Supporting Information

Rare-Earth-Catalyzed Regioselective Hydrosilylation of Aryl-Substituted Internal Alkenes

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General Experimental

All manipulations involving air- and moisture-sensitive compounds were carried out under an atmosphere of dry argon by using modified Schlenk line and glovebox techniques. The ^{1}H, ^{13}C, and ^{29}Si NMR spectroscopic data were recorded on a Bruker AV400 spectrometer. GC-MS data were obtained with a Thermo Scientific TRACE 1300 & ISQ QD system, equipped with a TG-5MS column.

The solvents (THF, toluene, and *n*-hexane) were freshly distilled from sodium and degassed prior to use. α-diimine,[S1] alkenes,[S2] and $KCH_2Si(CH_3)_3$[S3] were synthesized according to the published procedures. Alkenes were vacuum-distilled over CaH_2 and then were degassed prior to use. Other chemicals were of analytical grade and were used as received.

Synthesis of $LSmI(THF)_3$[S4] (1): A mixture of α-diimine (4.04 g, 10 mmol), and Sm (1.50 g, 10 mmol) in THF (30 mL) was added I_2 (1.27 g, 5 mmol) in THF (20 mL). The brown suspension was changed to orange, and then changed to blue. The solution was stirred at room temperature for 12 h. After removing the solvent under reduced pressure, the residue was washed by *n*-hexane. Removal of solvents yielded a blue powder (8.44 g, 93.9 %). Single crystal of **1** was grown from THF/*n*-hexane at –35 ℃. IR (cm^{-1}): $\tilde{\nu}$ 2962 (m), 1424 (s), 1257 (s), 773 (s).

Synthesis of $LSmCH_2Si(CH_3)_3(THF)_2$ (2): A mixture of **1** (450 mg, 0.5 mmol), and $KCH_2Si(CH_3)_3$ (63 mg, 0.5 mmol) was added 30 mL *n*-hexane. The solution was stirred at room temperature for 3 h. After filtration, the filtrate was concentrated to 10 mL. Storage kept overnight at –35 ℃ afforded brown crystals of **2** (244 mg, 62.0 %). **^{1}H NMR** (400 MHz, C_6D_6, 23 ℃): δ 7.83 (t, $^{3}J_{HH}$ = 7.5 Hz, 2H, Ar-*H*), 7.69 (d, $^{3}J_{HH}$ = 7.4 Hz ,4 H, Ar-*H*), 2.19 (s, 12 H), 1.91–1.51 (br, 8 H), 1.2 (br, 8 H), 0.14 (s, 8 H), –0.05 (s, 9 H, $Si(CH_3)_3$), –0.97 (br, 6 H). **^{13}C NMR** (101 MHz, C_6D_6, 23 ℃) δ 156.91, 123.98, 122.32, 68.12, 26.83, 24.97, 23.07, 21.83, 1.75. **^{29}Si NMR** (79 MHz, C_6D_6, 23 ℃) δ –4.05. IR (cm^{-1}): $\tilde{\nu}$ 2956 (m), 1428 (s), 1259 (s), 1026 (s), 855 (s), 822 (s), 781 (s).

Synthesis of L(THF)Sm(μ-H)$_2$(μ-THF)Sm(THF)L (3): A mixture of **2** (157 mg, 0.2 mmol), and $^{n}C_6H_{13}SiH_3$ (23 mg, 0.2 mmol) was added 15 mL *n*-hexane. The solution was stirred at room

temperature for 5 minutes. After filtration, the filtrate was stored at −35 ℃ overnight afforded brown crystals of **3** (115 mg, 86.5 %). **^{1}H NMR** (400 MHz，C_6D_6, 23 ℃): δ 7.69 (t, 4 H, Ar-*H*), 7.45 (br, 8 H, Ar-*H*), 3.02 (s, 8 H), 2.32 (s, 9 H), 1.24 (m, 11 H, *n*-hexane), 0.89 (t, 8 H, *n*-hexane), 0.50 (br, 16 H), −1.99 (s, 10 H, C_4H_8O)。IR (cm^{-1}): $\tilde{\nu}$ 2960 (s), 1665 (m), 1440 (s), 1255 (s), 1114 (s), 775 (s).

Typical Procedure for Catalytic Hydrosilylation. In an Ar glove box, a Schlenk tube was charged with catalyst (0.015 mmol, 3 mol %) and toluene. And then $^nC_6H_{13}SiH_3$ (0.55 mmol) and alkene (0.5 mmol) were added. The Schlenk tube was quickly removed from the glovebox. The reaction mixture was stirred at 60 ℃ or 80 ℃ using oil bath. Conversion and regioselectivity were analysed by GC-MS of the crude reaction mixture after quenching and diluting the crude reaction mixture with *n*-hexane. After the reaction was complete, the product was purified by column chromatography on silica gel (*n*-hexane for elution) to yield colorless oil.

Table S1. Scope of substrate of the hydrosilylation reaction.[a]

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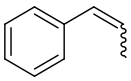
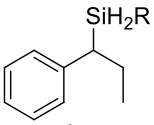
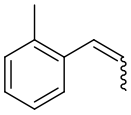
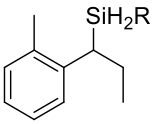
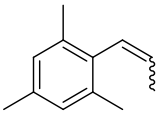
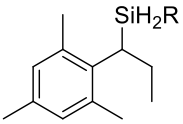
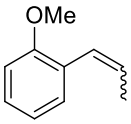
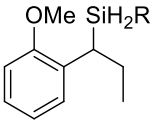
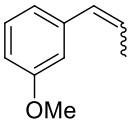
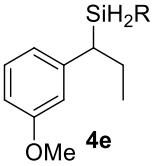
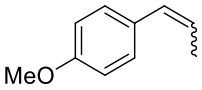
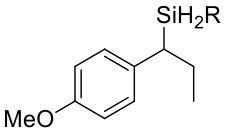
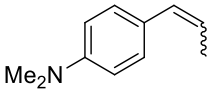
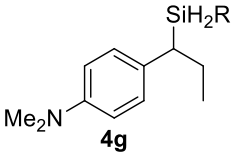
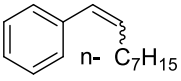
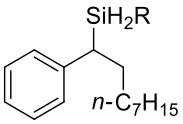
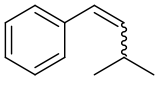
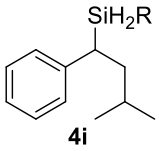
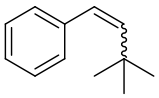
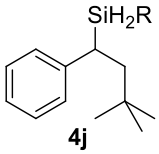
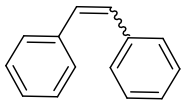
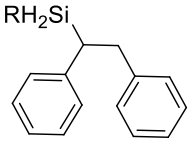
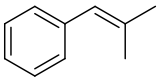
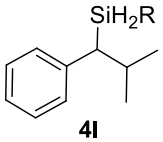
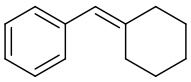
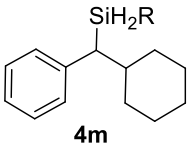
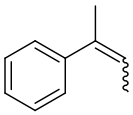
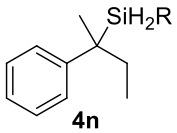
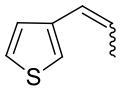
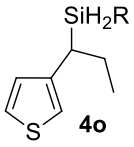
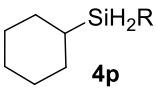
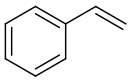
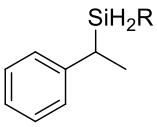
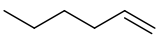
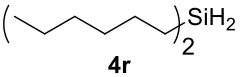
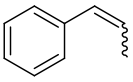
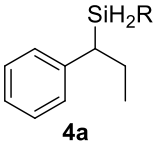
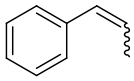
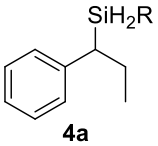
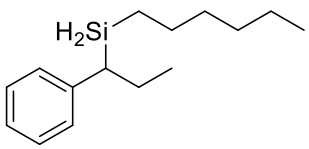
1		3	60	3	 **4a**	86	> 99
2		3	60	8	 **4b**	89	> 99
3[b]		5	80	24	 **4c**	41	97
4		3	60	3	 **4d**	91	> 99
5		3	60	3	 **4e**	88	> 99
6[b]		3	60	12	 **4f**	89	> 99
7[b]		3	60	12	 **4g**	85	> 99
8		3	60	10	 **4h**	86	> 99
9		3	60	10	 **4i**	88	> 99
10[b]		3	60	12	 **4j**	82	> 99

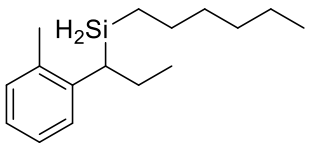
11[b,c]		5	80	12	 **4k**	87	—
12		5	80	12	 **4l**	84	> 99
13		5	80	12	 **4m**	91	> 99
14[b]		5	80	24	 **4n**	33	93
15[b]		5	80	24	 **4o**	41	> 99
16		5	60	10	 **4p**	75	—
17		3	60	1	 **4q**	89	98
18		3	60	2	 **4r**	78	96
19		3	25	1	 **4a**	85	> 99
20[d]		1.5	25	1	 **4a**	76	> 99

[a] Reaction conditions: 0.5 mmol of alkene, 0.55 mmol of $RSiH_3$ (R = *n*-C_6H_{13}) and **2** (3–5 mol%) in 0.1 mL of toluene; The yield (%) referred to the isolated yields; The regioselectivities were determined by GC-MS measurement of the crude products. [b] 1 mmol silane. [c] 0.3 mL toluene. [d] Complex **3** was used as catalyst.



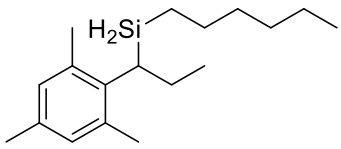
4a

Following the general procedure, substrate (59 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4a** (100 mg, yield 85.5 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 3 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.29 (dd, $^{3}J_{HH}$ = 8.4, 6.8 Hz, 2H, Ar-*H*), 7.14 (m, 3H, Ar-*H*), 3.79 (td, $^{3}J_{HH}$ = 6.5, 3.7 Hz, 1H, Si*H*H), 3.69 (td, $^{3}J_{HH}$ = 7.4, 3.7 Hz, 1H, SiH*H*), 1.89 (m, 2H, CHCH_2CH$_3$), 1.33–1.23 (m, 8H, CH$_2$C$_4H_8$CH$_3$), 0.94 (t, $^{3}J_{HH}$ = 7.3 Hz, 3H, CH$_2$CH_3), 0.89 (t, $^{3}J_{HH}$ = 7.0 Hz, 3H, CH$_2$CH_3), 0.63–0.56 (m, 2H, SiH$_2$CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 142.80, 127.35, 126.61, 123.79, 32.45, 31.46, 30.43, 24.13, 24.09, 21.49, 13.06, 13.03, 7.10. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –21.07. **EI**–**MS**: *m/z* 234.31.



4b

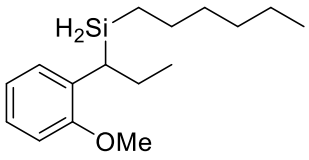
Following the general procedure, substrate (66 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4b** (111 mg, yield 89.4 %, regioselectivity 99.3 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 8 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.19–7.09 (m, 3H, Ar-*H*), 7.03 (t, $^{3}J_{HH}$ = 7.1 Hz, 1H, Ar-*H*), 3.73 (m, 1H, Si*H*H), 3.69 (m, 1H, SiH*H*), 2.42 (m, 1H, C*H*SiH$_2$), 2.29 (s, 3H, Ar–CH_3), 1.89 (m, 2H, CHCH_2CH$_3$), 1.27 (m, 8H, CH$_2$C$_4H_8$CH$_3$), 0.91 (t, $^{3}J_{HH}$ = 7.4, 3H, CH$_2$CH_3), 0.88 (t, $^{3}J_{HH}$ = 7.3 Hz, 3H, CH$_2$CH_3), 0.61 (m, 2H, SiH$_2$CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 142.13, 135.40, 130.16, 126.26, 126.17, 124.50, 32.54, 31.50, 28.36, 25.42, 25.32, 22.55, 20.38, 14.13, 8.30. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –22.37. **EI**–**MS**: *m/z* 248.37.



4c

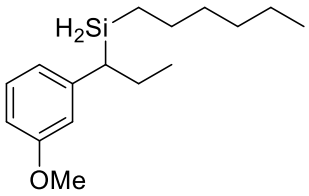
Following the general procedure, substrate (80 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4c** (56 mg, yield 40.6 %, regioselectivity 96.9 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 80 ℃ for 24 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 6.80 (d, $^{4}J_{HH}$ = 8.6 Hz, 2H, Ar-*H*), 3.90 (dt, $^{3}J_{HH}$ = 7.2, 3.7 Hz, 1H, Si*H*H), 3.80 (dt, $^{3}J_{HH}$ = 7.3, 3.7 Hz, 1H, SiH*H*), 2.63 (m, 1H, C*H*SiH$_2$), 2.33 (s, 3H, Ar–CH_3), 2.27 (s, 3H, Ar–CH_3), 2.23 (s, 3H, Ar–CH_3), 1.89 (m, 2H, CHCH_2CH$_3$), 1.27 (m, 8H, CH$_2$C$_4H_8$CH$_3$), 0.88 (m, 6H, CH$_2$CH_3), 0.61 (m, 2H, SiH$_2$CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 137.11, 136.19, 136.08, 133.99, 130.44, 128.94,

32.50, 31.49, 27.39, 25.33, 24.48, 22.52, 22.15, 21.57, 20.66, 14.68, 14.10, 9.73. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –24.74. **EI**–**MS**: *m/z* 276.30.



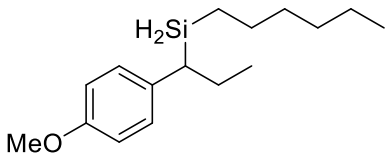
4d

Following the general procedure, substrate (74 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4d** (120 mg, yield 90.8 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 3 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.16 (m, 2H, Ar-*H*), 6.96 (m, 1H, Ar-*H*), 6.88 (m, 1H, Ar-*H*), 3.85 (s, 3H, Ar–OCH_3), 3.80 (dt, $^3J_{HH}$ = 6.5, 3.2 Hz, 1H, Si*H*H), 3.68 (dt, $^3J_{HH}$ = 7.0, 3.6 Hz, 1H, SiH*H*), 2.68 (m, 1H, C*H*SiH_2), 1.88 (m, 2H, CHC$H_2$$CH_3$), 1.38–1.24 (m, 8H, $CH_2C_4H_8CH_3$), 0.98 (t, $^3J_{HH}$ = 7.3 Hz, 3H, CH_2CH_3), 0.92 (t, $^3J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.63 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 156.80, 132.54, 127.59, 125.56, 120.64, 110.15, 55.18, 32.61, 31.58, 25.49, 25.35, 24.50, 22.59, 14.16, 14.14, 8.69. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –21.01. **EI**–**MS**: *m/z* 264.29.



4e

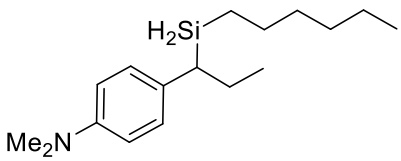
Following the general procedure, substrate (74 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4e** (116 mg, yield 87.8 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 3 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.24 (m, 1H, Ar-*H*), 6.75 (m, 3H, Ar-*H*), 3.88–3.82 (m, 4H, Si*H*H, Ar–OCH_3), 3.75 (dt, $^3J_{HH}$ = 7.1, 3.7 Hz, 1H, SiH*H*), 2.18–2.24 (m, 1H, C*H*SiH2), 1.87–1.95 (m, 2H, C$H_2$$CH_3$), 1.42–1.24 (m, 8H, $CH_2C_4H_8CH_3$), 0.99 (t, $^3J_{HH}$ = 7.3 Hz, 3H, CH_2CH_3), 0.94 (t, $^3J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.66 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 159.75, 145.61, 129.32, 120.23, 113.58, 109.87, 55.03, 33.69, 32.57, 31.54, 25.24, 25.16, 22.59, 14.13, 8.22. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –21.09. **EI**–**MS**: *m/z* 264.25.



4f

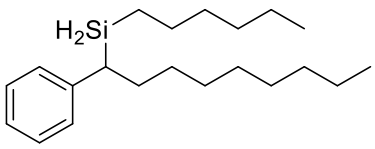
Following the general procedure, substrate (74 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4f** (117 mg, yield 88.6 %, regioselectivity 99.4 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 12 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 6.93 (d, $^3J_{HH}$ = 8.6 Hz, 2H, Ar-*H*), 6.74 (d, $^3J_{HH}$ = 8.6 Hz, 2H, Ar-*H*), 3.71 (s, 3H,

OC*H*$_3$), 3.67 (dt, $^3J_{HH}$ = 6.5, 3.3 Hz, 1H, Si*H*H), 3.57 (dq, $^3J_{HH}$ = 7.3, 3.7 Hz, 1H, SiH*H*), 2.01 (m, 1H, C*H*SiH$_2$), 1.73 (m, 2H), 1.17 (m, 8H, CH$_2$C$_4$*H*$_8$CH$_3$), 0.82 (t, $^3J_{HH}$ = 7.3 Hz, 3H, CH$_2$C*H*$_3$), 0.78 (d, $^3J_{HH}$ = 7.2 Hz, 3H, CH$_2$C*H*$_3$), 0.49 (m, 2H, SiH$_2$C*H*$_2$). **^{13}C NMR** (101 MHz, CDCl$_3$, 23 ℃) δ 156.02, 134.66, 127.45, 112.82, 54.16, 31.38, 30.45, 24.38, 24.16, 21.49, 13.29, 13.06, 7.14. **^{29}Si NMR** (79 MHz, CDCl$_3$, 23 ℃) δ –21.58. **EI**–**MS**: *m/z* 264.31.



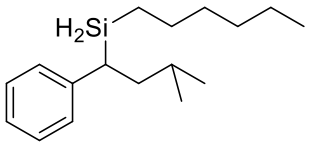
4g

Following the general procedure, substrate (81 mg, 0.50 mmol) and ^{n}C$_6$H$_{13}$SiH$_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4g** (118 mg, yield 85.1 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 12 h. The product was purified by column chromatography on silica gel (Hexane/EtOAc = 20/1) to yield colorless oil. **^{1}H NMR** (400 MHz, CDCl$_3$, 23 ℃) δ 7.00 (d, $^3J_{HH}$ = 8.1 Hz, 2H, Ar-*H*), 6.71 (d, $^3J_{HH}$ = 8.1 Hz, 2H, Ar-*H*), 3.76 (m, 1H, Si*H*H), 3.68 (m, 1H, SiH*H*), 2.93 (s, 6H, N(C*H*$_3$)$_2$), 2.08 (m, 1H, C*H*SiH2), 1.82 (m, 2H, C*H*$_2$CH$_3$), 1.27 (m, 8H, CH$_2$C$_4$*H*$_8$CH$_3$), 0.96–0.85 (m, 6H, CH$_2$C*H*$_3$), 0.60 (m, 2H, SiH$_2$C*H*$_2$). **^{13}C NMR** (101 MHz, CDCl$_3$, 23 ℃) δ 148.63, 131.78, 128.27, 113.18, 40.91, 32.53, 32.01, 31.51, 25.44, 25.25, 22.53, 14.06, 8.27. **^{29}Si NMR** (79 MHz, CDCl$_3$) δ –22.04. **EI**–**MS**: *m/z* 277.34.



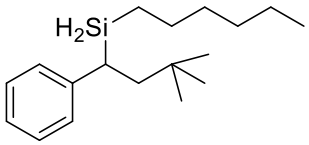
4h

Following the general procedure, substrate (101 mg, 0.50 mmol) and ^{n}C$_6$H$_{13}$SiH$_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4h** (137 mg, yield 86.1 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 10 h. **^{1}H NMR** (400 MHz, CDCl$_3$, 23 ℃) δ 7.18 (t, $^3J_{HH}$ = 7.6 Hz, 2H, Ar-*H*), 7.04 (t, $^3J_{HH}$ = 6.4 Hz, 3H, Ar-*H*), 3.72 (m, 1H, Si*H*H), 3.63 (m, 1H, SiH*H*), 2.19 (m, 1H, C*H*SiH$_2$), 1.75 (m, 2H), 1.18 (m, 20H, CH$_2$C$_4$*H*$_8$CH$_3$, CH$_2$C$_6$*H*$_{12}$CH$_3$), 0.81 (m, 6H, CH$_2$C*H*$_3$), 0.52 (m, 2H, SiH$_2$C*H*$_2$). **^{13}C NMR** (101 MHz, CDCl$_3$, 23 ℃) δ 144.05, 128.44, 127.64, 124.85, 32.59, 32.01, 31.98, 31.56, 31.44, 29.61, 29.53, 29.42, 29.23, 25.25, 22.77, 22.61, 14.19, 14.16, 8.25. **^{29}Si NMR** (79 MHz, CDCl$_3$, 23 ℃) δ –21.52. **EI**–**MS**: *m/z* 318.35.



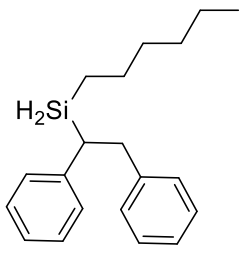
4i

Following the general procedure, substrate (73 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4i** (115 mg, yield 87.7 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 10 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.37–7.30 (m, 2H, Ar-*H*), 7.22–7.17 (m, 3H, Ar-*H*), 3.86 (td, $^{3}J_{HH}$ = 6.6, 3.6 Hz, 1H, Si*H*H), 3.77 (td, $^{3}J_{HH}$ = 7.4, 3.7 Hz, 1H, SiH*H*), 2.50 (m, 1H, C*H*SiH2), 2.03–1.92 (m, 1H, C*H*SiH_2), 1.66–1.56 (m, 2H, CHCH_2), 1.43–1.28 (m, 8H, $CH_2C_4H_8CH_3$), 0.94–0.98 (m, 9H, CH_2CH_3, $CH(CH_3)_2$), 0.71–0.64 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 143.80, 128.46, 127.69, 124.84, 40.91, 32.58, 31.55, 28.95, 26.25, 25.21, 23.55, 22.61, 21.35, 14.18, 8.24. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –19.59. **EI**–**MS**: *m/z* 262.24.



4j

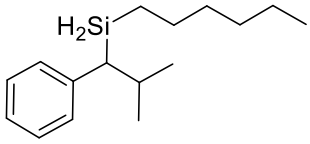
Following the general procedure, substrate (80 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4j** (113 mg, yield 81.8 %, regioselectivity > 99.9 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 12 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.27 (dd, $^{3}J_{HH}$ = 11.2, 4.0 Hz, 2H, Ar-*H*), 7.18 (d, $^{3}J_{HH}$ = 7.5 Hz, 2H, Ar-*H*), 7.12 (t, $^{3}J_{HH}$ = 6.5 Hz, 1H, Ar-*H*), 3.78 (dt, $^{3}J_{HH}$ = 6.5, 3.3 Hz, 1H, Si*H*H), 3.67 (td, $^{3}J_{HH}$ = 6.8, 3.4 Hz, 1H, SiH*H*), 2.44–2.46 (m, 1H, C*H*SiH2), 1.95–2.01 (m, 1H, C*H*^{t}Bu), 1.69–1.73 (m, 1H, C*H*^{t}Bu), 1.30 (m, 8H, $CH_2C_4H_8CH_3$), 0.90–0.93 (m, 3H, CH_2CH_3), 0.84–0.85 (m, 9H, $C(CH_3)_3$), 0.59 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 145.63, 128.40, 127.64, 124.55, 45.47, 32.93, 32.56, 31.53, 29.89, 27.62, 25.07, 22.59, 14.17, 8.43 . **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –17.75. **EI**–**MS**: *m/z* 276.35.



4k

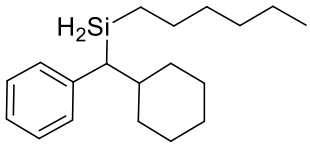
Following the general procedure, substrate (90 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4k** (129 mg, yield 87.2 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 80 ^{o}C for 12 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.26–7.16 (m, 4H, Ar-*H*), 7.08–7.11 (m, 6H, Ar-*H*), 3.76–3.79 (m, 1H, Si*H*H), 3.70–3.72 (m, 1H, SiH*H*), 3.11–3.14 (m, 2H, Ar–CH_2), 2.66–2.56 (m, 1H, C*H*SiH2), 1.23 (m, 8H, $CH_2C_4H_8CH_3$), 0.85 (t, $^{3}J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.52 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 143.33,

141.44, 128.71, 128.50, 128.20, 127.81, 125.96, 125.13, 38.53, 33.41 , 32.51, 31.49 , 25.14, 22.57 , 14.18, 8.30. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –20.54. **EI**–**MS**: *m/z* 296.33.



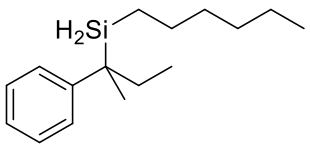
4l

Following the general procedure, substrate (66 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4l** (104 mg, yield 83.9 %, regioselectivity > 99.9 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 80 ℃ for 12 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.28 (t, $^{3}J_{HH}$ = 6.8 Hz, 2H, Ar-H), 7.10–7.18 (m, 3H, Ar-H), 3.95–3.89 (m, 1H, Si*H*H), 3.82–3.75 (m, 1H, SiH*H*), 2.24–2.13 (m, 1H, C*H*SiH_2), 2.04–1.97 (m, 1H), 1.25 (m, 5.5 Hz, 8H, $CH_2C_4H_8CH_3$), 1.14 (dd, *J* = 6.6, 2.5 Hz, 3H, CH_2CH_3), 0.92–0.84 (m, 6H, $CH(CH_3)_2$), 0.51 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 143.76, 128.31, 128.33, 124.95, 40.62, 32.49 , 31.52, 31.48, 25.24, 23.05, 22.99, 22.53, 14.11, 8.46. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –20.27. **EI**–**MS**: *m/z* 248.24.



4m

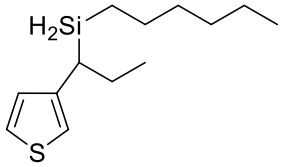
Following the general procedure, substrate (86 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4m** (131 mg, yield 90.9 %, regioselectivity > 99.9 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 80 ℃ for 12 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.31 (t, $^{3}J_{HH}$ = 7.5 Hz, 2H, Ar-H), 7.19 (d, $^{3}J_{HH}$ = 7.2 Hz, 1H, Ar-H), 7.14 (d, $^{3}J_{HH}$ = 7.6 Hz, 2H, Ar-H), 3.99–3.93 (m, 1H, Si*H*H), 3.83 (m, 1H, SiH*H*), 2.16–2.05 (m, 2H, Alkyl–*H*), 1.92–1.79 (m, 2H, Alkyl–*H*), 1.69 (d, $^{3}J_{HH}$ = 8.7 Hz, 3H, Alkyl–*H*), 1.41–1.08 (m, 12H, Alkyl–*H*), 0.93 (t, $^{3}J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.89–0.80 (m, 1H, Alkyl–*H*), 0.54 (s, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 143.49, 128.59, 128.35, 124.94, 41.09, 39.38, 33.61, 33.31, 32.53, 31.53, 26.73, 26.51, 25.31, 22.57, 14.15, 8.51. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –25.91. **EI**–**MS**: *m/z* 288.30.



4n

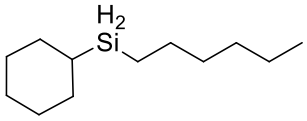
Following the general procedure, substrate (66 mg, 0.50 mmol) and $^{n}C_6H_{13}SiH_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4n** (41 mg, yield 33.0 %, regioselectivity 92.8 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 80 ℃ for 24 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.31–7.35 (m, $^{3}J_{HH}$ = 7.7 Hz, 2H, Ar-*H*), 7.26 (d, $^{3}J_{HH}$ = 7.2 Hz, 2H, Ar-*H*), 7.15 (t, $^{3}J_{HH}$ = 7.1 Hz, 1H, Ar-*H*), 3.70 (m, 2H, SiH_2), 2.09–2.18 (m, 1H, CC*H*CH_3), 1.76–1.85 (m, 1H, CC*H*CH_3), 1.45 (s, 3H, CH_3),

1.24–1.29 (m, 8H, $CH_2C_4H_8CH_3$), 0.88 (t, $^3J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.80 (t, $^3J_{HH}$ = 7.3 Hz, 3H, CH_2CH_3), 0.63–0.48 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 145.22, 127.11, 125.39, 123.43, 31.49, 30.41, 29.93, 28.45, 24.13, 21.47, 19.22, 13.05, 6.88, 6.48. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –10.60. **EI**–**MS**: *m/z* 248.31.



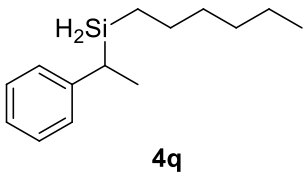
4o

Following the general procedure, substrate (62 mg, 0.50 mmol) and $^nC_6H_{13}SiH_3$ (118 mg, 1.0 mmol) was converted to the corresponding **4o** (49 mg, yield 40.8 %, regioselectivity > 99.9 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 80 ℃ for 24 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.29–7.25 (m, 1H, Ar-H), 6.91 (d, $^3J_{HH}$ = 4.9 Hz, 1H, Ar-*H*), 6.84 (m, 1H, Ar-*H*), 3.79 (dt, $^3J_{HH}$ = 6.3, 3.1 Hz, 1H, Si*H*H), 3.75–3.68 (m, 1H, SiH*H*), 2.40–2.32 (m, 1H, C*H*SiH_2), 1.92–1.75 (m, 2H, CH_2CH_3), 1.36–1.25 (m, 8H, $CH_2C_4H_8CH_3$), 0.98 (t, $^3J_{HH}$ = 7.3 Hz, 3H, CH_2CH_3), 0.90 (t, $^3J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.62 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 143.92, 127.57, 125.13, 118.24, 32.55, 31.50, 28.57, 25.51, 25.18, 22.56, 14.13, 14.09, 8.15. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –22.60. **EI**–**MS**: *m/z* 240.27.



4p

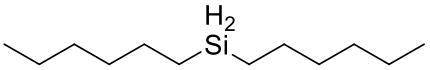
Following the general procedure, substrate (42 mg, 0.50 mmol) and $^nC_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4p** (74 mg, yield 74.7 %) using **2** (20 mg, 0.025 mmol, 5 mol %) at 60 ℃ for 10 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 3.51 (dd, $^3J_{HH}$ = 6.8, 3.7 Hz, 2H, SiH_2), 1.74 (s, 1H, C*H*SiH_2), 1.73–1.66 (m, 4H, Alkyl–*H*), 1.43–1.13 (m, 14H, Alkyl–*H*), 0.88 (t, $^3J_{HH}$ = 6.9 Hz, 3H, CH_2CH_3), 0.66 (m, 2H, SiH_2CH_2). **^{13}C NMR** (101 MHz, $CDCl_3$, 23 ℃) δ 31.65, 30.52, 28.24, 26.72, 25.70, 24.57, 21.56, 20.21, 13.10, 6.70. **^{29}Si NMR** (79 MHz, $CDCl_3$, 23 ℃) δ –22.08.



4q

Following the general procedure, substrate (52 mg, 0.50 mmol) and $^nC_6H_{13}SiH_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4q** (98 mg, yield 89.1 %, regioselectivity 97.7 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 1 h. **^{1}H NMR** (400 MHz, $CDCl_3$, 23 ℃) δ 7.36 (t, $^3J_{HH}$ = 7.5 Hz, 2H, Ar-*H*), 7.21 (m, 3H, Ar-*H*), 3.84 (dt, *J* = 6.4, 3.2 Hz, 1H, Si*H*H), 3.79 (dt, *J* = 6.5, 3.4

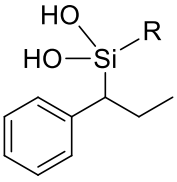
Hz, 1H, SiH*H*), 2.57–2.48 (m, 1H, C*H*SiH$_2$), 1.54 (d, $^3J_{HH}$ = 7.5 Hz, 3H, CHC*H*$_3$), 1.44–1.29 (m, 8H, CH$_2$C$_4$*H*$_8$CH$_3$), 0.97 (t, $^3J_{HH}$ = 6.7 Hz, 3H, CH$_2$C*H*$_3$), 0.75–0.68 (m, 2H, SiH$_2$C*H*$_2$). **^{13}C NMR** (101 MHz, CDCl$_3$, 23 ℃) δ 145.62, 128.46, 126.91, 124.89, 32.61, 31.57, 25.20, 24.49, 22.62, 16.87, 14.18, 8.29. **^{29}Si NMR** (79 MHz, CDCl$_3$, 23 ℃) δ –17.90. **EI**–**MS**: *m/z* 220.30.



4r

Following the general procedure, substrate (42 mg, 0.50 mmol) and ^{n}C$_6$H$_{13}$SiH$_3$ (64 mg, 0.55 mmol) was converted to the corresponding **4r** (78 mg, yield 77.9 %, regioselectivity 96.2 %) using **2** (12 mg, 0.015 mmol, 3 mol %) at 60 ℃ for 2 h. **^{1}H NMR** (400 MHz, CDCl$_3$, 23 ℃) δ 3.65 (m, 2H, Si*H*$_2$), 1.43–1.26 (m, 16H, CH$_2$C$_4$*H*$_8$CH$_3$), 0.90 (t, $^3J_{HH}$ = 6.8, 5.8 Hz, 6H, CH$_2$C*H*$_3$), 0.73–0.64 (m, 4H, SiH$_2$C*H*$_2$). **^{13}C NMR** (101 MHz, CDCl$_3$, 23 ℃) δ 32.63, 31.59, 25.45, 22.60, 14.10, 9.18. **^{29}Si NMR** (79 MHz, CDCl$_3$, 23 ℃) δ –28.56.

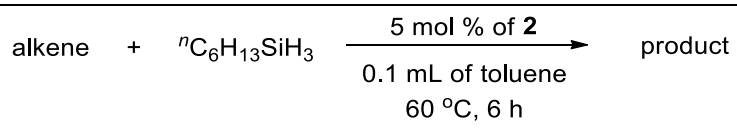
Hydrolyzation of the product 4a to Silanol 5



5

To a solution of **4a** (117 mg, 0.50 mmol) in phosphate buffer (pH = 6.84, 0.5 mL) / 1,4-dioxane (5 mL) was added Lindlar catalyst (5 % on calcium carbonate, lead poisoned, 53 mg, 5 mol %). Conversion were analysed by GC-MS of the crude reaction mixture. After being stirred at room temperature for overnight, the mixture was poured into diethyl ether/H$_2$O and phases were separated. The aqueous layer was extracted with diethyl ether. The combined organic layers were washed with brine, dried over anhydrous sodium sulfate, and concentrate under reduced pressure. The product was purified by column chromatography on silica gel (Hexane/EtOAc = 10/1) to yield colorless oil (117 mg, 88 %). **^{1}H NMR** (400 MHz, CDCl$_3$, 23 ℃) δ 7.28 (t, $^3J_{HH}$ = 7.6 Hz, 2H, Ar-*H*), 7.12–7.15 (m, 3H, Ar-*H*), 2.18 (br, 2H, Si(O*H*)$_2$), 2.06 (dd, 11.1 Hz, 4.5 Hz, 1H, SiC*H*C$_2$H$_5$), 1.81–1.96 (m, 2H, C*H*$_2$CH$_3$), 1.25–1.38 (m, 8H, Alkyl–*H*), 0.88 (t, $^3J_{HH}$ = 7.2 Hz, 3H, C*H*$_3$), 0.87 (t, $^3J_{HH}$ = 7.1 Hz, 3H, C*H*$_3$), 0.62 (t, $^3J_{HH}$ = 8.0 Hz, 2H, SiC*H*$_2$). **^{13}C NMR** (101 MHz, CDCl$_3$, 23 ℃) δ 141.99, 128.54, 128.42, 125.04, 38.56, 33.22, 31.61, 22.71, 22.67, 22.27, 14.24, 14.07, 13.49. **^{29}Si NMR** (79 MHz, CDCl$_3$, 23 ℃) δ –8.81. **EI**–**MS**: *m/z* 266.33.

