

Supporting Information

General: The metathesis reactions were carried out under an ethylene atmosphere, and all the reaction solutions were degassed through freeze-pump-thaw cycle. Ethylene gas was purified by passing through the aqueous CuCl solution (2 g of CuCl in 180 ml of sat. NH₄Cl aq.) and conc. H₂SO₄ and then KOH tube. CH₂Cl₂ was distilled under an argon atmosphere from CaH₂.

Typical Procedure for the Metathesis Reaction of 3h. To a solution of **2h** (87.7 mg, 0.21 μmol) in CH₂Cl₂ (7.0 ml, 0.03 M) was added **1** (17.5 mg, 21 μmol, 10 mol %), and the solution was stirred at room temperature under an ethylene for 3 h. To this solution was added an excess of ethyl vinyl ether. After the solvent was removed, the residue was purified by flash column chromatography on silica gel (hexane/ethyl acetate 9:1) to yield **3h** (84.6 mg, 0.19 mmol, 90%) as a colorless oil.

Spectral Data:

N-But-2-ynyl-N-cyclohex-2-enyl-4-methyl-benzenesulfonamide (2a). Colorless crystals; mp 84–86 °C. (ether/hexane); IR (film) ν 2225, 1647, 1334, 1160 cm⁻¹; ¹H NMR (270 MHz, CDCl₃) δ 1.68 (t, J = 2.4 Hz, 3 H), 1.74–1.81 (m, 4 H), 1.95 (br, 2 H), 2.42 (s, 3 H), 3.83–4.09 (m, 2 H), 4.49 (br, 1 H), 5.30–5.33 (m, 1 H), 5.83–5.87 (m, 1 H), 7.27 (d, J = 8.3 Hz, 2 H), 7.81 (d, J = 8.3 Hz, 2 H); ¹³C NMR (100 MHz, CDCl₃) δ 3.4 (CH₃), 21.4 (CH₃), 21.4 (CH₂), 24.3 (CH₂), 27.9 (CH₂), 33.1 (CH₂), 54.9 (CH), 75.5 (C), 79.6 (C), 127.1 (CH), 127.2 (CH x 2), 129.0 (CH x 2), 132.5 (CH), 138.1 (C), 142.7 (C); LRMS m/z 303 (M⁺), 155, 148, 91; HRMS calcd for C₁₇H₂₁NO₂S (M⁺) 303.1293, found 303.1287.

4-Isopropenyl-2-pent-4-enyl-1-(toluene-4-sulfonyl)-2,5-dihydro-1H-pyrrole (3a). Colorless oil. IR (neat) ν 1640, 1600, 1346, 1164 cm⁻¹; ¹H NMR (270 MHz, CDCl₃) δ 1.31–1.52 (m, 2 H), 1.77–1.86 (m, 2 H), 1.83 (s, 3 H), 2.07 (dt, J = 6.7, 7.3 Hz, 2 H), 2.41 (s, 3 H), 4.19–4.27 (m, 2 H), 4.52 (br, 1 H), 4.76 (s, 1 H), 4.93–5.04 (m, 3 H), 5.50 (s, 1 H), 5.79 (ddt, J = 17.0, 10.1, 6.7 Hz, 1 H), 7.29 (d, J = 8.3 Hz, 2 H), 7.71 (d, J = 8.3 Hz, 2 H); ¹³C NMR (67.8 MHz, CDCl₃) δ 20.0 (CH₃), 21.5 (CH₃), 24.0 (CH₂), 33.7 (CH₂), 35.6 (CH₂), 55.2 (CH₂), 67.8 (CH), 114.5 (CH₂), 114.7 (CH₂), 125.0 (CH), 127.4 (CH x 2), 129.7 (CH x 2), 134.9 (C), 136.6 (C), 138.4 (C), 138.6 (CH), 143.3 (C); LRMS m/z 331 (M⁺), 262, 176, 155, 107, 91; HRMS calcd for C₁₉H₂₅NO₂S (M⁺) 331.1606, found 331.1613.

