Catalytic amide-formation with α'-hydroxyenones as acylating reagents

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Electronic Supplementary Information

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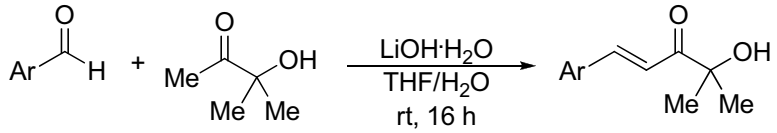
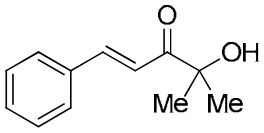
General Methods. All reactions utilizing air- or moisture-sensitive reagents were performed in dried glassware under an atmosphere of dry N_2. CH_2Cl_2 was distilled from CaH_2. *N*,*N*-diisopropylethylamine (DIPEA) was purified by distillation from KOH prior to use. Triazolium salt **1** is commercially available from Sigma-Aldrich. Aniline and *o*-anisidine were distilled under vacuum, and tryptamine was purified by sublimation in vacuo. Other reagents were used without further purification. Thin layer chromatography (TLC) was performed on EMD precoated plates (silica gel 60 F_{254}, Art 5715, 0.25 mm) and were visualized by fluorescence quenching under UV light and by staining with phosphomolybdic acid or potassium permanganate, respectively. Preparative thin-layer chromatography (PTLC) was performed using plates prepared from silical gel EMD 60 PF_{254} (Art 7749). Column chromatography was performed on EMD Silica Gel 60 (230–400 Mesh) using a forced flow of 0.5–1.0 bar. ^{1}H NMR (500 MHz) and ^{13}C NMR (125 MHz) were measured on a Bruker Avance AVII-500 spectrometer. Chemical shifts are expressed in parts per million (ppm) downfield from residual solvent peaks and coupling constants are reported as Hertz (Hz). Splitting patterns are indicated as follows: br, broad; s, singlet; d, doublet; t, triplet; q, quartet; quin, quintet; sext, sextet; m, multiplet; Infrared (IR) spectra were recorded on a JASCO FT/IR-4100 spectrophotometer and were reported as wavenumber (cm^{-1}).

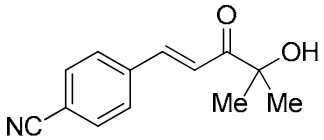
General Procedure for the Preparation of α′-Hydroxyenones



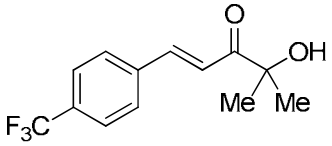
The α′-hydroxyenones were prepared according to modified literature procedures.[1] A mixture of 3-hydroxy-3-methyl-2-butanone (10 mmol, 1 equiv), the aldehyde (15 mmol, 1.5 equiv) and $LiOH{\cdot}H_2O$ (2 mmol, 0.2 equiv) in THF/H_2O (1:1 v/v, 0.08 M) was stirred at room temperature overnight. The THF was removed under reduced pressure, and the aqueous solution was extracted with CH_2Cl_2 (3×30 mL). The combined organic phase was dried over Na_2SO_4, filtered and concentrated. The residue was purified by column chromatography. All of characterization data of α′-hydroxyenones was published previously.[2]



(*E*)-4-Hydroxy-4-methyl-1-phenylpent-1-en-3-one (2). CAS RN: 63677-96-3.[1]

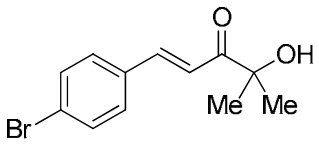


(*E*)-4-(4-Hydroxy-4-methyl-3-oxopent-1-enyl)benzonitrile. [2]

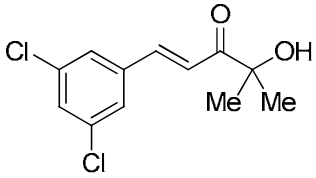


(*E*)-4-Hydroxy-4-methyl-1-(4-(trifluoromethyl)phenyl)pent-1-en-3-one. CAS RN: 1111644-46-2.[2]

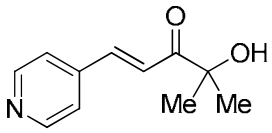
(1) (a) C. Palomo, M. Oiarbide, J. M. Garcia, A. Gonzalez and E. Arceo, *J. Am. Chem. Soc*., 2003, **125**, 13942–13943. (b) M. Reiter, H. Turner, R. Mills-Webb and V. Gouverneur, *J. Org. Chem.,* 2005, **70**, 8478–8485.
(2) P.-C. Chiang, M. Rommel and J. W. Bode, *J. Am. Chem. Soc.*, 2009, DOI: 10.1021/ja902143w



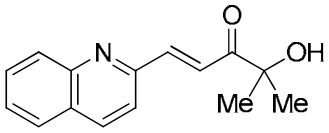
(*E*)-1-(4-Bromophenyl)-4-hydroxy-4-methylpent-1-en-3-one. CAS RN: 1111644-45-1.[2]



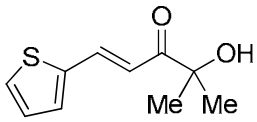
(*E*)-1-(3,5-Dichlorophenyl)-4-hydroxy-4-methylpent-1-en-3-one. [2]



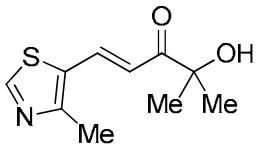
(*E*)-4-Hydroxy-4-methyl-1-(pyridin-4-yl)pent-1-en-3-one. [2]



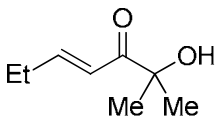
(*E*)-4-Hydroxy-4-methyl-1-(quinolin-2-yl)pent-1-en-3-one. [2]



(*E*)-4-Hydroxy-4-methyl-1-(thiophen-2-yl)pent-1-en-3-one. [2]



(*E*)-4-Hydroxy-4-methyl-1-(4-methylthiazol-5-yl)pent-1-en-3-one. [2]

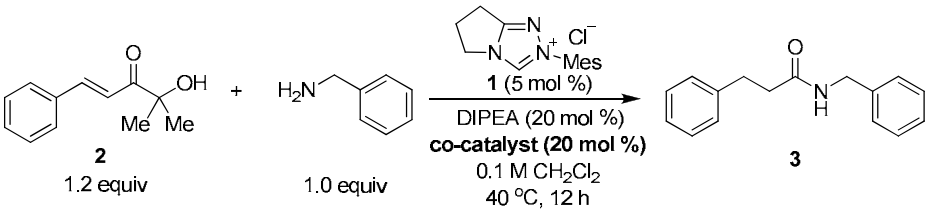


(*E*)-2-Hydroxy-2-methylhept-4-en-3-one. [1]

Optimization of the NHC-Catalyzed Amidation of α'-Hydroxyenones Conditions

The crude products were analyzed by NMR spectroscopy and the conversion of the benzylamine was determined by integration of the prominent signal for the methylene group in the starting material (δ=3.84 ppm, singlet) and in the product (δ= 4.38 ppm, doublet).

Table S-1. Co-catalysts survey of the amidation reaction of α'-hydroxyenone with benzylamine



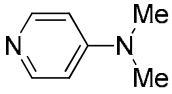
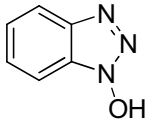
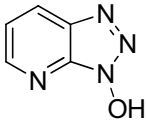
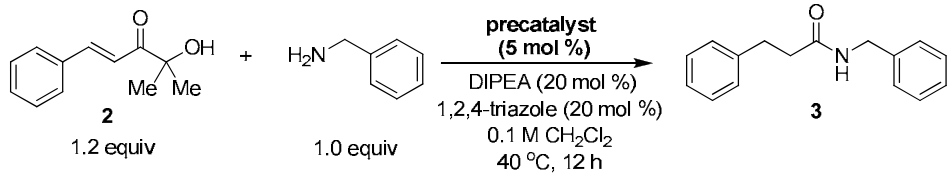
Co-catalyst	 imidazole	 pyrazole	 1,2,3-triazole	 1,2,4-triazole
Conversion	77%	73%	76%	62%
Co-catalyst	 DMAP	 HOBt	 HOAt	NO co-catalyst
Conversion	36%	< 1%	< 1%	44%

Table S-2. Precatalyst survey of the amidation reaction of α'-hydroxyenone with benzylamine



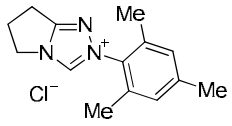
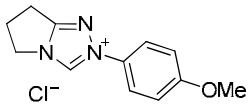
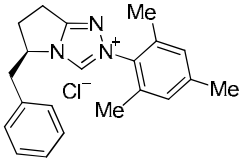
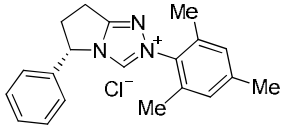
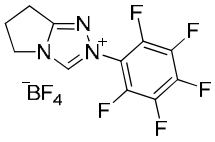
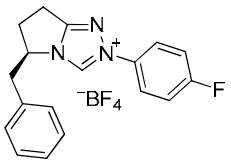
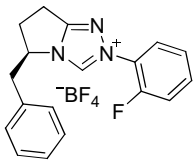
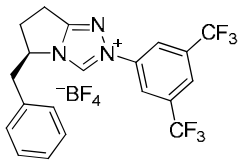
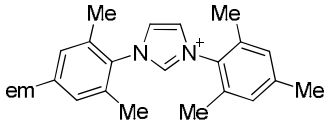
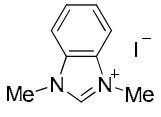
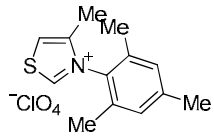
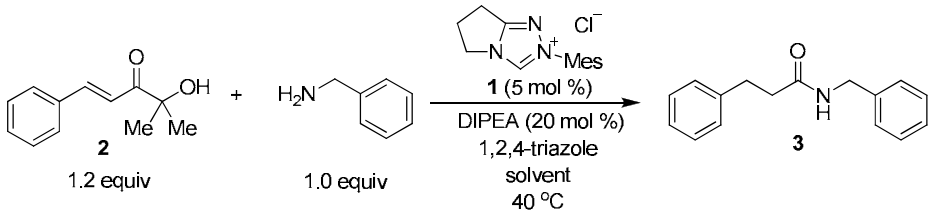
			
68%	<1%	17%	15%
			
18%	<1%	<1%	<1%
			
< 1%	< 1%	<1%	

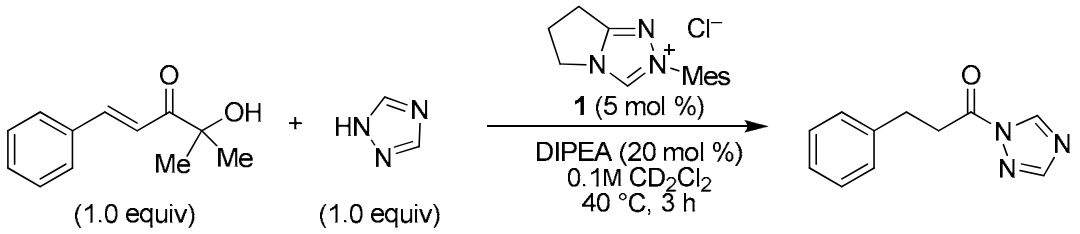
Table S-3. Optimization of the amidation reaction of α'-hydroxyenone with benzylamine

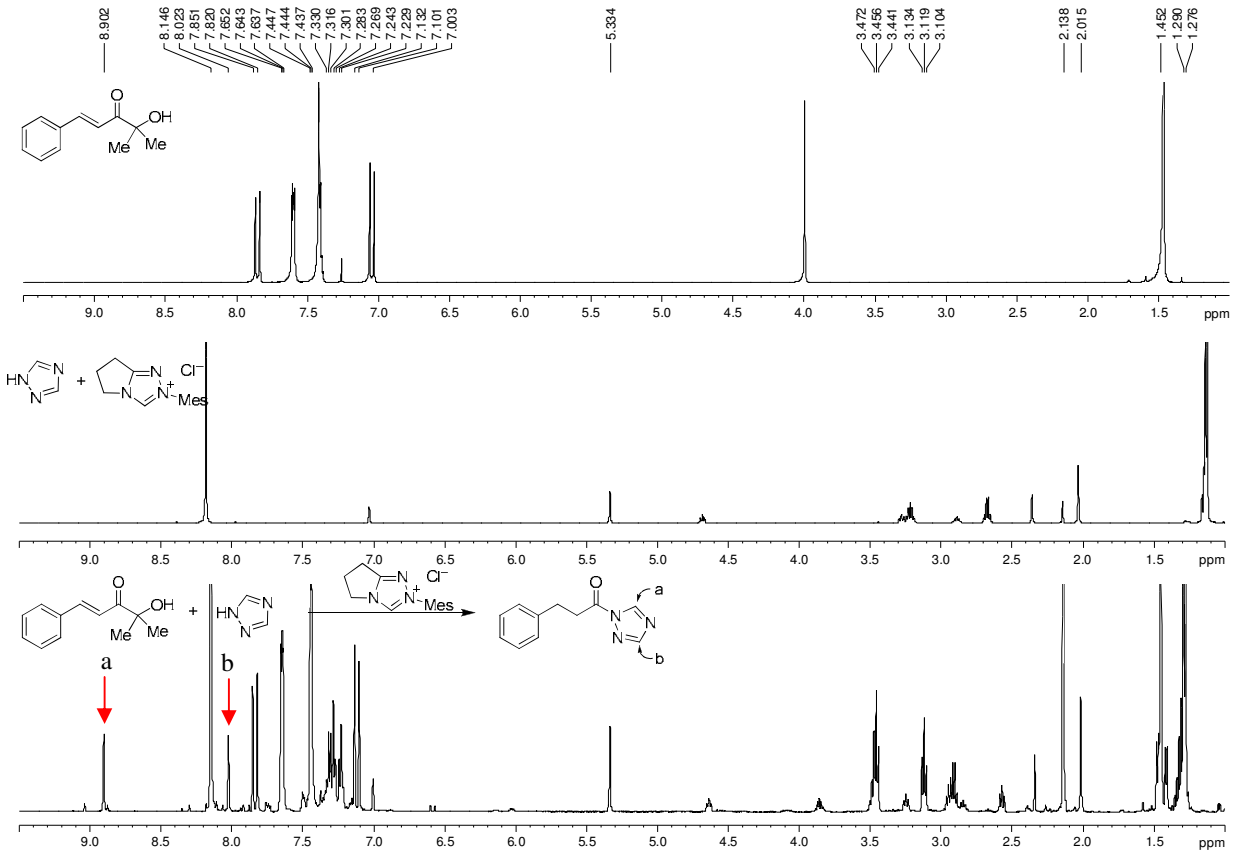


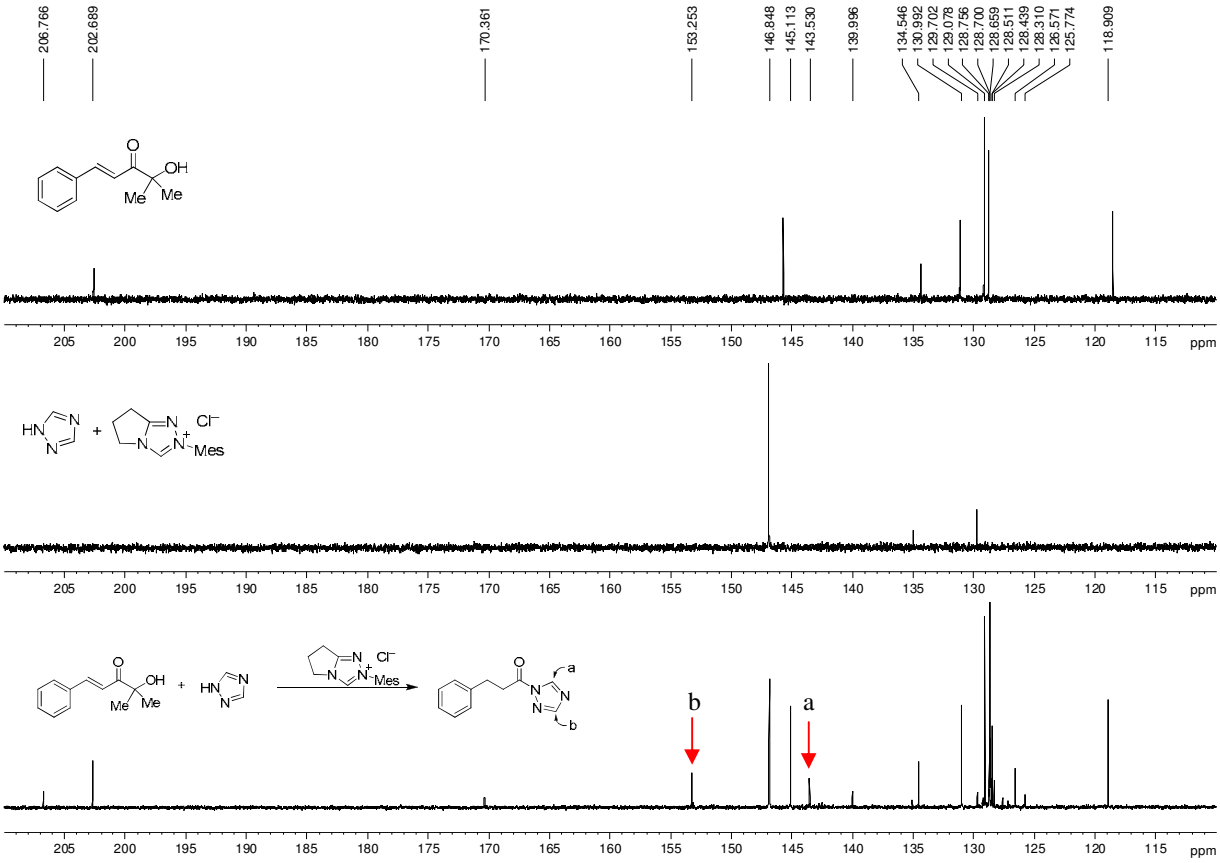
entry	mol % additive	solvent	time	% conversion
1	50	0.1 M CH_2Cl_2	12 h	69
2	20	0.1 M CH_2Cl_2	12 h	71
3	10	0.1 M CH_2Cl_2	12 h	85
4	5	0.1 M CH_2Cl_2	12 h	65
5	10	0.1M EtOAc	12 h	47
6	10	0.1M THF	12 h	52
8	50	0.2 M CH_2Cl_2	12 h	34
9	50	0.5 M CH_2Cl_2	12 h	79
10	50	1.0 M CH_2Cl_2	12 h	66
11	10	0.5 M CH_2Cl_2	1 h	68
12	10	0.5 M CH_2Cl_2	2 h	79
13	10	0.5 M CH_2Cl_2	3 h	82
14	10	0.5 M CH_2Cl_2	4 h	86
15	10	0.5 M CH_2Cl_2	5 h	82
16	10	0.5 M CH_2Cl_2	24 h	87

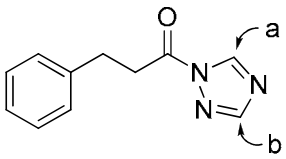
NMR Study of N-Acylation Intermediate

The reaction was carried out in the condition with 1 equiv of α'-hydroxyenone and 1 equiv of 1,2,4-triazole in 5 mol % precatalyst **1**, 20 mol % DIPEA, 0.1 M $CDCl_2$ at 40 °C for 3 hours. The regioselectivity of *N*-acylation was determined via the ^{1}H and ^{13}C NMR spectra comparison of reaction mixture and control experiment without α'-hydroxyenone**.**





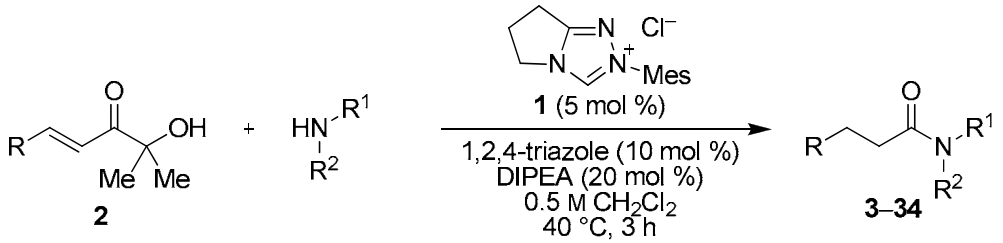




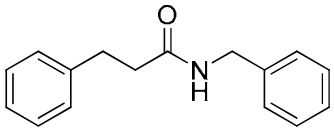
^{1}H NMR (500 MHz, CD_2Cl_2): H^a 8.90 ppm, H^b 8.02 ppm

^{13}C NMR (125 MHz, CD_2Cl_2): C^a 143.5 ppm, C^b 153.3 ppm

General Procedure for the Amidation of α′-Hydroxyenones and Amines

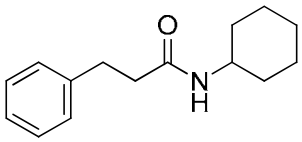


An oven-dried vial with a Teflon® coated screw cap and stir bar was charged with the triazolium precatalyst **1** (25 μmol, 5 mol %), 1,2,4-triazole (50 μmol, 10 mol %), α′-hydroxyenone (0.60 mmol, 1.2 equiv), and amine (0.50 mmol, 1.0 equiv). It was purged with nitrogen, and the reactants were dissolved in dry CH_2Cl_2 (1.0 mL, 0.5 M). Finally, DIPEA (0.10 mmol, 20 mol %) was added, and the sealed vial was placed into an oil bath at 40 °C if not indicated otherwise. After 3 hours, the reaction mixture was concentrated, and the product isolated by column chromatography.

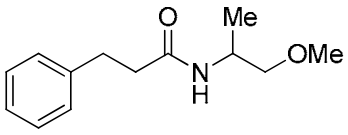


***N*-Benzyl-3-phenylpropanamide (3).** CAS RN: 10264-10-5. Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 84% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.31–7.26 (m, 5H), 7.22–7.19 (m, 3H), 7.14 (d, *J* = 7.3 Hz, 2H), 5.79 (brs, 1H), 4.38 (d, *J* = 5.5 Hz, 2H), 2.99 (t, *J* = 7.8 Hz, 2H), 2.51 (t, *J* = 7.8 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 172.0, 140.9, 138.3, 128.7, 128.6, 128.5, 127.8, 127.5, 126.3, 43.6, 38.6, 31.8. Analytical data is consistent with published data.[3]

(3) (a) I. Shiina and Y. Kawakita, *Tetrahedron*, 2004, **60**, 4729–4733. (b) J. W. Bode and S. S. Sohn, J. *Am. Chem. Soc*., 2007, **129**, 13798–13799.

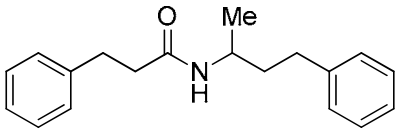


***N*-Cyclohexyl-3-phenylpropanamide (4).** CAS RN: 10264-23-0. Prepared according to the general procedure; Purification using hexanes/acetone (6:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 92% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.29–7.26 (m, 2H), 7.21–7.19 (m, 3H), 5.16 (brs, 1H), 3.76–3.71 (m, 1H), 2.95 (t, *J* = 7.7 Hz, 2H), 2.43 (t, *J* = 7.7 Hz, 2H), 1.84–1.81 (m, 2H), 1.66–1.63 (m, 2H), 1.60–1.57 (m, 1H), 1.37–1.29 (m, 2H), 1.15–1.08 (m, 1H), 1.04–0.97 (m, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.2, 141.0, 128.54, 128.46, 126.3, 48.1, 38.8, 33.1, 32.0, 25.6, 24.9. Analytical data is consistent with published data.[4]

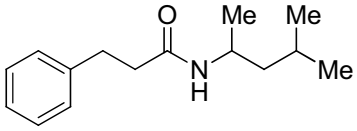


***N*-(1-Methoxypropan-2-yl)-3-phenylpropanamide (5).** Prepared according to the general procedure; Purification using hexanes/EtOAc (1:1 v/v) as the eluent afforded the desired amidation product as a colorless oil in 73 % yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.26 (t, *J* = 7.0 Hz, 2H), 7.18 (d, *J* = 6.5 Hz, 3H), 5.65 (brs, 1H), 4.12 (brs, m, 1H), 3.29 (s, 3H), 3.26 (d, *J* = 3.1 Hz, 2H), 2.94 (t, *J* = 7.5 Hz, 2H), 2.44 (t, *J* = 7.5 Hz, 2H), 1.09 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.6, 141.0, 128.6, 128.5, 126.3, 77.5, 77.2, 76.9, 75.6, 59.1, 44.8, 38.7, 31.9, 17.7; IR (thin film) ν 3293, 3063, 3027, 2974, 2928, 1643, 1547, 1497, 1109 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{13}H_{19}NO_2Na$: 244.1314, found 244.1322 $[M+Na]^+$.

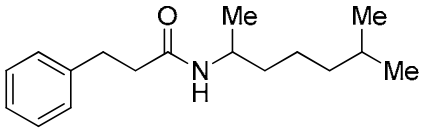
(4) H. Nambu, K. Hata, M. Matsugi, and Y. Kita, *Chem. Eur. J.*, 2005, **11**, 719–727.



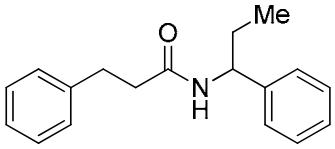
3-Phenyl-*N*-(4-phenylbutan-2-yl)propanamide (6). Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 69 % yield; mp: 67–68 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28 (t, *J* = 7.0 Hz, 4H), 7.19 (dd, *J* = 7.7, 6.9 Hz, 4H), 7.13 (d, *J* = 7.4 Hz, 2H), 5.15 (d, *J* = 7.4 Hz, 1H), 4.03 (m, 1H), 2.96 (t, *J* = 7.5 Hz, 2H), 2.54 (m, 2H), 2.43 (t, *J* = 7.5 Hz, 2H), 1.66 (t, *J* = 7.0 Hz, 2H), 1.09 (d, *J* = 5.6 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.4, 141.9, 141.0, 128.7, 128.5, 128.4, 126.4, 126.0, 45.2, 38.9, 38.7, 32.5, 31.9, 21.2; IR (thin film) ν 3287, 3084, 3062, 3026, 2965, 1640, 1550, 1496, 1454 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{19}H_{24}NO$: 282.1853, found 282.1859 $[M+H]^+$.



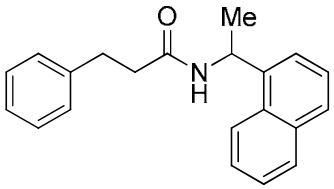
***N*-(4-Methylpentan-2-yl)-3-phenylpropanamide (7).** Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 90 % yield. mp:43–45 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.26 (t, *J* = 7.5 Hz, 2H), 7.19 (d, *J* = 6.9 Hz, 3H), 5.22 (d, *J* = 7.4 Hz, 1H), 4.02 (m, 1H), 2.94 (t, *J* = 7.6 Hz, 2H), 2.43 (t, *J* = 7.6 Hz, 2H), 1.45 (m, 1H), 1.24 (m, 1H), 1.16 (m, 1H), 1.02 (d, *J* = 6.5 Hz, 3H), 0.85 (t, *J* = 6.8 Hz, 6H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.4, 141.0, 128.6, 128.5, 127.5, 126.3, 46.4, 43.4, 38.9, 32.0, 25.0, 22.9, 22.6, 21.7; IR (thin film) ν 3290, 3065, 3029, 2957, 2927, 2363, 2342, 1638, 1559 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{15}H_{24}NO$: 234.1853, found 234.1855 $[M+H]^+$.



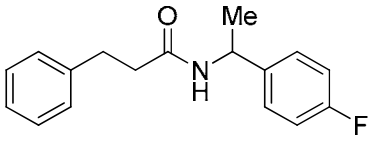
***N*-(6-Methylheptan-2-yl)-3-phenylpropanamide (8).** Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless oil in 90 % yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.26 (d, *J* = 7.4 Hz, 2H), 7.18 (d, *J* = 7.4 Hz, 3H), 5.32 (d, *J* = 7.3 Hz, 1H), 3.92 (m, 1H), 2.94 (d, *J* = 7.6 Hz, 2H), 2.43 (m, 1H), 1.48 (m, 1H), 1.28 (m, 1H), 1.20 (m, 1H), 1.12 (m, 1H), 1.02(d, *J* = 6.5 Hz, 3H), 0.84 (d, *J* = 6.5 Hz, 6H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.5, 141.0, 128.6, 128.5, 126.3, 77.5, 77.2, 77.0, 56.0, 45.3, 38.9, 38.8, 37.2, 32.0, 28.0, 23.9, 22.7, 22.7, 21.0; IR (thin film) ν 3285, 3064, 3028, 2955, 2930, 1640, 1550, 1454 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{17}H_{27}NONa$: 284.1991 , found 284.1978 $[M+Na]^+$.



3-Phenyl-*N*-(1-phenylpropyl)propamide (9). Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 84 % yield. mp: 74–77 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.30 (t, *J* = 7.4 Hz, 2H), 7.26 (d, *J* = 7.4 Hz, 4H), 7.19 (m, 4H), 5.53 (d, *J* = 7.4 Hz, 1H), 4.86 (q, *J* = 7.6 Hz, 1H), 2.96 (d, *J* = 7.4 Hz, 2H), 2.49 (d, *J* = 7.4 Hz, 1H), 1.73 (m, 1H), 0.81 (t, *J* = 7.4 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.4, 142.2, 140.9, 128.7, 128.6, 128.5, 127.4, 126.7, 126.4, 54.9, 38.7, 31.8, 29.1, 10.8; IR (thin film) ν 3287, 3062, 3028, 2965, 2930, 1641, 1545, 1495 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{18}H_{22}O$: 268.1701 , found 268.1690 $[M+H]^+$.

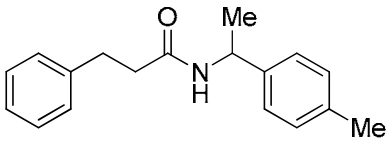


***N*-(1-(Naphthalene-1-yl)ethyl)-3-phenylpropanamide (10)**. Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 90 % yield; mp:134–135 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.07 (d, *J* = 7.8 Hz, 1H), 7.87 (d, *J* = 7.8 Hz, 1H), 7.78 (d, *J* = 7.8 Hz, 1H), 7.51(m, 2H), 7.40 (m, 2H), 7.24 (m, 3H), 7.17 (m, 3H), 5.91 (m, 1H), 5.60 (d, *J* = 7.2 Hz, 1H), 2.97 (m, 2H), 2.45 (t, *J* = 7.5 Hz, 2H), 1.58 (d, *J* = 6.7 Hz, 2H) ; ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.1, 140.9, 138.4, 134.1, 131.2, 128.9, 128.6, 128.53, 128.47, 126.7, 126.4, 126.0, 125.3, 123.6, 122.7, 44.7, 38.6, 31.9, 20.8 ; IR (thin film) ν 3287, 3060, 2928, 1638, 1542, 1453 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{21}H_{22}NO$ 304.1701, found 304.1707 $[M+H]^+$.

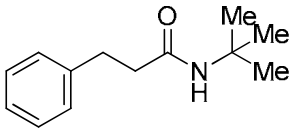


***N*-(1-1(4-Fluorophenyl)ethyl)-3-phenylpropanamide (11).** Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 56 % yield;. mp:87–88 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ7.25 (d, *J* = 6.5 Hz, 2H), 7.21 (d, *J* = 6.6 Hz, 1H), 7.16 (d, *J* = 7.8 Hz, 2H), 7.12 (m, 1H), 6.96 (t, *J* = 8.0 Hz, 2H), 5.69 (s, 1H), 5.05(m, 1H), 2.95 (t, *J* = 7.0 Hz, 2H), 2.48 (q, *J* = 6.5 Hz, 2H), 1.36 (d, *J* = 6.5 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.2, 162.0 (d, $^{1}J_{CF}$ = 245.4 Hz), 140.8, 139.0, 128.6 (d, $^{3}J_{CF}$ = 17.5 Hz), 127.9 (d, $^{4}J_{CF}$ = 7.9 Hz), 126.4, 115.5 (d, $^{2}J_{CF}$ = 21.6 Hz), 48.1,

38.7, 31.8, 21.8; IR (thin film) ν 3286, 3064, 2974, 2931, 1642, 1604, 1545, 1510, 1224 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{17}H_{19}FNO$: 272.1451, found 272.1451$[M+H]^+$.

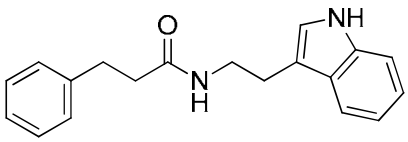


3-Phenyl-*N*-(1-*p*-tolylethyl)propanamide (12). Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 90 % yield; mp:78–79 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28 (d, *J* = 7.2 Hz, 2H), 7.22 (d, *J* = 7.0 Hz, 1H), 7.18 (d, *J* = 7.7 Hz, 2H), 7.11 (m, 4H), 5.73 (d, *J* = 6.5 Hz, 1H), 5.07(m, 1H), 2.33 (s, 3H), 1.39 (d, *J* = 6.8 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.2, 141.0, 140.3, 137.1, 129.4, 128.7, 128.6, 126.4, 126.3, 48.5, 38.7, 31.9, 21.8, 21.2; IR (thin film) ν 3283, 3926, 2971, 2925, 1639, 1545, 1453, 1374 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{18}H_{22}NO$: 268.1701, found 268.1697$[M+H]^+$.

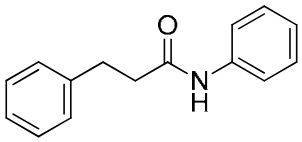


***N-tert*-Butyl-3-phenylpropanamide (13).** CAS RN: 58680-45-8. Prepared according to the general procedure; Purification using hexanes/acetone (4:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 47% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.29–7.27 (m, 2H), 7.20–7.18 (m, 3H), 5.13 (brs, 1H), 2.93 (t, *J* = 7.5 Hz, 2H), 2.38 (t, *J* = 7.5 Hz, 2H), 1.28 (s, 9H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.5, 141.2, 128.6, 126.3, 51.2, 39.6, 32.0, 28.9. Analytical data is consistent with published data.[5]

(5) Y. Saito, H. Ouchi and H. Takahata, *Tetrahedron*, 2008, **64**, 11129–11135.

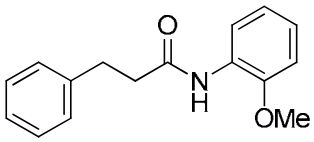


***N*-(2-(1*H*-Indol-3-yl)ethyl)-3-phenylpropanamide (14).** CAS RN: 21803-90-7. Prepared according to the general procedure; Purification using hexanes/EtOAc (1:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 98% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.51 (s, 1H), 7.57 (d, *J* = 7.9 Hz, 1H), 7.37 (d, *J* = 8.1 Hz, 1H), 7.29 (t, *J* = 7.4 Hz, 2H), 7.22 (t, *J* = 7.4 Hz, 2H), 7.18 (d, *J* = 7.6 Hz, 2H), 7.13 (t, *J* = 7.4 Hz, 1H), 5.61 (brs, 1H), 3.57 (dt, *J* = 6.4, 6.4 Hz, 2H), 2.95 (t, *J* = 7.7 Hz, 2H), 2.91 (t, *J* = 6.7 Hz, 2H), 2.40 (t, *J* = 7.7 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 172.3, 140.9, 136.5, 128.6, 128.4, 127.4, 126.3, 122.2, 122.1, 119.4, 118.7, 112.7, 111.4, 39.8, 38.5, 31.8, 25.3. Analytical data is consistent with published data.[6]

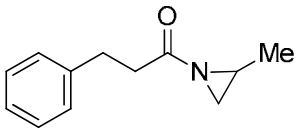


***N*,3-Diphenylpropanamide (15).** CAS RN: 3271-81-6. Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/Et_2O/CH_2Cl_2 (2:1:1 v/v/v) as the eluent afforded the desired amidation product as a colorless solid in 98% yield. ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.46–7.44 (m, 3H), 7.31–7.27 (m, 4H), 7.23–7.21 (m, 3H), 7.09 (t, *J* = 7.3 Hz, 1H), 3.04 (t, *J* = 7.5 Hz, 2H), 2.65 (t, *J* = 7.8 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 170.7, 140.7, 137.9, 129.0, 128.7, 128.5, 126.5, 124.4, 120.2, 39.4, 31.7. Analytical data is consistent with published data.[3,5]

(6) P. H. Kiviranta, H. S. Salo, J. Leppanen, V. M. Rinne, S. Kyrylenko, E. Kuusisto, T. Suuronen, A. Salminen, A. Poso, M. Lahtela-Kakkonen and E. A. A. Wallen, *Bioorg. Med. Chem.*, 2008, **16**, 8054–8062.



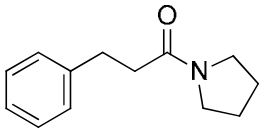
***N*-(2-Methoxyphenyl)-3-phenylpropanamide (16).** CAS RN: 126545-09-3. [7] Prepared according to the general procedure 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/Et_2O/CH_2Cl_2 (2:1:1 v/v/v) as the eluent afforded the desired amidation product as a colorless solid in 99% yield; mp: 46–47 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.41 (d, *J* = 7.9 Hz, 1H), 7.72 (brs, 1H), 7.31 (t, *J* = 7.4Hz, 2H), 7.27 (d, *J* = 6.8H, 2H), 7.22 (t, *J* = 7.1 Hz, 1H), 7.04 (t, *J* = 7.8 Hz, 1H), 6.97 (t, *J* = 7.7 Hz, 1H), 6.86 (d, *J* = 8.0 Hz, 1H), 3.83 (s, 3H), 3.08 (t, *J* = 7.8 Hz, 2H), 2.72 (t, *J* = 7.8 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 107.2, 147.8, 140.8, 128.6, 128.5, 126.3, 123.7, 121.1, 119.9, 109.9, 55.7, 39.7, 31.6; IR (thin film) ν 3414, 3317, 3062, 3026, 2935, 2836, 1680 s, 1600 s, 1527 s, 1484, 1460 s, 1252 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{16}H_{17}NO_2Na$: 278.1157, found 278.1148 $[M+Na]^+$.



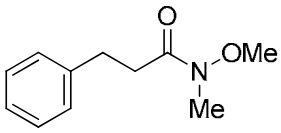
1-(2-Methylaziridin-1-yl)-3-phenylpropan-1-one (17). Prepared according to the general procedure; Purification using hexanes/acetone (4:1 v/v) as the eluent afforded the desired amidation product as a colorless liquid in 65% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.30–7.27 (m, 2H), 7.21–7.19 (m, 3H), 2.97 (t, *J* = 7.7 Hz, 2H), 2.70 (t, *J* = 7.8 Hz, 2H), 2.33–2.31 (m, 1H), 2.20 (d, *J* = 5.8 Hz, 1H), 1.87 (brs, 1H), 1.26 (d, *J* = 5.4 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 184.9, 141.1, 128.6, 128.4, 126.3, 38.9, 32.7, 31.3, 31.2, 17.8; IR (thin film) ν 3584, 3062, 3027,

(7) Y. Kikugawa and M. Shimada, *J. Chem. Soc., Chem. Commun.*, 1989, 1450–1451.

2992, 2965, 2928, 1692 s, 1406, 1374 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{12}H_{16}NO$: 190.1232, found 190.1224 $[M+H]^+$.

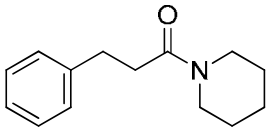


3-Phenyl-1-(pyrrolidin-1-yl)propan-1-one (18). CAS RN: 151647-54-0. Prepared according to the general procedure; Purification using hexanes/EtOAc (1:4 v/v) as the eluent afforded the desired amidation product as a pale yellow liquid in 96% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.24 (t, *J* = 7.3 Hz, 2H), 7.19 (d, *J* = 7.5 Hz, 2H), 7.15 (t, *J* = 7.0 Hz, 1H), 3.42 (t, *J* = 6.8 Hz, 2H), 3.23 (t, *J* = 6.6 Hz, 2H), 2.95 (t, *J* = 7.9 Hz, 2H), 2.52 (t, *J* = 7.9 Hz, 2H), 1.86–1.74 (m, 4H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 170.6, 141.4, 128.34, 128.32, 126.0, 46.4, 45.5, 36.6, 31.1, 26.0, 24.3. Analytical data is consistent with published data.[5]

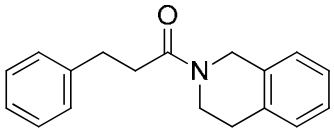


***N*-Methoxy-*N*-methyl-3-phenylpropanamide (19).** CAS RN: 170646-96-5. Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h with the free amine by pre-treatment of weinreb's amine HCl salt with sodium bicarbonate; Purification using hexanes/EtOAc (3:2 v/v) as the eluent afforded the desired amidation product as a colorless liquid in 64% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.30–7.27 (m, 2H), 7.24–7.18 (m, 3H), 3.59 (s, 3H), 3.17 (s, 3H), 2.96 (t, *J* = 7.8 Hz, 2H), 2.74 (t, *J* = 7.3 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 173.7, 141.4, 128.48, 128.47, 126.1, 61.2, 33.8, 32.2, 30.7. Analytical data is consistent with published data.[8]

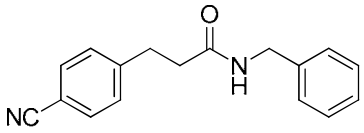
(8) J. A. Murphy, A. G. J. Commeureuc, T. N. Snaddon, T. M. McGuire, T. A. Khan, K. Hisler, M. L. Dewis, and R. Carling, *Org. Lett*., 2005, **7**, 1427–1429.



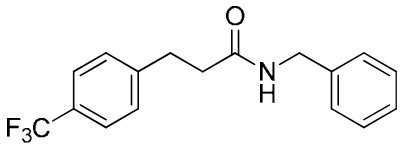
3-Phenyl-1-(piperidin-1-yl)propan-1-one (20). CAS RN: 21924-11-8. Prepared according to the general procedure; Purification using hexanes/EtOAc (2:1 v/v) as the eluent afforded the desired amidation product as a pale yellow liquid in 81% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28–7.25 (m, 2H), 7.21–7.16 (m, 3H), 3.54 (t, *J* = 4.9 Hz, 2H), 3.30 (t, *J* = 4.9 Hz, 2H), 2.95 (t, *J* = 7.9 Hz, 2H), 2.59 (t, *J* = 7.9 Hz, 2H), 1.58–1.43 (m, 6H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 170.3, 141.4, 128.40, 128.38, 126.0, 46.5, 42.6, 35.1, 31.6, 26.3, 25.5, 24.5. Analytical data is consistent with published data.[5]



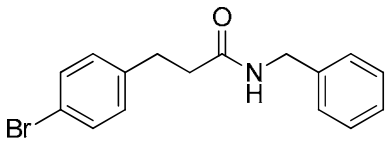
1-(3,4-Dihydroisoquinolin-2(1*H*)-yl)-3-phenylpropan-1-one (21). CAS RN: 349431-73-8. Prepared according to the general procedure; Purification using hexanes/EtOAc (4:1 v/v) as the eluent afforded the desired amidation product as a colorless liquid in 99% yield as a ~1.3:1 mixture of amide rotamers in $CDCl_3$, 25 °C; ^{1}H NMR (500 MHz, DMSO-d_6, 60 °C) δ 7.24–7.23 (m, 4H), 7.15 (m, 5H), 4.60 (s, 2H), 3.65 (brs, 2H), 2.86 (t, *J* = 7.8 Hz, 2H), 2.78 (brs, 2H), 2.70 (t, *J* = 7.8 Hz, 2H) ; ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.1, 171.0, 141.3, 135.1, 134.1, 133.5, 132.5, 128.9, 128.51, 128.48, 128.43, 128.41, 128.2, 126.9, 126.6, 126.5, 126.3, 126.2, 126.0, 47.2, 44.2, 43.1, 39.7, 35.8, 35.5, 31.42, 31.36, 29.4, 28.5; IR (thin film) ν 3061, 3025, 2929, 2860, 1646 s, 1495, 1452, 1207 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{18}H_{20}NO$: 266.1545, found 266.1537 $[M+H]^+$



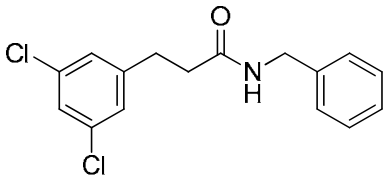
***N*-Benzyl-3-(4-cyanophenyl)propanamide (22).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/EtOAc (1:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 97% yield; mp: 113–114 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.52 (d, *J* = 7.5 Hz, 2H), 7.30–7.27 (m, 5H), 7.14 (d, *J* = 6.5 Hz, 2H), 5.79 (brs, 1H), 4.38 (d, *J* = 5.5 Hz, 2H), 3.04 (t, *J* = 7.3 Hz, 2H), 2.51 (t, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.0, 146.6, 138.1, 132.4, 129.4, 128.8, 127.8, 127.7, 119.1, 110.2, 43.7, 37.6, 31.6; IR (thin film) ν 3297, 3065, 3033, 2929, 2227, 1646, 1545, 1454 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{17}H_{17}N_2O$: 265.1341, found 265.1332 $[M+H]^+$.



