

SUPPORTING INFORMATION

Stereoselective Synthesis of *E,Z*-Configured 1,3-Dienes by RCM.

Application to the Total Synthesis of Lactimidomycin

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Control Experiments

Scheme S1. Exclusive Ring Contraction upon Attempted Formation of a 21-Membered 1,3-Diene

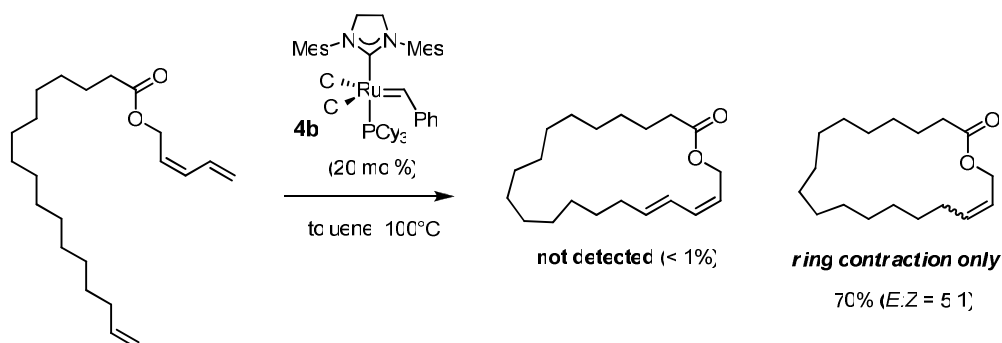
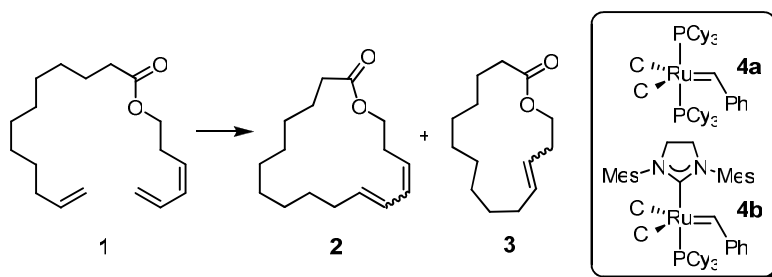


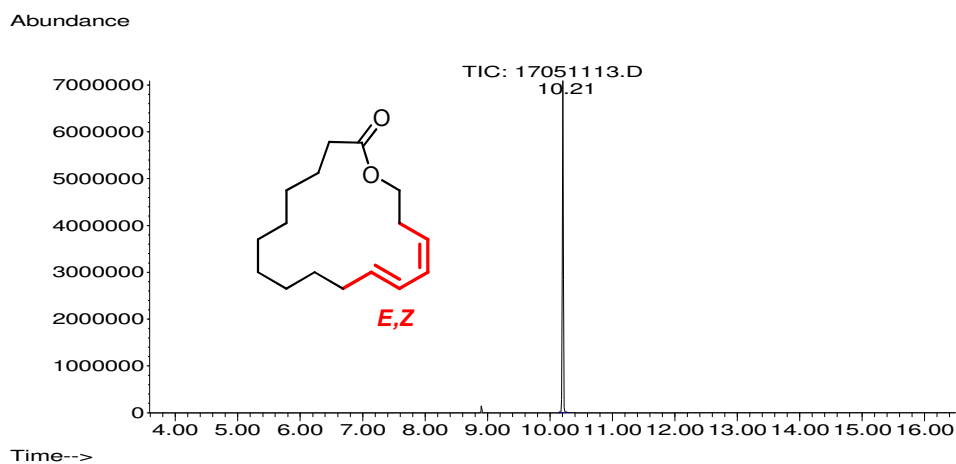
Table S1. Ring Contraction Interfering with an Attempted RCM-based Synthesis of a 17-Membered 1,3-Diene^a



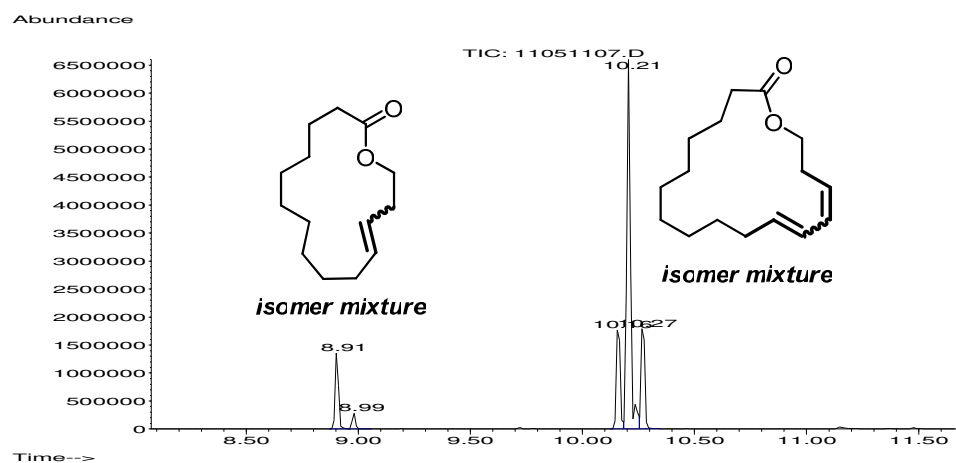
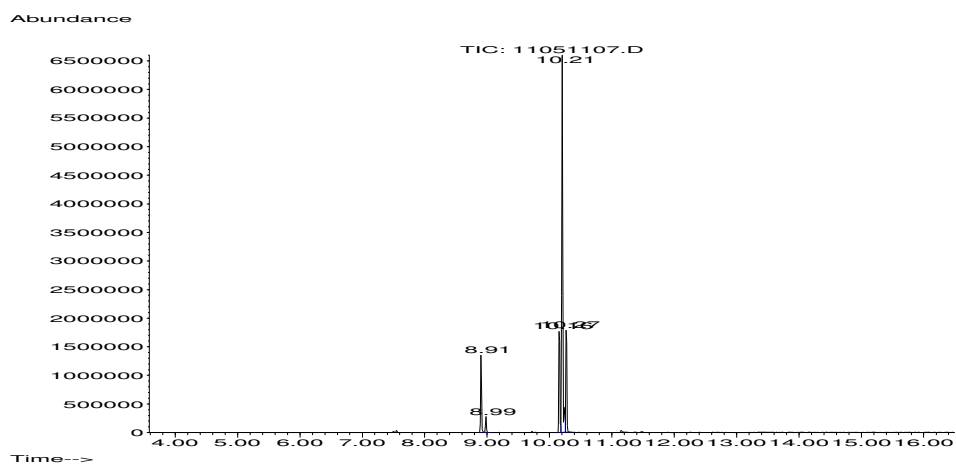
Entry	Catalyst	T (°C)	t (h)	2 (dr) ^b	3 (dr)
1	4a	20	24	86% (<u>3</u> :1:1)	14% (5:1)
2	4a	110 ^c	22	91% (<u>2.7</u> :1:1)	9% (5:1)
3	4b	20	4	< 5%	95% (7:1)
4	4b	110 ^c	4	12% (<u>1</u> :3:4)	88% (6:1)

^a All reactions were performed in toluene (c = 2 mM) with 10 mol% catalyst loading; ^b the underlined number shows the ratio of the desired *E,Z*-isomer in the crude mixture as determined by GC; the assignment was made by comparison with the authentic material prepared as described below; ^c in the presence of Cy₃P=O (10 mol%).

GC trace of product **2** formed by silyl directed RCM followed by protodesilylation according to Scheme 2 shown in the main text of this publication:



GC trace for the ring closure of substrate **1** using the first generation Grubbs catalyst **4a** in refluxing toluene (Table 1, entry 2):



GC trace for the ring closure of substrate **1** using the second generation Grubbs catalyst **4b** in refluxing toluene (Table 1, entry 4):

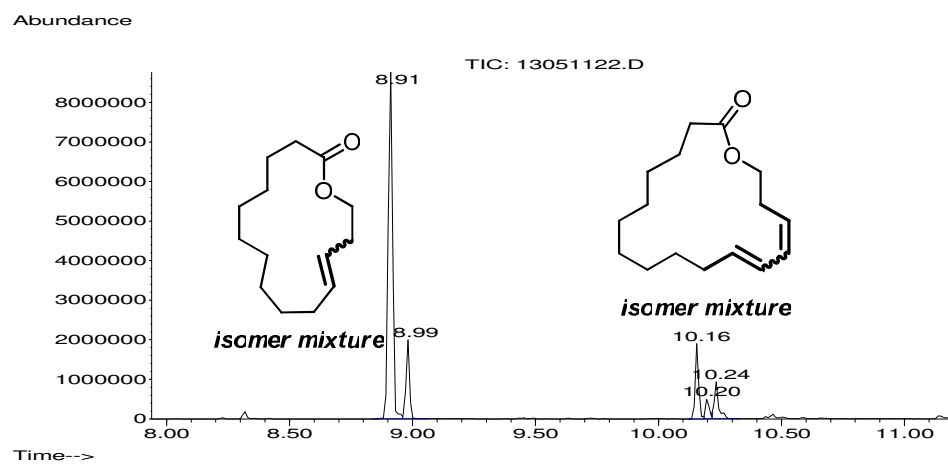
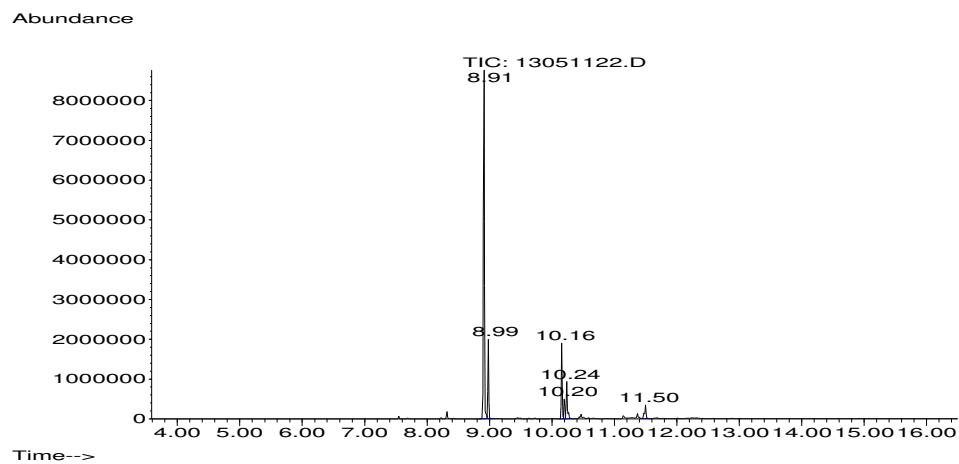
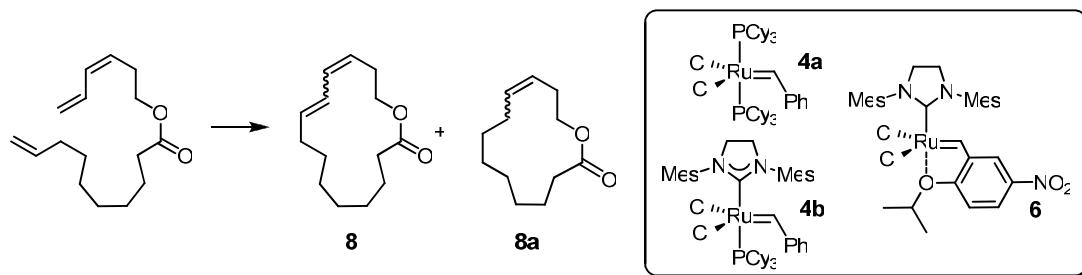
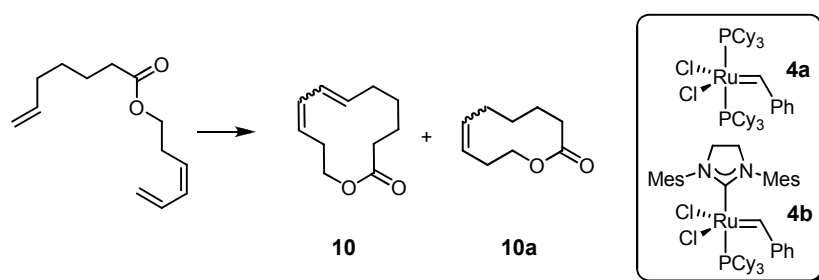


Table S2. Ring Contraction Interfering with an Attempted RCM-based Synthesis of a 15-Membered 1,3-Diene^a

Entry	Catalyst	T (°C)	t (h)	8 (dr) ^b	8a (dr)
1	4a	20	20	85% (<u>10</u> :1)	15% (3:1)
2	4a	110 ^c	7	81% (<u>7</u> :1)	19% (5:1)
3	4b	20	4	< 5%	95% (2:1)
4	4b	110 ^c	3	13% (<u>4</u> :1)	87% (4:1)
5	6	20	3	7%	93% (2:1)

^a All reactions were performed in toluene ($c = 2$ mM) with 10 mol% catalyst loading; ^b the underlined number shows the ratio of the desired *E,Z*-isomer in the crude mixture as determined by GC; the assignment was made by comparison with the authentic material prepared as described below; ^c in the presence of $\text{Cy}_3\text{P}=\text{O}$ (10 mol%).

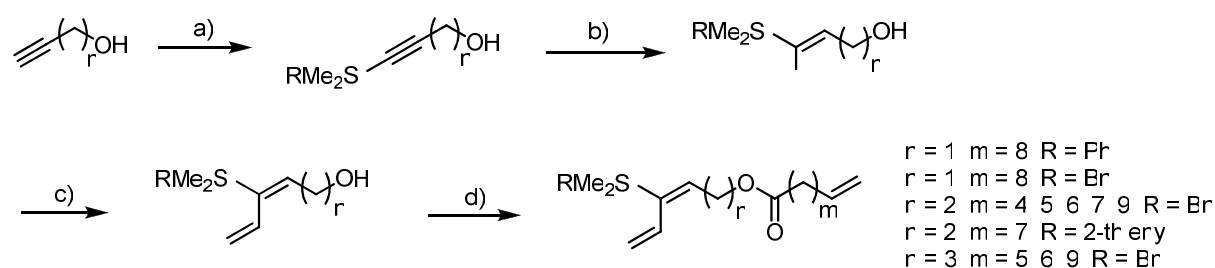
Table S3. Ring Contraction Interfering with an Attempted RCM-based Synthesis of a 12-Membered 1,3-Diene. The reactions of this particular substrate were sluggish and dimeric/oligomeric by-products were formed in variable amounts in all cases except for the conditions shown in entry 4.^a

Entry	Catalyst	T (°C)	t (h)	10 (dr) ^b	10a (dr)
1	4a	20	24	10% (<u>5</u> :1) ^d	5%
2	4a	110 ^c	20	73% (<u>3</u> :1) ^d	2% (5:1)
3	4b	20	24	< 3%	52% (3:1) ^d
4	4b	110 ^c	3	< 5%	95% (4:1)

^a All reactions were performed in toluene ($c = 2$ mM) with 10 mol% catalyst loading; ^b the underlined number shows the ratio of the desired *E,Z*-isomer in the crude mixture as determined by GC; the assignment was made by comparison with the authentic material prepared as described below; ^c in the presence of $\text{Cy}_3\text{P}=\text{O}$ (10 mol%); ^d the remainder are dimeric/oligomeric products and variable amounts of unreacted starting material.

General: All reactions were carried out under Ar in flame-dried glassware. The solvents used were purified by distillation over the drying agents indicated and were transferred under Ar: THF, Et₂O, CH₂Cl₂, HMPA, benzene, Et₃N, *i*Pr₂NH, 2,6-lutidine (CaH₂), hexane, pentane, toluene (Na/K), DMF (Desmodur 15, dibutyl tin dilaurat), MeOH (Mg). Flash chromatography (FC): Merck silica gel 60 (230-400 mesh). NMR: Spectra were recorded on Bruker DPX 300, AV 400 or AV 600 spectrometers in the solvents indicated; chemical shifts (δ) are given in ppm relative to TMS, coupling constants (J) in Hz. The solvent signals were used as references and the chemical shifts converted to the TMS scale (CDCl₃: $\delta_C \equiv 77.0$ ppm; residual CHCl₃ in CDCl₃: $\delta_H \equiv 7.26$ ppm; CD₂Cl₂: $\delta_C \equiv 53.8$ ppm; residual CH₂Cl₂ in CD₂Cl₂: $\delta_H \equiv 5.32$ ppm). IR: Spectrum One (Perkin Elmer) spectrometer, wavenumbers ($\tilde{\nu}$) in cm⁻¹. MS (EI): Finnigan MAT 8200 (70 eV), ESI-MS: ESQ 3000 (Bruker), accurate mass determinations: Finnigan MAT 95 or Bruker APEX III FT-MS (7 T magnet) or Mat 95 (Finnigan). Unless stated otherwise, all commercially available compounds (Fluka, Lancaster, Aldrich) were used as received.

Synthesis and Ring-Closing Metathesis of Model Substrates



Scheme S2: Reagents and conditions: (a) 1. 3,4-dihydro-2*H*-pyran, PPTS cat., CH₂Cl₂; 2. *n*BuLi, THF, RMe₂SiCl, -78 °C → RT; 3. *p*TsOH cat., MeOH; (b) 1. Red-Al, Et₂O, 0 °C → RT; 2. I₂, -20 °C (for $n = 1$); **or**: 1. Et₃Al, Dibal-H, CH₂Cl₂, 0 °C → RT; 2. I₂, -78 °C (for $n = 2, 3$); (c) H₂C=CHSnBu₃, [Ph₂PO₂][NBu₄], PdCl₂(MeCN)₂ cat., DMF; (d) EDC·HCl, 4-pyrrolidinyl-pyridine, alkenoic acid, CH₂Cl₂.

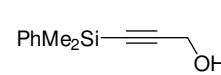
Representative Procedure for the Preparation of Alkynylsilanols.¹ PPTS (0.18 g, 0.7 mmol) was added to a solution of but-3-yn-1-ol (1.00 g, 14.3 mmol) and 3,4-dihydro-2*H*-pyran (1.44 mL, 15.7 mmol) in CH₂Cl₂ (14 mL) and the resulting solution stirred for 2 h. The mixture was then poured into sat. aq. NaHCO₃ (10 mL) and the aqueous phase extracted with CH₂Cl₂ (2 x 20 mL). The combined organic layers were washed with water (10 mL) and brine (10 mL), dried over MgSO₄ and concentrated. Filtration through a pad of silica (hexanes/ethyl acetate, 4:1) afforded the THP-protected alkyne as a colorless liquid (2.20 g). *n*-BuLi (1.6 M in hexane, 9.9 mL, 15.9 mmol) was added over 10 min to a solution of the THP-protected alkyne in THF (12 mL) at -78 °C. After stirring for 30 min at that temperature, benzylchlorodimethylsilane (2.85 mL, 15.7 mmol) was slowly introduced and stirring continued for 30 min at -78 °C and for 3 h at room temperature. For work up, the mixture was poured into aq. HCl (10 %, 20 mL) and ice, the aqueous phase was extracted with Et₂O (2 x 50 mL), the combined organic layers were dried over MgSO₄ and

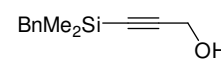
¹ Miura, K.; Hondo, T.; Okajima, S.; Nakagawa, T.; Takahashi, T.; Hosomi, A. *J. Org. Chem.* **2002**, *67*, 6082-6090.

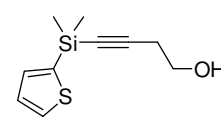
concentrated. Filtration through a pad of silica (hexanes/ethyl acetate, 4:1) afforded the THP-protected alkynylsilanol as a colorless liquid (4.30 g).

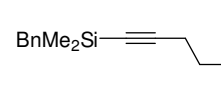
*p*TsOH:H₂O (54 mg, 0.3 mmol) was added to a solution of the THP-protected alkynylsilanol in MeOH (15 mL). After stirring for 2 h, Et₃N (42 μL, 0.3 mmol) was introduced and stirring continued for 10 min. The mixture was evaporated and the residue purified by flash chromatography (hexanes/ether, 3:2) to give 4-(benzyltrimethylsilyl)but-3-yn-1-ol as a colorless oil (2.94 g, 94 %). ¹H NMR (400 MHz, CDCl₃): δ = 7.26-7.21 (m, 2H), 7.13-7.06 (m, 3H), 3.68 (t, *J* = 6.3 Hz, 2H), 2.48 (t, *J* = 6.3 Hz, 2H), 2.19 (s, 2H), 1.76 (s, 1H), 0.14 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 139.1 (C), 128.3 (CH), 128.1 (CH), 124.4 (CH), 104.9 (C), 85.3 (C), 60.8 (CH₂), 26.3 (CH₂), 24.3 (CH₂), -2.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3342, 3081, 3060, 3025, 2959, 2894, 2174, 1600, 1493, 1249, 1207, 1155, 1055, 1027 cm⁻¹; MS (EI): *m/z* (%): 218 (10) [*M*⁺], 127 (47), 99 (28), 75 (100); HRMS (EI) calcd for C₁₃H₁₈OSi [*M*⁺]: 218.1127; found: 218.1127.

The following compounds were prepared analogously:

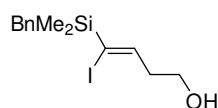
 90 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.65-7.61 (m, 2H), 7.41-7.37 (m, 3H), 4.31 (m, 2H), 1.74 (m, 1H), 0.44 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 136.5 (C), 133.6 (CH), 129.5 (CH), 127.9 (CH), 105.5 (C), 88.8 (C), 51.7 (CH₂), -1.1 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3331, 3070, 3050, 3023, 2961, 2176, 1428, 1249, 1114, 1036, 982 cm⁻¹; MS (EI): *m/z* (%): 190 (4) [*M*⁺], 175 (37), 147 (22), 115 (23), 91 (19), 75 (100), 45 (26); HRMS (EI) calcd for C₁₁H₁₄OSi [*M*⁺]: 190.0814; found: 190.0814.

 91 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.25-7.21 (m, 2H), 7.13-7.06 (m, 3H), 4.26 (s, 2H), 2.22 (s, 2H), 1.54 (s, 1H), 0.14 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 138.8 (C), 128.4 (CH), 128.2 (CH), 124.4 (CH), 105.1 (C), 89.3 (C), 51.6 (CH₂), 26.0 (CH₂), -2.3 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3340, 3082, 3060, 3025, 2959, 2898, 2175, 1600, 1493, 1249, 1207, 1156, 982 cm⁻¹; MS (EI): *m/z* (%): 204 (23) [*M*⁺], 113 (61), 91 (32), 85 (100), 75 (61); HRMS (EI) calcd for C₁₂H₁₆OSi [*M*⁺]: 204.0970; found: 204.0972.

 91 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.63 (d, *J* = 4.5 Hz, 1H), 7.37 (d, *J* = 3.5 Hz, 1H), 7.20 (dd, *J* = 4.5 Hz, 3.5 Hz, 1H), 3.74 (t, *J* = 6.3 Hz, 2H), 2.55 (t, *J* = 6.3 Hz, 2H), 1.82 (s, 1H), 0.46 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 136.6 (C), 135.1 (CH), 131.3 (CH), 128.2 (CH), 105.4 (C), 84.7 (C), 60.8 (CH₂), 24.3 (CH₂), 0.3 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3349, 2958, 2895, 2176, 1405, 1326, 1250, 1214, 1083, 1053, 1029, 994 cm⁻¹; MS (EI): *m/z* (%): 210 (26) [*M*⁺], 182 (12), 167 (22), 143 (13), 111 (100); HRMS (EI) calcd for C₁₀H₁₄OSSi [*M*⁺]: 210.0535; found: 210.0536.

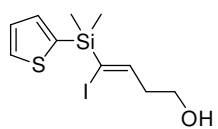
 93 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.25-7.20 (m, 2H), 7.12-7.06 (m, 3H), 3.72 (t, *J* = 6.3 Hz, 2H), 2.35 (t, *J* = 6.8 Hz, 2H), 2.19 (s, 2H), 1.76 (tt, *J* = 6.8 Hz, 6.3 Hz, 2H), 1.62 (s, 1H), 0.12 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 139.1 (C), 128.3 (CH), 128.1 (CH), 124.2 (CH), 108.0 (C), 83.6 (C), 61.7 (CH₂), 31.1 (CH₂), 26.4 (CH₂), 16.5 (CH₂), -2.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3346, 3081, 3061, 3024, 2956, 2896, 2173, 1600, 1493, 1452, 1249, 1207, 1155, 1055, 1030, 983 cm⁻¹; MS (EI): *m/z* (%): 232 (1) [*M*⁺], 141 (34), 99 (14), 75 (100); HRMS (EI) calcd for C₁₄H₂₀OSi [*M*⁺]: 232.1283; found: 232.1283.

Representative Procedure for the Preparation of (Z)- α -Iodoalkenylsilanes ($n = 2/3$).^{1,2}

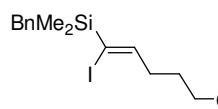


Et₃Al (25 wt % in toluene, 3.9 mL, 7.3 mmol) was added dropwise to a solution of 4-(benzyl(dimethyl)silyl)but-3-yn-1-ol (1.45 g, 6.6 mmol) in CH₂Cl₂ (13 mL) at 0 °C. After 30 min at room temperature, Dibal-H (1 M in CH₂Cl₂, 7.3 mL, 7.3 mmol) was slowly added and the resulting solution stirred for 58 h at room temperature. The mixture was cooled to -78 °C and treated with I₂ (3.7 g, 14.6 mmol). After being stirred for 30 min at -78 °C and an additional 30 min at 0 °C, the mixture was poured into aq. HCl (1 M, 20 mL) and extracted with CH₂Cl₂ (2 x 30 mL). The combined organic layers were washed with sat. aq. Na₂S₂O₃ (20 mL) and brine (20 mL), dried over MgSO₄ and concentrated. The residue was purified by flash chromatography (toluene/ether, 4:1) to give (Z)-4-(benzyl(dimethyl)silyl)-4-iodobut-3-en-1-ol as a pale yellow oil (1.25 g, 55 %). ¹H NMR (400 MHz, CDCl₃): δ = 7.21 (t, J = 7.3 Hz, 2H), 7.08 (t, J = 7.3 Hz, 1H), 7.02 (d, J = 7.3 Hz, 2H), 6.12 (t, J = 6.3 Hz, 1H), 3.70 (t, J = 6.6 Hz, 2H), 2.50 (dt, J = 6.3 Hz, 6.6 Hz, 2H), 2.27 (s, 2H), 1.37 (s br, 1H), 0.17 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 145.2 (CH), 139.0 (C), 128.3 (CH), 128.1 (CH), 124.3 (CH), 113.7 (C), 60.8 (CH₂), 42.2 (CH₂), 24.7 (CH₂), 3.4 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3331, 3081, 3059, 3023, 2955, 2889, 1599, 1492, 1451, 1405, 1247, 1205, 1154, 1054 cm⁻¹; MS (EI): m/z (%): 346 (15) [M^+], 255 (67), 215 (59), 185 (98), 127 (60), 91 (33), 75 (100), 53 (41); HRMS (EI) calcd for C₁₃H₁₉IOSi [M^+]: 346.0250; found: 346.0250.

The following compounds were prepared analogously:

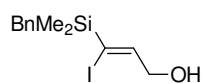


53 %; pale yellow oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.66 (d, J = 4.8 Hz, 1H), 7.36 (d, J = 3.3 Hz, 1H), 7.21 (dd, J = 4.8 Hz, 3.3 Hz, 1H), 6.28 (t, J = 6.3 Hz, 1H), 3.74 (t, J = 6.6 Hz, 2H), 2.52 (dt, J = 6.3 Hz, 6.6 Hz, 2H), 1.46 (s br, 1H), 0.53 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 146.0 (CH), 135.9 (CH), 135.1 (C), 131.6 (CH), 128.3 (CH), 113.0 (C), 60.8 (CH₂), 42.2 (CH₂), -1.5 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3327, 2956, 2875, 1597, 1497, 1404, 1249, 1214, 1083, 1043, 993 cm⁻¹; MS (EI): m/z (%): 338 (21) [M^+], 253 (21), 211 (18), 171 (15), 141 (100), 127 (31), 75 (44); HRMS (EI) calcd for C₁₀H₁₅IOSSi [M^+]: 337.9658; found: 337.9658.



57 %; pale yellow oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.21 (t, J = 7.3 Hz, 2H), 7.08 (t, J = 7.3 Hz, 1H), 7.02 (d, J = 7.3 Hz, 2H), 6.05 (t, J = 6.6 Hz, 1H), 3.61 (t, J = 6.6 Hz, 2H), 2.32 (dt, J = 6.6 Hz, 6.3 Hz, 2H), 2.26 (s, 2H), 1.68 (tt, J = 6.6 Hz, 6.3 Hz, 2H), 1.39 (s, 1H), 0.16 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 148.3 (CH), 139.0 (C), 128.3 (CH), 128.1 (CH), 124.3 (CH), 111.8 (C), 62.1 (CH₂), 35.4 (CH₂), 30.7 (CH₂), 24.7 (CH₂), -3.4 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3322, 3081, 3060, 3024, 2951, 1599, 1493, 1451, 1406, 1247, 1205, 1153, 1055, 1029 cm⁻¹; MS (EI): m/z (%): 360 (> 1) [M^+], 269 (35) [M^+ - Bn], 185 (31), 141 (100), 75 (76); HRMS (ESI⁺) calcd for C₁₄H₂₁IOSiNa [M^+ + Na]: 383.0299; found: 383.0295.

Representative Procedure for the Preparation of (Z)- α -Iodoalkenylsilanes ($n = 1$).³



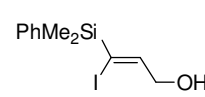
A solution of 3-(benzyl(dimethyl)silyl)prop-2-yn-1-ol (0.77 g, 3.8 mmol) in Et₂O (2 mL) was added over 1 h to a solution of sodium bis(2-methoxyethoxy)aluminumhydride (Red-Al) (65 wt % in toluene, 1.46 g, 4.7 mmol) in Et₂O (6 mL) and the resulting mixture was stirred at room temperature for 1 h once the addition was complete. The mixture was then cooled to -30 °C and treated with I₂ (1.9 g, 7.5 mmol). After being stirred for 30 min at room temperature, the mixture was poured into aq. HCl (1 M, 10 mL) and the aqueous phase extracted with Et₂O (2 x 30 mL). The combined

² Ma, S.; Liu, F.; Negishi, E.-i. *Tetrahedron Lett.* **1997**, *38*, 3829-3832.

³ Denmark, S.E.; Jones, T.K. *J. Org. Chem.* **1982**, *47*, 4595-4597.

organic layers were washed with sat. aq. $\text{Na}_2\text{S}_2\text{O}_3$ (10 mL) and brine (10 mL), dried over MgSO_4 and concentrated, and the residue was purified by flash chromatography (hexanes/ether, 7:3) to give (Z)-3-(benzylidimethyl-silyl)-3-iodoprop-2-en-1-ol as a pale yellow oil (0.91 g, 71 %). ^1H NMR (400 MHz, CDCl_3): δ = 7.21 (t, J = 7.3 Hz, 2H), 7.09 (t, J = 7.3 Hz, 1H), 7.02 (d, J = 7.3 Hz, 2H), 6.44 (t, J = 4.8 Hz, 1H), 4.25 (d, J = 4.8 Hz, 2H), 2.28 (s, 2H), 1.61 (s br, 1H), 0.16 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 148.0 (CH), 138.7 (C), 128.3 (CH), 128.2 (CH), 124.4 (CH), 110.0 (C), 69.5 (CH_2), 24.5 (CH_2), -3.6 (CH_3) ppm; IR (film): $\tilde{\nu}$ = 3302, 3080, 3059, 3023, 2957, 2892, 1599, 1492, 1451, 1247, 1204, 1154, 1055, 1027 cm^{-1} ; MS (EI): m/z (%): 332 (1) [M^+], 241 (16), 185 (21), 91 (22), 83 (26), 75 (100); HRMS (EI) calcd for $\text{C}_{12}\text{H}_{17}\text{IOSi}$ [M^+]: 332.0093; found: 332.0090.

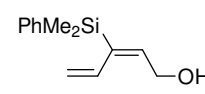
The following compound was prepared analogously:

 65 %; pale yellow oil; ^1H NMR (400 MHz, CDCl_3): δ = 7.57-7.54 (m, 2H), 7.42-7.36 (m, 3H), 6.48 (t, J = 5.1 Hz, 1H), 4.26 (m, 2H), 1.70 (m, 1H), 0.49 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 148.6 (CH), 135.3 (C), 134.2 (CH), 129.7 (CH), 128.0 (CH), 110.1 (C), 69.5 (CH_2), -2.9 (CH_3) ppm; IR (film): $\tilde{\nu}$ = 3312, 3068, 3048, 3021, 2958, 2899, 1427, 1247, 1112, 1026 cm^{-1} ; MS (EI): m/z (%): 318 (39) [M^+], 247 (24), 175 (18), 145 (29), 137 (30), 135 (100), 113 (41), 75 (46); HRMS (EI) calcd for $\text{C}_{11}\text{H}_{15}\text{IOSi}$ [M^+]: 317.9937; found: 317.9937.

Representative Procedure for the Cross Coupling of (Z)-Alkenyliodides with Tributyl(vinyl)tin.

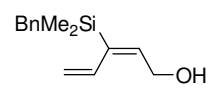
A solution of (Z)-4-(benzylidimethylsilyl)-4-iodobut-3-en-1-ol (0.89 g, 2.6 mmol) and tributyl(vinyl)tin (1.14 mL, 3.9 mmol) in DMF (4 mL) was transferred to a solution of $[\text{Ph}_2\text{PO}_2][\text{NBu}_4]$ (1.9 g, 4.1 mmol)⁴ in DMF (4 mL) via cannula followed by the addition of $\text{Pd}(\text{MeCN})_2\text{Cl}_2$ (70 mg, 0.26 mmol). The mixture quickly turned black and was stirred for 1 h. The reaction was quenched by the addition of water (4 mL) and the resulting mixture filtered through a pad of Celite which was carefully rinsed with Et_2O . The resulting orange mixture was extracted with Et_2O (2 x 15 mL), the combined organic layers were dried over MgSO_4 and concentrated, and the residue was purified by flash chromatography (hexanes/ether, 3:2) to give (E)-4-(benzylidimethylsilyl)hexa-3,5-dien-1-ol as a pale yellow oil (0.55 g, 87 %). ^1H NMR (400 MHz, CDCl_3): δ = 7.19 (t, J = 7.3 Hz, 2H), 7.06 (t, J = 7.3 Hz, 1H), 6.98 (d, J = 7.3 Hz, 2H), 6.65 (dd, J = 18.2 Hz, 10.8 Hz, 1H), 5.70 (t, J = 7.0 Hz, 1H), 5.24-5.18 (m, 2H), 3.61 (t, J = 6.3 Hz, 2H), 2.47 (dt, J = 7.0 Hz, 6.3 Hz, 2H), 2.23 (s, 2H), 1.33 (s br, 1H), 0.13 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 140.9 (C), 140.1 (C), 139.3 (CH), 135.4 (CH), 128.2 (CH), 128.0 (CH), 124.0 (CH), 116.9 (CH_2), 62.1 (CH_2), 32.6 (CH_2), 25.8 (CH_2), -2.8 (CH_3) ppm; IR (film): $\tilde{\nu}$ = 3326, 3082, 3059, 3024, 2955, 2893, 1600, 1493, 1409, 1248, 1205, 1154, 1044 cm^{-1} ; MS (EI): m/z (%): 246 (2) [M^+], 155 (19), 75 (100); HRMS (EI) calcd for $\text{C}_{15}\text{H}_{22}\text{OSi}$ [M^+]: 246.1440; found: 246.1441.

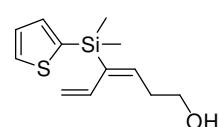
The following compounds were prepared analogously:

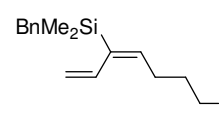
 92 %; pale yellow oil; ^1H NMR (400 MHz, CDCl_3): δ = 7.54-7.51 (m, 2H), 7.37-7.33 (m, 3H), 6.52 (dd, J = 17.7 Hz, 11.1 Hz, 1H), 6.01 (t, J = 5.8 Hz, 1H), 5.12 (d, J = 11.1 Hz, 1H), 5.02 (d, J = 17.8 Hz, 1H), 4.41 (d, J = 5.8 Hz, 2H), 1.53 (s br, 1H), 0.42 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 142.2 (CH),

⁴ For preparation see: Srogl, J.; Allred, G.D.; Liebeskind, L.S. *J. Am. Chem. Soc.* **1997**, *119*, 12376-12377; for use in Pd-cat. cross-coupling reactions see: (a) Smith, A.B.; Minbirole, K.P.; Verhoest, P.R.; Schelhaas, M. *J. Am. Chem. Soc.* **2001**, *123*, 10942-10953; (b) Fürstner, A.; Funel, J.-A.; Tremblay, M.; Bouchez, L.C.; Nevado, C.; Waser, M.; Ackerstaff, J.; Stimson, C.C. *Chem. Commun.* **2008**, 2873-2875.

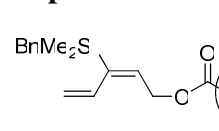
139.9 (C), 138.1 (C), 134.6 (CH), 133.9 (CH), 129.0 (CH), 127.8 (CH), 118.2 (CH₂), 60.2 (CH₂), -2.4 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3325, 3068, 3048, 2999, 2958, 2899, 1615, 1427, 1248, 1109, 1024 cm⁻¹; MS (EI): *m/z* (%): 203 (6) [*M*⁺ - CH₃], 142 (18), 137 (49), 135 (100), 75 (89); HRMS (ESI⁺) calcd for C₁₃H₁₈OSiNa [*M*⁺ + Na]: 241.1019; found: 241.1021.

 83 %; pale yellow oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.20 (t, *J* = 7.3 Hz, 2H), 7.07 (t, *J* = 7.3 Hz, 1H), 6.99 (d, *J* = 7.3 Hz, 2H), 6.49 (dd, *J* = 17.7 Hz, 11.1 Hz, 1H), 5.88 (t, *J* = 5.8 Hz, 1H), 5.21 (d, *J* = 11.1 Hz, 1H), 5.12 (d, *J* = 17.7 Hz, 1H), 4.34 (d, *J* = 5.8 Hz, 2H), 2.22 (s, 2H), 1.41 (s br, 1H), 0.11 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 141.3 (CH), 140.4 (C), 139.8 (C), 135.1 (CH), 128.3 (CH), 128.1 (CH), 124.1 (CH), 117.5 (CH₂), 60.13 (CH₂), 25.5 (CH₂), -3.2 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3311, 3082, 3060, 3024, 2957, 2895, 1600, 1493, 1451, 1248, 1205, 1154, 1057, 1027 cm⁻¹; MS (EI): *m/z* (%): 141 (3) [*M*⁺ - Bn], 75 (100); HRMS (EI) calcd for C₁₄H₂₀OSi [*M*⁺]: 232.1284; found: 232.1282.

 83 %; pale yellow oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.61 (d, *J* = 4.8 Hz, 1H), 7.28 (d, *J* = 3.3 Hz, 1H), 7.18 (dd, *J* = 4.8 Hz, 3.3 Hz, 1H), 6.6 (dd, *J* = 18.2 Hz, 10.6 Hz, 1H), 5.94 (t, 7.1 Hz, 1H), 5.18-5.12 (m, 2H), 3.71 (t, *J* = 6.6 Hz, 2H), 2.55 (dt, *J* = 7.1 Hz, 6.6 Hz, 2H), 1.45 (s br, 1H), 0.47 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 140.6 (C), 140.1 (CH), 138.2 (C), 135.1 (CH), 134.8 (CH), 130.9 (CH), 128.1 (CH), 117.8 (CH₂), 62.1 (CH₂), 32.6 (CH₂), -0.9 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3351, 3085, 2956, 2878, 1614, 1405, 1249, 1213, 1047, 989 cm⁻¹; MS (EI): *m/z* (%): 238 (1) [*M*⁺], 143 (26), 141 (74), 75 (100); HRMS (ESI⁺) calcd for C₁₂H₁₈OSSiNa [*M*⁺ + Na]: 261.0740; found: 261.0738.

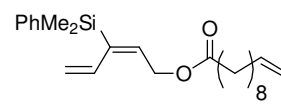
 89 %; pale yellow oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.05 (t, *J* = 7.3 Hz, 1H), 6.98 (d, *J* = 7.3 Hz, 2H), 6.65 (dd, *J* = 18.4 Hz, 10.6 Hz, 1H), 5.73 (t, *J* = 7.1 Hz, 1H), 5.21-5.14 (m, 2H), 3.58 (t, *J* = 6.6 Hz, 2H), 2.29 (dt, *J* = 7.1 Hz, 6.3 Hz, 2H), 2.22 (s, 2H), 1.62 (tt, *J* = 6.6 Hz, 6.3 Hz, 2H), 1.36 (s br, 1H), 0.1 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 143.2 (CH), 140.1 (C), 138.3 (C), 135.5 (CH), 128.3 (CH), 128.0 (CH), 123.9 (CH), 116.4 (CH₂), 62.3 (CH₂), 32.1 (CH₂), 25.8 (CH₂), 25.3 (CH₂), -2.8 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3354, 3081, 3061, 3023, 2951, 1600, 1493, 1451, 1247, 1206, 1153, 1056 cm⁻¹; MS (EI): *m/z* (%): 169 (27) [*M*⁺ - Bn], 75 (100); HRMS (ESI⁺) calcd for C₁₆H₂₄ONaSi [*M*⁺ + Na]: 283.1489; found: 283.1489.

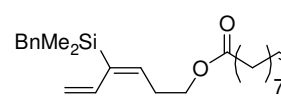
Representative Procedure for the Esterification with Alkenoic acids.

