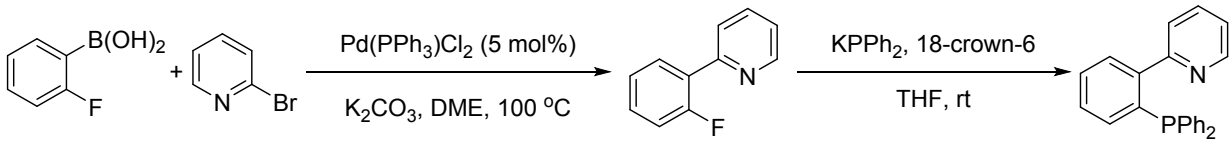
General Information: Chemicals were purchased from commercial suppliers and used as delivered. Dry solvents were dispensed from solvent purification system MB SPS-800. Oxygen-free, anhydrous reactions were carried out under an atmosphere of nitrogen. Reaction steps involving the synthesis of phosphorous ligands were carried out using dry and degassed solvents. To degas the solvents, nitrogen was bubbled through them for at least 1 hour. NMR spectra were, if not mentioned otherwise, recorded at room temperature on the following spectrometers: Bruker ARX-250, Bruker Avance DRX-300 or Bruker Avance 500. Chemical shifts are given in ppm and coupling constants in Hz. ^{1}H and ^{13}C spectra were calibrated in relation to deuterated solvents ($CDCl_3$: 7.26 / 77 ppm; CD_2Cl_2: 5.30 / 53.80 ppm; C_6D_6: 7.15 / 128.06 ppm; d_6-DMSO: 2.50 / 39.52 ppm; d_6-acetone: 2.05 / 29.84; d_4-methanol: 3.31 / 49 ppm; d_3-acetonitrile: 1.94 / 1.32 ppm). ^{31}P spectra were calibrated in relation to the reference measurement of phosphoric acid (0.00 ppm). ^{19}F spectra were calibrated in relation to the reference measurement of 1,2-difluorobenzene (-139 ppm). The following abbreviations were used for ^{1}H NMR to indicate the signal multiplicity: s (singlet), d (doublet), t (triplet), q (quartet), quint (quintet), pent (pentet), sext (sextet), sept (septet), decet (decet), m (multiplet), dd (doublet of doublet), dt (doublet of triplet), td (triplet of doublet), qd (quartet of doublet), tt (triplet of triplet), ddd (doublet of doublet of doublet), ddt (doublet of doublet of triplet), bs (broad singlet). All ^{13}C NMR spectra were measured with ^{1}H decoupling. The multiplicities mentioned in this spectra [s (singlet, quarternary carbon), d (doublet, CH-group), t (triplet, CH_2-group), q (quartet, CH_3 group)] were determined by DEPT135 and HSQC spectra. Mass spectra (MS and HRMS) were determined in the chemistry department of the University Heidelberg under the direction of Dr. J. Gross. EI^+-spectra were measured on a JOEL JMS-700 spectrometer. FAB^+-spectra were obtained using a JOEL JMS-700 spectrometer as well. As FAB-matrix 3-nitrobenzyl alcohol (NBA) or o-nitrophenyl octyl ether (NPOE) was used. For ESI^+-spectra a Bruker ApexQu FT-ICR-MS spectrometer was applied. Infrared Spectroscopy (IR) was processed on an FT-IR BRUKER (IF528), IR PERKIN ELMER (283) or FT-IR Bruker Vektor 22. The solvent or matrix is denoted in brackets. For the most significant bands, the wave number (cm^{-1}) is given. Gas Chromatography / Mass Spectrometry (GC MS) were carried out on two different systems: 1. HP 5972 Mass Selective Detector, coupled with a HP 5890 SERIES II plus Gas Chromatograph. 2. Agilent 5975C Mass Selective Detector, coupled with an Agilent 7890A Gas Chromatograph. In both cases, as a capillary column, an OPTIMA 5 cross-linked Methyl Silicone column (30 m x, 0.32 mm, 0.25 μm) was employed, and helium was used as the carrier gas. Gas Chromatography (GC) was carried out on a

HP 5890 SERIES II plus Gas Chromatograph. As a capillary column, an OPTIMA 5 cross-linked Methyl Silicone column (30 m x, 0.32 mm, 0.25 µm) was employed, and nitrogen was used as the carrier gas. Melting points were measured in open glass capillaries in a Büchi melting point apparatus (according to Dr. Tottoli) and were not corrected. Flash Column Chromatography was accomplished using Silica gel 60 (0.04 – 0.063 mm / 230 – 400 mesh ASTM) purchased from Macherey-Nagel or Aluminium oxide (neutral or basic) purchased from Macherey-Nagel. As eluents, mixtures of petroleum ether (PE), ethyl acetate (EA), dichloromethane (DCM) and diethylether (Et_2O) were used. Analytical Thin Layer Chromatography (TLC) was carried out on precoated Macherey-Nagel POLYGRAM® SIL G/UV254 or Merck TLC Silical Gel 60 F254 aluminium sheets or Macherey-nagel POLYGRAM® ALOX N/UV254 plastic sheets. Detection was accomplished using UV-light (254 nm), $KMnO_4$ (in 1.5 M Na_2CO_3 (aq)), molybdatophosphoric acid (5 % in ethanol), vanillin / H_2SO_4 (in ethanol) or anisaldeh

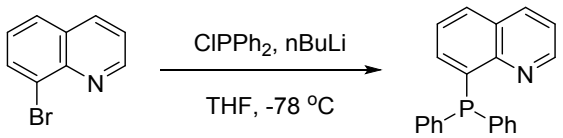
Fig. 1 Reaction apparatus. The blue LEDs photoreactor is equipped with a fan at the bottom to keep the reactor at room temperature.

General procedure for synthesis of P,N bidentate ligand



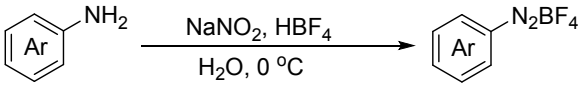
Step 1: To a flask equipped with a magnetic stir bar 2-bromo-pyridine (1 eq.) and 2-Fluorophenylboronic acid (1.3 eq.) were dissolved in a mixture of aqueous 2 M K_2CO_3 (1 L/mol) and DME (2 L/mol). The mixture was degassed for approximately 30 min and $Pd(PPh_3)_2Cl_2$ (5 mol%) was added. The mixture was heated to 100 °C overnight. The solution was cooled to room temperature and filtered through Celite. Then extracted with ethyl acetate, and dried over Na_2SO_4. After evaporation under vacuum, the crude product was purified by flash chromatography to afford 2-(2-fluorophenyl)pyridine in 78% yield.

Step 2: To a dry flask equipped with a magnetic stir bar was charged with 2-(2-fluorophenyl)pyridine (1 eq.) and 18-crown-6 (1.3 eq.) in THF. Then 0.5 M solution of $KPPh_2$ (1.2 eq.) in THF was added dropwise to the above solution at -78 °C. The reaction was allowed to warm to room temperature and stirred for 24 h. The reaction was quenched with water and extracted with ether, dried over Na_2SO_4 and concentrated under vacuum. The residue was purified by silica gel chromatography to afford 2-(2-(diphenylphosphanyl)phenyl)pyridine in 66% yield. [1]

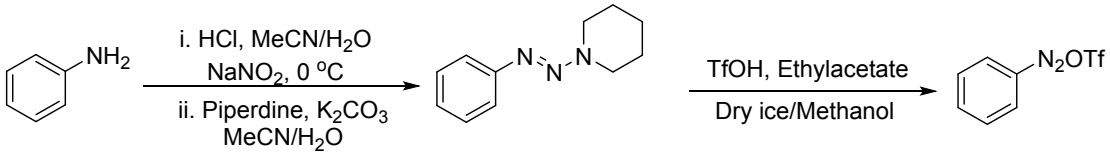


n-Butyllithium 2.5 M (1 eq) was added to a solution of 8-bromoquinoline (1 eq.) in THF at -78 °C dropwise. The mixture was stirred for 30 min. Then a solution of $ClPPh_2$ (1 eq.) in THF was added slowly. The reaction was stirred for an additional 30 min at -78 °C, next allowed to warm to room temperature. The resulting solution was quenched with water and extracted with DCM dried over Na_2SO_4 and concentrated under vacuum. The residue was purified by silica gel chromatography to afford 8-(diphenylphosphanyl)quinolone in 36% yield. [2]

General procedure for synthesis of aryldiazonium salts 2



1) To a mixture of 4 mL of distilled water and 3.5 mL of 48% hydrofluoroboric acid was added corresponding anilines (10 mmol) in a 100 ml polyethylene beaker under ice bath. Then a sodium nitrite solution (0.69 g in 1.5 mL distilled water) was added dropwise to the above mixture. The resulting solution was stirred for another 0.5 h and the precipitate was collected by filtration. The crude product was purified by dissolving in minimum amount of acetone and precipitating with ether, then filtered and washed with ether for several times. After drying under vacuum, the obtained aryldiazonium salts were stored at -20 °C.



2) Step 1 : Concentrated aqueous HCl (7.6 mL, 91 mmol, 4.0 eq.) was added dropwise to a cooled solution of aniline (23 mmol, 1.0 eq.) in MeCN/H2O (2:1) 30 mL at 0 °C. The reaction mixture was further cooled to -5 °C with salt ice bath and a solution of $NaNO_2$ (2.4 g, 34 mmol, 30 mL water, 1.5 eq.) was added slowly, the reaction was stirred for 30 min while maintaining the reaction temperature below 0 °C. Then it was transferred slowly to a stirred solution of piperidine (5.6 mL, 57 mmol, 2.5 eq.) and potassium carbonate (16 g, 119 mmol, 5.2 eq.) in MeCN/H_2O (2:1) 120 mL at 0 °C. After warming to room temperature, the mixture was stirred for additional 1 hour and then extracted with ethyl acetate, washed with brine and dried over Na_2SO_4. The crude product was concentrated under vacuum and purified by column chromatograph on silica gel to give the triazene product.

   Step 2: Triflic acid (1.77 mL, 20 mmol, 2eq) was added dropwise to a solution of the above triazene product (2.3 g, 10 mmol, 1eq) in ethyl acetate 40 mL cooled with dry ice/methanol bath. The mixture was stired for 30 min and ether 10 mL was added. The solid was collected by filtration. The crude product was purified by dissolving in minimum amount of acetone and precipitating with ether, then filtered and washed with ether for several times. After drying under vacuum, the obtained aryldiazonium salts were stored at -20 °C. [3]

General procedure for synthesis of gold (I) complexes

DMSAuCl (1 equiv.) was dissolved in DCM (10 L/mol) and the corresponding ligand (1 equiv.) was added. After 2 hours of stirring in the dark, the solvent was removed under reduced pressure at room temperature. For further purification, the crude product was dissolved again in a small

amount of DCM, and the gold complex was precipitated by addition of *n*-pentane., the gold complex was obtained after filtrating and drying under vacuum.

General procedure for halide exchange of gold (I) complexes 4b and 4c

NaBr (0.5 mmol, 52 mg) was added to a solution of Chloro[8-(diphenylphosphino)quinolone]gold (0.2 mmol, 110 mg) in 10 mL acetone, then the mixture was stirred overnight. The solvent was removed under reduced pressure and DCM (5 mL) was added, filtered through a pad of celite and washed with DCM (5 mL). DCM was evaporated under vacuum, then the crude product was dissolved in minimum amount of DCM and EtOH (8 mL) was added, the solution was slowly reduced to ca. 2 mL, the remaining EtOH was removed with a glass pipet and then dried under vacuum. The product **4b** was obtained as a white solid in 86% yield.

NaI (0.3 mmol, 45 mg) was added to a solution of Chloro[8-(diphenylphosphino)quinolone]gold (0.2 mmol, 110 mg) in 10 mL acetone, then the mixture was stirred overnight. The solvent was removed under reduced pressure and DCM (5 mL) was added, filtered through a pad of celite and washed with DCM (5 mL). DCM was evaporated under vacuum, then the crude product was dissolved in minimum amount of DCM and EtOH (8 mL) was added, the solution was slowly reduced to ca. 2 mL, the remaining EtOH was removed with a glass pipet and then dried under vacuum. The product **4c** was obtained as a white solid in 91% yield.

General procedure for synthesis of gold (III) complexes 3 and 5

A Pyrex tube equipped with a magnetic stir bar was charged with aryldiazonium tetrafluoroborate **2** (0.08 mmol) and gold (I) complexe (0.08 mmol) in 0.3 mL DCM under N_2 atmosphere. Then the mixture was degassed using Freeze-Pump-Thaw methods for three cycles. The tube was sealed with screw cap and put into the 12 W Blue LEDs photoreactor thereafter. The reaction was irradiated 8-12 h for gold (I) **1** and 3-8h for gold (I) **4**. Then the product was precipitated by the addition of ether. After separation, the gold (III) complex was obtained as a white solid.

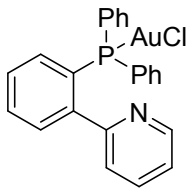
General procedure for synthesis of gold (III) complexes 7

A Pyrex tube equipped with a magnetic stir bar was charged with aromatic amine (0.16 mmol, 2 eq) in 0.15 mL MeCN. Then concentrated aqueous HCl (24 mg, 0.24 mmol, 3 eq) in 0.15 mL MeCN was added at 0 ^{o}C and stirred for 5 min, next *t*BuONO (24 µl, 0.176 mmol, 2.2 eq) was added. The reaction was stirred for another 15 min. The resulting mixture was freezed with liquid nitrogen and the corresponding gold (I) complex (0.08 mmol) was added, then degassed with Freeze-

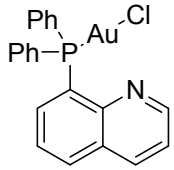
Pump-Thaw methods for three cycles. The tube was sealed with screw cap and put into the 12 W Blue LEDs photoreactor thereafter. The reaction was irradiated 12-18 h. The product was precipitated by the addition of ether. After separation, the gold (III) complex was obtained as white solid.

General procedure for synthesis of gold (III) complexes 8

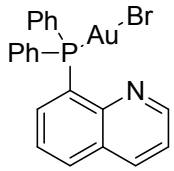
A Pyrex tube equipped with a magnetic stir bar was charged with aromatic amine (0.2 mmol, 2 eq) in 0.25 mL MeCN. Then concentrated aqueous HCl (24 mg, 0.3 mmol, 3 eq) in 0.25 mL MeCN was added at 0 ^{o}C and stirred for 5 min, next *t*BuONO (24 µl, 0.176 mmol, 2.2 eq) was added. The reaction was stirred for another 15 min. The resulting mixture was freezed with liquid nitrogen and the corresponding gold (I) complex (0.1 mmol) was added, then degassed with Freeze-Pump-Thaw methods for three cycles. The tube was sealed with screw cap and put into the 12 W Blue LEDs photoreactor thereafter. The reaction was irradiated 36 h. The solvent was removed under vacuum, the solid was washed with EtOH and ether. After filtration, the gold (III) complex was obtained as white solid.



Chloro[2-(2-(diphenylphosphanyl)phenyl)pyridine]gold, 1a: ^{1}H NMR (500 MHz, CD_2Cl_2): δ 8.27 (d, J = 4.1 Hz, 1H), 7.79-7.72 (m, 2H), 7.65 (dd, $J_{1,2}$ = 7.6 Hz, 1H), 7.58-7.54(m, 5H), 7.52-7.49 (m, 2 H), 7.46-7.40 (m, 5H), 7.22 (dd, J_1 = 6.2, J_2 = 5.8 Hz, 1H), 7.11 (dd, $J_{1,2}$ = 7.9 Hz, 1H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 157.3 (s), 148.3 (d), 145.4 (s), 137.5 (d), 135.6 (d, d: $J_{C\text{-}P}$ = 6.6 Hz), 134.4 (d, d: $J_{C\text{-}P}$ = 14.0 Hz), 132.0 (s, d: $J_{C\text{-}P}$ = 11.6 Hz), 131.9 (d), 131.6 (d), 130.7 (d, d: $J_{C\text{-}P}$ = 7.8 Hz), 129.3 (d, d: $J_{C\text{-}P}$ = 11.7 Hz), 128.9 (d, d: $J_{C\text{-}P}$ = 9.3 Hz), 128.2 (s, d: $J_{C\text{-}P}$ = 60.4 Hz), 123.7 (d), 123.3 (d); ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 31.3; IR (ATR) ν 3045, 1587, 1562, 1480, 1467, 1435, 1423, 1300, 1266, 1182, 1155, 1101, 1023, 998, 888, 852, 801, 762, 749, 724, 691 cm^{-1}; HRMS (ESI) for $C_{23}H_{18}AuClNNaP^+$ $(M+Na)^+$: 594.0423; Found : 594.0421.

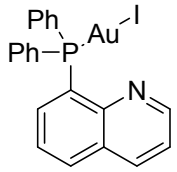


Chloro[8-(diphenylphosphino)quinoline]gold, 4a: ^{1}H NMR (400 MHz, $CDCl_3$): δ 8.81 (dd, J = 4.3 Hz, J = 1.7 Hz, 1H), 8.22 (dd, J = 8.3 Hz, J = 1.5 Hz, 1H), 8.05 (d, J = 8.3 Hz, 1H), 7.62-7.41 (m, 12H), 7.25 (m, 1H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 150.4 (d), 147.9 (s, d: $J_{C\text{-}P}$ = 7.0 Hz), 136.2 (d, d: $J_{C\text{-}P}$ = 1.5 Hz), 135.8 (d, d: $J_{C\text{-}P}$ = 6.6 Hz), 134.5 (d, d: $J_{C\text{-}P}$ = 14.2 Hz), 132.5 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 131.6 (d, d: $J_{C\text{-}P}$ = 2.6 Hz), 129.5 (s, d: $J_{C\text{-}P}$ = 64.0 Hz), 129.0 (d, d: $J_{C\text{-}P}$ = 12.0 Hz), 128.5 (s, d: $J_{C\text{-}P}$ = 5.5 Hz), 128.3 (s), 126.1 (d, d: $J_{C\text{-}P}$ = 11.2 Hz), 122.5 (d); ^{31}P NMR (162 MHz, $CDCl_3$): δ 26.4; IR (ATR) ν 2923, 2866, 1738, 1594, 1560, 1490, 1480, 1459, 1434, 1376, 1307, 1226, 1182, 1157, 1102, 1033, 996, 828, 790, 750, 712, 691 cm^{-1}; HRMS (ESI) for $C_{21}H_{16}AuNNaPCl^+$ $(M+Na)^+$: 568.0267; Found : 568.0279.

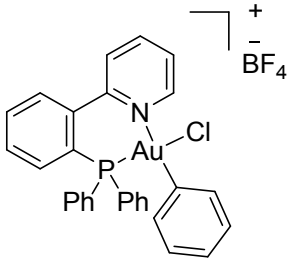


Bromo[8-(diphenylphosphino)quinoline]gold, 4b: 86%; ^{1}H NMR (500 MHz, $CDCl_3$): δ 8.75 (dd, J = 4.2 Hz, J = 1.6 Hz, 1H), 8.21 (d, J = 8.3 Hz, 1H), 8.04 (d, J = 8.2 Hz, 1H), 7.57-7.54 (m,

4H), 7.49 (td, J = 7.5 Hz, J = 1.7 Hz, 3H), 7.42-7.39 (m, 5H), 7.22 (dd, J = 12.9 Hz, J = 7.1 Hz, 1H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 150.4 (d), 147.9 (s, d: $J_{C\text{-}P}$ = 7.1 Hz), 136.4 (d, d: $J_{C\text{-}P}$ = 1.6 Hz), 135.8 (d, d: $J_{C\text{-}P}$ = 6.3 Hz), 134.5 (d, d: $J_{C\text{-}P}$ = 14.4 Hz), 132.6 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 131.7 (d, d: $J_{C\text{-}P}$ = 2.4 Hz), 129.6 (s, d: $J_{C\text{-}P}$ = 62.6 Hz), 129.1 (d, d: $J_{C\text{-}P}$ = 12.1 Hz), 128.6 (s, d: $J_{C\text{-}P}$ = 63.8 Hz), 128.5 (s, d: $J_{C\text{-}P}$ = 5.7 Hz), 126.3 (d, d: $J_{C\text{-}P}$ = 11.0 Hz), 122.5 (d); ^{31}P NMR (202.5 MHz, $CDCl_3$): δ 26.7; IR (ATR) ν 3046, 1592, 1561, 1488, 1479, 1460, 1436, 1380, 1306, 1226, 1182, 1152, 1130, 1106, 1067, 1028, 999, 910, 837, 826, 809, 789, 775, 745, 691 cm^{-1}; HRMS (ESI) for $C_{21}H_{17}AuNPBr^+$ $(M+H)^+$: 589.9942; Found : 589.9950.

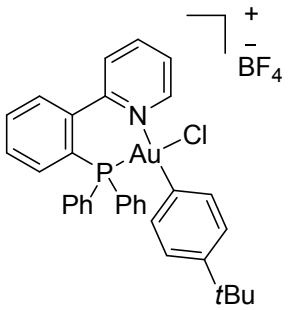


Iodo[8-(diphenylphosphino)quinoline]gold, 4c: 91%; ^{1}H NMR (500 MHz, CD_2Cl_2): δ 8.82 (dd, J = 4.2 Hz, J = 1.6 Hz, 1H), 8.28 (d, J = 8.3 Hz, 1H), 8.09 (d, J = 8.2 Hz, 1H), 7.62-7.58 (m, 4H), 7.56-7.53 (m, 3H), 7.50-7.44 (m, 5H), 7.28 (ddd, J = 12.7 Hz, J = 7.2 Hz, J = 1.1 Hz, 1H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 150.6 (d), 148.1 (s, d: $J_{C\text{-}P}$ = 7.5 Hz), 136.8 (d, d: $J_{C\text{-}P}$ = 1.6 Hz), 136.4 (d, d: $J_{C\text{-}P}$ = 5.9 Hz), 134.6 (d, d: $J_{C\text{-}P}$ = 14.5 Hz), 132.8 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 131.9 (d, d: $J_{C\text{-}P}$ = 2.4 Hz), 130.2 (s, d: $J_{C\text{-}P}$ = 60.2 Hz), 129.4 (d, d: $J_{C\text{-}P}$ = 11.8 Hz), 129.0 (s, d: $J_{C\text{-}P}$ = 61.4 Hz), 128.9 (s, d: $J_{C\text{-}P}$ = 5.3 Hz), 126.6 (d, d: $J_{C\text{-}P}$ = 10.6 Hz), 122.8 (d); ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 33.05; IR (ATR) ν 3045, 1737, 1592, 1560, 1488, 1478, 1459, 1435, 1379, 1305, 1225, 1181, 1151, 1130, 1105, 1027, 998, 836, 789, 772, 744, 713, 689 cm^{-1}; HRMS (ESI) for $C_{21}H_{17}AuINP^+$ $(M+H)^+$: 637.9803; Found : 637.9804.

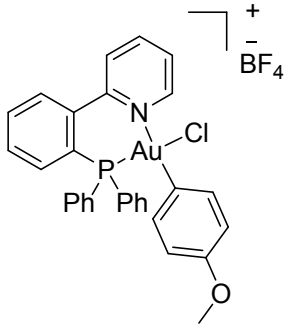


Gold (III) complex **3a**: 78%; ^{1}H NMR (300 MHz, CD_2Cl_2): δ 9.14 (dt, J = 5.7 Hz, J = 0.7 Hz, 1H), 8.15 (td, J = 7.9 Hz, J = 1.6 Hz, 1H), 8.08-8.00 (m, 2H), 7.88 (dd, J = 8.0 Hz, J = 0.6 Hz, 1H), 7.82-7.75 (m, 1H), 7.67-7.56 (m, 3H), 7.51-7.22 (m, 9H), 7.12 (d, J = 7.0 Hz, 2H), 7.01-6.89 (m, 3 H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 153.7 (s, d: $J_{C\text{-}P}$ = 5.3 Hz), 151.2 (d), 143.8 (d), 141.6 (s, d:

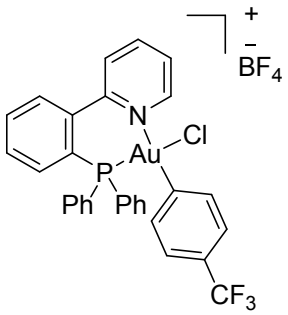
$J_{C\text{-}P}$ = 10.4 Hz), 138.8 (s, d: $J_{C\text{-}P}$ = 2.2 Hz), 136.2 (d, d: $J_{C\text{-}P}$ = 2.9 Hz), 135.0 (d, d: $J_{C\text{-}P}$ = 2.8 Hz), 134.4 (d, d: $J_{C\text{-}P}$ = 12.6 Hz), 134.3 (d, d: $J_{C\text{-}P}$ = 7.1 Hz), 134.2 (d), 132.9 (d, d: $J_{C\text{-}P}$ = 3.0 Hz), 132.4 (d, d: $J_{C\text{-}P}$ = 10.8 Hz), 130.5 (d), 130.4 (d, d: $J_{C\text{-}P}$ = 13.6 Hz), 129.3 (d), 127.8 (d), 127.5 (d), 117.8 (s, d: $J_{C\text{-}P}$ = 63.3 Hz), one quaternary carbon atom could not be detected; ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 29.8; IR (ATR) ν 2962, 2918, 2850, 1599, 1565, 1490, 1471, 1437, 1259, 1014, 865, 793, 768, 755, 733, 719 cm^{-1}; HRMS (ESI) for $C_{29}H_{23}AuClNP^+$ $(M\text{-}BF_4)^+$: 648.0921; Found : 648.0922; Elem. Anal. Calcd. For $C_{29}H_{23}AuBClF_4NP$: C, 47.34; H, 3.15; N, 1.90; Found: C, 46.88; H, 3.23; N, 1.77.



Gold (III) complex **3b**: 76%; ^{1}H NMR (500 MHz, CD_2Cl_2): δ 9.15 (d, J = 5.4 Hz, 1H), 8.13 (td, J = 7.9 Hz, J = 1.3 Hz, 1H), 8.07-8.02 (m, 2H), 7.87 (d, J = 8.0 Hz, 1H), 7.80-7.77 (m, 1H), 7.65 (dd, J = 7.0 Hz, J = 6.3 Hz, 1H), 7.58 (t, J = 6.9 Hz, 2H), 7.52-6.94 (m, 13H), 1.12 (s, 9H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 153.8 (s, d: $J_{C\text{-}P}$ = 5.3 Hz), 151.1 (d), 151.0 (s), 143.7 (d), 141.6 (s, d: $J_{C\text{-}P}$ = 10.4 Hz), 136.2 (d, d: $J_{C\text{-}P}$ = 3.0 Hz), 135.8 (s, d: $J_{C\text{-}P}$ = 2.9 Hz), 134.9 (d), 134.5 (d, d: $J_{C\text{-}P}$ = 12.3 Hz), 134.4 (d, d: $J_{C\text{-}P}$ = 4.2 Hz), 134.3 (d), 132.4 (d, d: $J_{C\text{-}P}$ = 10.8 Hz), 132.1 (d, d: $J_{C\text{-}P}$ = 3.1 Hz), 130.4 (d, d: $J_{C\text{-}P}$ = 13.2 Hz), 129.3 (d, d: $J_{C\text{-}P}$ = 0.9 Hz), 127.7 (d), 127.5 (d), 117.9 (s, d: $J_{C\text{-}P}$ = 63.2 Hz), 34.6 (s), 31.4 (q), one quaternary carbon atom could not be detected; ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 30.0; IR (ATR) ν 3076, 2963, 2868, 1739, 1601, 1561, 1489, 1471, 1439, 1390, 1310, 1264, 1171, 1105, 1054, 1029, 1005, 812, 796, 756, 725, 691 cm^{-1}; HRMS (ESI) for $C_{33}H_{31}AuClNP^+$ $(M\text{-}BF_4)^+$: 704.1543; Found : 704.1546.

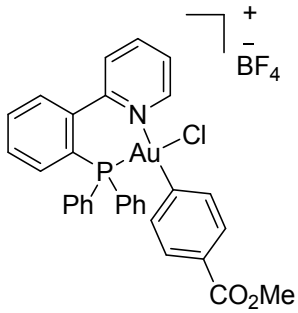


Gold (III) complex **3c**: 71%; ^{1}H NMR (500 MHz, d^{6}-Acetone): δ 9.31 (d, J = 5.5 Hz, 1H), 8.33 (m, 1H), 8.25 (dd, J = 7.4 Hz, J = 5.3 Hz, 1H), 8.12-8.08 (m, 2H), 7.92-7.88 (m, 2H), 7.70-7.48 (m, 11H), 7.14 (d, J = 7.8 Hz, 2H), 6.52 (d, J = 7.8 Hz, 2H), 3.66 (s, 3H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 159.3 (s), 153.7 (s, d: $J_{C\text{-}P}$ = 5.5 Hz), 151.2 (d), 143.7 (d), 141.6 (s, d: $J_{C\text{-}P}$ = 10.4 Hz), 136.1 (s, d: $J_{C\text{-}P}$ = 2.9 Hz), 135.0 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 134.5 (d, d: $J_{C\text{-}P}$ = 11.2 Hz), 134.4 (d, d: $J_{C\text{-}P}$ = 7.2 Hz), 134.3 (d, d: $J_{C\text{-}P}$ = 9.9 Hz), 133.1 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 132.4 (d, d: $J_{C\text{-}P}$ = 10.9 Hz), 130.4 (d, d: $J_{C\text{-}P}$ = 13.4 Hz), 129.2 (d, d: $J_{C\text{-}P}$ = 0.9 Hz), 127.8 (d, d: $J_{C\text{-}P}$ = 2.1 Hz), 127.5 (d), 117.9 (s, d: $J_{C\text{-}P}$ = 63.5 Hz), 116.0 (d, d: $J_{C\text{-}P}$ = 1.2 Hz), 55.8 (q), one quaternary carbon atom could not be detected; ^{31}P NMR (202.5 MHz, d^{6}-Acetone): δ 29.8; IR (ATR) ν 3069, 2835, 1600, 1584, 1572, 1488, 1438, 1285, 1244, 1176, 1099, 1049, 1029, 999, 819, 791, 759, 750, 725, 711, 691 cm^{-1}; HRMS (ESI) for $C_{30}H_{25}AuClNOP^{+}$ $(M\text{-}BF_4)^{+}$: 678.1022; Found : 678.1024.

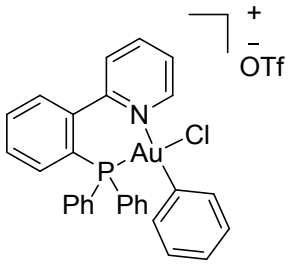


Gold (III) complex **3d**: 88%; ^{1}H NMR (500 MHz, acetone-d^{6}): δ 9.33 (d, J = 5.6 Hz, 1H), 8.35 (t, J = 7.8 Hz, 1H), 8.27 (dd, J = 7.5 Hz, J = 5.3 Hz, 1H), 8.13-8.11 (m, 2H), 7.93-7.91 (m, 2H), 7.76-7.49 (m, 13H), 7.21 (brs, 2H); ^{13}C NMR (125 MHz, acetone-d^{6}): δ 154.2 (s, d: $J_{C\text{-}P}$ = 5.8 Hz), 152.2 (d), 144.5 (d), 144.3 (s), 142.1 (s, d: $J_{C\text{-}P}$ = 10.6 Hz), 136.3 (d, d: $J_{C\text{-}P}$ = 2.9 Hz), 135.5 (d, d: $J_{C\text{-}P}$ = 11.5 Hz), 135.3 (d), 135.1 (d, d: $J_{C\text{-}P}$ = 6.9 Hz), 134.6 (d, d: $J_{C\text{-}P}$ = 6.2 Hz), 134.5 (d, d: $J_{C\text{-}P}$ = 6.9 Hz), 132.7 (d, d: $J_{C\text{-}P}$ = 10.9 Hz), 130.7 (d, d: $J_{C\text{-}P}$ = 13.5 Hz), 130.0 (d), 129.1 (s, q: $J_{C\text{-}F}$ = 32.3 Hz), 128.1 (d), 126.3 (d, q: $J_{C\text{-}F}$ = 2.7 Hz), 124.8 (s, q: $J_{C\text{-}F}$ = 271.3 Hz), 118.6 (s, d: $J_{C\text{-}P}$ =

64.4 Hz), one quaternary carbon atom could not be detected; ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 29.1; IR (ATR) ν 3072, 1737, 1593, 1562, 1491, 1440, 1394, 1325, 1282, 1269, 1156, 1102, 1049, 1033, 1007, 838, 822, 791, 764, 725, 692 cm^{-1}; HRMS (ESI) for $C_{30}H_{22}AuClF_3NP^+$ $(M\text{-}BF_4)^+$: 716.0791; Found : 716.0792.

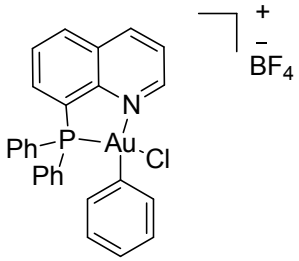


Gold (III) complex **3e**: 92%; ^{1}H NMR (500 MHz, CD_2Cl_2): δ 9.14 (d, J = 5.5 Hz, 1H), 8.18-8.15 (m, 1H), 8.08-8.03 (m, 2H), 7.88 (d, J = 7.9 Hz, 1H), 7.82-7.78 (m, 1H), 7.68-7.66 (m, 1H), 7.60-7.26 (m, 15H), 3.84 (s, 3H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 166.3 (s), 153.5 (s, d: $J_{C\text{-}P}$ = 5.7 Hz), 151.3 (d), 144.2 (s, d: $J_{C\text{-}P}$ = 2.2 Hz), 143.9 (d), 141.6 (s, d: $J_{C\text{-}P}$ = 10.5 Hz), 136.3 (d, d: $J_{C\text{-}P}$ = 2.9 Hz), 135.2 (d), 134.5 (d, d: $J_{C\text{-}P}$ = 11.5 Hz), 134.4 (d, d: $J_{C\text{-}P}$ = 5.3 Hz), 134.3 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 133.0 (d, d: $J_{C\text{-}P}$ = 2.9 Hz), 132.5 (d, d: $J_{C\text{-}P}$ = 10.9 Hz), 130.8 (d), 130.5 (d, d: $J_{C\text{-}P}$ = 13.9 Hz), 129.5 (s), 129.3 (d), 127.7 (d), 117.3 (s, d: $J_{C\text{-}P}$ = 63.7 Hz), 52.5 (q), one quaternary carbon atom could not be detected; ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 29.8; ^{19}F NMR (470.6 MHz, CD_2Cl_2): δ -152.4 (s), -152.5(s); IR (ATR) ν 3079, 3059, 2961, 1728, 1601, 1583, 1562, 1491, 1475, 1439, 1391, 1313, 1272, 1203, 1182, 1106, 1052, 1008, 997, 890, 848, 824, 790, 760, 747, 726, 711, 690 cm^{-1}; HRMS (ESI) for $C_{29}H_{23}AuClNP^+$ $(M\text{-}BF_4)^+$: 706.0972; Found : 706.0974.

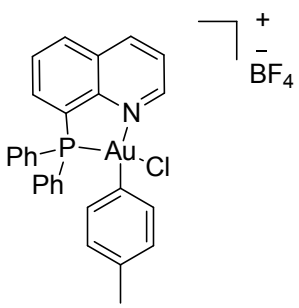


Gold (III) complex **3f**: 91%; ^{1}H NMR (500 MHz, CD_2Cl_2): δ 9.14 (d, J = 5.2 Hz, 1H), 8.15 (td, J = 7.9 Hz, J = 1.5 Hz, 1H), 8.07-8.02 (m, 2H), 7.89 (d, J = 8.0 Hz, 1H), 7.80-7.76 (m, 1H), 7.65-7.12 (m, 14H), 6.98 (t, J = 7.3 Hz, 1H), 6.91 (brs, 2H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 153.7 (s, d: $J_{C\text{-}P}$ = 5.3 Hz), 151.2 (d), 143.8 (d), 141.5 (s, d: $J_{C\text{-}P}$ = 10.2 Hz), 138.9 (s, d: $J_{C\text{-}P}$ = 1.9 Hz), 136.1 (d, d: $J_{C\text{-}P}$ = 2.9 Hz), 135.0 (d, d: $J_{C\text{-}P}$ = 2.9 Hz), 134.4 (d, d: $J_{C\text{-}P}$ = 12.8 Hz), 134.3 (d, d: $J_{C\text{-}$

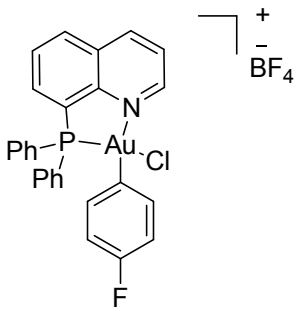
$_P$ = 0.8 Hz), 134.2 (d), 132.9 (d, d: $J_{C\text{-}P}$ = 3.0 Hz), 132.4 (d, d: $J_{C\text{-}P}$ = 10.6 Hz), 130.5 (d), 130.4 (d, d: $J_{C\text{-}P}$ = 13.2 Hz), 129.3 (d, d: $J_{C\text{-}P}$ = 0.9 Hz), 127.7 (d), 127.5 (d), 121.3 (s, d: $J_{C\text{-}F}$ = 321.9 Hz), 117.8 (s, d: $J_{C\text{-}P}$ = 63.4 Hz), one quaternary carbon atom could not be detected; ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 29.7; ^{19}F NMR (470.6 MHz, CD_2Cl_2): δ -78.9 (s); IR (ATR) ν 3059, 1601, 1565, 1473, 1438, 1262, 1222, 1155, 1104, 1067, 1029, 995, 753, 709, 690 cm^{-1}; HRMS (ESI) for $C_{29}H_{23}AuClNP^+$ $(M\text{-}OTf)^+$: 648.0917; Found : 648.0928.



