Supporting Information

Palladium-Catalyzed Sequential Three-Component Reactions to Access Vinylsilanes

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1. General Information

Pd(OAc)$_2$ was purchased from Strem Chemicals. All of the solvents were purified by distillation prior to use. The substrates were synthesized according to reported procedures. Unless otherwise noted, the other commercial chemicals were used without further purification. $^1$H NMR and $^{13}$C NMR spectra were recorded on Bruker ARX400 instrument (400 MHz) or Bruker DRX-600 instrument (600 MHz). High resolution mass spectra were measured on Bruker MicroTOF II ESI-TOF mass spectrometer. GC-MS data were tested with ThermoFisher Trace1300-ISQ (EI). The crystal data was tested with Bruker APEX3. The cell refinement was measured with Bruker SAINT. NMR spectra were recorded in CDCl$_3$. $^1$H NMR spectra were referenced to residual CHCl$_3$ at 7.26 ppm, and $^{13}$C NMR spectra were referenced to the central peak of CDCl$_3$ at 77.0 ppm. Chemical shifts (δ) are reported in ppm, and coupling constants (J) are in Hertz (Hz). Multiplicities are reported using the following abbreviations: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet.
2. General Procedure for the Synthesis of the Substrates

2b, 2d, 2e, 2f and 2j were prepared by following method A[1]. 2c, 2g, 2h, 2i, 2l and 2m were prepared by following method B[2]. The crude product was purified by silica gel column chromatography with petroleum ether/ethyl acetate to afford the corresponding product (67-85% yield).

Method A

A 100 mL round-bottomed flask equipped with a magnetic stir bar was fitted with a rubber septum. The flask was purged with dry argon, charged with PdCl₂(PPh₃)₂ (137.0 mg, 0.2 mmol), Cul (124.0 mg, 0.32 mmol) and aryl iodides 1 (6.5 mmol). While stirring, dry toluene (30 mL), DBU (5.9 mL, 39 mmol), thrimethylsilylethynylene (460.0 μL, 3.25 mmol) and distilled water (46.9 μL, 1.3 mmol) were added by syringe. The reaction was blocked from incidental light and then stirred at 60 °C for 18 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (60 mL), washed with 10% HCl (2X80 mL) and brine (2X80 mL). The organic phase was dried over Na₂SO₄, filtered and concentrated in vacuo. The residue was purified by silica gel column chromatography to afford the corresponding products.

Method B

A 50 mL thick-walled tube (with a Teflon high pressure valve) equipped with a magnetic stir bar was charged with Pd(PPh₃)₂Cl₂ (105.0 mg, 0.15 mmol), 1,4-bis(diphenylphosphino)butane (128.0 mg, 0.3 mmol), aryl iodides 1 (6.0 mmol), propiolic acid (212.0 mg, 3.0 mmol), DBU (913.0 mg, 6.0 mmol) and DMSO (15 mL). The reaction was stirred at 80 °C for 3 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (60 mL) and washed with saturated aq NH₄Cl (2X80 mL). The organic phase was dried over Na₂SO₄, filtered and concentrated in vacuo. The residue was purified by silica gel column chromatography to afford the corresponding products.
3. General Procedure for the Synthesis of the Products

A 35 mL Schlenk-type tube (with a Teflon high pressure valve and side arm) equipped with a magnetic stir bar was charged with 1,2-diphenylethylenes 2 (0.2 mmol), Pd(OAc)$_2$ (2.3 mg, 0.01 mmol), K$_2$CO$_3$ (27.6 mg, 0.2 mmol), and Me$_4$NOAc (26.6 mg, 0.2 mmol). Then the mixture was first stirred at room temperature for 1 minute followed by the addition of aryl iodides 1 (0.2 mmol), TMS-TMS 4 (81.9 μL, 0.4 mmol) and DMF (2 mL). The reaction was frozen with liquid nitrogen. And then the tube was evacuated and backfilled with nitrogen (10 times). The reaction was stirred at 95 °C for 12 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (15 mL) and washed with brine (2X15 mL). The organic phase was dried over Na$_2$SO$_4$, filtered and concentrated in vacuo. The residue was purified by preparative silica gel TLC to afford the corresponding products.

4. Procedure for the Transformation of the TMS Group

A 35 mL thick-walled tube (with a Teflon high pressure valve) equipped with a magnetic stir bar was charged with disilylated product 4aa (40.0 mg, 0.1 mmol), NBS (17.8 mg, 0.1 mmol) and MeCN (1 mL). The reaction was stirred at 40 °C for 12 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (15 mL) and washed with brine (2X15 mL). The organic phase was dried over Na$_2$SO$_4$, filtered and concentrated in vacuo. The residue was purified by preparative silica gel TLC with petroleum ether to afford 5aa as a white solid (28.4 mg, 70% yield).

A 35 mL thick-walled tube (with a Teflon high pressure valve) equipped with a magnetic stir bar was charged with disilylated product 4aa (40.0 mg, 0.1 mmol), NIS (135.0 mg, 0.6 mmol) and MeCN (1 mL). The reaction was stirred at 90 °C for 12 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (15 mL) and washed with brine (2X15 mL). The organic phase was dried over Na$_2$SO$_4$, filtered and concentrated in vacuo. The residue was purified by preparative silica gel TLC with petroleum ether to afford 6aa as a white solid (23.2 mg, 51% yield).

A 100 mL thick-walled tube (with a Teflon high pressure valve) equipped with a magnetic stir bar was charged with disilylated product 4aa (1.2 g, 3.0 mmol), NBS (5.3 g, 30.0 mmol) and MeCN (30 mL). The reaction was stirred at 100 °C for 12 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (60 mL) and washed with brine (2X60 mL). The organic phase was dried over Na$_2$SO$_4$, filtered and concentrated in vacuo. The residue was purified by silica gel column chromatography with petroleum ether to afford 7aa as a white solid (0.77 g, 61% yield).
A 35 mL Schlenk-type tube (with a Teflon high pressure valve and side arm) equipped with a magnetic stir bar was charged with disilylated product 4aa (40.0 mg, 0.1 mmol), TBAF·3H₂O (94.7 mg, 0.3 mmol) and THF (1 mL). The reaction was frozen with liquid nitrogen. And then the tube was evacuated and backfilled with argon (10 times). The reaction was stirred at 50 °C for 12 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (15 mL) and washed with brine (2X15 mL). The organic phase was dried over Na₂SO₄, filtered and concentrated in vacuo. The residue was purified by preparative silica gel TLC with petroleum ether to afford 8aa as a colorless oil (27.6 mg, 86% yield).

