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SUPPORTING INFORMATION

Title: Enantioselective Synthesis of 3-Methylisochromans and Determination of Their Absolute Configurations by Circular Dichroism

Author(s): Gábor Kerti, Tibor Kurtán,* Tünde-Zita Illyés, Katalin E. Kövér, Sándor Sólyom, Gennaro Pescitelli, Naoko Fujioka, Nina Berova, Sándor Antus*

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General procedure for the preparation of **8a-c**, **8a-c-Ac**:

(+)-(2*S*)-1-phenylpropan-2-ol [(+)-*S*-**8a**] and (–)-(1*R*)-1-methyl-2-phenylethyl acetate [(–)-R-**8a-Ac**]: The lipase from *Pseudomonas Cepacia* (300 mg) and vinylacetate (1.6 ml) were added to the solution of (±)-**8a** (600 mg, 4.41 mmol) in diisopropyl ether (30 ml) and this mixture was stirred at room temperature for 4 hours. Afterwords, the enzyme was filtered, washed with CH_2Cl_2 and the solvent was removed in vacuum. The residue was purified by column chromatography (hexane/ethyl acetate 19:1) to give (+)-*S*-**8a** (282 mg, *ee* > 95 %): $[\alpha]^{20}_{D}$ +41.7 (*c* 0.28, $CHCl_3$) [lit. $[\alpha]^{27}_{D}$ +41.8 (*c* 2.15, $CHCl_3$)]† for *ee* > 95 %; ^{1}H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.21 (d, *J* = 6.4 Hz, 3H, CH_3), 1.99 (s, 1H, OH), 2.74 (dd, *J* = 13.6, 6.5 Hz, 1H, CH_2a), 2.93 (dd, *J* = 13.5, 6.7 Hz, 1H, CH_2b), 5.06-5.16 (m, 1H, CH), 7.16-7.34 (m, 5H, Ar-H) ppm.

(–)-*R*-**8a-Ac** (281 mg): $[\alpha]^{20}_{D}$ –3.35 (*c* 0.62, CH_2Cl_2); ^{1}H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.21 (d, *J* = 6.4 Hz, 3H, CH_3), 1.99 (s, 3H, OAc), 2.74 (dd, *J* = 13.6, 6.5 Hz, 1H, CH_2a), 2.93 (dd, *J* = 13.5, 6.7 Hz, 1H, CH_2b), 5.06-5.16 (m, 1H, CH), 7.16-7.34 (m, 5H, Ar-H) ppm. (lit. ^{1}H NMR)†

(+)-(2*S*)-1-(3,5-dimethoxyphenyl)propan-2-ol [(+)-*S*-**8b**] and (–)-(1*R*)-2-(3,5-dimethoxyphenyl)-1-methylethyl acetate [(–)-*R*-**8b-Ac**]: (+)-*S*-**8b** (*ee* > 95 %): $[\alpha]^{20}_{D}$ +23.1 (*c* 0.88, CH_2Cl_2); ^{1}H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.25 (d, *J* = 6.1 Hz, 3H, CH_3), 1.60 (s, 1H, OH), 2.60 (dd, *J* = 13.4, 8.1 Hz, 1H, CH_2a), 2.75 (dd, *J* = 13.4, 4.7 Hz, 1H, CH_2b), 3.79 (s, 6H, 2×Ar-OCH_3), 4.00-4.14 (m, 1H, CH), 6.35-6.38 (m, 3H, Ar-H) ppm. (lit. ^{1}H NMR) #

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(−)-*R*-**8b-Ac**: $[\alpha]^{20}_{D}$ −2.3 (*c* 1.13, CH_2Cl_2); ^1H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.21 (d, *J* = 6.3 Hz, 3H, CH_3), 2.01 (s, 3H, OAc), 2.66 (dd, *J* = 13.5, 6.7 Hz, 1H, CH_2a), 2.89 (dd, *J* = 13.5, 6.6 Hz, 1H, CH_2b), 3.78 (s, 6H, 2×Ar-OCH_3), 5.06-5.15 (m, 1H, CH), 6.34-6.37 (m, 3H, Ar-H) ppm.

(+)-(2*S*)-1-(3-methoxyphenyl)propan-2-ol [(+)-*S*-**8c**] and (−)-(1*R*)-2-(3-methoxyphenyl)-1-methylethyl acetate [(−)-*R*-**8c-Ac**]: (+)-*S*-**8c** (*ee* > 95 %): $[\alpha]^{20}_{D}$ +32.6 (*c* 0.71, CH_2Cl_2) [lit. $[\alpha]^{12}_{D}$ +31.8 (*c* 1.53, $CHCl_3$)]$^{\neq}$; ^1H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.25 (d, *J* = 6.2 Hz, 3H, CH_3), 1.62 (s, 1H, OH), 2.65 (dd, *J* = 13.4, 7.9 Hz, 1H, CH_2a), 2.77 (dd, *J* = 13.4, 4.8 Hz, 1H, CH_2b), 3.80 (s, 3H, OCH_3), 3.98-4.07 (m, 1H, CH), 6.76-6.82 (m, 3H, Ar-H), 7.23 (t, *J* = 8.4 Hz, 1H, 5-H) ppm.

(−)-*R*-**8c-Ac**: $[\alpha]^{20}_{D}$ −2.5 (*c* 1.11, CH_2Cl_2); ^1H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.21 (d, *J* = 6.3 Hz, 3H, CH-CH_3), 2.01 (s, 3H, OAc), 2.71 (dd, *J* = 13.4, 6.6 Hz, 1H, CH_2a), 2.91 (dd, *J* = 13.4, 6.6 Hz, 1H, CH_2b), 3.80 (s, 3H, OCH_3), 5.06-5.16 (m, 1H, CH), 6.75-6.80 (m, 3H, Ar-H), 7.2 (t, *J* = 8.4 Hz, 1H, 5-H) ppm. Calcd mass for $C_{12}H_{16}O_3$ $[M+Na]^+$ 231.0992, found 231.1013.

(+)-1-(2-bromo-5-methoxyphenyl)propan-2-ol (**8f**): To the solution of **8c** (600 mg, 3.6 mmol) in CH_2Cl_2 (50 ml), iron powder (250 mg,4.48mmol) was added at room temperature under nitrogen atmosphere, 48 ml of 0.1M solution of Br_2 in CH_2Cl_2 was added dropwise for 3 hours and the mixture was stirred for 3 hours.The reaction mixture was treated with solution of $Na_2S_2O_5$ and extracted with CH_2Cl_2 (3×40 ml). The organic layer was washed with $NaHCO_3$ solution and brine, dried ($MgSO_4$), filtered and concentrated in vacuum. The residue was purified by column chromatography (hexane/ethyl acetate 4:1) to give **8f** (760 mg, 86%) as a white crystal: mp 41-43 °C; $[\alpha]^{20}_{D}$ +26.4 (*c* 1.38, CH_2Cl_2); ^1H NMR (360 MHz, $CDCl_3$, 25 °C): δ = 1.28 (d, *J* = 6.0 Hz, 3H, CH_3), 1.54 (s, 1H, OH), 2.78 (dd, *J* = 13.2, 8.2 Hz, 1H, CH_2a), 2.93 (dd, *J* = 13.2, 4.8 Hz, 1H, CH_2b), 3.78 (s, 3H, OCH_3), 4.08-4.17 (m, 1H, CH), 6.67 (dd, *J* = 8.8, 3.2 Hz, 1H, Ar-H), 6.82 (d, *J* = 3.2 Hz, 1H, Ar-H), 7.43 (d, *J* = 8.8 Hz, 1H, Ar-H)ppm. $C_{10}H_{13}BrO_2$ (208.25): calcd. C 49.00, H 5.35; found C 49.49, H 5.37.

General procedure for the preparation of **8i**, **8j**, *rac*-**8i,** *rac*-**8j**:

(−)-(1'*S*)-(2*R*)-2'-(3,5-dimethoxyphenyl)-1'-methylethyl-methoxy(phenyl)ethanoate (**8i**): EDC (31.3 mg, 0.16 mmol), DMAP (2.7 mg, 0.02 mmol) and **8b** (7.2 mg, 0.04 mmol) were added to a solution of (*R*)-α-methoxyphenyl acetic acid (23.74 mg, 0.14 mmol) in CH_2Cl_2 (10 ml). The mixture was stirred at ambient temperature for 3 hours. Then the mixture was evaporated and the crude product was purified by preparative TLC (hexane/ethyl acetate 2:1) to give **8i** (13 mg, 100 %) as an oil: $[\alpha]^{20}_{D}$ −20.5 (*c* 0.29, $CHCl_3$); ^1H NMR (200 MHz, $CDCl_3$, 25 °C): δ = 1.12 (d, *J* = 6.2 Hz, 3H, CH_3), 2.70 (dd, *J* = 13.6, 6.5 Hz, 1H, CH_2a), 2.89 (dd, *J* = 13.6, 7.0 Hz, 1H, CH_2b), 3.35 (s, 3H, OCH_3), 3.76 (s, 6H, 2×Ar-OCH_3), 4.69 (s, 1H, *CH*-OCH_3), 5.15-5.24 (m, 1H, *CH*-CH_3), 6.33-6.34 (m, 3H, Ar-H), 7.31-7.42 (m, 5H, Ar-H) ppm. HRFABMS calcd mass for $C_{20}H_{24}O_5$ $[M+H]^+$ 344.1624, found 344.1616.

(2*R*)-2'-(3,5-dimethoxyphenyl)-1'-methylethyl-methoxy(phenyl)ethanoate (*rac*-**8i**) [(*R*)-MPA ester of *rac*-**8b**]: Colorless oil; ^1H NMR (200 MHz, $CDCl_3$, 25 °C): δ = 1.12 [d, *J* = 6.2 Hz, 3H, CH_3(*S*)], 1.24 [d, *J* = 6.2 Hz, 3H, CH_3(*R*)], 2.55-2.94 (m, 4H, 2×CH_2), 3.35 [s, 3H, OCH_3(*S*)], 3.36 [s, 3H, OCH_3(*R*)], 3.72 [s, 6H, 2×Ar-OCH_3(*R*)], 3.76 [s, 6H, 2×Ar-OCH_3(*S*)], 4.69 [s, 1H, *CH*-OCH_3(*S*)], 4.70 [s, 1H, *CH*-OCH_3(*R*)], 5.15-5.24 (m, 2H, 2×*CH*-CH_3), 6.23-6.27 [m, 3H, Ar-H(*R*)], 6.32-6.34 [m, 3H, Ar-H(*S*)], 7.28-7.42 (m, 10H, Ar-H) ppm. HRFABMS calcd mass for $C_{20}H_{24}O_5$ $[M+H]^+$ 344.1624, found 344.1612.

(−)-(1'*S*)-(2*R*)-2'-(3-methoxyphenyl)-1'-methylethyl-methoxy(phenyl)ethanoate (**8j**): Colorless oil (100 %): $[\alpha]^{20}_{D}$ −25.1 (*c* 0.60, $CHCl_3$); ^1H NMR (200 MHz, $CDCl_3$, 25 °C): δ = 1.12 (d, *J* = 6.3 Hz, 3H, CH_3), 2.74 (dd, *J* = 13.7, 6.3 Hz, 1H, CH_2a), 2.91 (dd, *J* = 13.7, 7.1 Hz, 1H, CH_2b), 3.34 (s, 3H, OCH_3), 3.78 (s, 3H, Ar-OCH_3), 4.68 (s, 1H, *CH*-OCH_3), 5.14-

5.24 (m, 1H, *CH*-CH_3), 6.73-6.77 (m, 3H, Ar-H), 7.13-7.41 (m, 6H, Ar-H) ppm. Calcd mass for $C_{19}H_{22}O_4$ $[M+Na]^+$ 337.1410, found 337.1397 and $[2M+Na]^+$ 651.2928, found 651.2909.

(2*R*)-2'-(3-methoxyphenyl)-1'-methylethyl-methoxy(phenyl)ethanoate (*rac*-**8j**) [(*R*)-MPA ester of *rac*-**8c**]: Colorless oil; ^{1}H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.12 [d, J = 6.3 Hz, 3H, CH_3(*S*)], 1.23 [d, J = 6.3 Hz, 3H, CH_3(*R*)], 2.62-2.69 (m, 4H, 2×CH_2), 3.34 [s, 3H, OCH_3(*S*)], 3.36 [s, 3H, OCH_3(*R*)], 3.74 [s, 3H, Ar-OCH_3(*R*)], 3.78 [s, 3H, Ar-OCH_3(*S*)], 4.68 [s, 1H, *CH*-OCH_3(*S*)], 4.70 [s, 1H, *CH*-OCH_3(*R*)], 5.14-5.24 (m, 2H, 2×*CH*-CH_3), 6.53-6.67 [m, 2H, Ar-H(*R*)], 6.73-6.77 [m, 4H, Ar-H(*S*)], 7.06 [t, J = 8.1 Hz, 1H, Ar-H(*R*)], 7.17 [t, J = 8.1 Hz, 1H, Ar-H(*S*)], 7.30-7.39 (m, 10H, Ar-H) ppm.

(+)-(3*S*)-8-methoxy-3-methyl-3,4-dihydro-1*H*-isochromene (**9c**): To a stirred solution of **9f** (200 mg, 0.78 mmol) in THF (15 ml) under N_2 atmosphere was added n-BuLi (0.6 ml, 1.17 mmol, 1.5 eqv.) at –70°C for 30 min. The reaction was quenched with solution of NH_4Cl (15 ml) and stirred at room temperature for 15 min. The layers were separated and the aqueous solution was extracted with diethyl ether (3×20 ml). The combined organic layer was dried ($CaCl_2$), filtered and concentrated in vacuum. The residue was purified by preparative TLC (CH_2Cl_2) which yielded **9c** as a colorless oil (100.4 mg, 73 %): $[\alpha]^{20}_D$ +133.6 (*c* 1.38, CH_2Cl_2); ^{1}H NMR (500 MHz, $CDCl_3$, 25 °C): δ= 1.34 (d, J = 6.1 Hz, 3H, CH_3), 2.67 (d, J = 6.6 Hz, 2H, CH_2), 3.74-3.78 (m, 1H, CH), 3.78 (s, 3H, OCH_3), 4.64 (d, J = 15.9 Hz, 1H, OCH_2a), 4.93 (d, J = 15.9 Hz, 1H, OCH_2b), 6.67 (d, J = 7.9 Hz, 1H, Ar-H), 6.7 (d, J = 7.9 Hz, 1H, Ar-H), 7.13 (t, J = 7.9 Hz, 1H, 6-H) ppm.

(+)-(3*S*)-6,7-dimethoxy-3-methyl-3,4-dihydro-1*H*-isochromene (**9d**): $BF_3{\cdot}OEt_2$ (0.1 ml, 0.81 mmol) was added to the solution of **8d** (50 mg, 0.25 mmol) and formaldehyde dimethylacetal (0.03 ml, 0.31 mmol) in diethyl ether (5 ml) at 0°C Then it was allowed to warm to room temperature and stirred further for 5 hours. The reaction mixture was diluted with water (8 ml) and extracted with Et_2O (3×12 ml). The combined organic layer was washed with $NaHCO_3$ solution and brine, dried (Na_2SO_4), filtered and concentrated in vacuum. The residue was purified by preparative TLC (hexane/ethyl acetate 2:1) to give **9d** (43 mg, 81 %) as a white crystal: mp 58-60 °C; $[\alpha]^{20}_{D}$ +105.3 (*c* 1.43, CH_2Cl_2); ^{1}H NMR (200 MHz, $CDCl_3$, 25 °C): δ= 1.35 (d, *J* = 6.1 Hz, 3H, CH_3), 2.63 (d, *J* = 6.65 Hz, 2H, 4-H), 3.71-3.81 (m, 1H, CH), 3.85 (s, 6H, 2×Ar-OCH_3), 4.76 (s, 2H, 1-H), 6.49 (s, 1H, Ar-H), 6.58 (s, 1H, Ar-H) ppm. $C_{12}H_{16}O_3$ (208.25): calcd. C 69.21, H 7.74; found C 69.14, H 7.58.