Gold (III) complex **5a**: 88%; ^{1}H NMR (500 MHz, MeCN-d^3): δ 10.12 (dd, *J* = 5.2 Hz, *J* = 1.4 Hz, 1H), 9.04 (dt, *J* = 8.4 Hz, *J* = 1.7 Hz, 1H), 8.58 (d, *J* = 8.2 Hz, 1H), 8.34-8.30 (m, 1H), 8.17 (dd, *J* = 8.4 Hz, *J* = 5.2 Hz, 1H), 8.01 (td, *J* = 7.7 Hz, *J* = 2.5 Hz, 1H), 7.78-7.74 (m, 2H), 7.59-7.51 (m, 8H), 7.15 (dd, *J* = 7.3 Hz, *J* = 7.0 Hz, 1H), 7.05 (dd, *J* = 7.8 Hz, *J* = 7.4 Hz, 2H), 7.01-6.99 (m, 2H) ; ^{13}C NMR (125 MHz, MeCN-d^3): δ 153.6 (d), 150.1 (s, d: $J_{C\text{-}P}$ = 13.2 Hz), 144.6 (d, d: $J_{C\text{-}P}$ = 1.5 Hz), 141.8 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 136.7 (d, d: $J_{C\text{-}P}$ = 2.6 Hz), 135.8 (d, d: $J_{C\text{-}P}$ = 3.3 Hz), 135.4 (d, d: $J_{C\text{-}P}$ = 12.0 Hz), 133.6 (d, d: $J_{C\text{-}P}$ = 2.5 Hz), 132.4 (s, d: $J_{C\text{-}P}$ = 0.9 Hz), 132.2 (s, d: $J_{C\text{-}P}$ = 8.9 Hz), 131.2 (d, d: $J_{C\text{-}P}$ = 0.8 Hz), 131.0 (d, d: $J_{C\text{-}P}$ = 13.7 Hz), 130.9 (d, d: $J_{C\text{-}P}$ = 10.4 Hz), 128.4 (d), 126.3 (s, d: $J_{C\text{-}P}$ = 65.4 Hz), 125.8 (d), 121.1 (s, d: $J_{C\text{-}P}$ = 73.7 Hz); ^{31}P NMR (202.5 MHz, MeCN-d^3): δ 38.2; ^{19}F NMR (470.6 MHz, MeCN-d^3): δ -151.6 (s), -151.7 (s); IR (ATR) ν 3072, 2920, 2850, 1746, 1564, 1503, 1478, 1383, 1284, 1234, 1190, 1166, 1099, 1054, 994, 862, 837, 805, 778, 755, 722, 708, 692 cm^{-1}; HRMS (ESI) for $C_{27}H_{21}AuClNP^+$ $(M\text{-}BF_4)^+$: 622.0760; Found : 622.0762; Elem. Anal. Calcd. For $C_{27}H_{21}AuBClF_4NP$: C, 45.70; H, 2.98; N, 1.97; Found: C, 45.66; H, 3.12; N, 1.77.

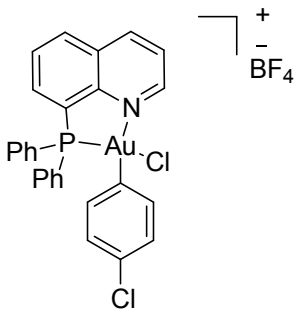


Gold (III) complex **5b**: 68%; ^{1}H NMR (500 MHz, CD_2Cl_2): δ 10.12 (d, J = 5.0 Hz, 1H), 9.05 (d, J = 8.4 Hz, 1H), 8.61 (d, J = 8.1 Hz, 1H), 8.28-8.24 (m, 1H), 8.15 (dd, J = 8.4 Hz, J = 5.2 Hz, 1H), 8.08 (td, J = 7.8 Hz, J = 2.3 Hz, 1H), 7.79-7.76 (m, 2H), 7.61-7.57 (m, 4H), 7.48 (d, J = 7.8 Hz, 2H), 7.45 (d, J = 7.8 Hz, 2H), 6.91 (d, J = 8.1 Hz, 2H), 6.81 (d, J = 8.1 Hz, 2H), 2.29 (s, 3H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 153.2 (d), 149.5 (s, d: $J_{C\text{-}P}$ = 13.0 Hz), 144.4 (d, d: $J_{C\text{-}P}$ = 1.5 Hz), 141.5 (d, d: $J_{C\text{-}P}$ = 2.1 Hz), 138.3 (s), 136.6 (d, d: $J_{C\text{-}P}$ = 2.7 Hz), 135.6 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 134.3 (d, d: $J_{C\text{-}P}$ = 11.8 Hz), 132.2 (d, d: $J_{C\text{-}P}$ = 2.4 Hz), 131.7 (s), 131.6 (d, d: $J_{C\text{-}P}$ = 0.9 Hz), 130.8 (d, d: $J_{C\text{-}P}$ = 13.7 Hz), 130.7 (d, d: $J_{C\text{-}P}$ = 10.0 Hz), 127.8 (s, d: $J_{C\text{-}P}$ = 1.4 Hz), 125.2 (d), 125.0 (s, d: $J_{C\text{-}P}$ = 65.0 Hz), 120.0 (s, d: $J_{C\text{-}P}$ = 73.5 Hz), 20.7 (q); ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 37.5; ^{19}F NMR (470.6 MHz, CD_2Cl_2): δ -152.4 (s), -152.5 (s); IR (ATR) ν 3086, 1608, 1588, 1571, 1500, 1488, 1438, 1381, 1371, 1315, 1284, 1233, 1208, 1187, 1165, 1146, 1100, 1057, 1013, 995, 862, 844, 806, 789, 776, 754, 738, 724, 708, 688 cm^{-1}; HRMS (ESI) for $C_{28}H_{23}AuNPCl^{+}$ $(M\text{-}BF_4)^{+}$: 636.0917; Found : 636.0927; Elem. Anal. Calcd. For $C_{28}H_{23}AuBClF_4NP$: C, 46.47; H, 3.20; N, 1.94; Found: C, 46.18; H, 3.31; N, 2.07.

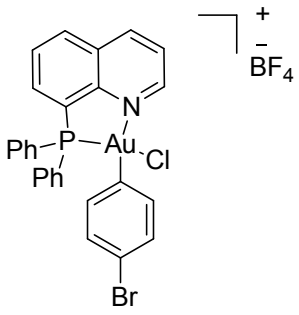


Gold (III) complex **5c**: 71%; ^{1}H NMR (500 MHz, CD_2Cl_2): δ 10.15 (dd, J = 5.2 Hz, J = 1.3 Hz, 1H), 9.04 (dt, J = 8.3 Hz, J = 1.6 Hz, 1H), 8.59 (d, J = 8.2 Hz, 1H), 8.25 (m, 1H), 8.13 (dd, J = 8.3 Hz, J = 5.2 Hz, 1H), 8.06 (td, J = 7.7 Hz, J = 2.5 Hz, 1H), 7.78-7.75 (m, 2H), 7.61-7.57 (m, 4H), 7.49 (d, J = 8.1 Hz, 2H), 7.46 (d, J = 8.1 Hz, 2H), 6.95-6.92 (m, 2H), 6.84 (t, J = 8.8 Hz, 2H); ^{13}C NMR (125 MHz, CD_2Cl_2): δ 162.7 (s, d: $J_{C\text{-}F}$ = 247.1 Hz), 153.3 (d), 149.6 (s, d: $J_{C\text{-}P}$ = 13.3 Hz), 144.5 (d, d: $J_{C\text{-}P}$ = 1.3 Hz), 141.4 (d, d: $J_{C\text{-}P}$ = 2.2 Hz), 136.6 (d, d: $J_{C\text{-}P}$ = 2.7 Hz), 135.7 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 134.3 (d, d: $J_{C\text{-}P}$ = 11.8 Hz), 133.7 (d, dd: $J_{C\text{-}F}$ = 7.3 Hz, $J_{C\text{-}P}$ = 2.5 Hz), 131.7 (s, d: $J_{C\text{-}P}$ = 8.8 Hz), 130.8 (d, d: $J_{C\text{-}P}$ = 13.5 Hz), 130.7 (d, d: $J_{C\text{-}P}$ = 11.3 Hz), 125.2 (d), 124.9 (s, d: $J_{C\text{-}P}$ = 65.4 Hz), 124.8 (s), 119.7 (s, d: $J_{C\text{-}P}$ = 73.5 Hz), 117.6 (d, dd: $J_{C\text{-}F}$ = 21.4 Hz, $J_{C\text{-}P}$ = 0.9 Hz); ^{31}P NMR (202.5 MHz, CD_2Cl_2): δ 38.8; ^{19}F NMR (470.6 MHz, CD_2Cl_2): δ -152.2 (s), -152.3 (s); IR

(ATR) ν 3088, 1587, 1577, 1499, 1486, 1459, 1438, 1380, 1372, 1316, 1224, 1191, 1160, 1146, 1099, 1055, 1008, 997, 863, 828, 778, 755, 738, 722, 709, 690 cm^{-1}; HRMS (ESI) for $C_{27}H_{20}AuFNPCl^{+}$ $(M\text{-}BF_4)^{+}$: 640.0666; Found : 640.0678; Elem. Anal. Calcd. For $C_{27}H_{20}AuBClF_5NP$: C, 44.57; H, 2.77; N, 1.92; Found: C, 44.48; H, 2.99; N, 1.93.

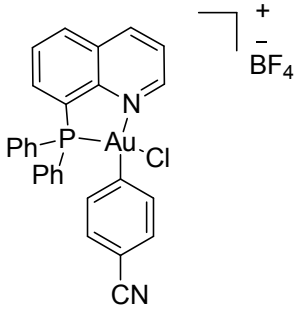


Gold (III) complex **5d**: 86%; ^{1}H NMR (500 MHz, MeCN-d^3): δ 10.12 (dd, J = 5.2 Hz, J = 1.3 Hz, 1H), 9.06 (dt, J = 8.4 Hz, J = 1.8 Hz, 1H), 8.59 (d, J = 8.2 Hz, 1H), 8.32 (m, 1H), 8.17 (dd, J = 8.4 Hz, J = 5.2 Hz, 1H), 8.01 (td, J = 7.7 Hz, J = 2.5 Hz, 1H), 7.80-7.76 (m, 2H), 7.59-7.55 (m, 8H), 7.09 (d, J = 8.6 Hz, 2H), 6.98 (dd, J = 8.6 Hz, J = 1.5 Hz, 2H); ^{13}C NMR (125 MHz, MeCN-d^3): δ 153.7 (d), 150.2 (s, d: $J_{C\text{-}P}$ = 13.3 Hz), 144.7 (d, d: $J_{C\text{-}P}$ = 1.4 Hz), 141.8 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 136.8 (d, d: $J_{C\text{-}P}$ = 2.8 Hz), 136.0 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 135.4 (d, d: $J_{C\text{-}P}$ = 11.9 Hz), 134.9 (d, d: $J_{C\text{-}P}$ = 2.5 Hz), 134.2 (s), 132.2 (s, d: $J_{C\text{-}P}$ = 9.0 Hz), 131.0 (d, d: $J_{C\text{-}P}$ = 13.5 Hz), 130.9 (d, d: $J_{C\text{-}P}$ = 11.0 Hz), 130.8 (d), 130.0 (s), 126.1 (s, d: $J_{C\text{-}P}$ = 65.8 Hz), 125.9 (d), 120.9 (s, d: $J_{C\text{-}P}$ = 73.6 Hz); ^{31}P NMR (202.5 MHz, MeCN-d^3): δ 39.4; ^{19}F NMR (470.6 MHz, MeCN-d^3): δ -151.6 (s), -151.7 (s); IR (ATR) ν 3094, 1609, 1591, 1572, 1500, 1475, 1439, 1382, 1317, 1288, 1233, 1191, 1165, 1147, 1101, 1085, 1049, 999, 865, 842, 832, 817, 777, 753, 738, 723, 710, 689 cm^{-1}; HRMS (ESI) for $C_{27}H_{20}AuCl_2NP^{+}$ $(M\text{-}BF_4)^{+}$: 656.0371; Found : 656.0383; Elem. Anal. Calcd. For $C_{27}H_{20}AuBCl_2F_4NP$: C, 43.58; H, 2.71; N, 1.88; Found: C, 43.53; H, 2.83; N, 2.02.

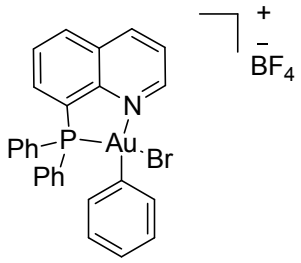


Gold (III) complex **5e**: 74%; ^{1}H NMR (500 MHz, MeCN-d^3): δ 10.12 (dd, J = 5.2 Hz, J = 1.4 Hz, 1H), 9.05 (dt, J = 8.4 Hz, J = 1.7 Hz, 1H), 8.59 (d, J = 8.1 Hz, 1H), 8.35-8.31 (m, 1H), 8.17 (dd, J

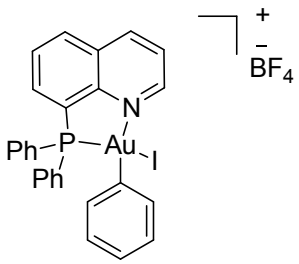
= 8.4 Hz, *J* = 5.3 Hz, 1H), 8.01 (td, *J* = 7.6 Hz, *J* = 2.5 Hz, 1H), 7.80-7.76 (m, 2H), 7.59-7.55 (m, 8H), 7.22 (d, *J* = 8.5 Hz, 2H), 6.92 (dd, *J* = 8.5 Hz, *J* = 1.6 Hz, 2H); ^{13}C NMR (125 MHz, MeCN-d^3): δ 153.7 (d), 150.2 (s, d: $J_{C\text{-}P}$ = 13.2 Hz), 144.7 (d, d: $J_{C\text{-}P}$ = 1.3 Hz), 141.8 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 136.8 (d, d: $J_{C\text{-}P}$ = 2.8 Hz), 136.0 (d, d: $J_{C\text{-}P}$ = 3.3 Hz), 135.4 (d, d: $J_{C\text{-}P}$ = 12.0 Hz), 135.3 (d, d: $J_{C\text{-}P}$ = 2.5 Hz), 133.7 (d, d: $J_{C\text{-}P}$ = 0.8 Hz), 132.2 (s, d: $J_{C\text{-}P}$ = 9.1 Hz), 131.1 (d, d: $J_{C\text{-}P}$ = 13.4 Hz), 131.0 (d, d: $J_{C\text{-}P}$ = 10.7 Hz), 130.9 (s), 126.1 (s, d: $J_{C\text{-}P}$ = 67.2 Hz), 125.9 (d), 122.3 (s), 120.9 (s, d: $J_{C\text{-}P}$ = 73.4 Hz); ^{31}P NMR (202.5 MHz, MeCN-d^3): δ 39.4; ^{19}F NMR (470.6 MHz, MeCN-d^3): δ -151.6 (s), -151.7 (s); IR (ATR) ν 3063, 1609, 1590, 1577, 1555, 1503, 1474, 1439, 1374, 1314, 1282, 1232, 1215, 1191, 1159, 1099, 1050, 998, 865, 837, 814, 779, 751, 723, 709, 688 cm^{-1}; HRMS (ESI) for $C_{27}H_{30}AuBrClNP^+$ $(M\text{-}BF_4)^+$: 699.9865; Found : 699.9881; Elem. Anal. Calcd. For $C_{27}H_{20}AuBBrClF_4NP$: C, 41.12; H, 2.56; N, 1.78; Found: C, 41.01; H, 2.79; N, 1.62.



Gold (III) complex **5f**: 91%; ^{1}H NMR (500 MHz, MeCN-d^3): δ 10.12 (dd, *J* = 5.3 Hz, *J* = 1.4 Hz, 1H), 9.07 (dt, *J* = 8.4 Hz, *J* = 1.7 Hz, 1H), 8.60 (d, *J* = 8.2 Hz, 1H), 8.37-8.33 (m, 1H), 8.18 (dd, *J* = 8.4 Hz, *J* = 5.3 Hz, 1H), 8.02 (td, *J* = 7.6 Hz, *J* = 2.5 Hz, 1H), 7.80-7.76 (m, 2H), 7.61-7.55 (m, 8H), 7.38 (d, *J* = 8.4 Hz, 2H), 7.20 (dd, *J* = 8.4 Hz, *J* = 1.5 Hz, 2H); ^{13}C NMR (125 MHz, MeCN-d^3): δ 153.8 (d), 150.2 (s, d: $J_{C\text{-}P}$ = 13.4 Hz), 144.9 (d, d: $J_{C\text{-}P}$ = 1.5 Hz), 141.8 (d, d: $J_{C\text{-}P}$ = 2.4 Hz), 138.7 (s), 136.9 (d, d: $J_{C\text{-}P}$ = 2.8 Hz), 136.1 (d, d: $J_{C\text{-}P}$ = 3.5 Hz), 135.4 (d, d: $J_{C\text{-}P}$ = 12.1 Hz), 134.7 (d, d: $J_{C\text{-}P}$ = 2.4 Hz), 134.0 (d), 132.2 (s, d: $J_{C\text{-}P}$ = 8.8 Hz), 131.1 (d, d: $J_{C\text{-}P}$ = 13.6 Hz), 131.0 (d, d: $J_{C\text{-}P}$ = 11.6 Hz), 126.0 (s, d: $J_{C\text{-}P}$ = 66.4 Hz), 125.9 (d), 120.7 (s, d: $J_{C\text{-}P}$ = 73.4 Hz), 119.0 (s), 112.1 (s); ^{31}P NMR (202.5 MHz, MeCN-d^3): δ 40.18; ^{19}F NMR (470.6 MHz, MeCN-d^3): δ -151.6 (s), -151.7 (s); IR (ATR) ν 3096, 3067, 2228, 1611, 1576, 1505, 1480, 1436, 1389, 1315, 1281, 1239, 1215, 1191, 1162, 1145, 1101, 1080, 1060, 1026, 997, 866, 839, 819, 781, 749, 723, 707, 689 cm^{-1}; HRMS (ESI) for $C_{28}H_{20}AuClN_2P^+$ $(M\text{-}BF_4)^+$: 647.0713; Found : 647.0723; Elem. Anal. Calcd. For $C_{28}H_{20}AuBClF_4N_2P$: C, 45.78; H, 2.74; N, 3.81; Found: C, 45.34; H, 2.76; N, 3.88.

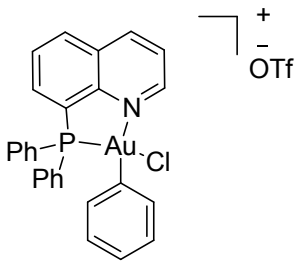


Gold (III) complex **5g**: 83%; ^{1}H NMR (500 MHz, MeCN-d^{3}): δ 10.31 (d, *J* = 3.7 Hz, 1H), 9.04 (dt, *J* = 8.3 Hz, *J* = 1.7 Hz, 1H), 8.57 (d, *J* = 8.1 Hz, 1H), 8.31 (ddd, *J* = 12.9 Hz, *J* = 7.3 Hz, *J* = 0.9 Hz, 1H), 8.14 (dd, *J* = 8.4 Hz, *J* = 5.3 Hz, 1H), 8.00 (td, *J* = 7.8 Hz, *J* = 2.4 Hz, 1H), 7.78-7.74 (m, 2H), 7.59-7.50 (m, 8H), 7.11 (t, *J* = 7.2 Hz, 1H), 7.03 (t, *J* = 7.6 Hz, 2H), 6.99-6.97 (m, 2H); ^{13}C NMR (125 MHz, MeCN-d^{3}): δ 155.3 (d), 150.3 (s, d: $J_{C\text{-}P}$ = 13.6 Hz), 144.5 (d, d: $J_{C\text{-}P}$ = 1.5 Hz), 141.9 (d, d: $J_{C\text{-}P}$ = 1.7 Hz), 136.8 (d, d: $J_{C\text{-}P}$ = 2.8 Hz), 135.7 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 135.3 (d, d: $J_{C\text{-}P}$ = 11.9 Hz), 134.0 (d, d: $J_{C\text{-}P}$ = 2.3 Hz), 133.1 (s, d: $J_{C\text{-}P}$ = 8.9 Hz), 132.2 (s, d: $J_{C\text{-}P}$ = 8.9 Hz), 131.0 (d, d: $J_{C\text{-}P}$ = 14.9 Hz), 133.1 (d, d: $J_{C\text{-}P}$ = 10.9 Hz), 130. 8 (d, d: $J_{C\text{-}P}$ = 10.1 Hz), 128.2 (d), 126.7 (s, d: $J_{C\text{-}P}$ = 64.3 Hz), 126.1 (d), 121.3 (s, d: $J_{C\text{-}P}$ = 72.5 Hz); ^{31}P NMR (202.5 MHz, MeCN-d^{3}): δ 36.42; ^{19}F NMR (470.6 MHz, MeCN-d^{3}): δ -151.6 (s), -151.7 (s); IR (ATR) ν 3071, 1590, 1563, 1500, 1476, 1437, 1381, 1315, 1286, 1233, 1215, 1192, 1163, 1100, 1052, 994, 862, 837, 804, 778, 755, 735, 708, 691 cm^{-1}; HRMS (ESI) for $C_{27}H_{21}AuBrNP^{+}$ $(M\text{-}BF_4)^{+}$: 666.0255; Found : 666.0253; Elem. Anal. Calcd. For $C_{27}H_{21}AuBBrF_4NP$: C, 43.00; H, 2.81; N, 1.86; Found: C, 43.19; H, 3.07; N, 1.66.

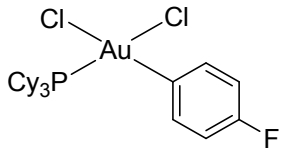


Gold (III) complex **5h**: 55%; ^{1}H NMR (500 MHz, MeCN-d^{3}): δ 10.61 (s, 1H), 9.04 (dt, *J* = 8.4 Hz, *J* = 1.6 Hz, 1H), 8.55 (d, *J* = 8.1 Hz, 1H), 8.29 (ddd, *J* = 12.5 Hz, *J* = 7.3 Hz, *J* = 0.9 Hz, 1H), 8.08 (dd, *J* = 8.4 Hz, *J* = 5.3 Hz, 1H), 7.98 (td, *J* = 7.8 Hz, *J* = 2.1 Hz, 1H), 7.77-7.74 (m, 2H), 7.56-7.48 (m, 8H), 7.04-6.94 (m, 5H); ^{13}C NMR (125 MHz, MeCN-d^{3}): δ 158.9 (d), 150.6 (s, d: $J_{C\text{-}P}$ = 14.6 Hz), 144.5 (d, d: $J_{C\text{-}P}$ = 1.5 Hz), 142.1 (d), 136.8 (d, d: $J_{C\text{-}P}$ = 2.7 Hz), 135.5 (d, d: $J_{C\text{-}P}$ = 3.5 Hz), 135.1 (d, d: $J_{C\text{-}P}$ = 11.6 Hz), 134.9 (d), 132.4 (s, d: $J_{C\text{-}P}$ = 8.8 Hz), 131.0 (d), 130.9 (d), 130.8

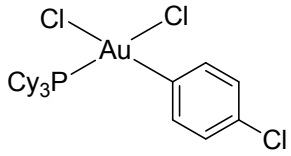
(d), 127.8 (d), 126.5 (d), 121.8 (s, d: $J_{C\text{-}P}$ = 69.5 Hz) two quaternary carbon atoms could not be detected due to the poor solubility; ^{31}P NMR (202.5 MHz, MeCN-d^3): δ 29.41; ^{19}F NMR (470.6 MHz, MeCN-d^3): δ -151.6 (s), -151.7 (s); IR (ATR) ν 3070, 1592, 1499, 1475, 1437, 1379, 1314, 1286, 1233, 1192, 1162, 1099, 1051, 993, 860, 836, 803, 778, 755, 733, 707, 691 cm^{-1}; HRMS (ESI) for $C_{27}H_{21}AuINP^+$ $(M\text{-}BF_4)^+$: 714.0116; Found : 714.0112; Elem. Anal. Calcd. For $C_{27}H_{21}AuBF_4INP$: C, 40.48; H, 2.64; N, 1.75; Found: C, 40.70; H, 2.80; N, 1.62.



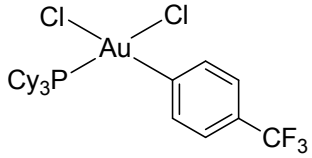
Gold (III) complex **5i**: 78%; ^{1}H NMR (500 MHz, $CDCl_3$): δ 10.07 (d, *J* = 5.1 Hz, 1H), 9.04 (d, *J* = 8.3 Hz, 1H), 8.56 (d, *J* = 8.1 Hz, 1H), 8.28-8.24 (m, 1H), 8.07-8.01 (m, 2H), 7.71-7.68 (m, 2H), 7.56-7.52 (m, 4H), 7.48-7.44 (m, 4H), 7.09 (t, *J* = 7.2 Hz, 1H), 6.99 (t, *J* = 7.6 Hz, 2H), 6.93 (d, *J* = 8.0 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 152.8 (d), 149.2 (s, d: $J_{C\text{-}P}$ = 13.2 Hz), 144.3 (d), 141.0 (d, d: $J_{C\text{-}P}$ = 1.9 Hz), 136.4 (d, d: $J_{C\text{-}P}$ = 2.6 Hz), 135.1 (d, d: $J_{C\text{-}P}$ = 3.4 Hz), 134.1 (d, d: $J_{C\text{-}P}$ = 11.9 Hz), 132.5 (d, d: $J_{C\text{-}P}$ = 2.4 Hz), 131.5 (s), 131.4 (s, d: $J_{C\text{-}P}$ = 8.7 Hz), 130.5 (d, m: 3C), 127.7 (d), 124.8 (d), 124.7 (s, d: $J_{C\text{-}P}$ = 66.5 Hz), 120.8 (s, d: $J_{C\text{-}F}$ = 321.5 Hz), 119.9 (s, d: $J_{C\text{-}P}$ = 73.3 Hz); ^{31}P NMR (202.5 MHz, $CDCl_3$): δ 37.97; ^{19}F NMR (470.6 MHz, $CDCl_3$): δ -78.2 (s); IR (ATR) ν 2364, 1562, 1503, 1475, 1435, 1384, 1312, 1275, 1257, 1224, 1150, 1100, 1064, 1031, 995, 914, 862, 834, 777, 752, 737, 722, 708, 690, 661 cm^{-1}; HRMS (ESI) for $C_{27}H_{21}AuClNP^+$ $(M\text{-}OTf)^+$: 622.0760; Found : 622.0787; Elem. Anal. Calcd. For $C_{28}H_{21}AuClF_3NO_3PS$: C, 43.57; H, 2.74; N, 1.81; Found: C, 43.45; H, 2.64; N, 1.83.



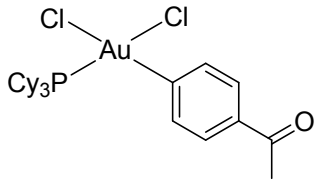
Gold (III) complex **7a**: 73%; ^{1}H NMR (300 MHz, $CDCl_3$): δ 7.34-7.29 (m, 2H), 6.98 (t, *J* = 8.5 Hz, 2H), 2.52 (q, *J* = 11.8 Hz, 3H), 1.96-1.66 (m, 21H), 1.29 (q, *J* = 12.5 Hz, 3H), 1.11 (q, *J* = 12.6 Hz, 6H); ^{31}P NMR (121.6 MHz, $CDCl_3$): δ 48.85; ^{19}F NMR (282.8 MHz, $CDCl_3$): δ -116.4 (s). [4]



Gold (III) complex **7b**: 72%; ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.27 (d, J = 8.5 Hz, 2H), 7.18 (d, J = 8.5 Hz, 2H), 2.50 (q, J = 12.2 Hz, 3H), 1.94 (brs, 6H), 1.85-1.82 (m, 6H), 1.74-1.65 (m, 9H), 1.26 (qt, J = 13.0 Hz, J = 3.3 Hz, 3H), 1.09 (q, J = 12.9 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 140.9 (s), 133.2 (d, d: $J_{C\text{-}P}$ = 0.6 Hz), 132.5 (s), 129.9 (d), 35.4 (d, d: $J_{C\text{-}P}$ = 27.0 Hz), 29.5 (t, d: $J_{C\text{-}P}$ = 3.3 Hz), 27.3 (t, d: $J_{C\text{-}P}$ = 12.0 Hz), 25.8 (t, d: $J_{C\text{-}P}$ = 1.3 Hz); ^{31}P NMR (121.6 MHz, $CDCl_3$): δ 49.07; IR (ATR) ν 3047, 2934, 2854, 1737, 1556, 1473, 1375, 1298, 1264, 1231, 1208, 1175, 1131, 1117, 1089, 1047, 1005, 920, 895, 848, 833, 805, 736, 703 cm^{-1}; HRMS (ESI) for $C_{24}H_{37}AuCl_3NaP^+$ $(M+Na)^+$: 681.1256; Found : 681.1281; Elem. Anal. Calcd. For $C_{24}H_{37}AuCl_3P{\cdot}CH_2Cl_2$: C, 40.32; H, 5.28; Found: C, 40.62; H, 5.30.

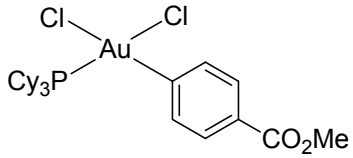


Gold (III) complex **7c**: 77%; ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.49 (d, J = 8.4 Hz, 2H), 7.44 (d, J = 8.4 Hz, 2H), 2.48 (q, J = 12.2 Hz, 3H), 1.93 (brs, 6H), 1.84-1.81 (m, 6H), 1.74-1.64 (m, 9H), 1.25 (qt, J = 13.1 Hz, J = 3.4 Hz, 3H), 1.06 (q, J = 12.9 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 147.5 (d), 132.8 (d), 128.8 (d, q: $J_{C\text{-}F}$ = 33.0 Hz), 126.4 (d, q: $J_{C\text{-}F}$ = 3.6 Hz), 123.9 (d, d: $J_{C\text{-}F}$ = 272.3 Hz), 35.5 (d, q: $J_{C\text{-}P}$ = 35.4 Hz), 29.5 (d, q: $J_{C\text{-}P}$ = 3.3 Hz), 27.2 (d, q: $J_{C\text{-}P}$ = 12.0 Hz), 25.8 (d, q: $J_{C\text{-}P}$ = 1.2 Hz); ^{31}P NMR (162 MHz, $CDCl_3$): δ 49.41; ^{19}F NMR (282.8 MHz, $CDCl_3$): δ -62.6 (s); IR (ATR) ν 2934, 2854, 1737, 1593, 1492, 1446, 1390, 1321, 1271, 1164, 1119, 1103, 1074, 1054, 1008, 918, 890, 848, 823, 773, 726, 683 cm^{-1}; HRMS (ESI) for $C_{25}H_{37}AuCl_2F_3NaP^+$ $(M+Na)^+$: 715.1520; Found : 715.1528; Elem. Anal. Calcd. For $C_{25}H_{37}AuCl_2F_3P$: C, 43.30; H, 5.38; Found: C, 43.20; H, 5.46.

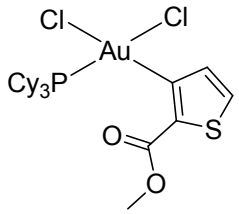


Gold (III) complex **7d**: 72%; ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.77 (d, J = 8.4 Hz, 2H), 7.48 (d, J = 8.2 Hz, 2H), 2.56 (s, 3H), 2.47 (q, J = 12.0 Hz, 3H), 1.93 (brs, 6H), 1.81-1.79 (m, 6H), 1.71-1.63

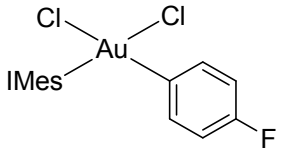
(m, 9H), 1.22 (q, J = 13.1 Hz, 3H), 1.03 (q, J = 12.8 Hz, 6H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 197.8 (s), 150.3 (s), 135.4 (s), 132.6 (d), 129.6 (d), 35.5 (d, d: $J_{C\text{-}P}$ = 27.0 Hz), 29.6 (t, d: $J_{C\text{-}P}$ = 3.3 Hz), 27.3 (t, d: $J_{C\text{-}P}$ = 12.0 Hz), 26.8 (q), 25.8 (t, d: $J_{C\text{-}P}$ = 1.1 Hz); ^{31}P NMR (202.5 MHz, $CDCl_3$): δ 49.48; IR (ATR) ν 2934, 2853, 1737, 1681, 1576, 1485, 1442, 1386, 1363, 1299, 1267, 1231, 1206, 1175, 1128, 1078, 1055, 1007, 958, 916, 896, 849, 824, 735, 719 cm^{-1}; HRMS (ESI) for $C_{26}H_{40}AuCl_2NaOP^+$ $(M+Na)^+$: 689.1752; Found : 689.1778; Elem. Anal. Calcd. For $C_{26}H_{40}AuCl_2OP \cdot 1/2CH_2Cl_2$: C, 44.83; H, 5.32; Found: C, 45.36; H, 5.73.



Gold (III) complex **7e**: 68%; ^{1}H NMR (400 MHz, $CDCl_3$): δ 7.84 (d, J = 8.4 Hz, 2H), 7.43 (d, J = 8.2 Hz, 2H), 3.90 (s, 3H), 2.49 (q, J = 12.1 Hz, 3H), 1.94 (brs, 6H), 1.84-1.81 (m, 6H), 1.74-1.65 (m, 9H), 1.26 (qt, J = 13.1 Hz, J = 3.4 Hz, 3H), 1.06 (q, J = 12.8 Hz, 6H); ^{13}C NMR (100 MHz, $CDCl_3$): δ 166.9 (s), 149.8 (s), 132.5 (d), 132.8 (d), 128.5 (s), 52.4 (q), 35.6 (d, d: $J_{C\text{-}P}$ = 26.9 Hz), 29.6 (t, d: $J_{C\text{-}P}$ = 3.3 Hz), 27.3 (t, d: $J_{C\text{-}P}$ = 12.1 Hz), 25.8 (t, d: $J_{C\text{-}P}$ = 0.8 Hz); ^{31}P NMR (121.6 MHz, $CDCl_3$): δ 48.96; IR (ATR) ν 2934, 2852, 1718, 1583, 1446, 1432, 1366, 1282, 1231, 1206, 1193, 1176, 1114, 1011, 918, 888, 850, 824, 760, 738, 695 cm^{-1}; HRMS (ESI) for $C_{26}H_{40}AuCl_2NaO_2P^+$ $(M+Na)^+$: 705.1701; Found : 705.1709; Elem. Anal. Calcd. For $C_{26}H_{40}AuCl_2O_2P$: C, 45.69; H, 5.90; Found: C, 46.15; H, 6.25.

