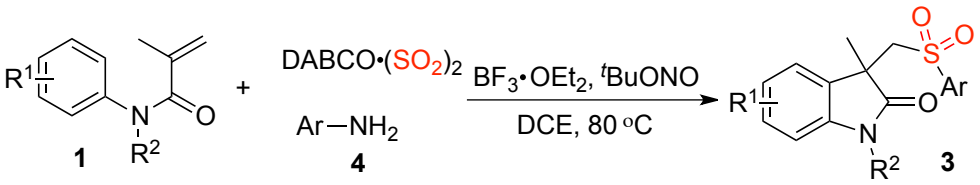
Electronic Supplementary Material (ESI) for Organic Chemistry Frontiers.

Supporting information

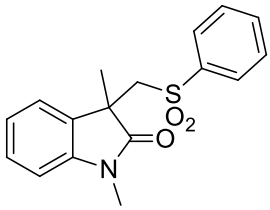
General Materials and Methods:

Unless otherwise stated, all commercial reagents were used as received. All solvents were dried and distilled according to standard procedures. Flash column chromatography was performed using silica gel (60-Å pore size, 32–63μm, standard grade). Analytical thin–layer chromatography was performed using glass plates pre-coated with 0.25 mm 230–400 mesh silica gel impregnated with a fluorescent indicator (254 nm). Thin layer chromatography plates were visualized by exposure to ultraviolet light. Organic solutions were concentrated on rotary evaporators at ~20 Torr at 25–35°C. Nuclear magnetic resonance (NMR) spectra are recorded in parts per million from internal tetramethylsilane on the δ scale. ^{1}H and ^{13}C NMR spectra were recorded in $CDCl_3$ on a Bruker DRX-400 spectrometer operating at 400 MHz and 100 MHz, respectively. All chemical shift values are quoted in ppm and coupling constants quoted in Hz. High resolution mass spectrometry (HRMS) spectra were obtained on a micrOTOF II Instrument.

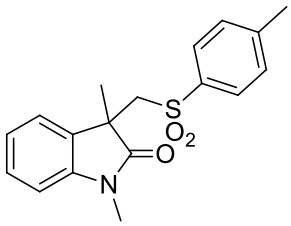
General experimental procedure for the reaction of N-arylacrylamides ***1****, DABCO•$(SO_2)_2$ and Anilines* ***4****:*



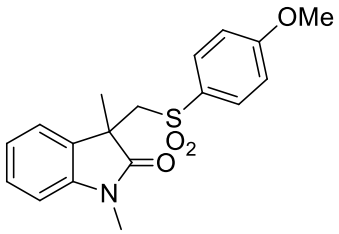
^{t}BuONO (0.48 mmol) was added dropwisely to a solution of aniline **4** (0.4 mmol) and $BF_3{\cdot}Et_2O$ (0.36 mmol) in DCE (1.5 mL) under 0 ^{o}C. After 15 minutes, the above mixture was added to a solution of *N*-arylacrylamide **1** (0.2 mmol) and DABCO•$(SO_2)_2$ (0.4 mmol) in DCE (1.5 mL) under N_2 protection via a syringe. The reaction was heated to 80 ^{o}C for 6 hours. After completion of reaction as indicated by TLC, the mixture was evaporated under reduced pressure and the residue was purified directly by flash column chromatography (EtOAc/*n*-hexane, 1:2) to give the desired product **3**.



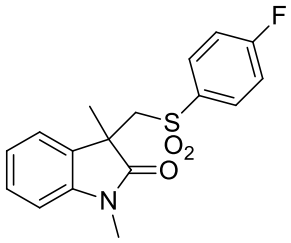
1,3-Dimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3a**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 (t, *J* = 7.4 Hz, 1H), 7.48 (d, *J* = 7.4 Hz, 2H), 7.37 (t, *J* = 7.8 Hz, 2H), 7.27 (t, *J* = 7.4 Hz, 1H), 7.02 (d, *J* = 7.3 Hz, 1H), 6.89 (d, *J* = 7.5 Hz, 1H), 6.85 (d, *J* = 8.1 Hz, 1H), 3.89 (d, *J* = 14.6 Hz, 1H), 3.70 (d, *J* = 14.6 Hz, 1H), 3.17 (s, 3H), 1.39 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.5, 143.2, 139.8, 133.3, 129.4, 128.8, 128.5, 127.7, 123.9, 122.5, 108.3, 61.7, 45.5, 26.5, 25.4.



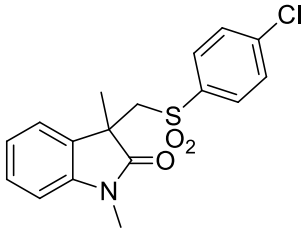
1,3-Dimethyl-3-(tosylmethyl)indolin-2-one (**3b**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 (d, *J* = 8.2 Hz, 2H), 7.28 (t, *J* = 7.7 Hz, 1H), 7.16 (d, *J* = 8.1 Hz, 2H), 7.06 (d, *J* = 7.2 Hz, 1H), 6.90 (t, *J* = 7.5 Hz, 1H), 6.84 (d, *J* = 7.8 Hz, 1H), 3.85 (d, *J* = 14.5 Hz, 1H), 3.67 (d, *J* = 14.5 Hz, 1H), 3.15 (s, 3H), 2.38 (s, 3H), 1.38 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.5, 144.2, 143.1, 136.8, 129.3, 128.5, 127.7, 124.0, 122.4, 108.3, 61.8, 45.5, 26.4, 25.4, 21.5.



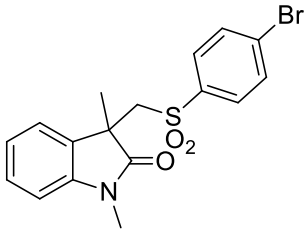
3-(((4-Methoxyphenyl)sulfonyl)methyl)-1,3-dimethylindolin-2-one (**3c**)[4]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 (d, *J* = 8.8 Hz, 2H), 7.28 (t, *J* = 7.4 Hz, 1H), 7.07 (d, *J* = 7.3 Hz, 1H), 6.93 (t, *J* = 7.5 Hz, 1H), 6.86 – 6.80 (m, 3H), 3.92 – 3.79 (m, 4H), 3.66 (d, *J* = 14.6 Hz, 1H), 3.16 (s, 3H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.6, 163.4, 143.1, 131.3, 123.0, 129.5, 128.5, 124.0, 122.4, 114.0, 108.3, 61.9, 55.6, 45.6, 26.5, 25.5.



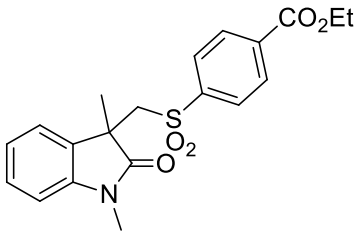
3-(((4-Fluorophenyl)sulfonyl)methyl)-1,3-dimethylindolin-2-one (**3d**)[3]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.51 – 7.42 (m, 2H), 7.31 – 7.27 (m, 1H), 7.08 – 6.96 (m, 3H), 6.94 – 6.83 (m, 2H), 3.91 (d, *J* = 14.7 Hz, 1H), 3.70 (d, *J* = 14.7 Hz, 1H), 3.19 (s, 3H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.4, 165.4 (d, $^{1}J_{CF}$ = 256.2 Hz), 143.2, 135.8, 130.6 (d, $^{3}J_{CF}$ = 9.6 Hz), 129.2, 128.7, 123.8, 122.4, 116.1 (d, $^{2}J_{CF}$ = 22.6 Hz), 108.4, 61.9, 45.5, 26.5, 25.4.



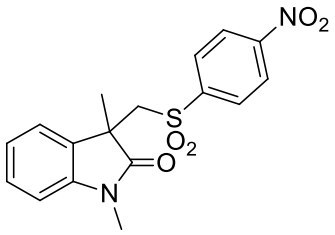
3-(((4-Chlorophenyl)sulfonyl)methyl)-1,3-dimethylindolin-2-one (**3e**)[3]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 – 7.25 (m, 5H), 6.96 (d, *J* = 7.2 Hz, 1H), 6.89 (d, *J* = 7.5 Hz, 1H), 6.85 (d, *J* = 8.1 Hz, 1H), 3.90 (d, *J* = 14.7 Hz, 1H), 3.71 (d, *J* = 14.7 Hz, 1H), 3.17 (s, 3H), 1.37 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.4, 143.3, 140.0, 138.2, 129.3, 129.1, 128.7, 123.9, 122.5, 108.5, 61.9, 45.5, 26.5, 25.5.



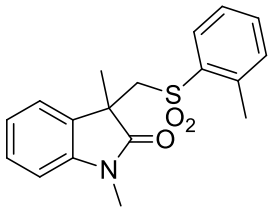
3-(((4-Bromophenyl)sulfonyl)methyl)-1,3-dimethylindolin-2-one (**3f**)[3]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 (d, *J* = 8.5 Hz, 2H), 7.31-7.28 (m, 3H), 6.97 (d, *J* = 7.0 Hz, 1H), 6.93 – 6.83 (m, 2H), 3.91 (d, *J* = 14.7 Hz, 1H), 3.70 (d, *J* = 14.7 Hz, 1H), 3.17 (s, 3H), 1.37 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.4, 143.2, 138.6, 132.0, 129.3, 129.1, 128.7, 123.8, 122.5, 108.4, 61.8, 45.4, 26.5, 25.5.



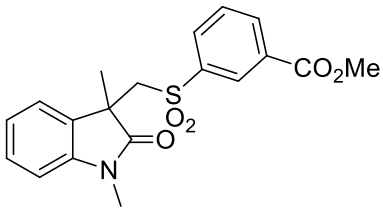
Ethyl 4-(((1,3-dimethyl-2-oxoindolin-3-yl)methyl)sulfonyl)benzoate (**3g**): ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.99 (d, *J* = 8.4, 2H), 7.58 – 7.42 (m, 2H), 7.31 – 7.18 (m, 1H), 6.93 (t, *J* = 6.0 Hz, 1H), 6.87 – 6.78 (m, 2H), 4.43 – 4.38 (m, 2H), 3.91 (d, *J* = 14.7 Hz, 1H), 3.73 (d, *J* = 14.7 Hz, 1H), 3.17 (d, *J* = 1.7 Hz, 3H), 1.45 – 1.31 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.3, 164.9, 143.4, 143.2, 134.6, 129.8, 129.1, 128.7, 127.7, 123.7, 122.4, 108.4, 61.7, 61.7, 45.4, 26.5, 25.3, 14.1; HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{20}H_{22}NO_5S^+$: 388.1219; found: .388.1218.



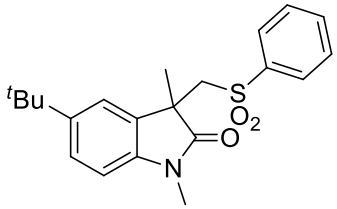
1,3-Dimethyl-3-(((4-nitrophenyl)sulfonyl)methyl)indolin-2-one (**3h**)[4]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.18 (d, *J* = 8.6 Hz, 2H), 7.63 (d, *J* = 8.5 Hz, 2H), 7.36 – 7.22 (m, 1H), 6.91-6.85 (m, 2H), 6.79 (t, *J* = 7.1 Hz, 1H), 3.98 (d, *J* = 14.8 Hz, 1H), 3.79 (d, *J* = 14.8 Hz, 1H), 3.23 (s, 3H), 1.40 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.2, 150.3, 145.3, 143.4, 129.1, 128.9, 123.9, 123.6, 122.4, 108.6, 61.9, 45.4, 26.6, 25.3.



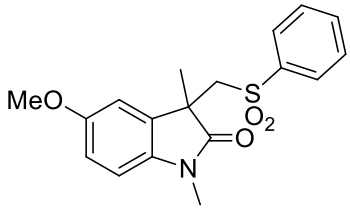
1,3-Dimethyl-3-((*o*-tolylsulfonyl)methyl)indolin-2-one (**3i**): ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 (t, *J* = 7.4 Hz, 1H), 7.33 – 7.23 (m, 3H), 7.15 – 7.05 (m, 2H), 6.93 (t, *J* = 7.5 Hz, 1H), 6.81 (d, *J* = 7.8 Hz, 1H), 3.90 (d, *J* = 14.5 Hz, 1H), 3.68 (d, *J* = 14.5 Hz, 1H), 3.09 (s, 3H), 2.66 (s, 3H), 1.40 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.5, 143.1, 138.1, 137.6, 133.4, 132.4, 129.8, 129.4, 128.6, 126.1, 124.2, 122.4, 108.3, 60.5, 45.5, 26.4, 3.64, 20.3; HRMS (ESI): m/z $[M + H]^+$ calcd for $C_{18}H_{20}NO_3S^+$: 330.1164; found: 330.1158.



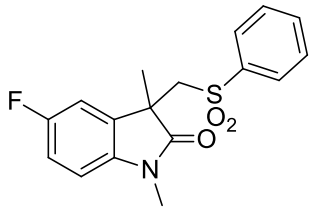
Methyl 3-(((1,3-dimethyl-2-oxoindolin-3-yl)methyl)sulfonyl)benzoate (**3j**): ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.16 (d, *J* = 7.7 Hz, 1H), 8.05 (s, 1H), 7.62 (d, *J* = 7.8 Hz, 1H), 7.44 (t, *J* = 7.8 Hz, 1H), 7.21 (t, *J* = 7.7 Hz, 1H), 6.89 – 6.73 (m, 3H), 3.92-3.88 (m, 4H), 3.72 (d, *J* = 14.7 Hz, 1H), 3.18 (s, 3H), 1.36 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.3, 165.1, 143.3, 140.5, 134.1, 131.7, 131.1, 129.2, 129.1, 128.9, 128.6, 123.7, 122.4, 108.4, 61.8, 52.5, 45.5, 26.5, 25.3; HRMS (ESI): $[M + H]^+$ calcd for $C_{19}H_{20}NO_5S^+$: 374.1062; found: 374.1057.



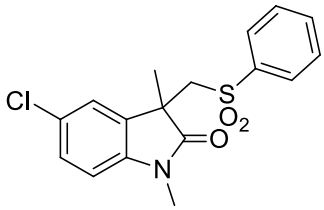
5-(*tert*-Butyl)-1,3-dimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3k**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54-7.49 (m, 3H), 7.36 (t, *J* = 7.7 Hz, 2H), 7.30 (d, *J* = 8.2 Hz, 1H), 7.18 (s, 1H), 6.77 (d, *J* = 8.2 Hz, 1H), 3.87 (d, *J* = 14.6 Hz, 1H), 3.72 (d, *J* = 14.6 Hz, 1H), 3.14 (s, 3H), 1.41 (s, 3H), 1.25 (s, 9H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.7, 145.6, 140.8, 140.0, 133.4, 129.1, 128.8, 127.8, 125.3, 121.4, 107.7, 61.9, 45.9, 34.5, 31.5, 26.5, 25.5.



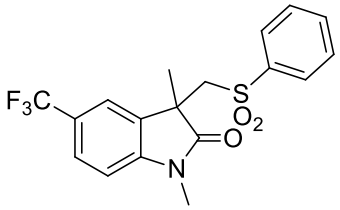
5-Methoxy-1,3-dimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3l**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 (t, *J* = 7.4 Hz, 1H), 7.46 (d, *J* = 7.4 Hz, 2H), 7.36 (t, *J* = 7.8 Hz, 2H), 6.80-6.74 (m, 2H), 6.53 (s, 1H), 3.88 (d, *J* = 14.7 Hz, 1H), 3.78 – 3.56 (m, 4H), 3.16 (s, 3H), 1.37 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.2, 155.7, 139.9, 136.7, 133.2, 130.5, 128.7, 127.7, 113.2, 111.0, 108.7 61.7, 55. 4, 45.9, 26.6, 25.3.



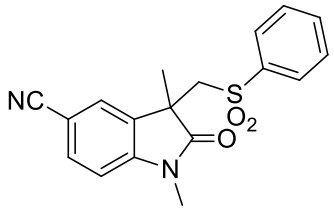
5-Fluoro-1,3-dimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3m**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.61 – 7.49 (m, 3H), 7.41 (t, *J* = 7.7 Hz, 2H), 6.97 (d, *J* = 9.0 Hz, 1H), 6.83 – 6.69 (m, 2H), 3.87 (d, *J* = 14.6 Hz, 1H), 3.68 (d, *J* = 14.6 Hz, 1H), 3.18 (s, 3H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.2, 158.9 (d, $^{1}J_{CF}$ = 241.0 Hz), 139.8, 139.2, 133.5, 131.0 (d, $3J_{CF}$ = 8.1 Hz), 128.9, 127.6, 114.9 (d, $^{2}J_{CF}$ = 23.5 Hz), 112.2 (d, $^{2}J_{CF}$ = 25.1 Hz), 108.8 (d, $^{3}J_{CF}$ = 8.0 Hz), 61.6, 45.9, 26.7, 25.2.



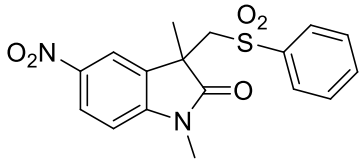
5-Chloro-1,3-dimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3n**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.57 (t, *J* = 7.3 Hz, 1H), 7.45 (d, *J* = 7.3 Hz, 2H), 7.38 (t, *J* = 7.8 Hz, 2H), 7.21 (d, *J* = 8.3 Hz, 1H), 6.82 – 6.76 (m, 2H), 3.89 (d, *J* = 14.7 Hz, 1H), 3.69 (d, *J* = 14.7 Hz, 1H), 3.20 (s, 3H), 1.35 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.1, 141.9, 139.6, 133.6 130.9, 129.0, 128.6, 127.7, 127.5, 124.4, 109.3, 61.5, 45.6, 26.7, 25.1.



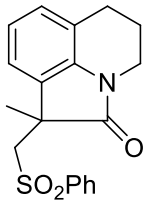
1,3-Dimethyl-3-((phenylsulfonyl)methyl)-5-(trifluoromethyl)indolin-2-one (**3o**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 (t, *J* = 7.0 Hz, 2H), 7.45 (d, *J* = 7.9 Hz, 2H), 7.36 (t, *J* = 7.6 Hz, 2H), 7.11 (s, 1H), 6.95 (d, *J* = 8.2 Hz, 1H), 3.93 (d, *J* = 14.8 Hz, 1H), 3.76 (d, *J* = 14.8 Hz, 1H), 3.27 (s, 3H), 1.40 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.6, 146.4, 139.7, 133.7, 129.9, 129.0, 127.4, 126.8 (q, $^{1}J_{CF}$ = 274.1 Hz), 126.5 (d, $^{3}J_{CF}$ = 3.5 Hz), 124.6 (q, $^{2}J_{CF}$ = 32.7 Hz), 120.8 (d, $^{3}J_{CF}$ = 3.3 Hz), 108.3, 61.7, 45.5, 26.8, 25.1.



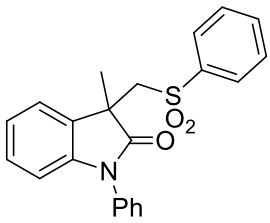
1,3-Dimethyl-2-oxo-3-((phenylsulfonyl)methyl)indoline-5-carbonitrile (**3p**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.66 – 7.56 (m, 2H), 7.49 (d, *J* = 7.3 Hz, 2H), 7.43 (t, *J* = 7.7 Hz, 2H), 7.12 (s, 1H), 6.96 (d, *J* = 8.2 Hz, 1H), 3.91 (d, *J* = 14.7 Hz, 1H), 3.77 (d, *J* = 14.8 Hz, 1H), 3.28 (s, 3H), 1.39 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.4, 147.2, 139.5, 133.8, 133.6, 130.4, 129.1, 127.3, 127.2, 118.7, 108.9, 105.5, 61.4, 45.2, 26.8, 25.0.



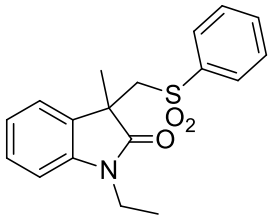
1,3-Dimethyl-5-nitro-3-((phenylsulfonyl)methyl)indolin-2-one (**3q**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.24 (d, *J* = 8.6, 1H), 7.72 (s, 1H), 7.55 – 7.49 (m, 3H), 7.39 (t, *J* = 7.6 Hz, 2H), 6.98 (d, *J* = 8.6 Hz, 1H), 3.97 (d, *J* = 14.7 Hz, 1H), 3.80 (d, *J* = 14.8 Hz, 1H), 3.35 (s, 3H), 1.44 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.9, 143.2, 133.6, 130.1, 129.3, 129.1, 127.3, 126.4, 125.9, 119.8, 108.0, 61.5, 45.4, 27.1, 25.0.



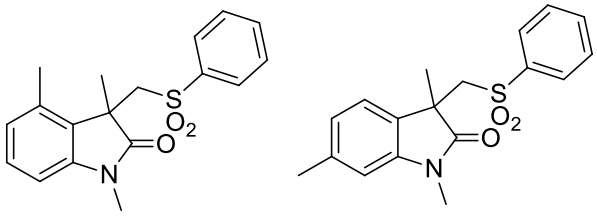
1-Methyl-1-((phenylsulfonyl)methyl)-5,6-dihydro-1H-pyrrolo[3,2,1-ij]quinolin-2(4H)-one (**3r**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 (t, *J* = 7.5 Hz, 3H), 7.38 (t, *J* = 7.3 Hz, 2H), 7.02 (d, *J* = 7.6 Hz, 1H), 6.89 (d, *J* = 4.5 Hz, 1H), 6.84 – 6.72 (m, 1H), 3.85 (d, *J* = 14.5 Hz, 1H), 3.76 – 3.58 (m, 3H), 2.90 – 2.67 (m, 2H), 2.11 – 1.91 (m, 2H), 1.40 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 176.4, 139.9, 138.9, 133.2, 128.8, 128.0, 127.6, 127.2, 121.9, 121.8, 120.3, 61.7, 46.7, 38.9, 24.9, 24.4, 20.9.



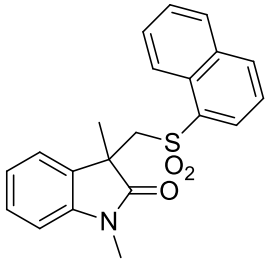
3-Methyl-1-phenyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3s**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.59 – 7.50 (m, 7H), 7.46-7.43 (m, 1H), 7.37 (t, *J* = 7.6 Hz, 2H), 7.18 (t, *J* = 7.7 Hz, 1H), 6.95 (d, *J* = 6.7 Hz, 1H), 6.84 (d, *J* = 7.7 Hz, 2H), 4.01 (d, *J* = 14.6 Hz, 1H), 3.82 (d, *J* = 14.6 Hz, 1H), 1.51 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.3, 143.5, 140.2, 134.4, 133.2, 129.5, 129.0, 128.9, 128.4, 128.1, 127.4, 126.8, 123.8, 122.8, 109.6, 62.2, 45.6, 25.6.



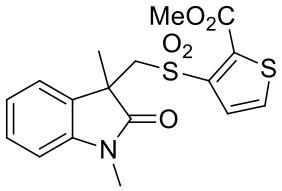
1-Ethyl-3-methyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3t**)[1]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54-7.49 (m,3H), 7.36 (t, *J* = 7.8 Hz, 2H), 7.25 (t, *J* = 9.2 Hz, 1H), 6.96 (d, *J* = 7.3 Hz, 1H), 6.88 (d, *J* = 7.8 Hz, 1H), 6.82 (t, *J* = 7.5 Hz, 1H), 4.11 – 3.32 (m, 4H), 1.37 (s, 3H), 1.31 (t, *J* = 7.2 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.2, 142.3, 140.1, 133.2, 129.6, 128.9, 128.4, 127.6, 124.0, 122.2, 108.5, 61.7, 45.5, 34.9, 25.4, 12.2.



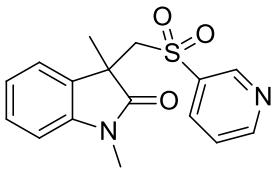
1,3,4-Trimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3u**)[2] and 1,3,6-trimethyl-3-((phenylsulfonyl)methyl)indolin-2-one (**3u′**)[2]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.58 – 7.47 (m, 3H), 7.45 – 7.32 (m, 5H), 7.20 (t, *J* = 7.8 Hz, 1H), 6.92 (d, *J* = 7.4 Hz, 0.5H), 6.75 – 6.60 (m,3H), 3.98 (d, *J* = 14.7 Hz, 1H), 3.87-3.82 (m, 1.5H), 3.68 (d, *J* = 14.5 Hz, 0.5H), 3.15 (s, 1.5H), 3.14 (s, 3H), 2.38 (s, 1.5H), 2.06 (s, 3H), 1.40 (s, 3H), 1.37 (s, 1.5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.8, 177.6, 143.6, 143.2, 139.9, 139.3, 138.7, 135.3, 133.3, 133.2, 129.1, 128.7, 128.7, 128.6, 128.0, 127.7, 126.4, 124.9, 123.7, 123.0, 109.2, 106.1, 61.9, 60.8, 45.8, 45.3, 26.5, 26.4, 25.3, 23.1, 21.8, 18.1 .



1,3-Dimethyl-3-((naphthalen-1-ylsulfonyl)methyl)indolin-2-one (**3v**)[6]: ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.67 (d, *J* = 8.6 Hz, 1H), 7.99 (d, *J* = 8.2 Hz, 1H), 7.93 (d, *J* = 8.2 Hz, 1H), 7.74 (t, *J* = 7.7 Hz, 1H), 7.61 (t, *J* = 7.6 Hz, 2H), 7.28 – 7.20 (m, 2H), 6.84 (d, *J* = 7.8 Hz, 1H), 6.72 (d, *J* = 4.3 Hz, 2H), 4.07 (d, *J* = 14.6 Hz, 1H), 3.90 (d, *J* = 14.6 Hz, 1H), 3.21 (s, 3H), 1.36 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.6, 143.1, 134.7, 134.6, 133.8, 130.1, 129.3, 129.1, 128.7, 128.4, 128.2, 126.8, 124.2, 123.8, 123.4, 122.2, 108.3, 60.9, 45.5, 26.5, 25.2.

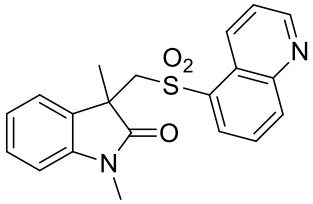


Methyl 3-(((1,3-dimethyl-2-oxoindolin-3-yl)methyl)sulfonyl)thiophene-2-carboxylate (**3w**): ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.19 – 7.15 (m, 2H), 6.83 – 6.80 (m, 2H), 6.71 - 6.66 (m, 2H), 4.70 (d, *J* = 15.1 Hz, 1H), 4.08 (d, *J* = 15.0 Hz, 1H), 3.97 (s, 3H), 3.23 (s,3H), 1.41 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ 177.7, 160.2, 144.3, 143.4, 133.1, 130.6, 129.4, 129.2, 128.5, 123.1, 122.1, 108.2, 60.7, 53.1, 45.3, 26.5, 25.0; HRMS (ESI): $[M + H]^+$ calcd for $C_{17}H_{18}NO_5S_2^+$: 380.0626; found: 380.0621.



