Supporting Information

Rhodium-catalyzed synthesis of Si-stereogenic alkoxysilanes and silyl enol ethers via hydrosilylation of carbonyl compounds

Yang Ding,[‡a] Jie Ke,[‡a] Wenbin Zhang,[c] Bin Li,[*b] and Chuan He[*a]

[a]Shenzhen Grubbs Institute and Department of Chemistry, Guangdong Provincial Key Laboratory of Catalysis, Southern University of Science and Technology, Shenzhen, Guangdong 518055, China.

[b]School of Environmental and Chemical Engineering, Wuyi University, Jiangmen, Guangdong 529020, China.

[c]Guangdong Wamo New Material Technology CO., LTD, Jiangmen, Guangdong 529020, China.

E-mail: hec@sustech.edu.cn; andonlee@163.com.

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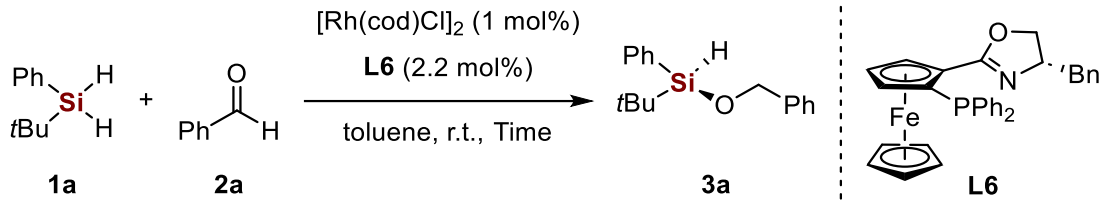
1. General Information

Regular reactions were carried out under an argon atmosphere with magnetic stirring. Catalytic reactions were performed in a colorless 10 mL microwave reaction tube under an inert argon atmosphere. Unless otherwise noted, anhydrous solvents were obtained from the Inert Pure Solv solvent purification system (THF and toluene). Flash chromatography was performed using GENERAL-REAGENT silica gel (200-300 mech). Unless otherwise specified, all reagents were purchased from commercial suppliers (Adamas, Bide Pharmatech, Energy Chemical, TCI, Aldrich, Alfa, and J&K) and directly used without further purification. Tert-butyl(phenyl)silane **1a** or other dihydrosilanes **1b**-**1d**[1] and mono-α-arylation of ketones[2] are known compounds and synthesized according to the reported literature.

NMR spectra were recorded on Bruker DRX-400 or DPX-600 spectrometers at 400 MHz for ^{1}H NMR, 101 MHz for ^{13}C NMR, and 376 MHz for ^{19}F NMR or 600 MHz for ^{1}H NMR, 151 MHz for ^{13}C NMR, and 565 MHz for ^{19}F NMR, respectively, at ambient temperature. NMR standards were used as follows: (^{1}H NMR) TMS = 0 ppm; (^{13}C NMR) $CDCl_3$ = 77.23 ppm. Chemical shifts (δ) were reported in ppm and coupling constants (*J*) were quoted in Hertz (Hz). ^{1}H NMR data were recorded as follows: Chemical shifts (δ, ppm), multiplicities (s = singlet; d = doublet; dd = doublet of doublets; t = triplet; td = triplet of doublets; q = quartet; m = multiplet), coupling constant (Hz), integration. ^{13}C NMR data were reported in terms of chemical shift (δ, ppm). High-resolution mass spectra (HRMS) were performed on an Agilent Technologies 6230 TOF LC/MS spectrometer by electrospray ionization (ESI). X-ray single-crystal diffraction data were collected on Bruker D8 VENTURE. HPLC analyses were performed on Agilent 1260 Infinity II. Chiral columns OD-3, OJ-3, OD-H and OJ-H were purchased from Daicel®. Optical rotation was measured on Rudolph Automatic Polarimeter at 589 nm and 25.2 °C. Data are reported as follows: $[\alpha]_D^{temp}$, concentration (c in g/100 mL), and solvent.

2. Reaction Optimization

Table S1. Optimization of the reaction time[a]



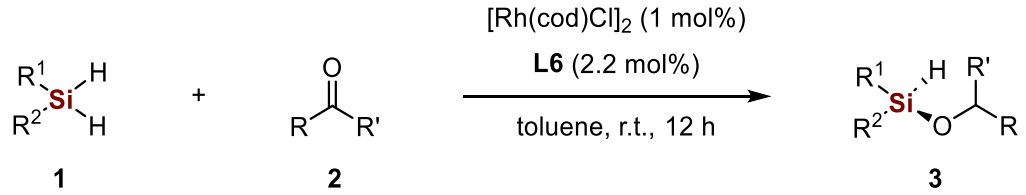
1a **2a** **3a** **L6**

Entry	Time (h)	**3a** Yield [%][b]	**3a** *er*[c]
1	1	25	94:6
2	2	36	94:6
3	4	43	94:6
4	6	63	94:6
5	12	94	94:6
6	18	93	94:6
7	24	43	94:6
8	48	43	94:6

[a]Reaction conditions: **1a** (0.11 mmol), **2a** (0.1 mmol), $[Rh(cod)Cl]_2$ (1 mol%), **L6** (2.2 mol%) in toluene (1.0 mL) at room temperature under argon for different time; [b]NMR yield with *1,1,2,2*-tetrachloroethane as standard; [c]The enantiomeric ratio was determined by chiral HPLC.

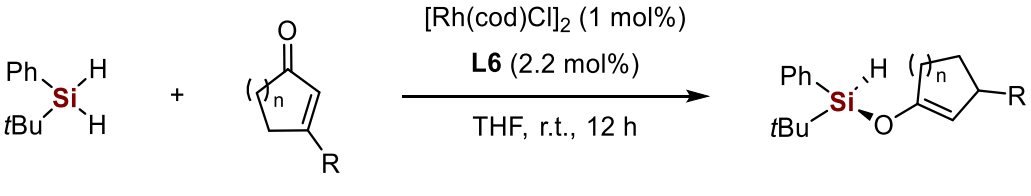
3. General Procedure for the Hydrosilylation of Carbonyl Compounds

General procedure for the synthesis of Si-stereogenic alkoxysilanes



Procedure A: Inside an argon-filled glovebox, an oven-dried 10 mL microwave reaction tube was charged with $[Rh(cod)Cl]_2$ (1 mol%), **L6** (2.2 mol%) and anhydrous toluene (2.0 mL). After being stirred at room temperature for 10 min, followed by the addition of dihydrosilane substrates **1** (0.22 mmol, 1.1 equiv). The solution was allowed to stir at room temperature for 10 min, and the aldehyde or ketone **2** (0.2 mmol) was added. The tube was capped and taken outside of the glovebox. Then, the resulting mixture was stirred at room temperature for 12 h. After the reaction was completed, the reaction mixture was filtered through a short silica gel pad and evaporated under reduced pressure, then purified by flash chromatography on silica gel to afford the target product. The enantiomeric ratio was determined by chiral HPLC analysis. Corresponding racemic samples were obtained by carrying out the reactions at identical conditions with racemic BINAP.

General procedure for the synthesis of Si-stereogenic silyl enol ethers

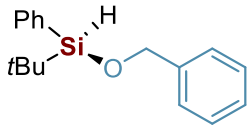


Procedure B: Inside an argon-filled glovebox, an oven-dried 10 mL microwave reaction tube was charged with $[Rh(cod)Cl]_2$ (1 mol%), **L6** (2.2 mol%) and anhydrous tetrahydrofuran (2.0 mL). After being stirred at room temperature for 10 min, followed

by the addition of *tert*-butyl(phenyl)silane **1a** (0.22 mmol, 1.1 equiv). The solution was allowed to stir at room temperature for 10 min, and α,β-unsaturated ketones **2o-2r** (0.2 mmol) was added. The tube was capped and taken outside of the glovebox. Then the resulting mixture was stirred at room temperature for 12 h. After the reaction was completed, the reaction mixture was filtered through a short silica gel pad and evaporated under reduced pressure, then purified by flash chromatography on silica gel to afford the target product. The enantiomeric ratio was determined by chiral HPLC analysis. Corresponding racemic samples were obtained by carrying out the reactions at identical conditions with (±)-**L6**.

4. Characterization of Products

(*S*)-(Benzyloxy)(*tert*-butyl)(phenyl)silane (3a)



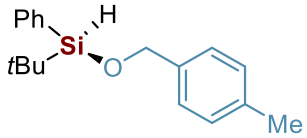
The reaction was performed according to **Procedure A** with the corresponding aldehyde (21.2 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3a** as a colorless oil (49.5 mg, 92% yield). The enantiomeric ratio was established as 94:6 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 0.4 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 12.89 min, tr (minor) = 13.59 min. $[\alpha]_D^{25.2}$ = -27.1 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.59 (dd, *J* = 7.8, 1.6 Hz, 2H), 7.43-7.35 (m, 3H), 7.32 (d, *J* = 4.4 Hz, 4H), 7.27-7.23 (m, 1H), 4.83-4.74 (m, 3H), 1.00 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 140.8, 134.8, 133.7, 130.3, 128.4, 128.0, 127.3, 126.5, 67.0, 25.9, 18.3 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{28}H_{25}Si]^-$: 269.1367; found: 269.1365.

(*S*)-*tert*-Butyl((4-methylbenzyl)oxy)(phenyl)silane (3b)



The reaction was performed according to **Procedure A** with the corresponding aldehyde (24.0 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3b** as a colorless oil

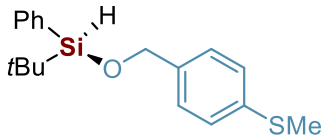
(52.3 mg, 92% yield). The enantiomeric ratio was established as 90:10 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 98:2, 0.6 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 7.35 min, tr (major) = 11.40 min. $[\alpha]_D^{25.2}$ = -40.4 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61-7.57 (m, 2H), 7.45-7.35 (m, 3H), 7.23-7.19 (m, 2H), 7.14-7.12 (m, 2H), 4.74 (d, *J* = 4.9 Hz, 3H), 2.33 (s, 3H), 0.98 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 137.8, 136.9, 134.8, 133.8, 130.2, 129.1, 128.0, 126.7, 66.9, 25.9, 21.4, 18.3 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{18}H_{23}OSi]^-$: 283.1524.; found: 283.1519.

(*S*)-*tert*-Butyl((4-(methylthio)benzyl)oxy)(phenyl)silane (3c)



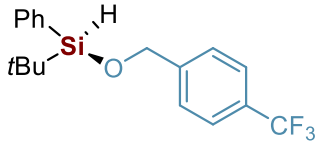
The reaction was performed according to **Procedure A** with the corresponding aldehyde (30.4 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3c** as a colorless oil (50.6 mg, 80% yield). The enantiomeric ratio was established as 94:6 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 9.45 min, tr (major) = 10.97 min. $[\alpha]_D^{25.2}$ = -35.5 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.61-7.55 (m, 2H), 7.45-7.35 (m, 3H), 7.23 (d, *J* = 0.9 Hz, 4H), 4.76-4.69 (m, 3H), 2.47 (s, 3H), 0.99 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 137.8, 137.2, 134.8, 133.6, 130.3, 128.0, 127.2, 127.0, 66.6, 25.9, 18.3, 16.3 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{18}H_{25}OSSi]^+$: 317.1390; found: 317.1386.

(*S*)-*tert*-Butyl(phenyl)((4-(trifluoromethyl)benzyl)oxy)silane (3d)



The reaction was performed according to **Procedure A** with the corresponding aldehyde (34.8 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3d** as a colorless oil (58.8 mg, 87% yield). The enantiomeric ratio was established as 93:7 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 98:2, 0.6 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 6.69 min, tr (major) = 14.33 min. $[\alpha]_D^{25.2}$ = -33.2 (c = 1.0, $CHCl_3$).

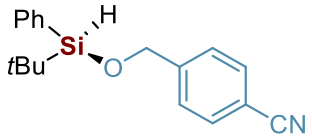
^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60-7.56 (m, 4H), 7.46-7.36 (m, 5H), 4.82 (s, 2H), 4.77 (s, 1H), 1.01 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 144.8, 134.7, 133.3, 130.5, 129.5 (q, *J* = 32.3 Hz), 128.1, 126.5, 125.8, 125.4 (q, *J* = 3.9 Hz), 66.3, 25.8, 18.3 ppm.

^{19}F NMR of **3d** (565 MHz, $CDCl_3$) δ -62.5 ppm

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{18}H_{20}F_3OSi]^-$: 337.1241; found: 337.1245.

(*S*)-4-(((*tert*-Butyl(phenyl)silyl)oxy)methyl)benzonitrile (3e)



The reaction was performed according to **Procedure A** with the corresponding aldehyde (26.2 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether/ethyl acetate = 20:1) to afford product **3e** as a colorless oil (38.4 mg, 65% yield). The enantiomeric ratio was established as 94:6 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-

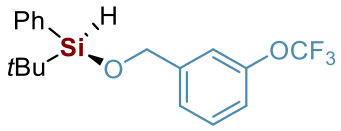
hexane/isopropanol = 100:0, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 25.54 min, tr (major) = 28.00 min. $[\alpha]_D^{25.2}$ = -6.1 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.64-7.55 (m, 4H), 7.45-7.36 (m, 5H), 4.81 (s, 2H), 4.76 (s, 1H), 1.01 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 146.3, 134.7, 133.0, 132.3, 130.5, 128.2, 126.7, 119.2, 111.0, 66.1, 25.8, 18.3 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{18}H_{22}NOSi]^+$: 296.1465; found: 296.1462.

(*S*)-*tert*-Butyl(phenyl)((3-(trifluoromethoxy)benzyl)oxy)silane (3f)



The reaction was performed according to **Procedure A** with the corresponding aldehyde (38.0 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3f** as a colorless oil (50.6 mg, 70% yield). The enantiomeric ratio was established as 93:7 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 0.4 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 11.50 min, tr (major) = 11.80 min. $[\alpha]_D^{25.2}$ = -43.2 (c = 1.0, $CHCl_3$).

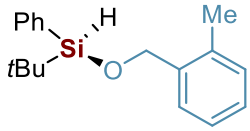
^{1}H NMR (600 MHz, $CDCl_3$): δ 7.59-7.56 (m, 2H), 7.45-7.42 (m, 1H), 7.40-7.36 (m, 2H), 7.33 (t, *J* = 7.9 Hz, 1H), 7.24-7.20 (m, 2H), 7.10-7.07 (m, 1H), 4.81-4.75 (m, 3H), 1.01 (s, 9H) ppm.

^{13}C NMR (151 MHz, $CDCl_3$): δ 149.6 (q, *J* = 15.1 Hz), 143.3, 134.7, 133.3, 130.4, 129.8, 128.1, 124.5, 120.7 (q, *J* = 256.7 Hz), 119.6, 118.8, 66.1, 25.8, 18.3 ppm.

^{19}F NMR (565 MHz, $CDCl_3$): δ -57.7 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{18}H_{20}F_3O_2Si]^-$: 353.1190; found: 353.1196.

(*S*)-*tert*-Butyl((2-methylbenzyl)oxy)(phenyl)silane (3g)



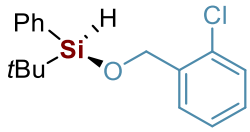
The reaction was performed according to **Procedure A** with the corresponding aldehyde (24.0 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3g** as a white solid (52.4 mg, 94% yield). The enantiomeric ratio was established as 97:3 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 98:2, 0.6 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 6.97 min, tr (major) = 16.22 min. $[\alpha]_D^{25.2}$ = -41.7 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.59 (dd, *J* = 7.8, 1.6 Hz, 2H), 7.45-7.34 (m, 4H), 7.21-7.10 (m, 3H), 4.79-4.71 (m, 3H), 2.24 (s, 3H), 0.99 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 138.6, 135.6, 134.8, 133.7, 130.3, 130.1, 128.0, 127.4, 127.0, 126.0, 65.4, 25.9, 18.8, 18.3 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{18}H_{23}OSi]^-$: 283.1524.; found: 283.1518.

(*S*)-*tert*-Butyl((2-chlorobenzyl)oxy)(phenyl)silane (3h)



The reaction was performed according to **Procedure A** with the corresponding aldehyde (28.0 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3h** as a white solid (49.3 mg, 81% yield). The enantiomeric ratio was established as 95:5 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 96:4, 1

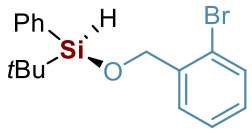
mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 3.37 min, tr (major) = 3.82 min. $[\alpha]_D^{25.2}$ = -51.5 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.64-7.57 (m, 3H), 7.46-7.36 (m, 3H), 7.29 (t, *J* = 7.3 Hz, 2H), 7.22-7.16 (m, 1H), 4.86 (s, 2H), 4.80 (s, 1H), 1.02 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 138.3, 134.7, 133.4, 131.8, 130.4, 129.1, 128.3, 128.1, 127.7, 126.9, 64.4, 25.9, 18.4 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{17}H_{20}OClSi]^-$: 303.0977.; found: 303.0971.

(*S*)-((2-Bromobenzyl)oxy)(*tert*-butyl)(phenyl)silane (3i)



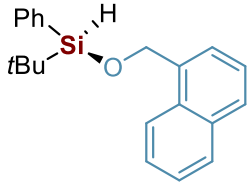
The reaction was performed according to **Procedure A** with the corresponding aldehyde (36.8 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3i** as a white solid (60.6 mg, 87% yield). The enantiomeric ratio was established as 96:4 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 96:4, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 3.43 min, tr (major) = 3.95 min. $[\alpha]_D^{25.2}$ = -54.3 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.63-7.57 (m, 3H), 7.48 (dd, *J* = 7.9, 1.2 Hz, 1H), 7.44-7.36 (m, 3H), 7.36-7.31 (m, 1H), 7.15-7.09 (m, 1H), 4.81 (s, 3H), 1.02 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 139.8, 134.7, 133.4, 132.4, 130.4, 128.6, 128.1, 127.9, 127.5, 121.5, 66.7, 25.9, 18.4 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{17}H_{20}OBrSi]^-$: 347.0472; found: 347.0468.

(*S*)-*tert*-Butyl(naphthalen-1-ylmethoxy)(phenyl)silane (3j)



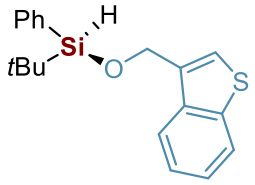
The reaction was performed according to **Procedure A** with the corresponding aldehyde (31.2 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3j** as a colorless oil (38.4 mg, 88% yield). The enantiomeric ratio was established as 95:5 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 17.35 min, tr (minor) = 18.86 min. $[\alpha]_D^{25.2}$ = -55.8 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 8.00-7.94 (m, 1H), 7.86-7.82 (m, 1H), 7.76 (d, *J* = 8.2 Hz, 1H), 7.62-7.58 (m, 2H), 7.56-7.53 (m, 1H), 7.49-7.33 (m, 6H), 5.28-5.19 (m, 2H), 4.79 (s, 1H), 0.99 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 136.0, 134.8, 133.7(4), 133.6(8), 131.1, 130.3, 128.8, 128.1, 128.0, 126.1, 125.8, 125.6, 124.5, 123.7, 65.5, 25.9, 18.3 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{21}H_{25}OSi]^+$: 369.1669; found: 369.1667.

(*S*)-(Benzo[b]thiophen-3-ylmethoxy)(*tert*-butyl)(phenyl)silane (3k)



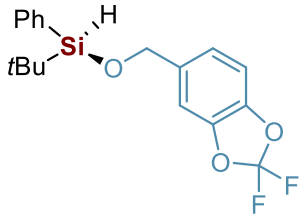
The reaction was performed according to **Procedure A** with the corresponding aldehyde (32.4 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3k** as a white solid (58.7 mg, 90% yield). The enantiomeric ratio was established as 93:7 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 13.60 min, tr (minor) = 14.60 min. $[\alpha]_D^{25.2}$ = -44.3 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.85-7.80 (m, 1H), 7.76-7.72 (m, 1H), 7.61-7.56 (m, 2H), 7.45-7.29 (m, 6H), 5.05-4.95 (m, 2H), 4.76 (s, 1H), 0.98 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 140.9, 137.9, 135.8, 134.8, 133.5, 130.3, 128.1, 124.5, 124.1, 123.2, 123.0, 122.2, 62.4, 25.9, 18.3 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{19}H_{23}OSSi]^+$: 327.1233; found: 327.1233.

(*S*)-*tert*-Butyl((2,2-difluorobenzo[d][1,3]dioxol-5-yl)methoxy)(phenyl)silane (3l)



The reaction was performed according to **Procedure A** with the corresponding aldehyde (37.2 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3l** as a colorless oil (57.4 mg, 82% yield). The enantiomeric ratio was established as 94:6 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 1 mL/min), λ = 280 nm, temperature = 28 °C, tr (minor) = 5.76 min, tr (major) = 5.92 min. $[\alpha]_D^{25.2}$ = -27.4 (c = 1.0, $CHCl_3$).

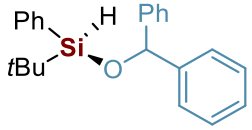
^{1}H NMR (400 MHz, $CDCl_3$): δ 7.59-7.54 (m, 2H), 7.46-7.35 (m, 3H), 7.07 (t, *J* = 1.0 Hz, 1H), 6.96 (d, *J* = 1.1 Hz, 2H), 4.76-4.69 (m, 3H), 1.00 (s, 9H) ppm.

^{13}C NMR (151 MHz, $CDCl_3$): δ 144.1, 143.0, 137.1, 134.7, 133.3, 131.9 (t, *J* = 255.2 Hz), 130.5, 128.1, 121.5, 109.2, 108.2, 66.5, 25.8, 18.3 ppm.

^{19}F NMR (565 MHz, $CDCl_3$) δ -50.0 ppm

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{18}H_{19}F_2O_3Si]^-$: 349.1077; found: 349.1074.

(*S*)-(Benzhydryloxy)(*tert*-butyl)(phenyl)silane (3m)



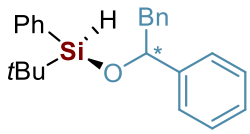
The reaction was performed according to **Procedure A** with the corresponding ketone (91.0 mg, 0.5 mmol), **1a** (90.3 mg, 0.55 mmol), $[Rh(cod)Cl]_2$ (2.5 mg, 1 mol%), **L6** (5.8 mg, 2.2 mol%) in anhydrous toluene (5.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3m** as a colorless oil (147.1 mg, 85% yield). The enantiomeric ratio was established as 95:5 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 0.4 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 14.23 min, tr (minor) = 16.11 min. $[\alpha]_D^{25.2}$ = -23.6 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.49-7.45 (m, 2H), 7.42-7.36 (m, 1H), 7.35-7.27 (m, 8H), 7.26-7.24 (m, 2H), 7.23-7.16 (m, 2H), 5.75 (s, 1H), 4.61 (s, 1H), 0.98 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 144.6, 144.1, 134.9, 133.5, 130.2, 128.5, 128.4, 127.9, 127.5, 127.2, 127.0, 126.5, 78.2, 25.9, 18.3 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{23}H_{25}OSi]^-$: 345.1680; found: 345.1674.

(1*S*)-*tert*-Butyl(1,2-diphenylethoxy)(phenyl)silane (3n)



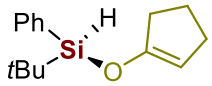
The reaction was performed according to **Procedure A** with the corresponding ketone (39.2 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (2.0 mg, 2 mol%), **L6** (4.6 mg, 4.4 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3n** as a colorless oil (59.8 mg, 83% yield). The enantiomeric ratio of major configuration was established as 99:1 *er* by HPLC analysis using a Daicel Chiralpak OD-H+OD-3 column (*n*-hexane/isopropanol = 100:0, 0.4 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 25.98 min, tr (major) = 27.23 min. $[\alpha]_D^{25.2}$ = -93.0 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.32 (dd, *J* = 24.7, 6.9 Hz, 4H), 7.25-7.19 (m, 7H), 7.14-7.07 (m, 4H), 4.74 (dd, *J* = 8.4, 4.4 Hz, 1H), 4.36 (s, 1H), 3.04-2.87 (m, 2H), 0.88 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 143.9, 138.9, 134.9, 133.4, 130.3, 129.9, 128.3, 128.2, 127.7, 127.5, 126.4, 126.3, 77.9, 47.7, 25.8, 18.1 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{24}H_{27}OSi]^-$: 359.1837; found: 359.1837.

(*S*)-*tert*-Butyl(cyclopent-1-en-1-yloxy)(phenyl)silane (3o)



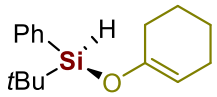
The reaction was performed according to **Procedure B** with the corresponding *α,β*-unsaturated ketone (16.4 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (2.0 mg, 2 mol%), **L6** (4.6 mg, 4.4 mol%) in anhydrous tetrahydrofuran (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3o** as a colorless oil (30.0 mg, 61% yield). The enantiomeric ratio was established as 97:3 *er* by HPLC analysis using a Daicel Chiralpak OJ-3 column (*n*-hexane/isopropanol = 100:0, 0.15 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 23.91 min, tr (major) = 25.11 min. $[\alpha]_D^{25.2}$ = -45.6 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.58 (m, 2H), 7.42-7.34 (m, 3H), 4.85 (s, 1H), 4.60 (p, *J* = 2.1 Hz, 1H), 2.34-2.27 (m, 2H), 2.22-2.16 (m, 2H), 1.82 (p, *J* = 7.4 Hz, 2H), 0.98 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 156.0, 134.5, 133.4, 130.3, 128.0, 102.5, 33.0, 28.8, 25.7, 21.5, 18.1 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{15}H_{23}OSi]^+$: 247.1513; found: 247.1513.

(*S*)-*tert*-Butyl(cyclohex-1-en-1-yloxy)(phenyl)silane (3p)



The reaction was performed according to **Procedure B** with the corresponding *α,β*-unsaturated ketone (19.2 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (2.0

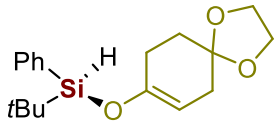
mg, 2 mol%), **L6** (4.6 mg, 4.4 mol%) in anhydrous tetrahydrofuran (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3p** as a colorless oil (46.3 mg, 89% yield). The enantiomeric ratio was established as 97.5:2.5 *er* by HPLC analysis using a Daicel Chiralpak OJ-3 column (*n*-hexane/isopropanol = 100:0, 0.15 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 23.98 min, tr (major) = 25.46 min. $[\alpha]_D^{25.2}$ = -47.6 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60-7.56 (m, 2H), 7.44-7.34 (m, 3H), 4.89-4.86 (m, 1H), 4.83 (s, 1H), 2.10-2.04 (m, 2H), 1.97-1.90 (m, 2H), 1.67-1.60 (m, 2H), 1.50-1.43 (m, 2H), 0.97 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 151.4, 134.5, 134.0, 130.2, 127.9, 104.0, 29.4, 25.7, 23.9, 23.2, 22.4, 18.1 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{16}H_{25}OSi]^+$: 261.1669; found: 261.1668.

(*S*)-((1,4-Dioxaspiro[4.5]dec-7-en-8-yl)oxy)(*tert*-butyl)(phenyl)silane (3q)



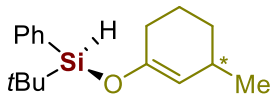
The reaction was performed according to **Procedure B** with the corresponding *α,β*-unsaturated ketone (30.8 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (2.0 mg, 2 mol%), **L6** (4.6 mg, 4.4 mol%) in anhydrous tetrahydrofuran (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether/ethyl acetate = 5:1) to afford product **3q** as a colorless oil (39.5 mg, 62% yield). The enantiomeric ratio was established as 96.5:3.5 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 98:2, 0.4 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 12.04 min, tr (minor) = 14.31 min. $[\alpha]_D^{25.2}$ = -8.5 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60-7.56 (m, 2H), 7.44-7.34 (m, 3H), 4.85 (s, 1H), 4.75-4.70 (m, 1H), 3.97-3.93 (m, 4H), 2.34-2.28 (m, 2H), 2.22-2.17 (m, 2H), 1.83-1.76 (m, 2H), 0.96 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 150.8, 134.5, 133.6, 130.2, 127.9, 107.9, 100.4, 64.6(1), 64.5(9), 34.0, 31.3, 28.1, 25.7, 18.1 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{18}H_{27}O_3Si]^+$: 319.1724; found: 319.1723.

(1*S*)-*tert*-Butyl(((*S*)-3-methylcyclohex-1-en-1-yl)oxy)(phenyl)silane (3r)



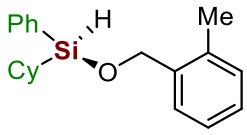
The reaction was performed according to **Procedure B** with the corresponding *α,β*-unsaturated ketone (22.0 mg, 0.2 mmol), **1a** (36.1 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (2.0 mg, 2 mol%), **L6** (4.6 mg, 4.4 mol%) in anhydrous tetrahydrofuran (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (petroleum ether) to afford product **3r** as a colorless oil (36.7 mg, 67% yield). The enantiomeric ratio was established as 96:4 *er* by HPLC analysis using a Daicel Chiralpak OJ-H+OJ-3 column (*n*-hexane/isopropanol = 100:0, 0.3 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 23.98 min, tr (major) = 25.23 min. $[\alpha]_D^{25.2}$ = -18.7 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60-7.56 (m, 2H), 7.44-7.34 (m, 3H), 4.84 (s, 1H), 4.76-4.74 (m, 1H), 2.20-2.12 (m, 1H), 2.06-2.01 (m, 2H), 1.78-1.69 (m, 1H), 1.68-1.60 (m, 1H), 1.54-1.46 (m, 1H), 0.97 (s, 9H), 0.89 (d, J = 6.9 Hz, 3H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 151.1, 134.6, 133.9 130.1, 127.9, 110.6, 31.2, 29.6, 29.3, 25.8, 22.5, 21.9, 18.2 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{17}H_{27}OSi]^+$: 275.1826; found: 275.1822.

(*S*)-Cyclohexyl((2-methylbenzyl)oxy)(phenyl)silane (3s)



The reaction was performed according to **Procedure A** with 2-methylbenzaldehyde (24.0 mg, 0.2 mmol), cyclohexyl(phenyl)silane (41.8 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was

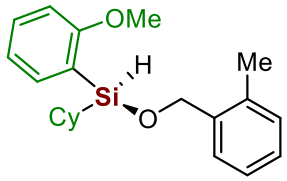
purified by flash chromatography on silica gel (*n*-hexane/ethyl acetate = 30:1) to afford product **3s** as a colorless oil (42.2 mg, 68% yield). The enantiomeric ratio was established as 98:2 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 1 mL/min), λ = 250 nm, temperature = 28 °C, tr (minor) = 13.76 min, tr (major) = 15.31 min. $[\alpha]_D^{25.2}$ = -10.1 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.60-7.56 (m, 2H), 7.44-7.33 (m, 4H), 7.19-7.15 (m, 2H), 7.14-7.09 (m, 1H), 4.82 (d, *J* = 2.0 Hz, 1H), 4.73 (s, 2H), 2.24 (s, 3H), 1.89-1.83 (m, 1H), 1.77-1.62 (m, 6H), 1.29-1.23 (m, 3H), 1.12-1.02 (m, 1H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 138.4, 135.7, 134.6, 134.2, 130.2, 130.1, 128.1, 127.5, 127.2, 126.0, 65.3, 27.7(6), 27.7(4), 27.0, 26.9, 26.8, 25.3, 18.8 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{20}H_{27}OSi]^+$: 311.1826; found: 311.1826.

(*S*)-Cyclohexyl(2-methoxyphenyl)((2-methylbenzyl)oxy)silane (3t)



The reaction was performed according to **Procedure A** with the 2-methylbenzaldehyde aldehyde (24.0 mg, 0.2 mmol), cyclohexyl(2-methoxyphenyl)silane (48.4 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (*n*-hexane/ethyl acetate = 30:1) to afford product **3t** as a colorless oil (57.8 mg, 85% yield). The enantiomeric ratio was established as 90:10 *er* by HPLC analysis using a Daicel Chiralpak OD-H+OD-3 column (*n*-hexane/isopropanol = 99.5:0.5, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 23.96 min, tr (minor) = 24.90 min. $[\alpha]_D^{25.2}$ = -12.8 (c = 1.0, $CHCl_3$).

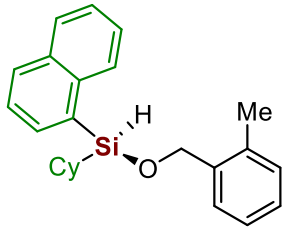
^{1}H NMR (400 MHz, $CDCl_3$): δ 7.50-7.47 (m, 1H), 7.43-7.36 (m, 2H), 7.21-7.13 (m, 2H), 7.12-7.09 (m, 1H), 6.96 (t, *J* = 7.2 Hz, 1H), 6.83 (d, *J* = 8.2 Hz, 1H), 4.85 (d, *J* =

1.8 Hz, 1H), 4.75 (s, 2H), 3.77 (s, 3H), 2.24 (s, 3H), 1.84 (d, *J* = 11.7 Hz, 1H), 1.74-1.63 (m, 5H), 1.26-1.20 (m, 5H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 164.4, 138.8, 136.6, 135.5, 132.0, 130.0, 127.2, 127.1, 125.9, 122.5, 120.8, 109.7, 65.3, 55.2, 27.8(8), 27.8(6), 27.3, 27.1, 27.0, 25.1, 18.8 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{21}H_{29}O_2Si]^+$: 341.1931; found: 341.1931.

(*S*)-Cyclohexyl((2-methylbenzyl)oxy)(naphthalen-1-yl)silane (3u)



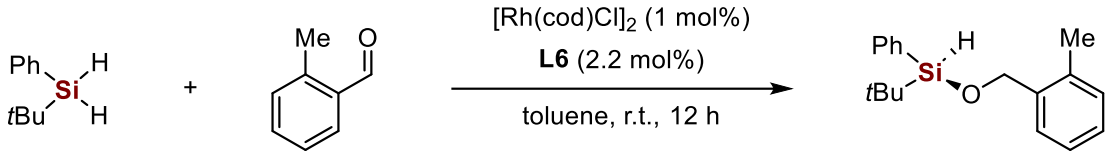
The reaction was performed according to **Procedure A** with the 2-methylbenzaldehyde aldehyde (24.0 mg, 0.2 mmol), cyclohexyl(naphthalen-2-yl)silane (52.8 mg, 0.22 mmol), $[Rh(cod)Cl]_2$ (1.0 mg, 1 mol%), **L6** (2.3 mg, 2.2 mol%) in anhydrous toluene (2.0 mL) at room temperature for 12 h. After the solvent was removed under vacuum, the residue was purified by flash chromatography on silica gel (*n*-hexane/ethyl acetate = 30:1) to afford product **3u** as a colorless oil (53.3 mg, 73% yield). The enantiomeric ratio was established as 90:10 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 100:0, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 23.96 min, tr (minor) = 24.90 min. $[\alpha]_D^{25.2}$ = -12.8 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 8.27-8.21 (m, 1H), 7.91 (d, *J* = 8.3 Hz, 1H), 7.88-7.84 (m, 1H), 7.79 (dd, *J* = 6.7, 1.3 Hz, 1H), 7.52-7.47 (m, 3H), 7.39-7.35 (m, 1H), 7.19-7.14 (m, 2H), 7.12-7.08 (m, 1H), 5.13 (d, *J* = 1.8 Hz, 1H), 4.73 (s, 2H), 2.22 (s, 3H), 1.93 (d, *J* = 13.5 Hz, 1H), 1.6-1.69 (m, 1H), 1.66-1.57 (m, 3H), 1.28-1.13 (m, 6H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 138.4, 137.4, 135.8, 135.2, 133.4, 132.7, 130.9, 130.1, 129.0, 128.2, 127.5, 127.4, 126.4, 126.0, 125.9, 125.3, 65.4, 27.8, 27.7, 27.5, 27.1, 26.9, 25.8, 18.9 ppm.

HRMS (ESI, m/z) $[M - H]^-$ calcd for $[C_{24}H_{27}OSi]^-$: 359.1837; found: 359.1836.

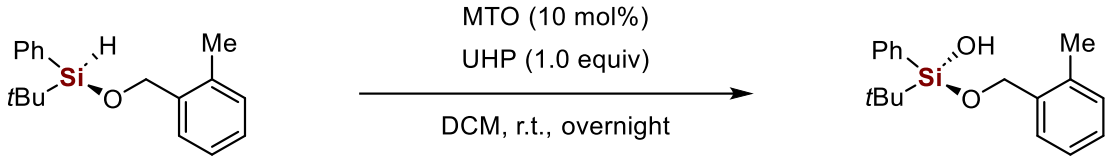
5. Gram-Scale Reaction and Synthetic Application



1a **2g** **3g**

Procedure for Gram-Scale reaction: Inside an argon-filled glovebox, a 200 mL one-neck round bottom flask was charged with $[Rh(cod)Cl]_2$ (22.2 mg, 1 mol%), **L6** (53.0 mg, 2.2 mol%) and anhydrous toluene (45 mL). After being stirred at room temperature for 10 min, followed by the addition of *tert*-butyl(phenyl)silane (812.3 mg, 4.95 mmol). The solution was allowed to stir at room temperature for 10 min, and the 2-methylbenzaldehyde (540 mg, 4.5 mmol) was added. Sealed the round bottom and took it outside of the glove box. Then, the resulting mixture was stirred at room temperature for 12 h. After the reaction was completed, the reaction mixture was evaporated under reduced pressure. the residue was purified by flash chromatography on silica gel (petroleum ether) to afford the target product **3g** as a white solid (1.12 g, 87% yield, 99:1 *er*).

Synthetic application:



3g **4**

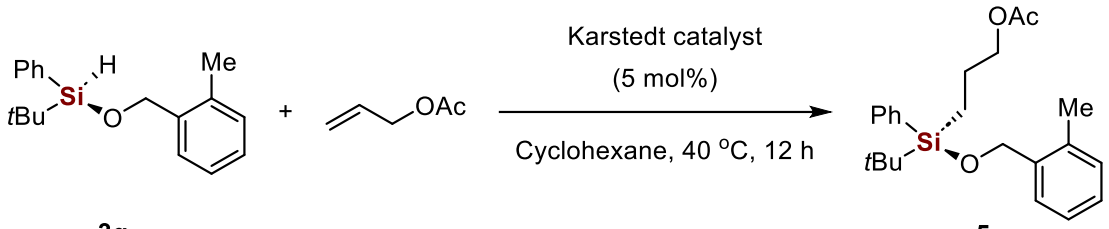
Procedure for the synthesis of 4[3]: To a solution of methyltrioxorhenium (MTO, 5 mg, 10 mol%) in dichloromethane (1.0 mL) was added urea/hydrogen peroxide adduct (UHP, 188 mg, 0.2 mmol). The resulting mixture was stirred for 10 minutes before adding **3g** (56.8 mg, 0.2 mmol). After stirring at ambient temperature overnight, the mixture was filtered through a short silica gel pad. After concentration, the crude product was purified by flash chromatography (petroleum ether/ethyl acetate = 20:1) to afford **4** as a white solid (58.2 mg, 97% yield). The enantiomeric ratio was established as 95:5 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-

hexane/isopropanol = 95:5, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 5.47 min, tr (major) = 12.35 min. $[\alpha]_D^{25.2}$ = -18.9 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.69-7.64 (m, 2H), 7.48-7.40 (m, 2H), 7.40-7.35 (m, 2H), 7.23-7.15 (m, 2H), 7.15-7.10 (m, 1H), 4.82 (d, *J* = 2.8 Hz, 2H), 2.24 (s, 3H), 1.62 (br, 1H), 1.01 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 138.9, 135.5, 135.2, 132.6, 130.3, 123.1, 128.0, 127.3, 126.6, 126.1, 63.1, 26.1, 18.8, 18.6 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{18}H_{25}O_2Si]^+$: 301.1618; found: 301.1614.