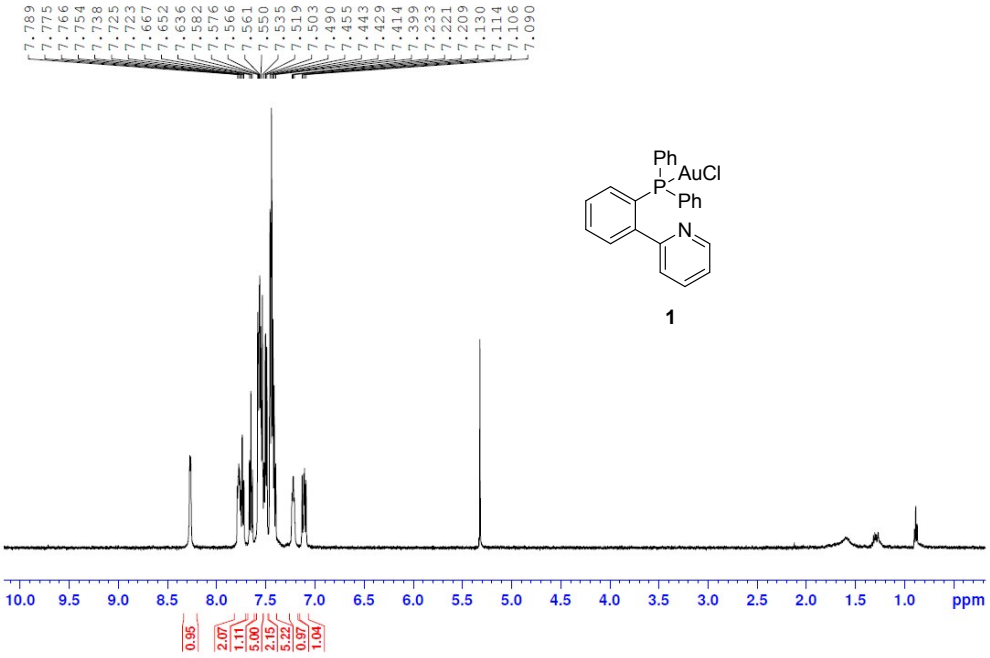


Gold (III) complex **7f**: 40%; ^{1}H NMR (300 MHz, $CDCl_3$): δ 7.57 (d, J = 4.6 Hz, 1H), 7.04 (d, J = 4.6 Hz, 1H), 3.89 (s, 3H), 2.43 (q, J = 11.3 Hz, 3H), 2.09 (brs, 6H), 1.83-1.64 (m, 18H), 1.29-0.99 (m, 9H); ^{13}C NMR (150 MHz, $CDCl_3$): δ 163.6 (s), 140.4 (s), 132.6 (d), 130.6 (d), 129.2 (s), 52.6 (q), 35.5 (d, d: $J_{C\text{-}P}$ = 27.2 Hz), 30.0 (t, d: $J_{C\text{-}P}$ = 2.3 Hz), 28.8 (t, d: $J_{C\text{-}P}$ = 2.9 Hz), 27.5 (t, d: $J_{C\text{-}P}$ = 12.5 Hz), 27.4 (t, d: $J_{C\text{-}P}$ = 11.7 Hz), 25.8 (t); ^{31}P NMR (243 MHz, $CDCl_3$): δ 50.36; IR (ATR) ν 3093, 2928, 2851, 1707, 1492, 1435, 1401, 1345, 1301, 1240, 1180, 1128, 1093, 1069, 1003, 969, 891, 870, 849, 787, 767, 730 cm^{-1};



Gold (III) complex **8**: 58%; ^{1}H NMR (500 MHz, $CDCl_3$): δ 7.18 (s, 2H), 7.12 (s, 2H), 6.97 (s, 2H), 6.69 (t, J = 8.9 Hz, 2H), 6.49 (dd, J = 8.6 Hz, J = 5.8 Hz, 2H), 2.47 (s, 6H), 2.42 (s, 6H), 1.61 (s, 6H); ^{13}C NMR (125 MHz, $CDCl_3$): δ 161.6 (s, d: $J_{C\text{-}F}$ = 244.4 Hz), 151.5 (s), 141.2 (s), 136.7 (s), 135.1 (s), 133.1 (d, d: $J_{C\text{-}F}$ = 6.9 Hz), 130.7 (d), 129.2 (d), 128.5 (s, d: $J_{C\text{-}F}$ = 2.5 Hz), 125.1 (d), 115.6 (d, d: $J_{C\text{-}F}$ = 20.7 Hz), 21.3 (q), 19.5 (q), 18.3 (q); ^{19}F NMR (470.6 MHz, $CDCl_3$): δ -117.5 (s); IR (ATR) ν 3174, 3163, 3127, 2974, 2957, 2921, 2852, 1745, 1608, 1577, 1481, 1435, 1414, 1379, 1331, 1300, 1219, 1157, 1123, 1090, 1057, 1035, 1008, 964, 928, 854, 817, 769, 736, 706 cm^{-1};

[1] J. Flapper, H. Kooijman, M. Lutz, A. L. Spek, P. W. N. M. van Leeuwen, C. J. Elsevier, P. C. J. Kamer, Organometallics 2009, 28, 1180.
[2] T. Pullmann, B. Engendahl, Z. Zhang, M. Hölscher, A. Zanotti-Gerosa, A. Dyke, G. Franciò, W. Leitner, *Chem. Eur. J* **2010**, *16*, 7517.
[3] C. Picherit, F. Wagner, D. Uguen, *Tetrahedron Lett.* **2004**, *45*, 2579.
[4] M. S. Winston, W. J. Wolf, F. D. Toste, *J. Am. Chem. Soc* **2014**, *136*, 7777.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7.576
7.566
7.561
7.550
7.535
7.519
7.503
7.490
7.455
7.443
7.429
7.414
7.399
7.233
7.221
7.209
7.130
7.114
7.106
7.090
Ph
AuCl
P
Ph
N
1
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
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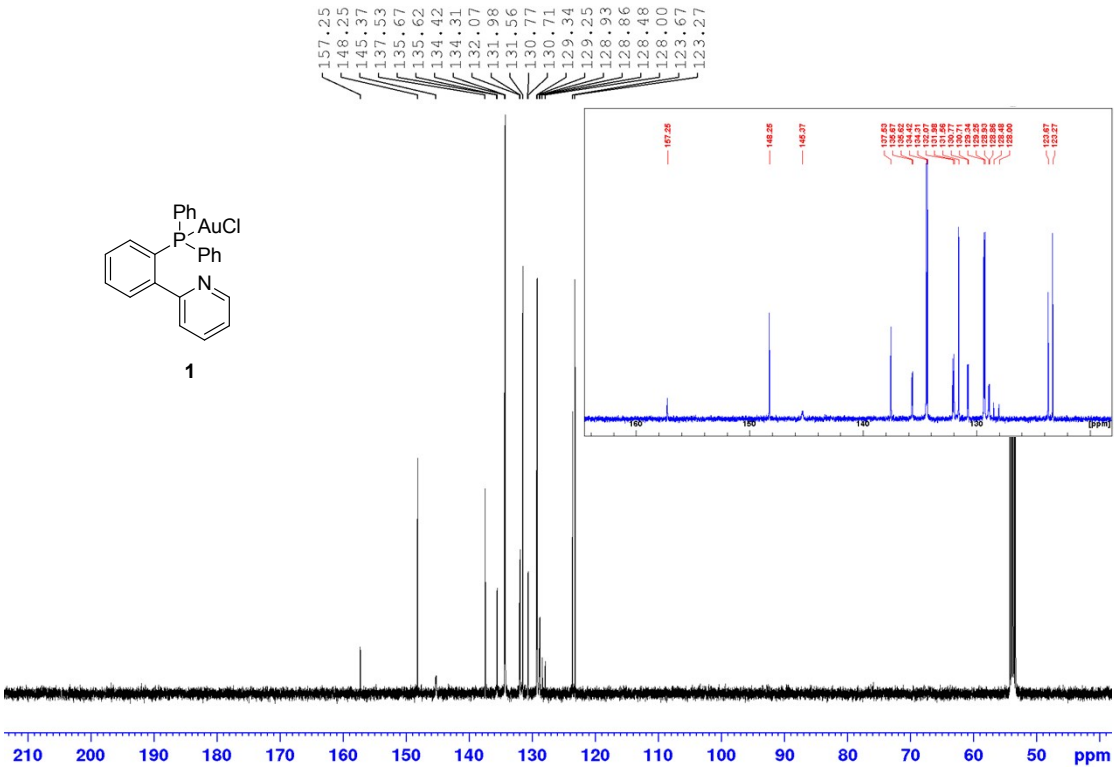
2.07
1.11
5.00
2.15
5.22
0.97
1.04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130.71
129.34
129.25
128.93
128.86
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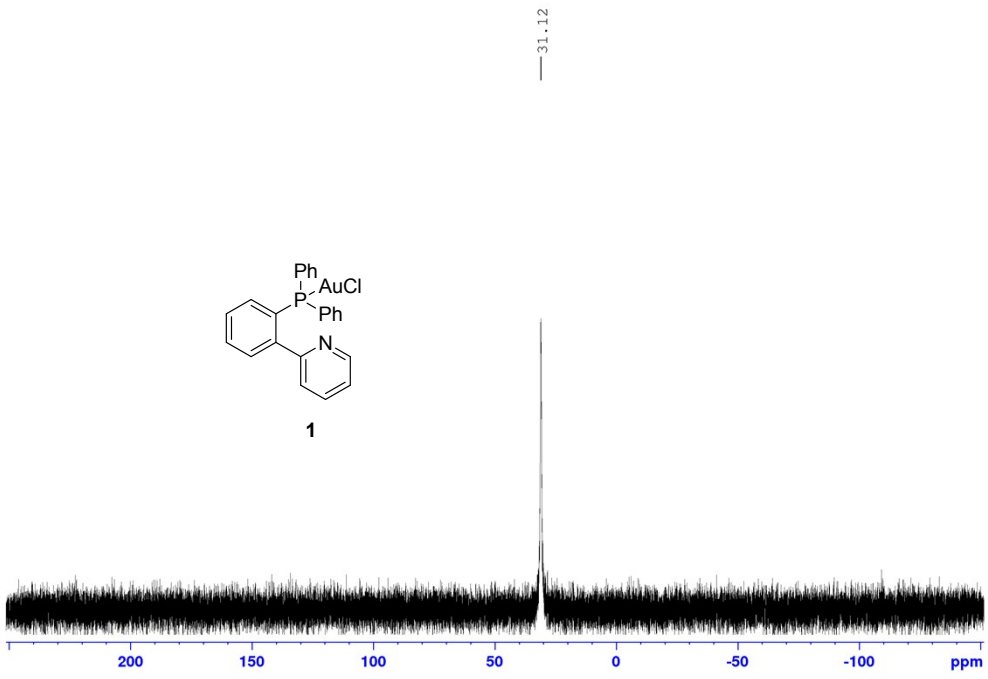
123.67
123.27
Ph
AuCl
P
Ph
N
1
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 ppm



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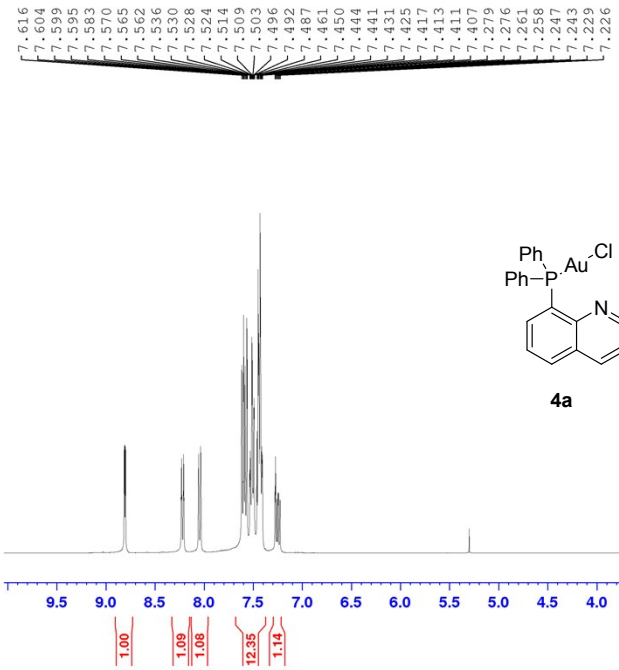
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7.509
7.503
7.496
7.492
7.487
7.461
7.450
7.444
7.441
7.431
7.425
7.417
7.413
7.411
7.407
7.279
7.276
7.261
7.258
7.247
7.243
7.229
7.226
Ph
Ph—P
Au
Cl
N
4a
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
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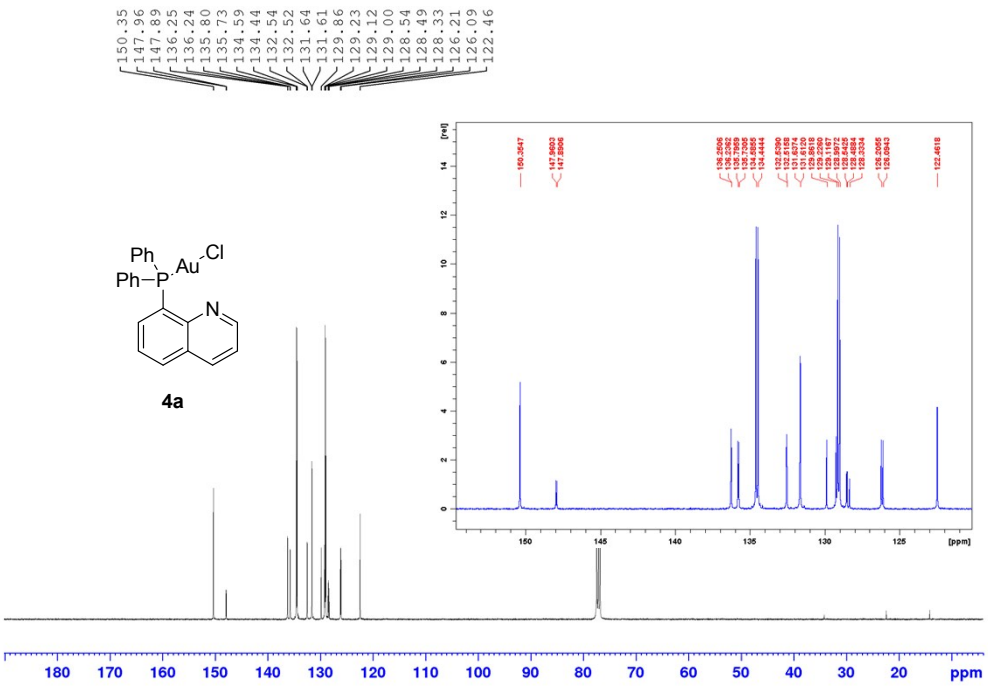
1.08
12.35
1.14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136.24
135.80
135.73
134.59
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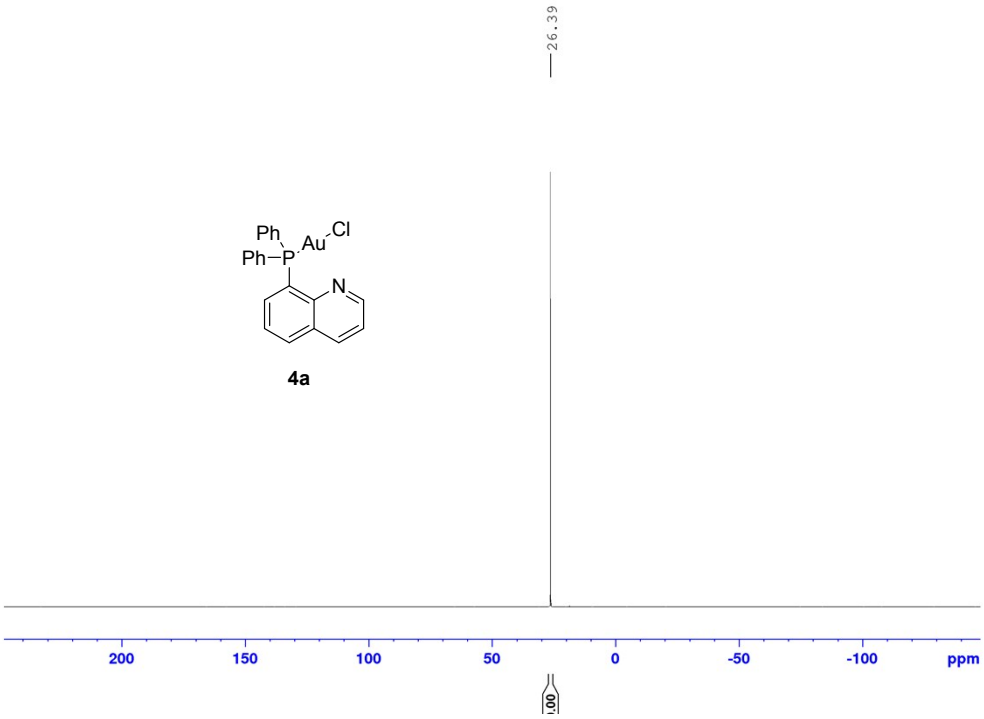
132.54
132.52
131.64
131.61
129.86
129.23
129.12
129.00
128.54
128.49
128.33
126.21
126.09
122.46
Ph
Ph—P
Au
Cl
N
4a
[ppm]
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm



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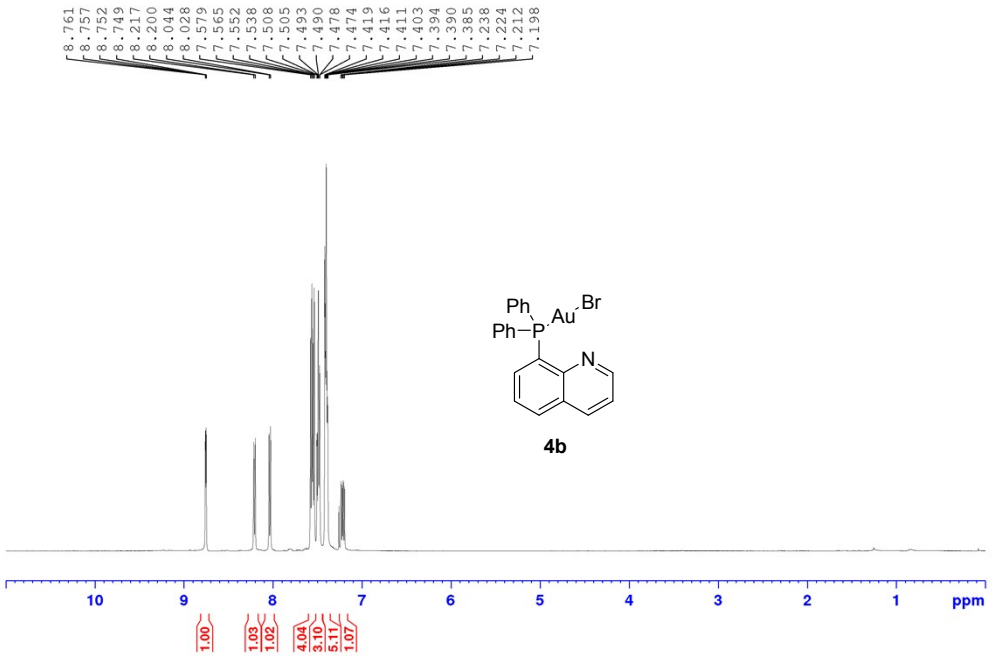
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7.490
7.478
7.474
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7.403
7.394
7.390
7.385
7.238
7.224
7.212
7.198
Ph
Ph—P
Au
Br
N
10
9
8
7
6
5
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2
1
ppm
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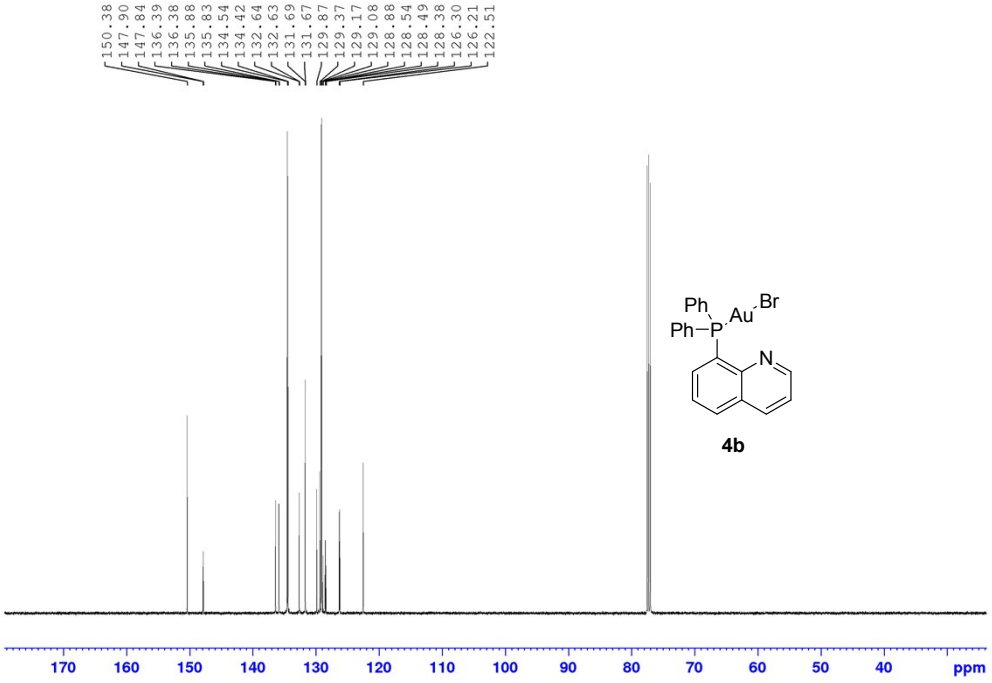
1.02
4.04
3.10
5.11
1.07

4b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132.64
132.63
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131.67
129.87
129.37
129.17
129.08
128.88
128.54
128.49
128.38
126.30
126.21
122.51
Ph
Ph—P
Au
Br
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160
150
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130
120
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90
80
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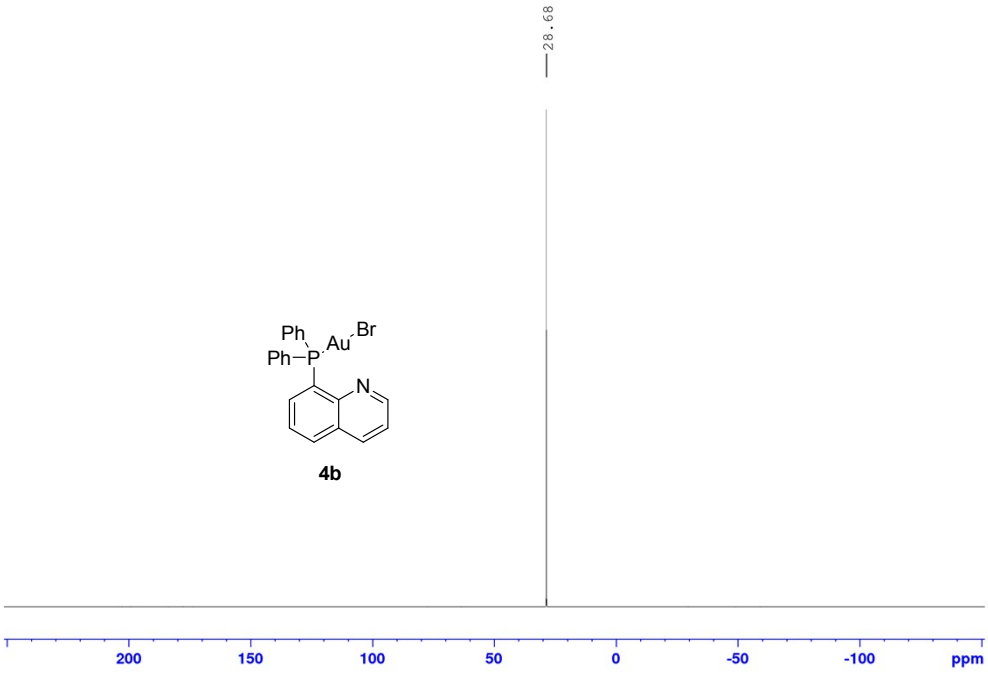
60
50
40
ppm

4b



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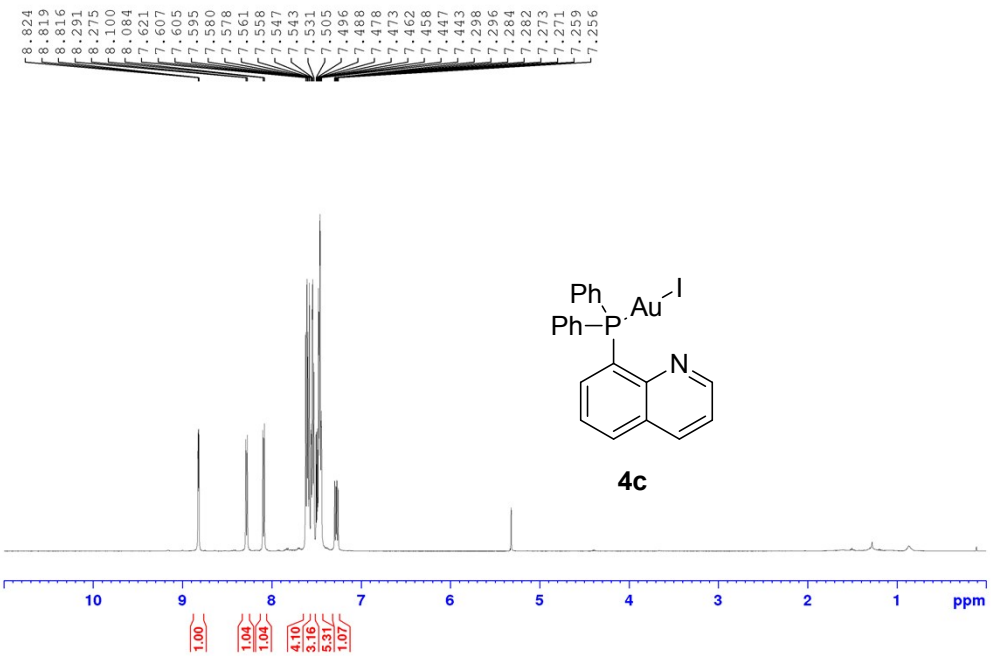
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7.578
7.561
7.558
7.547
7.543
7.531
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7.496
7.488
7.478
7.473
7.462
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7.447
7.443
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7.296
7.284
7.282
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7.259
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Ph
Ph—P
Au
I
N
4c
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9
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3
2
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ppm
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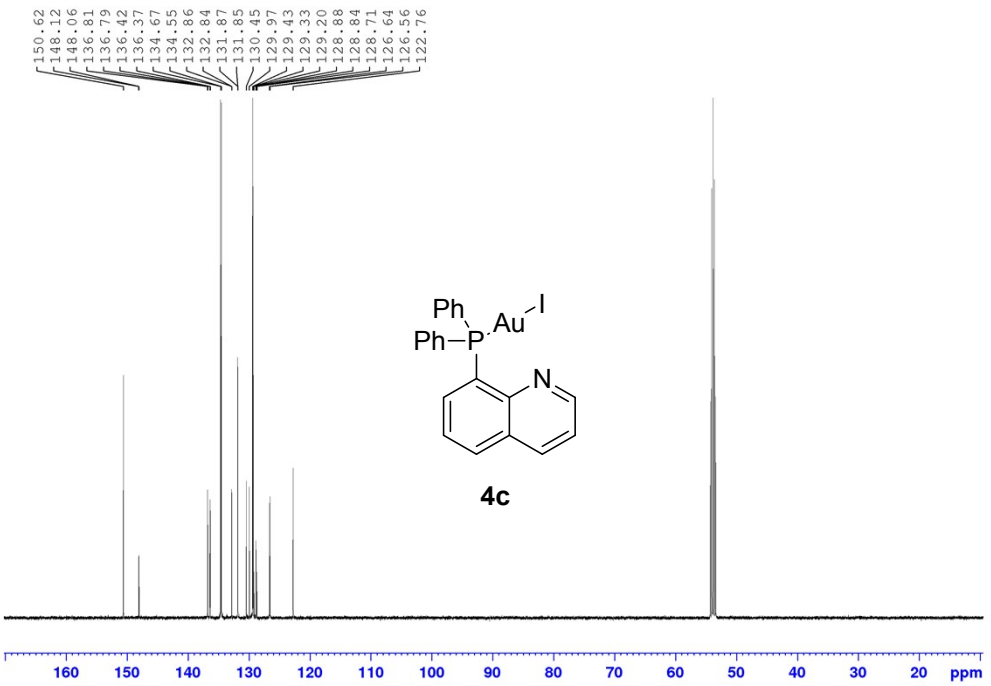
5.31
1.07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129.20
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126.64
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Ph—P
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80
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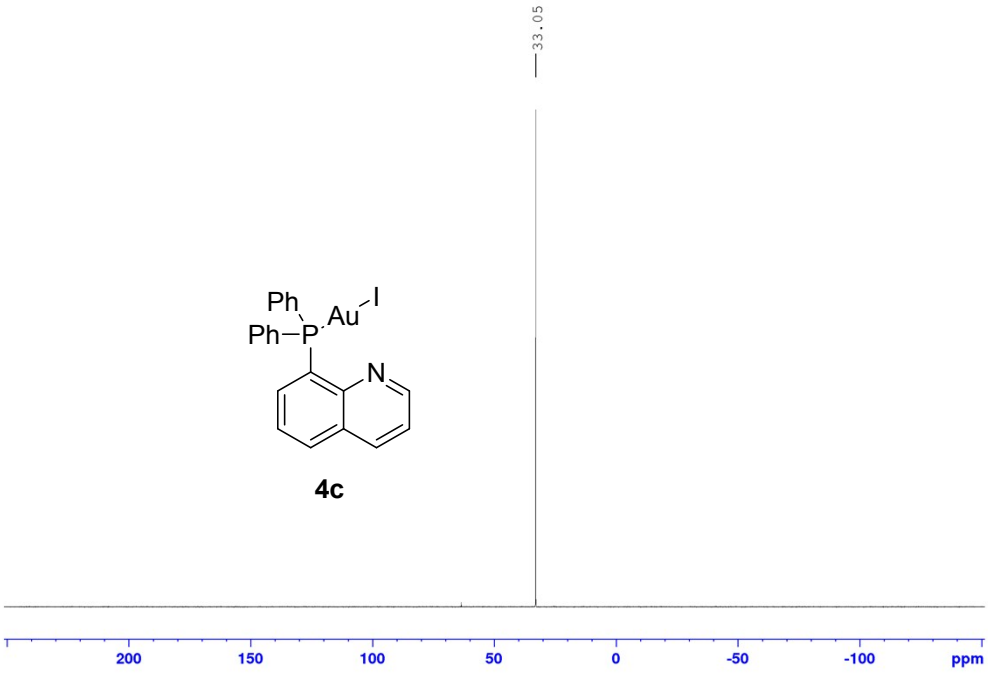
ppm