General procedure for the preparation of **11a-c**: 1-methyl-2-phenylethyl *N*-(3-aminopropyl)glycinate (**11a**): To a solution of **8a** (40 mg) and carrier **10** (20 mg, 1.5 eq) in anhydrous CH_2Cl_2 (1 ml), EDC (16 mg, 2 eq) and DMAP (0.2 eq) were added at ambient temperature and the mixture was stirred overnight. Then the mixture was diluted with CH_2Cl_2 (5 ml), washed with aqueous $NaHCO_3$ (5 %) solution and brine, and dried over Na_2SO_4. After evaporation of the solvent, the mixture was separated by flash column chromatography to yield bis-Boc protected conjugate, which was subsequently dissolved in CH_2Cl_2 (1 ml), and TFA (0.4 ml) at room temperature. After stirring at room temperature for 2 hours, the solution was evaporated *via* reduced pressure, and dried under high vacuum pump to give the analytically pure **11a** as its TFA salt (yield quant.).

Overall yield **11a** was 73 %. **Di-Boc derivative of 11a**: ^{1}H NMR ($CDCl_3$, 300 MHz, 25 °C): δ= 1.25 (d, *J* = 6.0 Hz, 3H), 1.35-1.50 (m, 18H), 1.52-1.60 (m, 2H), 2.60-2.80 (m, 1H), 2.90-3.00 (m, 1H), 3.10-3.40 (m, 4H), 3.70-4.00 (m, 2H), 5.10-5.20 (m, 1H), 7.10-7.30 (m, 5H) ppm.

11a: ^{1}H NMR (CD_3OD, 300 MHz, 25 °C): δ= 1.28 (d, *J* = 6.3 Hz, 3H), 2.00-2.15 (m, 2H), 2.80-2.95 (m, 2H), 2.95-3.15 (m, 2H), 3.87 (d, *J* = 17.0 Hz, 1H), 3.99 (d, *J* = 17.0 Hz, 1H), 5.20-5.35 (m, 1H), 7.15-7.35 (m, 5H) ppm. HRFABMS calcd mass for $C_{14}H_{23}N_2O_2$ $[M+H]^+$ 251.1760, found 251.1752.

2-(3,5-dimethoxyphenyl)-1-methylethyl *N*-(3-aminopropyl)glycinate (**11b**): **Di-Boc derivative of 11b**: ^{1}H NMR (CDCl$_3$, 400 MHz, 25 °C): δ= 1.23 (d, *J* = 6.0 Hz, 3H), 1.31-1.53 (m, 18H), 1.52-1.62(m, 2H), 2.60-2.70 (m, 1H), 2.80-2.90 (m, 1H), 3.10-3.40 (m, 4H), 3.78 (s, 6H), 3.70-3.80 (m, 2H), 5.10-5.20 (m, 1H), 6.30-6.40 (m, 3H) ppm.

11b: ^{1}H NMR (CD$_3$OD, 400 MHz, 25 °C): δ= 1.29 (d, *J* = 6.0 Hz, 3H), 2.00-2.10 (m, 2H), 2.80-3.00(m, 2H), 3.00-3.10 (m, 2H), 3.05-3.15 (m, 2H), 3.74 (s, 6H), 3.88 (d, *J* = 17.0 Hz, 1H), 3.99 (d, *J* = 17.0 Hz, 1H), 5.20-5.30 (m, 1H), 6.30-6.40 (m, 3H) ppm. HRFABMS calcd mass for $C_{16}H_{27}N_2O_4$ [M+H]$^+$ 311.1971, found 311.1956.

2-(3-methoxyphenyl)-1-methylethyl *N*-(3-aminopropyl)glycinate (**11c**): Overall yield was 60 %.**Di-Boc derivative of 11c**: ^{1}H NMR (CDCl$_3$, 300 MHz, 25 °C): δ= 1.25 (d, *J* = 6.0 Hz, 3H), 1.32-1.52 (m, 18H), 1.52-1.62(m, 2H), 2.60-2.70 (m, 1H), 2.90-3.00 (m, 1H), 3.10-3.40 (m, 4H), 3.81 (s, 3H), 3.70-3.80 (m, 2H), 5.20-5.30 (m, 1H), 6.70-6.80 (m, 1H), 7.20 (d, *J* = 6.0 Hz, 1H) ppm.

11c: ^{1}H NMR (CD$_3$OD, 300 MHz, 25 °C): δ= 1.32 (d, *J* = 6.3 Hz, 3H), 2.00-2.15 (m, 2H), 2.80-3.00 (m, 2H), 3.00-3.10 (m, 2H), 3.10-3.20 (m, 2H), 3.79 (s, 3H), 3.90 (d, *J* = 17.0 Hz, 1H), 4.01 (d, *J* = 17.0 Hz, 1H), 5.25-5.40 (m, 1H), 6.75-6.80 (m, 3H), 7.20-7.30 (m, 1H) ppm. HRFABMS calcd mass for $C_{15}H_{25}N_2O_3$ [M+H]$^+$ 281.1865, found 281.1855.

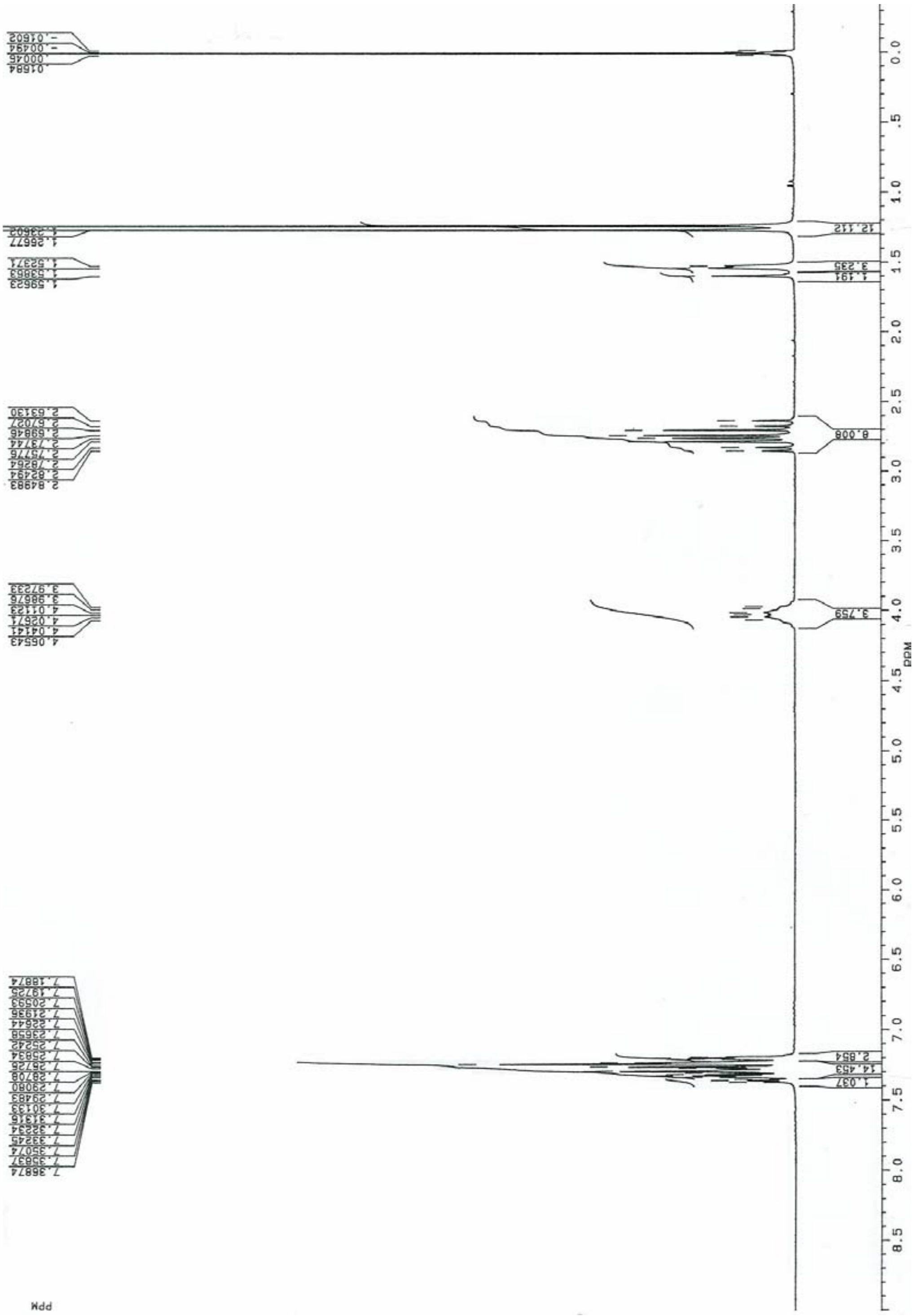
Genereal procedure for milligram scale preparation of Host-Guest complexes for measurement of CD. Preparation of tweezer **12** complex of **13a-c**. In typical experiment, a 1 μM tweezer **12** solution was prepared by the addition of a 10 μl aliquot of tweezer **12** (0.1 mM in anhydrous CH$_2$Cl$_2$) to 1 ml of CH$_2$Cl$_2$. The exact concentration of the diluted tweezer **12** solution was determined by UV from the known ε value of the Soret band in CH$_2$Cl$_2$ (ε = 890 000 l mol^{-1}cm^{-1}). The free amine solution of conjugate **11a-c** (1.8 mg, 3.54 μmol) was prepared from its TFA salt after the addition of 0.5 ml of MeOH followed by solid Na$_2$CO$_3$ (10 mg). The solvent (MeOH) was then dried under a stream of argon followed by placement under high vacuum (0.2 Torr) for 20 min. Anhydrous CH_2Cl_2 (1 ml) was then added to yield the free amine solution of conjugate **11a-c** (3.54 mM). An aliquot of 10 μl of the latter solution (ca. 30 equivalents) was added to the prepared porphyrin tweezer **12** solution to afford tweezer **12** /conjugate **13a-c** host-guest complex.

CD for **13a** [nm ($\Delta\varepsilon$), CH_2Cl_2]: 431 (+ 51), 420 (– 46); (Methylcyklohexane) 430 (+ 44), 420 (– 36)

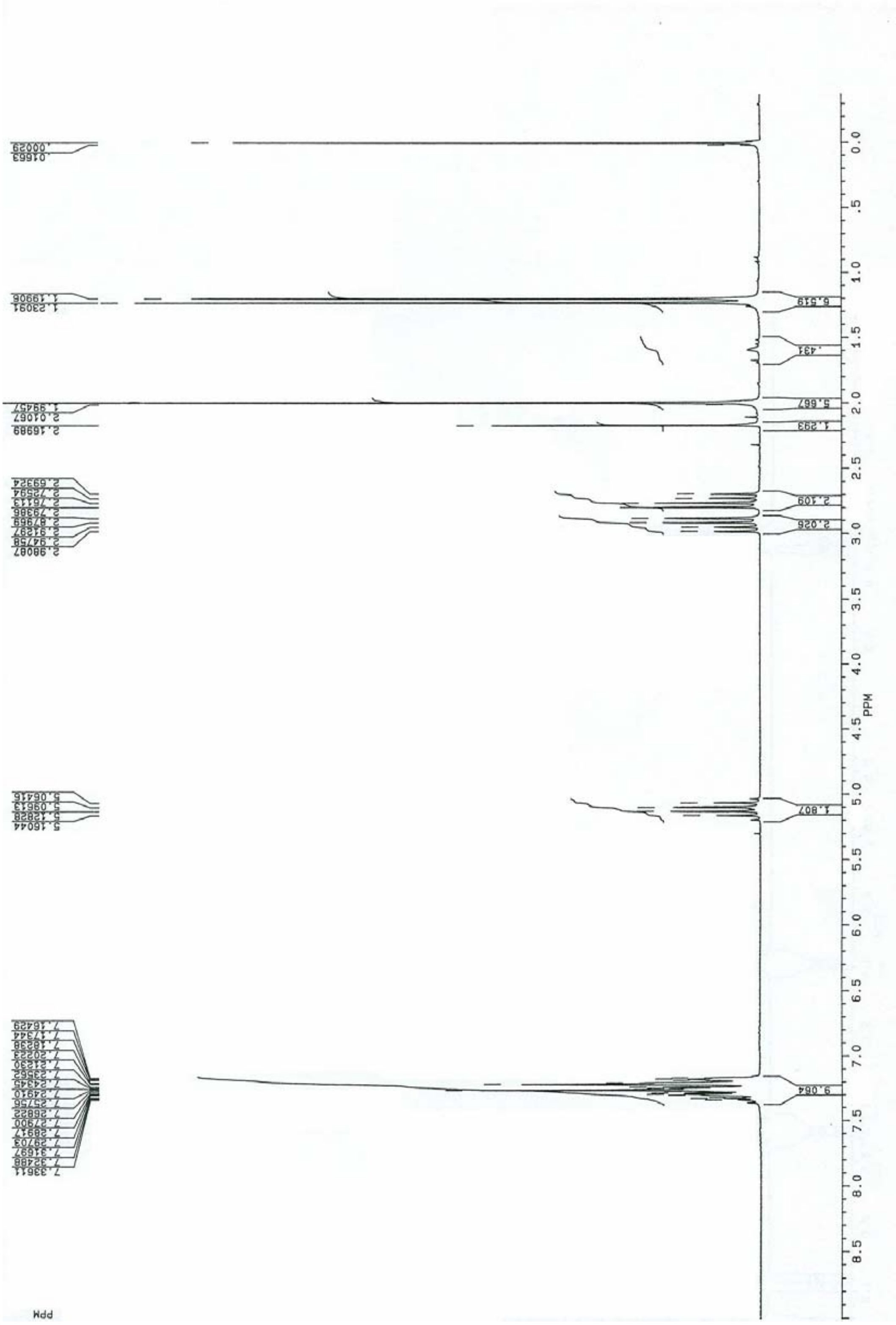
CD for **13b** [nm ($\Delta\varepsilon$), CH_2Cl_2]: 431 (+ 31), 419 (– 25); (Methylcyklohexane) 430 (+ 58), 420 (– 41)

CD for **13c** [nm ($\Delta\varepsilon$), CH_2Cl_2]: 432 (+ 45), 419 (– 50); (Methylcyklohexane) 430 (+ 34), 420 (– 39)

