SUPPORTING INFORMATION

An environmentally benign approach for the synthesis of bifunctional sulfonamide-amide compounds *via* isocyanide-based multicomponent reactions

Ahmad Shaabani,* Afshin Sarvary, Sabrieh Ghasemi, Ali Hossein Rezayan,

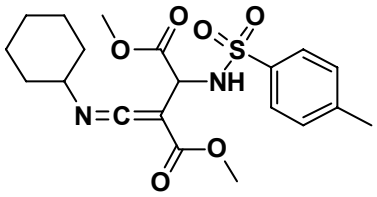
Rahim Ghadari and Seik Weng Ng

Department of Chemistry, Shahid Beheshti University, P. O. Box 19396-4716, Tehran, Iran

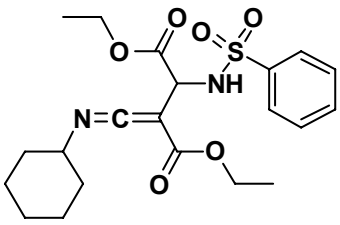
Experimental Section

General

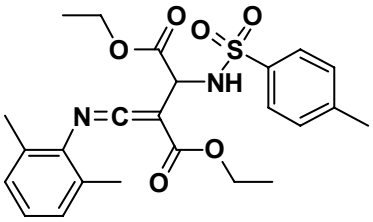
Melting points were measured on an Electrothermal 9100 apparatus and are uncorrected. Mass spectra were recorded on a FINNIGAN-MAT 8430 mass spectrometer operating at an ionization potential of 70 eV. IR spectra were recorded on a Shimadzu IR-470 spectrometer. ^{1}H and ^{13}C NMR spectra were recorded on a BRUKER DRX-300 AVANCE spectrometer at 300.13 and 75.47 MHz. NMR spectra were obtained on solution in $CDCl_3$ and DMSO-d_6 using TMS as internal standard. Elemental analyses were carried out on a Thermo Finnigan Flash EA 1112 C,H, N analyzer. The chemicals used in this work were purchased from Merck and Fluka Chemical Companies.



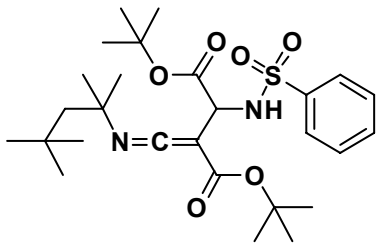
Typical procedure for preparation of Dimethyl 2-((cyclohexylimino)methylene)-3-(4-methylphenylsulfonamido)succinate (4a): To a magnetically stirred solution of 4-methylbenzenesulfonamide (0.17 g, 1.0 mmol) and dimethyl acetylenedicarboxylate (0.15 g, 1.0 mmol) in H_2O or CCl_2H_2 (10 mL) was added, cyclohexyl isocyanide (0.11 g, 1.0 mmol) at room temperature. The mixture was finally stirred for 3h in H_2O or 6h in CCl_2H_2. The solvent was removed under vacuum and the residue was crystallized from *n*-hexan/dichloromethane (2:1) and the product **4a** was obtained. White crystals (0.30 g, yield 72%). mp 105-107 ºC. IR (KBr) (ν_{max}/cm^{-1}): 2937, 2856, 1743, 1681, 1633. MS, *m/z* (%): 377 (M^+-45, 5), 395 (10), 198 (5), 171 (5), 155 (30), 91 (100), 55 (60). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.25-1.88 (10H, m, 5CH_2 of cyclohexyl), 2.38 (3H, s, CH_3), 3.58 (3H, s, O-CH_3), 3.61 (3H, s, O-CH_3), 3.76 (1H, m, C*H*-N), 4.64 (1H, d, $^{3}J_{HH}$= 8.1 Hz, C*H*NH), 5.86 (1H, d, $^{3}J_{HH}$= 8.1 Hz, CHN*H*), 7.25 (2H, d, $^{3}J_{HH}$= 8.1 Hz, arom), 7.71 (2H, d, $^{3}J_{HH}$= 8.1 Hz, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 21.5, 23.9, 25.1, 30.9, 33.3, 33.4, 51.5, 53.1, 53.6, 60.8, 61.9, 127.1, 129.4, 137.4, 143.4, 165.3, 168.3, 169.9. Anal. Calcd for $C_{20}H_{26}N_2O_6S$: C, 56.86; H, 6.20; N, 6.63. Found: C, 56.94; H, 6.14; N, 6.51.



Diethyl 2-((cyclohexylimino)methylene)-3-(phenylsulfonamido)succinate (4b): White crystals (0.35 g, 81%).76-79 mp ºC. IR (KBr) (ν_{max}/cm^{-1}): 3234, 2935, 2860, 2060, 1754, 1672. ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.15-1.96 (16H, m, 5CH_2 of cyclohexyl, 2O$CH_2C\mathit{H}_3$), 3.80 (1H, bs, C*H*-N), 4.02-4.13 (4H, m, 2O$C\mathit{H}_2CH_3$), 4.67 (1H, d, ^{3}J= 8.1 Hz, C*H*-NH), 5.87 (1H, d, ^{3}J= 8.1 Hz, CH-N*H*), 7.46-7.88 (5H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 13.9, 14.3, 23.8, 25.1, 33.3, 53.8 , 60.4, 60.8, 62.3, 62.4, 127.1, 128.9, 132.5, 140.5, 165.7, 168.4, 169.3. Anal. Calcd for $C_{21}H_{28}N_2O_6S$: C, 57.78; H, 6.47; N, 6.42. Found: C, 57.82; H, 6.57; N, 6.49.

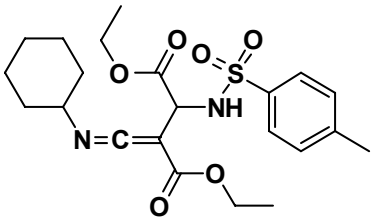


Diethyl 2-((2,6-dimethylphenylimino)methylene)-3-(4-methylphenylsulfonamido)succinate (4c): White crystals (0.37 g, 78%). mp 151-153 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3234, 2988, 2916, 2058, 1751, 1668. MS, m/z (%): 473 (M^++1, 2), 399 (5), 353 (5), 317 (10), 271 (5), 225 (10), 199 (5), 171 (10), 155 (15), 120 (20), 91 (100), 65 (25). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.15-1.22 (6H, m, 2O$CH_2C\mathit{H}_3$), 2.37 (9H, bs, 3CH_3), 4.05-4.18 (4H, m, 2 O-CH_2CH_3), 4.80 (1H, d, $^3J_{HH}$= 8.0 Hz, C*H*NH), 5.93 (1H, d, $^3J_{HH}$= 8.0 Hz, CHN*H*), 7.11-7.75 (7H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 13.9, 14.4, 18.8, 21.5, 54.2, 58.3, 60.5, 62.3, 127.1, 128.4, 128.5, 129.4, 132.2, 133.9, 137.7, 143.2, 163.6, 168.1, 169.3. Anal. Calcd for $C_{24}H_{28}N_2O_6S$: C, 61.00; H, 5.97; N, 5.93. Found: C, 61.03; H, 5.91; N, 6.01.

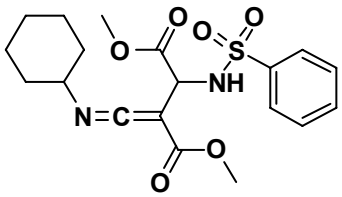


Di-tert-butyl 2-(phenylsulfonamido)-3-((2,4,4 trimethylpentan-2-ylimino)methylene)succinate (4d): White crystals (0.38 g, 68%). mp 135-138 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3222, 2971, 2067, 1730, 1692. MS, m/z (%): 523 (M^++1, 2), 299 (20), 269 (15), 141 (20), 93 (20), 77 (100), 57 (60). ^{1}H NMR (300 MHz, DMSO-d_6): δ_H (ppm) 0.92 (9H, s,

$C(CH_3)_3$), 1.33 (6H, s, $C(CH_3)_2$), 1.38 (9H, s, $OC(CH_3)_3$), 1.41(9H, s, $OC(CH_3)_3$), 1.53 (1H, AB-q, $^2J_{HH}$=14.7 Hz, CH_AH_B), 1.90 (1H, AB-q, $^2J_{HH}$=14.7 Hz, CH_AH_B), 6.59 (C*H*-NH), 7.36-7.84 (5H, m, arom), 8.12 (1H, s, CH-N*H*). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 27.7, 27.8, 28.0, 31.5, 31.6, 51.1, 57.8, 62.8, 128.9, 129.4, 130.3, 141.9, 157.5, 161.6, 162.6. Anal. Calcd for $C_{27}H_{42}N_2O_6S$: C, 62.04; H, 8.10; N, 5.36. Found: C, 62.17; H, 7.98; N, 5.48.

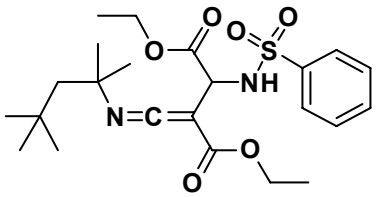


Diethyl 2-((cyclohexylimino)methylene)-3-(4-methylphenylsulfonamido)succinate (4e): White crystals (0.33 g, 73%). mp 115-117 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3222, 2936, 2859, 2064, 1751, 1671. MS, m/z (%): 421 (M^+-29, 10), 377 (10), 295 (25), 155 (20), 91 (100), 55 (60). ^{1}H NMR (300 MHz, DMSO-d_6): δ_H (ppm) 1.06-1.82 (16H, m, $5CH_2$ of cyclohexyl, $2OCH_2CH_3$), 2.35 (3H, s, CH_3), 3.84 (1H, bs, C*H*-N), 3.90-3.97 (4H, m, $2OCH_2CH_3$), 4.63 (1H, d, $^3J_{HH}$= 8.0 Hz, C*H*NH), 7.32 (2H, d, $^3J_{HH}$= 7.3 Hz, arom), 7.64 (2H, d, $^3J_{HH}$= 7.3 Hz, arom), 8.44 (1H, d, $^3J_{HH}$= 8.0 Hz, CHN*H*). ^{13}C NMR (75 MHz, DMSO-d_6): δ_C (ppm) 14.2, 14.5, 21.3, 23.5, 25.2, 32.9, 53.1, 60.3, 61.6, 62.4, 127.0, 129.7, 138.7, 142.9, 165.7, 167.9, 169.6. Anal. Calcd for $C_{22}H_{30}N_2O_6S$: C, 58.65; H, 6.71; N, 6.22. Found: C, 58.52; H, 6.79; N, 6.37.



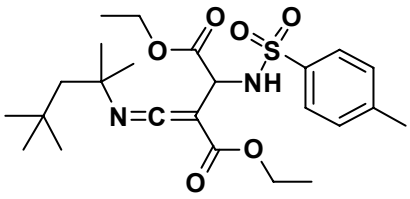
Dimethyl 2-((cyclohexylimino)methylene)-3-(phenylsulfonamido)succinate (4f): White crystals (0.33 g, yield 80%). mp 87-90 ºC. IR (KBr) (ν_{max}/cm^{-1}): 2939, 2847, 1753, 1688. MS, *m/z* (%): 408 (M^+, 10), 386 (2), 354 (20), 267 (100), 200 (30), 155 (20), 138 (20), 89 (60), 67 (40). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.26-1.97 (10H, m, $5CH_2$ of cyclohexyl), 3.58 (3H, s, OCH_3), 3.62 (3H, s, OCH_3), 3.78 (1H, m, C*H*-N), 4.68 (1H, d, $^3J_{HH}$= 8.2 Hz, C*H*NH), 5.93 (1H, d, $^3J_{HH}$= 8.2 Hz, CHN*H*), 7.45-7.86 (5H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 23.9, 25.1, 33.4 (C-cyclohexyl), 51.6 (CH-N), 53.1, 53.7 ($2OCH_3$), 60.8 (CH-NH), 61.8 (C=N), 127.1,

128.9, 132.6, 140.4 (C-Ar), 164.7 (*C*=C=N), 168.9, 169.9 (2C=O). Anal. Calcd for $C_{19}H_{24}N_2O_6S$: C, 55.87; H, 5.92; N, 6.86. Found: C, 55.91; H, 6.02; N, 6.79.



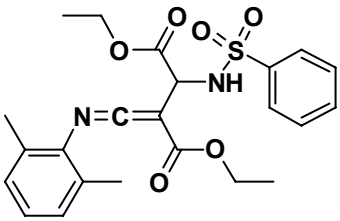
Diethyl 2-(phenylsulfonamido)-3-((2,4,4-trimethylpentan-2-ylimino)methylene)succinate (4g):

White crystals (0.35 g, 75%). mp 142-145 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3283, 2963, 2897, 2065, 1738, 1691. MS, m/z (%): 459 (M^+-8, 2), 385 (10), 339 (5), 302 (10), 244 (10), 198 (10), 141 (20), 103 (5), 77 (100), 51 (20). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.04 (9H, s, $C(CH_3)_3$), 1.14-1.23 (6H, m, $2OCH_2CH_3$), 1.47 (6H, s, $C(CH_3)_2$), 1.63 (2H, s, CH_2), 4.00-4.13 (4H, m, $2OCH_2CH_3$), 4.65 (1H, d, $^3J_{HH}$= 8.2 Hz, C*H*NH), 5.88 (1H, d, $^3J_{HH}$= 8.2 Hz, CHN*H*), 7.42-7.96 (5H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 13.9, 14.3, 31.15, 31.25, 31.38, 31.7, 53.7, 54.6, 60.3, 62.2, 63.4, 65.5, 127.1, 128.8, 132.5, 140.0, 164.9, 168.5, 169.4. Anal. Calcd for $C_{23}H_{34}N_2O_6S$: C, 59.21; H, 7.34; N, 6.00. Found: C, 59.08; H, 7.47; N, 5.94.

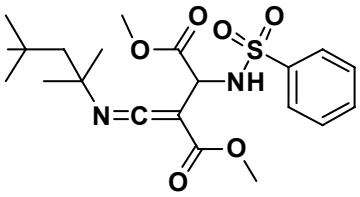


Diethyl 2-(4-methylphenylsulfonamido)-3-((2,4,4-trimethylpentan-2-ylimino)methylene)succinate (4h):

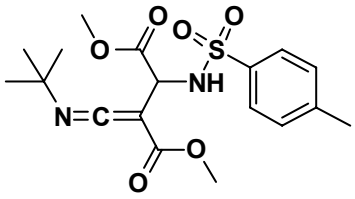
White crystals (0.37 g, 78%). mp 84-86 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3229, 2993, 2947, 2056, 1751, 1675. MS, m/z (%): 481 (M^++1, 1), 369 (2), 351(3), 323 (10), 247 (10), 213 (100), 155 (20), 107 (10), 91 (80), 57 (70). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.15 (9H, s, $C(CH_3)_3$), 1.15-1.20 (6H, m, $2OCH_2CH_3$), 1.47 (6H, s, $C(CH_3)_2$), 1.63 (2H, s, CH_2), 2.41 (3H, s, CH_3), 4.01-4.14 (4H, m, $2OCH_2CH_3$), 4.62 (1H, d, $^3J_{HH}$= 8.3 Hz, C*H*NH), 5.82 (1H, d, $^3J_{HH}$= 8.3 Hz, CHN*H*), 7.26 (2H, d, $^3J_{HH}$= 8.4 Hz, arom), 7.74 (2H, d, $^3J_{HH}$= 8.4 Hz, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 14.0, 14.3, 21.5, 31.1, 31.3, 31.4, 31.7, 53.7, 54.7, 60.3, 62.2, 63.5, 65.5, 127.2, 129.4, 137.5, 143.2, 165.1, 168.5, 169.5. Anal. Calcd for $C_{24}H_{36}N_2O_6S$: C, 59.98; H, 7.55; N, 5.83. Found: C, 59.73; H, 7.41; N, 5.88.



Diethyl 2-((2,6-dimethylphenylimino)methylene)-3-(phenylsulfonamido)succinate (4i): White crystals (0.35 g, 77%). mp 142-145 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3231, 2991, 2914, 2062, 1754, 1666. ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.13-1.20 (6H, m, 2OCH$_2$C*H*$_3$), 2.37 (6H, s, 2CH$_3$), 4.05-4.14 (4H, m, 2 O-CH$_2$CH$_3$), 4.82 (1H, d, $^3J_{HH}$= 8.1 Hz, C*H*NH), 6.04 (1H, d, $^3J_{HH}$= 8.1 Hz, CHN*H*), 7.05-7.86 (8H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 14.0, 14.4, 18.9, 54.3, 58.2, 60.5, 62.4, 127.0, 128.4, 128.5, 128.8, 132.1, 132.5, 134.0, 140.7, 163.5, 168.1, 169.2. Anal. Calcd for $C_{23}H_{26}N_2O_6S$: C, 60.25; H, 5.72; N, 6.11. Found: C, 60.23; H, 5.68; N, 6.11.

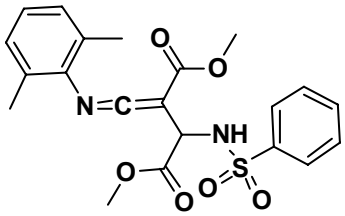


Dimethyl 2-(phenylsulfonamido)-3-((2,4,4-trimethylpentan-2-ylimino)methylene)succinate (4j); White crystals (0.32 g, 73%). mp 93-96 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3273, 2968, 2894, 2066, 1760, 1678. MS, m/z (%): 340 (M$^+$-98, 5), 295 (5), 254 (5), 199 (10), 155 (20), 124 (10), 95 (50), 57 (100). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.04 (9H, s, C(CH$_3$)$_3$), 1.15 (6H, s, C(CH$_3$)$_2$), 1.63 (2H, s, CH$_2$), 3.59 (3H, s, OCH$_3$), 3.65 (3H, s, OCH$_3$), 4.67 (1H, d, $^3J_{HH}$= 8.2 Hz, C*H*NH), 5.86 (1H, d, $^3J_{HH}$= 8.2 Hz, CHN*H*), 7.43-7.88 (5H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 31.1, 31.2, 31.4, 31.7, 51.4, 53.1, 53.6, 54.7, 62.9, 65.7, 127.1, 128.9, 132.6, 140.4, 163.8, 169.0, 169.9. Anal. Calcd for $C_{21}H_{30}N_2O_6S$: CC, 57.51; H, 6.90; N, 6.39. Found: C, 57.47; H, 6.79; N, 6.24.

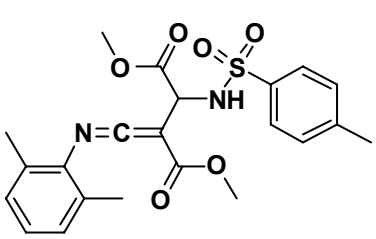


Dimethyl 2-((tert-butylimino)methylene)-3-(4-methylphenylsulfonamido)succinate (4k): White crystals (0.32 g, yield 82%). mp 125-128 ºC. IR (KBr) (ν_{max}/cm^{-1}): 2947, 1749, 1683, 1635. ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.34 (9H, s, C(CH$_3$)$_3$), 2.42 (3H, s, CH$_3$), 3.63 (6H, bs, 2O-CH$_3$), 4.65 (1H, d, $^3J_{HH}$= 8.1 Hz, C*H*NH), 5.78 (1H, d, $^3J_{HH}$= 8.1 Hz, CHN*H*), 7.28 (2H, d, $^3J_{HH}$= 7.7 Hz, arom), 7.74 (2H, d, $^3J_{HH}$= 7.7 Hz, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 21.5,

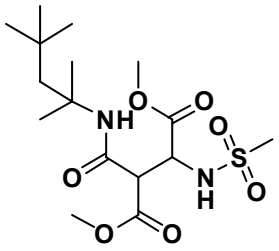
30.3, 51.6, 53.1, 53.6, 62.9, 63.8, 127.2, 129.5, 137.3, 143.4, 165.9, 168.8, 170.0. Anal. Calcd for $C_{18}H_{24}N_2O_6S$: C, 54.53; H, 6.10; N, 7.07. Found: C, 54.44; H, 6.16; N, 7.00.



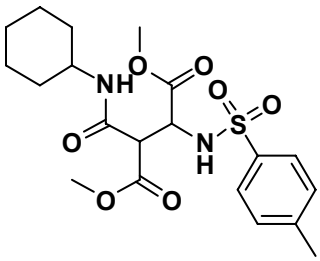
Dimethyl 2-((2,6-dimethylphenylimino)methylene)-3-(phenylsulfonamido)succinate (4l): White crystals (0.33 g, 76%). mp 165-167 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3119, 2952, 2921, 2078, 1750, 1662. MS, m/z (%): 430 (M^+, 5), 371 (20), 339 (5), 289 (10), 274 (5), 198 (5), 170 (20), 141 (30), 103 (10), 77 (100). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 2.38 (6H, s, 2CH_3), 3.62 (3H, s, O-CH_3), 3.68 (3H, s, O-CH_3), 4.85 (1H, d, $^3J_{HH}$= 8.2 Hz, C*H*NH), 5.98 (1H, d, $^3J_{HH}$= 8.2 Hz, CHN*H*), 7.11-7.88 (8H, m, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 18.9, 51.6, 53.2, 54.1, 57.8, 127.1, 128.6, 128.8, 128.9, 131.7, 132.6, 134.7, 140.6, 163.4, 168.7, 169.8. Anal. Calcd for $C_{21}H_{22}N_2O_6S$: C, 58.59; H, 5.15; N, 6.51. Found: C, 58.46; H, 5.16; N, 6.57.



Dimethyl 2-((2,6-dimethylphenylimino)methylene)-3-(4-methylphenylsulfonamido)succinate (4m): White crystals (0.34 g, 76%). mp 166-169 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3212, 2952, 2842, 2068, 1764, 1675. MS, m/z (%): 444 (M^+, 5), 630 (5), 385 (50), 274 (20), 171 (20), 155 (40), 91 (100), 65 (50). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 2.37 (6H, s, 2CH_3), 2.40 (3H, s, CH_3), 3.63 (3H, s, O-CH_3), 3.68 (3H, s, O-CH_3), 4.83 (1H, d, $^3J_{HH}$= 8.2 Hz, C*H*NH), 5.93 (1H, d, $^3J_{HH}$= 8.2 Hz, CHN*H*), 7.11-7.19 (3H, m, arom), 7.23 (2H, d, $^3J_{HH}$= 8.1 Hz, arom), 7.72 (2H, d, $^3J_{HH}$= 8.1 Hz, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 18.9, 21.5, 51.5, 53.1, 54.1, 57.8, 127.1, 128.5, 128.7, 129.4, 131.8, 134.4, 137.6, 143.3, 162.7, 168.6, 169.8. Anal. Calcd for $C_{22}H_{24}N_2O_6S$: C, 59.45; H, 5.44; N, 6.30. Found: C, 59.54; H, 5.32; N, 6.27.

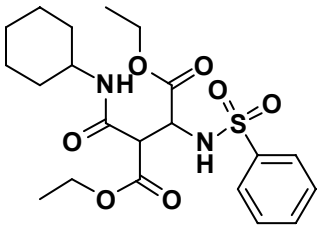


Typical procedure for preparation of Dimethyl 2-(methylsulfonamido)-3-(2,4,4-trimethylpentan-2-ylcarbamoyl)succinate (7g): To a magnetically stirred solution of methanesulfonamide (0.09 g, 1.0 mmol) and dimethyl acetylenedicarboxylate (0.14 g, 1.0 mmol) in H_2O (10 mL) was added, 1,1,3,3-tetramethyl-butyl (0.14 g, 1.0 mmol) at room temperature. The mixture was finally stirred for 3h in H_2O at room temperature and kept 12h at 80 ºC. After completion of the reaction, as indicated by TLC (ethyl acetate/n-hexane, 1:1), the precipitate was washed with ethyl acetate/n-hexane, (1:3) and the product **7g** was obtained as a white crystals (0.31 g, 80%). mp 126-129 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3358, 3178, 2957, 2916, 1735, 1654. ^{1}H NMR (300 MHz, DMSO-*d*$_6$): δ_H (ppm) 0.92 (9H, s, $C(CH_3)_3$), 1.27 (6H, s, $C(CH_3)_2$), 1.56 (1H, AB-q, $^2J_{HH}$=14.5 Hz, CH_AH_B), 1.77 (1H, AB-q, $^2J_{HH}$=14.5 Hz, CH_AH_B), 2.91 (S-CH_3), 3.60 (3H, s, OCH_3), 3.63 (3H, s, OCH_3), 3.84 (1H, d, $^3J_{HH}$= 8.2 Hz, CH), 4.50 (1H, dd, $^3J_{HH}$= 9.5 and 8.2 Hz, C*H*NH), 7.47 (1H, d, $^3J_{HH}$= 9.5 Hz, CH-N*H*), 7.74 (1H, s, CONH). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 29.2, 29.4, 31.5, 31.6, 42.1, 50.6, 52.5, 52.8, 54.6, 55.0, 55.4, 164.6, 168.6, 171.0. Anal. Calcd for $C_{16}H_{30}N_2O_7S$: C, 48.71; H, 7.67; N, 7.10. Found: C, 48.65; H, 7.74; N, 7.11.

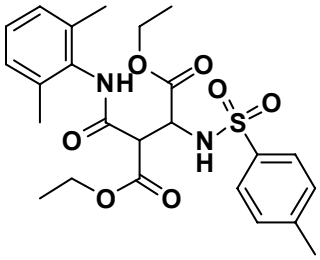


Dimethyl 2-(cyclohexylcarbamoyl)-3-(4-methylphenylsulfonamido)succinate (7a): White crystals (0.33 g, yield 75%). mp 152-155 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3354, 3171, 2947, 2828, 1730, 1651, 1608. MS, *m/z* (%): 421 (M^++1, 10), 359 (5), 282 (5), 256 (10), 224 (10), 199 (10), 171 (20), 155 (25), 128 (20), 91 (10), 70 (60). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.10-1.66 (10H, m, 5CH_2 of cyclohexyl), 2.35 (3H, s, CH_3), 3.21 (3H, s, O-CH_3), 3.36 (1H, m, C*H*NH), 3.54 (3H, s, O-CH_3), 3.72 (1H, d, $^3J_{HH}$= 9.7 Hz, CH), 4.42 (1H, dd, $^3J_{HH}$= 9.6 and 9.5 Hz, C*H*NH), 7.33 (2H, d, $^3J_{HH}$= 7.6 Hz, arom), 7.61 (2H, d, $^3J_{HH}$= 7.6 Hz, arom), 7.99 (1H, d, $^3J_{HH}$= 7.5 Hz, CONH), 8.12 (1H, d, $^3J_{HH}$= 9.6 Hz, $NHSO_2$). (^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 21.4, 24.8, 25.6, 32.1, 48.5, 52.2, 52.7, 54.2, 55.1, 126.9, 129.6,

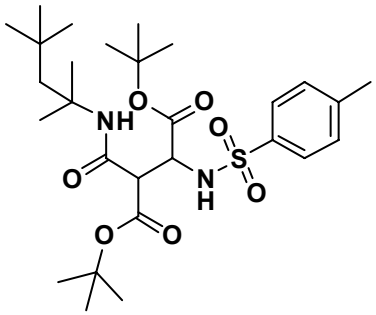
139.1, 142.9, 164.0, 168.4, 170.2. Anal. Calcd for $C_{20}H_{28}N_2O_7S$: C, 54.53; H, 6.41; N, 6.36. Found: C, 54.41; H, 6.40; N, 6.19.



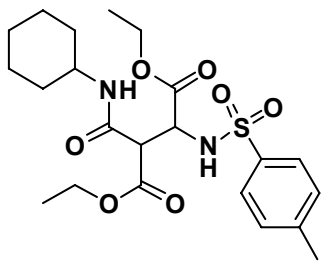
Diethyl 2-(cyclohexylcarbamoyl)-3-(phenylsulfonamido)succinate (7b): White crystals (0.35 g, 78%). mp 152-155 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3452, 3248, 2937, 2855, 1739, 1654, 1552. ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.06-1.88 (16H, m, $5CH_2$ of cyclohexyl, $2OCH_2CH_3$), 3.70 (1H, bs, C*H*-NH), 3.97 (4H, bs, $2OCH_2CH_3$), 4.21 (1H, bs, CH), 4.74 (1H, bs, C*H*-NH), 5.92 (1H, bs, CH-N*H*), 7.08 (1H, bs, CH-N*H*), 7.51-7.88 (5H, m, aromatic). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 13.8, 13.9 ($2\ OCH_2CH_3$), 24.5, 24.6, 25.4, 32.6, 32.7, 48.6, 53.8, 55.6, 62.3, 62.5, 127.2, 128.9, 132.7, 140.2, 164.4, 168.8, 169.4. Anal. Calcd for $C_{21}H_{30}N_2O_7S$: C, 55.49; H, 6.65; N, 6.16. Found: C, 55.58; H, 6.81; N, 6.20.



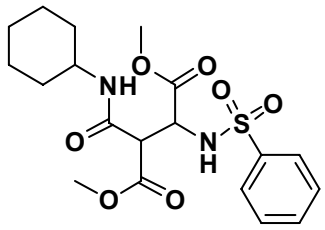
Diethyl 2-(2,6-dimethylphenylcarbamoyl)-3-(4-methylphenylsulfonamido)succinate (7c): White crystals (0.36 g, 73%). mp 162-164 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3454, 3253, 2931, 2858, 1732, 1661, 1578. MS, m/z (%): 444 (M^++1, 5), 342 (5), 320 (10), 296 (5), 244 (10), 200 (20), 171 (20), 155 (20), 121 (30),91 (100), 65 (50). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.03 (3H, bs, OCH_2CH_3), 1.30 (3H, bs, OCH_2CH_3), 2.17 (6H, s, $2CH_3$), 2.40 (3H, s, CH_3), 3.97 (3H, bs, O-CH_2CH_3 and CH), 4.27 (2H, bs, O-CH_2CH_3), 4.75 (1H, bs, C*H*-NH), 6.23 (1H, bs, CH-N*H*), 7.00-7.77 (7H, m, arom), 8.44 (1H, s, NHCO). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 13.6, 14.0, 18.4, 21.5, 54.7, 55.0, 62.3, 32.5, 127.3, 127.4, 128.0, 129.6, 133.3, 135.3, 136.9, 143.7, 164.5, 168.3, 169.4. Anal. Calcd for $C_{24}H_{30}N_2O_7S$: C, 58.76; H, 6.16; N, 5.71. Found: C, 58.82; H, 6.09; N, 5.69.



Di-tert-butyl 2-(4-methylphenylsulfonamido)-3-(2,4,4-trimethylpentan-2-ylcarbamoyl)succinate (7d): White crystals (0.47 g, 85%). mp 85-88 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3337, 3238, 2974, 2859, 1732, 1694, 1552. MS, m/z (%): 323 (M^+-231, 10), 267 (10), 223 (5), 198 (5), 155 (20), 112 (30), 91 (60), 57 (100). ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.00 (9H, s, $C(CH_3)_3$), 1.31 (18H, bs, $2OC(CH_3)_3$), 1.40 (6H, s, $C(CH_3)_2$), 1.57 (2H, s, CH_2), 2.35 (3H, s, CH_3), 4.42 (1H, d, $^3J_{HH}$= 6.7 Hz, CH), 5.24 (1H, bs, C*H*NH), 5.76 (1H, d, , $^3J_{HH}$= 6.7 Hz, CH-N*H*), 7.21(2H, d, $^3J_{HH}$= 7.5 Hz, arom), 7.68 (2H, d, $^3J_{HH}$= 7.5 Hz, arom), 7.77 (1H, bs, NHCO). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 21.4, 27.7, 28.3, 31.2, 31.3, 31.7, 54.1, 54.5, 65.1, 65.3, 80.4, 82.5, 127.1, 129.4, 137.8, 143.0, 167.6, 167.7, 168.3. Anal. Calcd for $C_{28}H_{46}N_2O_7S$: C, 60.62; H, 8.36; N, 5.05. Found: C, 60.56; H, 8.34; N, 5.09.

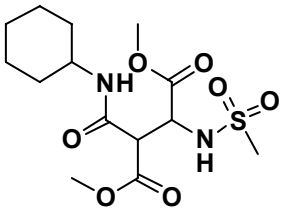


Diethyl 2-(cyclohexylcarbamoyl)-3-(4-methylphenylsulfonamido)succinate (7e): White crystals (0.38 g, 81%). mp 141-143 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3282, 2934, 2850, 1735, 1646, 1561, 1445. ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.05-1.88 (16H, m, $5CH_2$ of cyclohexyl, $2OCH_2CH_3$), 2.41 (3H, s, CH_3), 3.74 (1H, bs, CH), 3.95-4.22 (5H, m, OCH_2CH_3 and CH), 4.72 (1H, d, $^3J_{HH}$=8.4, C*H*NH), 5.79 (1H, d, $^3J_{HH}$=8.4, CHN*H*), 7.2 (1H, bs, CHN*H*), 7.28 (2H, d, $^3J_{HH}$=7.0, H-Ar),), 7.2874 (2H, d, $^3J_{HH}$=7.0, H-Ar). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 13.7, 13.9, 21.5, 24.5, 25.4, 32.7, 48.6, 53.8, 55.5, 62.3, 62.4, 127.3, 129.5, 137.1, 143.5, 164.4, 168.9, 169.4. Anal. Calcd for $C_{22}H_{32}N_2O_7S$: C, 56.39; H, 6.88; N, 5.98. Found: C, 56.42; H, 6.73; N, 6.04.

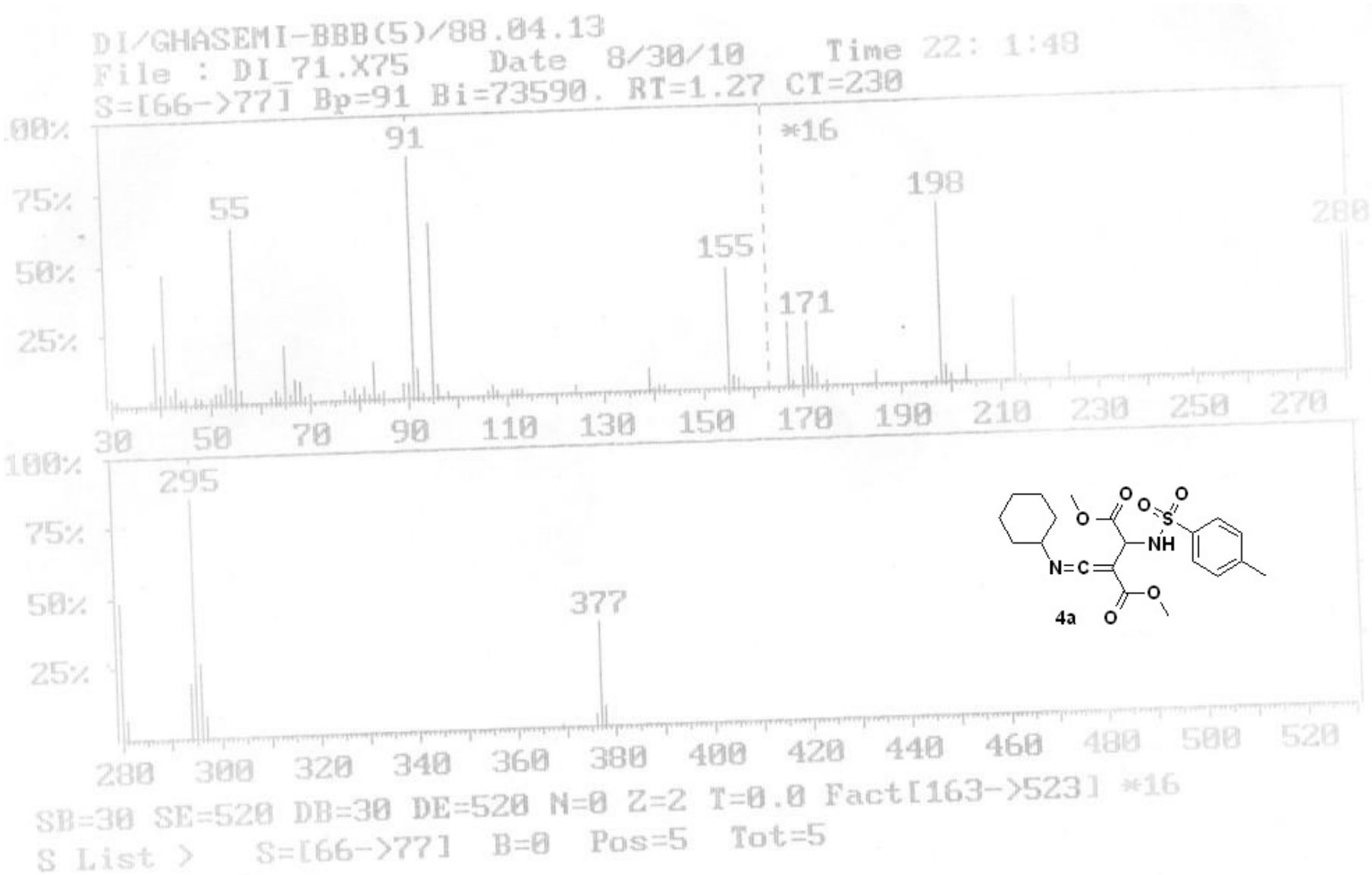


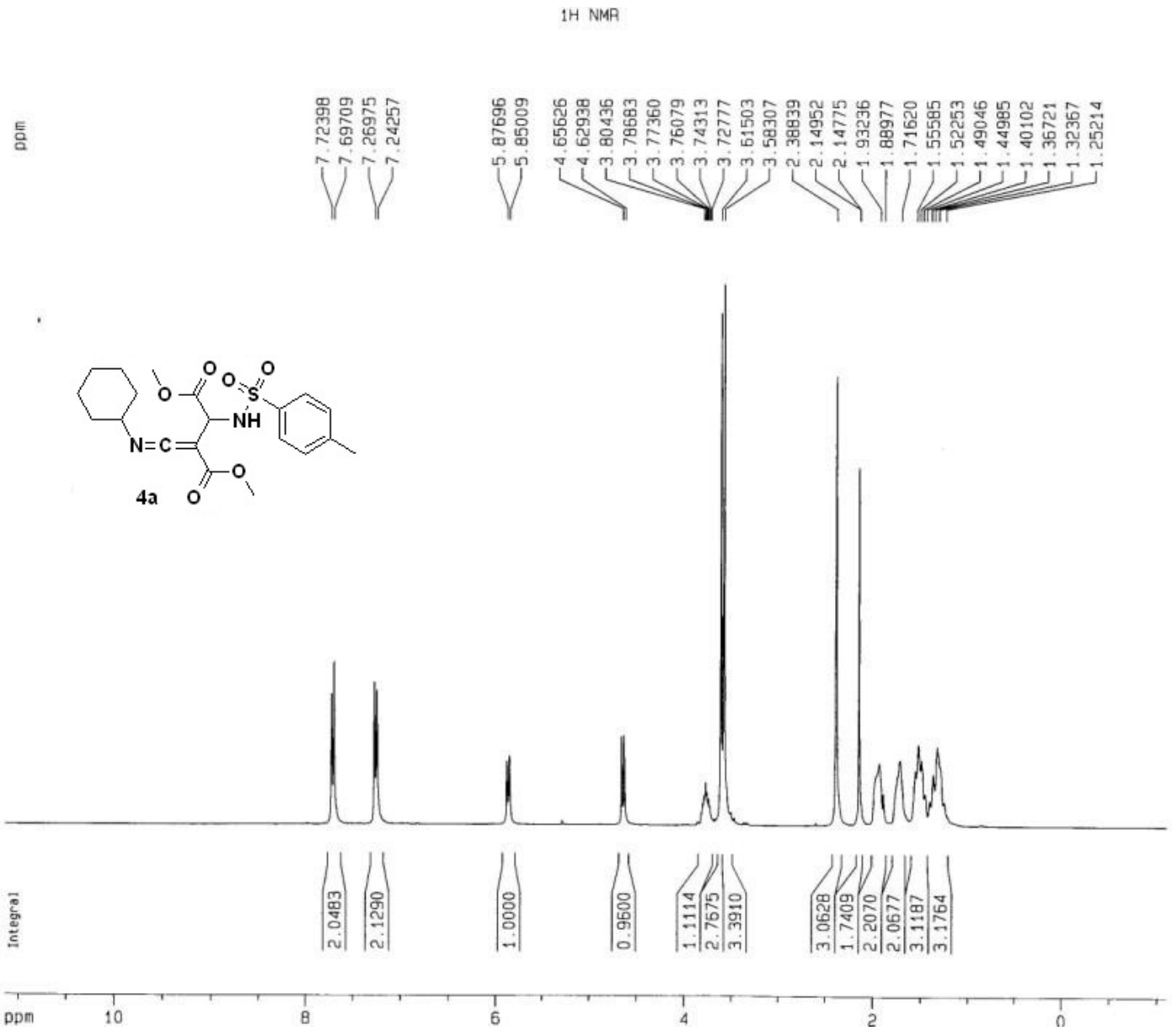
Dimethyl 2-(cyclohexylcarbamoyl)-3-(phenylsulfonamido)succinate (7f): White crystals (0.31 g, yield 74%). mp 138-140 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3316, 3255, 2934, 2863, 1740, 1650, 1545, 1450. ^{1}H NMR (300 MHz,

$CDCl_3$): δ_H (ppm) 1.20-1.87 (10H, m, $5CH_2$ of cyclohexyl), 3.50 (3H, s, O-CH_3), 3.70 (3H, s, O-CH_3), 3.76 (1H, bs, C*H*NH), 4.73 (1H, bs, CH), 5.95 (1H, bs, C*H*NH), 7.41(1H, bs, CHN*H*), 7.52-7.87 (5H, m, arom). (^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 24.5, 25.4, 32.5, 48.8, 53.0,53.5, 54.1, 55.1, 55.6, 127.2, 128.9, 129.1, 132.7, 164.5, 168.8, 169.9. Anal. Calcd for $C_{19}H_{26}N_2O_7S$: C, 53.51; H, 6.14; N, 6.57. Found: C, 53.57; H, 6.16; N, 6.38.

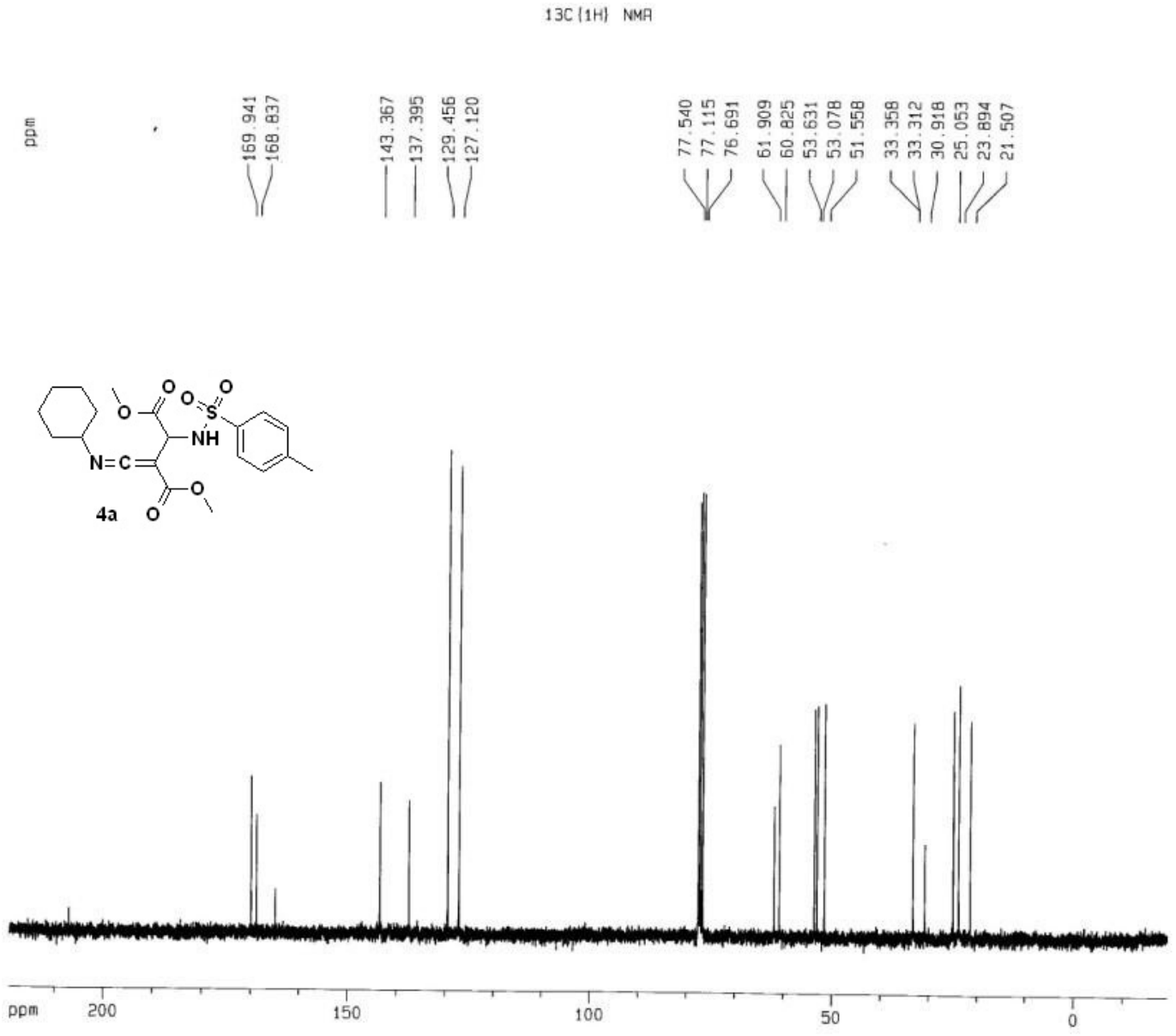


Dimethyl 2-(cyclohexylcarbamoyl)-3-(methylsulfonamido)succinate (7h): White crystals (0.25 g, yield 70%). mp 132-135 ºC. IR (KBr) (ν_{max}/cm^{-1}): 3282, 2913, 2847, 1733, 1646, 1264. ^{1}H NMR (300 MHz, $CDCl_3$): δ_H (ppm) 1.26-1.66-2.03 (10H, m, $5CH_2$ of cyclohexyl), 3.06 (3H, s, CO_2CH_3), 3.42(3H, s, CO_2CH_3), 3.72 (3H, s, CH_3), 3.80 (1H, bs, C*H*NH), 4.80 (1H, d, $^3J_{HH}$= 8.3 Hz, CH), 5.88 (1H, bs, C*H*NH), 6.94 (1H, d, $^3J_{HH}$= 7.5 Hz, arom). ^{13}C NMR (75 MHz, $CDCl_3$): δ_C (ppm) 23.9, 25.1, 33.4, 42.0, 48.8, 51.8, 53.1, 53.5, 54.1, 164.7, 168.9, 170.5. Anal. Calcd for $C_{14}H_{24}N_2O_7S$: C, 46.14; H, 6.64; N, 7.69. Found: C, 46.23; H, 6.60; N, 7.83.

