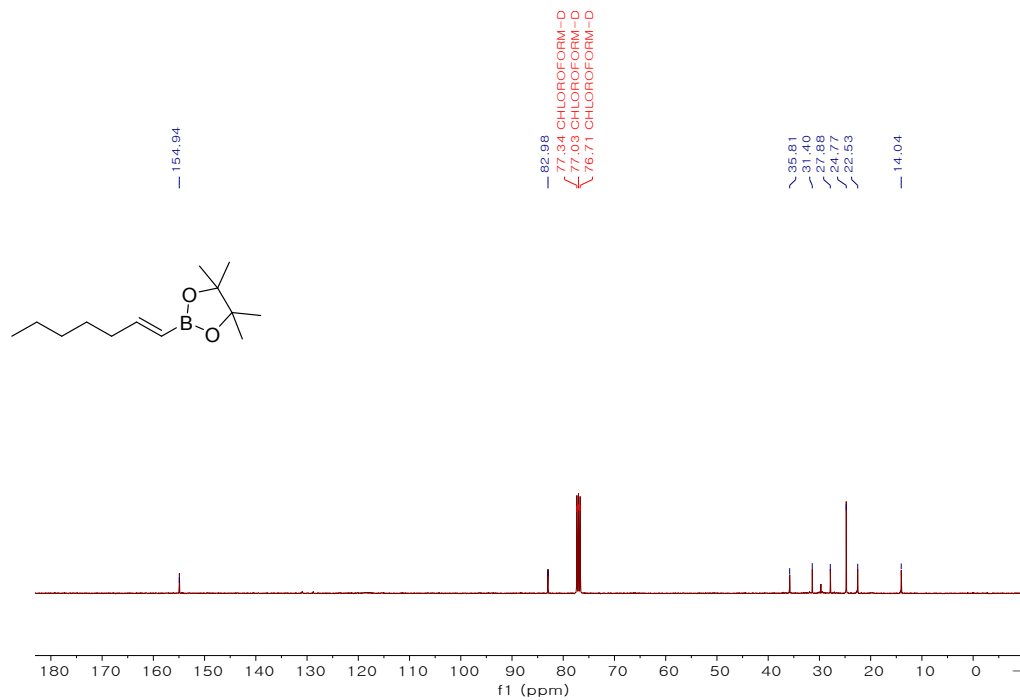


Figure S59: ¹³C NMR of *(E)*-2-(hept-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2t**)⁵

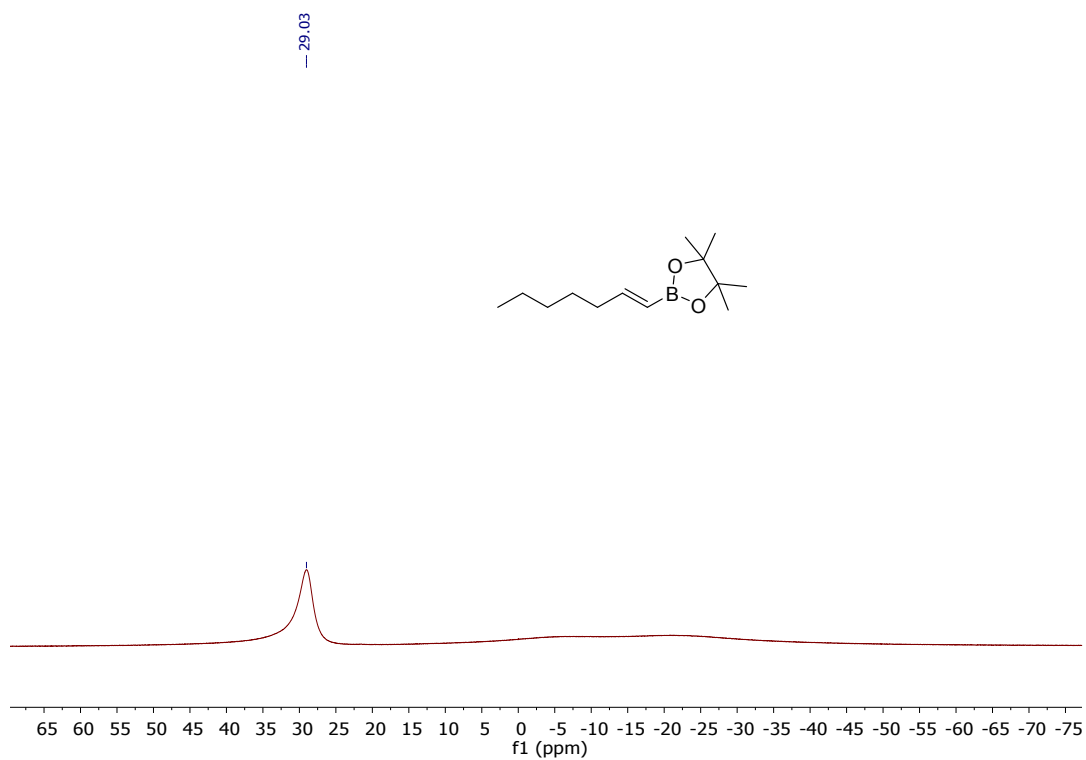


Figure S60: ¹¹B NMR of *(E)*-2-(hept-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2t**)⁵