To disilylated product 4aa (40.0 mg, 0.1 mmol) in dry CH₂Cl₂ (2 mL) at 0 °C under Ar atmosphere was added BBr₃ (57.8 μL, 0.6 mmol). The reaction was stirred at 25 °C for 12 h. Upon completion, the reaction mixture was quenched with water, diluted with EtOAc (15 mL) and washed with brine (2X15 mL). The organic phase was dried over Na₂SO₄, filtered and concentrated in vacuo. The residue was purified by preparative silica gel TLC with petroleum ether/ethyl acetate 50:1 to afford 9aa as a white solid (20.1 mg, 52% yield).

A 35 mL thick-walled tube (with a Teflon high pressure valve) equipped with a magnetic stir bar was charged with disilylated product 4ao (73.3 mg, 0.2 mmol), CsF (303.8 mg, 2 mmol) and DMF/H₂O (2 mL, 10:1). The reaction was stirred at 100 °C for 12 h. Upon completion, the reaction mixture was cooled to room temperature, diluted with EtOAc (15 mL) and washed with brine (2X15 mL). The organic phase was dried over Na₂SO₄, filtered and concentrated in vacuo. The residue was purified by preparative silica gel TLC with petroleum ether to afford (E)-pent-1-ene-1,2-diyldibenzene as colorless oil (34.6 mg, 78% yield).
5. Crystal data

The X-ray Crystal Structure of 4ba

The 4ba was prepared by the method mentioned above. The crude product was purified by preparative silica gel TLC with petroleum ether to afford 4ba as a white solid (79.96 mg, 93%). Single crystals were obtained by slow evaporation of its solution in petroleum ether at room temperature. CCDC 1845058 (for 4ba) contains the supplementary crystallographic data for this paper. These data can be obtained free of charge from The Cambridge Crystallographic Data Centre.

Table 1. Crystal data and structure refinement for 4ba

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6. Characterization of the Substrates

**1,2-di-\textit{m}-tolylethyne (2g)**: pale yellow oil (0.44 g, 71\%) \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) 7.36 (s, 2H), 7.34 (d, \(J = 7.6\) Hz, 2H), 7.24 (t, \(J = 7.6\) Hz, 2H), 7.14 (d, \(J = 7.6\) Hz, 2H), 2.36 (s, 6H). \(^{13}\)C NMR (151 MHz, CDCl\(_3\)) \(\delta\) 137.96, 132.15, 129.06, 128.63, 128.20, 123.11, 89.18, 21.23. MS (EI): \([M]^+\): 206.12

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\text{MeO} \\
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**1,2-bis(3-methoxyphenyl)ethyne (2h)**: yellow solid (0.49 g, 68\%) \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) 7.27 (t, \(J = 7.9\) Hz, 2H), 7.14 (d, \(J = 7.5\) Hz, 2H), 7.07 (s, 2H), 6.90 (dd, \(J = 8.2, 1.7\) Hz, 2H), 3.83 (s, 6H). \(^{13}\)C NMR (151 MHz, CDCl\(_3\)) \(\delta\) 159.31, 129.40, 124.19, 124.12, 116.29, 115.00, 89.08, 55.29. HRMS (ESI-TOF) m/z: calculated for \(\text{C}_{16}\text{H}_{15}\text{O}_2\): \([\text{M}+\text{H}]^+\): 239.1067, found: 239.1048

**1,2-bis(3,5-dimethylphenyl)ethyne (2l)**: yellow solid (0.51 g, 73\%) \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) 7.16 (s, 4H), 6.96 (s, 2H), 2.31 (s, 12H). \(^{13}\)C NMR (151 MHz, CDCl\(_3\)) \(\delta\) 137.83, 130.03, 129.25, 123.05, 123.00, 89.01, 21.12. HRMS (ESI-TOF) m/z: calculated for \(\text{C}_{18}\text{H}_{19}\): \([\text{M}+\text{H}]^+\): 235.1481, found: 235.1479.
7. Characterization of the Products

(Z)-(1,2-diphenyl-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4aa): white solid (73.6 mg, 92%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) \(\delta\) 7.57 (d, \(J = 7.4\) Hz, 1H), 7.50 – 7.41 (m, 2H), 7.40 – 6.97 (m, 6H), 6.98 – 6.92 (m, 3H), 6.92 – 6.85 (m, 2H), 0.01 (s, 9H), -0.26 (s, 9H). \(^1\)C NMR (151 MHz, CDCl\(_3\)) \(\delta\) 152.63, 149.71, 143.99, 143.86, 141.41, 138.72, 135.05, 131.79, 130.82, 129.48, 128.20, 127.76, 126.93, 126.59, 126.34, 125.21, 0.02, -0.02. HRMS (ESI-TOF) m/z: calculated for C\(_{26}\)H\(_{32}\)NaSi\(_2\)\([\text{M+Na}]^+\): 423.1935, found: 423.1931.

(Z)-(2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-5-methoxyphenyl)trimethylsilane (4ba): white solid (79.96 mg, 93%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) \(\delta\) 7.37 (d, \(J = 8.2\) Hz, 1H), 7.34 – 6.96 (m, 7H), 6.96 – 6.91 (m, 3H), 6.90–6.84 (m, 2H), 3.89 (s, 3H), -0.01 (s, 9H), -0.23 (s, 9H). \(^1\)C NMR (101 MHz, CDCl\(_3\)) \(\delta\) 158.08, 152.45, 144.18, 144.00, 142.32, 141.80, 140.40, 132.94, 130.84, 129.46, 127.64, 126.88, 126.28, 125.15, 121.47, 112.05, 55.07, 0.15, -0.10. HRMS (ESI-TOF) m/z: calculated for C\(_{27}\)H\(_{35}\)OSi\(_2\)\([\text{M+H}]^+\): 431.2221, found: 431.2204.