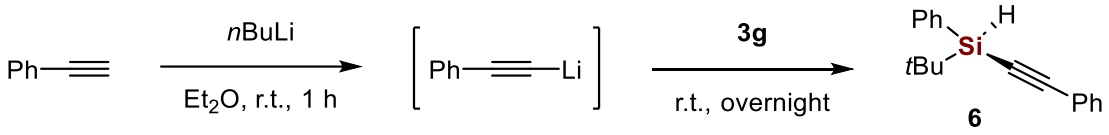


Procedure for the synthesis of 5[4]: Inside an argon-filled glovebox, an oven-dried 5 mL reaction tube was charged with **3g** (56.8 mg, 0.2 mmol), allyl acetate (40 mg, 0.4 mmol), Karstedt catalyst (100 μL, 0.01 mmol, 0.1 M in xylene) and anhydrous cyclohexane (1.0 mL). The tube was capped and taken outside of the glovebox. The resulting mixture was stirred at 40 °C for 12 h. After removing the solvent under vacuum, the residues were purified by flash chromatography (petroleum ether) to afford **5** as a colorless oil (53.8 mg, 70% yield). The enantiomeric ratio was established as 95:5 *er* by HPLC analysis using a Daicel Chiralpak OD-3 column (*n*-hexane/isopropanol = 95:5, 1 mL/min), λ = 220 nm, temperature = 28 °C, tr (major) = 5.23 min, tr (minor) = 9.11 min. $[\alpha]_D^{25.2}$ = -8.5 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.57-7.51 (m, 3H), 7.38 (q, *J* = 7.8, 6.6 Hz, 3H), 7.25-7.10 (m, 3H), 4.83 (s, 2H), 4.01 (t, *J* = 6.7 Hz, 2H), 2.25 (s, 3H), 2.03 (s, 3H), 1.80-1.68 (m, 2H), 1.15-1.01 (m, 2H), 0.98 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 171.4, 139.1, 135.1, 134.9, 134.3, 130.0, 129.8, 128.0, 127.2, 126.2, 126.1, 67.2, 63.9, 26.7, 23.2, 21.2, 19.3, 18.8, 7.2 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{23}H_{33}O_3Si]^+$: 385.2193; found: 385.2198.

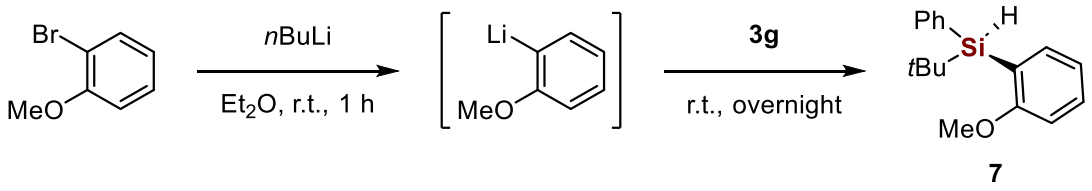


Procedure for the synthesis of 6[4]: To a solution of ethynylbenzene (102.1 mg, 1.0 mmol) in anhydrous Et_2O (1.0 mL) was added *n*BuLi (320 μL, 0.8 mmol, 2.5 M in *n*-hexane) dropwise under argon at room temperature. The mixture was stirred at room temperature for 1 h and then was added into another 10 mL reaction tube containing **3g** (56.8 mg, 0.2 mmol) via a syringe. After stirring for another 12 h at room temperature, the reaction mixture was quenched with water and extracted with EtOAc. The combined organic phase was dried over anhydrous Na_2SO_4, filtered and concentrated. The residues were purified by flash chromatography (petroleum ether) to afford **6** as a colorless oil (44.4 mg, 84% yield). The enantiomeric ratio was established as 96:4 *er* by HPLC analysis using a Daicel Chiralpak OJ-3 column (*n*-hexane/isopropanol = 100:0, 0.1 mL/min), λ = 250 nm, temperature = 28 °C, tr (major) = 51.39 min, tr (minor) = 65.68 min. $[\alpha]_D^{25.2}$ = 3.6 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.73-7.68 (m, 2H), 7.56-7.51 (m, 2H), 7.46-7.37 (m, 3H), 7.36-7.30 (m, 3H), 4.50 (s, 1H), 1.06 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 135.6, 132.4, 132.3, 130.1, 129.1, 128.5, 128.0, 123.0, 108.9, 87.6, 26.7, 17.7 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{18}H_{21}Si]^+$: 265.1407; found: 265.1407.



Procedure for the synthesis of 7[4]: To a solution of 1-bromo-2-methoxybenzene (149.6 mg, 0.8 mmol) in anhydrous Et_2O (1.0 mL) was added *n*BuLi (400 μL, 1.0 mmol, 2.5 M in *n*-hexane) dropwise under argon at room temperature. The mixture was stirred at room temperature for 1 h and then was added into another 10 mL reaction tube containing **3g** (56.8 mg, 0.2 mmol) via a syringe. After stirring for another 12 h at room

temperature, the reaction mixture was quenched with water and extracted with EtOAc. The combined organic phase was dried over anhydrous Na_2SO_4, filtered and concentrated. The residues were purified by flash chromatography (petroleum ether) to afford **7** as a colorless oil (40.0 mg, 74% yield). The enantiomeric ratio was established as 93:7 *er* by HPLC analysis using a Daicel Chiralpak OJ-H column (*n*-hexane/isopropanol = 99:1, 0.6 mL/min), λ = 220 nm, temperature = 28 °C, tr (minor) = 7.50 min, tr (major) = 8.11 min. $[\alpha]_D^{25.2}$ = 39.8 (c = 1.0, $CHCl_3$).

^{1}H NMR (400 MHz, $CDCl_3$): δ 7.74-7.68 (m, 2H), 7.57-7.51 (m, 1H), 7.39-7.29 (m, 4H), 6.94 (t, *J* = 7.3 Hz, 1H), 6.84 (d, *J* = 8.3 Hz, 1H), 4.60 (s, 1H), 3.79 (s, 3H), 1.06 (s, 9H) ppm.

^{13}C NMR (101 MHz, $CDCl_3$): δ 164.0, 138.4, 136.1, 135.1, 131.7, 129.3, 127.7, 123.0, 120.8, 109.8, 54.9, 28.4, 18.4 ppm.

HRMS (ESI, m/z) $[M + H]^+$ calcd for $[C_{171}H_{23}OSi]^+$: 271.1513; found: 271.1515.

6. Single Crystal X-Ray Diffraction

Single crystal suitable for X-ray diffraction of compound **3k** was obtained from a solution of the compound **3k** (93:7 *er*) in *n*-hexane. The X-ray crystal structure is deposited in the Cambridge Crystallographic Data Centre under reference number CCDC 2360226. Diffraction Data were collected on a BrukerD8 venture employing Cu-Kα radiation (λ = 1.54178 Å).

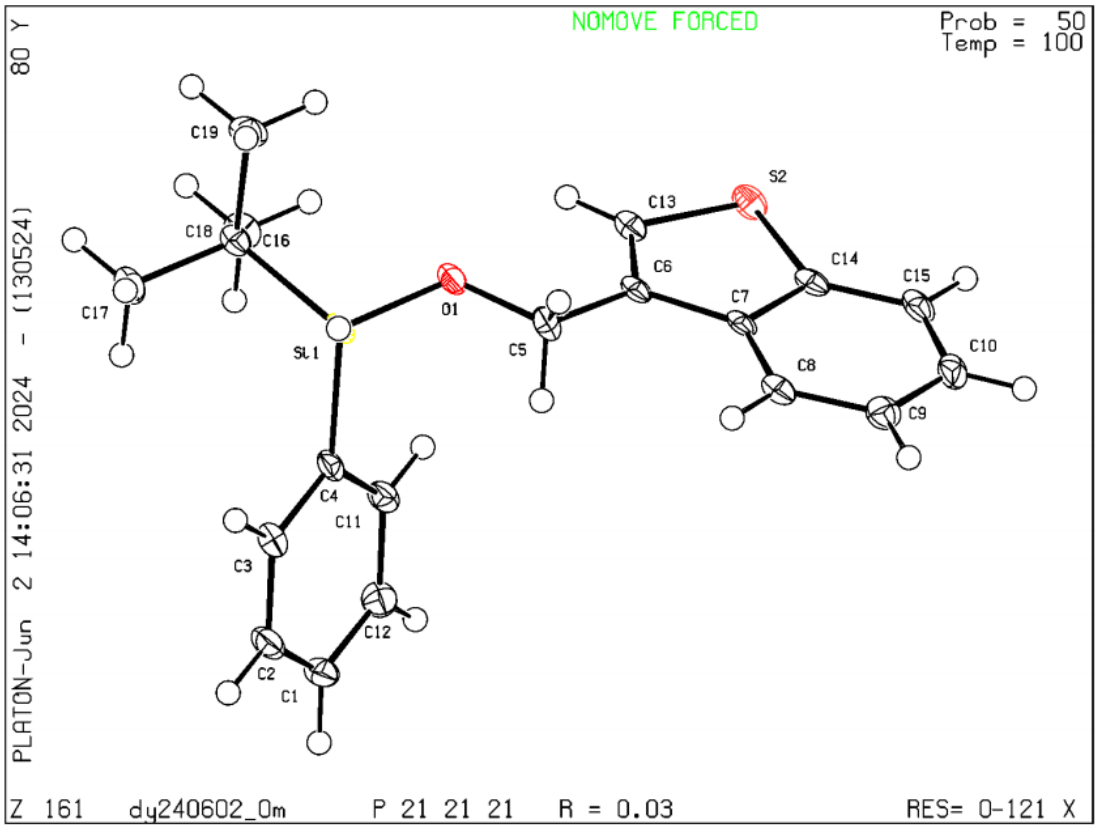


Table S2. Crystallographic data and structure refinement for compound **3k**

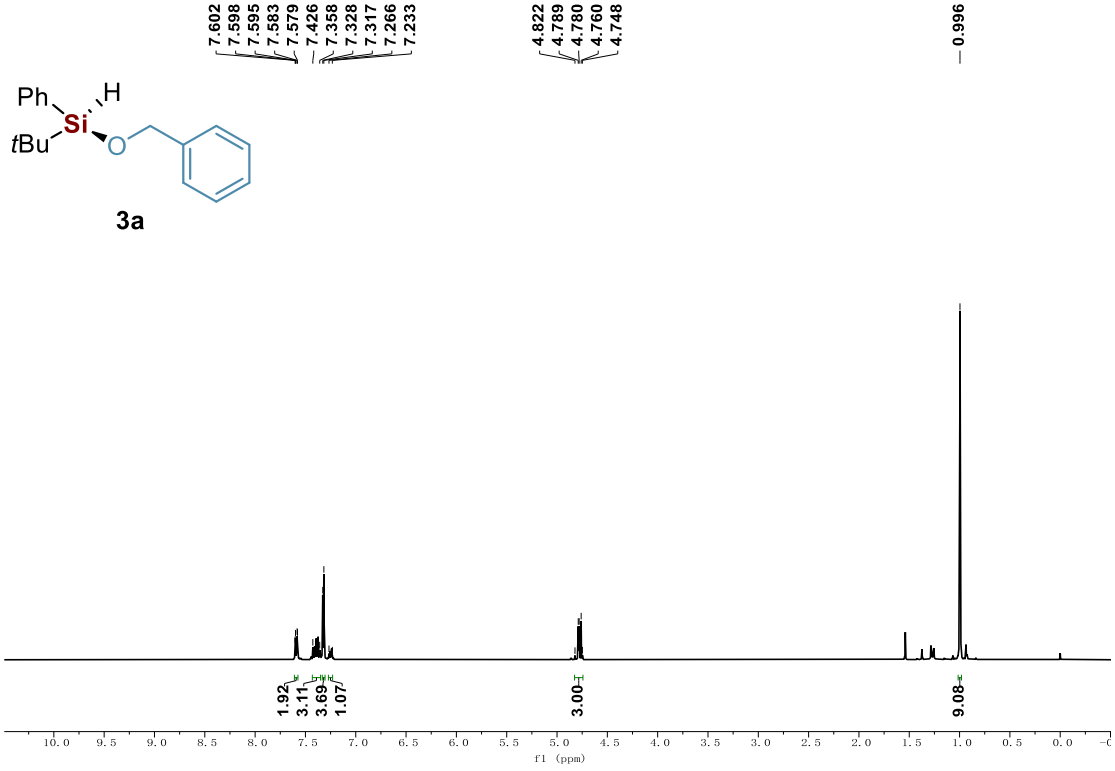
Identification code	DY240602_0m
Empirical formula	C19H22OSSi
Formula weight	326.51
Temperature/K	100.0(2)
Crystal system	orthorhombic
Space group	P212121
a/Å	6.0130(2)
b/Å	16.5709(4)
c/Å	17.6278(4)
α/°	90
β/°	90
γ/°	90
Volume/Å^3	1756.45(8)
Z	4
ρ_{calc}g/cm^3	1.235
μ/mm^{-1}	2.270
F(000)	696.0
Crystal size/mm^3	0.36 × 0.25 × 0.1
Radiation	CuKα (λ = 1.54178)
2Θ range for data collection/°	7.322 to 136.944
Index ranges	-6 ≤ h ≤ 7, -19 ≤ k ≤ 19, -20 ≤ l ≤ 21
Reflections collected	15680
Independent reflections	3213 [Rint = 0.0555, Rsigma = 0.0403]
Data/restraints/parameters	3213/0/202
Goodness-of-fit on F^2	1.125
Final R indexes [I>=2σ (I)]	R1 = 0.0293, wR2 = 0.0758
Final R indexes [all data]	R1 = 0.0295, wR2 = 0.0759
Largest diff. peak/hole / e Å-3	0.45/-0.33
Flack parameter	0.077(6)

7. References

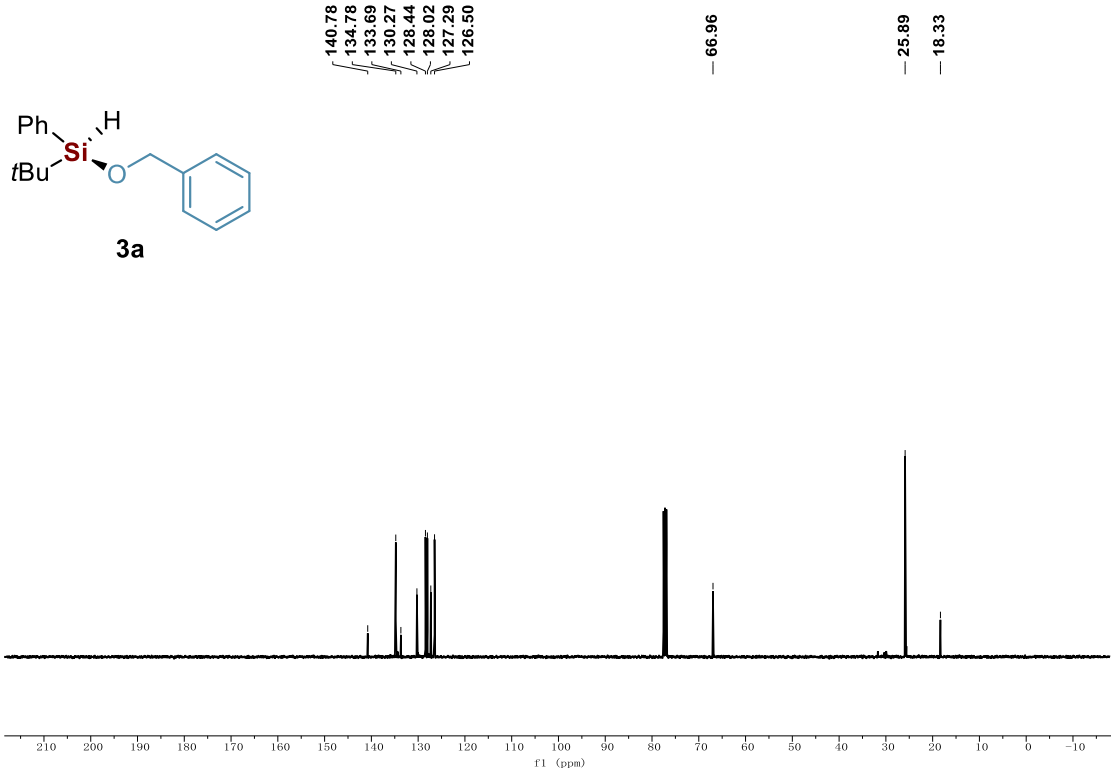
1. Z.-Z. Zhu, K. Chen, L.-Z. Yu, X.-Y. Tang and M. Shi, *Org. Lett.*, 2015, **17**, 5994-5997.
2. Z. Li, Y. Peng and T. Wu, *Org. Lett.*, 2021, **23**, 881-885.
3. G. Zhan, H.-L. Teng, Y. Luo, S.-J. Lou, M. Nishiura, and Z. Hou, *Angew. Chem. Int. Ed.*, 2018, **57**, 12342-12346.
4. W. Yuan, X. Zhu, Y. Xu and C. He, *Angew. Chem. Int. Ed.*, 2022, **61**, e202204912.

8. NMR Spectra

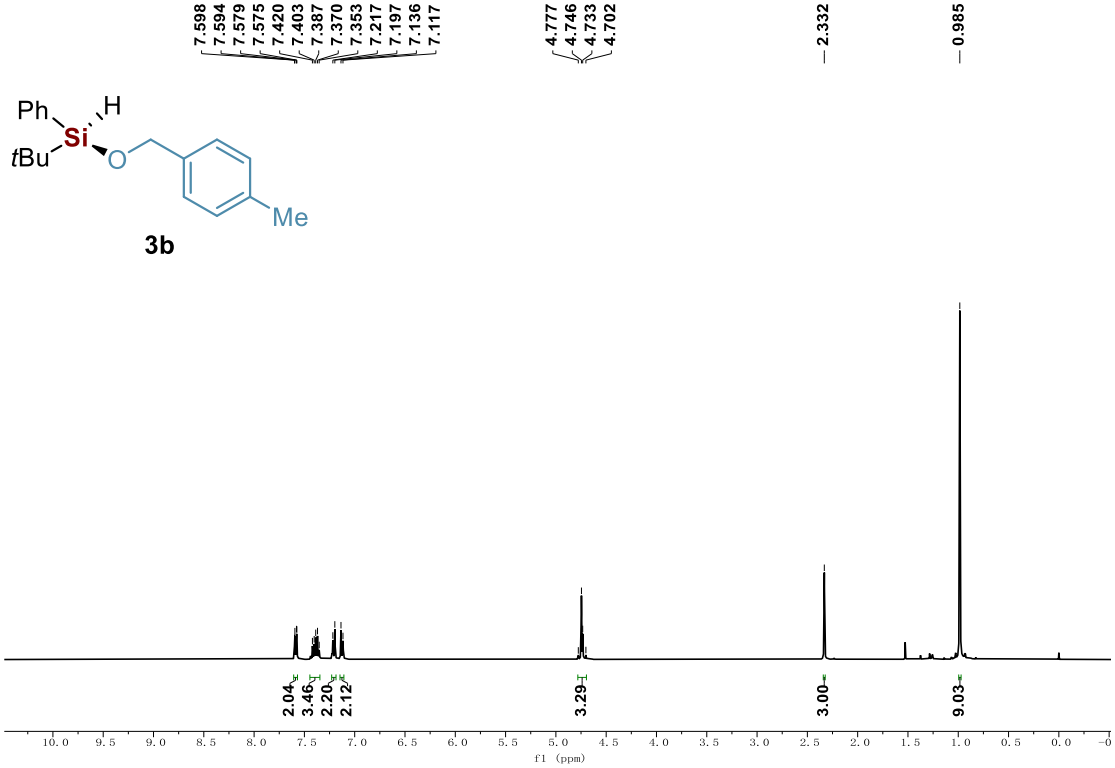
^{1}H NMR spectrum of **3a** (400 MHz, $CDCl_3$)



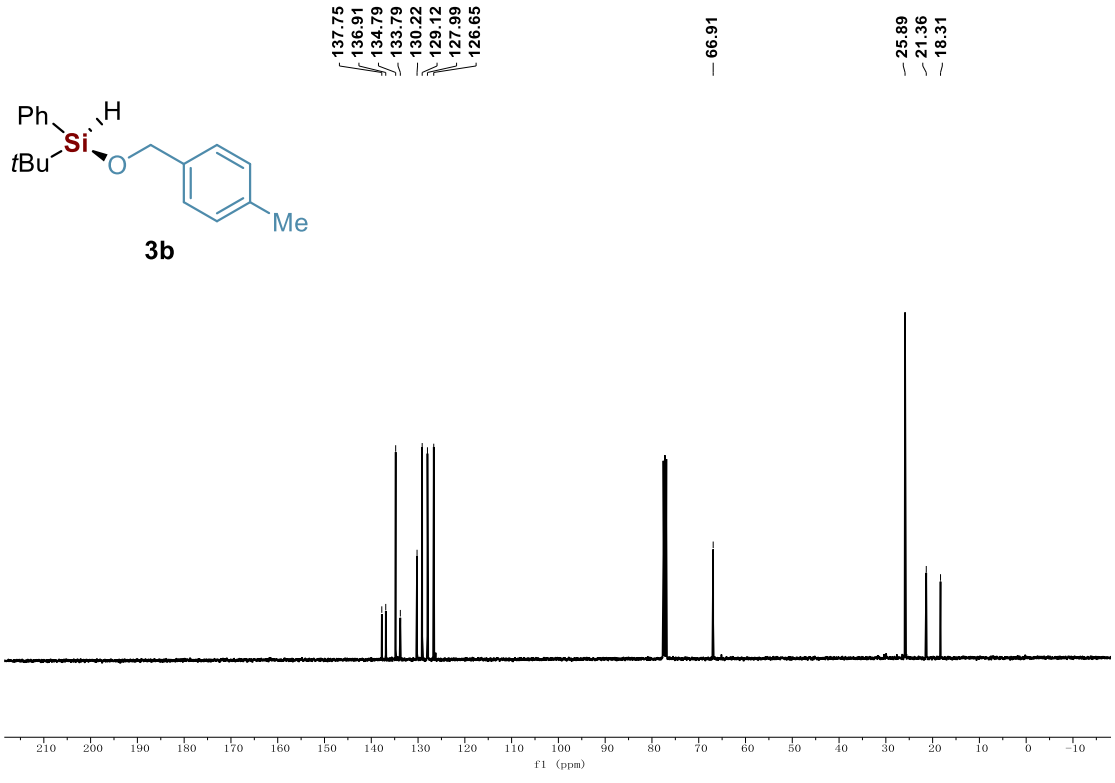
^{13}C NMR spectrum of **3a** (101 MHz, $CDCl_3$)



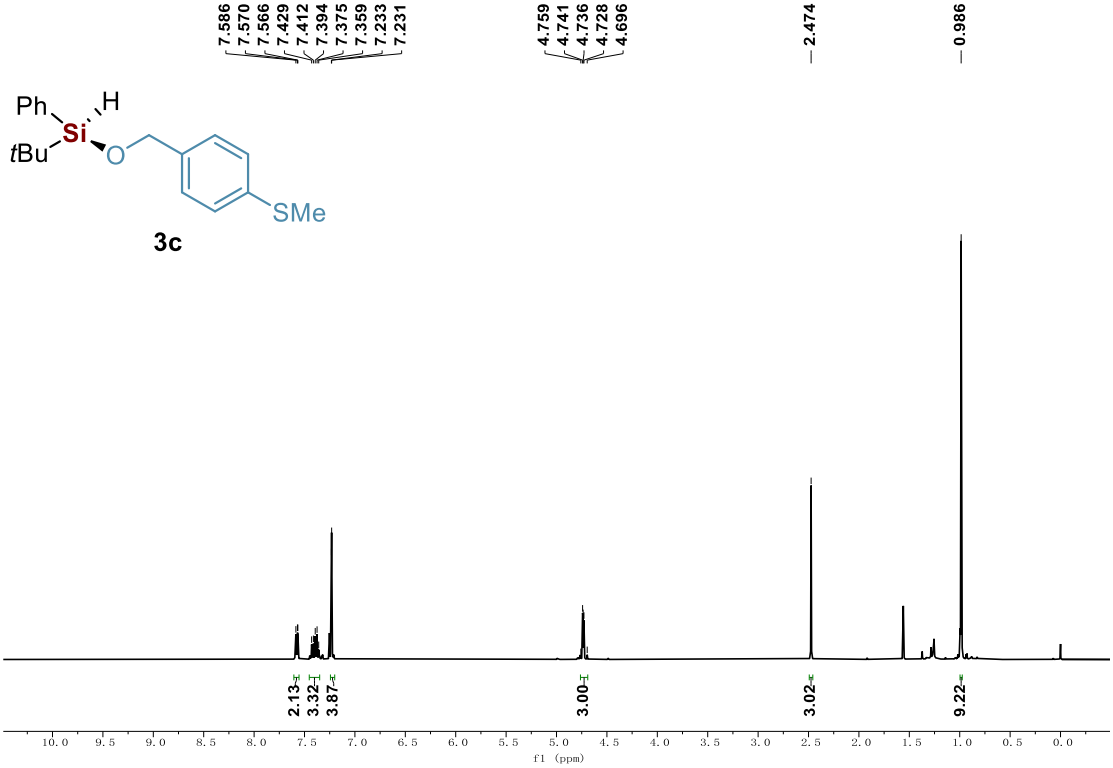
^{1}H NMR spectrum of **3b** (400 MHz, $CDCl_3$)



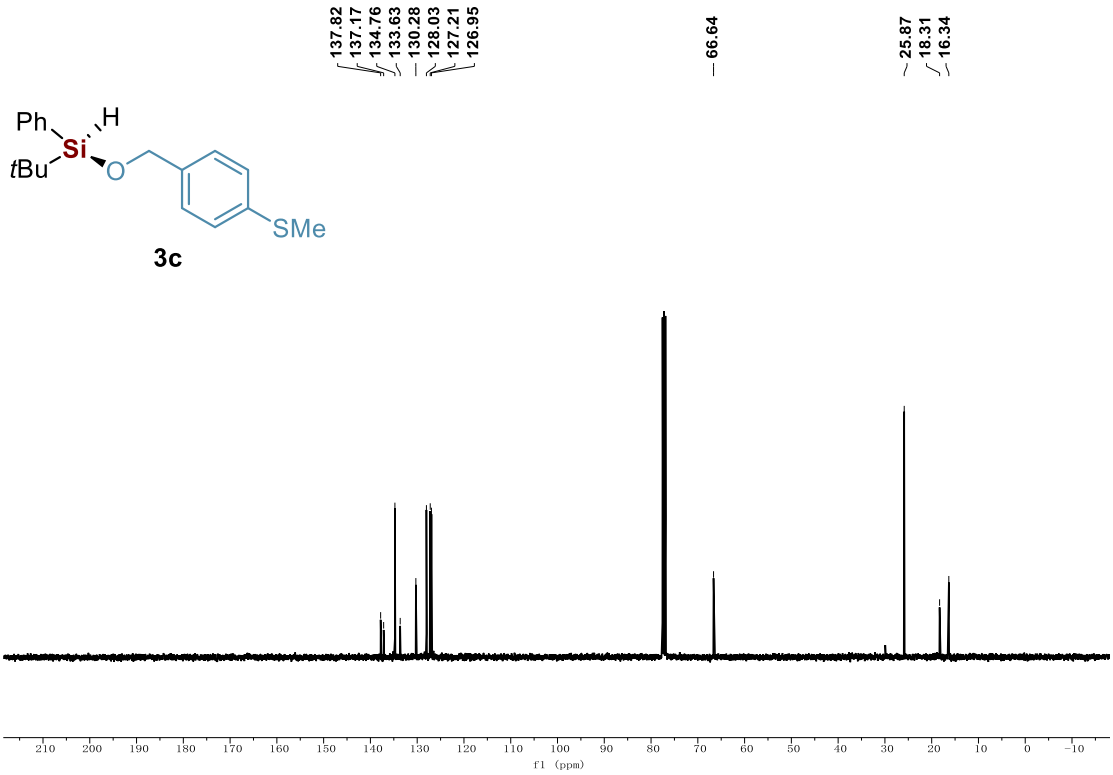
^{13}C NMR spectrum of **3b** (101 MHz, $CDCl_3$)



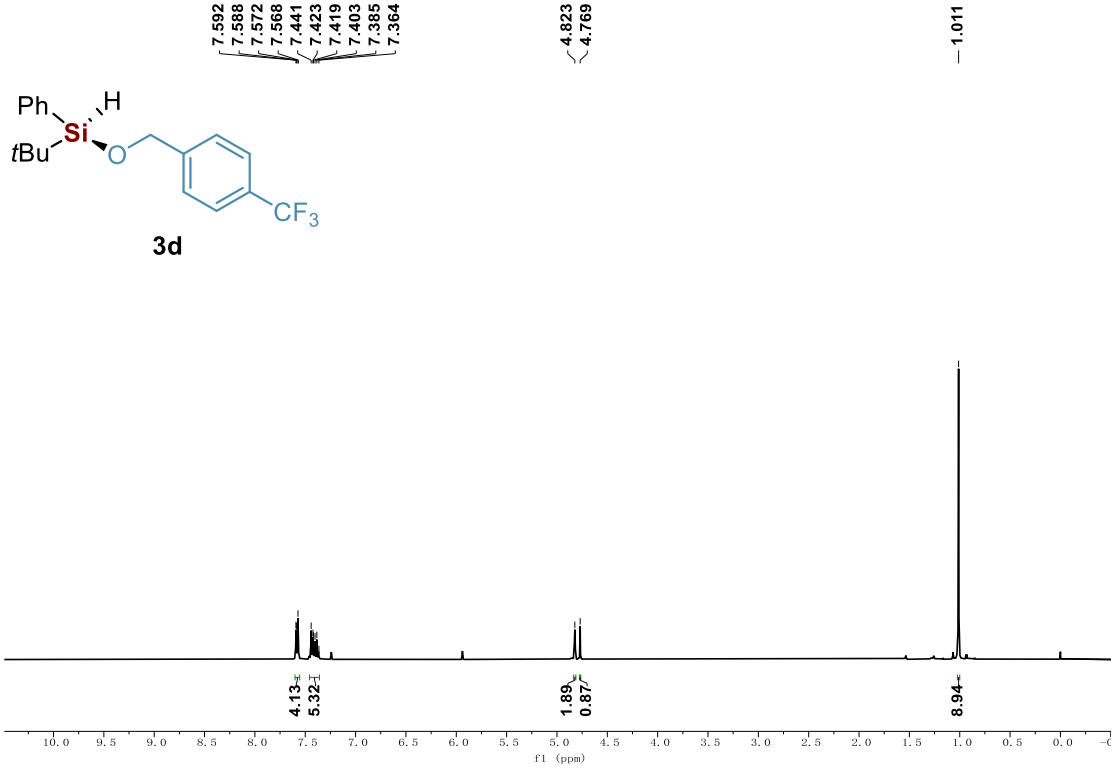
^{1}H NMR spectrum of **3c** (400 MHz, $CDCl_3$)



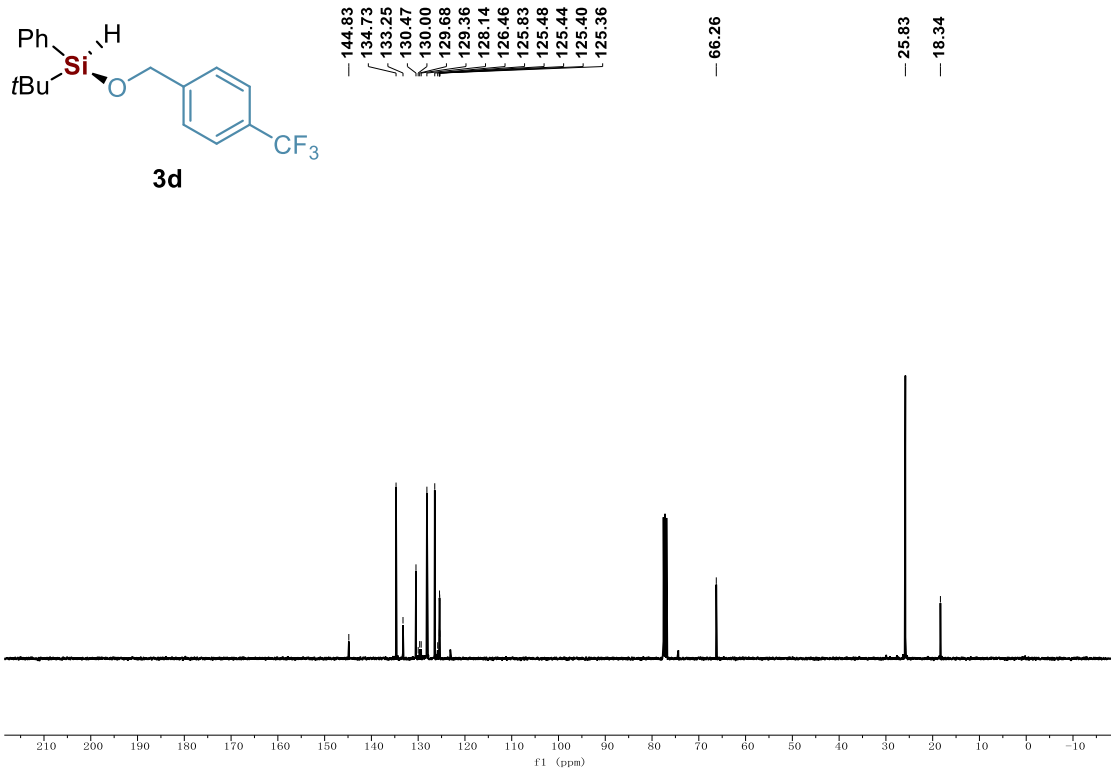
^{13}C NMR spectrum of **3c** (101 MHz, $CDCl_3$)



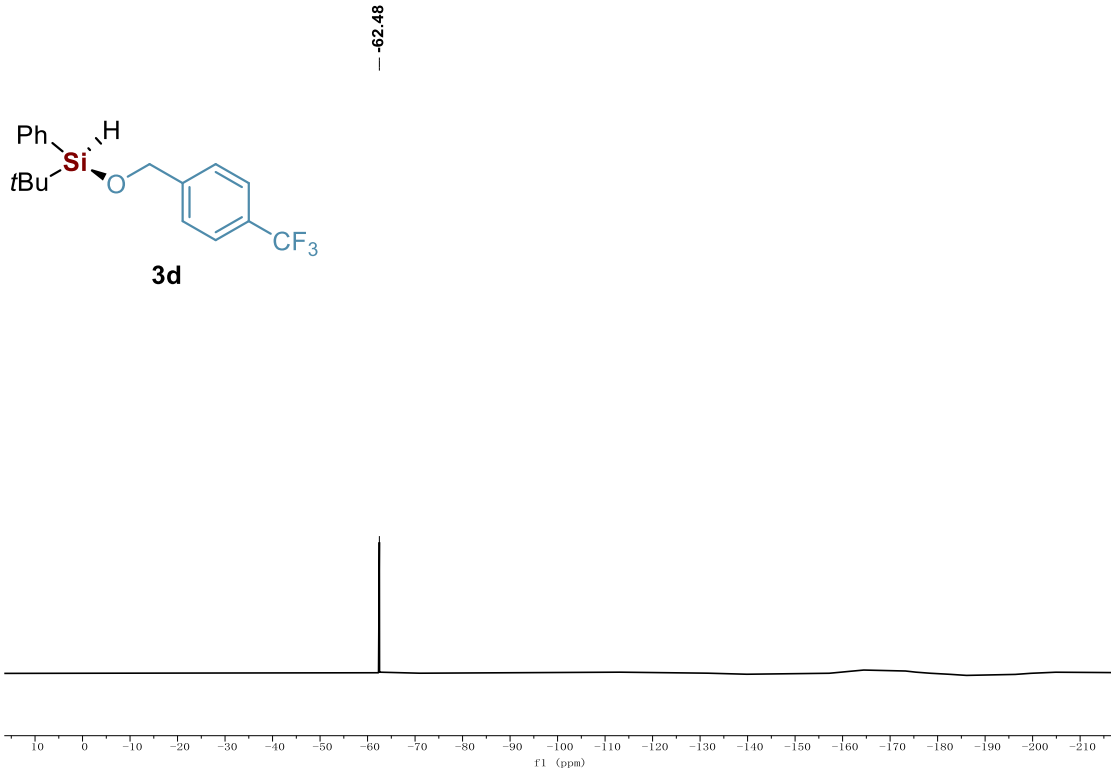
^{1}H NMR spectrum of **3d** (400 MHz, $CDCl_3$)



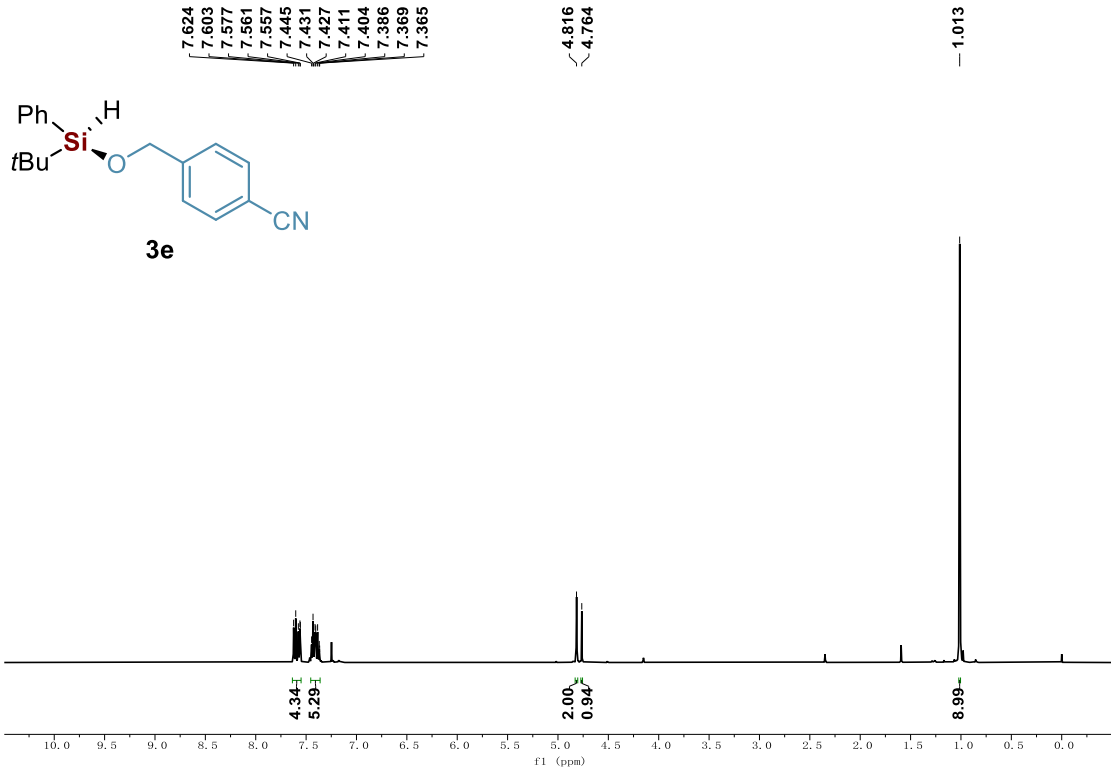
^{13}C NMR spectrum of **3d** (101 MHz, $CDCl_3$)