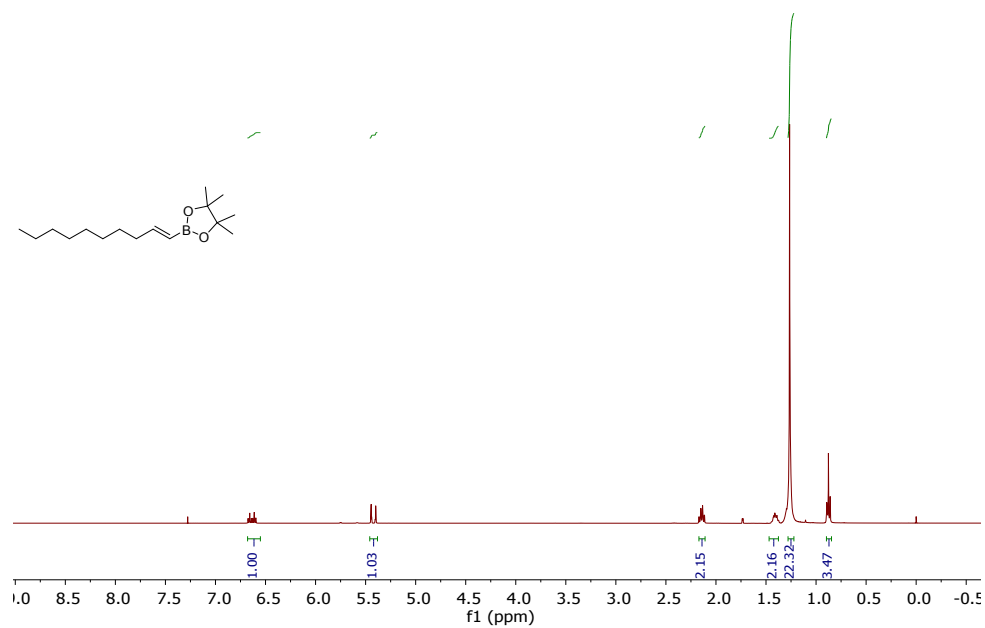


Figure S61: ¹H NMR of *(E)*-2-(dec-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2u**)⁶

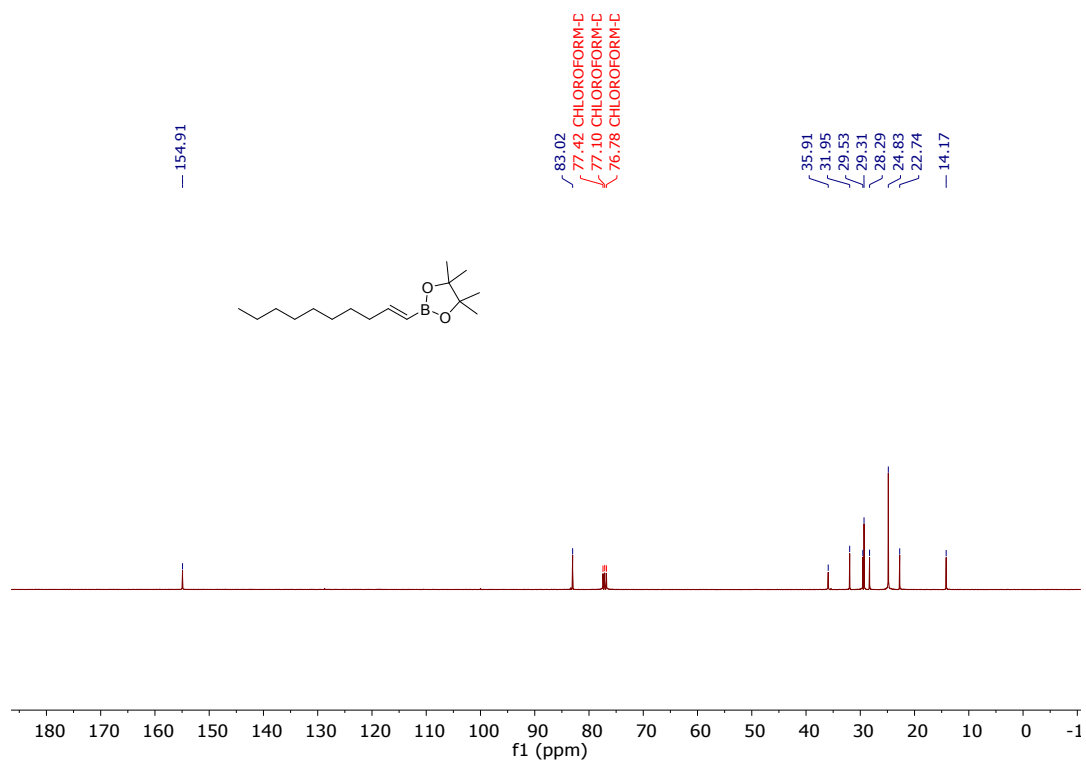


Figure S62: ¹³C NMR of *(E)*-2-(dec-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2u**)⁶

