Luminescent Metal Complexes Featuring Photophysically Innocent Boron Cluster Ligands — SI

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General considerations. All experiments were performed air and moisture free under an atmosphere of nitrogen using standard Schlenk and cannula techniques. THF used for reactions and MeCN used for cyclic voltammetry was purified and dried using a Grubbs column. All post-Schlenk work-up and characterization was performed under ambient conditions. The “ambient conditions” for this manuscript refer to room temperature (20 - 25 °C) and uncontrolled laboratory air. Thin-layer chromatography (TLC) samples for carborane-containing compounds were stained with 1 wt. % PdCl₂ in 6M HCl and were developed with heat. Elemental analyses were carried out by Atlantic Microlab, Inc. in Norcross, GA.

Materials. Deuterated solvents were purchased from Cambridge Isotope Laboratories and used as received. MilliQ water described in this manuscript refers to purified potable water with a resistivity at 25 °C of ≤18.2 MΩ·cm. Pd(cod)Cl₂ and Pt(cod)Cl₂ were made according to literature procedures. O-carborane (1,2-C₂B₁₀H₁₂) was purchased from Boron Specialties (USA). K₂[PtCl₆], PdCl₂, Ni(dppe)Cl₂, 1,2-bis(diphenylphosphino)ethane (dppe), 2,2'-bipyridine (bpy), 4,4'-di-tert-butyl-2,2'-bipyridine (dtb-bpy), 1,5-cyclooctadiene (cod), iodine, ethyl magnesium bromide, Pd(PPh₃)₂Cl₂, and tetrabutylammonium hexafluorophosphate (≥99.0%, electrochemical grade) were purchased from Sigma-Aldrich. Glass-backed Silica Gel 60 GLA TLC plates were purchased from Fisher Scientific. Aluminum oxide (activated, basic, Brockmann Grade I, 58 Å, 60 mesh powder) was purchased from Alfa Aesar. All reagents were used as received unless otherwise indicated.

Instruments. ¹H NMR spectra were obtained on a Bruker AV500 or a Bruker AV400 spectrometer; ¹³C{¹H} NMR spectra were obtained on a Bruker AV500 spectrometer; ¹¹B and ³¹P NMR spectra were obtained on a Bruker DRX500 spectrometer. Bruker Topspin software was used to process the NMR data. ¹H and ¹³C{¹H} NMR spectra were referenced to residual solvent resonances in deuterated solvents (CD₂Cl₂: ¹H, 5.320 ppm; ¹³C, 53.840 ppm; CDCl₃: ¹H, 7.260 ppm; ¹³C, 73.840 ppm; THF-d₅: ¹H, 5.020 ppm; ¹³C, 61.500 ppm; Note: due to high humidity H₂O resonances are often present). ¹¹B and ³¹P and NMR spectra were referenced to BF₃·Et₂O (0 ppm) and H₃PO₄ (0 ppm) standards, respectively. Mass spectrometry data was acquired using a Thermo Instruments Exactive Plus with IonSense ID-CUBE DART source instrument (compound 4a and 4b), and a Thermo Scientific™ Q-Exactive™ Plus instrument with a quadrupole mass filter and Orbitrap mass analyzer (compound 8). UV–Vis spectra were
recorded on a Hewlett-Packard 4853 diode array spectrometer. Phosphorescence lifetime measurements for 8 were performed by a time-correlated single-photon counting method using an IBH fluorocube lifetime instrument equipped with a 405 nm LED excitation source. Quantum yield measurements were carried out using a Hamamatsu C9920 system equipped with a xenon lamp, calibrated integrating sphere, and model C10027 photonic multichannel analyzer. Steady-state emission measurements of 8 as a solid, in the thin film, and in solution at 77 K were performed using a Photon Technology International QuantaMaster spectrofluorimeter.

**Preparation of PMMA thin film:** A solution of PMMA (0.085 g, 120 kDa) in toluene (1.5 mL) was thermally sonicated for 3 hours at 40°C, or until PMMA was completely dissolved. Next, 8 (0.0017 mg, 2 wt. %) was added to the solution and sonicated for 5 minutes, yielding an orange solution. The solution of 8/PMMA was spin coated on a quartz substrate (3-5 drops, 800-1,000 RPM, 30 seconds), and this was repeated until the film was thick enough emit light under $\lambda = 365$ nm excitation in a dark room under ambient conditions.

**Determination of molar extinction coefficients:** Extinction coefficients were determined through a series of 5 dilutions with a maximum absorption between 0.1 and 0.7.

**X-ray data collection and processing parameters.** For 3a-3c, 4a, and 8 a single crystal was mounted on a nylon loop using perfluoropolyether oil and cooled rapidly to 100 K with a stream of cold dinitrogen. Diffraction data were measured using a Bruker APEX-II CCD diffractometer using Mo-$K\alpha$ radiation. The cell refinement and data reduction were carried out using Bruker SAINT and the structure was solved with SHELXS-97. All subsequent crystallographic calculations were performed using SHELXL-2013.

**Cyclic voltammetry.** Cyclic voltammetry was performed on 8 and using a CH Instruments Model 600D potentiostat with a glassy carbon disc working electrode, platinum wire counter electrode, and Ag/AgCl wire reference in a saturated solution of KCl in MeCN. All experiments were conducted in 0.1M $[\text{N}^\text{nBu}_4]\text{PF}_6$/MeCN with 0.5 mM analyte concentrations. MeCN solutions were degassed by sparging with argon for 10 minutes, and the cyclic voltammetry was performed under constant flow of argon gas. A scan rate of 0.1 mV/s was used with ferrocene as
an internal standard.

**DFT Calculations.** All optimized geometries were calculated from crystallographic data and optimized with DFT calculations using standard triple-ξ polarization (TZP) basis sets available in the Amsterdam Density Functional 2014.04 Rev. 44409 (ADF)[4] software suite, with Becke[5] and Perdew[6] (BP) Slater-type orbitals (STOs) on a 6 core Apple computer. The local density approximation (LDA) was made with BP and exchange and correlation corrections available by default in the ADF 2014.04 suite. Single point calculations were performed using BP86 level of theory with the Grimme D3 dispersion correction[7] and a TZP basis set. Electron cores were frozen to 2p for Ni, Pd, and Pt; 1s for B, C, and N; and 2s for P atoms. Electron spins were restricted for S0 calculations, and electron spins were unrestricted for T1 calculations. Relativistic correlations were made using Zero-Order Relativistic Approximation (ZORA) for Pt (3c and 8).

**Experimental**

1,1′-Bis(o-carborane) [2].

O-carborane (5.00 g, 34.67 mmol) was added to a 500mL Schlenk flask, which was then evacuated and backfilled with N2 three times. Dry toluene (200 mL) was transferred via cannula, and the contents were stirred to give a slightly cloudy white solution. Next, nBuLi (28.4 mL, 71.0 mmol, 2.5 M in hexane) was added slowly via syringe. The solution immediately turned milky white and the mixture was allowed to stir at room temperature for 21 hours. CuCl powder (9.44 g, 95.3 mmol) was then added, causing the reaction mixture to immediately turn gray and then dark red over the course of 30 minutes. This suspension was stirred for 3 days, after which toluene was removed by rotary evaporation. CH2Cl2 (50 mL) and aqueous HCl (120 mL, 12 M) were added and stirred vigorously for 3 hours, or until the color turned green (indicating the formation of CuCl). The organic layer was separated, and the aqueous layer was washed with CH2Cl2 (3 x 100mL). The combined organic fractions were dried over Na2SO4, filtered, and dried in vacuo, yielding a light brown solid (4.60 g). This crude product was purified by stepwise vacuum sublimation: sublimation under dynamic vacuum (0.20 Torr) at 75°C for 1 hour yielded crystals of unreacted o-carborane. After removal, the remaining solid was heated to 180°C under dynamic vacuum (0.20 Torr) for 1-2 hours. Pure product in the form of white crystals was
isolated from the cold finger and dried under vacuum overnight (3.61 g, 73%). $^1$H NMR (CD$_2$Cl$_2$, 500 MHz): $\delta$ 3.90 (s, 2H, CH$_{cage}$), 3.40-1.40 (br. m, 18H, BH); $^{11}$B NMR (CD$_2$Cl$_2$, 160 MHz): 2.38 (4B), -8.98 (2B), -10.00 (6B), -11.17 (4B), 12.24 (2B), -13.29 (2B); $^{13}$C NMR (CD$_2$Cl$_2$, 125 MHz): 72.31, 63.25. Synthesis adapted from Reference 8.

9,12-diiodo-o-carborane [5].

To a 200 mL Schlenk flask was added o-carborane (2.88 g, 20.0 mmol) and one equivalent I$_2$ (5.08 g, 20.0 mmol). The flask was evacuated and backfilled with N$_2$ at least three times to remove residual moisture. Dry CH$_2$Cl$_2$(100 mL) was transferred to the reaction vessel via cannula and the contents of the flask were stirred to give a purple solution. Next, AlCl$_3$ (0.533 g, 4.0 mmol) was added under positive N$_2$ flow, and the reaction was refluxed until the color fades to pale yellow (~2-3 hours). A second equivalent of I$_2$(5.08 g, 20.0 mmol) and AlCl$_3$ (0.267g, 2.0 mmol) were added, and the reaction was heated to 45°C and allowed to reflux overnight. The next day, the dark brown reaction mixture was diluted with H$_2$O (50 mL, or until effervescence subsided), and unreacted I$_2$ was quenched with Na$_2$SO$_3$ (0.708 g, 5.62 mmol). After stirring for 10 minutes, the purple organic layer was separated and the aqueous layer was washed with CH$_2$Cl$_2$(40 mL x 3) and dried over MgSO$_4$. If the solution is still colored, activated charcoal can be added. This solution was passed through a silica plug and eluted with CH$_2$Cl$_2$ to give a light gray solution. Solvent was then removed by rotary evaporation, yielding a lavender solid. The crude product was then sublimed under vacuum (150-160°C, 5-6 hours, 0.20 Torr) to afford a white solid (6.52 g, 82%) on the cold finger, which was isolated and dried under vacuum overnight before further use. Alternatively, the crude product can be purified by recrystallization by layering CH$_2$Cl$_2$ with an equal volume of hexane and storing at -20°C. After 3-4 hours, the white crystals can be filtered off and washed with cold hexane. $^1$H NMR (CDCl$_3$, 500 MHz) $\delta$ 3.99 (s, 2H, CH), 3.50-1.80 (m, 9H, BH); $^{11}$B NMR (CDCl$_3$, 160 MHz): -5.50 (d, 2B), -12.67 (d, 4B), -14.01 (s, 3B), -14.89 (s, 1B); $^{13}$C NMR (CDCl$_3$, ppm): 51.71. Synthesis adapted from Reference 9.

9,12-diethyl-o-carborane [6].

To a 50 mL Schlenk flask was added 9,12-diiodo-o-carborane (1.98 g, 5.00 mmol) and PdCl$_2$(PPh$_3$)$_2$ (0.07091 g, 0.10 mmol). The flask was left under vacuum for 30 minutes, then
backfilled with N₂. Dry THF (20 mL) was added via cannula, and the flask was stirred in an ice bath for 10 minutes. EtMgBr (7.9 mL, 3.0 M, 23.7 mmol) was then slowly added. The resulting mixture was gently refluxed for 10 days and monitored by GC-MS. The reaction was cooled to room temperature and quenched with H₂O, then charged with diethyl ether (150 mL). The organic layer was separated, and the aqueous layer was extracted with diethyl ether (3 x 80mL). Aqueous HCl (5%, 30 mL) was added to the organic layer, and the organic layer was separated and solvent removed via rotary evaporation. The crude product was purified via silica column chromatography (ethyl acetate:hexanes 1:9). Solvent was removed under vacuum to afford the desired product as a low-melting red solid (0.250g, 31%). ¹H NMR (CD₂Cl₂, 500 MHz) δ 3.47 (2H, s, CHcage), 3.0-1.2 (8H, br. m, BH), 0.89 (t, 6H, CH₃), 0.71 (q, 4H, CH₂); ¹¹B NMR (CD₂Cl₂, 160 MHz): 9.64 (s, 2B), -8.43 (d, 2B), -14.24 (d, 4B), -16.21 (d, 2B); ¹³C NMR (CDCl₃, 125 MHz): 47.71, 13.52, 9.35 (br). Synthesis adapted from Reference 9.

9,9',12,12'-Tetra-ethyl-1,1'-bis(o-carborane) [7].

To a clean 25 mL Schlenk flask, 9,12-diethyl-o-carborane (0.500 g, 2.50 mmol) was added, and the flask was cooled to -78°C. The flask was evacuated and backfilled with N₂ five times, followed by the addition of dry toluene (10 mL) via cannula, yielding a yellow solution. Next, nBuLi (2.1 mL, 5.25 mmol, 2.5 M in hexanes) was added via syringe. The mixture, which immediately turned clear and gradually acquired a yellow color, was allowed to warm and was stirred at room temperature for 24 hours. CuCl was added (0.680 g, 6.87 mmol), and the resulting dark green suspension was allowed to stir for 3 days. Toluene was then removed under reduced pressure, and CH₂Cl₂ (5 mL) and aqueous HCl (15 mL, 10 M) were added and stirred vigorously to quench the resulting dark green reaction mixture. The mixture was allowed to stir until the aqueous layer turned light green (~3h). The organic layer was separated, and the aqueous layer was washed with CH₂Cl₂ (3 x 15mL). The combined organic fractions were dried over Na₂SO₄, filtered, and concentrated to dryness yielding a yellow-orange solid. The crude product was eluted through a pad of silica with hexanes and concentrated to dryness, yielding a pale yellow solid (0.385 g). Minimal pentane (2-3 mL) was added to the solid and stored in the freezer (-20°C) for recrystallization. The next day, pentane was decanted yielding white crystals. The supernatant was stored in the freezer and decanted after four hours, and this process was repeated once more yielding pure white crystals (Total: 0.231 g, 46%). ¹H NMR (CD₂Cl₂, 500
MHz) δ 3.72 (s, 2H, cage CH), 3.4-1.2 (br. m, 16H, BH), 0.86 (m, 12H, CH₃), 0.69 (m, 8H, CH₂); ¹¹B NMR (CD₂Cl₂, 160 MHz): 10.04 (s, 4B), -8.58 (d, 4B), -12.09 (m, 12B); ¹³C NMR (CD₂Cl₂, 125 MHz): 65.48, 56.19, 13.32, 8.36. Single crystals for X-ray diffraction analysis were grown from a concentrated solution of pentane stored in a freezer at -15°C overnight.

**Pd(dppe)Cl₂**

Pd(cod)Cl₂ (0.286 g, 1.00 mmol) and CH₂Cl₂ (6 mL) were combined and stirred in a large vial to give a yellow slurry, and 1,2-bis(diphenylphosphino)ethane (dppe, 0.398 g, 1.00 mmol) was then added. The color quickly changed to a lighter shade of yellow. After 15 minutes, hexane (14 mL) was added, and the vial was capped and stored in the freezer (-20°C) for 4 hours. The solid was filtered and washed with pentane (5 mL x 3) yielding the pale yellow product (0.517 g, 90%). ¹H NMR (CD₂Cl₂, 400 MHz): 7.87 (8H, m), 7.60 (4H, m), 7.53 (8H, m), 2.47 (4H, d, CH₂); ³¹P NMR (CD₂Cl₂, 121 MHz): 64.7. Synthesis adapted from Reference 10.