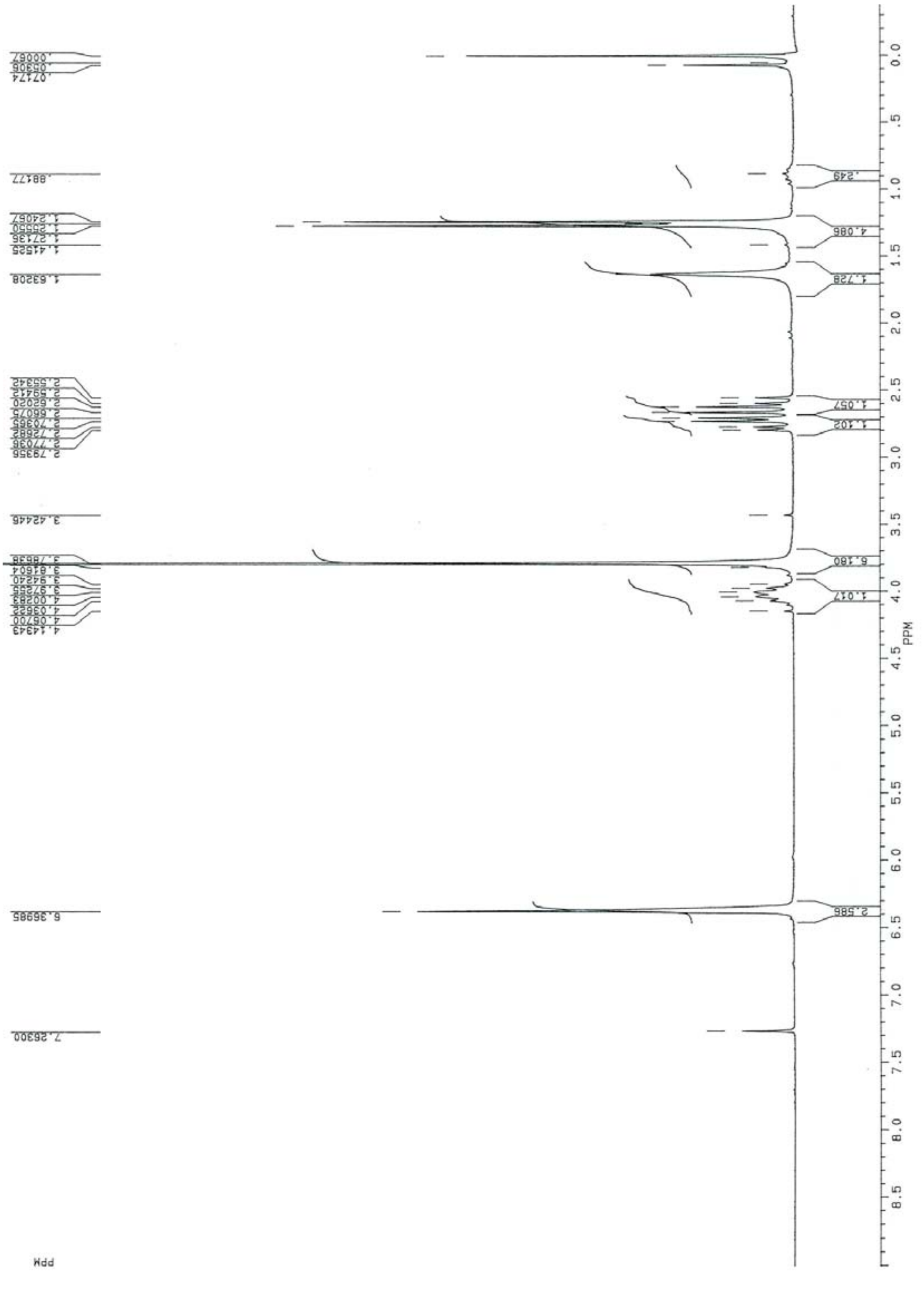
^{1}H NMR spectra of **8a** $CDCl_3$ 200 MHz



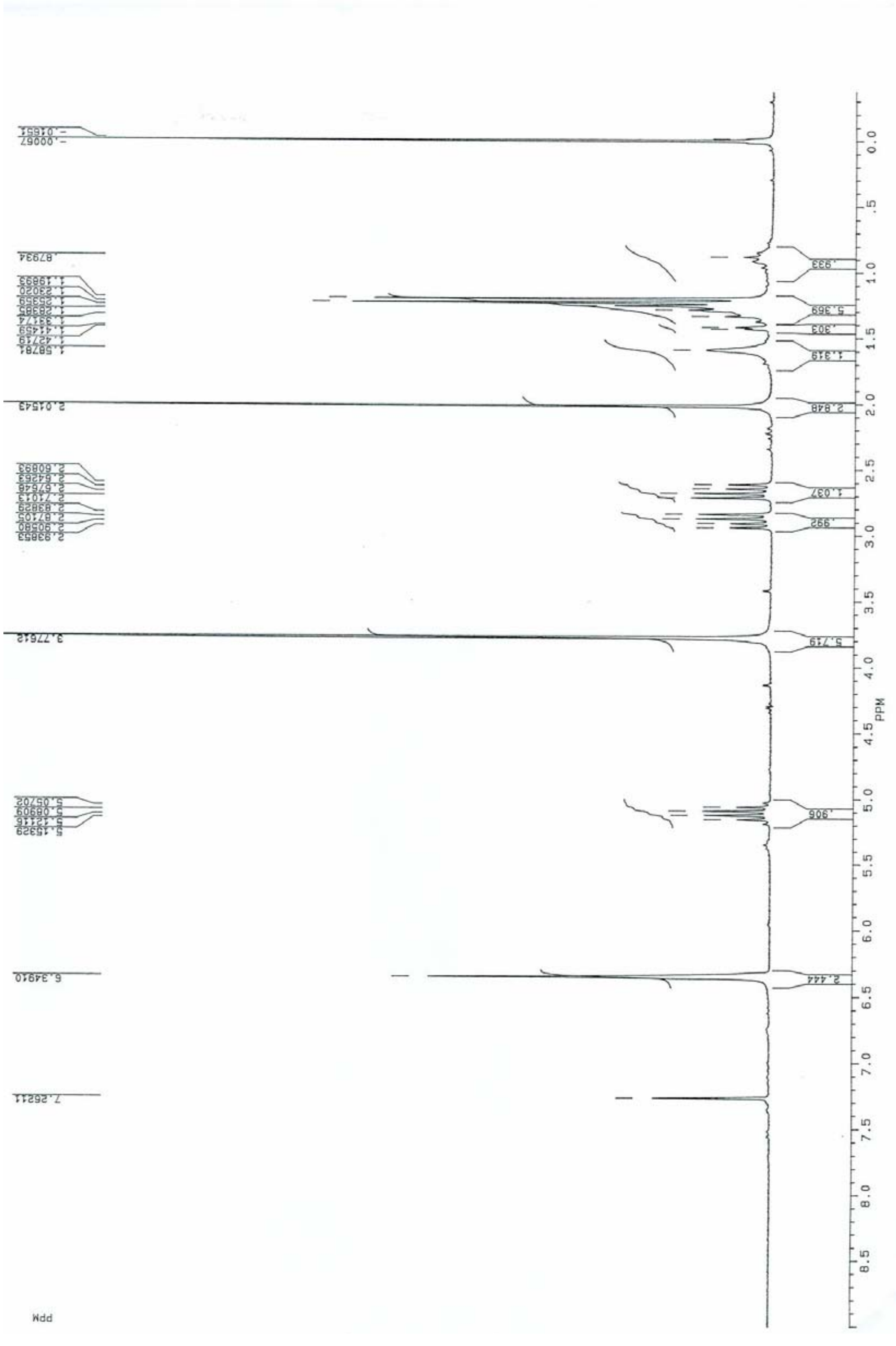
^{1}H NMR spectra of **8a-Ac** $CDCl_3$ 200 MHz



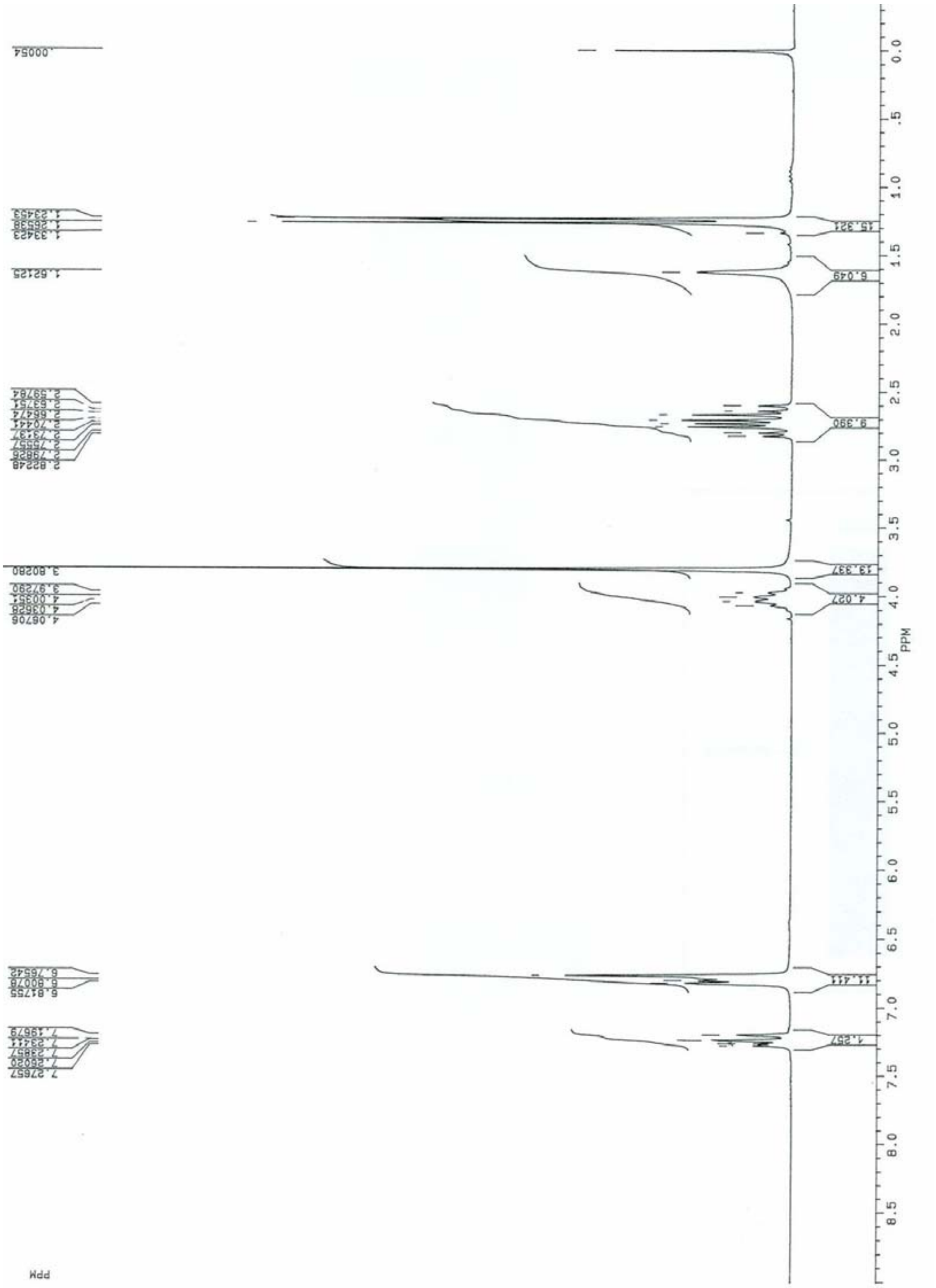
^{1}H NMR spectra of **8b** $CDCl_3$ 200 MHz



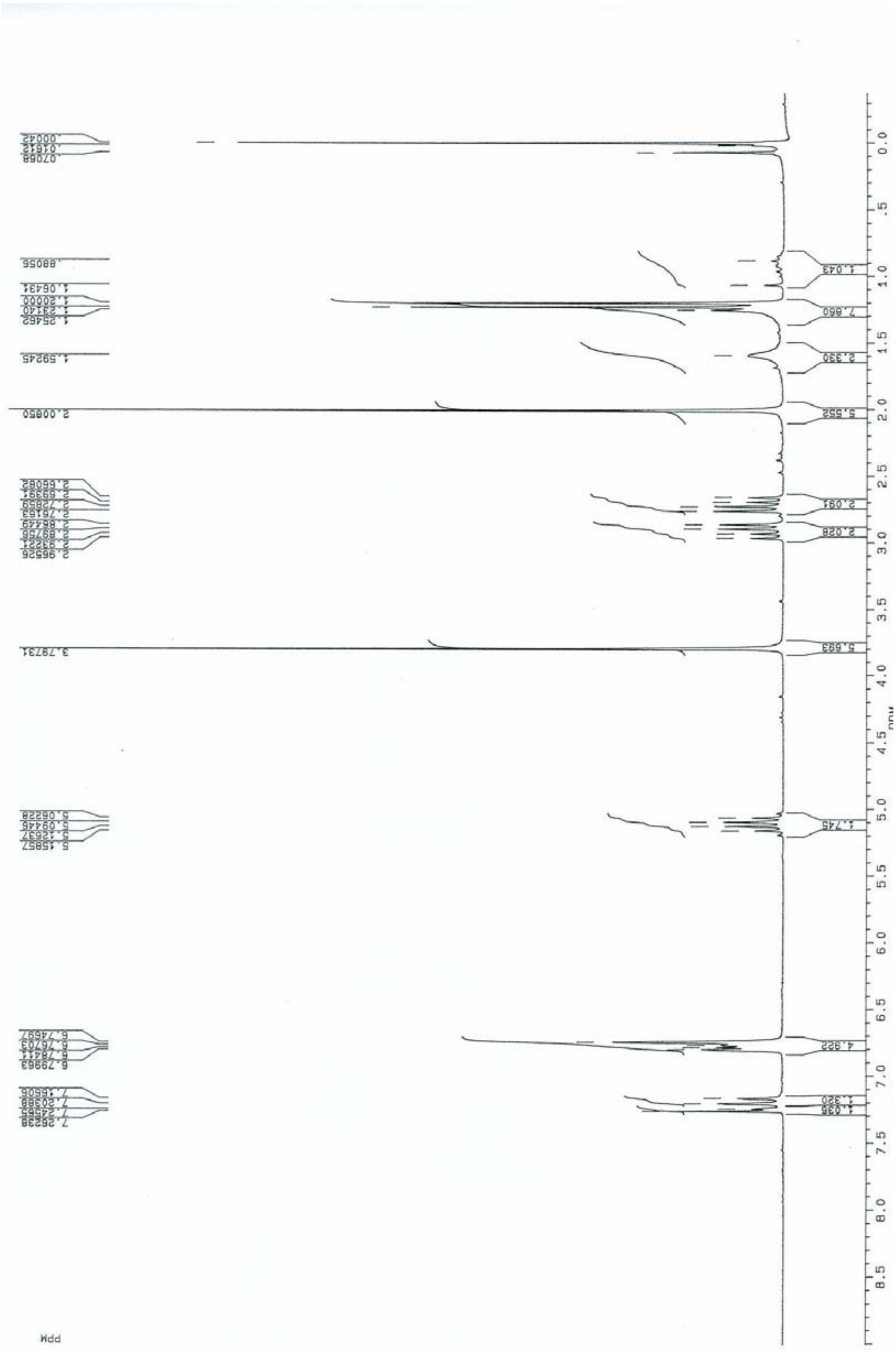
^1H NMR spectra of **8b-Ac** $CDCl_3$ 200 MHz



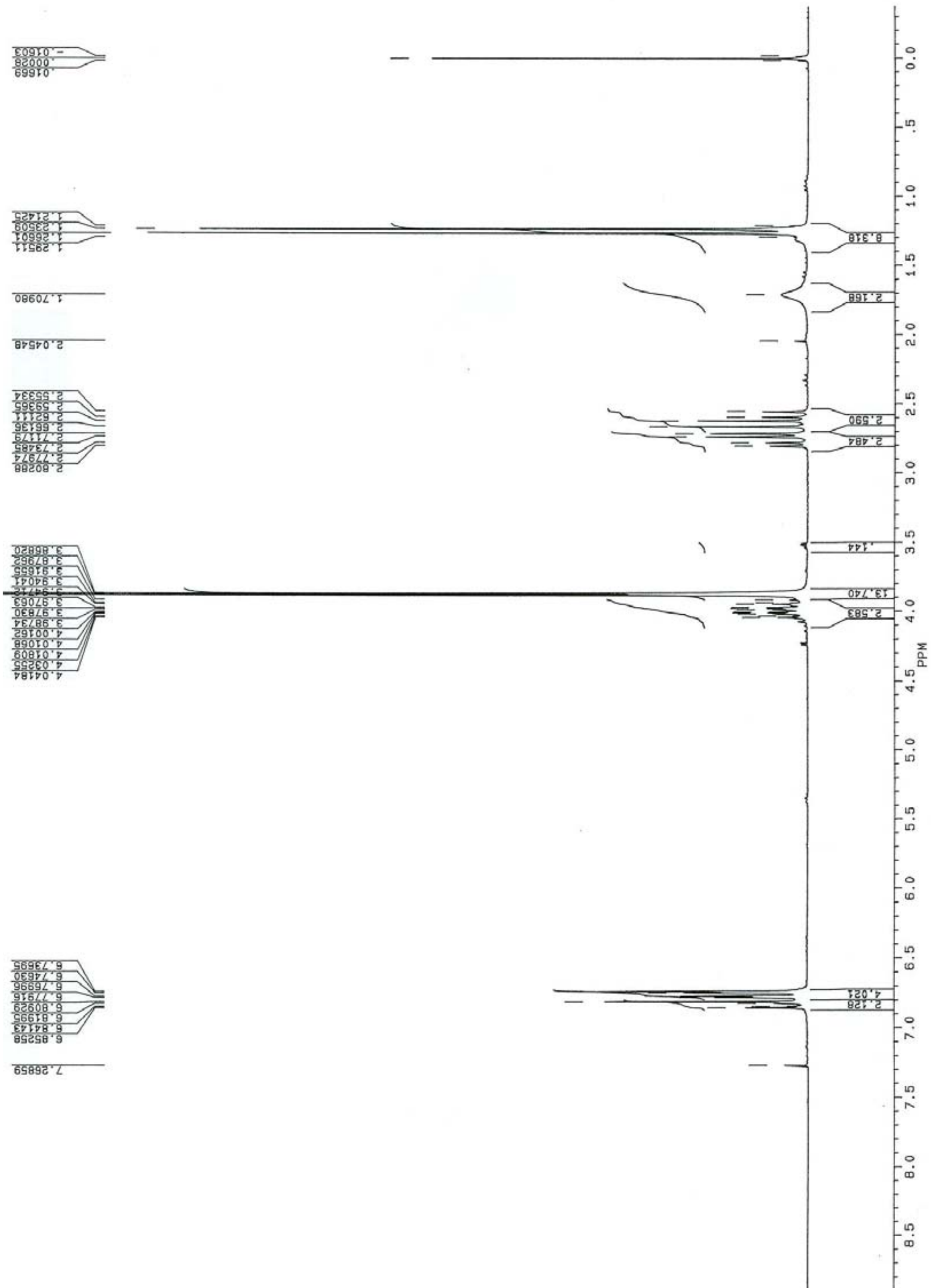
^{1}H NMR spectra of **8c** $CDCl_3$ 200 MHz



