Supporting Information for:

Detection of Amines and Unprotected Amino Acids in Aqueous Conditions by Formation of Highly Fluorescent Iminium Ions

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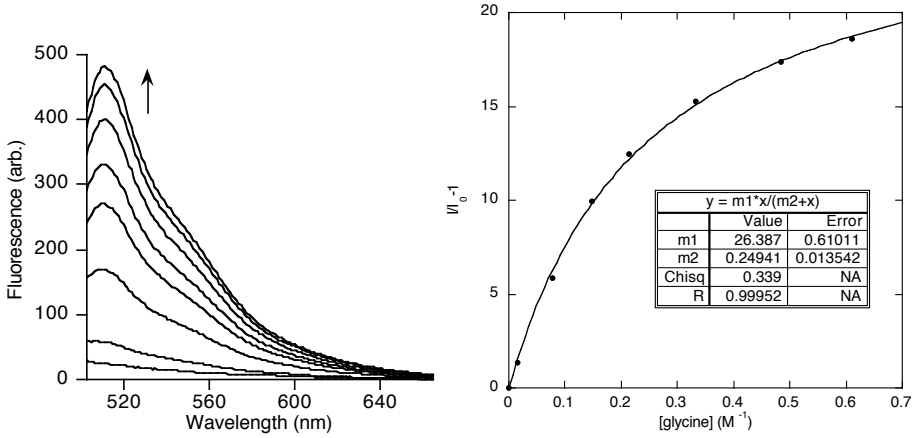
Titration methods

For UV/Vis and fluorescence assays, a 10^{-5} M solution of the sensor was prepared in buffer solution (100 mM NaCl, 50 mM HEPES, adjusted to pH=7.4). This solution was placed in a cuvette (1 ml for UV/Vis and 2.5 ml for fluorescence) and the temperature adjusted to 37°C. The sample was then titrated with a solution of amino acid (1 M in 100 mM NaCl, 50 mM HEPES, adjusted to pH=7.4 with 10^{-5} M sensor to prevent dilution). The change in absorbance or fluorescence was fit to a typical equilibrium model (see below)[1] to derive an equilibrium constant (K_{eq}=1/m2). The maximum change in fluorescence was calculated from the theoretical fit at complete saturation (I_{max}/I_0=m1+1).



NMR titrations were performed in D_2O with no buffer or NaCl. For compound **3**, 10 mg of aldehyde was dissolved in D_2O (1 ml) with a small amount of $NaHCO_3$. To this sample was added 100 mg of d_5-glycine. The subsequent NMR consisted of the aldehyde and imine only. The ratio of aldehyde and imine signals along with the known concentration of glycine were used to calculate a K_{eq} = 0.47 M^{-1}. For compound **4**, 4 mg of aldehyde was dissolved in D_2O (1 ml) with a small amount of DCl such that the pD = 7.0. To this sample was added 100 mg of d_5-glycine. The subsequent NMR consisted of the aldehyde and imine only. The ratio of aldehyde and imine signals along with the known concentration of glycine were used to calculate a K_{eq} = 0.29 M^{-1}.

Synthetic Procedures

Compound 1b:

A suspension of CuI (0.3 g, 1.8 mmol) and Et_2O (15 mL) was cooled to 0°C and n-BuLi (1.7 mL, 3.4 mmol, 2 M in pentane) was slowly added. After 20 min, the resultant blue solution was cooled to –78°C and THF (15 mL) was added. 4-Chloro-7-diethylamino-3-formylcoumarin[2] (0.5 g, 1.8 mmol) in THF (8 mL) was added dropwise over 10 min. The reaction was stirred at –78°C for 10 min and then quenched with saturated NH_4Cl. The aqueous layer was extracted with CH_2Cl_2 (3 x 50 mL). The organic layer was then dried over $MgSO_4$ and the solvent was removed *in vacuo*. Flash chromatography (EtOAc/Hex, 20:80) gave compound **1b** as an orange solid (0.4 g, 78% yield), M.P. 69-72°C.

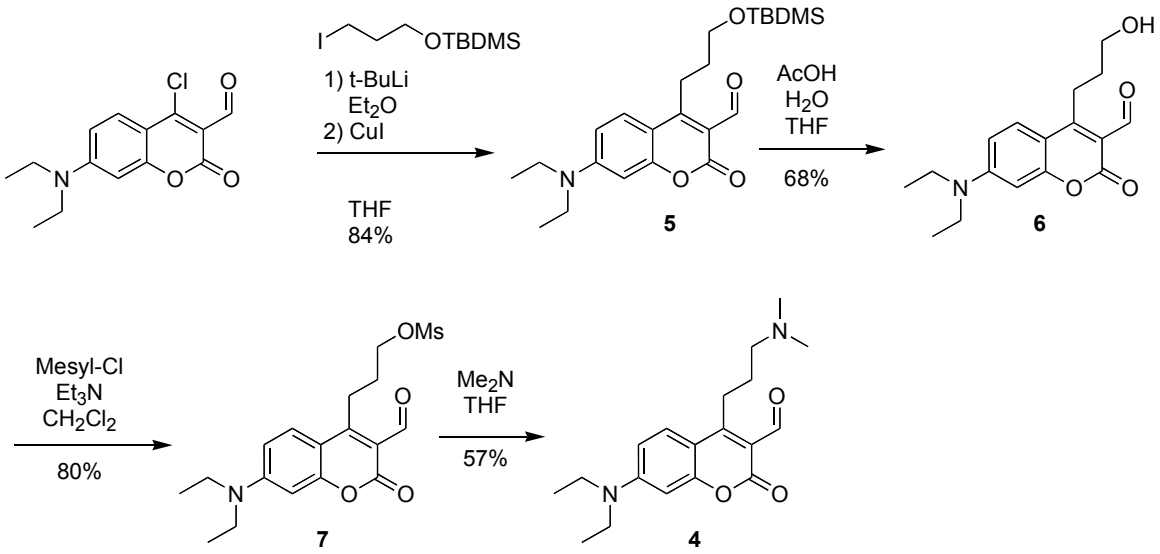
^{1}H NMR (400 MHz, $CDCl_3$); □ 0.99 (t, *J* = 7.0 Hz, 3H), 1.24 (t, *J* = 7.1 Hz, 6H), 1.49-1.60 (m, 4H), 3.26 (t, *J* = 7.9 Hz, 2H), 3.46 (q, *J* = 7.1 Hz, 4H), 6.48 (d, *J* = 2.6 Hz, 1H), 6.65 (dd, *J* = 2.6, 9.3 Hz, 1H), 7.62 (d, *J* = 9.3 Hz, 1H), 10.37 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$); □ 12.5, 13.8, 23.3, 27.5, 32.6, 45.0, 97.3, 108.5, 109.8, 111.7, 128.5, 152.5, 157.5, 163.2, 164.1, 164.2, 190.8.

FTIR (neat) 1708, 1672, 1608, 1555, 1502, 1443, 1349, 1267, 1202, 1149, 1114 cm^{-1}.

HRMS Calculated for $C_{18}H_{24}NO_3$ ($M + H^+$): 302.1756. Found: 302.1751.

Compound 4:



(*tert*-Butyl-dimethylsilyl)-3-iodo-propanol[3] (0.4 g, 1.4 mmol) and Et_2O (15 mL) were cooled to –78°C and *tert*-BuLi (1.8 mL, 3.0 mmol, 1.6 M in pentane) was slowly added. The mixture was stirred at –78°C for 5 min then warmed to ambient temperature and stirred 1 h. After cooling to 0°C, CuI (0.14 g, 0.7 mmol) was added and stirred 10 min. The reaction was cooled to –78°C and THF was added (8 mL). 4-Chloro-7-diethylamino-3-formylcoumarin (0.2 g, 1.4 mmol) in THF (6 mL) was added dropwise over 10 mins. The reaction was stirred 0.5 h at –78°C and then quenched with saturated NH_4Cl. The aqueous layer was extracted with CH_2Cl_2 (3 x 50 mL). The organic layer was then dried over $MgSO_4$ and the solvent was removed *in vacuo*. Flash chromatography (EtOAc/Hex, 20:80) gave compound **5** as an orange solid (0.2 g, 73% yield), M.P. 98-100°C.