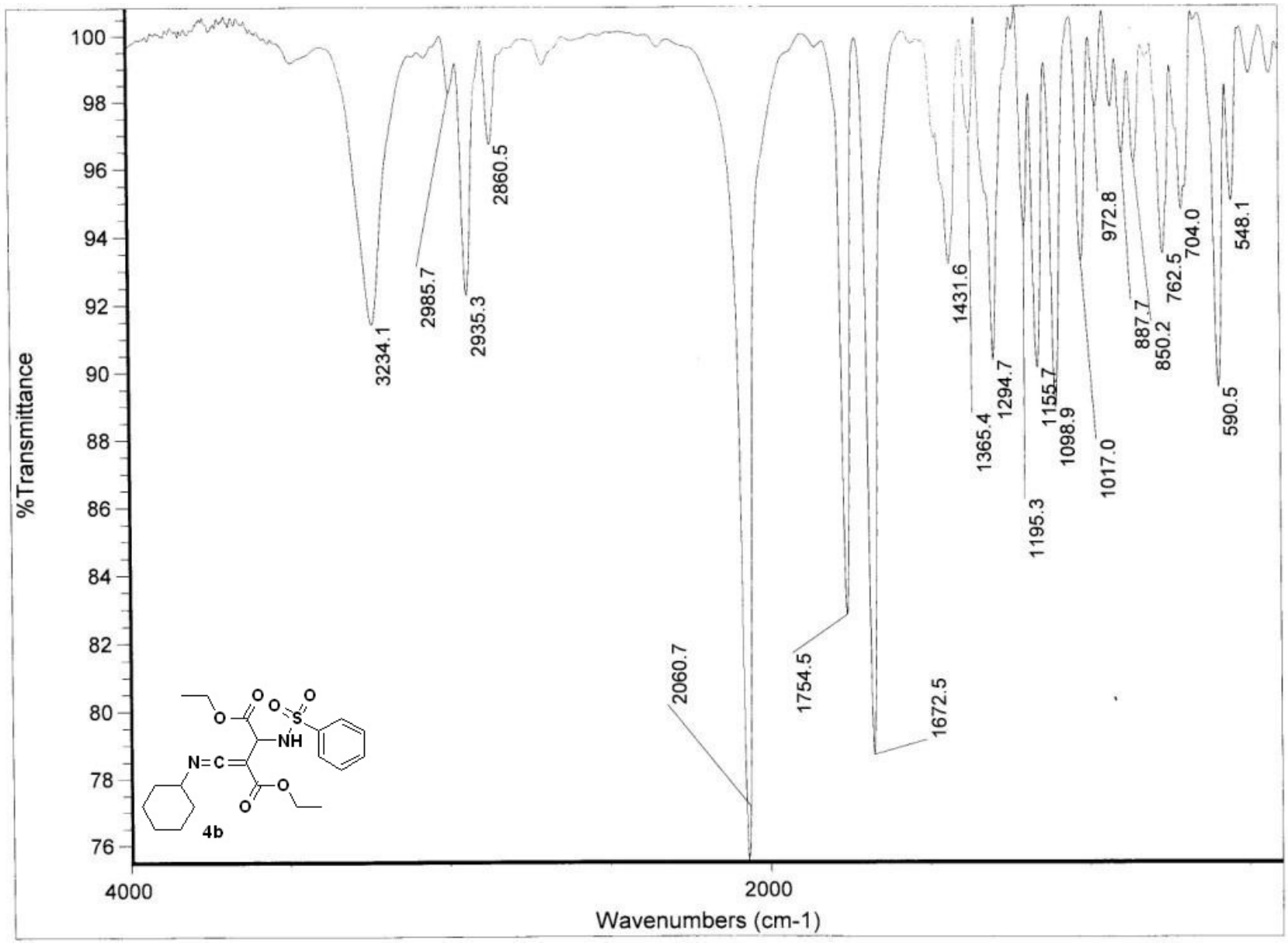

DI/GHASEMI-BBB(5)/88.04.13
File : DI_71.X75 Date 8/30/10 Time 22: 1:48
S=[66->77] Bp=91 Bi=73590. RT=1.27 CT=230
91
*16
198
55
155
171
295
377
4a
SB=30 SE=520 DB=30 DE=520 N=0 Z=2 T=0.0 Fact[163->523] *16
S List > S=[66->77] B=0 Pos=5 Tot=5

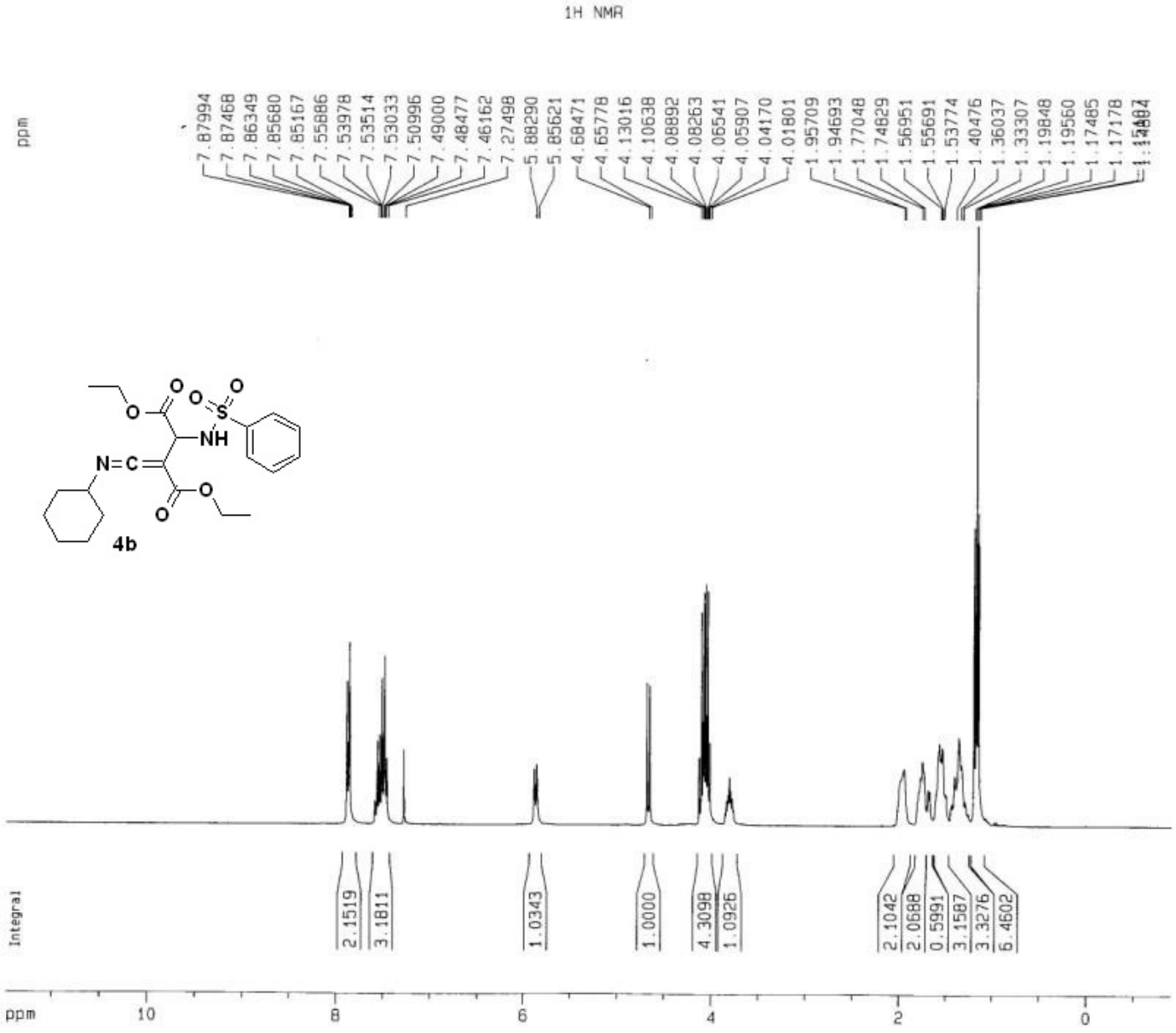



```
Current Data Parameters
NAME      Heidari-marjan
EXPNO                 78
PROCNO                 1

F2 - Acquisition Parameters
Date_           20080901
Time               11.11
INSTRUM            spect
PROBHD   5 mm BBO BB-1H
PULPROG             zg30
TD                 32768
SOLVENT            CDCl3
NS                    10
DS                     0
SWH           7812.500 Hz
FIDRES        0.238419 Hz
AQ            2.0972021 sec
RG                 228.1
DW               64.000 usec
DE                6.00 usec
TE                380.0 K
D1           2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                 15.50 usec
PL1                -2.00 dB
SFO1         300.1323986 MHz

F2 - Processing parameters
SI                 65536
SF          300.1300000 MHz
WDW                   EM
SSB                    0
LB                  0.30 Hz
GB                     0
PC                  1.00

1D NMR plot parameters
CX                 20.00 cm
CY                  9.40 cm
F1P                11.145 ppm
F1               3344.97 Hz
F2P                -1.099 ppm
F2               -329.72 Hz
PPMCM             0.61218 ppm/cm
HZCM            183.73470 Hz/cm
```

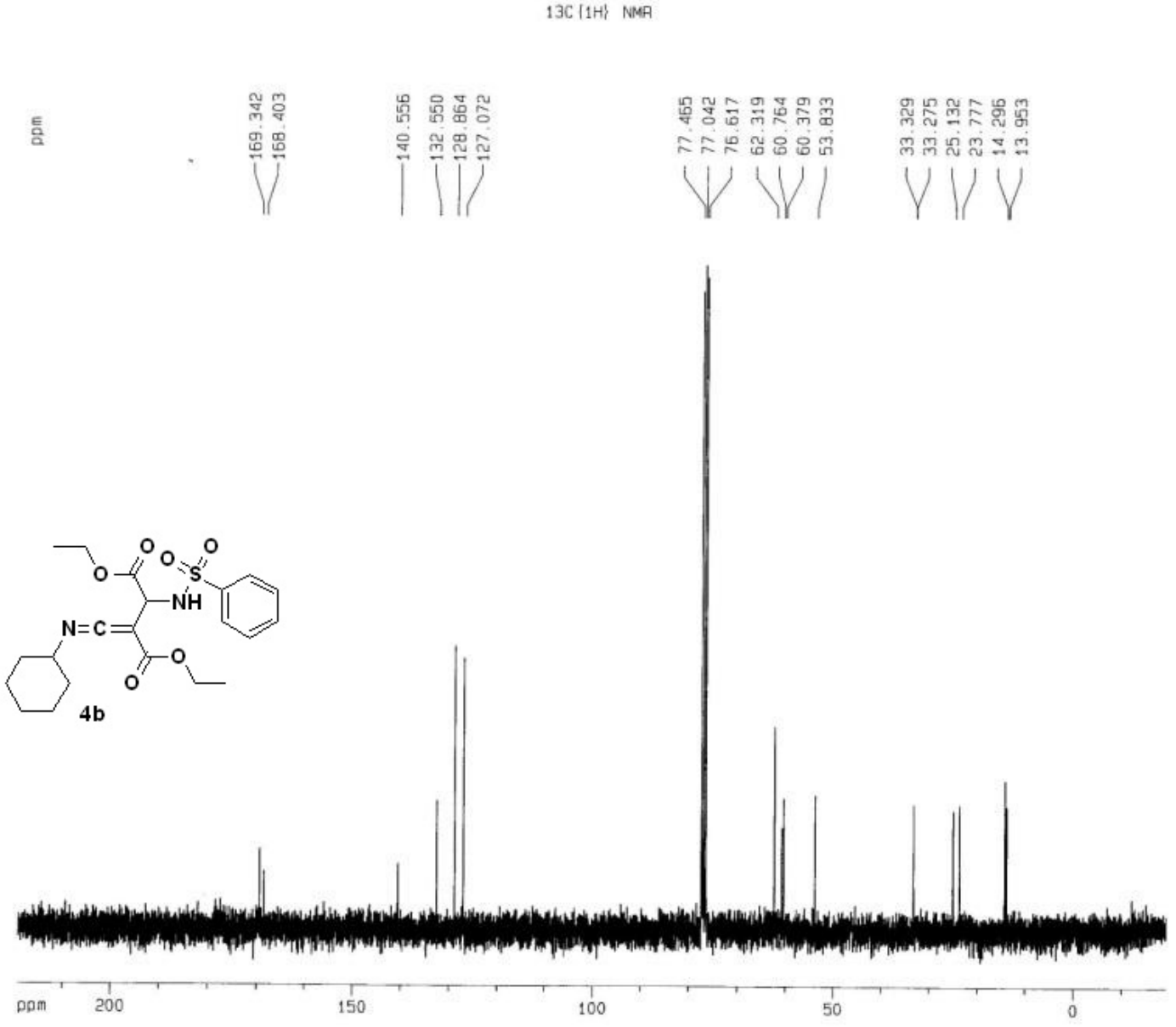



```
Current Data Parameters
NAME      Heidari-marjan
EXPNO              79
PROCNO             1

F2 - Acquisition Parameters
Date_          20080901
Time             11.16
INSTRUM          spect
PROBHD   5 mm BBO BB-1H
PULPROG         zgpg30
TD              65536
SOLVENT          CDCl3
NS                167
DS                  1
SWH         17985.611 Hz
FIDRES      0.274439 Hz
AQ          1.8219508 sec
RG               2048
DW            27.800 usec
DE             6.00 usec
TE            300.0 K
D1         2.00000000 sec
d11        0.03000000 sec
d12        0.00002000 sec

======== CHANNEL f1 ========
NUC1              13C
P1             8.75 usec
PL1           -2.00 dB
SFO1       75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2        waltz16
NUC2              1H
PCPD2         87.00 usec
PL2           -2.00 dB
PL12          12.00 dB
PL13          18.00 dB
SFO2      300.1312005 MHz

F2 - Processing parameters
SI              65536
SF         75.4677490 MHz
WDW               EM
SSB               0
LB             1.00 Hz
GB                0
PC             1.40

1D NMR plot parameters
CX            20.00 cm
CY             8.46 cm
F1P          219.155 ppm
F1          16539.10 Hz
F2P          -19.167 ppm
F2          -1446.51 Hz
PPMCM        11.91609 ppm/cm
HZCM        899.28058 Hz/cm
```


%Transmittance
100
98
96
94
92
90
88
86
84
82
80
78
76
4000
2000
Wavenumbers (cm-1)
3234.1
2985.7
2935.3
2860.5
2060.7
1754.5
1672.5
1431.6
1365.4
1294.7
1195.3
1155.7
1098.9
1017.0
972.8
887.7
850.2
762.5
704.0
590.5
548.1
NH
N=C
4b




```
Current Data Parameters
NAME                  Sarvari
EXPNO                     325
PROCNO                      1

F2 - Acquisition Parameters
Date_              20080924
Time                  10.11
INSTRUM               spect
PROBHD     5 mm BBO BB-1H
PULPROG               zg30
TD                    32768
SOLVENT               CDCl3
NS                       10
DS                        1
SWH                7812.500 Hz
FIDRES             0.238419 Hz
AQ                 2.0972021 sec
RG                    228.1
DW                   64.000 usec
DE                    6.00 usec
TE                   300.0 K
D1                 2.00000000 sec

======== CHANNEL f1 ========
NUC1                     1H
P1                    15.50 usec
PL1                   -2.00 dB
SFO1           300.1323986 MHz

F2 - Processing parameters
SI                    65536
SF             300.1300000 MHz
WDW                      EM
SSB                       0
LB                    0.30 Hz
GB                        0
PC                     1.00

1D NMR plot parameters
CX                   20.00 cm
CY                   10.41 cm
F1P                 11.481 ppm
F1                 3445.65 Hz
F2P                 -0.897 ppm
F2                 -269.31 Hz
PPMCM              0.61889 ppm/cm
HZCM             185.74823 Hz/cm
```



Current Data Parameters

NAME	Sarvari
EXPNO	326
PROCNO	1

F2 - Acquisition Parameters

Date_	20080924
Time	10.15
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	87
DS	1
SWH	17985.611 Hz
FIDRES	0.274439 Hz
AQ	1.8219508 sec
RG	2048
DW	27.800 usec
DE	6.00 usec
TE	300.0 K
D1	2.00000000 sec
d11	0.03000000 sec
d12	0.00002000 sec

-------- CHANNEL f1 --------

NUC1	13C
P1	8.75 usec
PL1	-2.00 dB
SFO1	75.4752953 MHz

-------- CHANNEL f2 --------

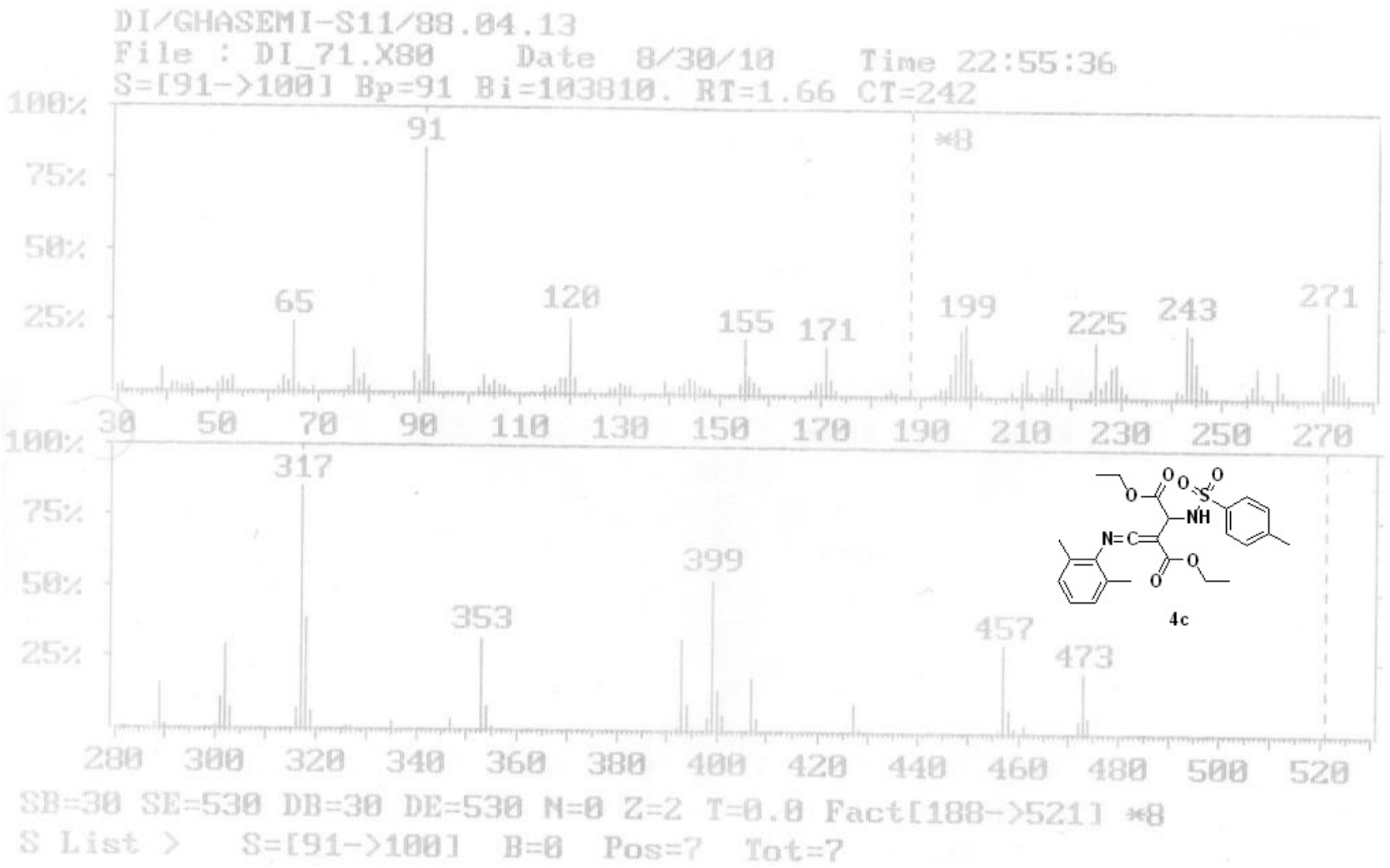
CPDPRG2	waltz16
NUC2	1H
PCPD2	87.00 usec
PL2	-2.00 dB
PL12	12.00 dB
PL13	18.00 dB
SFO2	300.1312005 MHz

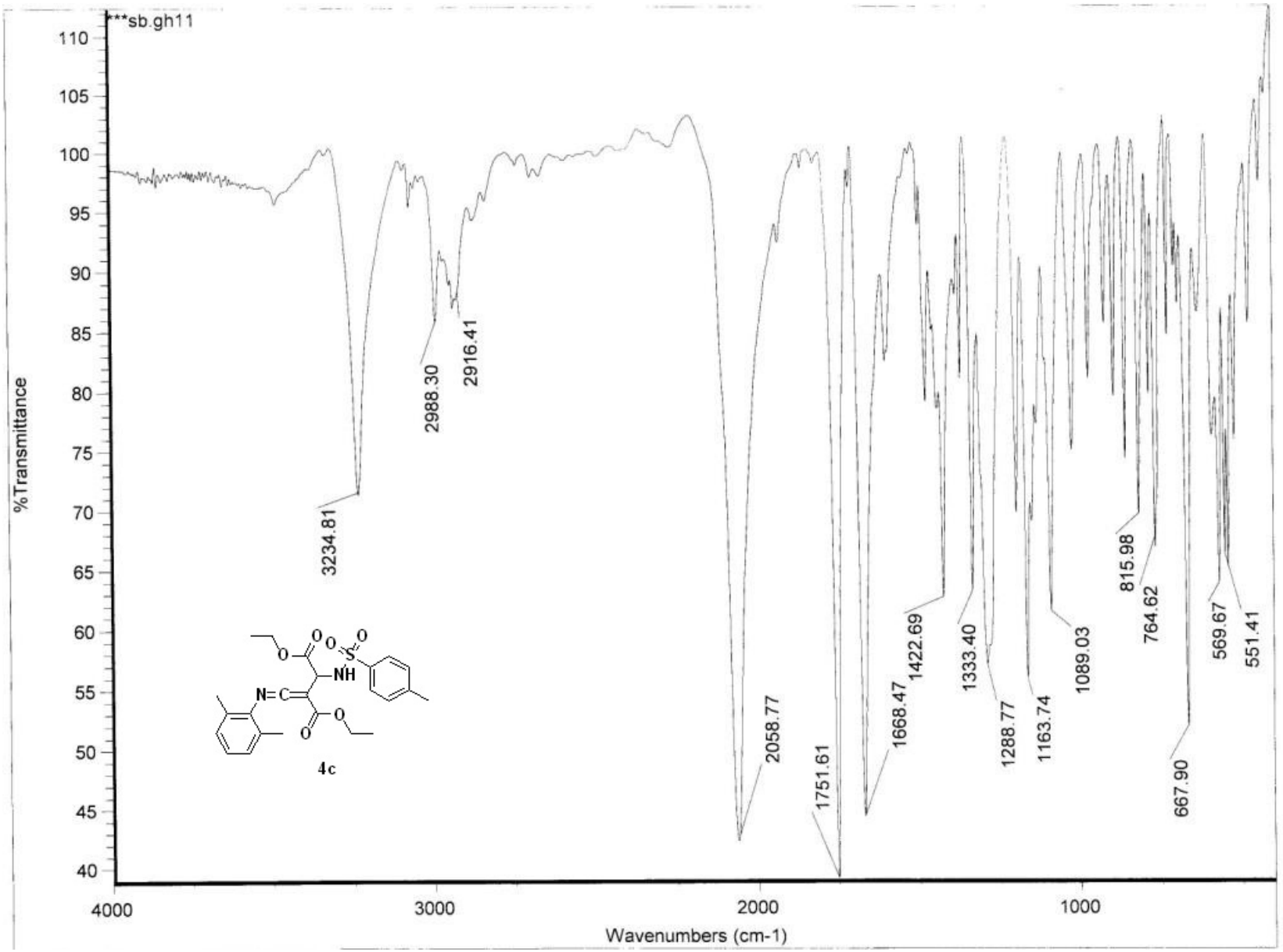
F2 - Processing parameters

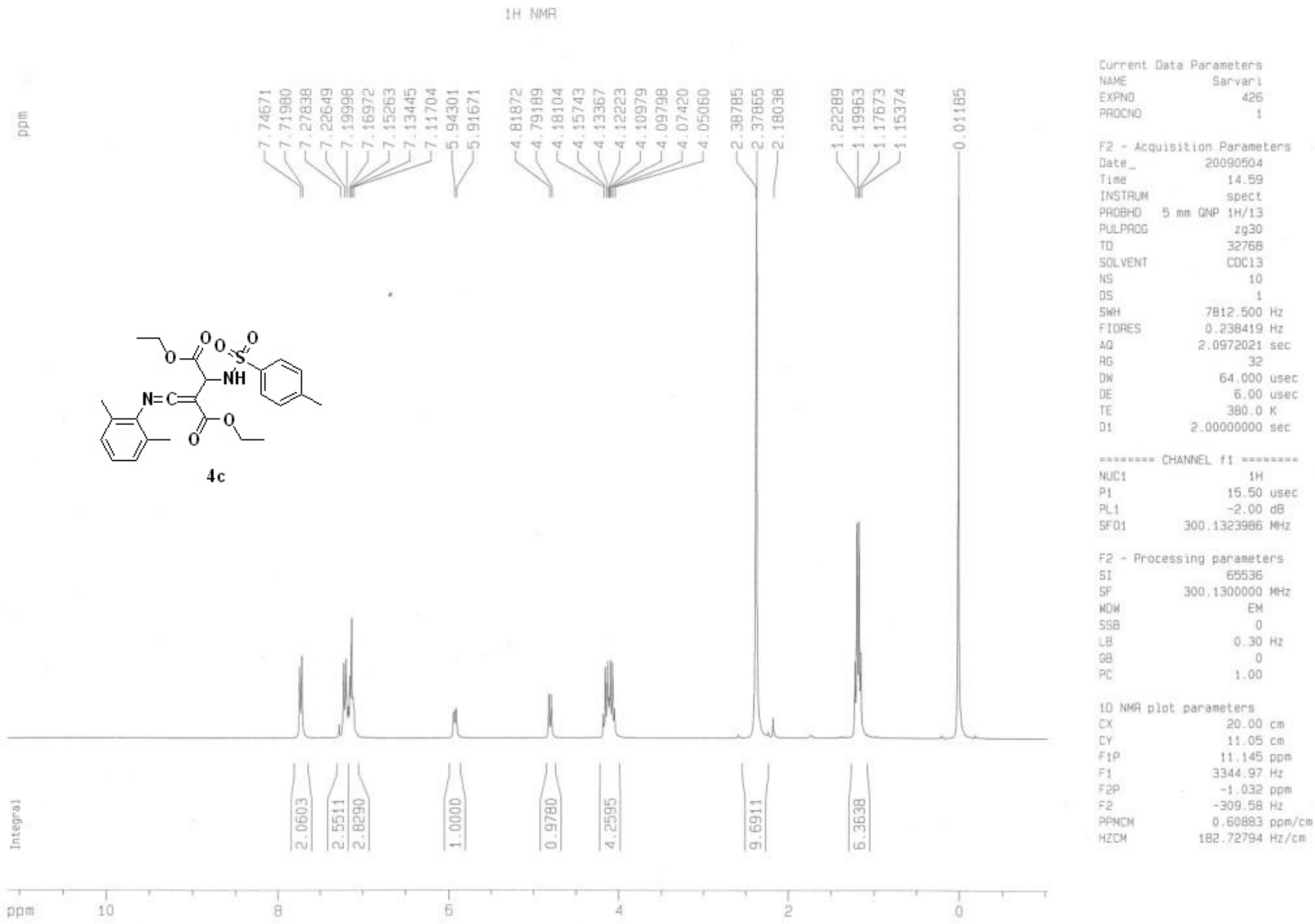
SI	65536
SF	75.4677490 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

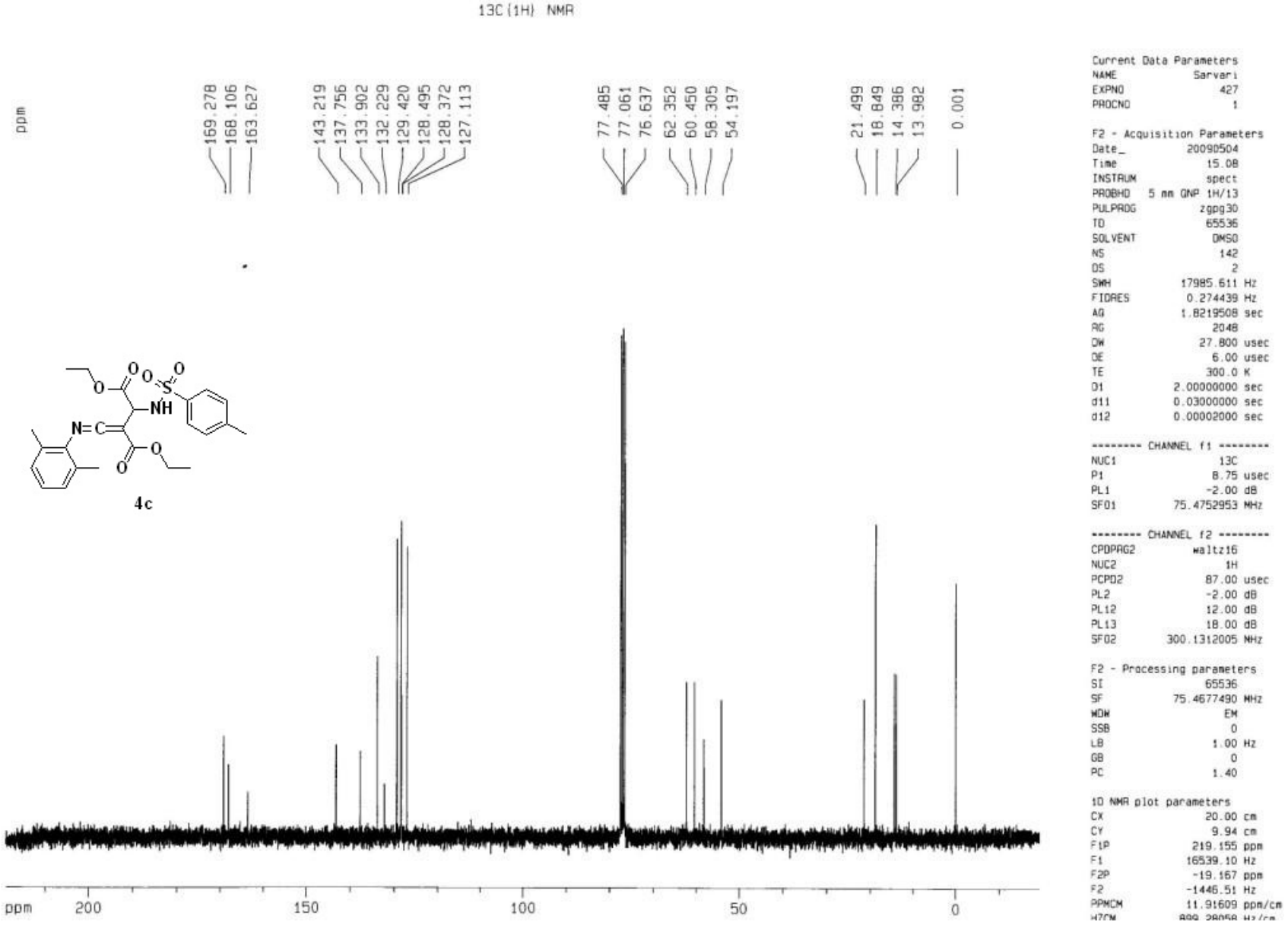
1D NMR plot parameters

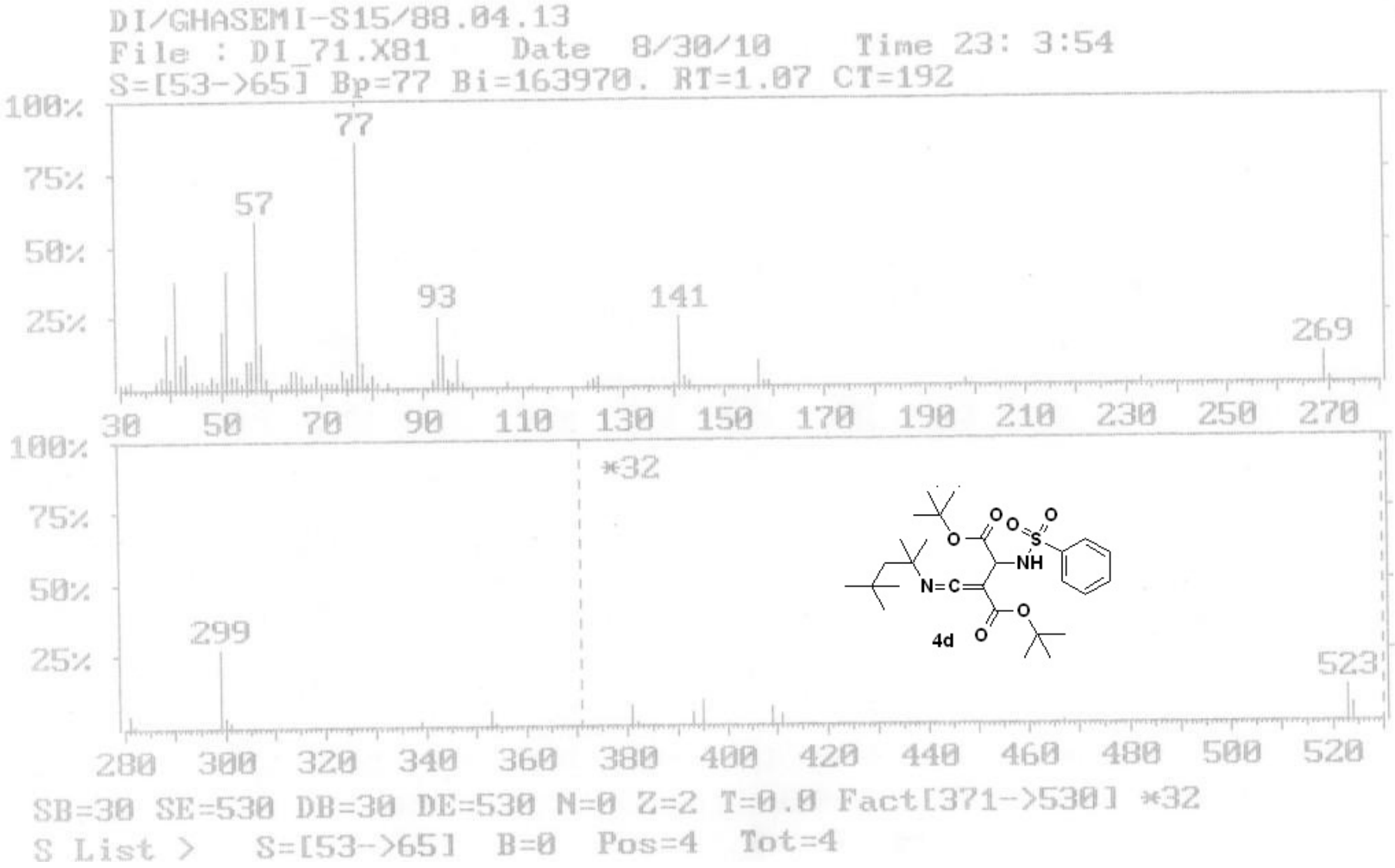
CX	20.00 cm
CY	11.77 cm
F1P	219.155 ppm
F1	16539.10 Hz
F2P	-19.167 ppm
F2	-1446.51 Hz
PPMCM	11.91609 ppm/cm
HZCM	899.28058 Hz/cm

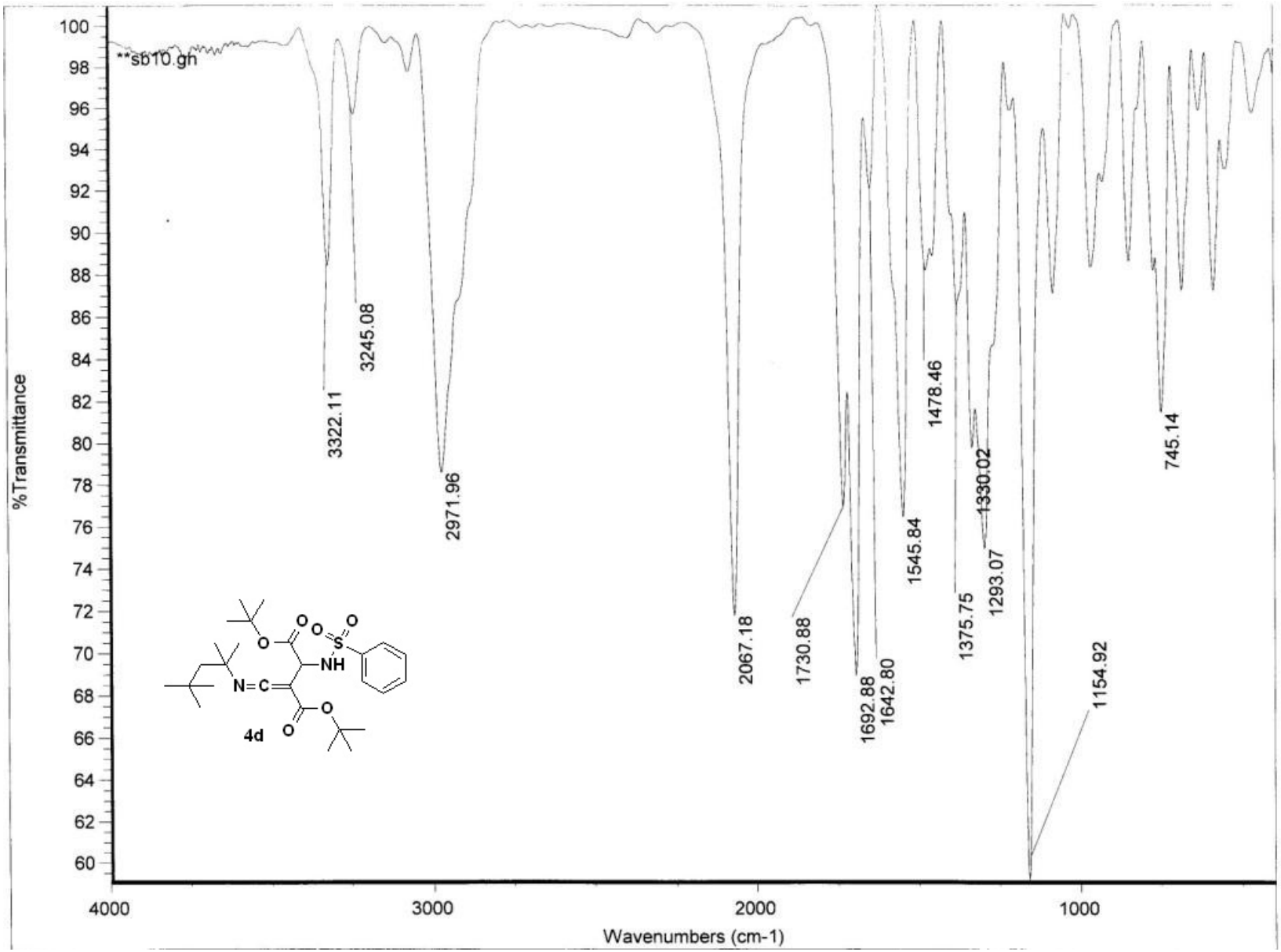

DI/GHASEMI-S11/88.04.13
File : DI_71.X80 Date 8/30/10 Time 22:55:36
S=[91->100] Bp=91 Bi=103810. RT=1.66 CT=242
100%
75%
50%
25%
91
*8
65
120
155
171
199
225
243
271
30 50 70 90 110 130 150 170 190 210 230 250 270
317
399
353
457
473
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=530 DB=30 DE=530 N=0 Z=2 T=0.0 Fact[188->521] *8
S List > S=[91->100] B=0 Pos=? Tot=?
NH
N=C
4c

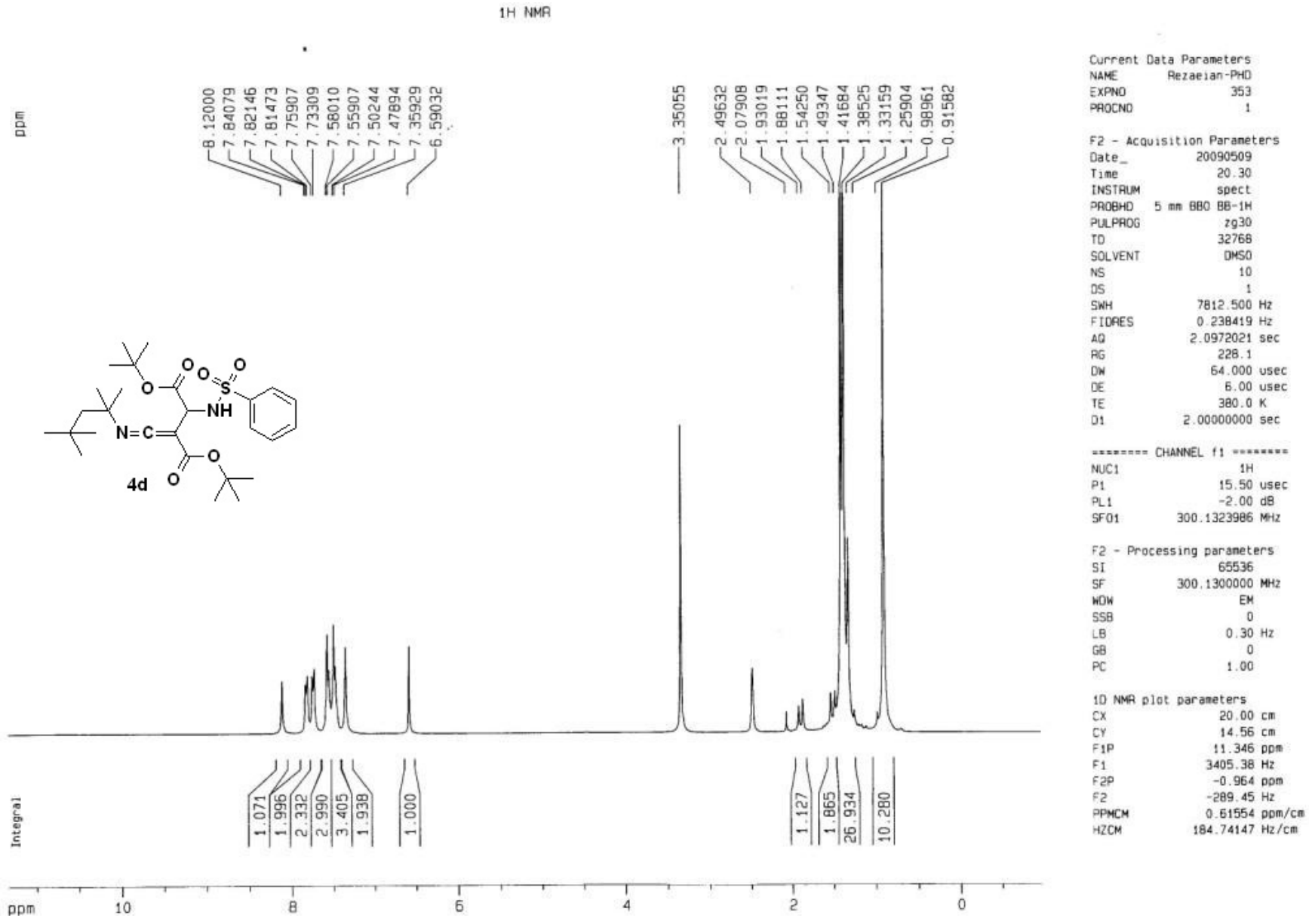

***sb.gh11
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
3234.81
2988.30
2916.41
2058.77
1751.61
1668.47
1422.69
1333.40
1288.77
1163.74
1089.03
815.98
764.62
667.90
569.67
551.41
NH
4c