N-But-2-ynyl-N-cyclohept-2-enyl-4-methyl-benzenesulfonamide (2b). Colorless crystals; mp 93–96 °C. (ether/hexane); IR (nujol) ν 2213, 1647, 1596, 1336, 1162 cm⁻¹; ¹H NMR (270 MHz, CDCl₃) δ 1.26–2.23 (m, 8 H), 1.68 (t, J = 2.4 Hz, 3 H), 2.42 (s, 3 H), 3.93–4.10 (m, 2 H), 4.56 (br, 1 H), 5.52 (m, 1 H), 5.70–5.79 (m, 1 H), 7.27 (d, J = 8.3 Hz, 2 H), 7.77 (d, J = 8.3 Hz, 2 H); ¹³C NMR (67.8 MHz, CDCl₃) δ 3.5 (CH₃), 21.5 (CH₃), 26.3 (CH₂), 27.6 (CH₂), 28.2 (CH₂), 33.2 (CH₂), 33.7 (CH₂), 59.6 (CH), 75.2 (C), 80.1 (C), 127.5 (CH x 2), 129.2 (CH x 2), 132.3 (CH), 133.4 (CH), 138.2 (C), 142.9 (C); LRMS m/z 317 (M⁺), 249, 234, 162, 155, 94, 91; HRMS calcd for C₁₈H₂₃NO₂S (M⁺) 317.1449, found 317.1442.

2-Hex-5-enyl-4-isopropenyl-1-(toluene-4-sulfonyl)-2,5-dihydro-1H-pyrrole (3b). Colorless oil. IR (neat) ν 1640, 1600, 1346, 1164 cm⁻¹; ¹H NMR (270 MHz, CDCl₃) δ 1.26–1.43 (m, 4 H), 1.75–1.87 (m, 2 H), 1.83 (s, 3 H), 2.04 (dt, J = 6.5, 6.5 Hz, 2 H), 2.41 (s, 3 H), 4.19–4.31 (m, 2 H), 4.51 (br, 1 H), 4.76 (s, 1 H), 4.92 (m, 1 H), 4.96 (m, 1 H), 5.02 (m, 1 H), 5.50 (s, 1 H), 5.80 (ddt, J = 17.0, 10.1, 6.7 Hz, 1 H), 7.29 (d, J = 8.1 Hz, 2 H), 7.71 (d, J = 8.1 Hz, 2 H); ¹³C NMR (67.8 MHz, CDCl₃) δ 20.0 (CH₃), 21.5 (CH₃), 24.1 (CH₂), 28.9 (CH₂), 33.6 (CH₂), 35.9 (CH₂), 55.2 (CH₂), 67.8 (CH), 114.3 (CH₂), 114.5 (CH₂), 125.1 (CH), 127.4 (CH x 2), 129.7 (CH x 2), 134.9 (C), 136.6 (C),

138.3 (C), 138.8 (CH), 143.3 (C); LRMS m/z 345 (M^+), 262, 155, 107, 91; HRMS calcd for $C_{20}H_{27}NO_2S$ (M^+) 345.1762, found 345.1752.

***N*-But-2-ynyl-*N*-cyclooct-2-enyl-4-methyl-benzenesulfonamide (2c).** Colorless crystals; mp 85-87 °C. (ethyl acetate/hexane); IR (nujol) ν 2214, 1648, 1597, 1333, 1162 cm^{-1} ; 1H NMR (270 MHz, $CDCl_3$) δ 1.32-1.77 (m, 8 H), 1.67 (t, $J = 2.4$ Hz, 3 H), 2.11-2.21 (m, 2 H), 2.40 (s, 3 H), 3.96-4.16 (m, 2 H), 4.79-4.88 (m, 1 H), 5.54-5.62 (m, 2 H), 7.24 (d, $J = 8.3$ Hz, 2 H), 7.75 (d, $J = 8.3$ Hz, 2 H); ^{13}C NMR (67.8 MHz, $CDCl_3$) δ 3.4 (CH_3), 21.5 (CH_3), 24.6 (CH_2), 26.1 (CH_2), 26.2 (CH_2), 29.0 (CH_2), 33.5 (CH_2), 34.5 (CH_2), 55.6 (CH), 75.1 (C), 80.2 (C), 127.6 (CH x 2), 128.4 (CH), 129.0 (CH x 2), 130.1 (CH), 138.0 (C), 142.8 (C); LRMS m/z 331 (M^+), 249, 234, 176, 155, 94, 91; HRMS calcd for $C_{19}H_{25}NO_2S$ (M^+) 331.1606, found 331.1631.