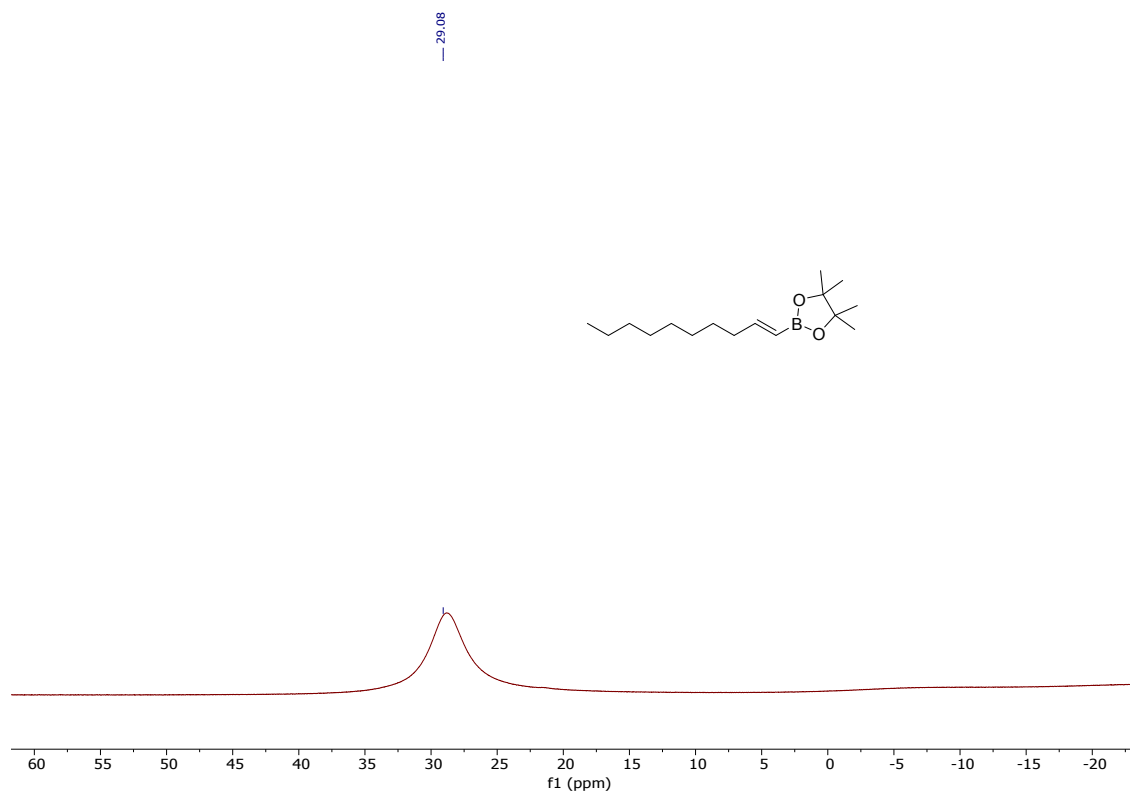


Figure S63: ^{11}B NMR of (*E*)-2-(dec-1-en-1-yl)-4,4,5,5-tetramethyl-1,3,2-dioxaborolane (**2u**)

