Electronic Supplementary Information

Iridium-Catalyzed Regioselective B(3,6)-Dialkenylation or B(4)-Alkenylation of *o*-Carboranes via B–H Activation and 1,2-Carbon Migration of Alkynes

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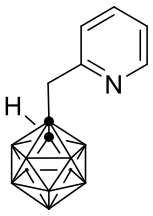
General Procedures.

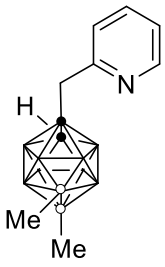
All reactions were carried out in oven-dried glassware under an atmosphere of dry N_2 with the rigid exclusion of air and moisture using standard Schlenk techniques or in a glovebox. Diethyl ether and toluene were purified by solvent purification system prior to use. 1-(2-Picolyl)-*o*-carborane (**1**)[1], alkynes (**2**)[2] and 1-(2-pyridinyl)-2-methyl-*o*-carborane (**7**)[3] were prepared according to literature procedures. All other chemicals were purchased from either Aldrich or J&K Chemical Co. and used as received unless otherwise specified. ^{1}H NMR spectra were recorded on a Bruker/Agilent/Varian 400 spectrometer at 400 MHz. $^{13}C\{^1H\}$, ^{11}B and ^{19}F NMR spectra were recorded on a Bruker/Agilent/Varian 400 spectrometer at 101, 128 and 376 MHz, respectively. All signals were reported in ppm unit with references to the residual solvent resonances of the deuterated solvents for proton and carbon chemical shifts, to external $BF_3{\cdot}OEt_2$ (0.00) for boron chemical shifts and to external $CFCl_3$ (0.00) for fluorine chemical shifts. Mass spectra were obtained on a Thermo Finnigan MAT 95 XL spectrometer. The melting points of solid compounds were determined by the melting point apparatus (Shanghai INESA Physico-Optical Instrument Co., LTD).

A Representative Procedure for the Preparation of Starting Materials 1a, 1b, 5a-f. *o*-Carborane/1-substituted-*o*-carborane (10.0 mmol) was dissolved in Et_2O (20 mL) and cooled to 0 ºC, to which was slowly added ^{n}BuLi (11.0 mmol, 2.5 M in hexane, 4.4 mL). The resulting solution was stirred for 2 h at 0 ºC. Then 2-picolyl chloride was added at 0 ºC. The resulting solution was stirred at 40 ºC overnight. After hydrolysis

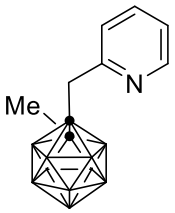
with water (20 mL) and extraction with diethyl ether (20 mL x 3), the ether solutions were combined and concentrated to dryness in vacuo. The residue was subjected to flash column chromatography on silica gel (200-300 mesh) using *n*-hexane and ethyl acetate (4/1 in v/v) as eluent to give the products **1**/**5**.



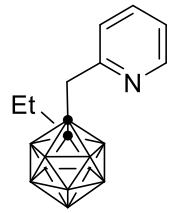
1a: White solid. Yield: 87%. Mp: 107.9-109.6 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.55 (d, J = 4.0 Hz, 1H), 7.70 (td, J = 7.6, 2.0 Hz, 1H), 7.25 (m, 1H), 7.17 (d, J = 7.6 Hz, 1H) (aromatic C*H*), 4.09 (s, 1H) (cage C*H*), 3.65 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.2, 149.9, 137.4, 124.6, 123.2 (aromatic *C*), 73.4, 58.5 (cage *C*), 45.1 (*C*H_2). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -1.9 (d, J = 148.5 Hz, 1B), -5.4 (d, J = 148.5 Hz, 1B), -9.7 (d, J = 145.9 Hz, 2B), -10.8 (d, J = 142.1 Hz, 2B), -11.9 (d, J = 105.0 Hz, 2B), -12.8 (d, J = 157.4 Hz, 2B). HRMS (DART) Calcd for $C_8H_{18}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 236.2437, Found: 236.2437.



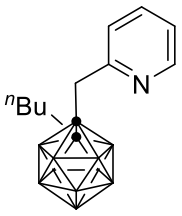
1b: White solid. Yield: 81%. Mp: 79.8-81.6 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.54 (d, J = 5.2 Hz, 1H), 7.66 (td, J = 7.6, 2.0 Hz, 1H), 7.22 (m, 1H), 7.15 (d, J = 8.0 Hz, 1H) (aromatic C*H*), 3.85 (s, 1H) (cage C*H*), 3.63 (s, 2H) (CH_2), 0.19 (s, 3H), 0.12 (s, 3H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.5, 149.8, 137.2, 124.5, 123.0 (aromatic *C*), 66.3, 51.7 (cage *C*), 44.4 (*C*H_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ 8.0 (s, 1B), 4.5 (s, 1B), -7.7 (d, J = 147.2 Hz, 2B), -10.9 (d, J = 158.7 Hz, 2B), -12.9 (d, J = 153.6 Hz, 4B). HRMS (DART) Calcd for $C_{10}H_{22}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 264.2750, Found: 264.2750.



5a: White solid. Yield: 80%. Mp: 65.4-66.5 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.55 (d, J = 5.2 Hz, 1H), 7.69 (td, J = 7.6, 1.6 Hz, 1H), 7.25 (m, 2H) (aromatic C*H*), 3.68 (s, 2H) (CH_2), 2.26 (s, 3H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.4, 149.5, 136.9, 125.2, 123.1 (aromatic *C*), 77.4, 75.3 (cage *C*), 43.7 (*C*H_2), 23.8 (*C*H_3). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.0 (d, J = 184.3 Hz, 1B), -5.6 (d, J = 174.1 Hz, 1B), -9.4 (d, J = 107.5 Hz, 4B), -10.3 (d, J = 142.1 Hz, 4B). HRMS (DART) Calcd for $C_9H_{20}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 250.2593, Found: 250.2593.

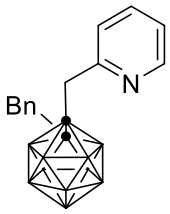


5b: Yellow oil. Yield: 74%. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.55 (d, J = 3.6 Hz, 1H), 7.69 (td, J = 7.6, 1.6 Hz, 1H), 7.24 (m, 2H) (aromatic C*H*), 3.66 (s, 2H) (CH_2Py), 2.57 (q, J = 7.6 Hz, 2H) (CH_2CH$_3$), 1.20 (t, J = 7.6 Hz, 3H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.4, 149.5, 136.8, 125.2, 123.0 (aromatic *C*), 81.3, 78.4 (cage *C*), 43.3 (*C*H$_2$Py), 29.0 (*C*H$_2$CH$_3$), 14.3 (CH$_2$*C*H$_3$). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.8 (d, J = 149.8 Hz, 2B), -10.3 (m, 6B), -11.0 (m, 2B). HRMS (DART) Calcd for $C_{10}H_{22}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 264.2750, Found: 264.2750.

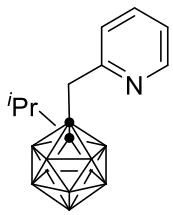


5c: White solid. Yield: 89%. Mp: 61.9-62.3 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.55 (d, J = 4.4 Hz, 1H), 7.68 (td, J = 7.6, 1.6 Hz, 1H), 7.24 (m, 2H) (aromatic C*H*), 3.66 (s, 2H) (CH_2Py), 2.48 (m, 2H), 1.55 (m, 2H), 1.38 (m, 2H) (alkyl CH_2), 0.96 (t, J = 7.2 Hz, 3H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.3, 149.5, 136.7, 125.1, 122.9 (aromatic *C*), 80.5, 78.4 (cage *C*), 43.3 (*C*H$_2$Py), 35.1, 31.9, 22.5 (alkyl *C*H$_2$), 13.8 (*C*H$_3$). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.7 (d, J = 147.2 Hz, 2B), -10.3 (d, J = 129.3 Hz, 8B). HRMS (DART) Calcd for

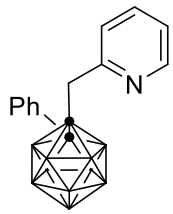
$C_{12}H_{26}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 292.3063, Found: 292.3063.



5d: White solid. Yield: 73%. Mp: 95.0-97.4 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.62 (d, J = 4.8 Hz, 1H), 7.74 (td, J = 7.6, 2.0 Hz, 1H), 7.32 (m, 5H), 7.27 (m, 2H) (aromatic C*H*), 3.92 (s, 2H), 3.88 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.6, 149.5, 137.0, 135.8, 130.5, 128.6, 128.0, 125.3, 123.2 (aromatic *C*), 79.9, 78.9 (cage *C*), 43.8, 40.9 (*C*H$_2$). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.4 (d, J = 144.6 Hz, 2B), -10.0 (d, J = 125.4 Hz, 8B). HRMS (DART) Calcd for $C_{15}H_{24}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 326.2906, Found: 326.2905.



5e: White solid. Yield: 84%. Mp: 67.1-68.0 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.54 (d, J = 4.4 Hz, 1H), 7.68 (td, J = 8.0, 2.0 Hz, 1H), 7.24 (m, 2H) (aromatic C*H*), 3.67 (s, 2H) (CH_2), 2.93 (m, 1H) (C*H*(CH$_3$)$_2$), 1.25 (d, J = 6.8 Hz, 6H) (CH(CH_3)$_2$). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.4, 149.4, 136.8, 125.3, 123.0 (aromatic *C*), 86.7, 80.8 (cage *C*), 43.3 (*C*H$_2$), 31.3 (*C*H(CH$_3$)$_2$), 24.6 (CH(*C*H$_3$)$_2$). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -3.9 (d, J = 139.5 Hz, 1B), -5.0 (d, J = 135.7 Hz, 1B), -9.8 (d, J = 135.7 Hz, 2B), -10.8 (d, J = 131.8 Hz, 4B), -11.7 (d, J = 139.5 Hz, 2B). HRMS (DART) Calcd for $C_{11}H_{24}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 278.2906, Found: 278.2906.

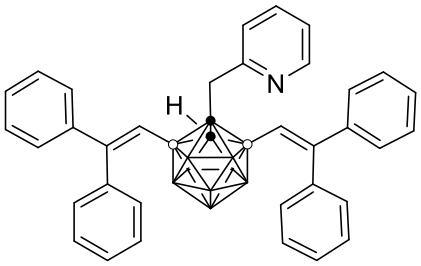


5f: White solid. Yield: 91%. Mp: 102.6-104.2 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.54 (d, J = 5.2 Hz, 1H), 7.75 (m, 2H), 7.58 (td, J = 7.6, 1.6 Hz, 1H), 7.46 (m, 3H), 7.18 (m, 1H), 6.88 (d, J = 7.6 Hz, 1H) (aromatic C*H*), 3.23 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.1, 149.7, 136.6, 131.6, 130.9, 130.8, 129.2, 124.8, 122.8 (aromatic *C*), 83.7, 80.7 (cage *C*), 43.2

(CH_2). ^{11}B NMR ($CDCl_3$, 128 MHz): δ -3.4 (d, J = 145.9 Hz, 2B), -10.0 (d, J = 115.2 Hz, 4B), -10.8 (d, J = 113.9 Hz, 4B). HRMS (DART) Calcd for $C_{14}H_{22}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 312.2750, Found: 312.2750.

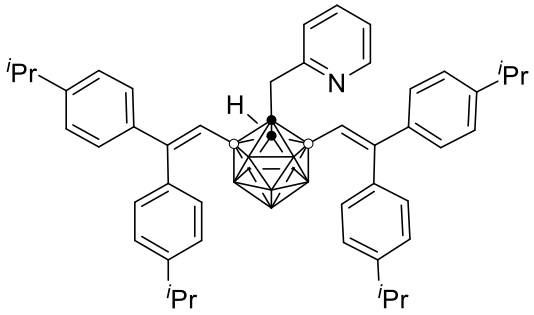
General procedure for the synthesis of 4 or 6.

An oven-dried Schlenk flask equipped with a stir bar was charged with 1-(2-picolyl)-*o*-carborane (**1**/**5**) (0.2 mmol), alkyne (**2**) (0.5 mmol), $[Cp^*IrCl_2]_2$ (4.0 mg, 0.005 mmol), $AgNTf_2$ (7.7 mg, 0.02 mmol) and HOAc (6.0 mg, 0.1 mmol), followed by dry toluene (3 mL). The flask was closed under an atmosphere of nitrogen and stirred at 130 ^{o}C for 12 h. After the addition of water (5 mL) and extraction with diethyl ether (5 mL x 3), the ether solutions were combined and concentrated to dryness in vacuo. The residue was subjected to flash column chromatography on silica gel (200-300 mesh) using *n*-hexane and ethyl acetate (10/1 in v/v) as eluent to give product **4/6**.

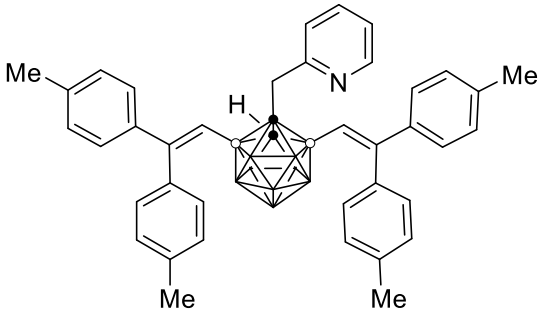


4a: White solid. Yield: 90%. Mp: 185.9-186.4 ^{o}C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.66 (d, J = 4.8 Hz, 1H), 7.51 (td, J = 7.6, 2.0 Hz, 1H), 7.39 (m, 6H), 7.25 (m, 6H), 7.20 (m, 9H), 7.09 (d, J = 8.0 Hz, 1H) (aromatic C*H*), 6.26 (s, 2H) (alkenyl C*H*), 3.73 (s, 1H) (cage C*H*), 3.63 (s, 2H) (CH_2). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 156.8, 155.7, 149.2, 142.6, 140.3, 136.6, 129.9, 128.3, 128.2, 128.1, 127.8, 127.2, 125.3, 122.6 (alkenyl and aromatic *C*), 74.1 (cage *C*), 62.0 (cage *C*H), 41.5 (CH_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz):

δ -4.5 (m, 4B), -10.6 (m, 6B). HRMS (DART) Calcd for $C_{36}H_{38}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 593.3992, Found: 593.3981.

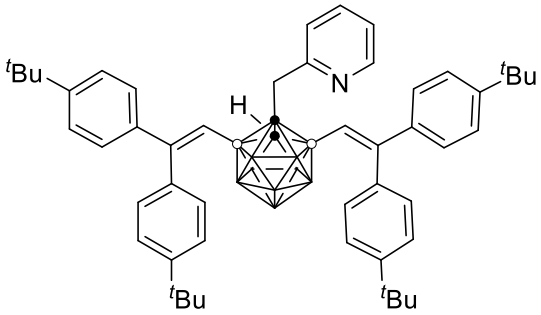


4b: White solid. Yield: 91%. Mp: 102.3-104.0 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.62 (d, J = 4.8 Hz, 1H), 7.49 (td, J = 7.6, 1.6 Hz, 1H), 7.23 (d, J = 8.0 Hz, 4H), 7.16 (m, 13H), 7.02 (d, J = 7.6 Hz, 1H) (aromatic C*H*), 6.15 (s, 2H) (alkenyl C*H*), 3.56 (s, 2H) (CH_2), 3.26 (s, 1H) (cage C*H*), 2.98 (m, 2H), 2.88 (m, 2H) (C*H*(CH$_3$)$_2$), 1.30 (d, J = 6.8 Hz, 12H), 1.23 (d, J = 6.8 Hz, 12H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 156.7, 155.8, 149.2, 149.0, 148.6, 140.5, 137.8, 136.4, 130.0, 127.3, 126.2, 126.1, 125.3, 122.5 (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.3 (cage *C*H), 41.5 (*C*H$_2$), 34.0, 33.9 (*C*H(CH$_3$)$_2$), 24.3, 24.2, 24.1, 24.0 (*C*H$_3$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.5 (m, 4B), -10.7 (m, 6B). HRMS (DART) Calcd for $C_{48}H_{62}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 760.5880, Found: 760.5867.

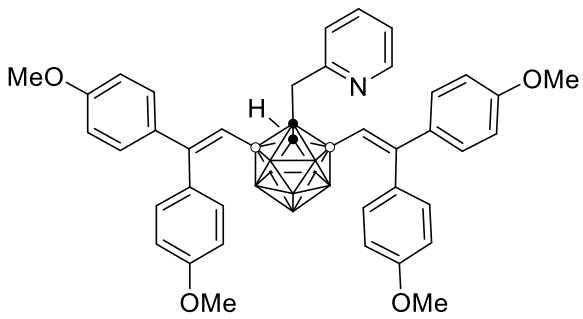


4c: White solid. Yield: 95%. Mp: 101.3-103.4 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.63 (d, J = 4.8 Hz, 1H), 7.50 (td, J = 7.6, 1.6 Hz, 1H), 7.18 (m, 5H), 7.06 (m, 13H) (aromatic C*H*), 6.19 (s, 2H) (alkenyl C*H*), 3.64 (s, 1H) (cage C*H*), 3.59 (s, 2H) (CH_2), 2.41 (s, 6H), 2.32 (s, 6H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 156.7, 155.8, 149.2, 140.3, 138.0, 137.5, 137.4, 136.5,

129.9, 128.9, 127.2, 125.3, 122.5 (alkenyl and aromatic *C*), 74.1 (cage *C*), 62.3 (cage *C*H), 41.5 (*C*H_2), 21.5, 21.3 (*C*H_3), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.5 (m, 4B), -10.7 (m, 6B). HRMS (DART) Calcd for $C_{40}H_{46}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 648.4628, Found: 648.4623.

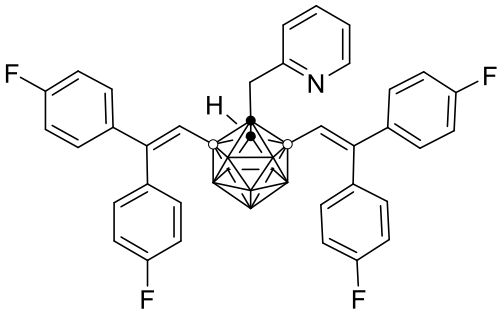


4d: Yellow solid. Yield: 92%. Mp: 157.7-159.1 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.62 (d, *J* = 4.4 Hz, 1H), 7.49 (td, *J* = 7.6, 1.6 Hz, 1H), 7.39 (d, *J* = 7.6 Hz, 4H), 7.29 (d, *J* = 8.0 Hz, 4H), 7.18 (m, 9H), 7.01 (d, *J* = 7.6 Hz, 1H) (aromatic C*H*), 6.14 (s, 2H) (alkenyl C*H*), 3.56 (s, 2H) (CH_2), 3.09 (s, 1H) (cage C*H*), 1.37 (s, 18H), 1.31 (s, 18H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 156.5, 155.8, 151.2, 151.0, 149.3, 140.0, 137.4, 136.3, 129.7, 127.0, 125.3, 125.1, 124.9, 122.5 (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.3 (cage *C*H), 41.5 (*C*H_2), 34.8, 34.7 (*C*$(CH_3)_3$), 31.6, 31.4 (C(*C*$H_3)_3$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.8 (m, 4B) -10.7 (m, 6B). HRMS (DART) Calcd for $C_{52}H_{70}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 816.6506, Found:816.6499.

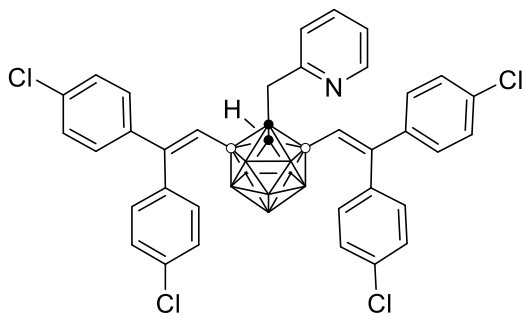


4e: Yellow solid. Yield: 90%. Mp: 88.9-89.1 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.63 (d, *J* = 4.0 Hz, 1H), 7.51 (td, *J* = 8.4, 2.0 Hz, 1H), 7.19 (m, 1H), 7.10 (m, 9H), 6.91 (d, *J* = 8.4 Hz, 4H), 6.77 (d, *J* = 8.4 Hz, 4H) (aromatic C*H*), 6.14 (s, 2H) (alkenyl C*H*), 3.86 (s, 6H),

3.79 (s, 6H) (OCH_3), 3.62 (s, 1H) (cage CH), 3.60 (s, 2H) (CH_2). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 159.7, 159.2, 156.0, 155.8, 149.2, 136.5, 135.8, 132.9, 131.1, 128.6, 125.3, 122.5, 113.6, 113.5 (alkenyl and aromatic *C*), 74.1 (cage *C*), 62.1 (cage *C*H), 55.4, 55.4 (O*C*H$_3$), 41.5 (*C*H$_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.3 (m, 4B), -10.7 (m, 6B). HRMS (DART) Calcd for $C_{40}H_{46}{}^{10}B_2{}^{11}B_8NO_4^+$ [M+H$^+$]: 712.4425, Found: 712.4409.

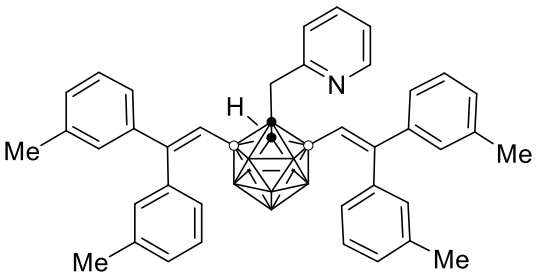


4f: White solid. Yield: 75%. Mp: 89.3-91.1 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.66 (d, J = 4.8 Hz, 1H), 7.50 (td, J = 7.6, 1.6 Hz, 1H), 7.22 (m, 1H), 7.15 (m, 4H), 7.07 (m, 9H), 6.92 (t, J = 8.8 Hz, 4H) (aromatic C*H*), 6.13 (s, 2H) (alkenyl C*H*), 4.18 (s, 1H) (cage C*H*), 3.63 (s, 2H) (CH_2). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 162.8 (d, $^1J_{CF}$ = 249.5 Hz), 162.6 (d, $^1J_{CF}$ = 248.5 Hz), 155.7, 155.1, 149.2, 138.7 (d, $^4J_{CF}$ = 3.0 Hz), 136.9, 136.0 (d, $^4J_{CF}$ = 4.0 Hz), 131.6 (d, $^3J_{CF}$ = 8.1 Hz), 128.9 (d, $^3J_{CF}$ = 9.1 Hz), 125.3, 122.8, 115.4 (d, $^2J_{CF}$ = 21.2 Hz), 115.1 (d, $^2J_{CF}$ = 21.2 Hz) (alkenyl and aromatic *C*), 73.9 (cage *C*), 61.8 (cage *C*H), 41.5 (*C*H$_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.6 (m, 4B), -10.3 (m, 6B). ^{19}F NMR ($CDCl_3$, 376 MHz): δ -113.8 (m, 4F). HRMS (DART) Calcd for $C_{36}H_{34}{}^{10}B_2{}^{11}B_8F_4N^+$ [M+H$^+$]: 664.3625, Found: 664.3623.

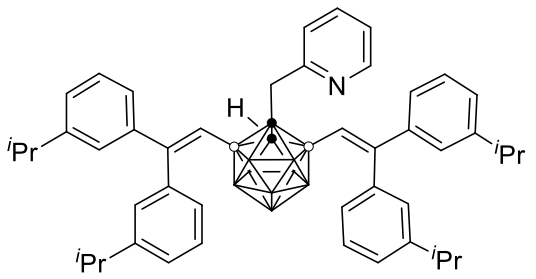


4g: White solid. Yield: 62%. Mp: 215.0-215.8 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.66 (d, J = 4.8 Hz, 1H), 7.51 (t, J = 7.6 Hz, 1H), 7.37 (d, J = 8.0 Hz, 4H), 7.21 (m, 5H),

7.12 (d, J = 8.0 Hz, 4H), 7.04 (d, J = 7.6 Hz, 1H), 6.98 (d, J = 8.0 Hz, 4H) (aromatic C*H*), 6.15 (s, 2H) (alkenyl C*H*), 4.38 (s, 1H) (cage C*H*), 3.63 (s, 2H) (CH_2). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 155.6, 154.8, 149.2, 140.7 138.2, 137.1, 134.3, 134.1, 131.3, 128.7, 128.4, 125.2, 122.8 (alkenyl and aromatic *C*), 73.8 (cage *C*), 61.8 (cage *C*H), 41.4 (*C*H_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.6 (m, 4B), -10.4 (m, 6B). HRMS (DART) Calcd for $C_{36}H_{34}{}^{10}B_2{}^{11}B_8Cl_4N^+$ [M+H$^+$]: 730.2414, Found: 730.2412.

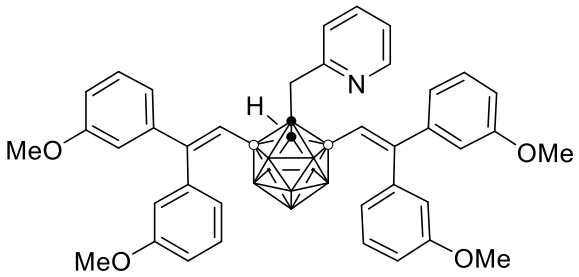


4h: White solid. Yield: 84%. Mp: 127.4-129.1 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.63 (d, J = 4.4 Hz, 1H), 7.50 (td, J = 7.6, 2.0 Hz, 1H), 7.22 (m, 2H), 7.15 (m, 5H), 7.04 (m, 7H), 6.96 (m, 4H) (aromatic C*H*), 6.14 (s, 2H) (alkenyl C*H*), 3.58 (s, 2H) (CH_2), 3.53 (s, 1H) (cage C*H*), 2.35 (s, 6H), 2.29 (s, 6H) (CH_3). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 157.2, 155.9, 149.2, 142.8, 140.2, 137.7, 137.7, 136.6, 130.9, 128.9, 128.4, 128.1, 128.0, 127.8, 126.9, 125.3, 124.6, 122.5 (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.3 (cage *C*H), 41.4 (*C*H_2), 21.6, 21.6 (*C*H_3), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.5 (m, 4B), -10.5 (m, 6B). HRMS (DART) Calcd for $C_{40}H_{46}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 648.4628, Found: 648.4619.

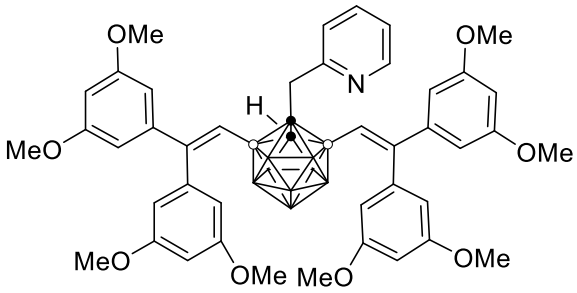


4i: Yellow solid. Yield: 95%. Mp: 95.8-96.7 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.68 (d, J = 4.8 Hz, 1H), 7.53 (t, J = 7.6 Hz, 1H), 7.31 (td, J = 7.6, 1.6 Hz, 2H),

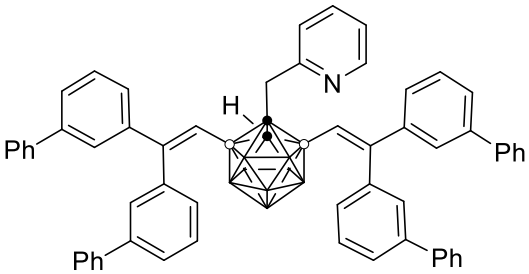
7.20 (m, 11H), 7.10 (d, J = 8.0 Hz, 1H), 7.01 (d, J = 7.6 Hz, 4H) (aromatic C*H*), 6.25 (d, J = 2.0 Hz, 2H) (alkenyl C*H*), 3.64 (s, 2H) (CH_2), 3.57 (s, 1H) (cage C*H*), 2.91 (m, 4H) (C*H*(CH_3)$_2$), 1.29 (d, J = 6.8 Hz, 12H), 1.25 (d, J = 6.8 Hz, 12H) (CH(CH_3)$_2$). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 157.4, 155.9, 149.2, 148.8, 148.7, 142.7, 140.3, 136.5, 128.5, 128.1, 128.1, 127.1, 126.1, 125.8, 125.3, 125.2, 125.1, 122.5 (alkenyl and aromatic *C*), 74.2 (cage *C*), 62.2 (cage *C*H), 41.5 (*C*H_2), 34.3 (*C*H(CH_3)$_2$), 24.2, 24.1, 24.1 (CH(*C*H_3)$_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.8 (m, 4B), -10.8 (m, 6B). HRMS (DART) Calcd for $C_{48}H_{62}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 760.5880, Found: 760.5865.



4j: Yellow solid. Yield: 91%. Mp: 123.9-125.6 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.65 (d, J = 4.8 Hz, 1H), 7.51 (td, J =7.6, 2.0 Hz, 1H), 7.29 (m, 2H), 7.19 (m, 3H), 7.08 (d, J = 7.6 Hz, 1H), 6.92 (d, J = 6.8 Hz, 2H), 6.79 (m, 10H) (aromatic C*H*), 6.24 (s, 2H) (alkenyl C*H*), 3.82 (s, 6H) (OCH_3), 3.79 (s, 1H) (cage C*H*), 3.76 (s, 6H) (OCH_3), 3.65 (s, 2H) (CH_2). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 159.5, 159.5, 156.5, 155.6, 149.1, 143.9, 141.4, 136.7, 129.3, 129.1, 125.4, 122.7, 122.2, 119.8, 115.6, 113.6, 113.2 (alkenyl and aromatic *C*), 74.1 (cage *C*), 62.2 (cage *C*H), 55.4, 55.3 (OCH_3), 41.5 (*C*H_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -5.0 (m, 4B), -10.8 (m, 6B). HRMS (DART) Calcd for $C_{40}H_{46}{}^{10}B_2{}^{11}B_8NO_4^+$ [M+H$^+$]: 713.4418, Found: 713.4415.

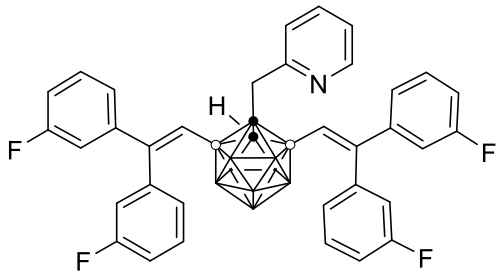


4k: White solid. Yield: 77%. Mp: 153.4-153.9 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.64 (d, J = 4.8 Hz, 1H), 7.53 (td, J = 8.0, 2.0 Hz, 1H), 7.20 (m, 1H), 7.10 (d, J = 8.0 Hz, 1H), 6.49 (s, 2H), 6.43 (s, 8H), 6.40 (s, 2H) (aromatic C*H*), 6.21 (s, 2H) (alkenyl C*H*), 3.92 (s, 1H) (cage C*H*), 3.80 (s, 12H), 3.75 (s, 12H) (CH_3), 3.69 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 160.6, 160.5, 156.5, 155.7, 149.0, 144.4, 141.8, 136.6, 125.3, 122.6, 108.2, 105.7, 100.0, 99.8 (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.3 (cage *C*H), 55.5, 55.4 (O*C*H$_3$), 41.4 (*C*H$_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 192 MHz): δ -5.0 (m, 4B), -10.8 (m, 6B). HRMS (DART) Calcd for $C_{44}H_{54}{}^{10}B_2{}^{11}B_8NO_8^+$ [M+H$^+$]: 832.4847, Found: 832.4834.

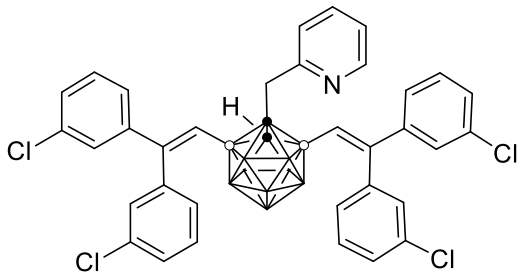


4l: Yellow solid. Yield: 73%. Mp: 128.3-129.7 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.57 (d, J = 3.6 Hz, 1H), 7.59 (m, 6H), 7.48 (m, 10H), 7.42 (m, 9H), 7.33 (m, 8H), 7.21 (d, J = 7.2 Hz, 2H), 7.12 (d, J = 7.6 Hz, 2H), 7.03 (m, 2H) (aromatic C*H*), 6.34 (s, 2H) (alkenyl C*H*), 4.05 (s, 1H) (cage C*H*), 3.69 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 157.0, 155.7, 149.2, 143.1, 141.2, 141.1, 140.9, 140.6, 136.7, 128.9, 128.8, 128.8, 128.7, 127.5, 127.3, 127.3, 127.0, 126.7, 126.5, 125.8, 125.3, 122.6 (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.3 (cage *C*H), 41.5 (*C*H$_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.8 (m, 4B), -10.1 (m, 6B). HRMS (DART) Calcd for

$C_{60}H_{54}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 897.5258, Found: 897.5246.

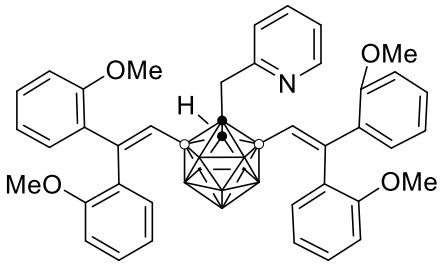


4m: Yellow solid. Yield: 62%. Mp: 129.1-131.4 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.72 (d, J = 4.8 Hz, 1H), 7.51 (m, 1H), 7.36 (m, 2H), 7.20 (m, 3H), 7.09 (m, 3H), 7.00 (d, J = 7.6 Hz, 2H), 6.92 (m, 4H), 6.82 (m, 4H) (aromatic C*H*), 6.19 (s, 2H) (alkenyl C*H*), 4.47 (s, 1H) (cage C*H*), 3.67 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 162.8 (d, $^1J_{CF}$ = 246.4 Hz), 162.3 (d, $^1J_{CF}$ = 248.5 Hz), 155.5, 154.6, 149.3, 144.3 (d, $^3J_{CF}$ = 7.1 Hz), 141.7 (d, $^3J_{CF}$ = 7.1 Hz), 137.1, 130.0 (d, $^3J_{CF}$ = 9.1 Hz), 129.7 (d, $^3J_{CF}$ = 8.1 Hz), 125.9 (d, $^4J_{CF}$ = 3.0 Hz), 125.3, 123.0, 122.8 (d, $^4J_{CF}$ = 3.0 Hz), 117.0 (d, $^2J_{CF}$ = 21.2 Hz), 115.2 (d, $^2J_{CF}$ = 21.2 Hz), 115.1 (d, $^2J_{CF}$ = 20.8 Hz), 113.8 (d, $^2J_{CF}$ = 22.2 Hz) (alkenyl and aromatic *C*), 73.9 (cage *C*), 61.7 (cage *C*H), 41.5 (*C*H$_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.9 (m, 4B), -10.0 (m, 6B). ^{19}F NMR ($CDCl_3$, 376 MHz): δ -112.7 (m, 2F), -113.3 (m, 2F). HRMS (DART) Calcd for $C_{36}H_{34}{}^{10}B_2{}^{11}B_8F_4N^+$ [M+H$^+$]: 664.3625, Found: 664.3609.

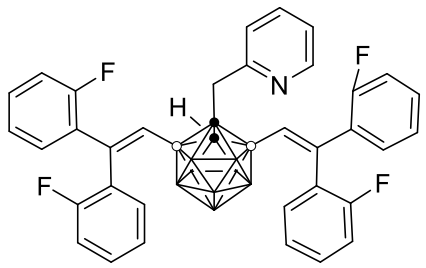


4n: Yellow solid. Yield: 58%. Mp: 137.7-139.1 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.76 (d, J = 4.8 Hz, 1H), 7.57 (td, J = 7.6, 2.0 Hz, 1H), 7.35 (m, 5H), 7.15 (m, 11H), 6.91 (d, J = 8.0 Hz, 2H) (aromatic C*H*), 6.16 (s, 2H) (alkenyl C*H*), 4.53 (s, 1H) (cage C*H*), 3.66 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 155.4, 154.5, 149.4, 143.8, 141.2, 137.3, 134.4, 134.3, 130.0, 129.7, 129.5, 128.3, 128.3, 127.0, 125.5, 125.2,

123.1 (alkenyl and aromatic *C*), 74.1 (cage *C*), 61.8 (cage *C*H), 41.4 (*C*H_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.7 (m, 4B), -10.2 (m, 6B). HRMS (DART) Calcd for $C_{36}H_{34}{}^{10}B_2{}^{11}B_8Cl_4N^+$ [M+H$^+$]: 730.2414, Found: 730.2410.

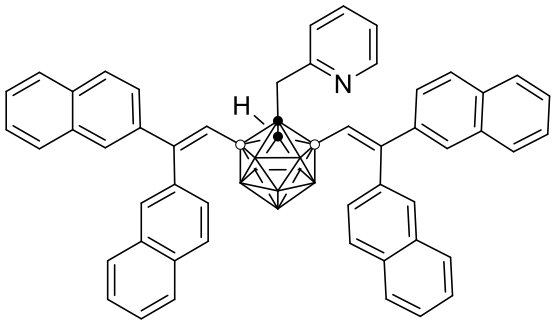


4o: Yellow solid. Yield: 94%. Mp: 96.8-98.5 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.54 (d, J = 4.8 Hz, 1H), 7.52 (td, J = 8.0, 1.6 Hz, 1H), 7.35 (d, J = 7.6 Hz, 1H), 7.17 (m, 9H), 6.85 (m, 8H) (aromatic C*H*), 6.22 (s, 2H) (alkenyl C*H*), 3.82 (s, 2H) (CH_2), 3.67 (s, J = 2.0 Hz, 12H) (CH_3), 3.11 (s, 1H) (cage C*H*). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 157.0, 157.0, 156.2, 151.5, 149.2, 135.9, 133.4, 131.9, 130.5, 130.4, 128.9, 128.5, 125.7, 122.3, 120.5, 120.0, 111.8, 110.8 (alkenyl and aromatic *C*), 74.6 (cage *C*), 62.5 (cage *C*H), 55.7, 55.5 (O*C*H_3), 40.3 (*C*H_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.7 (m, 4B), -11.4 (m, 6B). HRMS (DART) Calcd for $C_{40}H_{46}{}^{10}B_2{}^{11}B_8NO_4^+$ [M+H$^+$]: 713.4418, Found: 713.4411.

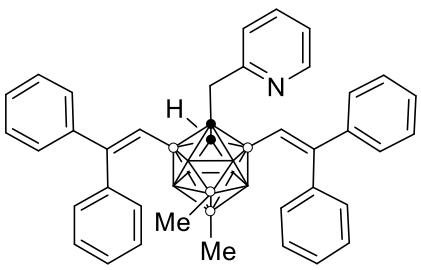


4p: Yellow solid. Yield: 60%. Mp: 145.7-146.3 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.58 (d, J = 5.2 Hz, 1H), 7.47 (td, J = 7.6, 1.6 Hz, 1H), 7.34 (m, 4H), 7.21 (m, 3H), 7.15 (m, 3H), 7.02 (m, 8H) (aromatic C*H*), 6.25 (s, 2H) (alkenyl C*H*), 4.36 (s, 1H) (cage C*H*), 3.81 (s, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 161.1 (d, $^2J_{CF}$ = 18.3 Hz), 158.7 (d, $^2J_{CF}$ = 23.3 Hz), 155.5, 149.0, 146.2, 136.5, 132.5 (m), 129.3 (d, $^1J_{CF}$ = 274.1 Hz), 129.2 (d, $^1J_{CF}$ = 279.1 Hz), 130.3 (d, $^4J_{CF}$ = 3.0 Hz), 130.0 (d, $^3J_{CF}$ = 8.1 Hz), 129.5 (d, $^3J_{CF}$ = 8.1 Hz),

127.9 (d, $^{2}J_{CF}$ = 17.2 Hz), 125.6, 124.0 (d, $^{3}J_{CF}$ = 13.5 Hz), 123.8 (d, $^{3}J_{CF}$ = 13.3 Hz), 122.5, 116.1 (d, $^{2}J_{CF}$ = 23.2 Hz), 115.5 (d, $^{2}J_{CF}$ = 22.2 Hz) (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.0 (cage *C*H), 40.9 (*C*H$_2$), the B$_{cage}$-*C* was not observed. ^{11}B NMR (CDCl$_3$, 128 MHz): δ -4.8 (m, 4B), -10.6 (m, 6B). ^{19}F NMR (CDCl$_3$, 376 MHz): δ -113.9 (m, 2F), -114.5 (m, 2F). HRMS (DART) Calcd for $C_{36}H_{34}{}^{10}B_2{}^{11}B_8F_4N^+$ [M+H$^+$]: 664.3625, Found: 664.3609.

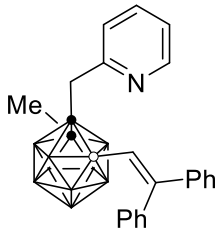


4q: Yellow solid. Yield: 60%. Mp: 132.6-133.4 ºC. ^{1}H NMR (400 MHz, CDCl$_3$): δ 8.79 (d, *J* = 5.2 Hz, 1H), 7.90 (m, 2H), 7.82 (m, 9H), 7.72 (d, *J* = 8.4 Hz, 2H), 7.64 (d, *J* = 7.2 Hz, 3H), 7.54 (m, 4H), 7.41 (m, 9H), 7.29 (m, 1H), 7.12 (d, *J* = 7.6 Hz, 1H) (aromatic C*H*), 6.39 (s, 2H) (alkenyl C*H*), 4.17 (s, 1H) (cage C*H*), 3.76 (s, 2H) (C*H*$_2$). ^{13}C{^{1}H} NMR (CDCl$_3$, 126 MHz): δ 157.0, 140.0, 137.6, 133.2, 133.1, 133.1, 132.9, 129.5, 128.6, 128.3, 128.0, 127.9, 127.7, 127.6, 127.3, 126.5, 126.4, 124.9, 122.7 (alkenyl and aromatic *C*), 74.3 (cage *C*), 62.3 (cage *C*H), 41.6 (*C*H$_2$), the B$_{cage}$-*C* was not observed. ^{11}B NMR (CDCl$_3$, 128 MHz): δ -4.3 (m, 4B), -10.4 (m, 6B). HRMS (ESI) Calcd for $C_{52}H_{46}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 792.4628, Found: 792.4625.

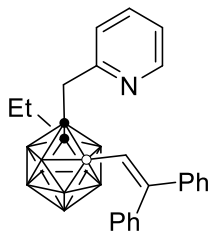


4r: White solid. Yield: 98%. Mp: 183.5-183.9 ºC. ^{1}H NMR (400 MHz, CDCl$_3$): δ 8.69 (d, *J* = 5.2 Hz, 1H), 7.54 (td, *J* = 7.6, 2.0 Hz, 1H), 7.42 (m, 6H), 7.29 (m, 9H), 7.24 (m, 6H), 7.13 (d, *J* = 7.6 Hz, 1H)

(aromatic C*H*), 6.33 (s, 2H) (alkenyl C*H*), 3.66 (s, 2H) (CH_2), 3.37(s, 1H) (cage C*H*), 0.08 (s, 3H), 0.01 (s, 3H) (CH_3). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 156.2, 156.0, 149.2, 142.8, 140.4, 136.5, 130.0, 128.2, 128.2, 128.0, 127.7, 127.2, 125.3, 122.5 (alkenyl and aromatic *C*), 67.1, 55.6 (cage *C*), 40.8 (*C*H_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ 5.4 (s, 2B), -8.2 (m, 4B), -11.4 (m, 4B). HRMS (DART) Calcd for $C_{38}H_{42}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 620.4315, Found: 620.4299.

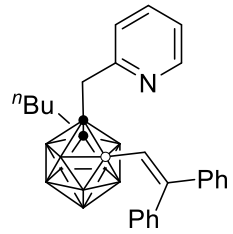


6a: White solid. Yield: 99%. Mp: 171.3-172.2 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.52 (d, *J* = 4.8 Hz, 1H), 7.65 (td, *J* = 7.6, 2.0 Hz, 1H), 7.37 (m, 5H), 7.29 (m, 5H), 7.21 (m, 2H) (aromatic C*H*), 6.46 (s, 1H) (alkenyl C*H*), 3.96 (d, *J* = 15.2 Hz, 1H), 3.49 (d, *J* = 15.2 Hz, 1H) (CH_2), 2.19 (s, 3H) (CH_3). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 156.0, 156.0, 149.3, 143.3, 140.7, 136.7, 130.4, 128.3, 128.1, 128.0, 127.6, 127.2, 125.3, 122.9 (alkenyl and aromatic *C*), 77.4, 75.7 (cage *C*), 41.3 (*C*H_2), 24.1 (*C*H_3), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -2.6 (s, 1B), -3,9 (d, *J* = 122.9 Hz, 1B), -4.8 (d, *J* = 142.1 Hz, 1B), -10.9 (m, 7B). HRMS (DART) Calcd for $C_{23}H_{30}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 428.3376, Found: 428.3368.

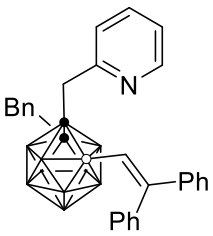


6b: White solid. Yield: 98%. Mp: 146.3-146.7 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.52 (d, *J* = 4.8 Hz, 1H), 7.64 (td, *J* = 7.6, 2.0 Hz, 1H), 7.38 (m, 5H), 7.29 (m, 5H), 7.20 (m, 2H) (aromatic C*H*), 6.47 (s, 1H) (alkenyl C*H*), 3.94 (d, *J* = 15.6 Hz, 1H), 3.50 (d, *J* = 15.2 Hz, 1H) (CH_2Py), 2.56 (m, 2H) (CH_2CH$_3$), 1.10 (t, *J* = 7.6 Hz, 3H) (CH$_2$CH_3). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 156.0, 155.9, 149.3, 143.3, 140.7, 136.6, 130.4, 128.3,

128.1, 127.9, 127.6, 127.2, 125.4, 122.9 (alkenyl and aromatic *C*), 81.7, 79.1 (cage *C*), 41.0 (*C*H_2Py), 29.0 (*C*$H_2$$CH_3$), 14.1 ($CH_2$*C*$H_3$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -2.8 (s, 1B), -4.1 (d, J = 148.5 Hz, 2B), -9.4 (m, 2B), -11.1 (m, 5B). HRMS (DART) Calcd for $C_{24}H_{32}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 442.3532, Found: 442.3524.

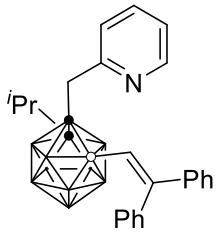


6c: White solid. Yield: 99%. Mp: 90.0-91.3 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.52 (d, J = 4.8 Hz, 1H), 7.64 (td, J = 7.6, 2.0 Hz, 1H), 7.38 (m, 5H), 7.30 (m, 5H), 7.20 (m, 2H) (aromatic C*H*), 6.47 (s, 1H) (alkenyl C*H*), 3.94 (d, J = 15.2 Hz, 1H), 3.53 (d, J = 15.2 Hz, 1H) (CH_2Py), 2.56 (m, 1H), 2.41 (m, 1H), 1.39 (m, 4H) (alkyl CH_2), 0.93 (t, J = 7.2 Hz, 3H) (alkyl CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 156.0, 155.8, 149.2, 143.3, 140.7, 136.5, 130.3, 128.3, 128.1, 127.9, 127.5, 127.2, 125.3, 122.8 (alkenyl and aromatic *C*), 80.9, 79.2 (cage *C*), 41.1 (*C*H_2Py), 35.1, 31.8, 22.5 (alkyl *C*H_2), 13.9 (alkyl *C*H_3), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -4.5 (m, 3B), -9.5 (m, 2B), 11.2 (m, 5B). HRMS (DART) Calcd for $C_{26}H_{36}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 470.3845, Found: 470.3835.