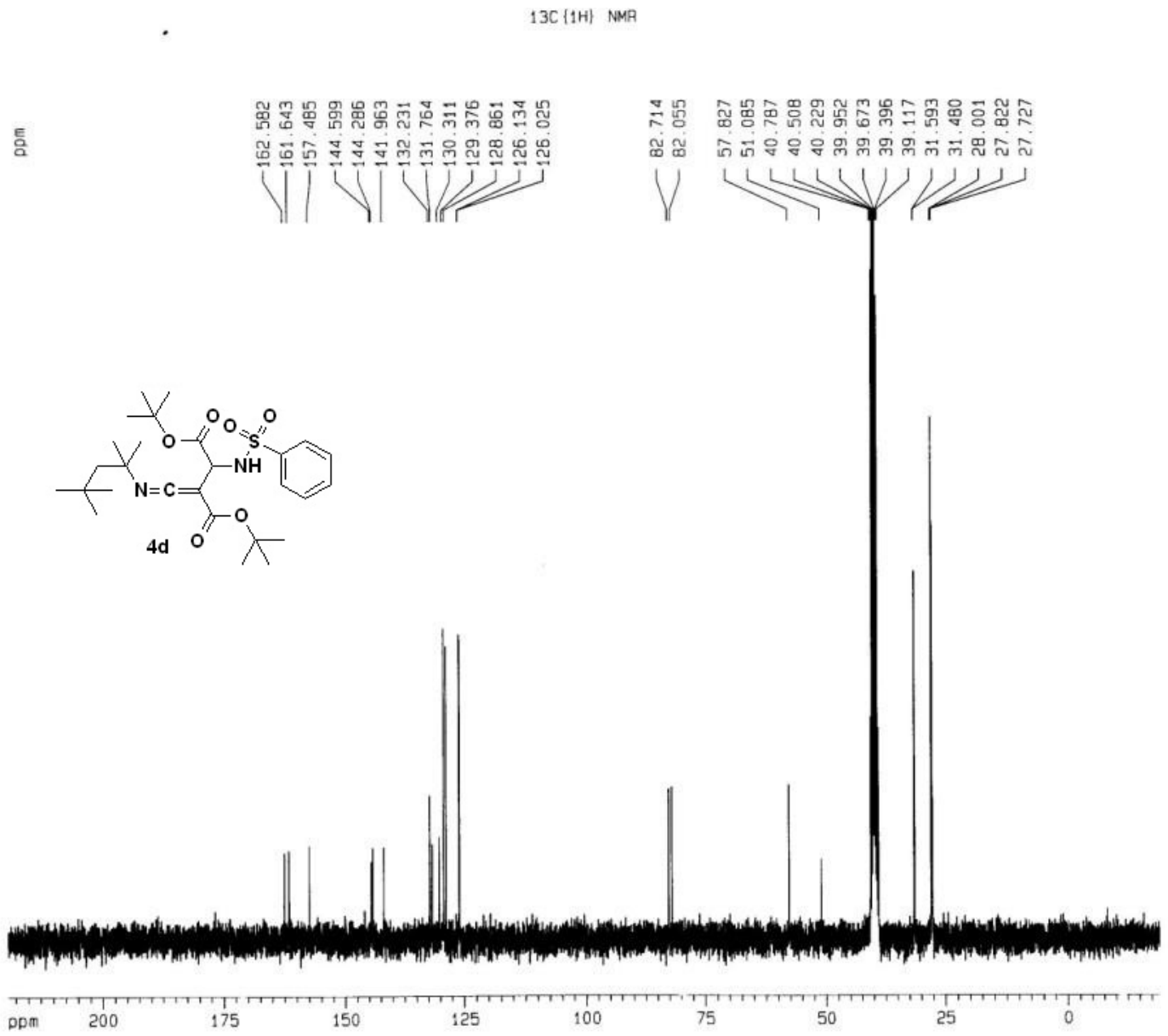

1H NMR
ppm
7.74671
7.71980
7.27838
7.22649
7.19998
7.16972
7.15263
7.13445
7.11704
5.94301
5.91671
4.81872
4.79189
4.18104
4.15743
4.13367
4.12223
4.10979
4.09798
4.07420
4.05060
2.38785
2.37865
2.18038
1.22289
1.19963
1.17673
1.15374
0.01185
Integral
2.0603
2.5511
2.8290
1.0000
0.9780
4.2595
9.6911
6.3638
ppm
10
8
6
4
2
0
4c
Current Data Parameters
NAME Sarvari
EXPNO 426
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090504
Time 14.59
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 32
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz
F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 11.05 cm
F1P 11.145 ppm
F1 3344.97 Hz
F2P -1.032 ppm
F2 -309.58 Hz
PPMCM 0.60883 ppm/cm
HZCM 182.72794 Hz/cm


13C{1H} NMR
ppm
169.278
168.106
163.627
143.219
137.756
133.902
132.229
129.420
128.495
128.372
127.113
77.485
77.061
76.637
62.352
60.450
58.305
54.197
21.499
18.849
14.386
13.982
0.001
4c
ppm
200
150
100
50
0
Current Data Parameters
NAME Sarvari
EXPNO 427
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090504
Time 15.08
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 142
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec
CHANNEL f1
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SF01 75.4752953 MHz
CHANNEL f2
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SF02 300.1312005 MHz
F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
1D NMR plot parameters
CX 20.00 cm
CY 9.94 cm
F1P 219.155 ppm
F1 16539.10 Hz
F2P -19.167 ppm
F2 -1446.51 Hz
PPMCM 11.91609 ppm/cm


DI/GHASEMI-S15/88.04.13
File : DI_71.X81 Date 8/30/10 Time 23: 3:54
S=[53->65] Bp=77 Bi=163970. RT=1.07 CT=192
100%
75%
50%
25%
77
57
93
141
269
30 50 70 90 110 130 150 170 190 210 230 250 270
*32
299
523
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=530 DB=30 DE=530 N=0 Z=2 T=0.0 Fact[371->530] *32
S List > S=[53->65] B=0 Pos=4 Tot=4
4d


**sb10.gh
%Transmittance
Wavenumbers (cm-1)
3322.11
3245.08
2971.96
2067.18
1730.88
1692.88
1642.80
1545.84
1478.46
1375.75
1330.02
1293.07
1154.92
745.14
4d


1H NMR
ppm
8.12000
7.84079
7.82146
7.81473
7.75907
7.73309
7.58010
7.55907
7.50244
7.47894
7.35929
6.59032
3.35055
2.49632
2.07908
1.93019
1.88111
1.54250
1.49347
1.41684
1.38525
1.33159
1.25904
0.98961
0.91582
4d
Integral
1.071
1.996
2.332
2.990
3.405
1.938
1.000
1.127
1.865
26.934
10.280
ppm
10
8
6
4
2
0
Current Data Parameters
NAME Rezaeian-PHD
EXPNO 353
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090509
Time 20.30
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT DMSO
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 228.1
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SF01 300.1323986 MHz
F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 14.56 cm
F1P 11.346 ppm
F1 3405.38 Hz
F2P -0.964 ppm
F2 -289.45 Hz
PPMCM 0.61554 ppm/cm
HZCM 184.74147 Hz/cm



Current Data Parameters
NAME Rezaeian-PHD
EXPNO 354
PROCNO 1

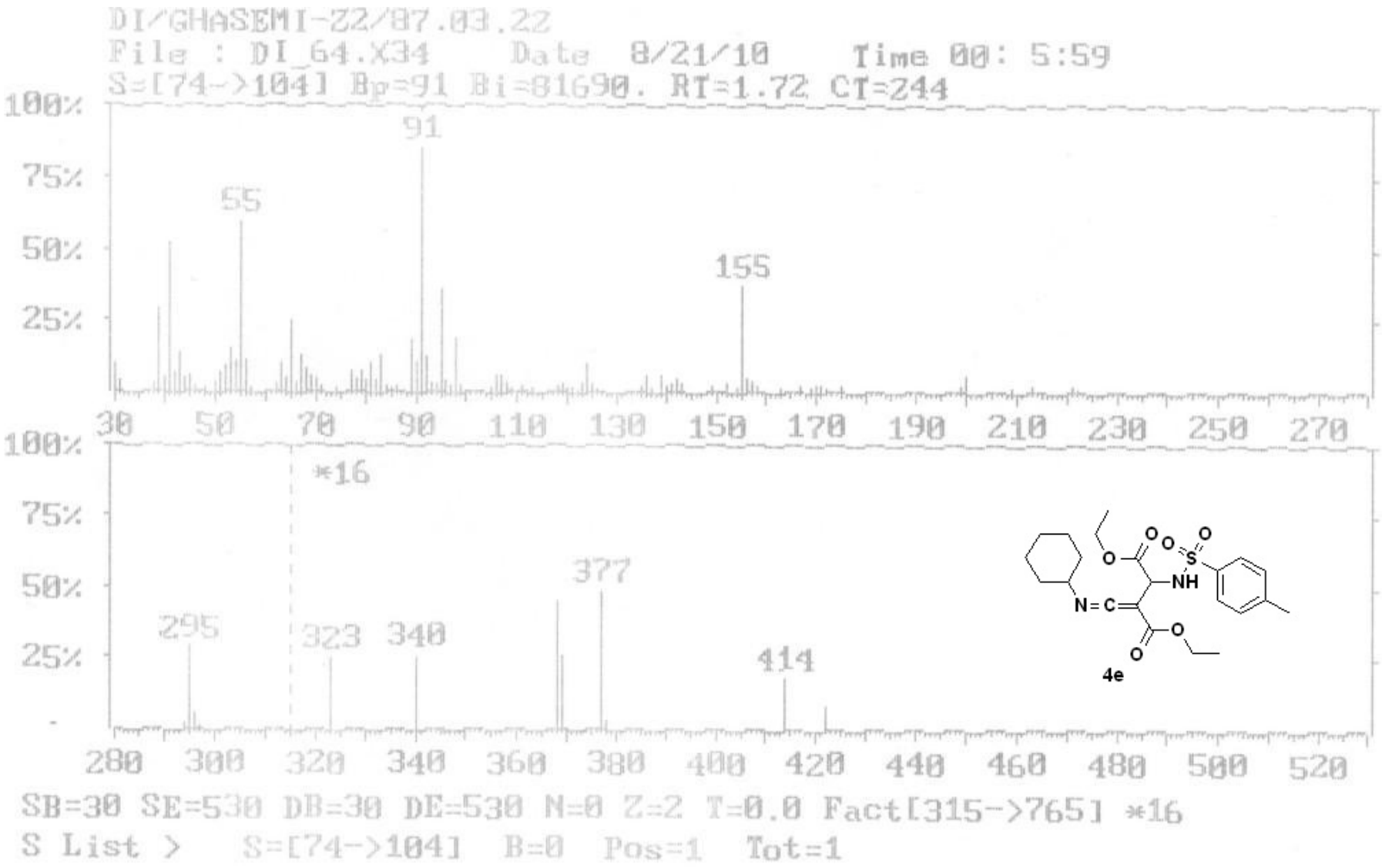
F2 - Acquisition Parameters
Date_ 20090509
Time 20.36
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 174
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec

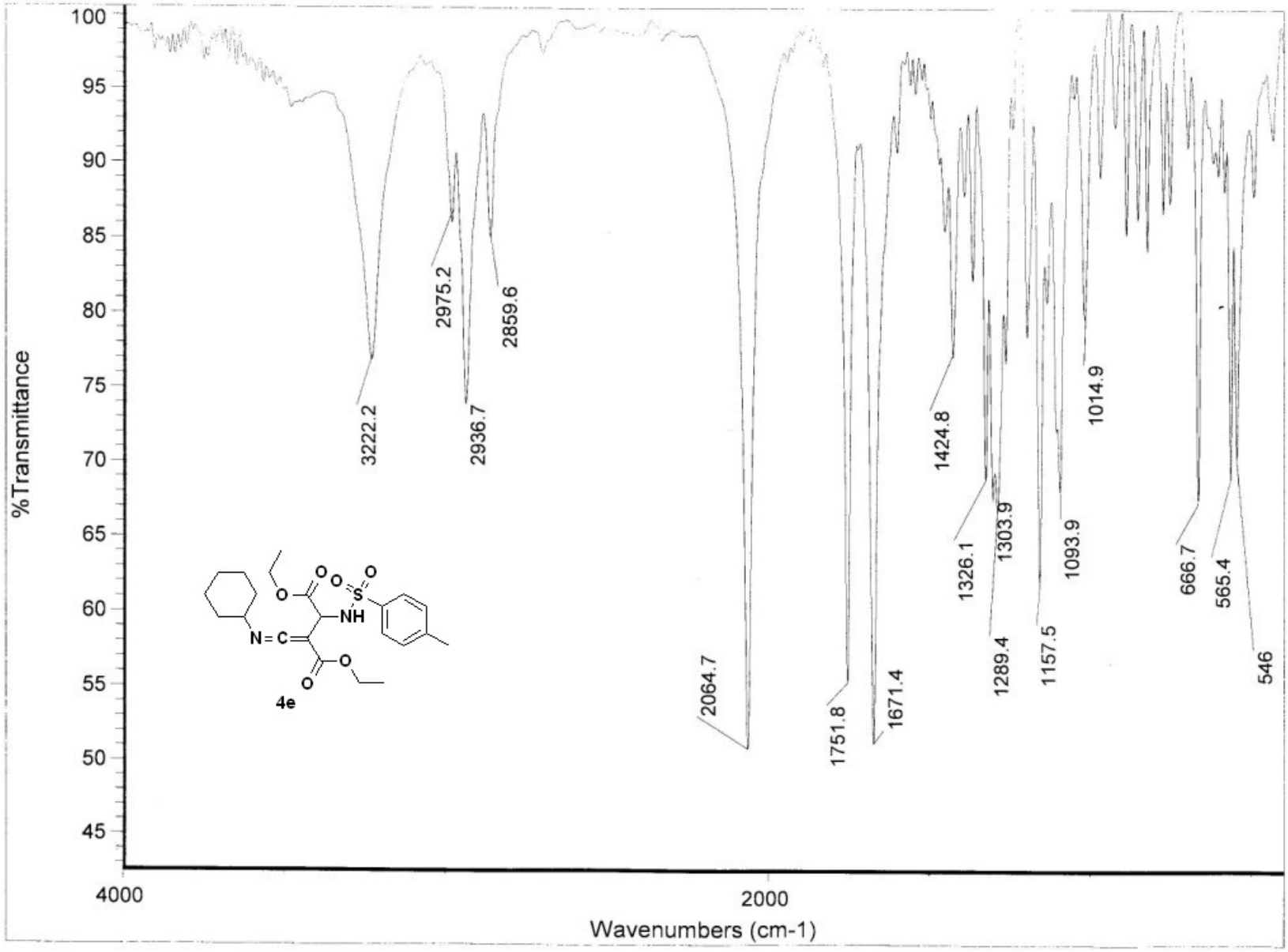
======== CHANNEL f1 ========
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SFO1 75.4752953 MHz

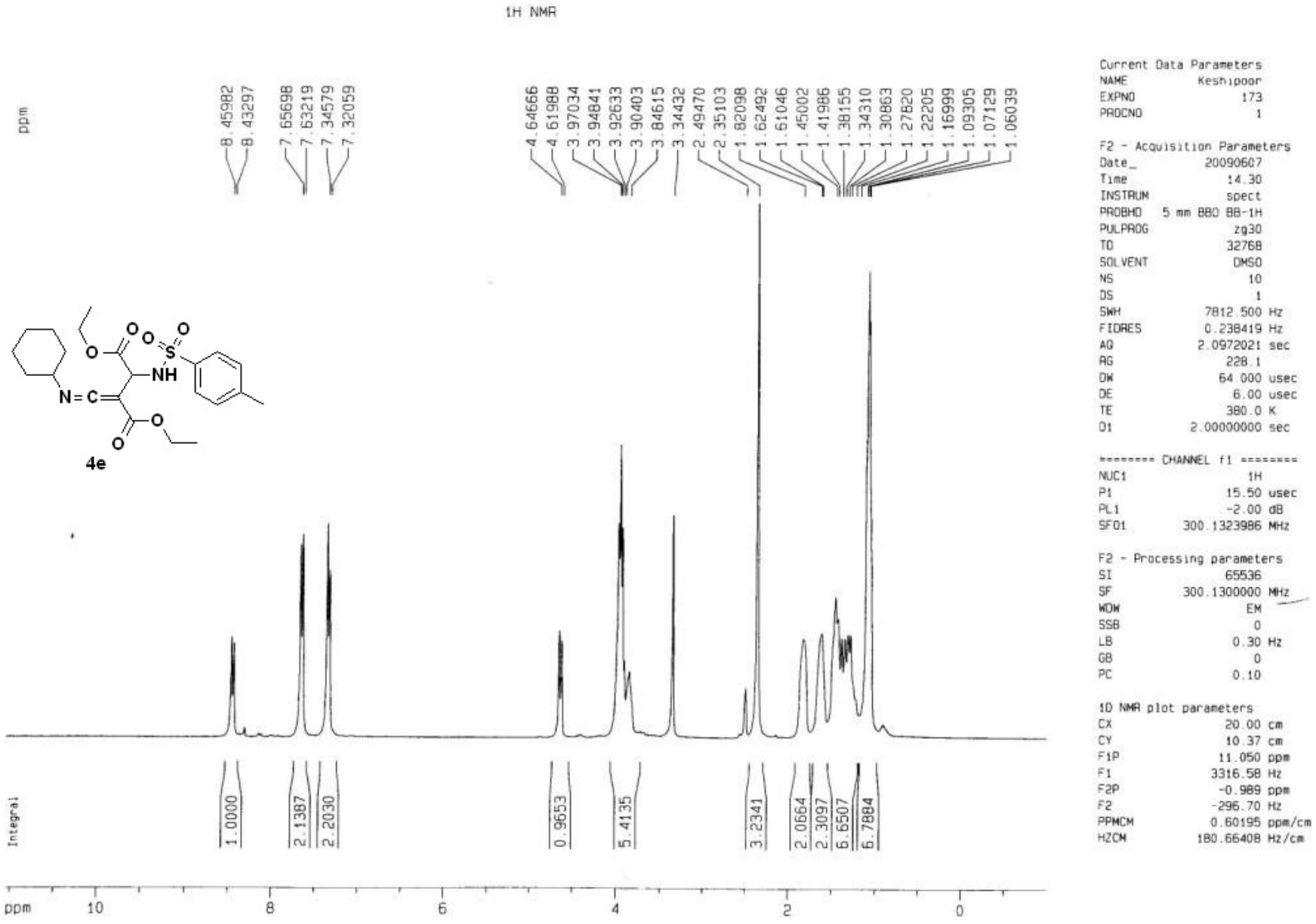
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SFO2 300.1312005 MHz

F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40

1D NMR plot parameters
CX 20.00 cm
CY 26.56 cm
F1P 219.155 ppm
F1 16539.10 Hz
F2P -19.167 ppm
F2 -1446.51 Hz
PPMCM 11.91609 ppm/cm
HZCM 899.28058 Hz/cm


DI/GHASEMI-Z2/87.03.22
File : DI_64.X34 Date 8/21/10 Time 00: 5:59
S=[74->104] Bp=91 Bi=81690. RT=1.72 CT=244
100%
75%
50%
25%
91
55
155
30 50 70 90 110 130 150 170 190 210 230 250 270
*16
377
295
323
340
414
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=530 DB=30 DE=530 N=0 Z=2 T=0.0 Fact[315->765] *16
S List > S=[74->104] B=0 Pos=1 Tot=1
O
O
O
S
NH
N= C
O
O
O
4e


%Transmittance
100
95
90
85
80
75
70
65
60
55
50
45
4000
2000
Wavenumbers (cm-1)
3222.2
2975.2
2936.7
2859.6
2064.7
1751.8
1671.4
1424.8
1326.1
1303.9
1289.4
1157.5
1093.9
1014.9
666.7
565.4
546
4e



Current Data Parameters

NAME	Keshipoor
EXPNO	173
PROCNO	1

F2 - Acquisition Parameters

Date_	20090607
Time	14.30
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	228.1
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

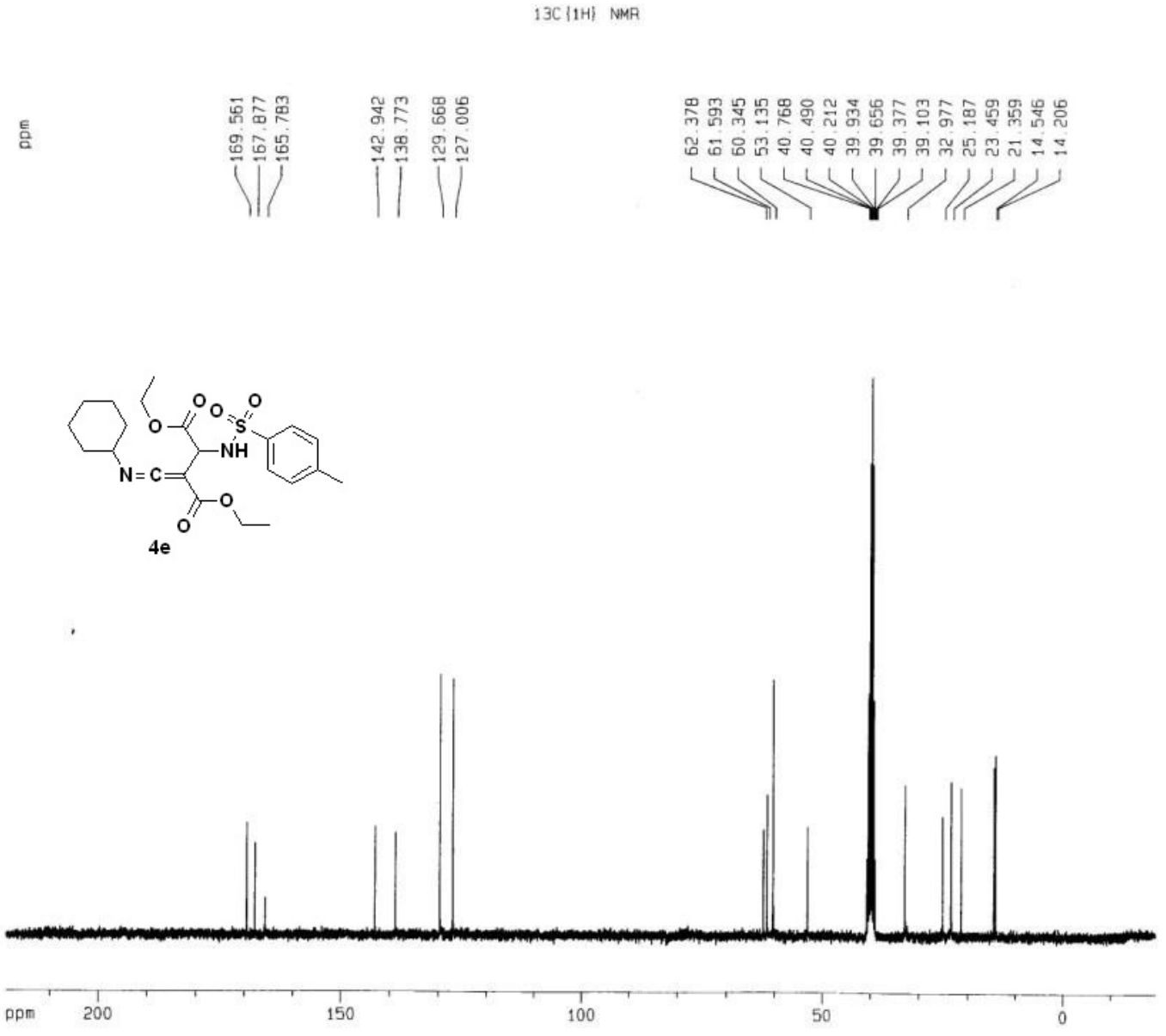
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1323986 MHz

F2 - Processing parameters

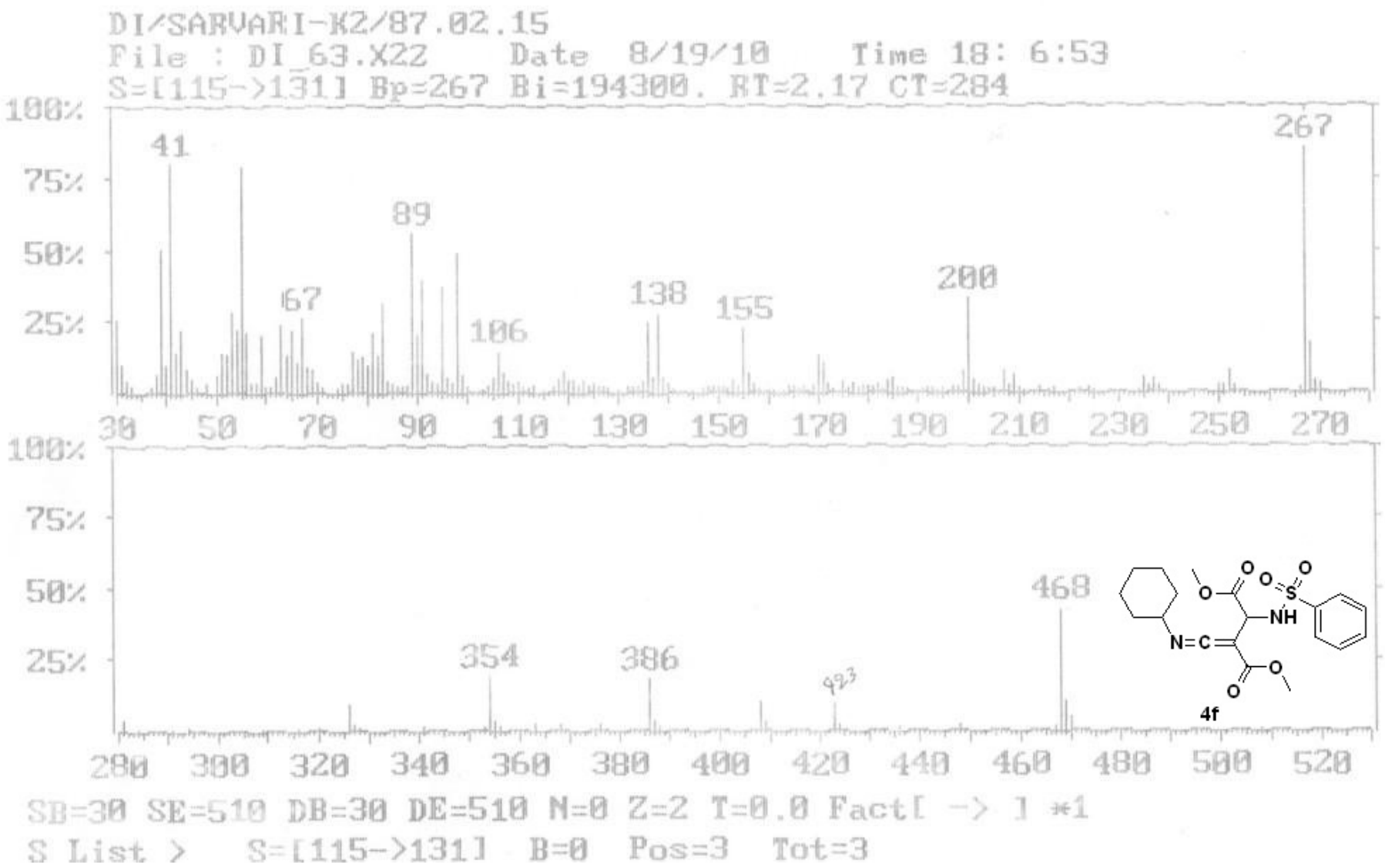
SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	0.10

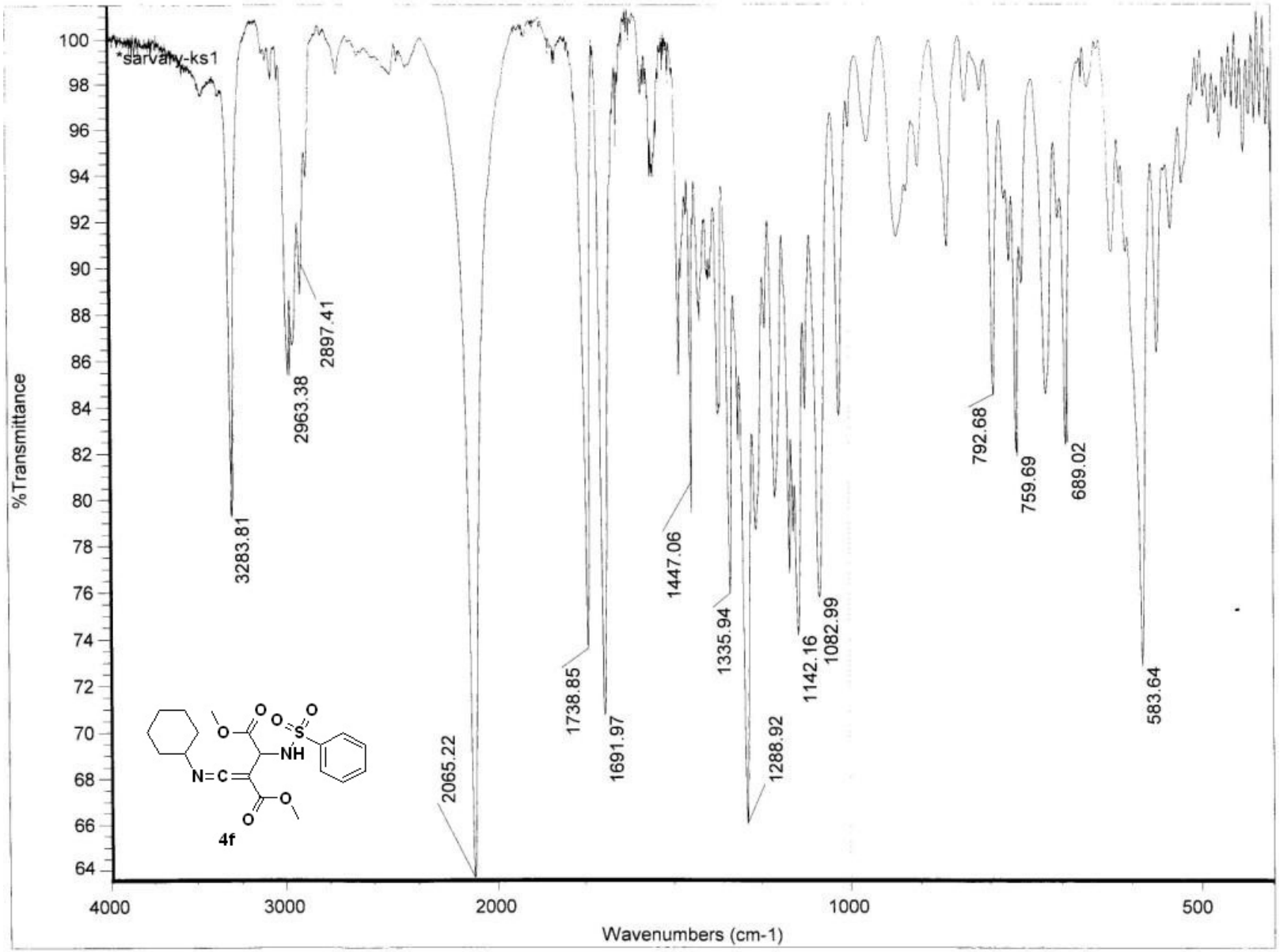
1D NMR plot parameters

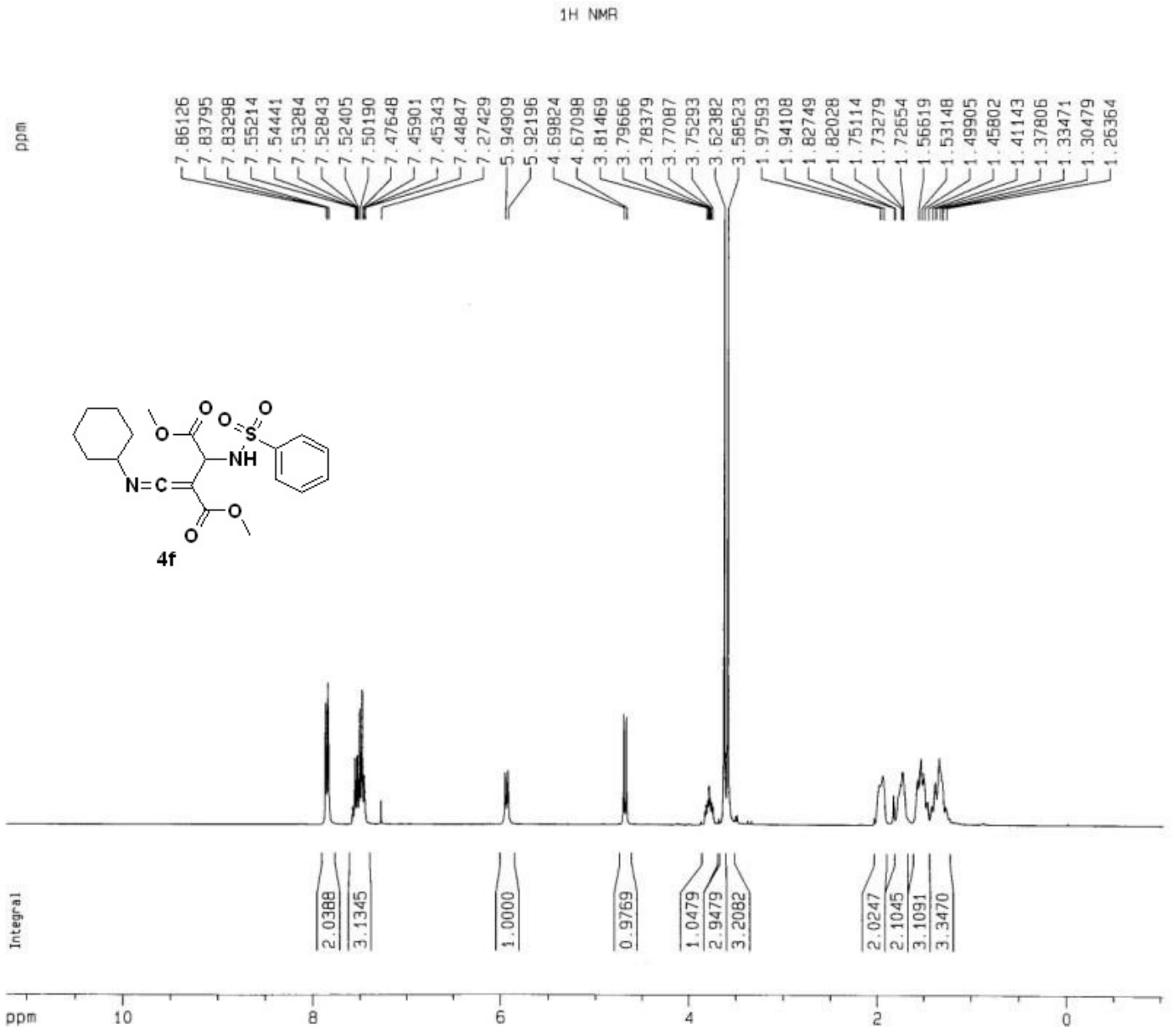
CX	20.00 cm
CY	10.37 cm
F1P	11.050 ppm
F1	3316.58 Hz
F2P	-0.989 ppm
F2	-296.70 Hz
PPMCM	0.60195 ppm/cm
HZCM	180.66408 Hz/cm



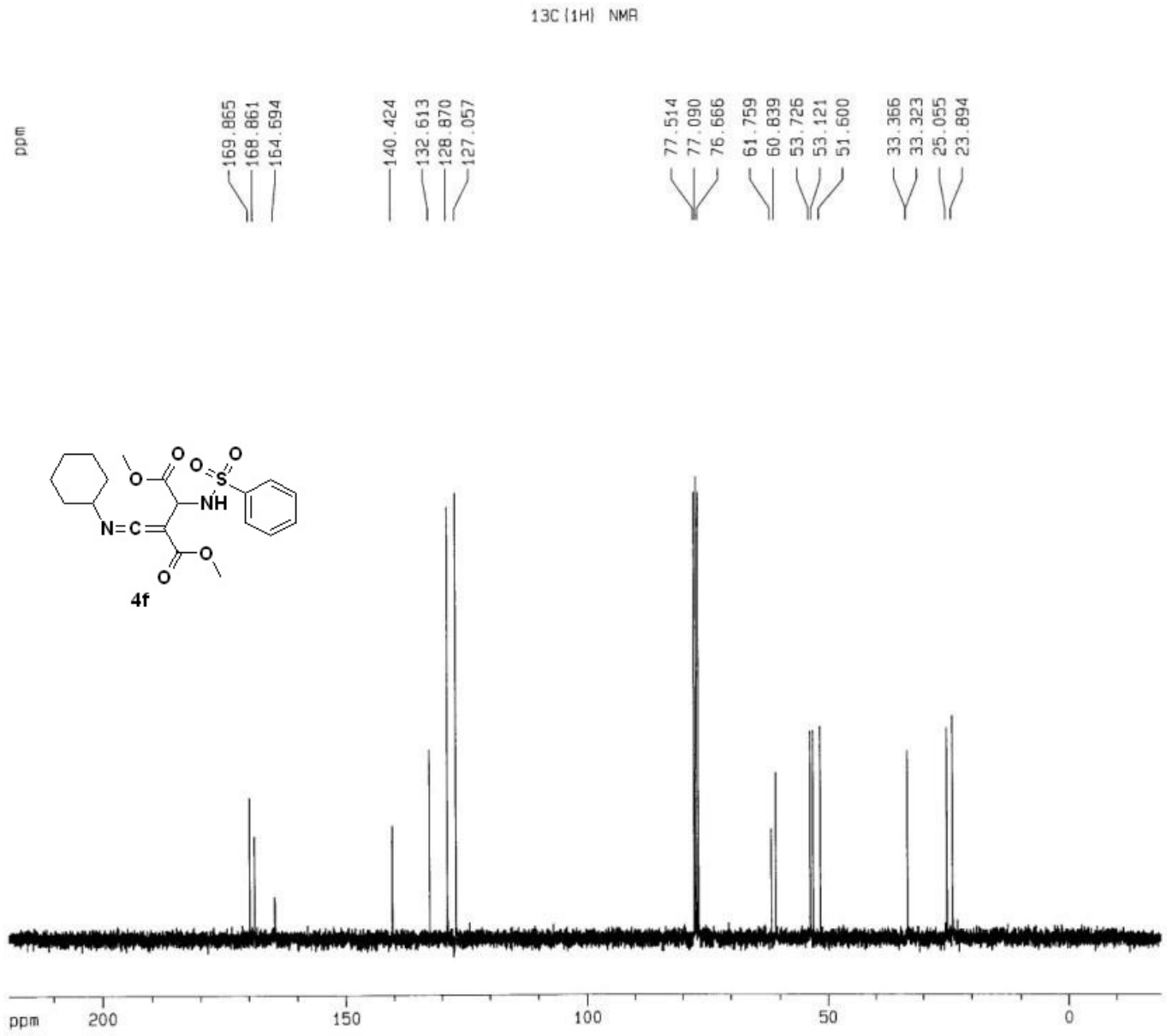

```
Current Data Parameters
NAME          Keshipoor
EXPNO              174
PROCNO               1

F2 - Acquisition Parameters
Date_          20090607
Time              14.42
INSTRUM           spect
PROBHD   5 mm BBO BB-1H
PULPROG         zgpg30
TD               65536
SOLVENT           DMSO
NS                 190
DS                   2
SWH          17985.611 Hz
FIDRES        0.274439 Hz
AQ            1.8219508 sec
RG                2048
DW              27.800 usec
DE               6.00 usec
TE              300.0 K
D1           2.00000000 sec
d11          0.03000000 sec
d12          0.00002000 sec

======== CHANNEL f1 ========
NUC1              13C
P1               8.75 usec
PL1             -2.00 dB
SF01        75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2        waltz16
NUC2               1H
PCPD2           87.00 usec
PL2             -2.00 dB
PL12            12.00 dB
PL13            18.00 dB
SF02       300.1312005 MHz

F2 - Processing parameters
SI               65536
SF          75.4677490 MHz
WDW                EM
SSB                 0
LB               1.00 Hz
GB                  0
PC               1.40

1D NMR plot parameters
CX              20.00 cm
CY               9.76 cm
F1P            219.155 ppm
F1            16539.10 Hz
F2P            -19.167 ppm
F2            -1446.51 Hz
PPMCM         11.91609 ppm/cm
HZCM         899.28058 Hz/cm
```


DI/SARVARI-K2/87.02.15
File : DI_63.X2Z Date 8/19/10 Time 18: 6:53
S=[115->131] Bp=267 Bi=194300. RT=2.17 CT=284
100%
75%
50%
25%
41
89
67
106
138
155
200
267
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
354
386
423
468
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=510 DB=30 DE=510 N=0 Z=2 T=0.0 Fact[->] *1
S List > S=[115->131] B=0 Pos=3 Tot=3
4f

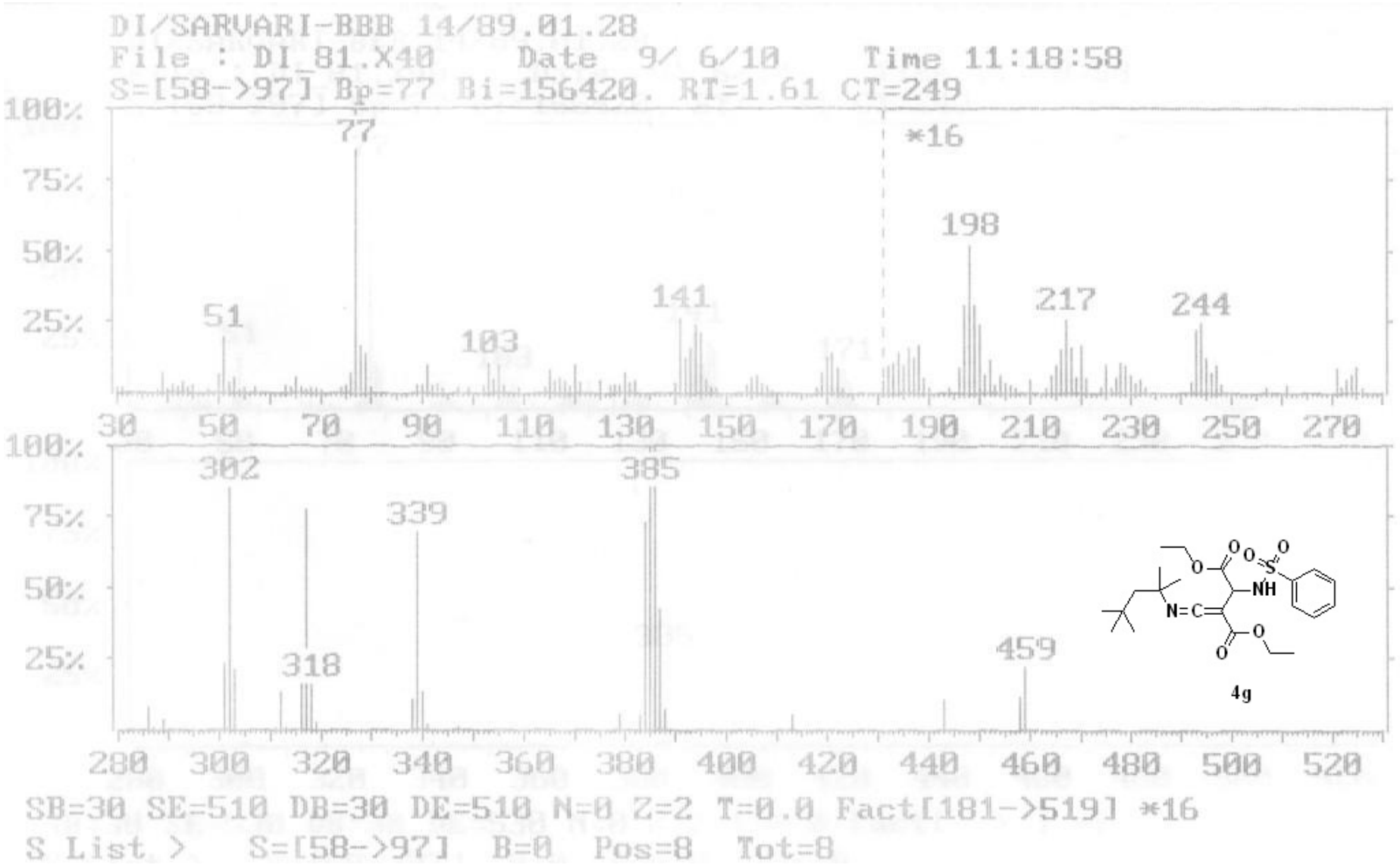

*sarvary-ks1
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
500
3283.81
2963.38
2897.41
2065.22
1738.85
1691.97
1447.06
1335.94
1288.92
1142.16
1082.99
792.68
759.69
689.02
583.64
4f