(Z)-(2-(4-methoxyphenyl)-1-phenyl-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ba'): white solid (21.5 mg, 25%) \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) 7.55 (d, \(J = 7.3\) Hz, 1H), 7.43 (d, \(J = 7.3\) Hz, 1H), 7.38 (d, \(J = 7.2\) Hz, 1H), 7.34 (t, \(J = 7.3\) Hz, 1H), 7.30 – 7.22 (m, 4H), 7.14 (t, \(J = 7.3\) Hz, 1H), 6.75 (d, \(J = 8.8\) Hz, 2H), 6.47 (d, \(J = 8.8\) Hz, 2H), 3.65 (s, 3H), 0.00 (s, 9H), -0.30 (s, 9H). \(^1\)C NMR (151 MHz, CDCl\(_3\)) \(\delta\) 157.84, 151.98, 149.93, 144.20, 142.18, 138.82, 135.01, 134.14, 132.11, 130.36, 128.18, 127.80, 126.50, 125.13, 112.29, 54.97, 0.07, 0.02. HRMS (ESI-TOF) m/z: calculated for C\(_{27}\)H\(_{34}\)NaOSi\(_2\)\([\text{M+Na}]^+\): 453.2040, found: 453.2049.

(Z)-(2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-5-methylphenyl)trimethylsilane (4ca): white solid (81.1 mg, 98%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) \(\delta\) 7.36 (s, 1H), 7.33 (d, \(J = 7.6\) Hz, 1H), 7.31 – 6.96 (m, 6H), 6.97 – 6.91 (m, 3H), 6.90 – 6.82 (m, 2H), 2.43 (s, 3H), 0.00 (s, 9H), -0.25 (s, 9H). \(^1\)C NMR (101 MHz, CDCl\(_3\)) \(\delta\) 152.79, 146.87, 144.03, 143.92, 141.69, 138.40, 135.83, 131.84, 130.82, 129.50, 128.20, 128.32, 127.67, 126.89, 126.26, 125.16, 21.38, 0.11. MS (EI): (M\(^+\)): 414.23.
(Z)-(5-tert-butyl)-2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)phenyltrimethylsilane (4da): white solid (87.6 mg, 96%) 1H NMR (400 MHz, CDCl3) δ 7.54 (d, J = 1.9 Hz, 1H), 7.42 (dd, J = 7.9, 2.0 Hz, 1H), 7.32 (d, J = 7.9 Hz, 1H), 7.24 – 6.98 (m, 5H), 6.95 – 6.91 (m, 3H), 6.90 – 6.85 (m, 2H), 1.37 (s, 9H), -0.02 (s, 9H), -0.31 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 152.73, 148.98, 146.70, 144.04, 141.64, 137.63, 131.78, 131.45, 130.81, 129.50, 127.61, 126.85, 126.21, 125.10, 124.94, 34.58, 31.45, 0.13, -0.09. HRMS (ESI-TOF) m/z: calculated for C30H30NaSi2 [M+Na]+: 479.2561, found: 479.2559.

(2)-(1,2-diphenyl-2-(trimethylsilyl)-1,1′-biphenyl)-4-ylvinyl)trimethylsilane (4ea): white solid (90.4 mg, 95%) 1H NMR (400 MHz, CDCl3) δ 7.83 (d, J = 1.7 Hz, 1H), 7.72 (d, J = 7.5 Hz, 3H), 7.57 – 7.47 (m, 3H), 7.40 (t, J = 7.3 Hz, 1H), 7.34 – 7.03 (m, 5H), 7.02 – 6.97 (m, 3H), 6.97 – 6.92 (m, 2H), 0.08 (s, 9H), -0.20 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 152.39, 148.83, 144.28, 143.87, 141.39, 141.16, 139.25, 139.07, 133.85, 132.28, 130.85, 129.46, 128.78, 127.70, 127.21, 127.09, 126.97, 126.74, 126.41, 125.24, 0.11, 0.08. HRMS (ESI-TOF) m/z: calculated for C30H30NaSi2 [M+Na]+: 499.2248, found: 499.2254.

(2)-(5,6-(4,1,2-diphenyl-2-(trimethylsilyl)vinyl)-3-(trimethylsilyl)phenyl)acetamide (4fa): white solid (80.4 mg, 88%) 1H NMR (600 MHz, CDCl3) δ 7.91 (dd, J = 8.1, 2.0 Hz, 1H), 7.62 – 7.52 (m, 1H), 7.43 (s, 1H), 7.39 (d, J = 8.1 Hz, 1H), 7.25 – 7.00 (m, 5H), 6.94 – 6.91 (m, 3H), 6.85 – 6.83 (m, 2H), 2.21 (s, 3H), -0.02 (s, 9H), -0.25 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 168.42, 152.11, 145.78, 144.32, 143.78, 141.42, 139.76, 136.54, 132.46, 130.80, 129.36, 127.65, 126.91, 126.36, 126.84, 125.20, 119.38, 24.67, 0.10, -0.14. HRMS (ESI-TOF) m/z: calculated for C30H32NNaO2Si2 [M+Na]+: 480.2149, found: 480.2137.

(2)-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-3-(trimethylsilyl)phenyl acetate (4ga): white solid (47.6 mg, 52%) 1H NMR (400 MHz, CDCl3) δ 7.42 (d, J = 8.7 Hz, 1H), 7.25 – 6.97 (m, 7H), 6.96 – 6.91 (m, 3H), 6.87 – 6.83 (m, 2H), 2.34 (s, 3H), -0.03 (s, 9H), -0.27 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 169.38, 151.82, 149.51, 147.24, 144.68, 143.73, 141.18, 140.09, 132.72, 130.83, 127.81, 127.77, 127.66, 126.99, 126.47, 125.28, 121.17, 21.28, 0.03, -0.17. HRMS (ESI-TOF) m/z: calculated for C30H30NaO2Si2 [M+Na]+: 481.1990, found: 481.1996.