^{1}H NMR (360 MHz, $CDCl_3$) □ 0.10 (s, 6H), 0.95 (s, 9H), 1.25 (t, *J* = 6.9 Hz, 6H), 1.79-1.84 (m, 2H), 3.31-3.36 (m, 2H), 3.46 (q, *J* = 7.1 Hz, 4H), 3.77 (t, *J* = 5.9 Hz, 2H), 6.45 (d, *J* = 2.6 Hz, 1H), 6.61 (dd, *J* = 2.6, 9.3 Hz, 1H), 7.75 (d, *J* = 9.3 Hz, 1H), 10.34 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) □ -5.3, 12.5, 18.3, 24.5, 25.9, 33.2, 45.0, 62.7, 97.2, 108.6, 109.8, 111.8, 129.0, 152.6, 157.5, 163.1, 164.0, 190.8.

FTIR (neat) 2928, 1788, 1678, 1615, 1561, 1510, 1458, 1355, 1269, 1204, 1148, 1098 cm^{-1}.

HRMS Calculated for $C_{23}H_{36}NO_4Si$ ($M + H^+$): 418.2414. Found: 418.2408.

Compound **5** (0.2 g, 0.5 mmol) was dissolved in a solution of AcOH: H_2O: THF (3:1:1) and stirred at ambient temperature for 4 h. The reaction was carefully poured over saturated $NaHCO_3$ and the aqueous layer was extracted with CH_2Cl_2 (3 x 15 mL). The organic layer was dried over $MgSO_4$ and the solvent was removed *in vacuo*. The resulting residue was purified via flash chromatography (EtOAc/Hex, 50:50) and compound **6** was isolated as an orange solid (0.9 g, 62% yield), M.P. 122-125°C.

^{1}H NMR (300 MHz, $CDCl_3$) □ 1.25 (t, *J* = 7.1 Hz, 6H), 1.85-1.94 (m, 2H), 3.37 (t, *J* = 7.6 Hz, 2H), 3.46 (q, *J* = 7.1 Hz, 4H), 3.74 (t, *J* = 5.6 Hz, 2H), 6.45 (d, *J* = 2.4 Hz, 1H), 6.66 (dd, *J* = 2.4, 9.3 Hz, 1H), 7.69 (d, *J* = 9.3 Hz, 1H), 10.34 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) □ 12.4, 24.0, 33.1, 45.1, 61.6, 97.2, 108.4, 110.0, 111.9, 128.8, 152.8, 157.6, 163.0, 163.4, 191.6.

FTIR (neat) 3396, 2913, 1706, 1670, 1610, 1552, 1503, 1453, 1347, 1267, 1150, 1069 cm^{-1}.

HRMS Calculated for $C_{17}H_{22}NO_4$ ($M + H^+$): 304.1549. Found: 304.1543.

A solution of compound **6** (70 mg, 0.2 mmol), Et_3N (40 μL, 0.3 mmol), and CH_2Cl_2 (3 mL) was stirred at 0°C. Methanesulfonyl chloride (20 μL, 0.3 mmol) was added and the reaction was stirred at 0°C for 10 mins. The solvent was removed *in vacuo* and the resulting residue was purified using flash chromatography (EtOAc/Hex, 30:70) and compound **7** was isolated as a yellow solid (73 mg, 83% yield), M.P. 126-128°C.

^{1}H NMR (300 MHz, $CDCl_3$) δ 1.23 (t, *J* = 7.1 Hz, 6H), 2.01-2.10 (m, 2H), 3.08 (s, 3H), 3.30-3.39 (m, 2H), 3.46 (q, *J* = 7.1 Hz, 4H), 4.42 (t, *J* = 5.9Hz, 2H), 6.50 (sd, *J* = 2.6 Hz, 1H), 6.68 (dd, *J* = 2.6, 9.3 Hz, 1H), 7.65 (d, *J* = 9.4 Hz, 1H), 10.34 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 12.9, 24.6, 30.1, 37.9, 45.6, 70.5, 97.8, 108.7, 110.7, 112.1, 129.0, 153.4, 158.1, 162.0, 163.4, 191.4.

FTIR (neat) 2975, 1712, 1673, 1613, 1556, 1506, 1454, 1352, 1172 cm^{-1}.

HRMS Calculated for $C_{18}H_{24}NO_6S$ ($M + H^+$): 382.1324. Found: 382.1319.

In a 15 mL sealed tube, compound **7** (61 mg, 0.2 mmol) and Me_2NH (5 mL, 2 M in THF) were capped and stirred at ambient temperature for 20 h. The solvent was removed *in vacuo*. The resulting residue was purified using flash chromatography (EtOAc/Et_3N, 90:10) and compound **4** was isolated as an orange solid (32 mg, 57% yield), M.P. 119-121°C.

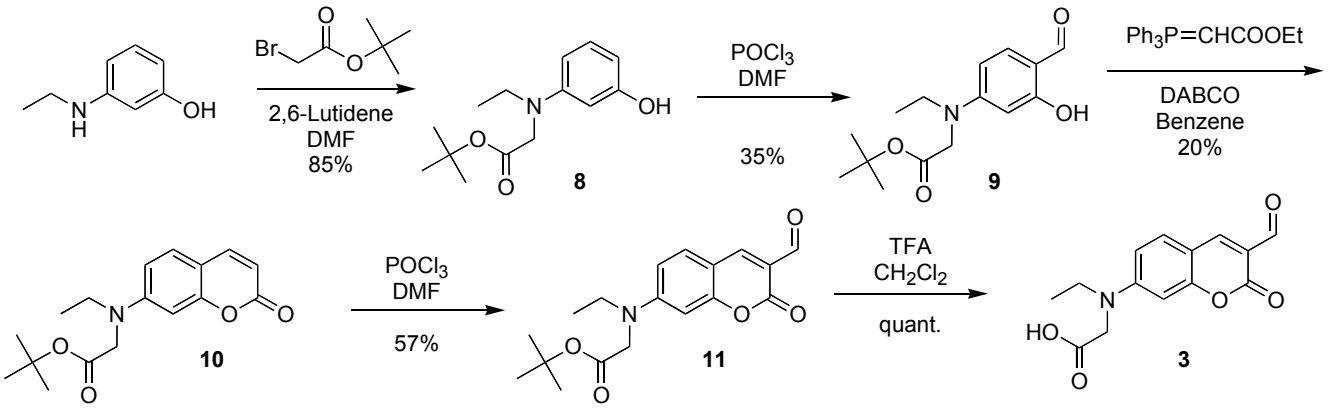
^{1}H NMR (300 MHz, $CDCl_3$) δ 1.25 (t, *J* = 7.1 Hz, 6H), 1.73 (m, 2H), 2.27 (s, 6H), 2.46 (t, *J* = 7.1 Hz, 2H), 3.29 (m, 2H), 3.46 (q, *J* = 7.1 Hz, 4H), 6.45 (d, *J* = 2.6 Hz, 1H), 6.64 (dd, *J* = 2.6, 9.3 Hz, 1H), 7.70 (d, *J* = 9.3 Hz, 1H), 10.36 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) δ 12.5, 25.7, 28.2, 45.0, 45.4, 59.4, 97.2, 108.6, 109.8, 111.7, 128.7, 152.6, 157.5, 163.1, 163.8, 190.8.

FTIR (neat) 2972, 1716, 1674, 1615, 1558, 1506, 1456, 1354, 1142, 1075 cm^{-1}.

HRMS Calculated for $C_{19}H_{27}N_2O_3$ ($M + H^+$): 331.2022. Found: 331.2016.

Compound 3:



A solution of 3-(ethylamino)phenol (1.0 g, 5.6 mmol), 2,6-lutidene (5 mL), *tert*-butyl bromoacetate (1.0 mL, 6.4 mmol), and DMF (40 mL) was stirred at ambient temperature for 20 h. The solvent was removed *in vacuo* and the resulting residue was purified using flash chromatography (CH_2Cl_2/Et_2O, 95:5). Compound **8** was isolated as a brown oil (0.7 g, 50% yield).

^{1}H NMR (300 MHz, $CDCl_3$) □ 1.15 (t, *J* = 7.1 Hz, 3H), 1.43 (s, 9H), 3.39 (q, *J* = 7.1 Hz, 2H) 3.87 (s, 2H), 6.04 (s, 1H), 6.12-6.18 (m, 3H), 7.00 (t, *J* = 8.0 Hz, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) □ 12.4, 28.0, 46.1, 53.2, 81.8, 99.2, 103.9, 104.4, 129.9, 149.3, 156.8, 171.2.

FTIR (neat) 3403, 1725, 1620, 1582, 1504, 1369, 1219, 1156, 1127 cm^{-1}.

HRMS Calculated for $C_{14}H_{22}NO_3$ ($M + H^+$): 252.1600. Found: 252.1594.