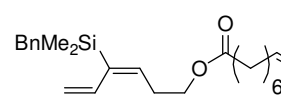
 4-Pyrrolidinylpyridine (22 mg, 0.15 mmol) and 1-(3-dimethylaminopropyl)-3-ethylcarbodiimide hydrochloride (EDC·HCl, 420 mg, 2.19 mmol) were added to a solution of (*E*)-3-(benzyltrimethylsilyl)pent-2,4-dien-1-ol (322 mg, 1.39 mmol) and undec-10-enoic acid (404 mg, 2.19 mmol) in CH₂Cl₂ (6 mL) and the resulting solution was stirred for 1 h. The reaction was then quenched with water (4 mL), the aqueous phase extracted with CH₂Cl₂ (3 x 5 mL) and the combined organic layers were dried over MgSO₄ and concentrated. Flash chromatography of the residue (hexanes/ether, 98:2) afforded the corresponding ester as a colorless oil (527 mg, 95 %). ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.07 (t, *J* = 7.3 Hz, 1H), 6.98 (t, *J* = 7.3 Hz, 2H), 6.49 (dd, *J* = 17.6 Hz, 11.1 Hz, 1H), 5.86-5.75 (m, 2H), 5.24 (d, *J* = 11.1 Hz, 1H), 5.13 (d, *J* = 17.6 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.93 (d, *J* = 10.1 Hz, 1H), 4.76 (d, *J* = 6.6 Hz, 2H), 2.31 (t, *J* = 7.6 Hz, 2H), 2.22 (s, 2H), 2.03 (dt, *J* = 7.6 Hz, 6.8 Hz, 2H), 1.63 (tt, *J* = 7.6 Hz, 7.3 Hz, 2H), 1.41-1.25 (m, 10H), 0.10 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.6 (C), 142.6 (C), 139.6 (C), 139.2 (CH), 135.7 (CH), 134.8 (CH), 128.3 (CH), 128.1 (CH), 124.1 (CH), 118.0 (CH₂), 114.1 (CH₂), 61.6 (CH₂), 34.3 (CH₂), 33.8

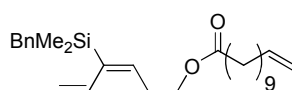
(CH₂), 29.3 (CH₂), 29.2 (CH₂), 29.1 (CH₂), 29.0 (CH₂), 28.9 (CH₂), 25.4 (CH₂), 25.0 (CH₂), –3.3 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3080, 3025, 2926, 2855, 1736, 1640, 1600, 1493, 1452, 1248, 1205, 1155, 1057 cm⁻¹; MS (EI): *m/z* (%): 307 (13) [*M*⁺ - Bn], 241 (83), 149 (30), 75 (100); HRMS (ESI⁺) calcd for C₂₅H₃₈O₂SiNa [*M*⁺ + Na]: 421.2533; found: 421.2531.

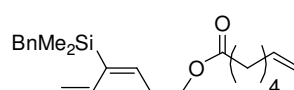
The following compounds were prepared analogously:

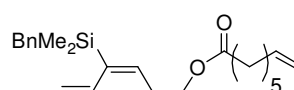
 96 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.53-7.49 (m, 2H), 7.37-7.33 (m, 3H), 6.52 (dd, *J* = 17.2 Hz, 11.1 Hz, 1H), 5.92 (t, *J* = 6.1 Hz, 1H), 5.81 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.15 (d, *J* = 11.1 Hz, 1H), 5.04 (d, *J* = 17.1 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.93 (d, *J* = 11.1 Hz, 1H), 4.81 (d, *J* = 6.1 Hz, 2H), 2.32 (t, *J* = 7.6 Hz, 2H), 2.04 (dt, *J* = 6.8 Hz, 6.6 Hz, 2H), 1.63 (tt, *J* = 7.6 Hz, 7.3 Hz, 2H), 1.41-1.25 (m, 10H), 0.41 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.7 (C), 142.0 (C), 139.2 (CH), 137.9 (C), 136.7 (CH), 134.4 (CH), 133.9 (CH), 129.1 (CH), 127.8 (CH), 118.7 (CH₂), 114.1 (CH₂), 61.6 (CH₂), 34.3 (CH₂), 33.8 (CH₂), 29.3 (CH₂), 29.2 (CH₂), 29.1 (CH₂), 29.0 (CH₂), 28.9 (CH₂), 25.0 (CH₂), –2.5 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3070, 2926, 2854, 1737, 1640, 1616, 1427, 1248, 1163, 1111 cm⁻¹; MS (EI): *m/z* (%): 384 (2) [*M*⁺], 241 (100), 135 (97), 75 (28); HRMS (ESI⁺) calcd for C₂₄H₃₆O₂SiNa [*M*⁺ + Na]: 407.2377; found: 407.2377.

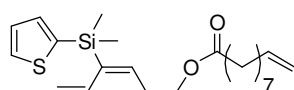
 **Compound 5a.** 95 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 6.98 (d, *J* = 7.3 Hz, 2H), 6.59 (dd, *J* = 17.6 Hz, 11.1 Hz, 1H), 5.81 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.71 (t, *J* = 7.1 Hz, 1H), 5.19 (d, *J* = 11.1 Hz, 1H), 5.17 (d, *J* = 17.6 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.93 (d, *J* = 10.1 Hz, 1H), 4.07 (t, *J* = 7.1 Hz, 2H), 2.54 (dt, *J* = 7.1 Hz, 7.1 Hz, 2H), 2.28 (t, *J* = 7.3 Hz, 2H), 2.21 (s, 2H), 2.04 (dt, *J* = 6.8 Hz, 7.1 Hz, 2H), 1.61 (tt, *J* = 7.3 Hz, 7.3 Hz, 2H), 1.41-1.27 (m, 8H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 140.9 (C), 139.9 (C), 139.1 (CH), 138.0 (CH), 135.3 (CH), 128.3 (CH), 128.0 (CH), 124.0 (CH), 116.9 (CH₂), 114.2 (CH₂), 63.2 (CH₂), 34.3 (CH₂), 33.7 (CH₂), 29.1 (CH₂), 29.1 (CH₂), 28.9 (CH₂), 28.8 (CH₂), 28.6 (CH₂), 25.7 (CH₂), 24.9 (CH₂), –2.9 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3081, 3025, 2927, 2855, 1735, 1640, 1615, 1600, 1493, 1452, 1248, 1205, 1157, 1056, 990 cm⁻¹; MS (EI): *m/z* (%): 307 (81) [*M*⁺ - Bn], 227 (59), 149 (35), 135 (71), 75 (100); HRMS (ESI⁺) calcd for C₂₅H₃₈O₂SiNa [*M*⁺ + Na]: 421.2533; found: 421.2537.

 93 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 6.98 (d, *J* = 7.3 Hz, 2H), 6.60 (dd, *J* = 17.6 Hz, 11.1 Hz, 1H), 5.80 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.71 (t, *J* = 7.1 Hz, 1H), 5.20 (d, *J* = 11.1 Hz, 1H), 5.18 (d, *J* = 17.6 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.93 (d, *J* = 10.1 Hz, 1H), 4.07 (t, *J* = 7.1 Hz, 2H), 2.54 (dt, *J* = 7.1 Hz, 7.1 Hz, 2H), 2.28 (t, *J* = 7.6 Hz, 2H), 2.21 (s, 2H), 2.04 (dt, *J* = 6.8 Hz, 7.1 Hz, 2H), 1.61 (tt, *J* = 7.6 Hz, 7.3 Hz, 2H), 1.42-1.28 (m, 6H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 140.8 (C), 139.9 (C), 139.0 (CH), 138.0 (CH), 135.3 (CH), 128.3 (CH), 128.0 (CH), 124.0 (CH), 116.9 (CH₂), 114.3 (CH₂), 63.2 (CH₂), 34.3 (CH₂), 33.7 (CH₂), 29.0 (CH₂), 28.7 (CH₂), 28.7 (CH₂), 28.6 (CH₂), 25.7 (CH₂), 24.9 (CH₂), –3.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3082, 3024, 2928, 2856, 1735, 1640, 1600, 1493, 1452, 1248, 1205, 1156 cm⁻¹; MS (EI): *m/z* (%): 293 (75) [*M*⁺ - Bn], 213 (46), 149 (31), 121 (56), 75 (100); HRMS (ESI⁺) calcd for C₂₄H₃₆O₂SiNa [*M*⁺ + Na]: 407.2377; found: 407.2380.

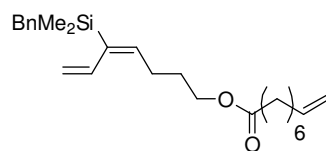

 93 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 6.98 (d, *J* = 7.3 Hz, 2H), 6.60 (dd, *J* = 17.6 Hz, 11.1 Hz, 1H), 5.81 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.71 (t, *J* = 7.1 Hz, 1H), 5.20 (d, *J* = 11.1 Hz, 1H), 5.18 (d, *J* = 17.6 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.93 (d, *J* = 10.1 Hz, 1H), 4.07 (t, *J* = 7.1 Hz, 2H), 2.54 (dt, *J* = 7.1 Hz, 7.1 Hz, 2H), 2.28 (t, *J* = 7.6 Hz, 2H), 2.21 (s, 2H), 2.04 (dt, *J* = 6.8 Hz, 7.1 Hz, 2H), 1.61 (tt, *J* = 7.6 Hz, 7.3 Hz, 2H), 1.41-1.24 (m, 12H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 140.8 (C), 139.9 (C), 139.2 (CH), 138.0 (CH), 135.3 (CH), 128.2 (CH), 128.0 (CH), 124.0 (CH), 116.9 (CH₂), 114.1 (CH₂), 63.2 (CH₂), 34.3 (CH₂), 33.8 (CH₂), 29.4 (CH₂), 29.4 (CH₂), 29.2 (CH₂), 29.1 (CH₂), 29.1 (CH₂), 28.9 (CH₂), 28.6 (CH₂), 25.7 (CH₂), 25.0 (CH₂), -3.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3081, 3024, 2925, 2854, 1736, 1640, 1614, 1600, 1493, 1452, 1248, 1205, 1157, 1056, 990 cm⁻¹; MS (EI): *m/z* (%): 335 (94) [*M*⁺ - Bn], 255 (74), 149 (41), 81 (39), 75 (100); HRMS (ESI⁺) calcd for C₂₇H₄₂O₂SiNa [*M*⁺ + Na]: 449.2846; found: 449.2848.

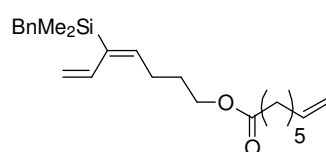

 94 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 6.98 (d, *J* = 7.3 Hz, 2H), 6.60 (dd, *J* = 17.6 Hz, 11.1 Hz, 1H), 5.79 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.71 (t, *J* = 7.1 Hz, 1H), 5.20 (d, *J* = 11.1 Hz, 1H), 5.18 (d, *J* = 17.6 Hz, 1H), 5.01 (d, *J* = 17.2 Hz, 1H), 4.96 (d, *J* = 10.1 Hz, 1H), 4.07 (t, *J* = 7.1 Hz, 2H), 2.54 (dt, *J* = 7.1 Hz, 7.1 Hz, 2H), 2.29 (t, *J* = 7.6 Hz, 2H), 2.22 (s, 2H), 2.07 (dt, *J* = 6.8 Hz, 7.1 Hz, 2H), 1.63 (tt, *J* = 7.3 Hz, 7.6 Hz, 2H), 1.42 (tt, *J* = 7.6 Hz, 7.1 Hz, 2H), 0.10 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.6 (C), 140.8 (C), 139.9 (C), 138.4 (CH), 138.0 (CH), 135.3 (CH), 128.2 (CH), 128.0 (CH), 124.0 (CH), 116.9 (CH₂), 114.7 (CH₂), 63.2 (CH₂), 34.1 (CH₂), 33.3 (CH₂), 28.6 (CH₂), 28.3 (CH₂), 25.2 (CH₂), 24.4 (CH₂), -3.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3082, 3025, 2954, 1735, 1640, 1614, 1600, 1493, 1452, 1248, 1205, 1155, 1056 cm⁻¹; MS (EI): *m/z* (%): 265 (70) [*M*⁺ - Bn], 185 (44), 149 (21), 111 (29), 83 (32), 75 (100), 55 (76), 41 (32); HRMS (ESI⁺) calcd for C₂₂H₃₂O₂SiNa [*M*⁺ + Na]: 379.2064; found: 379.2066.

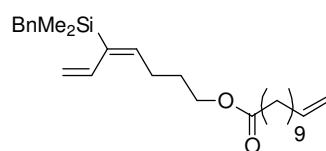

 90 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 6.98 (d, *J* = 7.3 Hz, 2H), 6.60 (dd, *J* = 17.6 Hz, 11.1 Hz, 1H), 5.80 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.71 (t, *J* = 7.1 Hz, 1H), 5.20 (d, *J* = 11.1 Hz, 1H), 5.18 (d, *J* = 17.6 Hz, 1H), 5.00 (d, *J* = 17.2 Hz, 1H), 4.94 (d, *J* = 10.1 Hz, 1H), 4.07 (t, *J* = 7.1 Hz, 2H), 2.54 (dt, *J* = 7.1 Hz, 7.1 Hz, 2H), 2.29 (t, *J* = 7.6 Hz, 2H), 2.22 (s, 2H), 2.05 (dt, *J* = 6.8 Hz, 7.1 Hz, 2H), 1.62 (tt, *J* = 7.6 Hz, 7.3 Hz, 2H), 1.45-1.28 (m, 4H), 0.10 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.7 (C), 140.8 (C), 139.9 (C), 138.8 (CH), 138.0 (CH), 135.3 (CH), 128.2 (CH), 128.0 (CH), 124.0 (CH), 116.9 (CH₂), 114.4 (CH₂), 63.2 (CH₂), 34.2 (CH₂), 33.5 (CH₂), 28.6 (CH₂), 28.6 (CH₂), 28.5 (CH₂), 25.7 (CH₂), 24.8 (CH₂), -3.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3082, 3024, 2929, 2857, 1735, 1640, 1614, 1600, 1493, 1452, 1248, 1205, 1156, 1057, 991 cm⁻¹; MS (EI): *m/z* (%): 279 (79) [*M*⁺ - Bn], 199 (44), 149 (28), 125 (24), 107 (30), 75 (100), 55 (72); HRMS (ESI⁺) calcd for C₂₃H₃₄O₂SiNa [*M*⁺ + Na]: 393.2220; found: 393.2222.


Compound 5b. 92 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.61 (d, *J* = 4.6 Hz, 1H), 7.27 (d, *J* = 3.3 Hz, 1H), 7.18 (dd, *J* = 4.6 Hz, 3.3 Hz, 1H), 6.62 (dd, *J* = 17.6 Hz, 11.4 Hz, 1H), 5.88 (t, *J* = 7.1 Hz, 1H), 5.81 (ddt, *J* = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.15 (d, *J* = 11.4 Hz, 1H), 5.14 (d, *J* = 17.6 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.93 (d, *J* = 10.1 Hz, 1H), 4.12 (t, *J* = 6.8 Hz, 2H), 2.59 (dt, *J* = 7.1 Hz, 6.8 Hz, 2H), 2.27 (t, *J* = 7.6 Hz, 2H), 2.04 (dt, *J* = 6.8 Hz, 6.6 Hz, 2H), 1.60 (tt, *J* = 7.6 Hz, 7.3 Hz, 2H), 1.42-1.24 (m, 8H), 0.45 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 140.4 (C), 139.1 (C), 139.1 (CH), 139.1 (CH), 135.1 (CH), 134.6

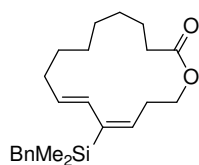
(CH), 130.9 (CH), 128.1 (CH), 117.8 (CH₂), 114.2 (CH₂), 63.1 (CH₂), 34.3 (CH₂), 33.7 (CH₂), 29.1 (CH₂), 29.1 (CH₂), 28.9 (CH₂), 28.8 (CH₂), 28.6 (CH₂), 24.9 (CH₂), -1.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3077, 2927, 2855, 1735, 1640, 1615, 1457, 1406, 1249, 1213, 1165, 1083, 990 cm⁻¹; MS (EI): m/z (%): 390 (7) [M^+], 227 (54), 141 (100), 75 (45); HRMS (ESI⁺) calcd for C₂₂H₃₄O₂SiNa [M^+ + Na]: 413.1941; found: 413.1941.

 96 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.18 (t, J = 7.3 Hz, 2H), 7.05 (t, J = 7.3 Hz, 1H), 6.98 (d, J = 7.3 Hz, 2H), 6.61 (dd, J = 17.6 Hz, 11.1 Hz, 1H), 5.81 (ddt, J = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.70 (t, J = 7.1 Hz, 1H), 5.17 (d, J = 11.1 Hz, 1H), 5.16 (d, J = 17.6 Hz, 1H), 4.99 (d, J = 17.2 Hz, 1H), 4.93 (d, J = 10.1 Hz, 1H), 4.02 (t, J = 6.8 Hz, 2H), 2.32-2.23 (m, 4H), 2.21 (s, 2H), 2.04 (dt, J = 6.8 Hz, 7.6 Hz, 2H), 1.72-1.58 (m, 4H), 1.44-1.30 (m, 6H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 142.4 (CH), 140.0 (C), 139.0 (CH), 138.8 (C), 135.4 (CH), 128.3 (CH), 128.0 (CH), 124.0 (CH), 116.5 (CH₂), 114.3 (CH₂), 63.7 (CH₂), 34.4 (CH₂), 33.7 (CH₂), 29.0 (CH₂), 28.7 (CH₂), 28.7 (CH₂), 28.3 (CH₂), 25.8 (CH₂), 25.4 (CH₂), 24.9 (CH₂), -2.9 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3082, 3024, 2928, 2856, 1735, 1640, 1613, 1600, 1493, 1452, 1248, 1205, 1157 cm⁻¹; MS (EI): m/z (%): 307 (74) [M^+ - Bn], 213 (100), 149 (21), 75 (82); HRMS (ESI⁺) calcd for C₂₅H₃₈O₂SiNa [M^+ + Na]: 421.2533; found: 421.2533.

 94 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.18 (t, J = 7.3 Hz, 2H), 7.05 (t, J = 7.3 Hz, 1H), 6.97 (d, J = 7.3 Hz, 2H), 6.61 (dd, J = 17.6 Hz, 11.1 Hz, 1H), 5.80 (ddt, J = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.70 (t, J = 7.1 Hz, 1H), 5.17 (d, J = 11.1 Hz, 1H), 5.16 (d, J = 17.6 Hz, 1H), 5.00 (d, J = 17.2 Hz, 1H), 4.94 (d, J = 10.1 Hz, 1H), 4.02 (t, J = 6.8 Hz, 2H), 2.32-2.24 (m, 4H), 2.22 (s, 2H), 2.06 (dt, J = 6.8 Hz, 7.3 Hz, 2H), 1.72-1.59 (m, 4H), 1.45-1.29 (m, 4H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 142.4 (CH), 140.0 (C), 138.8 (CH), 138.7 (C), 135.4 (CH), 128.2 (CH), 128.0 (CH), 124.0 (CH), 116.5 (CH₂), 114.4 (CH₂), 63.7 (CH₂), 34.3 (CH₂), 33.5 (CH₂), 28.6 (CH₂), 28.5 (CH₂), 28.3 (CH₂), 25.8 (CH₂), 25.4 (CH₂), 24.8 (CH₂), -2.9 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3081, 3024, 2930, 2858, 1734, 1640, 1613, 1600, 1493, 1452, 1248, 1205, 1156 cm⁻¹; MS (EI): m/z (%): 293 (55) [M^+ - Bn], 199 (87), 149 (20), 75 (100), 55 (34); HRMS (ESI⁺) calcd for C₂₄H₃₆O₂SiNa [M^+ + Na]: 407.2377; found: 407.2380.

 93 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.18 (t, J = 7.3 Hz, 2H), 7.05 (t, J = 7.3 Hz, 1H), 6.97 (d, J = 7.3 Hz, 2H), 6.61 (dd, J = 17.6 Hz, 11.1 Hz, 1H), 5.81 (ddt, J = 17.2 Hz, 10.1 Hz, 6.8 Hz, 1H), 5.70 (t, J = 7.1 Hz, 1H), 5.17 (d, J = 11.1 Hz, 1H), 5.16 (d, J = 17.6 Hz, 1H), 4.99 (d, J = 17.2 Hz, 1H), 4.93 (d, J = 10.1 Hz, 1H), 4.02 (t, J = 6.8 Hz, 2H), 2.32-2.24 (m, 4H), 2.22 (s, 2H), 2.04 (dt, J = 6.8 Hz, 7.3 Hz, 2H), 1.72-1.58 (m, 4H), 1.45-1.29 (m, 12H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.9 (C), 142.4 (CH), 140.0 (C), 139.2 (CH), 138.7 (C), 135.4 (CH), 128.2 (CH), 128.0 (CH), 124.0 (CH), 116.5 (CH₂), 114.1 (CH₂), 63.7 (CH₂), 34.3 (CH₂), 33.8 (CH₂), 29.4 (CH₂), 29.4 (CH₂), 29.3 (CH₂), 29.2 (CH₂), 29.1 (CH₂), 28.9 (CH₂), 28.3 (CH₂), 25.8 (CH₂), 25.4 (CH₂), 25.0 (CH₂), -2.9 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3082, 3025, 2925, 2854, 1735, 1640, 1613, 1600, 1493, 1248, 1205, 1157 cm⁻¹; MS (EI): m/z (%): 349 (48) [M^+ - Bn], 255 (100), 149 (18), 75 (67), 55 (20); HRMS (ESI⁺) calcd for C₂₈H₄₄O₂SiNa [M^+ + Na]: 463.3003; found: 463.3007.

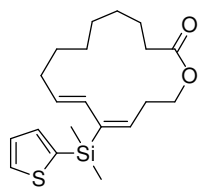
Representative Procedure for Ring Closing Metathesis (RCM) Reactions of the Model Substrates. Compound 7a.



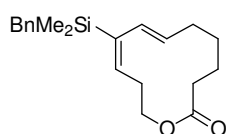
A 2-necked round bottom flask equipped with a reflux condenser connected to an Ar inlet was charged with ester **5a** (50.5 mg, 0.13 mmol), tricyclohexylphosphine oxide (P(O)Cy₃) (3.8 mg, 13 μmol)⁵ and freshly degassed toluene (64 mL, c = 2 mM). The solution was heated to 60 °C under Ar while a solution of complex **6** (8.5 mg, 13 μmol)⁶ in toluene (2 mL) was added over 24 h via syringe pump. The mixture was then cooled to room temperature and the reaction quenched by the addition of a solution of potassium 2-isocyanoacetate (11 mg, 90 μmol)⁷ in MeOH (1 mL). The mixture was stirred for 1h before it was concentrated and filtered through a pad of silica (ether rinse). The filtrate was concentrated and the remaining oil purified by careful flash chromatography (hexanes/ether, 100:0→95:5) to afford the title compound as a colorless oil (43.9 mg, 91 %). ¹H NMR (400 MHz, CDCl₃): δ = 7.18 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 7.00 (d, *J* = 7.3 Hz, 2H), 6.43 (d, *J* = 16.0 Hz, 1H), 5.68-5.59 (m, 2H), 4.13 (t, *J* = 5.8 Hz, 2H), 2.54 (dt, *J* = 7.8 Hz, 5.8 Hz, 2H), 2.29 (t, *J* = 7.1 Hz, 2H), 2.24 (s, 2H), 2.19 (dt, *J* = 7.1 Hz, 6.1 Hz, 2H), 1.63 (tt, *J* = 7.1 Hz, 6.8 Hz, 2H), 1.48 (tt, *J* = 6.1 Hz, 5.8 Hz, 2H), 1.38-1.26 (m, 6H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.9 (C), 140.1 (C), 140.1 (C), 137.3 (CH), 133.7 (CH), 129.4 (CH), 128.3 (CH), 128.0 (CH), 124.0 (CH), 63.3 (CH₂), 34.2 (CH₂), 32.0 (CH₂), 28.7 (CH₂), 27.6 (CH₂), 27.2 (CH₂), 26.4 (CH₂), 26.1 (CH₂), 25.9 (CH₂), 24.3 (CH₂), -2.6 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3060, 3023, 2927, 2855, 1732, 1600, 1580, 1493, 1451, 1246, 1205, 1152, 1056, 966 cm⁻¹; MS (EI): *m/z* (%): 279 (100) [*M*⁺ - Bn], 121 (19), 75 (73); HRMS (ESI⁺) calcd for C₂₃H₃₄O₂SiNa [*M*⁺ + Na]: 393.2220; found: 393.2222.

The following compounds were prepared analogously:

Compound 7b. 70 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.59 (d, *J* = 4.5 Hz, 1H), 7.28 (d, *J* = 3.3 Hz, 1H), 7.16 (dd, *J* = 4.5 Hz, 3.3 Hz, 1H), 6.44 (d, *J* = 16.2 Hz, 1H), 5.82 (t, *J* = 8.0 Hz, 1H), 5.59 (dt, *J* = 16.2 Hz, 7.1 Hz, 1H), 4.17 (t, *J* = 5.6 Hz, 2H), 2.58 (dt, *J* = 8.0 Hz, 5.6 Hz, 2H), 2.26 (t, *J* = 7.3 Hz, 2H), 2.11 (dt, *J* = 7.1 Hz, 6.1 Hz, 2H), 1.58 (tt, *J* = 7.3 Hz, 7.1 Hz, 2H), 1.36 (tt, *J* = 6.3 Hz, 6.1 Hz, 2H), 1.30-1.15 (m, 6H), 0.46 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 139.6 (C), 138.6 (C), 138.1 (CH), 135.0 (CH), 134.8 (CH), 130.7 (CH), 128.7 (CH), 128.0 (CH), 63.1 (CH₂), 34.2 (CH₂), 31.9 (CH₂), 28.7 (CH₂), 27.6 (CH₂), 27.0 (CH₂), 26.1 (CH₂), 25.8 (CH₂), 24.2 (CH₂), -0.6 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 2926, 2854, 1731, 1581, 1458, 1440, 1405, 1325, 1248, 1213, 1158, 1137, 1082, 989 cm⁻¹; MS (EI): *m/z* (%): 362 (45) [*M*⁺], 347 (15), 235 (13), 141 (100), 129 (31), 75 (50); HRMS (ESI⁺) calcd for C₂₀H₃₀O₂SSiNa [*M*⁺ + Na]: 385.1628; found: 385.1632.



Compound 10. 53 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.05 (t, *J* = 7.3 Hz, 1H), 7.01 (d, *J* = 7.3 Hz, 2H), 6.26 (d, *J* = 16.4 Hz, 1H), 5.73 (t, *J* = 8.4 Hz, 1H), 5.54 (dt, *J* = 16.4 Hz, 6.3 Hz, 1H), 4.09 (t, *J* = 5.6 Hz, 2H), 2.52 (dt, *J* = 8.4 Hz, 5.6 Hz, 2H), 2.30 (t, *J* = 6.1 Hz, 2H), 2.21 (s, 2H), 2.17 (dt, *J* = 6.3 Hz, 6.3 Hz, 2H), 1.80 (tt, *J* = 6.1 Hz, 5.8 Hz, 2H), 1.65 (tt, *J* = 6.3 Hz, 5.8 Hz, 2H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 174.0 (C), 142.0 (C), 140.1 (C), 137.1 (CH), 131.6 (CH), 129.3 (CH), 128.4 (CH), 128.0 (CH), 123.9 (CH), 63.1 (CH₂), 33.5 (CH₂), 31.6 (CH₂), 27.9 (CH₂), 26.3 (CH₂), 26.2 (CH₂), 23.5 (CH₂), -2.8 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3081, 3058, 3023, 2927, 1731,



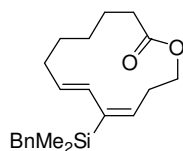
⁵ Bourgeois, D.; Pancrazi, A.; Nolan, S.P.; Prunet, J. *J. Organomet. Chem.* **2002**, 643, 247-252.

⁶ Michrowska, A.; Bujok, R.; Harutyunyan, S.; Sashuk, V.; Dolgonos, G.; Grela, K. *J. Am. Chem. Soc.* **2004**, 126, 9318-9325.

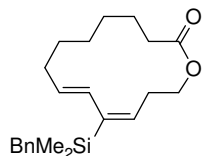
⁷ Galan, B.R.; Kalbarczyk, K.P.; Szczepankiewicz, S.; Keister, J.B.; Diver, S.T. *Org. Lett.* **2007**, 9, 1203-1206.

1599, 1580, 1493, 1444, 1385, 1338, 1247, 1195, 1157 cm^{-1} ; MS (EI): m/z (%): 328 (2) [M^+], 237 (71) [$M^+ - \text{Bn}$], 75 (100); HRMS (ESI $^+$) calcd for $\text{C}_{20}\text{H}_{28}\text{O}_2\text{SiNa}$ [$M^+ + \text{Na}$]: 351.1751; found: 351.1750.

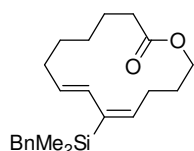
Compound 11. 80 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 7.18 (t, J = 7.3 Hz, 2H), 7.06 (t, J = 7.3 Hz, 1H), 6.99 (d, J = 7.3 Hz, 2H), 6.49 (d, J = 16.2 Hz, 1H), 5.70 (t, J = 8.1 Hz, 1H), 5.51 (dt, J = 16.2 Hz, 7.6 Hz, 1H), 4.10 (t, J = 5.3 Hz, 2H), 2.51 (dt, J = 8.1 Hz, 5.3 Hz, 2H), 2.33 (t, J = 6.1 Hz, 2H), 2.24 (s, 2H), 2.19 (dt, J = 7.6 Hz, 6.6 Hz, 2H), 1.65-1.58 (m, 2H), 1.48-1.41 (m, 2H), 1.41-1.33 (m, 2H), 0.11 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 173.5 (C), 140.1 (C), 140.0 (C), 137.8 (CH), 131.5 (CH), 130.6 (CH), 128.3 (CH), 128.0 (CH), 123.0 (CH), 64.0 (CH_2), 35.0 (CH_2), 32.3 (CH_2), 28.1 (CH_2), 26.3 (CH_2), 26.2 (CH_2), 26.2 (CH_2), 23.6 (CH_2), -2.6 (CH_3) ppm; IR (film): $\tilde{\nu}$ = 3081, 3058, 3022, 2925, 2854, 1727, 1599, 1580, 1493, 1451, 1330, 1245, 1205, 1150, 1137, 1056, 965 cm^{-1} ; MS (EI): m/z (%): 342 (< 1) [M^+], 251 (61) [$M^+ - \text{Bn}$], 121 (21), 91 (25), 75 (100); HRMS (ESI $^+$) calcd for $\text{C}_{21}\text{H}_{30}\text{O}_2\text{SiNa}$ [$M^+ + \text{Na}$]: 365.1907; found: 365.1905.



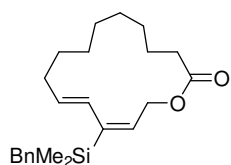
Compound 13. 92 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 7.19 (t, J = 7.3 Hz, 2H), 7.06 (t, J = 7.3 Hz, 1H), 7.02 (d, J = 7.3 Hz, 2H), 6.41 (d, J = 16.0 Hz, 1H), 5.63 (t, J = 8.3 Hz, 1H), 5.57 (dt, J = 16.0 Hz, 7.3 Hz, 1H), 4.17 (t, J = 5.3 Hz, 2H), 2.58 (dt, J = 8.3 Hz, 5.3 Hz, 2H), 2.32 (t, J = 6.1 Hz, 2H), 2.26 (s, 2H), 2.18 (dt, J = 7.3 Hz, 6.1 Hz, 2H), 1.67 (tt, J = 6.1 Hz, 6.1 Hz, 2H), 1.49 (tt, J = 6.1 Hz, 6.1 Hz, 2H), 1.39-1.29 (m, 2H), 1.28-1.20 (m, 2H), 0.11 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 173.8 (C), 140.1 (C), 139.5 (C), 137.7 (CH), 132.3 (CH), 129.5 (CH), 128.4 (CH), 128.0 (CH), 123.0 (CH), 63.1 (CH_2), 31.5 (CH_2), 31.0 (CH_2), 28.4 (CH_2), 26.5 (CH_2), 26.1 (CH_2), 24.6 (CH_2), 24.5 (CH_2), 24.0 (CH_2), -2.4 (CH_3) ppm; IR (film): $\tilde{\nu}$ = 3059, 3023, 2928, 2854, 1732, 1600, 1581, 1493, 1450, 1386, 1359, 1247, 1207, 1166, 1141, 1100, 966 cm^{-1} ; MS (ESI $^+$): m/z (%): 356 (100) [$M^+ + \text{Na}$]; HRMS (ESI $^+$) calcd for $\text{C}_{22}\text{H}_{32}\text{O}_2\text{SiNa}$ [$M^+ + \text{Na}$]: 379.2064; found: 379.2066.



Compound 15. 90 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 7.20 (t, J = 7.3 Hz, 2H), 7.05 (t, J = 7.3 Hz, 1H), 6.97 (d, J = 7.3 Hz, 2H), 6.23 (d, J = 15.9 Hz, 1H), 5.59 (t, J = 8.0 Hz, 1H), 5.37 (dt, J = 15.9 Hz, 6.8 Hz, 1H), 3.98 (t, J = 5.1 Hz, 2H), 2.41-2.34 (m, 4H), 2.18 (s, 2H), 2.16 (dt, J = 6.8 Hz, 6.1 Hz, 2H), 1.70-1.60 (m, 4H), 1.48 (tt, J = 6.8 Hz, 6.3 Hz, 2H), 1.35 (tt, J = 6.8 Hz, 6.3 Hz, 2H), 0.07 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 173.7 (C), 140.1 (C), 140.0 (CH), 139.4 (C), 131.3 (CH), 129.6 (CH), 128.2 (CH), 128.1 (CH), 123.9 (CH), 62.7 (CH_2), 34.9 (CH_2), 31.1 (CH_2), 28.0 (CH_2), 26.6 (CH_2), 25.9 (CH_2), 25.8 (CH_2), 25.4 (CH_2), 24.3 (CH_2), -3.0 (CH_3) ppm; IR (film): $\tilde{\nu}$ = 3059, 3024, 2926, 2855, 1730, 1599, 1493, 1451, 1331, 1246, 1204, 1144, 1056, 965 cm^{-1} ; MS (EI): m/z (%): 265 (100) [$M^+ - \text{Bn}$], 121 (19), 75 (80); HRMS (ESI $^+$) calcd for $\text{C}_{22}\text{H}_{32}\text{O}_2\text{SiNa}$ [$M^+ + \text{Na}$]: 379.2064; found: 379.2061.

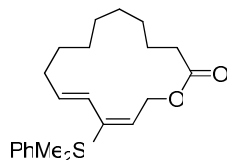


Compound 17. 73 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 7.19 (t, J = 7.3 Hz, 2H), 7.06 (t, J = 7.3 Hz, 1H), 6.98 (d, J = 7.3 Hz, 2H), 6.37 (d, J = 16.0 Hz, 1H), 5.93 (t, J = 7.3 Hz, 1H), 5.67 (dt, J = 16.0 Hz, 7.3 Hz, 1H), 4.58 (d, J = 7.3 Hz, 2H), 2.33 (t, J = 6.6 Hz, 2H), 2.24 (s, 2H), 2.18 (dt, J = 7.3 Hz, 6.1 Hz, 2H), 1.64 (tt, J = 7.3 Hz, 6.6 Hz, 2H), 1.45 (tt, J = 6.6 Hz, 6.1 Hz, 2H), 1.38-1.24 (m, 8H), 0.12 (s, 6H) ppm; ^{13}C NMR (100 MHz, CDCl_3): δ = 174.0 (C), 147.3 (C), 139.7 (C), 135.1 (CH), 132.0 (CH), 129.0 (CH), 128.3 (CH), 128.1 (CH), 124.1 (CH), 59.4 (CH_2), 34.4 (CH_2), 31.5 (CH_2), 27.2 (CH_2), 26.8 (CH_2), 26.6 (CH_2), 26.2 (CH_2), 25.8 (CH_2), 25.3 (CH_2), 24.4 (CH_2), -2.8 (CH_3) ppm; IR

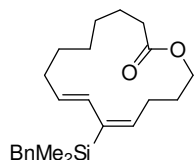


(film): $\tilde{\nu}$ = 3060, 3024, 2927, 2855, 1730, 1600, 1493, 1451, 1248, 1205, 1152, 1132, 1101, 1082, 1055, 1029, 1005, 966 cm^{-1} ; MS (EI): m/z (%): 279 (100) [M^+ - Bn], 265 (12), 149 (18), 121 (28), 91 (30), 75 (94); HRMS (ESI⁺) calcd for $\text{C}_{23}\text{H}_{34}\text{O}_2\text{SiNa}$ [M^+ + Na]: 393.2220; found: 393.2222.

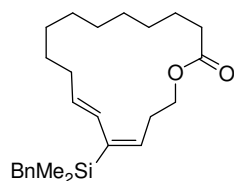
Compound 18. 78 %; colorless oil; ¹H NMR (400 MHz, CDCl_3): δ = 7.52-7.49 (m, 2H), 7.35-7.32 (m, 3H), 6.42 (d, J = 16.0 Hz, 1H), 6.08 (t, J = 7.3 Hz, 1H), 5.56 (dt, J = 16.0 Hz, 7.3 Hz, 1H), 4.64 (d, J = 7.3 Hz, 2H), 2.32 (t, J = 6.6 Hz, 2H), 2.07 (dt, J = 7.3 Hz, 6.1 Hz, 2H), 1.62 (tt, J = 7.1 Hz, 6.6 Hz, 2H), 1.34-1.19 (m, 8H), 1.17-1.09 (m, 2H), 0.42 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl_3): δ = 173.9 (C), 146.4 (C), 138.4 (C), 136.2 (CH), 133.9 (CH), 132.9 (CH), 128.9 (CH), 128.7 (CH), 127.7 (CH), 59.4 (CH₂), 34.3 (CH₂), 31.4 (CH₂), 27.0 (CH₂), 26.8 (CH₂), 26.6 (CH₂), 26.0 (CH₂), 25.1 (CH₂), 24.5 (CH₂), -2.1 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3068, 3022, 2928, 2855, 1731, 1456, 1427, 1371, 1247, 1110, 1083, 1047, 1006, 966 cm^{-1} ; MS (EI): m/z (%): 356 (10) [M^+], 137 (23), 135 (100), 129 (24), 75 (27); HRMS (ESI⁺) calcd for $\text{C}_{22}\text{H}_{32}\text{O}_2\text{SiNa}$ [M^+ + Na]: 379.2064; found: 379.2067.



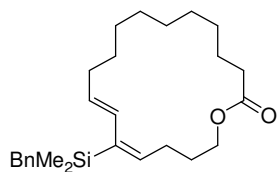
Compound 19. 75 %; colorless oil; ¹H NMR (400 MHz, CDCl_3): δ = 7.20 (t, J = 7.3 Hz, 2H), 7.05 (t, J = 7.3 Hz, 1H), 6.97 (d, J = 7.3 Hz, 2H), 6.07 (d, J = 15.9 Hz, 1H), 5.59 (t, J = 7.6 Hz, 1H), 5.37 (dt, J = 15.9 Hz, 7.1 Hz, 1H), 4.04 (t, J = 5.3 Hz, 2H), 2.38-2.27 (m, 4H), 2.17 (s, 2H), 2.14 (dt, J = 7.1 Hz, 6.8 Hz, 2H), 1.74-1.61 (m, 4H), 1.50-1.27 (m, 6H), 0.06 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl_3): δ = 174.0 (C), 140.2 (CH), 139.4 (C), 139.3 (C), 132.5 (CH), 129.1 (CH), 128.2 (CH), 128.0 (CH), 123.9 (CH), 63.2 (CH₂), 33.8 (CH₂), 32.0 (CH₂), 28.3 (CH₂), 28.2 (CH₂), 27.6 (CH₂), 26.7 (CH₂), 25.9 (CH₂), 25.7 (CH₂), 24.7 (CH₂), -3.2 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3058, 3023, 2926, 2854, 1732, 1600, 1493, 1450, 1246, 1206, 1181, 1146, 1056, 965 cm^{-1} ; MS (EI): m/z (%): 279 (100) [M^+ - Bn], 121 (28), 91 (30), 75 (94); HRMS (ESI⁺) calcd for $\text{C}_{23}\text{H}_{34}\text{O}_2\text{SiNa}$ [M^+ + Na]: 393.2220; found: 393.2222.



Compound 21. 92 %; colorless oil; ¹H NMR (400 MHz, CDCl_3): δ = 7.19 (t, J = 7.3 Hz, 2H), 7.06 (t, J = 7.3 Hz, 1H), 6.99 (d, J = 7.3 Hz, 2H), 6.18 (d, J = 16.0 Hz, 1H), 5.58 (t, J = 7.1 Hz, 1H), 5.48 (dt, J = 16.0 Hz, 7.1 Hz, 1H), 4.10 (t, J = 7.1 Hz, 2H), 2.56 (dt, J = 7.1 Hz, 7.1 Hz, 2H), 2.30 (t, J = 6.6 Hz, 2H), 2.19 (s, 2H), 2.16 (dt, J = 7.1 Hz, 6.8 Hz, 2H), 1.66 (tt, J = 6.6 Hz, 6.6 Hz, 2H), 1.45 (tt, J = 6.8 Hz, 6.3 Hz, 2H), 1.36-1.24 (m, 10H), 0.07 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl_3): δ = 174.0 (C), 141.1 (C), 140.1 (C), 136.0 (CH), 133.4 (CH), 128.9 (CH), 128.6 (CH), 128.0 (CH), 123.9 (CH), 63.3 (CH₂), 34.4 (CH₂), 32.2 (CH₂), 29.2 (CH₂), 28.5 (CH₂), 28.4 (CH₂), 28.2 (CH₂), 27.6 (CH₂), 27.1 (CH₂), 26.9 (CH₂), 25.7 (CH₂), 24.7 (CH₂), -3.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3059, 3023, 2926, 2854, 1732, 1600, 1493, 1451, 1341, 1246, 1205, 1152, 1056, 965 cm^{-1} ; MS (EI): m/z (%): 307 (100) [M^+ - Bn], 75 (86); HRMS (ESI⁺) calcd for $\text{C}_{25}\text{H}_{38}\text{O}_2\text{SiNa}$ [M^+ + Na]: 421.2533; found: 421.2537.

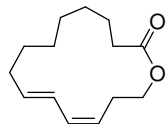


Compound 22. 90 %; colorless oil; ¹H NMR (400 MHz, CDCl_3): δ = 7.18 (t, J = 7.3 Hz, 2H), 7.05 (t, J = 7.3 Hz, 1H), 6.97 (d, J = 7.3 Hz, 2H), 6.35 (d, J = 15.9 Hz, 1H), 5.63 (dt, J = 15.9 Hz, 6.8 Hz, 1H), 5.57 (t, J = 6.8 Hz, 1H), 4.06 (t, J = 5.1 Hz, 2H), 2.37-2.27 (m, 4H), 2.21 (s, 2H), 2.14 (dt, J = 6.8 Hz, 7.1 Hz, 2H), 1.74-1.63 (m, 4H), 1.50-1.27 (m, 12H), 0.09 (s, 6H) ppm; ¹³C NMR (100 MHz, CDCl_3): δ = 174.0 (C), 140.7 (CH), 140.2 (C), 137.9 (C), 133.0 (CH), 128.8 (CH), 128.2 (CH), 128.0 (CH), 123.9 (CH), 63.7 (CH₂), 34.4 (CH₂), 32.1 (CH₂), 28.5 (CH₂), 27.6 (CH₂), 27.3 (CH₂), 27.2 (CH₂), 27.1 (CH₂), 26.9 (CH₂), 26.8 (CH₂), 26.0 (CH₂), 25.7 (CH₂), 24.2 (CH₂), -2.6



(CH₃) ppm; IR (film): $\tilde{\nu}$ = 3022, 2926, 2854, 1733, 1600, 1579, 1493, 1451, 1341, 1247, 1205, 1153, 1055, 965 cm⁻¹; MS (EI): *m/z* (%): 321 (100) [*M*⁺ - Bn], 121 (18), 75 (85); HRMS (ESI⁺) calcd for C₂₆H₄₀O₂SiNa [*M*⁺ + Na]: 435.2690; found: 435.2686.

