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Supporting Information

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Intermolecular Oxidative Enolate Heterocoupling

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General Procedures. All reactions were carried out under a nitrogen atmosphere with dry solvents under anhydrous conditions, unless otherwise noted. Dry tetrahydrofuran (THF), dichloromethane, dimethylformamide (DMF), methanol, toluene, and benzene were obtained by passing commercially available pre-dried, oxygen-free formulations through activated alumina columns. Yields refer to chromatographically and spectroscopically (^{1}H NMR) homogeneous materials, unless otherwise stated. Reagents were purchased at the highest commercial quality and used without further purification, unless otherwise stated. Reactions were monitored by thin-layer chromatography (TLC) carried out on 0.25 mm E. Merck silica gel plates (60F-254) using UV light as visualizing agent and either an ceric ammonium molybdate in aqueous H_2SO_4 or *p*-anisaldehyde in ethanol/aqueous H_2SO_4/CH_3CO_2H and heat as developing agents. NMR spectra were recorded on either Bruker DRX 600, DRX 500, or AMX 400 instruments, and calibrated using residual undeuterated solvent as an internal reference. The following abbreviations were used to explain the multiplicities: s = singlet, d = doublet, t = triplet, q = quartet, m = multiplet, quin = quintuplet, sext = sextet, sep =

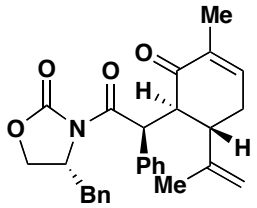
septet, a = apparent, b = broad. IR spectra were recorded on a Perkin-Elmer Spectrum BX spectrometer. High resolution mass spectra (HRMS) were recorded on an Agilent Mass spectrometer using ESI-TOF (electrospray ionization-time of flight). Melting points (m.p.) are uncorrected and were recorded on a Fisher-Johns 12-144 melting point apparatus. Optical rotations were obtained on a Perkin-Elmer 431 Polarimeter. Chiral HPLC was performed on a Shimandzu Sc110A VP using a Chiralpak AS column.

Intermolecular oxidative heterocoupling. General procedures.

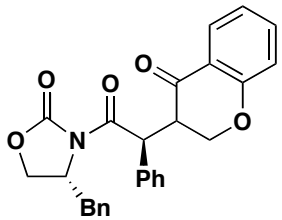
Procedure A: Oxazolidinone or oxindole (0.10 mmol, 1.0 equiv) and carbonyl compound (0.10 mmol, 1.0 equiv) were dissolved in benzene (1.0 mL) and the solvent removed *in vacuo*. This process was repeated a second time (azeotropic water removal). The starting materials were then dissolved in THF (340 μL, 0.3 *M*), and the solution was cooled to –78 °C. A solution of LDA (0.50 *M* in THF, 428 μL, 2.1 equiv) was added dropwise by syringe over 30 sec. The reaction was allowed to stir for 30 minutes at –78 °C, and was then warmed to ambient temperature. After 5 min of stirring 23 °C, a solution of $Fe(acac)_3$ (0.50 *M*, 408 μL, 2.0 equiv) was added all at once (less than 1 sec addition time). The reaction was stirred at ambient temperature for 20 min and was then quenched by the addition of 1 *N* HCl (1 mL). The aqueous layer was partitioned with EtOAc (2 mL), separated, and then extracted twice with EtOAc (2 mL). The organic portions were combined, washed with brine (5 mL), dried over anhydrous $MgSO_4$, filtered, and concentrated *in vacuo*. Flash chromatography (silica gel) of the crude reaction afforded pure coupled product. *Note: This procedure can be performed on gram scale (see entry 3).*

Procedure B: Oxazolidinone (0.33 mmol, 1.0 equiv) and powdered lithium chloride (1.64 mmol, 5.0 equiv) were taken up in benzene (1.0 mL) and the solvent removed *in vacuo*. This process was repeated a second time (azeotropic water removal). To this mixture was added toluene (546 μL, 0.6 *M*), and the resulting solution was cooled to –78 °C. A solution of LDA (0.50 *M* in THF, 759 μL, 1.15 equiv) was added by syringe down the sides of the reaction vessel over 10 sec. After stirring at –78 °C for 10 min, the solution was warmed to 0 °C for 10 min (color changes from pale to bright yellow), and then cooled to –78 °C for 5 min. In a separate reaction vessel, the carbonyl compound (0.57 mmol, 1.75 equiv) was dissolved in benzene (1.0 mL) and the solvent removed *in vacuo*. This process was repeated a second time. To this was added toluene (546 μL, 0.6 *M*), and the solution was cooled to –78 °C. A solution of LDA (0.50 *M* in THF, 1.2 mL, 1.85 equiv) was added by syringe down the sides of the reaction vessel over 10 sec and the resulting solution was stirred at –78 °C for 25 min. At this time, the carbonyl enolate solution was transferred, *via* canula, into the oxazolidinone enolate solution. The reaction vessel was stirred at –78 °C for an additional 5 min at which time a –78 °C solution of copper(II)-2-ethylhexanoate (0.3 *M* in toluene, 3.0 mL, 2.75 equiv) was transferred into the reaction vessel *via* canula. Immediately following addition, the vessel was quickly removed from the –78 °C bath and placed into a room temperature water bath, where the color changed from light blue to brown. The reaction was stirred for 20 min and was subsequently quenched by the addition of 5% aqueous NH_4OH (5 mL). The aqueous layer was partitioned with EtOAc (5 mL), separated, and then extracted twice with EtOAc (2 mL). The organic portions were combined, washed with brine (5 mL),

dried over anhydrous $MgSO_4$, filtered, and concentrated *in vacuo*. Flash chromatography (silica gel) of the crude reaction afforded pure coupled product. *Note: This procedure can be performed on gram scale (see entry 11).*

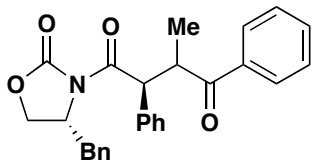


Entry 1, benzyl oxazolidinone – carvone adduct: Procedure A (0.68 mmol scale); yield = 52% (*dr* = 2.7:1, major diastereomer presented); colorless needles; m.p. = 146 – 147 °C; R_f = 0.36 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = –9.6 ($CHCl_3$, *c* = 0.40); IR (film) ν_{max} 1774, 1691, 1454, 1366, 1284, 1208, 1108 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.15 – 7.29 (m, 8 H), 6.90 (ad, *J* = 6.0 Hz, 2 H), 6.59 (bs, 1 H), 5.40 (d, *J* = 10.2 Hz, 1 H), 4.78 (s, 1 H), 4.77 (t, *J* = 8.4 Hz, 1 H), 4.68 (s, 1 H), 4.18 (t, *J* = 8.4 Hz, 1 H), 4.06 (dd, *J* = 8.7, 2.6 Hz, 1 H), 3.55 (dd, *J* = 10.1, 4.0 Hz, 1 H), 3.07 (dd, *J* = 13.5, 2.7 Hz, 1 H), 2.63 – 2.65 (m, 2 H), 2.55 (dd, *J* = 8.8, 6.8 Hz, 1 H), 2.42 (bd, *J* = 20.5 Hz, 1 H), 1.72 (s, 3 H), 1.61 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 199.1, 172.0, 153.1, 144.8, 141.7, 135.0 (2), 134.7, 129.5 (2), 129.4 (2), 128.8 (2), 128.5 (2), 127.9, 127.1, 112.3, 65.8, 55.2, 52.8, 50.0, 44.2, 37.1, 28.0, 21.3, 16.0; HRMS (ESI-TOF) calcd. for $C_{28}H_{30}NO_4$ [M + H^+] 444.2196, found 444.2187. Structure verified by X-ray crystallography. See CCDC 617245-617247.

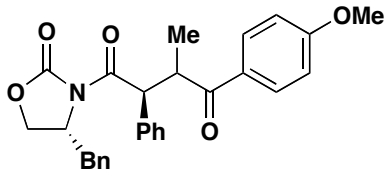


Entries 2–3, benzyl oxazolidinone – 4-chromanone adduct: Procedure A (0.51 mmol scale); yield = 59% (*dr* = 2.8:1, major diastereomer presented); white foam; R_f = 0.40 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = +130 ($CHCl_3$, *c* = 0.88); IR (film) ν_{max} 1780, 1687, 1605, 1480, 1458, 1388, 1213 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.83 (d, *J* = 7.7 Hz, 1 H), 7.47 (t, *J*

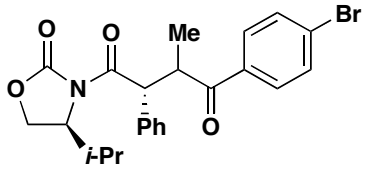
= 8.2 Hz, 1 H), 7.34 – 7.40 (m, 3 H), 7.22 – 7.28 (m, 5 H), 7.05 (t, *J* = 3.6 Hz, 2 H), 7.01 (t, *J* = 7.6 Hz, 1 H), 6.95 (d, *J* = 8.4 Hz, 1 H), 5.8 (d, *J* = 6.8 Hz, 1 H), 5.02 (t, *J* = 11.1 Hz, 1 H), 4.76 – 4.80 (m, 1 H), 4.36 (dd, *J* = 11.3, 4.6 Hz, 1 H), 4.25 (t, *J* = 8.4 Hz, 1 H), 4.08 (dd, *J* = 9.0, 2.6 Hz, 1 H), 3.34 – 3.38 (m, 1 H), 3.23 (dd, *J* = 13.4, 3.3 Hz, 1 H), 2.57 (dd, *J* = 13.3, 9.6 Hz, 1 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 192.9, 171.8, 161.8, 152.5, 136.0, 134.9, 134.3, 129.3 (2), 129.0 (4), 128.9 (2), 127.9, 127.3, 127.2, 121.4, 120.8, 117.8, 69.3, 65.9, 54.9, 50.1, 46.3, 37.5; HRMS (ESI-TOF) calcd. for $C_{27}H_{23}NO_5Na$ [M + Na^+] 464.1468, found 464.1478. *Note: Entry 3 was performed on larger than one gram scale (3.72 mmol), proceeding in 60% yield, dr = 2.6:1, with no experimental alterations necessary.*



Entry 4, benzyl oxazolidinone – propiophenone adduct: Procedure A (0.34 mmol scale); yield = 57% (*dr* = 2.8:1, major diastereomer presented); white foam; R_f = 0.28 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = +10 ($CHCl_3$, *c* = 0.46); IR (film) ν_{max} 1779, 1679, 1454, 1351, 1325, 1200, 1106, 974 cm^{-1}; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.79 (d, *J* = 7.2 Hz, 2 H), 7.47 (t, *J* = 7.5 Hz, 3 H), 7.36 (t, *J* = 7.8 Hz, 2 H), 7.15 – 7.24 (m, 6 H), 6.90 (d, *J* = 6.6 Hz, 2 H), 5.58 (d, *J* = 10.2 Hz, 1 H), 4.79 – 4.84 (m, 1 H), 4.48 (dq, *J* = 10.2, 6.9 Hz, 1 H), 4.24 (t, *J* = 8.6 Hz, 1 H), 4.10 (dd, *J* = 9.0, 2.9 Hz, 1 H), 3.02 (dd, *J* = 13.6, 3.3 Hz, 1 H), 2.60 (dd, *J* = 13.7, 8.6 Hz, 1 H), 1.36 (d, *J* = 6.9 Hz, 3 H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 201.9, 172.7, 152.6, 136.5,136.2, 134.6, 132.9,129.5 (2), 129.3 (2), 128.8 (2), 128.4 (4), 128.1 (2), 127.5, 127.2, 65.6, 54.8, 51.3, 44.5, 37.1 17.4; HRMS (ESI-TOF) calcd. for $C_{27}H_{26}NO_4$ [M + H^+] 428.1856, found 428.1859.

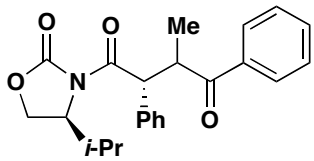


Entry 5, benzyl oxazolidinone – 4'-methoxypropiophenone adduct: Procedure A (0.17 mmol scale); yield = 67% (*dr* = 2.5:1, major diastereomer presented); white foam; R_f = 0.17 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = +2.8 ($CHCl_3$, *c* = 0.94); IR (film) ν_{max} 1778, 1671, 1599, 1352, 1322, 1261, 1202, 1173, 1105, 975 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.80 (dd, *J* = 11.6, 2.8 Hz, 2 H), 7.48 (d, *J* = 7.3 Hz, 2 H), 7.13 – 7.26 (m, 6 H), 6.90 (d, *J* = 6.7 Hz, 2 H), 6.83 (dd, *J* = 11.7, 2.8 Hz, 2 H), 5.57 (d, *J* = 10.1 Hz, 1 H), 4.79 – 4.84 (m, 1 H), 4.44 (dq, *J* = 10.2, 6.8 Hz, 1 H), 4.24 (t, *J* = 8.3 Hz, 1 H), 4.09 (dd, *J* = 9.0, 2.8 Hz, 1 H), 3.82 (s, 3 H), 3.02 (dd, *J* = 13.6, 3.4 Hz, 1 H), 2.60 (dd, *J* = 13.6, 8.5 Hz, 1 H), 1.34 (d, *J* = 6.8 Hz, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 200.2, 172.9, 163.3, 152.3, 136.4 (2), 134.7, 130.5 (2), 129.5 (2), 129.4 (2), 128.8 (2), 128.4 (2), 127.4, 127.2, 113.6 (2), 65.6, 55.4, 54.8, 51.4, 44.0, 37.1, 17.5; HRMS (ESI-TOF) calcd. for $C_{28}H_{28}NO_5$ [M + H^+] 458.1962, found 458.1961.

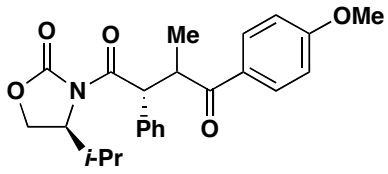


Entry 6, isopropyl oxazolidinone – 4'-bromopropiophenone adduct: Procedure A (0.20 mmol scale); yield = 55% (*dr* = 2.5:1, major diastereomer presented); colorless plates; m.p. = 177 – 179 °C; R_f = 0.36 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = –3.8 ($CHCl_3$, *c* = 0.35); IR (film) ν_{max} 1779, 1680, 1584, 1386, 1321, 1198, 975 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.63 (d, *J* = 8.6 Hz, 2 H), 7.48 (t, *J* = 8.7 Hz, 2 H), 7.37 (d, *J* = 8.0 Hz, 2 H), 7.16 (t, *J* = 7.7 Hz, 2 H), 7.09 (t, *J* = 7.3 Hz, 1 H), 5.59 (d, *J* = 10.3 Hz, 1 H), 4.52 – 4.55 (m, 1 H), 4.38 (dq, *J* = 10.3, 6.8 Hz, 1 H), 4.28 (t, *J* = 8.8 Hz, 1

H), 4.12 (dd, *J* = 9.1, 3.2 Hz, 1 H), 2.11 – 2.19 (m, 1 H), 1.31 (d, *J* = 6.8 Hz, 3 H), 0.79 (d, *J* = 7.1 Hz, 3 H), 0.36 (d, *J* = 6.9 Hz, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 201.1, 172.7, 153.1, 136.4, 135.5, 131.7 (2), 129.7 (2), 129.1 (2), 128.4 (2), 128.0, 127.6, 62.9, 58.1, 51.7, 43.9, 27.8, 17.7, 17.4, 13.9; HRMS (ESI-TOF) calcd. for $C_{23}H_{25}BrNO_4$ [M + H^+] 458.0961, found 458.0968. Structure verified by X-ray crystallography. See CCDC 617245-617247.

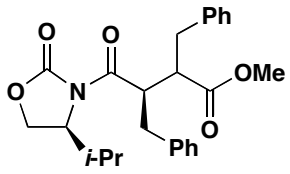


Entry 7, isopropyl oxazolidinone – propiophenone adduct: Procedure A (0.20 mmol scale); yield = 66% (*dr* = 2.1:1, major diastereomer presented); colorless oil; R_f = 0.33 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = –25 ($CHCl_3$, *c* = 0.35); IR (film) ν_{max} 1777, 1681, 1374, 1325, 1199, 1102, 975 cm^{-1}; ^{1}H NMR (600 MHz, $CDCl_3$) δ 7.78 (d, *J* = 7.3 Hz, 2 H), 7.46 (t, *J* = 7.4 Hz, 1 H), 7.40 (d, *J* = 7.3 Hz, 2 H), 7.35 (t, *J* = 7.7 Hz, 2 H), 7.16 (t, *J* = 7.8 Hz, 2 H), 7.08 (t, *J* = 7.4 Hz, 1 H), 5.63 (d, *J* = 10.3 Hz, 1 H), 4.52 – 4.55 (m, 1 H), 4.45 (dq, *J* = 10.2, 6.8 Hz, 1 H), 4.29 (t, *J* = 8.8 Hz, 1 H), 4.11 (dd, *J* = 9.1, 3.2 Hz, 1 H), 2.12 – 2.19 (m, 1 H), 1.33 (d, *J* = 6.8 Hz, 3 H), 0.79 (d, *J* = 7.1 Hz, 3 H), 0.36 (d, *J* = 6.9 Hz, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 201.9, 172.9, 153.2, 136.6 (2), 132.8, 129.2 (2), 128.4 (2), 128.3 (2), 128.1 (2), 127.4, 62.8, 58.0, 51.5, 44.0, 27.8, 17.7, 17.5, 13.9; HRMS (ESI-TOF) calcd. for $C_{23}H_{26}NO_4$ [M + H^+] 380.1856, found 380.1848.

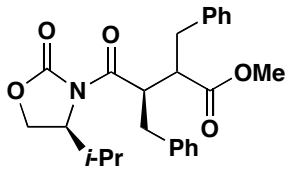


Entry 8, isopropyl oxazolidinone – 4'-methoxypropiophenone adduct: Procedure A (0.20 mmol scale); yield = 65% (*dr* = 2.3:1, major

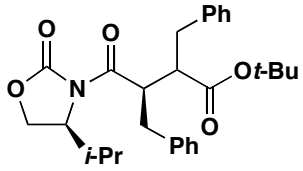
diastereomer presented); colorless oil; R_f = 0.23 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = –5.8 ($CHCl_3$, *c* = 0.62); IR (film) ν_{max} 1778, 1671, 1600, 1374, 1320, 1260, 1201, 1023, 976 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.78 (d, *J* = 8.9 Hz, 2 H), 7.40 (d, *J* = 7.4 Hz, 2 H), 7.15 (t, *J* = 7.5 Hz, 2 H), 7.08 (t, *J* = 7.3 Hz, 1 H), 6.82 (d, *J* = 8.9 Hz, 2 H), 5.61 (d, *J* = 10.3 Hz, 1 H), 4.52 – 4.55 (m, 1 H), 4.39 (dq, *J* = 10.3, 6.8 Hz, 1 H), 4.27 (t, *J* = 8.8 Hz, 1 H), 4.11 (dd, *J* = 9.0, 3.2 Hz, 1 H), 3.81 (s, 3 H), 2.12 –2.18 (m, 1 H), 1.31 (d, *J* = 6.8 Hz, 3 H), 0.79 (d, *J* = 7.0 Hz, 3 H), 0.36 (d, *J* = 6.9 Hz, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 200.3, 173.0, 163.3, 153.2, 136.8, 130.5 (2), 129.5, 129.2 (2), 128.3 (2), 127.3, 113.6 (2), 62.8, 58.0, 55.4, 51.5, 43.5, 27.8, 17.7, 17.6, 13.9; HRMS (ESI-TOF) calcd. for $C_{24}H_{27}NO_5Na$ [M + Na^+] 432.1781, found 432.1763.



Entry 9, isopropyl oxazolidinone – methyldihydrocinnamate adduct (upper diastereomer): Procedure B (0.19 mmol scale); yield = 51% (*dr* = 1.0:1, minor diastereomer); colorless oil; R_f = 0.48 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = +73 ($CHCl_3$, *c* = 0.38); IR (film) ν_{max} 1778, 1736, 1696, 1386, 1320, 1199 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.25 – 7.28 (m, 4H), 7.16 – 7.21 (m, 6 H), 4.63 (ddd, *J* = 10.1, 7.8, 5.7 Hz, 1 H), 4.05 (ddd, *J* = 8.1, 3.9, 2.3 Hz, 1 H), 3.99 (dd, *J* = 8.9, 2.2 Hz, 1 H), 3.65 (t, *J* = 8.5 Hz, 1 H), 3.54 (s, 3 H), 3.24 (ddd, *J* = 11.4, 7.9, 3.8 Hz, 1 H), 3.09 (dd, *J* = 13.3, 11.3 Hz, 1 H), 2.84 – 2.94 (m, 3 H), 2.24 – 2.30 (m, 1 H), 0.87 (d, *J* = 7.1 Hz, 3 H), 0.84 (d, *J* = 6.9 Hz, 3H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 173.5, 173.3, 153.5, 138.6, 138.1, 129.1 (2), 128.3 (2), 128.4 (2), 128.3 (2), 126.6, 126.5, 63.3, 58.9, 51.5, 59.4, 48.8, 36.8, 36.5, 28.8, 18.0, 14.8; HRMS (ESI-TOF) calcd. for $C_{25}H_{30}NO_5$ [M + H^+] 424.2118, found 424.2129.

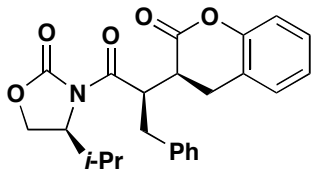


Entry 9, isopropyl oxazolidinone – methyldihydrocinnamate adduct (lower diastereomer): Procedure B (0.19 mmol scale); yield = 51% (*dr* = 1.0:1, major diastereomer); colorless oil; R_f = 0.40 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = +101 ($CHCl_3$, *c* = 0.40); IR (film) ν_{max} 1780, 1733, 1694, 1385, 1199 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.14 (d, *J* = 7.4 Hz, 4H), 7.18 – 7.28 (m, 6 H), 4.64 (ddd, *J* = 10.0, 7.8, 5.8 Hz, 1 H), 4.02 (ddd, *J* = 8.0, 3.7, 2.3 Hz, 1 H), 3.95 (dd, *J* = 8.9, 2.1 Hz, 1 H), 3.61 (t, *J* = 8.5 Hz, 1 H), 3.54 (s, 3 H), 3.14 – 3.18 (m, 1 H), 3.00 – 3.12 (m, 3 H), 2.84 (dd, *J* = 13.0, 10.2 Hz, 1 H), 2.18 – 2.23 (m, 1 H), 0.83 (d, *J* = 7.1 Hz, 3 H), 0.81 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 174.5, 173.9, 153.2, 138.4, 137.8, 129.2 (2), 128.8 (2), 128.4 (2), 128.3 (2), 126.7, 126.6, 63.0, 58.7, 51.6, 48.9, 45.3, 37.0, 35.4, 28.7, 17.9, 14.8; HRMS (ESI-TOF) calcd. for $C_{25}H_{30}NO_5$ [M + H^+] 424.2118, found 424.2126.

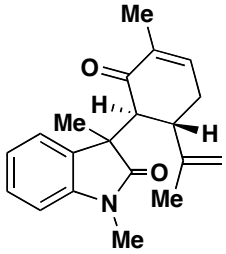


Entries 10–11, Isopropyl oxazolidinone – *t*-butyldihydrocinnamate adduct (mixture of diastereomers): Procedure B (0.19 mmol scale); yield = 51% (*dr* = 1.6:1); colorless oil; R_f = 0.54 (silica gel, 1:1 hexanes:Et_2O); IR (film) ν_{max} 1779, 1723, 1693, 1386, 1365, 1200, 1148 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.16 – 7.29 (m, 20 H), 4.60 – 4.68 (m, 2 H), 3.98 – 4.02 (m, 2 H), 3.93 – 3.96 (m, 2 H), 3.56 – 3.59 (m, 2 H), 2.79 – 3.13 (m, 10 H), 2.18 – 2.30 (m, 2 H), 1.29/1.24 (2s, 18 H), 0.81 – 0.86 (m, 12 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 174.8, 173.9, 173.1, 172.0, 153.4, 153.1, 138.7 (2), 138.4, 137.9, 129.2 (2), 129.1 (6), 128.3 (2), 128.2 (2), 128.1 (4), 126.6, 126.5, 126.4 (2), 81.0,

80.7, 63.2, 62.9, 58.9, 58.7, 51.1, 49.9, 47.0, 45.5, 37.2, 37.1, 36.9, 36.0, 28.8 (3), 28.6 (3), 27.9, 27.7, 18.0 (2), 14.9, 14.7; HRMS (ESI-TOF) calcd. for $C_{28}H_{34}NO_5$ [M + H^+] 466.2588, found 466.2584. *Note: Entry 11 was performed on larger than one gram scale (4.34 mmol), proceeding in 53% yield, dr = 1.6:1, with no experimental alterations necessary.*

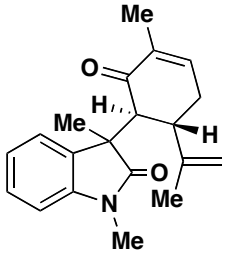


Entry 12, isopropyl oxazolidinone – dihydrocoumarin adduct: Procedure B (0.19 mmol scale); yield = 54% (*dr* = 2.4:1, major diastereomer presented); colorless pipes; m.p. = 189 – 191 °C; R_f = 0.51 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = +74 ($CHCl_3$, *c* = 0.19); IR (film) ν_{max} 1734, 1696, 1458, 1387, 1234, 1144 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.27 – 7.32 (m, 4H), 7.19 – 7.24 (m, 2 H), 7.16 (d, *J* = 8.8 Hz, 1 H), 7.07 (td, *J* = 7.5, 1.0 Hz, 1H), 7.01 (d, *J* = 8.1 Hz, 1H), 4.90 (dt, *J* = 8.3, 6.7 Hz, 1 H), 4.24 (ddd, *J* = 8.3, 3.7, 2.5 Hz, 1 H), 4.11 (dd, *J* = 9.1, 2.4 Hz, 1 H), 3.92 (t, *J* = 8.7 Hz, 1 H), 3.57 (dd, *J* = 15.3, 13.2 Hz, 1 H), 3.09 – 3.14 (m, 2 H), 3.98 (dd, *J* = 13.3, 8.9 Hz, 1 H) , 2.89 (dt, *J* = 12.9, 6.2 Hz, 1 H), 2.33 – 2.39 (m, 1 H), 0.95 (d, *J* = 6.8 Hz, 3 H), 0.90 (d, *J* = 8.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 174.5, 170.1, 153.4, 151.2, 137.4, 128.2 (2), 128.6 (2), 128.2, 128.0, 126.9, 124.4, 122.7, 116.6, 63.1, 58.8, 43.0, 40.7, 35.7, 28.4, 26.6, 18.0, 14.5; HRMS (ESI-TOF) calcd. for $C_{24}H_{25}NO_5Na$ [M + Na^+] 430.1625, found 430.1633. Structure verified by X-ray crystallography. See CCDC 617245-617247.

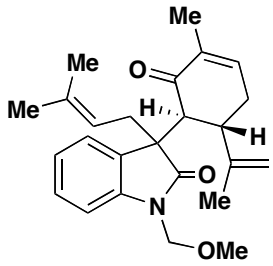


Entries 13–14, 1,3-dimethyloxindole – carvone adduct (upper diastereomer): Procedure A (0.54 mmol scale); yield = 60% (*dr* =

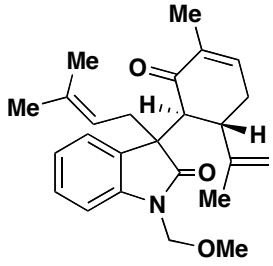
1.2:1, major diastereomer); white needles; m.p. = 99 – 102 °C; R_f = 0.28 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = – 79 ($CHCl_3$, *c* = 0.31); IR (film) ν_{max} 1711, 1657, 1611, 1492, 1471, 1376, 1112, 894 cm^{-1}; ^1H NMR (400 MHz, $CDCl_3$) δ 7.27 (td, *J* = 7.6, 1.3 Hz, 1H), 6.82 – 6.95 (m, 3 H), 6.34 (bs, 1 H), 4.67 (s, 1 H), 4.45 (s, 1 H), 3.23 (s, 3 H), 3.05 (d, *J* = 2.4 Hz, 1 H), 2.34 (d, *J* = 6.2 Hz, 1 H), 1.96 – 2.03 (m, 1 H), 1.83 (bs, 3 H), 1.71 – 1.78 (m, 1 H), 1.65 (s, 3 H), 1.43 (s, 3 H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 198.4, 179.1, 146.5, 143.7, 143.1, 135.9, 131.5, 128.3, 123.9, 121.7, 111.7, 107.8, 54.1, 51.0, 42.8, 27.8, 26.3, 23.7, 21.5, 16.2; HRMS (ESI-TOF) calcd. for $C_{20}H_{24}NO_2$ [M + H^+] 310.1801, found 310.1792. *Note: For entry 13, 2 equivalents of carvone were used resulting in 91% yield, dr = 1.2:1).*



Entries 13–14, 1,3-dimethyloxindole – carvone adduct (lower diastereomer): Procedure A (0.54 mmol scale); yield = 60% (*dr* = 1.2:1, minor diastereomer); colorless oil; R_f = 0.12 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = + 82 ($CHCl_3$, *c* = 0.84); IR (film) ν_{max} 1712, 1661, 1611, 1493, 1471, 1378, 1125, 896 cm^{-1}; ^1H NMR (500 MHz, $CDCl_3$) δ 7.26 (t, *J* = 7.7 Hz, 1H), 7.21 (d, *J* = 7.2 Hz, 1 H), 7.03 (t, *J* = 7.34 Hz, 1 H), 6.85 (d, *J* = 7.7 Hz, 1 H), 6.54 (bs, 1 H), 4.76 (s, 1 H), 4.73 (s, 1 H), 3.23 (s, 3 H), 3.07 (d, *J* = 5.6 Hz, 1 H), 2.62 (dd, *J* = 10.9, 5.4 Hz, 1 H), 2.25 – 2.26 (m, 2 H), 1.70 (s, 3 H), 1.68 (s, 3 H), 1.41 (s, 3 H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 197.9, 179.6, 147.3, 143.6, 142.0, 136.1, 133.2, 127.9, 122.7, 122.3, 112.4, 108.2, 55.4, 52.1, 43.5, 29.4, 26.3, 23.6, 20.6, 16.1; HRMS (ESI-TOF) calcd. for $C_{20}H_{22}NO_2$ [M – H]$^-$ 308.1656, found 308.1653. *Note: For entry 13, 2 equivalents of carvone were used resulting in 91% yield, dr = 1.2:1).*

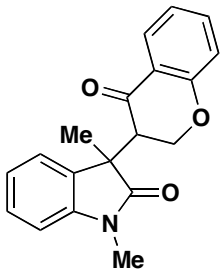


Entry 15, 1-methoxymethyl-3-prenyloxindole – carvone adduct (upper diastereomer): Procedure A (0.10 mmol scale); yield = 48% (*dr* = 1.0:1); colorless oil; R_f = 0.44 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = –41 ($CHCl_3$, *c* = 0.28); IR (film) ν_{max} 1718, 1654, 1611, 1488, 1466, 1347, 1092, 755 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.26 (t, *J* = 7.7 Hz, 1 H), 6.99 (d, *J* = 4.0 Hz, 1 H), 6.95 (t, *J* = 7.5 Hz, 1 H), 6.88 (d, *J* = 7.4 Hz, 1 H), 6.34 (bs, 1 H), 5.16 (d, *J* = 10.9 Hz, 1 H), 5.09 (d, *J* = 10.9 Hz, 1 H), 4.70 (s, 1 H), 4.52 (s, 1 H), 4.44 (t, *J* = 7.4 Hz, 1 H), 3.30 (s, 3 H), 3.12 (s, 1 H), 2.86 (dd, *J* = 14.3, 8.6 Hz, 1 H), 2.62 (dd, *J* = 14.3, 6.3 Hz, 1 H), 2.42 (d, *J* = 6.2 Hz, 1 H), 1.98 (dd, *J* = 19.7, 5.5 Hz, 1 H), 1.85 (d, *J* = 1.1 Hz, 3 H), 1.65 (s, 3 H), 1.48 (s, 3 H), 1.40 (s, 3 H), 1.36 – 1.40 (m, 1 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 198.4, 178.7, 146.6, 143.9, 142.3, 136.1, 135.5, 129.1, 128.5, 124.4, 122.0, 117.3, 111.7, 109.0, 71.5, 56.2, 56.0, 54.2, 42.7, 35.7, 27.7, 25.8, 21.6, 18.1, 18.2; HRMS (ESI-TOF) calcd. for $C_{25}H_{31}NO_3Na$ $[M + Na]^+$ 416.2196, found 416.2196.