(2)-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-5-fluorophenyltrimethylsilane (4ha): white solid (61.9 mg, 74%) 1H NMR (600 MHz, CDCl3) δ 7.38 (dd, J = 8.2, 5.5 Hz, 1H), 7.28 – 7.19 (m, 4H), 7.15-7.10 (m, 2H), 7.08-6.90 (m, 4H), 6.85 – 6.80 (m, 2H), -0.02 (s, 9H), -0.26 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 161.82 (d, J = 249.1 Hz), 151.66, 145.63 (d, J = 3.4 Hz), 144.74, 143.70, 142.08 (d, J = 3.8 Hz), 141.32, 133.38 (d, J = 6.7 Hz), 131.88 (d, J = 7.7 Hz), 130.77, 129.34, 127.00, 126.50, 125.32, 121.60 (d, J = 18.8 Hz), 114.66 (d, J = 20.8 Hz), 0.08, -0.24. HRMS (ESI-TOF) m/z: calculated for C30H30FNaSi2 [M+Na]+: 441.1841, found: 441.1844.
(Z)-(2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-4-methylphenyl)trimethylsilane (4ia): white solid (80.3 mg, 97%) 1H NMR (400 MHz, CDCl3) δ 7.43 (d, J = 7.5 Hz, 1H), 7.25 – 6.94 (m, 7H), 6.95 – 6.91 (m, 3H), 6.88 – 6.83 (m, 2H), 2.45 (s, 3H), -0.04 (s, 9H), -0.29 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 152.94, 149.64, 143.98, 143.78, 141.41, 137.82, 135.11, 135.03, 132.85, 130.82, 129.43, 127.67, 127.33, 126.91, 126.31, 125.16, 21.29, 0.06. MS (EI): (M+) = 414.23.

(4ia) white solid (66.2 mg, 77%) 1H NMR (400 MHz, CDCl3) δ 7.46 (d, J = 8.2 Hz, 1H), 7.34 – 7.01 (m, 5H), 6.96 (d, J = 2.5 Hz, 1H), 6.91 – 6.87 (m, 3H), 3.92 (s, 3H), -0.04 (s, 9H), -0.24 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 159.65, 152.41, 151.20, 143.88, 143.78, 141.11, 136.52, 130.76, 129.85, 129.44, 127.71, 126.95, 126.39, 125.23, 118.33, 111.42, 55.16, 0.16, 0.04. HRMS (ESI-TOF) m/z: calculated for C27H35OSi2 [M+H]^+ 431.2221, found: 431.2234.

(4ia) white solid (55.7 mg, 60%3%) 1H NMR (400 MHz, CDCl3) δ 7.99 (d, J = 1.5 Hz, 1H), 7.93 (dd, J = 7.7, 1.7 Hz, 1H), 7.67 (d, J = 7.7 Hz, 1H), 7.27 – 7.00 (m, 5H), 6.96 – 6.91 (m, 3H), 6.84 – 6.79 (m, 2H), 2.71 (s, 3H), 0.01 (s, 9H), -0.28 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 198.25, 151.76, 150.16, 145.92, 144.89, 143.52, 140.86, 136.42, 135.53, 130.81, 130.67, 129.26, 127.80, 127.05, 126.61, 126.26, 125.40, 26.79, 0.11, -0.19. HRMS (ESI-TOF) m/z: calculated for C28H34NaOSi2 [M+Na]^+ 465.2040, found: 465.2033.
(Z)-(2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-5-methoxy-4-methylphenyl)trimethylsilane (4ma): white solid (86.1 mg, 97%) 1H NMR (400 MHz, CDCl3) δ 7.40 – 6.99 (m, 6H), 6.98 (s, 1H), 6.96 – 6.91 (m, 3H), 6.91 – 6.85 (m, 2H), 3.88 (s, 3H), 2.34 (s, 3H), -0.02 (s, 9H), -0.25 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 156.31, 152.78, 144.16, 143.95, 142.21, 141.96, 136.64, 134.84, 130.82, 129.46, 127.63, 126.85, 126.20, 126.11, 125.08, 116.15, 55.24, 15.94, 0.20, 0.04. HRMS (ESI-TOF) m/z: calculated for C28H36NaO2Si2 [M+Na]+: 467.2197, found: 467.2191.

(Z)-(2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-5-fluoro-4-methylphenyl)trimethylsilane (4na): white solid (55.3 mg, 64%) 1H NMR (400 MHz, CDCl3) δ 7.26 – 6.96 (m, 7H), 6.95 – 6.90 (m, 3H), 6.87 – 6.81 (m, 2H), 2.38 (s, 3H), -0.05 (s, 9H), -0.26 (s, 9H). 13C NMR (101 MHz, CDCl3) δ160.43 (d, J = 247.6 Hz), 151.95, 145.34 (d, J = 3.7 Hz), 144.41, 143.81, 141.35, 138.56 (d, J = 3.7 Hz), 135.24 (d, J = 4.3 Hz), 130.78, 129.37 (d, J = 8.8 Hz), 127.72 (d, J = 7.3 Hz), 126.96, 126.45, 125.25, 124.16 (d, J = 17.0 Hz), 121.30 (d, J = 19.8 Hz), 14.34 (d, J = 3.2 Hz), 0.16, -0.22. MS (EI): (M+): 432.20.

(3,5-Dimethyl-2-(trimethylsilyl)phenyl)-1,2-diphenylvinyltrimethylsilane (4oa): white solid (59.1 mg, 63%/64%) 1H NMR (400 MHz, CDCl3) δ 7.55 (d, J = 7.3 Hz, 1H), 7.46 – 7.38 (m, 2H), 7.37 – 7.34 (m, 1H), 7.24 – 6.97 (m, 5H), 6.58 (s, 1H), 6.45 (s, 2H), 1.98 (s, 6H), 0.02 (s, 9H), -0.28 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 152.97, 149.88 , 144.20, 143.55, 141.20 , 138.74, 135.94 , 134.92 , 131.74, 129.43, 128.81, 128.14, 127.94, 126.44, 125.07, 21.12, 0.12, 0.02. HRMS (ESI-TOF) m/z: calculated for C28H36NaSi2 [M+Na]+: 451.2248, found: 451.2219.

(2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-3-methylphenyl)trimethylsilane (4pa): white solid (49.7 mg, 60%) 1H NMR (400 MHz, CDCl3) δ 7.43 (d, J = 7.1 Hz, 1H), 7.40 – 6.99 (m, 7H), 6.97 – 6.91 (m, 3H), 6.87 – 6.81 (m, 2H), 2.54 (s, 3H), 0.03 (s, 9H), -0.29 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 149.32, 148.86, 144.52, 143.56, 140.27, 138.98, 136.59, 132.74, 130.91, 130.83, 129.17, 128.03, 127.10, 126.62, 126.41, 125.48, 20.80, 0.77, -0.43. MS (EI): (M+): 414.3.