**Pt(dppe)Cl₂**

Pt(cod)Cl₂ (0.374 g, 1.00 mmol) and CH₂Cl₂ (6 mL) were combined and stirred in a large vial to give a white slurry, and 1,2-bis(diphenylphosphino)ethane (dppe, 0.398 g, 1.00 mmol) was then added. After 15 minutes, hexane (14 mL) was added, and the vial was capped and stored in the freezer (-20°C) for 4 hours. The solid was filtered and washed with pentane (5 mL x 3) yielding the white product (0.576 g, 87%). ¹H NMR (CD₂Cl₂, 400 MHz): 7.86 (8H, m), 7.56 (4H, m), 7.52 (8H, m), 2.36 (4H, d, CH₂); ³¹P NMR (CD₂Cl₂, 121 MHz): 41.8 (¹JPt-P = 3622 Hz). Synthesis adapted from the synthesis for Pd(dppe)Cl₂ in Reference 10.

**Pt(dtb-bpy)Cl₂**

Pt(cod)Cl₂ (0.350 g, 0.935 mmol), 4,4′-ditertbutyl-2,2′-bipyridine (dtb-bpy, 0.251 g, 0.935 mmol), and 8 mL methanol were stirred in a sealed tube at 75°C for 22 hours. As the suspension warmed up, the color changed to yellow-orange and eventually turned bright yellow. The tube was cooled to room temperature in a water bath and the yellow solid was filtered. After washing with diethyl ether (3 mL x 5) to remove 1,5-cyclooctadiene, the yellow product was dried under vacuum overnight (0.458 g, 92%). ¹H NMR (CD₂Cl₂, 500 MHz): 9.52 (2H, d), 7.91
(2H, d), 7.57 (2H, dd), 1.44 (18H, s, CH$_3$); $^{13}$C NMR (CD$_2$Cl$_2$, 126 MHz): 164.9, 157.2, 149.3, 124.8, 119.9, 36.2, 30.3. Synthesis adapted from Reference 11.

Ni(be)(dppe) [3a].

1,1′-Bis-(o-carborane) (0.100 g, 0.349 mmol) was added to a 10 mL Schlenk flask, which was then evacuated and backfilled with N$_2$ three times. Dry THF (4 mL) was transferred to the flask via cannula to give a clear solution. While stirring at room temperature, nBuLi (0.45 mL, 1.6 M, 0.72 mmol) was added drop-wise via syringe, giving a dark yellow solution. The reaction was then heated at 60°C for 3 hours, and the color slowly turned to a lighter yellow. After 3 hours, the flask was allowed to cool to room temperature yielding a golden-yellow solution. To a separate 25 mL Schlenk flask was added Ni(dppe)Cl$_2$ (0.184 g, 0.349 mmol), and the flask was evacuated and backfilled with N$_2$ three times. Dry THF (20 mL) was then transferred via cannula to give a red-orange slurry. This flask was cooled to -78°C and stirred for 5 minutes. The dilithio-bis-carborane mixture was added dropwise (∼1 mL/min) to the cold Ni(dppe)Cl$_2$ slurry, and the reaction was allowed to warm up to room temperature and react overnight, giving a deep orange solution the following day. The solvent was removed via rotary evaporation after 18 hours, and the orange solid was dissolved in 5-10 mL CH$_2$Cl$_2$ and passed through a pad of Celite. After removal of solvent, crude orange product (0.160 g) remained and was purified via column chromatography: a wide 60 mL filter frit was loaded halfway with silica in hexanes, and the crude product was dissolved in the minimum amount of 1:1 CH$_2$Cl$_2$:hexanes (R$_f$ = 0.50) and loaded on the silica. Any unreacted bis-carborane (R$_f$ = 0.90) can be removed as the initial clear/light yellow elution, and the desired product can be cleanly collected as the orange band that follows. The orange solution was concentrated to dryness to give a yellow solid (0.125 g, 49%) that was dried under vacuum overnight. $^1$H NMR (CD$_2$Cl$_2$, 500 MHz) δ 7.77 (br. t, 8H, Ar), 7.64 (t, 4H, Ar), 7.54 (t, 8H, Ar), 4.0-0.6 (br. m, 20H, BH), 2.0 (d, 4H, CH$_2$, $^2$J$_{PH}$ = 15.60 Hz); $^{11}$B NMR (CD$_2$Cl$_2$, 160 MHz) -1.96 (d, 2B), -3.83 (d, 2B), -8.35 (d, 12B), -10.62 (m, 4B); $^{13}$C NMR (CD$_2$Cl$_2$, 125 MHz) 134.62 (t, $^2$J$_{PC} = 5.2$ Hz), 132.51, 129.46 (t, $^3$J$_{PC} = 5.2$ Hz), 127.78 (m), 87.31 (dd, $^2$J$_{PC(trans)} = 91.8$ Hz, $^2$J$_{PC(cis)} = 38.4$ Hz), 84.70, 28.28 (t, $^1$J$_{PC} = 21.5$ Hz); $^{31}$P{$^1$H} NMR (CD$_2$Cl$_2$, 202 MHz): 49.09. NMR chemical shifts comparable to those in Reference 12. Single crystals for X-ray diffraction analysis were grown from slow vapor
diffusion of diethyl ether into dichloromethane. Elemental analysis (including 0.5 CH₂Cl₂) found (calculated for C₃₀H₄₅B₂₀ClNiP₂): C, 46.40 (46.73); H, 5.89 (5.79).

**Pd(bc)(dppe) [3b].**

1,1′-Bis-(o-carborane) (0.100 g, 0.349 mmol) was added to a 10 mL Schlenk flask, which was then evacuated and backfilled with N₂ three times. Dry THF (4 mL) was transferred to the flask via cannula to give a clear solution. While stirring at room temperature, nBuLi (0.45 mL, 1.6 M, 0.72 mmol) was added dropwise via syringe, giving a dark yellow solution. The reaction mixture was then heated at 60°C for 3 hours, and the color slowly turned lighter yellow. After 3 hours, the flask was allowed to cool to room temperature yielding a golden-yellow solution.

Pd(dppe)Cl₂ (0.202 g, 0.349 mmol) was added to a separate 25mL Schlenk flask, which was then evacuated and backfilled with N₂ three times. Dry THF (20 mL) was transferred via cannula to give a white slurry. This flask was cooled to -78°C and stirred for 10 minutes. The dilithio-bis-carborane solution was added dropwise (~1 mL/min) to the cold Pd(dppe)Cl₂ slurry, and the reaction was allowed to warm up to room temperature and stir overnight, giving a deep orange mixture the following day. THF was removed via rotary evaporation after 20 hours, and the remaining orange solid was dissolved in 5-10 mL CH₂Cl₂ and passed through a pad of Celite. After removal of solvent in vacuo, crude orange product (0.225 g) remained and was purified via column chromatography. A wide 60 mL filter frit was loaded halfway with silica in hexanes, and the crude product was dissolved in minimal 1:1 CH₂Cl₂:hexanes (Rₜ = 0.50) and loaded on the silica. Any unreacted bis-carborane (Rₜ = 0.90) can be removed as the initial clear/light yellow elution, and the desired product can be cleanly collected as the orange band that follows. The orange solution was concentrated to dryness to give an orange solid (0.70 g, 25%) that was dried under vacuum overnight.

**¹H NMR (CD₂Cl₂, 500 MHz)** δ 7.64 (t, 4H, Ar), 7.62 (t, 8H, Ar), 7.55 (t, 8H, Ar), 3.6-0.6 (br. m, 20H, BH), 2.12 (d, 4H, CH₂, 2JₚH = 20.4 Hz); **¹¹B NMR (CD₂Cl₂, 160 MHz)** -3.20 (m, 4B), -8.74 (m, 16B); **¹³C NMR (CD₂Cl₂, 125 MHz)** 134.57 (t, 2JₚC = 5.6 Hz), 132.74, 129.64 (t, 3JₚC = 5.4 Hz), 127.13, 91.90 (dd, 2JₚC(trans) = 138.7 Hz, 2JₚC(cis) = 14.7 Hz), 84.80, 28.82 (t, 1JₚC = 22.3 Hz); **³¹P{¹H} NMR (CD₂Cl₂, 202 MHz)** 51.63. Single crystals for X-ray diffraction analysis were grown by cooling a concentrated solution of hot benzene to room temperature. Elemental analysis found (calculated for C₃₀H₄₅B₂₀Pd₂): C, 45.80 (45.65); H, 5.89 (5.62).
Pt(bc)(dppe) [3c].

1,1′-Bis-(o-carborane) (0.100 g, 0.349 mmol) was added to a 10 mL Schlenk flask, which was then evacuated and backfilled with N\textsubscript{2} three times. Dry THF (4 mL) was transferred to the flask via cannula to give a clear solution. While stirring at room temperature, \textsuperscript{\textit{\textcircled{8}}}BuLi (0.45 mL, 1.6 M, 0.72 mmol) was added drop-wise via syringe, giving a dark yellow solution. The reaction was then heated at 60°C for 3 hours, and the color slowly turned lighter yellow. After 3 hours, the flask was allowed to cool to room temperature yielding a golden-yellow solution. Pt(dppe)Cl\textsubscript{2} (0.234 g, 0.349 mmol) was added to a separate 25mL Schlenk flask, which was then evacuated and backfilled with N\textsubscript{2} three times. Dry THF (15 mL) was then transferred via cannula to give a white slurry. This flask was cooled to -78°C and stirred for 10 minutes. The dilithio-bis-carborane solution was added dropwise (~1 mL/min) to the cold Pt(dppe)Cl\textsubscript{2} slurry, and the reaction was allowed to warm up to room temperature and stir overnight, giving a deep orange solution the following day. The orange solution was passed through a pad of Celite and washed with THF. The filtrate was then dried via rotary evaporation to yield a brown-orange solid. This solid was dissolved in 5-10 mL CH\textsubscript{2}Cl\textsubscript{2} and passed through a pad of Celite. After removal of solvent, crude orange product (0.225 g) remained and was purified via column chromatography through a pad of basic alumina. A wide 60 mL filter frit was loaded halfway with basic alumina in CH\textsubscript{2}Cl\textsubscript{2}, and the crude product was dissolved in minimal CH\textsubscript{2}Cl\textsubscript{2} (R\textsubscript{f} = 0.90) and loaded on the basic alumina. The orange filtrate (mix of product and unreacted bis-carborane) was collected, and the volume was reduced to about 1-2 mL via rotary evaporation. Next, 5-10 mL hexanes was added, causing a yellow solid to crash out. This solid was filtered and washed with hexanes (3 x 5 mL) and dried under vacuum for 24 hours to afford 3c as a yellow powder (0.082 g, 27%).

\textsuperscript{\textit{\textcircled{1}}}H\textsuperscript{13}C\textsuperscript{31}P\textsubscript{\textit{\textcircled{1}}}H NMR (CD\textsubscript{2}Cl\textsubscript{2}, 500 MHz) δ 7.70 (m, 8H, Ar), 7.63 (t, 4H, Ar), 7.55 (m, 8H, Ar), 3.5-0.7 (br. m, 20H, BH), 2.07 (d, 4H, CH\textsubscript{2}, \textsuperscript{\textit{\textcircled{2}}}J\textsubscript{PH} = 17.7 Hz); \textsuperscript{\textit{\textcircled{1}}}B\textsuperscript{\textit{\textcircled{1}}}NMR (CD\textsubscript{2}Cl\textsubscript{2}, 160 MHz): -3.67 (m, 4B), -8.08 (m, 16B); \textsuperscript{\textit{\textcircled{13}}}C\textsuperscript{\textit{\textcircled{31}}}P\textsubscript{\textit{\textcircled{1}}}H\textsuperscript{13}P\textsubscript{\textit{\textcircled{1}}}H NMR (CD\textsubscript{2}Cl\textsubscript{2}, 202 MHz): 41.44 (s, \textsuperscript{\textit{\textcircled{1}}}J\textsubscript{\textit{\textcircled{1}}}PtP = 2493 Hz). Single crystals for X-ray diffraction analysis were grown from slow vapor diffusion of diethyl ether into dichloromethane. Elemental analysis found (calculated for C\textsubscript{30}H\textsubscript{44}B\textsubscript{20}PtP\textsubscript{2}): C, 40.55 (41.04); H, 5.05 (4.80).
Pt(bc)(dtb-bpy) [4a] and [4b].

2 (0.080 g, 0.279 mmol) was charged to a 10mL Schlenk flask, which was then evacuated and backfilled 3 times with N₂. Dry THF (3 mL) was added via cannula and the solution was stirred, followed by the addition of nBuLi (0.36 mL, 1.6 M, 0.576 mmol) at room temperature. The flask was heated at 60°C for 3 hours and then cooled to room temperature. Pt(dtb-bpy)Cl₂ (dtb-bpy = 4,4'-di-tert-butyl-2,2'-bipyridine, 0.149 g, 0.279 mmol) was charged to a separate 50mL Schlenk flask, which was evacuated and backfilled 3 times with N₂. Next, dry THF (20 mL) was added, and the resulting yellow slurry was cooled to -78°C. The mixture of Li₂[bc] was added dropwise to the cooled slurry. The reaction mixture was allowed to warm up to room temperature and was heated to 60°C. The reaction mixture slowly turned from bright yellow to dark brown/black. After 21 hours, the solvent was moved via rotary evaporation to yield a yellow-brown solid. This solid was washed with CH₂Cl₂ (3 x 10 mL), yielding a gray solid (0.082 g) that was emissive under UV excitation (λexc = 365 nm). To this solid was added 5 mL hot 1,2-difluorobenzene, and this dark brown slurry was heated with a heat gun the solid completely dissolved. Next, the solution was passed through a pad of Celite, yielding a yellow-orange solution with black precipitate at the top of the Celite. This procedure was repeated two more times. The filtrate was dried in vacuo, and the pale orange solid was dried under vacuum overnight (0.055 g, 26%). ¹H NMR suggests a 1.0:1.4 mix of κ²-B,C-bound (4a) and κ²-C,C-bound (4b) isomers. Single crystals of 4a for X-ray diffraction analysis were by cooling a concentrated solution of hot 2-MeTHF to room temperature. Attempts to reproduce this result led to products with various mixes of isomers, including both a majority κ²-B,C-bound isomer and a majority κ²-C,C-bound isomer, as evidenced by the ¹H NMR spectrum of the aryl region (See NMR spectra). HRMS (DART): m/z calculated for C₂₂H₄₄B₂₀N₂Pt [M+H]+, 748.5237 Da; found, 748.5246 Da.

4a: ¹H NMR (THF-d₈, 500 MHz) δ 9.44 (d, 2H, Ar), 8.39 (d, 2H, Ar), 7.92 (dd, 2H, Ar), 3.1-1.0 (br. m, 20H, BH), 1.44 (s, 18H, tBu); ¹³C NMR (THF-d₈, 125 MHz) 166.32, 157.51, 151.77, 124.54, 121.02, 82.92, 81.01, 36.06, 30.13.

4b: ¹H NMR (THF-d₈, 500 MHz) δ 9.83 (d, 1H, Ar), 9.27 (d, 1H, Ar), 8.41 (d, 1H, Ar), 8.37 (d, 1H, Ar), 7.97 (dd, 1H, Ar), 7.84 (dd, 1H, Ar), 4.47 (s, 1H, CHbis-carborane), 3.2-1.6 (br m, 20H, BH), 1.459 (9H, s, tBu), 1.457 (9H, s, tBu); ¹³C NMR (THF-d₈, 125 MHz) 165.44, 165.00, 157.99, 156.52,
Note: {$^{11}\text{B}$ NMR chemical shifts for 4a and 4b overlap, so values for the mixture are reported.} {$^{11}\text{B}$ NMR (THF-d$_8$, 160 MHz) -4.01 (4B), -8.79 (8B), -11.15 (8B).