Table S2. Substrate limitations.[a]



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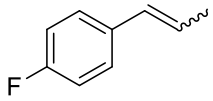
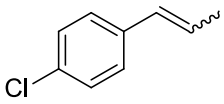
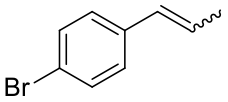
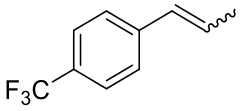
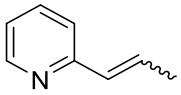
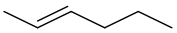
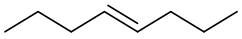
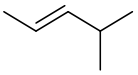
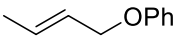
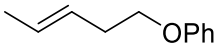
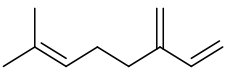
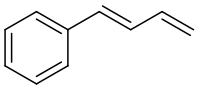
1		N.R.
2		N.R.
3		N.R.
4		N.R.
5		polymer
6		mixture
7[b]		trace
8		mixture
9		mixture
10		mixture
11		polymer
12		polymer
13		polymer

[a] Determined by GC-MS and NMR of the crude reaction mixture. [b] Reaction temperature was 80 °C.

X–ray Diffraction Parameters and Data

All intensity data were collected with a Bruker SMART CCD diffractometer, using graphite–monochromated Mo Kα radiation (λ = 0.710 73 Å). The structures were resolved by direct methods and refined by full matrix least squares on F^2.[S5] Two hydrogen atoms which bound to Sm ions in the complex **3** are located from the Fourier map. All the other hydrogen atoms were considered in calculated positions. All non-hydrogen atoms were refined anisotropically. The Ortep-3 program was utilized to draw the molecules.[S6] Crystal data and data collection details are collected in Tables S3. CCDC 1544763–1544765 contain the supplementary crystallographic data for this paper. These data can be obtained free of charge from The Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif.

Table S3. Crystallographic detail for **1**, **2** and **3**.

	1	**2**	**3**
formula	$C_{28}H_{40}N_2ISm•(C_4H_8O)_3$ (C_6H_{14})	$C_{32}H_{51}N_2SiSm•(C_4H_8O)_2$	$C_{77}H_{127}O_3N_4Sm_2$
Fw	984.36	786.39	1330.67
T (K)	113	113	113
space group	*P 21 21 21*	*P 21/n*	*P 21/n*
a (Å)	12.4946(9)	12.3211(10)	13.1388(13)
b (Å)	13.0778(9)	17.3773(13)	40.374(3)
c (Å)	28.872(2)	19.4787(16)	14.4187(13)
α (°)	90	90.00	90
β (°)	90	104.7023(16)	90.644(4)
γ (°)	90	90.00	90
V (Å^3)	4717.8(6)	4034.0(6)	7648.1(12)
Z	4	4	4
d_{calcd} (g/cm^3)	1.386	1.295	1.266
F(000)	2028.0	1652.0	3060.0
GOF	1.034	0.993	0.994
R_1, wR_2 (I>2σ(I))	0.0227, 0.0482	0.0319, 0.0763	0.0410, 0.0815
R_1, wR_2 (all data)	0.0268, 0.0495	0.0403, 0.0799	0.0574, 0.0885
CCDC	1544763	1544764	1544765

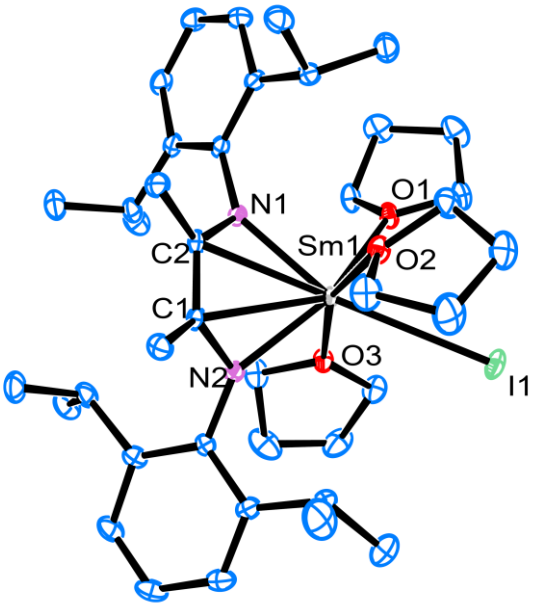
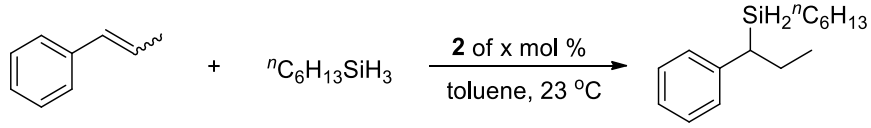


Figure S1 Molecular structure of complex **1** with 30 % ellipsoid probability. Hydrogen atoms have been omitted for clarity. Selected bond lengths (Å) and angles (deg) for **1**: Sm1–N1 2.250(2), Sm1–N2 2.236(2), Sm1–I1 3.2142(3), Sm1–O1 2.5036(19), Sm1–O2 2.4639(19), Sm1–O3 2.4935(18), N1–C2 1.419(3), N2–C1 1.417(3), C1–C2 1.380(4).

Kinetic Studies

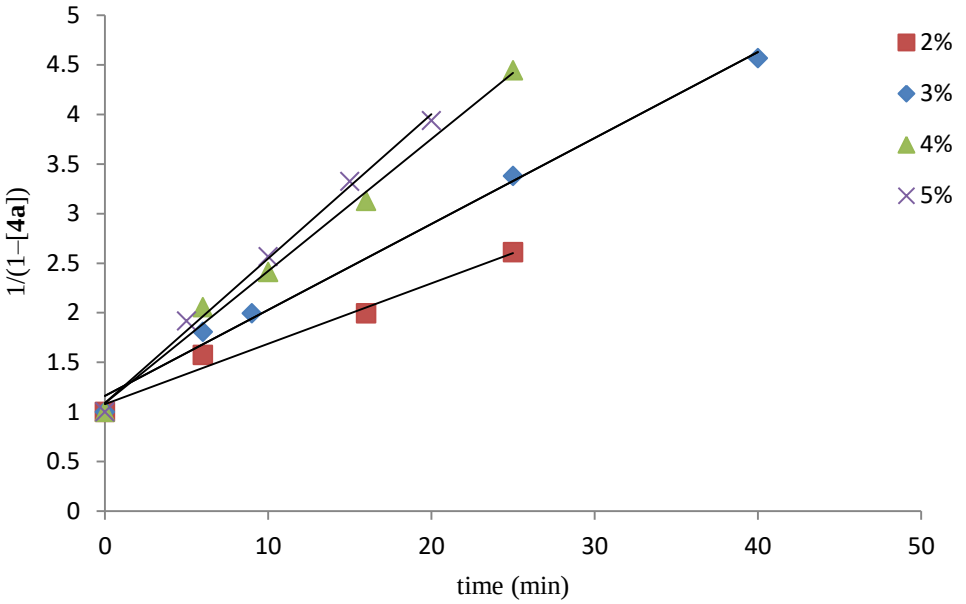
Table S4. Measurement of the PhCH=CHMe and $^{n}C_6H_{13}SiH_3$ concentration in different catalyst concentrations during the hydrosilylation process.[a]



0.5 mmol 0.5 mmol **4a**

x	time (min)	yield (%)	[**4a**] (mol Ł$^{-1}$)[b]	1/(1–[**4a**]) (mol^{-1} Ł)	k_{obs} (mol^{-1} Ł s^{-1})
2	0	0	0	1	
2	6	36.5	0.365	1.575	0.0610
2	16	49.8	0.498	1.992	
2	25	61.7	0.617	2.611	
3	0	0	0	1	
3	6	44.6	0.446	1.805	
3	9	49.8	0.498	1.992	0.0866
3	25	70.4	0.704	3.378	
3	40	78.1	0.781	4.566	
4	0	0	0	1	
4	6	51.3	0.513	2.053	
4	10	58.5	0.585	2.410	0.1333
4	16	68.0	0.680	3.125	
4	25	77.5	0.775	4.444	
5	0	0	0	1	
5	5	47.8	0.478	1.916	
5	10	61.0	0.610	2.564	0.1456
5	15	69.9	0.699	3.322	
5	20	74.6	0.746	3.937	

[a] In an Ar glove box, three Schlenk tubes were charged with catalyst **2** (8.0 mg, 1 μmol, 2 mol %), $^{n}C_6H_{13}SiH_3$ (80 μL, 0.5 mmol, 1 M) and PhCH=CHMe (66 μL, 0.5 mmol, 1 M). Then toluene was added to bring the total volume of the solution to 0.5 mL. The tubes were closed and shaken vigorously, then quickly removed from the glovebox. The reaction mixtures were maintained at 23 ℃, then quenching after 6, 16 and 25 minutes. The crude reaction mixture were recorded by ^{1}H NMR spectroscopy. [b] The concentration of **4a** during the reaction was determined by the integrals of **4a** (δ 3.79 ppm, 3.69 ppm) standardized to the total integrals of **4a** and alkene **3a** (δ 6.30–6.38 ppm, 6.11–6.21 ppm, 5.67–5.76 ppm).



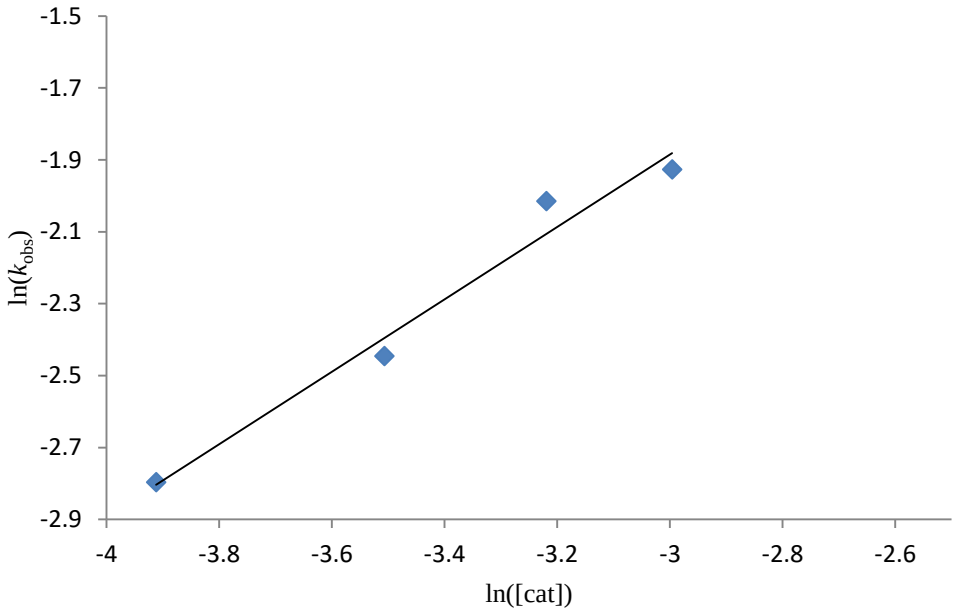


Figure S2 (above) Kinetic plots for the catalytic $^{n}C_6H_{13}SiH_3$ hydrosilylation of alkene **3a** as a function of the indicated catalyst concentrations. Initial [**3a**] = 1 M and [$^{n}C_6H_{13}SiH_3$] = 1 M. (below) Dependence of the observed rate constants for the hydrosilylation process in the kinetic plots (above) on the catalyst concentration. The linear relationship has a slope of 1.0066, R^2 = 0.9735.

$r = k[\text{cat}]^1[\text{sailen}]^1[\text{olefin}]^1$

Reference

[S1] Gans-Eichler, T.; Gudat, D.; Nättinen K.; Nieger, M. The Transfer of Tin and Germanium Atoms from *N*-Heterocyclic Stannylenes and Germylenes to Diazadienes. *Chem.-Eur. J.* **2006**, *12*, 1162–1173.

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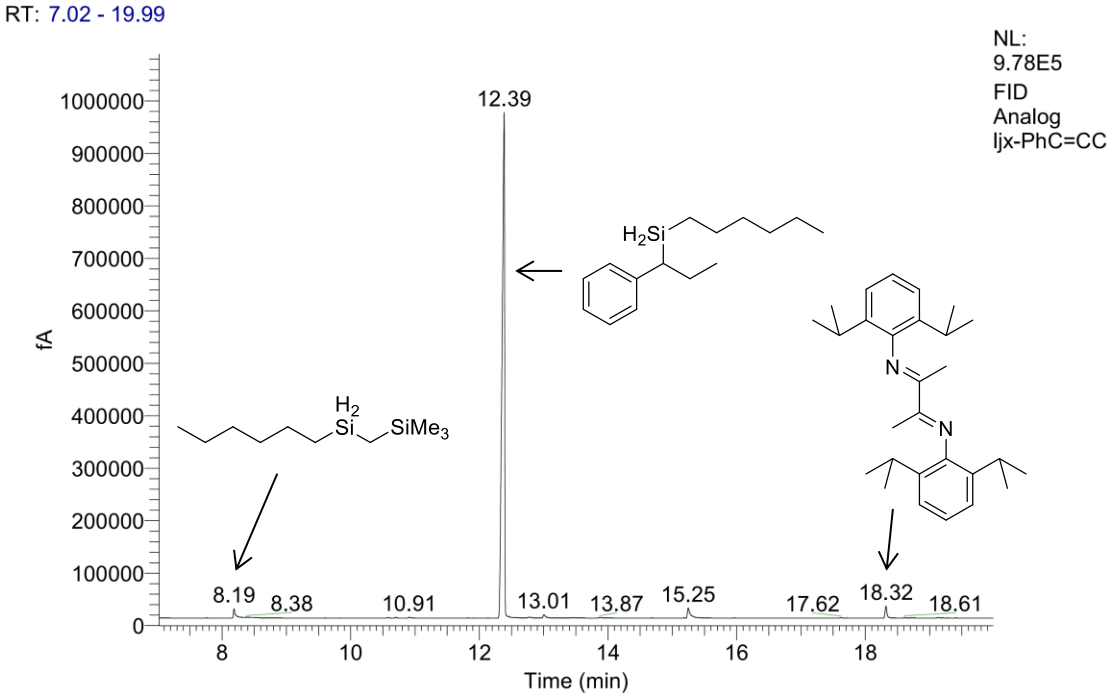
[S3] Clegg, W.; Conway, B.; Graham, D. V.; Hevia, E.; Kennedy, A. R.; Mulvey, R. E.; Russo, L.; Wright, D. S. Structurally Defined Potassium-Mediated Zincation of Pyridine and 4-R-Substituted Pyridines (R=Et, *i*Pr, *t*Bu, Ph, and Me_2N) by Using Dialkyl–TMP–Zincate Bases. *Chem.-Eur. J.* **2009**, *15*, 7074–7082.

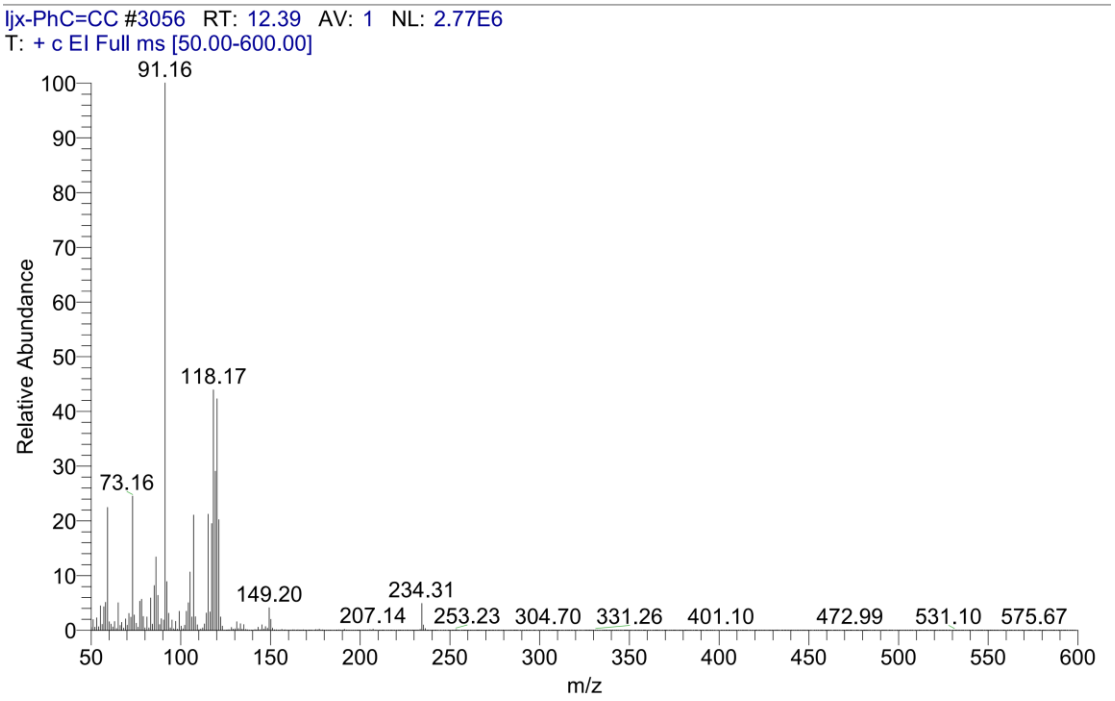
[S4] Panda, T. K.; Kaneko, H.; Pal, K.; Tsurugi, H.; Mashima, K. Salt Metathesis and Direct Reduction Reactions Leading to Group 3 Metal Complexes with a *N,N′*-Bis(2,6-diisopropylphenyl)-1,4-diaza-1,3-butadiene Ligand and Their Solid-State Structures. *Organometallics* **2010**, *29*, 2610–2615.

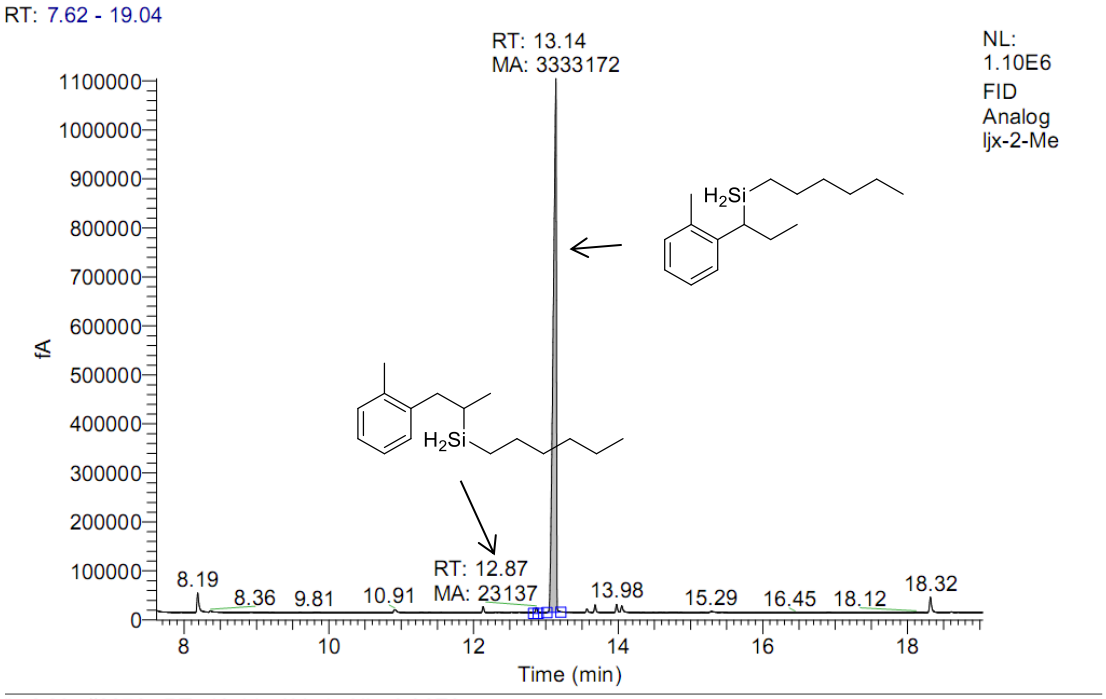
[S5] Sheldrick, G. M. A Short History of *SHELX*. *Acta Crystallogr.* **2008**, *A64*, 112–122.

[S6] Farrugia, L. J. *ORTEP*-3 for Windows - a Version of *ORTEP*-III with a Graphical User Interface (GUI). *J. Appl. Crystallogr.* **1997**, *30*, 565.

GC-MS Spectra of Crude Reaction Mixtures



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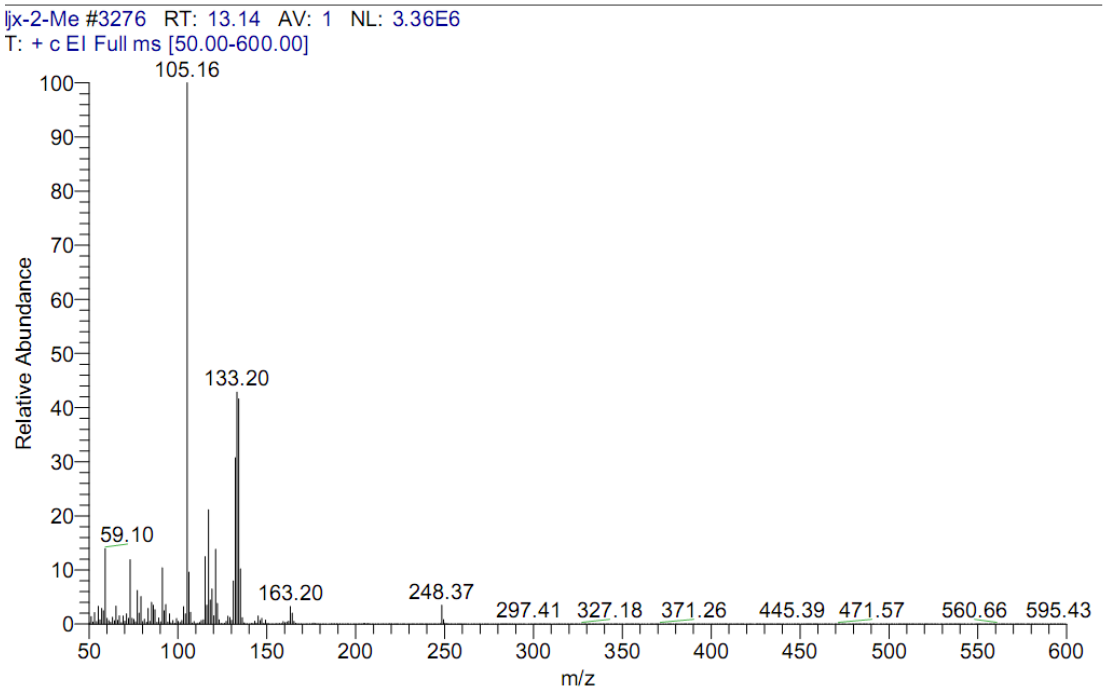
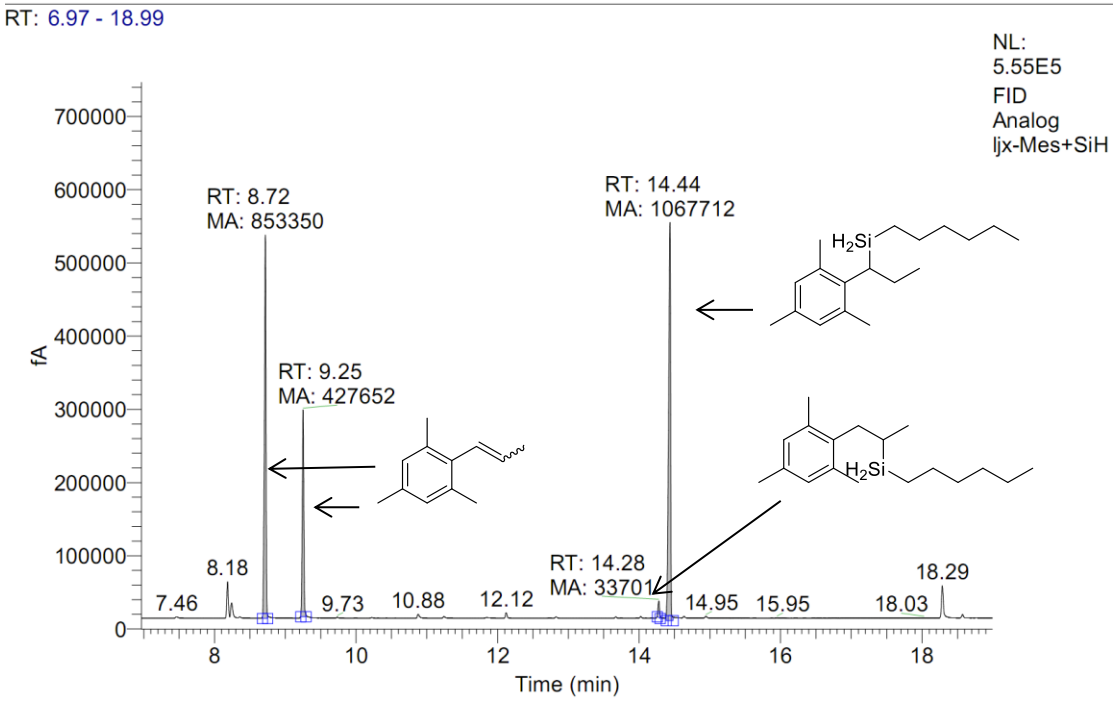
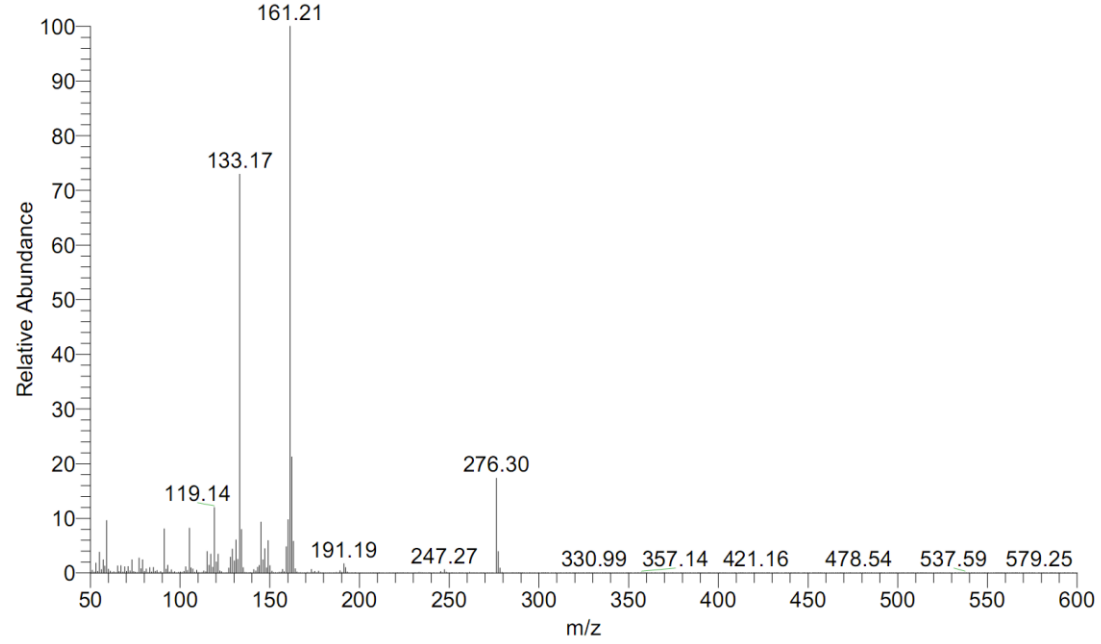
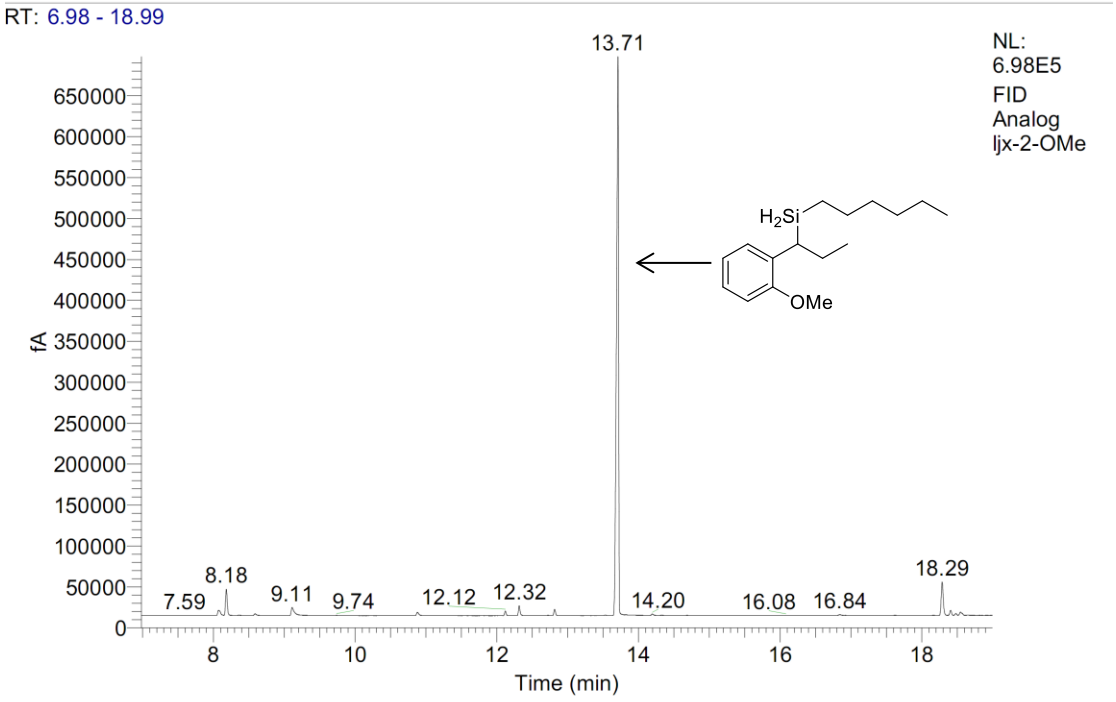
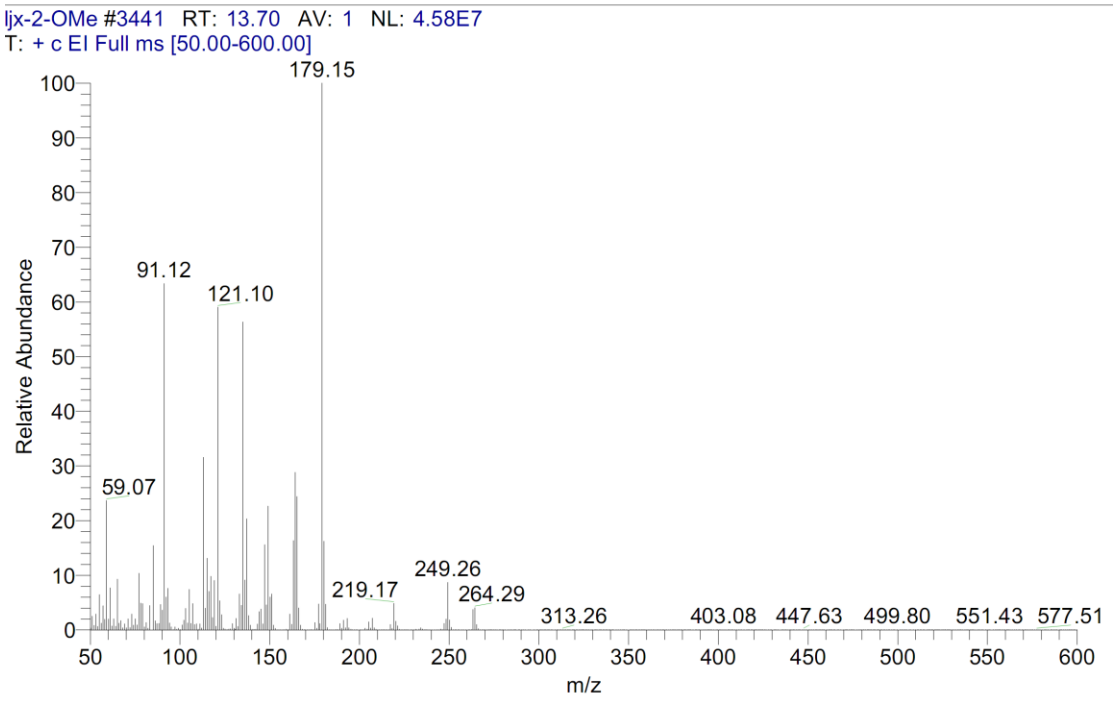
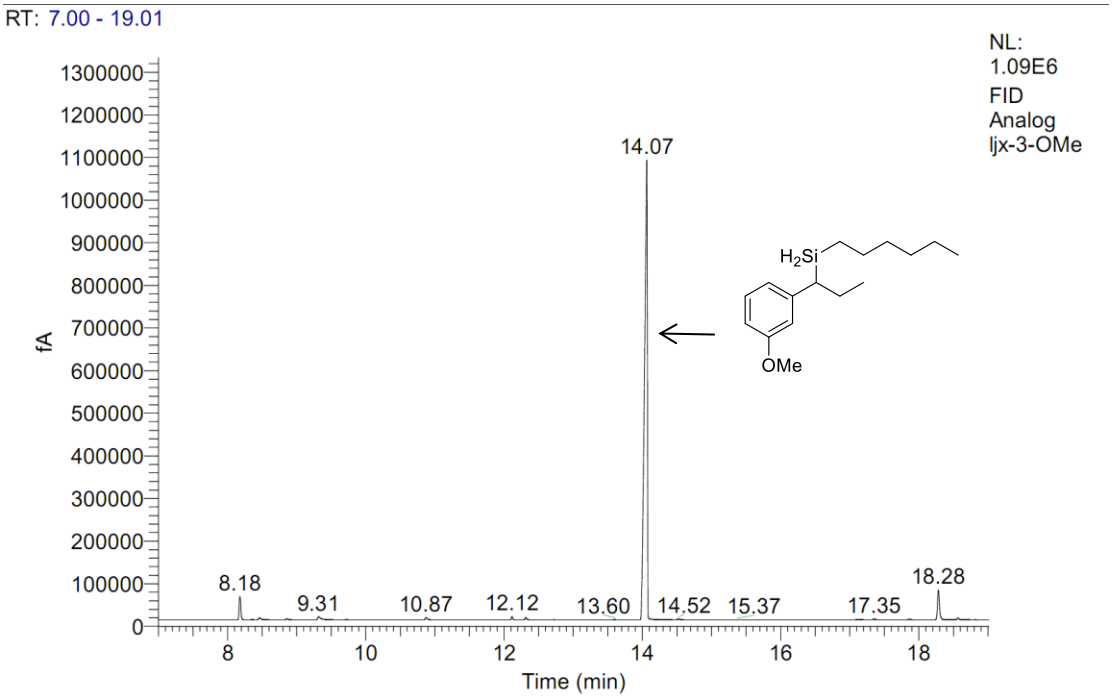

ljx-2-Me #3276 RT: 13.14 AV: 1 NL: 3.36E6
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
105.16
133.20
59.10
163.20
248.37
297.41
327.18
371.26
445.39
471.57
560.66
595.43

