Reactivity of a Gold(I)/Platinum(0) Frustrated Lewis Pair with Germanium and Tin Dihalides

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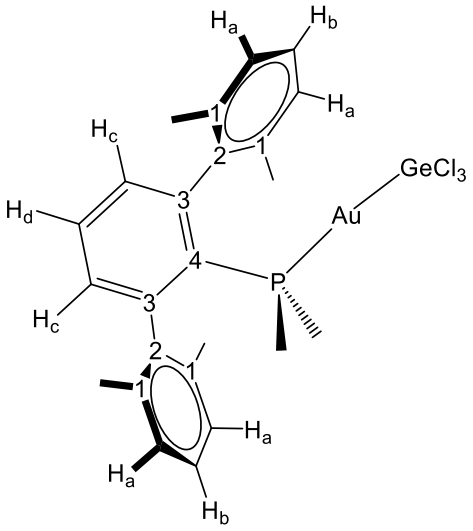
SUPPORTING INFORMATION

1. Synthesis and characterization of new compounds



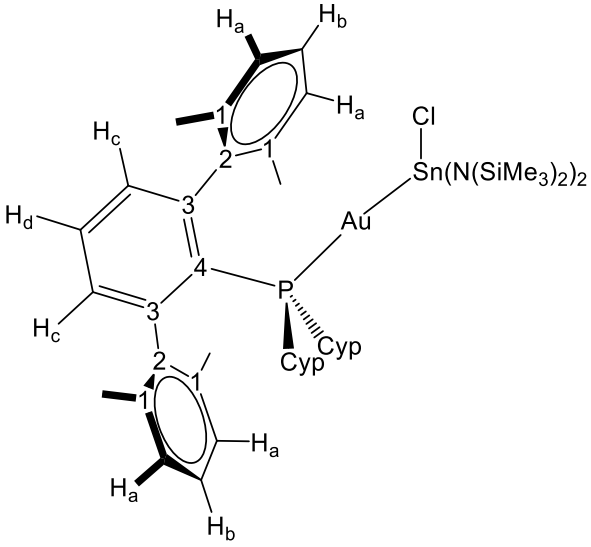
Compound 6^{Xyl}. A solution of (PMe_2Ar^{Xyl2})AuCl (150 mg, 0.26 mmol) in THF (5 mL) was added over a solution of germanium chloride dioxane complex (59 mg, 0.26 mmol) in THF (5 mL). The mixture was stirred for 30 minutes at room temperature. The solvent was then removed under vacuum to give compound $\mathbf{6^{Xyl}}$, as a fine white powder (169 mg, 90%). Crystals suitable for X-ray analysis were grown by slow diffusion of pentane into a THF solution of $\mathbf{6^{Xyl}}$.

Anal. Calcd. for $C_{24}H_{27}AuCl_3GeP$**:** C, 39.9; H, 3.8. **Found:** C, 39.7; H, 3.8.

^{1}H NMR (400 MHz, CD_2Cl_2, 25 ºC) δ: 7.67 (td, 1 H, $^3J_{HH}$ = 7.6 Hz, $^5J_{HP}$ = 1.6 Hz, H_d), 7.28 (m, 6 H, H_a, H_b), 7.16 (dd, 2 H, $^3J_{HH}$ = 7.6 Hz, $^4J_{HP}$ = 3.5 Hz, H_c), 2.09 (s, 12 H, Me_{Xyl}), 1.28 (d, 6 H, $^2J_{HP}$ = 9.5 Hz, PMe_2).

^{13}C{^{1}H} NMR (100 MHz, CD_2Cl_2, 25 ºC) δ: 147.3 (d, $^2J_{CP}$ = 11 Hz, C_3), 140.5 (d, $^3J_{CP}$ = 5 Hz, C_2), 136.5 (C_1), 133.1 (CH_d), 131.7 (d, $^3J_{CP}$ = 8 Hz, CH_c), 129.4 (CH_b), 128.8 (CH_a), 126.0 (d, $^1J_{CP}$ = 51 Hz, C_4), 21.8 (Me_{Xyl}), 16.2 (d, $^1J_{CP}$ = 34 Hz, PMe_2).

^{31}P{^{1}H} NMR (160 MHz, CD_2Cl_2, 25 ºC) δ: 6.8.

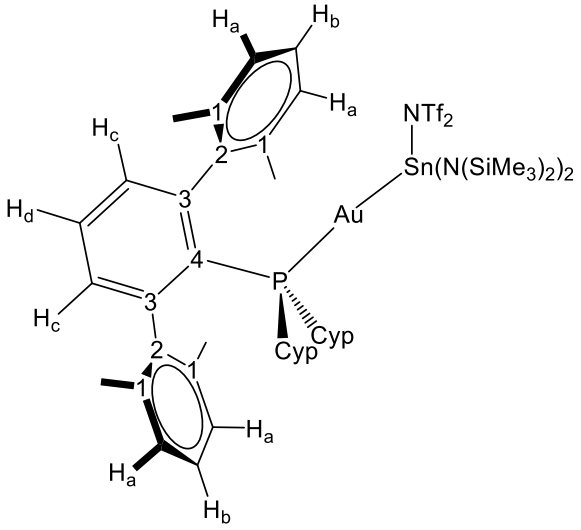


Compound 8^{Cyp}. In a NMR tube, a solution of ($PCyp_2Ar^{Xyl2}$)AuCl (30 mg, 0.04 mmol) in C_6D_6 (0.5 mL) was added tin bis(trimethylsilyl)amide (19 mg, 0.04 mmol). The mixture gives compound **8^{Cyp}** after 5 minutes. It can be crystallized by slow diffusion of pentane into a C_6D_6 solution (2:1 by vol.) (23 mg, 51%).

^{1}H NMR (400 MHz, C_6D_6, 25 ºC) δ: 7.29 (t, 2 H, $^3J_{HH}$ = 7.6 Hz, H_b), 7.14 (d, 4 H, $^3J_{HH}$ = 7.6 Hz, H_a), 6.94 (td, 1 H, $^3J_{HH}$ = 7.6 Hz, $^5J_{HP}$ = 1.5 Hz, H_d), 6.57 (dd, 2 H, $^3J_{HH}$ = 7.6 Hz, $^4J_{HP}$ = 2.7 Hz, H_c), 2.27-2.17 (m, 2 H, PCH), 1.94 (s, 12 H, Me_{Xyl}), 1.8-1.25 (m, 16 H, CH_2), 0.58 (s, 36 H, $SiMe_3$).

^{13}C{^{1}H} NMR (100 MHz, C_6D_6, 25 ºC) δ: 148.5 (d, $^2J_{CP}$ = 10 Hz, C_3), 141.1 (d, $^3J_{CP}$ = 4 Hz, C_2), 136.1 (C_1), 136.1 (d, $^3J_{CP}$ = 6 Hz, CH_c), 131.1 (d, $^4J_{CP}$ = 2 Hz, CH_d), 129.6 (CH_b), 128.9 (CH_a), 38.9 (d, $^1J_{CP}$ = 27 Hz, PCH), 35.2 (d, $^2J_{CP}$ = 10 Hz, CH_2), 32.6 (d, $^2J_{CP}$ = 9 Hz, CH_2), 25.1 (d, $^2J_{CP}$ = 10 Hz, CH_2), 24.8 (d, $^2J_{CP}$ = 10 Hz, CH_2), 21.6 (Me_{Xyl}), 7.21 ($SiMe_3$).

^{31}P{^{1}H} NMR (160 MHz, C_6D_6, 25 ºC) δ: 59.9 ($^2J_{PSn}$ = 2846 Hz).

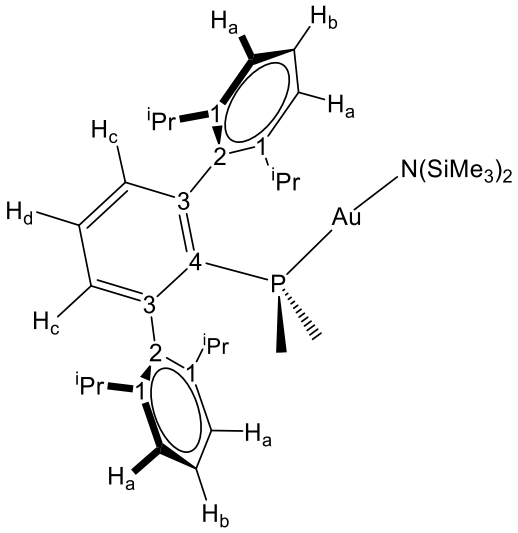


Compound 9^{Cyp}. In a NMR tube, a solution of $Au[P(Cyp)_2Ar^{Xyl2}]NTf_2$ (30 mg, 0.03 mmol) in C_6D_6 (0.5 mL) was added tin bis(trimethylsilyl)amide (14 mg, 0.03 mmol). The mixture gives compound $\mathbf{9^{Cyp}}$ after 5 minutes. It can be crystallized by slow diffusion of pentane into a C_6D_6 solution (2:1 by vol.) (20 mg, 49%).

^{1}H NMR (400 MHz, C_6D_6, 25 ºC) δ: 7.15 (t, 2 H, $^3J_{HH}$ = 7.6 Hz, H_b), 7.03 (d, 4 H, $^3J_{HH}$ = 7.6 Hz, H_a), 6.93 (td, 1 H, $^3J_{HH}$ = 7.6 Hz, $^5J_{HP}$ = 1.5 Hz, H_d), 6.51 (dd, 2 H, $^3J_{HH}$ = 7.6 Hz, $^4J_{HP}$ = 3 Hz, H_c), 2.35-2.23 (m, 2 H, PCH), 1.91 (s, 12 H, Me_{Xyl}), 1.79-1.25 (m, 16 H, CH_2), 0.49 (s, 36 H, $SiMe_3$).

^{13}C{^{1}H} NMR (100 MHz, C_6D_6, 25 ºC) δ: 147.8 (d, $^2J_{CP}$ = 10 Hz, C_3), 141.5 (d, $^3J_{CP}$ = 4 Hz, C_2), 136.6 (C_1), 132.3 (d, $^3J_{CP}$ = 6 Hz, CH_c), 131.3 (CH_d), 128.7 (CH_b), 128.4 (CH_a), 120.4 (q, $^1J_{CF}$ = 323 Hz, CF_3), 38.9 (d, $^1J_{CP}$ = 29 Hz, PCH), 35.9 (d, $^2J_{CP}$ = 10 Hz, CH_2), 32.8 (d, $^2J_{CP}$ = 7 Hz, CH_2), 25.3 (d, $^2J_{CP}$ = 10 Hz, CH_2), 24.4 (d, $^2J_{CP}$ = 10 Hz, CH_2), 21.6 (Me_{Xyl}), 6.74 ($^1J_{CSi}$ = 55 Hz, $^3J_{CSn}$ = 18 Hz, $SiMe_3$).

^{31}P{^{1}H} NMR (160 MHz, C_6D_6, 25 ºC) δ: 60.0 ($^2J_{PSn}$ = 2654 Hz).

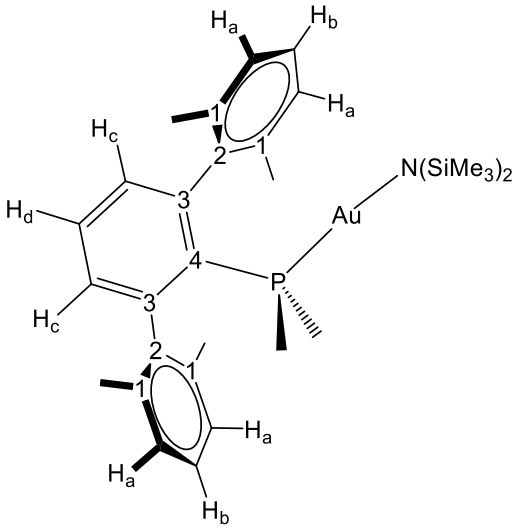


Compound [PMe_2Ar^{Dipp2}]Au[$N(SiMe_3)_2$]. A solid mixture of compound **5** (30 mg, 0.043 mmol) and Li[$N(SiMe_3)_2$] (7 mg, 0.043 mmol) was suspended in toluene inside a dry box. The solution was stirred for 30 min, filtered and the solvents evaporated under vacuum. The white residue was washed with pentane to yield [PMe_2Ar^{Dipp2}]Au[$N(SiMe_3)_2$] as a white solid (28 mg, 80%).

^{1}H NMR (400 MHz, C_6D_6, 25 ºC) δ: 7.28 (t, 2 H, $^3J_{HH}$ = 7.6 Hz, H_b), 7.12 (d, 4 H, $^3J_{HH}$ = 7.6 Hz, H_a), 6.93 (m, 2 H, H_c), 6.85 (m, 1 H, H_d), 2.77 (sept, 4 H, $^3J_{HH}$ = 6.8 Hz, ^{i}Pr(CH)), 1.39 (d, 12 H, $^3J_{HH}$ = 6.8 Hz, ^{i}Pr(CH_3)), 0.98 (d, 12 H, $^3J_{HH}$ = 6.8 Hz, ^{i}Pr(CH_3)), 0.88 (d, 6 H, $^2J_{HP}$ = 10 Hz, PMe_2), 0.41 (s, 18 H, $SiMe_3$).

^{13}C{^{1}H} NMR (100 MHz, C_6D_6, 25 ºC) δ: 146.9 (C_1), 143.8 (d, $^2J_{CP}$ = 10 Hz, C_3), 139.2 (d, $^3J_{CP}$ = 5 Hz, C_2), 132.9 (d, $^3J_{CP}$ = 8 Hz, CH_c), 130.1 (d, $^1J_{CP}$ = 46 Hz, C_4), 129.6 (CH_d), 128.6 (CH_b), 123.6 (CH_a), 31.5 (^{i}Pr(CH)), 25.7 (^{i}Pr(CH_3)), 23.6 (^{i}Pr(CH_3)), 18.1 (d, $^1J_{CP}$ = 37 Hz, PMe_2), 6.7 ($^1J_{CSi}$ = 38 Hz, $SiMe_3$).

^{31}P{^{1}H} NMR (160 MHz, C_6D_6, 25 ºC) δ: 3.1.

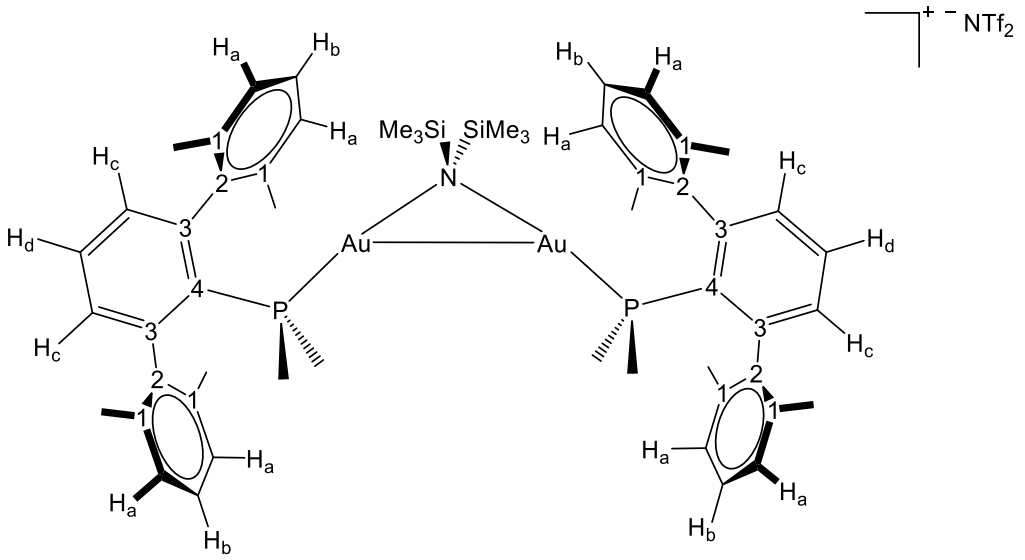


Compound [PMe_2Ar^{Xyl2}]Au[$N(SiMe_3)_2$]. A solid mixture of compound **5**^{Xyl} (35 mg, 0.06 mmol) and Li[$N(SiMe_3)_2$] (10 mg, 0.04 mmol) was suspended in toluene inside a dry box. The solution was stirred for 30 min, filtered and the solvents evaporated under vacuum. The white residue was washed with pentane to yield [PMe_2Ar^{Xyl2}]Au[$N(SiMe_3)_2$] as a white solid (29 mg, 69%).

^{1}H NMR (400 MHz, C_6D_6, 25 ºC) δ: 7.08 (t, 2 H, $^3J_{HH}$ = 7.6 Hz, H_b), 6.99 (d, 4 H, $^3J_{HH}$ = 7.6 Hz, H_a), 6.95 (td, 1 H, $^3J_{HH}$ = 7.6 Hz, $^5J_{HP}$ = 1.7 Hz, H_d), 6.58 (dd, 2 H, $^3J_{HH}$ = 7.6 Hz, $^4J_{HP}$ = 3.1 Hz, H_c), 2.11 (s, 12 H, Me_{Xyl}), 0.67 (d, 6 H, $^2J_{HP}$ = 9.4 Hz, PMe_2), 0.48 (s, 18 H, $SiMe_3$).

^{13}C{^{1}H} NMR (100 MHz, C_6D_6, 25 ºC) δ: 145.6 (d, $^2J_{CP}$ = 9 Hz, C_3), 141.3 (d, $^3J_{CP}$ = 3 Hz, C_2), 136.5 (C_1), 130.9 (CH_d), 130.8 (CH_c), 129.6 (d, $^1J_{CP}$ = 60 Hz, C_4), 128.7 (CH_b), 128.4 (CH_a), 22.2 (Me_{Xyl}), 17.2 (d, $^1J_{CP}$ = 38 Hz, PMe_2), 6.8 ($^1J_{CSi}$ = 53 Hz, $SiMe_3$).

^{31}P{^{1}H} NMR (160 MHz, C_6D_6, 25 ºC) δ: 1.5.

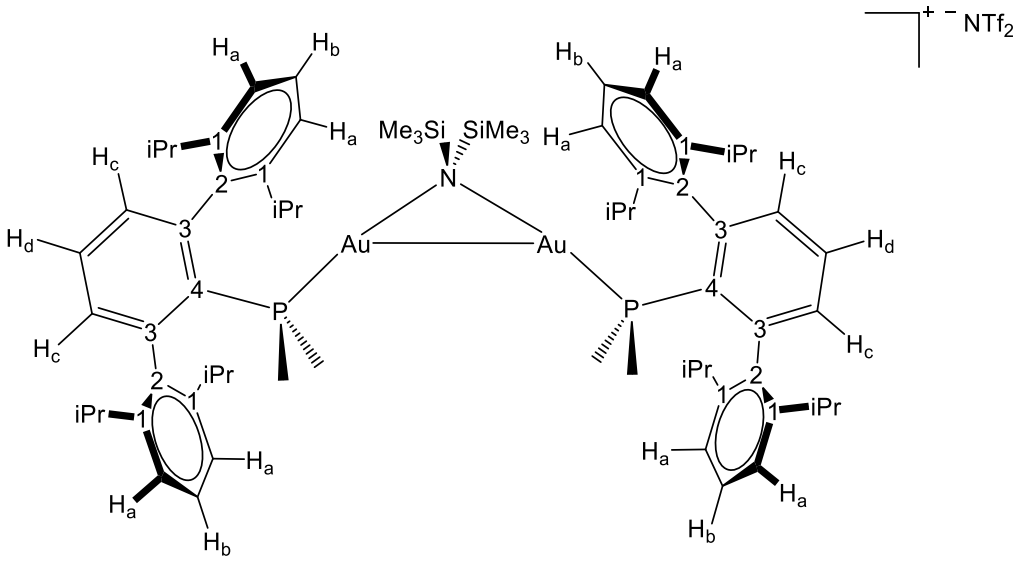


Compound [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Xyl2})$_2$]. A solid mixture of compounds **1^{Xyl}** (35 mg, 0.04 mmol) and [PMe_2Ar^{Xyl2}]Au[N($SiMe_3$)$_2$] (30 mg, 0.04 mmol) was dissolved in toluene inside a dry box. The solution was stirred for 30 min and the solvents evaporated under vacuum. The white residue was washed with pentane to yield [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Xyl2})$_2$].as a white solid (44 mg, 88%).

^{1}H NMR (400 MHz, C_6D_6, 25 ºC) δ: 7.16 (t, 2 H, $^3J_{HH}$ = 7.6 Hz, H_b), 7.03 (d, 4 H, $^3J_{HH}$ = 7.6 Hz, H_a), 6.95 (td, 1 H, $^3J_{HH}$ = 7.6 Hz, $^5J_{HP}$ = 1.7 Hz, H_d), 6.61 (dd, 2 H, $^3J_{HH}$ = 7.6 Hz, $^4J_{HP}$ = 3.1 Hz, H_c), 1.98 (s, 12 H, Me_{Xyl}), 0.87 (d, 6 H, $^2J_{HP}$ = 10.0 Hz, PMe_2), 0.25 (s, 18 H, $SiMe_3$).

^{13}C{^{1}H} NMR (100 MHz, C_6D_6, 25 ºC) δ: 146.11 (d, $^2J_{CP}$ = 10 Hz, C_3), 140.8 (C_2), 140.1 (C_1), 136.3 (CH_d), 132.1 (CH_c), 125.4 (d, $^1J_{CP}$ = 55 Hz, C_4), 131.1 (CH_b), 129.1 (CH_a), 120.3 (q, $^1J_{CF}$ = 323 Hz, CF_3), 21.7 (Me_{Xyl}), 17.7 (d, $^1J_{CP}$ = 43 Hz, PMe_2), 6.6 ($SiMe_3$).

^{31}P{^{1}H} NMR (160 MHz, C_6D_6, 25 ºC) δ: -3.4.



Compound [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Dipp2})$_2$]. A solid mixture of compounds **1** (36 mg, 0.04 mmol) and [PMe_2Ar^{Dipp2}]Au[N($SiMe_3$)$_2$] (32 mg, 0.04 mmol) was dissolved in toluene inside a dry box. The solution was stirred for 30 min and the solvents evaporated under vacuum. The white residue was washed with pentane to yield [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Dipp2})$_2$] as a white solid (49 mg, 83%).

^{1}H NMR (400 MHz, C_6D_6, 25 ºC) δ: 7.31 (t, 2 H, $^3J_{HH}$ = 7.6 Hz, H_b), 7.14 (d, 4 H, $^3J_{HH}$ = 7.6 Hz, H_a), 6.96 (m, 2 H, H_c, H_d), 2.56 (sept, 4 H, $^3J_{HH}$ = 6.8 Hz, ^{i}Pr(CH)), 1.33 (d, 12 H, $^3J_{HH}$ = 6.7 Hz, ^{i}Pr(CH_3)), 0.95 (d, 12 H, $^3J_{HH}$ = 6.6 Hz, ^{i}Pr(CH_3)), 0.14 (s, 18 H, $SiMe_3$).

^{13}C{^{1}H} NMR (100 MHz, C_6D_6, 25 ºC) δ: 146.6 (C_1), 145.4 (d, $^2J_{CP}$ = 10 Hz, C_3), 138.2 (d, $^3J_{CP}$ = 5 Hz, C_2), 133.3 (d, $^3J_{CP}$ = 8 Hz, CH_c), 130.3 (CH_d), 129.8 (d, $^1J_{CP}$ = 47 Hz, C_4), 127.4 (CH_b), 124.1 (CH_a), 120.5 (q, $^1J_{CF}$ = 323 Hz, CF_3), 31.6 (^{i}Pr(CH)), 25.5 (^{i}Pr(CH_3)), 23.6 (^{i}Pr(CH_3)), 19.3 (d, $^1J_{CP}$ = 39 Hz, PMe_2), 7.6 ($SiMe_3$).

^{31}P{^{1}H} NMR (160 MHz, C_6D_6, 25 ºC) δ: -7.8.