A solution of DMF (0.5 mL, 6.8 mmol) and phosphorous oxychloride (0.3 mL, 2.7 mmol) were stirred at ambient temperature for 2 h. Compound **8** (0.7 g, 2.7 mmol) in DMF (15 ml) was added via cannula. The reaction was stirred at ambient temperature for 20 h. The mixture was slowly poured over ice, and the aqueous layer was extracted with CH_2Cl_2 (3 x 50 mL). The organic layer was dried over $MgSO_4$ and the solvent was removed *in vacuo*. The resulting residue was purified by flash chromatography (EtOAc/Hex, 20:80) and compound **9** was isolated as a white solid (0.6 g, 73% yield), M.P. 77-79°C.

^{1}H NMR (360 MHz, $CDCl_3$) □ 1.30 (t, *J* = 7.2 Hz, 3H), 1.46 (s, 9H), 3.49 (q, *J* = 7.2 Hz, 2H), 3.97 (s, 2H), 6.05 (d, *J* = 2.3 Hz, 1H), 6.21 (dd, *J* = 2.3, 8.8 Hz, 1H), 7.28 (d, *J* = 8.8 Hz, 1H), 9.53 (s, 1H), 11.55 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) □ 12.2, 27.8, 46.6, 52.8, 82.1, 97.3, 104.4, 112.0, 135.2, 154.5, 164.0, 168.6, 192.4.

FTIR (neat) 2978, 1741, 1635, 1561, 1523, 1340, 1233, 1152 cm^{-1}.

HRMS Calculated for $C_{15}H_{22}NO_4$ ($M + H^+$): 280.1549. Found: 280.1543.

A solution of compound **9** (0.5 g, 1.9 mmol), DABCO (0.4 g, 3.7 mmol), (carbethoxymethylene)-triphenylphosphorane (0.8 g, 2.2 mmol) and benzene (20 mL) was heated to a vigorous reflux for 20 h. The solution was cooled to ambient temperature and poured into 1% HCl (30 mL). The aqueous layer was extracted with CH_2Cl_2 (3 x 20 mL). The organic layer was dried over $MgSO_4$ and the solvent was removed *in vacuo*. The resulting residue was purified by flash chromatography (EtOAc/Hex, 15:85) and compound **10** was isolated as an amorphous white solid (120 mg, 20% yield).

^{1}H NMR (300 MHz, CD_2Cl_2) □ 1.22 (t, *J* = 7.2 Hz, 3H), 1.45 (s, 9H), 3.50 (q, *J* = 7.2 Hz, 2H), 3.98 (s, 2H), 6.00 (d, *J* = 9.4 Hz, 1H), 6.44 (d, *J* = 2.4 Hz, 1H), 6.53 (dd, *J* = 2.5, 8.8 Hz, 1H), 7.28 (d, *J* = 8.8 Hz, 1H), 7.55 (d, *J* = 9.4 Hz, 1H).

^{13}C NMR (75 MHz, CD_2Cl_2) □ 12.4, 28.1, 47.1, 53.3, 82.3, 98.3, 109.1, 109.5, 110.4, 129.1, 143.9, 151.4, 156.8, 161.9, 169.4.

FTIR (neat) 1732, 1615, 1520, 1415, 1224, 1154, 1121 cm^{-1}.

HRMS Calculated for $C_{17}H_{22}NO_4$ ($M + H^+$): 304.1549. Found: 304.1543.

A solution of DMF (0.2 mL, 2.6 mmol) and phosphorous oxychloride (0.1 mL, 1.1 mmol) were stirred at ambient temperature for 2 h. Compound **10** (65 mg, 0.2 mmol) in DMF (2 ml) was added via cannula. The reaction was stirred at ambient temperature for 20 h. The mixture was slowly poured over ice, and the aqueous layer was extracted with CH_2Cl_2 (3 x 20 mL). The organic layer was dried over $MgSO_4$ and the solvent was removed *in vacuo*. The resulting residue was purified via flash chromatography (EtOAc/Hex, 10:90) and compound **11** was isolated as a yellow solid (40 mg, 57% yield), M.P. 124-126°C.

^{1}H NMR (300 MHz, $CDCl_3$) □ 1.29 (t, *J* = 7.2 Hz, 3H), 1.48 (s, 9H), 3.56 (q, *J* = 7.2 Hz, 2H), 4.04 (s, 2H), 6.45 (d, *J* = 2.4 Hz, 1H), 6.61 (dd, *J* = 2.4, 9.0 Hz, 1H), 7.45 (d, *J* = 9.0 Hz, 1H), 8.27 (s, 1H), 10.13 (s, 1H).

^{13}C NMR (75 MHz, $CDCl_3$) □ 12.1, 27.9, 47.2, 53.1, 82.8, 97.7, 108.9, 110.2, 115.2, 132.3, 145.5, 153.8, 158.5, 161.5, 168.1, 187.8.

FTIR (neat) 2977, 1720, 1683, 1618, 1576, 1510, 1393, 1349, 1155, 1123 cm^{-1}.

HRMS Calculated for $C_{18}H_{22}NO_5$ ($M + H^+$): 332.1498. Found: 332. 1492.

Compound **11** (11.3 mg, 0.03 mmol), trifluoroacetic acid (1 mL), and CH_2Cl_2 (1 mL) were stirred at ambient temperature for 1.5 h. The solvent was removed *in vacuo* to afford compound **3**, a yellow solid (8.3 mg, 100% yield), M.P. 180°C (decomp.).

^{1}H NMR (300 MHz,D_2O with NaOD) 0.99 (t, *J* = 7.1 Hz, 3H), 3.22 (q, *J* = 7.0 Hz, 2H), 5.66 (d, *J* = 2.5 Hz, 1H), 5.91 (dd, *J* = 2.4, 9.2 Hz, 1H), 7.34 (d, *J* = 9.2 Hz, 1H), 7.51 (s, 1H), 8.78 (s br, 1H).

^{13}C NMR (75 MHz, d_6-DMSO) 12.0, 46.3, 51.6, 97.0, 108.2, 110.6, 114.1, 132.8, 146.4, 154.1, 158.0, 160.5, 170.8, 187.3.

FTIR (neat) 2925, 1717, 1682, 1616, 1575, 1510, 1394, 1348, 1186 cm^{-1}.

HRMS Calculated for $C_{14}H_{13}NO_5$ ($M + H^+$): 276.0870. Found: 276.0873.

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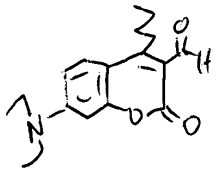
1. Connors, K. A. *Binding Constants*; John Wiley; New York, 1987.
2. (a) Kirpichenok, M. A.; Baukulev, V. M.; Karandashova, L. A.; Grandberg, I. I. *Chem. Heterocycl. Compd*. **1991**, *27*, 1193-1199. (b) Knierzinger, A.; Wolfbeis, O. S. *J. Heterocyclic Chem.* **1980**, *17*, 225-229.
3. Nicolaou, K. C.; Papahatjis, D. P.; Claremon, D. A.; Dolle, R. E., III *J. Am. Chem. Soc.* **1981**, *103*, 6967-6969.

EKF V 129
butyl aldehyde carbon



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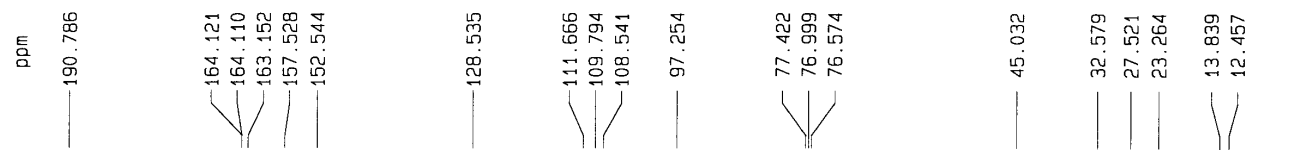