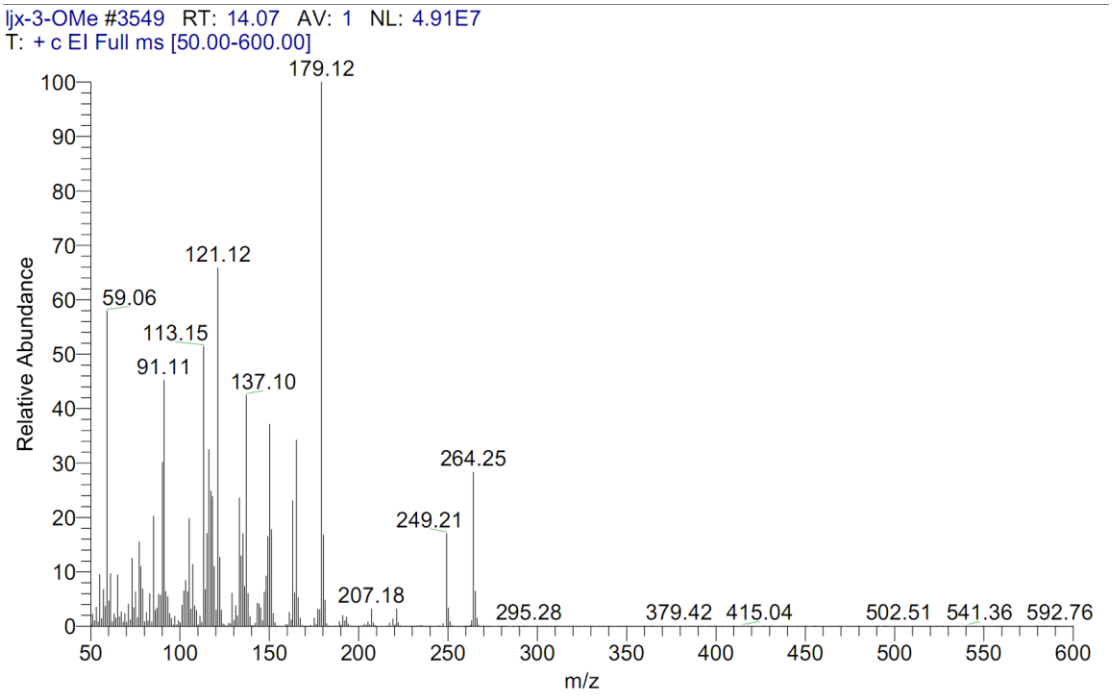

RT: 6.97 - 18.99
NL:
5.55E5
FID
Analog
ljx-Mes+SiH
RT: 8.72
MA: 853350
RT: 14.44
MA: 1067712
RT: 9.25
MA: 427652
RT: 14.28
MA: 33701
8.18
7.46
9.73
10.88
12.12
14.95
15.95
18.03
18.29
fA
Time (min)

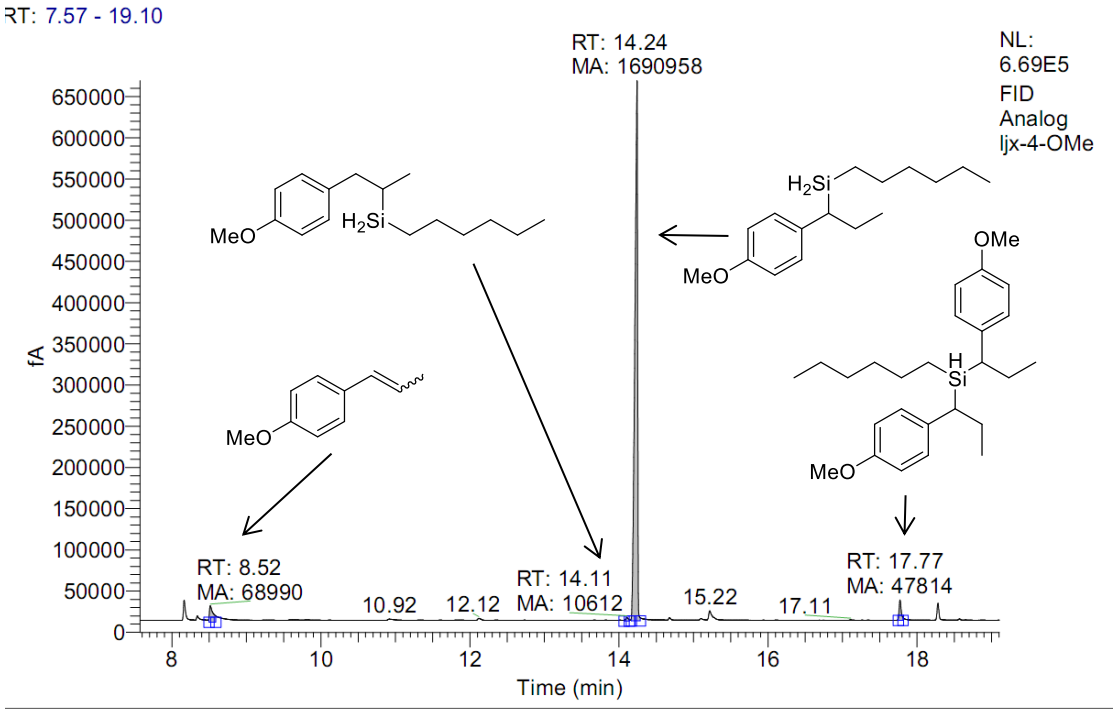

ljx-Mes+SiH #3658 RT: 14.44 AV: 1 NL: 8.86E7
T: + c EI Full ms [50.00-600.00]
161.21
133.17
276.30
119.14
191.19
247.27
330.99
357.14
421.16
478.54
537.59
579.25
Relative Abundance
m/z

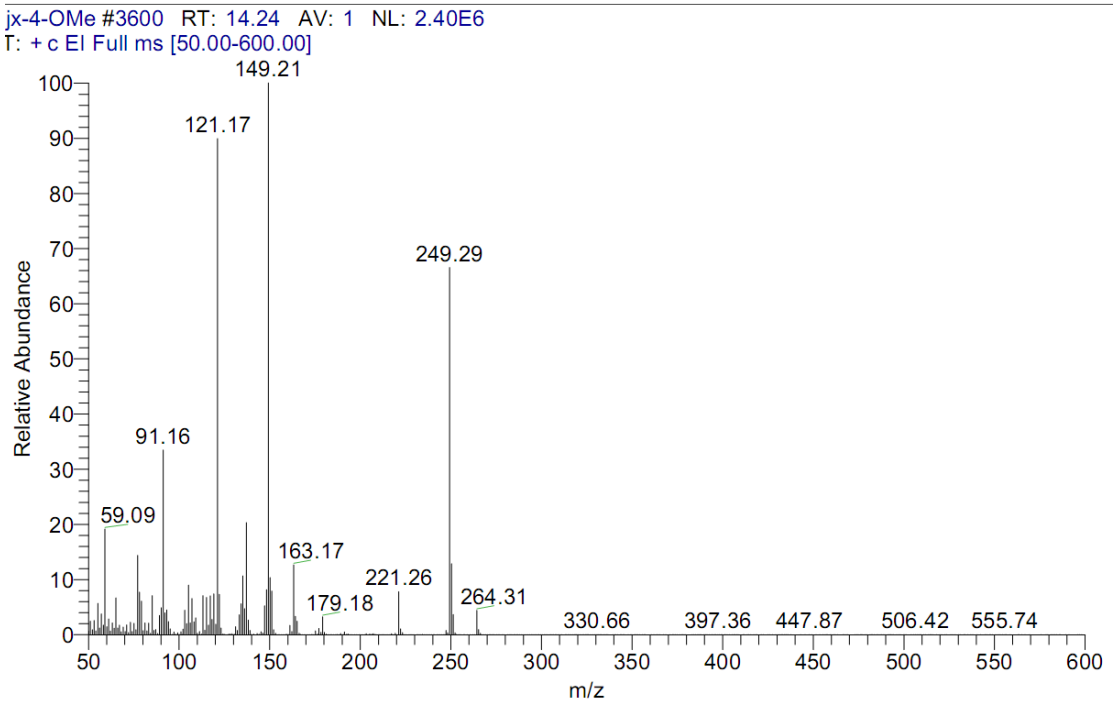

RT: 6.98 - 18.99
NL:
6.98E5
FID
Analog
ljx-2-OMe
13.71
H_2Si
OMe
fA
650000
600000
550000
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
8.18
7.59
9.11
9.74
12.12
12.32
14.20
16.08
16.84
18.29
8
10
12
14
16
18
Time (min)

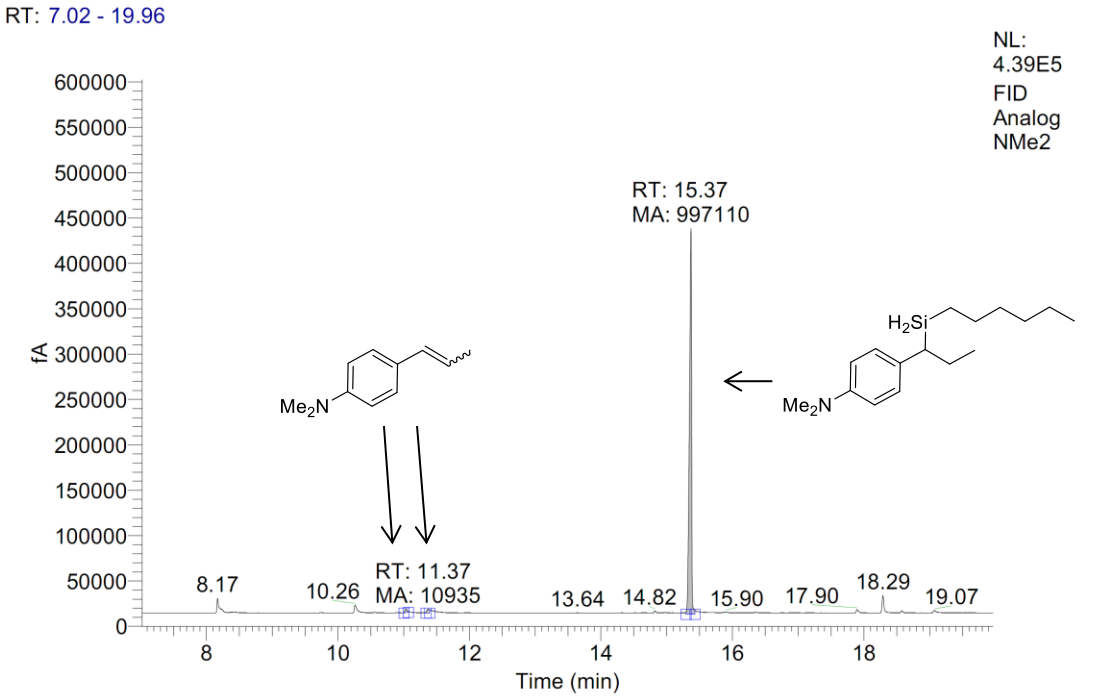

ljx-2-OMe #3441 RT: 13.70 AV: 1 NL: 4.58E7
T: + c EI Full ms [50.00-600.00]
179.15
91.12
121.10
59.07
219.17
249.26
264.29
313.26
403.08
447.63
499.80
551.43
577.51
Relative Abundance
100
90
80
70
60
50
40
30
20
10
0
50
100
150
200
250
300
350
400
450
500
550
600
m/z

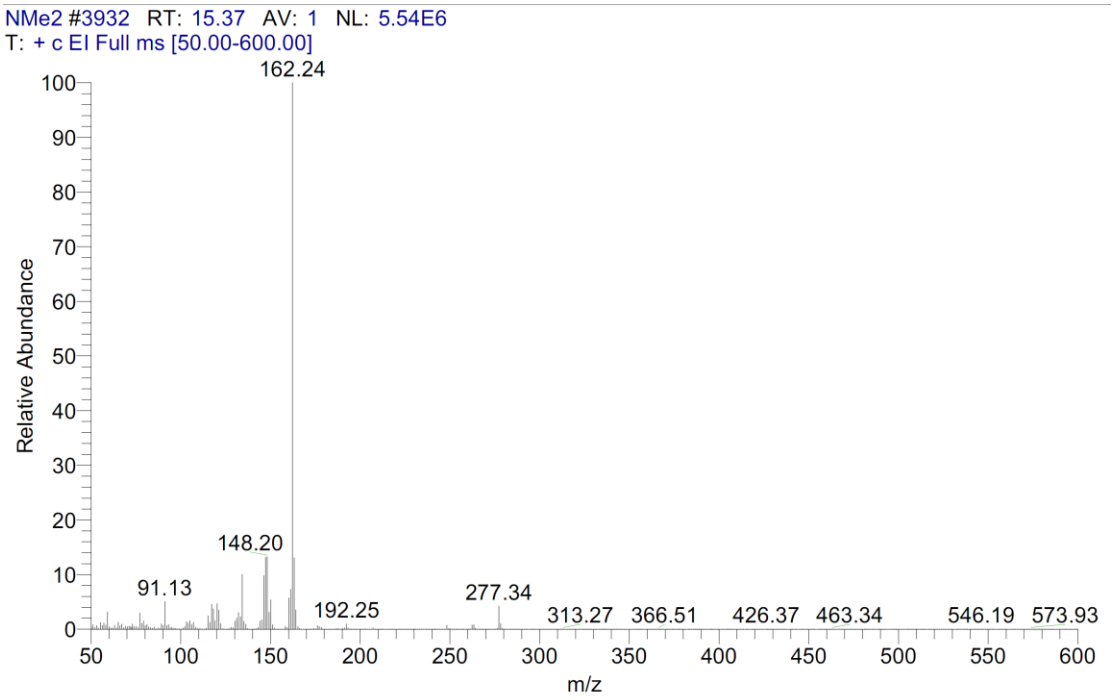

RT: 7.00 - 19.01
NL:
1.09E6
FID
Analog
ljx-3-OMe
14.07
H2Si
OMe
fA
Time (min)
8.18
9.31
10.87
12.12
13.60
14.52
15.37
17.35
18.28

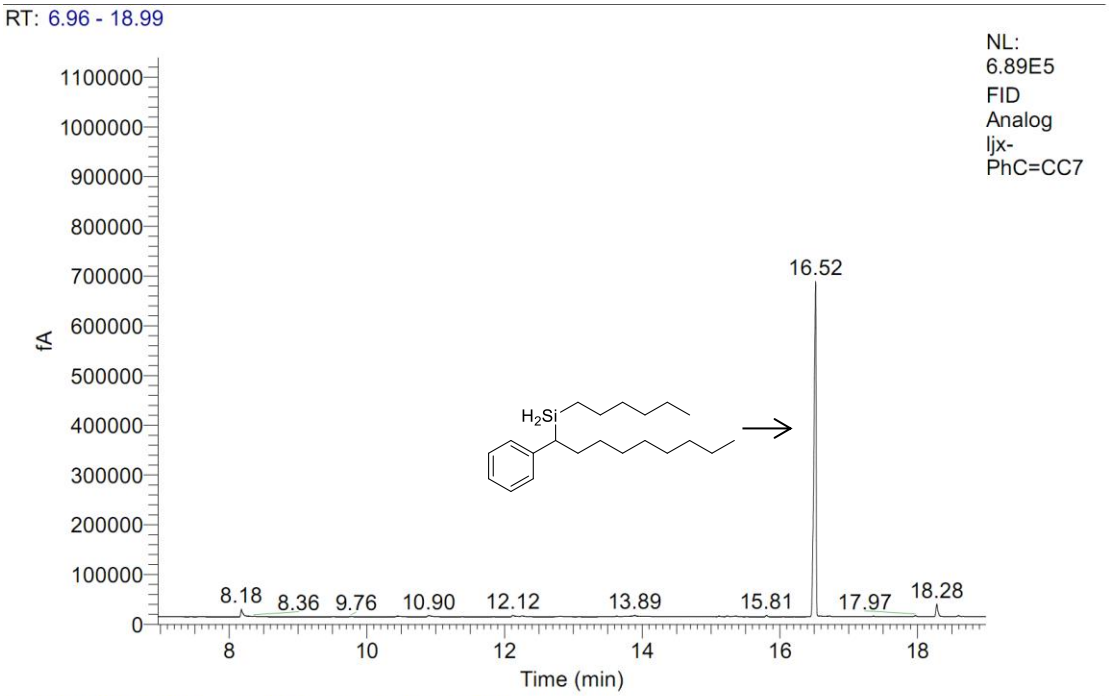

ljx-3-OMe #3549 RT: 14.07 AV: 1 NL: 4.91E7
T: + c EI Full ms [50.00-600.00]
179.12
121.12
59.06
113.15
91.11
137.10
264.25
249.21
207.18
295.28
379.42
415.04
502.51
541.36
592.76
Relative Abundance
m/z

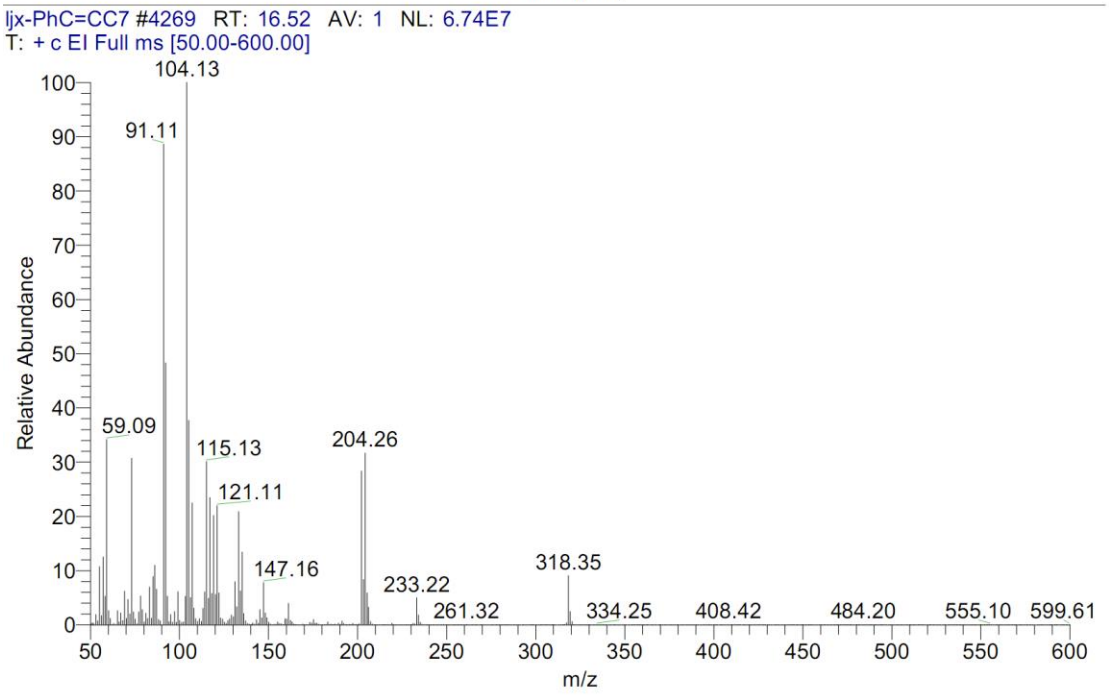

RT: 7.57 - 19.10
RT: 14.24
MA: 1690958
NL:
6.69E5
FID
Analog
ljx-4-OMe
fA
Time (min)
RT: 8.52
MA: 68990
RT: 14.11
MA: 10612
RT: 17.77
MA: 47814
10.92
12.12
15.22
17.11
MeO
OMe
H2Si
Si

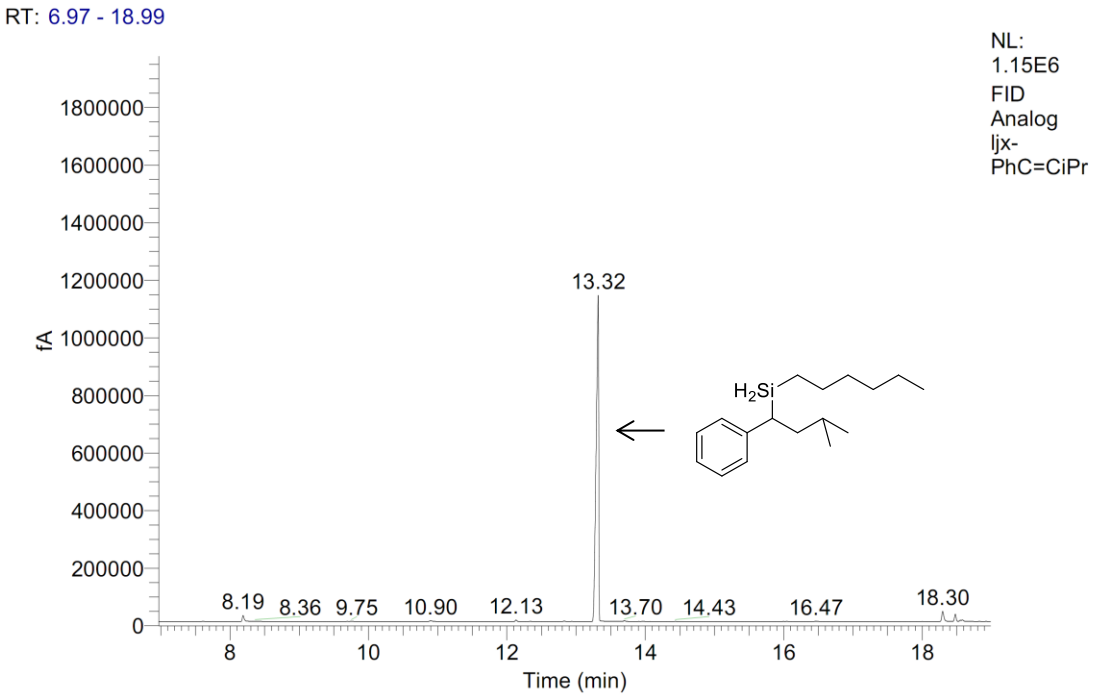

jx-4-OMe #3600 RT: 14.24 AV: 1 NL: 2.40E6
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
149.21
121.17
249.29
91.16
59.09
163.17
221.26
179.18
264.31
330.66
397.36
447.87
506.42
555.74

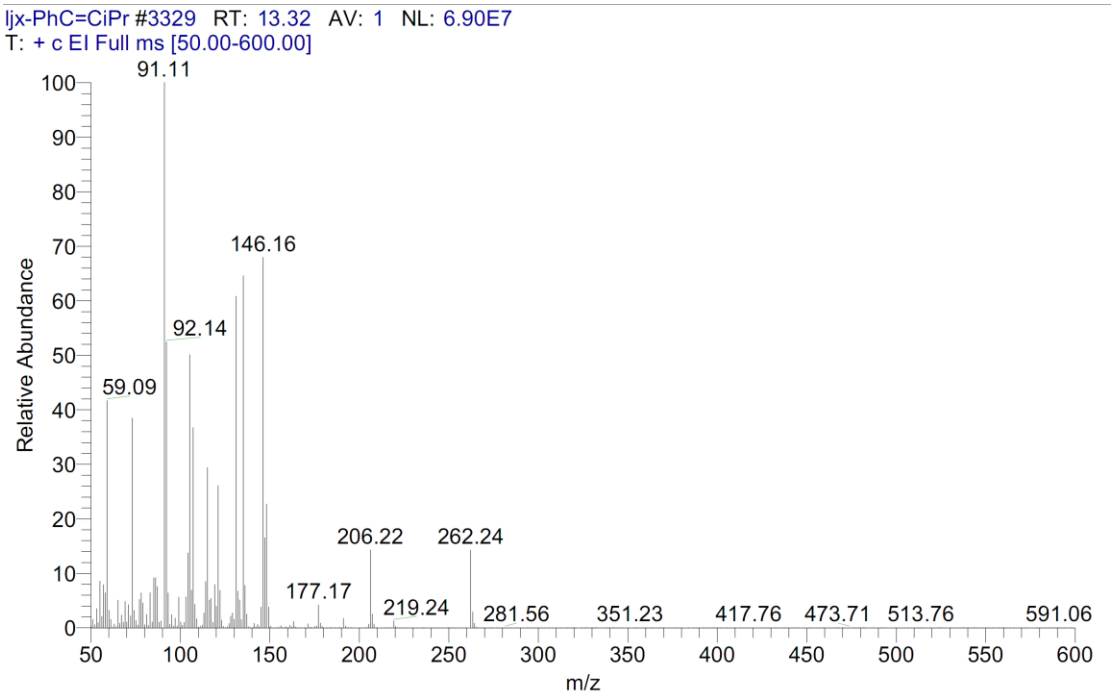

RT: 7.02 - 19.96
NL:
4.39E5
FID
Analog
NMe2
RT: 15.37
MA: 997110
RT: 11.37
MA: 10935
8.17
10.26
13.64
14.82
15.90
17.90
18.29
19.07
fA
Time (min)
Me2N
H2Si


NMe2 #3932 RT: 15.37 AV: 1 NL: 5.54E6
T: + c EI Full ms [50.00-600.00]
162.24
148.20
91.13
192.25
277.34
313.27
366.51
426.37
463.34
546.19
573.93
Relative Abundance
m/z

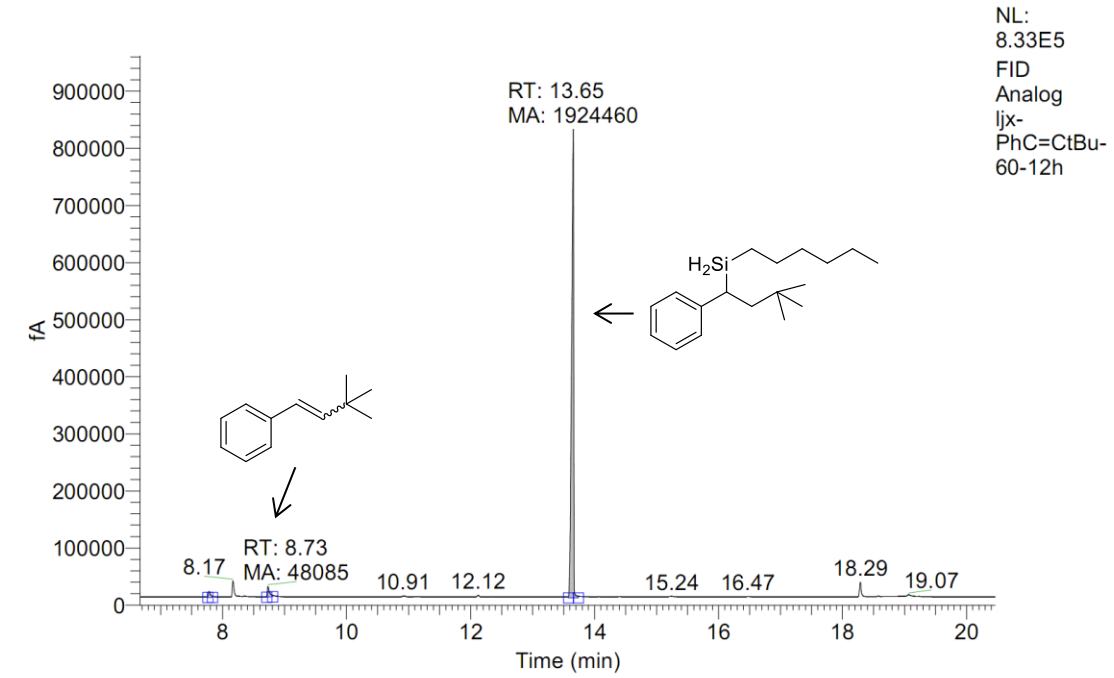

RT: 6.96 - 18.99
NL:
6.89E5
FID
Analog
ljx-
PhC=CC7
fA
Time (min)
16.52
8.18
8.36
9.76
10.90
12.12
13.89
15.81
17.97
18.28
H2Si


ljx-PhC=CC7 #4269 RT: 16.52 AV: 1 NL: 6.74E7
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
104.13
91.11
59.09
115.13
121.11
147.16
204.26
233.22
261.32
318.35
334.25
408.42
484.20
555.10
599.61

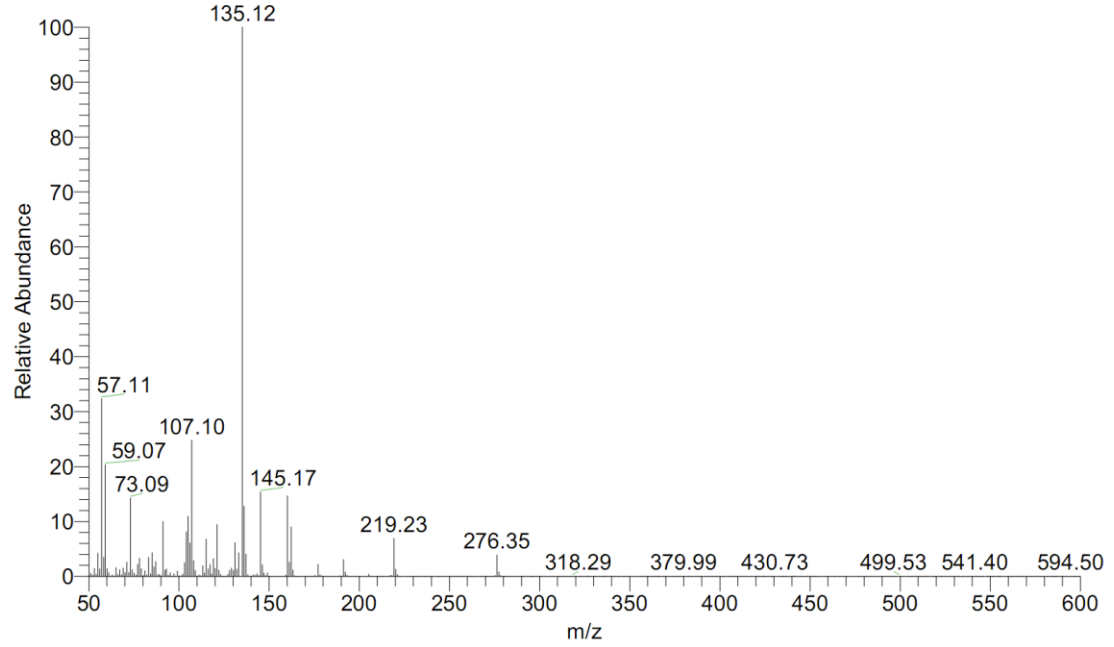

RT: 6.97 - 18.99
NL:
1.15E6
FID
Analog
ljx-
PhC=CiPr
fA
Time (min)
13.32
8.19
8.36
9.75
10.90
12.13
13.70
14.43
16.47
18.30
H2Si

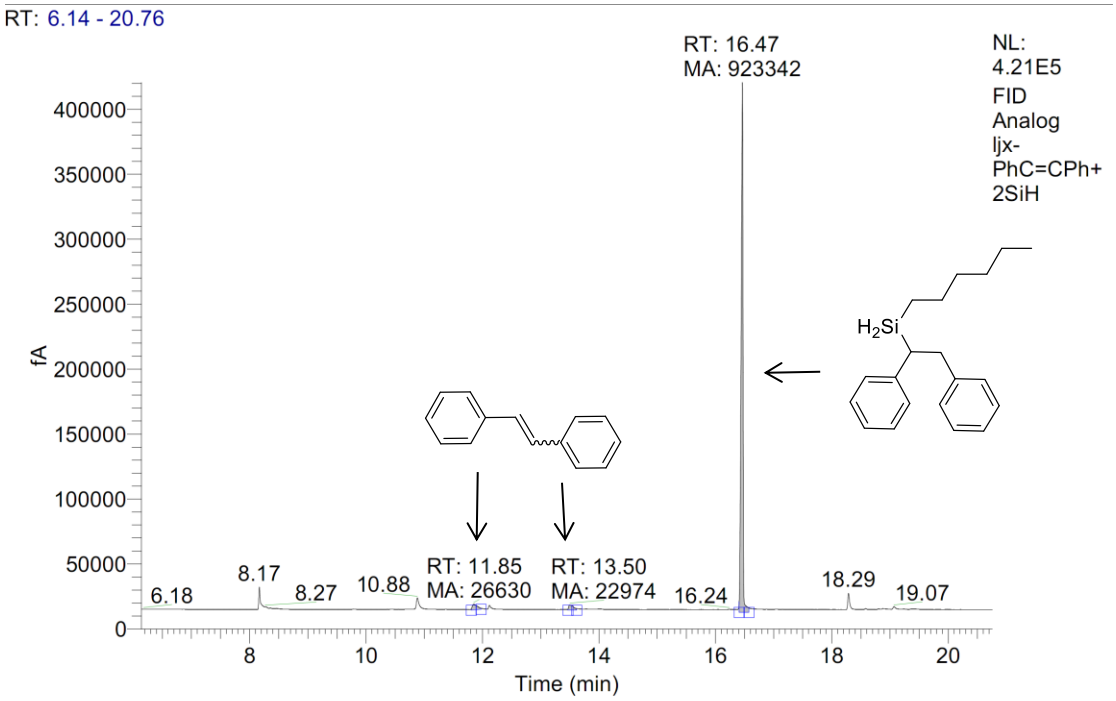

ljx-PhC=CiPr #3329 RT: 13.32 AV: 1 NL: 6.90E7
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
91.11
146.16
92.14
59.09
206.22
262.24
177.17
219.24
281.56
351.23
417.76
473.71
513.76
591.06