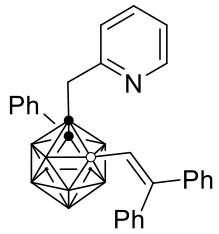


6d: White solid. Yield: 98%. Mp: 145.5-146.2 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.60 (d, J = 5.2 Hz, 1H), 7.70 (td, J = 7.6, 2.0 Hz, 1H), 7.40 (m, 5H), 7.30 (m, 9H), 7.20 (m, 3H) (aromatic C*H*), 6.48 (s, 1H) (alkenyl C*H*), 4.09 (d, J = 10.8 Hz, 1H), 4.05 (d, J = 10.8 Hz, 1H), 3.77 (d, J = 14.0 Hz, 2H) (CH_2). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 156.2, 156.1, 149.2, 143.3, 140.6, 136.8, 136.2, 130.4, 130.3, 128.5, 128.3, 128.2, 128.0, 127.7, 127.6, 127.2, 125.4, 123.0 (alkenyl and aromatic *C*), 80.2, 79.7 (cage *C*), 41.3, 40.7

(CH_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -3.7 (m, 3B), -8.9 (m, 2B), -10.9 (m, 5B). HRMS (DART) Calcd for $C_{29}H_{34}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 504.3689, Found: 504.3679.



6e: White solid. Yield: 95%. Mp: 129.0-129.7 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.50 (d, *J* = 4.8 Hz, 1H), 7.63 (td, *J* = 7.6, 1.6 Hz, 1H), 7.38 (m, 5H), 7.30 (m, 5H), 7.19 (m, 2H) (aromatic C*H*), 6.44 (s, 1H) (alkenyl C*H*), 3.94 (d, *J* = 15.6 Hz, 1H), 3.53 (d, *J* = 15.2 Hz, 1H) (CH_2), 3.08 (m, 1H) ($CH(CH_3)_2$), 1.15 (d, *J* = 6.8 Hz, 3H), 1.07 (d, *J* = 6.8 Hz, 3H) ($CH(CH_3)_2$). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 155.9, 155.8, 148.9, 143.3, 140.7, 136.9, 130.4, 128.3, 128.1, 128.0, 127.6, 127.2, 125.6, 123.0 (alkenyl and aromatic *C*), 87.3, 81.6 (cage *C*), 40.8 (CH_2), 31.0 ($CH(CH_3)_2$), 24.4, 24.3 ($CH(CH_3)_2$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -3.0 (m, 2B), -5.0 (d, *J* = 204.8 Hz, 1B), -8.9 (d, *J* = 157.4 Hz, 1B), -10.7 (m, 3B), -12.6 (m, 3B). HRMS (DART) Calcd for $C_{25}H_{34}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 456.3689, Found: 456.3679.

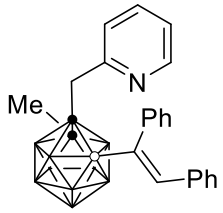


6f: White solid. Yield: 95%. Mp: 149.7-150.9 °C. ^1H NMR (400 MHz, $CDCl_3$): δ 8.50 (d, *J* = 4.0 Hz, 1H), 7.61 (d, *J* = 8.0 Hz, 2H), 7.49 (m, 2H), 7.40 (m, 7H), 7.29 (m, 5H), 7.13 (t, *J* = 6.4 Hz, 1H), 6.74 (d, *J* = 8.0 Hz, 1H) (aromatic C*H*), 6.60 (s, 1H) (alkenyl C*H*), 3.70 (d, *J* = 14.8 Hz, 1H), 2.97 (d, *J* = 14.8 Hz, 1H) (CH_2). $^{13}C\{^1H\}$ NMR ($CDCl_3$, 101 MHz): δ 155.4, 155.3, 149.5, 143.3, 140.8, 136.1, 131.6, 131.1, 130.8, 130.4, 128.9, 128.2, 128.1, 127.7, 127.4, 127.2, 125.0, 122.6 (alkenyl and aromatic *C*), 84.1, 80.8 (cage *C*), 40.8 (CH_2), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ -

2.5 (m, 4B), -10.3 (m, 6B). HRMS (DART) Calcd for $C_{28}H_{32}{}^{10}B_2{}^{11}B_8N^+$ [M+H$^+$]: 490.3532, Found: 490.3525.

Synthesis of 8.

An oven-dried Schlenk flask equipped with a stir bar was charged with 1-(2-picolyl)-2-methyl-*o*-carborane (**5a**) (49.8 mg, 0.2 mmol), diphenylacetylene (**2a**) (89.0 mg, 0.5 mmol), $[Ir(COD)Cl]_2$ (3.4 mg, 0.005 mmol), $AgNTf_2$ (3.9 mg, 0.01 mmol) and HOAc (6.0 mg, 0.1 mmol), followed by dry toluene (3 mL). The flask was closed under an atmosphere of nitrogen and stirred at 130 °C for 12 h. After the addition of water (5 mL) and extraction with diethyl ether (5 mL x 3), the ether solutions were combined and concentrated to dryness in vacuo. The residue was subjected to flash column chromatography on silica gel (200-300 mesh) using *n*-hexane and ethyl acetate (10/1 in v/v) as eluent to give product **8** as a white solid (46.1 mg, 54%).



8: Mp: 138.5-139.1 °C. ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.51 (d, J = 4.8 Hz, 1H), 7.58 (td, J = 7.6, 2.0 Hz, 1H), 7.38 (m, 2H), 7.31 (m, 3H), 7.19 (m, 5H), 7.03 (m, 2H), 6.80 (d, J = 7.6 Hz, 1H) (alkenyl C*H* and aromatic C*H*), 4.04 (d, J = 15.2 Hz, 1H), 3.52 (d, J = 15.6 Hz, 1H) (CH_2), 2.33 (s, 3H) (CH_3). ^{13}C{^{1}H} NMR ($CDCl_3$, 101 MHz): δ 156.1, 149.2, 143.3, 142.3, 137.5, 136.7, 129.8, 129.0, 128.8, 128.0, 127.3, 126.5, 125.0, 122.8 (alkenyl and aromatic *C*), 77.6, 76.8 (cage *C*), 40.5 (*C*H$_2$), 23.9 (*C*H$_3$), the B_{cage}-*C* was not observed. ^{11}B NMR ($CDCl_3$, 128 MHz): δ 0.86 (s, 1B), -3.1 (d, J = 151.0 Hz, 1B), -4.5 (d, J = 152.3 Hz, 1B), -10.9 (m, 7B). HRMS (DART) Calcd for $C_{23}H_{30}{}^{10}B_2{}^{11}B_8N^+$

[M+H$^+$]: 428.3374, Found: 428.3376.

X-ray Structure Determination. The data of **4a** (180 K), **6e** (173 K) and **8** (193 K) were collected at different temperatures on a Bruker APEX DUO diffractometer. An empirical absorption correction was applied using the SADABS program.[4] All structures were solved by direct methods and subsequent Fourier difference techniques and refined anisotropically for all non-hydrogen atoms by full-matrix least-squares on F^2 using the SHELXTL program package.[5] All hydrogen atoms were geometrically fixed using the riding model. Crystal data and details of data collection and structure refinements were given in Table S1.

CCDC 2215404-2215406 (**4a**, **6e** and **8**) contains the supplementary crystallographic data for this paper. These data can be obtained free of charge from The Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif.

Table S1. Crystal Data and Summary of Data Collection and Refinements.

compound	**4a**	**6e**	**8**
formula	$C_{36}H_{37}B_{10}N$	$C_{25}H_{33}B_{10}N$	$C_{23}H_{29}B_{10}N$
crystal size (mm)	0.12 x 0.05 x 0.03	0.17 x 0.15 x 0.12	0.05 x 0.03 x 0.02
fw	591.76	455.62	427.57
crystal system	Triclinic	Monoclinic	Triclinic
space group	*P*-1	$P2_1/c$	*P*-1
a, Å	10.327(1)	10.718(1)	8.172(1)
b, Å	10.604(1)	18.015(1)	11.935(1)
c, Å	16.150(1)	13.762(1)	13.559(1)
α, deg	85.701(1)	90	108.242(5)
β, deg	81.211(1)	92.277(2)	94.126(5)
γ, deg	68.369(1)	90	99.211(5)
V, Å^3	1624.3(1)	2655.1(1)	1229.3(2)
Z	2	8	2
D_{calcd}, Mg/m^3	1.210	1.140	1.155
radiation (λ) Å	1.34139	1.34139	1.34139
2θ range, deg	8.8 to 110.0	7.2 to 109.9	6.0 to 110.4
μ, mm^{-1}	0.306	0.278	0.281
F(000)	620	960	448
no. of obsd reflns	6105	5039	4656
no. of params refnd	424	327	308
goodness of fit	1.045	1.042	1.072
R1	0.0509	0.0517	0.0636
wR2	0.1315	0.1296	0.1661

References

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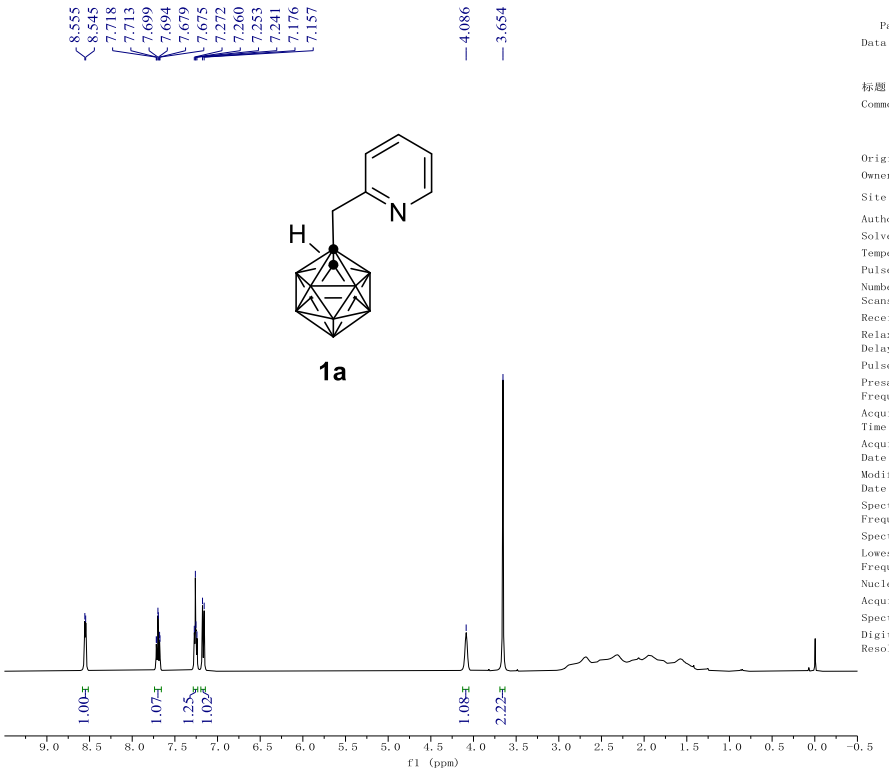

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Owner	
Site	
Author	omc1
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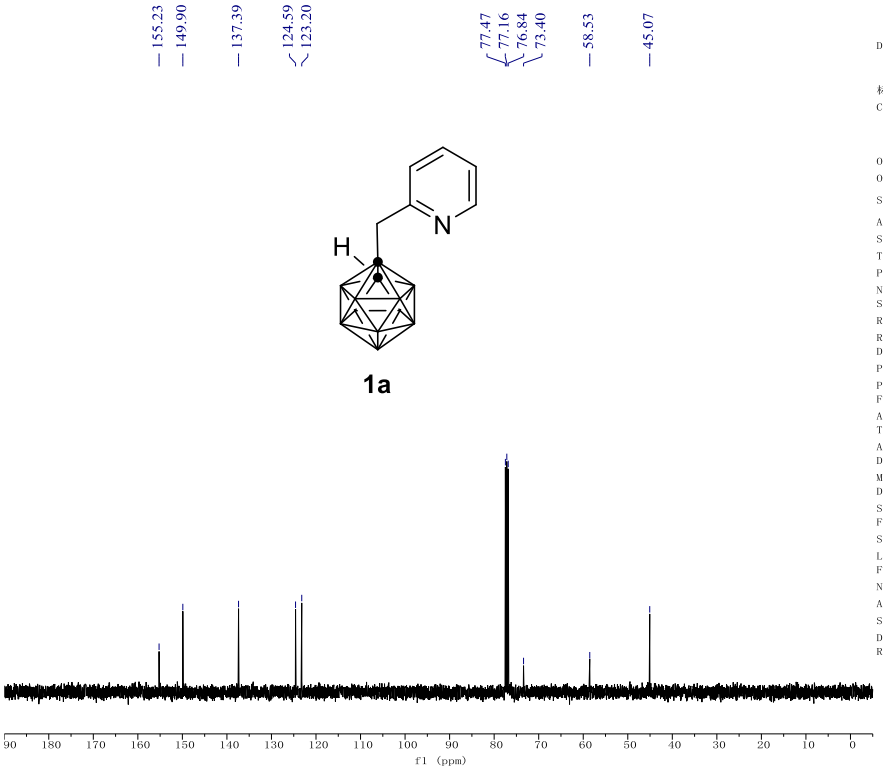

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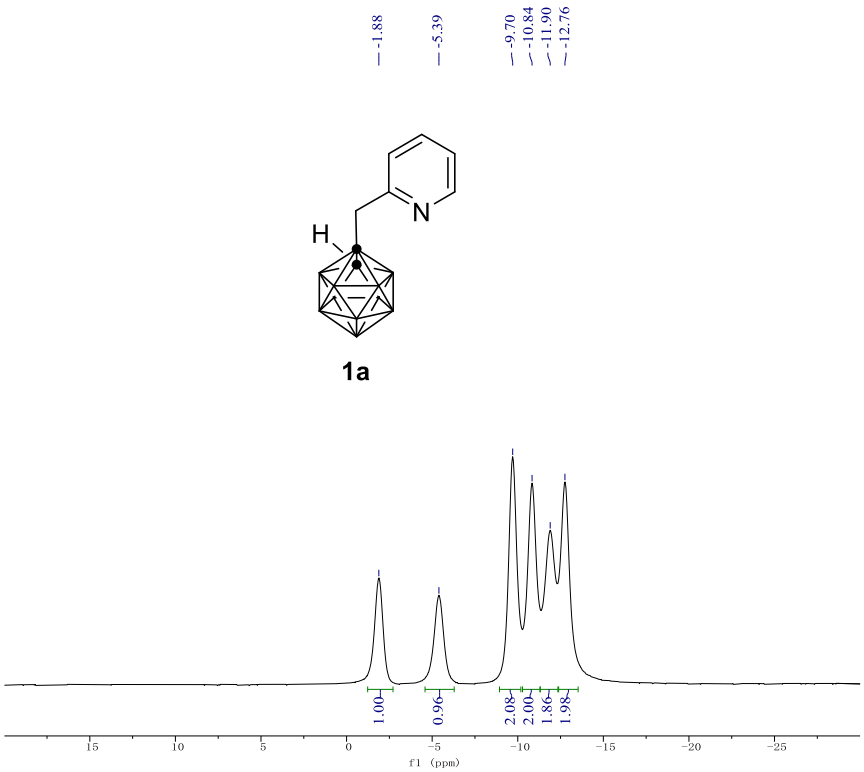

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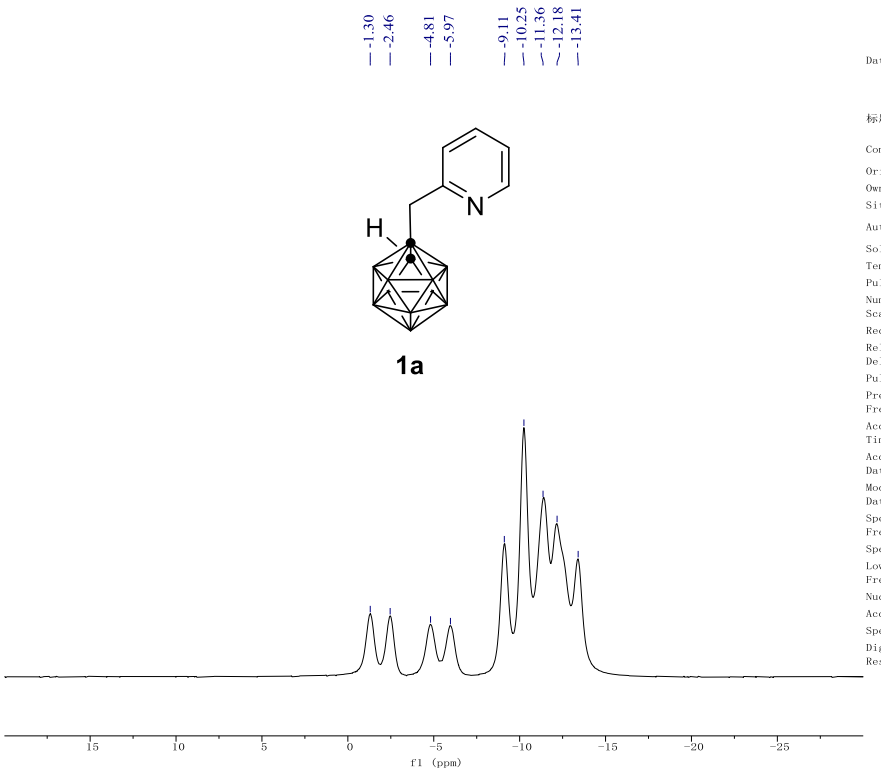
Digital Resolution	0.39



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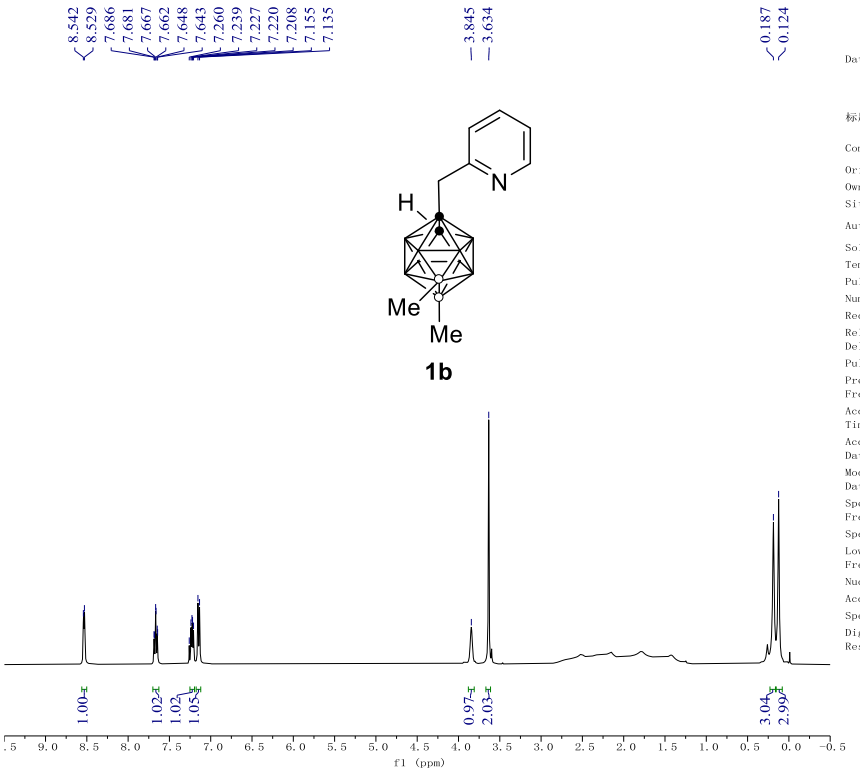

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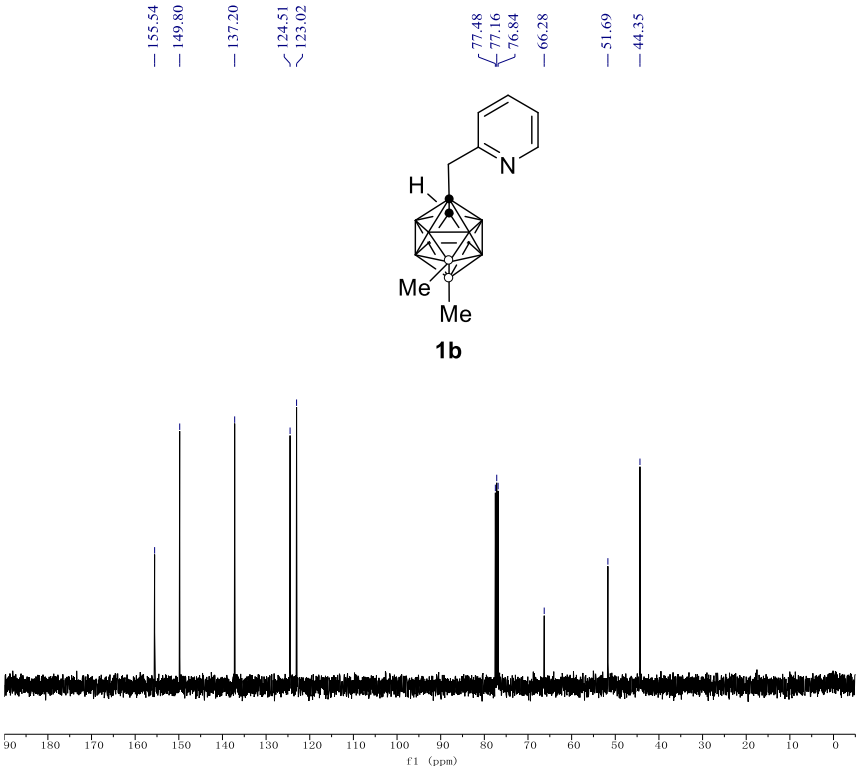
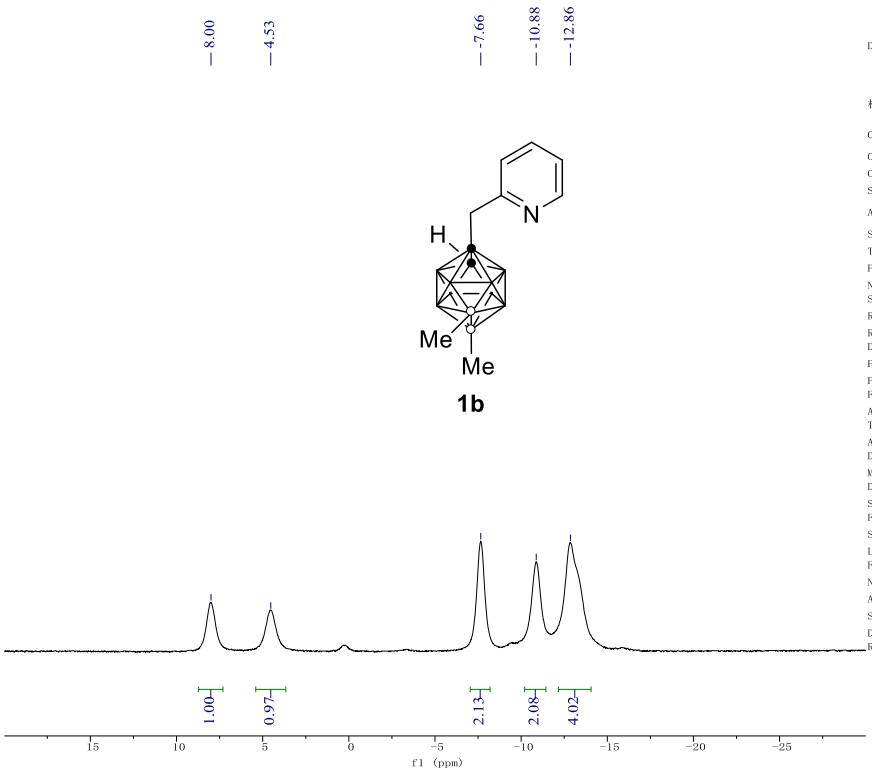
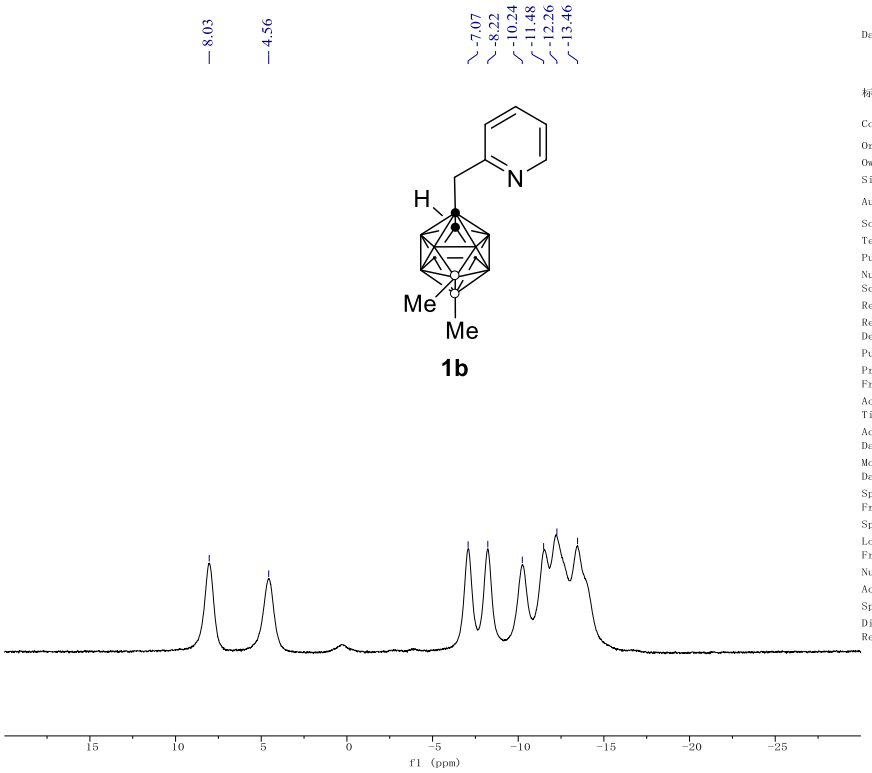
Spectral Size	65536
Digital Resolution	0.07



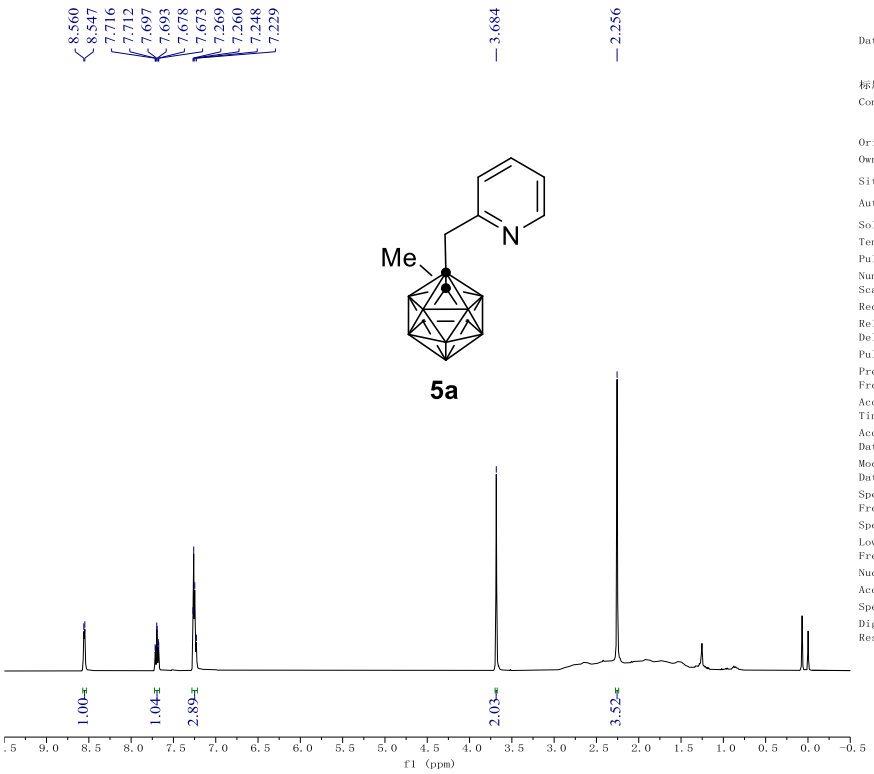
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 9,12-2Me/ 9,12-2Me-C.fid/ fid
标题	9,12-2Me-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	12
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-16T19:48:17
Modification Date	2021-04-16T11:48:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2224.8
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20



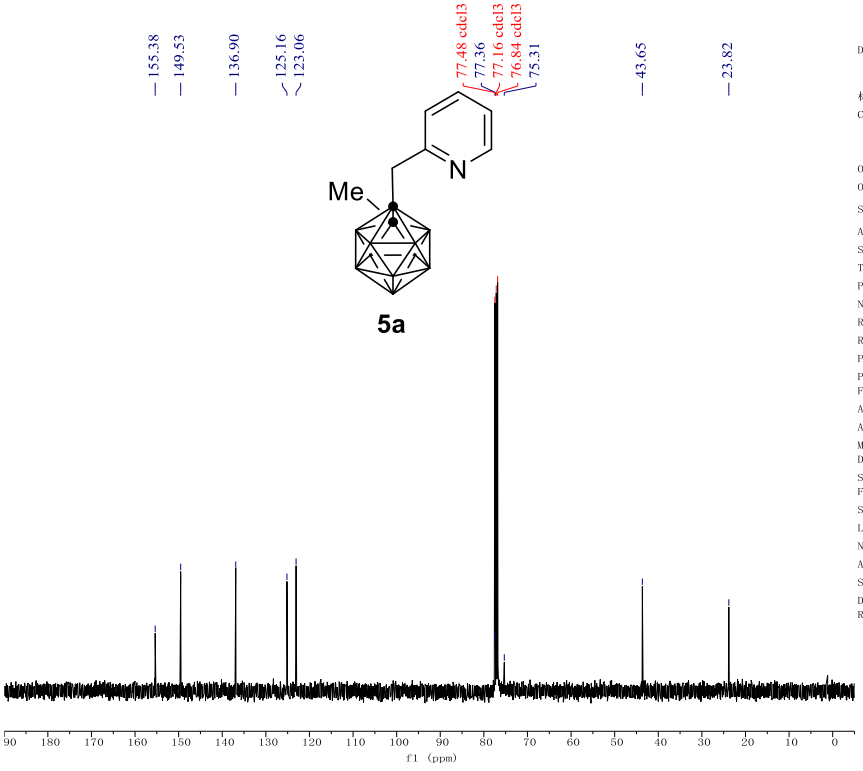
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 9,12-2Me/ zhf-9,12-2me-b-decouple/ 1/ fid
标题	zhf-9,12-2me-b-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.7
Pulse Sequence	aring-b11
Number of Scans	4
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-19T20:09:49
Modification Date	2021-04-19T20:09:50
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



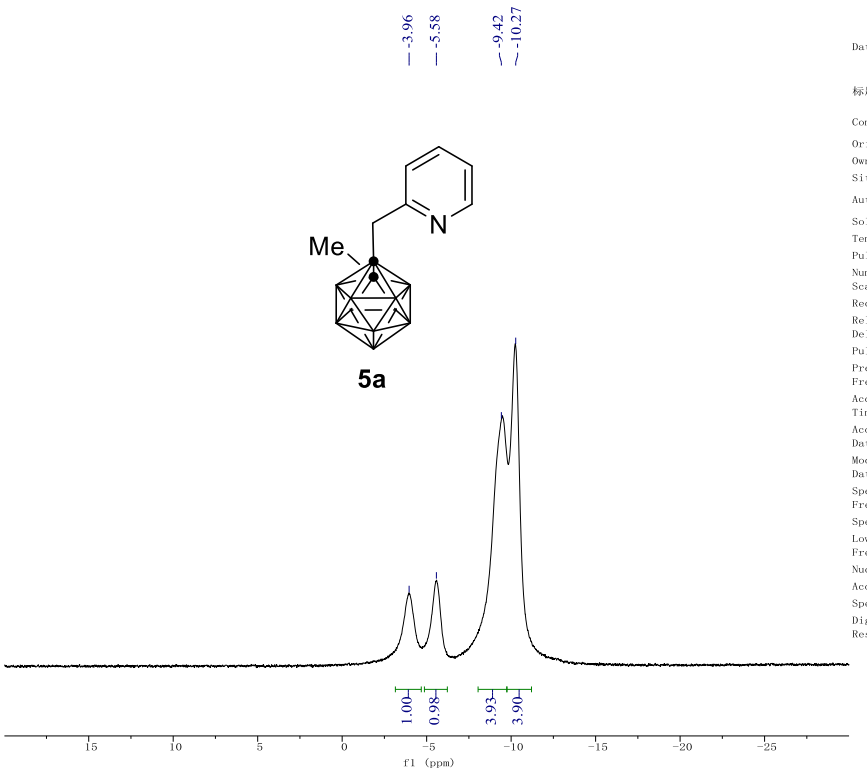
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 9,12-2Me/ zhf-9,12-2me-b-couple/ 1/ fid
标题	zhf-9,12-2me-b-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.6
Pulse Sequence	aring
Number of Scans	8
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-19T20:07:10
Modification Date	2021-04-19T20:07:11
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



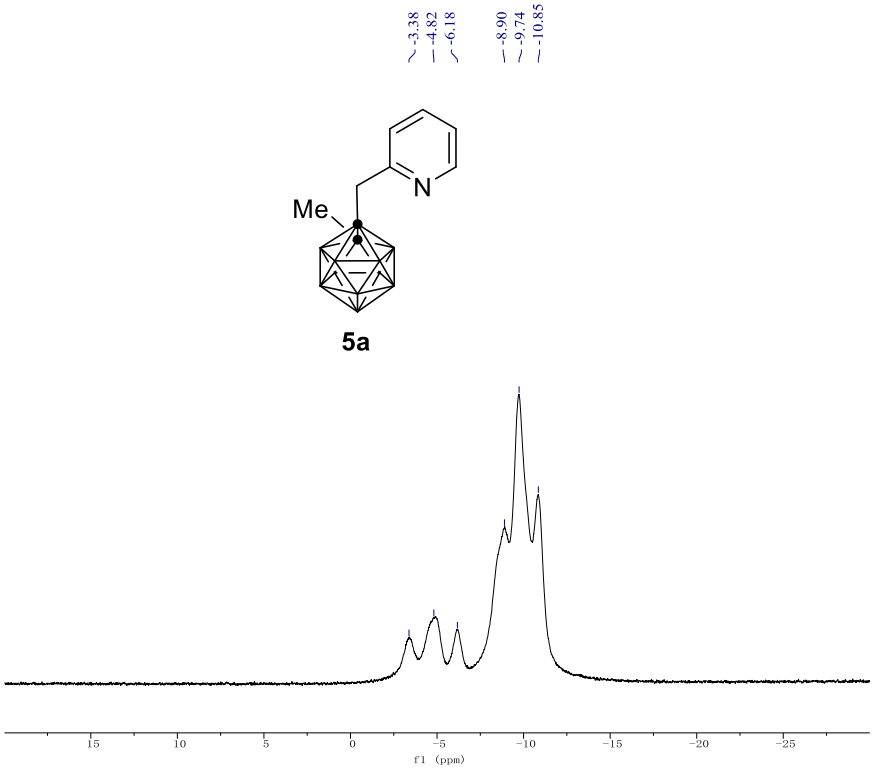
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Me/ zhf-1-Me-S-H.fid/ fid
标题	zhf-1-Me-S-H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	8
Receiver Gain	52
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-04-14T19:31:10
Modification Date	2021-04-14T11:31:00
Spectrometer Frequency	399.72
Spectral Width	8389.3
Lowest Frequency	-1196.2
Nucleus	1H
Acquired Size	25168
Spectral Size	65536
Digital Resolution	0.13



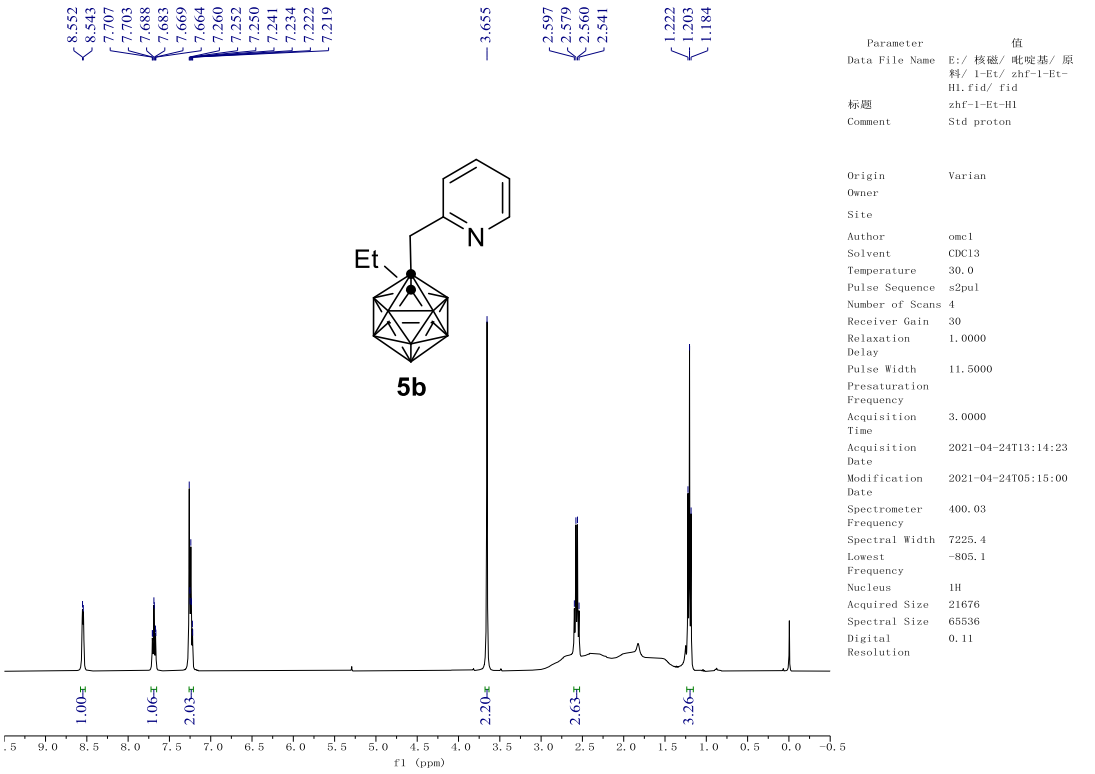
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Me/ zhf-1-me-S-C1.fid/ fid
标题	zhf-1-me-S-C1
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	164
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-16T19:40:02
Modification Date	2021-04-16T11:46:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2218.3
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20



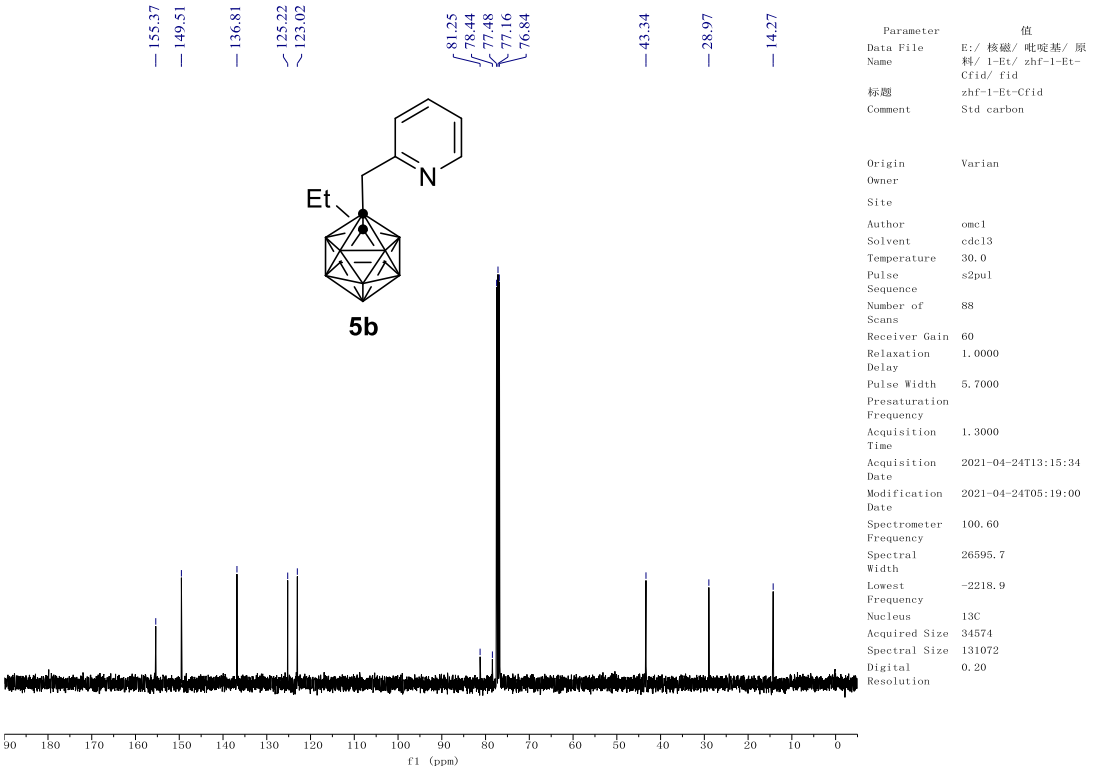
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Me/ zhf-1-Me-S-decouple/ 1/ fid
标题	zhf-1-Me-S-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.2
Pulse Sequence	aring-b11
Number of Scans	5
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-16T20:27:01
Modification Date	2021-04-16T20:27:02
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



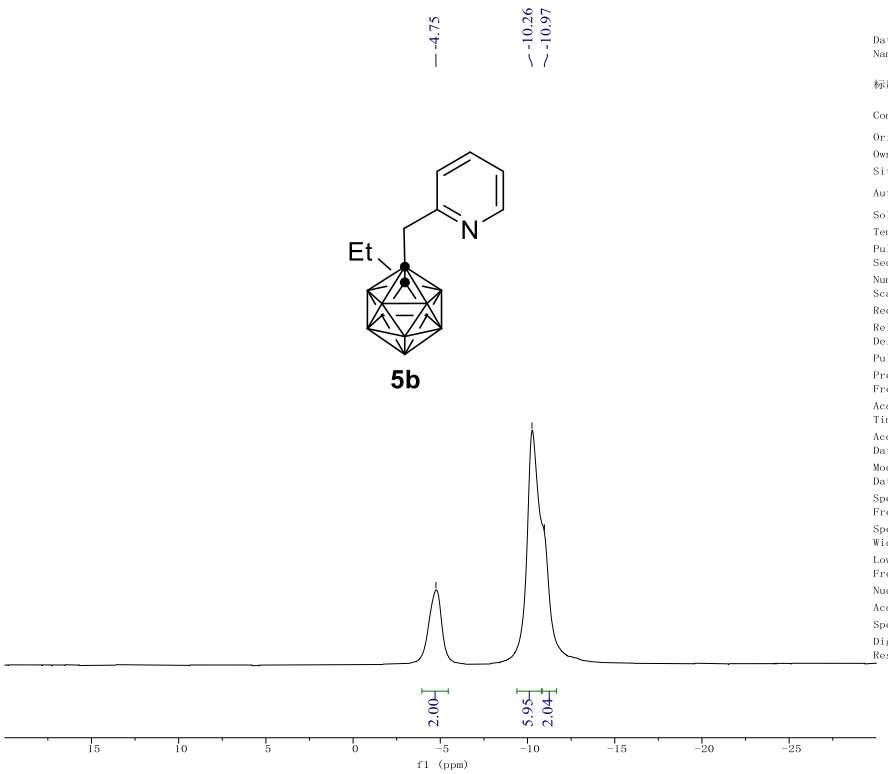
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Me/ zhf-1-Me-S-couple/ 1/ fid
标题	zhf-1-Me-S-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.0
Pulse Sequence	aring
Number of Scans	5
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-16T20:22:43
Modification Date	2021-04-16T20:22:44
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



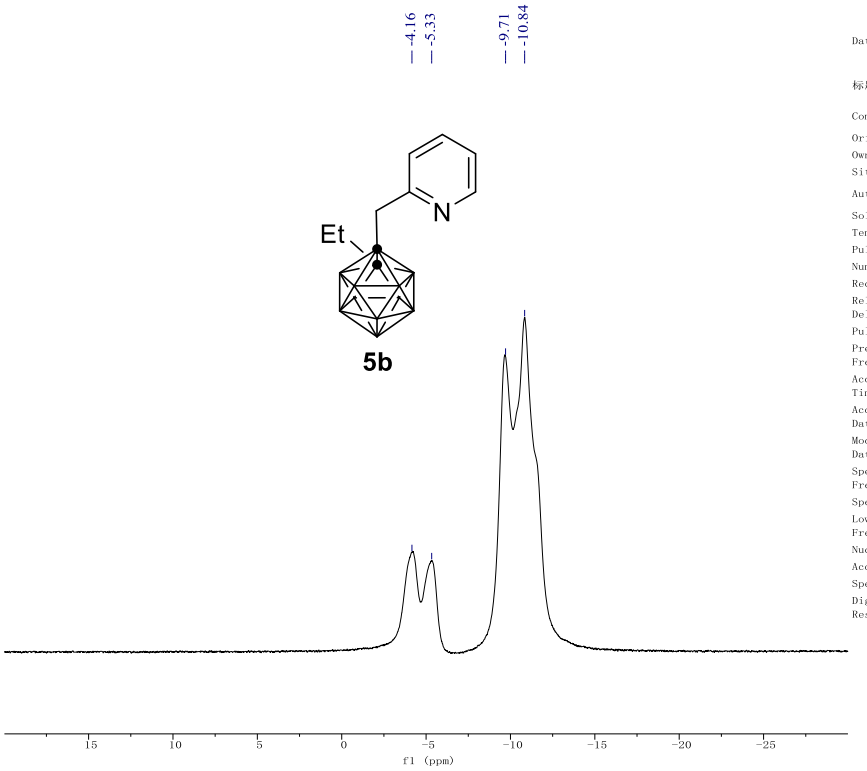
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Et/ zhf-1-Et-H1.fid/ fid
标题	zhf-1-Et-H1
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	30
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-04-24T13:14:23
Modification Date	2021-04-24T05:15:00
Spectrometer Frequency	400.03
Spectral Width	7225.4
Lowest Frequency	-805.1
Nucleus	1H
Acquired Size	21676
Spectral Size	65536
Digital Resolution	0.11



Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Et/ zhf-1-Et-Cfid/ fid
标题	zhf-1-Et-Cfid
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	88
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-24T13:15:34
Modification Date	2021-04-24T05:19:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2218.9
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20

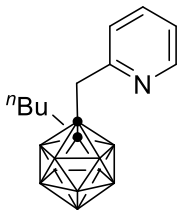


Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Et/ zhf-1-Et-s-decouple/ 1/ fid
标题	zhf-1-Et-s-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.7
Pulse Sequence	aring-b11
Number of Scans	6
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-25T20:19:45
Modification Date	2021-04-25T20:19:46
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