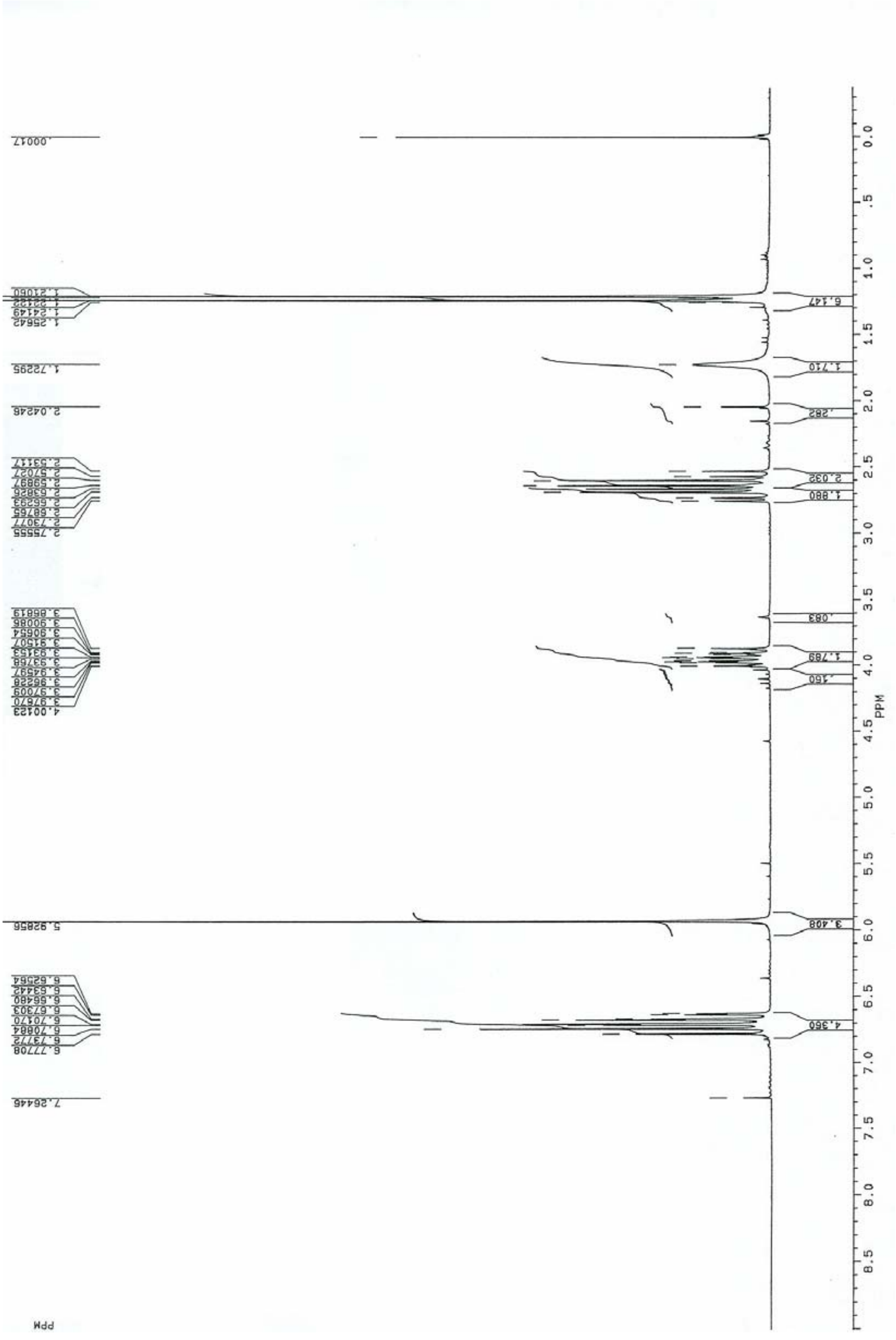
^1H NMR spectra of **8c-Ac** $CDCl_3$ 200 MHz



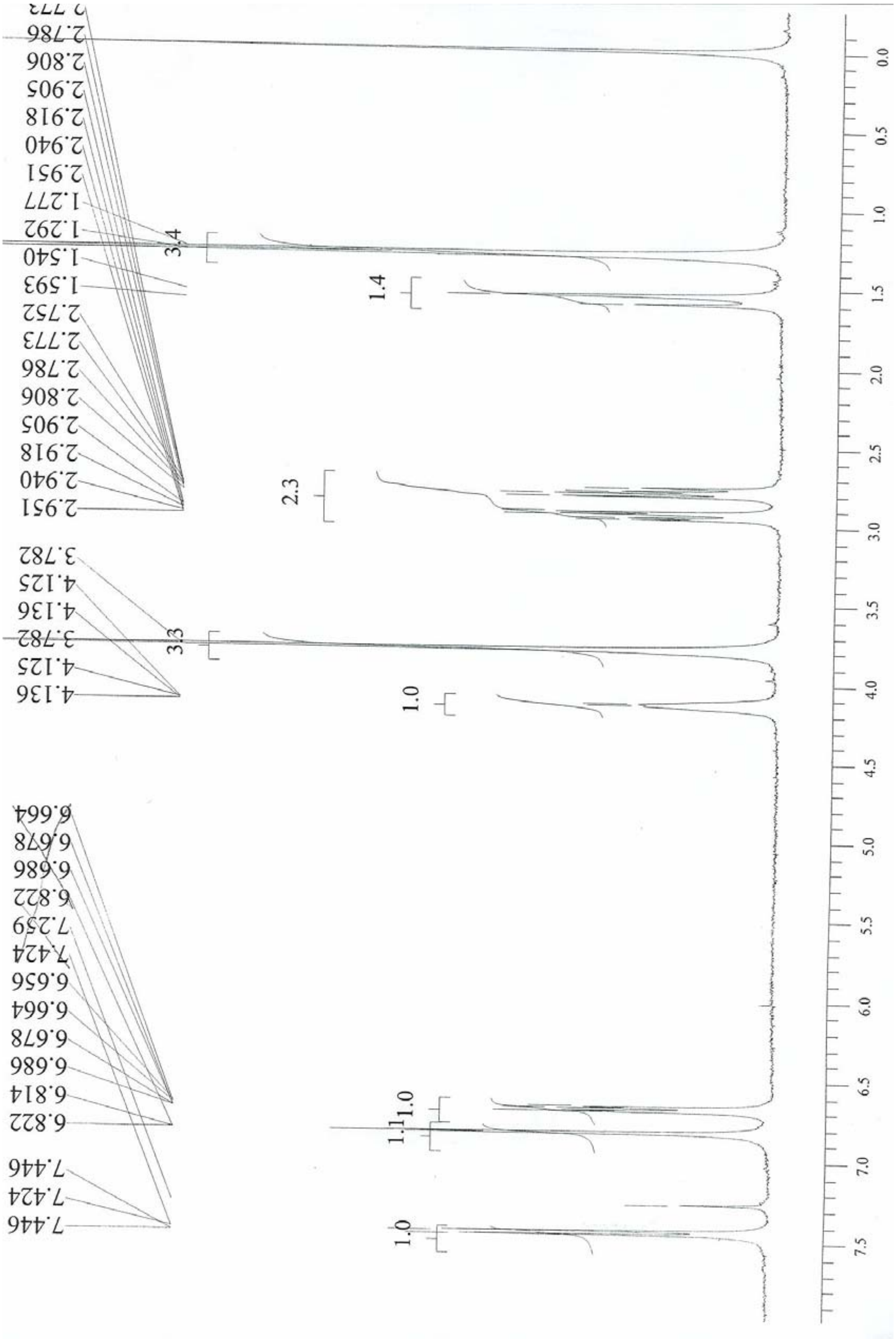
^{1}H NMR spectra of **8d** $CDCl_3$ 200 MHz



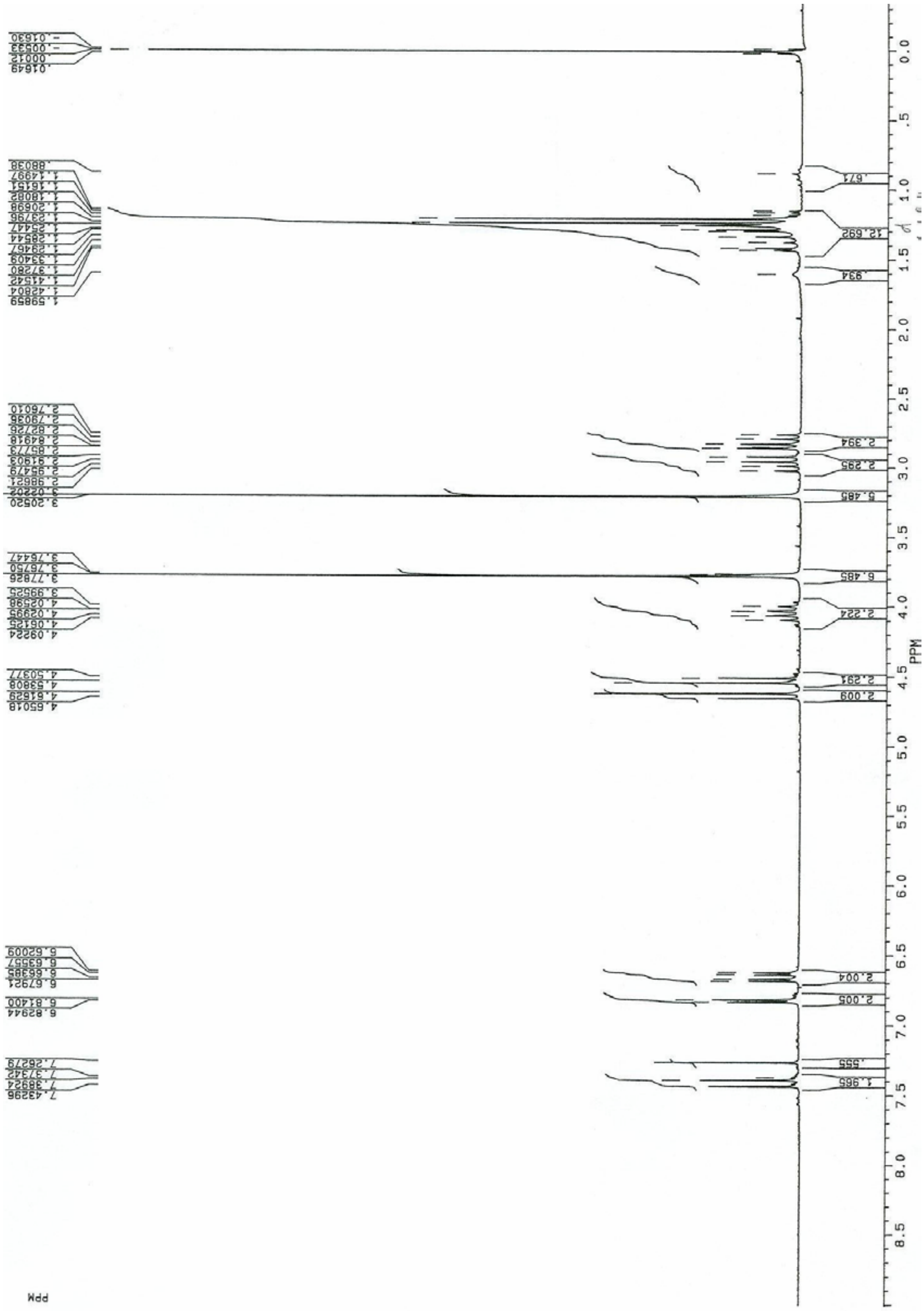
^{1}H NMR spectra of **8e** $CDCl_3$ 200 MHz



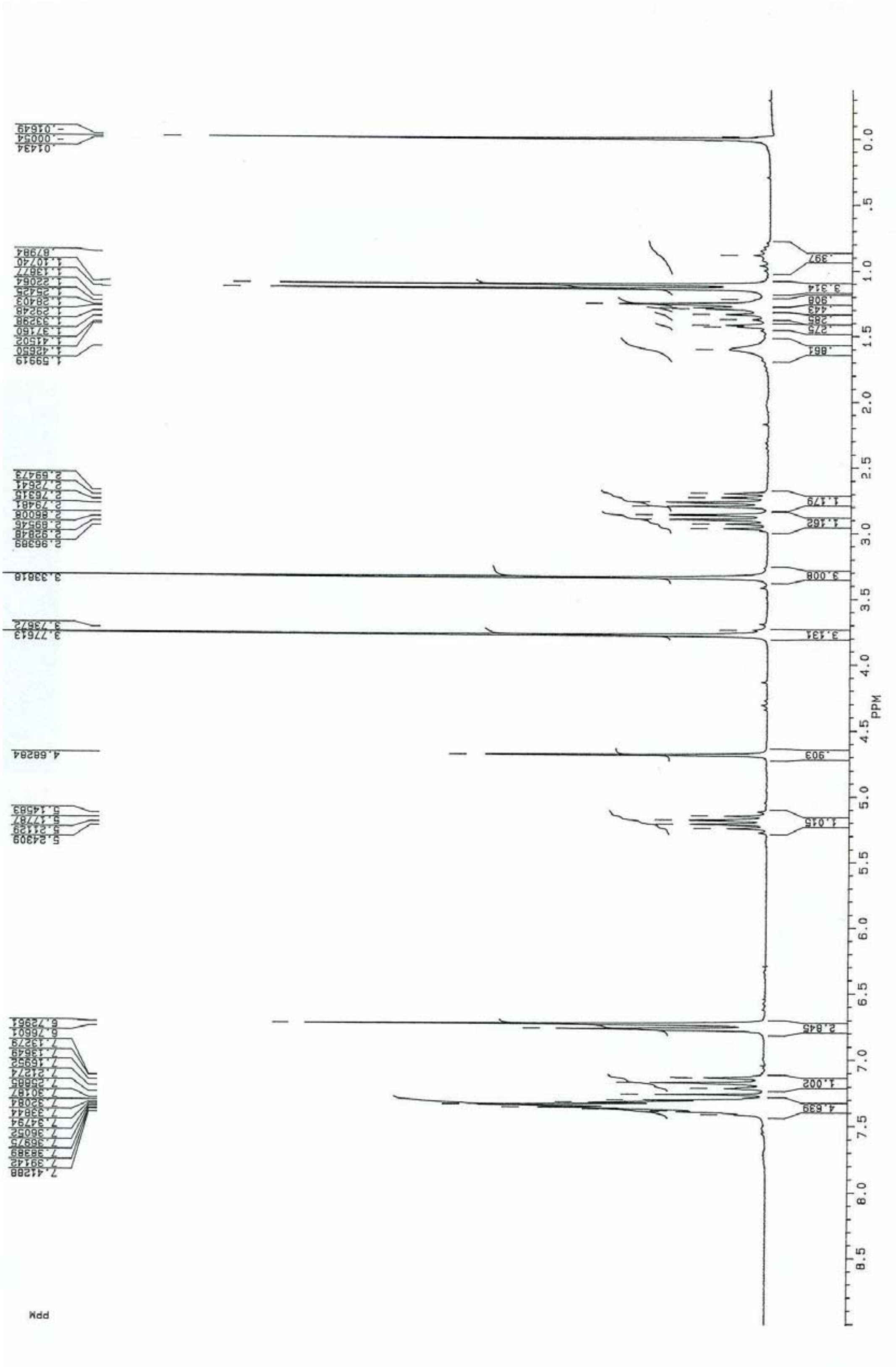
^{1}H NMR spectra of **8f** $CDCl_3$ 360 MHz