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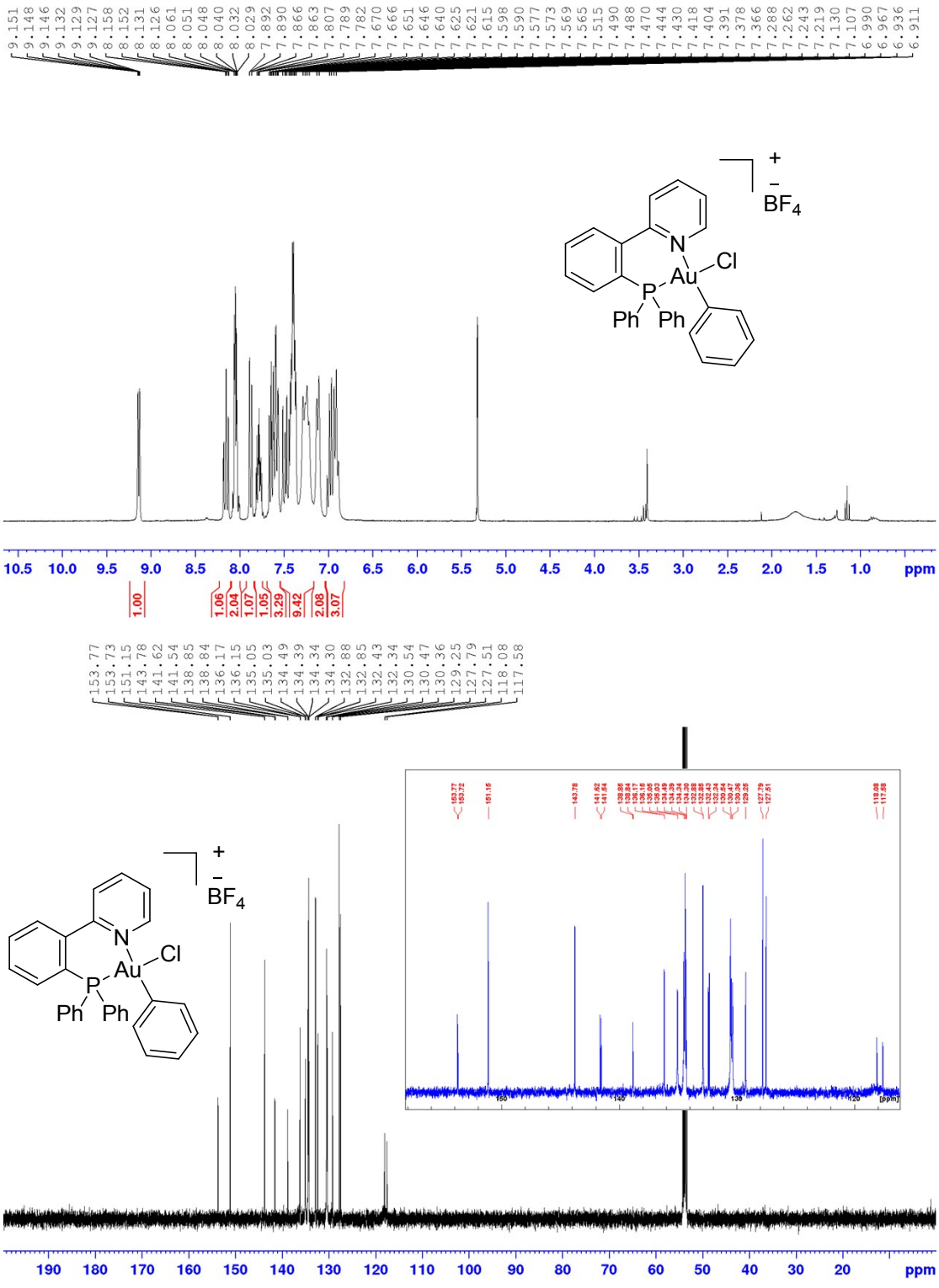
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6.967
6.936
6.911
+
BF4
N
Cl
Au
P
Ph
Ph
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3.07
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141.54
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138.84
136.17
136.15
135.05
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130.47
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Ph
Ph
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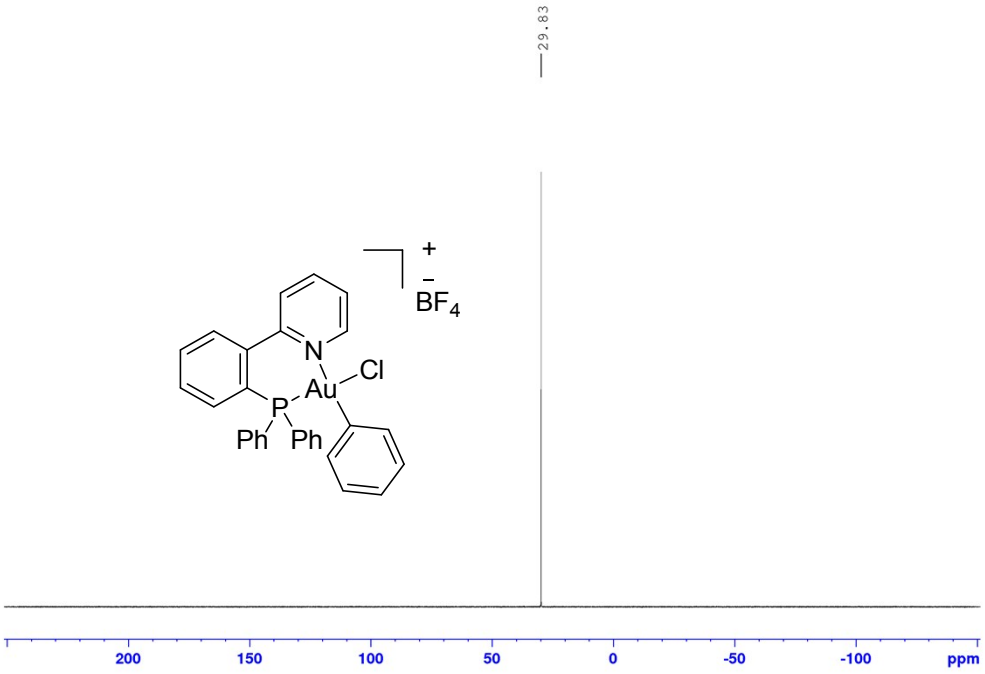
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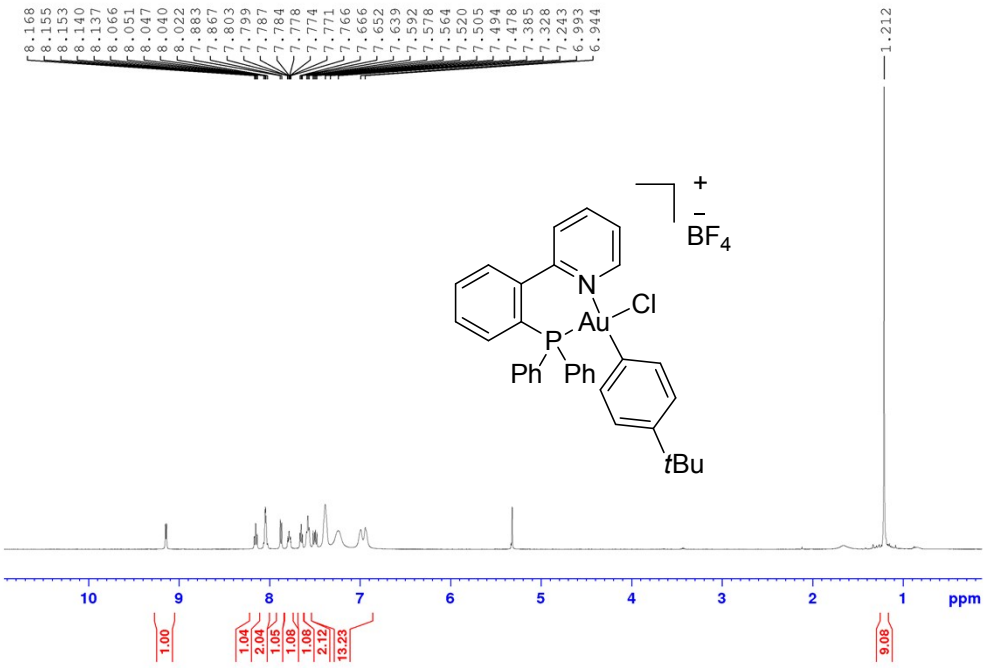
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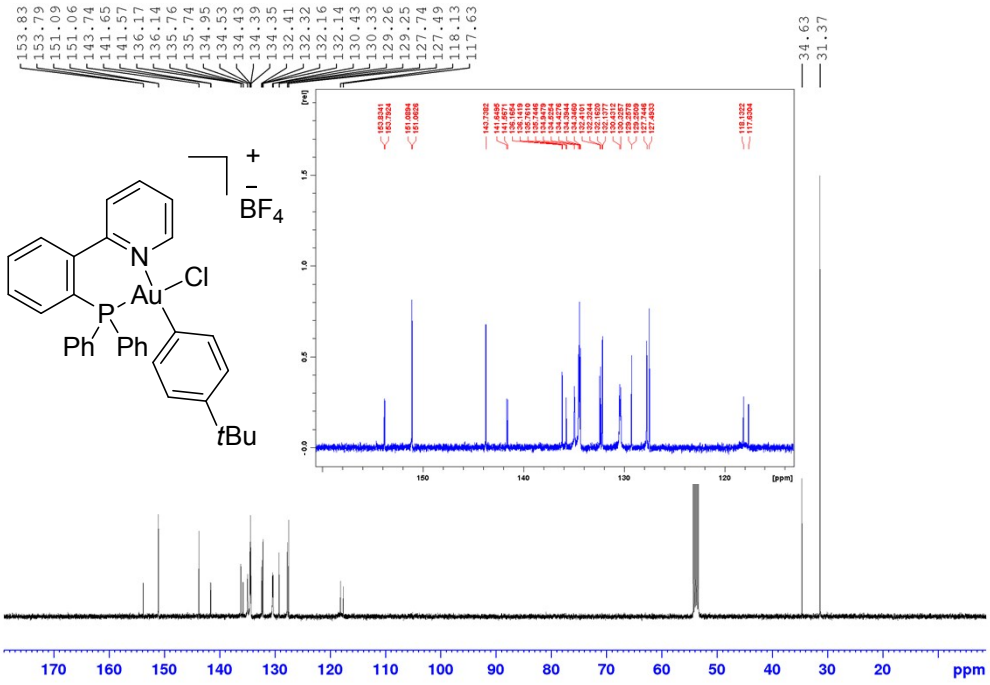
9.08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129.25
127.74
127.49
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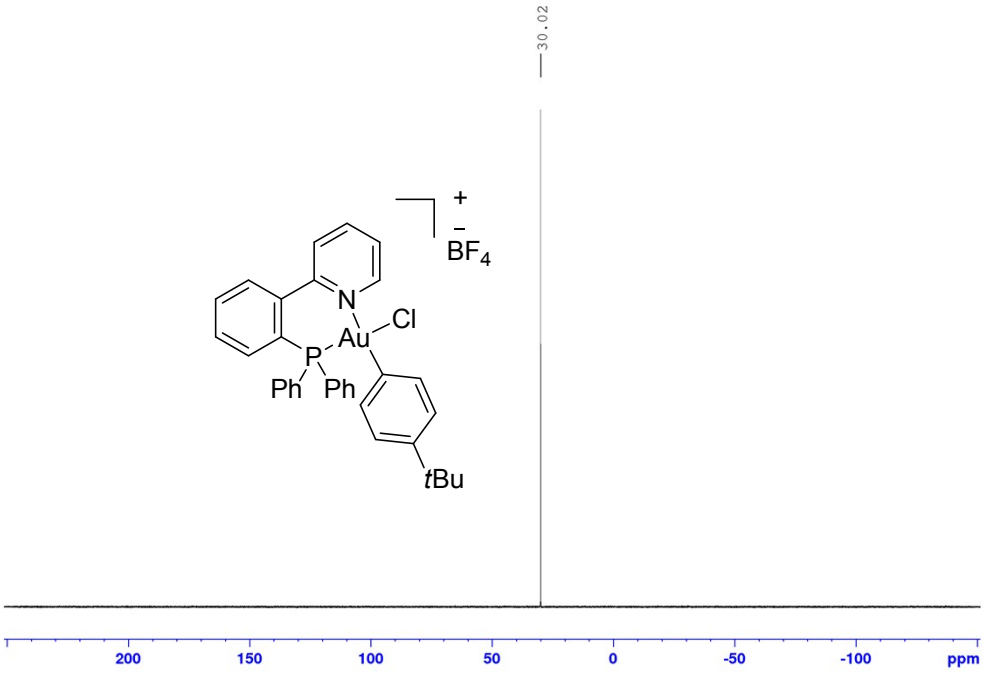
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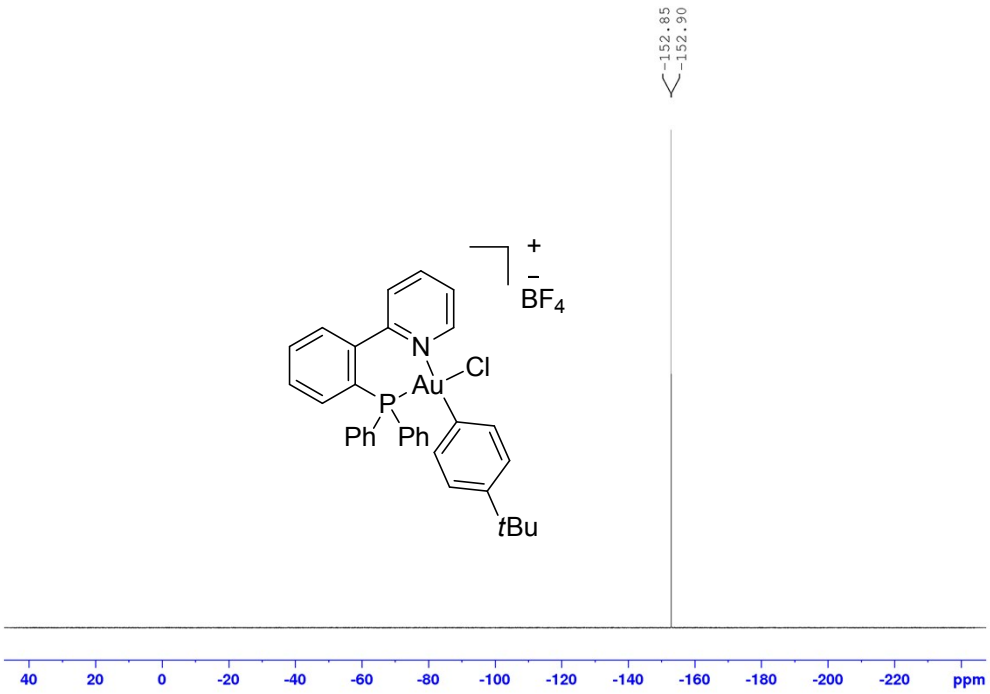
-100
ppm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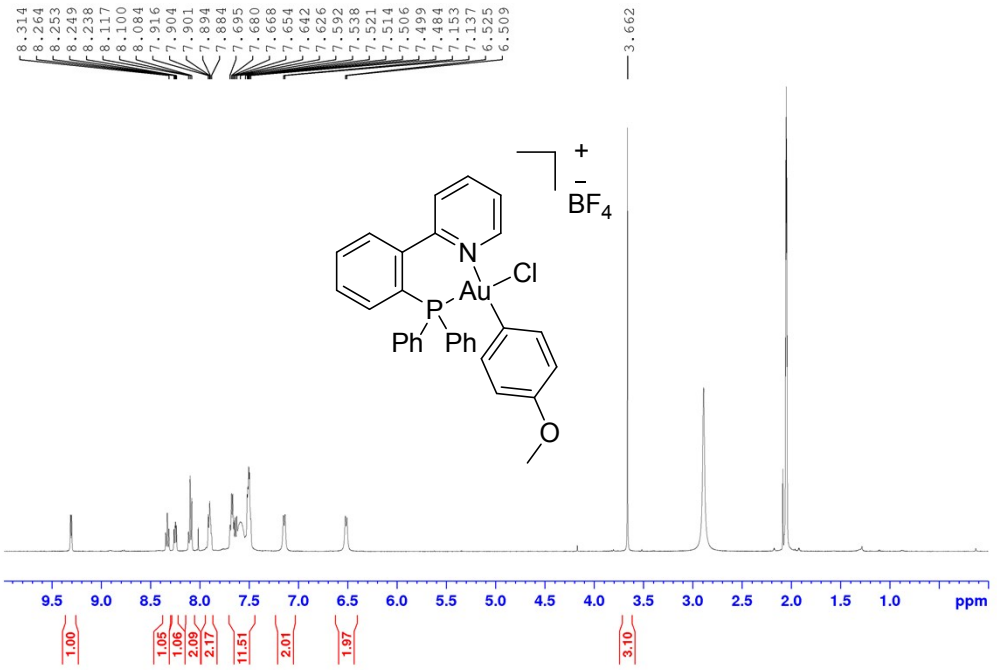
ppm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7.654
7.642
7.626
7.592
7.538
7.521
7.514
7.506
7.499
7.484
7.153
7.137
6.525
6.509
3.662
+
BF4
N
Cl
Au
P
Ph
Ph
O
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
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1.06
2.09
2.17
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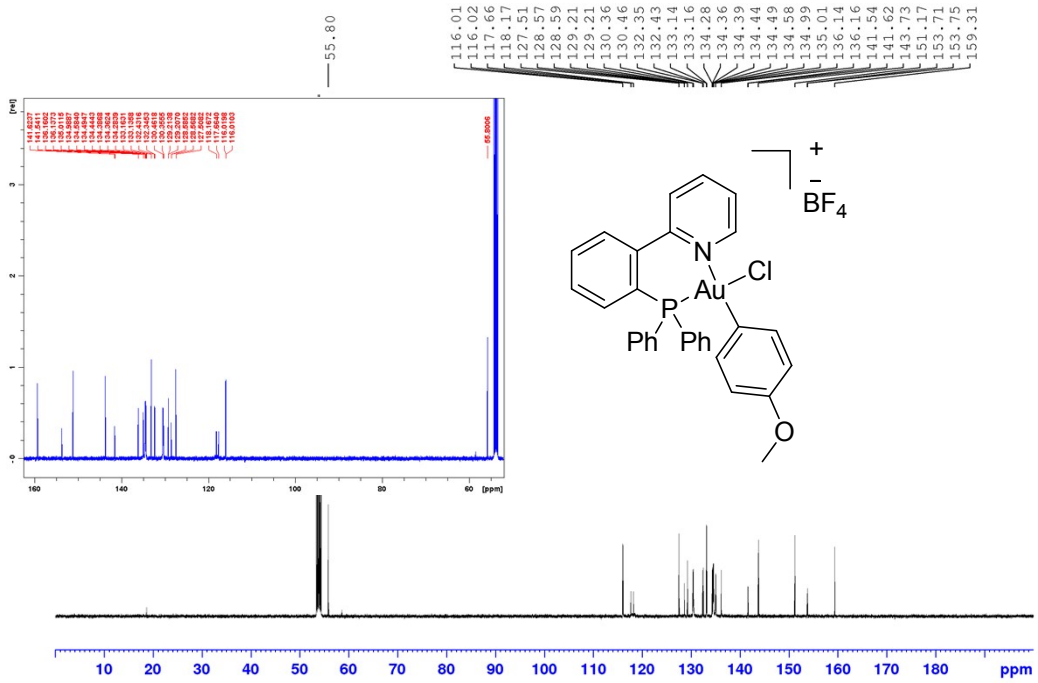
2.01
1.97
3.10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129.21
130.36
130.46
132.35
132.43
133.14
133.16
134.28
134.36
134.39
134.44
134.49
134.58
134.99
135.01
136.14
136.16
141.54
141.62
143.73
151.17
153.71
153.75
159.31
+
BF4
N
Cl
Au
P
Ph
Ph
O
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120
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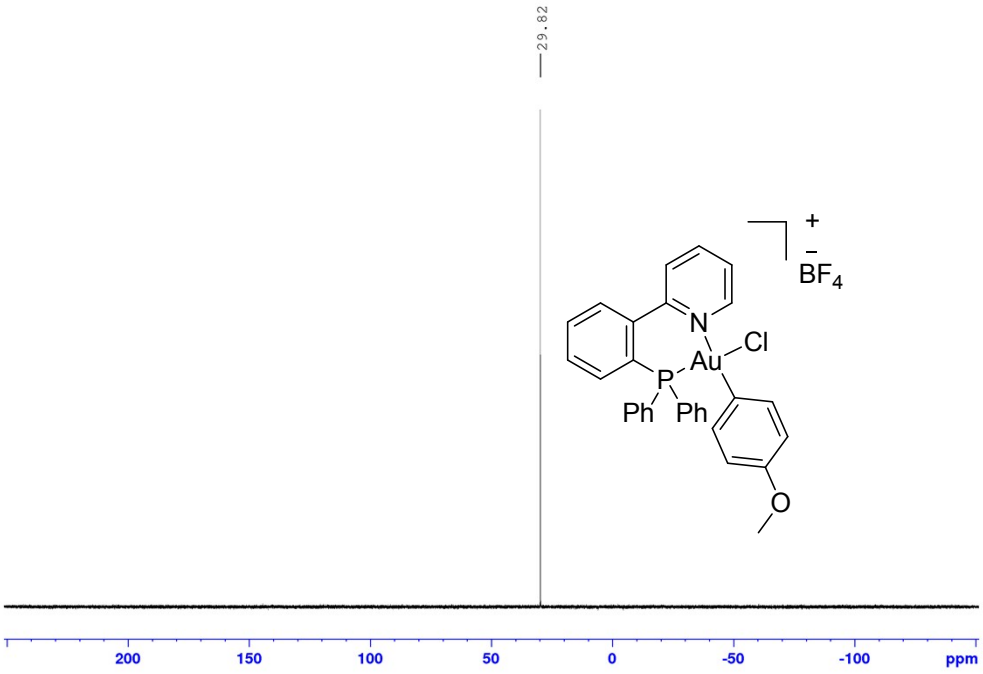
170
180
ppm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BF4
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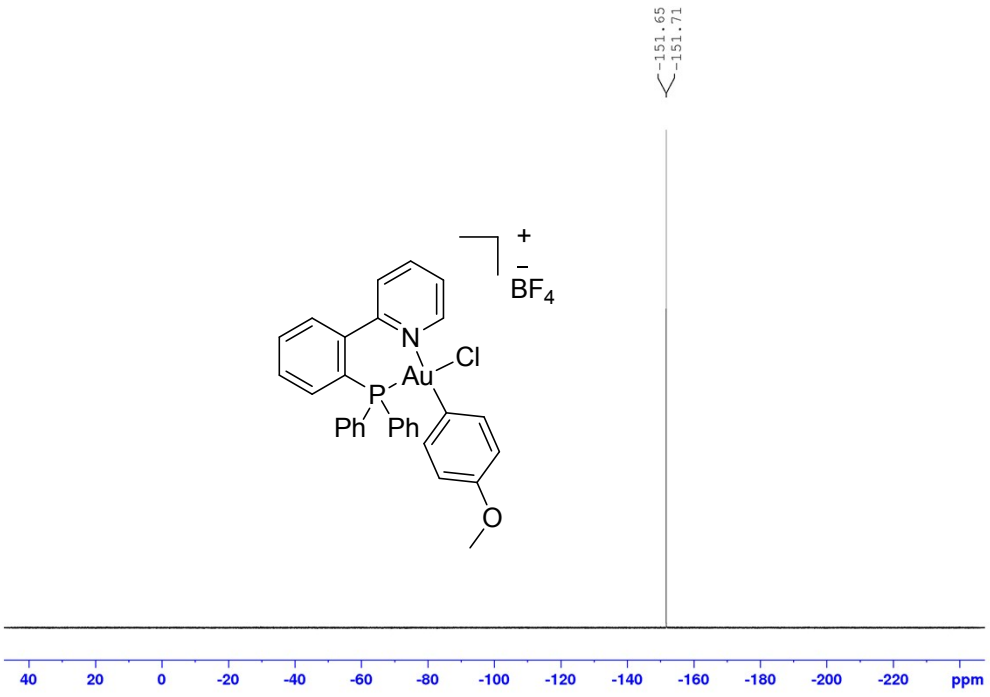
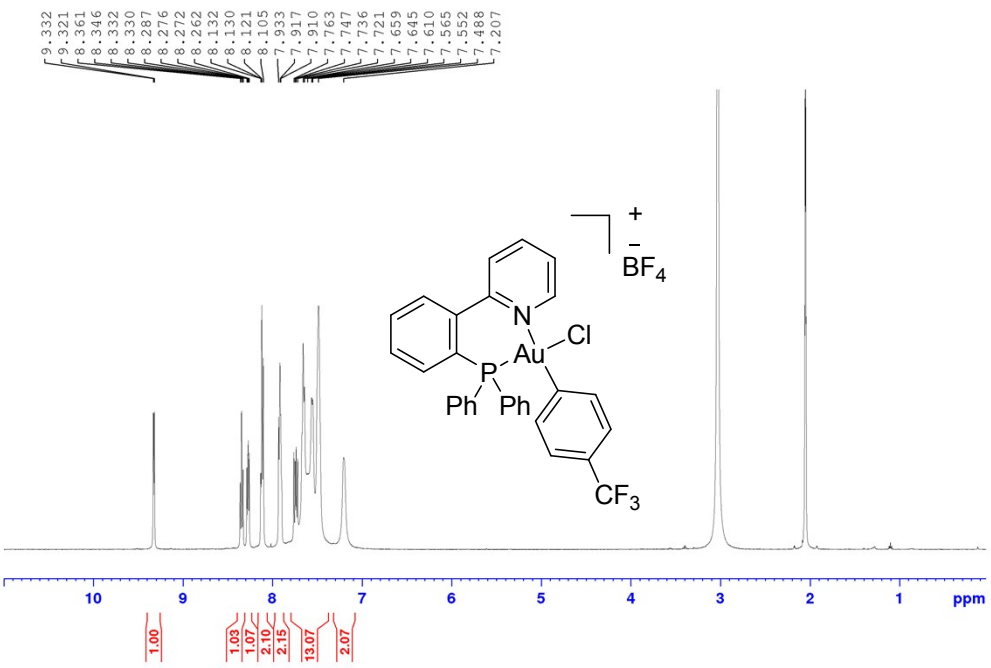
Cl
Au
P
Ph
Ph
O
200
150
100
50
0
-50
-100
ppm


151.65
151.71
+
BF4
N
Cl
Au
P
Ph
Ph
O
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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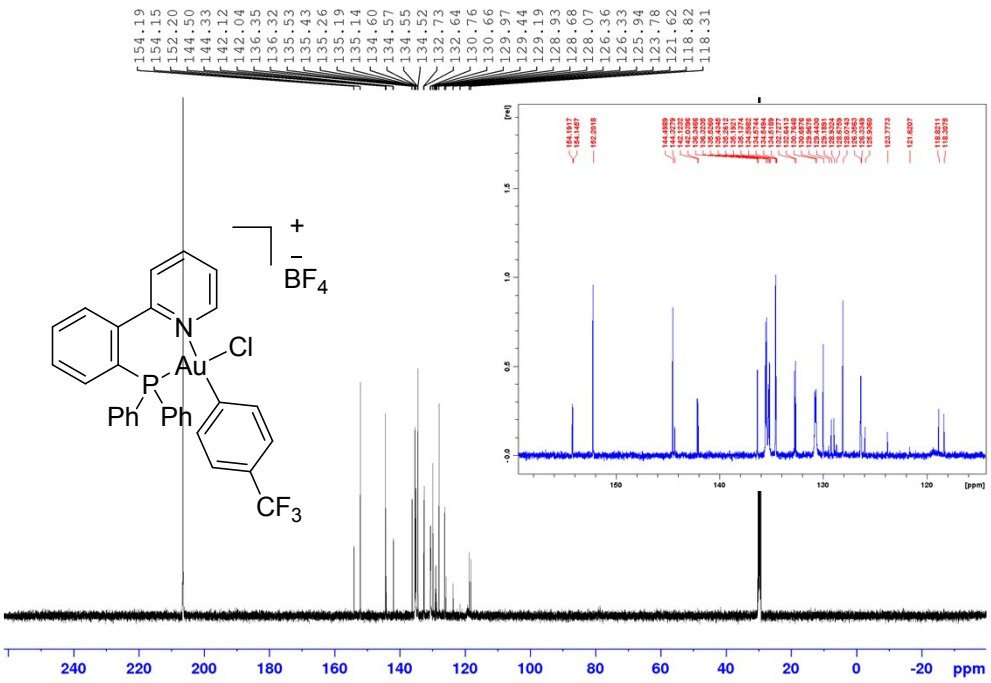
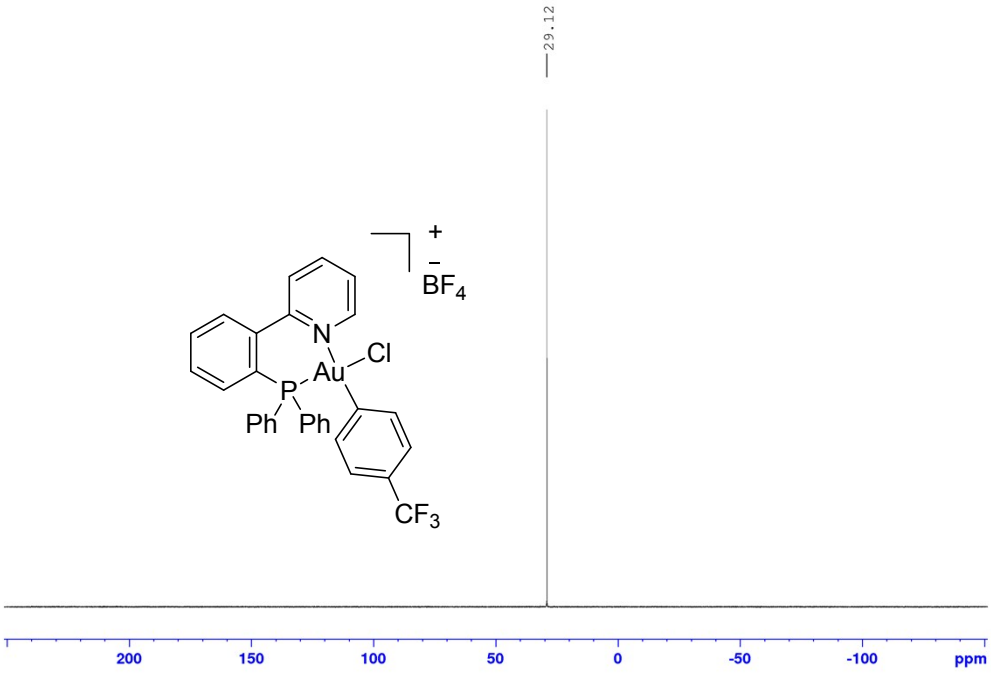
8.276
8.272
8.262
8.132
8.130
8.121
8.105
7.933
7.917
7.910
7.763
7.747
7.736
7.721
7.659
7.645
7.610
7.565
7.552
7.488
7.207
+
BF4
N
Cl
Au
P
Ph
Ph
CF3
10
9
8
7
6
5
4
3
2
1
ppm
1.00
1.03
1.07
2.10
2.15
13.07
2.07


154.19
154.15
152.20
144.50
144.33
142.12
142.04
136.35
136.32
135.53
135.43
135.26
135.19
135.14
134.60
134.57
134.55
134.52
132.73
132.64
130.76
130.66
129.97
129.44
129.19
128.93
128.68
128.07
126.36
126.33
125.94
123.78
121.62
118.82
118.31
+
BF4
N
Cl
Au
P
Ph
Ph
CF3
240
220
200
180
160
140
120
100
80
60
40
20
0
-20
ppm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+
−
BF4
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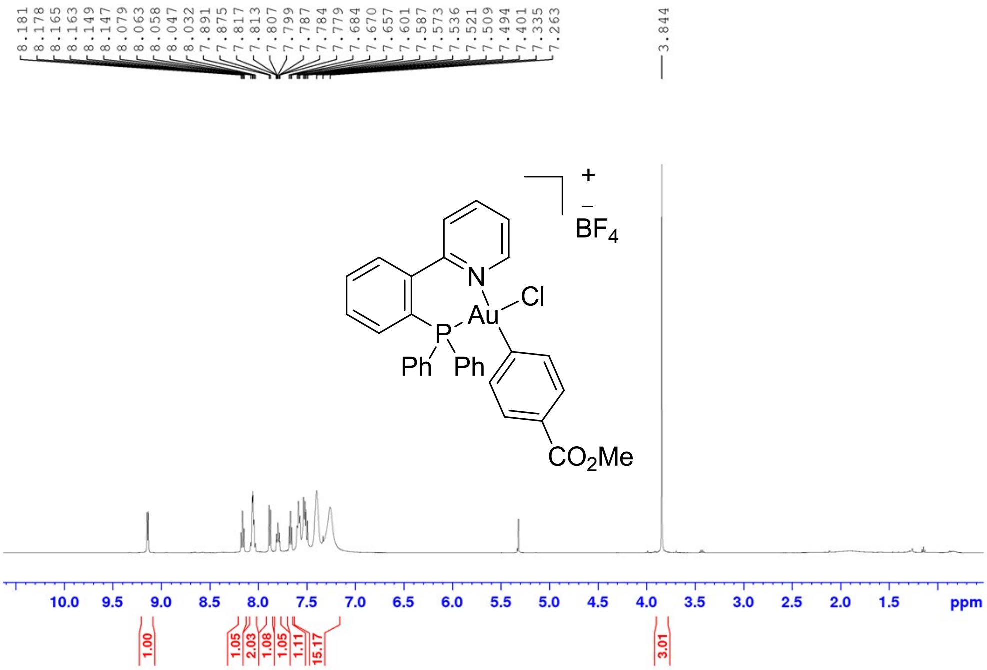
Cl
Au
P
Ph
Ph
CF3
200
150
100
50
0
-50
-100
ppm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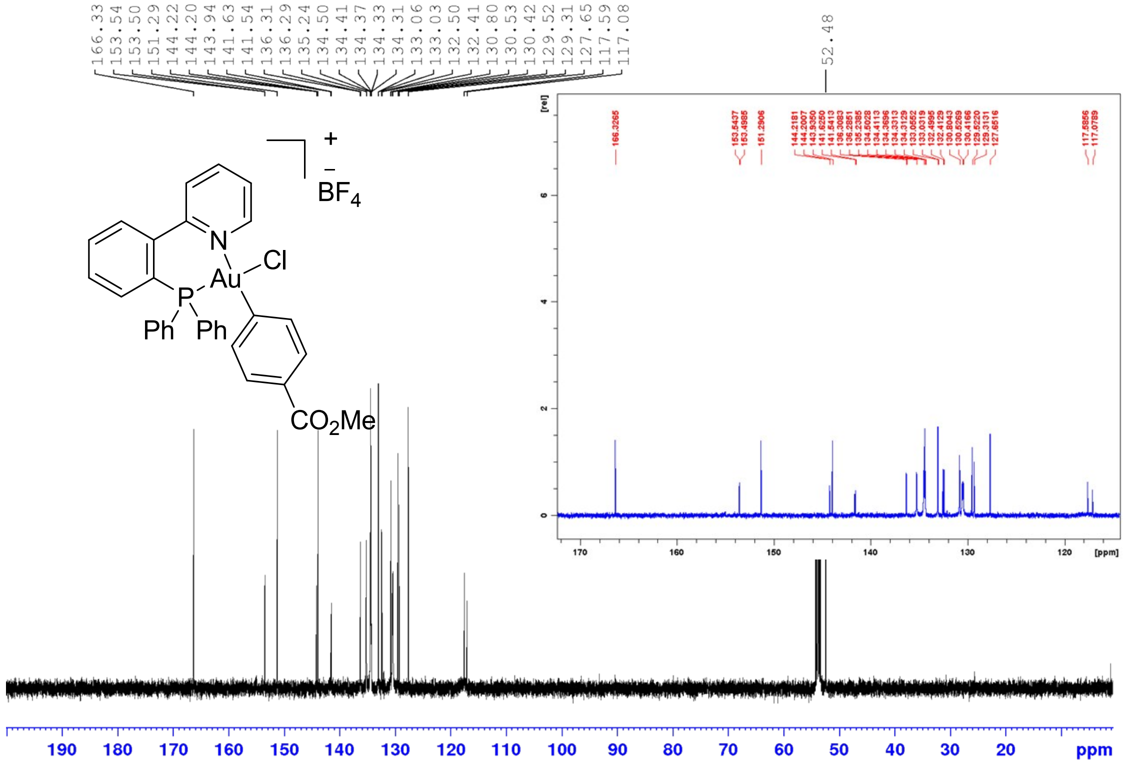
8.178
8.165
8.163
8.149
8.147
8.079
8.063
8.058
8.047
8.032
7.891
7.875
7.817
7.813
7.807
7.799
7.787
7.784
7.779
7.684
7.670
7.657
7.601
7.587
7.573
7.536
7.521
7.509
7.494
7.401
7.335
7.263
3.844
BF4
N
Cl
Au
P
Ph
Ph
CO2Me
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 ppm
1.00
1.05
2.03
1.08
1.05
1.11
15.17
3.01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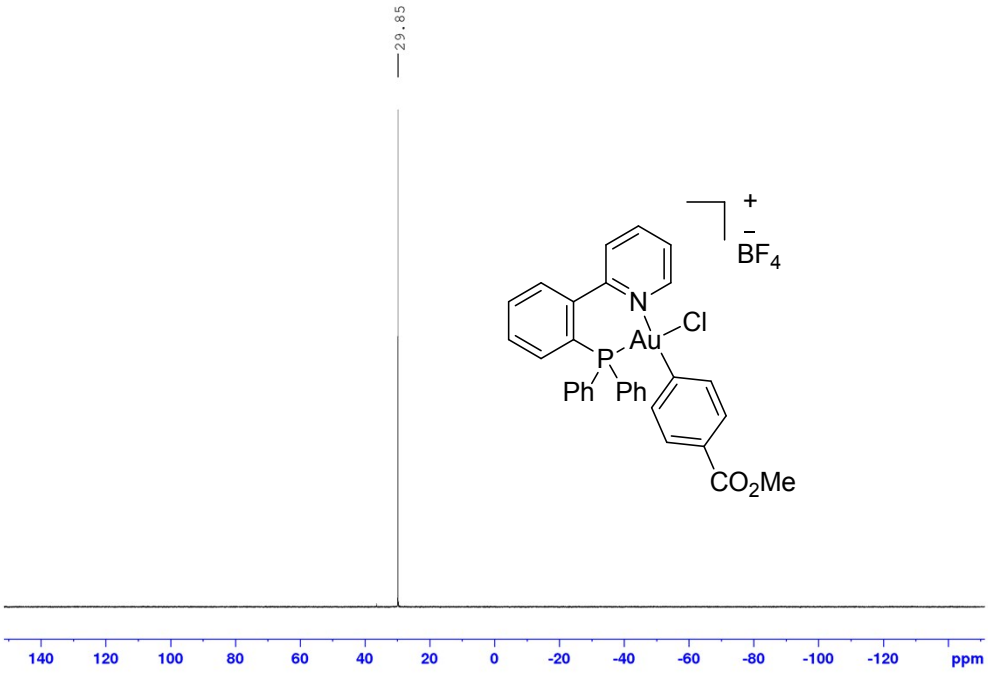
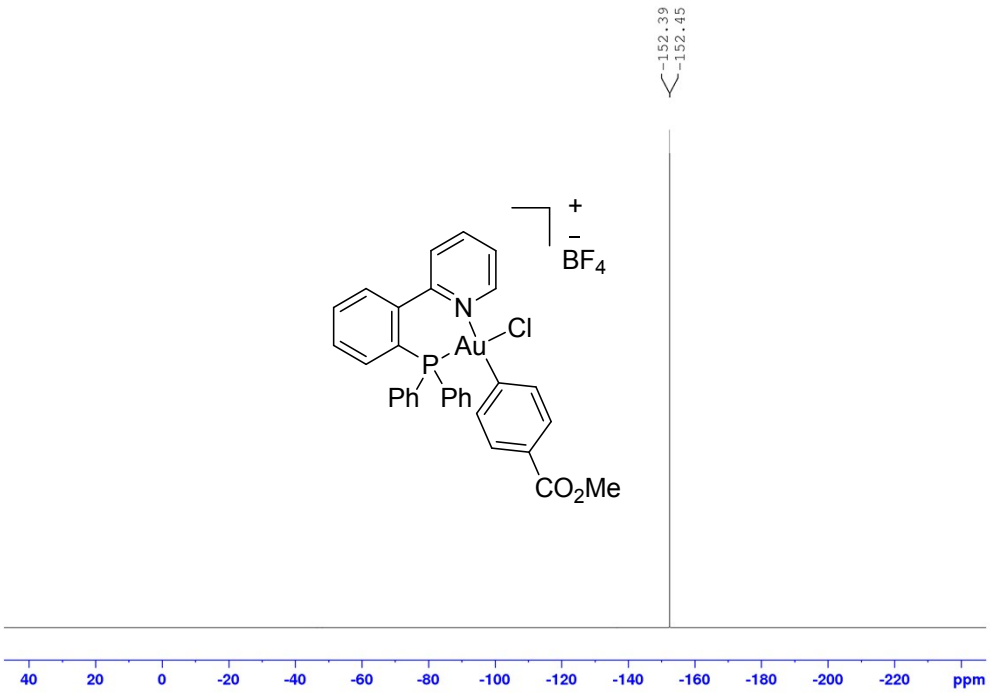
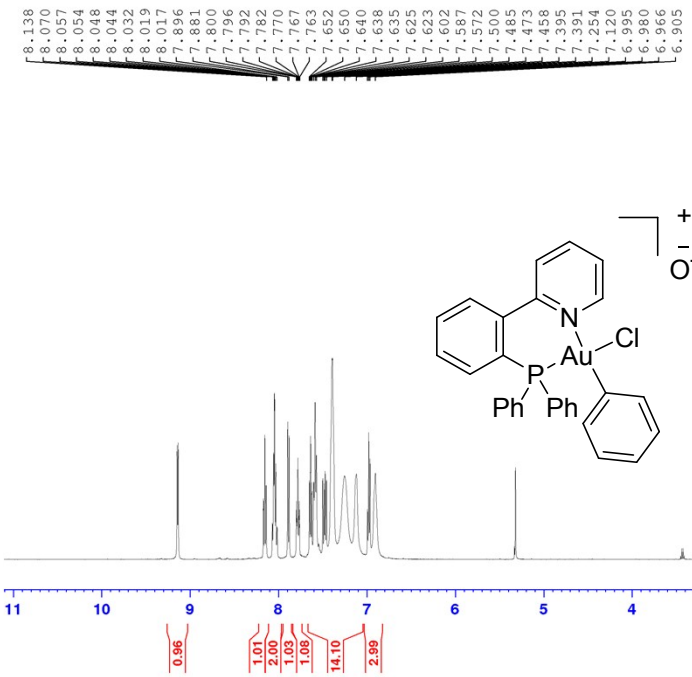
153.54
153.50
151.29
144.22
144.20
143.94
141.63
141.54
136.31
136.29
135.24
134.50
134.41
134.37
134.33
134.31
133.06
133.03
132.50
132.41
130.80
130.53
130.42
129.52
129.31
127.65
117.59
117.08
52.48
BF4
N
Cl
Au
P
Ph
Ph
CO2Me
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm
170 160 150 140 130 120 [ppm]