Pt(tebc)(dtb-bpy) [8].

7 (0.0689 g, 0.171 mmol, tebc) was charged to a 10mL Schlenk flask, which was then evacuated and backfilled 3 times with N$_2$. Dry THF (2 mL) was added via cannula and the solution was stirred, followed by the slow addition of $^8$BuLi (0.22 mL, 1.6 M, 0.351 mmol) at room temperature. The flask was heated at 60°C for 3 hours and then cooled to room temperature. Pt(dtb-bpy)Cl$_2$ (dtb-bpy = 4,4'-di-tert-butyl-2,2'-bipyridine, 0.0914 g, 0.171 mmol) was charged to a separate 25mL Schlenk flask, which was evacuated and backfilled 3 times with N$_2$. Next, dry THF (15 mL) was added, affording a yellow slurry, which was cooled to -78°C. The mixture containing [Li$_2$(tebc)] was added dropwise to the cooled slurry. The reaction mixture was allowed to warm up to room temperature and was then heated at 60°C for 60 hours. The reaction slowly turned from bright yellow to yellow-brown. After 60 hours, the solvent was moved via rotary evaporation to yield a yellow-brown solid. This solid was dissolved in diethyl ether and passed through a pad of Celite, and the filtrate was then dried in vacuo. Next, the resulting solid was washed with cold pentane (5 x 2 mL), yielding a pale orange solid. The solid was dissolved in CH$_2$Cl$_2$ and passed through a silica plug. The filtrate was dried in vacuo, and the resulting solid was dried under vacuum overnight (0.063 g, 43%). {$^1\text{H}$ NMR (CD$_2$Cl$_2$, 500 MHz) $\delta$ 9.56 (d, 1H, Ar), 9.36 (d, 1H, Ar), 8.08 (d, 1H, Ar), 8.02 (d, 1H, Ar), 7.68 (dd, 1H, Ar), 7.47 (dd, 1H, Ar), 3.87 (s, 1H, CH$_{\text{bis-carborane}}$), 3.3-1.2 (16H, br. m, BH), 1.45 (9H, s, $^4$Bu), 1.43 (9H, s, $^4$Bu), 1.02-0.82 (m, 12H, CH$_2$CH$_3$), 0.56-0.79 (m, 8H, CH$_2$); {$^{11}\text{B}$ NMR (CD$_2$Cl$_2$, 160 MHz) 7.74 (m, 4B), -8.46 (s, 8B), -11.25 (s, 4B), -13.81 (s, 4B); {$^{13}\text{C}$ NMR (CD$_2$Cl$_2$, 125 MHz) 164.12 (s, C$_2$ dtb-bpy, C—Pt$_{\text{trans}}$), 163.58, 157.22, 155.85, 155.19, 149.79, 123.99, 123.77, 120.02, 119.17, 76.63, 73.20, 59.56, 55.39, 35.98, 35.90, 30.36, 30.23 (d, tert-butyl CH$_3$, J = 16.2 Hz), 13.95, 13.71, 13.57, 13.51, (ethyl CH$_3$), 9.11 (br. m, ethyl CH$_2$). Single crystals for X-ray diffraction analysis were grown the slow evaporation of diethyl ether over the course of one week. HRMS (Orbitrap): m/z calculated for C$_{30}$H$_{64}$B$_{20}$N$_2$Pt [M$^+$], 863.6724 Da; found, 863.0652 Da.
[NEt₄]₂[Pd(bc)₂]

2 (0.100 g, 0.349 mmol) was added to a 25 mL Schlenk flask, which was then evacuated and backfilled with N₂ three times. Dry THF (4 mL) was transferred to the flask via cannula, generating a clear solution. While stirring at room temperature, ⁸BuLi (0.45 mL, 1.6 M, 0.72 mmol) was added dropwise via syringe to give a dark yellow solution. The reaction was then heated to 60°C for 3 hours, and the color slowly turned lighter yellow. After 3 hours, the flask was cooled to room temperature, and under positive N₂ flow, PdCl₂ (0.0309 g, 0.175 mmol) was added. The temperature was increased to 60°C and the mixture was allowed to stir for 21 hours. The reaction was cooled to room temperature, passed through a pad of Celite, and the filtrate was dried in vacuo. The resulting brown solid was then dissolved in H₂O (10 mL). To this solution was added a solution of tetraethylammonium bromide (NEt₄Br, 0.0736 g, 0.349 mmol) dissolved in 2 mL H₂O, and brown solid immediately precipitated. The solid was filtered and washed with H₂O (3 x 10 mL) was then dissolved in CH₂Cl₂ and dried over Na₂SO₄. The mixture was filtered and the solvent removed via rotary evaporation. Next, the solid was dissolved in minimal CH₂Cl₂ and loaded on silica. The plug was flushed with CH₂Cl₂ (100 mL) to remove side products, and then flushed with acetone (50 mL) to collect the product. Solvent was removed via rotary evaporation, and the brown solid was vacuum dried (0.059 g, 25%). Note: We believe B—H activation and/or deboronation may be occurring under the given reaction conditions for [NEt₄]₂[Pd(bc)₂]; however, the ¹¹B NMR spectrum for [NEt₄]₂[Pd(bc)₂] isolated under these conditions are in agreement with the ¹¹B NMR spectrum for the side product isolated during the synthesis of 3b (see Figure S7 below). ¹H NMR (CD₂Cl₂, 500 MHz) δ 3.4-1.0 (br. m, 20H, BH), 3.21 (q, 16H, CH₂), 1.35 (tt, 24H, CH₃); ¹¹B NMR (CD₂Cl₂, 160 MHz) -2.66 (m, 9B), -9.31 (m, 26B), -16.75 (2B), -22.07 (2B), -32.64 (0.5B), -35.11 (0.5B); ¹³C NMR (CD₂Cl₂, 125 MHz) 125.77, 82.77, 82.39, 72.30, 65.49, 65.22, 63.25, 34.46, 30.44, 30.05, 7.87. Elemental analysis found (calculated for C₂₄H₈₀B₄₀N₂Pd): C, 32.68 (30.81); H, 8.58 (8.62).

[NEt₄]₂[Pt(bc)₂]

2 (0.100 g, 0.349 mmol) was added to a 25 mL Schlenk flask, which was then evacuated and backfilled with N₂ three times. Dry THF (4 mL) was transferred to the flask via cannula, generating a clear solution. While stirring at room temperature, ⁸BuLi (0.45 mL, 1.6 M, 0.72
(528x39) mmol) was added dropwise via syringe to give a dark yellow solution. The reaction mixture was then heated at 60°C for 3 hours, and the color slowly turned lighter yellow. After 3 hours, the flask was cooled to -78°C, and under positive N₂ flow, Pt(cod)Cl₂ (cod = 1,5-cyclooctadiene, 0.065 g, 0.175 mmol) was added. The temperature was increased to 60°C and the resulting mixture was allowed to stir for 21 hours. The resulting dark brown mixture was allowed to cool to room temperature and was passed through a pad of Celite. The filtrate was dried in vacuo. The resulting solid was then dissolved in H₂O (10 mL). To this solution was added a solution of tetraethylammonium bromide (NEt₄Br, 0.0736 g, 0.349 mmol) dissolved in 2 mL H₂O, and dark green solid immediately precipitated. The solid was filtered and washed with H₂O (3 x 10 mL) and was then dissolved in CH₂Cl₂ and dried over Na₂SO₄. The dark brown solution was filtered and the solvent removed via rotary evaporation. Next, the solid was dissolved in minimal CH₂Cl₂ and loaded on silica. The plug was flushed with CH₂Cl₂ (100 mL) to remove side products, and then flushed with acetone (50 mL) to collect the product. Solvent was removed via rotary evaporation, and the resulting brown solid was vacuum dried (0.182 g, 68%). Note: We believe B–H activation and/or deboronation may be occurring under the given reaction conditions for [NEt₄]₂[Pt(bc)₂]: however, the ¹¹B NMR spectrum for [NEt₄]₂[Pt(bc)₂] isolated under these conditions are in agreement with the ¹¹B NMR spectrum for the side product isolated during the synthesis of 3c (see Figure S7 below). ¹H NMR (CD₂Cl₂, 500 MHz): 3.3-1.0 (br. m, 20H, BH), 3.21 (q, 16H, CH₂), 1.35 (tt, 24H, CH₃); ¹¹B NMR (CD₂Cl₂, 160 MHz) -2.84 (m, 8B), -9.45 (m, 25H), -16.94 (d, 4B), -22.25 (d, 2B), -32.77 (d, 0.5B), -35.21 (d, 0.5B); ¹³C NMR (CD₂Cl₂, 125 MHz) 72.31, 71.22, 65.43, 63.26, 29.88, 22.72, 14.21, 7.86. Elemental analysis found (calculated for C₂₄H₈₀B₄₀N₂Pt): C, 31.37 (28.14); H, 7.56 (7.87).
**Figure S1**: UV-Vis absorption spectrum of 1 and 2. Solutions were made to 0.002 M concentration.

**Figure S2**: Structures of luminescent compounds mentioned in manuscript. A) Ir(III) compounds containing a κ²-C,N-bound 1-(2-pyridyl)-o-carboranyl ligand (page 1 of manuscript, reference 13, SI); B) Ir(III) compounds containing a κ²-C,P-bound 1-(Pr₂PCH₂)-o-carboranyl (page 1 of manuscript, reference 14, SI); C) Pt(bph)(bpy) where bph = biphenyl and bpy = 2,2'-bipyridine (page 2 of manuscript, reference 15, SI).
Figure S3: Structures of Ir(III) compounds that contain ortho-, meta-, para, and nido-carborane as substituents. A) Reference 16; B) Reference 17; C) Reference 18; D) Reference 19.

Figure S4: Thermal ellipsoid plots of 3a-3c at 50% probability.
### Table S1: Selected bond distances and angles for 3a-3c.

| Parameter                  | 3a   | 3b   | 3c   |
|----------------------------|------|------|------|
| M-C1 (Å)                   | 2.007| 2.097| 2.090|
| M-C4 (Å)                   | 1.995| 2.103| 2.093|
| C1-C2 (Å)                  | 1.694| 1.688| 1.744|
| C2-C3 (Å)                  | 1.514| 1.531| 1.514|
| C3-C4 (Å)                  | 1.694| 1.690| 1.728|
| M-P1 (Å)                   | 2.253| 2.312| 2.297|
| M-P2 (Å)                   | 2.243| 2.304| 2.310|
| C1-M-C4 (°)                | 90.82| 88.20| 86.88|
| M-C1-C2 (°)                | 111.25| 111.60| 113.48|
| C1-C2-C3 (°)               | 113.04| 114.43| 112.52|
| C2-C3-C4 (°)               | 113.40| 114.18| 113.69|
| C3-C4-M (°)                | 111.43| 111.51| 113.36|
| C1-M-P2 (°)                | 171.46| 174.30| 173.20|
| C4-M-P1 (°)                | 172.40| 174.71| 173.05|
| M-M (Å)                    | 10.976| 12.176| 8.685|
| C1-C4 (Å)                  | 2.850| 2.923| 2.876|
| C1-C2-C3-C4 dihedral       | -0.2 | -2.91| 0.59 |
| C1-C2-C3-C4-M sum of angles (°) | 539.94 | 539.92 | 539.93 |

### Table S2: Selected bond distances and angles for 3a-3c and the average bond distances and angles of corresponding M(bph)(P^P) complexes.

| Parameter                  | 3a   | Avg. Ni(bph)(P^P) | 3b   | Avg. Pd(bph)(P^P) | 3c   | Avg. Pt(bph)(P^P) |
|----------------------------|------|-------------------|------|-------------------|------|-------------------|
| M-C1 (Å)                   | 2.007| 1.960             | 2.097| 2.050             | 2.090| 2.050             |
| M-C4 (Å)                   | 1.995| 1.940             | 2.103| 2.050             | 2.093| 2.030             |
| C1-M-C4 (°)                | 90.82| 83.25             | 88.20| 80.82             | 86.88| 80.66             |
To demonstrate that the bc framework is structurally similar to the biphenyl (bph) framework, we compared bond distances, angles, and molecular geometries of M(bc)(dppe) to those of a series of cyclometallated M(bph)(P^P) in reported X-ray crystal structures.\textsuperscript{[20]} X-ray quality crystals of 3a-3c were grown using slow evaporation of diethyl ether, vapor diffusion of diethyl ether into dichloromethane, or cooling of a concentrated solution of hot benzene. For 3a-3c, the M—C bond is about 0.05 Å longer than the average M—C bond in corresponding biphenyl complexes. Of the three complexes 3a-3c, the Ni—C bond (3a) is the shortest M—C bond at 2.00 Å, and both Pd—C (3b) and Pt—C (3c) bond lengths are about 2.09 Å. These observations are consistent with Ni possessing the smallest atomic radius and Pd and Pt exhibit similar atomic radii due to the lanthanide contraction for Pt.\textsuperscript{[21]}

The C1—M—C4 bond angles decrease as the size of the metal atom increases, which compares well with analogous Group 10 bph complexes. However, the trend is more pronounced in the bc series with this angle being 6-8° larger than the average C1—M—C4 angle in the biphenyl complexes. The C1—C2—C3—C4 dihedral angles of 0.20°, 2.91°, and 0.59° for 3a, 3b, and 3c, respectively, suggest the chelation of 2 leads to a minimally distorted square planar structure. The C1—C4 distances between the two metal-bound carbons fall within a range of 0.07 Å of each other (2.850 Å to 2.923 Å), indicating the larger C1—M—C4 angle is likely a structural characteristic of 2. For comparison, the average corresponding C1—C4 distance in M(bph)(P^P) complexes is about 0.2 Å shorter at 2.662 Å, further rationalizing the more acute C1—M—C4 angles seen in those bph complexes. Furthermore, the bc C1—M—C4 bond angles
are larger than all reported C1—M—C4 bond angles for M(bph)(P^P) complexes. Compounds 3a-3c have C—M—P\textsubscript{trans} angles of 171-174°, making them slightly distorted square planar complexes. These values are comparable to those of the reported cyclometallated M(bph)(P^P) compounds, indicating that bc does not influence the intramolecular geometry much differently than biphenyl.
Figure S6: A) Reaction scheme for the oxidation of 3c on silica to form Pt(bc)(O=dppe). B) $^{31}$P{${}^1$H} NMR spectrum of the product Pt(bc)(O=dppe) isolated after passing 3c through a short plug of silica eluted with CH$_2$Cl$_2$. Insets show expanded regions of the $^{31}$P NMR spectrum corresponding to each of the phosphorous atoms in the dppe ligand. Asterisks correspond to the $^{31}$P peak and Pt—P satellites for each phosphorous: black = both P atoms in 3c; red = O=P in Pt(bc)(O=dppe); blue = P in Pt(bc)(O=dppe).

The purification of 3c proved troublesome as one of the P—Pt bonds easily underwent oxidation on silica, forming the monooxidized dppe species as evidenced by the formation of 2 doublets with unique $^1J_{Pt-P}$ values in the $^{31}$P{${}^1$H} NMR spectrum. For the oxidized P (O=P, red in Figure 3A), $\delta = 40.75$ ppm with $^2J_{Pt-P} = 60$ Hz and $^3J_{P-PO} = 3.8$ Hz. For the unoxidized P (P, blue in Figure 3A), $\delta = 15.70$ ppm with $^1J_{Pt-P} = 2800$ Hz and $^3J_{P-PO} = 3.8$ Hz. These chemical shifts and coupling constants are similar to those for compounds 2a and 2b in Reference 22. Purifying the crude reaction mixture for 3c via column chromatography with basic alumina yielded the unoxidized, isolated compound at 27% yield.
Figure S7: Left: Stacked $^{11}$B{${}^1$H} NMR spectra for the $[	ext{Pd(bc)}_2]^2^-$ side product isolated during the synthesis of 3b (top) and independently synthesized $[	ext{Pd(bc)}_2]^2^-$ (see experimental). Right: Stacked $^{11}$B{${}^1$H} NMR spectra for the $[	ext{Pt(bc)}_2]^2^-$ side product isolated during the synthesis of 3c (top) and independently synthesized $[	ext{Pt(bc)}_2]^2^-$ (see experimental).