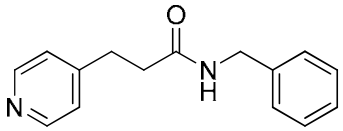
***N*-Benzyl-3-(4-(trifluoromethyl)phenyl)propanamide (23).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/EtOAc (2:3 v/v) as the eluent afforded the desired amidation product as a colorless solid in 74% yield; mp: 117–118 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.51 (d, *J* = 7.5 Hz, 2H), 7.30–7.27 (m, 5H), 7.13 (d, *J* = 7.0 Hz, 2H), 5.78 (brs, 1H), 4.38 (d, *J* = 5.5 Hz, 2H), 3.04 (t, *J* = 7.3 Hz, 2H), 2.51 (t, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.5, 145.0, 138.1, 128.8, 128.7, 128.6 (q, $^2J_{CF}$ = 32.4 Hz), 127.7, 127.6, 125.5 (q, $^3J_{CF}$ = 3.6 Hz), 124.4 (q, $^1J_{CF}$ = 272.0 Hz), 43.6, 37.8, 31.4; IR (thin film) ν 3260, 3086, 1645 s, 1573, 1323 s, 1266, 1115, 1065 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{17}H_{17}F_3NO$: 308.1262, found 308.1255 $[M+H]^+$.



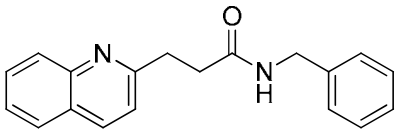
***N*-Benzyl-3-(4-bromophenyl)propanamide (24).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/EtOAc (2:3 v/v) as the eluent afforded the desired amidation product as a colorless solid in 68% yield. mp:140–141 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.38 (d, *J* = 8.0 Hz, 2H), 7.32–7.25 (m, 3H), 7.12 (d, *J* = 7.0 Hz, 2H), 7.06 (d, *J* = 8.0 Hz, 2H), 5.74 (brs, 1H), 4.37 (d, *J* = 5.5 Hz, 2H), 2.93 (t, *J* = 7.3 Hz, 2H), 2.47 (t, *J* = 7.3 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.6, 139.9, 138.2, 131.7, 130.3, 128.8, 127.8, 127.6, 120.2, 43.7, 38.3, 31.1; IR (thin film) ν 3293 s, 3031, 2926, 1635 s, 1538, 1486 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{16}H_{17}BrNO$: 318.0494, found 318.0491 $[M+H]^+$.



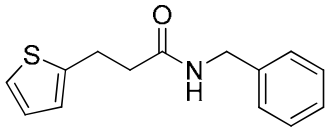
***N*-Benzyl-3-(3,5-dichlorophenyl)propanamide (25).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/EtOAc (3:2 v/v) as the eluent afforded the desired amidation product as a colorless solid in 53% yield; mp: 103–104 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.33–7.30 (m, 2H), 7.28–7.26 (m, 1H), 7.21 (s, 1H), 7.18 (d, *J* = 7.0 Hz, 2H), 7.10 (s, 2H), 5.70 (brs, 1H), 4.41 (d, *J* = 5.5 Hz, 2H), 2.96 (t, *J* = 7.5 Hz, 2H), 2.48 (t, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.0, 144.3, 138.1, 135.1, 128.9, 127.9, 127.7, 127.1, 126.7, 43.8, 37.8, 31.0; IR (thin film) ν 3291 s, 3086, 2936, 1640 s, 1568, 1429 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{16}H_{16}Cl_2NO$: 308.0609, found 308.0601 $[M+H]^+$.



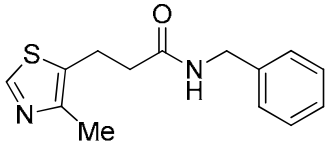
***N*-Benzyl-3-(pyridin-4-yl)propanamide (26).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using EtOAc/acetone (1:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 57% yield; mp: 33–35 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.36 (d, *J* = 5.5 Hz, 2H), 7.27–7.20 (m, 3H), 7.12 (d, *J* = 7.5 Hz, 2H), 7.05 (d, *J* = 5.0 Hz, 2H), 5.56 (brs, 1H), 4.35 (d, *J* = 6.0 Hz, 2H), 2.93 (t, *J* = 7.5 Hz, 2H), 2.48 (t, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.3, 150.1, 149.6, 138.2, 128.7, 127.7, 127.5, 123.9, 43.6, 36.7, 30.8; IR (thin film) ν 3279 s, 3064, 2925, 1648 s, 1604, 1558, 1418 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{15}H_{17}N_2O$: 241.1341, found 241.1333 $[M+H]^+$.



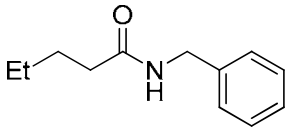
***N*-Benzyl-3-(quinolin-2-yl)propanamide (27).** Prepared according to the general procedure; Purification using hexanes/EtOAc (1:4 v/v) as the eluent afforded the desired amidation product as a colorless solid in 78% yield; mp: 113–114 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.99 (d, *J* = 8.4 Hz, 1H), 7.76 (d, *J* = 8.5 Hz, 1H), 7.73 (d, *J* = 8.1 Hz, 1H), 7.60–7.57 (m, 1H), 7.45 (t, *J* = 7.5 Hz, 1H), 7.33 (brs, 1H), 7.24 (d, *J* = 8.4 Hz, 1H), 7.18–7.17 (m, 3H), 7.12–7.11 (m, 2H), 4.37 (d, *J* = 5.5 Hz, 2H), 3.29 (t, *J* = 6.8 Hz, 2H), 2.81 (t, *J* = 7.0 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 172.5, 160.9, 147.5, 138.4, 136.5, 129.4, 128.52, 128.48, 127.6, 127.5, 127.2, 126.8, 125.9, 121.8, 43.5, 35.2, 34.0; IR (thin film) ν 3286, 3061, 2921, 1647 s, 1549, 1504, 1427 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{19}H_{19}N_2O$: 291.1497, found 291.1486 $[M+H]^+$.



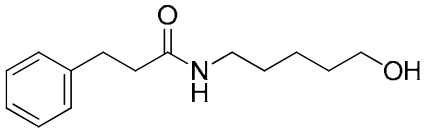
***N*-Benzyl-3-(thiophen-2-yl)propanamide (28).** Prepared according to the general procedure; Purification using hexanes/EtOAc (3:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 48% yield; mp: 70–71 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.32–7.24 (m, 3H), 7.17 (d, *J* = 7.3 Hz, 2H), 7.12 (d, *J* = 5.1 Hz, 1H), 6.92–6.90 (m, 1H), 6.82–6.81 (m, 1H), 5.81 (brs, 1H), 4.41 (d, *J* = 5.5 Hz, 2H), 3.21 (t, *J* = 7.5 Hz, 2H), 2.56 (t, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 171.5, 143.4, 138.2, 128.8, 127.9, 127.6, 127.0, 125.0, 123.6, 43.7, 38.8, 26.0; IR (thin film) ν 3298 s, 3067, 3031, 2924, 1642 s, 1543, 1454 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{14}H_{15}NOSNa$: 268.0772, found 268.0764 $[M+Na]^+$.



***N*-Benzyl-3-(4-methylthiazol-5-yl)propanamide (29).** Prepared according to the general procedure; Purification using hexanes/acetone (3:2 v/v) as the eluent afforded the desired amidation product as a colorless solid in 59% yield; mp: 70–71 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.54 (s, 1H), 7.33–7.26 (m, 3H), 7.19 (d, *J* = 7.0 Hz, 2H), 5.71 (brs, 1H), 4.42 (d, *J* = 5.5 Hz, 2H), 3.16 (t, *J* = 7.3 Hz, 2H), 2.49 (t, *J* = 7.3 Hz, 2H), 2.39 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 170.9, 149.5, 149.4, 138.1, 130.2, 128.9, 127.9, 127.8, 43.9, 38.2, 22.3, 15.0; IR (thin film) ν 3259, 2919, 2850, 1645, 1539, 1494, 1453, 1412, 1375 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{14}H_{17}N_2OS$: 261.1062, found 261.1052 $[M+H]^+$.

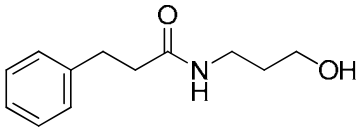


***N*-benzylpentanamide (30).** CAS RN: 10264-05-8. Prepared according to the general procedure in 0.1 M CH_2Cl_2 for 12 h; Purification using hexanes/acetone (4:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 21% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.35–7.27 (m, 5H), 5.67 (brs, 1H), 4.45 (d, *J* = 5.5 Hz, 2H), 2.22 (t, *J* = 7.5 Hz, 2H), 1.65 (quin, *J* = 7.5 Hz, 2H), 1.36 (sext, *J* = 7.5 Hz, 2H), 0.92 (t, *J* = 7.3 Hz, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 173.1, 138.5, 128.9, 128.0, 127.7, 43.8, 36.7, 28.0, 22.6, 13.9. Analytical data is consistent with published data.[9]

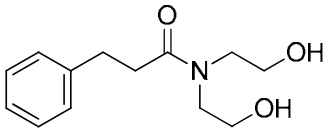


***N*-(5-Hydroxypentyl)-3-phenylpropanamide (31).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 solution; Purification using hexanes/EtOAc (1:4 v/v) as the eluent afforded the desired amidation product as a colorless solid in 51% yield; mp:44–46 °C; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.26 (t, *J* = 7.4 Hz, 2H), 7.17 (d, *J* = 7.4 Hz, 3H), 5.74 (brs, 1H), 3.59 (t, *J* = 6.3 Hz, 2H), 3.18 (dd, *J* = 6.6, 12.9 Hz, 2H), 2.93 (t, *J* = 7.7 Hz, 2H), 2.44 (t, *J* = 7.7 Hz, 2H), 2.33 (brs, 1H), 1.52 (quintet, *J* = 7.0 Hz, 2H), 1.43 (quintet, *J* = 7.2 Hz, 2H), 1.29 (quintet, *J* = 7.5 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 172.5, 140.9, 128.5, 128.4, 126.2, 62.3, 39.4, 38.4, 32.2, 31.8, 29.2, 23.0; IR (thin film) ν 3297, 3086, 3028, 2935, 2862, 1647, 1557, 1496, 1454 cm^{-1}; HRMS (ESI) *m/z* calcd for $C_{14}H_{21}NO_2Na$: 258.1470 , found 258.1462 $[M+Na]^+$.

(9) Q. Liu, Z. Liu, Y.-L. Zhou, W. Zhang, L. Yang, Z.-L. Liu and W. Yu, *Synlett*., 2005, 2510–2512.

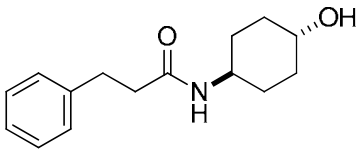


***N*-(3-Hydroxypropyl)-3-phenylpropanamide (32).** CAS RN: 401587-50-6. Prepared according to the general procedure in 0.1 M CH_2Cl_2 solution; Purification using hexanes/EtOAc (1:4 v/v) as the eluent afforded the desired amidation product as a colorless solid in 66% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28–7.25 (m, 2H), 7.20–7.17 (m, 3H), 6.24 (brs, 1H), 3.57 (brs, 1H), 3.50 (brs, 2H), 3.35–3.31 (m, 2H), 2.94 (t, *J* = 7.8 Hz, 2H), 2.48 (t, *J* = 7.5 Hz, 2H), 1.61–1.57 (m, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 173.5, 140.7, 128.6, 128.4, 126.4, 59.3, 38.4, 36.4, 32.1, 31.8. Analytical data is consistent with published data.[10]



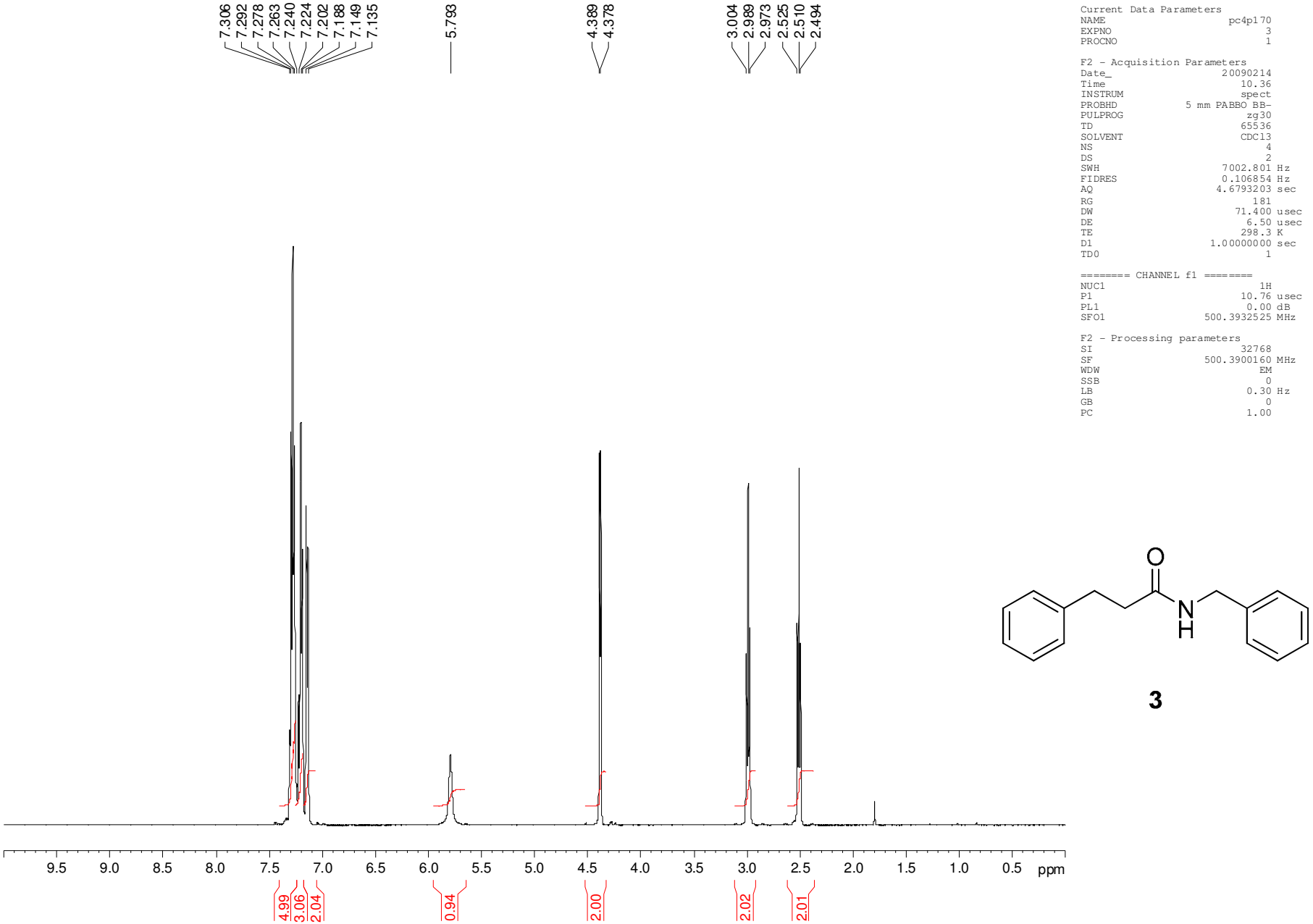
***N*,*N*-bis(2-Hydroxyethyl)-3-phenylpropanamide (33).** Prepared according to the general procedure in 0.1 M CH_2Cl_2 solution; Purification using EtOAc/acetone (1:1 v/v) as the eluent afforded the desired amidation product as a colorless oil in 38% yield; ^{1}H NMR (500 MHz, $CDCl_3$) δ 7.28–7.26 (m, 2H), 7.20–7.19 (m, 3H), 3.82 (t, *J* = 4.6 Hz, 2H), 3.70 (t, *J* = 4.7 Hz, 2H), 3.54 (t, *J* = 4.5 Hz, 2H), 3.41 (t, *J* = 4.6 Hz, 2H), 2.95 (t, *J* = 7.7 Hz, 2H), 2.71 (t, *J* = 7.8 Hz, 2H); ^{13}C NMR (125 MHz, $CDCl_3$) δ 174.8, 141.1, 128.6, 128.5, 126.4, 61.4, 60.8, 52.2, 50.7, 35.5, 31.6; IR (thin film) ν 3366, 2932, 2876, 1618 s, 1454, 1048 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{13}H_{19}NO_3Na$: 260.1263, found 260.1254 $[M+Na]^+$.

(10) A. Brizzi, G. Bruni, P. Massarelli, C. Nencini, R. Rauggi, R. Sirianni, V. Brizzi, *Bollettino Chimico Farmaceutico*, 2005, **144**, e1/1–e1/19.



***N*-(*trans*-4-Hydroxycyclohexyl)-3-phenylpropanamide (34).** CAS RN: 713526-52-4. [11] Prepared according to the general procedure in 0.1 M CH_2Cl_2 solution; Purification using EtOAc/acetone (4:1 v/v) as the eluent afforded the desired amidation product as a colorless solid in 74% yield; mp: 180–181 °C; ^{1}H NMR (500 MHz, Acetone-d_6) δ 7.25–7.15 (m, 5H), 6.81 (brs, 1H), 3.60 (brs, 2H), 3.47 (brs, 1H), 2.87 (t, *J* = 7.5 Hz, 2H), 2.39 (t, *J* = 7.5 Hz, 2H), 1.88–1.82 (m, 4H), 1.33–1.26 (m, 2H), 1.21–1.15 (m, 2H); ^{13}C NMR (125 MHz, Acetone-d_6) δ 171.3, 142.6, 129.2, 129.1, 126.7, 69.8, 48.4, 38.6, 35.0, 32.4, 31.4; IR (thin film) ν 3295, 2935, 2861, 1637, 1544, 1064 cm^{-1}; HRMS (ESI) *m*/*z* calcd for $C_{15}H_{21}NO_2Na$: 270.1470, found 270.1462 $[M+Na]^+$.

(11) M. Kawai, H. Nakamura, I. Sakurada, H. Shimokawa, H. Tanaka, M. Matsumizu, K. Ando, K. Hattori, A. Ohta, S. Nukui, A. Omura and M. Kawamura, *Bioorg. Med. Chem. Lett*., 2007, **17**, 5533–5536.

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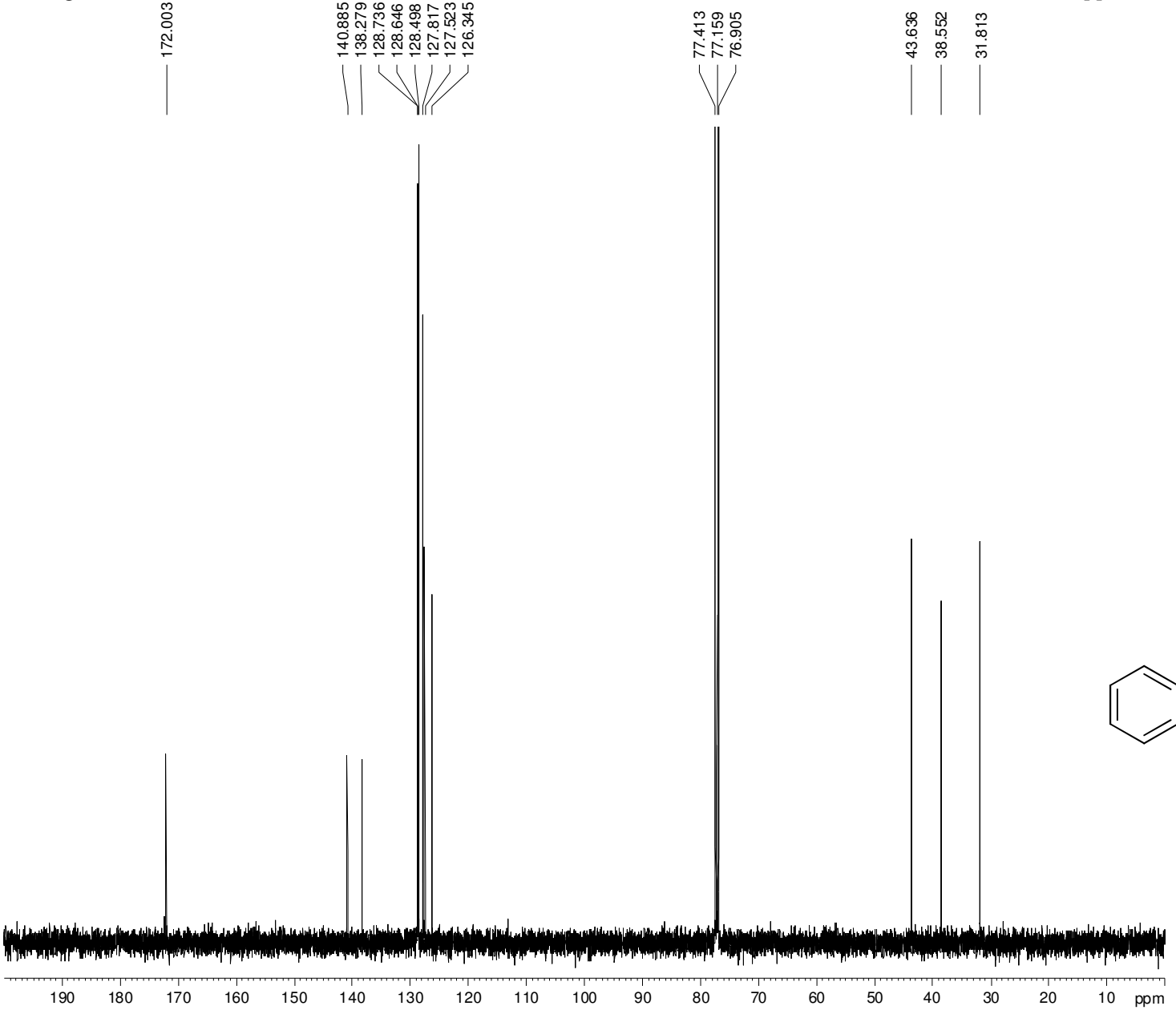
3

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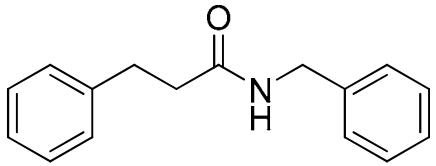
EXPNO                            4
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20090214
Time                         10.37
INSTRUM                      spect
PROBHD          5 mm PABBO BB-
PULPROG                    zgpg30
TD                          65536
SOLVENT                     CDCl3
NS                             32
DS                              4
SWH                    29761.904 Hz
FIDRES                  0.454131 Hz
AQ                    1.1010548 sec
RG                           1150
DW                       16.800 usec
DE                        6.50 usec
TE                        298.5 K
D1                   2.00000000 sec
d11                  0.03000000 sec
DELTA                1.89999998 sec
TD0                             1

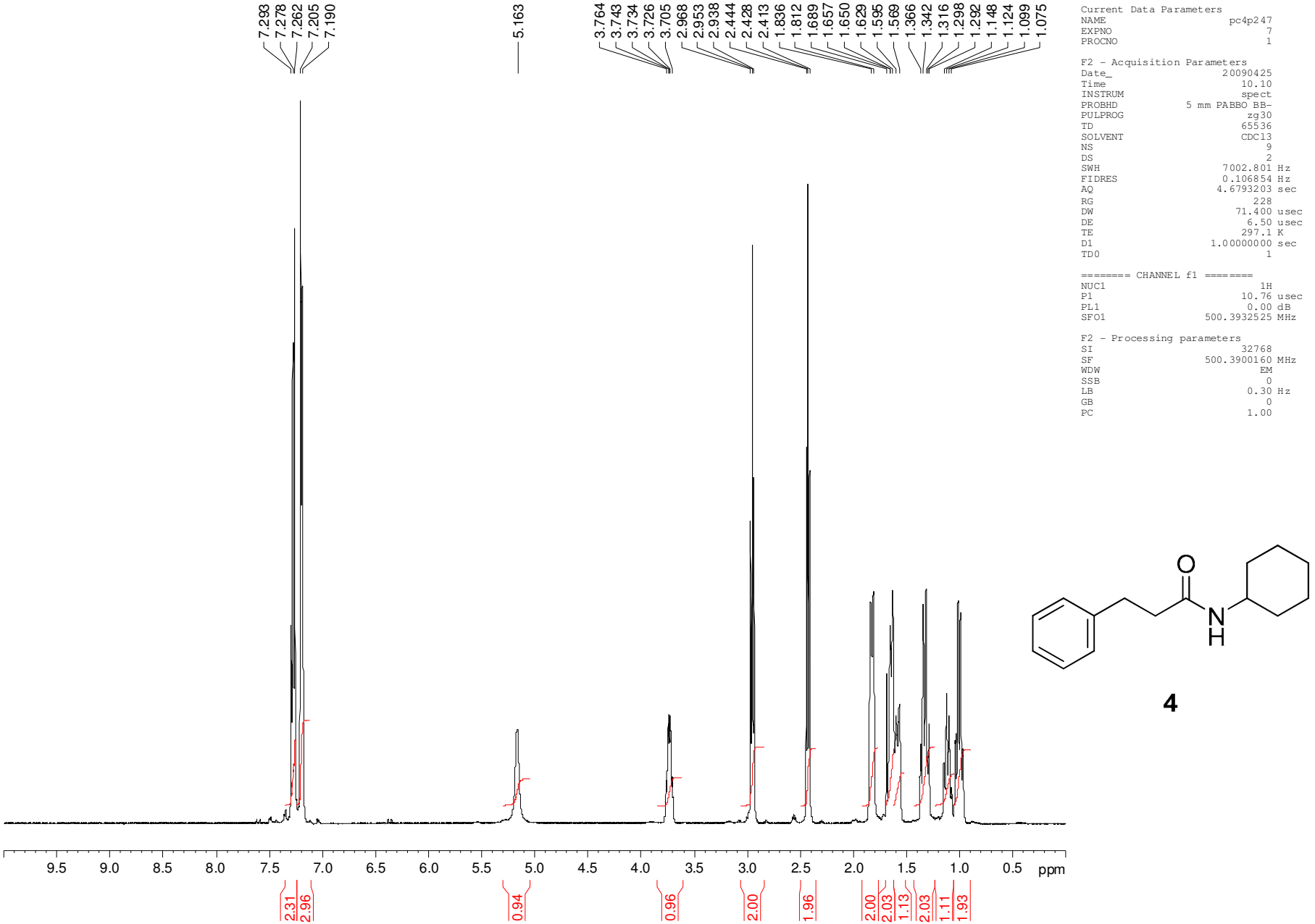
======== CHANNEL f1 ========
NUC1                          13C
P1                         7.50 usec
PL1                        1.00 dB
SFO1                 125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                   waltz16
NUC2                          1H
PCPD2                     80.00 usec
PL12                      17.43 dB
PL13                      18.43 dB
PL2                        0.00 dB
SFO2                 500.3920016 MHz

F2 - Processing parameters
SI                            32768
SF                   125.8231570 MHz
WDW                              EM
SSB                               0
LB                         1.00 Hz
GB                                0
PC                             1.40
```



3



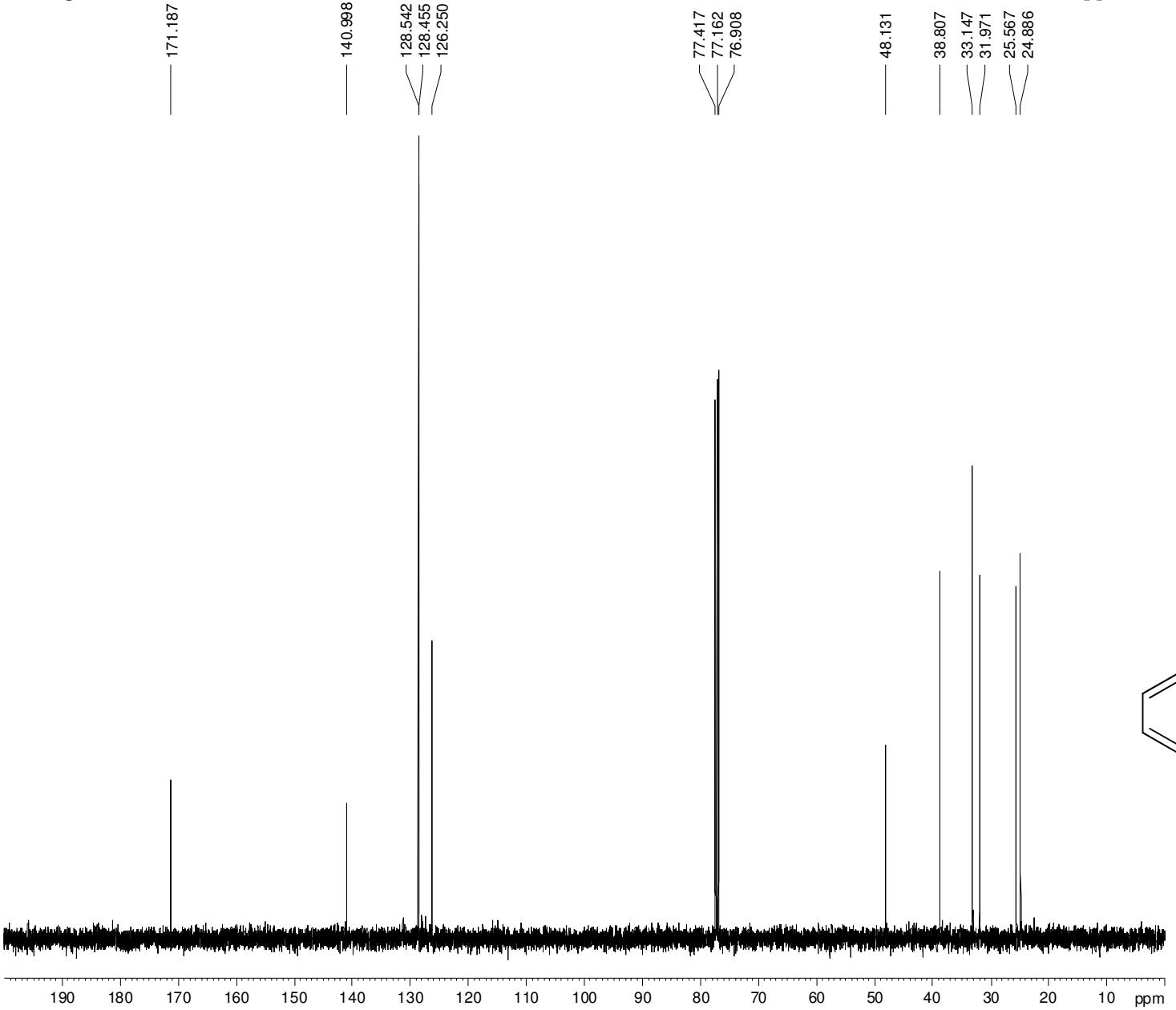

```
Current Data Parameters
NAME                      pc4p247
EXPNO                           7
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090425
Time                        10.10
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDCl3
NS                              9
DS                              2
SWH                   7002.801 Hz
FIDRES                0.106854 Hz
AQ                   4.6793203 sec
RG                            228
DW                     71.400 usec
DE                      6.50 usec
TE                      297.1 K
D1                  1.00000000 sec
TD0                             1

======== CHANNEL f1 ========
NUC1                           1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                          32768
SF                 500.3900160 MHz
WDW                            EM
SSB                             0
LB                      0.30 Hz
GB                              0
PC                           1.00
```


4



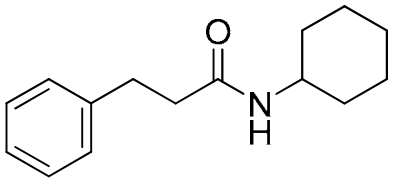

```
Current Data Parameters
NAME                      pc4p247
EXPNO                           4
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090422
Time                        18.25
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDCl3
NS                           17
DS                            4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                         2050
DW                     16.800 usec
DE                      6.50 usec
TE                        297.6 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                           1

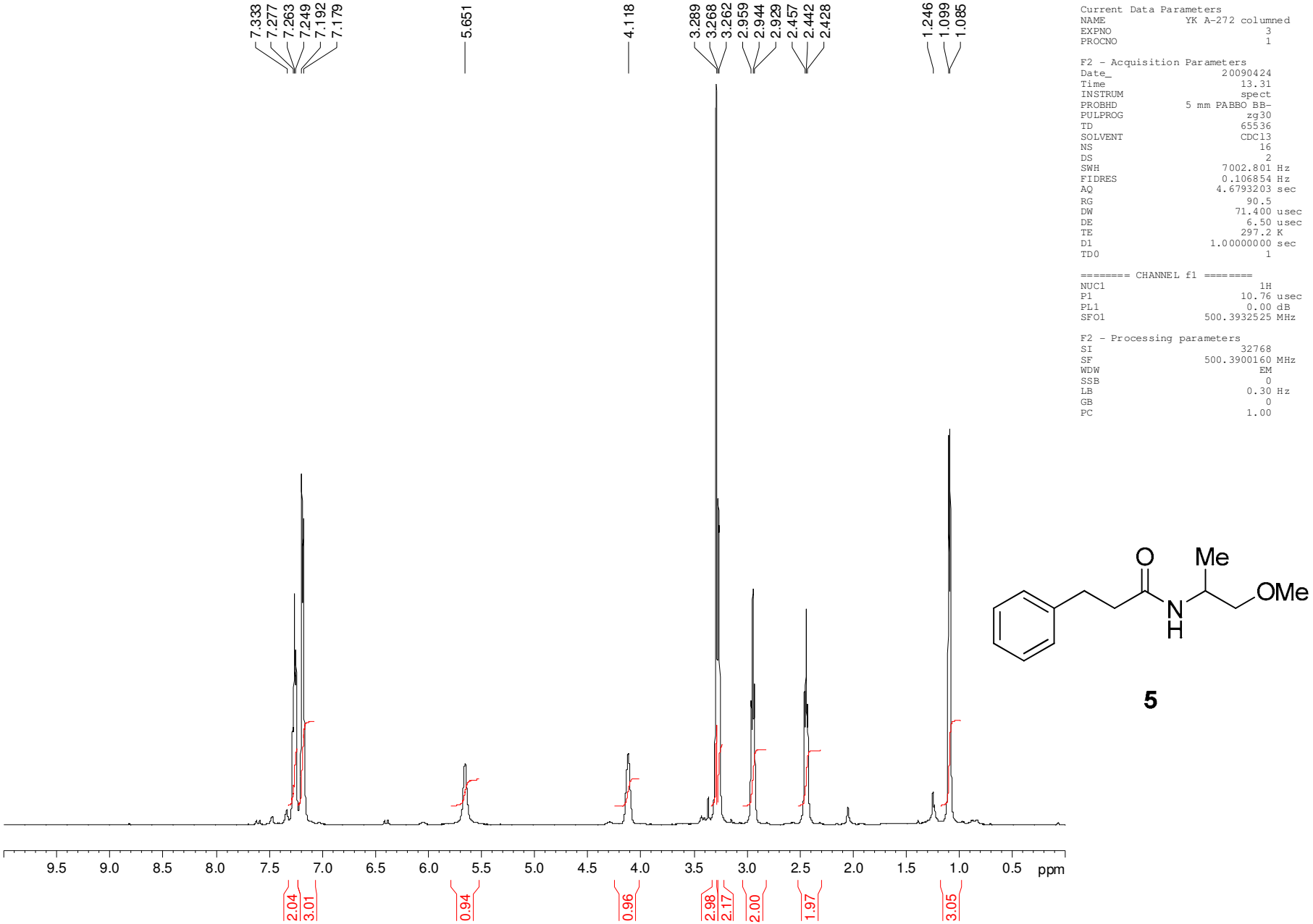
======== CHANNEL f1 ========
NUC1                        13C
P1                     7.50 usec
PL1                    1.00 dB
SFO1               125.8357479 MHz

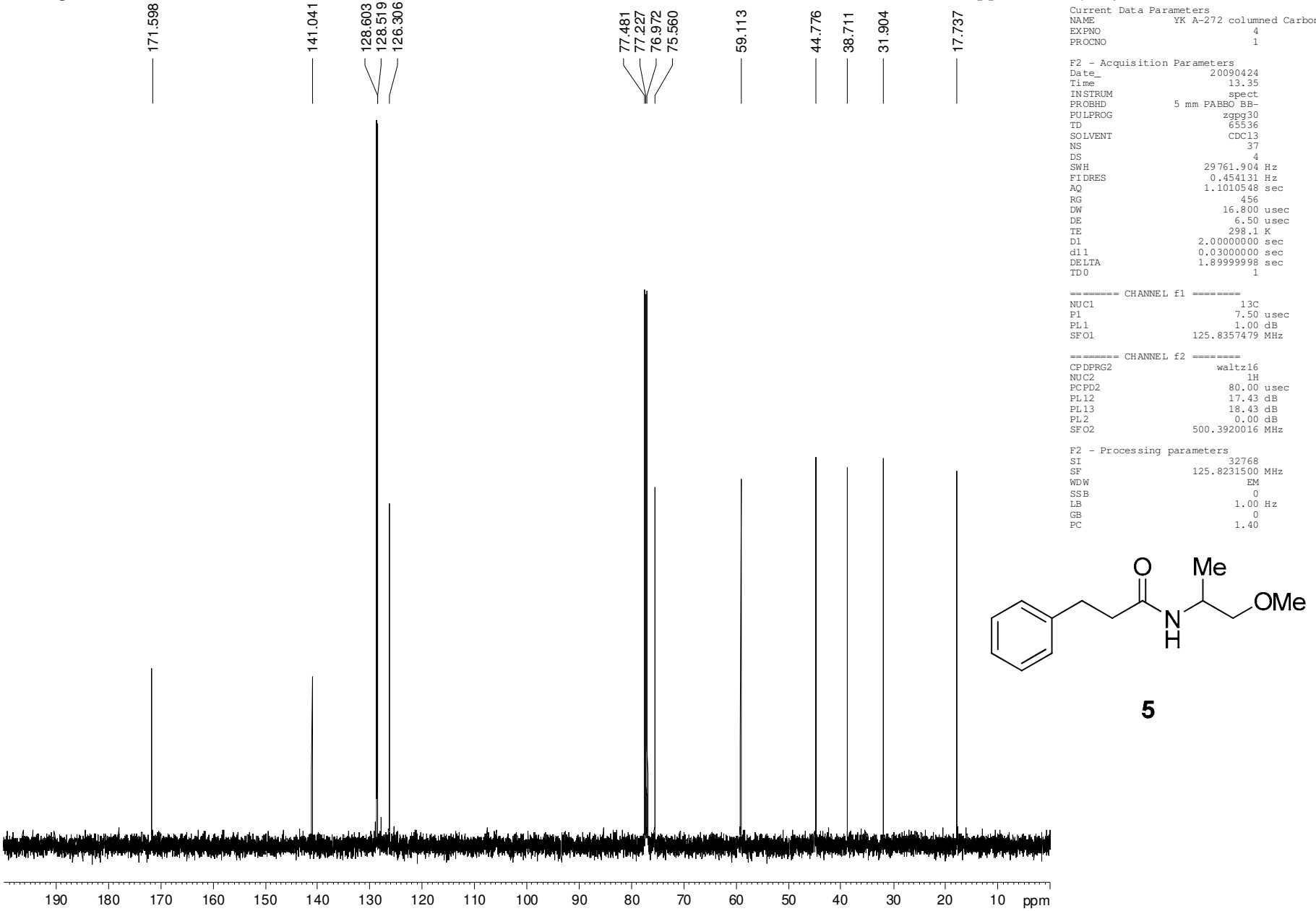
======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                  80.00 usec
PL12                   17.43 dB
PL13                   18.43 dB
PL2                     0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                        32768
SF                 125.8231597 MHz
WDW                          EM
SSB                           0
LB                     1.00 Hz
GB                            0
PC                     1.40
```



4


7.333
7.277
7.263
7.249
7.192
7.179
5.651
4.118
3.289
3.268
3.262
2.959
2.944
2.929
2.457
2.442
2.428
1.246
1.099
1.085
Current Data Parameters
NAME YK A-272 columned
EXPNO 3
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090424
Time 13.31
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 90.5
DW 71.400 usec
DE 6.50 usec
TE 297.2 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
2.04
3.01
0.94
0.96
2.98
2.17
2.00
1.97
3.05
O
Me
OMe
N
H
5




```
Current Data Parameters
NAME                  YK A-272 columned Carbon
EXPNO                                       4
PROCNO                                      1

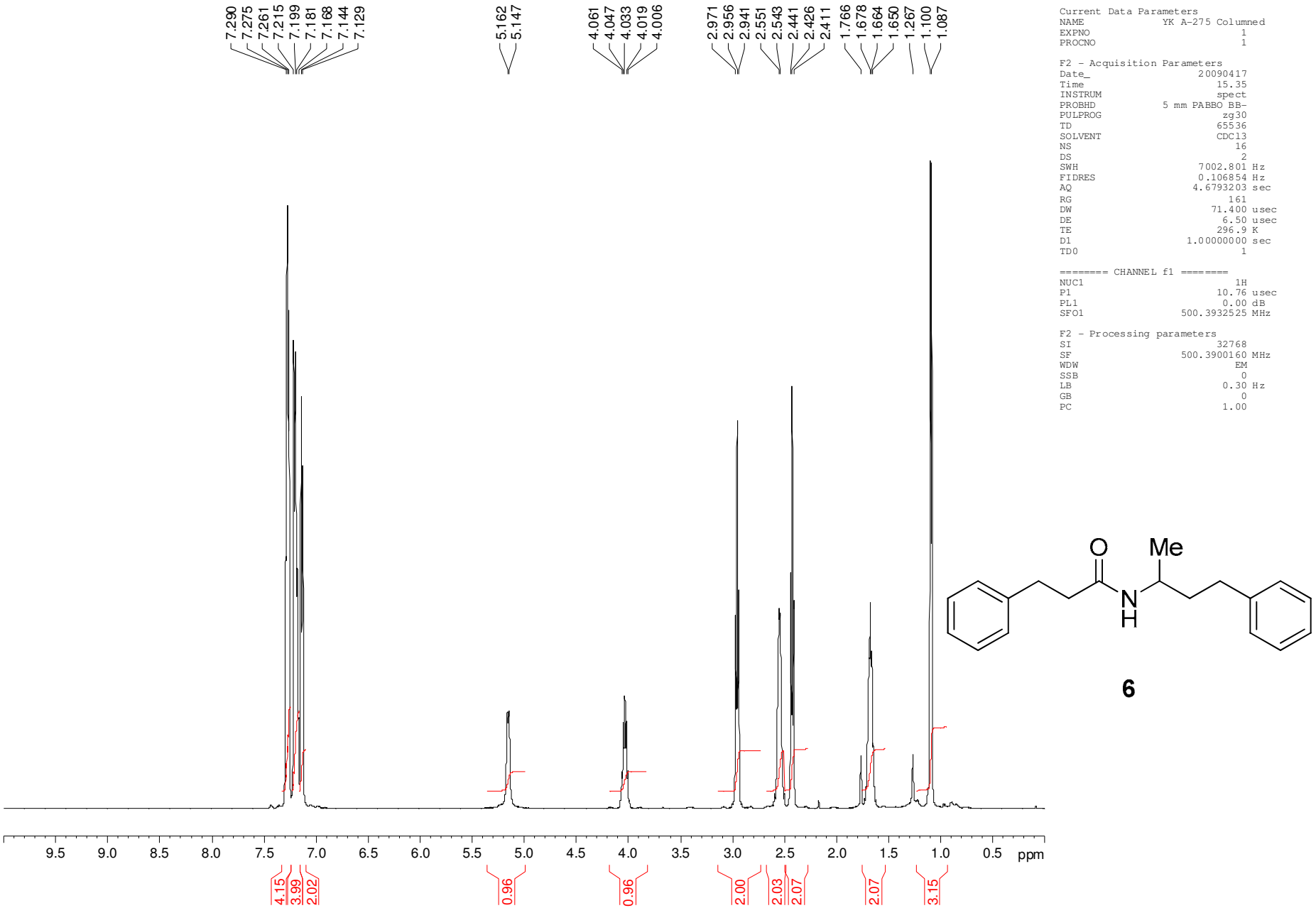
F2 - Acquisition Parameters
Date_                              20090424
Time                                  13.35
INSTRUM                               spect
PROBHD                5 mm PABBO BB-
PULPROG                             zgpg30
TD                                   65536
SOLVENT                              CDC13
NS                                      37
DS                                       4
SWH                           29761.904 Hz
FIDRES                         0.454131 Hz
AQ                          1.1010548 sec
RG                                     456
DW                                16.800 usec
DE                                 6.50 usec
TE                                 298.1 K
D1                         2.00000000 sec
d11                        0.03000000 sec
DELTA                      1.89999998 sec
TD0                                      1