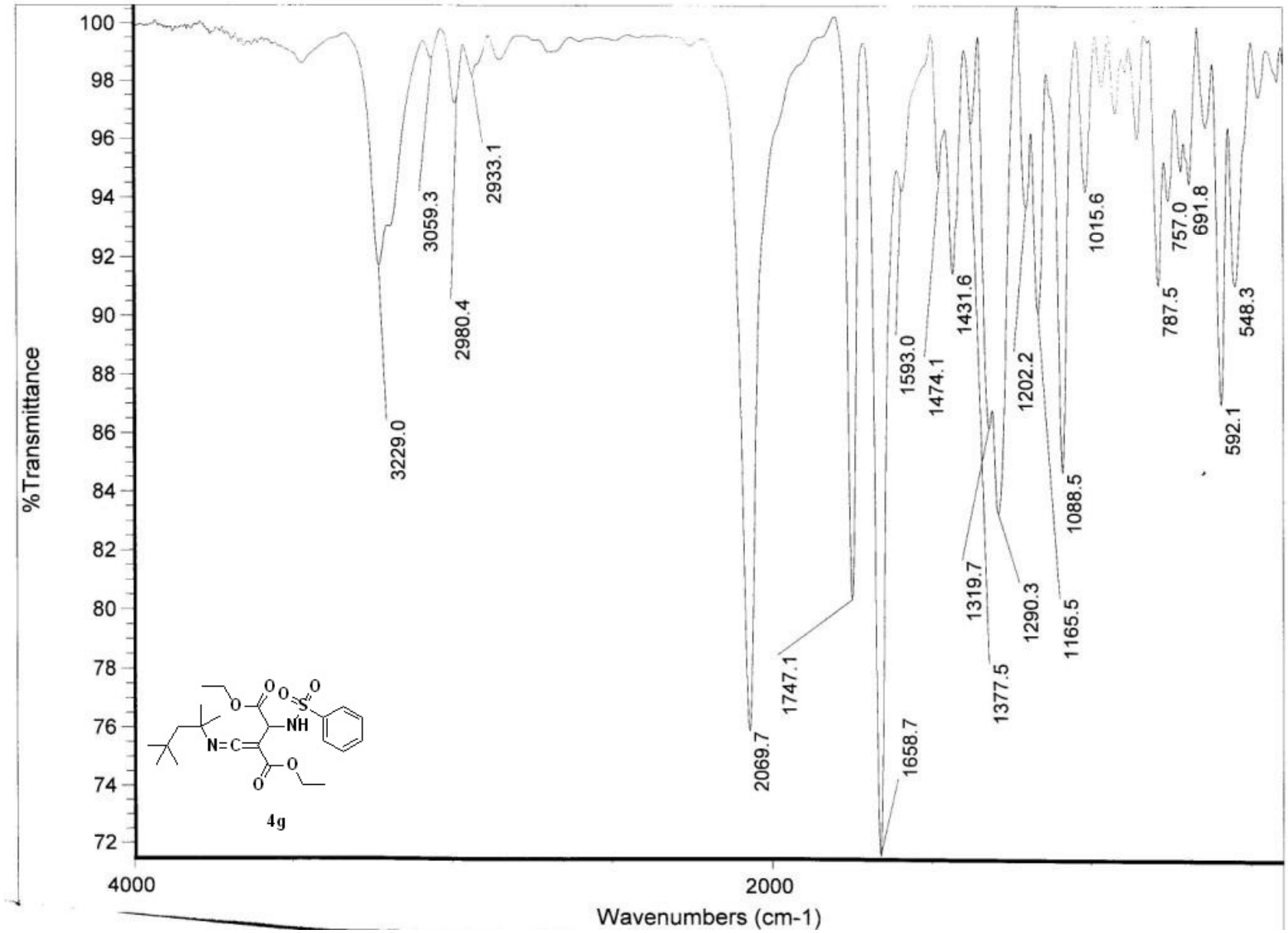


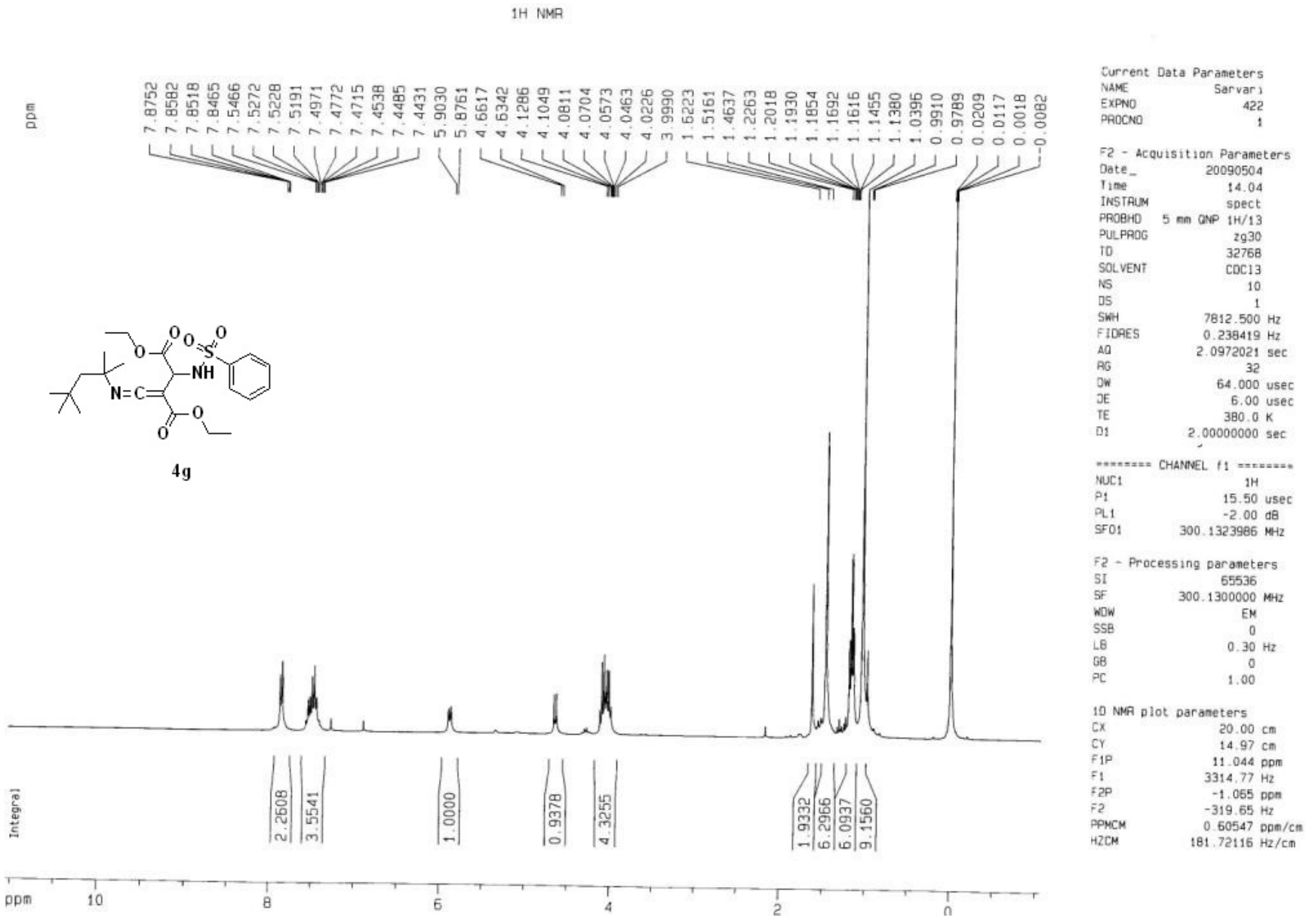

```
Current Data Parameters
NAME                  Sarvari
EXPNO                     305
PROCNO                      1

F2 - Acquisition Parameters
Date_                20080902
Time                    12.24
INSTRUM                 spect
PROBHD   5 mm BBO BB-1H
PULPROG                 zg30
TD                     32768
SOLVENT                CDCl3
NS                        10
DS                         2
SWH                 7812.500 Hz
FIDRES              0.238419 Hz
AQ                  2.0972021 sec
RG                       50.8
DW                     64.000 usec
DE                      6.00 usec
TE                     380.0 K
D1                  2.00000000 sec

======== CHANNEL f1 ========
NUC1                       1H
P1                      15.50 usec
PL1                     -2.00 dB
SFO1               300.1323986 MHz

F2 - Processing parameters
SI                         65536
SF                 300.1300000 MHz
WDW                           EM
SSB                            0
LB                      0.30 Hz
GB                             0
PC                          1.00

1D NMR plot parameters
CX                     20.00 cm
CY                     11.70 cm
F1P                    11.212 ppm
F1                   3365.11 Hz
F2P                    -1.032 ppm
F2                   -309.58 Hz
PPMCM                0.61218 ppm/cm
HZCM               183.73470 Hz/cm
```

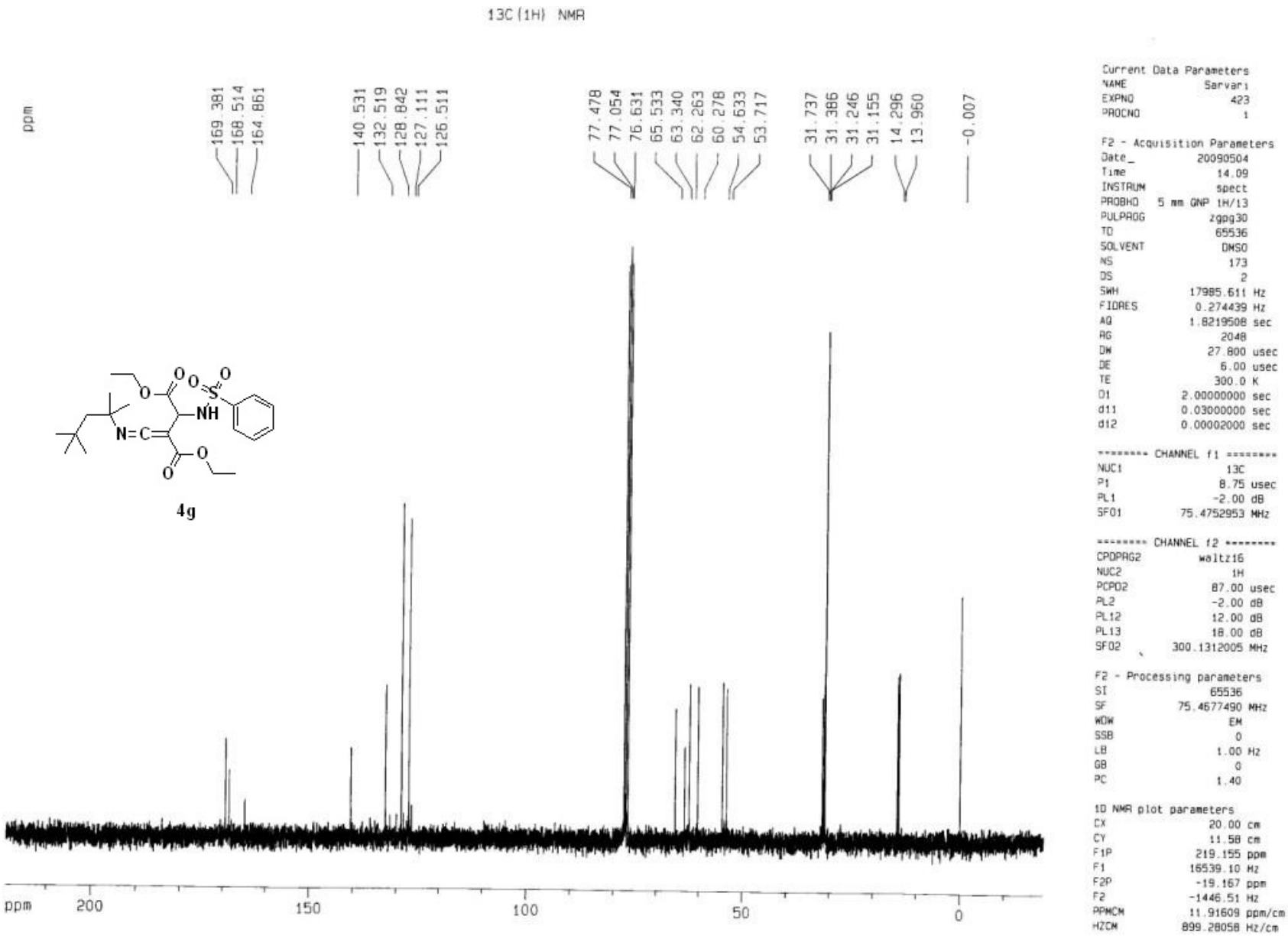


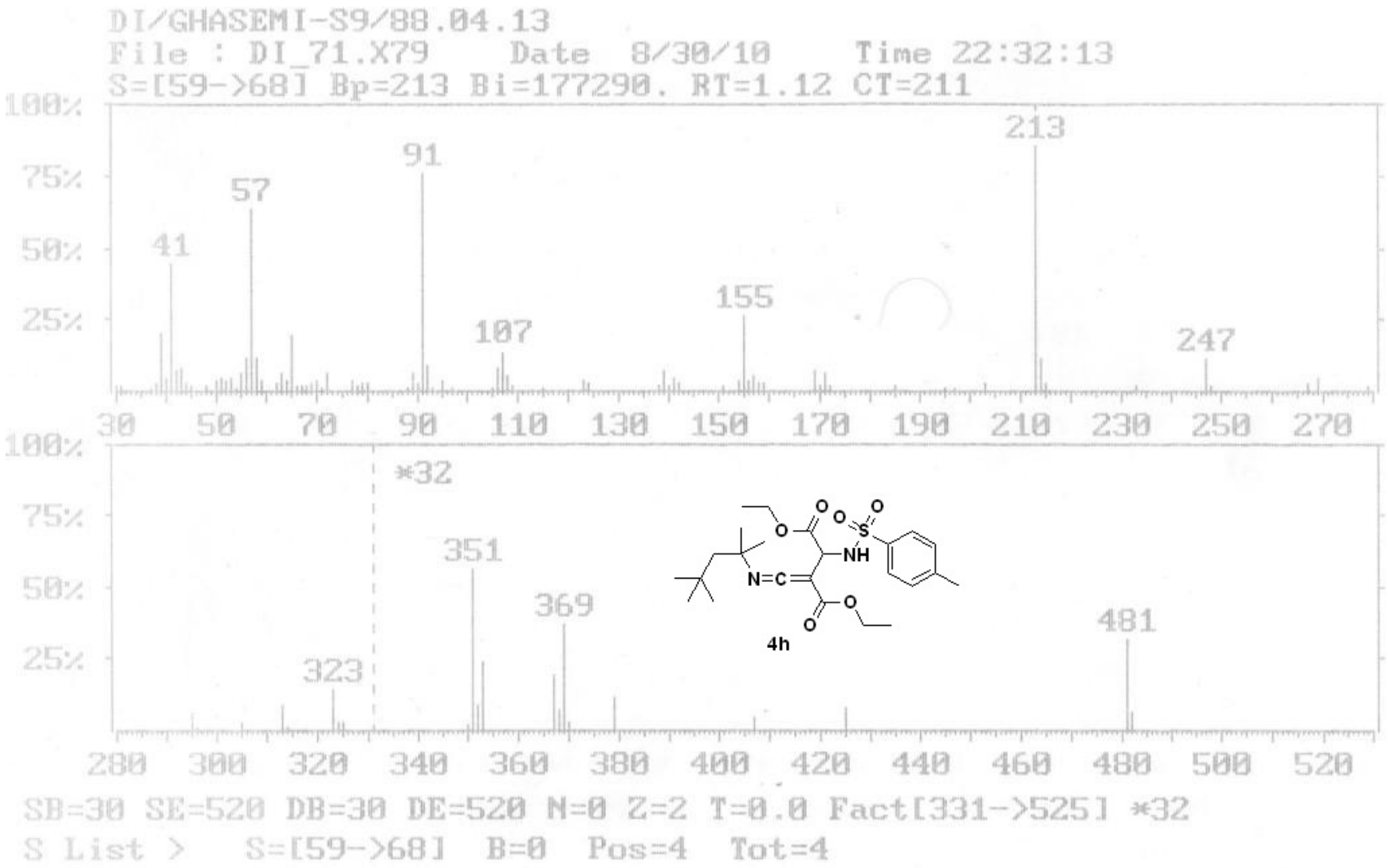

```
Current Data Parameters
NAME                  Sarvari
EXPNO                     306
PROCNO                      1

F2 - Acquisition Parameters
Date_               20080902
Time                   12.29
INSTRUM                spect
PROBHD   5 mm BBO BB-1H
PULPROG               zgpg30
TD                     65536
SOLVENT                DMSO
NS                       104
DS                         1
SWH                17985.611 Hz
FIDRES                 0.274439 Hz
AQ                     1.8219508 sec
RG                        2048
DW                       27.800 usec
DE                        6.00 usec
TE                       300.0 K
D1                     2.00000000 sec
d11                    0.03000000 sec
d12                    0.00002000 sec

======== CHANNEL f1 ========
NUC1                        13C
P1                         8.75 usec
PL1                       -2.00 dB
SFO1                75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                     87.00 usec
PL2                       -2.00 dB
PL12                      12.00 dB
PL13                      18.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
SI                         65536
SF                  75.4677490 MHz
WDW                           EM
SSB                            0
LB                          1.00 Hz
GB                             0
PC                          1.40

1D NMR plot parameters
CX                         20.00 cm
CY                          8.08 cm
F1P                       219.155 ppm
F1                      16539.10 Hz
F2P                       -19.167 ppm
F2                      -1446.51 Hz
PPMCM                   11.91609 ppm/cm
HZCM                    899.28058 Hz/cm
```

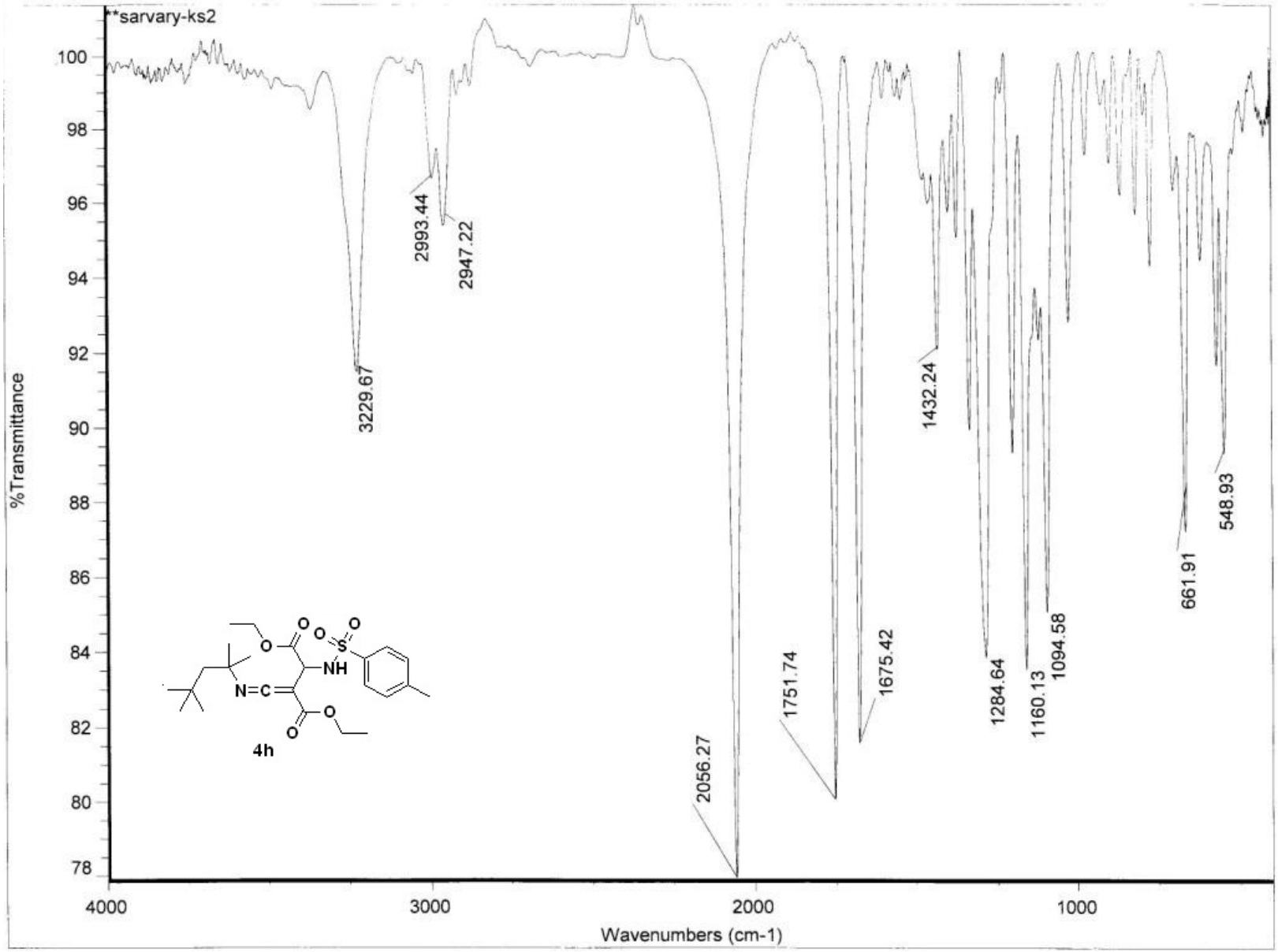

DI/SARVARI-BBB 14/89.01.28
File : DI_81.X40 Date 9/ 6/10 Time 11:18:58
S=[58->97] Bp=77 Bi=156420. RT=1.61 CT=249
100%
75%
50%
25%
77
*16
198
51
141
103
217
244
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
302
385
339
318
459
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=510 DB=30 DE=510 N=0 Z=2 T=0.0 Fact[181->519] *16
S List > S=[58->97] B=0 Pos=8 Tot=8
O
O
O
S
NH
N=C
O
O
O
O
4g

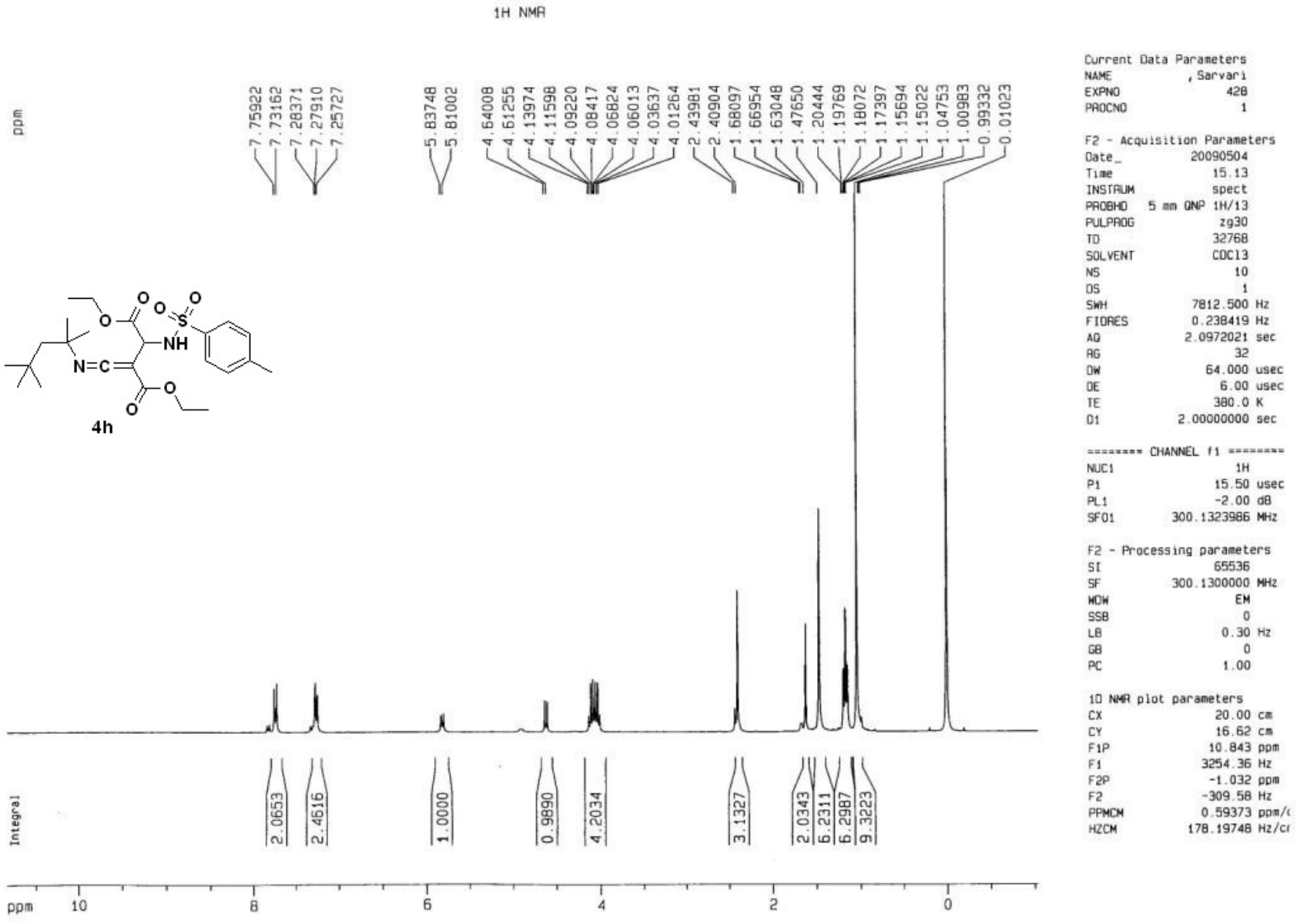

%Transmittance
100
98
96
94
92
90
88
86
84
82
80
78
76
74
72
4000
2000
Wavenumbers (cm-1)
3229.0
3059.3
2980.4
2933.1
2069.7
1747.1
1658.7
1593.0
1474.1
1431.6
1377.5
1319.7
1290.3
1202.2
1165.5
1088.5
1015.6
787.5
757.0
691.8
592.1
548.3
4g

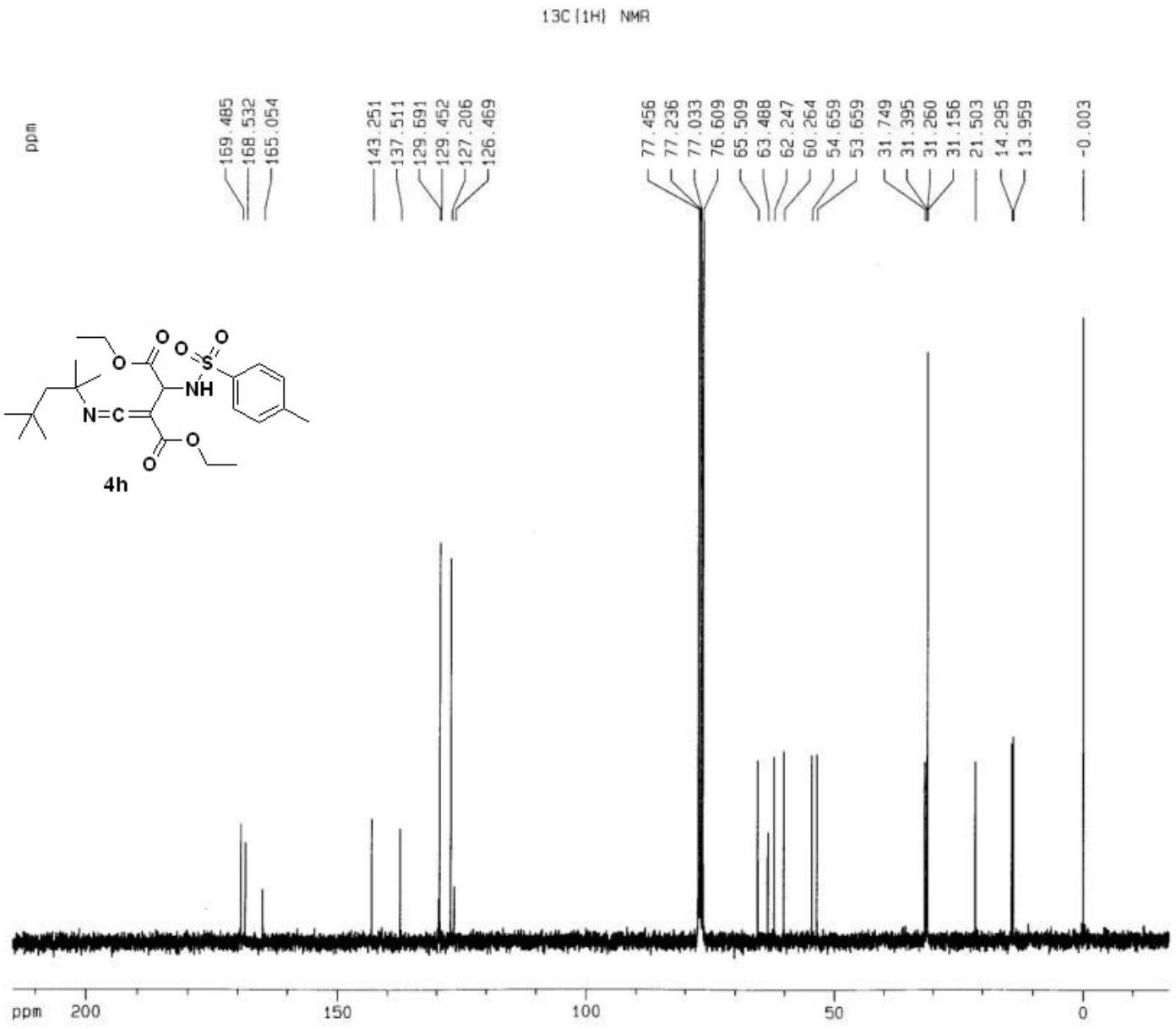

1H NMR
ppm
7.8752
7.8582
7.8518
7.8465
7.5466
7.5272
7.5228
7.5191
7.4971
7.4772
7.4715
7.4538
7.4485
7.4431
5.9030
5.8761
4.6617
4.6342
4.1286
4.1049
4.0811
4.0704
4.0573
4.0463
4.0226
3.9990
1.6223
1.5161
1.4637
1.2263
1.2018
1.1930
1.1854
1.1692
1.1616
1.1455
1.1380
1.0396
0.9910
0.9789
0.0209
0.0117
0.0018
-0.0082
Integral
2.2608
3.5541
1.0000
0.9378
4.3255
1.9332
6.2966
6.0937
9.1560
ppm
10
8
6
4
2
0
4g
Current Data Parameters
NAME Sarvari
EXPNO 422
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090504
Time 14.04
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 32
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz
F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 14.97 cm
F1P 11.044 ppm
F1 3314.77 Hz
F2P -1.065 ppm
F2 -319.65 Hz
PPMCM 0.60547 ppm/cm
HZCM 181.72116 Hz/cm


13C (1H) NMR
ppm
159.381
168.514
164.861
140.531
132.519
128.842
127.111
126.511
77.478
77.054
76.631
65.533
63.340
62.263
60.278
54.633
53.717
31.737
31.386
31.246
31.155
14.296
13.960
-0.007
4g
ppm
200
150
100
50
0
Current Data Parameters
NAME Sarvari
EXPNO 423
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090504
Time 14.09
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 173
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SF01 75.4752953 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SF02 300.1312005 MHz
F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
1D NMR plot parameters
CX 20.00 cm
CY 11.58 cm
F1P 219.155 ppm
F1 16539.10 Hz
F2P -19.167 ppm
F2 -1446.51 Hz
PPMCM 11.91609 ppm/cm
HZCM 899.28058 Hz/cm

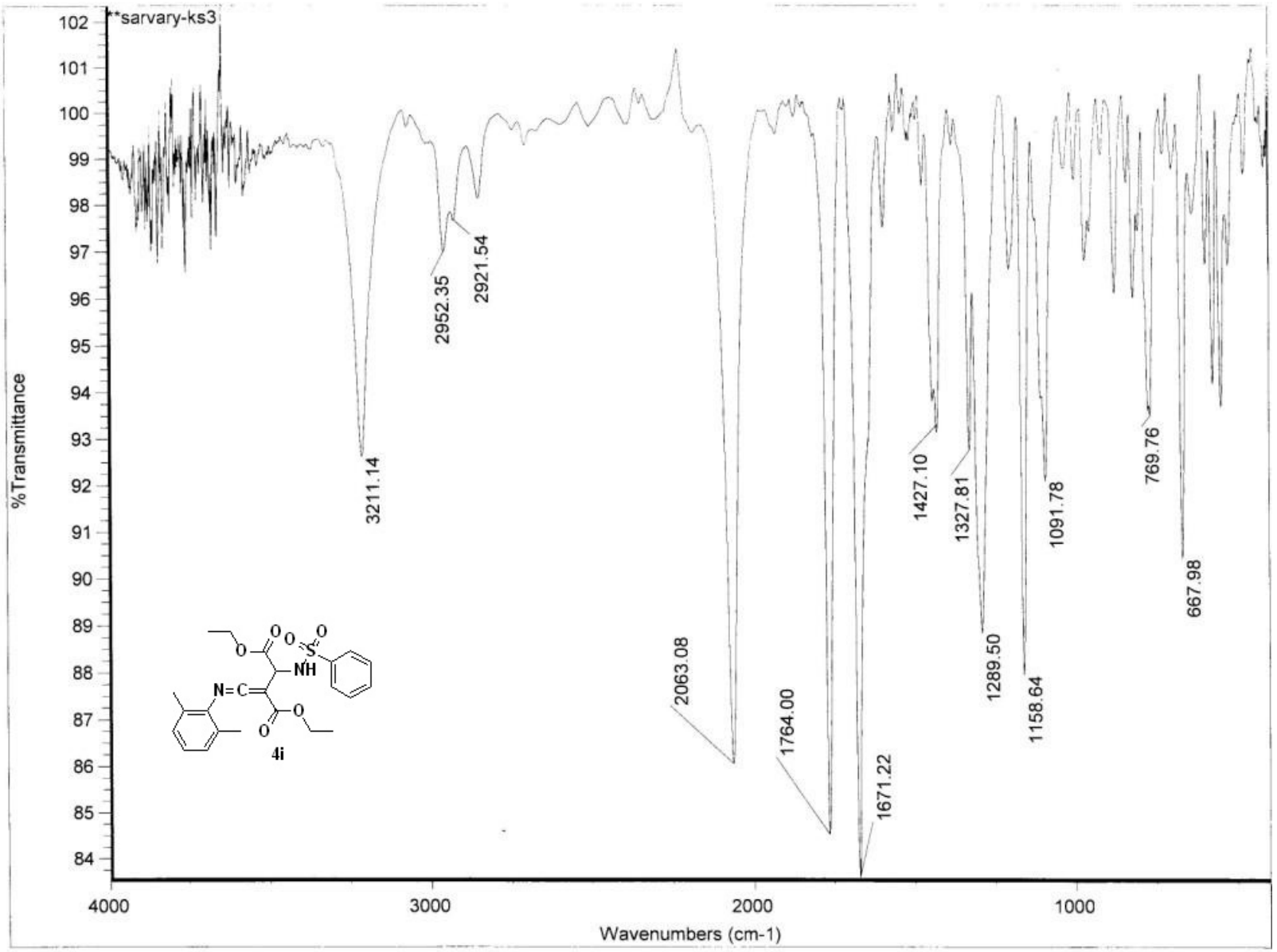

DI/GHASEMI-S9/88.04.13
File : DI_71.X79 Date 8/30/10 Time 22:32:13
S=[59->68] Bp=213 Bi=177290. RT=1.12 CT=211
100%
75%
50%
25%
213
91
57
41
155
107
247
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
*32
351
369
323
481
280 300 320 340 360 380 400 420 440 460 480 500 520
O
O
S
O
NH
N=C
O
O
O
4h
SB=30 SE=520 DB=30 DE=520 N=0 Z=2 T=0.0 Fact[331->525] *32
S List > S=[59->68] B=0 Pos=4 Tot=4

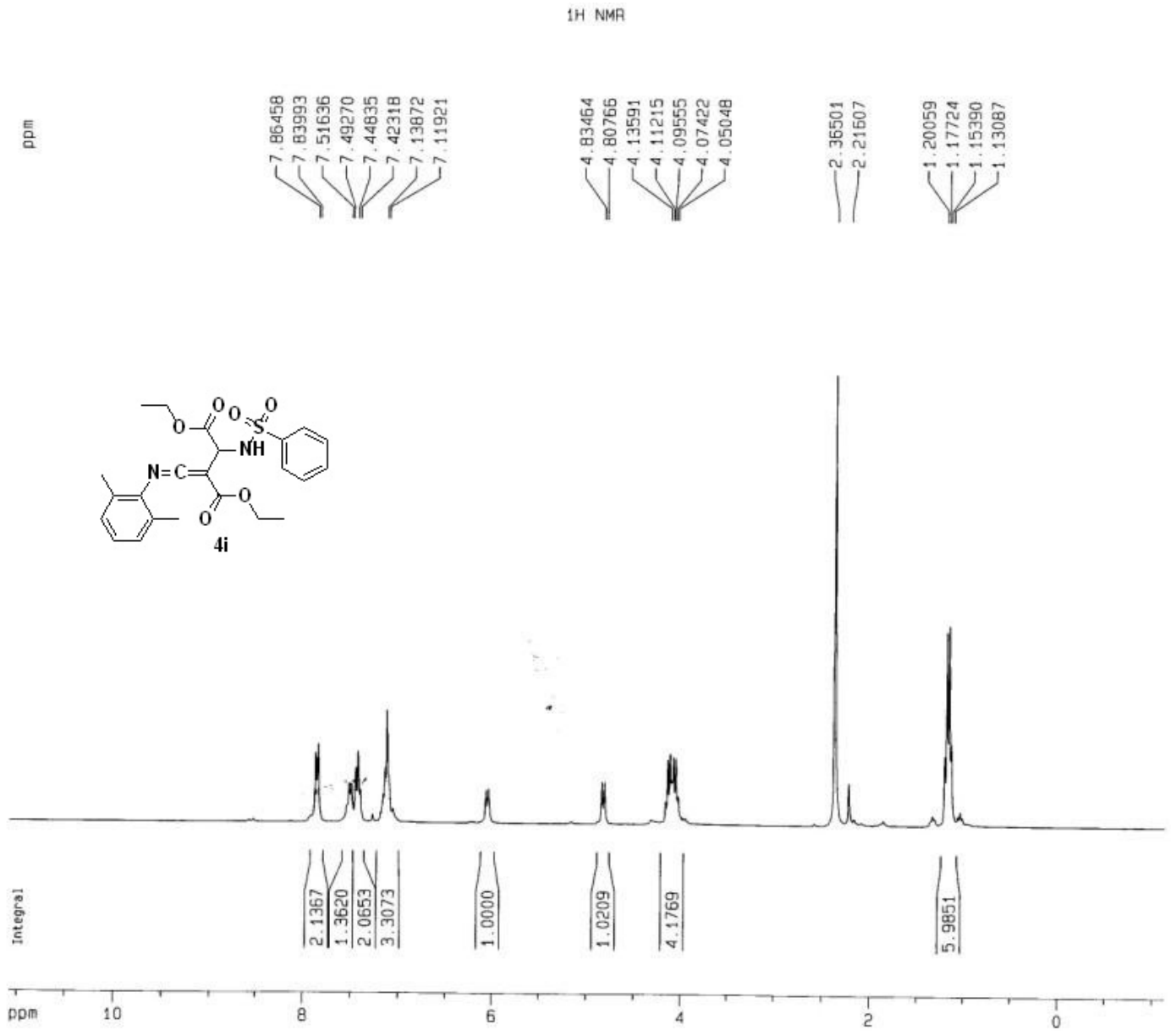

**sarvary-ks2
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
100
98
96
94
92
90
88
86
84
82
80
78
3229.67
2993.44
2947.22
2056.27
1751.74
1675.42
1432.24
1284.64
1160.13
1094.58
661.91
548.93
4h


1H NMR
ppm
7.75922
7.73162
7.28371
7.27910
7.25727
5.83748
5.81002
4.64008
4.61255
4.13974
4.11598
4.09220
4.08417
4.06824
4.06013
4.03637
4.01264
2.43981
2.40904
1.68097
1.66954
1.63048
1.47650
1.20444
1.19769
1.18072
1.17397
1.15694
1.15022
1.04753
1.00983
0.99332
0.01023
O
O
O
O
S
NH
N=C
O
O
4h
Integral
2.0653
2.4616
1.0000
0.9890
4.2034
3.1327
2.0343
6.2311
6.2987
9.3223
ppm
10
8
6
4
2
0
Current Data Parameters
NAME , Sarvari
EXPNO 428
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090504
Time 15.13
INSTRUM spect
PROBHD 5 mm QNP 1H/13
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 32
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz
F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 16.62 cm
F1P 10.843 ppm
F1 3254.36 Hz
F2P -1.032 ppm
F2 -309.58 Hz
PPMCM 0.59373 ppm/
HZCM 178.19748 Hz/




```
Current Data Parameters
NAME                 Sarvari
EXPNO                    429
PROCNO                     1

F2 - Acquisition Parameters
Date_              20090504
Time                   16.19
INSTRUM                spect
PROBHD   5 mm QNP 1H/13
PULPROG              zgpg30
TD                    65536
SOLVENT                DMSO
NS                      1024
DS                         2
SWH               17985.611 Hz
FIDRES            0.274439 Hz
AQ                1.8219508 sec
RG                      2048
DW                  27.800 usec
DE                   6.00 usec
TE                   300.0 K
D1                2.00000000 sec
d11               0.03000000 sec
d12               0.00002000 sec

======== CHANNEL f1 ========
NUC1                     13C
P1                    8.75 usec
PL1                  -2.00 dB
SFO1             75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2              waltz16
NUC2                     1H
PCPD2                87.00 usec
PL2                  -2.00 dB
PL12                 12.00 dB
PL13                 18.00 dB
SFO2            300.1312005 MHz

F2 - Processing parameters
SI                       65536
SF               75.4677490 MHz
WDW                         EM
SSB                          0
LB                    1.00 Hz
GB                           0
PC                        1.40

1D NMR plot parameters
CX                   20.00 cm
CY                   22.47 cm
F1P                 214.548 ppm
F1                16191.44 Hz
F2P                 -17.325 ppm
F2                -1307.44 Hz
PPMCM              11.59382 ppm/cm
HZCM              874.94446 Hz/cm
```


**sarvary-ks3
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
3211.14
2952.35
2921.54
2063.08
1764.00
1671.22
1427.10
1327.81
1289.50
1158.64
1091.78
769.76
667.98
NH
N=C
4i



Current Data Parameters

NAME	Rezaeian-PHD
EXPNO	308
PROCNO	1

F2 - Acquisition Parameters

Date_	20081022
Time	11.05
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	228.1
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

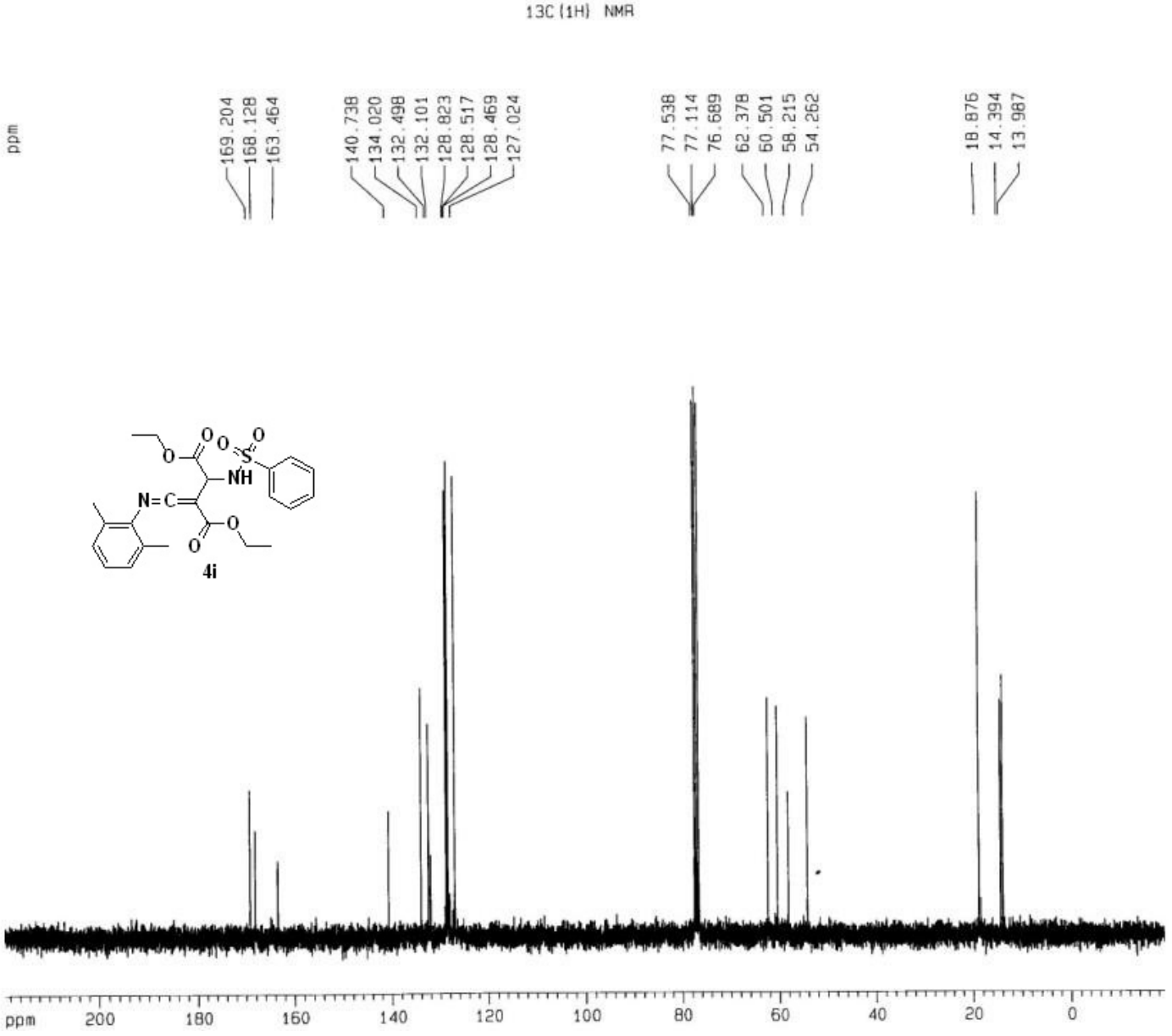
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1312005 MHz

F2 - Processing parameters

SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

1D NMR plot parameters

CX	20.00 cm
CY	7.84 cm
F1P	11.078 ppm
F1	3324.79 Hz
F2P	-1.132 ppm
F2	-339.83 Hz
PPMCM	0.61051 ppm/cm
HZCM	183.23134 Hz/cm