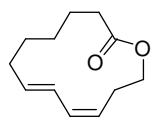
Representative Procedure for the C-Desilylation of the Macrolactones. Compound 8.



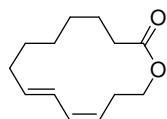
TBAF (1.0 M in THF, 312 μL, 0.312 mmol) was added to a solution of compound **7a** (38.7 mg, 0.104 mmol) in THF (0.4 mL). The mixture was stirred for 2 h and checked by TLC (toluene/ethyl acetate, 95:5). In some cases a large amount of polar material was detected by TLC, which could be identified as the corresponding dimethyl silanol. In these cases, gentle heating to 60 °C for 30 min was necessary to successfully convert the material into the free diene. Once TLC showed complete conversion, the mixture was diluted with Et₂O (3 mL) and the reaction quenched with brine (1 mL). The mixture was extracted with Et₂O (3 x 2 mL), the combined organic layers were dried over MgSO₄ and concentrated. Flash chromatography of the residue (hexanes/ether, 100:0→95:5) gave the diene as a colorless oil (19.6 mg, 85 %). ¹H NMR (400 MHz, CDCl₃): δ = 6.36 (dd, *J* = 15.2 Hz, 11.1 Hz, 1H), 6.13 (dd, *J* = 10.6 Hz, 10.6 Hz, 1H), 5.61 (dt, *J* = 15.2 Hz, 7.3 Hz, 1H), 5.32 (dt, *J* = 10.6 Hz, 8.3 Hz, 1H), 4.15 (t, 5.3 Hz, 2H), 2.46 (dt, *J* = 8.3 Hz, 5.3 Hz, 2H), 2.25 (t, *J* = 8.1 Hz, 2H), 2.17 (dt, *J* = 7.3 Hz, 5.8 Hz, 2H), 1.60 (tt, *J* = 8.1 Hz, 6.8 Hz, 2H), 1.45 (tt, *J* = 5.8 Hz, 5.3 Hz, 2H), 1.34-1.22 (m, 6H); ¹³C NMR (100 MHz, CDCl₃): δ = 173.8 (C), 135.6 (CH), 131.9 (CH), 126.9 (CH), 125.0 (CH), 63.3 (CH₂), 34.3 (CH₂), 30.6 (CH₂), 27.6 (CH₂), 27.5 (CH₂), 26.4 (CH₂), 25.5 (CH₂), 25.2 (CH₂), 24.3 (CH₂) ppm; IR (film): $\tilde{\nu}$ = 3022, 2927, 2854, 1731, 1458, 1439, 1266, 1236, 1179, 1146, 1124, 985 cm⁻¹; MS (EI): *m/z* (%): 222 (45) [*M*⁺], 93 (56), 80 (100); HRMS (ESI⁺) calcd for C₁₄H₂₂O₂Na [*M*⁺ + Na]: 245.1512; found: 245.1513.

The following compounds were prepared analogously:

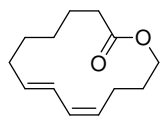
Compound 12. 78 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 6.41 (dd, *J* = 15.2 Hz, 10.9 Hz, 1H), 6.17 (dd, *J* = 10.9 Hz, 10.9 Hz, 1H), 5.52 (dt, *J* = 15.2 Hz, 7.8 Hz, 1H), 5.45 (dt, *J* = 10.9 Hz, 8.6 Hz, 1H), 4.12 (t, 5.3 Hz, 2H), 2.50 (dt, *J* = 8.6 Hz, 5.3 Hz, 2H), 2.32 (t, *J* = 5.8 Hz, 2H), 2.16 (dt, *J* = 7.8 Hz, 5.3 Hz, 2H), 1.64-1.55 (m, 2H), 1.47-1.39 (m, 2H), 1.38-1.30 (m, 2H); ¹³C NMR (100 MHz, CDCl₃): δ = 173.6 (C), 132.1 (CH), 131.9 (CH), 128.5 (CH), 125.2 (CH), 64.6 (CH₂), 35.2 (CH₂), 30.6 (CH₂), 26.6 (CH₂), 26.1 (CH₂), 26.0 (CH₂), 22.8 (CH₂) ppm; IR (film): $\tilde{\nu}$ = 3026, 2926, 2856, 1724, 1453, 1441, 1328, 1237, 1213, 1142, 1060, 1035, 985 cm⁻¹; MS (EI): *m/z* (%): 194 (38) [*M*⁺], 93 (63), 79 (100), 41 (38); HRMS (EI) calcd for C₁₂H₁₈O₂ [*M*⁺]: 194.1307; found: 194.1308.



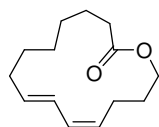
Compound 14. 82 %; colorless oil; ¹H NMR (400 MHz, CDCl₃): δ = 6.27-6.15 (m, 2H), 5.52 (dt, *J* = 14.1 Hz, 7.3 Hz, 1H), 5.35 (dt, *J* = 10.0 Hz, 8.3 Hz, 1H), 4.16 (t, 5.6 Hz, 2H), 2.54 (dt, *J* = 8.3 Hz, 5.6 Hz, 2H), 2.31 (t, *J* = 5.8 Hz, 2H), 2.14 (dt, *J* = 7.3 Hz, 6.1 Hz, 2H), 1.65 (tt, *J* = 6.1 Hz, 5.8 Hz, 2H), 1.47 (tt, *J* = 6.3 Hz, 6.1 Hz, 2H), 1.37-1.27 (m, 2H), 1.27-1.16 (m, 2H); ¹³C NMR (100 MHz, CDCl₃): δ = 173.7 (C), 133.3 (CH), 131.9 (CH), 127.1 (CH), 124.9 (CH), 63.4 (CH₂), 30.9 (CH₂), 30.0 (CH₂), 27.4 (CH₂), 26.0 (CH₂), 24.1 (CH₂), 24.0 (CH₂), 23.6 (CH₂) ppm; IR (film): $\tilde{\nu}$ = 3023, 2929, 2854, 1731, 1443, 1384, 1360, 1267, 1205, 1179, 1161, 1144, 1130, 1029, 984 cm⁻¹; MS (EI): *m/z* (%): 208 (45) [*M*⁺], 93 (63), 79 (100), 41 (46); HRMS (ESI⁺) calcd for C₁₃H₂₀O₂Na [*M*⁺ + Na]: 231.1356; found: 231.1356.



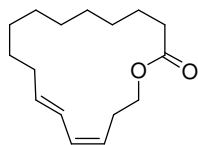
Compound 16. 84 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 6.40 (dd, J = 15.4 Hz, 10.9 Hz, 1H), 6.13 (dd, J = 10.9 Hz, 10.9 Hz, 1H), 5.57 (dt, J = 15.4 Hz, 6.3 Hz, 1H), 5.22 (dt, J = 10.9 Hz, 8.6 Hz, 1H), 3.98 (t, 5.3 Hz, 2H), 2.44-2.36 (m, 4H), 2.16 (dt, J = 6.3 Hz, 5.8 Hz, 2H), 1.76-1.63 (m, 4H), 1.51 (tt, J = 6.6 Hz, 5.8 Hz, 2H), 1.27 (tt, J = 7.1 Hz, 6.6 Hz, 2H); ^{13}C NMR (100 MHz, CDCl_3): δ = 173.8 (C), 131.8 (CH), 130.8 (CH), 127.2 (CH), 126.2 (CH), 61.7 (CH_2), 34.6 (CH_2), 29.5 (CH_2), 27.0 (CH_2), 25.0 (CH_2), 24.9 (CH_2), 23.8 (CH_2), 23.1 (CH_2) ppm; IR (film): $\tilde{\nu}$ = 3005, 2929, 2860, 1729, 1465, 1452, 1433, 1330, 1278, 1243, 1199, 1138, 1119, 1084, 1070, 1027, 985 cm^{-1} ; MS (EI): m/z (%): 208 (51) [M^+], 107 (37), 93 (81), 79 (100), 41 (47); HRMS (ESI^+) calcd for $\text{C}_{13}\text{H}_{20}\text{O}_2\text{Na}$ [M^+ + Na]: 231.1356; found: 231.1355.



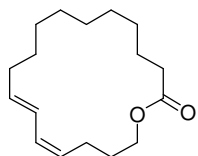
Compound 20. 85 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 6.26 (dd, J = 15.2 Hz, 10.9 Hz, 1H), 6.01 (dd, J = 10.9 Hz, 10.9 Hz, 1H), 5.60 (dt, J = 15.2 Hz, 6.8 Hz, 1H), 5.20 (dt, J = 10.9 Hz, 8.3 Hz, 1H), 4.00 (t, 5.3 Hz, 2H), 2.40-2.29 (m, 4H), 2.09 (dt, J = 6.8 Hz, 6.1 Hz, 2H), 1.76-1.66 (m, 4H), 1.45-1.30 (m, 4H), 1.30-1.20 (m, 2H); ^{13}C NMR (100 MHz, CDCl_3): δ = 174.6 (C), 134.2 (CH), 130.6 (CH), 127.6 (CH), 126.0 (CH), 62.3 (CH_2), 34.0 (CH_2), 30.7 (CH_2), 28.7 (CH_2), 27.4 (CH_2), 26.6 (CH_2), 26.2 (CH_2), 24.1 (CH_2), 23.4 (CH_2) ppm; IR (film): $\tilde{\nu}$ = 3005, 2925, 2856, 1732, 1444, 1359, 1342, 1215, 1179, 1140, 1070, 984 cm^{-1} ; MS (EI): m/z (%): 222 (36) [M^+], 107 (33), 93 (78), 79 (100), 67 (32), 55 (32), 41 (50); HRMS (ESI^+) calcd for $\text{C}_{14}\text{H}_{22}\text{O}_2\text{Na}$ [M^+ + Na]: 245.1512; found: 245.1512.



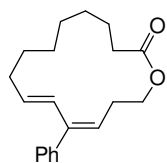
Compound 2. 81 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 6.30 (dd, J = 15.2 Hz, 10.9 Hz, 1H), 6.10 (dd, J = 10.9 Hz, 10.9 Hz, 1H), 5.65 (dt, J = 15.2 Hz, 7.3 Hz, 1H), 5.27 (dt, J = 10.9 Hz, 7.6 Hz, 1H), 4.18 (t, 5.3 Hz, 2H), 2.51 (dt, J = 7.6 Hz, 5.3 Hz, 2H), 2.26 (t, J = 7.1 Hz, 2H), 2.14 (dt, J = 7.3 Hz, 5.8 Hz, 2H), 1.60 (tt, J = 7.1 Hz, 7.1 Hz, 2H), 1.46 (tt, J = 6.3 Hz, 5.8 Hz, 2H), 1.35-1.22 (m, 10H); ^{13}C NMR (100 MHz, CDCl_3): δ = 174.0 (C), 135.5 (CH), 131.4 (CH), 125.9 (CH), 125.3 (CH), 63.5 (CH_2), 34.3 (CH_2), 31.2 (CH_2), 27.8 (CH_2), 27.8 (CH_2), 27.3 (CH_2), 26.8 (CH_2), 26.8 (CH_2), 26.7 (CH_2), 26.7 (CH_2), 24.4 (CH_2) ppm; IR (film): $\tilde{\nu}$ = 3021, 2926, 2854, 1732, 1458, 1385, 1340, 1241, 1170, 1123, 1100, 1058, 983 cm^{-1} ; MS (EI): m/z (%): 250 (22) [M^+], 93 (50), 80 (100), 67 (37), 55 (39), 41 (57); HRMS (ESI^+) calcd for $\text{C}_{16}\text{H}_{26}\text{O}_2\text{Na}$ [M^+ + Na]: 273.1825; found: 273.1828.



Compound 23. 85 %; colorless oil; ^1H NMR (400 MHz, CDCl_3): δ = 6.32 (dd, J = 15.2 Hz, 10.9 Hz, 1H), 6.02 (dd, J = 10.9 Hz, 10.9 Hz, 1H), 5.68 (dt, J = 15.2 Hz, 6.8 Hz, 1H), 5.26 (dt, J = 10.9 Hz, 7.8 Hz, 1H), 4.11 (t, J = 5.3 Hz, 2H), 2.37-2.25 (m, 4H), 2.11 (dt, J = 6.8 Hz, 6.6 Hz, 2H), 1.75-1.63 (m, 4H), 1.50-1.20 (m, 12H); ^{13}C NMR (100 MHz, CDCl_3): δ = 174.0 (C), 134.3 (CH), 129.7 (CH), 128.1 (CH), 125.7 (CH), 63.3 (CH_2), 34.4 (CH_2), 30.9 (CH_2), 28.7 (CH_2), 27.6 (CH_2), 27.3 (CH_2), 27.0 (CH_2), 26.7 (CH_2), 26.7 (CH_2), 26.6 (CH_2), 24.7 (CH_2), 24.2 (CH_2) ppm; IR (film): $\tilde{\nu}$ = 3019, 2926, 2854, 1732, 1459, 1342, 1251, 1173, 1121, 1090, 1034, 982 cm^{-1} ; MS (EI): m/z (%): 264 (45) [M^+], 121 (28), 107 (36), 93 (80), 80 (100), 67 (35), 55 (26), 41 (50); HRMS (ESI^+) calcd for $\text{C}_{17}\text{H}_{28}\text{O}_2\text{Na}$ [M^+ + Na]: 287.1982; found: 287.1981.

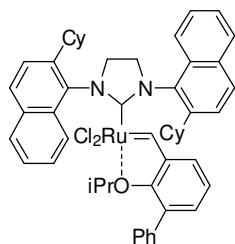


Hiyama cross coupling. Compound 9.⁸ TBAF·3H₂O (1.0 M in THF, 186 μL, 186 mmol) was added dropwise to a solution of the macrolactone **7b** (R = 2-thienyl) (33.7 mg, 0.093 mmol) in THF (0.5 mL). After 10 min, iodobenzene (16 μL, 0.14 mmol) was introduced, followed by Pd₂dba₃·CHCl₃ (5.2 mg, 5 μmol). The resulting dark solution was stirred for 1 h before the mixture was filtered through a short pad of silica, which was carefully rinsed with Et₂O. The filtrate was evaporated and the residue purified by flash chromatography (hexanes/ether, 100:0→95:5) to afford product **9** as a colorless oil (21.6 mg, 78 %). ¹H NMR (400 MHz, CDCl₃): δ = 7.37-7.22 (m, 5H), 6.62 (d, *J* = 15.7 Hz, 1H), 5.47 (dt, *J* = 15.7 Hz, 7.3 Hz, 1H), 5.39 (t, *J* = 8.4 Hz, 1H), 4.25 (t, *J* = 5.3 Hz, 2H), 2.63 (dt, *J* = 8.4 Hz, 5.3 Hz, 2H), 2.31 (t, *J* = 7.3 Hz, 2H), 2.20 (dt, *J* = 7.3 Hz, 6.1 Hz, 2H), 1.66 (tt, *J* = 7.3 Hz, 7.1 Hz, 2H), 1.43 (tt, *J* = 6.1 Hz, 5.8 Hz, 2H), 1.39-1.25 (m, 6H); ¹³C NMR (100 MHz, CDCl₃): δ = 173.9 (C), 142.5 (C), 138.9 (C), 135.3 (CH), 128.8 (CH), 127.9 (CH), 127.6 (CH), 126.8 (CH), 126.0 (CH), 63.4 (CH₂), 34.2 (CH₂), 31.4 (CH₂), 27.9 (CH₂), 27.5 (CH₂), 26.5 (CH₂), 26.0 (CH₂), 25.9 (CH₂), 24.3 (CH₂) ppm; IR (film): $\tilde{\nu}$ = 3030, 2927, 2855, 1730, 1491, 1458, 1442, 1264, 1237, 1177, 1141, 1074, 1054, 1006, 969 cm⁻¹; MS (EI): *m/z* (%): 298 (30) [*M*⁺], 169 (19), 155 (100), 142 (30); HRMS (ESI⁺) calcd for C₂₀H₂₆O₂Na [*M*⁺ + Na]: 321.1825; found: 321.1826.



Formal Total Synthesis of Lactimidomycin

Complex 43. The catalyst was prepared by an adaptation of the literature procedure; its spectroscopic data are in agreement with those reported in ref. 9. ¹H NMR (300 MHz, CD₂Cl₂): δ = 16.18 (s, 1H), 8.34 (d, *J* = 8.7 Hz, 2H), 8.06 (d, *J* = 8.7 Hz, 2H), 7.93 (d, *J* = 7.2 Hz, 2H), 7.69 (d, *J* = 8.7 Hz, 2H), 7.62-7.49 (m, 4H), 7.27 (s br, 5H), 7.21 (dd, *J* = 7.5 Hz, 1.5 Hz, 1H), 6.78 (t, *J* = 7.5 Hz, 1H), 6.49 (dd, *J* = 7.5 Hz, 1.5 Hz, 1H), 4.40 (m, 4H), 4.22 (sept, *J* = 6.4 Hz, 1H), 3.67 (m br, 2H), 2.00-1.21 (m, 20H), 0.65 (d, *J* = 6.4 Hz, 3H), 0.61 (d, *J* = 6.4 Hz, 3H) ppm; IR (solid): $\tilde{\nu}$ = 3052, 2928, 2852, 1735, 1687, 1600, 1562, 1510, 1476, 1446, 1420, 1370, 1336, 1307, 1251, 1206, 1176, 1145, 1104, 1091, 1045, 1028, 1009 cm⁻¹; MS (ESI⁺): *m/z* (%): 847 (100) [*M*⁺ - Cl]; HRMS (ESI⁺) calcd for C₅₁H₅₄ClN₂ORu [*M*⁺ - Cl]: 847.2982; found: 847.2989.



Compound 25. *n*BuLi (1.6 M in hexane, 50.9 mL, 81.4 mmol) was added dropwise to a solution of *i*Pr₂NH (12.0 mL, 85.3 mmol) in THF (85 mL) at -78 °C. After stirring at this temperature for 1 h, a solution of (*R*)-ethyl 3-hydroxybutyrate (5.12 g, 38.8 mmol) in THF (27 mL) and HMPA (11.6 mL) was introduced over 30 min via cannula. The mixture was warmed to -40 °C and stirred at this temperature for 20 min before it was cooled back to -78 °C. Iodomethane (3.0 mL, 48.4 mmol) was then slowly added and the mixture allowed to reach 0 °C within 2 h before the reaction was quenched with sat. aq. NH₄Cl (50 mL). Aq. HCl (1 M) was then added until pH 7 was reached. The organic phase was extracted with Et₂O (3 x 80 mL), the combined organic layers were dried over MgSO₄ and concentrated, and the residue was purified by flash chromatography (hexanes/ethyl acetate, 4:1→3:2) to give the title compound as a pale yellow oil (5.1 g, 92 %). [α]_D²⁰ = -30.0 (c = 1.0, CHCl₃) [lit.¹⁰ [α]_D²⁰ = -30.3 (c = 1.0, CHCl₃)]; ¹H NMR (400 MHz,

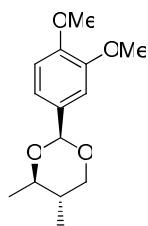
⁸ (a) Hosoi, K.; Nozaki, K.; Hiyama, T. *Chem. Lett.* **2002**, *31*, 138-139; (b) Denmark, S.E.; Tymonko, S.A. *J. Am. Chem. Soc.* **2005**, *127*, 8004-8005.

⁹ Gatti, M.; Vieille-Petit, L.; Luan, X.; Mariz, R.; Drinkel, E.; Linden, A.; Dorta, R. *J. Am. Chem. Soc.* **2009**, *131*, 9498-9499.

¹⁰ Mori, K. Ebata, T. *Tetrahedron* **1986**, *42*, 4413-4420.

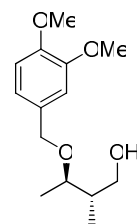
CDCl₃): δ = 4.16 (q, J = 7.1 Hz, 2H), 3.86 (qd, J = 6.4 Hz, 6.4 Hz, 1H), 2.57 (s br, 1H), 2.42 (qd, J = 7.1 Hz, 7.1 Hz, 1H), 1.26 (t, J = 7.1 Hz, 3H), 1.20 (d, J = 6.3 Hz, 3H), 1.16 (d, J = 7.1 Hz, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 175.9 (C), 69.4 (CH), 60.5 (CH₂), 46.9 (CH), 20.7 (CH₃), 14.1 (CH₃), 14.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3444, 2978, 2937, 1715, 1458, 1375, 1260, 1181, 1110, 1074, 1046, 1028 cm⁻¹; MS (EI): m/z (%): 131 (7), 102 (86), 85 (23), 74 (100), 56 (57), 45 (52), 29 (53); HRMS (CI) calcd for C₇H₁₅O₃ [M^+ + H]: 147.1021; found: 147.1022.

Compound 26. A precooled (0 °C) solution of compound **25** (5.1 g, 34.9 mmol) in Et₂O (25 mL) was slowly added to a suspension of LiAlH₄ (2.65 g, 69.8 mmol) in Et₂O (130 mL) at 0 °C. The resulting mixture was stirred at 0 °C for 1 h before the reaction was quenched by the careful addition of water (5 mL), followed by aq. NaOH (1 M, 10 mL) and more water (15 mL). MgSO₄ (~ 10 g) was added and the slurry filtered through a pad of Celite. The filtrate was carefully concentrated (volatility of the diol) and the crude product (3.42 g) directly used in the next step.



In a 500 mL round bottom flask equipped with a Dean-Stark trap and a reflux condenser, the diol (3.42 g, 32.8 mmol) was dissolved in benzene (160 mL). 3,4-Dimethoxybenzaldehyde (7.2 g, 43.3 mmol) was added followed by *p*TsOH·H₂O (0.75 g, 3.9 mmol) and the solution was refluxed until no more water was collected (ca. 3 h). The solution was cooled to room temperature before water (130 mL), Et₂O (130 mL) and solid NaHCO₃ (0.7 g, 7.9 mmol) were added. The mixture was extracted with Et₂O (3 x 80 mL) and the combined organic layers were washed with brine (50 mL), dried over MgSO₄ and concentrated. To destroy residual 3,4-dimethoxybenzaldehyde, NaBH₄ (1.86 g, 49.2 mmol) was added to a solution of the crude product in MeOH (130 mL). After stirring for 1 h, water (20 mL) was added and the mixture extracted with Et₂O (3 x 80 mL). The combined organic layers were dried over MgSO₄ and evaporated, and the residue was purified by flash chromatography (hexanes/ether, 7:3→4:1) to afford the title compound as a colorless oil (5.7 g, 65 % over 2 steps). $[\alpha]_D^{24}$ = +3.0 (c = 1.0, CHCl₃) [lit.¹¹ $[\alpha]_D^{24}$ = +3.4 (c = 1.1, CHCl₃)]; ¹H NMR (400 MHz, CDCl₃): δ = 7.06 (d, J = 1.8 Hz, 1H), 7.03 (dd, J = 8.1 Hz, 2.0 Hz, 1H), 6.84 (d, J = 8.1 Hz, 1H), 5.45 (s, 1H), 4.09 (dd, J = 11.4 Hz, 4.6 Hz, 1H), 3.91 (s, 3H), 3.86 (s, 3H), 3.54 (dq, J = 9.6 Hz, 6.1 Hz, 1H), 3.48 (dd, J = 11.1 Hz, 11.1 Hz, 1H), 1.79 (dddq, J = 11.3 Hz, 9.6 Hz, 6.6 Hz, 4.8 Hz, 1H), 1.32 (d, J = 6.1 Hz, 3H), 0.80 (d, J = 6.6 Hz, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 149.3 (C), 148.9 (C), 131.6 (C), 118.8 (CH), 110.8 (CH), 109.1 (CH), 101.3 (CH), 79.5 (CH), 73.0 (CH₂), 55.9 (CH₃), 55.8 (CH₃), 35.9 (CH), 19.1 (CH₃), 12.5 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 2959, 2934, 2836, 2875, 1682, 1610, 1595, 1517, 1462, 1418, 1403, 1384, 1369, 1262, 1234, 1159, 1133, 1113, 1076, 1024, 976 cm⁻¹; MS (EI): m/z (%): 252 (66) [M^+], 221 (22), 166 (100), 138 (22), 69 (19); HRMS (ESI⁺) calcd for C₁₄H₂₀O₄Na [M^+ + Na]: 275.1254; found: 275.1252.

Compound S-1. A precooled (-42 °C) solution of Dibal-H (1 M in CH₂Cl₂, 101.1 mL, 101.1 mmol) was added over 10 min to a solution of compound **26** (5.1 g, 20.2 mmol) in CH₂Cl₂ (84 mL) at -50 °C. The mixture was allowed to reach 0 °C and was stirred at this temperature for 2.5 h before the reaction was quenched by careful addition of MeOH (12 mL). Sat. aq. sodium potassium tartrate solution (240 mL) was added and the mixture vigorously stirred overnight. The aqueous phase was extracted with Et₂O (3 x 100 mL) and the combined organic layers were dried over MgSO₄ and evaporated. Purification of the residue by flash chromatography



¹¹ Roush, W.R., Bannister, T.D., Wendt, M.D., Jablonowski, J.A., Scheidt, K.A. *J. Org. Chem.* **2002**, *67*, 4275-4283.

(hexanes/ethyl acetate, 1:1) afforded the title compound as a colorless oil (5.03 g, 98 %). $[\alpha]_D^{23} = -64.0$ ($c = 1.0$, CHCl_3) [lit.¹¹ $[\alpha]_D^{23} = -69.0$ ($c = 0.63$, CHCl_3)]; $^1\text{H NMR}$ (400 MHz, CDCl_3): $\delta = 6.88$ - 6.85 (m, 2H), 6.82 (d, $J = 8.1$ Hz, 1H), 4.59 (d, $J = 11.1$ Hz, 1H), 4.35 (d, $J = 11.1$ Hz, 1H), 3.88 (s, 3H), 3.87 (s, 3H), 3.63 (dd, $J = 10.9$ Hz, 3.5 Hz, 1H), 3.56 (dd, $J = 10.9$ Hz, 7.1 Hz, 1H), 3.46 (dq, $J = 6.3$ Hz, 6.1 Hz, 1H), 2.56 (s br, 1H), 1.77 (dddq, $J = 7.3$ Hz, 7.1 Hz, 7.1 Hz, 3.5 Hz, 1H), 1.23 (d, $J = 6.3$ Hz, 3H), 0.89 (d, $J = 7.1$ Hz, 3H) ppm; $^{13}\text{C NMR}$ (100 MHz, CDCl_3): $\delta = 149.1$ (C), 148.7 (C), 130.8 (C), 120.3 (CH), 111.1 (CH), 111.0 (CH), 80.1 (CH), 70.6 (CH_2), 67.2 (CH_2), 55.9 (CH_3), 55.8 (CH_3), 41.1 (CH), 17.3 (CH_3), 14.0 (CH_3) ppm; IR (film): $\tilde{\nu} = 3438$, 2965, 2934, 2837, 1608, 1593, 1515, 1464, 1419, 1375, 1328, 1262, 1237, 1155, 1137, 1103, 1068, 1026 cm^{-1} ; MS (EI): m/z (%): 254 (16) [M^+], 167 (32), 151 (100); HRMS (ESI⁺) calcd for $\text{C}_{14}\text{H}_{22}\text{O}_4\text{Na}$ [$M^+ + \text{Na}$]: 277.1410; found: 277.1409.

Compound 27. A precooled (-78 °C) solution of DMSO (4.2 mL, 59 mmol) in CH_2Cl_2 (8.5 mL) was added over 10 min to a solution of oxalylchloride (3.4 mL, 39.3 mmol) in CH_2Cl_2 (120 mL) at -78 °C. After being stirred for 10 min at this temperature, a solution of alcohol **S-1** (5.0 g, 19.7 mmol) in CH_2Cl_2 (12 mL) was introduced at -78 °C. After 10 min, Et_3N (12.3 mL, 88.5 mmol) was added, the solution allowed to warm to 0 °C and stirring continued for 10 min. The reaction was quenched with brine (120 mL) and the aqueous phase extracted with Et_2O (3 x 100 mL). The combined organic layers were successively washed with sat. aq. NaHCO_3 (60 mL), aq. NaHSO_4 (1 M, 2 x 60 mL), sat. aq. NaHCO_3 (60 mL) and brine (60 mL) before they were dried over MgSO_4 and evaporated to afford the title compound as a pale yellow oil (4.95 g, 99 %) which was used in the next step without further purification. $[\alpha]_D^{23} = -63.0$ ($c = 1.0$, CHCl_3); $^1\text{H NMR}$ (400 MHz, CDCl_3): $\delta = 9.71$ (d, $J = 2.3$ Hz, 1H), 6.86-6.80 (m, 3H), 4.55 (d, $J = 11.4$ Hz, 1H), 4.38 (d, $J = 11.4$ Hz, 1H), 3.88 (s, 3H), 3.87 (s, 3H), 3.78 (dq, $J = 6.8$ Hz, 6.3 Hz, 1H), 2.55 (ddq, $J = 7.1$ Hz, 6.8 Hz, 2.5 Hz, 1H), 1.24 (d, $J = 6.3$ Hz, 3H), 1.07 (d, $J = 7.1$ Hz, 3H) ppm; $^{13}\text{C NMR}$ (100 MHz, CDCl_3): $\delta = 204.3$ (CH), 149.0 (C), 148.6 (C), 130.7 (C), 120.2 (CH), 111.1 (CH), 110.9 (CH), 74.9 (CH), 70.6 (CH_2), 55.9 (CH_3), 55.8 (CH_3), 51.8 (CH), 16.8 (CH_3), 10.1 (CH_3) ppm; IR (film): $\tilde{\nu} = 2972$, 2936, 2875, 2836, 1721, 1608, 1593, 1515, 1463, 1419, 1377, 1328, 1260, 1236, 1155, 1137, 1113, 1065, 1026 cm^{-1} ; MS (EI): m/z (%): 252 (29) [M^+], 167 (39), 151 (100), 139 (16); HRMS (ESI⁺) calcd for $\text{C}_{14}\text{H}_{20}\text{O}_4\text{Na}$ [$M^+ + \text{Na}$]: 275.1254; found: 275.1252.

Compound 28. $\text{Ph}_3\text{P}=\text{C}(\text{Me})\text{CO}_2\text{Et}$ (14.21 g, 39.2 mmol) was added to a solution of aldehyde **27** (4.95 g, 19.6 mmol) in CH_2Cl_2 (120 mL) and the yellow solution stirred for 40 h. The mixture was then concentrated and the crude product purified by flash chromatography (hexanes/ethyl acetate, 9:1→4:1) to afford the title compound as a colorless oil (6.11 g, 93 %). $[\alpha]_D^{25} = -16.2$ ($c = 1.0$, CHCl_3) [lit.¹² $[\alpha]_D^{25} = -17.0$ ($c = 1.8$, CHCl_3)]; $^1\text{H NMR}$ (400 MHz, CDCl_3): $\delta = 6.89$ (d, $J = 1.8$ Hz, 1H), 6.85 (dd, $J = 8.1$ Hz, 1.8 Hz, 1H), 6.81 (d, $J = 8.1$ Hz, 1H), 6.68 (d, $J = 10.0$ Hz, 1H), 4.53 (d, $J = 11.4$ Hz, 1H), 4.39 (d, $J = 11.4$ Hz, 1H), 4.18 (dq, $J = 7.1$ Hz, 1.8 Hz, 2H), 3.87 (s, 6H), 3.43 (dq, $J = 6.1$ Hz, 5.8 Hz, 1H), 2.68 (ddq, $J = 10.1$ Hz, 6.8 Hz, 5.6 Hz, 1H), 1.84 (d, $J = 1.5$ Hz, 3H), 1.29 (t, $J = 7.1$ Hz, 3H), 1.15 (d, $J = 6.3$ Hz, 3H), 1.02 (d, $J = 6.8$ Hz, 3H) ppm; $^{13}\text{C NMR}$ (100 MHz, CDCl_3): $\delta = 168.3$ (C), 149.0 (C), 148.4 (C), 144.5 (CH), 131.4 (C), 127.7 (C), 119.9 (CH), 111.0 (CH), 110.8 (CH), 77.5 (CH), 70.6 (CH_2), 60.4 (CH_2), 55.9 (CH_3), 55.7 (CH_3), 38.8 (CH), 16.8 (CH_3), 15.6 (CH_3), 14.3 (CH_3), 12.6 (CH_3) ppm; IR (film): $\tilde{\nu} = 2972$, 2933, 2872, 2836, 1704, 1649, 1608, 1593, 1515, 1463, 1419, 1369, 1260, 1235, 1155, 1137, 1089, 1028 cm^{-1} ; MS (EI): m/z (%): 336 (7) [M^+], 170 (18), 151 (100); HRMS (ESI⁺) calcd for $\text{C}_{19}\text{H}_{28}\text{O}_5\text{Na}$ [$M^+ + \text{Na}$]: 359.1829; found: 359.1828.

¹² Dunetz, J.R., Julian, L.D., Newcom, J.S., Roush, W.R. *J. Am. Chem. Soc.* **2008**, *130*, 16407-16416.

Compound S-2. Dibal-H (1 M in CH₂Cl₂, 40 mL, 39.9 mmol) was slowly added to a solution of ester **28** (6.1 g, 18.1 mmol) in a mixture of CH₂Cl₂ (84 mL) and hexane (84 mL) at -78 °C. After being stirred at this temperature for 1 h, the reaction was quenched with MeOH (10.5 mL). Sat. aq. sodium potassium tartrate solution (150 mL) was added and the mixture vigorously stirred for 1 h. The aqueous phase was extracted with Et₂O (3 x 100 mL), the combined organic layers were dried over MgSO₄ and evaporated. Flash chromatography of the residue (hexanes/ethyl acetate, 3:2→1:1) afforded the title compound as a colorless oil (5.3 g, 99 %). $[\alpha]_D^{25} = -4.3$ (c = 1.0, CHCl₃) [ref.¹² $[\alpha]_D^{25} = -7.1$ (c = 1.9, CHCl₃)] ; ¹H NMR (400 MHz, CDCl₃): δ = 6.90 (d, *J* = 1.8 Hz, 1H), 6.86 (dd, *J* = 8.1 Hz, 1.8 Hz, 1H), 6.82 (d, *J* = 8.1 Hz, 1H), 5.32 (d, *J* = 9.6 Hz, 1H), 4.51 (d, *J* = 11.6 Hz, 1H), 4.40 (d, *J* = 11.6 Hz, 1H), 3.99 (s br, 2H), 3.88 (s, 3H), 3.87 (s, 3H), 3.39 (dq, *J* = 6.3 Hz, 4.8 Hz, 1H), 2.61 (ddq, *J* = 9.6 Hz, 6.8 Hz, 4.6 Hz, 1H), 1.66 (d, *J* = 1.5 Hz, 3H), 1.54 (s br, 1H), 1.11 (d, *J* = 6.3 Hz, 3H), 0.98 (d, *J* = 6.8 Hz, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 148.9 (C), 148.4 (C), 134.9 (C), 131.6 (C), 128.7 (CH), 120.0 (CH), 111.1 (CH), 110.8 (CH), 77.9 (CH), 70.5 (CH₂), 69.0 (CH₂), 55.9 (CH₃), 55.8 (CH₃), 37.1 (CH), 16.5 (CH₃), 16.1 (CH₃), 13.9 (CH₃) ppm; IR (film): $\tilde{\nu} = 3430, 2969, 2933, 2869, 1593, 1514, 1463, 1419, 1372, 1325, 1261, 1235, 1074, 1027$ cm⁻¹; MS (EI): *m/z* (%): 294 (9) [*M*⁺], 166 (12), 151 (100); HRMS (ESI⁺) calcd for C₁₇H₂₆O₄Na [*M*⁺ + Na]: 317.1723; found: 317.1721.

Compound 29. Et₃N (12.6 mL, 90.6 mmol) was added to a solution of the alcohol **S-2** (5.3 g, 18.0 mmol) in a mixture of CH₂Cl₂ (127 mL) and DMSO (19 mL) followed by SO₃·pyridine (14.4 g, 90.6 mmol). After 30 min, the reaction was quenched with brine (120 mL) and the aqueous layer extracted with ether (3 x 100 mL). The combined organic phases were successively washed with sat. aq. NaHCO₃ (60 mL), aq. KHSO₄ (1 M, 2 x 60 mL), sat. aq. NaHCO₃ (60 mL) and brine (60 mL) before being dried over MgSO₄ and evaporated. The residue was purified by flash chromatography (hexanes/ethyl acetate, 4:1→1:1) to afford the title compound as a colorless oil (4.35 g, 82 %). $[\alpha]_D^{25} = +12.5$ (c = 1.0, CHCl₃) [ref.¹² $[\alpha]_D^{25} = +14.0$ (c = 2.5, CHCl₃)] ; ¹H NMR (400 MHz, CDCl₃): δ = 9.40 (s, 1H), 6.86-6.80 (m, 3H), 6.44 (d, *J* = 10.1 Hz, 1H), 4.55 (d, *J* = 11.6 Hz, 1H), 4.37 (d, *J* = 11.6 Hz, 1H), 3.87 (s, 3H), 3.86 (s, 3H), 3.49 (dq, *J* = 6.3 Hz, 5.3 Hz, 1H), 2.82 (m, 1H), 1.75 (d, *J* = 1.3 Hz, 3H), 1.17 (d, *J* = 6.3 Hz, 3H), 1.09 (d, *J* = 6.8 Hz, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 195.4 (CH), 157.0 (CH), 149.0 (C), 148.6 (C), 139.2 (C), 131.1 (C), 120.1 (CH), 111.0 (CH), 110.9 (CH), 77.4 (CH), 70.3 (CH₂), 55.9 (CH₃), 55.8 (CH₃), 39.4 (CH), 17.2 (CH₃), 16.0 (CH₃), 9.4 (CH₃) ppm; IR (film): $\tilde{\nu} = 2969, 2934, 2872, 2835, 1682, 1640, 1608, 1592, 1514, 1463, 1453, 1419, 1373, 1328, 1262, 1236, 1155, 1136, 1102, 1068, 1027$ cm⁻¹; MS (EI): *m/z* (%): 292 (7) [*M*⁺], 166 (8), 151 (100), 126 (28); HRMS (ESI⁺) calcd for C₁₇H₂₄O₄Na [*M*⁺ + Na]: 315.1567; found: 315.1568.

Compound S-3. Bu₂OTf (1.0 M in CH₂Cl₂, 17.3 mL, 17.3 mmol) was slowly added to a solution of oxazolidinone **35** (3.39 g, 14.5 mmol)¹³ in CH₂Cl₂ (30 mL) at -78 °C, followed by the addition of Et₃N (2.62 mL, 18.9 mmol). The resulting solution was warmed to 0 °C and stirred at this temperature for 1 h before it was cooled again to -78 °C. A solution of aldehyde **29** (4.12 g, 14.1 mmol) in CH₂Cl₂ (10 mL, 5 mL rinse) was slowly added at -78 °C and stirring continued for 1 h. The mixture was then stirred at 0 °C for 1 h and at ambient temperature for an additional 2 h. The reaction was quenched by the dropwise addition of pH 7 phosphate buffer (15 mL), MeOH (40 mL) and a mixture of MeOH and aq. H₂O₂ (30 %)

¹³ For the preparation see: Koide, K.; Finkelstein, J.M.; Ball, Z.; Verdine, G.L. *J. Am. Chem. Soc.* **2001**, *123*, 398-408.

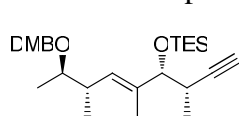
(2:1, 40 mL) and the resulting mixture was stirred for 1 h. Water was added (40 mL) and the aqueous phase extracted with Et₂O (3 x 80 mL). The combined organic layers were washed with brine (50 mL), dried over MgSO₄ and concentrated, and the residue purified by flash chromatography (hexanes/ethyl acetate, 2:1→3:2) to give the title compound as a colorless liquid (7.1 g, 95 %). $[\alpha]_D^{23} = +8.7$ ($c = 1.1$, CHCl₃); ¹H NMR (400 MHz, CDCl₃): $\delta = 7.44$ – 7.35 (m, 3H), 7.29 – 7.24 (m, 2H), 6.93 (d, $J = 1.8$ Hz, 1H), 6.87 (dd, $J = 8.1$ Hz, 1.8 Hz, 1H), 6.80 (d, $J = 8.1$ Hz, 1H), 5.57 (d, $J = 7.3$ Hz, 1H), 5.49 (d, $J = 9.6$ Hz, 1H), 4.71 (dq, $J = 6.8$ Hz, 6.6 Hz, 1H), 4.51 (d, $J = 11.6$ Hz, 1H), 4.44 (d, $J = 11.6$ Hz, 1H), 4.35 (d, $J = 3.8$ Hz, 1H), 4.00 (dq, $J = 6.8$ Hz, 4.0 Hz, 1H), 3.89 (s, 3H), 3.83 (s, 3H), 3.40 (dq, $J = 6.1$ Hz, 5.3 Hz, 1H), 2.71 – 2.51 (br m, 2H), 1.65 (d, $J = 1.0$ Hz, 3H), 1.16 (d, $J = 6.8$ Hz, 3H), 1.13 (d, $J = 6.3$ Hz, 3H), 0.99 (d, $J = 6.8$ Hz, 3H), 0.87 (d, $J = 6.6$ Hz, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): $\delta = 176.6$ (C), 152.6 (C), 149.0 (C), 148.4 (C), 133.6 (C), 133.1 (C), 131.7 (C), 129.5 (CH), 128.8 (CH), 128.7 (CH), 125.6 (CH), 120.0 (CH), 111.1 (CH), 110.8 (CH), 78.9 (CH), 77.8 (CH), 75.7 (CH), 70.5 (CH₂), 55.9 (CH₃), 55.8 (CH₃), 54.9 (CH), 40.6 (CH), 37.1 (CH), 16.5 (CH₃), 16.0 (CH₃), 14.3 (CH₃), 13.5 (CH₃), 10.6 (CH₃) ppm; IR (film): $\tilde{\nu} = 3525$, 2969 , 2934 , 2874 , 1777 , 1698 , 1607 , 1593 , 1515 , 1455 , 1419 , 1361 , 1341 , 1262 , 1235 , 1194 , 1150 , 1139 , 1120 , 1088 , 1067 , 1025 , 1001 , 985 , 956 cm⁻¹; MS (EI): m/z (%): 525 (1) [M^+], 166 (9), 151 (100), 107 (18); HRMS (ESI⁺) calcd for C₃₀H₃₉NO₇Na [$M^+ + Na$]: 548.2619 ; found: 548.2624 .