2-Hept-6-enyl-4-isopropenyl-1-(toluene-4-sulfonyl)-2,5-dihydro-1*H*-pyrrole (3c). Colorless oil. IR (neat) 1640, 1598, 1346, 1164 cm^{-1} ; 1H NMR (400 MHz, $CDCl_3$) δ 1.24-1.86 (m, 8 H), 1.82 (s, 3 H), 2.03 (dt, $J = 6.7, 6.4$ Hz, 2 H), 2.41 (s, 3 H), 4.20-4.30 (m, 2 H), 4.50 (br, 1 H), 4.76 (s, 1 H), 4.92-5.01 (m, 2 H), 4.96 (s, 1 H), 5.50 (s, 1 H), 5.80 (ddt, $J = 16.7, 10.0, 6.7$ Hz, 1 H), 7.29 (d, $J = 8.3$ Hz, 2 H), 7.71 (d, $J = 8.3$ Hz, 2 H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 20.1 (CH_3), 21.6 (CH_3), 24.5 (CH_2), 28.9 (CH_2), 29.2 (CH_2), 33.8 (CH_2), 36.1 (CH_2), 55.2 (CH_2), 67.9 (CH), 114.2 (CH_2), 114.4 (CH_2), 125.1 (CH), 127.3 (CH x 2), 129.6 (CH x 2), 134.8 (C), 136.5 (C), 138.1 (C), 138.9 (CH), 143.2 (C); LRMS m/z 359 (M^+), 262, 155, 107, 91; HRMS calcd for $C_{21}H_{29}NO_2S$ (M^+) 359.1919, found 359.1919.

***N*-Cyclohex-2-enyl-4-methyl-*N*-prop-2-ynyl-benzenesulfonamide (2d).** Colorless solid. IR (nujol) ν 2116, 1653, 1596, 1332, 1157 cm^{-1} ; 1H NMR (270 MHz, $CDCl_3$) δ 1.52-1.98 (m, 6 H), 2.16 (t, $J = 2.4$ Hz, 1 H), 2.42 (s, 3 H), 3.91 (dd, $J = 2.4, 18.4$ Hz, 1 H), 4.13 (dd, $J = 2.4, 18.4$ Hz, 1 H), 4.46-4.51 (m, 1 H), 5.29-5.33 (m, 1 H), 5.86-5.91 (m, 1 H), 7.28 (d, $J = 8.4$ Hz, 2 H), 7.81 (d, $J = 8.4$ Hz, 2 H); ^{13}C NMR (67.8 MHz, $CDCl_3$) δ 21.4 (CH_2), 21.5 (CH_3), 24.3 (CH_2), 28.0 (CH_2), 32.6 (CH_2), 55.1 (CH), 72.0 (CH), 80.6 (C), 127.0 (CH), 127.4 (CH x 2), 129.4 (CH x 2), 133.2 (CH), 137.9 (C), 143.2 (C); LRMS m/z 289 (M^+), 155, 134, 91; HRMS calcd for $C_{16}H_{19}NO_2S$ (M^+) 289.1136, found 289.1126.