1,3-Dimethyl-3-((pyridin-3-ylsulfonyl)methyl)indolin-2-one (**3x**): ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.75 (d, *J* = 4.0 Hz, 1H), 8.60 (s, 1H), 7.85 – 7.64 (m, 1H), 7.40 – 7.20 (m, 2H), 7.01 – 6.77 (m, 3H), 3.97 (d, *J* = 14.8 Hz, 1H), 3.74 (d, *J* = 14.8 Hz, 1H), 3.19 (s, 3H), 1.40 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 177.2, 163.2, 153.8, 148.7, 144.5, 143.3, 135.6, 129.0, 123.8, 123.5, 122.6, 108.7, 62.2, 45.5, 26.6, 25.4; HRMS (ESI): $[M + H]^+$

calcd for $C_{16}H_{17}N_2O_3S^+$: 317.0960; found: 317.0958.



1,3-Dimethyl-3-((quinolin-5-ylsulfonyl)methyl)indolin-2-one (**3y**): ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.04 (d, *J* = 6.9 Hz, 2H), 8.29 (d, *J* = 8.3 Hz, 1H), 7.76 – 7.62 (m, 2H), 7.56 (t, *J* = 7.1 Hz, 1H), 7.29 - 7.25 (m, 1H), 6.85 (t, *J* = 6.0 Hz, 3H), 4.07 (d, *J* = 14.5 Hz, 1H), 3.79 (d, *J* = 14.5 Hz, 1H), 3.17 (s, 3H), 1.37 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 177.5, 151.2, 148.1, 143.2, 136.3, 134.9, 132.4, 130.7, 129.1, 128.7, 127.7, 124.3, 123.7, 123.1, 122.4, 108.5, 61.7, 45.5, 26.5, 25.5; HRMS (ESI): $[M + H]^+$ calcd for $C_{20}H_{19}N_2O_3S^+$: 367.1116; found: 367.1111.