======== CHANNEL f1 ========
NUC1                                   13C
P1                                7.50 usec
PL1                                1.00 dB
SFO1                       125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                           waltz16
NUC2                                   1H
PCPD2                             80.00 usec
PL12                               17.43 dB
PL13                               18.43 dB
PL2                                 0.00 dB
SFO2                       500.3920016 MHz

F2 - Processing parameters
SI                                   32768
SF                         125.8231500 MHz
WDW                                     EM
SSB                                      0
LB                                 1.00 Hz
GB                                       0
PC                                    1.40
```


5



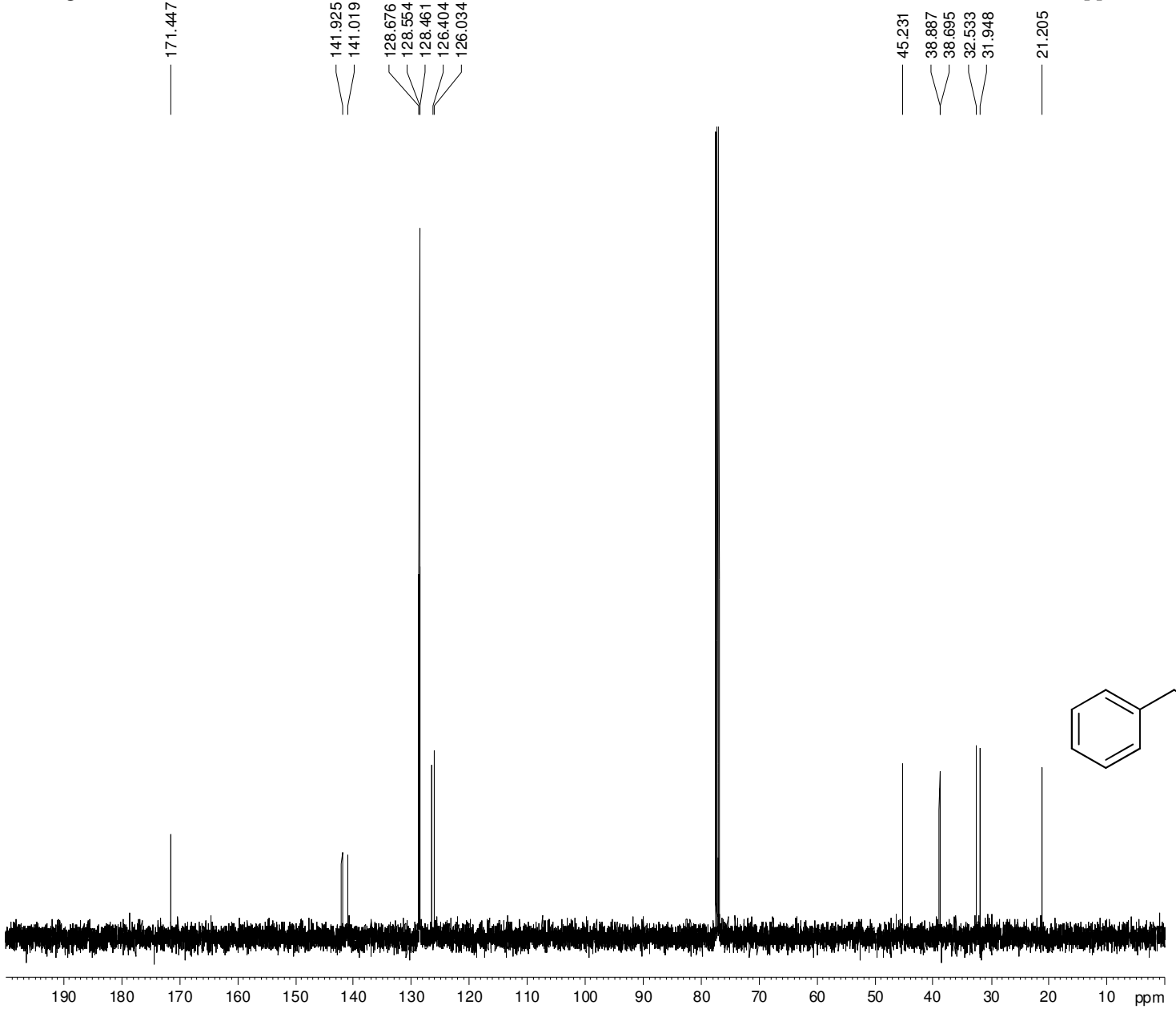

```
Current Data Parameters
NAME                  YK A-275 Columned
EXPNO                                1
PROCNO                               1

F2 - Acquisition Parameters
Date_                         20090417
Time                             15.35
INSTRUM                          spect
PROBHD           5 mm PABBO BB-
PULPROG                          zg30
TD                              65536
SOLVENT                         CDC13
NS                                 16
DS                                  2
SWH                        7002.801 Hz
FIDRES                     0.106854 Hz
AQ                        4.6793203 sec
RG                                161
DW                          71.400 usec
DE                           6.50 usec
TE                           296.9 K
D1                       1.00000000 sec
TD0                                 1

======== CHANNEL f1 ========
NUC1                               1H
P1                          10.76 usec
PL1                          0.00 dB
SFO1                   500.3932525 MHz

F2 - Processing parameters
SI                              32768
SF                     500.3900160 MHz
WDW                               EM
SSB                                 0
LB                           0.30 Hz
GB                                  0
PC                               1.00
```


6



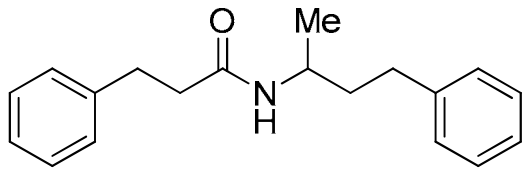

```
Current Data Parameters
NAME                  YK A-275 Columned
EXPNO                                2
PROCNO                               1

F2 - Acquisition Parameters
Date_                         20090417
Time                             15.39
INSTRUM                          spect
PROBHD           5 mm PABBO BB-
PULPROG                       zgpg30
TD                             65536
SOLVENT                        CDC13
NS                                23
DS                                 4
SWH                       29761.904 Hz
FIDRES                     0.454131 Hz
AQ                        1.1010548 sec
RG                               456
DW                          16.800 usec
DE                           6.50 usec
TE                           297.7 K
D1                      2.00000000 sec
d11                     0.03000000 sec
DELTA                   1.89999998 sec
TD0                                1

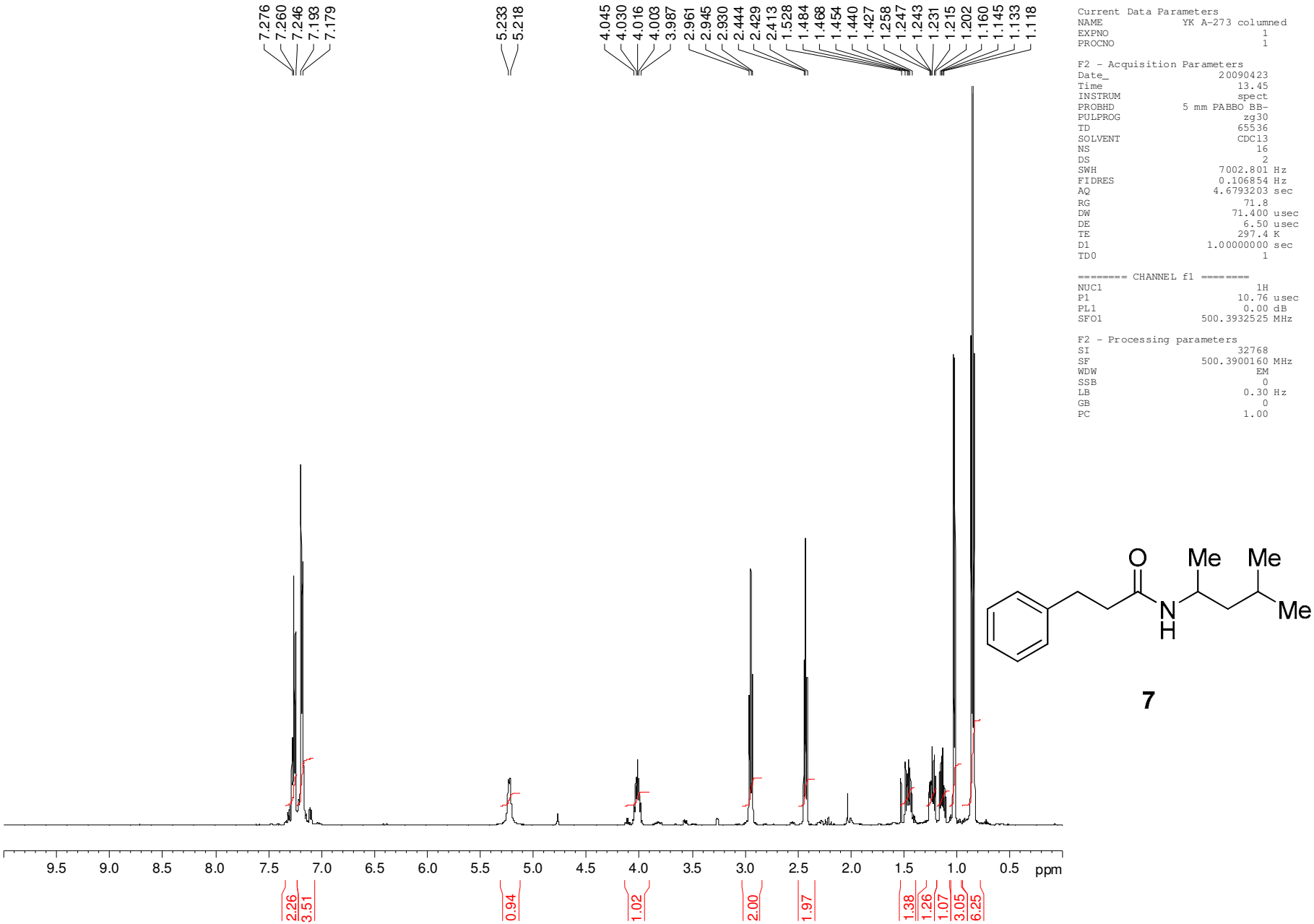
======== CHANNEL f1 ========
NUC1                             13C
P1                            7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

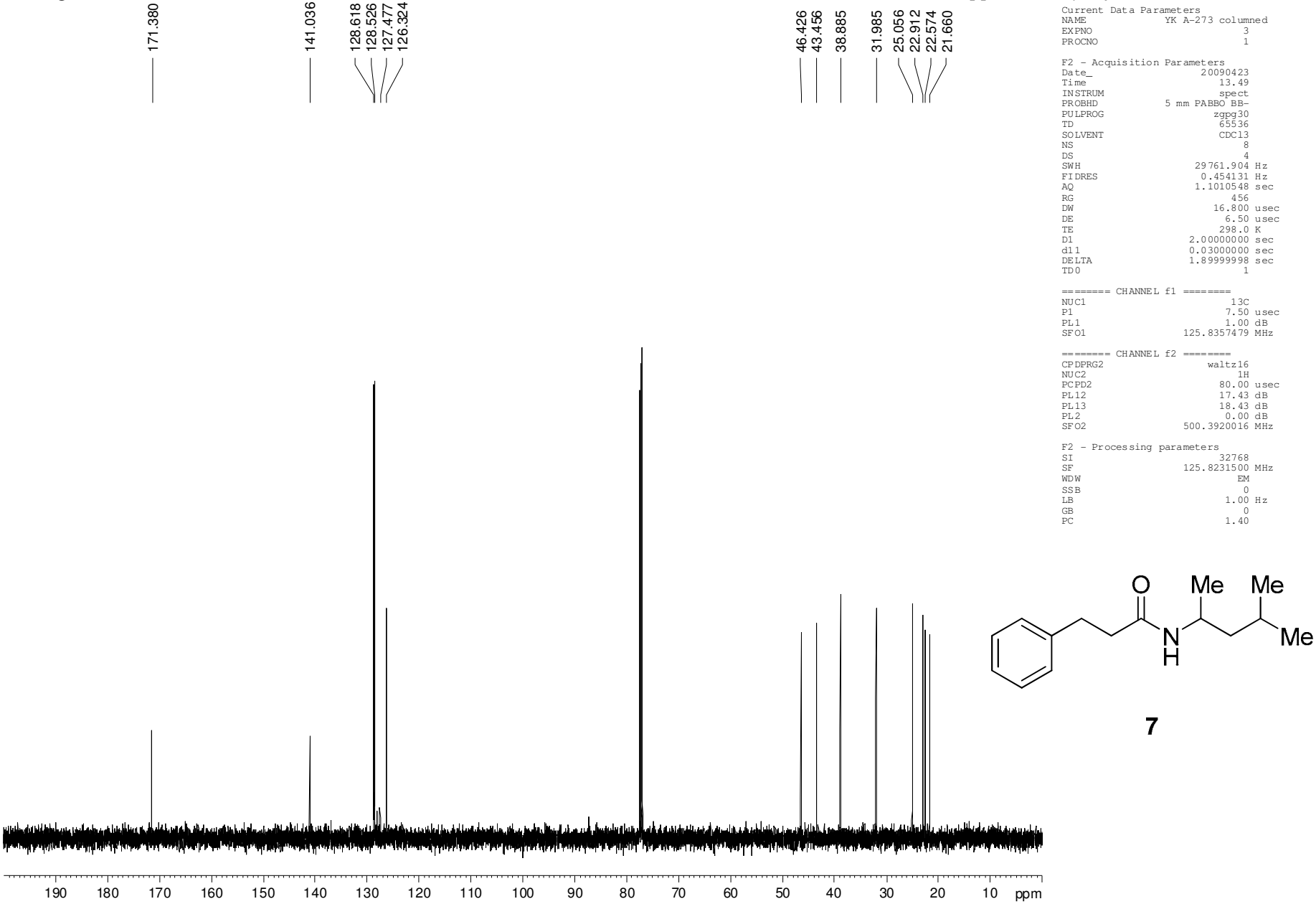
======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                        80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                               32768
SF                    125.8231500 MHz
WDW                              EM
SSB                               0
LB                            1.00 Hz
GB                                0
PC                            1.40
```



6


7.276
7.260
7.246
7.193
7.179
5.233
5.218
4.045
4.030
4.016
4.003
3.987
2.961
2.945
2.930
2.444
2.429
2.413
1.528
1.484
1.468
1.454
1.440
1.427
1.258
1.247
1.243
1.231
1.215
1.202
1.160
1.145
1.133
1.118
Current Data Parameters
NAME YK A-273 columned
EXPNO 1
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090423
Time 13.45
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 71.8
DW 71.400 usec
DE 6.50 usec
TE 297.4 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
Me
Me
N
H
Me
7
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
2.26
3.51
0.94
1.02
2.00
1.97
1.38
1.26
1.07
3.05
6.25




```
Current Data Parameters
NAME                  YK A-273 columned
EXPNO                               3
PROCNO                              1

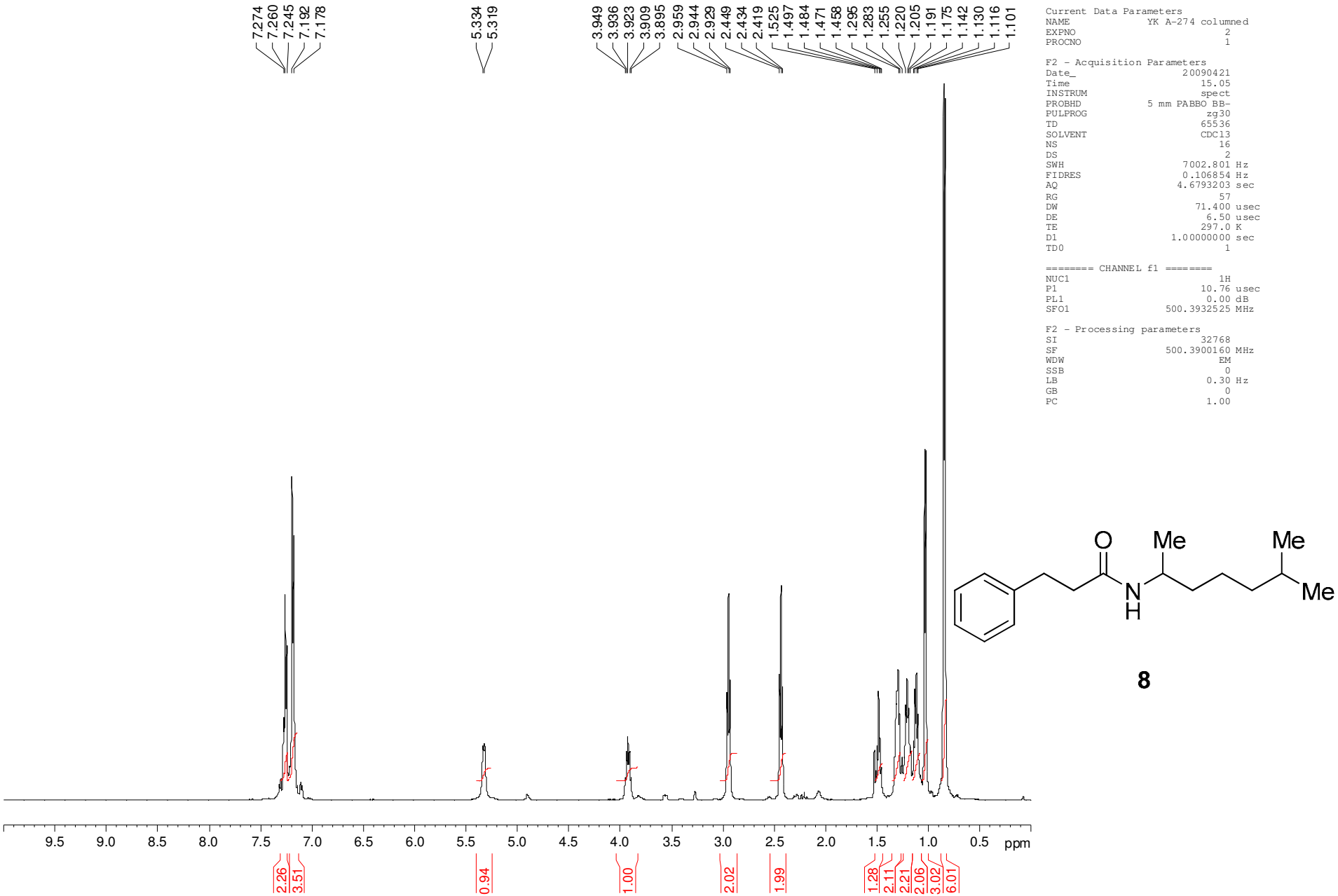
F2 - Acquisition Parameters
Date_                        20090423
Time                            13.49
INSTRUM                         spect
PROBHD           5 mm PABBO BB-
PULPROG                      zgpg30
TD                            65536
SOLVENT                         CDC13
NS                                  8
DS                                  4
SWH                       29761.904 Hz
FIDRES                     0.454131 Hz
AQ                        1.1010548 sec
RG                                456
DW                           16.800 usec
DE                            6.50 usec
TE                           298.0 K
D1                        2.00000000 sec
d11                       0.03000000 sec
DELTA                     1.89999998 sec
TD0                                 1

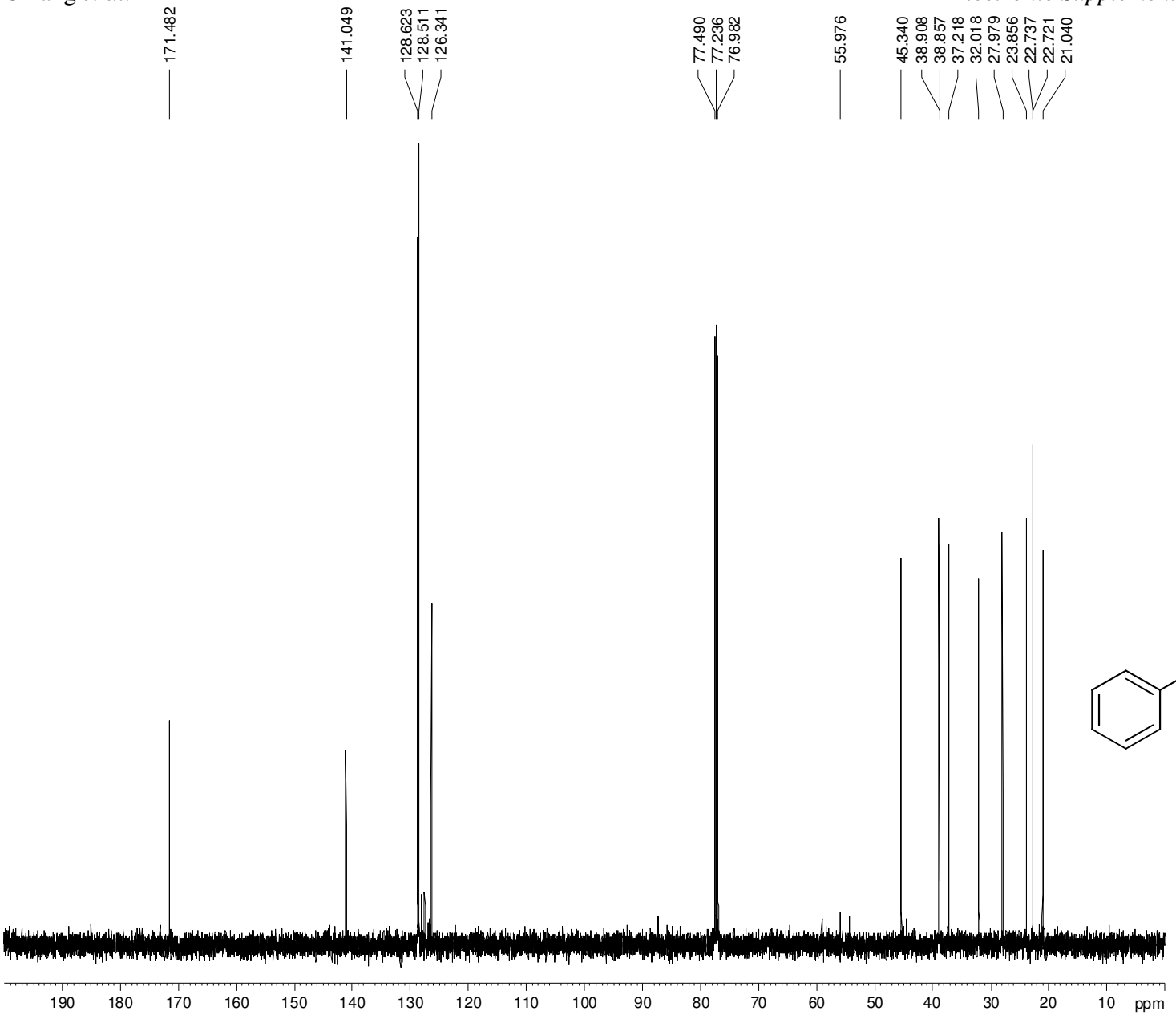
======== CHANNEL f1 ========
NUC1                              13C
P1                             7.50 usec
PL1                            1.00 dB
SFO1                    125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                      waltz16
NUC2                              1H
PCPD2                         80.00 usec
PL12                          17.43 dB
PL13                          18.43 dB
PL2                            0.00 dB
SFO2                    500.3920016 MHz

F2 - Processing parameters
SI                                32768
SF                      125.8231500 MHz
WDW                                EM
SSB                                 0
LB                             1.00 Hz
GB                                  0
PC                             1.40
```


7


7.274
7.260
7.245
7.192
7.178
5.334
5.319
3.949
3.936
3.923
3.909
3.895
2.959
2.944
2.929
2.449
2.434
2.419
1.525
1.497
1.484
1.471
1.458
1.295
1.283
1.255
1.220
1.205
1.191
1.175
1.142
1.130
1.116
1.101
Current Data Parameters
NAME YK A-274 columned
EXPNO 2
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090421
Time 15.05
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 57
DW 71.400 usec
DE 6.50 usec
TE 297.0 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
Me
Me
N
H
Me
8
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
2.26
3.51
0.94
1.00
2.02
1.99
1.28
2.11
2.21
2.06
3.02
6.01



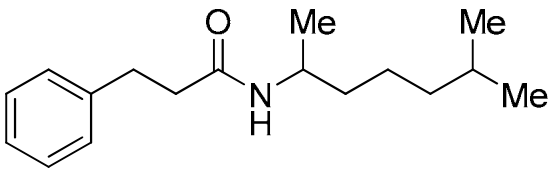

```
Current Data Parameters
NAME                  YK A-274 columned
EXPNO                                3
PROCNO                               1

F2 - Acquisition Parameters
Date_                         20090421
Time                             15.08
INSTRUM                          spect
PROBHD           5 mm PABBO BB-
PULPROG                       zgpg30
TD                             65536
SOLVENT                        CDC13
NS                                22
DS                                 4
SWH                       29761.904 Hz
FIDRES                     0.454131 Hz
AQ                        1.1010548 sec
RG                               456
DW                          16.800 usec
DE                           6.50 usec
TE                           297.9 K
D1                      2.00000000 sec
d11                     0.03000000 sec
DELTA                   1.89999998 sec
TD0                                1

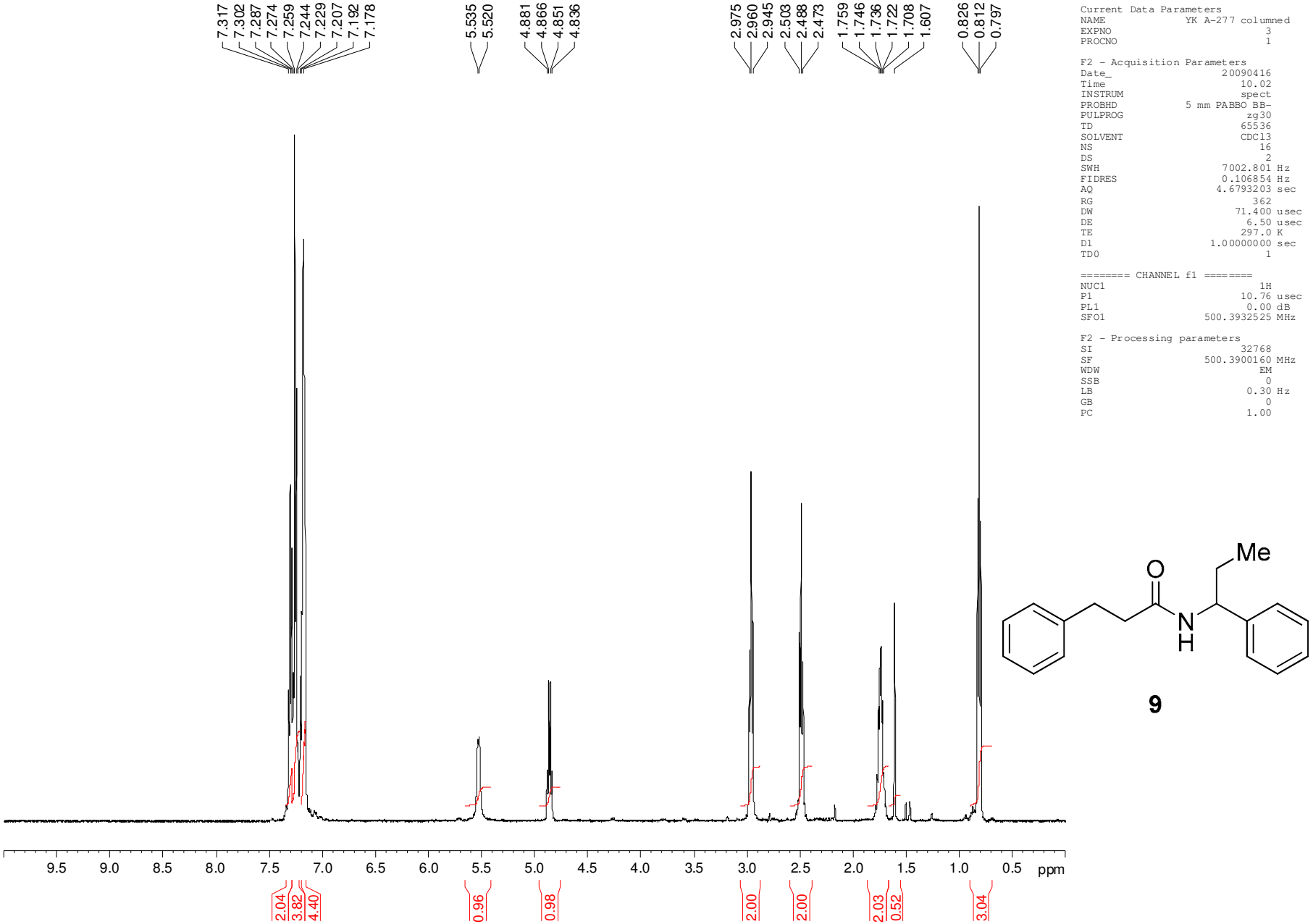
======== CHANNEL f1 ========
NUC1                             13C
P1                            7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

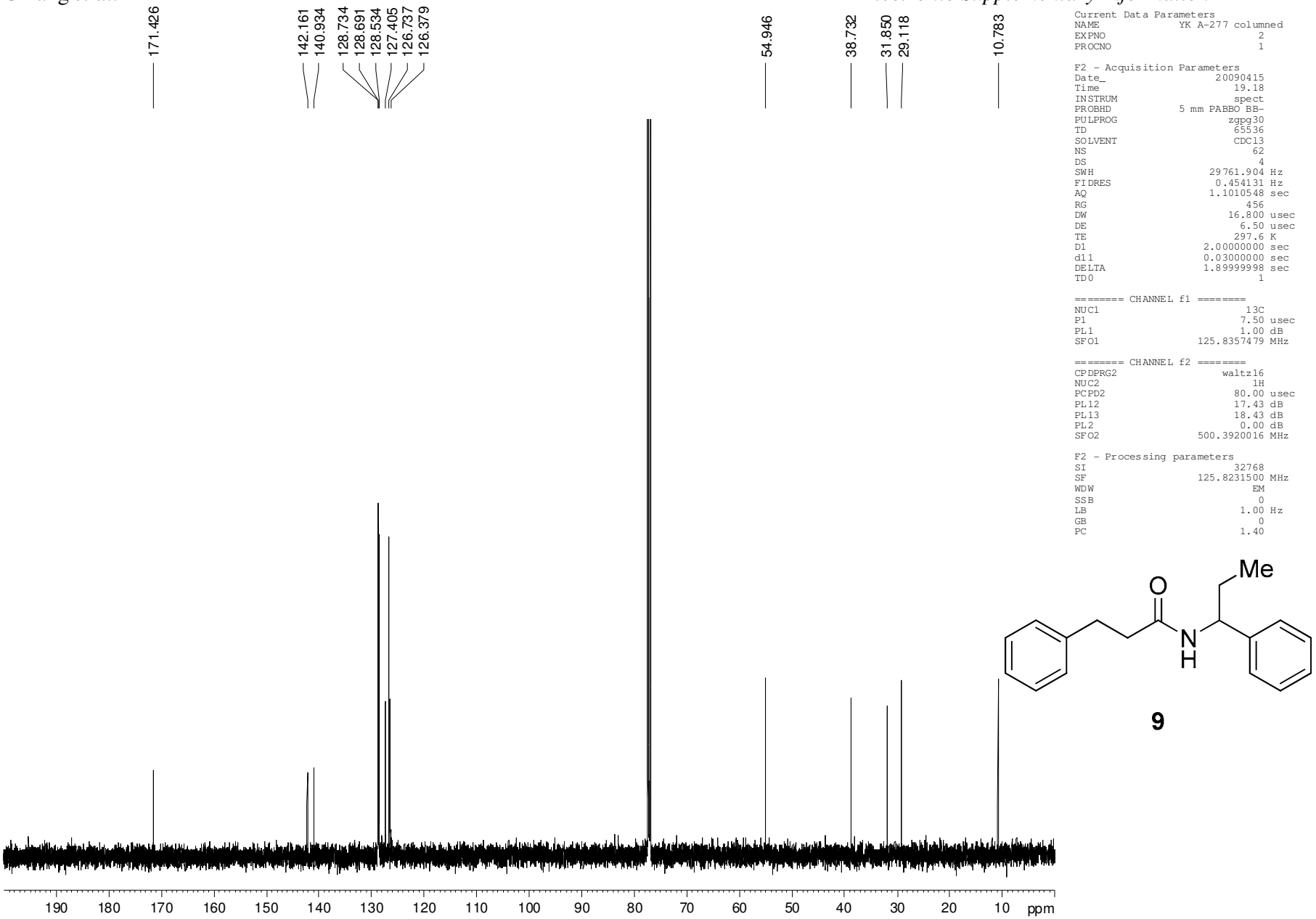
======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                        80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                               32768
SF                    125.8231500 MHz
WDW                                EM
SSB                                0
LB                            1.00 Hz
GB                                 0
PC                            1.40
```



8


7.317
7.302
7.287
7.274
7.259
7.244
7.229
7.207
7.192
7.178
5.535
5.520
4.881
4.866
4.851
4.836
2.975
2.960
2.945
2.503
2.488
2.473
1.759
1.746
1.736
1.722
1.708
1.607
0.826
0.812
0.797
Current Data Parameters
NAME YK A-277 columned
EXPNO 3
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090416
Time 10.02
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 362
DW 71.400 usec
DE 6.50 usec
TE 297.0 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
Me
O
N
H
9
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
2.04
3.82
4.40
0.96
0.98
2.00
2.00
2.03
0.52
3.04




```
Current Data Parameters
NAME                  YK A-277 columned
EXPNO                                2
PROCNO                               1

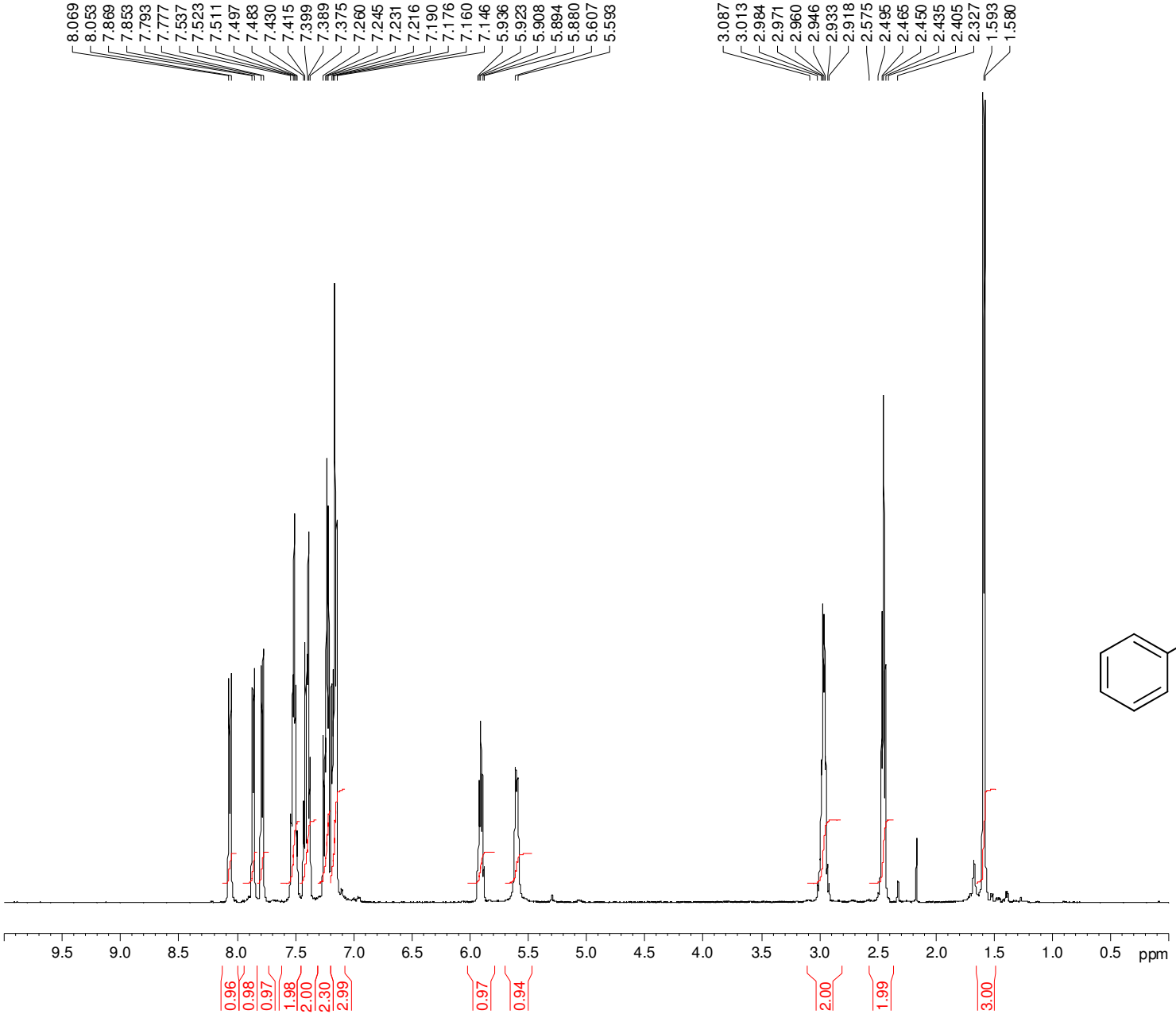
F2 - Acquisition Parameters
Date_                         20090415
Time                             19.18
INSTRUM                          spect
PROBHD           5 mm PABBO BB-
PULPROG                       zgpg30
TD                             65536
SOLVENT                        CDC13
NS                                62
DS                                 4
SWH                       29761.904 Hz
FIDRES                     0.454131 Hz
AQ                        1.1010548 sec
RG                               456
DW                          16.800 usec
DE                           6.50 usec
TE                           297.6 K
D1                      2.00000000 sec
d11                     0.03000000 sec
DELTA                   1.89999998 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                             13C
P1                           7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                       80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                               32768
SF                    125.8231500 MHz
WDW                             EM
SSB                              0
LB                            1.00 Hz
GB                               0
PC                            1.40
```


9

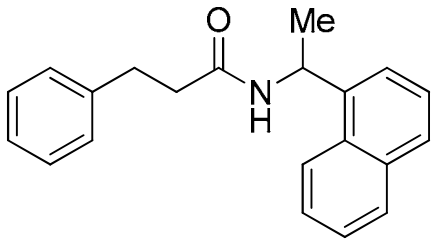



```
Current Data Parameters
NAME                  YK A-279 columned
EXPNO                               5
PROCNO                              1

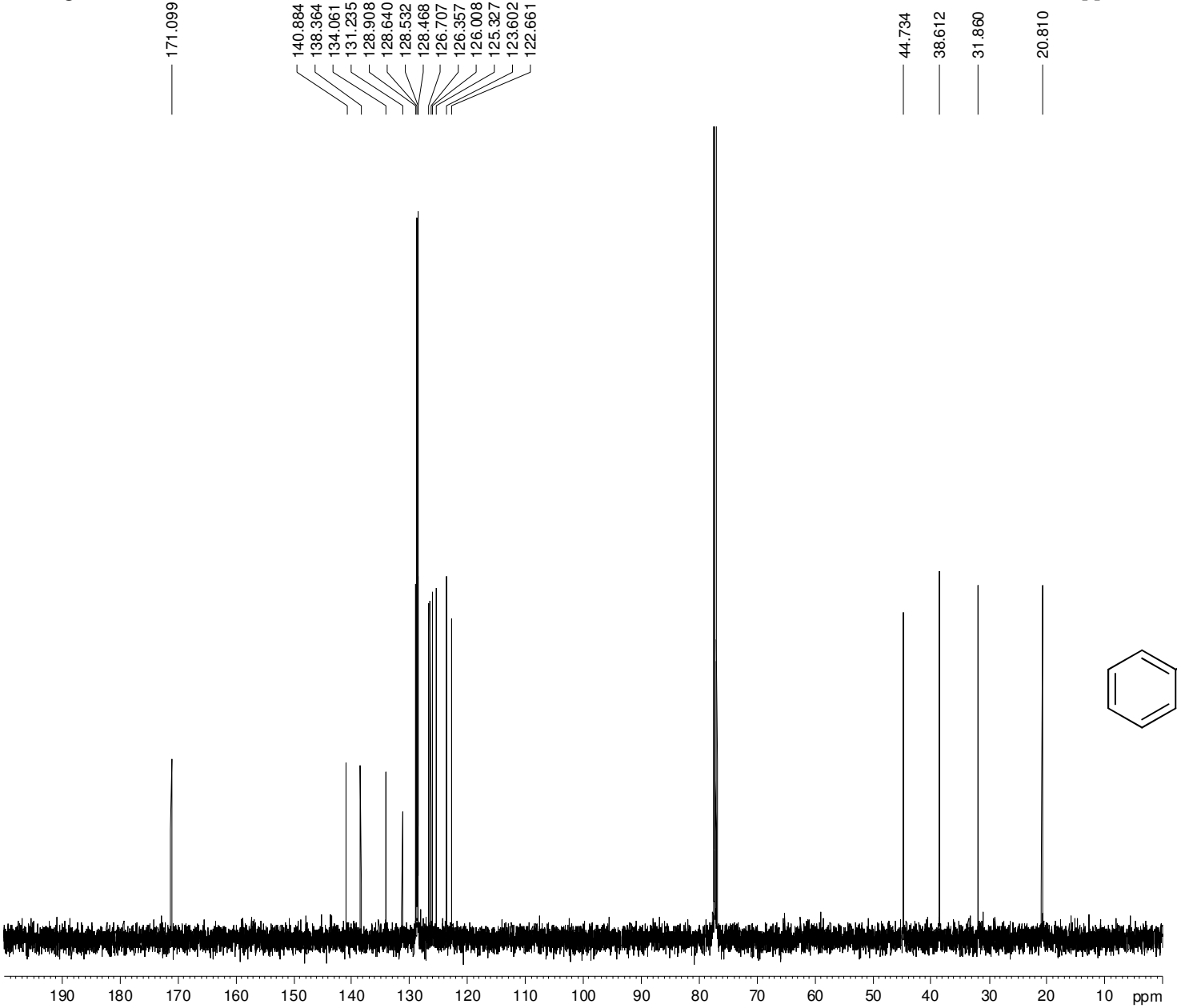
F2 - Acquisition Parameters
Date_                        20090417
Time                            15.42
INSTRUM                         spect
PROBHD           5 mm PABBO BB-
PULPROG                         zg30
TD                             65536
SOLVENT                        CDC13
NS                                16
DS                                 2
SWH                       7002.801 Hz
FIDRES                    0.106854 Hz
AQ                       4.6793203 sec
RG                               228
DW                          71.400 usec
DE                           6.50 usec
TE                           297.0 K
D1                      1.00000000 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                              1H
P1                          10.76 usec
PL1                          0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                             32768
SF                    500.3900160 MHz
WDW                               EM
SSB                                0
LB                           0.30 Hz
GB                                 0
PC                              1.00
```



10



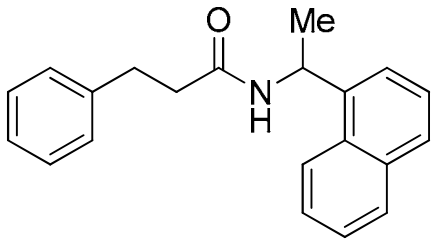

