Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

ELECTRONIC SUPPLEMENTARY INFORMATION

Asymmetric total synthesis of (+)-*O*-methylasparvenone, a rare nitrogen-free serotonin 2C receptor antagonist†

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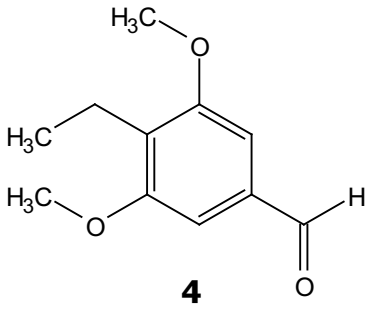
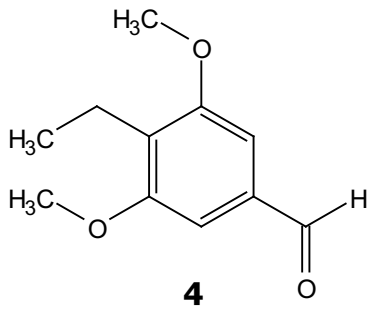


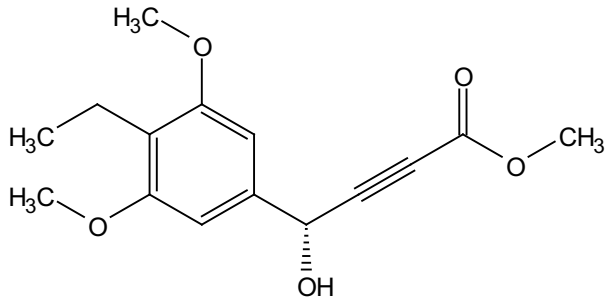
4

^{1}H NMR (400 MHz, $CDCl_3$)



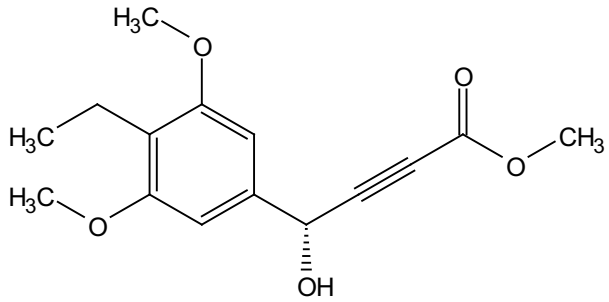
4

^{13}C NMR (100 MHz, $CDCl_3$)



5

^{1}H NMR (500 MHz, $CDCl_3$)



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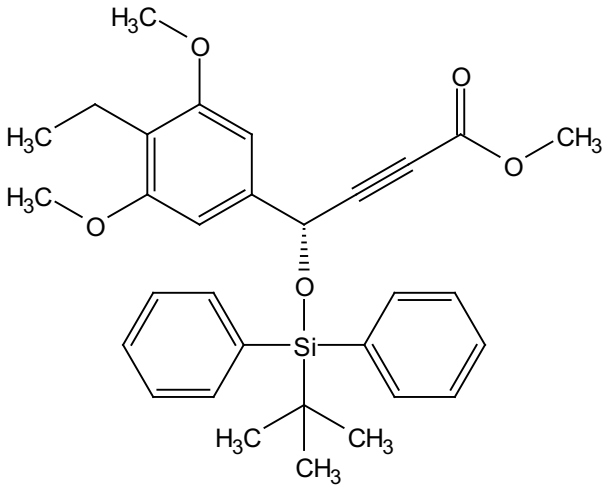
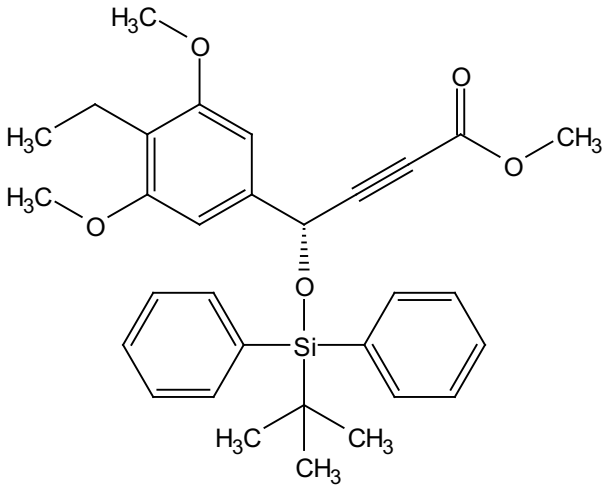
^{13}C NMR (125 MHz, $CDCl_3$)