References

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2. Li， X.; Xu, X.; Hu, P.; Xiao, X.; Zhou, C. *J. Org. Chem.* **2013**, *78,* 7348.
3. Ji, P.; Zhang, M.; Xu, J.; Liu, Y.; Guo, C. *J. Org. Chem.* **2016**, *81,* 5181.
4. Xia, D.; Miao, T.; Li, P.; Wang, L. *Chem. Asian J.* **2015**, *10*, 1919.;
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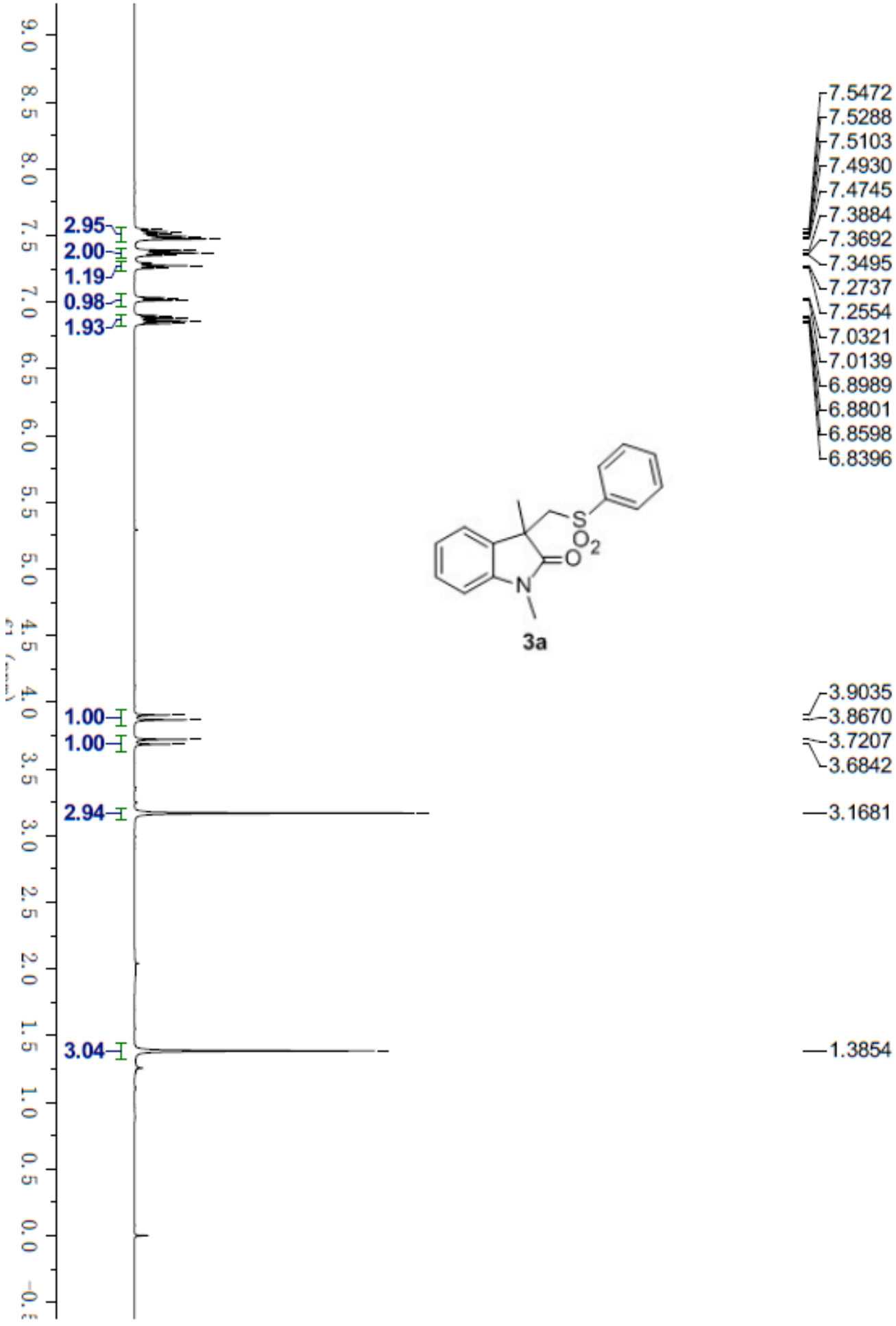
6. Wei, W.; Wen, J.; Yang, D.; Du, J.; You, J.; Wang , H. *Green Chem.,* **2014**, *16*, 2988.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6.8598
6.8396
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2.00
1.19
0.98
1.93
1.00
1.00
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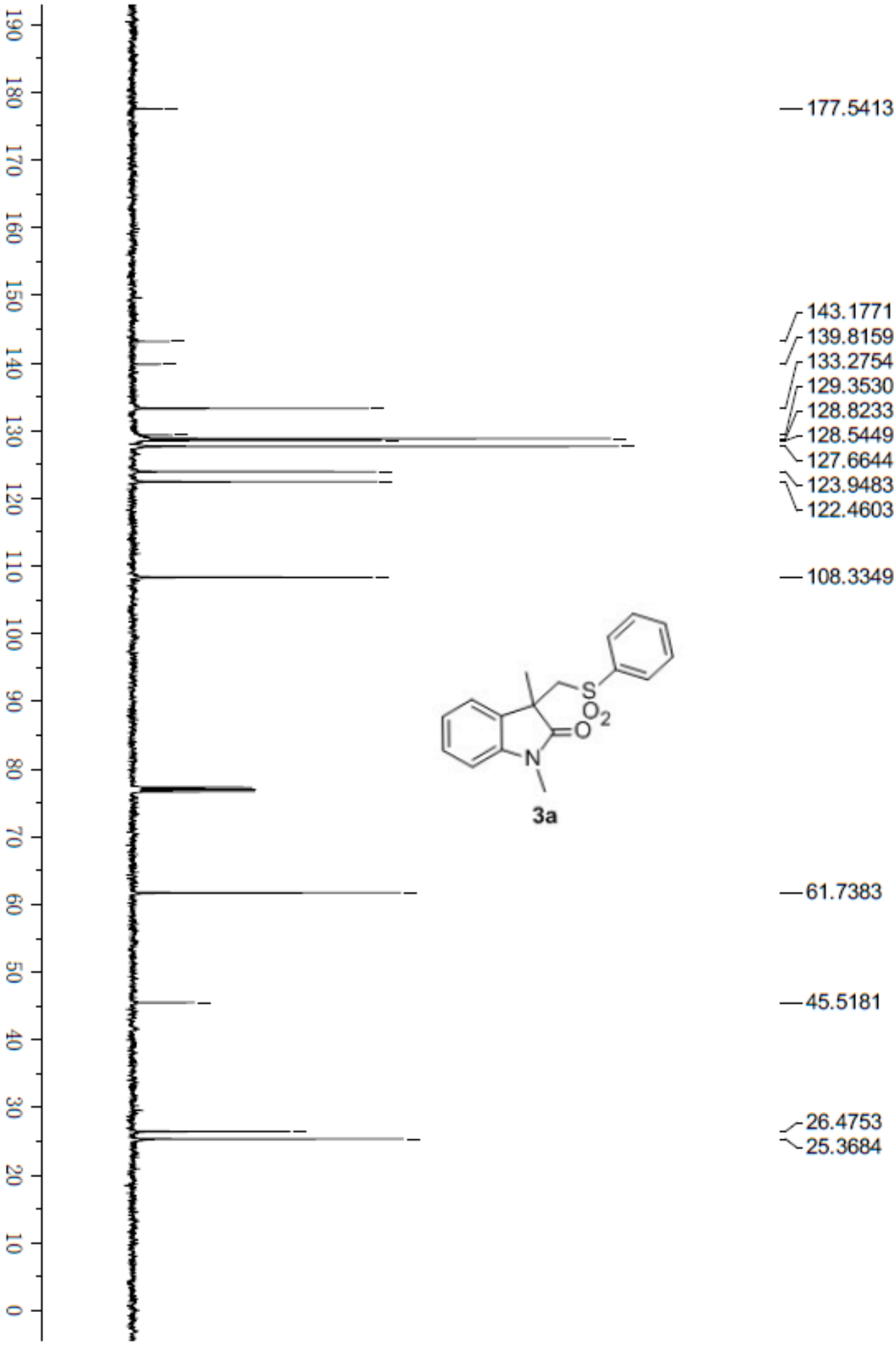
3a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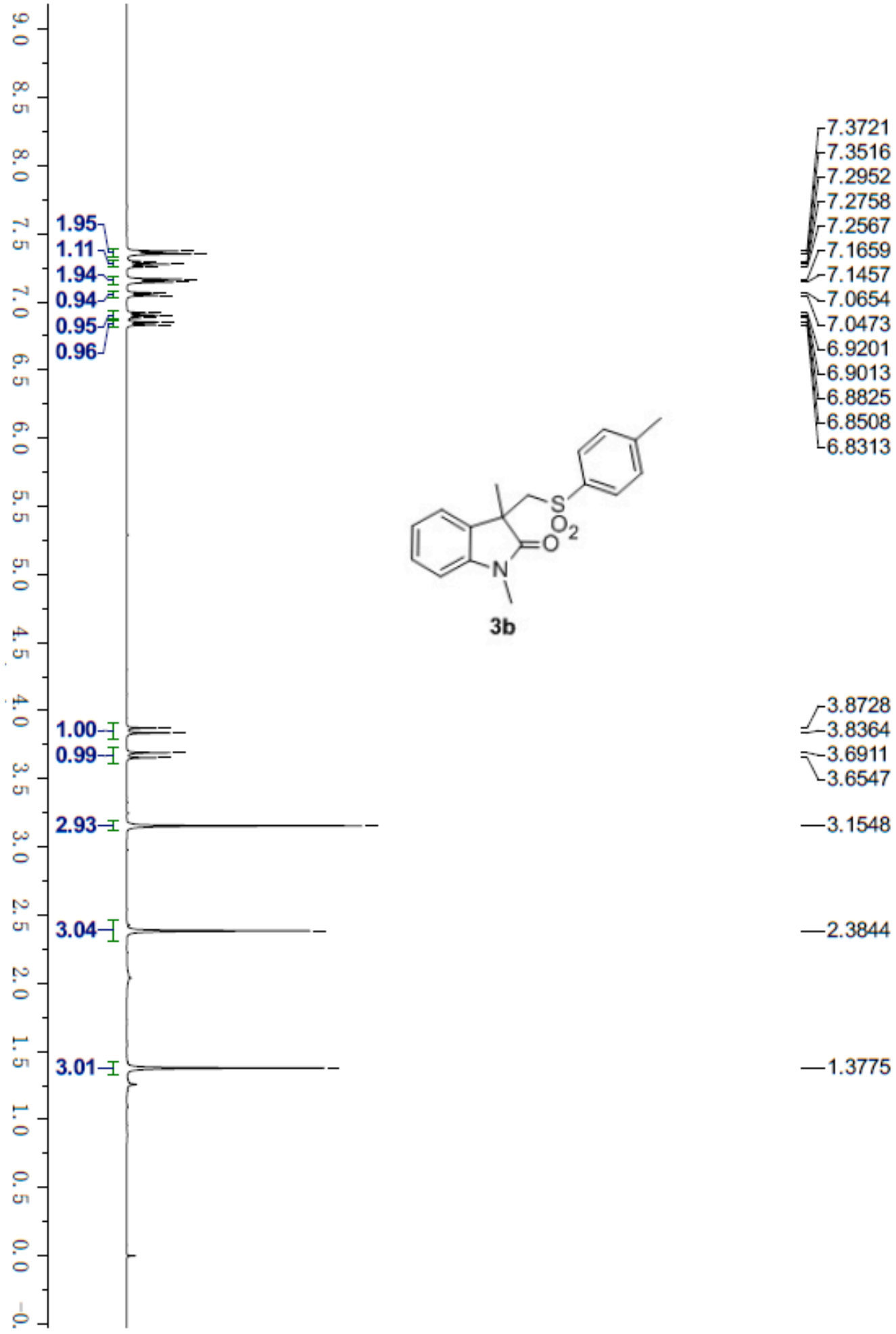