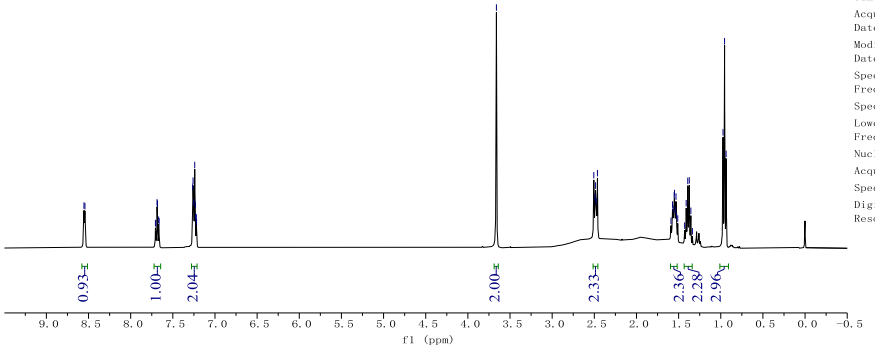
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Et/ zhf-1-Et-s-couple/ 1/ fid
标题	zhf-1-Et-s-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.7
Pulse Sequence	aring
Number of Scans	9
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-25T20:16:39
Modification Date	2021-04-25T20:16:39
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-n-Bu/ zhf-1-nBu.fid/ fid
标题	zhf-1-nBu
Comment	Std proton

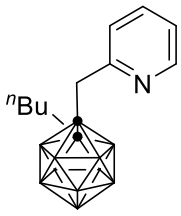


5c

Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	24
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-01-14T09:42:41
Modification Date	2021-01-14T01:43:00
Spectrometer Frequency	400.03
Spectral Width	7225.4
Lowest Frequency	-802.7
Nucleus	1H
Acquired Size	21676
Spectral Size	65536
Digital Resolution	0.11

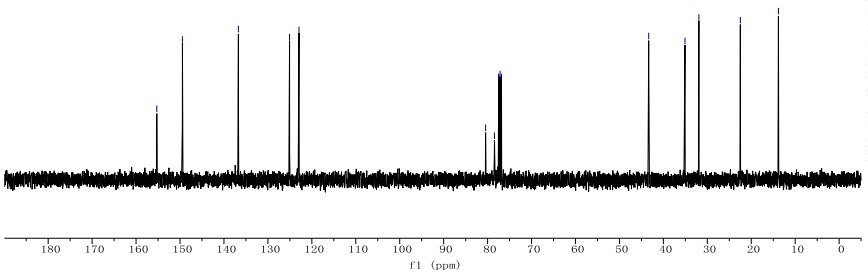


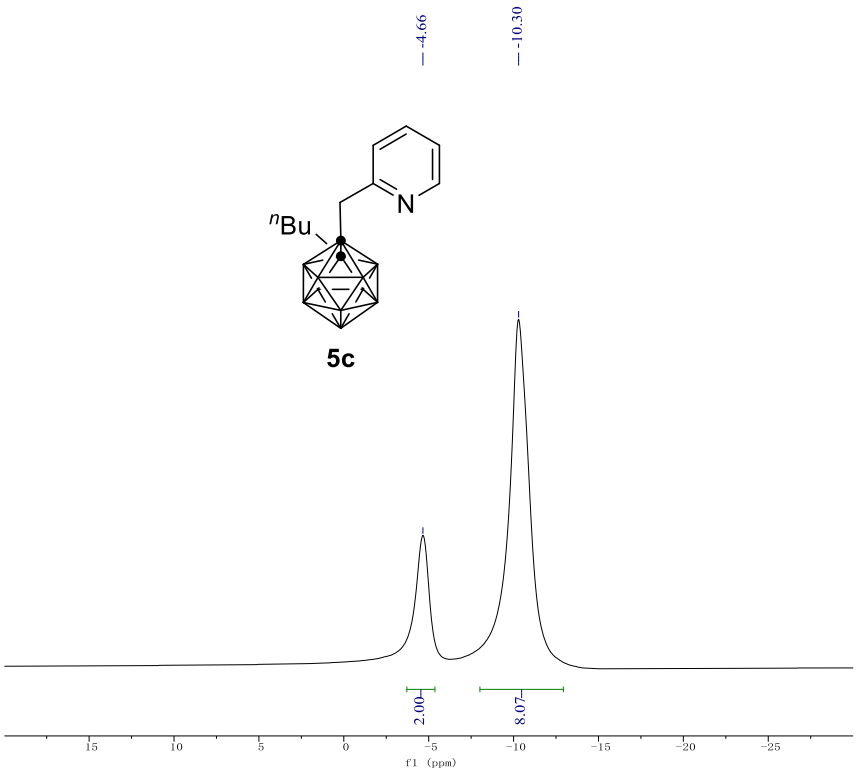
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-n-Bu/ zhf-1-nbu-s-c.fid/ fid
标题	zhf-1-nbu-s-c
Comment	Std carbon



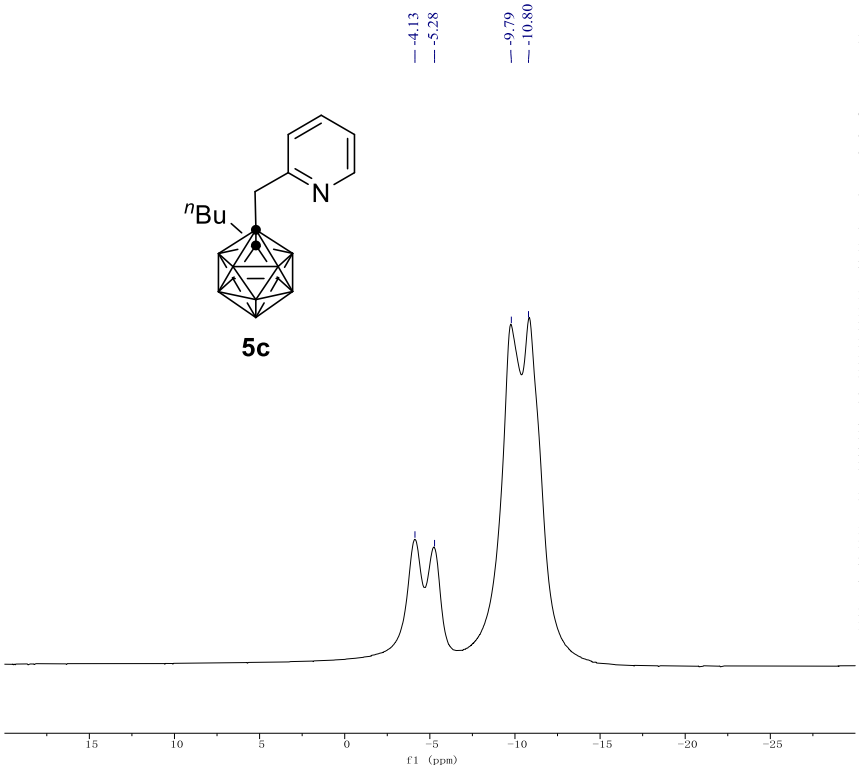
5c

Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	12
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-15T19:38:31
Modification Date	2021-04-15T11:39:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2226.2
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20

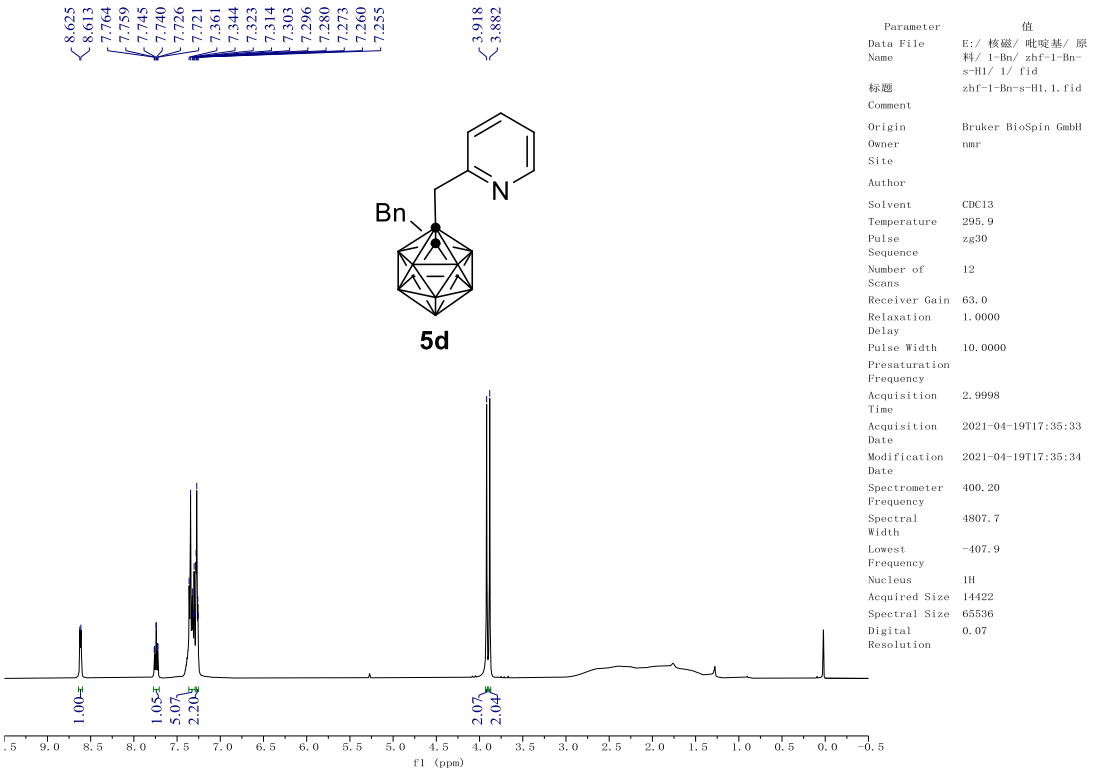




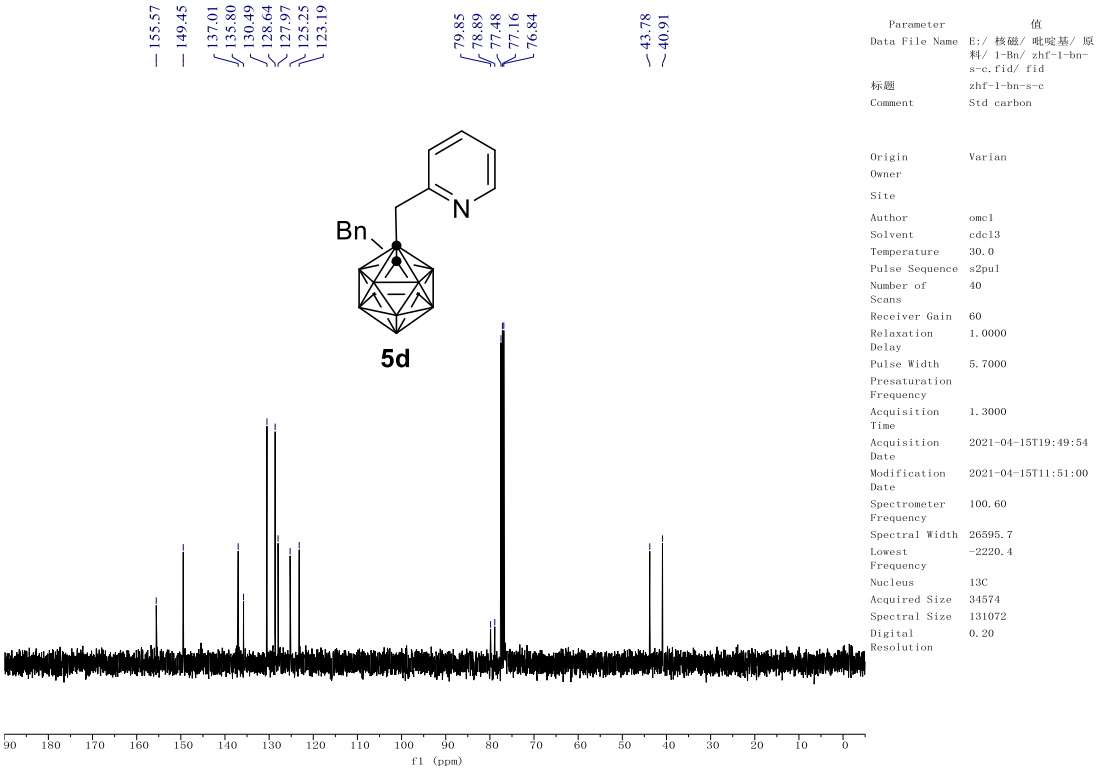
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-n-Bu/ zhf-1-nbu-s-decouple/ 1/ fid
标题	zhf-1-nbu-s-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.1
Pulse Sequence	aring-b11
Number of Scans	6
Receiver Gain	91.8
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-15T20:27:14
Modification Date	2021-04-15T20:27:15
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



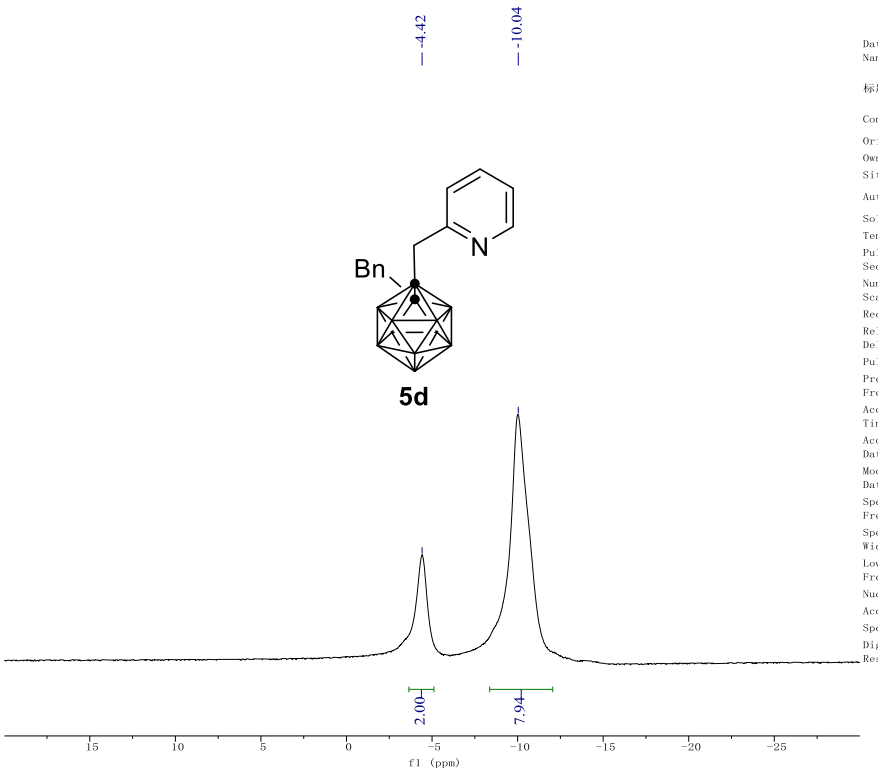
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-n-Bu/ zhf-1-nbu-s-couple/ 1/ fid
标题	zhf-1-nbu-s-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.9
Pulse Sequence	aring
Number of Scans	5
Receiver Gain	91.8
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-15T20:24:26
Modification Date	2021-04-15T20:24:27
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



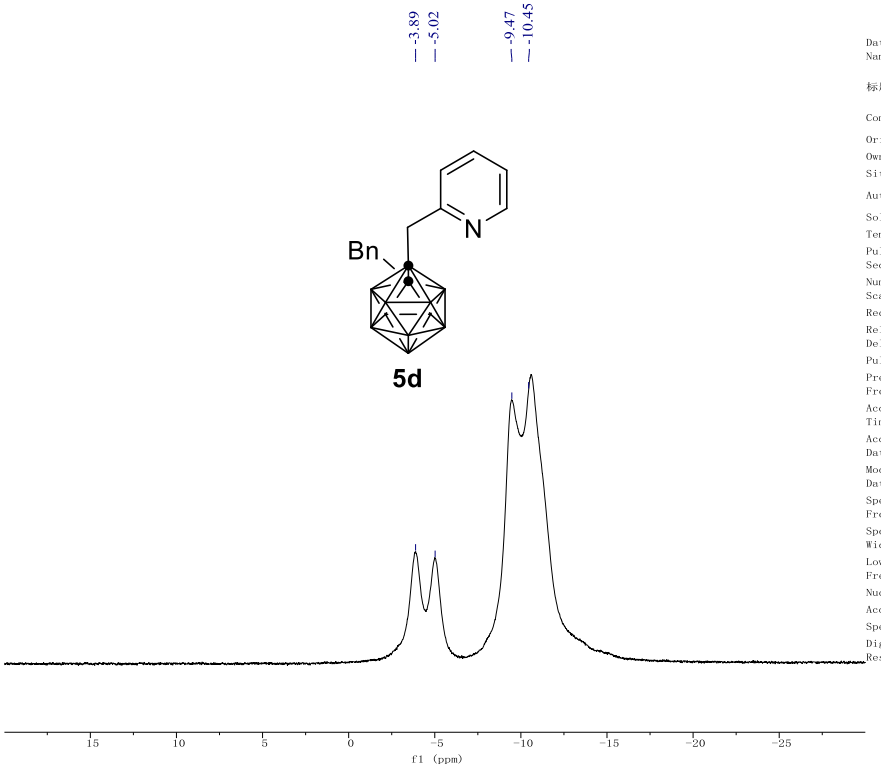
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Bn/ zhf-1-Bn-s-H1/ 1/ fid
标题	zhf-1-Bn-s-H1.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	zg30
Number of Scans	12
Receiver Gain	63.0
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-04-19T17:35:33
Modification Date	2021-04-19T17:35:34
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-407.9
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07



Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Bn/ zhf-1-bn-s-c.fid/ fid
标题	zhf-1-bn-s-c
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omcl
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	40
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-15T19:49:54
Modification Date	2021-04-15T11:51:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2220.4
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20

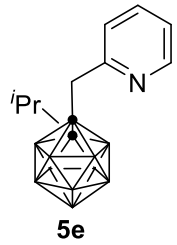


Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Bn/ zhf-1-Bn-s-decouple/ 1/ fid
标题	zhf-1-Bn-s-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.9
Pulse Sequence	aring-b11
Number of Scans	5
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-15T20:32:19
Modification Date	2021-04-15T20:32:19
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



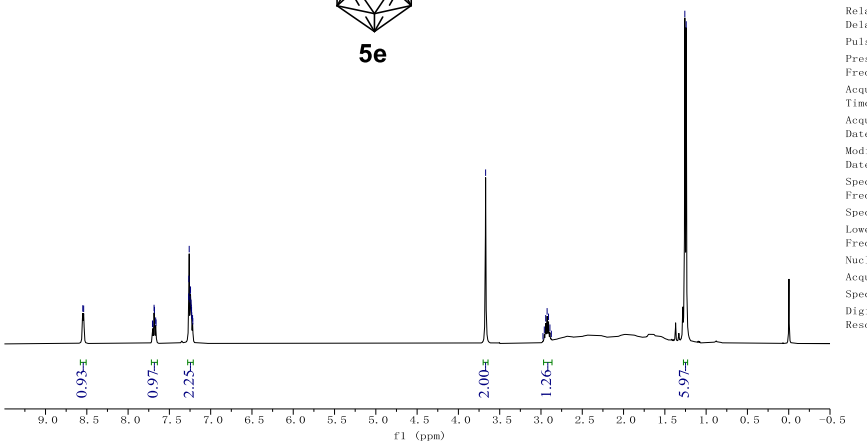
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Bn/ zhf-1-Bn-s-couple/ 1/ fid
标题	zhf-1-Bn-s-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.9
Pulse Sequence	aring
Number of Scans	5
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-15T20:30:20
Modification Date	2021-04-15T20:30:21
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-iPr/ zhf-1-ipr-H.fid/ fid
标题	zhf-1-ipr-H
Comment	Std proton

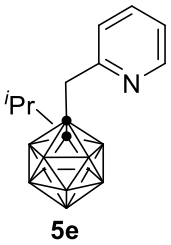


5e

Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	16
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-07T19:08:08
Modification Date	2021-03-07T11:08:00
Spectrometer Frequency	400.03
Spectral Width	6410.3
Lowest Frequency	-797.0
Nucleus	1H
Acquired Size	19231
Spectral Size	65536
Digital Resolution	0.10

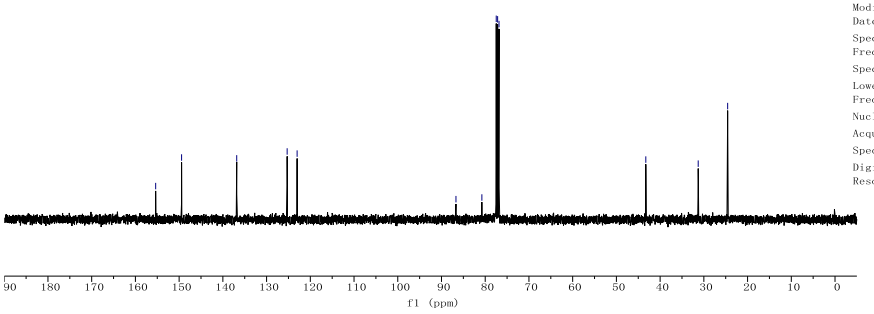


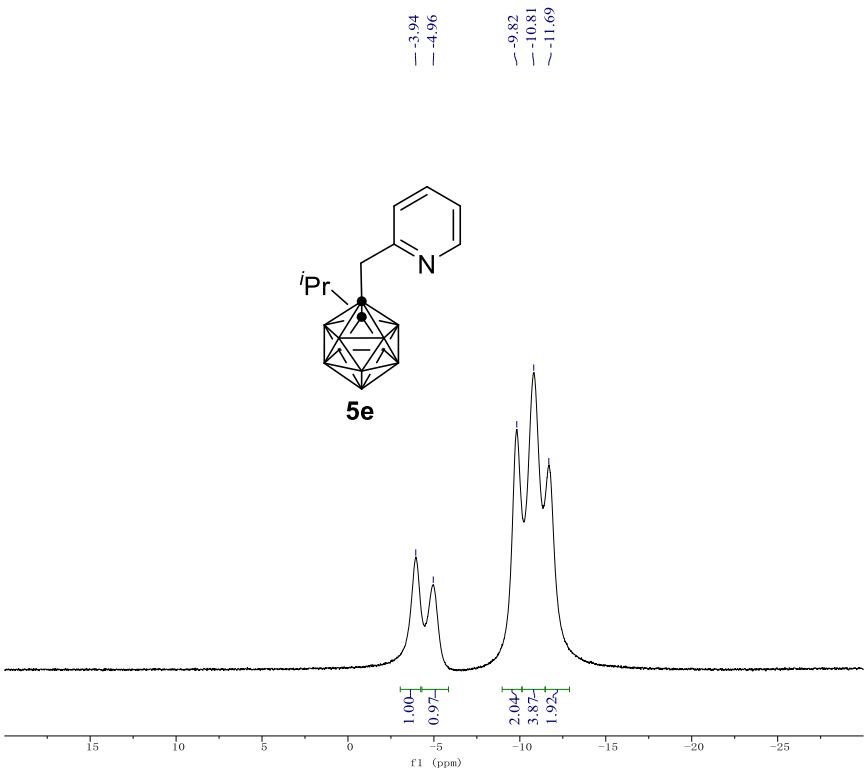
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-iPr/ zhf-1-ipr-C.fid/ fid
标题	zhf-1-ipr-C
Comment	Std carbon



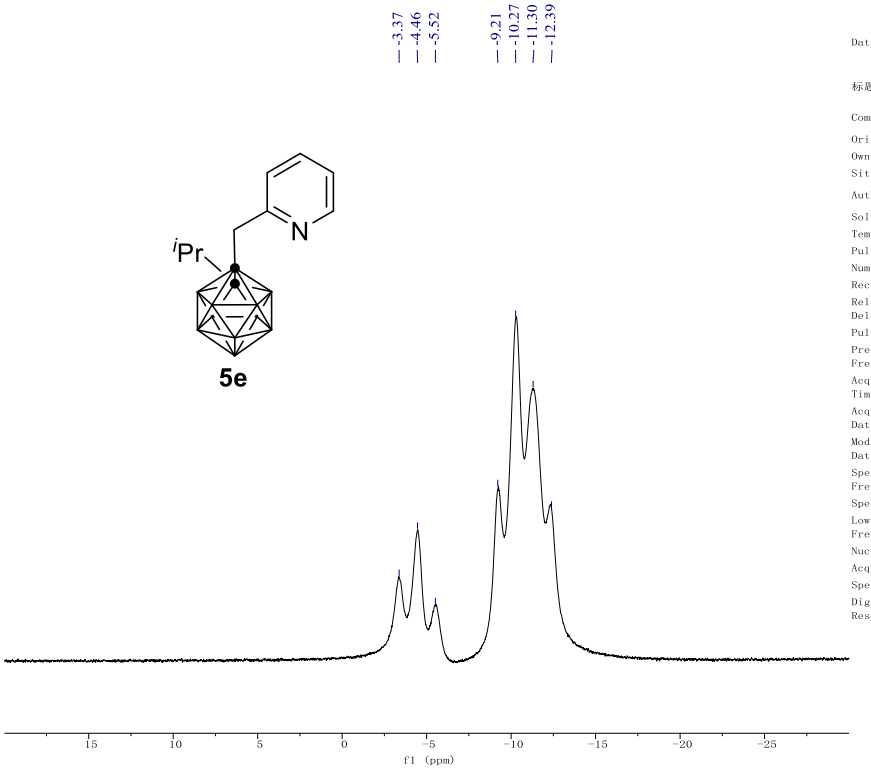
5e

Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	100
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-13T13:04:48
Modification Date	2021-04-13T05:08:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2218.7
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20



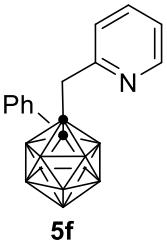


Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-iPr/ zhf-1-ipr-s-decouple/ 1/ fid
标题	zhf-1-ipr-s-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.6
Pulse Sequence	aring-b11
Number of Scans	8
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-14T20:28:39
Modification Date	2021-04-14T20:28:40
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

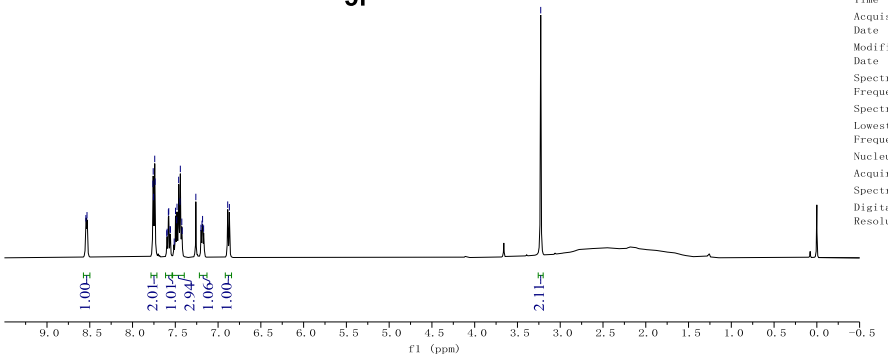


Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-iPr/ zhf-1-ipr-s-couple/ 1/ fid
标题	zhf-1-ipr-s-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.5
Pulse Sequence	aring
Number of Scans	9
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-14T20:25:32
Modification Date	2021-04-14T20:25:33
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

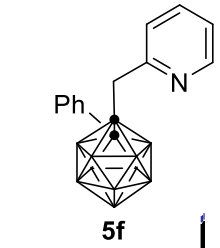
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Ph/ zhf-1-ph-H.fid/ fid
标题	zhf-1-ph-H
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	8
Receiver Gain	24
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-04-13T13:10:18
Modification Date	2021-04-13T05:11:00
Spectrometer Frequency	400.03
Spectral Width	7225.4
Lowest Frequency	-805.4
Nucleus	1H
Acquired Size	21676
Spectral Size	65536
Digital Resolution	0.11



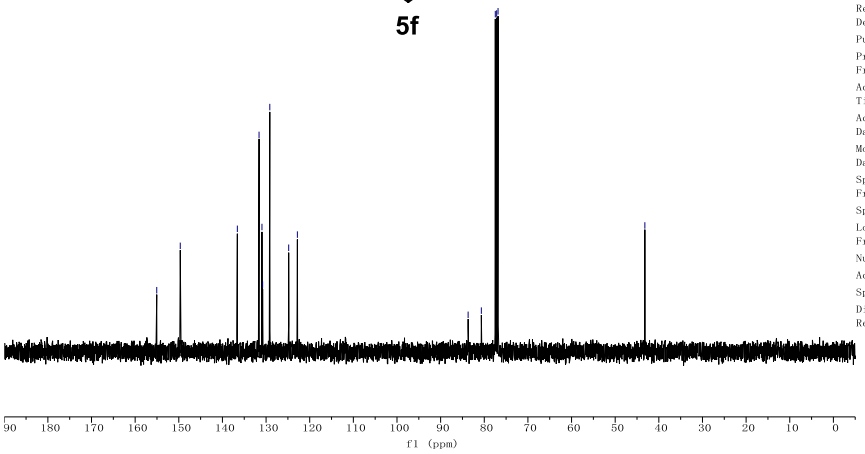
5f

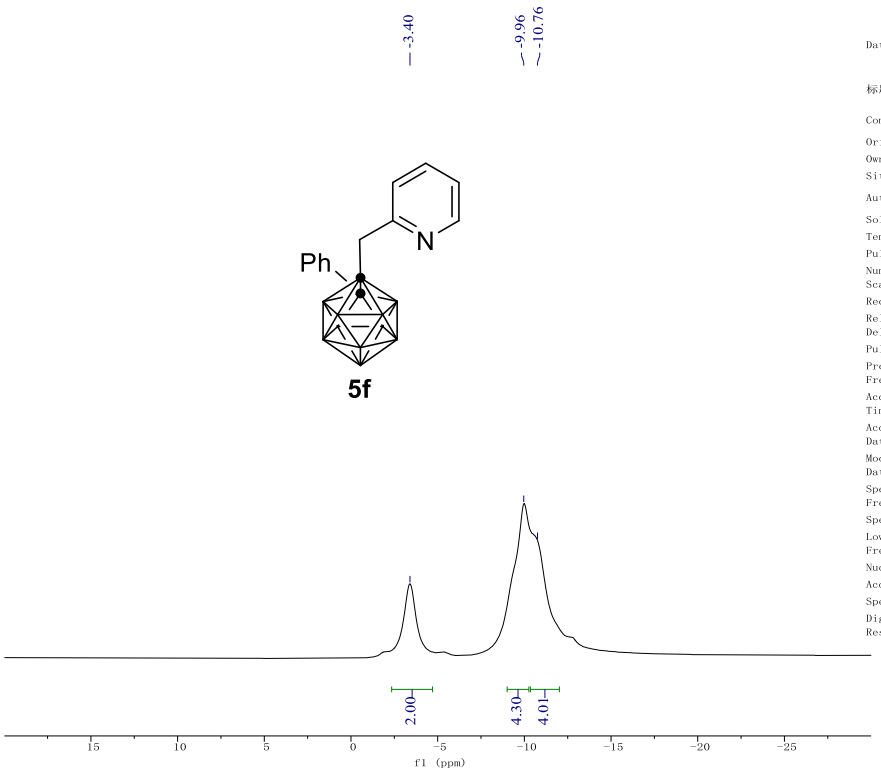


Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Ph/ zhf-1-ph-C.fid/ fid
标题	zhf-1-ph-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	40
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-04-13T13:11:48
Modification Date	2021-04-13T05:13:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2221.1
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20

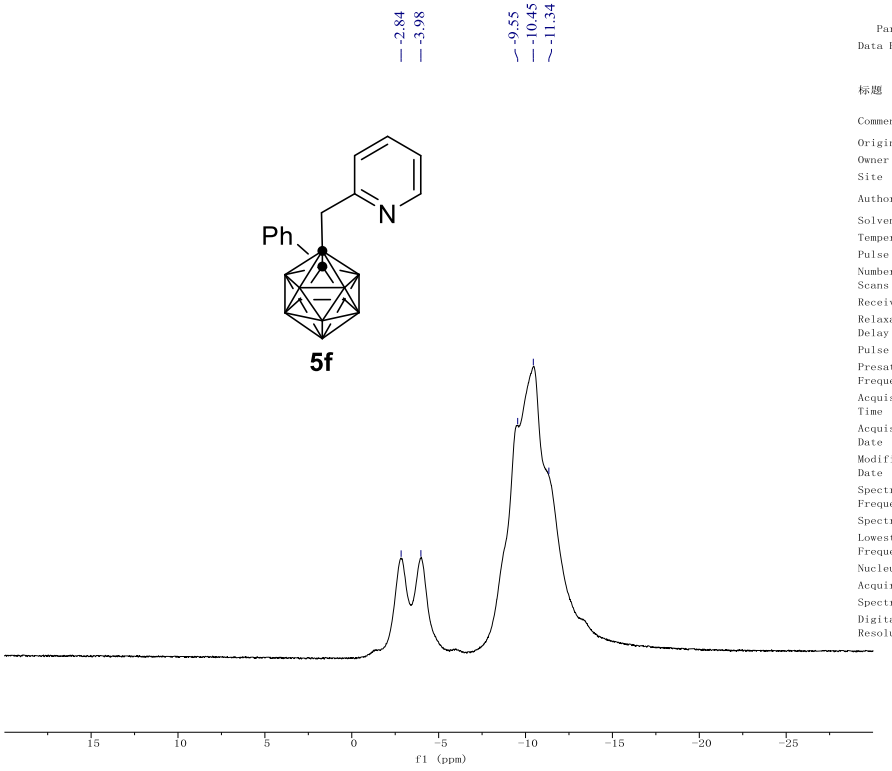


5f

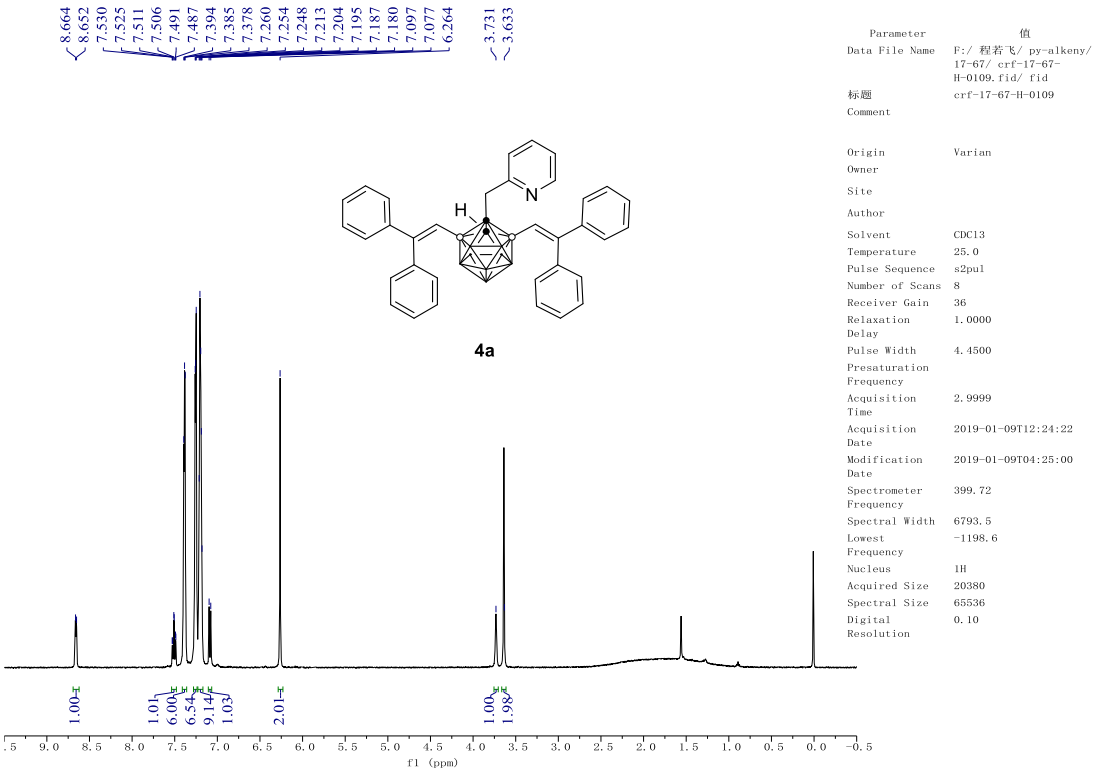




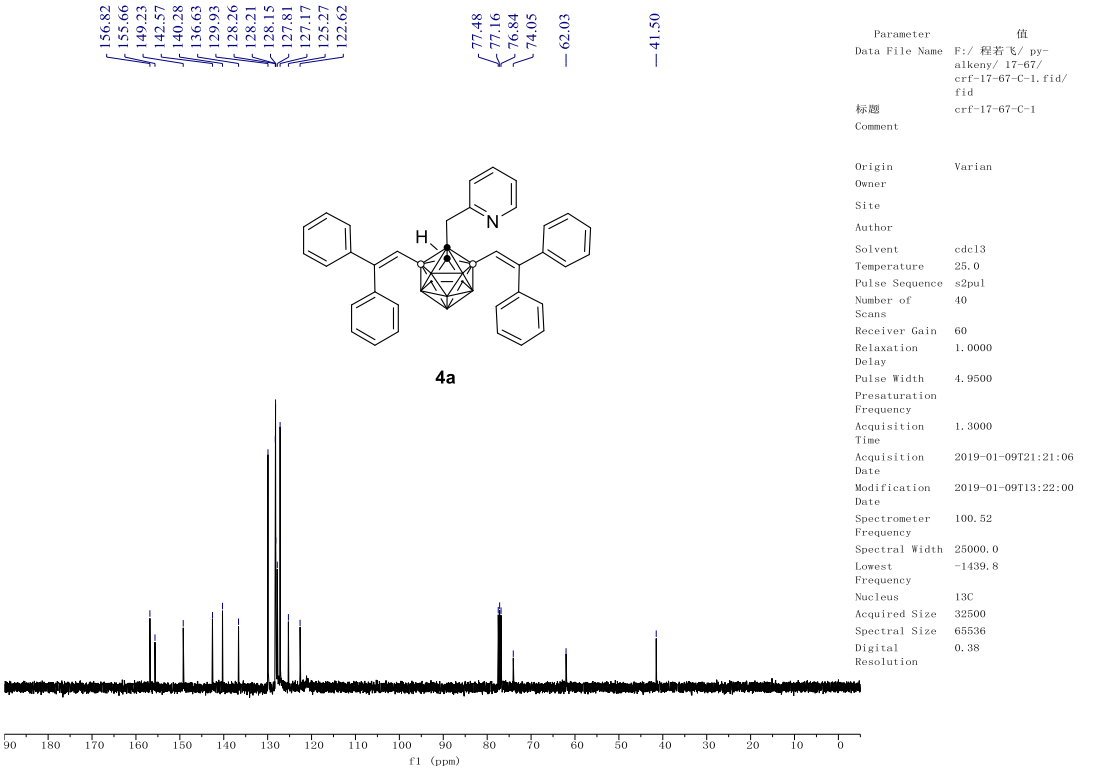
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Ph/ zhf-1-ph-s-decouple/ 1/ fid
标题	zhf-1-ph-s-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.6
Pulse Sequence	aring-b11
Number of Scans	9
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-14T20:21:35
Modification Date	2021-04-14T20:21:36
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



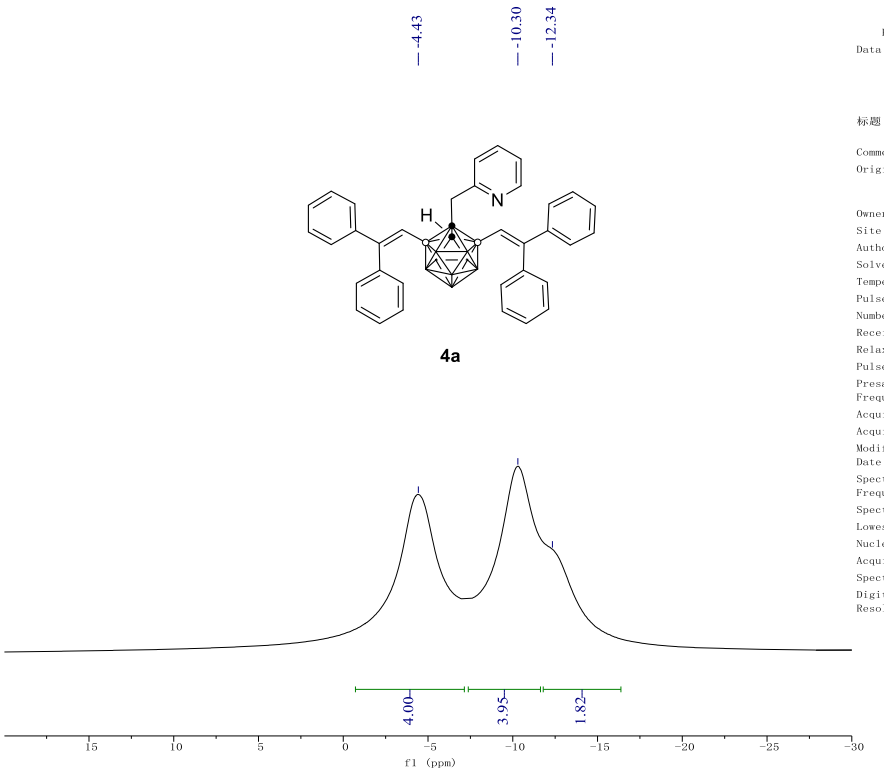
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ 原料/ 1-Ph/ zhf-1-ph-s-couple/ 1/ fid
标题	zhf-1-ph-s-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.4
Pulse Sequence	aring
Number of Scans	10
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-14T20:17:57
Modification Date	2021-04-14T20:17:58
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 17-67/ crf-17-67-H-0109.fid/ fid
标题	crf-17-67-H-0109
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	8
Receiver Gain	36
Relaxation Delay	1.0000
Pulse Width	4.4500
Presaturation Frequency	
Acquisition Time	2.9999
Acquisition Date	2019-01-09T12:24:22
Modification Date	2019-01-09T04:25:00
Spectrometer Frequency	399.72
Spectral Width	6793.5
Lowest Frequency	-1198.6
Nucleus	1H
Acquired Size	20380
Spectral Size	65536
Digital Resolution	0.10

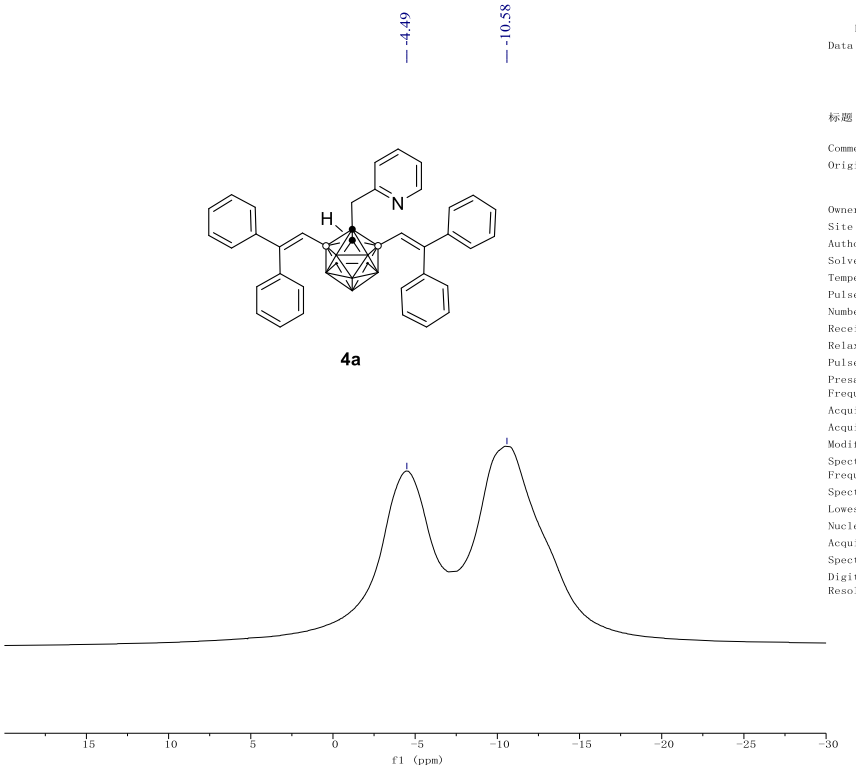


Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 17-67/ crf-17-67-C-1.fid/ fid
标题	crf-17-67-C-1
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	cdcl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	40
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	4.9500
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-01-09T21:21:06
Modification Date	2019-01-09T13:22:00
Spectrometer Frequency	100.52
Spectral Width	25000.0
Lowest Frequency	-1439.8
Nucleus	13C
Acquired Size	32500
Spectral Size	65536
Digital Resolution	0.38



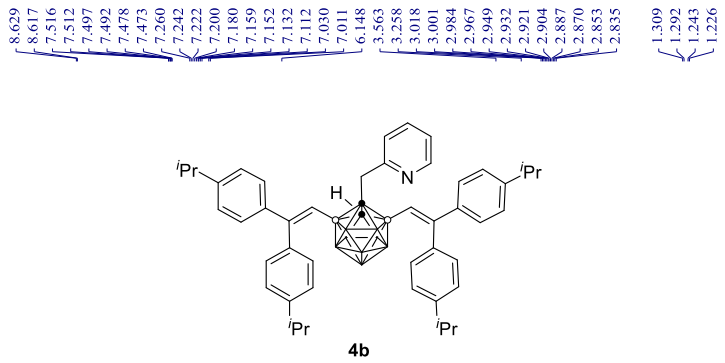
4a

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 17-67/ 2013156b-crf-17-67/ 2013156b-crf-17-67-decouple/ 1/ fid
标题	2013156b-crf-17-67-decouple.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	500
Receiver Gain	143.7
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-01-10T16:11:52
Modification Date	2019-01-10T09:34:57
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19587.6
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



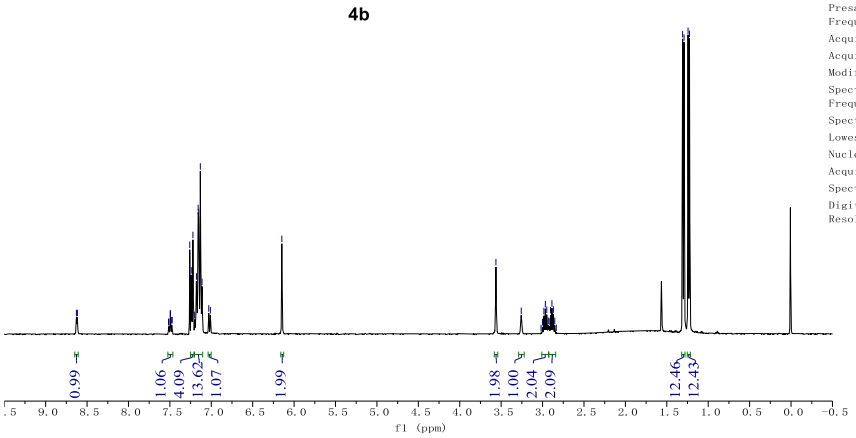
4a

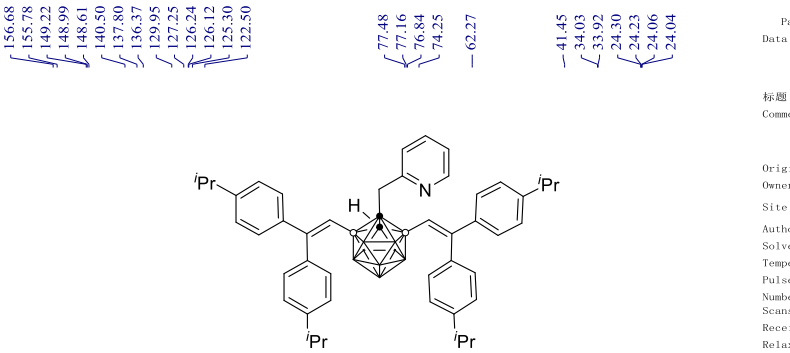
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 17-67/ 2013156b-crf-17-67/ 2013156b-crf-17-67-coupling/ 1/ fid
标题	2013156b-crf-17-67-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	500
Receiver Gain	143.7
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-01-10T16:21:55
Modification Date	2019-01-10T09:34:55
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19587.6
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