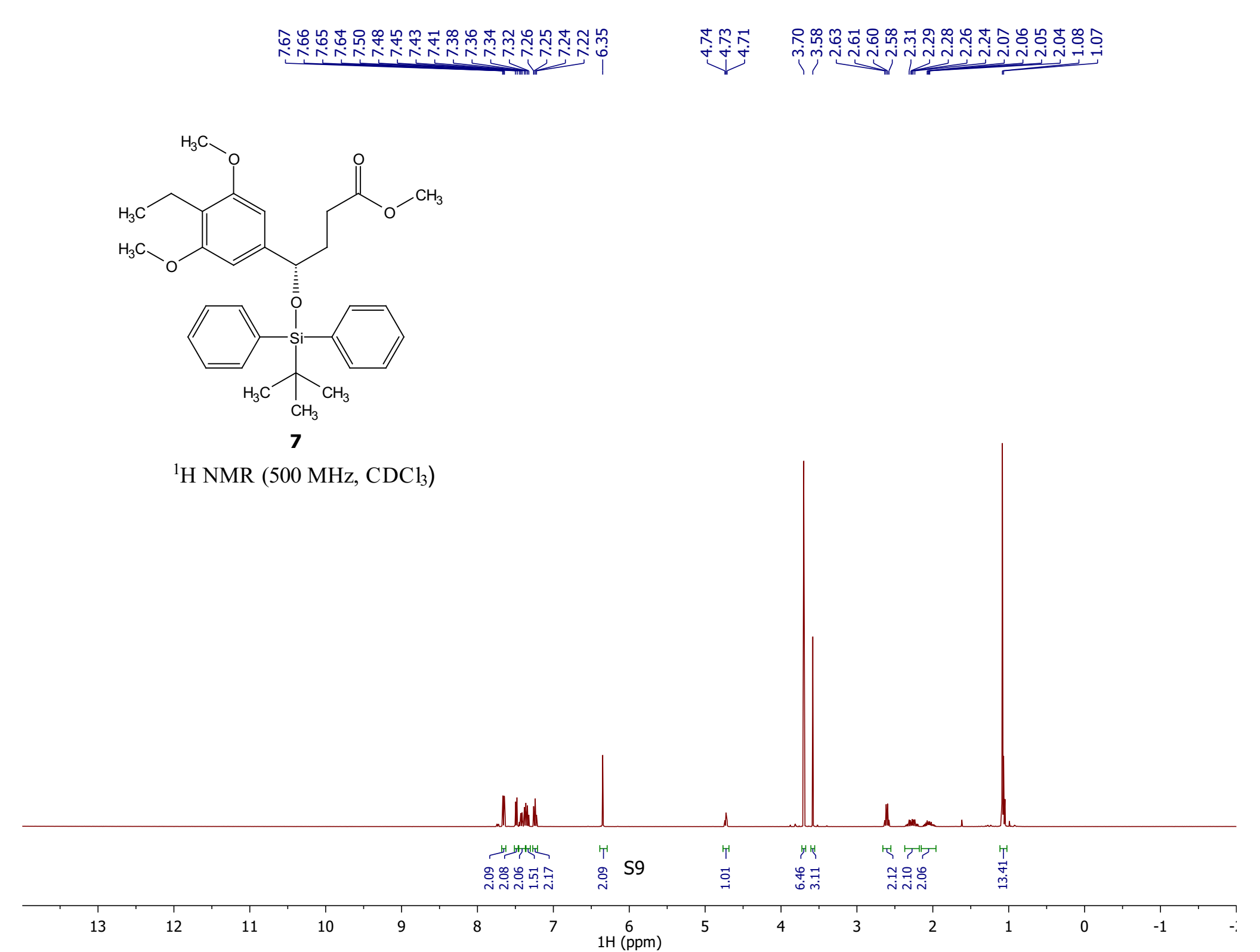
6