Current Data Parameters
NAME Rezaeian-PHD
EXPNO 309
PROCNO 1

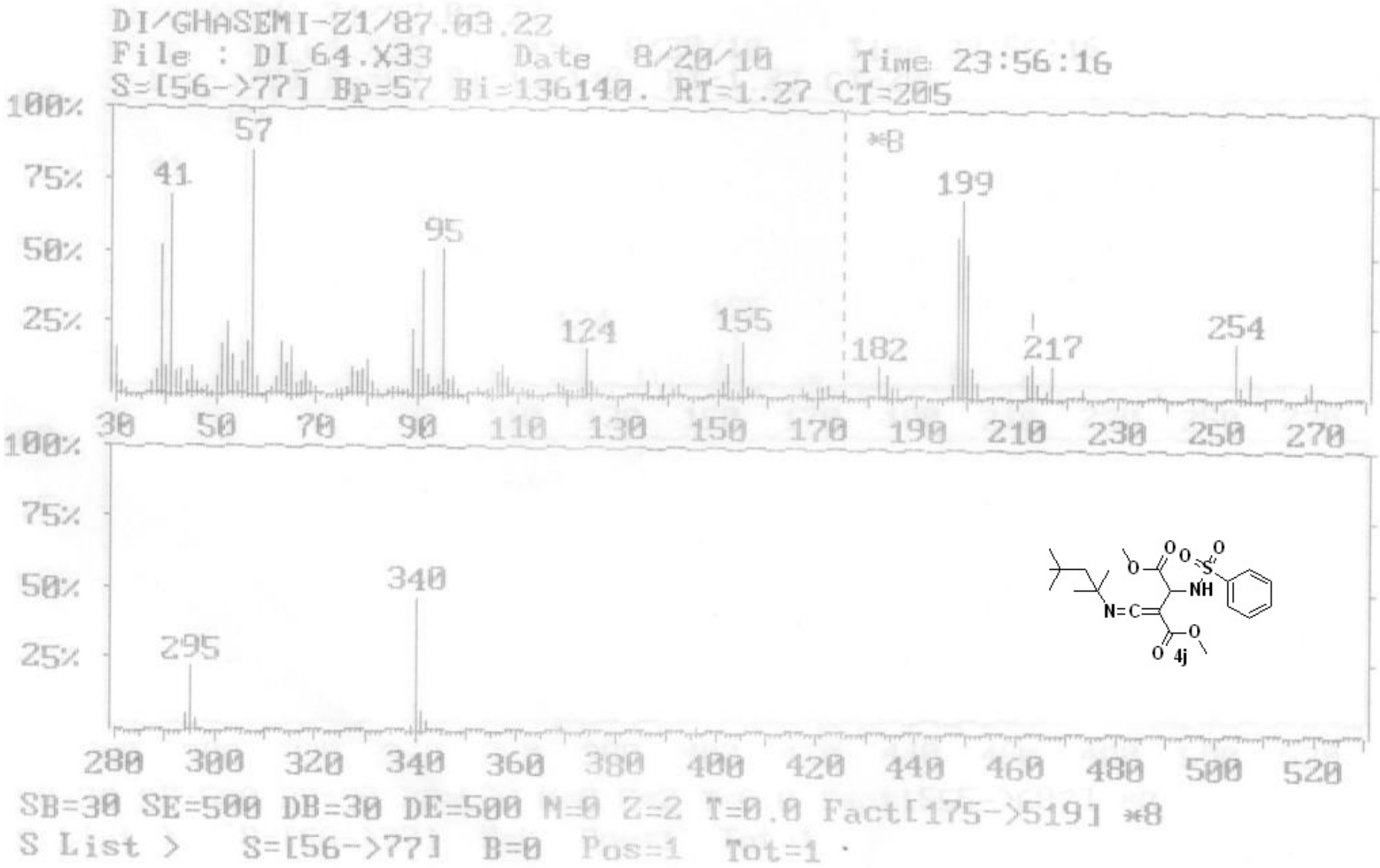
F2 - Acquisition Parameters
Date_ 20081022
Time 11.06
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 74
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec

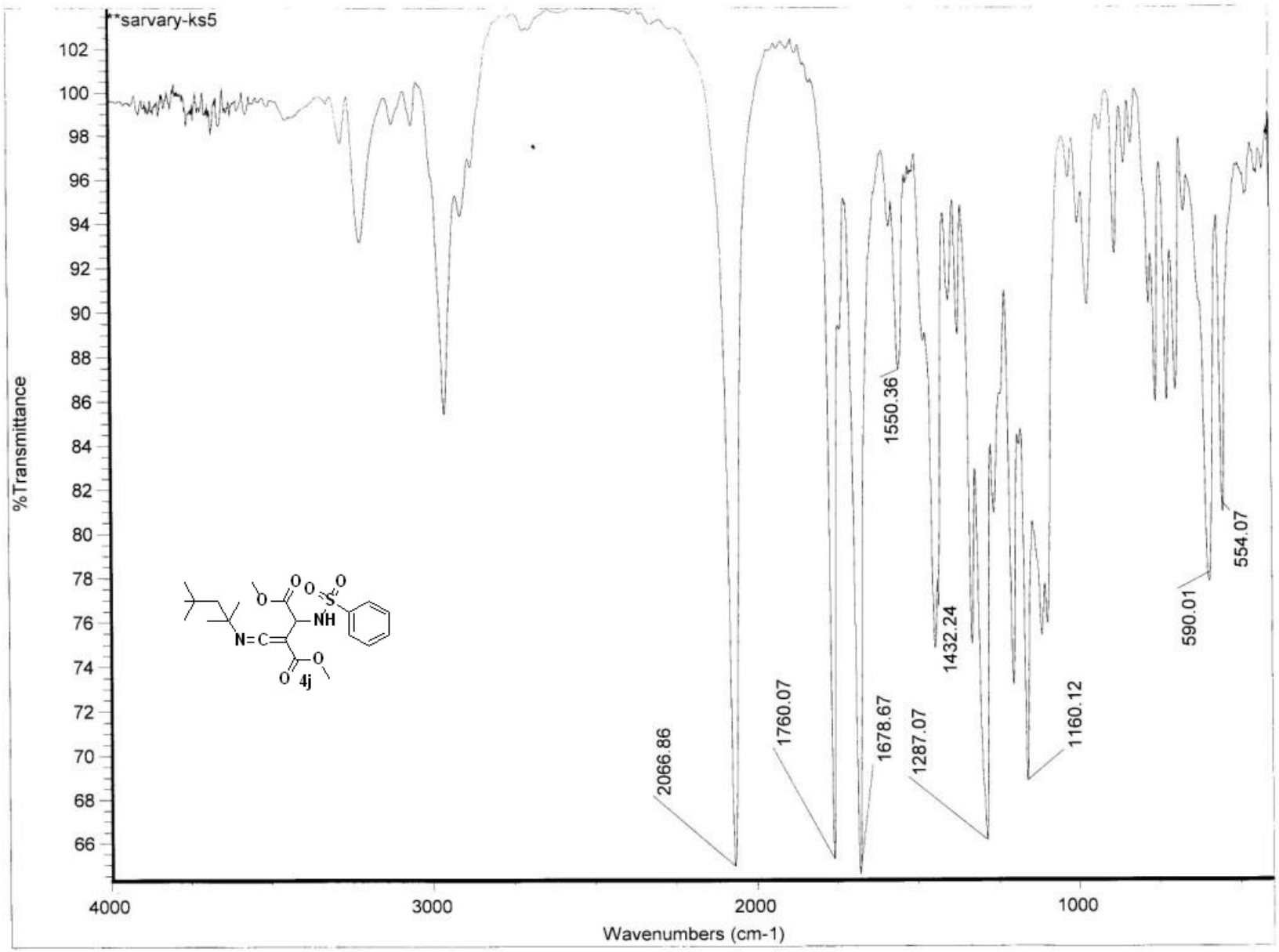
======== CHANNEL f1 ========
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SFO1 75.4752953 MHz

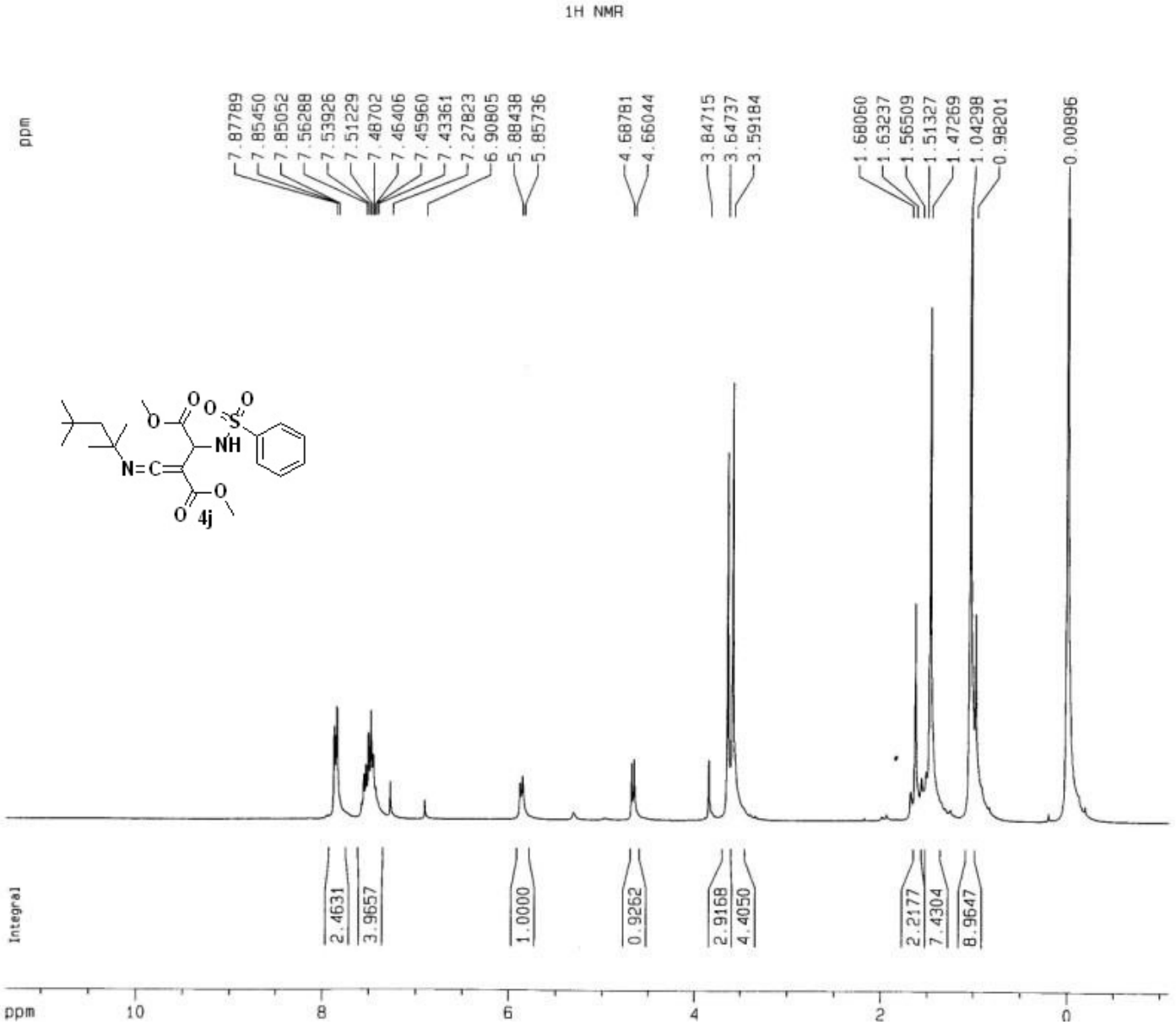
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SFO2 300.1312005 MHz

F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
CY 9.57 cm
F1P 219.155 ppm
F1 16539.10 Hz
F2P -19.167 ppm
F2 -1446.51 Hz
PPMCM 11.91609 ppm/cm
HZCM 899.28058 Hz/cm


DI/GHASEMI-Z1/87.03.22
File : DI_64.X33 Date 8/20/10 Time 23:56:16
S=[56->77] Bp=57 Bi=136140. RT=1.27 CT=205
100%
75%
50%
25%
57
41
95
124
155
*8
199
182
217
254
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
340
295
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=500 DB=30 DE=500 N=0 Z=2 T=0.0 Fact[175->519] *8
S List > S=[56->77] B=0 Pos=1 Tot=1
NH
N=C
4j


**sarvary-ks5
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
2066.86
1760.07
1678.67
1550.36
1432.24
1287.07
1160.12
590.01
554.07
4j



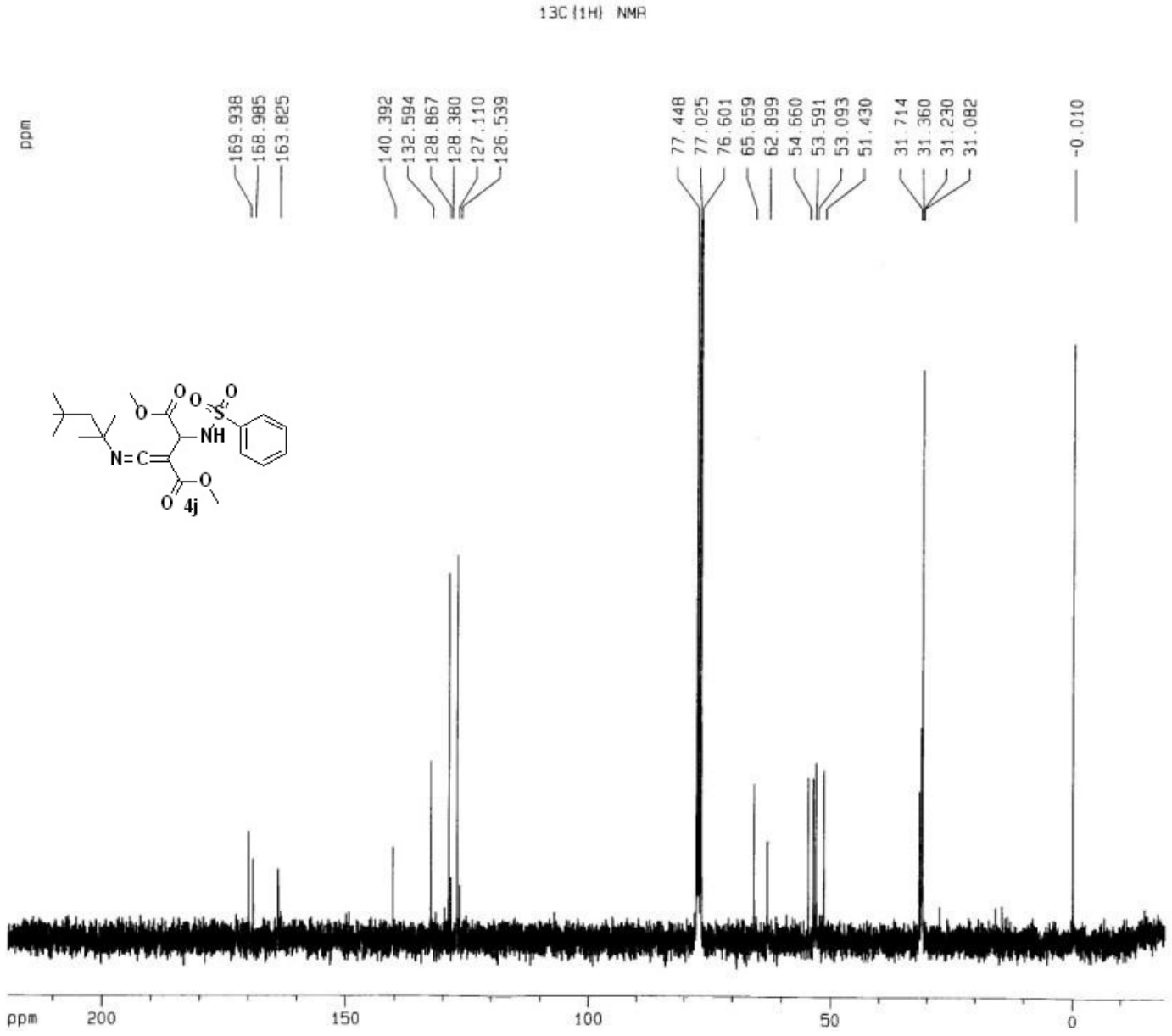
Current Data Parameters
NAME Rezaeian-PHD
EXPNO 377
PROCNO 1

F2 - Acquisition Parameters
Date_ 20090526
Time 13.44
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 228.1
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec

======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz

F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
CY 26.46 cm
F1P 11.380 ppm
F1 3415.45 Hz
F2P -1.099 ppm
F2 -329.72 Hz
PPMCM 0.62392 ppm/cm
HZCM 187.25838 Hz/cm



Current Data Parameters

NAME	Rezaeian-PHD
EXPNO	378
PROCNO	1

F2 - Acquisition Parameters

Date_	20090526
Time	14.22
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	595
DS	2
SWH	17985.611 Hz
FIDRES	0.274439 Hz
AQ	1.8219508 sec
RG	2048
DW	27.800 usec
DE	6.00 usec
TE	300.0 K
D1	2.00000000 sec
d11	0.03000000 sec
d12	0.00002000 sec

======== CHANNEL f1 ========

NUC1	13C
P1	8.75 usec
PL1	-2.00 dB
SFO1	75.4752953 MHz

======== CHANNEL f2 ========

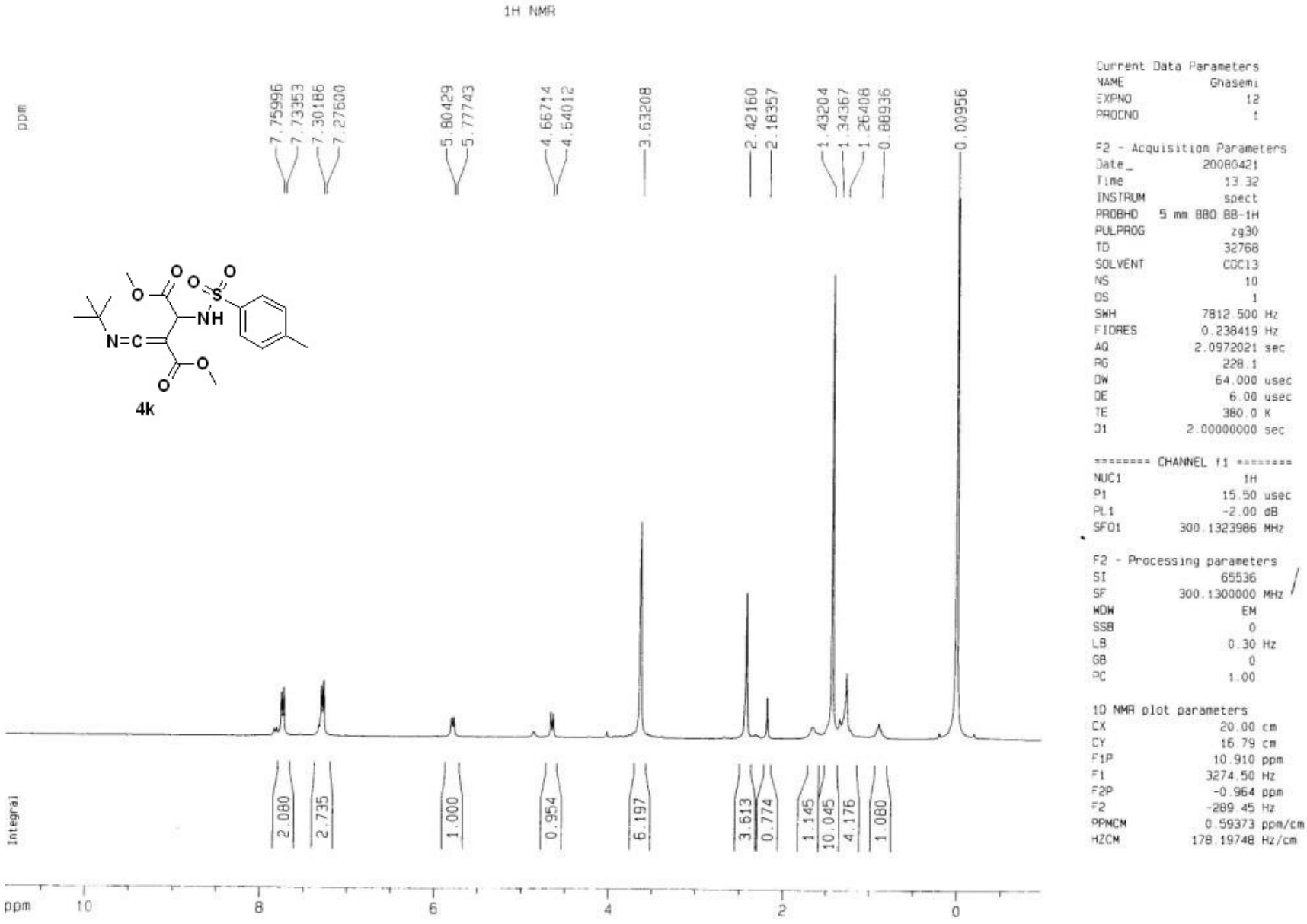
CPDPRG2	waltz16
NUC2	1H
PCPD2	87.00 usec
PL2	-2.00 dB
PL12	12.00 dB
PL13	18.00 dB
SFO2	300.1312005 MHz

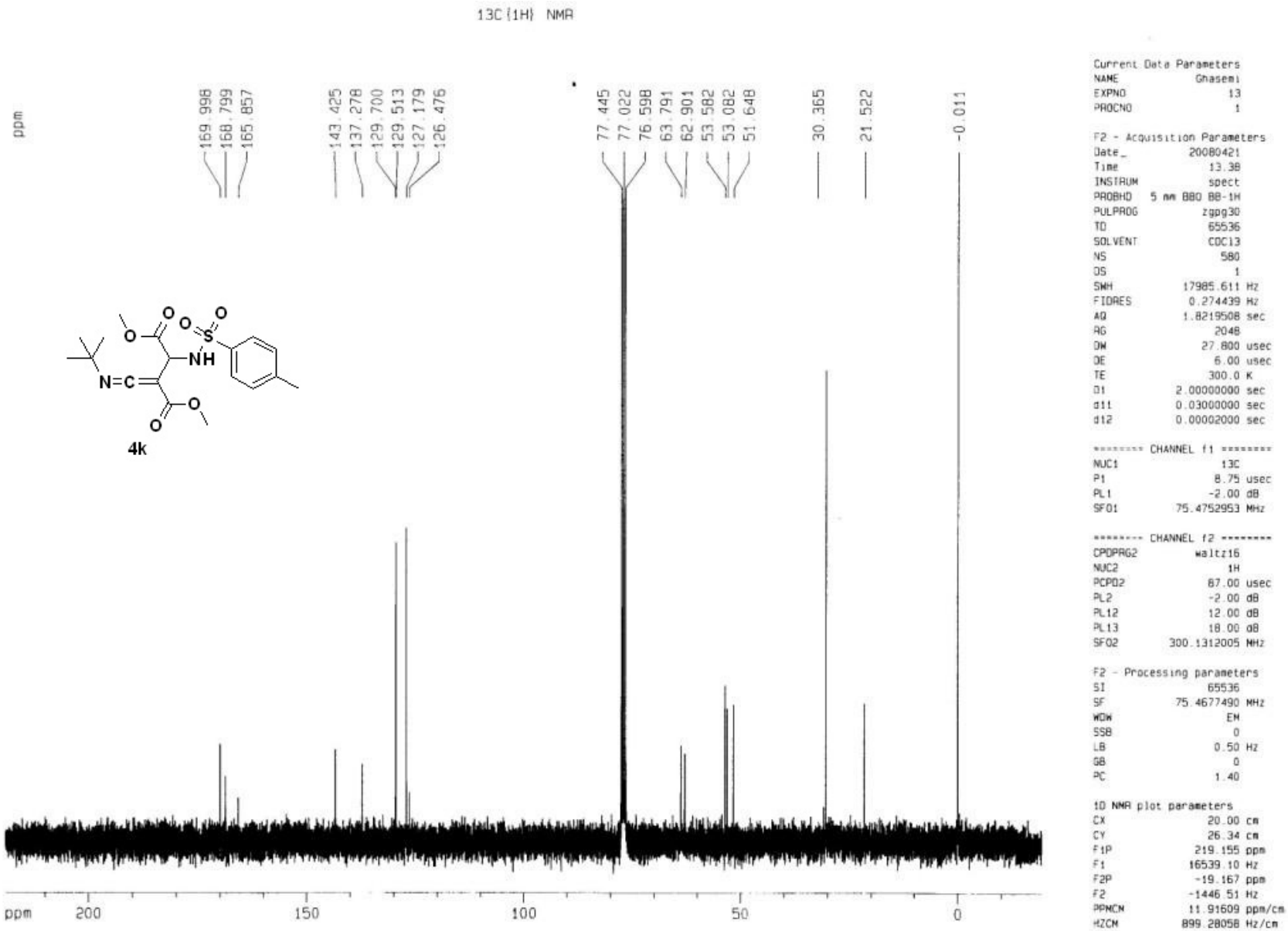
F2 - Processing parameters

SI	65536
SF	75.4677490 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

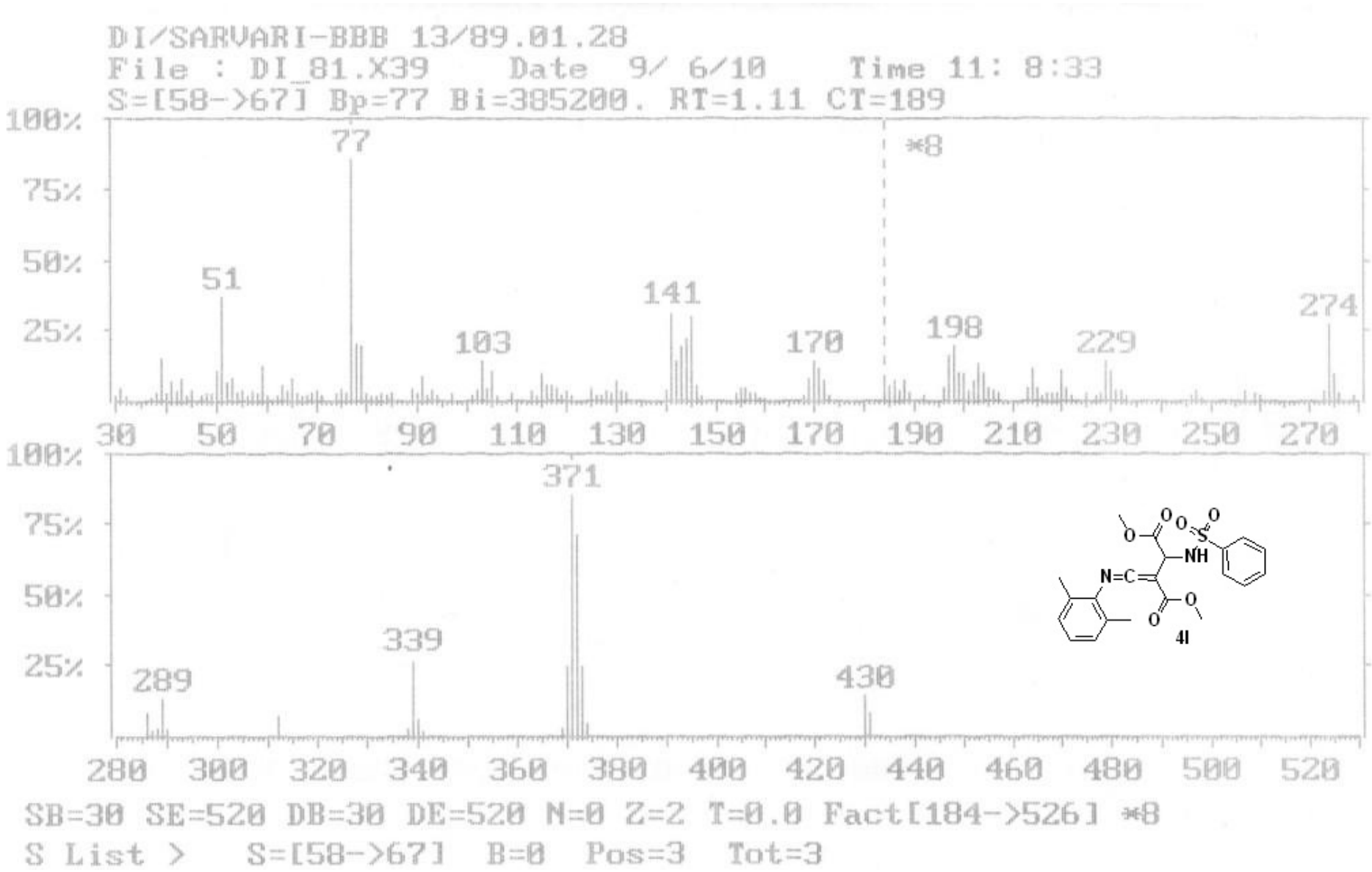
1D NMR plot parameters

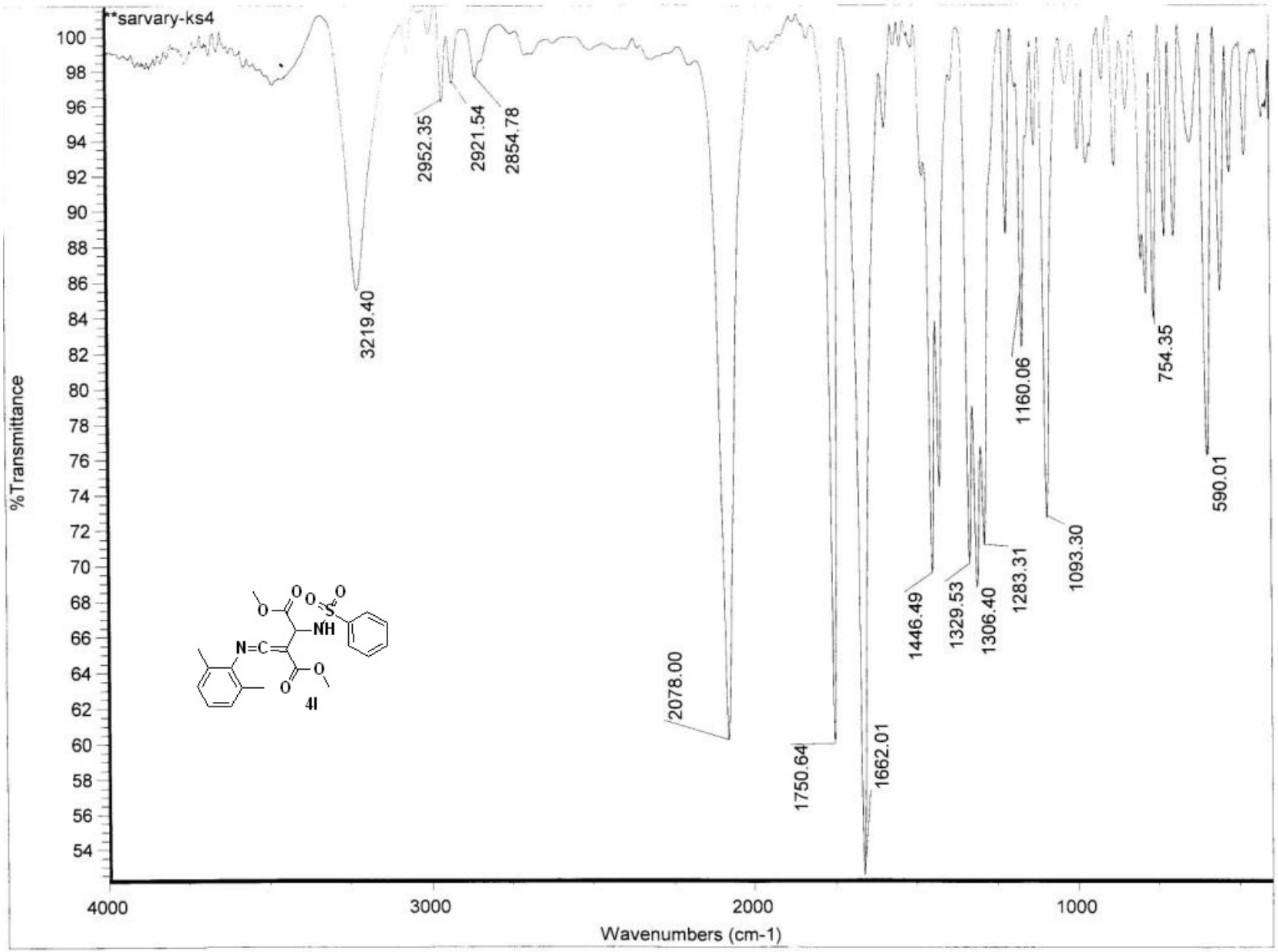
CX	20.00 cm
CY	20.12 cm
F1P	219.155 ppm
F1	16539.10 Hz
F2P	-19.167 ppm
F2	-1446.51 Hz
PPMCM	11.91609 ppm/cm

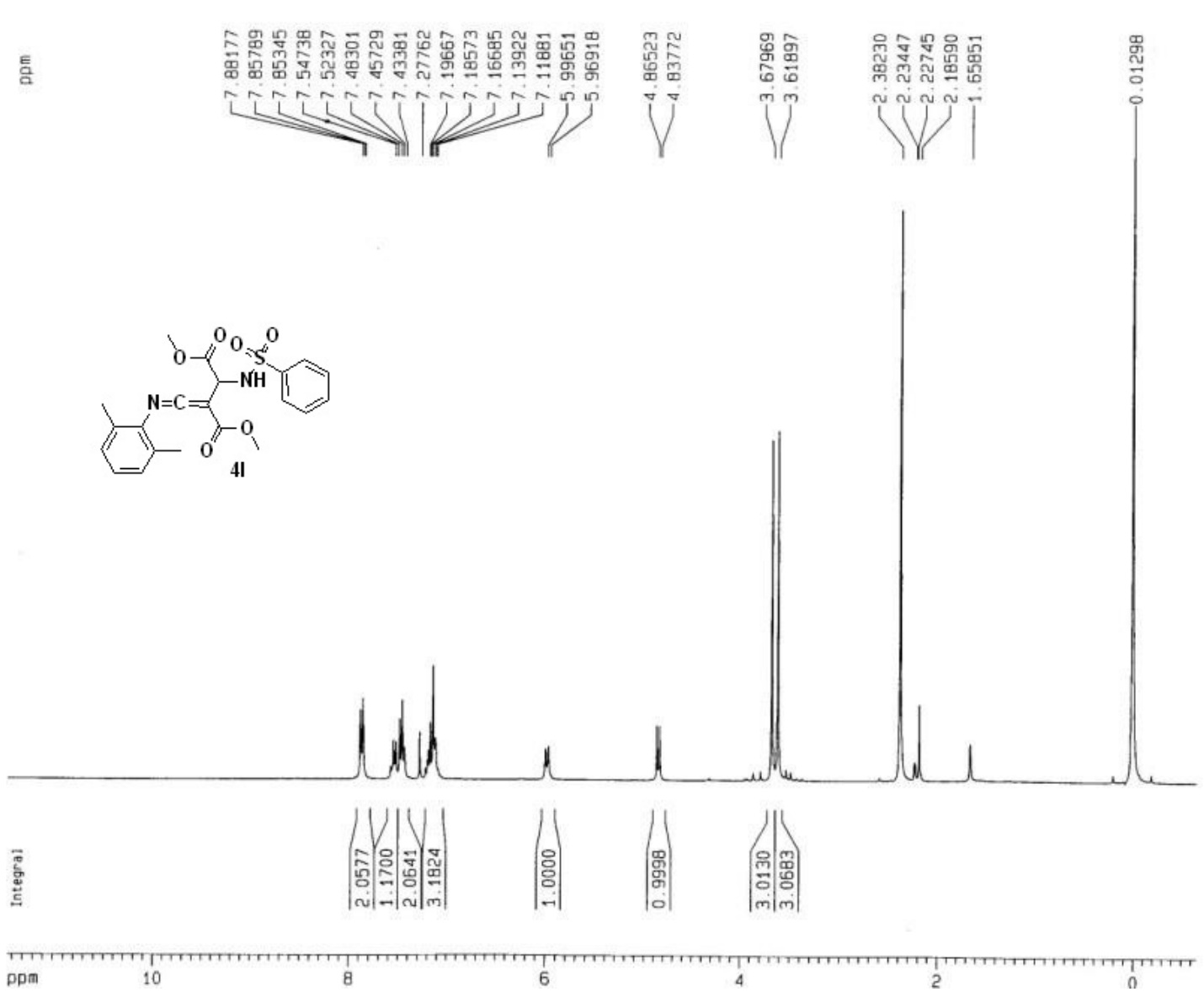

1H NMR
ppm
7.75996
7.73353
7.30186
7.27600
5.80429
5.77743
4.66714
4.64012
3.63208
2.42160
2.18357
1.43204
1.34367
1.26408
0.88936
0.00956
4k
Integral
2.080
2.735
1.000
0.954
6.197
3.613
0.774
1.145
10.045
4.176
1.080
ppm
10
8
6
4
2
0
Current Data Parameters
NAME Ghasemi
EXPNO 12
PROCNO 1
F2 - Acquisition Parameters
Date_ 20080421
Time 13.32
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 228.1
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz
F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 16.79 cm
F1P 10.910 ppm
F1 3274.50 Hz
F2P -0.964 ppm
F2 -289.45 Hz
PPMCM 0.59373 ppm/cm
HZCM 178.19748 Hz/cm




```
Current Data Parameters
NAME                  Ghasemi
EXPNO                      13
PROCNO                      1

F2 - Acquisition Parameters
Date_               20080421
Time                   13.38
INSTRUM                spect
PROBHD   5 mm BBO BB-1H
PULPROG                zgpg30
TD                      65536
SOLVENT                CDCl3
NS                        580
DS                          1
SWH                17985.611 Hz
FIDRES                 0.274439 Hz
AQ                     1.8219508 sec
RG                       2048
DW                     27.800 usec
DE                      6.00 usec
TE                     300.0 K
D1                  2.00000000 sec
d11                 0.03000000 sec
d12                 0.00002000 sec

======== CHANNEL f1 ========
NUC1                       13C
P1                      8.75 usec
PL1                     -2.00 dB
SFO1               75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  87.00 usec
PL2                     -2.00 dB
PL12                    12.00 dB
PL13                    18.00 dB
SFO2              300.1312005 MHz

F2 - Processing parameters
SI                        65536
SF                 75.4677490 MHz
WDW                        EM
SSB                         0
LB                      0.50 Hz
GB                          0
PC                       1.40

1D NMR plot parameters
CX                     20.00 cm
CY                     26.34 cm
F1P                   219.155 ppm
F1                  16539.10 Hz
F2P                   -19.167 ppm
F2                  -1446.51 Hz
PPMCM                 11.91609 ppm/cm
HZCM                899.28058 Hz/cm
```


DI/SARVARI-BBB 13/89.01.28
File : DI_81.X39 Date 9/ 6/10 Time 11: 8:33
S=[58->67] Bp=77 Bi=385200. RT=1.11 CT=189
100%
75%
50%
25%
77
*8
51
141
103
170
198
229
274
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
371
339
289
430
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=520 DB=30 DE=520 N=0 Z=2 T=0.0 Fact[184->526] *8
S List > S=[58->67] B=0 Pos=3 Tot=3
NH
N=C
4l


*sarvary-ks4
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
3219.40
2952.35
2921.54
2854.78
2078.00
1750.64
1662.01
1446.49
1329.53
1306.40
1283.31
1160.06
1093.30
754.35
590.01
4l



Current Data Parameters

NAME	Sarvari
EXPNO	442
PROCNO	1

F2 - Acquisition Parameters

Date_	20090530
Time	19.03
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	32
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

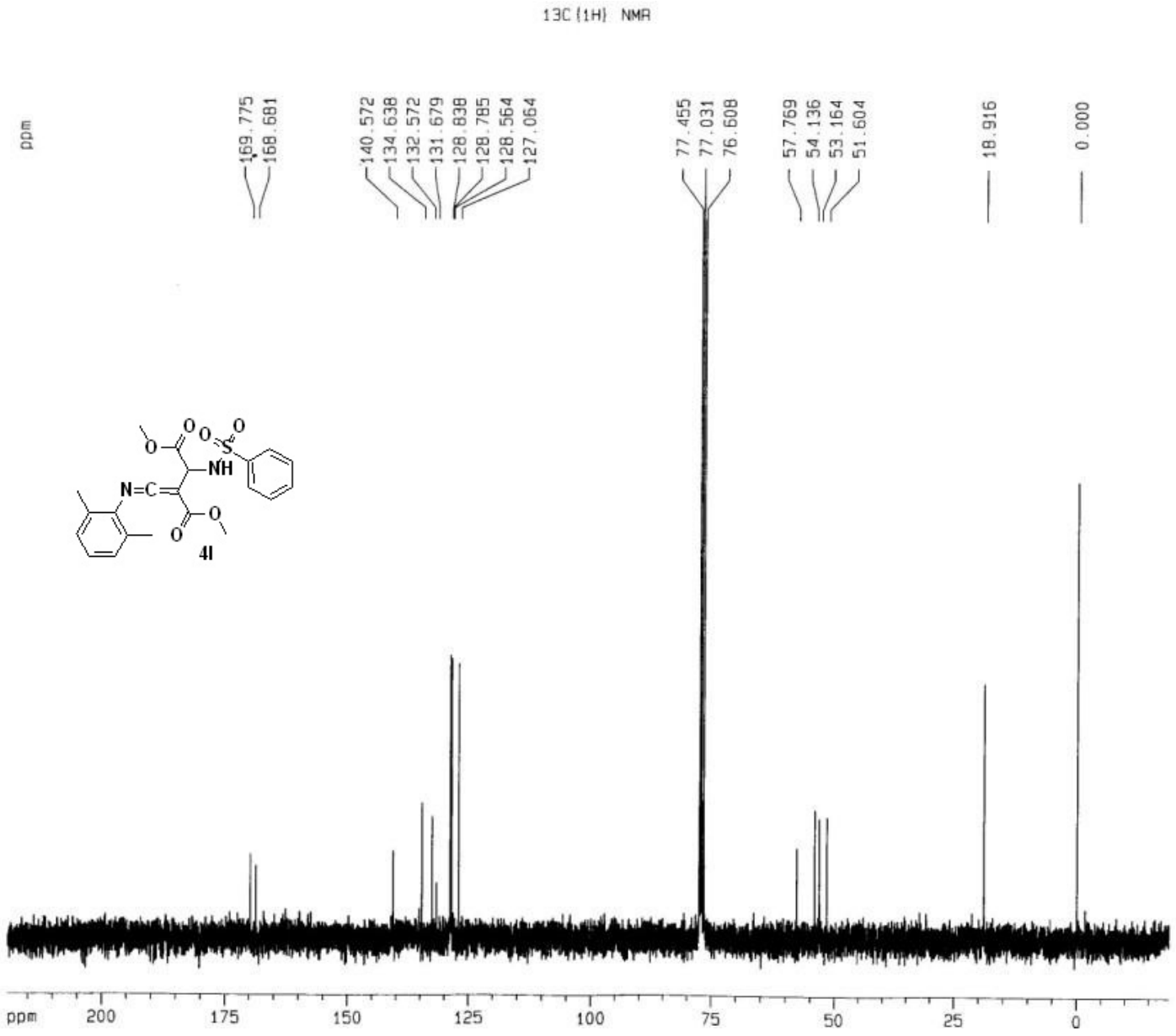
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1323986 MHz

F2 - Processing parameters

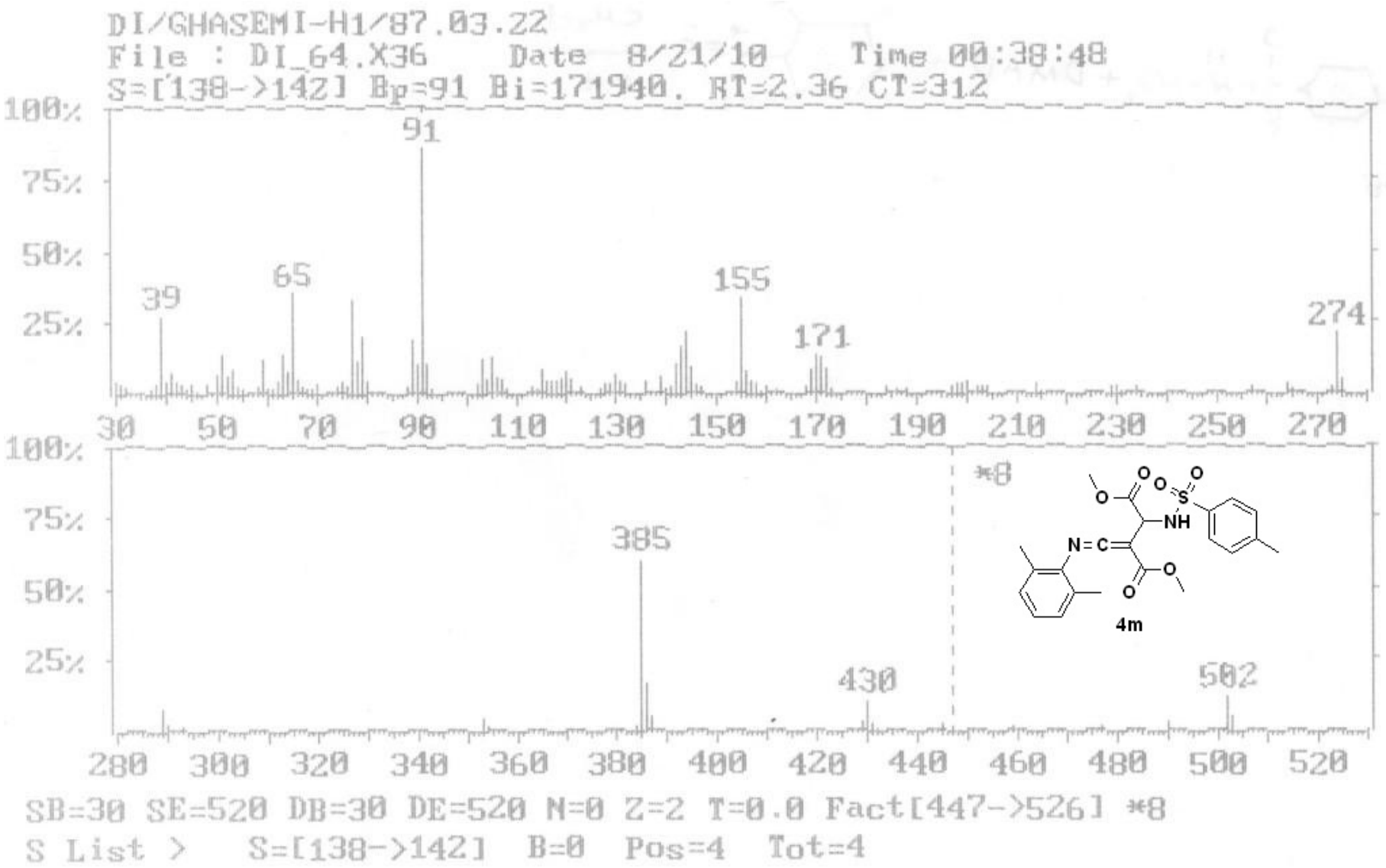
SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