```
Current Data Parameters
NAME                  YK A-279 carbon
EXPNO                               1
PROCNO                              1

F2 - Acquisition Parameters
Date_                        20090429
Time                            12.01
INSTRUM                         spect
PROBHD           5 mm PABBO BB-
PULPROG                       zgpg30
TD                             65536
SOLVENT                        CDCl3
NS                                67
DS                                 4
SWH                       29761.904 Hz
FIDRES                     0.454131 Hz
AQ                        1.1010548 sec
RG                              1820
DW                          16.800 usec
DE                           6.50 usec
TE                           298.5 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
TD0                                1

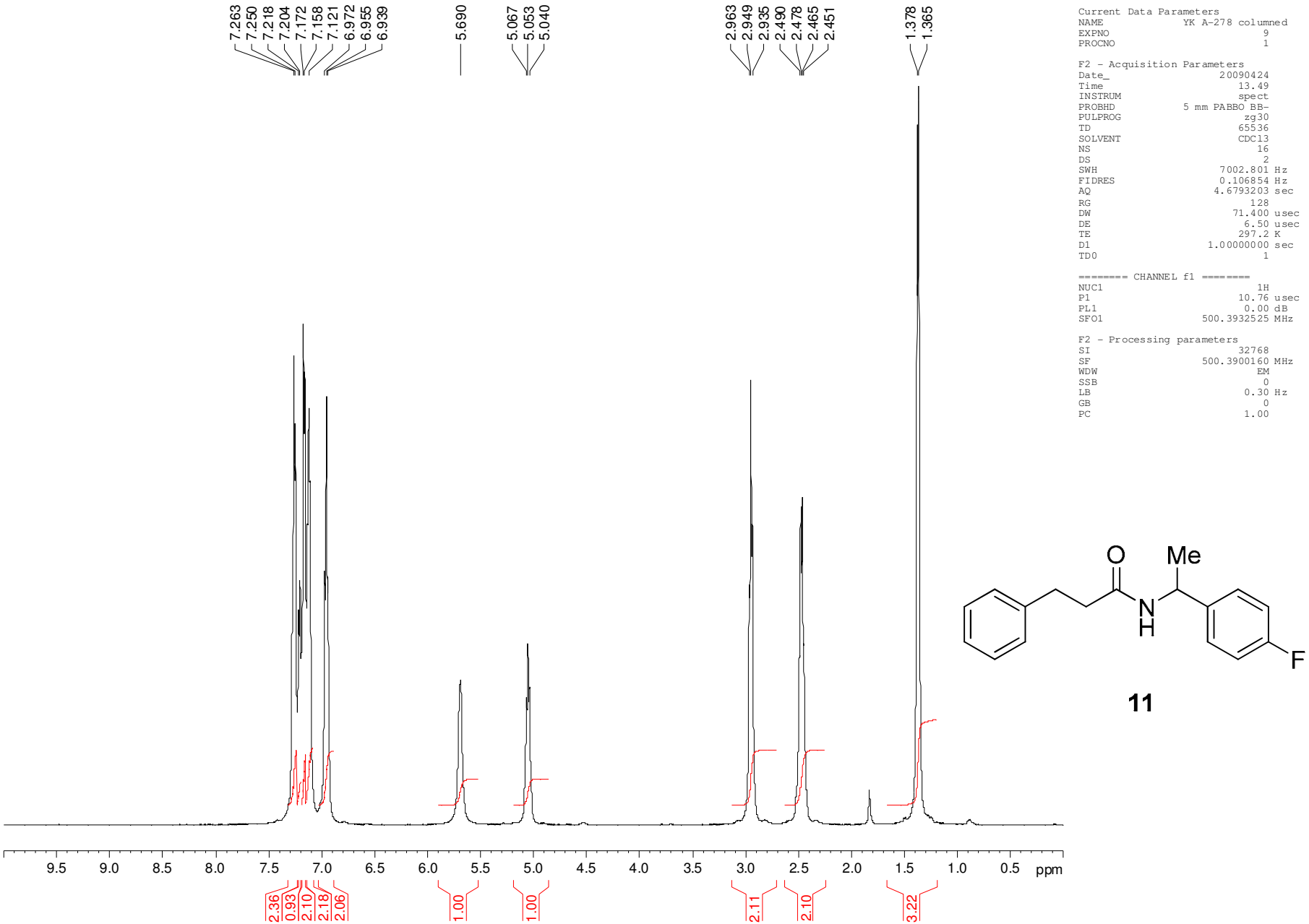
======== CHANNEL f1 ========
NUC1                             13C
P1                           7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                       80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231500 MHz
WDW                              EM
SSB                               0
LB                            1.00 Hz
GB                                0
PC                             1.40
```



10



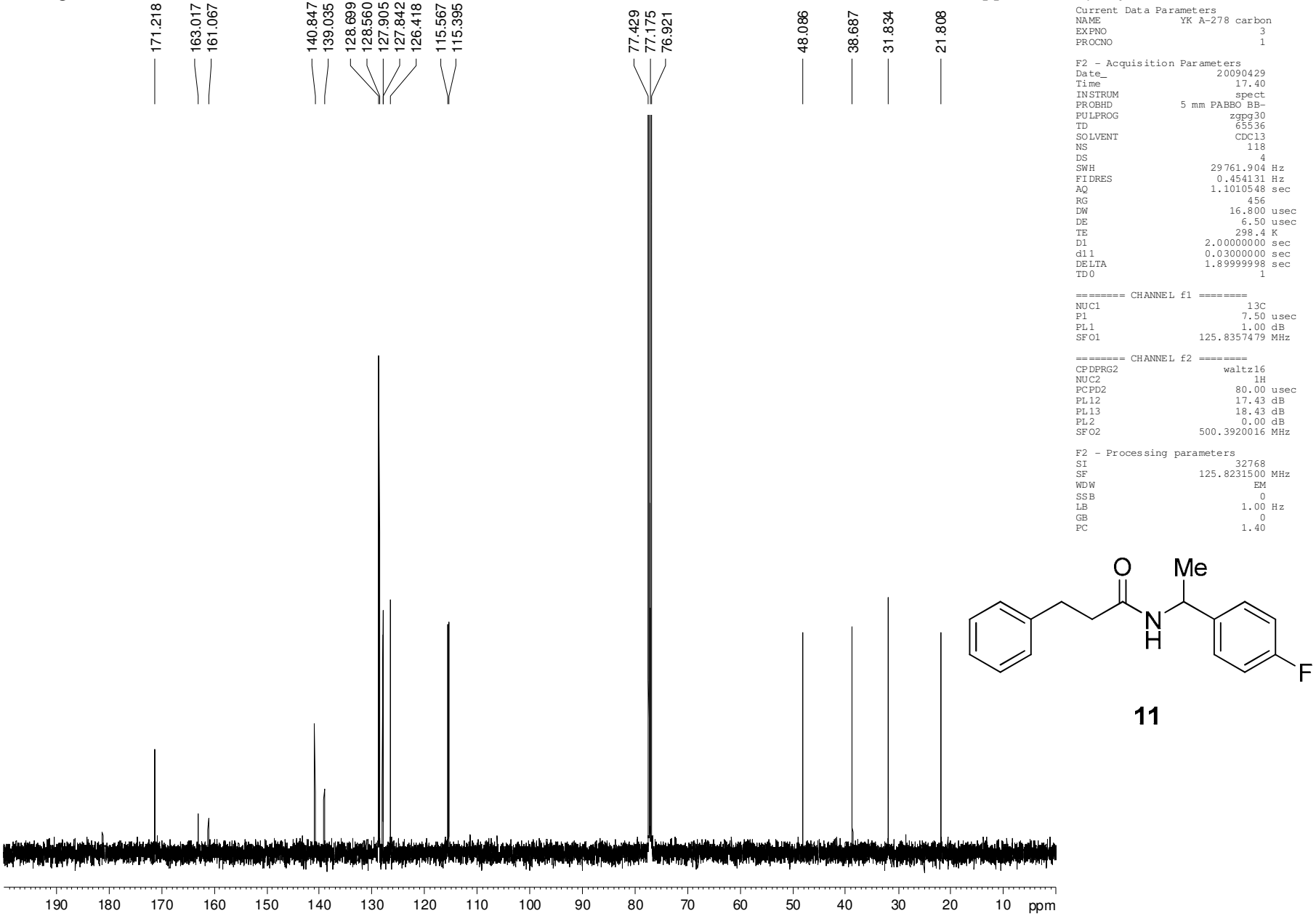

```
Current Data Parameters
NAME                  YK A-278 columned
EXPNO                                 9
PROCNO                                1

F2 - Acquisition Parameters
Date_                          20090424
Time                              13.49
INSTRUM                           spect
PROBHD           5 mm PABBO BB-
PULPROG                           zg30
TD                               65536
SOLVENT                          CDC13
NS                                  16
DS                                   2
SWH                         7002.801 Hz
FIDRES                      0.106854 Hz
AQ                         4.6793203 sec
RG                                 128
DW                            71.400 usec
DE                             6.50 usec
TE                             297.2 K
D1                        1.00000000 sec
TD0                                  1

======== CHANNEL f1 ========
NUC1                                1H
P1                            10.76 usec
PL1                            0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                               32768
SF                    500.3900160 MHz
WDW                                 EM
SSB                                  0
LB                             0.30 Hz
GB                                   0
PC                             1.00
```


11




```
Current Data Parameters
NAME                  YK A-278 carbon
EXPNO                               3
PROCNO                              1

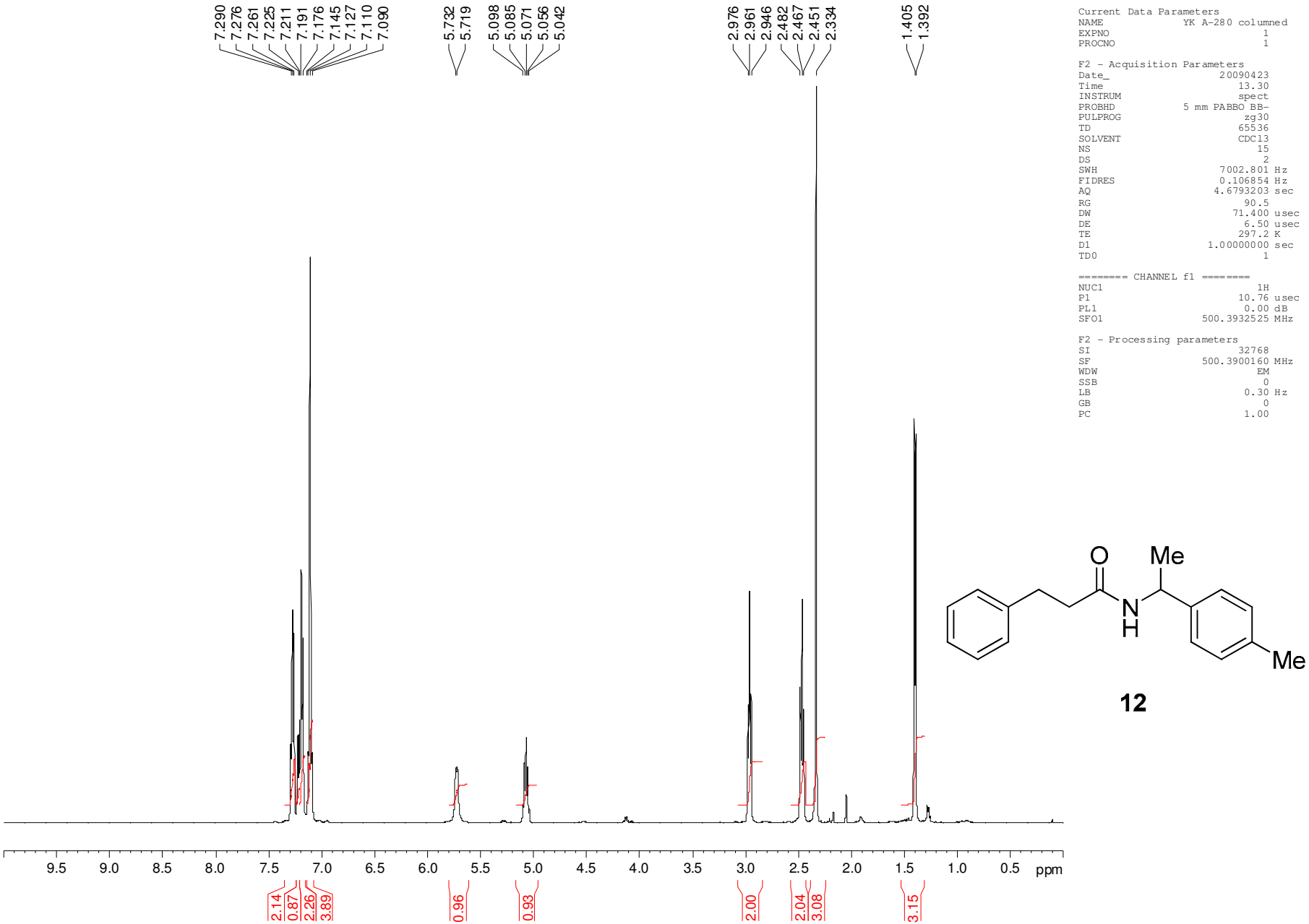
F2 - Acquisition Parameters
Date_                        20090429
Time                            17.40
INSTRUM                         spect
PROBHD           5 mm PABBO BB-
PULPROG                       zgpg30
TD                             65536
SOLVENT                        CDC13
NS                               118
DS                                 4
SWH                      29761.904 Hz
FIDRES                    0.454131 Hz
AQ                      1.1010548 sec
RG                               456
DW                          16.800 usec
DE                           6.50 usec
TE                           298.4 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                             13C
P1                            7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                        80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                               32768
SF                  125.8231500 MHz
WDW                             EM
SSB                              0
LB                            1.00 Hz
GB                               0
PC                            1.40
```


11



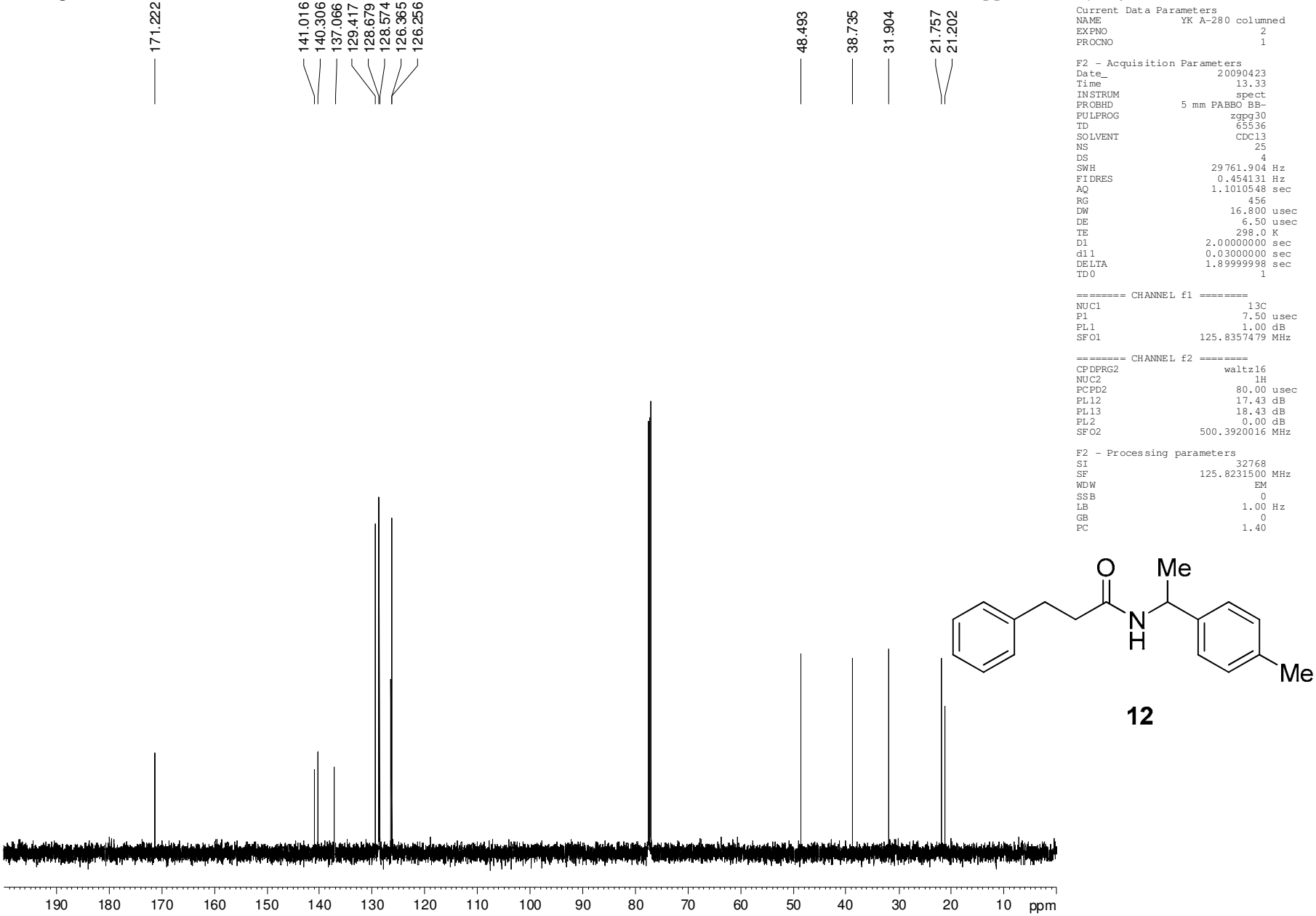

```
Current Data Parameters
NAME                  YK A-280 columned
EXPNO                                1
PROCNO                               1

F2 - Acquisition Parameters
Date_                         20090423
Time                             13.30
INSTRUM                          spect
PROBHD           5 mm PABBO BB-
PULPROG                          zg30
TD                              65536
SOLVENT                         CDCl3
NS                                  15
DS                                   2
SWH                        7002.801 Hz
FIDRES                     0.106854 Hz
AQ                        4.6793203 sec
RG                               90.5
DW                          71.400 usec
DE                           6.50 usec
TE                           297.2 K
D1                       1.00000000 sec
TD0                                  1

======== CHANNEL f1 ========
NUC1                                1H
P1                          10.76 usec
PL1                          0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                               32768
SF                    500.3900160 MHz
WDW                                 EM
SSB                                  0
LB                           0.30 Hz
GB                                   0
PC                               1.00
```


12




```
Current Data Parameters
NAME                  YK A-280 columned
EXPNO                                 2
PROCNO                                1

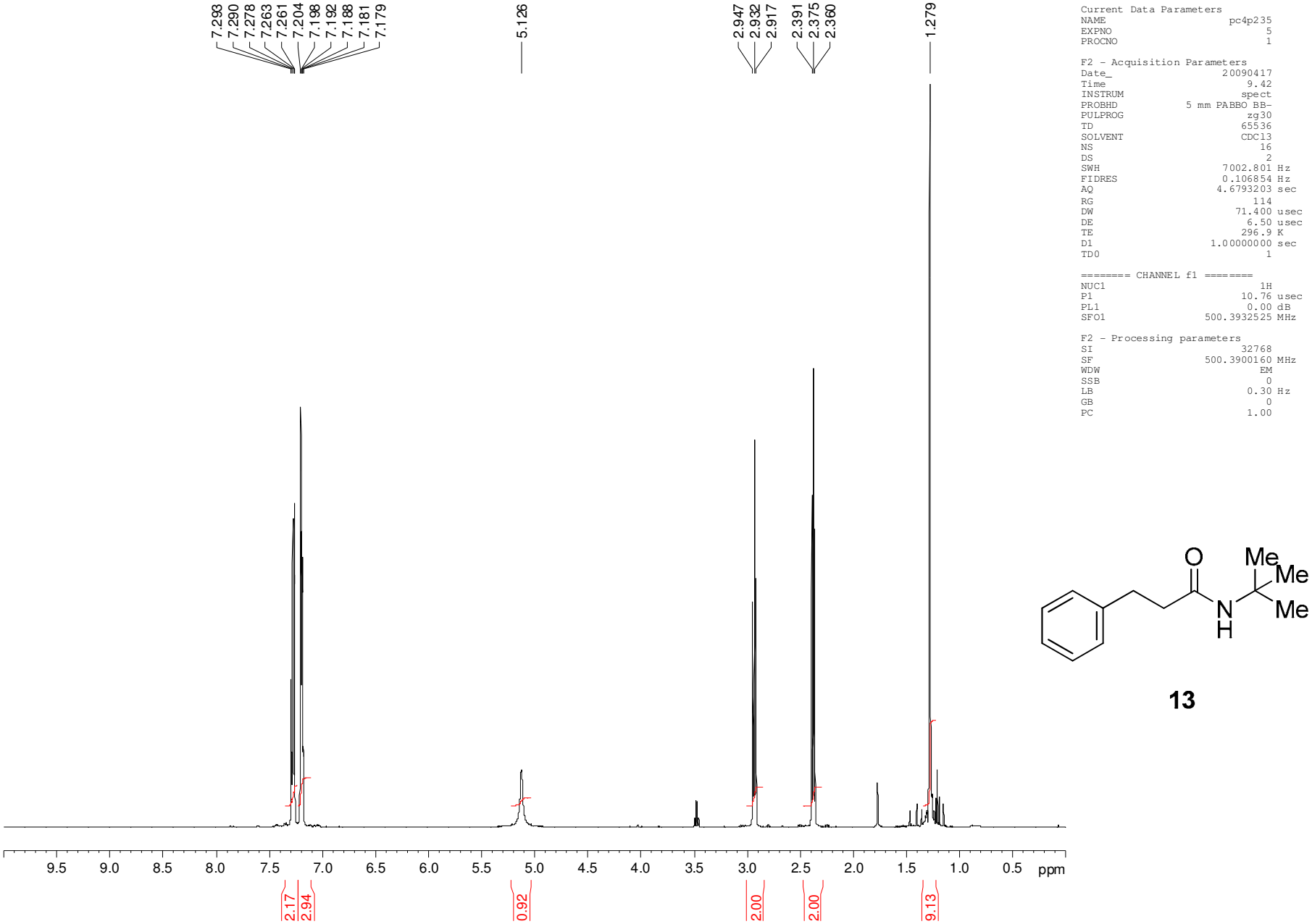
F2 - Acquisition Parameters
Date_                          20090423
Time                              13.33
INSTRUM                           spect
PROBHD           5 mm PABBO BB-
PULPROG                        zgpg30
TD                              65536
SOLVENT                         CDCl3
NS                                 25
DS                                  4
SWH                        29761.904 Hz
FIDRES                      0.454131 Hz
AQ                         1.1010548 sec
RG                                456
DW                           16.800 usec
DE                            6.50 usec
TE                            298.0 K
D1                        2.00000000 sec
d11                       0.03000000 sec
DELTA                     1.89999998 sec
TD0                                 1

======== CHANNEL f1 ========
NUC1                              13C
P1                            7.50 usec
PL1                           1.00 dB
SFO1                     125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                       waltz16
NUC2                              1H
PCPD2                         80.00 usec
PL12                          17.43 dB
PL13                          18.43 dB
PL2                            0.00 dB
SFO2                     500.3920016 MHz

F2 - Processing parameters
SI                                32768
SF                     125.8231500 MHz
WDW                                EM
SSB                                 0
LB                            1.00 Hz
GB                                  0
PC                                1.40
```


12



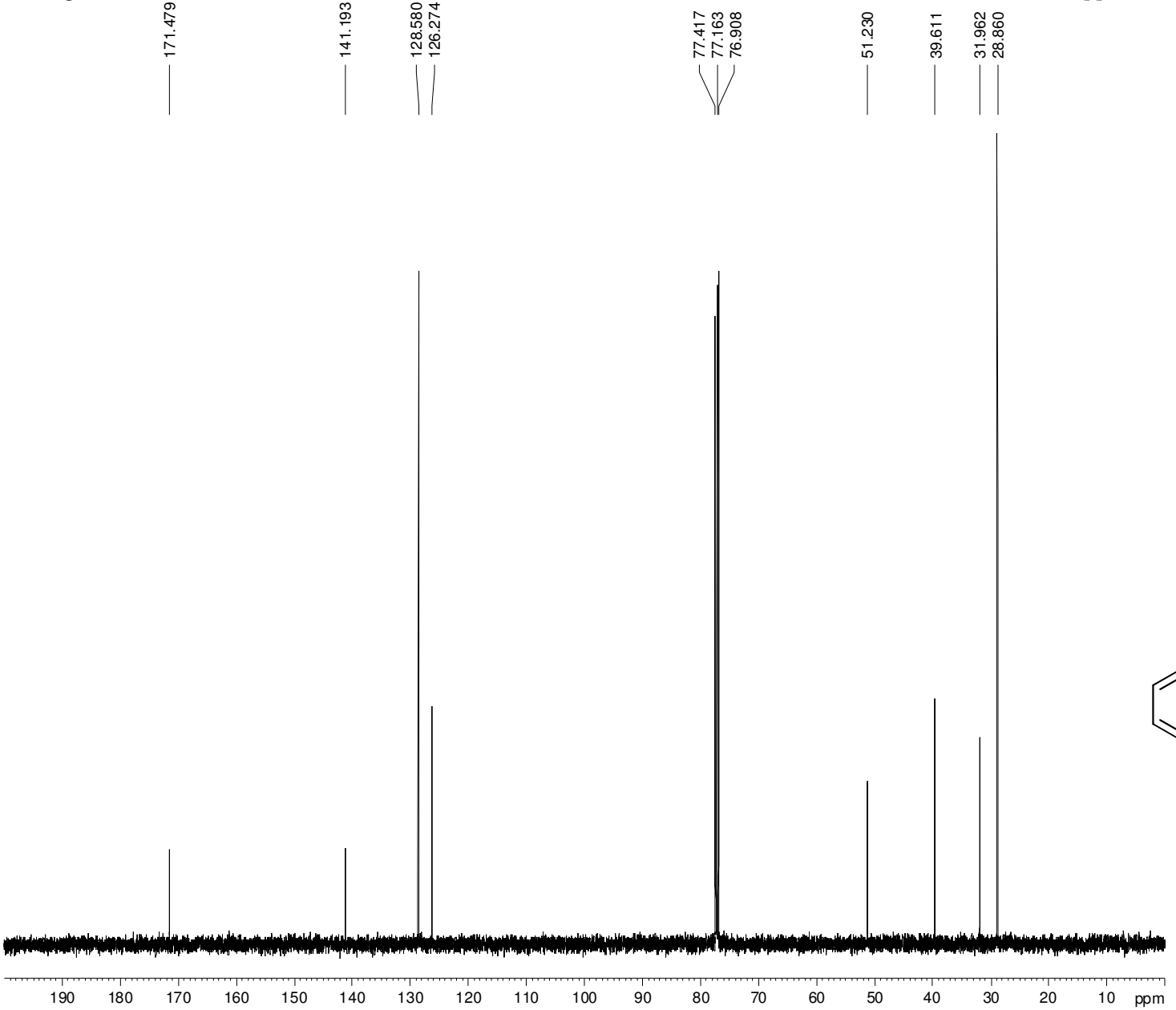

```
Current Data Parameters
NAME                      pc4p235
EXPNO                           5
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090417
Time                         9.42
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                     CDC13
NS                             16
DS                              2
SWH                   7002.801 Hz
FIDRES                0.106854 Hz
AQ                   4.6793203 sec
RG                            114
DW                     71.400 usec
DE                      6.50 usec
TE                      296.9 K
D1                  1.00000000 sec
TD0                             1

======== CHANNEL f1 ========
NUC1                           1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                          32768
SF                 500.3900160 MHz
WDW                            EM
SSB                             0
LB                       0.30 Hz
GB                              0
PC                           1.00
```


13



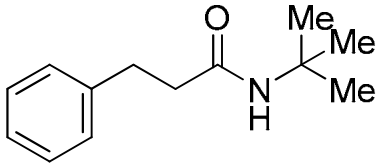

```
Current Data Parameters
NAME                      pc4p235
EXPNO                           6
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090417
Time                         9.46
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDC13
NS                            64
DS                             4
SWH                   29761.904 Hz
FIDRES                 0.454131 Hz
AQ                   1.1010548 sec
RG                          1620
DW                      16.800 usec
DE                       6.50 usec
TE                       297.9 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                            1

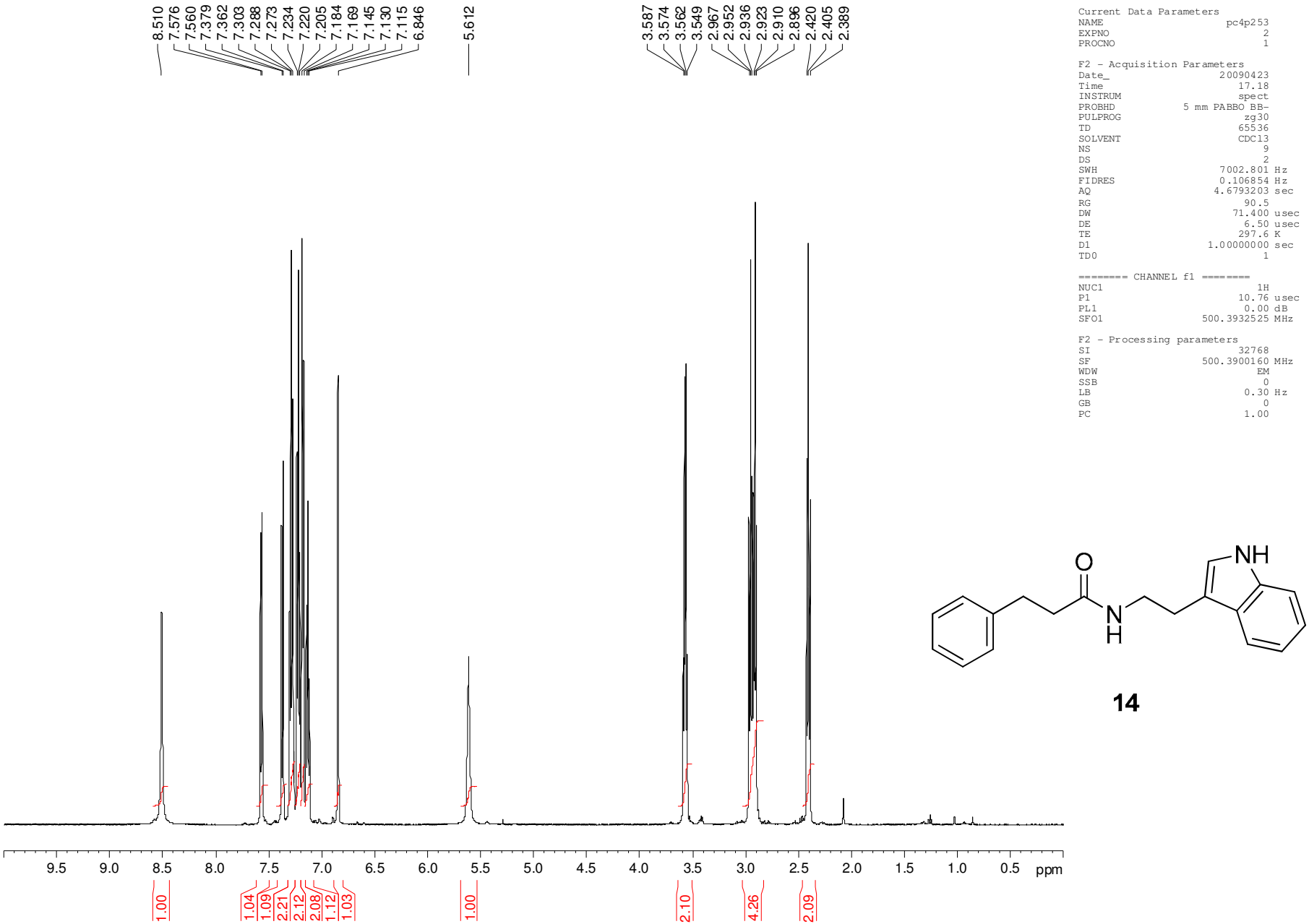
======== CHANNEL f1 ========
NUC1                         13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1                125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                    80.00 usec
PL12                     17.43 dB
PL13                     18.43 dB
PL2                       0.00 dB
SFO2                500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                  125.8231525 MHz
WDW                             EM
SSB                              0
LB                        1.00 Hz
GB                               0
PC                            1.40
```



13



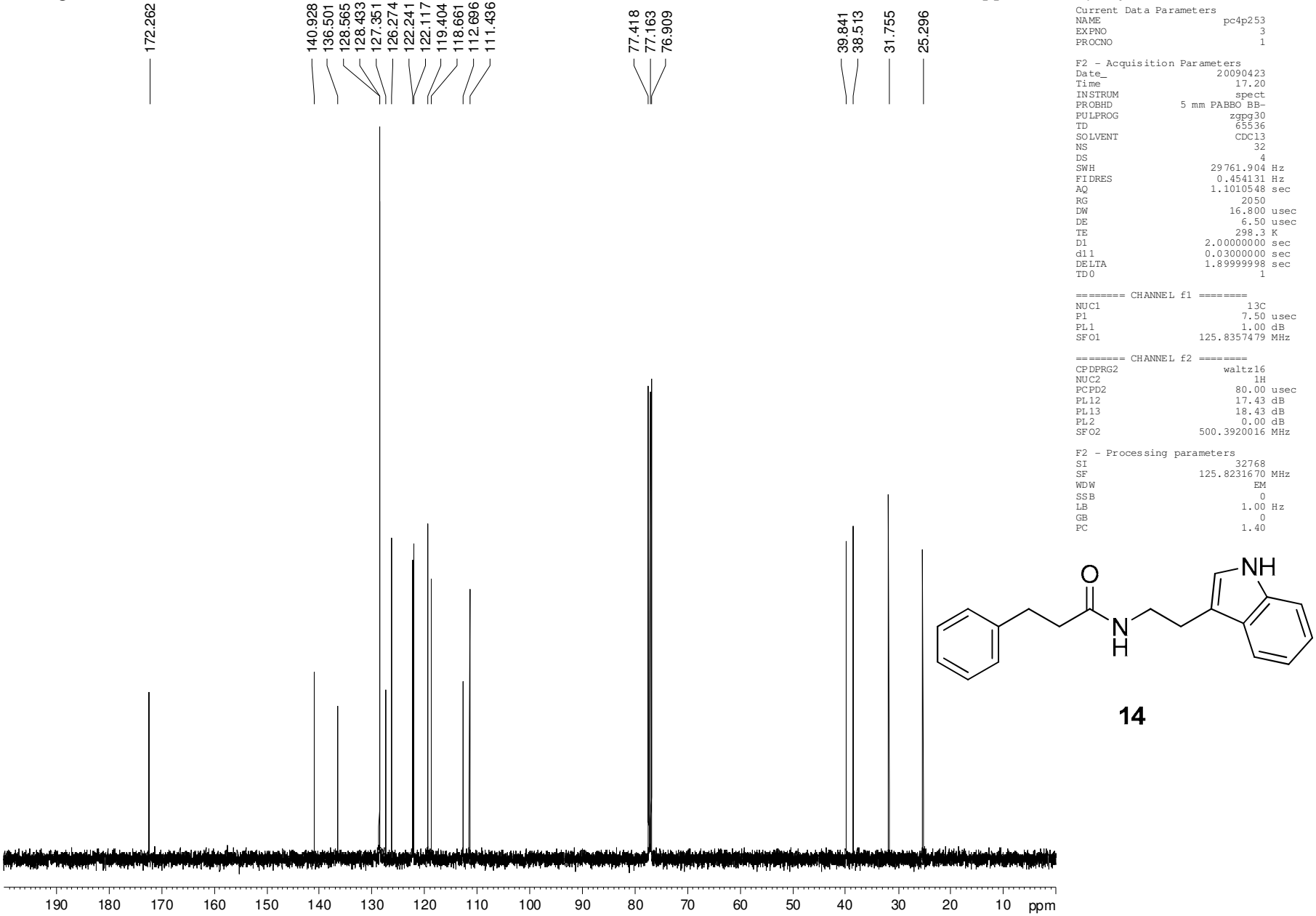

```
Current Data Parameters
NAME                      pc4p253
EXPNO                           2
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090423
Time                        17.18
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                             9
DS                             2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                          90.5
DW                     71.400 usec
DE                      6.50 usec
TE                      297.6 K
D1                 1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1              500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                500.3900160 MHz
WDW                           EM
SSB                            0
LB                      0.30 Hz
GB                             0
PC                          1.00
```


14




```
Current Data Parameters
NAME                         pc4p253
EXPNO                              3
PROCNO                             1

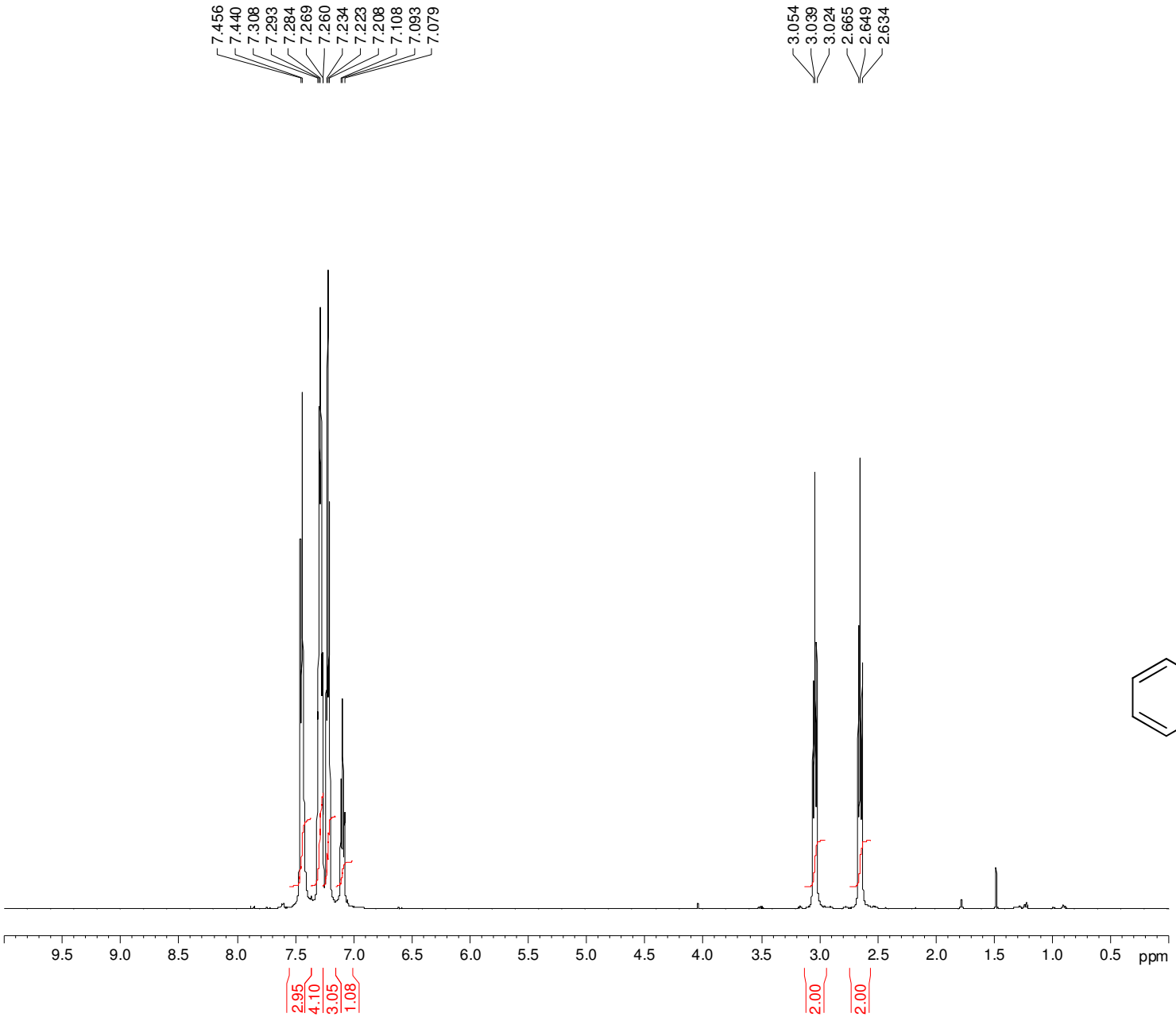
F2 - Acquisition Parameters
Date_                       20090423
Time                           17.20
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                              65536
SOLVENT                        CDC13
NS                                32
DS                                 4
SWH                     29761.904 Hz
FIDRES                    0.454131 Hz
AQ                      1.1010548 sec
RG                              2050
DW                        16.800 usec
DE                         6.50 usec
TE                           298.3 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                            13C
P1                         7.50 usec
PL1                         1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                      80.00 usec
PL12                       17.43 dB
PL13                       18.43 dB
PL2                         0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231670 MHz
WDW                               EM
SSB                                0
LB                          1.00 Hz
GB                                 0
PC                              1.40
```


14

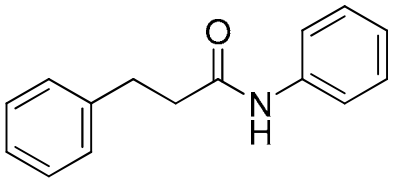



```
Current Data Parameters
NAME                         pc4p251
EXPNO                              4
PROCNO                             1

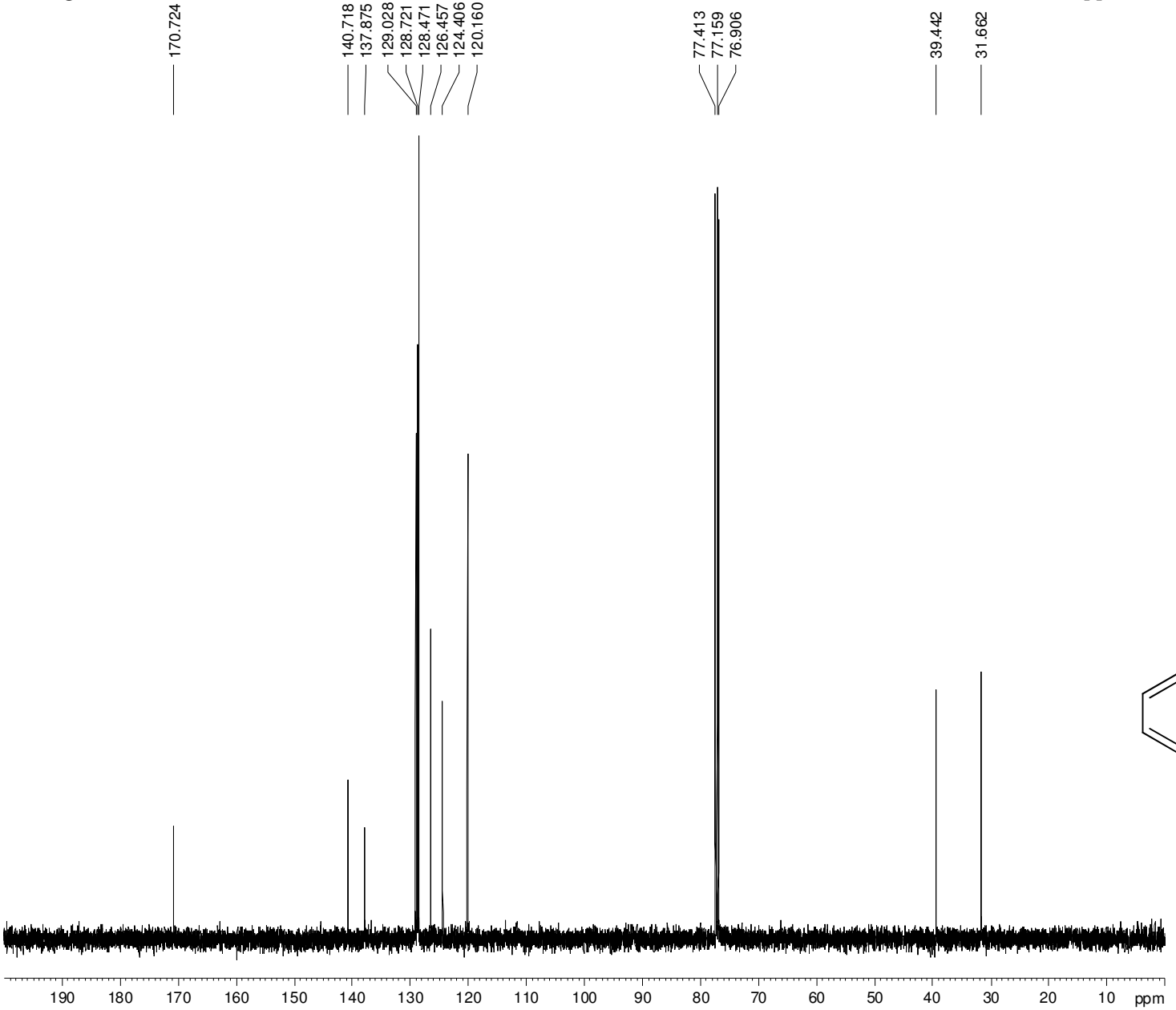
F2 - Acquisition Parameters
Date_                       20090424
Time                            9.19
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                        zg30
TD                            65536
SOLVENT                       CDC13
NS                               16
DS                                2
SWH                        7002.801 Hz
FIDRES                    0.106854 Hz
AQ                        4.6793203 sec
RG                              144
DW                         71.400 usec
DE                          6.50 usec
TE                          297.3 K
D1                       1.00000000 sec
TD0                               1