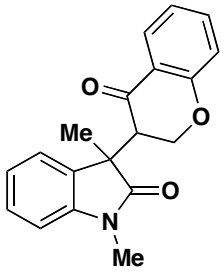


Entry 15, 1-methoxymethyl-3-prenyloxindole – carvone adduct (lower diastereomer): Procedure A (0.10 mmol scale); yield = 48% (*dr* = 1.0:1); colorless oil; R_f = 0.31 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = + 63 ($CHCl_3$, *c* = 0.43); IR (film) ν_{max} 1723, 1662, 1611, 1488, 1467, 1348, 1091, 755 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.26 (t, *J* = 7.8 Hz, 1 H), 7.19 (d, *J* = 7.3 Hz, 1 H), 7.07 (t, *J* = 7.4 Hz, 1 H), 7.02 (d, *J* = 7.8 Hz, 1 H), 6.50 (bs, 1 H), 5.13 (d, *J* = 10.9 Hz, 1 H), 5.03 (d, *J* = 10.9 Hz, 1 H), 4.74 (s, 1 H), 4.66

(s, 1 H), 4.61 (t, *J* = 7.4 Hz, 1 H), 3.31 (s, 3 H), 3.09 (d, *J* = 3.6 Hz, 1 H), 2.74 (dd, *J* = 13.8, 8.6 Hz, 1 H), 2.66 (dd, *J* = 13.8, 6.3 Hz, 1 H), 2.51 (d, *J* = 4.2 Hz, 1 H), 2.17 – 2.26 (m, 2 H), 1.75 (s, 3 H), 1.64 (s, 3 H), 1.44 (s, 3 H), 1.39 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 198.1, 178.7, 147.2, 142.8, 141.4, 136.6, 135.8, 130.3, 128.2, 123.4, 122.8, 117.4, 112.2, 109.3, 99.6, 71.5, 56.2, 55.7, 54.9, 42.7, 35.4, 28.7, 25.8, 18.0, 16.3; HRMS (ESI-TOF) calcd. for $C_{25}H_{31}NO_3$ $[M + Na]^+$ 416.2196, found 416.2197.

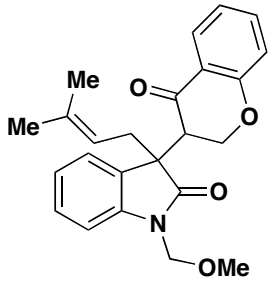


Entry 16, 1,3-dimethyloxindole – 4-chromanone adduct (upper diastereomer): Procedure A (0.16 mmol scale); yield = 72% (*dr* = 2.6:1, major diastereomer); white needles; m.p. = 141 – 144 °C; R_f = 0.40 (silica gel, 1:1 hexanes:Et_2O); IR (film) ν_{max} 1696, 1606, 1479, 1467, 1326, 1125, 1021, 929, 753 cm^{-1}; ^{1}H NMR (600 MHz, $CDCl_3$) δ 7.83 (dd, *J* = 7.9, 1.7 Hz, 1 H), 7.39 (t, *J* = 7.7 Hz, 1 H), 7.23 (td, *J* = 7.7, 1.1 Hz, 1 H), 7.02 (dd, *J* = 7.7, 1.0 Hz, 1 H), 6.97 (t, *J* = 7.9 Hz, 1 H), 6.88 (t, *J* = 7.2 Hz, 2 H), 6.78 (d, *J* = 8.2 Hz, 1 H), 4.48 (dd, *J* = 11.6, 4.7 Hz, 1 H), 4.35 (dd, *J* = 11.5, 10.3 Hz, 1 H), 3.39 (dd, *J* = 10.3, 4.8 Hz, 1 H), 3.23 (s, 3 H), 1.59 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 192.1, 179.1, 161.3, 143.1, 135.9, 132.6, 128.0, 127.1, 123.0, 122.4, 121.5, 121.3, 117.4, 108.2, 68.4, 51.1, 47.9, 26.3, 23.0; HRMS (ESI-TOF) calcd. for $C_{19}H_{18}NO_3$ $[M + H]^+$ 308.1281, found 308.1282.

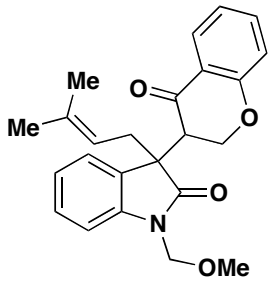


Entry 16, 1,3-dimethyloxindole – 4-chromanone adduct (lower diastereomer): Procedure A (0.16 mmol scale); yield = 72% (*dr* = 2.6:1, minor diastereomer); white powder; R_f = 0.26 (silica gel, 1:1

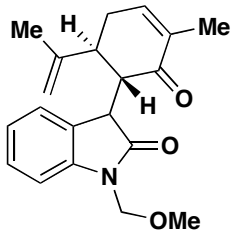
hexanes:Et_2O); IR (film) ν_{max} 1714, 1607, 1479, 1379, 1291, 1216, 1025, 928, 754 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.68 (dd, *J* = 7.9, 1.6 Hz, 1 H), 7.39 (t, *J* = 7.8 Hz, 1 H), 7.26 (t, *J* = 8.3 Hz, 1 H), 7.10 (d, *J* = 7.4 Hz, 1 H), 6.89 – 6.95 (m, 4 H), 4.86 (dd, *J* = 11.2, 4.9, Hz, 1 H), 4.65 (t, *J* = 11.2 Hz, 1 H), 3.51 (dd, *J* = 11.2, 4.9 Hz, 1 H), 3.31 (s, 3 H), 1.45 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 190.8, 179.6, 161.4, 144.2, 135.8, 131.2, 128.4, 127.3, 123.0, 122.0, 121.5, 121.2, 117.5, 108.4, 67.9, 52.3, 46.8, 42.1, 26.6; HRMS (ESI-TOF) calcd. for $C_{19}H_{18}NO_3$ $[M + H]^+$ 308.1281, found 308.1283.



Entry 17, 1-methoxymethyl-3-prenyloxindole – 4-chromanone adduct (upper diastereomer): Procedure A (0.10 mmol scale); yield = 73% (*dr* = 2.0:1, major diastereomer); yellow oil; R_f = 0.45 (silica gel, 1:1 hexanes:Et_2O); IR (film) ν_{max} 1718, 1606, 1480, 1466, 1349, 1327, 1093, 755 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.81 (dd, *J* = 7.9, 1.4 Hz, 1 H), 7.40 (t, *J* = 7.8 Hz, 1 H), 7.23 (t, *J* = 7.7 Hz, 1 H), 7.05 (t, *J* = 9.3 Hz, 2 H), 6.98 (t, *J* = 7.5 Hz, 1 H), 6.90 (t, *J* = 7.6 Hz, 1 H), 6.80 (d, *J* = 8.3 Hz, 1 H), 5.16 (d, *J* = 10.9 Hz, 1 H), 5.14 (d, *J* = 10.9 Hz, 1 H), 4.78 – 4.81 (m, 1 H), 4.55 (dd, *J* = 11.5, 4.8 Hz, 1 H), 4.45 (t, *J* = 11.5 Hz, 1 H), 3.50 (dd, *J* = 10.7, 4.7 Hz, 1 H), 3.36 (s, 3 H), 2.99 (dd, *J* = 14.1, 6.1 Hz, 1 H), 2.65 (dd, *J* = 14.1, 8.1 Hz, 1 H), 1.54 (s, 3 H), 1.48 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 192.1, 179.1, 161.2, 142.1, 136.4, 135.9, 130.3, 128.1, 127.2, 123.5, 122.7, 121.6, 121.3, 117.4, 116.7, 109.3, 71.5, 68.4, 56.2, 52.4, 50.5, 34.8, 25.9, 18.1; HRMS (ESI-TOF) calcd. for $C_{24}H_{25}NO_4Na$ $[M + Na]^+$ 414.1676, found 414.1678.

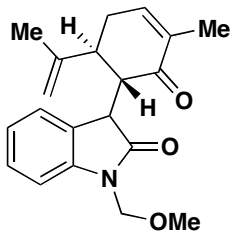


Entry 17, 1-methoxymethyl-3-prenyloxindole – 4-chromanone adduct (lower diastereomer): Procedure A (0.10 mmol scale); yield = 73% (*dr* = 2.0:1, minor diastereomer); colorless oil; R_f = 0.33 (silica gel, 1:1 hexanes:Et_2O); IR (film) ν_{max} 1721, 1607, 1480, 1466, 1350, 1088, 756 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.72 (dd, *J* = 7.9, 1.6 Hz, 1 H), 7.42 (t, *J* = 8.6 Hz, 1 H), 7.26 (t, *J* = 7.7 Hz, 1 H), 7.12 (d, *J* = 7.4 Hz, 1 H), 7.07 (d, *J* = 7.8 Hz, 1 H), 6.98 (t, *J* = 7.5 Hz, 1 H), 6.94 (t, *J* = 7.5 Hz, 1 H), 6.91 (d, *J* = 8.3 Hz, 1 H), 5.19 (d, *J* = 11.0 Hz, 1 H), 5.14 (d, *J* = 11.0 Hz, 1 H), 4.77 – 4.82 (m, 2 H), 4.61 (t, *J* = 10.8 Hz, 1 H), 3.54 (dd, *J* = 10.2, 4.7 Hz, 1 H), 3.40 (s, 3 H), 2.71 (dd, *J* = 13.8, 8.5 Hz, 1 H), 2.55 (dd, *J* = 13.8, 6.2 Hz, 1 H), 1.52 (s, 3 H), 1.48 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 190.8, 178.9, 161.3, 143.4, 136.3, 135.8, 129.1, 128.5, 127.4, 123.2, 122.5, 121.6, 121.4, 117.4, 116.3, 109.5, 71.9, 68.0, 56.2, 52.0, 51.7, 34.6, 25.9, 18.0; HRMS (ESI-TOF) calcd. for $C_{24}H_{25}NO_4Na$ $[M + Na]^+$ 414.1676, found 414.1677.

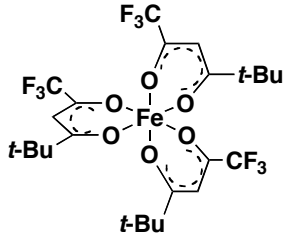


1-methoxymethyloxindole – 4-chromanone adduct (5, upper diastereomer): Procedure A (using Fe(*t*-butylCOCHCF$_3$)$_3$ instead of Fe(acac)$_3$, 0.06 mmol scale); yield = 83% (*dr* = 1.0:1); colorless oil; R_f = 0.36 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = + 120 ($CHCl_3$, *c* = 0.31); IR (film) ν_{max} 1721, 1607, 1480, 1466, 1350, 1088, 756 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 7.24 (t, *J* = 7.8 Hz, 1 H), 6.98 – 7.02 (m, 3 H), 6.75 (d, *J* = 5.8 Hz, 1 H), 5.12 (d, *J* = 10.9 Hz, 1 H), 5.00 (d, *J* = 10.9 Hz, 1 H), 4.62 (bs, 1 H), 4.42 (bs, 1 H), 4.24 (bs, 1 H), 3.39 (s, 3 H), 3.33 (dd, *J* = 13.5, 1.6 Hz, 1 H), 3.11 (bs, 1 H), 2.49 – 2.55 (m, 1 H), 2.28 (dt, *J* = 18.6, 4.6 Hz, 1 H), 1.79 (s, 3 H), 1.67 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$)

δ 198.3, 178.2, 144.4, 144.0, 143.2, 134.9, 127.7, 123.2, 122.2, 114.8, 109.3, 71.7, 56.4, 51.0, 46.4, 44.1, 31.5, 18.5, 16.1 (1 carbon missing); HRMS (ESI-TOF) calcd. for $C_{20}H_{23}NO_3Na$ $[M + Na]^+$ 348.1570, found 348.1565.

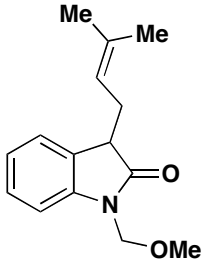


1-methoxymethyloxindole – 4-chromanone adduct (5, lower diastereomer): Procedure A (using Fe(*t*-butylCOCHCF$_3$)$_3$ instead of Fe(acac)$_3$, 0.06 mmol scale); yield = 83% (*dr* = 1.0:1); colorless needles; m.p. = 115 – 118 °C; R_f = 0.30 (silica gel, 1:1 hexanes:Et_2O); $[\alpha]_D$ = – 237 ($CHCl_3$, *c* = 0.31); IR (film) ν_{max} 1717, 1670, 1540, 1488, 1351, 1090, 752 cm^{-1}; ^{1}H NMR (600 MHz, $CDCl_3$) δ 7.25 (t, *J* = 7.7 Hz, 1 H), 7.19 (d, *J* = 7.4 Hz, 1 H), 7.13 (d, *J* = 7.8 Hz, 1 H), 6.98 (t, *J* = 7.5 Hz, 1 H), 6.71 (d, *J* = 5.9 Hz, 1 H), 5.21 (s, 2 H), 5.11 (s, 1 H), 4.98 (s, 1 H), 3.53 (s, 1 H), 5.50 (dd, *J* = 13.9, 2.7 Hz, 1 H), 3.44 (s, 3 H), 3.29 (ddd, *J* = 13.9, 11.3, 4.5 Hz, 1 H), 2.56 – 2.63 (m, 1 H), 2.42 (dt, *J* = 18.4, 5.0 Hz, 1 H), 1.86 (s, 3 H), 1.62 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 196.9, 178.3, 144.9, 143.7, 143.6, 135.3, 127.8, 127.1, 123.3, 122.3, 115.0, 109.5, 71.7, 56.4, 52.5, 47.5, 44.1, 31.7, 18.2, 15.7; HRMS (ESI-TOF) calcd. for $C_{20}H_{23}NO_3Na$ $[M + Na]^+$ 348.1570, found 348.1566.



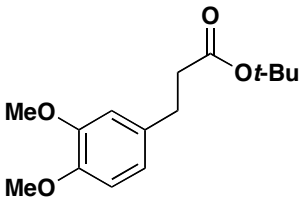
Tris(1,1,1-trifluoro-5,5-dimethyl-2,4-hexanedionato)iron(III): To a solution $FeCl_3$•$6H_20$ (1.3 g, 5 mmol, 1 equiv) in H_2O (9.7 mL, 0.5 *M*) was added a vigorously stirring solution of 1,1,1-trifluoro-5,5-dimethyl-2,4-hexanedione (2.9 g, 15 mmol, 3 equiv) in methanol (37.5 mL, 0.4 *M*) *via* addition funnel over 15 min. A solution of sodium

acetate (2.0 g, 24.6 mmol, 5.1 equiv) in H_2O (6.2 mL, 4.0 *M*) *via* addition funnel over 5 min. Upon completion of addition, the reaction was heated to 80 °C for 15 min. The reaction was cooled to ambient temperature (during which time the title compound began to crash of solution) and was then stirred at 4 °C for 12 hr. The red solid was filtered and collected furnishing 2.8 g (87%) of the title compound as a red solid, which was used in oxidative coupling reactions with no further purification. *Note: This is a representative procedure; all of the iron oxidants (excluding $Fe(acac)_3$) were made using this protocol.*



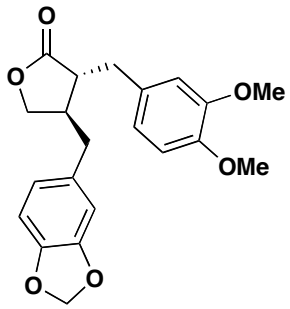
1-methoxymethyl-3-(3-methyl-2-butenyl)oxindole (Used in entries 15, 17): 1-methoxymethyloxindole (50 mg, 0.28 mmol) was dissolved in THF (941 μL, 0.30 *M*) and cooled to –78 °C. After 5 min at –78 °C, *n*-butyl lithium (113 μL from a 2.5 *M* solution in THF, 0.28 mmol, 1 equiv) was added dropwise by syringe. The solution was stirred 1 hr before 3,3-dimethylallyl bromide (63 μL, 0.42 mmol, 1.5 equiv) was added dropwise by syringe. The solution ws stirred for 1 hr at which time it was warmed to room temperature. After 10 min of stirring, the reaction was quenched with saturated aqueous NH_4Cl (2 mL). The solution was diluted with EtOAc (2 mL), the resulting mixture was poured into a separatory funnel, and the layers were separated. The aqueous portion was extracted twice with EtOAc (2 mL). The organic portions were combined, washed with brine (5 mL), dried over anhydrous $MgSO_4$, filtered, and concentrated *in vacuo*. The resulting oil was purified by flash chromatography (silica gel, 1:9 Et_2O:hexanes), furnishing 26 mg (38%) of the title compound as a colorless oil; R_f = 0.58 (silica gel, 1:1 hexanes:Et_2O); IR (film) ν_{max} 1720, 1613, 1488, 1466, 1346, 1089, 1073 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ

7.24 – 7.28 (m, 2 H), 7.05 (t, *J* = 7.5 Hz, 1 H), 7.00 (d, *J* = 7.8 Hz, 1 H), 5.16 (d, *J* = 10.9 Hz, 1 H), 5.07 (d, *J* = 10.8 Hz, 2 H), 3.54 (t, *J* = 5.9 Hz, 1 H), 3.29 (s, 3 H), 2.64 – 2.73 (m, 2 H), 1.64 (s, 3 H), 1.58 (s, 3 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 177.9, 142.4, 134.7, 128.3, 127.7, 123.9, 122.5, 119.2, 109.1, 70.9, 55.7, 45.7, 29.1, 25.6, 17.9; HRMS (ESI-TOF) calcd. for $C_{15}H_{19}NO_2Na$ $[M + Na]^+$ 268.1308, found 268.1305.



***tert*-butyl 3,4-dimethoxydihydrocinnamate, 3:** 3,4-dimethoxydihydrocinnamic acid (5 g, 23.8 mmol) was dissolved in CH_2Cl_2 (23.8 mL, 1 *M*) and was cooled to 0 °C. After 5 min at 0 °C, oxalyl chloride (5.1 mL, 59.5 mmol, 2.5 equiv) was added dropwise by syringe. The clear solution immediately turned bright orange. DMF (4 drops) was added and, after 10 min at 0 °C, the reaction warmed to room temperature. After 2 hr of stirring, the volatiles were removed *in vacuo* and the resultant orange oil was dissolved in THF (10 mL, 2.4 *M*). This solution was added to a 0 °C solution of pyridine (1.94 mL, 23.8 mmol, 1 equiv) and *tert*-butanol (4.5 mL, 47.6 mL, 2 equiv) in THF (60 mL, 0.4 *M*) dropwise by syringe. Upon complete addition, the solution was allowed to warm to room temperature and was stirred for 24 hr. During this time the orange color slowly faded into a pale yellow color as a white precipitate (pyridinium–hydrochloride) crashed out of solution. After 24 hr of stirring, the reaction was quenched with 1 *N* HCl (50 mL). The solution was diluted with EtOAc (50 mL), the mixture was poured into a separatory funnel, and the layers were separated. The aqueous portion was extracted twice with EtOAc (25 mL). The organic portions were combined, washed with saturated aqueous $NaHCO_3$ (50 mL), then brine (50 mL), and were dried over anhydrous $MgSO_4$, filtered,

and concentrated *in vacuo*. The resulting yellow oil was purified by flash chromatography (silica gel, 1:9 Et_2O:hexanes), furnishing 3.99 g (63%) of the title compound: colorless oil; R_f = 0.51 (silica gel, 1:1 hexanes:Et_2O); IR (film) ν_{max} 1725, 1516, 1366, 1260, 1238, 1145, 1029 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 6.78 (d, *J* = 8.6 Hz, 1 H), 6.73 – 6.79 (m, 2 H), 3.86 (s, 3 H), 3.85 (s, 3 H), 2.85 (t, *J* = 7.8 Hz, 2 H), 2.52 (t, *J* = 7.8 Hz, 2 H), 1.42 (s, 9 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 172.3, 148.8, 147.3, 133.4, 120.1, 111.6, 111.2, 80.3, 55.9, 55.8, 37.3, 30.7, 28.1 (3); HRMS (ESI-TOF) calcd. for $C_{15}H_{22}NO_4Na$ $[M + Na]^+$ 289.1410, found 289.1406.



(–)-bursehernin, 1: Procedure A was followed exactly for the oxidative coupling (1.8 mmol scale) of oxazolidinone **2** and *tert*-butyl ester **3**. The crude reaction was dissolved in THF (22 mL, 0.2 *M*). Methanol (327 μL, 9.2 mmol, 5.0 equiv) was added and the reaction was cooled to –78 °C. After 5 min at –78 °C, lithium borohydride (9.2 mL from a 2.0 *M* solution in THF, 18.4 mmol, 10 equiv) was added dropwise by syringe. After stirring for 5 min at –78 °C, the reaction was warmed to –10 °C for 1.5 hr, was quenched with saturated aqueous sodium potassium tartrate (30 mL), and then stirred at ambient temperature for 1 hr. The aqueous layer was partitioned with EtOAc (20 mL), separated, and then extracted twice with EtOAc (20 mL). The organic portions were combined, washed with brine (30 mL), dried over anhydrous $MgSO_4$, filtered, and concentrated *in vacuo*. The crude oil was dissolved in toluene (37 mL, 0.05 *M*). 1,8-diazabicyclo[5.4.0]undec-7-ene (2.77 mL, 18.4 mmol, 10 equiv) was added and the reaction was heated to 110 °C in a capped round-bottom flask for 24 hr. After

cooling to ambient temperature, the reaction was quenched with 5% aqueous citric acid (50 mL). The aqueous layer was partitioned with EtOAc (20 mL), separated, and then extracted twice with EtOAc (20 mL). The organic portions were combined, washed with brine (30 mL), dried over anhydrous $MgSO_4$, filtered, and concentrated *in vacuo*. The resulting oil was purified by flash chromatography (silica gel, 1:9 EtOAc:hexanes), furnishing 273 mg (41%) of (–)-bursehernin as a colorless oil. (–)-Bursehernin, **1**: R_f = 0.50 (silica gel, 1:1 hexanes:EtOAc); $[\alpha]_D = -13$ ($CHCl_3$, c = 0.46); IR (film) ν_{max} 1767, 1516, 1490, 1443, 1241, 1145, 1028 cm^{-1}; ^1H NMR (600 MHz, $CDCl_3$) δ 6.78 (d, J = 8.1 Hz, 1 H), 6.66 – 6.68 (m, 3 H), 6.43 – 6.45 (m, 2 H), 5.92 (s, 1 H), 5.91 (s, 1 H), 4.11 (dd, J = 8.9, 7.0 Hz, 1 H), 3.85 (s, 3 H), 3.84 – 3.88 (m, 1 H), 3.83 (s, 3 H), 2.96 (dd, J = 14.0, 5.0 Hz, 1 H), 2.88 (dd, J = 14.1, 7.1 Hz, 1 H), 2.57 – 2.60 (m, 1 H), 2.53 – 2.56 (m, 1 H), 2.46 – 2.48 (m, 1 H), 2.44 – 2.46 (m, 1 H); ^{13}C NMR (150 MHz, $CDCl_3$) δ 178.6, 149.0, 147.9, 147.9, 146.3, 131.6, 130.1, 121.5, 121.3, 112.1, 111.1, 108.7, 108.3, 101.0, 71.2, 55.8, 55.8, 46.5, 41.0, 38.3, 34.6; HRMS (ESI-TOF) calcd. for $C_{21}H_{22}O_6Na$ $[M + Na]^+$ 371.1489, found 371.1506.

There are conflicting literature values for the optical rotations of the natural product ((–)-**1**: –45,[1] –46,[2] –29;[3] (+)-**1**: +36[4]). The observed optical rotations for synthetic **1** were consistently different than any of the reported values. This prompted us to employ chiral HPLC in order to *unambiguously* determine the enantiomeric excess of **1**. Procurement of racemic **1** (through synthesis with *(rac)*-**2**, Table S1/Figure S1: 40% 2-propanol/hexanes at 1 mL/min) and subsequent analysis of all samples using chiral HPLC facilitated understanding of our data with regards to the inconsistent literature reports. Our hypothesis is that there must be a small leakage to the β-epimer (α to the oxazolidinone)

in the oxidative coupling step. This would produce a third diastereomer (undetectable in the crude ^{1}H NMR; diagnostic peaks are buried), which would ultimately lead to a small amount of the opposite enantiomer of the natural product (Table S1/Figure S2). This was confirmed by exhaustive purification of the desired set of oxidative coupling product diastereomers (PTLC: 1% EtOAc/DCM, 4 elutions) and subjection of the purified diastereomers to the remainder of the reaction conditions above yielding synthetic **1** in 99% *ee* (Table S1/Figure S3). This exact sample yielded an optical rotation of $[\alpha]_D = -15$ (c = 0.2) on our instrument. While this is not in agreement with what the literature reports, we are certain that our material is a single enantiomer. This experiment suggests that the issues of low *ee* and inconsistent optical rotation do not appear to be directly related. While the presence of ~5% of the undesired enantiomer should decrease the absolute value of the optical rotation, it should *not* lower it by ~50-75%. Through use of the synthetic scheme above, the natural product was obtained in 91% *ee*, and can be obtained in 99% *ee* if a purification step is added after the first synthetic operation. For further confirmation of structure, see Table S2 and Figure S4.

		Retention Time (min)	***Area Percent (%)***	***ee (%)***
Figure S1	(+)-bursehernin	16.98	47.37	5.26
	(–)-bursehernin	19.55	52.63	
Figure S2	(+)-bursehernin	16.85	95.59	91.18
	(–)-bursehernin	19.13	4.41	
Figure S3	(+)-bursehernin	16.5	0.59	98.82
	(–)-bursehernin	18.13	99.41	

Table S1: Chiral HPLC data for **1**.

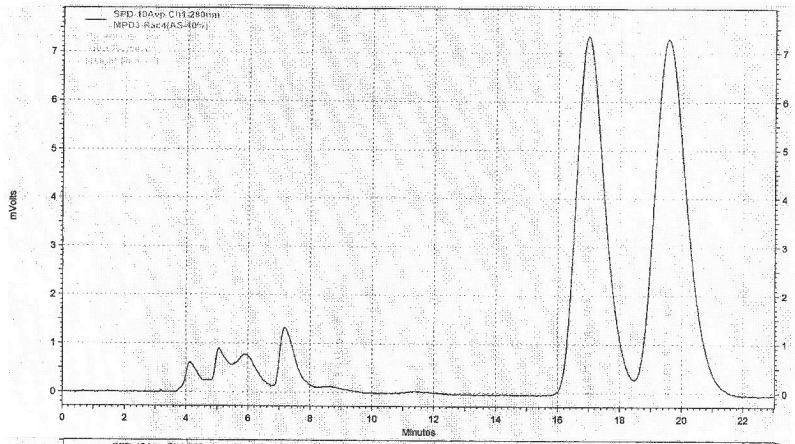


Figure S1: Chiral HPLC trace of racemic **1**.

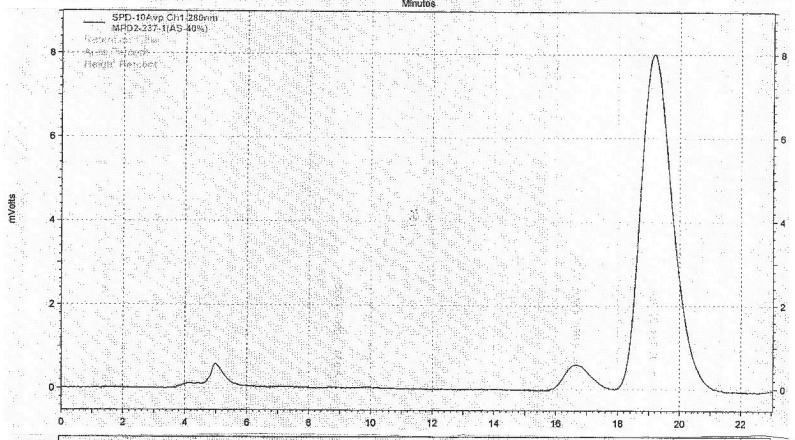


Figure S2: Chiral HPLC trace of **1** (procedure above).

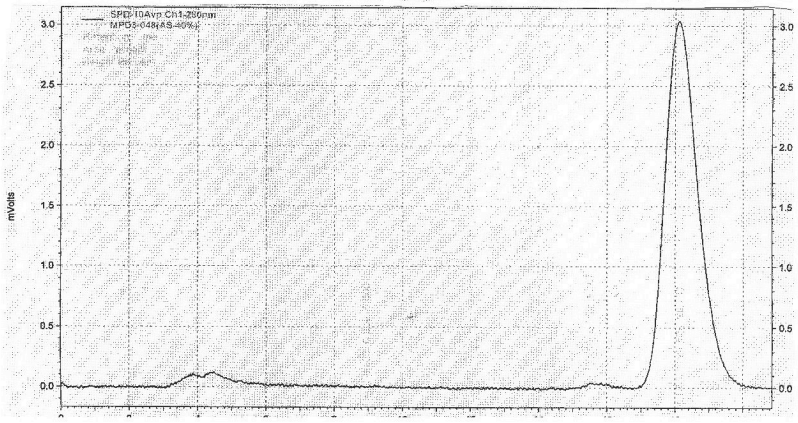
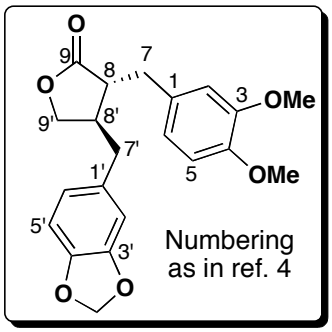
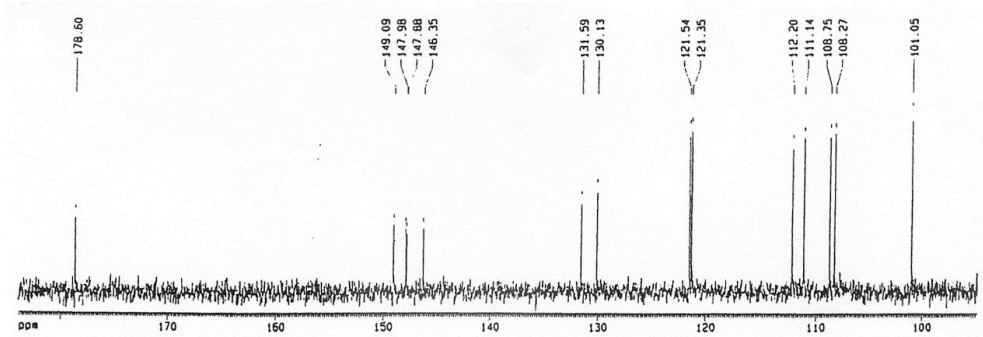


Figure S3: Chiral HPLC trace of **1** (with added purification step).