2. X-Ray Structural Characterization of new compounds

Crystallographic details. Low-temperature diffraction data were collected either on a Rigaku MicroMax-007HF diffractometer coupled to a Dectris Pilatus3R detector by means of ω-scans (structures **6**, **8^{Cyp}** and [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Xyl2})$_2$]; Chemistry Department at Yale University) or on a Bruker APEX-II CCD diffractometer by means of ω and φ scans (structures **6^{Xyl}**, **13** and **10**; Instituto de Investigaciones Químicas, Sevilla). In both cases data were collected using monochromatic radiation λ(Mo Kα1) = 0.71073 Å. The diffraction images collected at the Rigaku instrument were processed and scaled using Rigaku Oxford Diffraction software (CrysAlisPro; Rigaku OD: The Woodlands, TX, 2015), while the ones recorded at the Bruker instrument were reduced (SAINT) [1] and corrected for Lorentz polarization effects and absorption by multiscan method applied by SADABS.[2] The structures were solved with SHELXT and was refined against F^2 on all data by full-matrix least squares with SHELXL.[3] All non-hydrogen atoms were refined anisotropically. Hydrogen atoms were included in the model at geometrically calculated positions and refined using a riding model, unless otherwise noted. The isotropic displacement parameters of all hydrogen atoms were fixed to 1.2 times the U value of the atoms to which they are linked (1.5 times for methyl groups). In structure **6**, the fluorine of the fluorobenzene is disordered over two positions. The site occupancies were freely refined and fixed near their converged values of 0.70/0.30. Due to the small amount of electron density, the atomic displacement parameter was constrained to the same value of the associated carbon. Structure **6** was solved in P2(1)2(1)2(1) space group and refined as a racemic twin (0.57:0.43). In structure **8^{Cyp}**, $SnClN(SiMe_3)_2$ group is disordered over two positions. Nitrogen atoms C5B, C7B, and C8B are common to both models. The site occupancies of the two models were freely refined and converged at nearly equal occupancies. The site occupancies were subsequently fixed at 0.5. A global rigid bond restraint was applied to help the model converge. All disordered hydrogens were placed in geometrically expected positions as riding atoms. In structure **13** the program SQUEEZE was used to compensate for the contribution of disordered solvents, as well as a triflimide anion, contained in voids within the crystal lattice from the diffraction intensities. This procedure was applied to the data file and the submitted model is based on the solvent removed data. Based on the total electron density found in the voids (672 e/Å^3), it is likely that one triflimide anion and *ca.* two pentane molecules are present in the unit cell. See "_platon_squeeze_details" in the .cif for more information. In the structure of [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Xyl2})$_2$] one xylyl and the triflate groups are disordered in complementing orientations. There site occupancies were freely refined in linked variables to relative ratios of 0.57/0.43. The minor component is distinguished with the suffix "B". Similarity restraints were applied to all disordered, chemically equivalent bond distances. The structure of compound **10** contains a high degree of disorder that result from the rotation of the 36 *tert*-butyl groups of the phosphine ligands bound to Pt centres, as well as the four phosphonium cations present in the asymmetric unit. In contrast, the position of the heavier atoms (Pt, Sn, P, Cl) was located with very minor deviations, as evinced by the almost identical geometric parameters (bond distances and angles) between the four molecules of **10** has been refined as a 2-component inversion twin. In addition, the program SQUEEZE was used to compensate for the contribution of disordered solvent molecules by the same approached mentioned above. Based on the total electron density found in the voids (838 e/Å^3), it is likely that *ca.* 20 dichloromethane molecules are present in the unit cell. The full numbering scheme of all the reported structures can be found in the full details of the X-ray structure determination (CIF), which is included as Supporting Information.

Table S1. Crystal data and structure refinement for compounds **6**, **8^{Cyp}** and **$[Au_2(\mu\text{-}N(SiMe_3)_2)(PMe_2Ar^{Xyl2})_2]$**.

	6	**8^{Cyp}**	**$[Au_2(\mu\text{-}N(SiMe_3)_2)(Pme_2Ar^{Xyl2})_2]$**
formula	$C_{38}H_{48}AuCl_3FgeP$	$C_{44}H_{75}AuClN_2PSi_4Sn$	$C_{54}H_{72}Au_2NP_2Si_2{\cdot}C_2F_6NO_4S_2$
Radiation type	Cu *K*α	Mo *K*α	Mo *K*α
fw	930.64	1126.49	1527.32
cryst.size, mm	0.20 × 0.20 × 0.05	0.20 × 0.20 × 0.04	0.20 × 0.20 × 0.08
crystal system	Monoclinic	Monoclinic	Triclinic
space group	Cc	$P2_1/c$	P-1
a, Å	13.6626 (3)	14.4337 (7)	12.3889 (2)
b, Å	22.0555 (5)	17.5668 (10)	14.0629 (3)
c, Å	12.6148 (3)	20.4495 (10)	19.0624 (3)
α, deg	90	90	82.064 (2)
β, deg	92.166 (2)	105.385 (5)	78.105 (2)
γ, deg	90	90	72.256 (2)
V, Å^3	3798.57 (15)	4999.2 (5)	3085.10 (10)
T, K	93	93	93
Z	4	4	2
ρ_{calc}, g cm^{-3}	1.627	1.497	1.644
μ, mm^{-1} (MoKα)	10.70	3.64	4.97
F(000)	1848	2280	1512
absorption corrections	multi-scan, 0.54-1.00	multi-scan, 0.38-1.00	multi-scan, 0.59-1.00
ϑ range, deg	3.8 – 66.5	2.9 – 27.5	2.9 – 27.5
no. of rflns measd	67328	57414	139393
R_{int}	0.057	0.060	0.053
no. of rflns unique	6706	11452	14144
no. of params / restraints	419 / 2	562 / 540	850 / 90
R_1 ($I > 2\sigma(I)$) [a]	0.020	0.059	0.019
R_1 (all data)	0.022	0.079	0.024
wR_2 ($I > 2\sigma(I)$)	0.046	0.121	0.044
wR_2 (all data)	0.046	0.127	0.045
Diff.Fourier.peaks min/max, eÅ^{-3}	0.59 / -0.72	2.23 / -4.76	1.09 / -0.60
CCDC number	1897306	1897307	1897308

Table S2. Crystal data and structure refinement for compounds **6^{Xyl}**, **10** and **13**.

	6^{Xyl}	**10**	**13**
formula	$C_{24}H_{27}AuCl_3GeP$	$C_{36}H_{78}Cl_7P_3Pt_2Sn_3$	$C_{180}H_{282}Au_3F_{12}N_2O_8P_8Pt_2S_4$
Radiation type	Mo *K*α	Mo *K*α	Mo *K*α
fw	722.33	1598.29	4187.14
cryst.size, mm	0.20 × 0.17 × 0.12	0.40 × 0.40 × 0.25	0.20 × 0.10 × 0.08
crystal system	Orthorhombic	Orthorrombic	Triclinic
space group	$P2_12_12_1$	$P2_12_12_1$	P-1
a, Å	11.9826 (10)	*a* = 15.0060 (8) Å	12.2275 (4)
b, Å	12.8906 (11)	*b* = 15.1859 (7) Å	14.0212 (4)
c, Å	16.9382 (14)	*c* = 29.4759 (16) (6) Å	32.6312 (9)
α, deg	90	90	90.778 (1)
β, deg	90	90	97.949 (2)
γ, deg	90	90	112.880 (1)
V, Å^3	2616.3 (4)	6717.0 (6) Å^3	5090.8 (3)
T, K	193	193	193
Z	4	4	1
ρ_{calc}, g cm^{-3}	1.834	1.580	1.366
μ, mm^{-1} (MoKα)	7.13	5.62	3.69
F(000)	1392	3056	2125
absorption corrections	multi-scan, 0.19-0.75	Multi-scan, 0.24-0.14	multi-scan, 0.62-0.75
ϑ range, deg	2.6 – 30.5	1.57 – 25.0	1.7 – 25.0
no. of rflns measd	146074	52412	86632
R_{int}	0.048	0.153	0.029
no. of rflns unique	8002	11487	17919
no. of params / restraints	287 / 0	486 / 432	1026 / 0
R_1 ($I > 2\sigma(I)$) [a]	0.017	0.065	0.037
R_1 (all data)	0.018	0.097	0.045
wR_2 ($I > 2\sigma(I)$)	0.041	0.150	0.104
wR_2 (all data)	0.042	0.159	0.114
Diff.Fourier.peaks min/max, eÅ^{-3}	-1.41 / 0.79	3.11 / -3.04	-3.04 / 5.87
CCDC number	1897309	1897311	1897310

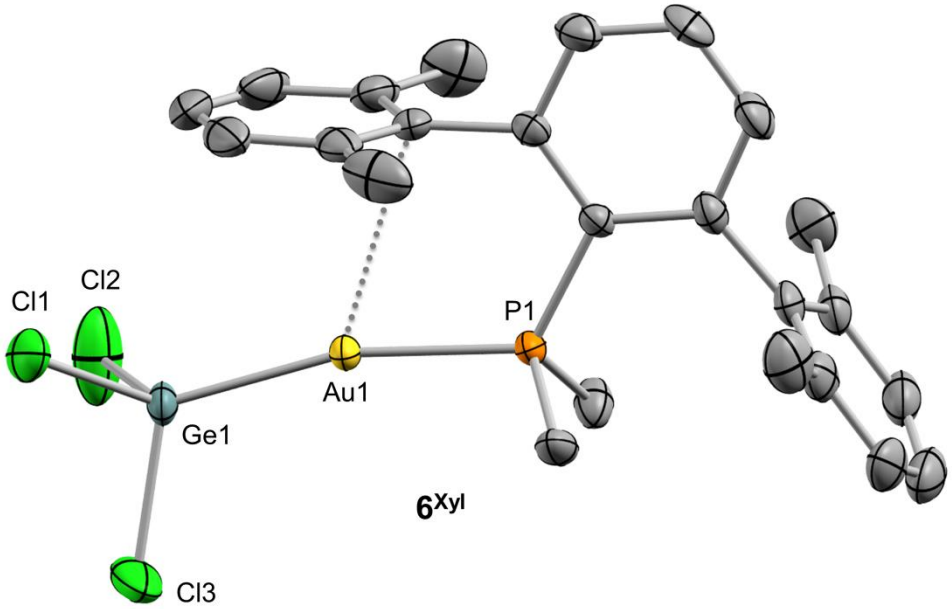


Figure S1. ORTEP diagram of compound **6**$^{\mathbf{Xyl}}$; hydrogen atoms have been excluded for clarity and thermal ellipsoids are set at 50 % probability.

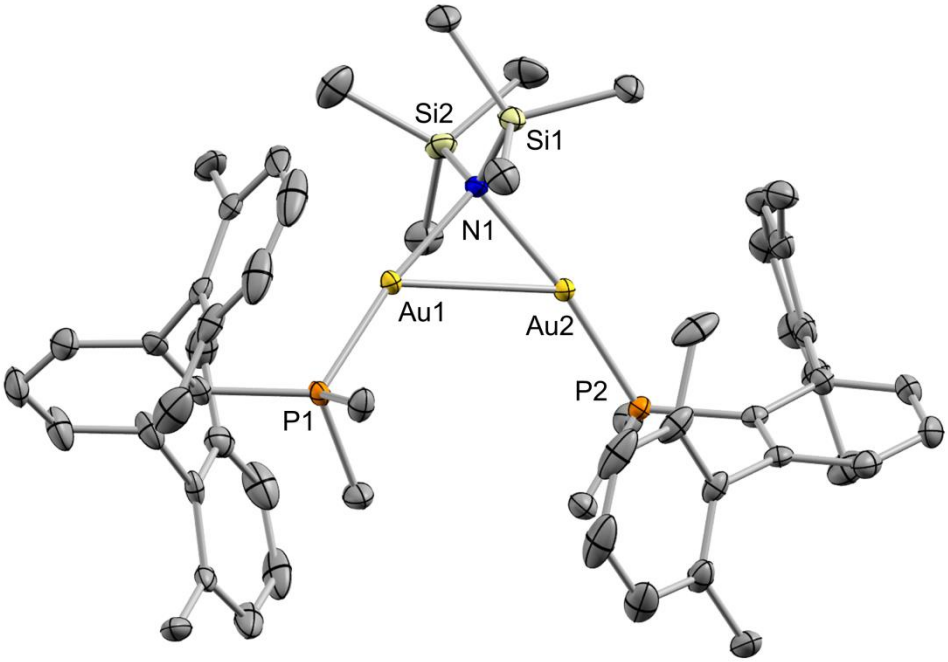


Figure S2. ORTEP diagram of compound [Au_2(μ-N($SiMe_3$)$_2$)(PMe_2Ar^{Xyl2})$_2$]; hydrogen atoms and the triflimide counteraion have been excluded for clarity. Thermal ellipsoids are set at 50 % probability.

3. Computational details

Calculations were performed at the DFT level with the Gaussian 09 (Revision B.01) program[4]. The ωB97XD[5] functional was used throughout the computational study, and geometry optimizations were carried out in the gas phase without geometry constraints, using the 6-31G(d,p)[6] basis set to represent the C, H, P and Cl atoms and the Stuttgart/Dresden Effective Core Potential and its associated basis set (SDD)[7] to describe the Pt and Sn atoms. The stationary points and its nature as minima were characterized by vibrational analysis. The NMR shieldings were calculated with the Gauge-Independent Atomic Orbital (GIAO)[8] method at the ωB97XD/6-311+G(2d,p)//ωB97XD/6-31G(d,p) level. The localized molecular orbital study was carried out following the Pipek-Mezey criterion.[9] The bonding was also investigated by means of the quantum theory of atoms in molecules (QTAIM).[10] The topological analysis of the calculated electron densities was carried out using the Multiwfn program[11]. The Natural Bond Orbital analysis was performed using the NBOPro 6.0 program.[12]

Table S3. NBOs involved in sigma donation from the Sn atoms to Pt(2).

NBO	Occupancy	Type	Atom	Composition
78	1.54611	LP (1)	Sn 1	s(72.05%)p 0.39(27.95%)
98	1.53720	LP (1)	Sn 7	s(68.40%)p 0.46(31.60%)
109	1.47301	LP (1)	Sn 91	s(57.88%)p 0.73(42.12%)
200	0.35357	LV (1) (non-Lewis)	Pt 6	s(48.88%)p 0.97(47.22%)d 0.08(3.90%)

Table S4. Second Order Perturbation Theory analysis of Fock matrix in NBO basis regarding to the NBOs involved in sigma donation from the Sn atoms to Pt(2).

Donor (L) NBO	Acceptor (NL) NBO	kcal/mol
78. LP (1)Sn 1	200. LV (1)Pt 6	136.27
98. LP (1)Sn 7	200. LV (1)Pt 6	160.06
109. LP (1)Sn 91	200. LV (1)Pt 6	341.23

Table S5. NBOs corresponding to LPs of Pt(2) and a BD* corresponding to Pt(1)-P(1).

NBO	Occupancy	Type	Atoms	Composition
93	1.96101	LP (1)	Pt 6	s(0.00%)p 0.00(0.01%)d 1.00(99.99%)
94	1.95249	LP (2)	Pt 6	s(0.00%)p 1.00(0.02%)d99.99(99.98%)
95	1.95182	LP (3)	Pt 6	s(0.14%)p 0.09(0.01%)d99.99(99.85%)
96	1.94530	LP (4)	Pt 6	s(0.00%)p 0.00(0.00%)d 1.00(100.00%)
97	1.76950	LP (5)	Pt 6	s(1.34%)p 0.04(0.05%)d73.68(98.61%)
205	0.40412	BD*(1) (non-Lewis)	Pt 5- P 12	(81.88%) 0.9049*Pt 5 s(95.43%)p 0.01(0.64%)d 0.04(3.93%) (18.12%) -0.4256* P 12 s(31.91%)p 2.13(67.97%)d 0.00(0.11%)

Table S6. Second Order Perturbation Theory analysis of Fock matrix in NBO basis regarding to the NBOs involved in the Pt-Pt interaction.

Donor (L) NBO	Acceptor (NL) NBO	kcal/mol
97. LP (5)Pt 6	205. BD*(1)Pt 5- P 12	16.90

Table S7. NBOs corresponding to LPs of Pt(1) and LVs corresponding to the Sn atoms of the $SnCl_2$ units.

NBO	Occupancy	Type	Atoms	Composition
88	1.97142	LP (1)	Pt 5	s(0.15%)p 0.10(0.01%)d99.99(99.84%)
89	1.95868	LP (2)	Pt 5	s(0.03%)p 0.20(0.01%)d99.99(99.96%)
90	1.95719	LP (3)	Pt 5	s(0.04%)p 0.23(0.01%)d99.99(99.95%)
91	1.87229	LP (4)	Pt 5	s(0.01%)p15.89(0.18%)d99.99(99.81%)
92	1.81202	LP (5)	Pt 5	s(3.67%)p 0.02(0.08%)d26.24(96.25%)
199	0.44555	LV (1) (non-Lewis)	Sn 1	s(0.04%)p99.99(99.96%)
201	0.42310	LV (1) (non-Lewis)	Sn 7	s(0.61%)p99.99(99.39%)

Table S8. Second Order Perturbation Theory analysis of Fock matrix in NBO basis regarding to the NBOs involved in the Pt-Sn back-donation.

Donor (L) NBO	Acceptor (NL) NBO	kcal/mol
91. LP (4)Pt 5	199. LV (1)Sn 1	7.91
91. LP (4)Pt 5	201. LV (1)Sn 7	12.71
92. LP (5)Pt 5	201. LV (1)Sn 7	42.88
92. LP (5)Pt 5	199. LV (1)Sn 1	39.34

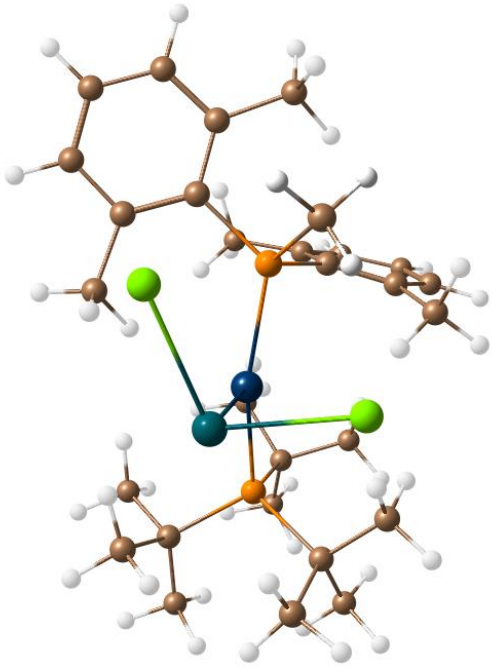


Figure S3. Calculated minimum-energy conformer of complex **15**.

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92
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Cl        0.388375000     -3.602477000     -2.088936000
Cl        0.296841000      3.452848000     -2.116732000
Pt        1.416329000      0.083778000      0.020584000
Pt       -1.349982000      0.019977000      0.021265000
Sn        0.013711000     -1.106773000      1.981028000
Cl        0.528468000     -0.301152000      4.236953000
Cl        0.603181000     -3.449860000      2.398810000
Cl        0.954990000      3.584037000      1.536070000
P        -3.642438000     -0.465574000     -0.010399000
P         3.729596000     -0.050354000     -0.024348000
C        -3.953651000     -2.358625000     -0.244830000
C        -4.540524000      0.437435000     -1.451703000
C        -4.476005000      0.057253000      1.641772000
C         4.459547000      0.296547000      1.712411000
C         4.360534000      1.280517000     -1.248455000
C         4.341224000     -1.771164000     -0.607339000
C        -4.090429000     -0.915750000      2.770769000
H        -4.549585000     -1.900526000      2.673877000
H        -3.007008000     -1.038932000      2.845536000
H        -4.430622000     -0.487441000      3.720228000
C        -3.908374000      1.426426000      2.067745000
H        -2.838721000      1.355837000      2.278713000
H        -4.044111000      2.215811000      1.331053000
H        -4.413770000      1.738366000      2.989444000
C        -6.011254000      0.153241000      1.600126000
H        -6.372160000      0.386555000      2.608916000
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H	6.522239000	1.098077000	-0.850513000
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H	6.124551000	1.644225000	1.233944000
H	6.274088000	0.784978000	2.762028000
H	6.587583000	-0.065007000	1.247323000
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H	3.237438000	-1.295102000	2.613744000
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C	3.508643000	-2.865511000	0.089994000
H	2.442795000	-2.754533000	-0.113210000
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H        4.264386000     -2.989065000     -2.376994000
H        3.046718000     -1.725819000     -2.386377000
H        4.737410000     -1.328237000     -2.735706000
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Cl      -2.330171000      4.314108000      0.289301000


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C       -3.238682000     -0.004558000      2.170504000
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H       -5.032921000     -0.032792000      3.363130000
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81

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C	2.729105000	-0.736872000	-2.691848000
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H	-2.470562000	3.795952000	0.013230000
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H        5.112469000     -0.799101000     -1.163486000
H        4.645588000     -2.211016000     -0.205636000
H        4.720792000     -2.323971000     -1.959812000
H        2.460979000      3.338900000     -1.807642000
H        1.082546000      2.303405000     -1.358259000
H        2.254698000      1.757667000     -2.557915000
H        4.766644000      2.826326000     -1.022846000
H        5.134973000      1.368044000     -0.100813000
H        4.671917000      1.252958000     -1.804084000


108
Pt(SnCl2)(PCy3)2. E(RwB97XD) =  -3137.47045352
Pt       0.056204000     -0.068347000     -0.312492000
Sn       0.145447000     -2.760301000     -0.314333000
Cl       2.227056000     -3.524277000      0.866327000
Cl      -1.337744000     -3.244627000      1.647722000
P        2.265597000      0.545222000      0.002622000
P       -2.251400000      0.217794000     -0.317940000
C        3.639592000     -0.595695000     -0.471219000
H        3.483014000     -1.458300000      0.186738000
C        5.064957000     -0.074650000     -0.245836000
H        5.265303000      0.763617000     -0.927029000
H        5.187753000      0.300939000      0.776350000
C        6.085244000     -1.185624000     -0.519993000
H        7.100429000     -0.801836000     -0.371175000
H        5.937063000     -1.992487000      0.209152000
C        5.928968000     -1.744489000     -1.936801000
H        6.636144000     -2.564728000     -2.098489000
H        6.185188000     -0.959416000     -2.662318000
C        4.496840000     -2.220617000     -2.193833000
H        4.269385000     -3.073735000     -1.542431000
H        4.390573000     -2.567229000     -3.227399000
C        3.479189000     -1.111128000     -1.910363000
H        2.461118000     -1.483659000     -2.070340000
H        3.627449000     -0.288679000     -2.625266000
C        2.524981000      0.940347000      1.798570000
H        3.504578000      1.426016000      1.903676000
C        1.437437000      1.906571000      2.304323000
H        0.459914000      1.434793000      2.142534000
H        1.435392000      2.837717000      1.726552000
C        1.602255000      2.214434000      3.794104000
H        2.552386000      2.742315000      3.956087000
H        0.804425000      2.891355000      4.119112000
C        1.587702000      0.928412000      4.622254000
H        1.727363000      1.154778000      5.684545000
H        0.604002000      0.448884000      4.522916000
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H        2.626957000     -0.975684000      4.700079000
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C        2.517931000     -0.345653000      2.643194000
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H	0.656106000	2.171354000	-1.875945000
H	0.812878000	3.208770000	-0.462326000
C	1.642623000	4.060350000	-2.264787000
H	0.712894000	4.586606000	-2.509852000
H	2.057264000	3.694344000	-3.214087000
C	2.643303000	5.016368000	-1.612916000
H	2.882806000	5.839604000	-2.294027000
H	2.185062000	5.464918000	-0.720655000
C	3.918198000	4.275359000	-1.203208000
H	4.613307000	4.958405000	-0.703736000
H	4.428770000	3.905376000	-2.102782000
C	3.603351000	3.092865000	-0.280714000
H	3.162918000	3.480696000	0.645833000
H	4.528347000	2.584030000	0.001862000
C	-2.442853000	2.036615000	-0.739317000
H	-1.718298000	2.165565000	-1.556970000
C	-3.806676000	2.508507000	-1.270727000
H	-4.123520000	1.905458000	-2.126791000
H	-4.573446000	2.389873000	-0.496160000
C	-3.737575000	3.978866000	-1.702557000
H	-3.050399000	4.064458000	-2.555861000
H	-4.720859000	4.305378000	-2.057519000
C	-3.248152000	4.886891000	-0.572858000
H	-3.986186000	4.881546000	0.240665000
H	-3.171739000	5.921286000	-0.924009000
C	-1.900553000	4.405536000	-0.031738000
H	-1.576712000	5.032134000	0.806373000
H	-1.137636000	4.505934000	-0.816386000
C	-1.975593000	2.943122000	0.412406000
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H	-2.684051000	2.864885000	1.246249000
C	-3.061326000	-0.154286000	1.303595000
H	-3.105873000	-1.251241000	1.283965000
C	-2.177479000	0.186524000	2.517227000
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H	-2.039105000	1.271459000	2.601333000
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H	-4.215430000	1.263021000	4.122772000
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C	-2.642907000	-0.467473000	-2.976974000
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C	-3.477219000	-1.121630000	-4.080667000
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103