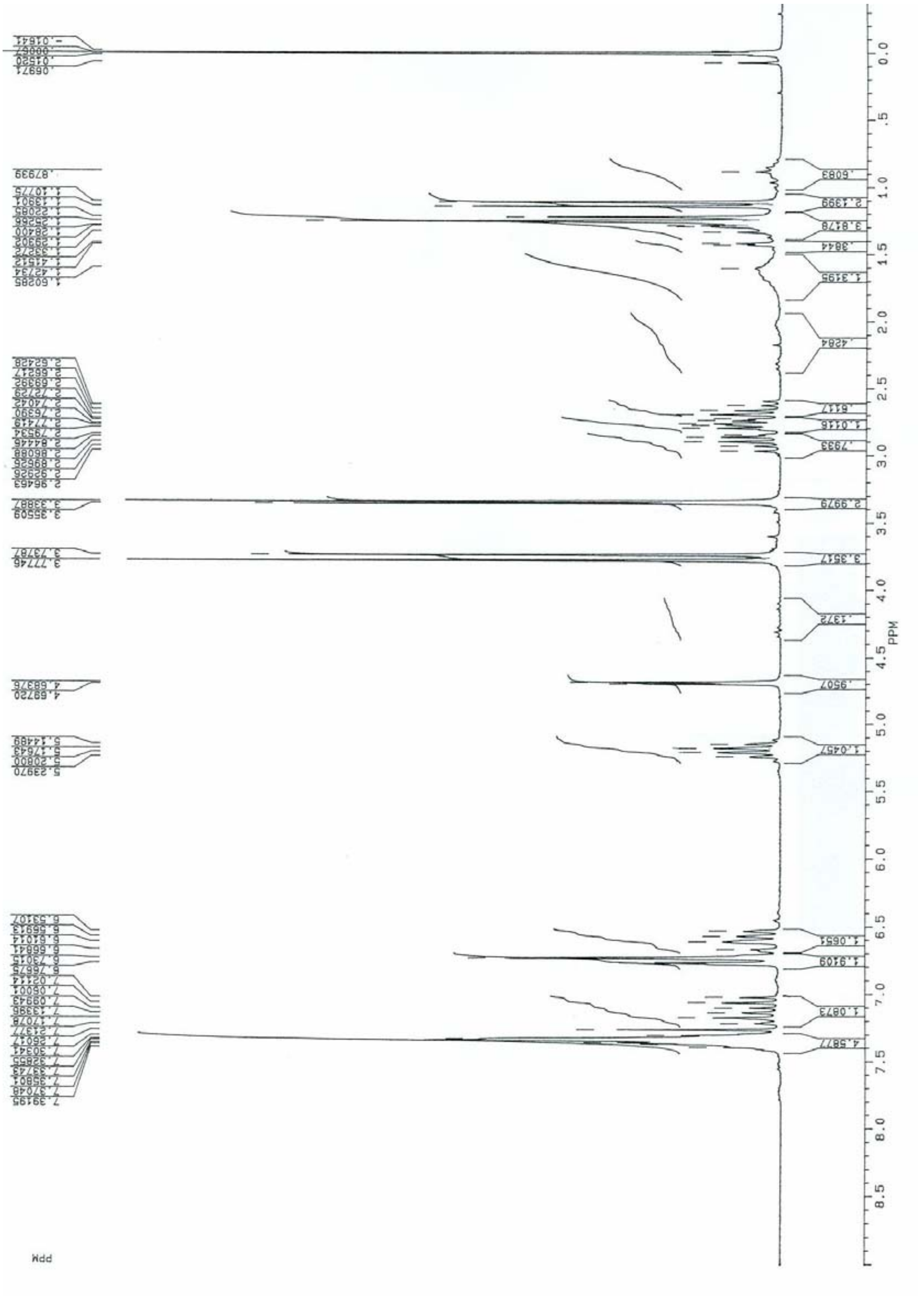
^{1}H NMR spectra of **8h** $CDCl_3$ 200 MHz



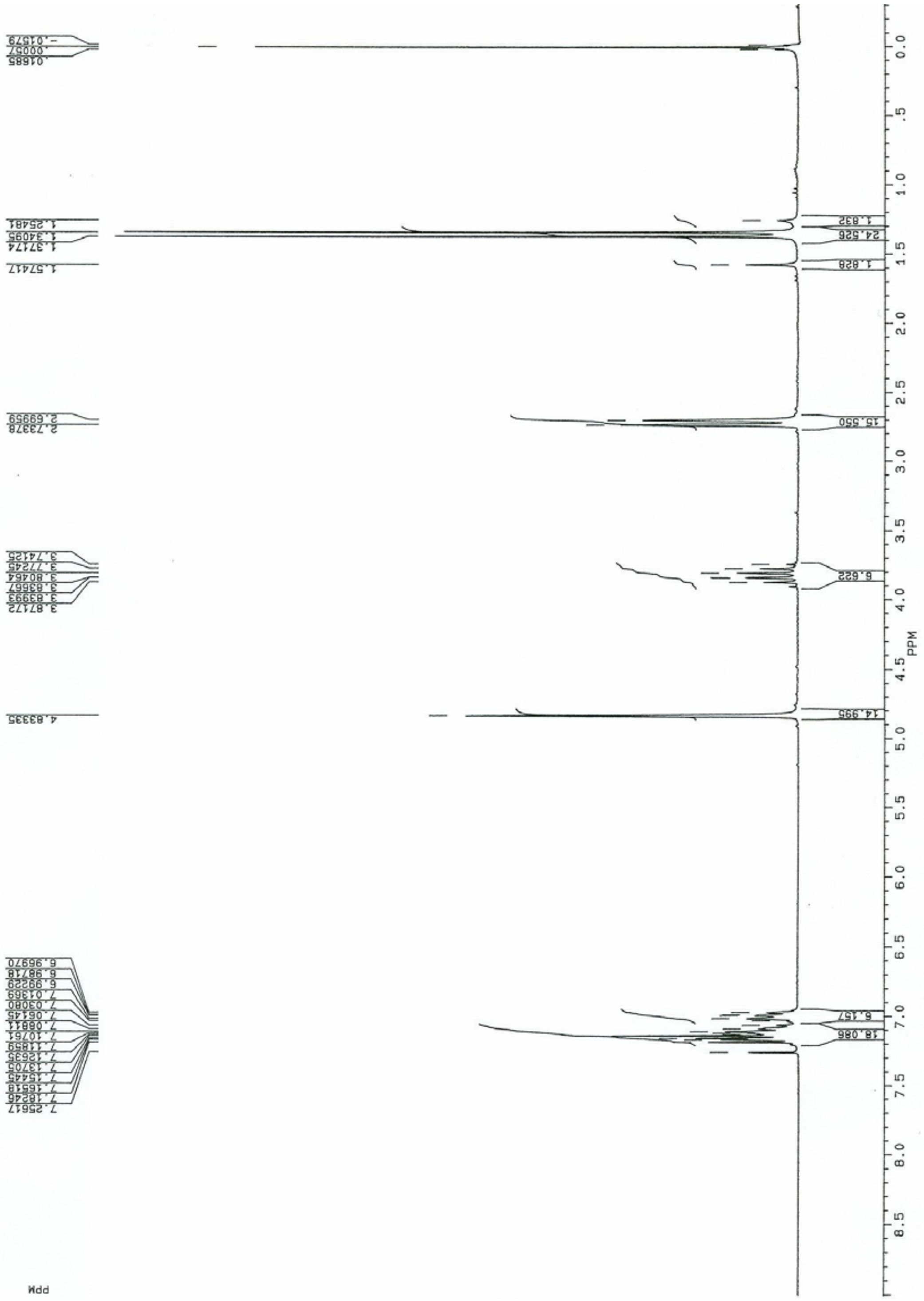
^{1}H NMR spectra of **8j** $CDCl_3$ 200 MHz



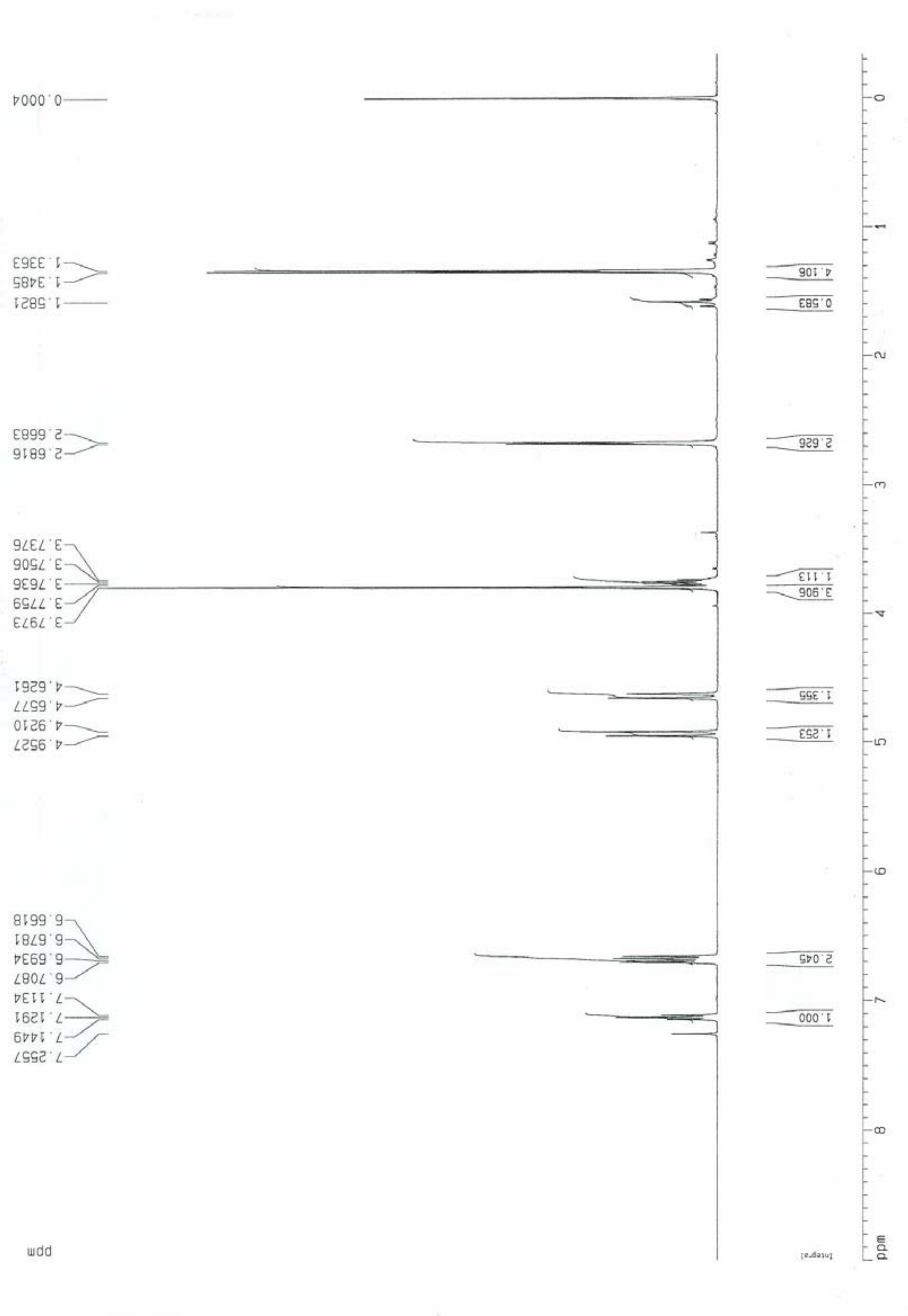
^{1}H NMR spectra of *rac*-**8j** $CDCl_3$ 200 MHz



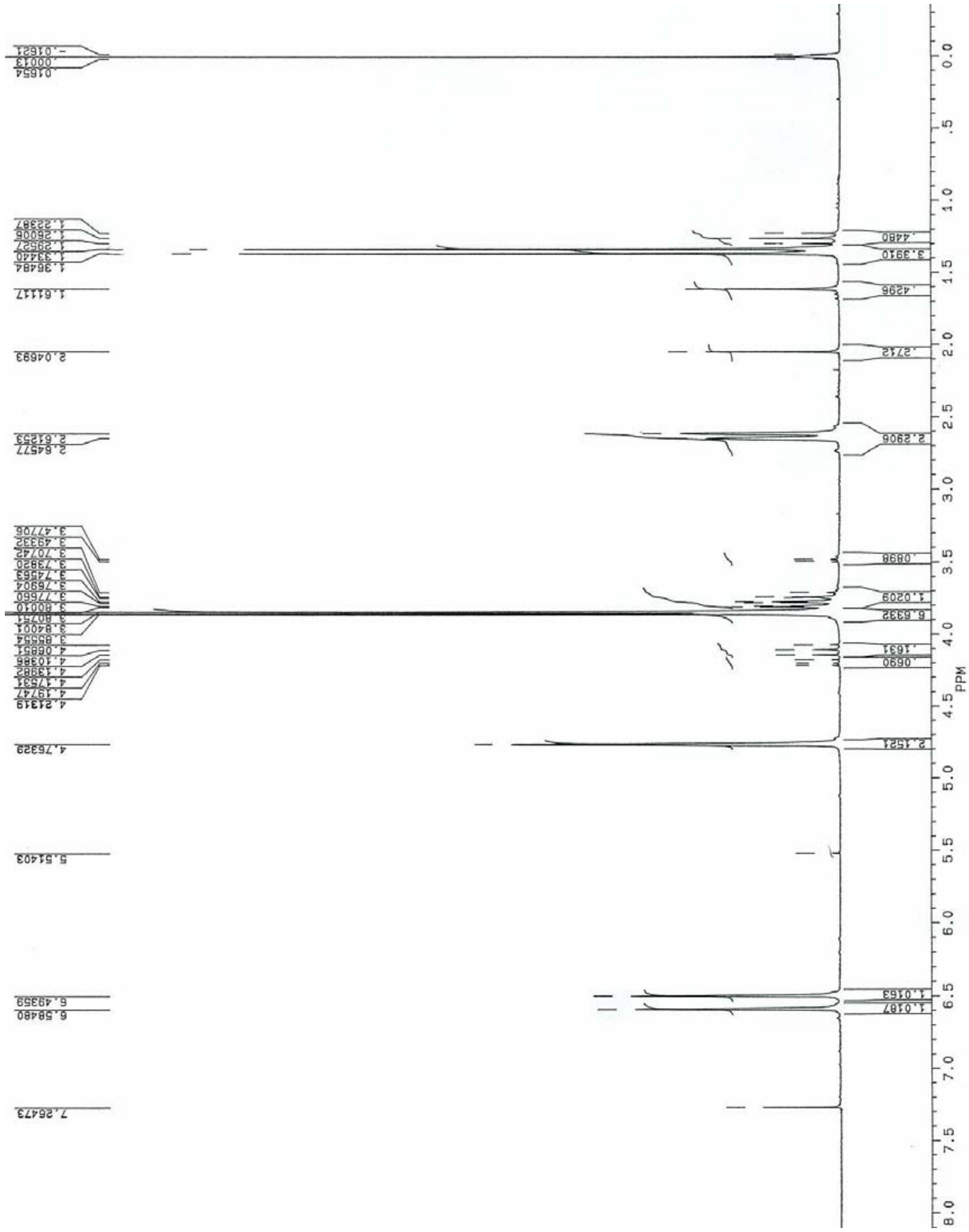
^{1}H NMR spectra of **9a** $CDCl_3$ 200 MHz