(2-(2-(2-[(trifluoromethyl)-6-(trimethylsilyl)phenyl]vinyl)trimethylsilane (4qa): white solid (70.2 mg, 75%) 1H NMR (400 MHz, CDCl3) δ 7.79 (d, J = 7.3Hz, 2H), 7.51 – 7.31 (m, 3H), 7.25 – 7.00 (m, 3H), 6.98 – 6.89 (m, 3H), 6.86 – 6.77 (m, 2H), 0.07 (s, 9H), -0.30 (s, 9H). 13C NMR (101 MHz, CDCl3) δ 147.38, 145.83, 145.09, 144.11, 142.32, 140.25, 138.69, 131.60, 131.55, 130.15 (q, J = 28.0 Hz), 128.63, 127.39 (q, J = 5.2 Hz), 126.91, 126.75, 126.58, 125.73, 124.92 (q, J =276.4 Hz), 0.87, -0.52. HRMS (ESI-TOF) m/z: calculated for C30H23F3NaSi2 [M+Na]+: 491.1809, found: 491.1809.
**Z**-2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-3-(trimethylsilyl)benzonitrile (4ra): white solid (63.8 mg, 75%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) δ 7.63 – 7.76 (m, 2H), 7.45 (t, J = 7.6 Hz, 1H), 7.33 – 7.10 (m, 5H), 7.01 – 6.95 (m, 3H), 6.90 – 6.82 (m, 2H), 0.05 (s, 9H), -0.21 (s, 9H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) δ 152.74, 147.84, 147.40, 143.23, 141.32, 139.65, 139.07, 132.90, 130.62, 129.07, 129.03, 126.88, 125.70, 119.54, 115.74, 0.00, -0.47. HRMS (ESI-TOF) m/z: calculated for C\(_{27}\)H\(_{31}\)NNaSi\(_2\)\([M+Na]^+\): 448.1887, found: 448.1882.

**Z**-(2-(2,4-dimethyl-6-(trimethylsilyl)phenyl)-1,2-diphenylvinyl)trimethylsilane (4sa): white solid (65.9 mg, 77%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) δ 7.40 – 6.96 (m, 7H), 6.95 – 6.90 (m, 3H), 6.87 – 6.82 (m, 2H), 2.50 (s, 3H), 2.37 (s, 3H), 0.02 (s, 9H), -0.28 (s, 9H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) δ 149.48, 146.00, 144.66, 143.66, 140.57, 138.68, 136.40, 135.70, 133.46, 131.64, 130.84, 129.18, 128.04, 127.06, 125.32, 125.41, 21.29, 20.72, 0.83, -0.34. HRMS (ESI-TOF) m/z: calculated for C\(_{28}\)H\(_{36}\)NaSi\(_2\)\([M+Na]^+\): 451.2248, found: 451.2255.

**Z**-(2-(2,3-dimethyl-6-(trimethylsilyl)phenyl)-1,2-diphenylvinyl)trimethylsilane (4ta): white solid (53.9 mg, 63%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) δ 7.40 – 7.07 (m, 7H), 6.97 – 6.92 (m, 3H), 6.87 – 6.81 (m, 2H), 2.45 (s, 3H), 2.38 (s, 3H), 0.00 (s, 9H), -0.33 (s, 9H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) δ 154.44, 144.03, 138.14, 136.70, 135.30, 133.70, 129.77, 129.35, 129.11, 128.79, 128.00, 127.96, 127.00, 126.15, 124.95, 123.92, 20.72, 1.28, 0.60. HRMS (ESI-TOF) m/z: calculated for C\(_{28}\)H\(_{36}\)NaSi\(_2\)\([M+Na]^+\): 451.2246, found: 451.2246.

**Z**-(4-chloro-2-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-3-methylphenyl)trimethylsilane (4ua): white solid (71.8 mg, 80%) \(^1\)H NMR (400 MHz, CDCl\(_3\)) δ 7.45 – 7.15 (m, 7H), 6.99 – 6.93 (m, 3H), 6.83 – 6.77 (m, 2H), 2.60 (s, 3H), 0.01 (s, 9H), -0.30 (s, 9H). \(^{13}\)C NMR (101 MHz, CDCl\(_3\)) δ 150.64, 148.70, 144.22, 144.13, 139.89, 137.79, 136.29, 134.92, 133.53, 130.75, 128.97, 128.14, 127.51, 127.28, 126.72, 125.72, 18.37, 0.67, -0.39. MS (EI): (M\(^+\)): 448.17.

**Z**-5-(1,2-diphenyl-2-(trimethylsilyl)vinyl)-6-(trimethylsilyl)-1\(^1\)H-indole (4va): white solid (48.3 mg, 55%) \(^1\)H NMR (600 MHz, CDCl\(_3\)) δ 8.19 (s, 1H), 7.68 (s, 1H), 7.60 (s, 1H), 7.30 – 7.28 (m, 1H), 7.26 – 6.75 (m, 10H), 6.63 (s, 1H), -0.01 (s, 9H), -0.32 (s, 9H). \(^{13}\)C NMR (151 MHz, CDCl\(_3\)) δ 153.87, 143.33, 143.96, 141.93, 141.20, 134.95, 131.75, 131.11, 129.72, 127.69, 127.54, 126.80, 126.16, 125.03, 124.76, 124.18, 117.87, 102.55, 0.37, 0.10. HRMS (ESI-TOF) m/z: calculated for C\(_{29}\)H\(_{33}\)NNaSi\(_2\)\([M+Na]^+\): 462.2044, found: 462.2037.
(Z)-(1,2-di-p-tolyl-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ab): white solid (82.2 mg, 91%/5%). $^1$H NMR (400 MHz, CDCl$_3$) δ 7.53 (d, $J = 7.3$ Hz, 1H), 7.46 – 7.30 (m, 3H), 7.08 – 6.71 (m, 8H), 2.31 (s, 3H), 2.15 (s, 3H), -0.02 (s, 9H), -0.31 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 152.36, 150.05, 142.97, 140.92, 138.78, 138.65, 135.88, 134.96, 134.46, 131.74, 130.74, 129.23, 128.47, 128.12, 127.66, 126.42, 21.12, 21.00, 0.08, 0.03. HRMS (ESI-TOF) m/z: calculated for C$_{28}$H$_{36}$NaSi$_2^+$ [M+Na]$^+$: 451.2248, found: 451.2254.