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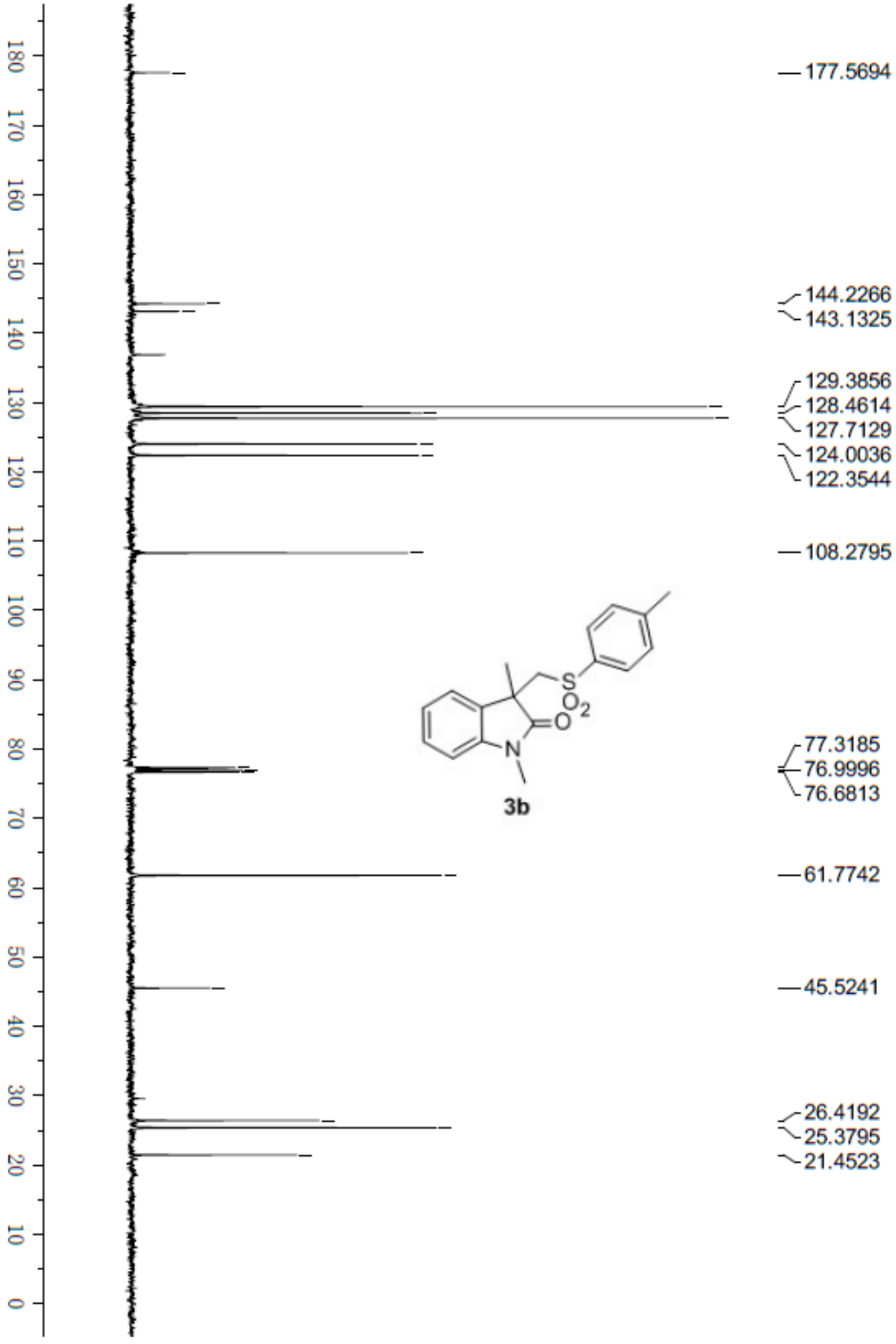
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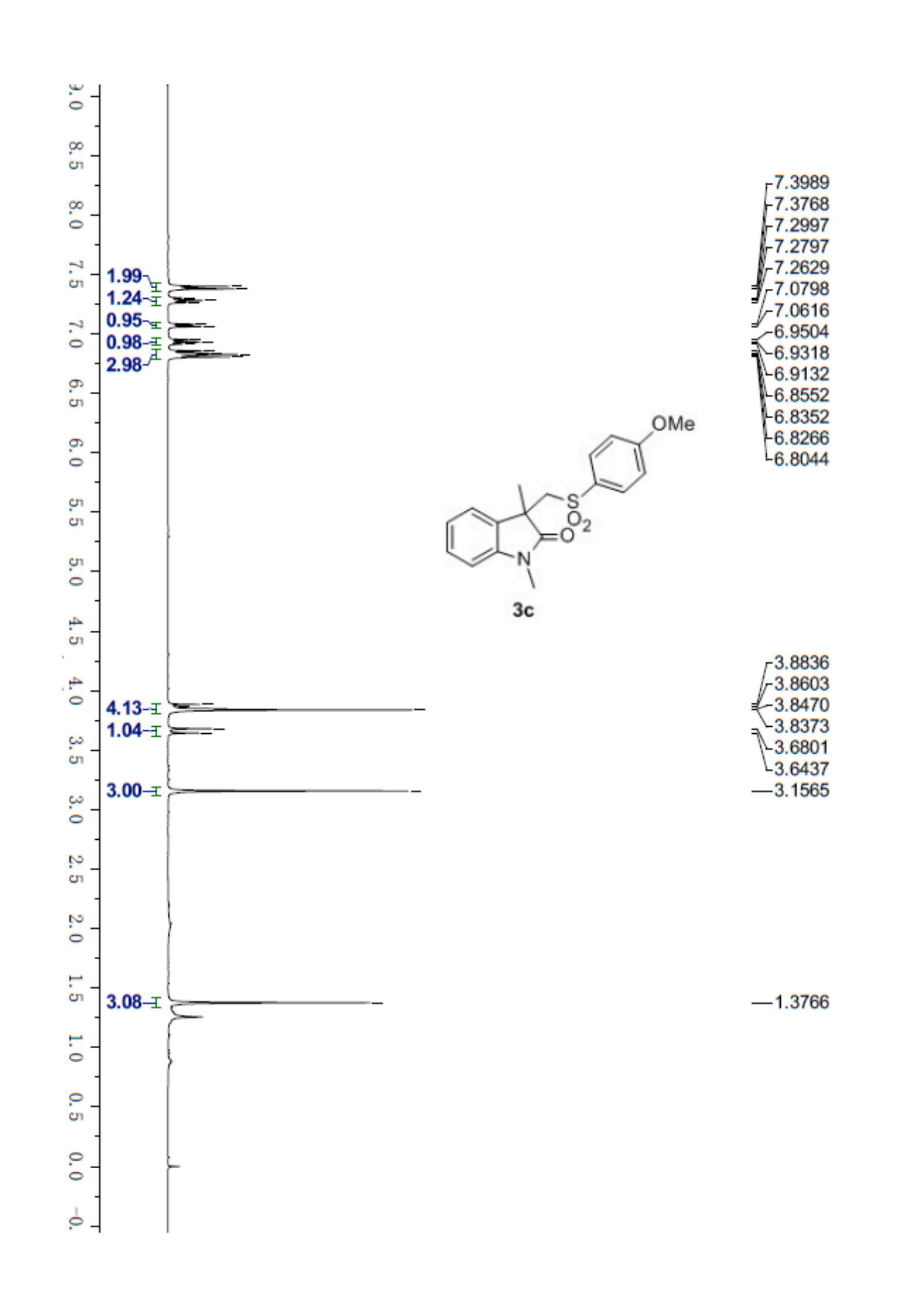
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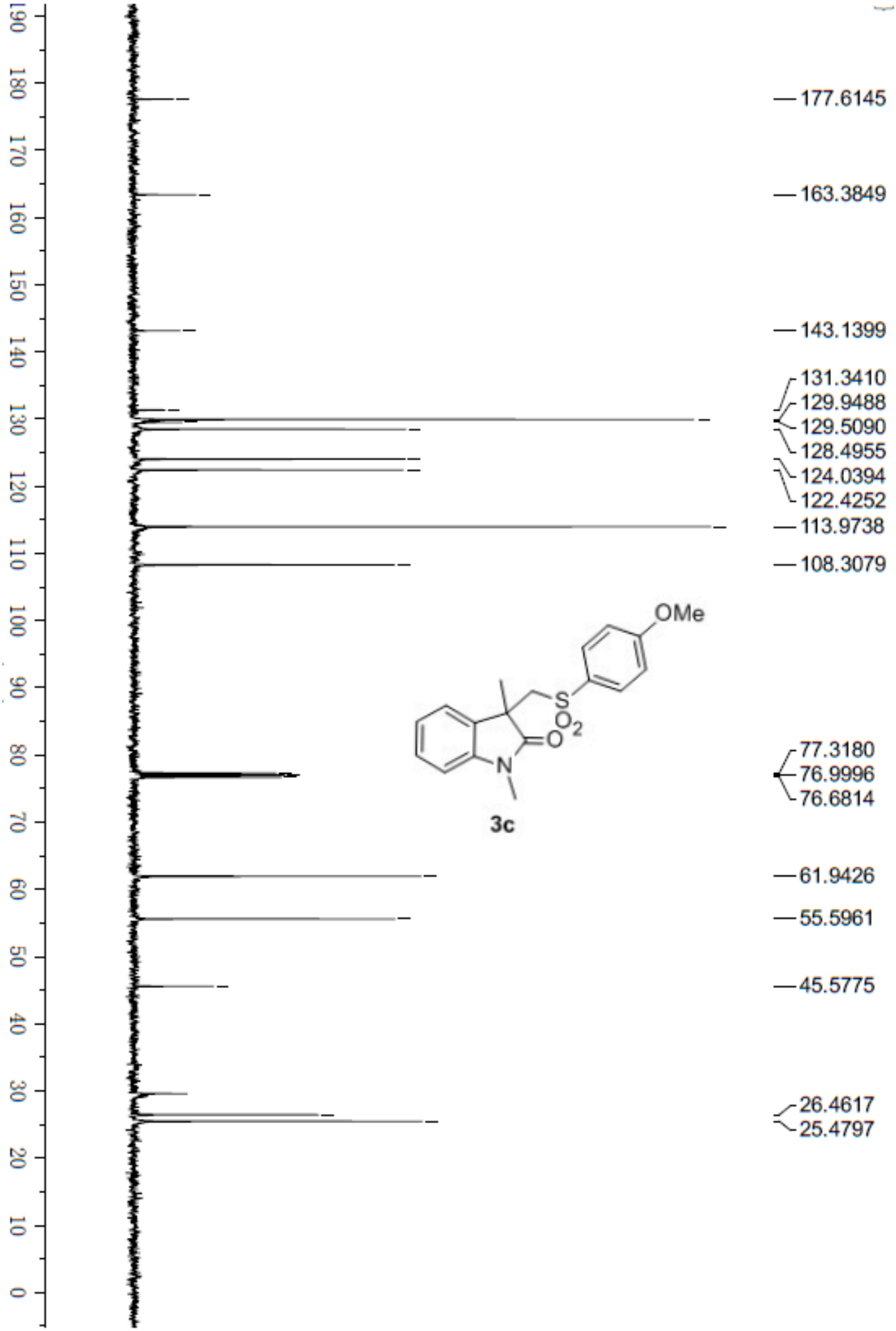
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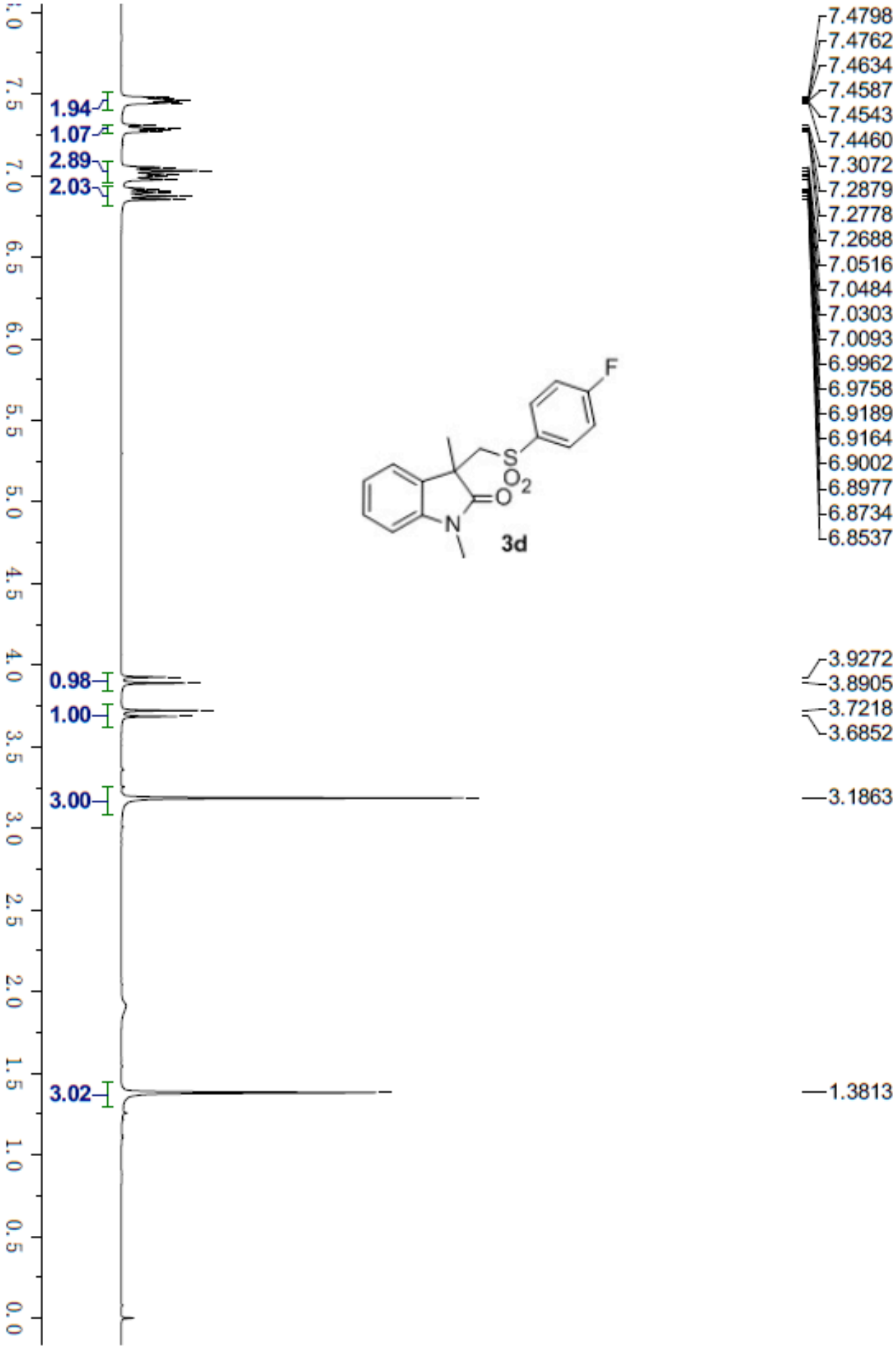
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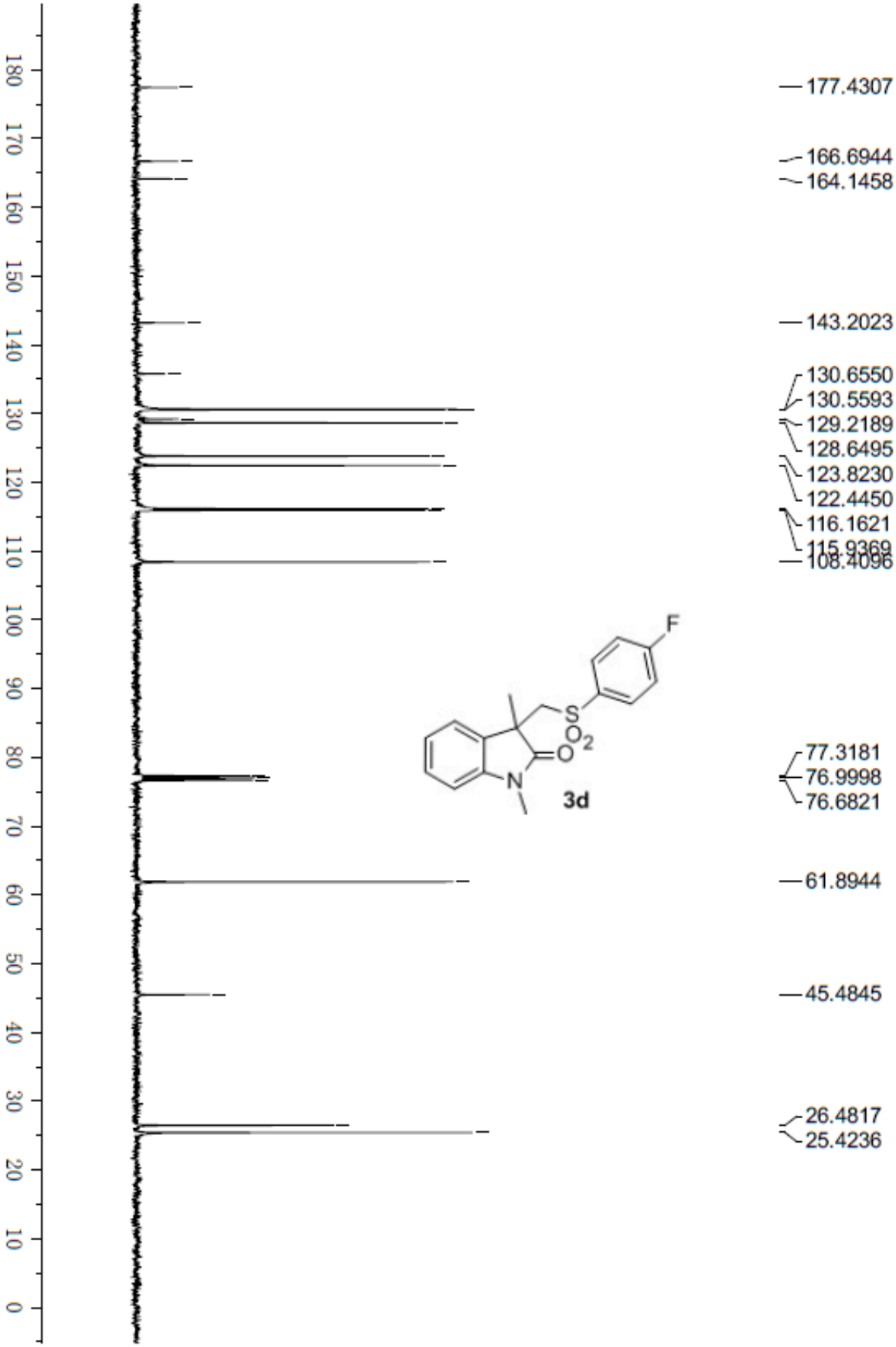
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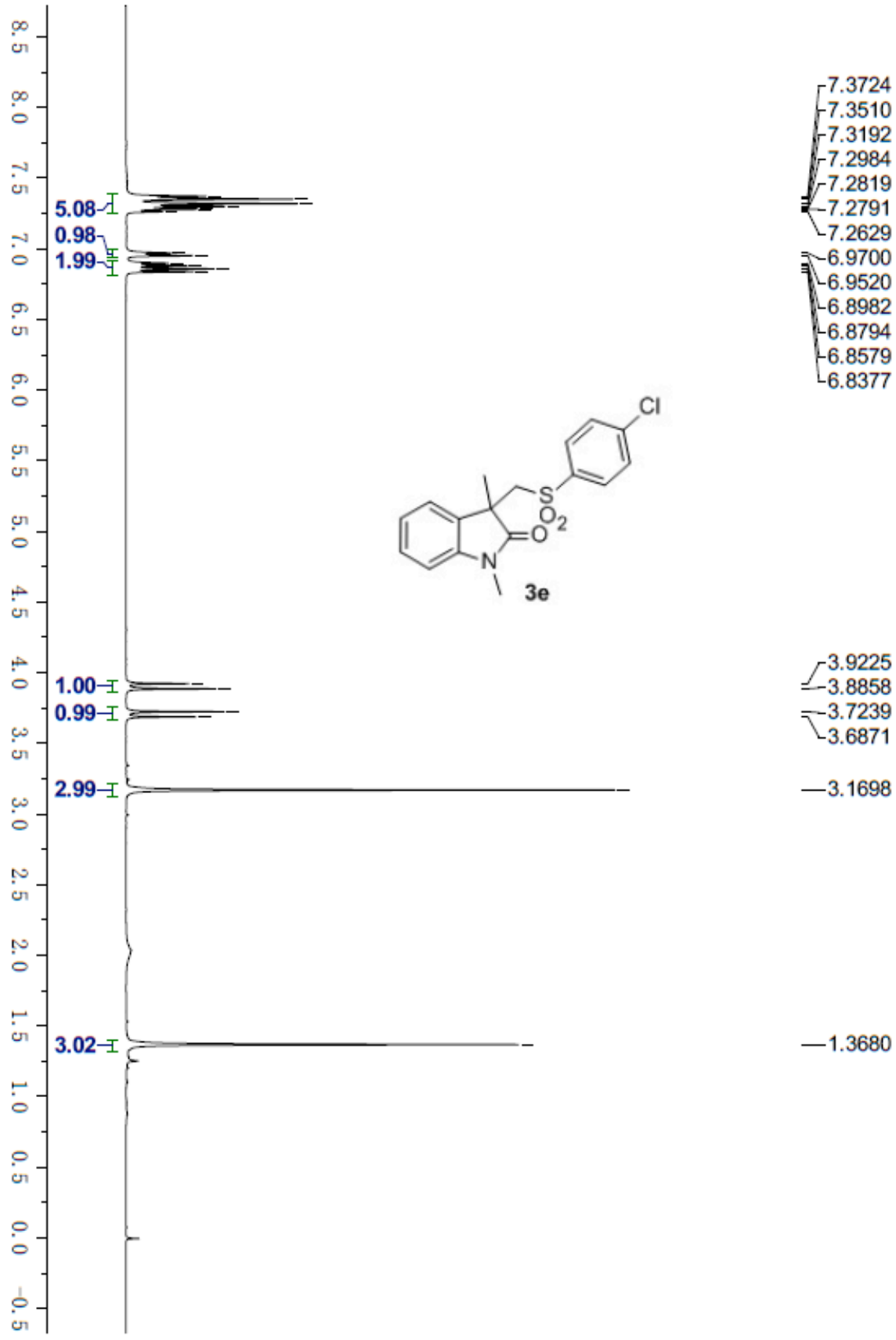
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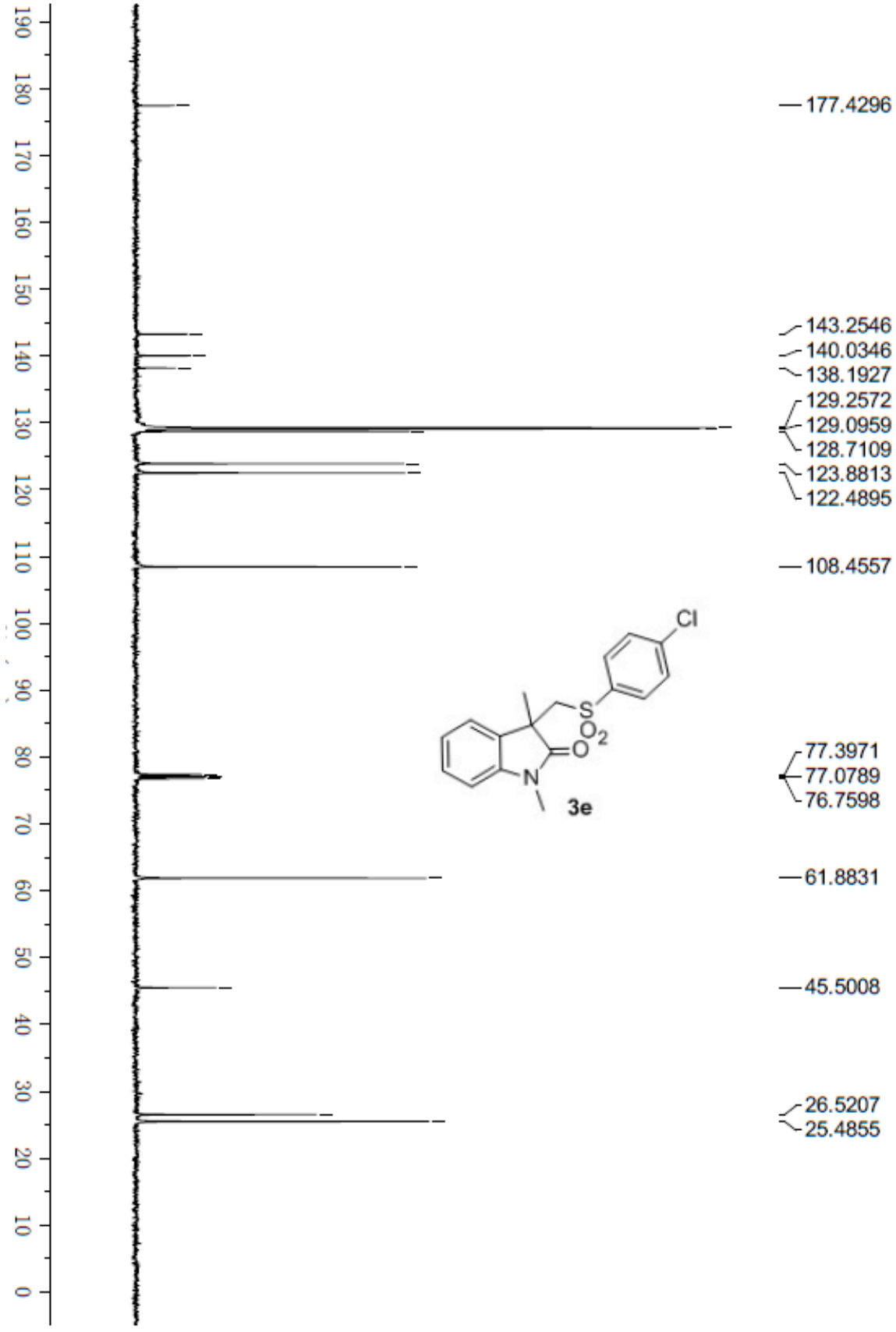
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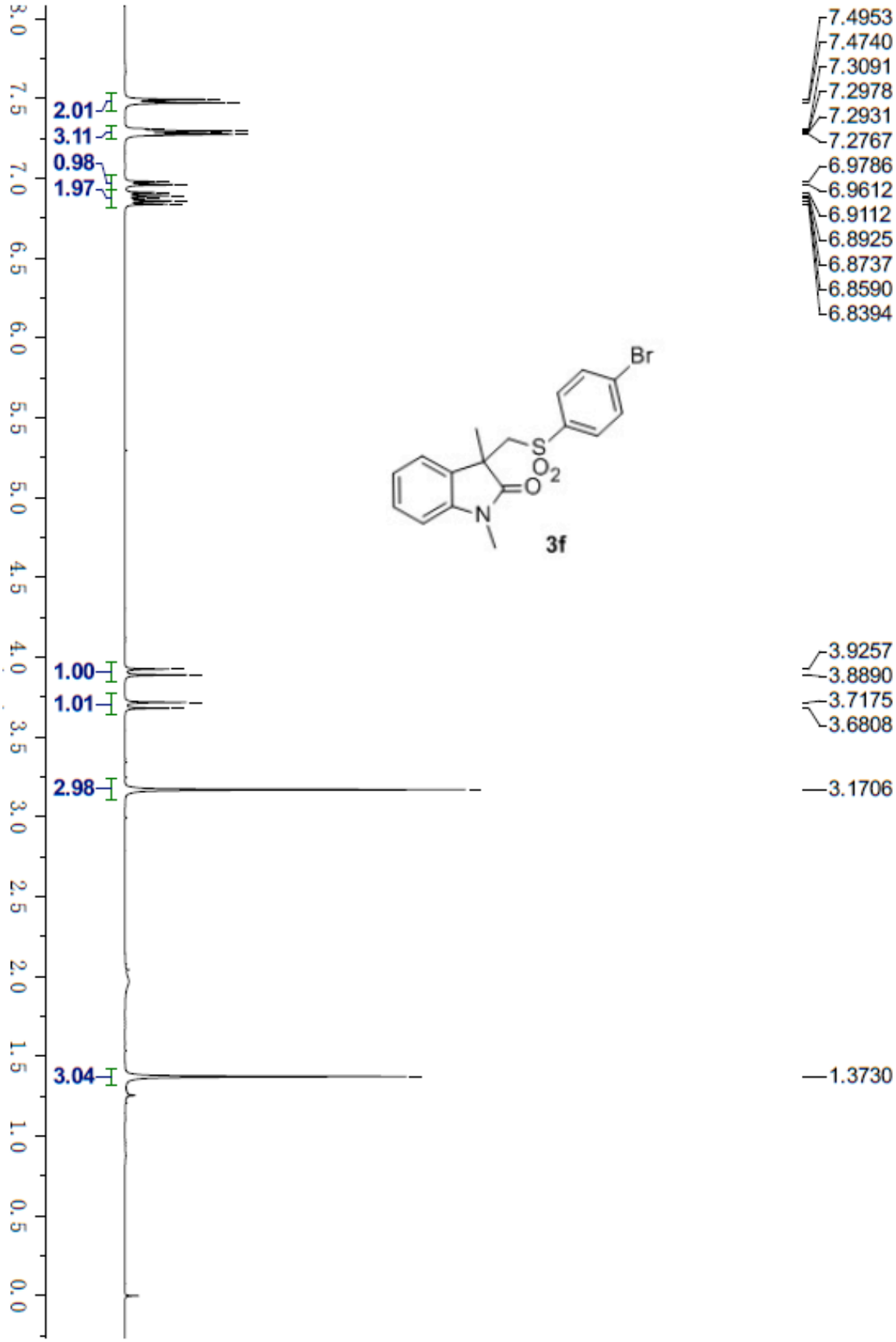
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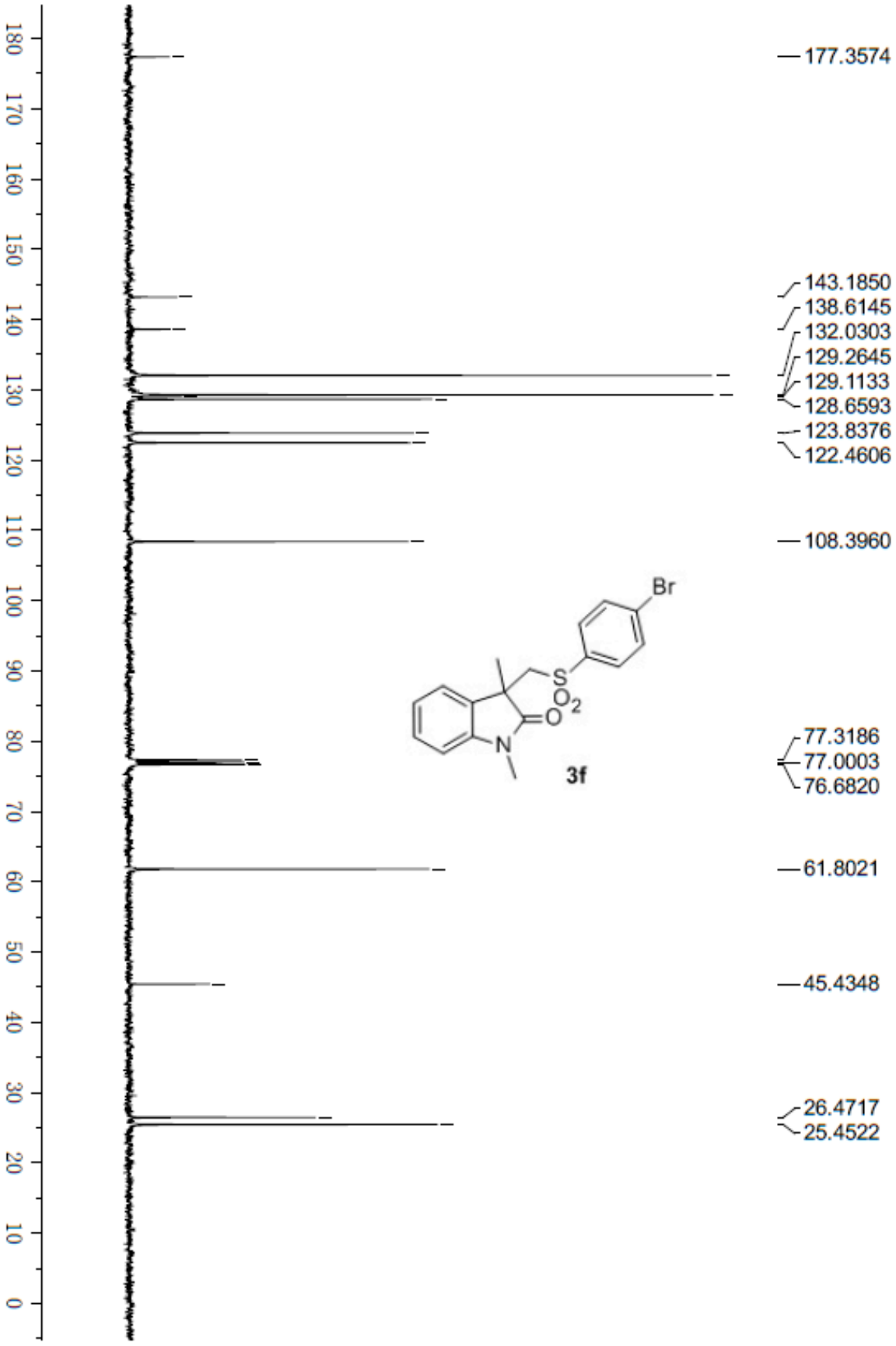
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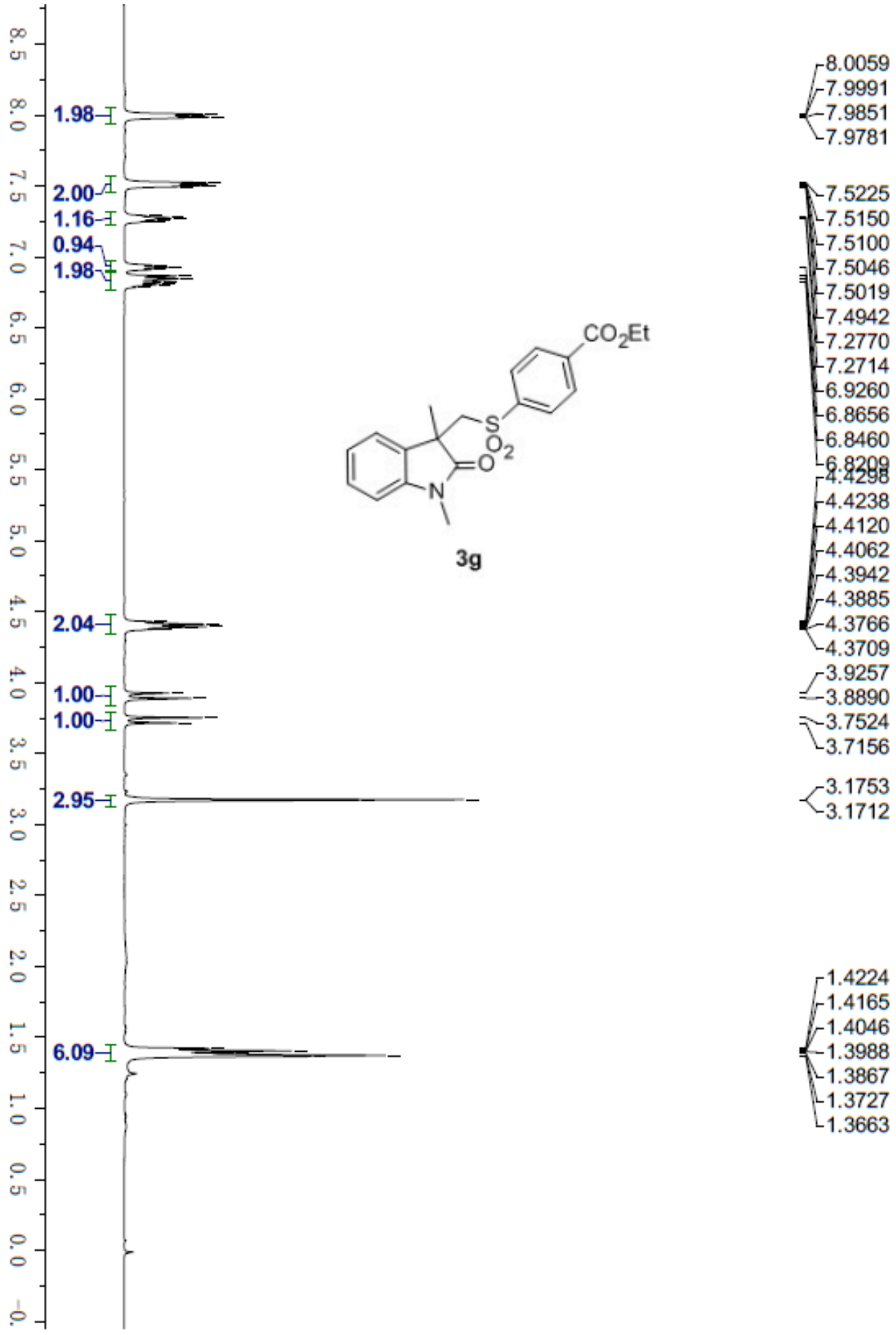