For each reaction, the other major by-product is $[\text{M(bc)}_2]^2^-$ (where M = Ni, Pd, Pt), which is isolated via silica column chromatography. The formation of this di-substituted complex is likely due to the low concentration of M(dppe)Cl$_2$ relative to newly generated and more soluble M(bc)(dppe) under the reaction conditions, making M(bc)(dppe) more prone to a second nucleophilic attack from the Li$_2$-[bc]. The $^{11}$B NMR of the isolated reaction product for 3b and 3c matched the $^{11}$B NMR of the independently synthesized $[	ext{Pd(bc)}_2]^2^-$ and $[	ext{Pt(bc)}_2]^2^-$ complexes (Figure S5), supporting our hypothesis.

We believe B—H activation and/or deboronation may be occurring under the given reaction conditions for $[	ext{Pd(bc)}_2]^2^-$ and $[	ext{Pt(bc)}_2]^2^-$, and that the reaction product contains admixtures of closo-nido-[bc] and/or its metalation products. Kazakov and coworkers have reported the partial deboronation of 2 in the presence of water,[23] and their reported $^{11}$B NMR chemical shifts are similar to those observed in for $[	ext{Pd(bc)}_2]^2^-$ and $[	ext{Pt(bc)}_2]^2^-$ (Figure S7). However, the $^{11}$B NMR spectra for $[	ext{Pd(bc)}_2]^2^-$ and $[	ext{Pt(bc)}_2]^2^-$ isolated under these conditions are in agreement with the $^{11}$B NMR spectra for the side product isolated during the synthesis of 3b and 3c.

Additionally, $^{31}$P NMR shows the in-situ formation of mono-oxidized dppe, Ph$_2$P(CH$_2$)$_2$P(O)Ph$_2$ ($O$=dppe) for the synthesis of 3a-3c, suggesting the ligand is displaced by an extra equivalent of Li$_2$-[bc] as the metal center is substituted twice (Figure S6). The $^{31}$P{${}^1$H} chemical shifts for $O$=dppe are similar to those for compound 2 in Reference 24. Interestingly, we still observe free $O$=dppe despite stringent air-free conditions.
Figure S8: A) Reaction scheme for the formation of \([\text{M}(bc)_2]^2-\) (M = Ni, Pd, Pt) and O=dppe. B) Representative in-situ \(^{31}\text{P}^{[1}\text{H}]\) NMR spectrum during the synthesis of 3a shows the formation of free O=dppe (δ = 32.1 ppm, O=P; δ = -12.7 ppm, P), which results from the reaction of Li2-[bc] with 3a (δ = 49.09 ppm) to form [Ni(bc)]^2-. Interestingly, O=dppe formed even under rigorous oxygen-free conditions.

Figure S9: UV-Vis absorption spectrum for 3a (black), 3b (red), and 3c (blue). Inset: Zoomed in region depicting MLCT transitions.
Figure S10: HOMO and LUMO images derived from DFT calculations of 3a (left), 3b (middle), and 3c (right). Involvement of the bc ligand in HOMO-LUMO transitions is negligible, indicating the bc ligand is photophysically innocent.

Figure S11: A) Thermal ellipsoid plot of 4a (50% probability). H atoms were omitted for clarity. B) Stacking of 4a Pt(II)···Pt(II) distances of 5.870 Å and 5.520 Å.
Table S3: Selected bond distances and angles for 4a.

| Parameter            | 4a     |
|----------------------|--------|
| Pt-C1 (Å)            | 2.043  |
| Pt-C4 (Å)            | 2.045  |
| C1-C2 (Å)            | 1.708  |
| C2-C3 (Å)            | 1.516  |
| C3-C4 (Å)            | 1.71   |
| Pt-N1 (Å)            | 2.109  |
| Pt-N2 (Å)            | 2.105  |
| C1-Pt-C4 (°)         | 86.54  |
| Pt-C1-C2 (°)         | 114.67 |
| C1-C2-C3 (°)         | 112.04 |
| C2-C3-C4 (°)         | 112.15 |
| C3-C4-Pt (°)         | 114.43 |
| C1-Pt-N1 (°)         | 174.27 |
| C4-Pt-N2 (°)         | 173.08 |
| Pt···Pt (Å)          | 5.87   |
| C1-C4 (Å)            | 2.802  |
| C1-C2-C3-C4 dihedral (°) | 1.22 |
| N1-C4-C5-N2 dihedral (°) | 1.27 |

Table S4: Selected bond distances and angles for 4a and the selected average bond distances and angles of Pt(bph)(N^N) complexes.

| Parameter            | 4a     | Pt(bph)(N^N) |
|----------------------|--------|--------------|
| Pt-C1 (Å)            | 2.043  | 2.011        |
| Pt-C4 (Å)            | 2.045  | 1.996        |
| Pt-N1 (Å)            | 2.091  | 2.106        |
| Pt-N2 (Å)            | 2.105  | 2.126        |
| C1-Pt-C4 (°)         | 86.54  | 80.76        |
| C1-Pt-N1 (°)         | 174.27 | 151.44       |
| C4-Pt-N2 (°)         | 173.08 | 151.33       |

For 4a, both Pt—C bond lengths are almost identical at 2.043 Å and 2.045 Å, and they are only 0.04 Å longer than the average Pt—C bond found in all Pt(bph)(N^N) crystal structures available in the Cambridge Structural Database. At 2.105 Å and 2.091 Å, Pt—N bonds in this
molecule are roughly the same as the average Pt—N bond in Pt(bph)(N^N) compounds, with the difference in length of about 0.02-0.03 Å. The C—Pt—C angle in the bc analogue is about 6° larger than the average corresponding angle in all N^N chelated biphenyl analogues (86.54° versus 80.76°), which is characteristic of bc-chelated metal ions reported. This C—M—C angle for 4a is also consistent with the C—M—C angle seen in 3a-3c (Table S2). Based on this evidence, the intramolecular geometry of the synthesized bc complex is roughly equivalent to that of its biphenyl analogues.

Figure S12: Numbering scheme for Pt(bph)(N^N) complexes listed in Table S3 and Table S4.

Figure S13: Thermal ellipsoid plot of 7 (50% probability). Salmon = B; black = C. H atoms were omitted for clarity.
**Figure S14:** Thermal ellipsoid plot of 8 (50% probability). H atoms were omitted for clarity. Labels indicate the numbering scheme used for Table S5.

**Table S5:** Selected bond angles and distances for 8.

| Parameter                  | 8    |
|----------------------------|------|
| Pt-C1 (Å)                  | 2.036|
| Pt-B4 (Å)                  | 2.073|
| C1-C2 (Å)                  | 1.704|
| C2-C3 (Å)                  | 1.517|
| C3-B4 (Å)                  | 1.725|
| Pt-N1 (Å)                  | 2.175|
| Pt-N2 (Å)                  | 2.053|
| C1-Pt-B4 (°)               | 87.02|
| Pt-C1-C2 (°)               | 115.78|
| C1-C2-C3 (°)               | 110.73|
| C2-C3-B4 (°)               | 114.11|
| C3-B4-Pt (°)               | 112.04|
| C1-Pt-N2 (°)               | 176.55|
| B4-Pt-N1 (°)               | 168.82|
| Pt···Pt (Å)                | 7.979|
| C1-B4 (Å)                  | 2.829|
| C1-C2-C3-B4 dihedral (°)   | 6.1  |
| N1-C4-C5-N2 dihedral (°)   | 4.43 |
Figure S15: Thermogravimetric analysis (TGA) of compound 8 up to 500°C. The bc framework remains intact, and the loss in mass corresponds to the cleavage of alkyl groups from both ligands.

Geometry Optimized Coordinates for DFT Calculations.

Ni(bc)(dppe) [3a].

| Atom | X         | Y         | Z         |
|------|-----------|-----------|-----------|
| Ni   | 0.68130784| 7.86224652| 3.24437611|
| P    | -1.26868014| 6.72001114| 3.49170712|
| P    | -0.35978197| 8.8625613 | 1.48195488|
| B    | 2.994782   | 9.96752888| 1.84304495|
| H    | 2.15585703| 10.70107025| 1.43005302|
| B    | 3.23819456| 8.35001487| 1.20090549|
| H    | 2.57821322| 7.90811987| 0.32079833|
| B    | 4.91677016| 7.86346719| 1.51662324|
| H    | 5.47736619| 7.09155985| 0.80188353|
| B    | 5.72325876| 9.20504807| 2.36574499|
| H    | 6.89104651| 9.4186741 | 2.25652971|
| B    | 4.52873294| 10.51587323| 2.56025468|
| H    | 4.80735364| 11.67367185| 2.6067092 |
| B    | 3.60506102| 7.28269331 | 2.53582347|
| H    | 3.21624832| 6.17007578 | 2.57232808|
| B    | 5.14459512| 7.79364483 | 3.28269304|
|     |      |      |      |
|-----|------|------|------|
|  H  |  5.78629056 |  6.99009515 |  3.87502496 |
|  B  |  4.90873847 |  9.4372323 |  3.92810226 |
|  H  |  5.38900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
|  B  |  3.22580874 |  9.91603121 |  3.57803344 |
|  H  |  2.60670085 | 10.57636947 |  4.33280972 |
|  B  |  4.54729128 |  9.54724888 |  1.06994424 |
|  H  |  4.85107648 | 10.00636013 |  0.01242494 |
|  B  |  2.60972599 |  6.03541339 |  6.29942675 |
|  H  |  5.39900024 |  9.76040877 |  4.96402319 |
| Element | X (Angstroms) | Y (Angstroms) | Z (Angstroms) |
|---------|---------------|---------------|---------------|
| H       | -3.15141682   | 4.50912923    | 2.7478294     |
| C       | -2.29594903   | 6.45549847    | 5.0041215     |
| C       | -2.9761234    | 7.55956098    | 5.54956077    |
| H       | -2.85121997   | 8.55445379    | 5.11901217    |
| C       | -3.79819518   | 7.40497557    | 6.66549029    |
| H       | -4.31677757   | 8.27138693    | 7.07805176    |
| C       | -3.94312428   | 6.14780841    | 7.26001555    |
| H       | -4.58120248   | 6.02752767    | 8.13671425    |
| C       | -3.25883008   | 5.0500927     | 6.7342386     |
| H       | -3.35722195   | 4.06842137    | 7.19976275    |
| C       | -2.43748049   | 5.20047844    | 5.61354259    |
| H       | -1.90696793   | 4.3356255     | 5.21768429    |
| C       | 0.21883843    | 9.1871958     | -0.24334024   |
| C       | 0.47520604    | 10.48188264   | -0.71773625   |
| H       | 0.37231565    | 11.33895554   | -0.0535171    |
| C       | 0.86485767    | 10.68321591   | -2.04459738   |
| H       | 1.06303568    | 11.69593879   | -2.39807745   |
| C       | 1.00698938    | 9.59669255    | -2.9097871    |
| H       | 1.31491646    | 9.75637099    | -3.94422614   |
| C       | 0.7641221     | 8.30161687    | -2.44222271   |
| H       | 0.88608483    | 7.44563465    | -3.10727826   |
| C       | 0.37758482    | 8.09670953    | -1.11759315   |
| H       | 0.21941031    | 7.07633048    | -0.76518842   |
| C       | -1.02072573   | 10.47452079   | 2.08785902    |
| C       | -0.566376     | 10.97767514   | 3.31674014    |
| H       | 0.19465376    | 10.42901651   | 3.87602975    |
| C       | -1.07752853   | 12.17621948   | 3.82380492    |
| H       | -0.71197908   | 12.55802354   | 4.77801063    |
| C       | -2.04553305   | 12.88221701   | 3.10668539    |
| H       | -2.44294202   | 13.81922213   | 3.50026345    |
| C       | -2.5049618    | 12.38832435   | 1.88015861    |
| H       | -3.25782244   | 12.93995193   | 1.31483395    |
| C       | -1.99676589   | 11.19210177   | 1.37164925    |
| H       | -2.35156691   | 10.82760083   | 0.40602493    |
| C       | 2.48255388    | 8.57661818    | 2.7522921     |
| C       | 3.63924617    | 8.28576866    | 3.95188095    |
| C       | 1.39900971    | 7.28054514    | 5.02025565    |
| C       | 3.02725268    | 7.70851603    | 5.22368025    |
Pd(bc)(dppe) [3b].

| Atom | X       | Y       | Z       |
|------|---------|---------|---------|
| Pd   | 15.58256413 | 8.49645518 | 6.2289578 |
| P    | 15.01837909 | 8.30849417 | 8.5542649 |
| P    | 15.65562364 | 6.09576714 | 6.33611364 |
| B    | 16.60307539 | 11.69309857 | 5.97702522 |
| H    | 17.70209199 | 11.29569759 | 6.13361777 |
| B    | 15.45025585 | 11.85015242 | 7.29005019 |
| H    | 15.81232819 | 11.52468236 | 8.37652499 |
| B    | 13.85303729 | 11.44548776 | 6.68008236 |
| H    | 13.06824241 | 10.83262751 | 7.32590635 |
| B    | 14.00459414 | 11.02285348 | 4.98540999 |
| H    | 13.3620404  | 10.16580996 | 4.49223514 |
| B    | 14.57206743 | 12.45614052 | 4.08314336 |
| H    | 14.3200695  | 12.54198452 | 2.92724544 |
| B    | 16.19058608 | 12.87233603 | 4.70074203 |
| H    | 17.04637913 | 13.24474433 | 3.96883882 |
| B    | 16.02820289 | 13.29623364 | 6.42455179 |
| H    | 16.78880618 | 14.05978937 | 6.93408099 |
| B    | 14.31062169 | 13.15470279 | 6.86956146 |
| H    | 13.81359523 | 13.83008373 | 7.71732687 |
| B    | 13.41307777 | 12.62423949 | 5.42319364 |
| H    | 12.27322255 | 12.89844065 | 5.20821138 |
| B    | 14.76445909 | 13.77475658 | 5.26030695 |
| H    | 14.60128367 | 14.90844844 | 4.92990555 |
| B    | 17.82101347 | 9.50511385  | 4.11333045 |
| H    | 18.36938798 | 9.84580307  | 5.10007737 |
| B    | 17.74674001 | 7.82419216  | 3.61953811 |
| H    | 18.27728369 | 7.02636937  | 4.32055908 |
| B    | 16.17142232 | 7.53205003  | 2.89807701 |
| H    | 15.57192947 | 6.52089551  | 3.08538155 |
| B    | 15.25905139 | 9.02957683  | 2.93071524 |
| H    | 14.09517601 | 9.06808693  | 3.11633389 |
| B    | 16.10156743 | 10.2422882  | 1.92530967 |
| H    | 15.47303305 | 11.13064293 | 1.45320178 |
| B    | 16.03378037 | 8.53008543  | 1.43038068 |
| H    | 15.35151433 | 8.19113982  | 0.51347585 |
| B    | 17.58995094 | 7.77323593  | 1.84801716 |
| H    | 18.04839981 | 6.86889236  | 1.22027561 |
| B    | 18.61265529 | 9.01270075  | 2.61822462 |
| H    | 19.80327437 | 9.02161977  | 2.56443472 |
| B    | 17.69761742 | 10.5374246  | 2.66209135 |
| Atom | X       | Y       | Z       |
|------|---------|---------|---------|
| Pt   | -1.57127888 | 5.16033774 | 10.05138955 |
| P    | -2.65813417  | 6.17826253  | 8.29028714  |
| P    | -3.55382819  | 4.00652176  | 10.30184773 |
| B    | -0.19915394  | 5.39377446  | 13.07347848 |
| H    | -0.53555026  | 6.52233185  | 13.05093001 |
| B    | 1.43513248   | 4.88067805  | 13.57614938 |
| H    | 2.22726566   | 5.71164345  | 13.87512623 |
| B    | 1.90747243   | 3.50044913  | 12.55038509 |
| H    | 3.0191684    | 3.38950701  | 12.15116437 |
| B    | 0.56486637   | 3.16960204  | 11.43215197 |
| H    | 0.7205181    | 2.81917381  | 10.31768321 |
| B    | -0.85629841  | 2.71809476  | 12.35721598 |
| H    | -1.66473941  | 2.03588998  | 11.81187679 |
| B    | 0.76138316   | 2.16857237  | 12.86209245 |
| H    | 1.09908719   | 1.03266379  | 12.7281856 |
| B    | 1.29751685   | 3.21914901  | 14.20067246 |
| H    | 2.02924337   | 2.83599853  | 15.06089994 |
| B    | -0.00299561  | 4.40241299  | 14.51291208 |
| H    | -0.22503051  | 4.88692535  | 15.57957112 |
| B    | -1.32038019  | 4.08245153  | 13.36395287 |
| H    | -2.44830056  | 4.37401701  | 13.57057719 |
| B    | -0.41532269  | 2.72613798  | 14.07865956 |
| H    | -0.94079445  | 1.97899033  | 14.84646882 |
| B    | 1.67169504   | 5.13157743  | 9.28706958  |