2-Pent-4-enyl-1-(toluene-4-sulfonyl)-4-vinyl-2,5-dihydro-1*H*-pyrrole (3d). Colorless solid. IR (nujol) ν 1642, 1598, 1344, 1166 cm^{-1} ; 1H NMR (270 MHz, $CDCl_3$) δ 1.24-1.49 (m, 2 H), 1.76-1.85 (m, 2 H), 2.06 (dt, $J = 6.8, 7.3$ Hz, 2 H), 2.41 (s, 3 H), 4.16-4.28 (m, 2 H), 4.50 (br, 1 H), 4.92-5.03 (m, 2 H), 5.01 (d, $J = 17.8$ Hz, 1 H), 5.14 (d, $J = 10.5$ Hz, 1 H), 5.51 (br, 1 H), 5.78 (ddt, $J = 17.0, 10.3, 6.8$ Hz, 1 H), 6.32 (dd, $J = 17.8, 10.5$ Hz, 1 H), 7.29 (d, $J = 8.1$ Hz, 2 H), 7.71 (d, $J = 8.3$ Hz, 2 H); ^{13}C NMR (67.8 MHz, $CDCl_3$) δ 21.5 (CH_3), 23.9 (CH_2), 33.7 (CH_2), 35.5 (CH_2), 54.3 (CH_2), 67.3 (CH), 114.6 (CH_2), 116.7 (CH_2), 127.3 (CH x 2), 127.8 (CH), 129.7 (CH x 2), 129.9 (CH), 134.8 (C), 136.6 (C), 138.5 (CH), 143.3 (C); LRMS m/z 317 (M^+), 248, 155, 91; HRMS calcd for $C_{18}H_{23}NO_2S$ (M^+) 317.1449, found 317.1455.

***N*-Cyclohept-2-enyl-4-methyl-*N*-prop-2-ynyl-benzenesulfonamide (2e).** Colorless oil. IR (neat) ν 2120, 1654, 1598, 1336, 1160 cm^{-1} ; 1H NMR (270 MHz, $CDCl_3$) δ 1.30-2.24 (m, 8 H), 2.17 (t, $J = 2.4$ Hz, 1 H), 2.42 (s, 3 H), 4.01 (d, $J = 2.4$ Hz, 1 H), 4.14 (d, $J = 2.4$ Hz, 1 H), 4.56 (br, 1 H), 5.49 (m, 1 H), 5.71-5.81 (m, 1 H), 7.27 (d, $J = 8.1$ Hz, 2 H), 7.78 (d, $J = 8.1$ Hz, 2 H); ^{13}C NMR (67.8 MHz, $CDCl_3$) δ 21.5 (CH_3), 26.2 (CH_2), 27.3 (CH_2), 28.1 (CH_2), 33.1 (CH_2), 33.2 (CH_2), 59.7 (CH), 72.2 (CH), 80.1 (C), 127.4 (CH x 2), 129.4 (CH x 2), 132.7 (CH), 132.9 (CH), 137.8 (C), 143.2 (C); LRMS m/z 303 (M^+), 155, 148, 91; HRMS calcd for $C_{17}H_{21}NO_2S$ (M^+) 303.1293, found 303.1282.

2-Hex-5-enyl-1-(toluene-4-sulfonyl)-4-vinyl-2,5-dihydro-1H-pyrrole (3e). Colorless oil. IR (neat) ν 1640, 1598, 1346, 1162 cm^{-1} ; ^1H NMR (270 MHz, CDCl_3) δ 1.23-1.46 (m, 4 H), 1.71-1.86 (m, 2 H), 2.04 (dt, $J = 6.7, 6.5$ Hz, 2 H), 2.41 (s, 3 H), 4.16-4.28 (m, 2 H), 4.49 (br, 1 H), 4.91-5.03 (m, 2 H), 5.01 (d, $J = 17.8$ Hz, 1 H), 5.14 (d, $J = 11.1$ Hz, 1 H), 5.52 (m, 1 H), 5.79 (ddt, $J = 17.0, 10.1, 6.7$ Hz, 1 H), 6.33 (dd, $J = 17.8, 11.1$ Hz, 1 H), 7.29 (d, $J = 8.1$ Hz, 2 H), 7.71 (d, $J = 8.1$ Hz, 2 H); ^{13}C NMR (67.8 MHz, CDCl_3) δ 21.4 (CH_3), 24.1 (CH_2), 28.8 (CH_2), 33.6 (CH_2), 35.9 (CH_2), 54.2 (CH_2), 67.4 (CH), 114.3 (CH_2), 116.6 (CH_2), 127.3 (CH x 2), 127.9 (CH), 129.7 (CH x 2), 129.9 (CH), 134.5 (C), 136.6 (C), 138.8 (CH), 143.3 (C); LRMS m/z 331 (M^+), 248, 155, 91; HRMS calcd for $\text{C}_{19}\text{H}_{25}\text{NO}_2\text{S}$ (M^+) 331.1606, found 331.1604.