Compound 30. Me₃Al (2 M in heptane, 14.1 mL, 28.2 mmol) was added over 5 min to a solution of MeNHOMe·HCl (2.75 g, 28.2 mmol) in CH₂Cl₂ (45 mL) at 0 °C. The resulting solution was then stirred at room temperature for 1 h before it was cooled to -20 °C. A solution of compound **S-3** (7.1 g, 13.4 mmol) in CH₂Cl₂ (15 mL) was slowly introduced and the mixture warmed to room temperature over the course of 5 h and then stirred overnight. The solution was transferred into a second flask containing cold (0 °C) aq. tartaric acid (1 M, 78 mL) and the mixture stirred at this temperature for 1.5 h. Water (100 mL) was added and the aqueous layer extracted with Et₂O (3 x 150 mL). The combined organic phases were washed with brine (50 mL), dried over MgSO₄ and evaporated, and the residue was purified by flash chromatography (hexanes/ethyl acetate, 2:3) to afford a main fraction (7.4 g) of the title compound contaminated with residual Evans auxiliary, which could be removed by recrystallization from hexanes/ethyl acetate (4:1). After three repeated crystallizations, compound **30** was obtained in pure form as a colorless oil (4.9 g, 90 %). $[\alpha]_D^{23} = -10.5$ ($c = 1.5$, CHCl₃); ¹H NMR (400 MHz, CDCl₃): $\delta = 6.92$ (d, $J = 1.8$ Hz, 1H), 6.86 (dd, $J = 8.1$ Hz, 1.8 Hz, 1H), 6.80 (d, $J = 8.1$ Hz, 1H), 5.51 (d, $J = 9.6$ Hz, 1H), 4.50 (d, $J = 11.6$ Hz, 1H), 4.42 (d, $J = 11.6$ Hz, 1H), 4.25 (d, $J = 2.5$ Hz, 1H), 3.88 (s, 3H), 3.86 (s, 3H), 3.69 (s, 3H), 3.39 (dq, $J = 6.3$ Hz, 5.1 Hz, 1H), 3.17 (s, 3H), 3.05 (s br, 1H), 2.97 (m br, 1H), 2.67 (dq, $J = 9.6$ Hz, 6.8 Hz, 6.3 Hz, 1H), 1.59 (d, $J = 1.0$ Hz, 3H), 1.11 (d, $J = 6.3$ Hz, 3H), 1.08 (d, $J = 7.1$ Hz, 3H), 0.97 (d, $J = 6.8$ Hz, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): $\delta = 177.9$ (C), 148.9 (C), 148.3 (C), 132.9 (C), 131.8 (C), 129.2 (CH), 119.9 (CH), 111.0 (CH), 110.8 (CH), 79.3 (CH), 77.7 (CH), 75.3 (CH), 70.4 (CH₂), 61.5 (CH₃), 55.9 (CH₃), 55.8 (CH₃), 36.9 (CH), 31.9 (CH₃), 16.04 (CH₃), 15.6 (CH₃), 13.8 (CH₃), 10.4 (CH₃) ppm; IR (film): $\tilde{\nu} = 3427$, 2966 , 2936 , 2870 , 2837 , 1636 , 1593 , 1514 , 1454 , 1418 , 1382 , 1327 , 1261 , 1235 , 1154 , 1137 , 1085 , 1026 , 989 cm⁻¹; MS (EI): m/z (%): 409 (2) [M^+], 360 (3), 214 (12), 151 (100); HRMS (ESI⁺) calcd for C₂₂H₃₅NO₆Na [$M^+ + Na$]: 432.2357 ; found: 432.2358 .

Compound S-4. 2,6-Lutidine (1.56 mL, 13.4 mmol) was slowly added to a solution of Weinreb amide **30** (1.37 g, 3.35 mmol) in CH₂Cl₂ (21 mL) at 0 °C followed by TESOTf (1.44 mL, 6.7 mmol). The mixture was stirred for 1 h at 0 °C before it was quenched with MeOH (0.5 mL) and

diluted with CH_2Cl_2 (15 mL). The solution was successively washed with sat. aq. NaHCO_3 (10 mL), aq. KHSO_4 (1 M, 2 x 25 mL) and brine (10 mL), the organic phase was dried over MgSO_4 and evaporated, and the residue purified by flash chromatography to give the title compound as a colorless oil (1.58 g, 90 %). $[\alpha]_D^{23} = +2.3$ ($c = 1.1$, CHCl_3); $^1\text{H NMR}$ (400 MHz, CDCl_3): $\delta = 6.91$ (d, $J = 1.8$ Hz, 1H), 6.86 (dd, $J = 8.1$ Hz, 1.8 Hz, 1H), 6.80 (d, $J = 8.1$ Hz, 1H), 5.19 (d, $J = 9.4$ Hz, 1H), 4.45 (s br, 2H), 4.12 (d, $J = 9.1$ Hz, 1H), 3.88 (s, 3H), 3.85 (s, 3H), 3.56 (s, 3H), 3.27 (dq, $J = 6.3$ Hz, 6.3 Hz, 1H), 3.18-3.06 (m, 1H), 2.97 (s, 3H), 2.64 (dq, $J = 9.4$ Hz, 6.6 Hz, 6.3 Hz, 1H), 1.59 (d, $J = 1.3$ Hz, 3H), 1.18 (d, $J = 6.8$ Hz, 3H), 1.00 (d, $J = 6.3$ Hz, 3H), 0.95-0.90 (m, 12H), 0.57 (q, $J = 7.8$ Hz, 6H) ppm; $^{13}\text{C NMR}$ (100 MHz, CDCl_3): $\delta = 175.5$ (C), 148.9 (C), 148.3 (C), 135.6 (C), 131.8 (C), 130.4 (CH), 119.9 (CH), 110.9 (CH), 110.8 (CH), 80.3 (CH), 76.8 (CH), 69.9 (CH_2), 65.8 (CH), 61.3 (CH_3), 55.9 (CH_3), 55.8 (CH_3), 35.9 (CH), 31.6 (CH_3), 15.2 (CH_3), 15.1 (CH_3), 14.2 (CH_3), 11.1 (CH_3), 6.8 (CH_3), 4.8 (CH_2) ppm; IR (film): $\tilde{\nu} = 2958, 2936, 2910, 2875, 1658, 1593, 1515, 1457, 1417, 1378, 1262, 1236, 1155, 1137, 1051, 1029, 993$ cm^{-1} ; MS (EI): m/z (%): 494 (7) [M^+ - ethyl], 328 (25), 151 (100); HRMS (ESI $^+$) calcd for $\text{C}_{28}\text{H}_{49}\text{NO}_6\text{SiNa}$ [M^+ + Na]: 546.3221; found: 546.3224.

Compound 31. Dibal-H (1 M in hexane, 2.7 mL, 2.7 mmol) was added over 20 min to a solution of compound **S-4** (563 mg, 1.08 mmol) in THF (3 mL) at -78 $^\circ\text{C}$. After stirring for 15 min, the reaction was quenched with acetone (0.13 mL) and the mixture warmed to ambient temperature. Et_2O (8 mL) and aq. tartaric acid (1 M, 10 mL) were added and the mixture vigorously stirred for 1h. The aqueous layer was extracted with ether (3 x 20 mL), the combined organic phases were washed with brine (5 mL), dried over MgSO_4 and concentrated to afford the crude aldehyde (464 mg) as a colorless oil, which was directly used in the next step without further purification.

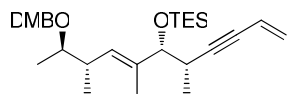


K_2CO_3 (414 mg, 3.0 mmol) was added to a solution of the Ohira-Bestmann reagent **36** (767 mg, 4.0 mmol)¹⁴ in MeOH (5 mL) at 0 $^\circ\text{C}$. After stirring for 1 h at this temperature, a solution of the crude aldehyde (464 mg) in THF (2.5 mL) was added over 30 min. Stirring was continued for 1 h at 0 $^\circ\text{C}$, the mixture was then warmed to ambient temperature and stirred for an additional 30 min. The reaction was quenched with sat. aq. NH_4Cl (2 mL) and the aqueous layer extracted with Et_2O . The combined organic layers were dried over MgSO_4 and concentrated. The residue was purified by flash chromatography to afford the title compound (335 mg) as well as a second fraction consisting of the alkyne, in which the TES group had been cleaved (42 mg). This material was reprotected by applying the procedure described above (TESOTf, 2,6-lutidine, CH_2Cl_2) to give product **31** in an overall yield of 76% as a colorless oil (378 mg). $[\alpha]_D^{23} = +1.5$ ($c = 1.0$, CHCl_3); $^1\text{H NMR}$ (400 MHz, CDCl_3): $\delta = 6.93$ (d, $J = 1.8$ Hz, 1H), 6.87 (dd, $J = 8.1$ Hz, 1.8 Hz, 1H), 6.82 (d, $J = 8.1$ Hz, 1H), 5.29 (d, $J = 9.4$ Hz, 1H), 4.50 (d, $J = 11.9$ Hz, 1H), 4.43 (d, $J = 11.9$ Hz, 1H), 3.89 (s, 3H), 3.87 (s, 3H), 3.82 (d, $J = 8.6$ Hz, 1H), 3.45 (dq, $J = 6.8$ Hz, 6.3 Hz, 1H), 2.67 (ddq, $J = 9.4$ Hz, 6.8 Hz, 6.8 Hz, 6.8 Hz, 1H), 2.55 (ddq, $J = 8.6$ Hz, 6.8 Hz, 2.3 Hz, 1H), 1.93 (d, $J = 2.3$ Hz, 1H), 1.60 (d, $J = 1.5$ Hz, 3H), 1.21 (d, $J = 6.8$ Hz, 3H), 1.10 (d, $J = 6.3$ Hz, 3H), 1.00 (d, $J = 6.8$ Hz, 3H), 0.93 (t, $J = 7.8$ Hz, 9H), 0.57 (q, $J = 7.8$ Hz, 6H) ppm; $^{13}\text{C NMR}$ (100 MHz, CDCl_3): $\delta = 148.9$ (C), 148.3 (C), 135.9 (C), 131.9 (C), 130.6 (CH), 119.9 (CH), 111.0 (CH), 110.8 (CH), 86.7 (C), 82.4 (CH), 77.5 (CH), 70.3 (CH_2), 69.8 (CH), 55.9 (CH_3), 55.8 (CH_3), 36.6 (CH), 31.3 (CH), 17.7 (CH_3), 16.2 (CH_3), 15.3 (CH_3), 10.9 (CH_3), 6.8 (CH_3), 4.8 (CH_2) ppm; IR (film): $\tilde{\nu} = 3312, 2957, 2911, 2875, 2344, 1593, 1515, 1463, 1418, 1374, 1327, 1264, 1237,$

¹⁴ For the preparation see: (a) Dirat, O.; Clipson, A.; Elliott, J.M.; Garrett, S.; Jones, A.B.; Reader, M.; Shaw, D. *Tetrahedron Lett.* **2006**, 47, 1729-1731; (b) Pietruszka, J.; Witt, A. *Synthesis* **2006**, 4266-4268.

1156, 1137, 1066, 1031, 1007 cm^{-1} ; MS (EI): m/z (%): 460 (2), 363 (2), 281 (3), 241 (4), 185 (8), 151 (100); HRMS (ESI⁺) calcd for $\text{C}_{27}\text{H}_{44}\text{O}_4\text{SiNa}$ [$M^+ + \text{Na}$]: 483.2901; found: 483.2897.

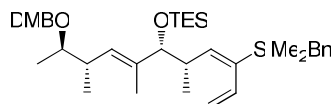
Compound 32. A solution of vinyl bromide in THF (1 M, 2.4 mL, 2.4 mmol) and neat $i\text{Pr}_2\text{NH}$ (228 μL , 1.62 mmol) were successively added to a mixture of



(PPh_3)₂PdCl₂ (28.8 mg, 0.04 mmol) and CuI (15.4 mg, 0.08 mmol). Next, a solution of alkyne **31** (373 mg, 0.81 mmol) in THF (3 mL) was added over 30 min, the resulting orange mixture was stirred at

room temperature for 2 h before it was filtered through a pad of silica (hexanes/ethyl acetate, 4:1) and the filtrate was evaporated. Purification of the residue by flash chromatography (hexanes/ethyl acetate, 9:1) afforded the title compound as a colorless oil (346 mg, 88 %). [α]_D²³ = +3.6 (c = 1.1, CHCl₃); ¹H NMR (400 MHz, CDCl₃): δ = 6.92 (d, J = 1.8 Hz, 1H), 6.87 (dd, J = 8.1 Hz, 1.8 Hz, 1H), 6.82 (d, J = 8.1 Hz, 1H), 5.67 (ddd, J = 17.7 Hz, 11.1 Hz, 2.0 Hz, 1H), 5.44 (dd, J = 17.7 Hz, 2.3 Hz, 1H), 5.29 (dd, J = 11.1 Hz, 2.3 Hz, 1H), 5.28 (d, J = 9.6 Hz, 1H), 4.49 (d, J = 11.6 Hz, 1H), 4.42 (d, J = 11.6 Hz, 1H), 3.89 (s, 3H), 3.87 (s, 3H), 3.82 (d, J = 8.6 Hz, 1H), 3.43 (dq, J = 6.3 Hz, 6.3 Hz, 1H), 2.72-2.62 (m, 2H), 1.60 (d, J = 1.3 Hz, 3H), 1.21 (d, J = 6.8 Hz, 3H), 1.08 (d, J = 6.3 Hz, 3H), 1.01 (d, J = 6.8 Hz, 3H), 0.93 (t, J = 7.8 Hz, 9H), 0.57 (q, J = 7.8 Hz, 6H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 148.9 (C), 148.3 (C), 136.1 (C), 131.9 (C), 130.3 (CH), 125.2 (CH₂), 119.9 (CH), 117.6 (CH), 111.0 (CH), 110.8 (CH), 93.1 (C), 82.4 (CH), 80.8 (C), 77.4 (CH), 70.3 (CH₂), 55.9 (CH₃), 55.8 (CH₃), 36.5 (CH), 32.0 (CH), 17.7 (CH₃), 16.1 (CH₃), 15.2 (CH₃), 11.0 (CH₃), 6.8 (CH₃), 4.8 (CH₂) ppm; IR (film): $\tilde{\nu}$ = 2956, 2936, 2909, 2875, 2225, 1608, 1593, 1515, 1455, 1417, 1373, 1263, 1236, 1156, 1137, 1099, 1061, 1030, 1005 cm^{-1} ; MS (EI): m/z (%): 486 (>1) [M^+], 281 (4), 247 (6), 241 (7), 151 (100); HRMS (ESI⁺) calcd for $\text{C}_{29}\text{H}_{46}\text{O}_4\text{SiNa}$ [$M^+ + \text{Na}$]: 509.3058; found: 509.3055.

Compound 33. BnMe₂SiH (238 μL , 1.50 mmol) was added to a solution of complex **37** (3.4 mg, 5.0 μmol)¹⁵ in THF (0.4 mL) in an HPLC vial. The vial was



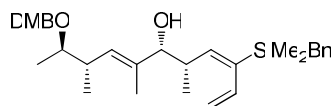
capped and heated to 60 °C for 1h. The resulting yellow solution was cooled to room temperature and transferred to a Schlenk flask containing enyne **32** (244 mg, 0.50 mmol). The solvent was

slowly evaporated by passing a stream of Ar over the mixture and the resulting yellow oil was stirred for 24 h. The mixture was added on top of a pad of silica which was eluted with hexanes/ethyl acetate (4:1), the combined filtrates were evaporated and the residue purified by flash chromatography (hexanes/ethyl acetate, 100:0→9:1) to afford the title compound as a colorless oil (305 mg, 93 %, dr = 96:4). [α]_D²³ = +21.9 (c = 1.3, CHCl₃); ¹H NMR (400 MHz, CDCl₃): δ = 7.17 (t, J = 7.3 Hz, 2H), 7.04 (t, J = 7.3 Hz, 1H), 6.96 (d, J = 7.3 Hz, 2H), 6.88 (d, J = 1.8 Hz, 1H), 6.85 (dd, J = 8.1 Hz, 1.8 Hz, 1H), 6.80 (d, J = 8.1 Hz, 1H), 6.63 (ddd, J = 18.2 Hz, 10.9 Hz, 1.3 Hz, 1H), 5.46 (d, J = 9.6 Hz, 1H), 5.17 (d, J = 9.6 Hz, 1H), 5.15-5.09 (m, 2H), 4.47 (d, J = 11.9 Hz, 1H), 4.39 (d, J = 11.9 Hz, 1H), 3.86 (2 s, 6H), 3.71 (d, J = 8.4 Hz, 1H), 3.37 (dq, J = 6.3 Hz, 6.3 Hz, 1H), 2.85 (ddq, J = 9.6 Hz, 8.4 Hz, 6.8 Hz, 1H), 2.61 (ddq, J = 9.6 Hz, 6.8 Hz, 6.3 Hz, 1H), 2.20 (d, J = 13.5 Hz, 1H), 2.13 (d, J = 13.5 Hz, 1H), 1.49 (d, J = 1.3 Hz, 3H), 1.04 (d, J = 6.3 Hz, 3H), 0.99 (d, J = 6.8 Hz, 3H), 0.96-0.89 (m, 12H), 0.56 (q, J = 7.8 Hz, 6H), 0.06 (s, 3H), 0.00 (s, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 148.9 (C), 148.3 (C), 146.5 (CH), 140.1 (C), 137.3 (C), 136.0 (C), 135.7 (CH), 131.7 (C), 129.0 (CH), 128.3 (CH), 128.0 (CH), 123.9 (CH), 119.9 (CH), 116.2 (CH₂), 110.9 (CH), 110.8 (CH), 82.9 (CH), 77.5 (CH), 70.3 (CH₂), 55.9 (CH₃), 55.7 (CH₃), 37.9 (CH), 36.3 (CH), 25.7 (CH₂), 17.4 (CH₃), 16.4 (CH₃), 15.2 (CH₃), 11.5 (CH₃), 6.9 (CH₃), 4.9 (CH₂), -2.8

¹⁵ The complex was prepared according to: Berthon-Gelloz, G.; Schumers, J.-M.; Lucaccioni, F.; Tinant, B.; Wouters, J.; Markó, I.E. *Organomet.* **2007**, *26*, 5731-5734; for use in the hydrosilylation of internal alkynes see: Berthon-Gelloz, G.; Schumers, J.-M.; De Bo, G.; Markó, I.E. *J. Org. Chem.* **2008**, *73*, 4190-4197.

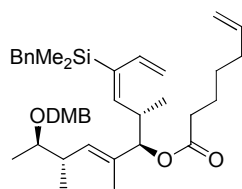
(CH₃), -3.2 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 2956, 2874, 1594, 1515, 1493, 1452, 1417, 1371, 1262, 1237, 1206, 1155, 1137, 1055, 1031, 1004 cm⁻¹; MS (EI): *m/z* (%): 407 (3), 281 (10), 247 (15), 185 (19), 151 (100); HRMS (ESI⁺) calcd for C₃₈H₆₀O₄Si₂Na [*M*⁺ + Na]: 659.3922; found: 659.3928.

Compound S-5. PPTS (12 mg, 0.05 mmol) was added to a solution of compound **33** (305 mg, 0.48 mmol) in EtOH (3 mL) and the mixture stirred at room temperature for 5 h before the reaction was quenched with sat. aq. NaHCO₃ (1 mL) and the aqueous phase extracted with Et₂O (3 x 5 mL). The combined organic layers were dried over MgSO₄ and



concentrated, and the residue purified by flash chromatography (hexanes/ethyl acetate, 4:1) to give the title compound as a colorless oil (221 mg, 89 %). [α]_D²³ = +14.6 (c = 2.1, CHCl₃); ¹H NMR (400 MHz, CDCl₃): δ = 7.17 (t, *J* = 7.3 Hz, 2H), 7.05 (t, *J* = 7.3 Hz, 1H), 6.96 (d, *J* = 7.3 Hz, 2H), 6.89 (d, *J* = 1.8 Hz, 1H), 6.85 (dd, *J* = 8.1 Hz, 1.8 Hz, 1H), 6.80 (d, *J* = 8.1 Hz, 1H), 6.63 (dd, *J* = 18.4 Hz, 10.6 Hz, 1H), 5.49 (d, *J* = 9.6 Hz, 1H), 5.27 (d, *J* = 9.6 Hz, 1H), 5.17 (d, *J* = 10.6 Hz, 1H), 5.16 (d, *J* = 18.4 Hz, 1H), 4.49 (d, *J* = 11.6 Hz, 1H), 4.39 (d, *J* = 11.6 Hz, 1H), 3.86 (s br, 6H), 3.77 (d, *J* = 7.6 Hz, 1H), 3.37 (dq, *J* = 6.3 Hz, 6.3 Hz, 1H), 2.90 (ddq, *J* = 9.6 Hz, 7.6 Hz, 6.8 Hz, 1H), 2.59 (dq, *J* = 9.6 Hz, 6.8 Hz, 6.3 Hz, 1H), 2.20 (d, *J* = 13.6 Hz, 1H), 2.16 (d, *J* = 13.6 Hz, 1H), 1.51 (d, *J* = 1.3 Hz, 3H), 1.44 (s br, 1H), 1.06 (d, *J* = 6.1 Hz, 3H), 0.99 (d, *J* = 6.8 Hz, 3H), 0.97 (d, *J* = 6.8 Hz, 3H), 0.07 (s, 3H), 0.04 (s, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 148.9 (C), 148.4 (C), 145.8 (CH), 140.0 (C), 136.7 (C), 136.6 (C), 135.5 (CH), 131.6 (C), 130.0 (CH), 128.2 (CH), 128.0 (CH), 123.9 (CH), 120.0 (CH), 116.6 (CH₂), 111.0 (CH), 110.8 (CH), 81.7 (CH), 77.5 (CH), 70.4 (CH₂), 55.9 (CH₃), 55.7 (CH₃), 36.9 (CH), 36.6 (CH), 25.7 (CH₂), 16.7 (CH₃), 16.5 (CH₃), 15.7 (CH₃), 12.0 (CH₃), -2.8 (CH₃), -3.1 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3435, 3082, 2961, 2932, 2870, 1598, 1515, 1493, 1463, 1452, 1419, 1372, 1260, 1247, 1236, 1206, 1154, 1138, 1082, 1057, 1028 cm⁻¹; MS (EI): *m/z* (%): 431 (>1) [*M*⁺ - Bn], 292 (8), 167 (13), 151 (100), 126 (9); HRMS (ESI⁺) calcd for C₃₂H₄₆O₄SiNa [*M*⁺ + Na]: 545.3058; found: 545.3052.

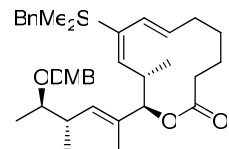
Compound 34. Hept-6-enoic acid (72 μ L, 0.53 mmol), DMAP (65 mg, 0.53 mmol) and EDC·HCl (102 mg, 0.53 mmol) were successively added to a solution of compound **S-5** (221 mg, 0.42 mmol) in CH₂Cl₂ (5 mL) at 0 °C. The mixture was stirred for 3 h at ambient temperature before the reaction was quenched with water (2 mL). The aqueous phase was extracted with CH₂Cl₂ (3 x 4 mL), the combined organic layers were washed with brine (2 mL), dried over MgSO₄ and evaporated. The residue was purified by



flash chromatography (hexanes/ethyl acetate, 9:1) to afford the title compound as a colorless oil (260 mg, 97 %). [α]_D²³ = +18.7 (c = 2.2, CHCl₃); ¹H NMR (400 MHz, CDCl₃): δ = 7.17 (t, *J* = 7.3 Hz, 2H), 7.04 (t, *J* = 7.3 Hz, 1H), 6.95 (d, *J* = 7.3 Hz, 2H), 6.88 (d, *J* = 1.8 Hz, 1H), 6.84 (dd, *J* = 8.1 Hz, 1.8 Hz, 1H), 6.80 (d, *J* = 8.1 Hz, 1H), 6.57 (ddd, *J* = 17.7 Hz, 11.1 Hz, 1.3 Hz, 1H), 5.78 (ddt, *J* = 17.2 Hz, 10.4 Hz, 6.6 Hz, 1H), 5.47 (d, *J* = 9.6 Hz, 1H), 5.33 (d, *J* = 9.6 Hz, 1H), 5.16 (d, *J* = 11.1 Hz, 1H), 5.13 (d, *J* = 17.7 Hz, 1H), 4.99 (d, *J* = 17.2 Hz, 1H), 4.98 (d, *J* = 8.1 Hz, 1H), 4.94 (d, *J* = 10.4 Hz, 1H), 4.46 (d, *J* = 11.6 Hz, 1H), 4.37 (d, *J* = 11.6 Hz, 1H), 3.86 (2 s, 6H), 3.35 (dq, *J* = 6.3 Hz, 6.3 Hz, 1H), 3.05 (ddq, *J* = 9.6 Hz, 8.1 Hz, 6.8 Hz, 1H), 2.58 (dq, *J* = 9.6 Hz, 6.8 Hz, 6.3 Hz, 1H), 2.29 (t, *J* = 7.6 Hz, 2H), 2.19 (d, *J* = 13.6 Hz, 1H), 2.14 (d, *J* = 13.6 Hz, 1H), 2.05 (dt, *J* = 6.6 Hz, 7.3 Hz, 2H), 1.62 (tt, *J* = 7.5 Hz, 6.5 Hz, 2H), 1.52 (d, *J* = 1.3 Hz, 3H), 1.40 (tt, *J* = 7.8 Hz, 7.4 Hz, 2H), 1.03 (d, *J* = 6.3 Hz, 3H), 0.97 (d, *J* = 6.8 Hz, 3H), 0.90 (d, *J* = 6.8 Hz, 3H), 0.06 (s, 3H), 0.02 (s, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 172.7 (C), 148.8 (C), 148.2 (C), 144.3 (CH), 139.9 (C), 138.4 (CH), 137.5 (C), 135.3 (CH), 132.5 (C), 131.7 (CH), 131.5 (C), 128.2 (CH), 128.0 (CH), 124.0 (CH), 119.9 (CH), 116.8 (CH₂), 114.6 (CH₂), 110.7 (CH), 110.6 (CH), 82.1

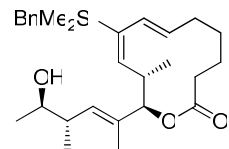
(CH), 77.2 (CH), 70.3 (CH₂), 55.8 (CH₃), 55.7 (CH₃), 36.4 (CH), 35.4 (CH), 34.4 (CH₂), 33.3 (CH₂), 28.3 (CH₂), 25.6 (CH₂), 24.5 (CH₂), 16.9 (CH₃), 16.3 (CH₃), 15.4 (CH₃), 12.8 (CH₃), -2.9 (CH₃), -3.2 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 3080, 2964, 2932, 2868, 1732, 1640, 1599, 1515, 1493, 1452, 1418, 1371, 1261, 1237, 1206, 1156, 1138, 1096, 1058, 1031 cm⁻¹; MS (EI): *m/z* (%): 632 (3) [*M*⁺], 541 (7) [*M*⁺ - Bn], 262 (8), 231 (5), 185 (9), 151 (100), 149 (17); HRMS (ESI⁺) calcd for C₃₉H₅₆O₅SiNa [*M*⁺ + Na]: 655.3789; found: 655.3785.

Compound 38. Under Ar, a 2-necked round bottom flask equipped with a reflux condenser connected to the argon inlet was charged with compound **34** (54.2 mg, 0.086 mmol), tetrafluoro-1,4-benzoquinone (2.3 mg, 0.017 mmol)¹⁶ and carefully degassed toluene (86 mL, *c* = 1 mM). The solution was heated to 120 °C before a solution of complex **43** (7.6 mg, 8.6 μmol) in toluene (1 mL) was added over 2 h via syringe pump. Once the addition was



complete, stirring was continued at reflux temperature for 2 h before the mixture was cooled to room temperature and the reaction quenched with a solution of potassium 2-isocynoacetate (7.4 mg, 0.06 mmol) in MeOH (1 mL). The resulting mixture was stirred at room temperature for 1 h before it was concentrated and filtered through a pad of silica (ether rinse). The filtrate was evaporated and the residue purified by flash chromatography (toluene/ethyl acetate, 95:5→9:1) to afford the title compound as a pale yellow oil (39.5 mg, 76 %, isomer ratio = 94:6). [α]_D²³ = -77.0 (*c* = 1.7, CHCl₃); ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.06 (t, *J* = 7.3 Hz, 1H), 7.00 (d, *J* = 7.3 Hz, 2H), 6.89 (d, *J* = 2.0 Hz, 1H), 6.87 (dd, *J* = 8.1 Hz, 2.0 Hz, 1H), 6.81 (d, *J* = 8.1 Hz, 1H), 6.24 (d, *J* = 16.4 Hz, 1H), 5.51 (dt, *J* = 16.4 Hz, 6.2 Hz, 1H), 5.37 (d, *J* = 9.6 Hz, 1H), 5.30 (d, *J* = 9.6 Hz, 1H), 5.07 (d, *J* = 4.8 Hz, 1H), 4.51 (d, *J* = 11.6 Hz, 1H), 4.42 (d, *J* = 11.6 Hz, 1H), 3.88 (s, 3H), 3.86 (s, 3H), 3.44-3.32 (m, 2H), 2.63 (ddq, *J* = 9.6 Hz, 6.8 Hz, 6.8 Hz, 1H), 2.38-2.05 (m, 4H), 2.21 (s, 2H), 2.02-1.91 (m, 1H), 1.85-1.72 (m, 1H), 1.67-1.44 (m, 2H), 1.55 (d, *J* = 1.3 Hz, 3H), 1.12 (d, *J* = 6.3 Hz, 3H), 0.99 (d, *J* = 6.8 Hz, 3H), 0.92 (d, *J* = 6.8 Hz, 3H), 0.10 (s, 3H), 0.06 (s, 3H) ppm; ¹³C NMR (100 MHz, CDCl₃): δ = 173.2 (C), 148.9 (C), 148.4 (C), 143.6 (CH), 140.2 (C), 139.4 (C), 133.8 (CH), 131.6 (CH), 130.6 (C), 129.5 (CH), 128.3 (CH), 128.1 (CH), 125.8 (C), 124.0 (CH), 119.9 (CH), 110.9 (CH), 110.8 (CH), 83.3 (CH), 77.7 (CH), 70.5 (CH₂), 55.9 (CH₃), 55.8 (CH₃), 37.0 (CH), 34.6 (CH), 33.6 (CH₂), 31.7 (CH₂), 26.0 (CH₂), 26.0 (CH₂), 23.7 (CH₂), 17.7 (CH₃), 16.5 (CH₃), 15.6 (CH₃), 14.3 (CH₃), -2.3 (CH₃), -3.0 (CH₃) ppm; IR (film): $\tilde{\nu}$ = 2967, 2929, 2870, 1726, 1598, 1515, 1493, 1452, 1418, 1372, 1336, 1247, 1203, 1152, 1138, 1118, 1095, 1077, 1056, 1029, 971 cm⁻¹; MS (EI): *m/z* (%): 604 (3) [*M*⁺], 513 (2) [*M*⁺ - Bn], 292 (43), 221 (54), 151 (100), 126 (85), 75 (23); HRMS (ESI⁺) calcd for C₃₇H₅₂O₅SiNa [*M*⁺ + Na]: 627.3476; found: 627.3479.

Compound S-6. DDQ (25.3 mg, 0.111 mmol) was added to a solution of macrolactone **38** (51.8 mg, 0.086 mmol) in a mixture of CH₂Cl₂/aq. phosphate buffer (pH 7)

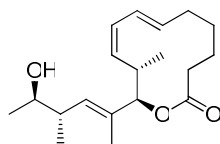


(10:1, 3.0 mL) at 0 °C. The mixture was stirred at 0 °C for 15 min before it was diluted with Et₂O (5 mL). The reaction was quenched with sat. aq. NaHCO₃ (3 mL) and the resulting mixture warmed to ambient temperature. After stirring for 15 min, the aqueous phase was extracted with Et₂O (3 x 5 mL) and the combined organic layers were washed with sat. aq. NaHCO₃ (3 x 3 mL), dried over MgSO₄ and concentrated. The residue was purified by flash chromatography (hexanes/ethyl acetate, 8.5:1.5→4:1) to afford the title compound as a colorless oil (34 mg, 87 %). [α]_D²³ = -117.3 (*c* = 1.8, CHCl₃); ¹H NMR (400 MHz, CDCl₃): δ = 7.19 (t, *J* = 7.3 Hz, 2H), 7.05 (t, *J* = 7.3 Hz, 1H), 7.00 (d, *J* = 7.3 Hz, 2H), 6.24 (d, *J* = 16.4

¹⁶ For the use in RCM reaction to suppress unwanted isomerisation processes see: Hong, S.H.; Sanders, D.P.; Lee, C.W.; Grubbs, R.H. *J. Am. Chem. Soc.* **2005**, *127*, 17160-17161.

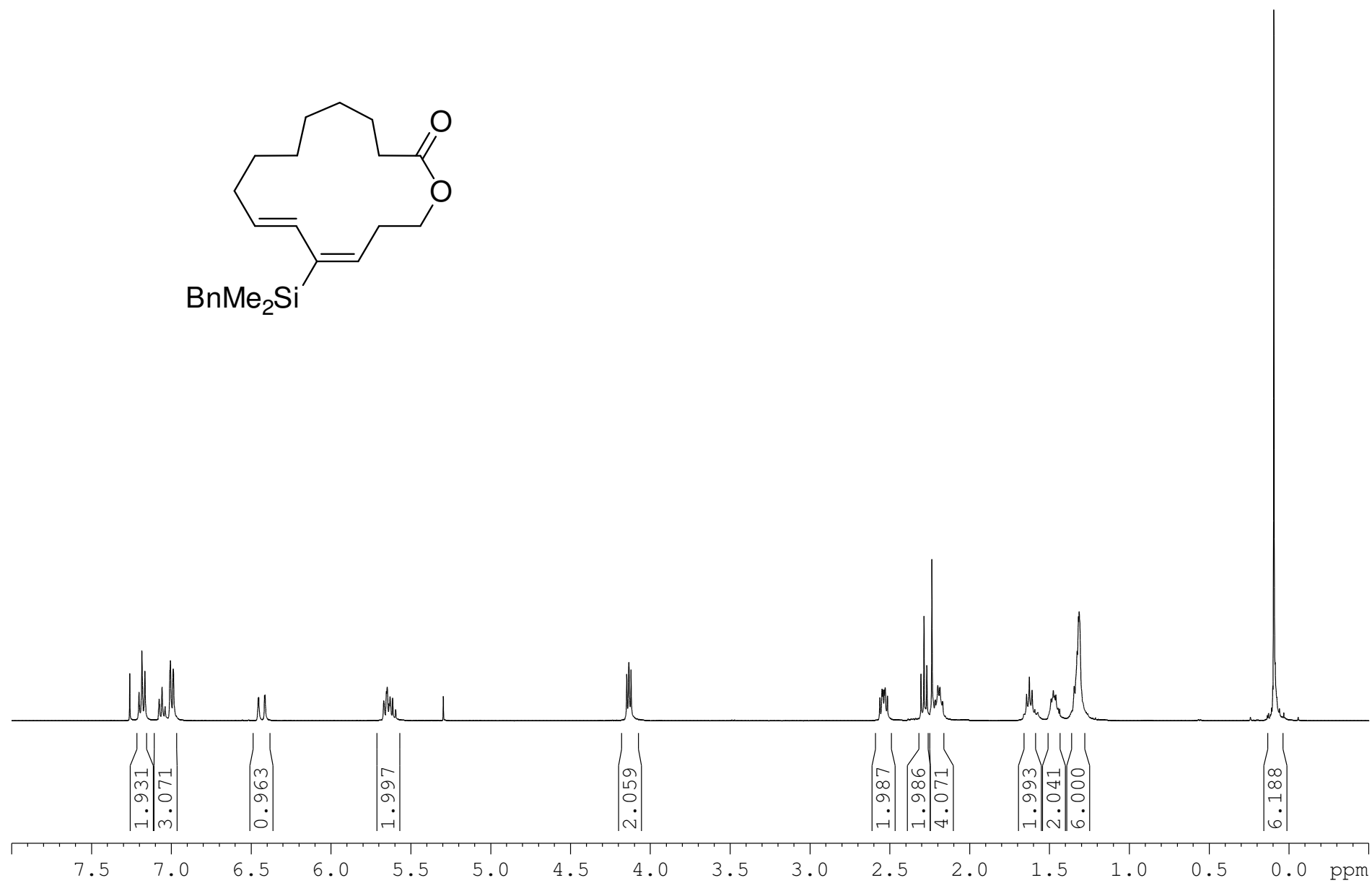
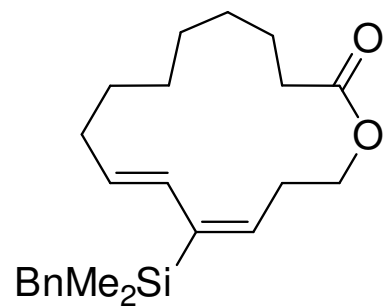
Hz, 1H), 5.53 (dt, $J = 16.4$ Hz, 6.2 Hz, 1H), 5.38 (d, $J = 9.6$ Hz, 1H), 5.23 (d, $J = 9.6$ Hz, 1H), 5.08 (d, $J = 4.6$ Hz, 1H), 3.58 (qd, $J = 6.3$ Hz, 6.3 Hz, 1H), 3.39 (ddq, $J = 9.6$ Hz, 4.6 Hz, 6.8 Hz, 1H), 2.41 (ddq, $J = 9.6$ Hz, 6.1 Hz, 6.8 Hz, 1H), 2.35-2.06 (m, 4H), 2.21 (s, 2H), 2.03-1.91 (m, 1H), 1.85-1.73 (m, 1H), 1.68-1.44 (m, 3H), 1.59 (d, $J = 1.5$ Hz, 3H), 1.18 (d, $J = 6.3$ Hz, 3H), 0.97 (d, $J = 6.8$ Hz, 3H), 0.94 (d, $J = 6.8$ Hz, 3H), 0.11 (s, 3H), 0.06 (s, 3H) ppm; ^{13}C NMR (100 MHz, CDCl_3): $\delta = 173.2$ (C), 143.2 (CH), 140.1 (C), 139.7 (C), 132.9 (CH), 132.7 (C), 131.7 (CH), 129.5 (CH), 128.3 (CH), 128.1 (CH), 124.0 (CH), 83.0 (CH), 71.5 (CH), 40.0 (CH), 34.5 (CH), 33.6 (CH_2), 31.7 (CH_2), 26.1 (CH_2), 26.0 (CH_2), 23.7 (CH_2), 20.2 (CH_3), 17.9 (CH_3), 16.4 (CH_3), 14.8 (CH_3), -2.3 (CH_3), -3.0 (CH_3) ppm; IR (film): $\tilde{\nu} = 3475, 3024, 2963, 2927, 2873, 1726, 1600, 1493, 1451, 1417, 1374, 1338, 1247, 1204, 1152, 1094, 1079, 1057, 1026, 1008, 970$ cm^{-1} ; MS (EI): m/z (%): 363 (4) [$M^+ - \text{Bn}$], 319 (6), 221 (100), 149 (9), 121 (11), 75 (35); HRMS (ESI $^+$) calcd for $\text{C}_{28}\text{H}_{42}\text{O}_3\text{SiNa}$ [$M^+ + \text{Na}$]: 477.2796; found: 477.2798.