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Pt	0.107701000	-0.265057000	-0.158337000
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Cl	1.825131000	-0.672537000	3.290703000
Sn	2.101888000	0.852645000	1.299233000
Cl	1.059059000	2.865196000	2.450027000
N	0.261810000	-3.255287000	-0.194271000
N	2.243950000	-2.534194000	-0.569540000
C	0.982544000	-2.105703000	-0.290395000
C	1.054162000	-4.371576000	-0.401981000
H	0.649712000	-5.369664000	-0.361235000
C	2.303280000	-3.916990000	-0.638842000
H	3.224501000	-4.435044000	-0.847659000
C	3.367616000	-1.672255000	-0.787385000
C	4.392761000	-1.649976000	0.166368000
C	5.449201000	-0.763750000	-0.040967000
H	6.246386000	-0.722181000	0.696575000
C	5.494342000	0.082000000	-1.147954000
C	4.466940000	0.004154000	-2.087050000
H	4.499669000	0.642010000	-2.967087000
C	3.394674000	-0.872552000	-1.935799000
C	4.356824000	-2.530293000	1.388739000
H	5.116666000	-2.215003000	2.106054000
H	4.549428000	-3.578503000	1.136296000
H	3.387416000	-2.475301000	1.892291000
C	6.613224000	1.077565000	-1.311610000
H	6.359599000	2.021508000	-0.817474000
H	6.802146000	1.295359000	-2.366102000
H	7.541295000	0.710861000	-0.865356000
C	2.305186000	-0.925745000	-2.973724000
H	1.447205000	-0.323605000	-2.650993000
H	1.943498000	-1.946526000	-3.128804000
H	2.667208000	-0.535617000	-3.927940000
C	-1.166696000	-3.302426000	-0.058922000
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H	-3.918691000	-3.672897000	-1.980876000
C	-3.931924000	-3.418249000	0.153541000
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H	-3.608628000	-3.127883000	2.257849000
C	-1.745198000	-3.183194000	1.208686000

C	-1.270122000	-3.485057000	-2.576912000
H	-0.776336000	-2.524523000	-2.767858000
H	-2.008906000	-3.651347000	-3.363906000
H	-0.504179000	-4.262097000	-2.657285000
C	-5.433586000	-3.440831000	0.276920000
H	-5.754842000	-4.077860000	1.106027000
H	-5.905094000	-3.808730000	-0.637913000
H	-5.820057000	-2.433744000	0.469782000
C	-0.898824000	-2.985197000	2.433263000
H	-0.124073000	-3.754003000	2.513648000
H	-1.508841000	-3.015250000	3.338321000
H	-0.379828000	-2.022575000	2.402829000
C	-0.593776000	3.197878000	-0.732913000
H	-0.207632000	3.595186000	0.215621000
C	-1.586208000	4.220022000	-1.309345000
H	-1.990691000	3.853761000	-2.262515000
H	-2.437919000	4.357780000	-0.638380000
C	-0.901316000	5.570802000	-1.545568000
H	-1.618379000	6.280142000	-1.973450000
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C	0.319699000	5.429371000	-2.456588000
H	0.814759000	6.398413000	-2.580694000
H	-0.011094000	5.112261000	-3.455771000
C	1.301345000	4.394935000	-1.900928000
H	2.149589000	4.269914000	-2.583020000
H	1.709155000	4.753155000	-0.946411000
C	0.618326000	3.044766000	-1.670529000
H	1.332748000	2.327795000	-1.254593000
H	0.301603000	2.628059000	-2.635316000
C	-2.662168000	1.170680000	-1.432008000
H	-3.346276000	2.030480000	-1.453460000
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H	-2.761419000	-0.922514000	-0.911190000
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H	-5.072343000	-1.330529000	-1.694382000
H	-5.288682000	0.379885000	-2.052077000
C	-3.959246000	-0.631332000	-3.418198000
H	-3.281637000	-1.496020000	-3.396902000
H	-4.749988000	-0.861647000	-4.140350000
C	-3.176382000	0.605840000	-3.858468000
H	-3.868762000	1.452446000	-3.963286000
H	-2.723714000	0.445111000	-4.843067000
C	-2.087534000	0.968988000	-2.845594000
H	-1.564188000	1.868227000	-3.181510000
H	-1.337314000	0.166070000	-2.809148000
C	-2.163548000	1.897029000	1.418282000
H	-1.479270000	2.600174000	1.909394000
C	-2.184382000	0.629214000	2.295092000
H	-2.754548000	-0.169432000	1.801207000
H	-1.163558000	0.253039000	2.409139000
C	-2.780848000	0.910244000	3.674956000
H	-2.822758000	-0.021086000	4.250300000
H	-2.109080000	1.586897000	4.218382000
C	-4.168485000	1.544305000	3.571525000
H	-4.569301000	1.757134000	4.568459000

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H       -3.477542000      3.559099000      3.247957000
H       -5.110963000      3.273400000      2.651681000
C       -3.549832000      2.557642000      1.337771000
H       -4.252637000      1.913012000      0.795947000
H       -3.498545000      3.498773000      0.782912000


17
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H        1.557873000     -1.853359000      0.622877000
H       -0.103344000     -2.446632000      0.501679000
H        0.837819000     -2.148908000     -0.965459000
Si       0.000181000     -0.000179000     -0.000510000
C       -0.323584000      0.595611000      1.759390000
H       -0.690959000      1.627194000      1.766633000
H       -1.073973000     -0.028037000      2.256362000
H        0.589187000      0.562378000      2.363351000
C        1.294100000      1.107705000     -0.810213000
H        1.499004000      0.792147000     -1.838532000
H        0.958180000      2.149464000     -0.842039000
H        2.239397000      1.079360000     -0.258167000
C       -1.602170000      0.073662000     -0.992505000
H       -1.444548000     -0.250416000     -2.026480000
H       -2.368474000     -0.574031000     -0.553971000
H       -2.003893000      1.091985000     -1.020166000
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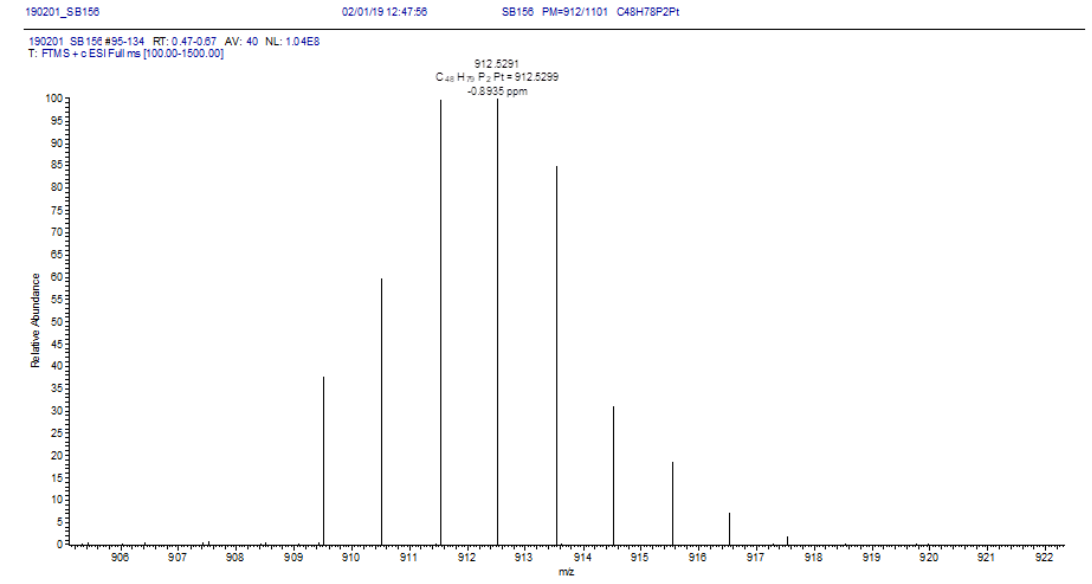
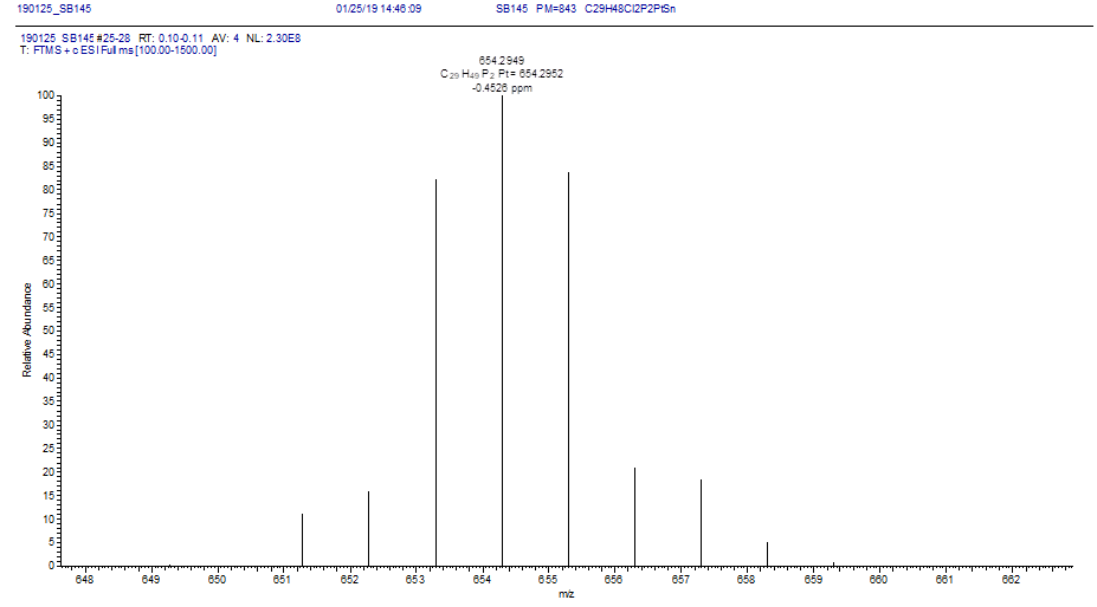
4. High resolution mass spectra of compounds 14 and 15

Centro de Investigación, Tecnología e Innovación
Universidad de Sevilla
Avda. Reina Mercedes, nº 4-B, 41012 Sevilla, Spain
SERVICIO DE ESPECTROMETRIA DE MASAS



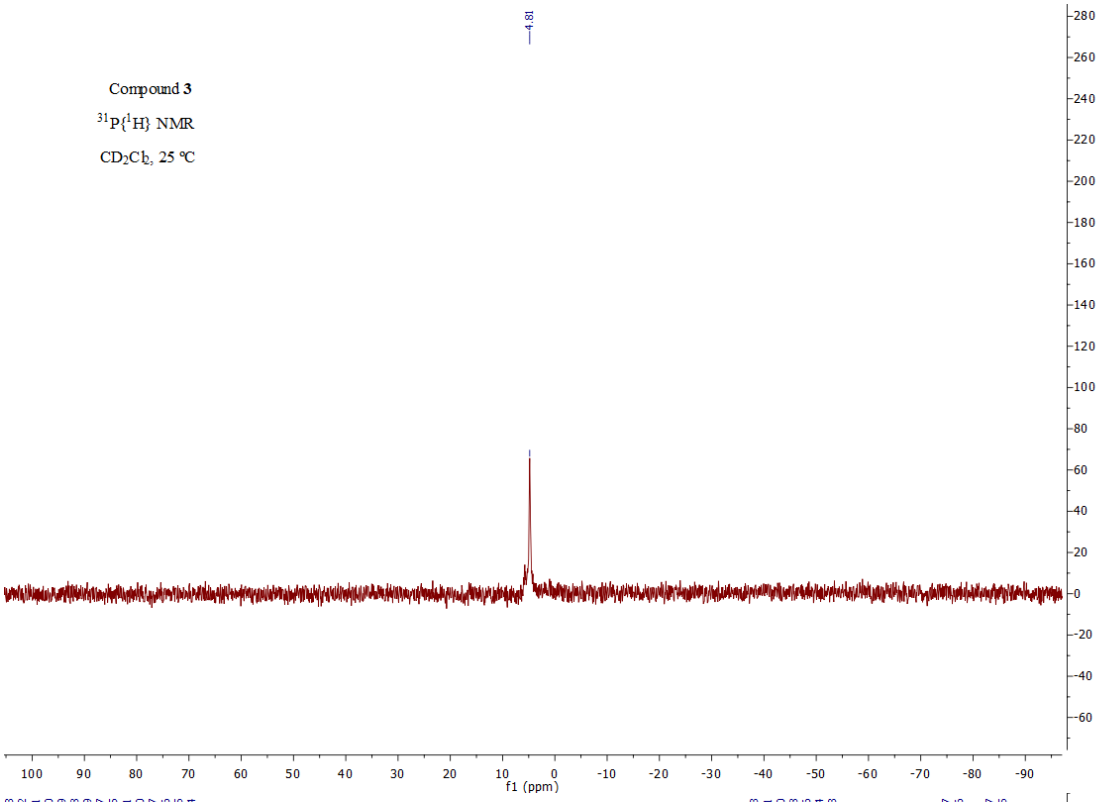
SGI Espectrometría de Masas
Tfno. 954559744; espectrometriademasas@us.es
Apdo. 1152, 41080 Sevilla, Spain
PGC07FT06-EPM
Rev.: 01

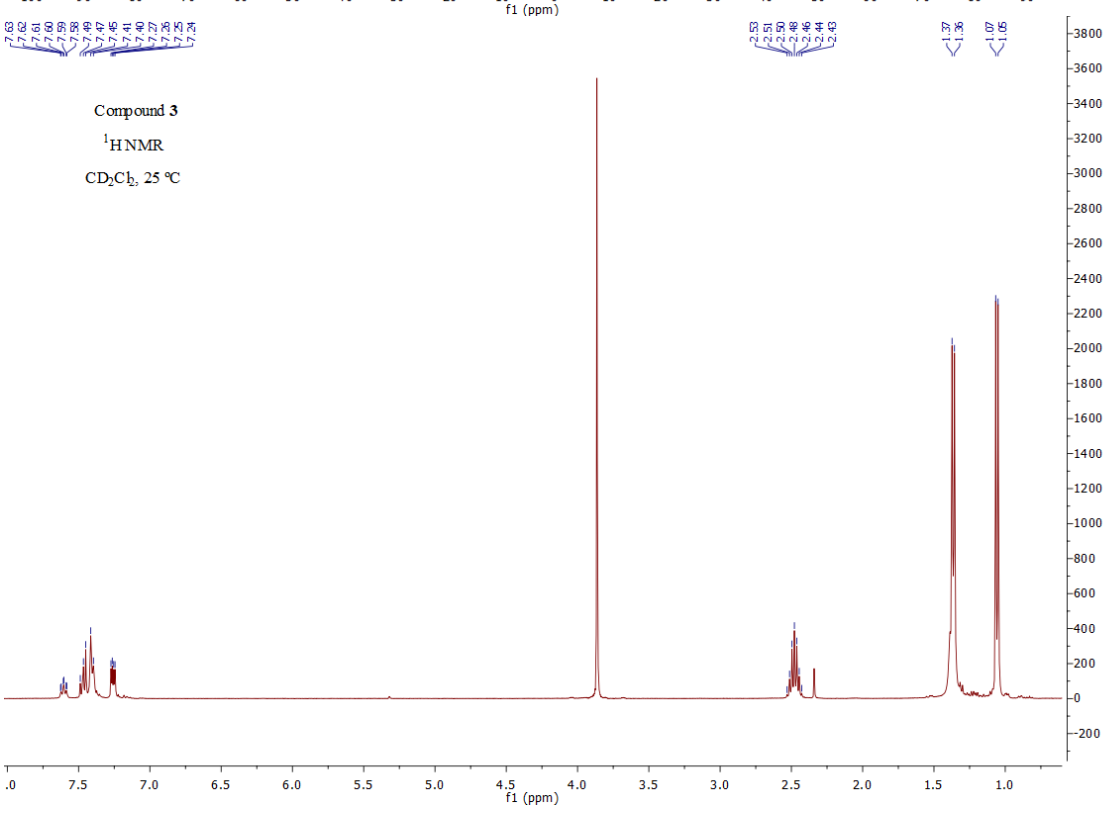
Centro de Investigación, Tecnología e Innovación
Universidad de Sevilla
Avda. Reina Mercedes, nº 4-B, 41012 Sevilla, Spain
SERVICIO DE ESPECTROMETRIA DE MASAS

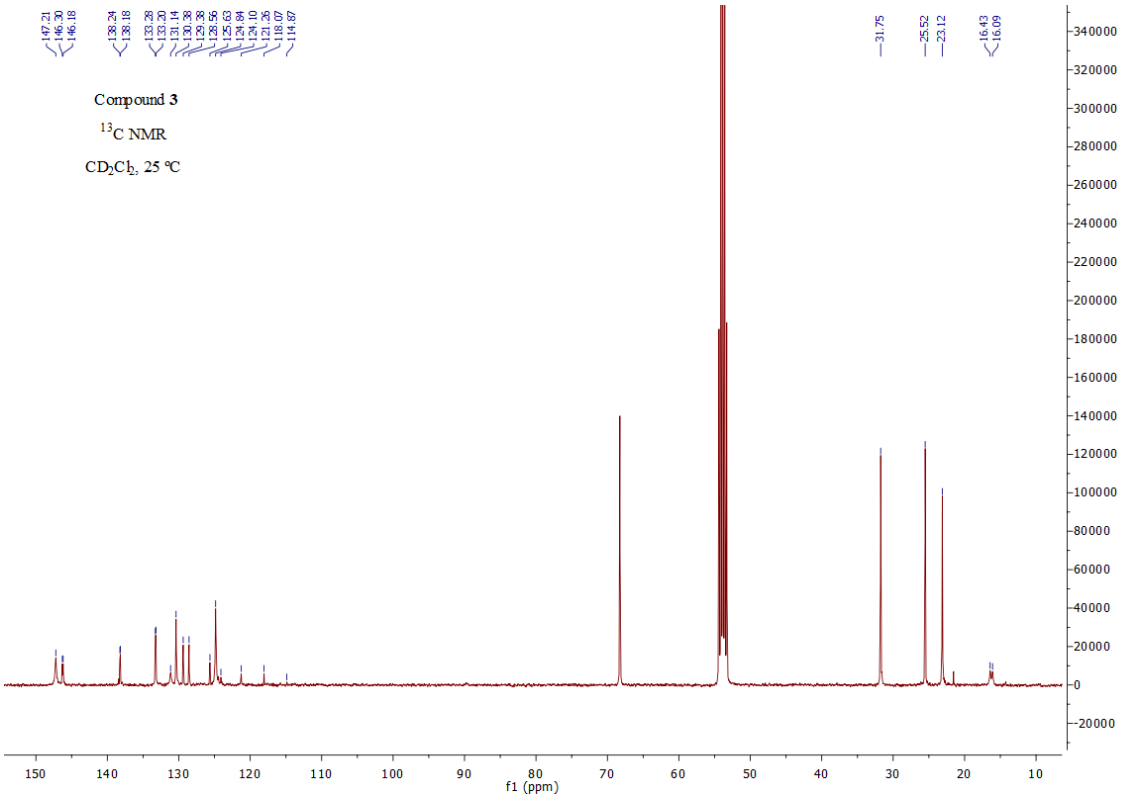


SGI Espectrometría de Masas
Tfno. 954559744; espectrometriademasas@us.es
Apdo. 1152, 41080 Sevilla, Spain
PGC07FT06-EPM
Rev.: 01

5. NMR spectra of new compounds



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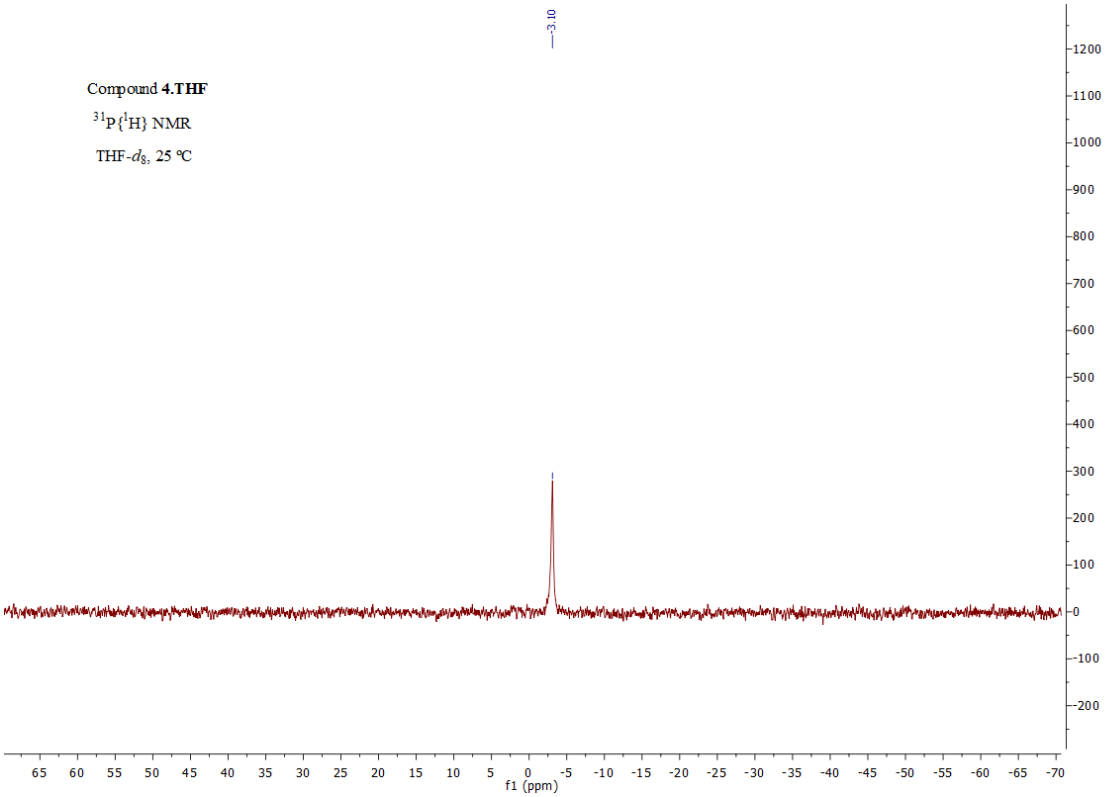
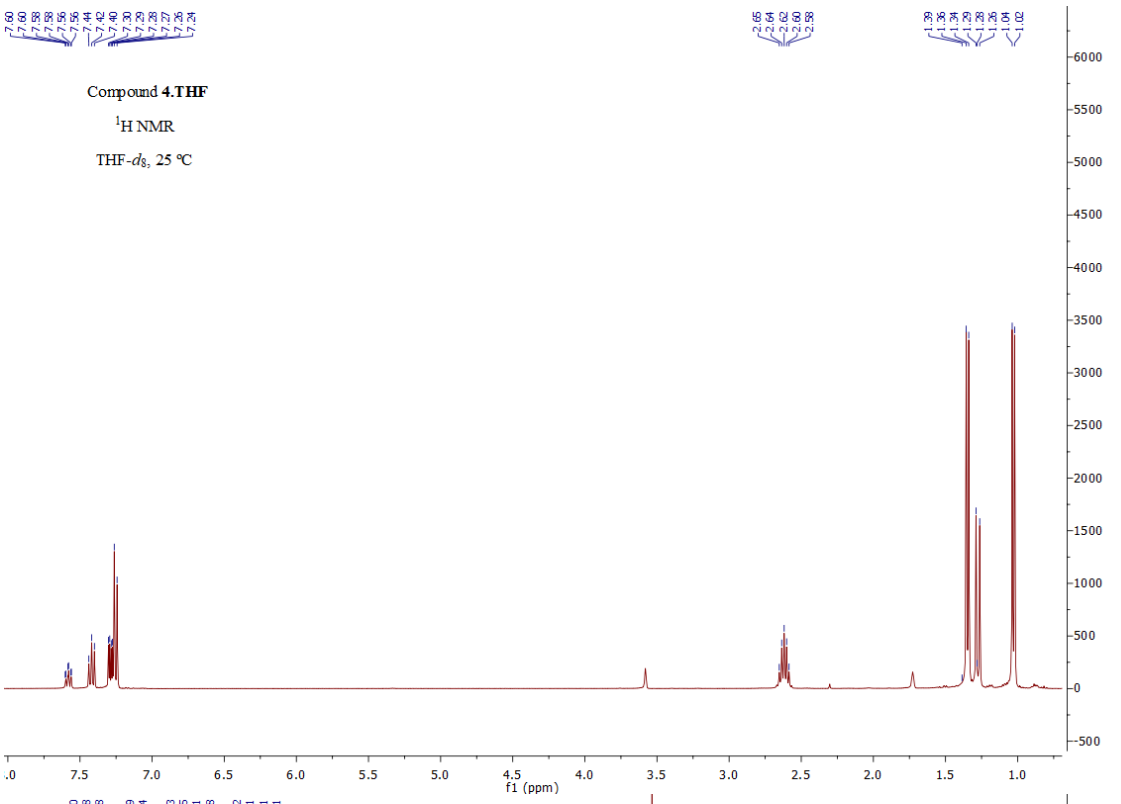
125.63
124.84
124.10
121.30
118.07
114.87
31.75
25.52
23.12
16.43
16.09
Compound 3
13C NMR
CD2Cl2, 25 ℃
f1 (ppm)