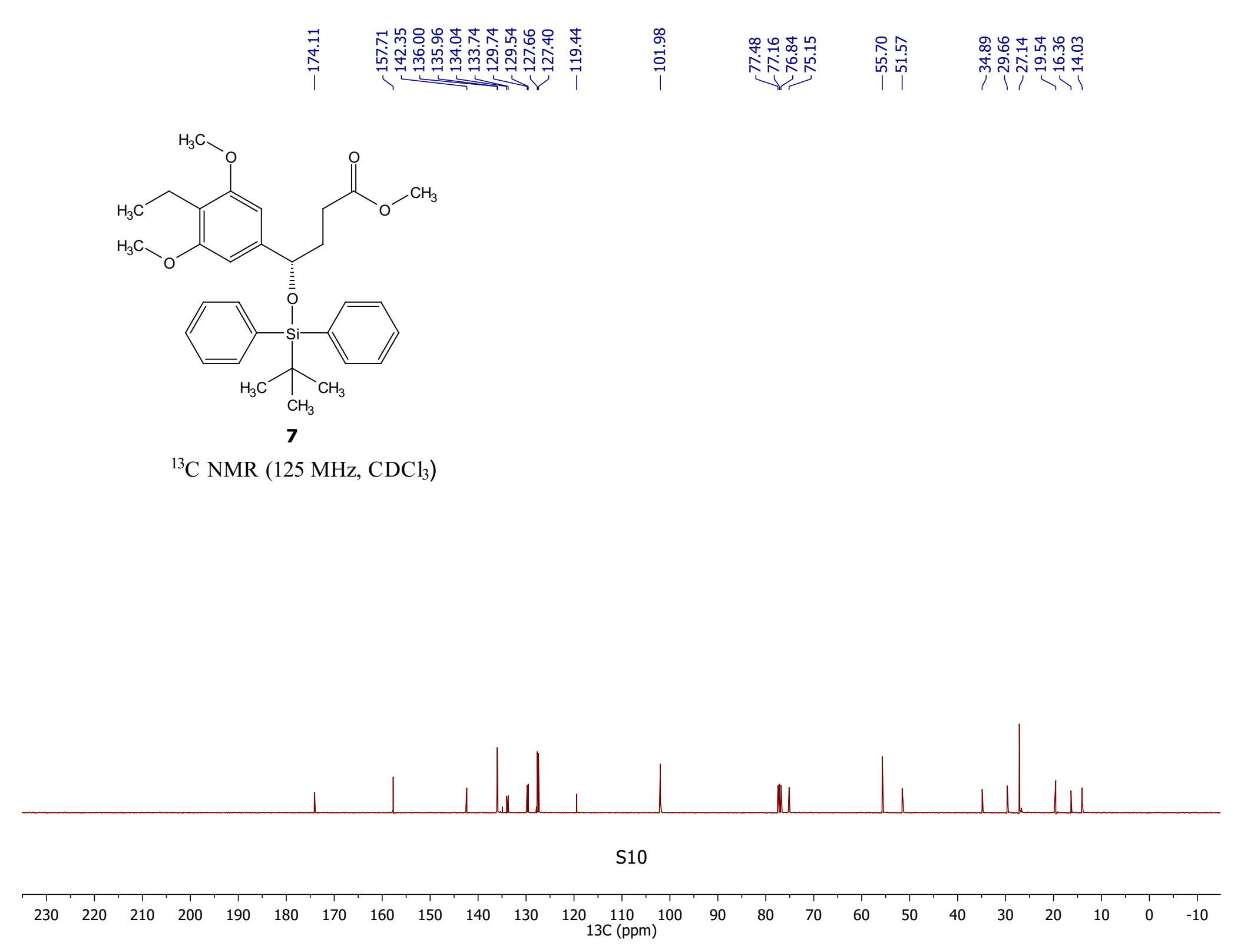
^{1}H NMR (500 MHz, $CDCl_3$)