(1,2-bis(4-(tert-butyl)phenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ac): white solid (85.1 mg, 78%/5%). $^1$H NMR (400 MHz, CDCl$_3$) δ 7.52 (d, $J = 7.2$ Hz, 1H), 7.43 – 7.27 (m, 2H), 7.32 (t, $J = 7.2$ Hz, 1H), 7.22 (d, $J = 8.1$ Hz, 2H), 7.02 – 6.93 (m, 2H), 6.90 (d, $J = 8.5$ Hz, 2H), 6.69 (d, $J = 8.5$ Hz, 2H), 1.30 (s, 9H), 1.13 (s, 9H), -0.06 (s, 9H), -0.29 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 152.37, 150.23, 149.09, 148.01, 142.86, 140.92, 138.83, 138.61, 134.94, 131.65, 130.52, 128.95, 128.12, 126.37, 124.50, 123.67, 34.32, 34.20, 31.43, 31.09, 0.08, 0.04. HRMS (ESI-TOF) m/z: calculated for C$_{34}$H$_{48}$NaSi$_2^+$ [M+Na]$^+$: 535.3187, found: 535.3200.

(1,2-bis(4-methoxyphenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ad): white solid (77.3 mg, 84%). $^1$H NMR (400 MHz, CDCl$_3$) δ 7.54 (d, $J = 7.3$ Hz, 1H), 7.45 – 7.29 (m, 3H), 7.21 – 6.77 (m, 4H), 6.75 (d, $J = 8.9$ Hz, 2H), 6.48 (d, $J = 8.9$ Hz, 2H), 3.79 (s, 3H), 3.66 (s, 3H), -0.01 (s, 9H), -0.31 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 157.81, 157.35, 152.33, 150.12, 141.72, 138.84, 136.41, 135.05, 134.32, 132.20, 131.68, 130.48, 128.23, 126.51, 113.39, 112.38, 55.18, 55.05, 0.13, 0.09. HRMS (ESI-TOF) m/z: calculated for C$_{30}$H$_{32}$NaO$_2$Si$_2^+$ [M+Na]$^+$: 483.2146, found: 483.2157.

(1,2-bis(4-fluorophenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ae): white solid (83.7 mg, 96%). $^1$H NMR (400 MHz, CDCl$_3$) δ 7.55 (d, $J = 7.3$ Hz, 1H), 7.45 (t, $J = 7.3$ Hz, 1H), 7.40 – 7.32 (m, 2H), 7.24 – 6.85 (m, 4H), 6.83 – 6.77 (m, 2H), 6.70 -6.60 (m, 2H), -0.01 (s, 9H), -0.28 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 161.17 (d, $J = 248.7$ Hz), 161.07 (d, $J = 245.1$ Hz), 152.34, 149.27, 143.02, 139.47 (d, $J = 3.3$ Hz), 138.67, 137.41 (d, $J = 3.3$ Hz), 135.22, 133.42 (d, $J = 8.4$ Hz), 132.43 (d, $J = 7.9$ Hz), 131.60, 128.34, 126.84, 115.67 (d, $J = 22.2$ Hz), 114.00 (d, $J = 21.2$ Hz), 0.07, -0.10. HRMS (ESI-TOF) m/z: calculated for C$_{26}$H$_{31}$F$_2$Si$_2^+$ [M+H]$^+$: 437.1927, found: 437.1941.
(Z)-1,2-bis(4-chlorophenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4af): white solid (90.8 mg, 97%) ¹H NMR (400 MHz, CDCl₃) δ 7.57 – 7.53 (m, 1H), 7.44 (t, J = 6.8 Hz, 1H), 7.38 – 7.33 (m, 2H), 7.32 – 6.80 (m, 6H), 6.76 (d, J = 8.7 Hz, 2H), -0.00 (s, 9H), -0.29 (s, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 152.13, 148.87, 143.73, 142.07, 139.65, 138.69, 135.26, 132.43, 131.98, 131.40, 130.59, 128.36, 128.13, 127.34, 126.95, -0.14, -0.13. MS (EI): [M⁺]: 468.16.

(Z)-1,2-di-m-tolyl-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ag): white solid (83.0 mg, 98%) ¹H NMR (400 MHz, CDCl₃) δ 7.57 – 7.51 (m, 1H), 7.47 – 7.30 (m, 3H), 7.24 – 6.77 (m, 5H), 6.75 (d, J = 7.3 Hz, 1H), 6.66 (d, J = 7.2 Hz, 2H), 2.28 (s, 3H), 2.02 (s, 3H), -0.01 (s, 9H), -0.30 (s, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 152.48, 149.88, 148.35, 143.86, 143.83, 141.36, 138.74, 138.45, 136.89, 136.12, 134.95, 131.81, 131.58, 130.16, 128.1, 127.97, 127.39, 126.99, 126.67, 126.46, 125.83, 21.52, 21.28, 0.07, 0.01. HRMS (ESI-TOF) m/z: calculated for C₂₈H₃₆NaSi₂⁺ [M+Na]⁺: 451.2248, found: 451.2253.

(Z)-1,2-bis(3-methoxyphenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ah): white solid (82.8 mg, 90%) ¹H NMR (400 MHz, CDCl₃) δ 7.54 (d, J = 7.3 Hz, 1H), 7.45 – 7.30 (m, 3H), 7.23-6.58 (m, 5H), 6.66 – 6.51 (m, 2H), 6.43 (d, J = 7.8 Hz, 1H), 3.74 (s, 3H), 3.43 (s, 3H), 0.01 (s, 9H), -0.28 (s, 9H). ¹³C NMR (101 MHz, CDCl₃) δ 159.23, 158.23, 152.28, 149.46, 145.51, 143.83, 143.83, 141.36, 138.74, 137.25, 136.89, 136.12, 134.95, 131.64, 130.16, 128.1, 128.18, 128.77, 128.83, 126.60, 123.58, 122.11, 115.72, 115.18, 113.05, 110.47, 55.15, 54.92, 0.11, 0.04. HRMS (ESI-TOF) m/z: calculated for C₂₈H₃₆O₂NaSi₂⁺ [M+H]⁺: 483.2146, found: 483.2156.