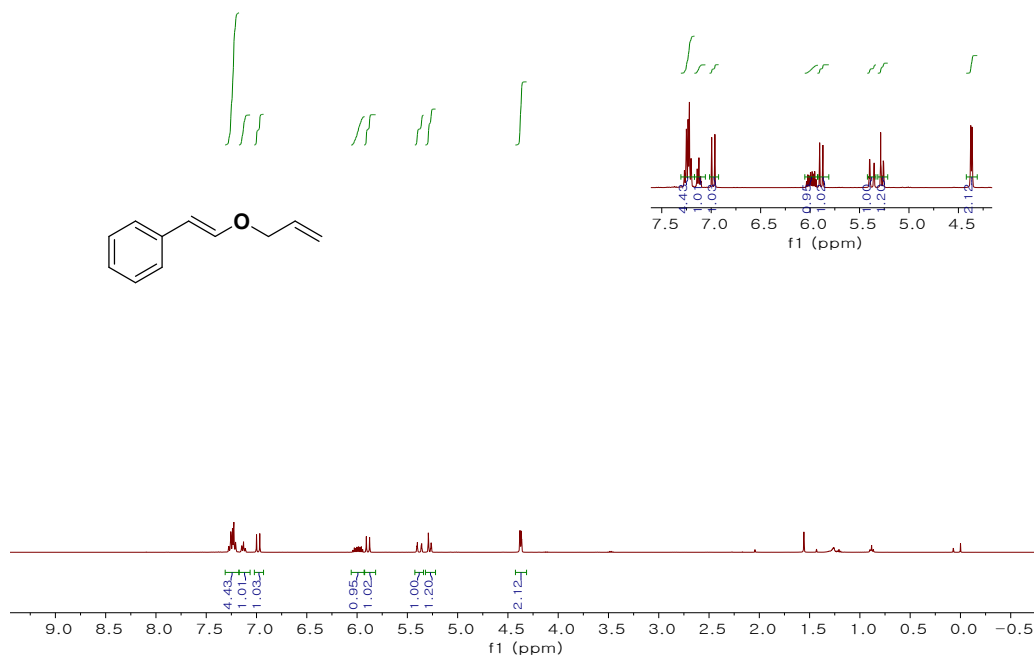


Figure S64: ^1H NMR of (*E*)-2-(allyloxy)vinylbenzene (**3a**)⁸

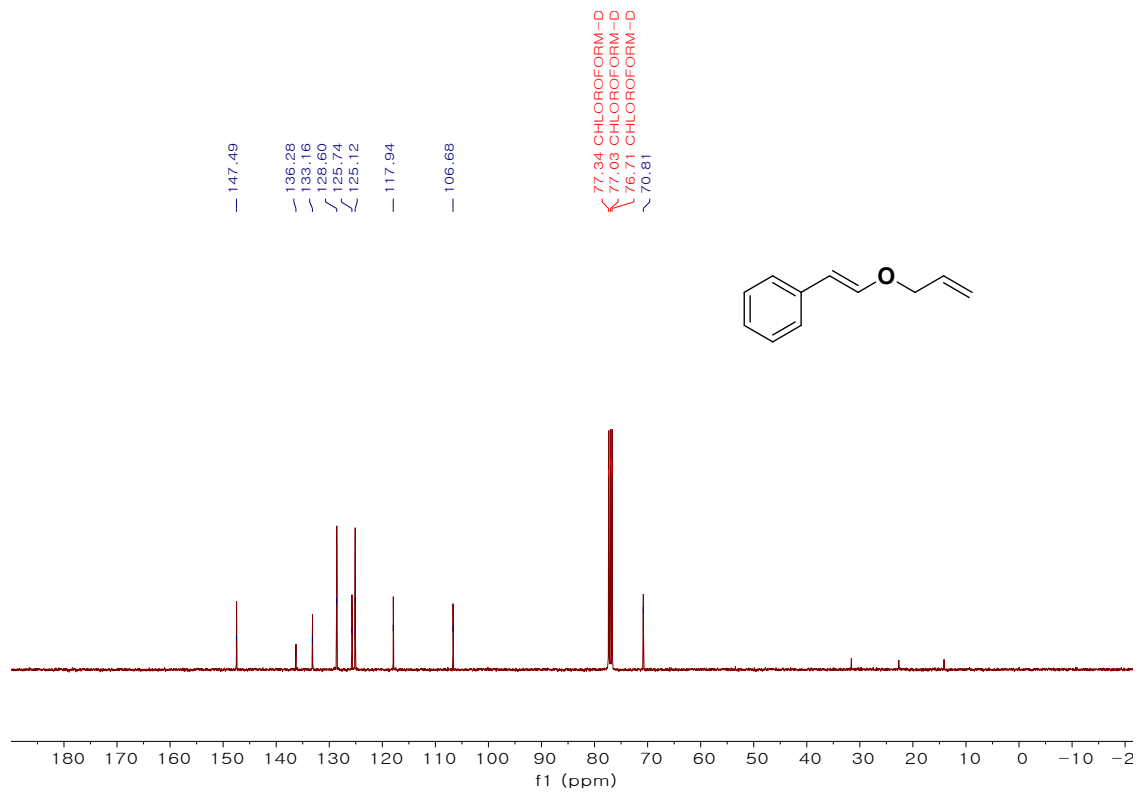


Figure S65: ^{13}C NMR of (*E*)-(2-(Allyloxy)vinyl)benzene (**3a**)⁸

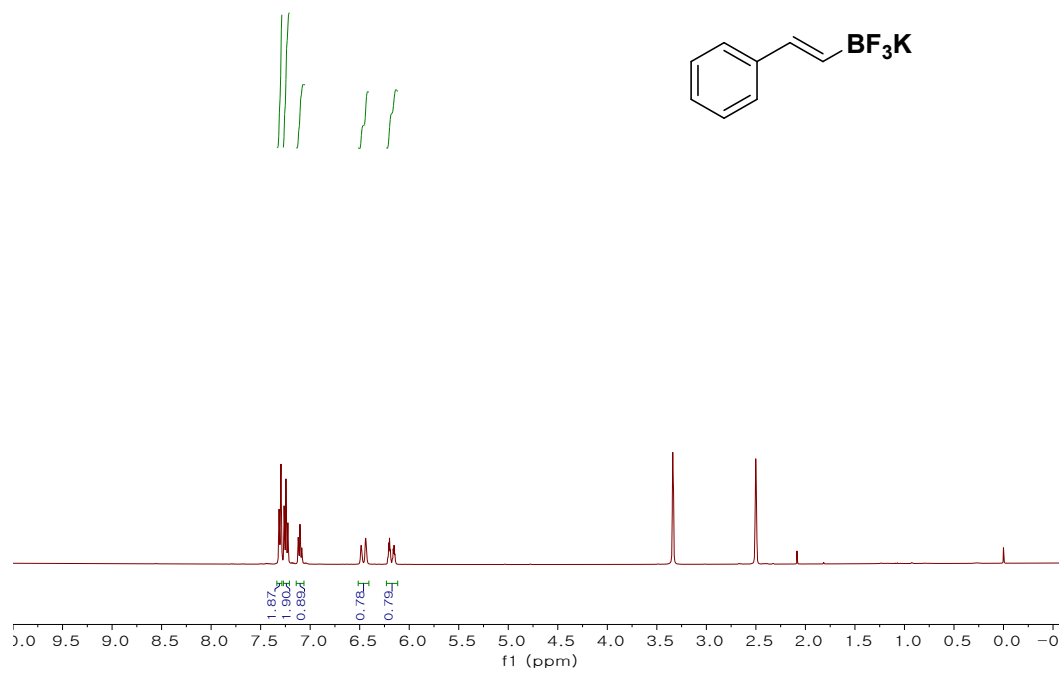


Figure S66: ^1H NMR of Potassium *trans*-styryltrifluoroborate (**3b**)⁹