======== CHANNEL f1 ========
NUC1                             1H
P1                         10.76 usec
PL1                         0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                            32768
SF                  500.3900160 MHz
WDW                              EM
SSB                               0
LB                          0.30 Hz
GB                                0
PC                             1.00
```



15



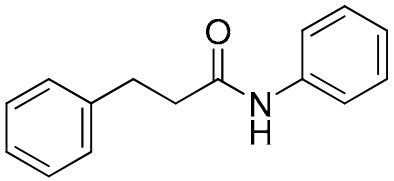

```
Current Data Parameters
NAME                      pc4p251
EXPNO                           3
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090423
Time                        17.08
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDC13
NS                           36
DS                            4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                         2050
DW                     16.800 usec
DE                      6.50 usec
TE                      298.0 K
D1                 2.00000000 sec
d11                0.03000000 sec
DELTA              1.89999998 sec
TD0                           1

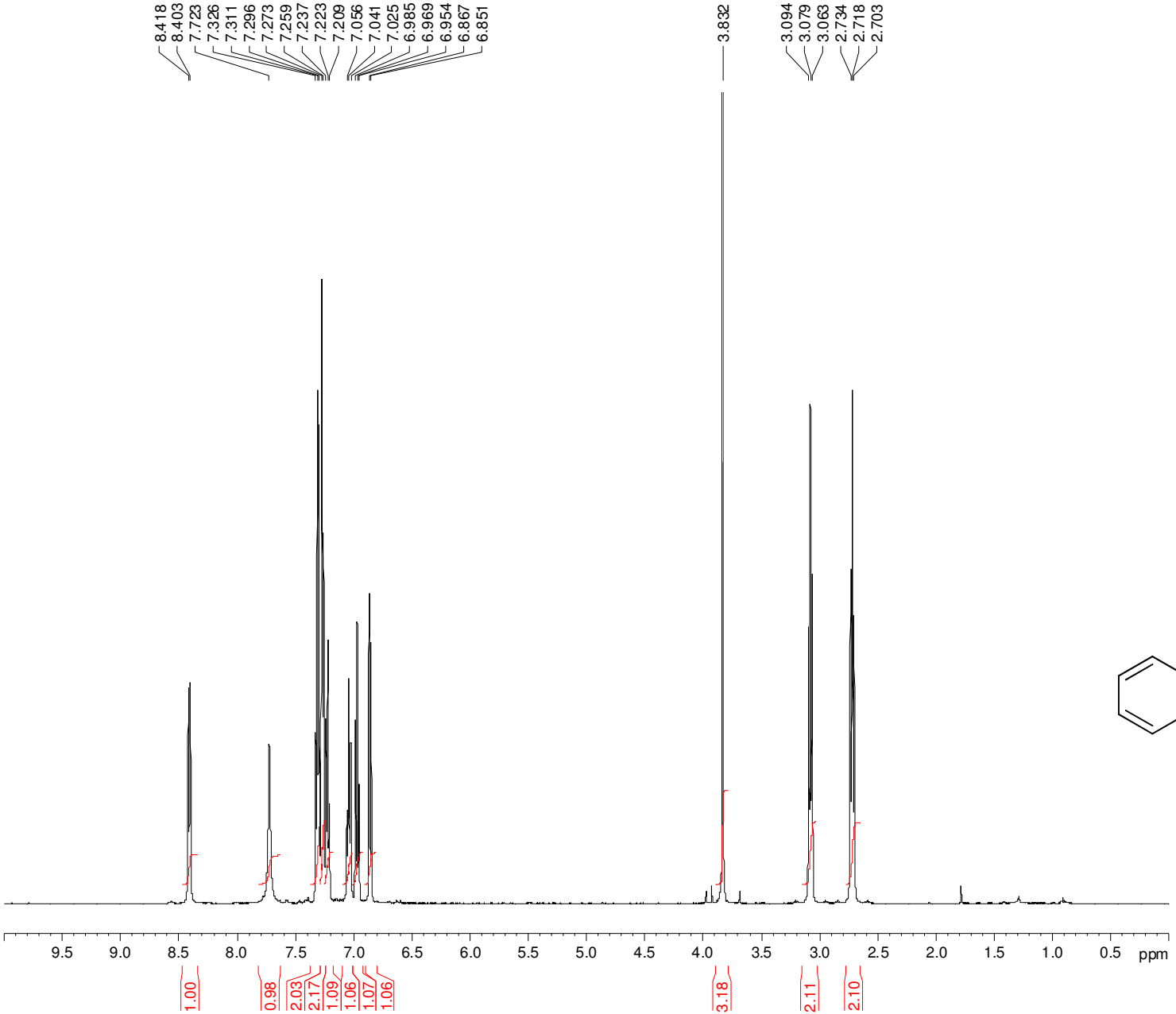
======== CHANNEL f1 ========
NUC1                        13C
P1                     7.50 usec
PL1                     1.00 dB
SFO1               125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                  80.00 usec
PL12                    17.43 dB
PL13                    18.43 dB
PL2                      0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                        32768
SF                 125.8231589 MHz
WDW                          EM
SSB                           0
LB                      1.00 Hz
GB                            0
PC                         1.40
```



15

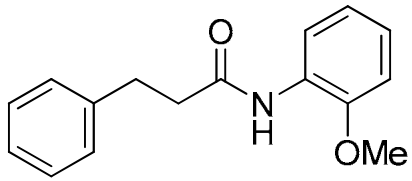



```
Current Data Parameters
NAME                      pc4p252
EXPNO                           2
PROCNO                          1

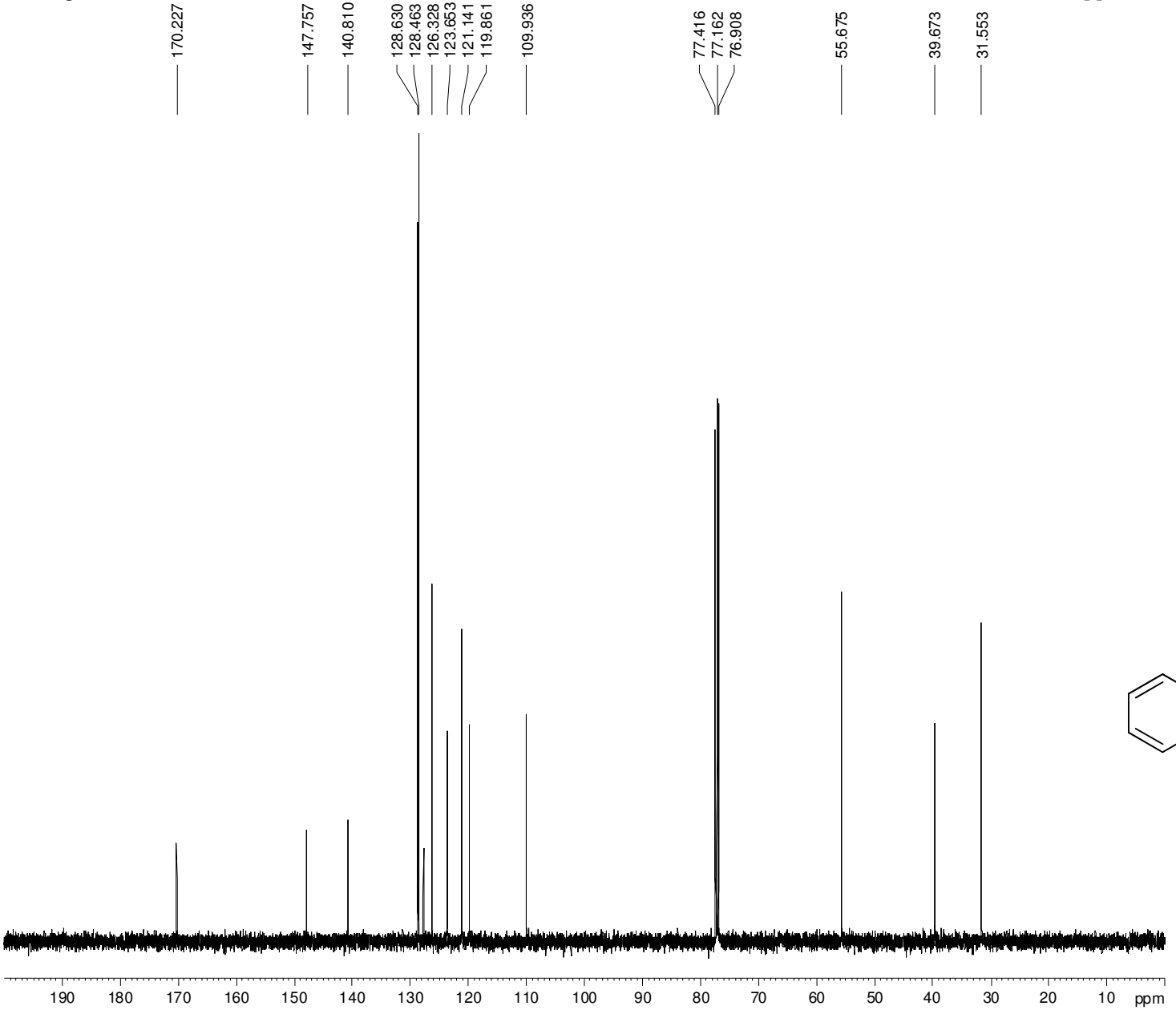
F2 - Acquisition Parameters
Date_                    20090423
Time                        17.12
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                             9
DS                             2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                           114
DW                     71.400 usec
DE                      6.50 usec
TE                      297.4 K
D1                  1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                  500.3900160 MHz
WDW                           EM
SSB                            0
LB                      0.30 Hz
GB                             0
PC                          1.00
```



16



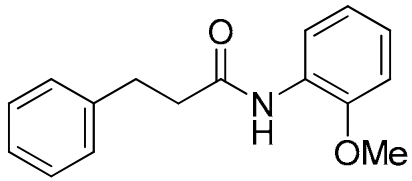

```
Current Data Parameters
NAME                       pc4p252
EXPNO                            3
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20090423
Time                         17.14
INSTRUM                      spect
PROBHD          5 mm PABBO BB-
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDC13
NS                            32
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.454131 Hz
AQ                   1.1010548 sec
RG                          2050
DW                      16.800 usec
DE                       6.50 usec
TE                       298.1 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                            1

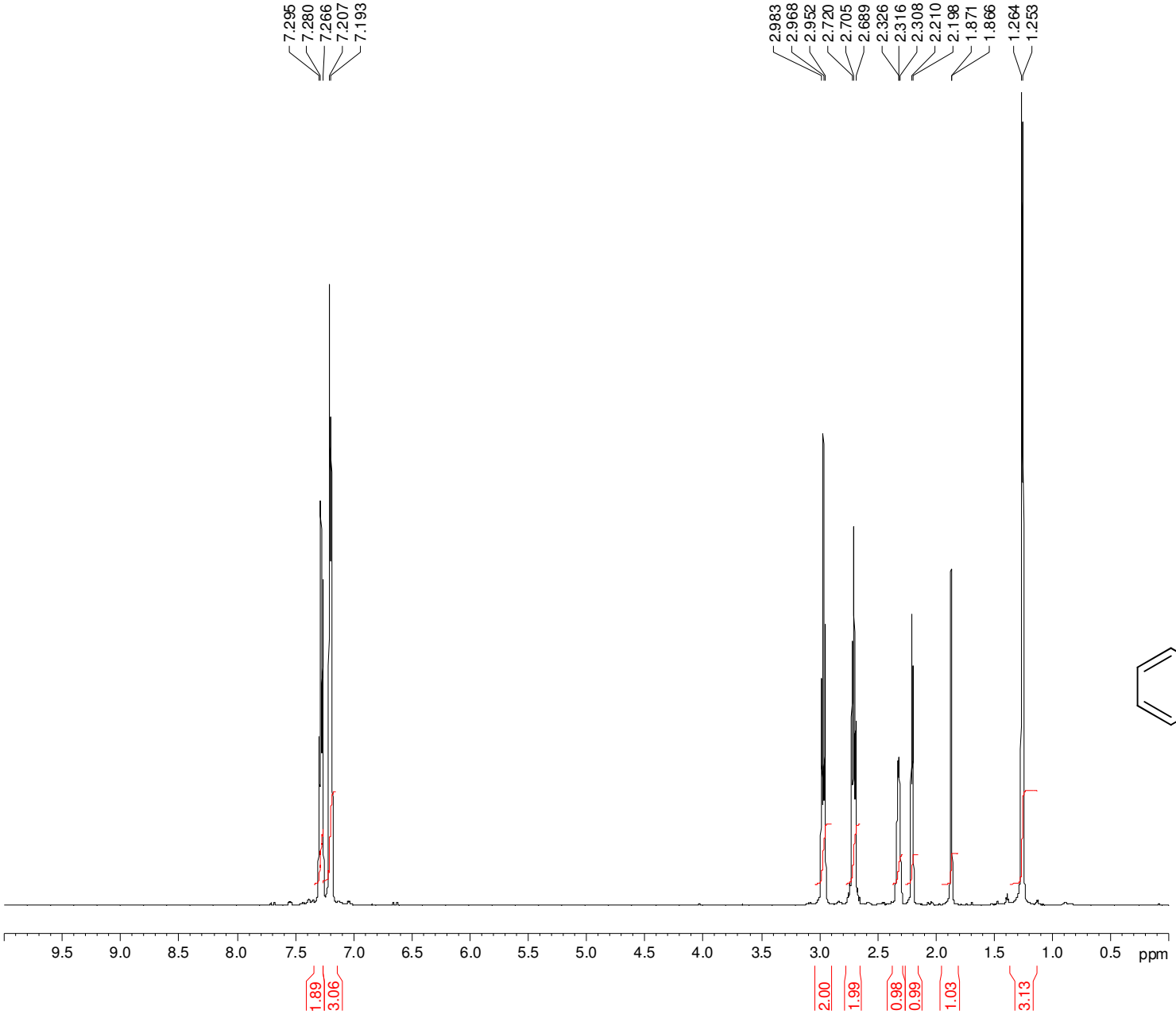
======== CHANNEL f1 ========
NUC1                         13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1                125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                    80.00 usec
PL12                     17.43 dB
PL13                     18.43 dB
PL2                       0.00 dB
SFO2                500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                  125.8231616 MHz
WDW                             EM
SSB                              0
LB                        1.00 Hz
GB                               0
PC                            1.40
```



16

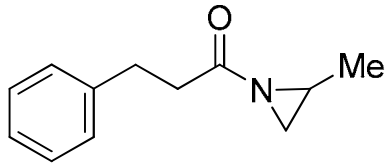



```
Current Data Parameters
NAME                      pc4p234
EXPNO                           6
PROCNO                          1

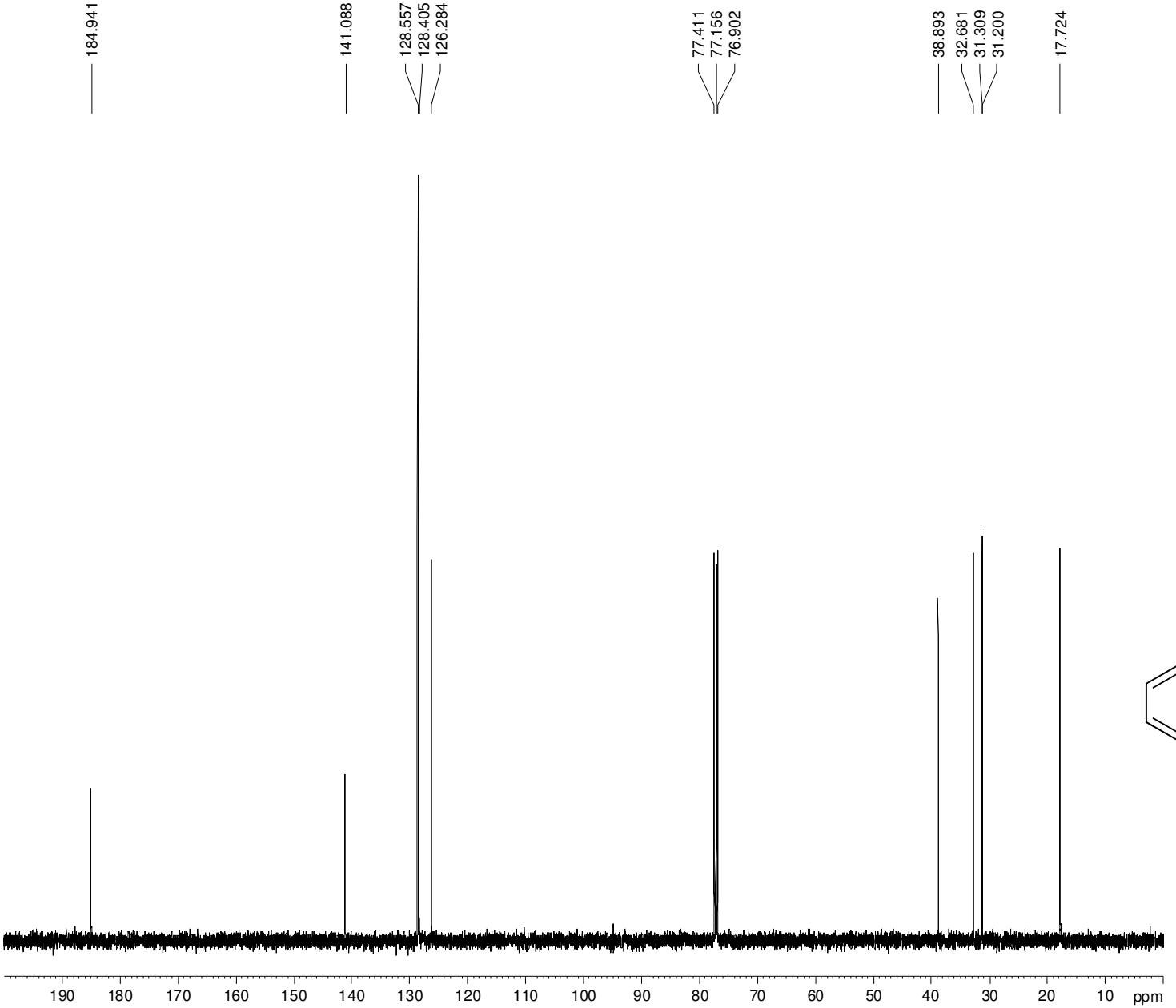
F2 - Acquisition Parameters
Date_                    20090418
Time                        15.45
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                            16
DS                             2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                            57
DW                    71.400 usec
DE                     6.50 usec
TE                     297.1 K
D1                 1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                    10.76 usec
PL1                    0.00 dB
SFO1              500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                500.3900160 MHz
WDW                           EM
SSB                            0
LB                    0.30 Hz
GB                             0
PC                          1.00
```



17



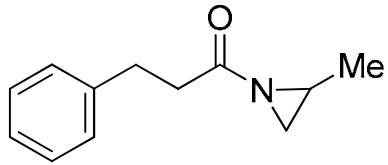

```
Current Data Parameters
NAME                      pc4p234
EXPNO                           7
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090418
Time                        15.47
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDC13
NS                           17
DS                            4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                         1620
DW                     16.800 usec
DE                      6.50 usec
TE                        297.8 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                           1

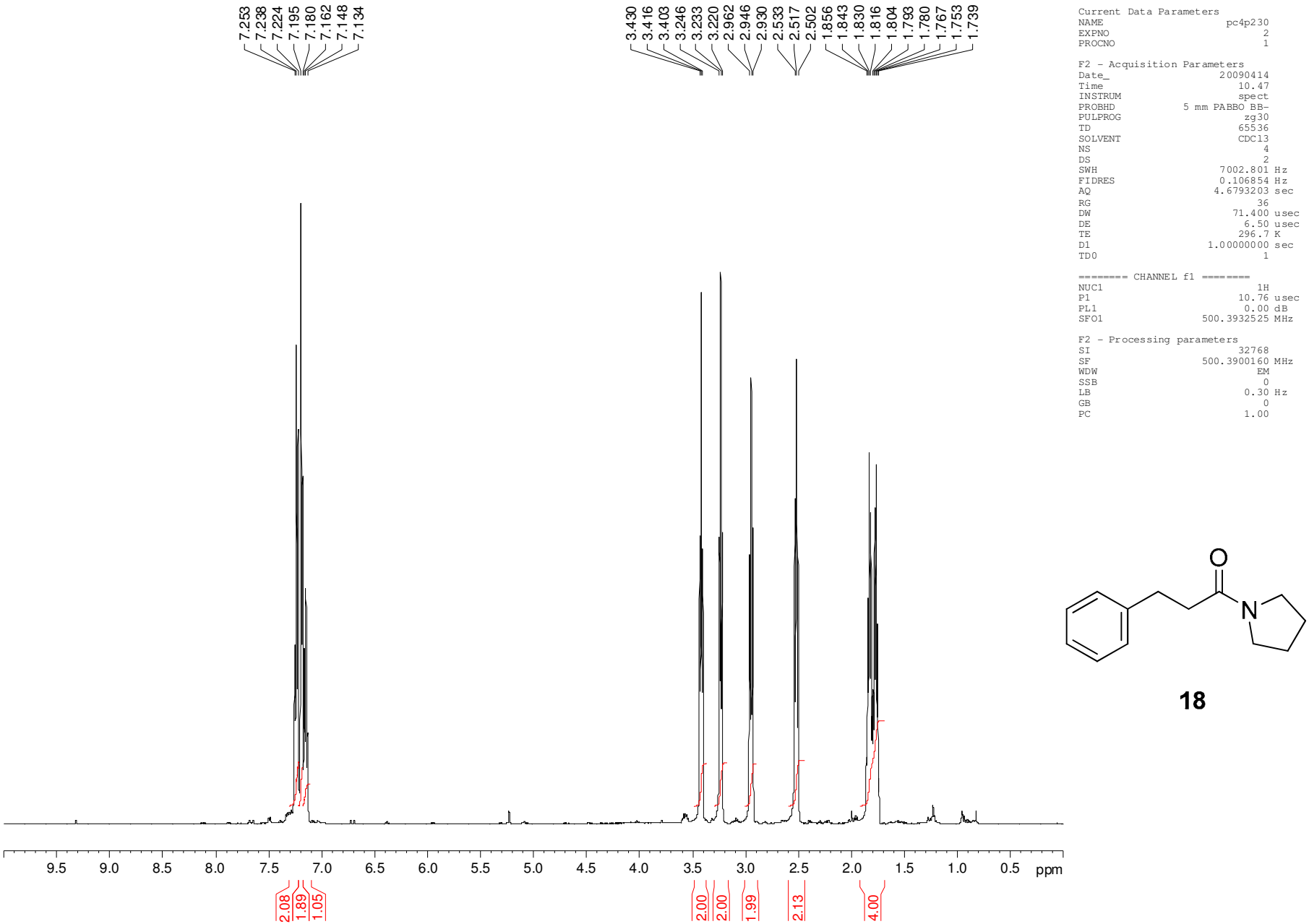
======== CHANNEL f1 ========
NUC1                        13C
P1                     7.50 usec
PL1                     1.00 dB
SFO1               125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                  80.00 usec
PL12                   17.43 dB
PL13                   18.43 dB
PL2                     0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                        32768
SF                 125.8231633 MHz
WDW                          EM
SSB                           0
LB                     1.00 Hz
GB                            0
PC                         1.40
```



17



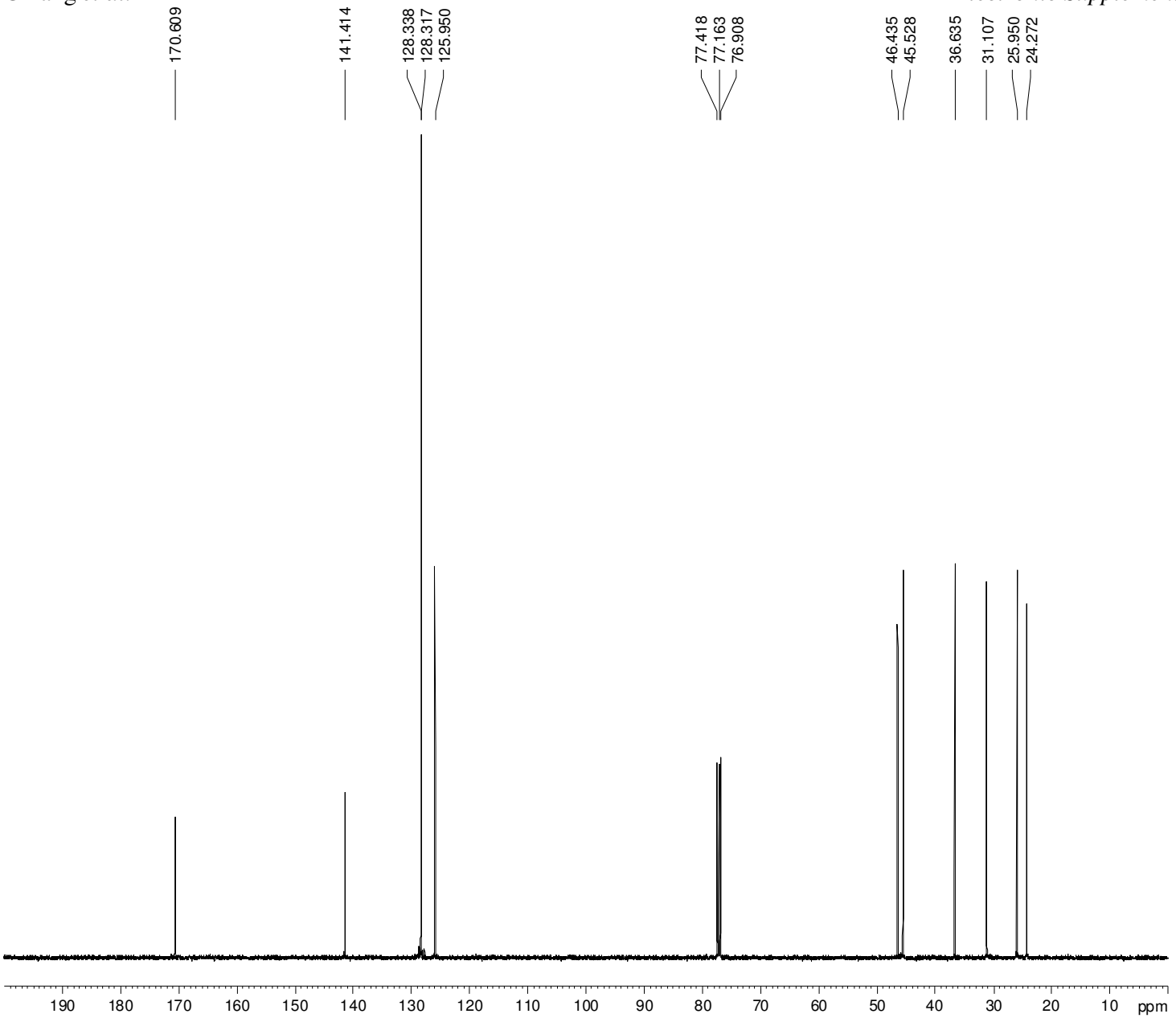

```
Current Data Parameters
NAME                      pc4p230
EXPNO                           2
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090414
Time                        10.47
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                      zg30
TD                          65536
SOLVENT                     CDC13
NS                              4
DS                              2
SWH                    7002.801 Hz
FIDRES                 0.106854 Hz
AQ                    4.6793203 sec
RG                             36
DW                     71.400 usec
DE                      6.50 usec
TE                      296.7 K
D1                   1.00000000 sec
TD0                             1

======== CHANNEL f1 ========
NUC1                           1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                          32768
SF                 500.3900160 MHz
WDW                            EM
SSB                             0
LB                      0.30 Hz
GB                              0
PC                           1.00
```


18



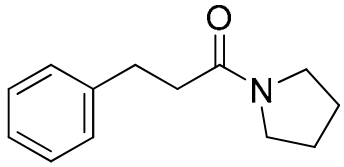

```
Current Data Parameters
NAME                         pc4p230
EXPNO                              3
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090414
Time                           10.51
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                              65536
SOLVENT                        CDCl3
NS                               101
DS                                 4
SWH                      29761.904 Hz
FIDRES                    0.454131 Hz
AQ                        1.1010548 sec
RG                              2050
DW                         16.800 usec
DE                          6.50 usec
TE                          297.8 K
D1                       2.00000000 sec
d11                      0.03000000 sec
DELTA                    1.89999998 sec
TD0                                1

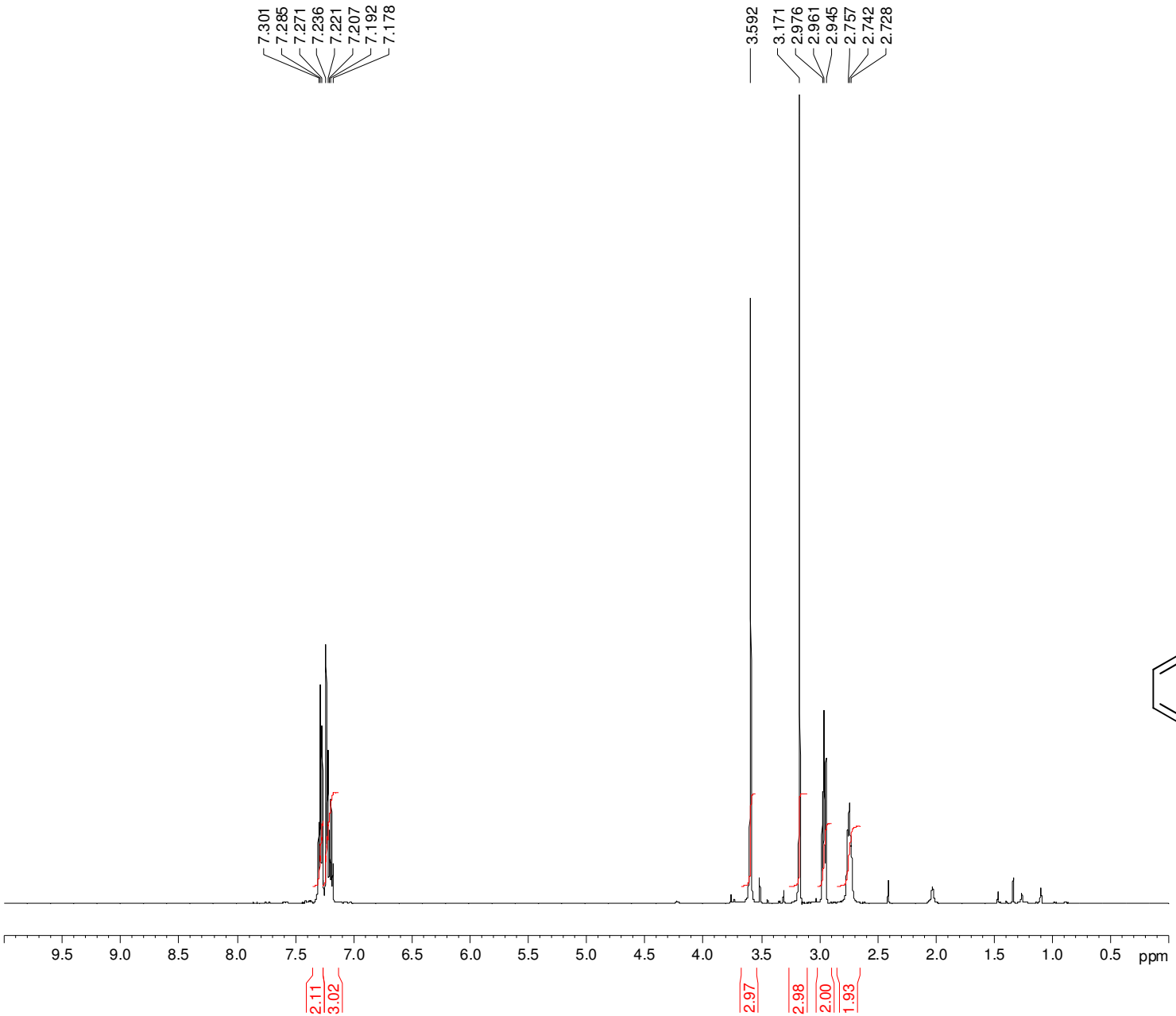
======== CHANNEL f1 ========
NUC1                             13C
P1                          7.50 usec
PL1                          1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                       80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231788 MHz
WDW                               EM
SSB                                0
LB                           1.00 Hz
GB                                 0
PC                            1.40
```



18

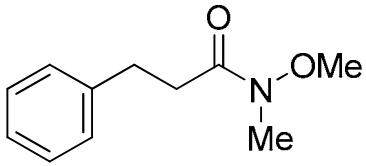



```
Current Data Parameters
NAME                      pc4p256
EXPNO                           3
PROCNO                          1

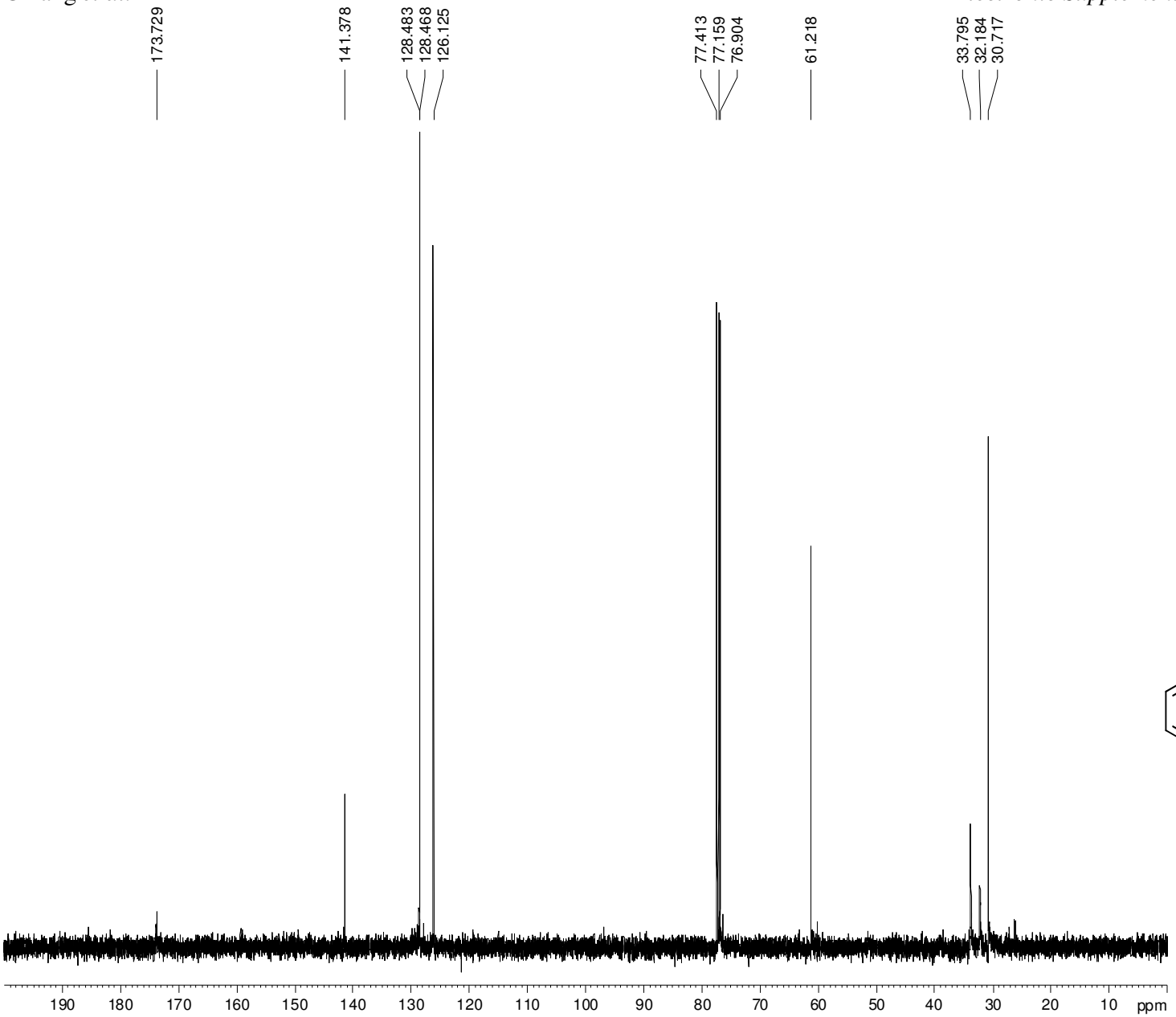
F2 - Acquisition Parameters
Date_                    20090427
Time                         9.10
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                             9
DS                             2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                          50.8
DW                      71.400 usec
DE                       6.50 usec
TE                      298.0 K
D1                   1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                      10.76 usec
PL1                      0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                  500.3900160 MHz
WDW                           EM
SSB                            0
LB                       0.30 Hz
GB                             0
PC                          1.00
```



19



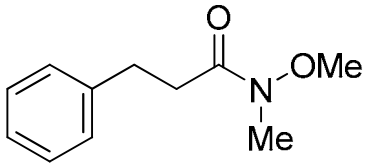

```
Current Data Parameters
NAME                      pc4p256
EXPNO                           4
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090427
Time                         9.12
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDC13
NS                            32
DS                             4
SWH                   29761.904 Hz
FIDRES                 0.454131 Hz
AQ                    1.1010548 sec
RG                          2050
DW                      16.800 usec
DE                       6.50 usec
TE                       300.0 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                            1

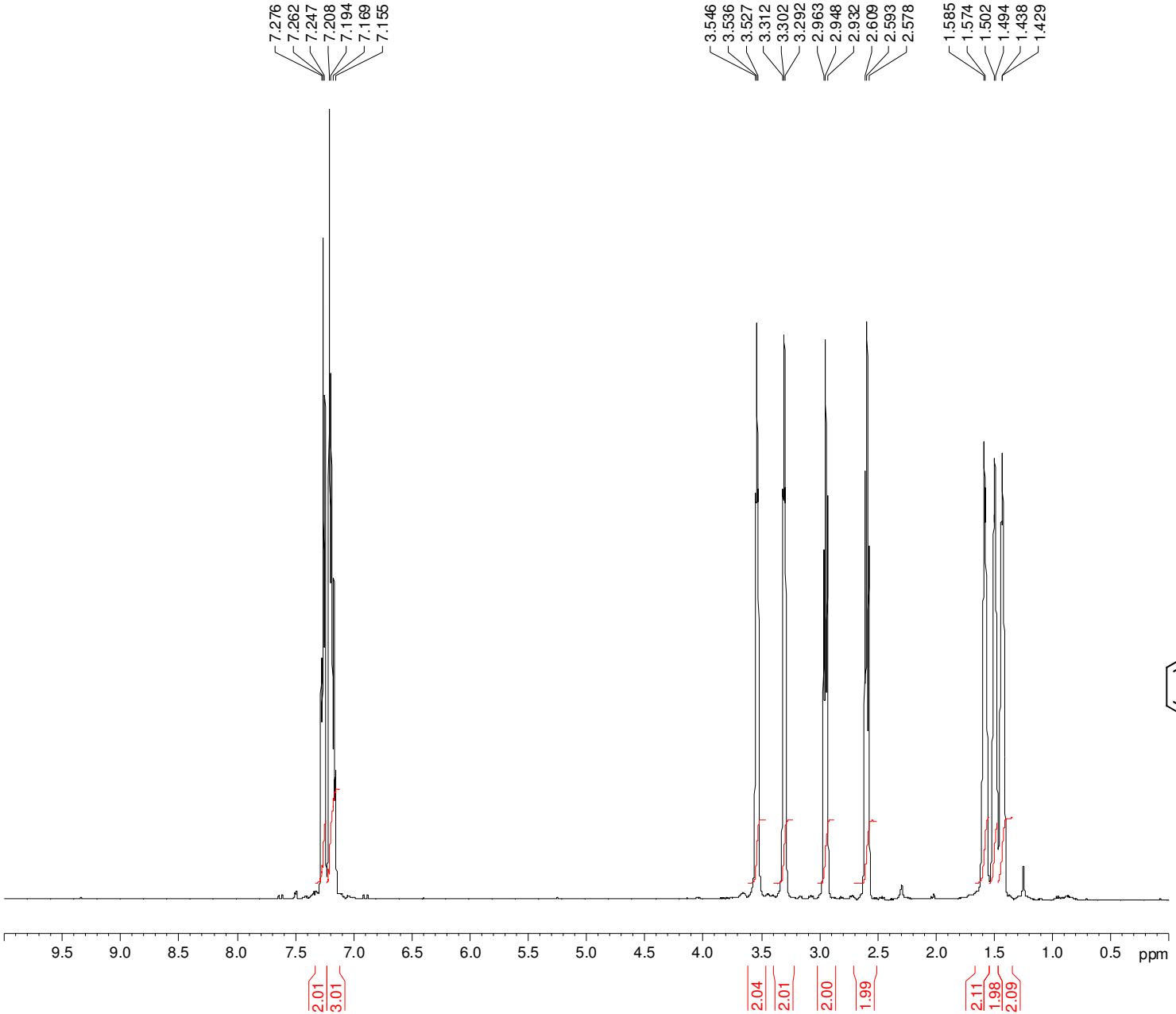
======== CHANNEL f1 ========
NUC1                         13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1                125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                    80.00 usec
PL12                     17.43 dB
PL13                     18.43 dB
PL2                       0.00 dB
SFO2                500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                  125.8231652 MHz
WDW                             EM
SSB                              0
LB                        1.00 Hz
GB                               0
PC                            1.40
```



19

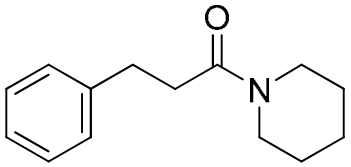



```
Current Data Parameters
NAME                      pc4p240
EXPNO                           2
PROCNO                          1