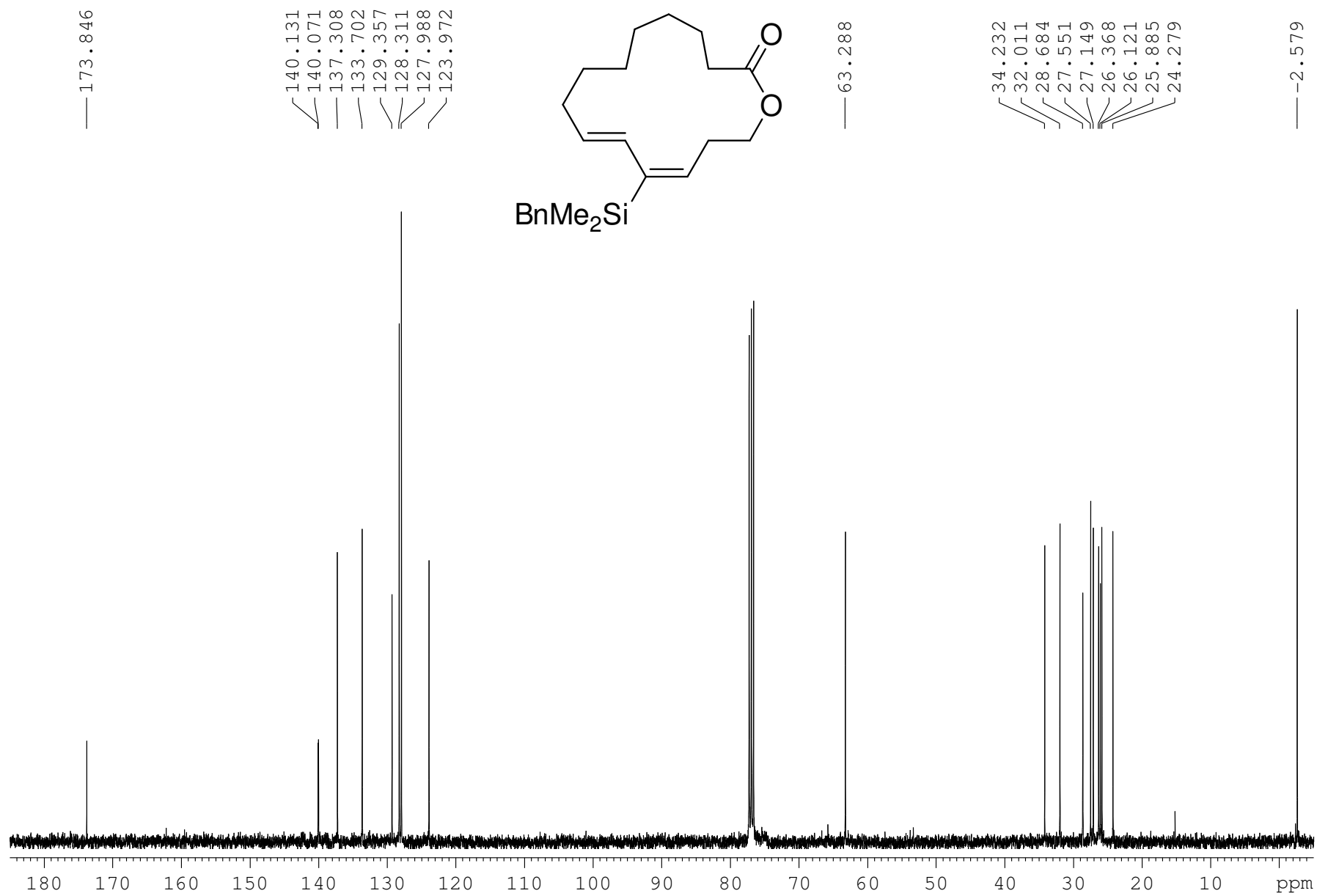
Compound 40. TBAF (1 M in THF, 334 μL , 0.334 mmol) was added to a solution of macrolactone **S-6** (38 mg, 0.084 mmol) in THF (0.5 mL). After the mixture had been stirred for 1h, several spots were detected by TLC (hexanes/ethyl acetate, 4:1), which converted to one major spot after heating the solution to 60 $^\circ\text{C}$ for 1h. At this point, the mixture was filtered through a pad of silica (ethyl acetate rinse), the filtrate was evaporated and

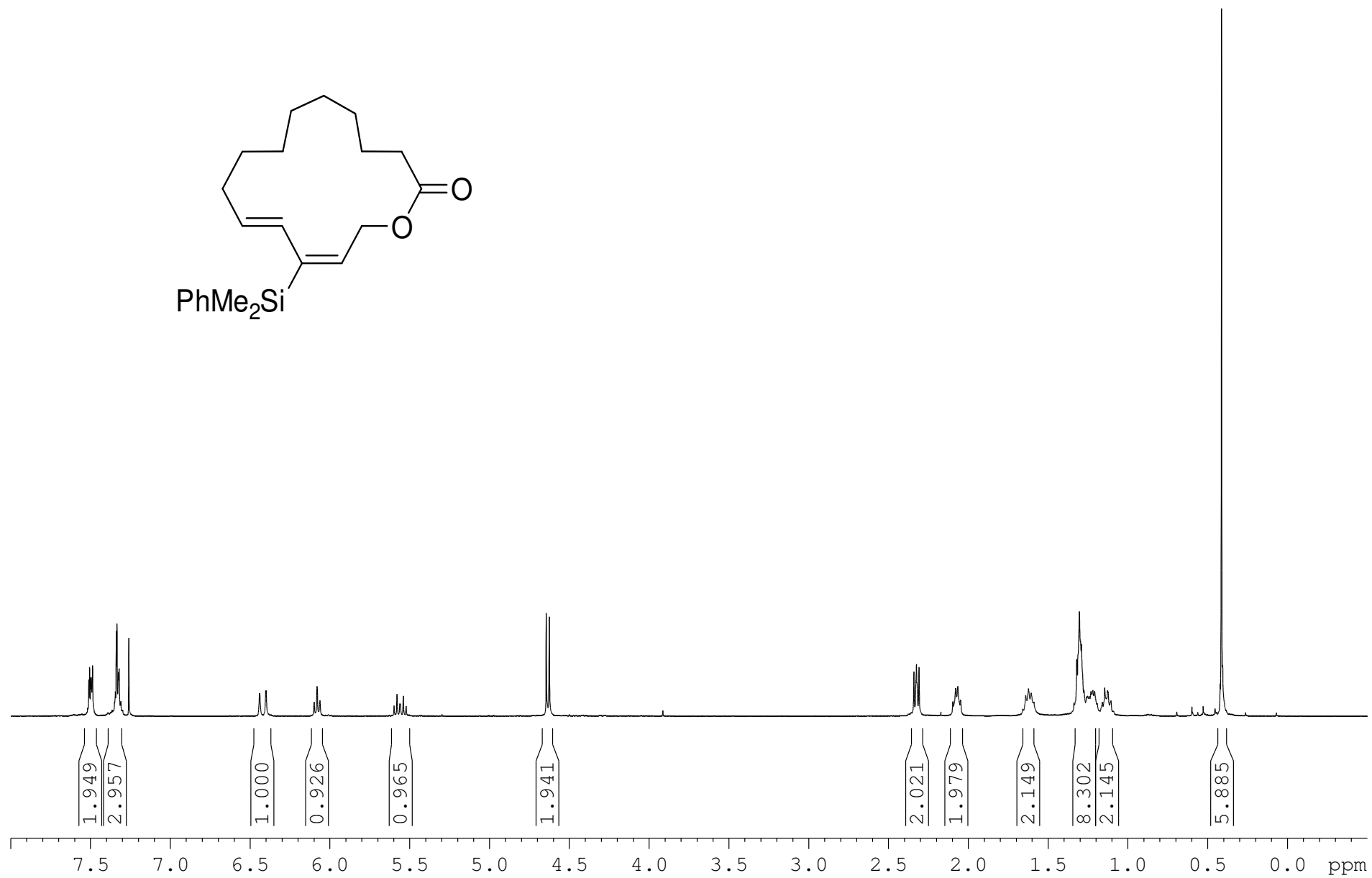
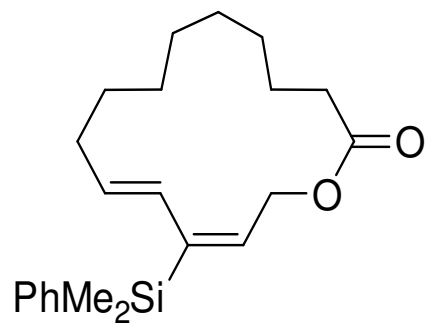


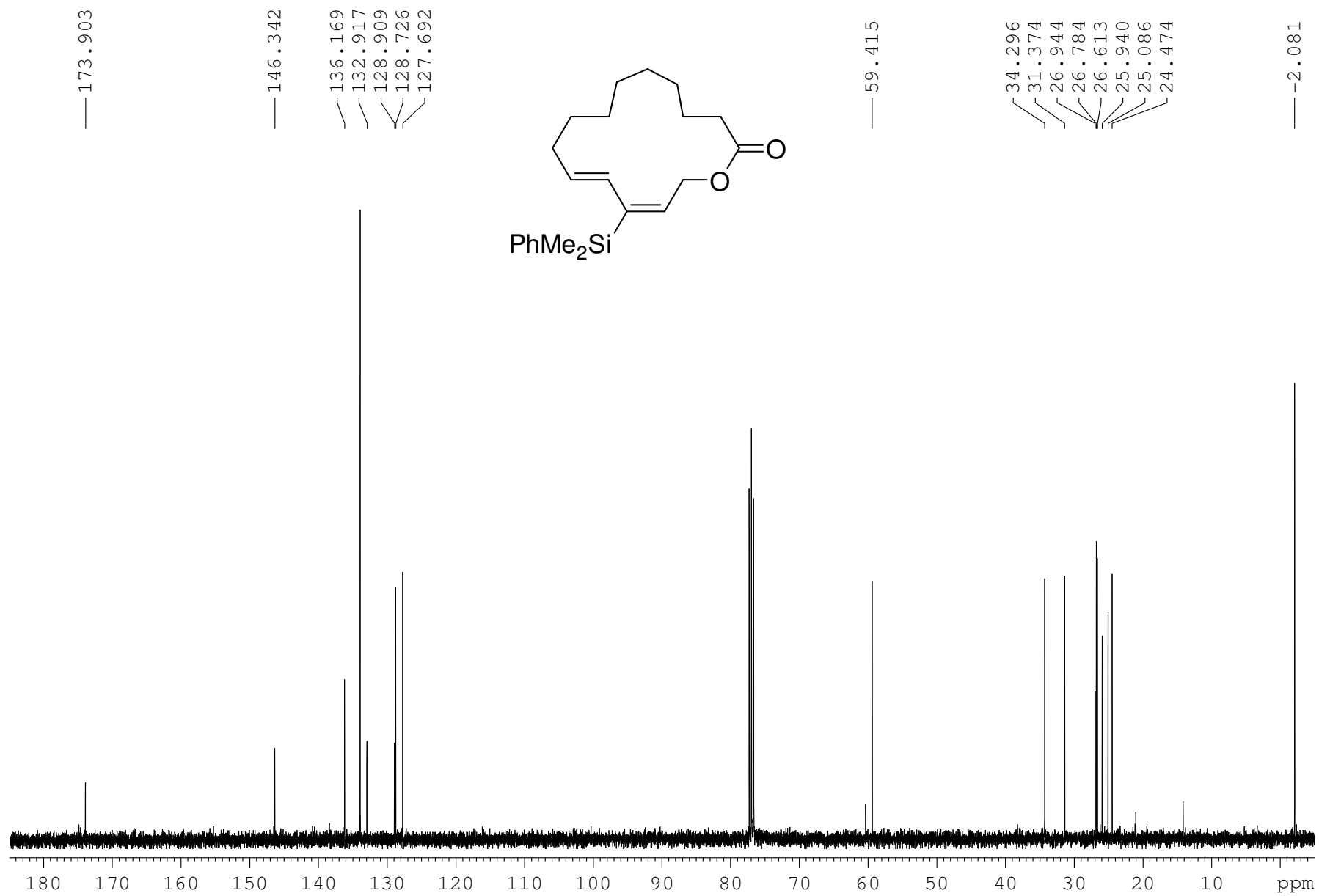
the residue purified by flash chromatography (hexanes/ethyl acetate, 9:1 \rightarrow 4:1) to afford the title compound as a colorless oil (21.8 mg, 85 %). The analytical and spectral data are in agreement with those reported in the literature.¹⁷ [α] $_D^{23} = -76.0$ ($c = 1.5$, CHCl_3) [lit.¹⁷ [α] $_D^{20} = -85.8$ ($c = 0.9$, CHCl_3)] ; ^1H NMR (400 MHz, CDCl_3): $\delta = 6.21$ (dd, $J = 15.6$ Hz, 10.8 Hz, 1H), 6.12 (dd, $J = 10.3$ Hz, 10.3 Hz, 1H), 5.74 (dt, $J = 15.4$ Hz, 5.3 Hz, 1H), 5.24 (d, $J = 9.8$ Hz, 1H), 5.14 (d, $J = 5.1$ Hz, 1H), 5.05 (dd, $J = 10.0$ Hz, 10.0 Hz, 1H), 3.58 (qd, $J = 6.3$ Hz, 6.3 Hz, 1H), 3.41-3.31 (m, 1H), 2.41 (ddq, $J = 9.8$ Hz, 6.8 Hz, 6.3 Hz, 1H), 2.36-2.27 (m, 3H), 2.04-1.83 (m, 3H), 1.64 (d, $J = 1.5$ Hz, 3H), 1.60-1.48 (m, 3H), 1.16 (d, $J = 6.1$ Hz, 3H), 0.97 (d, $J = 6.8$ Hz, 3H), 0.95 (d, $J = 6.8$ Hz, 3H) ppm; ^{13}C NMR (100 MHz, CDCl_3): $\delta = 173.1$ (C), 133.1 (CH), 132.8 (C), 131.3 (CH), 131.1 (CH), 130.1 (CH), 126.5 (CH), 83.1 (CH), 71.5 (CH), 40.0 (CH), 33.3 (CH), 33.2 (CH_2), 30.3 (CH_2), 23.9 (CH_2), 23.0 (CH_2), 20.2 (CH_3), 17.7 (CH_3), 16.4 (CH_3), 14.6 (CH_3) ppm; IR (film): $\tilde{\nu} = 3450, 2966, 2929, 2876, 1725, 1453, 1417, 1376, 1338, 1314, 1283, 1255, 1201, 1145, 1092, 1075, 994, 966, 919$ cm^{-1} ; MS (EI): m/z (%): 306 (1) [M^+], 164 (100), 149 (6), 136 (18), 120 (40), 107 (18), 94 (19), 79 (21), 68 (18), 55 (9), 41 (10); HRMS (ESI $^+$) calcd for $\text{C}_{19}\text{H}_{30}\text{O}_3\text{Na}$ [$M^+ + \text{Na}$]: 329.2087; found: 329.2086.

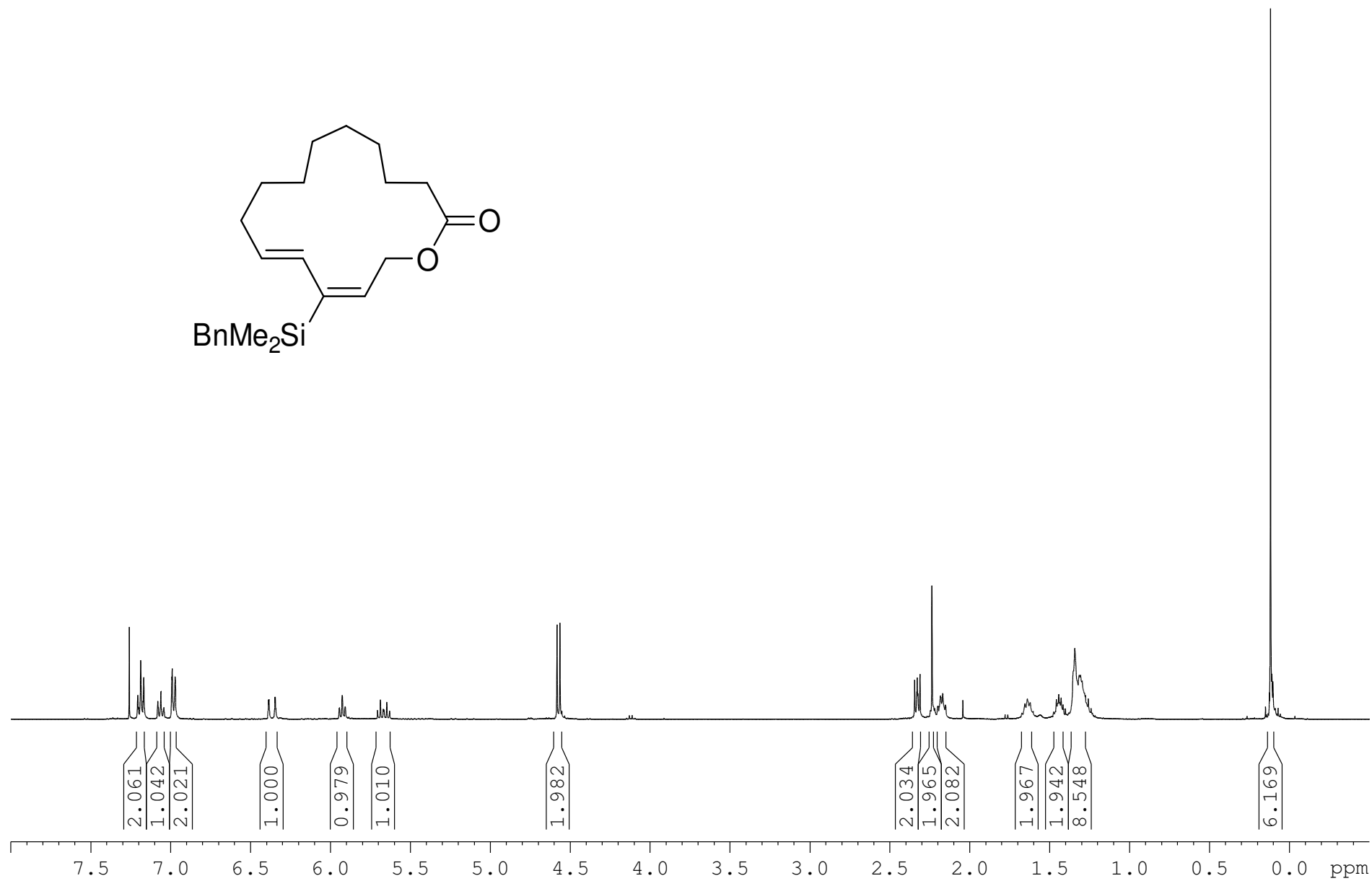
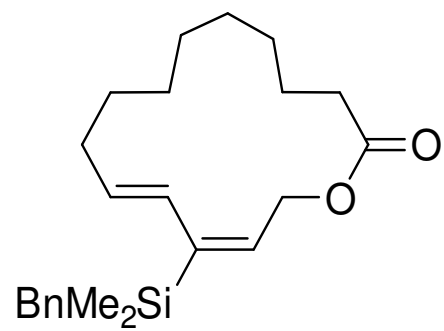
¹⁷ Micoine, K., Fürstner, A. *J. Am. Chem. Soc.* **2010**, *132*, 14064-14066.

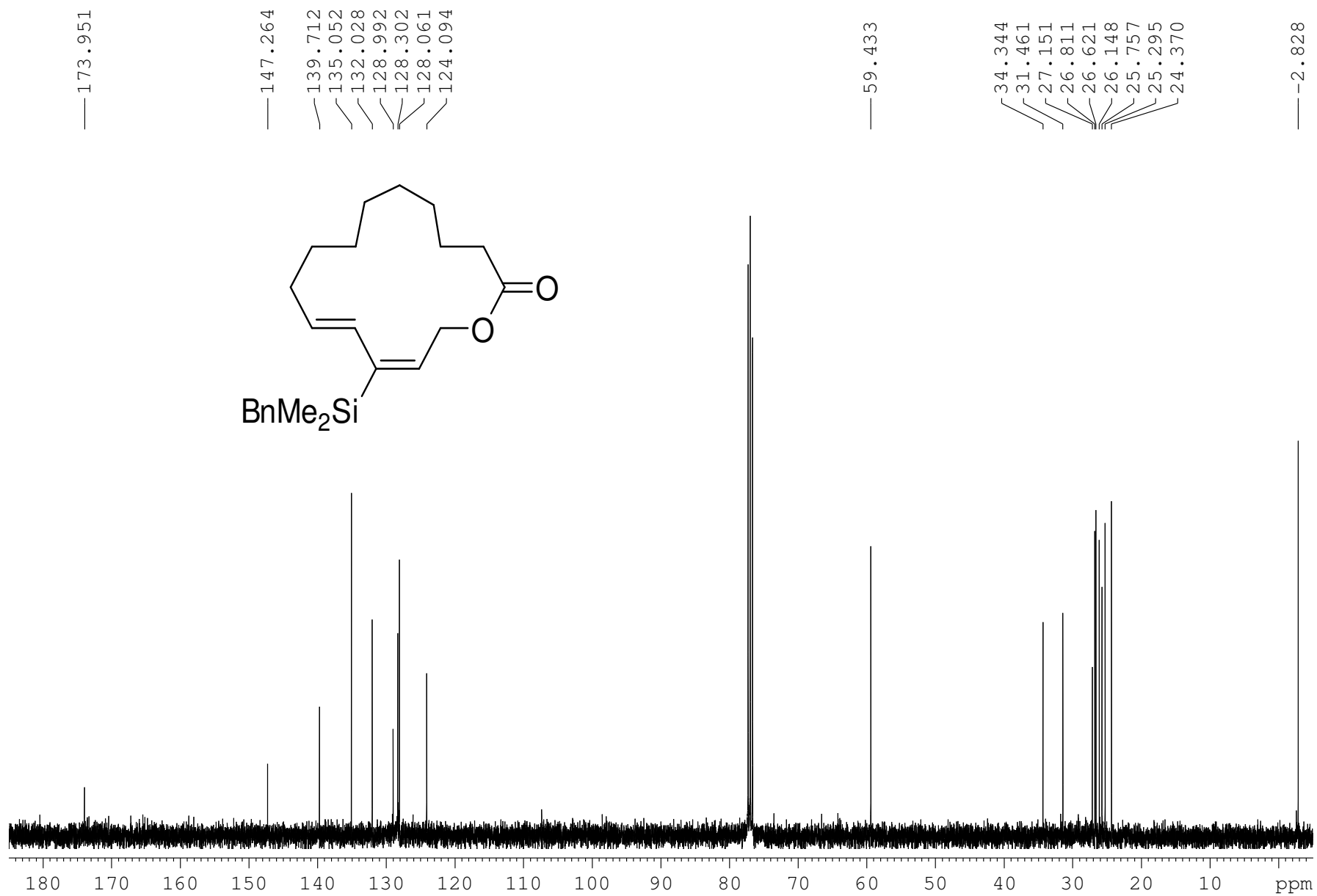


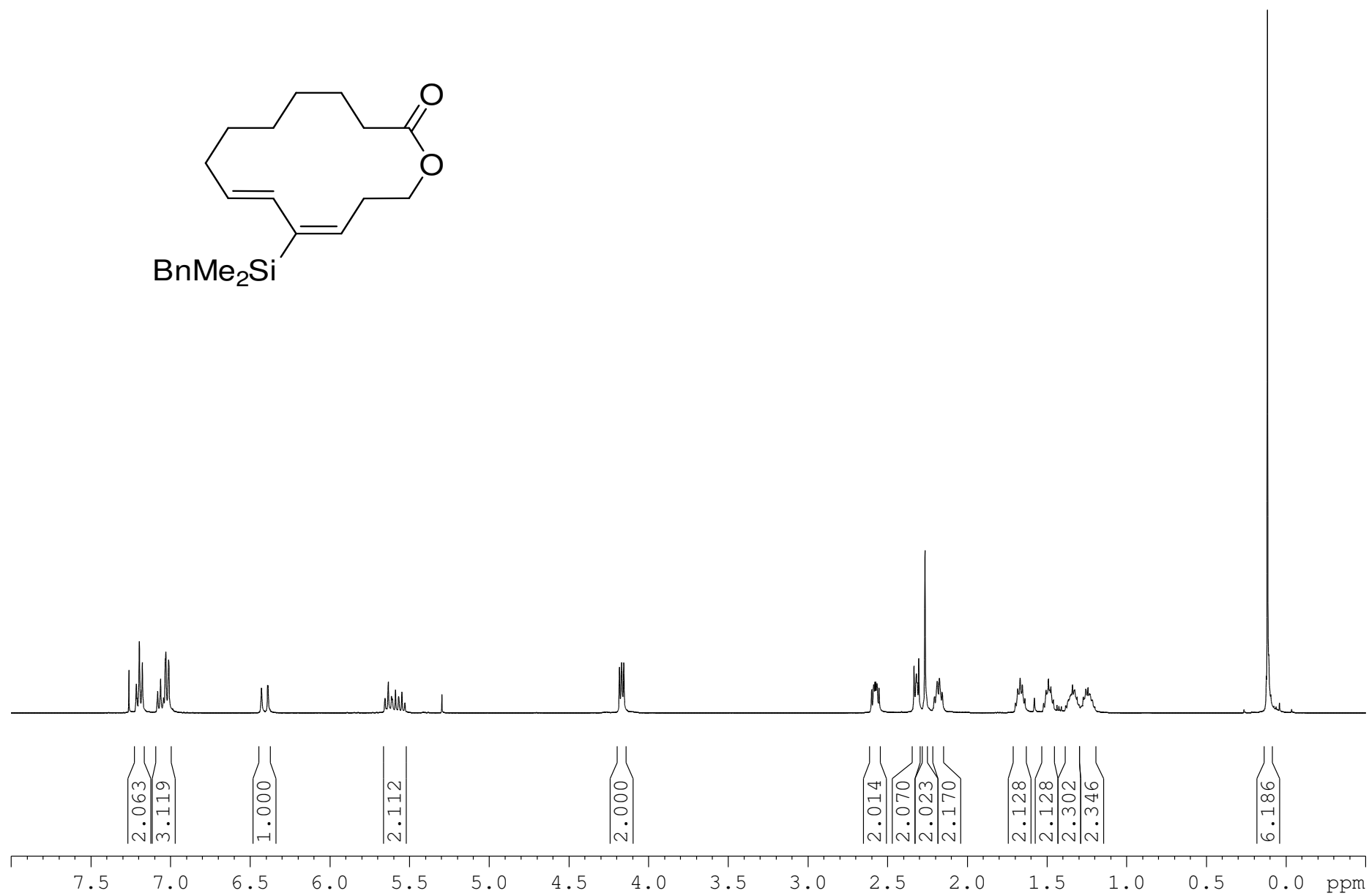
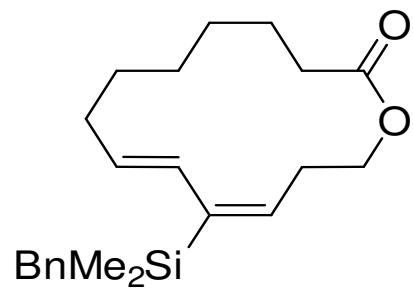


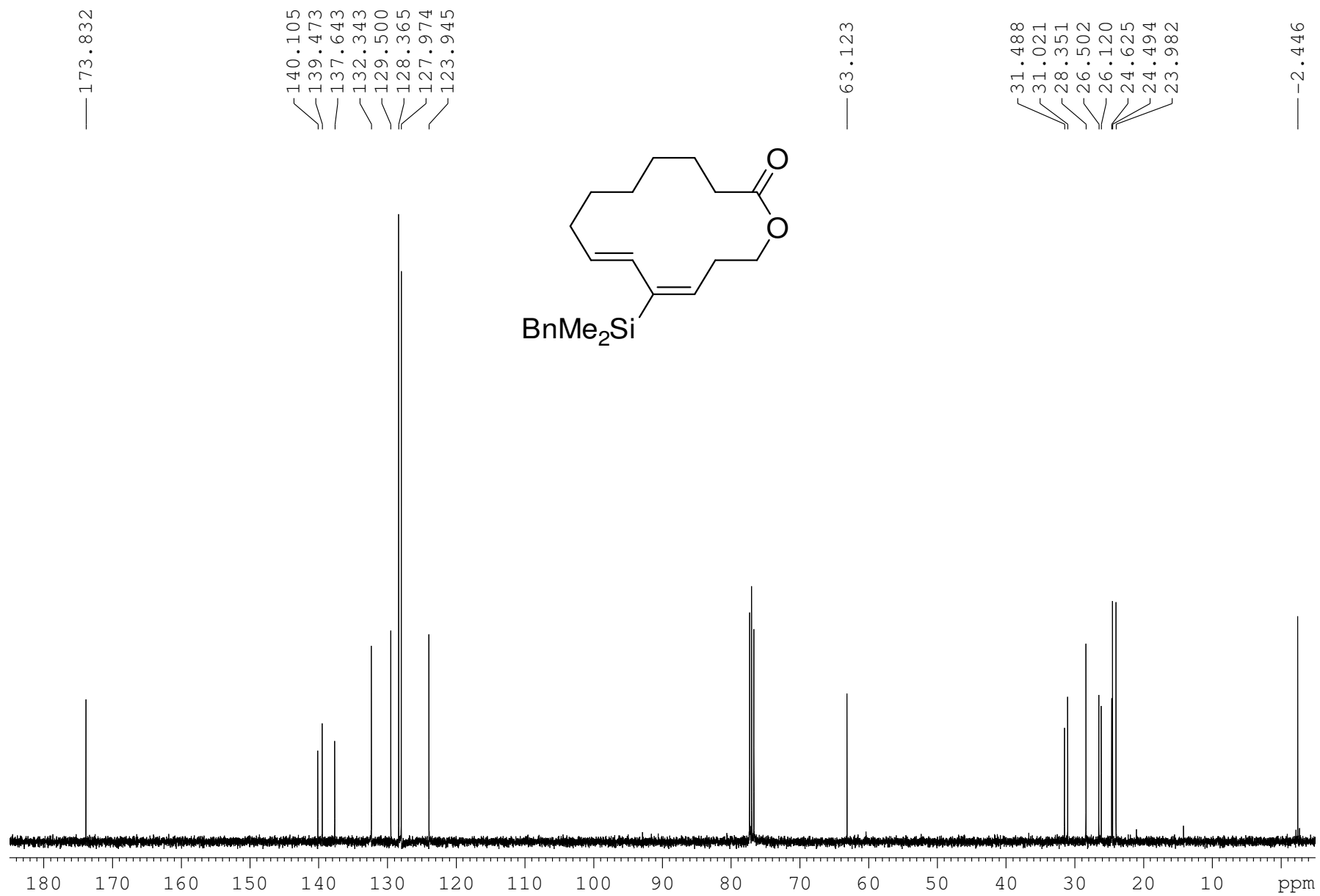


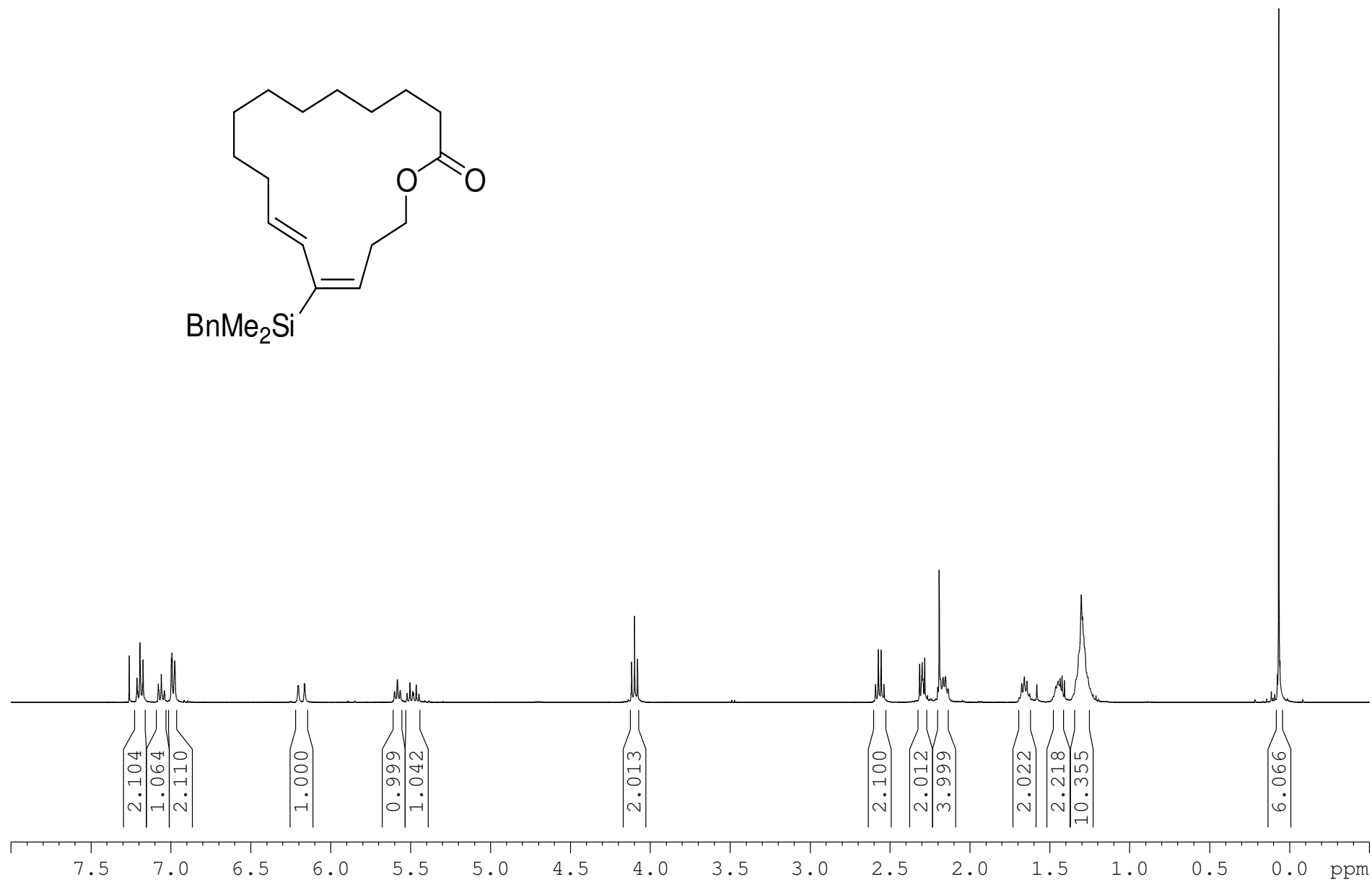
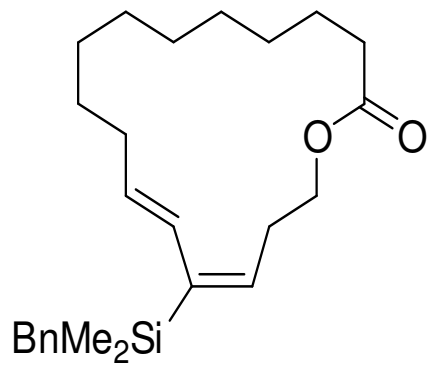


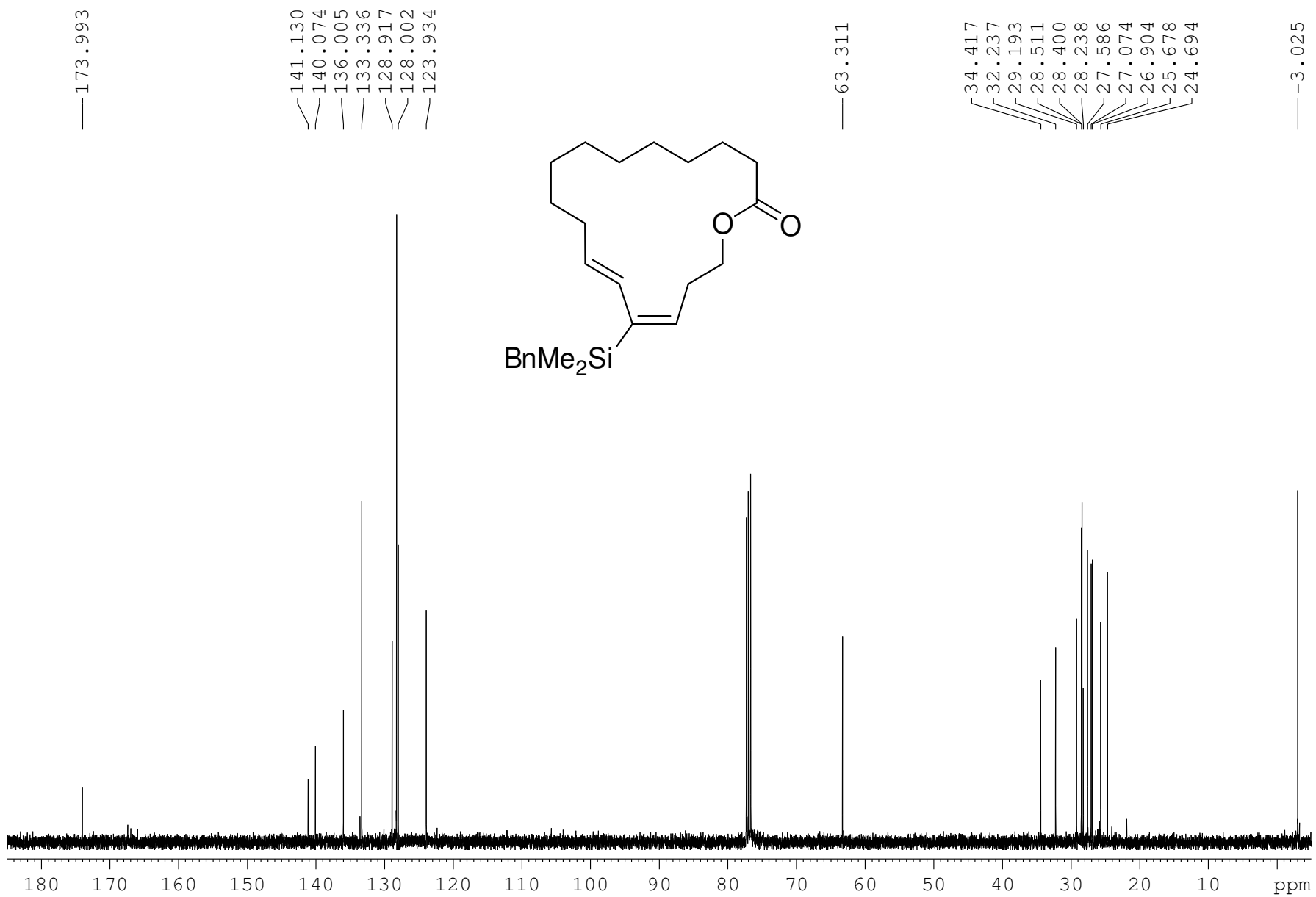


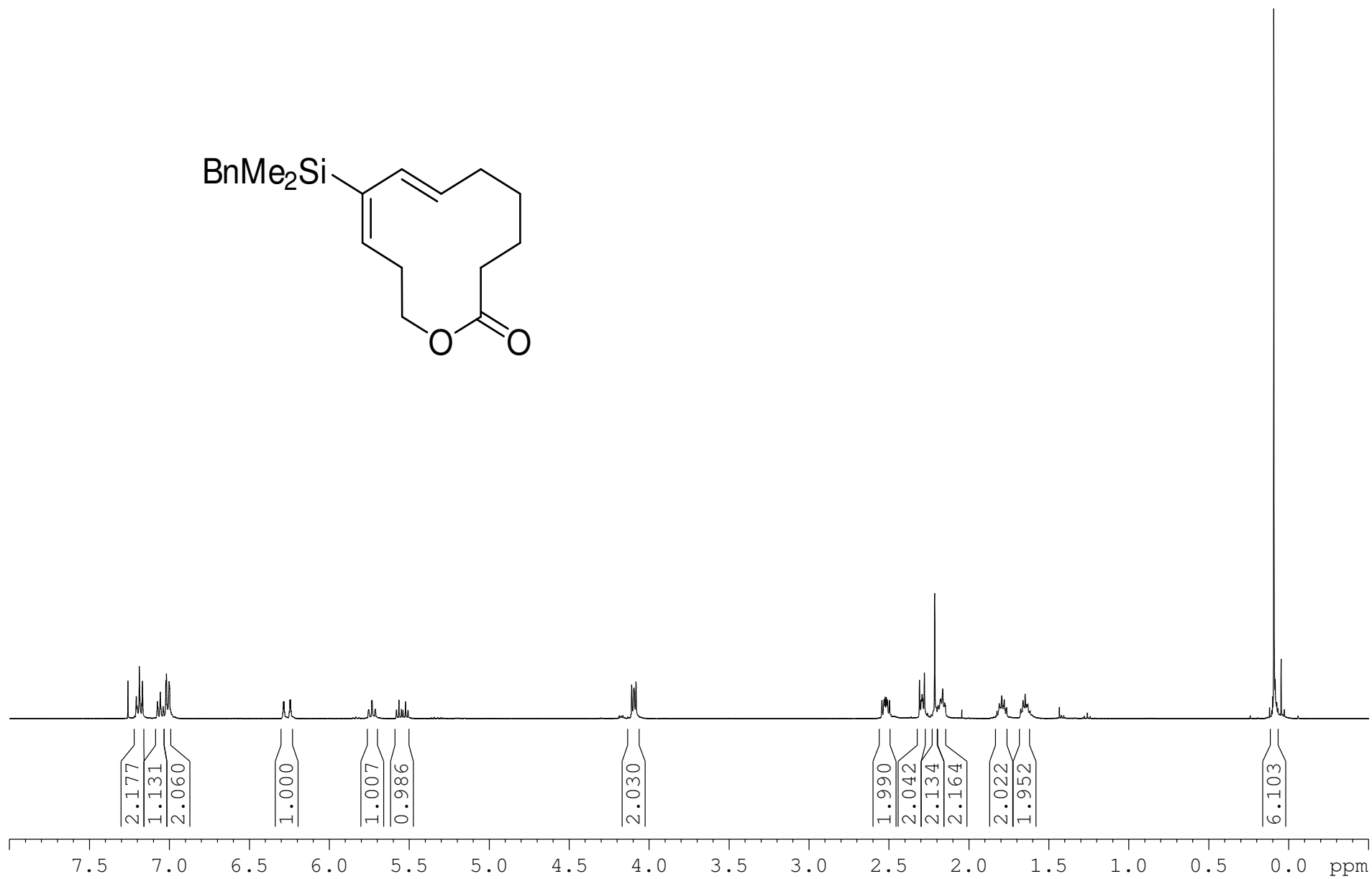
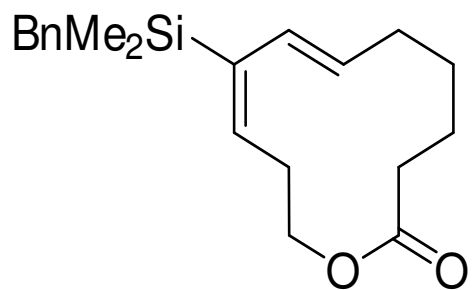


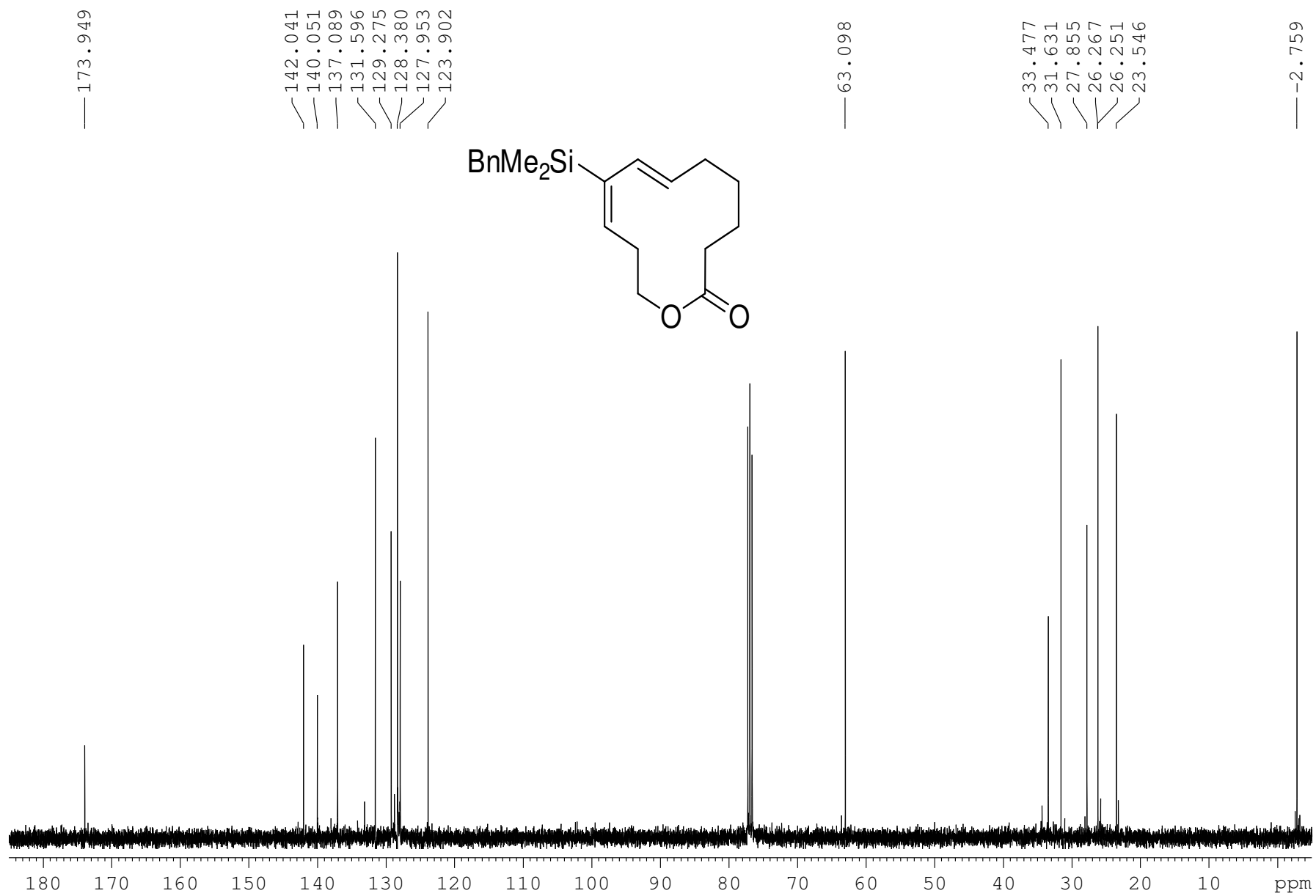


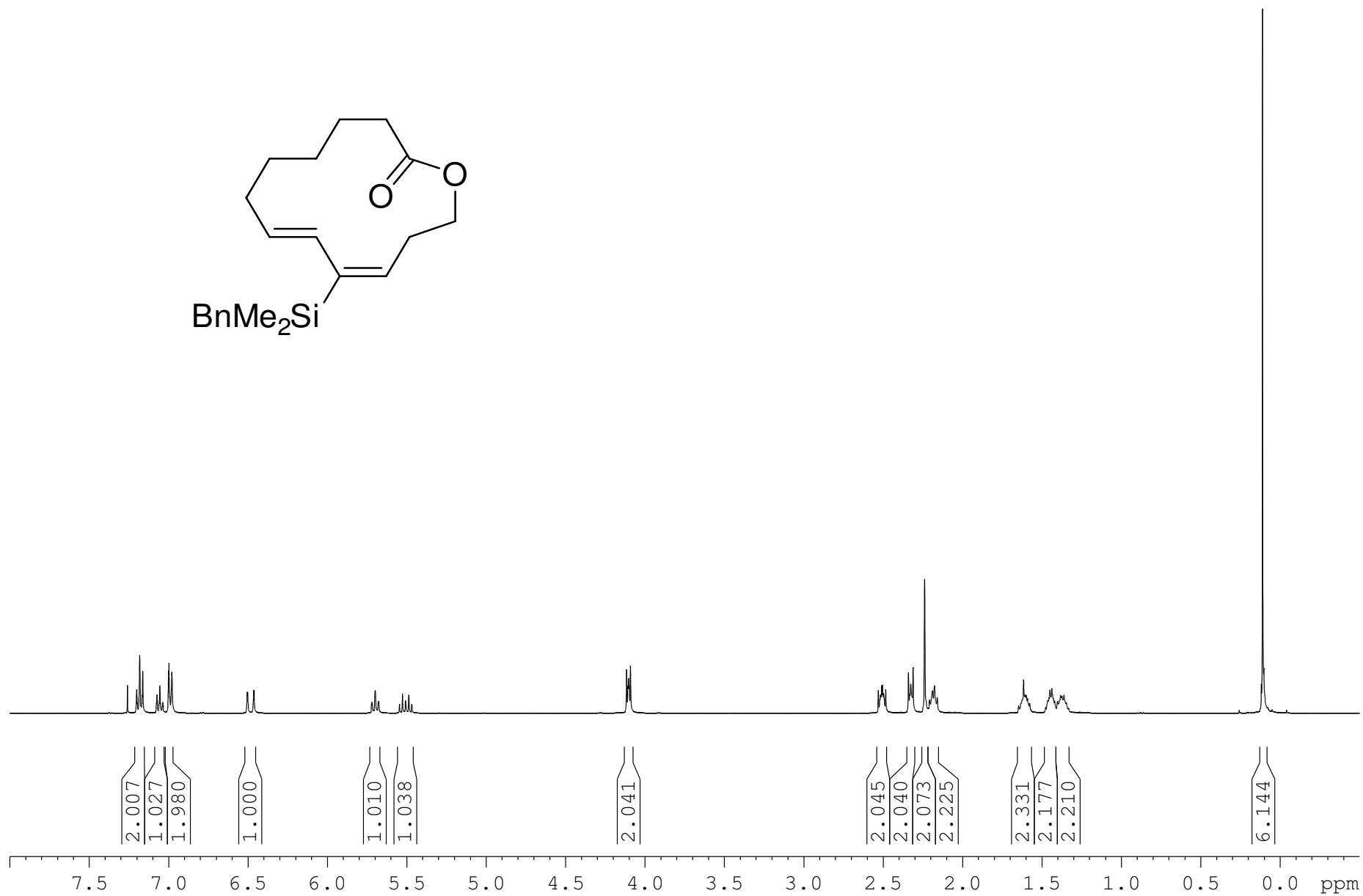
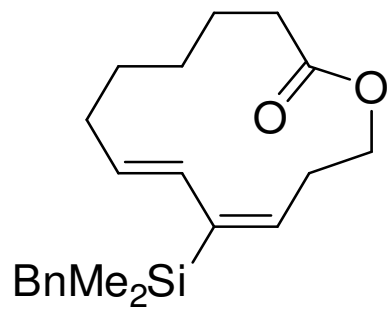