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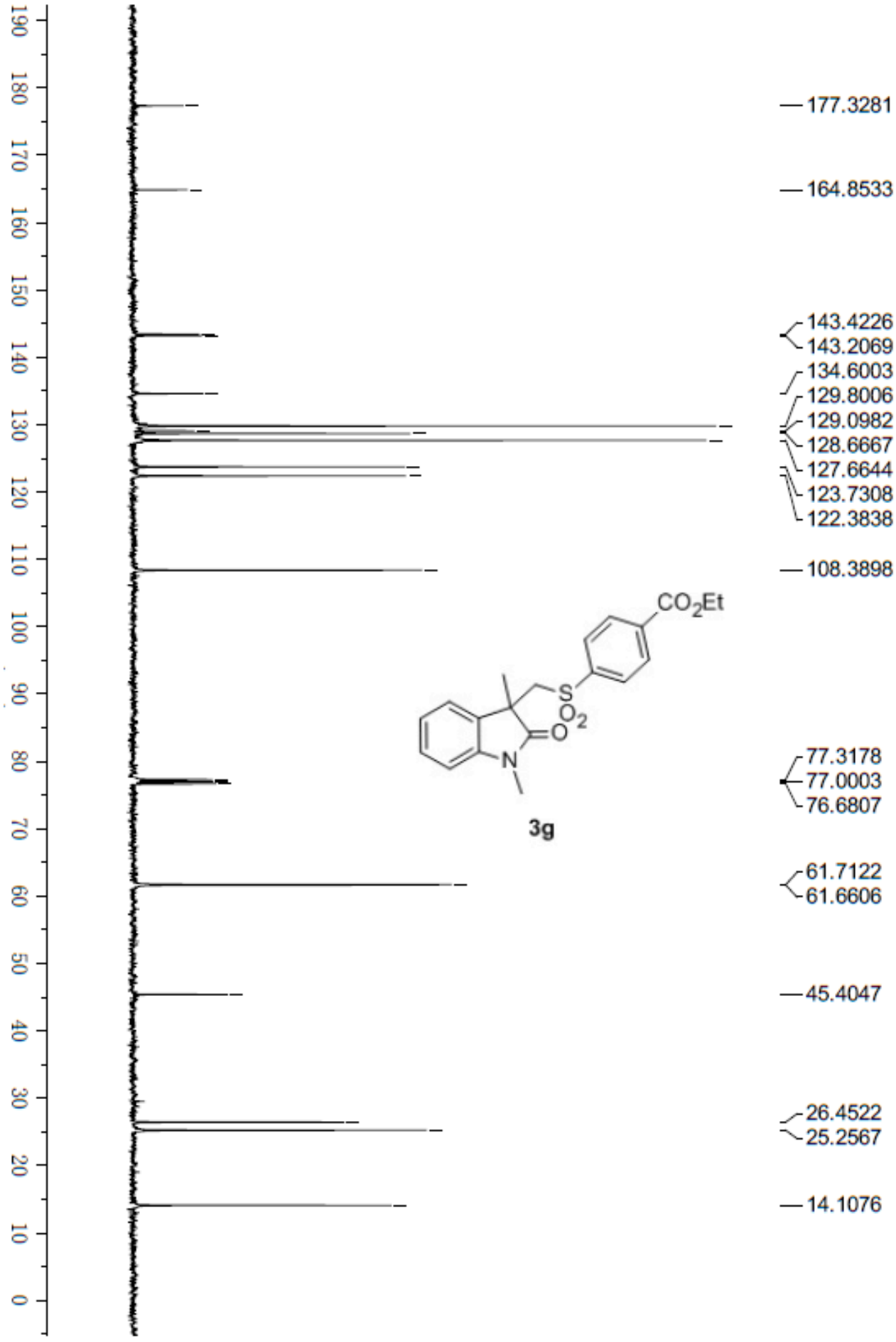
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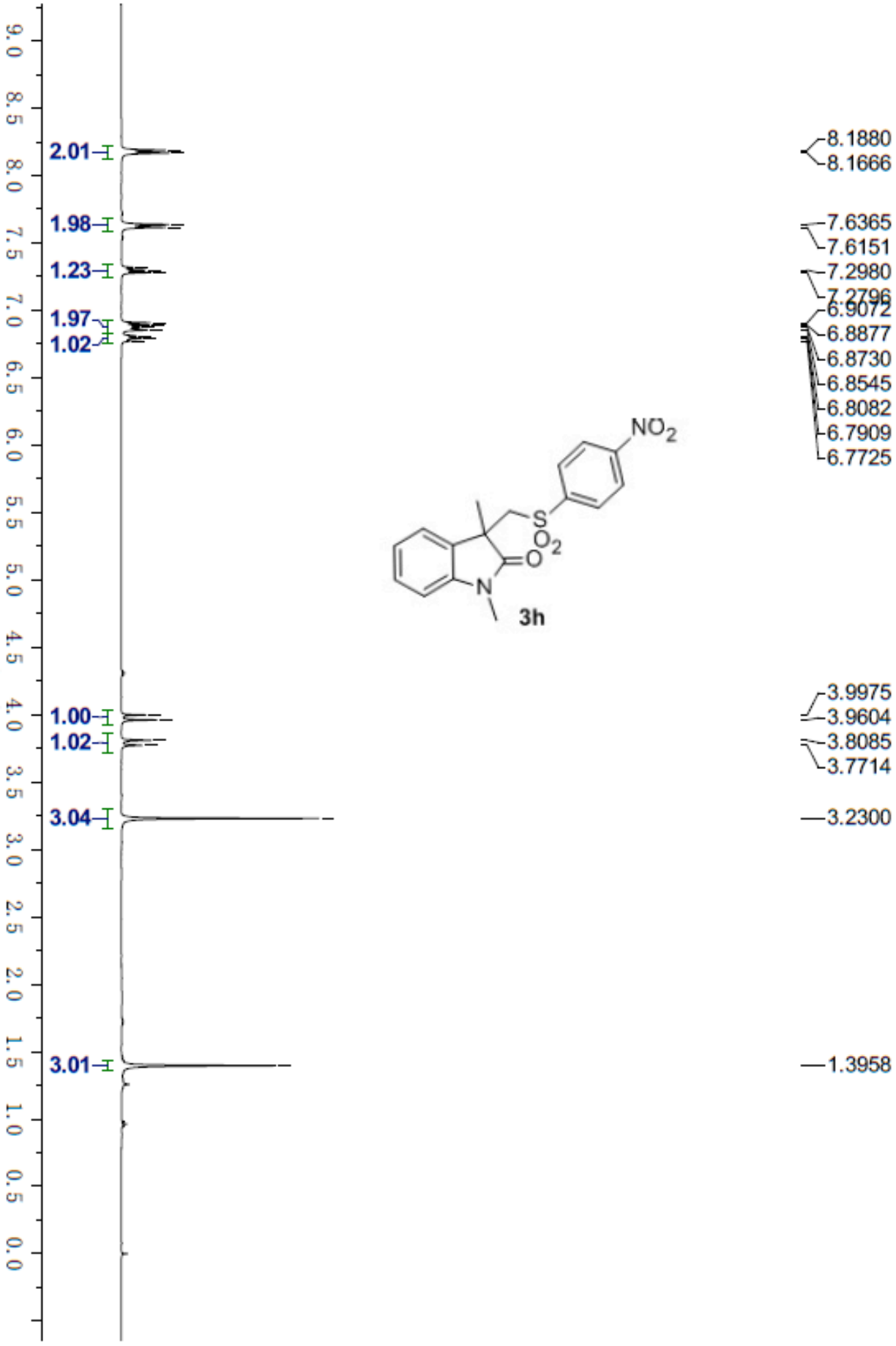
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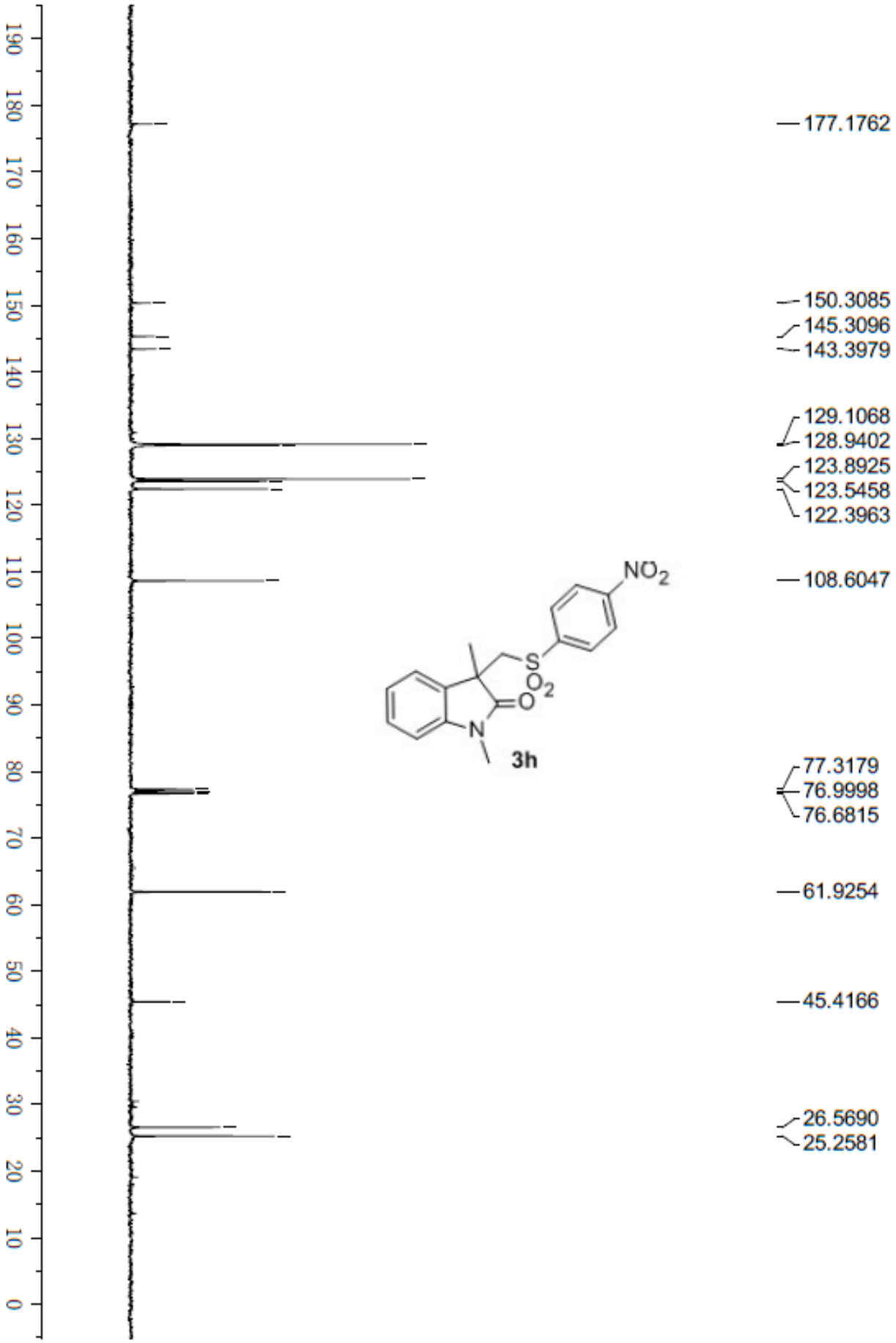
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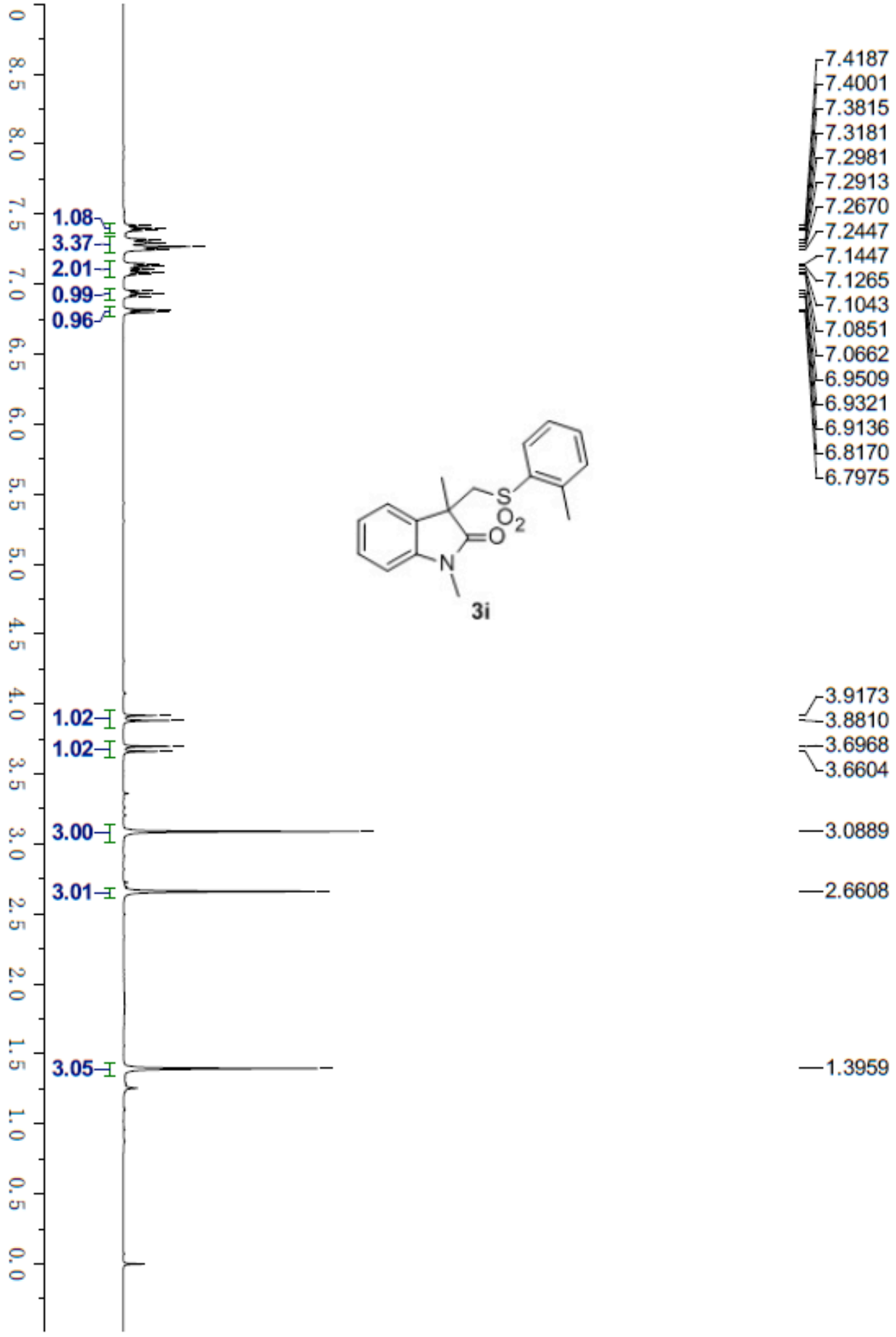
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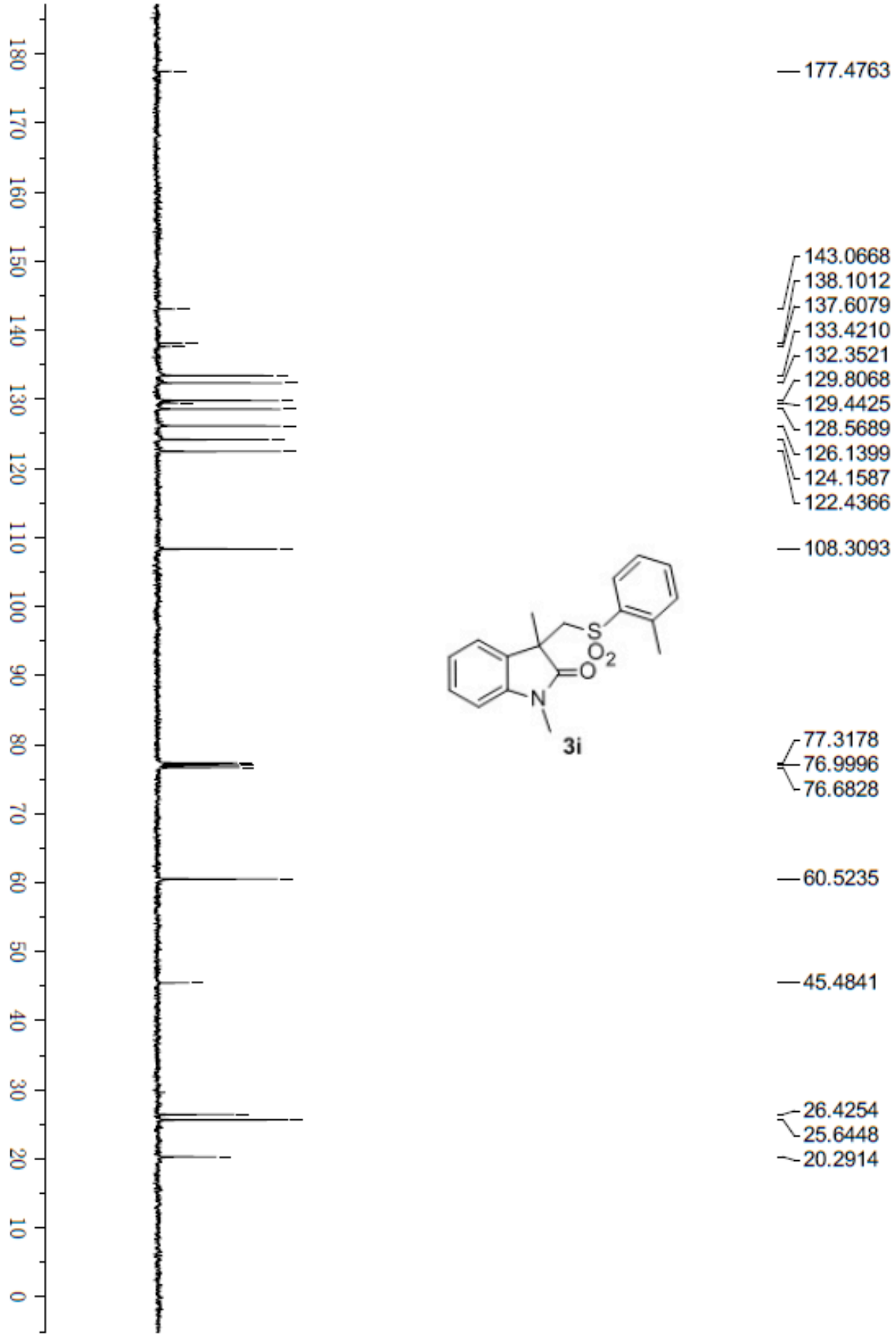
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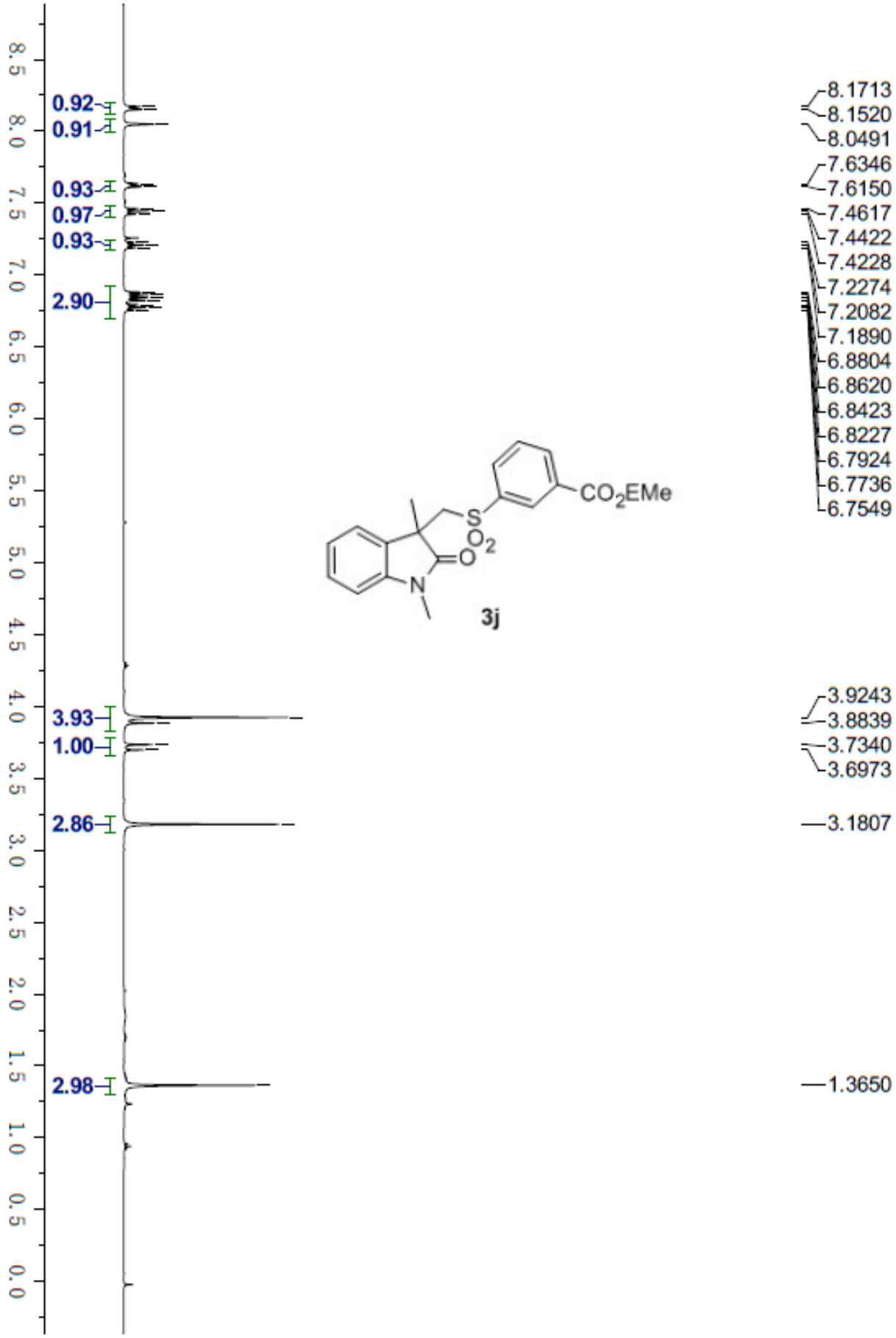
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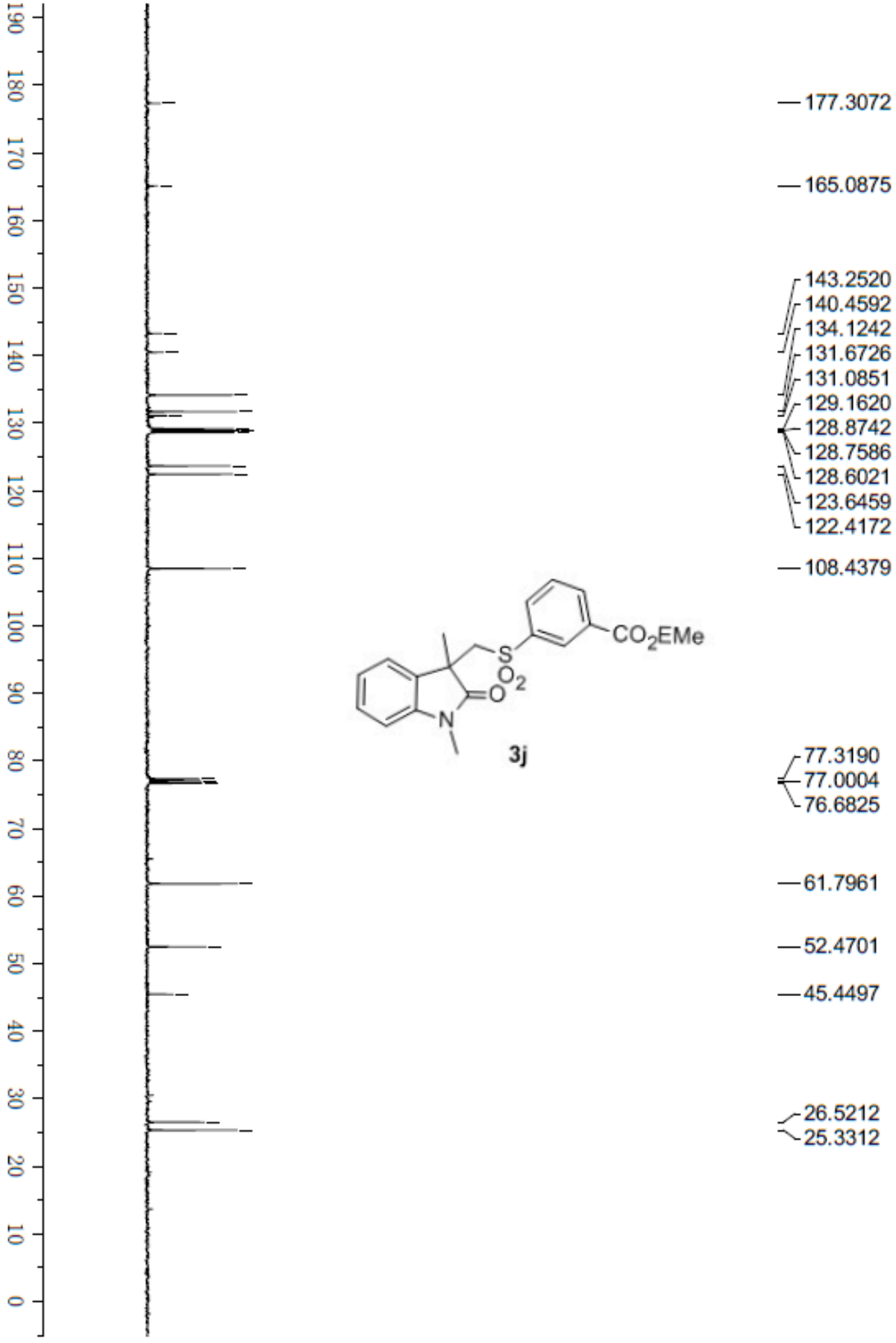
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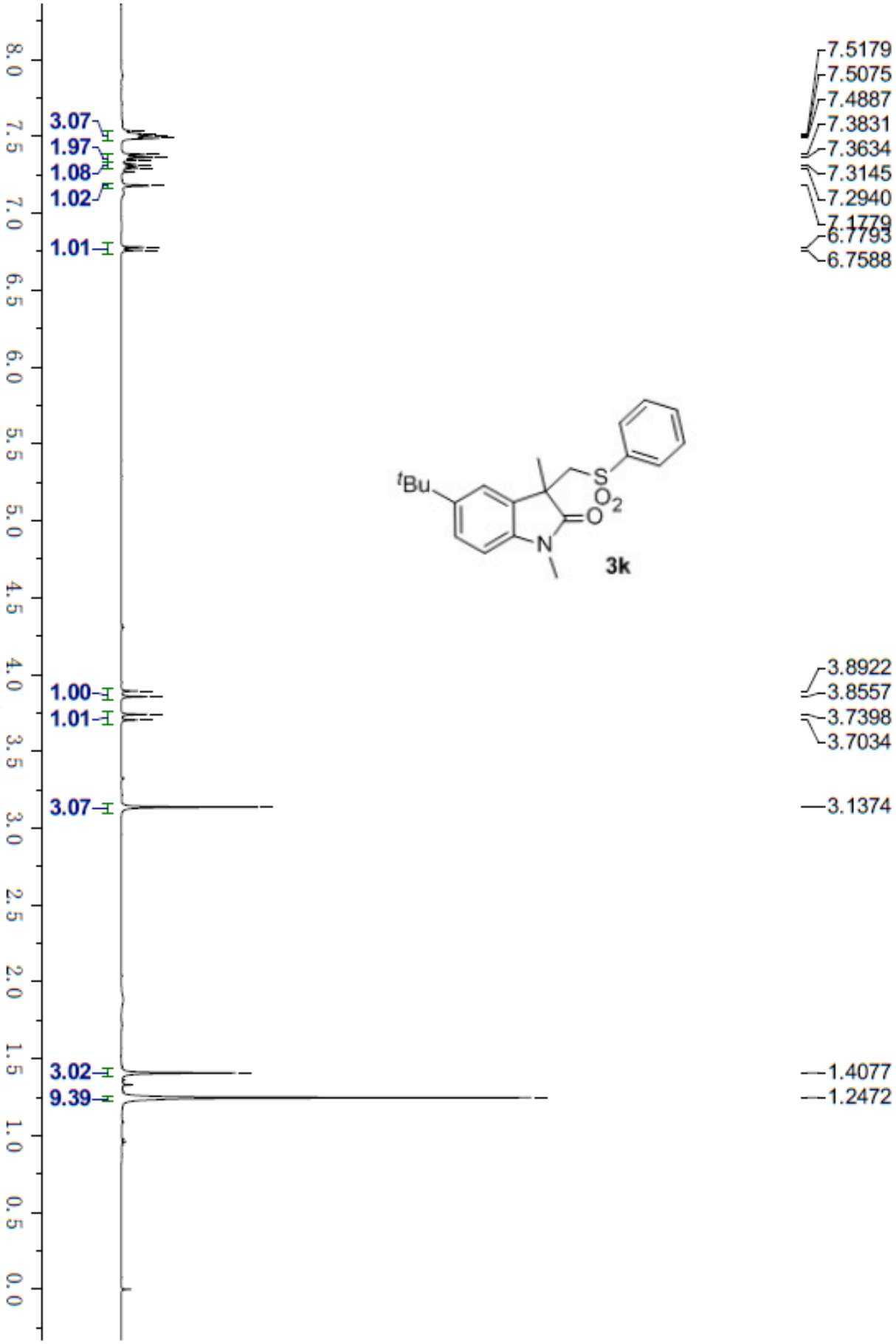
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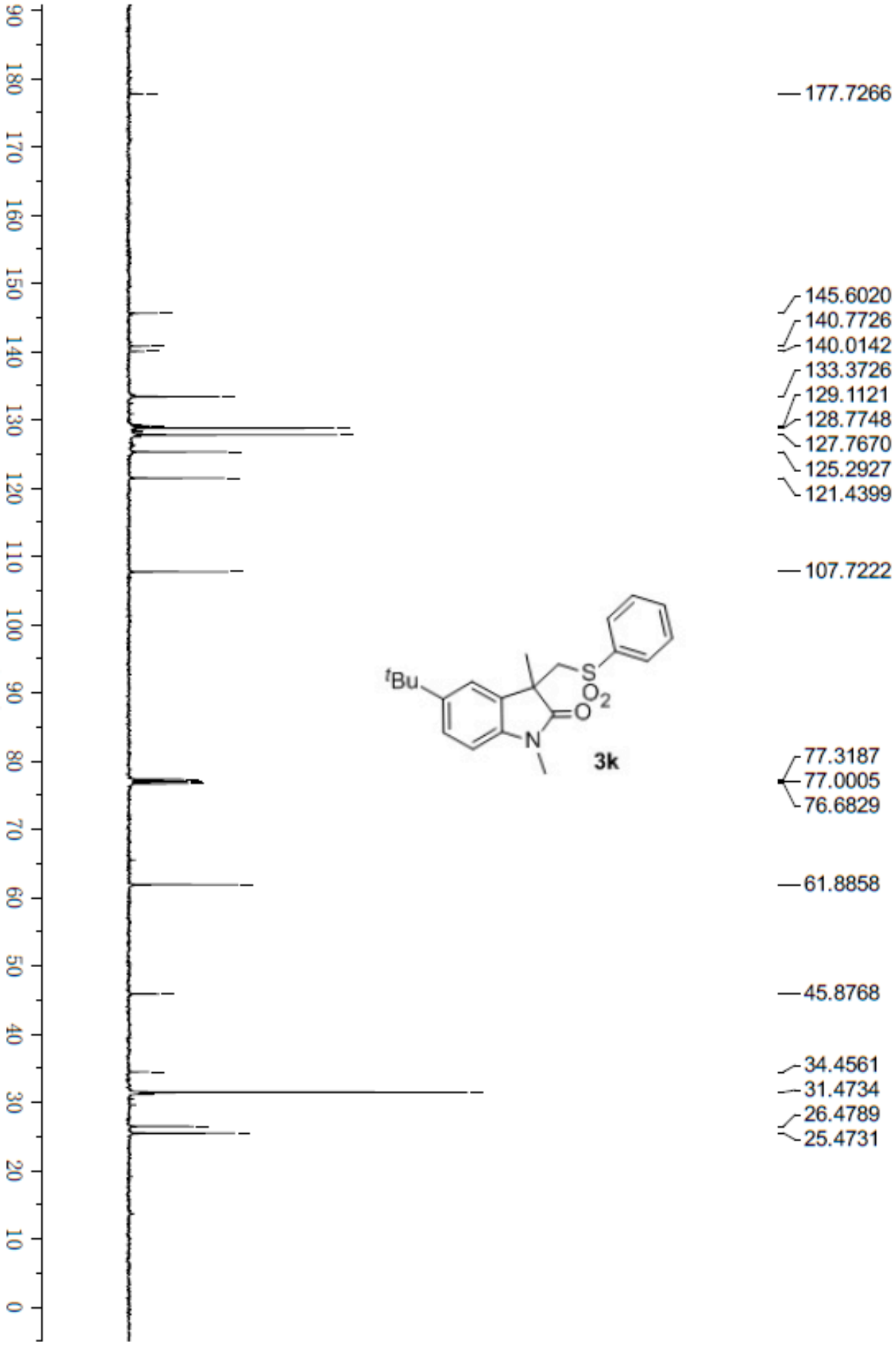