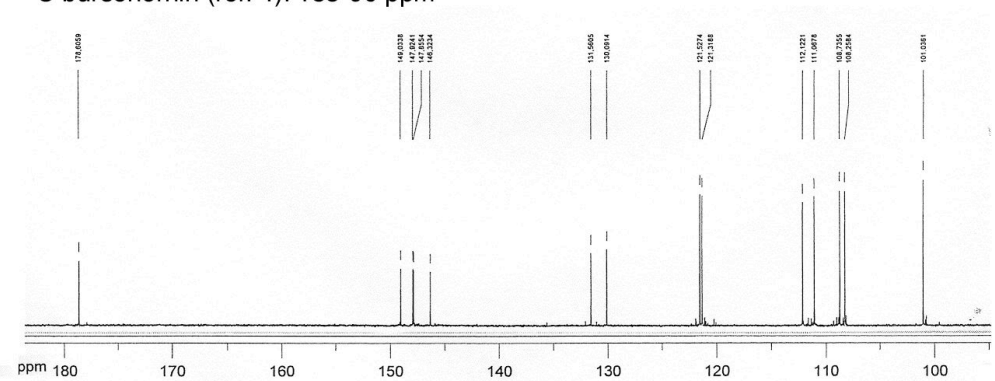


Carbon Position	*Spectral Data: Chemical Shift (ppm)*			
	^{1}H (ref. 4)	**^{1}H (synthetic)**	**^{13}C (Ref 4)**	**^{13}C (synthetic)**
1	–	–	130.1, *s*	130.1, *s*
2	6.64, *d* (1.8)	6.67, *m*	112.2, *d*	112.1, *d*
3	–	–	149.1, *s*	149.0, *s*
4	–	–	147.9, *s*	147.9, *s*
5	6.77, *d* (8.0)	6.78, *d* (8.1)	111.1, *d*	111.1, *d*
6	6.66, *dd* (8.0, 1.8)	6.67, *m*	121.4, *d*	121.3, *d*
7	2.87, *dd* (14.1, 6.9)	2.88, *dd* (14.1, 7.1)	34.6, *t*	34.6, *t*
	2.94, *dd* (14.1, 5.1)	2.96, *dd* (14.0, 5.0)	–	–
8	2.53, *dd* (13.1, 7.9)	2.56, *m*	46.5, *d*	46.5, *d*
9	–	–	178.6, *s*	178.6, *s*
1'	–	–	131.6, *s*	131.6, *s*
2'	6.41, *d* (1.5)	6.44, *m*	108.3, *d*	108.3, *d*
3'	–	–	148.0, *s*	147.9, *s*
4'	–	–	146.4, *s*	146.3, *s*
5'	6.66, *d* (7.8)	6.67, *m*	108.8, *d*	108.7, *d*
6'	6.43, *dd* (7.8, 1.5)	6.44, *m*	121.5, *d*	121.5, *d*
7'	2.44, *m*	2.45, *m*	38.3, *t*	38.3, *t*
	2.57, *dd* (17.0, 9.8)	2.58, *m*	–	–
8'	2.46, *m*	2.47, *m*	41.1, *d*	41.0 *d*
9'	3.83, *m*	3.84–3.88, *m*	71.2, *t*	71.2, *t*
	4.09, *dd* (9.2, 7.0)	4.11, *dd* (8.9, 7.0)	–	–
3-OMe	3.81, *s*	3.83, *s*	55.8, *q*	55.8, *q*
4-OMe	3.84, *s*	3.85, *s*	55.9, *q*	55.8, *q*
3',4'-OCH_2O	5.90, *br s*	5.91, *br s*	101.1, *t*	101.0, *t*
	5.91, *br s*	5.92, *br s*	–	–

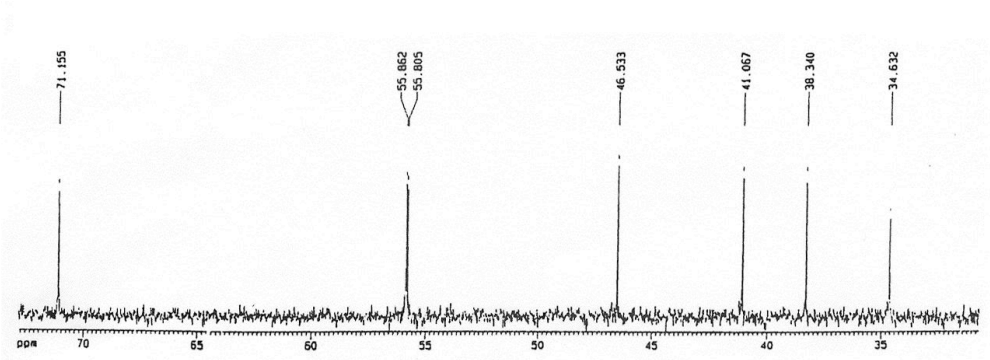
Table S2: Proton and carbon NMR spectral data comparison.



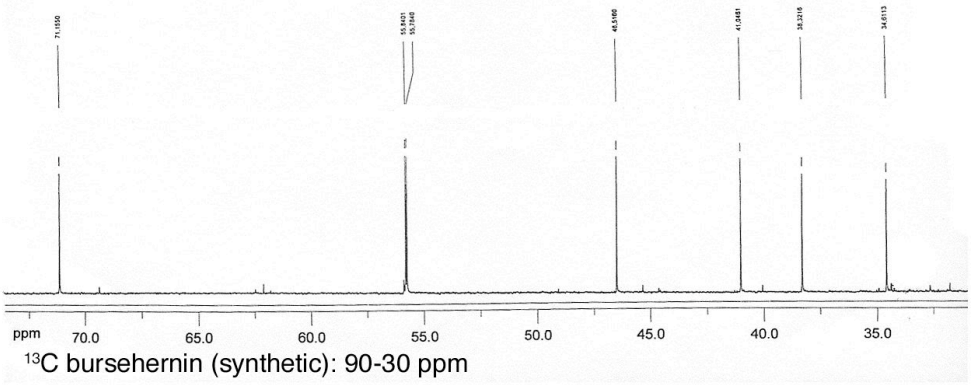
^{13}C bursehernin (ref. 4): 185-90 ppm



^{13}C bursehernin (synthetic): 185-90 ppm



^{13}C bursehernin (ref. 4): 90-30 ppm



^{13}C bursehernin (synthetic): 90-30 ppm

Figure S4: Spectral comparison for **1**.

References

(1) McDoniel, P. B.; Cole, J. R. *J. Pharm. Sci.* **1972**, *61*, 1992-1994.

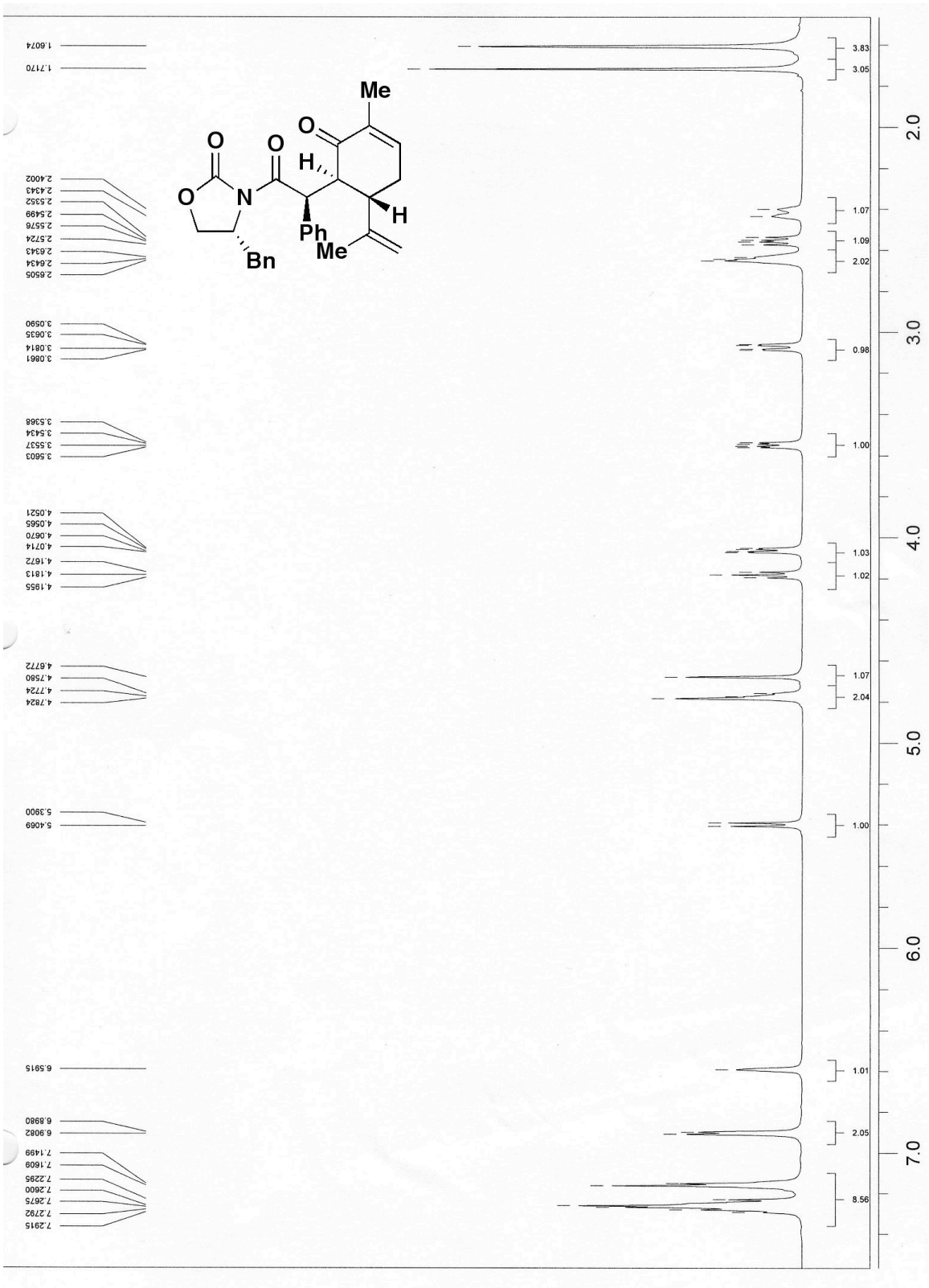
(2) Nishibe, S.; Chiba, M.; Hisada, S. *Yakugaku Zasshi* **1977**, *97*, 1366-1369.

(3) Yamaguchi, H.; Arimoto, M.; Yamamoto, K.; Numata, A. *Yakugaku Zasshi* **1979**, *99*, 674-677.

(4) Chang, C.-C.; Lien, Y.-C.; Karin, C. S.; Chem L.; Shoei-Sheng, L. *Phytochemistry* **2003**, *63*, 825-833.

Acknowledegments

Thanks to professor Shoei-Sheng Lee of National Taiwan University for providing the reference ^{13}C spectrum found in figure S4. Thanks also to the Boger lab for use of their Shimadzu HPLC.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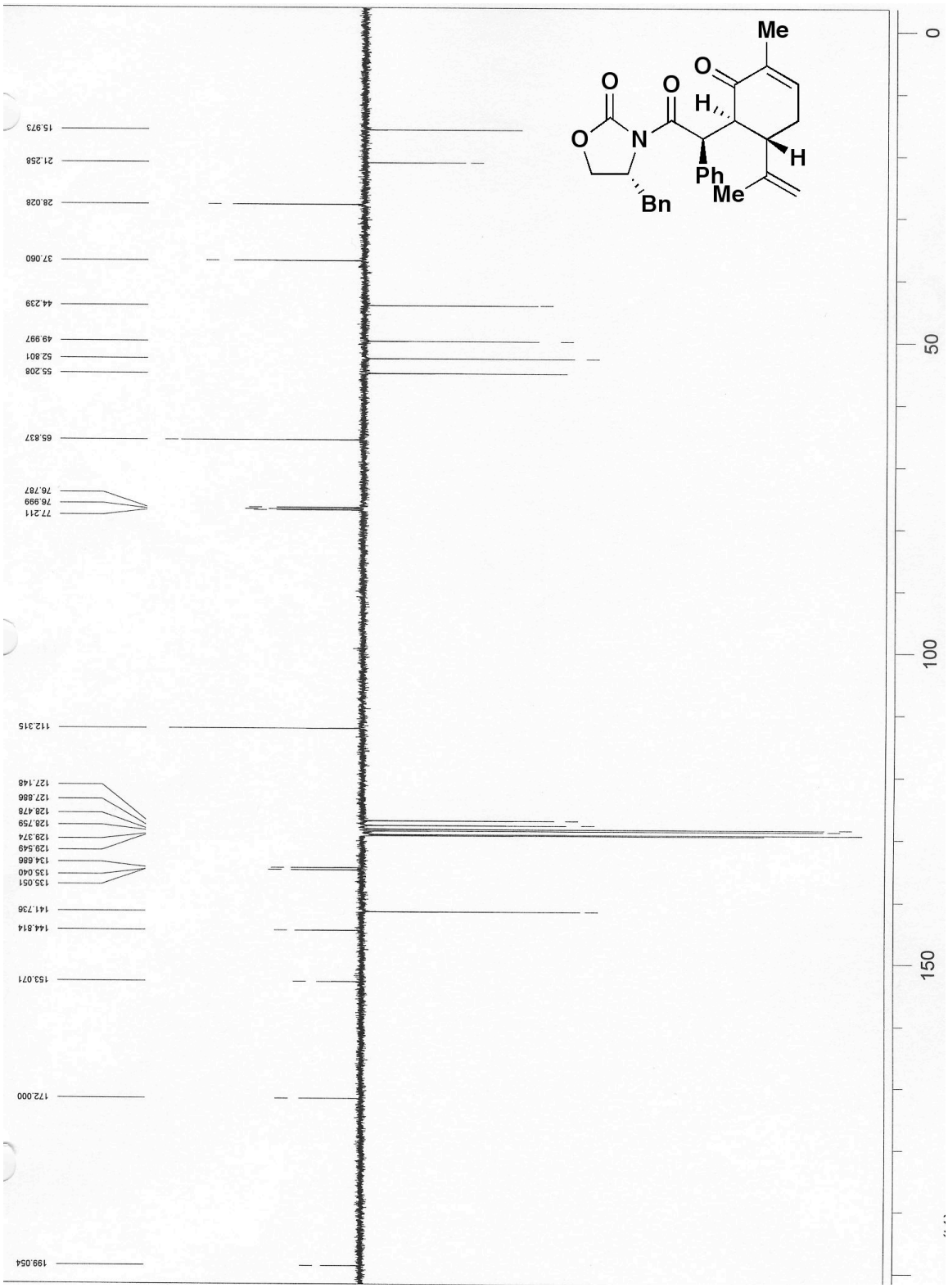
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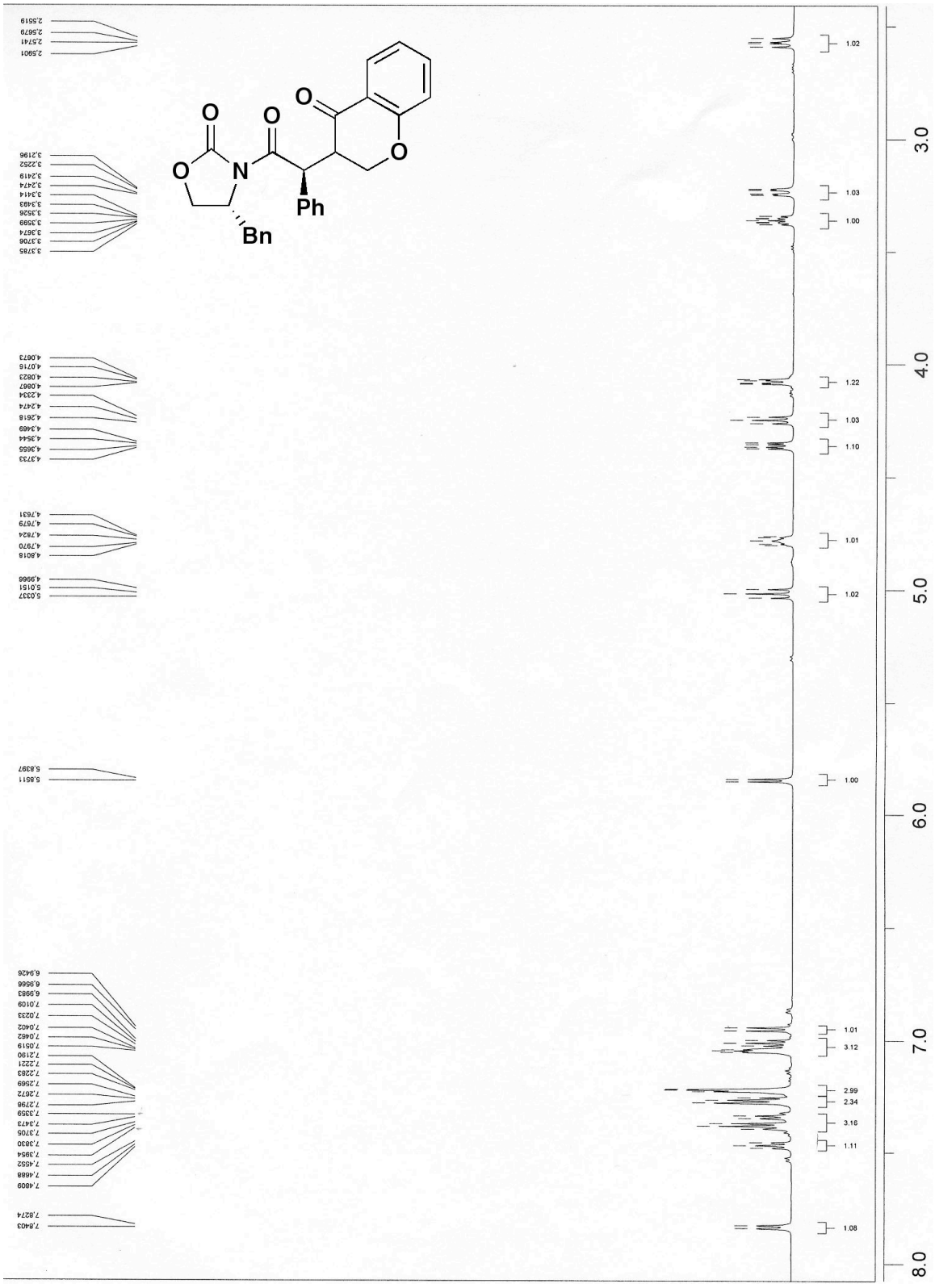
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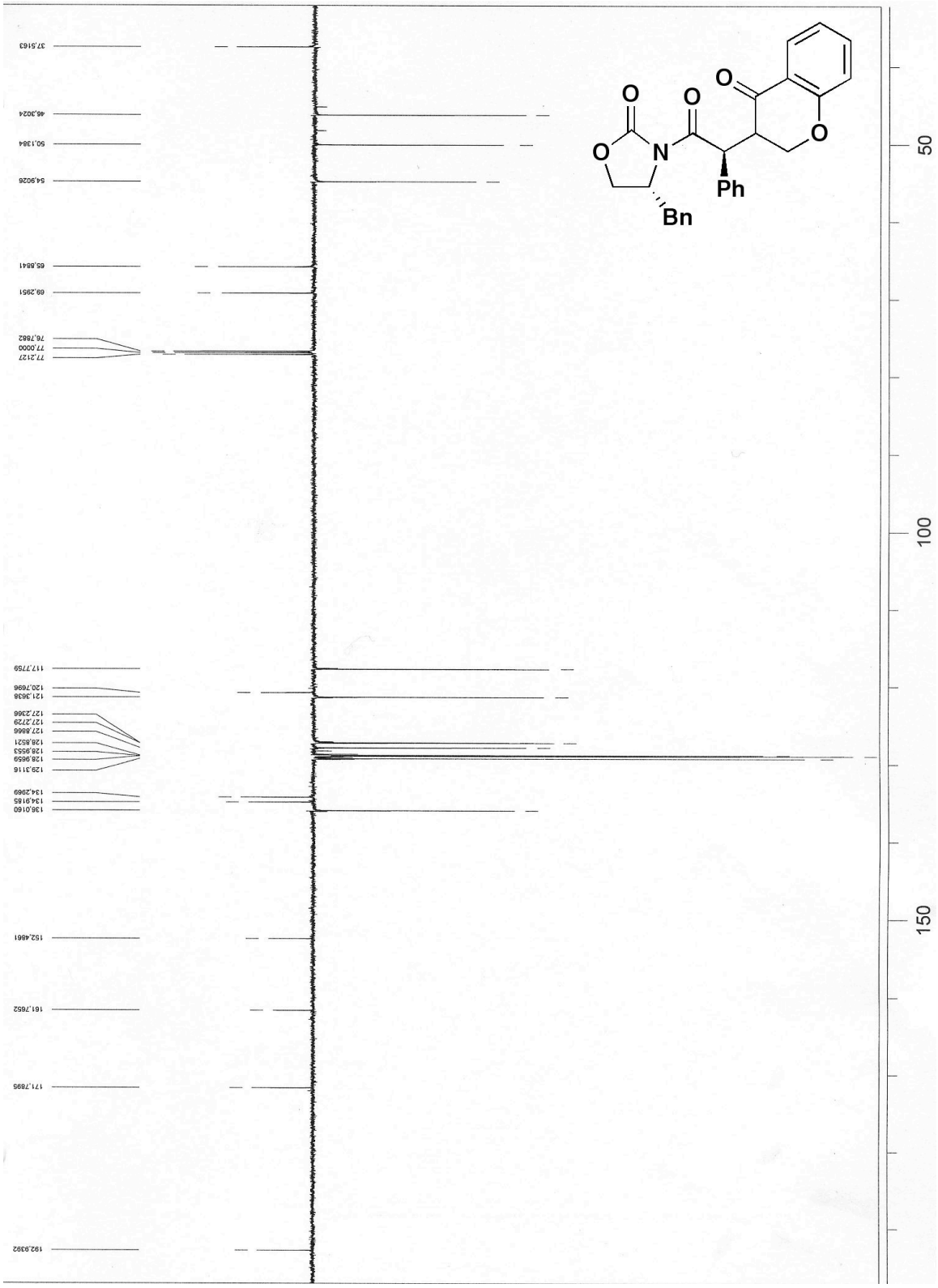
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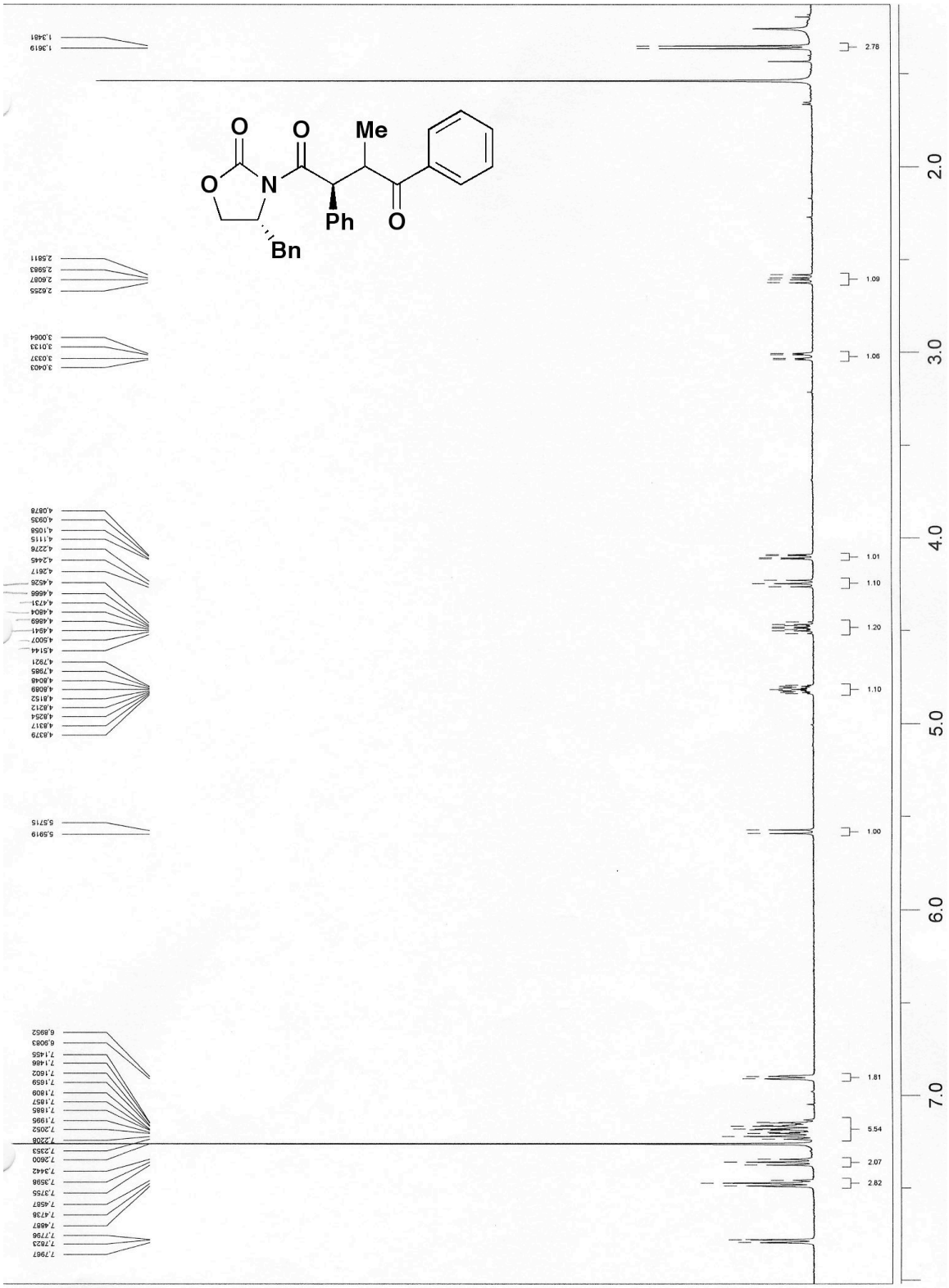
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Ph
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3.0133
3.0337
3.0403
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4.0935
4.1058
4.1115
4.2276
4.2445
4.2617
4.4526
4.4666
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4.7985
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4.8212
4.8254
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6.8952
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7.1496
7.1602
7.1659
7.1809
7.1857
7.1985
7.1995
7.2052
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7.2600
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7.3598
7.3755
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7.4736
7.4887
7.7623
7.7796
7.7967
2.78
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1.06
1.01
1.10
1.20
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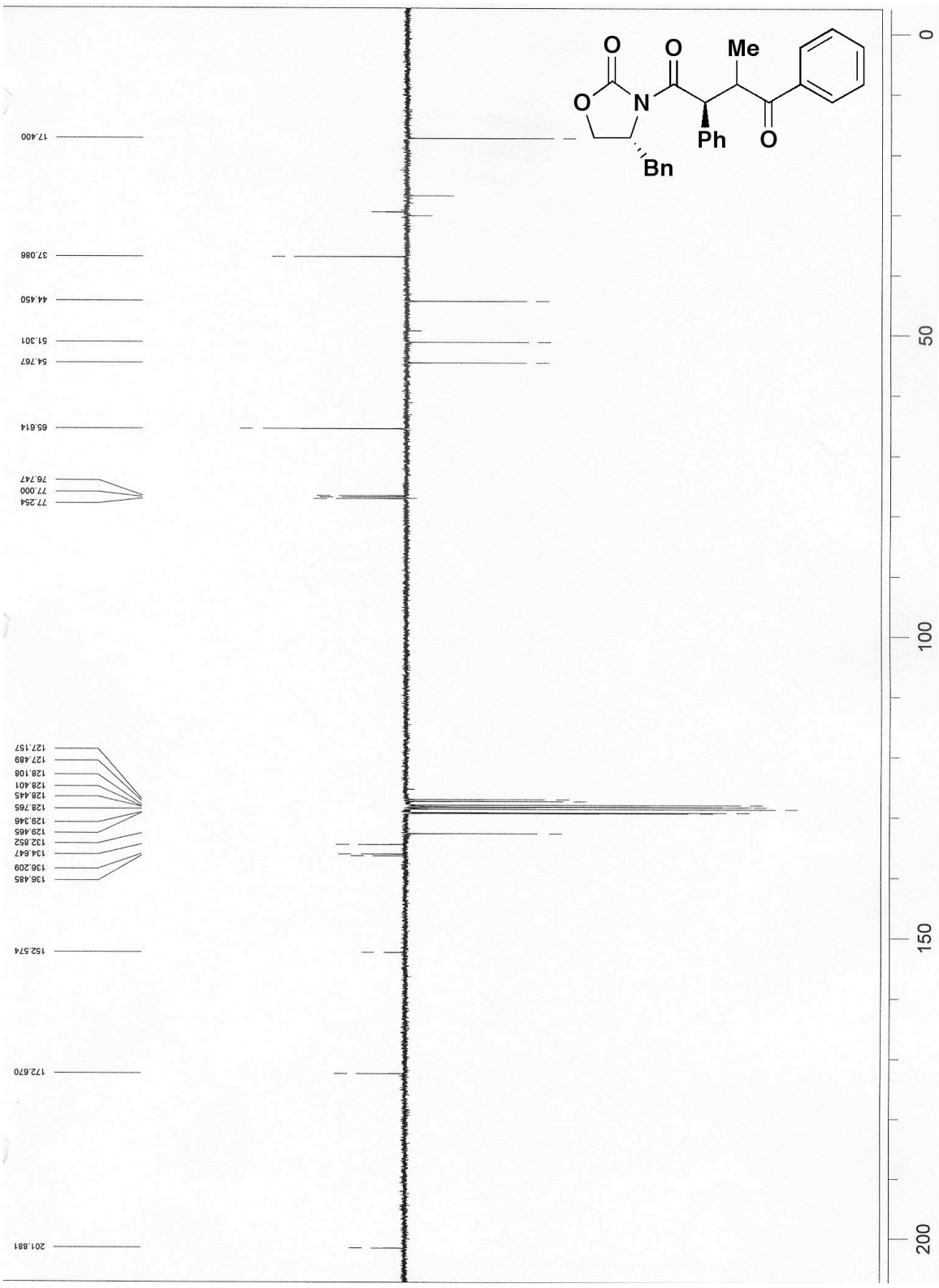
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Bn
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77.000
77.254
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127.489
128.108
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128.445
128.765
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136.485
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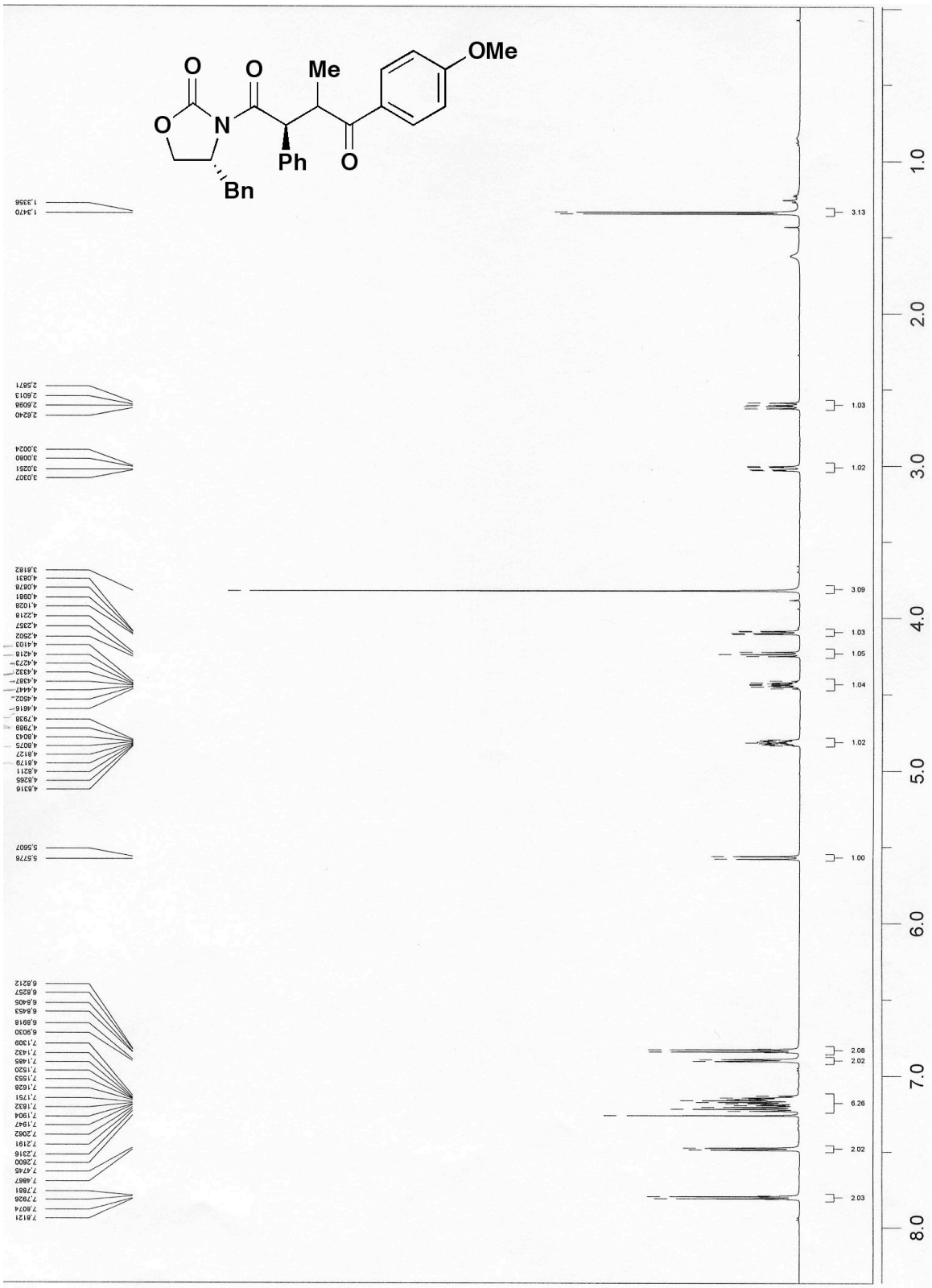
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Me
OMe
O
N
Ph
O
Bn
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1.03
1.02
3.09
1.03
1.05
1.04
1.02
1.00
2.08
2.02
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2.02
2.03
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3.0
4.0
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6.0
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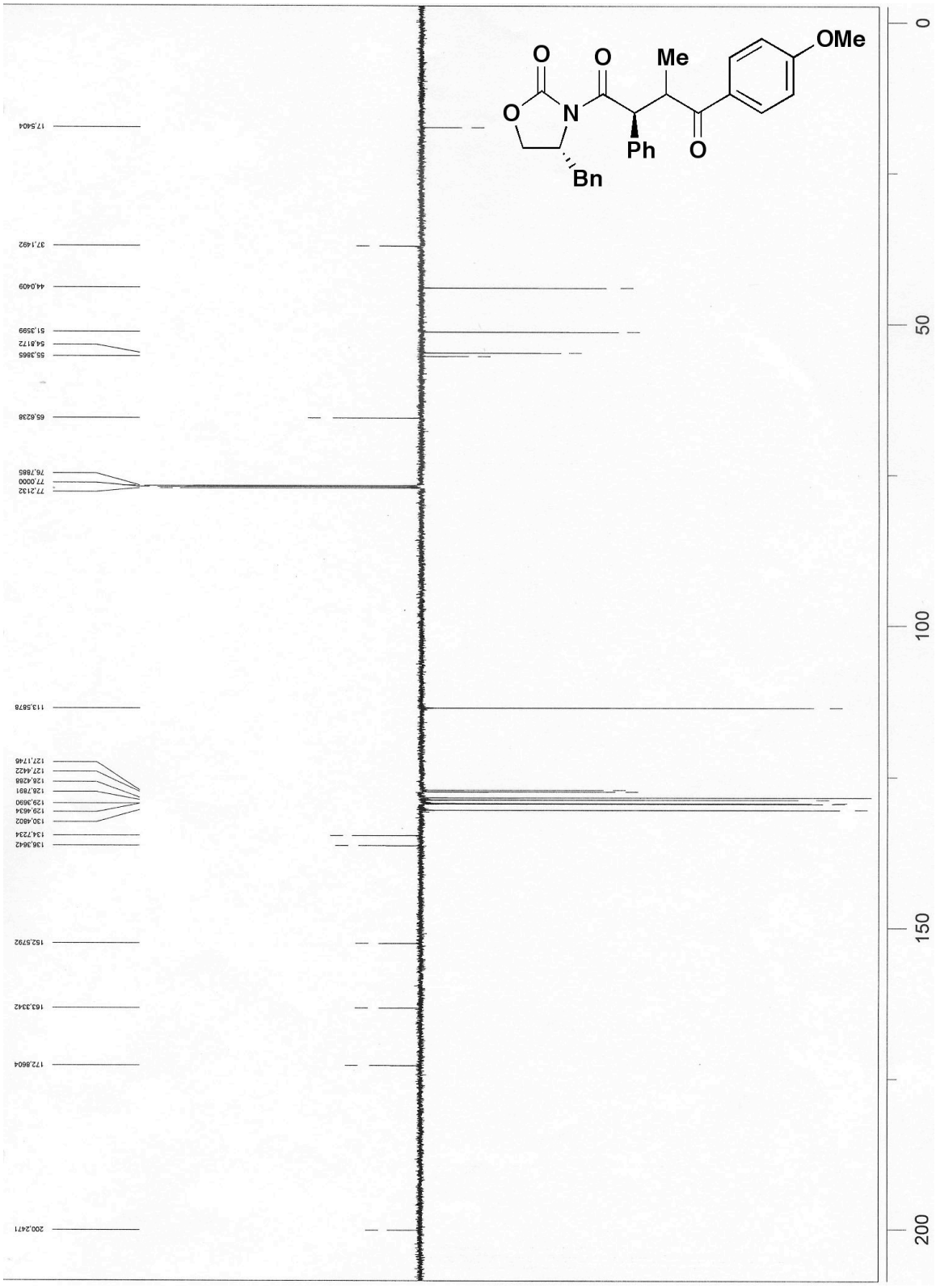
8.0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Me
OMe
O
N
Ph
O
Bn
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55.3865
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77.0000
77.2132
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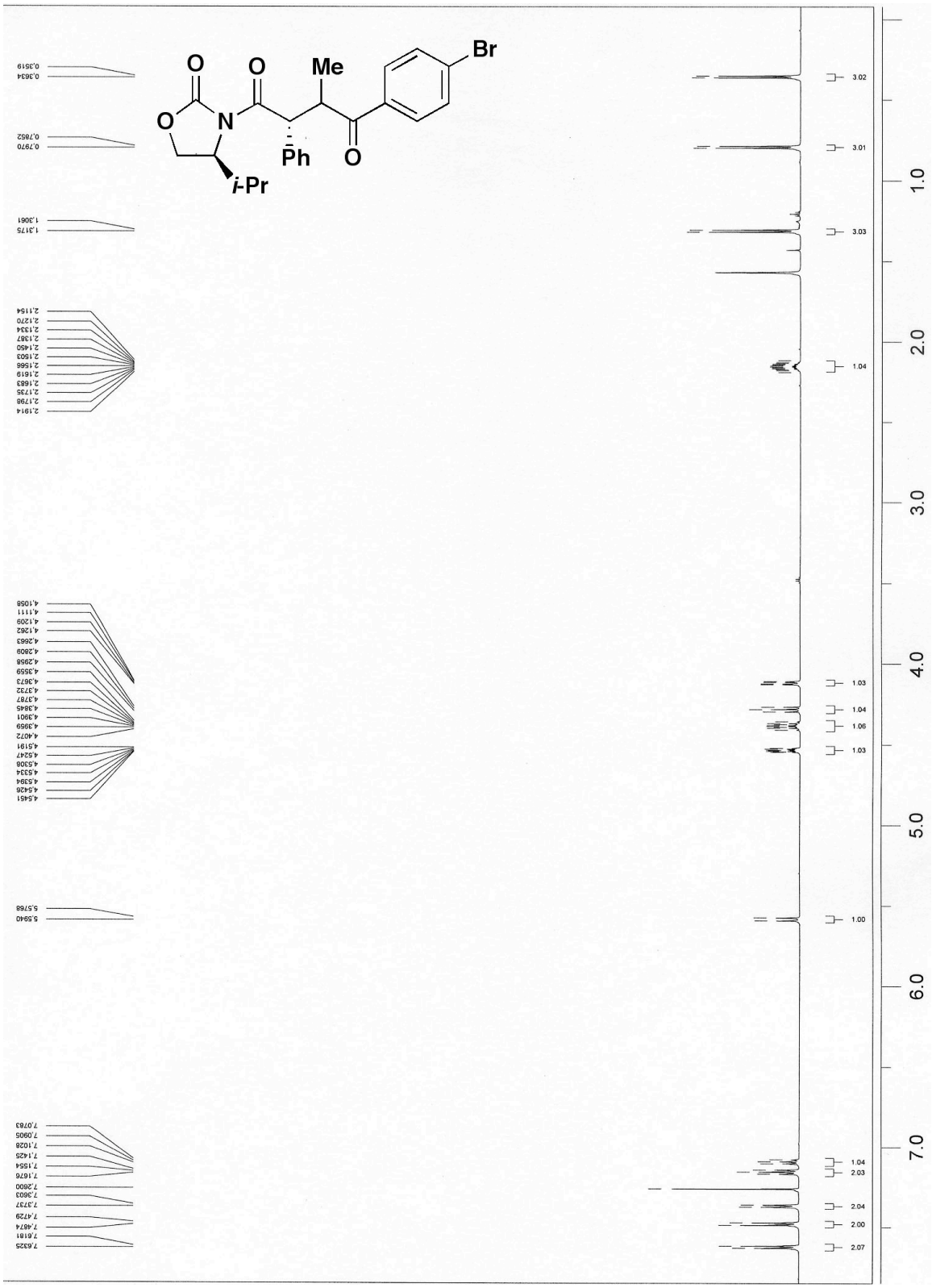
150
200