Pt(bc)(dppe) [3c].
|   |   |   |   |
|---|---|---|---|
| H | 1.53181399 | 3.98116658 | 9.07611392 |
| B | 3.02908587 | 5.78316241 | 10.24756128 |
| H | 3.81005371 | 5.025678  | 10.72055215 |
| B | 2.40545427 | 7.15708799 | 11.19700806 |
| H | 2.75993654 | 7.33791764 | 12.31453437 |
| B | 0.67818543 | 7.34870002 | 10.80991274 |
| H | -0.13157222 | 7.6712395  | 11.60379083 |
| B | 0.50935602 | 7.72305942 | 9.10459095  |
| H | -0.46256842 | 8.32416913 | 8.77372004  |
| B | 0.61907009 | 5.9929045  | 7.16833473  |
| H | 2.85626104 | 6.18405183 | 8.52131583  |
| B | 3.59855627 | 5.72205318 | 7.71031981  |
| H | 3.1498222  | 7.44966288 | 9.69299436  |
| B | 4.41151673 | 7.91710079 | 9.72956013  |
| H | 1.85420035 | 8.4095699  | 10.0504317  |
| B | 1.87147999 | 9.56254832 | 10.35633931 |
| H | 2.13746398 | 7.80776877 | 8.39663073  |
| B | 2.36705123 | 8.53881158 | 7.48182934  |
| C | -0.66805607 | 4.33271648 | 11.7746308  |
| C | 0.95487918 | 4.79237031 | 11.9368736  |
| C | 0.28159611 | 6.10891902 | 9.67234133  |
| C | 1.43363806 | 5.77767054 | 10.87044881 |
| C | -4.2269635  | 5.23603316 | 7.93718111  |
| H | -4.89332875 | 5.85592062 | 7.32239418  |
| H | -3.95393616 | 4.34425771 | 7.3549954   |
| C | -4.85755584 | 4.84548562 | 9.2683929   |
| H | -5.71570715 | 4.17143446 | 9.14585044  |
| H | -5.19543279 | 5.73473931 | 9.81941418  |
| C | -1.88672755 | 6.31517159 | 6.64789203  |
| C | -1.58624128 | 5.11382599 | 5.98306734  |
| H | -1.85375216 | 4.15470897 | 6.43120123  |
| C | -0.89297621 | 5.13876213 | 4.77447213  |
| H | -0.65189416 | 4.20340806 | 4.26829827  |
| C | -0.48186094 | 6.35966678 | 4.22923447  |
| H | 0.07745446 | 6.37746722 | 3.29331691  |
| C | -0.77264267 | 7.55394878 | 4.89213023  |
| H | -0.43721628 | 8.50541434 | 4.47835898  |
| C | -1.47360756 | 7.53607468 | 6.09960891  |
| H | -1.66892075 | 8.46884135 | 6.62703062  |
| C | -3.29637202 | 7.82848562 | 8.75919539  |
| C | -3.02774138 | 8.32599885 | 10.04328912 |
| H | -2.38885591 | 7.75285281 | 10.71827517 |
| X    | Y    | Z    |
|------|------|------|
| 4.14329669   | -0.11314597   | 8.17752421   |
| 5.32584742   | 1.26298222   | 6.87668211   |
| 2.79800596   | 1.42017394   | 7.6811178   |
| 5.13543457   | -3.14947895   | 7.83832985   |
| 4.15384929   | -3.2653234   | 7.19906101   |
| 5.66670342   | -4.36940745   | 9.02497111   |
| 4.97590482   | -5.32405207   | 9.19776303   |
| 6.42181697   | -3.51920232   | 10.38780123   |

**Pt(tebc)(dtb-bpy) [8], S°.**
|   | X    | Y    | Z    |
|---|------|------|------|
| H | 6.26022134 | -3.88525736 | 11.50583817 |
| B | 6.33082191  | -1.76890397  | 10.04089997  |
| H | 6.14220168  | -0.96809373  | 10.88312191  |
| B | 6.537634    | -2.28543989  | 7.2531303    |
| H | 6.47215382  | -1.81690112  | 10.88312191  |
| B | 7.26926286  | -1.43805053  | 8.60513207   |
| H | 7.74304676  | -0.35004557  | 8.515513     |
| B | 8.00153727  | -2.96908178  | 8.02343375   |
| B | 7.45637432  | -4.28397582  | 9.14851793   |
| H | 6.63117215  | -4.0307487   | 7.57423808   |
| B | 6.8478373   | -4.81754273  | 6.6782773    |
| B | 7.83365793  | -2.64607668  | 9.77284684   |
| H | 8.75809032  | -2.42231443  | 10.49214692  |
| B | 2.3445179   | -2.78884934  | 9.11926855   |
| H | 2.46360449  | -3.30953305  | 8.07070854   |
| C | 2.6388779   | -3.76975827  | 10.50417671  |
| H | 2.99015191  | -4.77934381  | 10.30638505  |
| B | 3.38652741  | -2.95347473  | 11.81973924  |
| H | 4.21711678  | -3.5256958   | 12.43743496  |
| B | 3.4929278   | -1.26637312  | 11.26640427  |
| H | 4.41610137  | -0.63711692  | 11.64814473  |
| B | 1.87117297  | -0.63245951  | 10.97216349  |
| B | 1.18082105  | -1.60904678  | 9.64724298   |
| H | 0.36821705  | -1.21217655  | 8.86602848   |
| B | 1.03678358  | -3.29363921  | 10.1958718   |
| H | 0.28100848  | -4.11024847  | 9.77456271   |
| B | 1.66839131  | -3.39852297  | 11.84586825  |
| H | 1.34761463  | -4.29052333  | 12.56293139  |
| B | 2.17854115  | -1.77716133  | 12.3295158   |
| H | 2.16567923  | -1.43797059  | 13.4715173   |
| B | 0.70081754  | -1.96713042  | 11.34142947  |
| C | 5.53875688  | -1.5884514   | 8.49025731   |
| C | 5.08478638  | -2.8545376   | 9.55154262   |
| C | 3.71824304  | -2.56915319  | 10.16112539  |
| B | 2.94620937  | -1.14446767  | 9.5458733    |
| C | 9.39465434  | -3.00646563  | 7.22944021   |
| H | 9.59615312  | -4.04651321  | 6.92231421   |
| H | 9.28052354  | -2.4509094   | 6.28268283   |
| C | 10.61740825 | -2.46260786  | 7.98748182   |
| H | 10.46842421 | -1.41609382  | 8.29235622   |
| H | 11.52910771 | -2.50507248  | 7.37259244   |
| H | 10.80734249 | -3.03828413  | 8.90477386   |
| C | 8.36319139  | -5.56016507  | 9.48820071   |
H    8.00384347  6.64441706  5.6715911
H    8.00376151  5.47397271  7.01299458
C    6.72486978  5.07733298  3.78380476
H    5.69050871  5.38122863  3.99481827
H    6.6966516   4.27293016  3.0354054
H    7.24320391  5.93988479  3.34074709
C    0.13857991  4.71161778  6.55101006
C    -0.99033389 4.16380762  5.6460413
H    -0.58226377  3.74054513  4.71735545
H    -1.68059644  4.9765739  5.37829536
H    -1.57448127  3.38108418  6.14782413
C    0.86342418  5.84241533  5.80024886
H    1.30226005  5.49139934  4.85498544
H    1.65778185  6.29607517  6.41031951
H    0.14527015  6.63648808  5.5547618
C    -0.47431723  5.2922673   7.84851641
H    -1.1681065  6.10853315  7.60117468
H    0.30687444  5.69411166  8.50884989
H    -1.03440922 4.53284224  8.41014041

Pt(tebc)(dtb-bpy) [8], T1.

| Atom | X       | Y       | Z       |
|------|---------|---------|---------|
| Pt   | 4.09257795 | -0.41049265 | 7.66548585 |
| N    | 5.14749894  | 1.45559988  | 7.6747957 |
| N    | 2.69019873  | 0.93243385  | 6.91998323 |
| B    | 4.74029355  | -3.48223152 | 7.79531362 |
| H    | 3.62177445  | -3.54995942 | 7.4298175 |
| B    | 5.41095738  | -4.52913812 | 9.07134763 |
| H    | 4.68955734  | -5.31844252 | 9.59531486 |
| B    | 6.56678328  | -3.57042321 | 10.02324381 |
| H    | 6.64633486  | -3.69968704 | 11.2015399 |
| B    | 6.57865735  | -1.92438513 | 9.34015385 |
| H    | 6.67445    | -0.96567597 | 10.02075958 |
| B    | 6.0349581  | -2.95903283 | 6.73945483 |
| H    | 5.75206625 | -2.66383426 | 5.62116414 |
| B    | 7.1578204  | -1.99627723 | 7.68311941 |
| H    | 7.67802397 | -1.02770739 | 7.22553867 |
| B    | 7.5629146  | -3.70466938 | 7.29969971 |
| B    | 7.17610547 | -4.69430809 | 8.77354242 |
| B    | 6.02109657 | -4.6110659  | 7.40196689 |
| H    | 5.77002756 | -5.5504578  | 6.71066529 |
|   | X  | Y  | Z  |   |   |
|---|----|----|----|---|---|
| H | -1.13336951 | -0.66105894 | 14.37127682 |   |   |
| H | 0.57162272 | -1.08089951 | 14.6305081 |   |   |
| C | 2.37057994 | 1.62462421 | 10.77652875 |   |   |
| H | 2.79233562 | 1.96144055 | 9.81559765 |   |   |
| H | 1.29406214 | 1.85504863 | 10.7144098 |   |   |
| C | 2.99731816 | 2.44955378 | 11.91342532 |   |   |
| H | 2.55740419 | 2.193519 | 12.88772985 |   |   |
| H | 2.84974553 | 3.5282108 | 11.75507613 |   |   |
| H | 4.07941216 | 2.26958558 | 11.99115948 |   |   |
| C | 6.42717122 | 1.63901721 | 8.073698 |   |   |
| H | 6.9234034 | 0.7664898 | 8.49643561 |   |   |
| C | 7.07771077 | 2.85154823 | 7.95902844 |   |   |
| H | 8.10277815 | 2.91957319 | 8.31554165 |   |   |
| C | 6.41097013 | 3.9696347 | 7.39032302 |   |   |
| C | 5.09556894 | 3.76818693 | 6.98879752 |   |   |
| H | 4.53536276 | 4.58485464 | 6.53420748 |   |   |
| H | 4.44514927 | 2.5281226 | 7.14381159 |   |   |
| C | 3.07915588 | 2.25527765 | 6.78388023 |   |   |
| C | 2.16037142 | 3.21601152 | 6.30601655 |   |   |
| H | 2.49529057 | 4.24730378 | 6.22049272 |   |   |
| C | 0.86228603 | 2.877975 | 5.95821582 |   |   |
| C | 0.49538267 | 1.51075124 | 6.12643231 |   |   |
| H | -0.50485732 | 1.15718718 | 5.88151009 |   |   |
| C | 1.41001535 | 0.60147137 | 6.60520921 |   |   |
| H | 1.14758109 | -0.44624826 | 6.7480564 |   |   |
| C | 7.08715112 | 5.33649607 | 7.20529711 |   |   |
| C | 8.51541341 | 5.35567049 | 7.780892 |   |   |
| H | 8.95514504 | 6.35194141 | 7.63487322 |   |   |
| H | 9.16945654 | 4.62923635 | 7.27860871 |   |   |
| H | 8.52397038 | 5.14342007 | 8.8595934 |   |   |
| C | 6.25826314 | 6.42535806 | 7.92650233 |   |   |
| H | 5.23908506 | 6.49900534 | 7.52314964 |   |   |
| H | 6.73755592 | 7.40747721 | 7.80266659 |   |   |
| H | 6.18175806 | 6.21353243 | 9.00222096 |   |   |
| C | 7.16463962 | 5.66413866 | 5.69492606 |   |   |
| H | 6.16762306 | 5.69836185 | 5.23454944 |   |   |
| H | 7.75812377 | 4.90998019 | 5.15939722 |   |   |
| H | 7.63956662 | 6.64488118 | 5.54486437 |   |   |
| C | -0.16051993 | 3.88735754 | 5.42747164 |   |   |
| C | -0.65045365 | 3.42644724 | 4.03325239 |   |   |
| H | 0.18481359 | 3.37567806 | 3.32059216 |   |   |
| H | -1.393769 | 4.13640099 | 3.64193077 |   |   |
| H | -1.12224741 | 2.43542155 | 4.07226173 |   |   |
| Element | X-coordinate | Y-coordinate | Z-coordinate |
|---------|--------------|--------------|--------------|
| C       | 0.43073729   | 5.30106295   | 5.29060198   |
| H       | 1.27998056   | 5.32191102   | 4.59230782   |
| H       | 0.7639283    | 5.70148465   | 6.25899983   |
| H       | -0.3365598   | 5.98297002   | 4.89830704   |
| C       | -1.36266771  | 3.94776335   | 6.40004121   |
| H       | -2.12034048  | 4.64894924   | 6.02011562   |
| H       | -1.04562881  | 4.28900713   | 7.39559373   |
| H       | -1.84141649  | 2.96624314   | 6.51677651   |
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Current Data Parameters
NAME    bis-carborane
EXPNO   10
PROCNO  1

F2 - Acquisition Parameters
Date_   20150918
Time    16.05
INSTRUM av500
PROBHD  5 mm DCH 13C-1
PULPROG zg30
TD      65536
SOLVENT CD2Cl2
NS      24
DS      0
SWH     10000.000 Hz
FIDRES  0.152588 Hz
AQ      3.2767999 sec
RG      23.34
DW      50.000 usec
DE      10.00 usec
TE      298.0 K
D1      2.00000000 sec
TD0     1