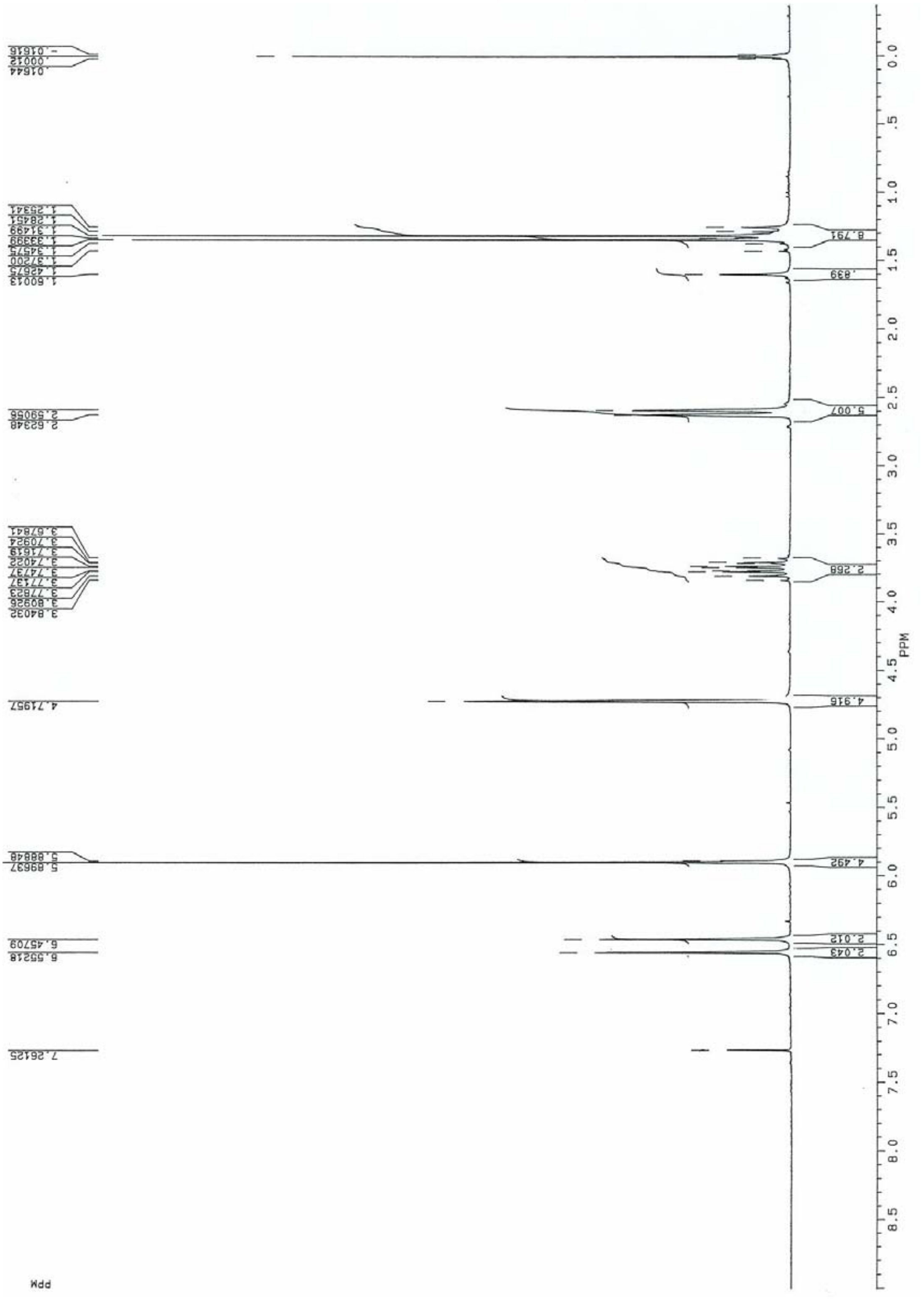
^{1}H NMR spectra of **9c** $CDCl_3$ 500 MHz



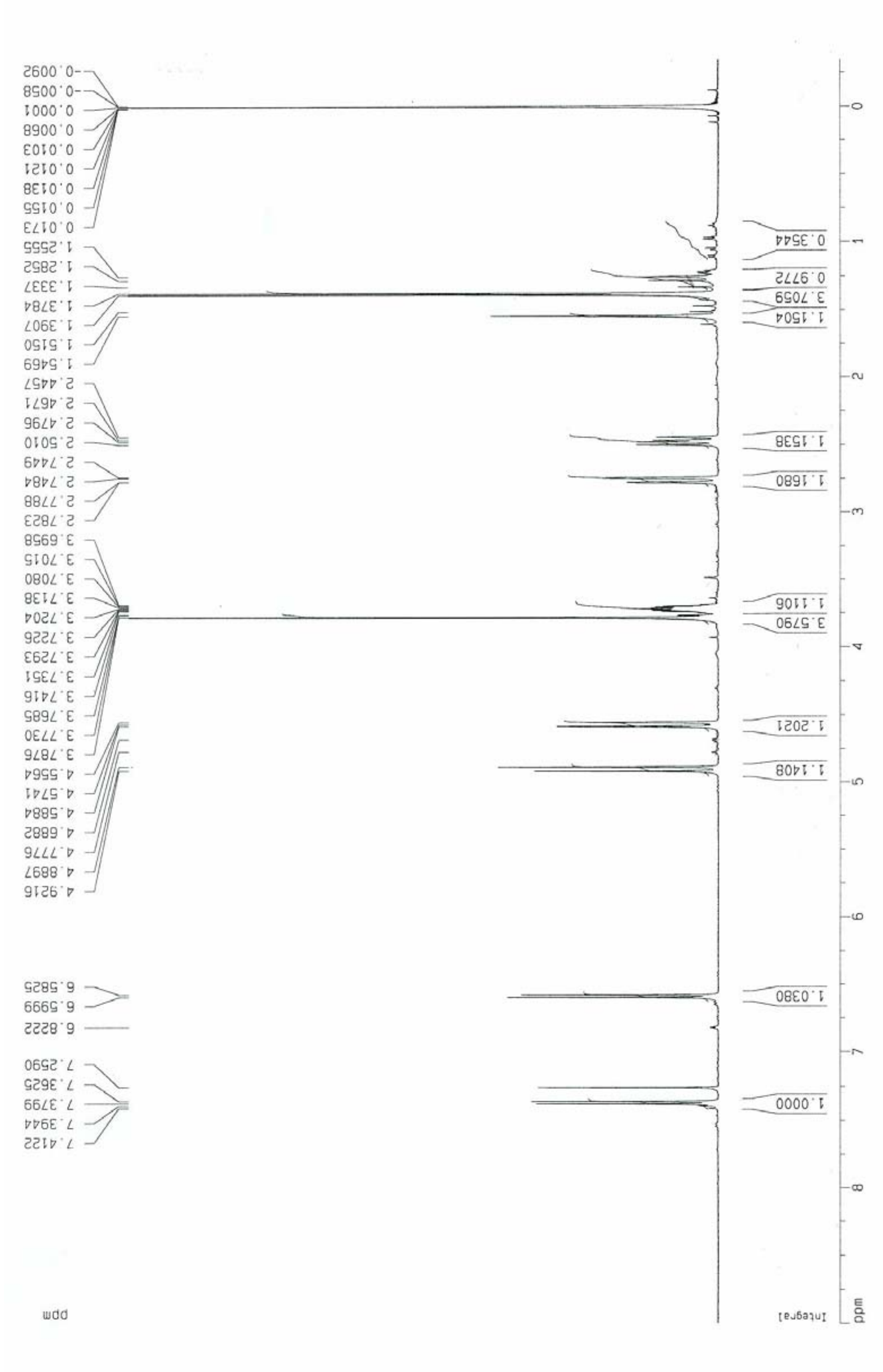
^{1}H NMR spectra of **9d** $CDCl_3$ 200 MHz



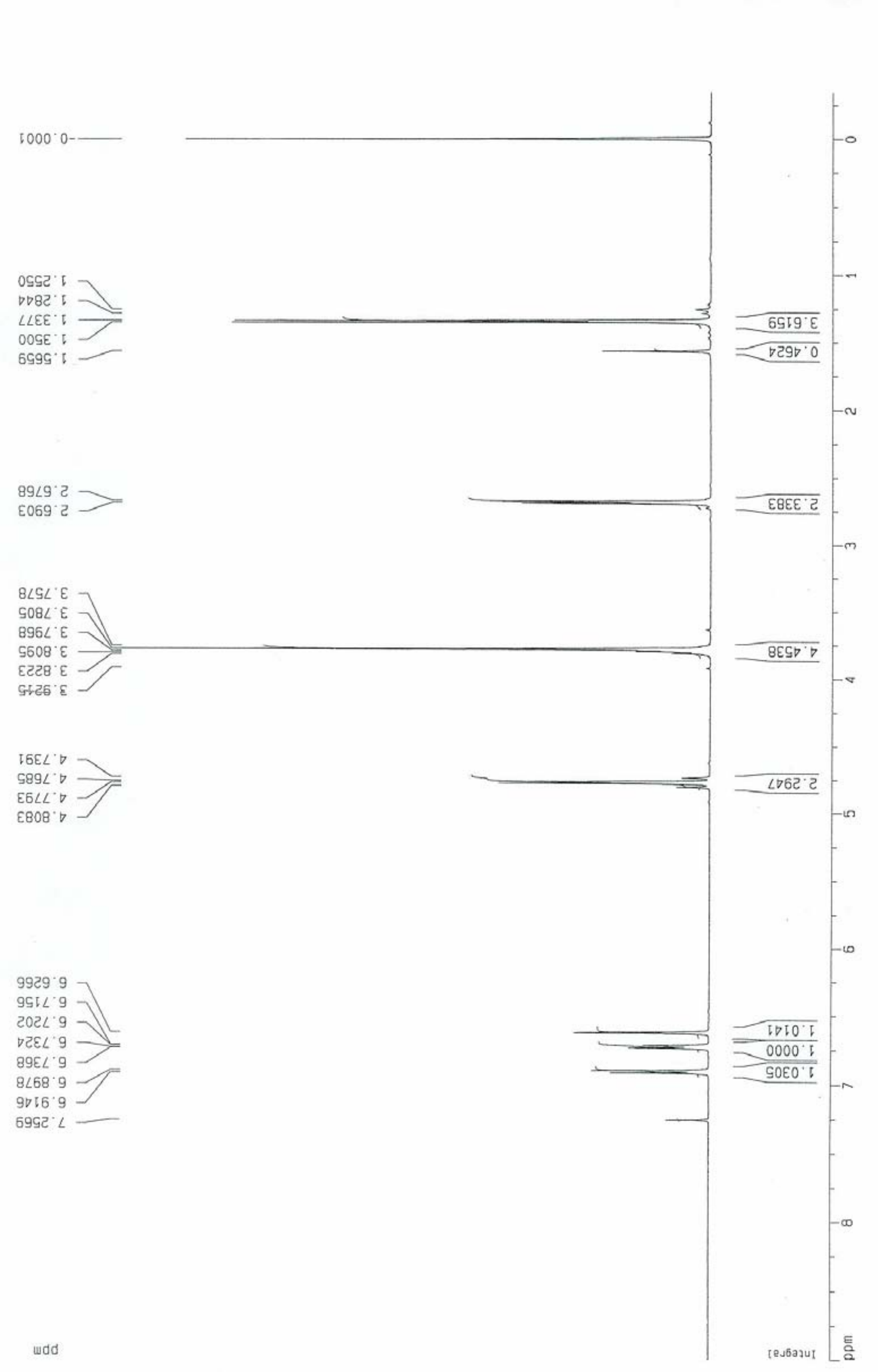
^{1}H NMR spectra of **9e** $CDCl_3$ 200 MHz



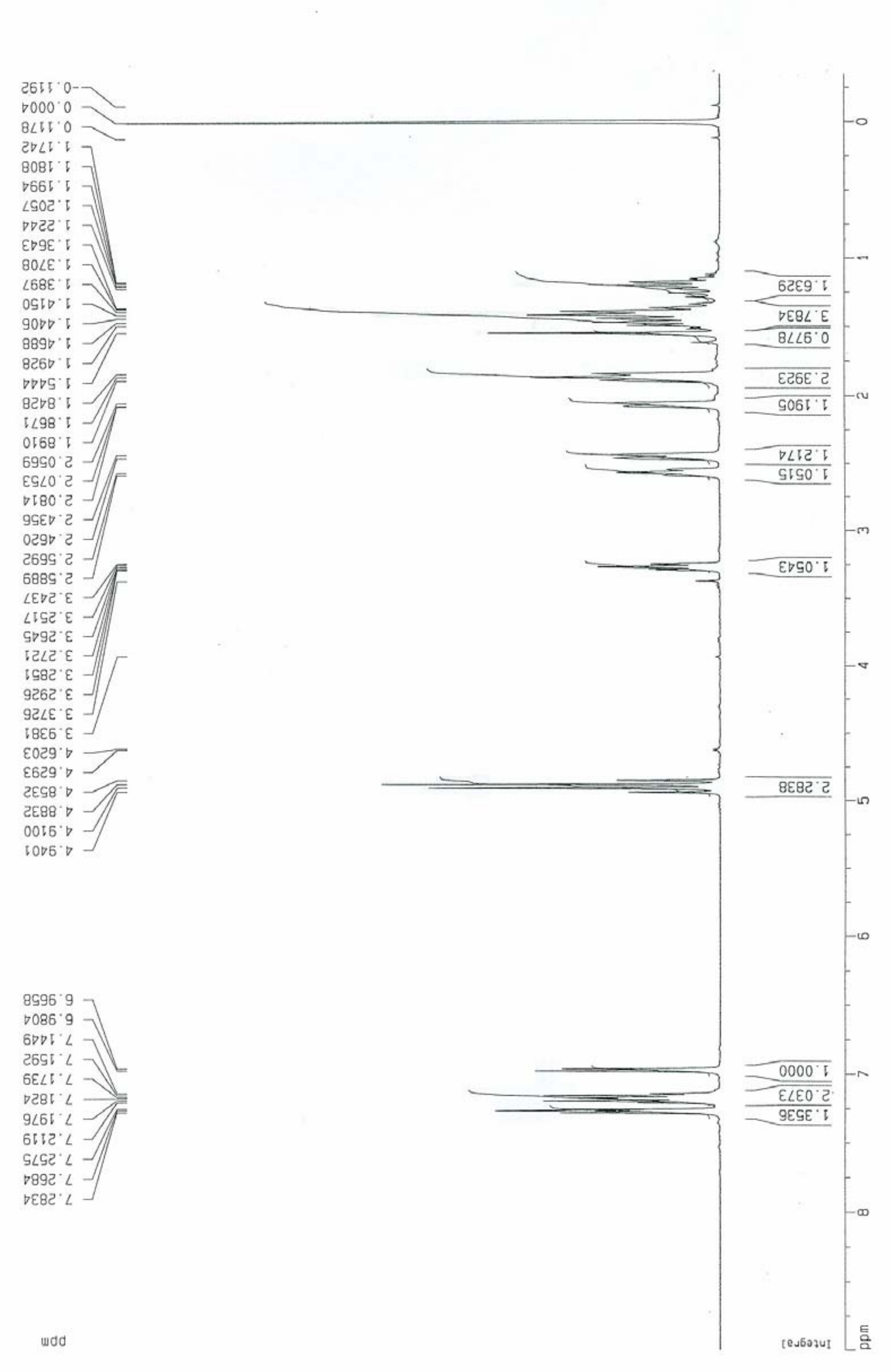
^{1}H NMR spectra of **9f** $CDCl_3$ 500 MHz