O
O
Me
Br
O
N
Ph
O
i-Pr
3.02
3.01
3.03
1.04
1.03
1.04
1.06
1.03
1.00
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2.04
2.00
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1.0
2.0
3.0
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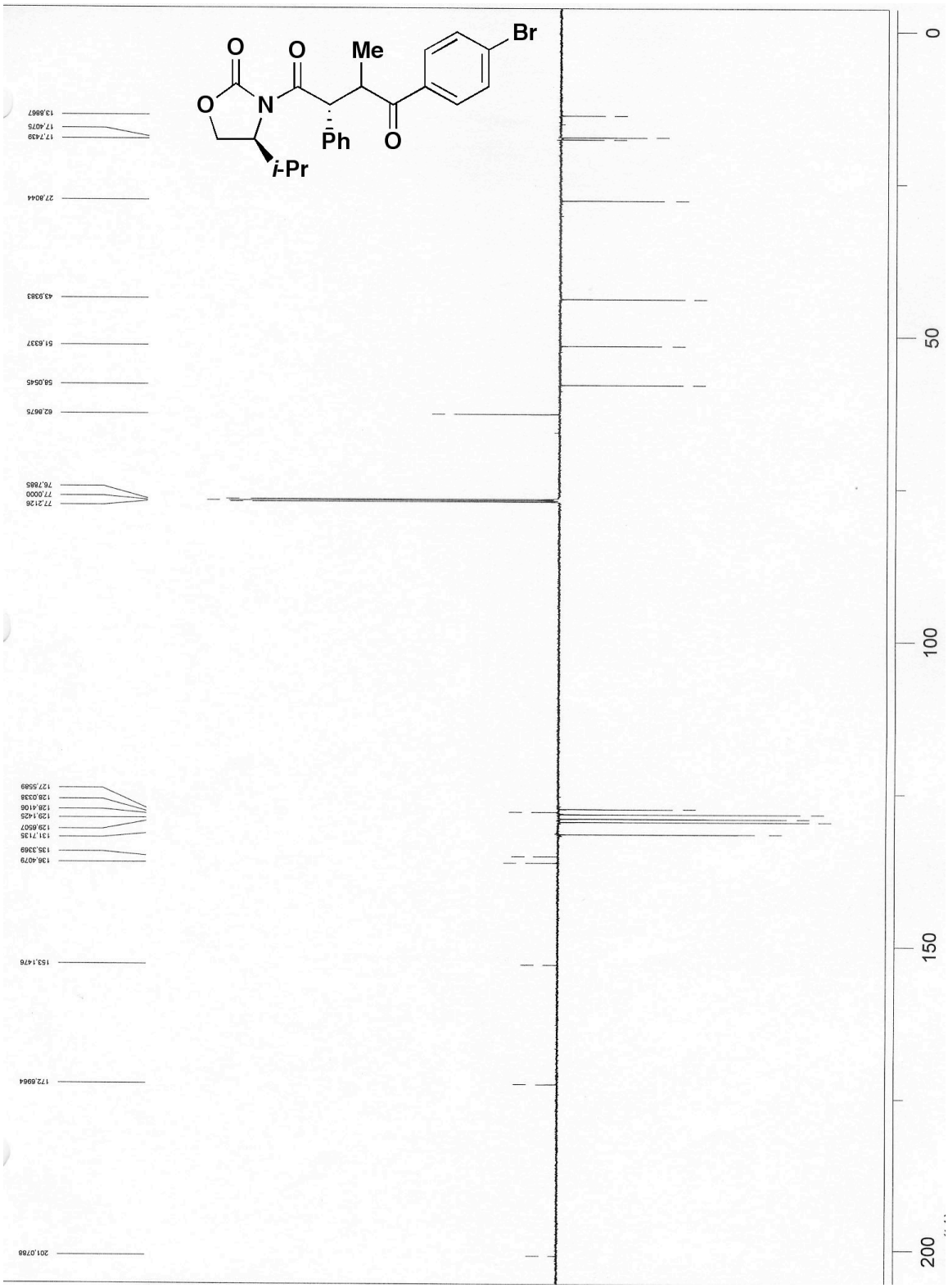
7.0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Me
Br
O
N
Ph
O
i-Pr
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128.4106
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150
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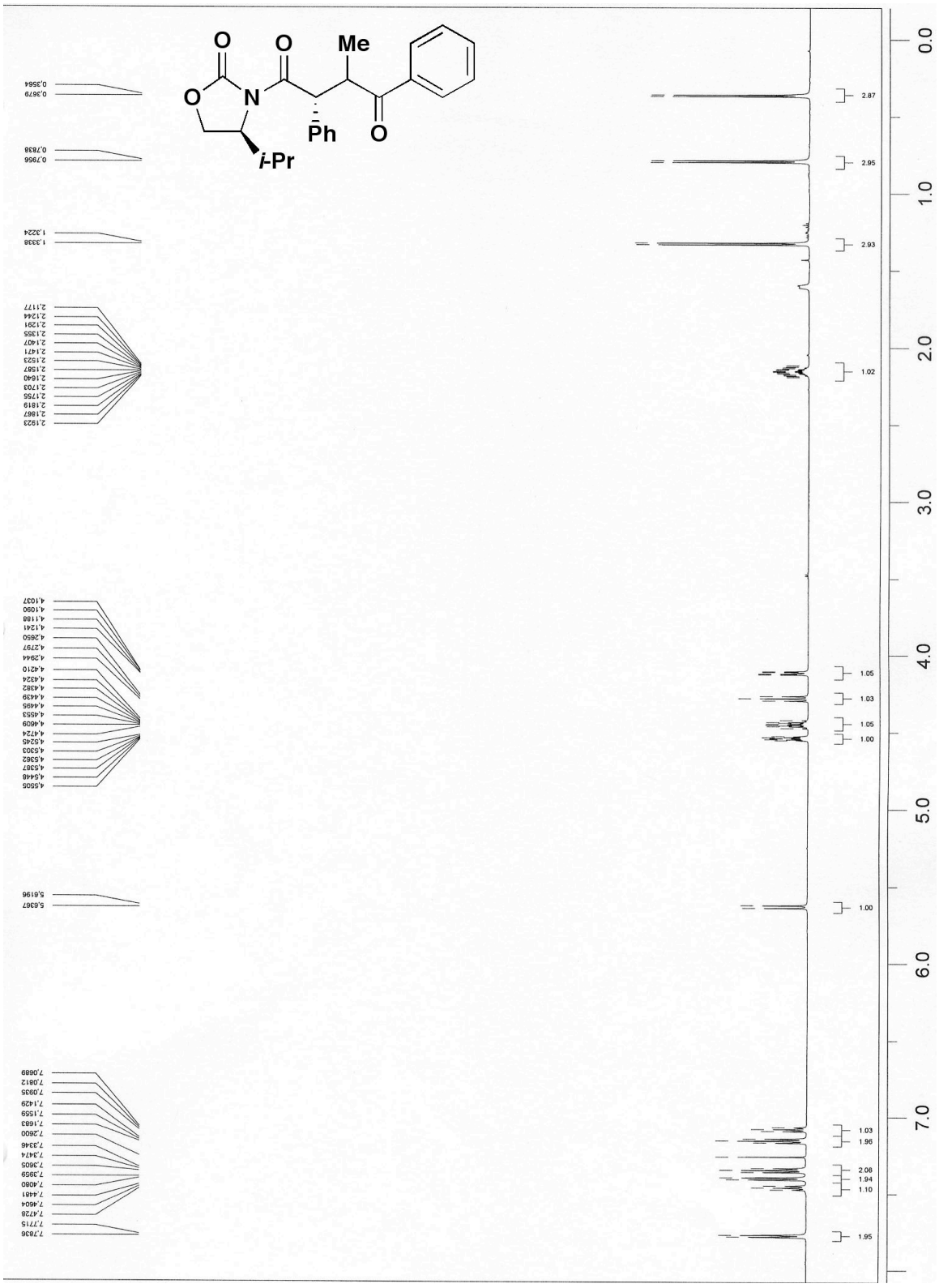
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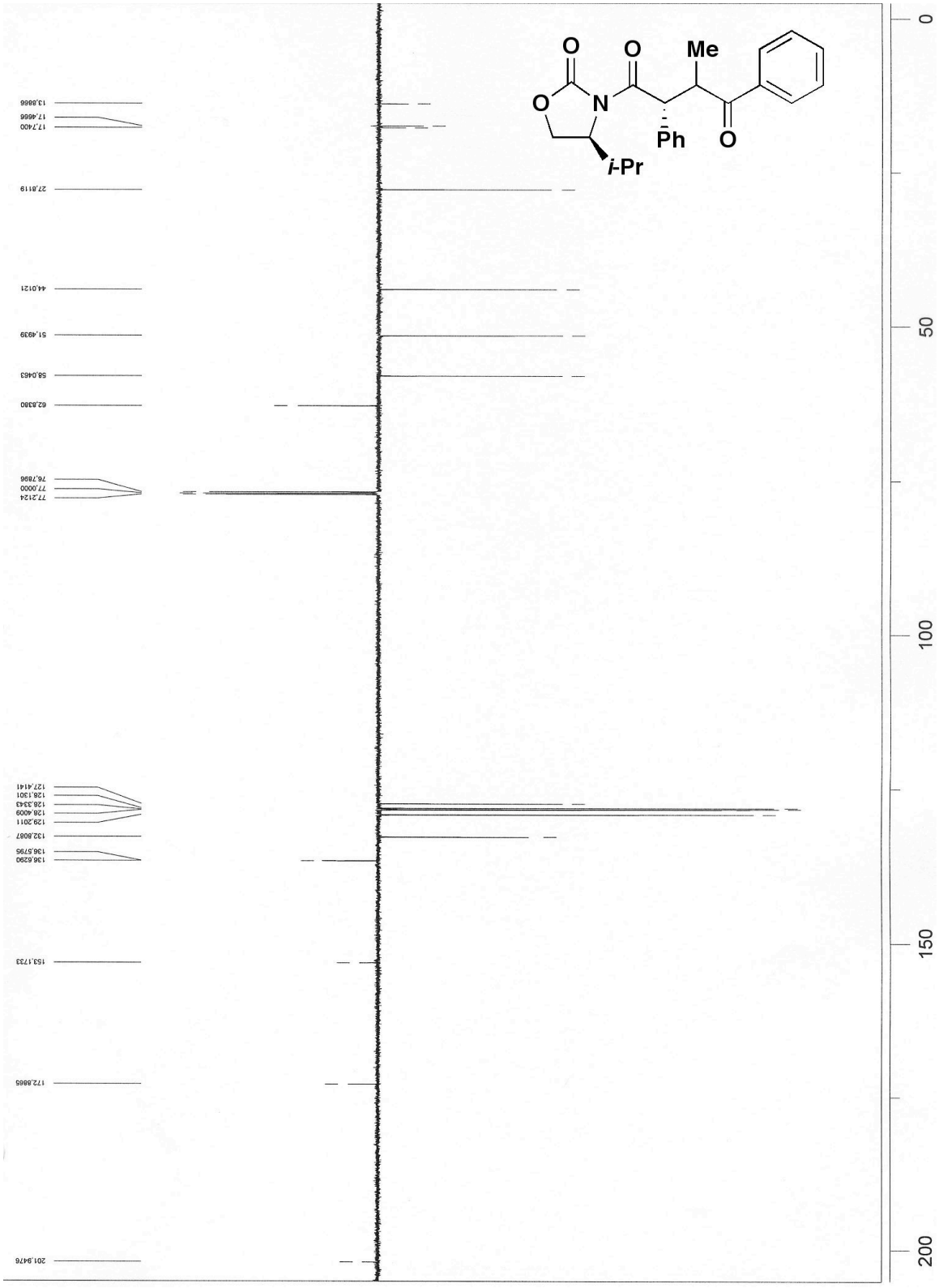
O
Me
O
N
Ph
O
i-Pr
2.87
2.95
2.93
1.02
1.05
1.03
1.05
1.00
1.00
1.03
1.96
2.08
1.94
1.10
1.95
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0


O
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Me
O
N
Ph
O
i-Pr
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44.0121
51.4939
58.0463
62.8380
76.7896
77.0000
77.2124
127.4141
128.1301
128.3343
128.4009
129.2011
132.8087
136.5795
136.6290
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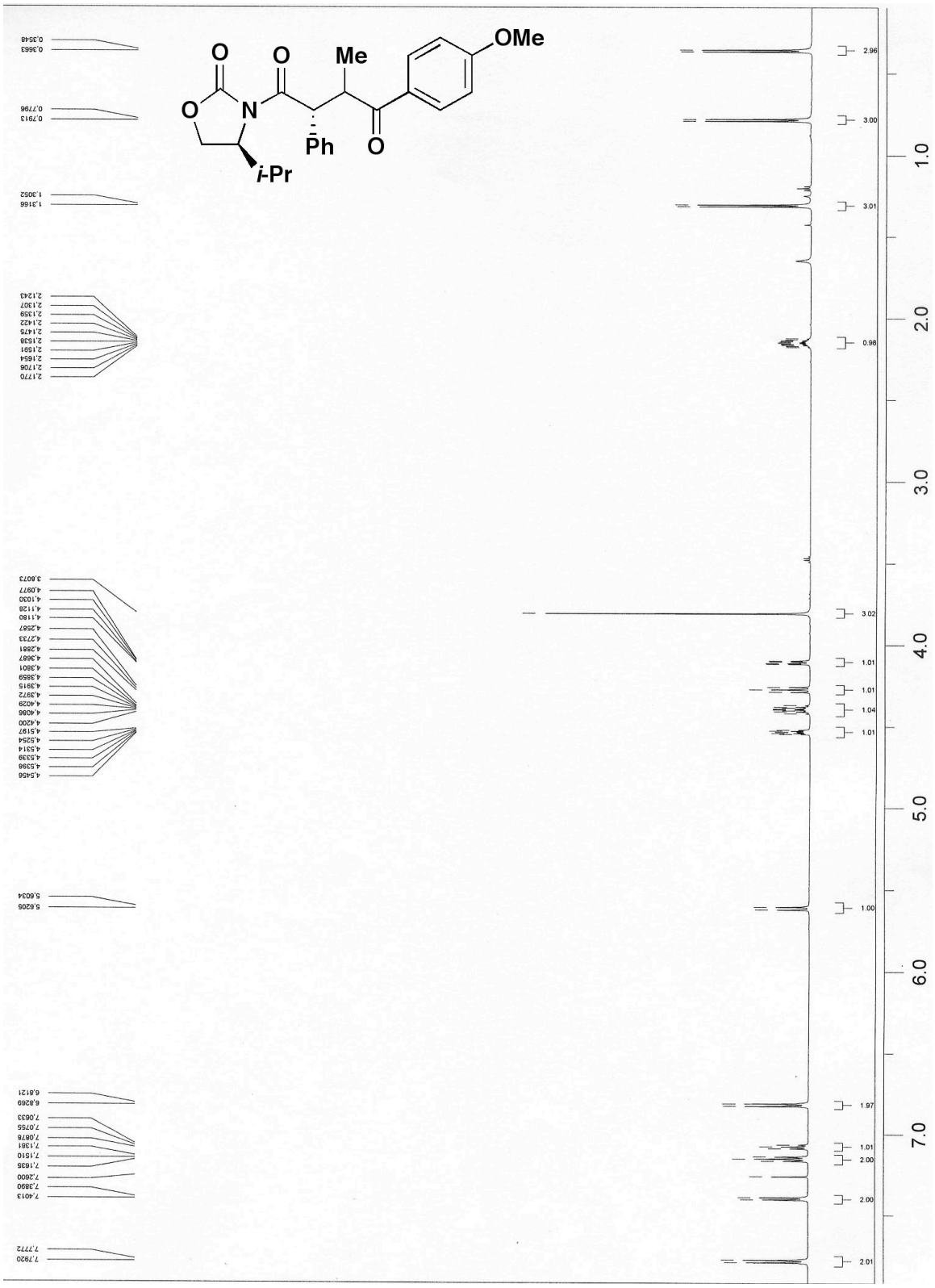
150
200


OMe
O
O
Me
O
N
Ph
O
i-Pr
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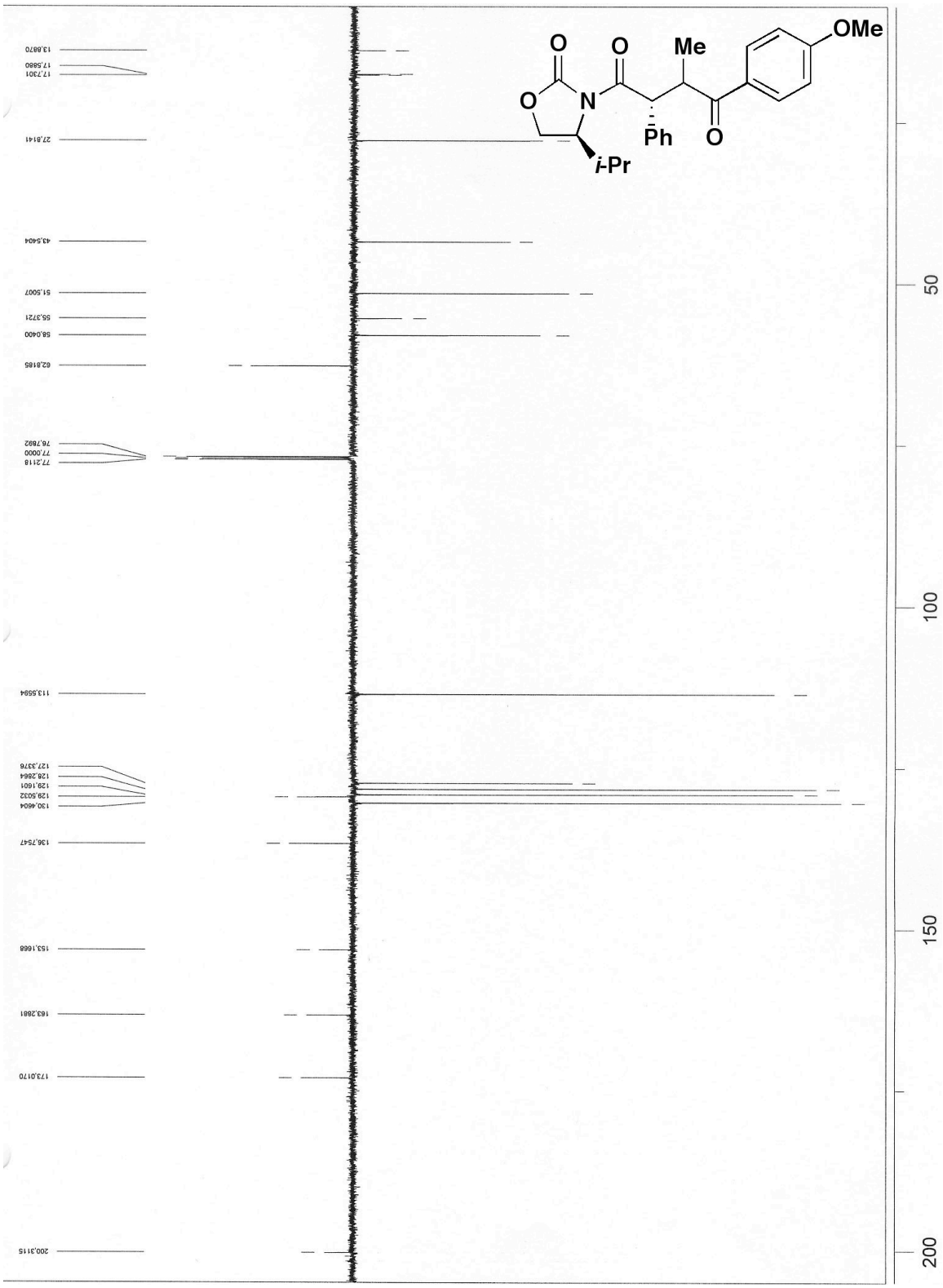
0.3663
0.7796
0.7913
1.3052
1.3166
2.1243
2.1307
2.1359
2.1422
2.1475
2.1538
2.1591
2.1654
2.1706
2.1770
3.8073
4.0977
4.1030
4.1128
4.1180
4.2587
4.2733
4.2881
4.3687
4.3801
4.3859
4.3915
4.3972
4.4029
4.4086
4.4200
4.5197
4.5254
4.5314
4.5339
4.5398
4.5456
5.6034
5.6205
6.8121
6.8269
7.0633
7.0755
7.0876
7.1081
7.1510
7.1635
7.2600
7.3890
7.4013
7.7772
7.7920
2.96
3.00
3.01
0.98
3.02
1.01
1.01
1.04
1.01
1.00
1.97
1.01
2.00
2.00
2.01
1.0
2.0
3.0
4.0
5.0
6.0
7.0