-------- CHANNEL f1 --------
SFO1    500.1330008 MHz
NUC1    1H
P1      10.00 usec
PLW1    13.50000000 W

F2 - Processing parameters
SI      65536
SF      500.1300194 MHz
WDW     EM
SSB     0
LB      0.30 Hz
GB      0
PC      1.00
11B NMR

Current Data Parameters
NAME  bis-carborane 11B
EXPN0  3
PROCNO  1

F2 - Acquisition Parameters
Date_  20160114
Time  12.31
INSTRUM  drx500
PROBHD  5 mm bb-Z Z800
PULPROG  zgdc
TD  7168
SOLVENT  D2O
NS  4096
DS  4
SWH  64102.562 Hz
FIDRES  8.942880 Hz
AQ  0.0559104 sec
RG  362
DW  7.800 usec
DE  6.00 usec
TE  296.8 K
D1  0.00000400 sec
d11  0.03000000 sec
TD0  1

======== CHANNEL f1 ========
NUC1  11B
P1  8.00 usec
PL1  -2.00 dB
SFO1  160.5257140 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2  off
PCPD2  100.00 usec
PL2  0 dB
PL12  17.52 dB
SFO2  500.3300000 MHz

F2 - Processing parameters
SI  32768
SF  160.5257924 MHz
WDW  EM
SSB  0
LB  10.00 Hz
GB  0
PC  1.40
Current Data Parameters
NAME      bis-carborane
EXPNO     11
PROCNO    1

F2 - Acquisition Parameters
Date_     20150918
Time      16.08
INSTRUM   av500
PROBHD    5 mm DCH 13C-1
PULPROG   zgpg30
TD         65536
SOLVENT   CD2C12
NS         32
DS         2
SWH        31250.000 Hz
FIDRES    0.476837 Hz
AQ         1.0485760 sec
RG         204.54
DW         16.000 usec
DE         18.00 usec
TE         298.0 K
D1         2.00000000 sec
D11        0.03000000 sec
TD0        1

--------- CHANNEL f1 ---------
SFO1      125.7722511 MHz
NUC1      13C
P1         9.63 usec
PLW1      23.00000000 W

--------- CHANNEL f2 ---------
SFO2      500.1330008 MHz
NUC2      1H
CPDPRG[2] 40.00 usec
PCPD2     0.21094000 W
PLW2      13.50000000 W
PLW12     0.13500001 W
PLW13     0.13500001 W

F2 - Processing parameters
SI         131072
SF         125.7577396 MHz
WDW        EM
SSB        0
LB         1.00 Hz
GB         0
PC         1.40
Current Data Parameters
NAME     kk-l-235 ni(bc)(dppe) pure
EXPNO    10
PROCNO   1

F2 - Acquisition Parameters
Date_    20150920
Time     16.43
INSTRUM  av500
PROBHD   5 mm DCH 13C-1
PULPROG  zg30
TD       65536
SOLVENT  CD2C12
NS       64
DS       0
SWR      10000.000 Hz
FIDRES   0.152588 Hz
AQ        3.2767999 sec
DW        50.000 usec
DE        10.00 usec
TE        298.2 K
D1       2.00000000 sec
TD0      1

======== CHANNEL f1 ========
SFO1  500.1330008 MHz
NUC1  1H
P1     10.00 usec
PLW1   13.50000000 W

F2 - Processing parameters
SI      65536
SF      500.1300193 MHz
NOW     ZW
SSB     0
LB      0.30 Hz
GB      0
PC      1.00
11B NMR

Current Data Parameters
NAME kk-1-235 ni(bc)(dppe) pure 1lb
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20150922
Time 14.35
INSTRUM drx500
PROBHD 5 mm bb-Z Z800
PULPROG zgdc
TD 7168
SOLVENT CD2Cl2
NS 4096
DS 4
SNR 64102.562 Hz
FIDRES 8.942880 Hz
AQ 0.0559104 sec
RG 574.7
DW 7.800 usec
DE 6.00 usec
TE 296.8 K
D1 0.00000010 sec
d11 0.00000010 sec
TD0 1

====== CHANNEL f1 ======
NUC1 11B
P1 8.00 usec
PL1 -2.00 dB
SFO1 160.5257140 MHz

====== CHANNEL f2 ======
CPDPRG[2] walt16
NUC2 off
PCPD2 100.00 usec
PL2 0 dB
PL12 17.52 dB
SPU2 500.3300000 MHz

F2 - Processing parameters
SI 32768
SF 160.525717 MHz
WDW EM
GB 0
LB 10.00 Hz
GM 0
PC 1.40
Current Data Parameters
NAME Ni(bc)(dppe) pure 11B
EXPNO 1
PROCNO 1

F2 - Acquisition Parameters
Date_ 20150922
Time 13.40
INSTRUM drx500
PROBHD 5 mm bb-Z 2800
PULPROG zgdc
TD 7168
SOLVENT CD2Cl2
NS 4096
dw 4
SWH 64102.562 Hz
FIDRES 8.942880 Hz
AQ 0.0559104 sec
RG 574.7
DW 7.800 usec
DE 6.00 usec
TE 297.1 K
D1 0.00000400 sec
d11 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 11B
P1 8.00 usec
PL1 -2.00 dB
SFO1 160.5257136 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 100.00 usec
PL2 0 dB
PL12 17.52 dB
SFO2 500.3330020 MHz

F2 - Processing parameters
SI 32768
SF 160.5257717 MHz
WDW EM
SSB 0
LB 10.00 Hz
GB 0
PC 1.40
Current Data Parameters

NAME     kk-1-235 ni(bc)(dppe) pure
EXPNO     11
PROCNO    1

F2 - Acquisition Parameters
Date_     20150920
Time      17.37
INSTRUM   av500
PROBHD    5 mm DCH 13C-1
PULPROG   zgpg30
TD        65536
SOLVENT   CD2C12
NS        1024
DS        2
SWH       31250.000 Hz
FIDRES    0.476837 Hz
AQ         1.0485760 sec
RG         204.54
DW        16.000 usec
DE         18.00 usec
TE        298.0 K
D1        2.00000000 sec
D11       0.03000000 sec
TD0       1

======== CHANNEL f1 ========
SFO1    125.7722511 MHz
NUC1    13C
P1       9.63 usec
PLW1    23.00000000 W

======== CHANNEL f2 ========
SFO2    500.1330008 MHz
NUC2    1H
CPDP0G[2]   waltz16
PCPD2   80.00 usec
PLW2    13.50000000 W
PLW12   0.21094000 W
PLW13   0.13500001 W

F2 - Processing parameters
SI       131072
SF      125.7577378 MHz
WOW     EN
SSB     0
LB      1.00 Hz
GB      0
PC      1.43
31P{1H} NMR

Current Data Parameters
NAME: kk-1-235 ni(bc)(dppe) pure, 31p
EXPNO: 1
PROCNO: 1

F2 - Acquisition Parameters
Date: 20150920
Time: 15:34
INSTROU: drx500
PROBHD: 5 mm bb-Z Z800
PULPP: zgdc30
TO: 131072
SOLVENT: CD2Cl2
NS: 128
DS: 0
SWH: 100000.000 Hz
FIDRES: 0.762939 Hz
AQ: 0.0514600 sec
RG: 9195.2
DM: 5.000 usec
DE: 6.00 usec
TE: 397.1 K
D1: 2.00000000 sec
d11: 0.03000000 sec
TD0: 1

-------- CHANNEL f1 --------
NUC1: 31P
P1: 9.00 usec
PL1: 0 dB
SFO1: 202.5370460 MHz

-------- CHANNEL f2 --------
CPODPR: wzal16
NUC2: 1H
PCPD2: 100.00 usec
PL2: 0 dB
PL12: 17.52 dB
SFO2: 500.3320013 MHz

F2 - Processing parameters
SI: 131072
SF: 202.5371980 MHz
CON: CM
SSB: 0
LB: 0
GB: 0
PC: 1.40
Current Data Parameters
NAME       kk-1-241 pd(bc)(dppe) pure
EXPNO      20
PROCNO     1

F2 - Acquisition Parameters
Date_      20150920
Time       19.02
INSTRUM    av500
PROBHD     5 mm DCH 13C-1
PULPROG    zg30
TD          65536
SOLVENT    CD2Cl2
NS          64
DS          0
SWR         10000.000 Hz
FIDRES     0.1525888 Hz
AQ          3.2767999 sec
RG          23.34
DW          50.000 usec
TE          298.0 K
D1          2.00000000 sec
TD0         1

-------- CHANNEL f1 --------
SFO1       500.1330008 MHz
NUC1       1H
P1          10.00 usec
PLW1       13.50000000 W

F2 - Processing parameters
SI          65536
SF          500.1300196 MHz
NOW         1H
SSB         0
LB          0.30 Hz
PC          1.00
### 11B {1H} NMR

#### Current Data Parameters

| Parameter | Value |
|-----------|-------|
| NAME      | kk-1-241 pd(bc)(dppe) pure 11b |
| EXPNO     | 1     |
| PROCNO    | 1     |

#### F2 - Acquisition Parameters

| Parameter | Value |
|-----------|-------|
| Date_     | 20150922 |
| Time      | 13:54  |
| INSTRUM   | drx500 |
| PROBHD    | 5 mm bb-Z Z800 |
| PULPROG   | zgdc   |
| TD        | 7168   |
| SOLVENT   | CD2Cl2 |
| NS        | 4096   |
| DS        | 4      |
| SNH       | 64102.562 Hz |
| FIDRES    | 8.942880 Hz |
| AQ        | 0.0559104 sec |
| BG        | 574.7  |
| DW        | 7.800 usec |
| DE        | 6.00 usec |
| TE        | 297.1 K |
| D1        | 0.00000400 sec |
| d11       | 0.03000000 sec |
| TD0       | 1      |

#### CHANNEL f1

| Parameter | Value |
|-----------|-------|
| NUC1      | 11B   |
| P1        | 8.00 usec |
| PL1       | -2.00 dB |
| SFO1      | 160.5257136 MHz |

#### CHANNEL f2

| Parameter | Value |
|-----------|-------|
| CPDPRG    | waltz16 |
| NUC2      | 1H    |
| PCPD2     | 100.00 usec |
| PL2       | 0 dB  |
| PL12      | 17.52 dB |
| SPV2      | 500.3330020 MHz |

#### F2 - Processing parameters

| Parameter | Value |
|-----------|-------|
| SI        | 32768 |
| SF        | 160.5255717 MHz |
| WDTM      | EM    |
| SB        | 0     |
| LB        | 10.00 Hz |
| GB        | 0     |
| PC        | 1.40  |
13C{1H} NMR

Current Data Parameters
NAME     kk-1-241 pd(bc)(dppe) pure
EXPNO     22
PROCNO    1

F2 - Acquisition Parameters
Date_ 20150920
Time  19.56
INSTRUM av500
PROBHD  5 mm DCH 13C-1
PULP prog zgpg30
TD  65536
SOLVENT CD2Cl2
NS  1024
DS  2
SWR  31250.000 Hz
FIDRES  0.476837 Hz
AQ  1.0485760 sec
RG  204.54
DW  16.000 usec
DE  18.00 usec
TE  298.8 K
D1  2.00000000 sec
D11  0.03000000 sec
TD0  1

======== CHANNEL f1 ========
SFO1  125.7722511 MHz
NUC1  13C
P1  9.63 usec
PLW1  23.00000000 W

======== CHANNEL f2 ========
SFO2  500.1330008 MHz
NUC2  1H
CPDPRG[2 waltz16
PCPD2  80.00 usec
PLW2  13.50000000 W
PLW12  0.21094000 W
PLW13  0.13500001 W

F2 - Processing parameters
SI  131072
SF  125.7577377 MHz
WOW  EN
SSB  0
LB  1.00 Hz
GB  0
PC  1.40
### Current Data Parameters

| Parameter  | Value |
|------------|-------|
| NAME       | kk-1-241 pd(bc)(dppe) pure, 31p |
| EXPNO      | 1     |
| PROCNO     | 1     |

#### F2 - Acquisition Parameters

| Parameter  | Value |
|------------|-------|
| Date       | 20150920 |
| Time       | 15.47 |
| INSTRUM    | drx500 |
| PROBHD     | 5 mm bb-Z Z800 |
| PULPROG    | zgdc30 |
| TD         | 131072 |
| SOLVENT    | CD2Cl2 |
| NS         | 128   |
| DS         | 0     |
| SWH        | 100000.000 Hz |
| FIDRES     | 0.762939 Hz |
| AQ         | 0.855660 sec |
| RG         | 9195.2 |
| DW         | 5.000 usec |
| DE         | 6.00 usec |
| TE         | 297.3 K  |
| D1         | 2.00000000 sec |
| d11        | 0.03000000 sec |
| TD0        | 1     |

#### CHANNEL f1

| Parameter  | Value |
|------------|-------|
| NUC1       | 31P   |
| P1         | 9.00 usec |
| SP01       | 202.5370460 MHz |

#### CHANNEL f2

| Parameter  | Value |
|------------|-------|
| CPDP1      | Waltz16 |
| NUC2       | 1H    |
| CPDP2      | 100.00 usec |
| PL2        | 0 db  |
| PL12       | 17.52 dB |
| SFO2       | 500.3320013 MHz |

#### F2 - Processing parameters

| Parameter  | Value |
|------------|-------|
| SI         | 131072 |
| SF         | 202.5371980 MHz |
| WOW        | RM    |
| SBB        | 0     |
| LB         | 1.00 Hz |
| GB         | 0     |
| PC         | 1.40  |
Current Data Parameters
NAME: KK-1-285 Pt(bc)(dppe) pure 11B
EXPNO: 3
PROCNO: 1

F2 - Acquisition Parameters
Date: 20151221
Time: 18.29
INSTROM: drx500
PROBHD: 5 mm bb-Z Z800
PULPROG: zgdc
TD: 7168
SOLVENT: CD2Cl2
NS: 4096
DS: -
SNUM: 64102.562 Hz
FIDRES: 8.942880 Hz
AQ: 0.0559104 sec
RG: 406.4
DW: 7.800 ussec
dw: 6.00 ussec
TE: 296.7 K
D1: 0.00000000 sec
d11: 0.00000000 sec
TD0: 1

CHAN F1
NUC1: 11B
P1: 8.00 ussec
PL1: -2.00 dB
SF01: 160.5257140 MHz

CHAN F2
CPDPRG: [waltz16]
NUC2: off
CPD2: 100.00 ussec
PL2: 0 dB
PL12: 17.52 dB
SF02: 500.3300000 MHz

F2 - Processing parameters
SI: 32768
SF: 160.5257957 MHz
WDW: EM
SSB: 0
LB: 10.00 Hz
GB: 0
PC: 1.40
11B{1H} NMR

Current Data Parameters
NAME: KK-1-285 Pt(bc)(dppe) pure 11B
EXPNO: 2
PROCNO: 1

F2 - Acquisition Parameters
Date_ 20151221
Time 18.21
INSTRUM drx500
PROBHD 5 mm bb-Z Z800
PULPROG zgdc
TD 7168
SOLVENT CD2Cl2
NS 4096
DS .4
SNH 64102.562 Hz
FIDRES 8.942880 Hz
AQ 0.0559104 sec
RG 406.4
DW 7.800 usec
DE 6.00 usec
TE 297.0 K
DI 0.00000400 sec
d1 0.03000000 sec
TD0 1

======== CHANNEL f1 ========
NUC1 11B
P1 8.00 usec
PL1 -2.00 dB
SFO1 160.5257136 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2 1H
PCPD2 100.00 usec
PL2 0 dB
PL12 17.52 db
SFO2 500.3330020 MHz