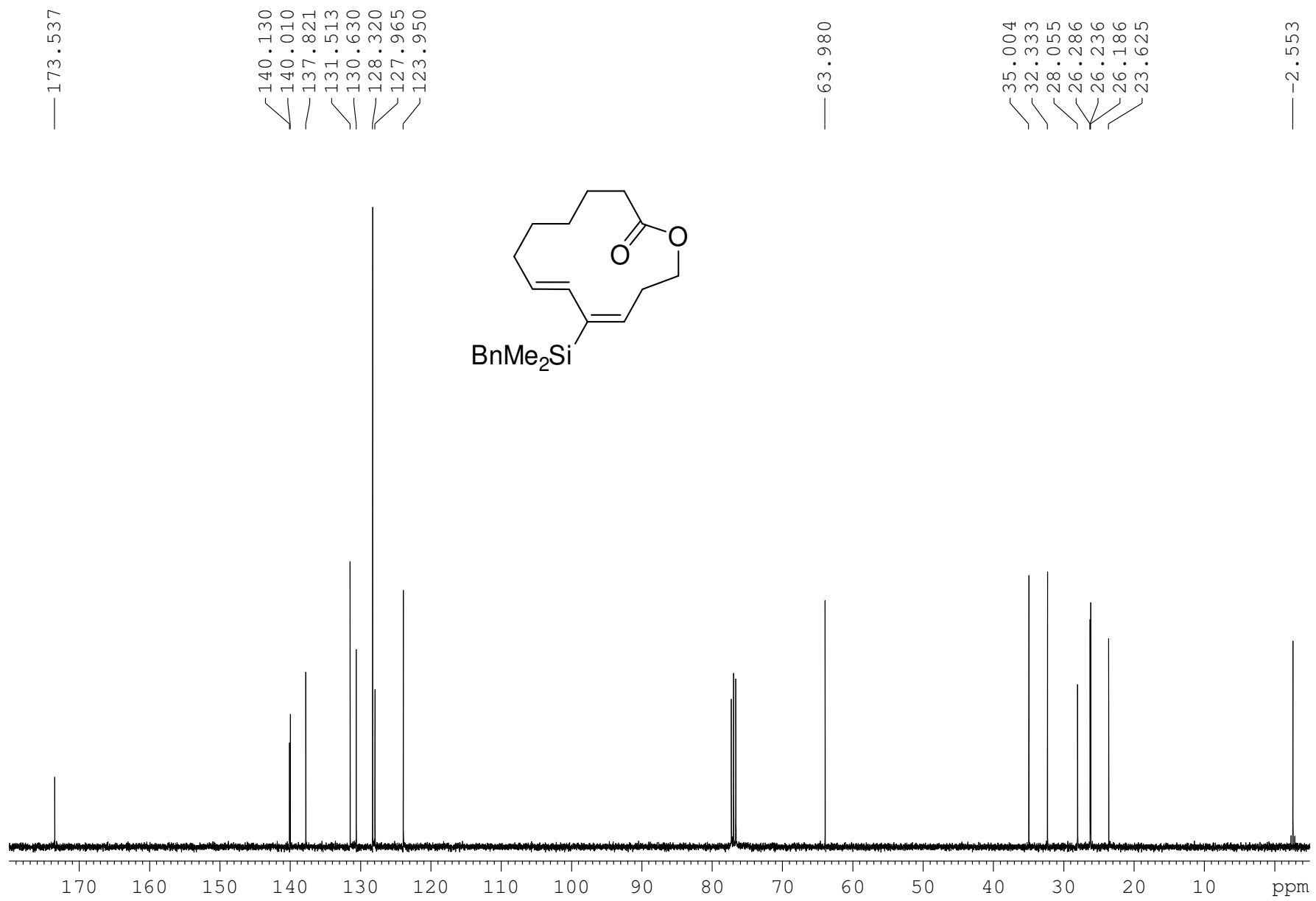


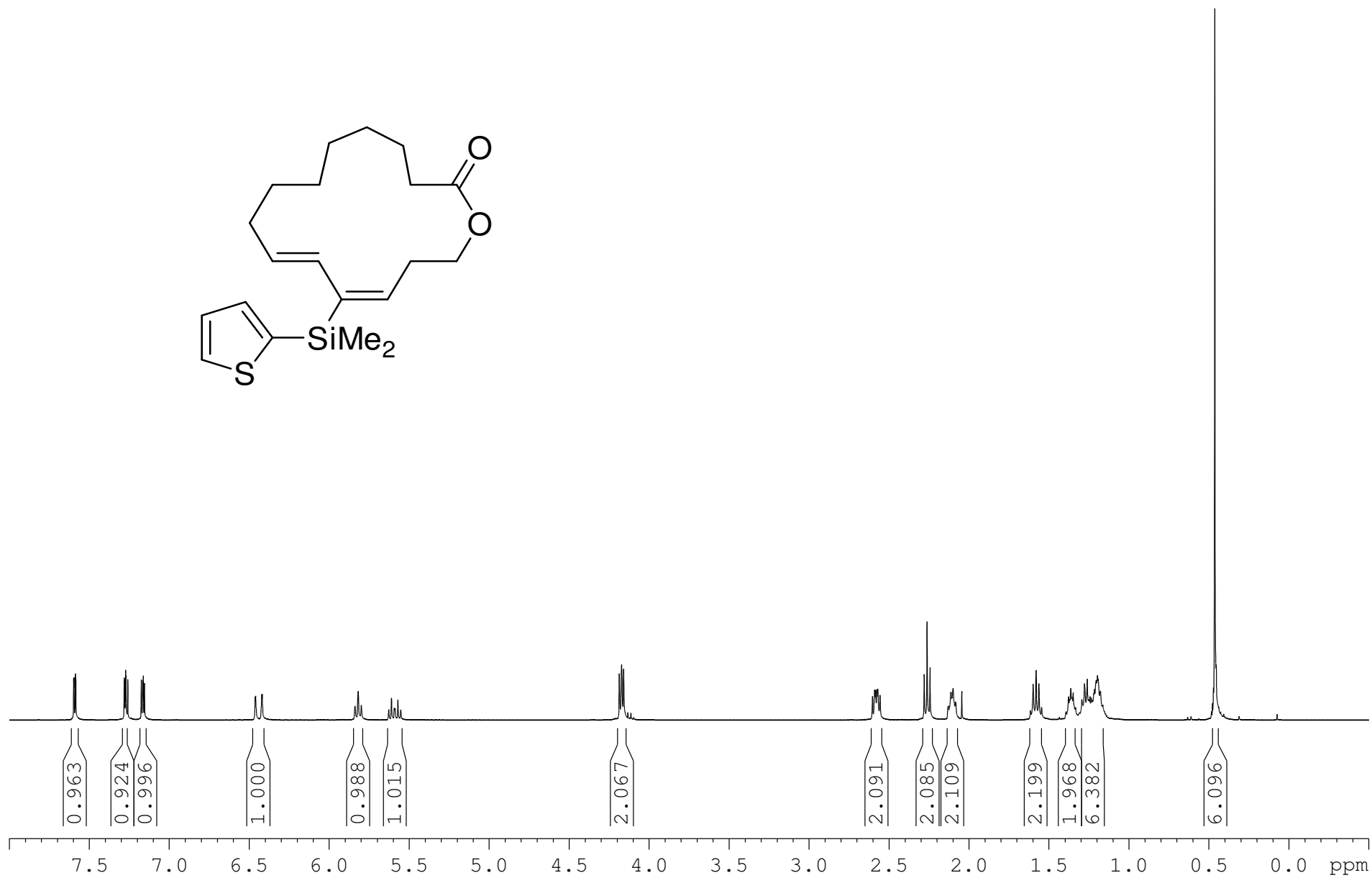
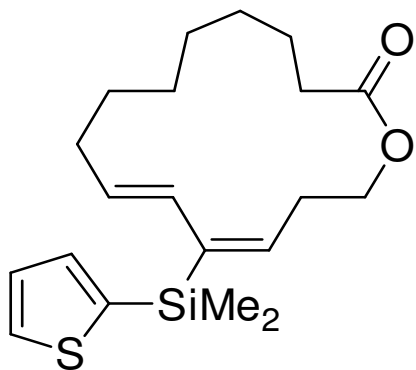


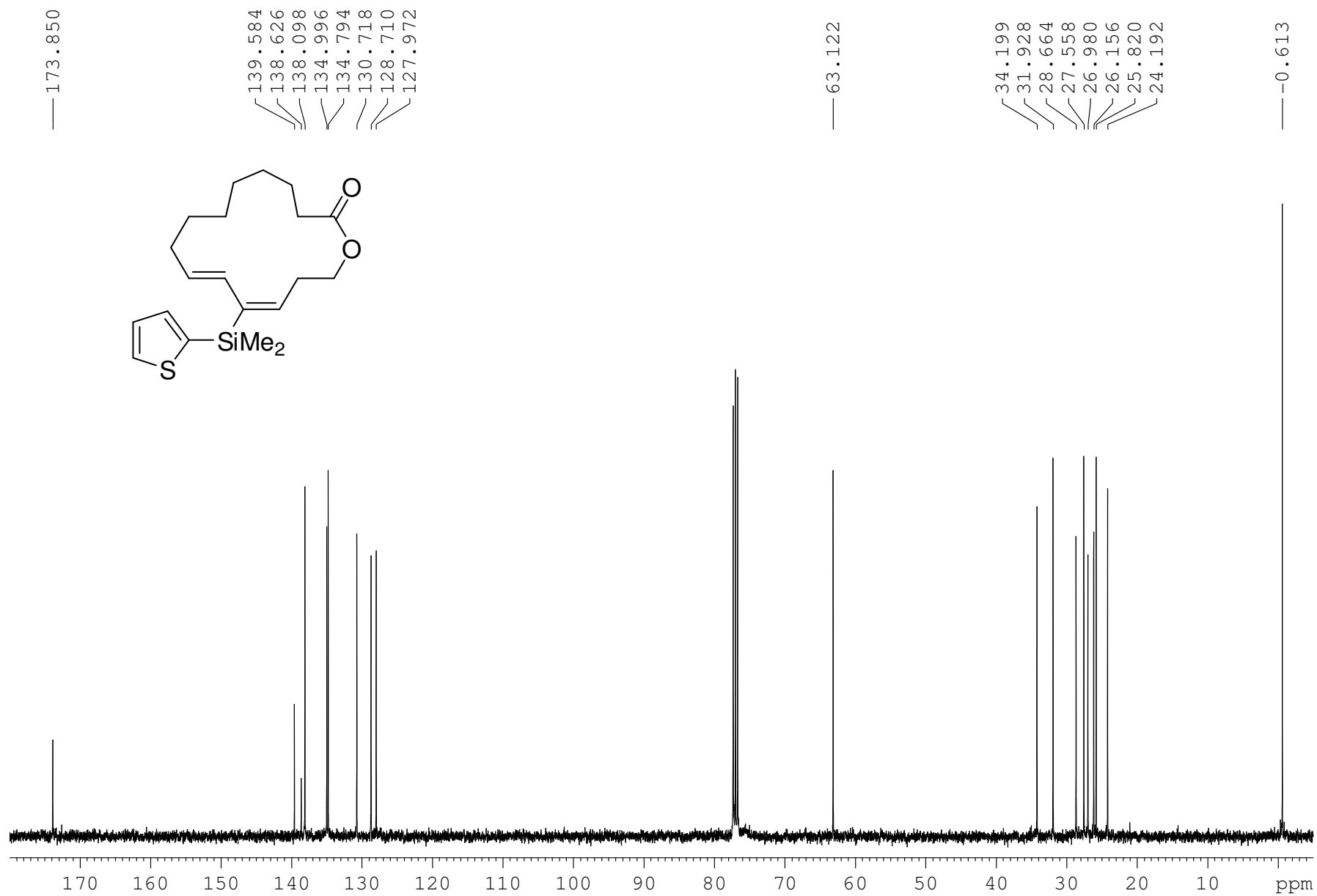


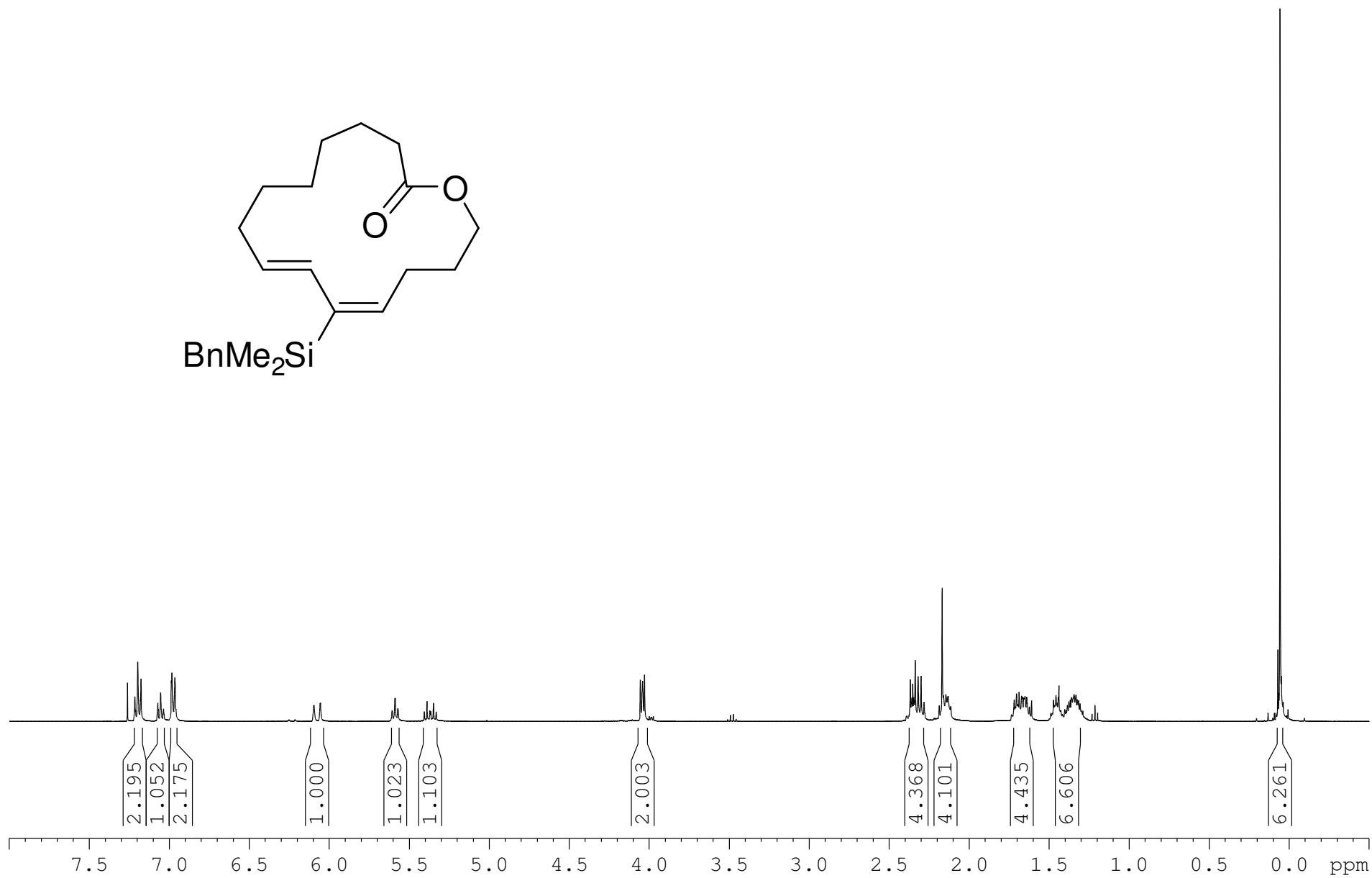
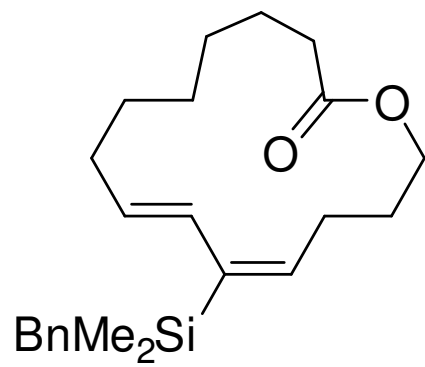


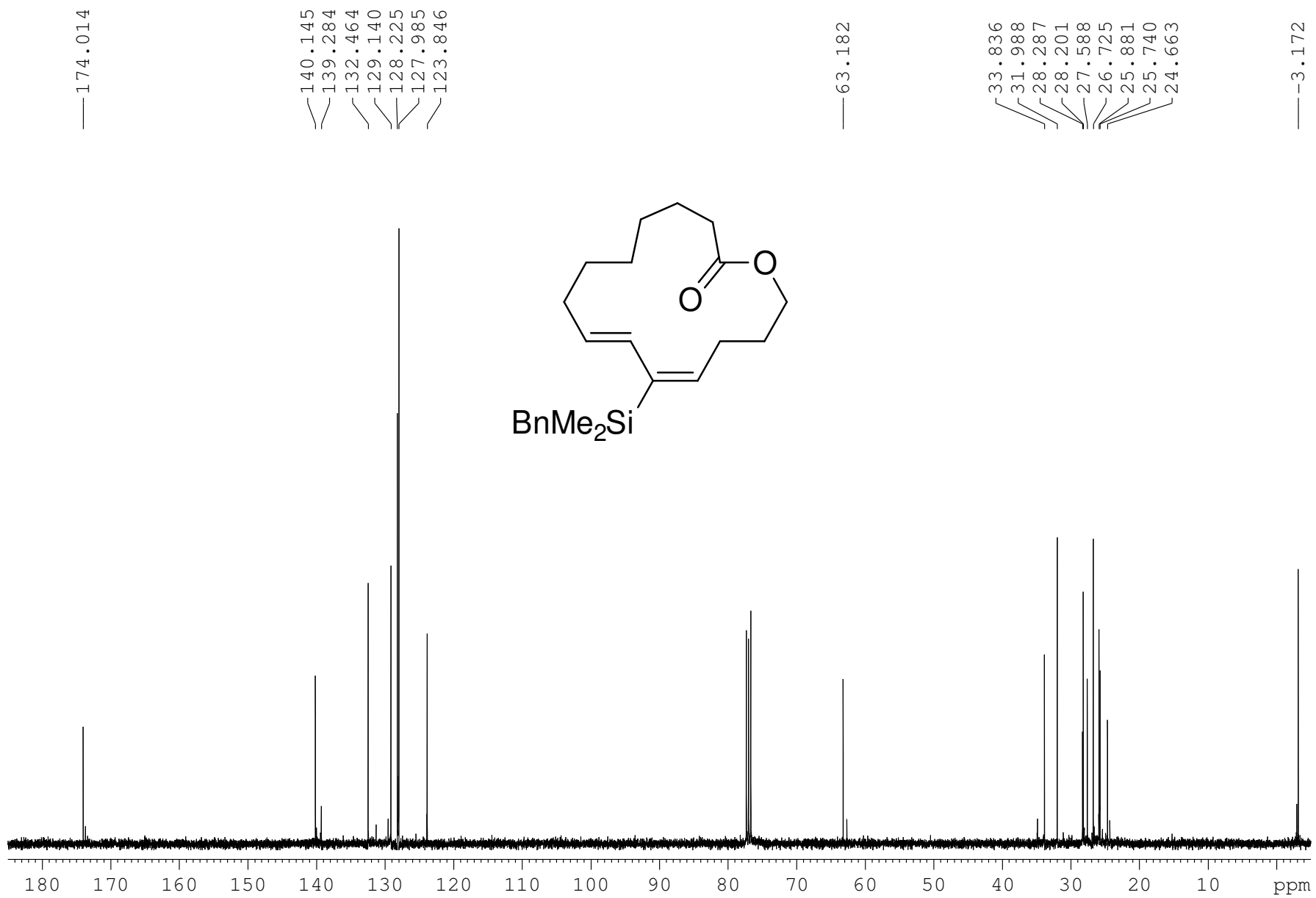


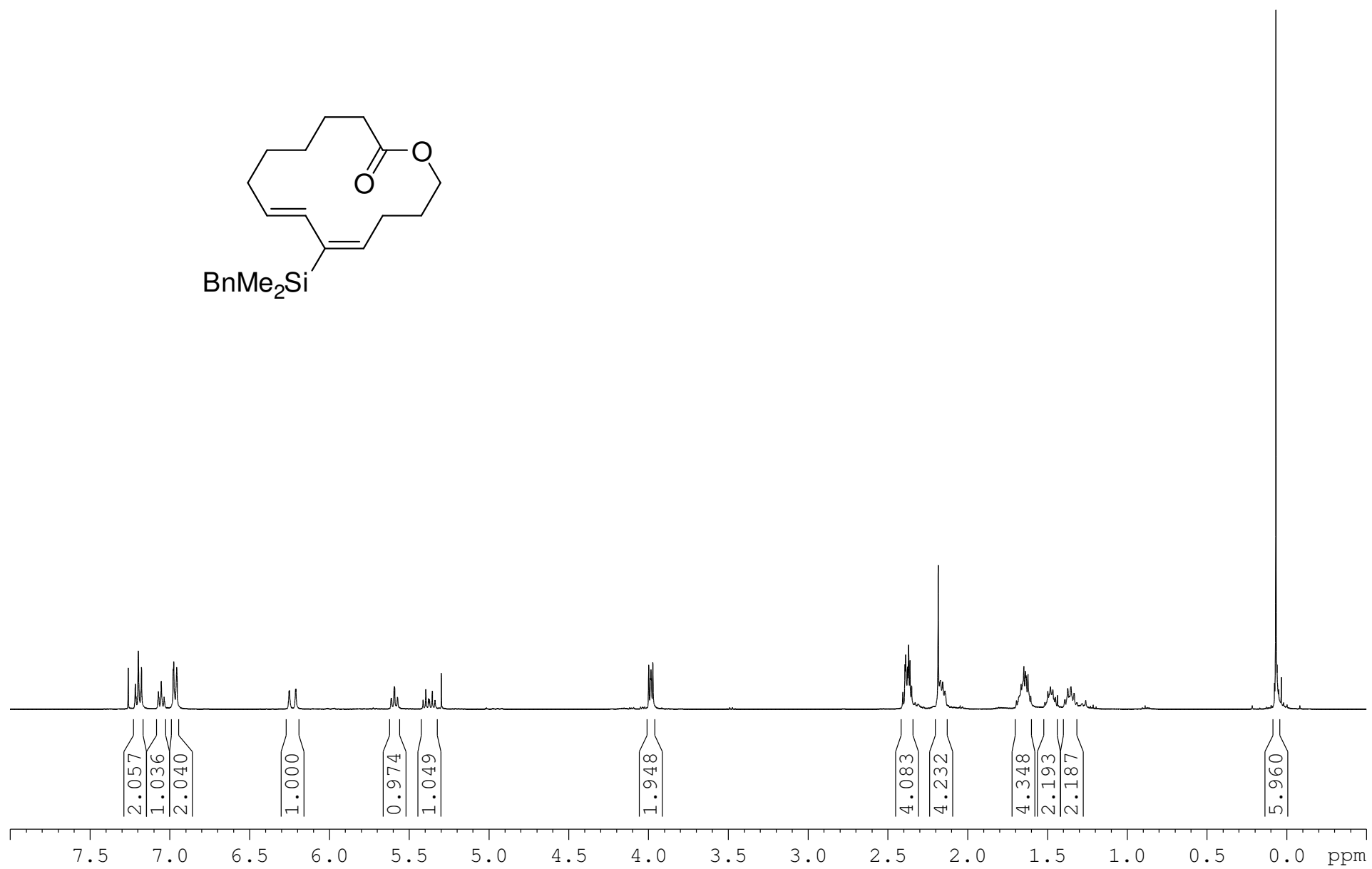
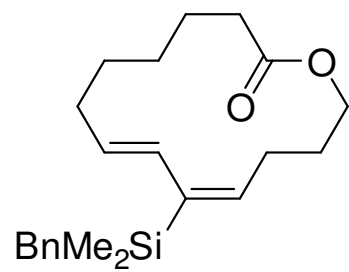


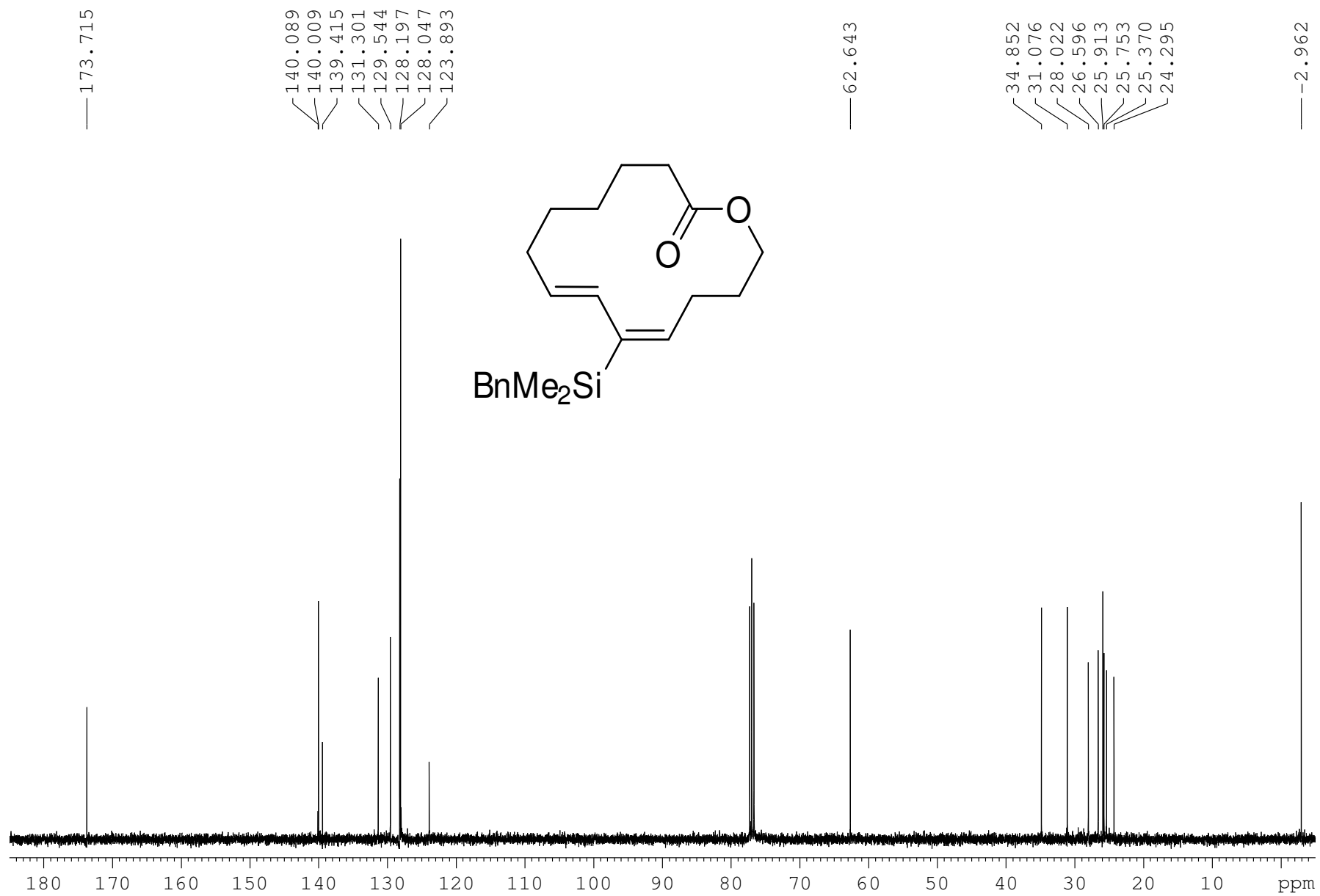


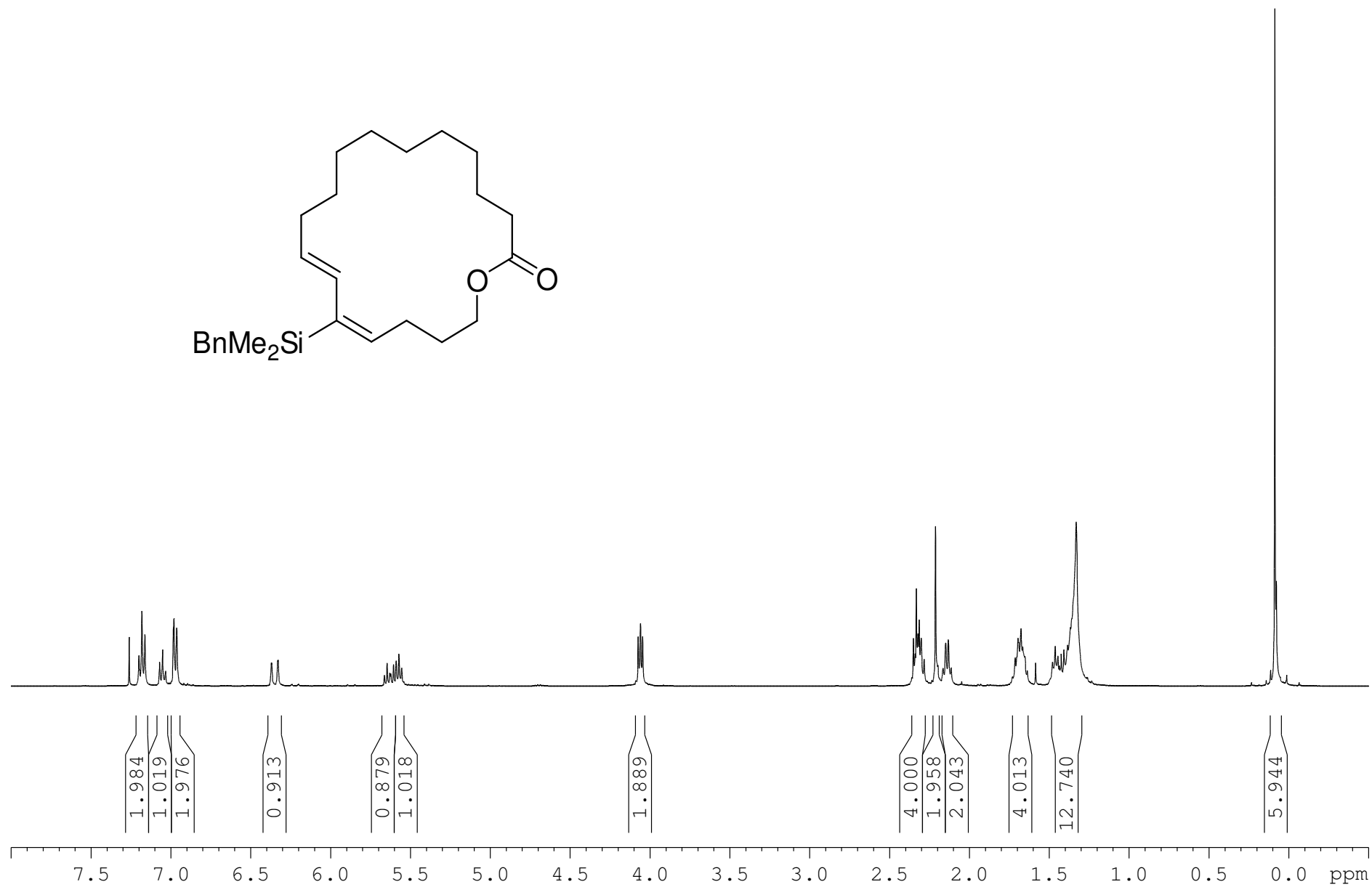
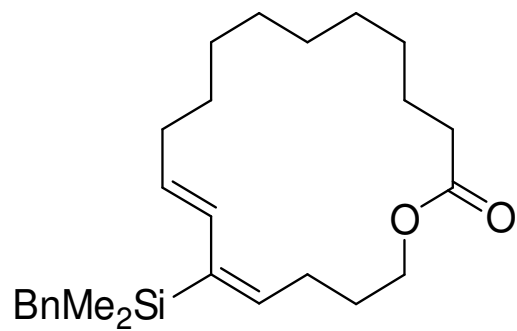


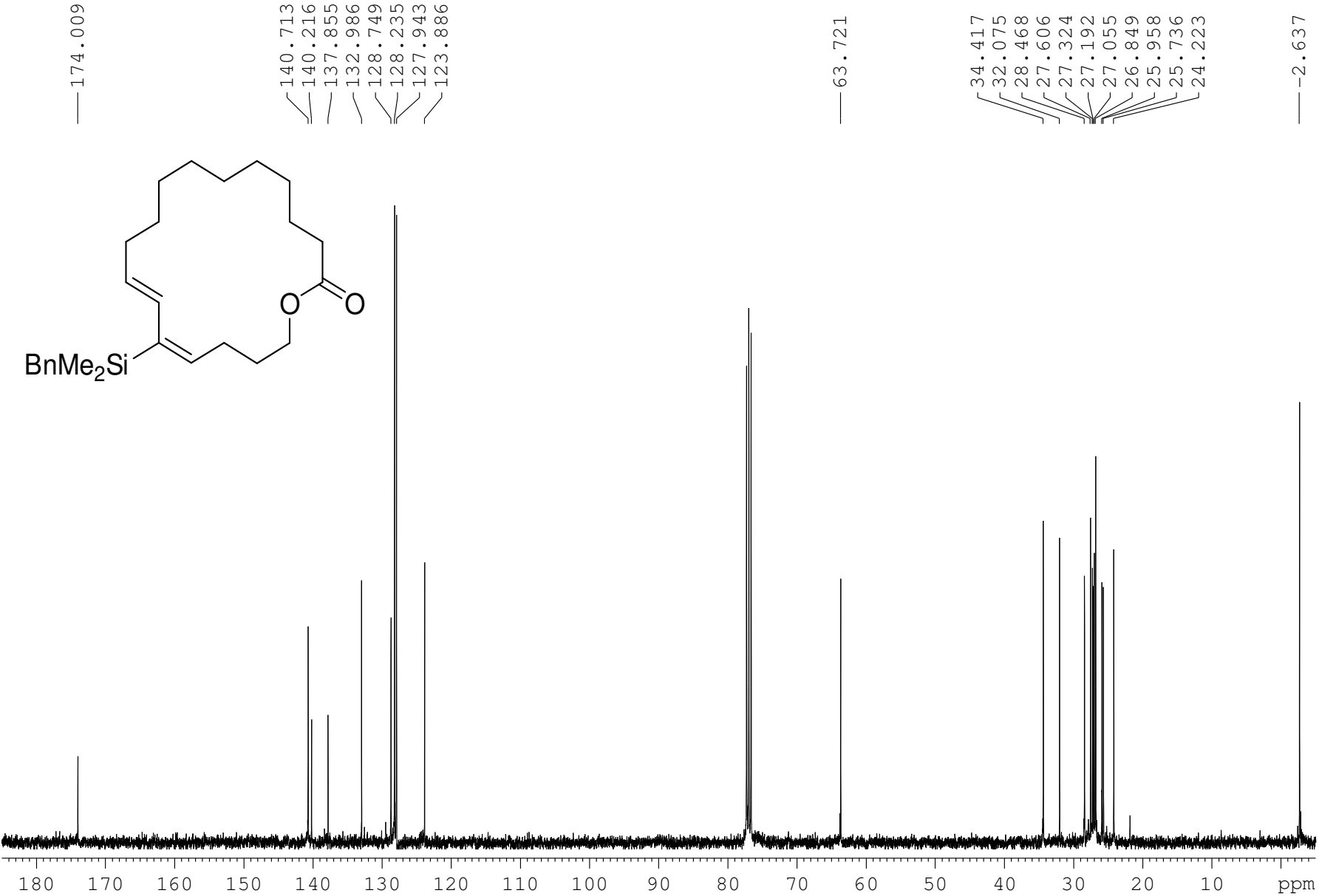
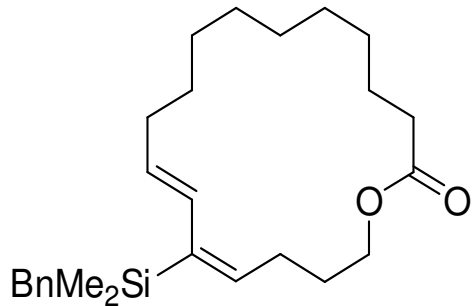


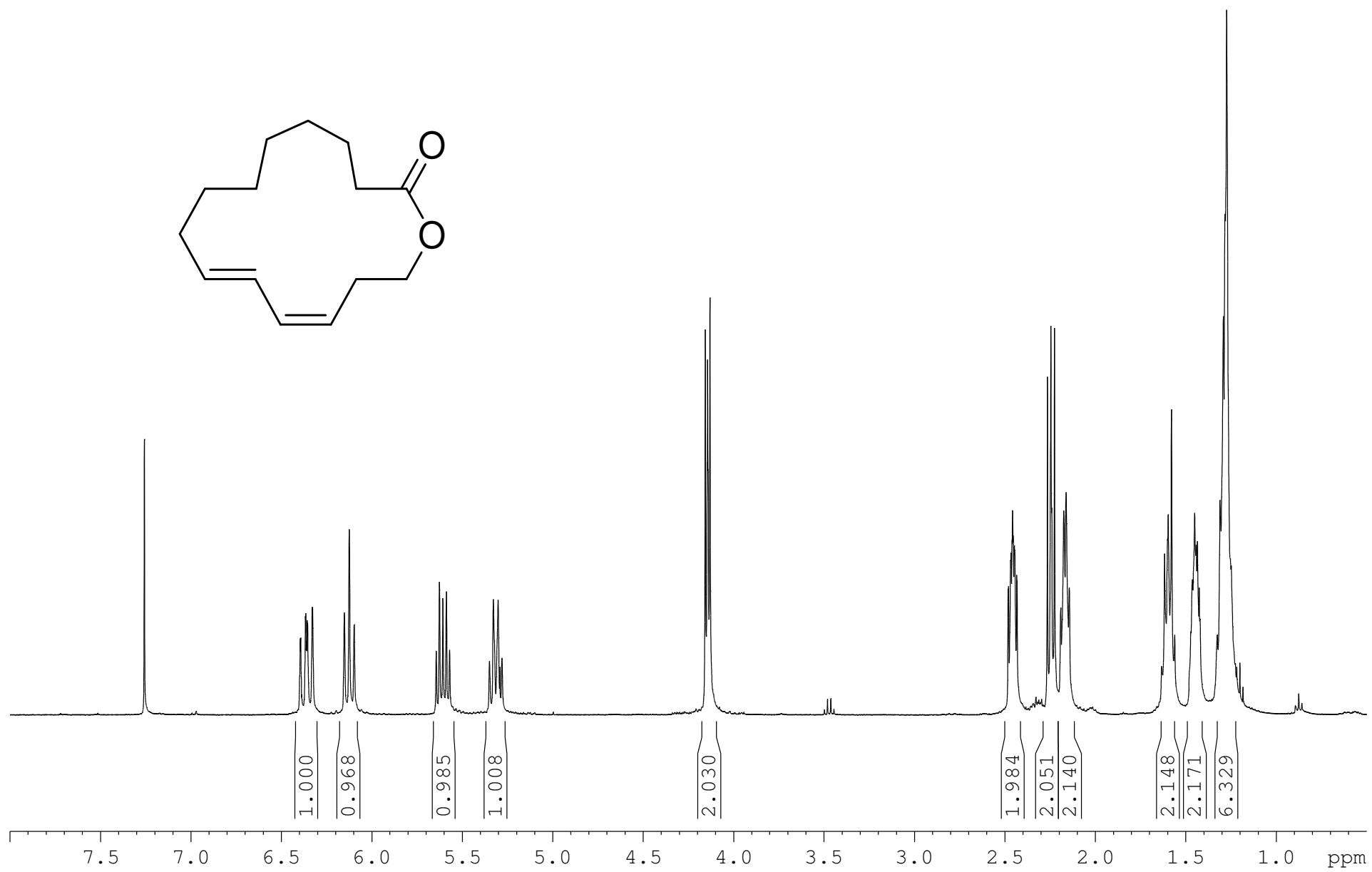
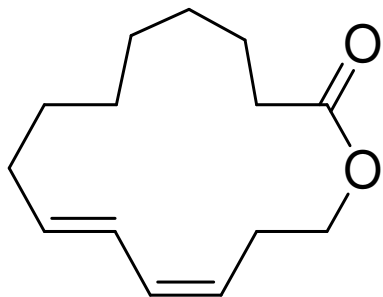