(Z)-1,2-bis(3-fluorophenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4ai): white solid (75.0 mg, 86%) ¹H NMR (600 MHz, CDCl₃) δ 7.56 (d, J = 7.4 Hz, 1H), 7.45 (t, J = 7.4 Hz, 1H), 7.36 (d, J = 7.7 Hz, 2H), 7.24 – 6.55 (m, 7H), 5.68 - 6.53 (m, 1H), 0.01 (s, 9H), -0.27 (s, 9H). ¹³C NMR (151 MHz, CDCl₃) δ 162.69 (d, J = 248.2 Hz), 162.05 (d, J = 244.5 Hz), 152.12 (d, J = 1.8 Hz), 148.82, 146.00 (d, J = 7.3 Hz), 144.44, 143.56 (d, J = 7.1 Hz), 138.83, 135.38, 131.73, 128.88, 128.54, 128.50 (d, J = 8.3 Hz ), 127.34 (d, J = 12.3 Hz), 127.14, 126.57 (d, J = 2.7 Hz), 117.51 (d, J = 22.4 Hz), 116.15 (d, J = 17.0 Hz), 113.69 (d, J = 21.2 Hz), 112.59 (d, J = 21.1 Hz), 0.22, 0.00. HRMS (ESI-TOF) m/z: calculated for C₂₆H₂₁F₂Si₂⁺ [M+H]⁺: 437.1927, found: 437.1938.
(Z)-1,2-bis(3-chlorophenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4aj): white solid (77.7 mg, 83%) $^1$H NMR (400 MHz, CDCl$_3$) δ 7.56 (d, $J = 7.0$ Hz, 1H), 7.45 (t, $J = 7.3$ Hz, 1H), 7.39 – 7.34 (m, 2H), 7.33 – 6.92 (m, 5H), 6.89 (t, $J = 7.9$ Hz, 1H), 6.83 (s, 1H), 6.76 (d, $J = 7.8$ Hz, 1H), 0.01 (s, 9H), -0.27 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 152.13, 148.47, 145.37, 144.35, 142.91, 138.64, 135.29, 133.17, 131.64, 130.59, 129.13, 128.84, 128.26, 127.23, 127.14, 127.07, 126.77, 125.73, 0.13, -0.16. MS (EI): (M$^+$): 468.04.

(Z)-1,1’-((1-(trimethylsilyl)-2-(2-(trimethylsilyl)phenyl)ethene-1,2-diyl)bis(3,1-phenylene))bis(ethane-1-one) (4ak): white solid (72.6 mg, 75%) $^1$H NMR (600 MHz, CDCl$_3$) δ 7.73 (dd, $J = 8.8$, 1.6 Hz, 1H), 7.58 – 7.54 (m, 2H), 7.52 – 7.46 (m, 3H), 7.45 – 7.15 (m, 4H), 7.06 (t, $J = 7.7$ Hz, 1H), 7.03 – 6.99 (m, 1H), 2.54 (s, 3H), 2.23 (s, 3H), 0.00 (s, 9H), -0.25 (s, 9H). $^{13}$C NMR (151 MHz, CDCl$_3$) δ 198.10, 197.80, 152.72, 148.59, 144.49, 144.23, 141.46, 138.57, 135.78, 135.38, 135.28, 131.70, 131.16, 128.52, 127.65, 127.11, 126.21, 125.75, 26.69, 26.37, 0.15, -0.16. MS (EI): (M$^+$): 484.30.

(Z)-1,2-bis(3,5-dimethylphenyl)-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4al): white solid (82.1 mg, 90%) $^1$H NMR (400 MHz, CDCl$_3$) δ 7.53 (d, $J = 7.2$ Hz, 1H), 7.44 – 7.29 (m, 3H), 6.92 – 6.54 (m, 4H), 6.47 (s, 2H), 2.24 (s, 6H), 1.98 (s, 6H), 0.00 (s, 9H), -0.31 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 152.37, 150.09, 143.85, 143.71, 141.30, 138.79, 136.64, 135.76, 134.86, 131.83, 128.79, 128.12, 127.80, 127.07, 126.57, 21.37, 21.16, 0.13, 0.02. MS (EI): (M$^+$): 456.28.

(Z)-1,2-di-o-tolyl-2-(2-(trimethylsilyl)phenyl)vinyl)trimethylsilane (4am): white solid (45.4 mg, 47%/6%) $^1$H NMR (400 MHz, CDCl$_3$) δ 7.77 (d, $J = 7.6$ Hz, 1H), 7.51 (d, $J = 6.5$ Hz, 1H), 7.38 (t, $J = 7.5$ Hz, 1H), 7.30 (t, $J = 6.7$ Hz, 1H), 7.19 (t, $J = 8.3$ Hz, 2H), 7.09 (t, $J = 7.2$ Hz, 1H), 6.95 (t, $J = 7.4$ Hz, 1H), 6.91 – 6.84 (m, 2H), 6.81 (d, $J = 7.1$ Hz, 1H), 6.71 (t, $J = 7.5$ Hz, 1H), 2.09 (s, 3H), 1.78 (s, 3H), -0.06 (s, 9H), -0.22 (s, 9H). $^{13}$C NMR (101 MHz, CDCl$_3$) δ 156.16, 150.35, 144.88, 141.88, 140.6, 138.51, 137.13, 134.99, 134.87, 134.54, 134.40, 132.36, 131.17, 129.83, 127.63, 127.11, 126.70, 125.17, 123.92, 123.46, 22.78, 19.90, 1.12, -0.10. HRMS (ESI-TOF) m/z: calculated for C$_{38}$H$_{36}$NaSi$_2$ [M+Na]$: 511.2248, found: 511.2283.

(Z)-trimethyl(2-(1-phenyl-1-(trimethylsilyl)prop-1-en-2-yl)phenyl)silane (4an): colorless oil (52.73 mg, 67%/11%) $^1$H NMR (600 MHz, CDCl$_3$) δ 7.64 (dd, $J = 7.4$, 1.1 Hz, 1H), 7.43 – 7.41 (m, 2H), 7.38 – 7.34 (m, 2H), 7.31 – 7.29 (m, 1H), 7.23 (dd, $J = 7.5$, 1.1 Hz, 1H), 7.15 (d, $J = 7.2$ Hz, 2H), 1.85 (s, 3H), 0.45 (s, 9H), -0.26 (s, 9H). HRMS (ESI-TOF) m/z: calculated for C$_{32}$H$_{28}$NaSi$_2$ [M+Na]$: 361.1778, found: 361.1799.
(Z)-trimethyl(2-(1-phenyl-1-(trimethylsilyl)pent-1-en-2-yl)phenyl)silane (4ao): colorless oil (41.72 mg, 52%/5%) 1H NMR (600 MHz, CDCl3) δ 7.57 – 7.55 (m, 1H), 7.32 (d, J = 7.4 Hz, 2H), 7.28 (dd, J = 7.4, 7.0, 1.6 Hz, 2H), 7.21 – 7.18 (m, 1H), 7.11 – 7.03 (m, 3H), 2.29 – 2.24 (m, 1H), 1.86 – 1.82 (m, 1H), 1.25 – 1.20 (m, 1H), 1.09 – 1.04 (m, 1H), 0.61 (t, J = 7.3 Hz, 3H), 0.36 (s, 9H), -0.38 (s, 9H).