4b

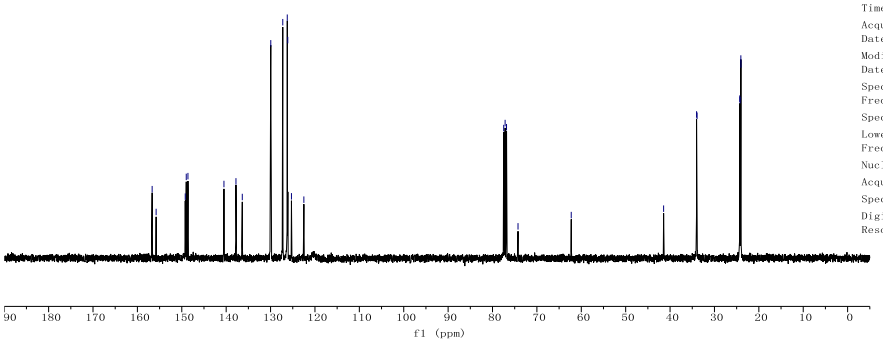
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-101-2/ crf-19-101-2-H.fid/ fid
标题	crf-19-101-2-H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	44
Relaxation Delay	1.0000
Pulse Width	4.4500
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-04-21T21:35:30
Modification Date	2019-04-21T13:36:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-793.7
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11

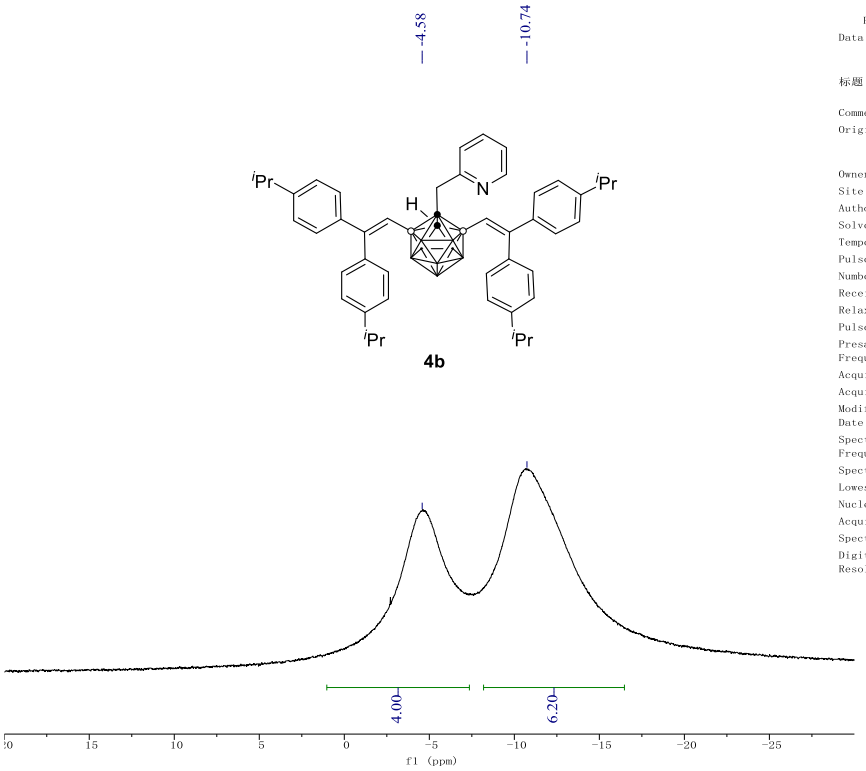




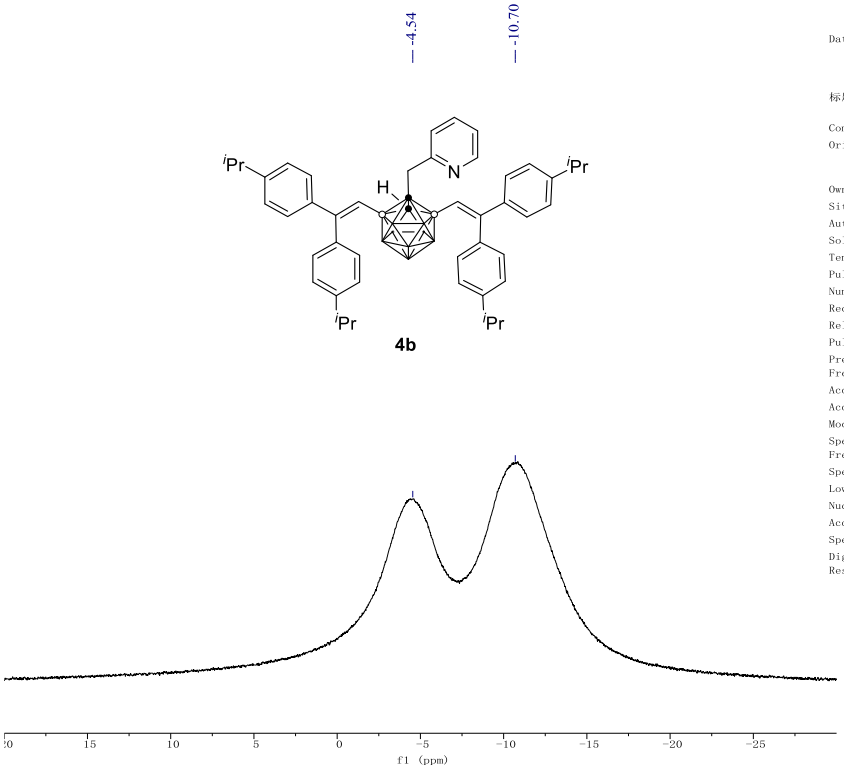
4b

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-101-2/ crf-19-101-2-C.fid/ fid
标题	crf-19-101-2-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	84
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-04-21T19:55:02
Modification Date	2019-04-21T11:58:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1681.6
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37

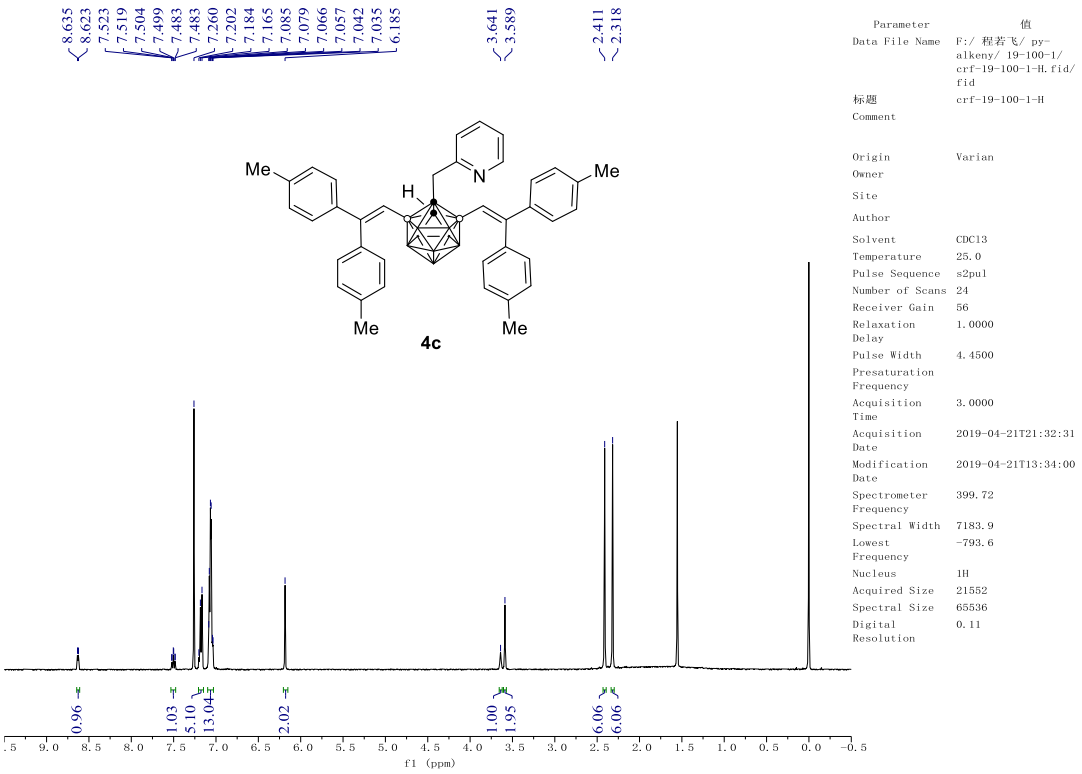




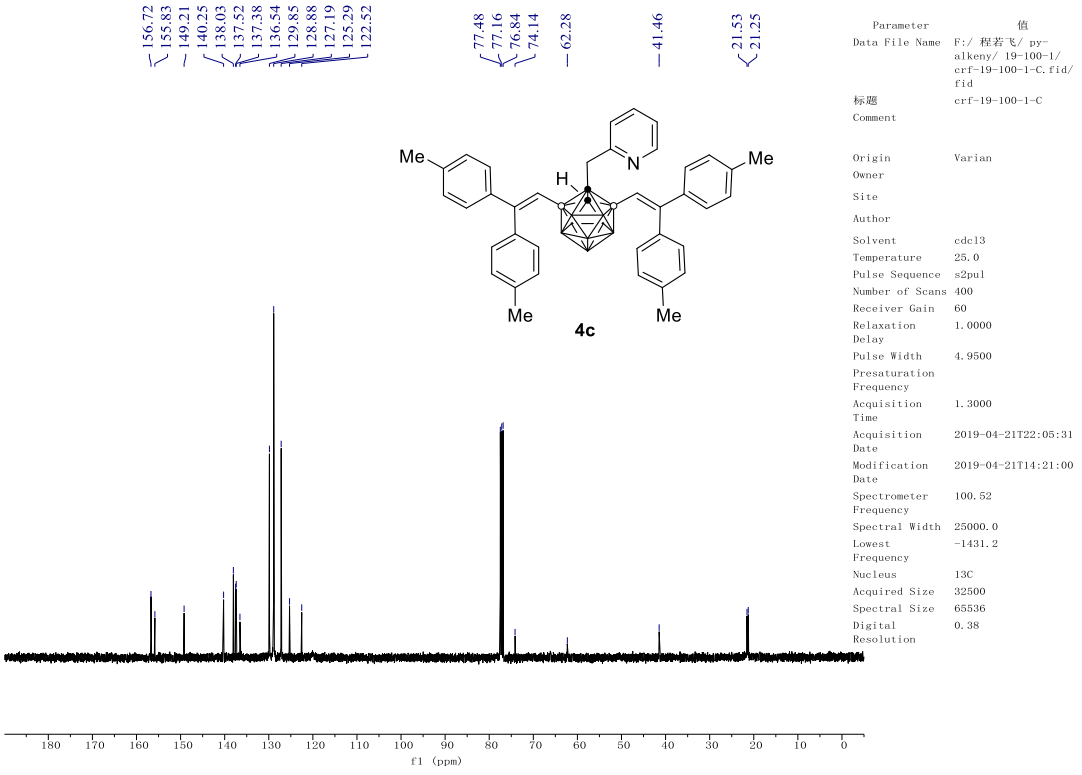
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-101-2/ 2013156b-crf-19-101-2/ 1/ fid
标题	2013156b-crf-19-101-2.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	215
Receiver Gain	322.5
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-22T19:27:36
Modification Date	2019-04-22T15:46:20
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19578.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



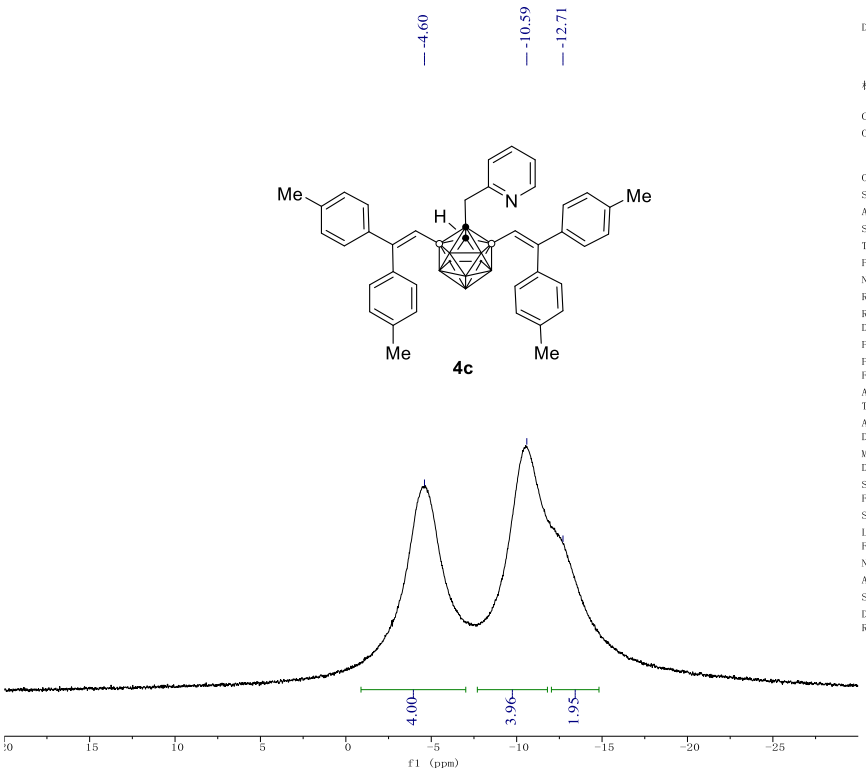
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-101-2/ 2013156b-crf-19-101-2-coupling/ 1/ fid
标题	2013156b-crf-19-101-2-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	212
Receiver Gain	322.5
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-22T19:25:34
Modification Date	2019-04-22T15:46:25
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19578.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



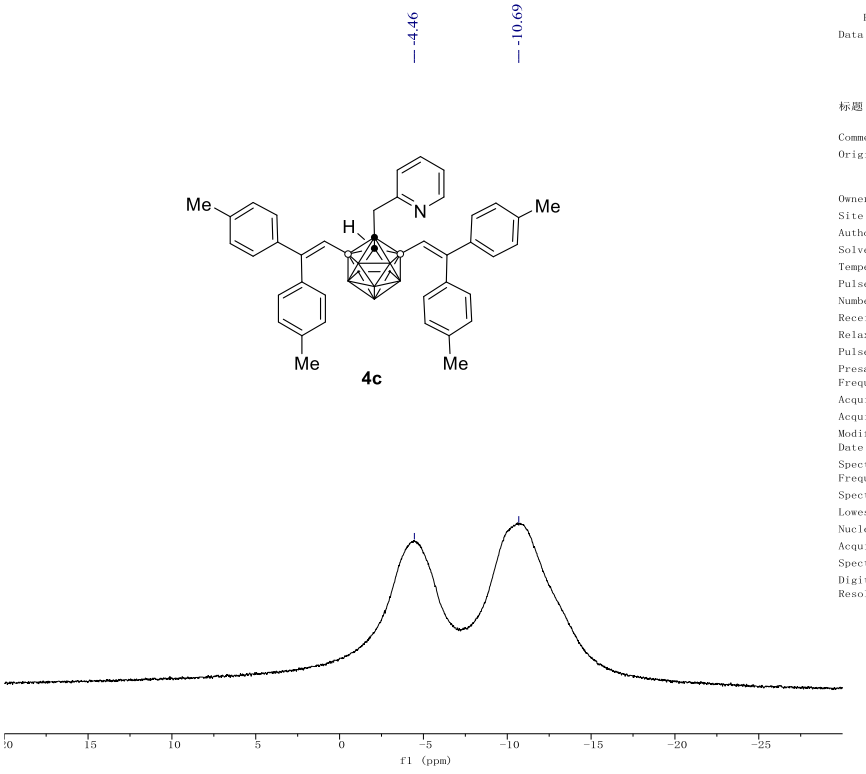
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-100-1/ crf-19-100-1-H.fid/ fid
标题	crf-19-100-1-H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	24
Receiver Gain	56
Relaxation Delay	1.0000
Pulse Width	4.4500
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-04-21T21:32:31
Modification Date	2019-04-21T13:34:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-793.6
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11



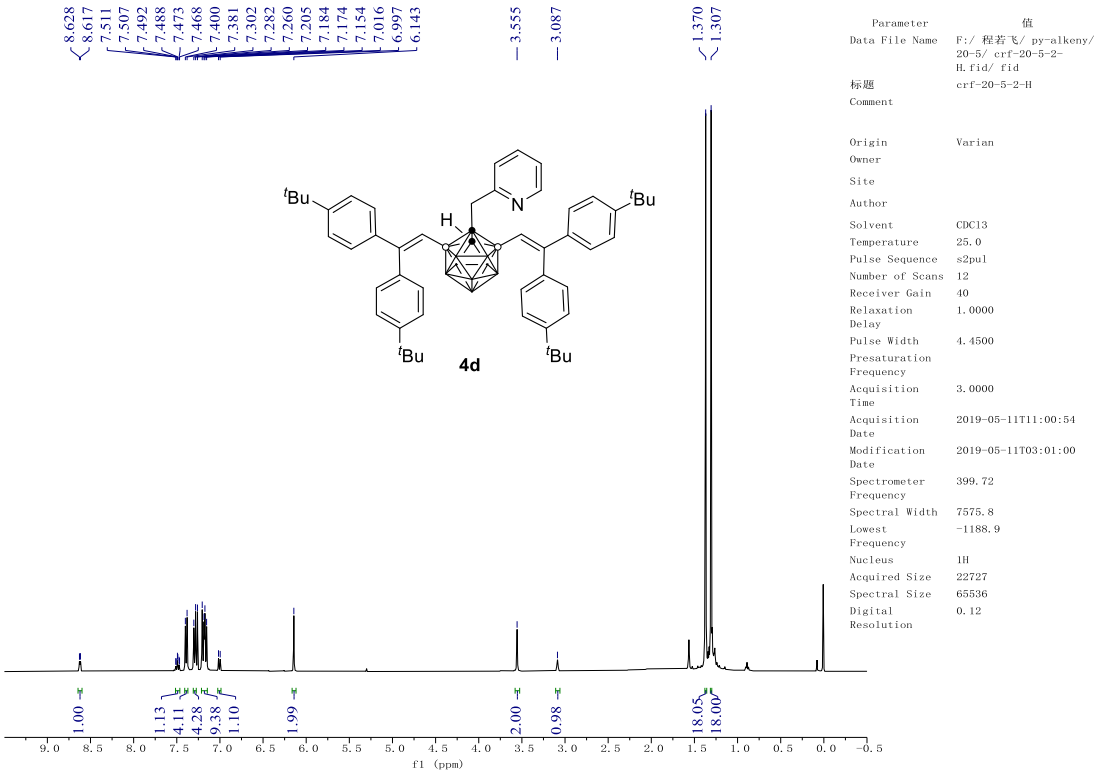
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-100-1/ crf-19-100-1-C.fid/ fid
标题	crf-19-100-1-C
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	cdcl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	400
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	4.9500
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-04-21T22:05:31
Modification Date	2019-04-21T14:21:00
Spectrometer Frequency	100.52
Spectral Width	25000.0
Lowest Frequency	-1431.2
Nucleus	13C
Acquired Size	32500
Spectral Size	65536
Digital Resolution	0.38



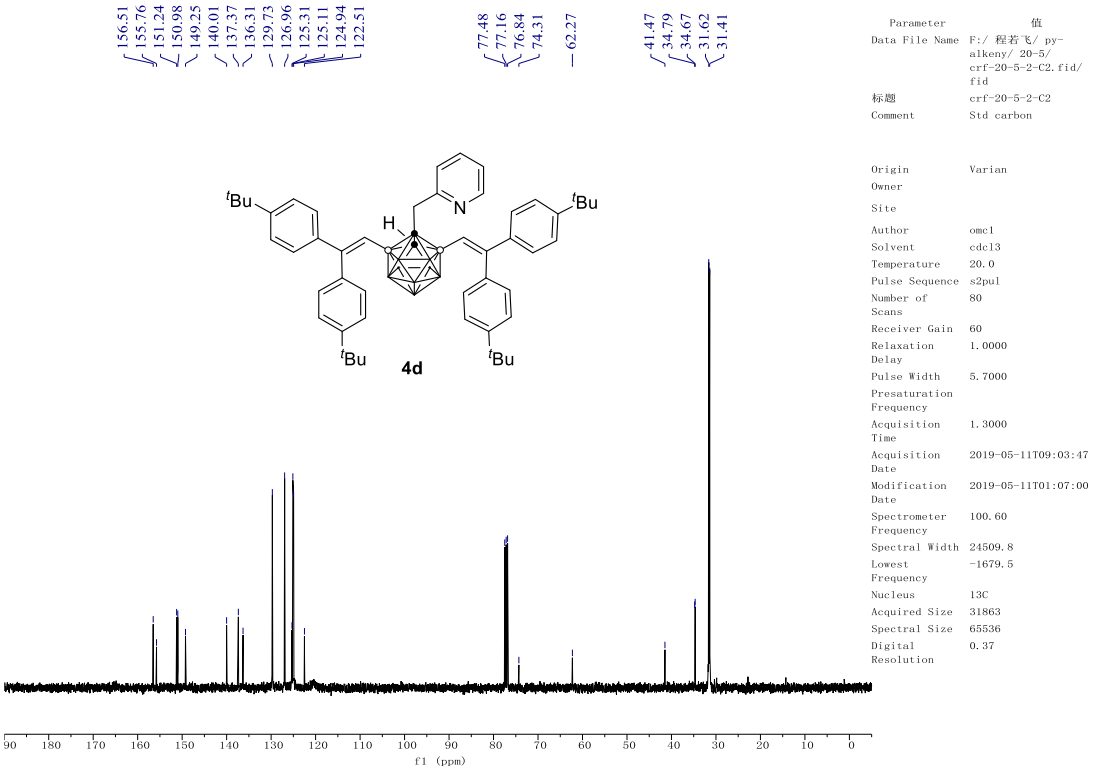
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-100-1/ 2013156b-crf-19-100-1/ 1/ fid
标题	2013156b-crf-19-100-1.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	289
Receiver Gain	645.1
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-22T19:17:03
Modification Date	2019-04-22T15:46:36
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19578.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



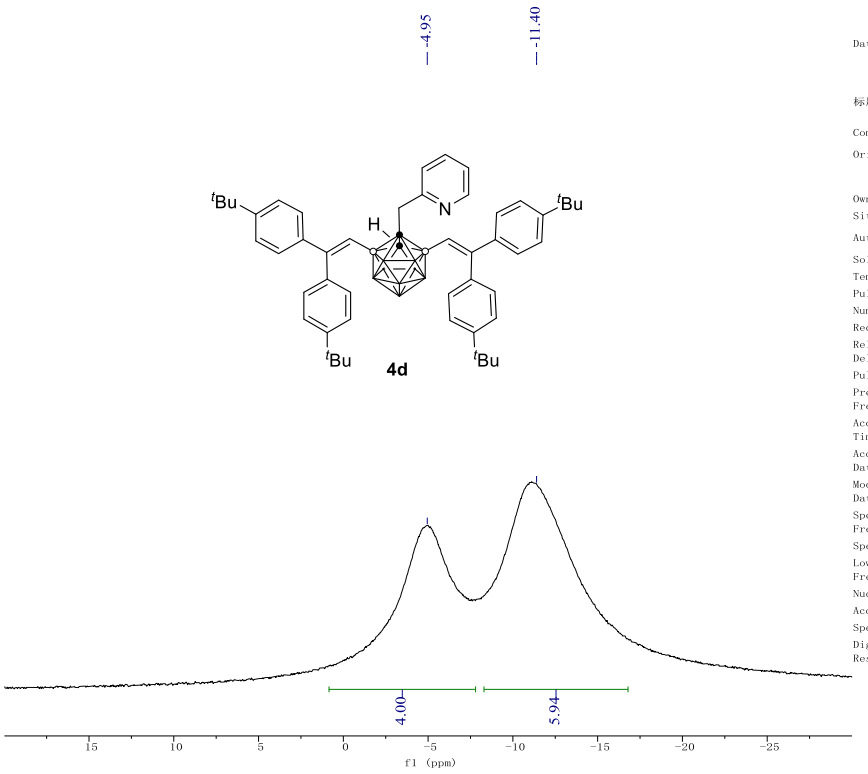
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-100-1/ 2013156b-crf-19-100-1/ 2013156b-crf-19-100-1-coupling/ 1/ fid
标题	2013156b-crf-19-100-1-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	353
Receiver Gain	645.1
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-22T19:22:07
Modification Date	2019-04-22T15:46:31
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19578.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



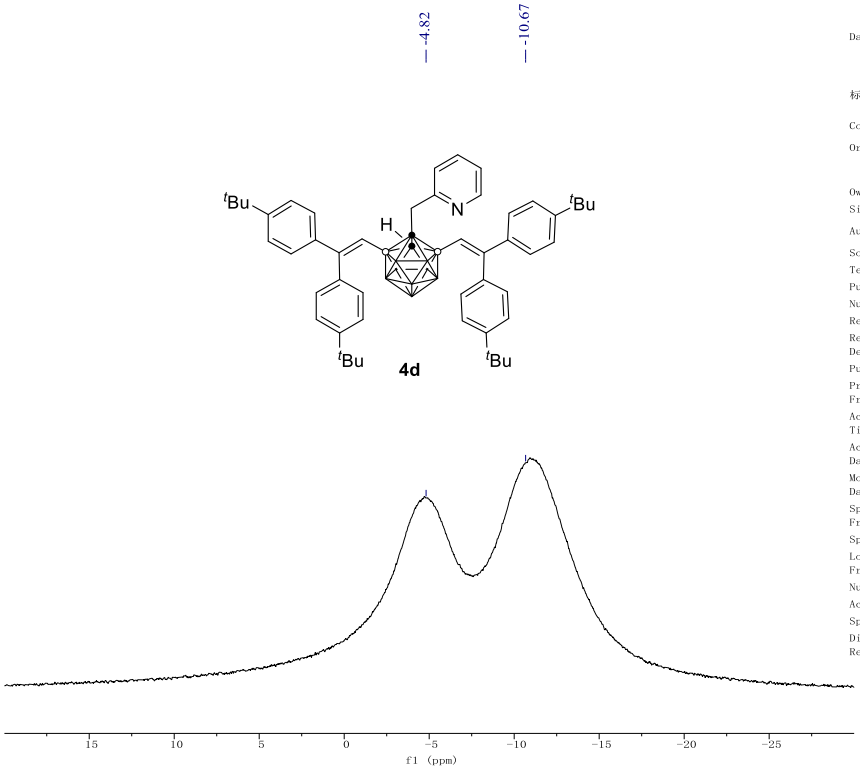
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-5/ crf-20-5-2-H.fid/ fid
标题	crf-20-5-2-H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	12
Receiver Gain	40
Relaxation Delay	1.0000
Pulse Width	4.4500
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-05-11T11:00:54
Modification Date	2019-05-11T03:01:00
Spectrometer Frequency	399.72
Spectral Width	7575.8
Lowest Frequency	-1188.9
Nucleus	1H
Acquired Size	22727
Spectral Size	65536
Digital Resolution	0.12



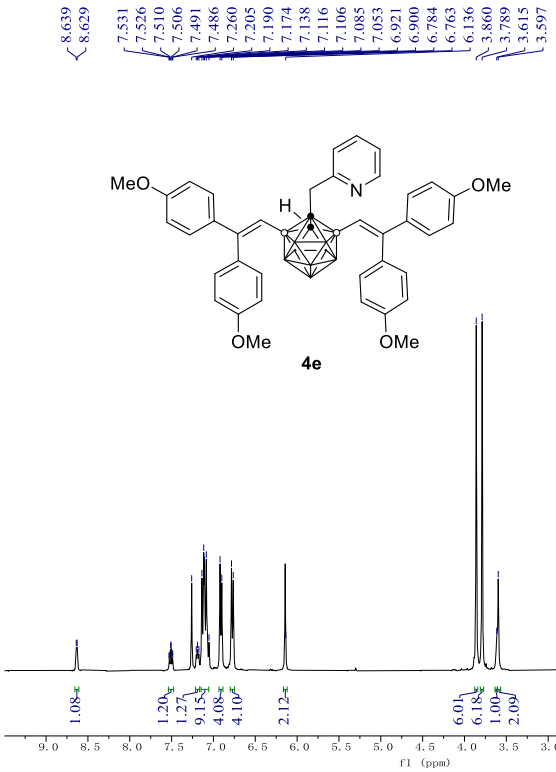
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-5/ crf-20-5-2-C2.fid/ fid
标题	crf-20-5-2-C2
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omcl
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	80
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-05-11T09:03:47
Modification Date	2019-05-11T01:07:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1679.5
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37



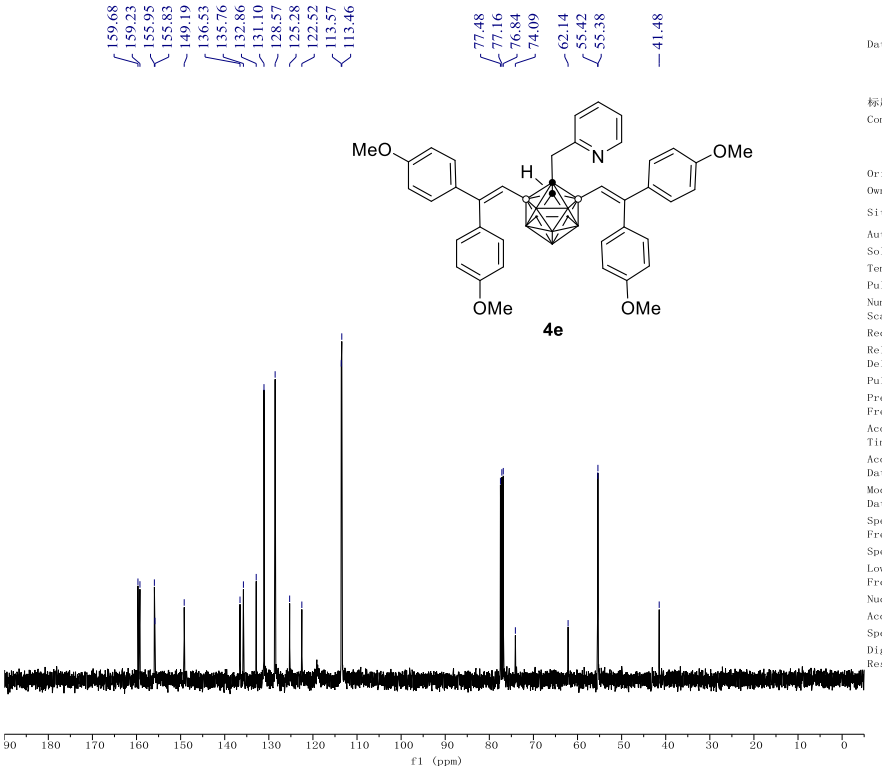
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-5/ 2013156b-crf-20-5-2/ 1/ fid
标题	2013156b-crf-20-5-2.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-13T22:05:17
Modification Date	2019-05-13T16:27:48
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19618.1
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



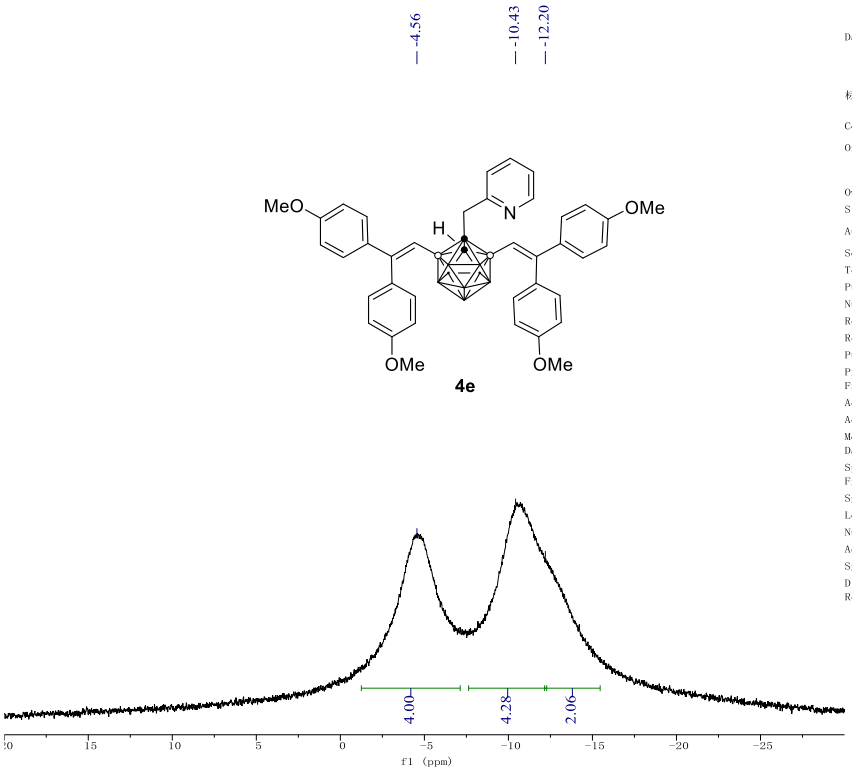
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-5/ 2013156b-crf-20-5-2-coupling/ 1/ fid
标题	2013156b-crf-20-5-2-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-13T22:06:53
Modification Date	2019-05-13T16:27:43
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19618.1
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



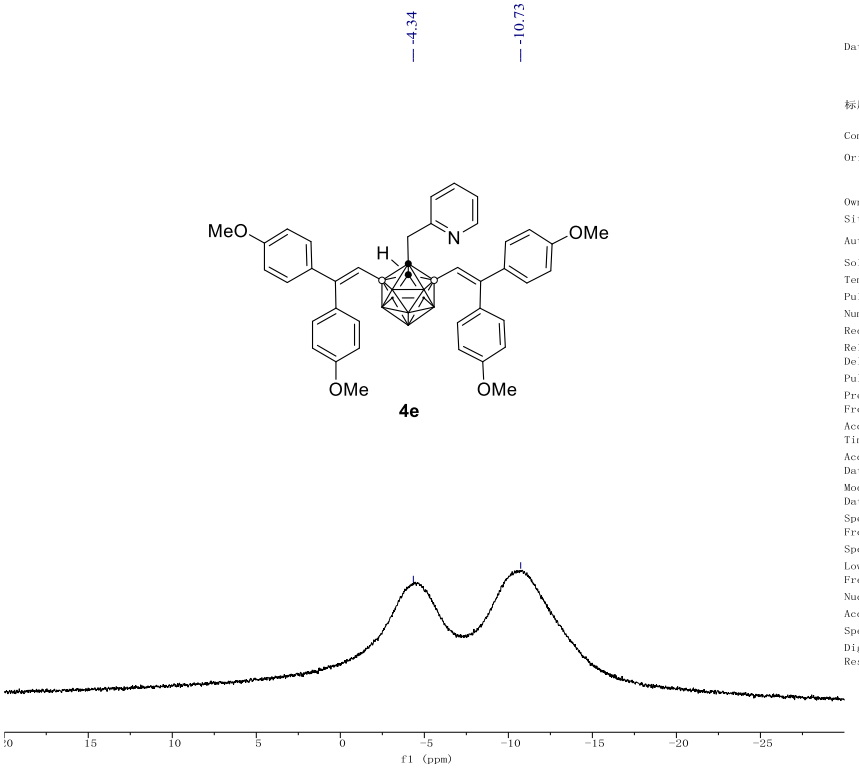
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-91/ crf-19-91-1-.fid/ fid
标题	crf-19-91-1-
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	12
Receiver Gain	30
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-04-17T14:51:46
Modification Date	2019-04-17T06:52:00
Spectrometer Frequency	400.03
Spectral Width	7622.0
Lowest Frequency	-1204.7
Nucleus	1H
Acquired Size	22866
Spectral Size	65536
Digital Resolution	0.12



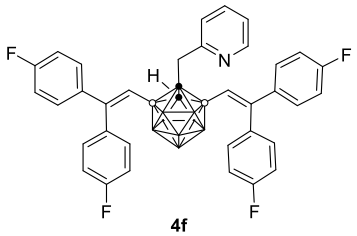
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-91/ crf-19-91-CC.fid/ fid
标题	crf-19-91-CC
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	88
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-04-19T08:56:01
Modification Date	2019-04-19T00:59:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1681.7
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-91/ 2013156b-crf-19-91-decouple/ 1/ fid
标题	2013156b-crf-19-91-decouple.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	180
Receiver Gain	512.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-18T20:06:04
Modification Date	2019-04-18T14:05:56
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19578.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17

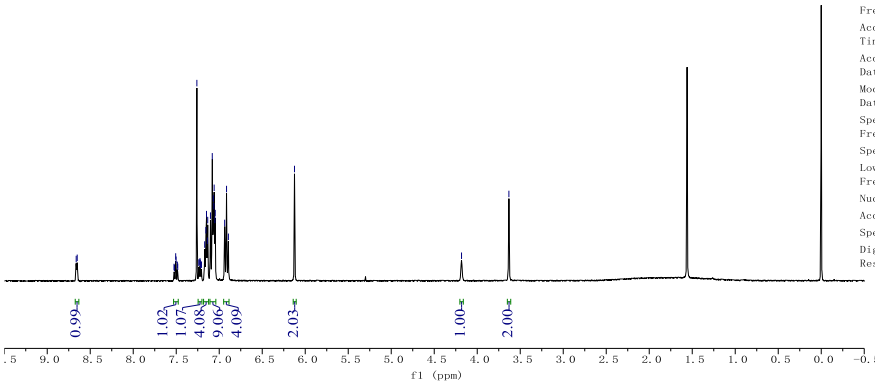


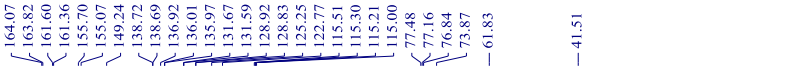
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-91/ 2013156b-crf-19-91-coupling/ 1/ fid
标题	2013156b-crf-19-91-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	280
Receiver Gain	512.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-18T20:05:18
Modification Date	2019-04-18T14:05:58
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19578.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17

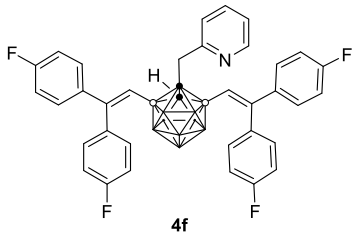


4f

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-2/ crf-19-105-2-H.fid/ fid
标题	crf-19-105-2-H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	8
Receiver Gain	48
Relaxation Delay	1.0000
Pulse Width	4.4500
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-04-24T10:31:23
Modification Date	2019-04-24T02:32:00
Spectrometer Frequency	399.72
Spectral Width	7575.8
Lowest Frequency	-1189.3
Nucleus	1H
Acquired Size	22727
Spectral Size	65536
Digital Resolution	0.12

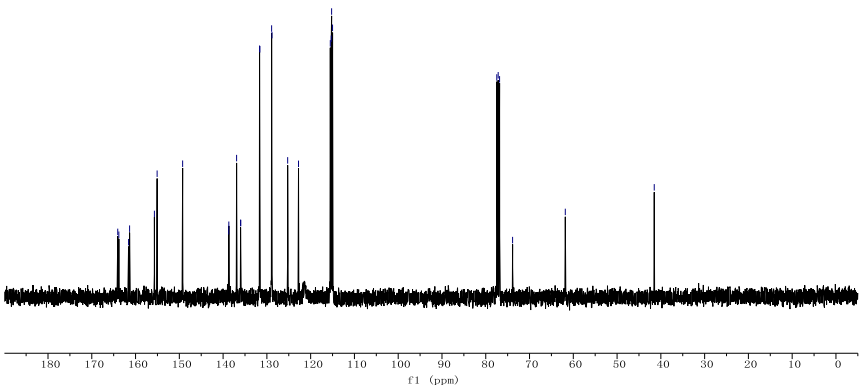


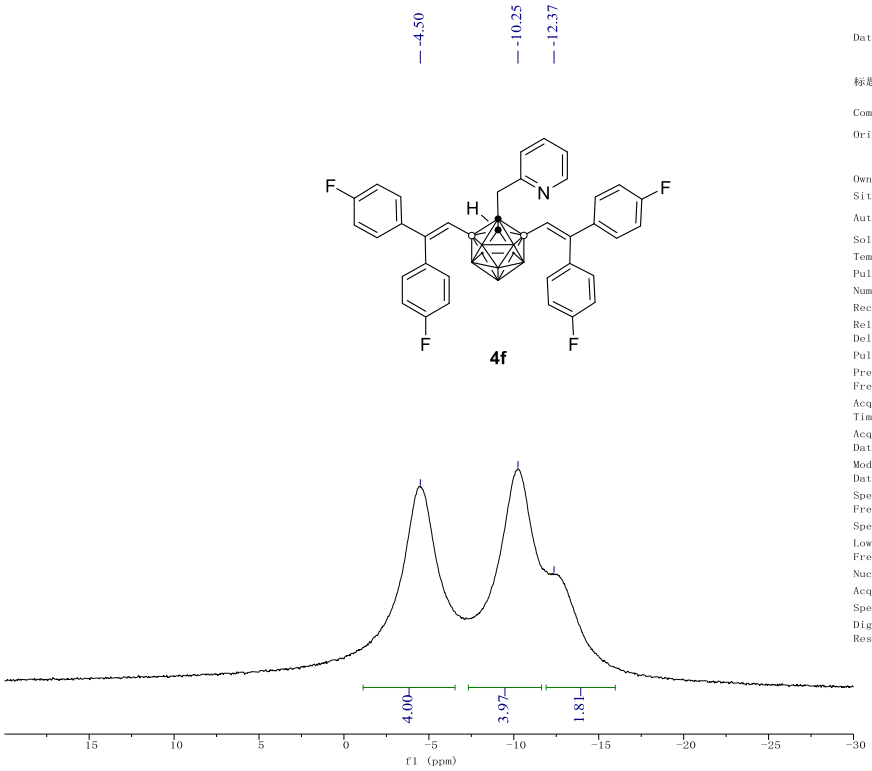




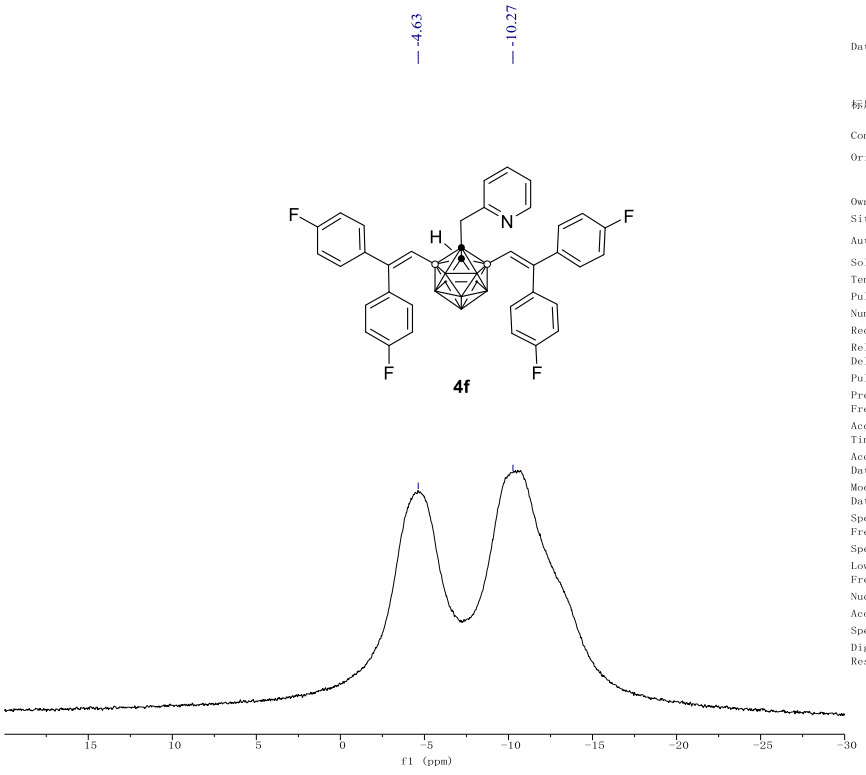
4f

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-2/ crf-19-105-2-C.fid/ fid
标题	crf-19-105-2-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	80
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-04-24T08:36:55
Modification Date	2019-04-24T00:40:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1678.0
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37

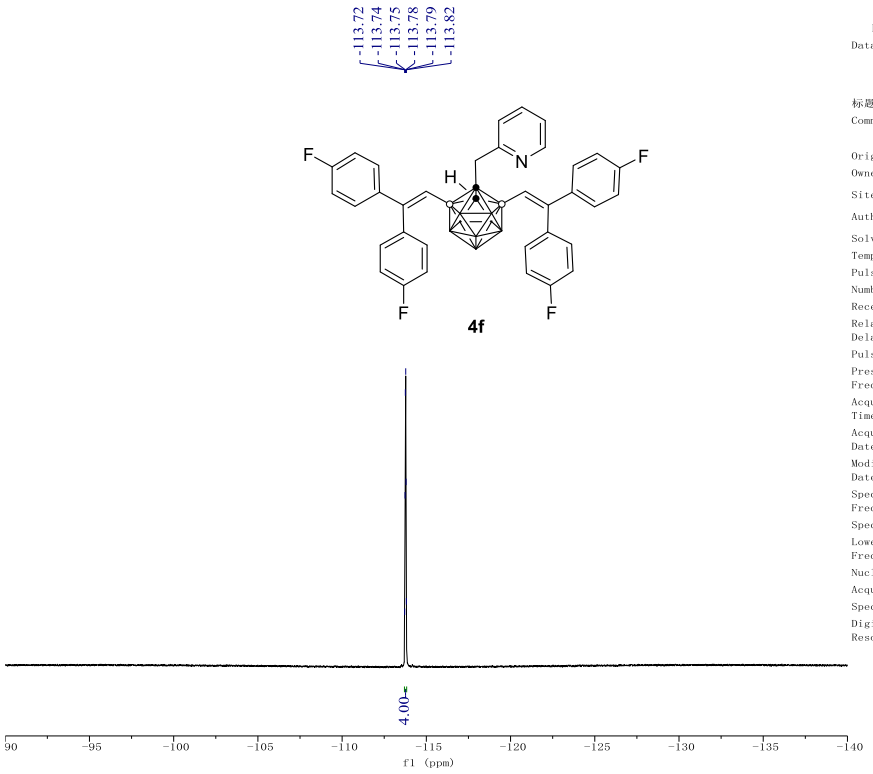




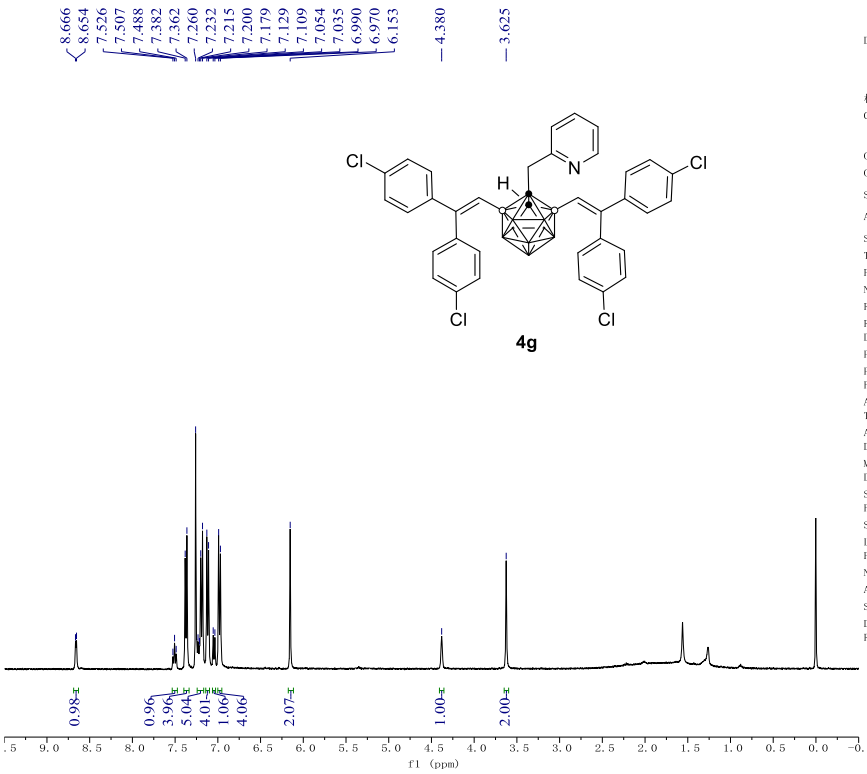
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-2/ b-crf-19-105-2/ fid
标题	19-105-2/ b-crf-19-105-2
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-25T20:25:16
Modification Date	2019-04-25T14:26:00
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19598.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