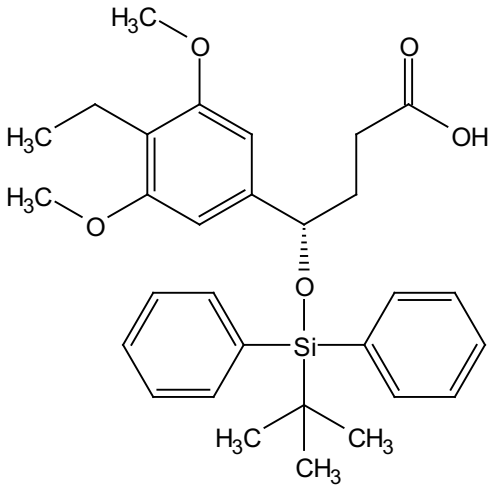


6

^{13}C NMR (125 MHz, $CDCl_3$)

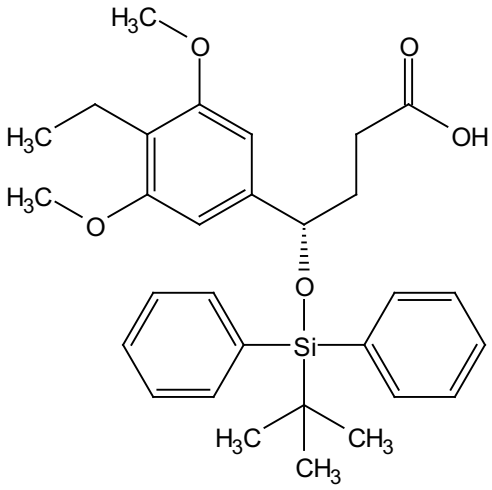

7.67
7.66
7.65
7.64
7.50
7.48
7.45
7.43
7.41
7.38
7.36
7.34
7.32
7.26
7.25
7.24
7.22
6.35
4.74
4.73
4.71
3.70
3.58
2.63
2.61
2.60
2.58
2.31
2.29
2.28
2.26
2.24
2.07
2.06
2.05
2.04
1.08
1.07
H3C
O
O
CH3
H3C
H3C
O
O
Si
H3C
CH3
CH3
7
1H NMR (500 MHz, CDCl3)
2.09
2.08
2.06
1.51
2.17
2.09
1.01
6.46
3.11
2.12
2.10
2.06
13.41
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
1H (ppm)


174.11
157.71
142.35
136.00
135.96
134.04
133.74
129.74
129.54
127.66
127.40
119.44
101.98
77.48
77.16
76.84
75.15
55.70
51.57
34.89
29.66
27.14
19.54
16.36
14.03
H3C
O
O
CH3
H3C
O
H3C
O
Si
H3C
CH3
CH3
7
13C NMR (125 MHz, CDCl3)
S10
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
13C (ppm)



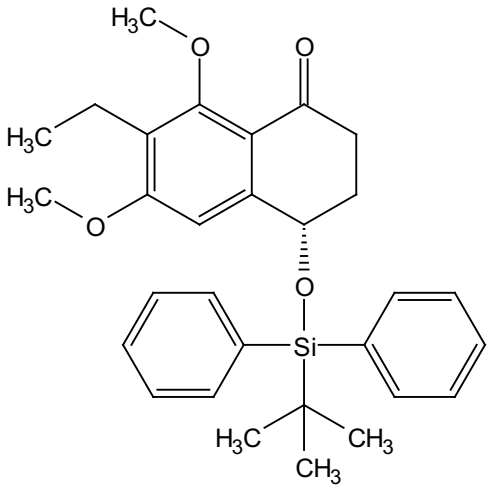
8

^{1}H NMR (500 MHz, $CDCl_3$)



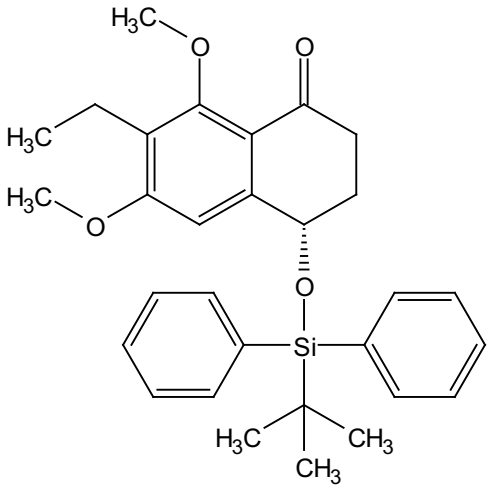
8

^{13}C NMR (125 MHz, $CDCl_3$)