N-Cyclooct-2-enyl-4-methyl-N-prop-2-ynyl-benzenesulfonamide (2f) was prepared according to the published procedure. (*J. Am. Chem. Soc.* **1998**, *120*, 8305.); ^1H NMR (270 MHz, CDCl_3) δ 1.32-1.81 (m, 8 H), 2.06-2.20 (m, 2 H), 2.15 (t, $J = 2.4$ Hz, 1 H), 2.41 (s, 3 H), 4.07 (dd, $J = 2.4, 18.6$ Hz, 1 H), 4.18 (dd, $J = 2.4, 18.6$ Hz, 1 H), 4.84 (dt, $J = 9.7, 7.3$ Hz, 1 H), 5.53-5.67 (m, 2 H), 7.24 (d, $J = 8.1$ Hz, 2 H), 7.76 (d, $J = 8.1$ Hz, 2 H).

2-Hept-6-enyl-1-(toluene-4-sulfonyl)-4-vinyl-2,5-dihydro-1H-pyrrole (3f). Colorless oil. IR (neat) 1640, 1598, 1346, 1164 cm^{-1} ; ^1H NMR (270 MHz, CDCl_3) δ 1.21-1.39 (m, 6 H), 1.73-1.82 (m, 2 H), 1.99-2.06 (m, 2 H), 2.41 (s, 3 H), 4.16-4.29 (m, 2 H), 4.49 (br, 1 H), 4.90-5.03 (m, 2 H), 5.01 (d, $J = 17.6$ Hz, 1 H), 5.14 (d, $J = 10.8$ Hz, 1 H), 5.52 (m, 1 H), 5.80 (ddt, $J = 17.0, 10.3, 6.8$ Hz, 1 H), 6.33 (dd, $J = 17.6, 10.8$ Hz, 1 H), 7.29 (d, $J = 8.1$ Hz, 2 H), 7.71 (d, $J = 8.1$ Hz, 2 H); ^{13}C NMR (67.8 MHz, CDCl_3) δ 21.5 (CH_3), 24.4 (CH_2), 28.8 (CH_2), 29.0 (CH_2), 33.7 (CH_2), 36.0 (CH_2), 54.3 (CH_2), 67.5 (CH), 114.2 (CH_2), 116.6 (CH_2), 127.3 (CH x 2), 127.9 (CH), 129.7 (CH x 2), 123.0 (CH), 134.9 (C), 136.6 (C), 139.0 (CH), 143.3 (C); LRMS m/z 345 (M^+), 248, 155, 106, 91; HRMS calcd for $\text{C}_{20}\text{H}_{27}\text{NO}_2\text{S}$ (M^+) 345.1762, found 345.1760.