29.85
+
BF4
N
Cl
Au
P
Ph
Ph
CO2Me
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
ppm


-152.39
-152.45
+
BF4
N
Cl
Au
P
Ph
Ph
CO2Me
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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8.054
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8.044
8.032
8.019
8.017
7.896
7.881
7.800
7.796
7.792
7.782
7.770
7.767
7.763
7.652
7.650
7.640
7.638
7.635
7.625
7.623
7.602
7.587
7.572
7.500
7.485
7.473
7.458
7.395
7.391
7.254
7.120
6.995
6.980
6.966
6.905
+
OTf
N
Au
Cl
P
Ph
Ph
11
10
9
8
7
6
5
4
3
2
1
ppm
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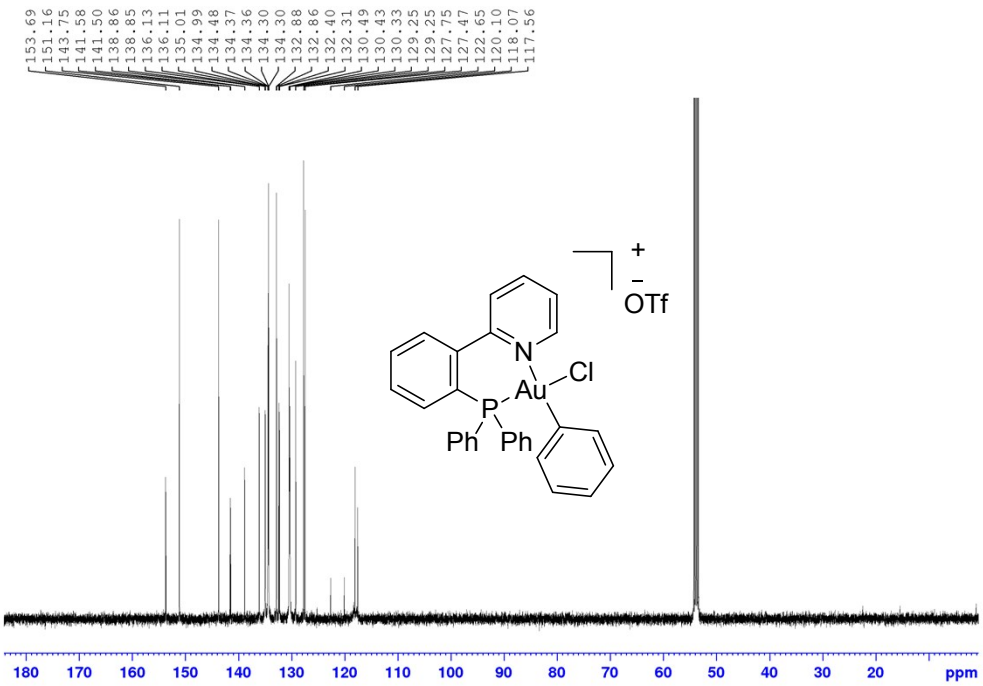
2.00
1.03
1.08
14.10
2.99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143.75
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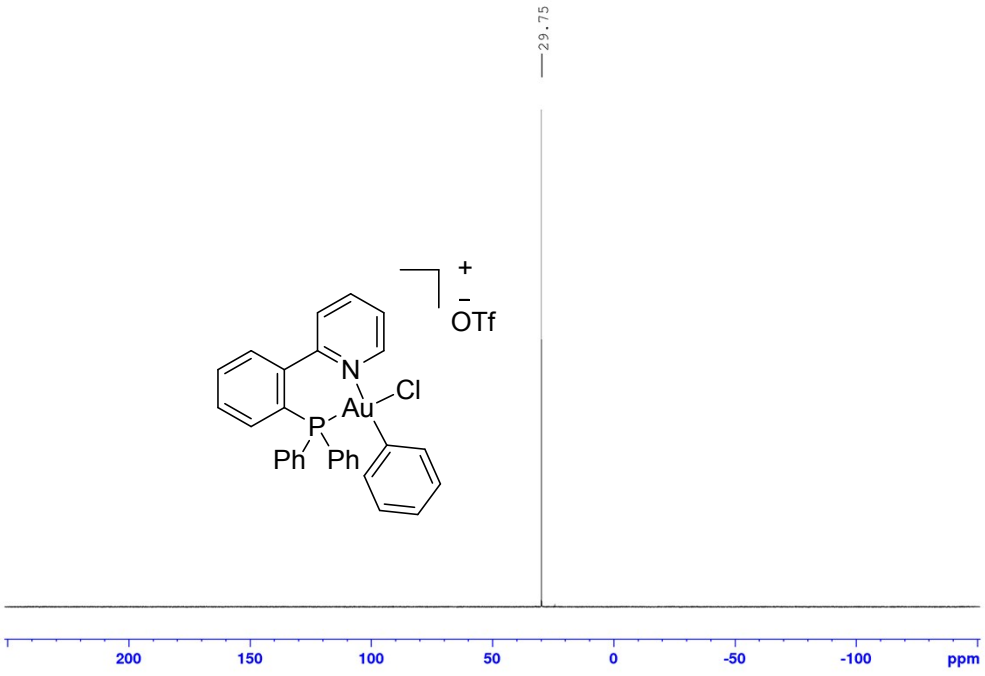
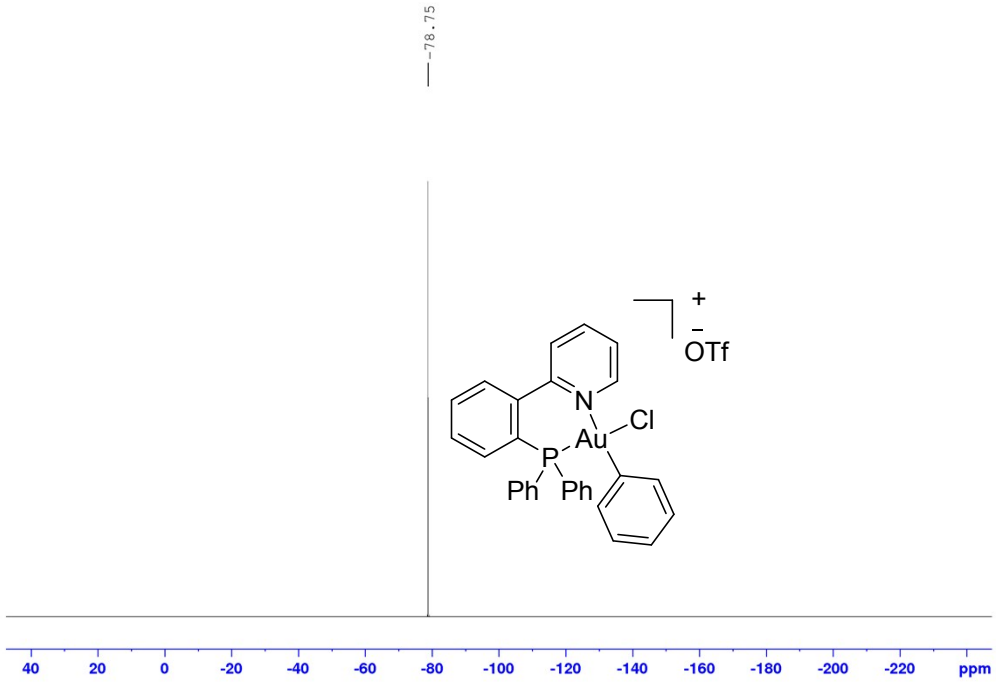
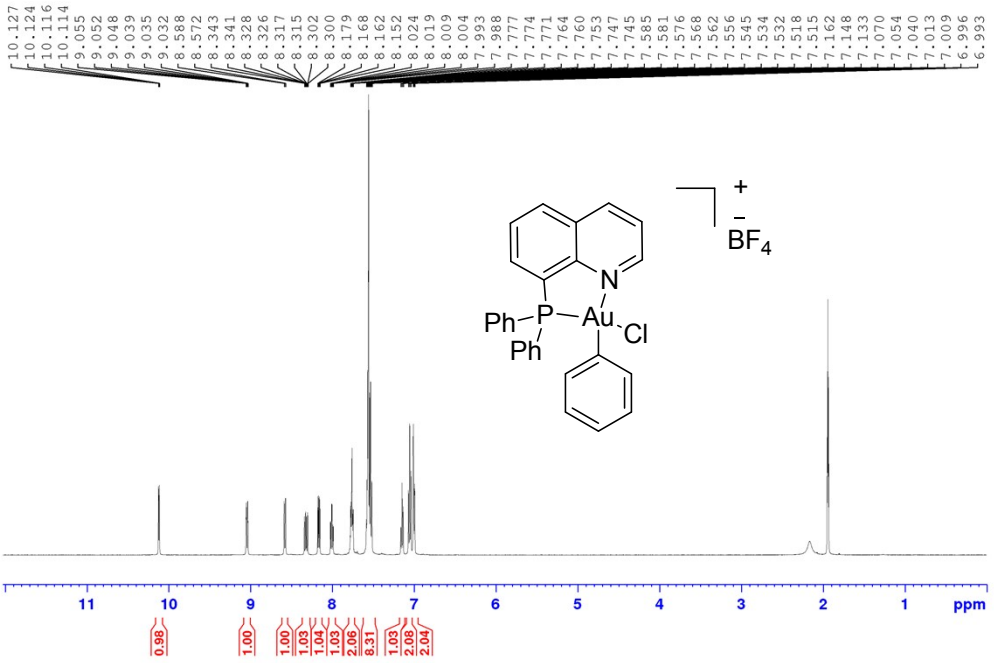
138.86
138.85
136.13
136.11
135.01
134.99
134.48
134.37
134.36
134.30
134.30
132.88
132.86
132.40
132.31
130.49
130.43
130.33
129.25
129.25
127.75
127.47
122.65
120.10
118.07
117.56
+
OTf
N
Au
Cl
P
Ph
Ph
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm


29.75
+
–
OTf
N
Au
Cl
P
Ph
Ph
200
150
100
50
0
-50
-100
ppm


-78.75
+
–
OTf
N
Au
Cl
P
Ph
Ph
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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10.116
10.114
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9.052
9.048
9.039
9.035
9.032
8.588
8.572
8.343
8.341
8.328
8.326
8.317
8.315
8.302
8.300
8.179
8.168
8.162
8.152
8.024
8.019
8.009
8.004
7.993
7.988
7.777
7.774
7.771
7.764
7.760
7.753
7.747
7.745
7.585
7.581
7.576
7.568
7.562
7.556
7.545
7.534
7.532
7.518
7.515
7.162
7.148
7.133
7.070
7.054
7.040
7.013
7.009
6.996
6.993
+
BF4
N
Ph
P
Au
Cl
Ph
11
10
9
8
7
6
5
4
3
2
1
ppm
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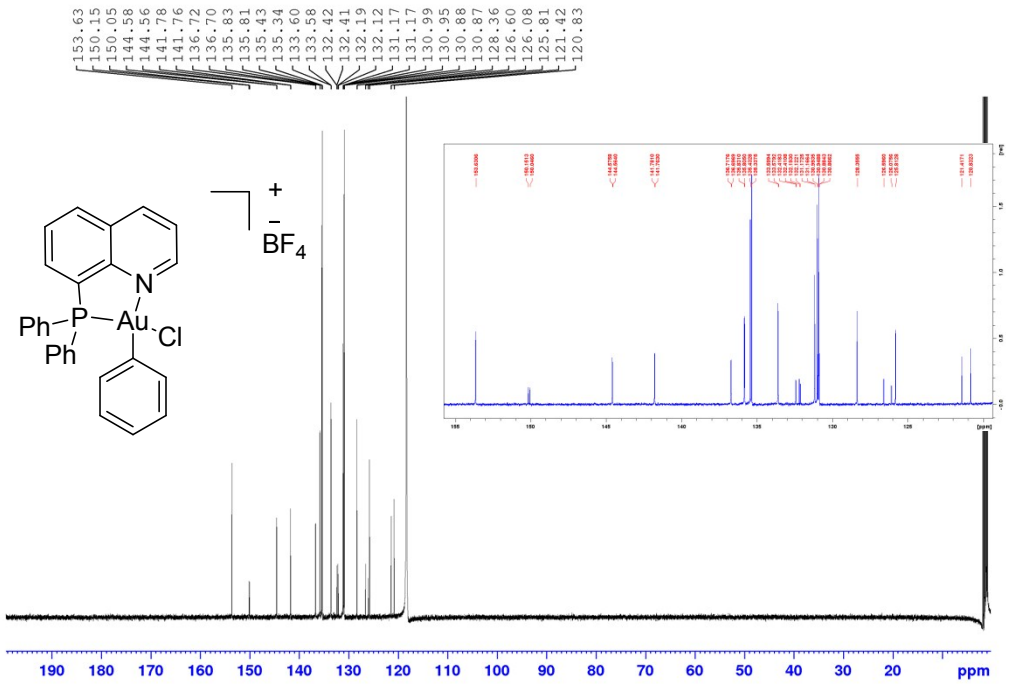
1.00
1.03
1.04
1.03
2.06
8.31
1.03
2.08
2.04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150.15
150.05
144.58
144.56
141.78
141.76
136.72
136.70
135.83
135.81
135.43
135.34
133.60
133.58
132.42
132.41
132.19
132.12
131.17
131.17
130.99
130.95
130.88
130.87
128.36
126.60
126.08
125.81
121.42
120.83
+
BF4
N
Ph
P
Au
Cl
Ph
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180
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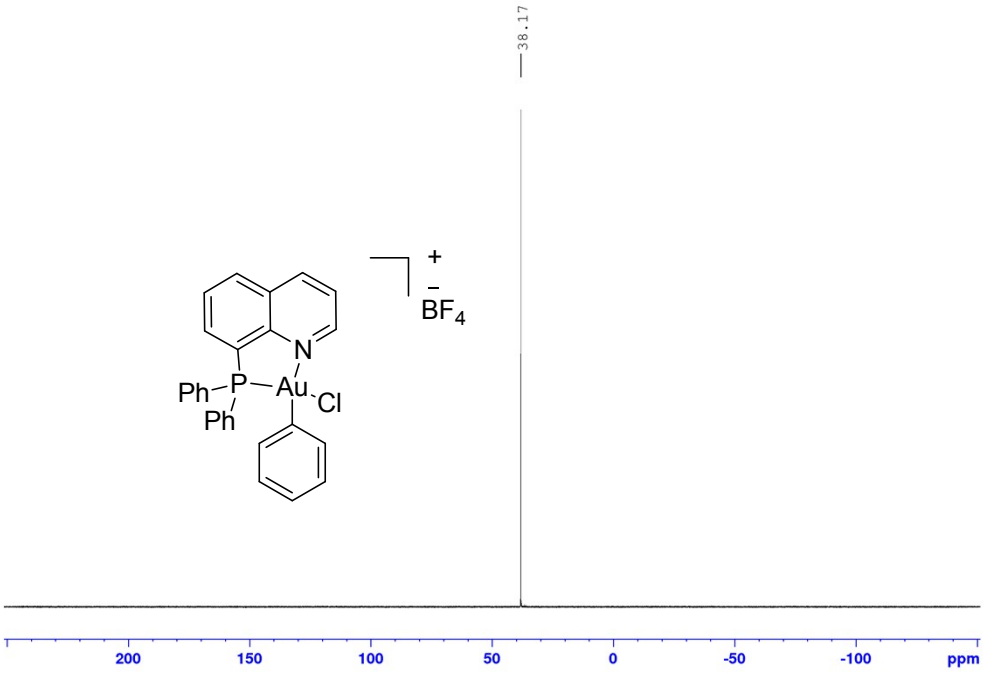
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm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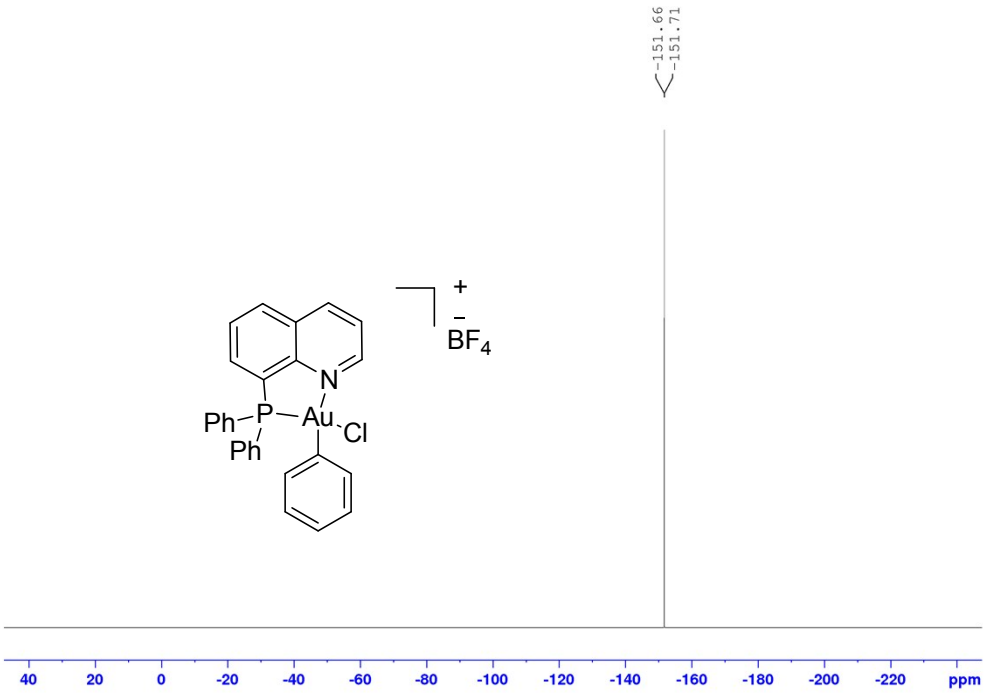
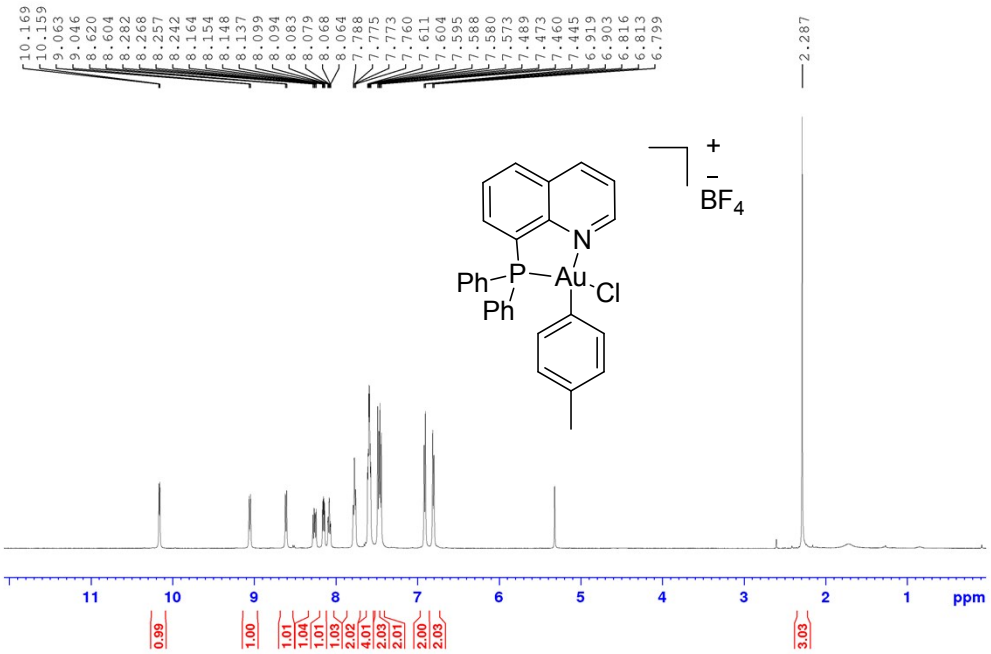
+
BF4
N
Ph
P
Au
Cl
Ph
200
150
100
50
0
-50
-100
ppm


151.66
151.71
+
BF4
N
Ph
P
Au
Cl
Ph
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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8.604
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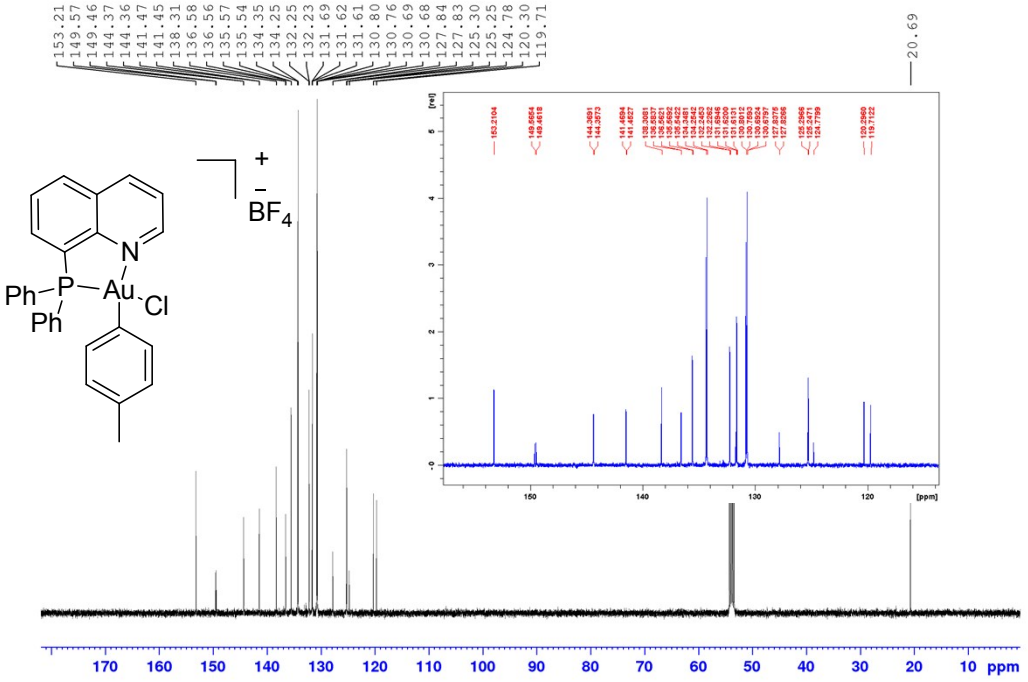
8.268
8.257
8.242
8.164
8.154
8.148
8.137
8.099
8.094
8.083
8.079
8.068
8.064
7.788
7.775
7.773
7.760
7.611
7.604
7.595
7.588
7.580
7.573
7.489
7.473
7.460
7.445
6.919
6.903
6.816
6.813
6.799
2.287
+
BF4
N
Ph
P
Au
Cl
Ph
11
10
9
8
7
6
5
4
3
2
1
ppm
0.99
1.00
1.01
1.04
1.01
1.03
2.02
4.01
2.03
2.01
2.00
2.03
3.03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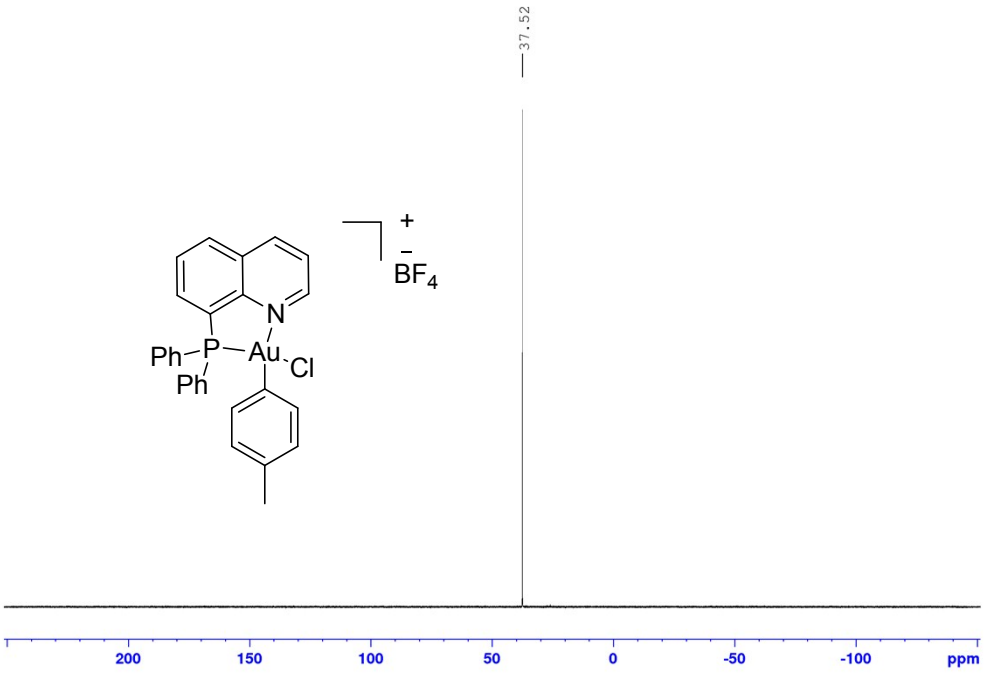
144.36
141.47
141.45
138.31
136.58
136.56
135.57
135.54
134.35
134.25
132.25
132.23
131.69
131.62
131.61
130.80
130.76
130.69
130.68
127.84
127.83
125.30
125.25
124.78
120.30
119.71
20.69
+
BF4
N
Ph
P
Au
Cl
Ph
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm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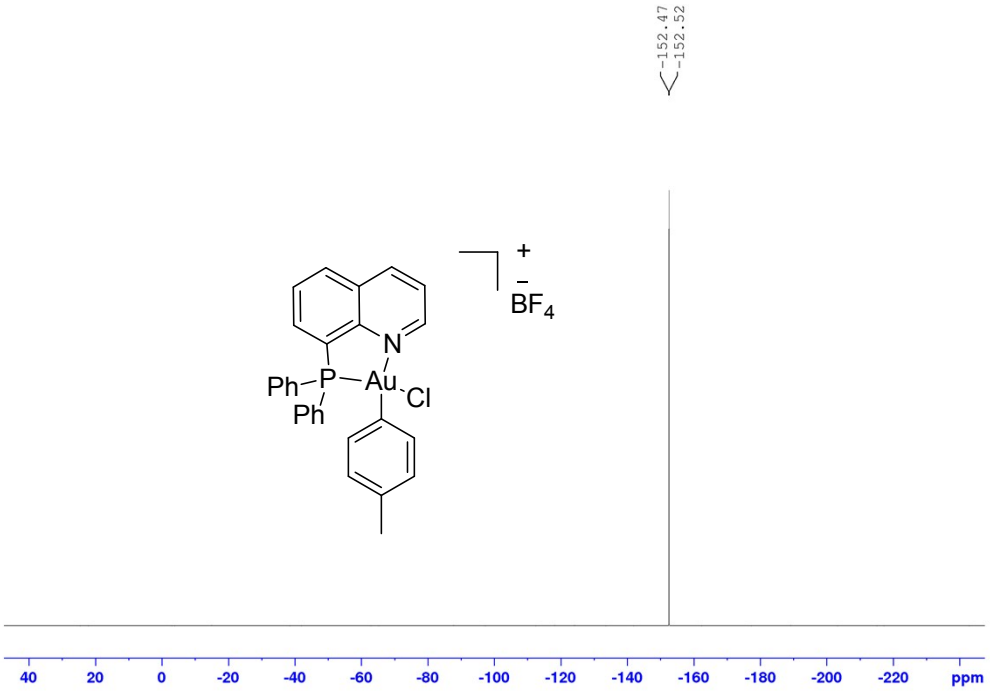
N
Ph
P
Au
Cl
Ph
200
150
100
50
0
-50
-100
ppm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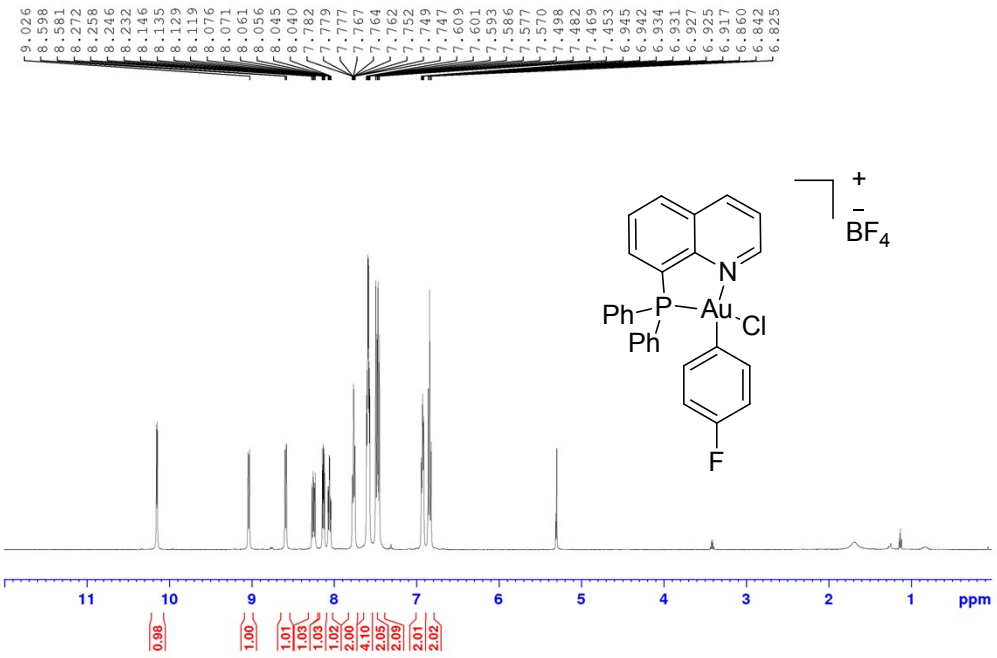
-152.52
+
BF4
N
Ph
P
Au
Cl
Ph
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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8.598
8.581
8.272
8.258
8.246
8.232
8.146
8.135
8.129
8.119
8.076
8.071
8.061
8.056
8.045
8.040
7.782
7.779
7.777
7.767
7.764
7.762
7.752
7.749
7.747
7.609
7.601
7.593
7.586
7.577
7.570
7.498
7.482
7.469
7.453
6.945
6.942
6.934
6.931
6.927
6.925
6.917
6.860
6.842
6.825
+
BF4
N
Ph
P
Au
Cl
Ph
F
11
10
9
8
7
6
5
4
3
2
1
ppm
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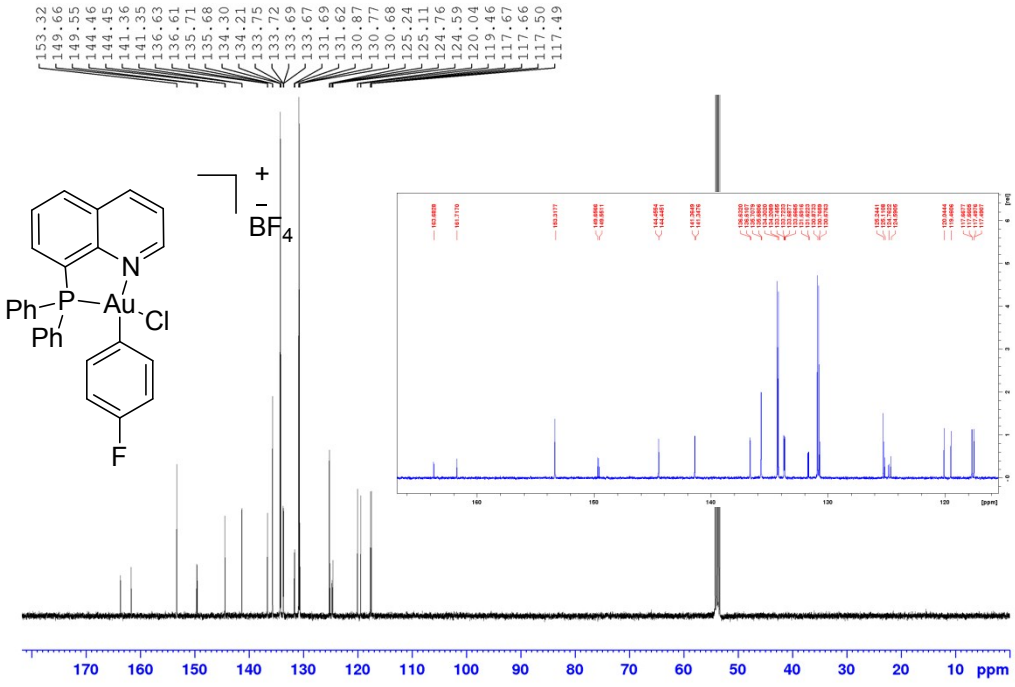
1.00
1.01
1.03
1.03
1.02
2.00
4.10
2.05
2.09
2.01
2.02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149.66
149.55
144.46
144.45
141.36
141.35
136.63
136.61
135.71
135.68
134.30
134.21
133.75
133.72
133.69
133.67
131.69
131.62
130.87
130.77
130.68
125.24
125.11
124.76
124.59
120.04
119.46
117.67
117.66
117.50
117.49
+
BF4
N
Ph
P
Au
Cl
Ph
F
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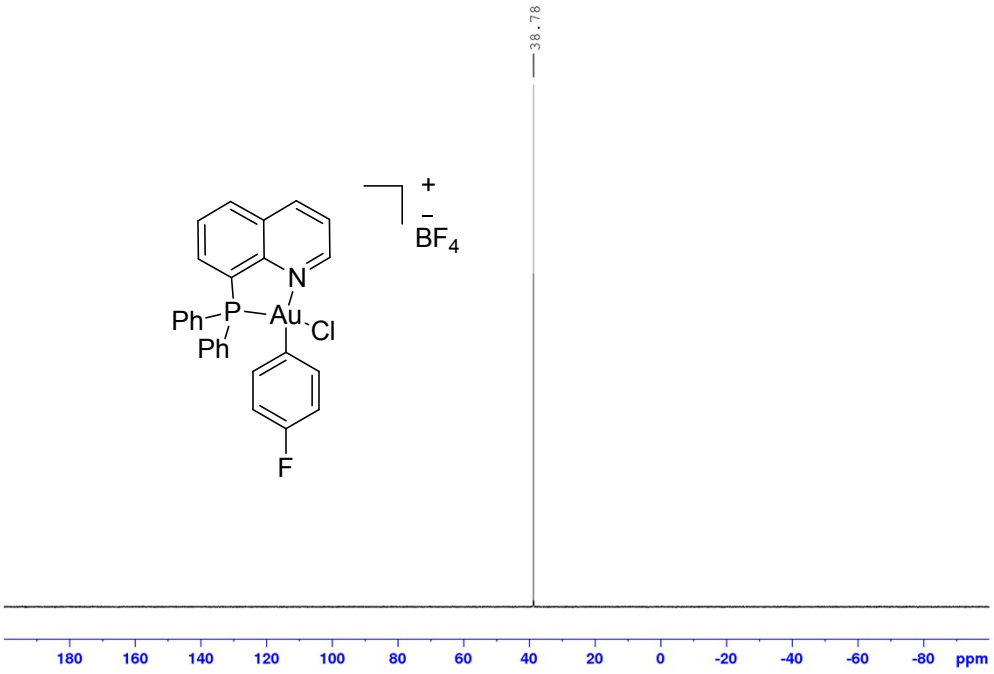
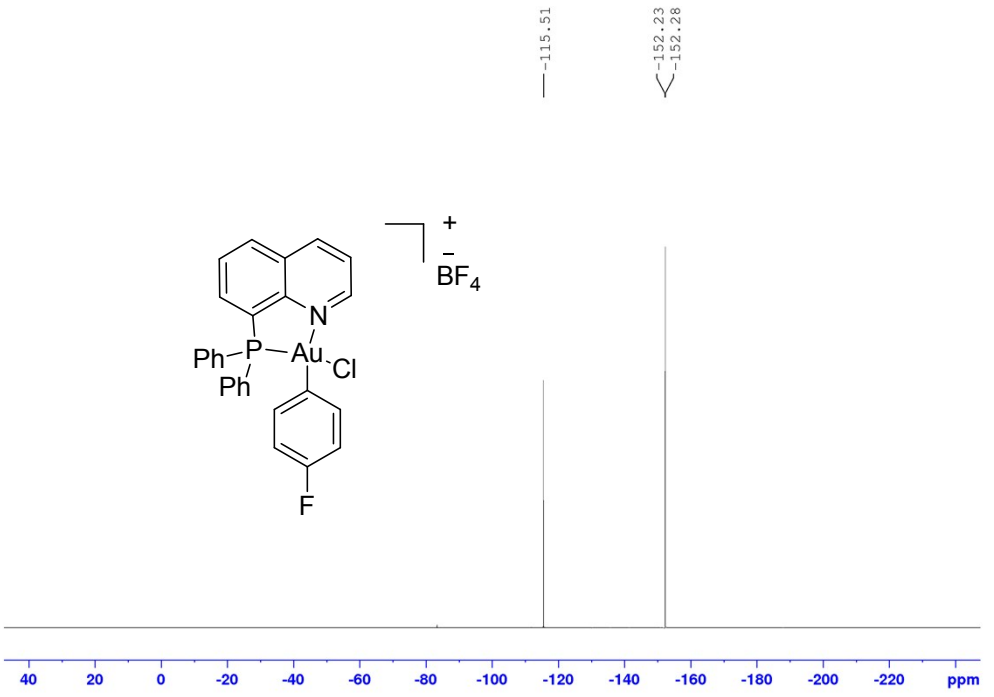
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm


38.78
+
−
BF4
N
Ph
P
Au
Cl
Ph
F
180
160
140
120
100
80
60
40
20
0
-20
-40
-60
-80
ppm


-115.51
-152.23
-152.28
+
−
BF4
N
Ph
P
Au
Cl
Ph
F
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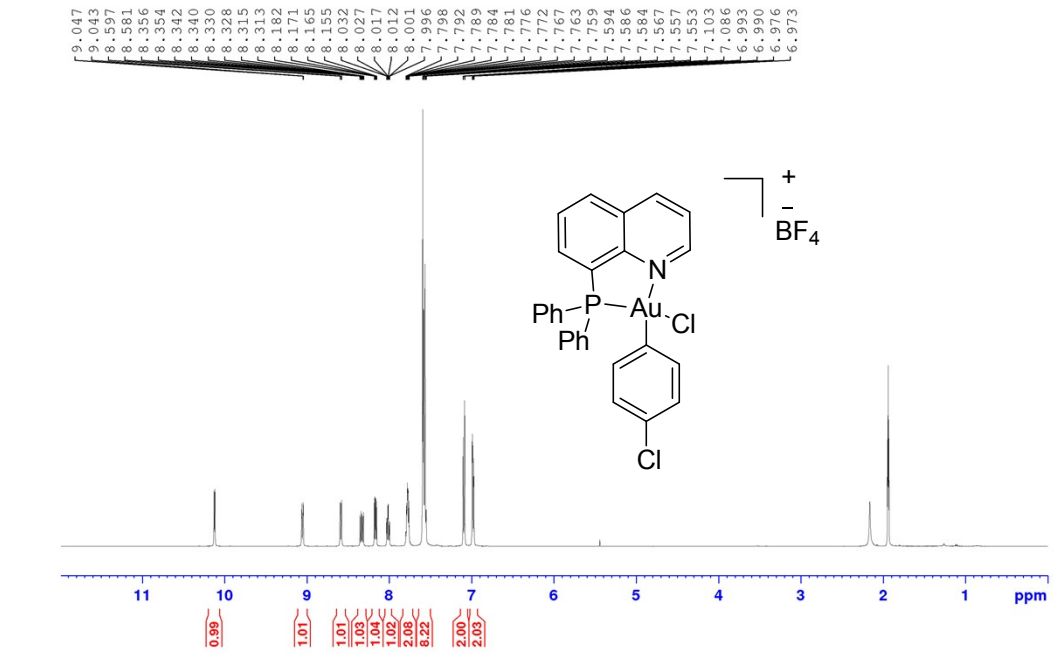
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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8.342
8.340
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8.328
8.315
8.313
8.182
8.171
8.165
8.155
8.032
8.027
8.017
8.012
8.001
7.996
7.798
7.792
7.789
7.784
7.781
7.776
7.772
7.767
7.763
7.759
7.594
7.586
7.584
7.567
7.557
7.553
7.103
7.086
6.993
6.990
6.976
6.973
+
BF4
N
Ph
P
Au
Cl
Ph
Cl
11
10
9
8
7
6
5
4
3
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ppm
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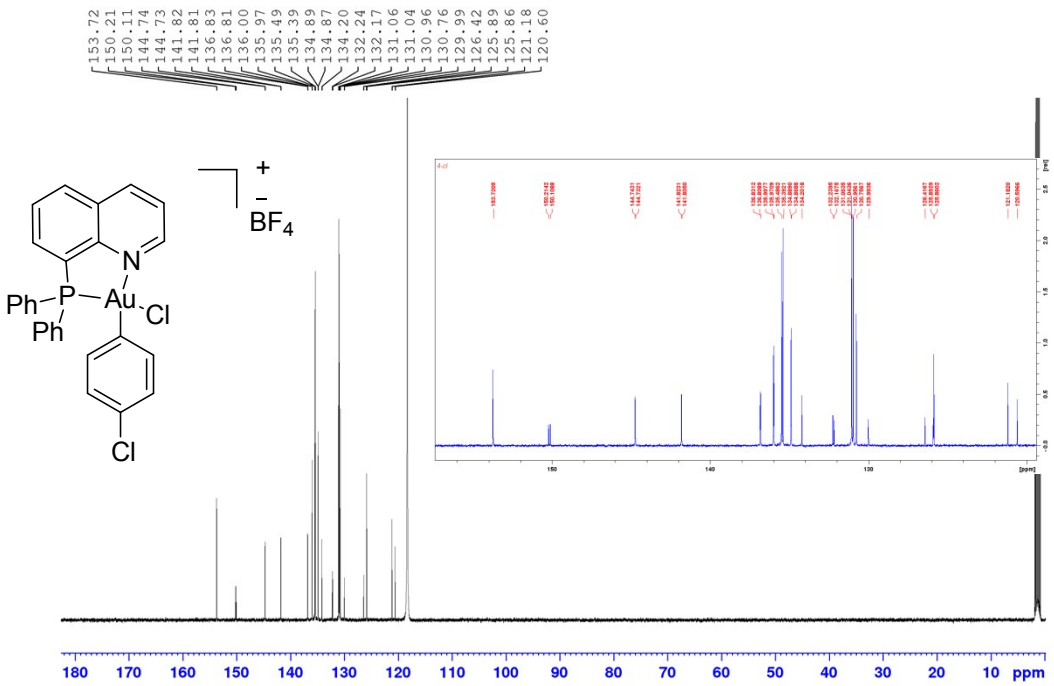
1.01
1.01
1.03
1.04
1.02
2.08
8.22
2.00
2.03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150.11
144.74
144.73
141.82
141.81
136.83
136.81
136.00
135.97
135.49
135.39
134.89
134.87
134.20
132.24
132.17
131.06
131.04
130.96
130.76
129.99
126.42
125.89
125.86
121.18
120.60
+
BF4
N
Ph
P
Au
Cl
Ph
Cl
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150
140
130
120
110
100
90
80
70
60
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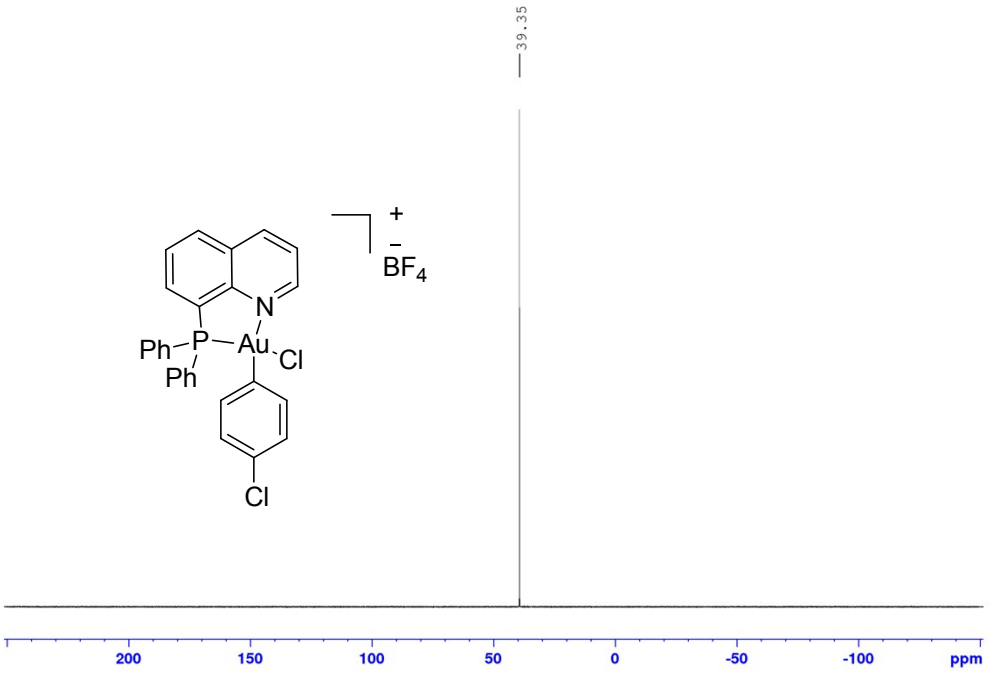
40
30
20
10
ppm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BF4
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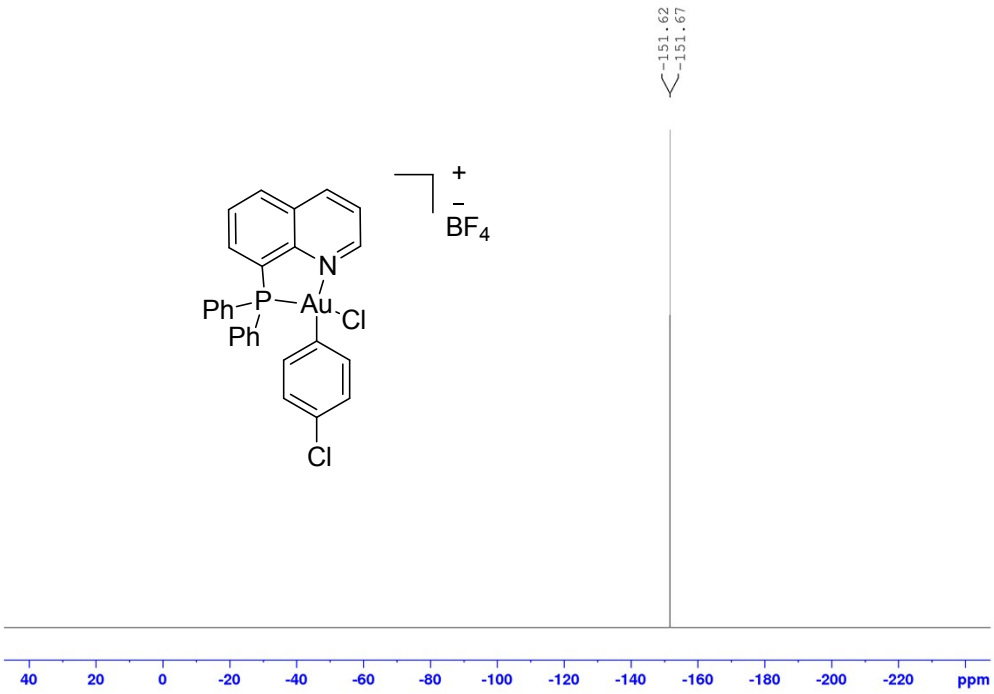
Ph
P
Au
Cl
Ph
Cl
200
150
100
50
0
-50
-100
ppm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-151.67
+
BF4
N
Ph
P
Au
Cl
Ph
Cl
40
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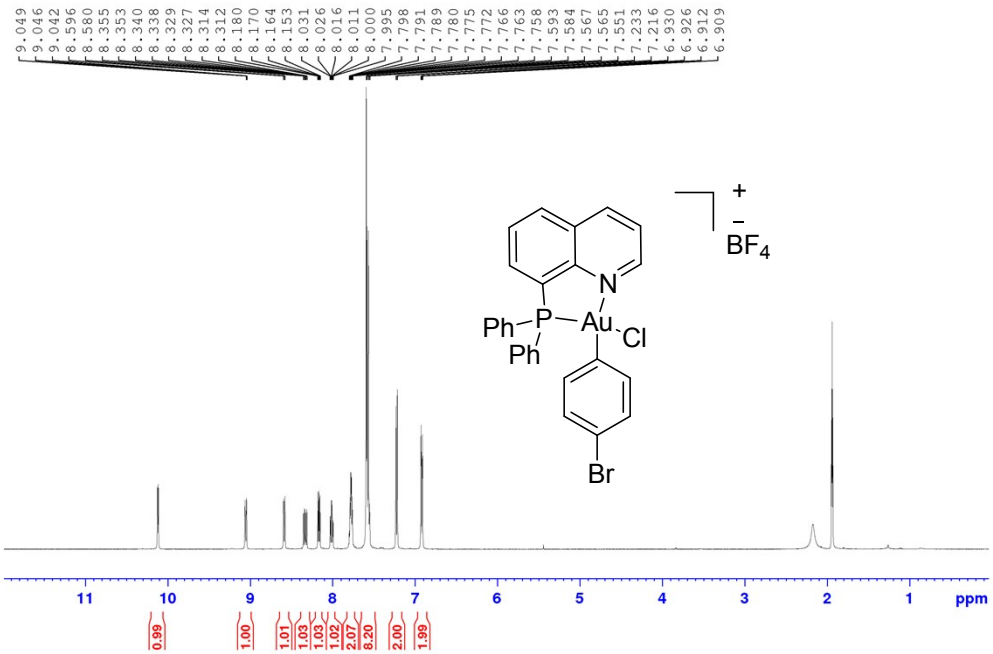
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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8.340
8.338
8.329
8.327
8.314
8.312
8.180
8.170
8.164
8.153
8.031
8.026
8.016
8.011
8.000
7.995
7.798
7.791
7.789
7.780
7.775
7.772
7.766
7.763
7.758
7.593
7.584
7.567
7.565
7.551
7.233
7.216
6.930
6.926
6.912
6.909
+
BF4
N
Ph
P
Au
Cl
Ph
Br
11
10
9
8
7
6
5
4
3
2
1
ppm
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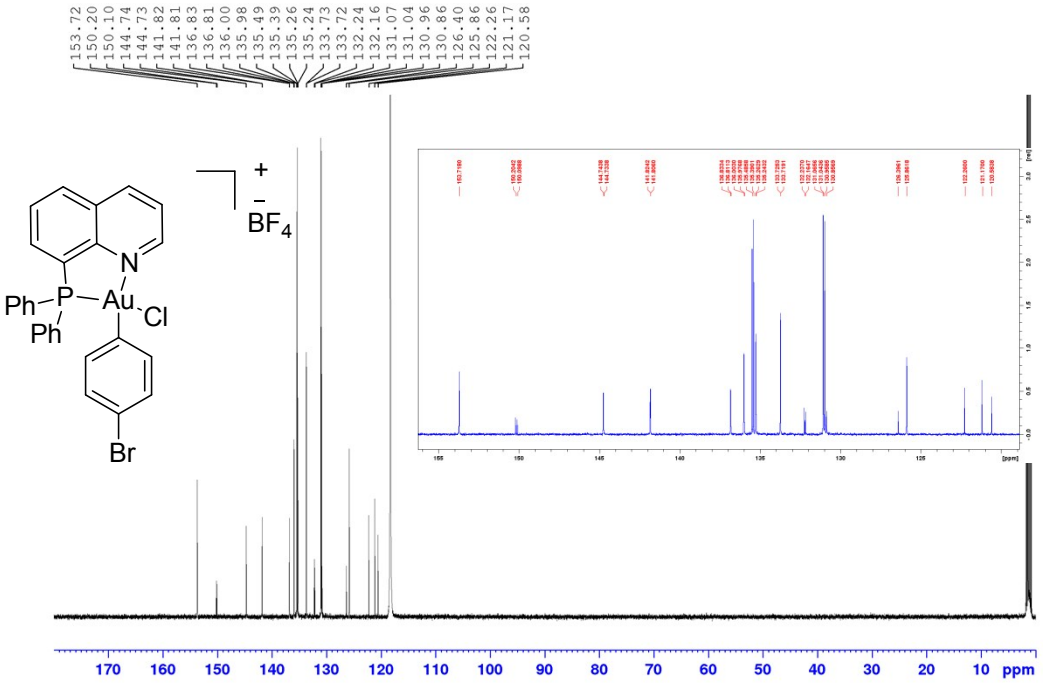
1.00
1.01
1.03
1.03
1.02
2.07
8.20
2.00
1.99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150.20
150.10
144.74
144.73
141.82
141.81
136.83
136.81
136.00
135.98
135.49
135.39
135.26
135.24
133.73
133.72
132.24
132.16
131.07
131.04
130.96
130.86
126.40
125.86
122.26
121.17
120.58
+
BF4
N
Ph
P
Au
Cl
Ph
Br
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150
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110
100
90
80
70
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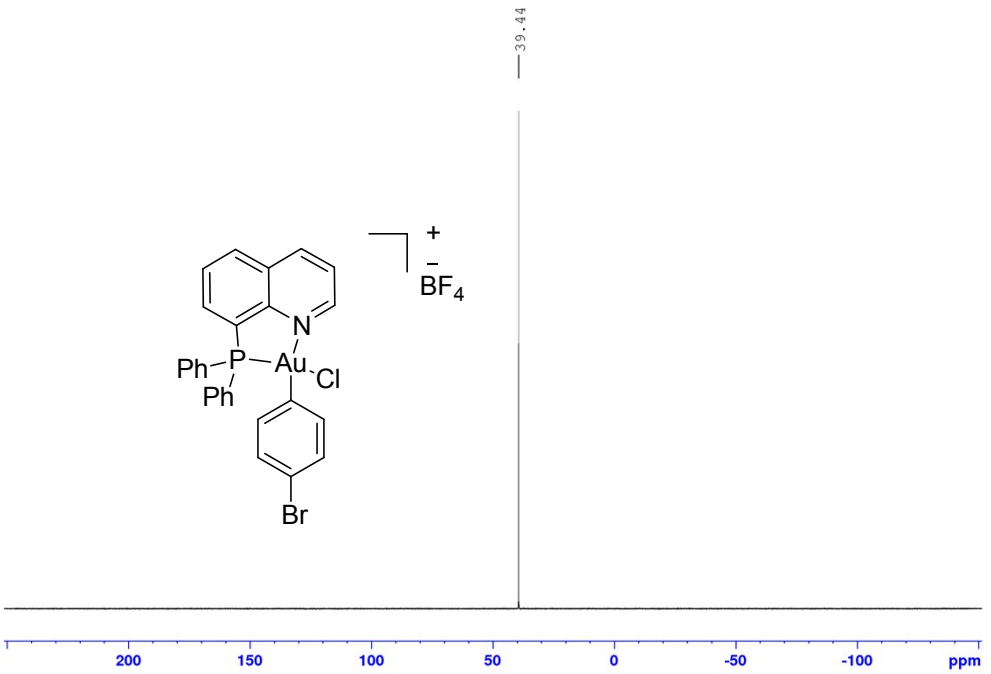
40
30
20
10
ppm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+
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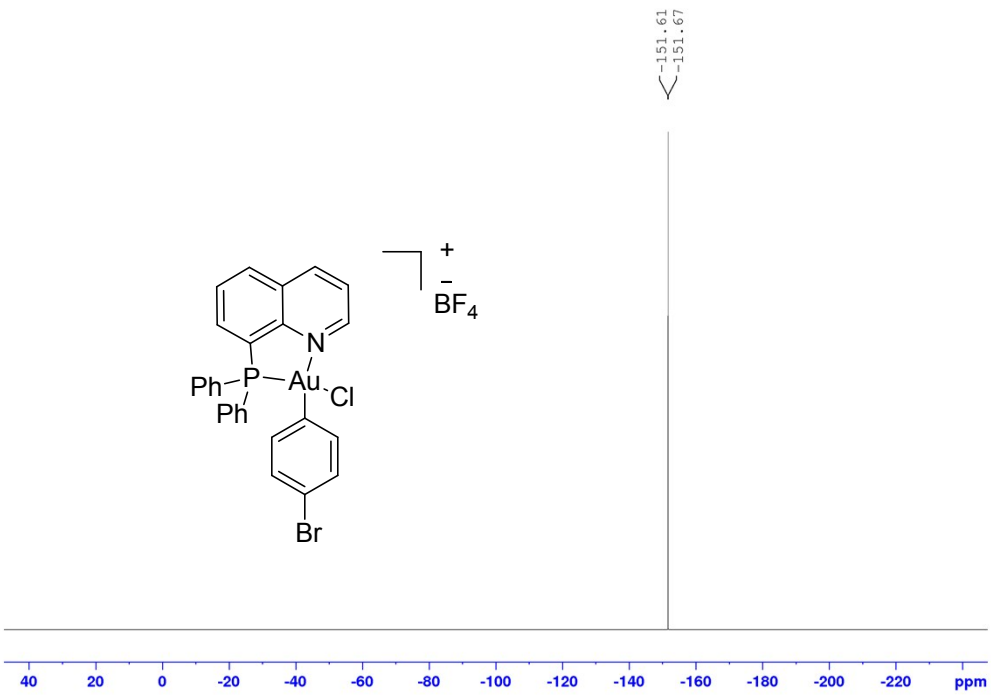
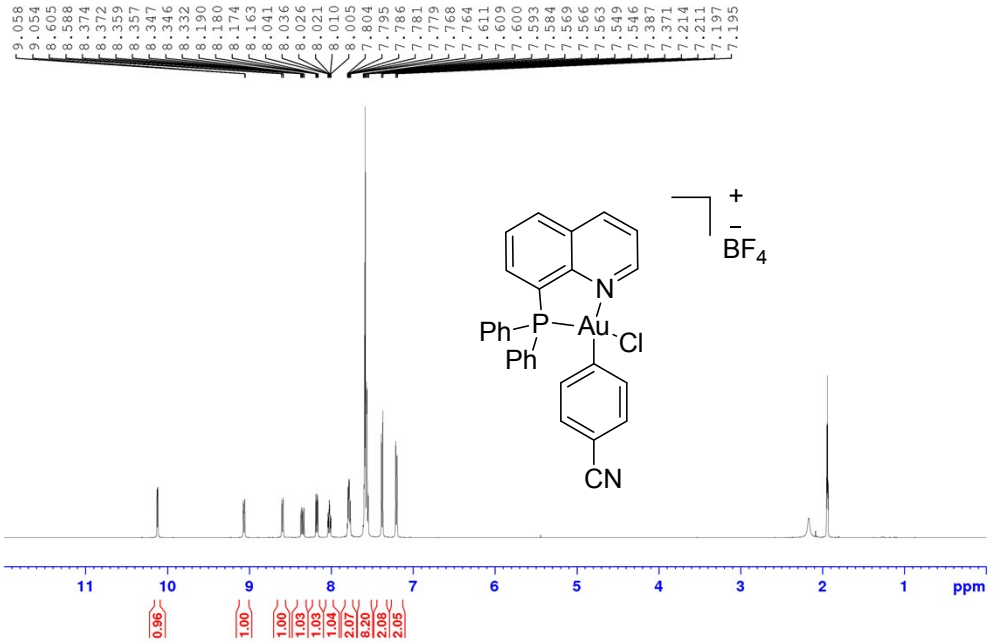
Ph
P
Au
Cl
Ph
Br
200
150
100
50
0
-50
-100
ppm


-151.61
-151.67
+
BF4
N
Ph
P
Au
Cl
Ph
Br
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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9.054
8.605
8.588
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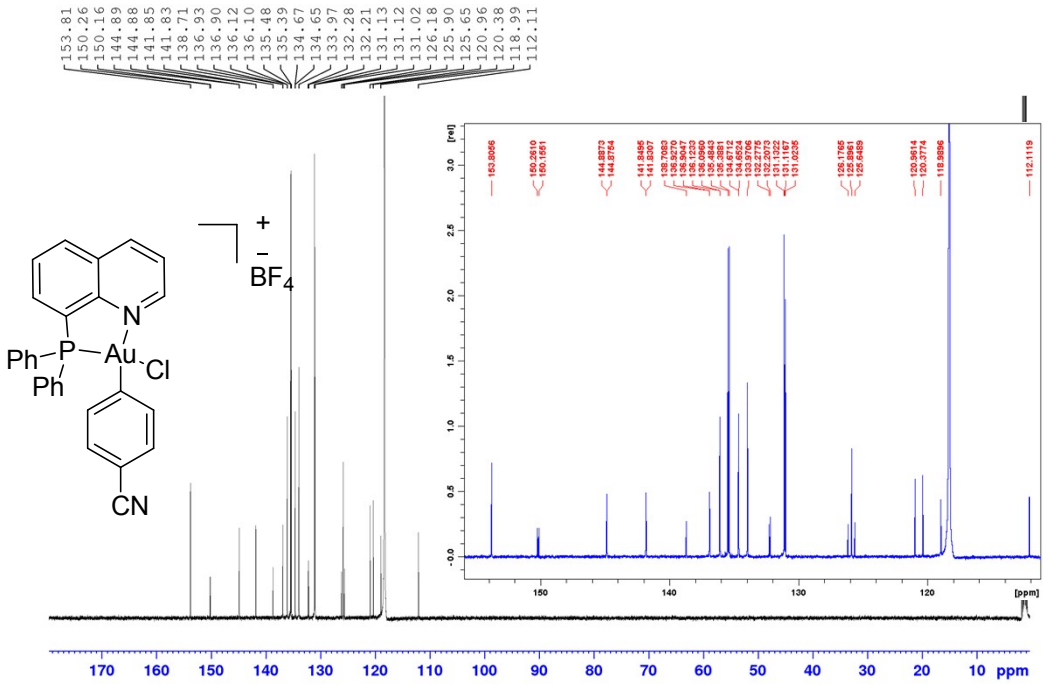
8.372
8.359
8.357
8.347
8.346
8.332
8.190
8.180
8.174
8.163
8.041
8.036
8.026
8.021
8.010
8.005
7.804
7.795
7.786
7.781
7.779
7.768
7.764
7.611
7.609
7.600
7.593
7.584
7.569
7.566
7.563
7.549
7.546
7.387
7.371
7.214
7.211
7.197
7.195
+
BF4
N
Ph
P
Au
Cl
Ph
CN
11
10
9
8
7
6
5
4
3
2
1
ppm
0.96
1.00
1.00
1.03
1.03
1.04
2.07
8.20
2.08
2.05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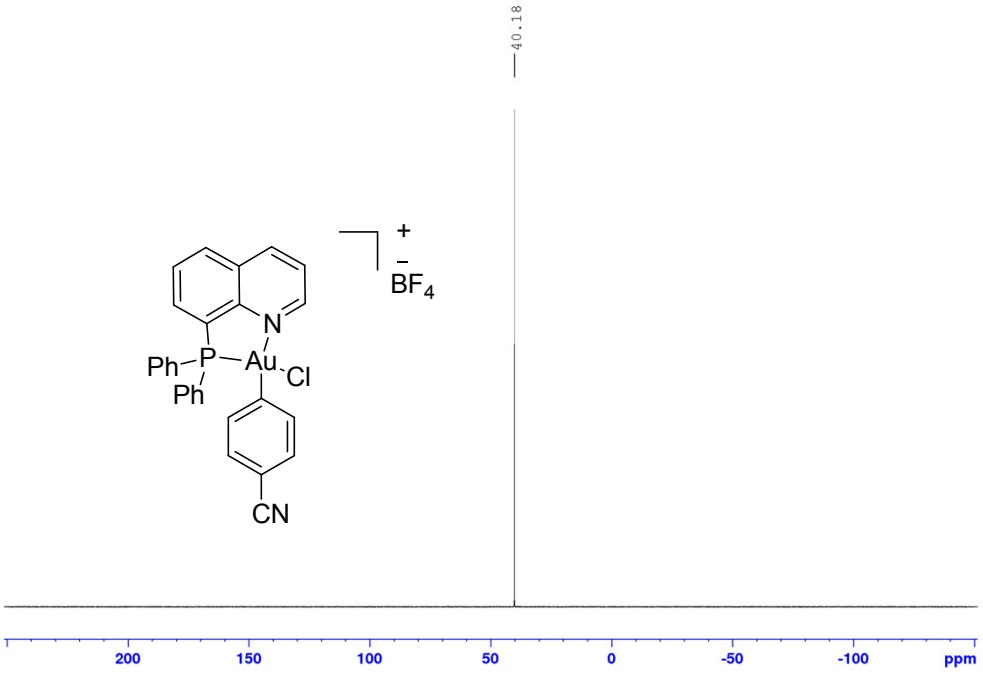
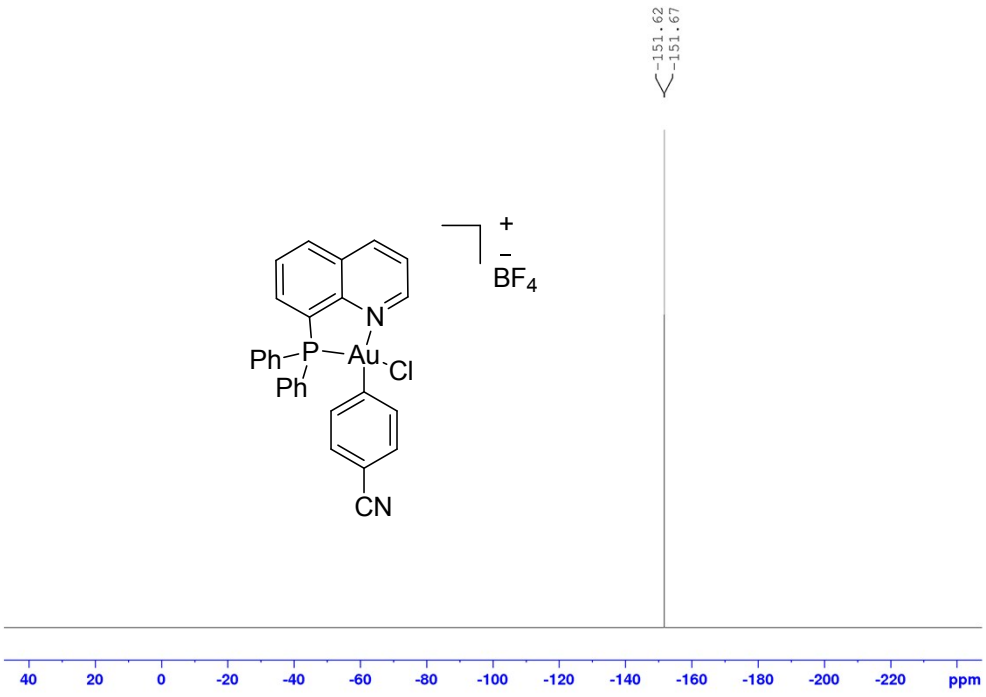
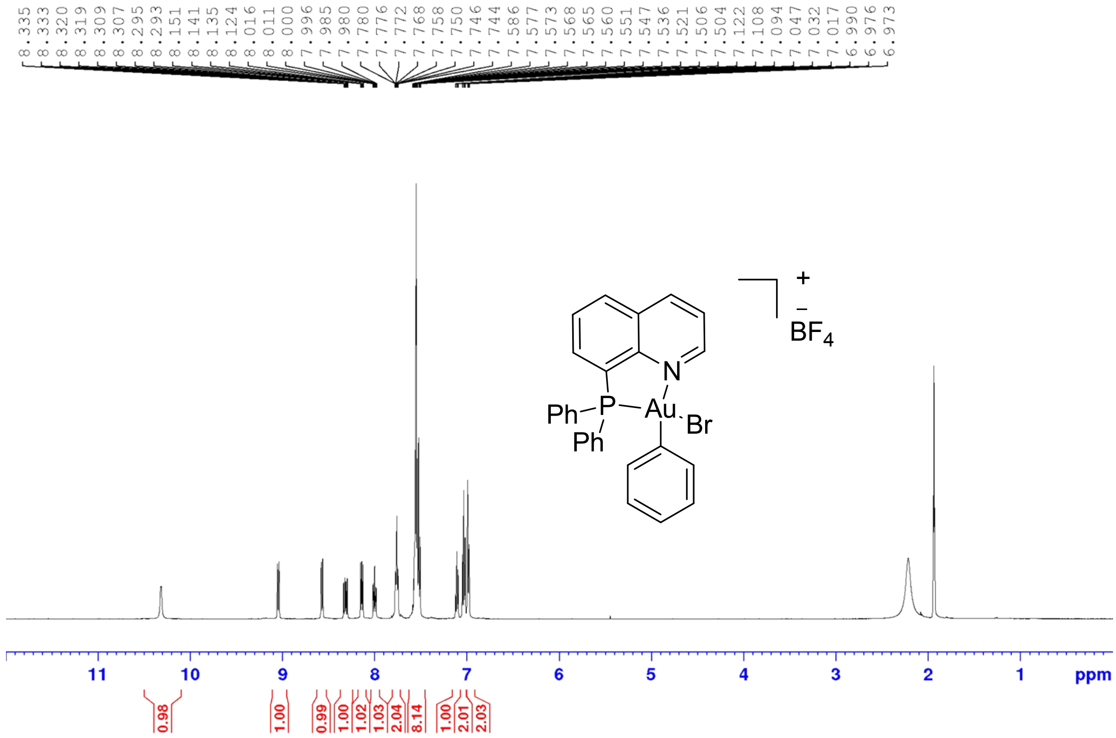
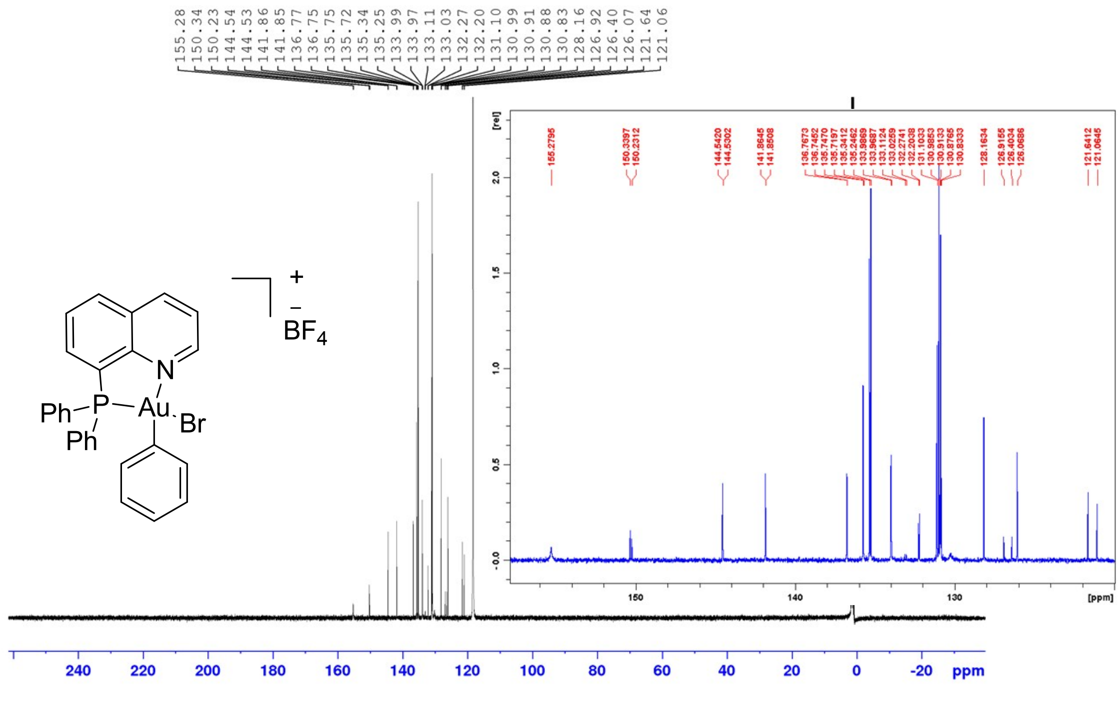
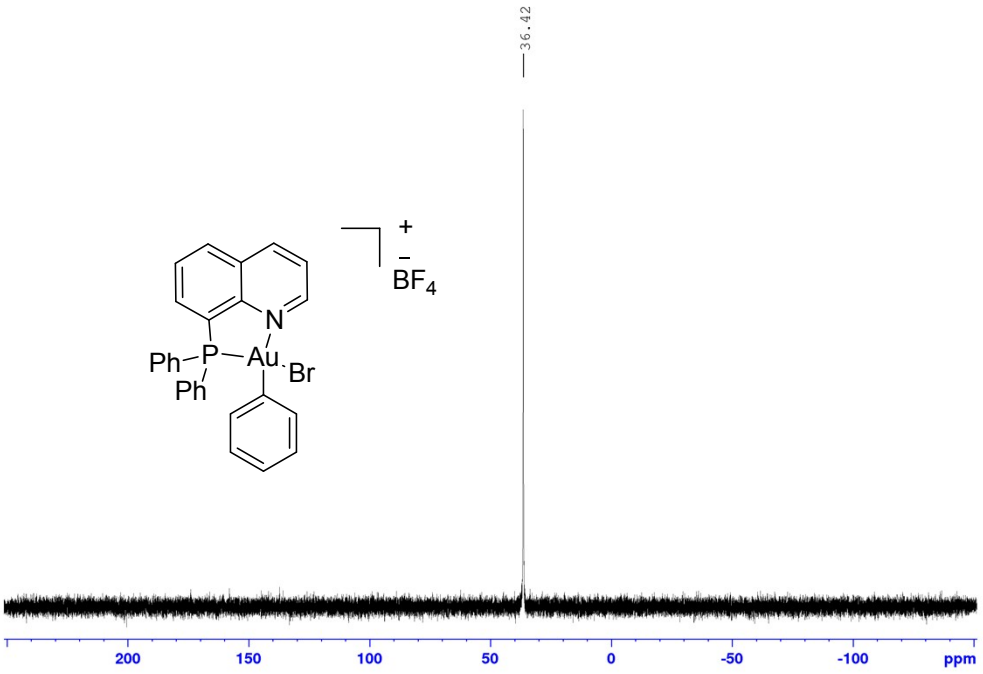
150.16
144.89
144.88
141.85
141.83
138.71
136.93
136.90
136.12
136.10
135.48
135.39
134.67
134.65
133.97
132.28
132.21
131.13
131.12
131.02
126.18
125.90
125.65
120.96
120.38
118.99
112.11
+
BF4
N
Ph
P
Au
Cl
Ph
CN
[ml]
3.0
2.5
2.0
1.5
1.0
0.5
-0.0
150
140
130
120
[ppm]
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