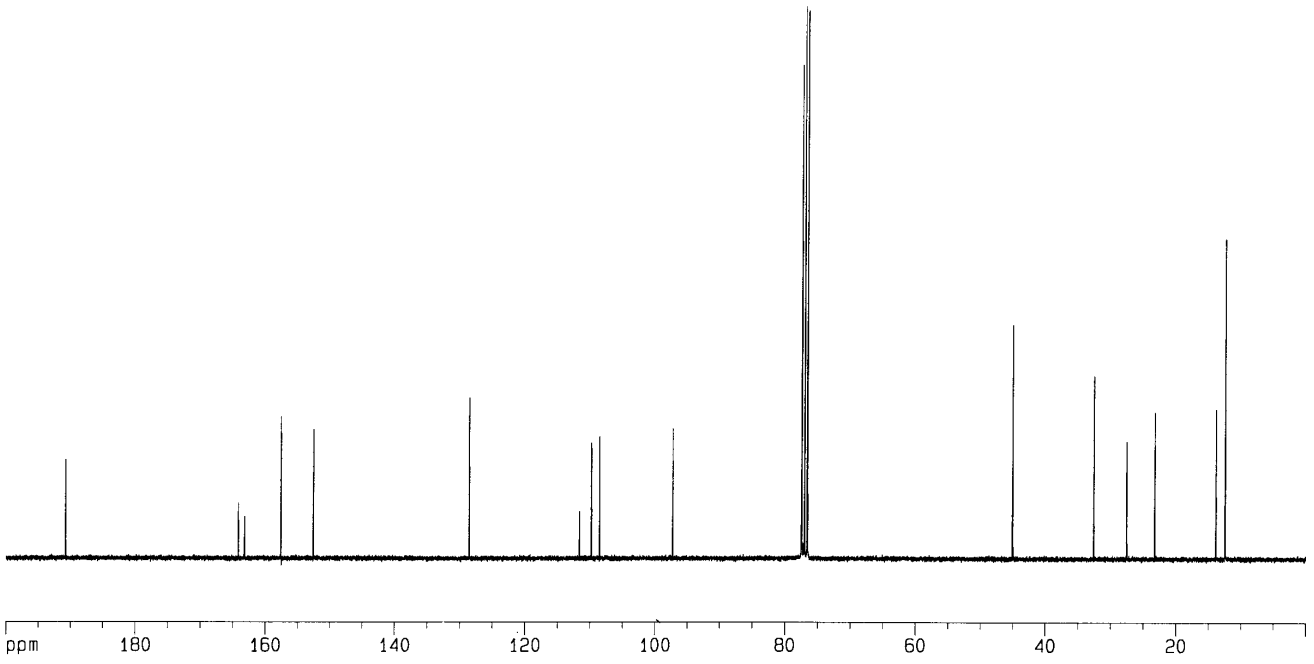

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F2 - Processing parameters

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1D NMR plot parameters

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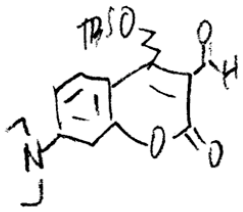
EKF V OTBS
for characterization



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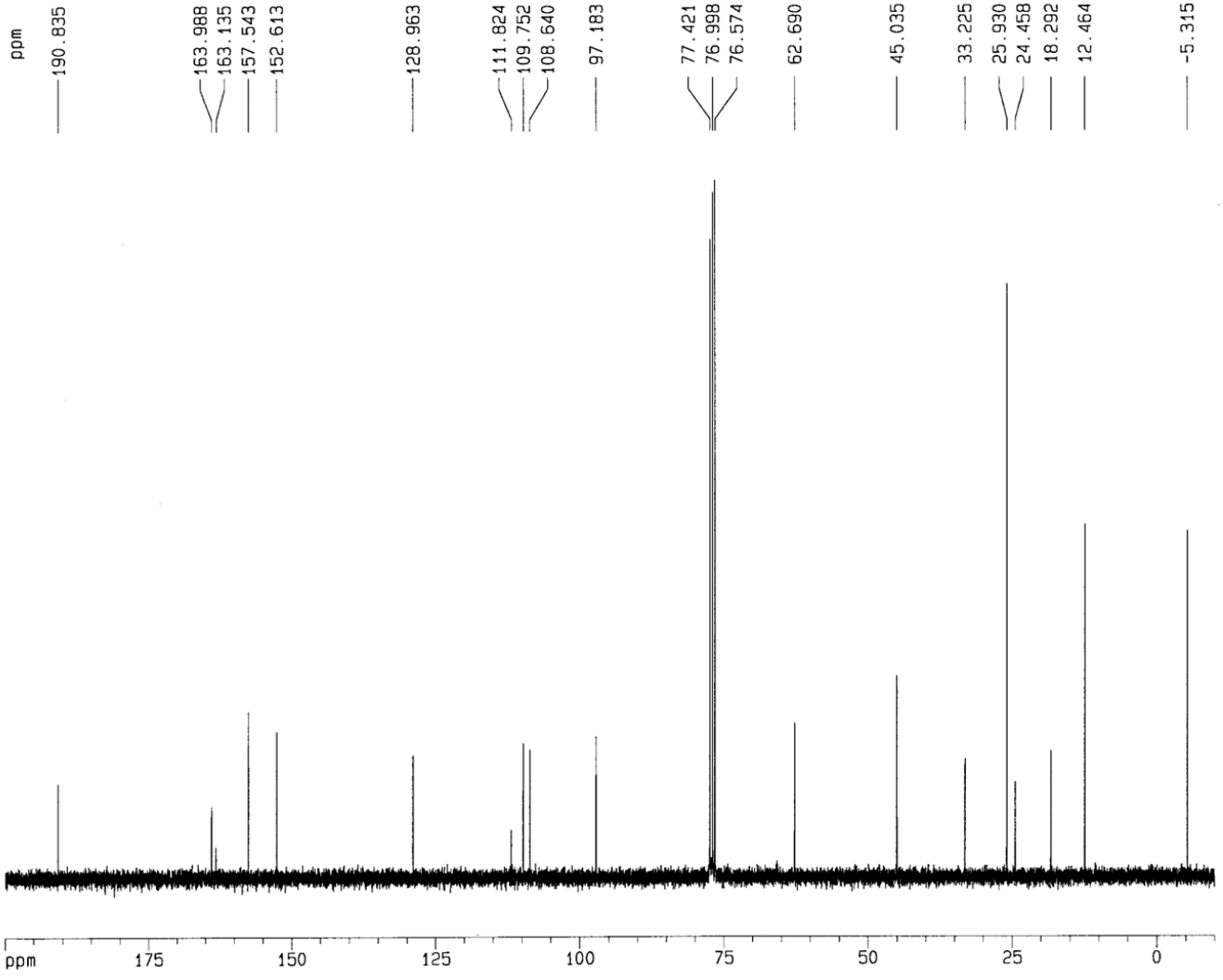


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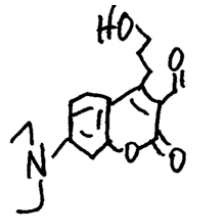

6

EKF V alcohol
for characterization

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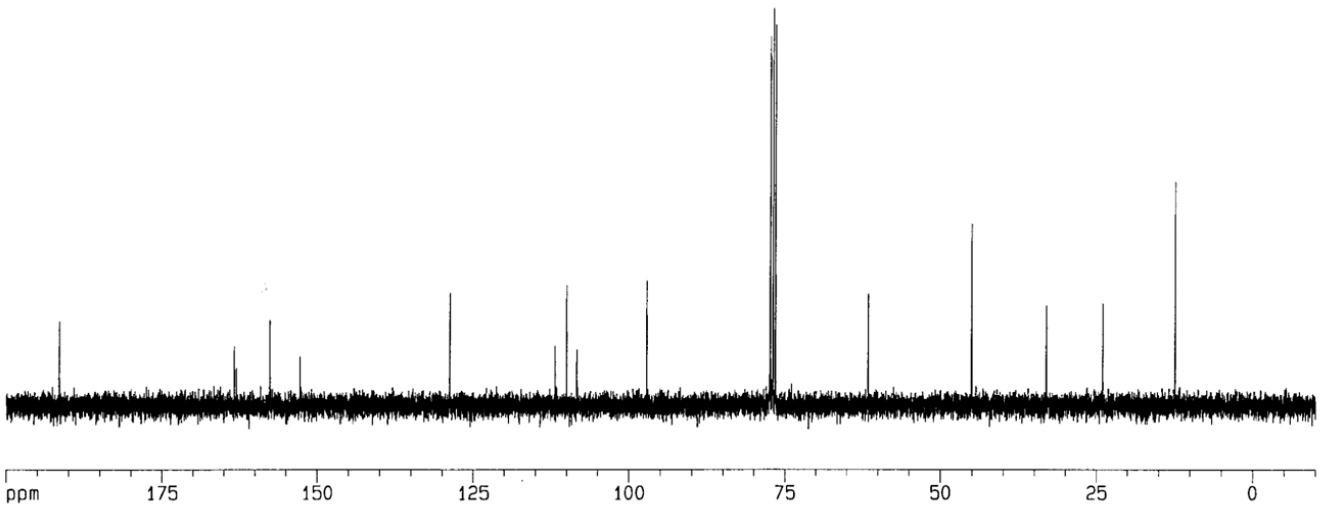