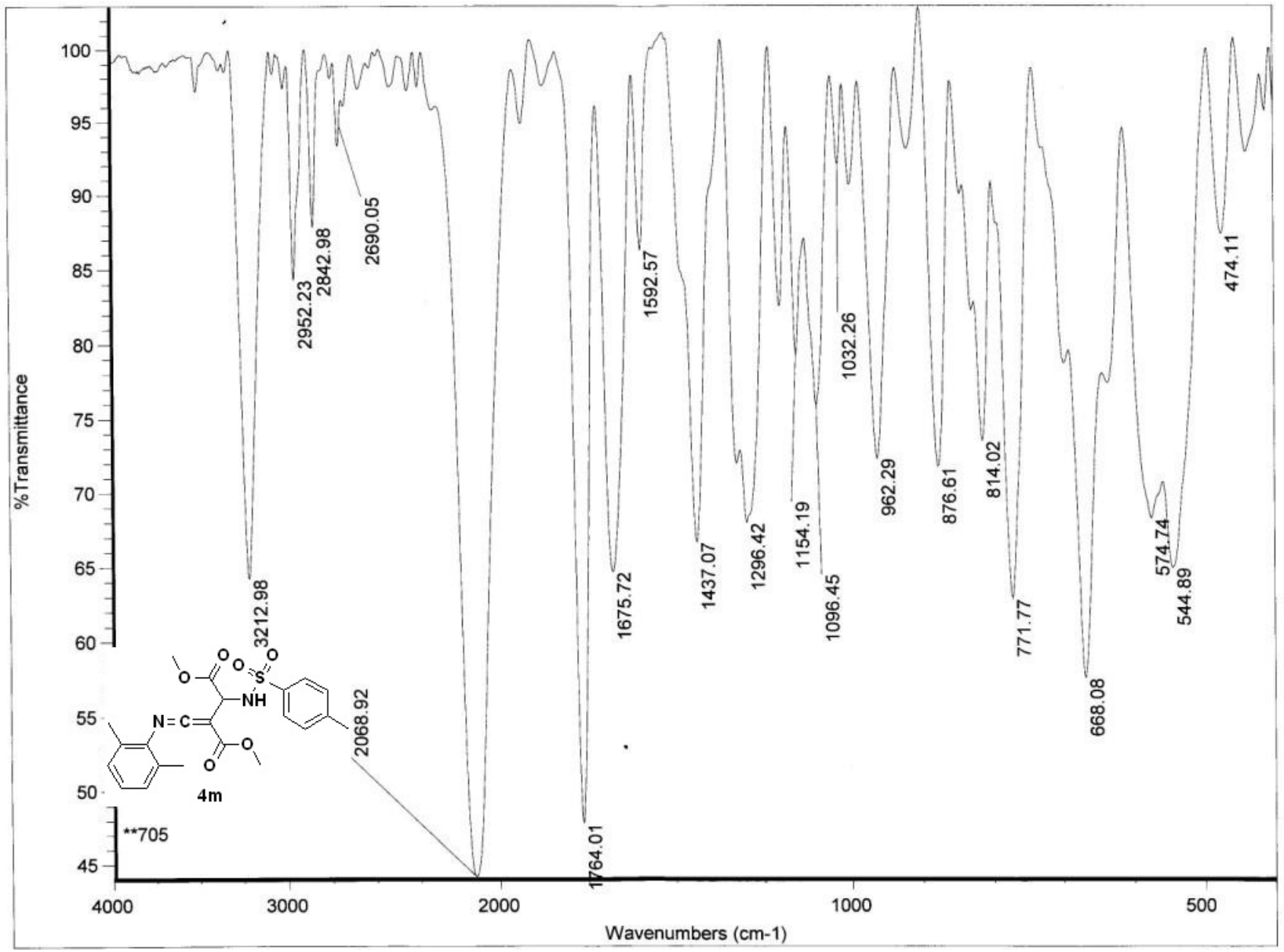
1D NMR plot parameters

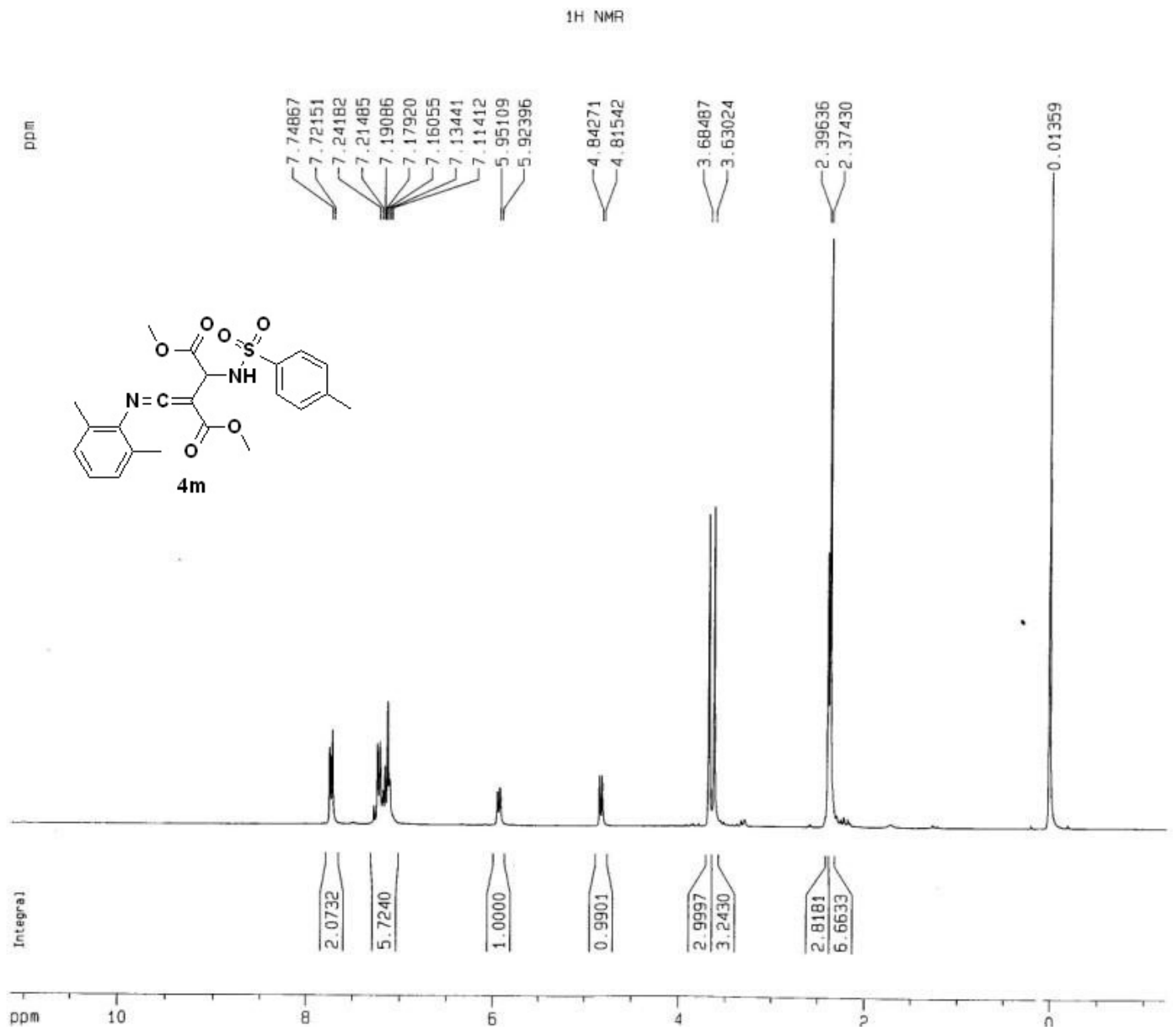
CX	20.00 cm
CY	24.90 cm
F1P	11.447 ppm
F1	3435.58 Hz
F2P	-0.663 ppm
F2	-198.84 Hz
PPMCM	0.60547 ppm/cm
HZCM	181.72116 Hz/cm



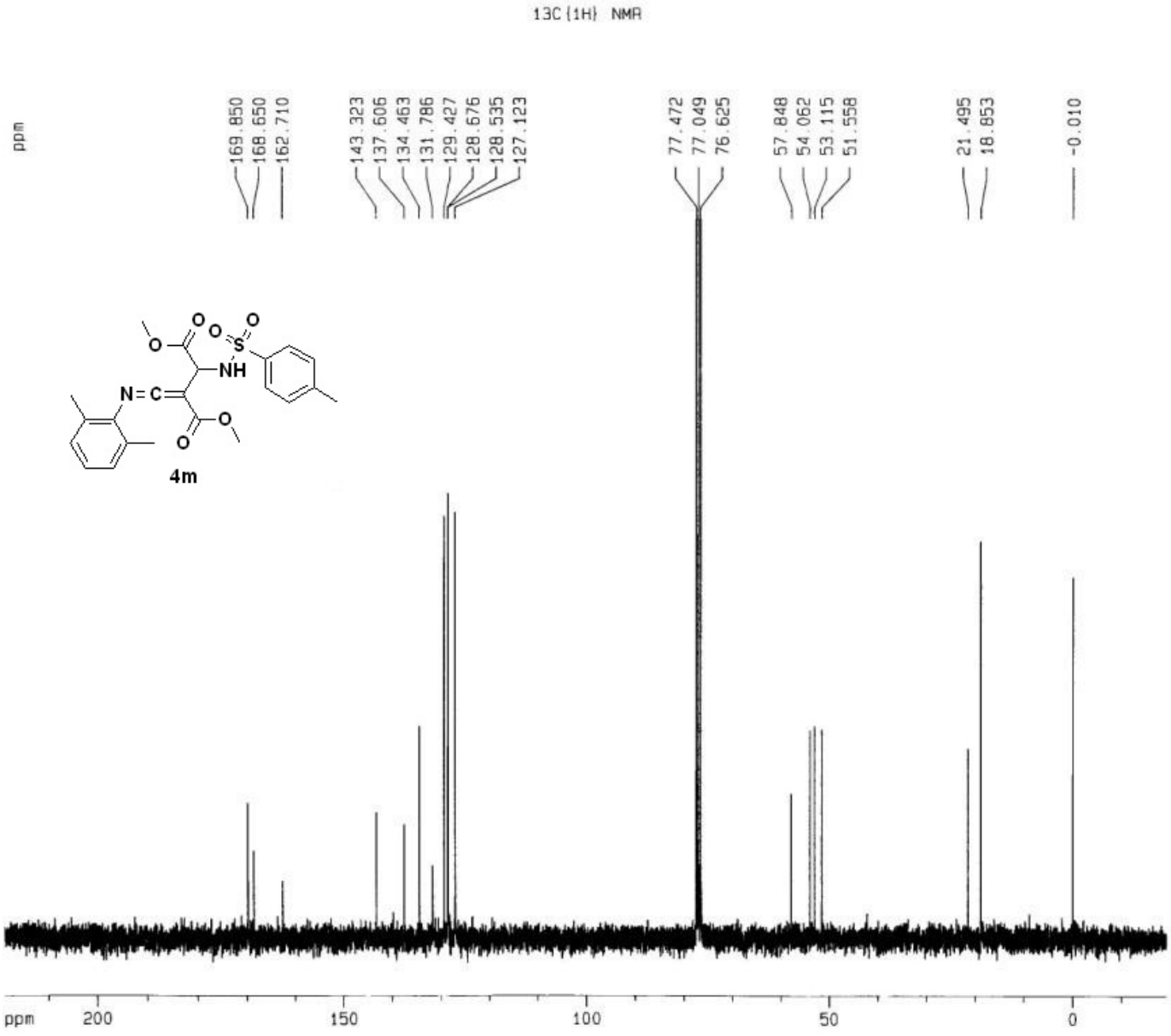

```
Current Data Parameters
NAME                  Sarvari
EXPNO                     443
PROCNO                      1

F2 - Acquisition Parameters
Date_              20090530
Time                  19.13
INSTRUM               spect
PROBHD   5 mm BBO BB-1H
PULPROG               zgpg30
TD                     65536
SOLVENT                CDCl3
NS                       264
OS                         2
SWH               17985.611 Hz
FIDRES            0.274439 Hz
AQ                1.8219508 sec
RG                      2048
DW                  27.800 usec
DE                   6.00 usec
TE                   300.0 K
D1                2.00000000 sec
d11               0.03000000 sec
d12               0.00002000 sec

======== CHANNEL f1 ========
NUC1                      13C
P1                     8.75 usec
PL1                   -2.00 dB
SFO1             75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                 87.00 usec
PL2                   -2.00 dB
PL12                  12.00 dB
PL13                  18.00 dB
SFO2            300.1312005 MHz

F2 - Processing parameters
SI                        65536
SF               75.4677490 MHz
WDW                          EM
SSB                           0
LB                     1.00 Hz
GB                            0
PC                         1.40

1D NMR plot parameters
CX                    20.00 cm
CY                    20.86 cm
F1P                 219.155 ppm
F1                  16539.10 Hz
F2P                 -19.167 ppm
F2                  -1446.51 Hz
PPMCM              11.91609 ppm/cm
```


DI/GHASEMI-H1/87.03.22
File : DI_64.X36 Date 8/21/10 Time 00:38:48
S=[138->142] Bp=91 Bi=171940. RT=2.36 CT=312
100%
75%
50%
25%
91
39
65
155
171
274
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
385
430
502
280 300 320 340 360 380 400 420 440 460 480 500 520
*8
4m
SB=30 SE=520 DB=30 DE=520 N=0 Z=2 T=0.0 Fact[447->526] *8
S List > S=[138->142] B=0 Pos=4 Tot=4

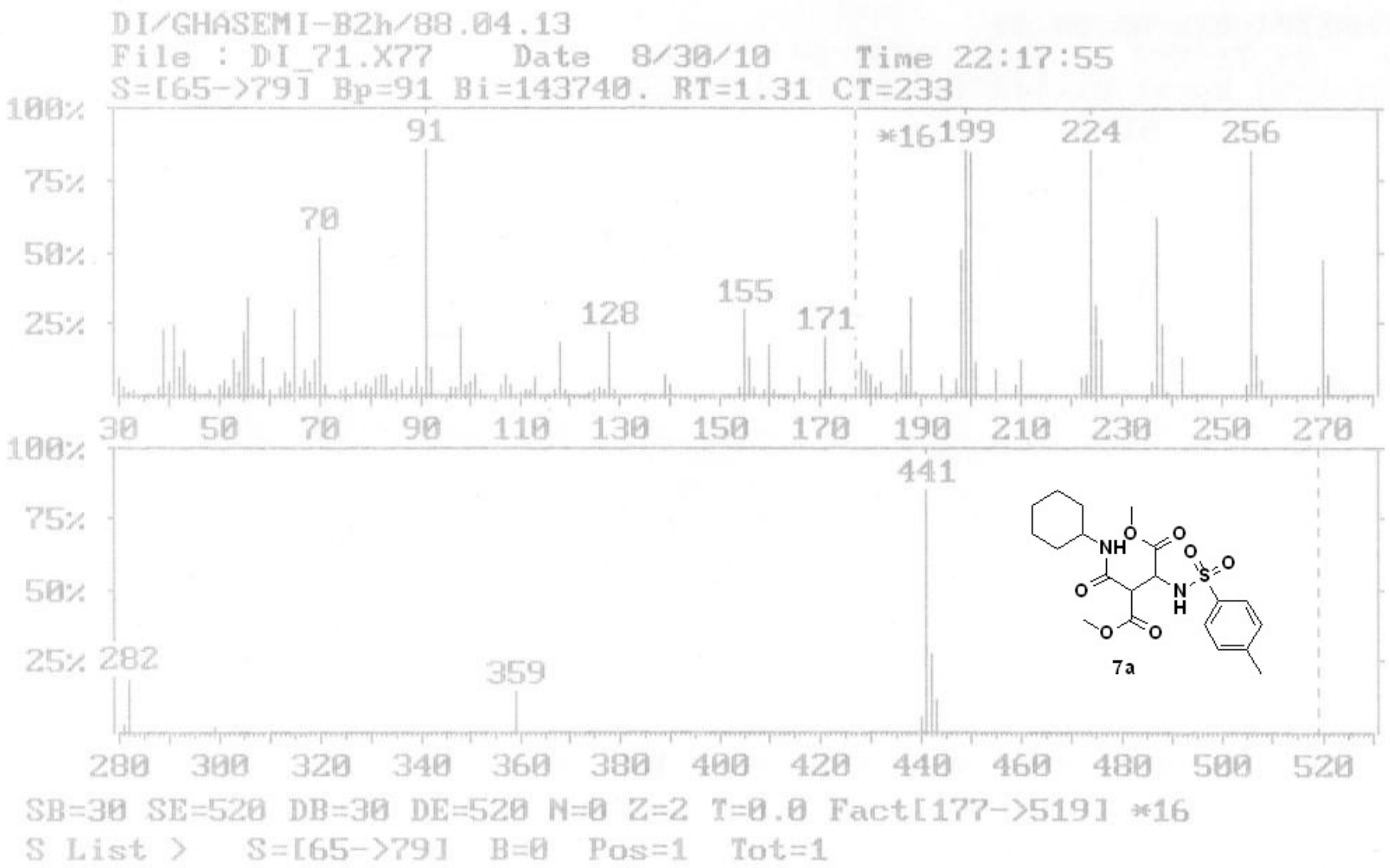

%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
500
100
95
90
85
80
75
70
65
60
55
50
45
3212.98
2952.23
2842.98
2690.05
2068.92
1764.01
1675.72
1592.57
1437.07
1296.42
1154.19
1096.45
1032.26
962.29
876.61
814.02
771.77
668.08
574.74
544.89
474.11
**705
4m

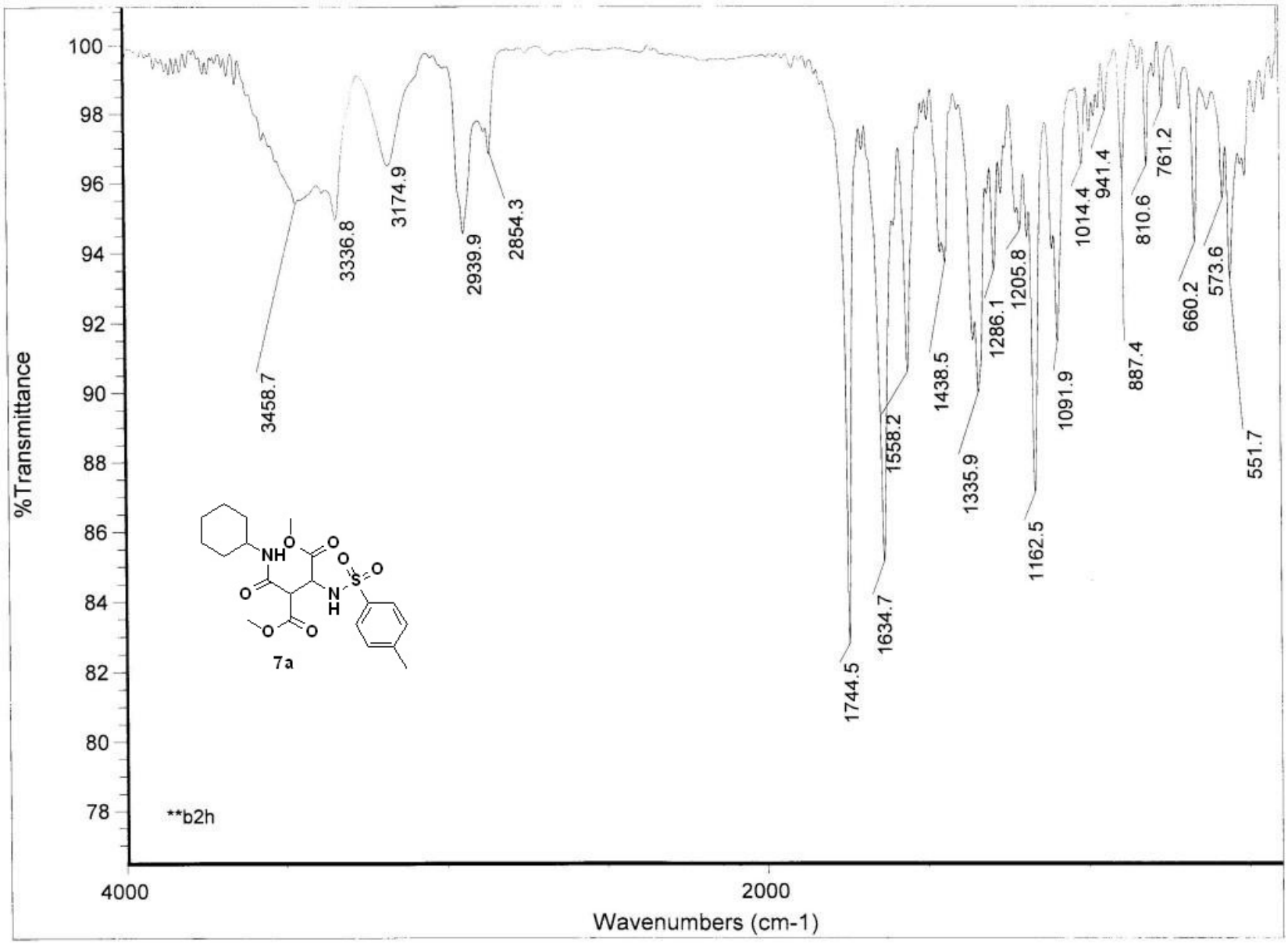


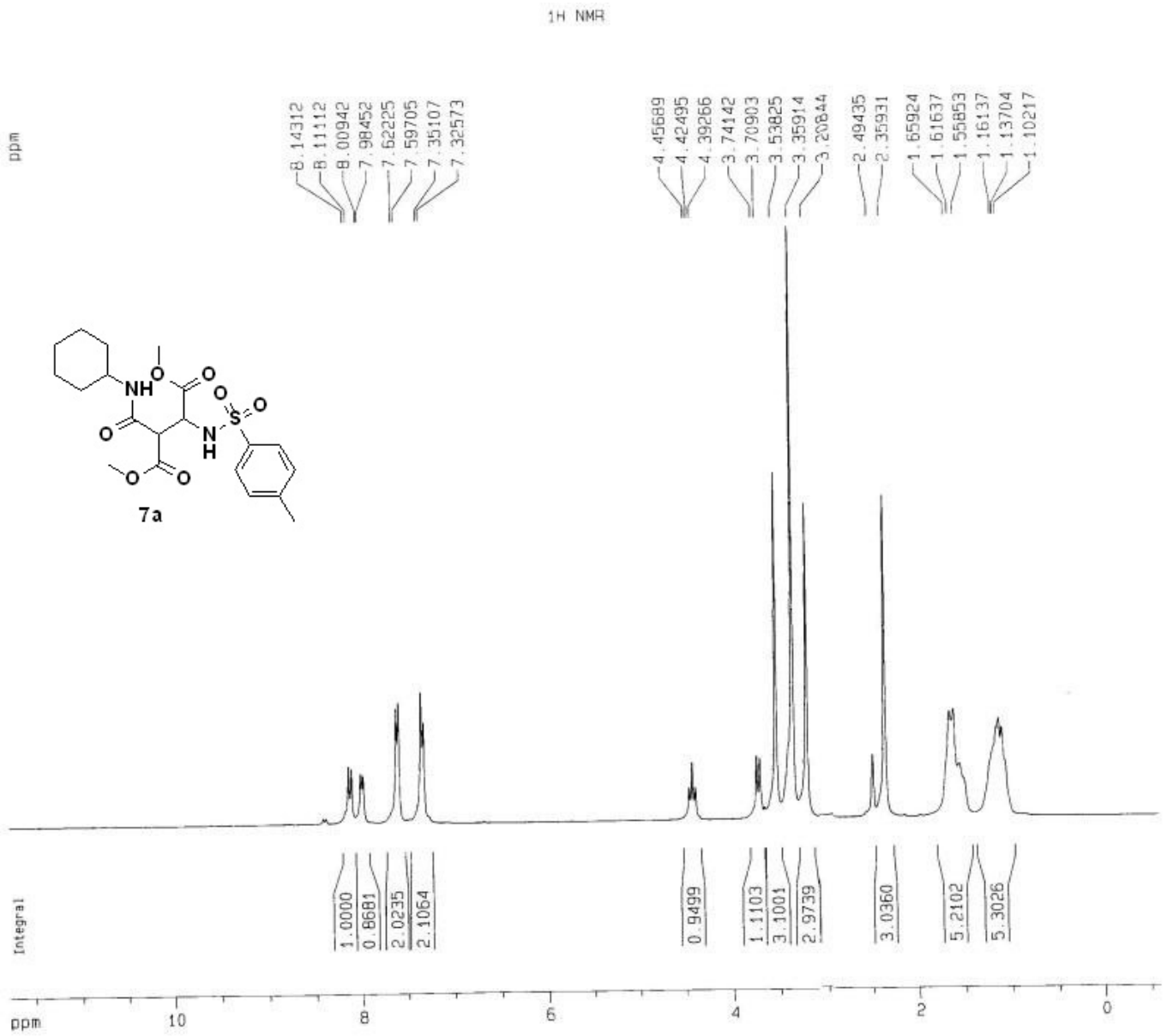

```
Current Data Parameters
NAME          Rezaeian-PHD
EXPNO                  361
PROCNO                   1

F2 - Acquisition Parameters
Date_             20090517
Time                 19.15
INSTRUM              spect
PROBHD   5 mm BBO BB-1H
PULPROG              zg30
TD                  32768
SOLVENT             CDCl3
NS                     10
DS                      1
SWH              7812.500 Hz
FIDRES           0.238419 Hz
AQ               2.0972021 sec
RG                   228.1
DW                64.000 usec
DE                 6.00 usec
TE                380.0 K
D1             2.00000000 sec

======== CHANNEL f1 ========
NUC1                   1H
P1                 15.50 usec
PL1                -2.00 dB
SFO1         300.1323986 MHz

F2 - Processing parameters
SI                  65536
SF          300.1300000 MHz
WDW                    EM
SSB                     0
LB                 0.30 Hz
GB                      0
PC                   1.00

1D NMR plot parameters
CX                 20.00 cm
CY                 11.24 cm
F1P               11.145 ppm
F1                3344.97 Hz
F2P                -1.233 ppm
F2                -369.99 Hz
PPMCM            0.61889 ppm/cm
HZCM           185.74823 Hz/cm
```




```
Current Data Parameters
NAME        Rezaeian-PHD
EXPNO             362
PROCNO              1

F2 - Acquisition Parameters
Date_          20090517
Time              19.15
INSTRUM           spect
PROBHD   5 mm BBO BB-1H
PULPROG         zgpg30
TD               65536
SOLVENT          CDCl3
NS                 188
DS                   2
SWH          17985.611 Hz
FIDRES         0.274439 Hz
AQ             1.8219508 sec
RG                2048
DW               27.800 use
DE                6.00 use
TE              300.0 K
D1              2.00000000 sec
d11             0.03000000 sec
d12             0.00002000 sec

======== CHANNEL f1 ========
NUC1               13C
P1                8.75 use
PL1              -2.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2               1H
PCPD2            87.00 use
PL2              -2.00 dB
PL12             12.00 dB
PL13             18.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI                65536
SF           75.4677490 MHz
WDW                EM
SSB                0
LB              1.00 Hz
GB                 0
PC              1.40

1D NMR plot parameters
CX              20.00 cm
CY              13.57 cm
F1P            219.155 ppm
F1            16539.10 Hz
F2P           -19.167 ppm
F2            -1446.51 Hz
PPMCM          11.91609 ppm/
HZCM          899.28058 Hz/
```


DI/GHASEMI-B2h/88.04.13
File : DI_71.X77 Date 8/30/10 Time 22:17:55
S=[65->79] Bp=91 Bi=143740. RT=1.31 CT=233
100%
75%
50%
25%
91
70
128
155
171
*16
199
224
256
30 50 70 90 110 130 150 170 190 210 230 250 270
441
282
359
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=520 DB=30 DE=520 N=0 Z=2 T=0.0 Fact[177->519] *16
S List > S=[65->79] B=0 Pos=1 Tot=1
NH
O
N
H
S
7a


%Transmittance
100
98
96
94
92
90
88
86
84
82
80
78
4000
2000
Wavenumbers (cm-1)
3458.7
3336.8
3174.9
2939.9
2854.3
1744.5
1634.7
1558.2
1438.5
1335.9
1286.1
1205.8
1162.5
1091.9
1014.4
941.4
887.4
810.6
761.2
660.2
573.6
551.7
**b2h
7a



Current Data Parameters

NAME	Sarvari
EXPNO	561
PROCNO	1

F2 - Acquisition Parameters

Date_	20100111
Time	2.10
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	228.1
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

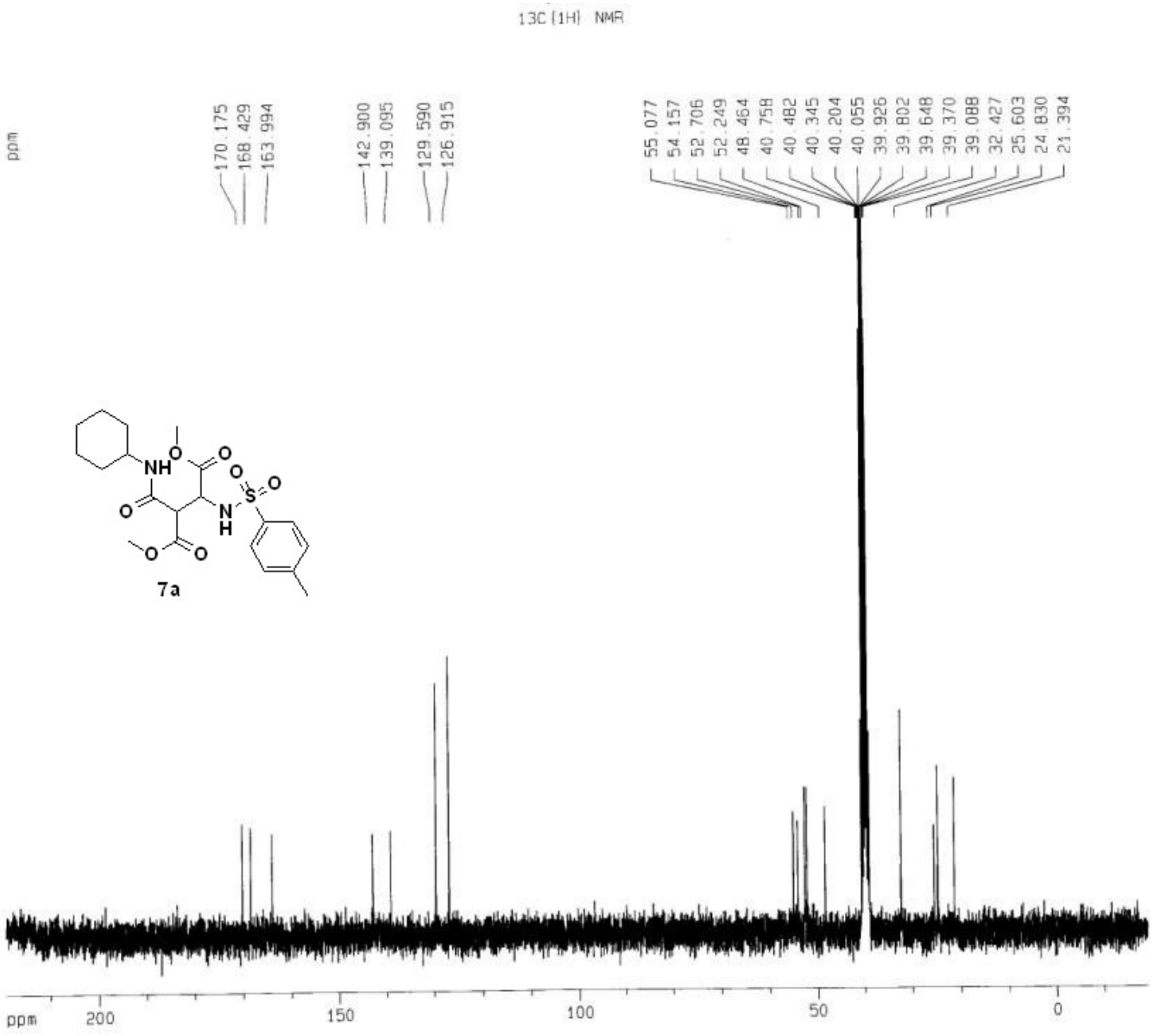
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1323986 MHz

F2 - Processing parameters

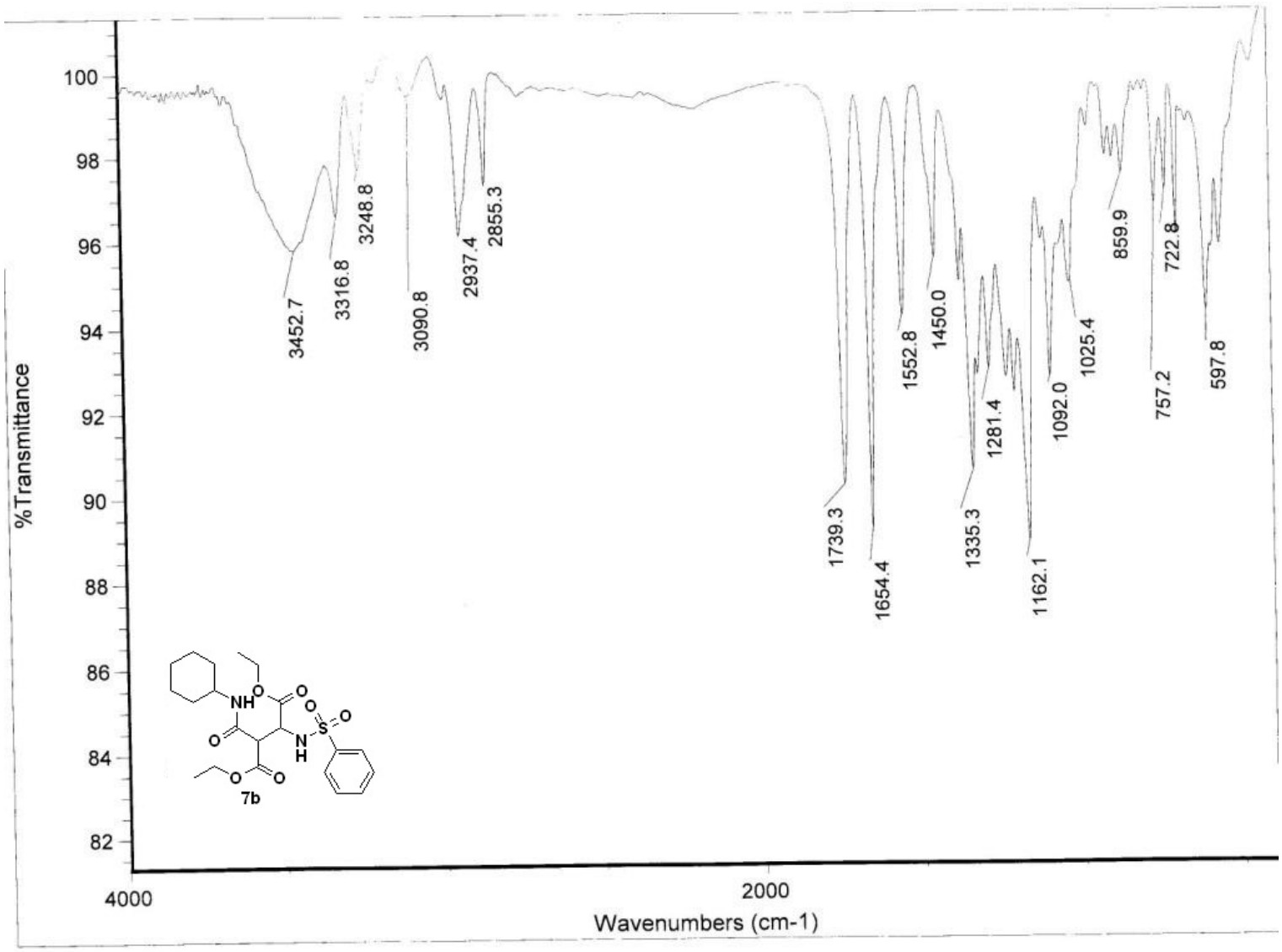
SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

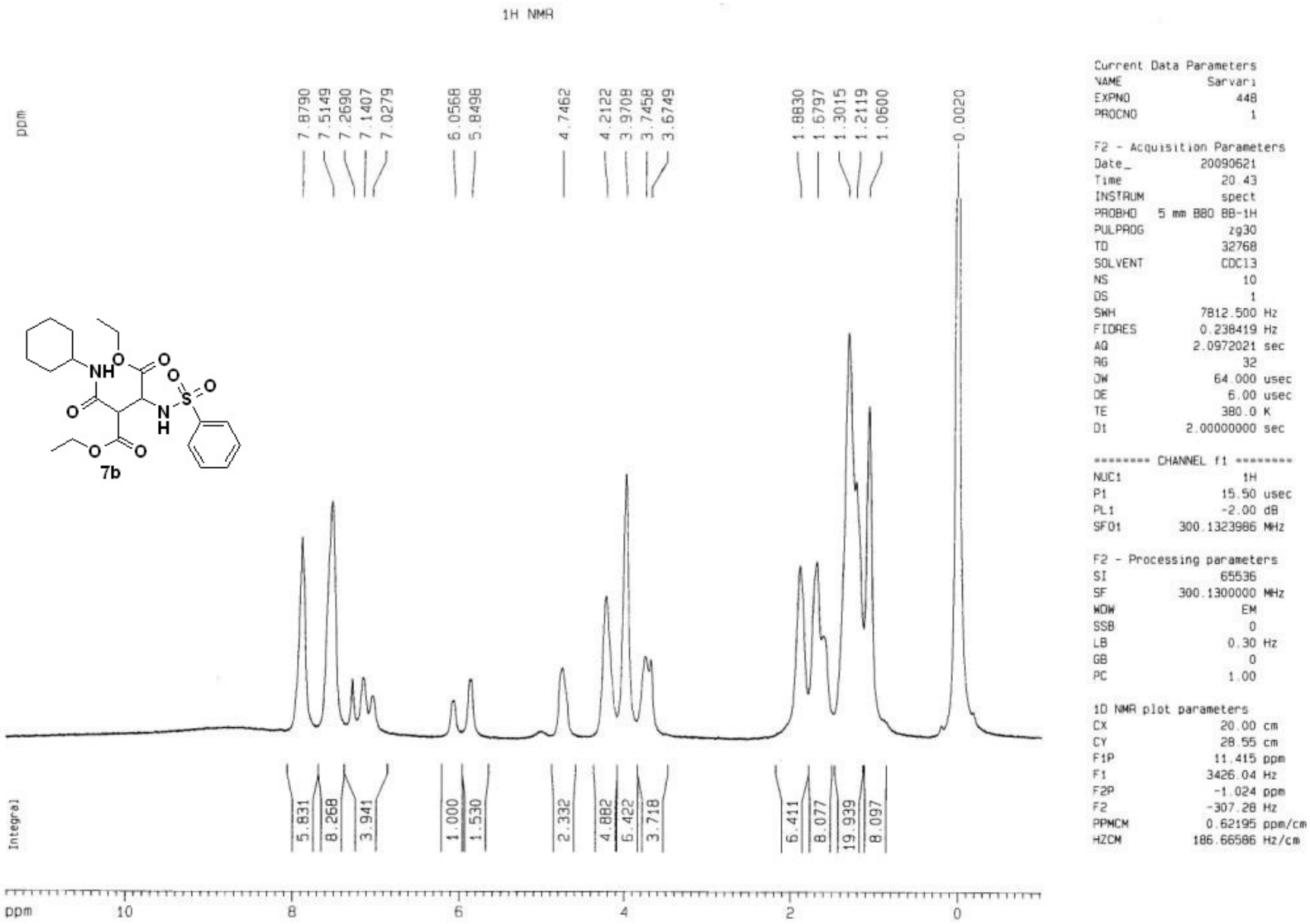
1D NMR plot parameters

CX	20.00 cm
CY	10.34 cm
F1P	11.782 ppm
F1	3536.15 Hz
F2P	-0.590 ppm
F2	-176.94 Hz
PPMCM	0.61858 ppm/cm
HZCM	185.65417 Hz/cm

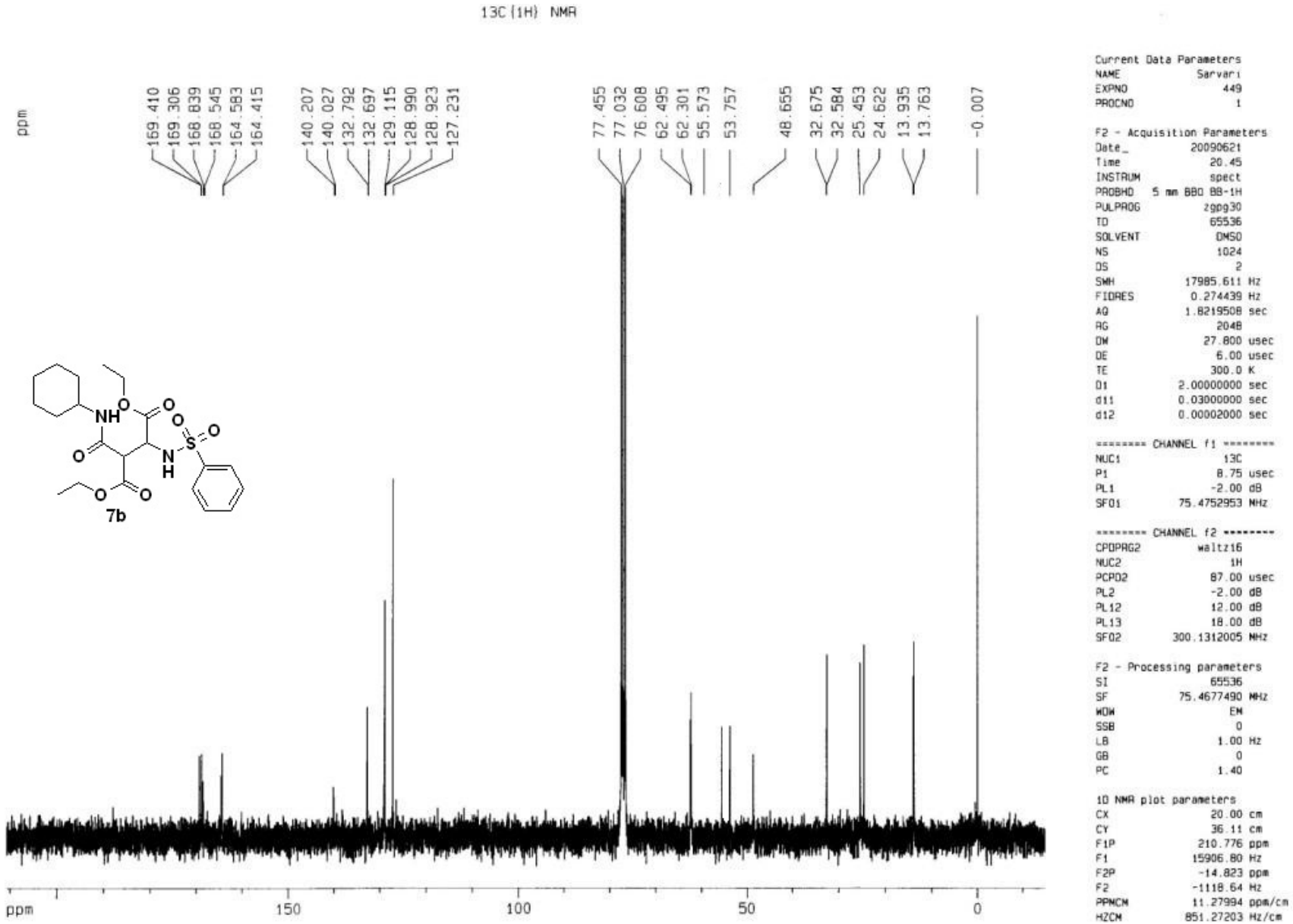


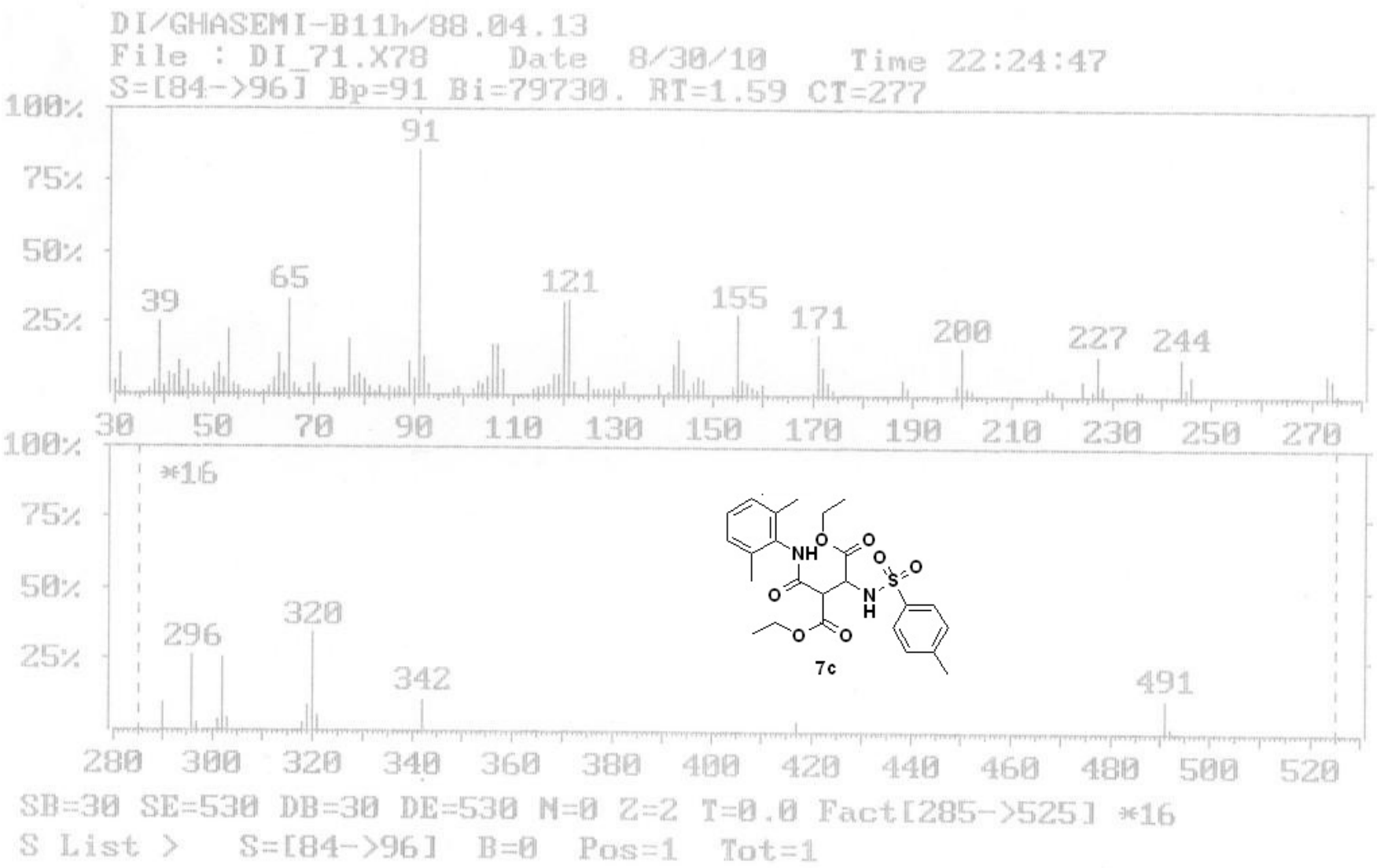

```
Current Data Parameters
NAME                  Sarvari
EXPNO                     562
PROCNO                      1

F2 - Acquisition Parameters
Date_               20100111
Time                    2.12
INSTRUM                spect
PROBHD   5 mm BBO BB-1H
PULPROG               zgpg30
TD                     65536
SOLVENT                DMSO
NS                       144
DS                         2
SWH                17985.611 Hz
FIDRES             0.274439 Hz
AQ                 1.8219508 sec
RG                      2048
DW                   27.800 usec
DE                    6.00 usec
TE                    300.0 K
D1                 2.00000000 sec
d11                0.03000000 sec
d12                0.00002000 sec

======== CHANNEL f1 ========
NUC1                      13C
P1                     8.75 usec
PL1                   -2.00 dB
SF01               75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                 87.00 usec
PL2                   -2.00 dB
PL12                  12.00 dB
PL13                  18.00 dB
SF02              300.1312005 MHz

F2 - Processing parameters
SI                         65536
SF                 75.4677490 MHz
WDW                           EM
SSB                            0
LB                      1.00 Hz
GB                             0
PC                          0.10

1D NMR plot parameters
CX                     20.00 cm
CY                     24.75 cm
F1P                  219.155 ppm
F1                  16539.11 Hz
F2P                  -19.167 ppm
F2                  -1446.51 Hz
PPMCM                11.91609 ppm/cm
HZCM                899.28058 Hz/cm
```