N-{(1R*,4S*)-4-(tert-Butyl-dimethylsilyloxy)-cyclohex-2-enyl}-4-methyl-N-prop-2-ynyl-benzenesulfonamide (2g). Colorless needles. IR (film) ν 2121, 1654, 1598, 1338, 1255, 1163, 1093 cm^{-1} ; ^1H NMR (270 MHz, CDCl_3) δ 0.04 (s, 6 H), 0.87 (s, 9 H), 1.56-1.72 (m, 3 H), 2.01-2.08 (m, 1 H), 2.14 (t, $J = 2.4$ Hz, 1 H), 2.42 (s, 3 H), 3.95 (dd, $J = 2.7, 18.4$ Hz, 1 H), 4.06 (m, 1 H), 4.11 (dd, $J = 2.7, 18.4$ Hz, 1 H), 4.35-4.40 (m, 1 H), 5.41 (dd, $J = 2.4, 10.0$ Hz, 1 H), 5.83-5.89 (m, 1 H), 7.28 (d, $J = 8.4$ Hz, 2 H), 7.81 (d, $J = 8.4$ Hz, 2 H); ^{13}C NMR (67.8 MHz, CDCl_3) δ -4.8 (CH_3), -4.5 (CH_3), 18.0 (C), 21.5 (CH_3), 22.5 (CH_2), 25.8 (CH_3 x 3), 30.4 (CH_2), 32.9 (CH_2), 54.7 (CH), 63.0 (CH), 72.1 (CH), 80.3 (C), 127.5 (CH x 2), 129.1 (CH), 129.5 (CH x 2), 135.0 (CH), 137.9 (C), 143.3 (C); LRMS m/z 404 ($\text{M}^+ - \text{CH}_3$), 362, 266, 155, 132, 117, 91; HRMS calcd for $\text{C}_{18}\text{H}_{24}\text{NO}_3\text{SSi}$ ($\text{M}^+ - \text{Bu}$) 362.1246, found 362.1233.

N-{(1R*,4S*)-4-(tert-Butyl-dimethylsilyloxy)-cyclohex-2-enyl}-4-methyl-N-(2-methylene-but-3-enyl)-benzenesulfonamide (4g). Colorless oil. IR (neat) ν 1638, 1598, 1342, 1253, 1163, 1093 cm^{-1} ; ^1H NMR (270 MHz, CDCl_3) δ -0.02 (s, 3 H), -0.01 (s, 3 H), 0.81 (s, 9 H), 1.54-1.66 (m, 3 H), 1.79-1.87 (m, 1 H), 2.43 (s, 3 H), 3.76 (d, $J = 17.6$ Hz, 1 H), 4.00 (br, 1 H), 4.04 (d, $J = 17.6$ Hz, 1 H), 4.44-4.48 (m, 1 H), 5.03-5.09 (m, 2 H), 5.17-5.24 (m, 2 H), 5.42 (br, 1 H), 5.69-5.75 (m, 1 H), 6.40 (dd, $J = 18.1, 11.3$ Hz, 1 H), 7.30 (d, $J = 8.4$ Hz, 2 H), 7.74 (d, $J = 8.4$ Hz, 2 H); ^{13}C NMR (67.8 MHz, CDCl_3) δ -4.9 (CH_3), -4.6 (CH_3), 17.9 (C), 21.5 (CH_3), 22.9 (CH_2), 25.7 (CH_3 x 3), 30.4 (CH_2), 45.1 (CH_2), 55.6 (CH), 62.6 (CH), 113.3 (CH_2), 117.4 (CH_2), 127.2 (CH x 2), 129.0 (CH), 129.7 (CH x 2), 134.1 (CH), 136.9 (CH), 137.9 (C), 142.5 (C), 143.2 (C); LRMS m/z 447 (M^+), 390, 248, 132, 91; HRMS calcd for $\text{C}_{24}\text{H}_{37}\text{NO}_3\text{SSi}$ (M^+) 447.2263, found 447.2244.