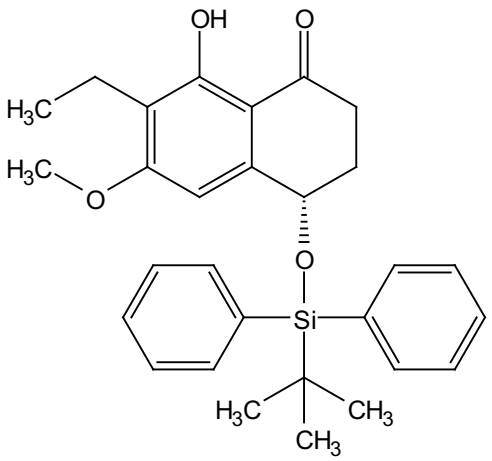
9

^{1}H NMR (400 MHz, $CDCl_3$)



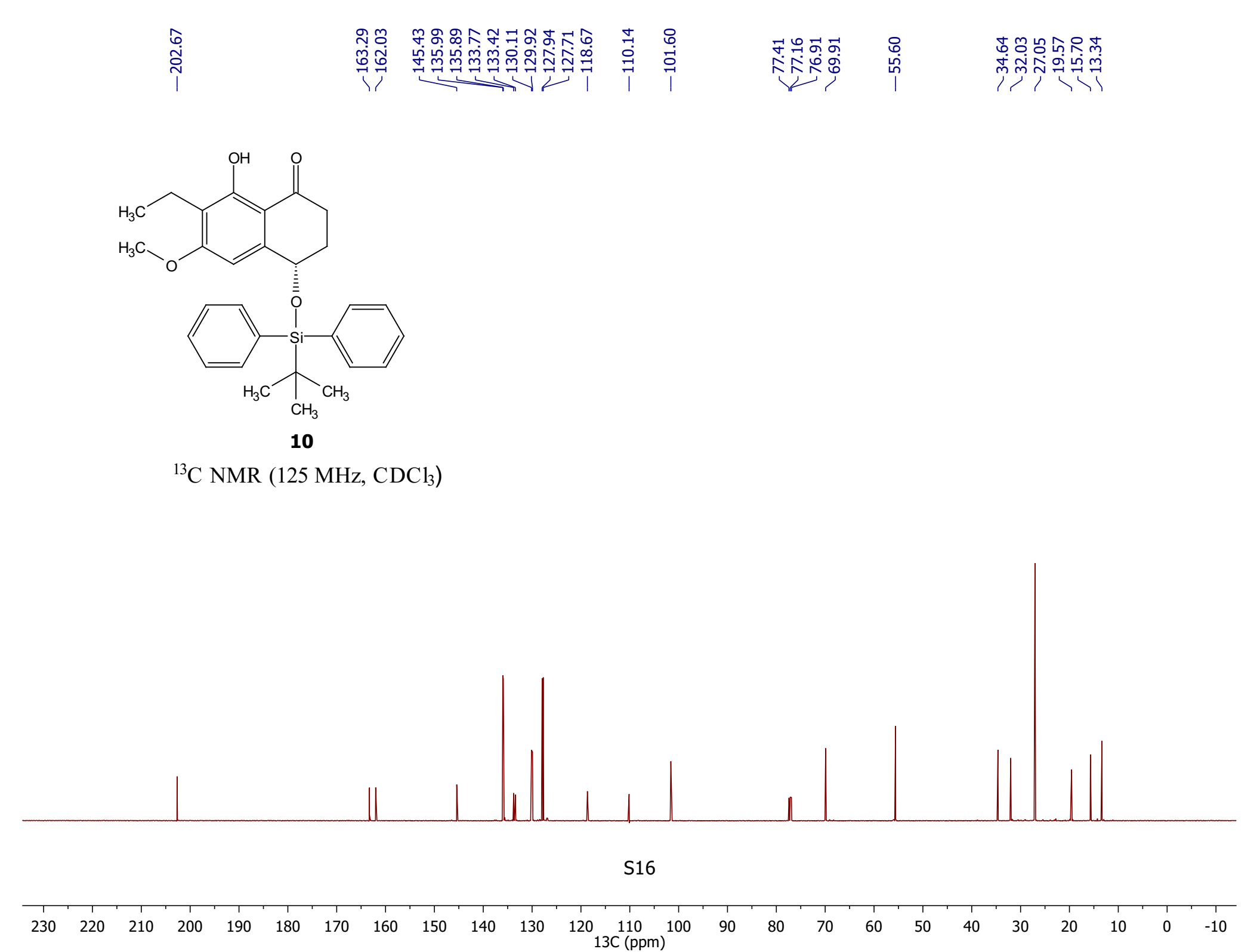
9

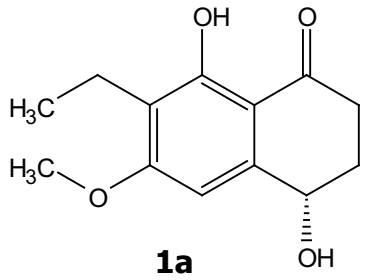
^{13}C NMR (100 MHz, $CDCl_3$)



10

^{1}H NMR (500 MHz, $CDCl_3$)