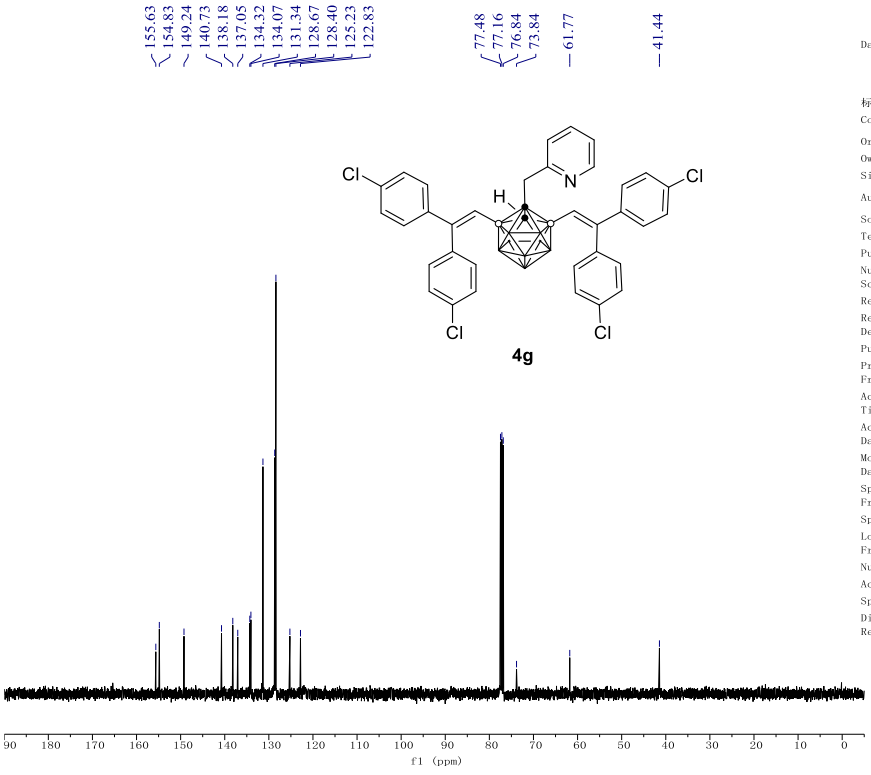
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-2/ b-crf-19-105-2-coupling/ fid
标题	19-105-2/ b-crf-19-105-2-coupling
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-25T20:27:39
Modification Date	2019-04-25T14:27:00
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19598.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



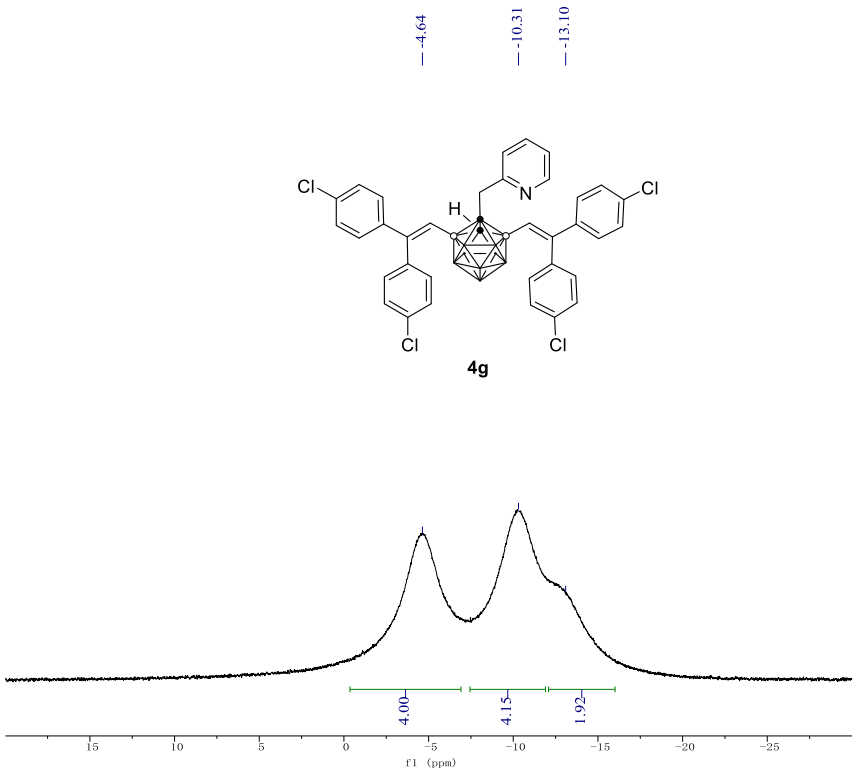
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-2/ crf-19-105-2-F.fid/ fid
标题	crf-19-105-2-F
Comment	Std Fluorine
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	6.0667
Presaturation Frequency	
Acquisition Time	1.0000
Acquisition Date	2019-04-24T08:40:31
Modification Date	2019-04-24T00:40:00
Spectrometer Frequency	376.37
Spectral Width	156250.0
Lowest Frequency	-115765.3
Nucleus	19F
Acquired Size	156250
Spectral Size	524288
Digital Resolution	0.30



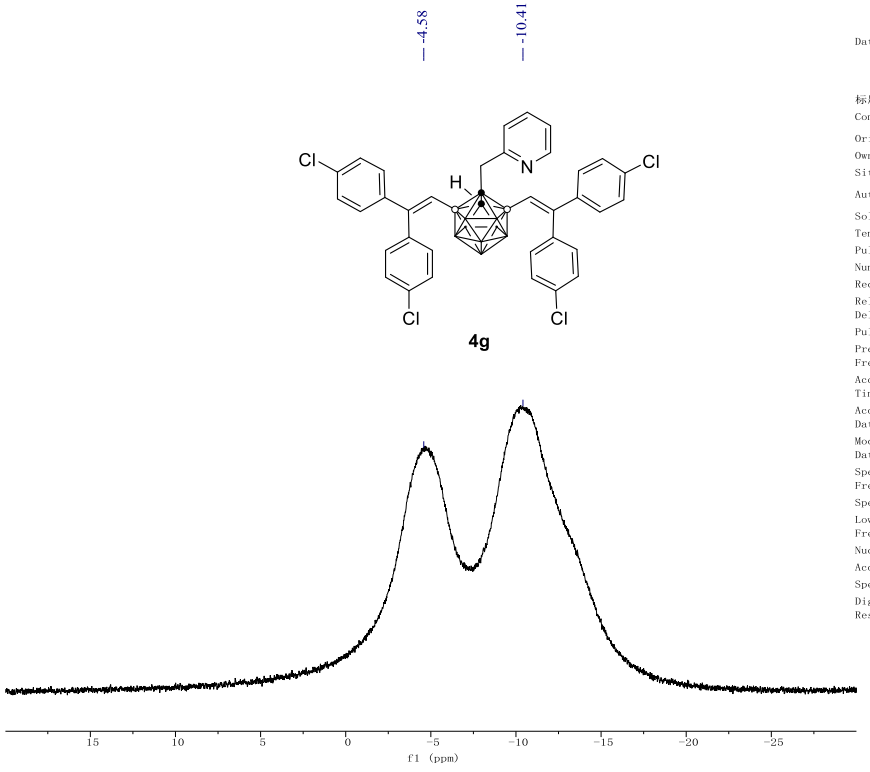
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ p-Cl-二苯乙炔/ zhf-p-Cl-H.fid/ fid
标题	zhf-p-Cl-H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	52
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-26T09:04:37
Modification Date	2021-03-26T01:05:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-793.9
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ p-Cl-二苯乙炔/ zhf-p-Cl-C/ 1/ fid
标题	zhf-p-Cl-C.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.7
Pulse Sequence	zgpg30
Number of Scans	66
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2021-03-25T10:34:34
Modification Date	2021-03-25T10:34:35
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5268.5
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27

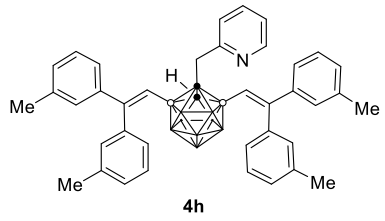


Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ p-Cl-二苯乙炔/ zhf-p-Cl-decouple/ 1/ fid
标题	zhf-p-Cl-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.7
Pulse Sequence	aring-b11
Number of Scans	29
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-25T10:42:02
Modification Date	2021-03-25T10:42:03
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



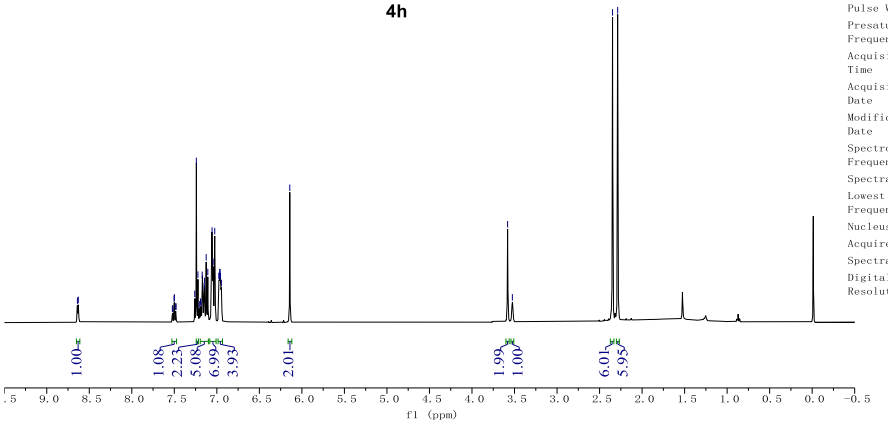
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ p-Cl-二苯乙炔/ zhf-p-Cl-couple/ 1/ fid
标题	zhf-p-Cl-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.6
Pulse Sequence	aring
Number of Scans	29
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-25T10:38:04
Modification Date	2021-03-25T10:38:05
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 18-58/ crf-18-58-H.fid/ fid
标题	crf-18-58-H
Comment	Std proton

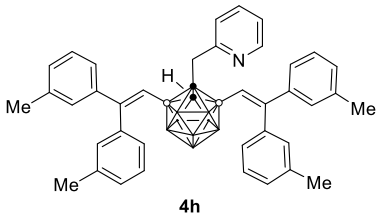


4h

Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	12
Receiver Gain	40
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-01-05T11:50:46
Modification Date	2019-01-05T03:52:00
Spectrometer Frequency	400.03
Spectral Width	7622.0
Lowest Frequency	-1211.2
Nucleus	1H
Acquired Size	22866
Spectral Size	65536
Digital Resolution	0.12

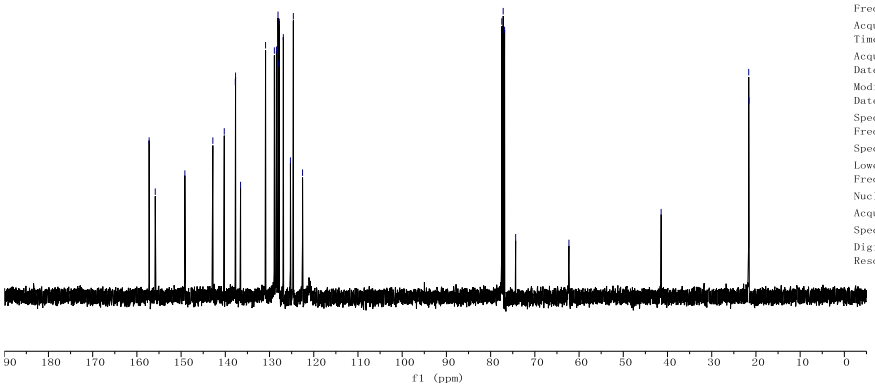


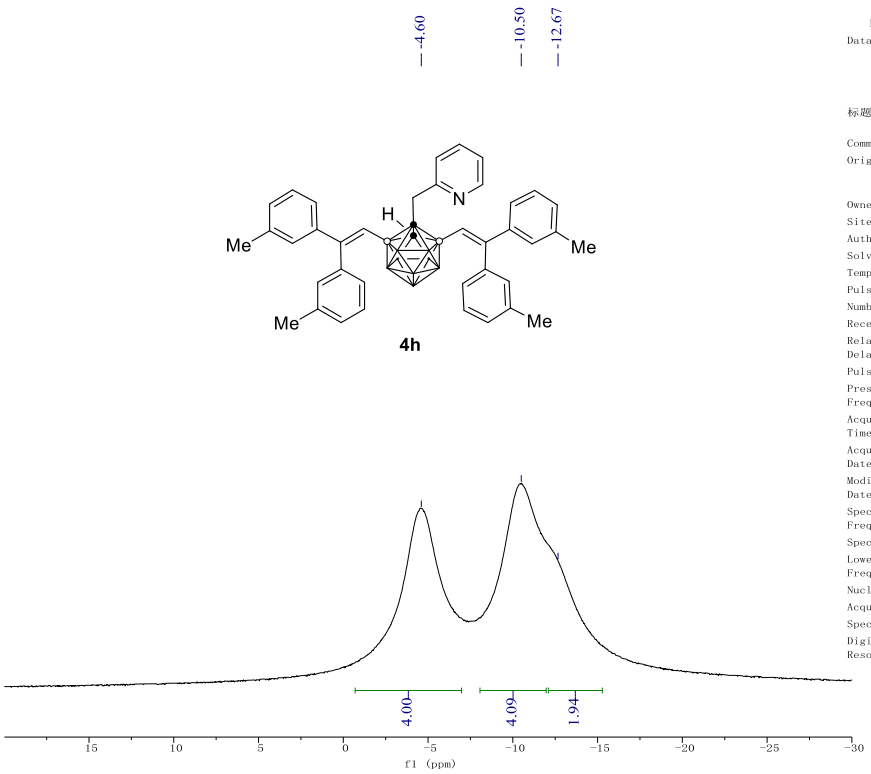
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 18-58/ crf-18-58-C-3.fid/ fid
标题	crf-18-58-C-3
Comment	



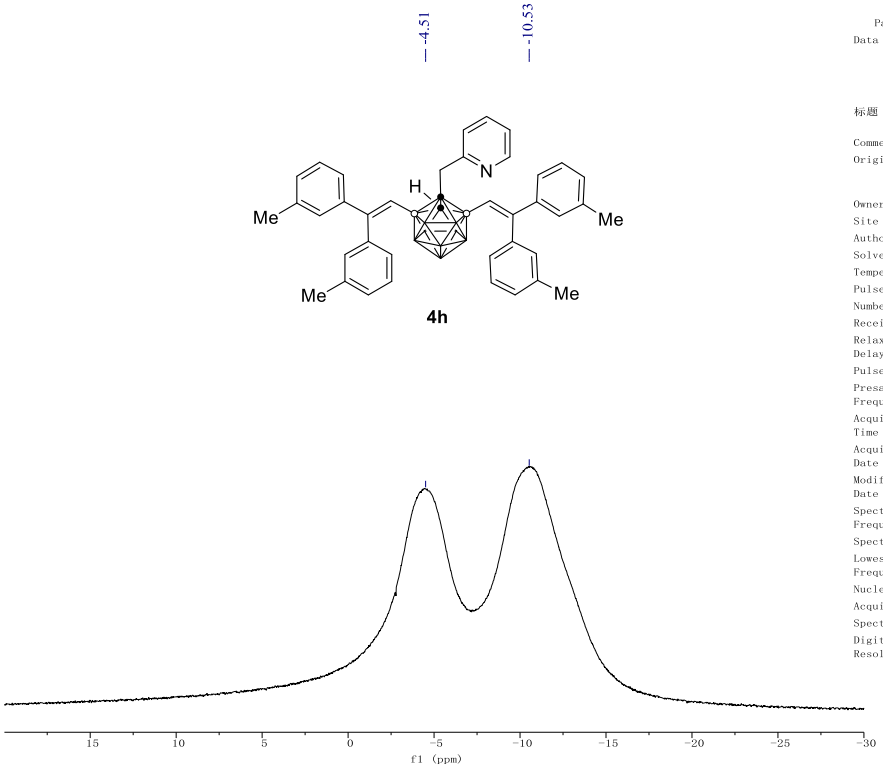
4h

Origin	Varian
Owner	
Site	
Author	
Solvent	cdcl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	136
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	4.9500
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-01-06T16:41:15
Modification Date	2019-01-06T08:46:00
Spectrometer Frequency	100.52
Spectral Width	25000.0
Lowest Frequency	-1435.9
Nucleus	13C
Acquired Size	32500
Spectral Size	65536
Digital Resolution	0.38

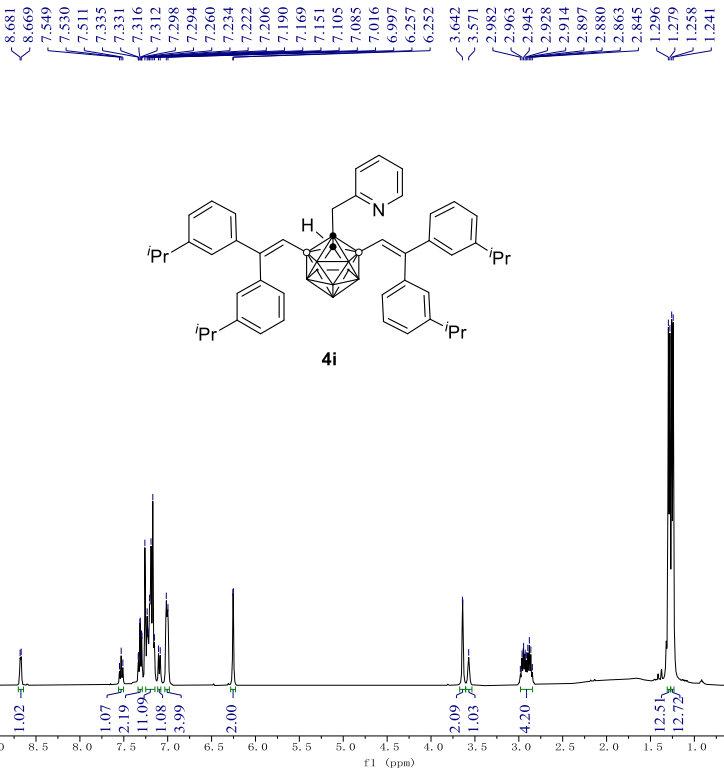




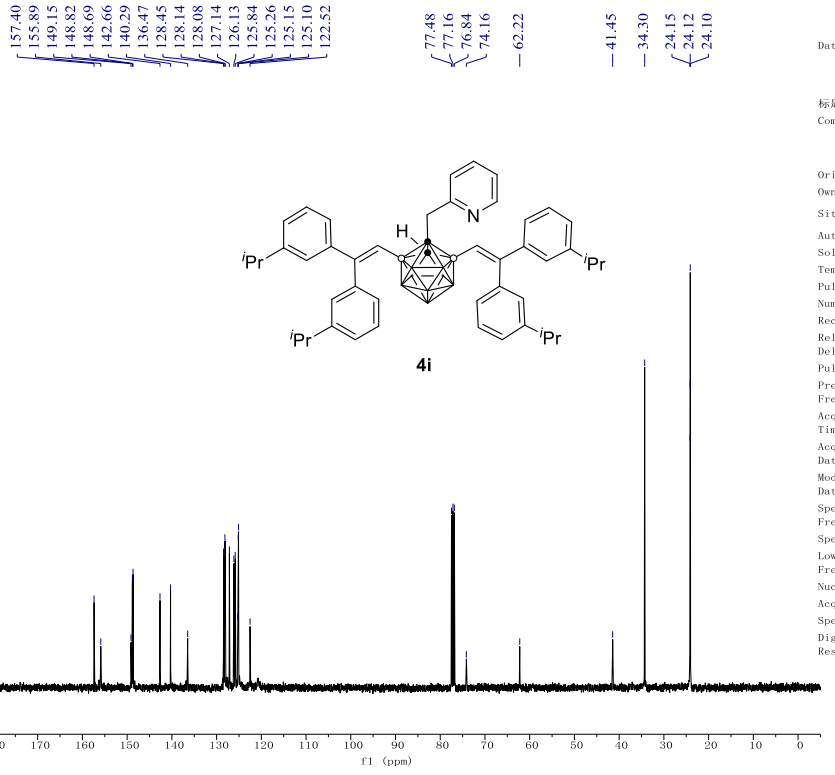
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 18-58/ 2013156b-crf-18-58/ 2013156b-crf-18-58-decouple/ 1/ fid
标题	2013156b-crf-18-58-decouple.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	500
Receiver Gain	181.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-01-07T18:31:24
Modification Date	2019-01-07T11:43:17
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19587.6
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



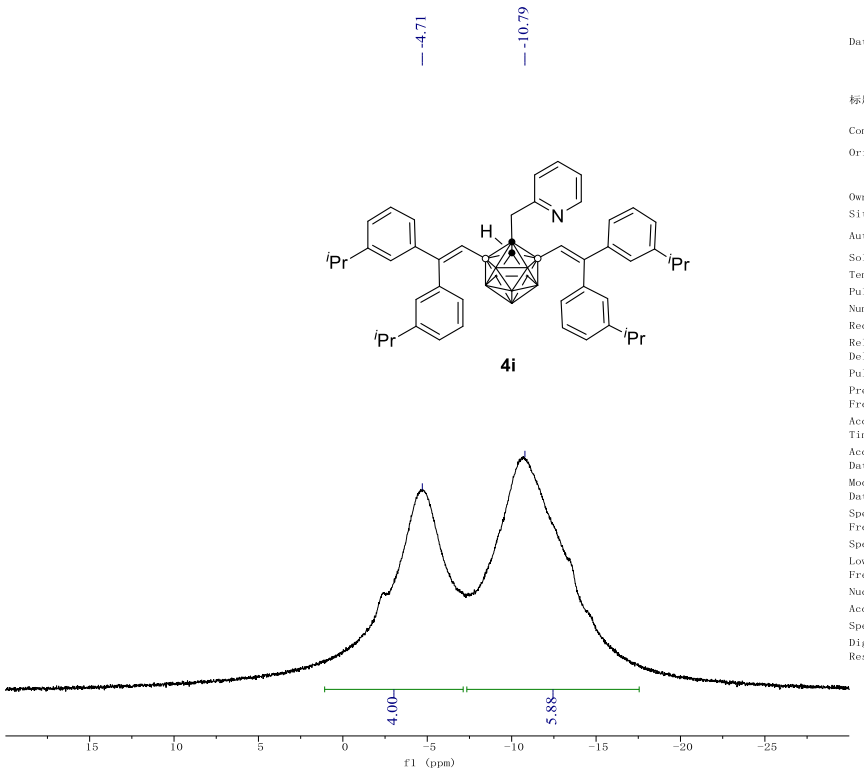
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 18-58/ 2013156b-crf-18-58/ 2013156b-crf-18-58-coupling/ 1/ fid
标题	2013156b-crf-18-58-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	433
Receiver Gain	181.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-01-07T18:38:35
Modification Date	2019-01-07T11:43:15
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19587.6
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



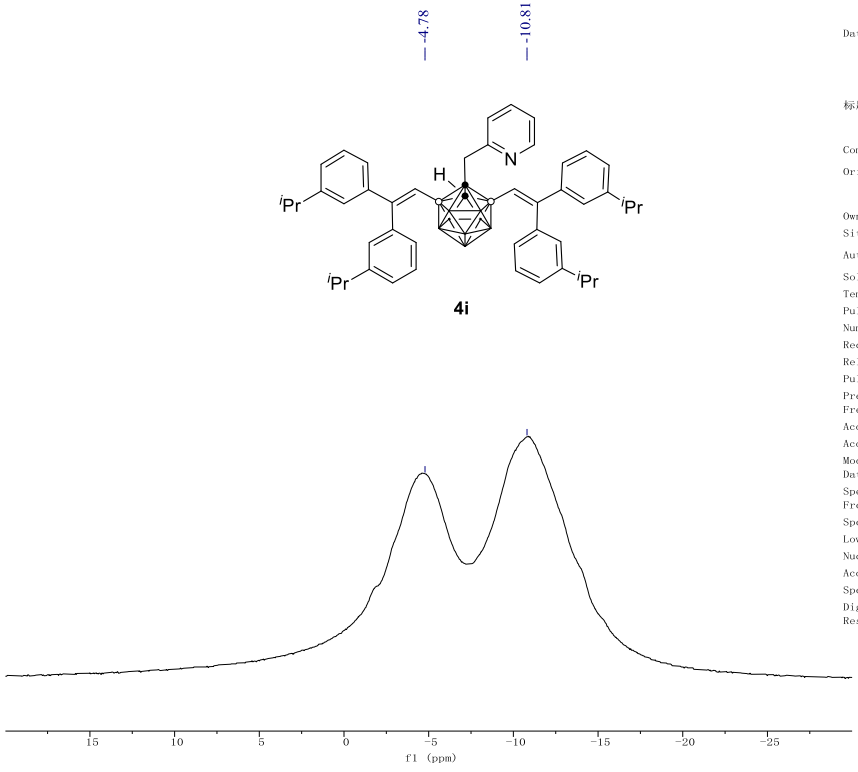
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-20-2 wenti m-ipr/ zhf-m-ipr-H/ 1/ fid
标题	zhf-m-ipr-H.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.7
Pulse Sequence	zg30
Number of Scans	6
Receiver Gain	35.7
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-03-23T20:28:18
Modification Date	2021-03-23T20:28:19
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.6
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07



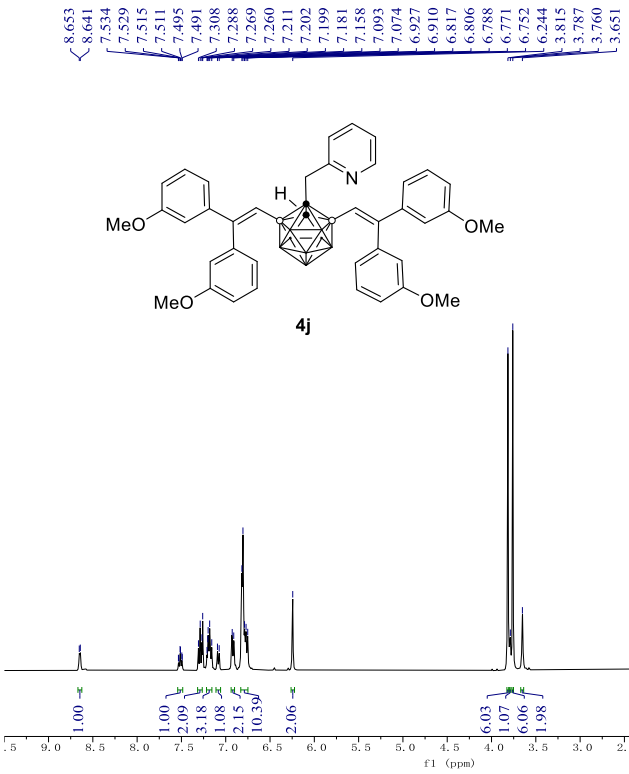
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-20-2 wenti m-ipr/ crf-20-20-2-C3.fid/ fid
标题	crf-20-20-2-C3
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	80
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-05-11T14:01:38
Modification Date	2019-05-11T06:04:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1684.4
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37



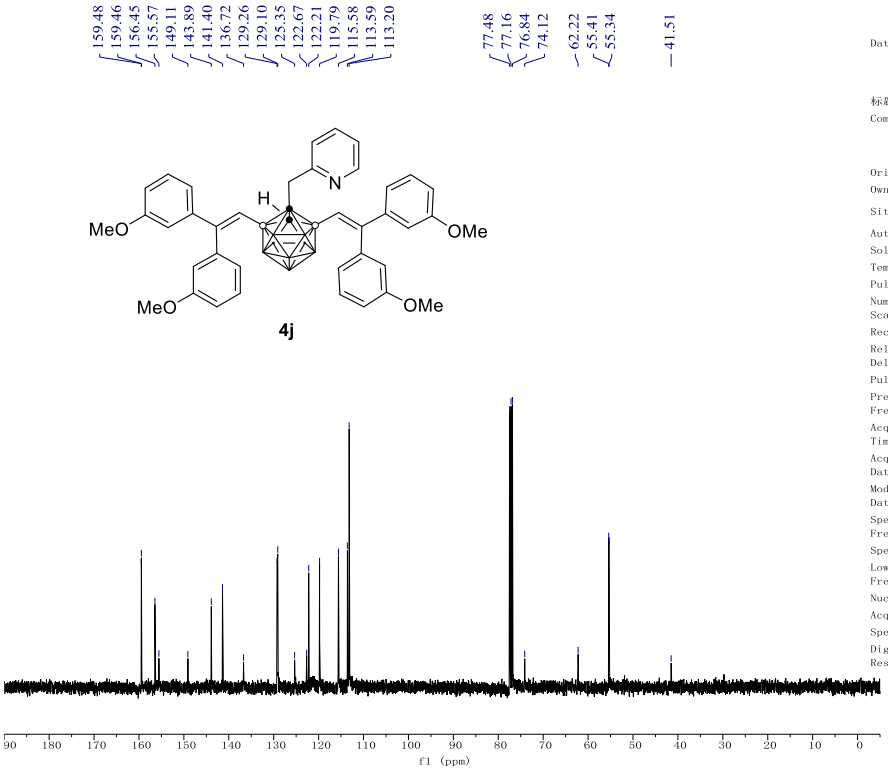
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-20-2 wenti m-ipr/ 2013156b-crf-20-20-2/ 1/ fid
标题	2013156b-crf-20-20-2.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	181.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-13T21:52:41
Modification Date	2019-05-13T16:28:19
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19618.1
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



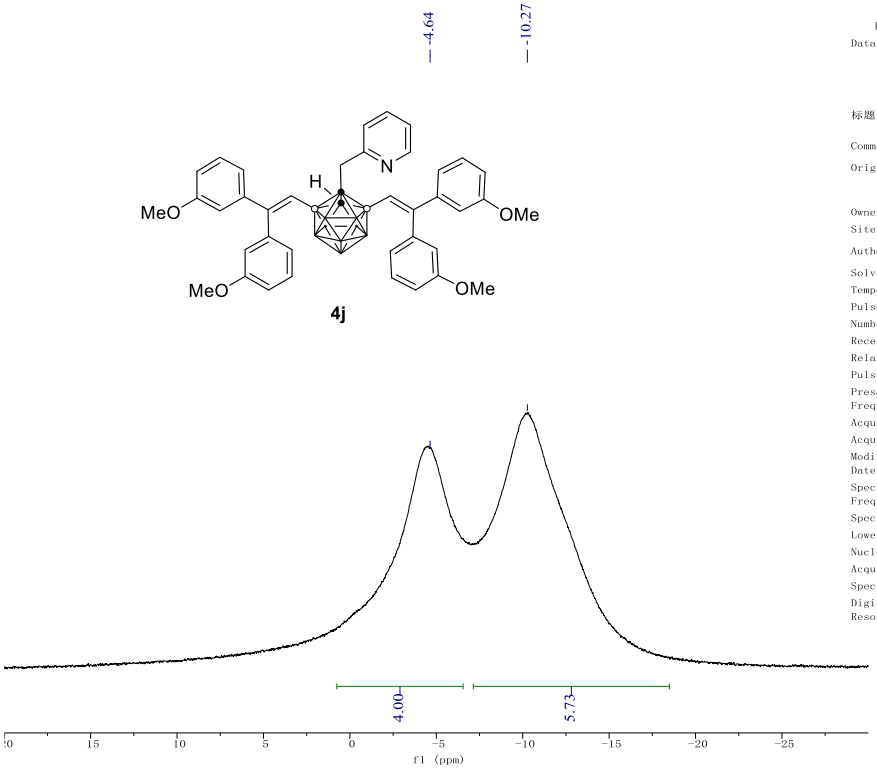
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-20-2 wenti m-ipr/ 2013156b-crf-20-20-2coupling/ 1/ fid
标题	2013156b-crf-20-20-2coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	181.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-13T21:54:25
Modification Date	2019-05-13T16:28:15
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19618.1
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



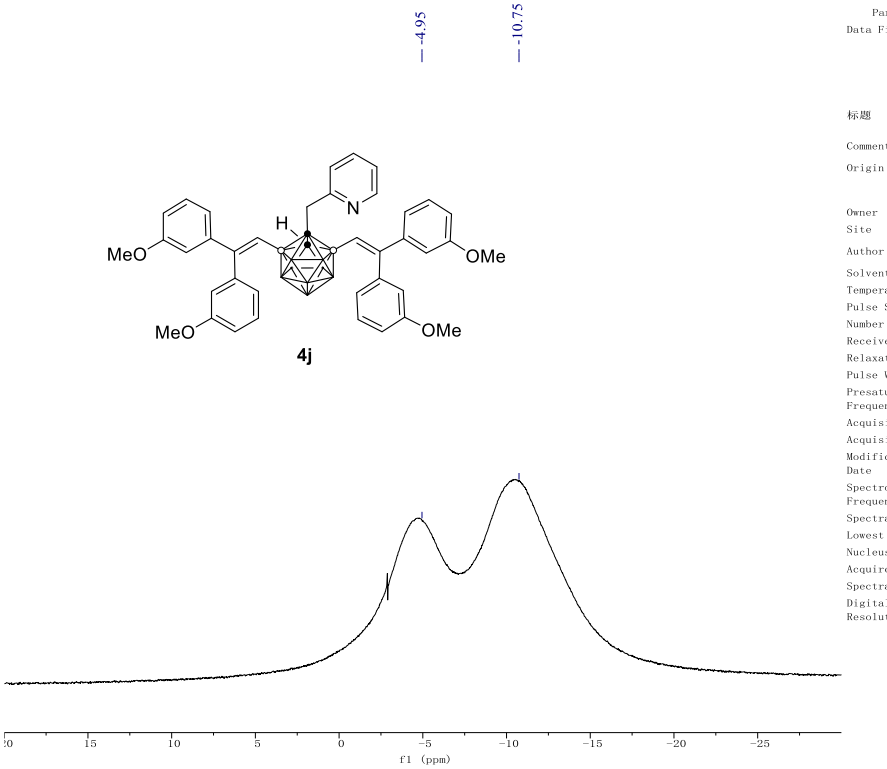
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ zhf-m-ome-p.fid/ fid
标题	zhf-m-ome-p
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	36
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-23T16:57:25
Modification Date	2021-03-23T08:57:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-794.1
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11



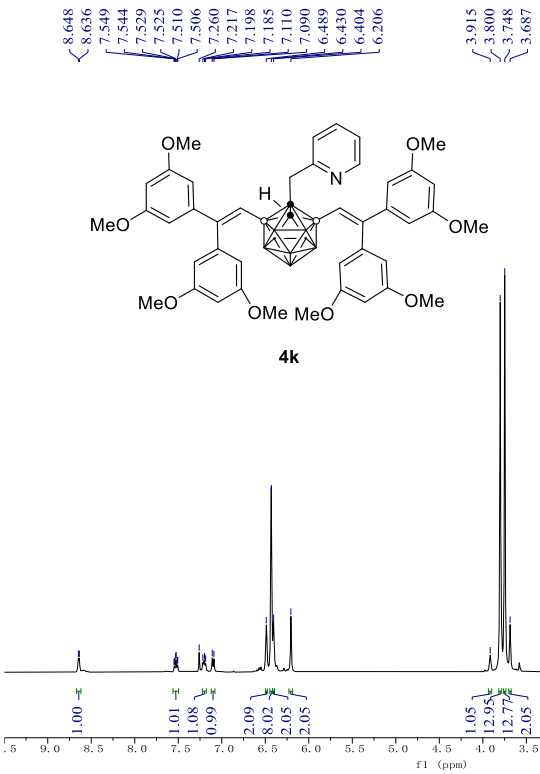
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-2 wenti/ crf-20-14-2-Cl.fid/ fid
标题	crf-20-14-2-Cl
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	20
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-05-13T15:07:31
Modification Date	2019-05-13T07:08:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1689.4
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37



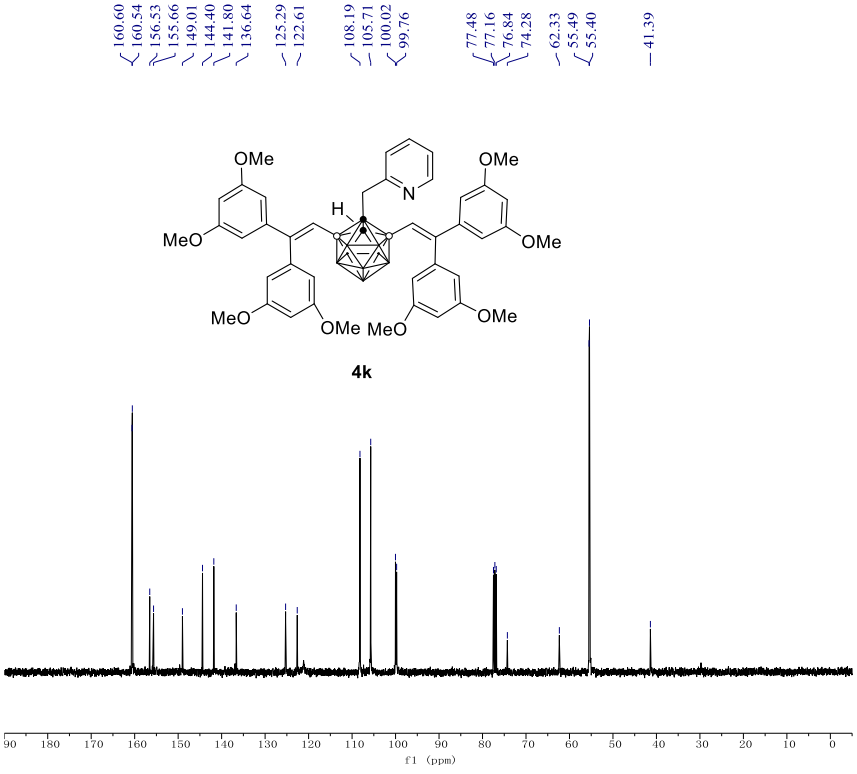
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-2 wenti-m-OMe/ 2013156b-crf-20-14-2-coupling/ 2013156b-crf-20-14-2/ 1/ fid
标题	2013156b-crf-20-14-2.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	86
Receiver Gain	114.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-14T20:41:31
Modification Date	2019-05-14T13:57:42
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19601.7
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



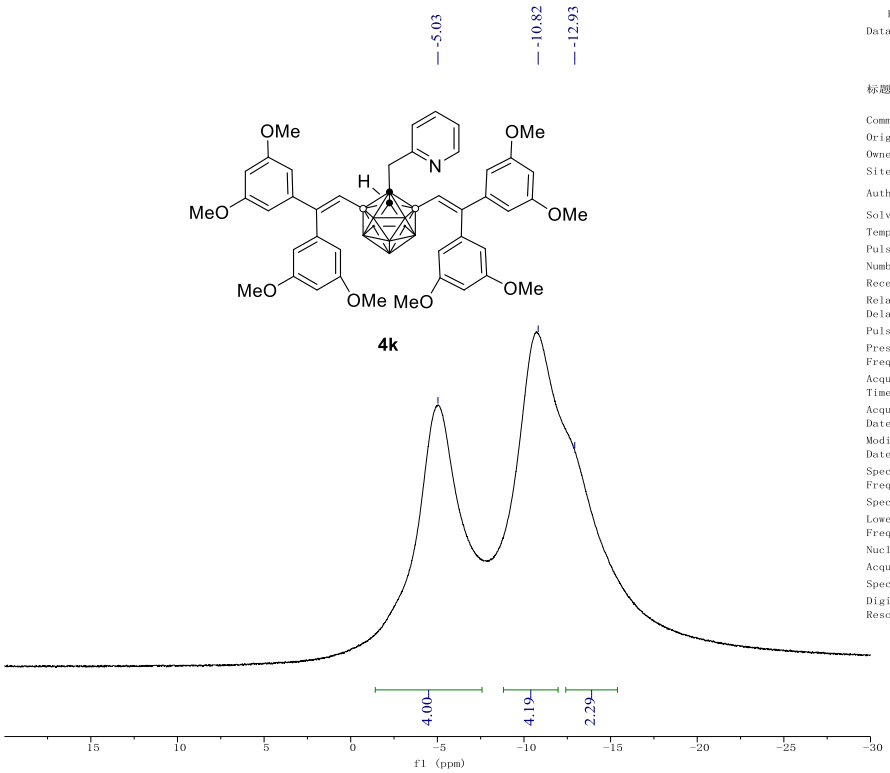
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-2 wenti-m-OMe/ 2013156b-crf-20-14-2-coupling/ 2013156b-crf-20-14-2-coupling/ 1/ fid
标题	2013156b-crf-20-14-2-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	107
Receiver Gain	114.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-14T20:40:18
Modification Date	2019-05-14T13:57:47
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19601.7
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



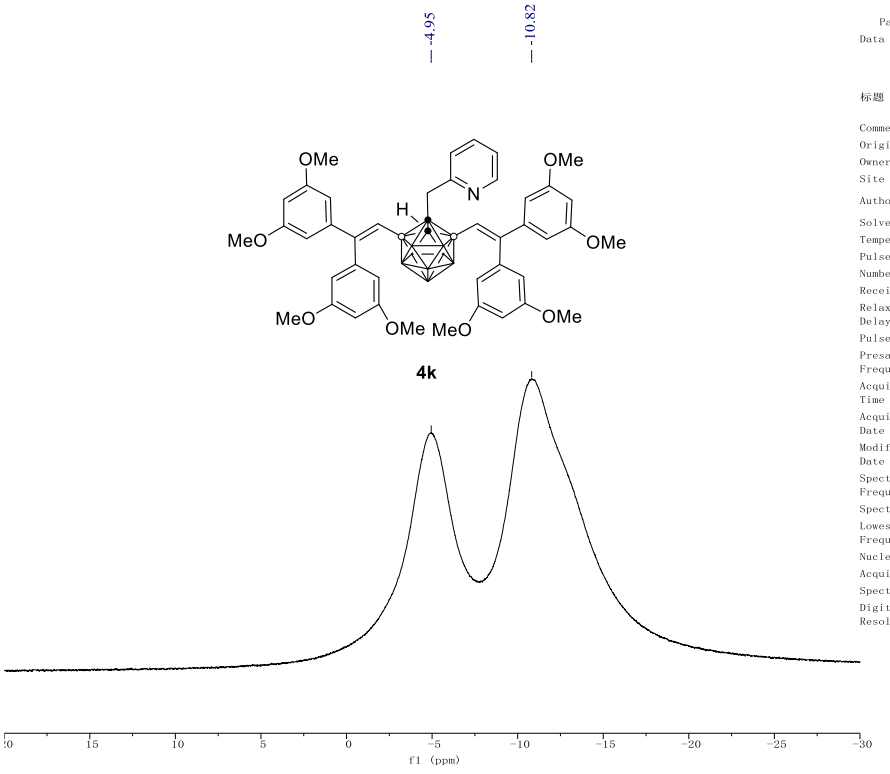
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 25-86-2 wenti 3,5-2OMe/ zhf-3-5-2ome-p.fid/ fid
标题	zhf-3-5-2ome-p
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	36
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-23T16:52:21
Modification Date	2021-03-23T08:53:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-793.6
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11



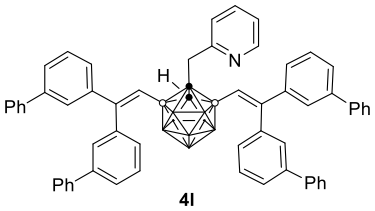
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 25-86-2 wenti 3,5-2OMe/ crf-25-86-2-CC.fid/ fid
标题	crf-25-86-2-CC
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	60
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2020-07-18T09:59:39
Modification Date	2020-07-18T02:02:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2227.7
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 25-86-2 wenti 3,5-20Me/ 2013156b-crf-86-2/ 1/ fid
标题	2013156b-crf-86-2.1.fid
Comment	decoupling
Origin	Bruker BioSpin GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	294.7
Pulse Sequence	aring-b11
Number of Scans	64
Receiver Gain	101.0
Relaxation Delay	0.2000
Pulse Width	10.7000
Presaturation Frequency	
Acquisition Time	0.8520
Acquisition Date	2020-07-10T12:54:46
Modification Date	2020-07-10T12:54:47
Spectrometer Frequency	192.54
Spectral Width	38461.5
Lowest Frequency	-20984.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.59

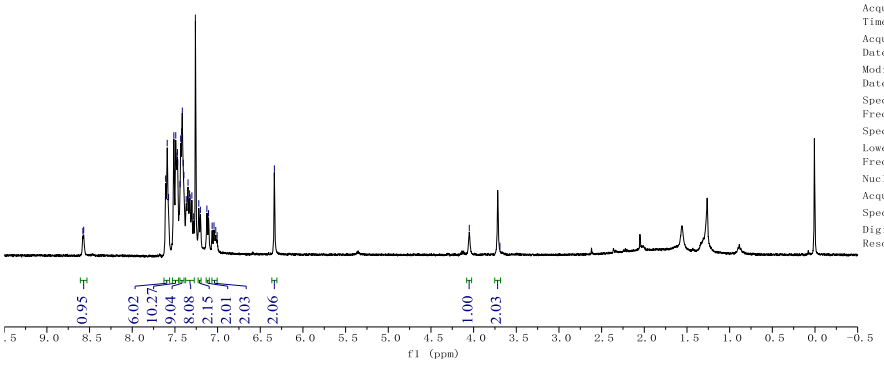


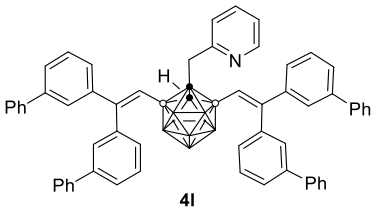
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 25-86-2 wenti 3,5-20Me/ 2013156b-crf-86-2/ 2/ fid
标题	2013156b-crf-86-2.2.fid
Comment	coupling
Origin	Bruker BioSpin GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	293.7
Pulse Sequence	aring
Number of Scans	64
Receiver Gain	101.0
Relaxation Delay	0.2000
Pulse Width	10.7000
Presaturation Frequency	
Acquisition Time	0.8520
Acquisition Date	2020-07-10T12:56:44
Modification Date	2020-07-10T12:56:44
Spectrometer Frequency	192.55
Spectral Width	38461.5
Lowest Frequency	-19255.5
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.59