%Transmittance
100
98
96
94
92
90
88
86
84
82
4000
2000
Wavenumbers (cm-1)
3452.7
3316.8
3248.8
3090.8
2937.4
2855.3
1739.3
1654.4
1552.8
1450.0
1335.3
1281.4
1162.1
1092.0
1025.4
859.9
757.2
722.8
597.8
NH
O
O
O
O
O
S
O
N
H
O
O
7b

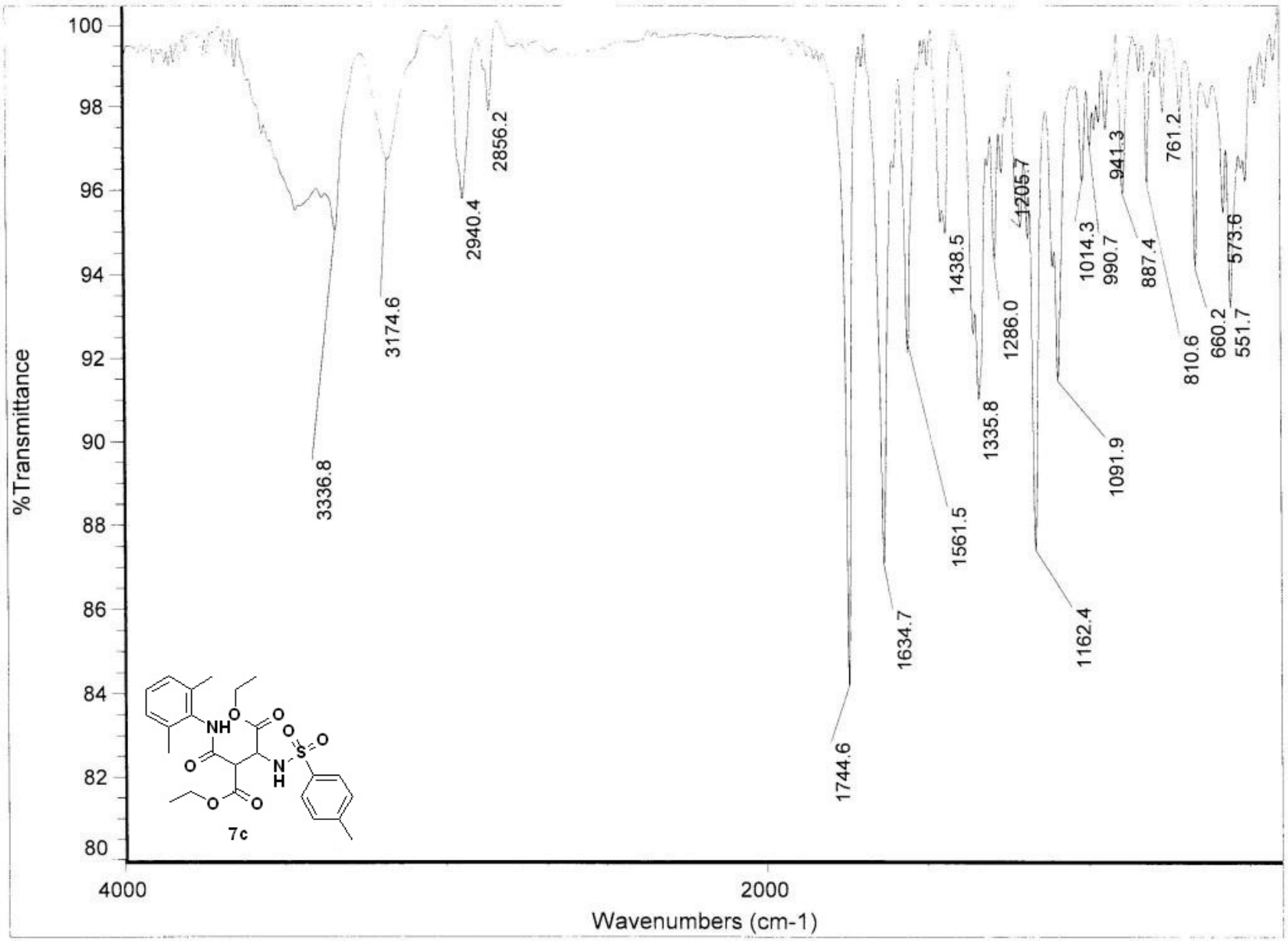


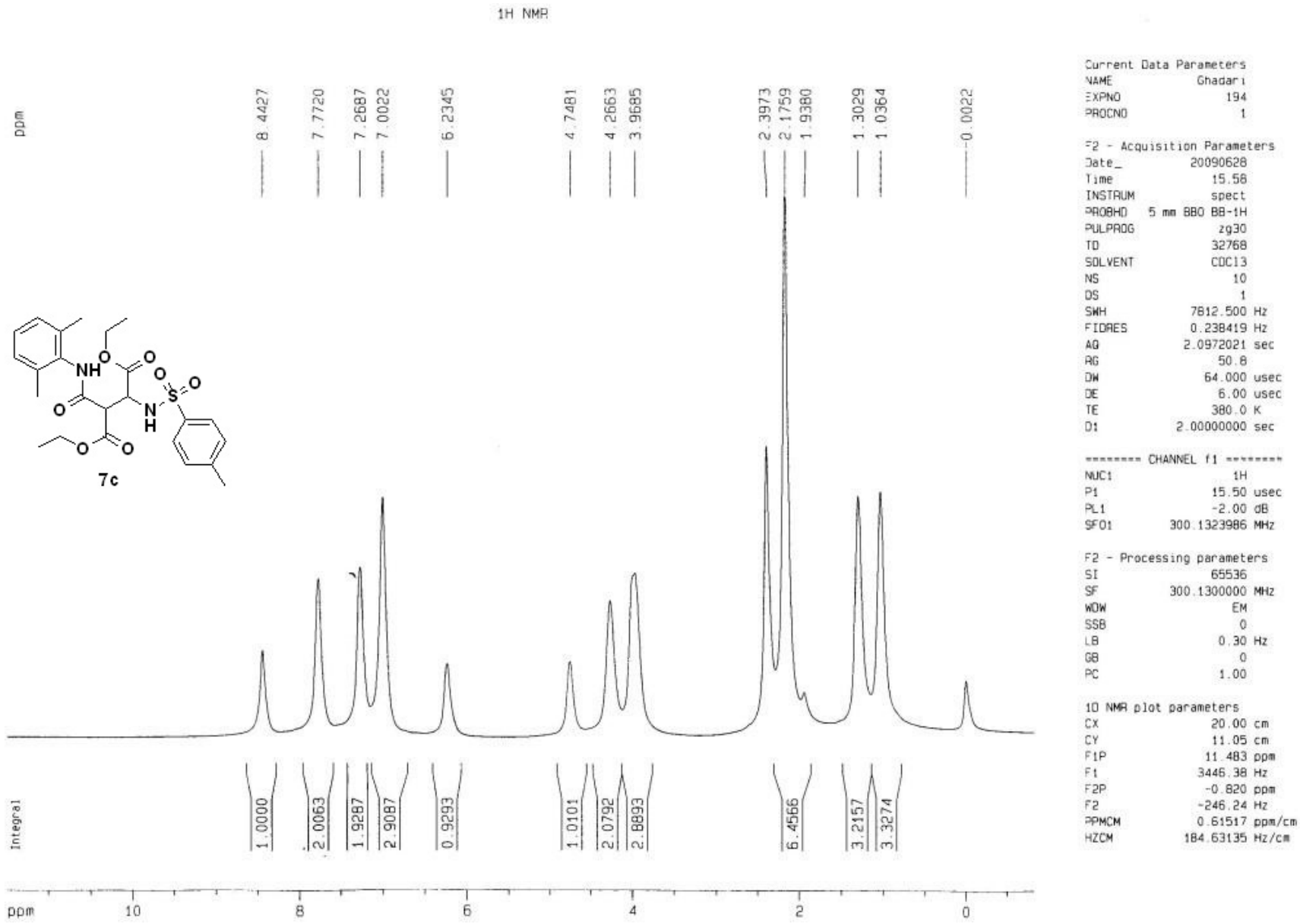

```
Current Data Parameters
NAME                  Sarvari
EXPNO                    448
PROCNO                     1

F2 - Acquisition Parameters
Date_              20090621
Time                  20.43
INSTRUM               spect
PROBHD   5 mm BBO BB-1H
PULPROG                zg30
TD                    32768
SOLVENT               CDCl3
NS                       10
DS                        1
SWH                7812.500 Hz
FIDRES             0.238419 Hz
AQ                 2.0972021 sec
RG                       32
DW                    64.000 usec
DE                     6.00 usec
TE                    380.0 K
D1                 2.00000000 sec

======== CHANNEL f1 ========
NUC1                      1H
P1                     15.50 usec
PL1                    -2.00 dB
SFO1              300.1323986 MHz

F2 - Processing parameters
SI                        65536
SF                300.1300000 MHz
WDW                       EM
SSB                        0
LB                      0.30 Hz
GB                         0
PC                      1.00

1D NMR plot parameters
CX                     20.00 cm
CY                     28.55 cm
F1P                   11.415 ppm
F1                   3426.04 Hz
F2P                   -1.024 ppm
F2                   -307.28 Hz
PPMCM                 0.62195 ppm/cm
HZCM                186.66586 Hz/cm
```

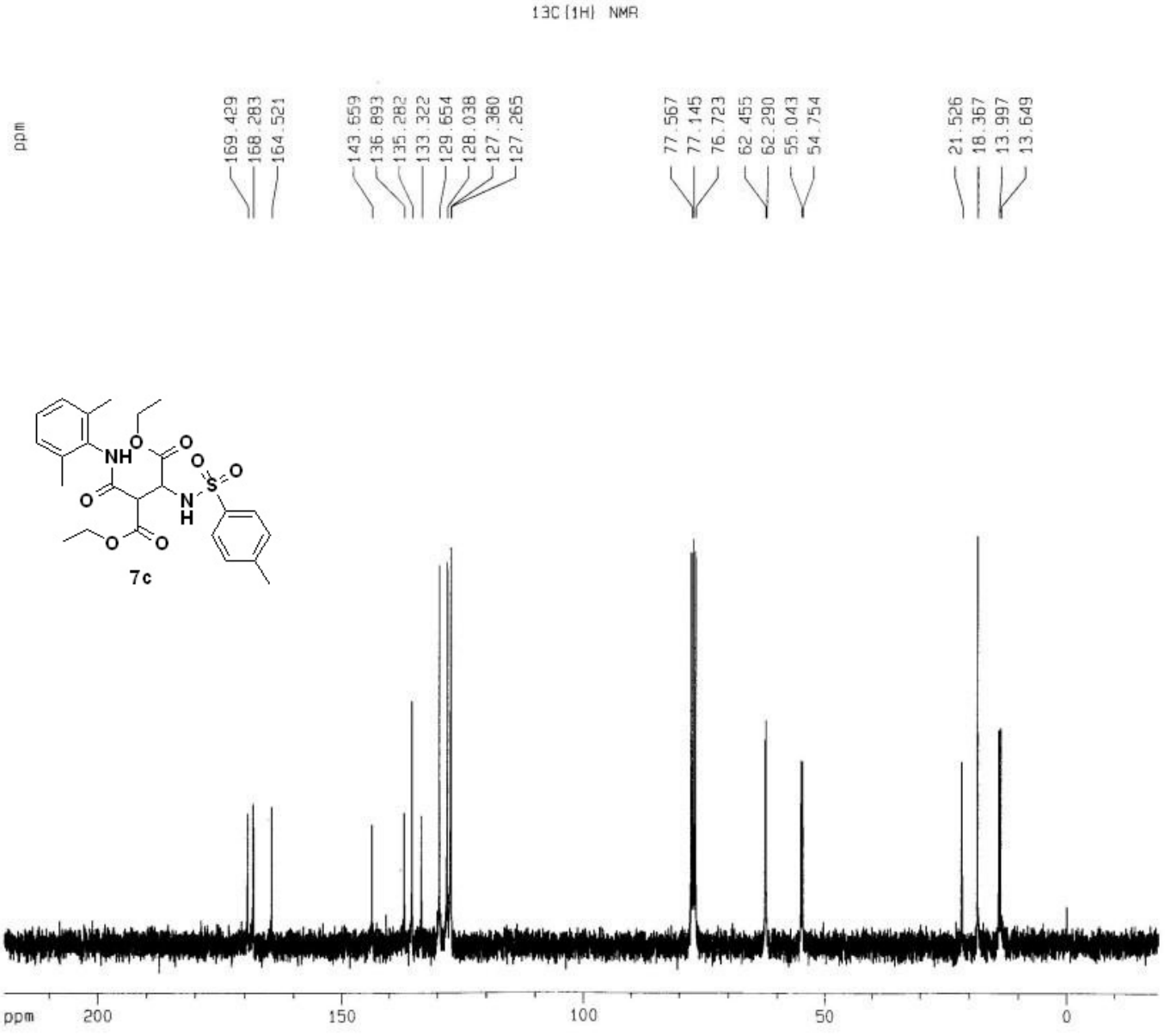

13C (1H) NMR
ppm
169.410
169.306
168.839
168.545
164.583
164.415
140.207
140.027
132.792
132.697
129.115
128.990
128.923
127.231
77.455
77.032
76.608
62.495
62.301
55.573
53.757
48.655
32.675
32.584
25.453
24.622
13.935
13.763
-0.007
7b
ppm
150
100
50
0
Current Data Parameters
NAME Sarvari
EXPNO 449
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090621
Time 20.45
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 1024
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SFO1 75.4752953 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SFO2 300.1312005 MHz
F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
1D NMR plot parameters
CX 20.00 cm
CY 36.11 cm
F1P 210.776 ppm
F1 15906.80 Hz
F2P -14.823 ppm
F2 -1118.64 Hz
PPMCM 11.27994 ppm/cm
HZCM 851.27203 Hz/cm


DI/GHASEMI-B11h/88.04.13
File : DI_71.X78 Date 8/30/10 Time 22:24:47
S=[84->96] Bp=91 Bi=79730. RT=1.59 CT=277
100%
75%
50%
25%
91
65
39
121
155
171
200
227
244
30 50 70 90 110 130 150 170 190 210 230 250 270
*16
320
296
342
491
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=530 DB=30 DE=530 N=0 Z=2 T=0.0 Fact[285->525] *16
S List > S=[84->96] B=0 Pos=1 Tot=1

7c


%Transmittance
100
98
96
94
92
90
88
86
84
82
80
4000
2000
Wavenumbers (cm-1)
3336.8
3174.6
2940.4
2856.2
1744.6
1634.7
1561.5
1438.5
1335.8
1286.0
1205.7
1162.4
1091.9
1014.3
990.7
941.3
887.4
810.6
761.2
660.2
573.6
551.7
NH
N
H
S
O
7c


1H NMR
ppm
8.4427
7.7720
7.2687
7.0022
6.2345
4.7481
4.2663
3.9685
2.3973
2.1759
1.9380
1.3029
1.0364
0.0022
7c
Integral
1.0000
2.0063
1.9287
2.9087
0.9293
1.0101
2.0792
2.8893
6.4566
3.2157
3.3274
ppm
10
8
6
4
2
0
Current Data Parameters
NAME Ghadari
EXPNO 194
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090628
Time 15.58
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 50.8
DW 64.000 usec
DE 6.00 usec
TE 380.0 K
D1 2.00000000 sec
======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz
F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
1D NMR plot parameters
CX 20.00 cm
CY 11.05 cm
F1P 11.483 ppm
F1 3446.38 Hz
F2P -0.820 ppm
F2 -246.24 Hz
PPMCM 0.61517 ppm/cm
HZCM 184.63135 Hz/cm



Current Data Parameters

NAME	Gnadari
EXPNO	195
PROCNO	1

F2 - Acquisition Parameters

Date_	20090628
Time	16.00
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zgpg30
TD	65536
SOLVENT	DMSO
NS	295
DS	2
SWH	17985.611 Hz
FIDRES	0.274439 Hz
AQ	1.8219508 sec
RG	2048
DW	27.800 usec
DE	6.00 usec
TE	300.0 K
D1	2.00000000 sec
d11	0.03000000 sec
d12	0.00002000 sec

======== CHANNEL f1 ========

NUC1	13C
P1	8.75 usec
PL1	-2.00 dB
SFO1	75.4752953 MHz

======== CHANNEL f2 ========

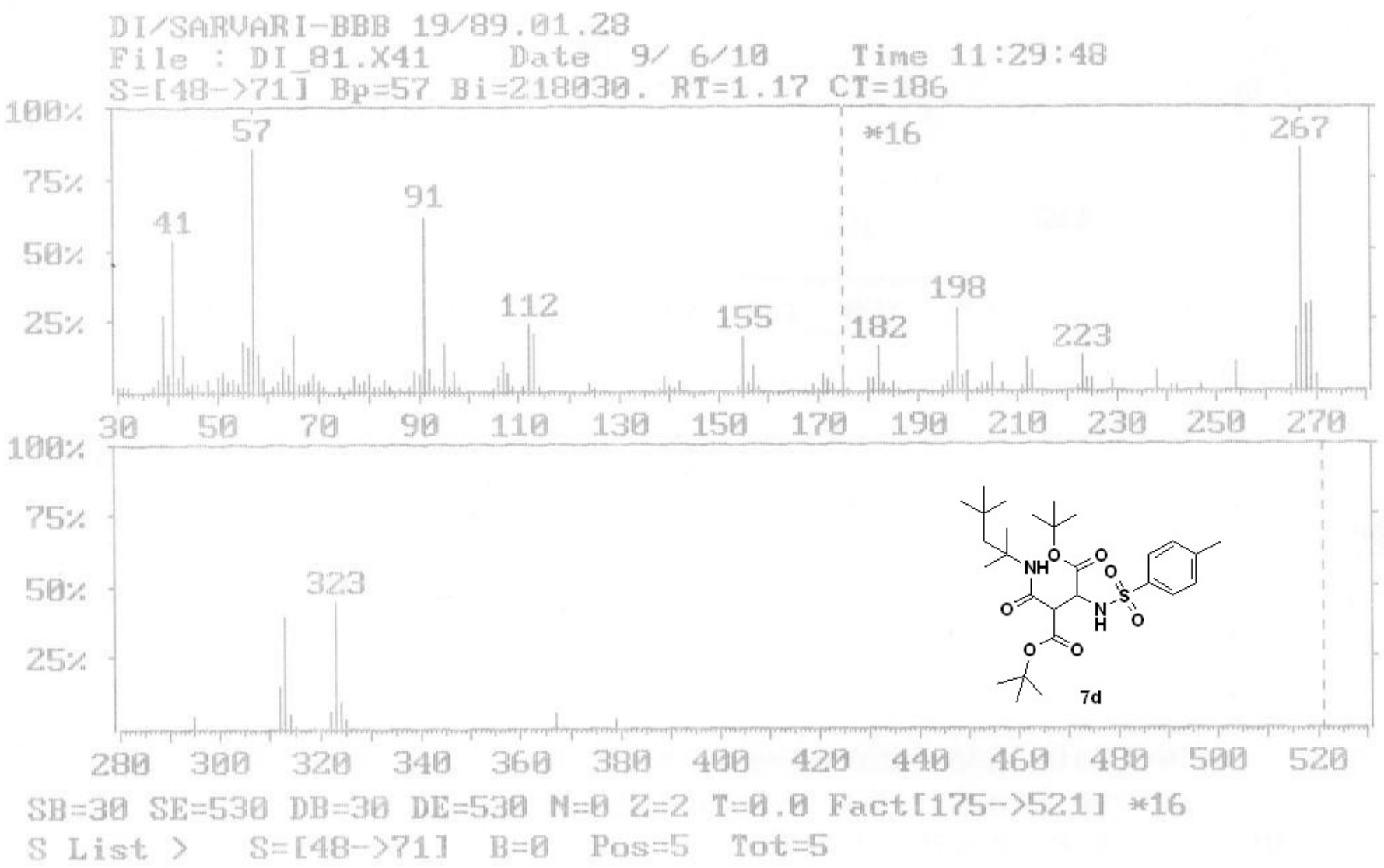
CPDPRG2	waltz16
NUC2	1H
PCPD2	87.00 usec
PL2	-2.00 dB
PL12	12.00 dB
PL13	18.00 dB
SFO2	300.1312005 MHz

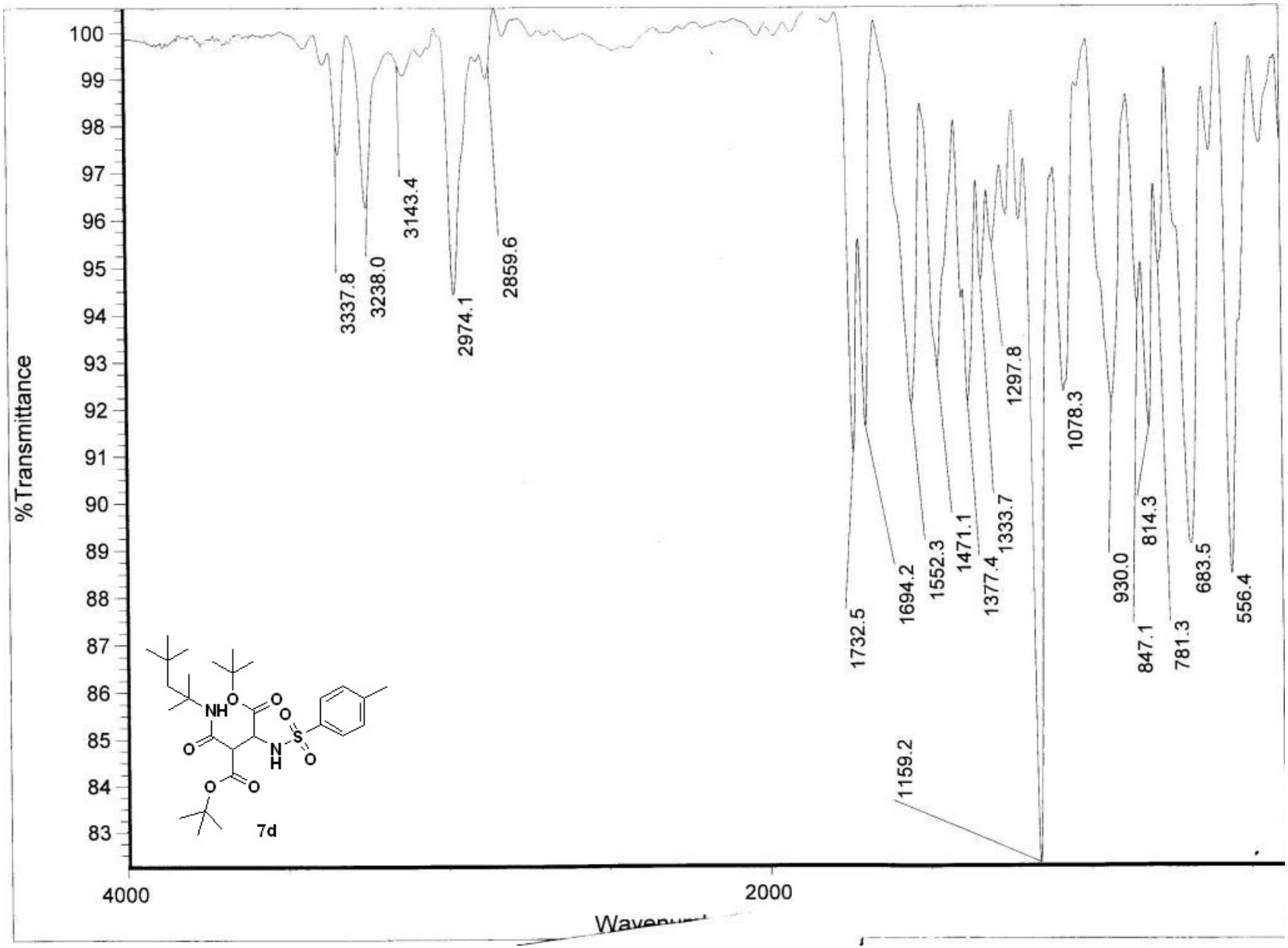
F2 - Processing parameters

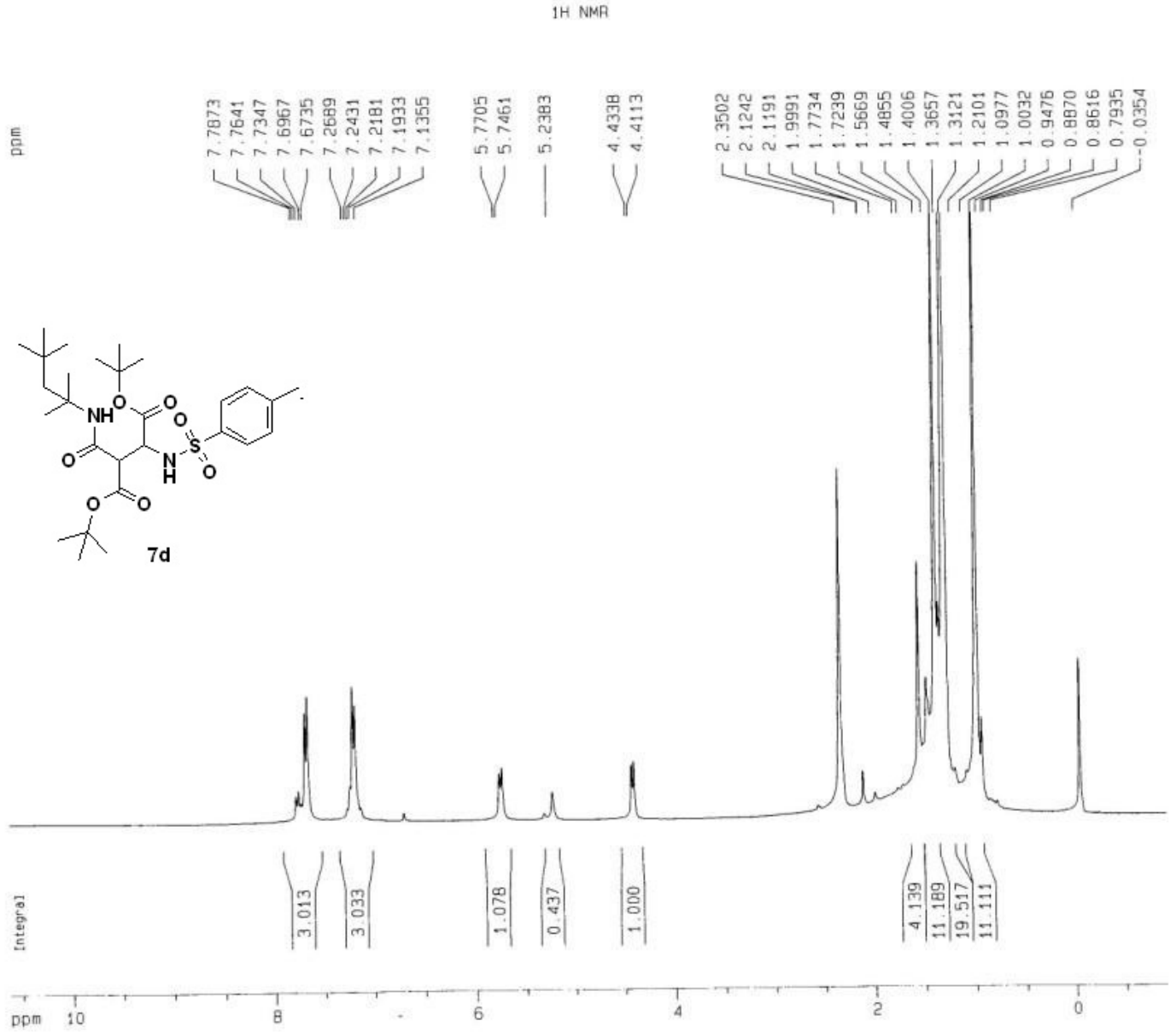
SI	65536
SF	75.4677490 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

1D NMR plot parameters

CX	20.00 cm
CY	6.99 cm
F1P	219.155 ppm
F1	16539.11 Hz
F2P	-19.167 ppm
F2	-1446.51 Hz
PPMCM	11.91609 ppm/cm
HZCM	899.28052 Hz/cm


DI/SARVARI-BBB 19/89.01.28
File : DI_81.X41 Date 9/ 6/10 Time 11:29:48
S=[48->71] Bp=57 Bi=218030. RT=1.17 CT=186
100%
75%
50%
25%
57
41
91
112
155
*16
182
198
223
267
30 50 70 90 110 130 150 170 190 210 230 250 270
100%
75%
50%
25%
323
280 300 320 340 360 380 400 420 440 460 480 500 520
SB=30 SE=530 DB=30 DE=530 N=0 Z=2 T=0.0 Fact[175->521] *16
S List > S=[48->71] B=0 Pos=5 Tot=5
NH
O
O
O
O
N
H
S
O
O
O
O
7d


%Transmittance
100
99
98
97
96
95
94
93
92
91
90
89
88
87
86
85
84
83
4000
2000
3337.8
3238.0
3143.4
2974.1
2859.6
1732.5
1694.2
1552.3
1471.1
1377.4
1333.7
1297.8
1159.2
1078.3
930.0
847.1
814.3
781.3
683.5
556.4
NH
O
O
O
O
N
H
S
O
O
O
O
7d



Current Data Parameters

NAME	Sarvari
EXPNO	418
PROCNO	1

F2 - Acquisition Parameters

Date_	20090425
Time	13.35
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	32
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

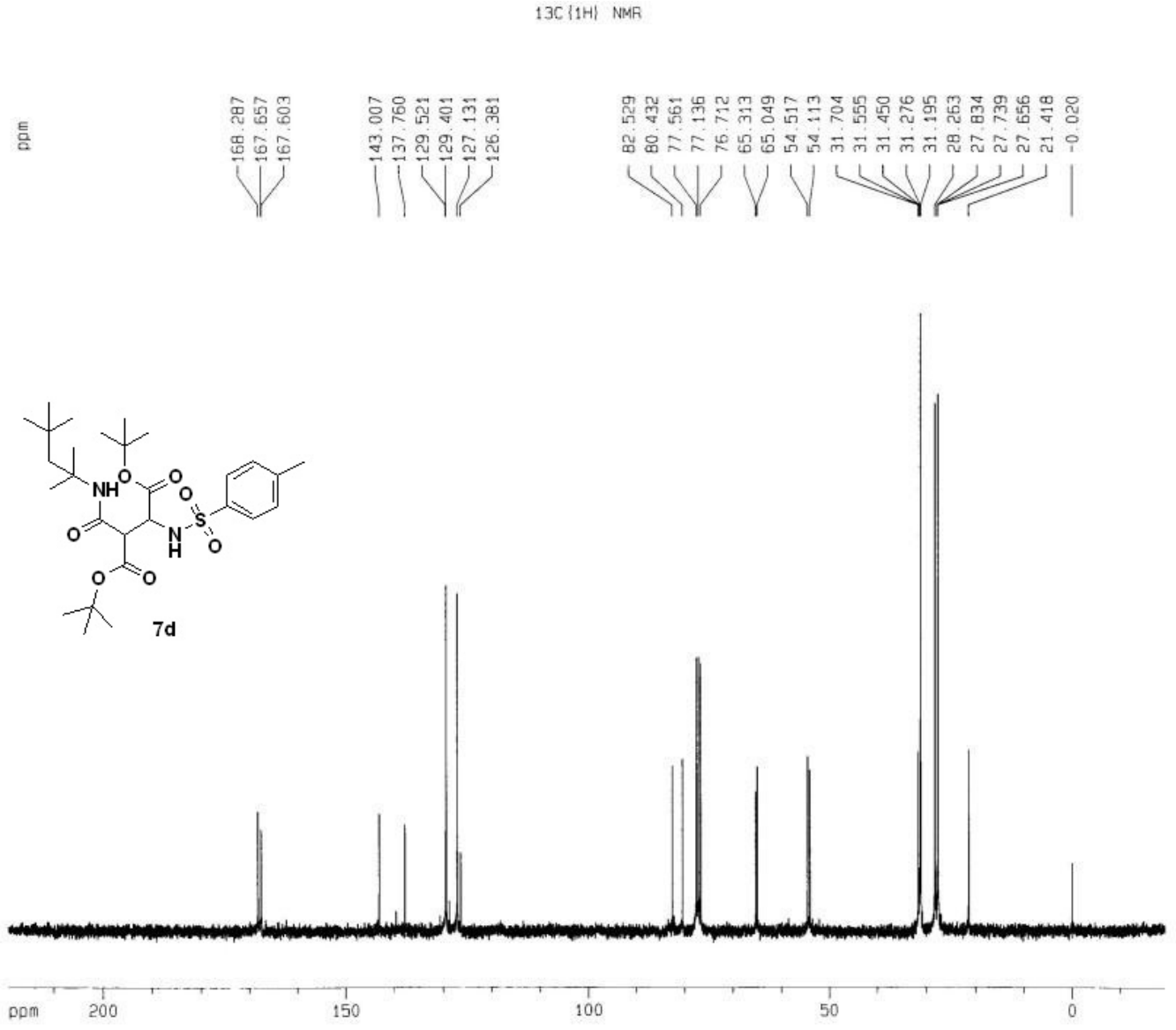
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SF01	300.1323986 MHz

F2 - Processing parameters

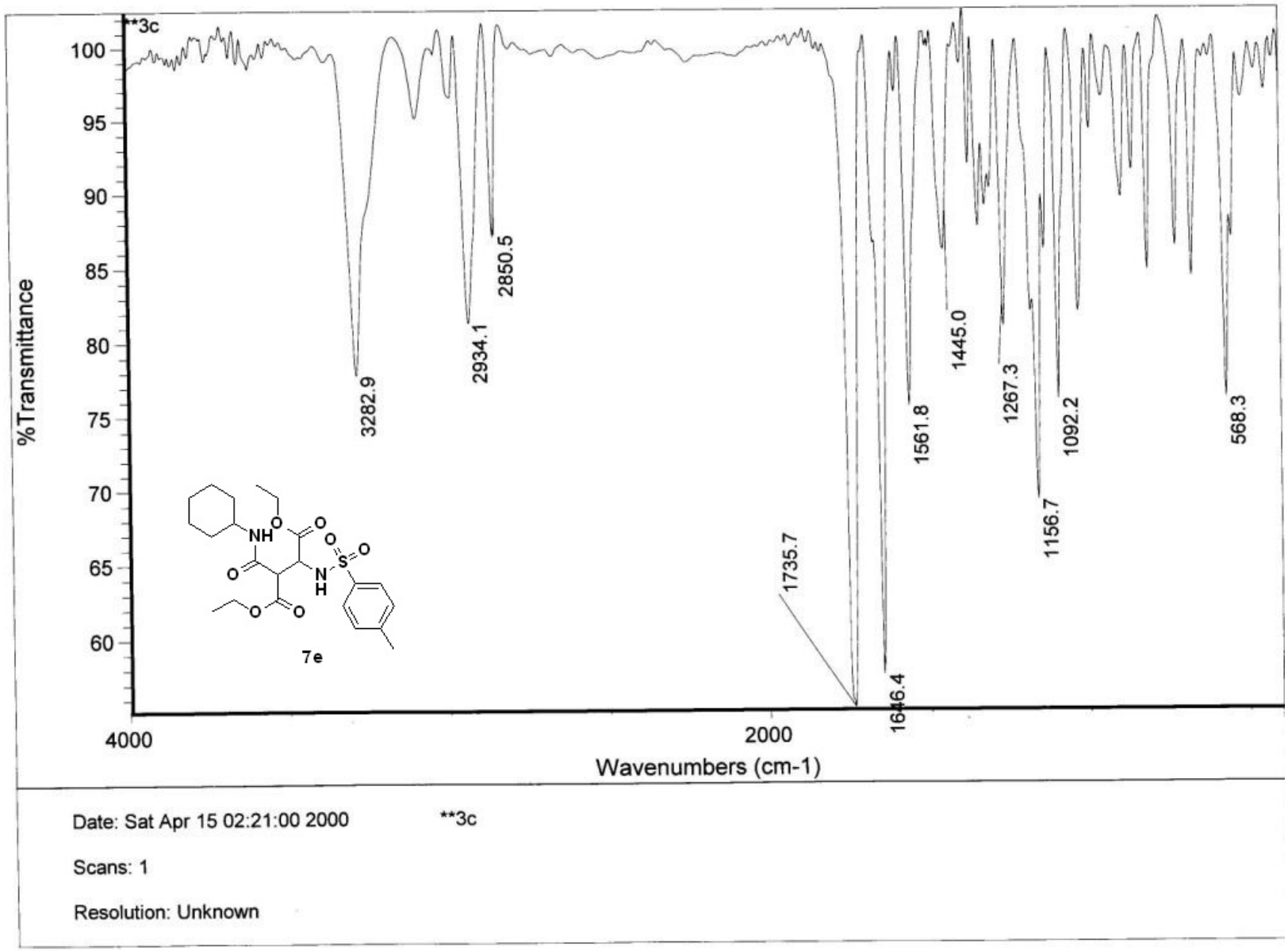
SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

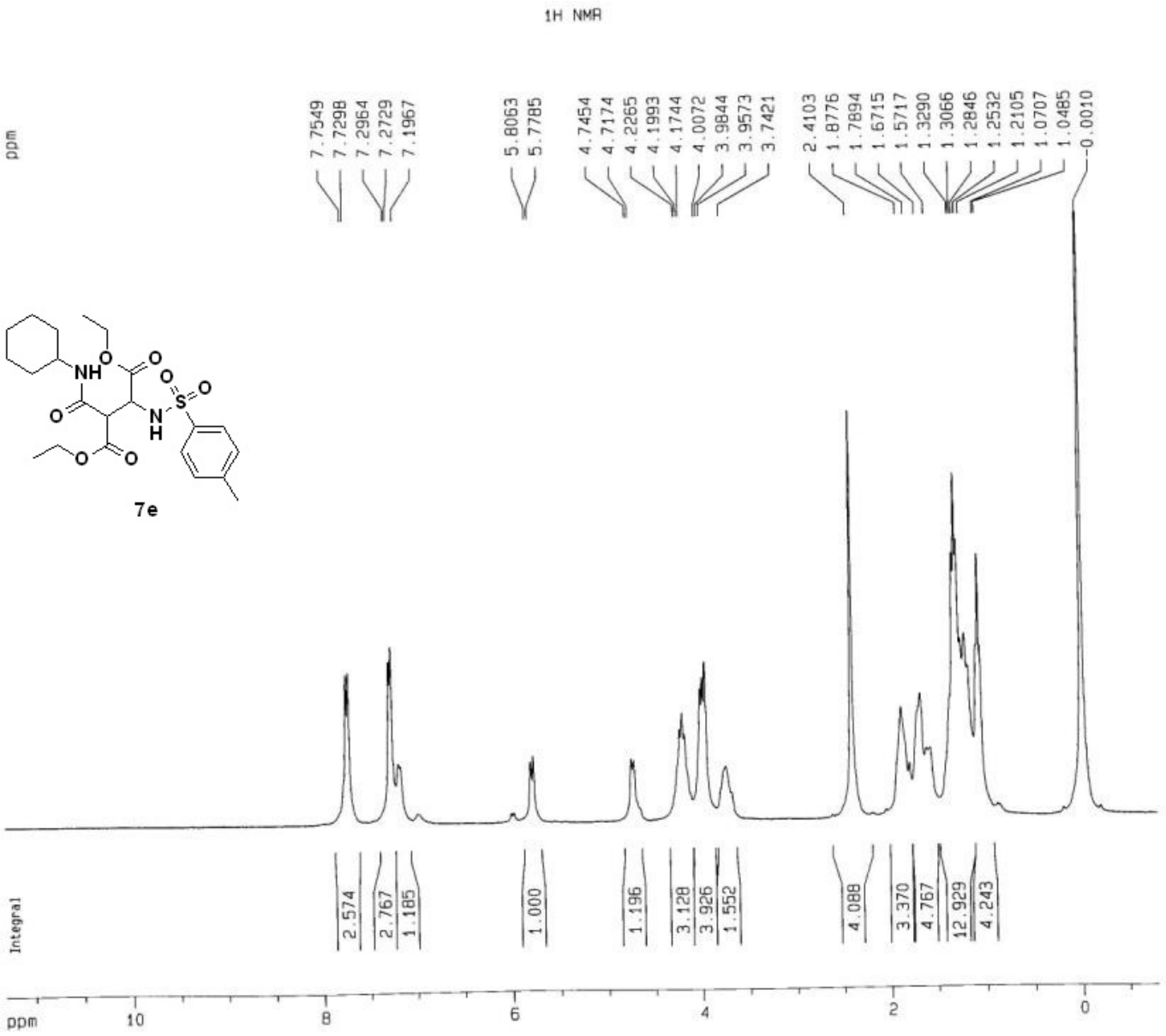
1D NMR plot parameters

CX	20.00 cm
CY	29.71 cm
F1P	10.633 ppm
F1	3191.25 Hz
F2P	-0.896 ppm
F2	-268.98 Hz
PPMCM	0.57646 ppm/cm
HZCM	173.01186 Hz/cm




```
Current Data Parameters
NAME                  Sarvari
EXPNO                     419
PROCNO                      1

F2 - Acquisition Parameters
Date_              20090425
Time                    13.39
INSTRUM                 spect
PROBHD   5 mm BBO BB-1H
PULPROG                 zgpg30
TD                       65536
SOLVENT                  DMSO
NS                        290
DS                          2
SWH                 17985.611 Hz
FIDRES              0.274439 Hz
AQ                  1.8219508 sec
RG                       2048
DW                     27.800 usec
DE                      6.00 usec
TE                     300.0 K
D1                 2.00000000 sec
d11                0.03000000 sec
d12                0.00002000 sec

======== CHANNEL f1 ========
NUC1                      13C
P1                      8.75 usec
PL1                    -2.00 dB
SFO1               75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2                waltz16
NUC2                       1H
PCPD2                  87.00 usec
PL2                    -2.00 dB
PL12                   12.00 dB
PL13                   18.00 dB
SFO2              300.1312005 MHz

F2 - Processing parameters
SI                       65536
SF                 75.4677490 MHz
WDW                        EM
SSB                         0
LB                      1.00 Hz
GB                          0
PC                       1.40

1D NMR plot parameters
CX                     20.00 cm
CY                     10.82 cm
F1P                  219.155 ppm
F1                  16539.11 Hz
F2P                  -19.167 ppm
F2                  -1446.51 Hz
PPMCM               11.91609 ppm/cm
HZCM               899.28052 Hz/cm
```


**3c
%Transmittance
100
95
90
85
80
75
70
65
60
3282.9
2934.1
2850.5
1735.7
1646.4
1561.8
1445.0
1267.3
1156.7
1092.2
568.3
4000
2000
Wavenumbers (cm-1)
7e
Date: Sat Apr 15 02:21:00 2000
**3c
Scans: 1
Resolution: Unknown



Current Data Parameters

NAME	Sarvari
EXPNO	684
PROCNO	1

F2 - Acquisition Parameters

Date_	20100924
Time	10.12
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	50.8
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