OMe
O
O
Me
O
N
O
Ph
O
i-Pr
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17.7301
27.8141
43.5404
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55.3721
58.0400
62.8185
76.7892
77.0000
77.2118
113.5594
127.3376
128.2864
129.1601
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173.0170
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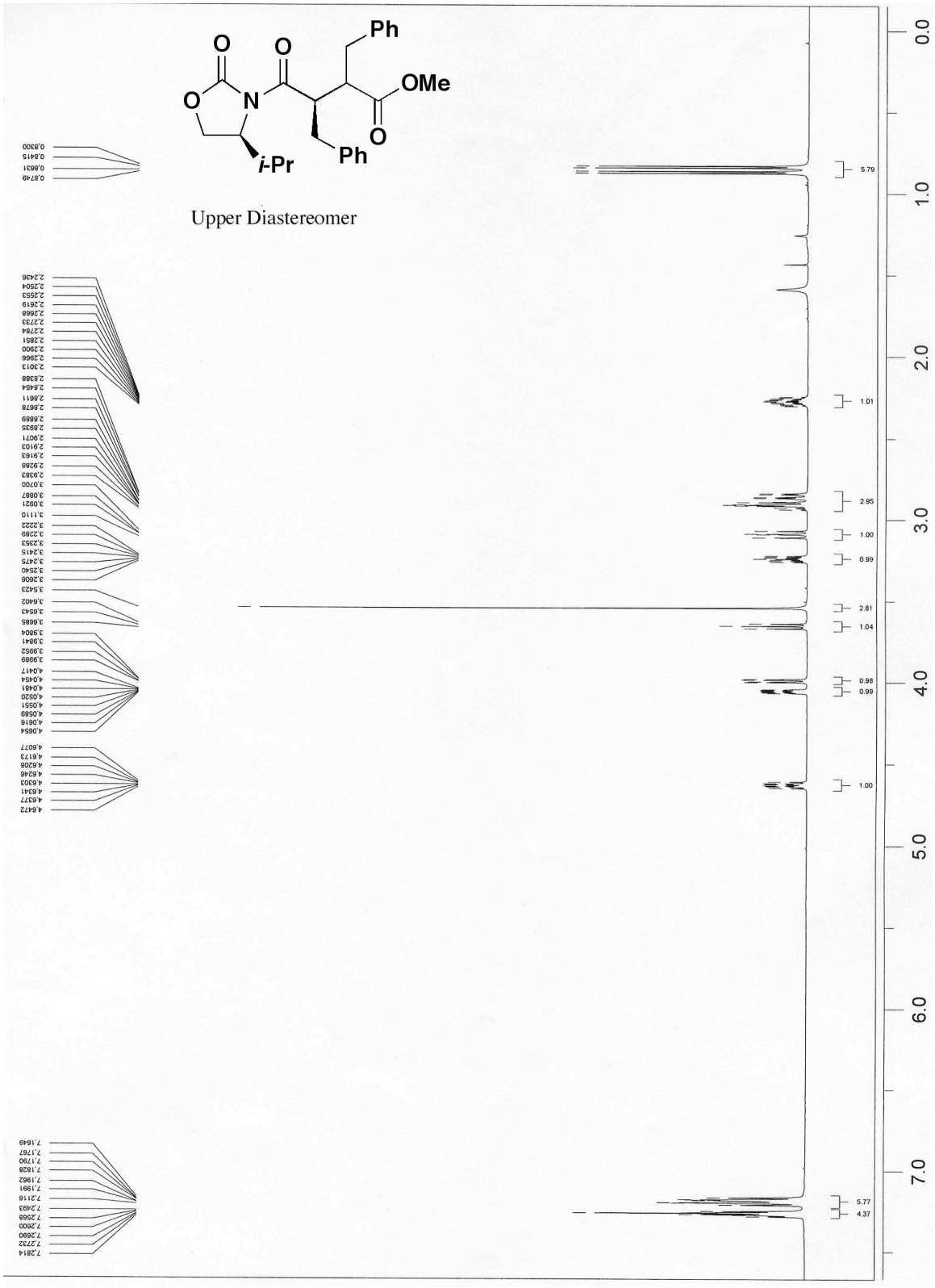
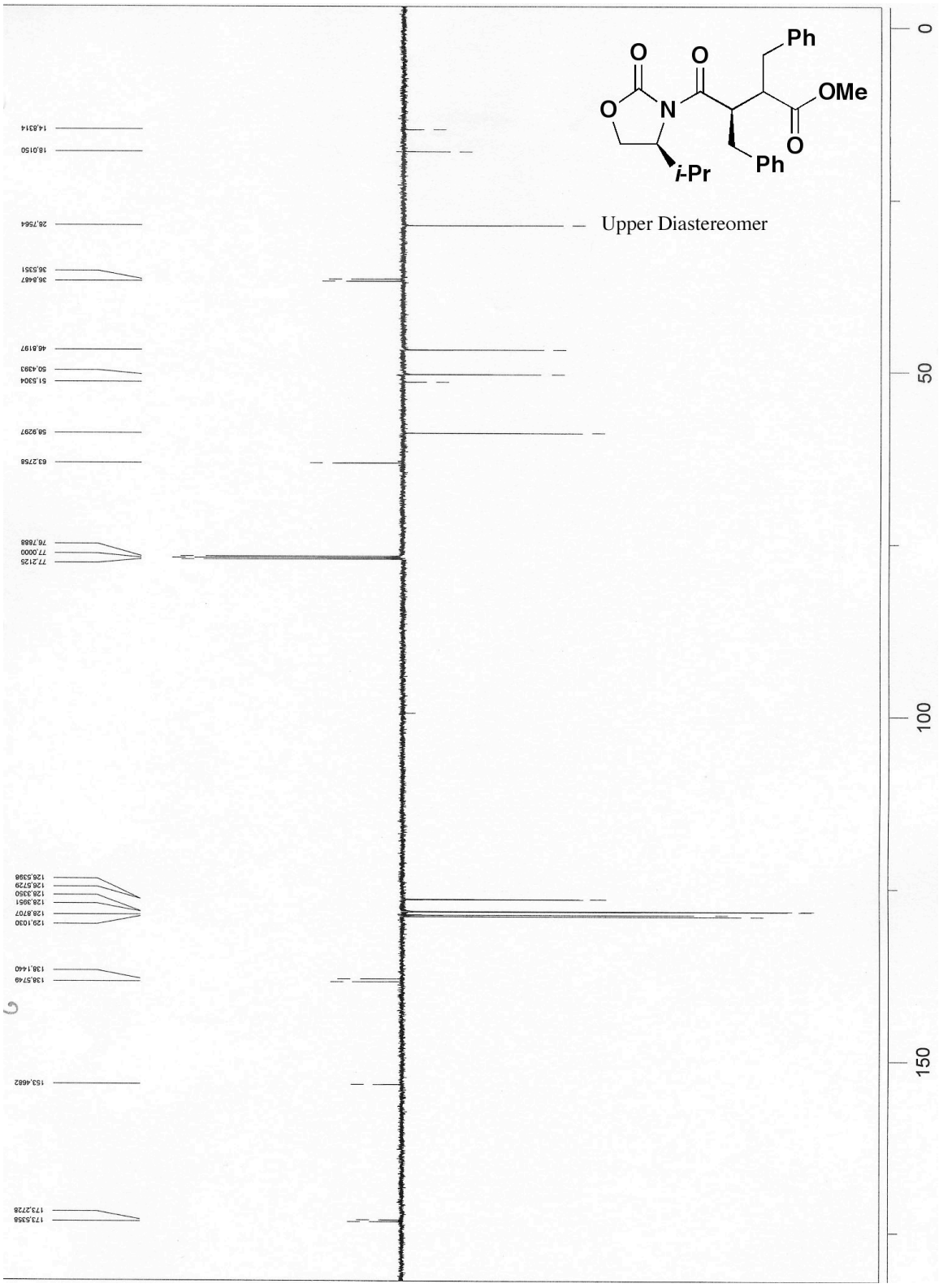
50
100
150
200


Ph
O
O
OMe
O
N
O
O
Ph
i-Pr
Upper Diastereomer
5.79
1.01
2.95
1.00
0.99
2.81
1.04
0.98
0.99
1.00
5.77
4.37
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0


Upper Diastereomer
Ph
OMe
Ph
i-Pr
O
N
14.8314
18.0150
28.7564
36.5351
36.8487
46.8197
50.4393
51.5304
58.9297
63.2758
76.7888
77.0000
77.2125
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128.5729
128.3350
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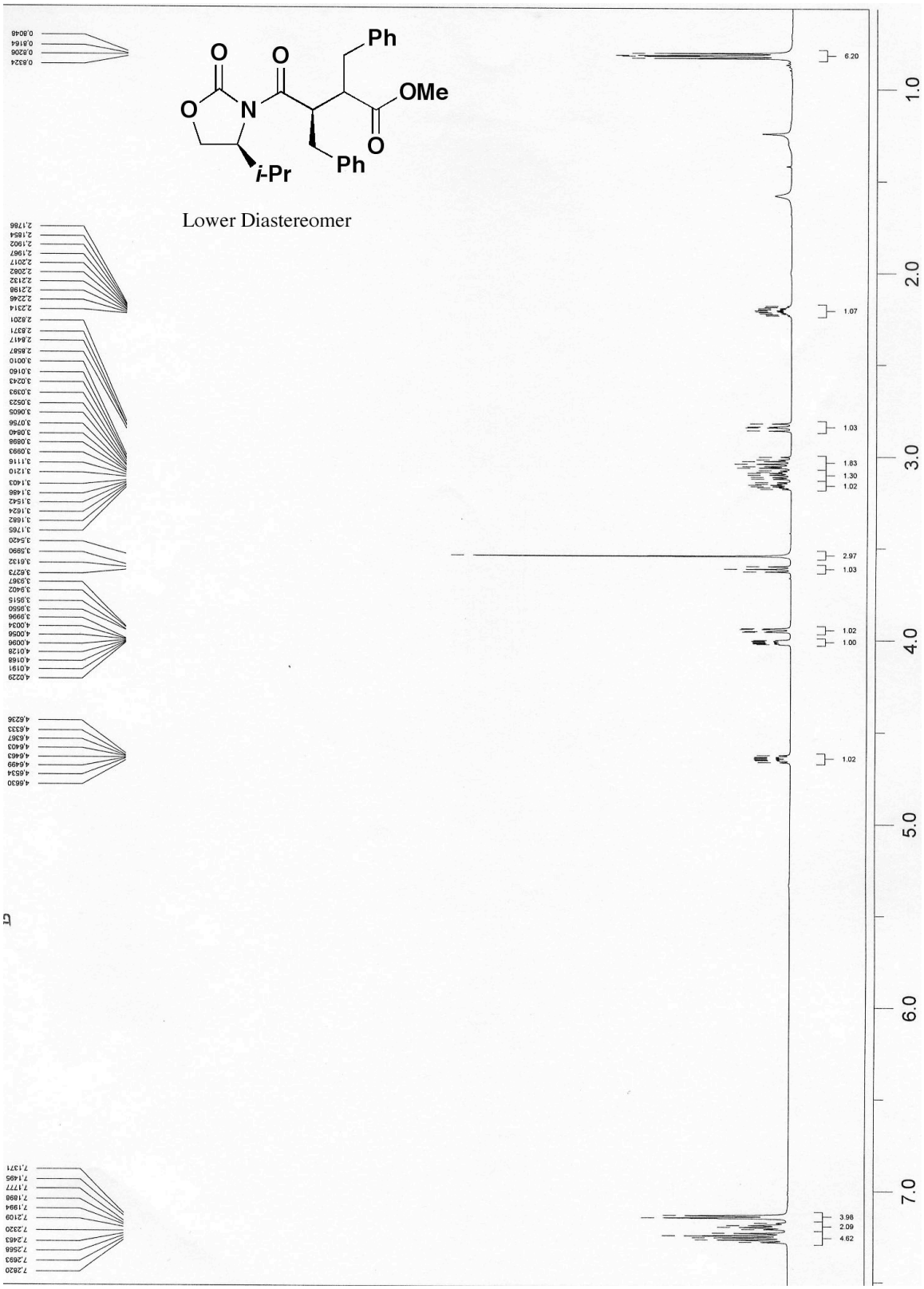
100
150


Ph
O
O
OMe
O
N
O
Ph
i-Pr
Lower Diastereomer
6.20
1.07
1.03
1.83
1.30
1.02
2.97
1.03
1.02
1.00
1.02
3.98
2.09
4.62
1.0
2.0
3.0
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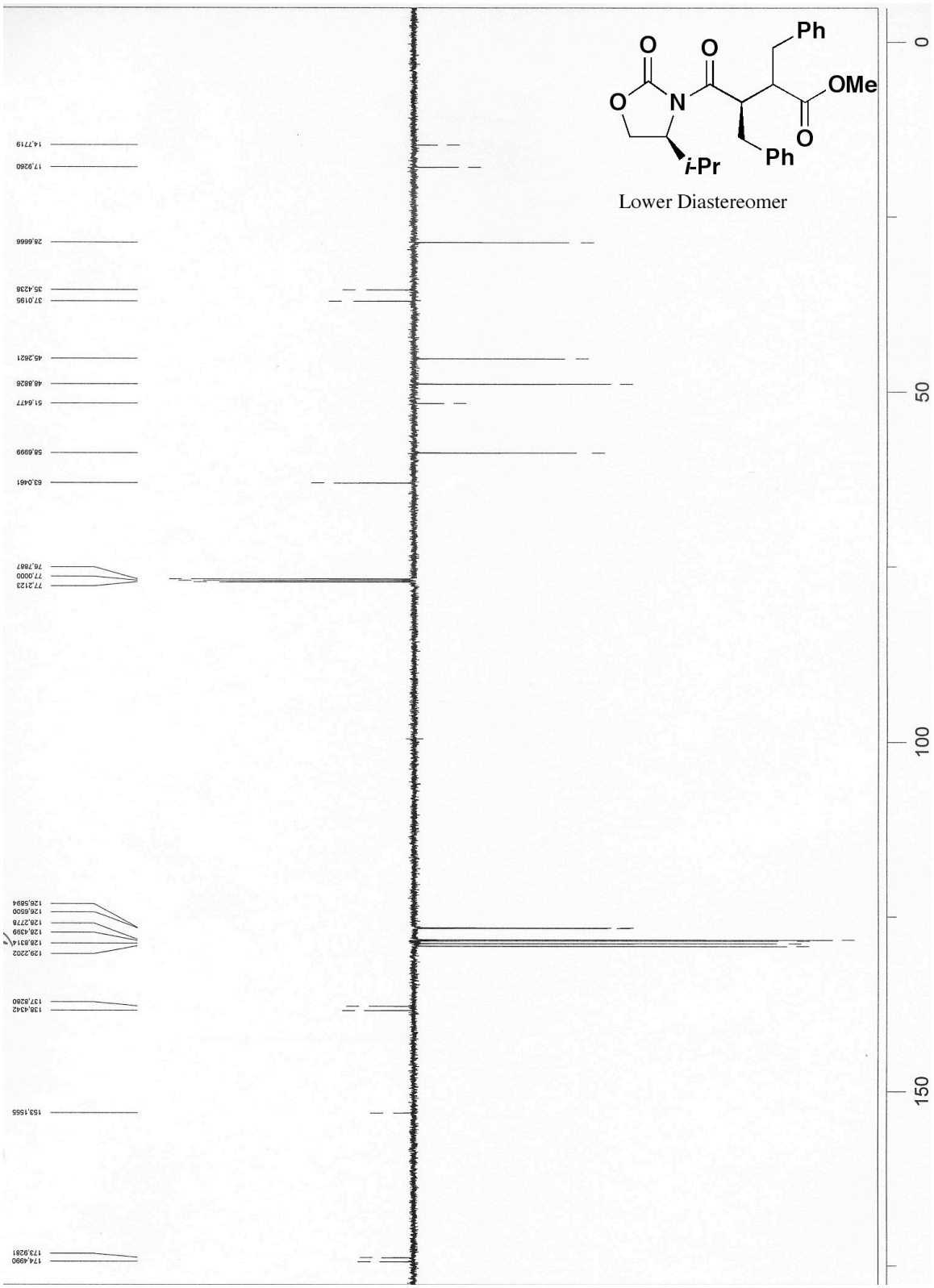
5.0
6.0
7.0


Ph
O
O
OMe
O
N
O
O
Ph
i-Pr
Lower Diastereomer
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37.0195
45.3621
48.8826
51.6477
58.6999
63.0461
76.7867
77.0000
77.2123
126.5694
126.6500
126.8776
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129.2202
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153.1555
173.9281
174.4990
0
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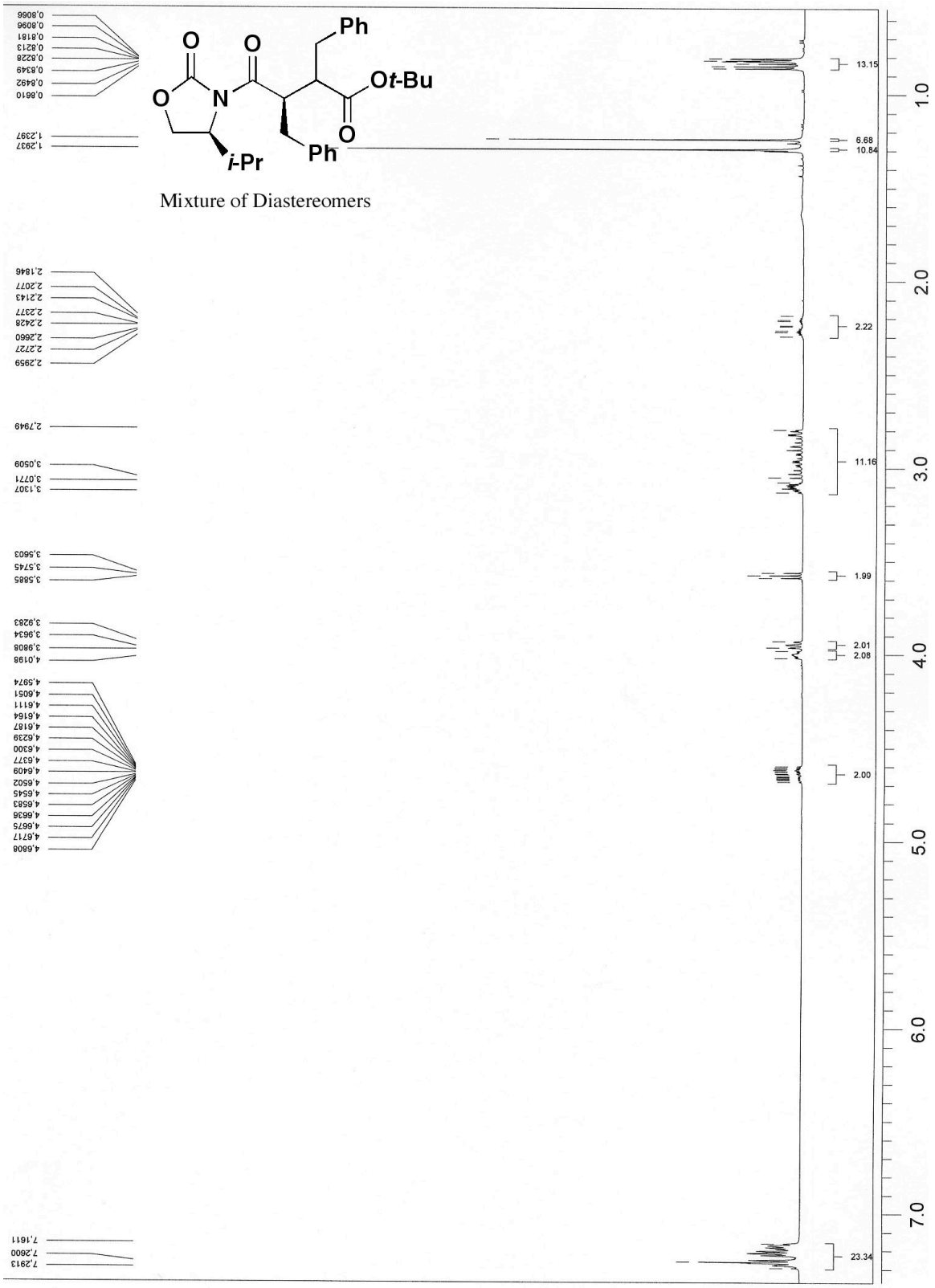
100
150


Ph
O
O
O
N
O
Ot-Bu
O
Ph
i-Pr
Mixture of Diastereomers
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10.84
2.22
11.16
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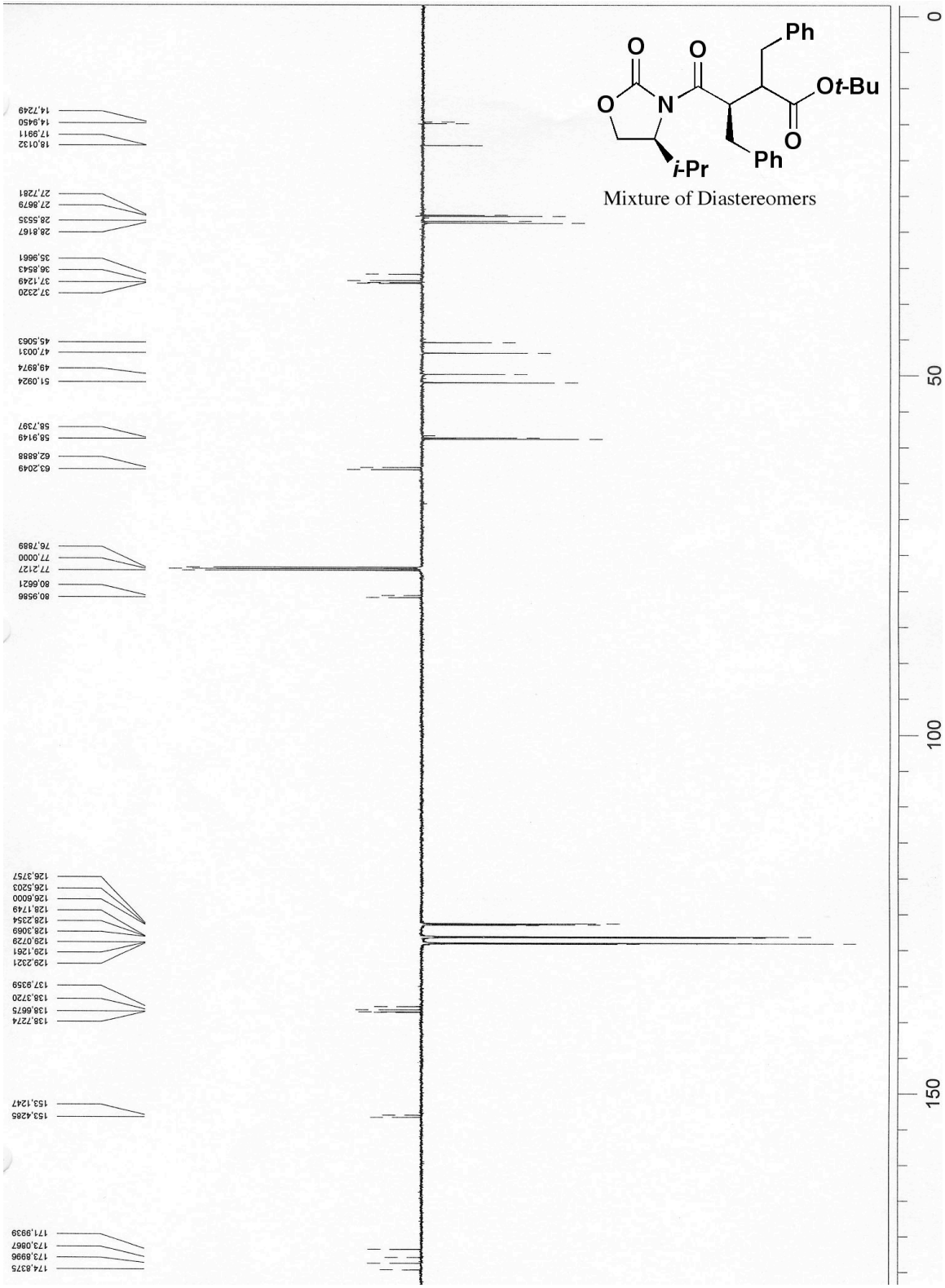
2.01
2.08
2.00
23.34
1.0
2.0
3.0
4.0
5.0
6.0
7.0


Ph
O
O
O
N
Ot-Bu
O
Ph
i-Pr
Mixture of Diastereomers
14.7249
14.9450
17.9911
18.0132
27.7281
27.8679
28.5535
28.8167
35.9661
36.8543
37.1249
37.2320
45.5063
47.0031
49.8974
51.0924
58.7397
58.9149
62.8888
63.2049
76.7889
77.0000
77.2127
80.0621
80.9586
126.3757
126.5203
126.6000
128.1749
128.2354
128.3069
128.0729
128.1261
128.2321
137.9359
138.3720
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153.1247
153.4285
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173.8996
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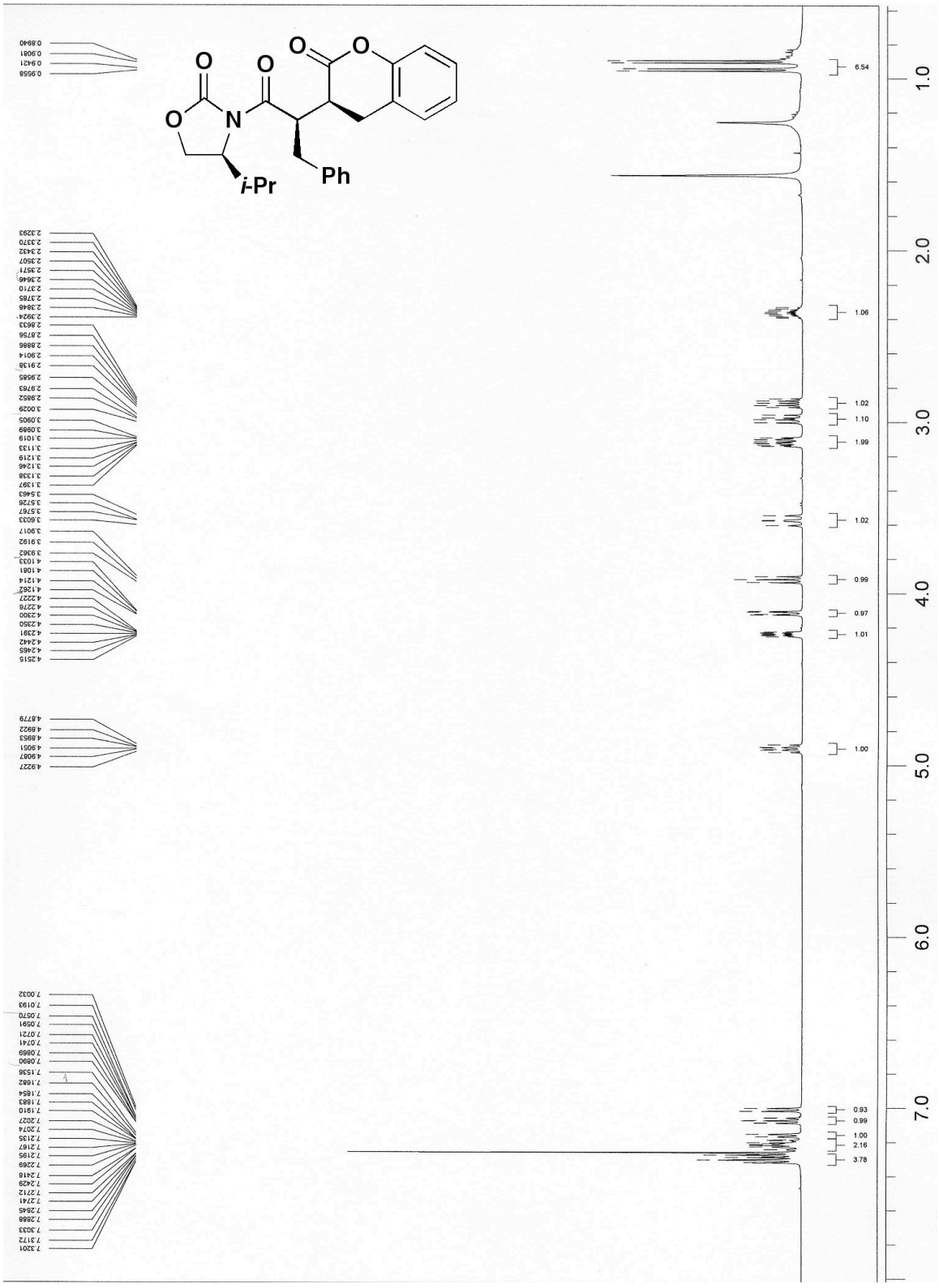
100
150


O
O
O
O
N
O
i-Pr
Ph
6.54
1.06
1.02
1.10
1.99
1.02
0.99
0.97
1.01
1.00
0.93
0.99
1.00
2.16
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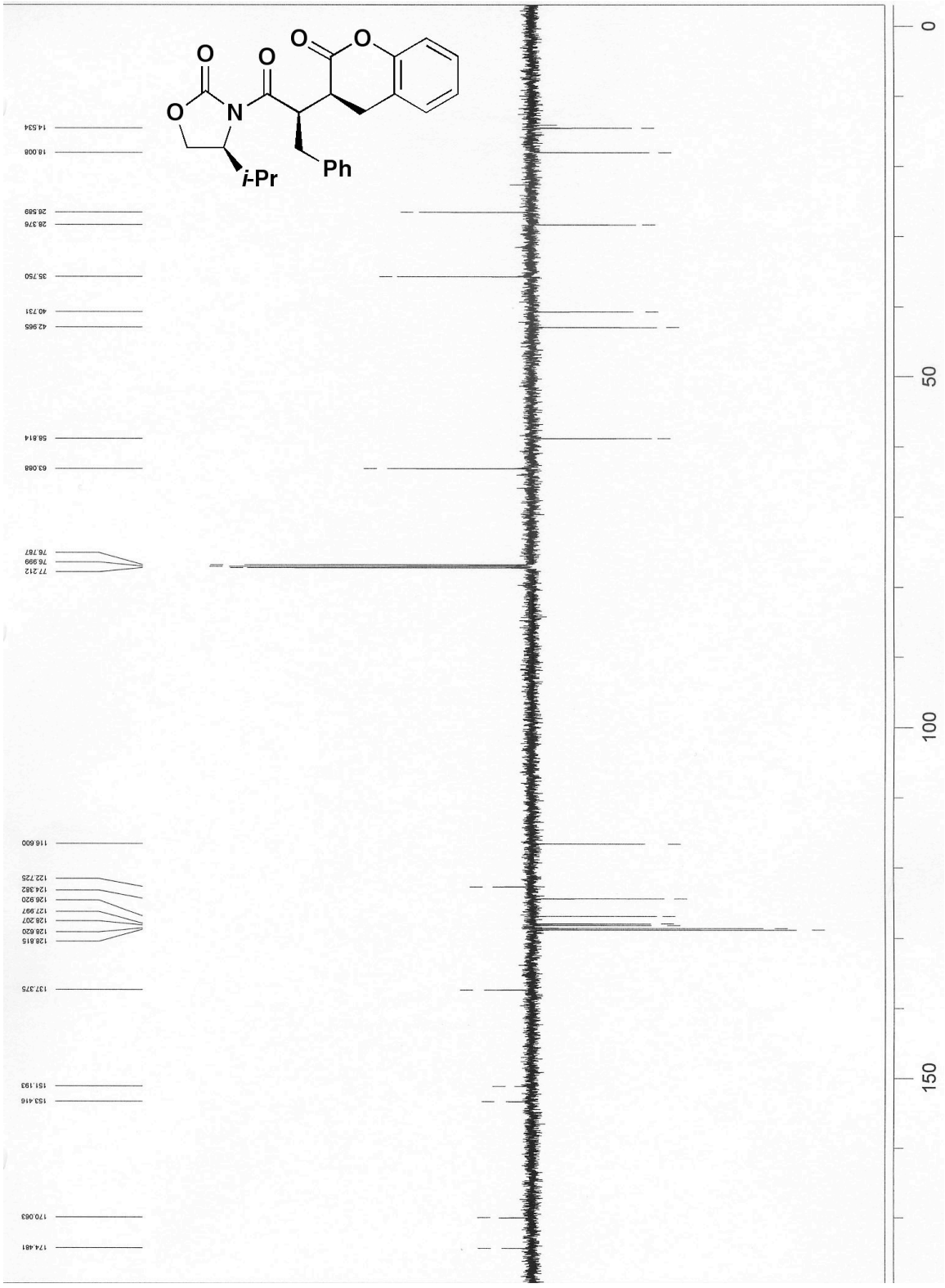
2.0
3.0
4.0
5.0
6.0
7.0