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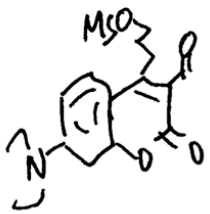
PCPD2 115.00 usec
PL2 0.00 dB
PL12 20.00 dB
PL13 20.00 dB
SFO2 299.8711995 MHz

F2 - Processing parameters
SI 32768
SF 75.4023763 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.40

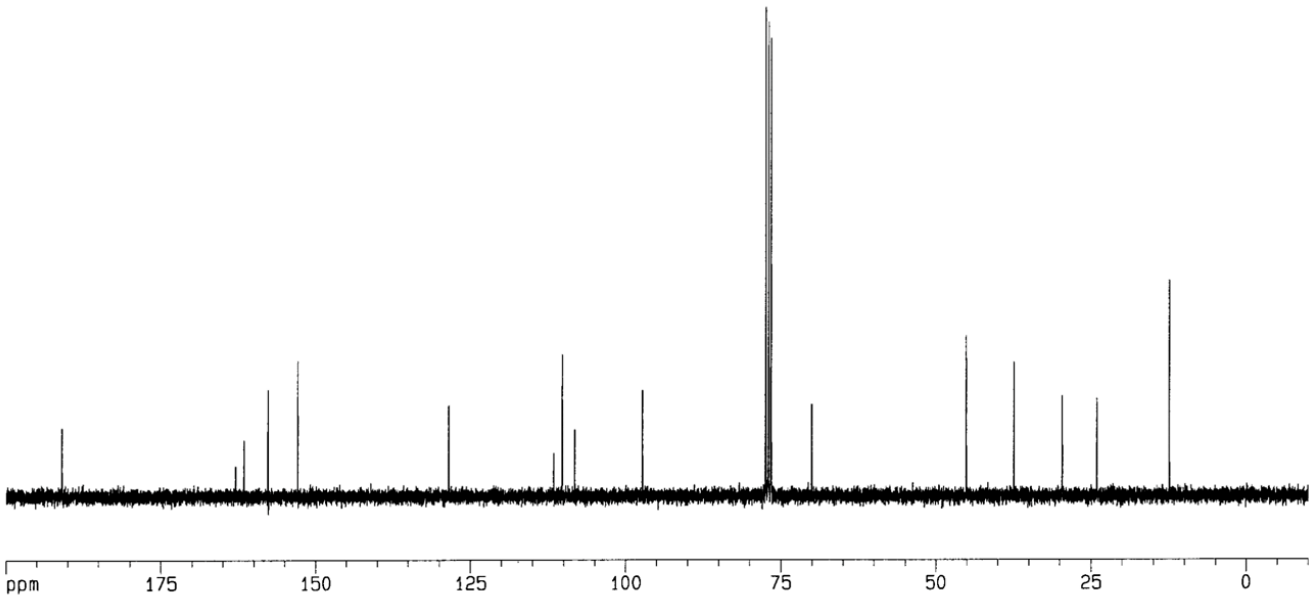
1D NMR plot parameters
CX 20.00 cm
F1P 200.000 ppm
F1 15080.47 Hz
F2P -10.000 ppm
F2 -754.02 Hz
PPMCM 10.50000 ppm/cm
HZCM 791.72491 Hz/cm



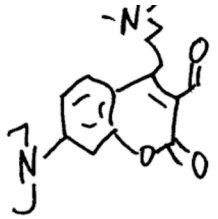
7

EKF V mesylate
for characterization

ppm 190.971 162.923 161.573 157.673 152.902 128.501 111.628 110.269 108.222 97.306 77.426 77.002 76.579 70.071 45.122 37.440 29.634 24.096 12.454



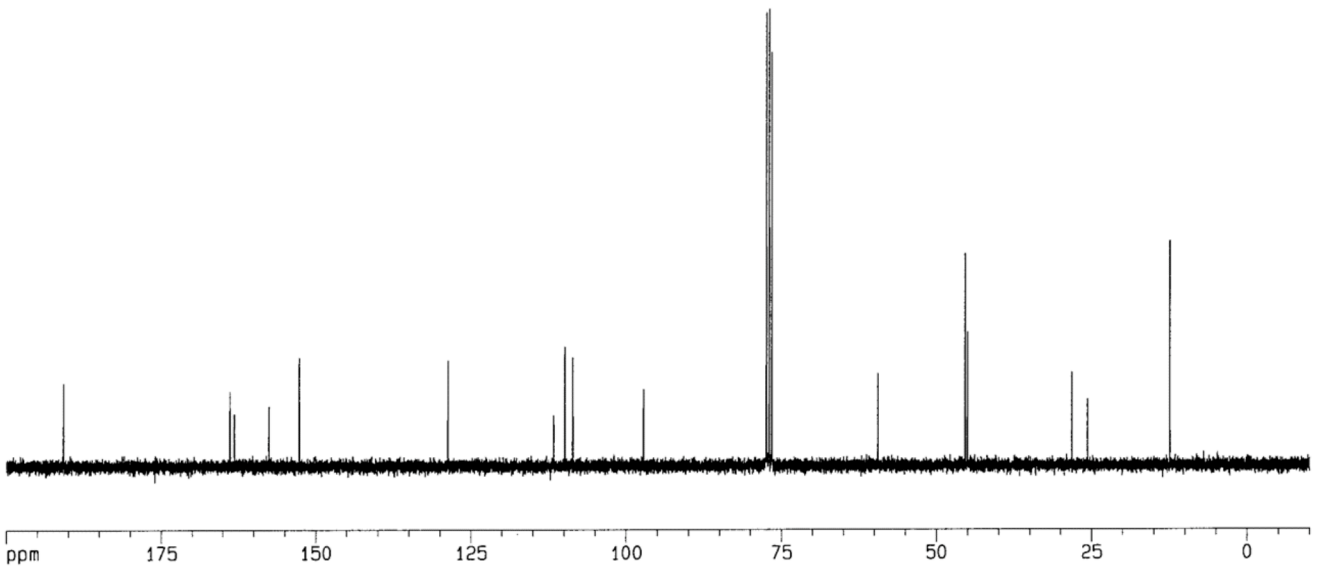

```
Current Data Parameters
NAME        ekf-04-24-03
EXPNO                  6
PROCNO                 1

F2 - Acquisition Parameters
Date_           20030424
Time               18.10
INSTRUM            spect
PROBHD     5 mm GNP 1H/1
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  823
DS                    4
SWH           18796.992 Hz
FIDRES        0.286819 Hz
AQ            1.7433076 sec
RG                 1024
DW               26.600 usec
DE                6.00 usec
TE               300.0 K
D1           2.00000000 sec
D11          0.03000000 sec
D12          0.00002000 sec

========== CHANNEL f1 ==========
NUC1                13C
P1                5.40 usec
PL1              -6.00 dB
SFO1         75.4106357 MHz

========== CHANNEL f2 ==========
CPDPRG2         waltz16
NUC2                1H
PCPD2           115.00 usec
PL2               0.00 dB
PL12             20.00 dB
PL13             20.00 dB
SFO2        299.8711995 MHz

F2 - Processing parameters
SI                 32768
SF           75.4023757 MHz
WDW                   no
SSB                    0
LB                0.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                20.00 cm
F1P              200.000 ppm
F1              15080.47 Hz
F2P              -10.000 ppm
F2               -754.02 Hz
PPMCM           10.50000 ppm/cm
HZCM           791.72491 Hz/cm
```



4

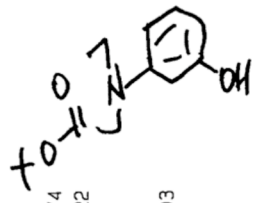
EKF VI 21 A
dimethylamino coumarin for characterization

ppm
190.791
163.873
163.127
157.535
152.621
128.694
111.682
109.835
108.587
97.231
77.425
77.001
76.577
59.425
45.435
45.046
28.219
25.659
12.456