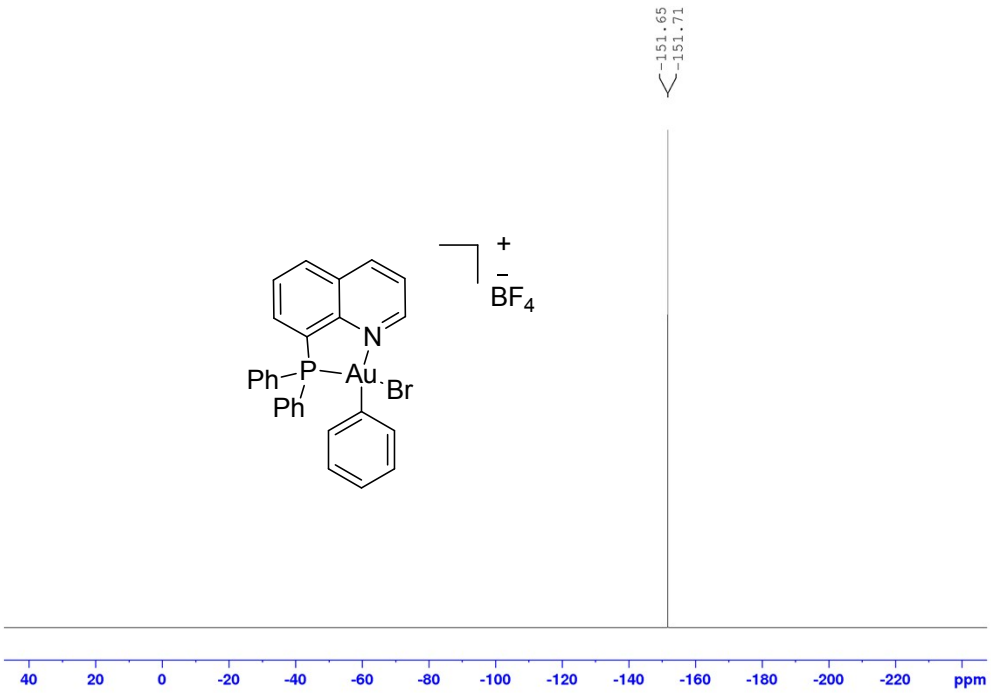

40.18
+
BF4
N
Ph
P
Au
Cl
Ph
CN
200
150
100
50
0
-50
-100
ppm

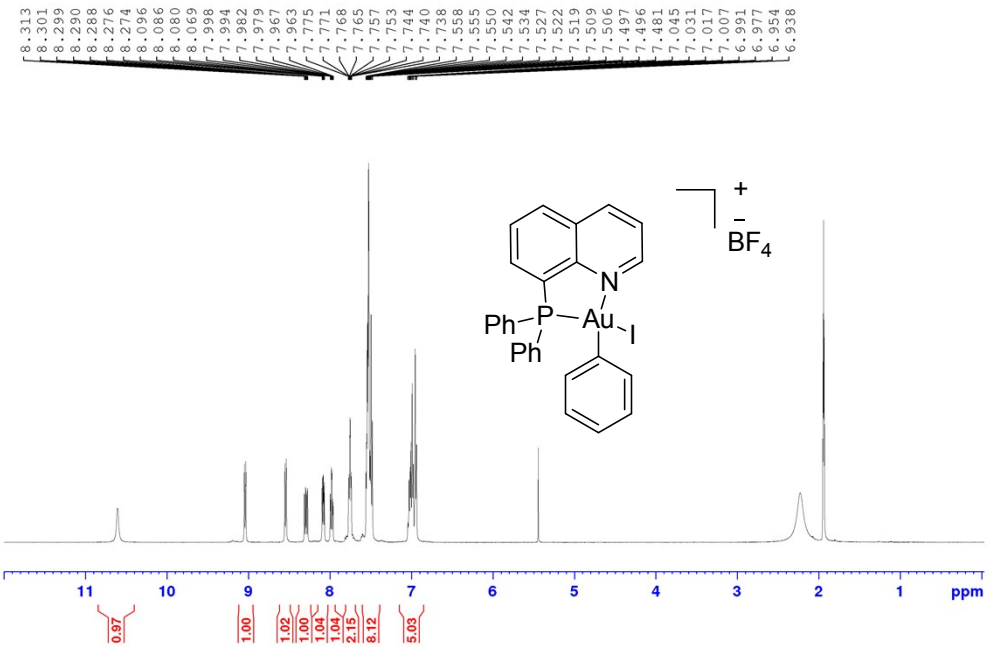

151.62
151.67
+
BF4
N
Ph
P
Au
Cl
Ph
CN
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm

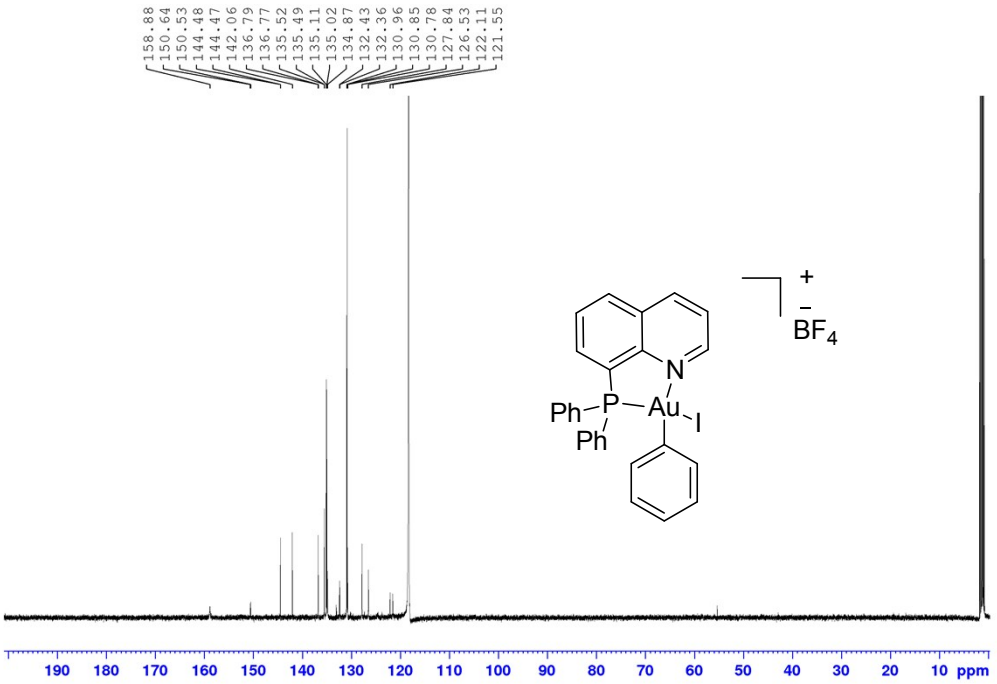





36.42
+
BF4
N
Ph
P
Au
Br
Ph
200
150
100
50
0
-50
-100
ppm


151.65
151.71
+
BF4
N
Ph
P
Au
Br
Ph
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm


8.313
8.301
8.299
8.290
8.288
8.276
8.274
8.096
8.086
8.080
8.069
7.998
7.994
7.982
7.979
7.967
7.963
7.775
7.771
7.768
7.765
7.757
7.753
7.744
7.740
7.738
7.558
7.555
7.550
7.542
7.534
7.527
7.522
7.519
7.509
7.506
7.497
7.496
7.481
7.045
7.031
7.017
7.007
6.991
6.977
6.954
6.938
N
Ph
P
Au
I
Ph
+
BF4
11
10
9
8
7
6
5
4
3
2
1
ppm
0.97
1.00
1.02
1.00
1.04
1.04
2.15
8.12
5.03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150.53
144.48
144.47
142.06
136.79
136.77
135.52
135.49
135.11
135.02
134.87
132.43
132.36
130.96
130.85
130.78
127.84
126.53
122.11
121.55
N
Ph
P
Au
I
Ph
+
BF4
190
180
170
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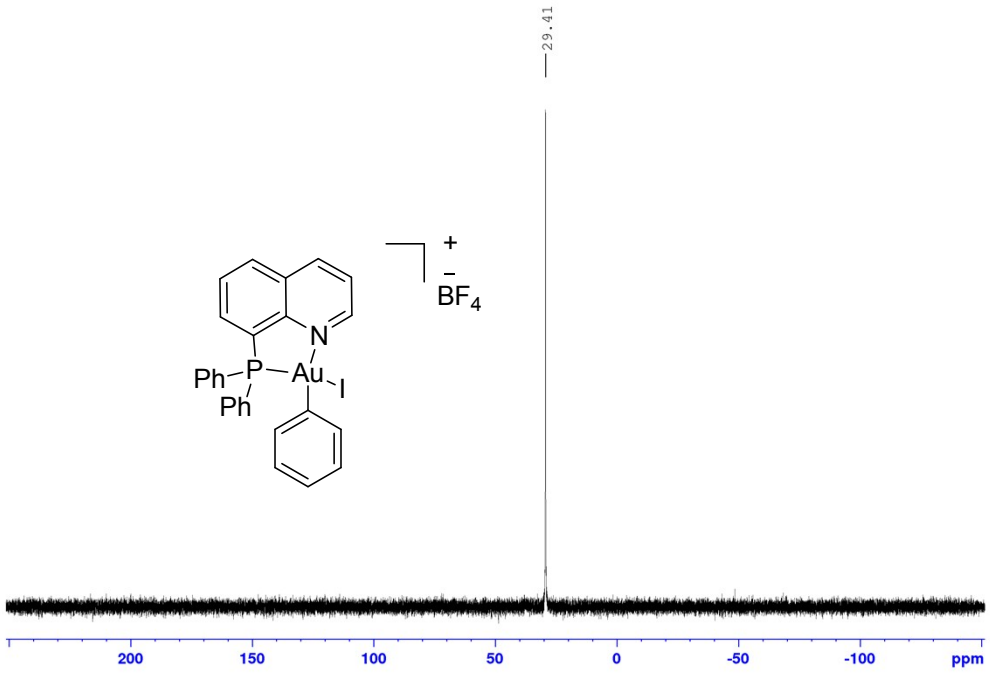
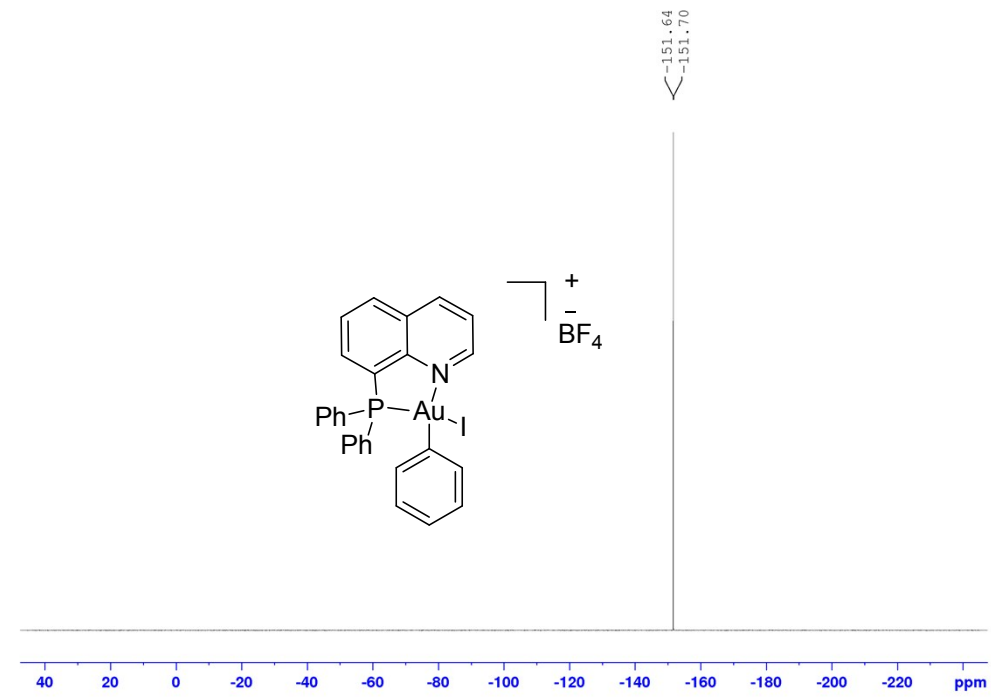
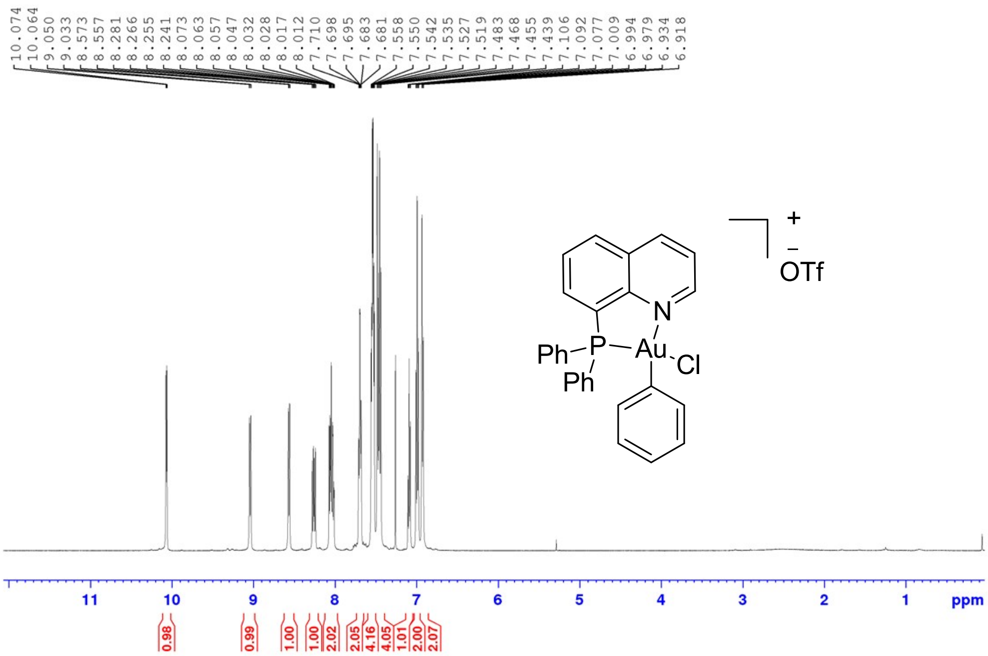
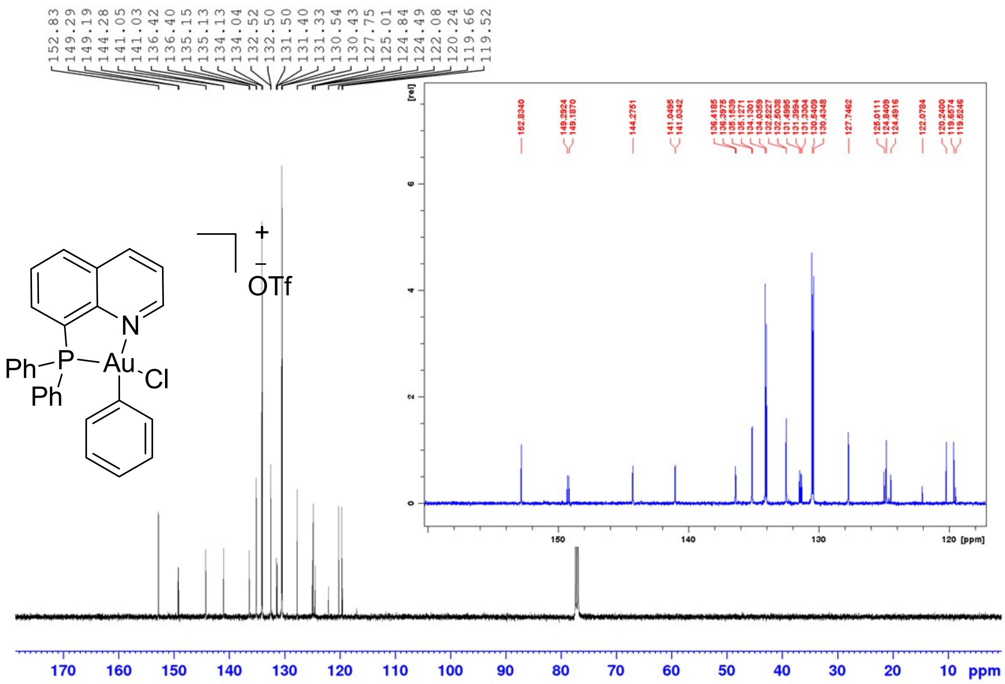
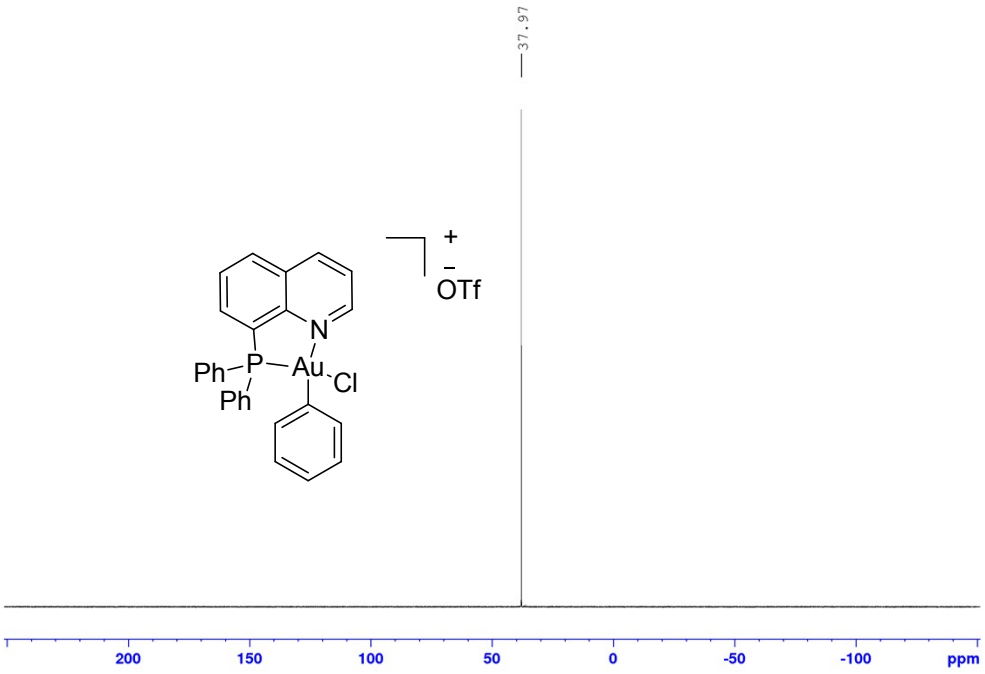
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
ppm

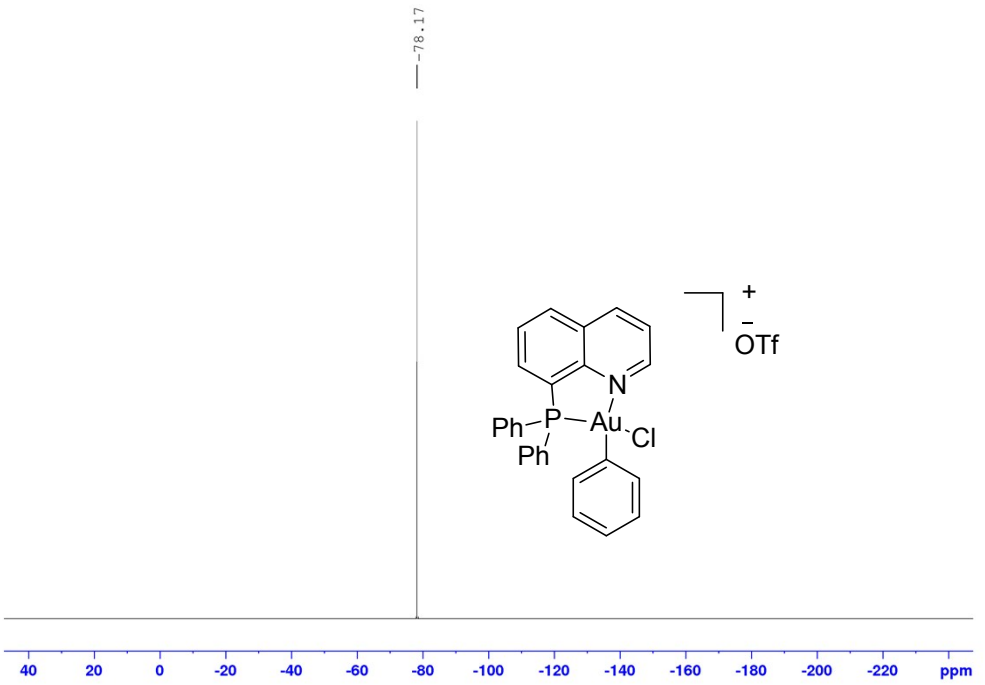

29.41
N
Ph
P
Au
I
Ph
+
BF4
200
150
100
50
0
-50
-100
ppm

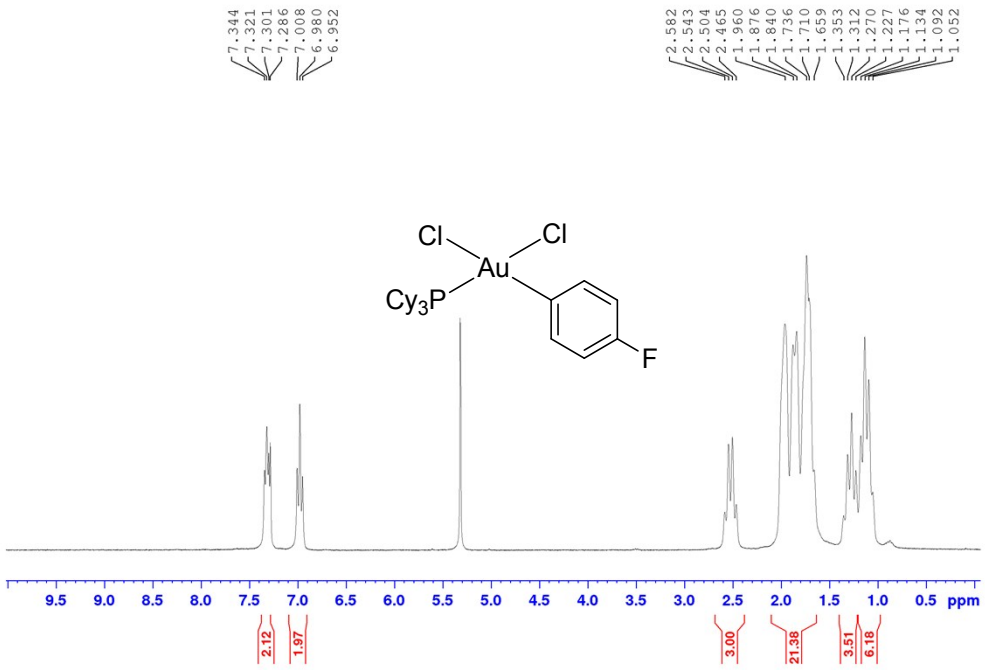

-151.64
-151.70
N
Ph
P
Au
I
Ph
+
BF4
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm


10.074 10.064 9.050 9.033 8.573 8.557 8.281 8.266 8.255 8.241 8.073 8.063 8.057 8.047 8.032 8.028 8.017 8.012 7.710 7.698 7.695 7.683 7.681 7.558 7.550 7.542 7.535 7.527 7.519 7.483 7.468 7.455 7.439 7.106 7.092 7.077 7.009 6.994 6.979 6.934 6.918
N
Ph
P
Ph
Au
Cl
+
−
OTf
11 10 9 8 7 6 5 4 3 2 1 ppm
0.98 0.99 1.00 1.00 2.02 2.05 4.16 4.05 1.01 2.00 2.07


152.83 149.29 149.19 144.28 141.05 141.03 136.42 136.40 135.15 135.13 134.13 134.04 132.52 132.50 131.50 131.40 131.33 130.54 130.43 127.75 125.01 124.84 124.49 122.08 120.24 119.66 119.52
N
Ph
P
Ph
Au
Cl
+
−
OTf
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm
[rel]
150 140 130 120 [ppm]


37.97
N
Ph
P
Au
Cl
Ph
+
OTf
200
150
100
50
0
-50
-100
ppm


-78.17
N
Ph
P
Au
Cl
Ph
+
OTf
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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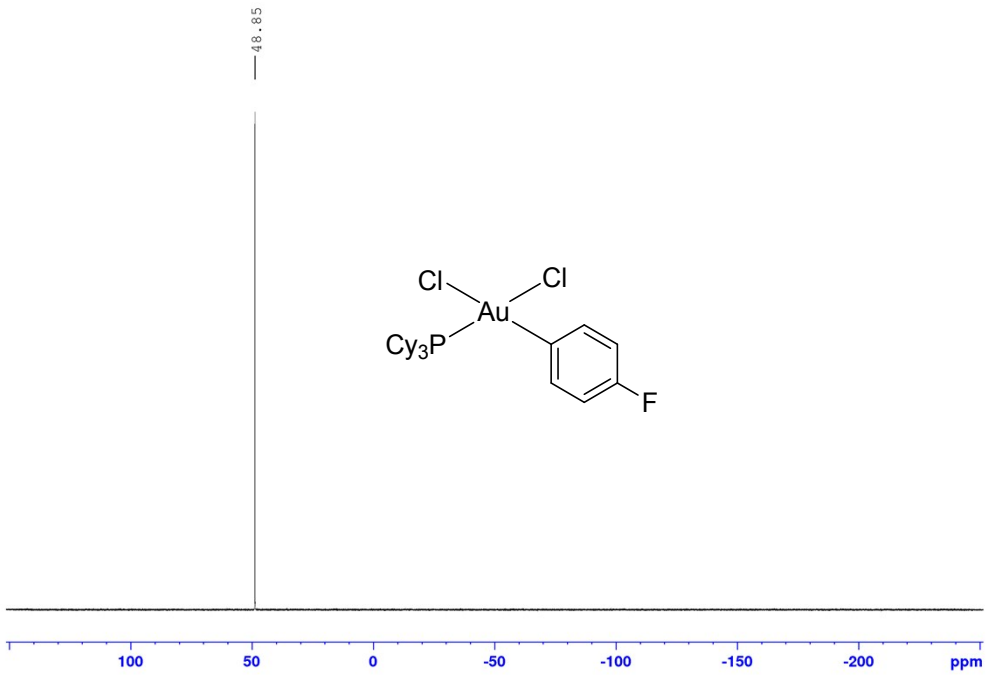
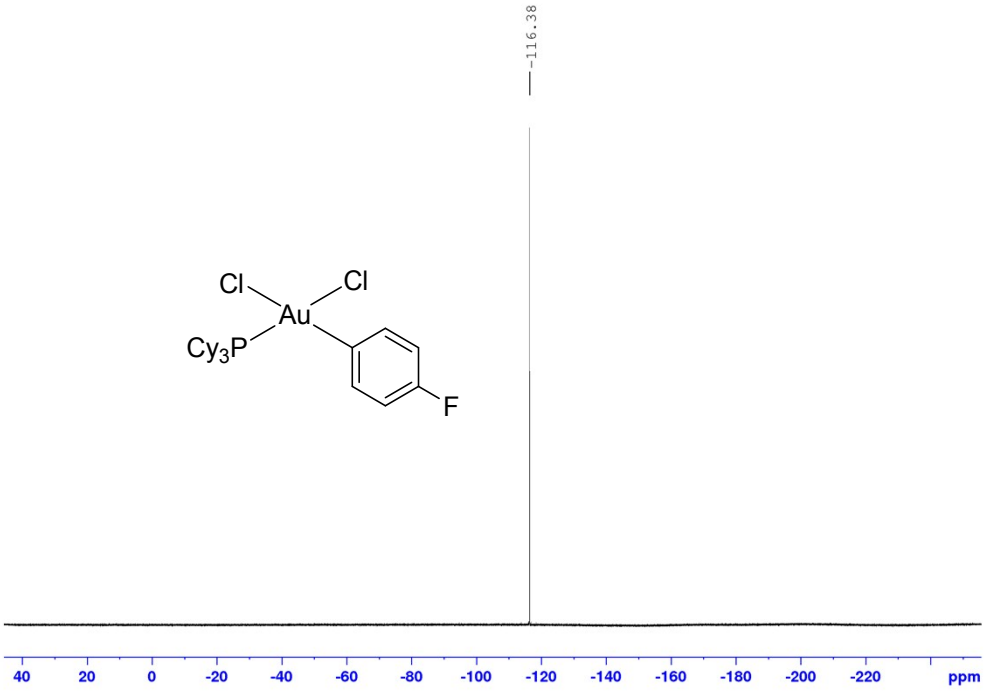
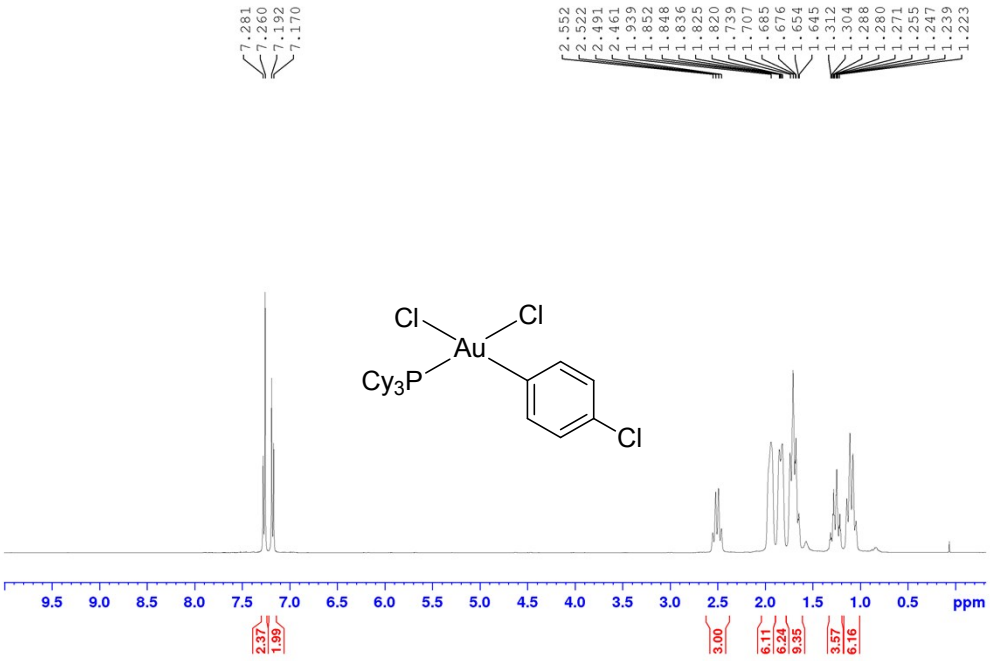
7.321
7.301
7.286
7.008
6.980
6.952
2.582
2.543
2.504
2.465
1.960
1.876
1.840
1.736
1.710
1.659
1.353
1.312
1.270
1.227
1.176
1.134
1.092
1.052
Cl
Cl
Au
Cy3P
F
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
2.12
1.97
3.00
21.38
3.51
6.18