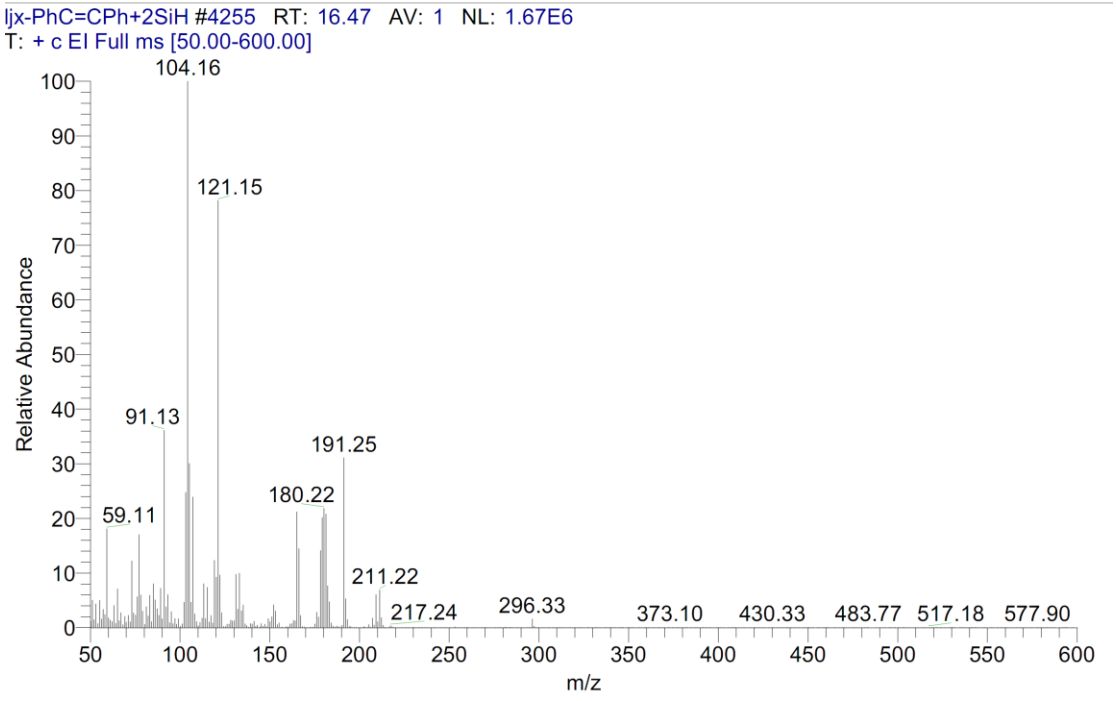
RT: 6.67 - 20.46

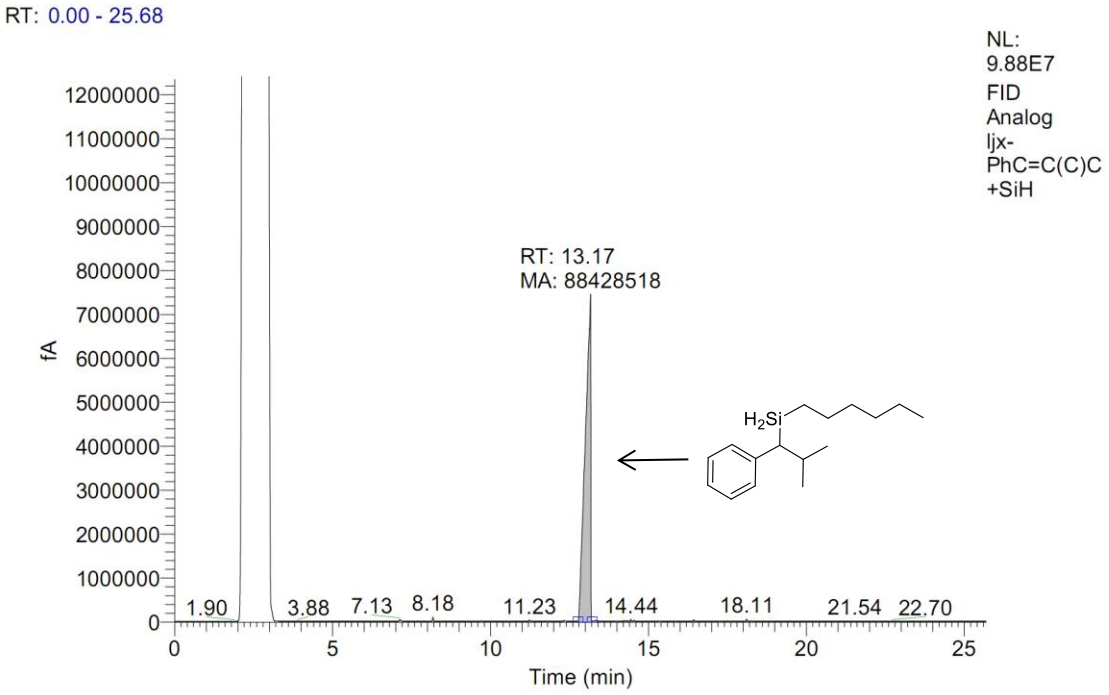


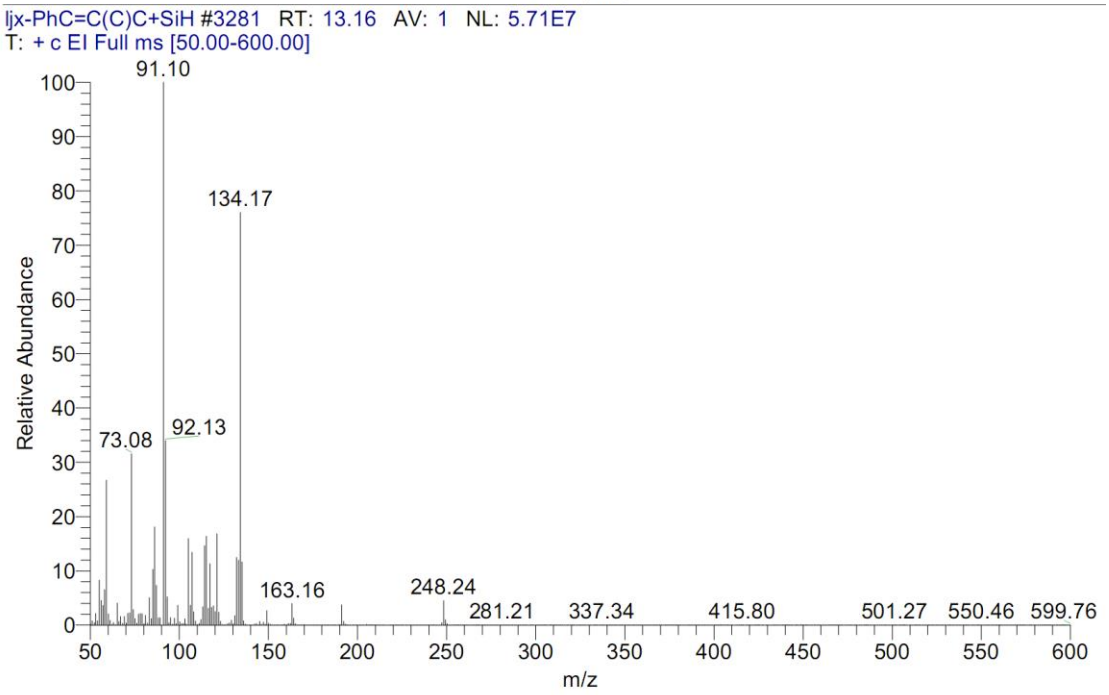
ljx-PhC=CtBu-60-12h #3425 RT: 13.65 AV: 1 NL: 2.58E7
T: + c EI Full ms [50.00-600.00]

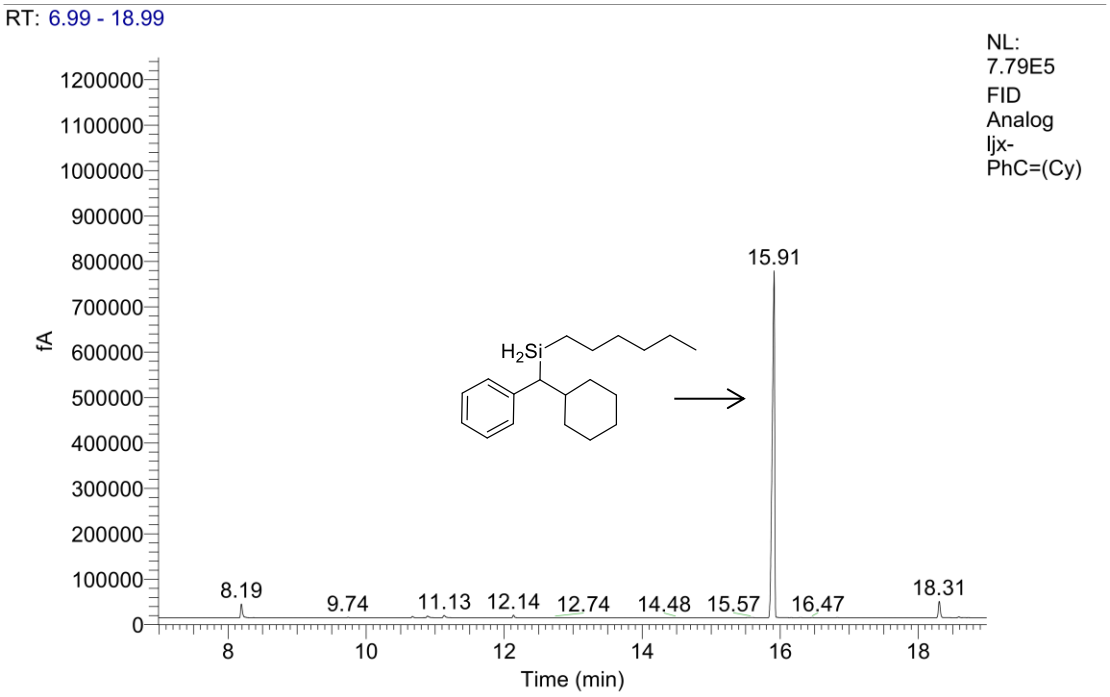


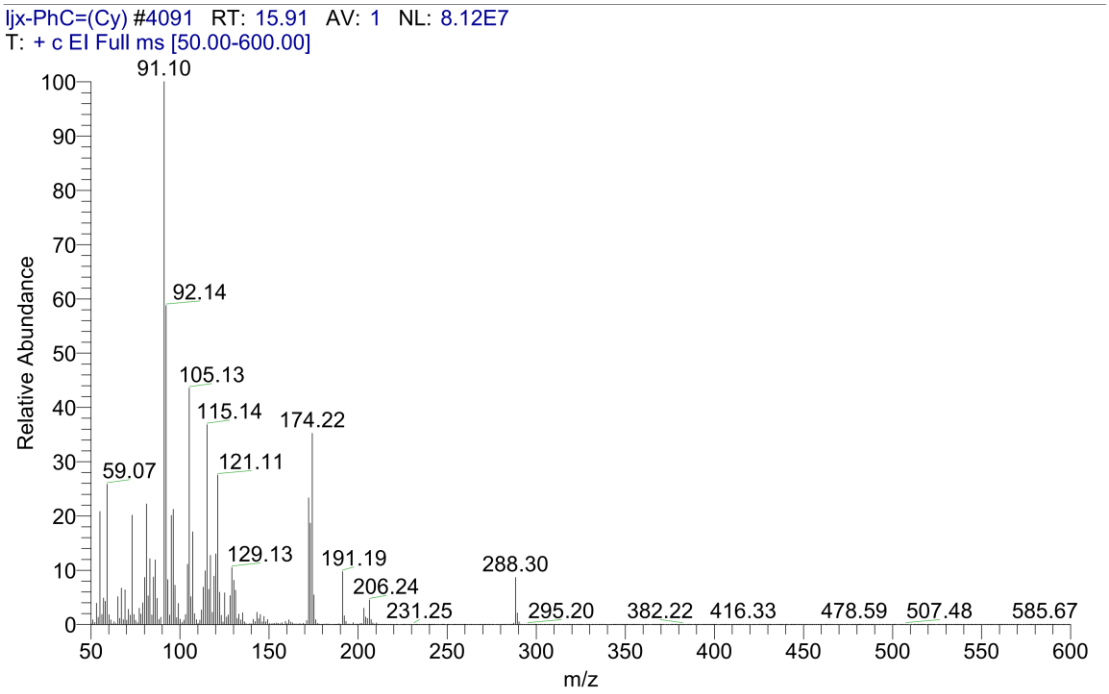

RT: 6.14 - 20.76
RT: 16.47
MA: 923342
NL:
4.21E5
FID
Analog
ljx-
PhC=CPh+
2SiH
fA
Time (min)
6.18
8.17
8.27
10.88
RT: 11.85
MA: 26630
RT: 13.50
MA: 22974
16.24
18.29
19.07
H2Si

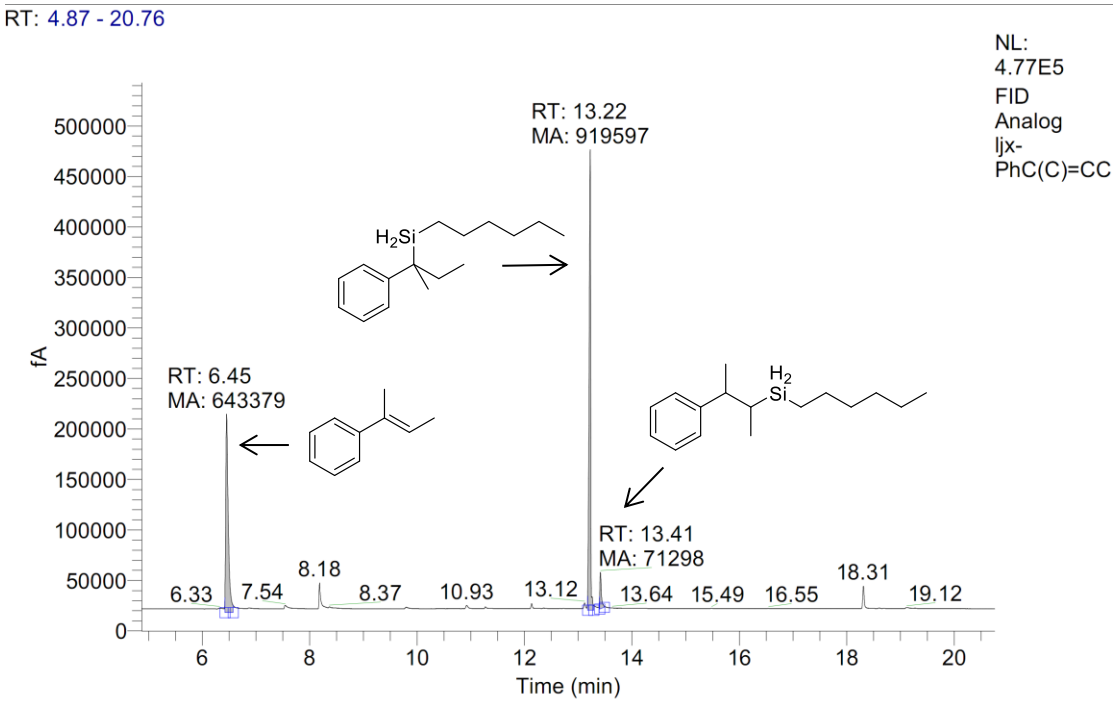

ljx-PhC=CPh+2SiH #4255 RT: 16.47 AV: 1 NL: 1.67E6
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
104.16
121.15
91.13
191.25
180.22
59.11
211.22
217.24
296.33
373.10
430.33
483.77
517.18
577.90

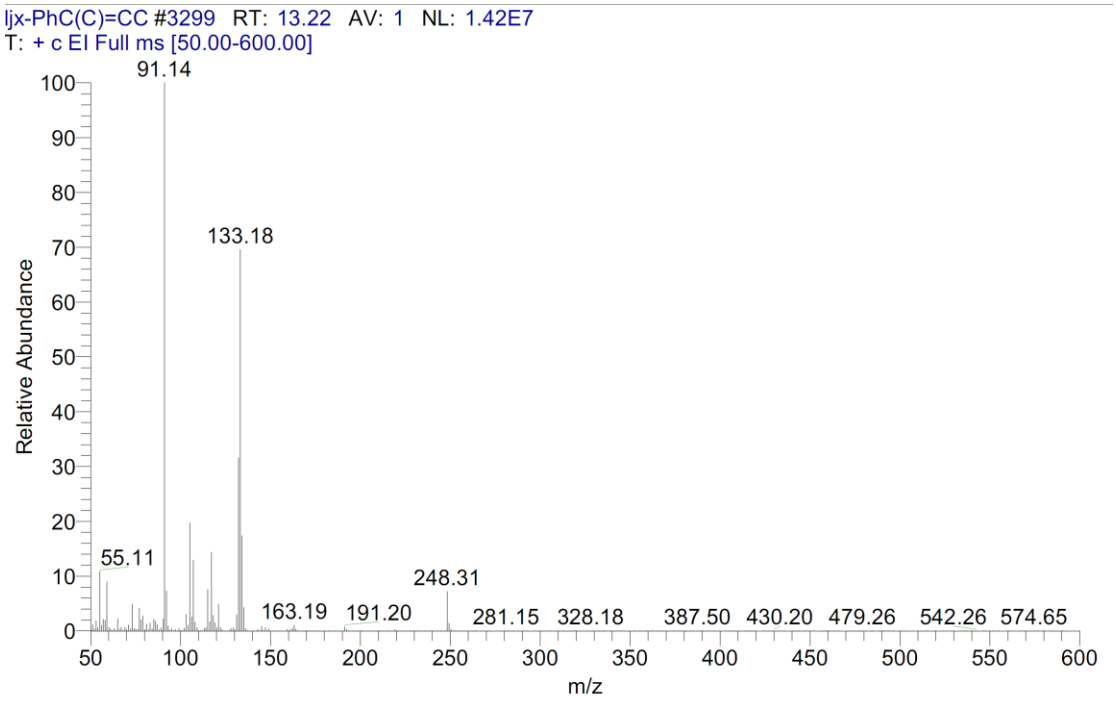

RT: 0.00 - 25.68
NL:
9.88E7
FID
Analog
ljx-
PhC=C(C)C
+SiH
RT: 13.17
MA: 88428518
fA
Time (min)
1.90
3.88
7.13
8.18
11.23
14.44
18.11
21.54
22.70
H2Si

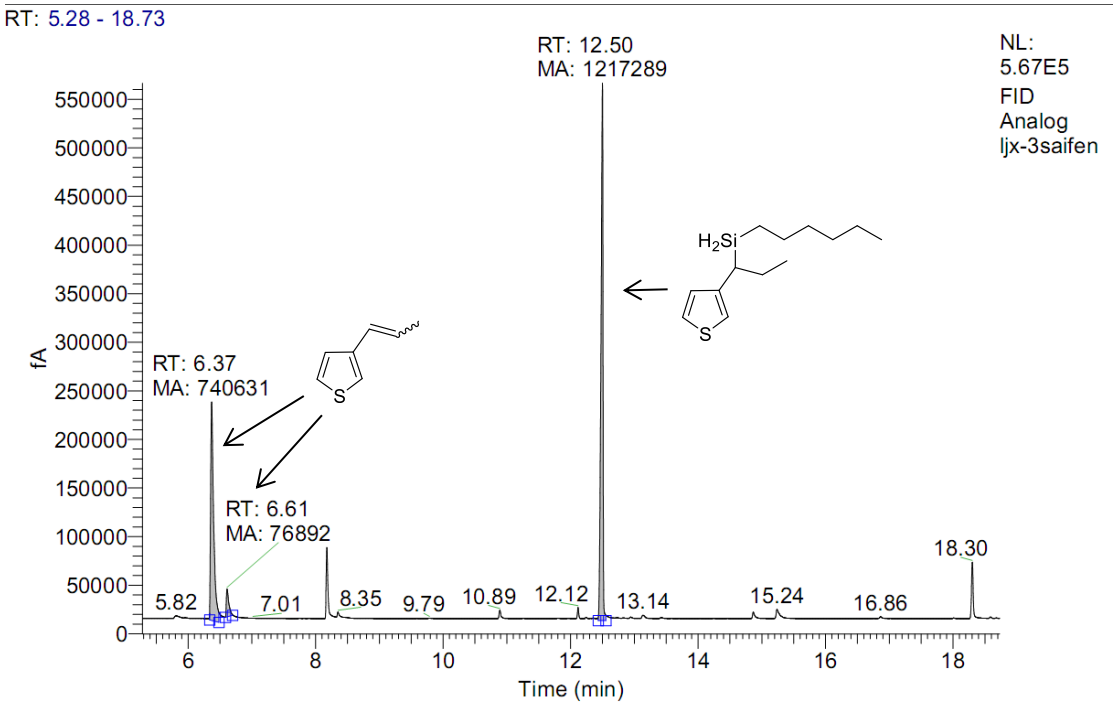

ljx-PhC=C(C)C+SiH #3281 RT: 13.16 AV: 1 NL: 5.71E7
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
91.10
134.17
92.13
73.08
163.16
248.24
281.21
337.34
415.80
501.27
550.46
599.76

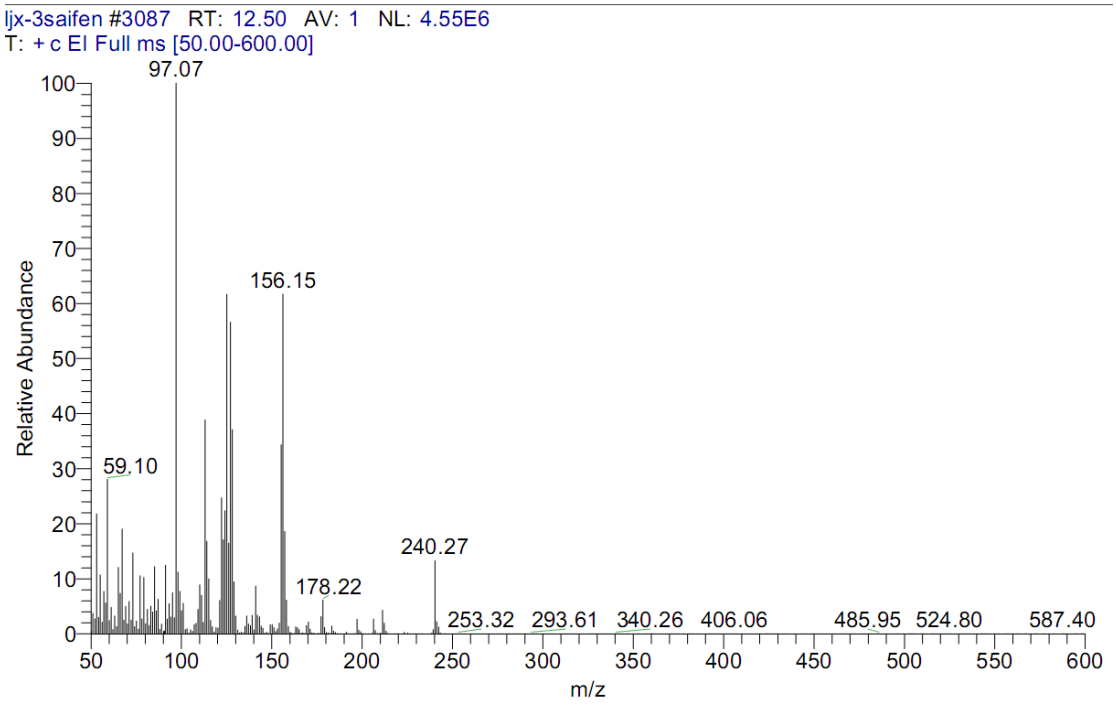

RT: 6.99 - 18.99
NL:
7.79E5
FID
Analog
ljx-
PhC=(Cy)
fA
Time (min)
15.91
8.19
9.74
11.13
12.14
12.74
14.48
15.57
16.47
18.31
H2Si

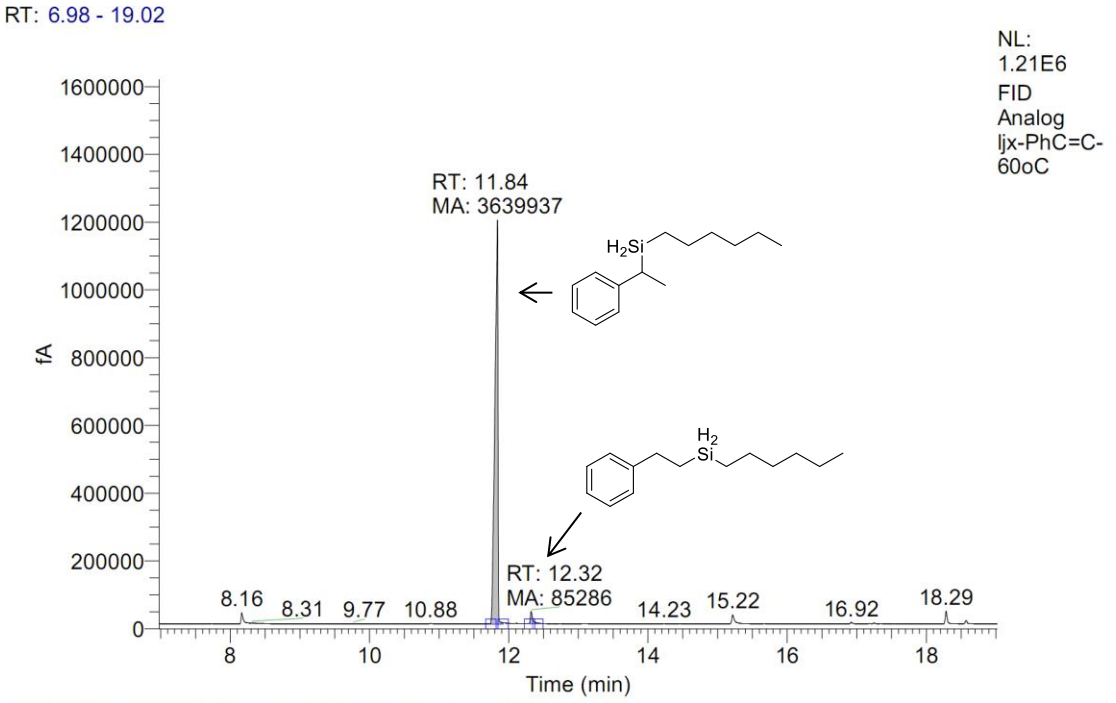

ljx-PhC=(Cy) #4091 RT: 15.91 AV: 1 NL: 8.12E7
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
91.10
92.14
105.13
115.14
174.22
59.07
121.11
129.13
191.19
206.24
231.25
288.30
295.20
382.22
416.33
478.59
507.48
585.67

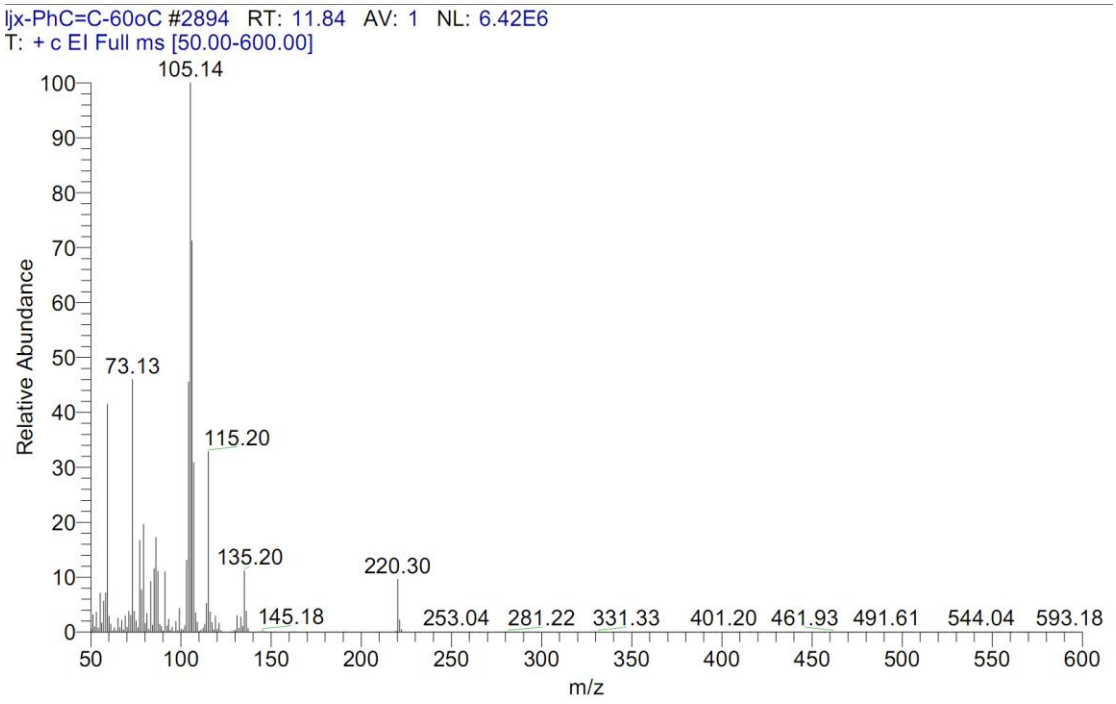

RT: 4.87 - 20.76
NL:
4.77E5
FID
Analog
ljx-
PhC(C)=CC
RT: 13.22
MA: 919597
RT: 6.45
MA: 643379
RT: 13.41
MA: 71298
fA
Time (min)

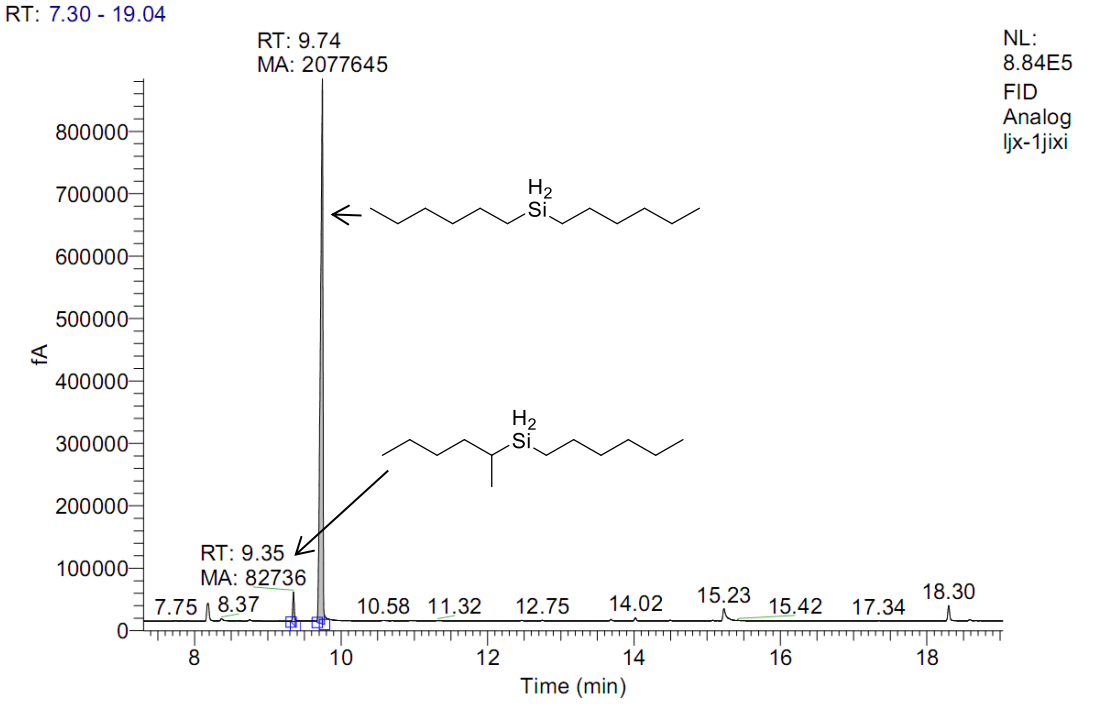

ljx-PhC(C)=CC #3299 RT: 13.22 AV: 1 NL: 1.42E7
T: + c EI Full ms [50.00-600.00]
91.14
133.18
55.11
248.31
Relative Abundance
m/z

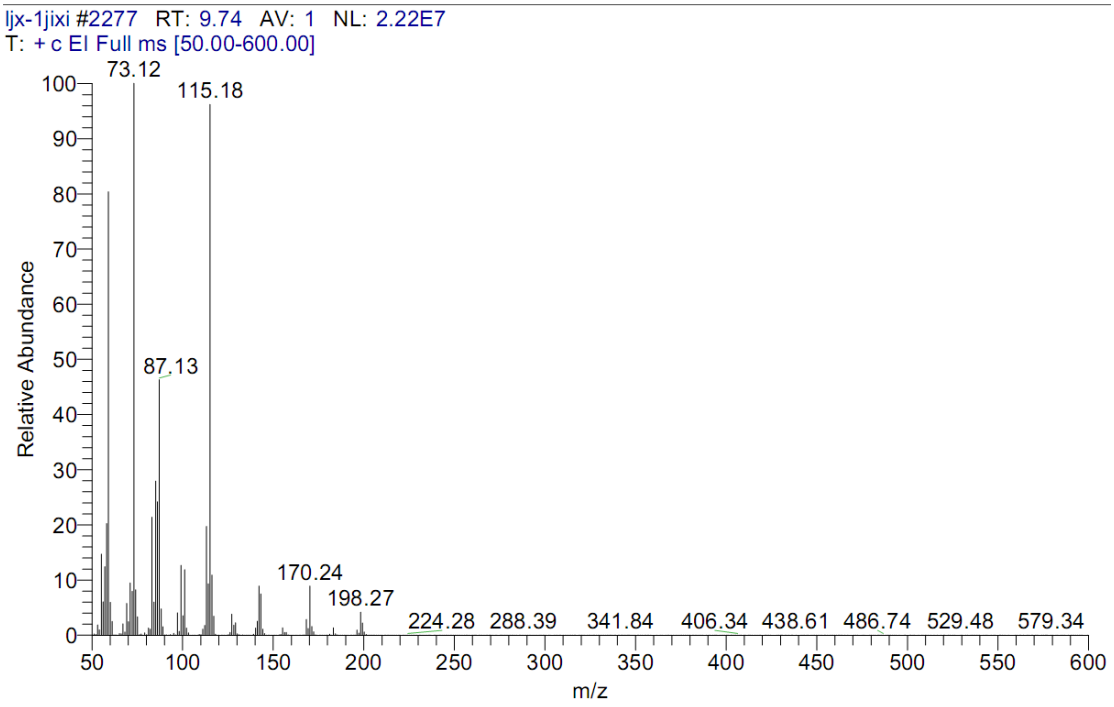

RT: 5.28 - 18.73
RT: 12.50
MA: 1217289
NL:
5.67E5
FID
Analog
ljx-3saifen
RT: 6.37
MA: 740631
RT: 6.61
MA: 76892
fA
Time (min)
5.82
7.01
8.35
9.79
10.89
12.12
13.14
15.24
16.86
18.30

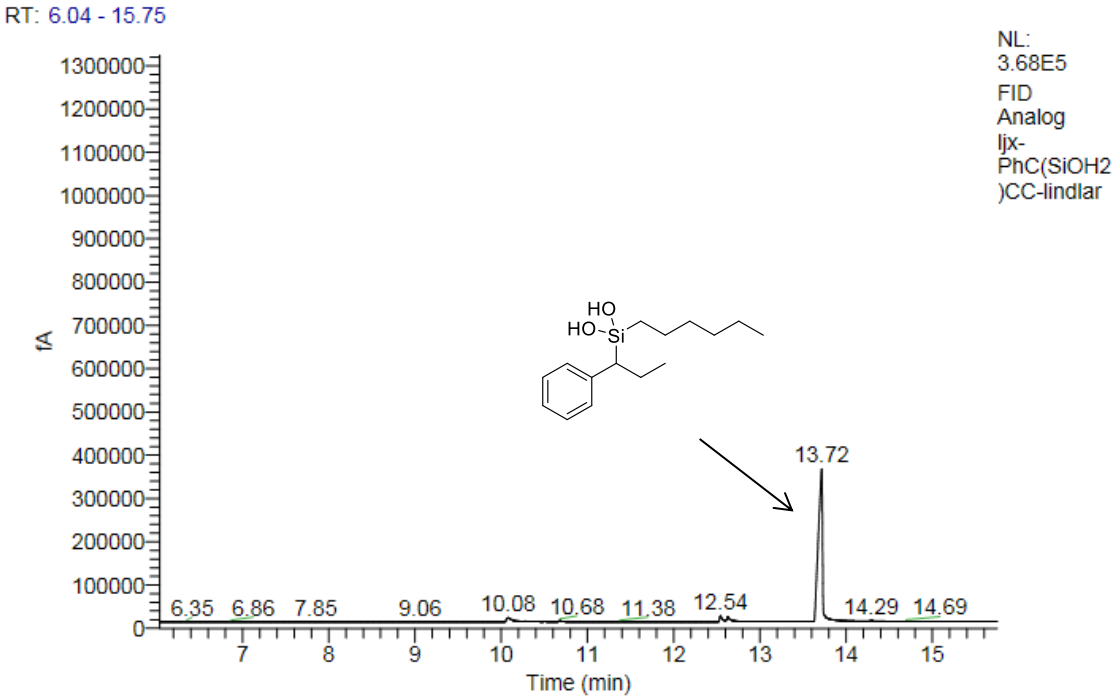

ljx-3saifen #3087 RT: 12.50 AV: 1 NL: 4.55E6
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
97.07
156.15
59.10
240.27
178.22
253.32
293.61
340.26
406.06
485.95
524.80
587.40