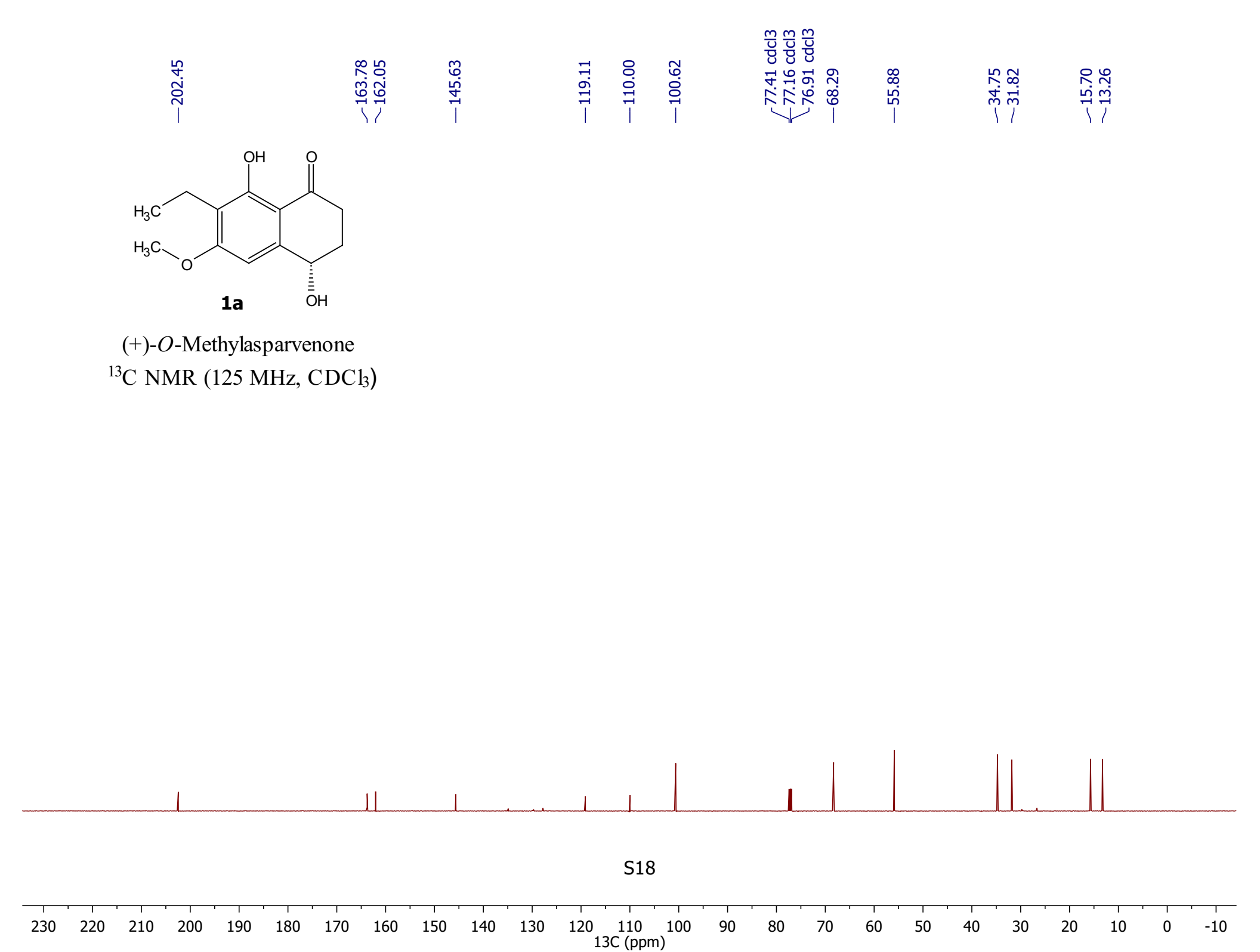

202.67
163.29
162.03
145.43
135.99
135.89
133.77
133.42
130.11
129.92
127.94
127.71
118.67
110.14
101.60
77.41
77.16
76.91
69.91
55.60
34.64
32.03
27.05
19.57
15.70
13.34
OH
O
H3C
H3C
O
O
Si
H3C
CH3
CH3
10
13C NMR (125 MHz, CDCl3)
230
220
210
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
13C (ppm)



1a

(+)-*O*-Methylasparvenone

^{1}H NMR (500 MHz, $CDCl_3$)



(+)-*O*-Methylasparvenone

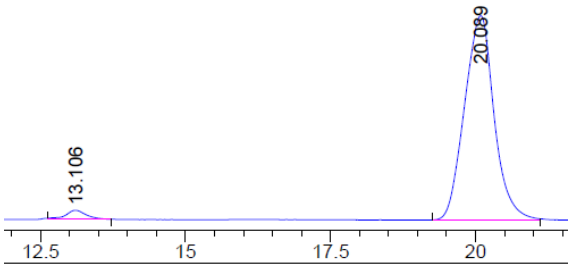
^{13}C NMR (125 MHz, $CDCl_3$)

Chiral HPLC Traces

Chiral HPLC trace of (*R*)-methyl 4-(4-ethyl-3,5-dimethoxyphenyl)-4-hydroxybut-2-ynoate (**5**), 94 % ee

CHIRALCEL OJ-H, 250 X 4.6 mm, 5 µm Daicel

Eluent = n-hex.: *iso*-propanol = 90:10, 1 mL/min, λ 235.16 nm



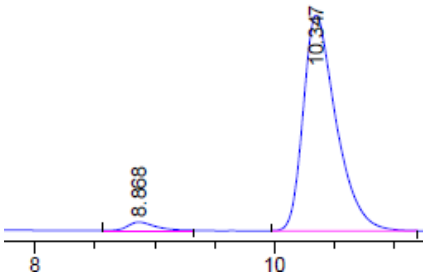
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.106	BBA	0.3574	375.88654	15.26108	2.9578
2	20.089	BBA	0.5442	1.23326e4	347.35394	97.0422
Totals :				1.27085e4	362.61502	

Figure S1. Determination of enantiomeric excess via chiral HPLC of (+)-(*R*)-**5** 94% ee ((-)-(S)-**5** t_R=13.11 min, (+)-(*R*)-**5** t_R=20.09 min)

Chiral HPLC trace of (+)-*O*-Methylasparvenone (**1a**), 94 % ee

ChiralPAK AD-H, 250 X 4.6 mm, 5 µm Daicel

Eluent = n-hex.: *iso*-propanol = 90:10, 1 mL/min, λ 235.16 nm



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	8.868	BB	0.2358	360.55624	22.63946	3.1565
2	10.347	BB	0.2889	1.10622e4	579.07874	96.8435
Totals :				1.14227e4	601.71819	

Figure S2. Determination of enantiomeric excess via chiral HPLC of (+)-(*S*)-**1a** 94% ee ((-)-(R)-**1a** t_R=8.87 min, (+)-(*S*)-**1a** t_R=10.35 min)