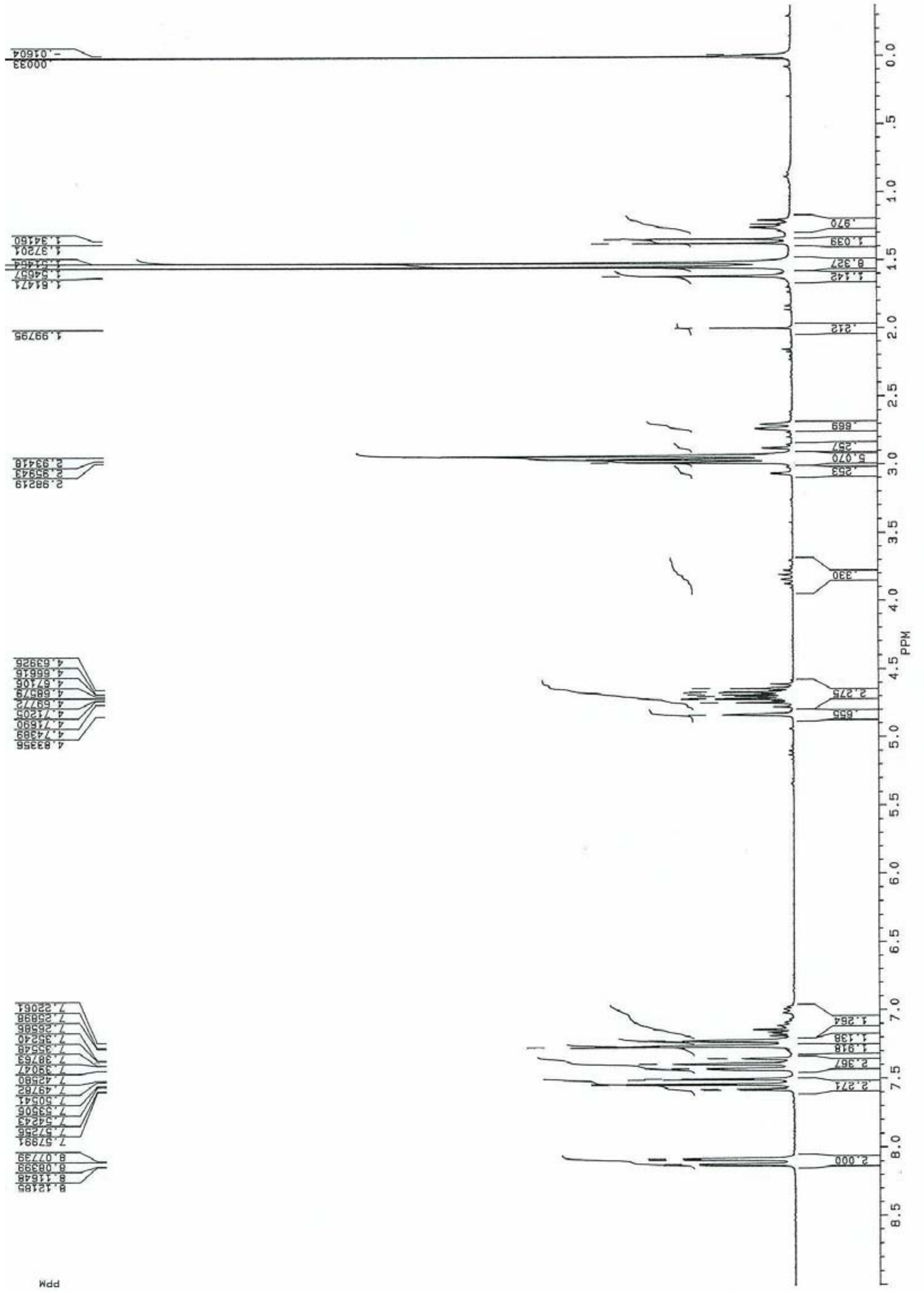
^{1}H NMR spectra of **9g** $CDCl_3$ 500 MHz



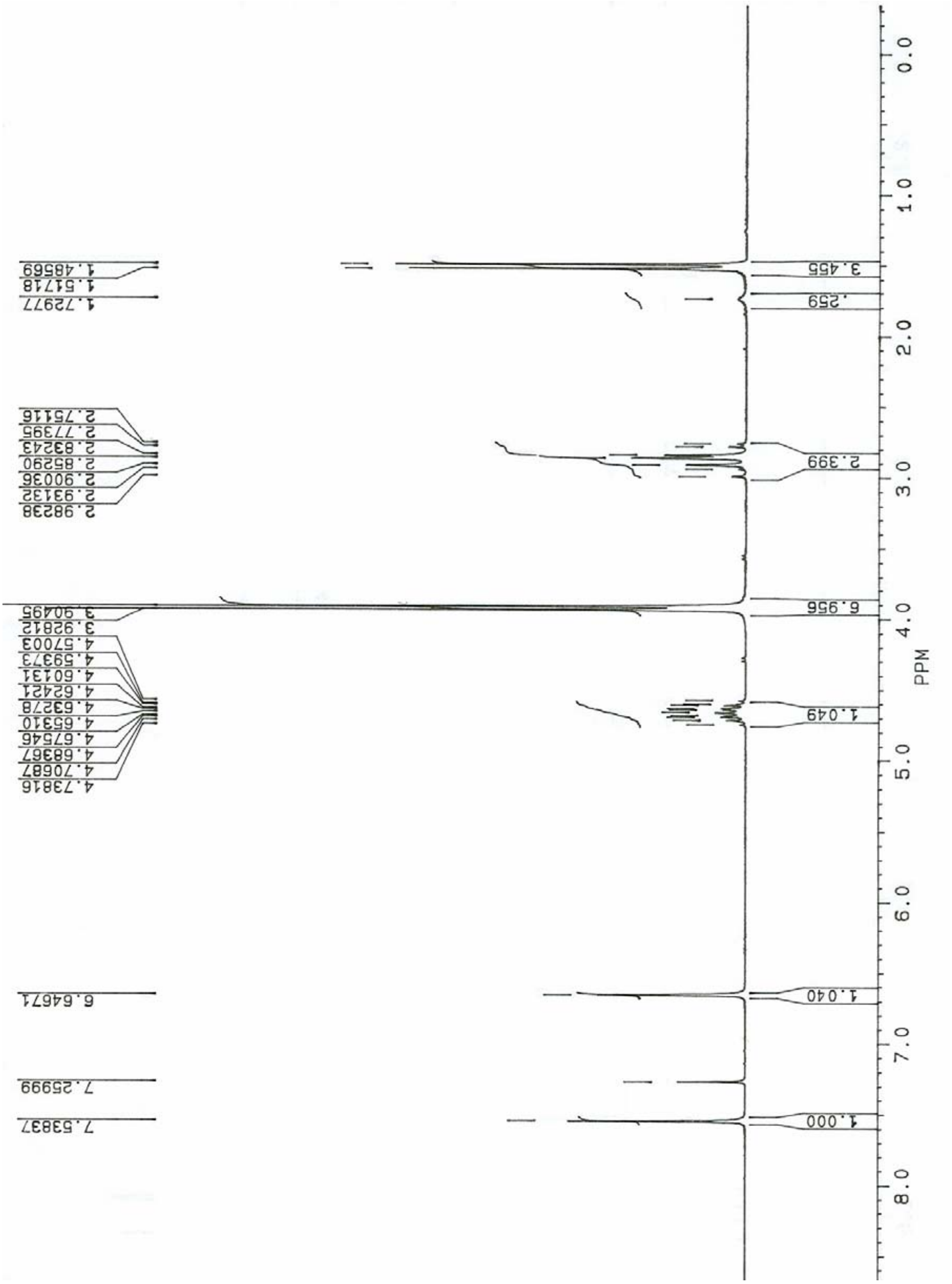
^{1}H NMR spectra of **16** $CDCl_3$ 500 MHz



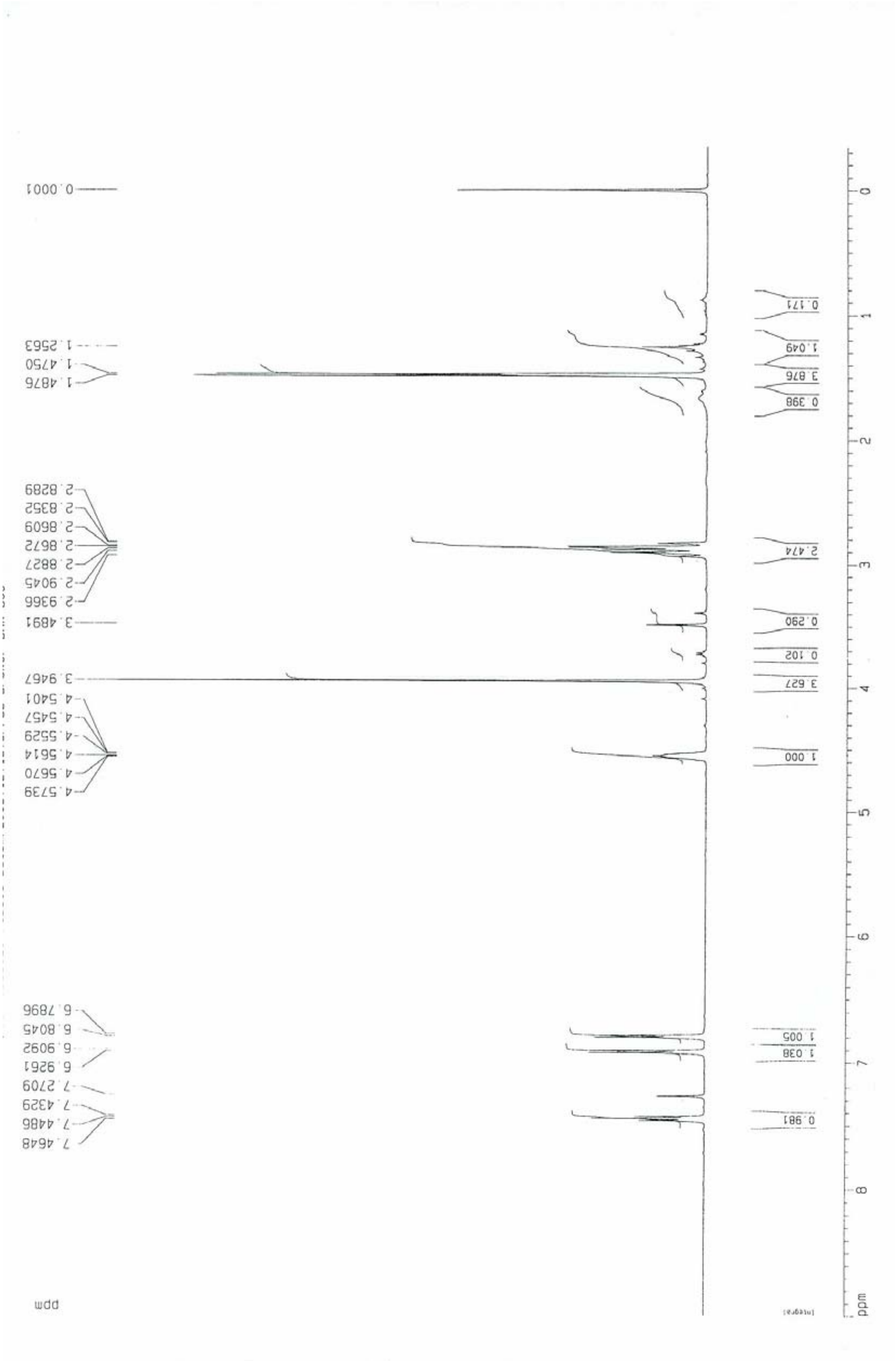
^{1}H NMR spectra of **17a** $CDCl_3$ 200 MHz



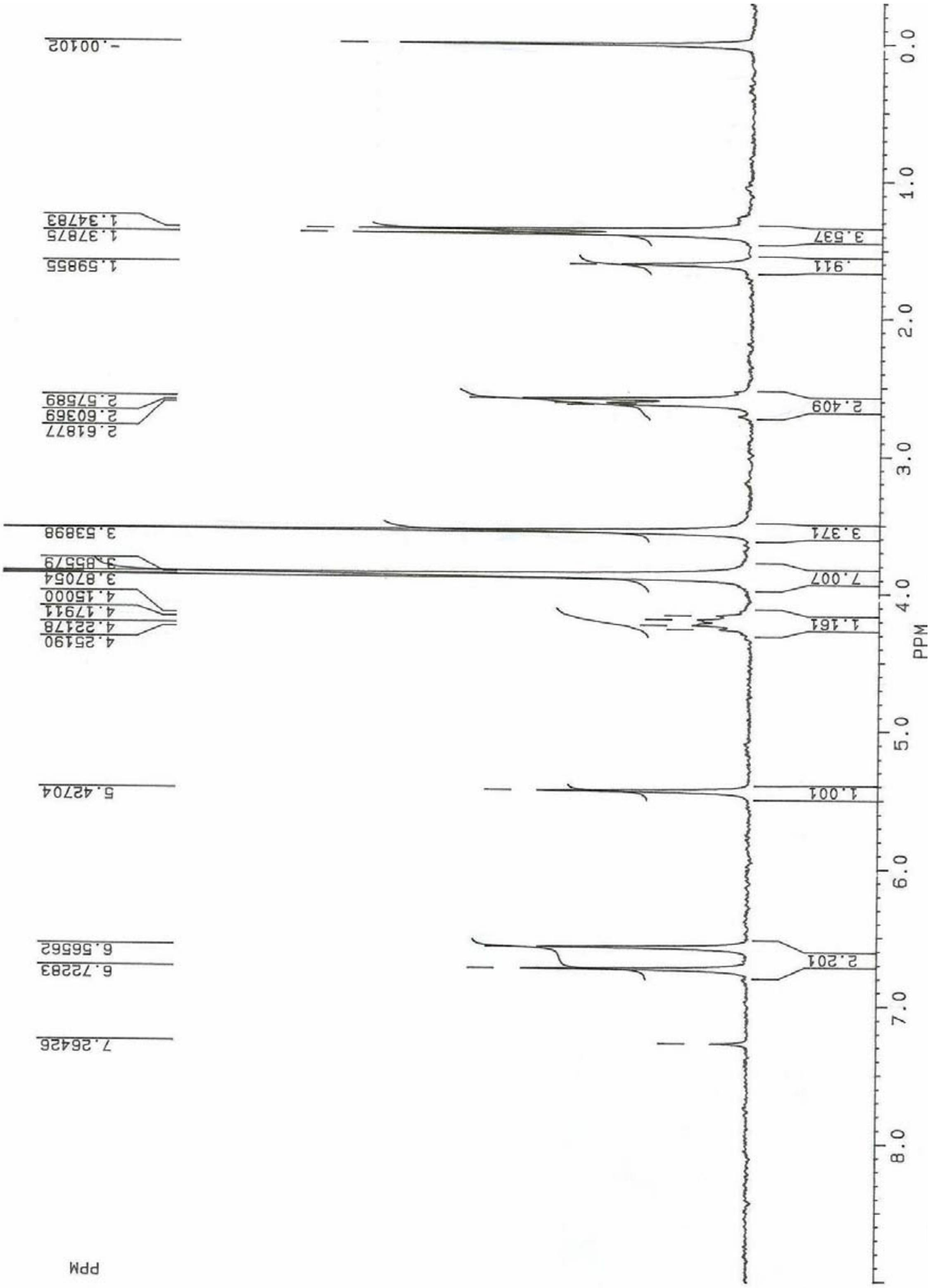
^{1}H NMR spectra of **17b** $CDCl_3$ 200 MHz