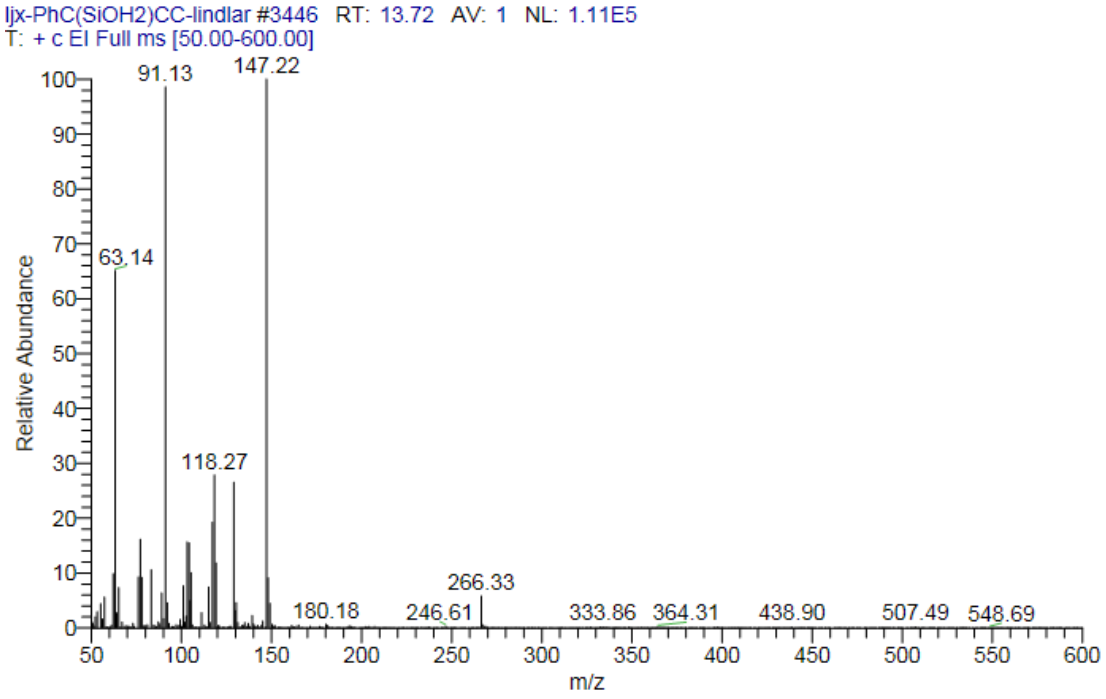

RT: 6.98 - 19.02
NL:
1.21E6
FID
Analog
ljx-PhC=C-
60oC
RT: 11.84
MA: 3639937
RT: 12.32
MA: 85286
fA
Time (min)
8.16
8.31
9.77
10.88
14.23
15.22
16.92
18.29


ljx-PhC=C-60oC #2894 RT: 11.84 AV: 1 NL: 6.42E6
T: + c EI Full ms [50.00-600.00]
105.14
73.13
115.20
135.20
145.18
220.30
253.04
281.22
331.33
401.20
461.93
491.61
544.04
593.18
Relative Abundance
m/z

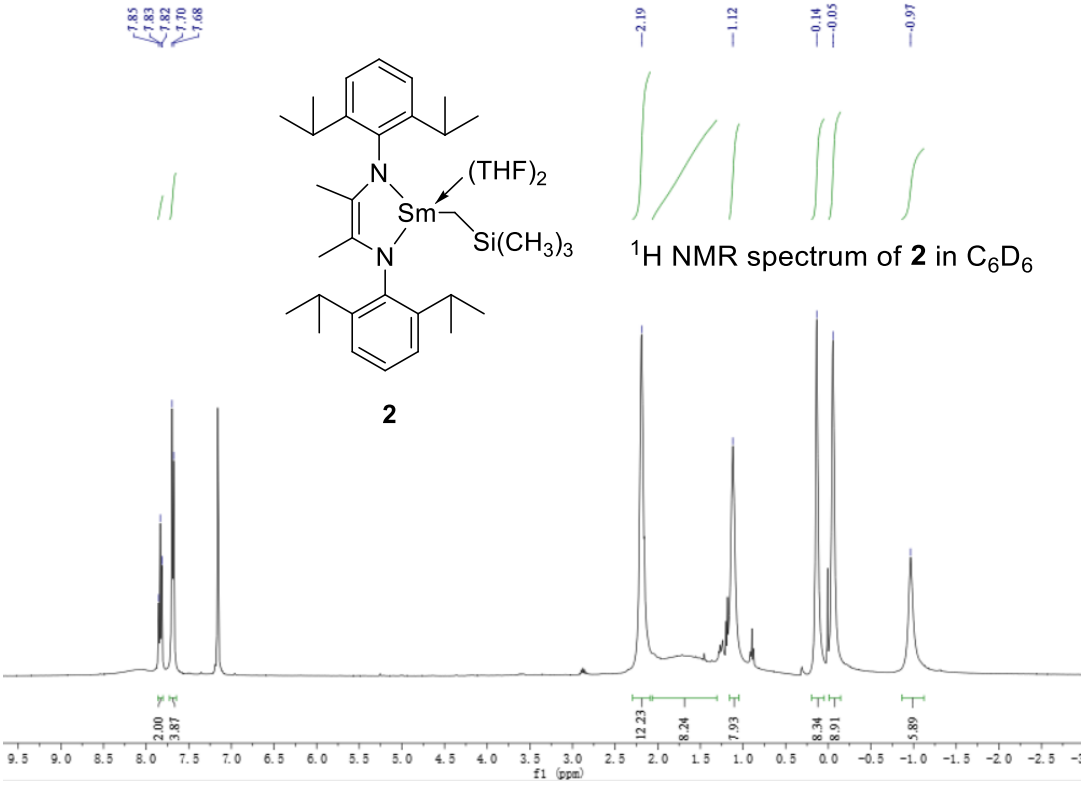

RT: 7.30 - 19.04
RT: 9.74
MA: 2077645
NL:
8.84E5
FID
Analog
ljx-1jixi
H2
Si
H2
Si
RT: 9.35
MA: 82736
fA
Time (min)
7.75
8.37
10.58
11.32
12.75
14.02
15.23
15.42
17.34
18.30


ljx-1jixi #2277 RT: 9.74 AV: 1 NL: 2.22E7
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
73.12
115.18
87.13
170.24
198.27
224.28
288.39
341.84
406.34
438.61
486.74
529.48
579.34


RT: 6.04 - 15.75
NL:
3.68E5
FID
Analog
ljx-
PhC(SiOH2
)CC-lindlar
fA
Time (min)
HO
HO
Si
13.72
6.35
6.86
7.85
9.06
10.08
10.68
11.38
12.54
14.29
14.69

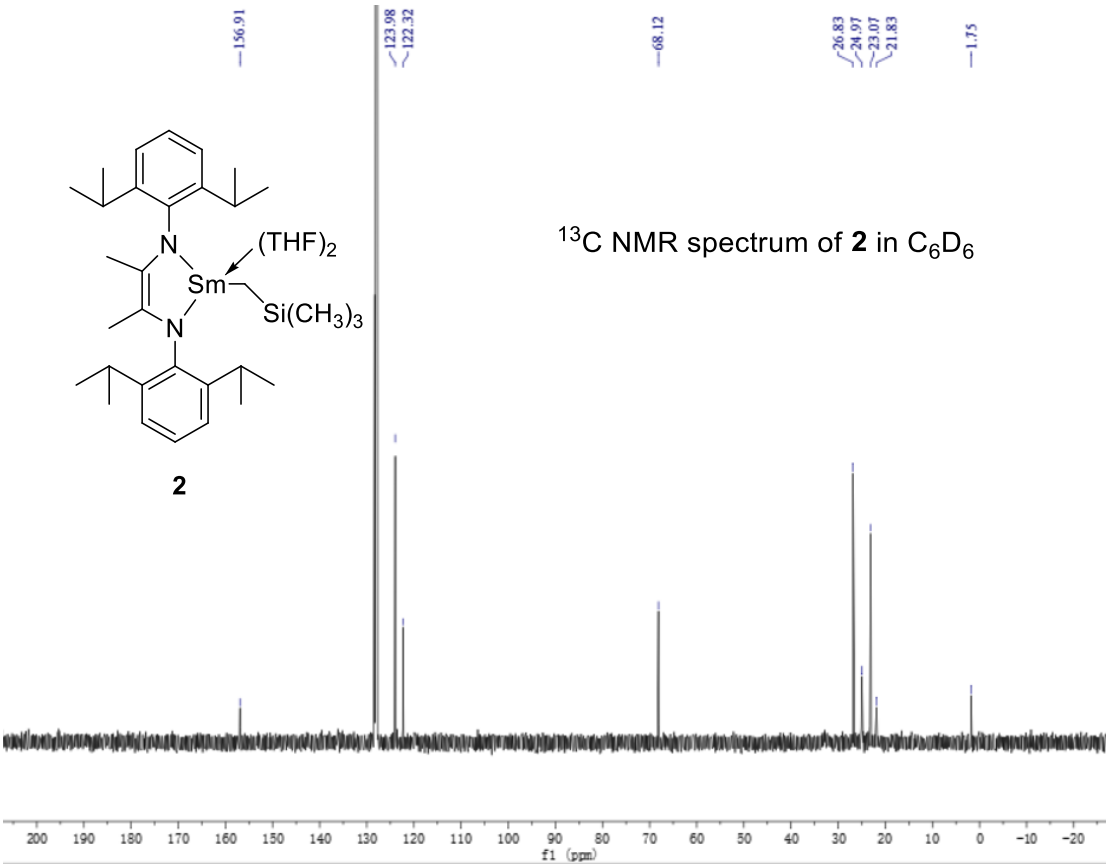

ljx-PhC(SiOH2)CC-lindlar #3446 RT: 13.72 AV: 1 NL: 1.11E5
T: + c EI Full ms [50.00-600.00]
Relative Abundance
m/z
91.13
147.22
63.14
118.27
266.33
180.18
246.61
333.86
364.31
438.90
507.49
548.69

NMR Spectrum



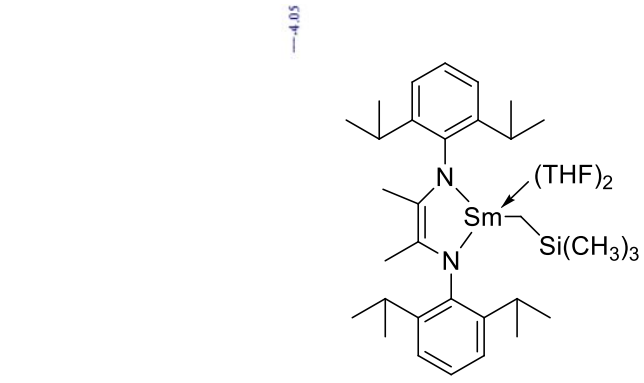
2

^{1}H NMR spectrum of **2** in C_6D_6



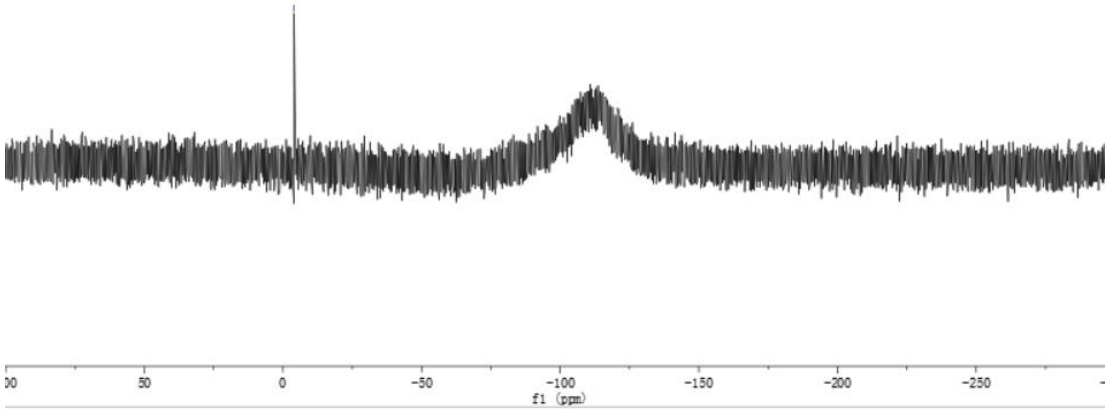
2

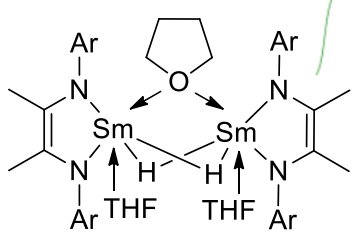
^{13}C NMR spectrum of **2** in C_6D_6



2

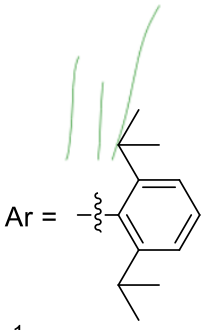
^{29}Si NMR spectrum of **2** in C_6D_6



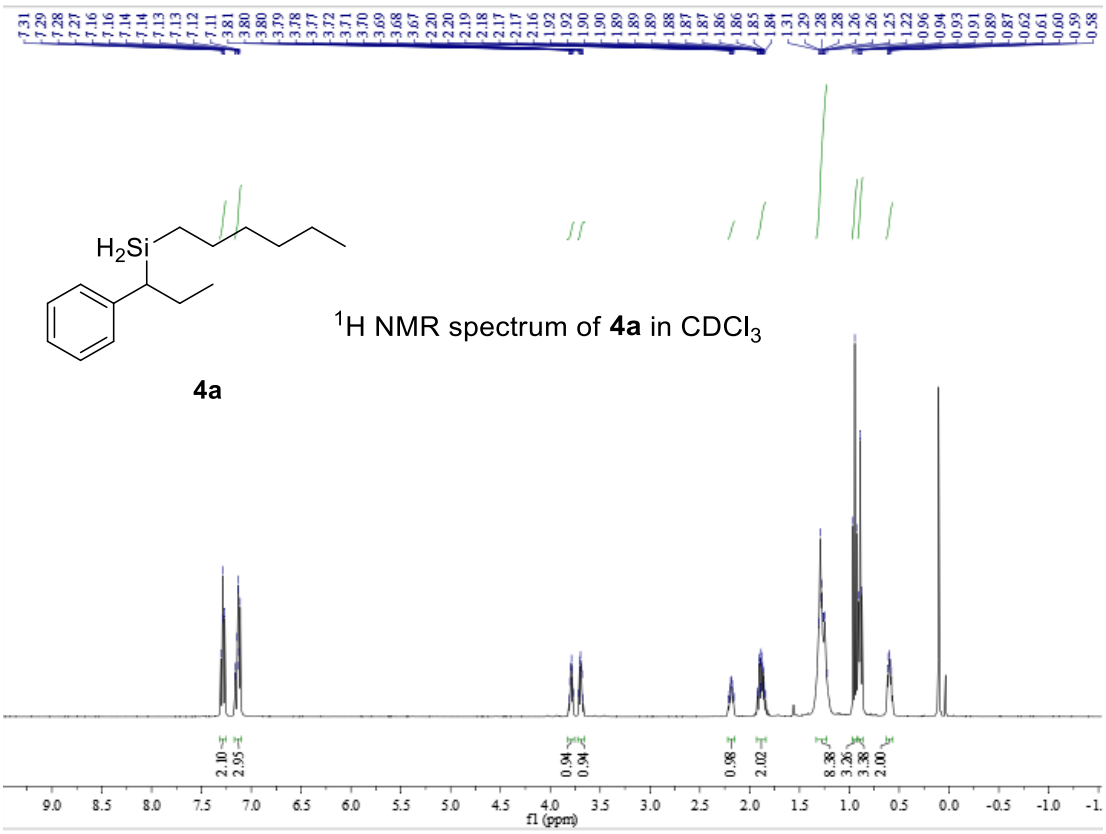


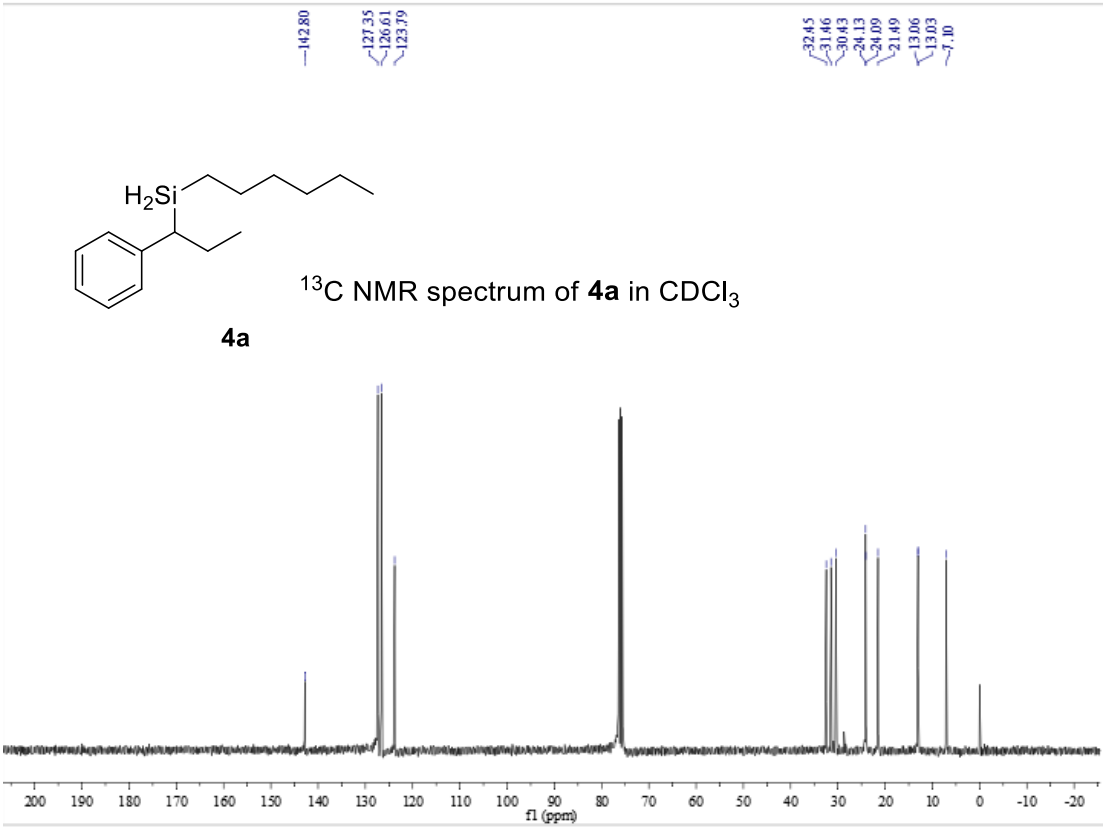
3

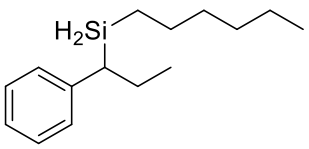
Ar =



^{1}H NMR spectrum of **3** in C_6D_6

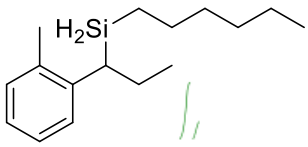

H2Si
4a
1H NMR spectrum of 4a in CDCl3
f1 (ppm)


H2Si
4a
13C NMR spectrum of 4a in CDCl3
f1 (ppm)



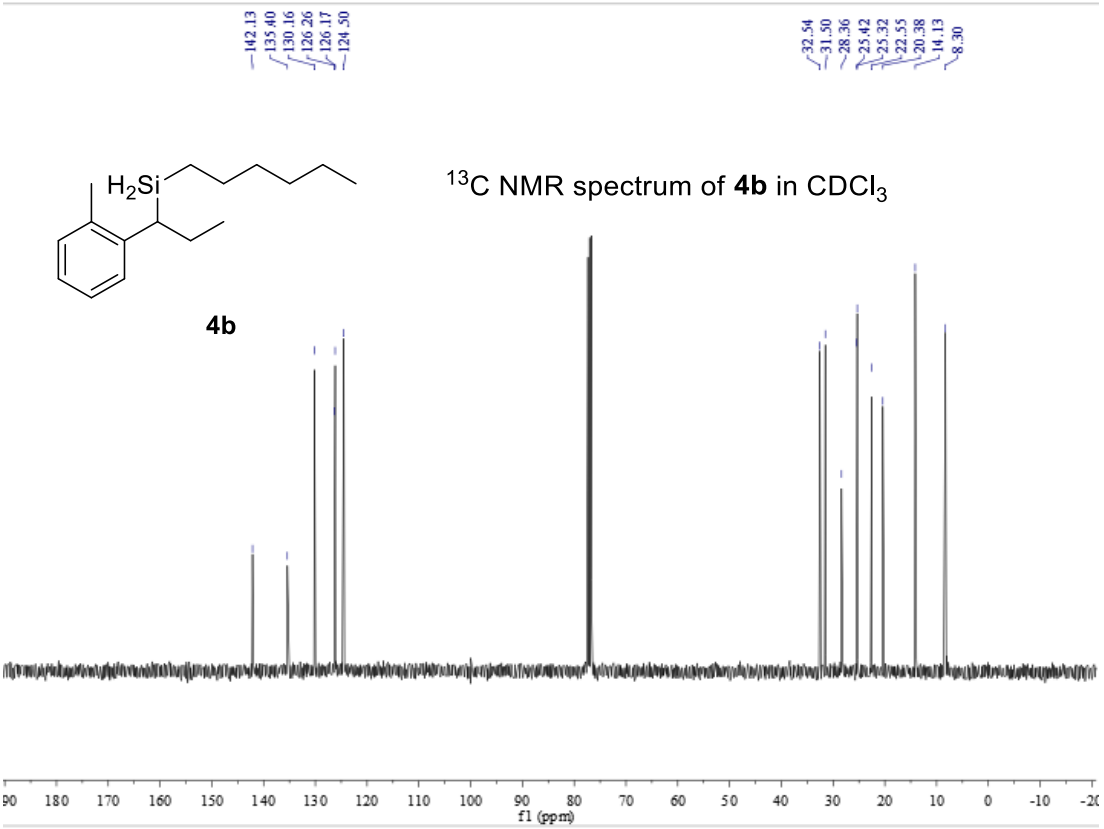
4a

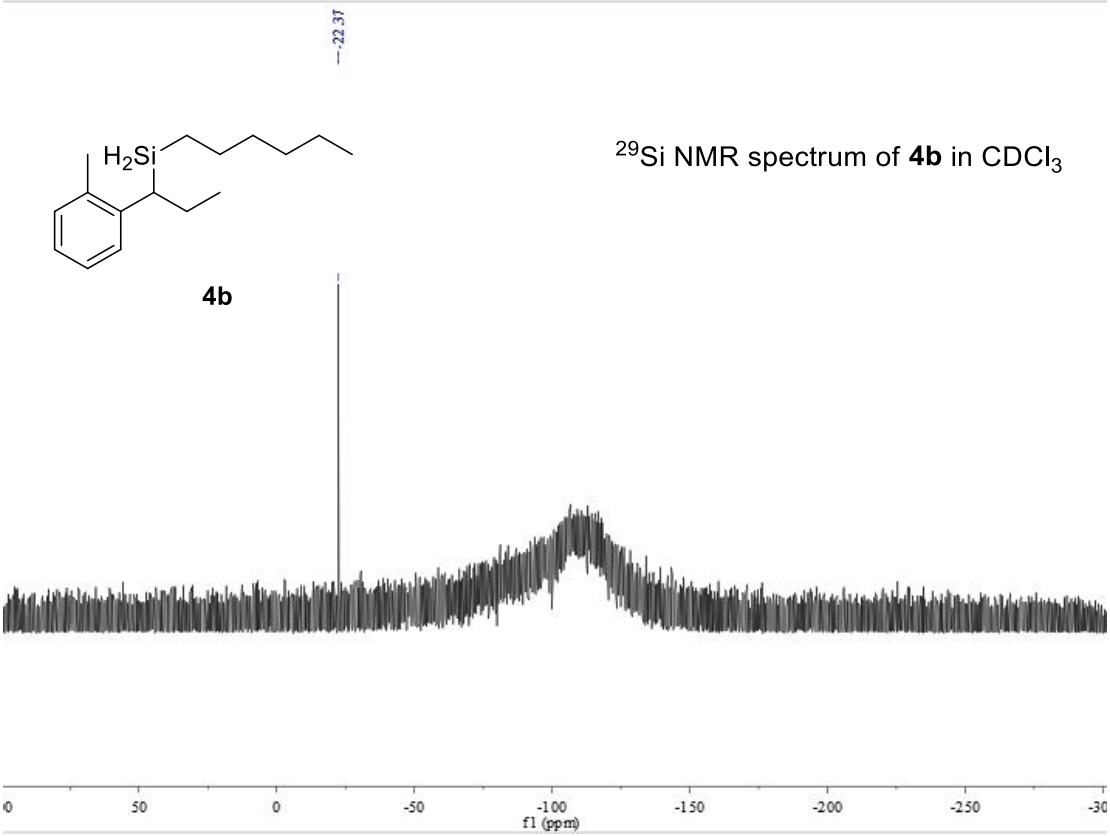
^{29}Si NMR spectrum of **4a** in $CDCl_3$

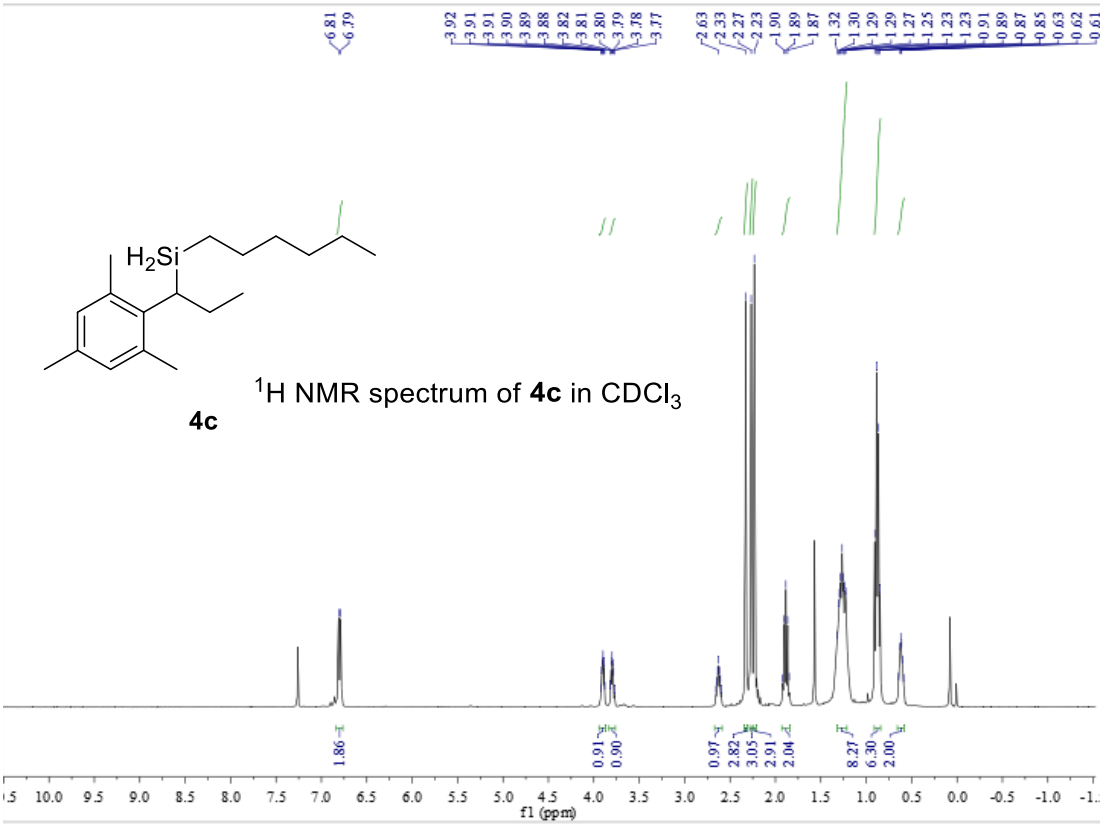


4b

^{1}H NMR spectrum of **4b** in $CDCl_3$

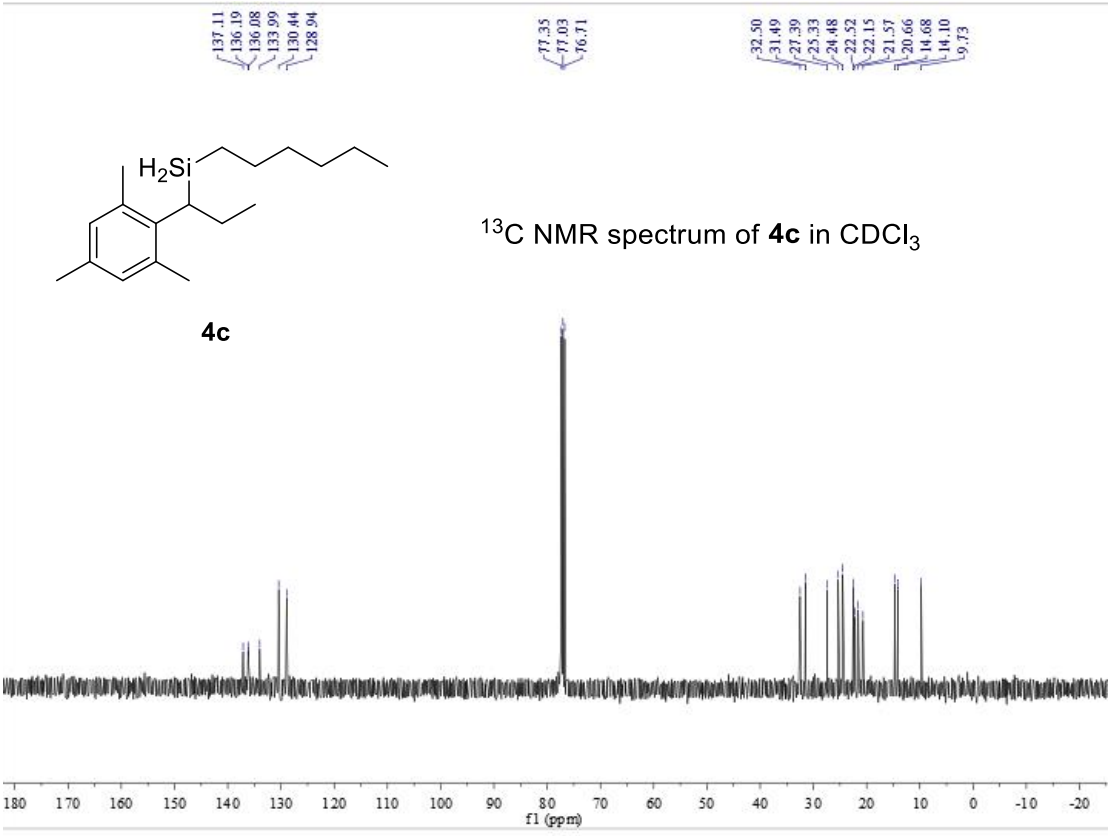

142.13
135.40
130.16
126.26
126.17
124.50
32.54
31.50
28.36
25.42
25.32
22.55
20.38
14.13
8.30
H2Si
4b
13C NMR spectrum of 4b in CDCl3
f1 (ppm)


-22.37
H2Si
4b
29Si NMR spectrum of 4b in CDCl3
f1 (ppm)