4l

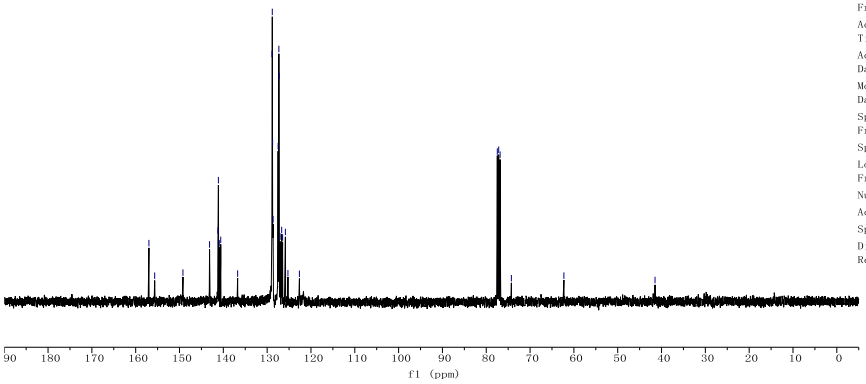
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-15-1 wenti m-Ph/ zhf-m-Ph.fid/ fid
标题	zhf-m-Ph
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-26T09:08:07
Modification Date	2021-03-26T01:08:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-794.3
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11

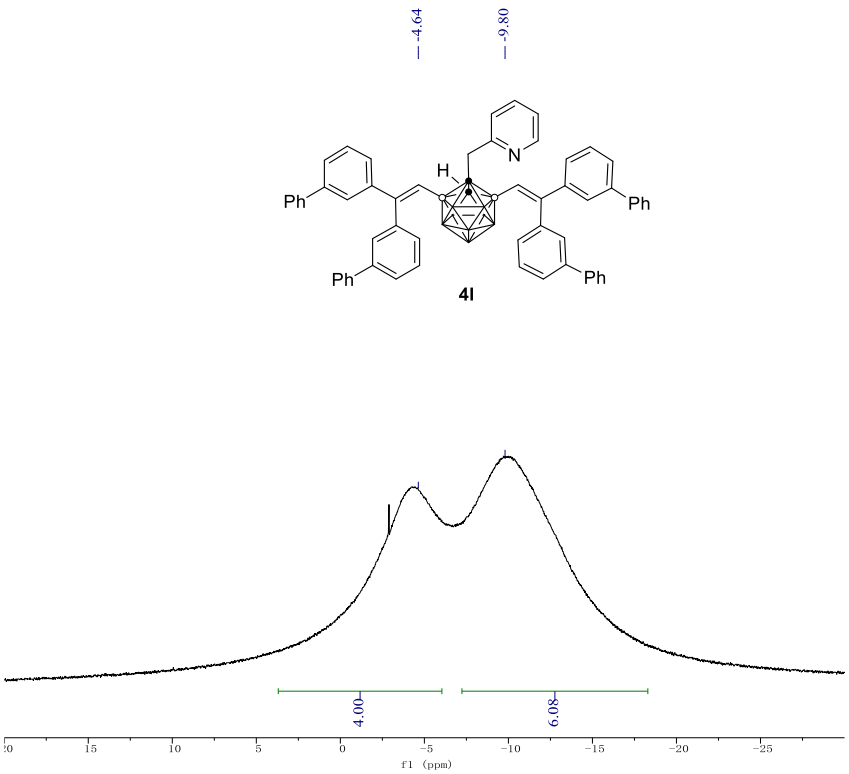




4l

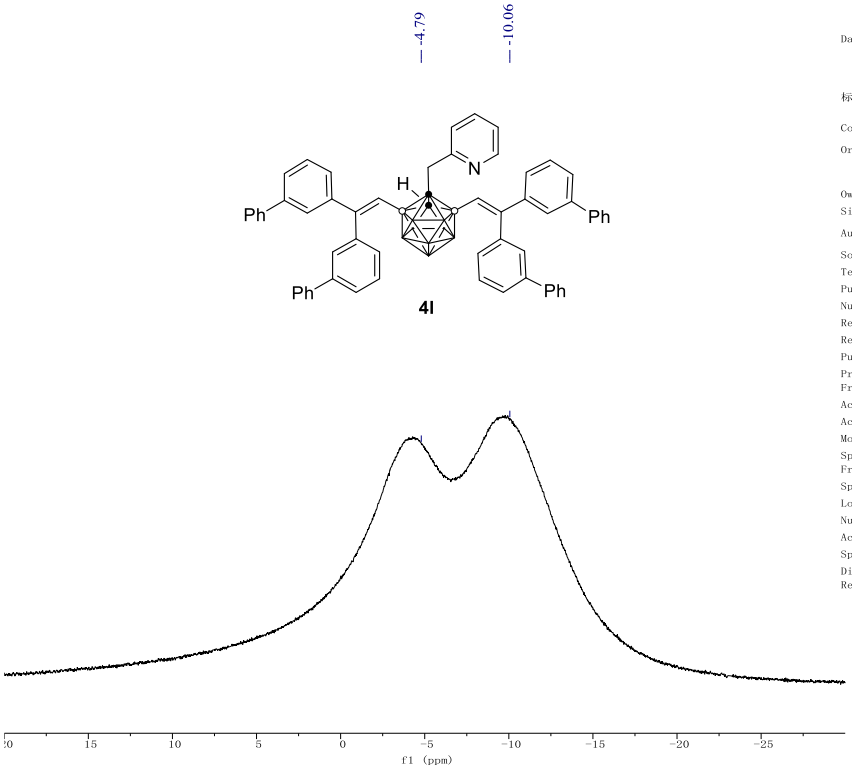
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-15-1 wenti m-Ph/ crf-20-15-1-C1.fid/ fid
标题	crf-20-15-1-C1
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	20
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-05-13T15:00:54
Modification Date	2019-05-13T07:01:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1695.9
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37





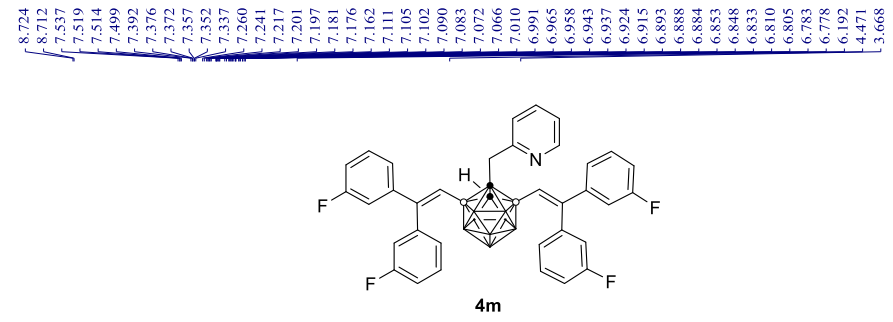
4l

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-15-1 wenti m-Ph/ 2013156b-crf-20-15-1/ 1/ fid
标题	2013156b-crf-20-15-1.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	117
Receiver Gain	114.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-14T20:36:19
Modification Date	2019-05-14T13:57:56
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19601.7
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



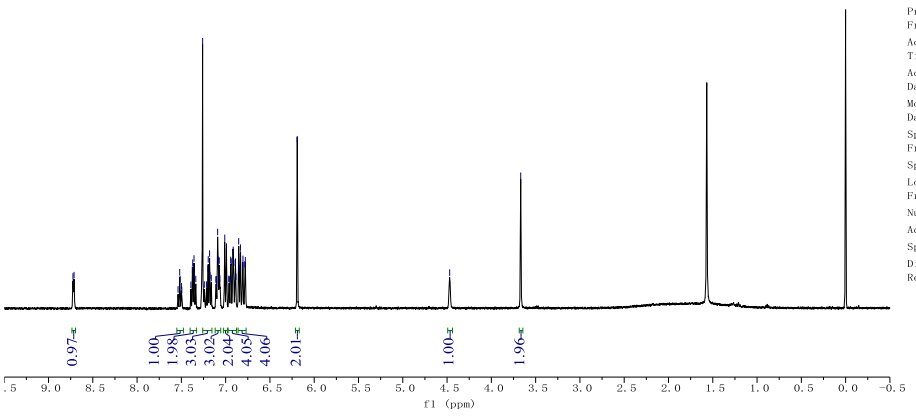
4l

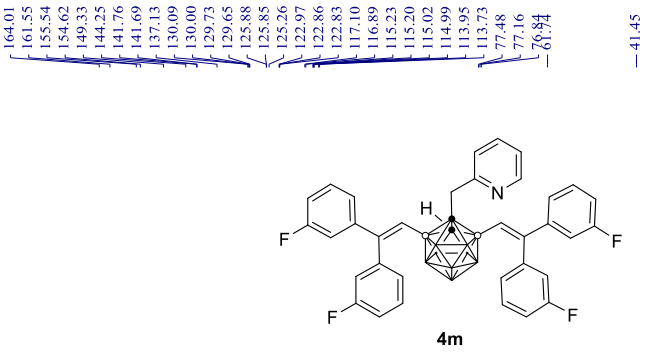
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-15-1 wenti m-Ph/ 2013156b-crf-20-15-1-coupling/ 1/ fid
标题	2013156b-crf-20-15-1-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	132
Receiver Gain	114.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-14T20:37:34
Modification Date	2019-05-14T13:57:51
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19601.7
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



4m

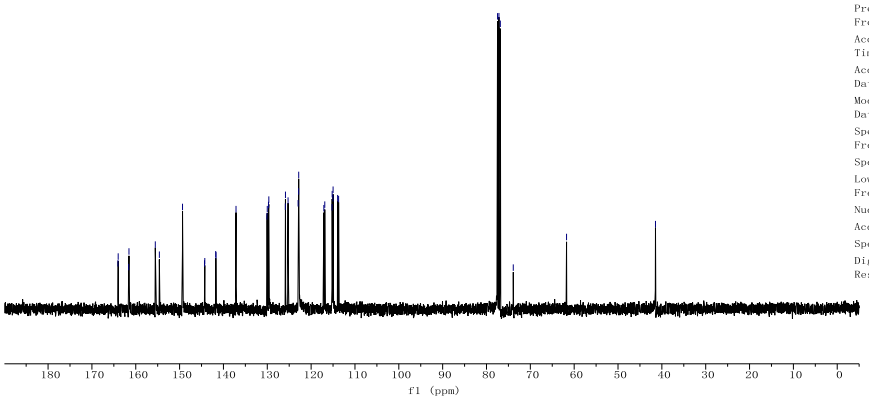
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-3/ crf-3H.fid/ fid
标题	crf-3H
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	54
Relaxation Delay	1.0000
Pulse Width	4.4500
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-04-25T10:15:09
Modification Date	2019-04-25T02:16:00
Spectrometer Frequency	399.72
Spectral Width	7575.8
Lowest Frequency	-1188.6
Nucleus	1H
Acquired Size	22727
Spectral Size	65536
Digital Resolution	0.12

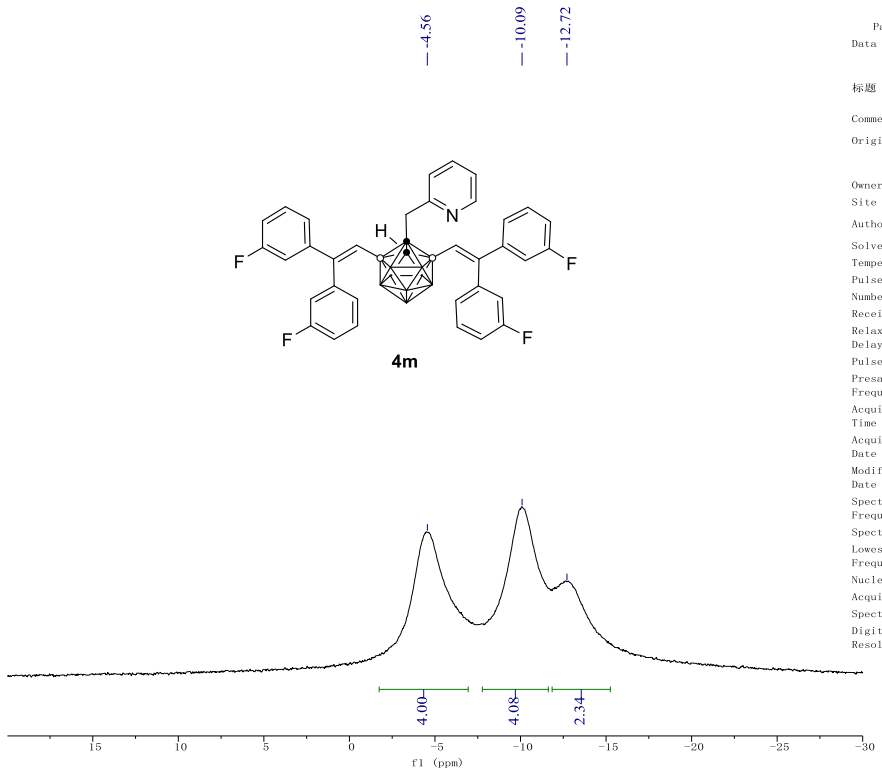




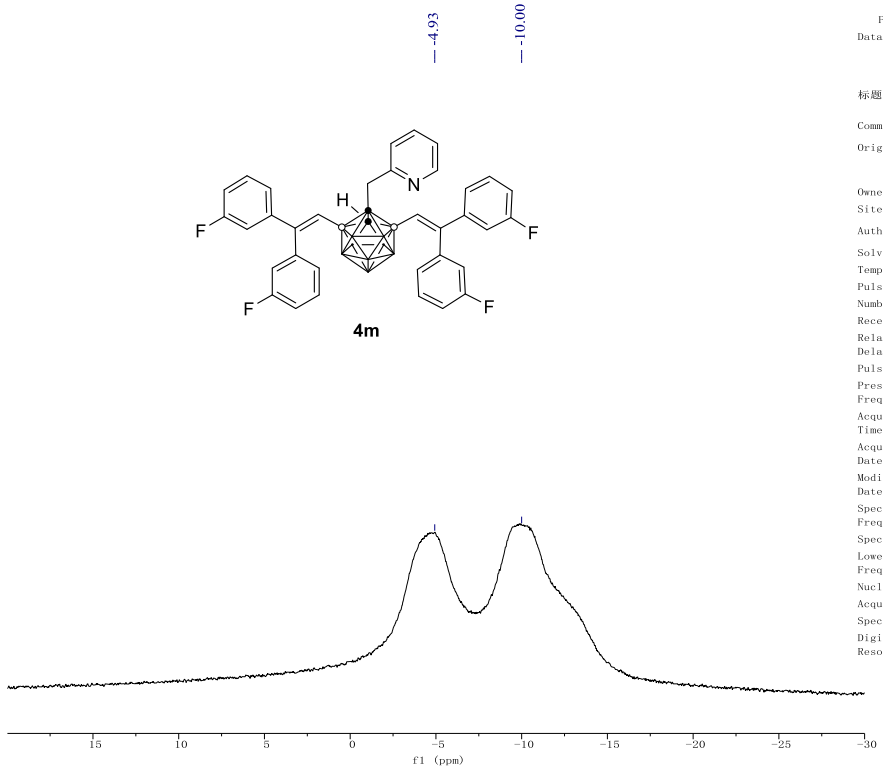
4m

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-3/ crf-19-105-3-C-2.fid/ fid
标题	crf-19-105-3-C-2
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	168
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-04-25T08:20:37
Modification Date	2019-04-25T00:27:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1678.0
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37

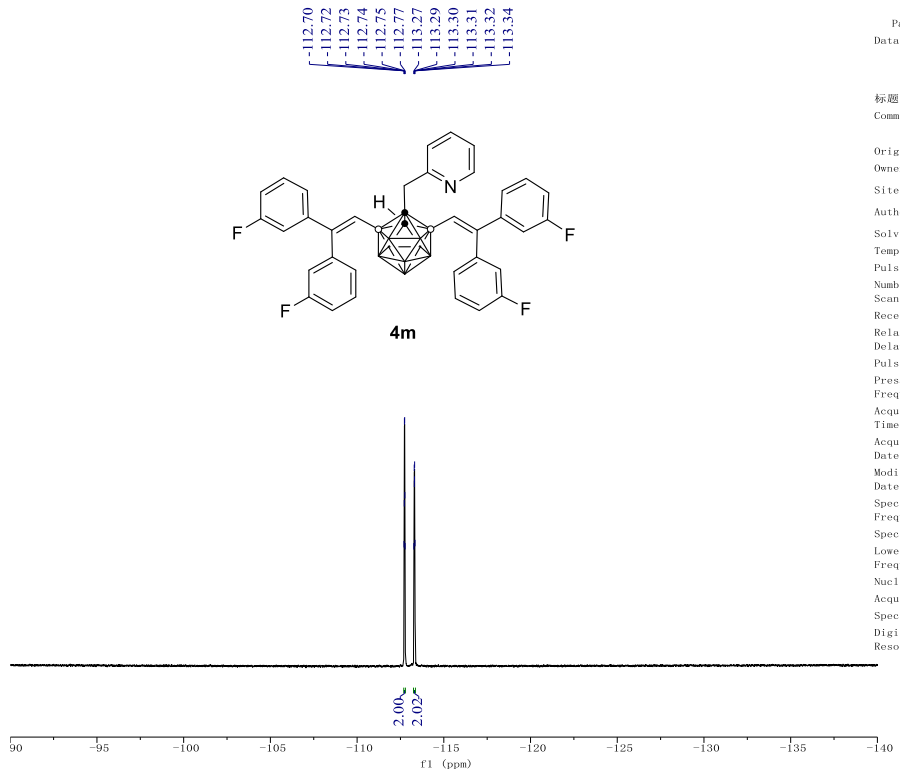




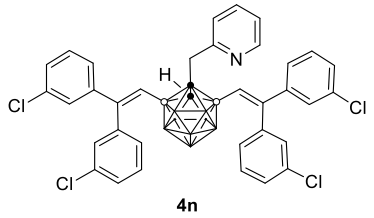
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-3/ b-crf-19-105-3/ fid
标题	19-105-3/ b-crf-19-105-3
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-25T20:31:41
Modification Date	2019-04-25T14:31:00
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19598.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-3/ b-crf-19-105-3-coupling/ fid
标题	19-105-3/ b-crf-19-105-3-coupling
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-04-25T20:29:23
Modification Date	2019-04-25T14:30:00
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19598.2
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17

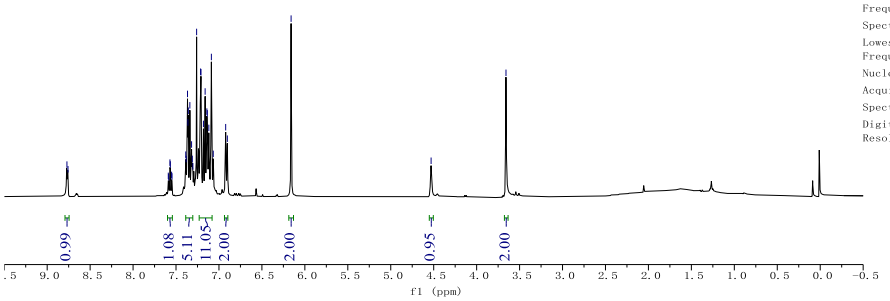


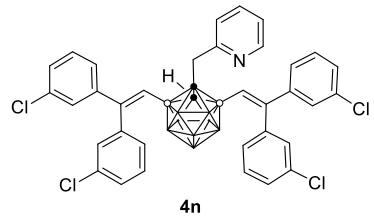
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 19-105-3/ crf-19-105-3-F.fid/ fid
标题	crf-19-105-3-F
Comment	Std Fluorine
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	8
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	6.0667
Presaturation Frequency	
Acquisition Time	1.0000
Acquisition Date	2019-04-25T08:27:29
Modification Date	2019-04-25T00:28:00
Spectrometer Frequency	376.37
Spectral Width	156250.0
Lowest Frequency	-115765.3
Nucleus	19F
Acquired Size	156250
Spectral Size	524288
Digital Resolution	0.30



4n

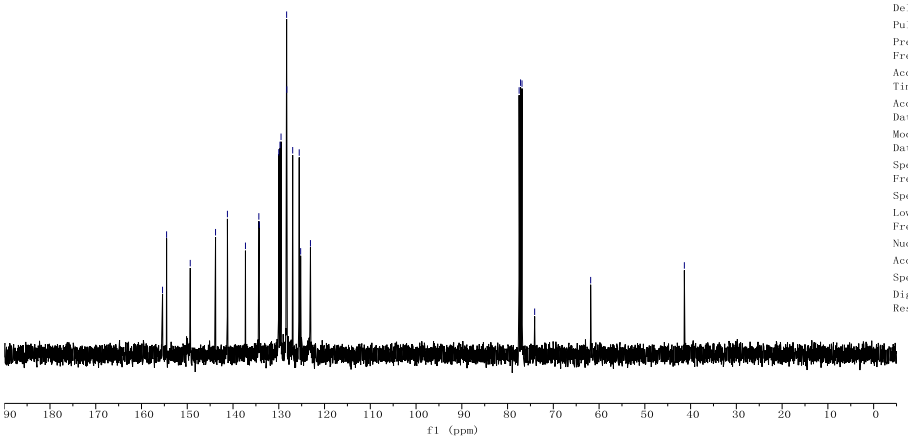
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ m-Cl-二苯乙炔/ zhf-m-Cl-H-22/ 1/ fid
标题	zhf-m-Cl-H-22.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.0
Pulse Sequence	zg30
Number of Scans	11
Receiver Gain	63.0
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-04-06T21:48:03
Modification Date	2021-04-06T21:48:03
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.5
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07

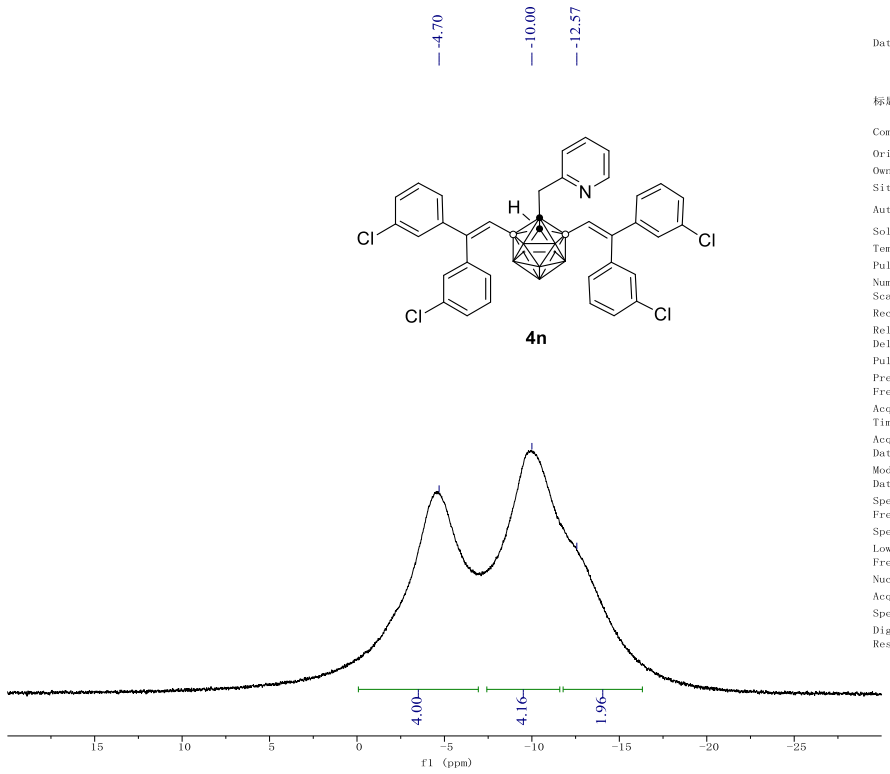




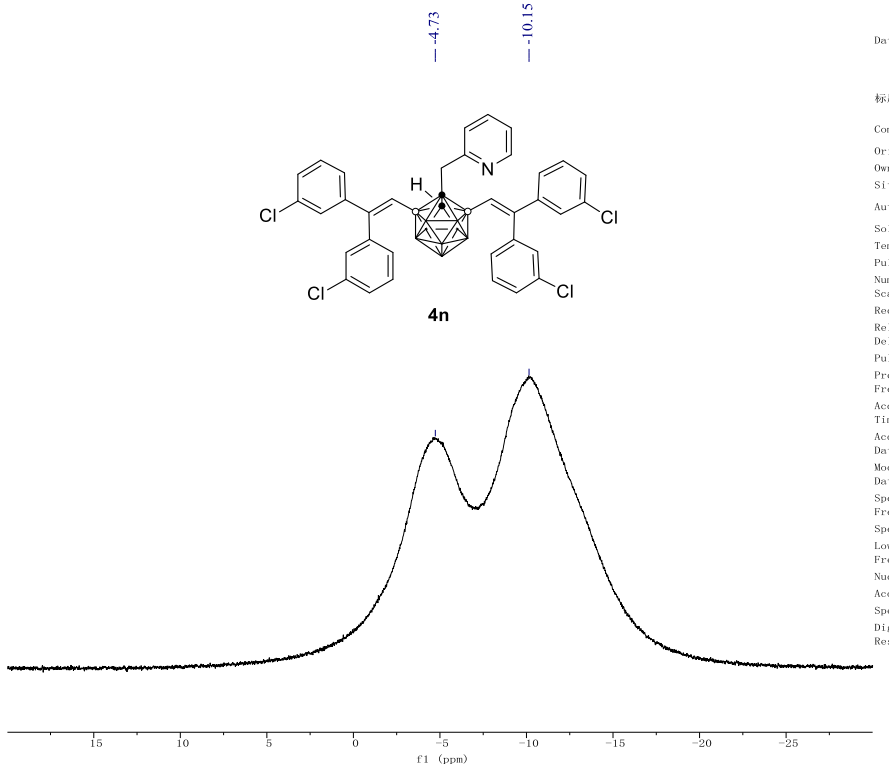
4n

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ m-Cl-二苯乙炔/ zhf-m-cl-c/ 1/ fid
标题	zhf-m-cl-c.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.1
Pulse Sequence	zgpg30
Number of Scans	18
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2021-03-29T20:07:59
Modification Date	2021-03-29T20:07:59
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5275.3
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27

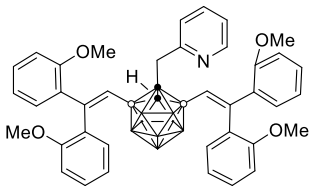




Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ m-Cl-二苯乙炔/ zhf-m-cl-decouple/ 1/ fid
标题	zhf-m-cl-decouple. 1. fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	aring-b11
Number of Scans	8
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-29T20:13:37
Modification Date	2021-03-29T20:13:38
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

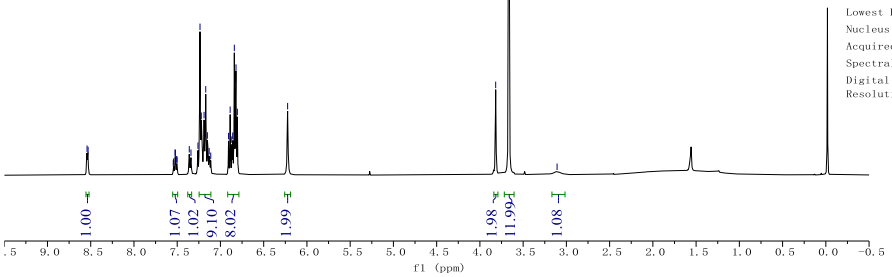


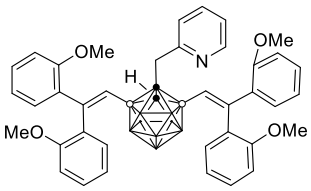
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ m-Cl-二苯乙炔/ zhf-m-cl-couple/ 1/ fid
标题	zhf-m-cl-couple. 1. fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	aring
Number of Scans	9
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-29T20:10:48
Modification Date	2021-03-29T20:10:49
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



4o

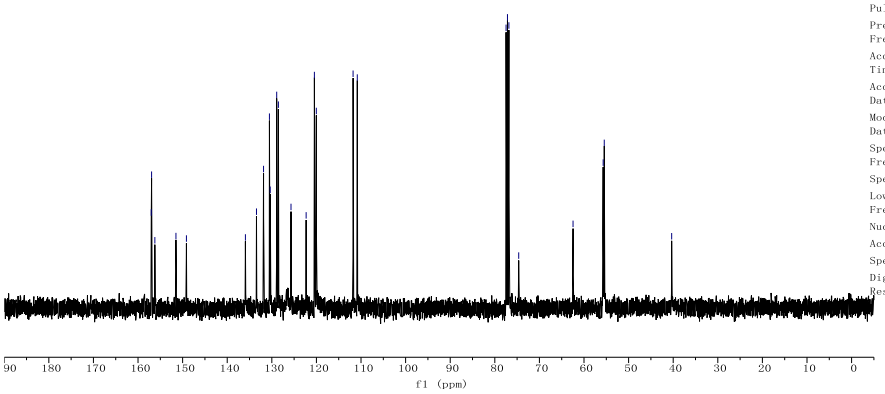
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-1 wenti-o-OMe/ crf-20-14-1-CDCl3-0511.fid/ fid
标题	crf-20-14-1-CDCl3-0511
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omcl
Solvent	CDCl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	24
Receiver Gain	38
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2019-05-11T13:52:58
Modification Date	2019-05-11T05:55:00
Spectrometer Frequency	400.03
Spectral Width	8445.9
Lowest Frequency	-2024.9
Nucleus	1H
Acquired Size	25338
Spectral Size	65536
Digital Resolution	0.13

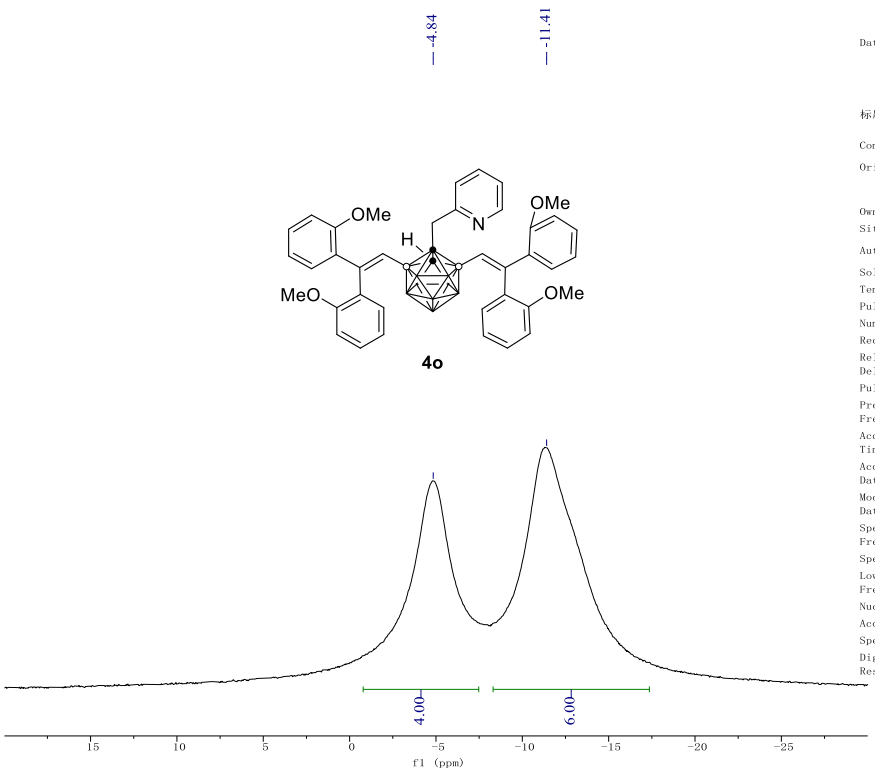




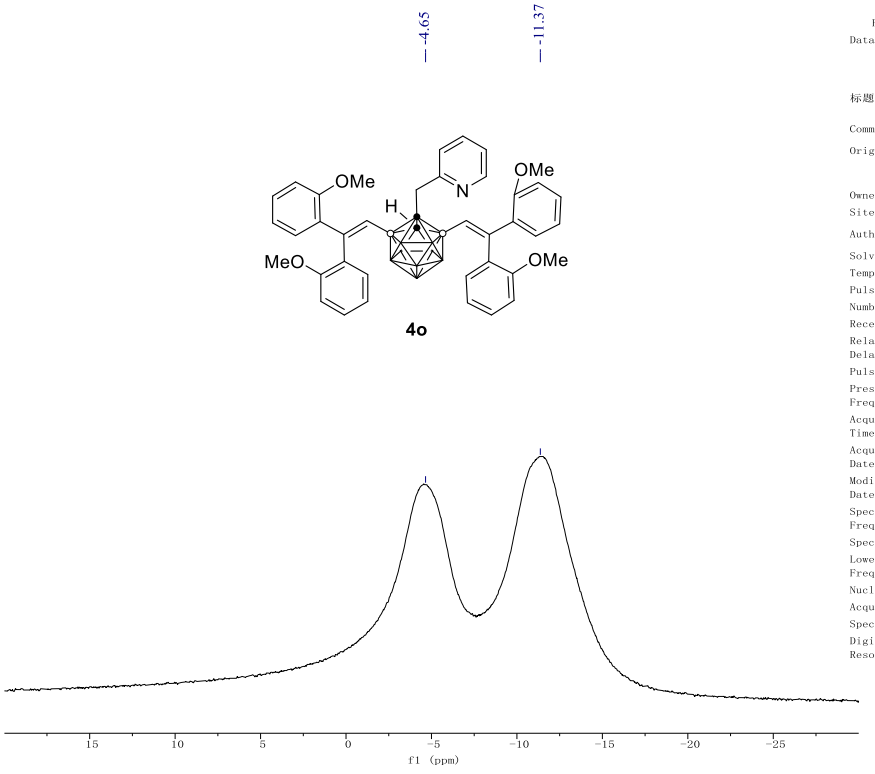
4o

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-1 wenti-o-OMe/ crf-20-14-1-C3.fid/ fid
标题	crf-20-14-1-C3
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omcl
Solvent	cdcl3
Temperature	20.0
Pulse Sequence	s2pul
Number of Scans	84
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2019-05-11T13:56:28
Modification Date	2019-05-11T05:59:00
Spectrometer Frequency	100.60
Spectral Width	24509.8
Lowest Frequency	-1682.0
Nucleus	13C
Acquired Size	31863
Spectral Size	65536
Digital Resolution	0.37

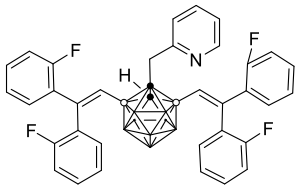




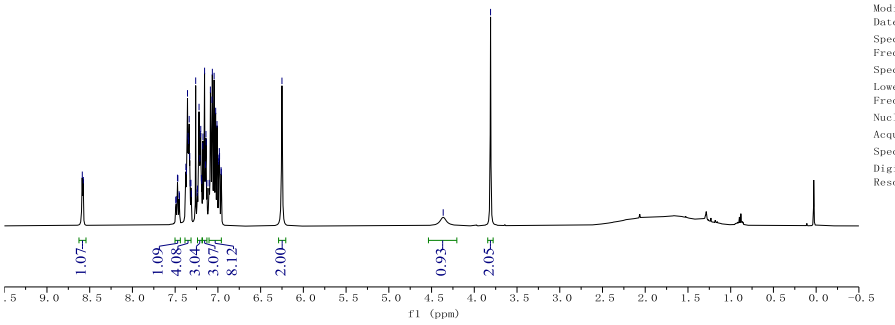
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-1 wenti-o-OMe/ 2013156b-crf-20-14-1/ 1/ fid
标题	2013156b-crf-20-14-1.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-13T22:03:22
Modification Date	2019-05-13T16:27:54
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19618.1
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17



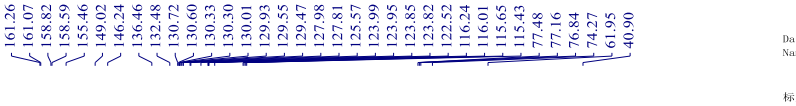
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-14-1 wenti-o-OMe/ 2013156b-crf-20-14-1-coupling/ 1/ fid
标题	2013156b-crf-20-14-1-coupling.1.fid
Comment	
Origin	UXNMR, Bruker Analytische Messtechnik GmbH
Owner	root
Site	
Author	
Solvent	CDCl3
Temperature	300.0
Pulse Sequence	aring.lgy
Number of Scans	128
Receiver Gain	256.0
Relaxation Delay	0.0000
Pulse Width	5.0000
Presaturation Frequency	
Acquisition Time	0.4260
Acquisition Date	2019-05-13T22:02:12
Modification Date	2019-05-13T16:27:59
Spectrometer Frequency	128.38
Spectral Width	38461.5
Lowest Frequency	-19618.1
Nucleus	11B
Acquired Size	16384
Spectral Size	32768
Digital Resolution	1.17

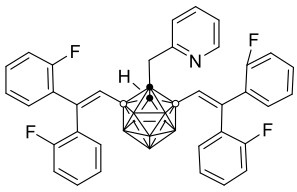


4p

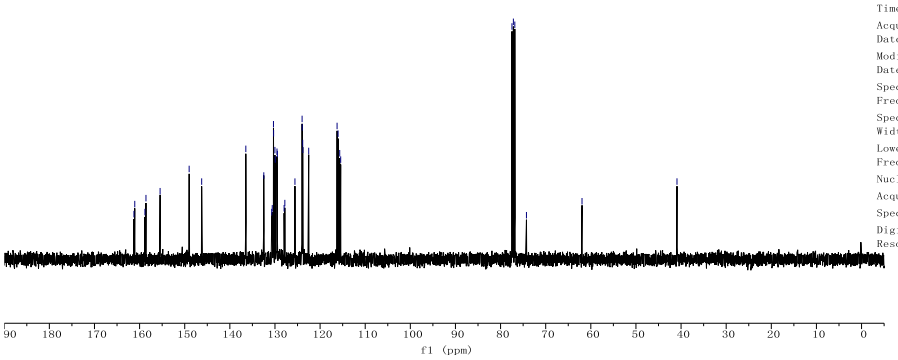


Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ o-F-二苯乙炔/ zhf-O-F-H-2/ 1/ fid
标题	zhf-O-F-H-2.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.0
Pulse Sequence	zg30
Number of Scans	15
Receiver Gain	50.8
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-04-06T21:44:10
Modification Date	2021-04-06T21:44:10
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.7
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07

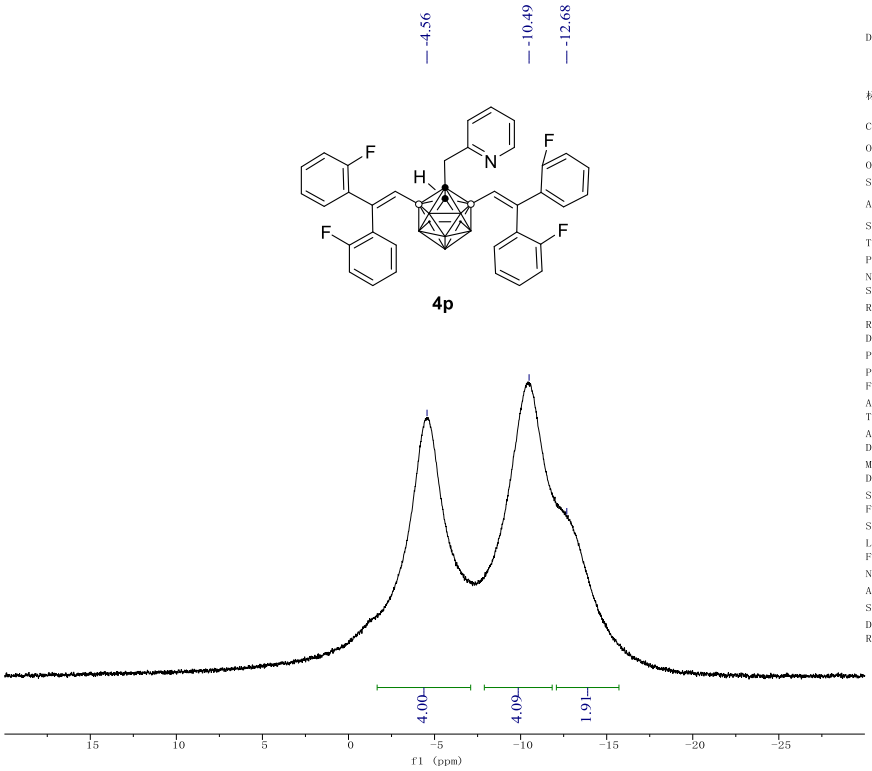




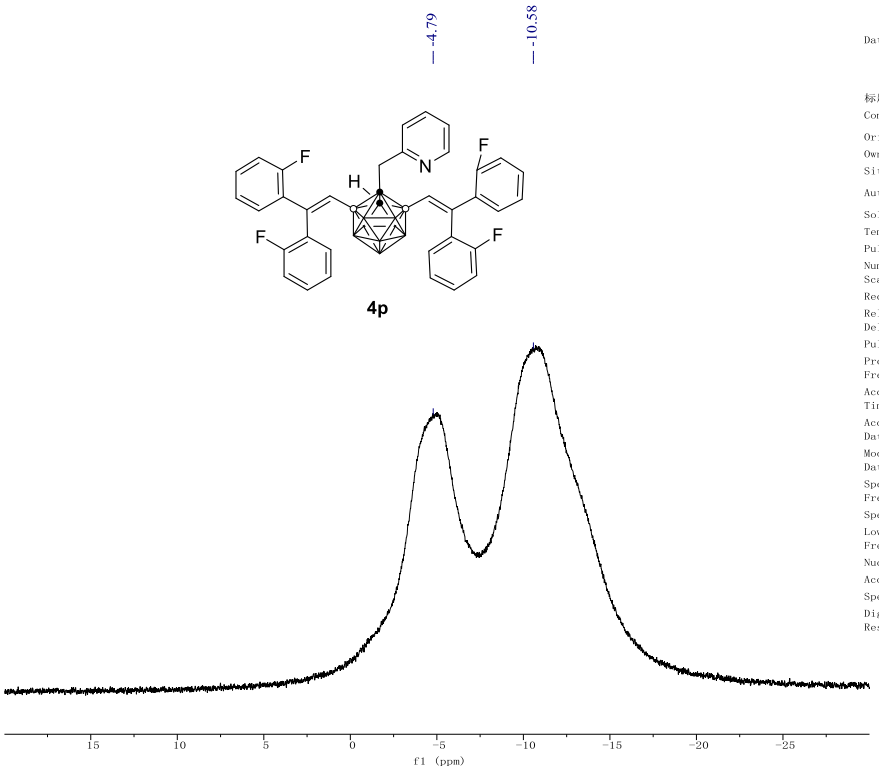
4p



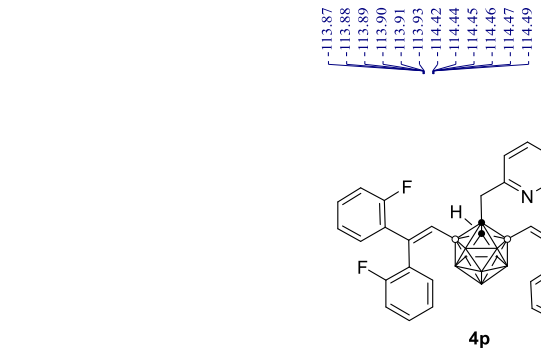
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ o-F-二苯乙炔/ zhf-o-F-C/ 1/ fid
标题	zhf-o-F-C.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.0
Pulse Sequence	zgpg30
Number of Scans	19
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2021-03-29T20:20:51
Modification Date	2021-03-29T20:20:52
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5273.4
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ o-F-二苯乙炔/ zhf-o-F-decouple/ 1/ fid
标题	zhf-o-F-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	aring-b11
Number of Scans	6
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-29T20:25:59
Modification Date	2021-03-29T20:26:00
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

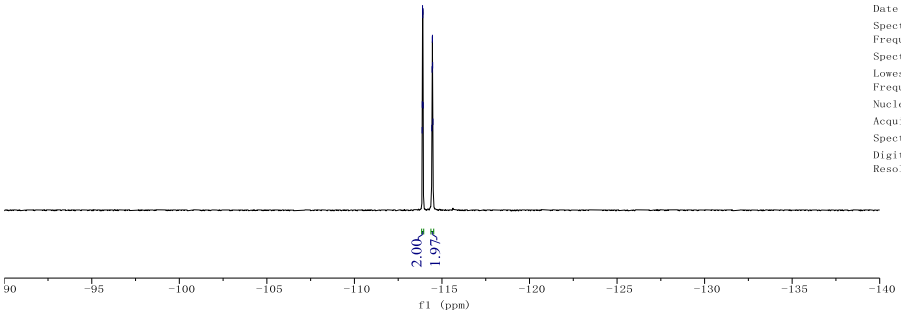


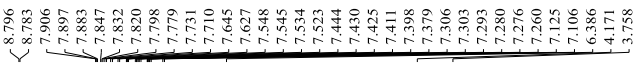
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ o-F-二苯乙炔/ zhf-o-F-couple/ 1/ fid
标题	zhf-o-F-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.8
Pulse Sequence	aring
Number of Scans	5
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-29T20:23:37
Modification Date	2021-03-29T20:23:38
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

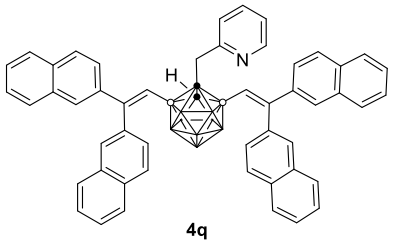


4p

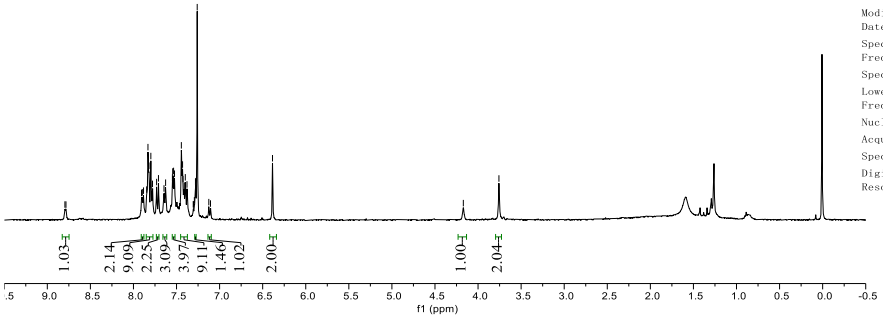
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ o-F-二苯乙炔/ zhf-o-F-F/ 1/ fid
标题	zhf-o-F-F.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.3
Pulse Sequence	zgflqn
Number of Scans	10
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	18.0000
Presaturation Frequency	
Acquisition Time	1.0000
Acquisition Date	2021-03-30T20:25:18
Modification Date	2021-03-30T20:25:18
Spectrometer Frequency	376.60
Spectral Width	300000.0
Lowest Frequency	-112343.6
Nucleus	19F
Acquired Size	299985
Spectral Size	524288
Digital Resolution	0.57