O
O
O
O
O
N
i-Pr
Ph
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35.750
40.731
42.965
58.814
63.088
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76.999
77.212
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122.725
124.382
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128.620
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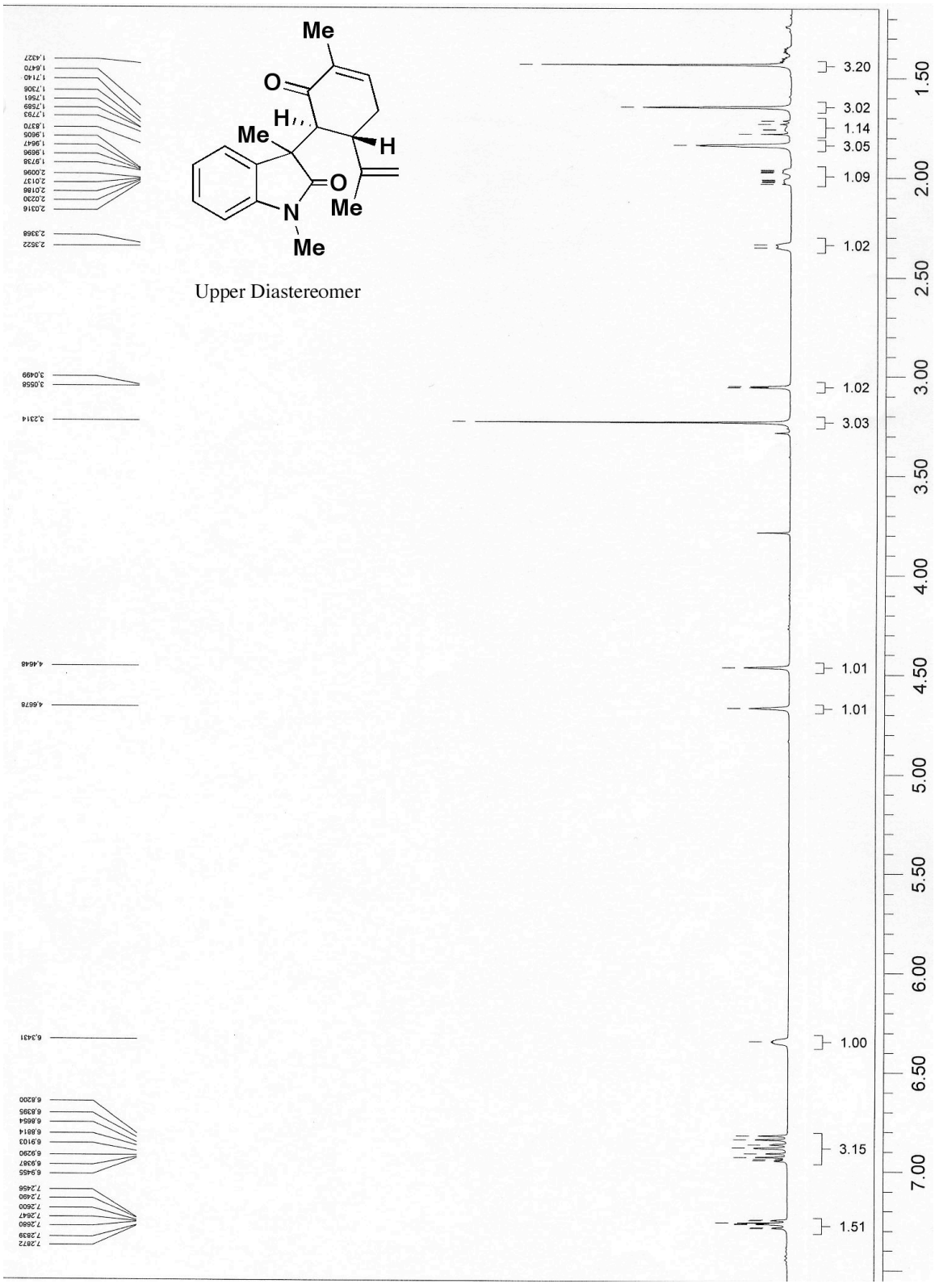
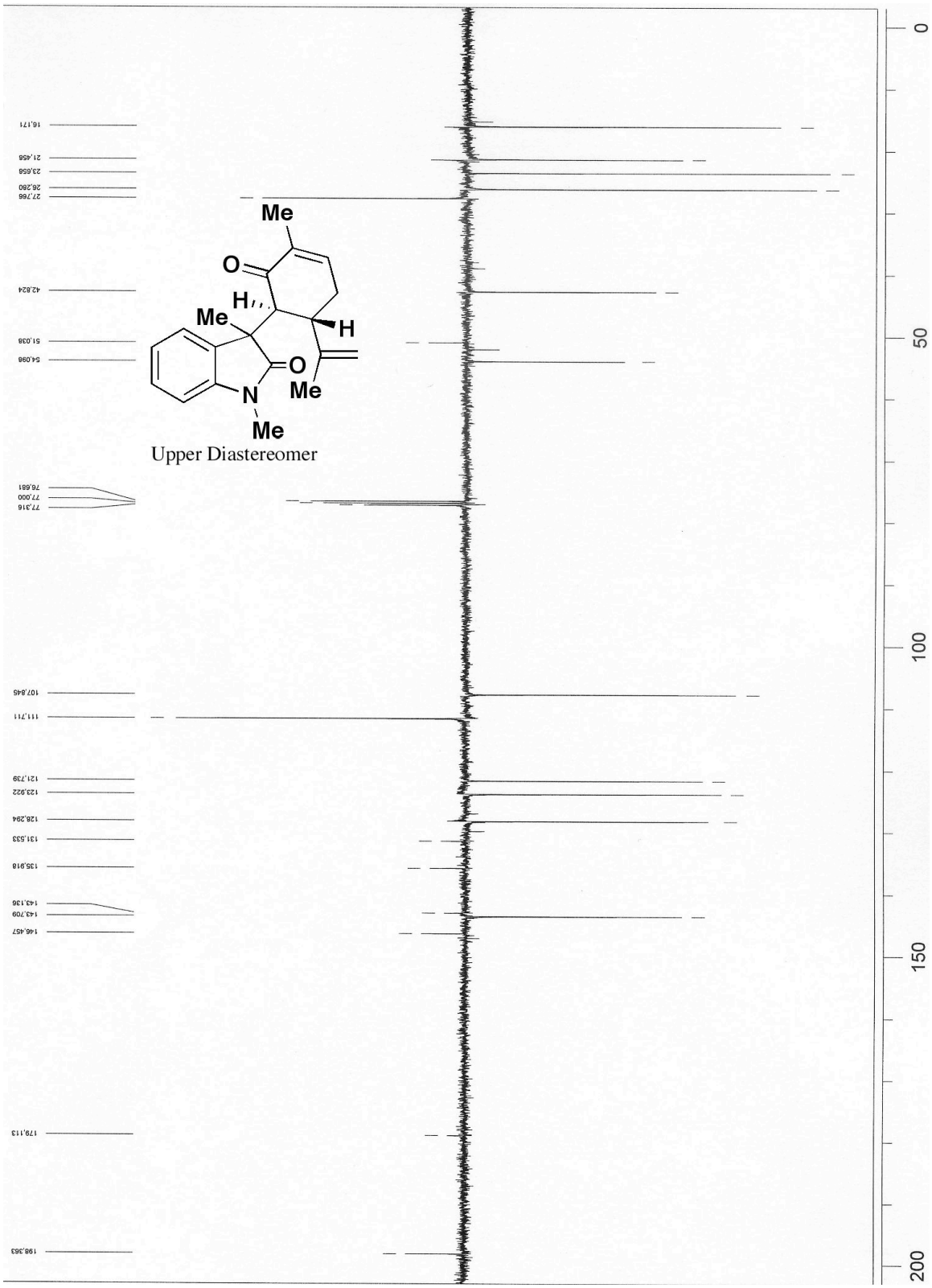

Me
O
H
Me
H
O
N
Me
Me
Upper Diastereomer
3.20
3.02
1.14
3.05
1.09
1.02
1.02
3.03
1.01
1.01
1.00
3.15
1.51
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
7.00


Me
O
H
Me
H
O
Me
N
Me
Upper Diastereomer
16.171
21.456
23.656
26.280
27.766
42.824
51.038
54.098
76.681
77.000
77.316
107.845
111.711
121.739
123.922
126.294
131.533
135.918
143.136
143.709
146.457
179.113
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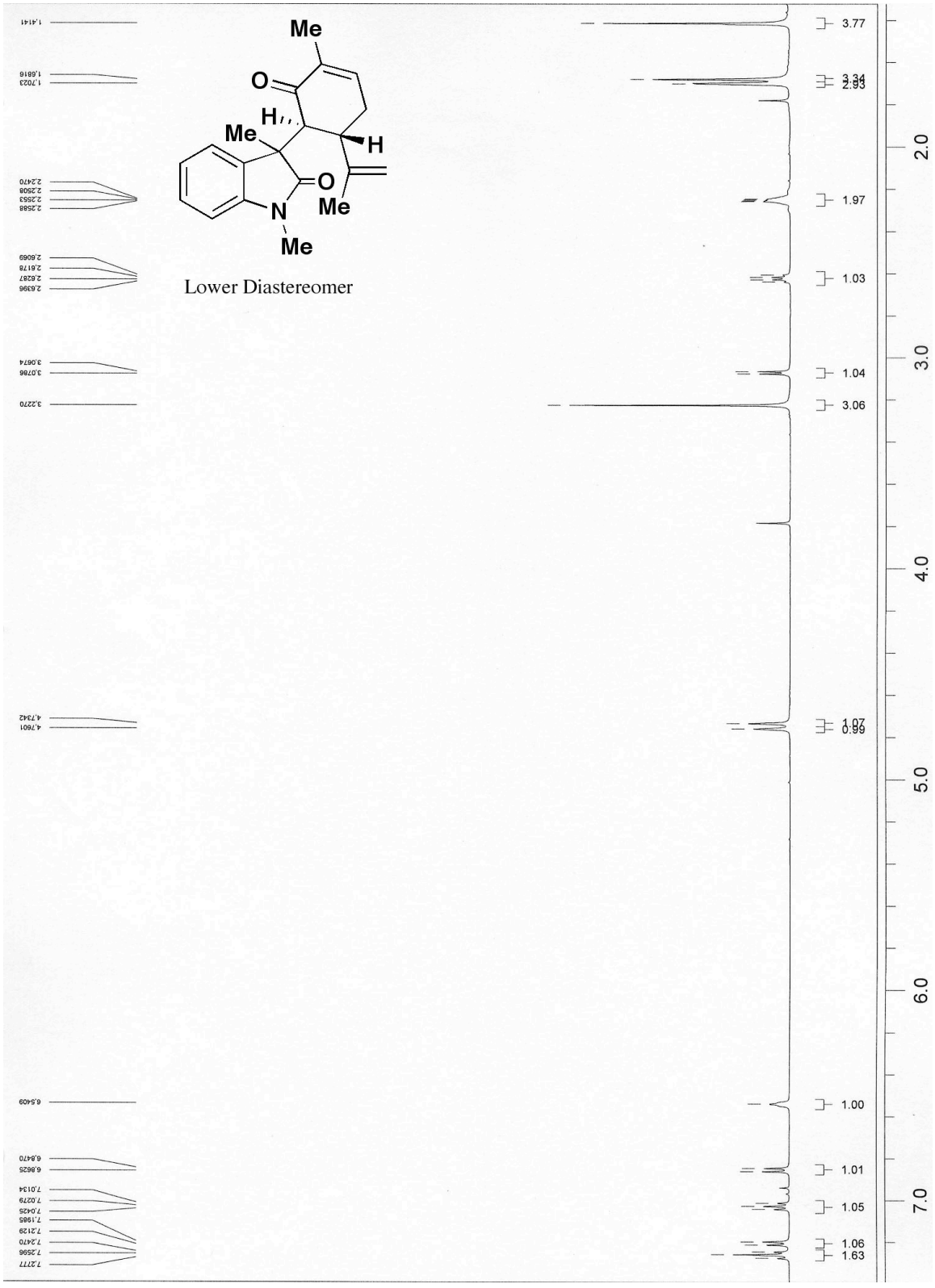
50
100
150
200


Me
O
H
Me
H
O
N
Me
Me
Lower Diastereomer
3.77
2.34
2.93
1.97
1.03
1.04
3.06
1.07
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1.00
1.01
1.05
1.06
1.63
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3.0
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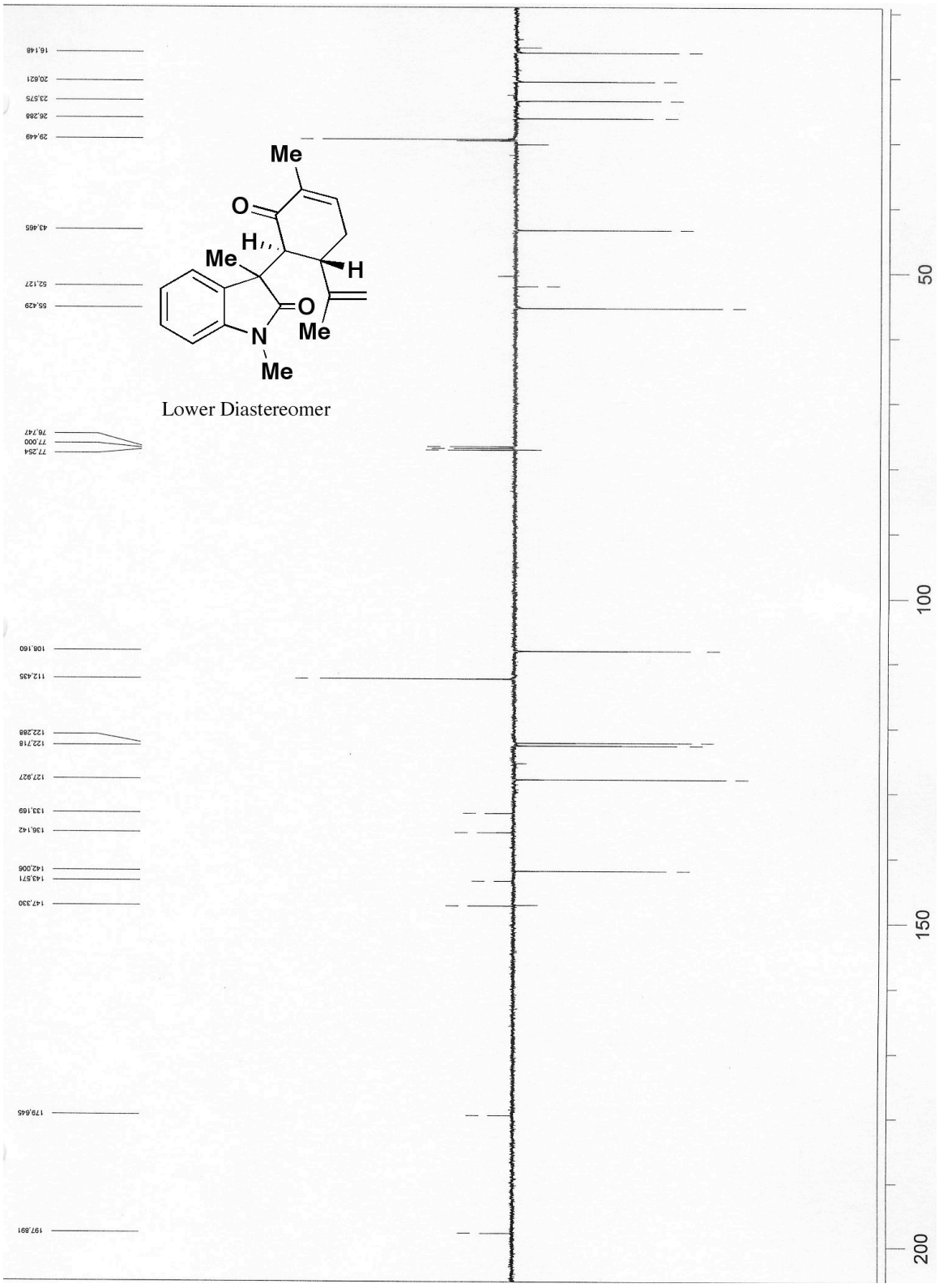
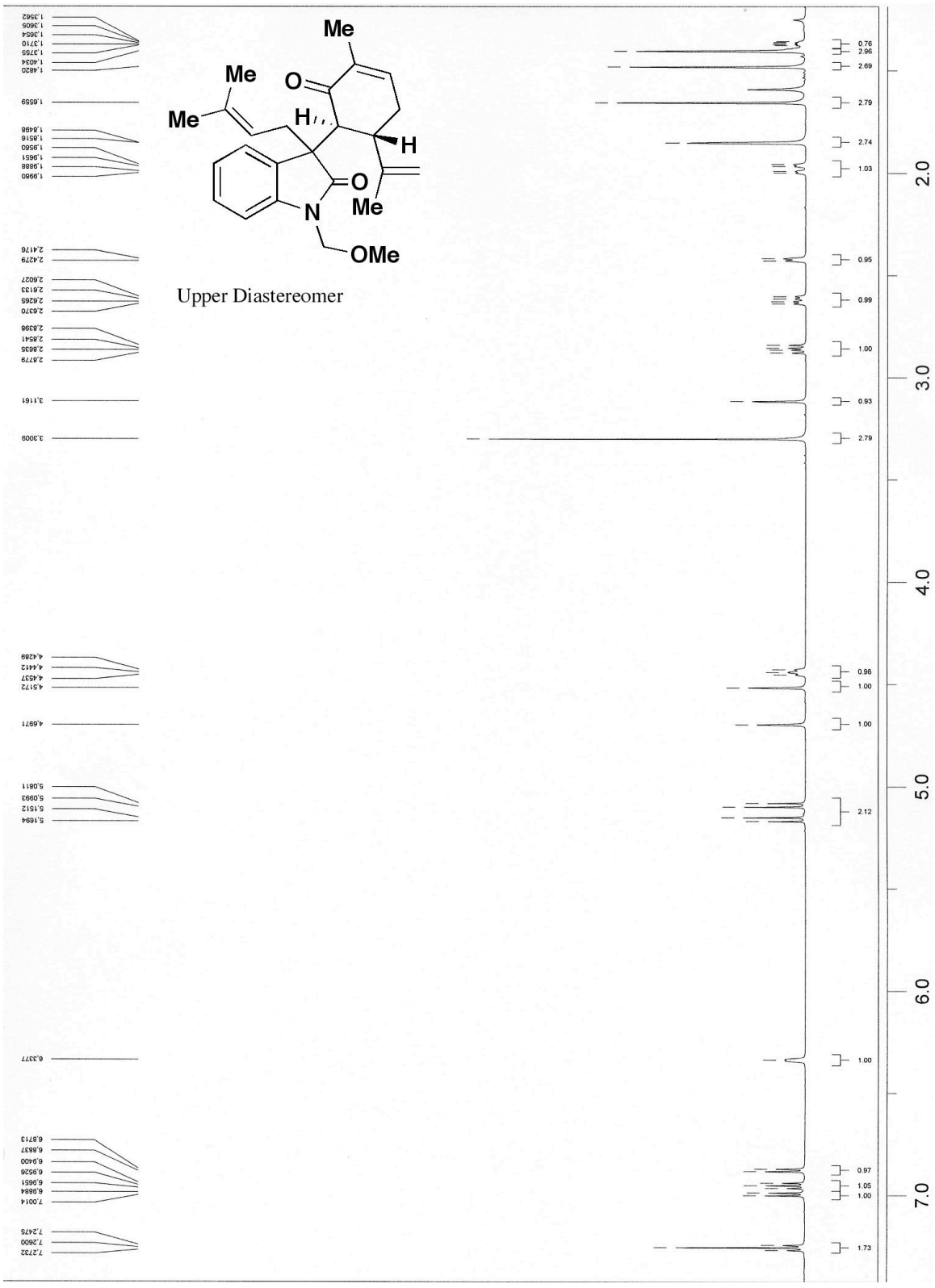
5.0
6.0
7.0



Lower Diastereomer


Me
Me
O
Me
H
H
O
Me
N
OMe
Upper Diastereomer
1.3562
1.3605
1.3654
1.3710
1.3755
1.4024
1.4820
1.6559
1.8498
1.8516
1.9560
1.9651
1.9886
1.9980
2.4176
2.4279
2.6027
2.6133
2.6265
2.6370
2.8396
2.8541
2.8635
2.8779
3.1161
3.3008
4.4289
4.4412
4.4537
4.5172
4.6971
5.0811
5.0993
5.1512
5.1694
6.3377
6.8713
6.8837
6.9400
6.9526
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6.9884
7.0014
7.2475
7.2600
7.2732
0.76
2.96
2.69
2.79
2.74
1.03
0.95
0.99
1.00
0.93
2.79
0.96
1.00
1.00
2.12
1.00
0.97
1.05
1.00
1.73
2.0
3.0
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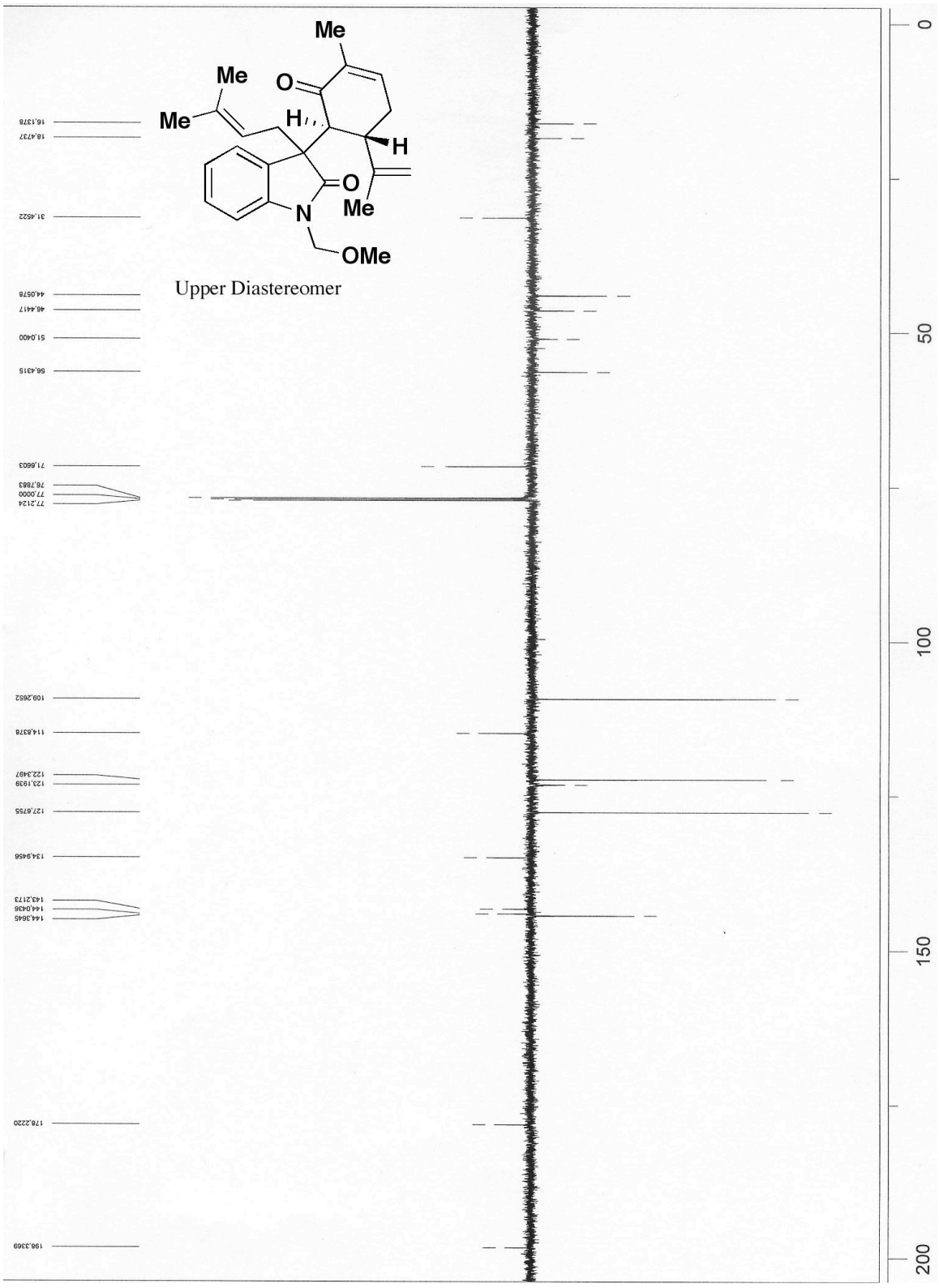
7.0


Me
Me
O
Me
H
H
O
N
Me
OMe
Upper Diastereomer
16.1378
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31.4522
44.0578
46.4417
51.0400
56.4315
71.6603
76.7883
77.0000
77.2124
109.2652
114.8378
122.3497
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143.2173
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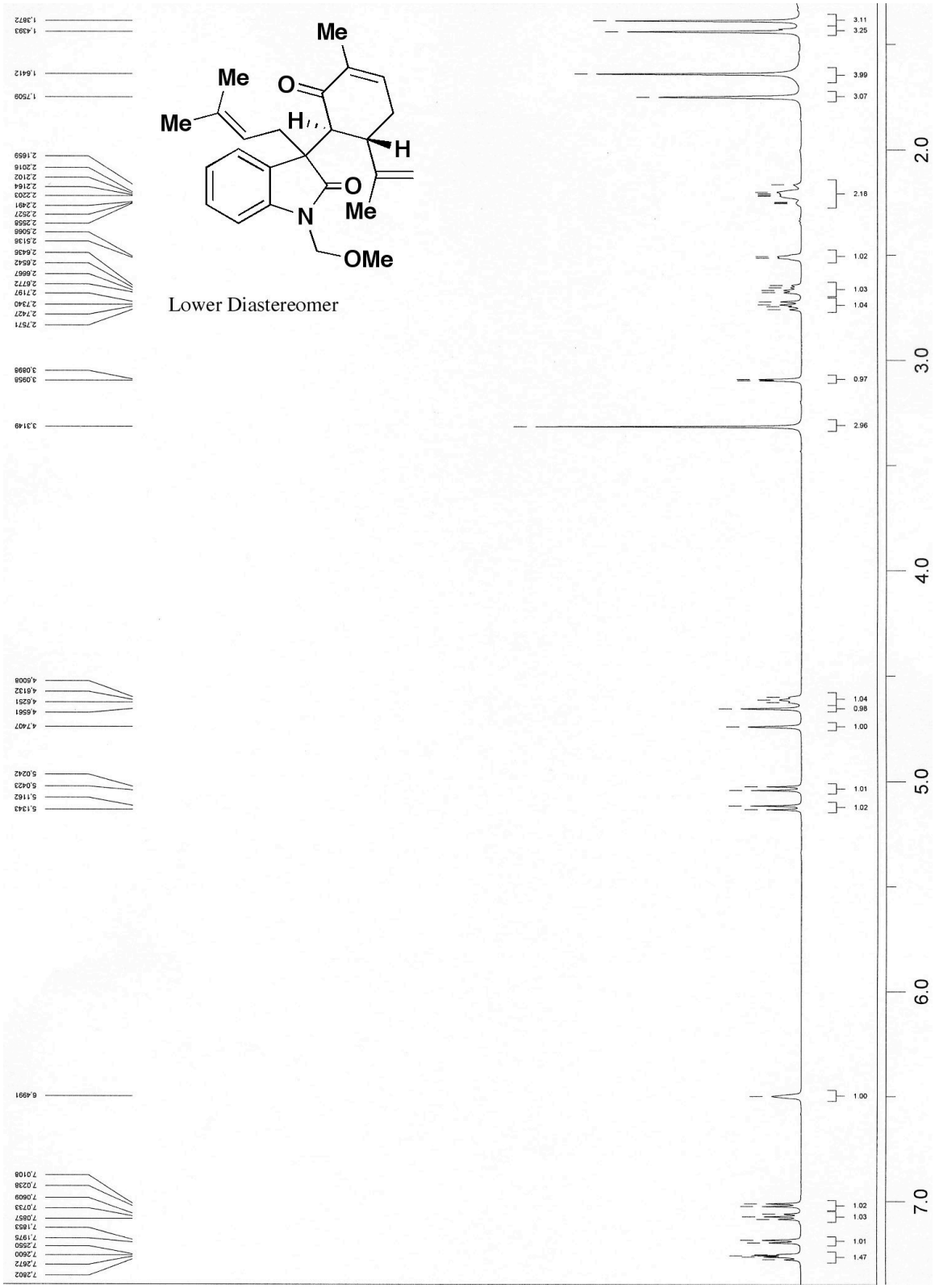
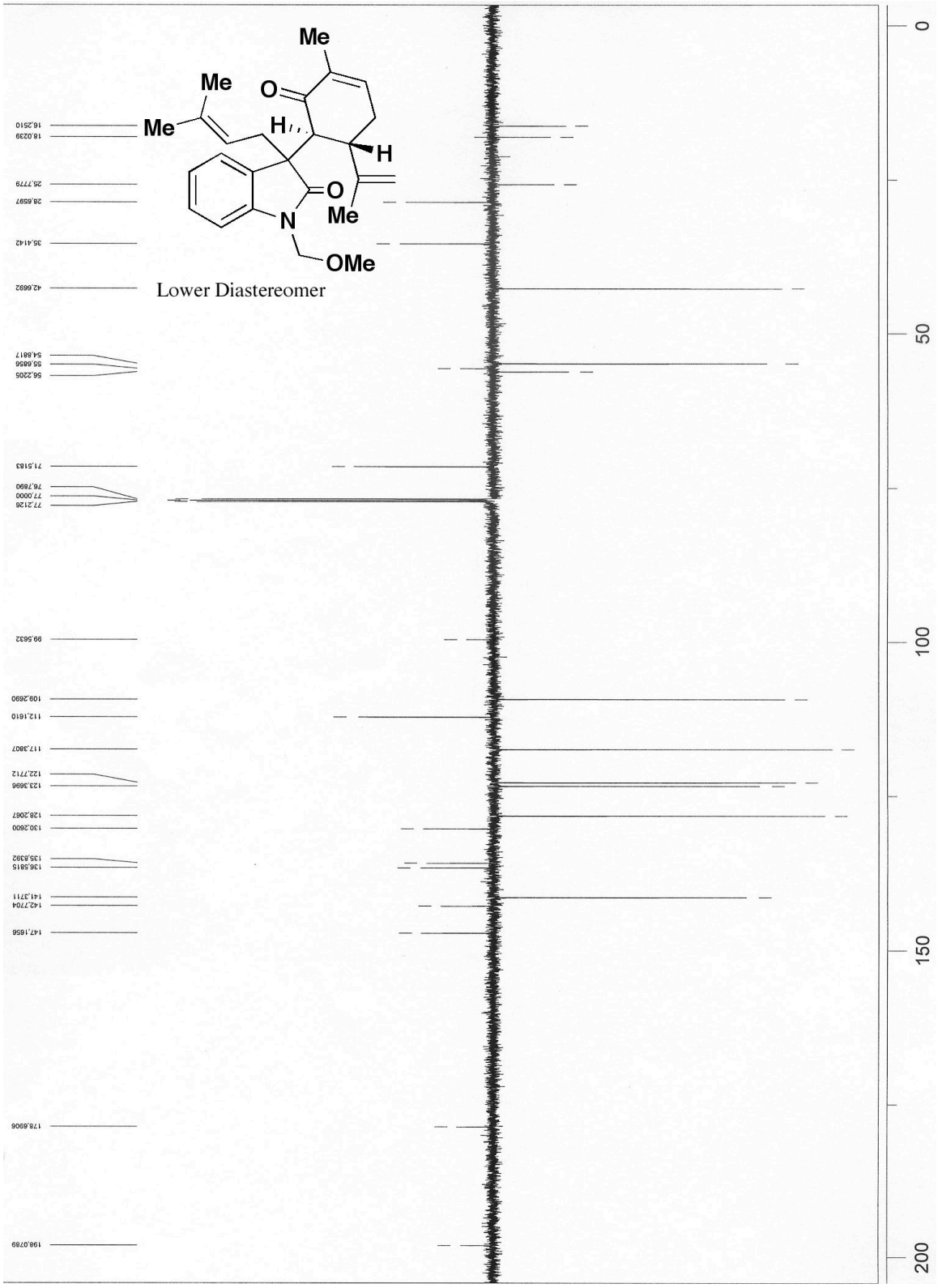
150
200