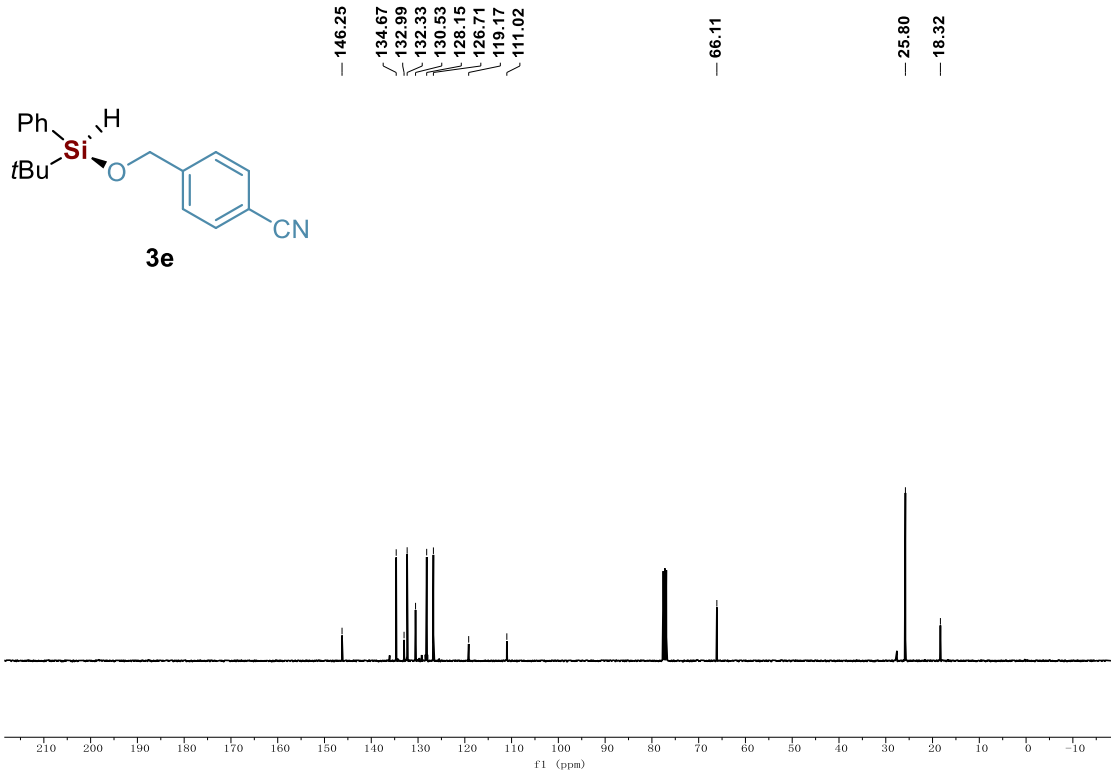
^{19}F NMR spectrum of **3d** (565 MHz, $CDCl_3$)



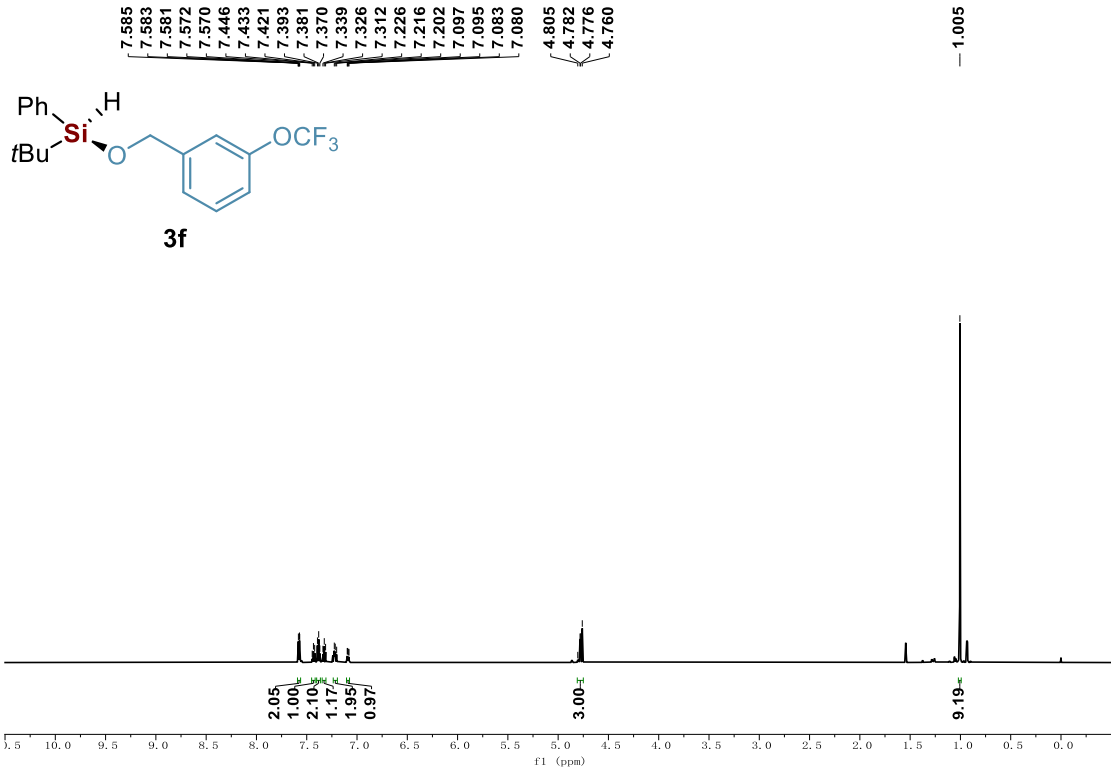
^{1}H NMR spectrum of **3e** (400 MHz, $CDCl_3$)



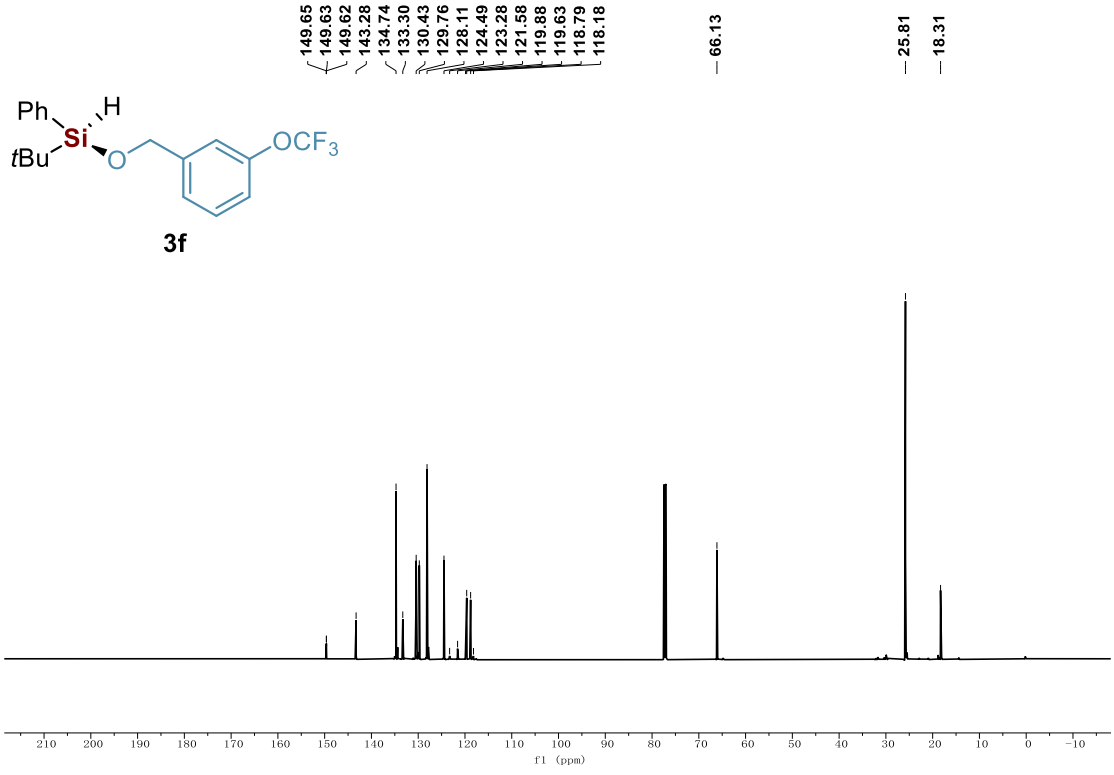
^{13}C NMR spectrum of **3e** (101 MHz, $CDCl_3$)



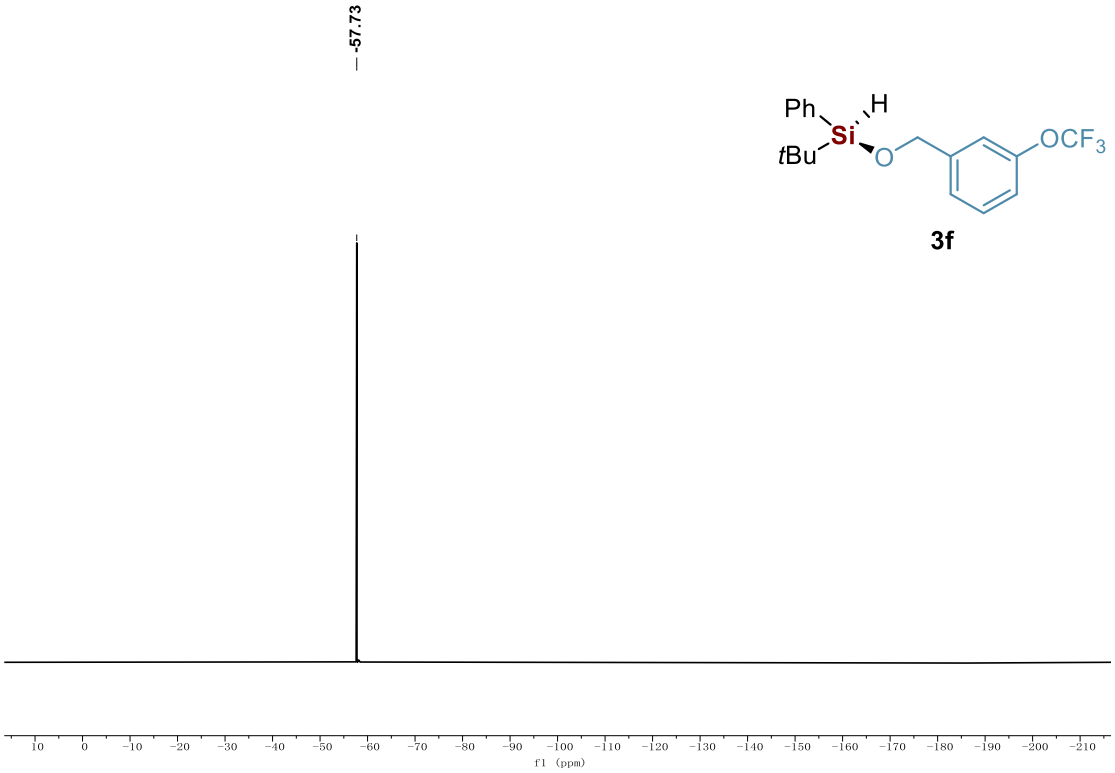
^{1}H NMR spectrum of **3f** (600 MHz, $CDCl_3$)



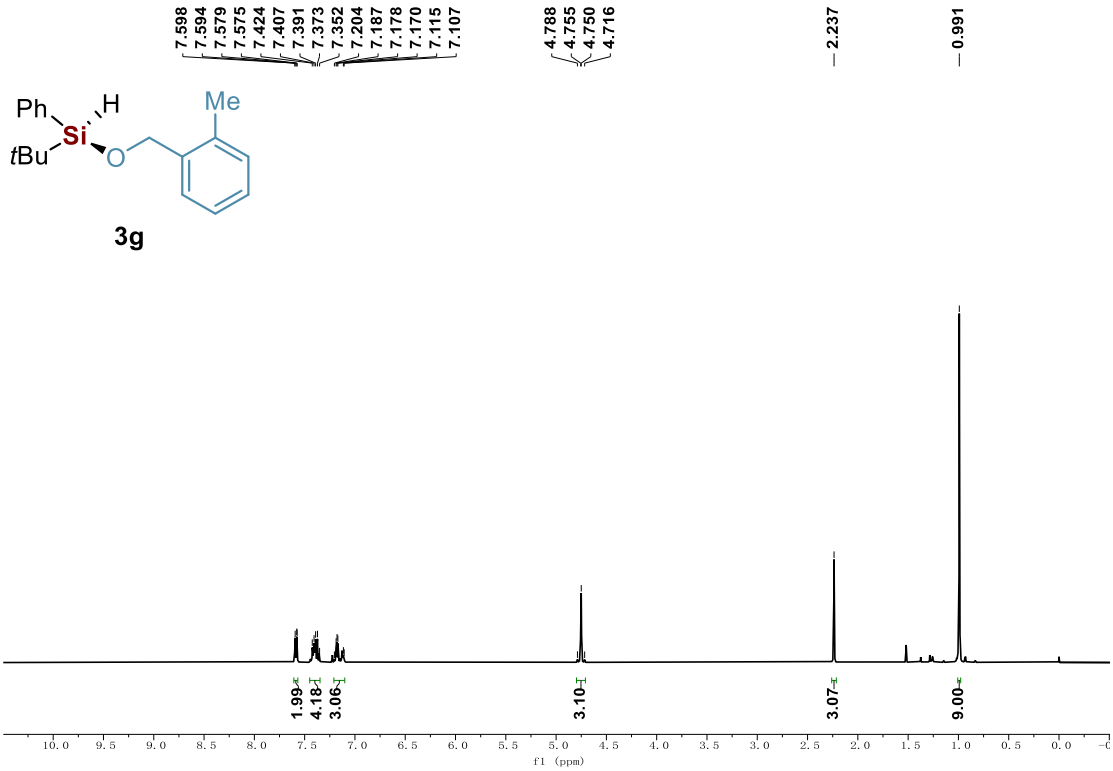
^{13}C NMR spectrum of **3f** (151 MHz, $CDCl_3$)



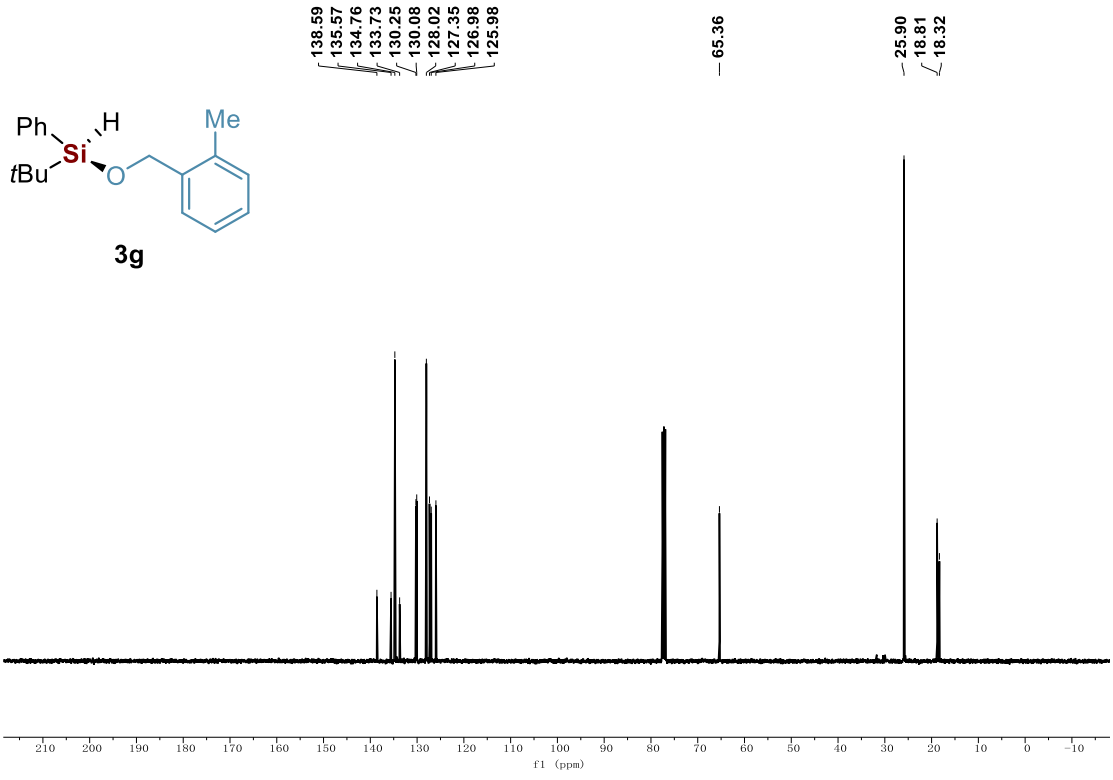
^{19}F NMR spectrum of **3f** (565 MHz, $CDCl_3$)



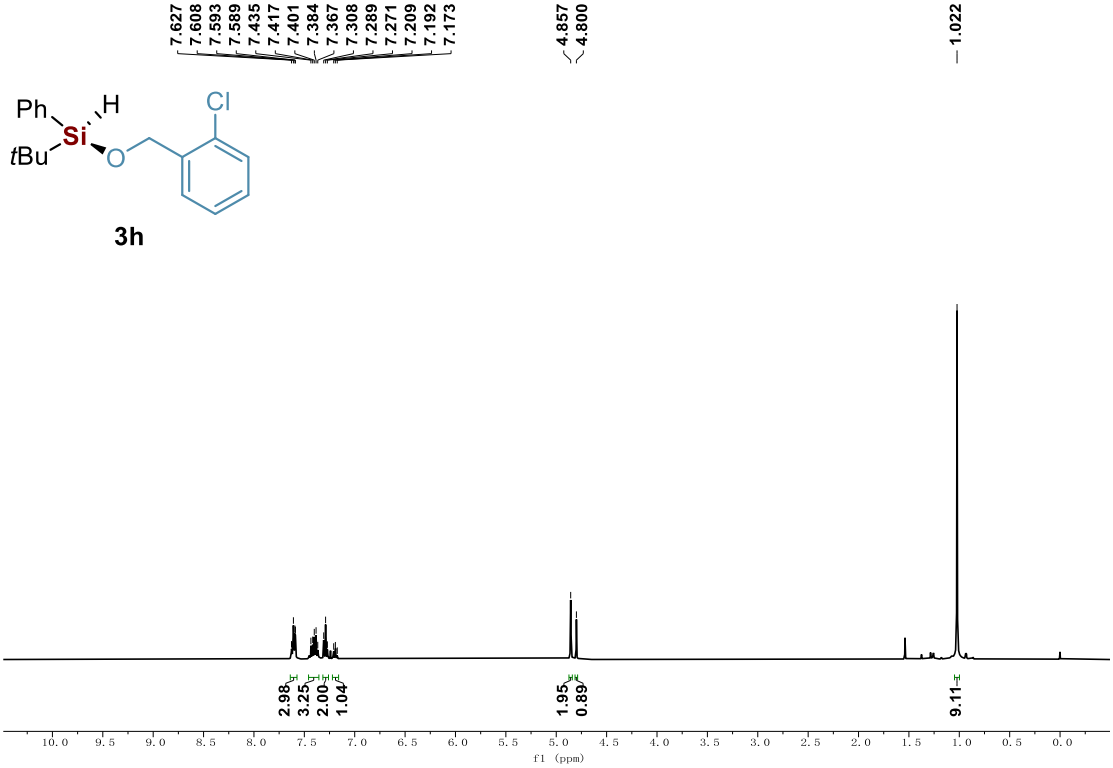
^{1}H NMR spectrum of **3g** (400 MHz, $CDCl_3$)



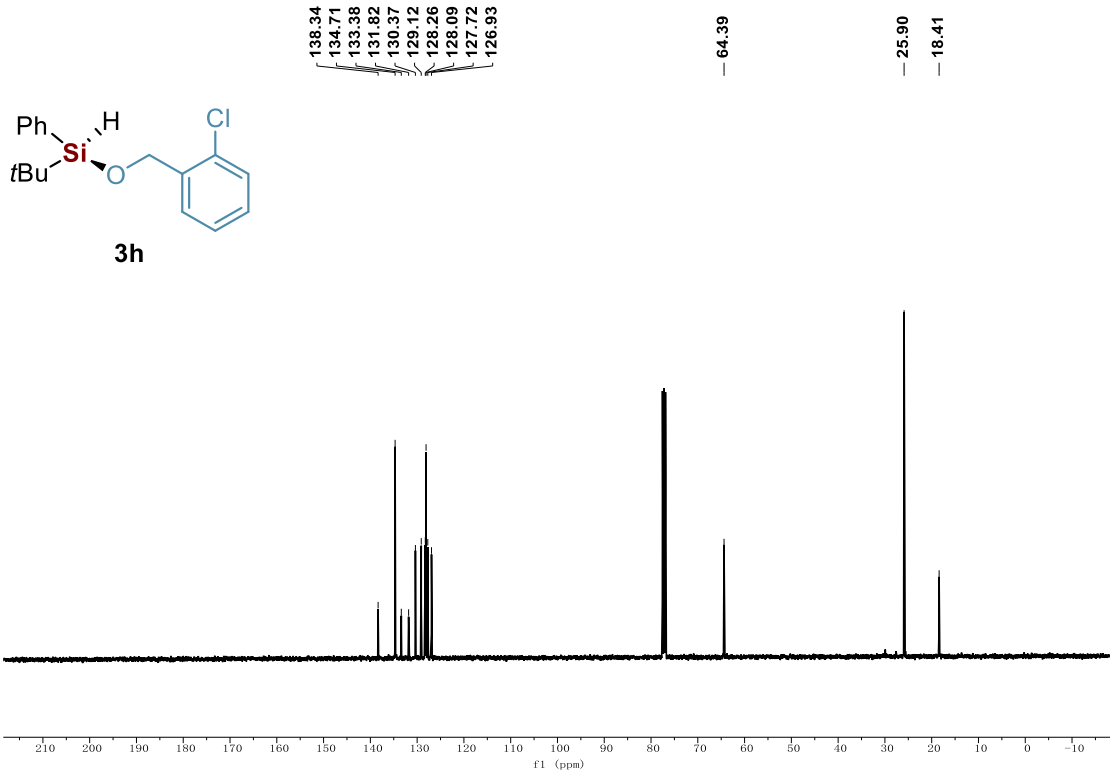
^{13}C NMR spectrum of **3g** (101 MHz, $CDCl_3$)



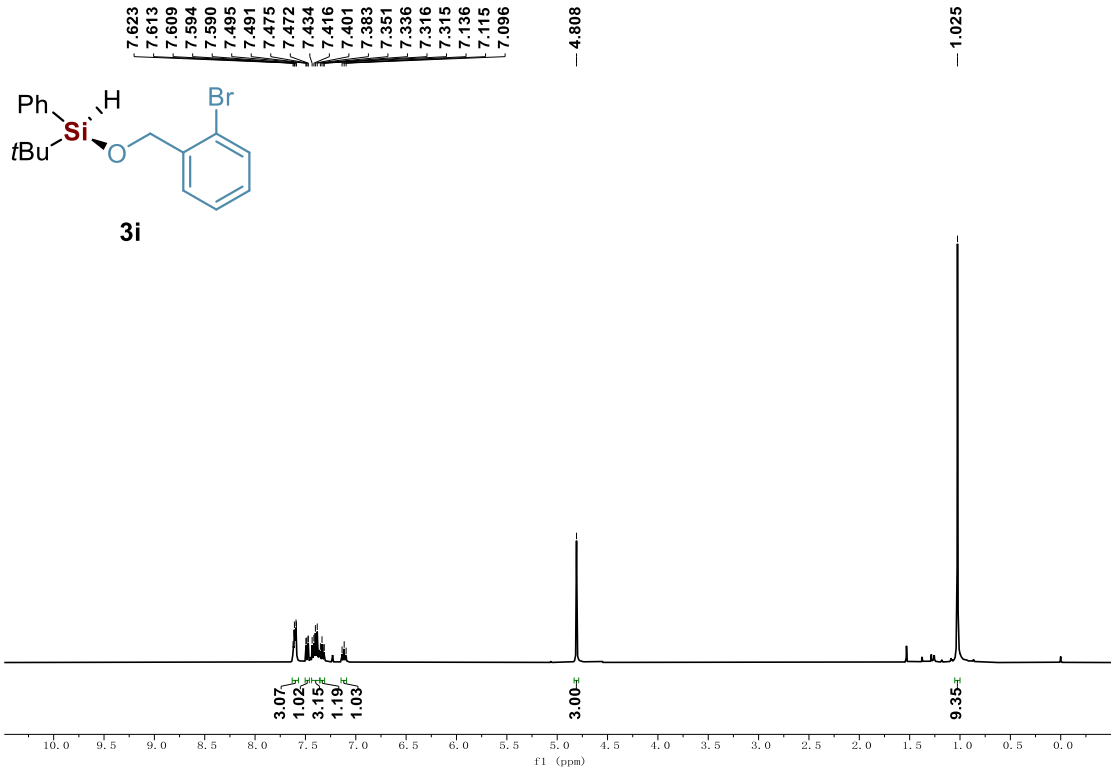
^{1}H NMR spectrum of **3h** (400 MHz, $CDCl_3$)



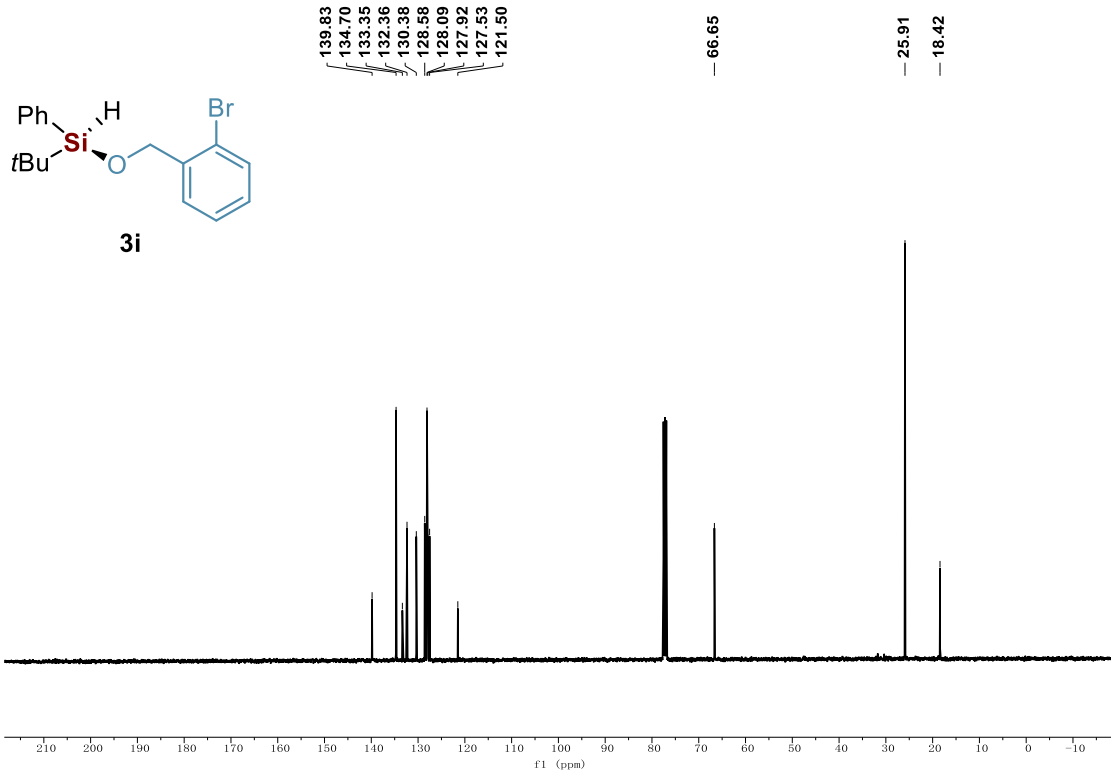
^{13}C NMR spectrum of **3h** (101 MHz, $CDCl_3$)



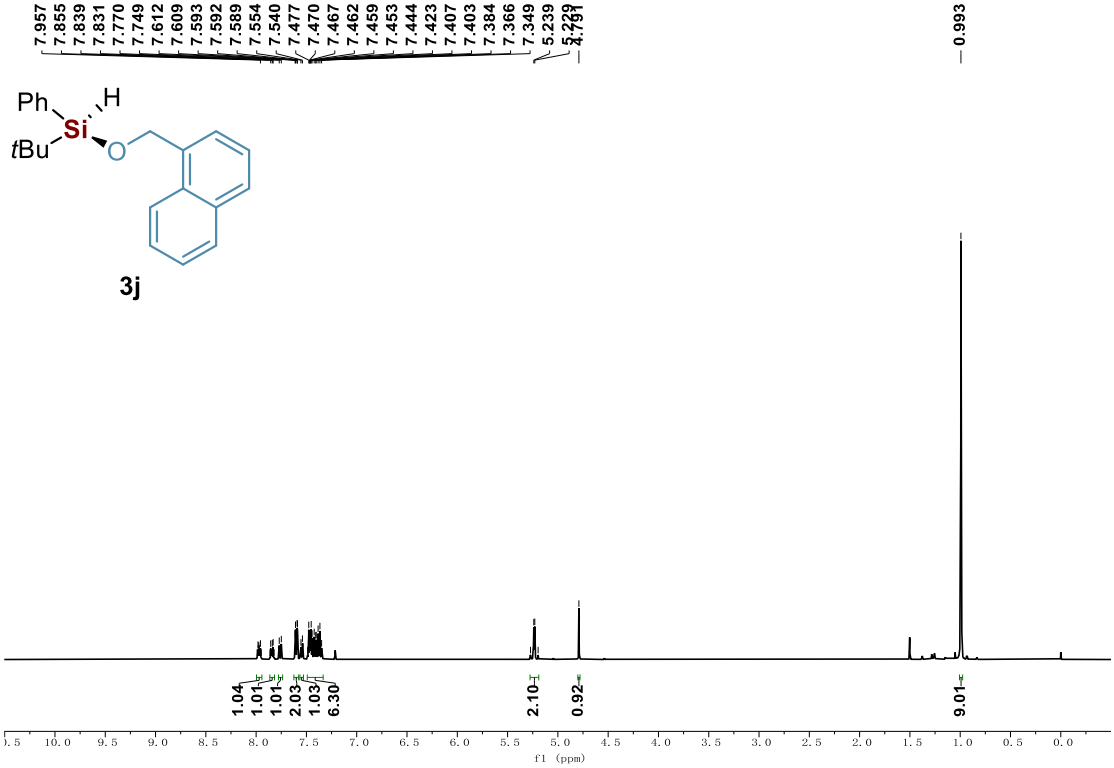
^{1}H NMR spectrum of **3i** (400 MHz, $CDCl_3$)



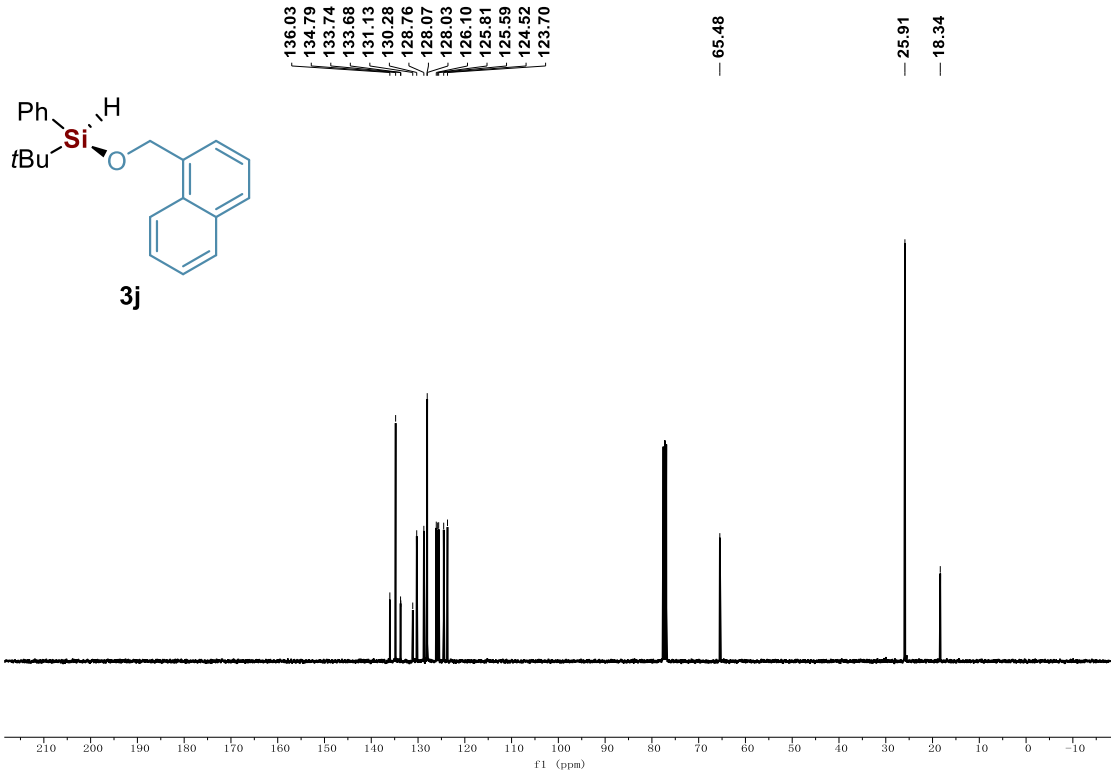
^{13}C NMR spectrum of **3i** (101 MHz, $CDCl_3$)



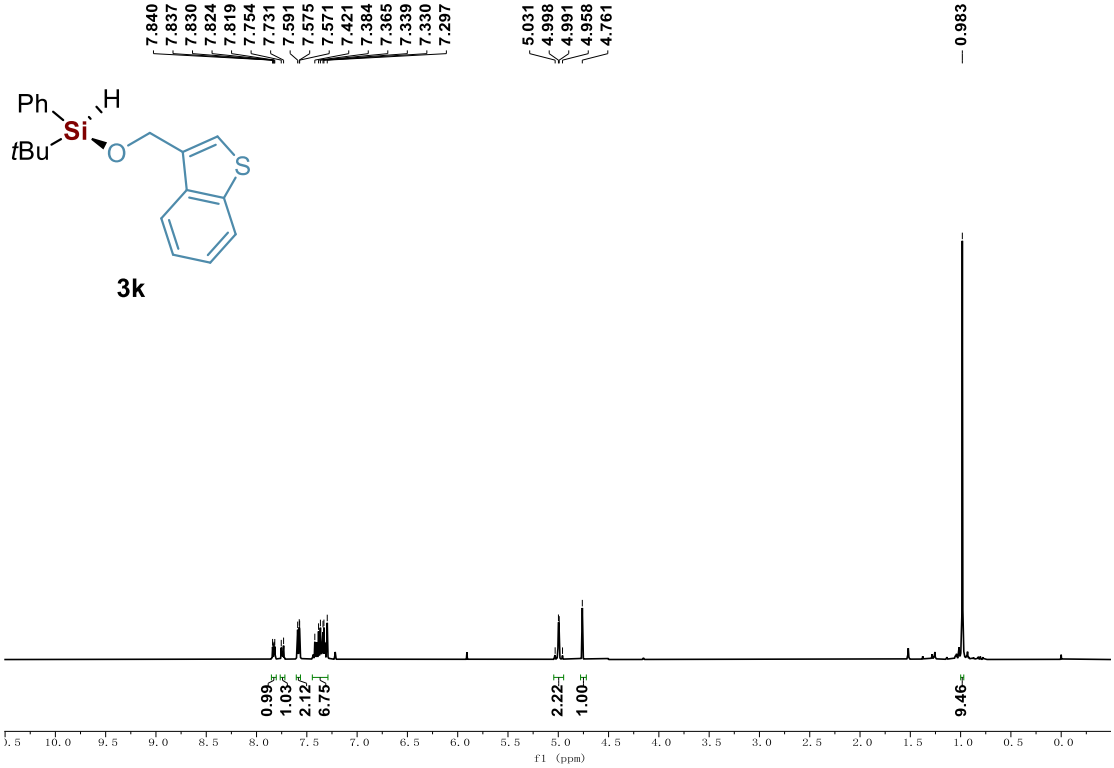
^{1}H NMR spectrum of **3j** (400 MHz, $CDCl_3$)



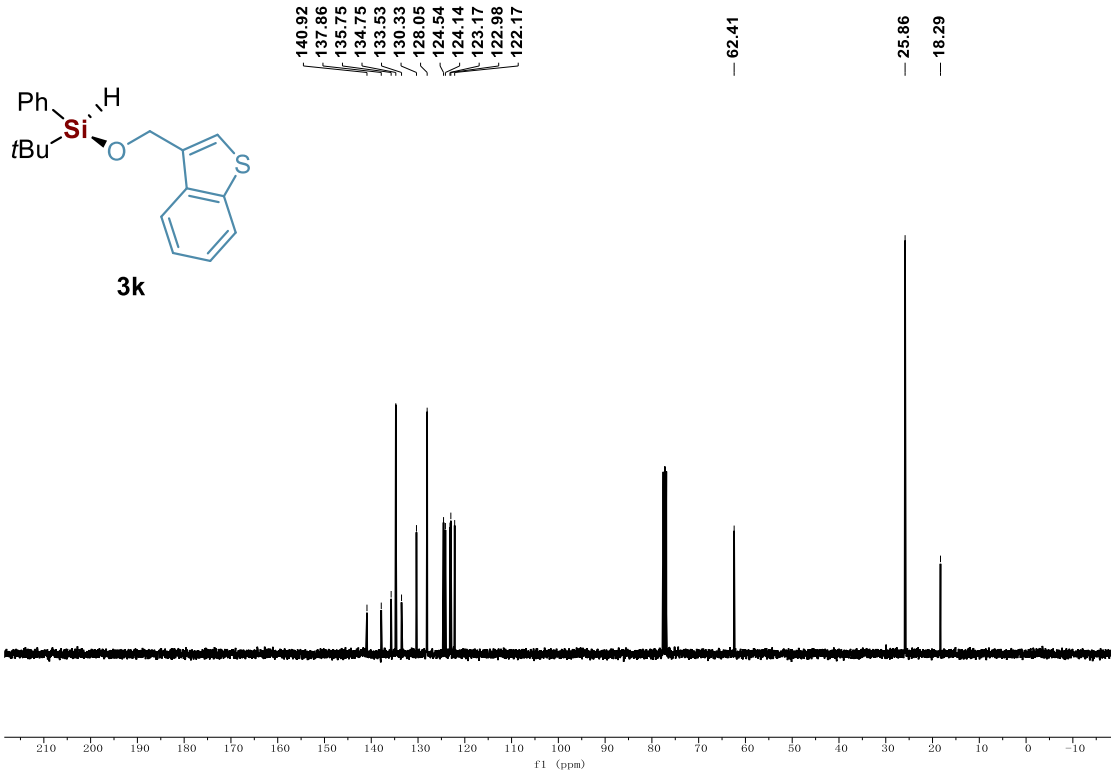
^{13}C NMR spectrum of **3j** (101 MHz, $CDCl_3$)