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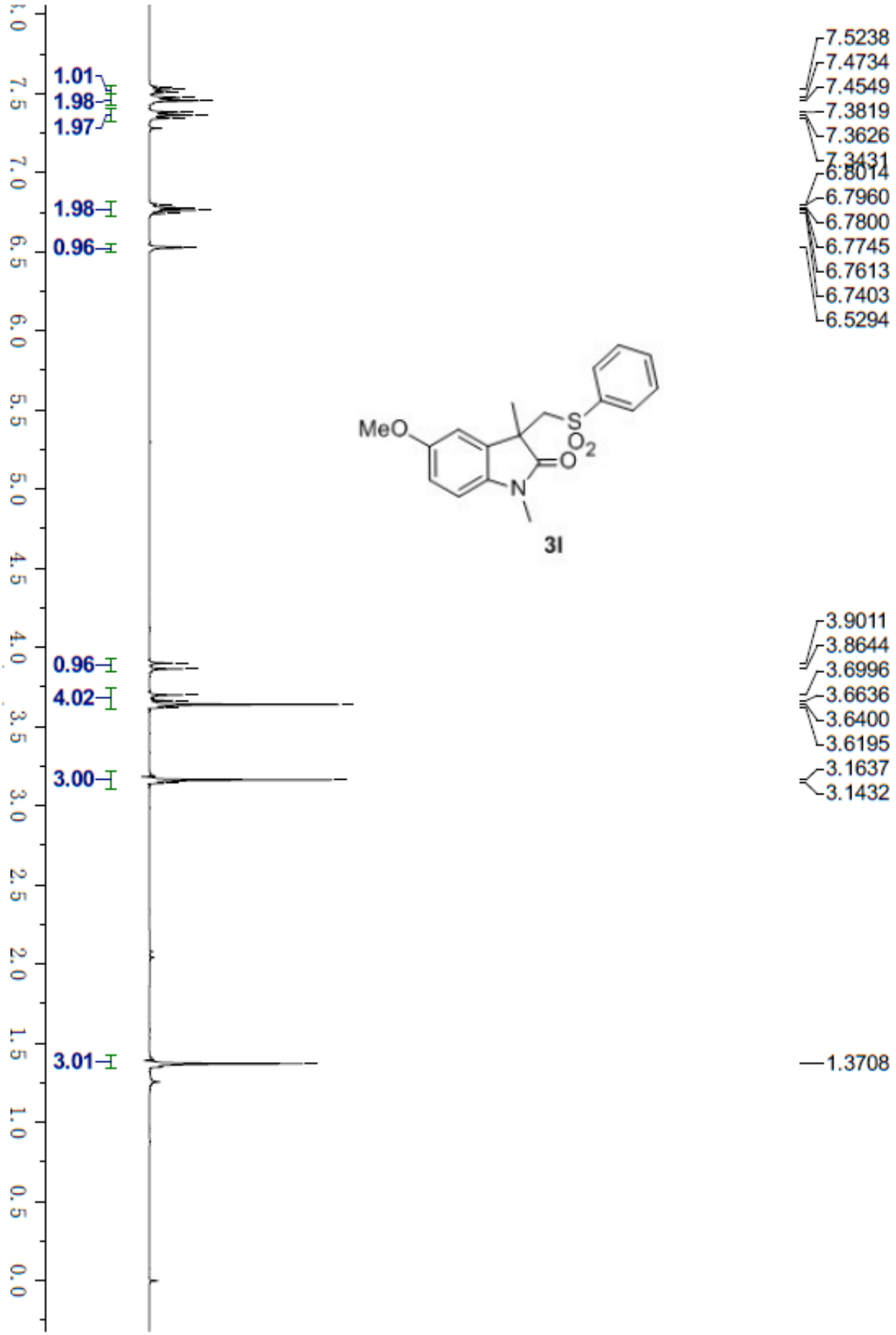
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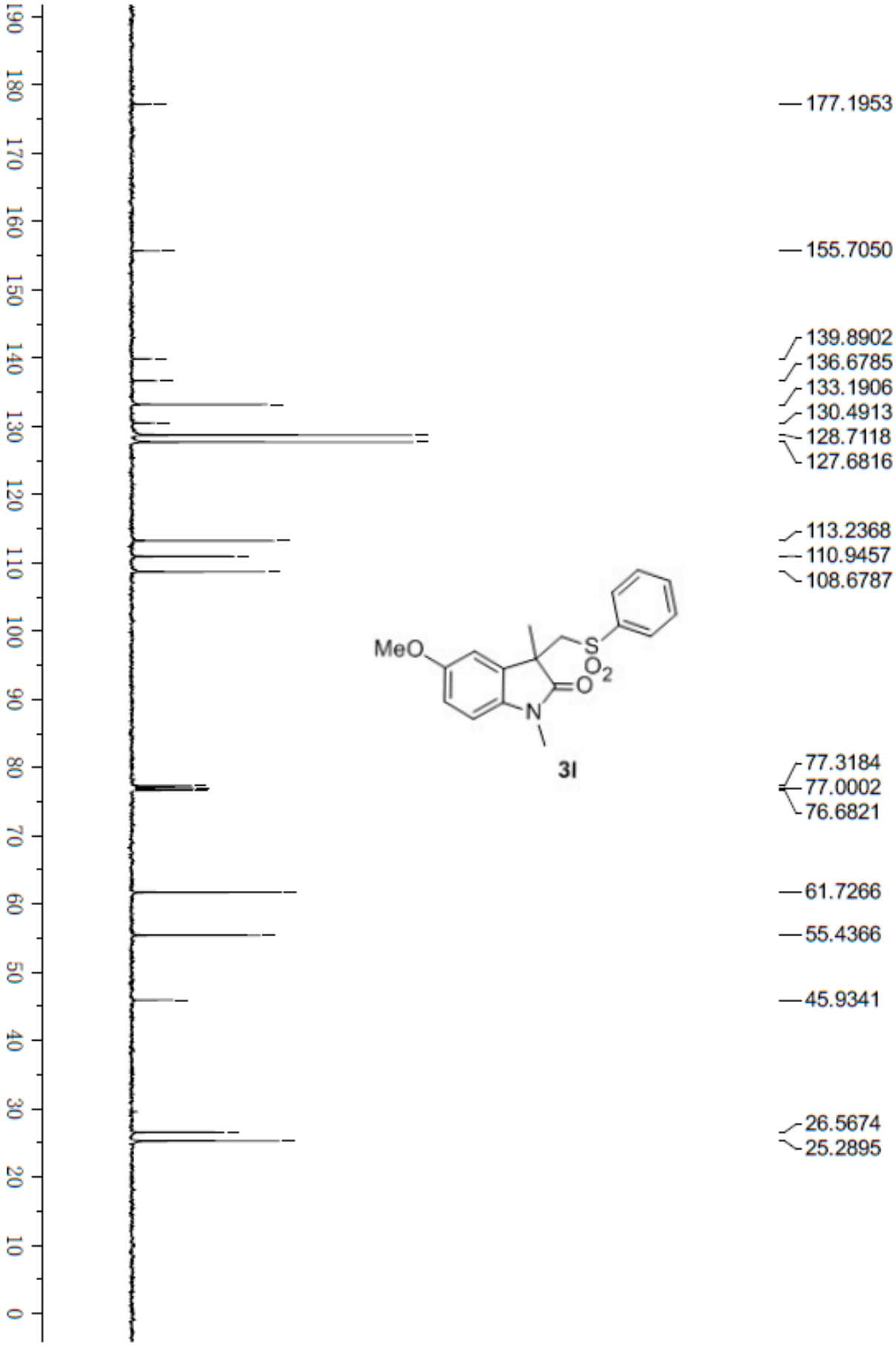
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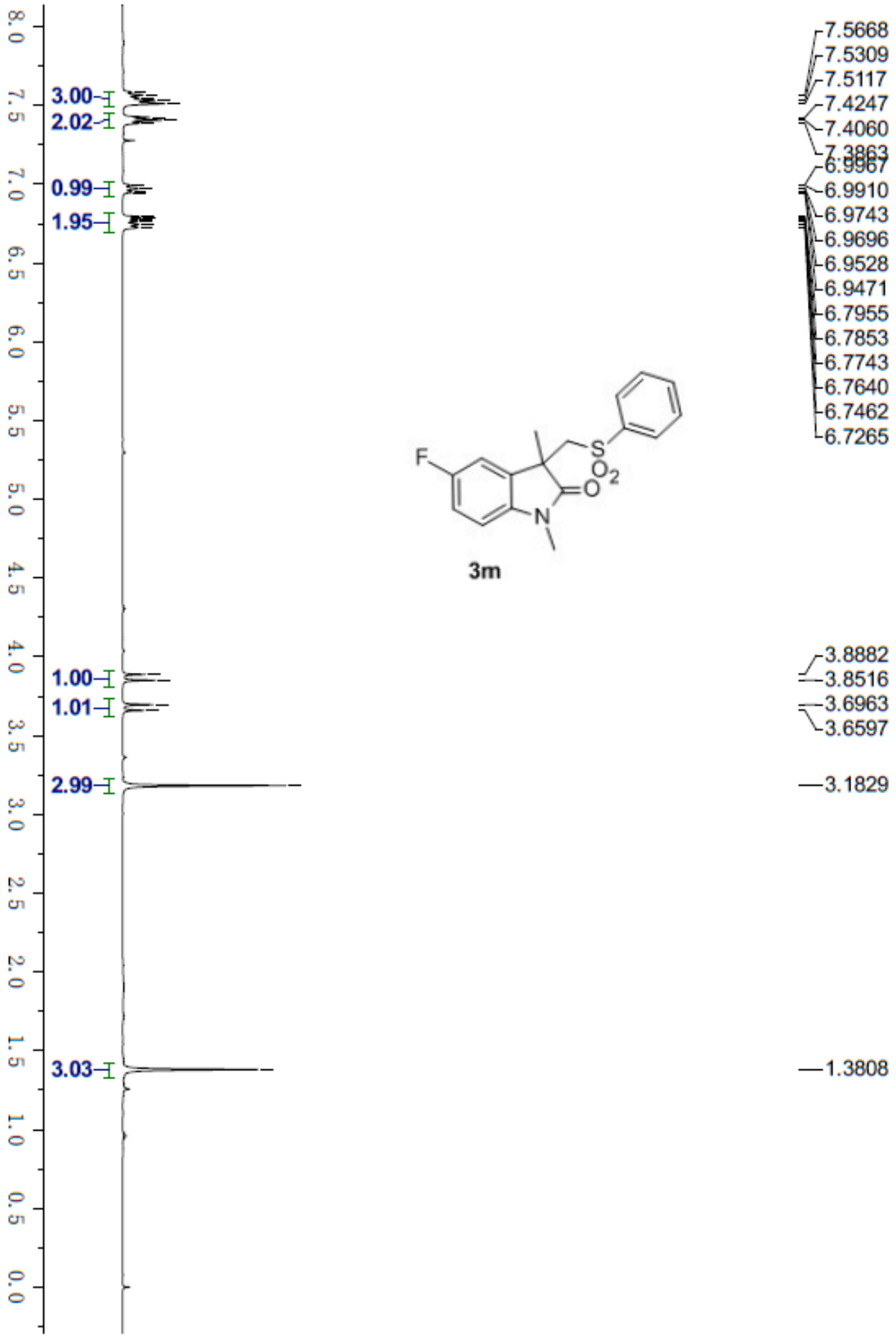
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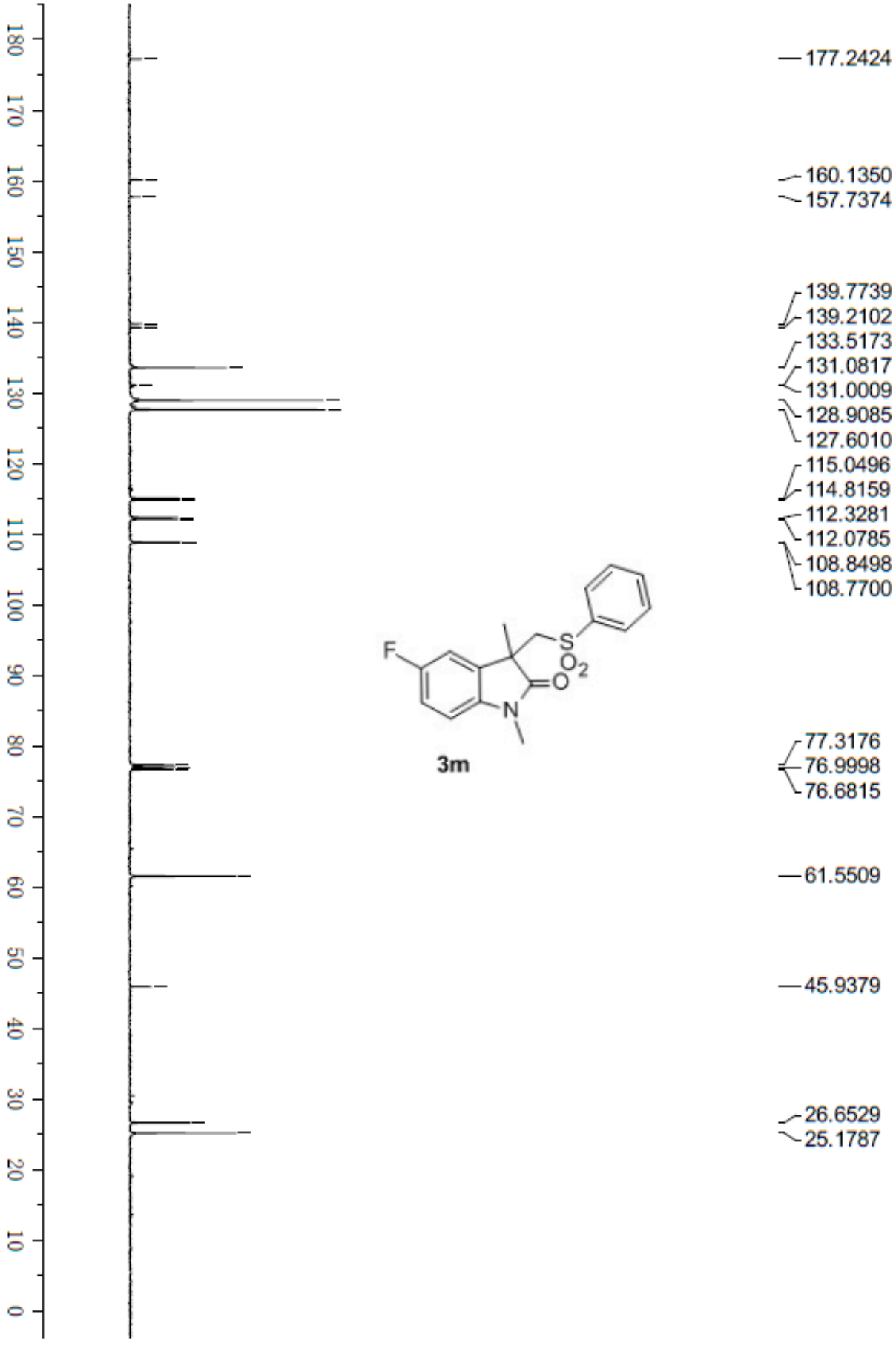
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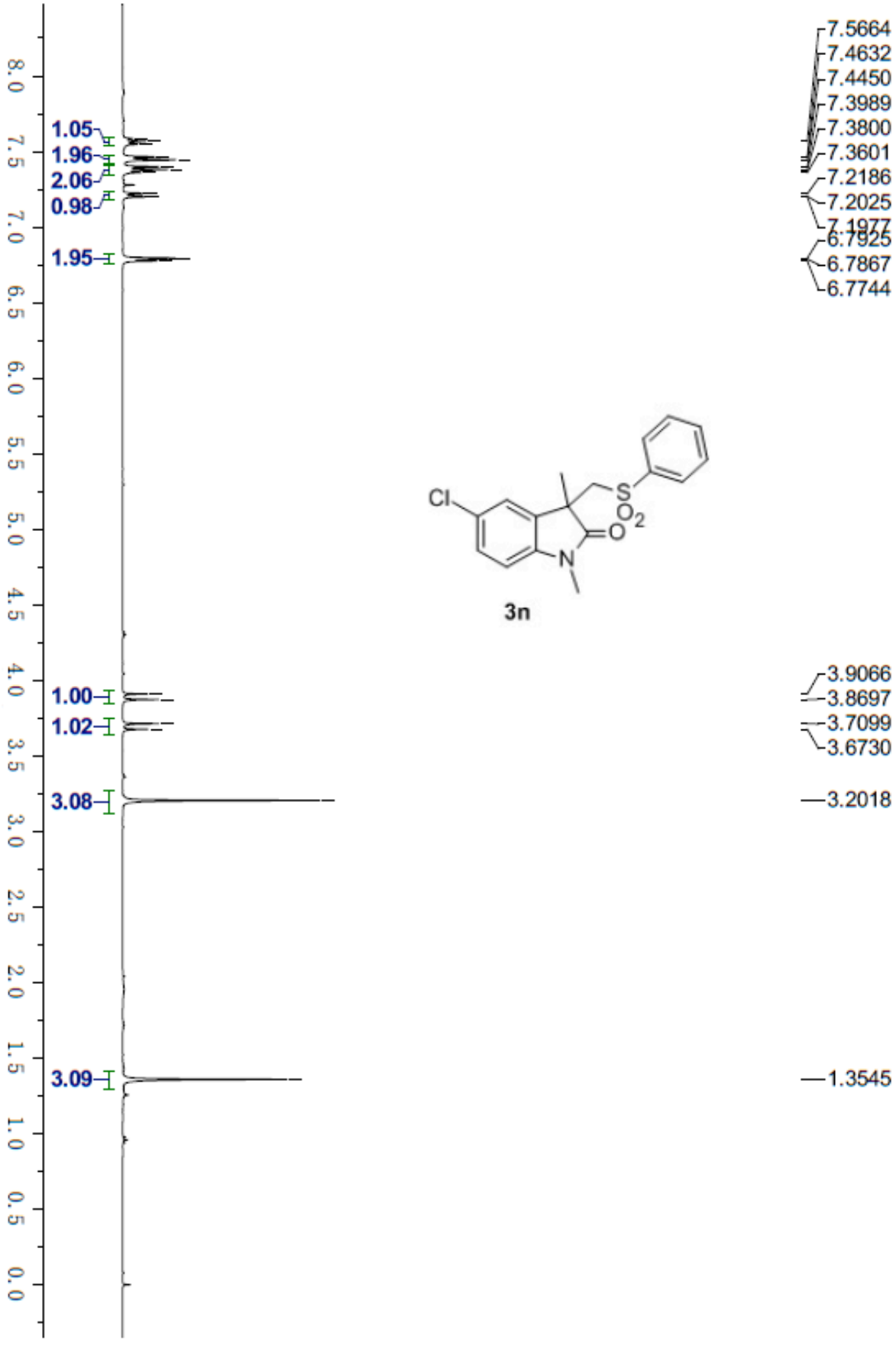
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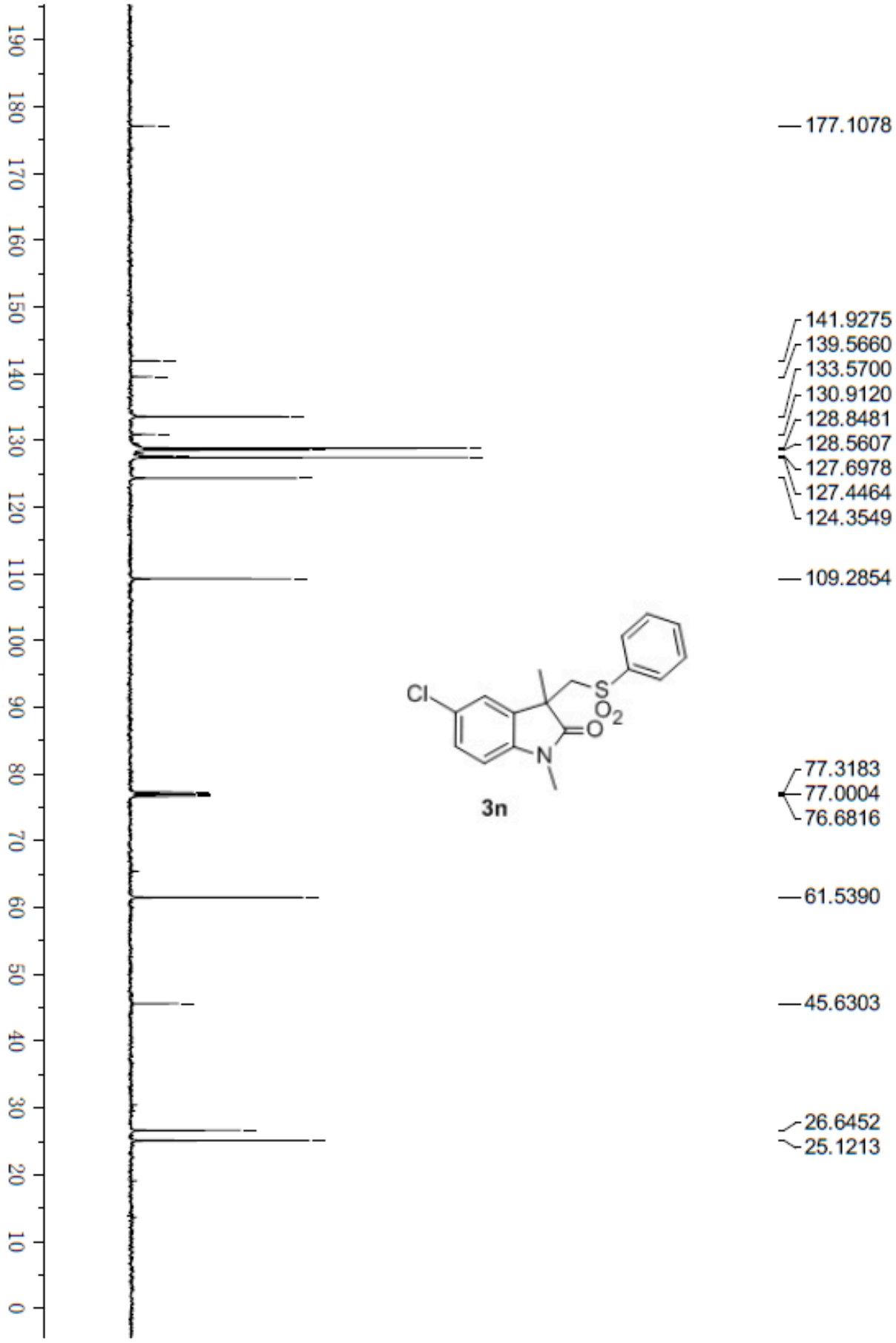
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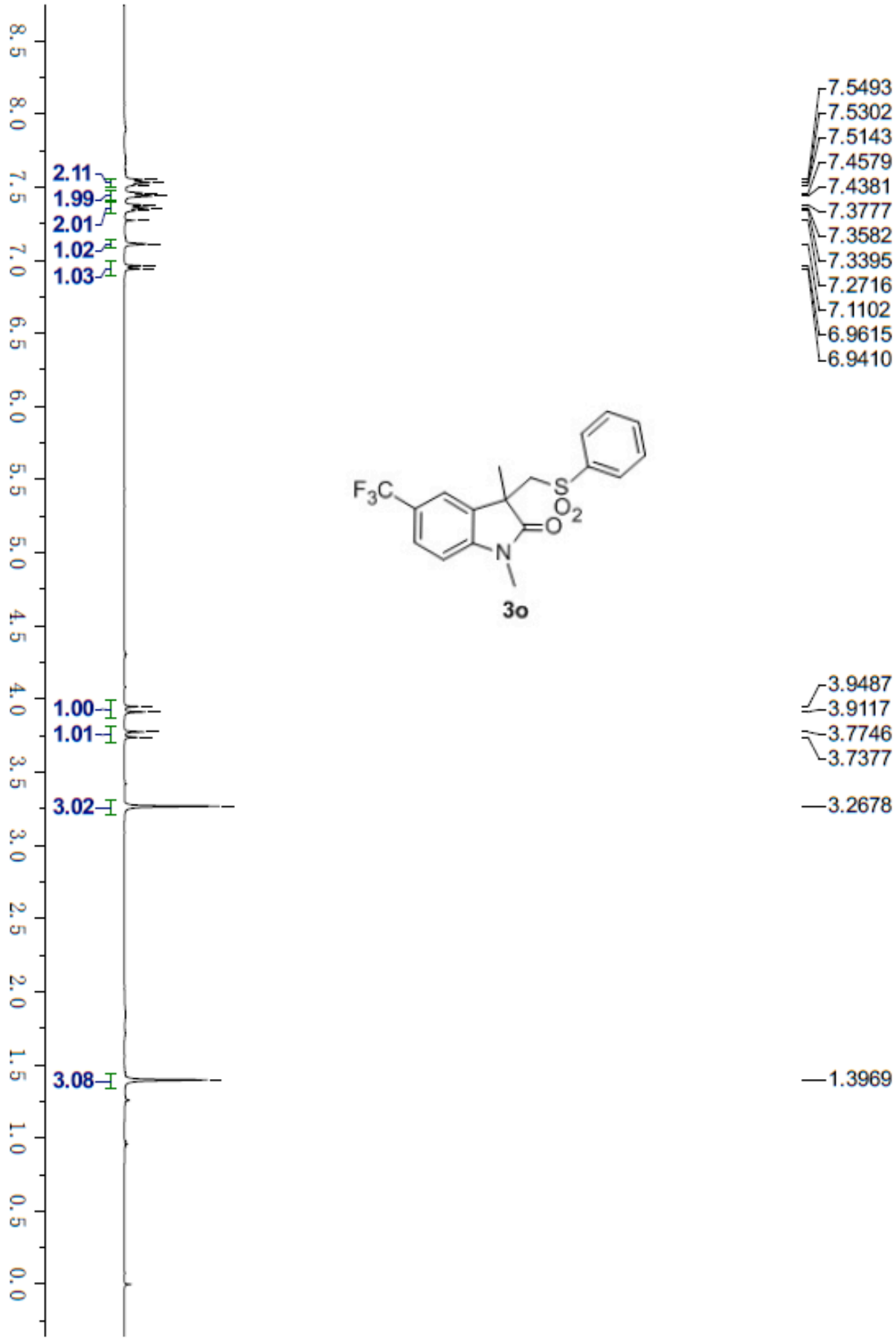
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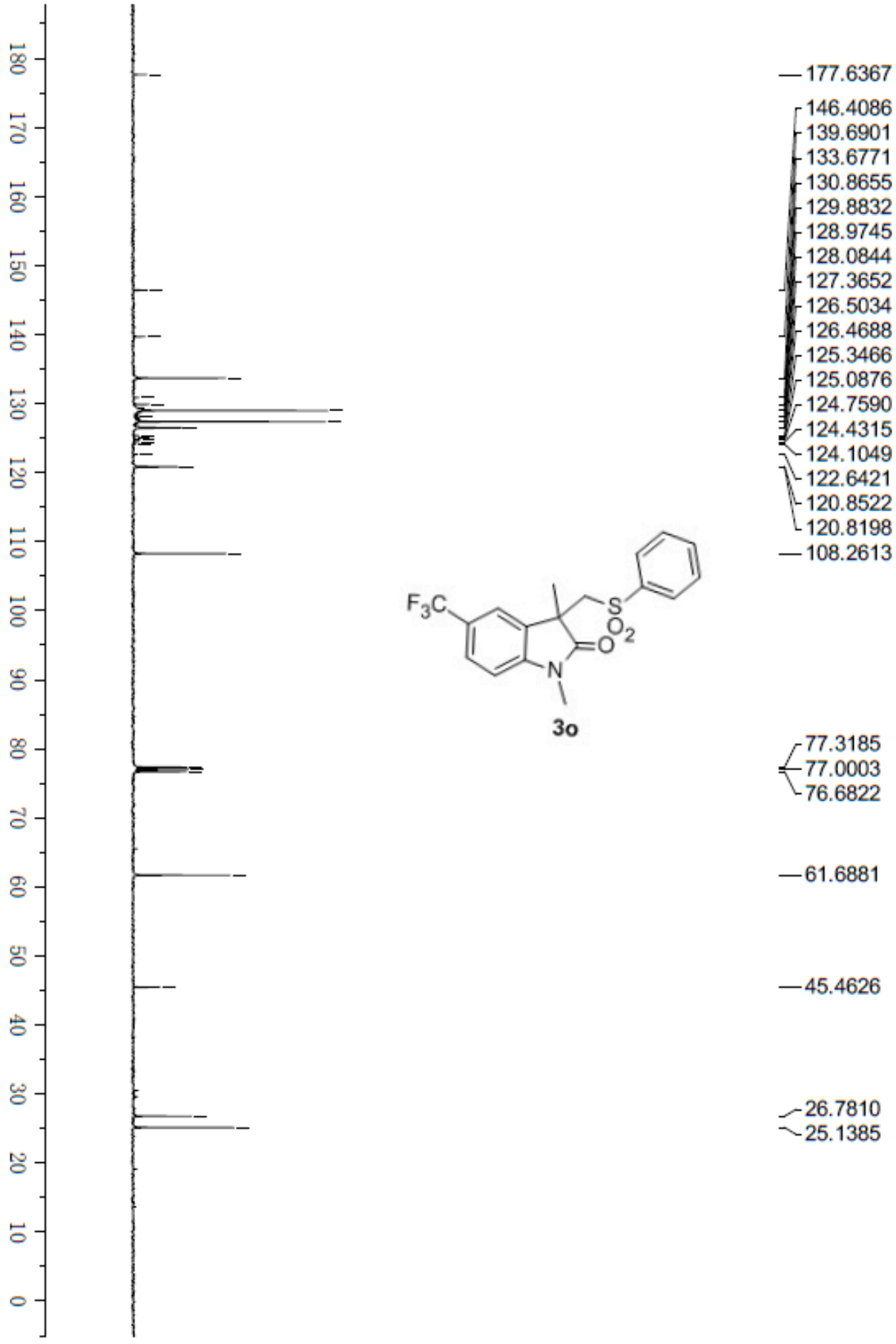
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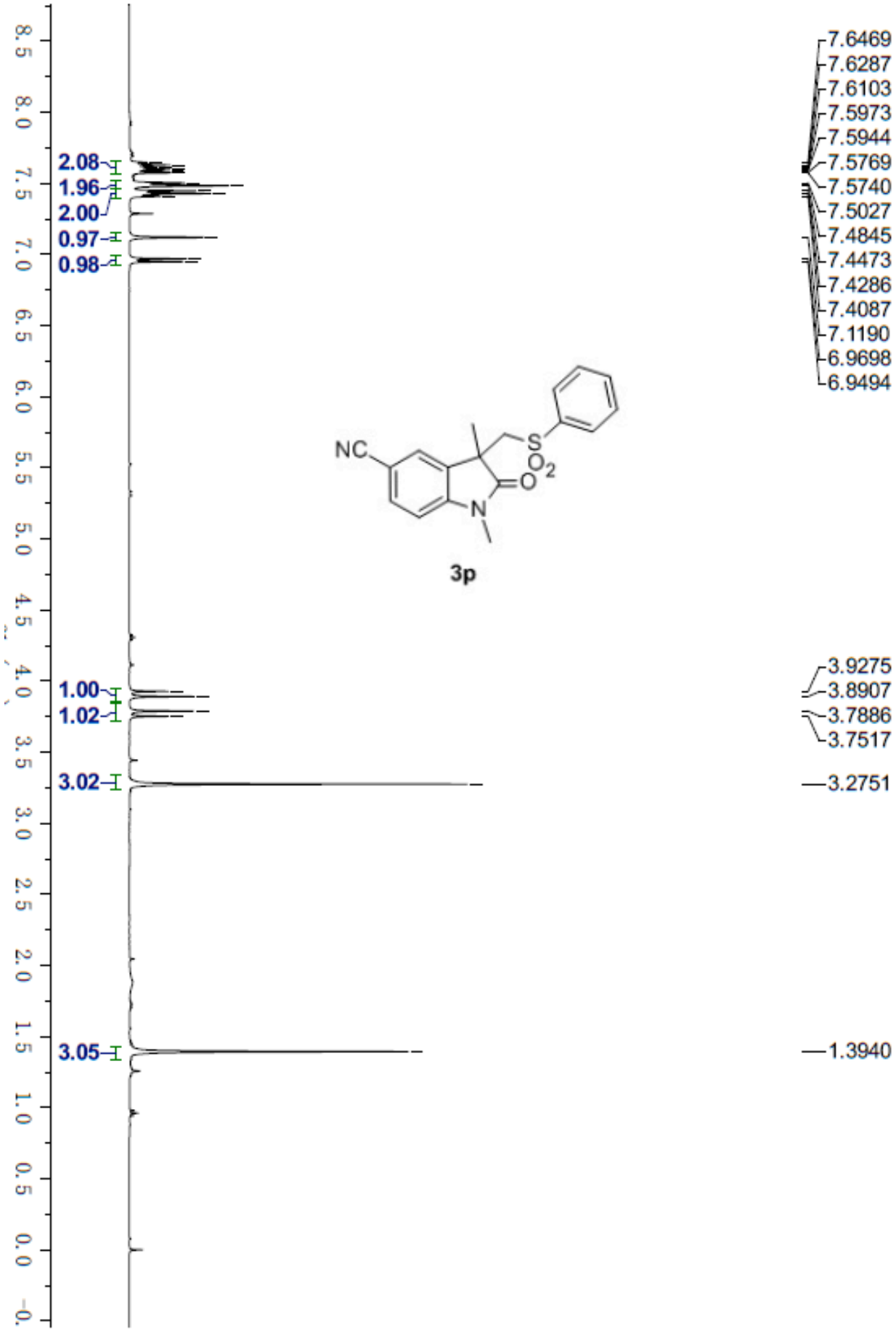
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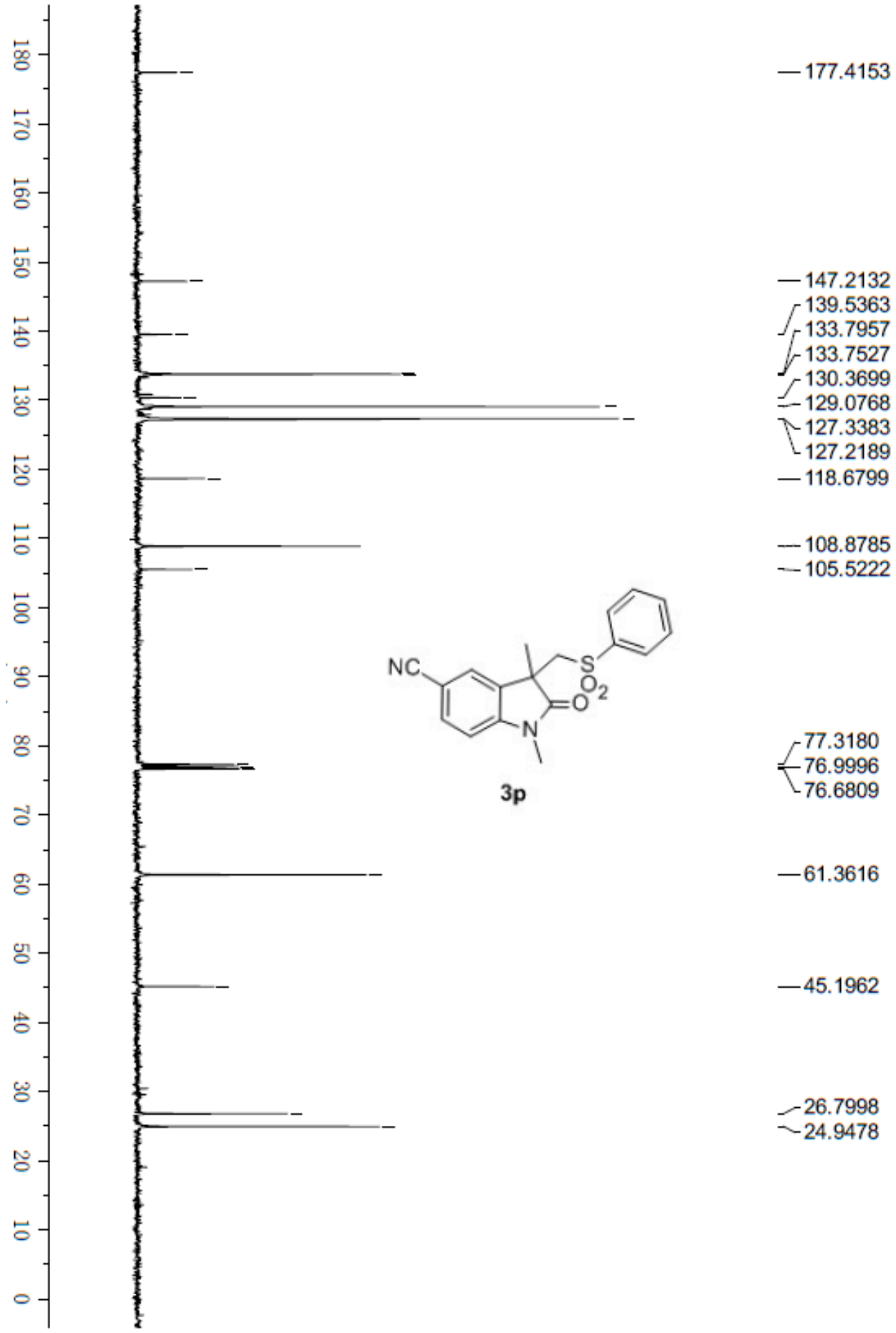