Me
Me
O
Me
H
H
O
N
Me
OMe
Lower Diastereomer


Me
Me
O
Me
H
H
O
Me
N
OMe
Lower Diastereomer
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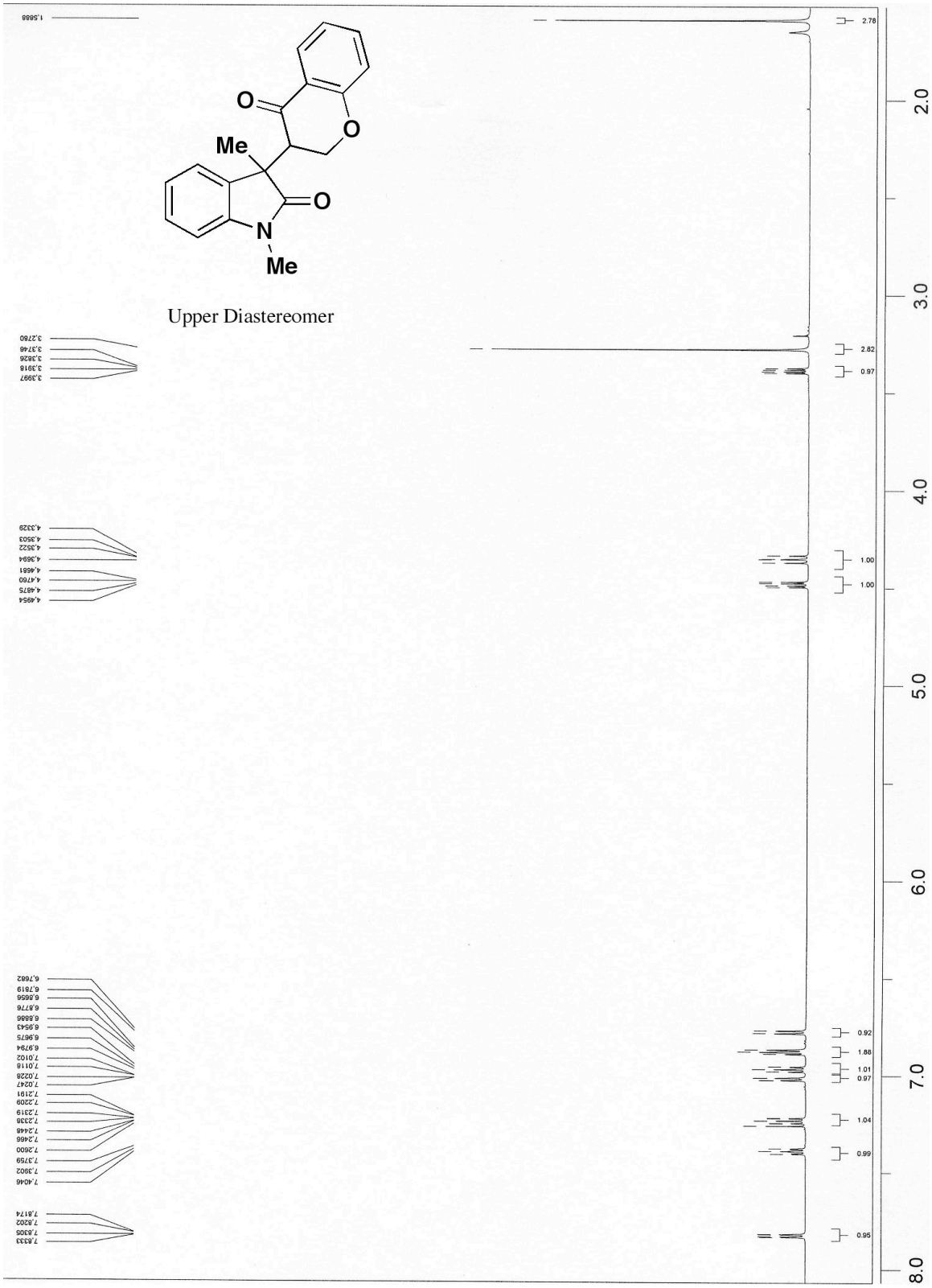
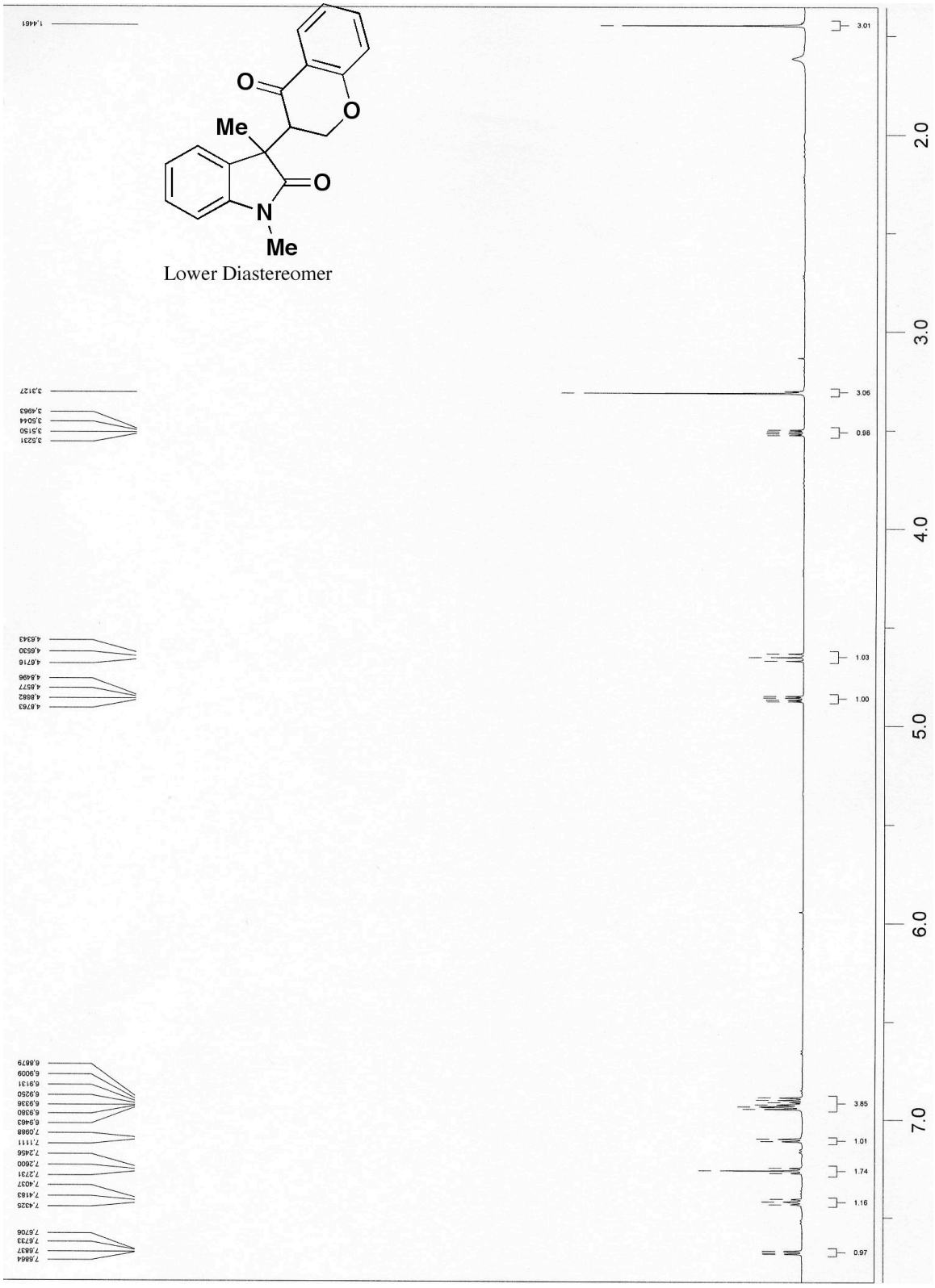
25.7779
28.6597
35.4142
42.6692
54.8817
55.6656
56.2205
71.5183
76.7890
77.0000
77.2126
99.5632
109.2690
112.1610
117.3807
122.7712
123.3696
128.2067
130.2600
135.8382
136.5815
141.3711
142.7704
147.1656
178.6906
198.0789
0
50
100
150
200


Me
N
Me
Upper Diastereomer


O
O
Me
O
N
Me
Upper Diastereomer
22.9920
26.3416
47.8880
51.1042
68.4480
76.7894
77.0000
77.2123
108.1661
117.4453
121.2853
121.5036
122.4417
122.9520
127.1262
128.0427
132.5733
135.8613
143.0879
161.3173
179.1003
192.0537
50
100
150


Me
Me
Lower Diastereomer
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3.3127
3.4863
3.5044
3.5150
3.5231
4.8343
4.8530
4.8716
4.8496
4.8577
4.8682
4.8763
6.8879
6.9009
6.9131
6.9250
6.9336
6.9380
6.9463
7.0988
7.1111
7.2456
7.2600
7.2731
7.4037
7.4163
7.4325
7.6706
7.6733
7.6837
7.6864
3.01
3.06
0.98
1.03
1.00
3.85
1.01
1.74
1.16
0.97
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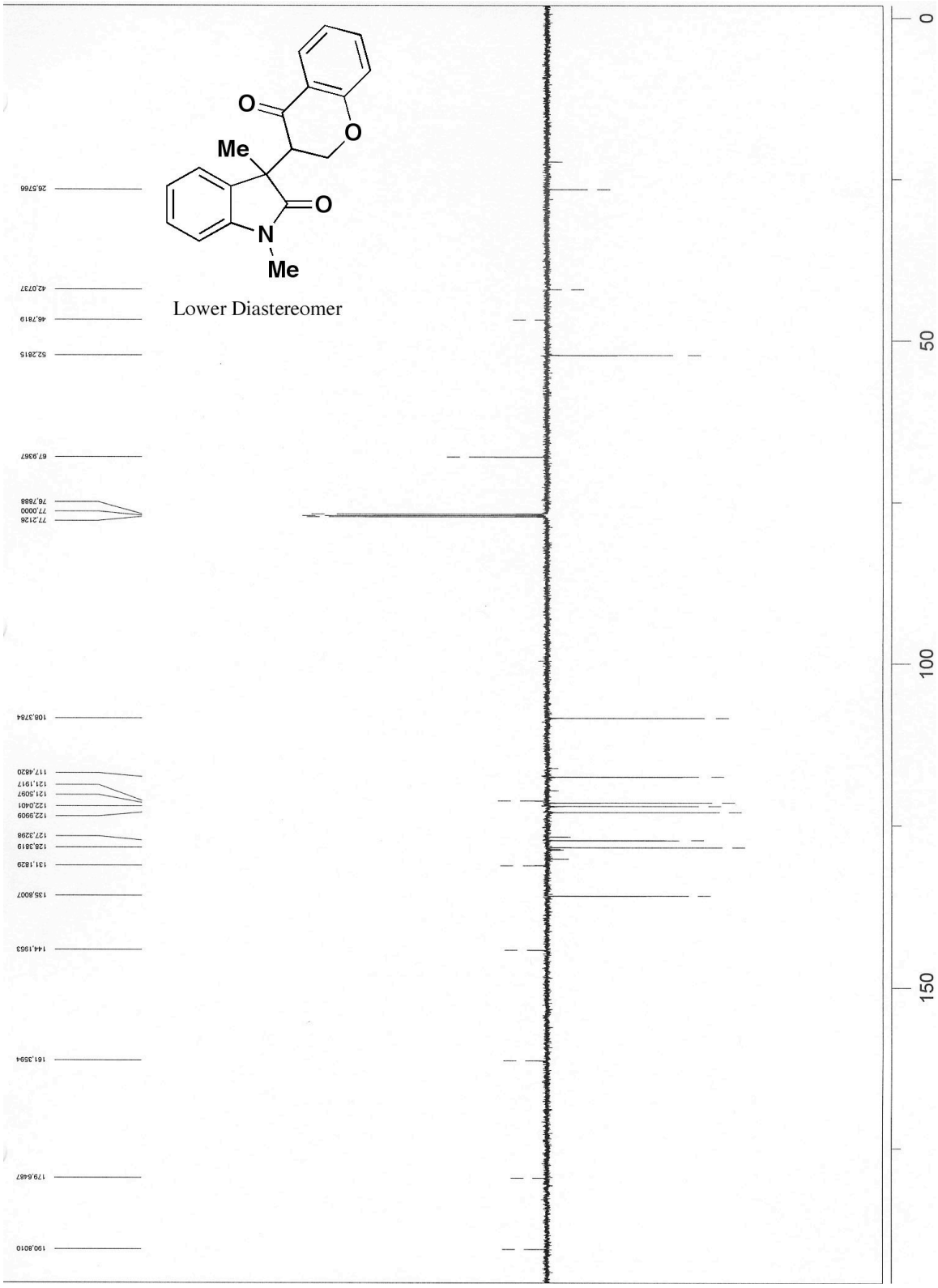
3.0
4.0
5.0
6.0
7.0


O
O
Me
O
N
Me
Lower Diastereomer
26.5766
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46.7619
52.2815
67.9367
76.7688
77.0000
77.2126
108.3784
117.4820
121.1917
121.5097
122.0401
122.9909
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144.1963
161.3594
179.6467
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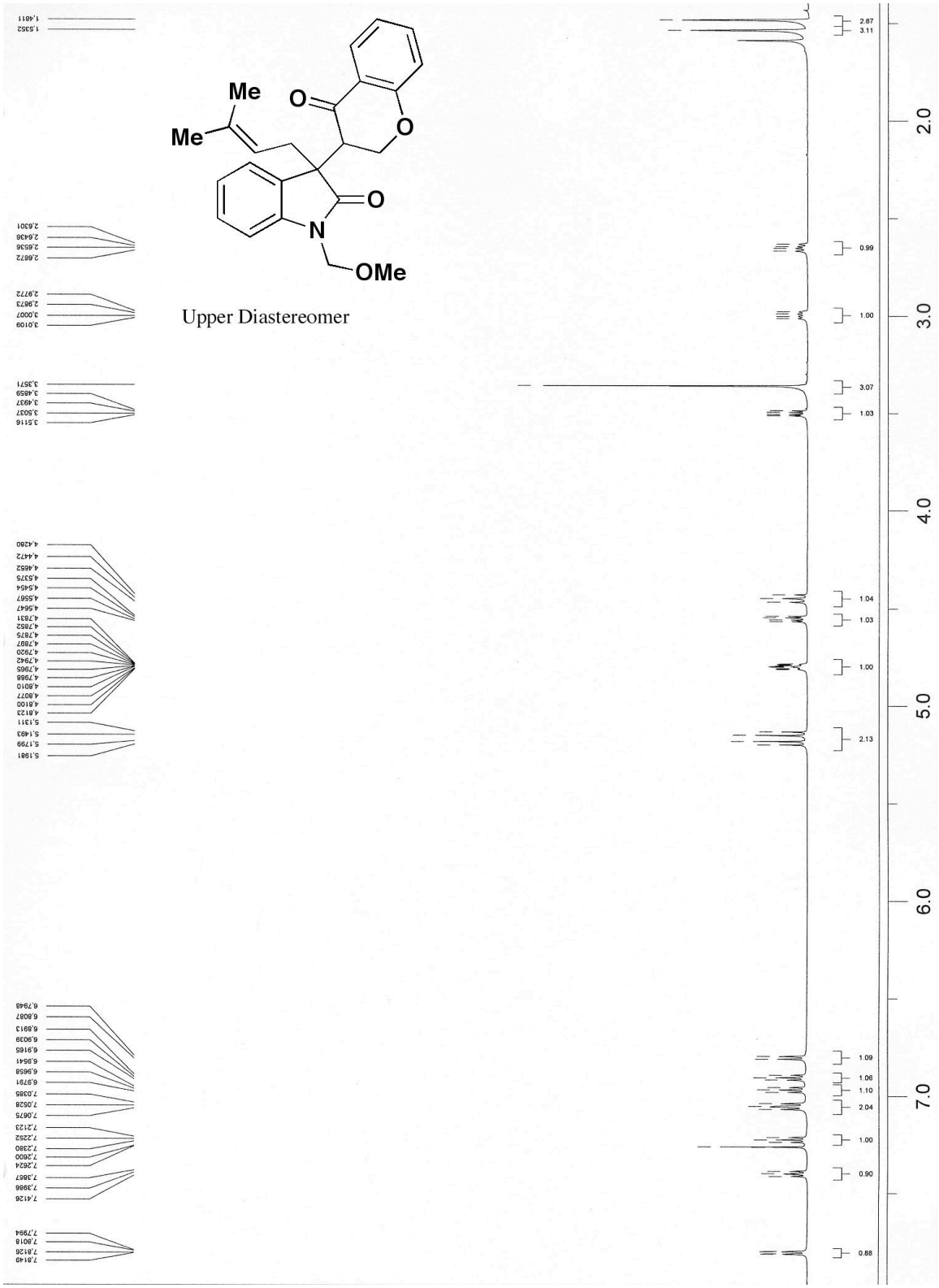
100
150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Me
O
O
O
N
OMe
Upper Diastereomer
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3.11
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1.00
3.07
1.03
1.04
1.03
1.00
2.13
1.09
1.06
1.10
2.04
1.00
0.90
0.88
2.0
3.0
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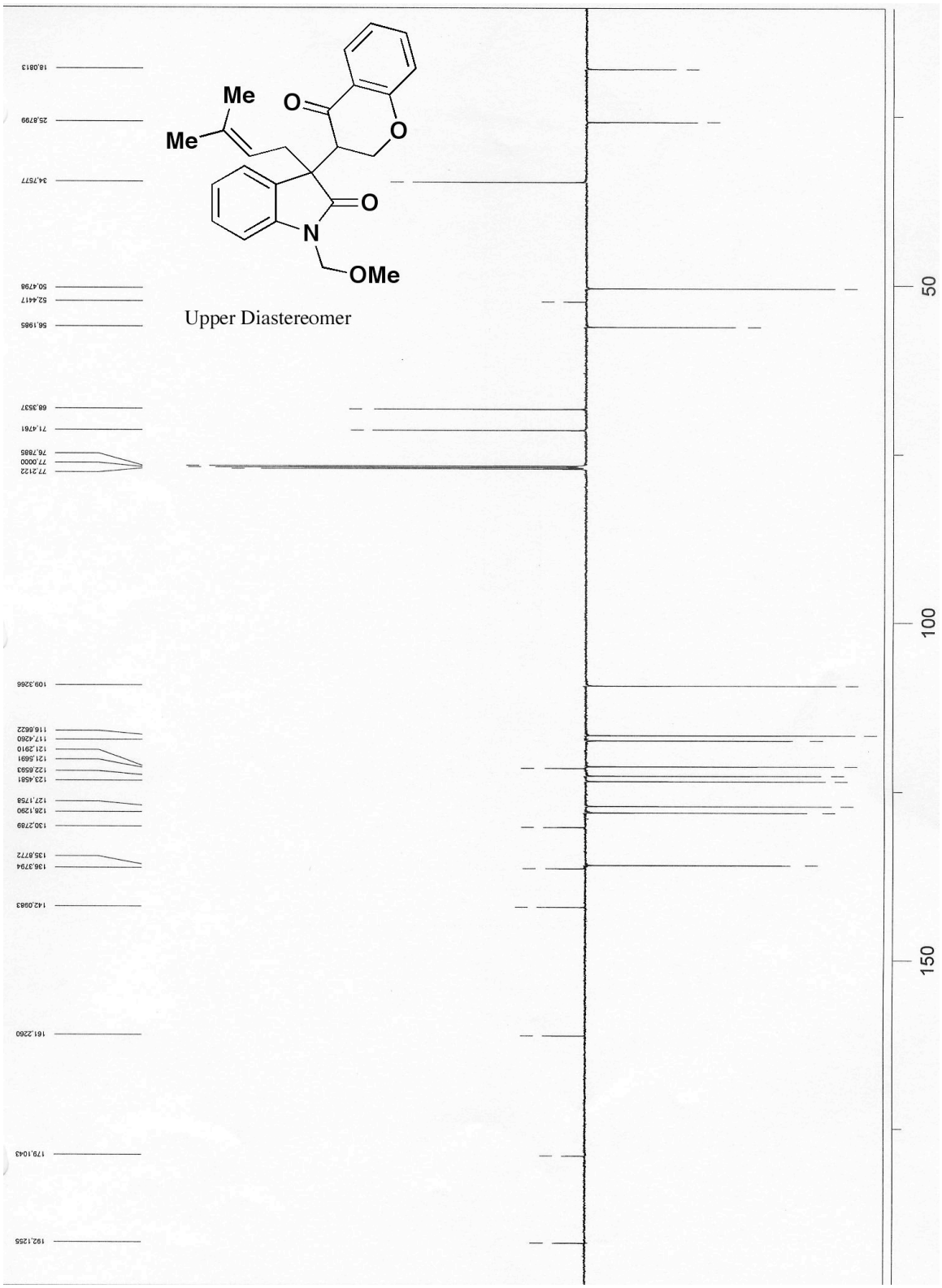
5.0
6.0
7.0


Me
Me
O
O
O
N
OMe
Upper Diastereomer
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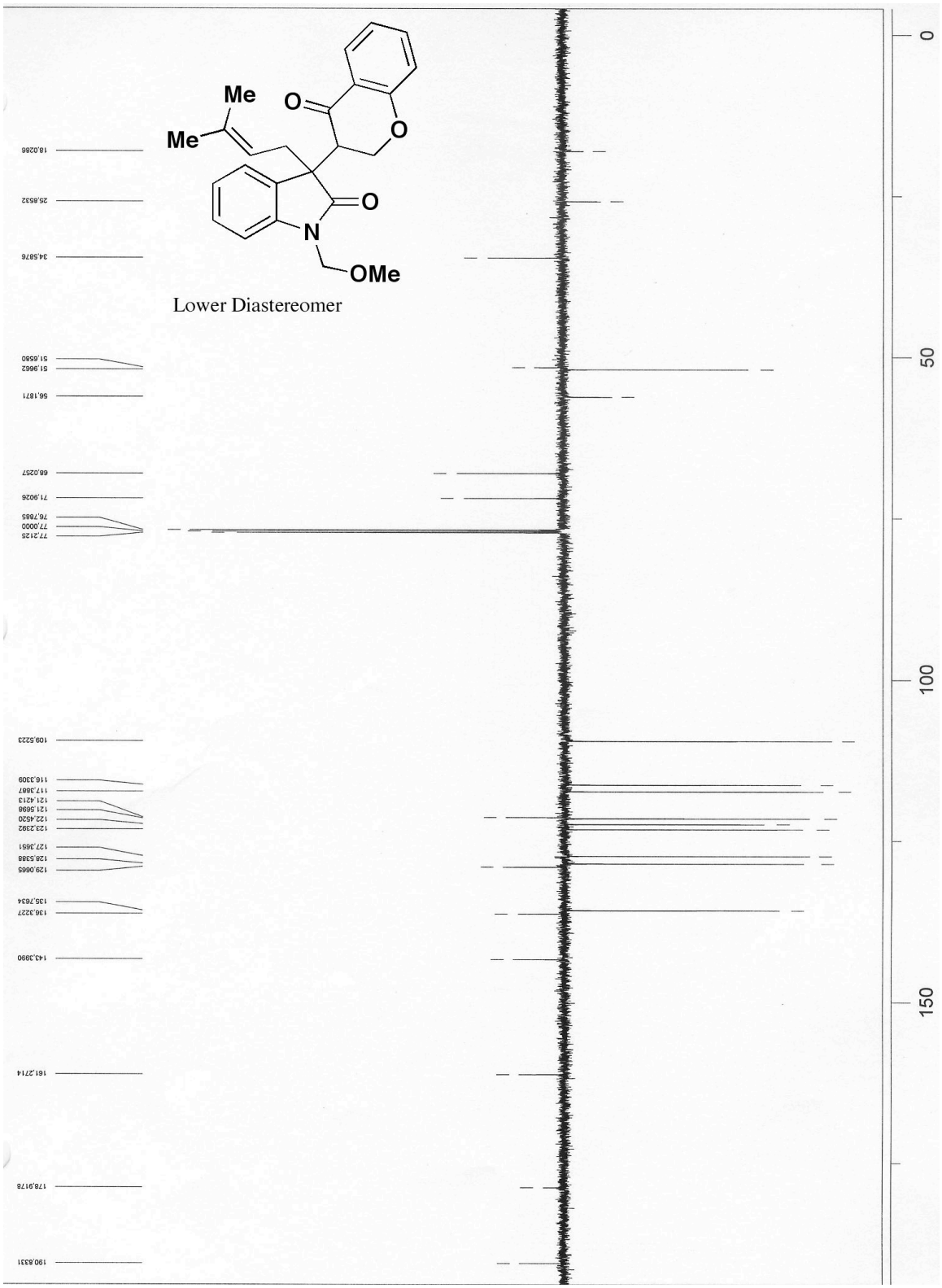
52.4417
56.1985
68.3537
71.4761
76.7885
77.0000
77.3122
109.3366
116.8622
117.4260
121.2910
121.5691
122.6593
123.4581
127.1758
128.1290
130.2789
135.8772
136.3794
142.0983
161.2260
179.1043
192.1255
50
100
150


Me
Me
O
O
O
N
OMe
Lower Diastereomer
3.05
2.99
1.06
1.06
3.01
1.02
1.09
2.07
2.13
1.00
1.07
1.08
2.11
1.68
1.06
1.00
2.0
3.0
4.0
5.0
6.0
7.0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Me
O
O
O
N
OMe
Lower Diastereomer
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56.1871
68.0257
71.9026
76.7685
77.0000
77.2125
109.5223
116.3309
117.3687
121.4213
121.5698
122.4520
123.2392
127.3651
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143.3980
161.2714
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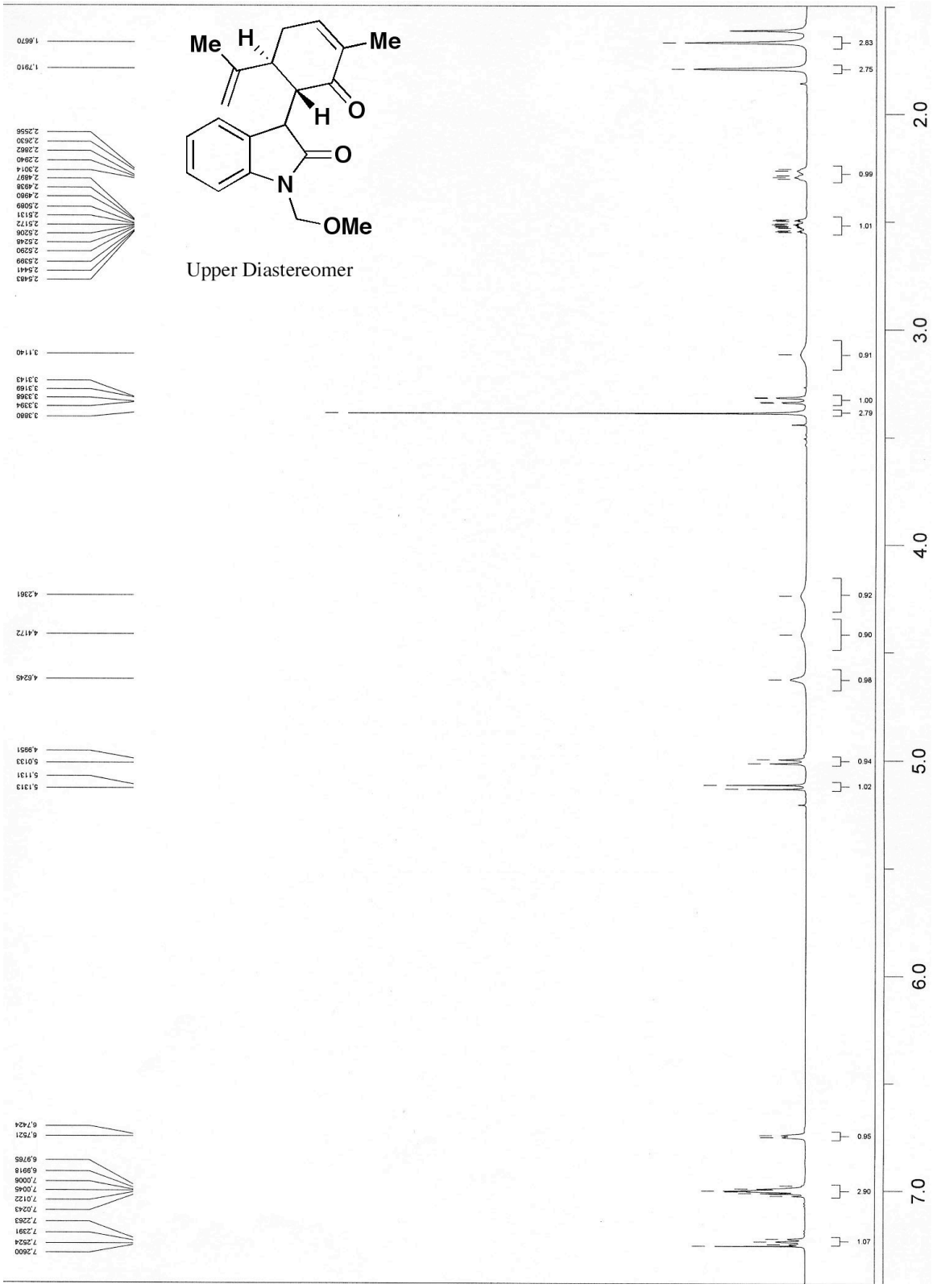
Me
H
Me
H
O
O
N
OMe
Upper Diastereomer
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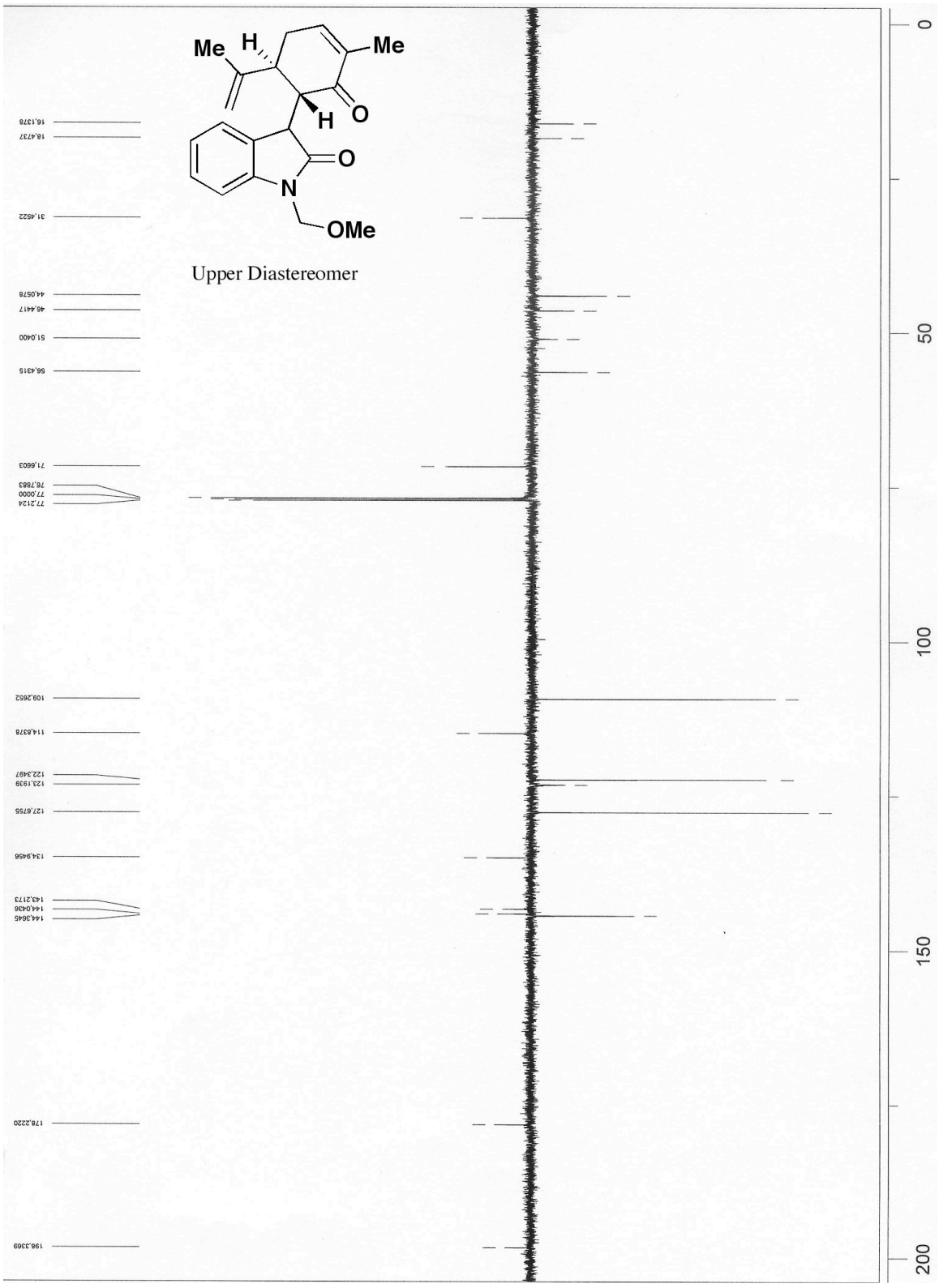
2.2940
2.3014
2.4897
2.4938
2.4980
2.5089
2.5131
2.5172
2.5206
2.5246
2.5290
2.5399
2.5441
2.5483
3.1140
3.3143
3.3169
3.3368
3.3394
3.3860
4.2361
4.4172
4.6245
4.9851
5.0133
5.1131
5.1313
6.7424
6.7521
6.9765
6.9918
7.0006
7.0046
7.0122
7.0243
7.2263
7.2391
7.2524
7.2600
2.83
2.75
0.99
1.01
0.91
1.00
2.79
0.92
0.90
0.98
0.94
1.02
0.95
2.90
1.07
2.0
3.0
4.0
5.0
6.0
7.0