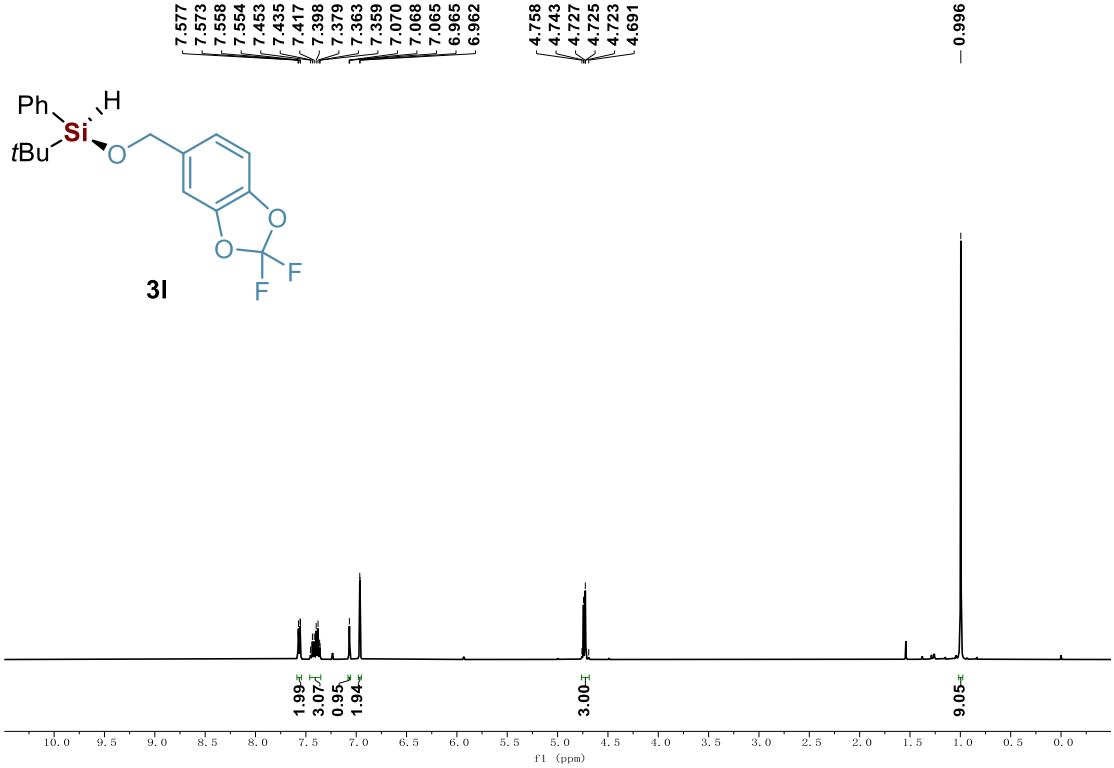
^{1}H NMR spectrum of **3k** (400 MHz, $CDCl_3$)



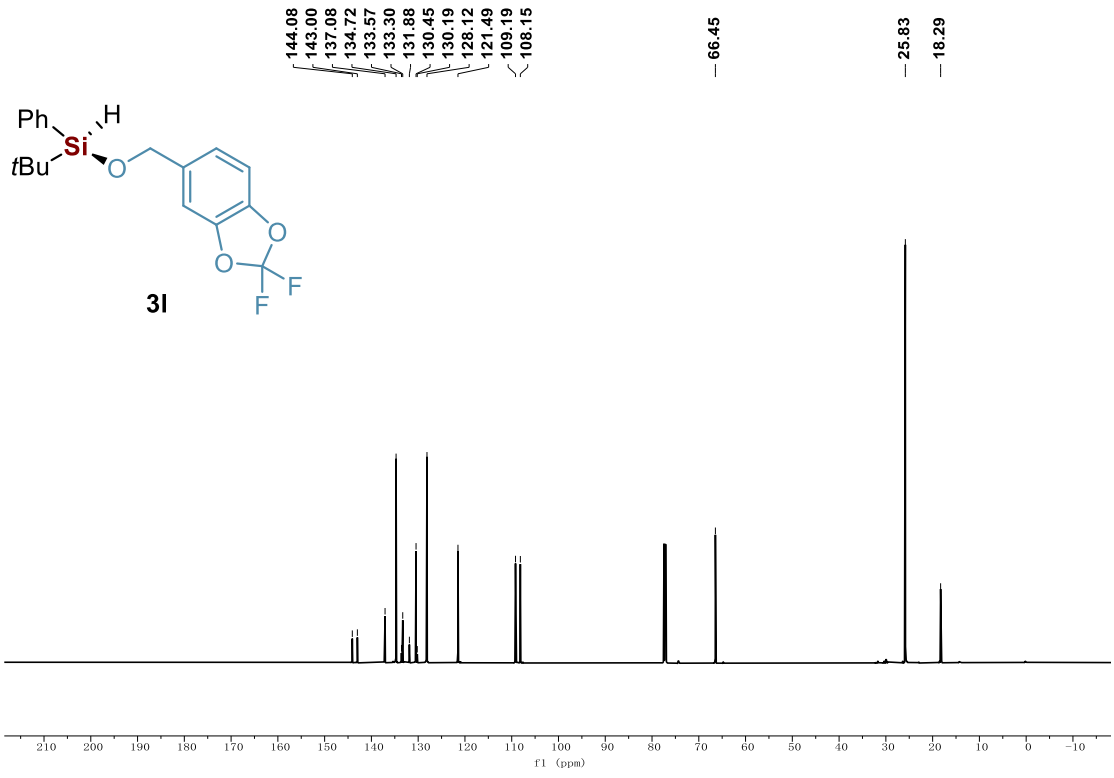
^{13}C NMR spectrum of **3k** (101 MHz, $CDCl_3$)



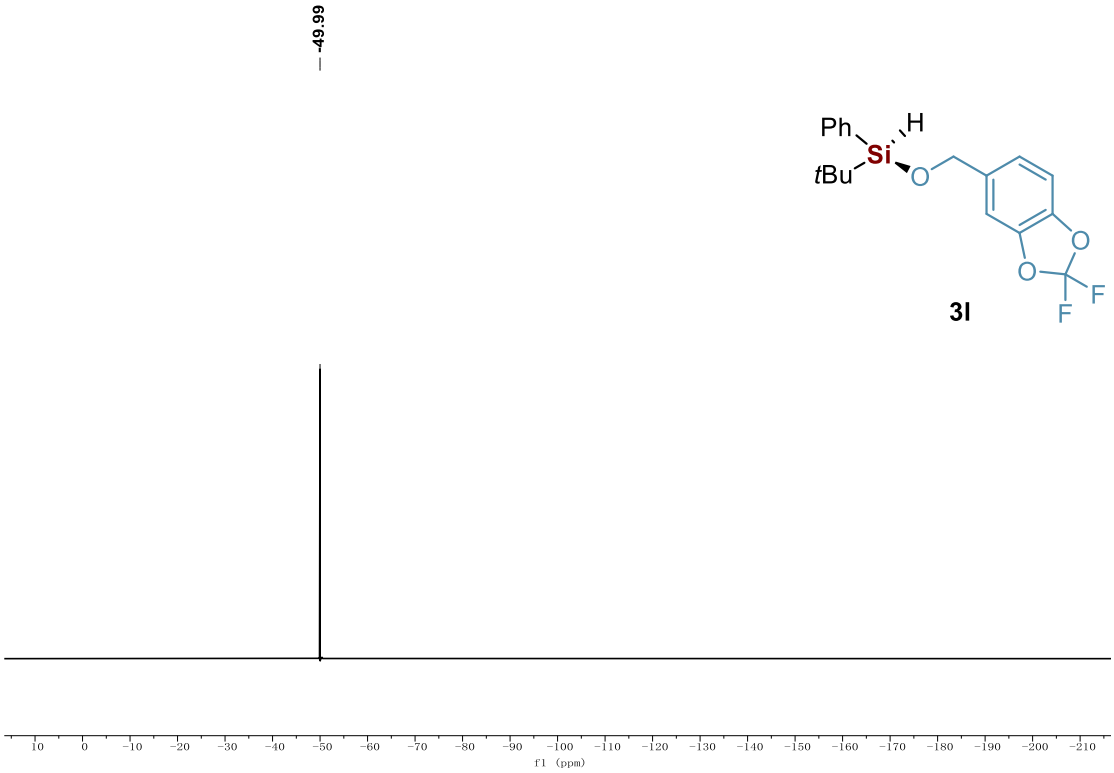
^{1}H NMR spectrum of **3l** (400 MHz, $CDCl_3$)



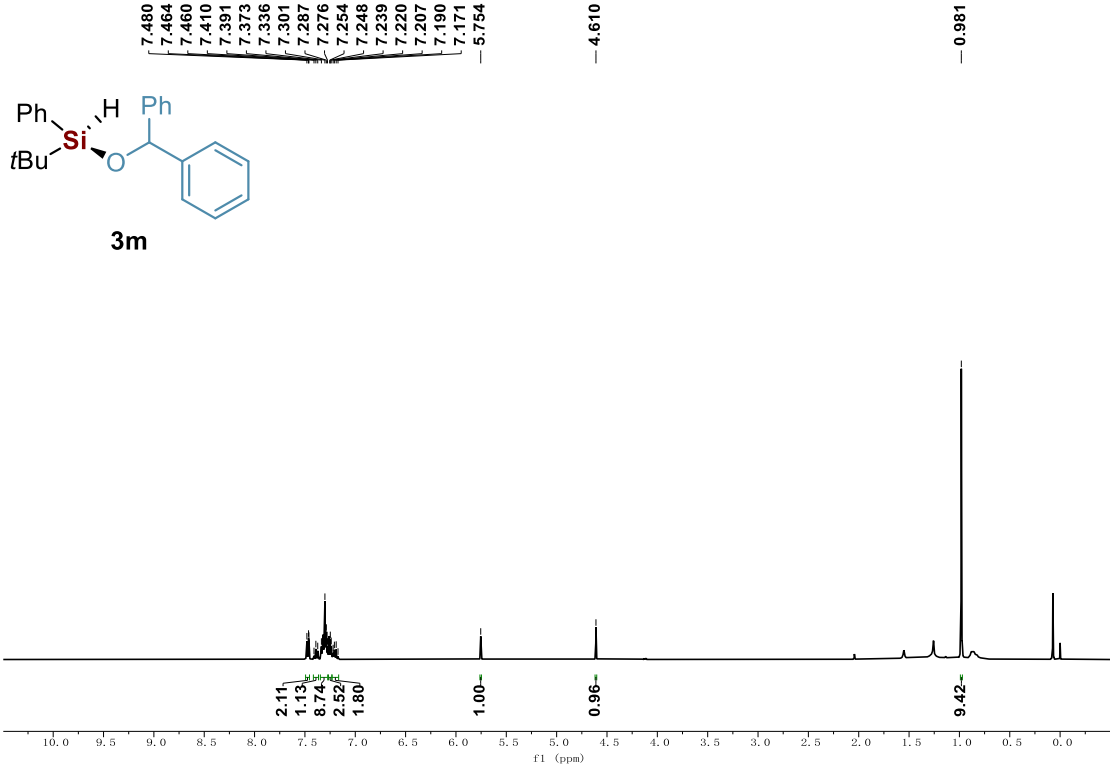
^{13}C NMR spectrum of **3l** (151 MHz, $CDCl_3$)



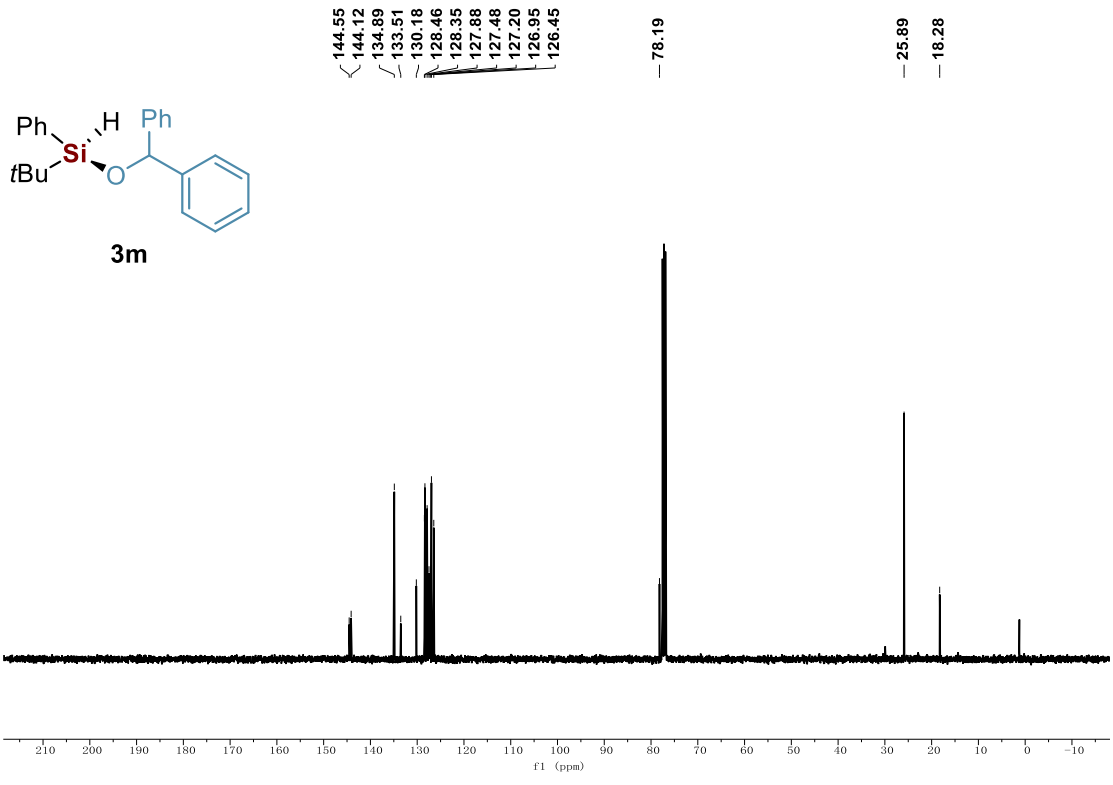
^{19}F NMR spectrum of **3l** (565 MHz, $CDCl_3$)



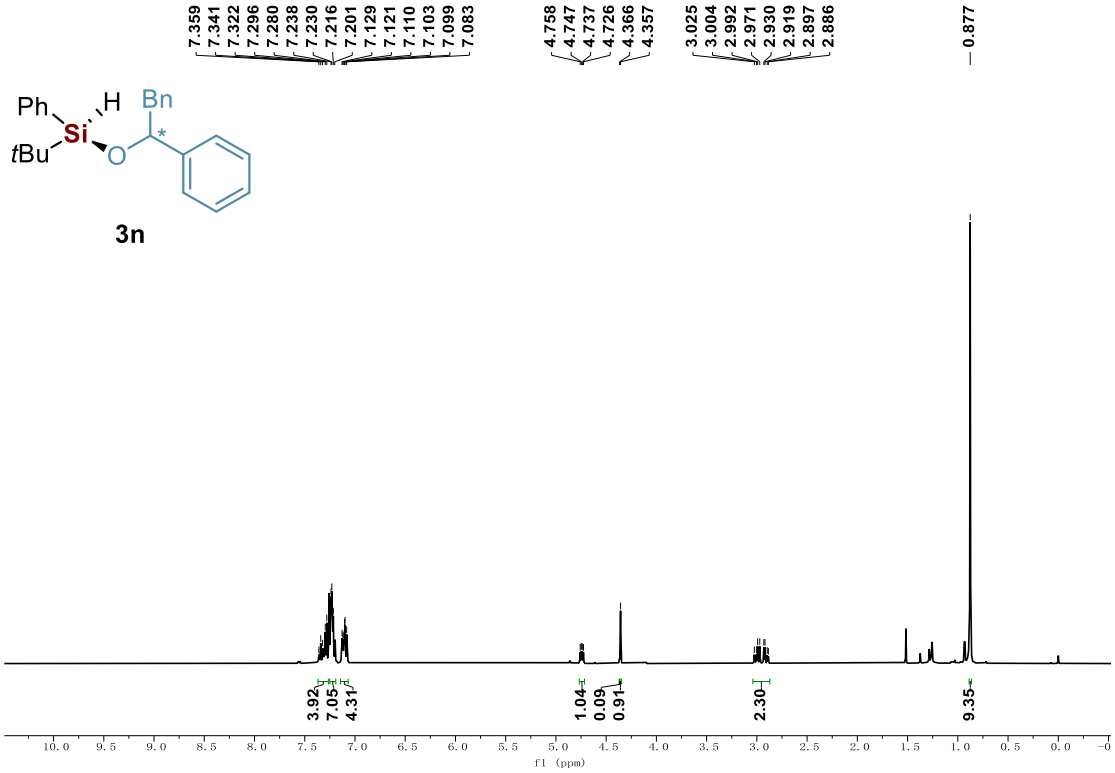
^{1}H NMR spectrum of **3m** (400 MHz, $CDCl_3$)



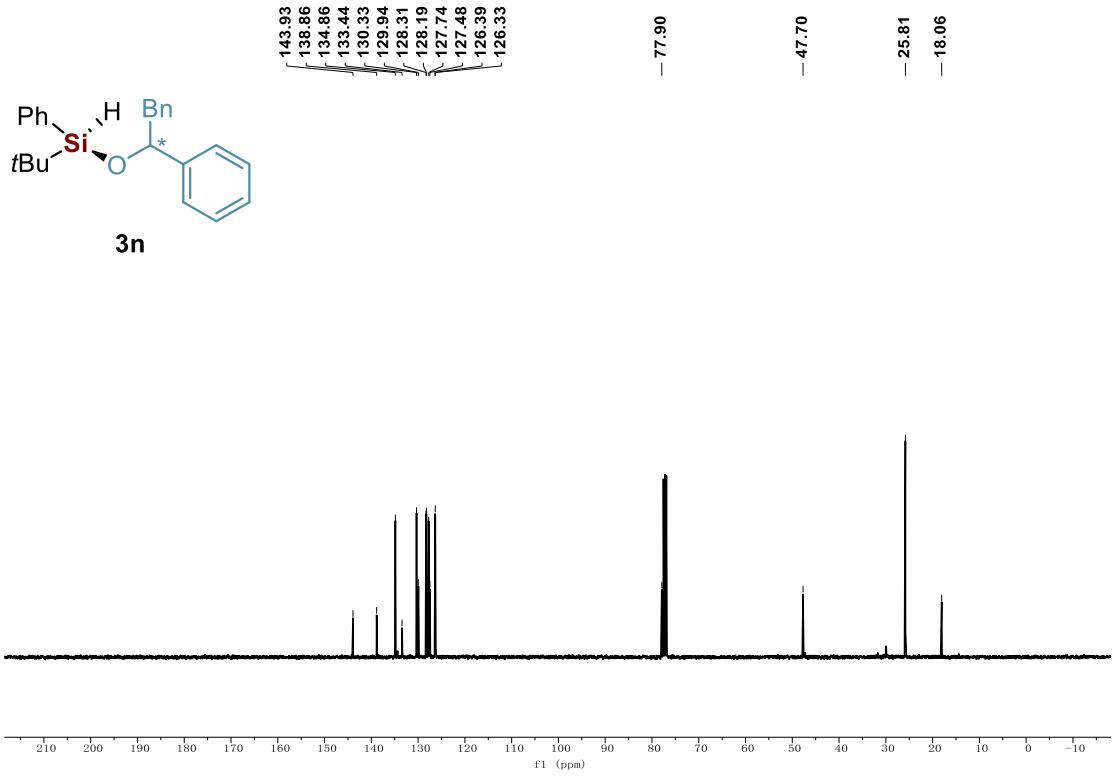
^{13}C NMR spectrum of **3m** (101 MHz, $CDCl_3$)



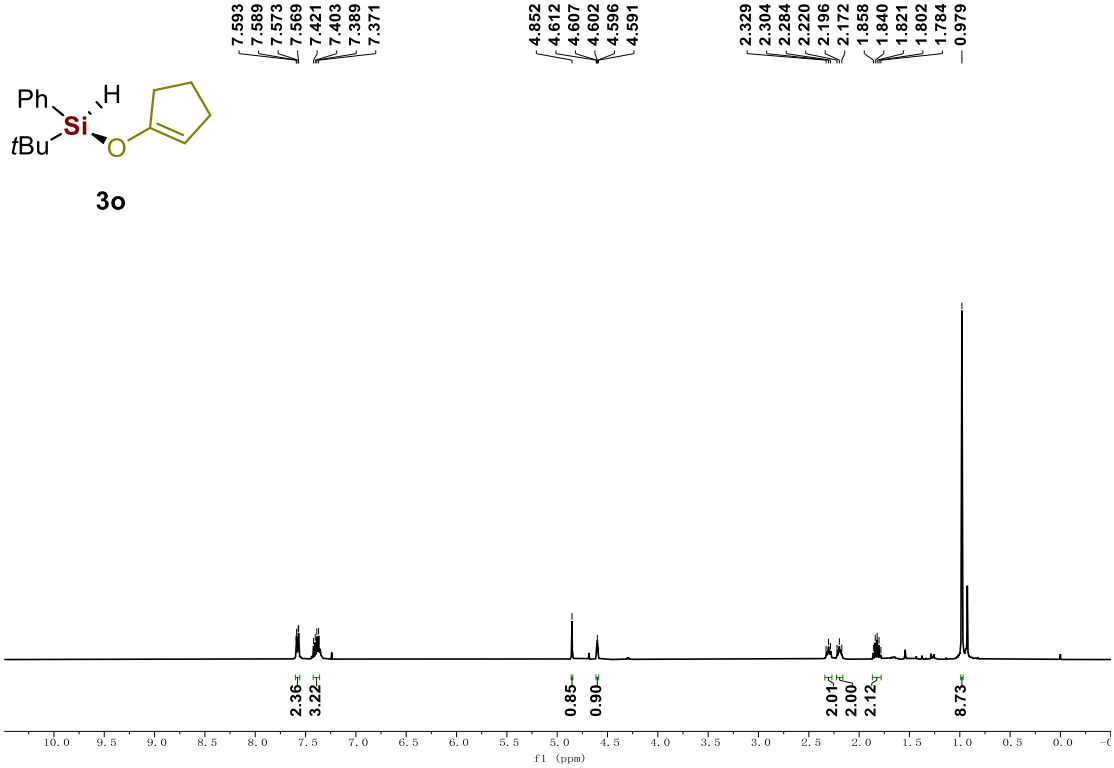
^{1}H NMR spectrum of **3n** (400 MHz, $CDCl_3$)



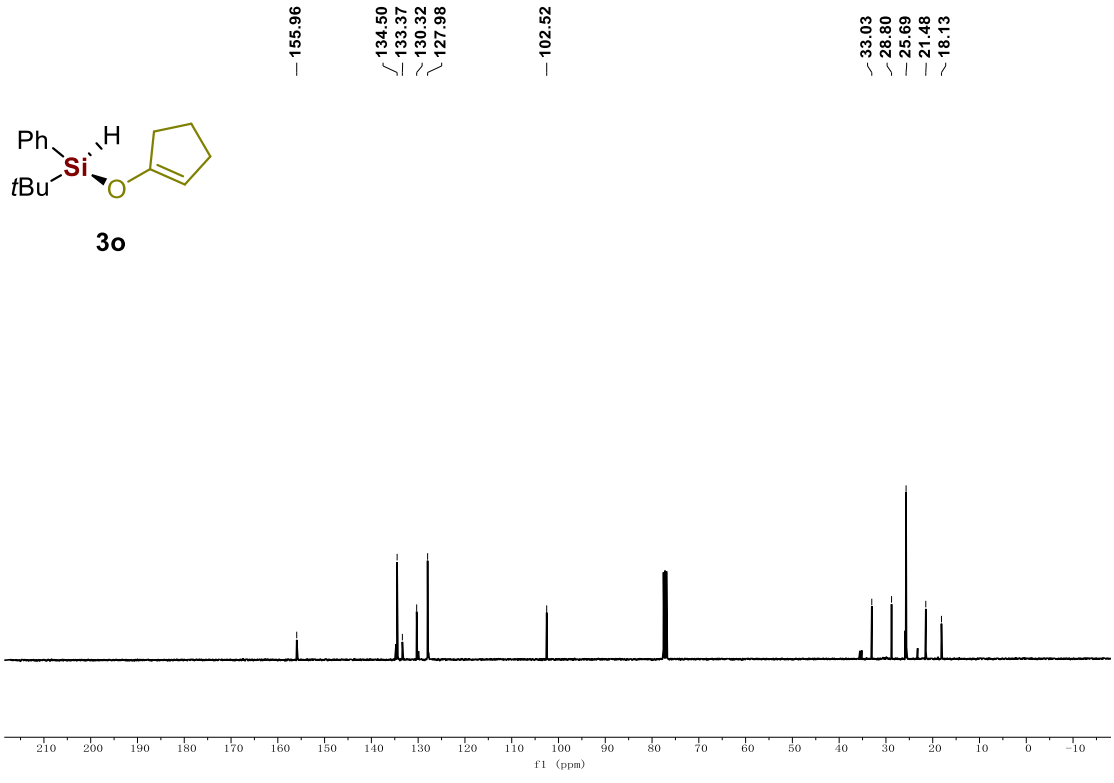
^{13}C NMR spectrum of **3n** (101 MHz, $CDCl_3$)



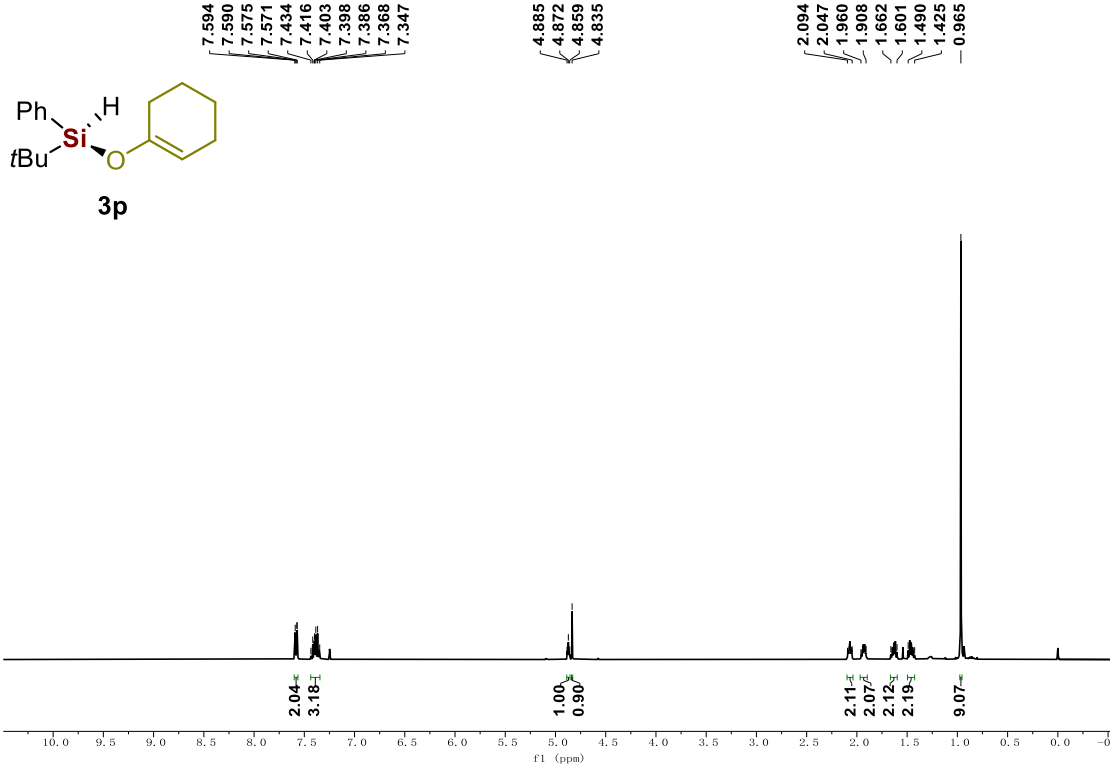
^{1}H NMR spectrum of **3o** (400 MHz, $CDCl_3$)



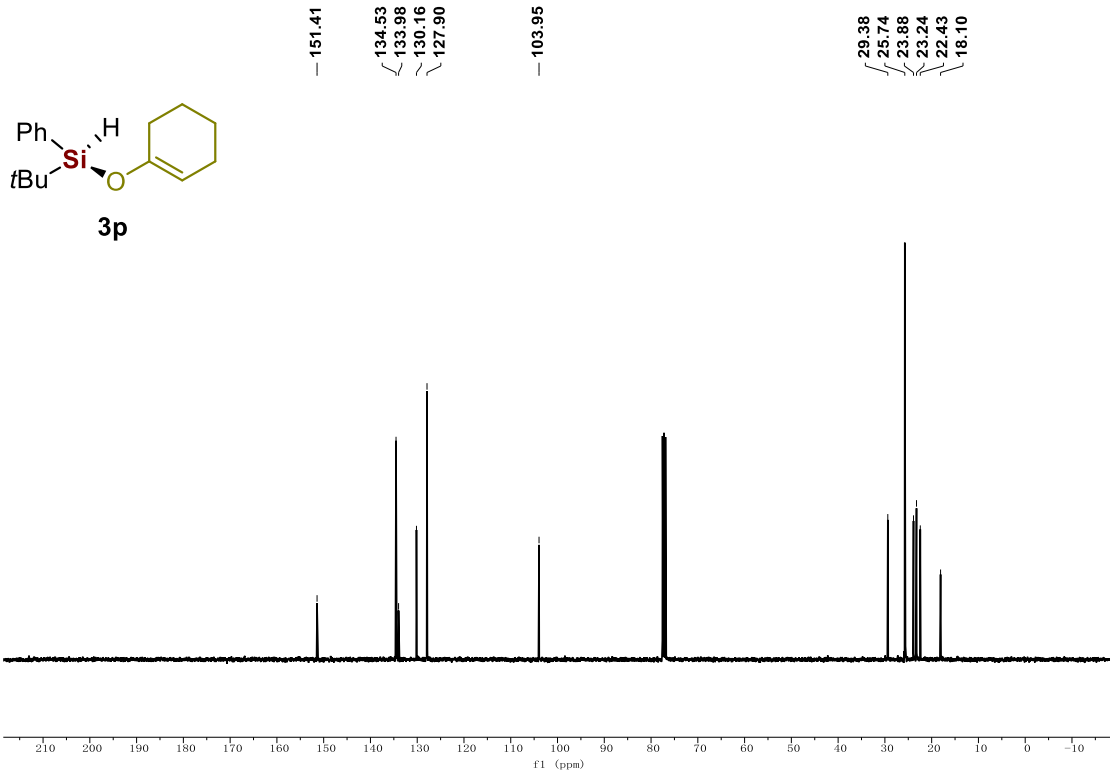
^{13}C NMR spectrum of **3o** (101 MHz, $CDCl_3$)



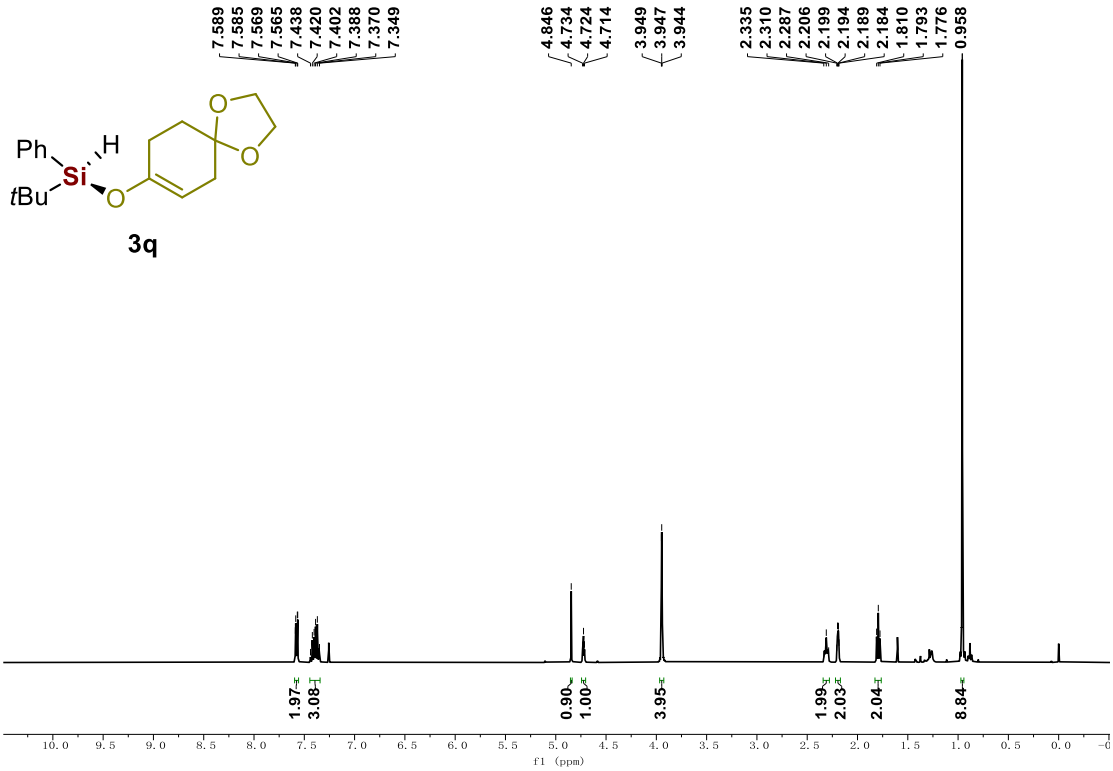
^{1}H NMR spectrum of **3p** (400 MHz, $CDCl_3$)



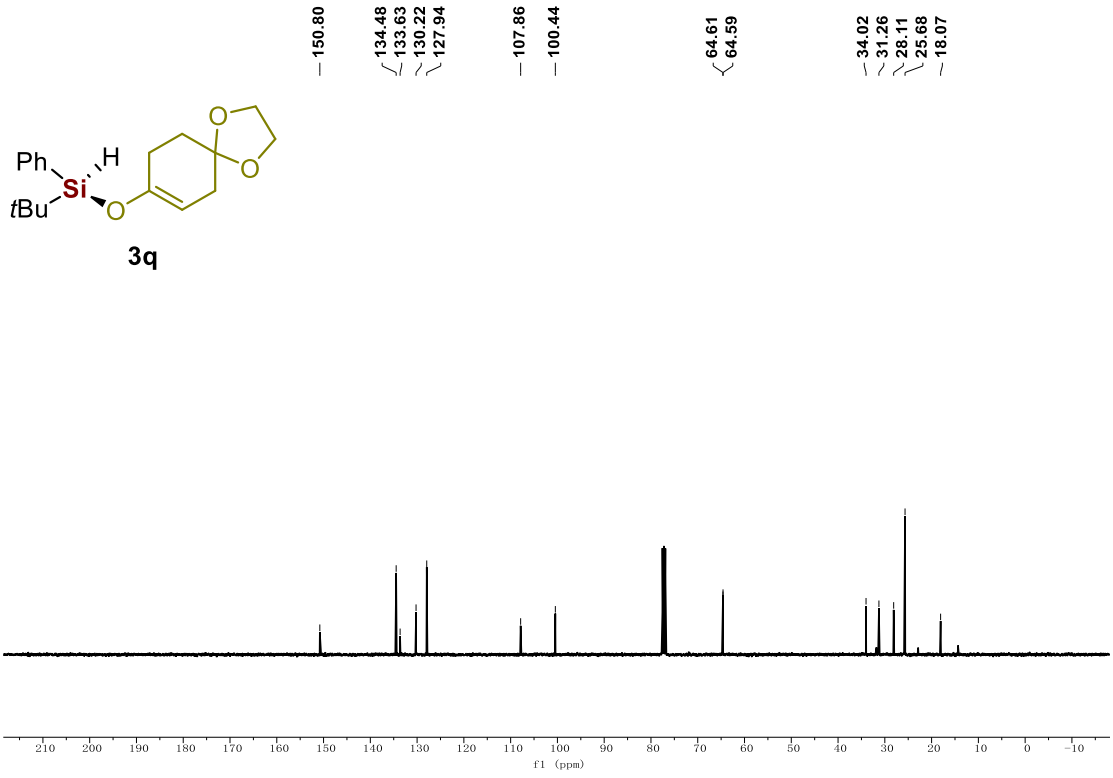
^{13}C NMR spectrum of **3p** (101 MHz, $CDCl_3$)