N-{(1S*,4S*)-4-(tert-Butyl-dimethylsilyloxy)-cyclohex-2-enyl}-4-methyl-N-prop-2-ynyl-

benzenesulfonamide (2h). Colorless oil. IR (neat) ν 2120, 1654, 1598, 1338, 1162 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 0.05 (s, 6 H), 0.87 (s, 9 H), 1.47-1.56 (m, 1 H), 1.73-1.83 (m, 1 H), 1.87-1.91 (m, 1 H), 1.97-2.01 (m, 1 H), 2.17 (t, $J = 2.4$ Hz, 1 H), 2.42 (s, 3 H), 3.88 (dd, $J = 2.4, 18.4$ Hz, 1 H), 4.07 (dd, $J = 2.4, 18.4$ Hz, 1 H), 4.24 (m, 1 H), 4.50 (m, 1 H), 5.29 (dd, $J = 1.6, 10.4$ Hz, 1 H), 5.74 (dd, $J = 2.0, 10.4$ Hz, 1 H), 7.27 (d, $J = 8.0$ Hz, 2 H), 7.78 (d, $J = 8.0$ Hz, 2 H); ^{13}C NMR (100 MHz, CDCl_3) δ -4.7 (CH_3), -4.5 (CH_3), 18.2 (C), 21.6 (CH_3), 25.9 ($\text{CH}_3 \times 3$), 27.0 (CH_2), 32.5 (CH_2), 32.7 (CH_2), 55.3 (CH), 66.9 (CH), 72.3 (CH), 80.3 (C), 127.3 (CH \times 2), 127.8 (CH), 129.4 (CH \times 2), 137.5 (C), 137.6 (CH), 143.3 (C); LRMS m/z 404 ($\text{M}^+ - \text{CH}_3$), 362, 288, 264, 155, 132, 91; HRMS calcd for $\text{C}_{18}\text{H}_{24}\text{NO}_3\text{SSi}$ ($\text{M}^+ - \text{Bu}$) 362.1246, found 362.1230.

(2S*)-2-((3S*)-3-(tert-Butyl-dimethylsilyloxy)-pent-4-enyl)-1-(toluene-sulfonyl)-4-vinyl-2,5-dihydro-1H-pyrrole (3h). Colorless oil. IR (neat) ν 1646, 1598, 1348, 1252, 1163, 1096 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 0.03 (s, 3 H), 0.06 (s, 3 H), 0.89 (s, 9 H), 1.41-1.57 (m, 2 H), 1.76-1.91 (m, 2 H), 2.41 (s, 3 H), 4.07 (dt, $J = 6.4, 6.0$ Hz, 1 H), 4.17-4.26 (m, 2 H), 4.54 (br, 1 H), 4.98 (d, $J = 17.6$ Hz, 1 H), 5.01 (d, $J = 10.4$ Hz, 1 H), 5.13 (d, $J = 17.2$ Hz, 1 H), 5.14 (d, $J = 10.8$ Hz, 1 H), 5.47 (br, 1 H), 5.76 (ddd, $J = 6.4, 10.4, 17.2$ Hz, 1 H), 6.32 (dd, $J = 10.8, 17.6$ Hz, 1 H), 7.29 (d, $J = 8.4$ Hz, 2 H), 7.71 (d, $J = 8.4$ Hz, 2 H); ^{13}C NMR (100 MHz, CDCl_3) δ -4.70 (CH_3), -4.2 (CH_3), 18.3 (C), 21.6 (CH_3), 25.9 ($\text{CH}_3 \times 3$), 31.7 (CH_2), 32.7 (CH_2), 54.4 (CH_2), 67.3 (CH), 73.7 (CH), 113.7 (CH_2), 116.6 (CH_2), 127.3 (CH \times 2), 127.7 (CH), 129.6 (CH \times 2), 129.8 (CH), 134.7 (C), 136.6 (C), 141.5 (CH), 143.3 (C); LRMS m/z 432 ($\text{M}^+ - \text{CH}_3$), 390, 292, 262, 248, 236, 155, 91; HRMS calcd for $\text{C}_{23}\text{H}_{34}\text{NO}_3\text{SSi}$ ($\text{M}^+ - \text{CH}_3$) 432.2067, found 432.2048; Anal. calcd for $\text{C}_{24}\text{H}_{37}\text{NO}_3\text{SSi}$: C, 64.39; H, 8.33; N, 3.13; S, 7.16. found : C, 64.48; H, 8.48; N, 2.91; S, 7.21.