3.10
Compound 4.THF
31P{1H} NMR
THF-d8, 25 ℃
f1 (ppm)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2.64
2.62
2.60
2.58
1.39
1.36
1.34
1.29
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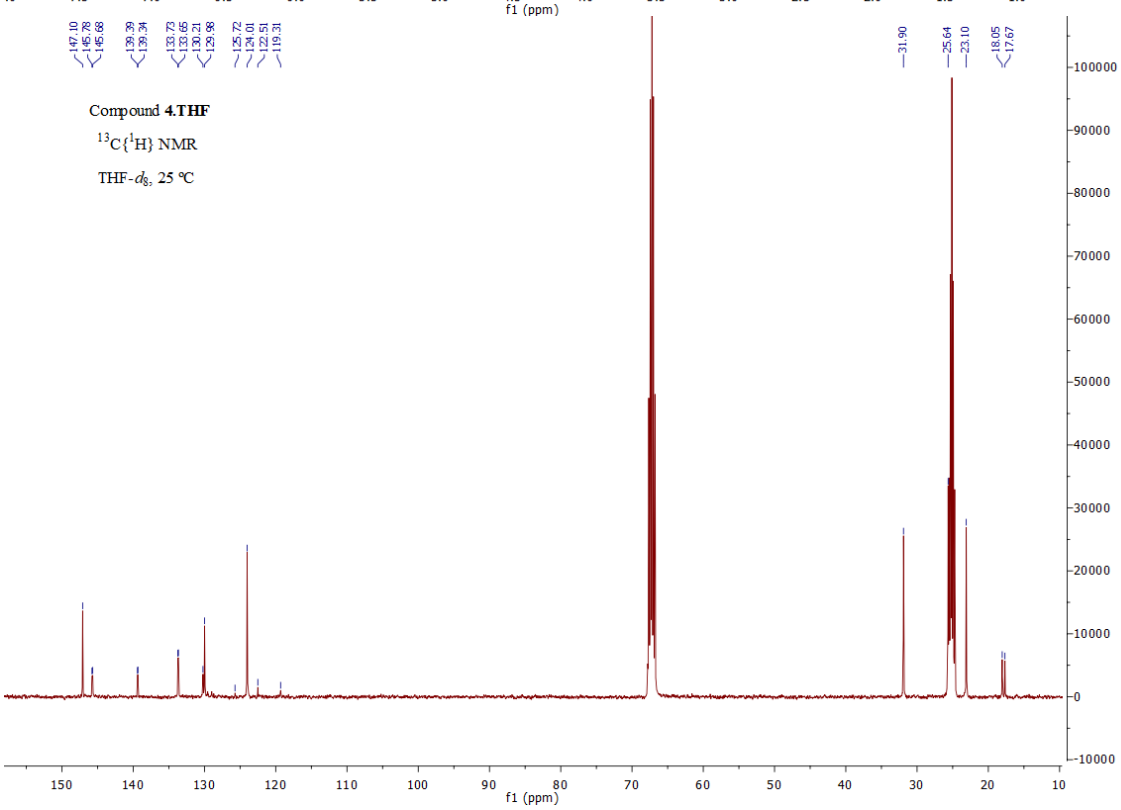
1.26
1.04
1.02
Compound 4.THF
1H NMR
THF-d8, 25 ℃
f1 (ppm)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119.31
31.90
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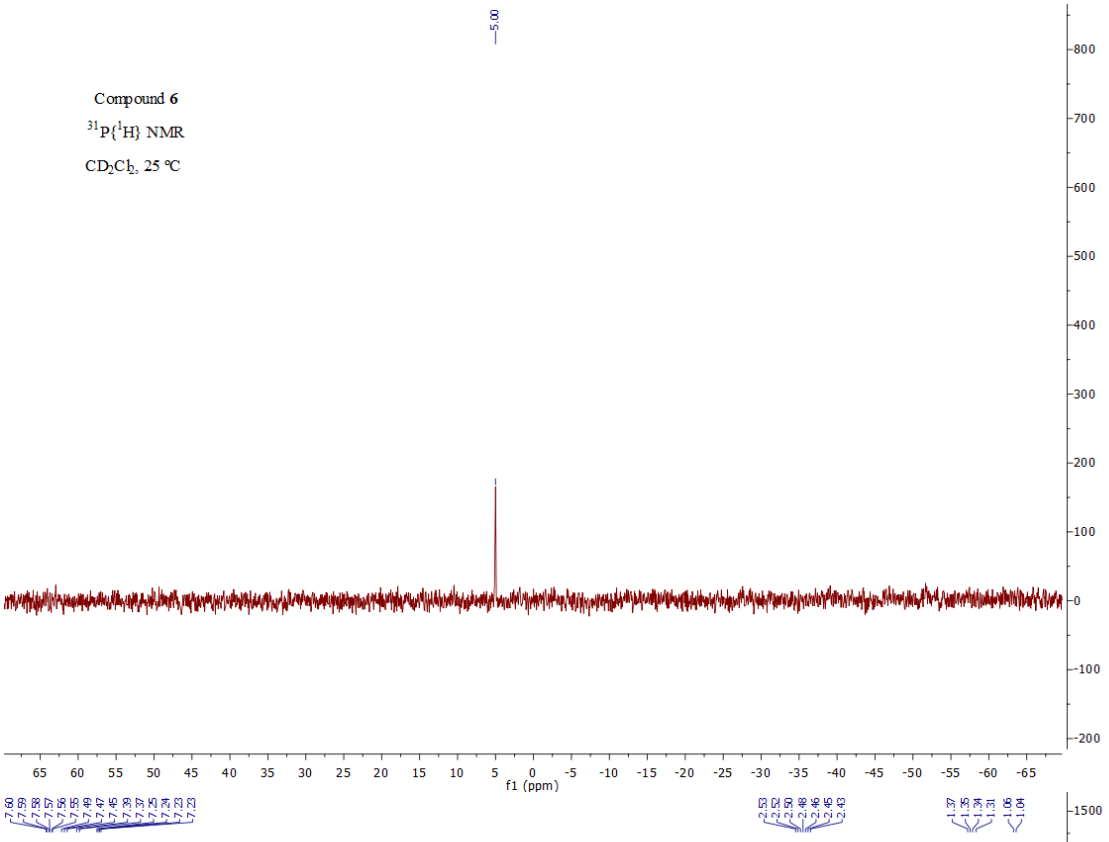
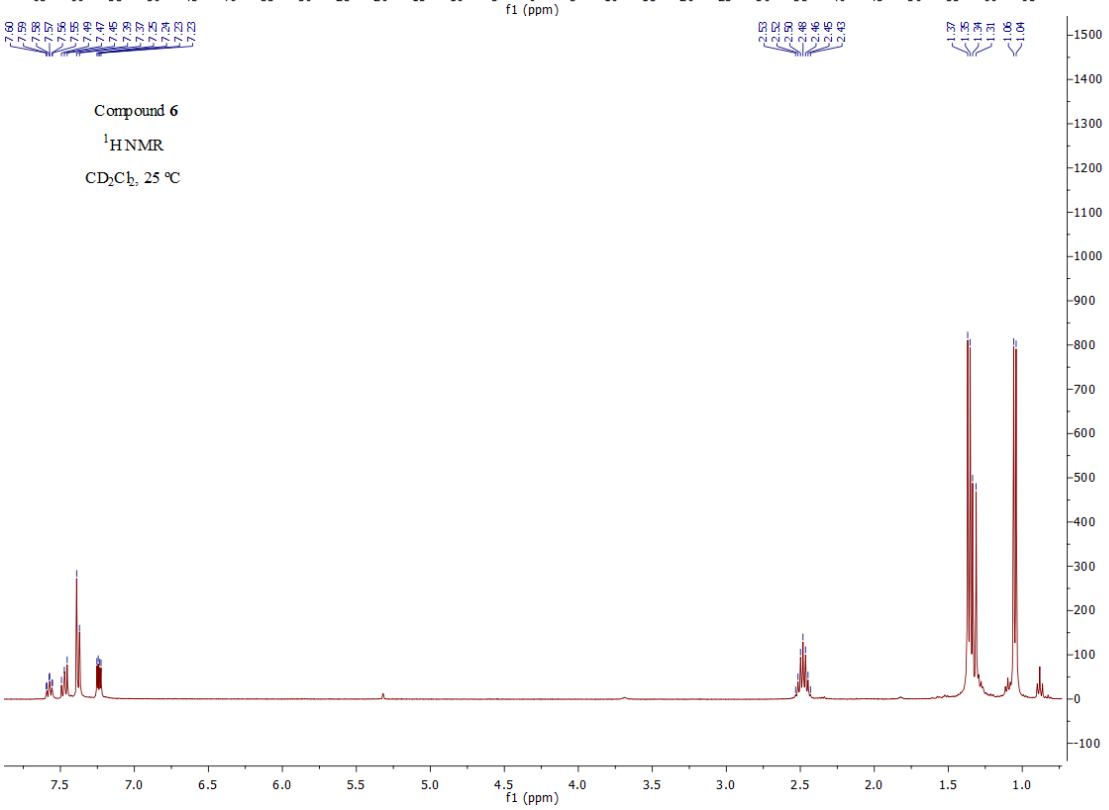
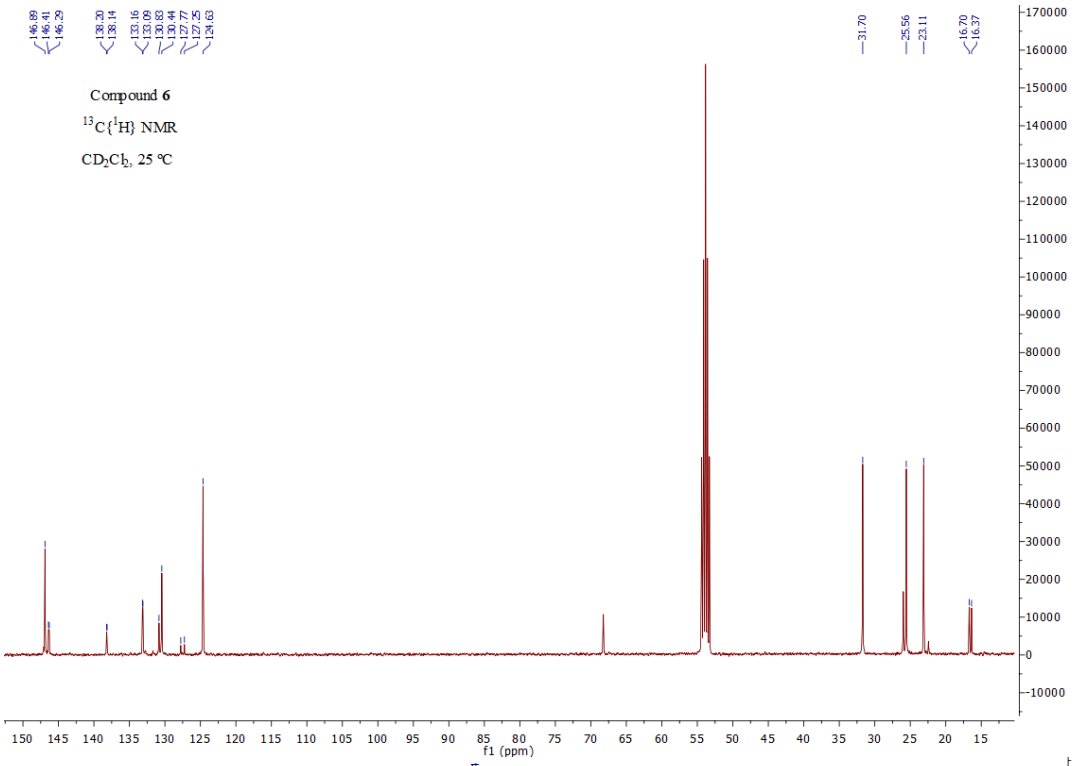
18.05
17.67
Compound 4.THF
13C{1H} NMR
THF-d8, 25 ℃
f1 (ppm)


Compound 6
31P{1H} NMR
CD2Cl2, 25 °C
5.00
f1 (ppm)


Compound 6
1H NMR
CD2Cl2, 25 °C
f1 (ppm)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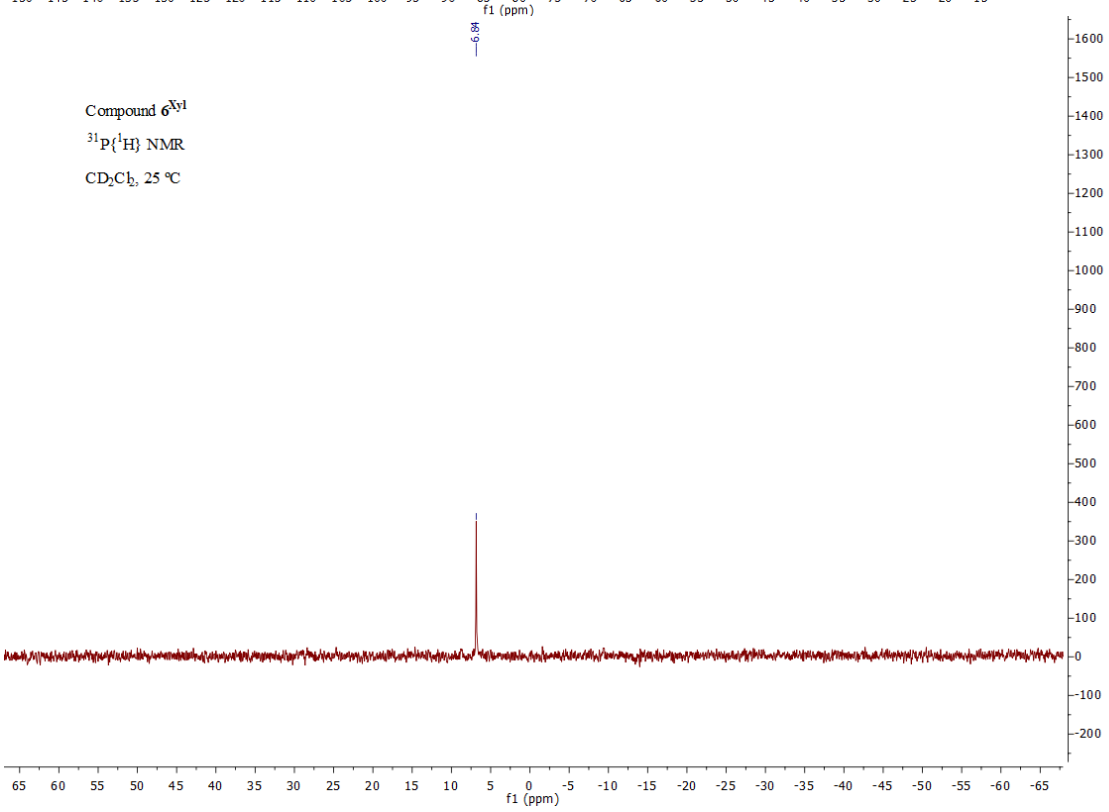
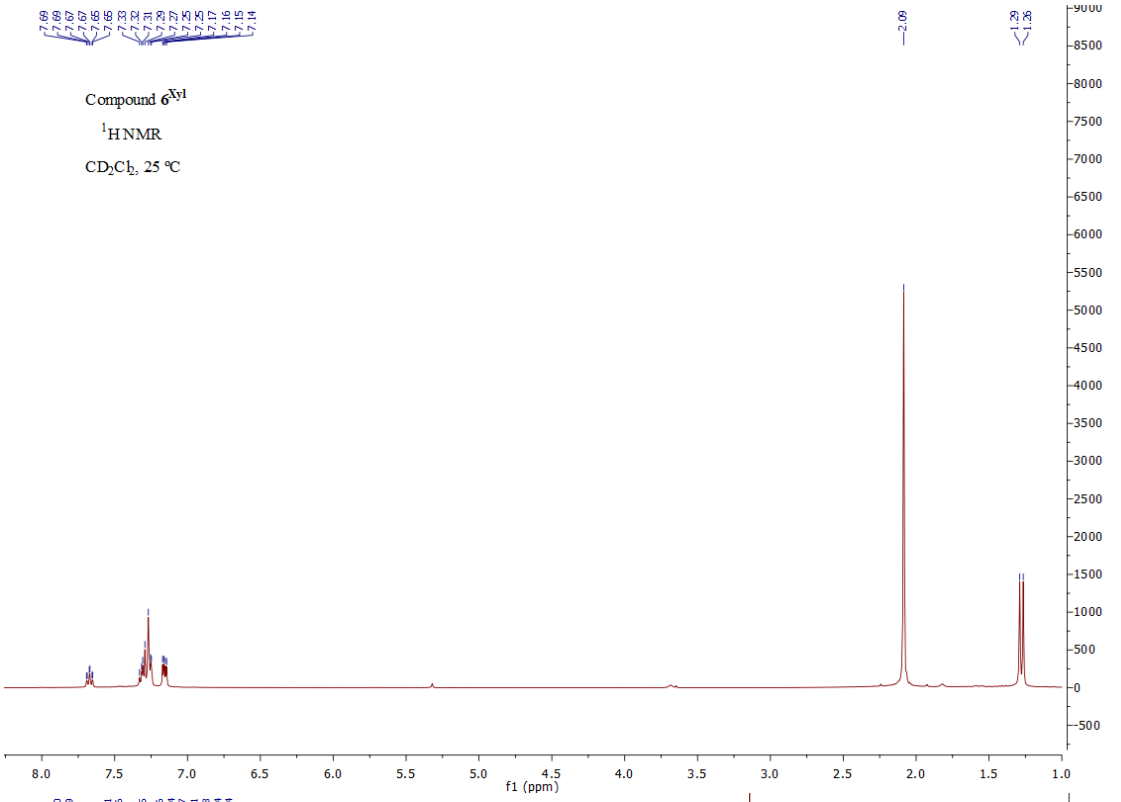
25.56
23.11
16.70
16.37
Compound 6
$^{13}C\{^{1}H\}$ NMR
CD_2Cl_2, 25 °C
f1 (ppm)