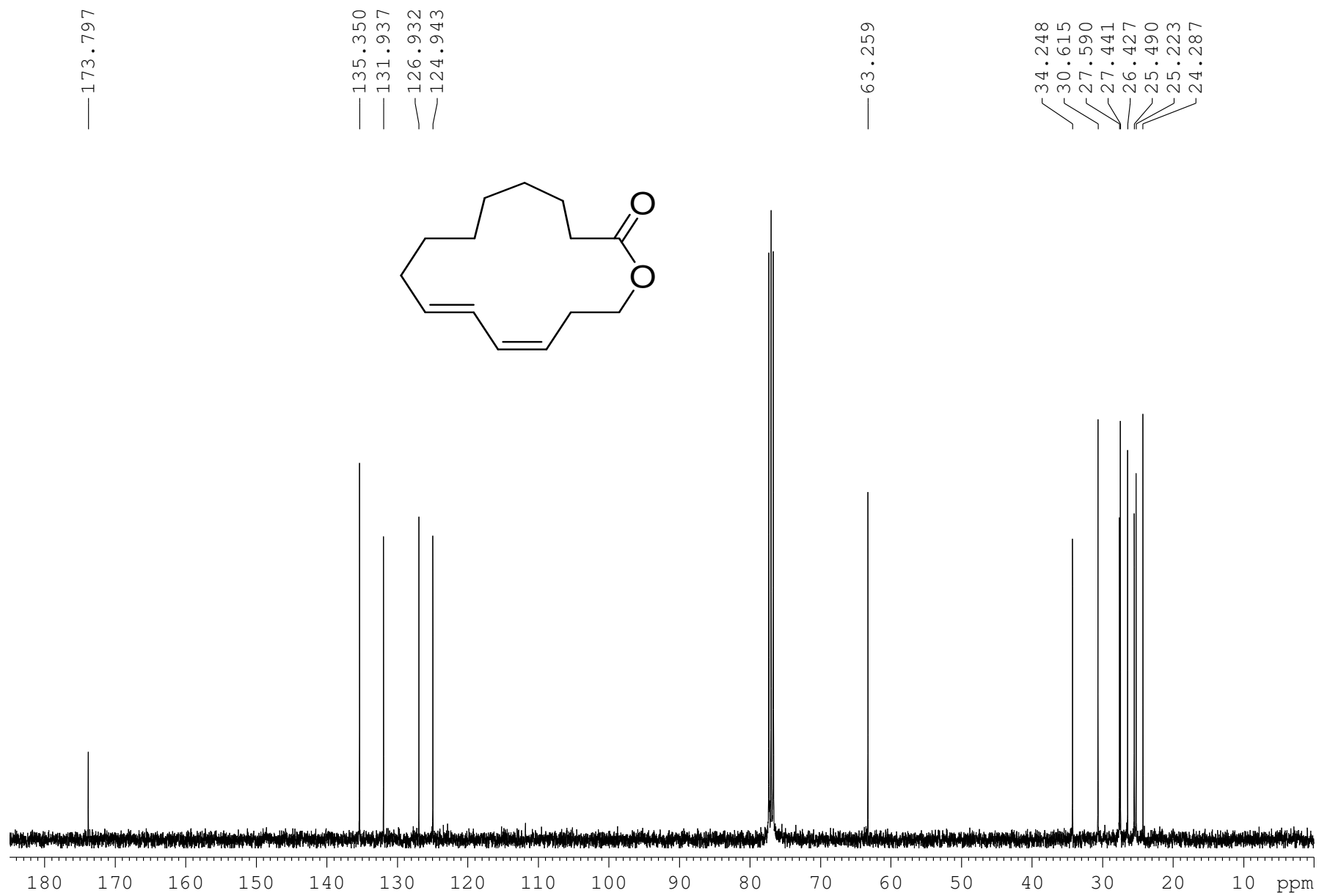


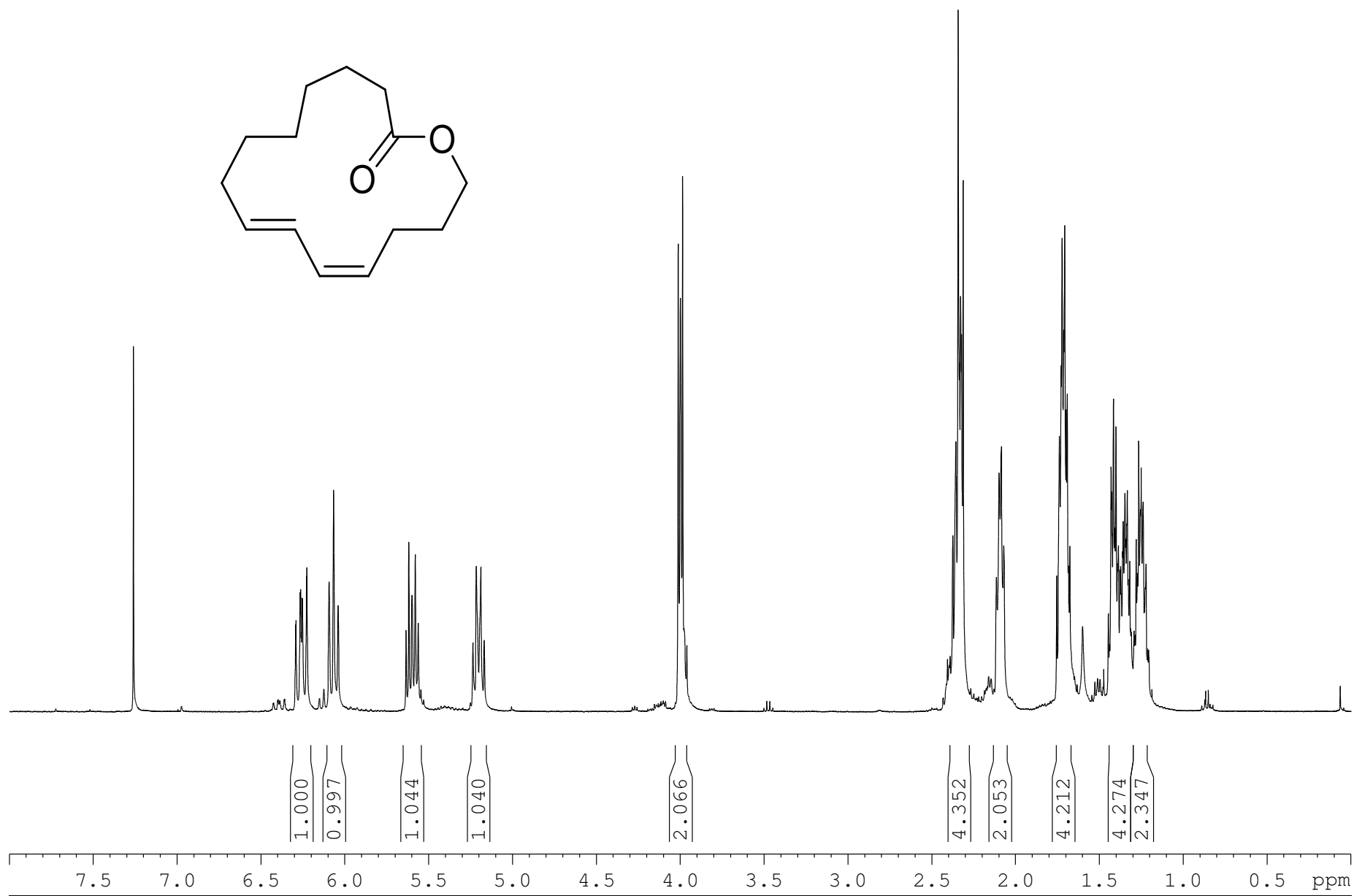
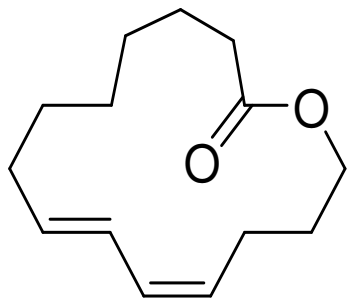


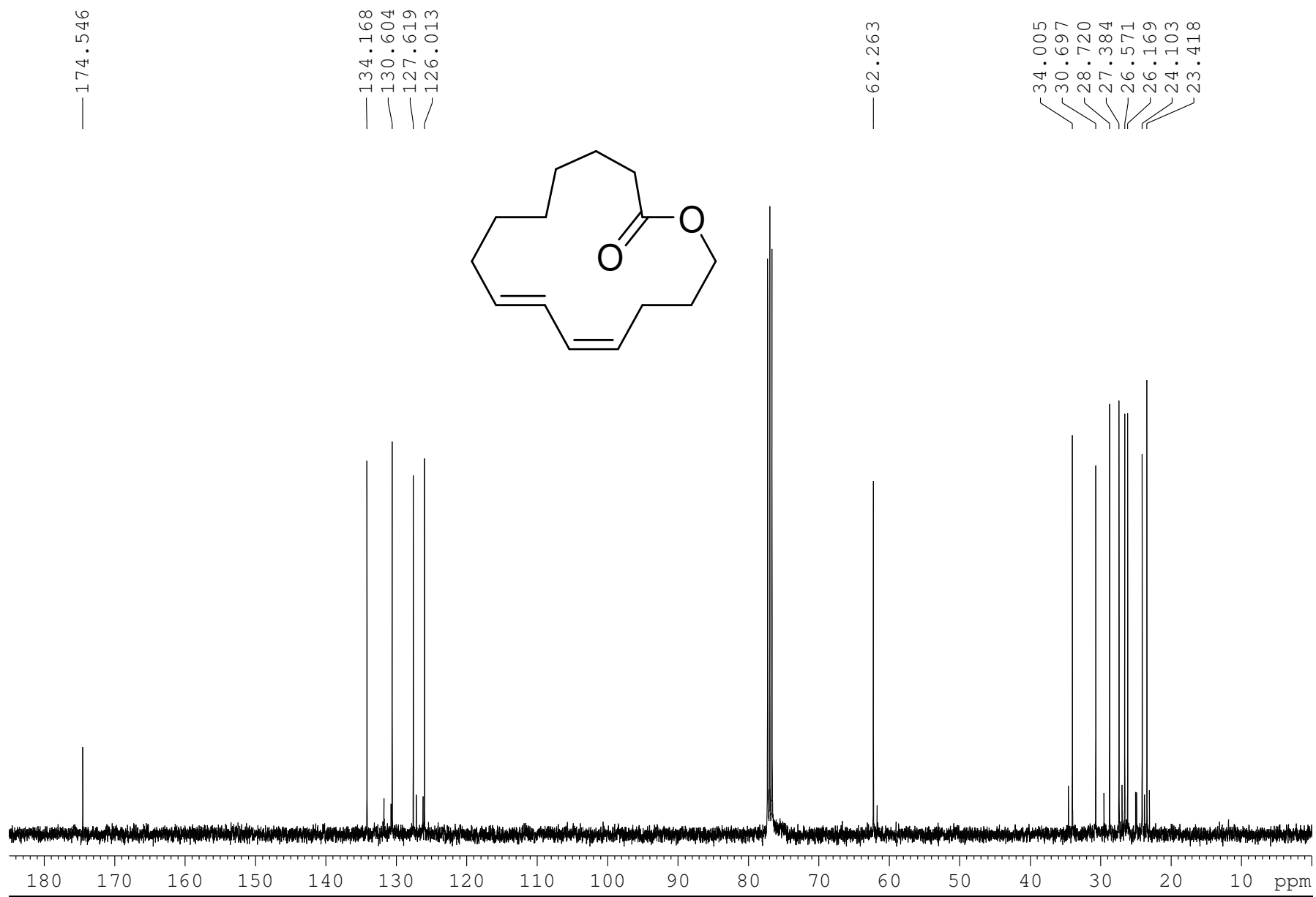


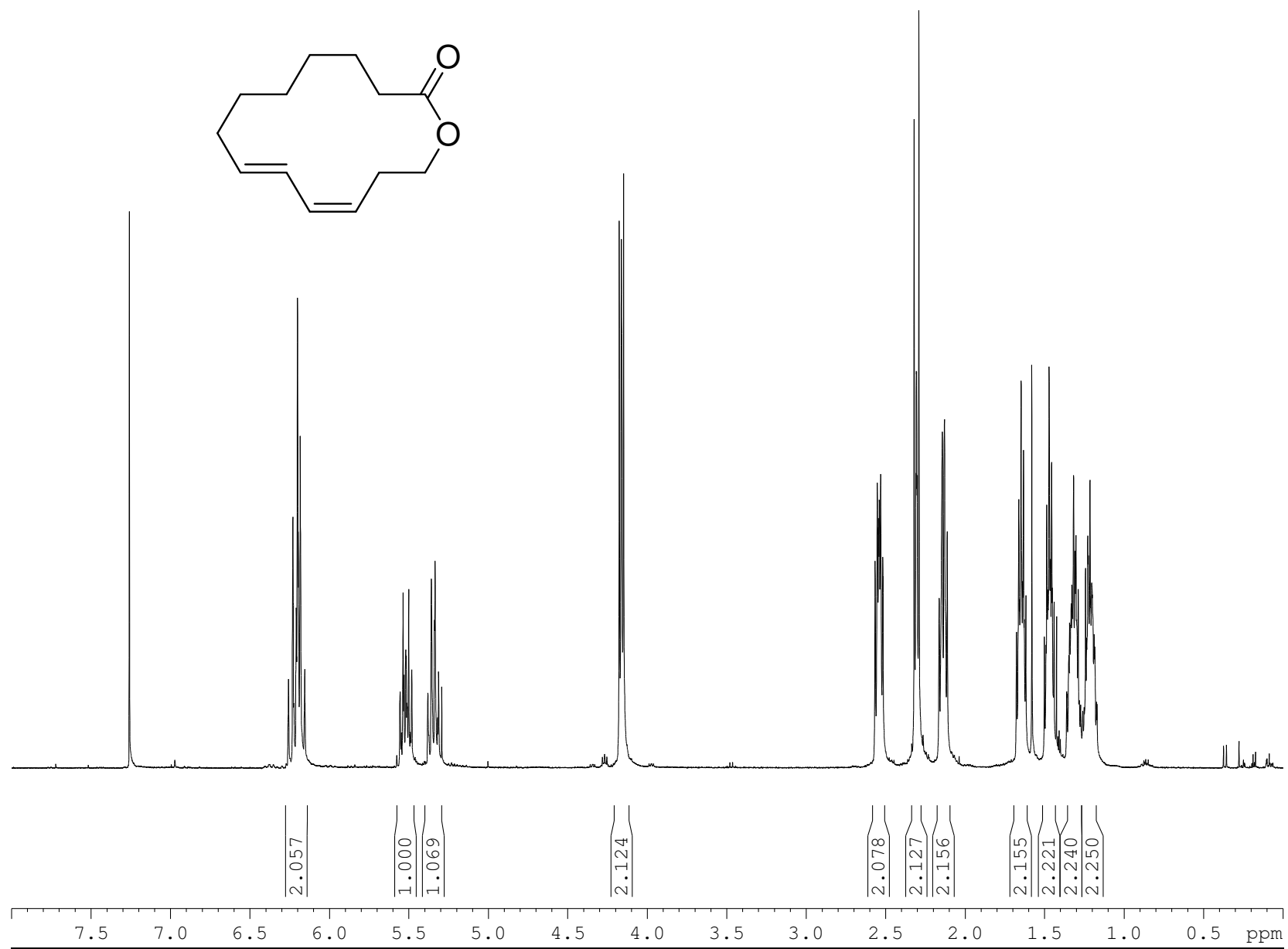


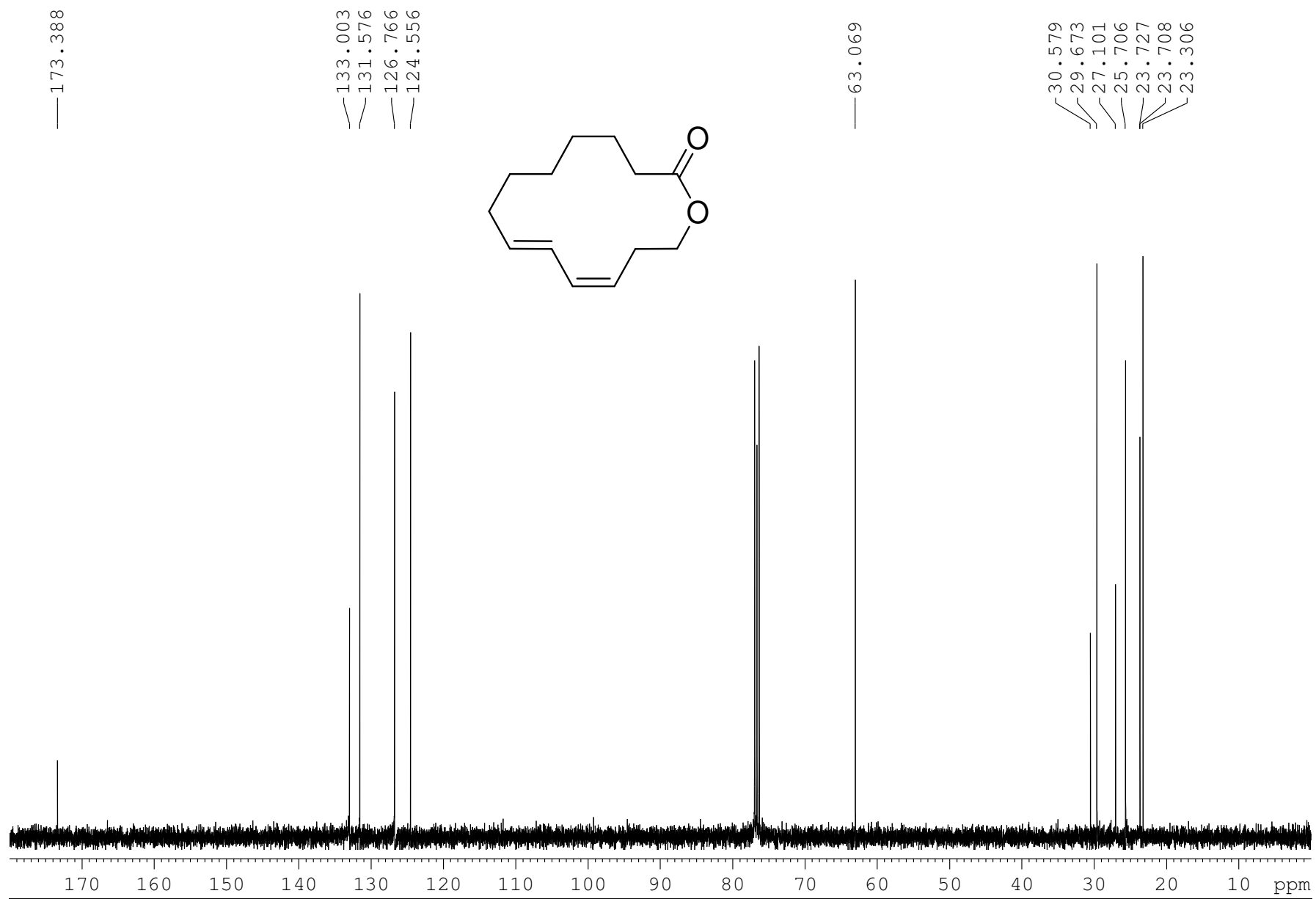


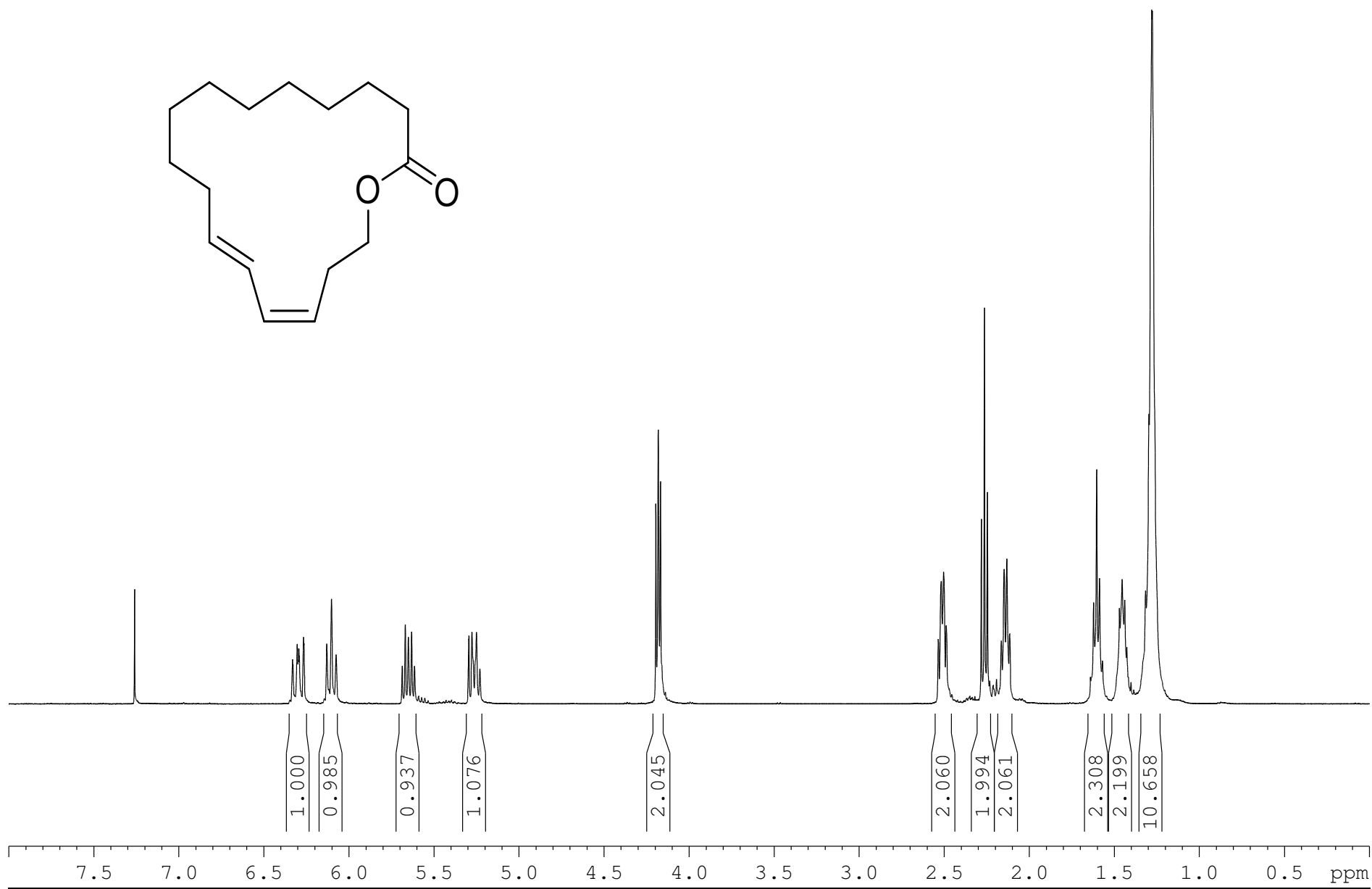
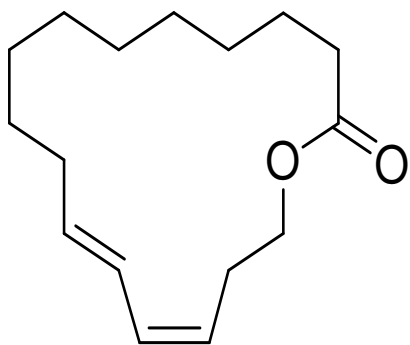


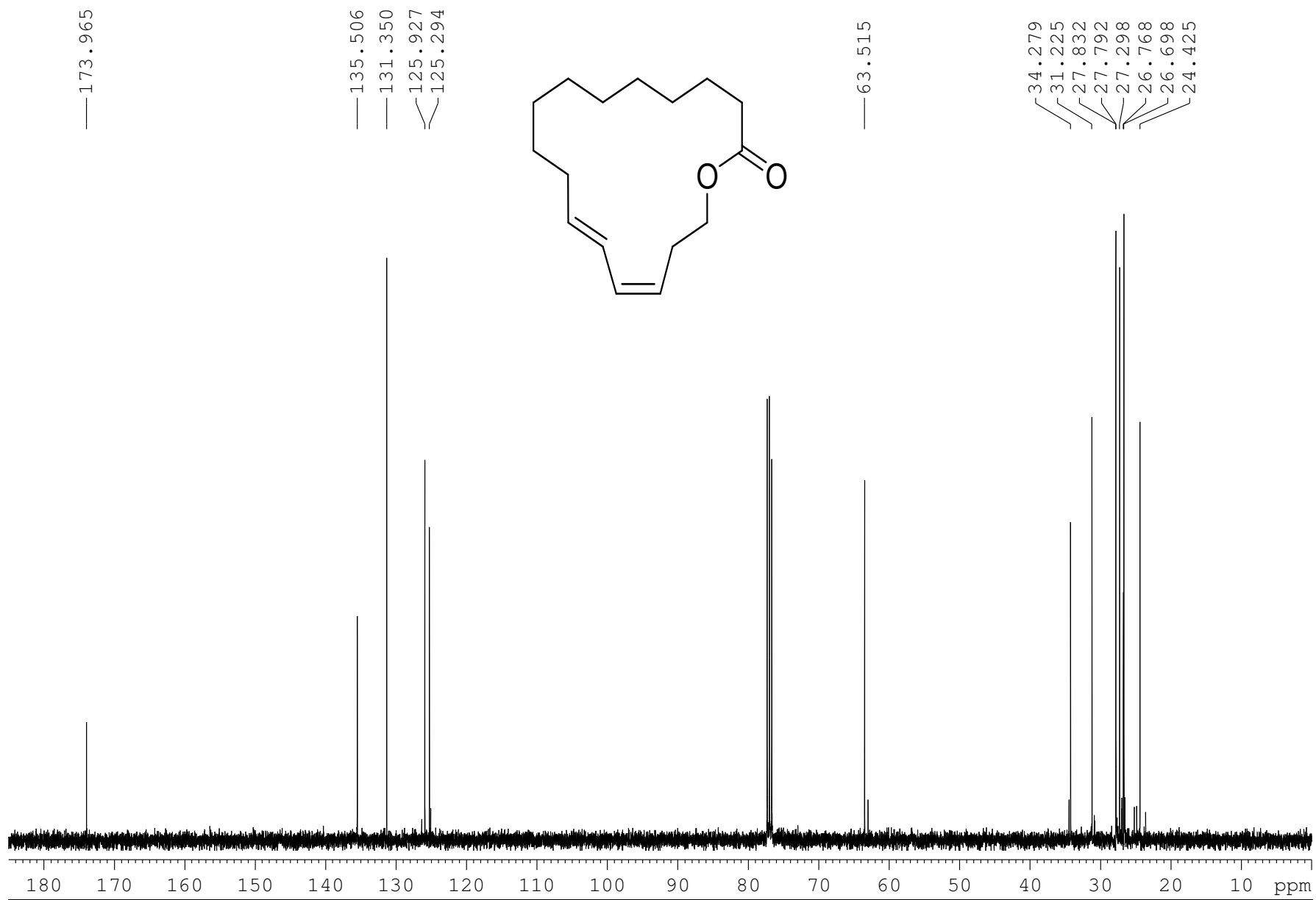


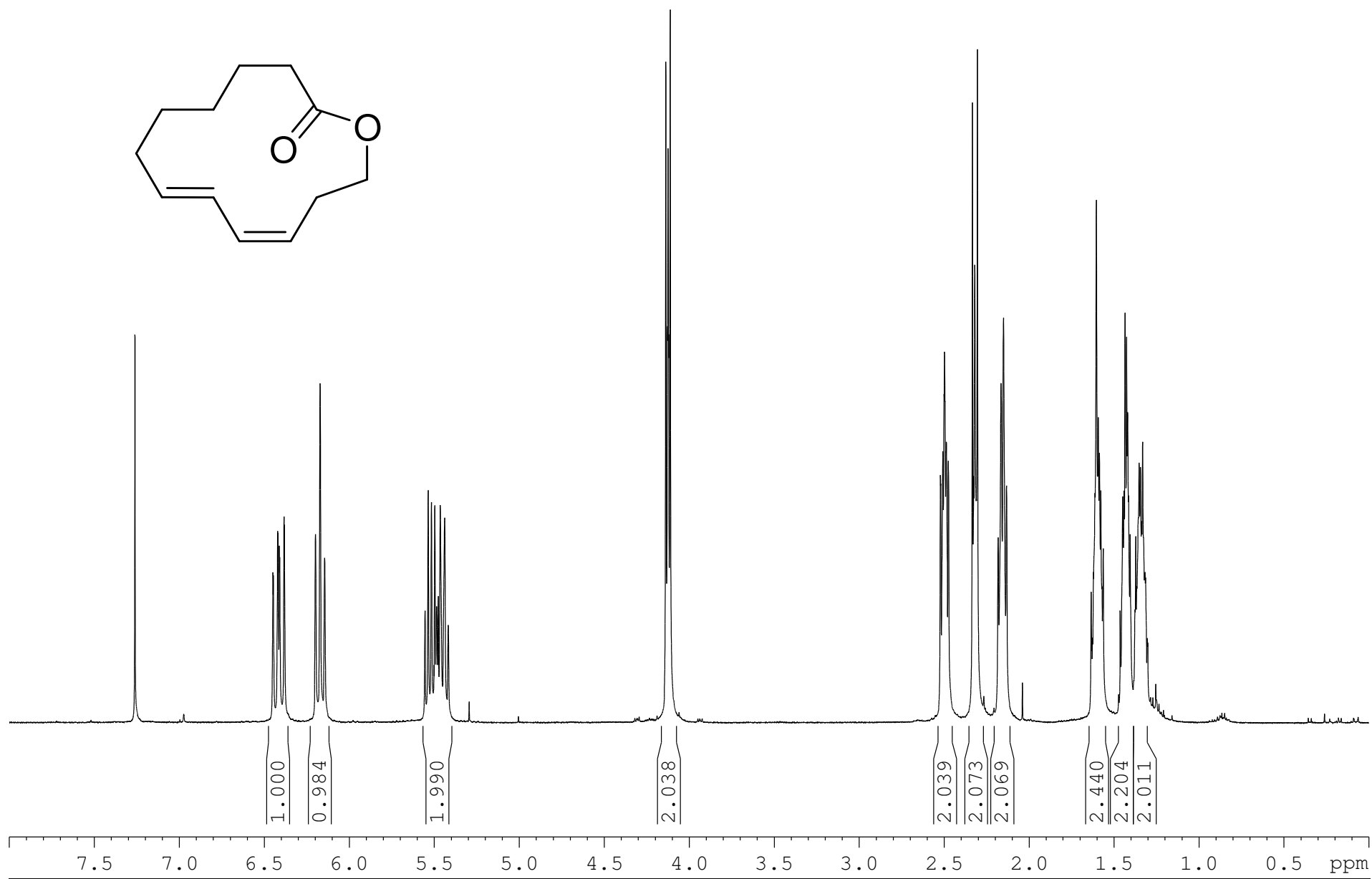
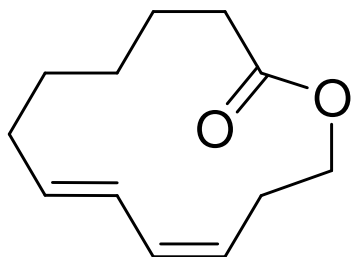


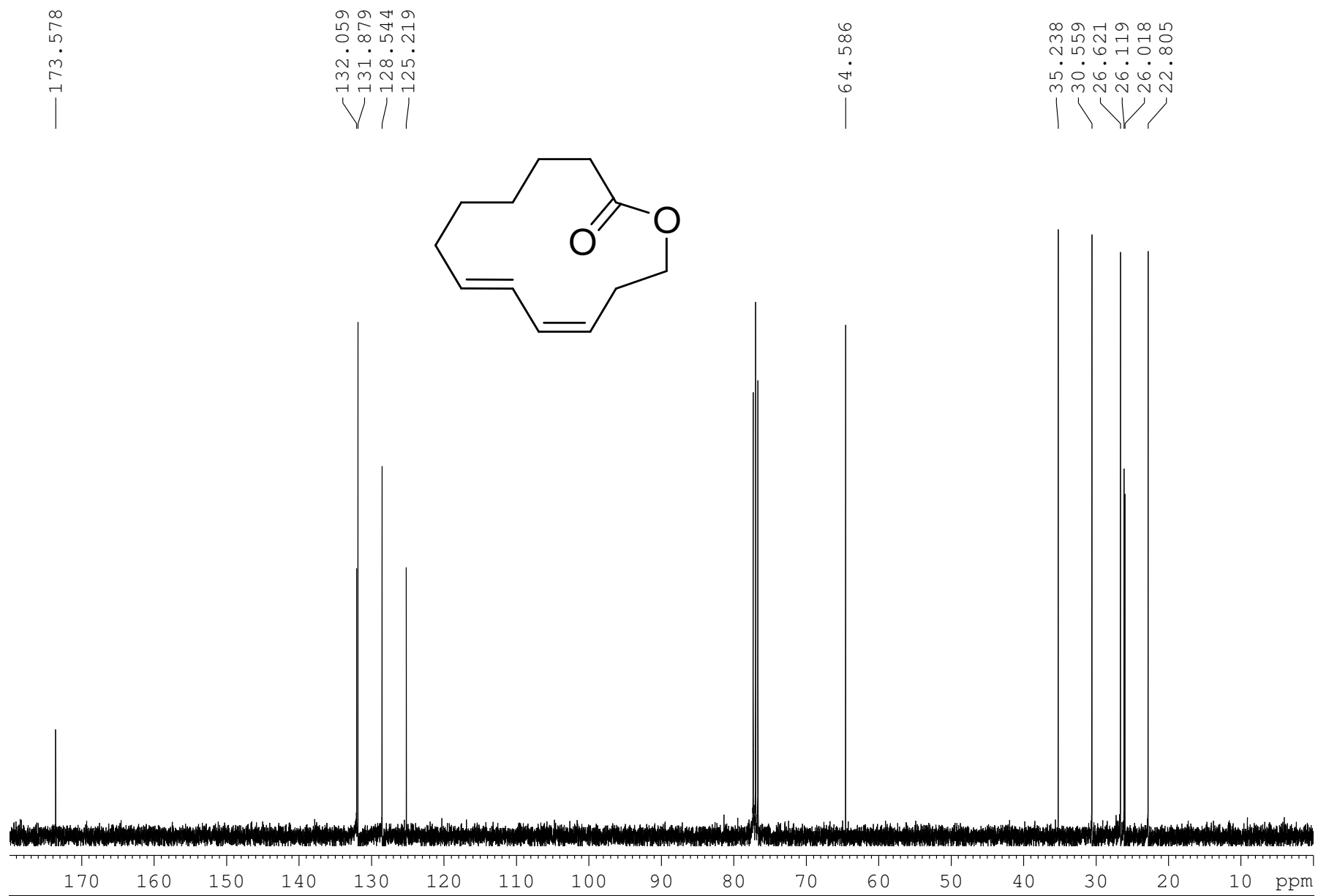


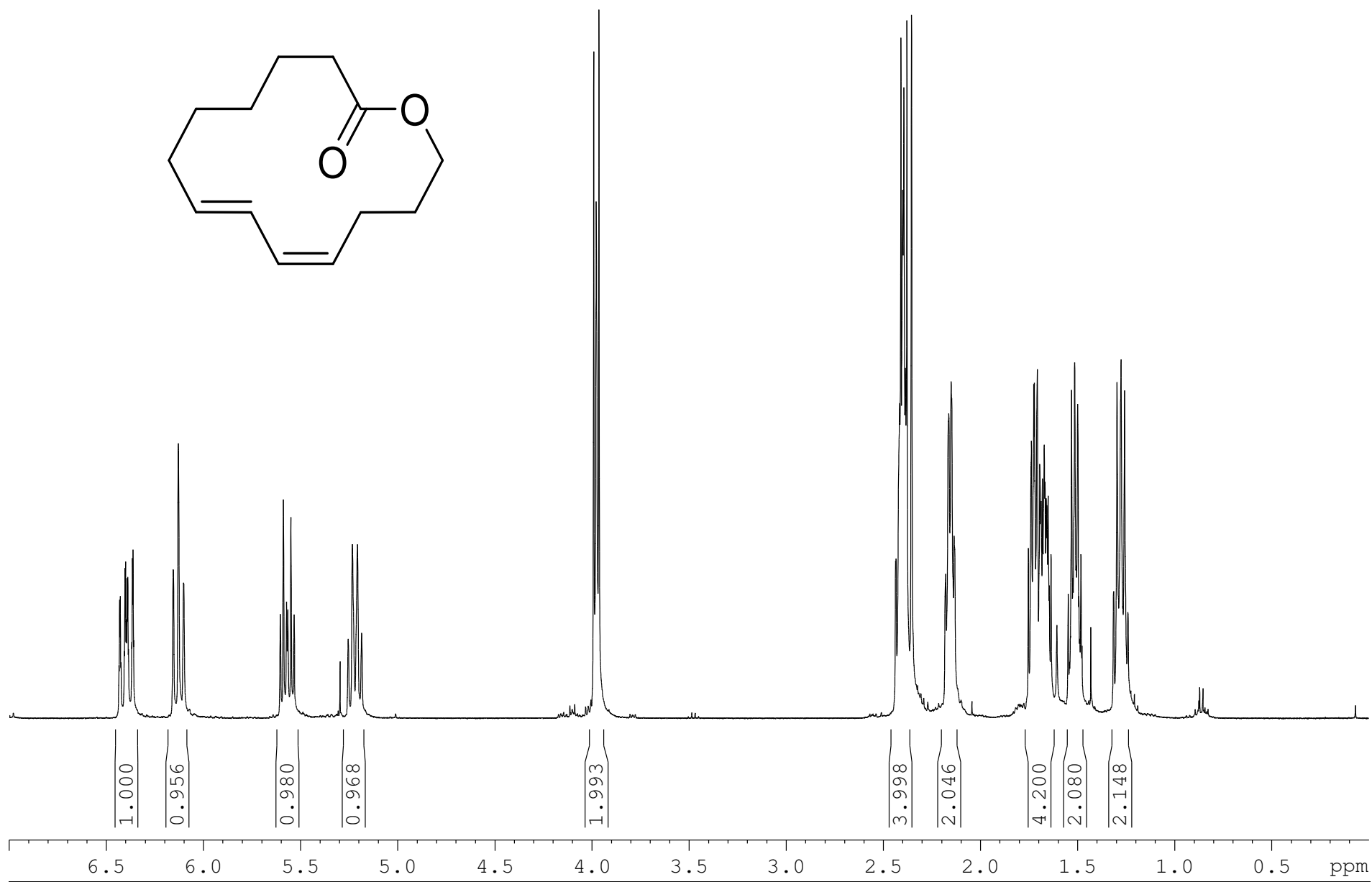
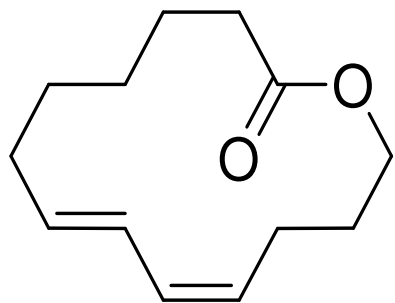