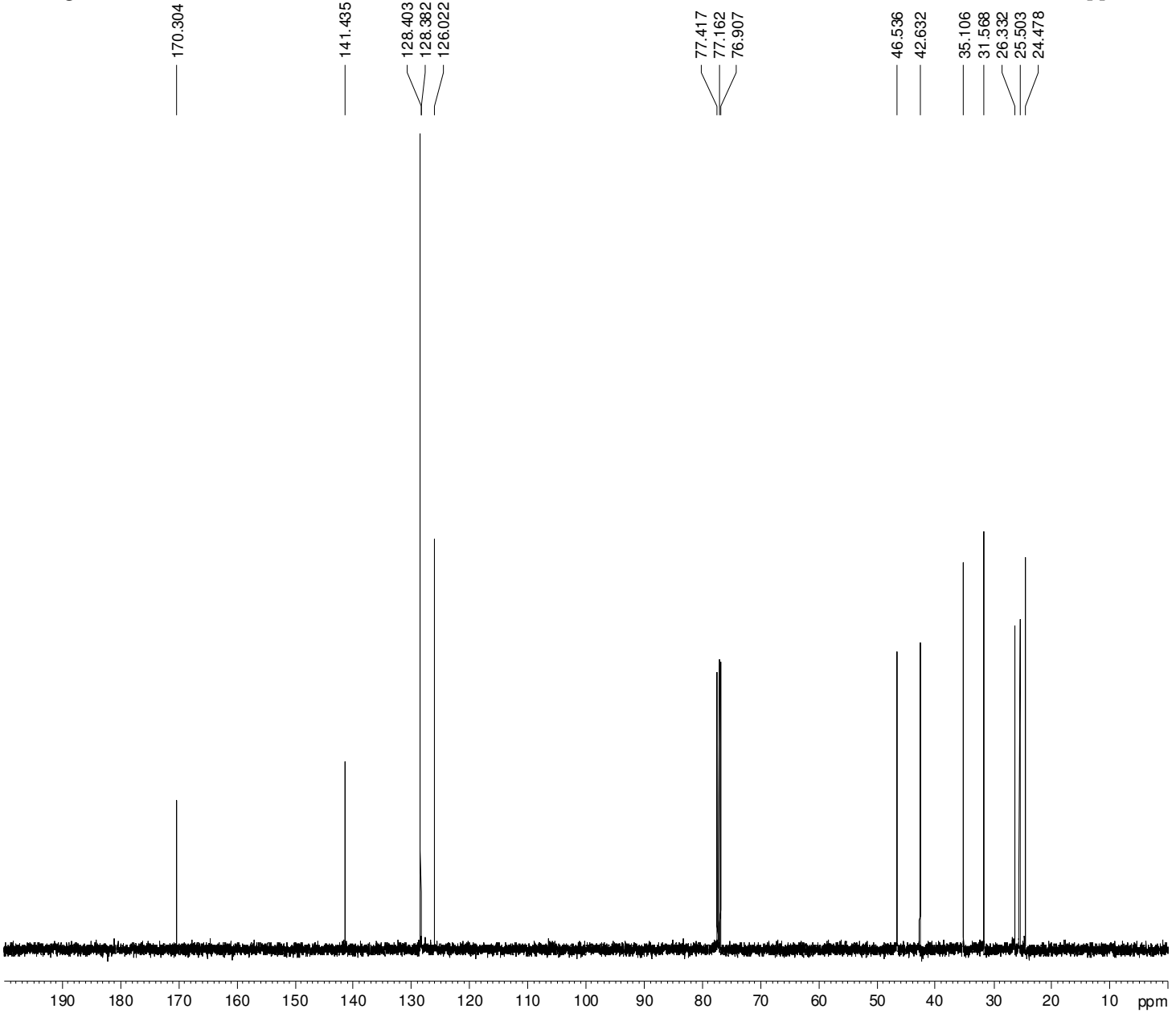
F2 - Acquisition Parameters
Date_                    20090418
Time                        16.03
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                              9
DS                              2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                             36
DW                     71.400 usec
DE                      6.50 usec
TE                      297.2 K
D1                  1.00000000 sec
TD0                             1

======== CHANNEL f1 ========
NUC1                           1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                  500.3900160 MHz
WDW                           EM
SSB                            0
LB                      0.30 Hz
GB                             0
PC                          1.00
```



20



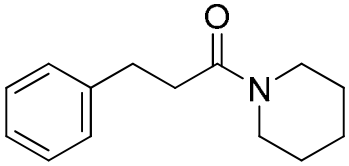

```
Current Data Parameters
NAME                         pc4p240
EXPNO                              3
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090418
Time                           16.05
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                              65536
SOLVENT                        CDC13
NS                                16
DS                                 4
SWH                     29761.904 Hz
FIDRES                    0.454131 Hz
AQ                      1.1010548 sec
RG                              1820
DW                         16.800 usec
DE                          6.50 usec
TE                          297.9 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
TD0                                1

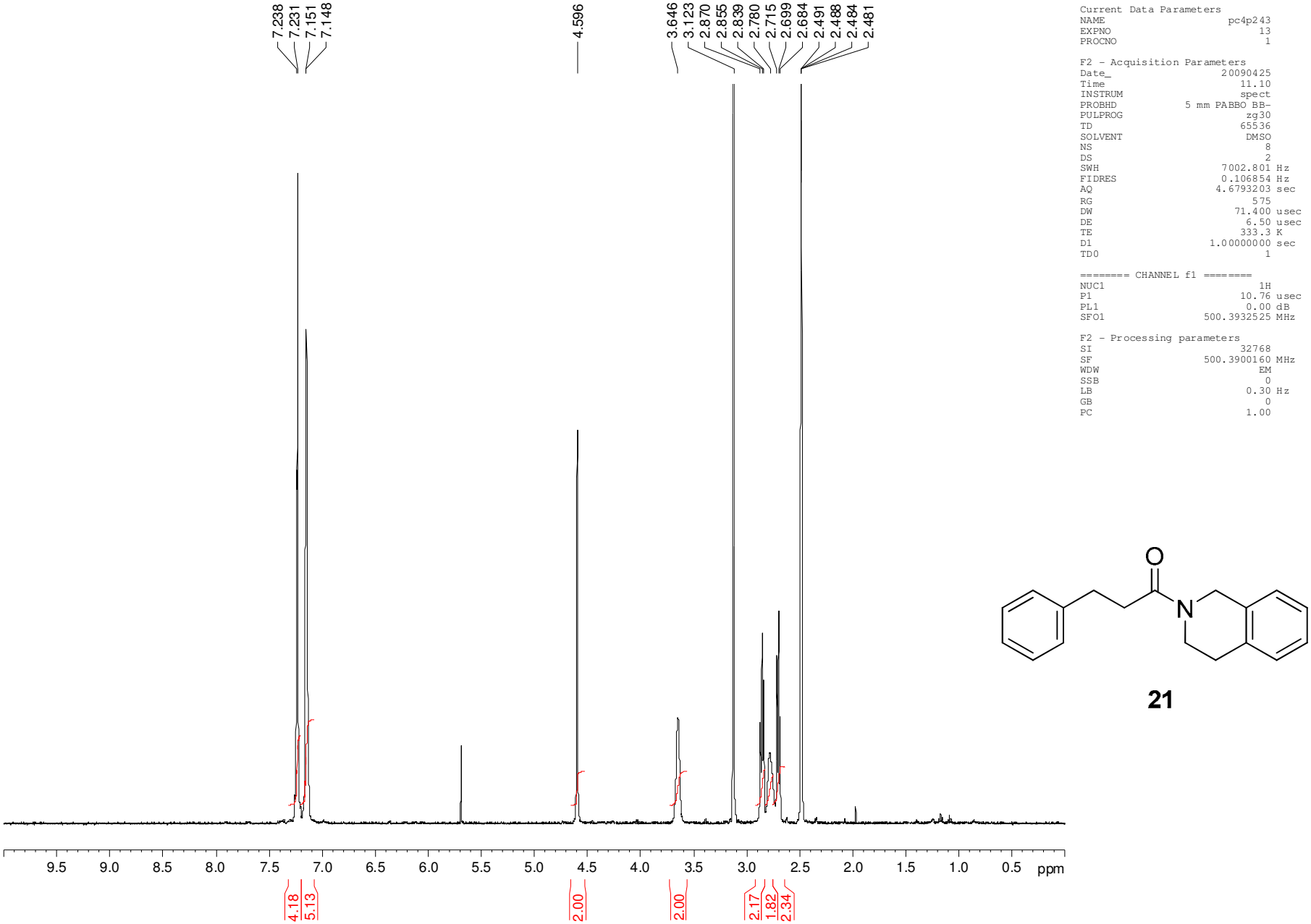
======== CHANNEL f1 ========
NUC1                             13C
P1                            7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                        80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231743 MHz
WDW                               EM
SSB                                0
LB                            1.00 Hz
GB                                 0
PC                            1.40
```



20



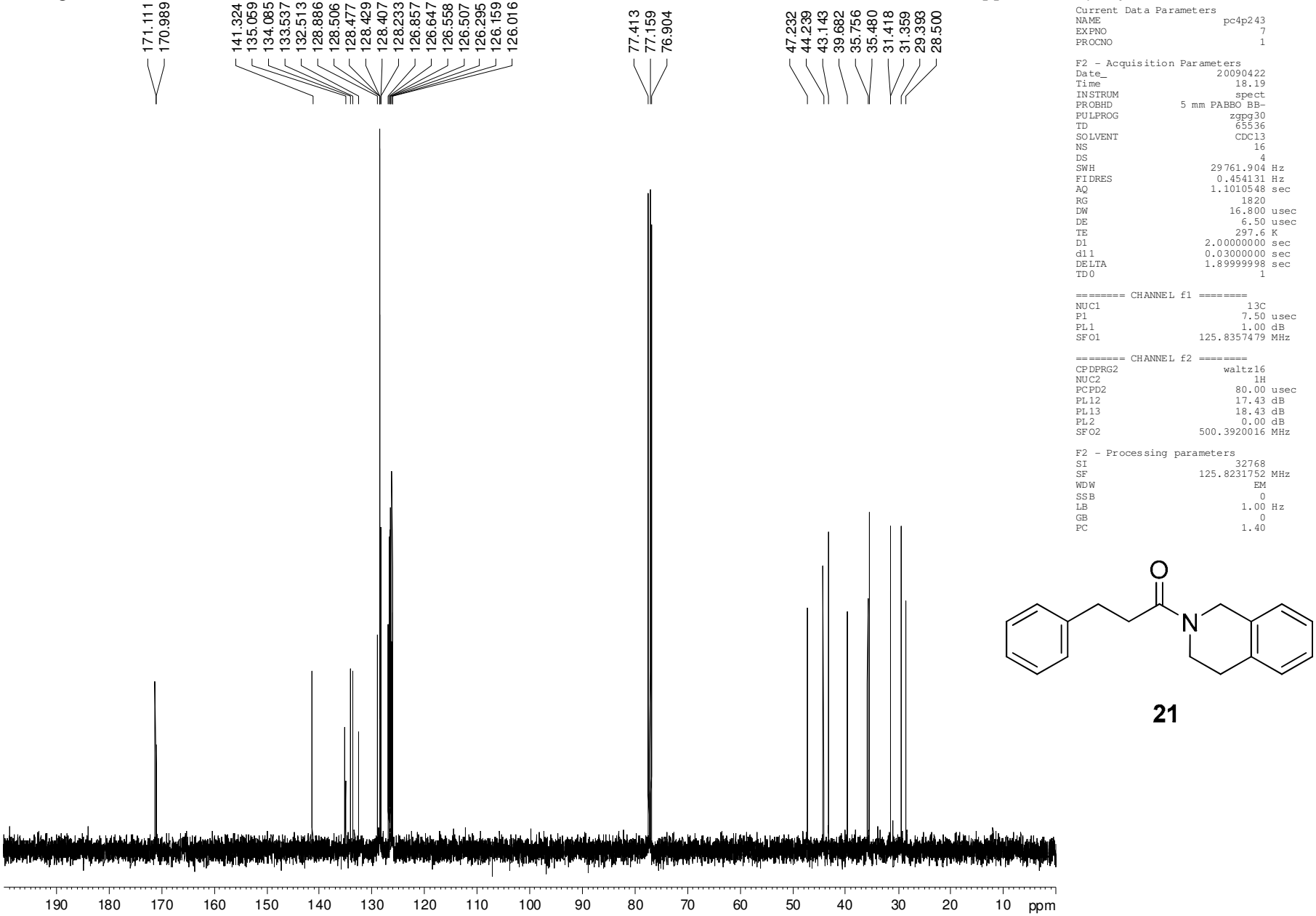

```
Current Data Parameters
NAME                      pc4p243
EXPNO                          13
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090425
Time                        11.10
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                     DMSO
NS                             8
DS                             2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                           575
DW                      71.400 usec
DE                       6.50 usec
TE                       333.3 K
D1                  1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                      10.76 usec
PL1                      0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                500.3900160 MHz
WDW                           EM
SSB                            0
LB                       0.30 Hz
GB                             0
PC                          1.00
```


21




```
Current Data Parameters
NAME                         pc4p243
EXPNO                              7
PROCNO                             1

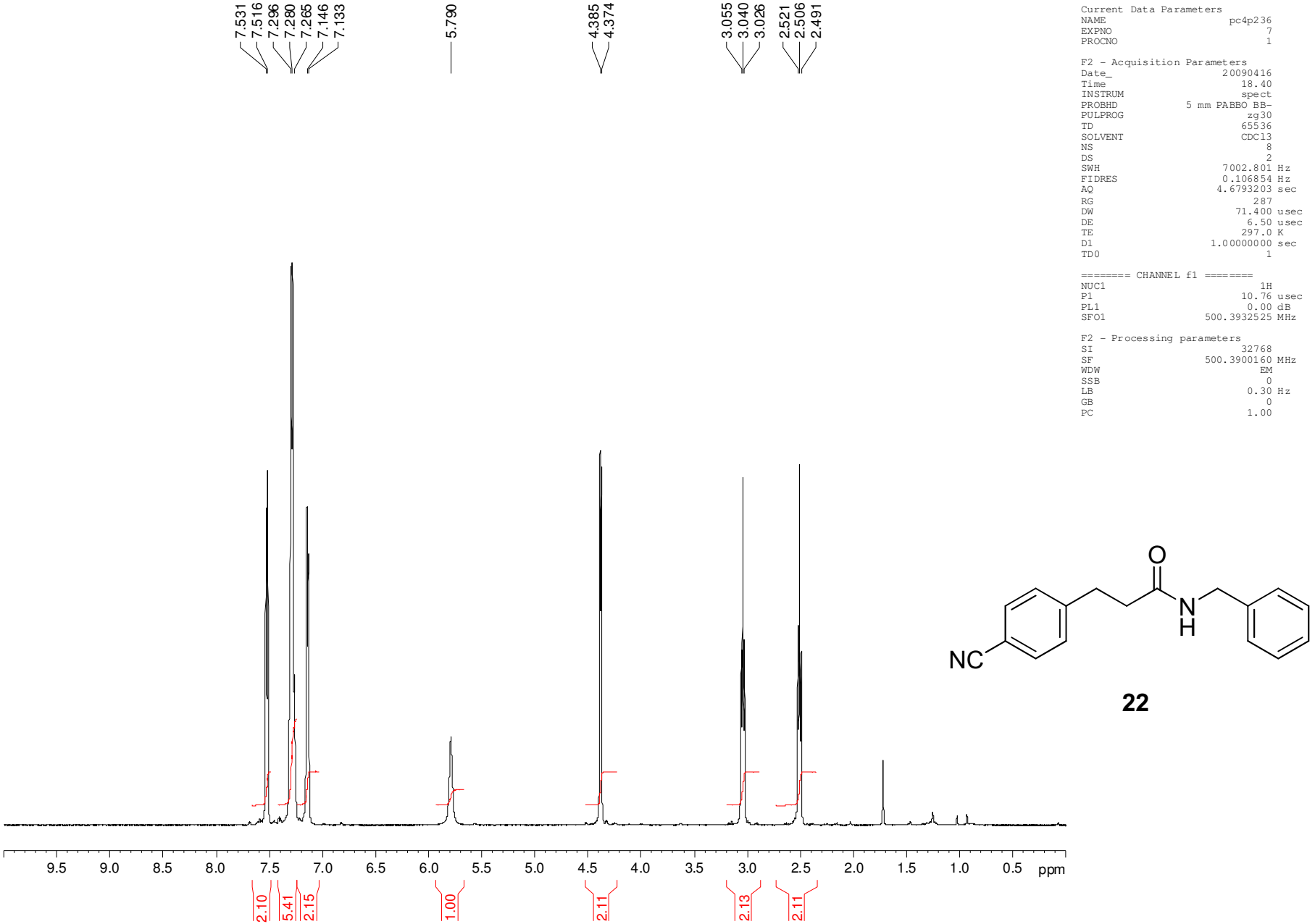
F2 - Acquisition Parameters
Date_                       20090422
Time                           18.19
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                              65536
SOLVENT                        CDC13
NS                                16
DS                                 4
SWH                     29761.904 Hz
FIDRES                    0.454131 Hz
AQ                      1.1010548 sec
RG                              1820
DW                         16.800 usec
DE                          6.50 usec
TE                          297.6 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                             13C
P1                           7.50 usec
PL1                           1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                       80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231752 MHz
WDW                               EM
SSB                                0
LB                            1.00 Hz
GB                                 0
PC                             1.40
```


21



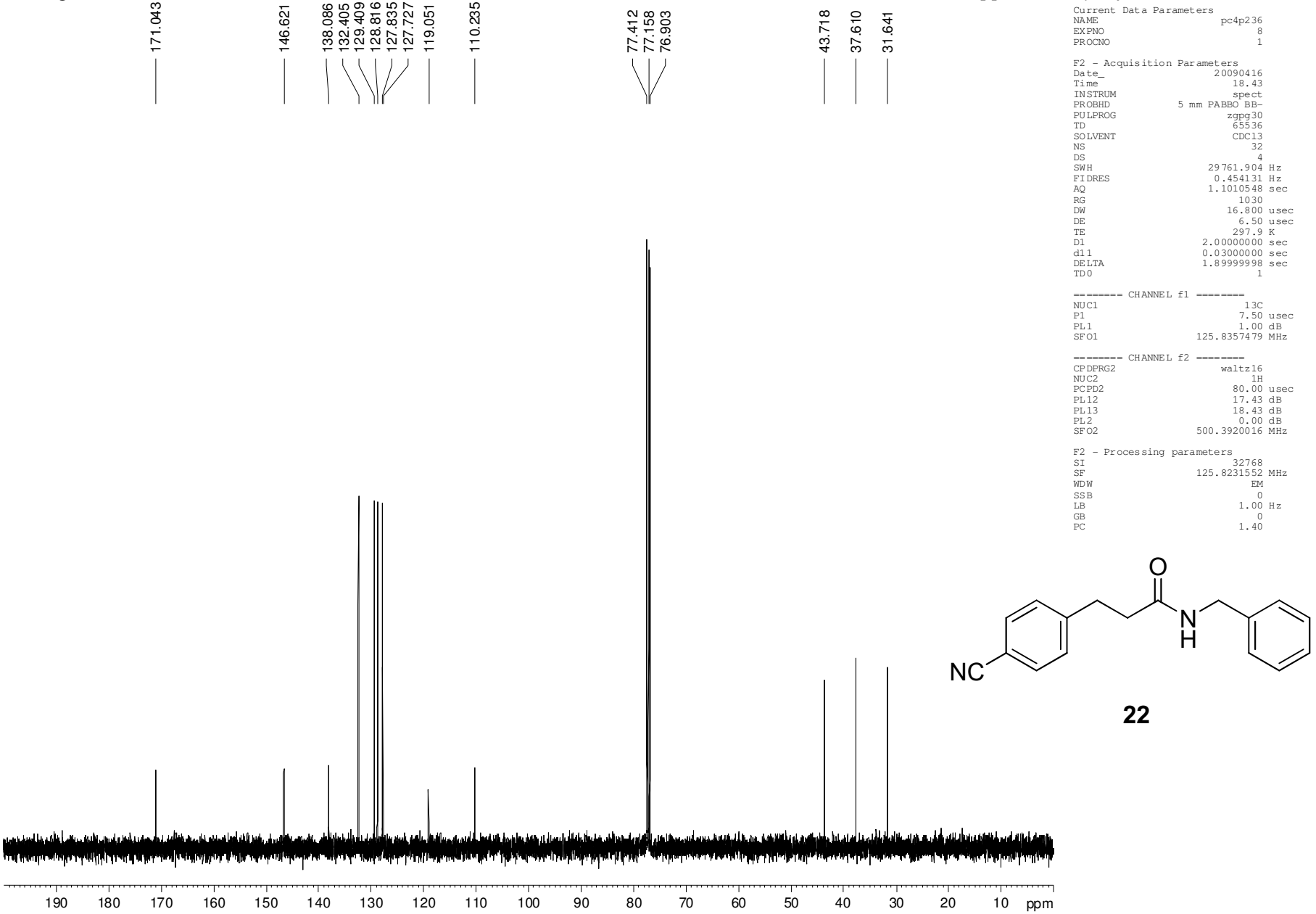

```
Current Data Parameters
NAME                         pc4p236
EXPNO                              7
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090416
Time                           18.40
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                        zg30
TD                            65536
SOLVENT                       CDC13
NS                                 8
DS                                 2
SWH                       7002.801 Hz
FIDRES                    0.106854 Hz
AQ                        4.6793203 sec
RG                               287
DW                          71.400 usec
DE                           6.50 usec
TE                           297.0 K
D1                        1.00000000 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                              1H
P1                          10.76 usec
PL1                          0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                             32768
SF                    500.3900160 MHz
WDW                               EM
SSB                                0
LB                           0.30 Hz
GB                                 0
PC                              1.00
```


22




```
Current Data Parameters
NAME                      pc4p236
EXPNO                           8
PROCNO                          1

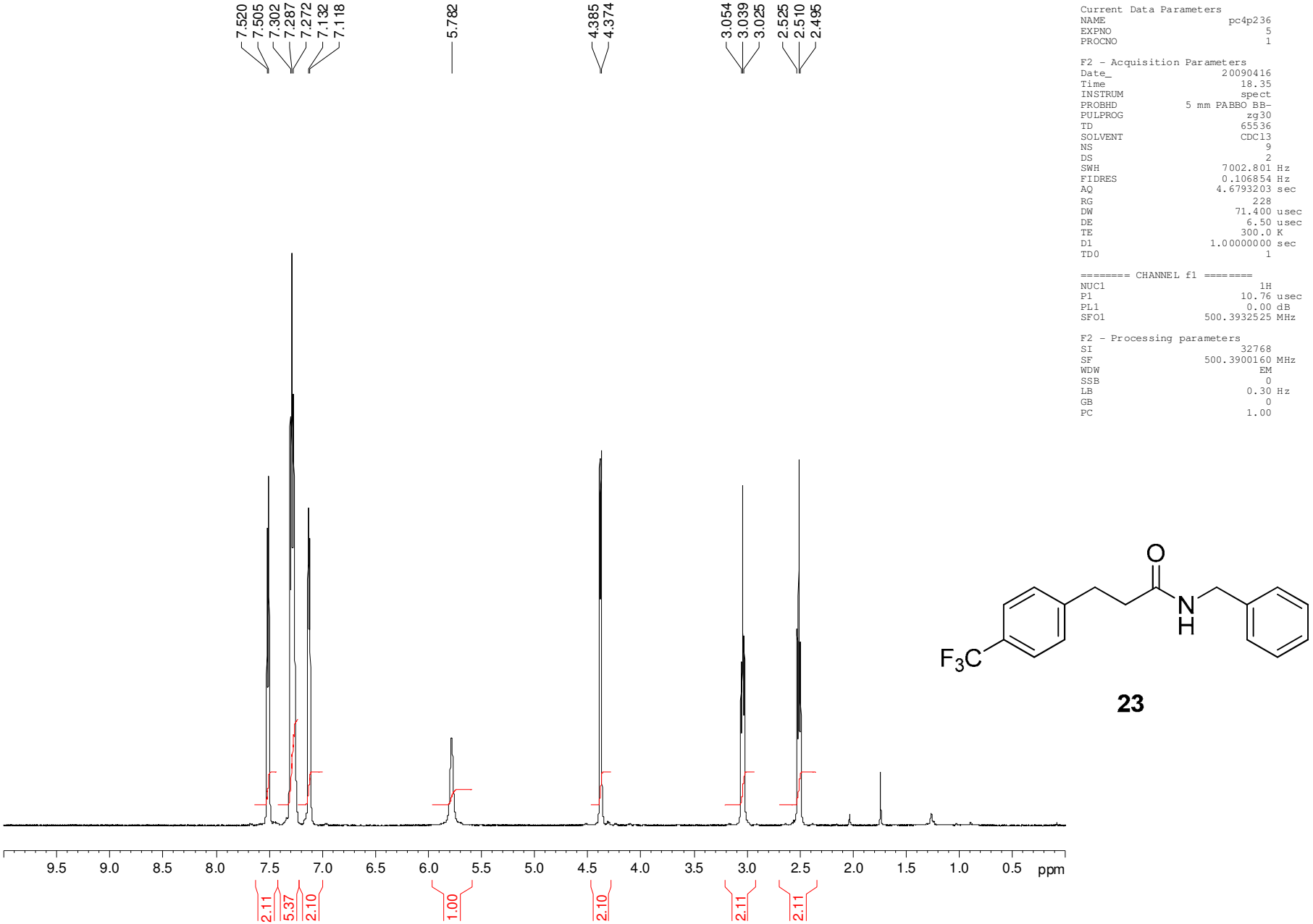
F2 - Acquisition Parameters
Date_                    20090416
Time                        18.43
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDC13
NS                           32
DS                            4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                         1030
DW                       16.800 usec
DE                        6.50 usec
TE                       297.9 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                           1

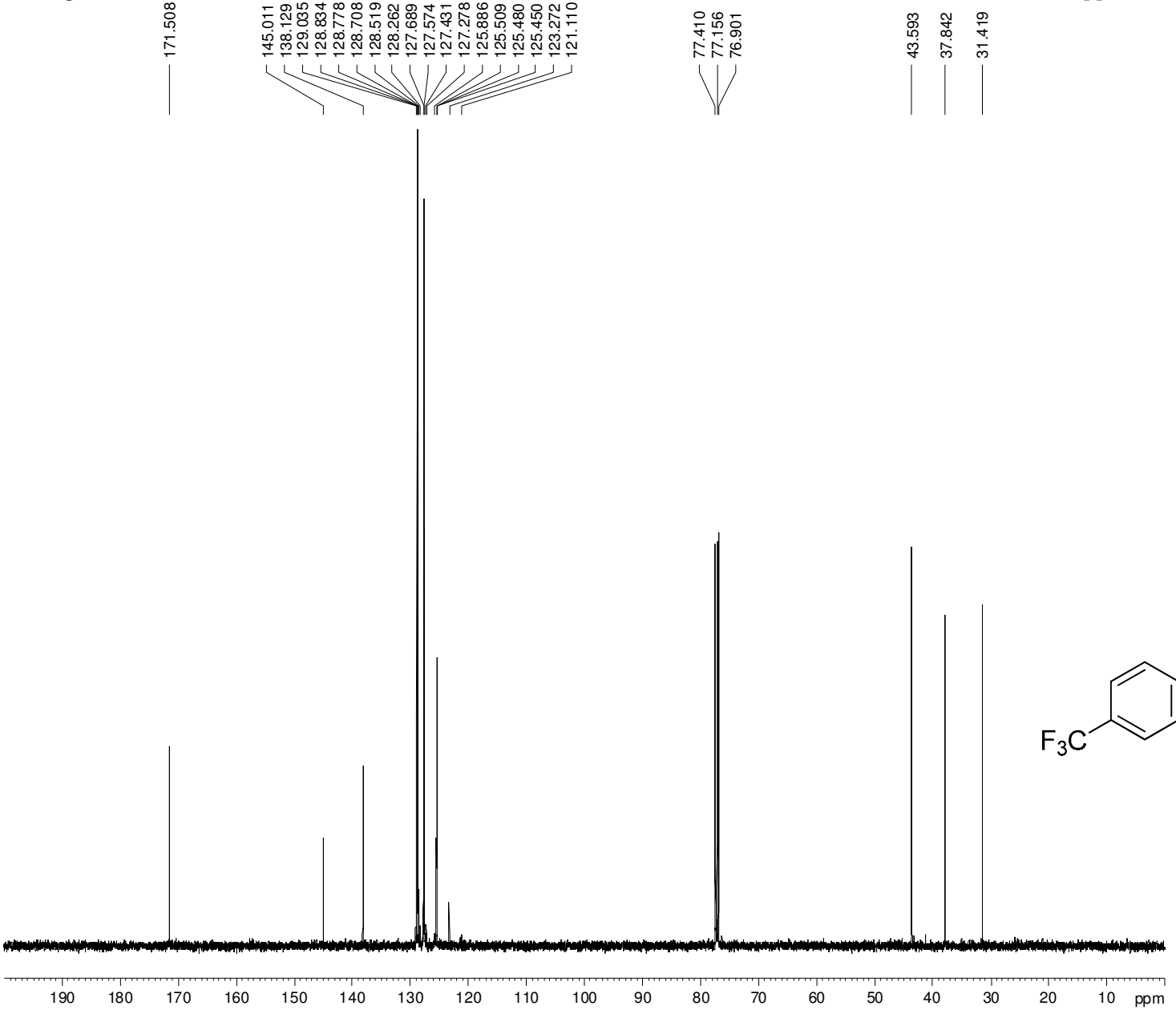
======== CHANNEL f1 ========
NUC1                        13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1               125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                        1H
PCPD2                    80.00 usec
PL12                     17.43 dB
PL13                     18.43 dB
PL2                       0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                          32768
SF                 125.8231552 MHz
WDW                            EM
SSB                             0
LB                        1.00 Hz
GB                              0
PC                         1.40
```


22


7.520
7.505
7.302
7.287
7.272
7.132
7.118
5.782
4.385
4.374
3.054
3.039
3.025
2.525
2.510
2.495
Current Data Parameters
NAME pc4p236
EXPNO 5
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090416
Time 18.35
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 9
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 228
DW 71.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
2.11
5.37
2.10
1.00
2.10
2.11
2.11
O
N
H
F3C
23



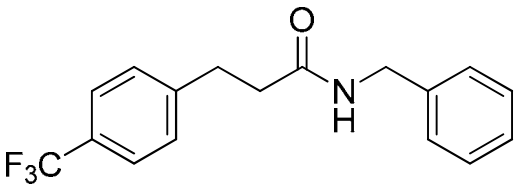

```
Current Data Parameters
NAME                       pc4p259
EXPNO                            4
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20090429
Time                         15.36
INSTRUM                      spect
PROBHD          5 mm PABBO BB-
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDC13
NS                            89
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.454131 Hz
AQ                     1.1010548 sec
RG                          2050
DW                        16.800 usec
DE                         6.50 usec
TE                        297.8 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
TD0                            1

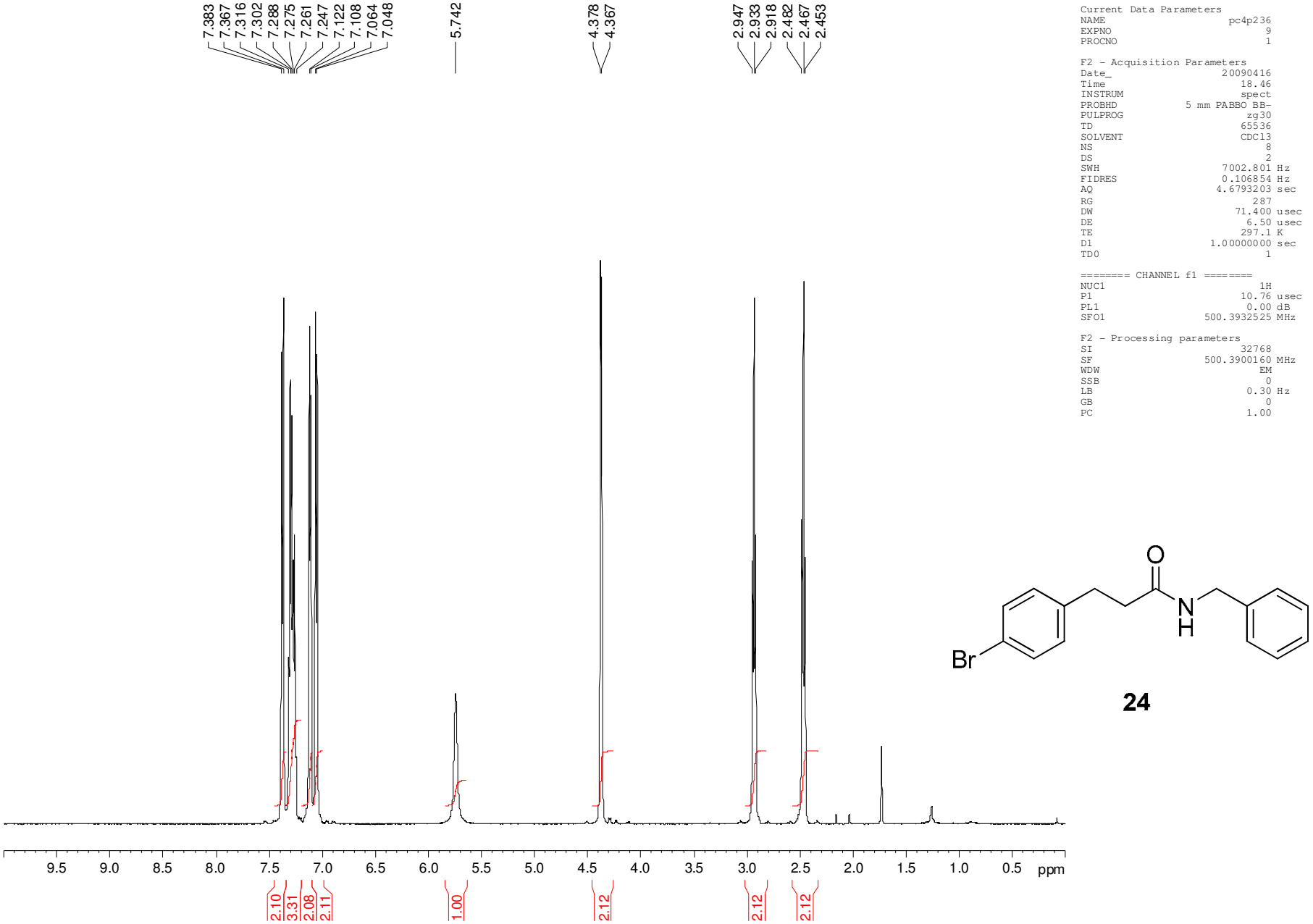
======== CHANNEL f1 ========
NUC1                         13C
P1                         7.50 usec
PL1                        1.00 dB
SFO1                 125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                     80.00 usec
PL12                      17.43 dB
PL13                      18.43 dB
PL2                        0.00 dB
SFO2                 500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                   125.8231597 MHz
WDW                             EM
SSB                             0
LB                         1.00 Hz
GB                              0
PC                         1.40
```



23



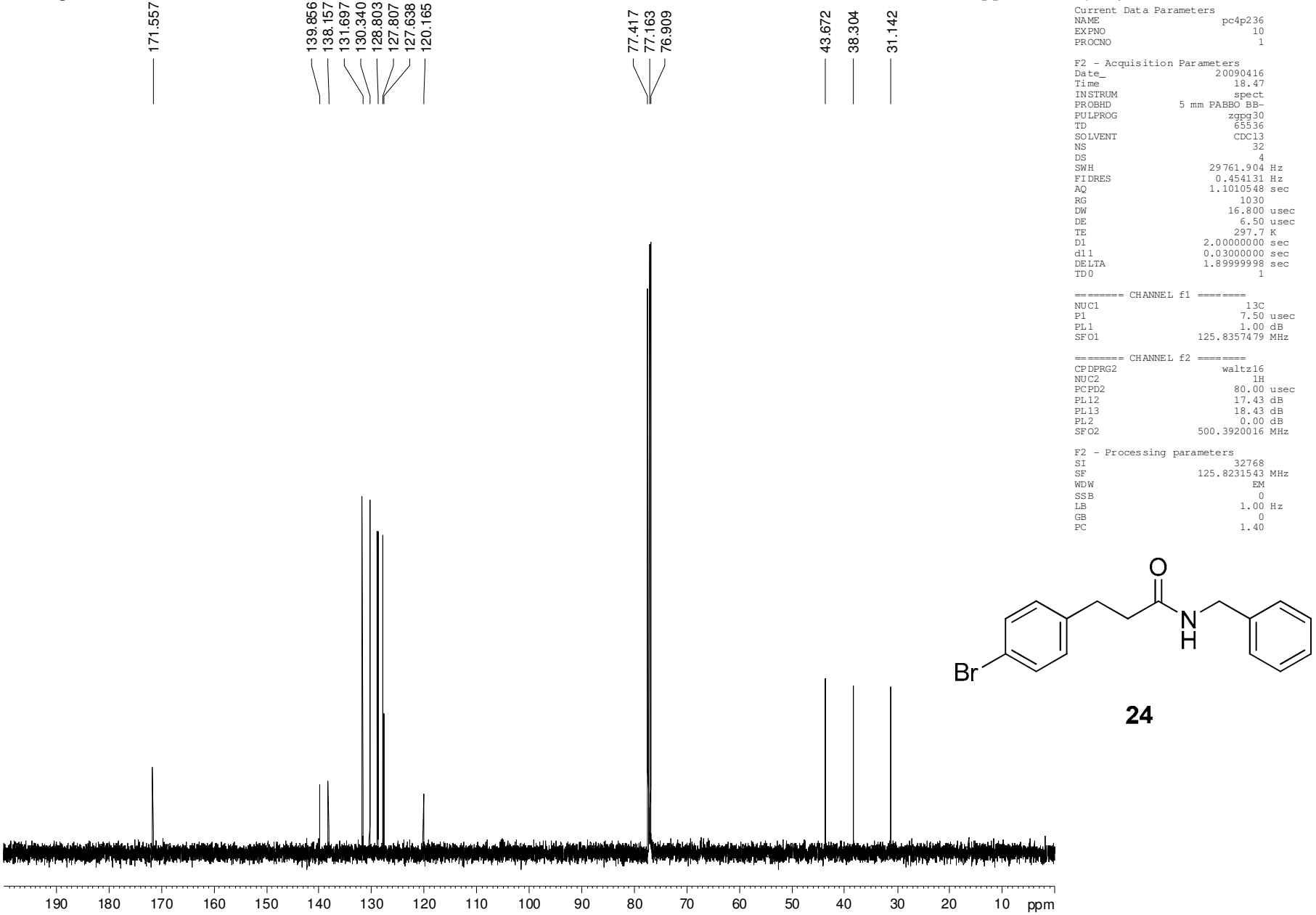

```
Current Data Parameters
NAME                       pc4p236
EXPNO                            9
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20090416
Time                         18.46
INSTRUM                      spect
PROBHD          5 mm PABBO BB-
PULPROG                      zg30
TD                          65536
SOLVENT                     CDC13
NS                               8
DS                               2
SWH                    7002.801 Hz
FIDRES                 0.106854 Hz
AQ                    4.6793203 sec
RG                             287
DW                      71.400 usec
DE                       6.50 usec
TE                       297.1 K
D1                    1.00000000 sec
TD0                              1

======== CHANNEL f1 ========
NUC1                            1H
P1                      10.76 usec
PL1                      0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                           32768
SF                  500.3900160 MHz
WDW                             EM
SSB                              0
LB                       0.30 Hz
GB                               0
PC                            1.00
```


24




```
Current Data Parameters
NAME                      pc4p236
EXPNO                          10
PROCNO                          1

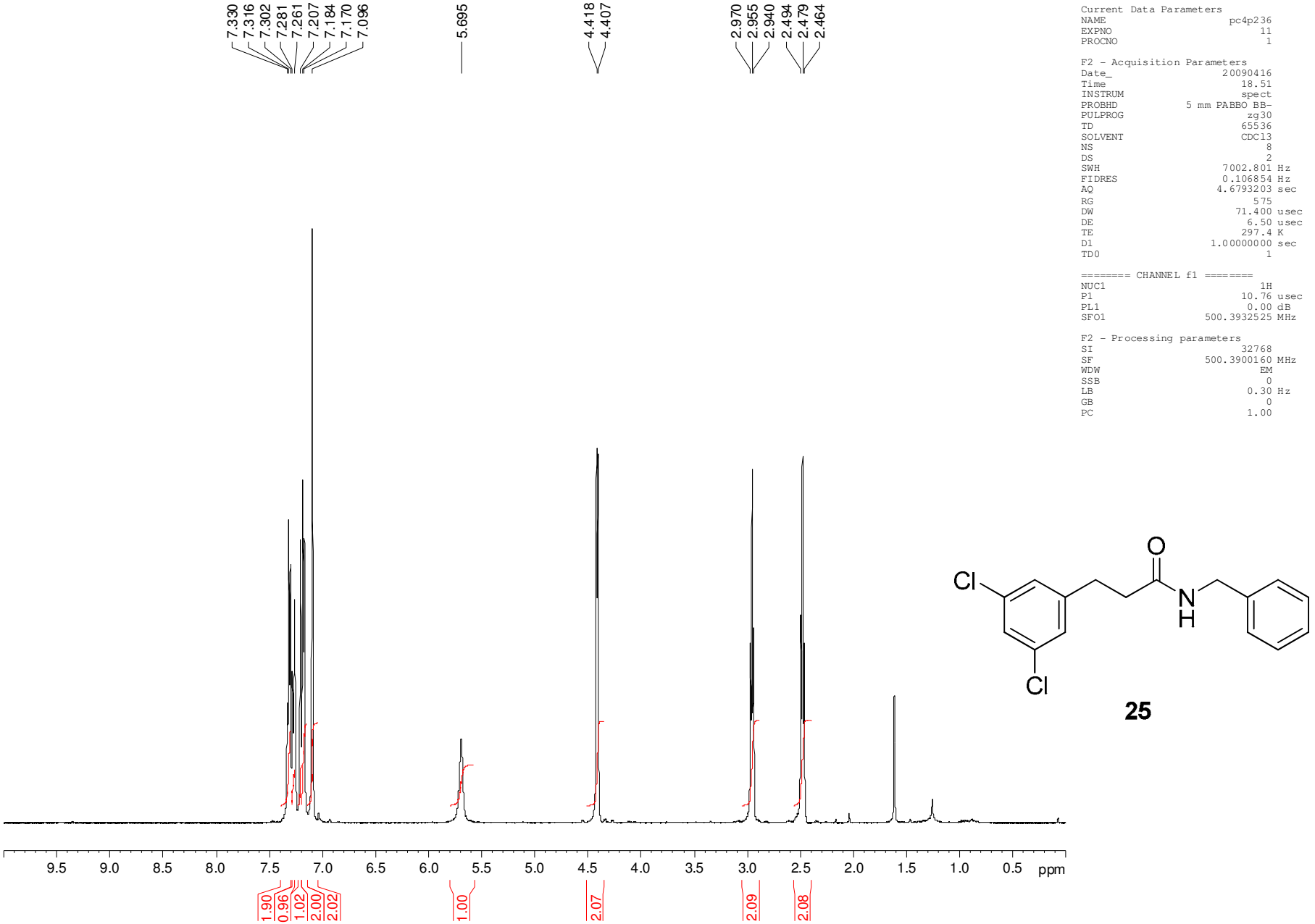
F2 - Acquisition Parameters
Date_                    20090416
Time                        18.47
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                            32
DS                             4
SWH                   29761.904 Hz
FIDRES                 0.454131 Hz
AQ                    1.1010548 sec
RG                          1030
DW                        16.800 usec
DE                         6.50 usec
TE                        297.7 K
D1                   2.00000000 sec
d11                  0.03000000 sec
DELTA                1.89999998 sec
TD0                            1