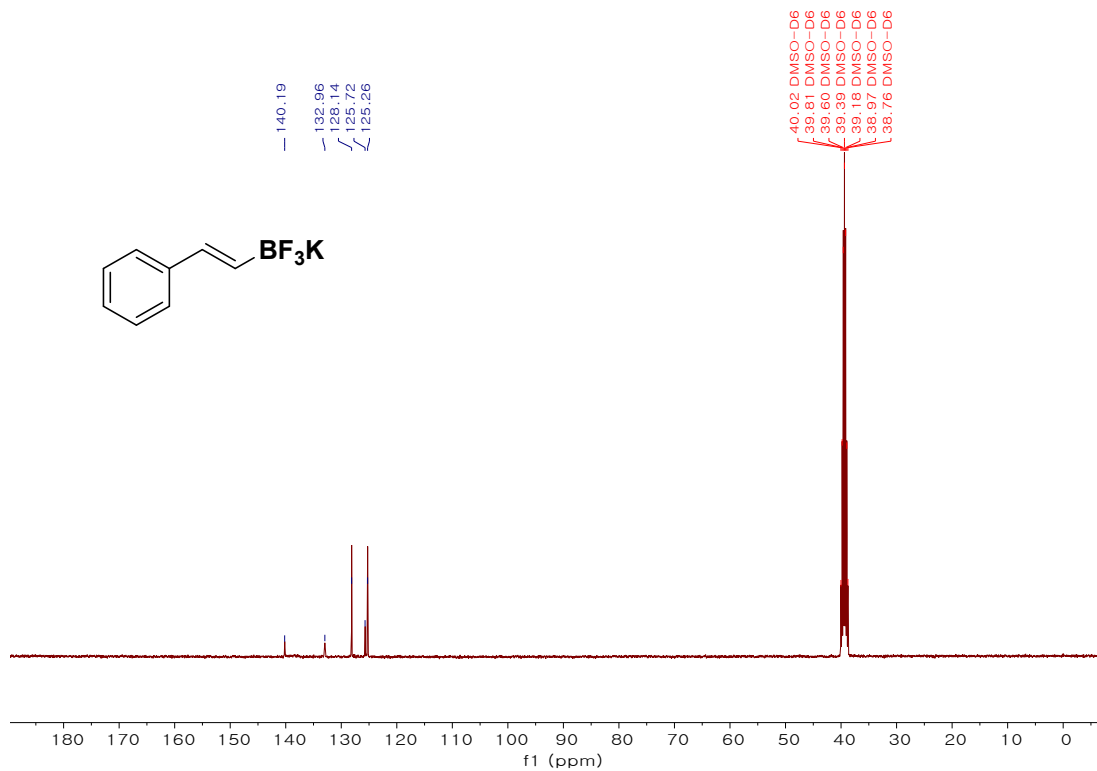


Figure S67: ¹³C NMR of Potassium trans-styryltrifluoroborate (**3b**)⁹

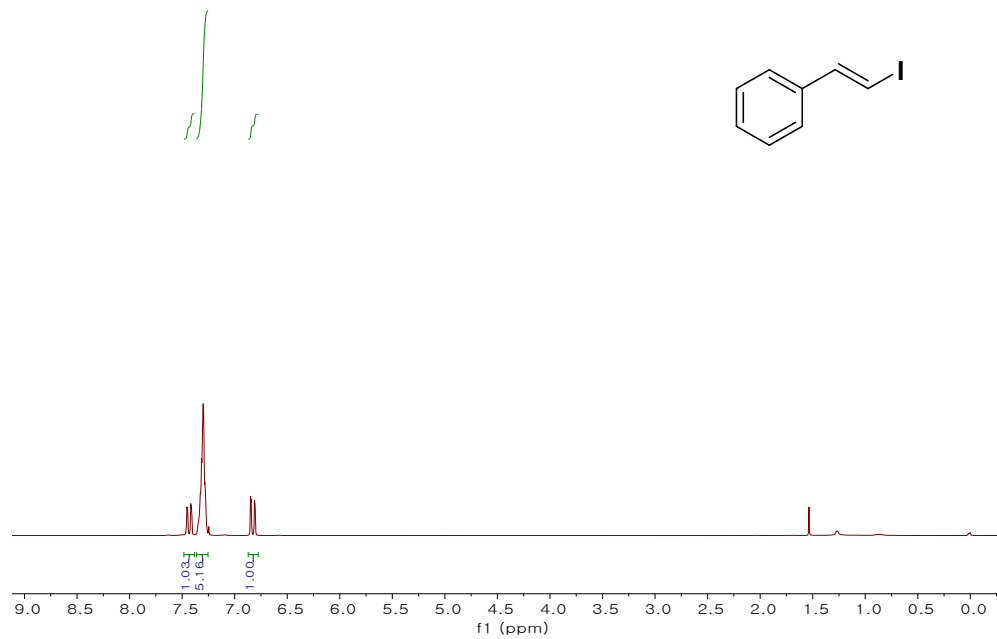


Figure S68: ¹H NMR of (*E*)-(2-Iodovinyl)benzene (**3c**)¹⁰

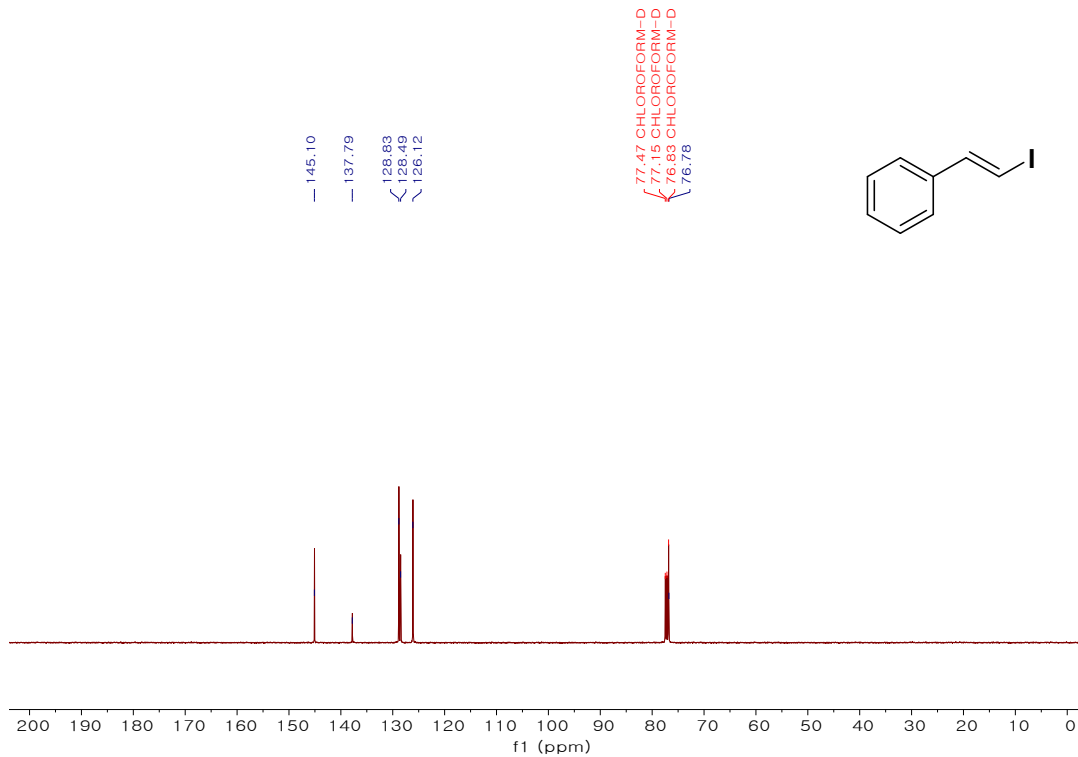