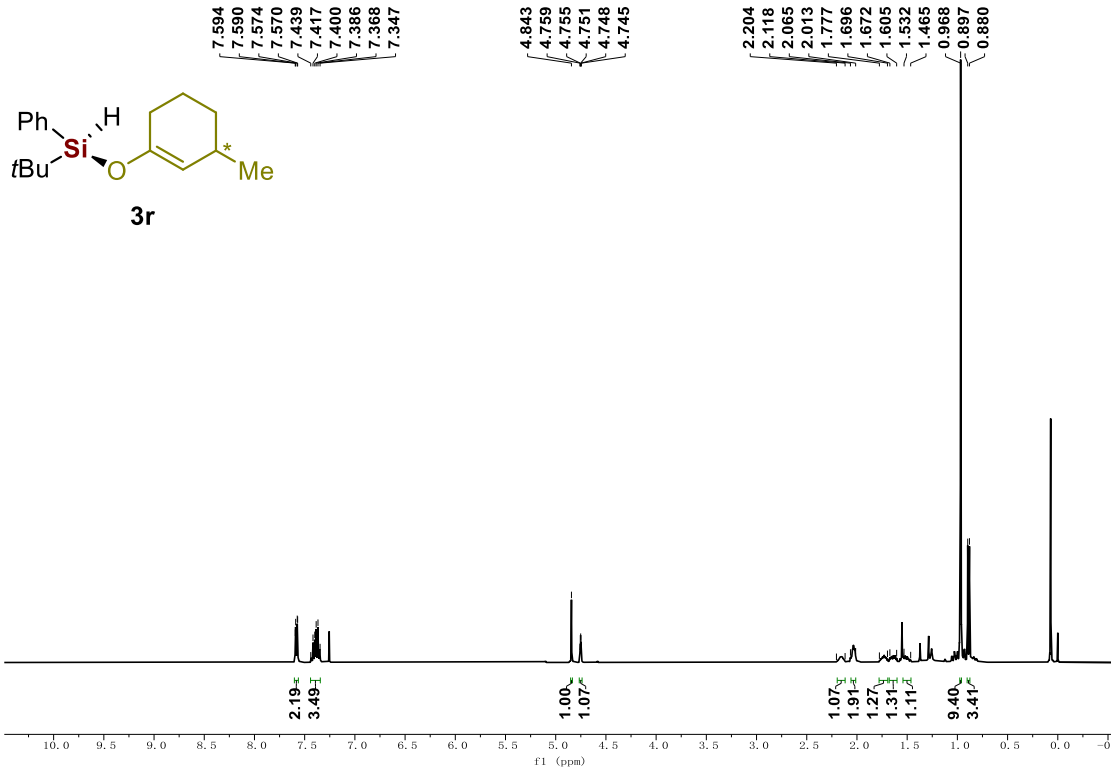
^{1}H NMR spectrum of **3q** (400 MHz, $CDCl_3$)



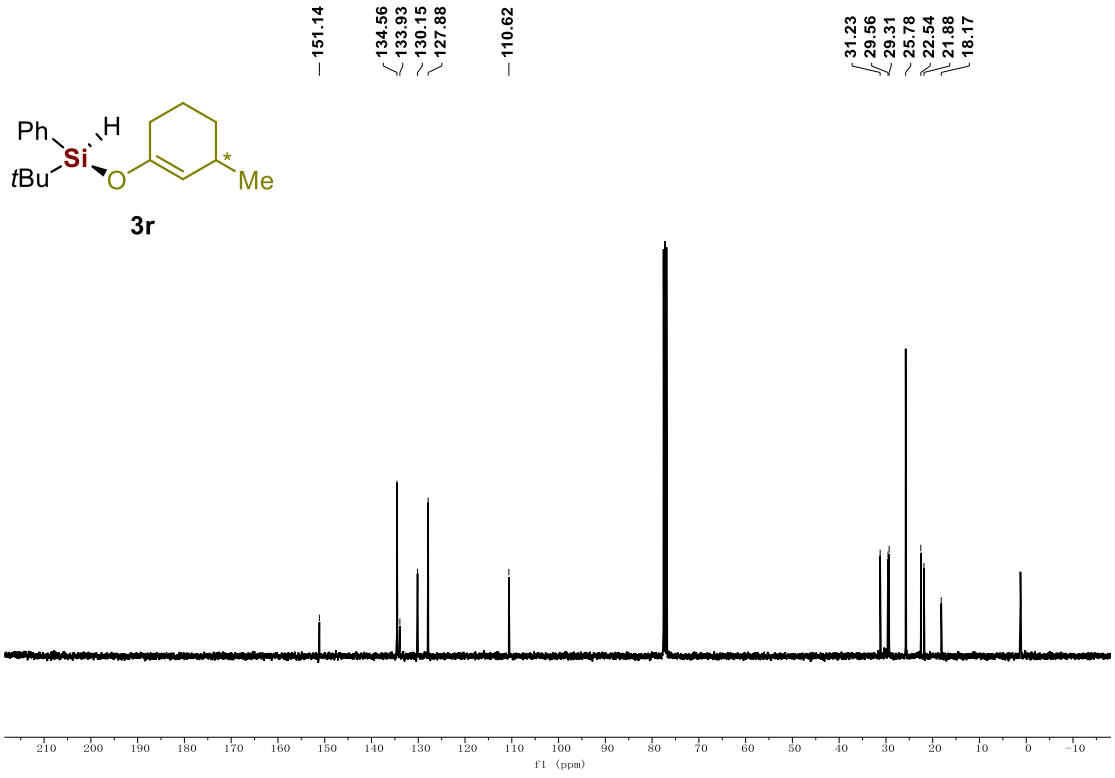
^{13}C NMR spectrum of **3q** (101 MHz, $CDCl_3$)



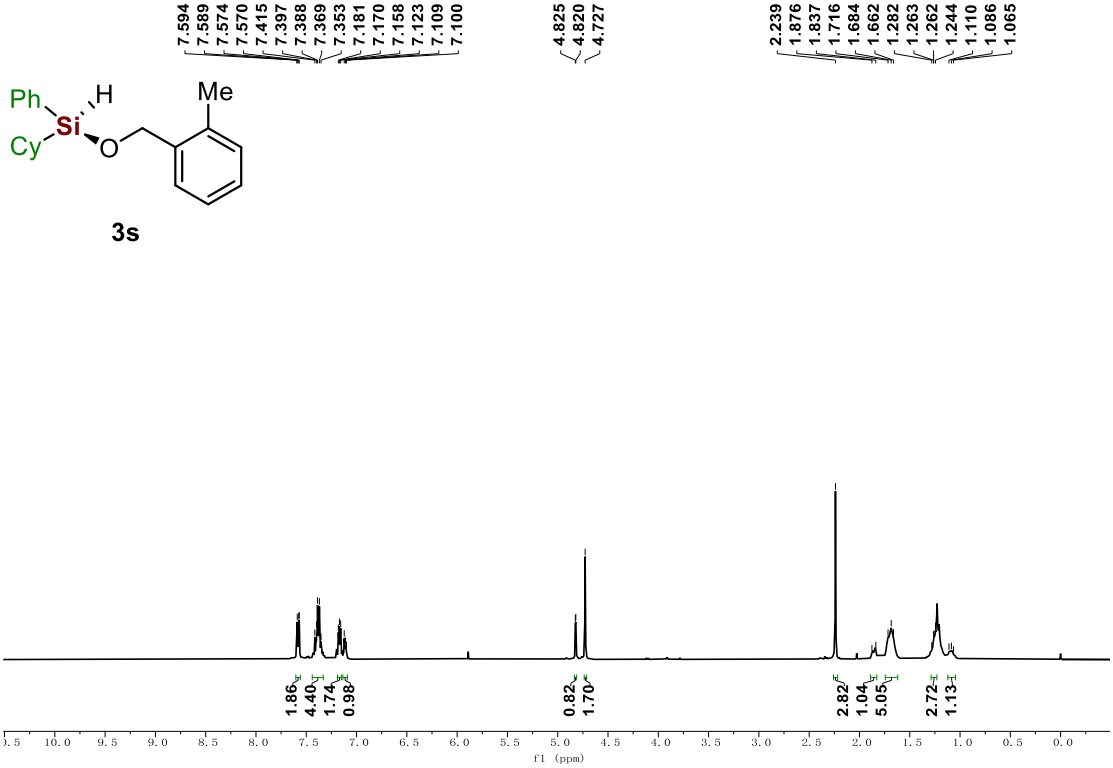
^{1}H NMR spectrum of **3r** (400 MHz, $CDCl_3$)



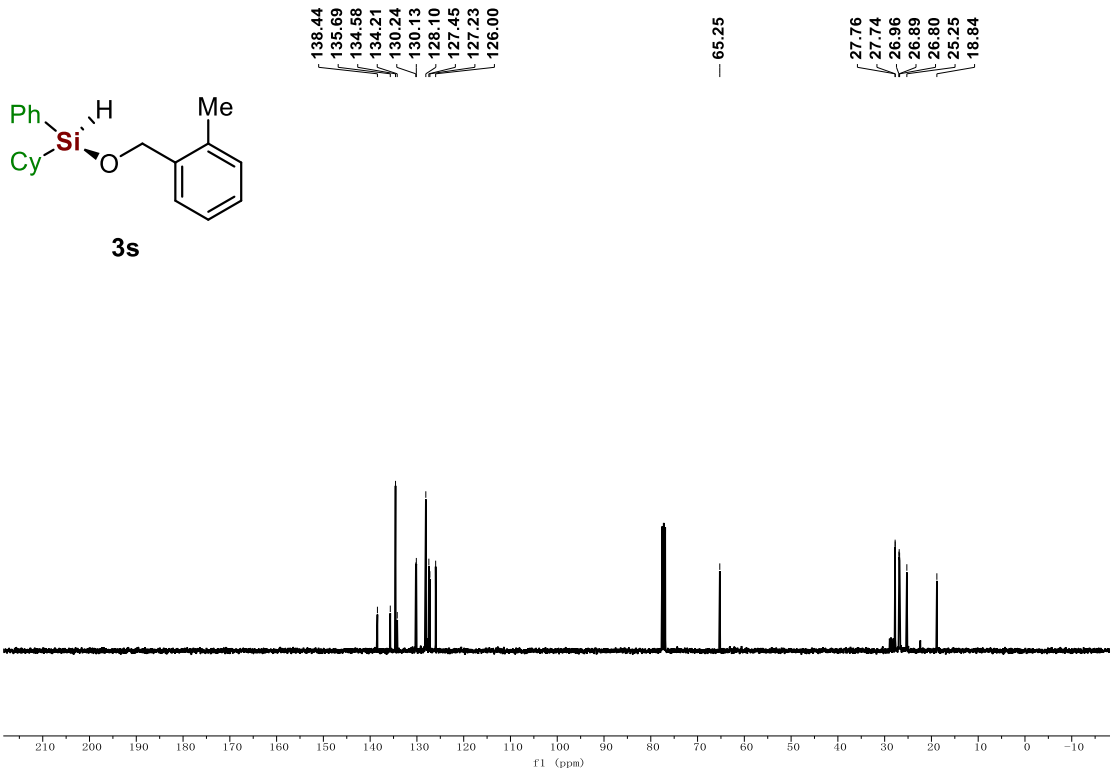
^{13}C NMR spectrum of **3r** (101 MHz, $CDCl_3$)



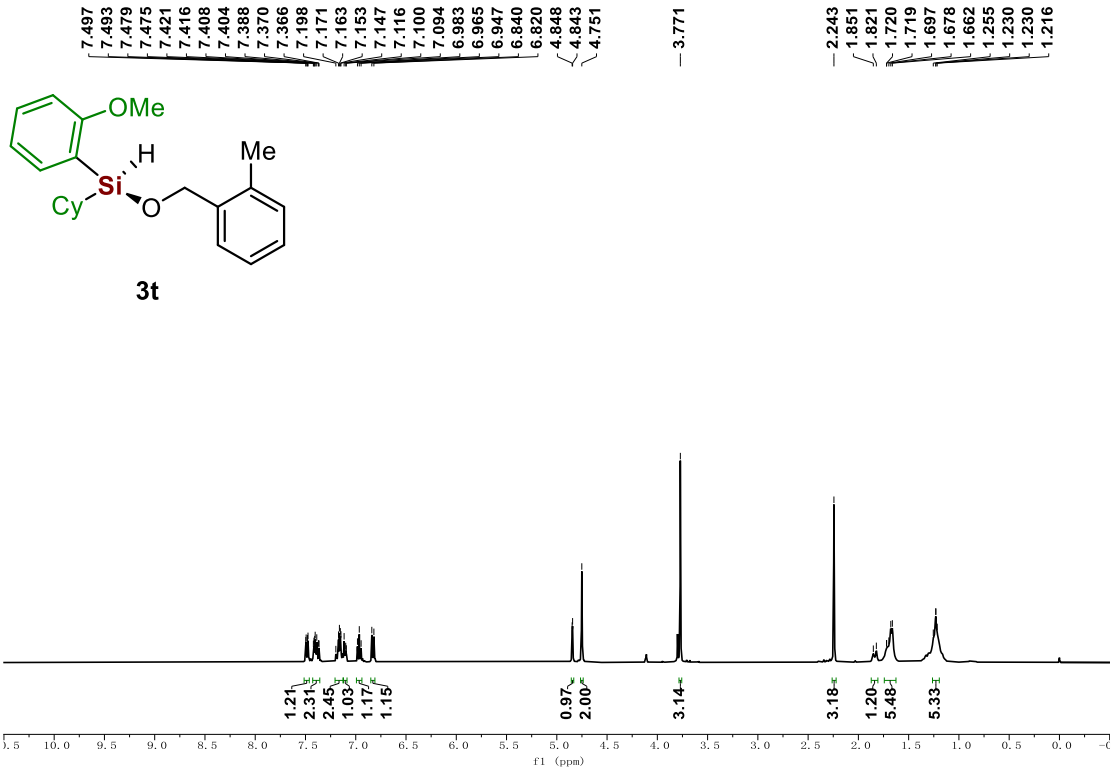
^{1}H NMR spectrum of **3s** (400 MHz, $CDCl_3$)



^{13}C NMR spectrum of **3s** (101 MHz, $CDCl_3$)

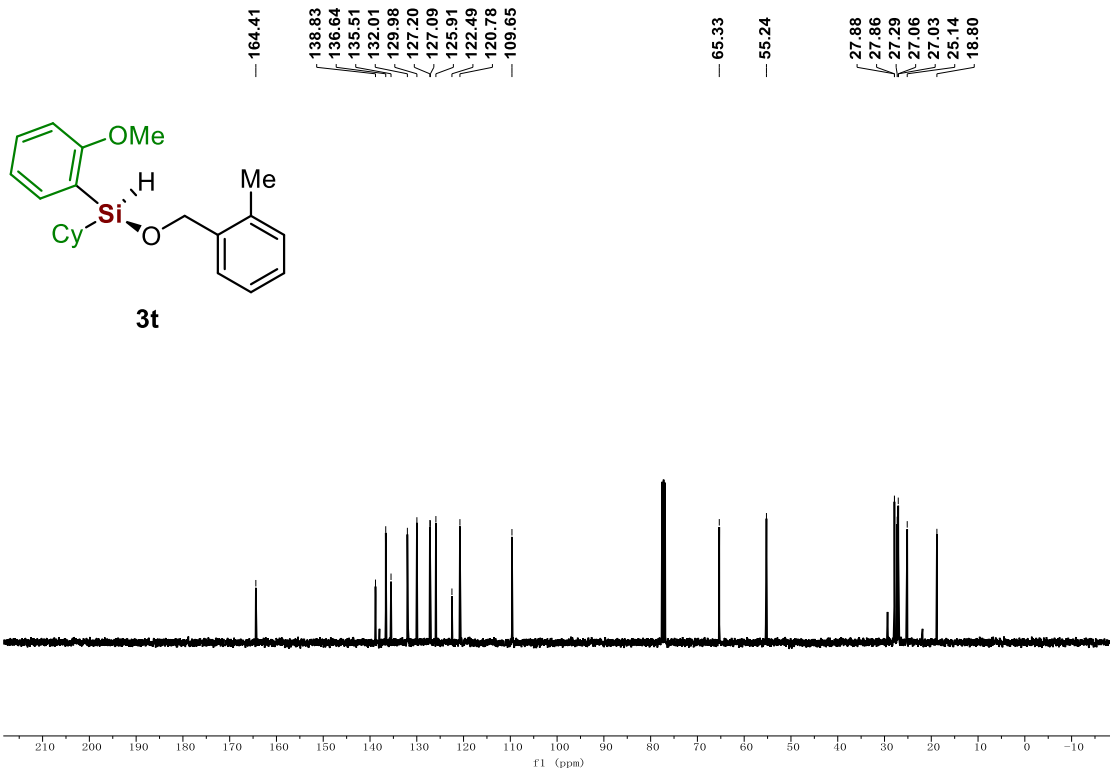


^{1}H NMR spectrum of **3t** (400 MHz, $CDCl_3$)



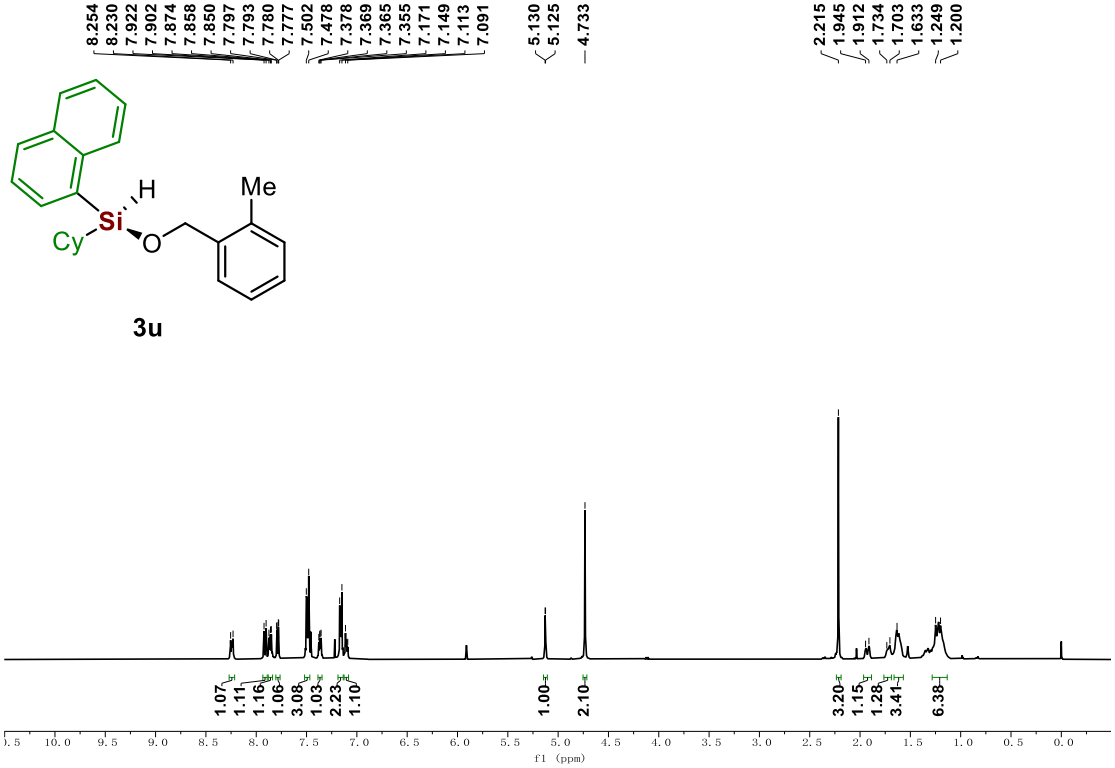
3t

^{13}C NMR spectrum of **3t** (101 MHz, $CDCl_3$)



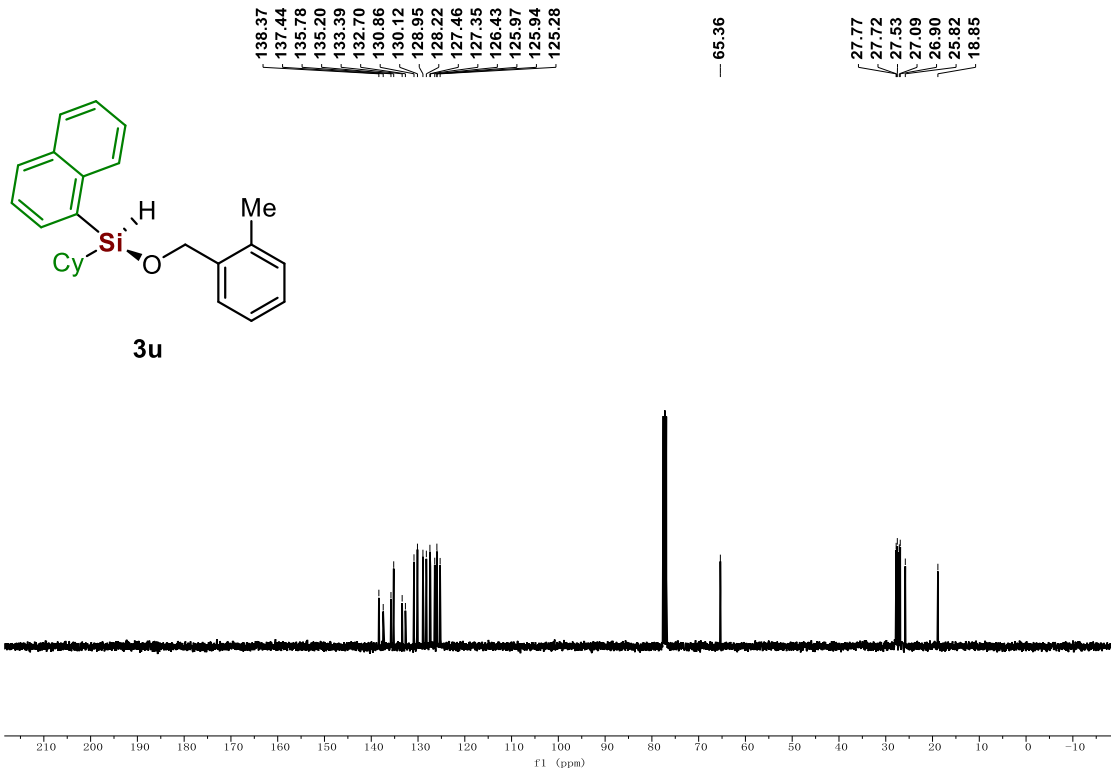
3t

^{1}H NMR spectrum of **3u** (400 MHz, $CDCl_3$)



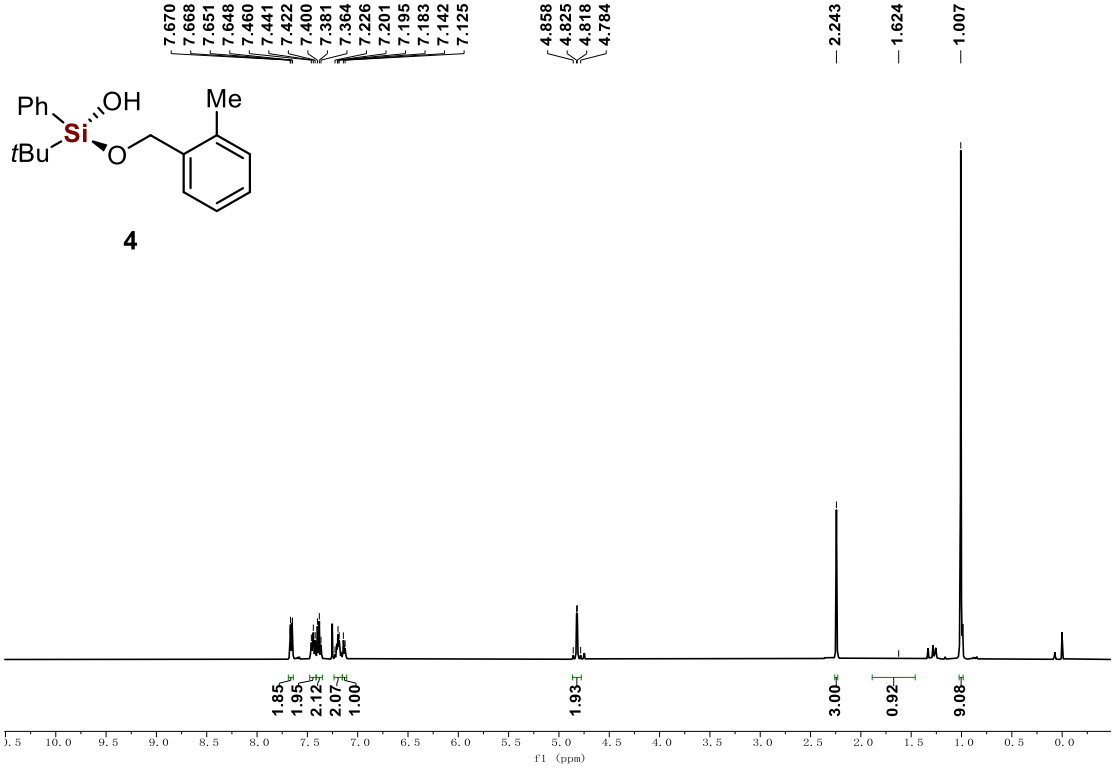
3u

^{13}C NMR spectrum of **3u** (101 MHz, $CDCl_3$)

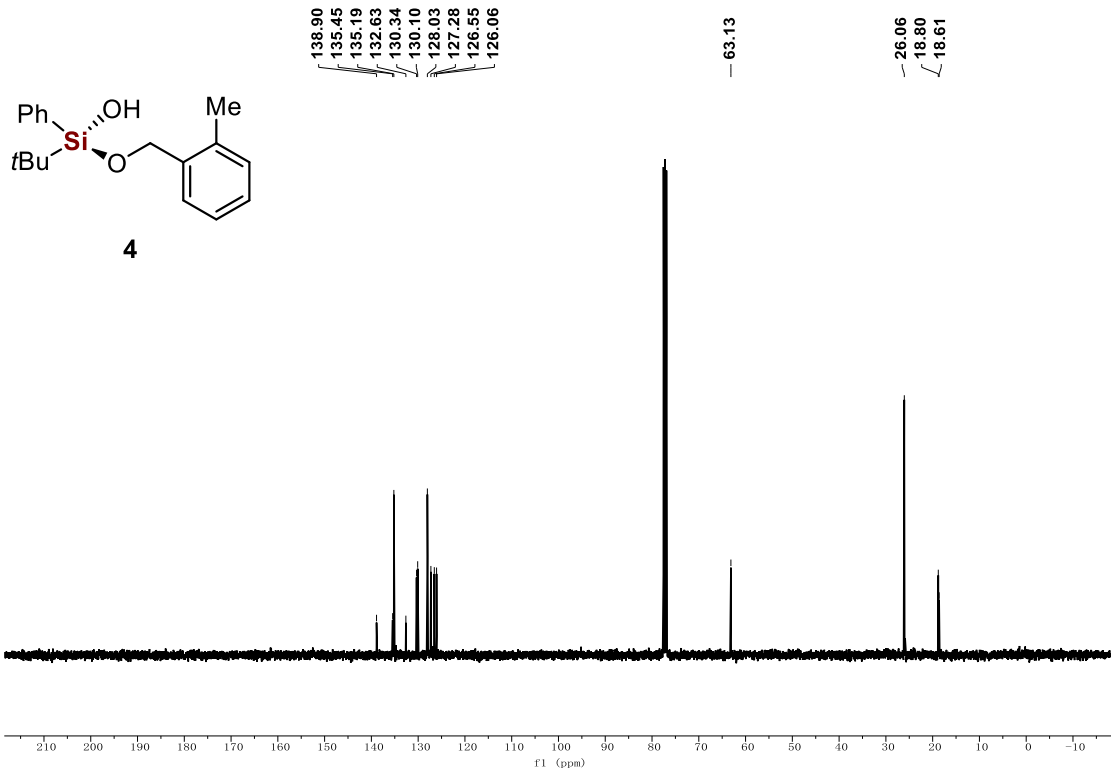


3u

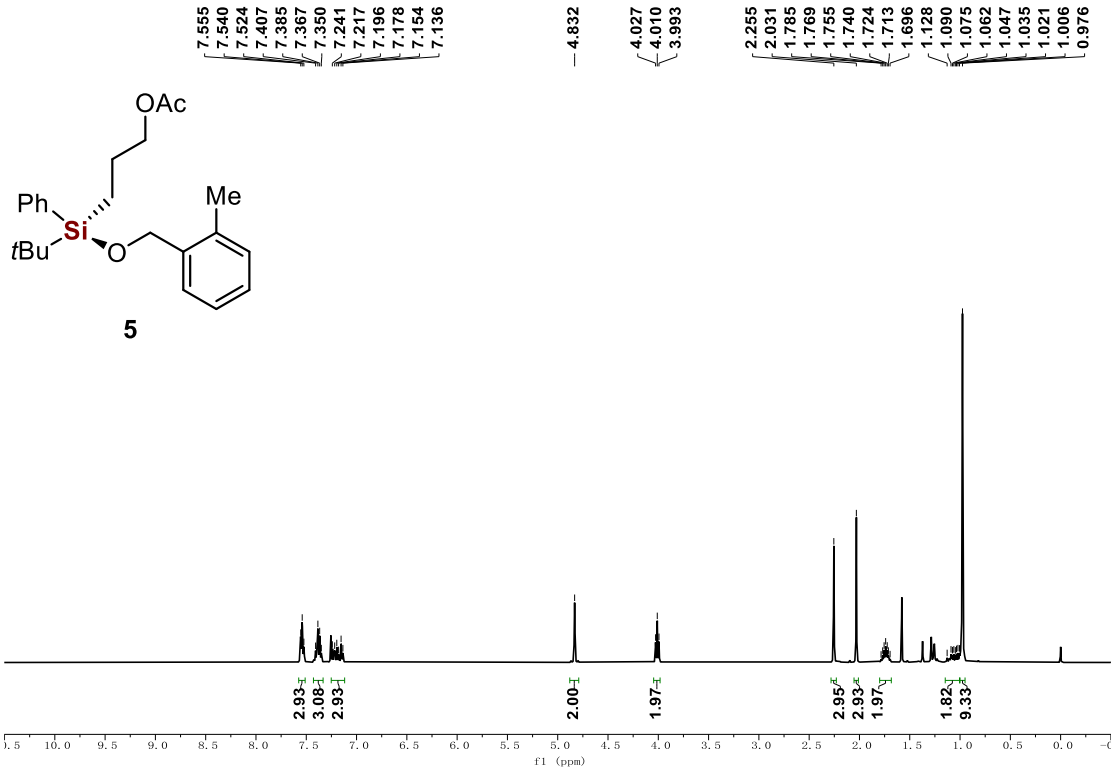
^{1}H NMR spectrum of **4** (400 MHz, $CDCl_3$)



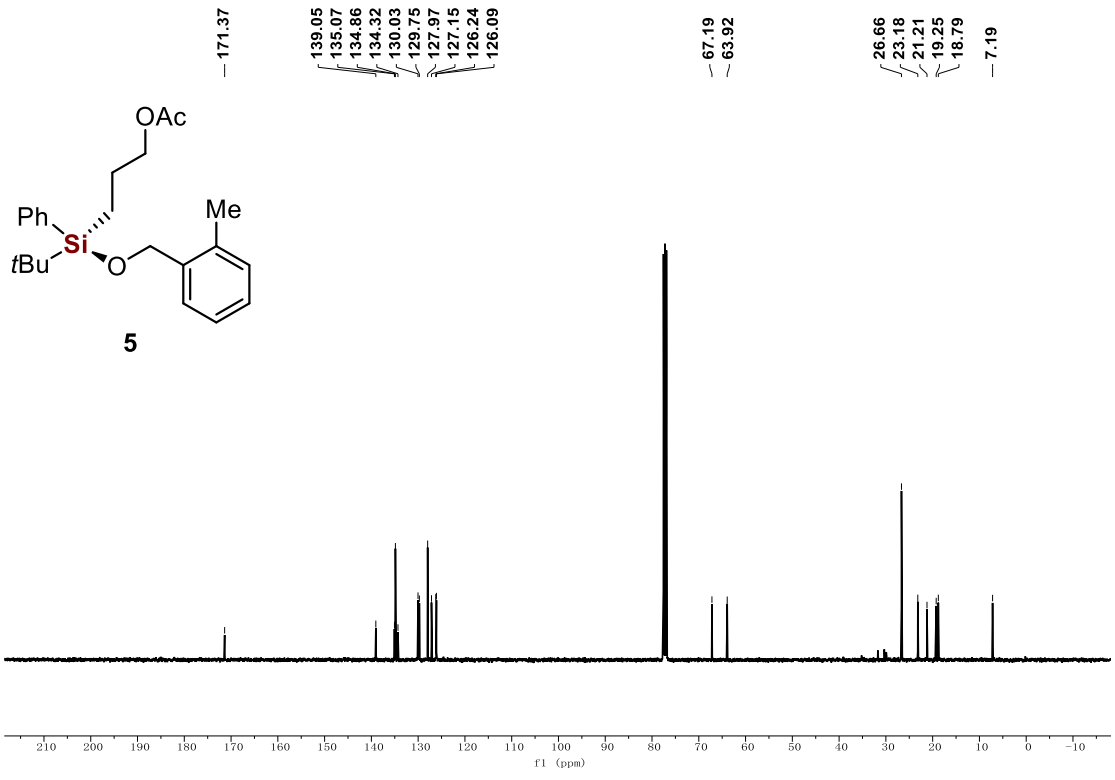
^{13}C NMR spectrum of **4** (101 MHz, $CDCl_3$)



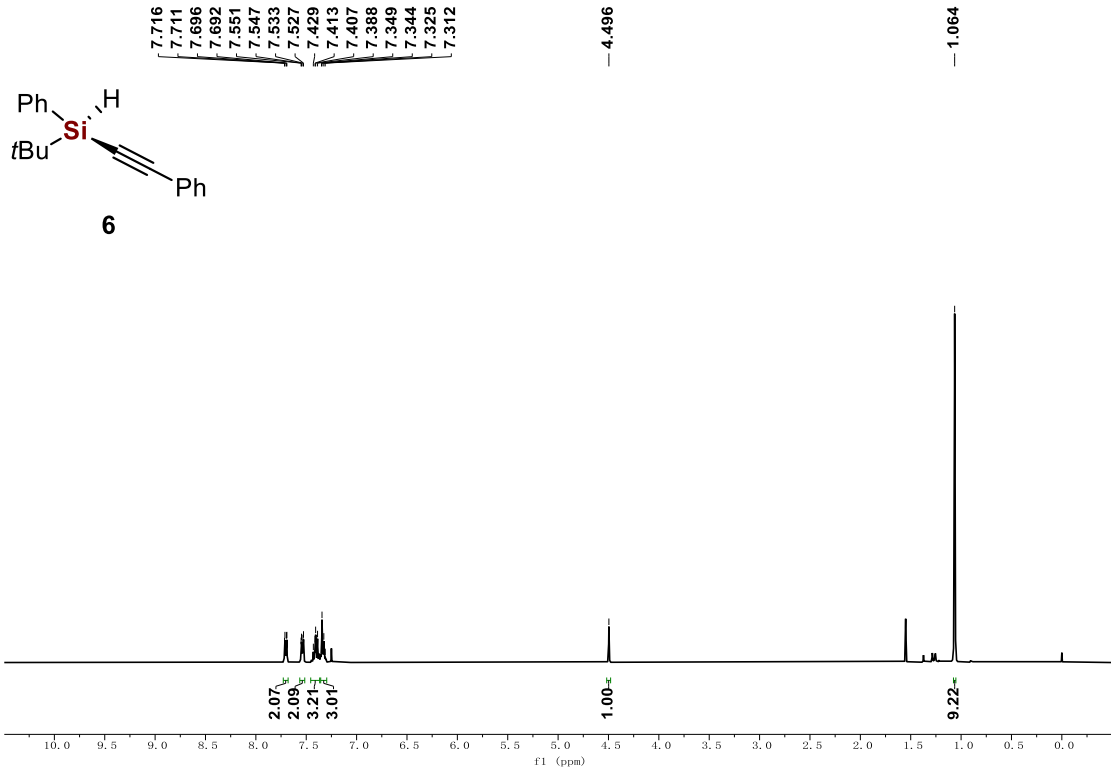
^{1}H NMR spectrum of **5** (400 MHz, $CDCl_3$)



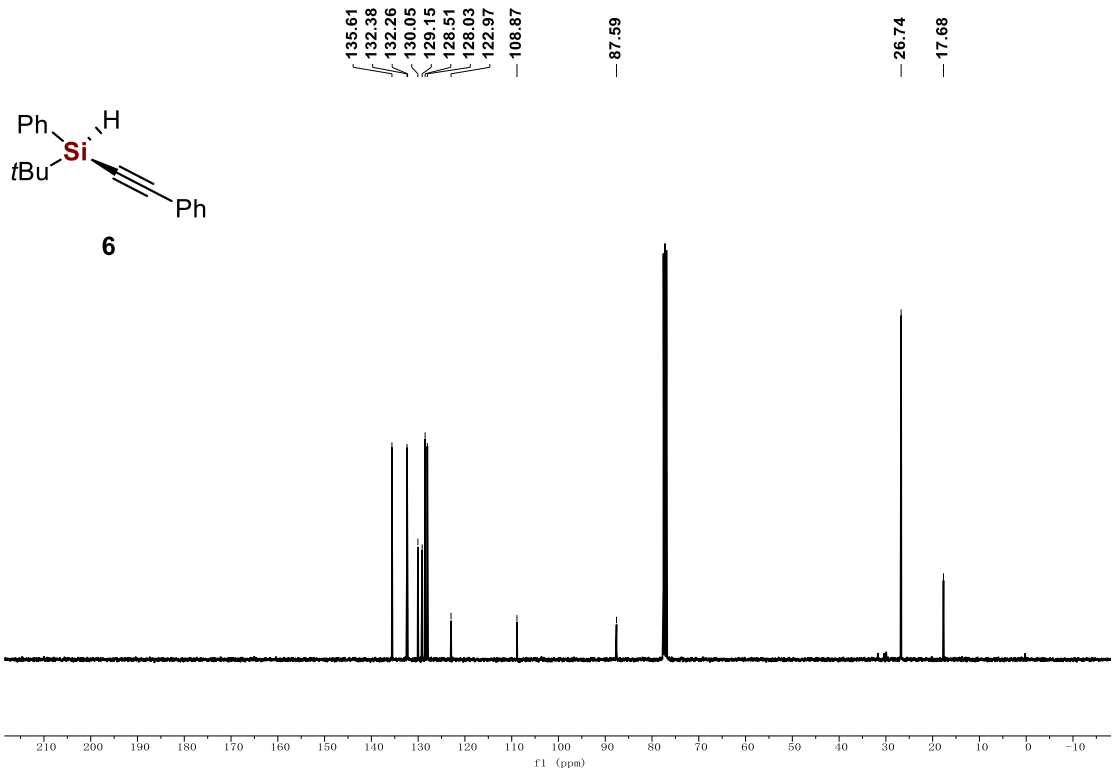
^{13}C NMR spectrum of **5** (101 MHz, $CDCl_3$)