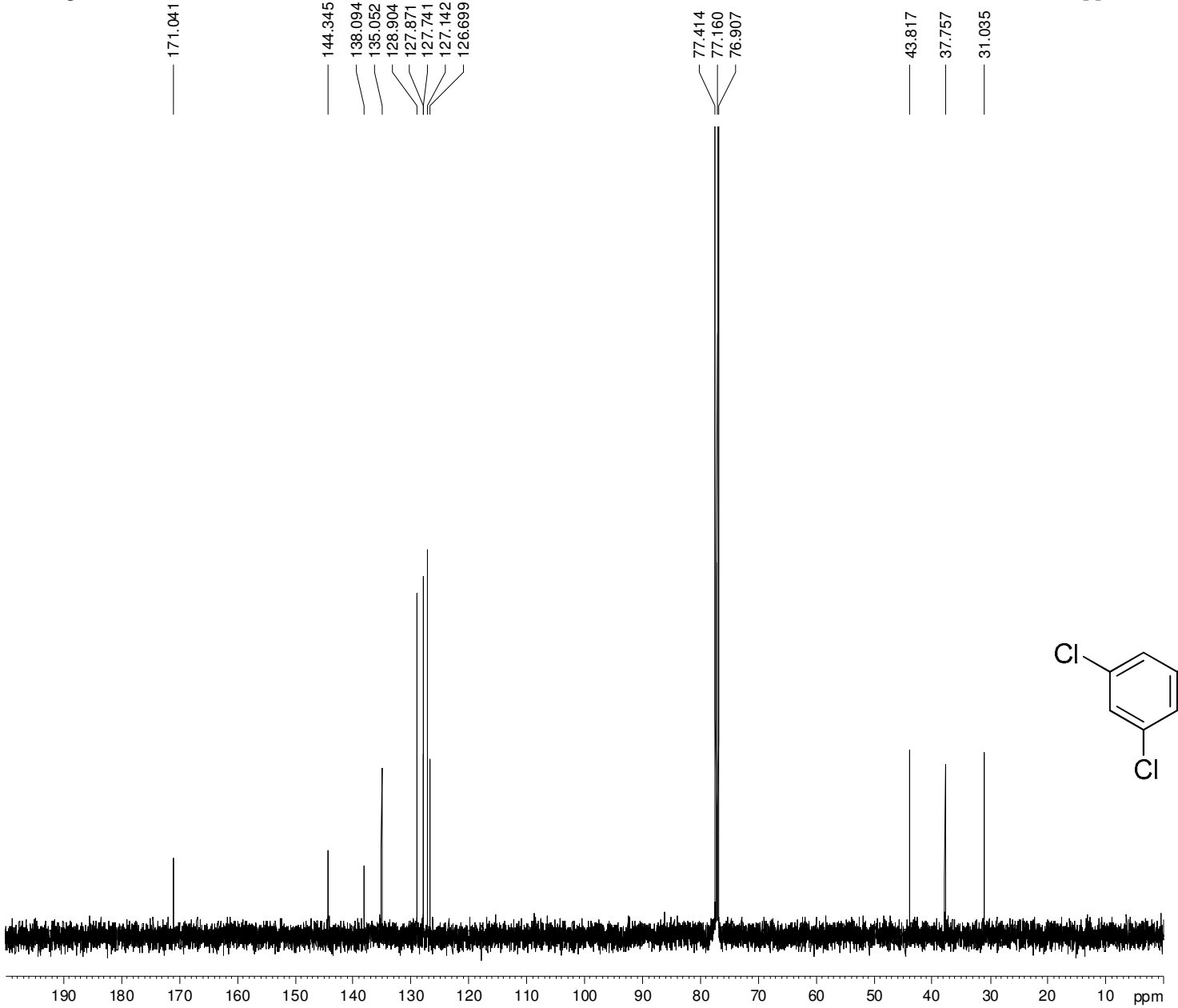
======== CHANNEL f1 ========
NUC1                         13C
P1                         7.50 usec
PL1                        1.00 dB
SFO1                 125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                     80.00 usec
PL12                      17.43 dB
PL13                      18.43 dB
PL2                        0.00 dB
SFO2                 500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                   125.8231543 MHz
WDW                             EM
SSB                              0
LB                         1.00 Hz
GB                               0
PC                         1.40
```


24


7.330
7.316
7.302
7.281
7.261
7.207
7.184
7.170
7.096
5.695
4.418
4.407
2.970
2.955
2.940
2.494
2.479
2.464
Current Data Parameters
NAME pc4p236
EXPNO 11
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090416
Time 18.51
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 8
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 575
DW 71.400 usec
DE 6.50 usec
TE 297.4 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
Cl
Cl
O
N
H
25
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
1.90
0.96
1.02
2.00
2.02
1.00
2.07
2.09
2.08



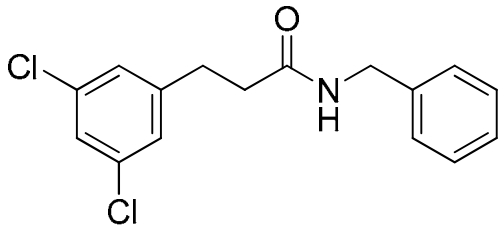

```
Current Data Parameters
NAME                         pc4p236
EXPNO                             12
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090416
Time                           18.53
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                              65536
SOLVENT                        CDC13
NS                               128
DS                                 4
SWH                      29761.904 Hz
FIDRES                    0.454131 Hz
AQ                       1.1010548 sec
RG                              1820
DW                         16.800 usec
DE                          6.50 usec
TE                          300.0 K
D1                      2.00000000 sec
d11                     0.03000000 sec
DELTA                   1.89999998 sec
TD0                                1

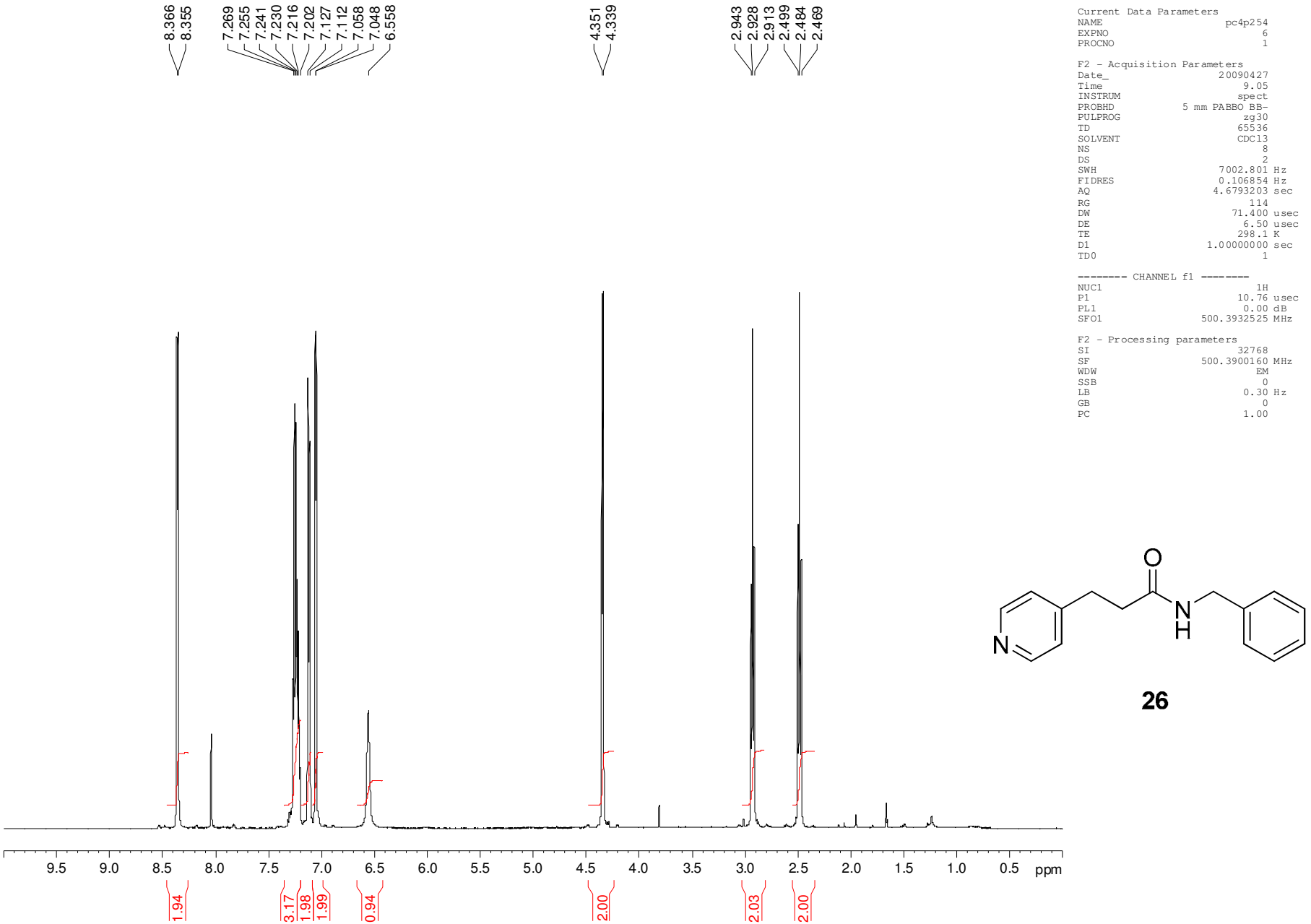
======== CHANNEL f1 ========
NUC1                             13C
P1                          7.50 usec
PL1                          1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                       80.00 usec
PL12                         17.43 dB
PL13                         18.43 dB
PL2                           0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231507 MHz
WDW                               EM
SSB                                0
LB                           1.00 Hz
GB                                 0
PC                            1.40
```



25



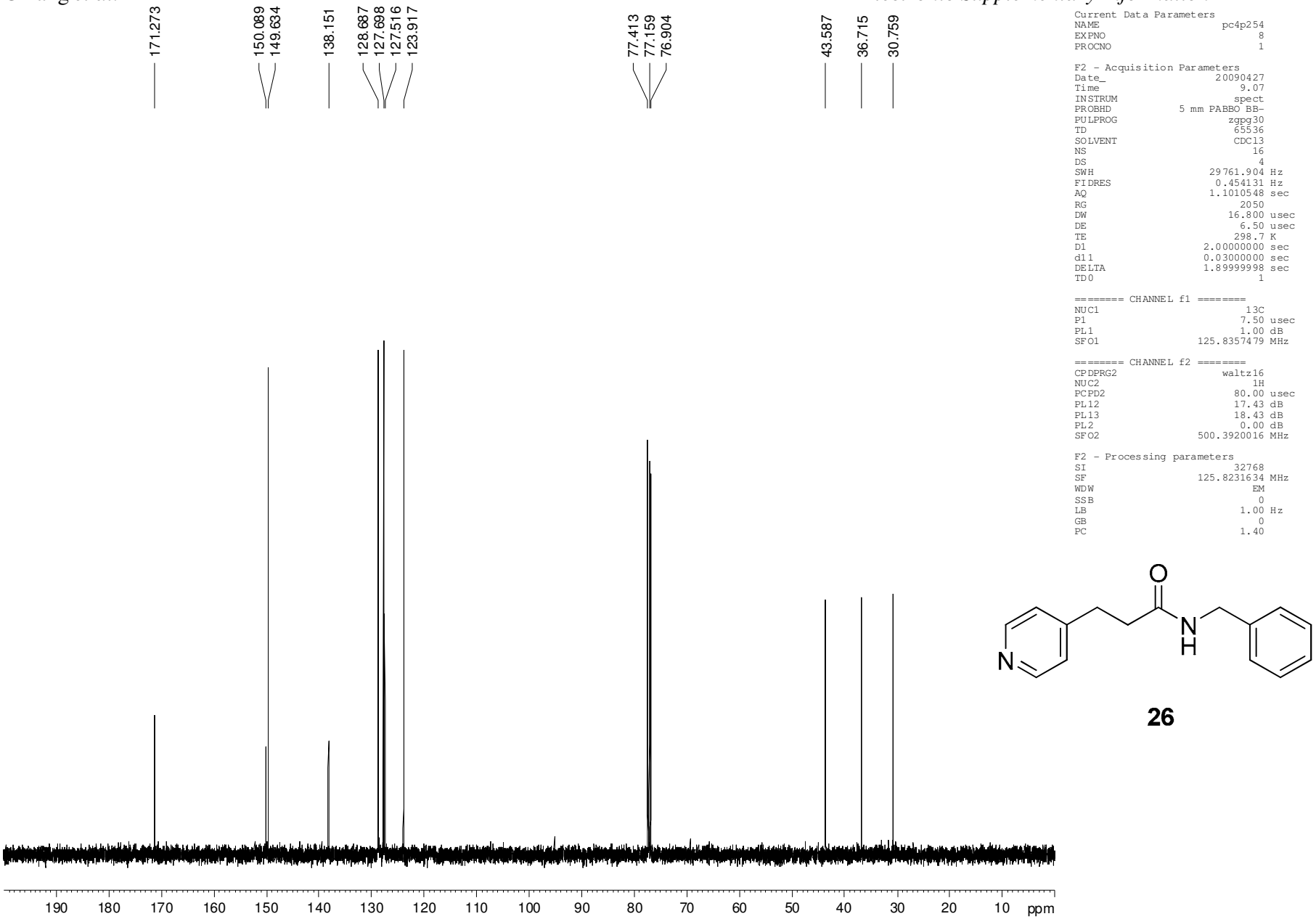

```
Current Data Parameters
NAME                      pc4p254
EXPNO                           6
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090427
Time                         9.05
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                             8
DS                             2
SWH                   7002.801 Hz
FIDRES                0.106854 Hz
AQ                   4.6793203 sec
RG                           114
DW                      71.400 usec
DE                       6.50 usec
TE                      298.1 K
D1                   1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                      10.76 usec
PL1                      0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                  500.3900160 MHz
WDW                           EM
SSB                            0
LB                       0.30 Hz
GB                             0
PC                          1.00
```


26




```
Current Data Parameters
NAME                         pc4p254
EXPNO                              8
PROCNO                             1

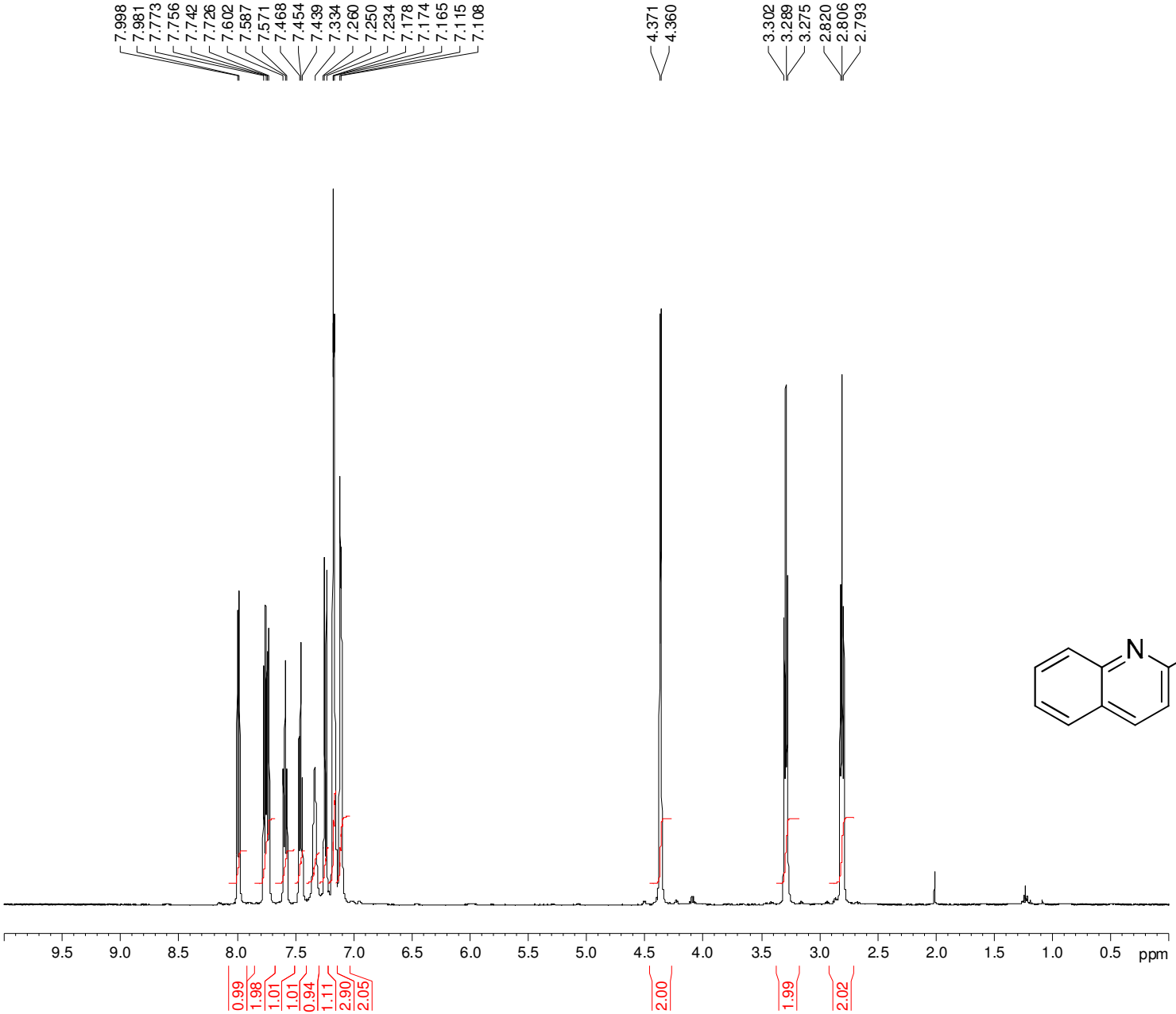
F2 - Acquisition Parameters
Date_                       20090427
Time                            9.07
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                           65536
SOLVENT                      CDC13
NS                              16
DS                               4
SWH                     29761.904 Hz
FIDRES                   0.454131 Hz
AQ                     1.1010548 sec
RG                            2050
DW                       16.800 usec
DE                        6.50 usec
TE                          298.7 K
D1                   2.00000000 sec
d11                  0.03000000 sec
DELTA                1.89999998 sec
TD0                              1

======== CHANNEL f1 ========
NUC1                           13C
P1                        7.50 usec
PL1                        1.00 dB
SFO1                 125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                   waltz16
NUC2                           1H
PCPD2                    80.00 usec
PL12                      17.43 dB
PL13                      18.43 dB
PL2                        0.00 dB
SFO2                 500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                   125.8231634 MHz
WDW                             EM
SSB                              0
LB                         1.00 Hz
GB                               0
PC                            1.40
```


26

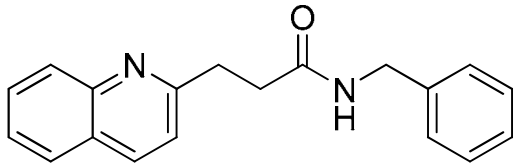



```
Current Data Parameters
NAME                         pc4p255
EXPNO                              2
PROCNO                             1

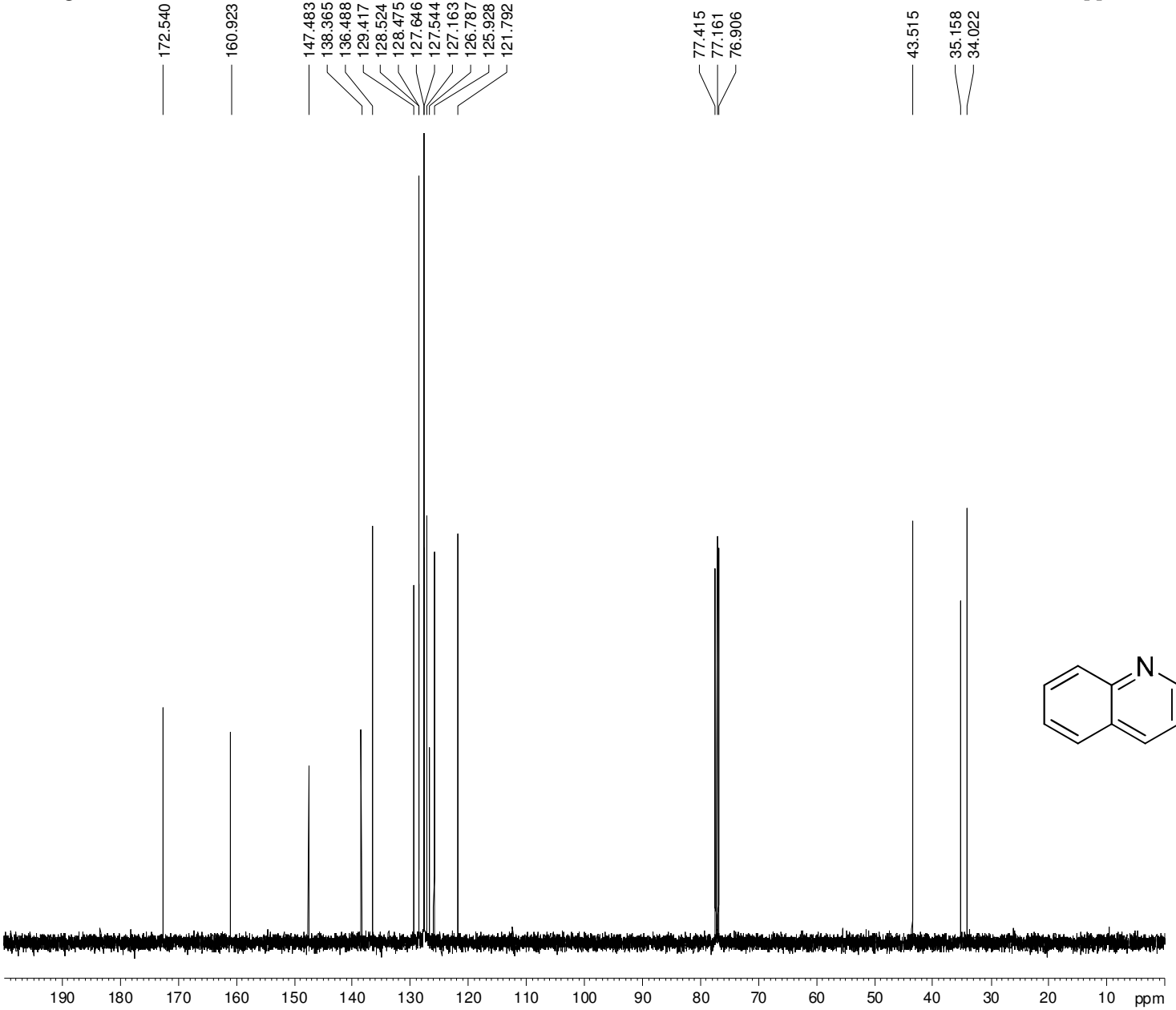
F2 - Acquisition Parameters
Date_                       20090425
Time                           10.02
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                        zg30
TD                            65536
SOLVENT                       CDC13
NS                                 8
DS                                 2
SWH                       7002.801 Hz
FIDRES                    0.106854 Hz
AQ                        4.6793203 sec
RG                             45.2
DW                           71.400 usec
DE                            6.50 usec
TE                           297.1 K
D1                        1.00000000 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                              1H
P1                           10.76 usec
PL1                           0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                             32768
SF                    500.3900160 MHz
WDW                               EM
SSB                                0
LB                            0.30 Hz
GB                                 0
PC                             1.00
```



27



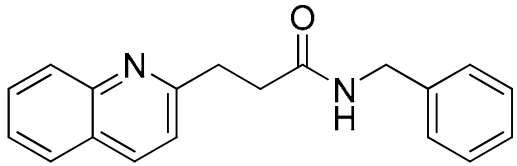

```
Current Data Parameters
NAME                      pc4p255
EXPNO                           3
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090425
Time                        10.04
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDCl3
NS                             17
DS                              4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                          2050
DW                      16.800 usec
DE                       6.50 usec
TE                       297.8 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                             1

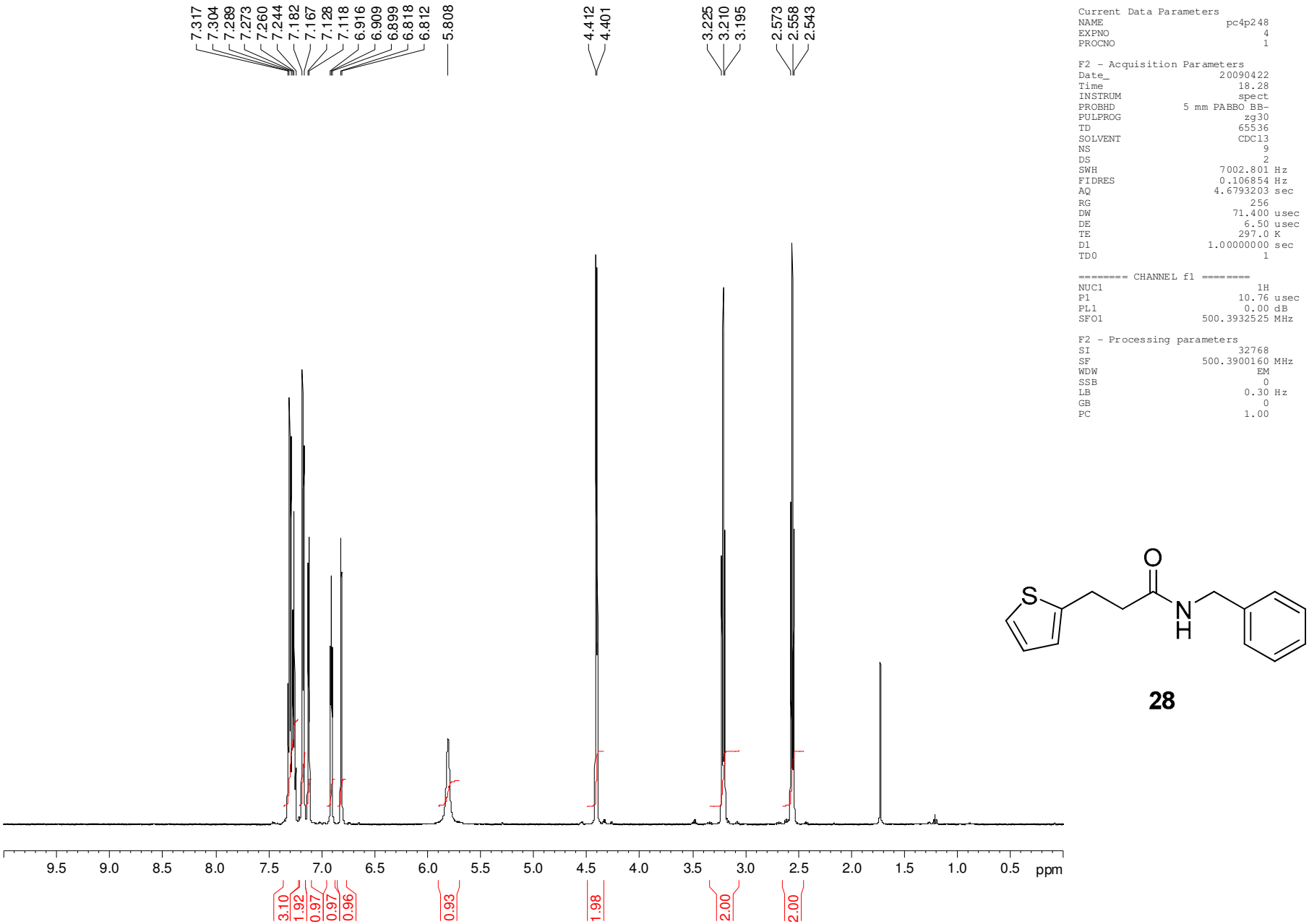
======== CHANNEL f1 ========
NUC1                         13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1               125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                    80.00 usec
PL12                     17.43 dB
PL13                     18.43 dB
PL2                       0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                 125.8231725 MHz
WDW                             EM
SSB                              0
LB                        1.00 Hz
GB                               0
PC                            1.40
```



27



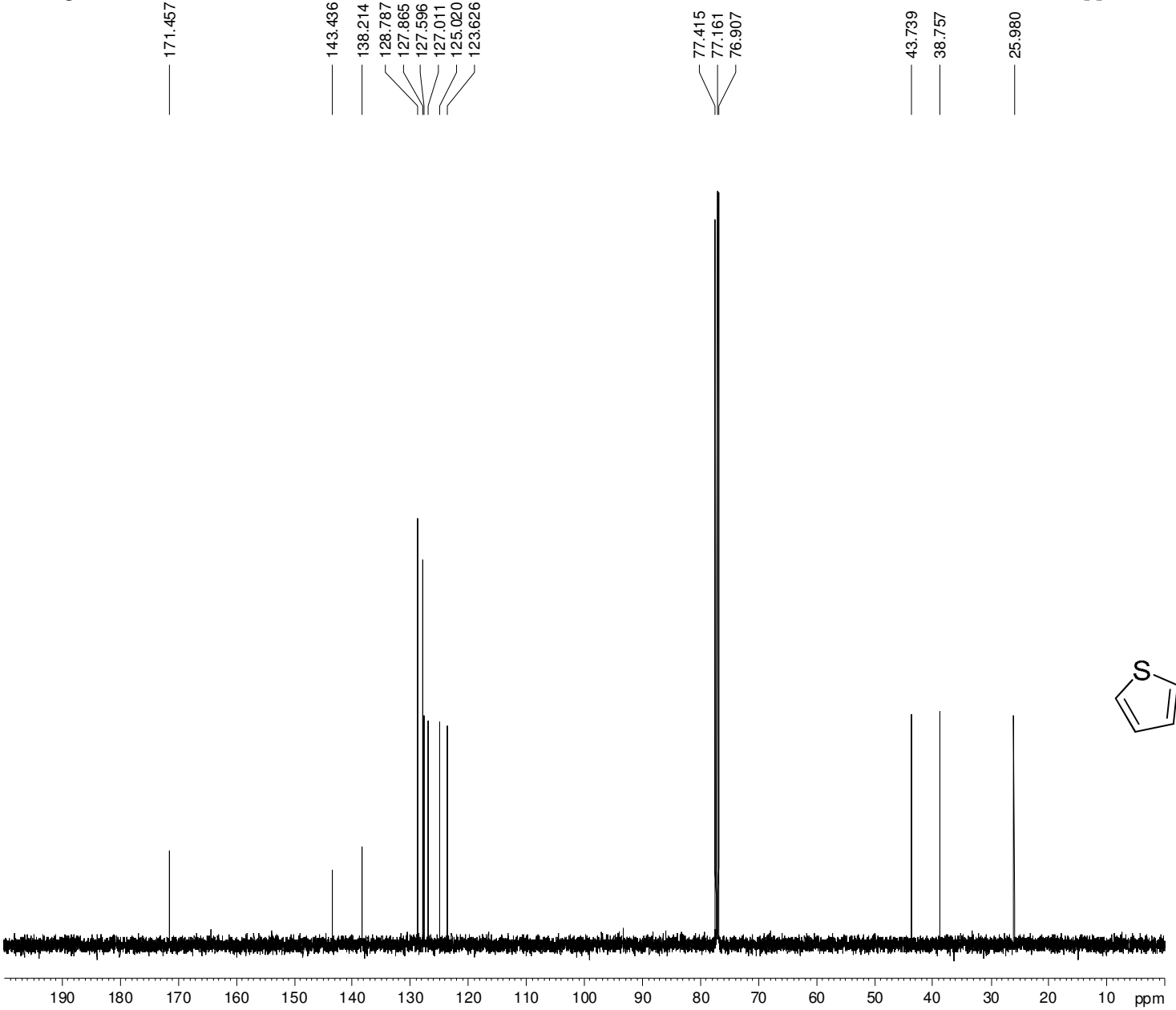

```
Current Data Parameters
NAME                      pc4p248
EXPNO                           4
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090422
Time                        18.28
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                              9
DS                              2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                            256
DW                     71.400 usec
DE                      6.50 usec
TE                      297.0 K
D1                  1.00000000 sec
TD0                             1

======== CHANNEL f1 ========
NUC1                           1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                          32768
SF                 500.3900160 MHz
WDW                            EM
SSB                             0
LB                       0.30 Hz
GB                              0
PC                           1.00
```


28



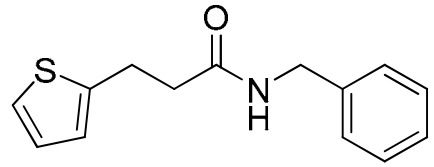

```
Current Data Parameters
NAME                      pc4p248
EXPNO                           5
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090422
Time                        18.30
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDCl3
NS                           67
DS                            4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                         1620
DW                       16.800 usec
DE                        6.50 usec
TE                       297.7 K
D1                  2.00000000 sec
d11                 0.03000000 sec
DELTA               1.89999998 sec
TD0                            1

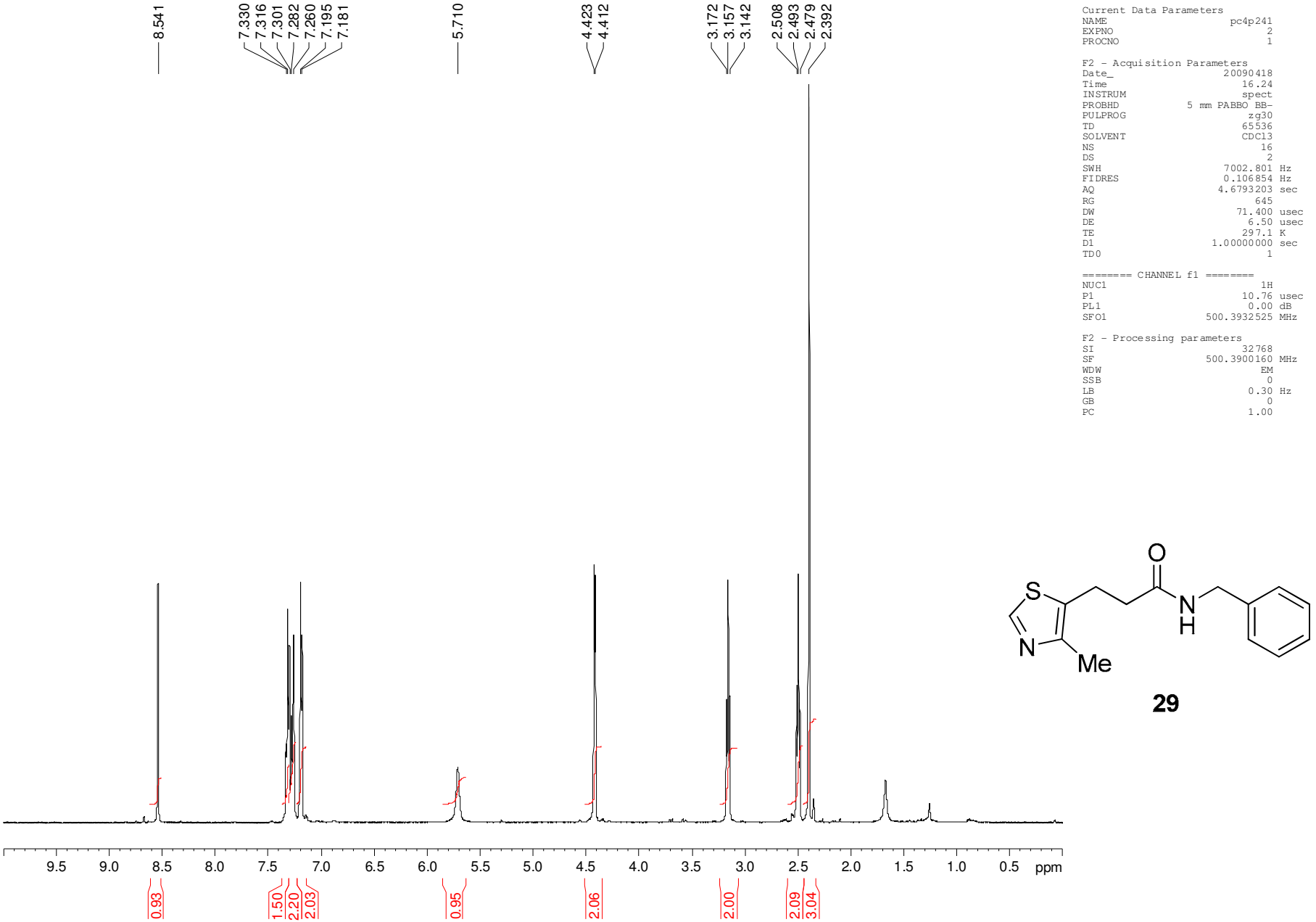
======== CHANNEL f1 ========
NUC1                         13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1               125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                    80.00 usec
PL12                      17.43 dB
PL13                      18.43 dB
PL2                        0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                 125.8231543 MHz
WDW                             EM
SSB                              0
LB                        1.00 Hz
GB                               0
PC                        1.40
```



28



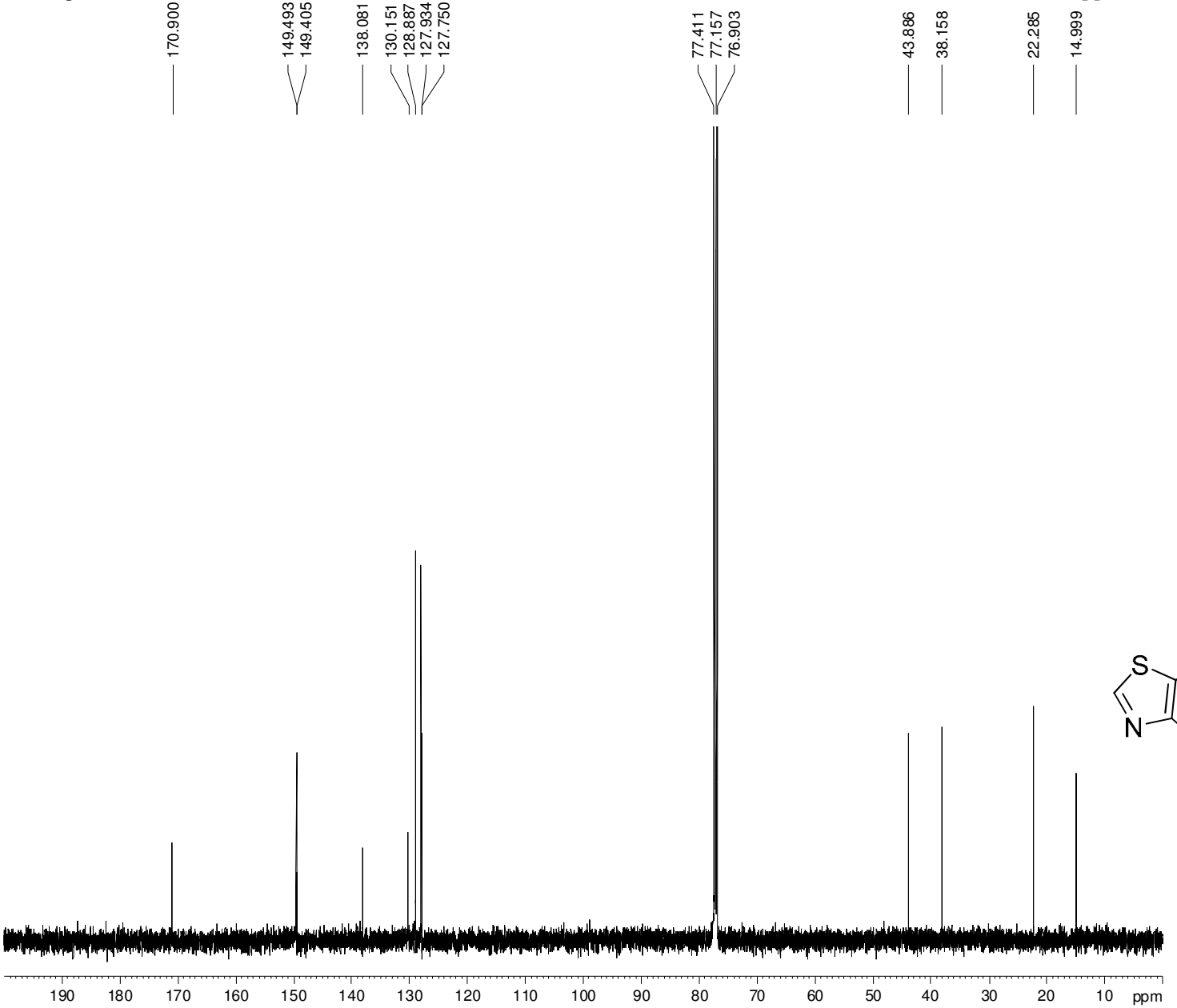

```
Current Data Parameters
NAME                       pc4p241
EXPNO                            2
PROCNO                           1

F2 - Acquisition Parameters
Date_                     20090418
Time                         16.24
INSTRUM                      spect
PROBHD          5 mm PABBO BB-
PULPROG                      zg30
TD                          65536
SOLVENT                     CDCl3
NS                             16
DS                              2
SWH                      7002.801 Hz
FIDRES                  0.106854 Hz
AQ                      4.6793203 sec
RG                            645
DW                       71.400 usec
DE                        6.50 usec
TE                        297.1 K
D1                    1.00000000 sec
TD0                             1

======== CHANNEL f1 ========
NUC1                           1H
P1                       10.76 usec
PL1                       0.00 dB
SFO1                 500.3932525 MHz

F2 - Processing parameters
SI                          32768
SF                 500.3900160 MHz
WDW                            EM
SSB                             0
LB                        0.30 Hz
GB                              0
PC                           1.00
```


29



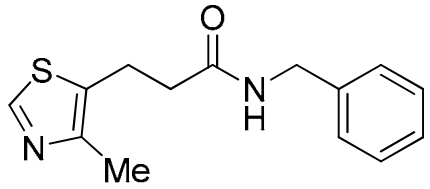

```
Current Data Parameters
NAME                      pc4p241
EXPNO                           3
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090418
Time                        16.27
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                  zgpg30
TD                        65536
SOLVENT                   CDCl3
NS                          512
DS                            4
SWH                  29761.904 Hz
FIDRES                0.454131 Hz
AQ                   1.1010548 sec
RG                         1620
DW                       16.800 usec
DE                        6.50 usec
TE                       297.9 K
D1                   2.00000000 sec
d11                  0.03000000 sec
DELTA                1.89999998 sec
TD0                            1