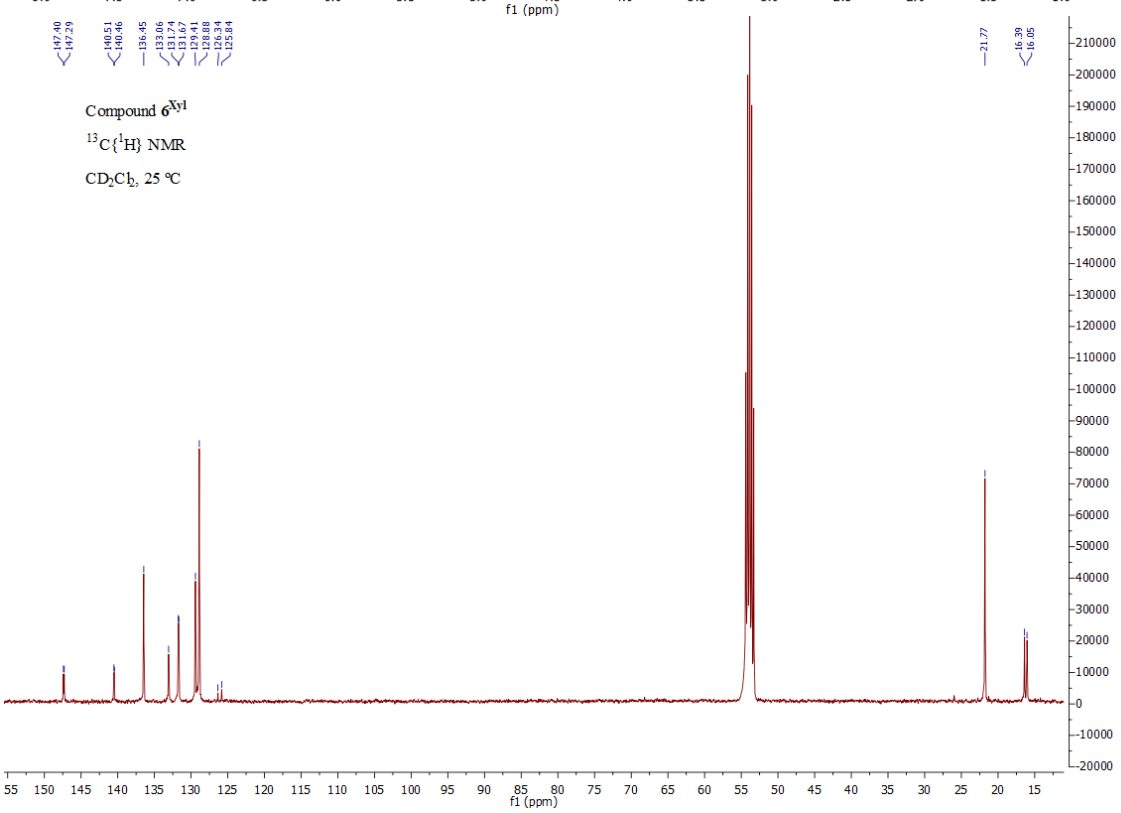

6.84
Compound 6^{Xyl}
$^{31}P\{^{1}H\}$ NMR
CD_2Cl_2, 25 °C
f1 (ppm)



Compound $\mathbf{6}^{Xyl}$

^{1}H NMR

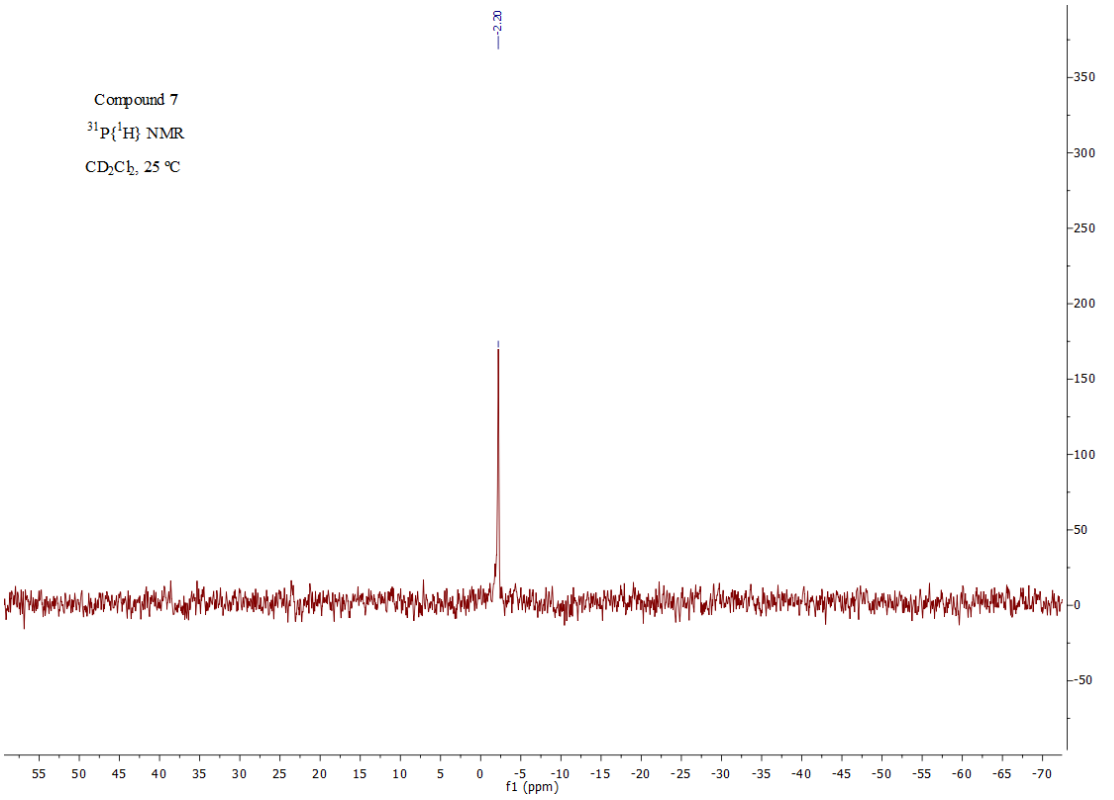
CD_2Cl_2, 25 °C

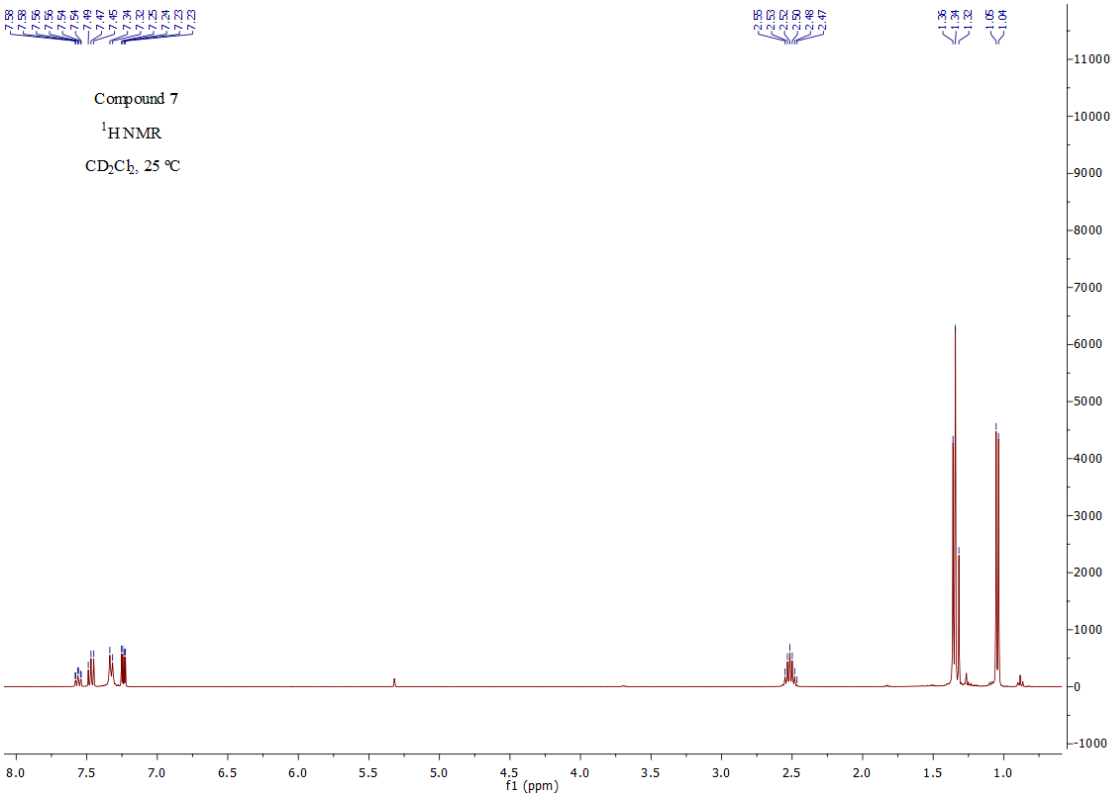


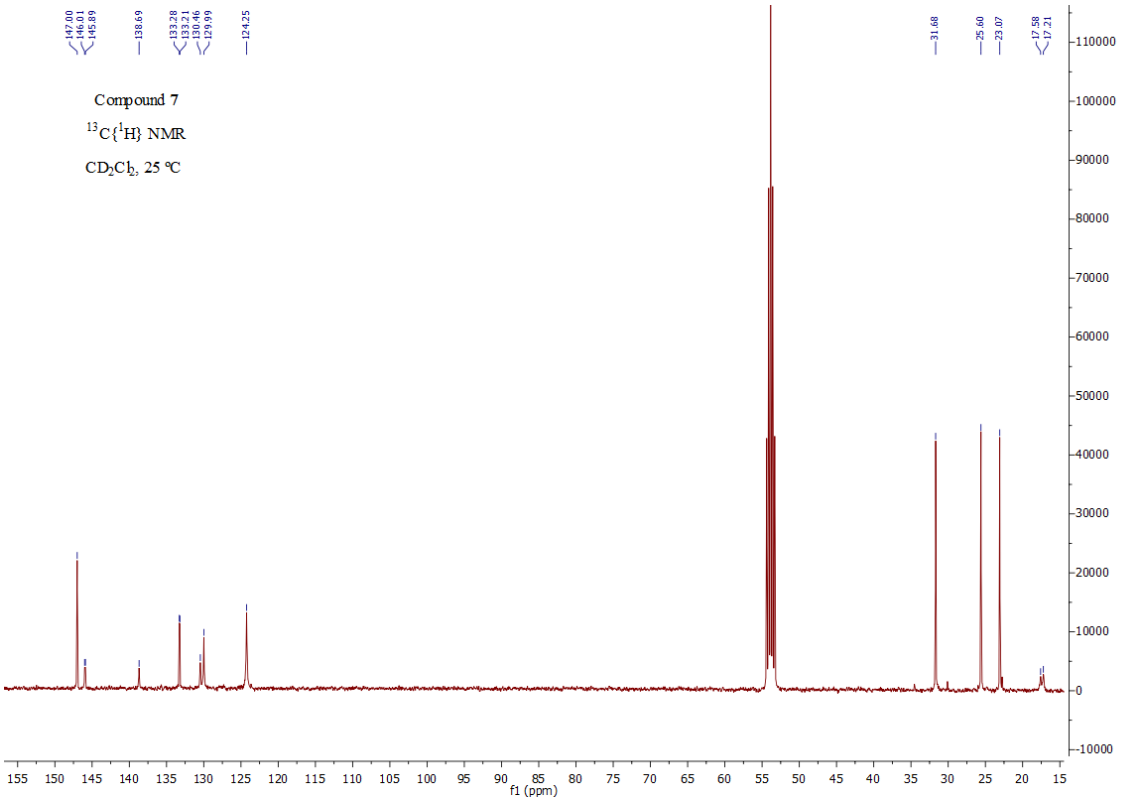
Compound $\mathbf{6}^{Xyl}$

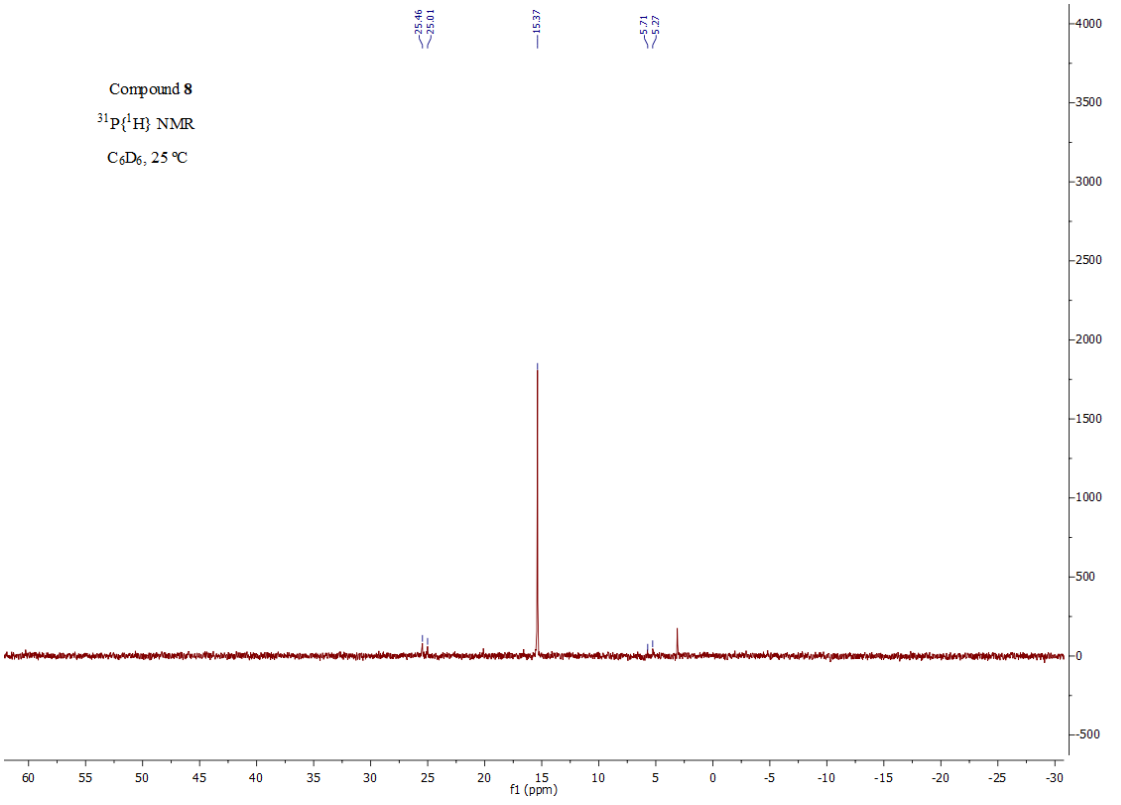
$^{13}C\{^{1}H\}$ NMR

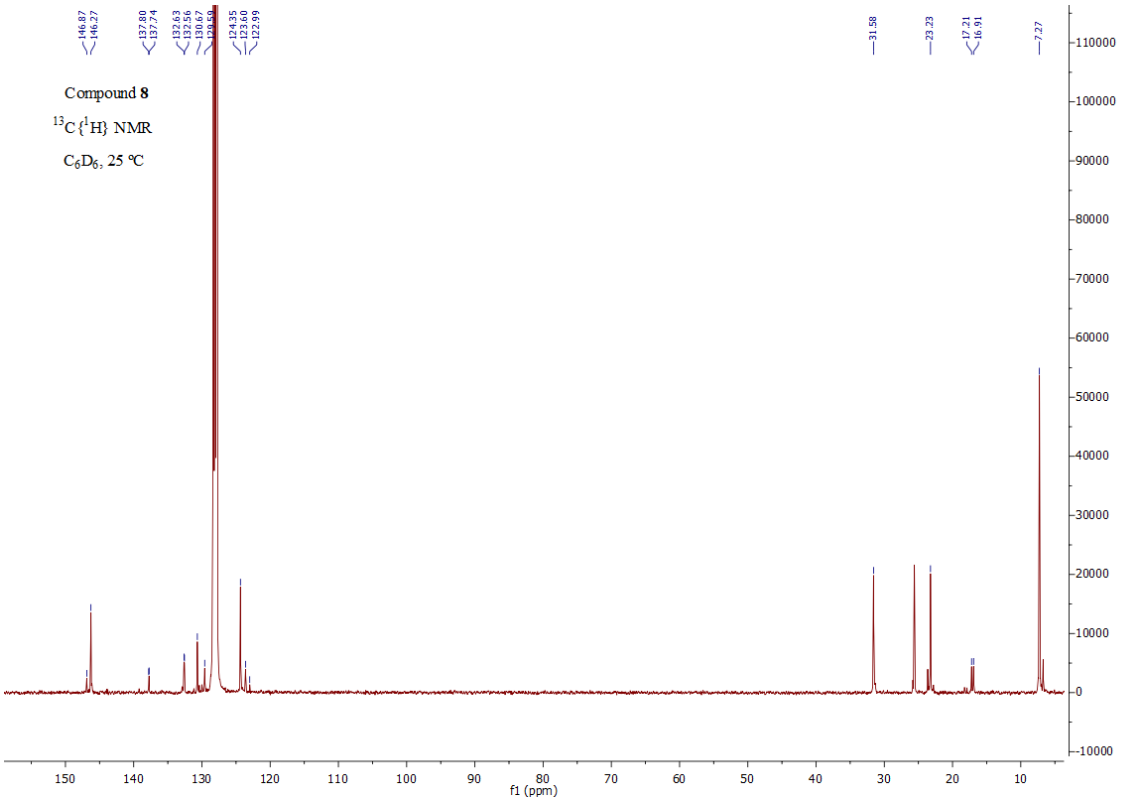
CD_2Cl_2, 25 °C

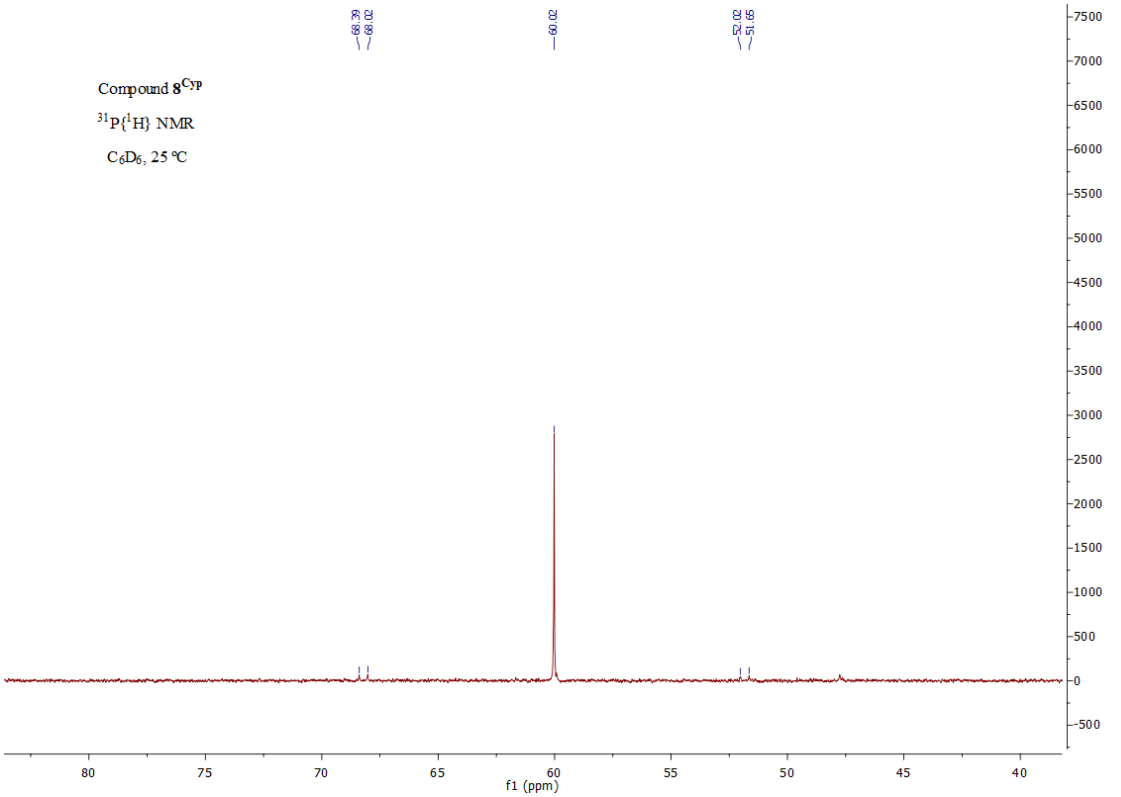

Compound 7
$^{31}P\{^{1}H\}$ NMR
CD_2Cl_2, 25 °C
-2.20
f1 (ppm)

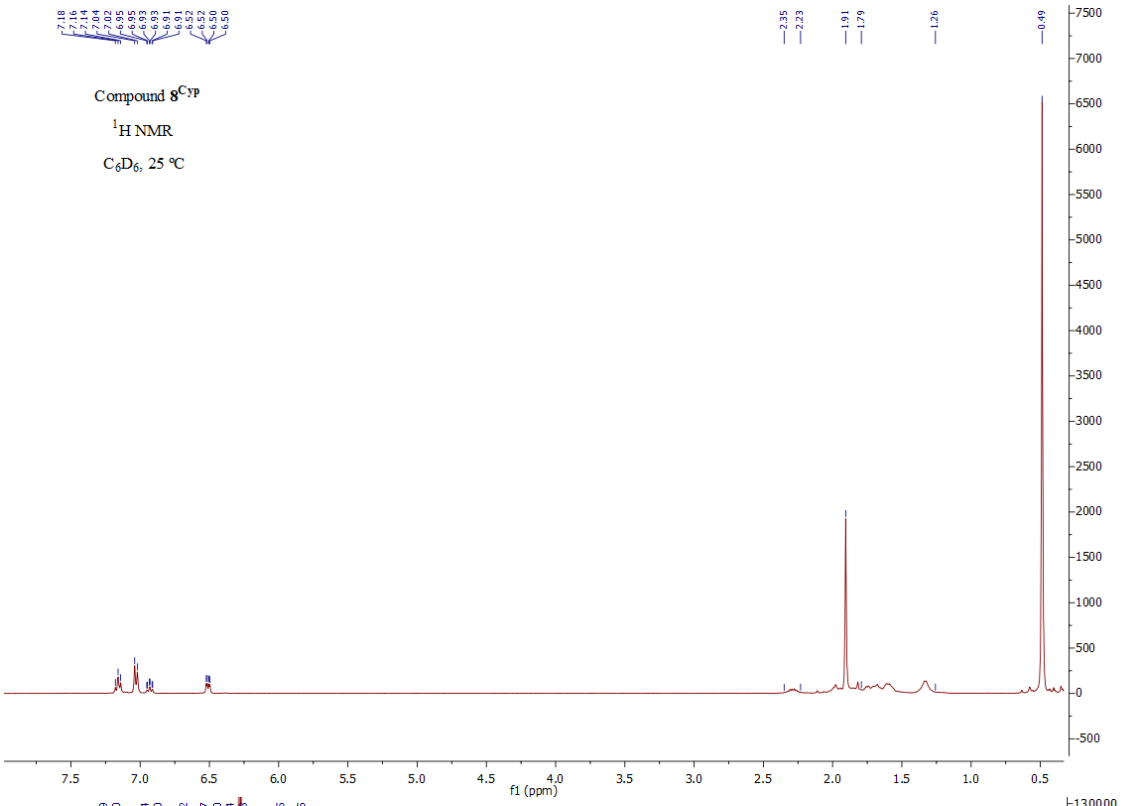

Compound 7
^{1}H NMR
CD_2Cl_2, 25 °C
7.58
7.58
7.56
7.56
7.54
7.54
7.49
7.47
7.45
7.34
7.32
7.25
7.24
7.23
7.23
2.55
2.53
2.52
2.50
2.48
2.47
1.36
1.34
1.32
1.05
1.04
f1 (ppm)

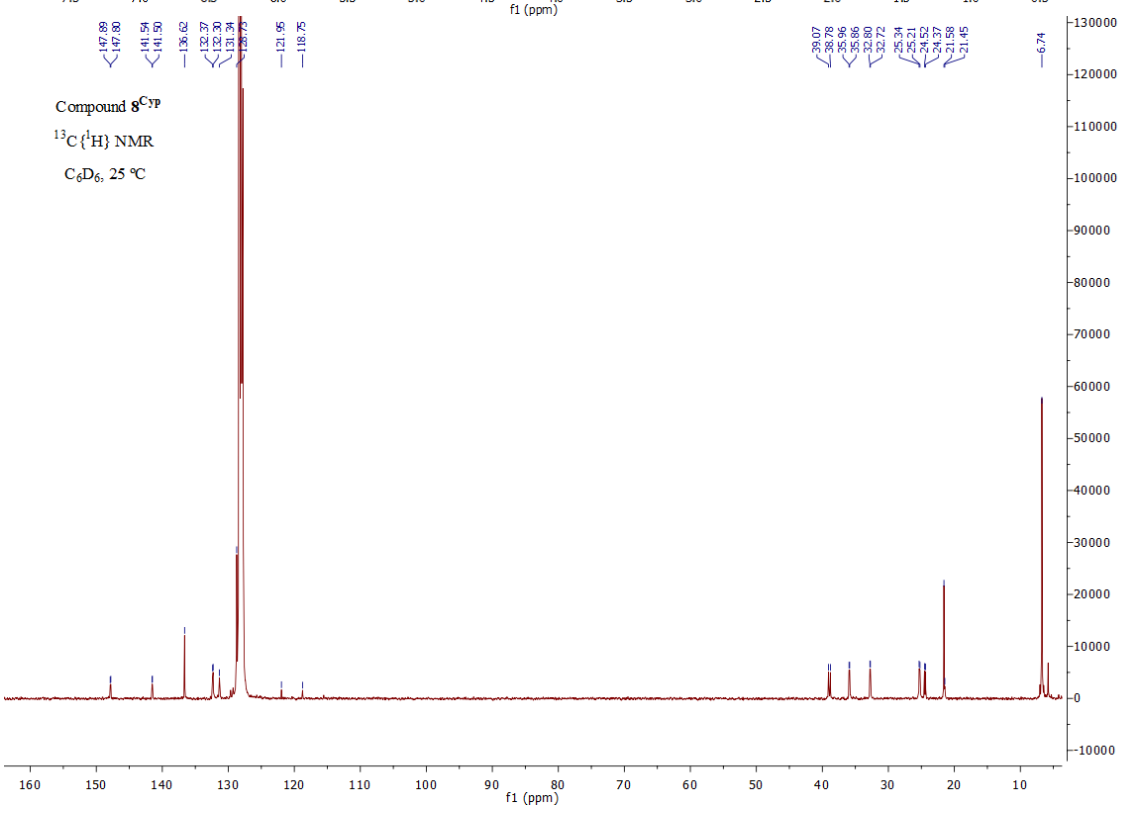

147.00
146.01
145.89
138.69
133.28
133.21
130.46
129.99
124.25
31.68
25.60
23.07
17.58
17.21
Compound 7
$^{13}C\{^{1}H\}$ NMR
CD_2Cl_2, 25 °C
f1 (ppm)

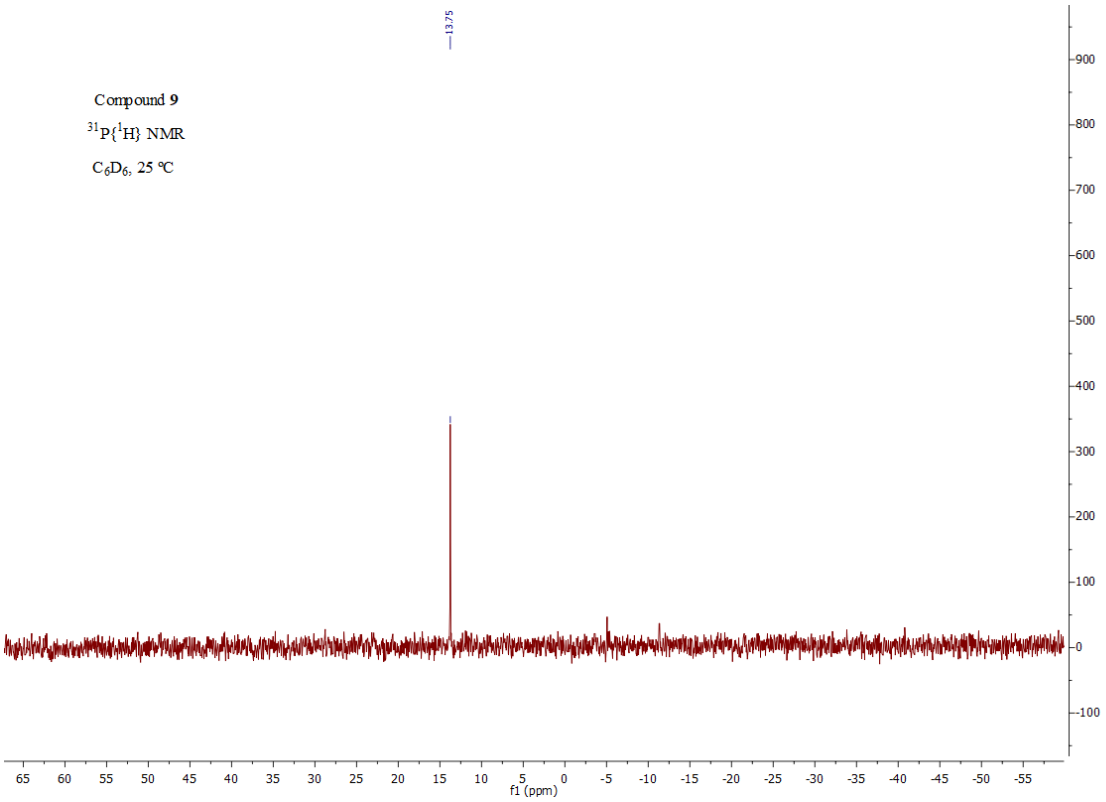

25.46
25.01
15.37
5.71
5.27
Compound 8
$^{31}P\{^{1}H\}$ NMR
C_6D_6, 25 °C
f1 (ppm)