Figure S69: ¹³C NMR of (*E*)-(2-Iodovinyl)benzene (**3c**)¹⁰

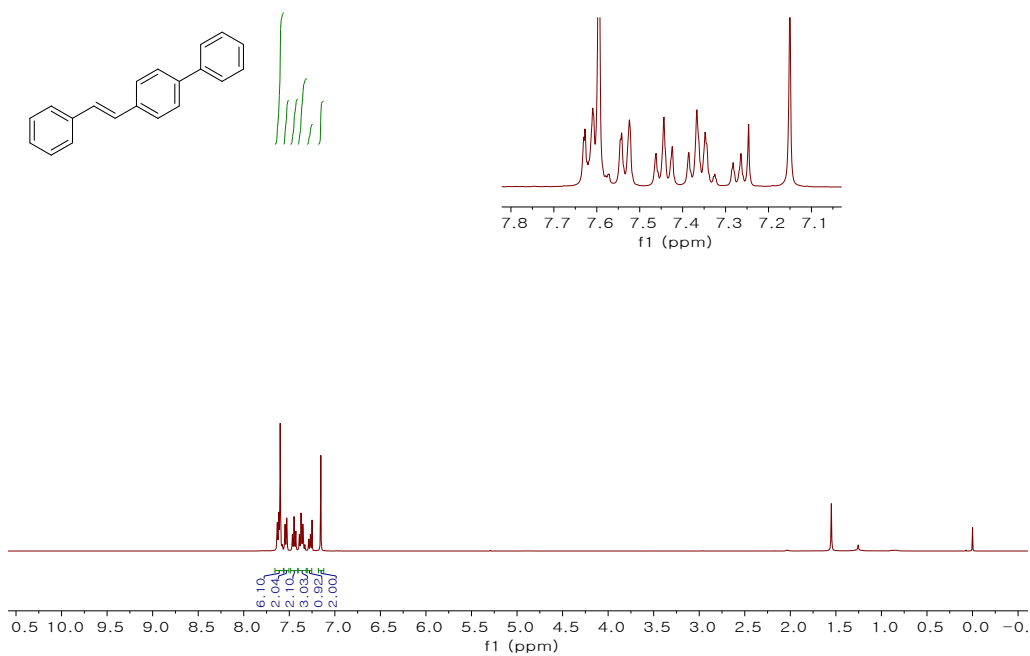


Figure S70: ¹H NMR of (*E*)-4-Styryl-1,1'-biphenyl (**3d**)¹¹

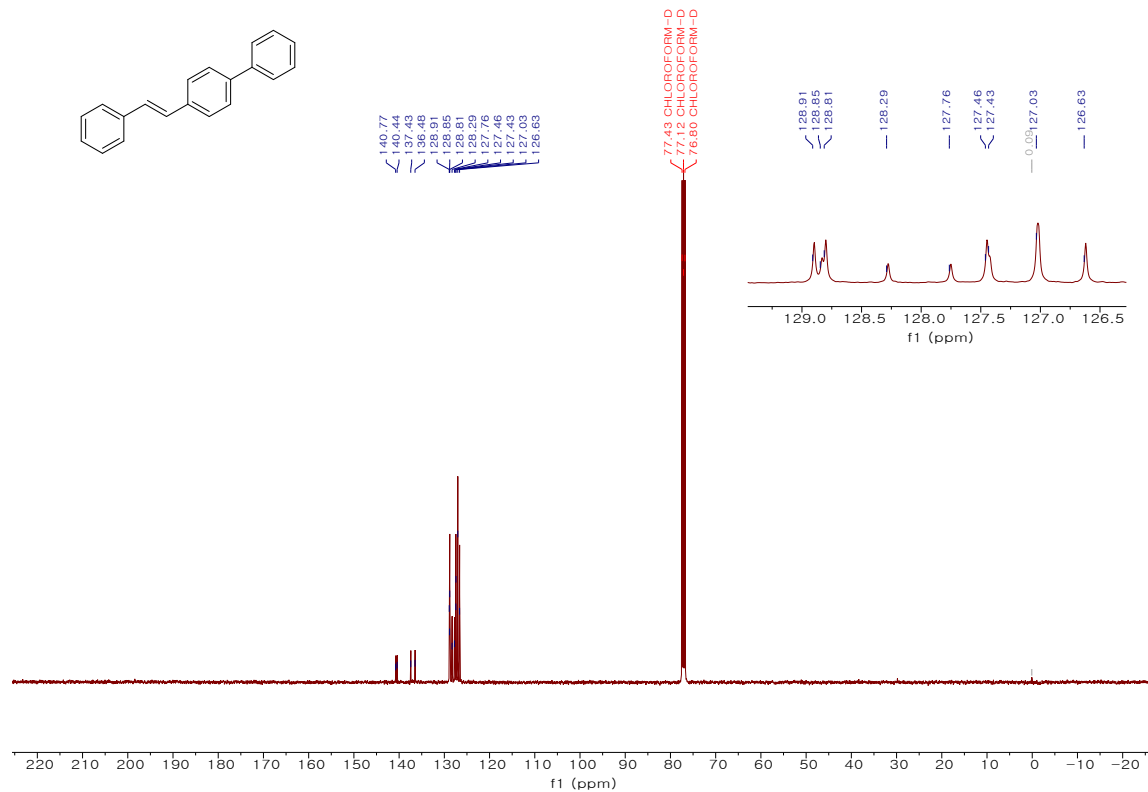


Figure S71: ¹³C NMR of *(E)*-4-Styryl-1,1'-biphenyl (**3d**)¹¹

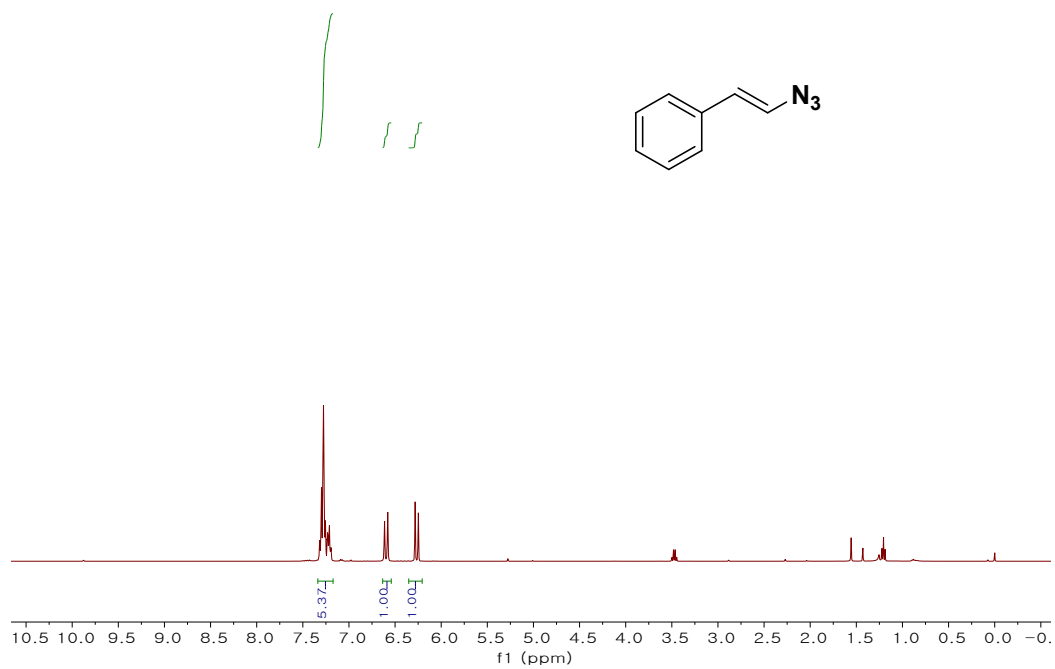