(2S*)-2-((3S*)-3-Hydroxy-pent-4-enyl)-1-(toluene-sulfonyl)-4-vinyl-2,5-dihydro-1H-pyrrole (5). Colorless oil. IR (neat) ν 3518, 1647, 1598, 1342, 1160 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 1.45-1.53 (m, 1 H), 1.59-1.68 (m, 1 H), 1.86 (br, 1 H), 1.87-1.92 (m, 2 H), 2.41 (s, 3 H), 4.13 (dt, $J = 6.4, 6.4$ Hz, 1 H), 4.17-4.28 (m, 2 H), 4.57 (m, 1 H), 5.01 (d, $J = 17.6$ Hz, 1 H), 5.11 (d, $J = 10.0$ Hz, 1 H), 5.11 (d, $J = 10.8$ Hz, 1 H), 5.23 (d, $J = 17.6$ Hz, 1 H), 5.48 (m, 1 H), 5.85 (ddd, $J = 6.4, 10.0, 17.6$ Hz, 1 H), 6.32 (dd, $J = 10.8, 17.6$ Hz, 1 H), 7.30 (d, $J = 8.0$ Hz, 2 H), 7.71 (d, $J = 8.0$ Hz, 2 H); ^{13}C NMR (100 MHz, CDCl_3) δ 21.5 (CH_3), 31.5 (CH_2), 31.5 (CH_2), 54.4 (CH_2), 67.0 (CH), 72.9 (CH), 114.7 (CH_2), 116.8 (CH_2), 127.3 (CH \times 2), 127.5 (CH), 129.6 (CH \times 2), 129.7 (CH), 134.3 (C), 136.6 (C), 140.8 (CH), 143.4 (C); LRMS m/z 315 ($\text{M}^+ - \text{H}_2\text{O}$), 248, 178, 155, 91; HRMS calcd for $\text{C}_{18}\text{H}_{21}\text{NO}_2\text{S}$ ($\text{M}^+ - \text{H}_2\text{O}$) 315.1293, found 315.1301.

(5aS*,8aS*,8bR*)-1-(Toluene-4-sulfonyl)-2,4,5,5a,7,8,8a,8b-octahydro-1H-benzo[cd]indol-6-one (6). Colorless needles; mp 136.5-139 $^\circ\text{C}$. (ethyl acetate/hexane); IR (film) ν 1713, 1598, 1341, 1164 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 1.24-1.33 (m, 1 H), 1.86-1.98 (m, 2 H), 2.08-2.16 (m, 2 H), 2.24-2.37 (m, 3 H), 2.43 (s, 3 H), 2.60 (m, 1 H), 2.79 (br, 1 H), 3.79-3.83 (m, 1 H), 3.91 (d, $J = 13.2$ Hz, 1 H), 4.24 (ddd, $J = 5.2, 8.0, 13.2$ Hz, 1 H), 5.61 (br, 1 H), 7.33 (d, $J = 8.0$ Hz, 2 H), 7.75 (d, $J = 8.0$ Hz, 2 H); ^{13}C NMR (100 MHz, CDCl_3) δ 20.9 (CH_2), 21.0 (CH_2), 21.6 (CH_3), 28.5 (CH_2), 36.6 (CH_2), 41.9 (CH), 42.3 (CH), 51.1 (CH_2), 58.2 (CH), 121.6 (CH), 127.4 (CH \times 2), 129.7 (CH \times 2), 134.0 (C), 134.7 (C), 143.6 (C), 209.9 (C); LRMS m/z 331 (M^+), 274, 176, 155, 120, 91; HRMS calcd for $\text{C}_{18}\text{H}_{21}\text{NO}_3\text{S}$ (M^+) 331.1242, found 331.1233.