



Current Data Parameters
NAME OS-A
EXPNO 10
PROCNO 1

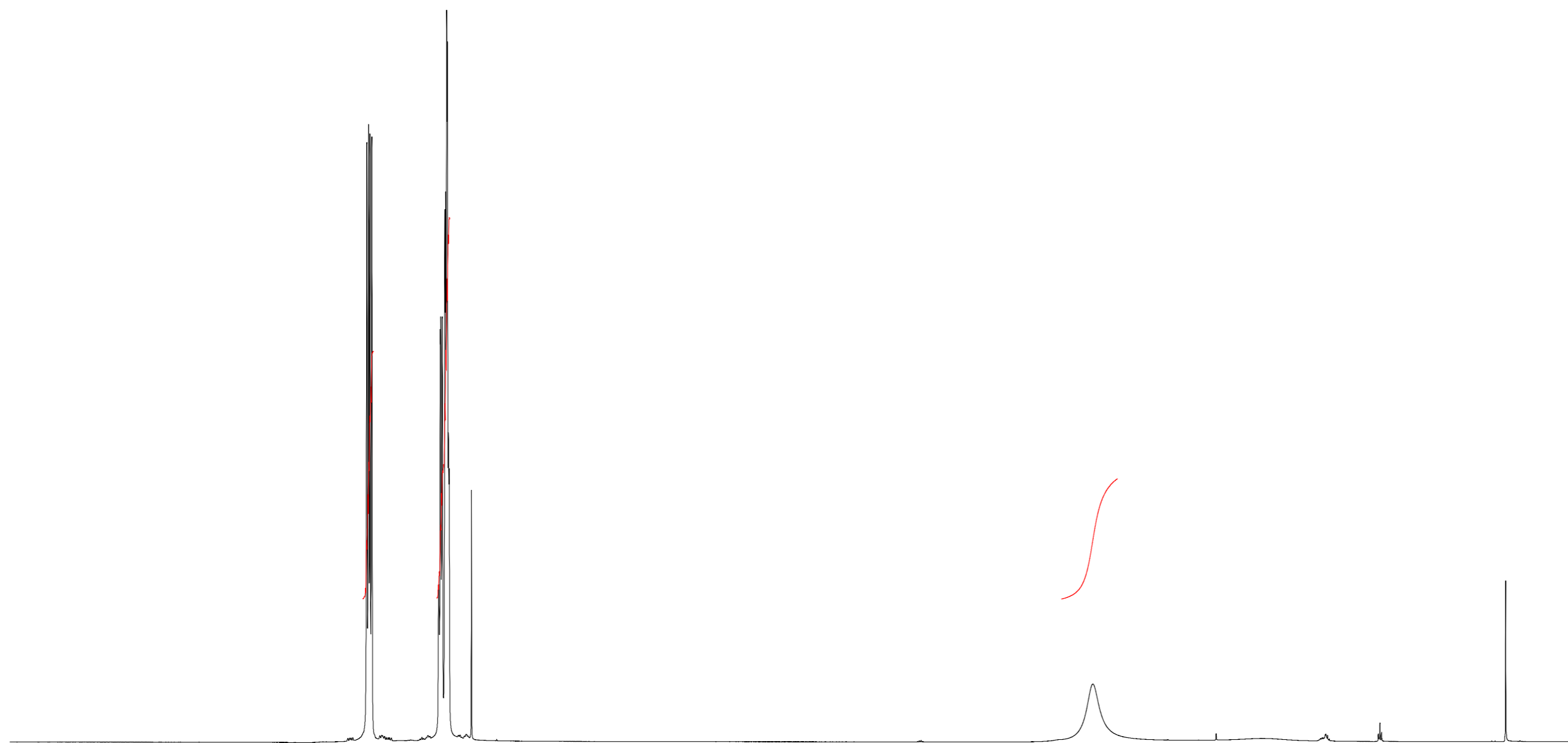
F2 - Acquisition Parameters
Date_ 20170915
Time 4.02
INSTRUM spect
PROBHD 5 mm CPPBBO BB
PULPROG zg30
TD 65536
SOLVENT CDCl3
NS 16
DS 2
SWH 12019.230 Hz
FIDRES 0.183399 Hz
AQ 2.7262976 sec
RG 18.96
DW 41.600 use
DE 10.00 use
TE 300.0 K
D1 1.00000000 sec
TD0 1

==== CHANNEL f1 =====
SF01 600.1337060 MHz
NUC1 1H
P1 12.00 use
PLW1 23.00000000 W

F2 - Processing parameters
SI 65536
SF 600.1300152 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

7.9950
7.9825
7.9722
7.9597
7.4898
7.4890
7.4786
7.4759
7.4660
7.4464
7.4412
7.4335
7.4286
7.4215
7.4165
7.2598

— 2.8981



10.0 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 0.0 ppm

4.01

6.17

1.95



Current Data Parameters
NAME OS-A-Q
EXPNO 21
PROCNO 1

F2 - Acquisition Parameters
Date_ 20170918
Time 17.13
INSTRUM spect
PROBHD 5 mm CPPBBO BB
PULPROG zg30
TD 65536
SOLVENT CDC13
NS 16
DS 2
SWH 12019.230 Hz
FIDRES 0.183399 Hz
AQ 2.7262976 sec
RG 17.5
DW 41.600 use
DE 10.00 use
TE 300.0 K
D1 1.00000000 sec
TD0 1

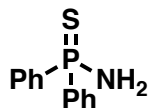
==== CHANNEL f1 =====
SFO1 600.1337060 MHz
NUC1 1H
P1 12.00 use
PLW1 23.00000000 W

F2 - Processing parameters
SI 65536
SF 600.1300113 MHz
WDW EM
SSB 0
LB 0.30 Hz
GB 0
PC 1.00

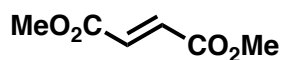
8.0030
8.0000
7.9984
7.9957
7.9912
7.9866
7.9839
7.9802
7.9771
7.9756
7.9639
7.9613
7.9553
7.9429
7.4905
7.4861
7.4820
7.4780
7.4741
7.4713
7.4691
7.4666
7.4543
7.4493
7.4471
7.4439
7.4421
7.4390
7.4366
7.4339
7.4311
7.4249
7.4228
7.4195
7.2662
6.8621
6.8584

3.8080
3.8039

2.9082



2 19.7 mg
MW 233.27 (0.0845 mmol)



dimethyl fumarate
MW 144.13
($P_{std} > 98.0\%$) 12.5 mg
(0.0867 mmol)

$$\text{Molar Ratio}_{\text{NMR}} = \frac{6.00 \div 6}{3.89 \div 4} = 1.03$$

$$P_{\text{pdt}} = \text{Molar Ratio}_{\text{NMR}} \times \frac{0.0845 \text{ mmol}_{\text{pdt}}}{0.0867 \text{ mmol}_{\text{std}}} \times >98.0\% > 98\%$$



10.0 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 0.0 ppm

3.89

5.98

1.71

6.00

1.98