F2 - Processing parameters
SI 32768
SF 160.5257957 MHz
WDW EM
SUB 0 10.00 Hz
GR 0
PC 1.40
### 31P{1H} NMR

![NMR Spectrogram](image)

#### Current Data Parameters

| Parameter | Value |
|-----------|-------|
| Name      | KK-1-285 Pt(bc)(dppe) pure 31P |
| EXPNO     | 2     |
| PROCNO    | 1     |

#### F2 - Acquisition Parameters

| Parameter | Value |
|-----------|-------|
| Date_     | 20151221 |
| Time      | 17.09 |
| INSTRUM   | drx500 |
| PROBHD    | 5 mm bb-2 200 |
| PULPROG   | zqdc30 |
| TD        | 131072 |
| SOLVENT   | CD2Cl2 |
| NS        | 1024 |
| DS        | 0     |
| SNW       | 0     |
| TDRR      | 0.762939 Hz |
| AQ        | 0.6553600 sec |
| BW        | 100000.000 Hz |
| FIDRES    | 0.762939 Hz |
| RG        | 6.00 usec |
| GC        | 6.00 usec |
| TE        | 297.1 K |
| TI        | 2.000000000 sec |
| T1        | 0.030000000 sec |
| T2        | 1     |

#### CHANNEL f1

| Parameter | Value |
|-----------|-------|
| NUC1      | 31P |
| P1        | 9.08 usec |
| PL1       | 0 dB |
| SFO1      | 202.5370460 MHz |

#### CHANNEL f2

| Parameter | Value |
|-----------|-------|
| NUC2      | 1H |
| PCPD2     | 100.00 usec |
| PL2       | 0 dB |
| SFO2      | 500.3320013 MHz |

#### F2 - Processing parameters

| Parameter | Value |
|-----------|-------|
| SI        | 131072 |
| SF        | 202.5370460 MHz |
| WDW       | EM |
| SB        | 0     |
| LB        | 1.00 Hz |
| GA        | 0     |
| PC        | 1.40 |

---

**Diagram:**

- **3c**

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**Graph:**

- 31P{1H} NMR spectrum with peaks at various ppm values.
1H NMR

Current Data Parameters
NAME  KK-1-297 Pt(bc)(dtb-bpy)
EXPNO  10
PROCNO  1

F2 - Acquisition Parameters
Date_  20160127
Time  1.10
INSTRUM  av500
PROBHD  5 mm DCH 13C-1
PULPROG  zg30
TD  65536
SOLVENT  THF
NS  128
DS  0
SWH  10000.000 Hz
FIDRES  0.152588 Hz
AQ  3.2767999 sec
RG  23.34
DW  50.000 usec
TE  298.0 K
D1  2.0000000 sec
TDO  1

======== CHANNEL f1 ========
SFO1  500.1330008 MHz
NUC1  1H
P1  10.00 usec
PLW1  13.5000000 W

F2 - Processing parameters
SI  65536
SF  500.1290892 MHz
WDW  EM
SSB  0
LB  0.30 Hz
GB  0
PC  1.00
11B NMR

4a + 4b (40/60)

Current Data Parameters
NAME: KK-1-297 Pt(bc)(dtb-bpy) 11B
EXPNO: 2
PROCNO: 1

F2 - Acquisition Parameters
Date: 20160129
Time: 12.58
INSTRUM: drx500
PROBHD: 5 mm bb-Z Z800
PULPROG: zgdc
TD: 7168
SOLVENT: THF
NS: 8192
DS: 4
SNR: 64102.562 Hz
FIDRES: 8.942880 Hz
AQ: 0.0560104 sec
RG: 574.7
DW: 7.800 usec
DE: 6.00 usec
TE: 296.7 K
D1: 0.00000400 sec
d11: 0.00000000 sec
TD0: 1

======== CHANNEL f1 ========
NUC1: 11B
P1: 8.00 usec
PL1: -2.00 dB
SFO1: 160.5257140 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2: off
PCPD2: 100.00 usec
PL2: 0 dB
PL12: 17.52 dB
SFO2: 500.3300000 MHz

F2 - Processing parameters
SI: 32768
SF: 160.5257546 MHz
WOW: EM
SSB: 0
LB: 10.00 Hz
PC: 1.40
11B {1H} NMR

4a + 4b (40/60)
Current Data Parameters
| NAME       | i2-ocb kk-1-265ish |
|------------|--------------------|
| EXPNO      | 10                 |
| PROCNO     | 1                  |

F2 - Acquisition Parameters
- **Date**: 20151002
- **Time**: 11.30
- **INSTRUM**: av500
- **PROBHD**: 5 mm DCH 13C-1
- **PULPROG**: zg30
- **TD**: 65536
- **SOLVENT**: CDC13
- **NS**: 32
- **DS**: 0
- **SWH**: 10000.000 Hz
- **FIDRES**: 0.152588 Hz
- **AQ**: 3.2767999 sec
- **RG**: 12.14
- **DW**: 50.000 usec
- **DE**: 10.00 usec
- **TE**: 298.0 K
- **D1**: 2.00000000 sec
- **TD0**: 1

F2 - Processing parameters
- **SI**: 65536
- **SF**: 500.1300122 MHz
- **WDW**: EM
- **SSB**: 0
- **LB**: 0.30 Hz
- **GB**: 0
- **PC**: 1.00

**1H NMR**

![NMR spectrum with peaks at 2.00 and 9.05 ppm]
Current Data Parameters
NAME     kk-1-264 i2-obc
EXPNO     2
PROCNO    1

F2 - Acquisition Parameters
Date_     20151002
Time      12.33
INSTRUM   drx500
PROBHD    5 mm bb-Z Z800
PULPROG   zgdc
TD        7168
SOLVENT   CDC13
NS        2048
DS        4
SWH       64102.562 Hz
FIDRES    8.942880 Hz
AQ         0.0559104 sec
RG         362
DW         7.800 usec
DE         6.00 usec
TE         296.9 K
D1        0.00008400 sec
d11        0.03000000 sec
TD0        1

-------- CHANNEL f1 --------
NUC1     11B
P1         8.00 usec
PL1       -2.00 dB
SFO1     160.5257140 MHz

-------- CHANNEL f2 --------
CPDPdRg[2 waltz16
NUC2     11B
PCPD2    0 dB
PL2      100.00 usec
PL12     17.52 dB
SFO2    500.3300000 MHz

F2 - Processing parameters
SI        32768
SF       160.5257010 MHz
WDN       EM
SSB       0
LB       10.00 Hz
GB       0
PC       1.40
Current Data Parameters
NAME     i2-ocb kk-1-265ish
EXPNO    11
PROCNO   1

F2 - Acquisition Parameters
Date     20151002
Time     11.33
INSTRUM  av500
PROBHD   5 mm DCH 13C-1
PULPROG  zgpg30
TD       65536
SOLVENT  CDCl3
NS       32
DS       2
SWH      31250.000 Hz
FIDRES   0.476837 Hz
AQ       1.0485760 sec
RG       204.54
DW       16.000 usec
DE       10.000 usec
TE       298.0 K
D1       2.00000000 sec
D11      0.03000000 sec
TD0      1

----------- CHANNEL f1 -----------
SFO1 125.7722511 MHz
NUC1 13C
P1 9.63 usec
PLW1 23.00000000 W

----------- CHANNEL f2 -----------
SFO2 500.1330008 MHz
NUC2 1H
CPDPRG[2 waltz16
CPDPD2 80.00 usec
PLW2 13.50000000 W
PLW12 0.21094000 W
PLW13 0.13500001 W

F2 - Processing parameters
SI 131072
SF 125.7577744 MHz
NDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
Current Data Parameters
NAME       diethyl-o-carborane pure
EXPNO      10
PROCNO     1

F2 - Acquisition Parameters
Date_      20151103
Time       17.47
INSTRUM     av500
PROBHD      5 mm DCH 13C-1
PULPROG     zg30
TD          65536
SOLVENT     CDCl3
NS          64
DS          0
SWH         10000.000 Hz
FIDRES      0.152588 Hz
AQ           3.2767999 sec
RG           3.63
DW           50.000 usec
DE           10.00 usec
TE           298.0 K
D1           2.0000000 sec
TD0          1

======== CHANNEL f1 ========
SFO1      500.1330008 MHz
NUC1      1H
P1         10.00 usec
PLW1       13.5000000 W

F2 - Processing parameters
SI          65536
SF          500.1300123 MHz
MDW         EM
SSB         0
LB          0.30 Hz
GB          0
PC          1.00
Current Data Parameters
NAME: diethyl-o-carborane pure 11b
EXPNO: 1
PROCNO: 1

F2 - Acquisition Parameters
Date: 20151103
Time: 20.15
INSTRUM: drx500
PROBHD: 5 mm bb-Z Z800
PULPROG: zgdc
TD: 7168
SOLVENT: D2O
NS: 4096
DS: 4
SWH: 64102.562 Hz
FIDRES: 8,942880 Hz
AQ: 0.0559104 sec
RG: 28.5
DW: 7.800 usec
DE: 6.00 usec
TE: 298.0 K
D1: 0.00000400 sec
d11: 0.03000000 sec
TD0: 1

======== CHANNEL f1 ========
NUC1: 11B
P1: 8.00 usec
PL1: -2.00 dB
SFO1: 160.5257136 MHz

======== CHANNEL f2 ========
CPDPRG[2: waltz16
NUC2: 1H
PCPD2: 100.00 usec
PL2: 0 dB
PL12: 17.52 dB
SFO2: 500.3330020 MHz

F2 - Processing parameters
SI: 32768
SF: 160.5257136 MHz
DM: SSBD
LB: 10.00 Hz
PC: 1.40
1H NMR

Current Data Parameters
NAME      kk-1-210 tebc
EXPNO     10
PROCNO    1

F2 - Acquisition Parameters
Date       20151012
Time       17.06
INSTRUM    av500
PROBHD     5 mm DCH 13C-1
PULPROG    zg30
TD          65536
SOLVENT    CDC13
NS          128
DS          0
SWH        10000.000 Hz
FIDRES     0.152588 Hz
AQ         3.2767999 sec
RG          12.14
DW        50.0000 usec
DE          10.00 usec
TE          298.0 K
D1        2.00000000 sec
TD0        1

--------- CHANNEL f1 ---------
SFO1      500.1330008 MHz
NUC1      1H
P1        10.00 usec
PLW1      13.50000000 W

F2 - Processing parameters
SI         65536
SF        500.1300121 MHz
WDW         EM
SSB        0
LB          0.30 Hz
GB         0
PC          1.00
Current Data Parameters
NAME    tetraethyl-bis-carborane pure 11b
EXPNO   2
PROCNO  1

F2 - Acquisition Parameters
Date_   20151111
Time    16.24
INSTROB drx500
PROBSSD 5 mm bb-Z Z800
PULPROG zgdc
TD      7168
SOLVENT D2O
NS      2048
DS      4
SNR    64102.562 Hz
FIDRES 8.942880 Hz
AQ      0.0359104 sec
RG      352.5
DN      7.800 usec
SK      6.00 usec
TE      298.0 K
DS1     0.00000000 sec
d11     0.00000000 sec
TD0     1

======== CHANNEL f1 ========
NUC1   11B
F1     8.00 usec
FL1    2.00 dB
SFO1   160.5257140 MHz

======== CHANNEL f2 ========
CPDPRG[2
NUC2   off
PCPD2  100.00 usec
PL2    0 dB
FL2    17.52 dB
SFO2   500.3300000 MHz

F2 - Processing parameters
SI      32768
SR      160.5257136 MHz
WON     2M
SSB    10.00 Hz
GB      1.40
11B {1H} NMR

Current Data Parameters
NAME: tetraethyl-bis-carborane pure 11b
EXPNO: 1
PROCNO: 1

F2 - Acquisition Parameters
Date: 20151111
Time: 16:19
INSTRUM: drx500
PROCSED: 5 mm bb–Z Z800
PULPROG: zgdc
TD: 7618
SOLVENT: D2O
NS: 2048
DS: 4
SNR: 6410.526 Hz
FIDRES: 8.942980 Hz
AQ: 0.0359104 sec
RG: 352.5
DN: 7.800 usec
SK: 6.00 usec
TE: 298.1 K
D1: 0.00004000 sec
d1l: 0.00000000 sec
TD0: 1

-------- CHANNEL f1 --------
NUC1: 11B
P1: 8.00 usec
PL1: -12.00 dB
SFO1: 160.5257136 MHz

-------- CHANNEL f2 --------
CPDPRG[2 waltz16
NUC2: 1H
PFPD2: 100.00 usec
PL2: 0 dB
PLL2: 17.52 dB
SFO2: 500.3330020 MHz

F2 - Processing parameters
SI: 32768
SF: 160.5257476 MHz
CBW: EM
SSB: 10.00 Hz
GB: 1.40
Current Data Parameters

NAME: KK-1-232 Pt(tbec)(dtb-bpy) pure 11B
EXPNO: 1
PROCNO: 1

F1 - Acquisition Parameters
Date: 20150922
Time: 14.05
INSTRUM: drx500
PROBHD: 5 mm bb-Z Z800
PULPROG: zgdc
TD: 7168
SOLVENT: CD2Cl2
NS: 4096
DS: 4
SNR: 64122.592 Hz
FIDRES: 8.942880 Hz
AQ: 0.0559104 sec
RG: 374.1
DM: 7.360 usec
DE: 6.00 usec
TE: 297.2 K
D1: 0.0000000 sec
d11: 0.0000000 sec
TDO: 1

======== CHANNEL f1 ========
NUC1: 11B
P1: 8.00 usec
PL1: -2.00 dB
SFO1: 160.5257136 MHz

======== CHANNEL f2 ========
CP2DPRG[2 waltz16
NUC2: 1H
PCPD2: 100.00 usec
PL2: 0 dB
FL12: 17.32 dB
SFO2: 500.3330020 MHz

F2 - Processing parameters
SI: 32768
SF: 160.5257137 MHz
MEM: EM
ASS: D
LB: 10.00 Hz
PC: 1.40
### 13C{1H} NMR

| Peak | ppm |
|------|-----|
| 119.17 | 120.01 |
| 123.77 | 123.80 |
| 123.99 | 149.79 |
| 155.18 | 155.85 |
| 157.21 | 163.58 |
| 164.12 |

**Current Data Parameters**

- **NAME**: kk-1-232 pt(tebc)(dtb-bpy)
- **EXPNO**: 11
- **PROCNO**: 1

**F2 - Acquisition Parameters**

- **Date**: 20150922
- **Time**: 12.03
- **INSTRUM**: av500
- **PROBHD**: 5 mm DCH 13C-1
- **PULPROG**: zgpg30
- **TD**: 65536
- **SOLVENT**: CD2Cl2
- **NS**: 1024
- **DS**: 2
- **SWR**: 31250.000 Hz
- **FIDRES**: 0.476837 Hz
- **AQ**: 1.0485760 sec
- **RG**: 204.54
- **DN**: 16.000 usec
- **DE**: 18.00 usec
- **TE**: 298.8 K
- **D1**: 2.0000000 sec
- **D11**: 0.0300000 sec
- **TD0**: 1

******** CHANNEL f1 ********

- **SFO1**: 125.7722511 MHz
- **NUC1**: 13C
- **P1**: 9.63 usec
- **PLW1**: 23.00000000 W

******** CHANNEL f2 ********

- **SFO2**: 500.1330008 MHz
- **NUC2**: 1H
- **CPDPRG[2 waltz16**:
- **PCPD2**: 80.00 usec
- **PLW2**: 13.500000 W
- **PLW12**: 0.21094000 W
- **PLW13**: 0.13500001 W