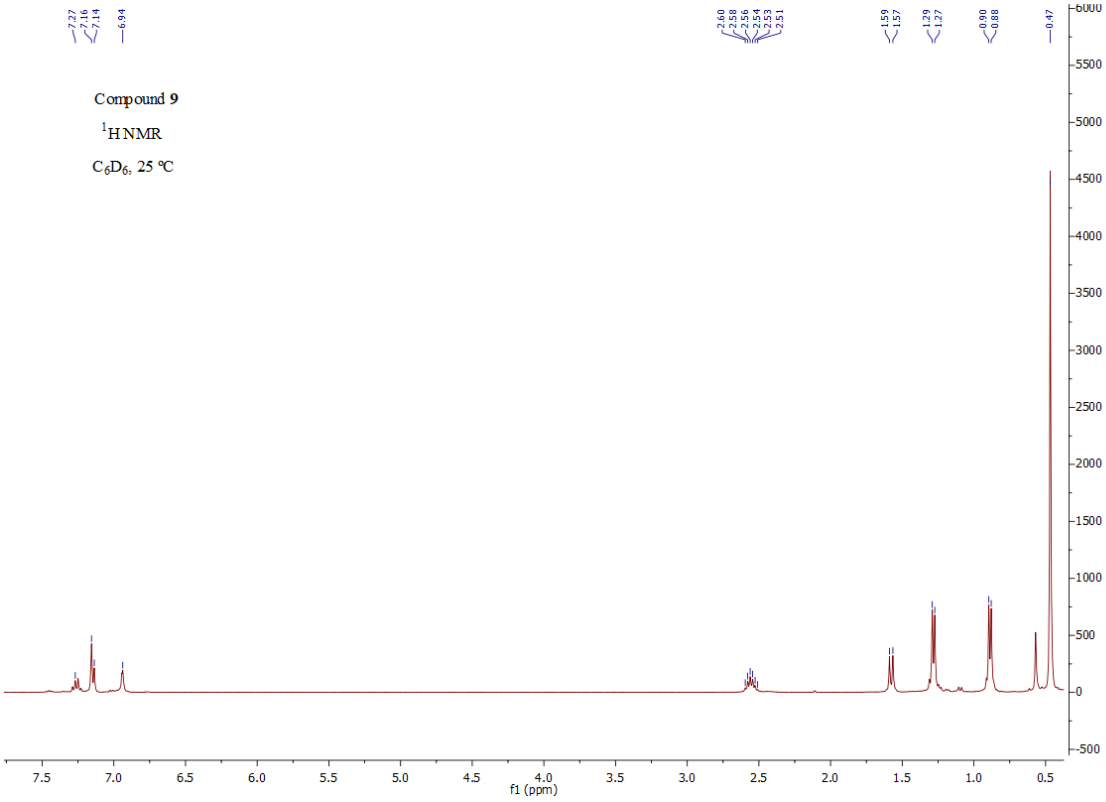

146.87
146.27
137.80
137.74
132.63
132.56
130.67
130.58
124.35
123.60
122.99
31.58
23.23
17.21
16.91
7.27
Compound 8
13C {1H} NMR
C6D6, 25 °C
f1 (ppm)

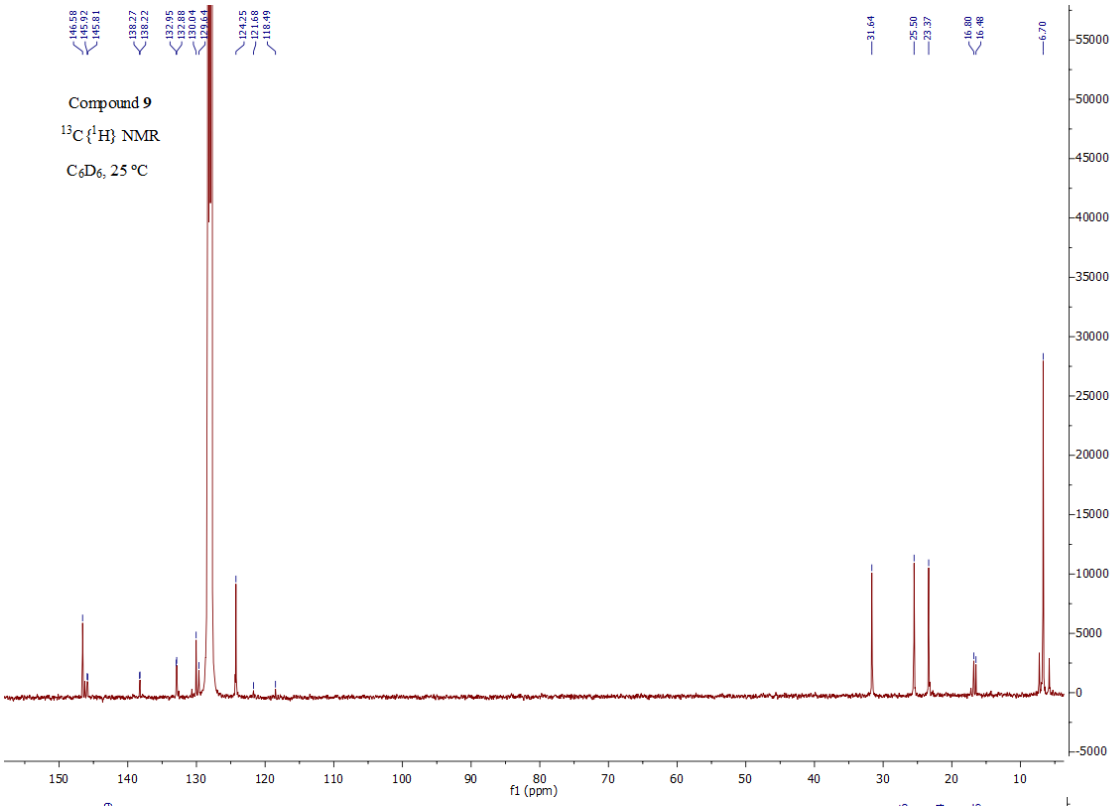

68.39
68.02
60.02
52.02
51.65
Compound 8Cyp
31P{1H} NMR
C6D6, 25 °C
f1 (ppm)

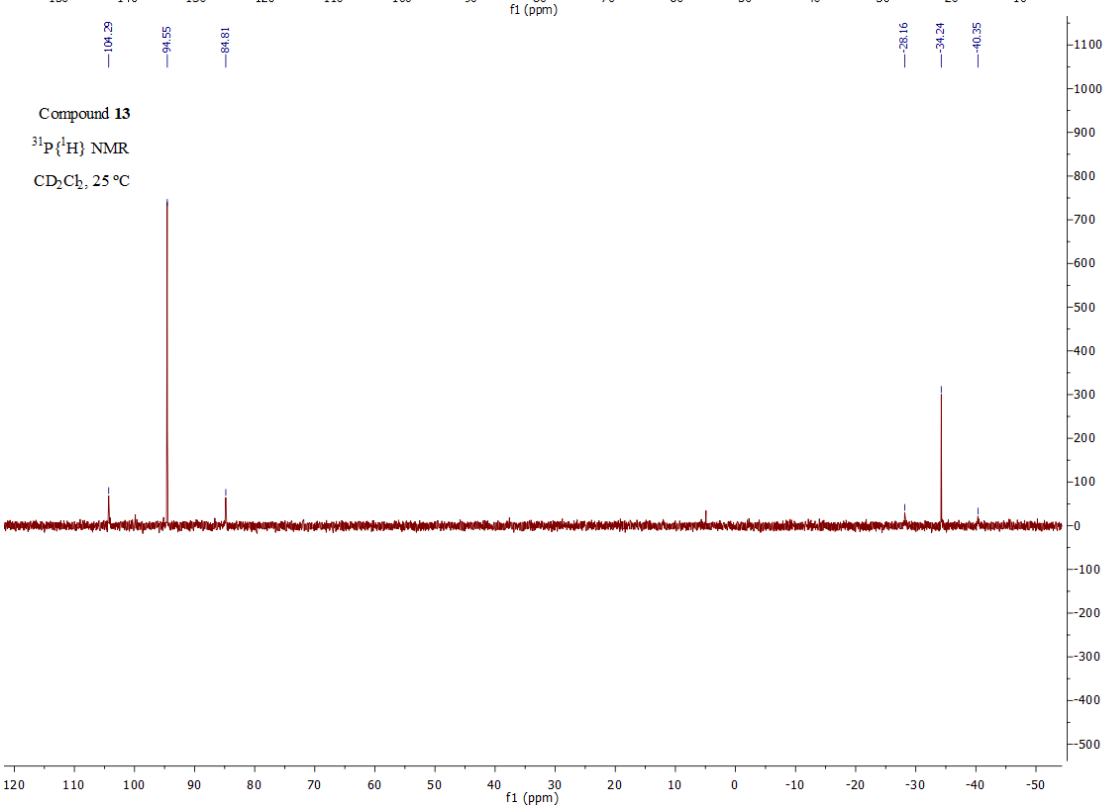

Compound 8Cyp
1H NMR
C6D6, 25 °C
f1 (ppm)

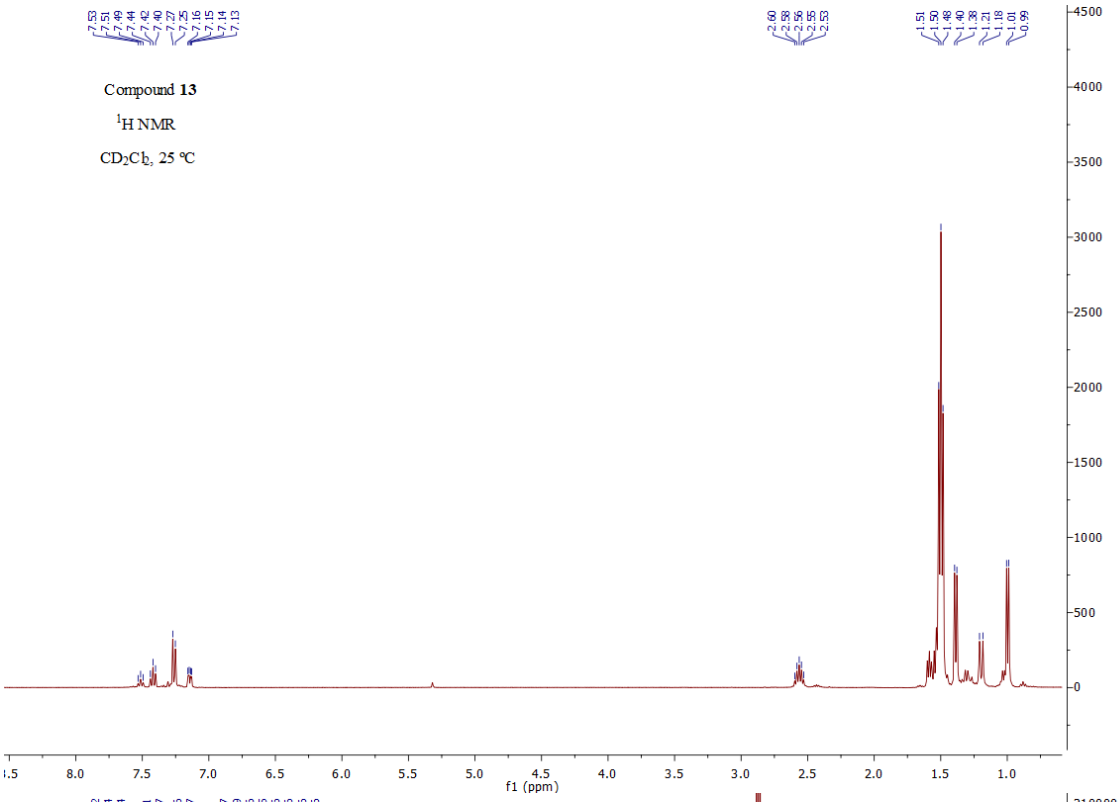

Compound 8Cyp
13C {1H} NMR
C6D6, 25 °C
f1 (ppm)

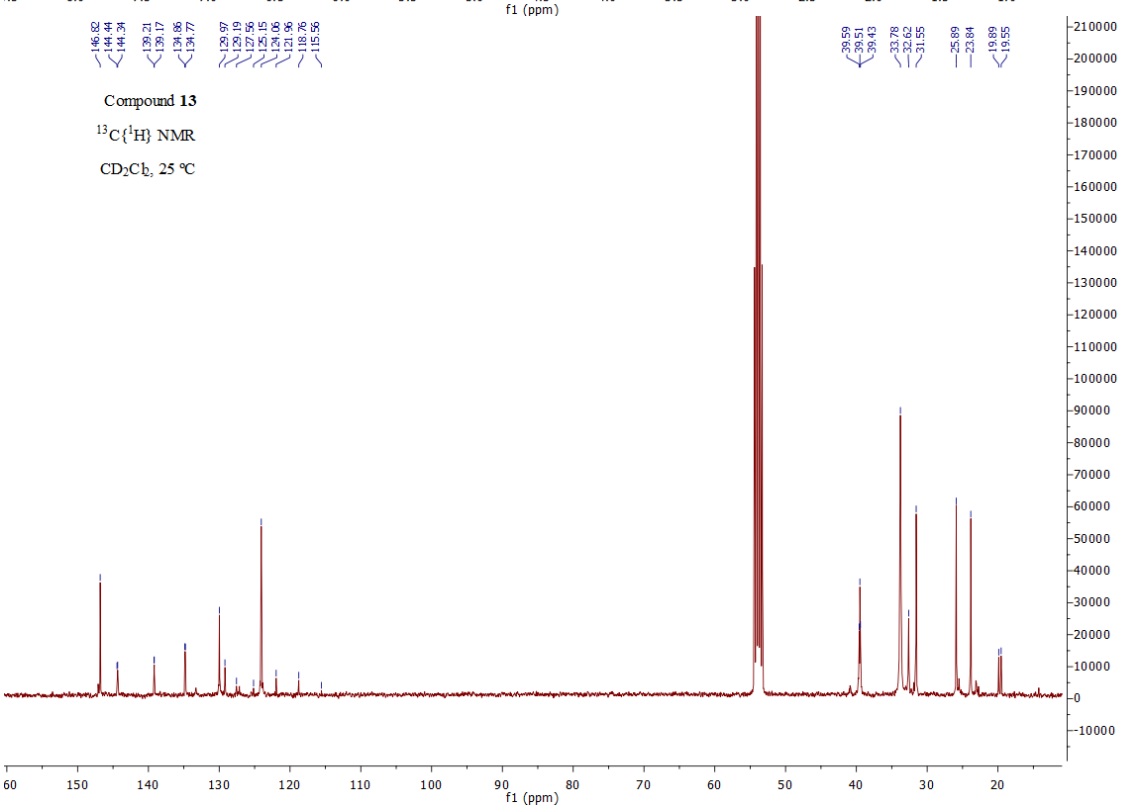

13.75
Compound 9
31P{1H} NMR
C6D6, 25 °C
f1 (ppm)

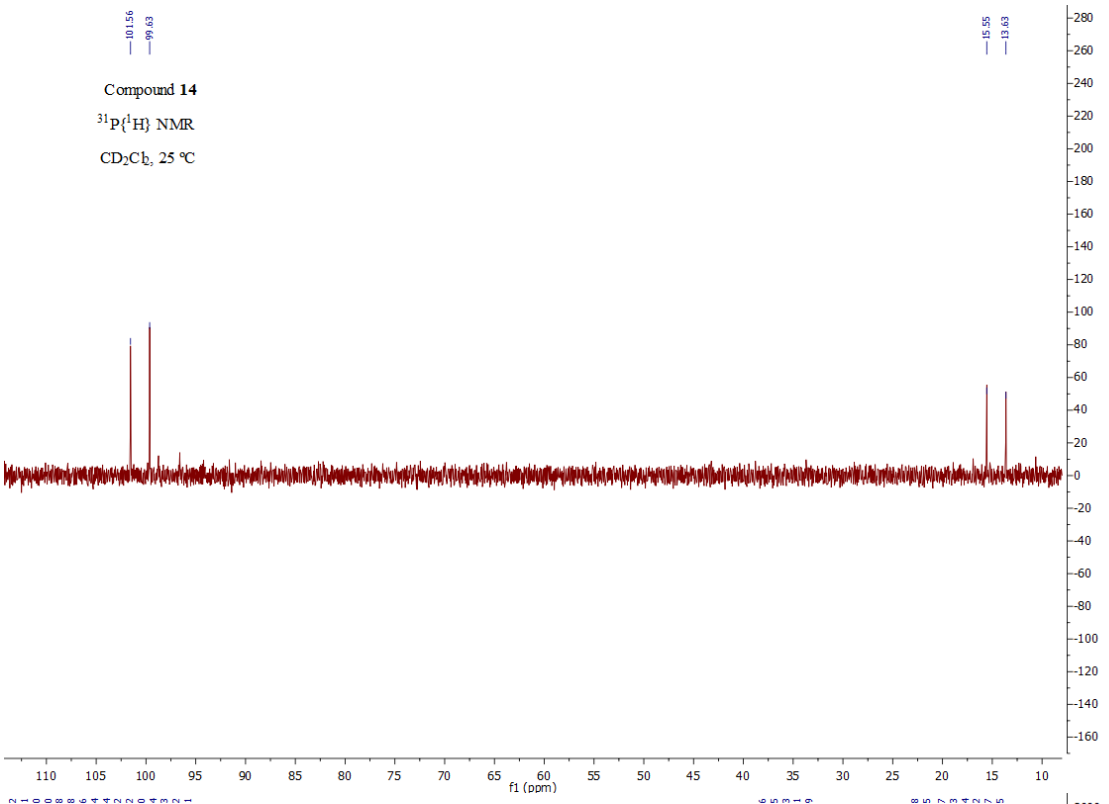

7.27
7.16
7.14
6.94
2.60
2.58
2.56
2.54
2.53
2.51
1.59
1.57
1.39
1.27
0.90
0.88
0.47
Compound 9
1H NMR
C6D6, 25 °C
f1 (ppm)

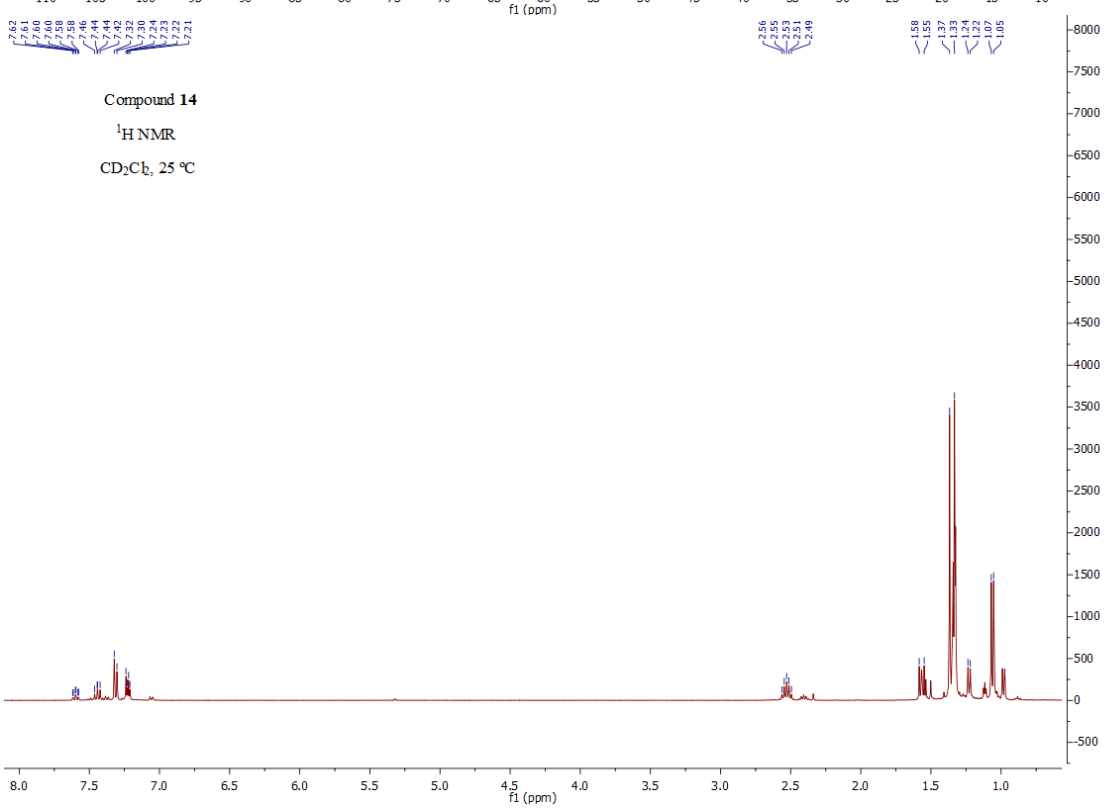

146.58
145.92
145.81
138.27
138.22
132.95
132.88
130.04
129.64
124.25
121.68
118.49
31.64
25.50
23.37
16.80
16.48
6.70
Compound 9
$^{13}C\{^{1}H\}$ NMR
C_6D_6, 25 °C
f1 (ppm)

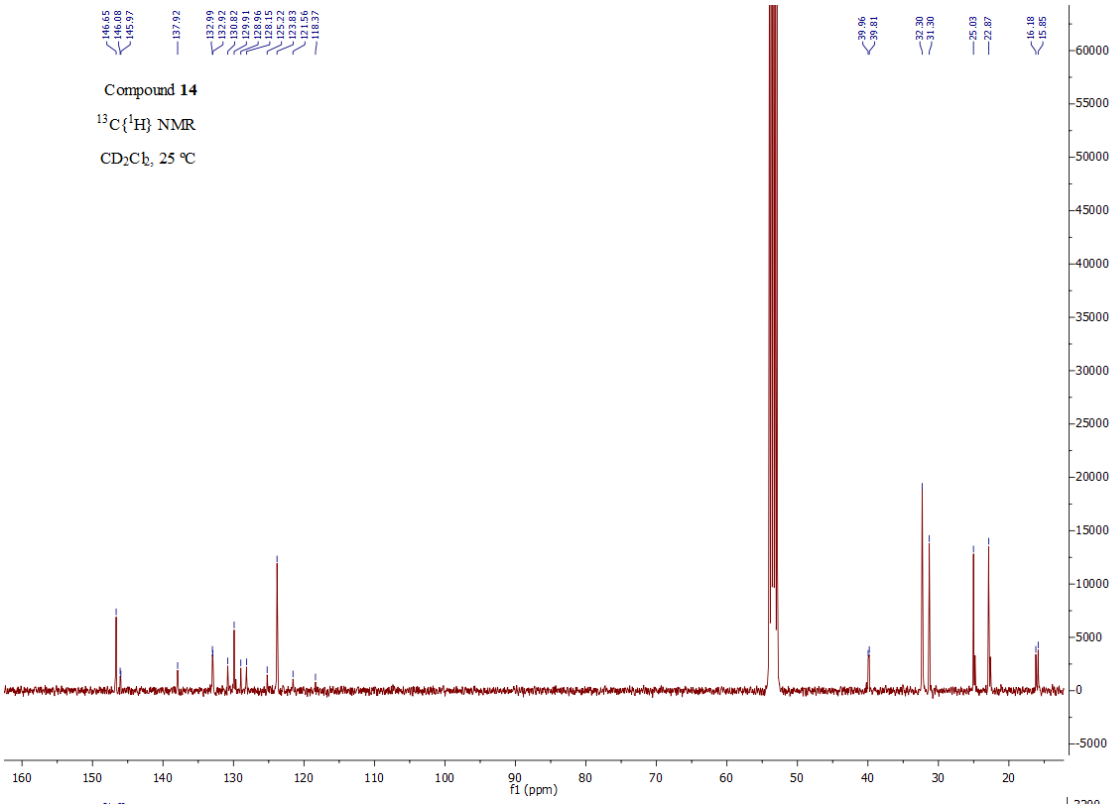

104.29
94.55
84.81
28.16
34.24
40.35
Compound 13
$^{31}P\{^{1}H\}$ NMR
CD_2Cl_2, 25 °C
f1 (ppm)