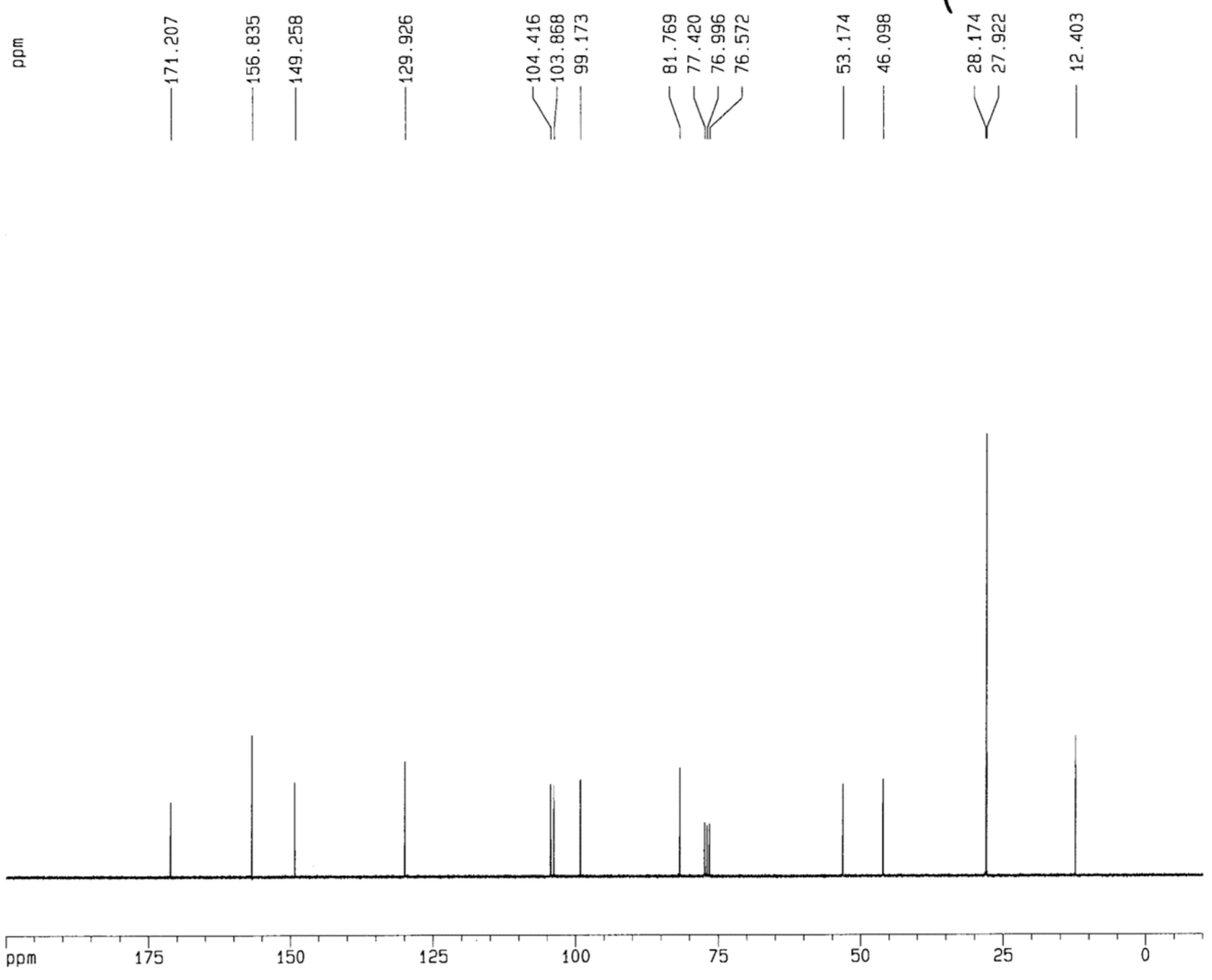



```
Current Data Parameters
NAME        ekf-05-08-03
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20030508
Time               14.52
INSTRUM            spect
PROBHD    5 mm QNP 1H/1
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  785
DS                    4
SWH           18796.992 Hz
FIDRES         0.286819 Hz
AQ            1.7433076 sec
RG                16384
DW               26.600 usec
DE                6.00 usec
TE               300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
D12           0.00002000 sec

============ CHANNEL f1 ============
NUC1                13C
P1                5.40 usec
PL1              -6.00 dB
SFO1         75.4106357 MHz

============ CHANNEL f2 ============
CPDPRG2         waltz16
NUC2                1H
PCPD2           115.00 usec
PL2               0.00 dB
PL12             20.00 dB
PL13             20.00 dB
SFO2        299.8711995 MHz

F2 - Processing parameters
SI                32768
SF           75.4023757 MHz
WDW                  no
SSB                   0
LB                0.00 Hz
GB                    0
PC                1.40

1D NMR plot parameters
CX               20.00 cm
F1P             200.000 ppm
F1             15080.47 Hz
F2P             -10.000 ppm
F2              -754.02 Hz
PPMCM          10.50000 ppm/cm
HZCM          791.72491 Hz/cm
```

EKF VI 4 A
for characterization

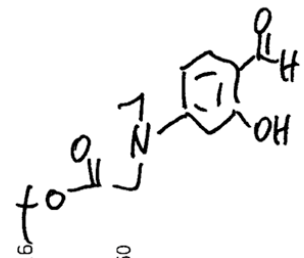


8




```
Current Data Parameters
NAME        ekf-05-01-03
EXPNO                  5
PROCNO                 1

F2 - Acquisition Parameters
Date_           20030501
Time               14.24
INSTRUM            spect
PROBHD    5 mm GNP 1H/1
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                  408
DS                    4
SWH           18796.992 Hz
FIDRES         0.286819 Hz
AQ            1.7433076 sec
RG                 1024
DW               26.600 usec
DE                6.00 usec
TE               300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
D12           0.00002000 sec

============ CHANNEL f1 ============
NUC1                13C
P1                 5.40 usec
PL1               -6.00 dB
SFO1         75.4106357 MHz

============ CHANNEL f2 ============
CPDPRG2         waltz16
NUC2                1H
PCPD2           115.00 usec
PL2               0.00 dB
PL12             20.00 dB
PL13             20.00 dB
SFO2        299.8711995 MHz

F2 - Processing parameters
SI                 32768
SF           75.4023826 MHz
WDW                   no
SSB                    0
LB                0.00 Hz
GB                     0
PC                 1.40

1D NMR plot parameters
CX                20.00 cm
F1P              200.000 ppm
F1              15080.48 Hz
F2P              -10.000 ppm
F2               -754.02 Hz
PPMCM           10.50000 ppm/cm
HZCM           791.72504 Hz/cm
```