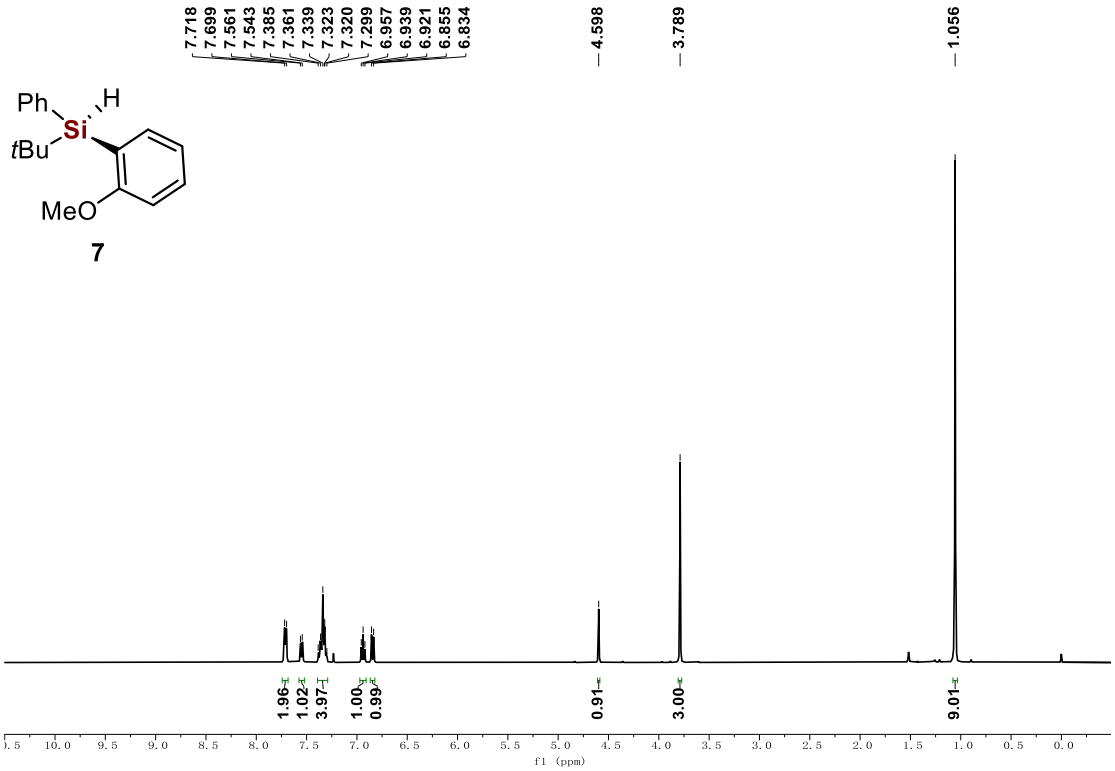
^{1}H NMR spectrum of **6** (400 MHz, $CDCl_3$)



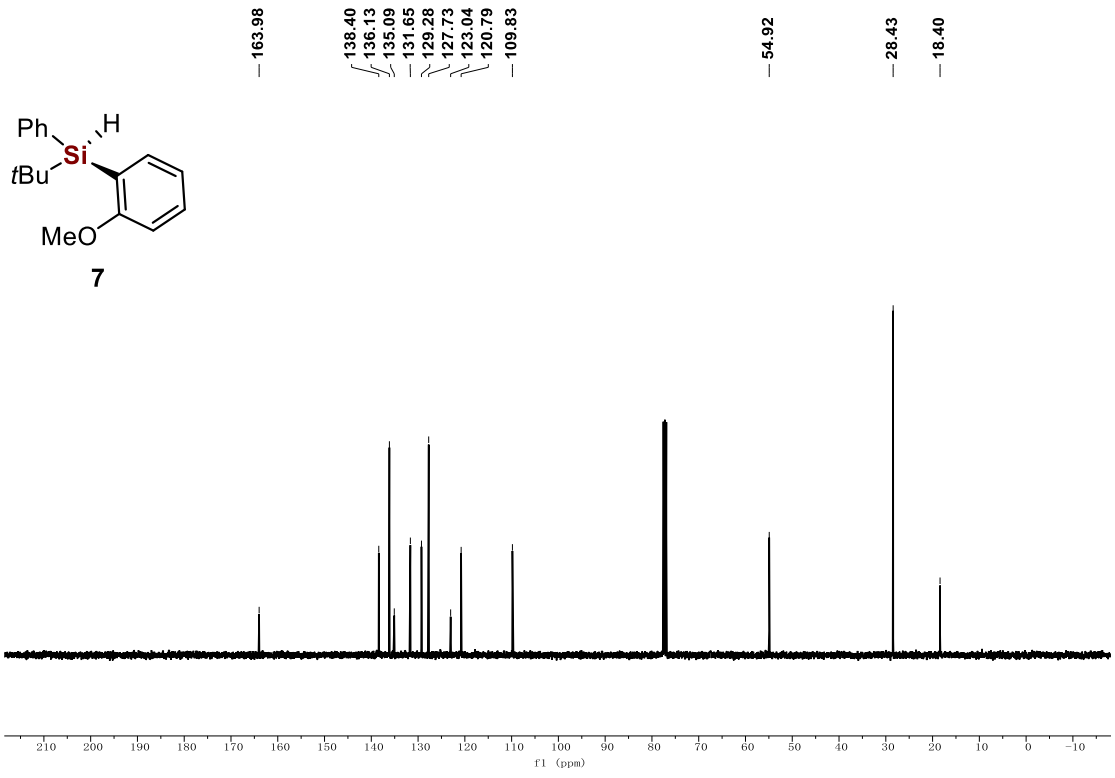
^{13}C NMR spectrum of **6** (101 MHz, $CDCl_3$)



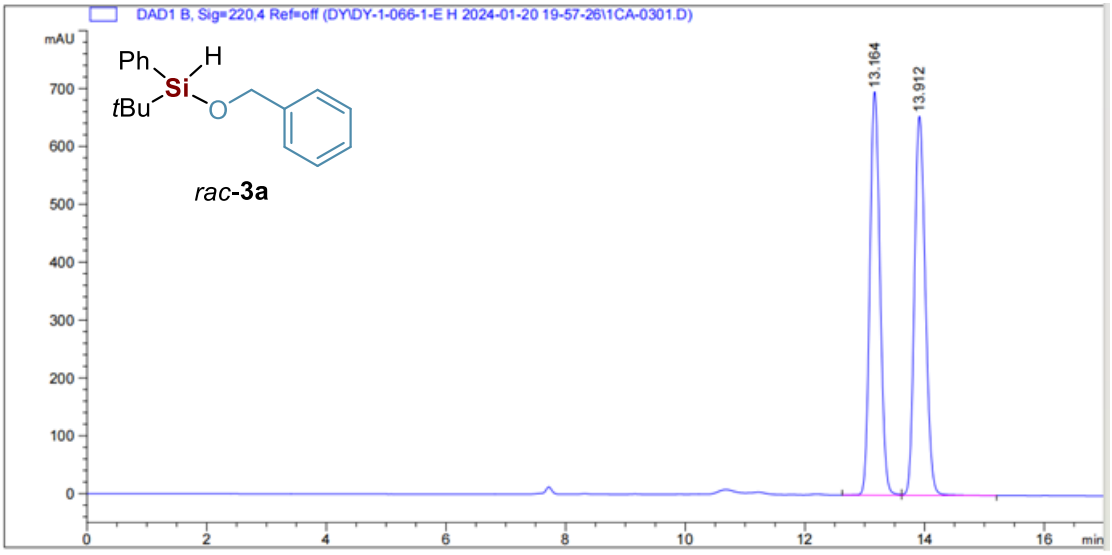
^{1}H NMR spectrum of **7** (400 MHz, $CDCl_3$)



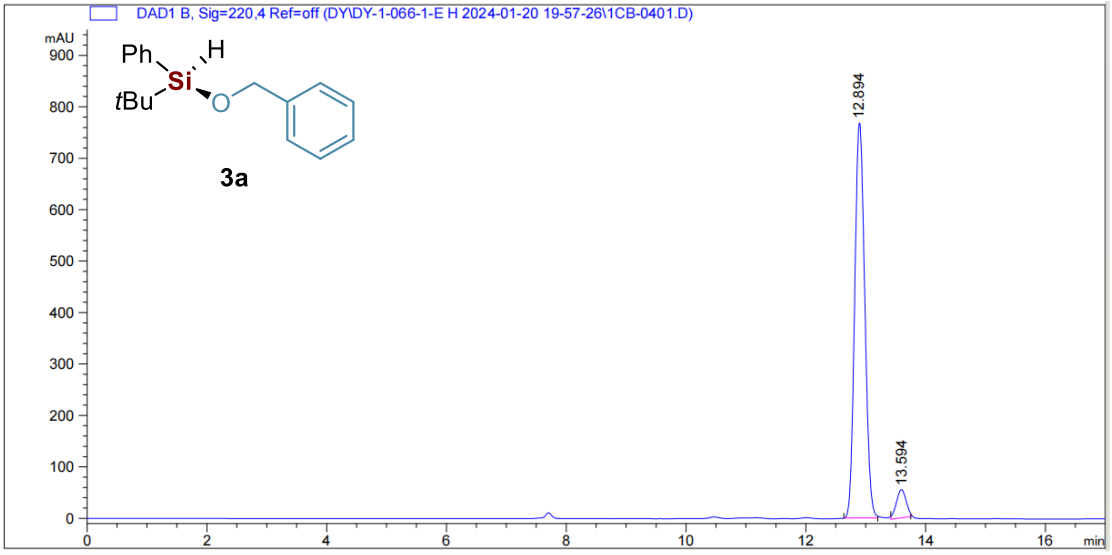
^{13}C NMR spectrum of **7** (101 MHz, $CDCl_3$)



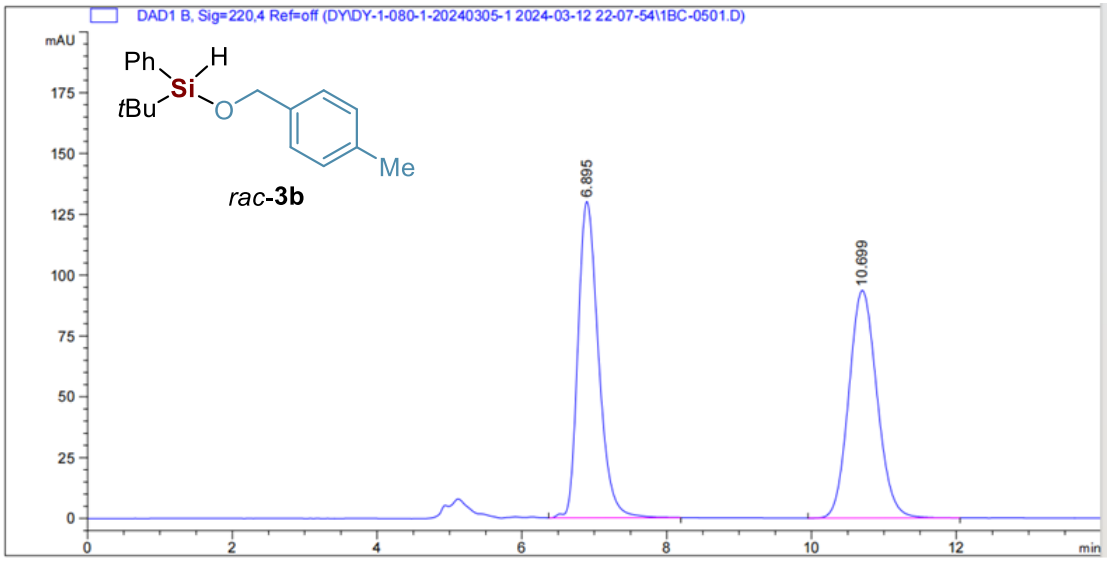
9. HPLC Chromatography



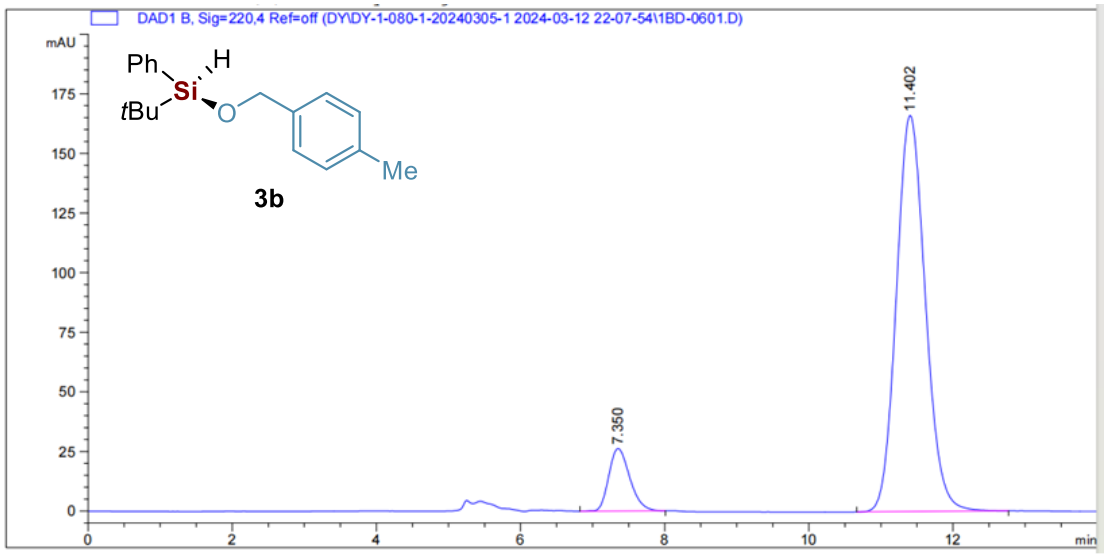
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.164	BV	0.1832	8198.81738	697.03345	49.7110
2	13.912	VB	0.1997	8294.13672	655.07605	50.2890



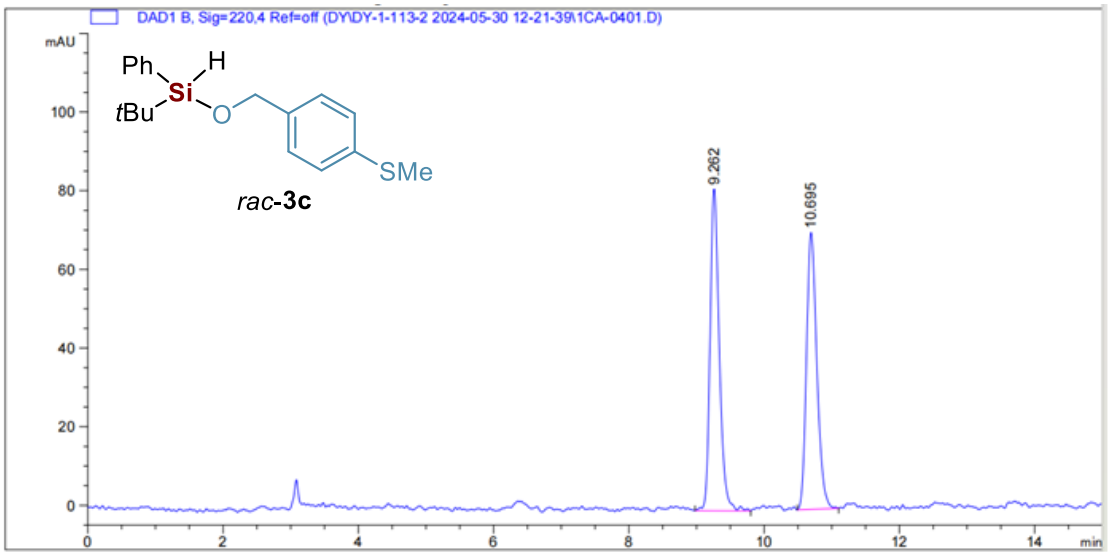
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.894	MM R	0.1947	8978.79688	768.40442	93.5682
2	13.594	MM R	0.1875	617.19073	54.86659	6.4318



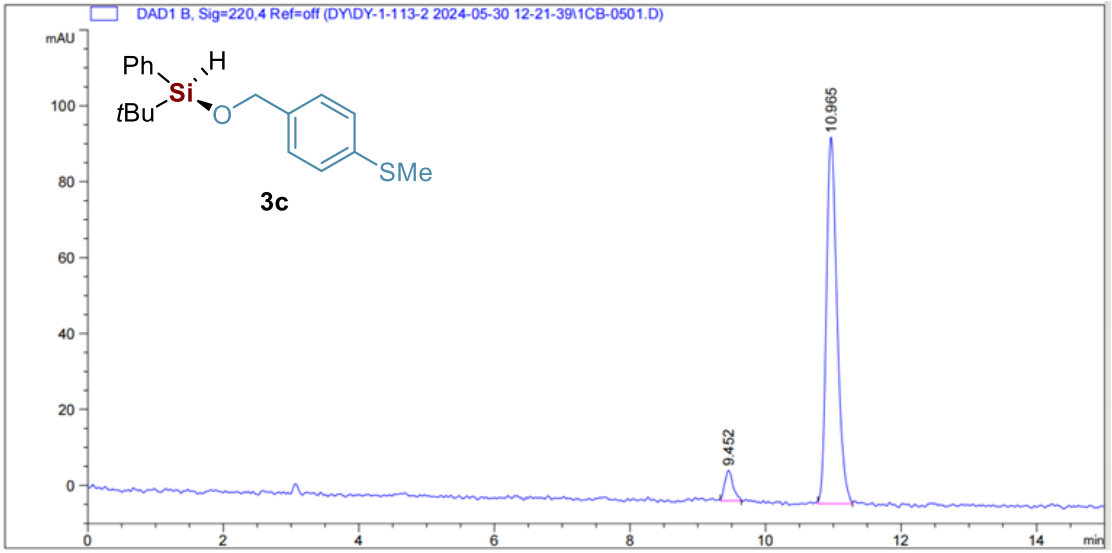
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.895	VB R	0.3028	2557.77271	129.96519	50.2309
2	10.699	BB	0.4199	2534.25977	93.60690	49.7691



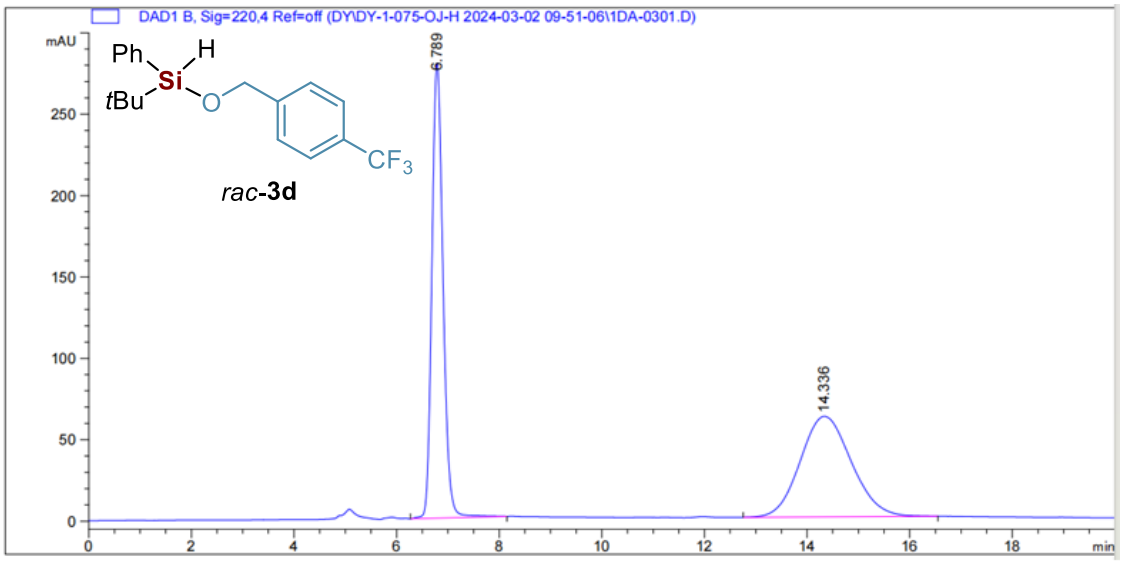
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.350	BB	0.3139	530.78796	26.25024	10.2648
2	11.402	BB	0.4358	4640.14551	166.18037	89.7352



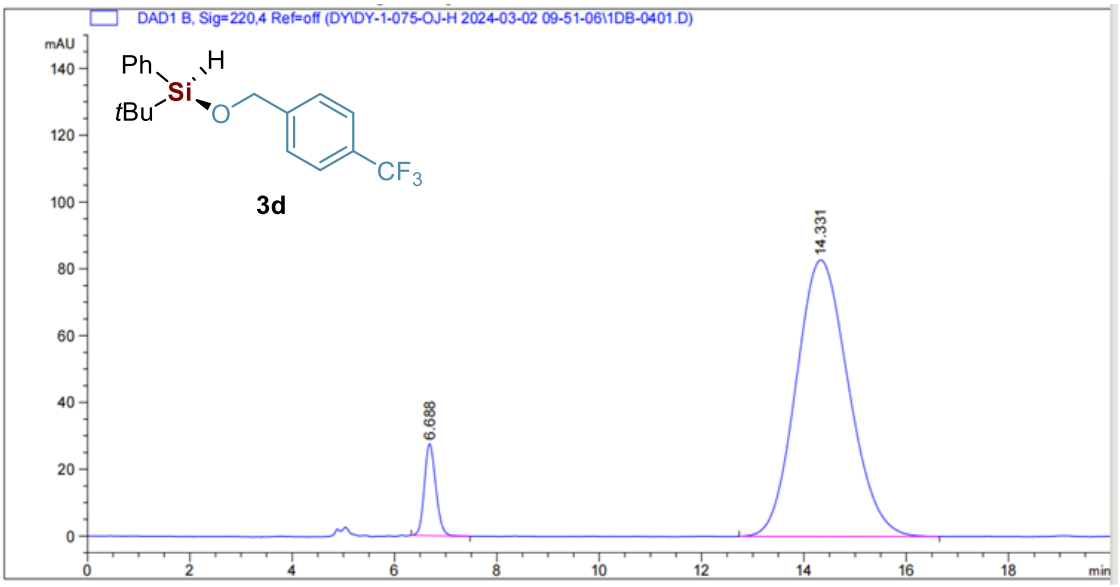
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.262	VV R	0.1441	772.45667	81.83495	50.9453
2	10.695	BV R	0.1632	743.79077	70.44464	49.0547



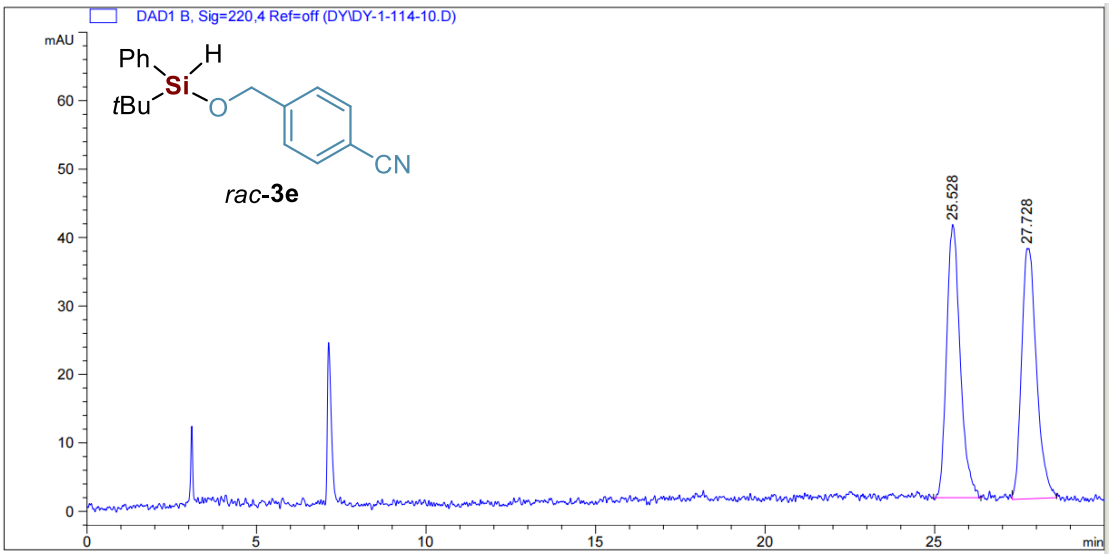
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	9.452	MM R	0.1429	68.79331	8.02407	6.0852
2	10.965	MM R	0.1797	1061.71301	96.60230	93.9148



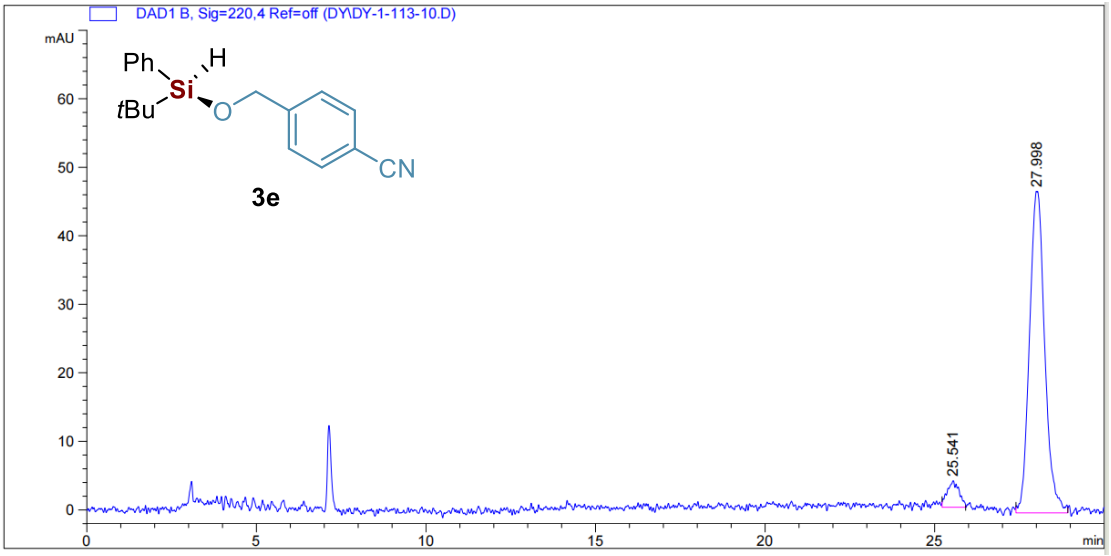
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.789	BB	0.2340	4217.05664	279.56329	49.6589
2	14.336	BB	1.0539	4274.98145	61.73750	50.3411



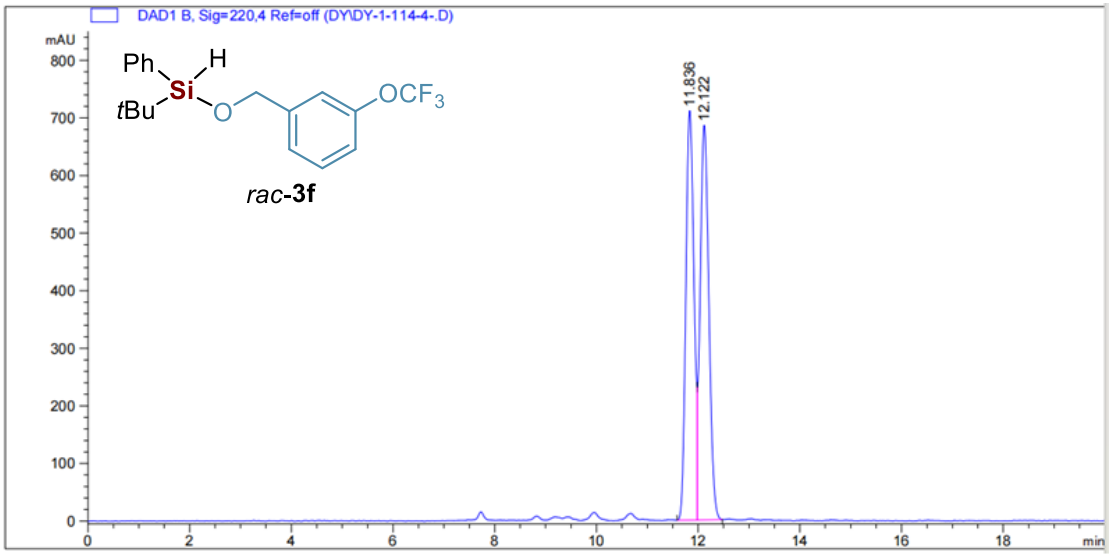
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.688	BB	0.2419	428.56302	27.49068	6.7854
2	14.331	BB	1.0758	5887.39258	82.77316	93.2146



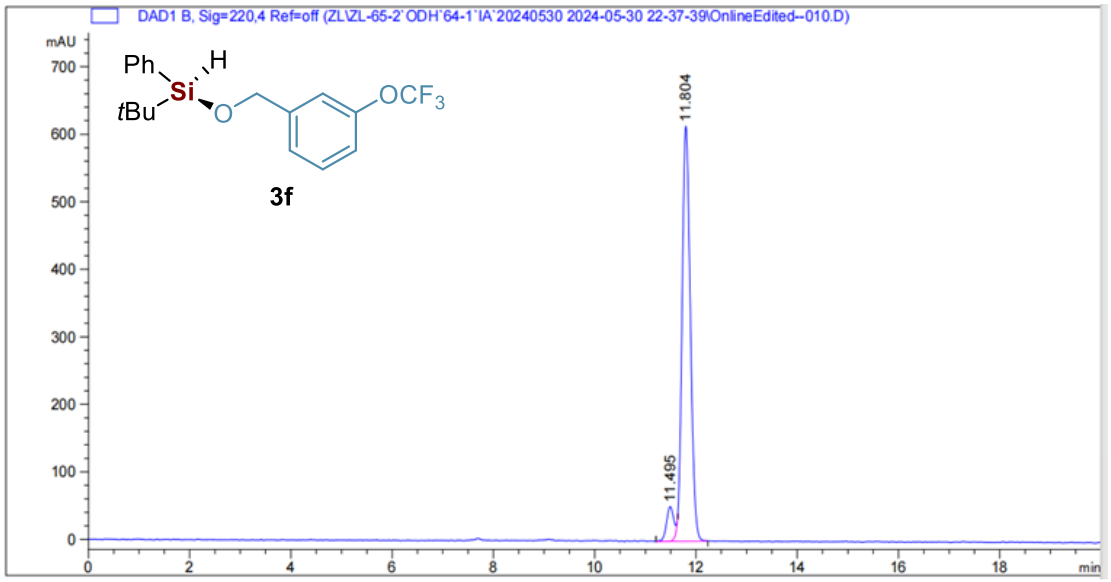
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	25.528	MM R	0.4665	1117.73010	39.93352	50.0047
2	27.728	MM R	0.5085	1117.51917	36.62547	49.9953



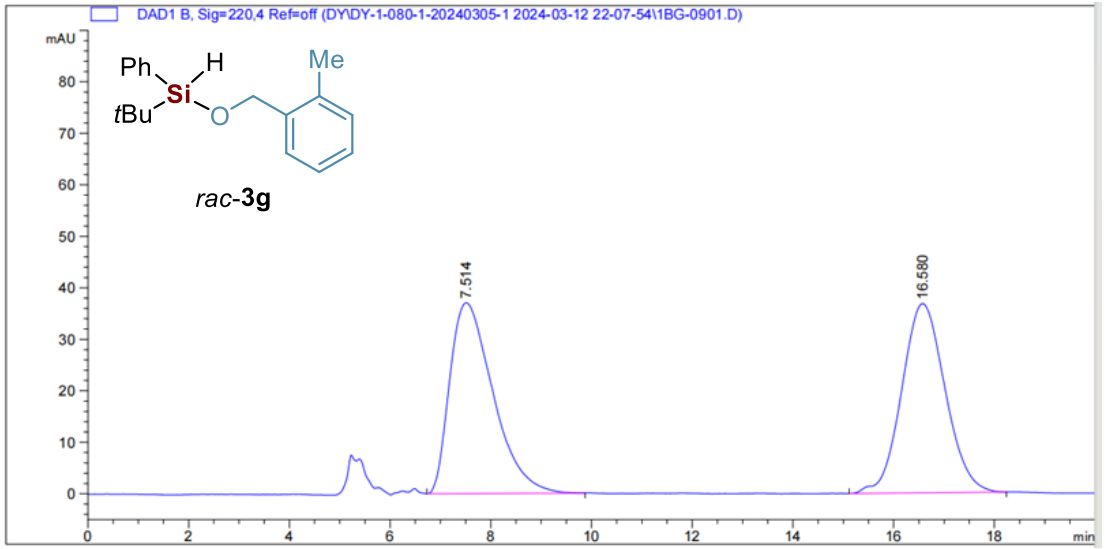
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	25.541	MM R	0.4033	93.73181	3.87388	6.0344
2	27.998	MM R	0.5175	1459.56726	47.00948	93.9656



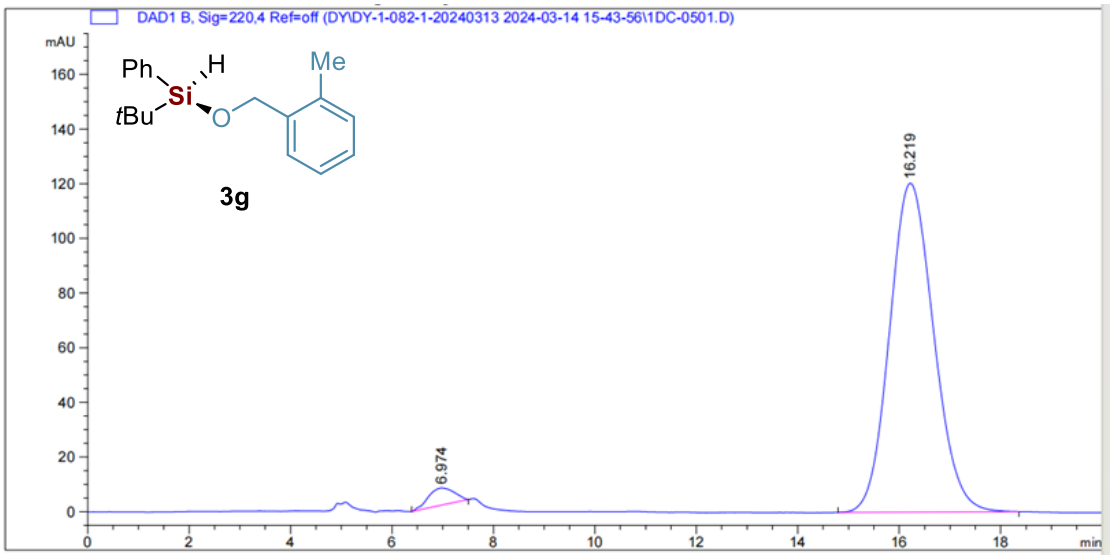
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.836	BV	0.1726	7832.50781	710.77234	48.9265
2	12.122	VB	0.1852	8176.21484	685.06006	51.0735



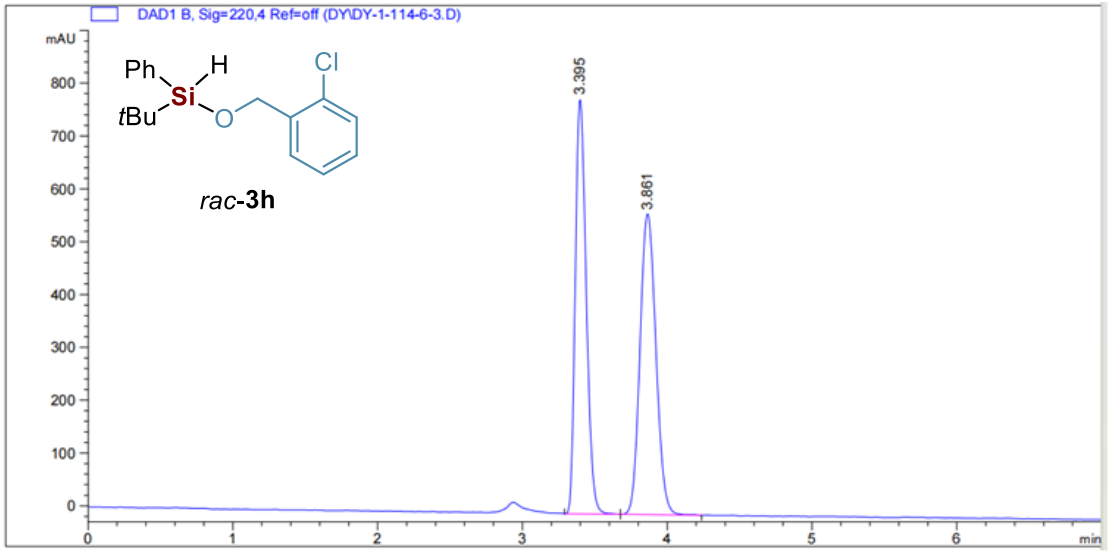
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.495	BV E	0.1527	491.06375	50.81229	6.5563
2	11.804	VB R	0.1788	6998.85986	614.88300	93.4437



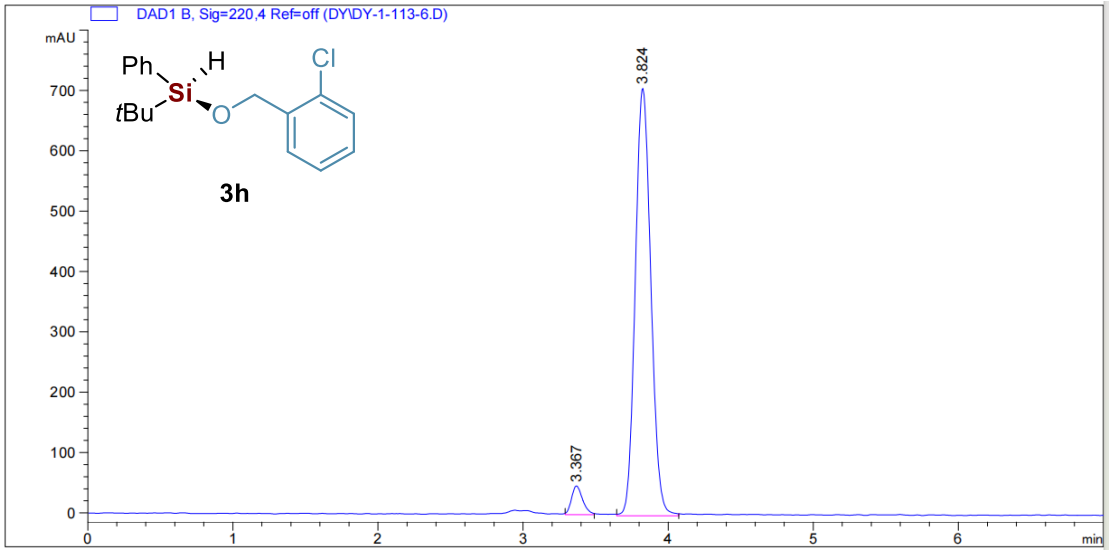
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.514	BB	0.8816	2209.25586	37.05194	50.1137
2	16.580	BB	0.9040	2199.23071	36.75964	49.8863