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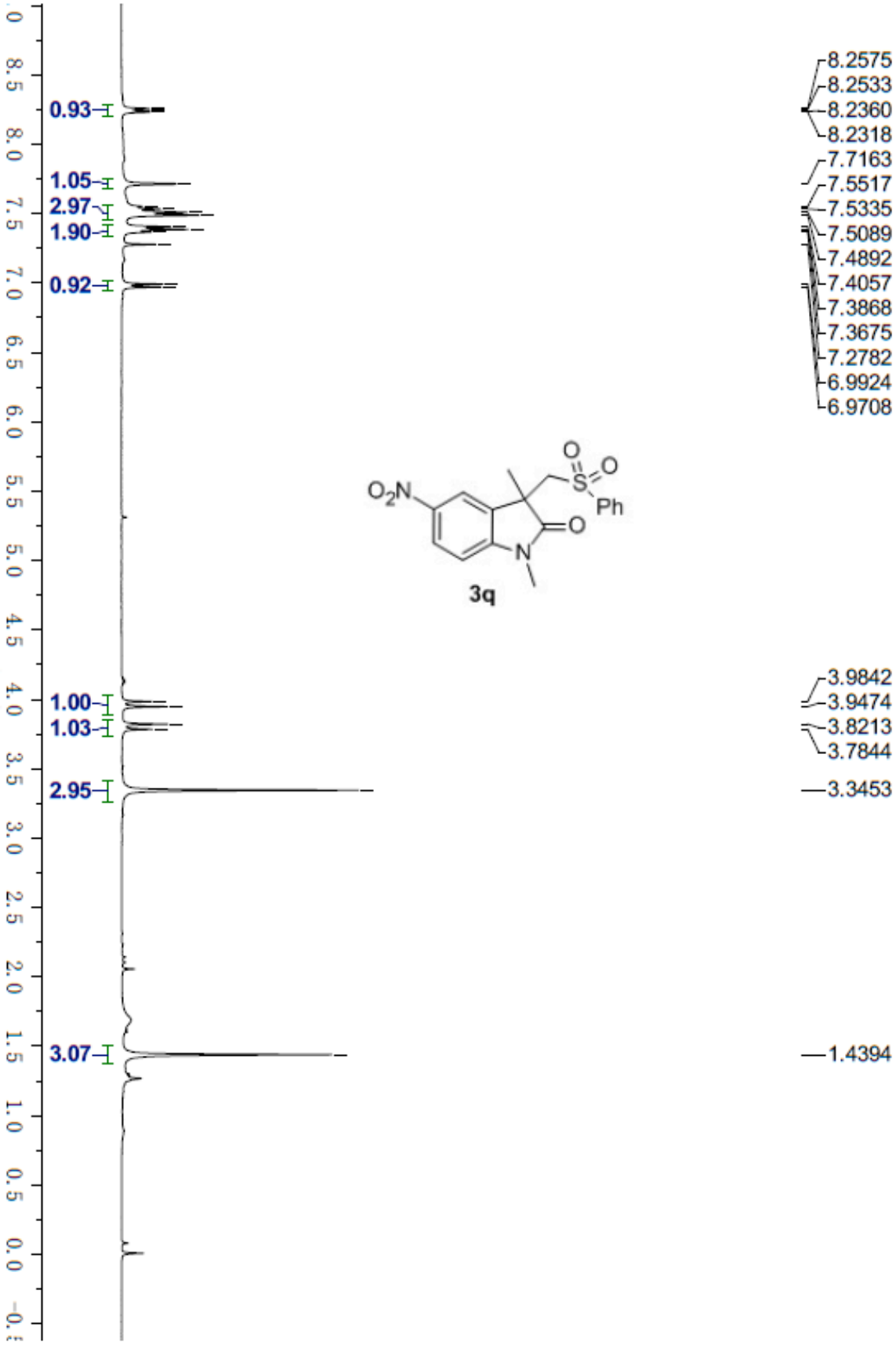
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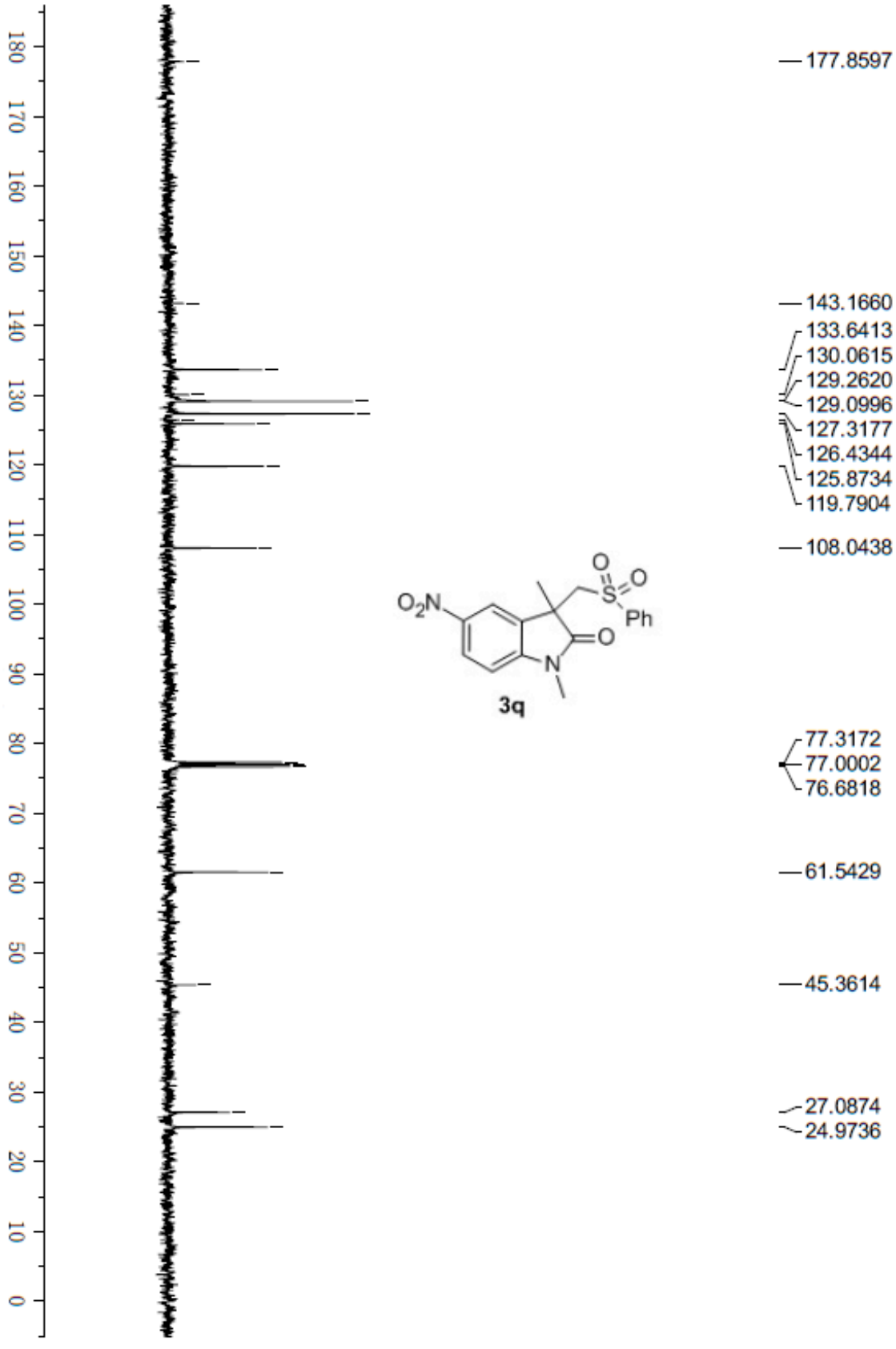
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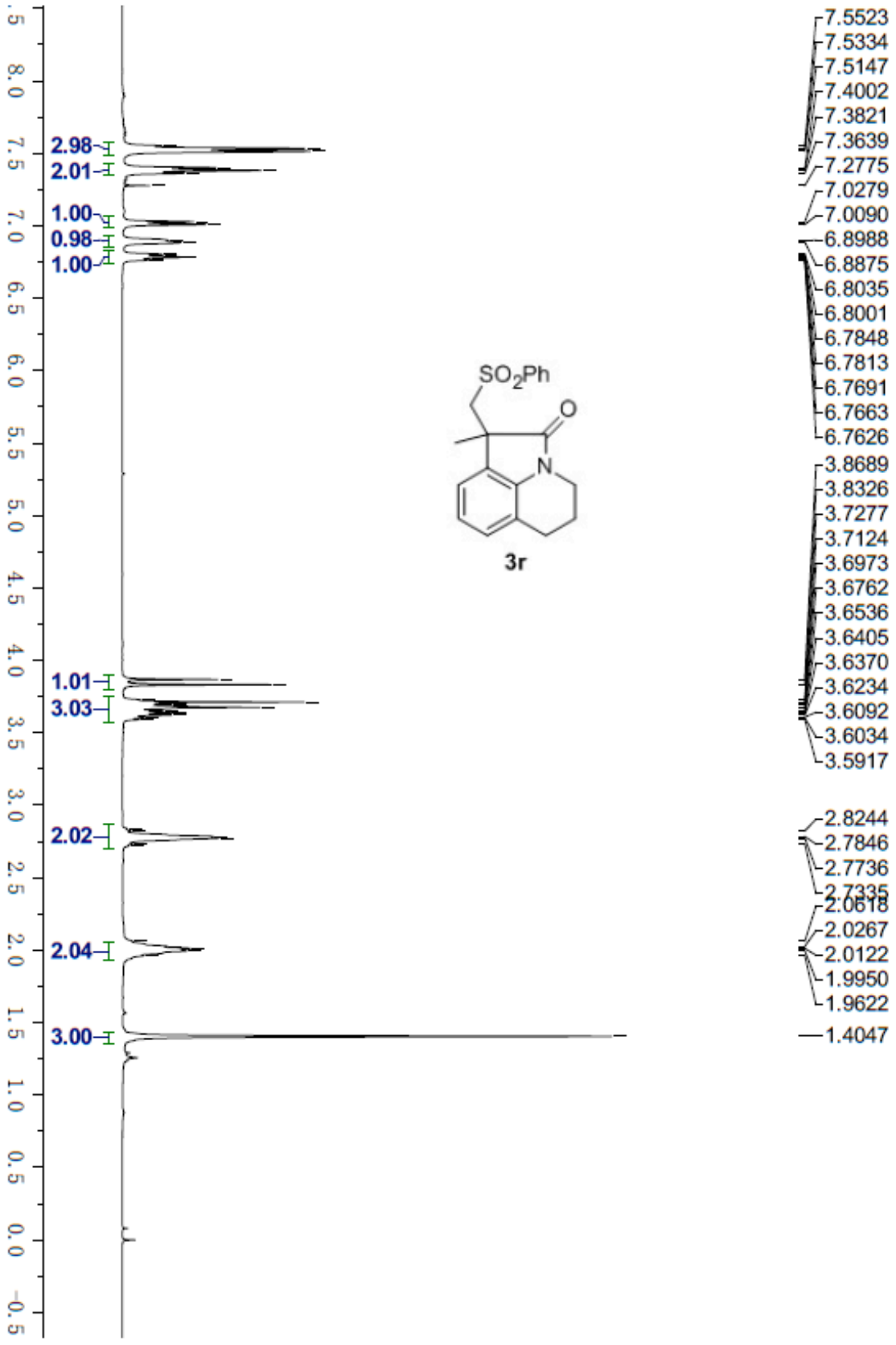
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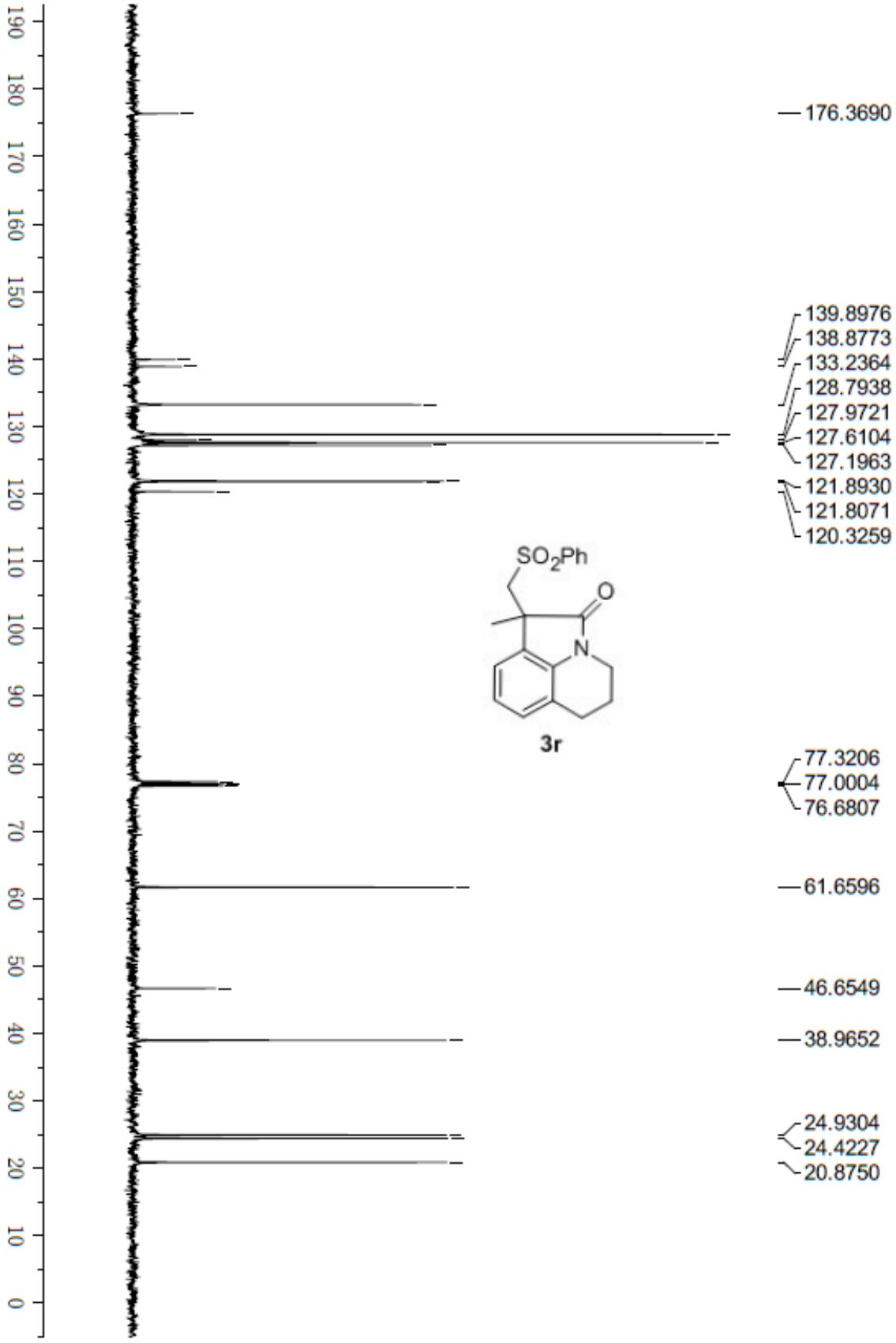
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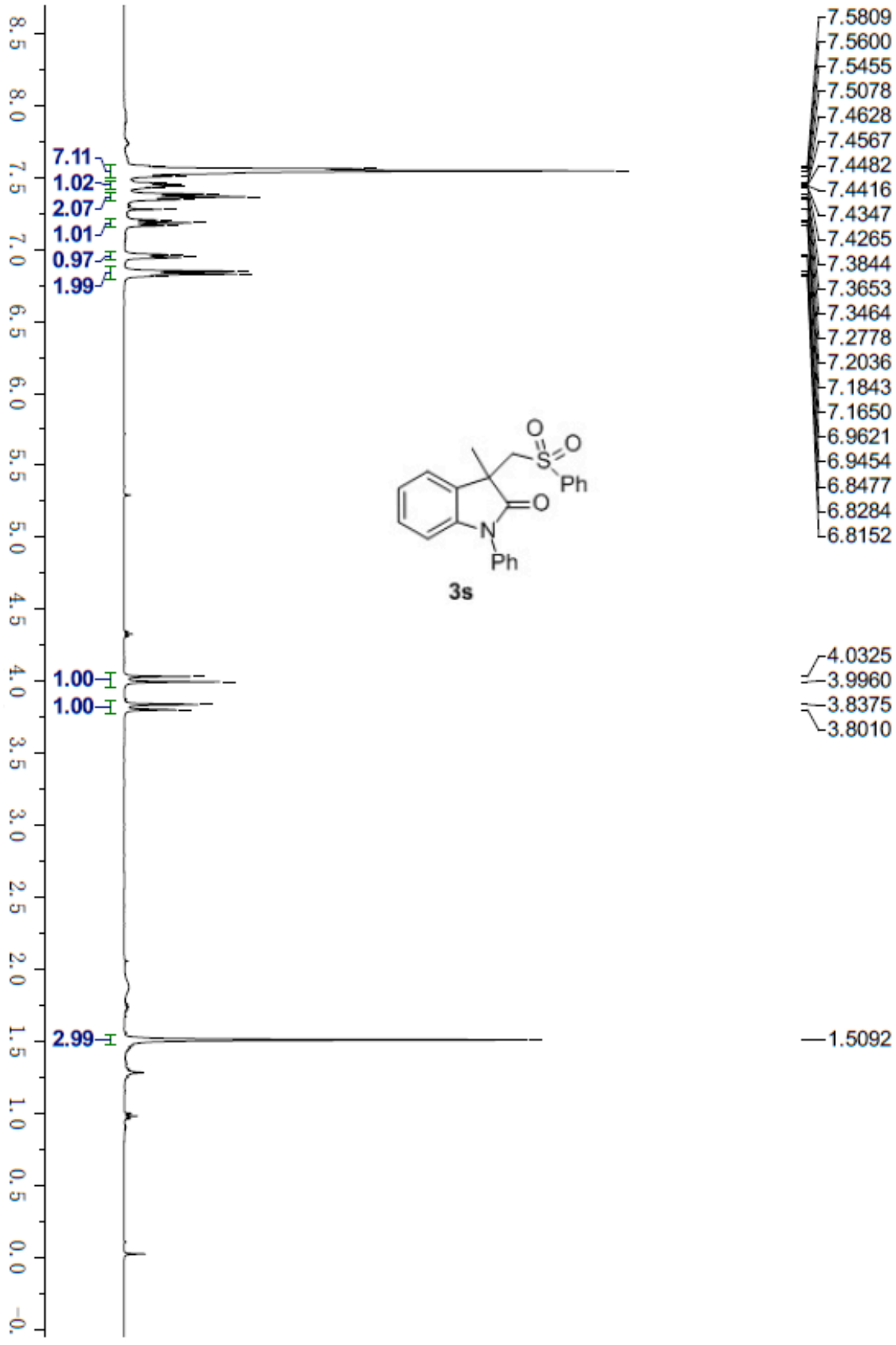
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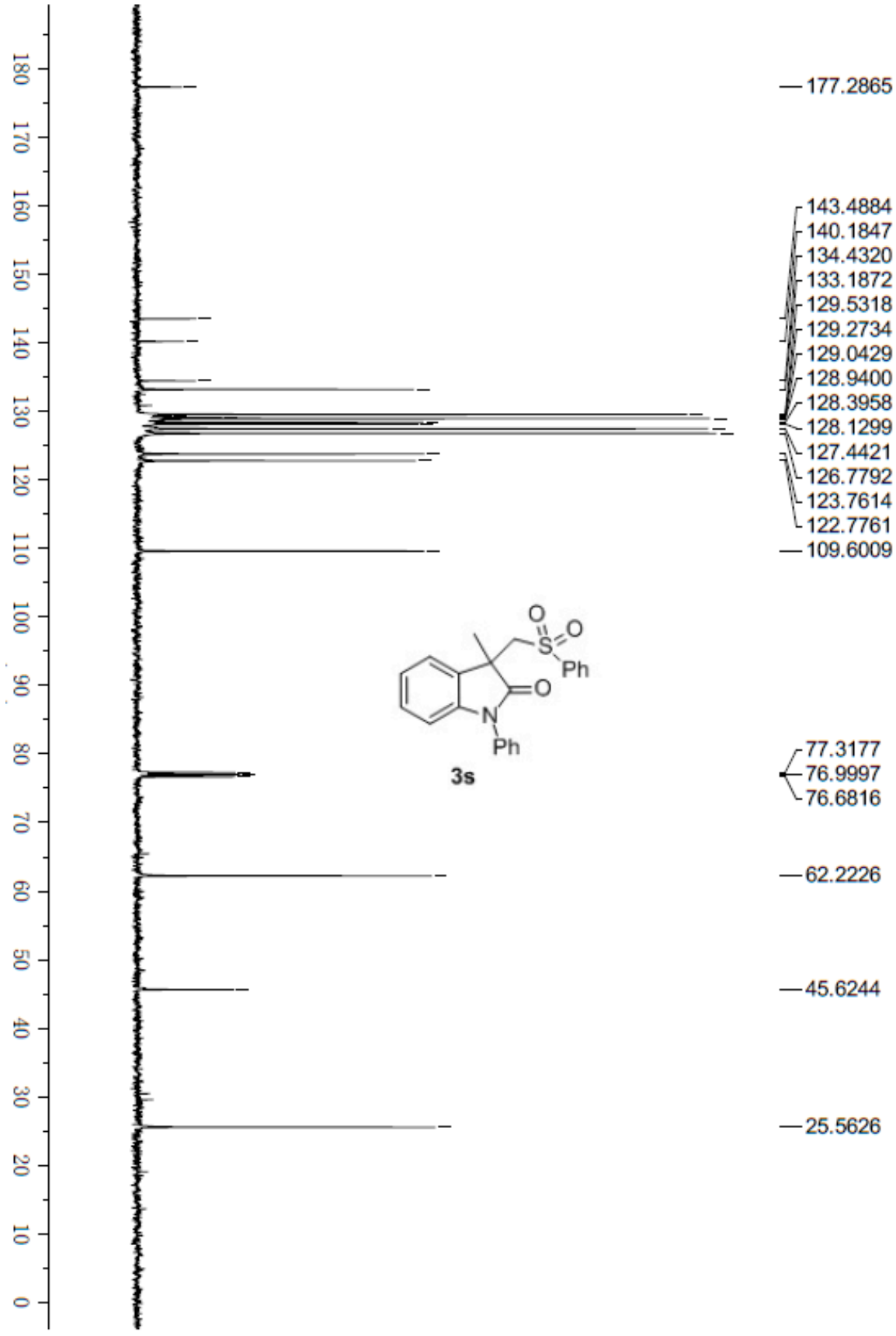
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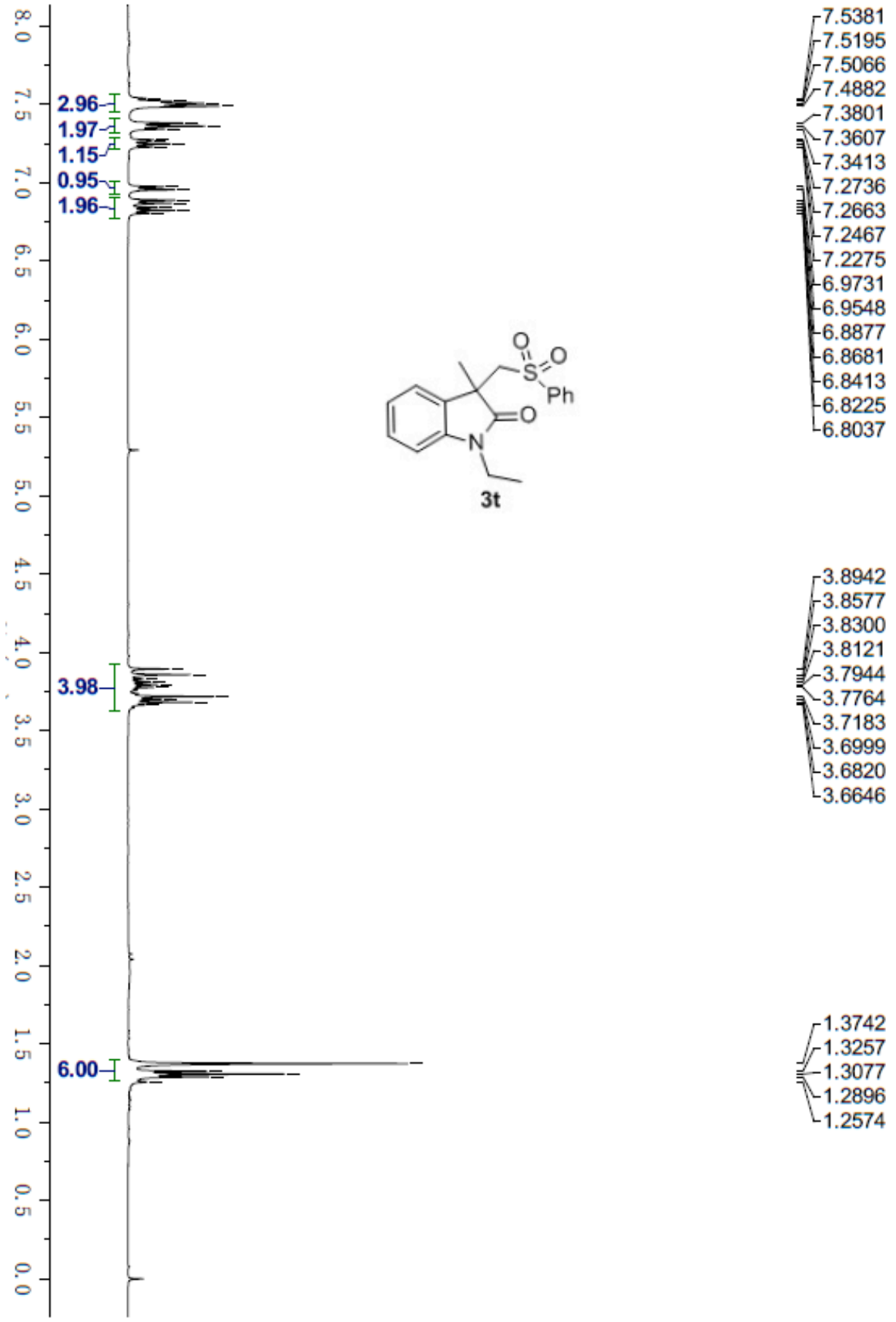
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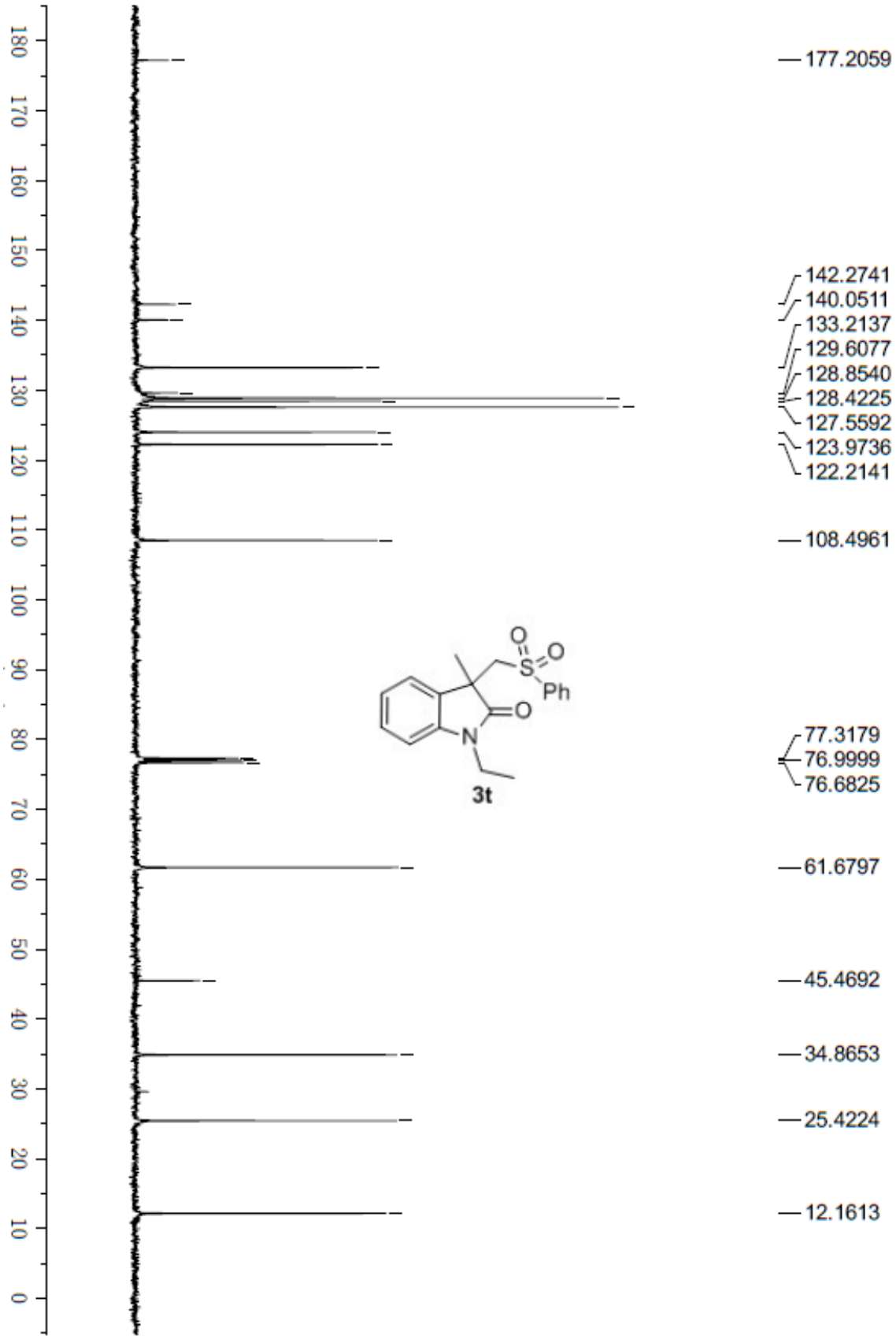
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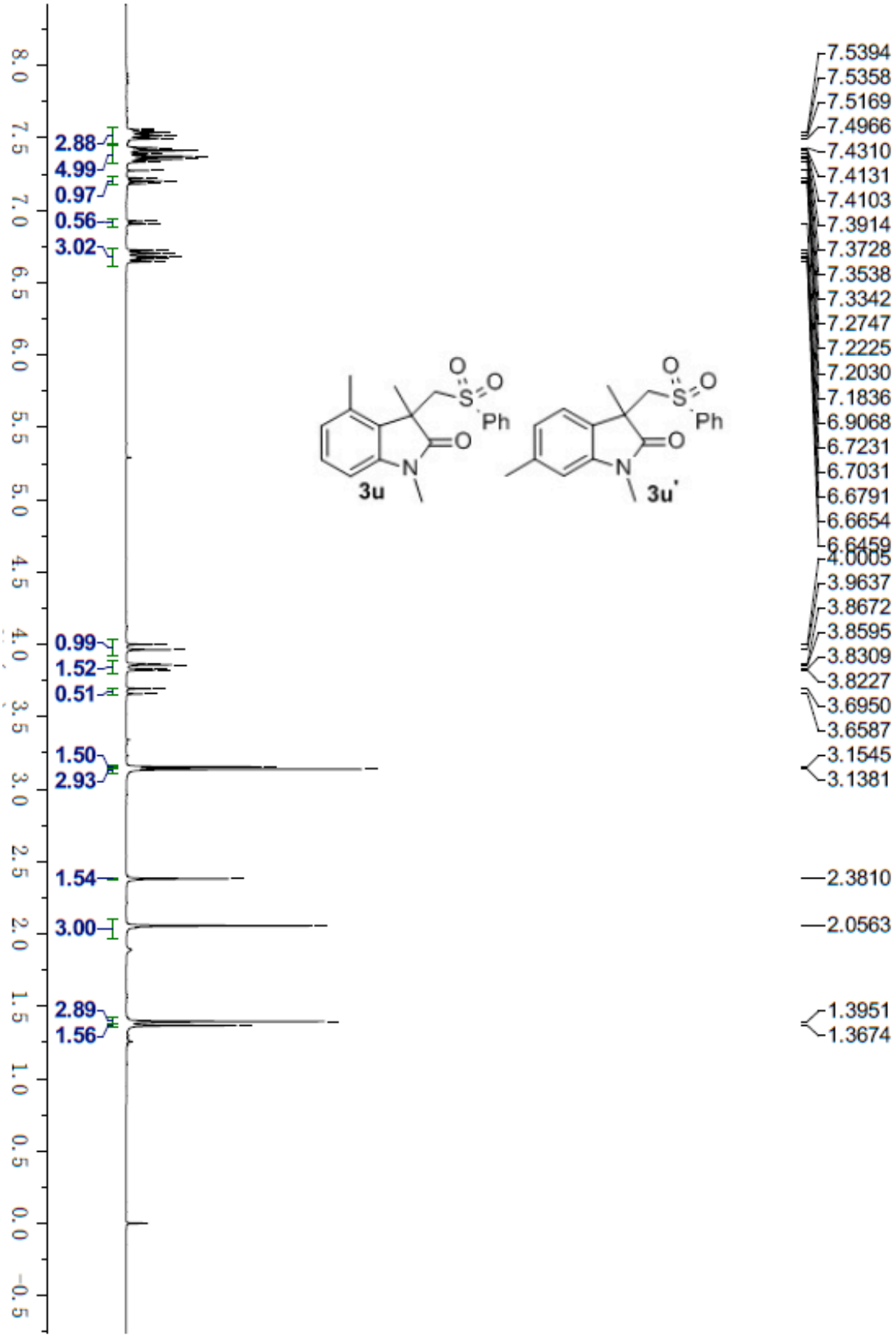