EKF VI 23
Vilsmeyer for characterization



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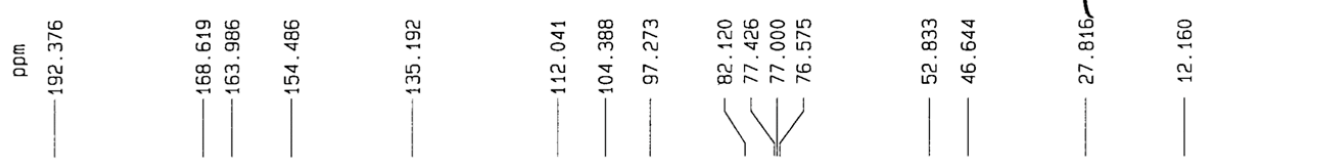
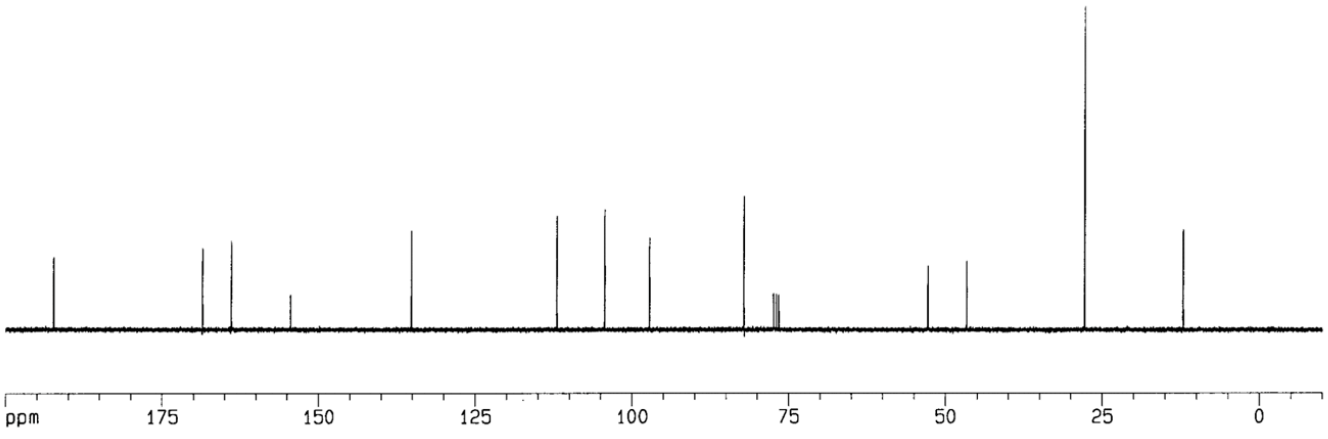
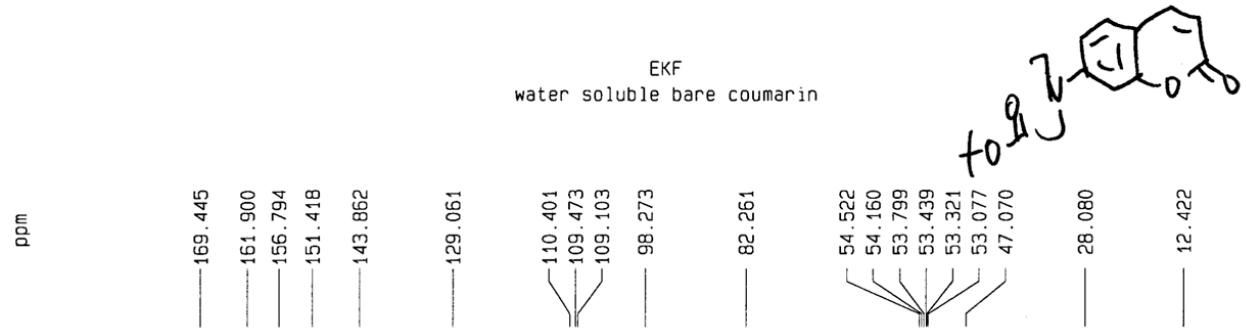
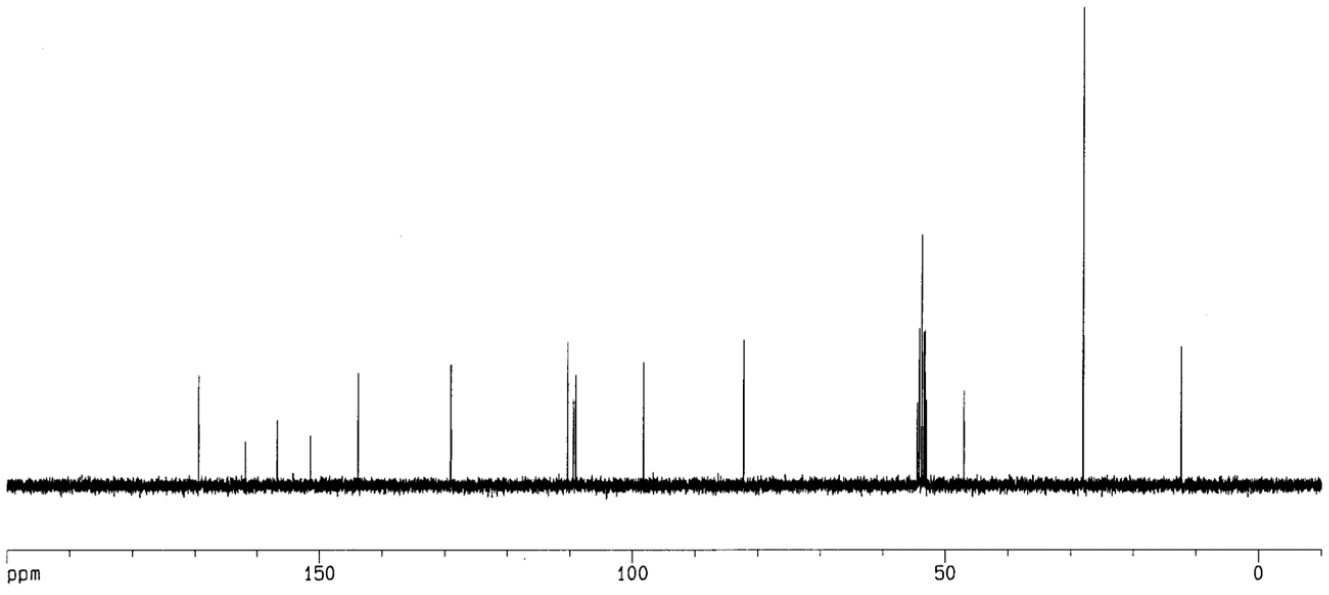




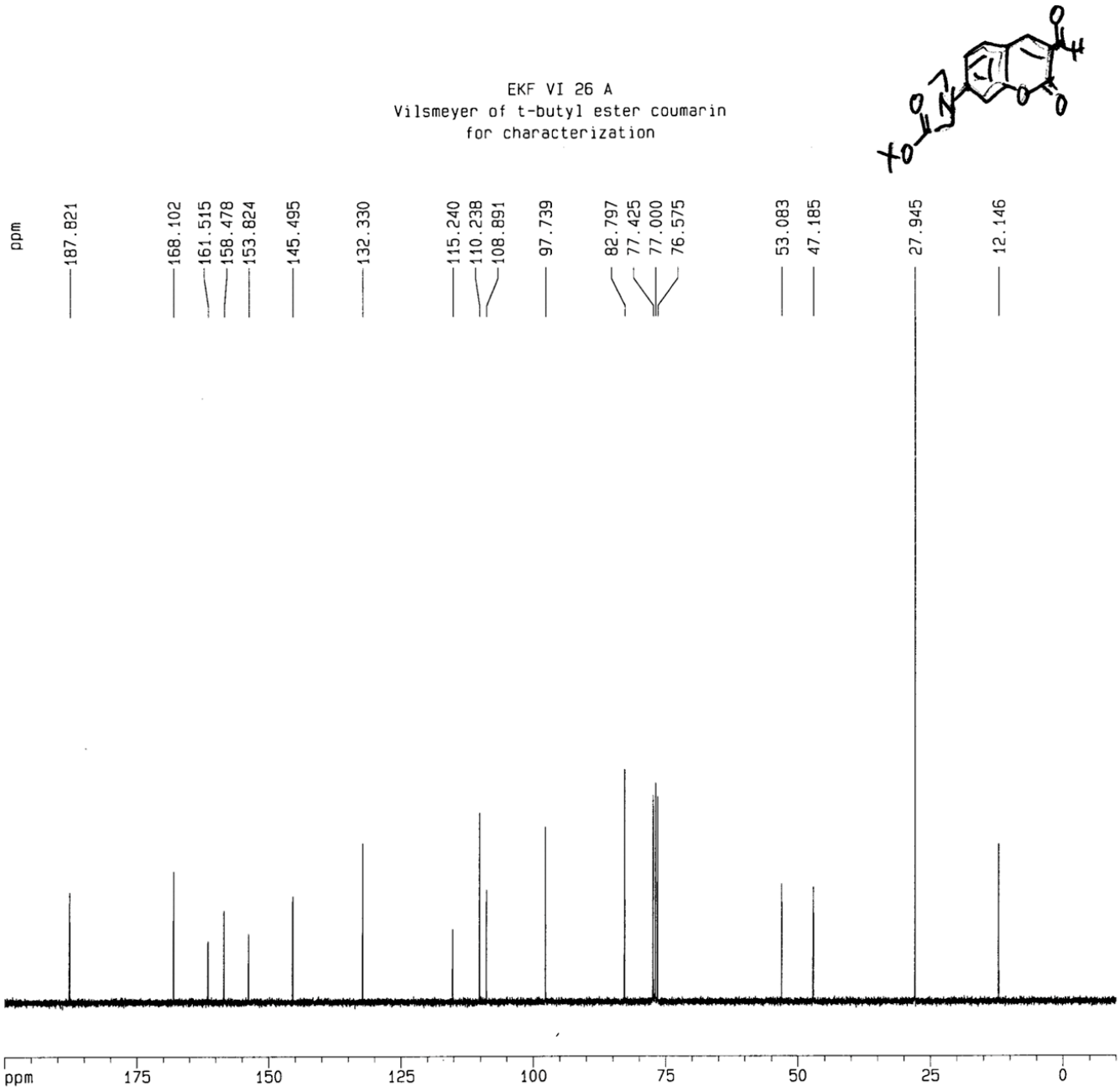

```
Current Data Parameters
NAME        ekf-05-09-03
EXPNO                  3
PROCNO                 1

F2 - Acquisition Parameters
Date_           20030509
Time               11.00
INSTRUM            spect
PROBHD    5 mm QNP 1H/1
PULPROG          zgpg30
TD                65536
SOLVENT           CDCl3
NS                   49
DS                    4
SWH           18796.992 Hz
FIDRES         0.286819 Hz
AQ             1.7433076 sec
RG                 1024
DW               26.600 usec
DE                6.00 usec
TE               300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
D12           0.00002000 sec

========== CHANNEL f1 ==========
NUC1                13C
P1                 5.40 usec
PL1               -6.00 dB
SFO1          75.4106357 MHz

========== CHANNEL f2 ==========
CPDPRG2         waltz16
NUC2                1H
PCPD2          115.00 usec
PL2              0.00 dB
PL12            20.00 dB
PL13            20.00 dB
SFO2         299.8711995 MHz

F2 - Processing parameters
SI                 32768
SF            75.4023849 MHz
WDW                   no
SSB                    0
LB                  0.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 20.00 cm
F1P               200.000 ppm
F1              15080.48 Hz
F2P               -10.000 ppm
F2               -754.02 Hz
PPMCM            10.50000 ppm/cm
HZCM            791.72504 Hz/cm
```