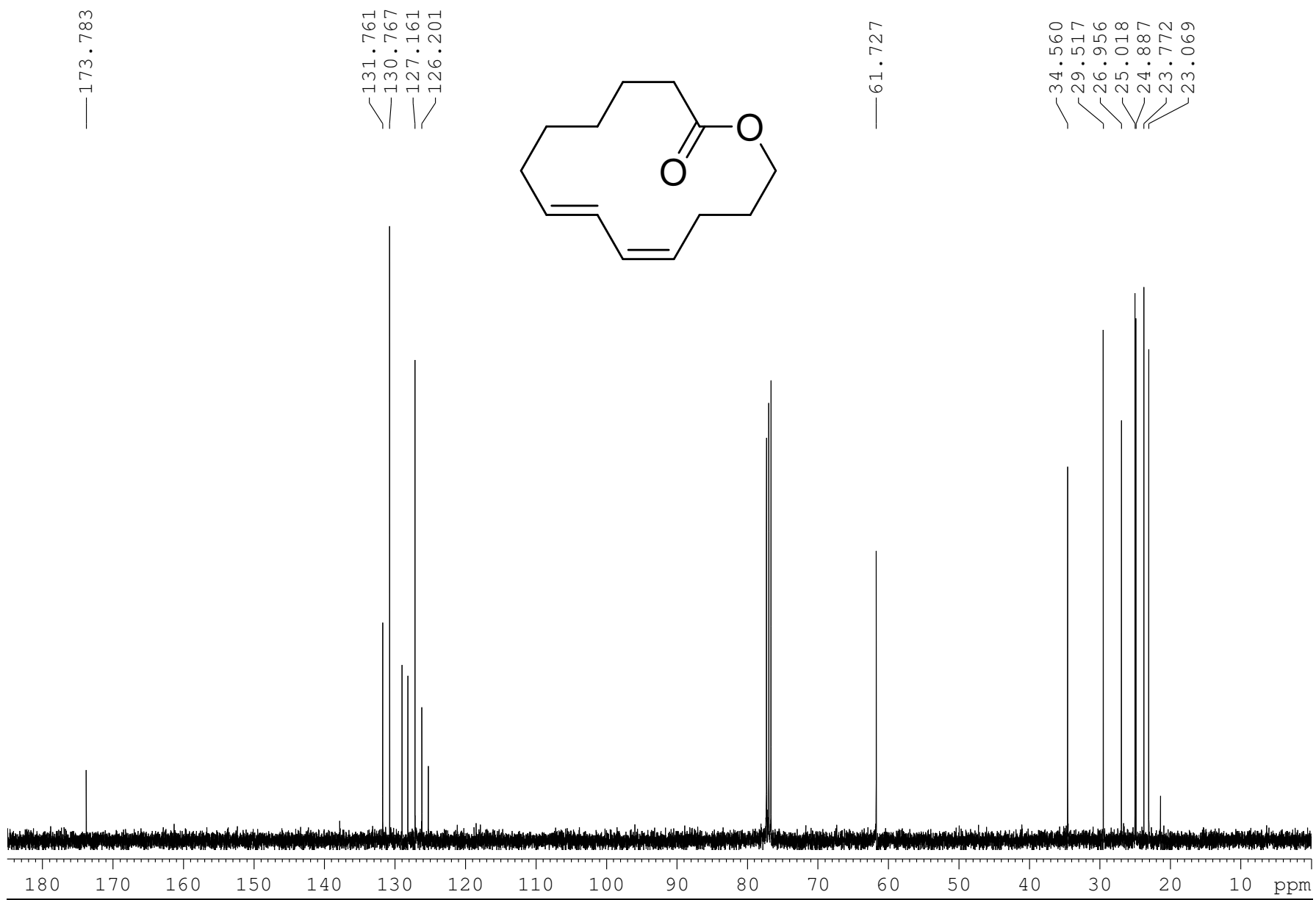


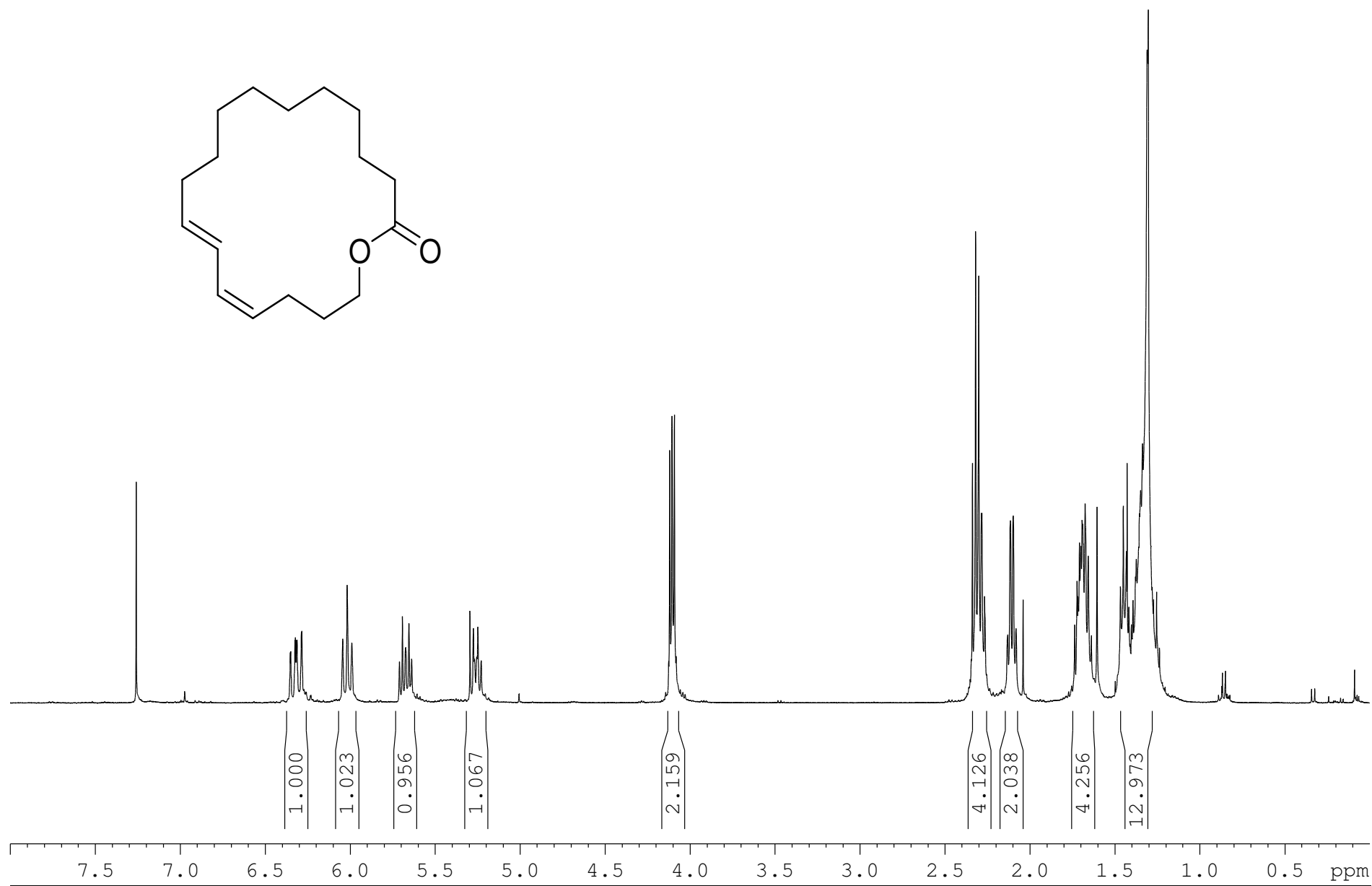
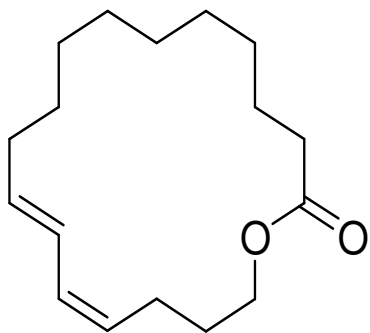


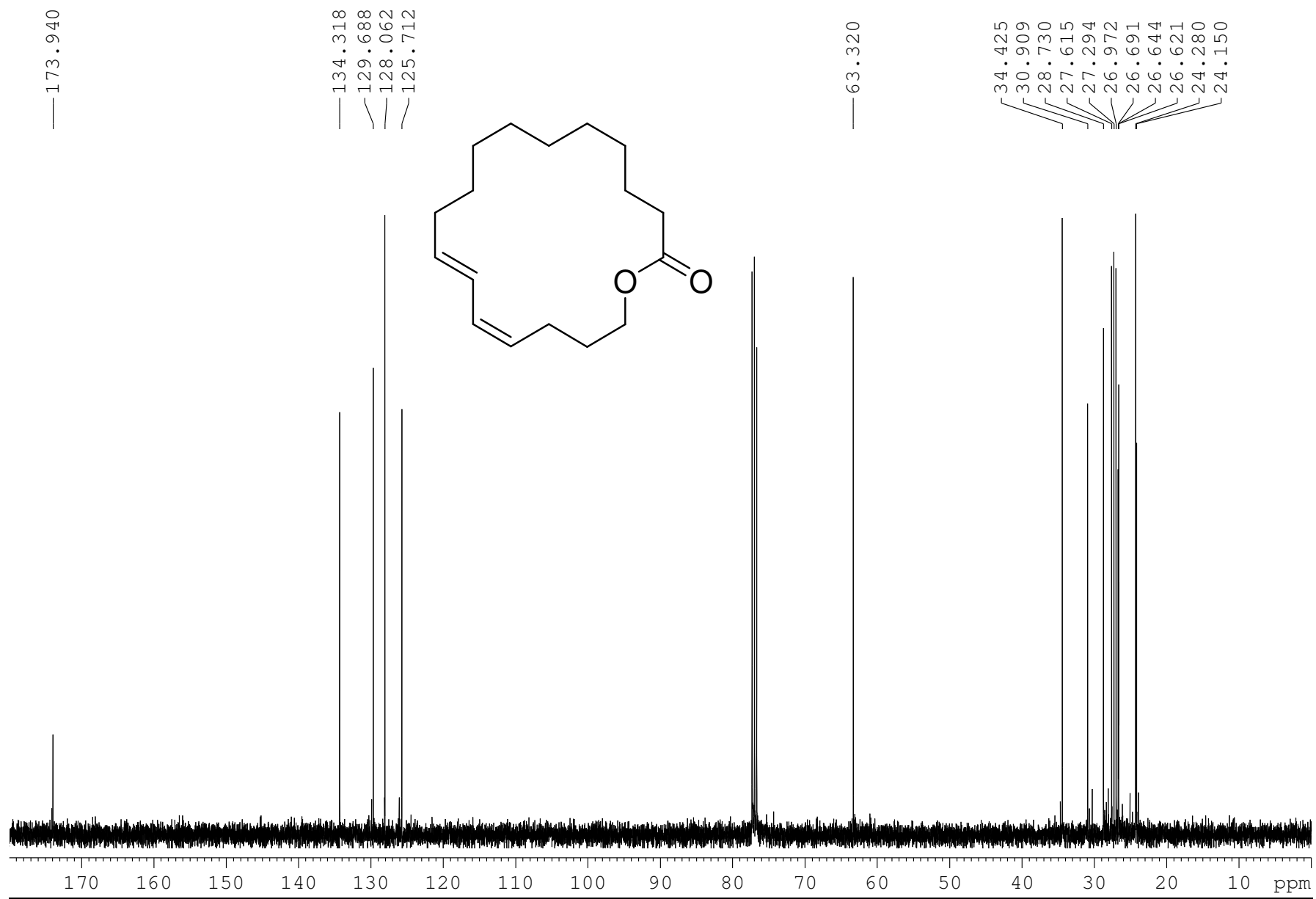


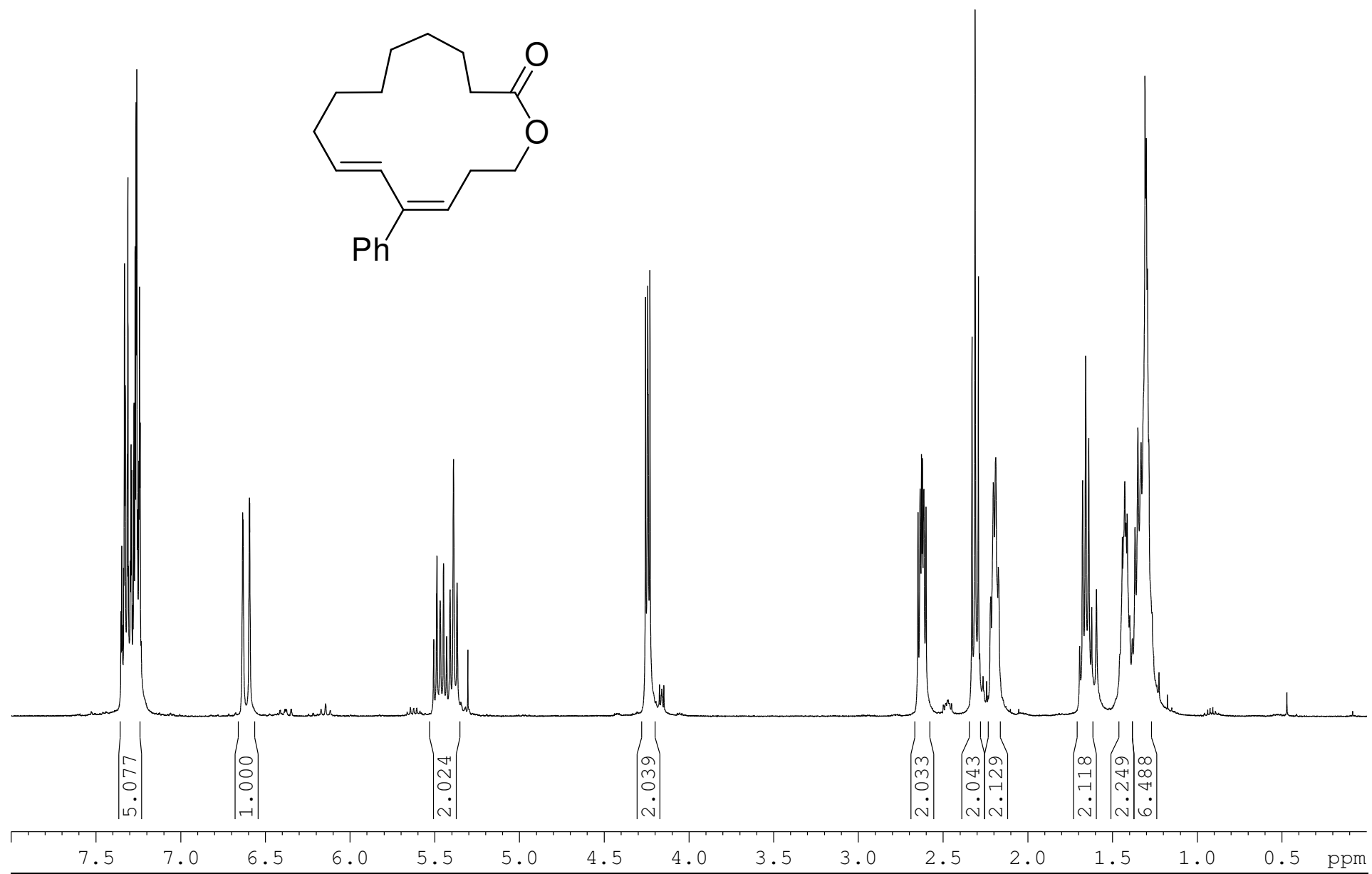


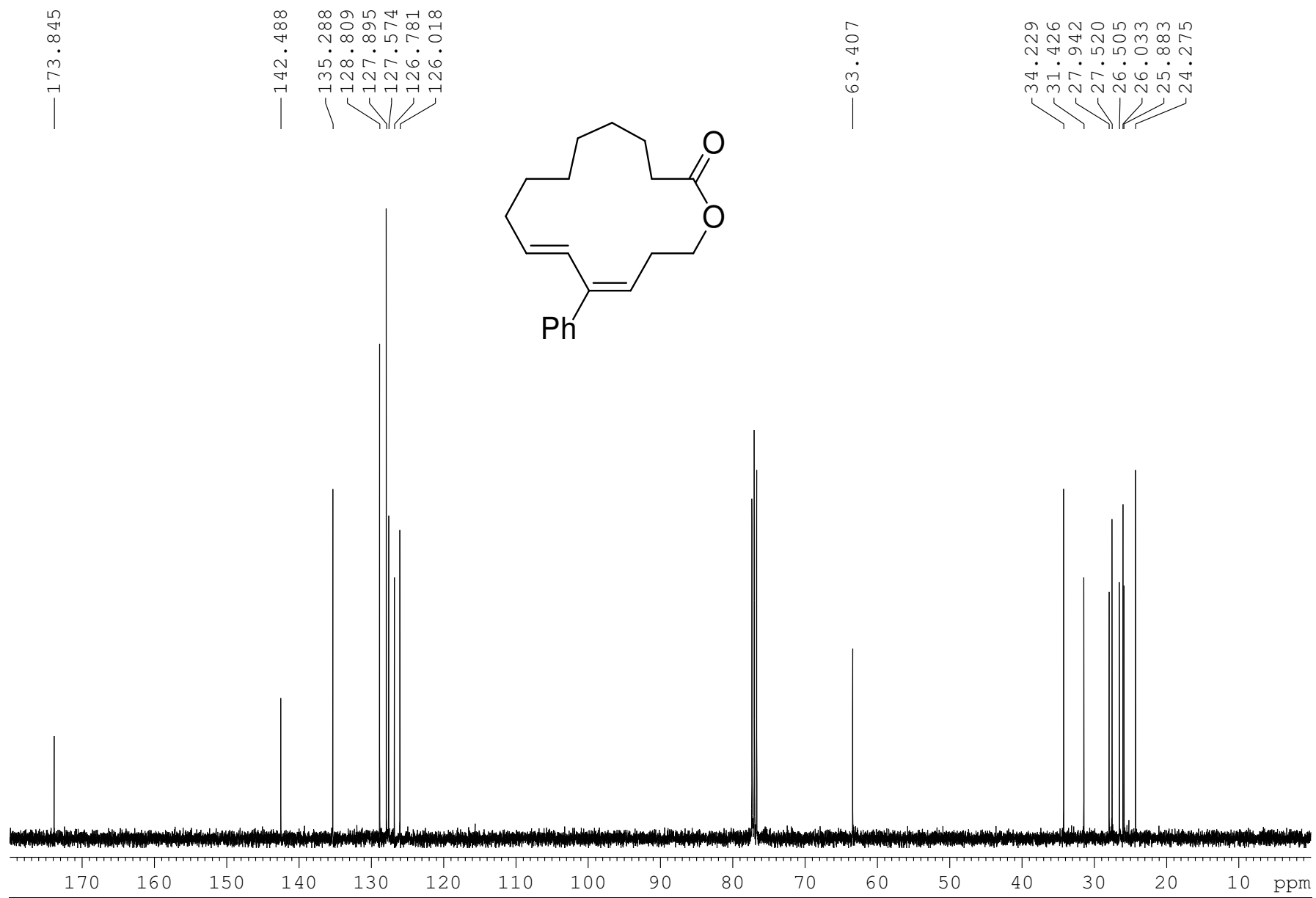


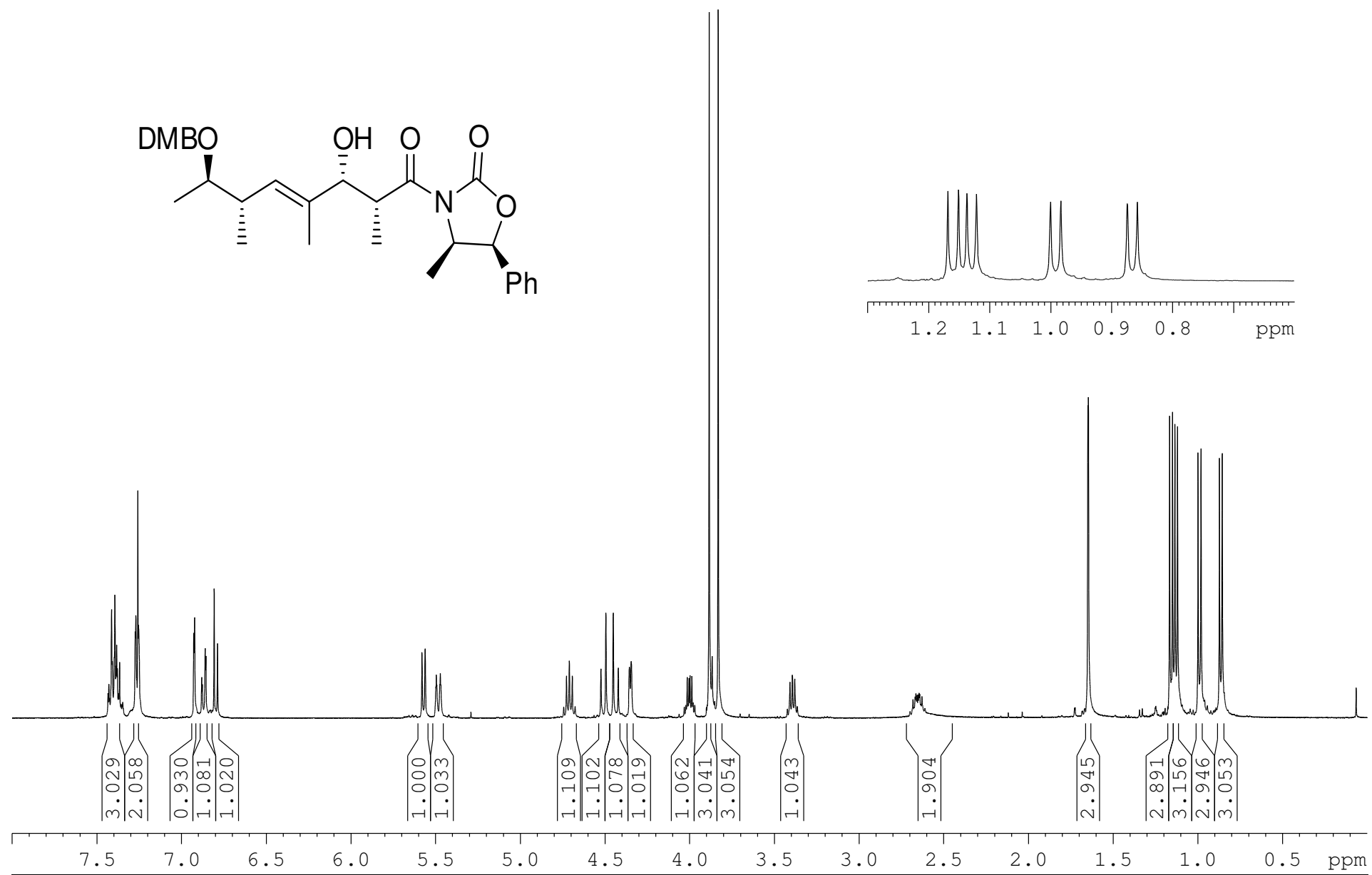


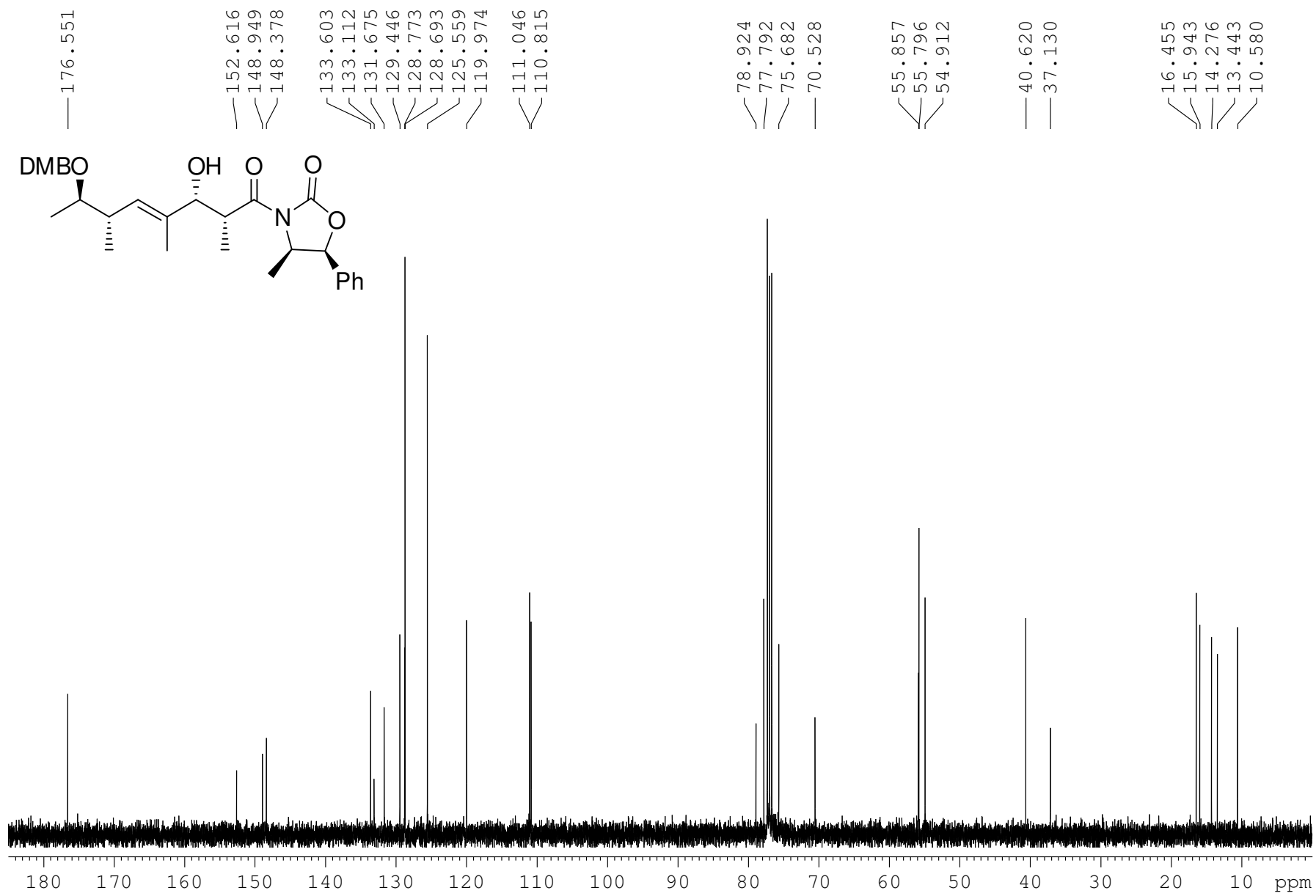


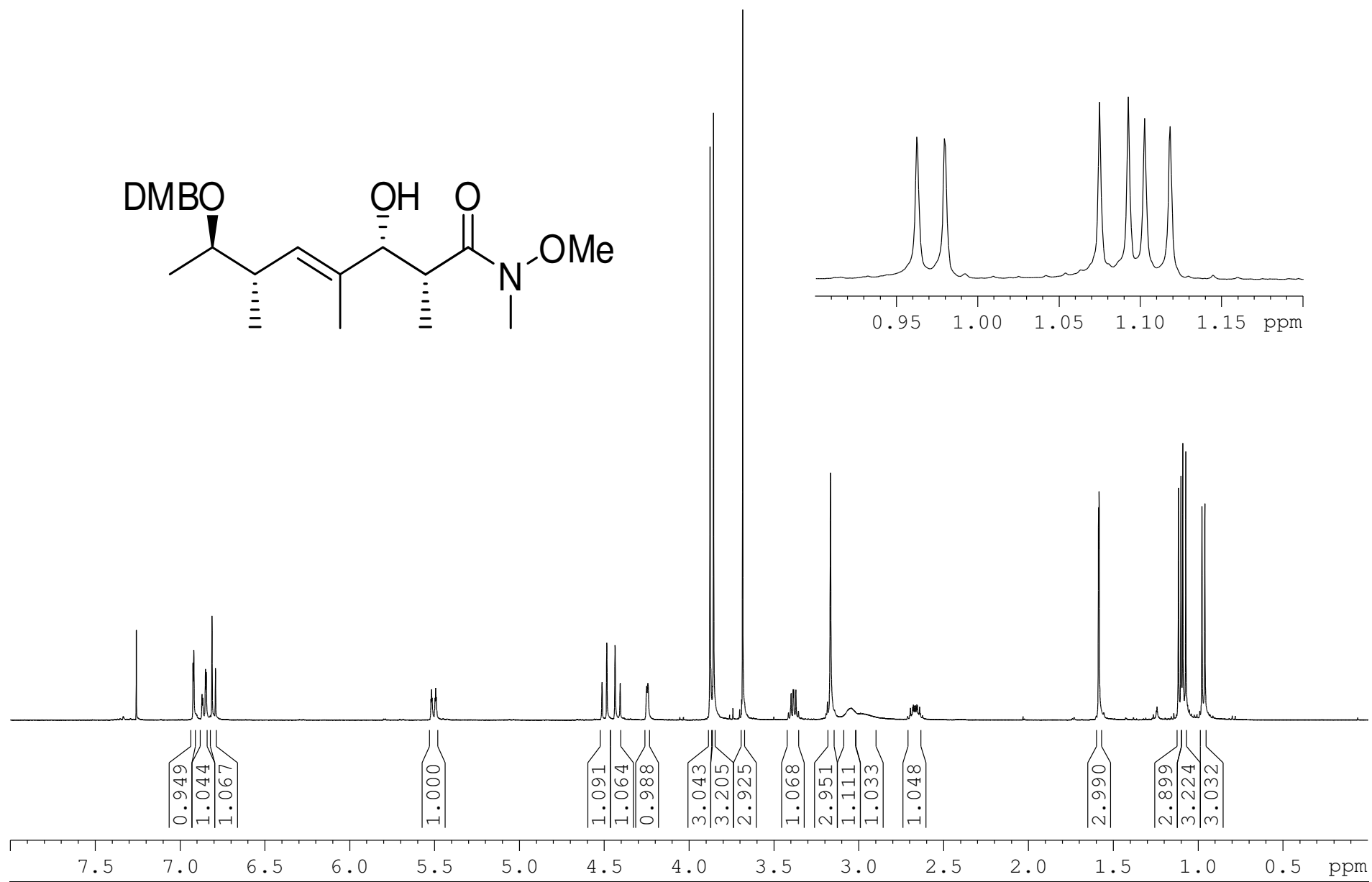


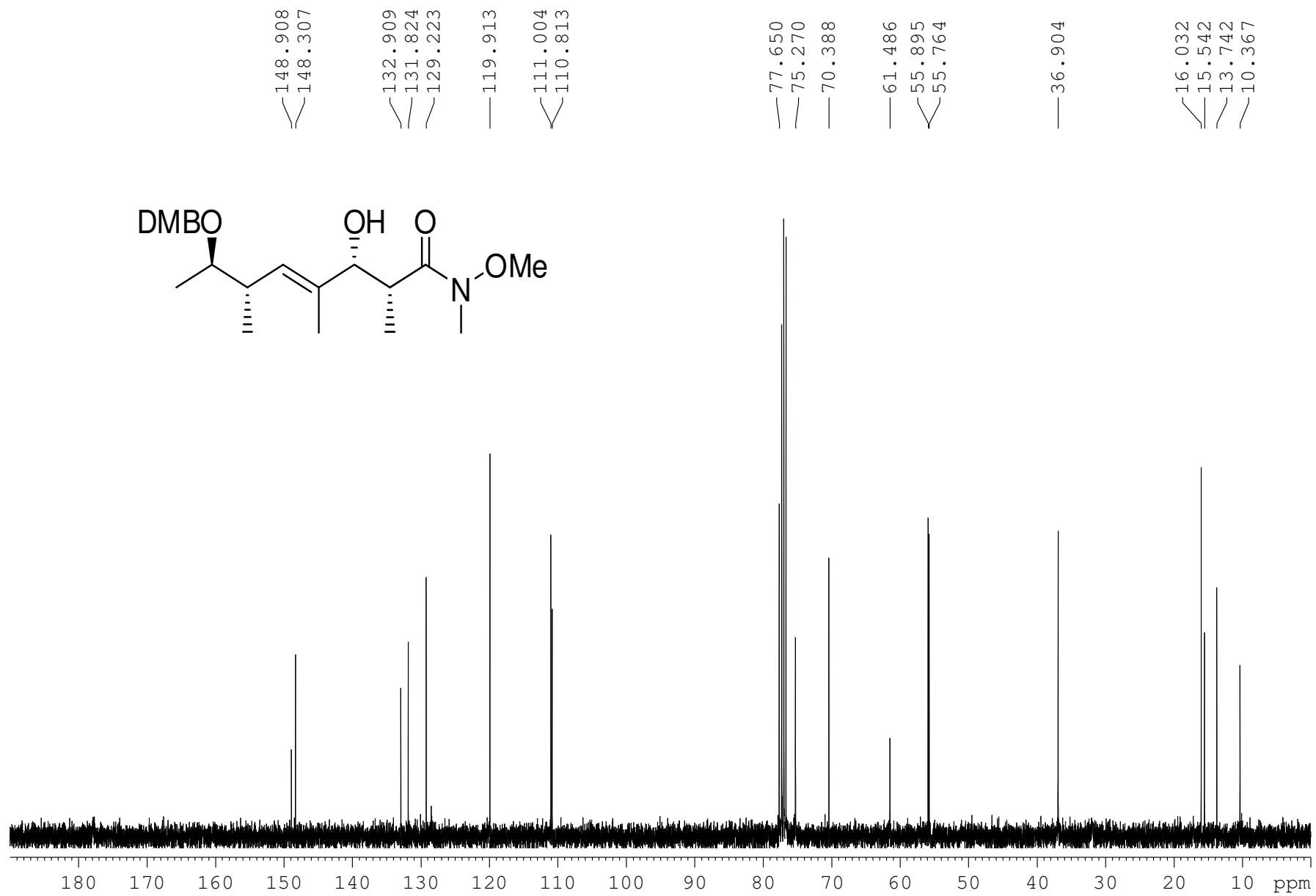


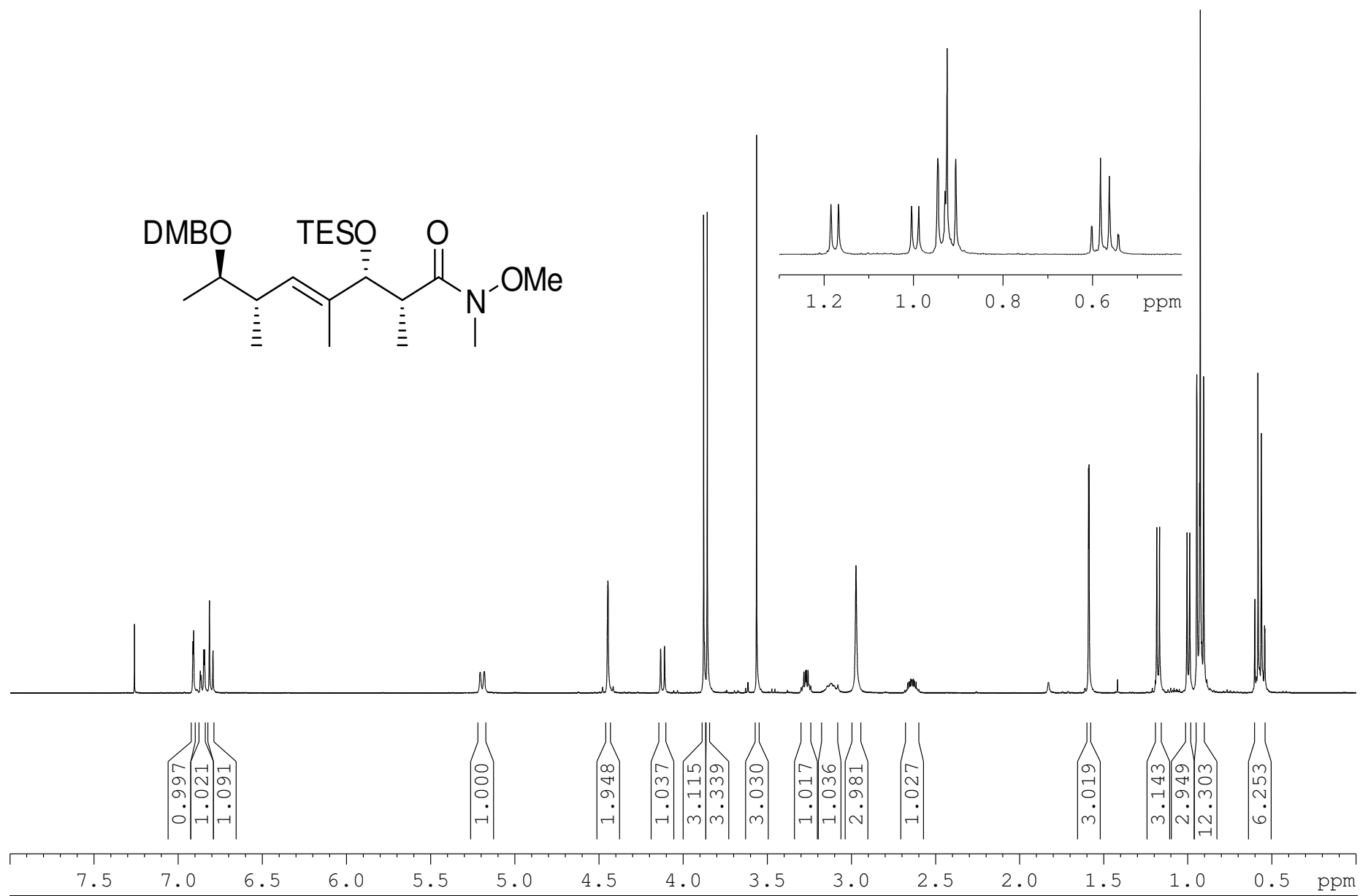












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148.270

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131.819
130.417

119.856

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110.788

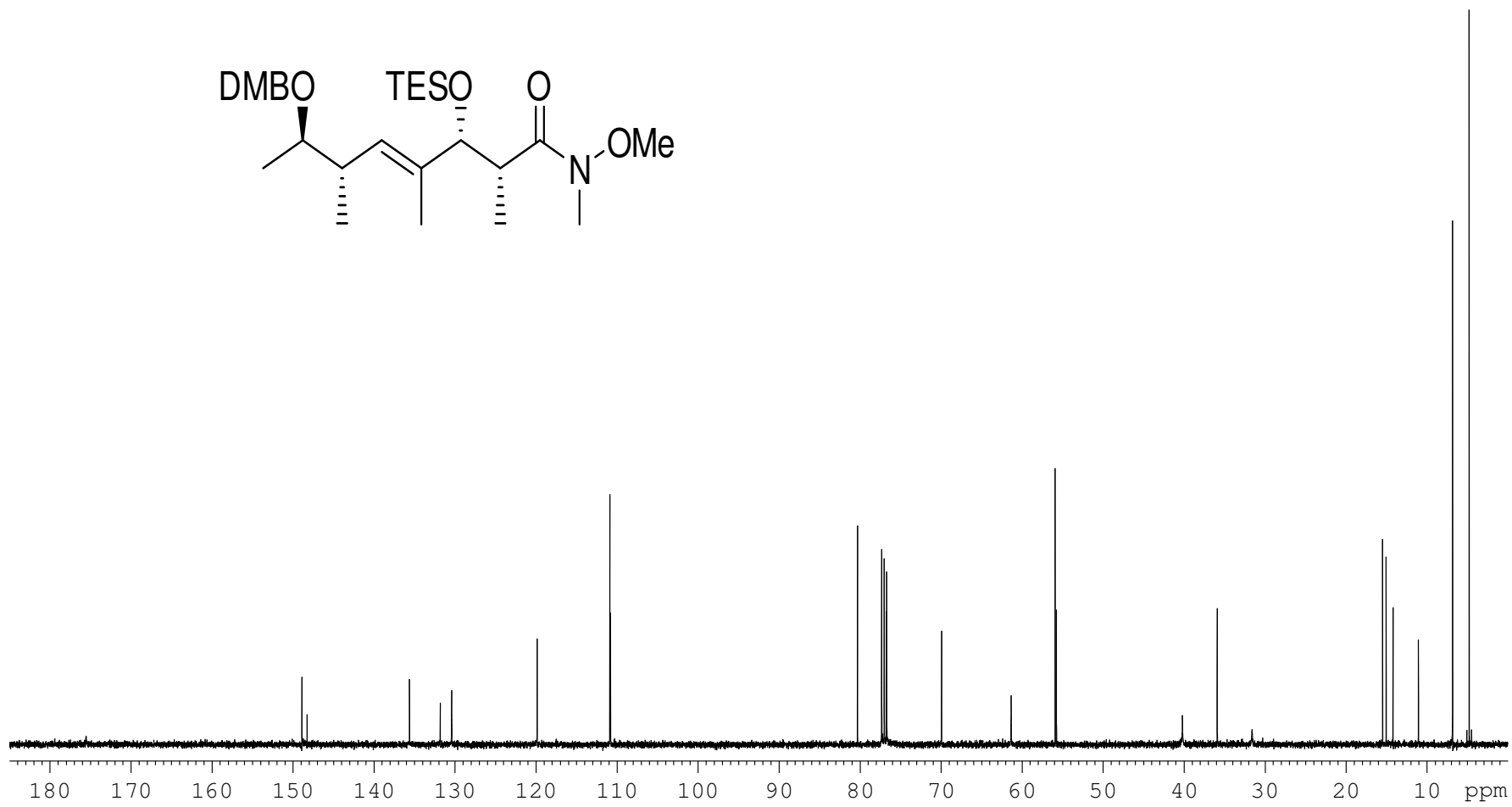
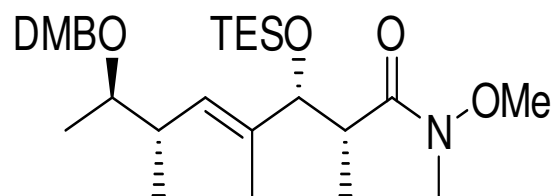
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76.761

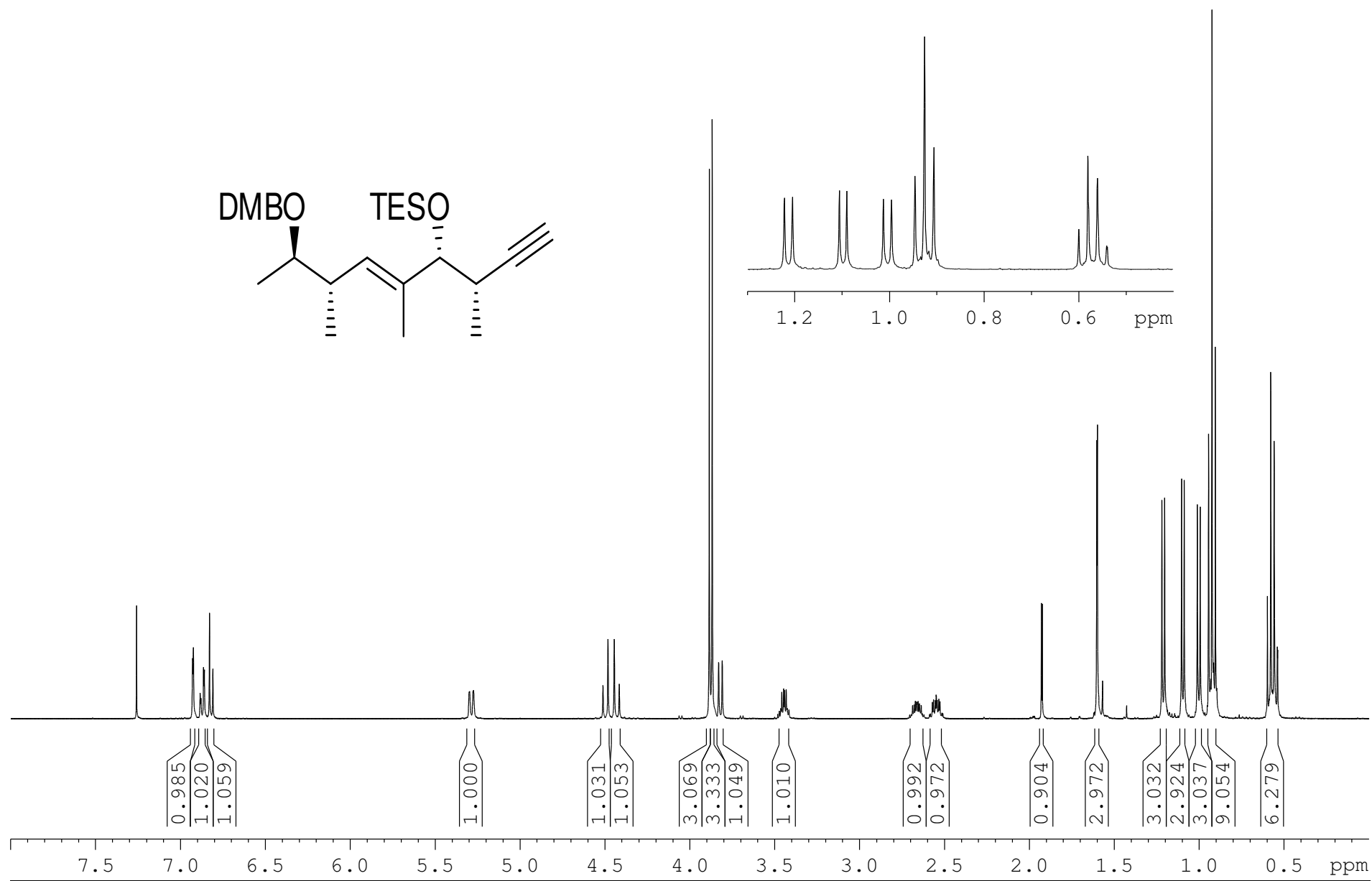
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11.045
6.837
4.778





148.895
148.323

135.879
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119.900

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36.599

31.254

17.716
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15.255
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6.829
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