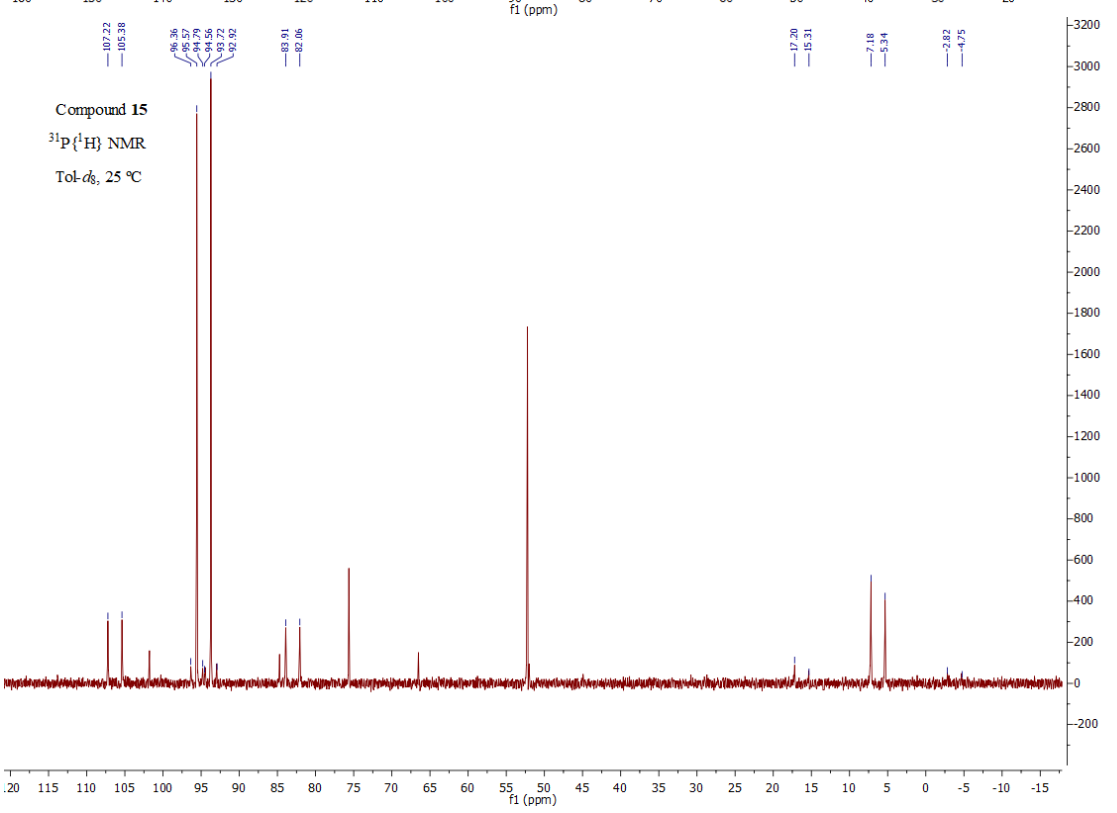

7.53
7.51
7.49
7.44
7.42
7.40
7.27
7.25
7.16
7.15
7.14
7.13
2.60
2.58
2.56
2.55
2.53
1.51
1.50
1.48
1.40
1.38
1.21
1.18
1.01
0.99
Compound 13
1H NMR
CD2Cl2, 25 °C
f1 (ppm)

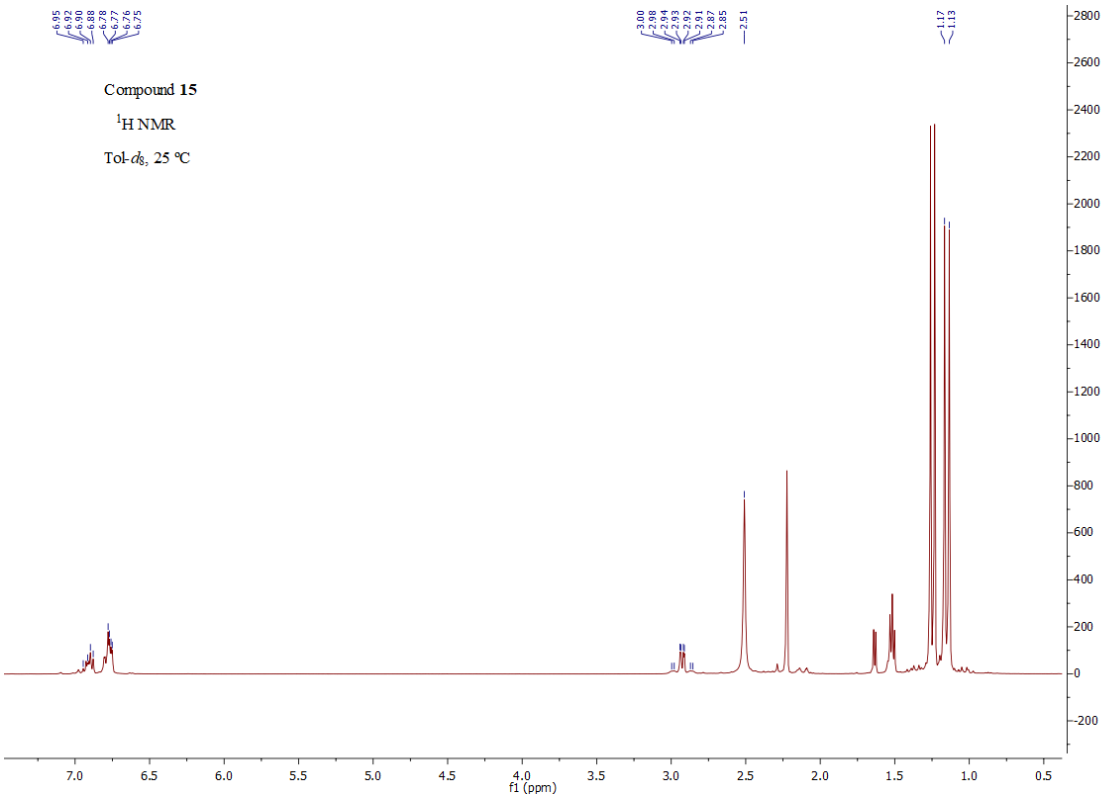

146.82
144.44
144.34
139.21
139.17
134.86
134.77
129.97
129.19
127.56
125.15
124.06
121.96
118.76
115.56
39.59
39.51
39.43
33.78
32.62
31.55
25.89
23.84
19.89
19.55
Compound 13
13C{1H} NMR
CD2Cl2, 25 °C
f1 (ppm)

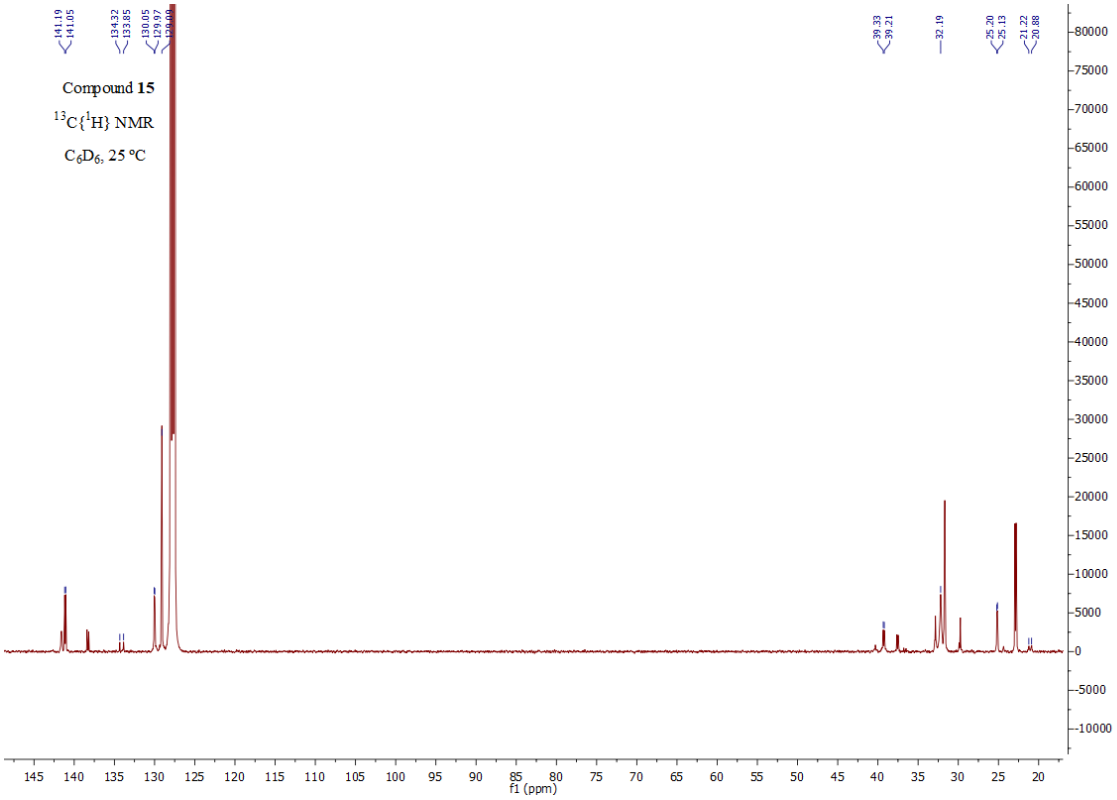

101.56
99.63
15.55
13.63
Compound 14
31P{1H} NMR
CD2Cl2, 25 °C
f1 (ppm)

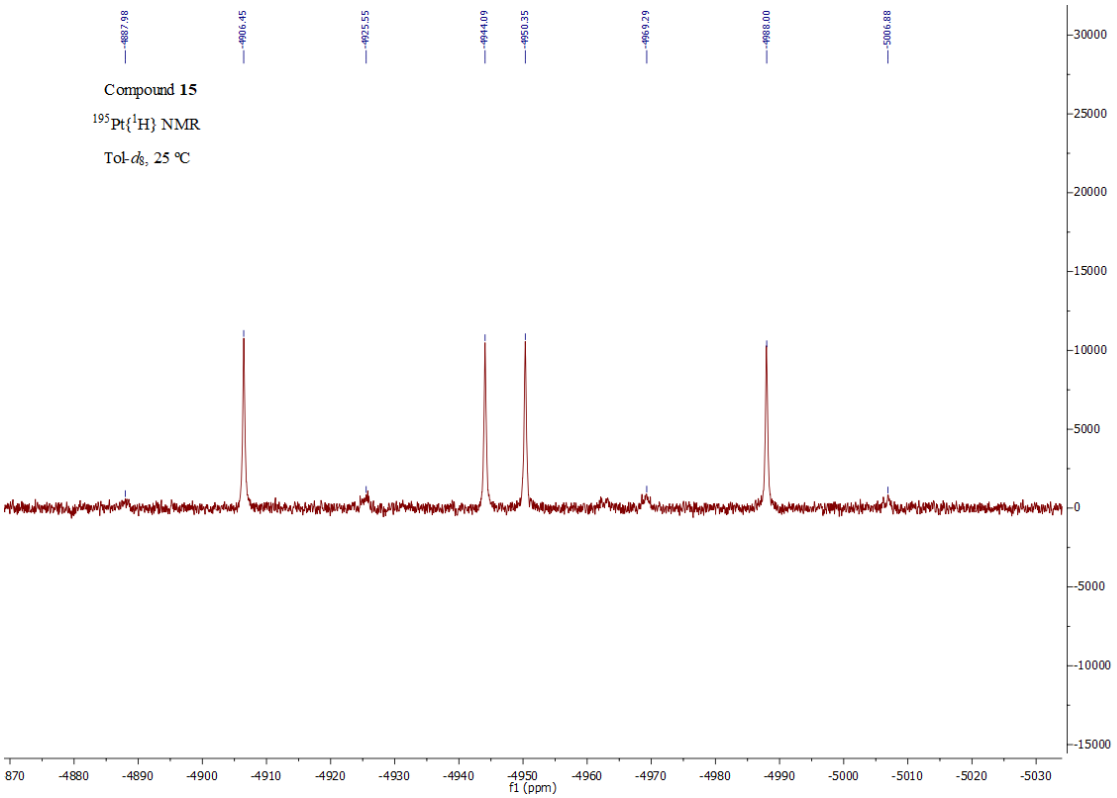

7.62
7.61
7.60
7.60
7.58
7.58
7.46
7.44
7.44
7.42
7.32
7.30
7.24
7.23
7.22
7.21
2.56
2.55
2.53
2.51
2.49
1.58
1.55
1.37
1.33
1.24
1.22
1.07
1.05
Compound 14
1H NMR
CD2Cl2, 25 °C
f1 (ppm)

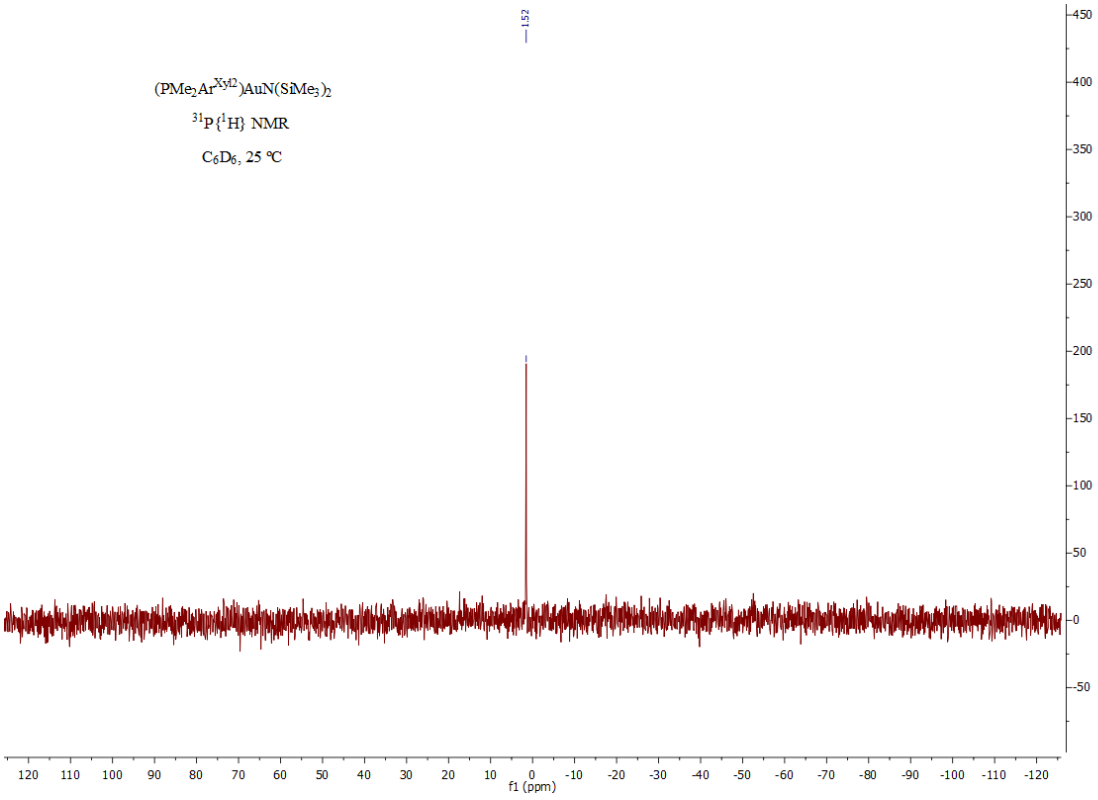

146.65
146.08
145.97
137.92
132.99
132.92
130.82
129.91
128.96
128.15
125.22
123.83
121.56
118.37
39.96
39.81
32.30
31.30
25.03
22.87
16.18
15.85
Compound 14
$^{13}C\{^{1}H\}$ NMR
CD_2Cl_2, 25 °C
f1 (ppm)

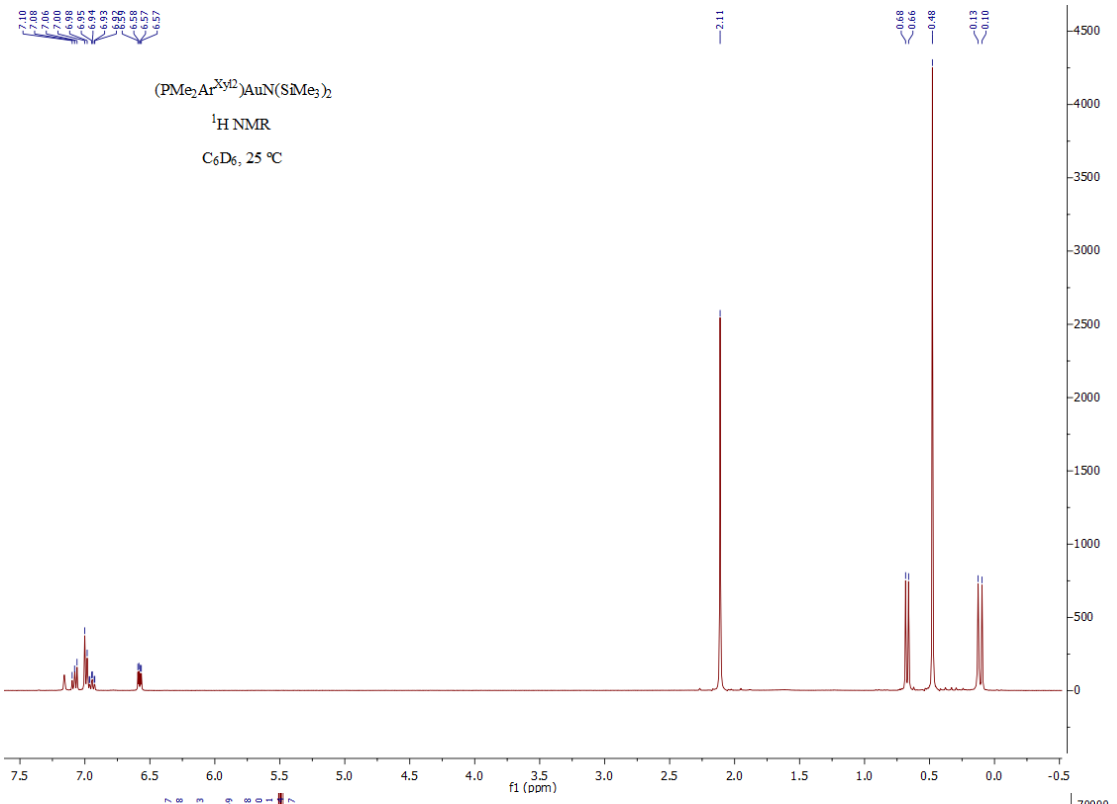

107.22
105.38
96.36
95.57
94.79
94.56
93.72
92.92
83.91
82.06
17.20
15.31
7.18
5.34
2.82
-4.75
Compound 15
$^{31}P\{^{1}H\}$ NMR
Tol-d_8, 25 °C
f1 (ppm)

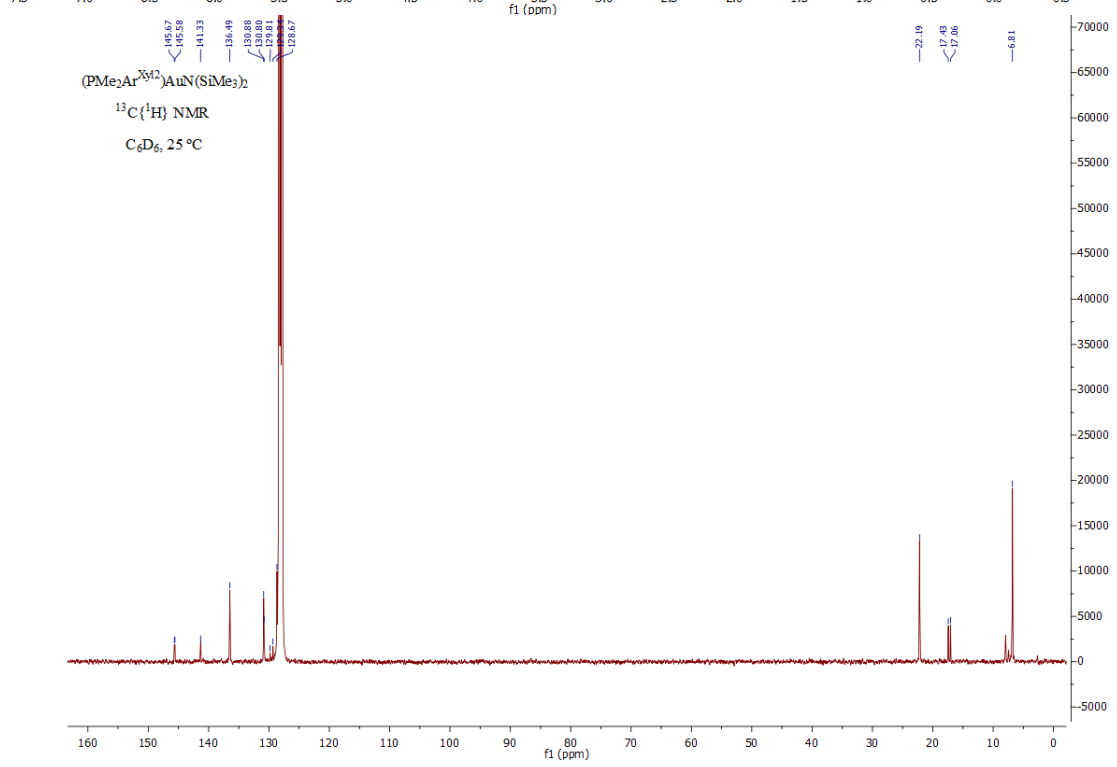

Compound 15
1H NMR
Tol-d8, 25 °C
f1 (ppm)

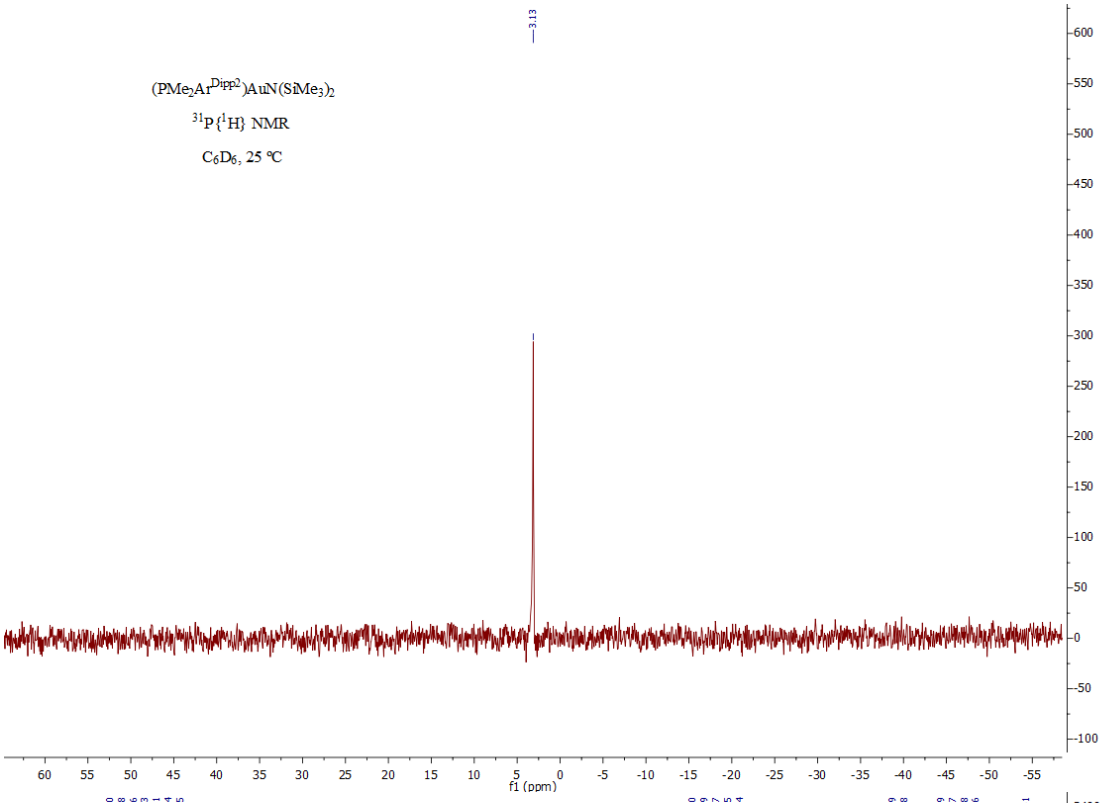

Compound 15
13C{1H} NMR
C6D6, 25 °C
f1 (ppm)