Figure S72: ¹H NMR of *(E)*-(2-Azidovinyl)benzene (**3e**)¹⁰

Alkyne-crude

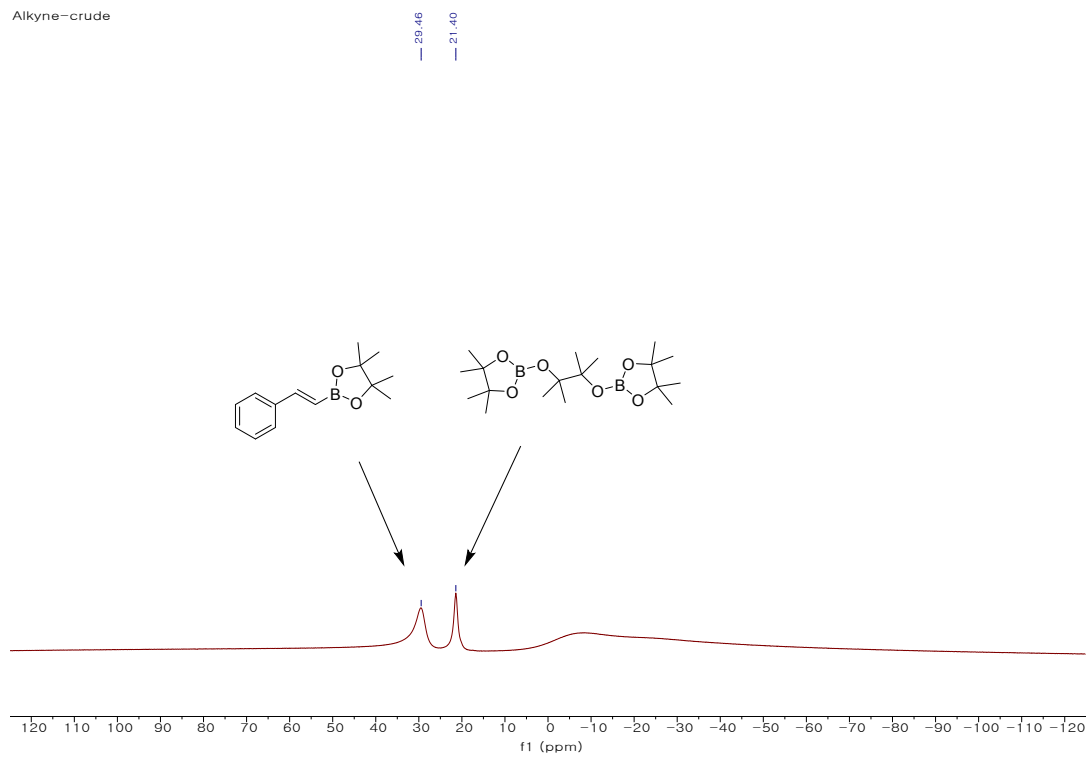
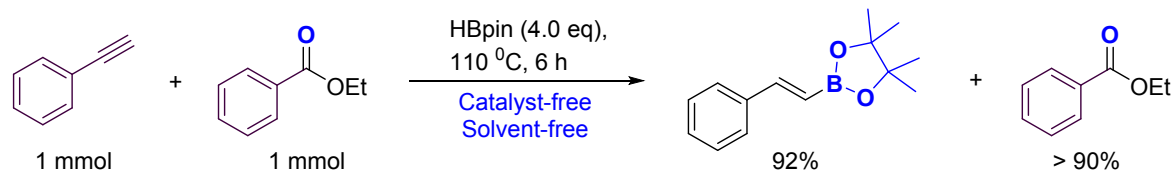


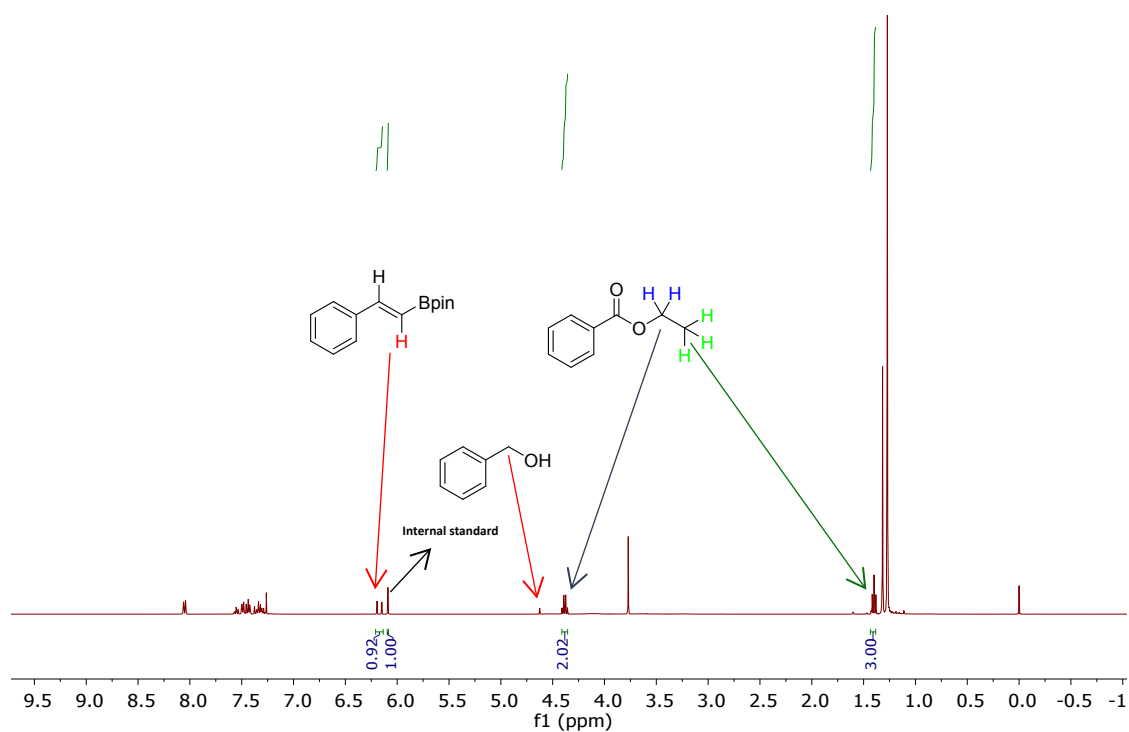
Figure S75: ^{11}B NMR of crude reaction mixture of phenyl acetylene and HBpin in CDCl_3 ¹⁵

II. Chemoselective hydroboration of phenyl acetylene over ester

Scheme 1. Chemoselective hydroboration of phenyl acetylene^a



^aYields were calculated based on ¹H NMR, Using 1,3,5-trimethoxybenzene as an internal standard.



III. References:

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