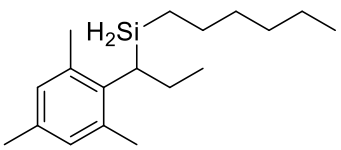
4c

^{1}H NMR spectrum of **4c** in $CDCl_3$



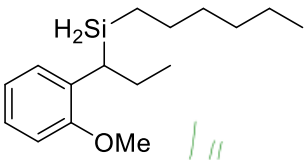
4c

^{13}C NMR spectrum of **4c** in $CDCl_3$



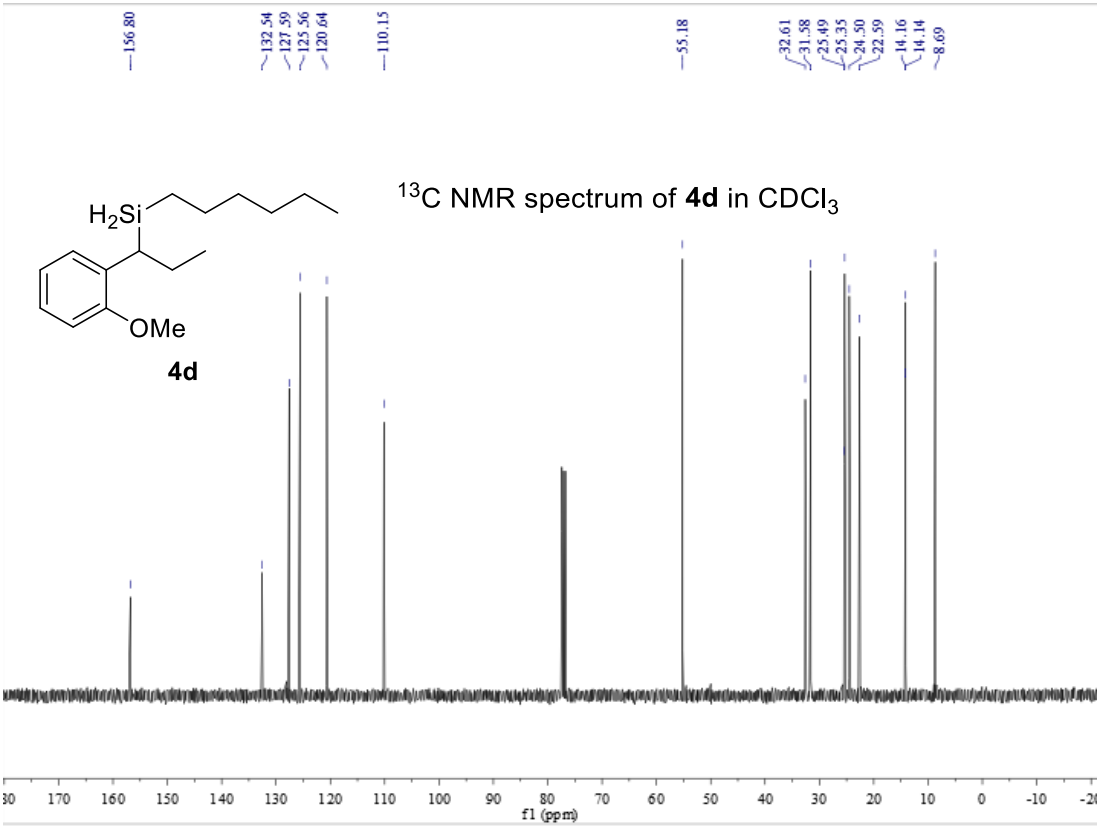
4c

^{29}Si NMR spectrum of **4c** in $CDCl_3$

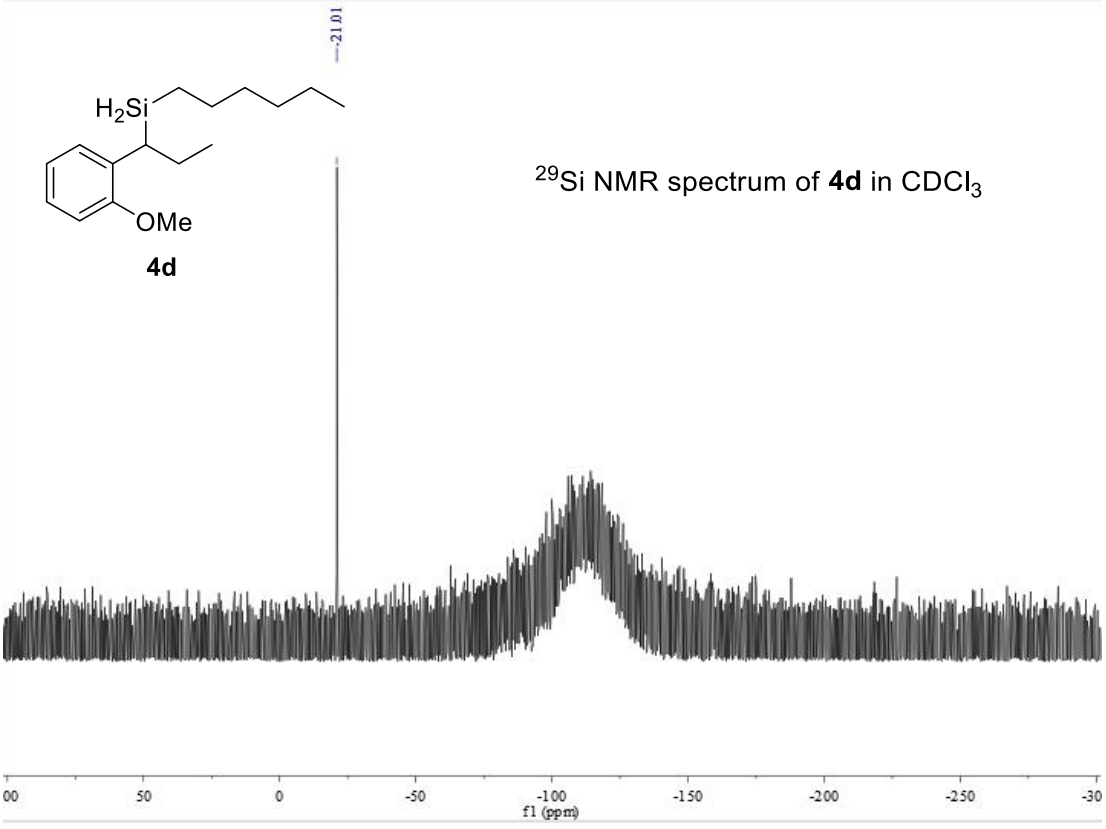


4d

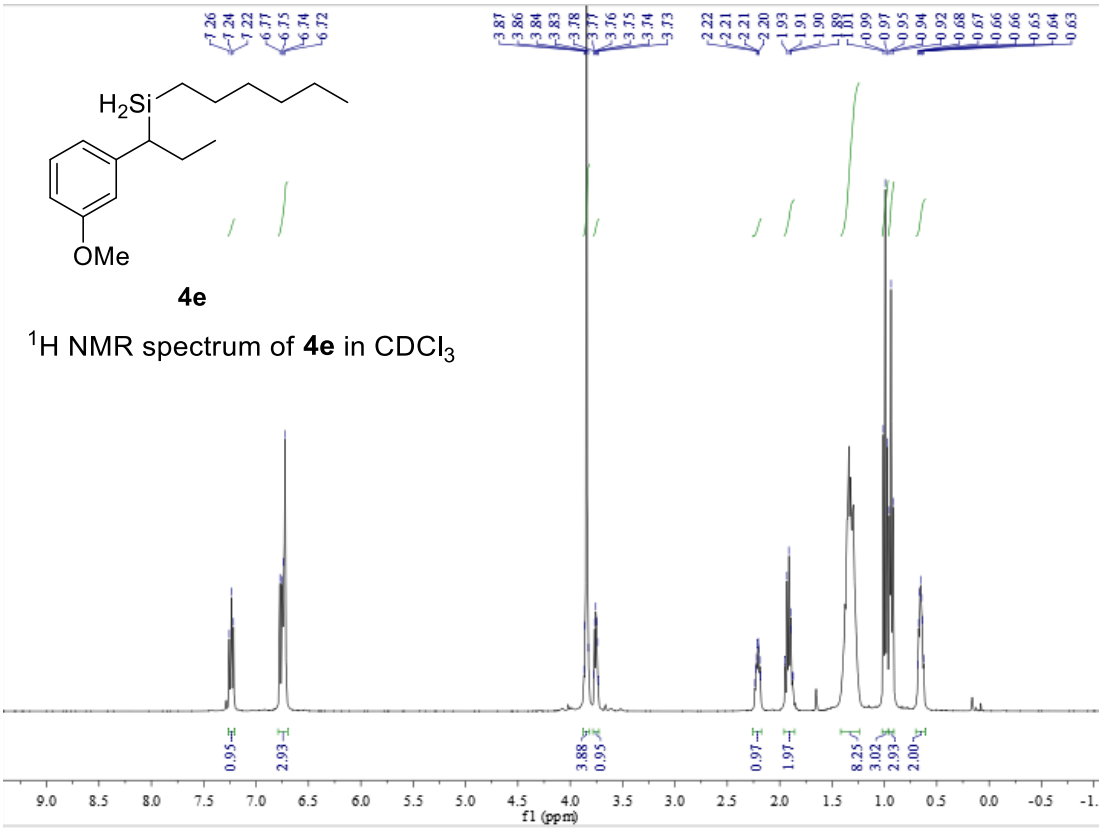
^{1}H NMR spectrum of **4d** in $CDCl_3$



^{13}C NMR spectrum of **4d** in $CDCl_3$

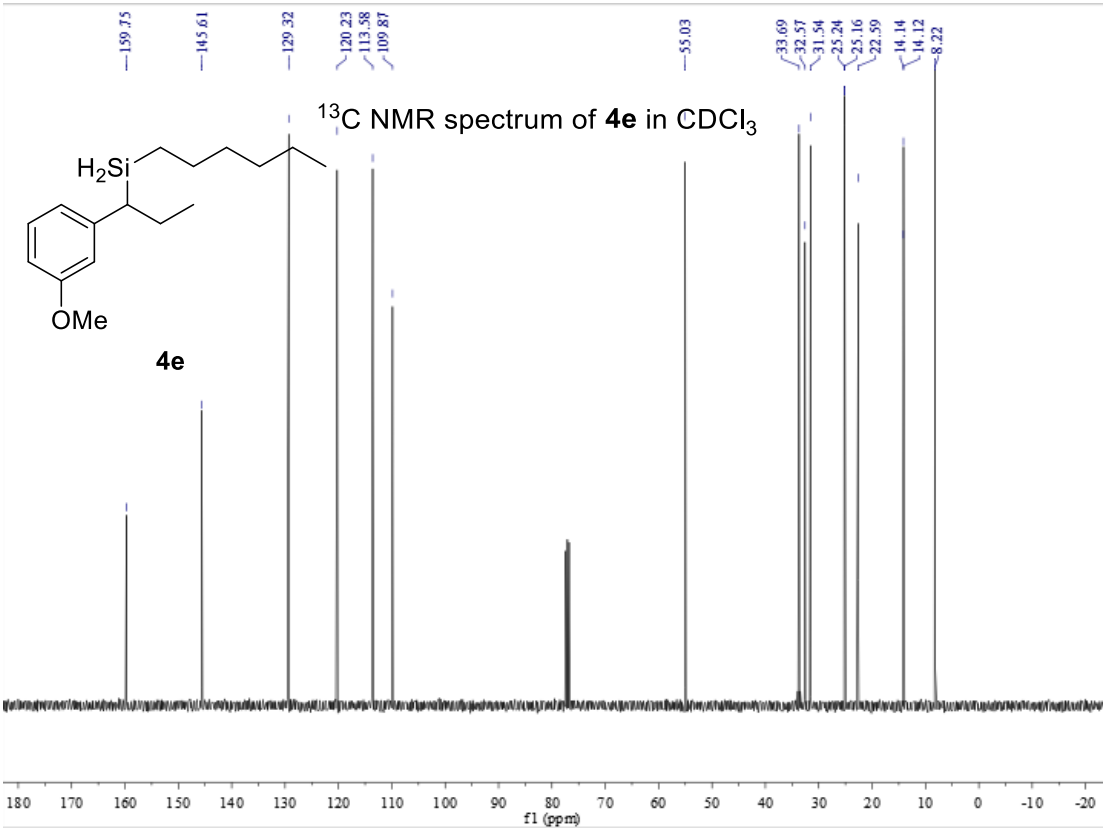


^{29}Si NMR spectrum of **4d** in $CDCl_3$



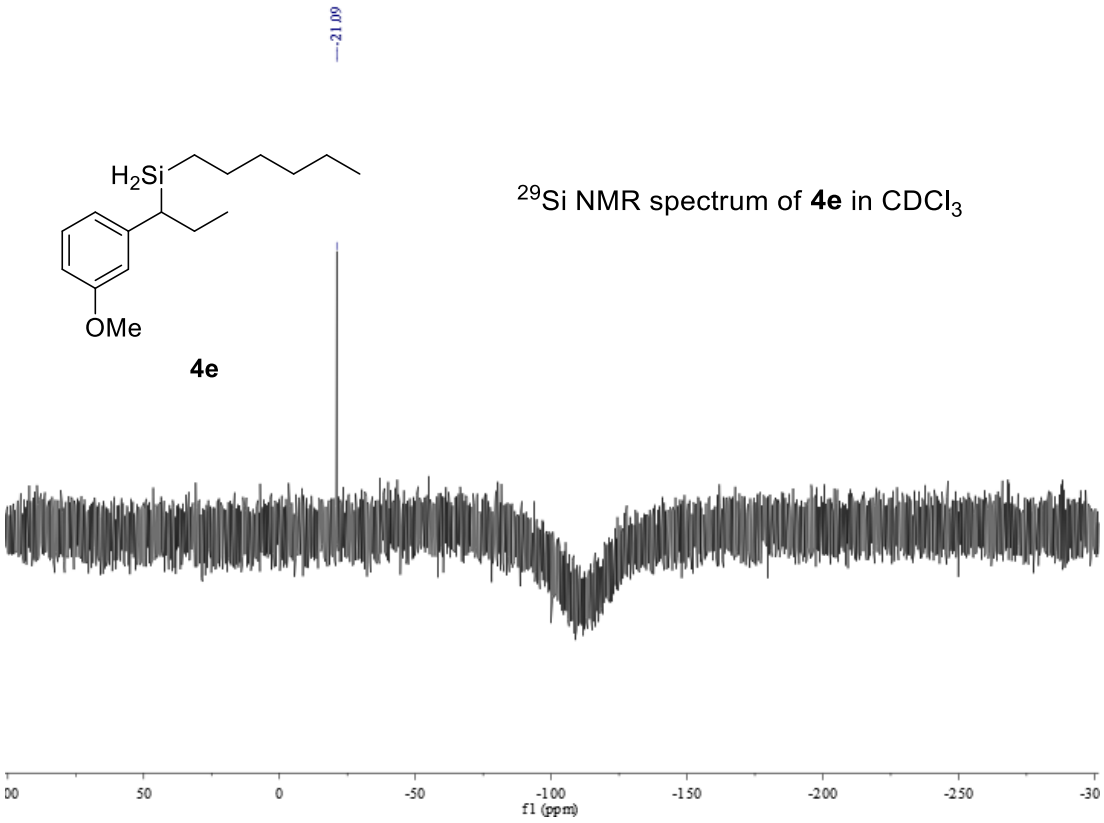
4e

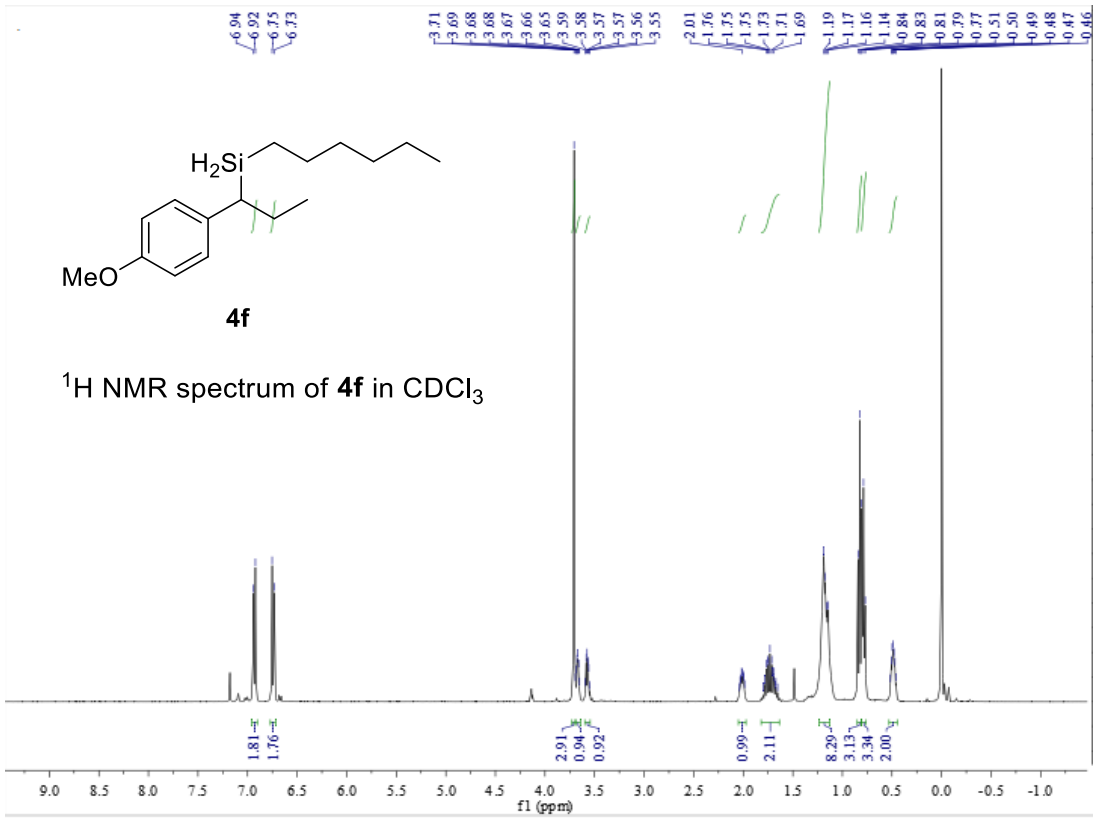
^{1}H NMR spectrum of **4e** in $CDCl_3$

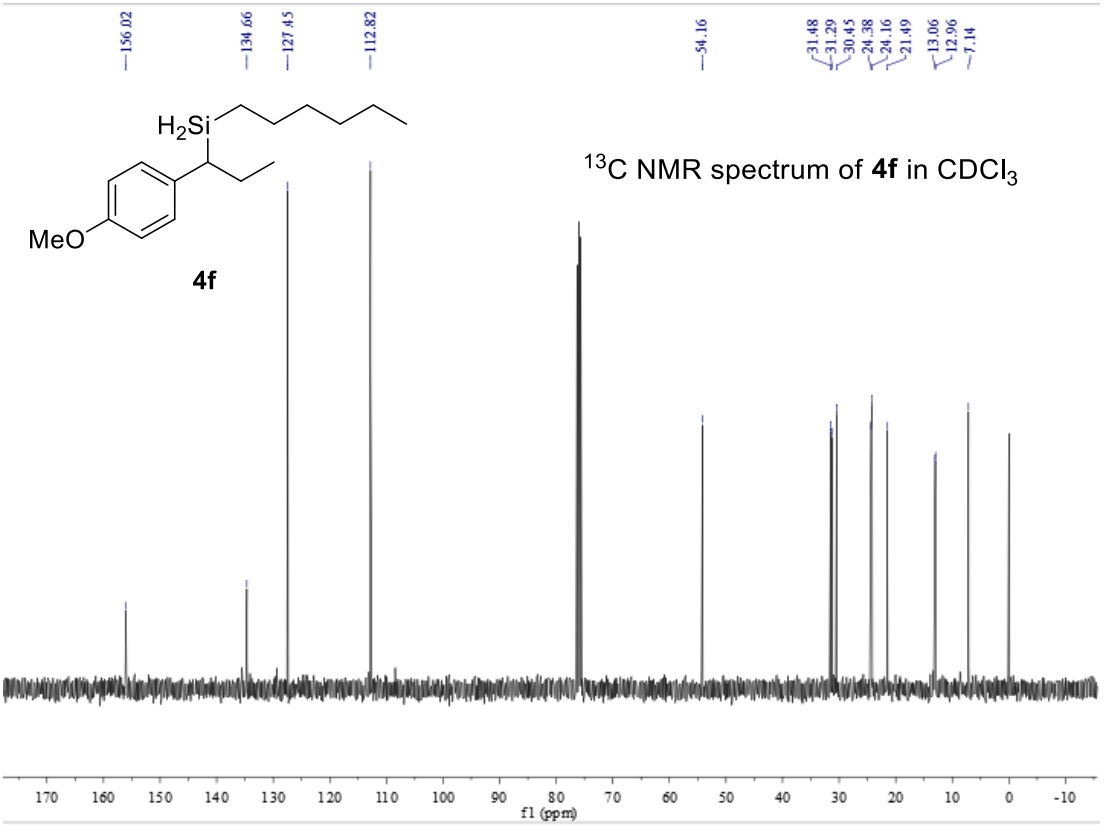


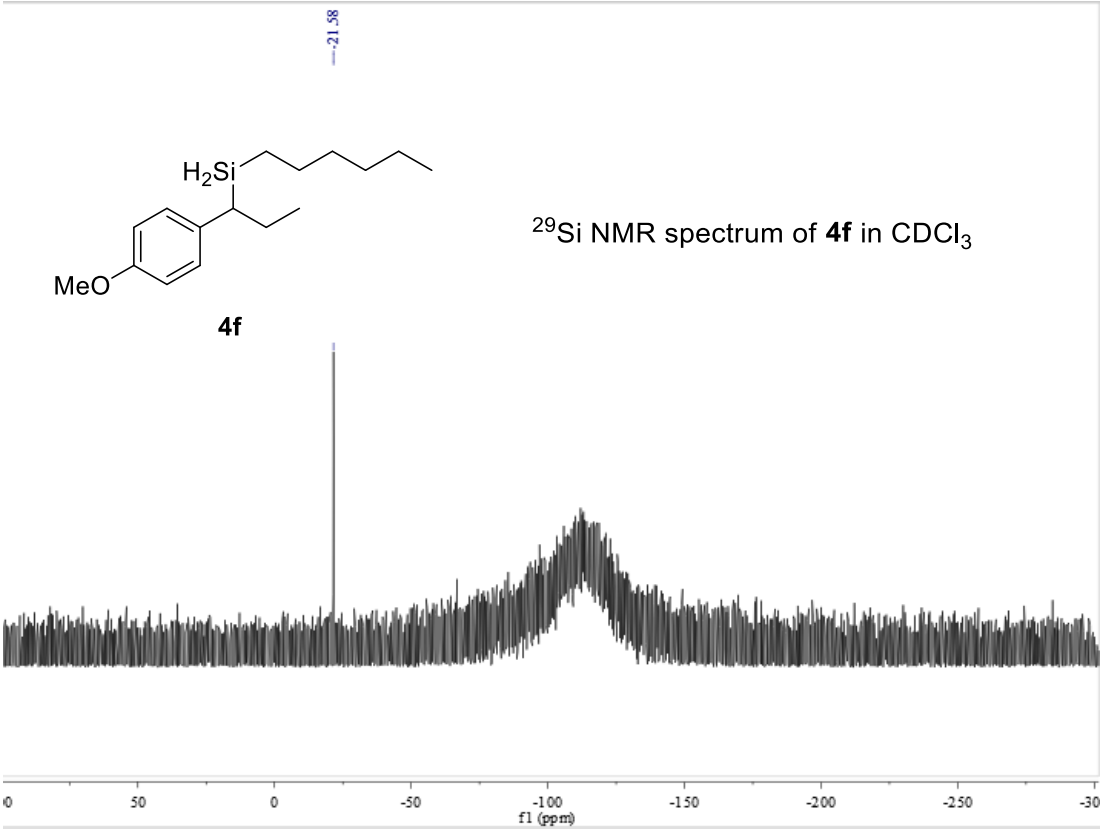
^{13}C NMR spectrum of **4e** in $CDCl_3$

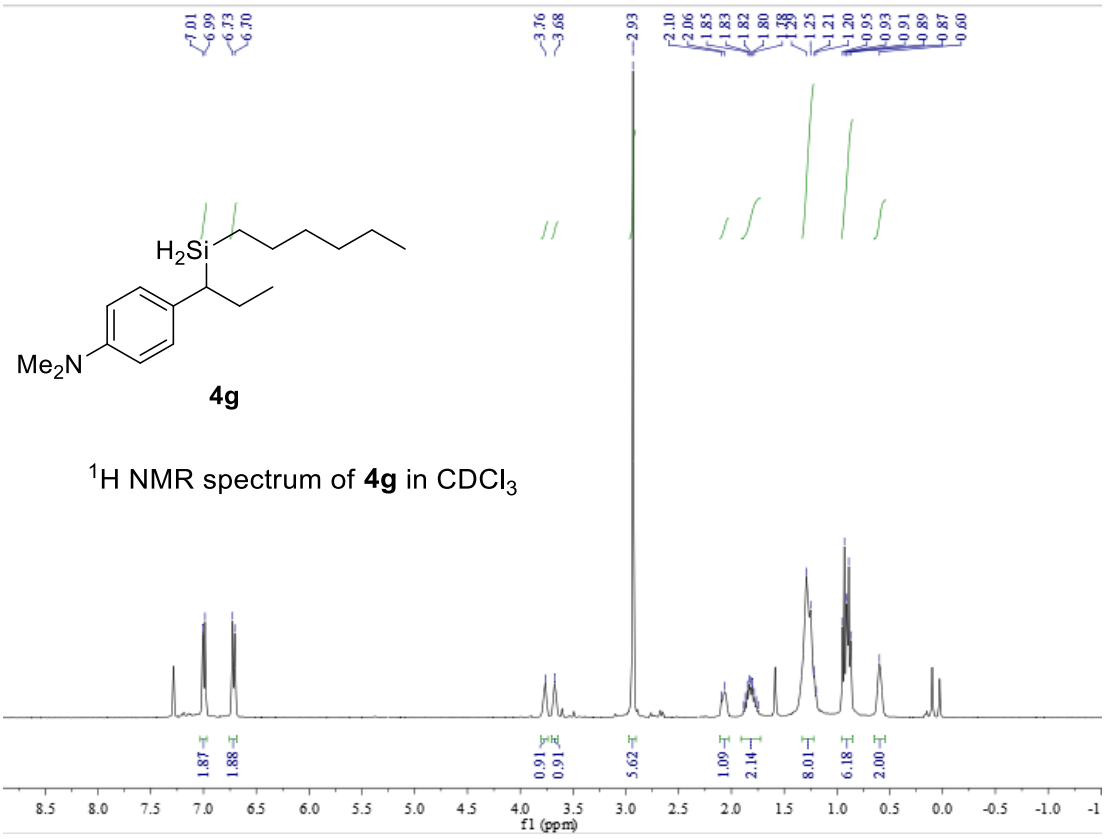
4e


-21.09
H2Si
OMe
4e
29Si NMR spectrum of 4e in CDCl3
f1 (ppm)


H2Si
MeO
4f
1H NMR spectrum of 4f in CDCl3
f1 (ppm)

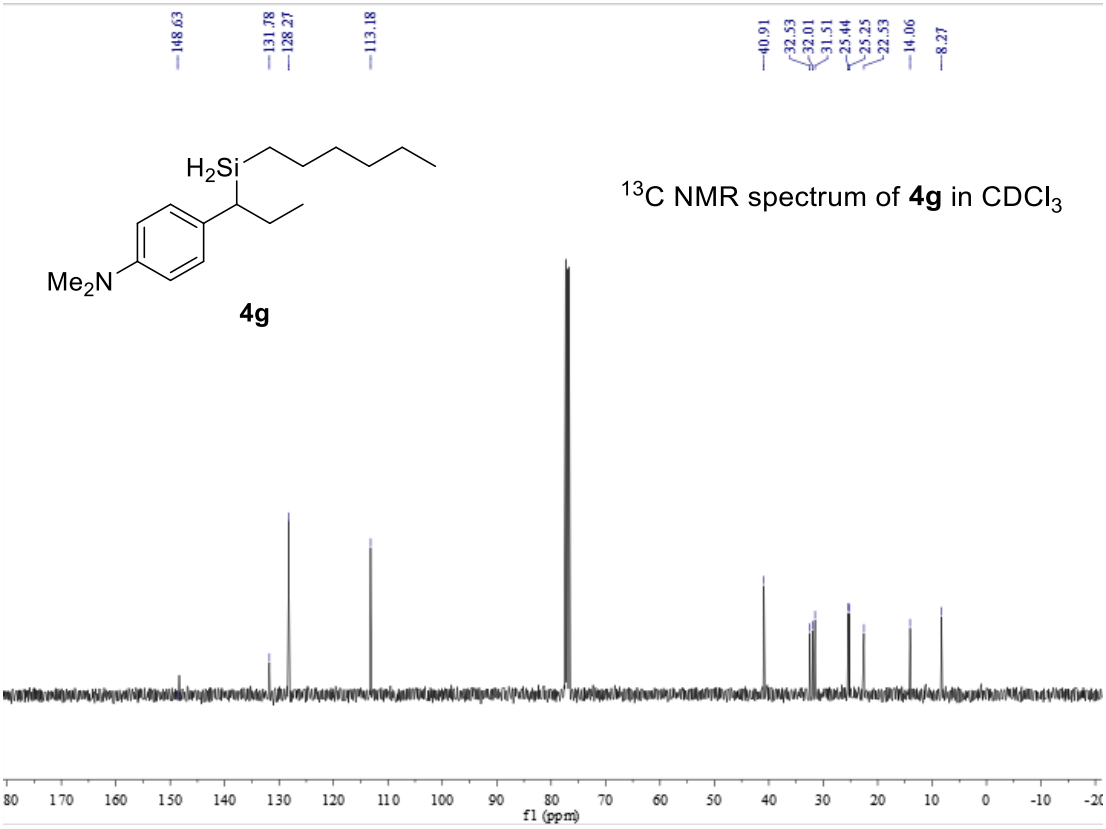

156.02
134.66
127.45
112.82
54.16
31.48
31.29
30.45
24.38
24.16
21.49
13.06
12.96
7.14
H2Si
MeO
4f
13C NMR spectrum of 4f in CDCl3
170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)


-21.58
H2Si
MeO
4f
29Si NMR spectrum of 4f in CDCl3
50 0 -50 -100 -150 -200 -250
f1 (ppm)