48.85
Cl
Cl
Au
Cy3P
F
100 50 0 -50 -100 -150 -200 ppm


-116.38
Cl
Cl
Au
Cy3P
F
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm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7.192
7.170
2.552
2.522
2.491
2.461
1.939
1.852
1.848
1.836
1.825
1.820
1.739
1.707
1.685
1.676
1.654
1.645
1.312
1.304
1.288
1.280
1.271
1.255
1.247
1.239
1.223
Cl
Cl
Au
Cy3P
Cl
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
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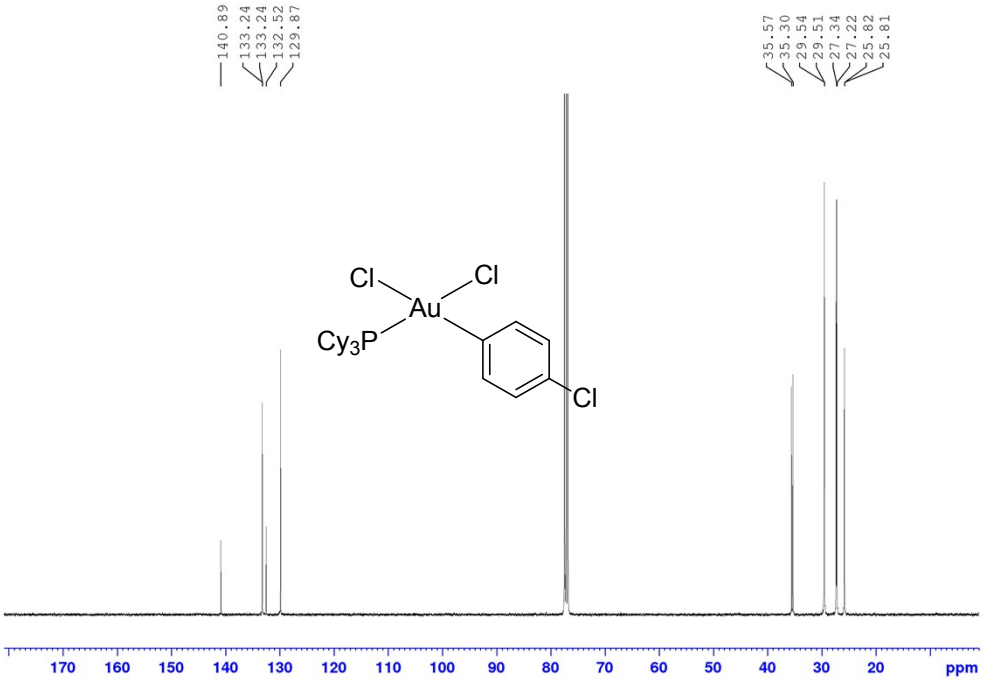
1.99
3.00
6.11
6.24
9.35
3.57
6.16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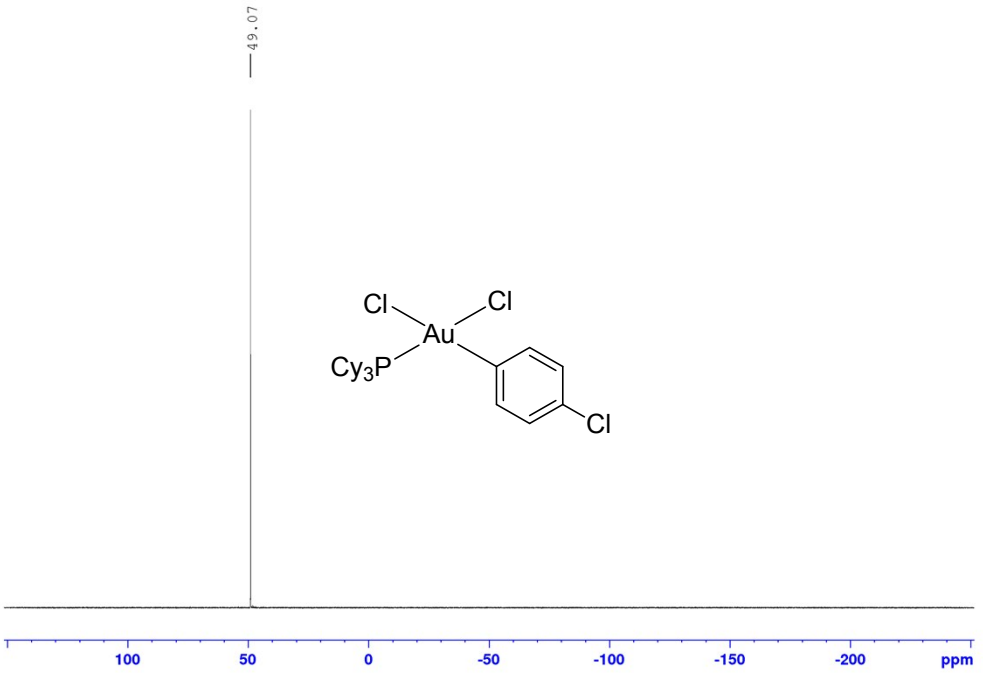
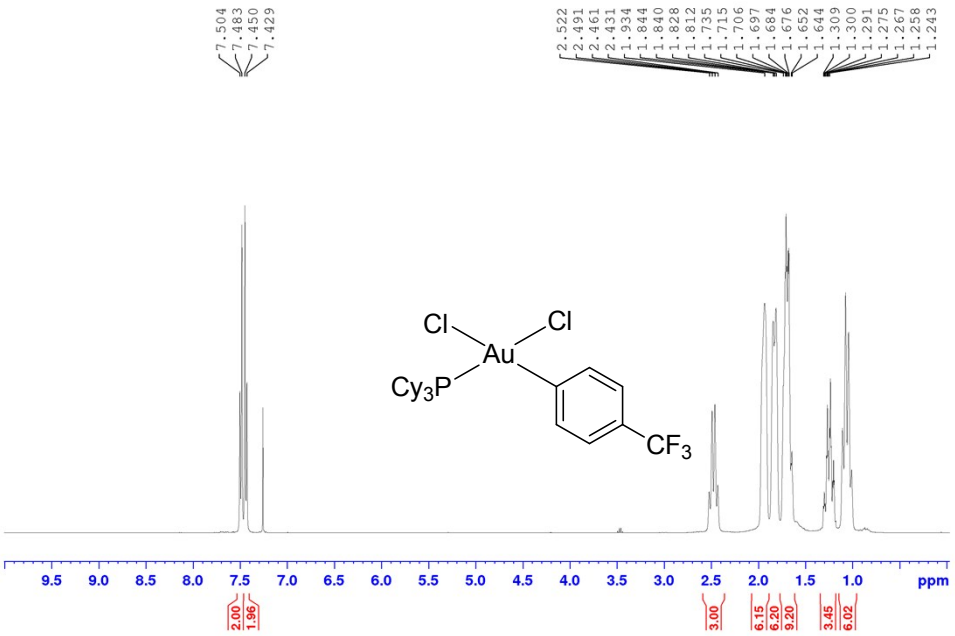
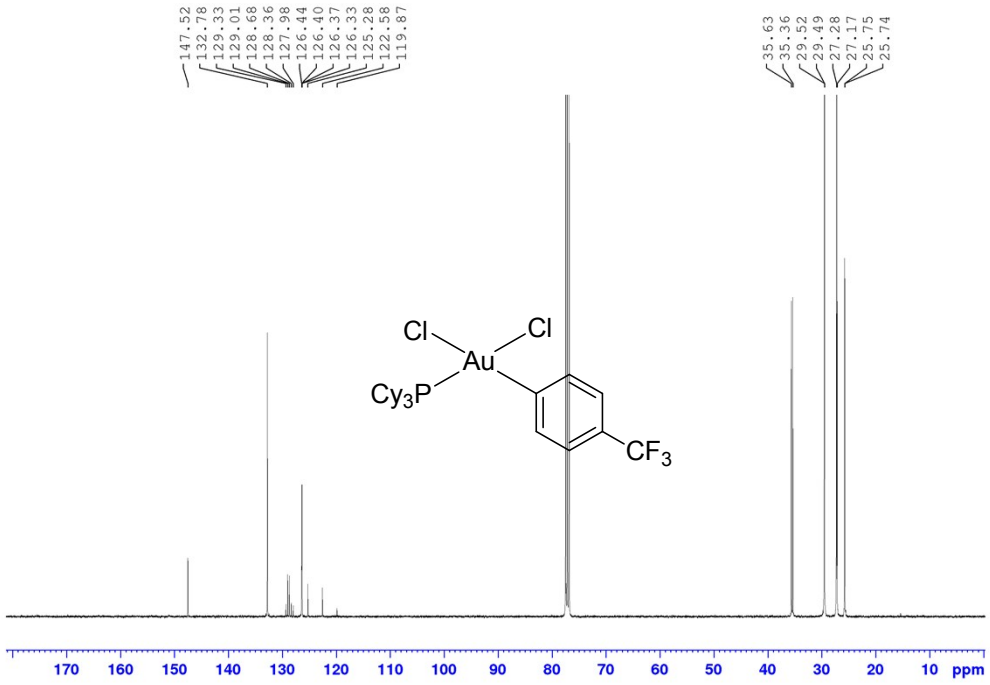
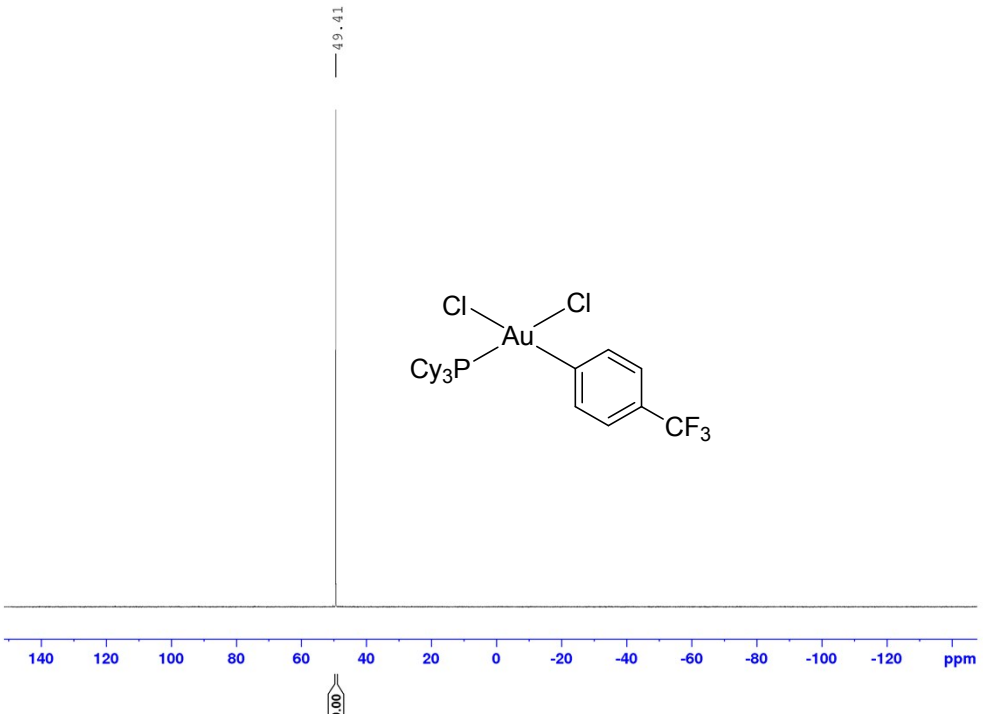
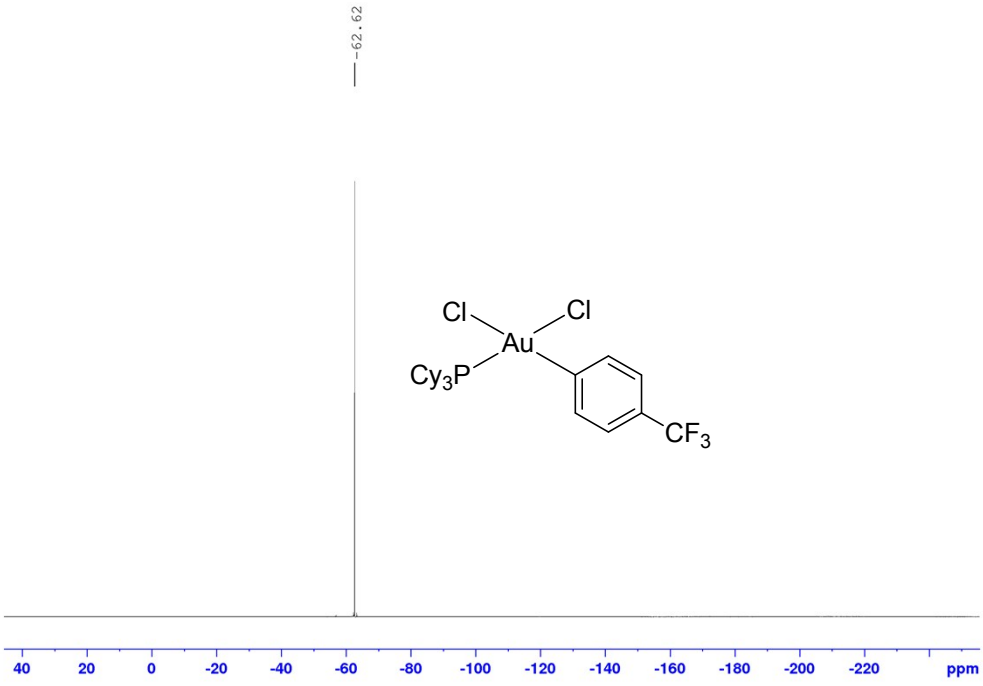
133.24
133.24
132.52
129.87
35.57
35.30
29.54
29.51
27.34
27.22
25.82
25.81
Cl
Cl
Au
Cy3P
Cl
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
ppm

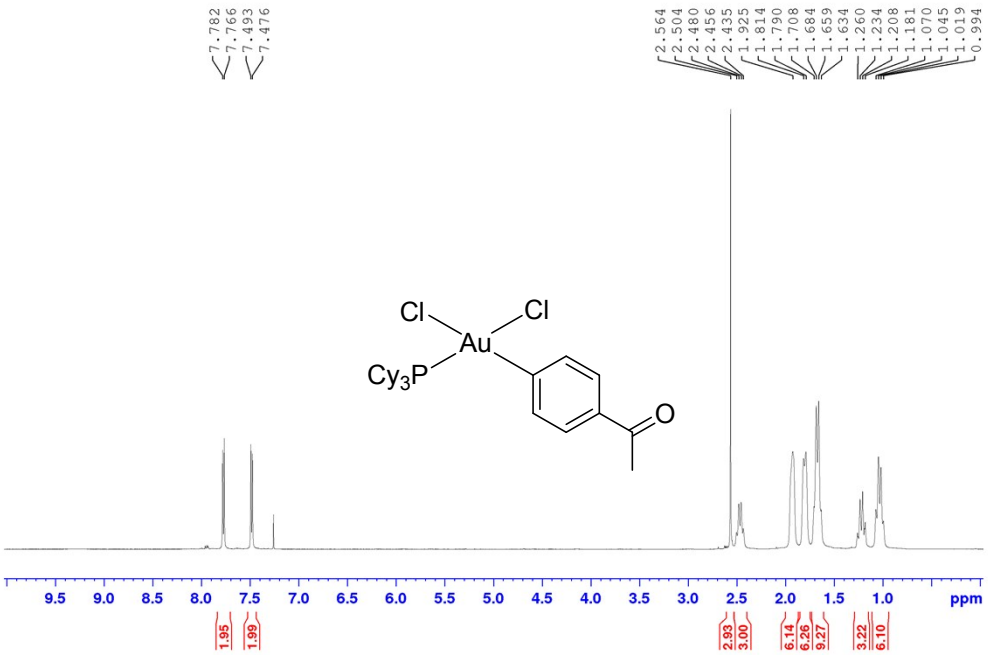

49.07
Cl
Cl
Au
Cy3P
Cl
100
50
0
-50
-100
-150
-200
ppm


7.504
7.483
7.450
7.429
2.522
2.491
2.461
2.431
1.934
1.844
1.840
1.828
1.812
1.735
1.715
1.706
1.697
1.684
1.676
1.652
1.644
1.309
1.300
1.291
1.275
1.267
1.258
1.243
Cl
Cl
Au
Cy3P
CF3
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
2.00
1.96
3.00
6.15
6.20
9.20
3.45
6.02

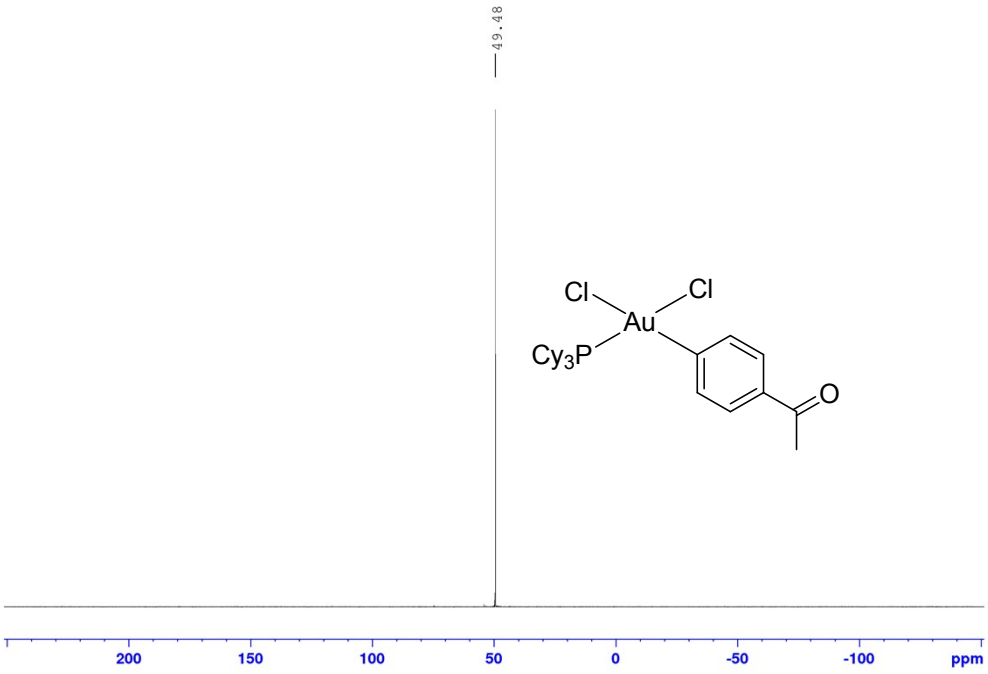

147.52
132.78
129.33
129.01
128.68
128.36
127.98
126.44
126.40
126.37
126.33
125.28
122.58
119.87
35.63
35.36
29.52
29.49
27.28
27.17
25.75
25.74
Cl
Cl
Au
Cy3P
CF3
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

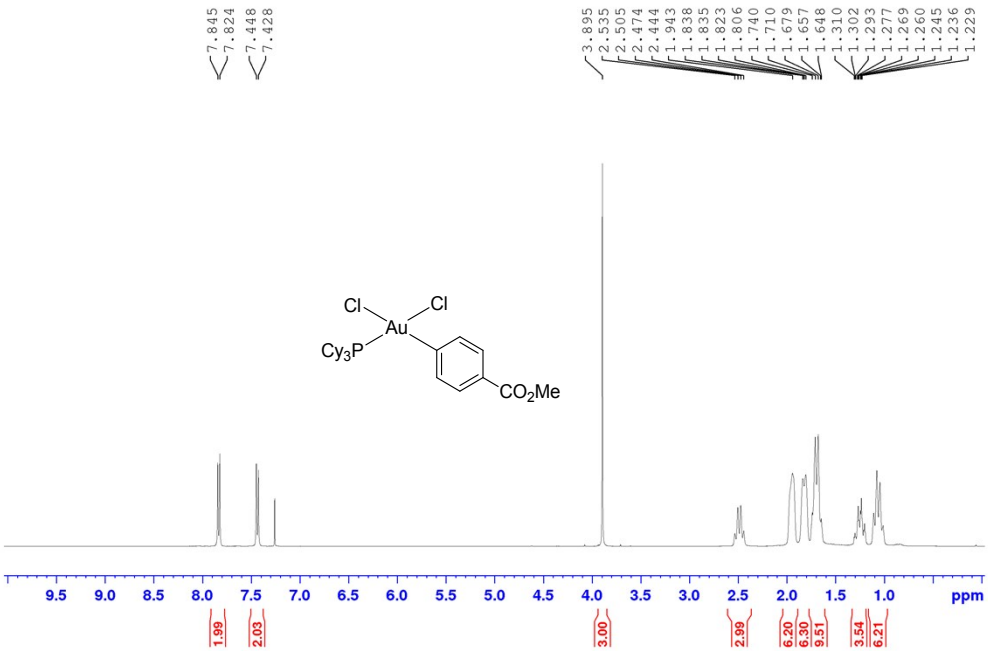

49.41
Cl
Cl
Au
Cy3P
CF3
140
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
ppm
1.00

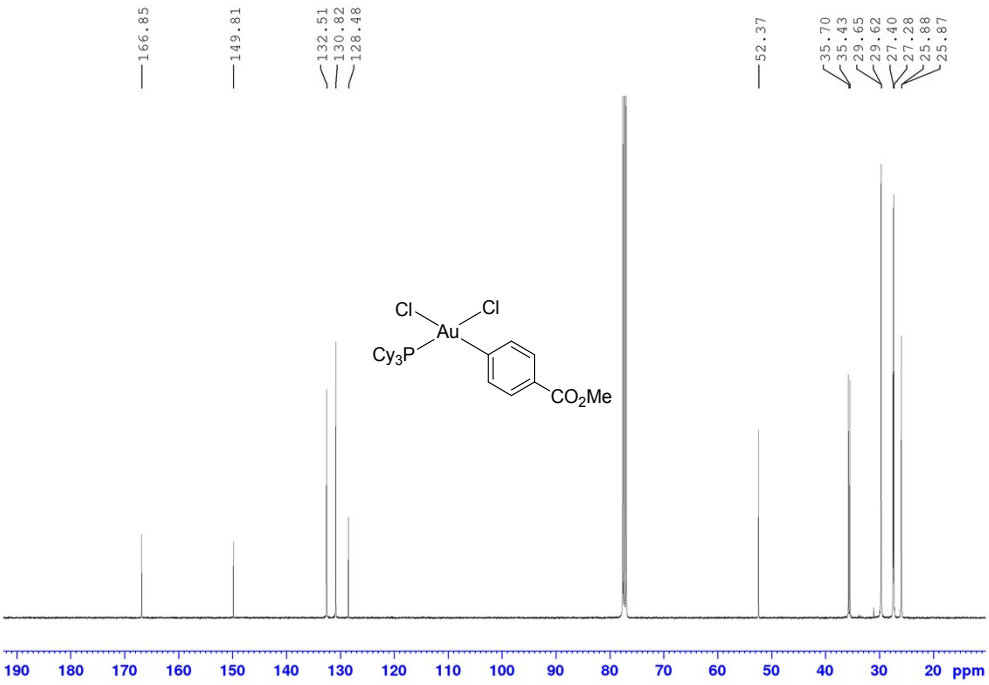

62.62
Cl
Cl
Au
Cy3P
CF3
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm

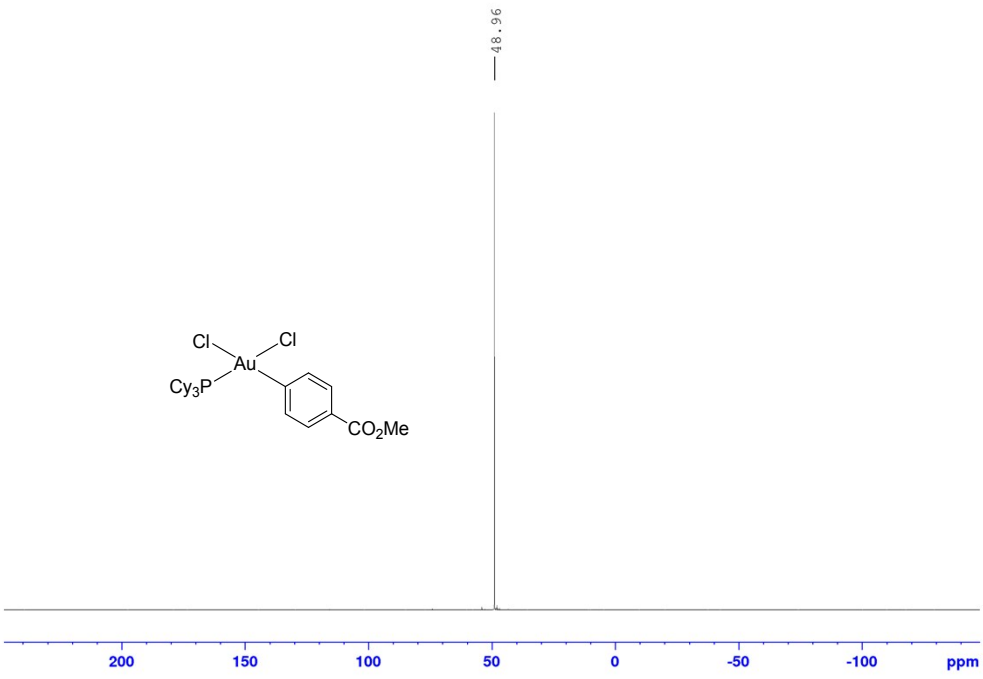

7.782
7.766
7.493
7.476
2.564
2.504
2.480
2.456
2.435
1.925
1.814
1.790
1.708
1.684
1.659
1.634
1.260
1.234
1.208
1.181
1.070
1.045
1.019
0.994
Cl
Cl
Au
Cy3P
O
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
1.95
1.99
2.93
3.00
6.14
6.26
9.27
3.22
6.10

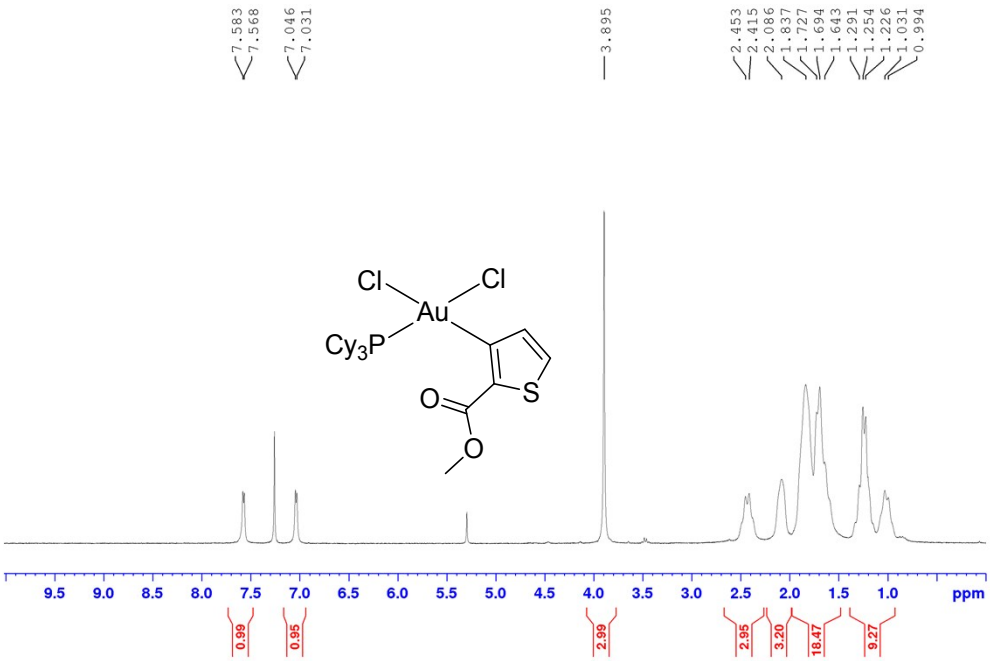

197.77
150.27
135.36
132.64
129.61
35.59
35.38
29.57
29.54
27.33
27.23
26.82
25.80
25.79
Cl
Cl
Au
Cy3P
O
210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 ppm

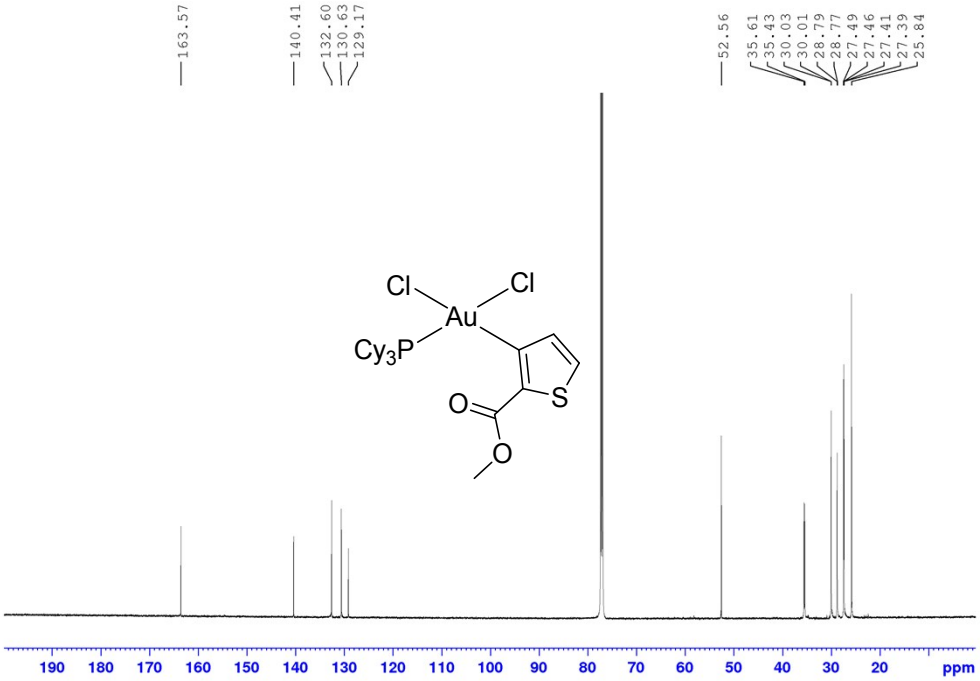

49.48
Cl
Cl
Au
Cy3P
O
200
150
100
50
0
-50
-100
ppm

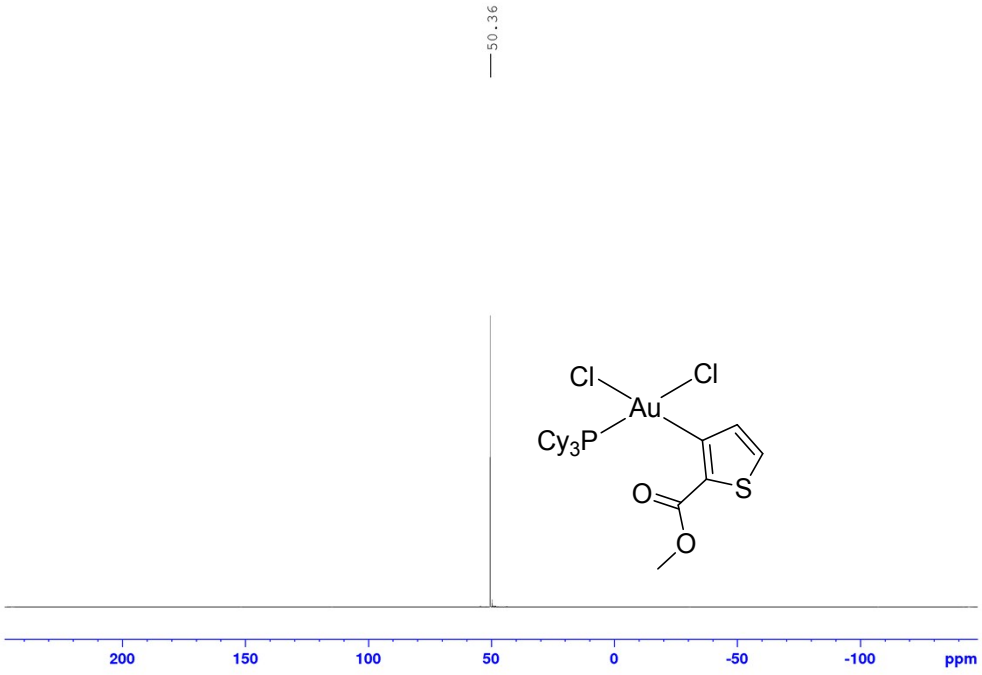

7.845
7.824
7.448
7.428
3.895
2.535
2.505
2.474
2.444
1.943
1.838
1.835
1.823
1.806
1.740
1.710
1.679
1.657
1.648
1.310
1.302
1.293
1.277
1.269
1.260
1.245
1.236
1.229
Cl
Cl
Au
Cy3P
CO2Me
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
1.99
2.03
3.00
2.99
6.20
6.30
9.51
3.54
6.21

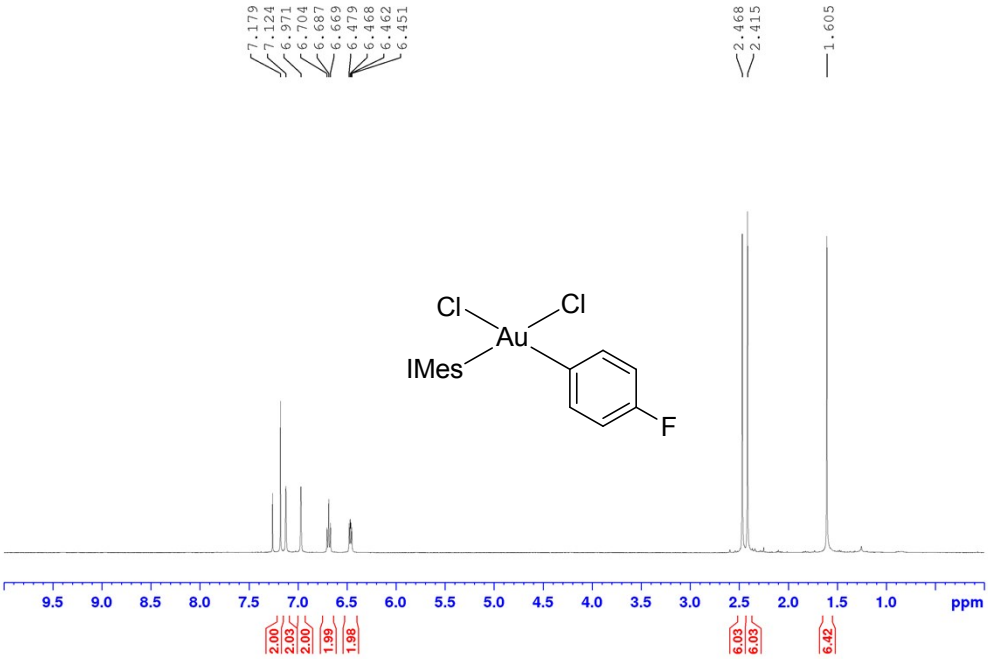

166.85
149.81
132.51
130.82
128.48
52.37
35.70
35.43
29.65
29.62
27.40
27.28
25.88
25.87
Cl
Cl
Au
Cy3P
CO2Me
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm

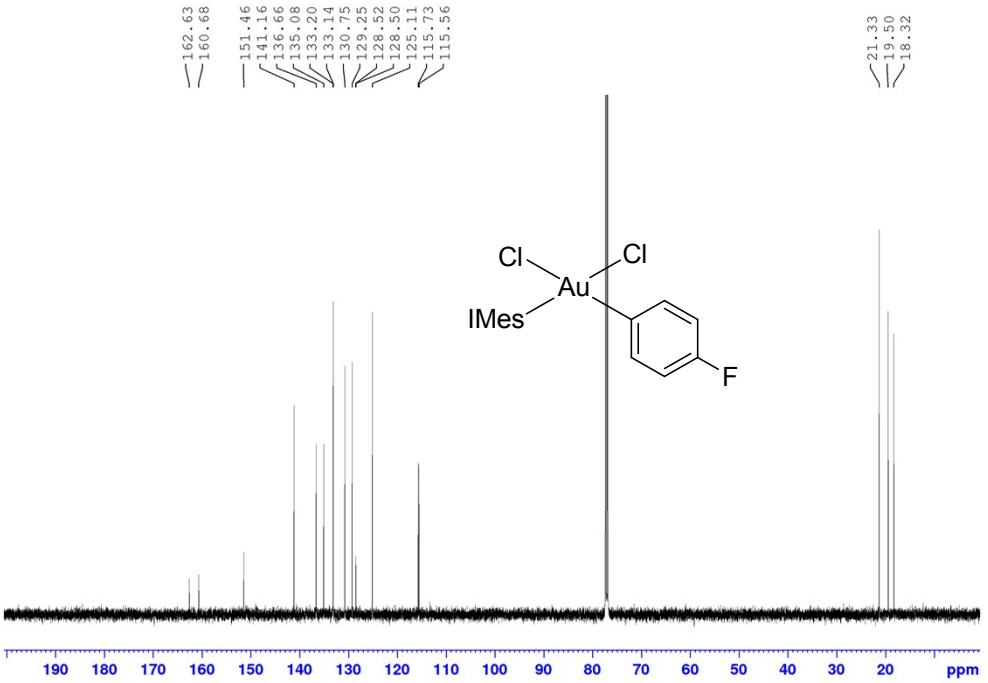

48.96
Cl
Cl
Au
Cy3P
CO2Me
200
150
100
50
0
-50
-100
ppm

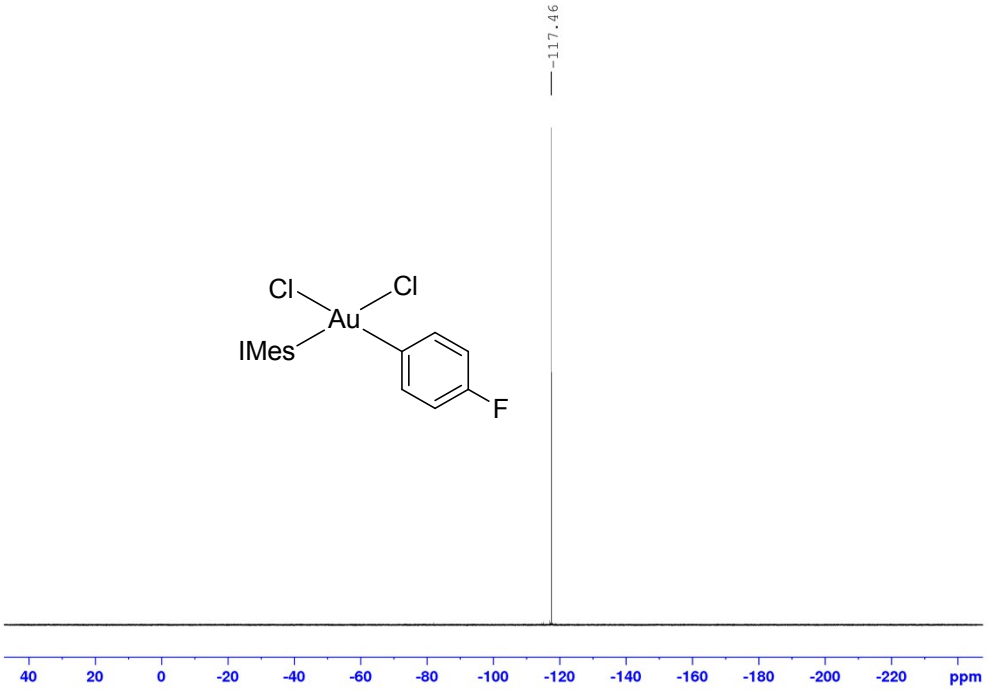

7.583
7.568
7.046
7.031
3.895
2.453
2.415
2.086
1.837
1.727
1.694
1.643
1.291
1.254
1.226
1.031
0.994
Cl
Cl
Au
Cy3P
O
S
O
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
0.99
0.95
2.99
2.95
3.20
18.47
9.27


163.57
140.41
132.60
130.63
129.17
52.56
35.61
35.43
30.03
30.01
28.79
28.77
27.49
27.46
27.41
27.39
25.84
Cl
Cl
Au
Cy3P
O
S
O
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm


50.36
Cl
Cl
Au
Cy3P
O
S
O
200
150
100
50
0
-50
-100
ppm


7.179
7.124
6.971
6.704
6.687
6.669
6.479
6.468
6.462
6.451
2.468
2.415
1.605
Cl
Cl
Au
IMes
F
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 ppm
2.00
2.03
2.00
1.99
1.98
6.03
6.03
6.42


162.63
160.68
151.46
141.16
136.66
135.08
133.20
133.14
130.75
129.25
128.52
128.50
125.11
115.73
115.56
21.33
19.50
18.32
Cl
Cl
Au
IMes
F
190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 ppm


-117.46
Cl
Cl
Au
IMes
F
40
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
-200
-220
ppm