Me
H
Me
H
O
O
N
OMe
Upper Diastereomer
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31.4522
44.0578
46.4417
51.0400
56.4315
71.6603
76.7883
77.0000
77.2124
109.2652
114.8378
122.3497
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127.6755
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144.3645
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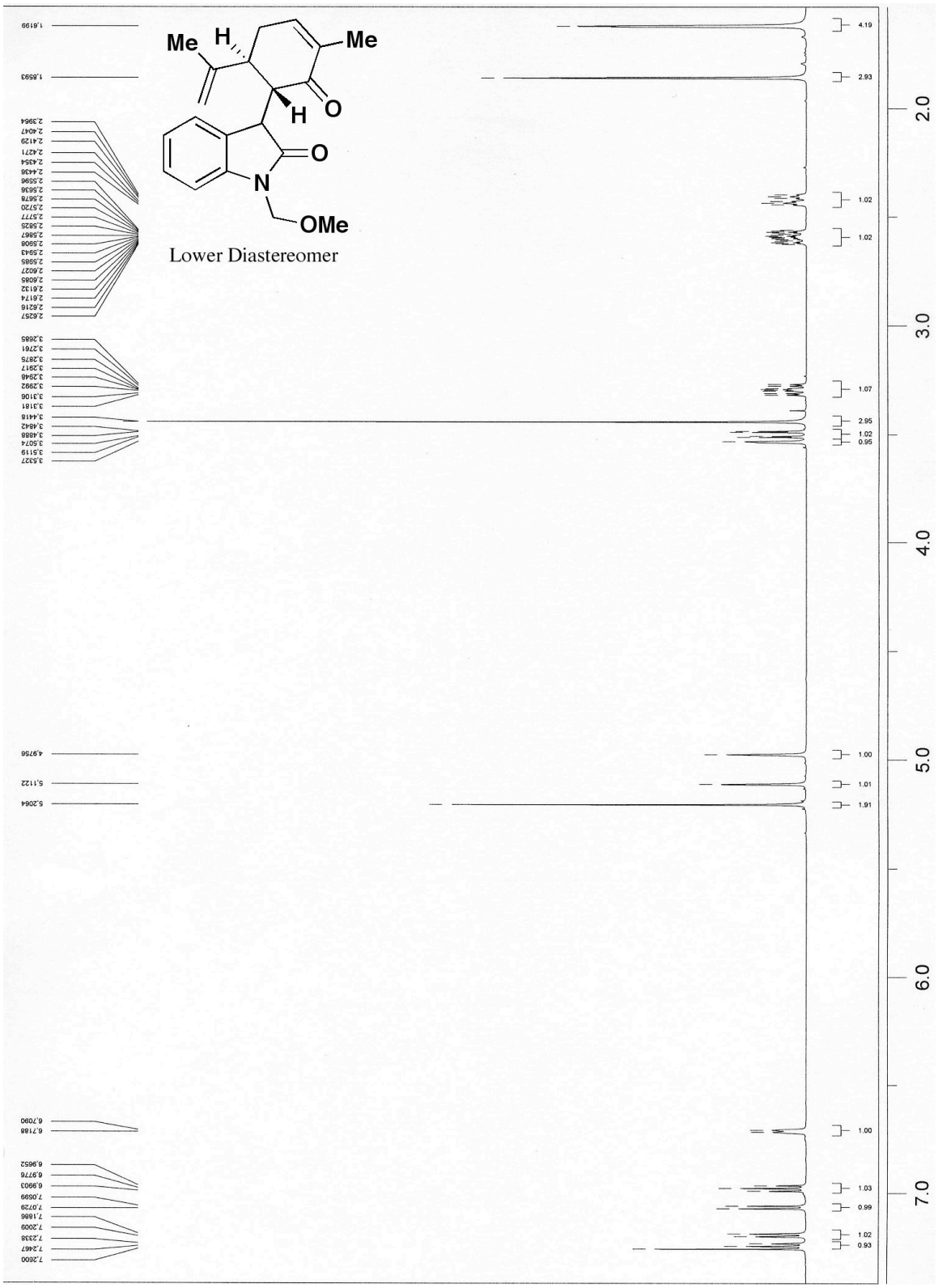
200


Me
H
Me
H
O
O
N
OMe
Lower Diastereomer
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1.8593
2.3964
2.4047
2.4129
2.4271
2.4354
2.4436
2.5596
2.5636
2.5678
2.5720
2.5777
2.5825
2.5867
2.5908
2.5943
2.5985
2.6027
2.6085
2.6132
2.6174
2.6216
2.6257
3.2685
3.2761
3.2875
3.2917
3.2948
3.2992
3.3106
3.3181
3.4418
3.4642
3.4688
3.5074
3.5119
3.5327
4.9756
5.1122
5.2064
6.7090
6.7168
6.9652
6.9776
6.9903
7.0599
7.0729
7.1686
7.2009
7.2338
7.2467
7.2600
4.19
2.93
1.02
1.02
1.07
2.95
1.02
0.95
1.00
1.01
1.91
1.00
1.03
0.99
1.02
0.93
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3.0
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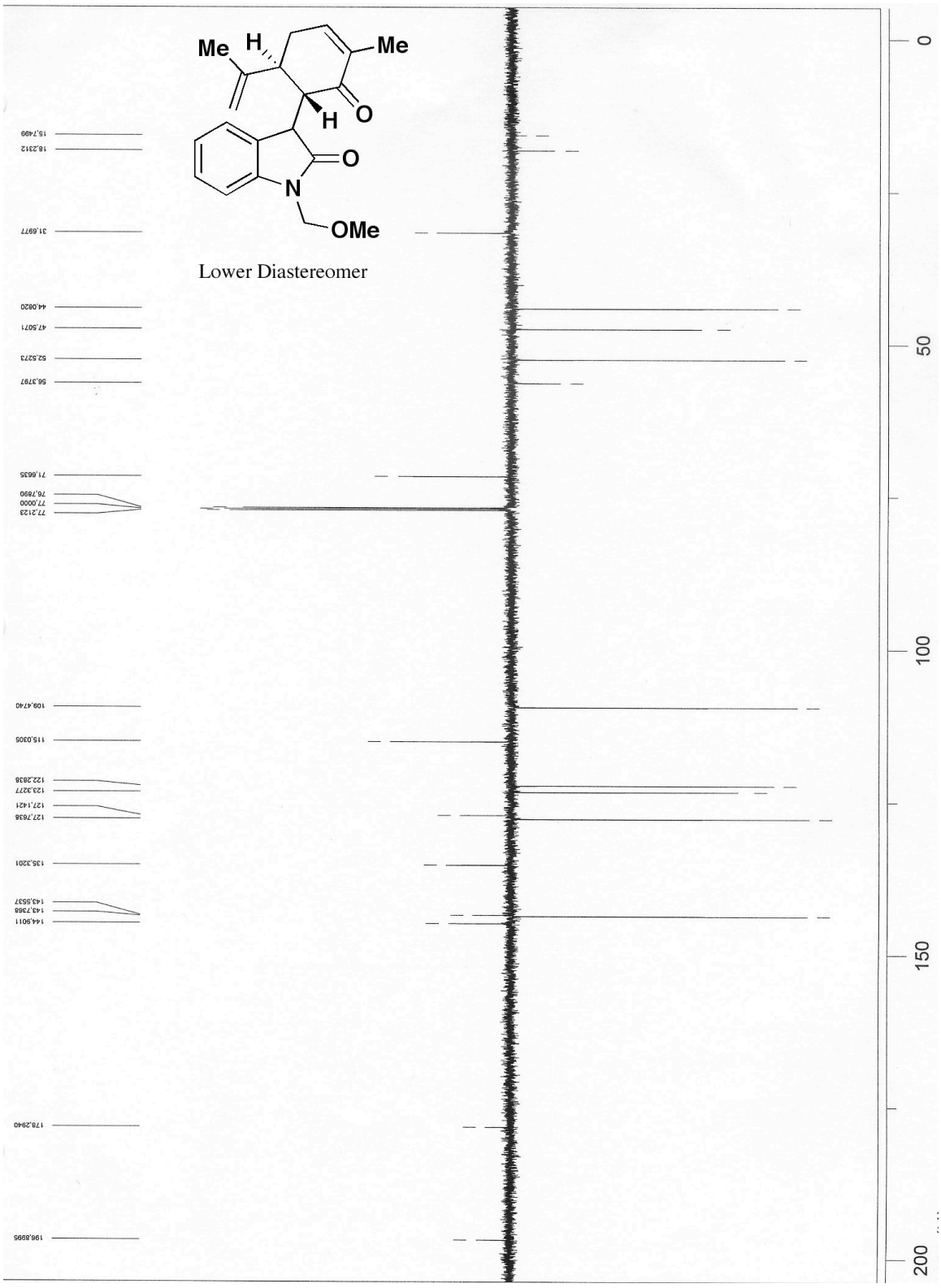
6.0
7.0


Me
H
Me
H
O
O
N
OMe
Lower Diastereomer
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31.6977
44.0820
47.5071
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71.6635
76.7890
77.0000
77.2123
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115.0305
122.2838
123.3277
127.1421
127.7538
135.3201
143.5537
143.7388
144.9011
170.2940
196.8995
0
50
100
150
200


Me
Me
O
N
OMe
1.5808
1.6359
2.6434
2.6548
2.6673
2.6804
2.7047
2.7137
2.7286
3.2923
3.5280
3.5370
3.5477
5.0581
5.0761
5.1557
5.1739
6.9980
7.0110
7.0422
7.0546
7.0671
7.2420
7.2550
7.2635
7.2754
3.14
3.14
2.15
3.02
1.00
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1.05
1.10
1.02
2.15
1.0
2.0
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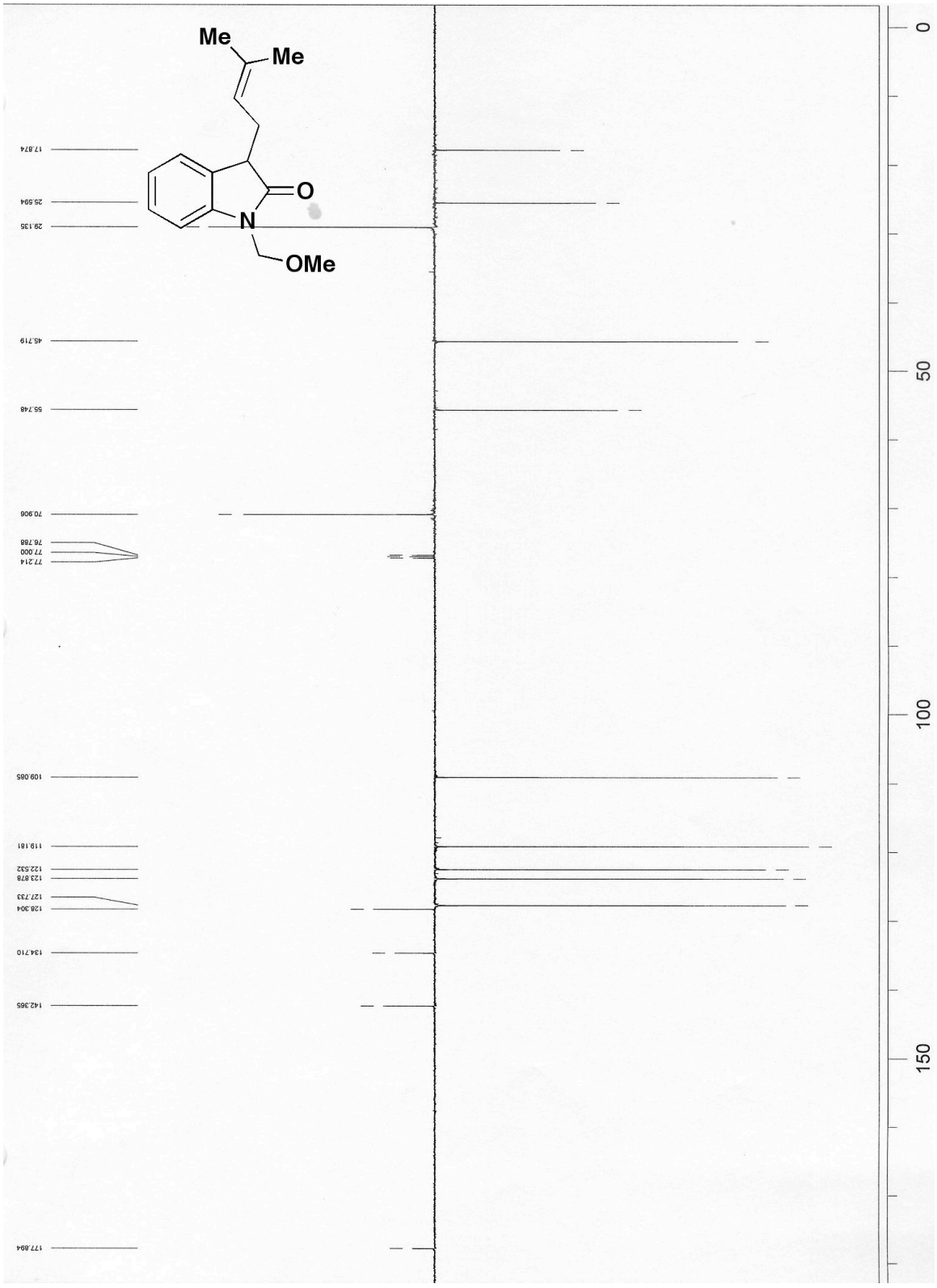
Me
Me
O
N
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55.748
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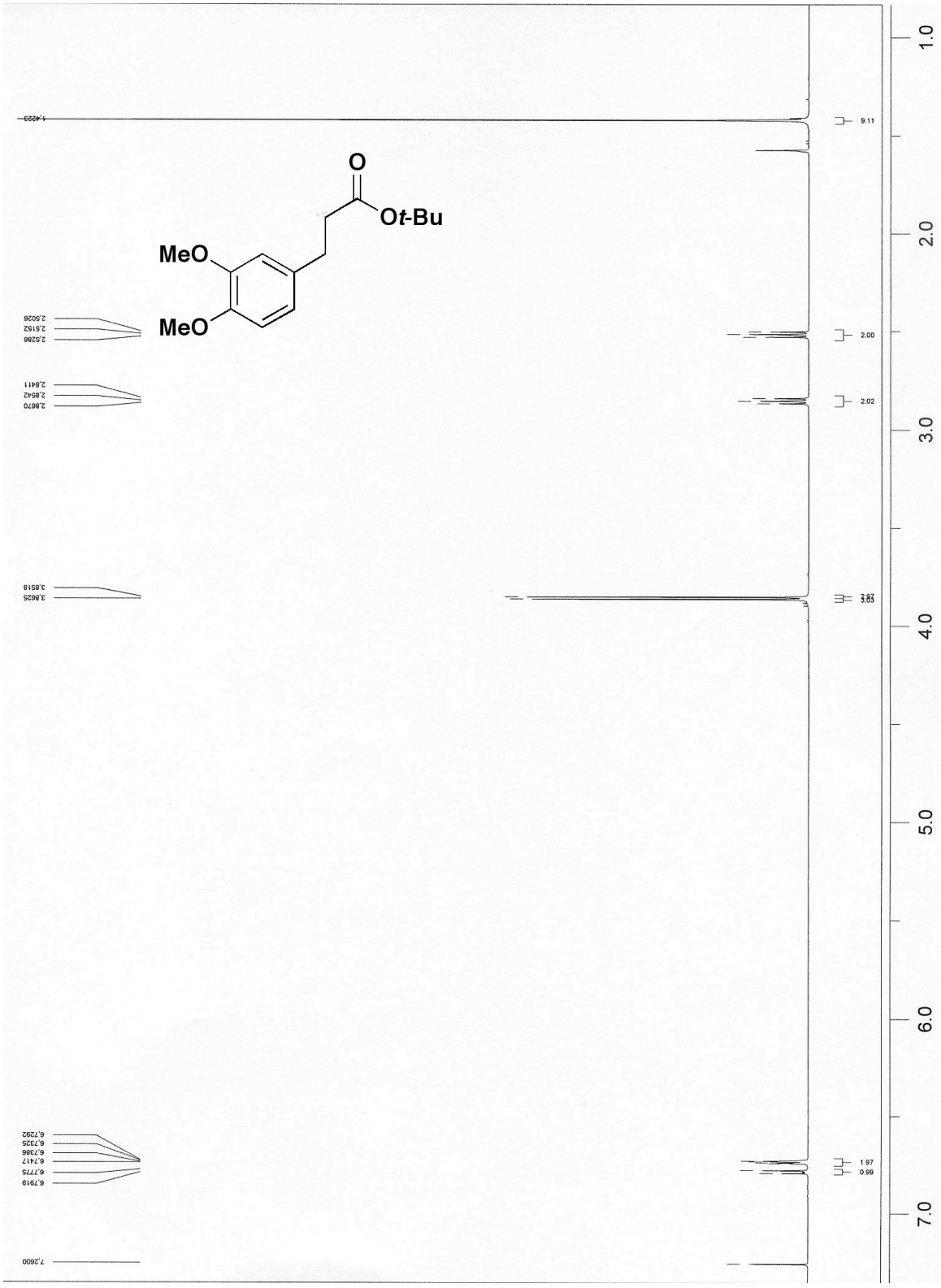
150


O
Ot-Bu
MeO
MeO
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2.8670
3.8516
3.8625
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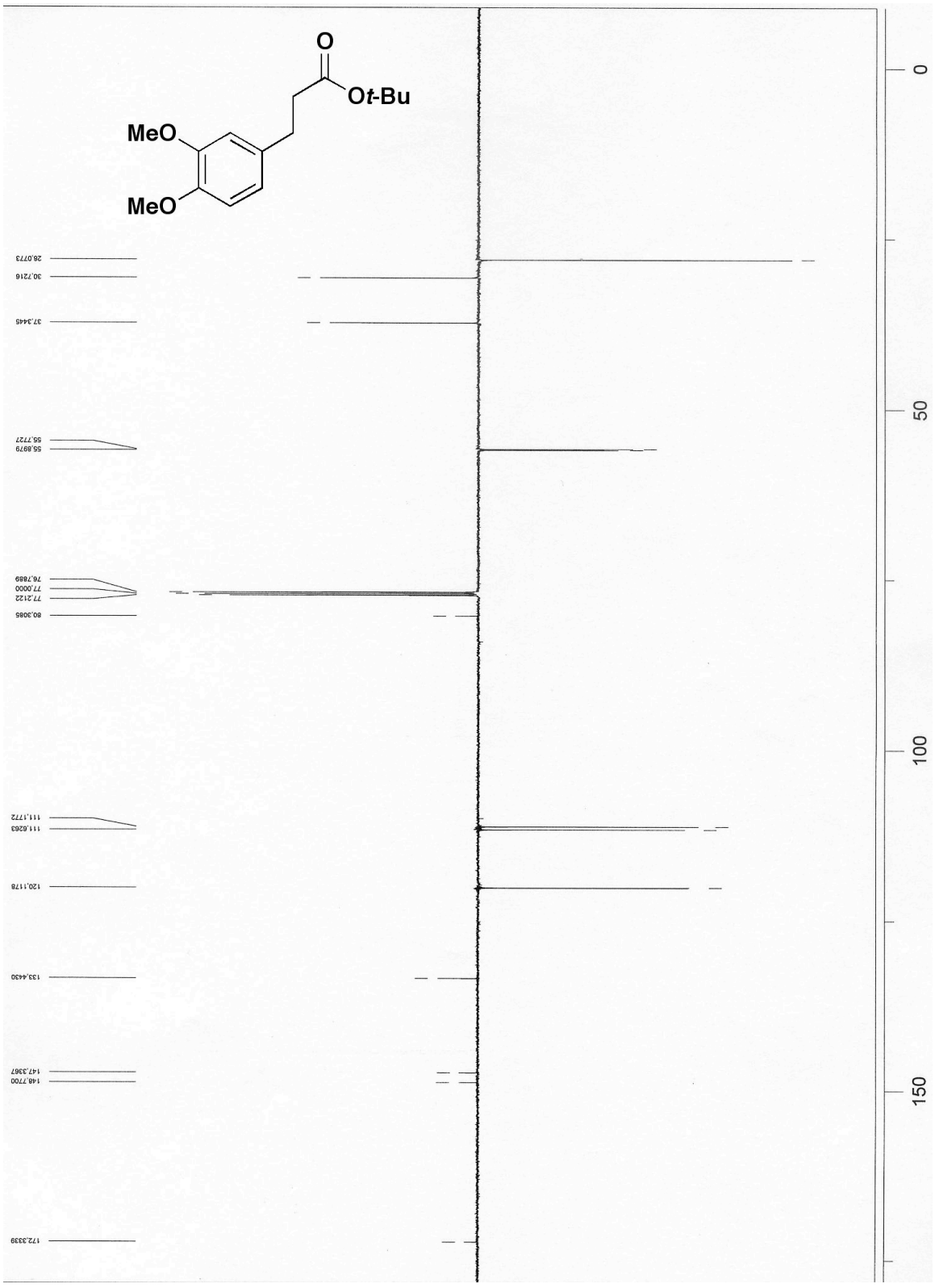
6.7325
6.7386
6.7417
6.7775
6.7919
7.2600
9.11
2.00
2.02
2.97
3.03
1.97
0.99
1.0
2.0
3.0
4.0
5.0
6.0
7.0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Ot-Bu
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148.7700
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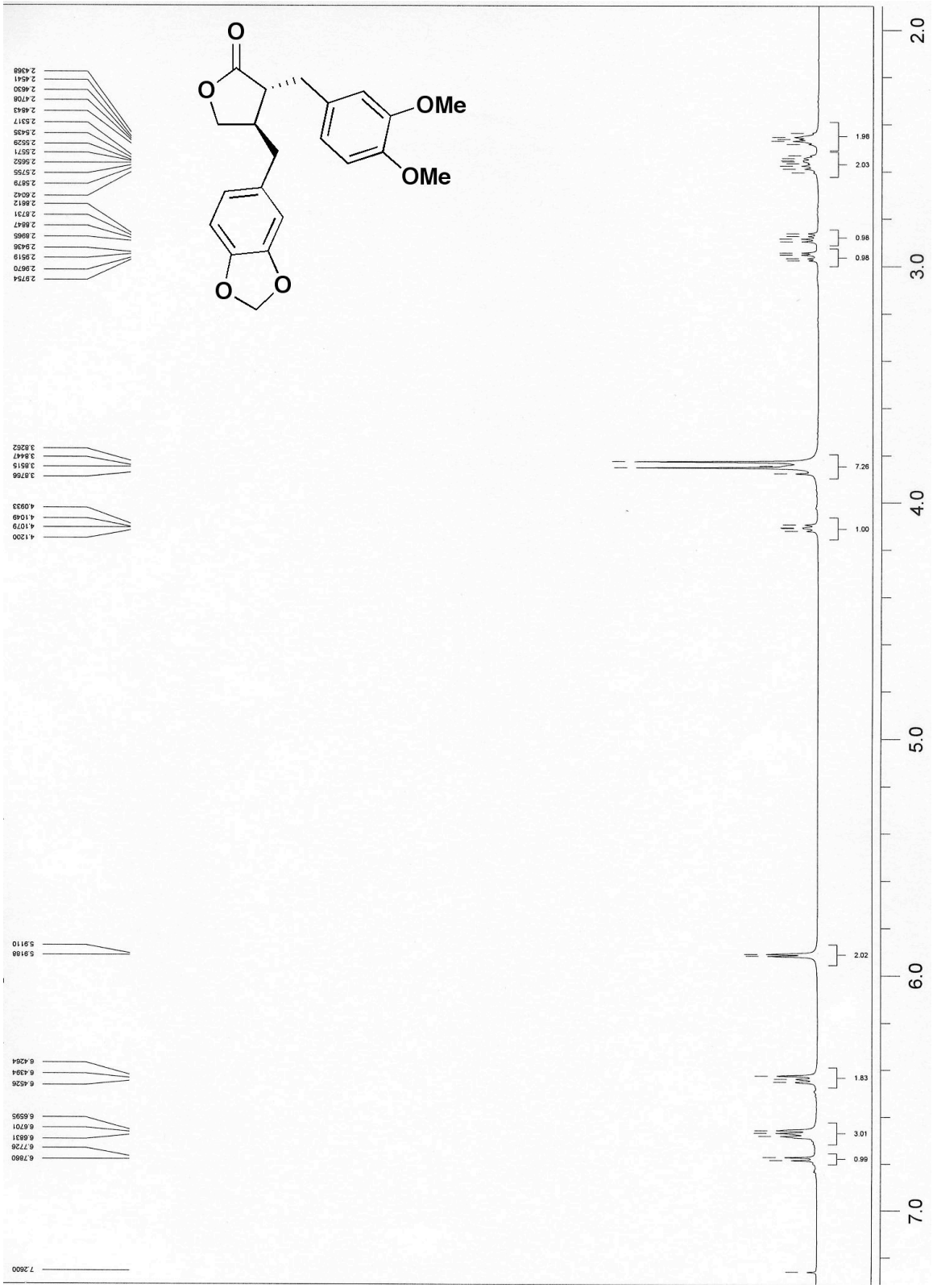
100
150


O
O
OMe
OMe
O
O
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2.9519
2.9670
2.9754
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3.8447
3.8515
3.8766
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4.1079
4.1200
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5.9188
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6.7726
6.7860
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0.98
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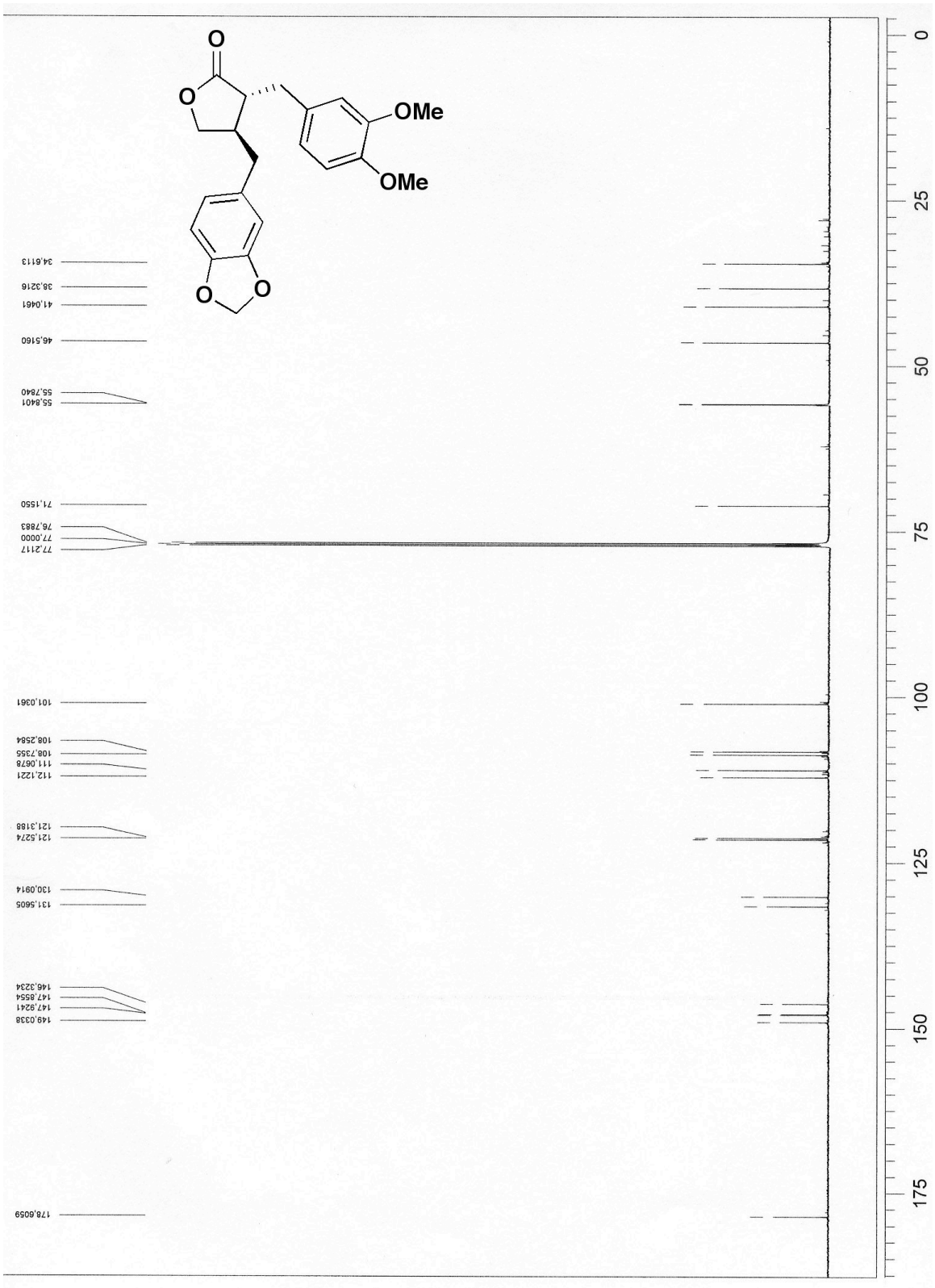
7.0


O
O
OMe
OMe
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71.1550
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112.1221
121.3188
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100
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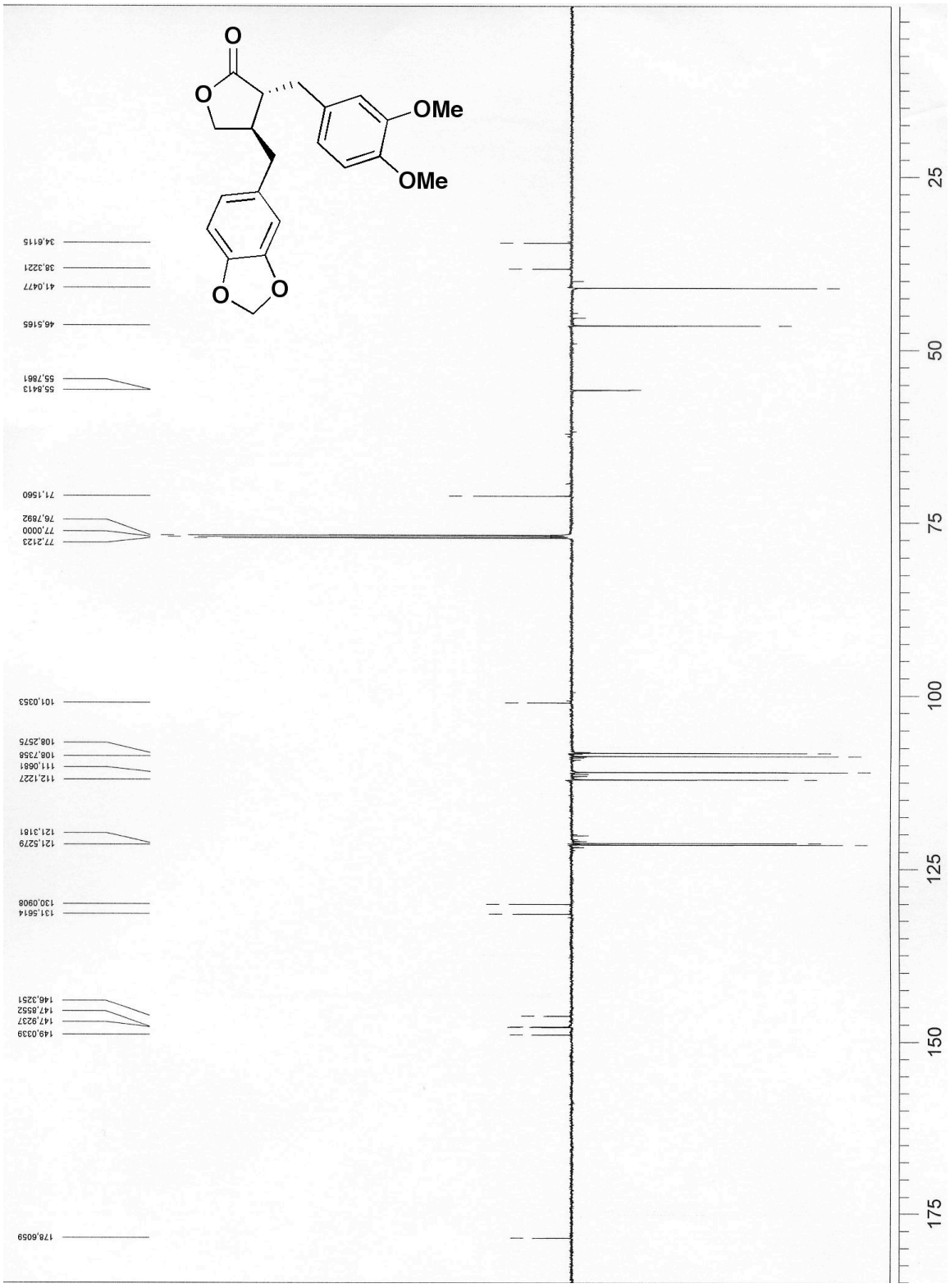
150
175


O
O
OMe
OMe
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77.2123
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108.7358
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112.1227
121.3181
121.5279
130.0908
131.5614
146.3251
147.8552
147.9237
149.0339
178.6059
25
50
75
100
125
150
175