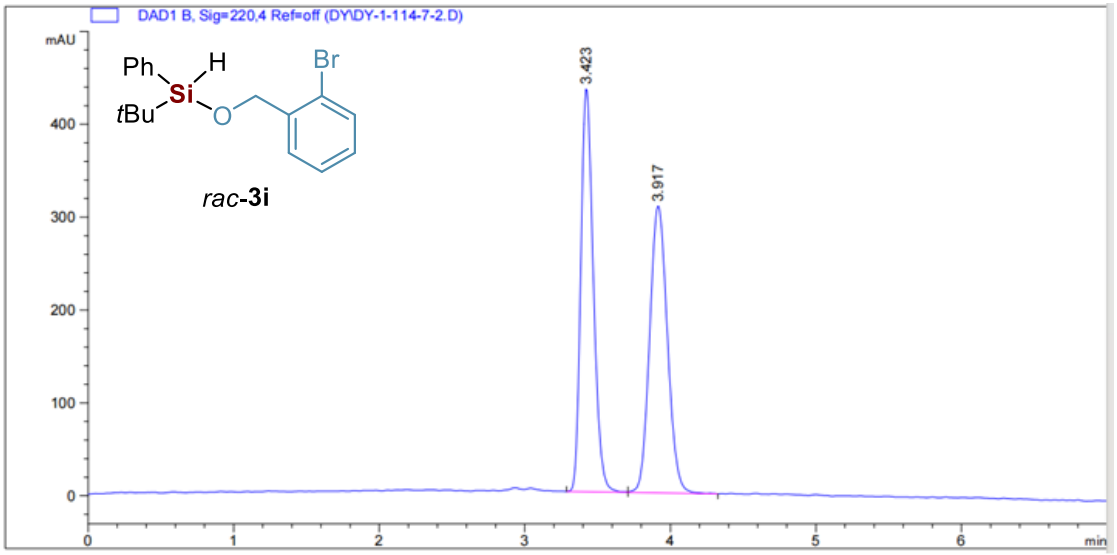
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	6.974	BB	0.5525	222.69781	6.26851	2.9700
2	16.219	BB	0.9213	7275.57617	120.35682	97.0300



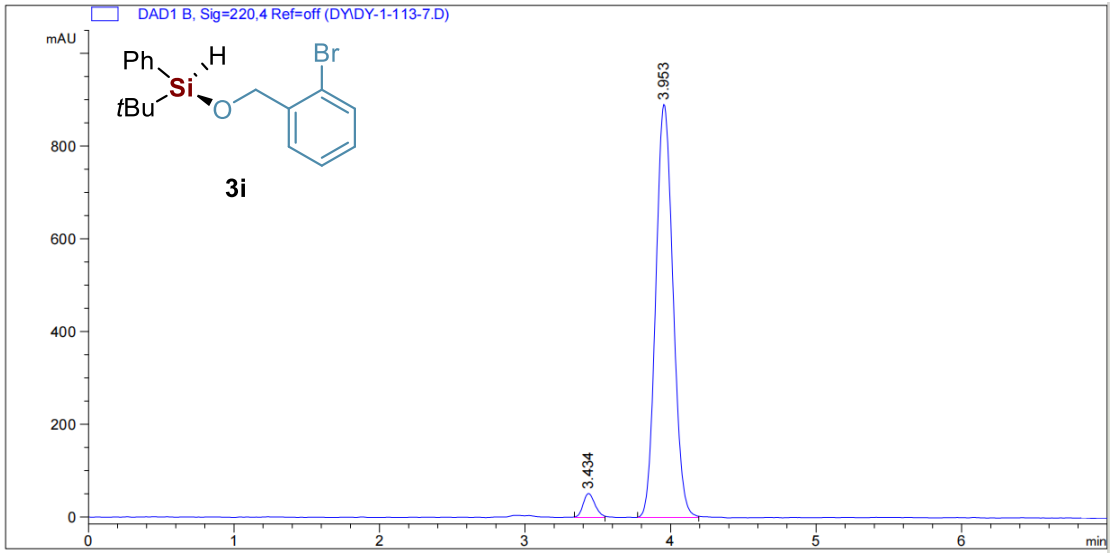
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.395	BB	0.0830	4107.61963	785.62421	48.5430
2	3.861	BB	0.1212	4354.19824	569.51324	51.4570



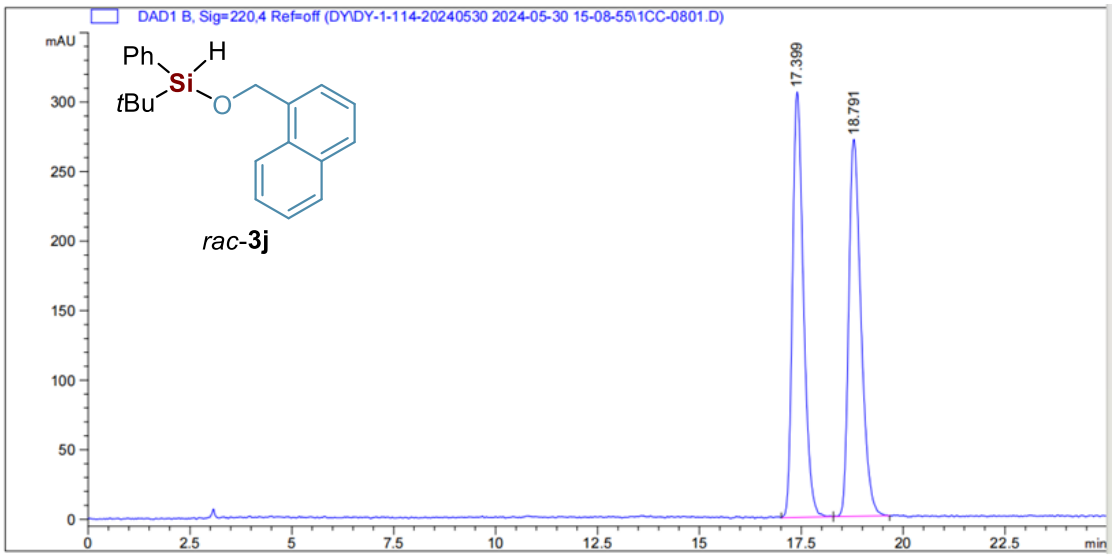
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.367	MM R	0.0888	255.14659	47.90448	4.6080
2	3.824	MM R	0.1242	5281.85742	708.99066	95.3920



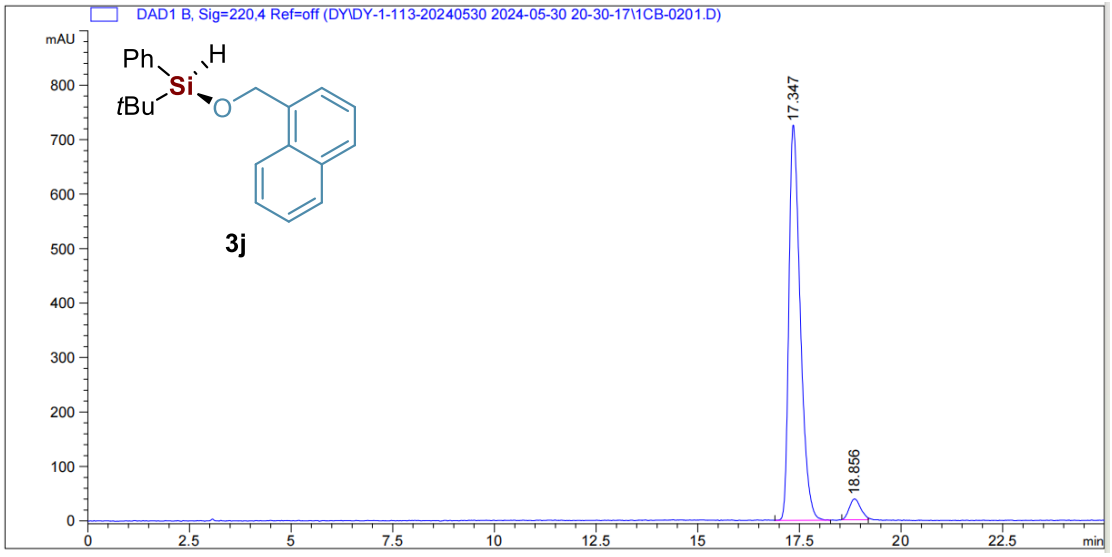
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.423	BV	0.0937	2596.98608	434.47940	49.7825
2	3.917	VB	0.1309	2619.67993	309.10678	50.2175



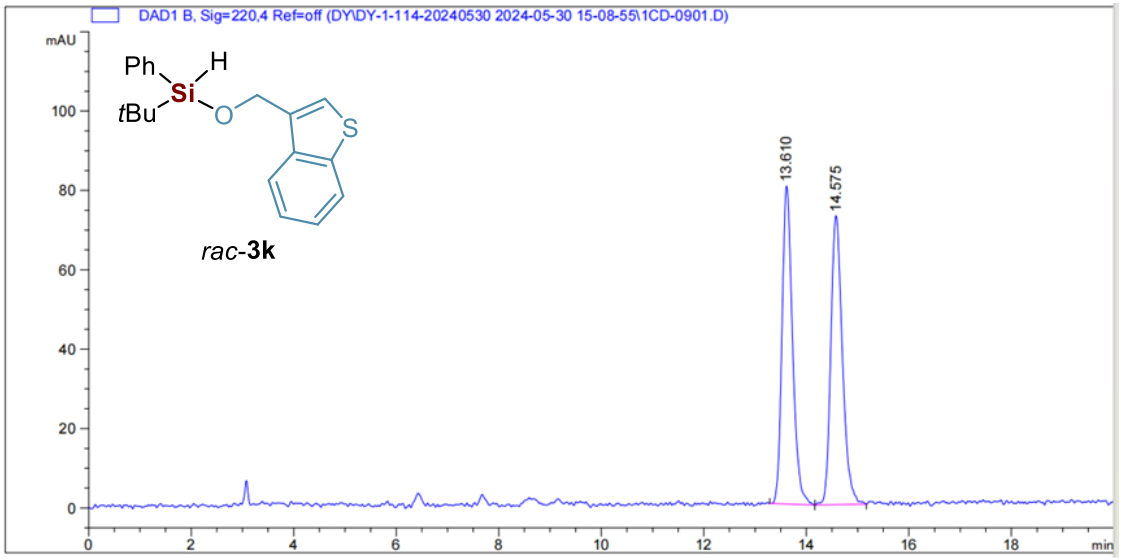
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	3.434	MM R	0.0947	296.75803	52.22577	3.8953
2	3.953	MM R	0.1367	7321.60596	892.63245	96.1047



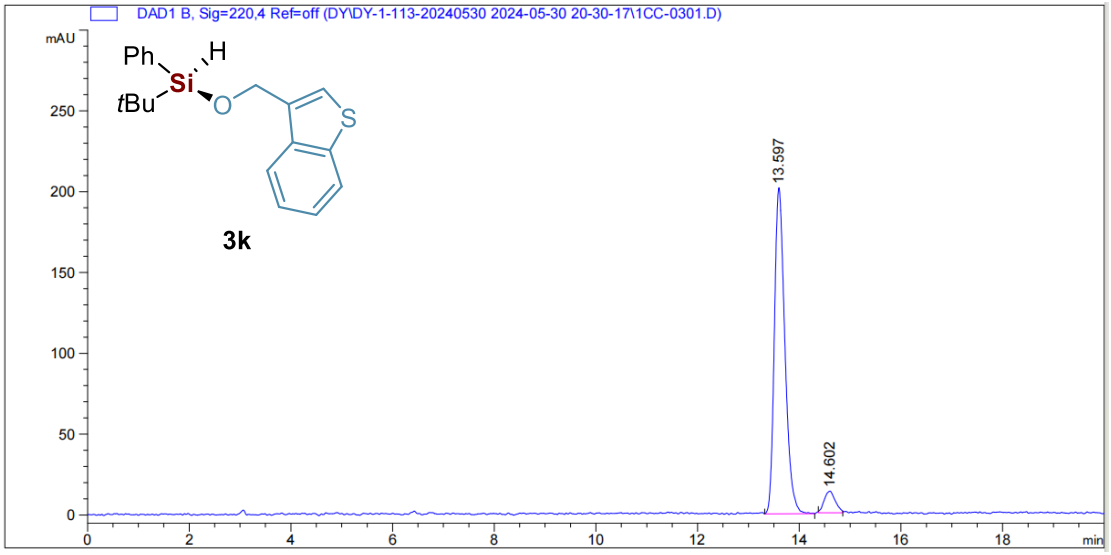
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	17.399	BV R	0.2880	5719.12793	306.06628	50.0557
2	18.791	VV R	0.3195	5706.40186	271.20160	49.9443



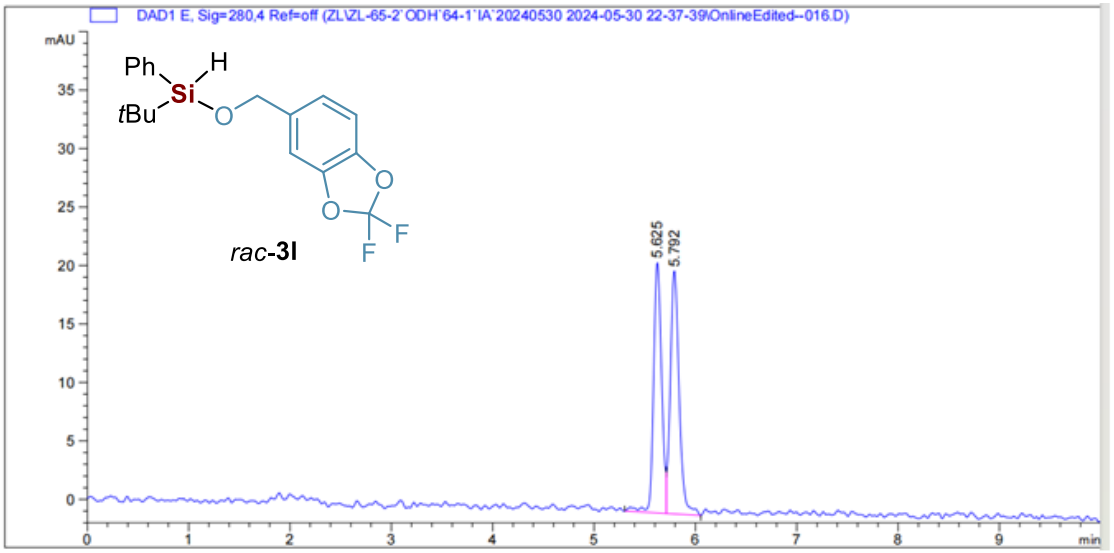
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	17.347	BV R	0.2882	1.40717e4	725.91449	94.9781
2	18.856	MM R	0.3244	744.03479	38.23180	5.0219



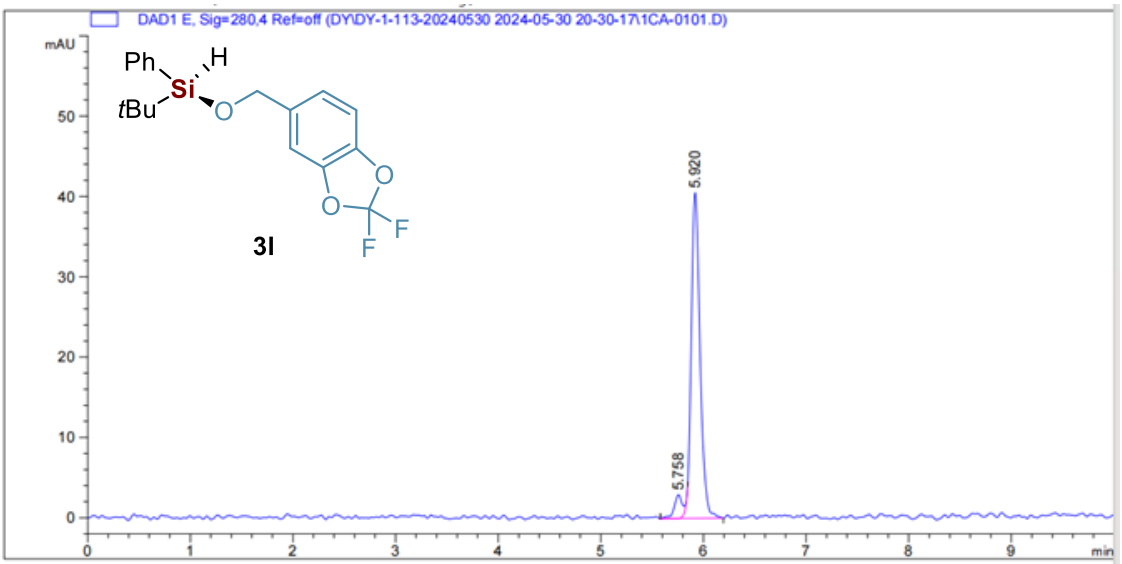
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.610	VB R	0.2156	1137.35413	80.14635	49.8804
2	14.575	BV R	0.2351	1142.80676	72.81794	50.1196



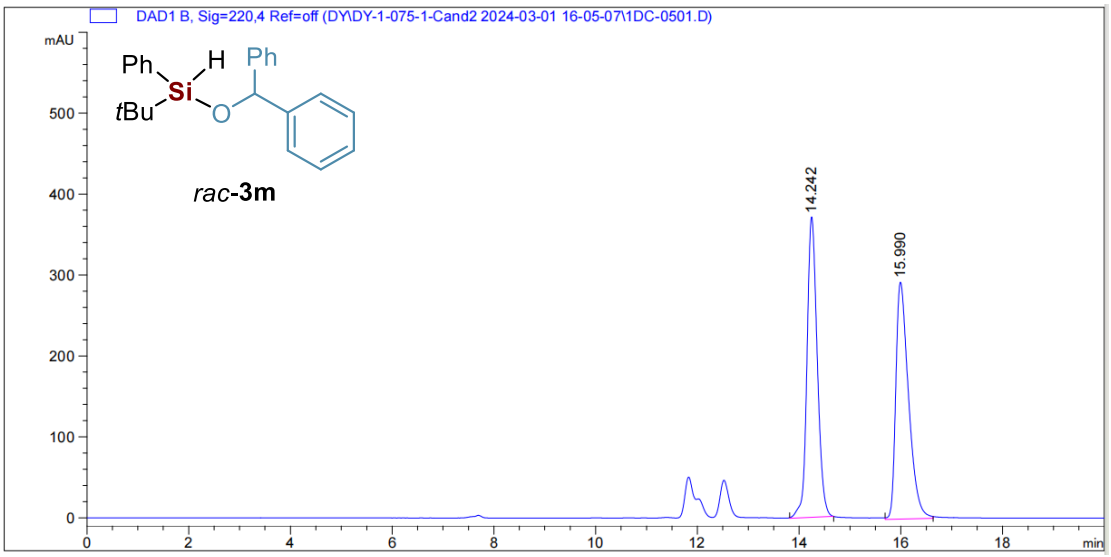
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.597	BV R	0.2196	2899.60107	201.82574	93.4673
2	14.602	MM R	0.2519	202.66132	13.40920	6.5327



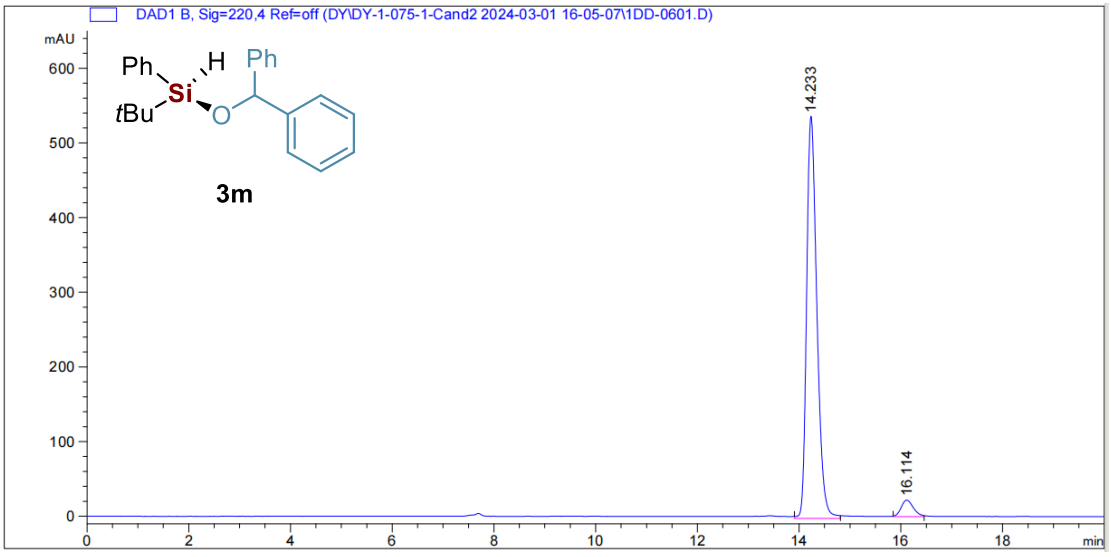
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.625	VV R	0.0847	118.93460	21.44460	48.8736
2	5.792	VB	0.0919	124.41673	20.77002	51.1264



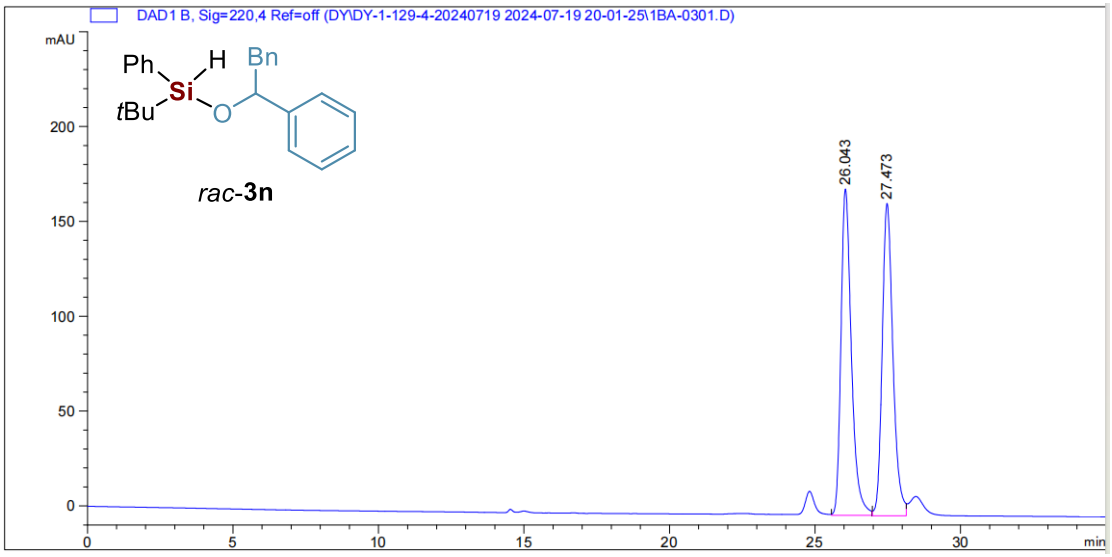
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.758	BV E	0.0811	15.94192	2.94570	6.1104
2	5.920	VB R	0.0924	244.95706	40.58935	93.8896



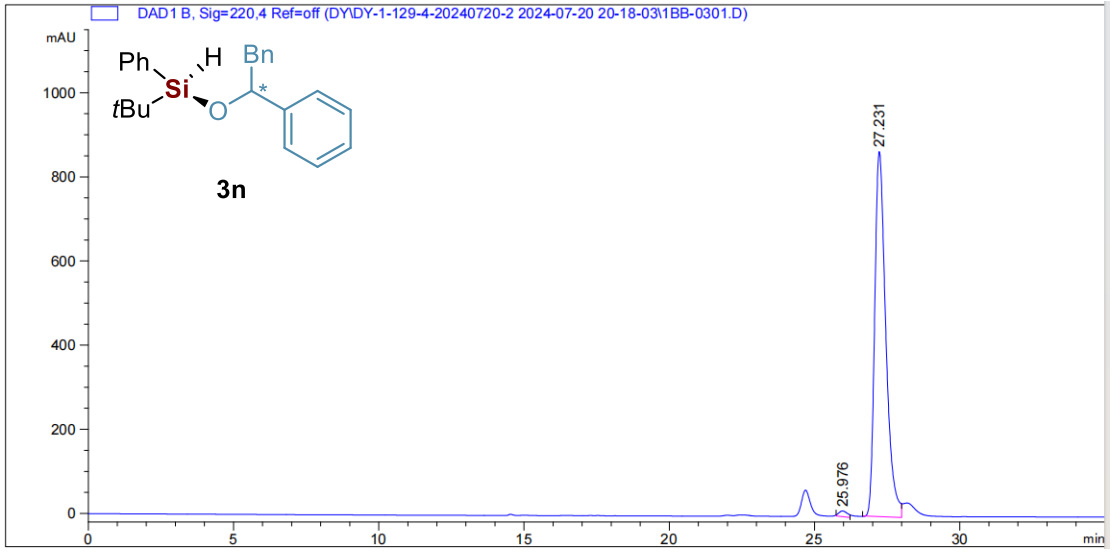
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.242	MM R	0.2328	5187.10938	371.42871	50.4990
2	15.990	MM R	0.2893	5084.58887	292.91437	49.5010



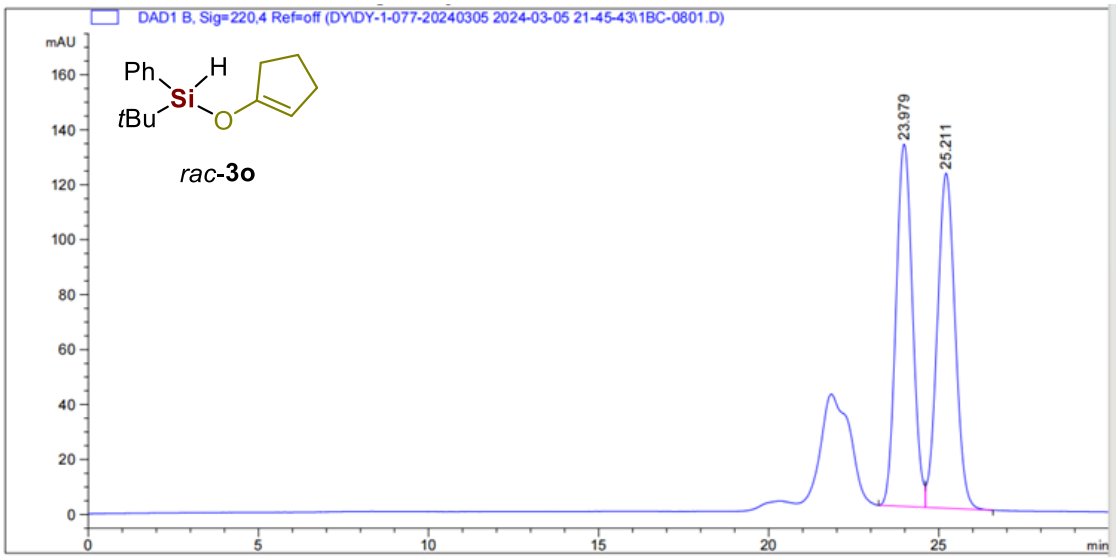
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.233	MM R	0.2323	7507.98242	538.76544	95.2741
2	16.114	MM R	0.2792	372.41925	22.22898	4.7259



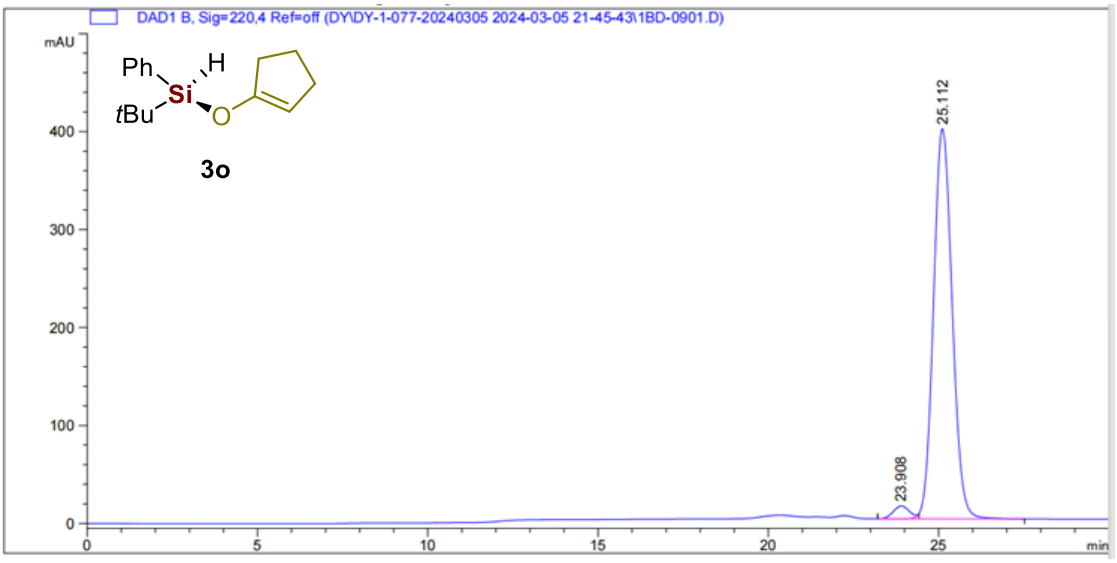
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	26.043	MM R	0.4139	4272.15283	172.04161	50.2285
2	27.473	MM R	0.4285	4233.28369	164.66908	49.7715



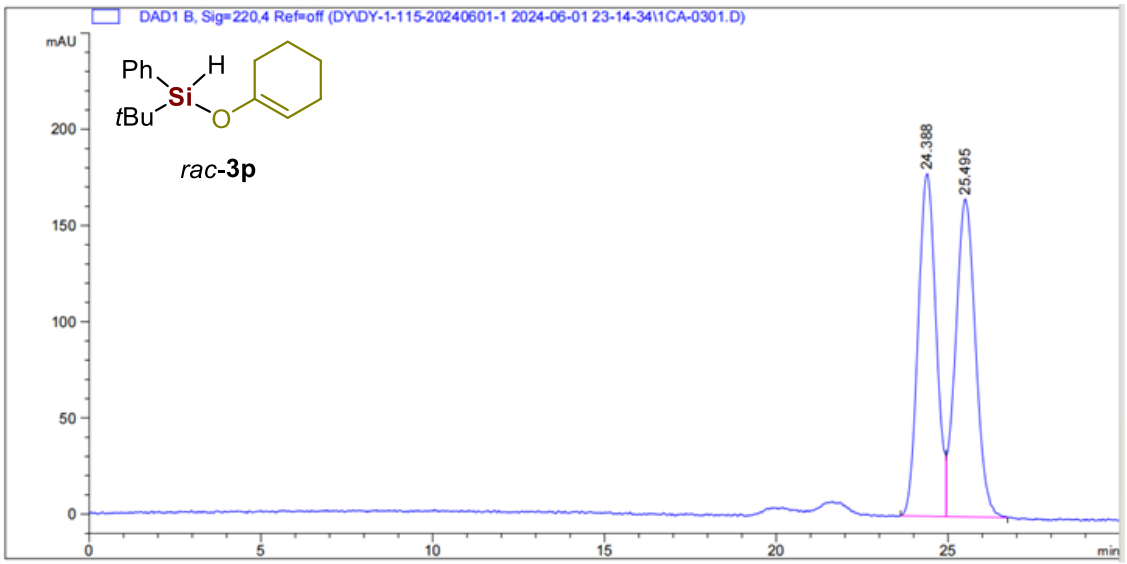
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	25.976	MM R	0.3411	279.12985	13.64062	1.1959
2	27.231	MM R	0.4428	2.30607e4	867.96521	98.8041



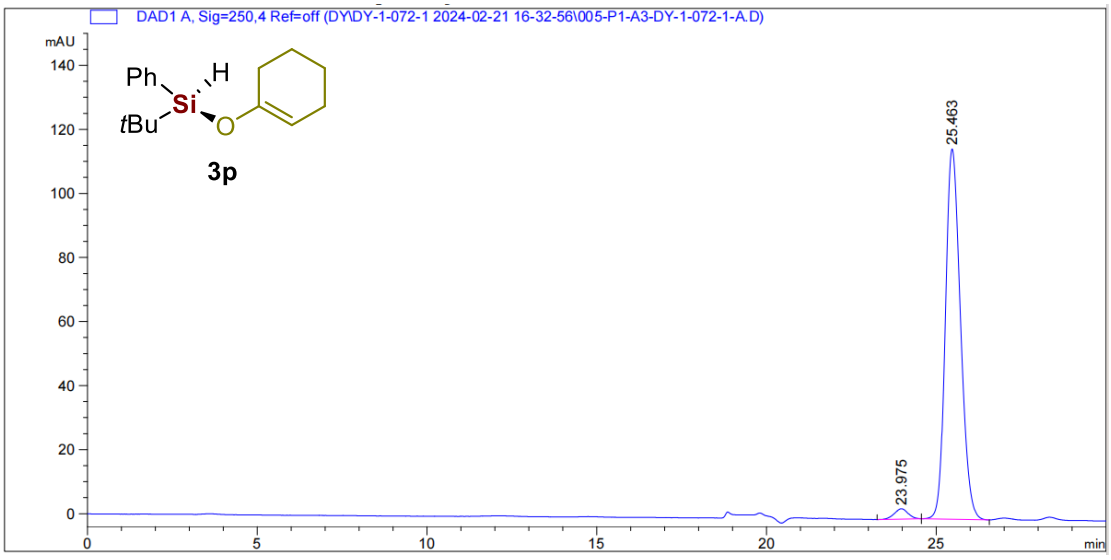
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	23.979	BV	0.5212	4396.69580	131.78775	49.7437
2	25.211	VB	0.5711	4442.00049	121.90864	50.2563



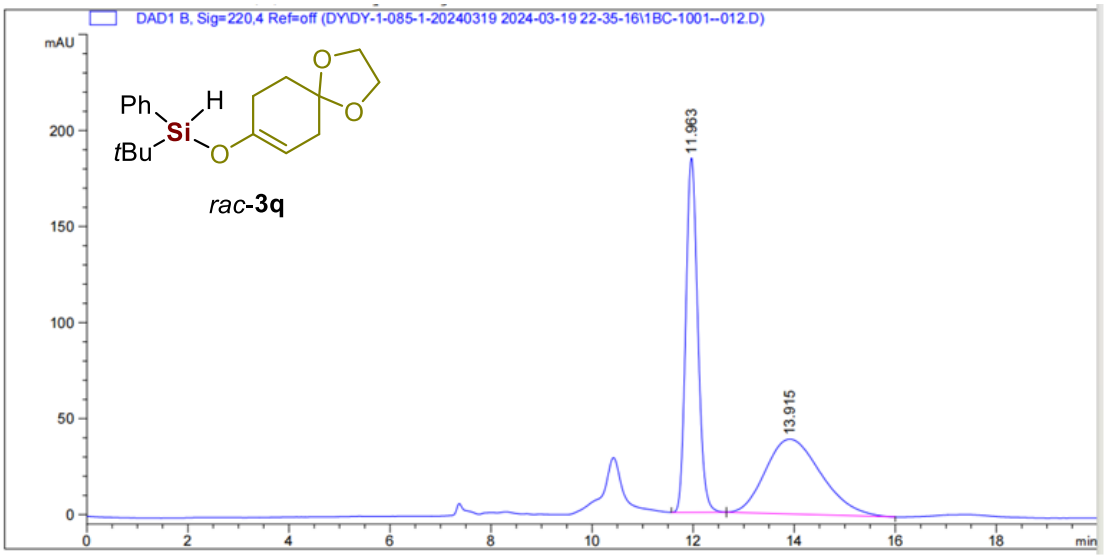
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	23.908	BV E	0.5000	418.57700	13.05748	2.6919
2	25.112	VB R	0.5953	1.51311e4	398.19336	97.3081



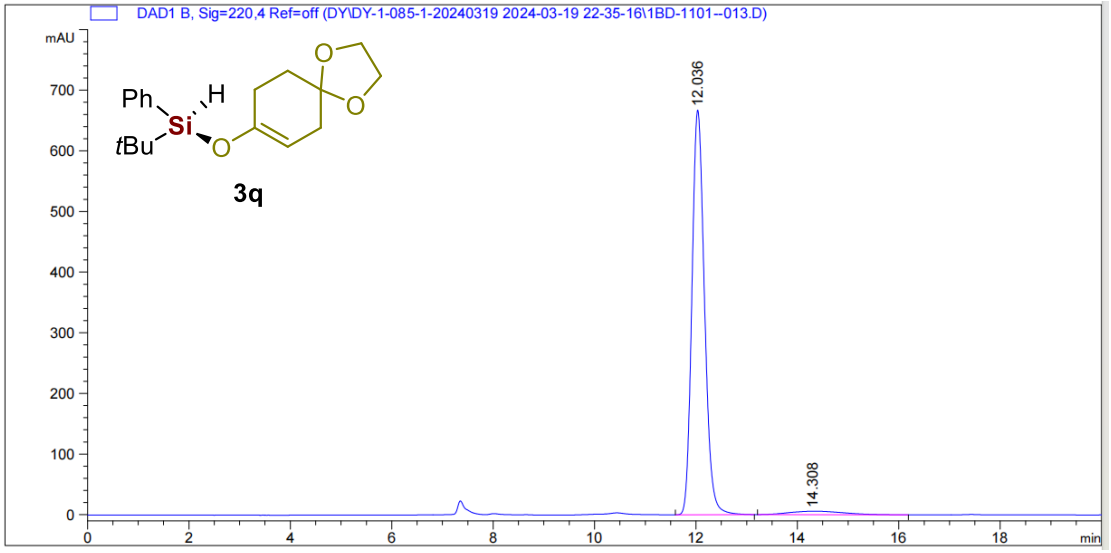
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	24.388	BV	0.4746	6445.24121	177.93843	49.1458
2	25.495	VV R	0.5090	6669.29639	165.19363	50.8542



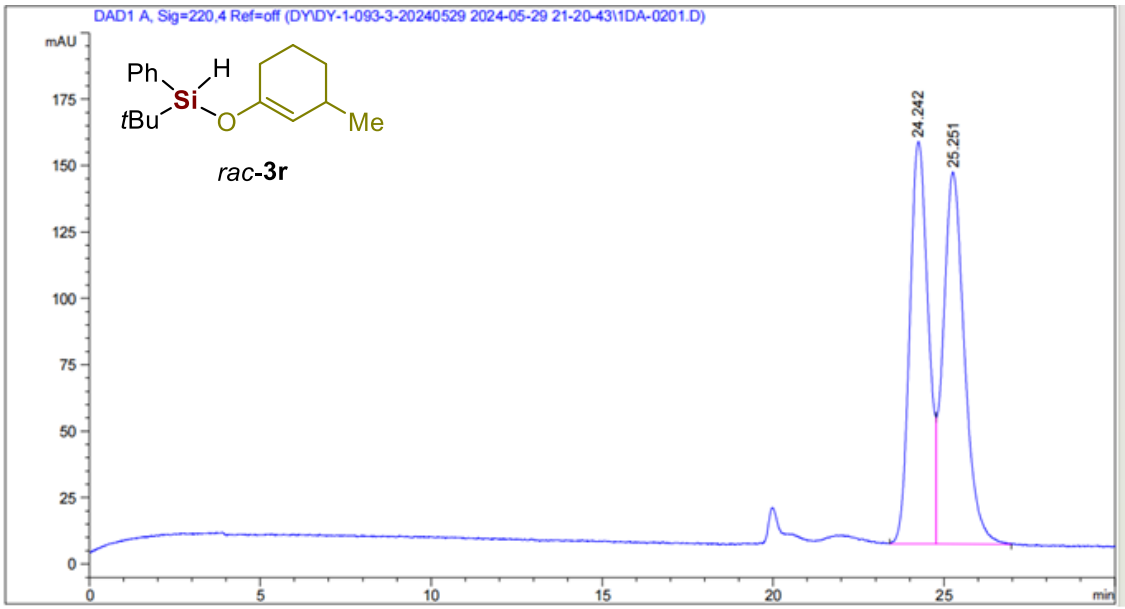
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	23.975	BB	0.3910	91.71191	3.23242	2.5022
2	25.463	BB	0.4826	3573.48120	115.62598	97.4978