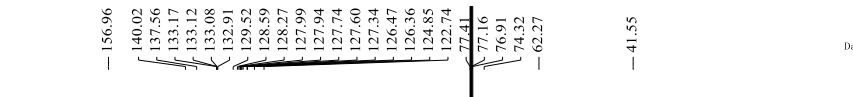


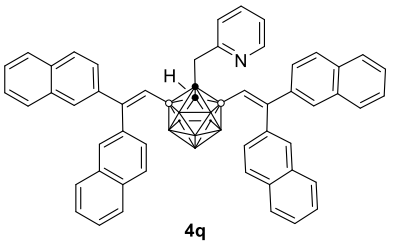


4q

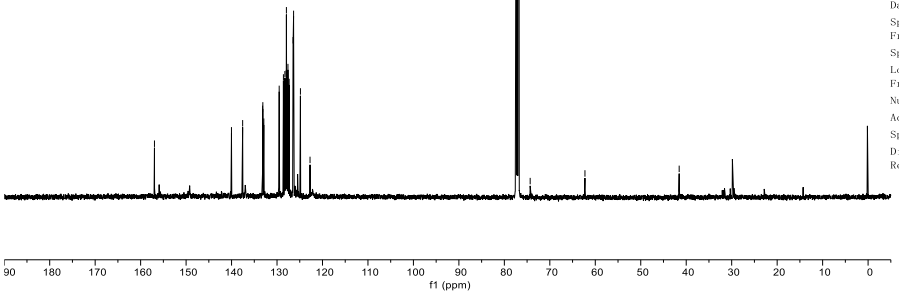


Parameter	值
Data File Name	D:/ nmr/ crf-20-28-1-0720.fid/ fid
标题	crf-20-28-1-0720
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	30
Relaxation Delay	3.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2020-07-20T10:37:56
Modification Date	2020-07-20T02:38:00
Spectrometer Frequency	400.03
Spectral Width	7622.0
Lowest Frequency	-1204.4
Nucleus	1H
Acquired Size	22866
Spectral Size	65536
Digital Resolution	0.12

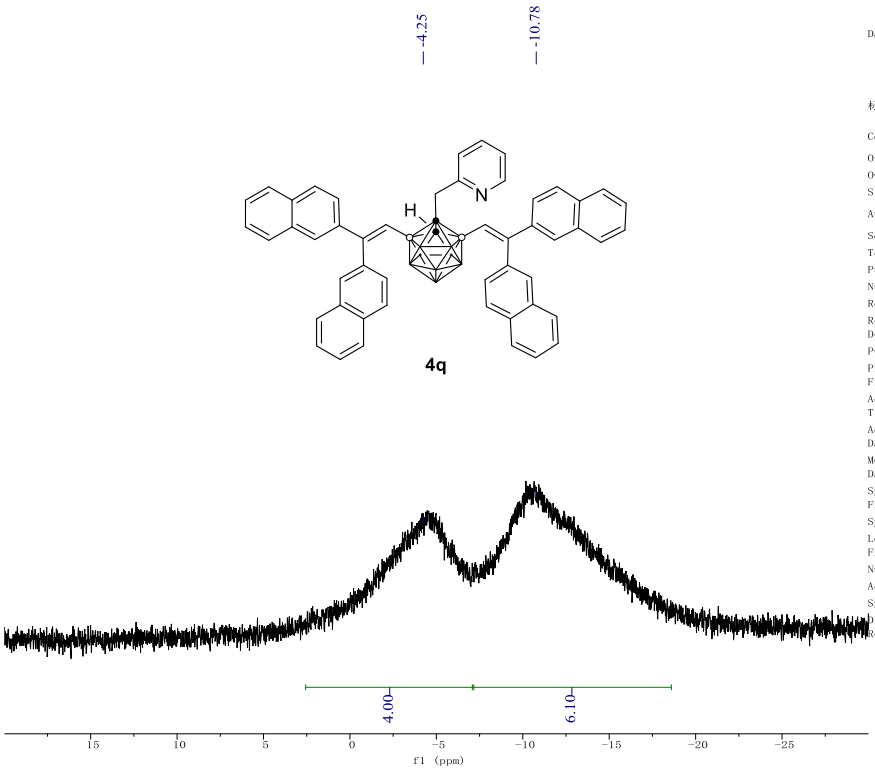




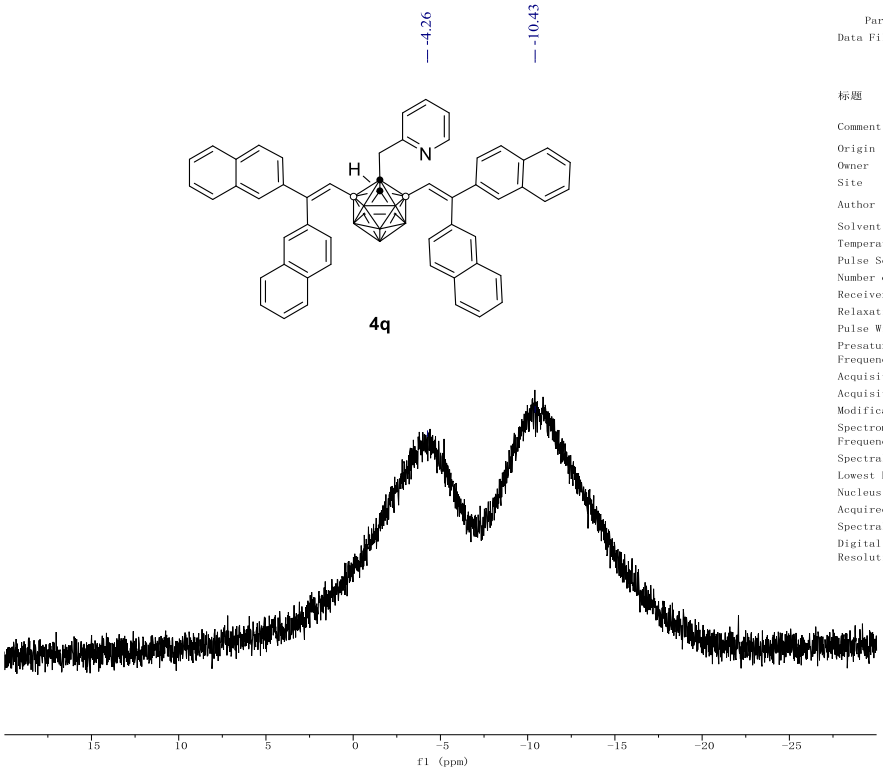
4q



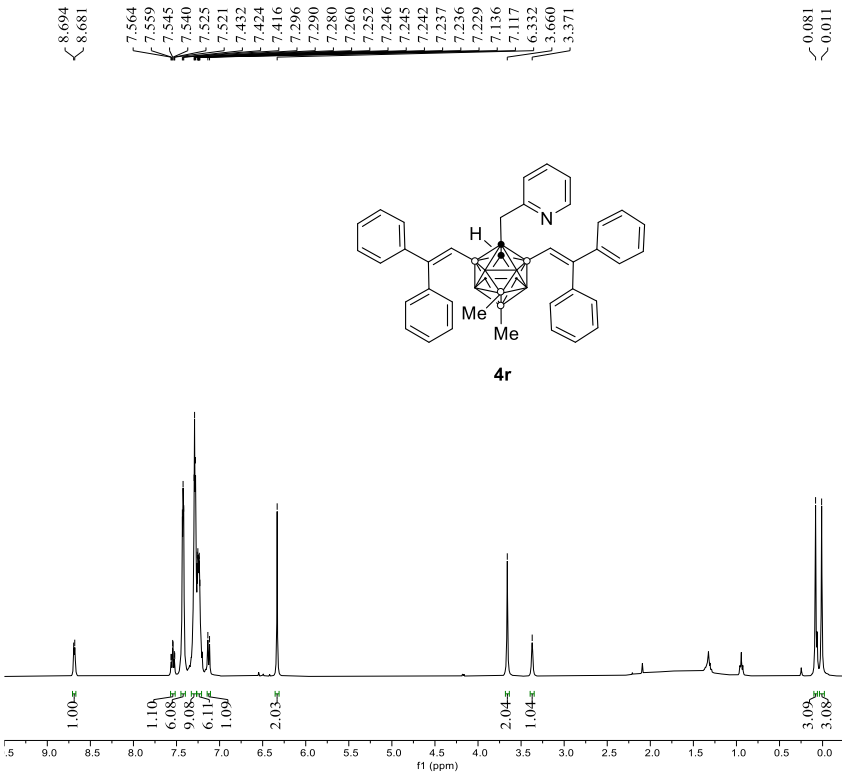
Parameter	值
Data File Name	D:/ nmr/ crf-c-0720/ crf-20-28-1/ 1/ fid
标题	crf-20-28-1.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmrsu
Site	
Author	
Solvent	CDCl3
Temperature	298.1
Pulse Sequence	zgpg30
Number of Scans	154
Receiver Gain	101.0
Relaxation Delay	2.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	0.8847
Acquisition Date	2020-07-20T14:42:25
Modification Date	2020-07-20T14:41:23
Spectrometer Frequency	125.78
Spectral Width	37037.0
Lowest Frequency	-5928.0
Nucleus	13C
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.57



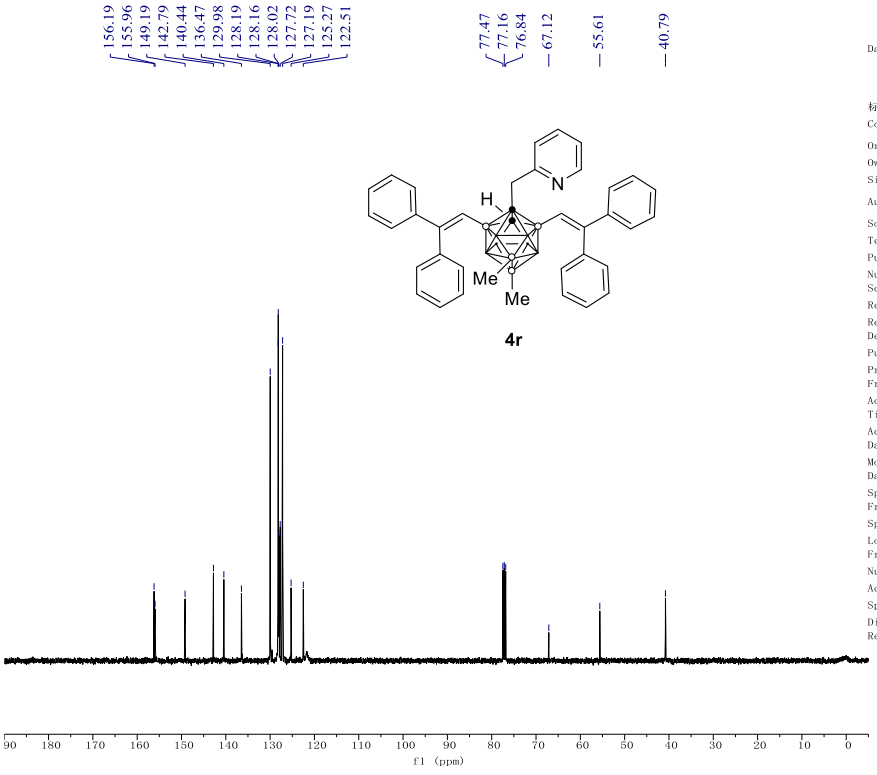
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-28-1 wenti -2-naphthyl/ zhf-2-naphthyl-decouple/ 1/ fid
标题	zhf-2-naphthyl-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.2
Pulse Sequence	aring-b11
Number of Scans	13
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-17T20:31:14
Modification Date	2021-04-17T20:31:15
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



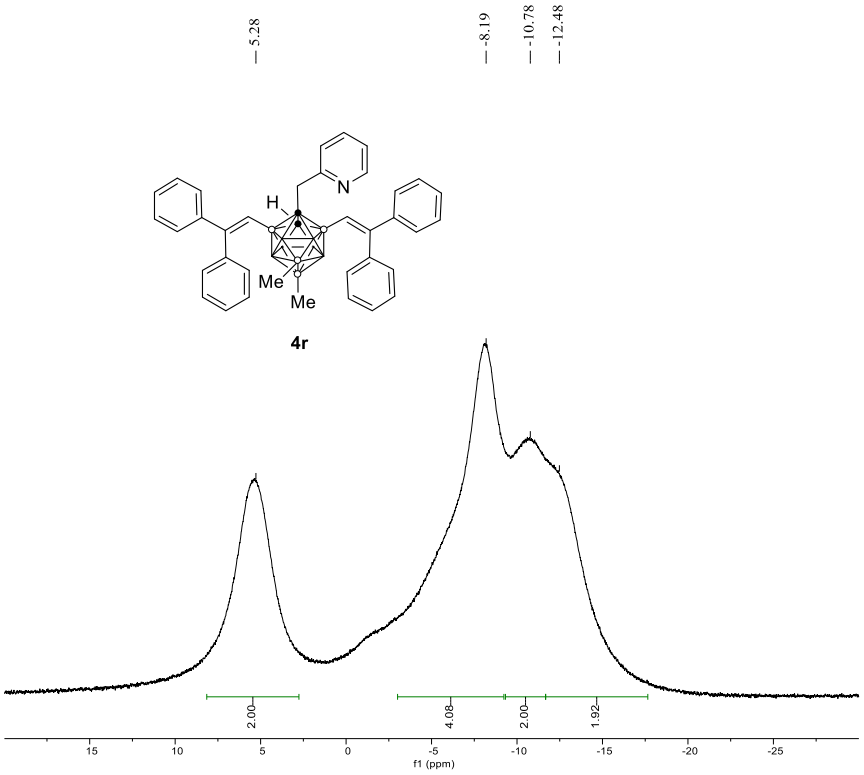
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ 20-28-1 wenti -2-naphthyl/ zhf-2-naphthyl-couple/ 1/ fid
标题	zhf-2-naphthyl-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.1
Pulse Sequence	aring
Number of Scans	23
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-04-17T20:26:35
Modification Date	2021-04-17T20:26:36
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



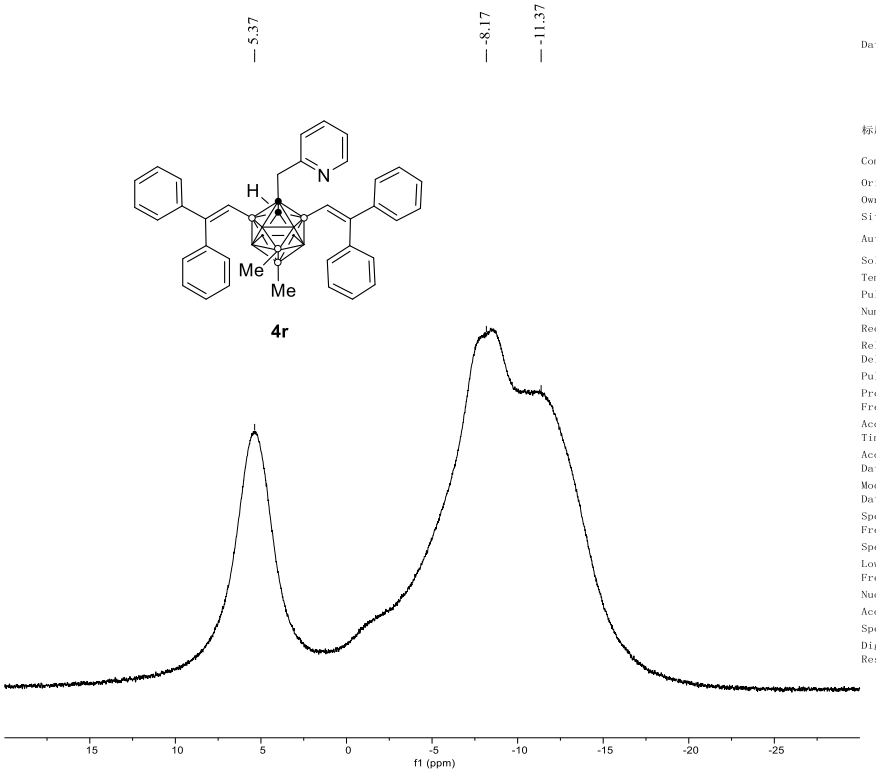
Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应/ 核磁数据/ 碳硼烷底物/ 9,12-2Me/ zhf-9-12.fid/ fid
标题	zhf-9-12
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDC13
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	20
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-04-08T13:10:30
Modification Date	2021-04-08T05:11:00
Spectrometer Frequency	400.03
Spectral Width	7225.4
Lowest Frequency	-804.9
Nucleus	1H
Acquired Size	21676
Spectral Size	65536
Digital Resolution	0.11



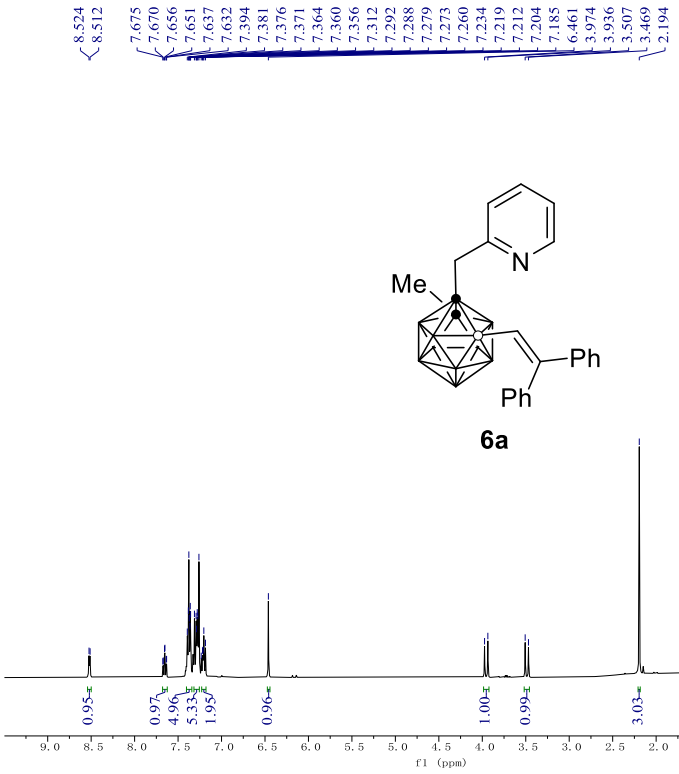
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ 9,12-2Me/ zhf-9,12-2me-C/ 1/ fid
标题	zhf-9,12-2me-C.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.3
Pulse Sequence	zgpg30
Number of Scans	59
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2021-03-24T10:50:55
Modification Date	2021-03-24T10:50:56
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5278.2
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27



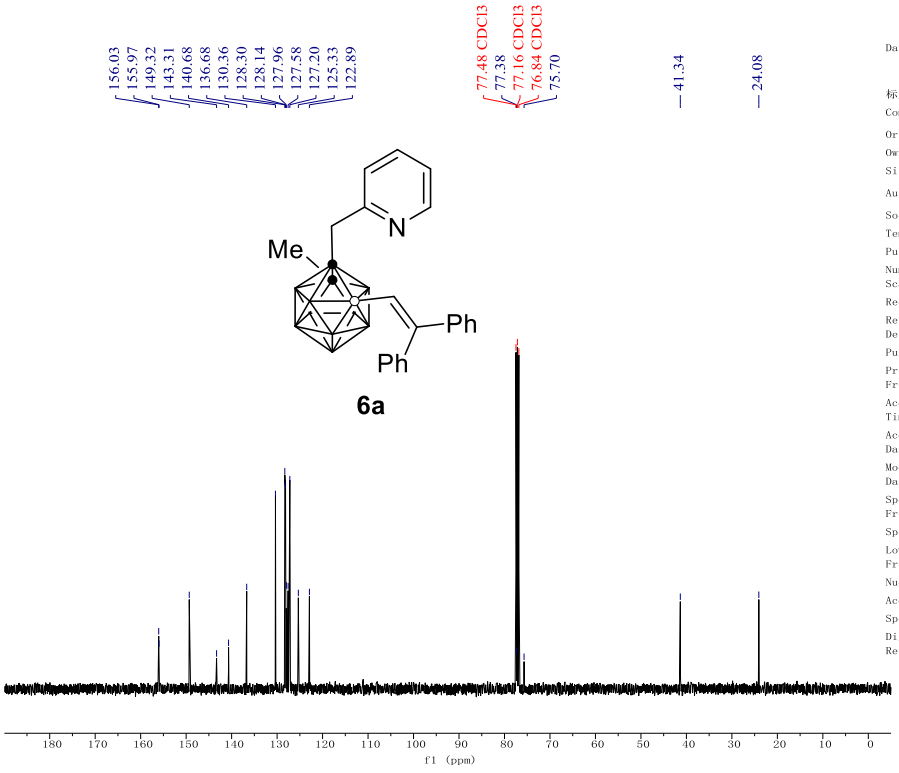
Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应/ 核磁数据/ 碳硼烷底物/ 9,12-2Me/ zhf-9,12-2Me-decouple/ 1/ fid
标题	zhf-9,12-2Me-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.3
Pulse Sequence	aring-b11
Number of Scans	15
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-23T10:52:43
Modification Date	2021-03-23T10:52:44
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



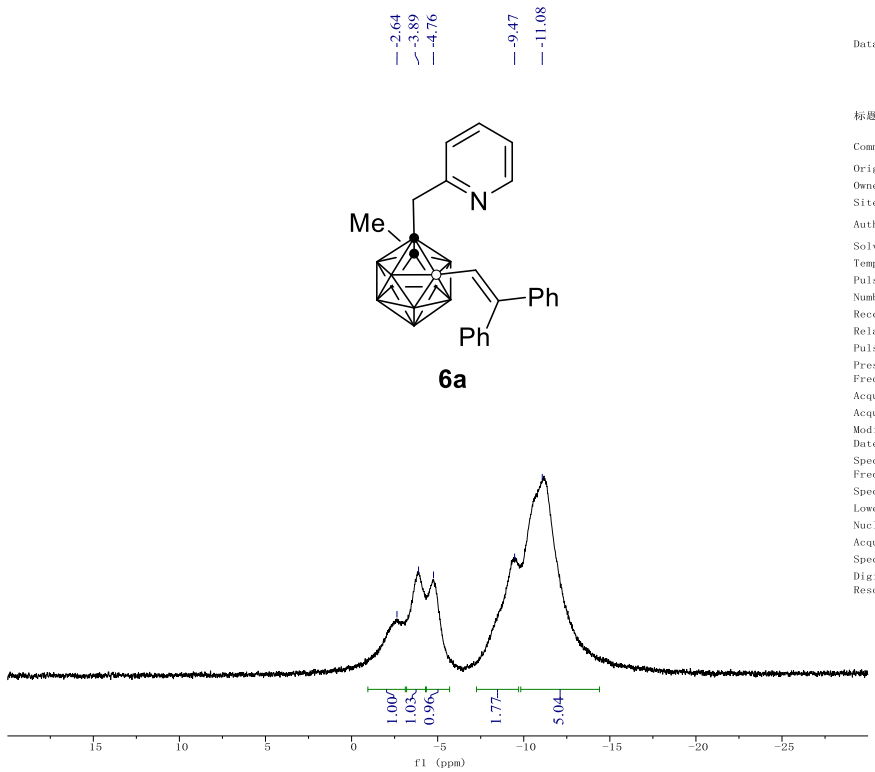
Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应/ 核磁数据/ 碳硼烷底物/ 9,12-2Me/ zhf-9,12-2Me-couple/ 1/ fid
标题	zhf-9,12-2Me-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.2
Pulse Sequence	aring
Number of Scans	16
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-23T10:50:21
Modification Date	2021-03-23T10:50:22
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



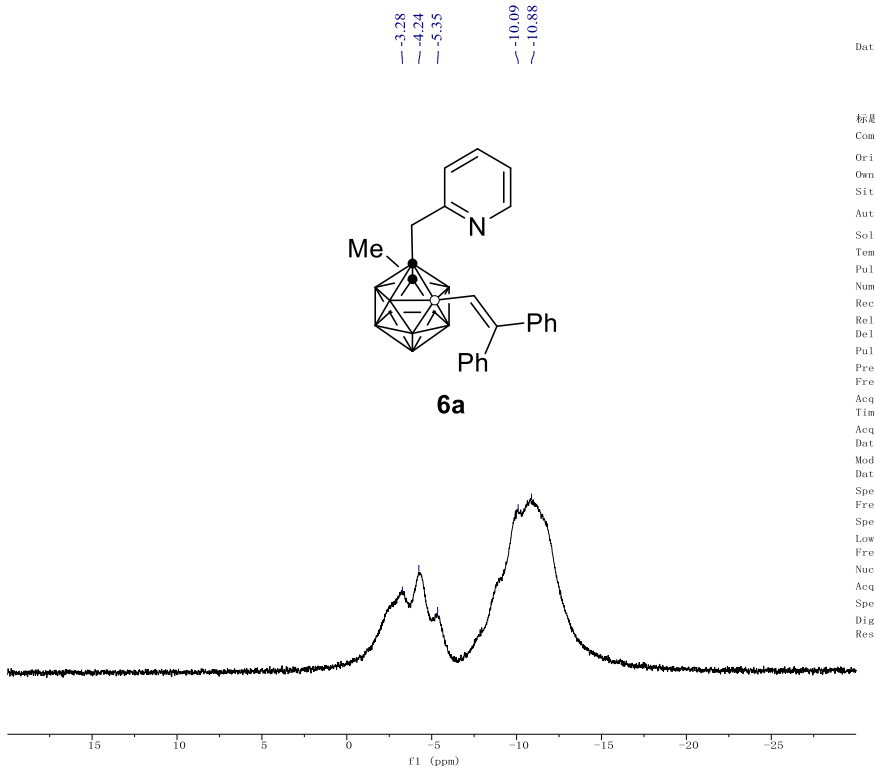
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ 1-Me/ zhf-1-Me-H/ 1/ fid
标题	zhf-1-Me-H.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.8
Pulse Sequence	zg30
Number of Scans	25
Receiver Gain	77.4
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-03-14T16:52:31
Modification Date	2021-03-14T16:52:31
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.8
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07



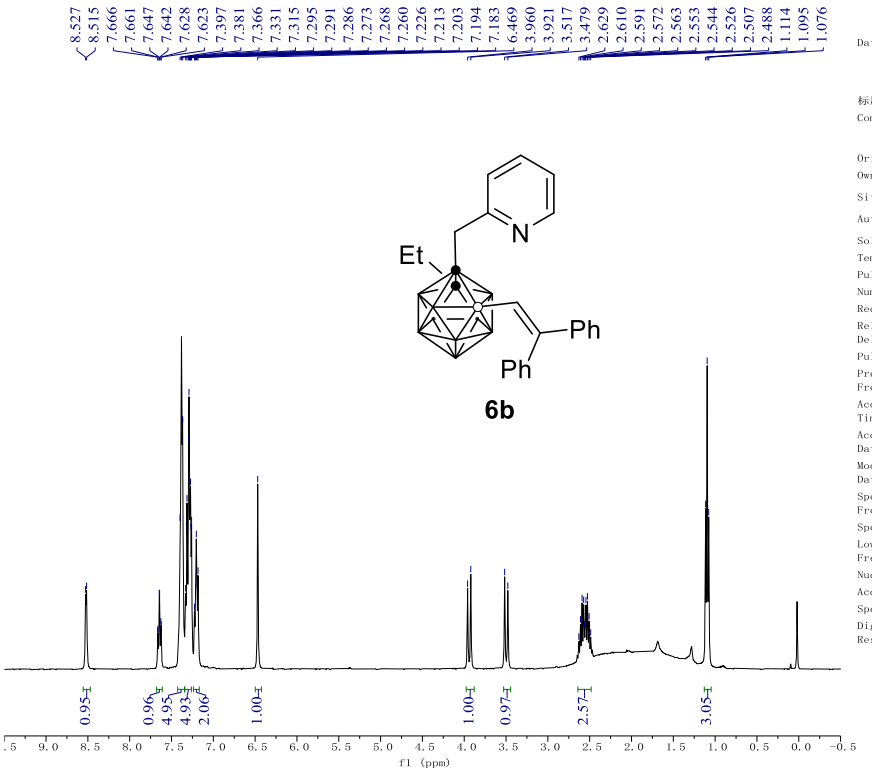
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ 1-Me/ zhf-1-Me-C.fid/ 4/ fid
标题	zhf-1-Me-C.fid.4.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.7
Pulse Sequence	zgpg30
Number of Scans	144
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2021-03-15T20:24:34
Modification Date	2021-03-15T20:24:35
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5267.6
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27



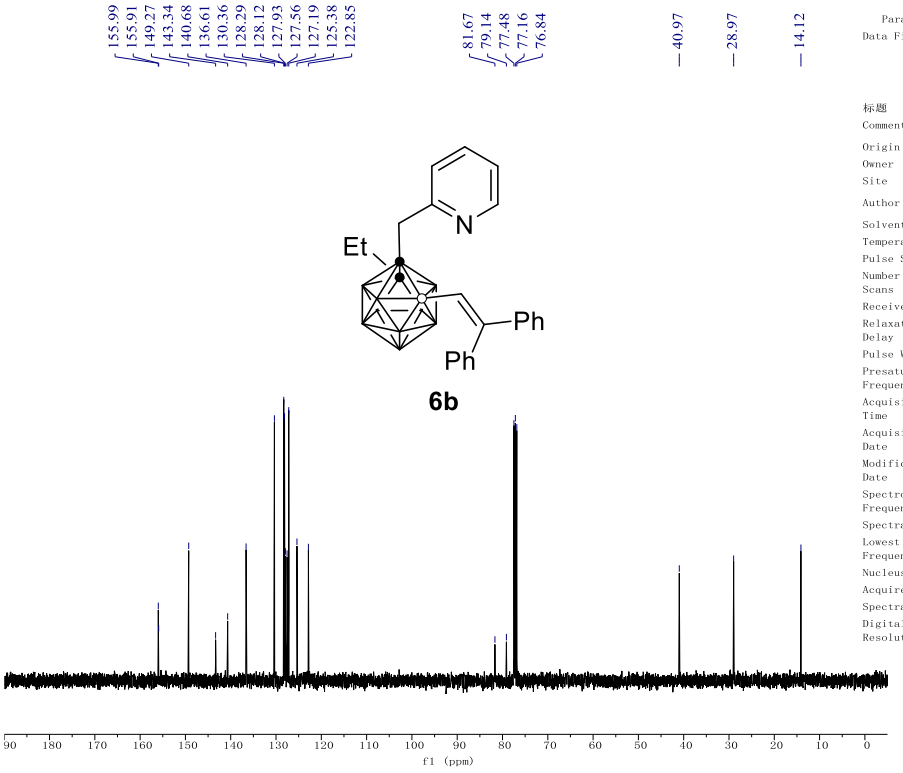
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Me/ zhf-1-me-decouple/ 1/ fid
标题	zhf-1-me-decouple. 1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.2
Pulse Sequence	aring-b11
Number of Scans	29
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-24T10:43:27
Modification Date	2021-03-24T10:43:27
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



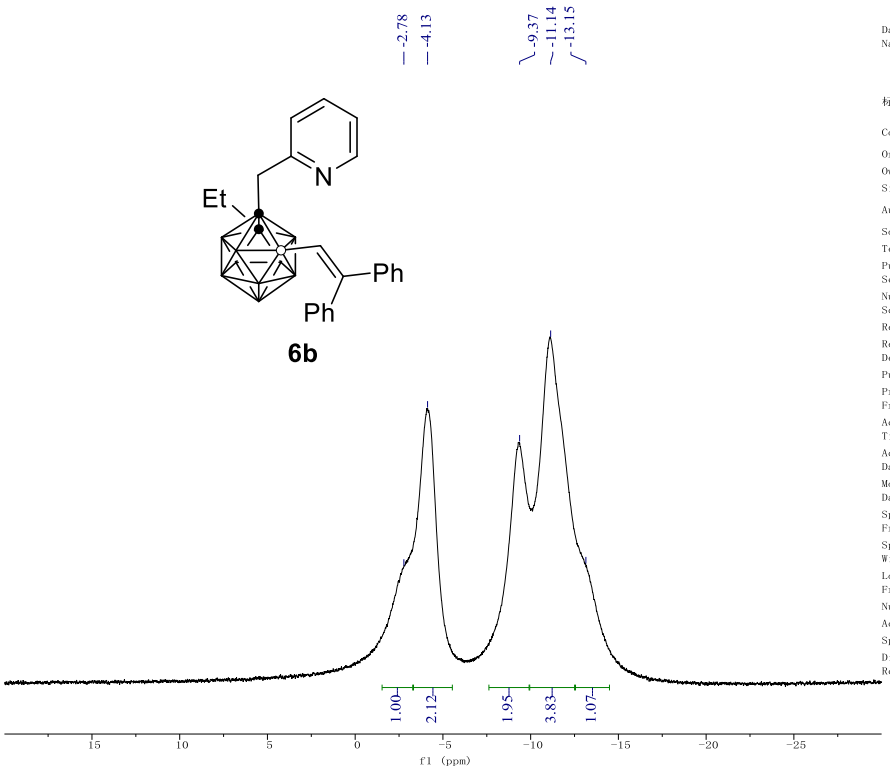
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Me/ zhf-1-me-couple/ 1/ fid
标题	zhf-1-me-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.1
Pulse Sequence	aring
Number of Scans	29
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-24T10:39:50
Modification Date	2021-03-24T10:39:50
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



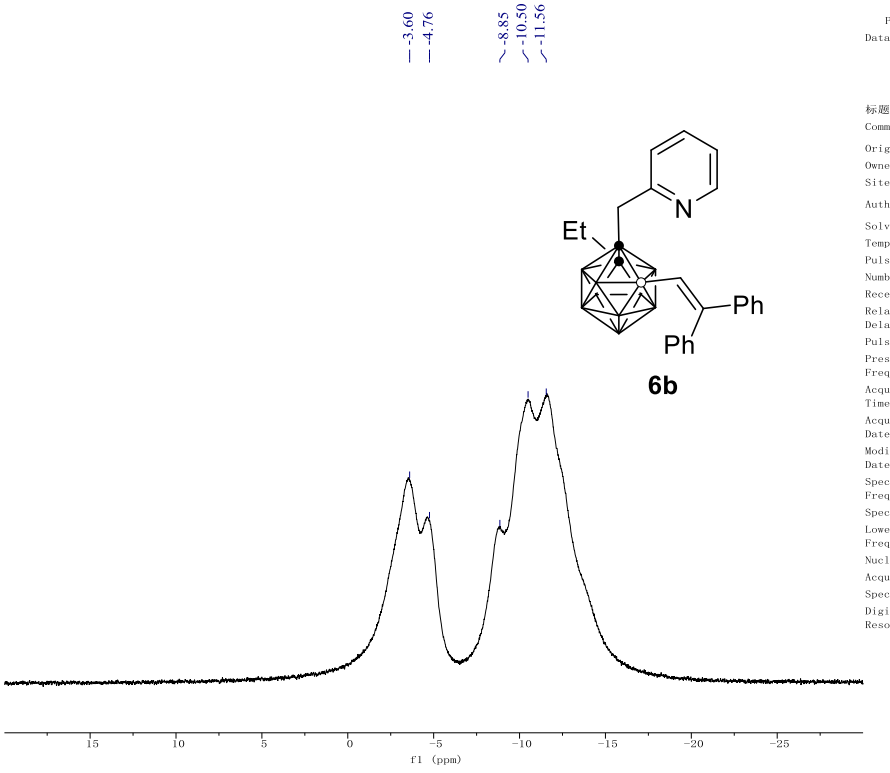
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Et/ zhf-1-Et-H2.fid/ fid
标题	zhf-1-Et-H2
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	48
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-27T09:08:40
Modification Date	2021-03-27T01:09:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-793.5
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11



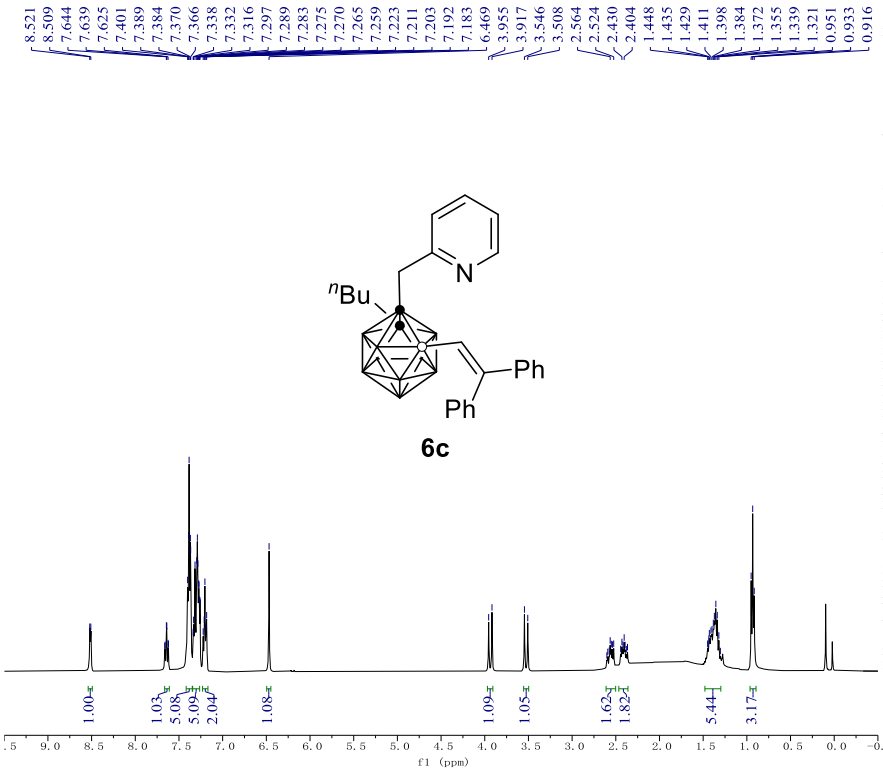
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Et/ zhf-1-Et-C/ 1/ fid
标题	zhf-1-Et-C.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	zgpg30
Number of Scans	32
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	0.9999
Acquisition Date	2021-03-27T10:42:40
Modification Date	2021-03-27T10:42:41
Spectrometer Frequency	100.64
Spectral Width	26041.7
Lowest Frequency	-1942.6
Nucleus	13C
Acquired Size	26040
Spectral Size	65536
Digital Resolution	0.40



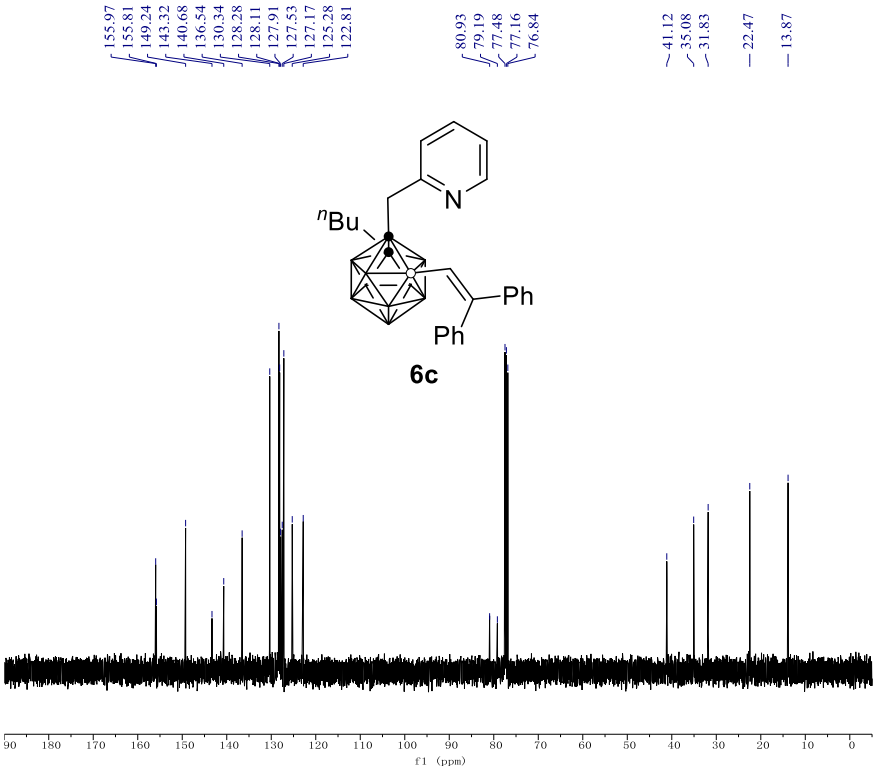
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Et/ zhf-1-Et-decouple/ 1/ fid
标题	zhf-1-Et-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	aring-b11
Number of Scans	14
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-27T10:48:31
Modification Date	2021-03-27T10:48:31
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



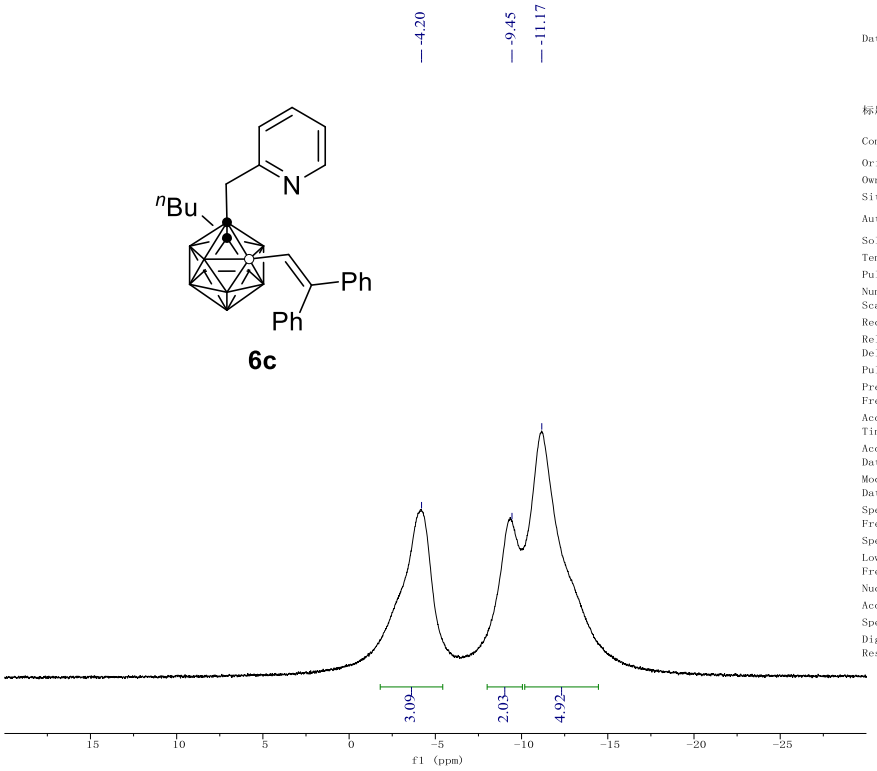
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Et/ zhf-1-Et-couple/ 1/ fid
标题	zhf-1-Et-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.8
Pulse Sequence	aring
Number of Scans	13
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-27T10:45:47
Modification Date	2021-03-27T10:45:48
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



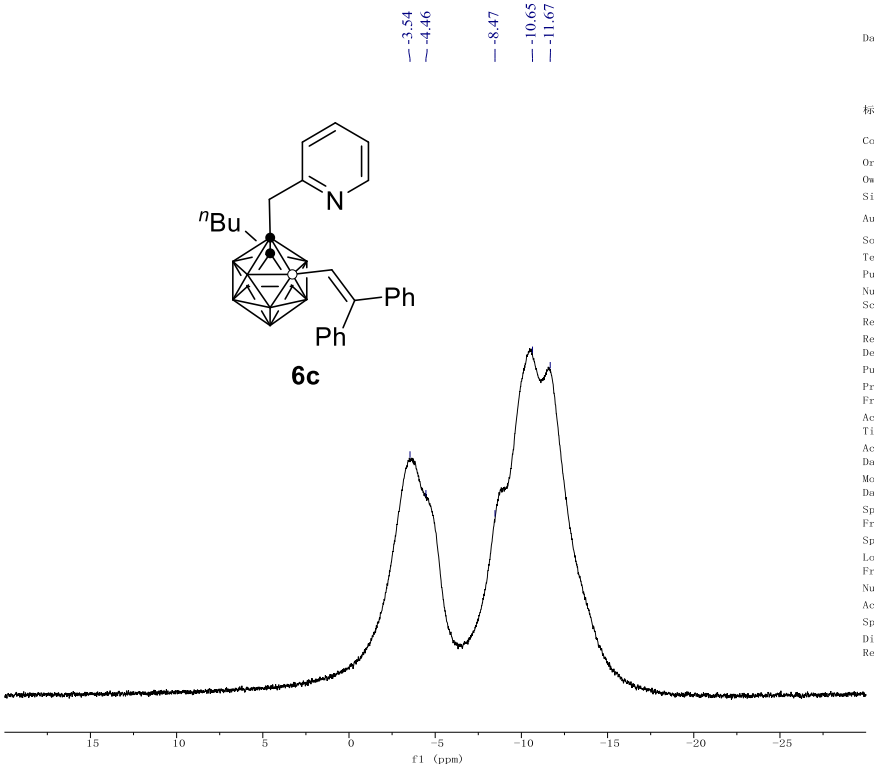
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-nBu/ zhf-1-nBu-h111.fid/ fid
标题	zhf-1-nBu-h111
Comment	Std proton
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	CDCl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	28
Relaxation Delay	1.0000
Pulse Width	11.5000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-30T19:06:24
Modification Date	2021-03-30T11:07:00
Spectrometer Frequency	400.03
Spectral Width	7225.4
Lowest Frequency	-805.1
Nucleus	1H
Acquired Size	21676
Spectral Size	65536
Digital Resolution	0.11



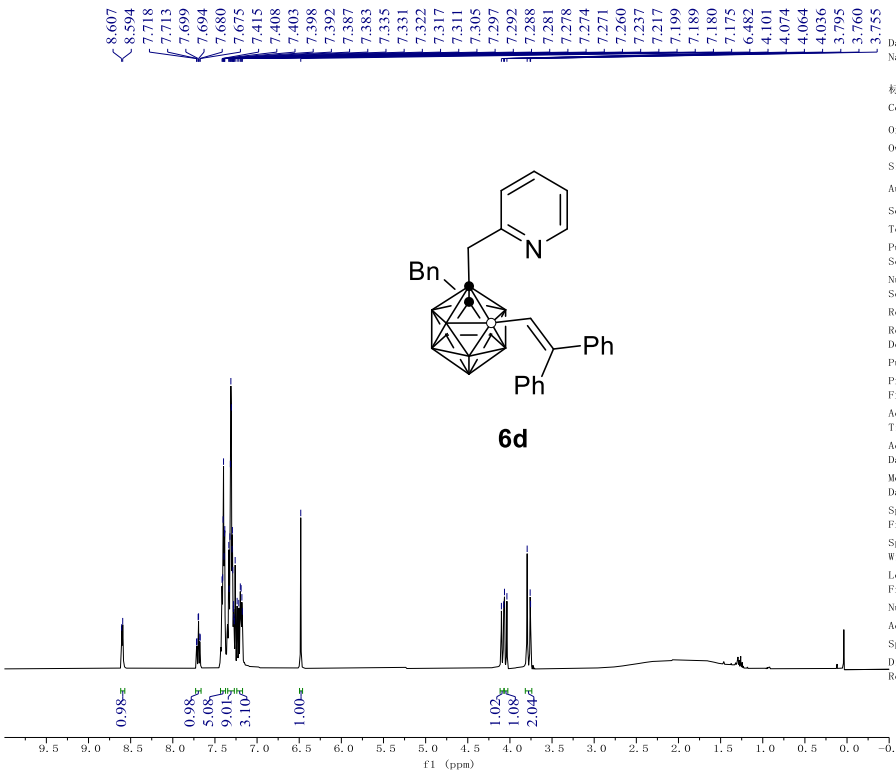
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-nBu/ zhf-1-nBu-C.fid/ fid
标题	zhf-1-nBu-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	72
Receiver Gain	0
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-03-14T19:08:33
Modification Date	2021-03-14T11:11:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2222.9
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20