10






```
Current Data Parameters
NAME        ekf-05-01-03
EXPNO                  2
PROCNO                 1

F2 - Acquisition Parameters
Date_           20030501
Time               12.34
INSTRUM            spect
PROBHD     5 mm QNP 1H/1
PULPROG          zgpg30
TD                65536
SOLVENT           CD2Cl2
NS                   207
DS                     4
SWH           18796.992 Hz
FIDRES         0.286819 Hz
AQ            1.7433076 sec
RG                   512
DW               26.600 usec
DE                6.00 usec
TE               300.0 K
D1            2.00000000 sec
D11           0.03000000 sec
D12           0.00002000 sec

============ CHANNEL f1 ============
NUC1                13C
P1                 5.40 usec
PL1               -6.00 dB
SF01         75.4106357 MHz

============ CHANNEL f2 ============
CPDPRG2         waltz16
NUC2                1H
PCPD2            115.00 usec
PL2                0.00 dB
PL12              20.00 dB
PL13              20.00 dB
SF02        299.8711995 MHz

F2 - Processing parameters
SI                 32768
SF           75.4023468 MHz
WDW                   no
SSB                    0
LB                  0.00 Hz
GB                     0
PC                  1.40

1D NMR plot parameters
CX                 20.00 cm
F1P               200.000 ppm
F1               15080.47 Hz
F2P               -10.000 ppm
F2                -754.02 Hz
PPMCM            10.50000 ppm/cm
HZCM            791.72461 Hz/cm
```



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Current Data Parameters

NAME	ekf-05-13-03
EXPNO	3
PROCNO	1

F2 - Acquisition Parameters

Date_	20030513
Time	16.43
INSTRUM	spect
PROBHD	5 mm QNP 1H/1
PULPROG	zgpg30
TD	65536
SOLVENT	CDCl3
NS	723
DS	4
SWH	18796.992 Hz
FIDRES	0.286819 Hz
AQ	1.7433075 sec
RG	1024
DW	26.600 usec
DE	6.00 usec
TE	300.0 K
D1	2.00000000 sec
D11	0.03000000 sec
D12	0.00002000 sec

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

NUC1	13C
P1	5.40 usec
PL1	-6.00 dB
SFO1	75.4106357 MHz

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

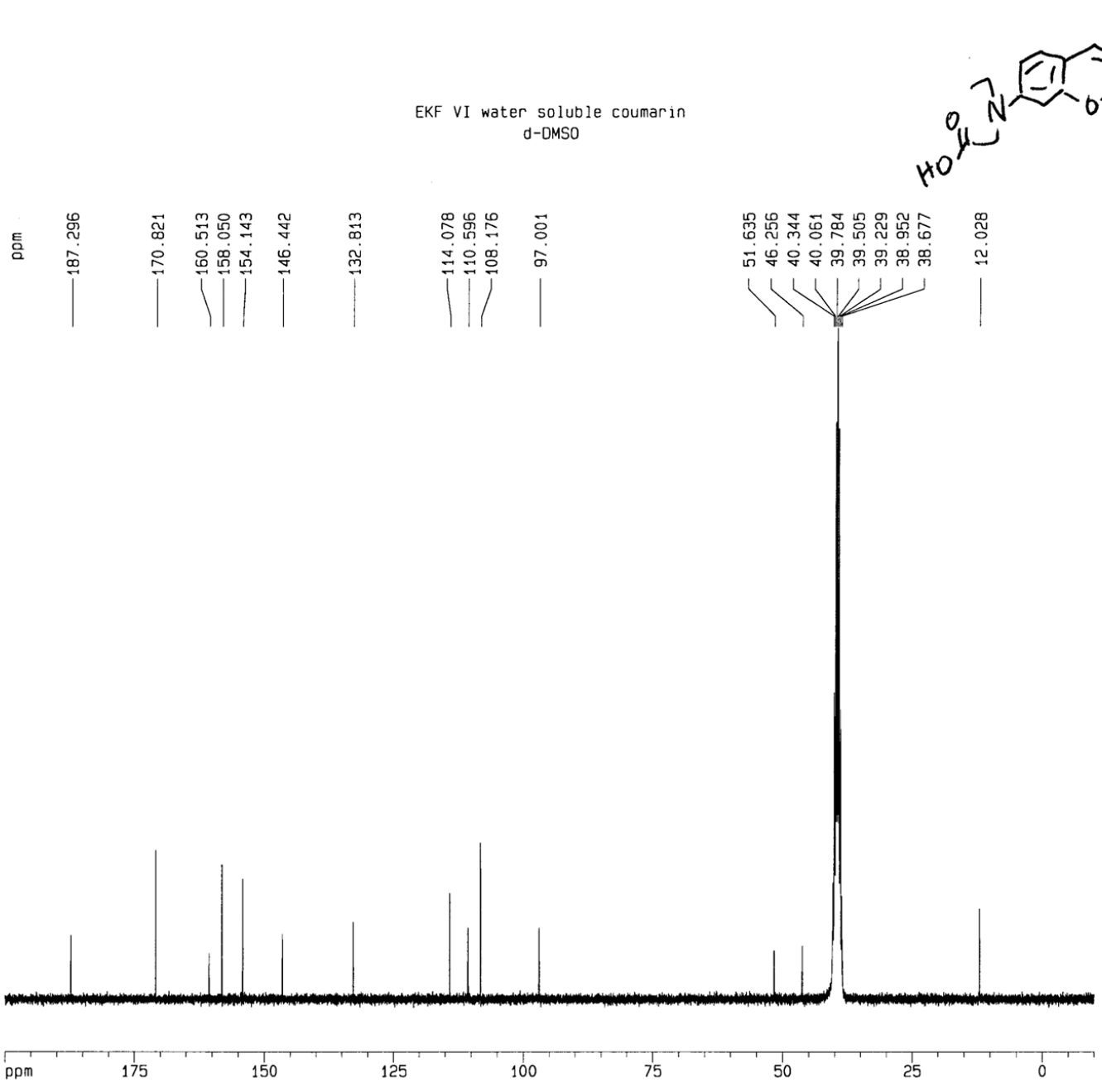
CPDPRG2	waltz16
NUC2	1H
PCPD2	115.00 usec
PL2	0.00 dB
PL12	20.00 dB
PL13	20.00 dB
SFO2	299.8711995 MHz

F2 - Processing parameters

SI	32768
SF	75.4023786 MHz
WDW	no
SSB	0
LB	0.00 Hz
GB	0
PC	1.40

1D NMR plot parameters

CX	20.00 cm
F1P	200.000 ppm
F1	15080.48 Hz
F2P	-10.000 ppm
F2	-754.02 Hz
PPMCM	10.50000 ppm/cm
HZCM	791.72504 Hz/cm



3

Current Data Parameters
NAME ekf-06-08-03
EXPNO 2
PROCNO 1

F2 - Acquisition Parameters
Date_ 20030609
Time 8.36
INSTRUM spect
PROBHD 5 mm Multinu
PULPROG zgpg30
TD 65536
SOLVENT DMSO
NS 11948
DS 4
SWH 18832.393 Hz
FIDRES 0.287360 Hz
AQ 1.7400308 sec
RG 13004
DW 26.550 usec
DE 6.00 usec
TE 300.0 K
D1 2.00000000 sec
d11 0.03000000 sec
d12 0.00002000 sec

========== CHANNEL f1 ==========
NUC1 13C
P1 5.60 usec
PL1 -6.00 dB
SF01 75.4760200 MHz

========== CHANNEL f2 ==========
CPDPRG2 waltz16
NUC2 1H
PCPD2 114.00 usec
PL2 -6.00 dB
PL12 18.00 dB
PL13 18.00 dB
SF02 300.1312005 MHz

F2 - Processing parameters
SI 32768
SF 75.4677849 MHz
WDW no
SSB 0
LB 0.00 Hz
GB 0
PC 1.40

1D NMR plot parameters
CX 20.00 cm
F1P 200.000 ppm
F1 15093.56 Hz
F2P -10.000 ppm
F2 -754.68 Hz
PPMCM 10.50000 ppm/cm
HZCM 792.41180 Hz/cm