13C NMR (151 MHz, CDCl3) δ 155.41, 149.52, 144.28, 140.50, 137.43, 134.97, 130.44, 127.98, 127.85, 127.77, 126.06, 125.06, 40.48, 21.48, 14.28, 1.18, -0.22. MS (EI): (M+): 366.40.

(2-(2-bromo-1,2-diphenylvinyl)phenyl)trimethylsilane (5aa): white solid (28.4 mg, 70%) 1H NMR (600 MHz, CDCl3) δ 7.63 (d, J = 7.1 Hz, 1H), 7.47 (t, J = 7.5 Hz, 1H), 7.40 – 7.33 (m, 4H), 7.27 – 7.22 (m, 3H), 7.07 – 7.03 (m, 1H), 7.01 (t, J = 7.4 Hz, 2H), 6.88 (d, J = 7.5 Hz, 2H), 0.09 (s, 9H).

13C NMR (151 MHz, CDCl3) δ 150.01, 144.22, 141.13, 139.32, 137.89, 135.31, 130.68, 130.47, 129.96, 128.95, 128.34, 128.20, 127.61, 126.64, 123.61, -0.22. HRMS (ESI-TOF) m/z: calculated for C23H23BrNaSi+ [M+Na]+: 429.0645, found: 426.0650.

(2-(2-iodo-1,2-diphenylvinyl)phenyl)trimethylsilane (6aa): white solid (23.2 mg, 51%) 1H NMR (600 MHz, CDCl3) δ 7.85 (d, J = 7.9 Hz, 1H), 7.48 (d, J = 7.4 Hz, 1H), 7.42 (t, J = 7.1 Hz, 1H), 7.20 – 7.14 (m, 2H), 7.11 – 7.00 (m, 5H), 7.02 – 6.96 (m, 4H), -0.19 (s, 9H).

13C NMR (151 MHz, CDCl3) δ 153.39, 147.74, 145.38, 143.34, 140.50, 139.35, 130.80, 130.41, 129.11, 128.74, 127.76 127.51, 126.92, 126.16, 125.20, 101.40, -0.18. HRMS (ESI-TOF) m/z: calculated for C23H23INaSi+ [M+Na]+: 477.0506, found: 477.0517.

(1-bromo-2-(2-bromophenylethene-1,2-diyl)) dibenzene (7aa): white solid (0.77 g, 61%) 1H NMR (600 MHz, CDCl3) δ 7.67 (d, J = 8.0 Hz, 1H), 7.41 – 7.35 (m, 3H), 7.33 (d, J = 7.6 Hz, 1H), 7.25 – 7.20 (m, 4H), 7.10 – 7.02 (m, 5H). 13C NMR (151 MHz, CDCl3) δ 144.50, 141.94, 140.25, 138.82, 133.05, 130.53, 130.17, 129.93, 129.03, 128.32, 128.08, 127.84, 127.66, 127.17, 125.14, 123.14. MS (EI): (M+): 413.96.

(8aa): colorless oil (28.2 mg, 86%) 1H NMR (600 MHz, CDCl3) δ 7.65 (d, J = 7.3 Hz, 1H), 7.29 – 7.14 (m, 12H), 7.03 (d, J = 7.5 Hz, 1H), 6.57 (s, 1H), 0.28 (s, 9H).

13C NMR (151 MHz, CDCl3) δ 151.41, 144.19, 140.48, 138.81, 137.12, 135.37, 130.64, 130.55, 130.00, 129.36, 128.38, 128.15, 128.11, 127.39, 126.83, 126.39, 1.17. HRMS (ESI-TOF) m/z: calculated for C23H23NaSi+ [M+Na]+: 351.1539, found: 351.1544.
2,3-diphenyl-1H-indene1,1,3,3-tetramethyl-4,5-diphenyl-1,3dihydrobenzo[c][1,2,7]Oxadisilepine (9aa): white solid (20.1 mg, 52%) 1H NMR (600 MHz, CDCl3) δ 7.61 (dd, J = 7.2, 1.2 Hz, 1H), 7.31 – 7.25 (m, 3H), 7.17 – 7.02 (m, 6H), 6.99 (d, J = 7.4 Hz, 1H), 6.91 – 6.85 (m, 3H), 0.61 (s, 6H), -0.18 (s, 6H). 13C NMR (151 MHz, CDCl3) δ 154.38, 149.49, 144.57, 144.00, 143.96, 138.11, 133.05, 131.64, 130.31, 129.31, 128.56, 127.70, 127.23, 126.69, 126.15, 124.98, 1.02, 0.76. MS (EI): (M+): 386.18.

(E)-pent-1-ene-1,2-diyl dibenzene: colorless oil (34.6 mg, 78%). 1H NMR (600 MHz, CDCl3) δ 7.48 – 7.44 (m, 2H), 7.39 – 7.35 (m, 4H), 7.34 – 7.31 (m, 2H), 7.30 – 7.27 (m, 1H), 7.26 – 7.24 (m, 1H), 6.70 (s, 1H), 2.70 – 2.67 (m, 2H), 1.48 – 1.42 (m, 2H), 0.90 (t, J = 7.4 Hz, 3H). 13C NMR (151 MHz, CDCl3) δ 143.20, 143.15, 138.35, 128.80, 128.34, 128.27, 128.25, 127.13, 126.64, 126.50, 32.18, 21.97, 14.09. MS (EI): (M+): 222.20.
8. NMR Spectra

8.1 NMR Spectra of the Substrates
8.2 NMR Spectra of the Products
9. References