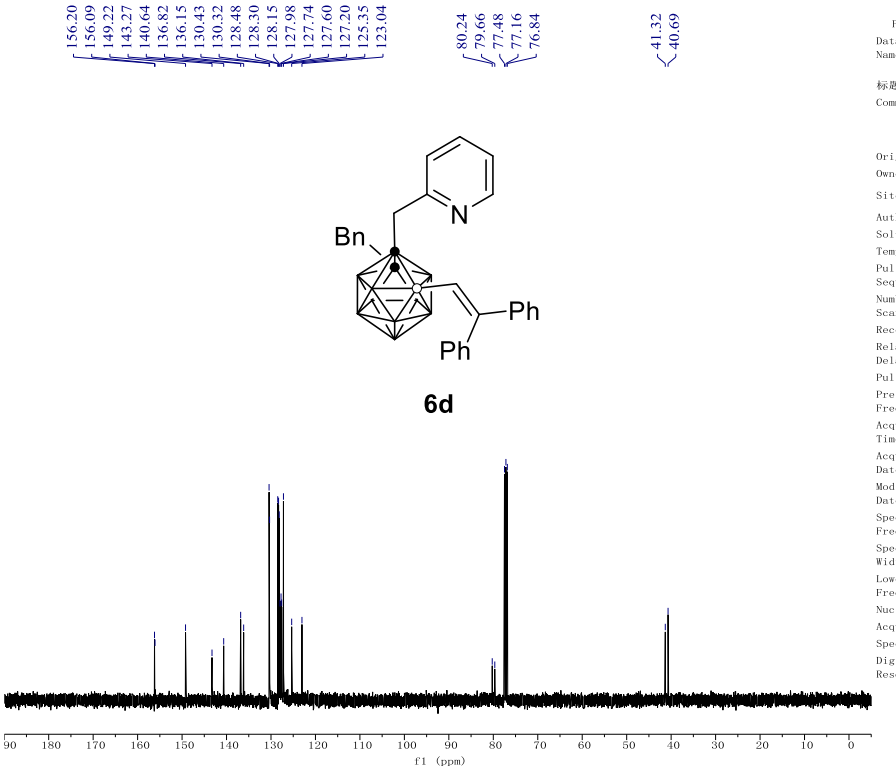
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-nBu/ zhf-1-nBu-decouple/ 1/ fid
标题	zhf-1-nBu-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.5
Pulse Sequence	aring-b11
Number of Scans	13
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-30T20:14:05
Modification Date	2021-03-30T20:14:06
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



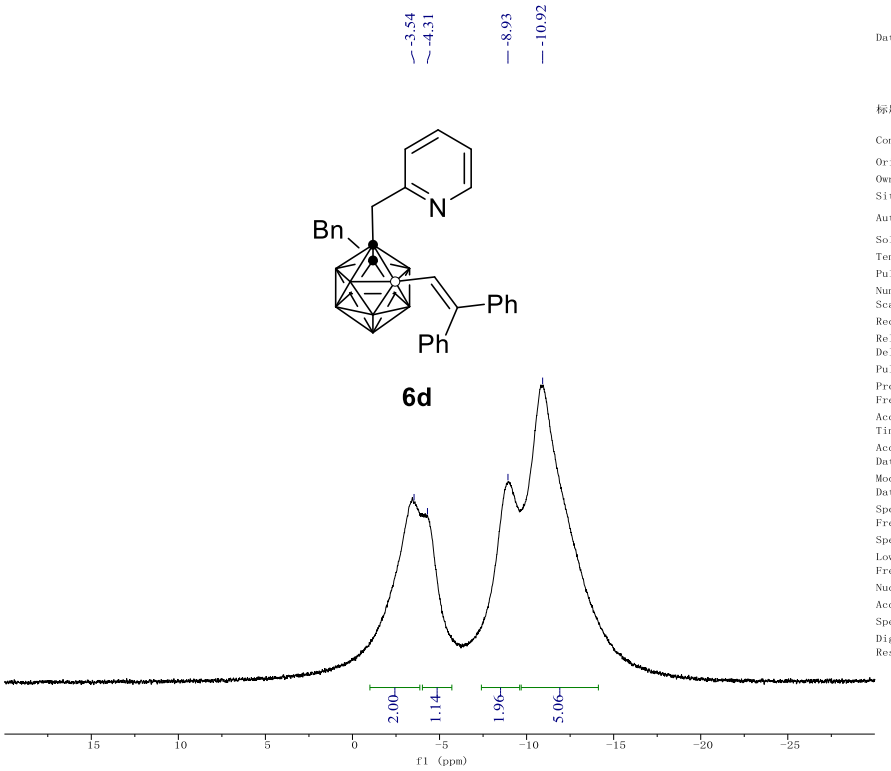
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-nBu/ zhf-1-nBu-couple/ 1/ fid
标题	zhf-1-nBu-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.4
Pulse Sequence	aring
Number of Scans	14
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-30T20:11:28
Modification Date	2021-03-30T20:11:29
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



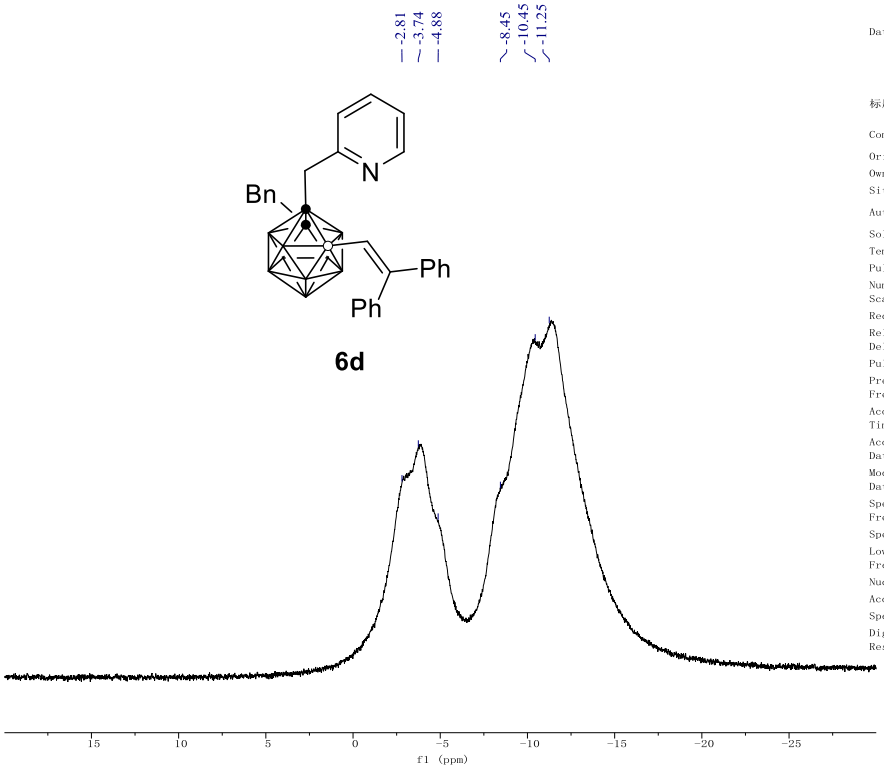
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ 1-Bn/ zhf-1-Bn-H/ 1/ fid
标题	zhf-1-Bn-H.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	294.7
Pulse Sequence	zg30
Number of Scans	6
Receiver Gain	38.4
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-03-14T17:29:23
Modification Date	2021-03-14T17:29:23
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.6
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07



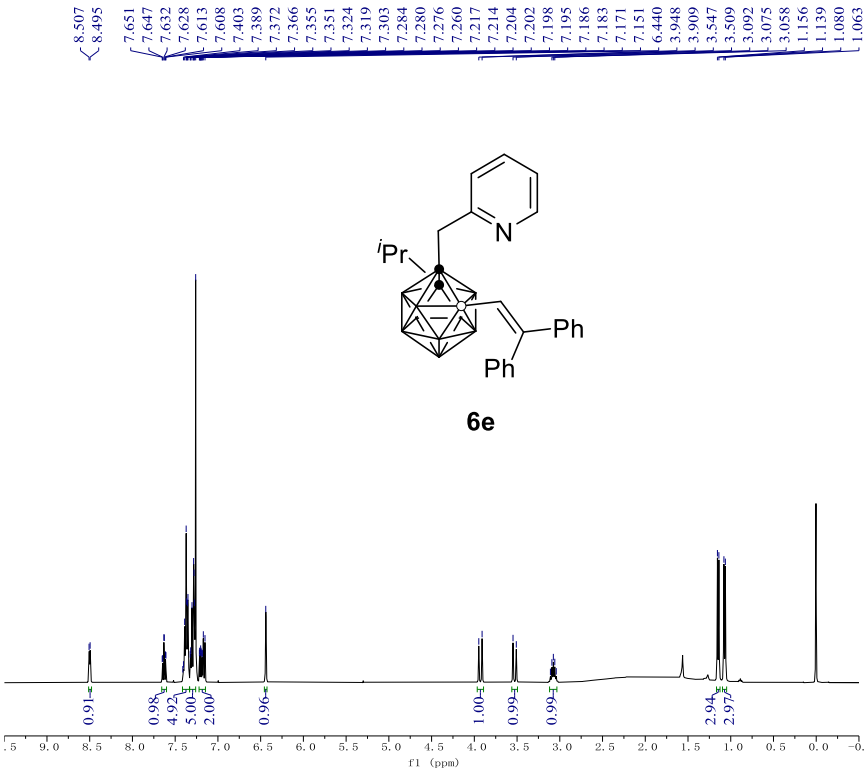
Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ 1-Bn/ zhf-1-Bn-C.fid/ fid
标题	zhf-1-Bn-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omcl
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	136
Receiver Gain	0
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-03-15T19:21:35
Modification Date	2021-03-15T11:27:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2224.0
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20



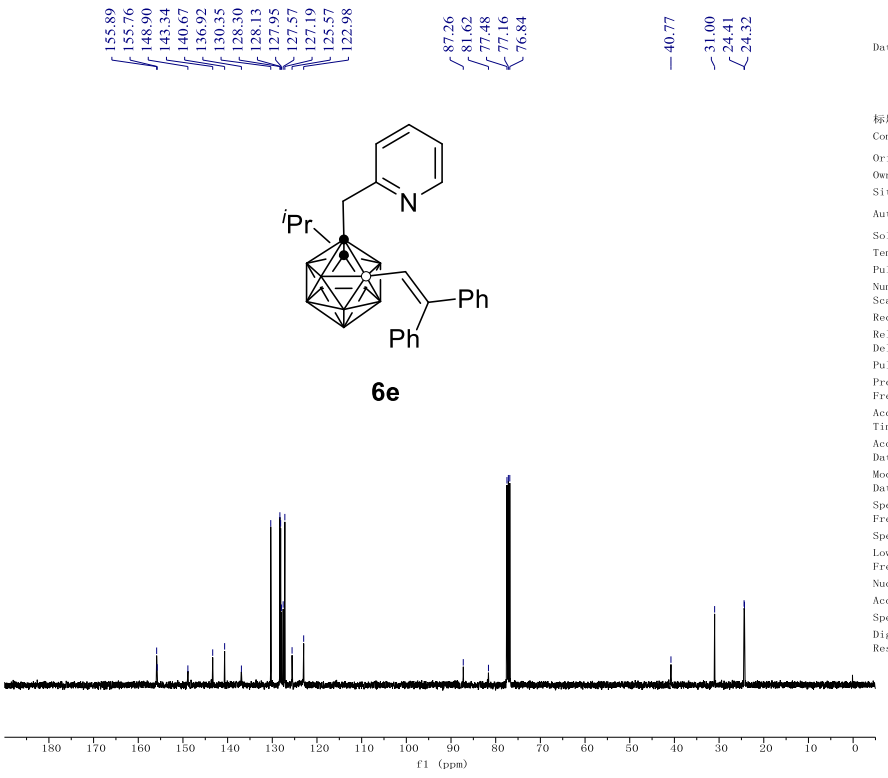
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Bn/ zhf-1-Bn-decouple/ 1/ fid
标题	zhf-1-Bn-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.3
Pulse Sequence	aring-b11
Number of Scans	10
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-23T10:45:28
Modification Date	2021-03-23T10:45:29
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



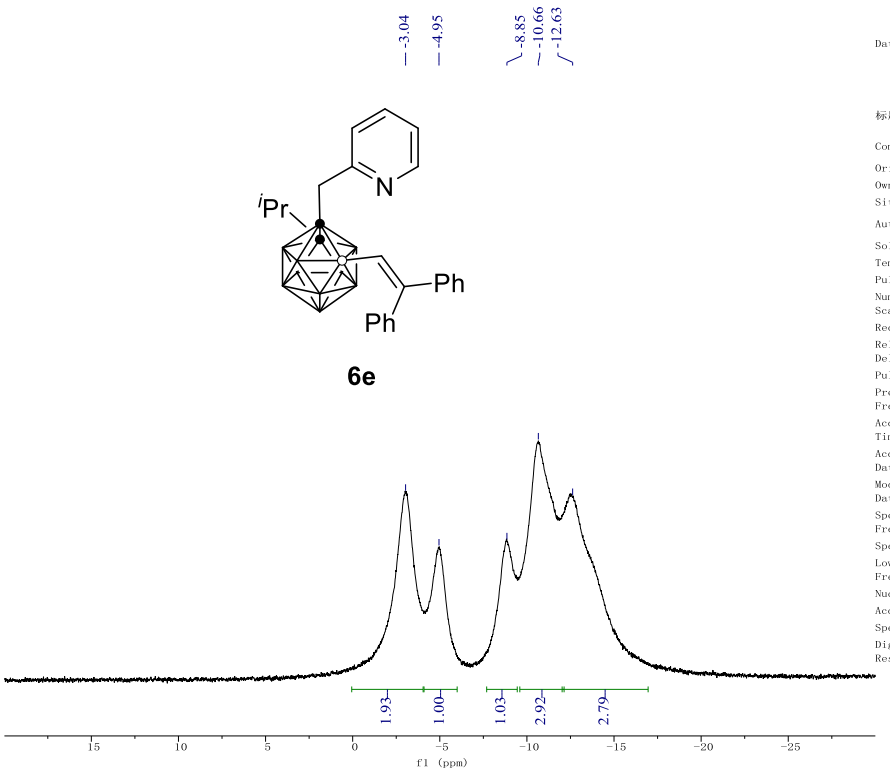
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Bn/ zhf-1-Bn-couple/ 1/ fid
标题	zhf-1-Bn-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.2
Pulse Sequence	aring
Number of Scans	10
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-23T10:42:30
Modification Date	2021-03-23T10:42:31
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



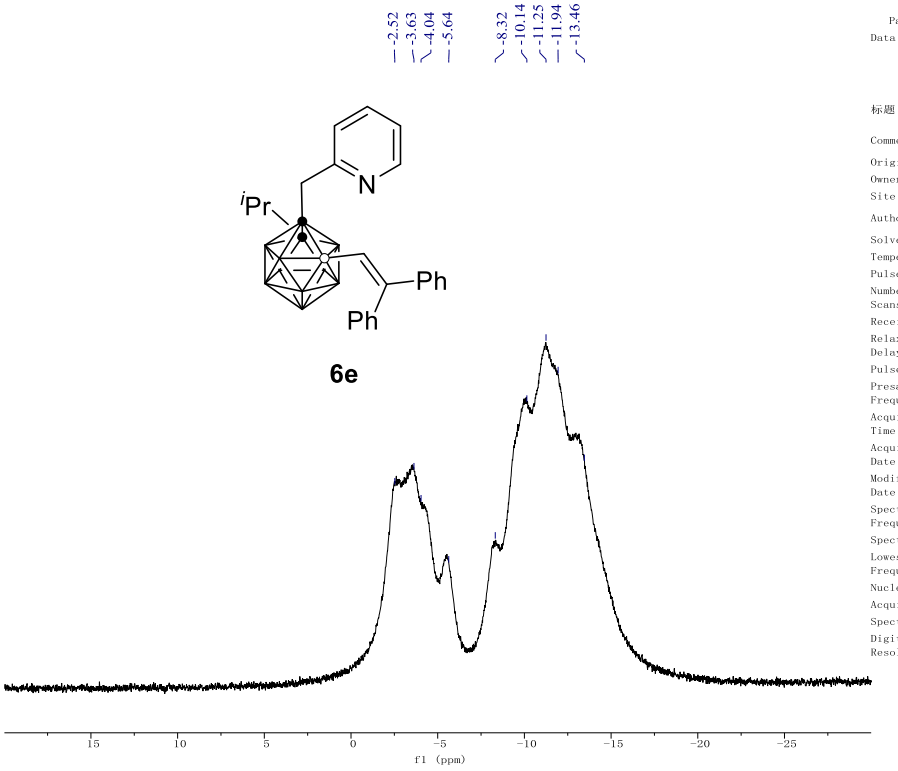
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-iPr/ zhf-1-ipr-H1/ 1/ fid
标题	zhf-1-ipr-H1.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.8
Pulse Sequence	zg30
Number of Scans	8
Receiver Gain	77.4
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2021-03-26T20:20:52
Modification Date	2021-03-26T20:20:54
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.8
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07



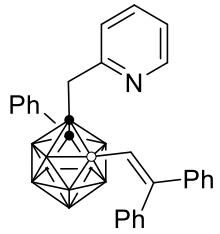
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-iPr/ zhf-1-ipr-cc/ 1/ fid
标题	zhf-1-ipr-cc.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.1
Pulse Sequence	zgpg30
Number of Scans	161
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	0.9999
Acquisition Date	2021-03-27T20:20:01
Modification Date	2021-03-27T20:20:02
Spectrometer Frequency	100.64
Spectral Width	26041.7
Lowest Frequency	-1941.2
Nucleus	13C
Acquired Size	26040
Spectral Size	65536
Digital Resolution	0.40



Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-iPr/ zhf-1-ipr-b-decouple/ 1/ fid
标题	zhf-1-ipr-b-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.0
Pulse Sequence	aring-b11
Number of Scans	18
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-27T20:27:05
Modification Date	2021-03-27T20:27:06
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

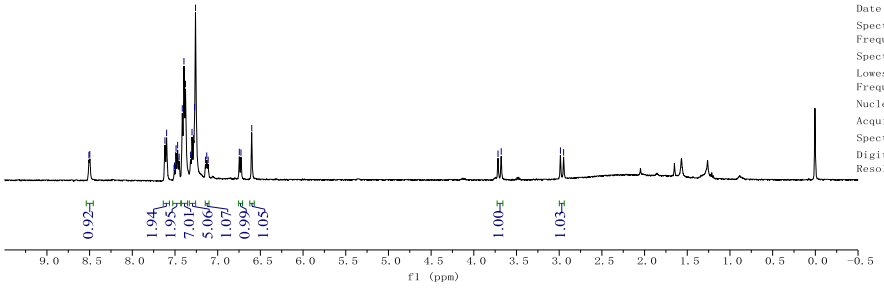


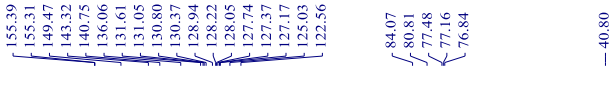
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-iPr/ zhf-1-ipr-b-couple/ 1/ fid
标题	zhf-1-ipr-b-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.9
Pulse Sequence	aring
Number of Scans	18
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-27T20:23:53
Modification Date	2021-03-27T20:23:54
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39

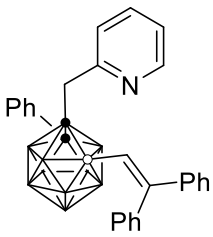


6f

Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Ph/ zhf-1-Ph-H-1.fid/ fid
标题	zhf-1-Ph-H-1
Comment	
Origin	Varian
Owner	
Site	
Author	
Solvent	CDCl3
Temperature	25.0
Pulse Sequence	s2pul
Number of Scans	4
Receiver Gain	60
Relaxation Delay	1.0000
Pulse Width	11.0000
Presaturation Frequency	
Acquisition Time	3.0000
Acquisition Date	2021-03-26T09:09:37
Modification Date	2021-03-26T01:10:00
Spectrometer Frequency	399.72
Spectral Width	7183.9
Lowest Frequency	-794.2
Nucleus	1H
Acquired Size	21552
Spectral Size	65536
Digital Resolution	0.11

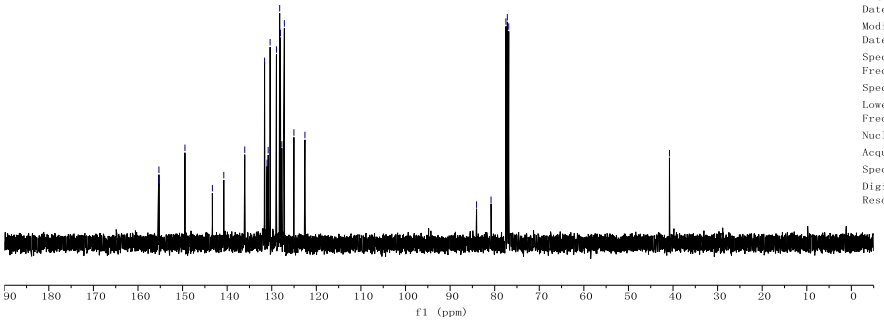


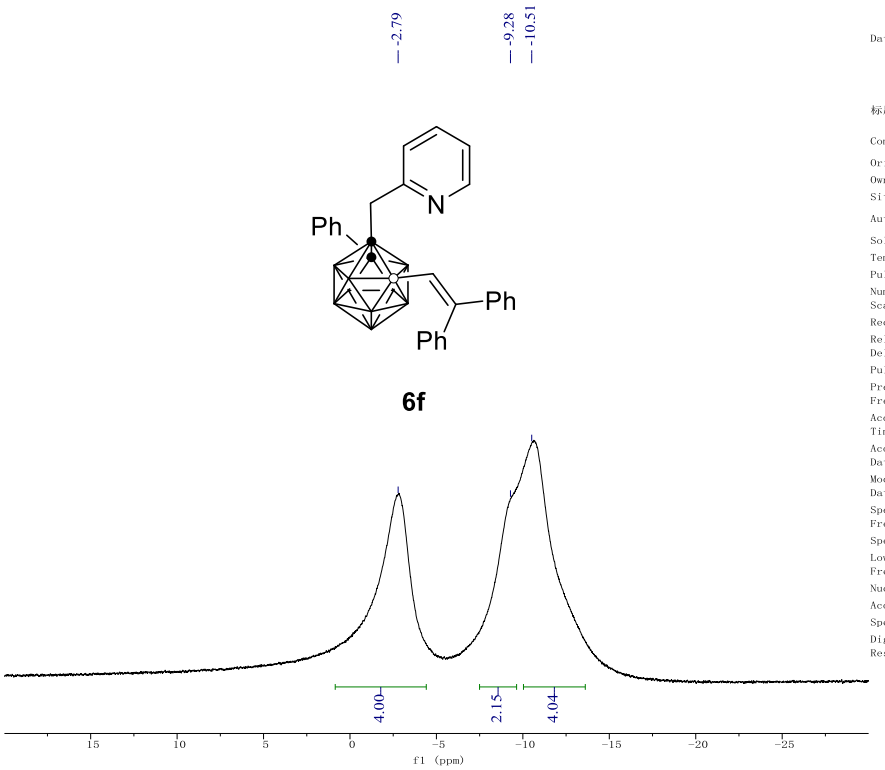




6f

Parameter	值
Data File Name	E:/ 核磁/ 吡啶基/ new/ 1-Ph/ zhf-1-ph-C.fid/ fid
标题	zhf-1-ph-C
Comment	Std carbon
Origin	Varian
Owner	
Site	
Author	omc1
Solvent	cdcl3
Temperature	30.0
Pulse Sequence	s2pul
Number of Scans	64
Receiver Gain	0
Relaxation Delay	1.0000
Pulse Width	5.7000
Presaturation Frequency	
Acquisition Time	1.3000
Acquisition Date	2021-03-15T19:06:11
Modification Date	2021-03-15T11:09:00
Spectrometer Frequency	100.60
Spectral Width	26595.7
Lowest Frequency	-2227.3
Nucleus	13C
Acquired Size	34574
Spectral Size	131072
Digital Resolution	0.20





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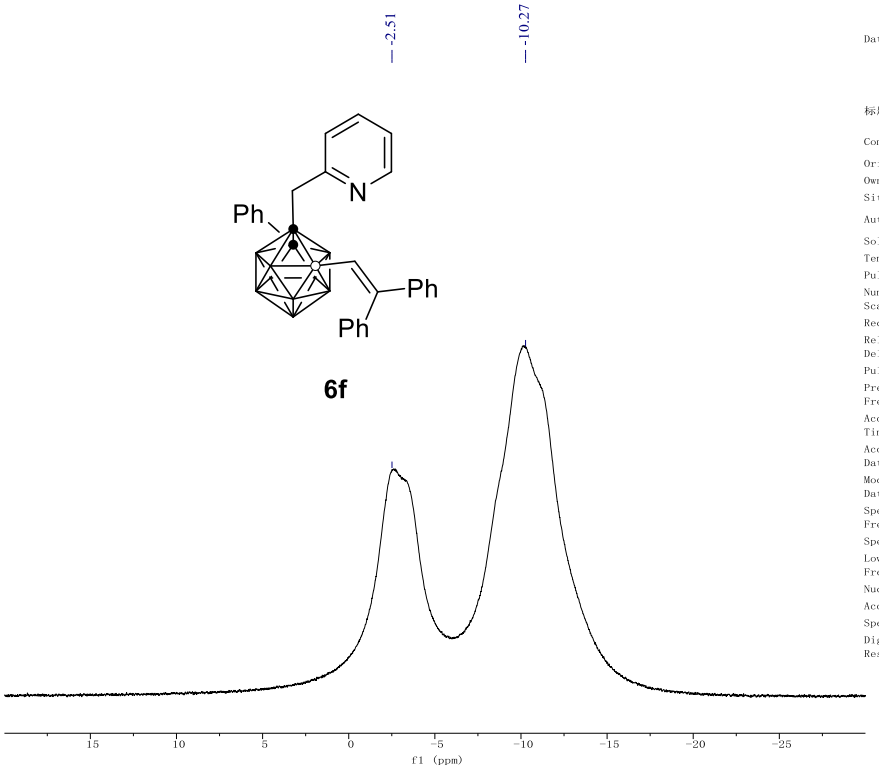
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Ph/ zhf-1-ph-decouple/ 1/ fid
标题	zhf-1-ph-decouple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.2
Pulse Sequence	aring-b11
Number of Scans	6
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-23T10:38:00
Modification Date	2021-03-23T10:38:01
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



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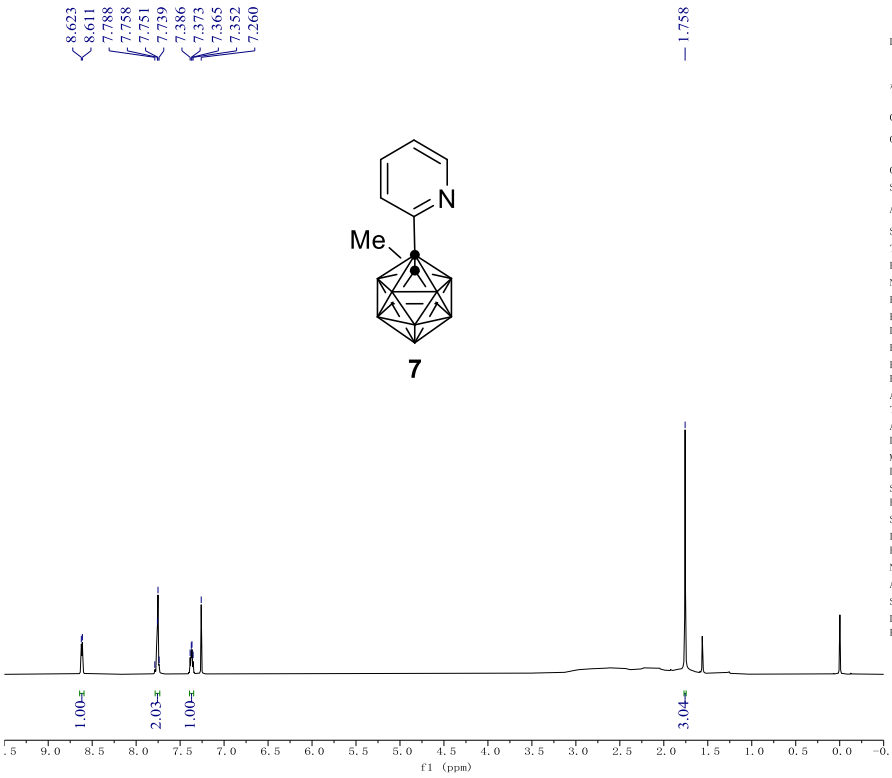
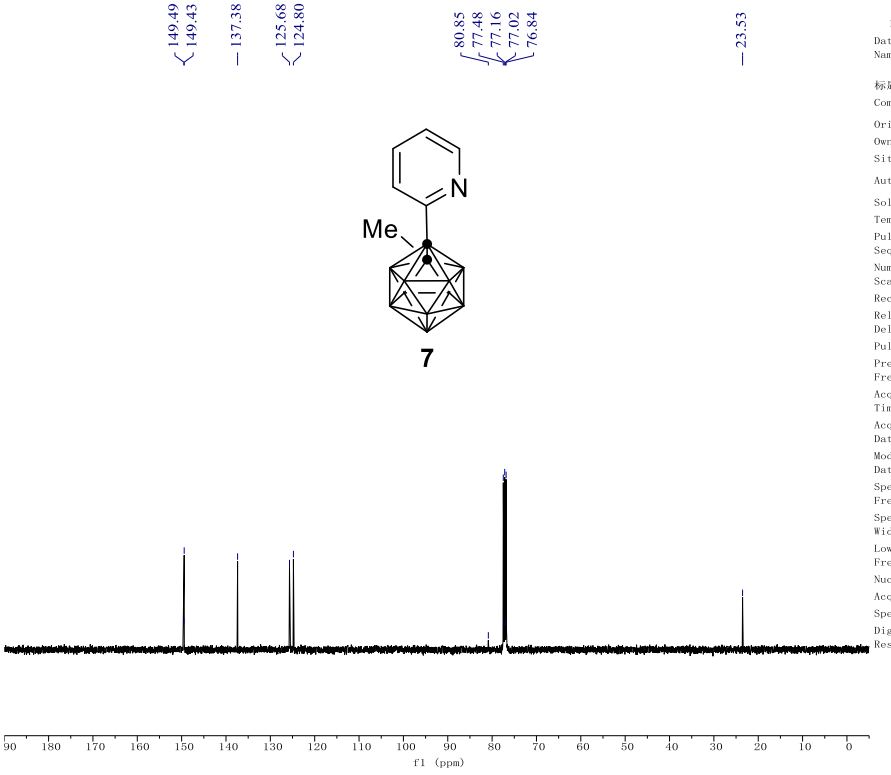
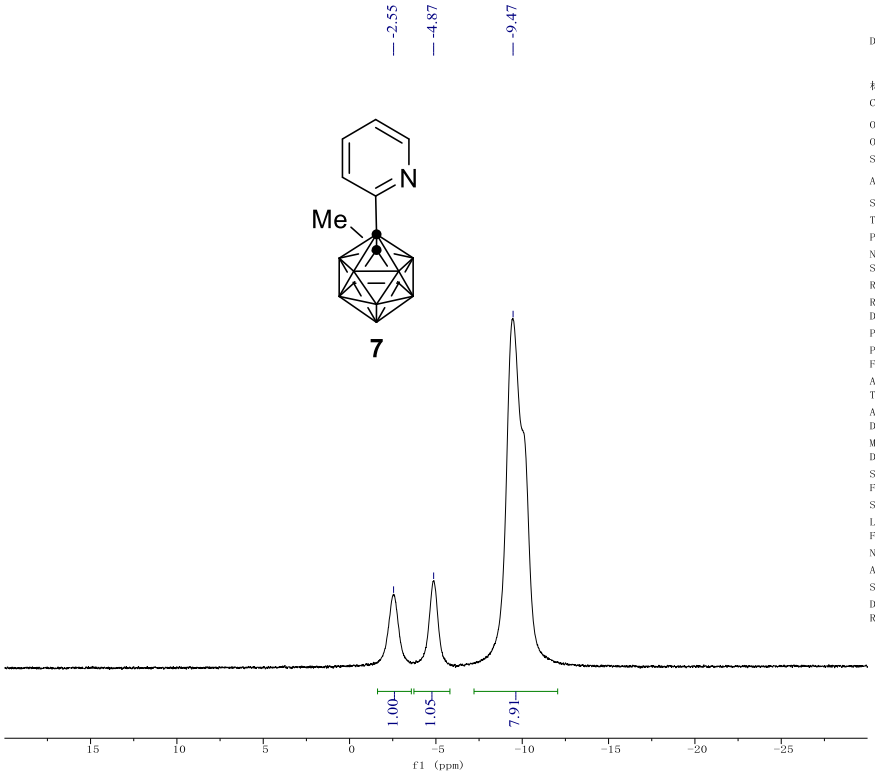
Parameter	值
Data File Name	F:/ 程若飞/ py-alkeny/ zhf-CH2-Py-核磁整理/ 碳硼烷底物/ 1-Ph/ zhf-1-ph-couple/ 1/ fid
标题	zhf-1-ph-couple.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	295.2
Pulse Sequence	aring
Number of Scans	13
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	12.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2021-03-23T10:35:34
Modification Date	2021-03-23T10:35:35
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



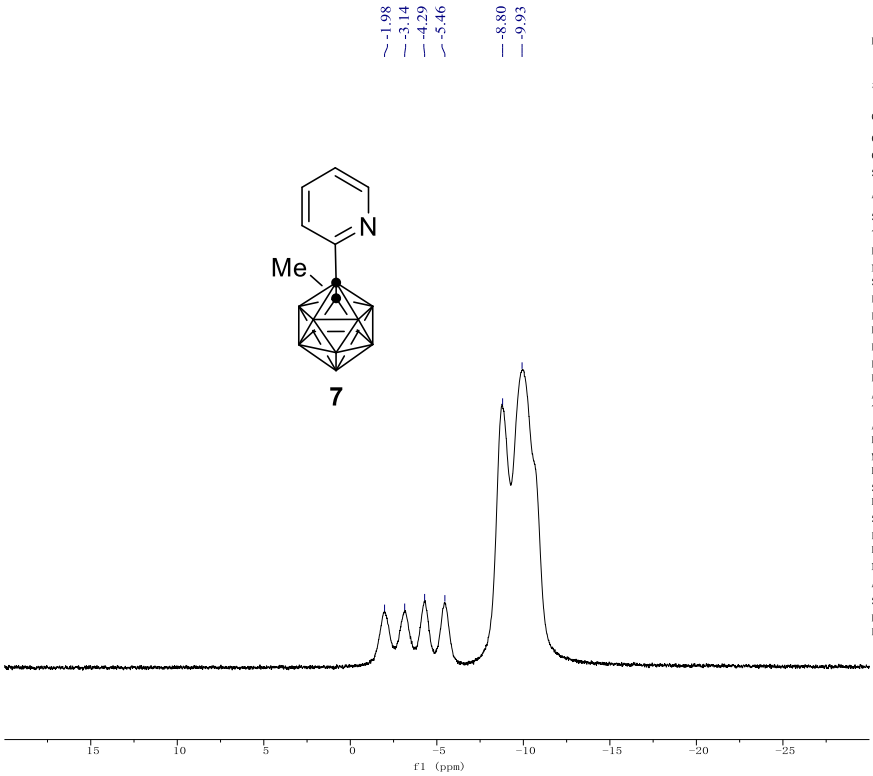
Parameter	值
Data File Name	E:/ 新课题-吡啶Ir(I)/ zhf-CH3-py-H/ 2/ fid
标题	zhf-CH3-py-H.2.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.6
Pulse Sequence	zg30
Number of Scans	9
Receiver Gain	77.4
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2022-08-24T12:23:07
Modification Date	2022-08-24T12:23:07
Spectrometer Frequency	400.20
Spectral Width	7598.8
Lowest Frequency	-1207.6
Nucleus	1H
Acquired Size	22795
Spectral Size	65536
Digital Resolution	0.12



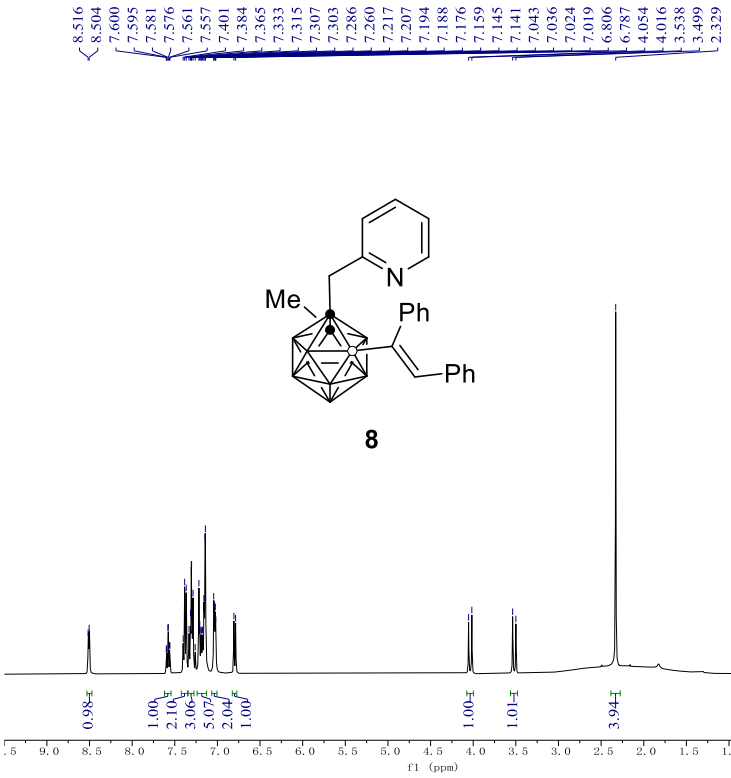
Parameter	值
Data File Name	E:/ 新课题-吡啶Ir(I)/ zhf-ch3-py-c/ 8/ fid
标题	zhf-ch3-py-c.8.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.2
Pulse Sequence	zgpg30
Number of Scans	114
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2022-10-03T19:22:36
Modification Date	2022-10-03T19:22:37
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5278.3
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27



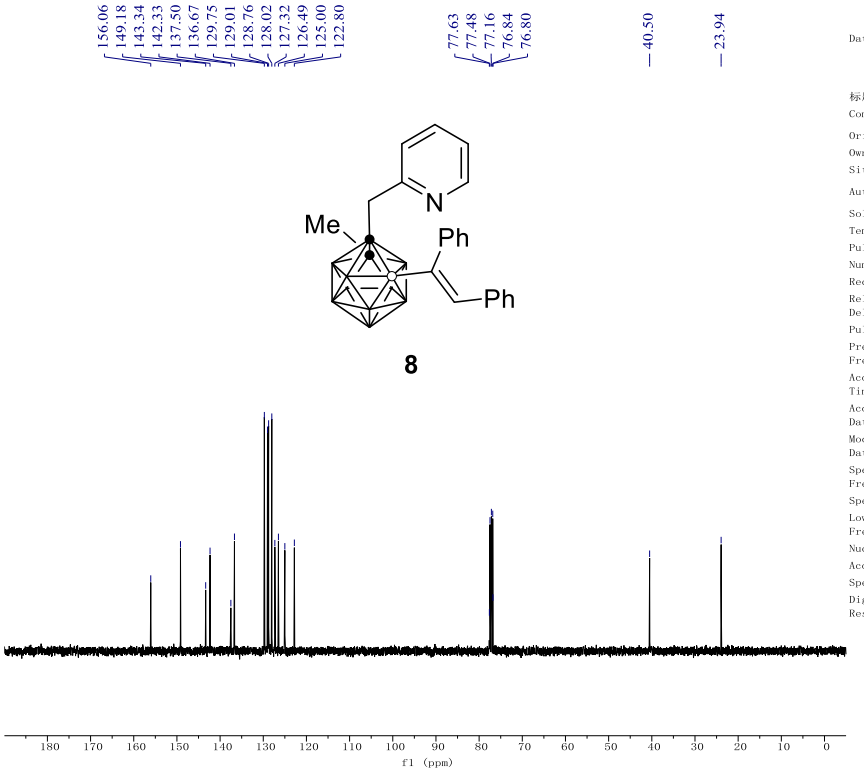
Parameter	值
Data File Name	E:/ 新课题-吡啶 Ir(I)/ zhf-CH3-py-B/ 16/ fid
标题	zhf-CH3-py-B.16.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	297.0
Pulse Sequence	aring-b11
Number of Scans	6
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2022-08-26T19:13:48
Modification Date	2022-08-26T19:13:49
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



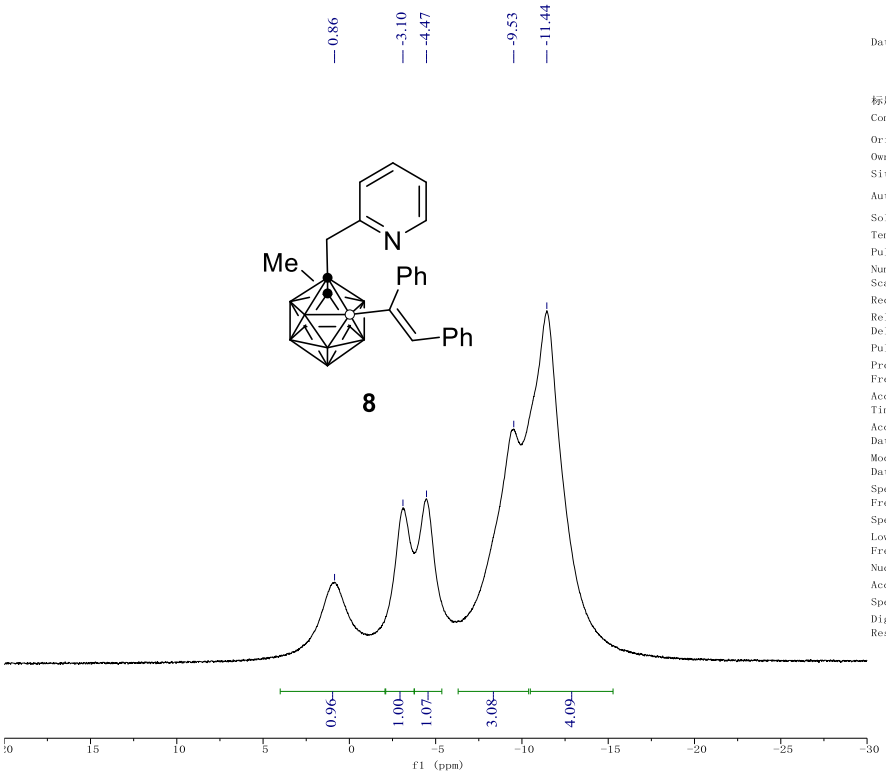
Parameter	值
Data File Name	E:/ 新课题-吡啶 Ir(I)/ zhf-CH3-py-no-B/ 15/ fid
标题	zhf-CH3-py-no-B.15.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	297.0
Pulse Sequence	aring
Number of Scans	5
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2022-08-26T19:13:11
Modification Date	2022-08-26T19:13:12
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



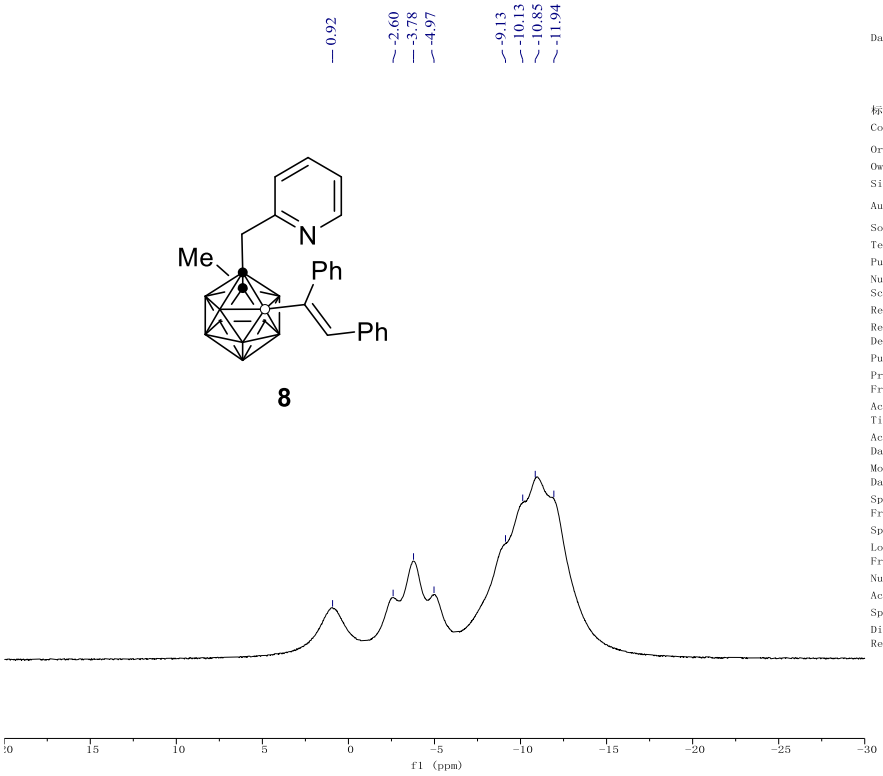
Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应-Work-1/核磁数据/ 8038/ zhf-8038-H/ 1/ fid
标题	zhf-8038-H.1.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.3
Pulse Sequence	zg30
Number of Scans	1
Receiver Gain	27.2
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	2.9998
Acquisition Date	2022-07-10T21:17:43
Modification Date	2022-07-10T21:17:43
Spectrometer Frequency	400.20
Spectral Width	4807.7
Lowest Frequency	-412.3
Nucleus	1H
Acquired Size	14422
Spectral Size	65536
Digital Resolution	0.07



Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应-Work-1/ 核磁数据/ 8038/ zhf-8038-C/ 8/ fid
标题	zhf-8038-C.8.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.6
Pulse Sequence	zgpg30
Number of Scans	17
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2999
Acquisition Date	2022-07-11T19:11:28
Modification Date	2022-07-11T19:11:29
Spectrometer Frequency	100.64
Spectral Width	35714.3
Lowest Frequency	-5274.3
Nucleus	13C
Acquired Size	46426
Spectral Size	131072
Digital Resolution	0.27



Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应-Work-1/核磁数据/ 8038/ zhf-8038-B/ 9/ fid
标题	zhf-8038-B.9.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.5
Pulse Sequence	aring-b11
Number of Scans	6
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2022-07-11T19:13:02
Modification Date	2022-07-11T19:13:03
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39



Parameter	值
Data File Name	F:/ zhf-芳基迁移-3,6位烯基化反应-Work-1/核磁数据/ 8038/ zhf-8038-no-B/ 10/ fid
标题	zhf-8038-no-B.10.fid
Comment	
Origin	Bruker BioSpin GmbH
Owner	nmr
Site	
Author	
Solvent	CDCl3
Temperature	296.5
Pulse Sequence	aring
Number of Scans	6
Receiver Gain	195.5
Relaxation Delay	1.0000
Pulse Width	10.0000
Presaturation Frequency	
Acquisition Time	1.2845
Acquisition Date	2022-07-11T19:13:41
Modification Date	2022-07-11T19:13:42
Spectrometer Frequency	128.40
Spectral Width	25510.2
Lowest Frequency	-12755.1
Nucleus	11B
Acquired Size	32768
Spectral Size	65536
Digital Resolution	0.39