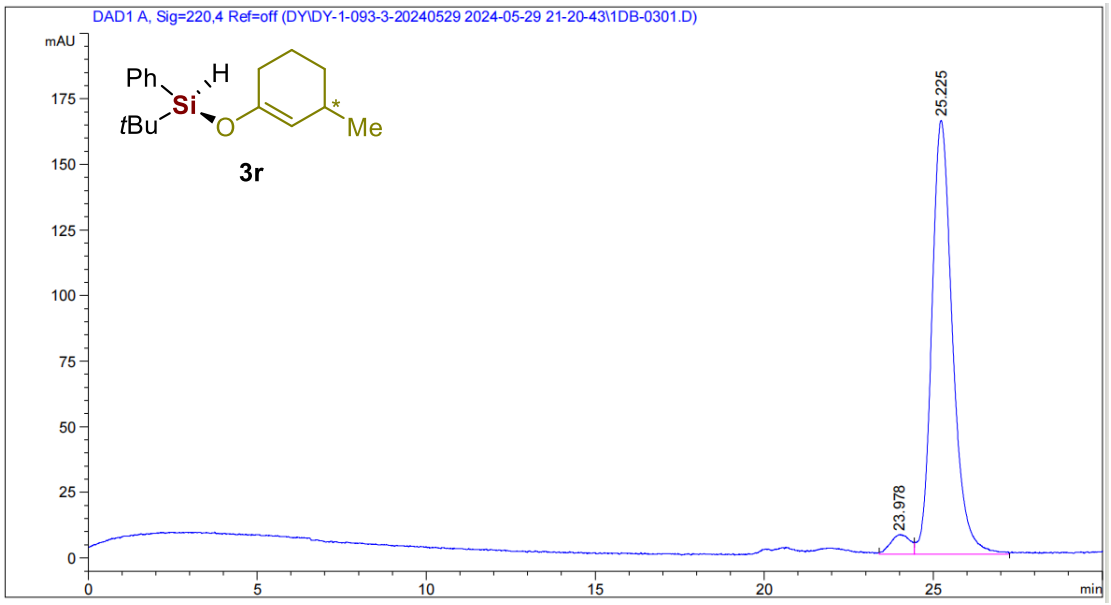
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	11.963	BB	0.2555	3028.58350	184.49829	50.4107
2	13.915	BB	1.0850	2979.23804	38.92292	49.5893



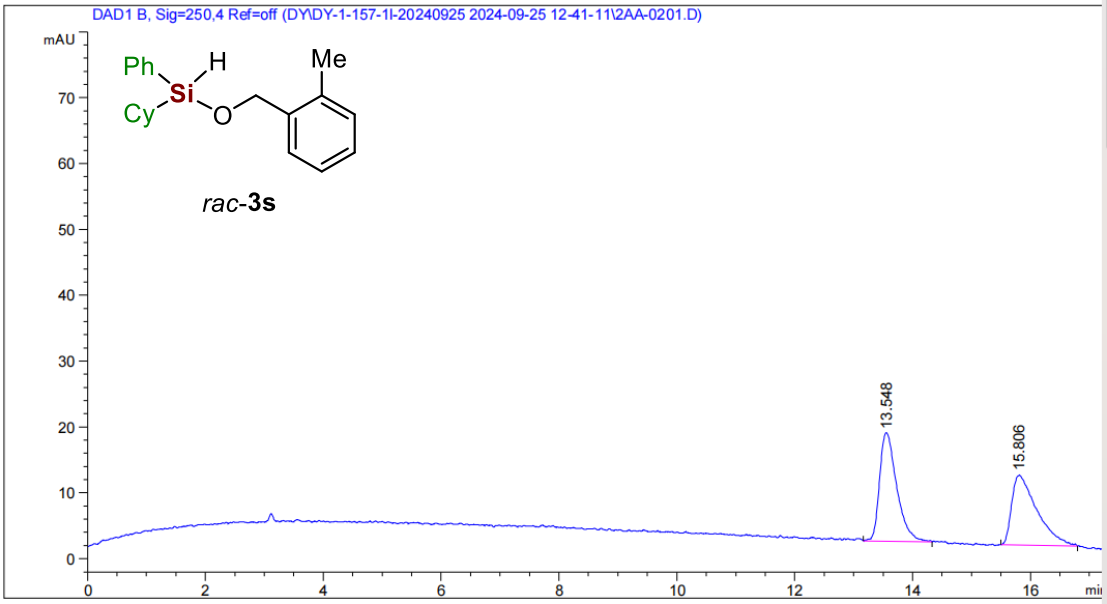
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	12.036	BB	0.2674	1.15177e4	667.26129	96.4878
2	14.308	BB	0.8643	419.25479	5.71192	3.5122



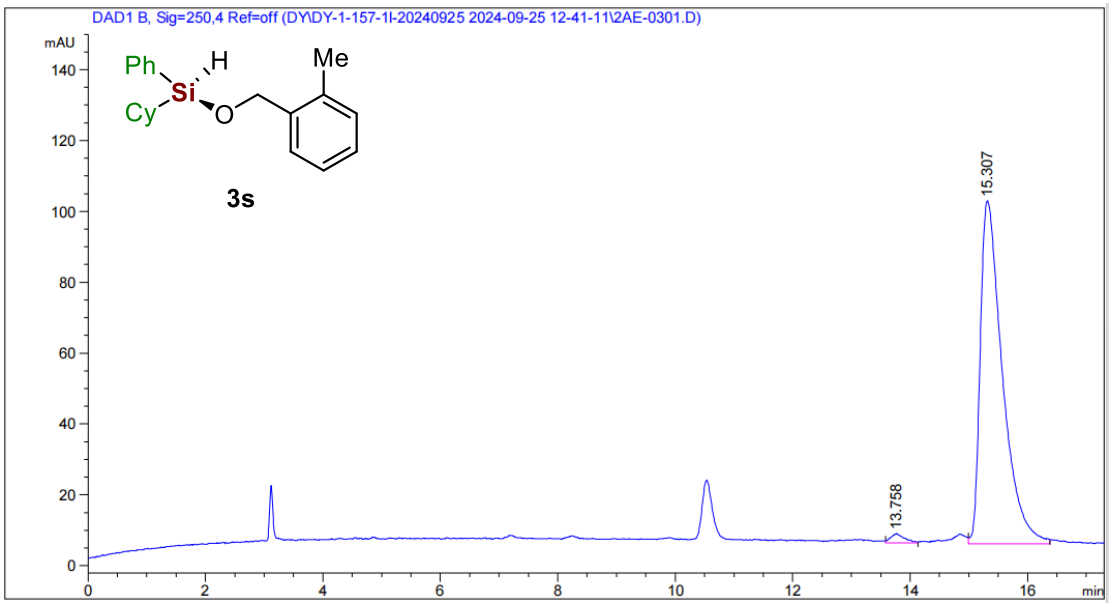
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	24.242	BV	0.5485	5662.32129	151.35031	48.3052
2	25.251	VB	0.5875	6059.64941	139.84288	51.6948



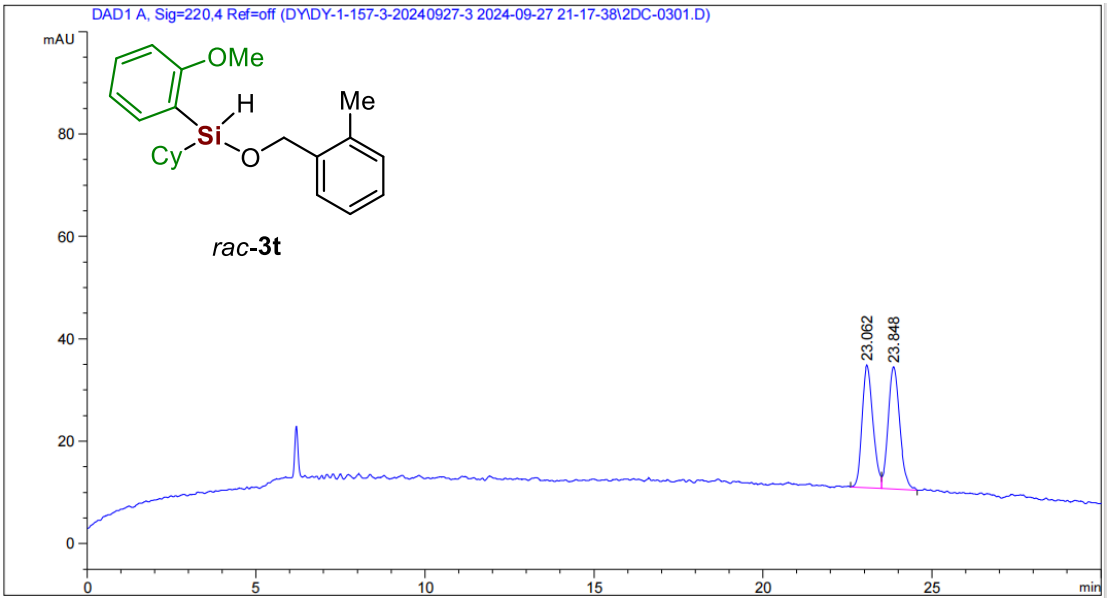
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	23.978	MF R	0.6725	300.67352	7.45165	4.0973
2	25.225	FM R	0.7096	7037.72168	165.30736	95.9027



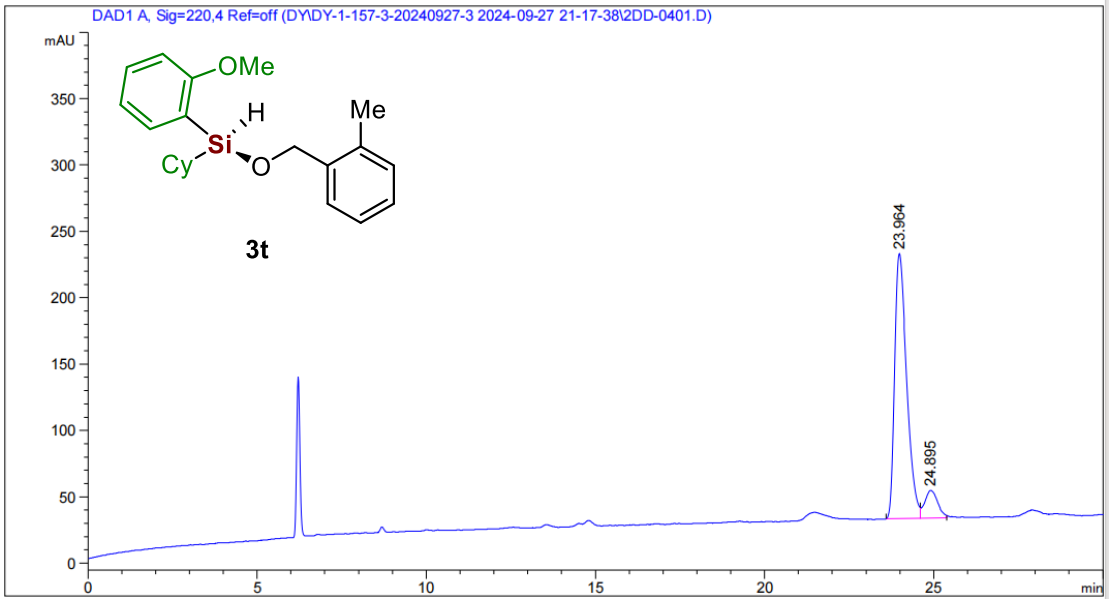
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.548	BB	0.3012	332.59183	16.49511	51.2213
2	15.806	BB	0.3614	316.73206	10.63798	48.7787



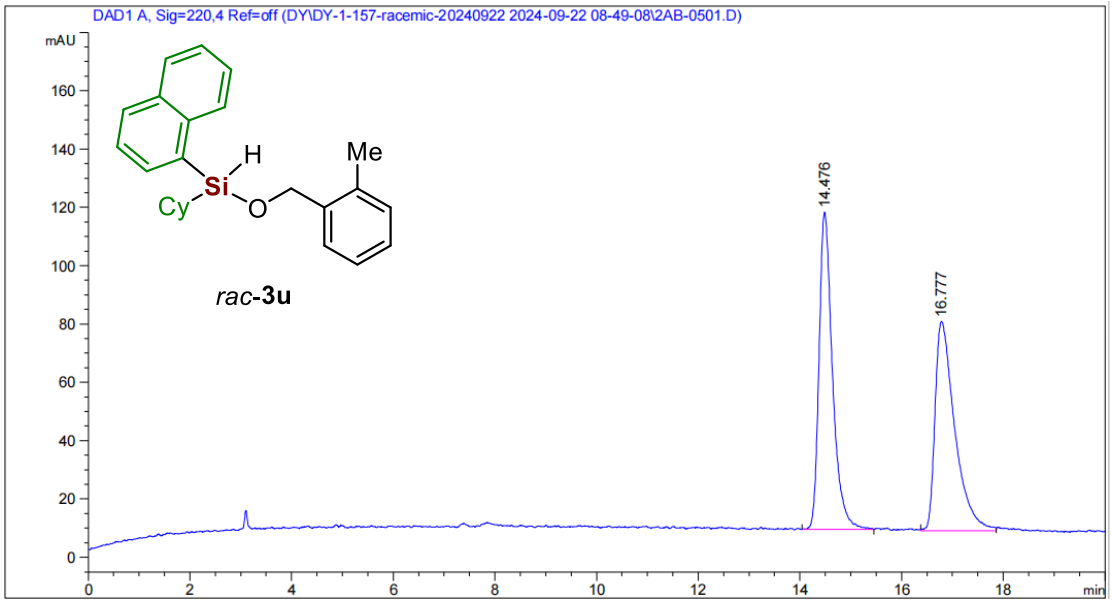
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.758	MM R	0.2681	40.28536	2.50477	1.5608
2	15.307	MM R	0.4373	2540.80420	96.83143	98.4392



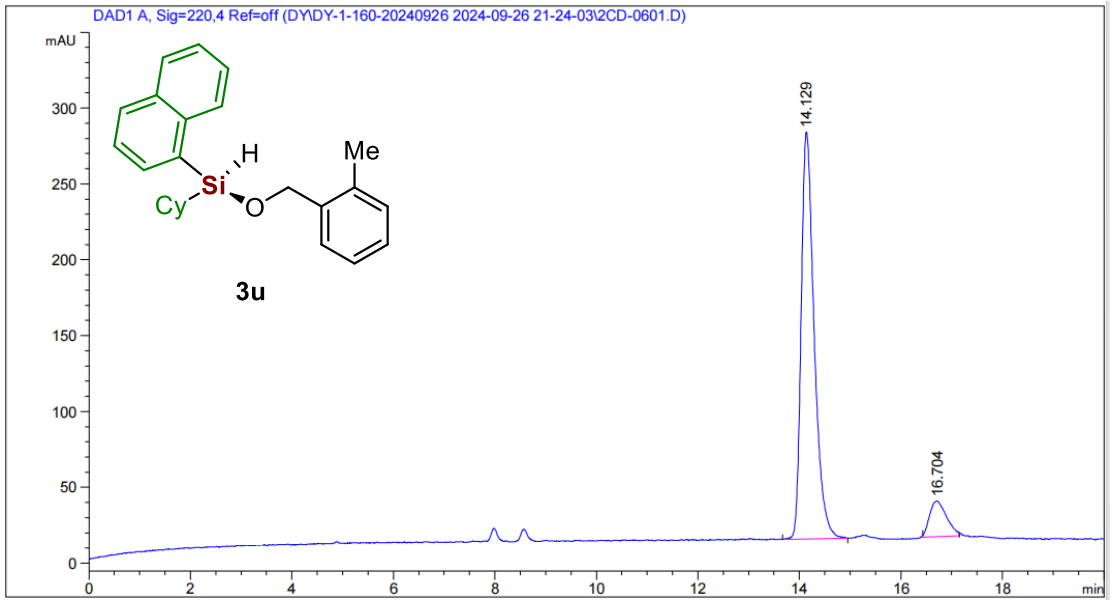
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	23.062	BV	0.3566	544.18146	23.99502	48.9376
2	23.848	VB	0.3652	567.80792	23.90170	51.0624



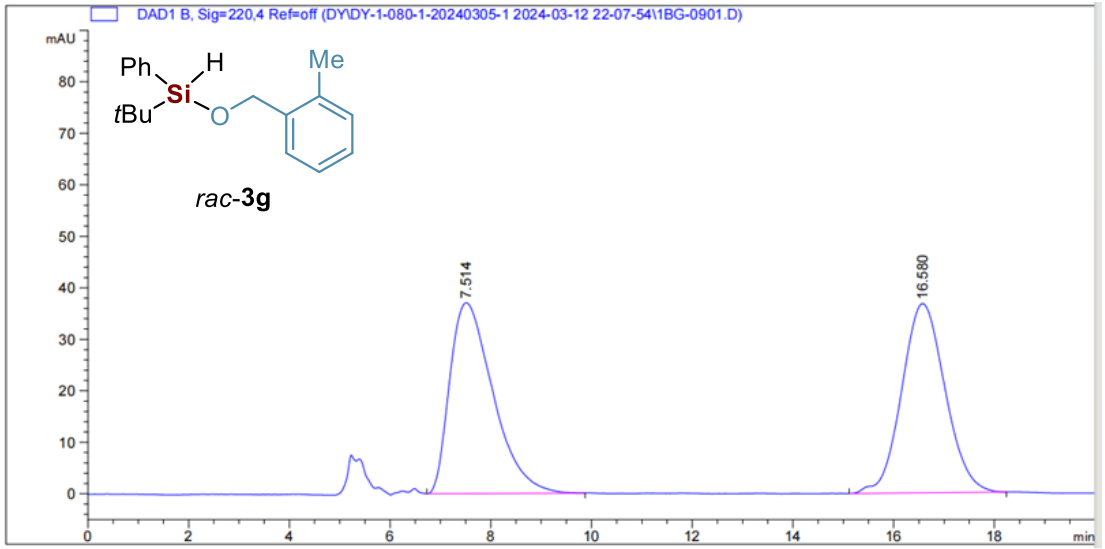
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	23.964	MF R	0.4101	4913.20947	199.67773	89.9018
2	24.895	FM R	0.4400	551.87347	20.90639	10.0982



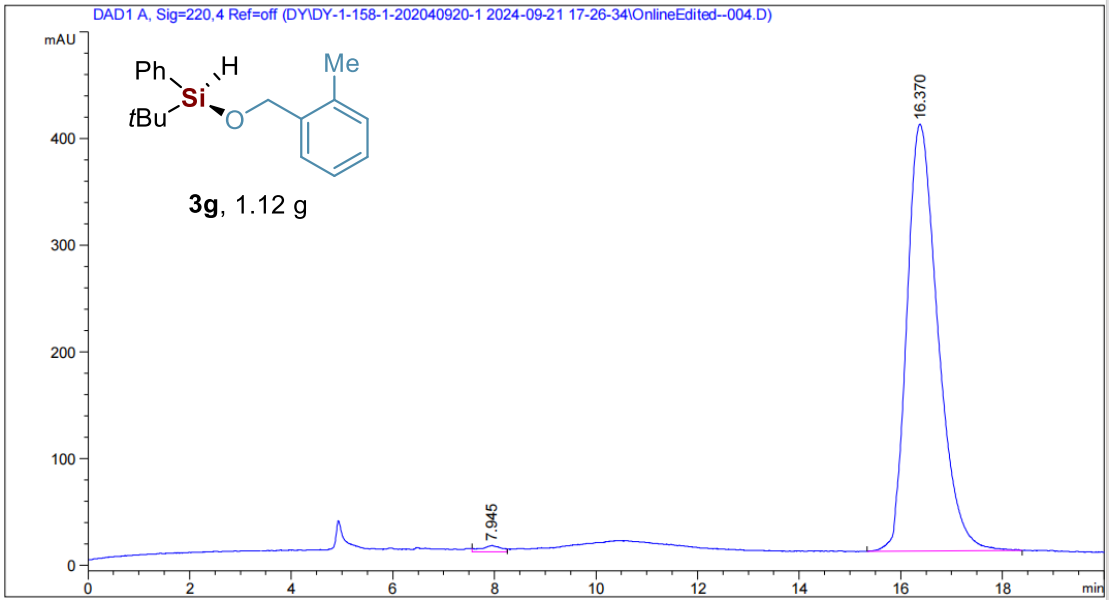
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.476	BV R	0.2778	1994.78625	108.86865	50.7652
2	16.777	MM R	0.4494	1934.65369	71.75258	49.2348



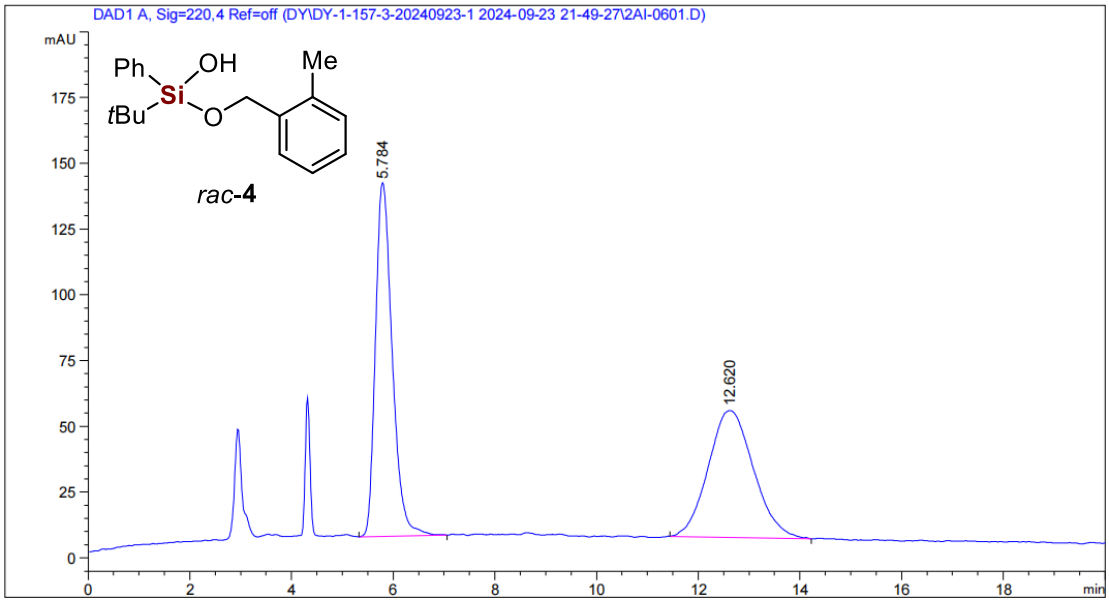
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	14.129	BB	0.2651	4764.83154	268.36334	89.7468
2	16.704	MM R	0.3854	544.36438	23.54243	10.2532



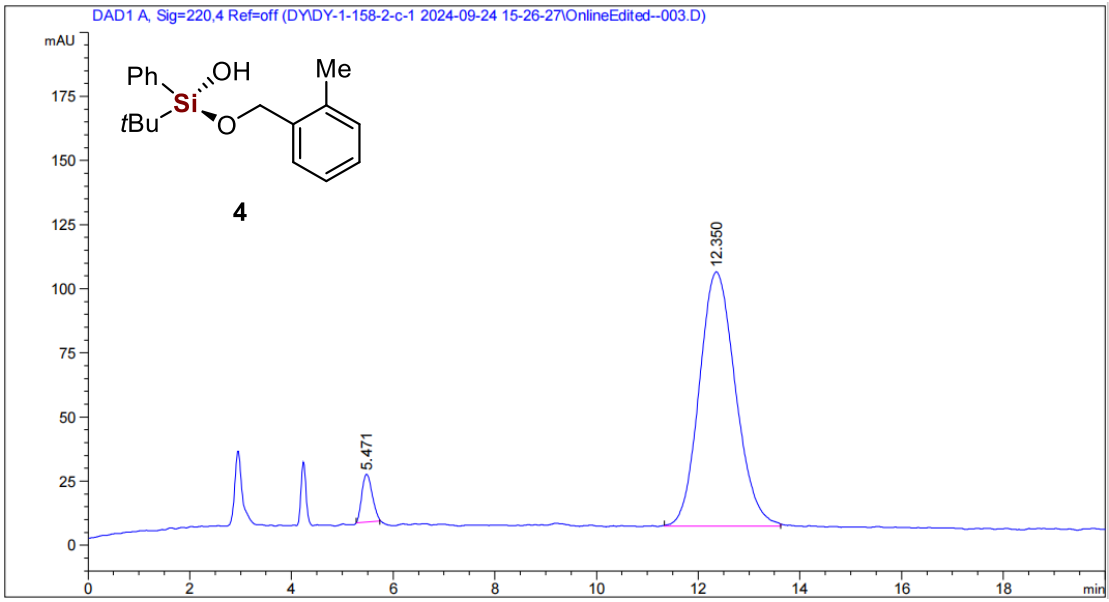
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.514	BB	0.8816	2209.25586	37.05194	50.1137
2	16.580	BB	0.9040	2199.23071	36.75964	49.8863



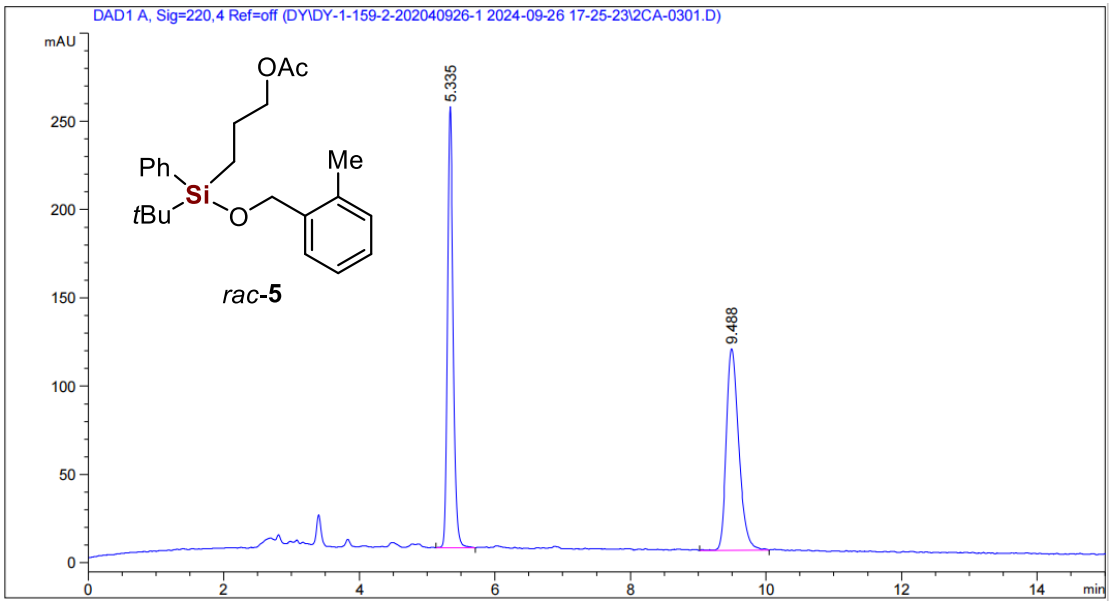
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.945	MM R	0.4501	162.30927	6.00953	0.9488
2	16.370	BV R	0.5844	1.69439e4	399.82999	99.0512



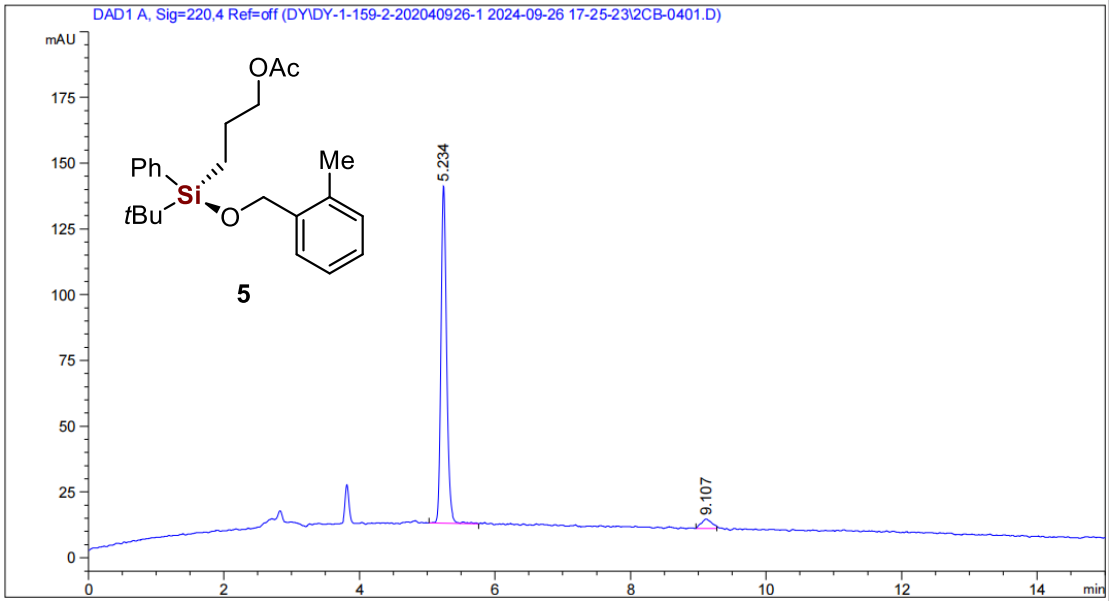
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.784	BB	0.3511	3078.70923	134.48726	50.8367
2	12.620	BB	0.8682	2977.36694	48.22910	49.1633



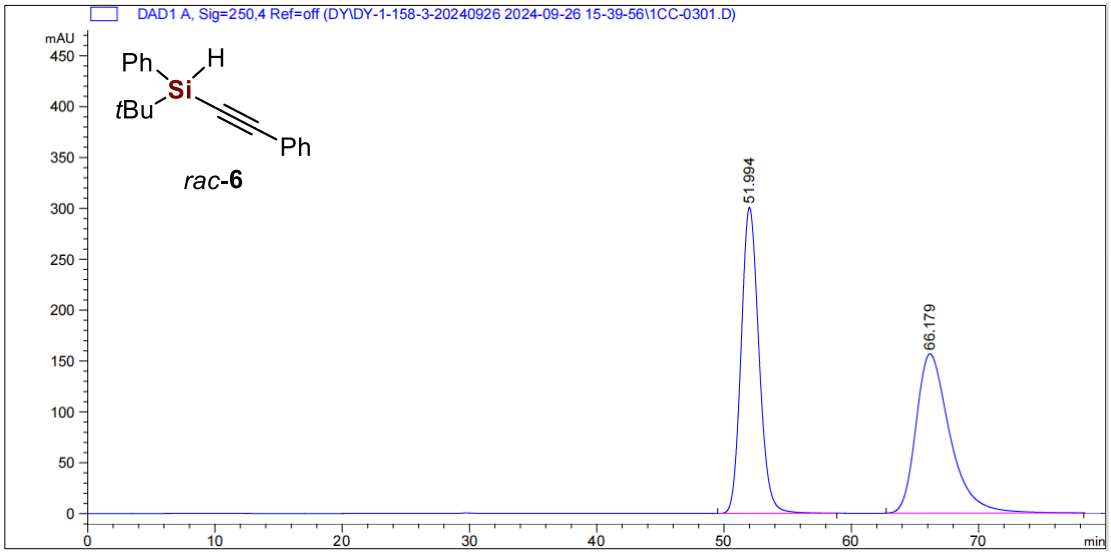
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.471	MM R	0.2353	264.05313	18.70371	5.1243
2	12.350	MM R	0.8221	4888.92529	99.11571	94.8757



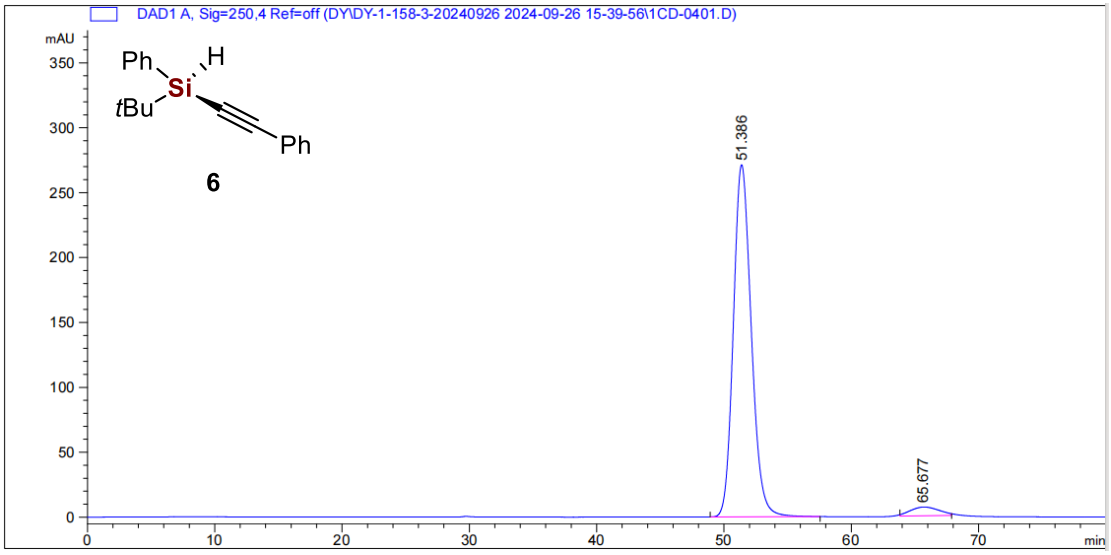
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.335	VB	0.0907	1472.22205	249.98006	50.3352
2	9.488	VV R	0.1925	1452.61108	114.12514	49.6648



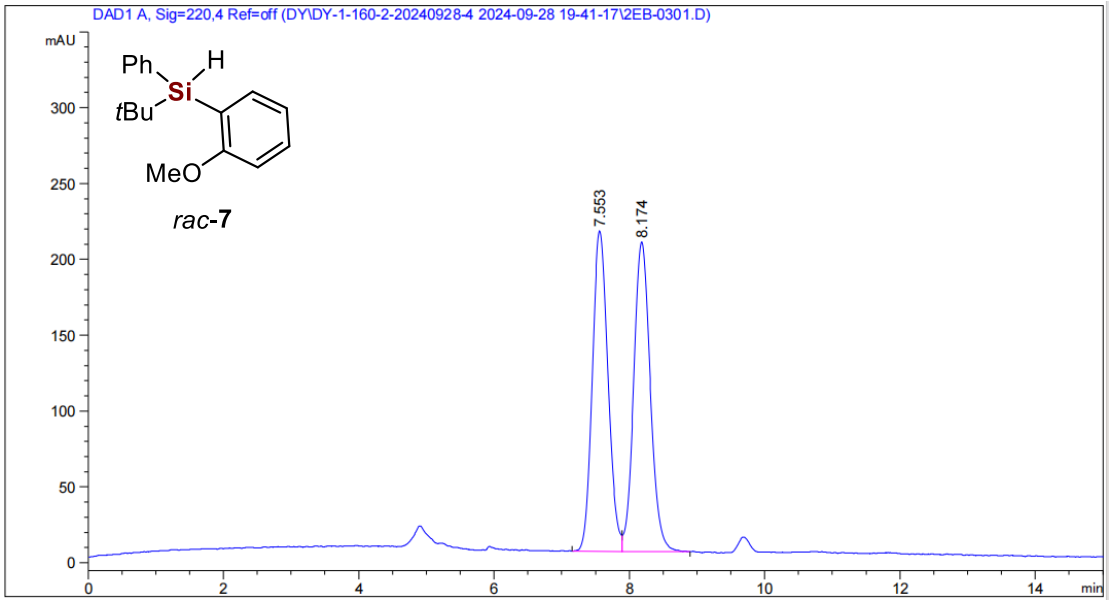
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	5.234	BV R	0.0860	726.69006	128.43176	94.8283
2	9.107	MM R	0.1849	39.63157	3.57289	5.1717



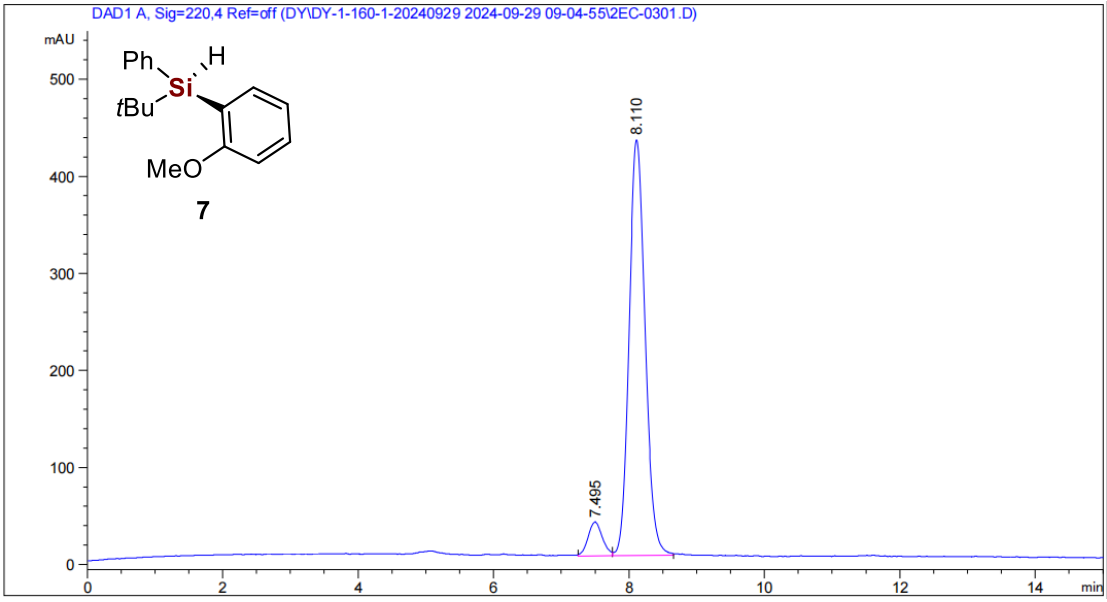
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	51.994	BB	1.4960	2.92303e4	300.71945	50.2781
2	66.179	BB	2.5495	2.89070e4	156.45992	49.7219



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	51.386	BB	1.4306	2.65232e4	271.28973	96.1581
2	65.677	MM R	2.6139	1059.70264	6.75692	3.8419



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.553	BV	0.2521	3404.18481	211.18240	49.4789
2	8.174	VV R	0.2627	3475.88330	204.12251	50.5211



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	7.495	MF R	0.2451	513.61218	34.92746	6.8060
2	8.110	FM R	0.2736	7032.85010	428.48874	93.1940