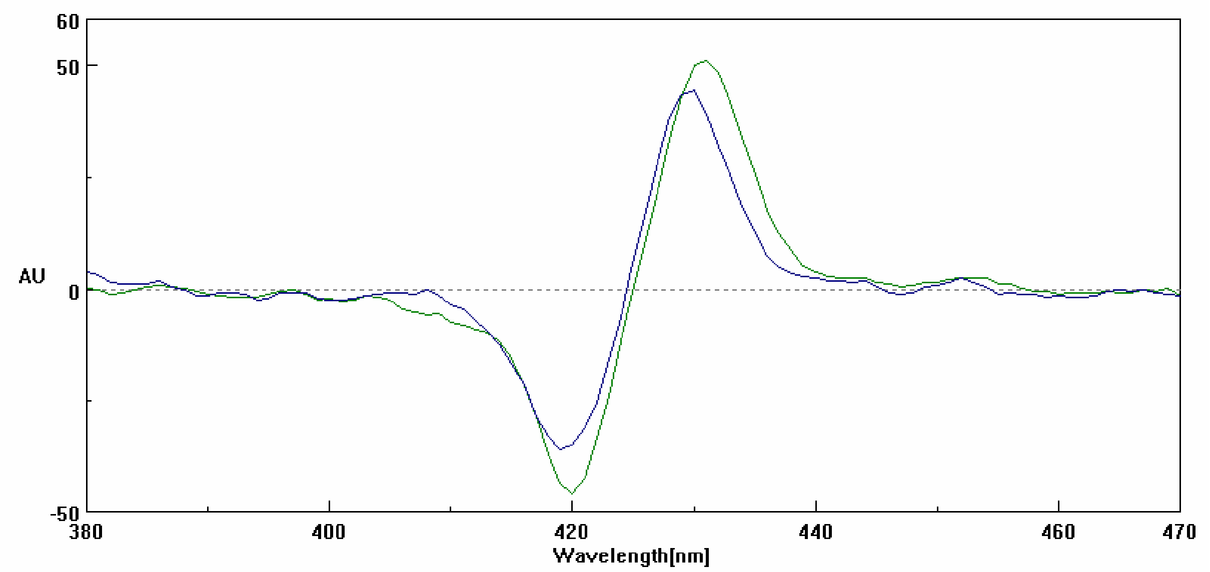
^{1}H NMR spectra of **17c** $CDCl_3$ 500 MHz



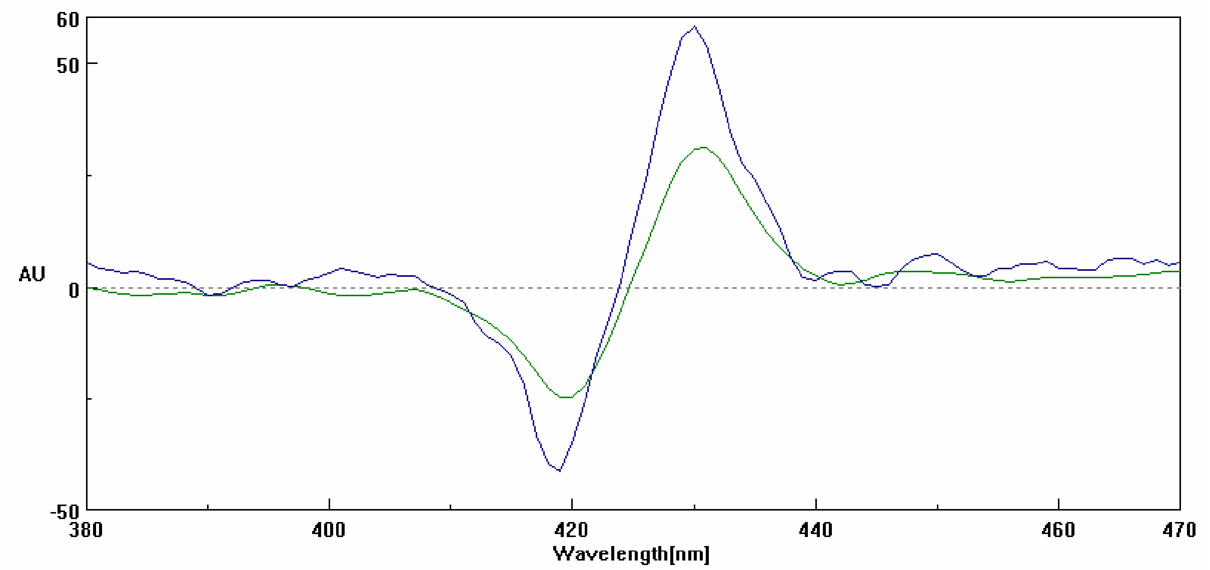
^{1}H NMR spectra of **18b** $CDCl_3$ 200 MHz



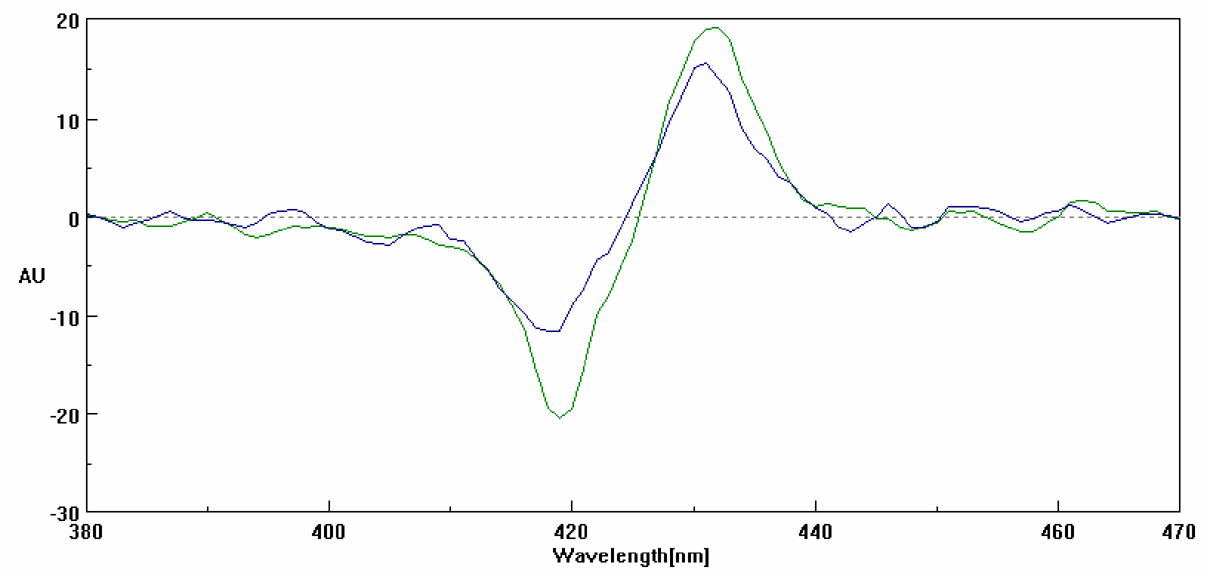
CD spectra of **13a** in dichloromethane (green curve) and methylcyclohexane (blue curve)



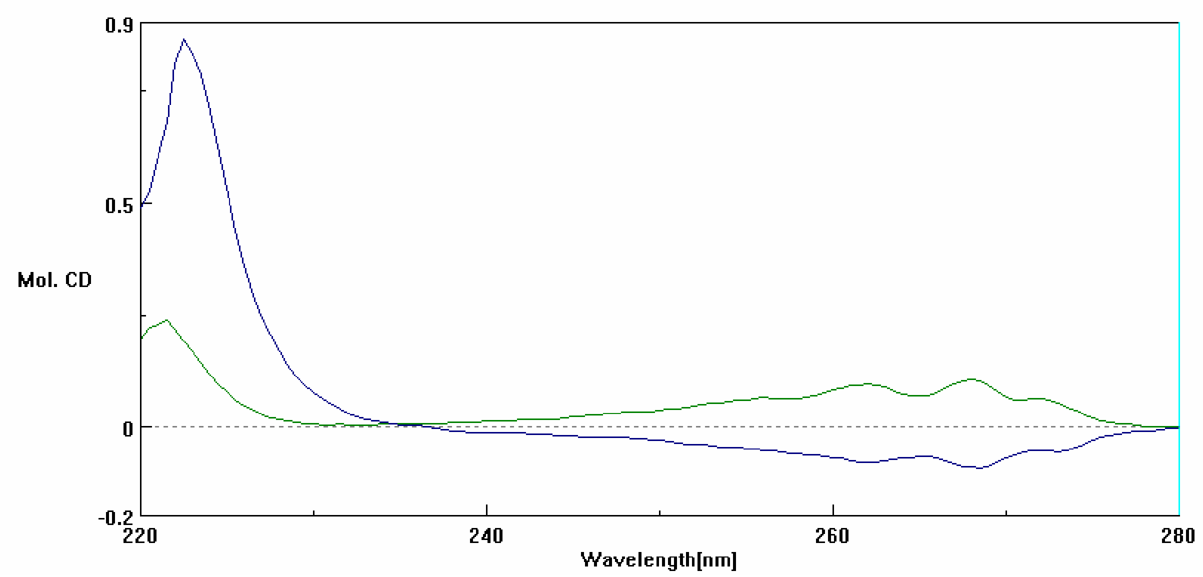
CD spectra of **13b** in dichloromethane (green curve) and methylcyclohexane (blue curve).



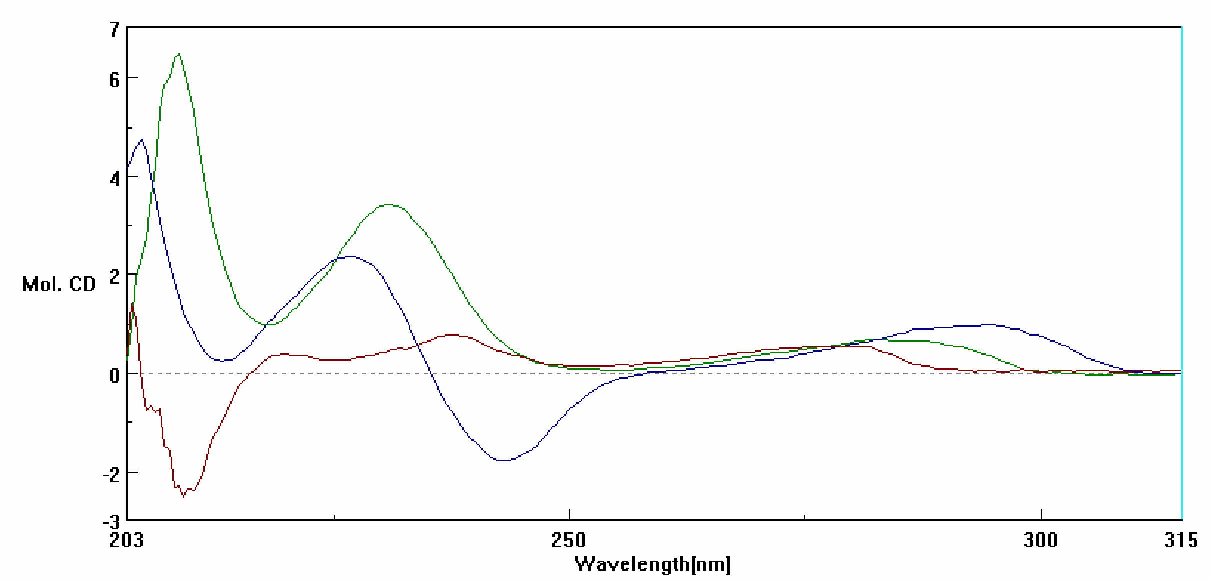
CD specta of **13c** in dichloromethane (green curve) and methylcyclohexane (blue curve).



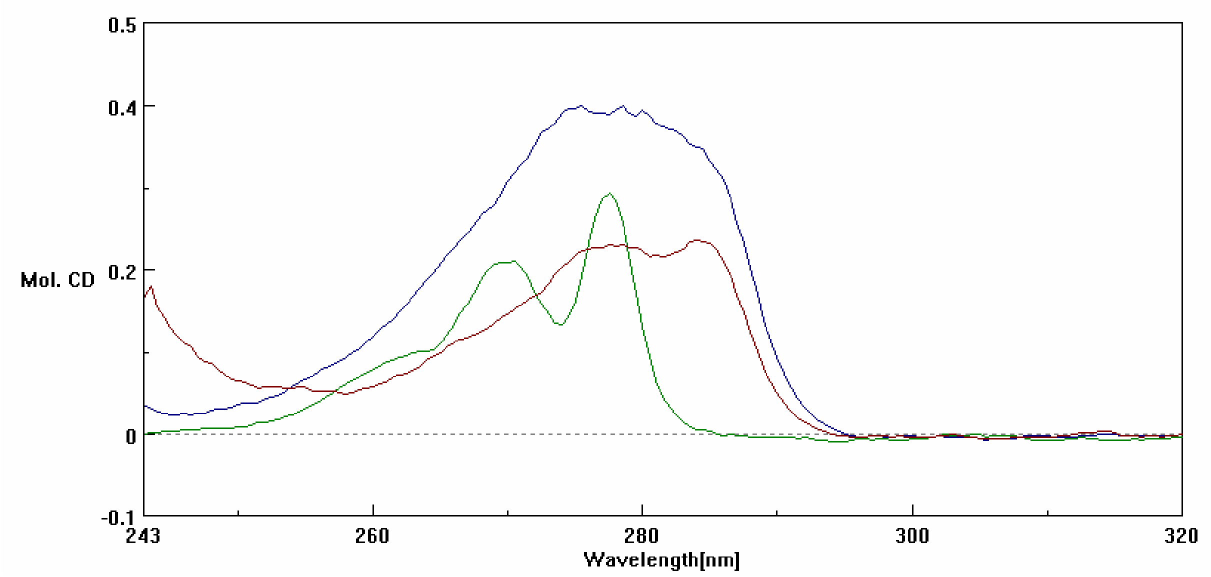
CD spectra of (*S*)-**9a** (green curve) and (4a*R*,10b*S*)-**16** (blue curve) in acetonitrile.



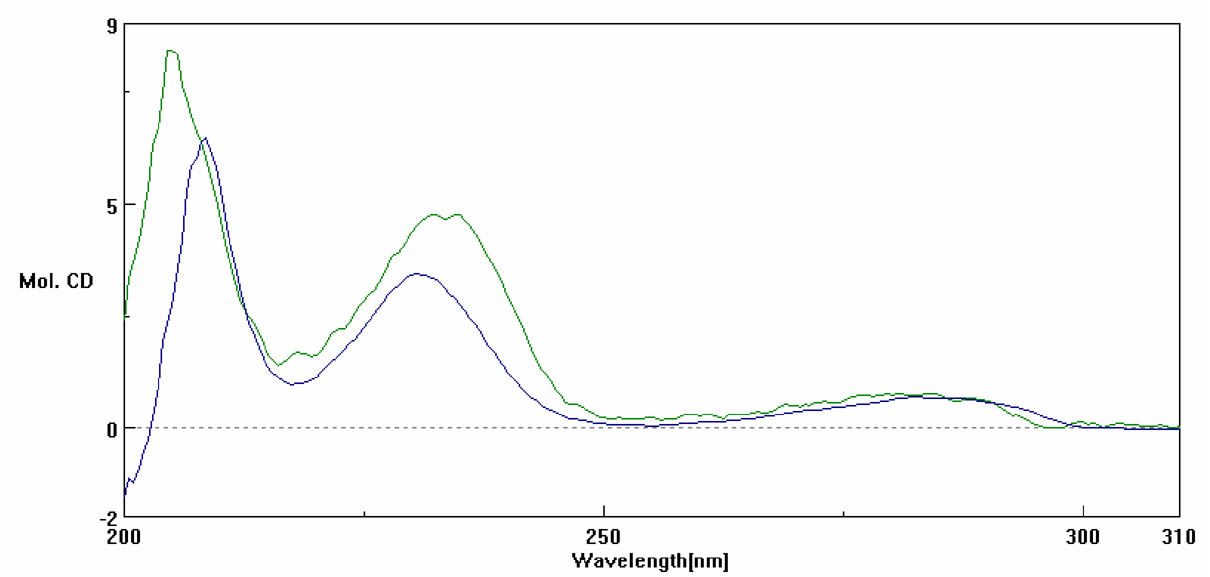
CD spectra of (*S*)-**9b** (brown curve), (*S*)-**9d** (green curve) and (*S*)-**9e** (blue curve) in acetonitrile.



^1L_b CEs of (*S*)-**9c** (green curve), (*S*)-**9f** (brown curve) and (*S*)-**9g** (blue curve) in acetonitrile.



CD spectra of (1*R*,3*S*)-**18b** (green curve) and (*S*)-**9d** (blue curve) in acetonitrile.



CD spectra of (*S*)-**17a** (green curve), (*S*)-**17b** (blue curve) and (*S*)-**17c** (brown curve) in acetonitrile.