**F2 - Processing parameters**

- **SI**: 131072
- **SF**: 125.7577377 MHz
- **WOW**: 0
- **SSB**: 0
- **LB**: 1.00 Hz
- **GB**: 0
- **PC**: 1.40
Current Data Parameters
NAME  (TEA)2[Pd(bc)2] 1H:13C
EXPNO  10
PROCNO  1

F2 - Acquisition Parameters
Date_  20160126
Time  22.53
INSTRUM  av500
PROBHD  5 mm DCH 13C-1
PULPROG  zg30
TD  65536
SOLVENT  CD2Cl2
NS  64
DS  0
SWH  10000.000 Hz
FIDRES  0.152588 Hz
AQ  3.2767999 sec
RG  12.14
DW  50.000 usec
DE  10.00 usec
TE  298.0 K
D1  2.00000000 sec
TDO  1

======== CHANNEL f1 ========
SFO1  500.1330008 MHz
NUC1  1H
P1  10.00 usec
PLW1  13.50000000 W

F2 - Processing parameters
SI  65536
SF  500.1300194 MHz
WDW  EM
SSB  0
LB  0.30 Hz
GB  0
PC  1.00
Current Data Parameters
NAME     KK-2-022 [Pd(bc)2]2- 11B
EXPNO     3
PROCNO     1

F2 - Acquisition Parameters
Date_     20160208
Time     18.23
INSTRUM     drx500
PRBHD     5 mm bb-Z Z800
PULPROG     zgdc
TD     7168
SOLVENT     CD2Cl2
NS     8192
DS     4
SWH     64102.562 Hz
FIDRES     8.942880 Hz
AQ     0.0559104 sec
RG     287.4
DW     7.800 usec
DE     6.00 usec
TE     297.0 K
D1     0.00000400 sec
d11     0.03000000 sec
TD0     1

======== CHANNEL f1 ========
NUC1     11B
F1     8.00 usec
PL1     -2.00 dB
SFO1     160.5257140 MHz

======== CHANNEL f2 ========
CPDPRG[2     waltz16
NUC2     off
PCPD2     100.00 usec
PL2     0 dB
PL12     17.52 dB
SFO2     500.3300000 MHz

F2 - Processing parameters
SI     32768
SF     160.5256716 MHz
WOM     EM
SSB     0
LB     10.00 Hz
GB     0
PC     1.40
Current Data Parameters
NAME  KK-2-022 [Pd(bc)2]2- 11B
EXPNO  2
PROCNO  1

F2 - Acquisition Parameters
Date_ 20160208
Time  18.05
INSTRUM  drx500
PROBHD  5 mm bb-Z Z800
PULPROG  zgdc
TD  7168
SOLVENT  CD2Cl2
NS  4096
DS  4
SWH  64102.562 Hz
FIDRES  8.942880 Hz
AQ  0.0559104 sec
RG  574.7
DW  7.800 usec
DE  6.00 usec
TE  297.2 K
D1  0.00000400 sec
dll  0.03000000 sec
TD0  1

======== CHANNEL f1 ========
NUC1  11B
F1  8.00 usec
PL1  -2.00 dB
SFO1  160.5257136 MHz

======== CHANNEL f2 ========
CPDPRG[2 waltz16
NUC2  1H
PCPD2  100.00 usec
PL2  0 dB
PLI2  17.52 dB
SFO2  500.3330020 MHz

F2 - Processing parameters
SI  32768
SF  160.5256716 MHz
WOW  EM
SSB  0
LB  10.00 Hz
GB  0
PC  1.40
Current Data Parameters
NAME     KK-2-017 Pt(bc)2 vac dried
EXPNO     10
PROCNO    1

F2 - Acquisition Parameters
Date_     20160205
Time       17.10
INSTRUM   av500
PROBHD    5 mm DCH 13C-1
PULPROG   zg30
TD        65536
SOLVENT   CD2Cl2
NS        64
DS         0
SWH        10000.000 Hz
FIDRES    0.152588 Hz
AQ         3.2767999 sec
RS        12.14
DW        50.000 usec
DE        10.00 usec
TE         298.0 K
D1       2.00000000 sec
TD0       1

======== CHANNEL f1 ========
SFO1    500.1330008 MHz
NUC1     1H
P1       10.00 usec
PLW1    13.50000000 W

F2 - Processing parameters
SI        65536
SF        500.1300193 MHz
WOW       ZM
SSB       0
LB        0.00 Hz
GB        0
PC        1.00
Current Data Parameters
NAME     KK-2-017 [Pt(bc)2]2- 11B
EXPNO    3
PROCNO   1

F2 - Acquisition Parameters
Date_    20160206
Time     17.39
INSTRUM  drx500
PROBHD   5 mm bb-Z Z800
PULPROG  zgdc
TD       7168
SOLVENT  CD2Cl2
NS       8192
DS       4
SWH      64102.562 Hz
FIDRES   8.942880 Hz
AQ       0.0559104 sec
RG       228.1
DW       7.800 usec
DE       6.00 usec
TE       296.8 K
D1       0.00000400 sec
d11      0.03000000 sec
TD0      1

======== CHANNEL f1 ========
NUC1     11B
F1       8.00 usec
PL1      -2.00 dB
SFO1     160.5257140 MHz

======== CHANNEL f2 ========
CPDFPRG2 waltz16
NUC2     off
PCPD2    100.00 usec
PL2      0 dB
PL12     17.52 dB
SFO2     500.3300000 MHz

F2 - Processing parameters
SI       32768
SF       160.5256909 MHz
WOW      EM
SSB      0
LB       10.00 Hz
GB       0
PC       1.40
11B \{1H\} NMR

Current Data Parameters
NAME: KK-2-017 [Pt(bc)2]2- 11B
EXPNO: 2
PROCNO: 1

F2 - Acquisition Parameters
Date: 20160206
Time: 17.21
INSTRUM: drx500
PROBHD: 5 mm bb-Z Z800
PULPROG: zgdc
TD: 7168
SOLVENT: CD2Cl2
NS: 8192
DS: 4
SWH: 64102.562 Hz
FIDRES: 8.942880 Hz
AQ: 0.0559104 sec
RG: 228.1
DW: 7.800 usec
DE: 6.00 usec
TE: 297.1 K
D1: 0.000000000 sec
d11: 0.030000000 sec
TD0: 1

====== CHANNEL f1 ======
NUC1: 11B
F1: 8.00 usec
PL1: -2.00 dB
SFO1: 160.5257136 MHz

====== CHANNEL f2 ======
CPDPRG: [2 waltz16]
NUC2: 1H
PCPD2: 100.00 usec
PL2: 0 dB
PL12: 17.52 dB
SFO2: 500.3330020 MHz

F2 - Processing parameters
SI: 12768
SF: 160.5256909 MHz
WDW: EM
SSB: 0
LB: 10.00 Hz
GB: 0
PC: 1.40
Current Data Parameters

NAME     KK-2-017 Pt(bc)2 vac dried
EXPNO     11
PROCNO    1

F2 - Acquisition Parameters
Date_      20160205
Time       18.06
INSTRUM    av500
PROBHD     5 mm DCH 13C-1
PULPROG    zgpg30
TD          65536
SOLVENT    CD2Cl2
NS          1024
DS          2
SWH        31250.000 Hz
FIDRES     0.476837 Hz
AQ          1.0485760 sec
RG          204.54
DW         16.000 usec
DE          18.00 usec
TE          298.0 K
D1          2.00000000 sec
D11        0.03000000 sec
TD0         1

======== CHANNEL f1 ========
SFO1  125.7722511 MHz
NUC1    13C
P1        9.63 usec
PLW1     23.00000000 W

======== CHANNEL f2 ========
SFO2  500.1330008 MHz
NUC2     1H
CPDPRG2  waltz16
PCPD12   80.00 usec
PLW2     13.50000000 W
PLW12    0.21094000 W
PLW13    0.13500001 W

F2 - Processing parameters
SI         131072
SF         125.7577397 MHz
WOW        EM
SSB        0
LB          1.00 Hz
GB          0
FC          1.40
Current Data Parameters

NAME        Ni(dppe)Cl2
EXPNO       170
PROCNO      1

F2 - Acquisition Parameters
Date_        20150327
Time         12.57
INSTRUM      AV400
PROBHD       5 mm PABBO BB/
PULPROG      zg30
TD           52882
SOLVENT      CD2Cl2
NS           64
DS           0
SWH          8012.820 Hz
FIDRES       0.151523 Hz
AQ           3.2998369 sec
RG           155.85
DW           62.400 usec
DE           6.50 usec
TE           299.1 K
D1           2.00000000 sec
TD0          1

-------- CHANNEL f1 --------
SFO1        400.1324008 MHz
NUC1        1H
P1           15.00 usec
PLW1        13.00000000 W

F2 - Processing parameters
SI           65536
SF           400.1300154 MHz
WDW          EM
SSB          0
LB           0.30 Hz
PC           1.00
31P{1H} NMR

Current Data Parameters
NAME       Ni(dppe)Cl2
EXPNO      171
PROCNO     1

F2 - Acquisition Parameters
Date_      20150327
Time       13.02
INSTRUM     av400
PROBHD      5 mm PABBO BB/
PULPROG     zgpg30
TD          262144
SOLVENT    CD2Cl2
NS          80
DS          0
SWH         131578.953 Hz
FIDRES      0.501934 Hz
AQ          0.9961472 sec
RG          189.85
DW          3.800 usec
DE          6.50 usec
TE          300.1 K
D1          2.00000000 sec
D11         0.03000000 sec
TD0         1

------- CHANNEL f1 -------
SFO1       161.9755930 MHz
NUC1       31P
P1          14.00 usec
PLW1       12.00000000 W

------- CHANNEL f2 -------
SFO2       400.1324008 MHz
NUC2       1H
CPDPRG[2]   waltz16
PCPD2       90.00 usec
PLW2       13.00000000 W
PLW12      0.36111000 W
PLW13      0.29249999 W

F2 - Processing parameters
SI          262144
SF          161.9755930 MHz
WDW         EM
SSB         0
LB          1.00 Hz
GB          0
PC          1.40
Current Data Parameters
NAME        Pd(dppe)Cl2
EXPNO       60
PROCNO       1

F2 - Acquisition Parameters
Date_        20150324
Time          10.37
INSTRUM       av400
PROBHD     5 mm PABBO BB/
PULPROG      zg30
TD           52882
SOLVENT     CD2C12
NS           40
DS            0
SWH        8012.820 Hz
FIDRES       0.151523 Hz
AQ           3.2998369 sec
RG            155.85
DW         62.400 usec
DE           6.50 usec
TE          299.0 K
D1       2.00000000 sec
TD0          1

-------- CHANNEL f1 --------
SFO1       400.1324008 MHz
NUC1        1H
P1          15.00 usec
PLW1       13.00000000 W

F2 - Processing parameters
SI          65536
SF        400.1300155 MHz
WDW     EM
SSB           0
LB         0.30 Hz
GB            0
PC            1.00
$31P\{1H\}$ NMR

Current Data Parameters
NAME        Pd(dppe)Cl$_2$
EXPNO       61
PROCNO      1

F2 - Acquisition Parameters
Date         20150324
Time         10.42
INSTRUM      av400
PROBHD       5 mm PABBO BB/
PULPROG      zgpg30
TD           262144
SOLVENT      CD2Cl$_2$
NS           64
DS           0
SWH          131578.953 Hz
FIDRES       0.501934 Hz
AQ           0.9961472 sec
RG           189.85
DW           3.800 usec
DE           6.50 usec
TE           299.0 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0          1

--------- CHANNEL f1 ---------
SFO1        161.9755930 MHz
NUC1        31P
P1          14.00 usec
PLW1        12.00000000 W

--------- CHANNEL f2 ---------
SFO2        400.1324008 MHz
NUC2        1H
CPDPRG[2    waltz16
PCPD2       90.00 usec
PLW2        13.00000000 W
PLW12       0.36111000 W
PLW13       0.29249999 W

F2 - Processing parameters
SI           262144
SF           161.9755930 MHz
WDW          EM
SSB          0
LB           1.00 Hz
GB           0
PC           1.40
Current Data Parameters
NAME: Pt(dppe)Cl2
EXPNO: 50
PROCNO: 1

F2 - Acquisition Parameters
Date: 20150324
Time: 10.25
INSTRUM: av400
PROBHD: 5 mm PABBO BB/
PULPROG: zg30
TD: 52882
SOLVENT: CD2C12
NS: 40
DS: 0
SWH: 8012.820 Hz
FIDRES: 0.151523 Hz
AQ: 3.2998369 sec
RG: 189.85
DW: 62.400 usec
DE: 6.50 usec
TE: 299.0 K
D1: 2.00000000 sec
TD0: 1

-------- CHANNEL f1 --------
SFO1: 400.1324008 MHz
NUC1: 1H
P1: 15.00 usec
PLW1: 13.00000000 W

F2 - Processing parameters
SI: 65536
SF: 400.1300153 MHz
WDW: EM
SSB: 0
LB: 0.30 Hz
GB: 0
PC: 1.00
### Current Data Parameters

| NAME        | Pt(dppe)Cl₂ |
|-------------|-------------|
| EXPNO       | 51          |
| PROCNO      | 1           |

### F2 - Acquisition Parameters

- **Date**: 20150324
- **Time**: 10.29
- **INSTRUM**: av400
- **PROBHD**: 5 mm PABBO BB/
- **PULPROG**: zgpg30
- **TD**: 262144
- **SOLVENT**: CD₂Cl₂
- **NS**: 64
- **DS**: 0
- **SWH**: 131578.953 Hz
- **FIDRES**: 0.501934 Hz
- **AQ**: 0.9961472 sec
- **RG**: 189.85
- **DW**: 3.800 usec
- **DE**: 6.50 usec
- **TE**: 299.0 K
- **D1**: 2.00000000 sec
- **D11**: 0.03000000 sec
- **TD0**: 1

#### CHANNEL f1

- **SFO1**: 161.9755930 MHz
- **NUC1**: 31P
- **P1**: 14.00 usec
- **PLW1**: 12.00000000 W

#### CHANNEL f2

- **SFO2**: 400.1324008 MHz
- **NUC2**: 1H
- **CPDPRG[2]**: waltz16
- **PCPD2**: 90.00 usec
- **PLW2**: 13.00000000 W
- **PLW12**: 0.36111000 W
- **PLW13**: 0.29249999 W

### F2 - Processing parameters

- **SI**: 262144
- **SF**: 161.9755930 MHz
- **WDW**: EM
- **SSB**: 0
- **LB**: 1.00 Hz
- **GB**: 0
- **PC**: 1.40
1H NMR

Current Data Parameters
NAME     Pt(dtb-bpy)Cl2, DCM
EXPNO    10
PROCNO   1

F2 - Acquisition Parameters
Date_   20150801
Time    15.01
INSTRUM av400
PROBHD   5 mm PABBO BB/
PULPROG  zg30
TD       52882
SOLVENT CD2C12
NS       64
DS       0
SWH      8012.820 Hz
FIDRES   0.151523 Hz
AQ       3.2998369 sec
RG       155.85
DW       62.400 usec
DE       6.50 usec
TE       299.0 K
D1       2.00000000 sec
TD0      1

--------- CHANNEL f1 ---------
SFO1    400.1324008 MHz
NUC1    1H
P1      15.00 usec
PLW1    13.00000000 W

F2 - Processing parameters
SI       65536
SF       400.1300154 MHz
WDW      EM
SSB      0
LB       0.30 Hz
GB       0
PC       1.00