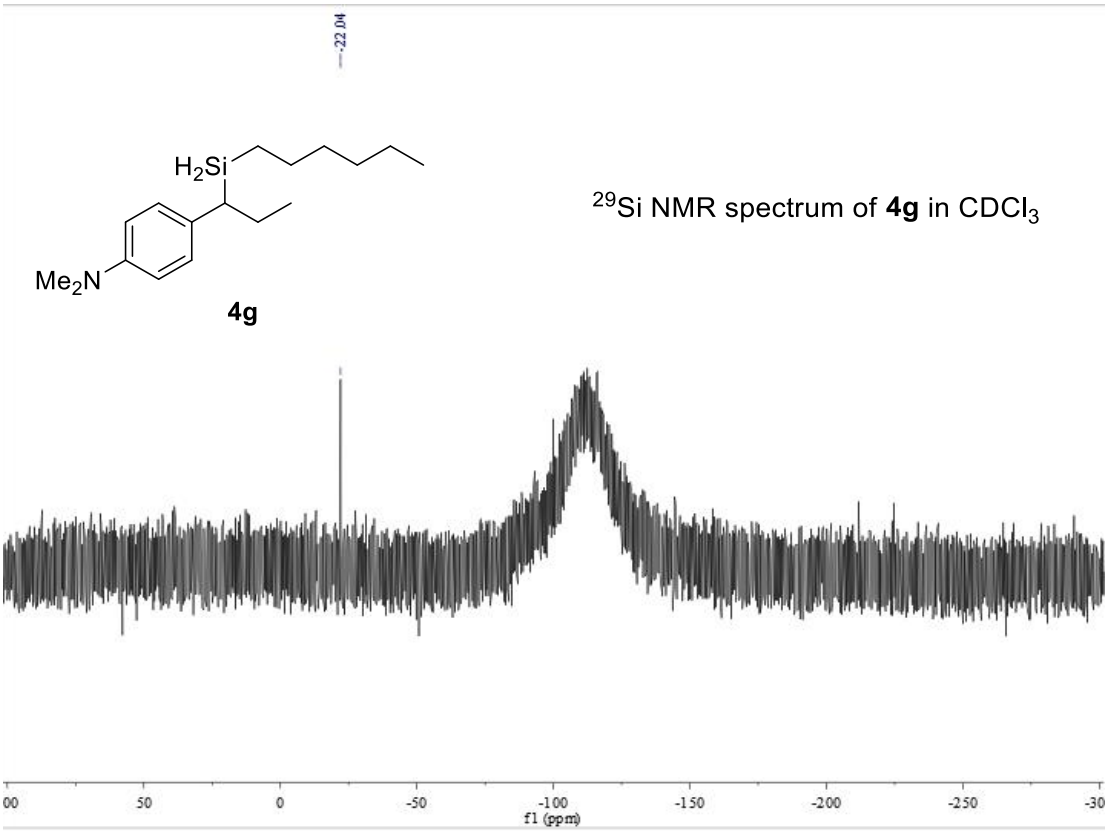
4g

^{1}H NMR spectrum of **4g** in $CDCl_3$



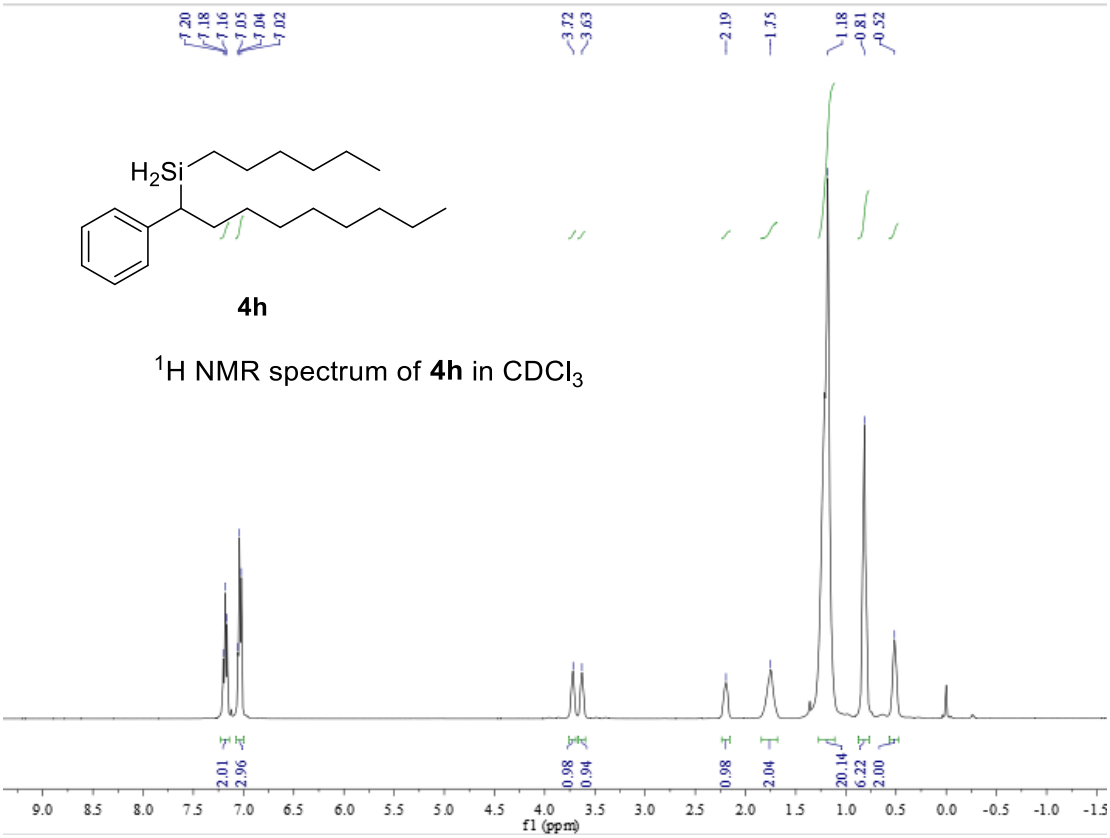
4g

^{13}C NMR spectrum of **4g** in $CDCl_3$



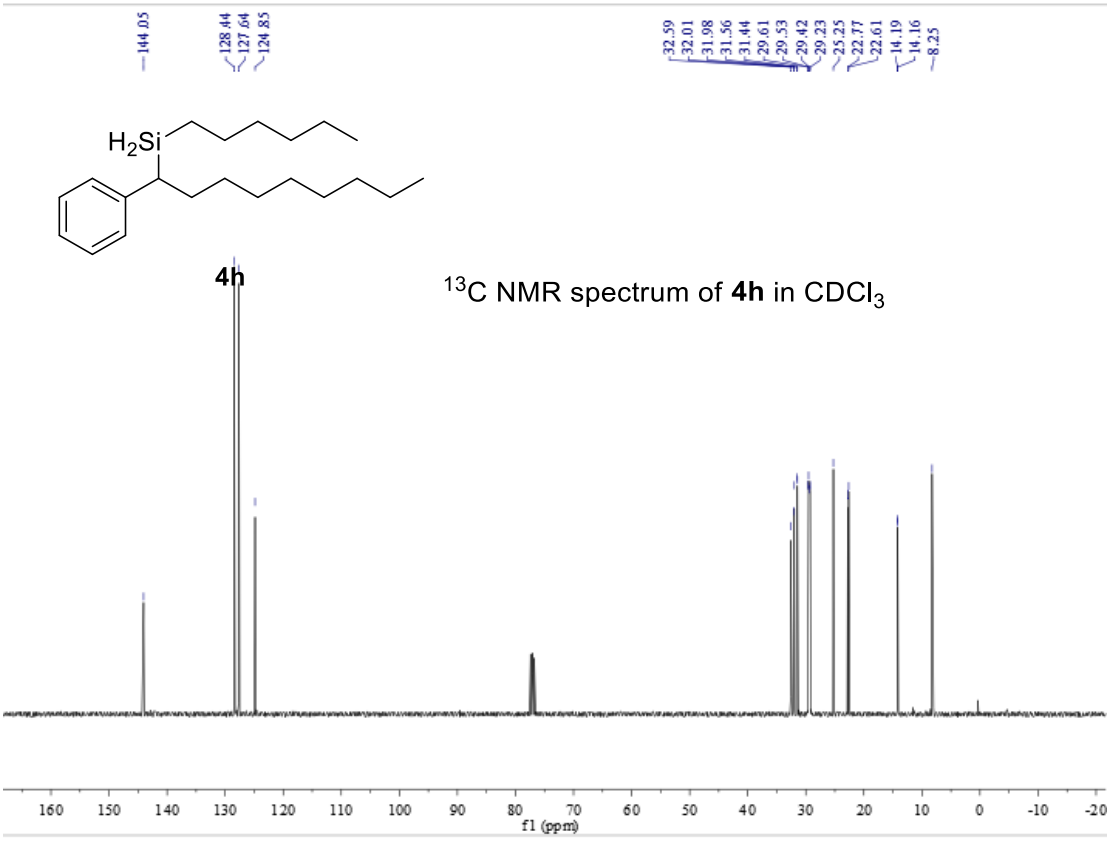
4g

^{29}Si NMR spectrum of **4g** in $CDCl_3$

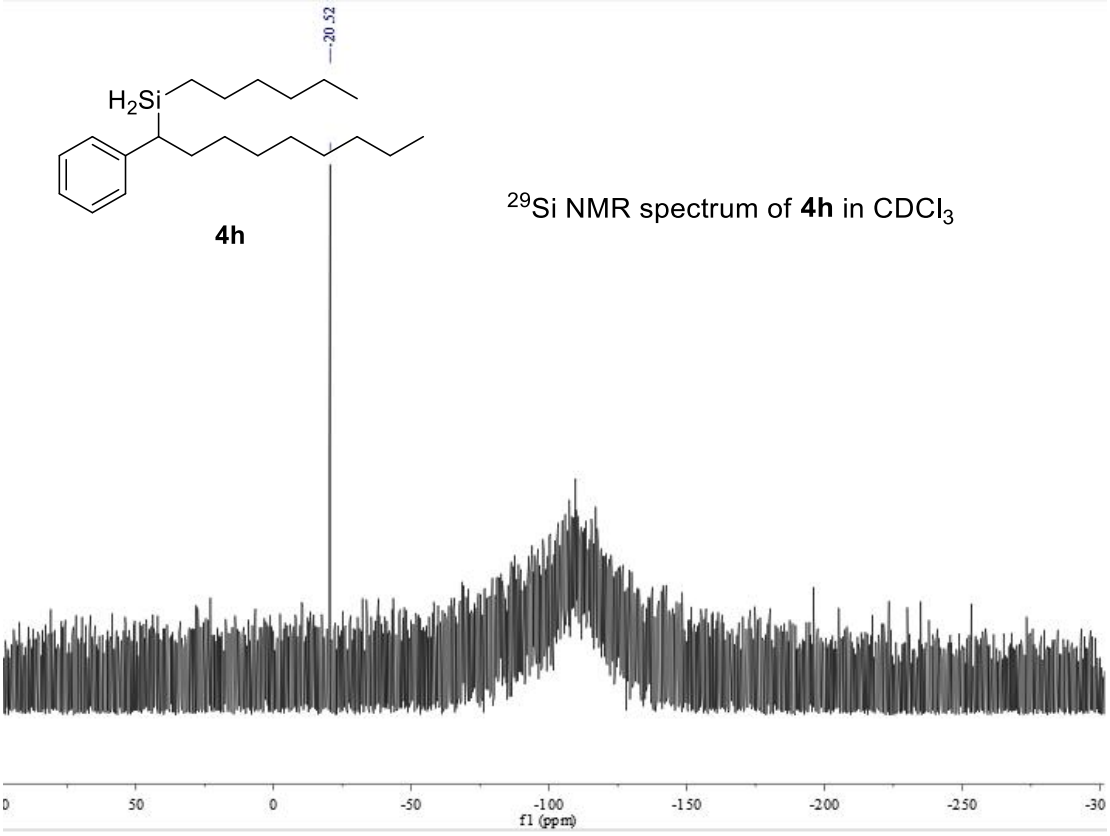


4h

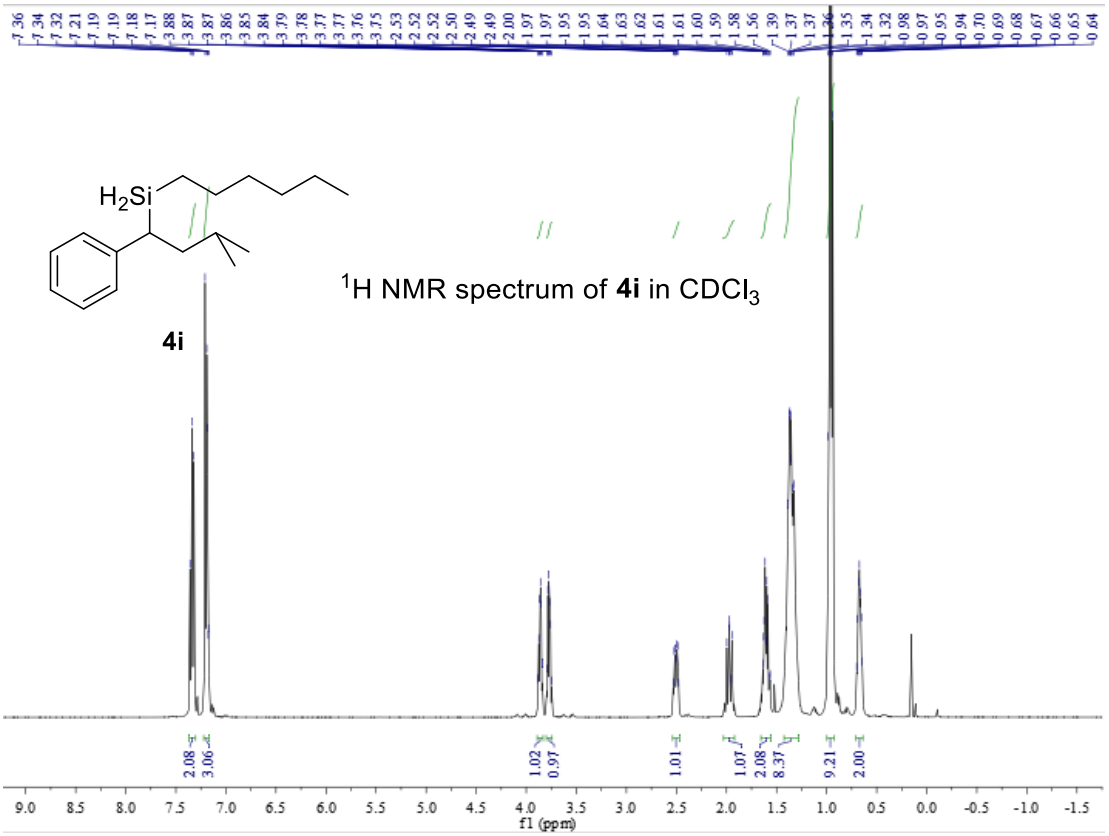
^{1}H NMR spectrum of **4h** in $CDCl_3$

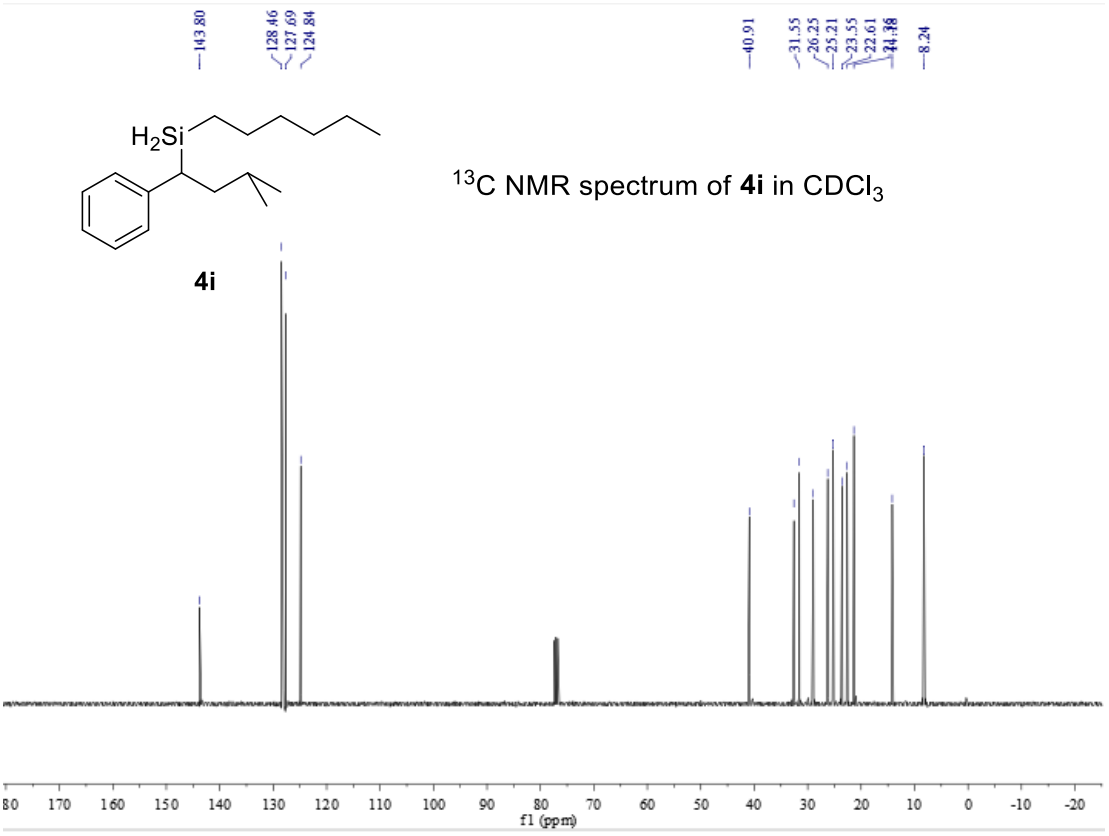


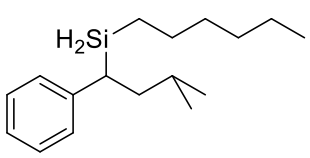
^{13}C NMR spectrum of **4h** in $CDCl_3$



^{29}Si NMR spectrum of **4h** in $CDCl_3$

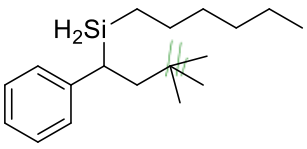

H2Si
4i
1H NMR spectrum of 4i in CDCl3
f1 (ppm)


H2Si
4i
13C NMR spectrum of 4i in CDCl3
f1 (ppm)



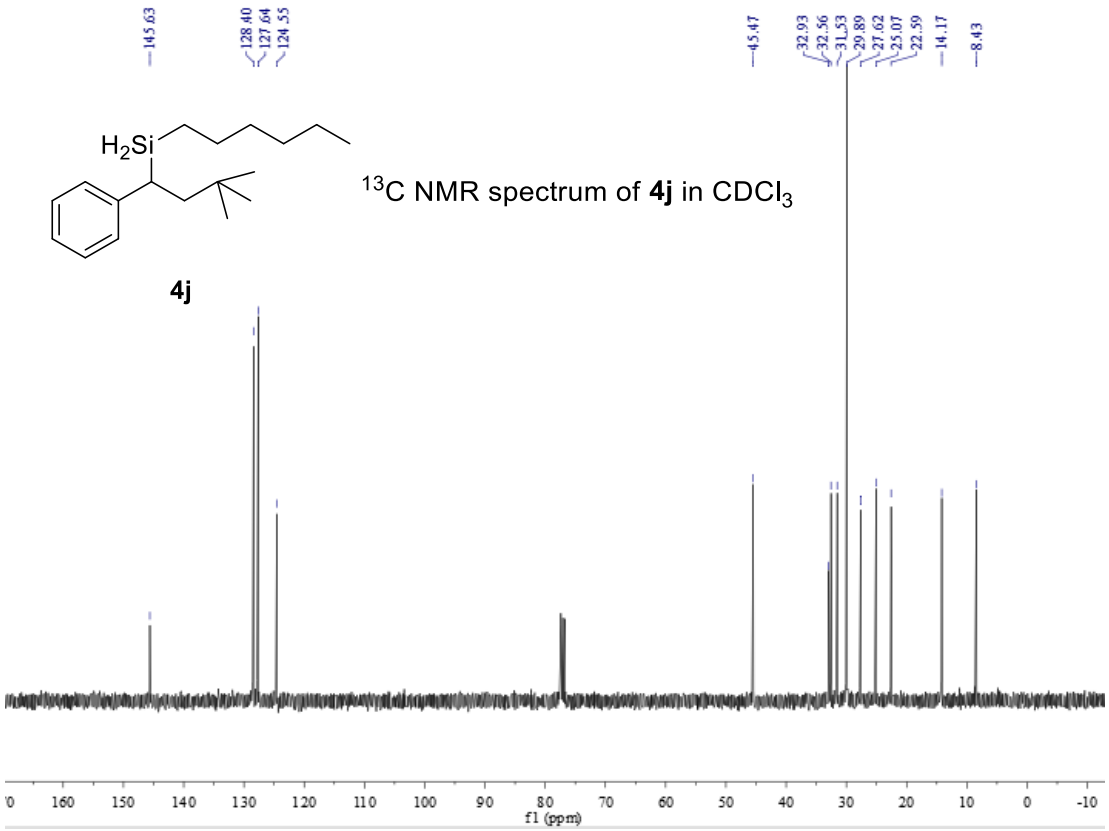
4i

^{29}Si NMR spectrum of **4i** in $CDCl_3$



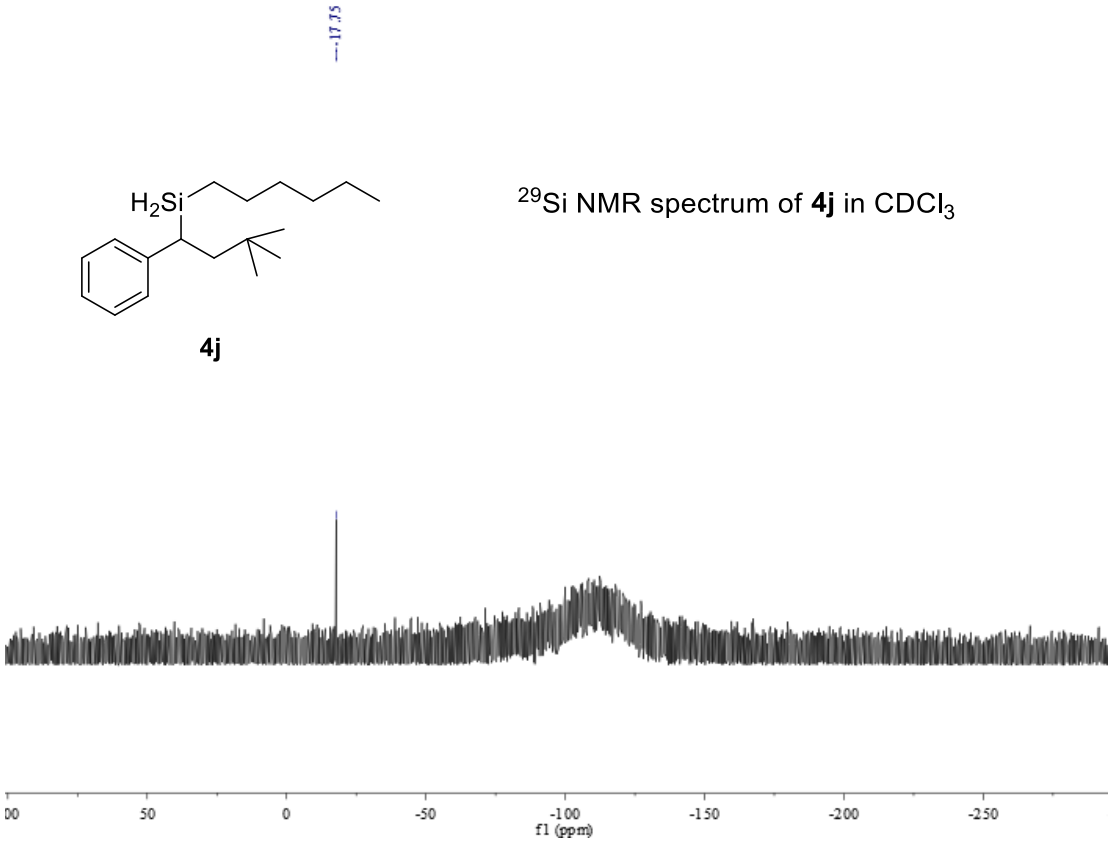
4j

^{1}H NMR spectrum of **4j** in $CDCl_3$



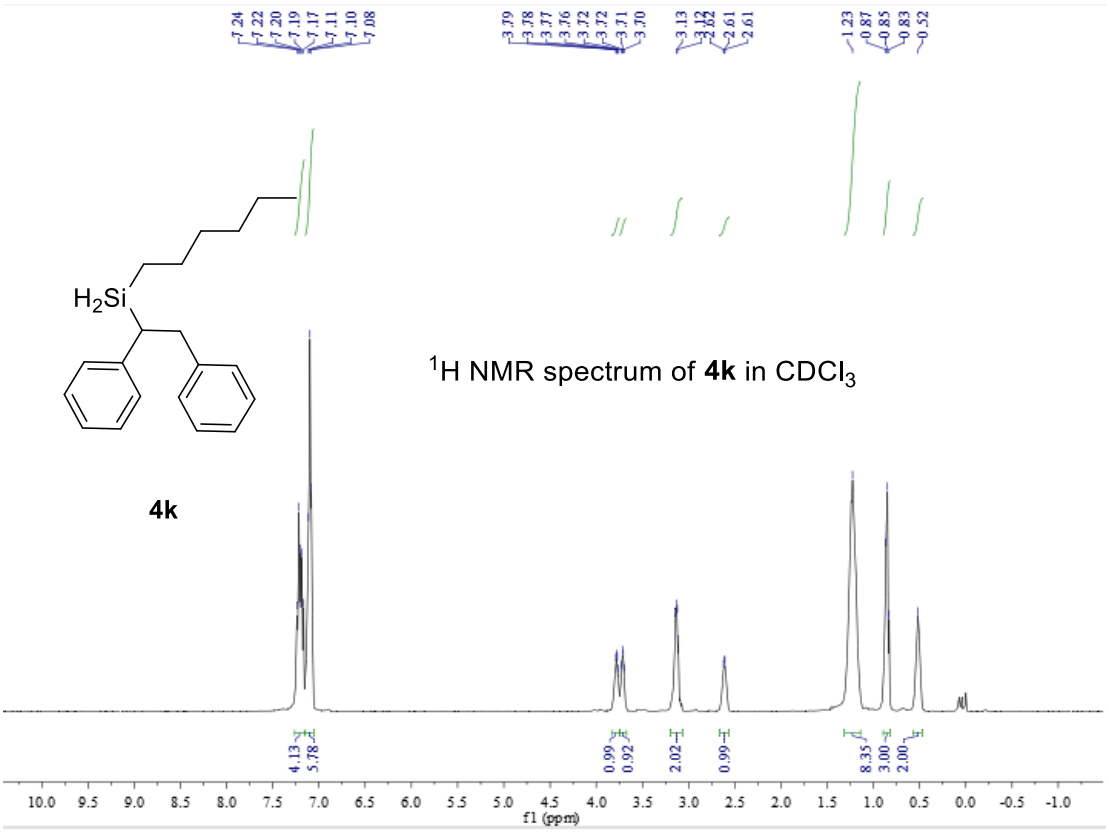
^{13}C NMR spectrum of **4j** in $CDCl_3$

4j

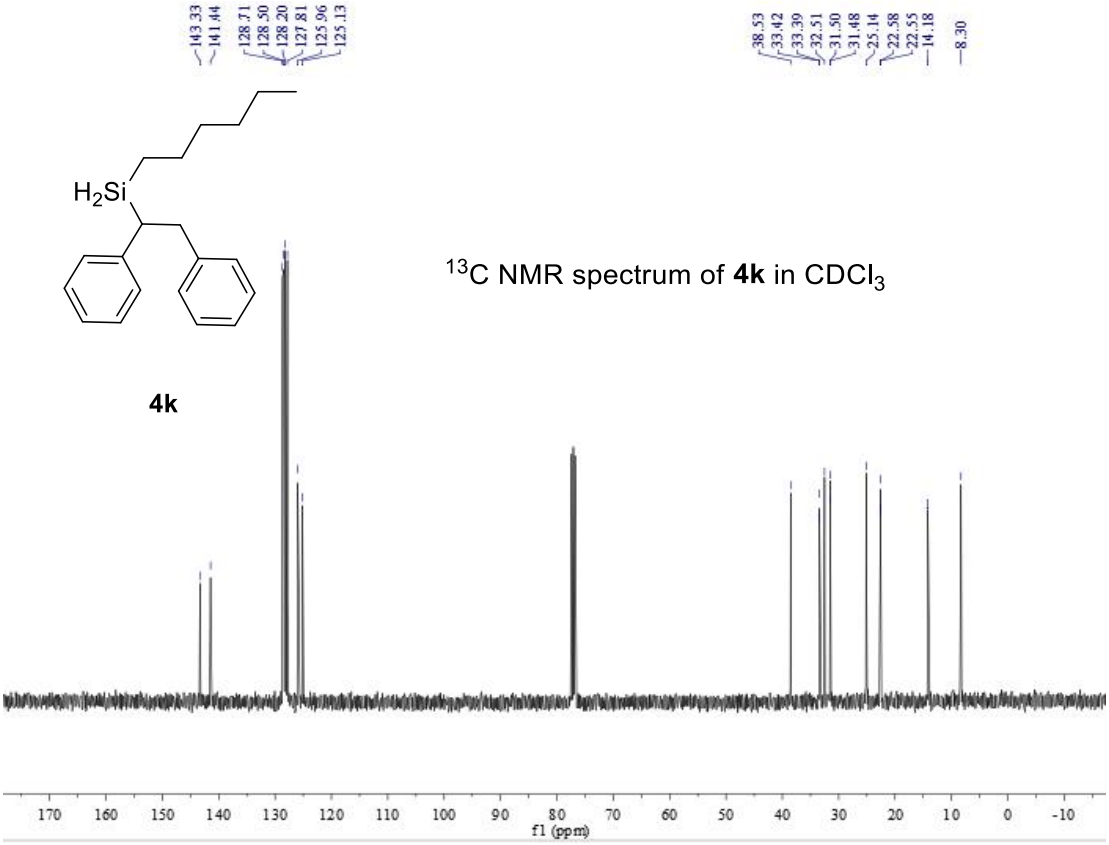


^{29}Si NMR spectrum of **4j** in $CDCl_3$

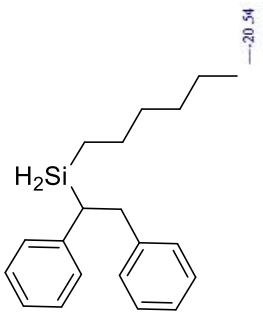
4j



^{1}H NMR spectrum of **4k** in $CDCl_3$

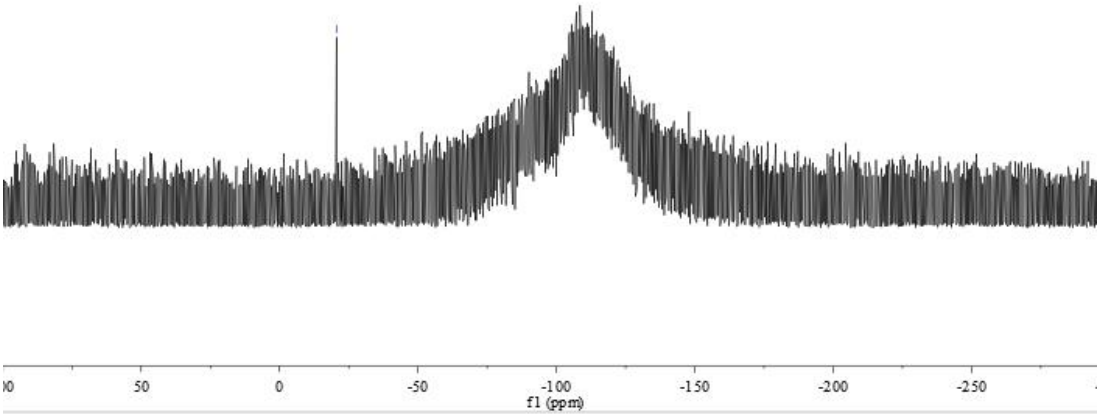


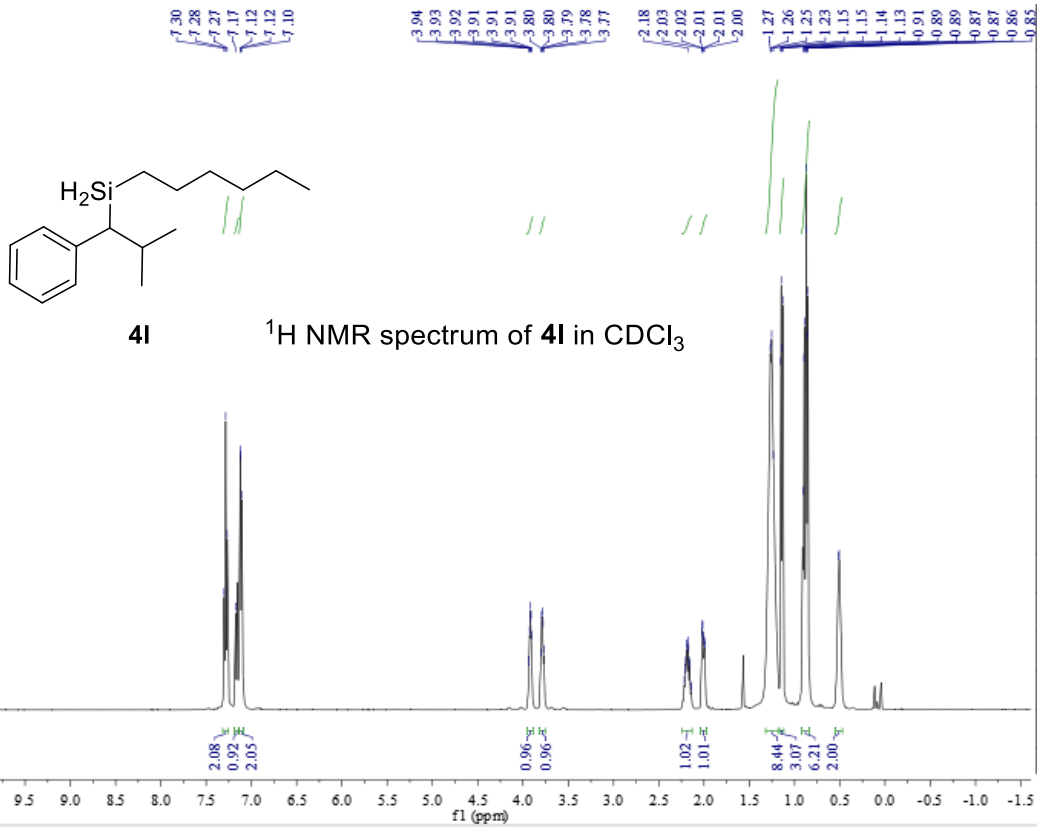
^{13}C NMR spectrum of **4k** in $CDCl_3$



4k

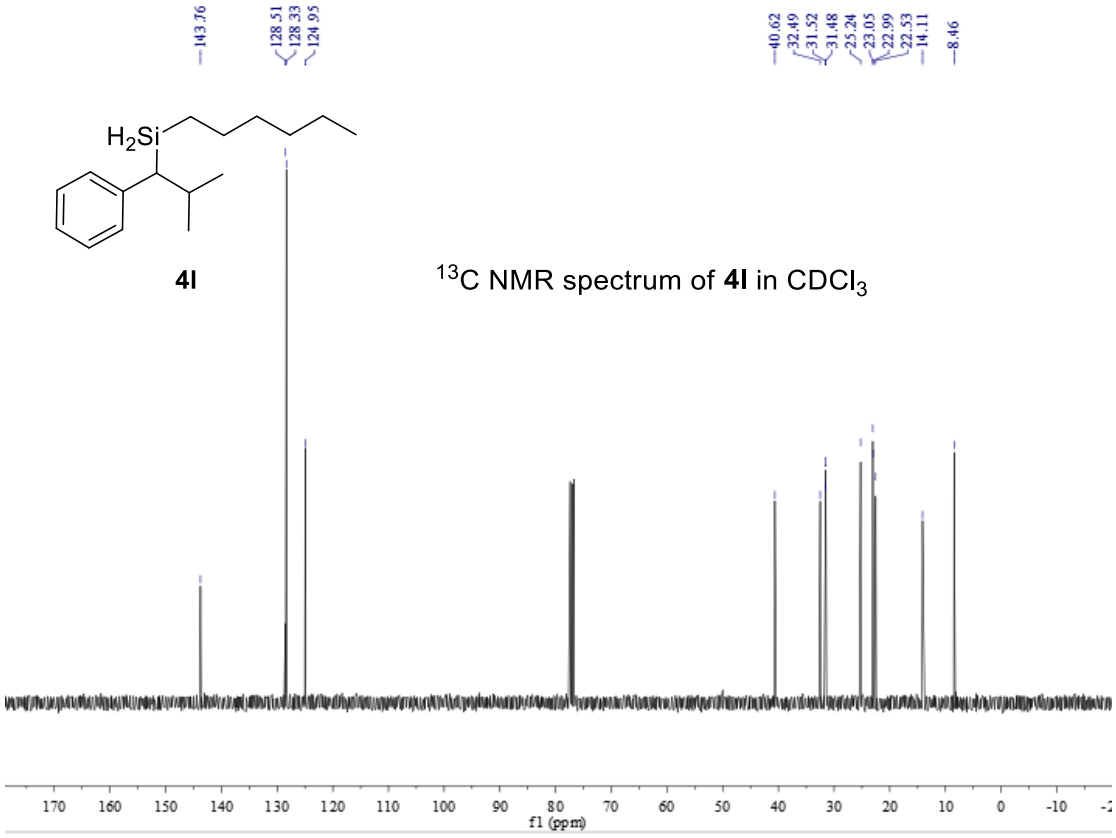
^{29}Si NMR spectrum of **4k** in $CDCl_3$



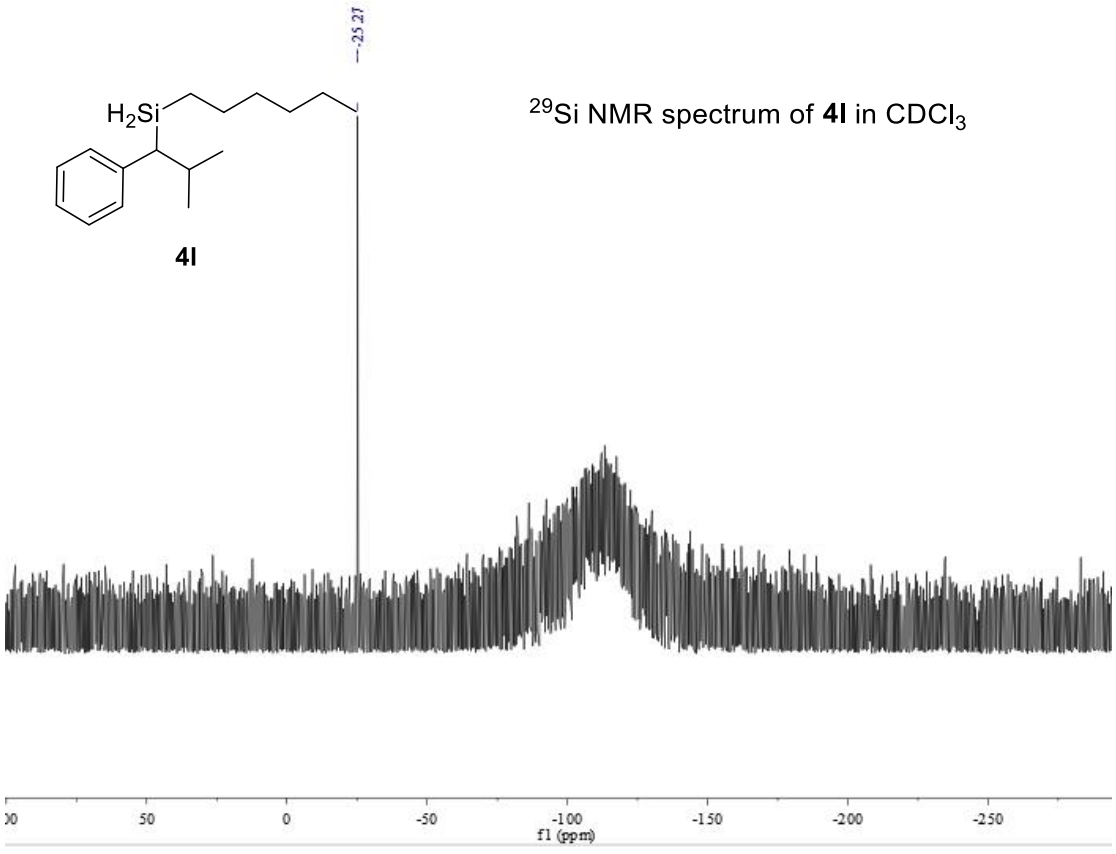


4l

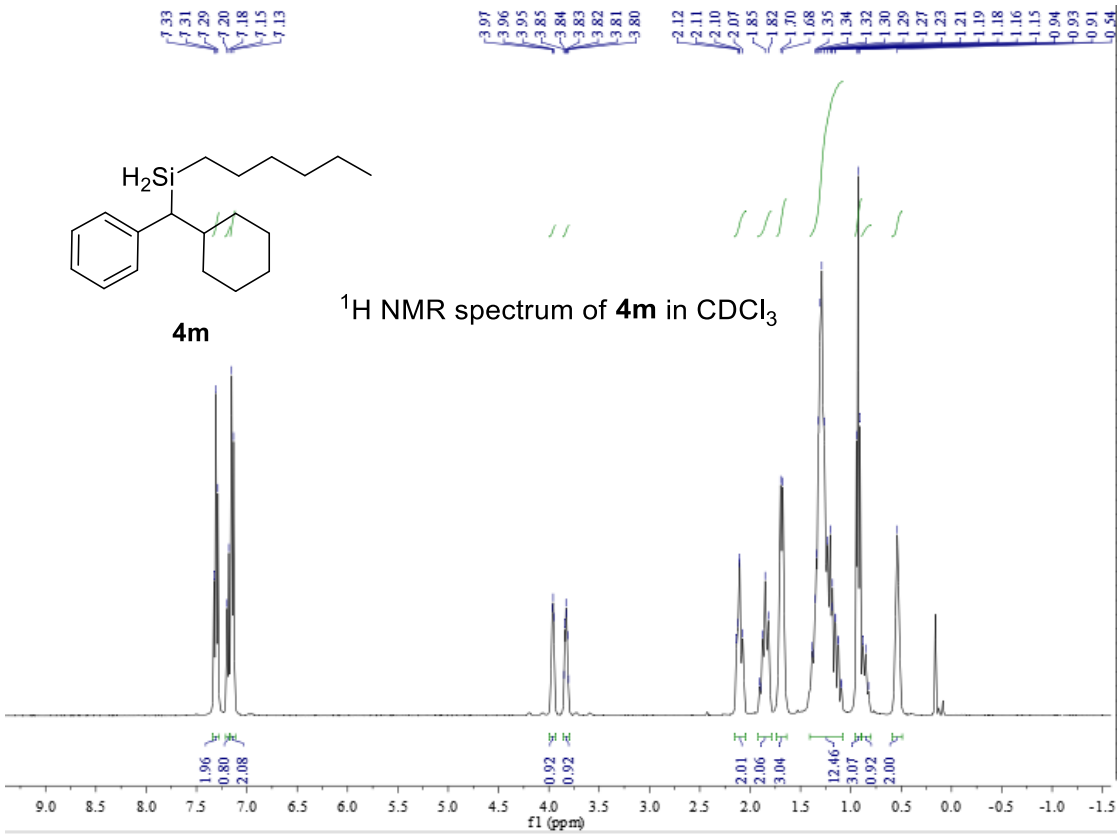
^{1}H NMR spectrum of **4l** in $CDCl_3$