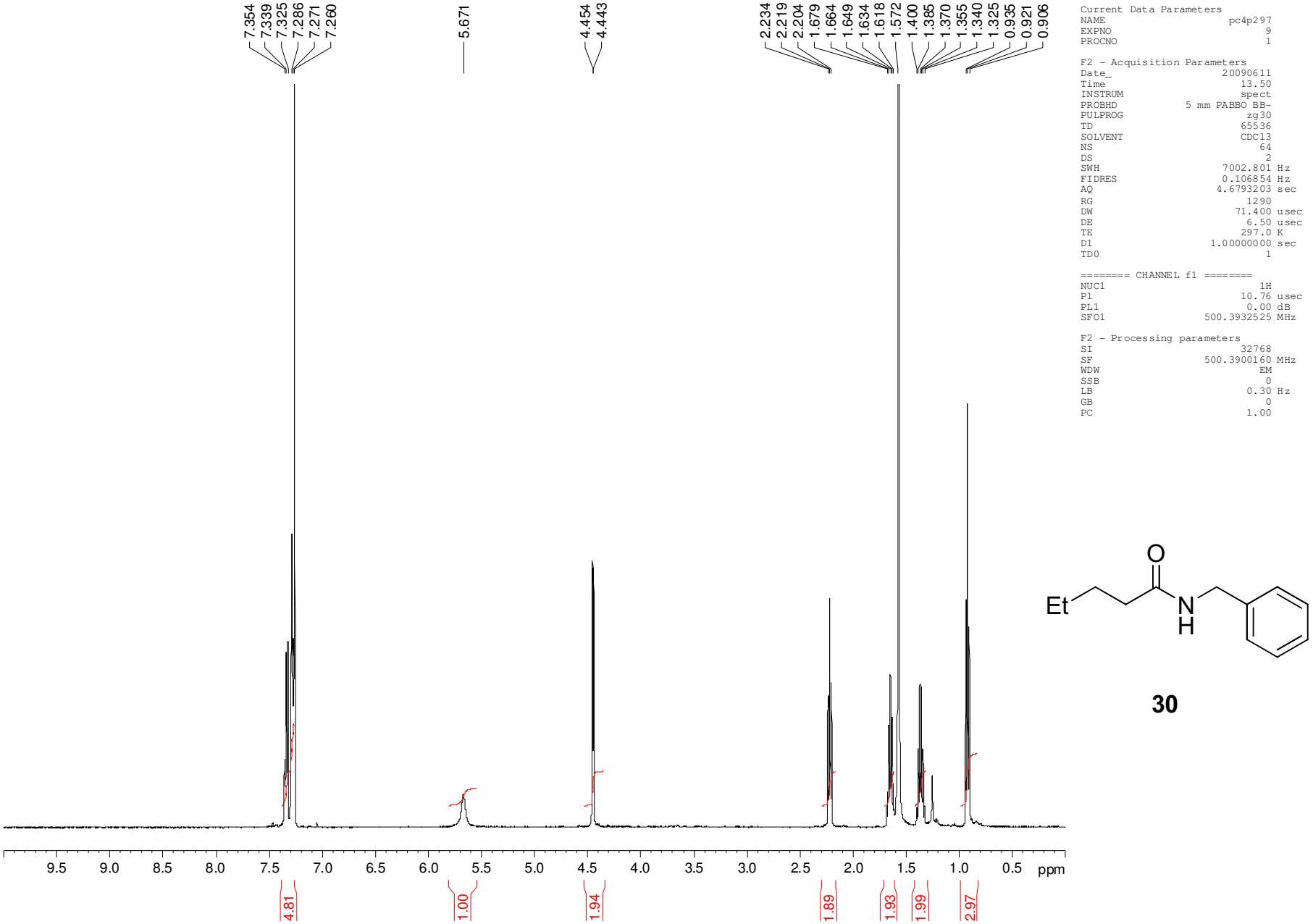
======== CHANNEL f1 ========
NUC1                         13C
P1                        7.50 usec
PL1                       1.00 dB
SFO1               125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                    80.00 usec
PL12                     17.43 dB
PL13                     18.43 dB
PL2                       0.00 dB
SFO2               500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                 125.8231506 MHz
WDW                             EM
SSB                              0
LB                        1.00 Hz
GB                               0
PC                        1.40
```



29



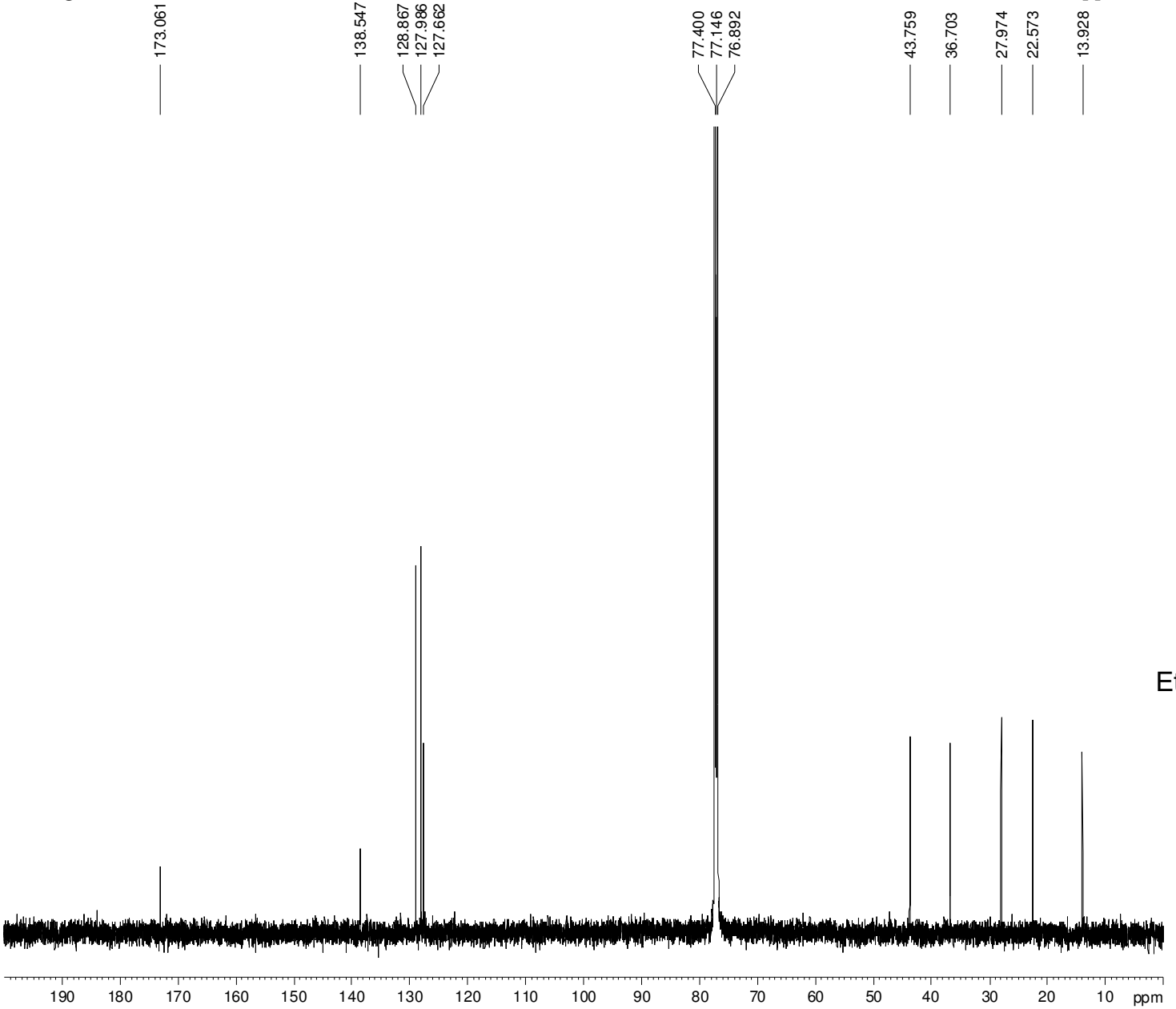

```
Current Data Parameters
NAME                      pc4p297
EXPNO                           9
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090611
Time                        13.50
INSTRUM                     spect
PROBHD          5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                            64
DS                             2
SWH                   7002.801 Hz
FIDRES                0.106854 Hz
AQ                   4.6793203 sec
RG                          1290
DW                     71.400 usec
DE                      6.50 usec
TE                      297.0 K
D1                  1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                     10.76 usec
PL1                     0.00 dB
SFO1                500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                  500.3900160 MHz
WDW                           EM
SSB                            0
LB                      0.30 Hz
GB                             0
PC                          1.00
```


30



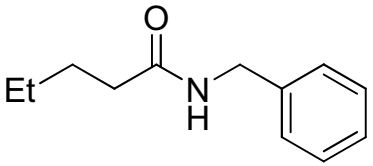

```
Current Data Parameters
NAME                         pc4p297
EXPNO                             10
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090611
Time                           21.34
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                             65536
SOLVENT                        CDCl3
NS                             12288
DS                                 4
SWH                     29761.904 Hz
FIDRES                    0.454131 Hz
AQ                      1.1010548 sec
RG                               456
DW                          16.800 usec
DE                           6.50 usec
TE                           297.7 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
TD0                                1

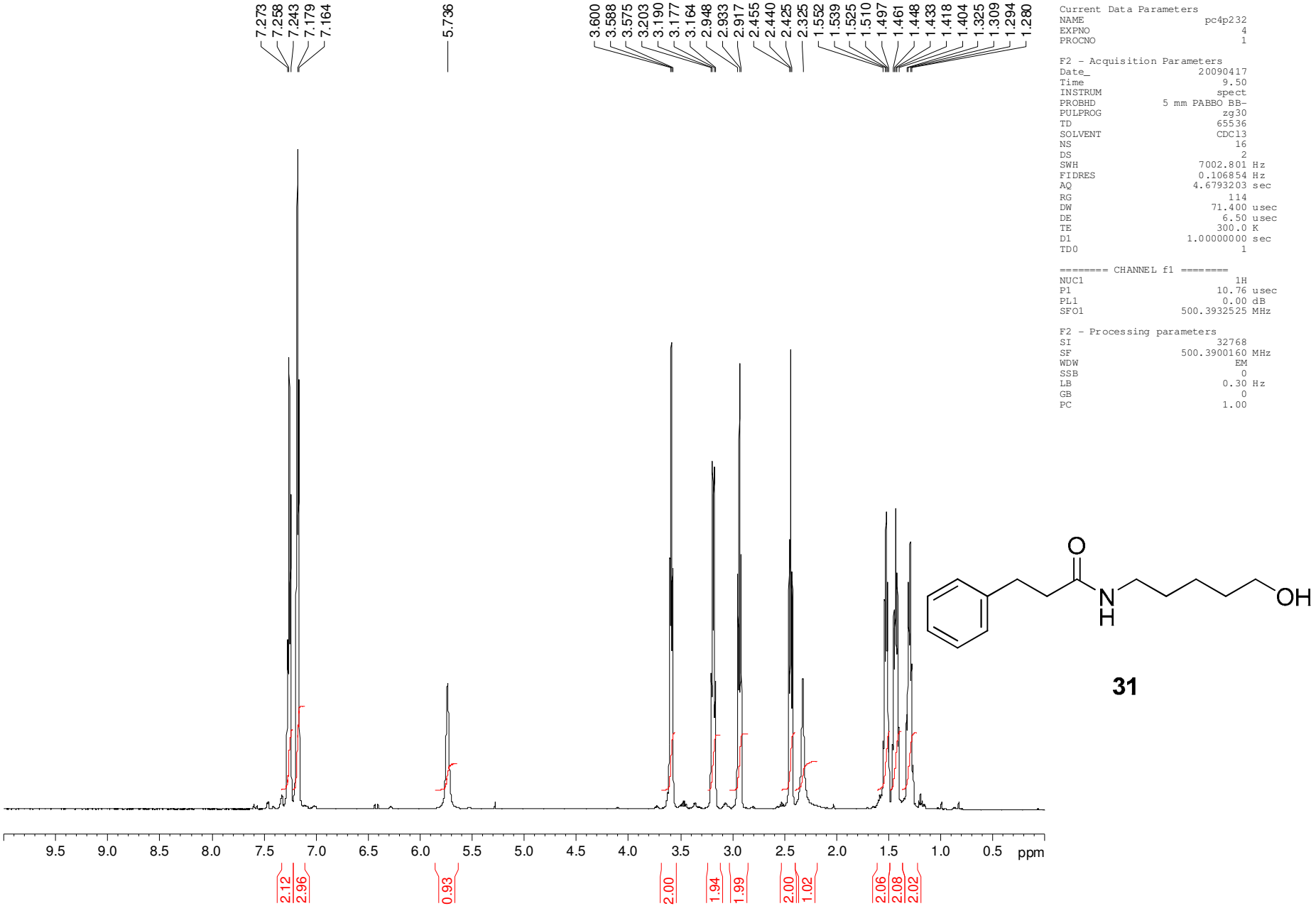
======== CHANNEL f1 ========
NUC1                            13C
P1                           7.50 usec
PL1                          1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                       80.00 usec
PL12                        17.43 dB
PL13                        18.43 dB
PL2                          0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231497 MHz
WDW                            EM
SSB                             0
LB                           1.00 Hz
GB                              0
PC                           1.40
```



30


7.273
7.258
7.243
7.179
7.164
5.736
3.600
3.588
3.575
3.203
3.190
3.177
3.164
2.948
2.933
2.917
2.455
2.440
2.425
2.325
1.552
1.539
1.525
1.510
1.497
1.461
1.448
1.433
1.418
1.404
1.325
1.309
1.294
1.280
Current Data Parameters
NAME pc4p232
EXPNO 4
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090417
Time 9.50
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 114
DW 71.400 usec
DE 6.50 usec
TE 300.0 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900160 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
N
H
OH
31
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
ppm
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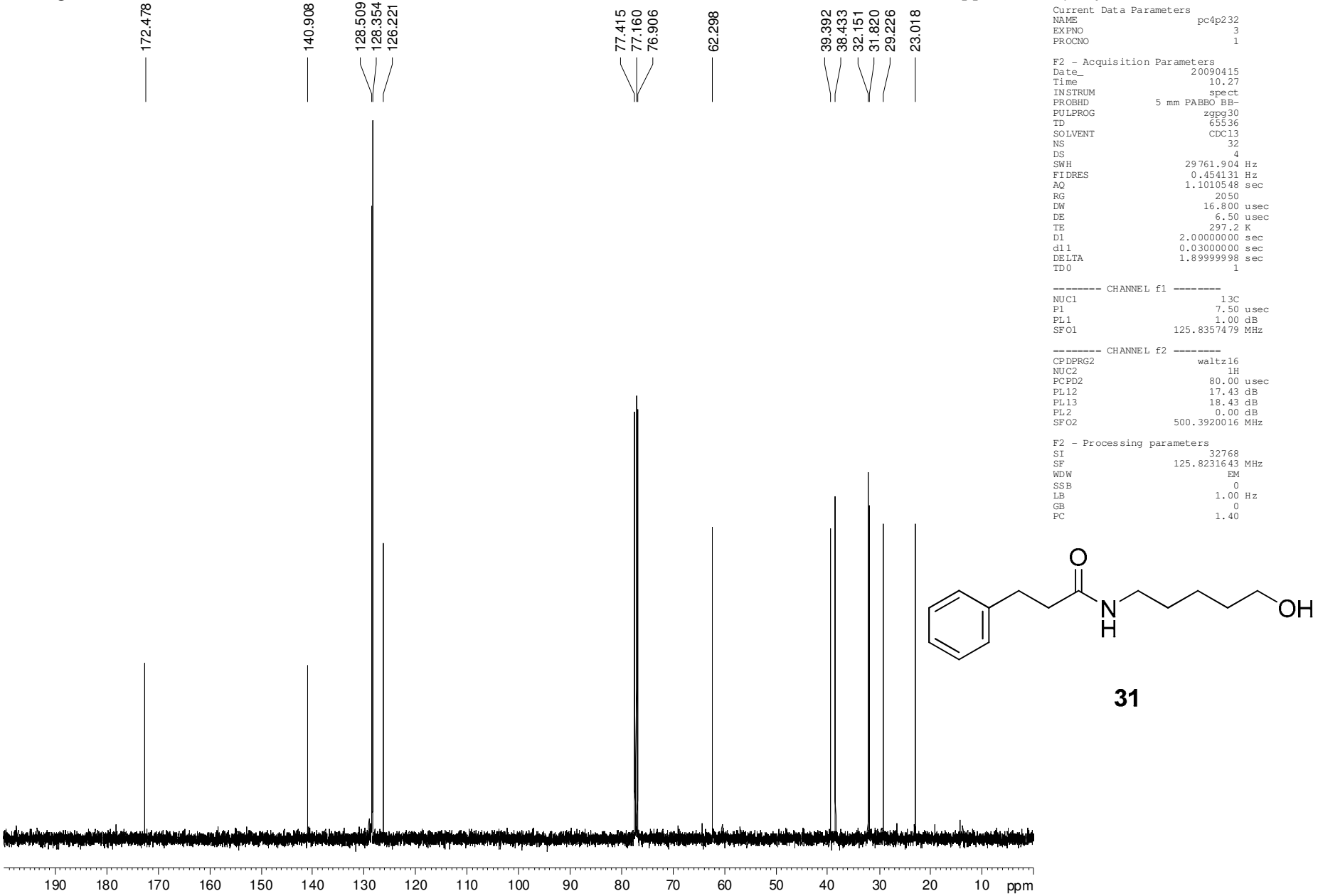
0.93
2.00
1.94
1.99
2.00
1.02
2.06
2.08
2.02




```
Current Data Parameters
NAME                         pc4p232
EXPNO                              3
PROCNO                             1

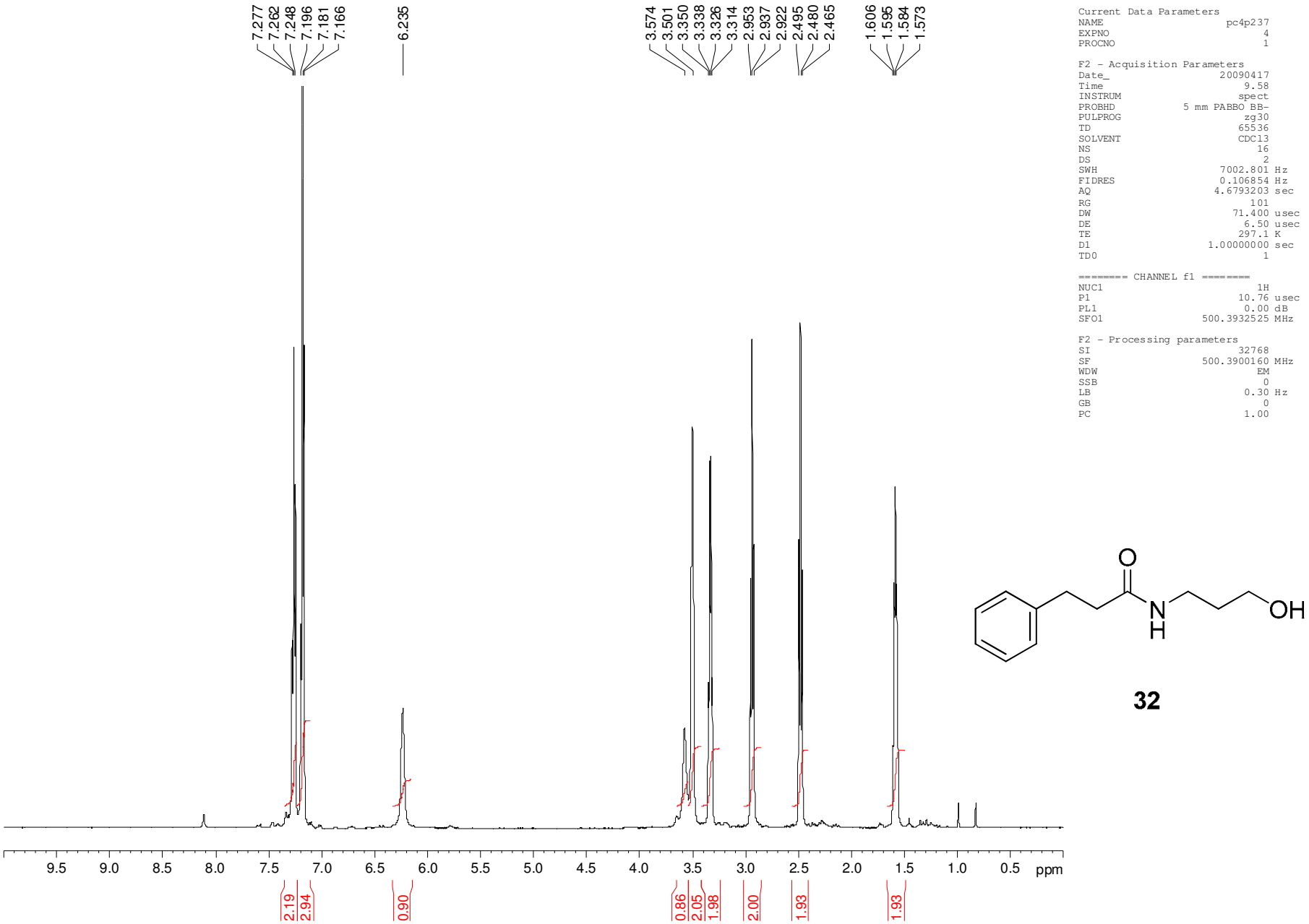
F2 - Acquisition Parameters
Date_                       20090415
Time                           10.27
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                             65536
SOLVENT                        CDCl3
NS                                32
DS                                 4
SWH                     29761.904 Hz
FIDRES                   0.454131 Hz
AQ                      1.1010548 sec
RG                              2050
DW                        16.800 usec
DE                         6.50 usec
TE                            297.2 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                            13C
P1                         7.50 usec
PL1                         1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                      80.00 usec
PL12                       17.43 dB
PL13                       18.43 dB
PL2                         0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8231643 MHz
WDW                            EM
SSB                             0
LB                          1.00 Hz
GB                              0
PC                          1.40
```


31



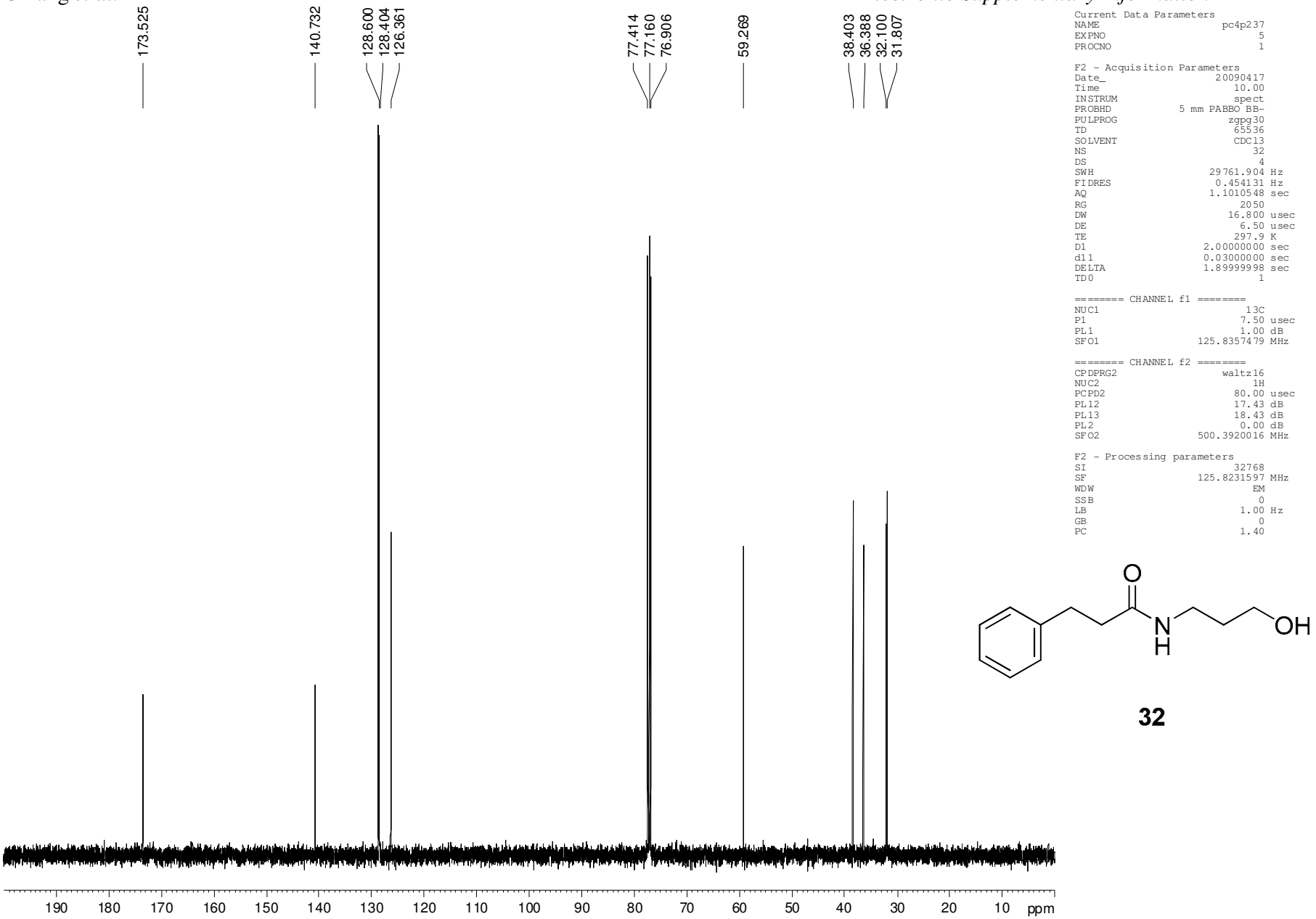

```
Current Data Parameters
NAME                         pc4p237
EXPNO                              4
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090417
Time                            9.58
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                        zg30
TD                            65536
SOLVENT                       CDC13
NS                               16
DS                                2
SWH                        7002.801 Hz
FIDRES                     0.106854 Hz
AQ                        4.6793203 sec
RG                              101
DW                         71.400 usec
DE                          6.50 usec
TE                          297.1 K
D1                      1.00000000 sec
TD0                               1

======== CHANNEL f1 ========
NUC1                             1H
P1                         10.76 usec
PL1                         0.00 dB
SFO1                  500.3932525 MHz

F2 - Processing parameters
SI                            32768
SF                  500.3900160 MHz
WDW                              EM
SSB                               0
LB                          0.30 Hz
GB                                0
PC                             1.00
```


32




```
Current Data Parameters
NAME                      pc4p237
EXPNO                           5
PROCNO                          1

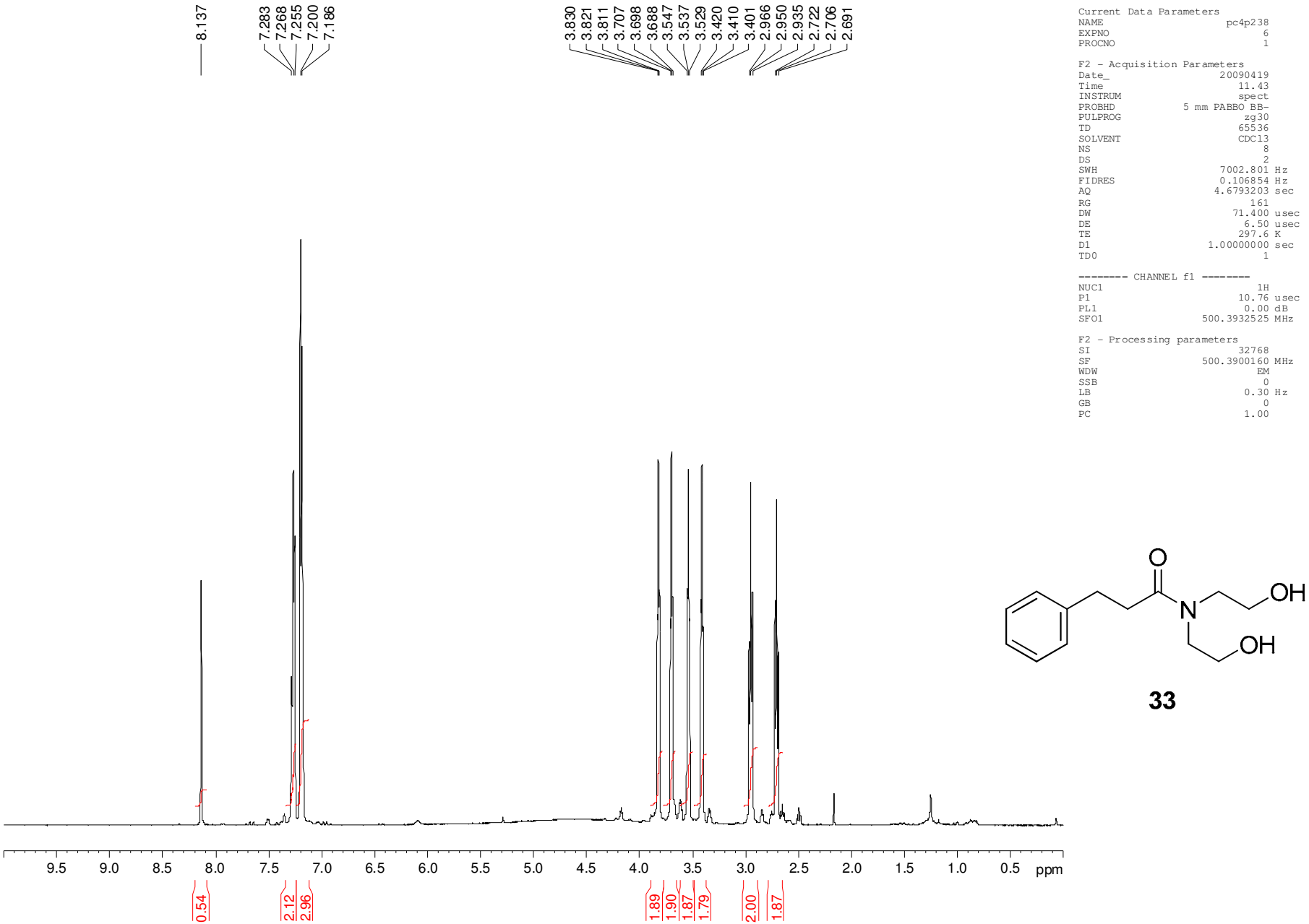
F2 - Acquisition Parameters
Date_                    20090417
Time                        10.00
INSTRUM                      spect
PROBHD          5 mm PABBO BB-
PULPROG                   zgpg30
TD                         65536
SOLVENT                    CDCl3
NS                            32
DS                             4
SWH                    29761.904 Hz
FIDRES                 0.454131 Hz
AQ                     1.1010548 sec
RG                          2050
DW                        16.800 usec
DE                         6.50 usec
TE                        297.9 K
D1                    2.00000000 sec
d11                   0.03000000 sec
DELTA                 1.89999998 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                         13C
P1                         7.50 usec
PL1                        1.00 dB
SFO1                 125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                  waltz16
NUC2                         1H
PCPD2                     80.00 usec
PL12                      17.43 dB
PL13                      18.43 dB
PL2                        0.00 dB
SFO2                 500.3920016 MHz

F2 - Processing parameters
SI                           32768
SF                   125.8231597 MHz
WDW                             EM
SSB                             0
LB                         1.00 Hz
GB                              0
PC                         1.40
```


32



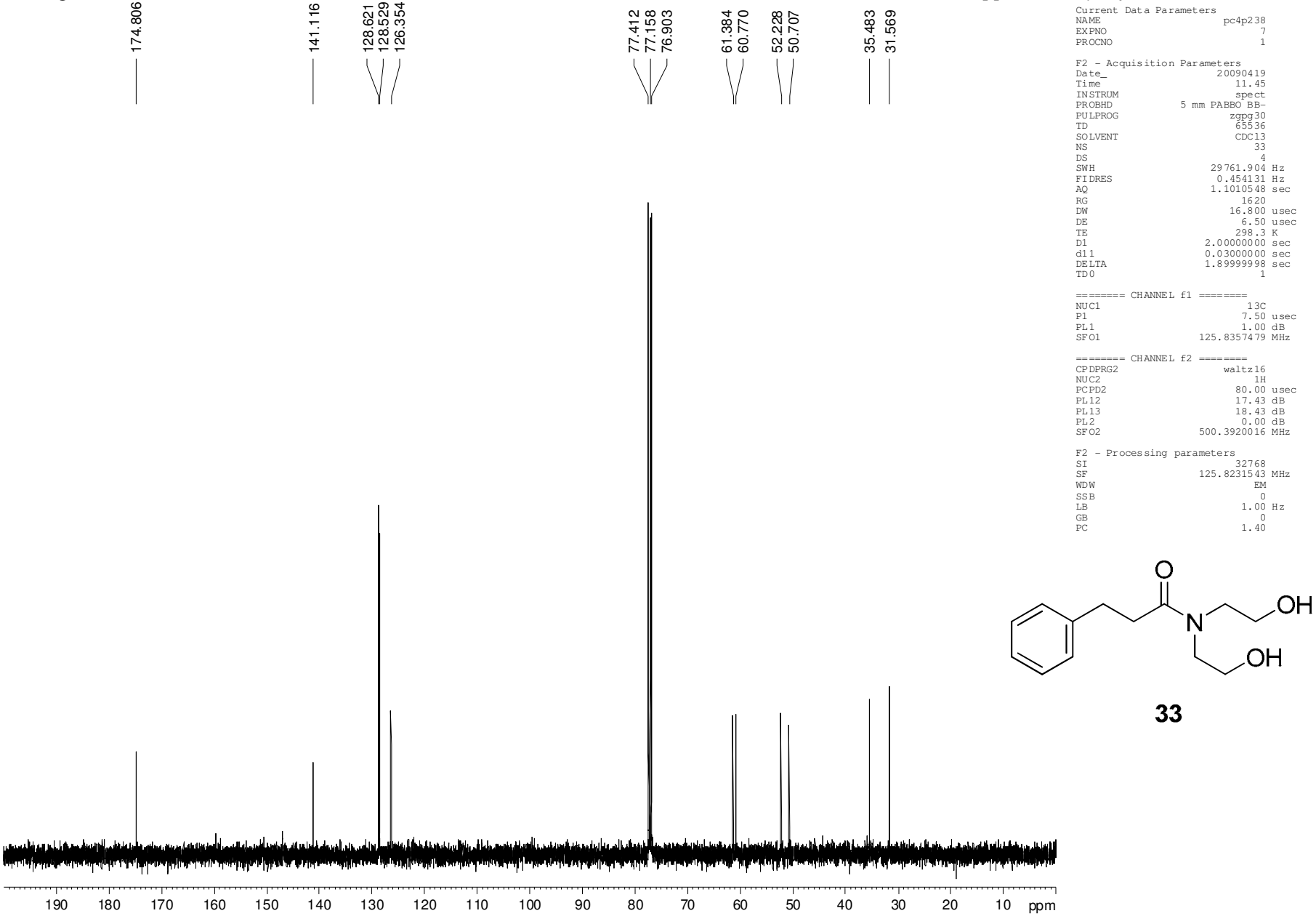

```
Current Data Parameters
NAME                      pc4p238
EXPNO                           6
PROCNO                          1

F2 - Acquisition Parameters
Date_                    20090419
Time                        11.43
INSTRUM                     spect
PROBHD       5 mm PABBO BB-
PULPROG                     zg30
TD                         65536
SOLVENT                    CDC13
NS                             8
DS                             2
SWH                   7002.801 Hz
FIDRES               0.106854 Hz
AQ                  4.6793203 sec
RG                           161
DW                    71.400 usec
DE                     6.50 usec
TE                     297.6 K
D1                 1.00000000 sec
TD0                            1

======== CHANNEL f1 ========
NUC1                          1H
P1                    10.76 usec
PL1                    0.00 dB
SFO1              500.3932525 MHz

F2 - Processing parameters
SI                         32768
SF                500.3900160 MHz
WDW                           EM
SSB                            0
LB                     0.30 Hz
GB                             0
PC                          1.00
```


33




```
Current Data Parameters
NAME                         pc4p238
EXPNO                              7
PROCNO                             1

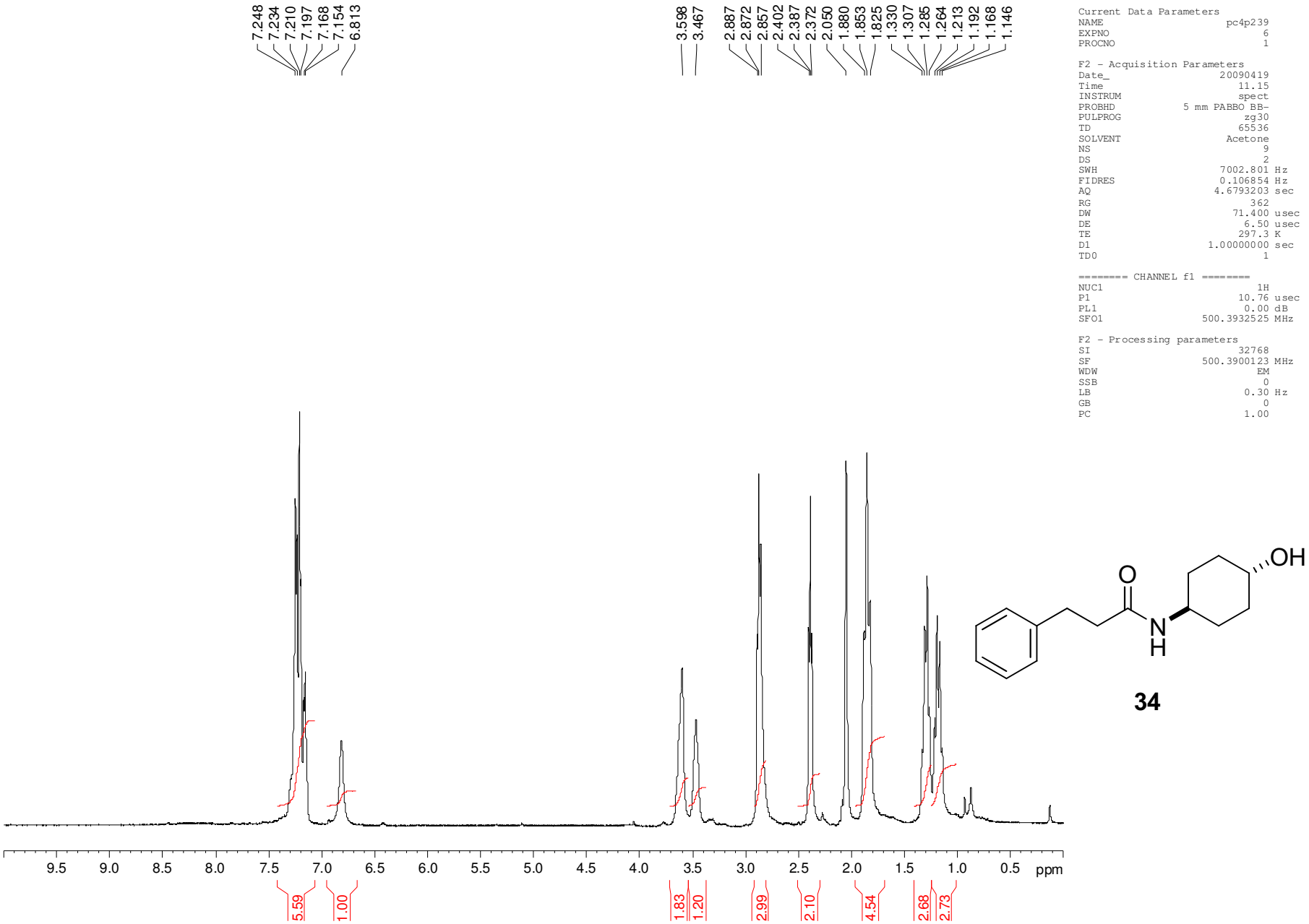
F2 - Acquisition Parameters
Date_                       20090419
Time                           11.45
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                             65536
SOLVENT                        CDCl3
NS                                33
DS                                 4
SWH                       29761.904 Hz
FIDRES                     0.454131 Hz
AQ                        1.1010548 sec
RG                              1620
DW                            16.800 usec
DE                             6.50 usec
TE                            298.3 K
D1                        2.00000000 sec
d11                       0.03000000 sec
DELTA                     1.89999998 sec
TD0                                1

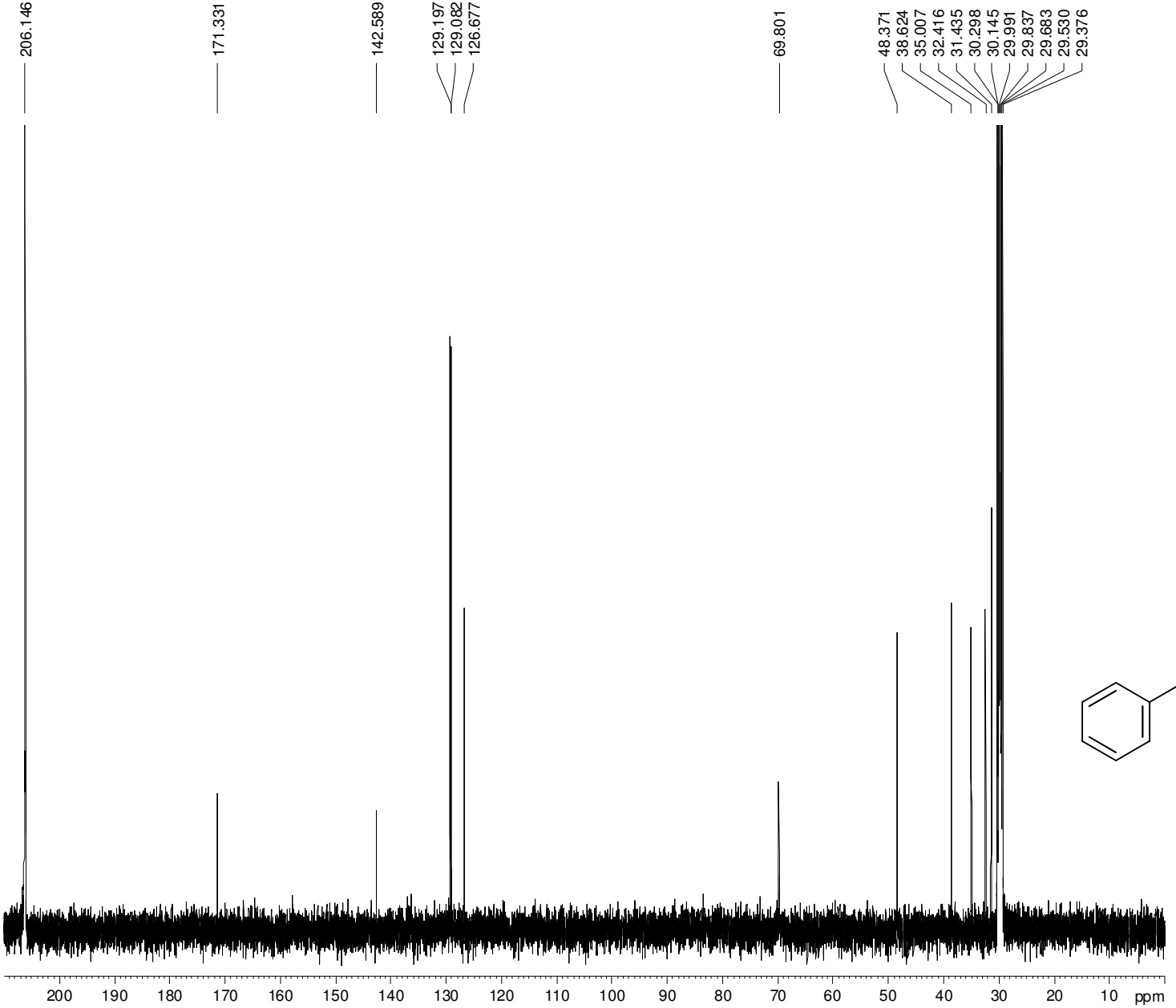
======== CHANNEL f1 ========
NUC1                             13C
P1                             7.50 usec
PL1                            1.00 dB
SFO1                   125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                             1H
PCPD2                         80.00 usec
PL12                          17.43 dB
PL13                          18.43 dB
PL2                            0.00 dB
SFO2                   500.3920016 MHz

F2 - Processing parameters
SI                             32768
SF                   125.8231543 MHz
WDW                               EM
SSB                                0
LB                             1.00 Hz
GB                                 0
PC                             1.40
```


33


7.248
7.234
7.210
7.197
7.168
7.154
6.813
3.598
3.467
2.887
2.872
2.857
2.402
2.387
2.372
2.050
1.880
1.853
1.825
1.330
1.307
1.285
1.264
1.213
1.192
1.168
1.146
Current Data Parameters
NAME pc4p239
EXPNO 6
PROCNO 1
F2 - Acquisition Parameters
Date_ 20090419
Time 11.15
INSTRUM spect
PROBHD 5 mm PABBO BB-
PULPROG zg30
TD 65536
SOLVENT Acetone
NS 9
DS 2
SWH 7002.801 Hz
FIDRES 0.106854 Hz
AQ 4.6793203 sec
RG 362
DW 71.400 usec
DE 6.50 usec
TE 297.3 K
D1 1.00000000 sec
TD0 1
======== CHANNEL f1 ========
NUC1 1H
P1 10.76 usec
PL1 0.00 dB
SFO1 500.3932525 MHz
F2 - Processing parameters
SI 32768
SF 500.3900123 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00
O
N
H
OH
34
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 ppm
5.59
1.00
1.83
1.20
2.99
2.10
4.54
2.68
2.73



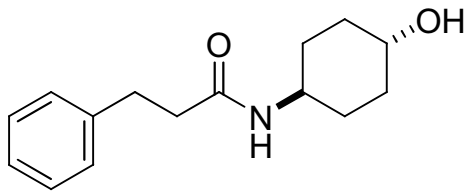

```
Current Data Parameters
NAME                         pc4p239
EXPNO                              7
PROCNO                             1

F2 - Acquisition Parameters
Date_                       20090419
Time                           11.17
INSTRUM                        spect
PROBHD          5 mm PABBO BB-
PULPROG                     zgpg30
TD                              65536
SOLVENT                      Acetone
NS                                297
DS                                  4
SWH                     29761.904 Hz
FIDRES                   0.454131 Hz
AQ                      1.1010548 sec
RG                              1440
DW                        16.800 usec
DE                         6.50 usec
TE                         298.0 K
D1                     2.00000000 sec
d11                    0.03000000 sec
DELTA                  1.89999998 sec
TD0                                1

======== CHANNEL f1 ========
NUC1                            13C
P1                         7.50 usec
PL1                         1.00 dB
SFO1                  125.8357479 MHz

======== CHANNEL f2 ========
CPDPRG2                     waltz16
NUC2                            1H
PCPD2                      80.00 usec
PL12                       17.43 dB
PL13                       18.43 dB
PL2                         0.00 dB
SFO2                  500.3920016 MHz

F2 - Processing parameters
SI                              32768
SF                    125.8230547 MHz
WDW                            EM
SSB                                0
LB                          1.00 Hz
GB                                 0
PC                                 1.40
```



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