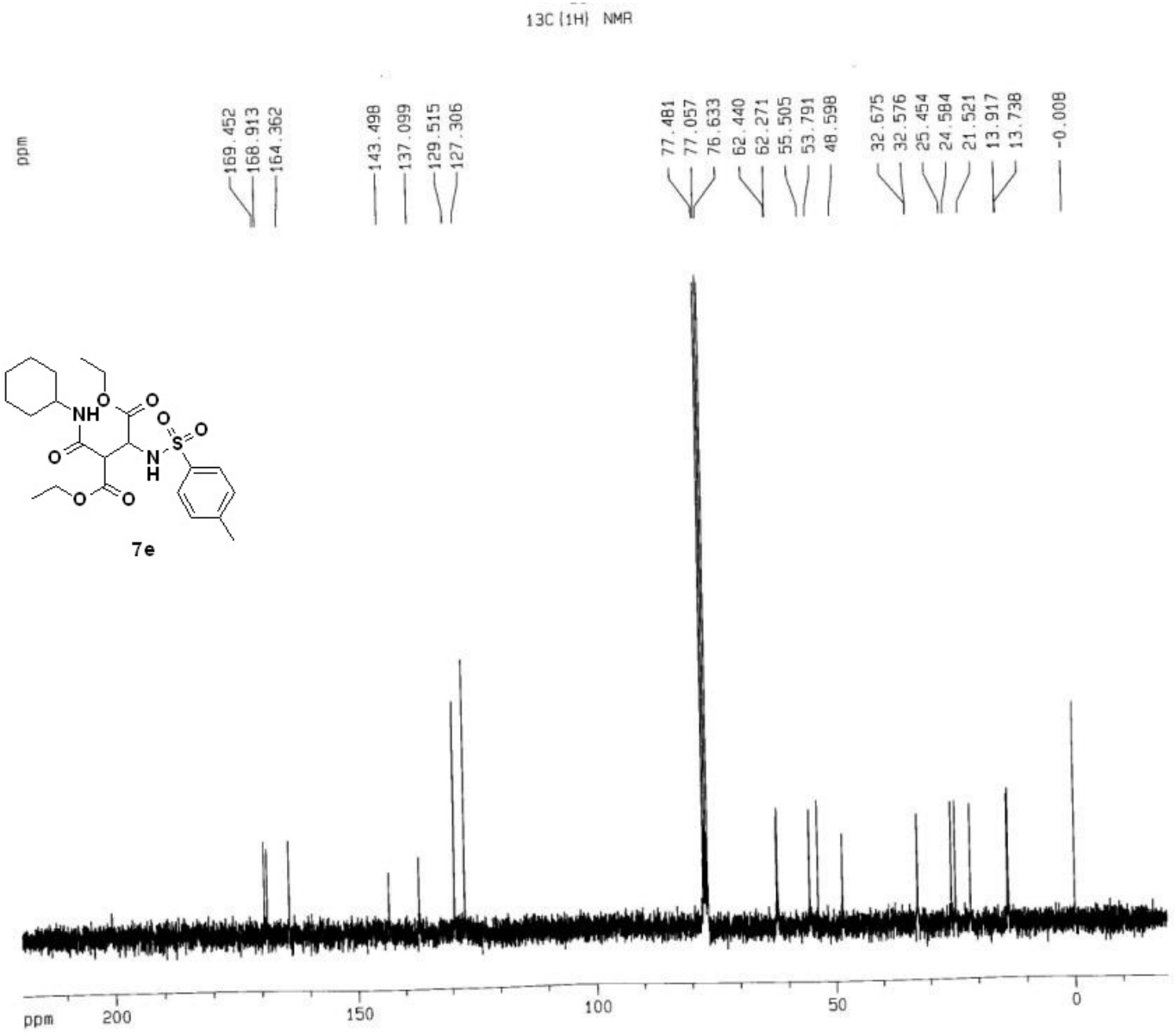
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1323986 MHz

F2 - Processing parameters

SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

1D NMR plot parameters

CX	20.00 cm
CY	14.57 cm
F1P	11.315 ppm
F1	3395.95 Hz
F2P	-0.800 ppm
F2	-240.18 Hz
PPMCM	0.60576 ppm
HZCM	181.80685 Hz/



Current Data Parameters

NAME	Sarvari
EXPNO	685
PROCNO	1

F2 - Acquisition Parameters

Date_	20100924
Time	10.16
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	251
DS	2
SWH	17985.611 Hz
FIDRES	0.274439 Hz
AQ	1.8219508 sec
RG	2048
DW	27.800 usec
DE	6.00 usec
TE	300.0 K
D1	2.00000000 sec
d11	0.03000000 sec
d12	0.00002000 sec

======== CHANNEL f1 ========

NUC1	13C
P1	8.75 usec
PL1	-2.00 dB
SFO1	75.4752953 MHz

======== CHANNEL f2 ========

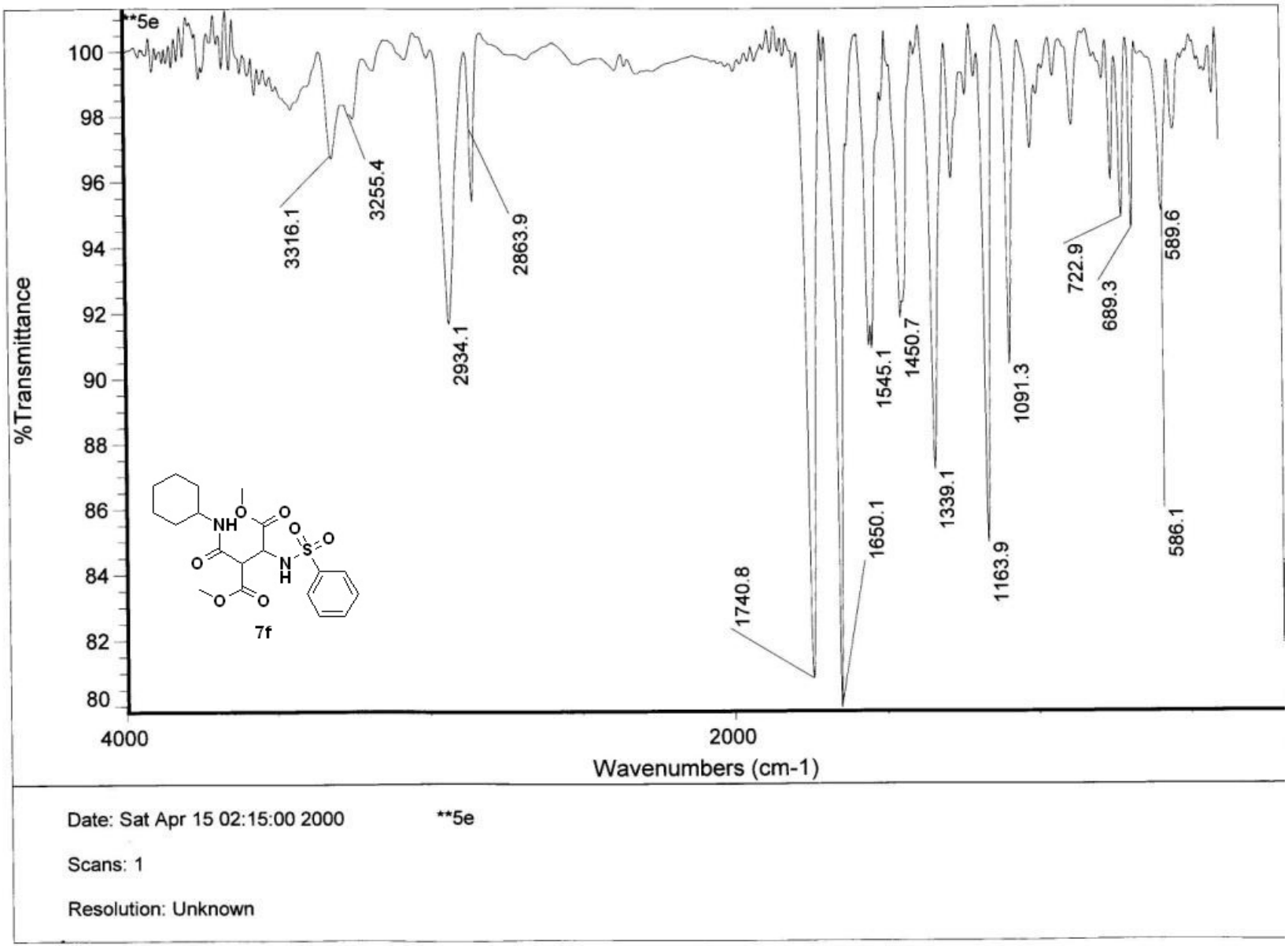
CPDPRG2	waltz16
NUC2	1H
PCPD2	87.00 usec
PL2	-2.00 dB
PL12	12.00 dB
PL13	18.00 dB
SFO2	300.1312005 MHz

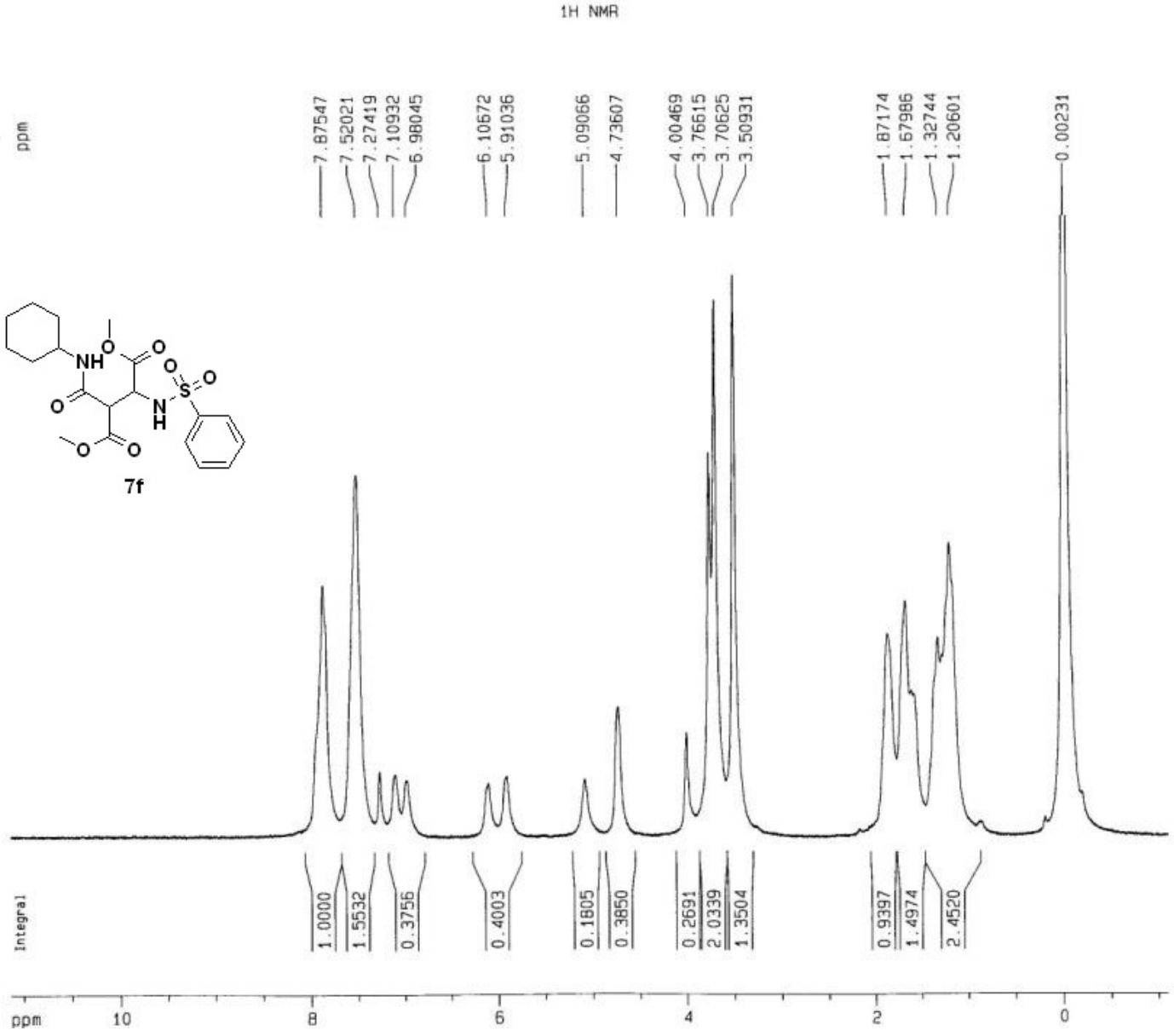
F2 - Processing parameters

SI	65536
SF	75.4677490 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	1.40

1D NMR plot parameters

CX	20.00 cm
CY	11.54 cm
F1P	219.155 ppm
F1	16539.10 Hz
F2P	-19.167 ppm
F2	-1446.51 Hz
PPMCM	11.91609 ppm/cm
HZCM	899.28052 Hz/cm


**5e
%Transmittance
100
98
96
94
92
90
88
86
84
82
80
4000
2000
Wavenumbers (cm-1)
3316.1
3255.4
2934.1
2863.9
1740.8
1650.1
1545.1
1450.7
1339.1
1163.9
1091.3
722.9
689.3
589.6
586.1
7f
Date: Sat Apr 15 02:15:00 2000
**5e
Scans: 1
Resolution: Unknown



Current Data Parameters

NAME	Sarvari
EXPNO	686
PROCNO	1

F2 - Acquisition Parameters

Date_	20100924
Time	10.34
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	CDCl3
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	50.8
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

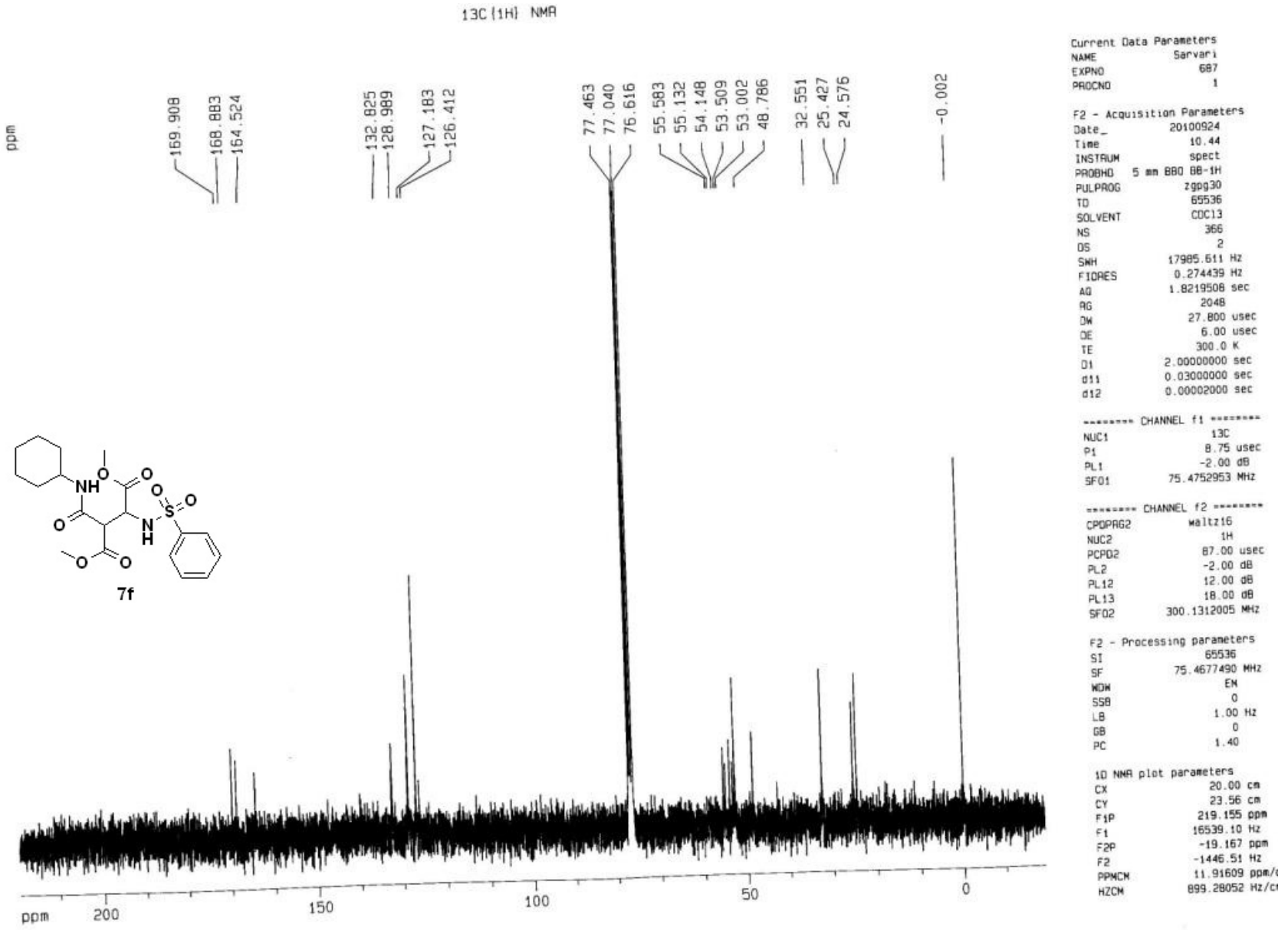
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1323986 MHz

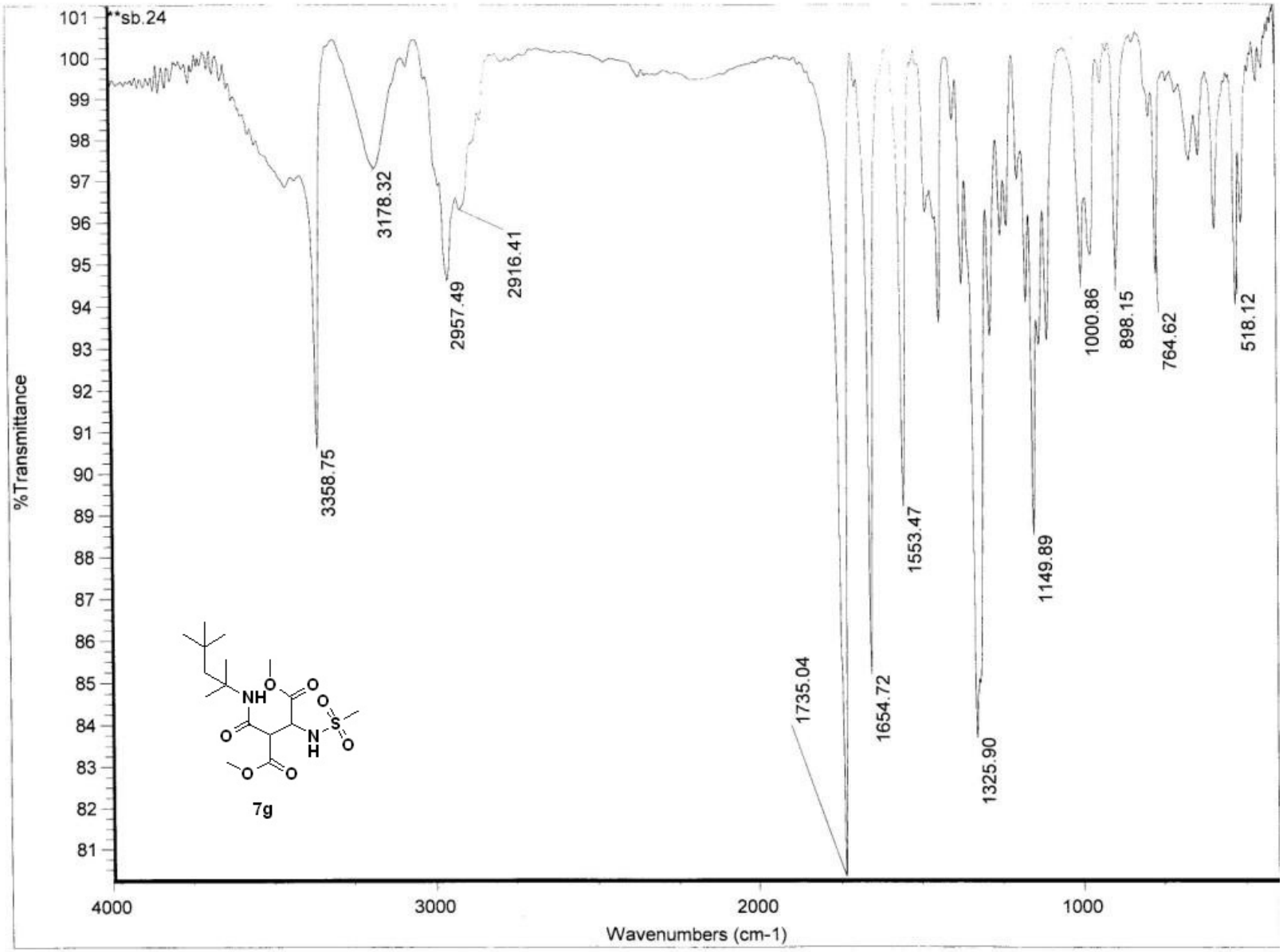
F2 - Processing parameters

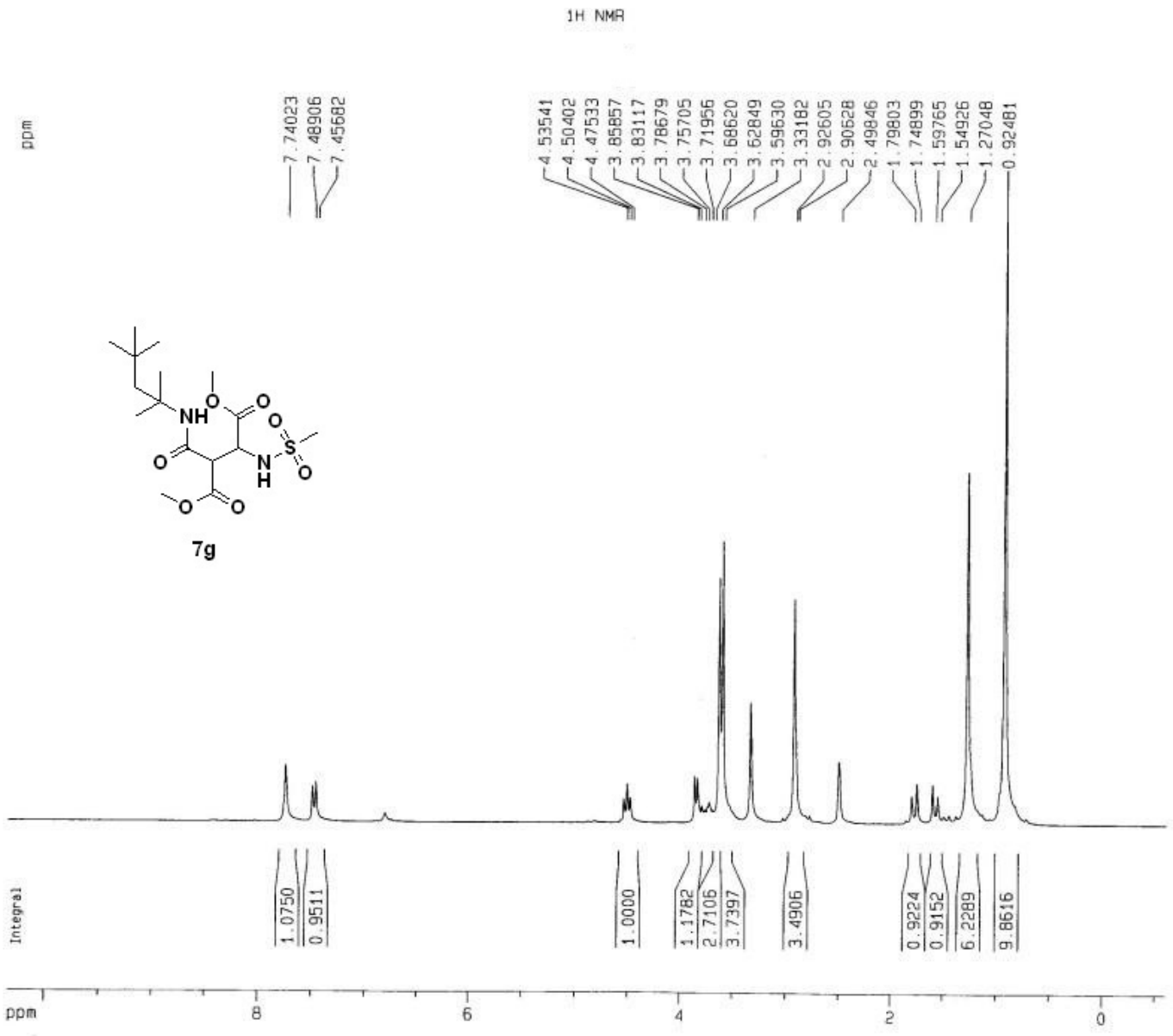
SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

1D NMR plot parameters

CX	20.00 cm
CY	35.85 cm
F1P	11.141 ppm
F1	3343.67 Hz
F2P	-1.105 ppm
F2	-331.56 Hz
PPMCM	0.61227 ppm/cm
HZCM	183.76175 Hz/cm


13C {1H} NMR
ppm
169.908
168.883
164.524
132.825
128.989
127.183
126.412
77.463
77.040
76.616
55.583
55.132
54.148
53.509
53.002
48.786
32.551
25.427
24.576
-0.002
7f
ppm
200
150
100
50
0
Current Data Parameters
NAME Sarvari
EXPNO 687
PROCNO 1
F2 - Acquisition Parameters
Date_ 20100924
Time 10.44
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 366
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec
======== CHANNEL f1 ========
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SFO1 75.4752953 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SFO2 300.1312005 MHz
F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.40
1D NMR plot parameters
CX 20.00 cm
CY 23.56 cm
F1P 219.155 ppm
F1 16539.10 Hz
F2P -19.167 ppm
F2 -1446.51 Hz
PPMCM 11.91609 ppm/
HZCM 899.28052 Hz/


**sb.24
%Transmittance
Wavenumbers (cm-1)
4000
3000
2000
1000
3358.75
3178.32
2957.49
2916.41
1735.04
1654.72
1553.47
1325.90
1149.89
1000.86
898.15
764.62
518.12
7g



Current Data Parameters

NAME	Rezaeian-PHD
EXPNO	379
PROCNO	1

F2 - Acquisition Parameters

Date_	20090526
Time	14.29
INSTRUM	spect
PROBHD	5 mm BBO BB-1H
PULPROG	zg30
TD	32768
SOLVENT	DMSO
NS	10
DS	1
SWH	7812.500 Hz
FIDRES	0.238419 Hz
AQ	2.0972021 sec
RG	228.1
DW	64.000 usec
DE	6.00 usec
TE	380.0 K
D1	2.00000000 sec

======== CHANNEL f1 ========

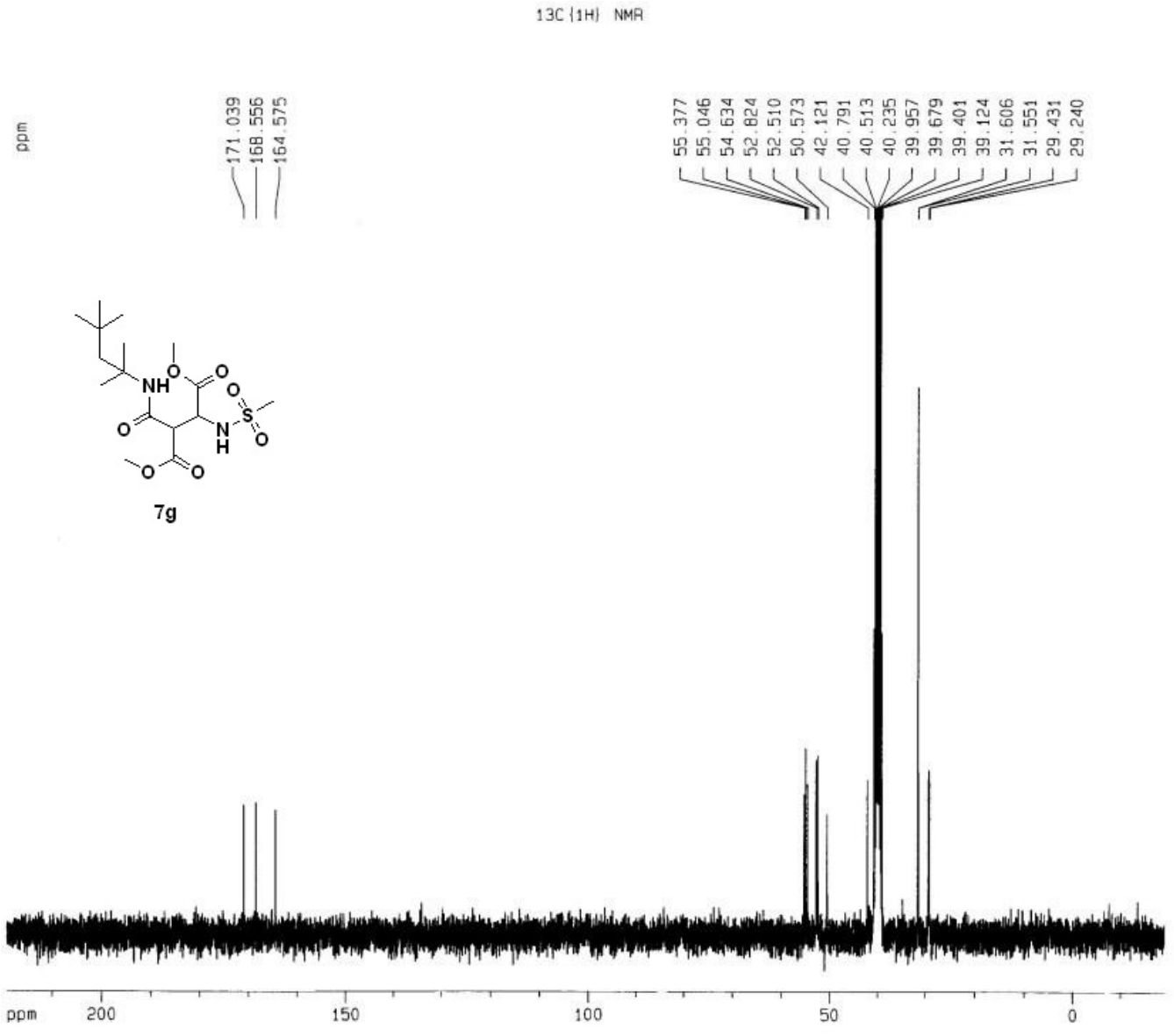
NUC1	1H
P1	15.50 usec
PL1	-2.00 dB
SFO1	300.1323986 MHz

F2 - Processing parameters

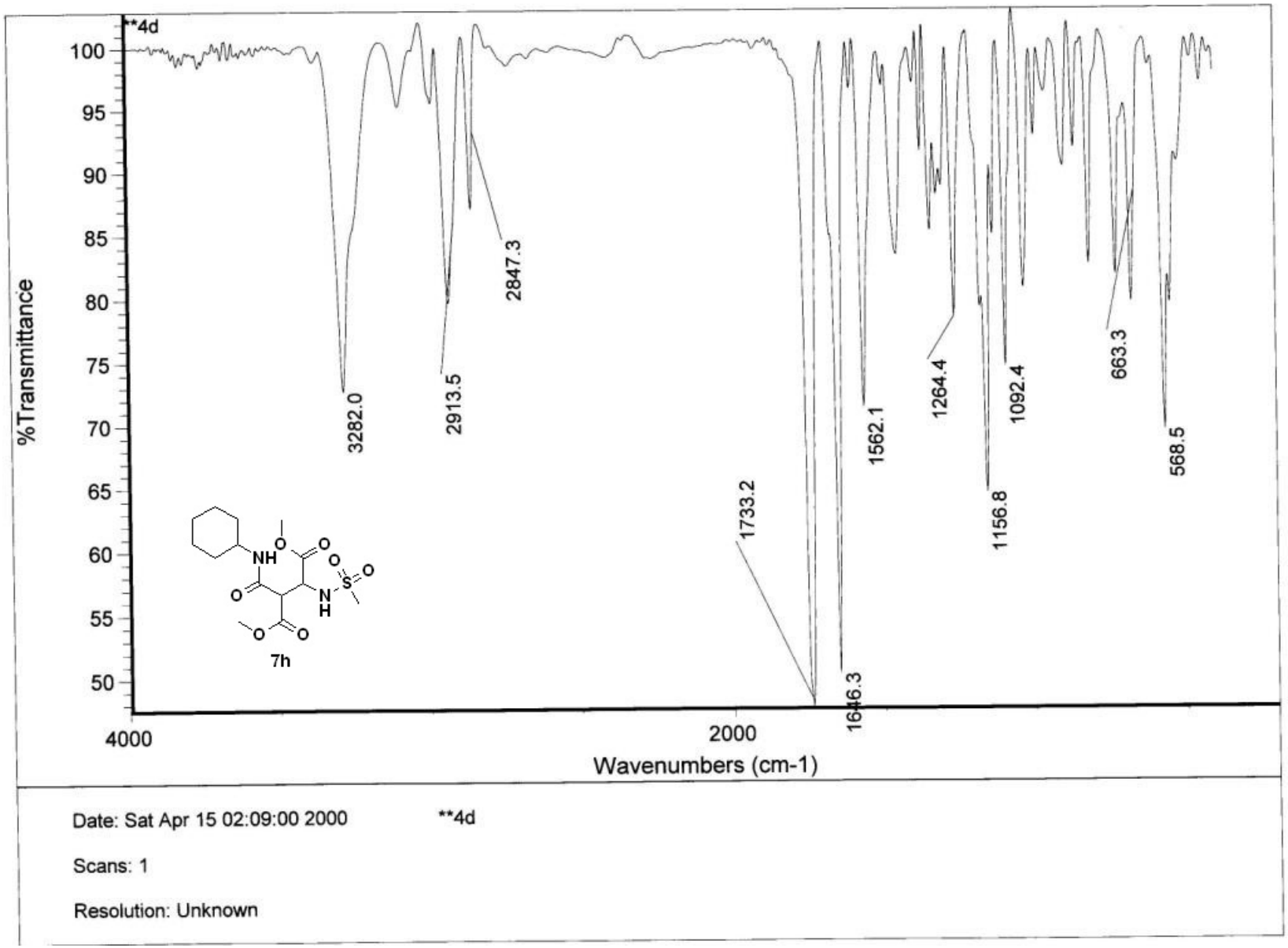
SI	65536
SF	300.1300000 MHz
WDW	EM
SSB	0
LB	0.30 Hz
GB	0
PC	1.00

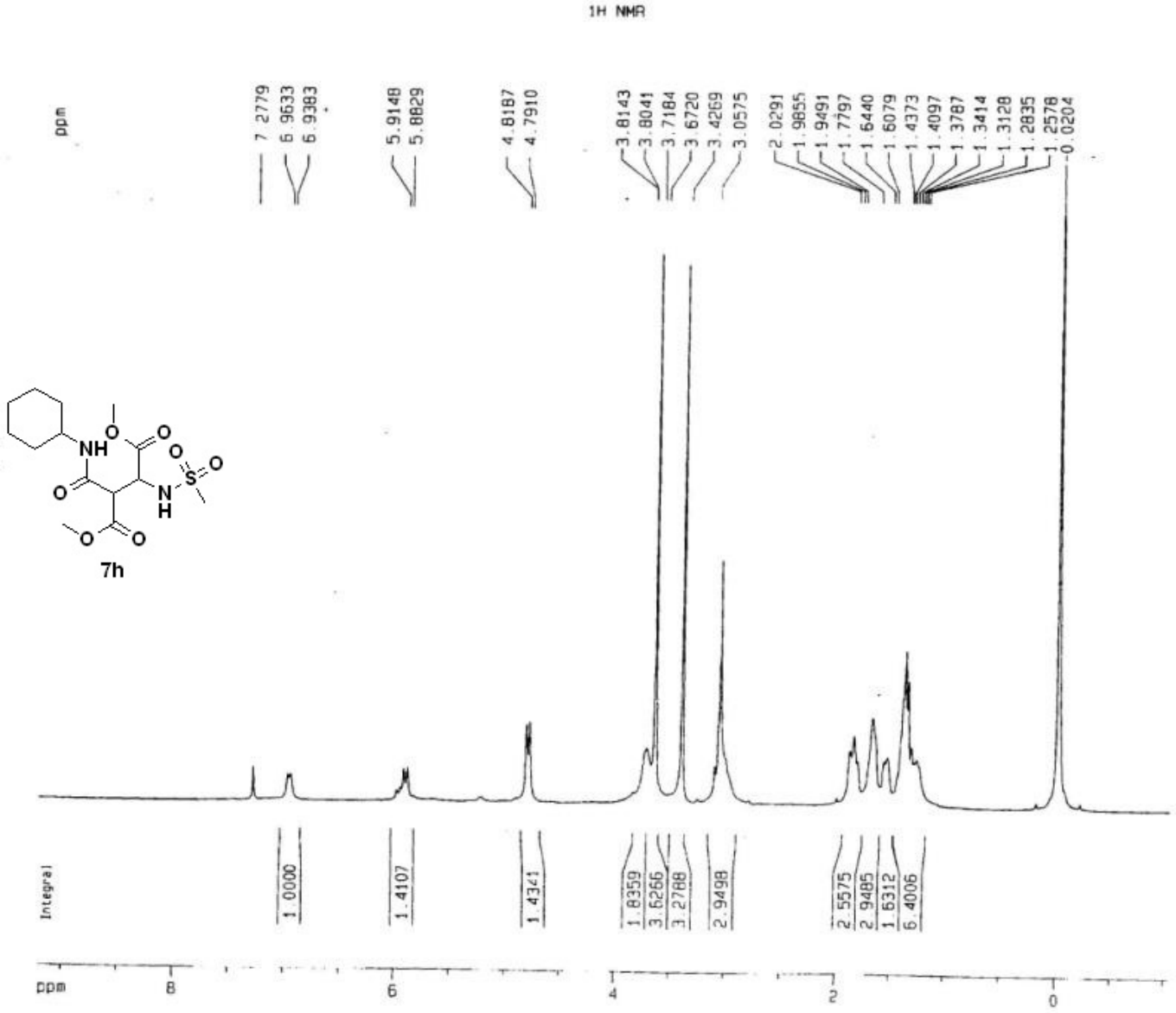
1D NMR plot parameters

CX	20.00 cm
CY	10.92 cm
F1P	10.340 ppm
F1	3103.31 Hz
F2P	-0.615 ppm
F2	-184.53 Hz
PPMCM	0.54774 ppm/cm
HZCM	164.39207 Hz/cm




```
Current Data Parameters
NAME        Rezaeian-PHD
EXPNO               380
PROCNO                1

F2 - Acquisition Parameters
Date_          20090526
Time              14.49
INSTRUM           spect
PROBHD   5 mm BBO BB-1H
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  316
DS                    2
SWH           17985.611 Hz
FIDRES        0.274439 Hz
AQ            1.8219508 sec
RG                 2048
DW               27.800 usec
DE                6.00 usec
TE               300.0 K
D1            2.00000000 sec
d11           0.03000000 sec
d12           0.00002000 sec

======== CHANNEL f1 ========
NUC1                13C
P1                 8.75 usec
PL1               -2.00 dB
SFO1         75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2         waltz16
NUC2                1H
PCPD2             87.00 usec
PL2               -2.00 dB
PL12              12.00 dB
PL13              18.00 dB
SFO2        300.1312005 MHz

F2 - Processing parameters
SI                65536
SF          75.4677490 MHz
WDW                 EM
SSB                  0
LB                1.00 Hz
GB                   0
PC                1.40

1D NMR plot parameters
CX                20.00 cm
CY                36.63 cm
F1P              219.155 ppm
F1             16539.10 Hz
F2P              -19.167 ppm
F2             -1446.51 Hz
PPMCM          11.91609 ppm/cm
HZCM          899.28058 Hz/cm
```


**4d
%Transmittance
100
95
90
85
80
75
70
65
60
55
50
4000
2000
Wavenumbers (cm-1)
3282.0
2913.5
2847.3
1733.2
1646.3
1562.1
1264.4
1156.8
1092.4
663.3
568.5
NH
O
O
O
O
O
S
N
H
O
O
O
7h
Date: Sat Apr 15 02:09:00 2000
**4d
Scans: 1
Resolution: Unknown



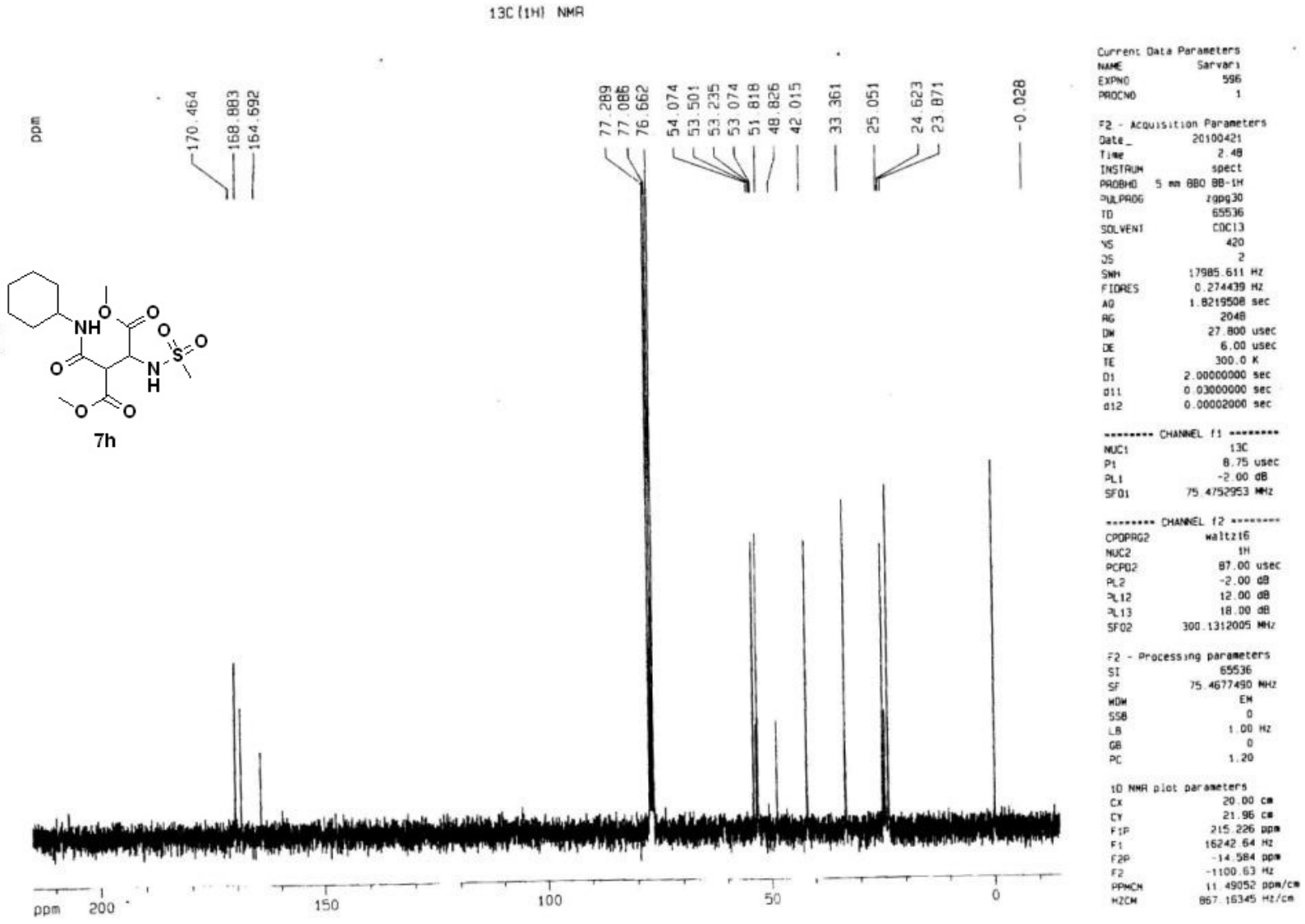
Current Data Parameters
NAME Sarvari
EXPNO 595
PROCNO 1

F2 - Acquisition Parameters
Date_ 20100421
Time 2.20
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zg30
TD 32768
SOLVENT CDCl3
NS 10
DS 1
SWH 7812.500 Hz
FIDRES 0.238419 Hz
AQ 2.0972021 sec
RG 228.1
DW 64.000 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec

======== CHANNEL f1 ========
NUC1 1H
P1 15.50 usec
PL1 -2.00 dB
SFO1 300.1323986 MHz

F2 - Processing parameters
SI 65536
SF 300.1300000 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

1D NMR plot parameters
CX 20.00 cm
CY 17.37 cm
F1P 9.208 ppm
F1 2763.48 Hz
F2P -1.054 ppm
F2 -316.44 Hz
PPMCM 0.51310 ppm/cm
HZCM 153.99638 Hz/cm


13C {1H} NMR
ppm
170.464
168.883
164.692
77.289
77.086
76.662
54.074
53.501
53.235
53.074
51.818
48.826
42.015
33.361
25.051
24.623
23.871
-0.028
7h
ppm 200
150
100
50
0
Current Data Parameters
NAME Sarvari
EXPNO 596
PROCNO 1
F2 - Acquisition Parameters
Date_ 20100421
Time 2.48
INSTRUM spect
PROBHD 5 mm BBO BB-1H
PULPROG zgpg30
TD 65536
SOLVENT CDCl3
NS 420
DS 2
SWH 17985.611 Hz
FIDRES 0.274439 Hz
AQ 1.8219508 sec
RG 2048
DW 27.800 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec
CHANNEL f1
NUC1 13C
P1 8.75 usec
PL1 -2.00 dB
SF01 75.4752953 MHz
CHANNEL f2
CPDPRG2 waltz16
NUC2 1H
PCPD2 87.00 usec
PL2 -2.00 dB
PL12 12.00 dB
PL13 18.00 dB
SF02 300.1312005 MHz
F2 - Processing parameters
SI 65536
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
PC 1.20
1D NMR plot parameters
CX 20.00 cm
CY 21.96 cm
F1P 215.226 ppm
F1 16242.64 Hz
F2P -14.584 ppm
F2 -1100.63 Hz
PPMCM 11.49052 ppm/cm
HZCM 867.16345 Hz/cm