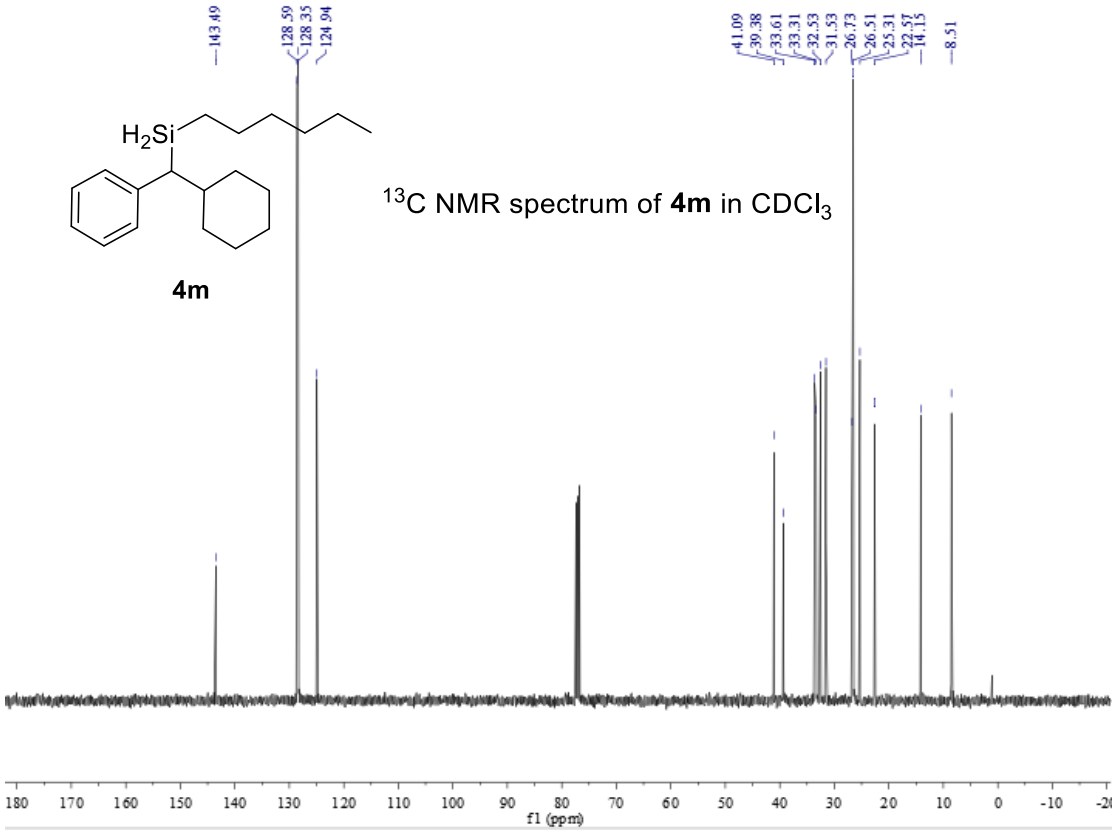


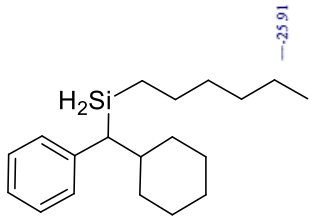
^{13}C NMR spectrum of **4l** in $CDCl_3$



^{29}Si NMR spectrum of **4l** in $CDCl_3$

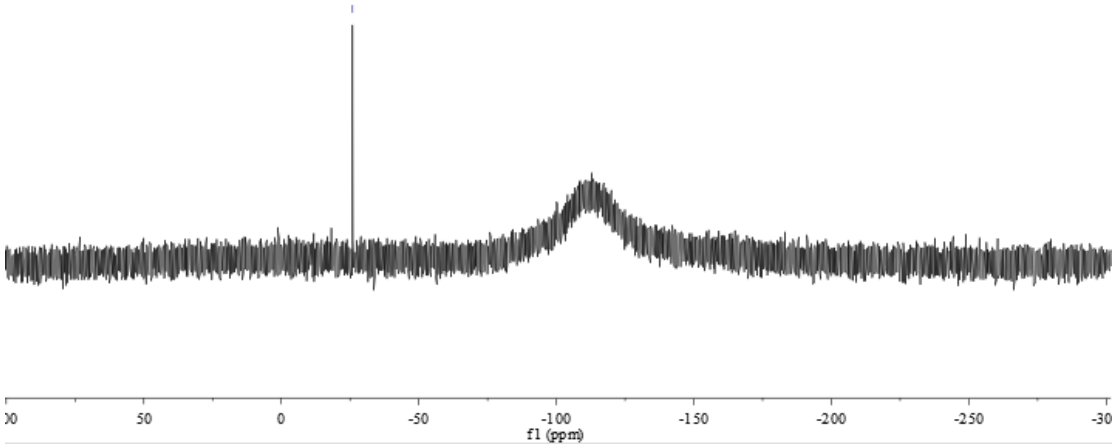

7.33
7.31
7.29
7.20
7.18
7.15
7.13
3.97
3.96
3.95
3.85
3.84
3.83
3.82
3.81
3.80
2.12
2.11
2.10
2.07
1.85
1.82
1.70
1.68
1.35
1.34
1.32
1.30
1.29
1.27
1.23
1.21
1.19
1.18
1.16
1.15
0.94
0.93
0.91
0.54
H2Si
4m
1H NMR spectrum of 4m in CDCl3
1.96
0.80
2.08
0.92
0.92
2.01
2.06
3.04
12.46
3.07
0.92
2.00
9.0 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 0.0 -0.5 -1.0 -1.5
f1 (ppm)

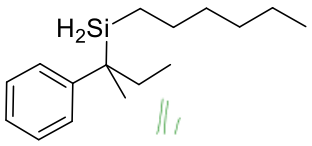

143.49
128.59
128.35
124.94
41.09
39.38
33.61
33.31
32.53
31.53
26.73
26.51
25.31
22.57
14.15
8.51
H2Si
4m
13C NMR spectrum of 4m in CDCl3
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)



4m

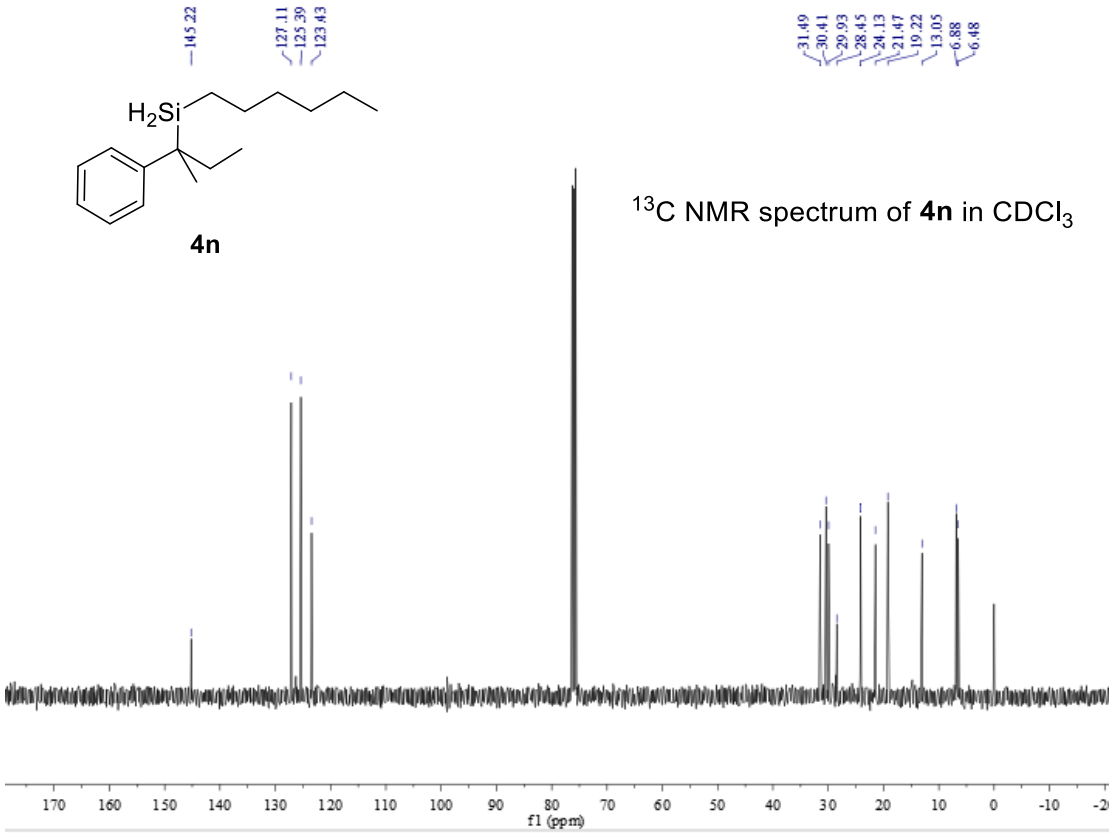
^{29}Si NMR spectrum of **4m** in $CDCl_3$



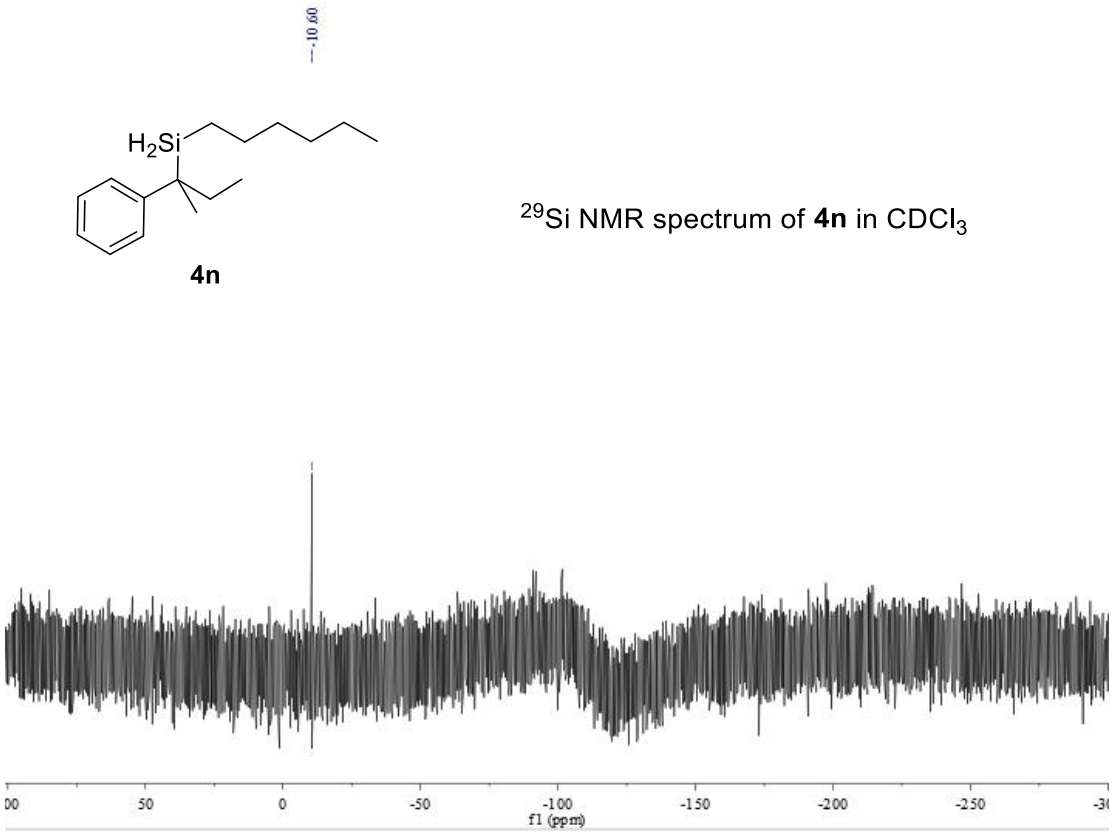


4n

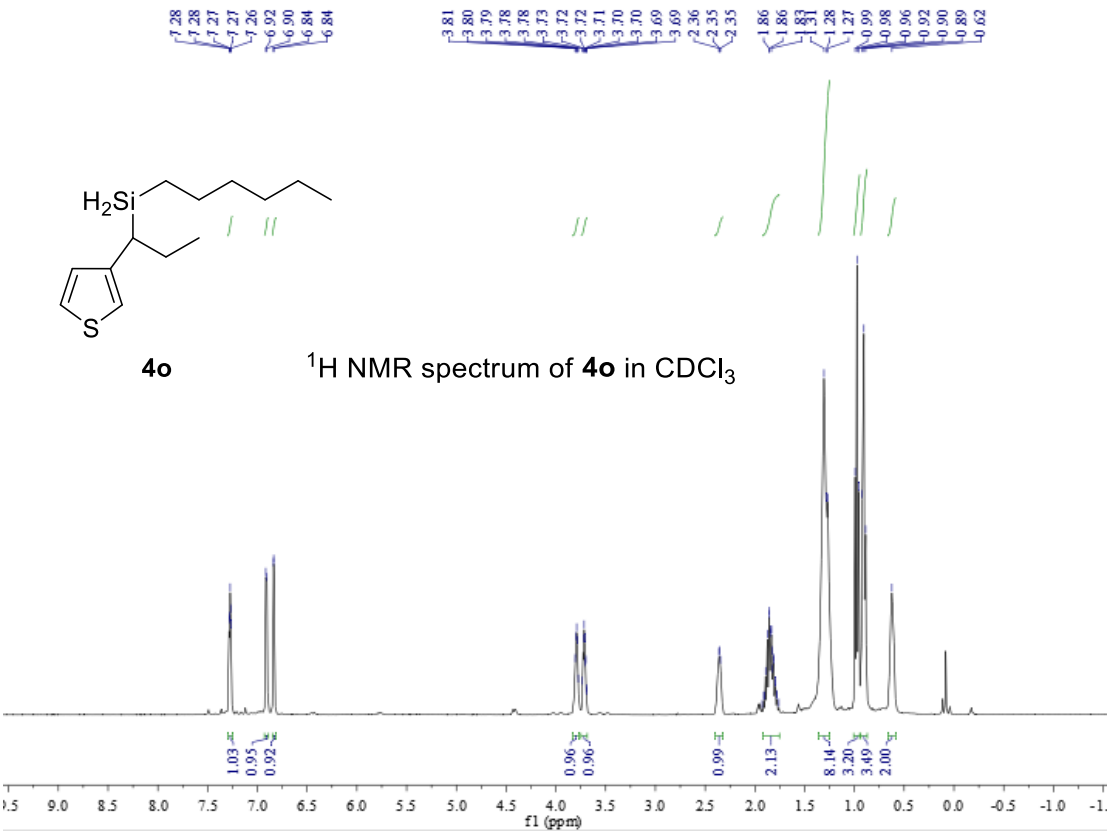
^{1}H NMR spectrum of **4n** in $CDCl_3$



^{13}C NMR spectrum of **4n** in $CDCl_3$

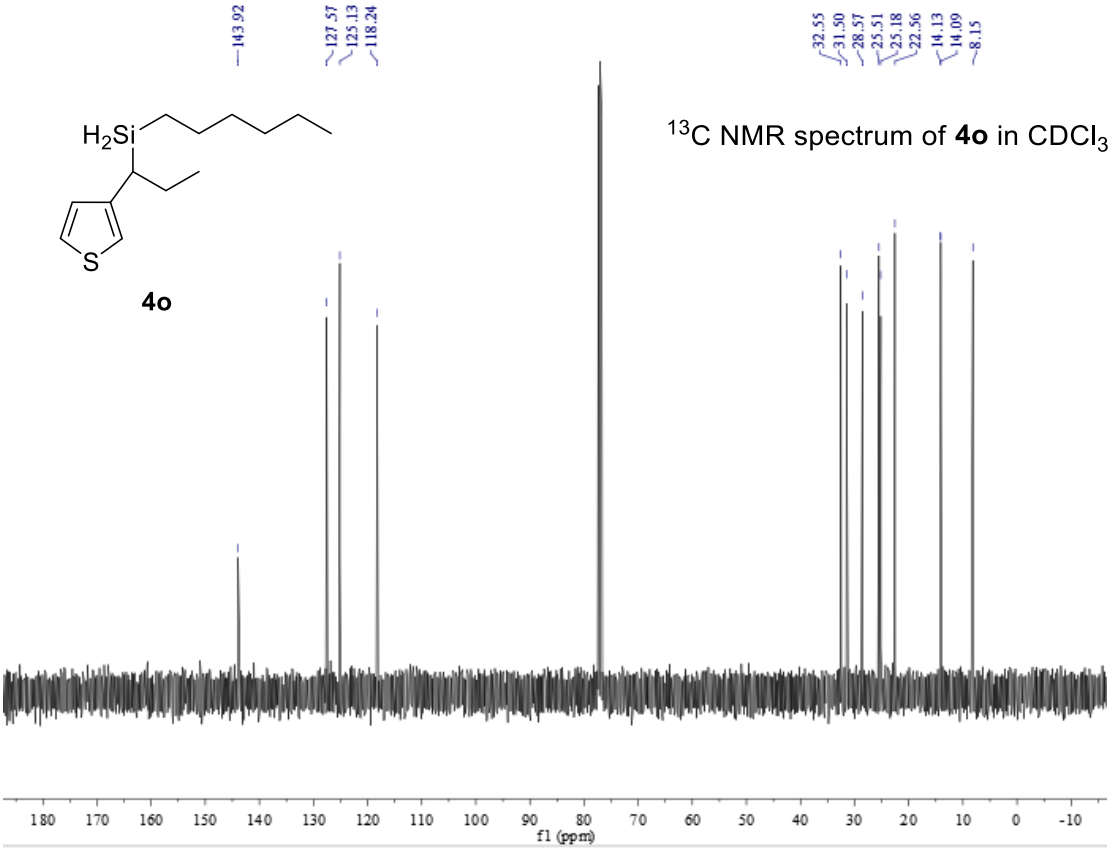


^{29}Si NMR spectrum of **4n** in $CDCl_3$



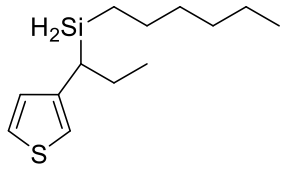
4o

^{1}H NMR spectrum of **4o** in $CDCl_3$



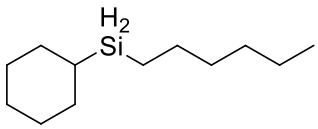
4o

^{13}C NMR spectrum of **4o** in $CDCl_3$



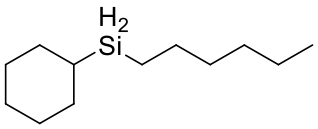
4o

^{29}Si NMR spectrum of **4o** in $CDCl_3$



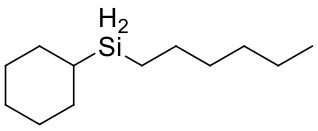
4p

^{1}H NMR spectrum of **4p** in $CDCl_3$



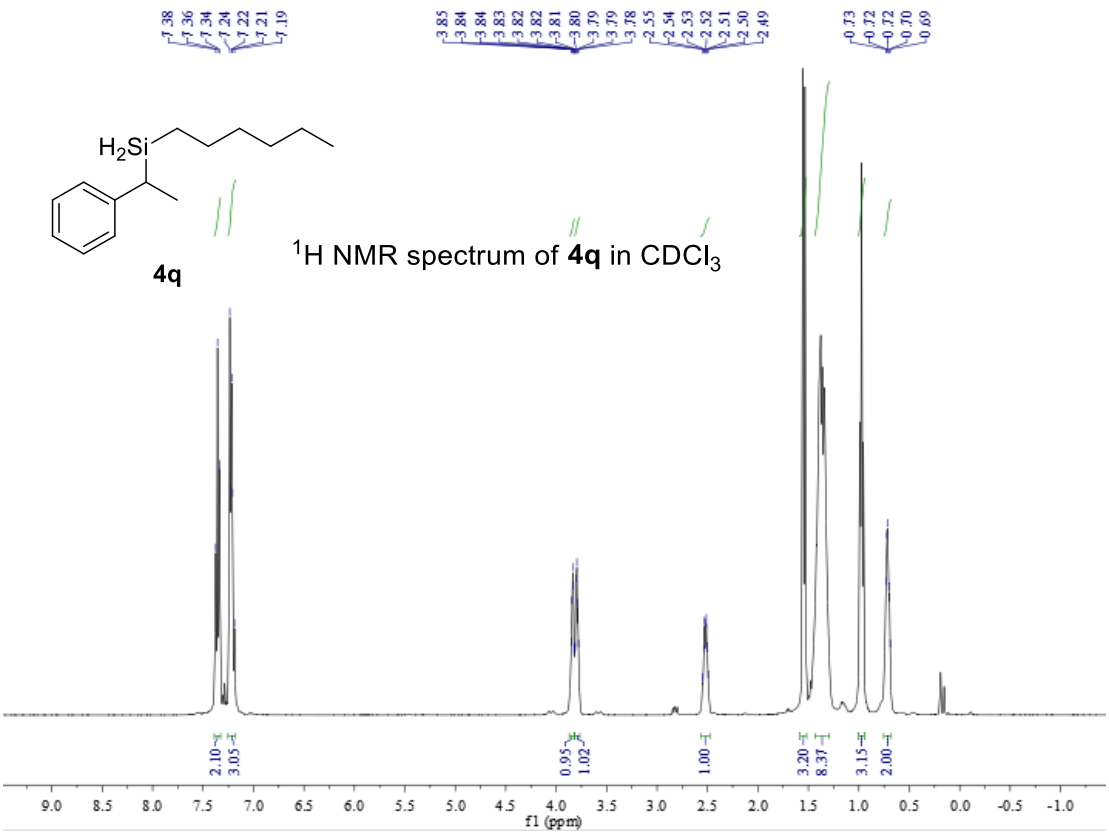
4p

^{13}C NMR spectrum of **4p** in $CDCl_3$



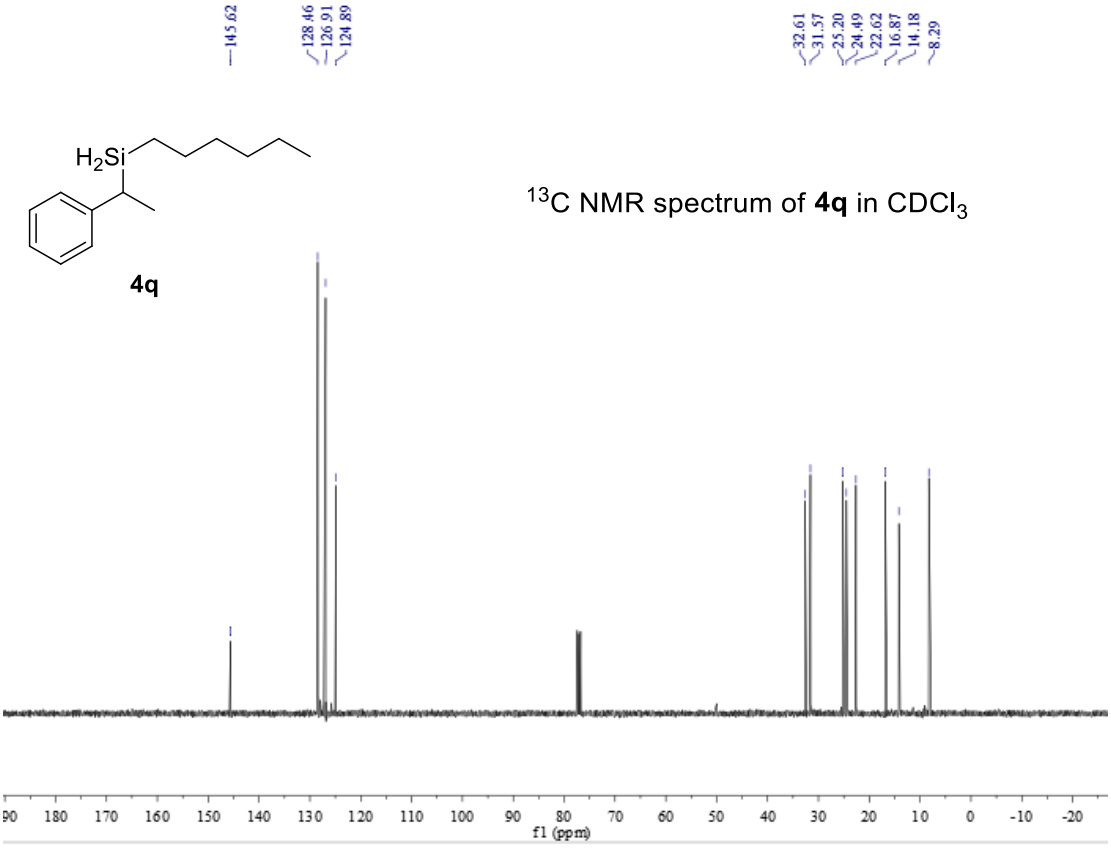
4p

^{29}Si NMR spectrum of **4p** in $CDCl_3$



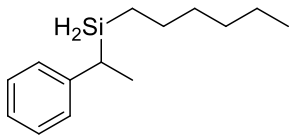
4q

^{1}H NMR spectrum of **4q** in $CDCl_3$



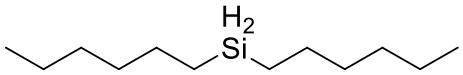
4q

^{13}C NMR spectrum of **4q** in $CDCl_3$



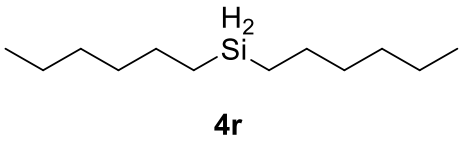
4q

^{29}Si NMR spectrum of **4q** in $CDCl_3$



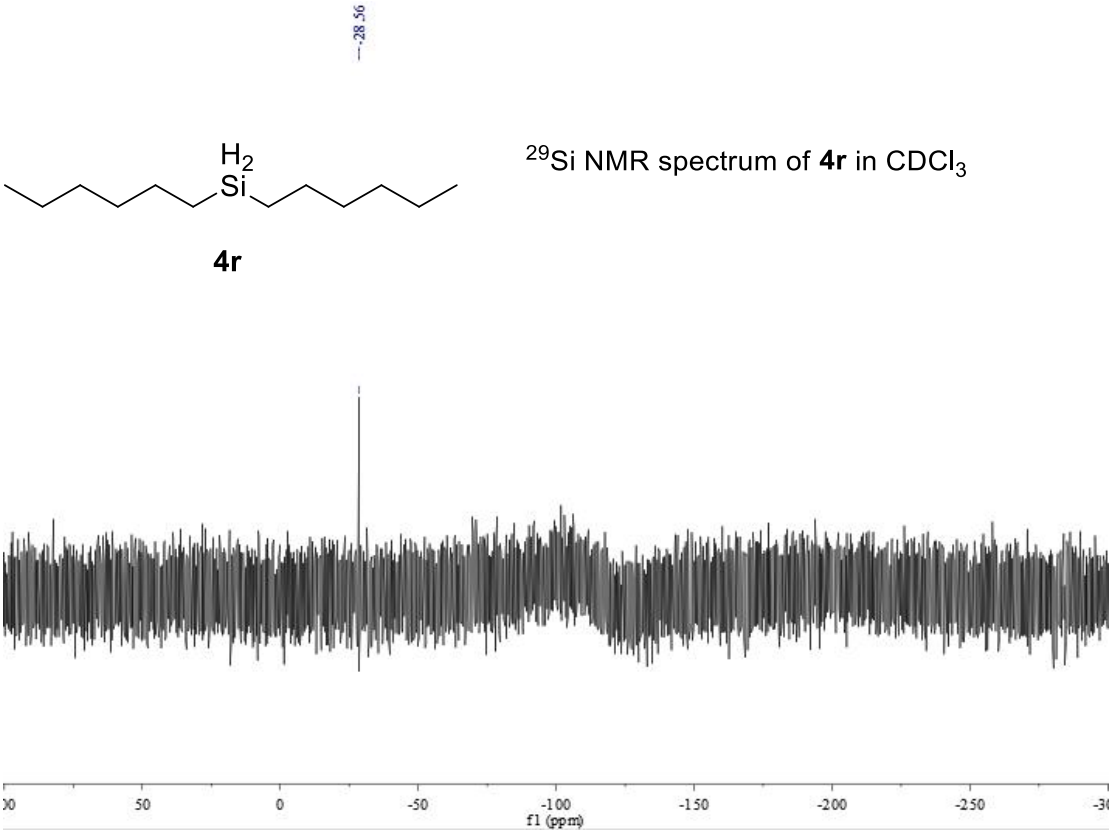
4r

^{1}H NMR spectrum of **4r** in $CDCl_3$



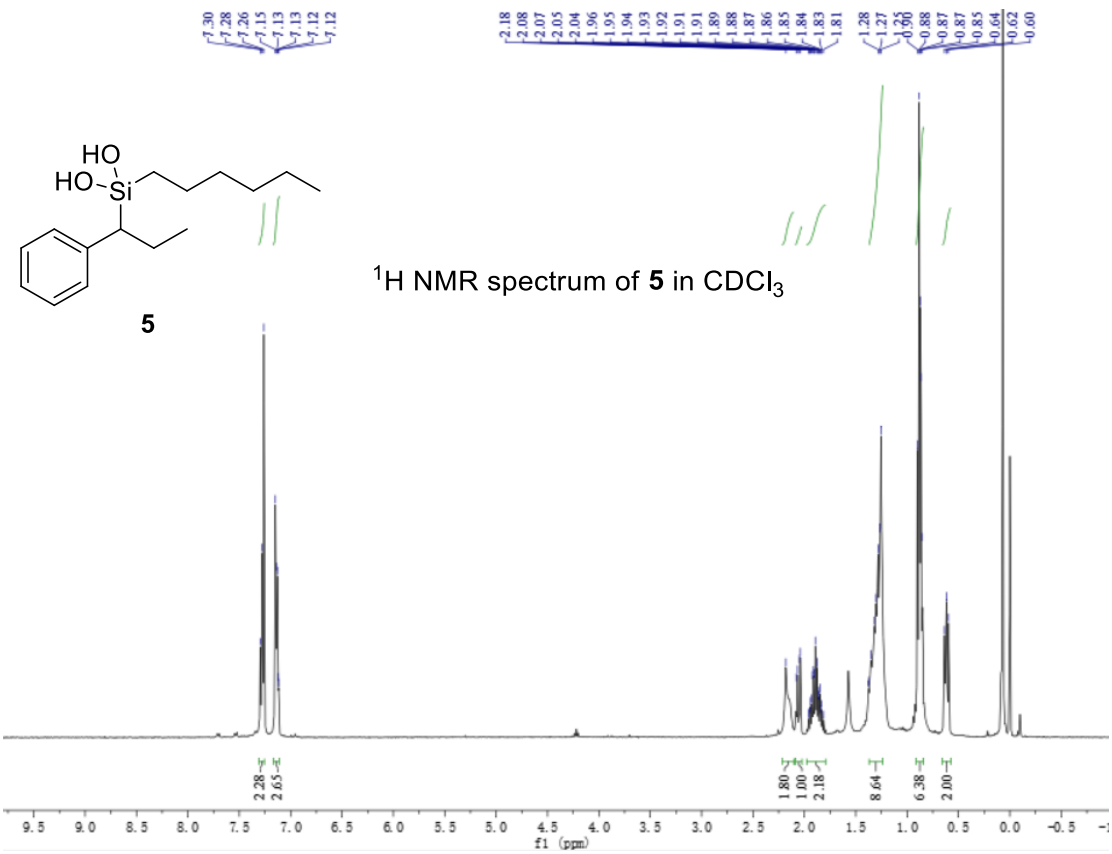
4r

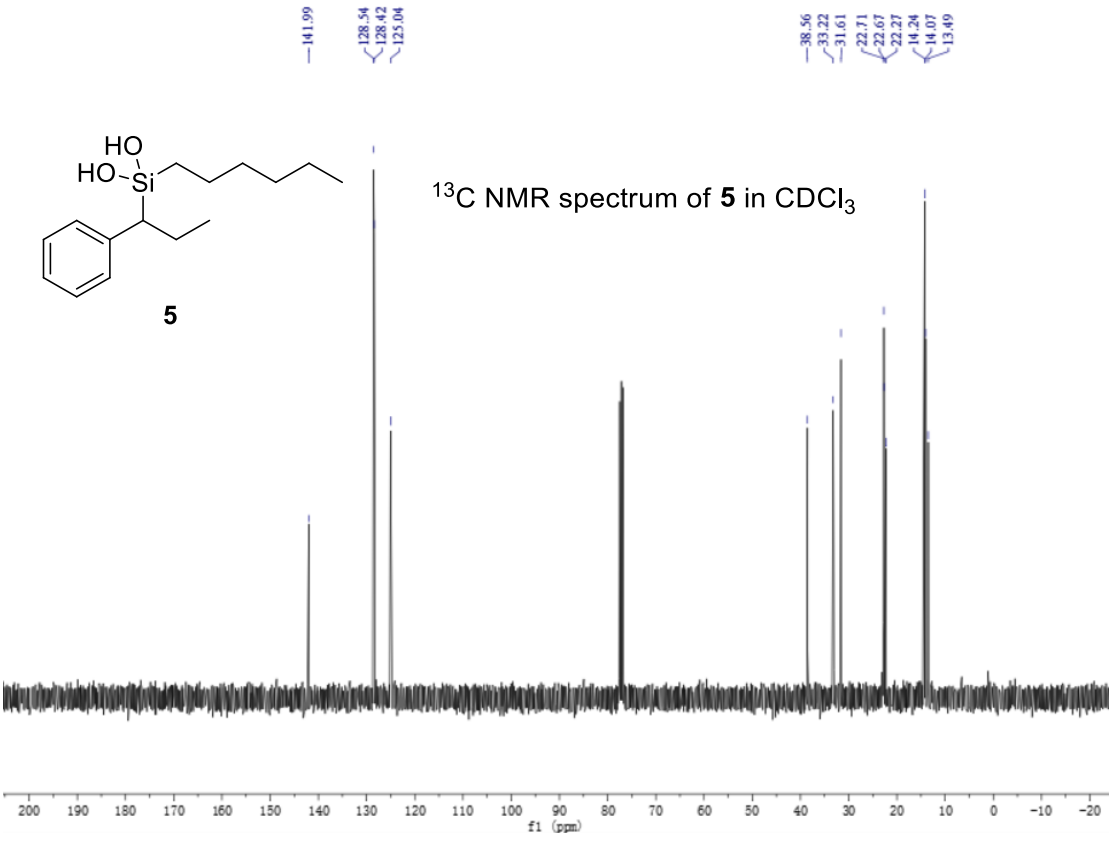
^{13}C NMR spectrum of **4r** in $CDCl_3$

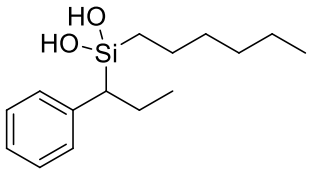


4r

^{29}Si NMR spectrum of **4r** in $CDCl_3$


HO
HO
Si
5
1H NMR spectrum of 5 in CDCl3
f1 (ppm)


HO
HO
Si
5
13C NMR spectrum of 5 in CDCl3
f1 (ppm)



5

^{29}Si NMR spectrum of **5** in $CDCl_3$