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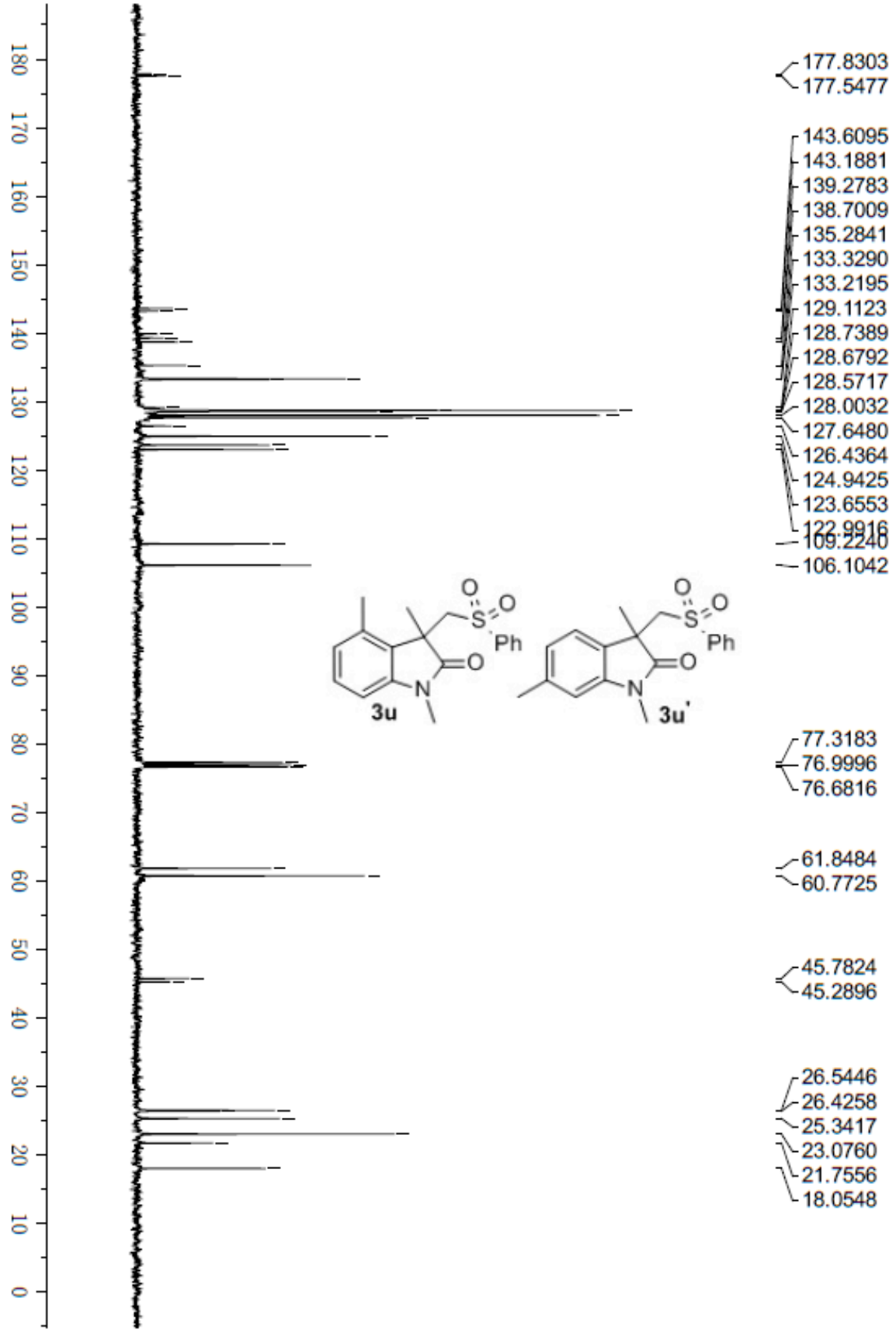
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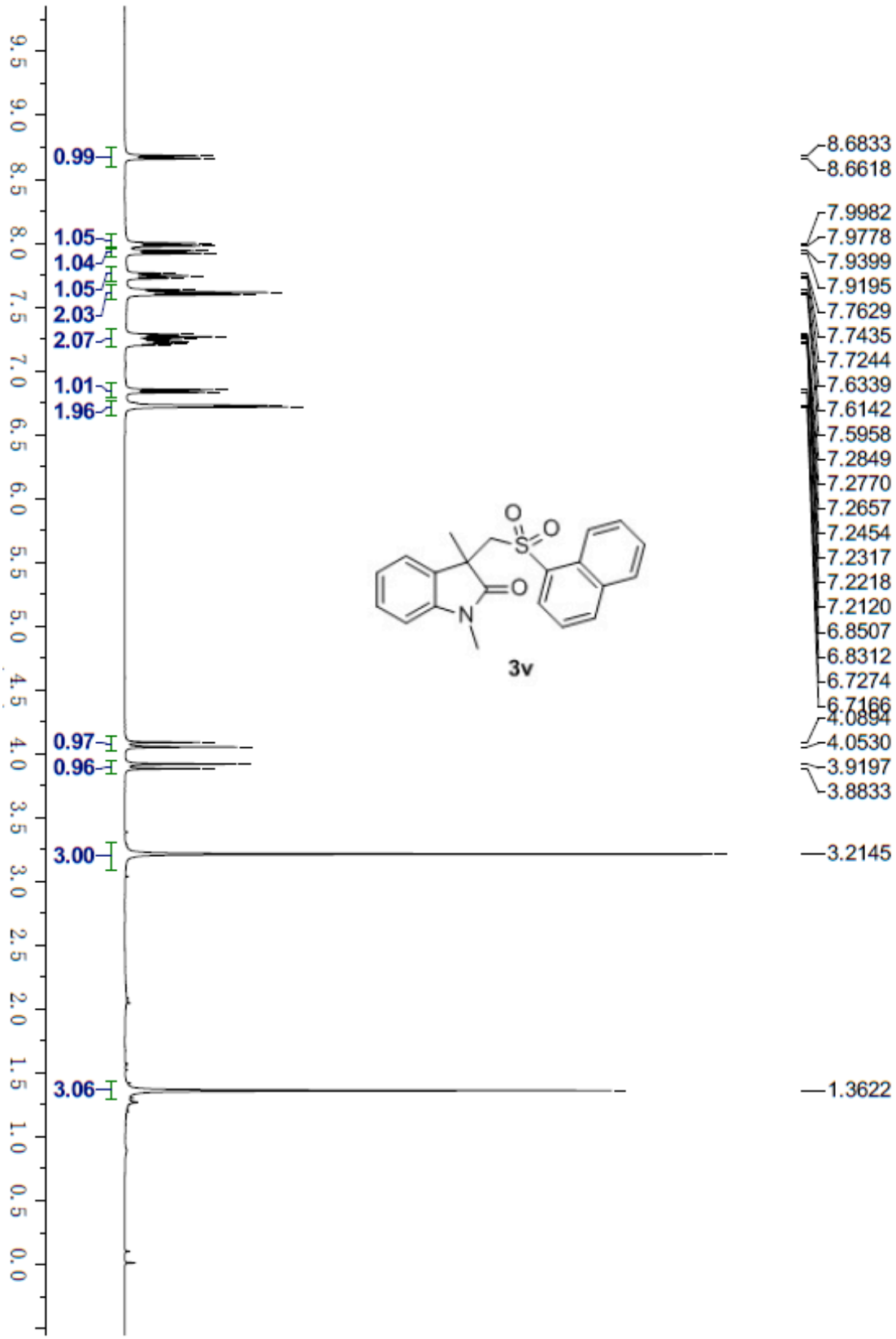
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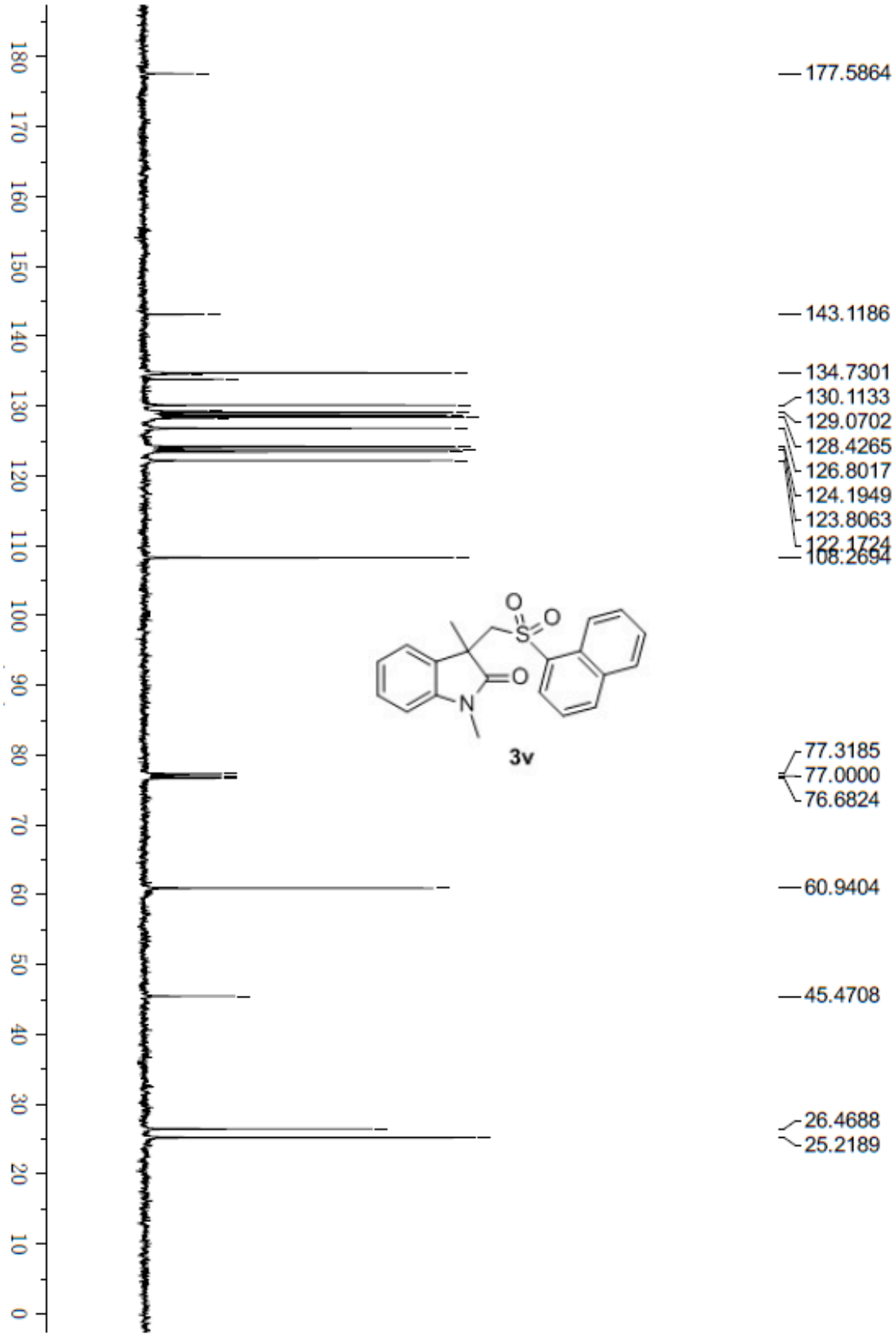
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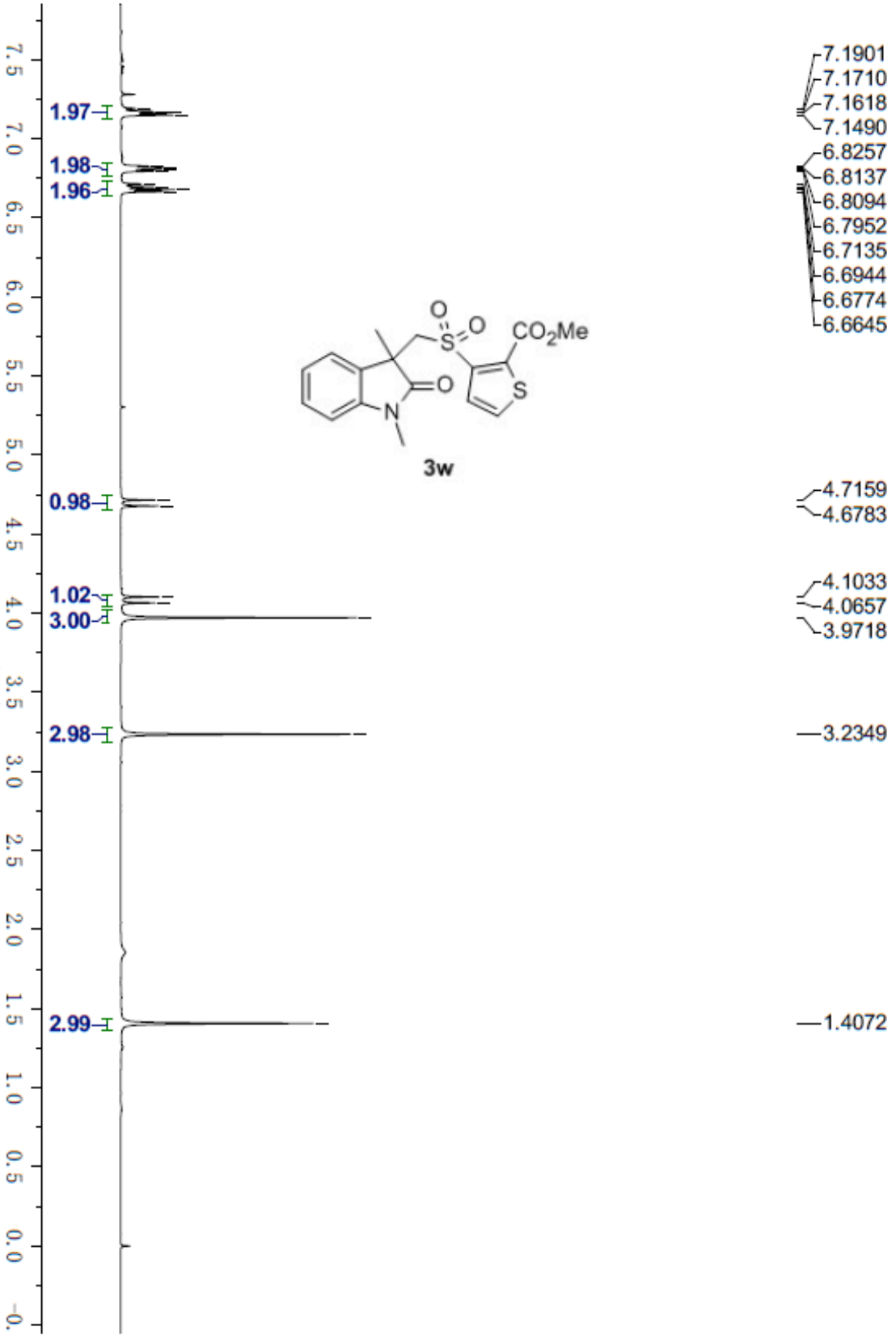
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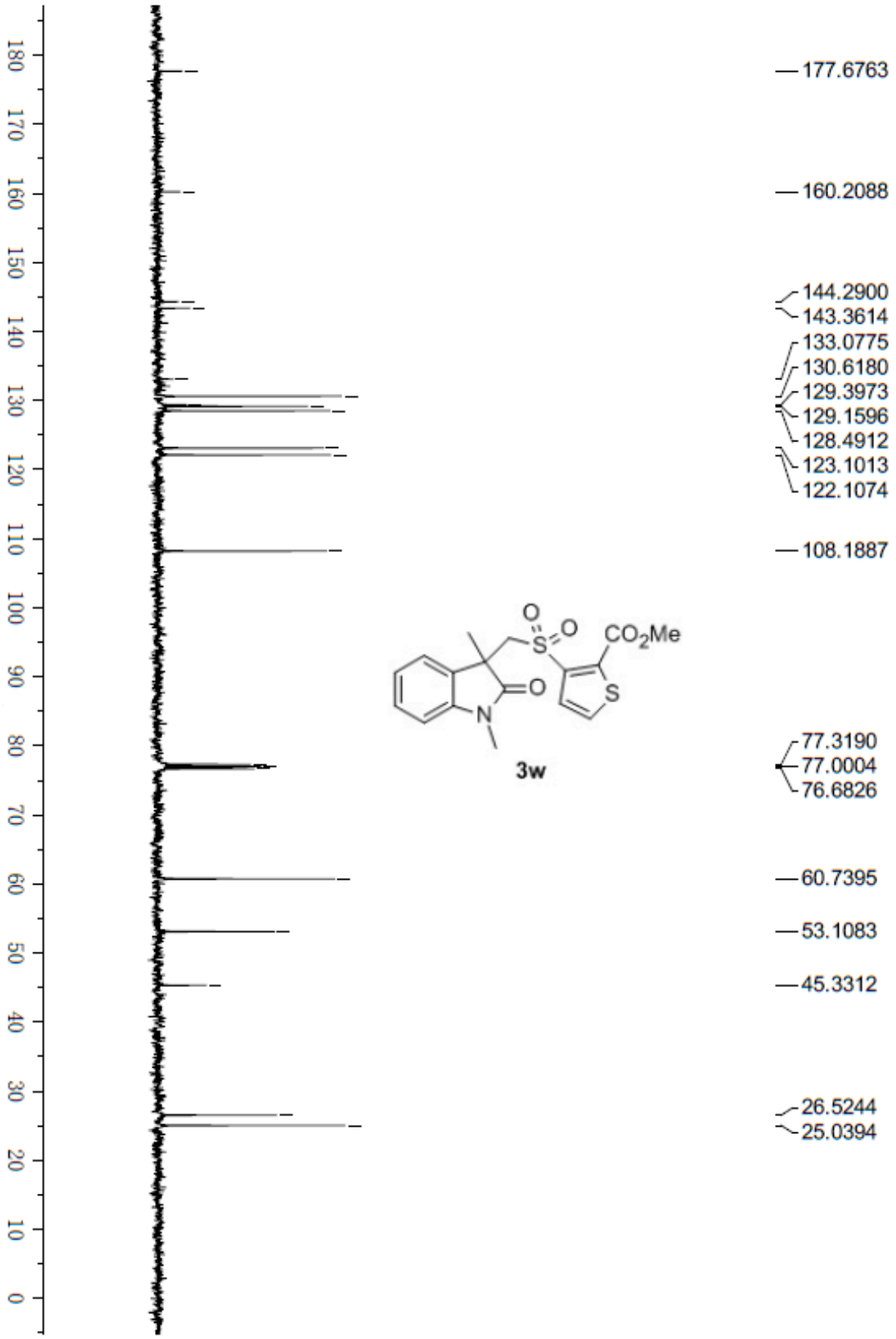
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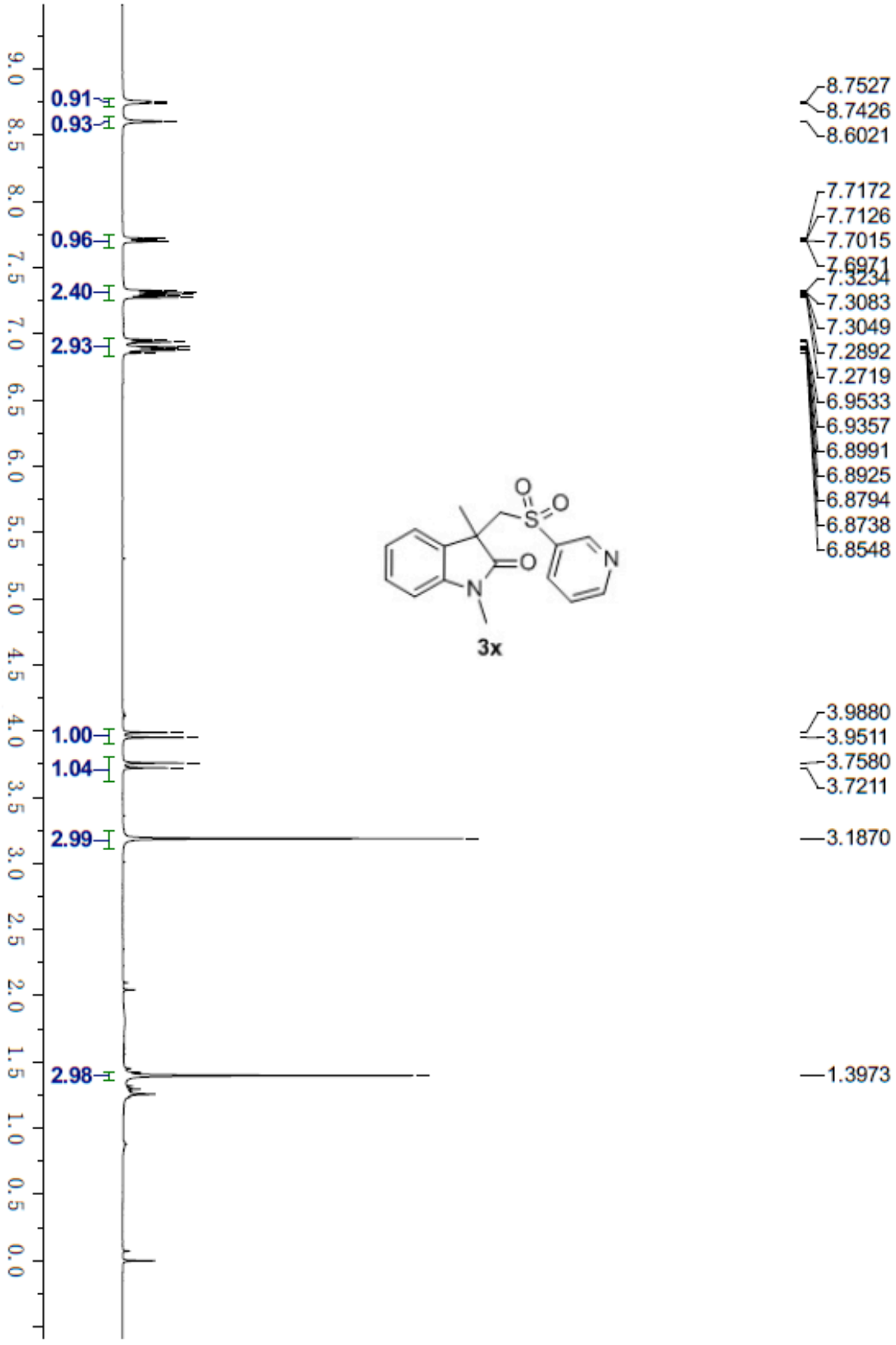
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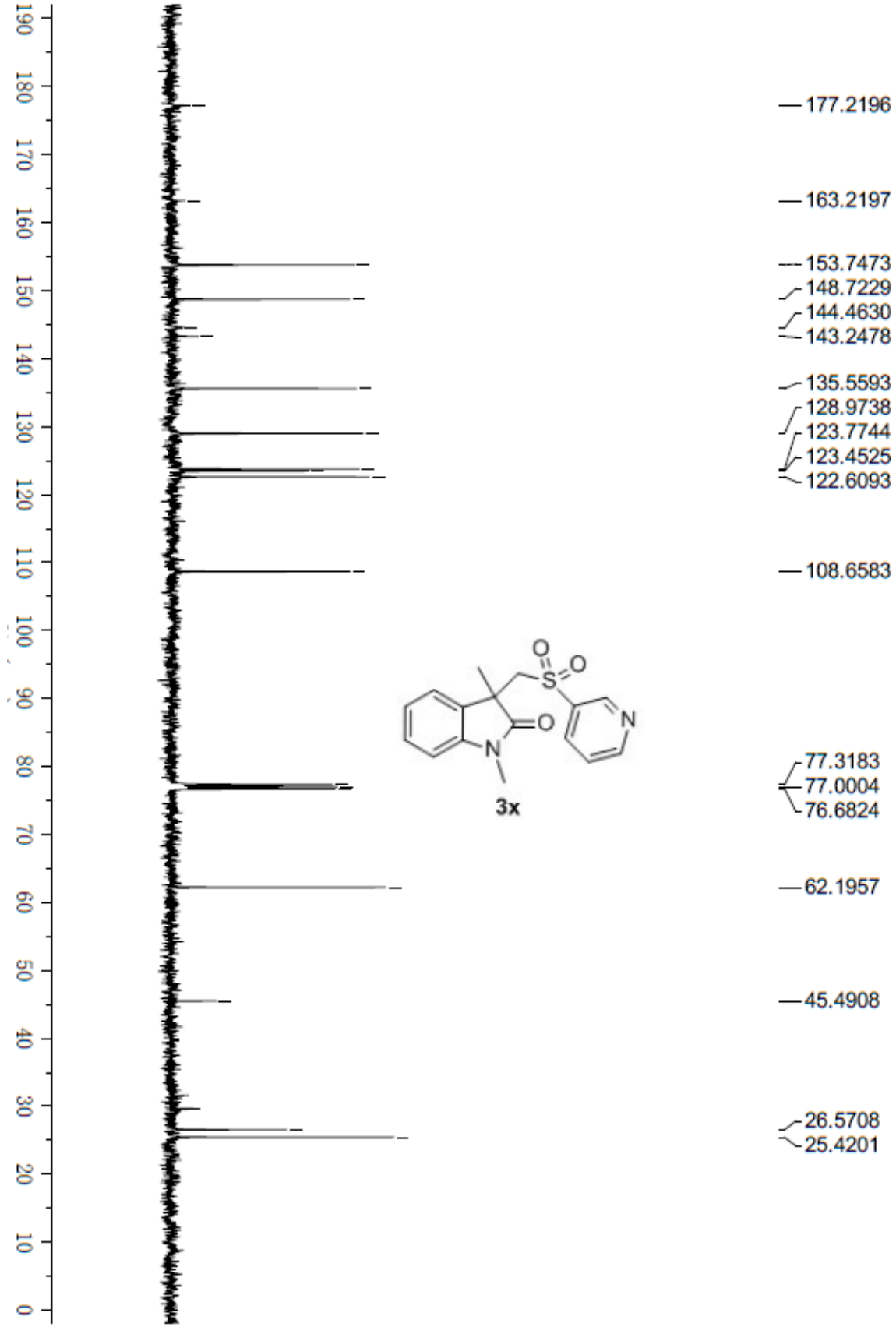
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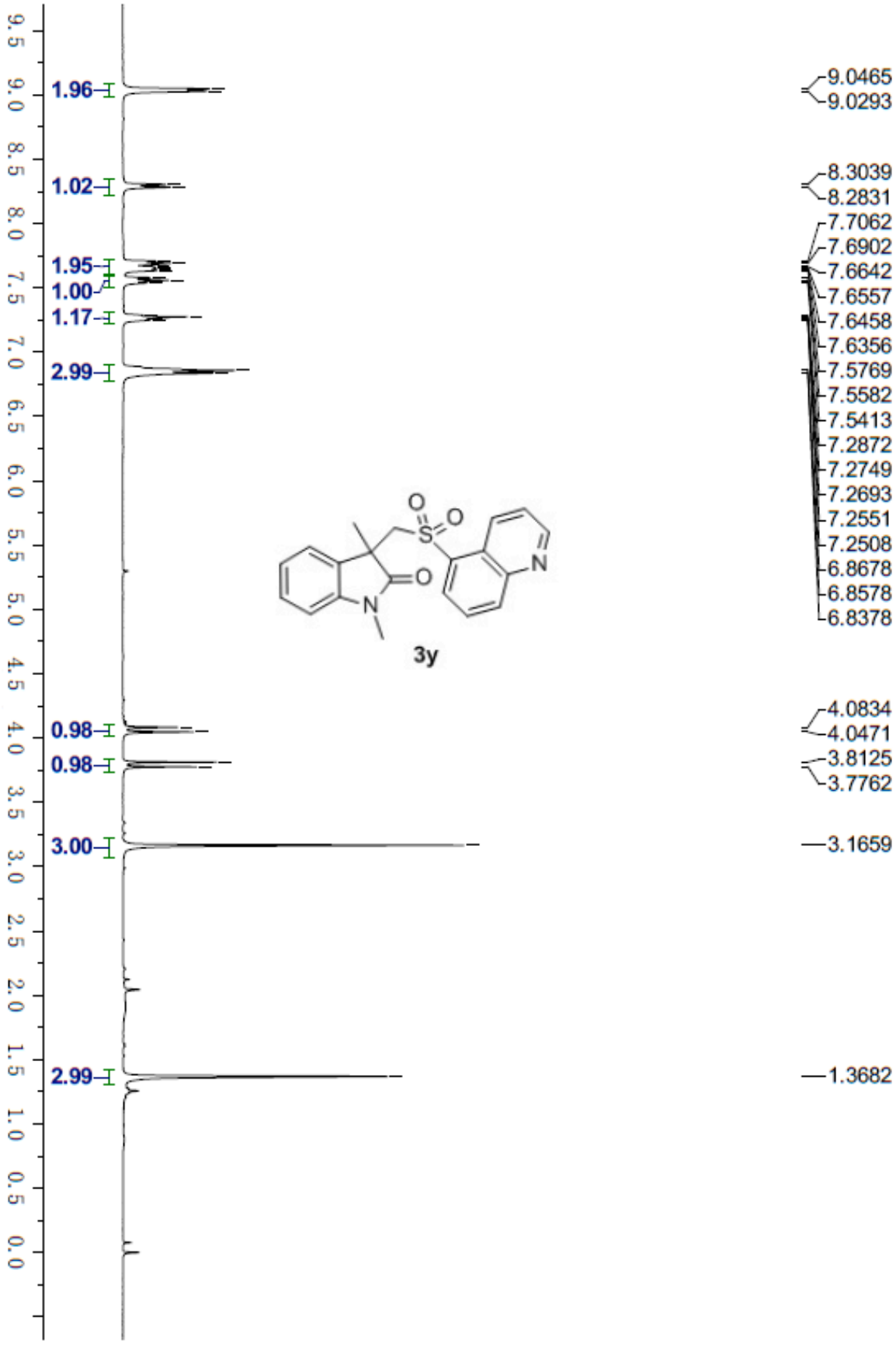
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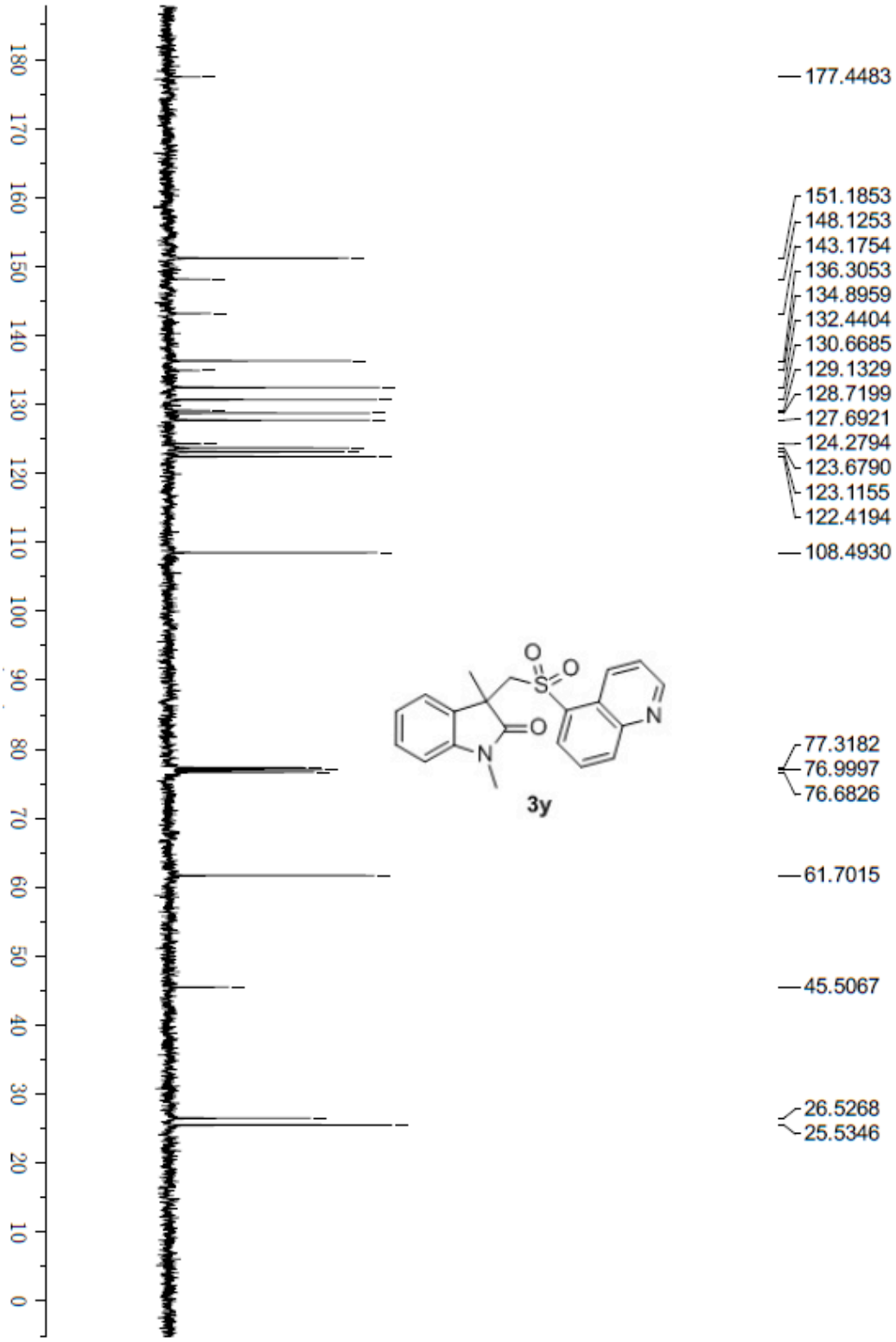
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