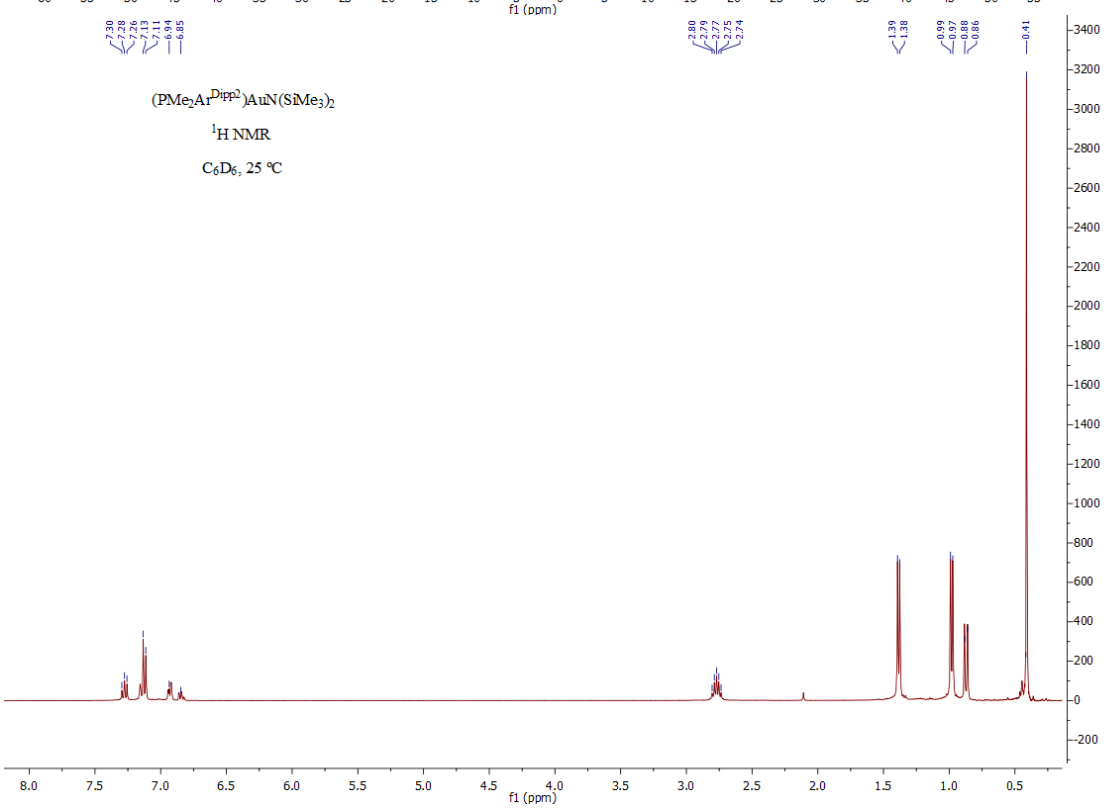

-4887.98
-4906.45
-4925.55
-4944.09
-4950.35
-4969.29
-4988.00
-5006.88
Compound 15
$^{195}Pt\{^{1}H\}$ NMR
Tol-d_8, 25 °C
f1 (ppm)

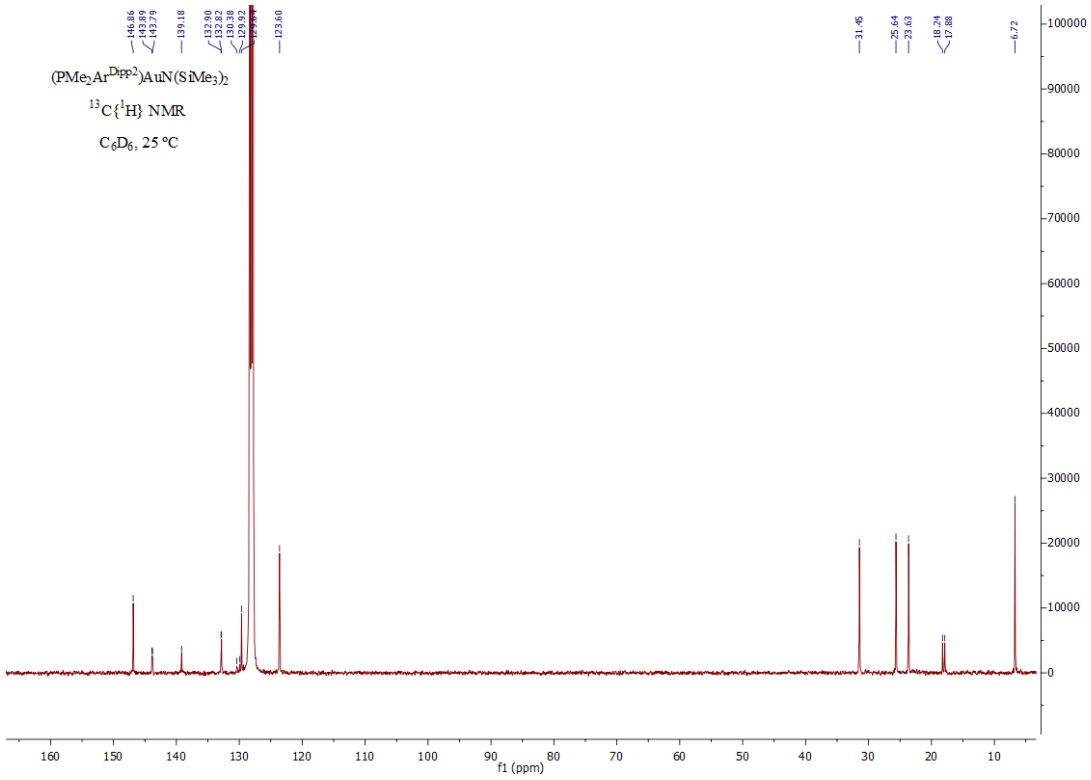

1.52
$(PMe_2Ar^{Xyl2})AuN(SiMe_3)_2$
$^{31}P\{^{1}H\}$ NMR
C_6D_6, 25 °C
f1 (ppm)

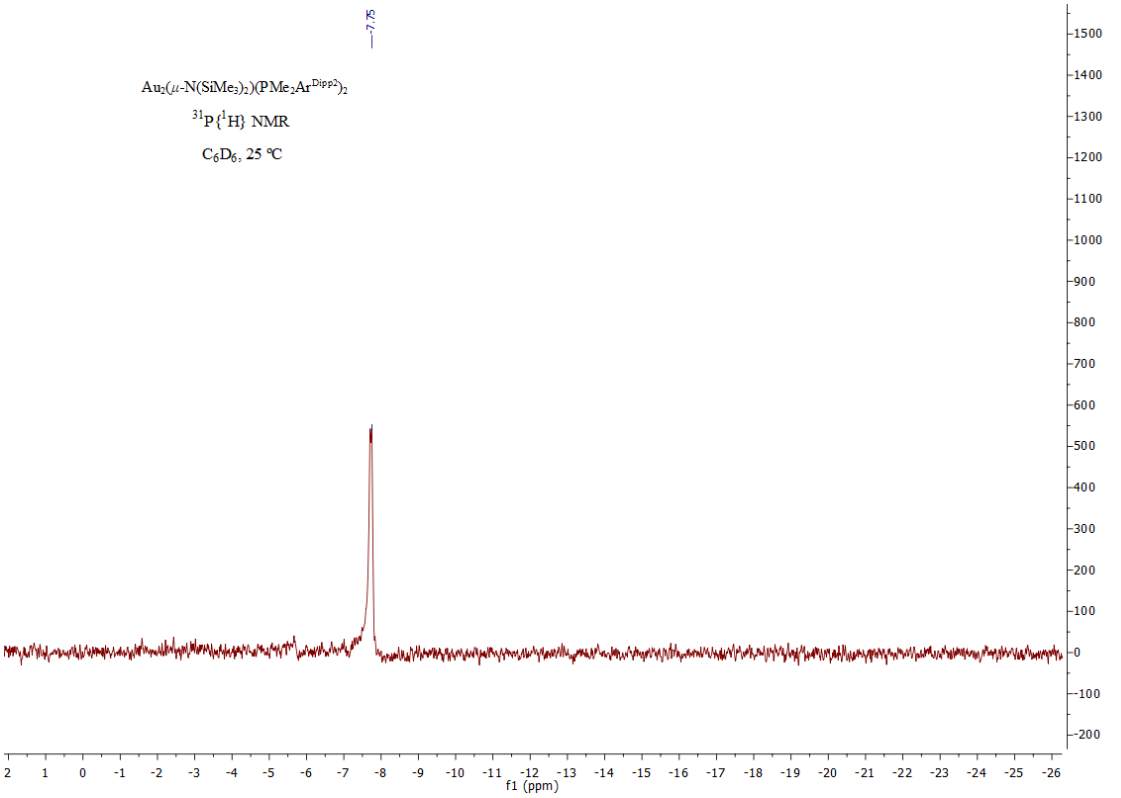

(PMe2ArXyl2)AuN(SiMe3)2
1H NMR
C6D6, 25 °C
f1 (ppm)

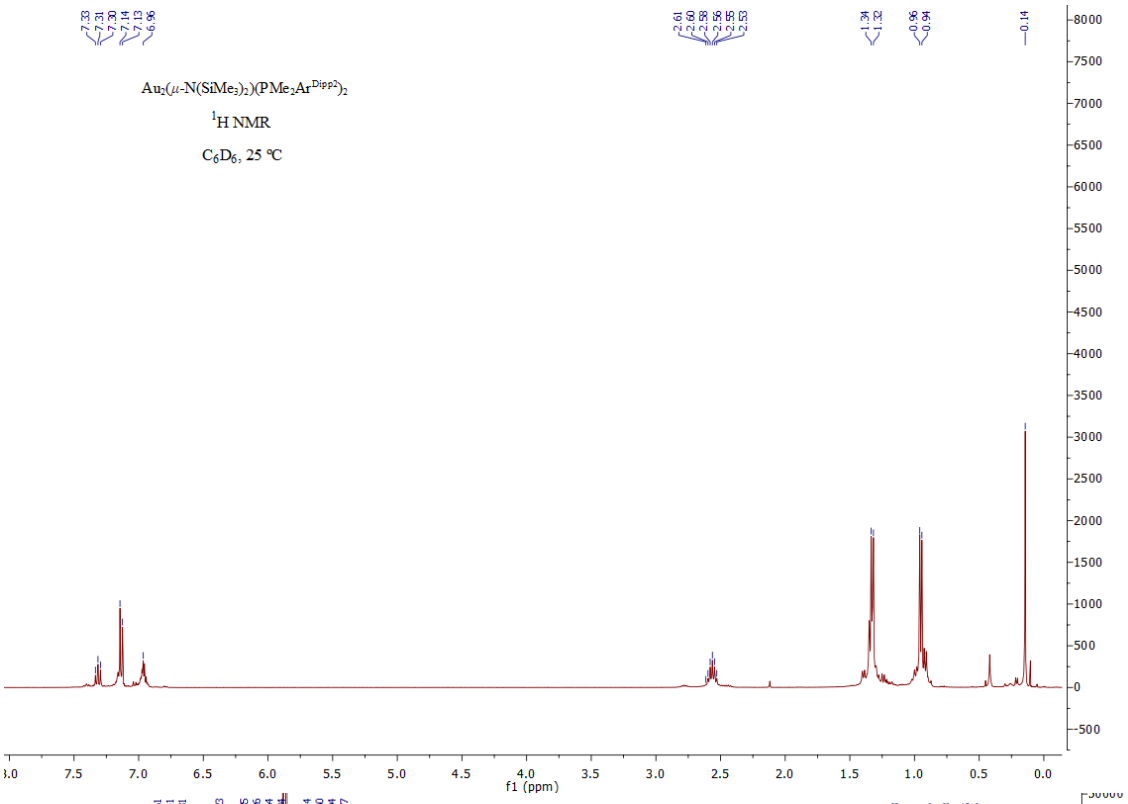

(PMe2ArXyl2)AuN(SiMe3)2
13C{1H} NMR
C6D6, 25 °C
f1 (ppm)

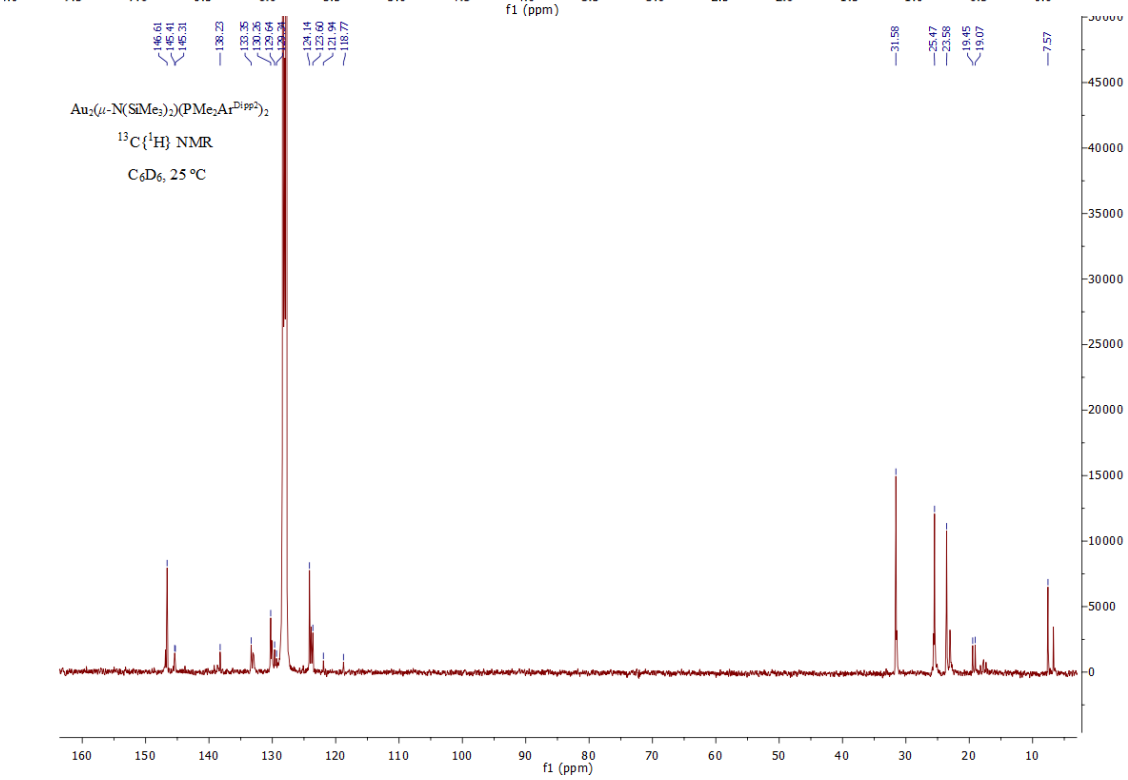

(PMe2Ar^Dipp2)AuN(SiMe3)2
31P{1H} NMR
C6D6, 25 °C
3.13
f1 (ppm)


(PMe2Ar^Dipp2)AuN(SiMe3)2
1H NMR
C6D6, 25 °C
7.30
7.28
7.26
7.13
7.11
6.94
6.85
2.80
2.79
2.77
2.75
2.74
1.39
1.38
0.99
0.97
0.88
0.86
0.41
f1 (ppm)


146.86
143.89
143.79
139.18
132.90
132.82
130.38
129.92
123.60
31.46
25.64
23.63
18.24
17.88
6.72
(PMe2ArDipp2)AuN(SiMe3)2
13C{1H} NMR
C6D6, 25 °C
f1 (ppm)


7.75
Au2(μ-N(SiMe3)2)(PMe2ArDipp2)2
31P{1H} NMR
C6D6, 25 °C
f1 (ppm)

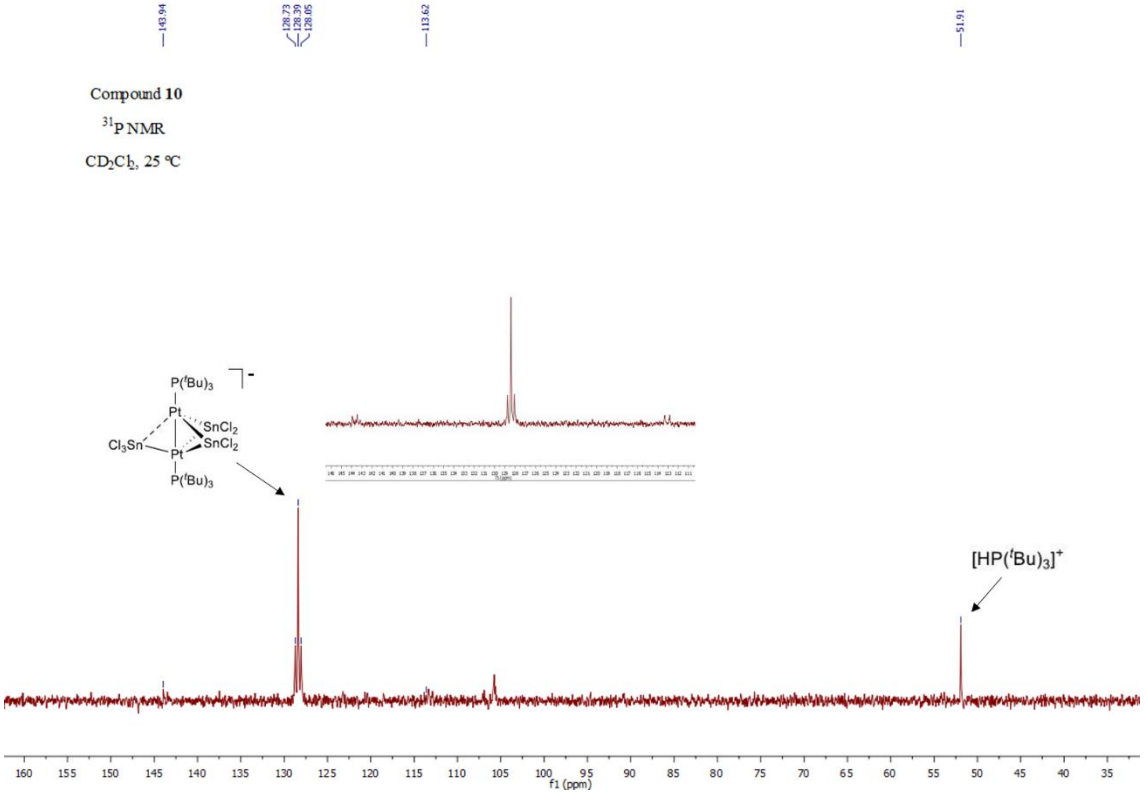

7.33
7.31
7.30
7.14
7.13
6.96
2.61
2.60
2.58
2.56
2.55
2.53
1.34
1.32
0.96
0.94
0.14
Au2(μ-N(SiMe3)2)(PMe2ArDipp2)2
1H NMR
C6D6, 25 °C
f1 (ppm)


146.61
145.41
145.31
138.23
133.35
130.26
129.64
124.14
123.60
121.94
118.77
31.58
25.47
23.58
19.45
19.07
7.57
Au2(μ-N(SiMe3)2)(PMe2ArDipp2)2
13C{1H} NMR
C6D6, 25 °C
f1 (ppm)

Compound **10**

^{31}P NMR

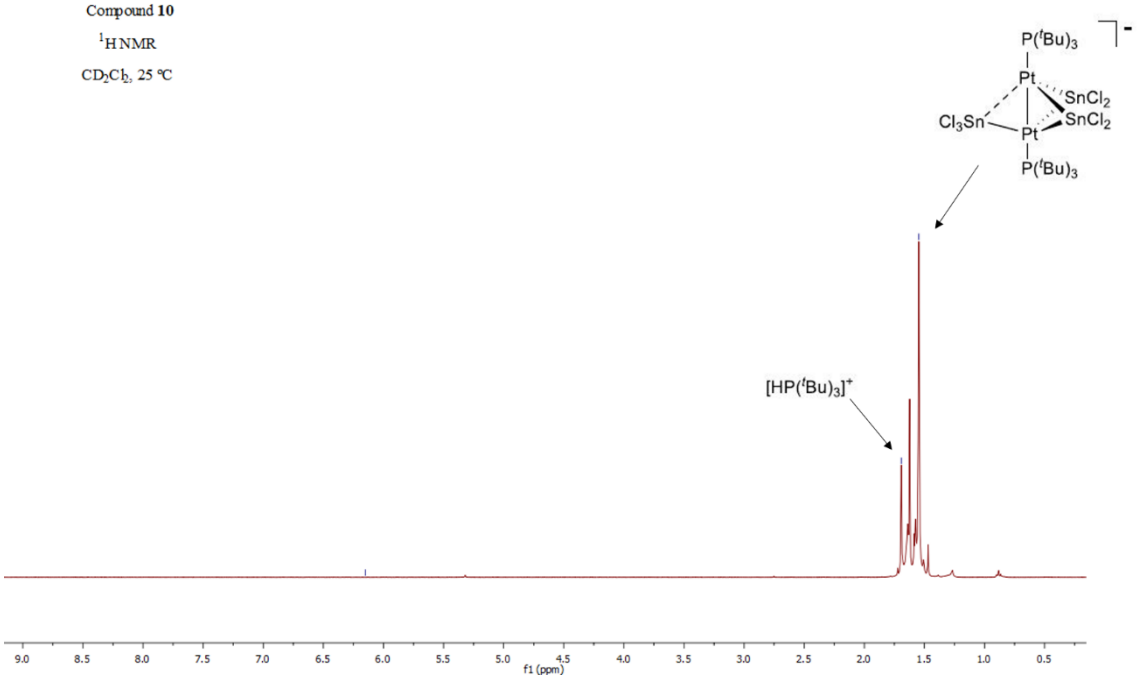
CD_2Cl_2, 25 °C



Compound **10**

^{1}H NMR

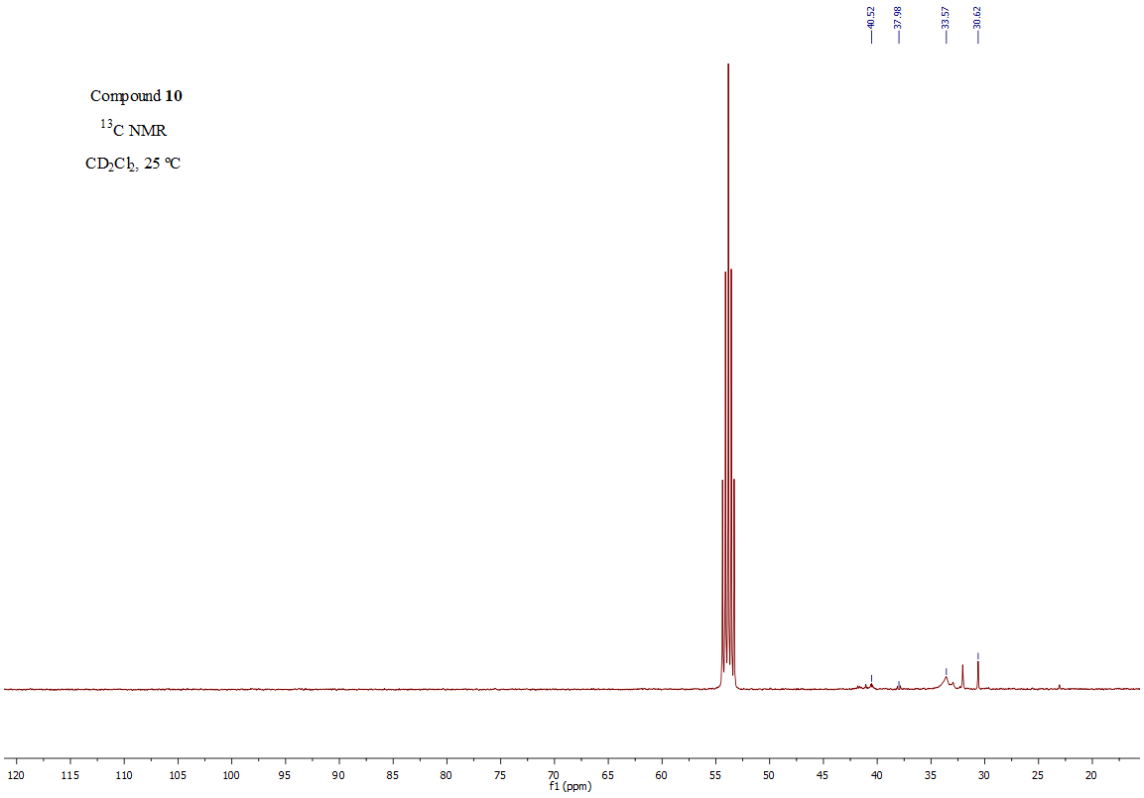
CD_2Cl_2, 25 °C



Compound **10**

^{13}C NMR

CD_2Cl_2, 25 °C



6. References

[1] SAINT 6.02, BRUKER-AXS, Inc., Madison, WI 53711-5373 USA, 1997–1999

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