

●Spektrenanhang●

Kupfer(II)-katalysierte {1,5}-/{1,6}-transannulare katalytisch asymmetrische Gosteli–Claisen-Umlagerung zum Aufbau mittelgroßer und großer Carbozyklen

Dissertation Tobias Jaschinski - Buch 2

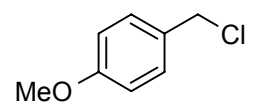
Prof. Dr. rer. nat. habil. M. Hiersemann Fakultät Chemie, Technische Universität Dortmund,
44227 Dortmund, Germany; martin.hiersemann@udo.edu

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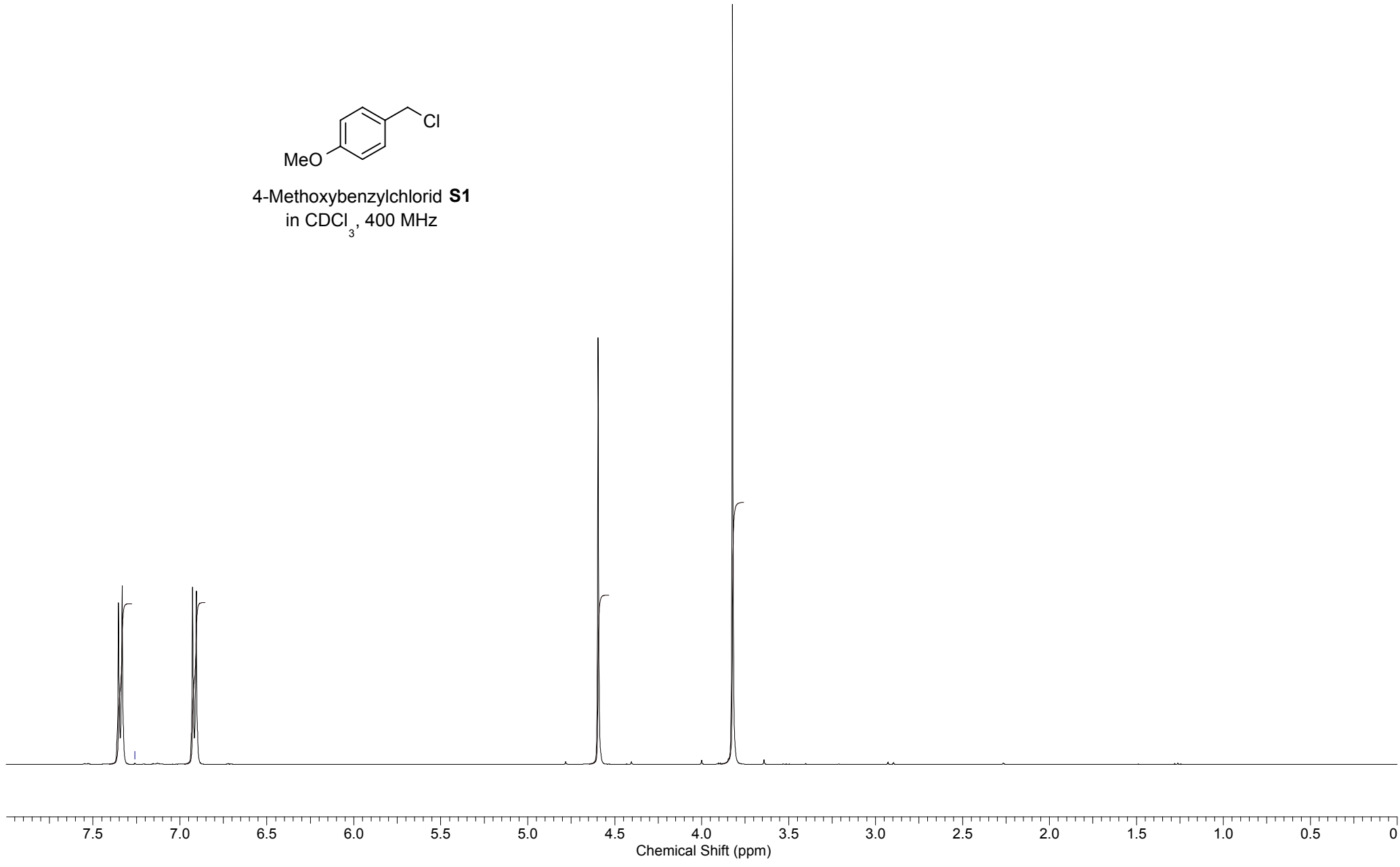
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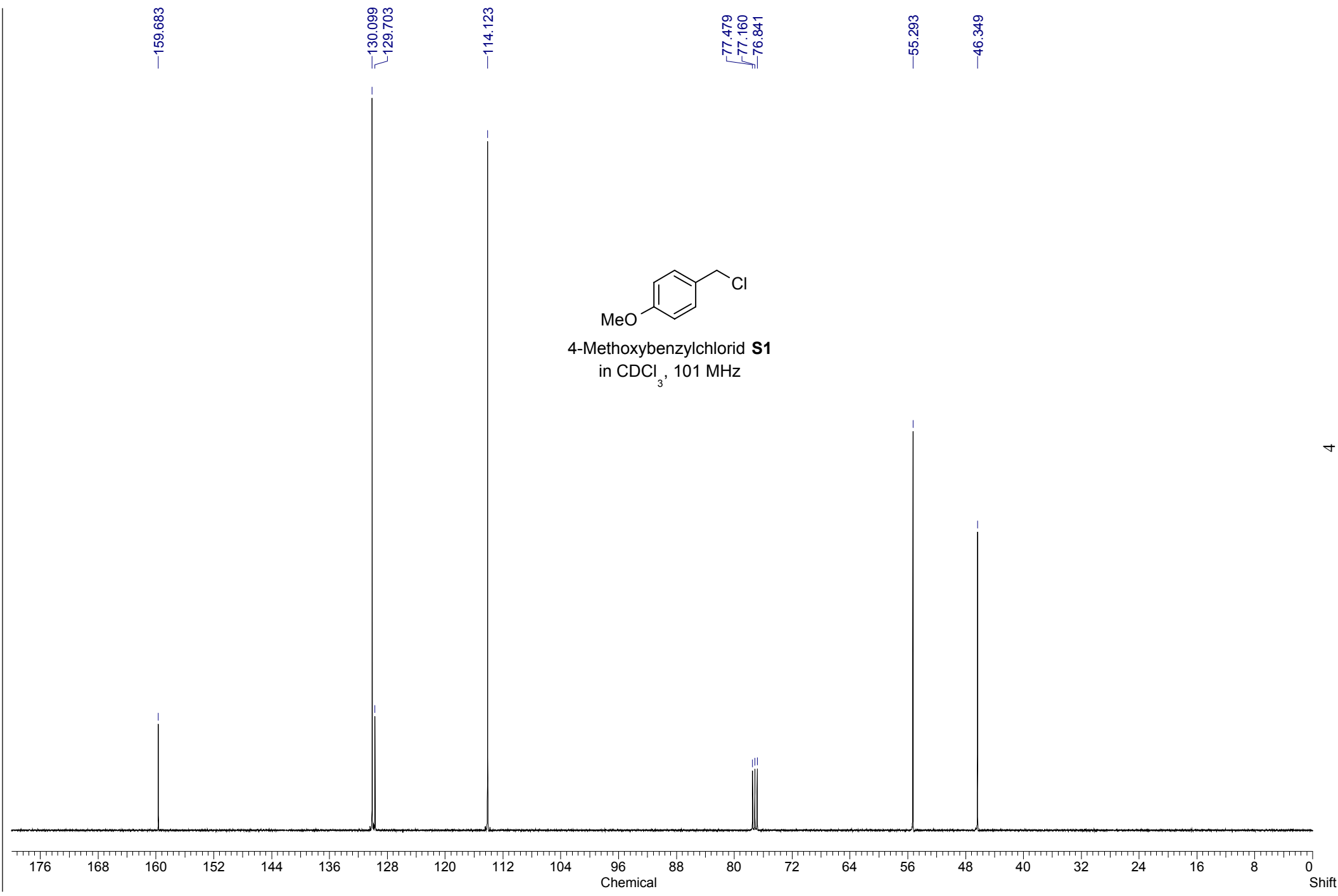
NMR-Spektren

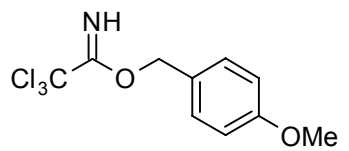
—7.260



4-Methoxybenzylchlorid **S1**
in CDCl₃, 400 MHz

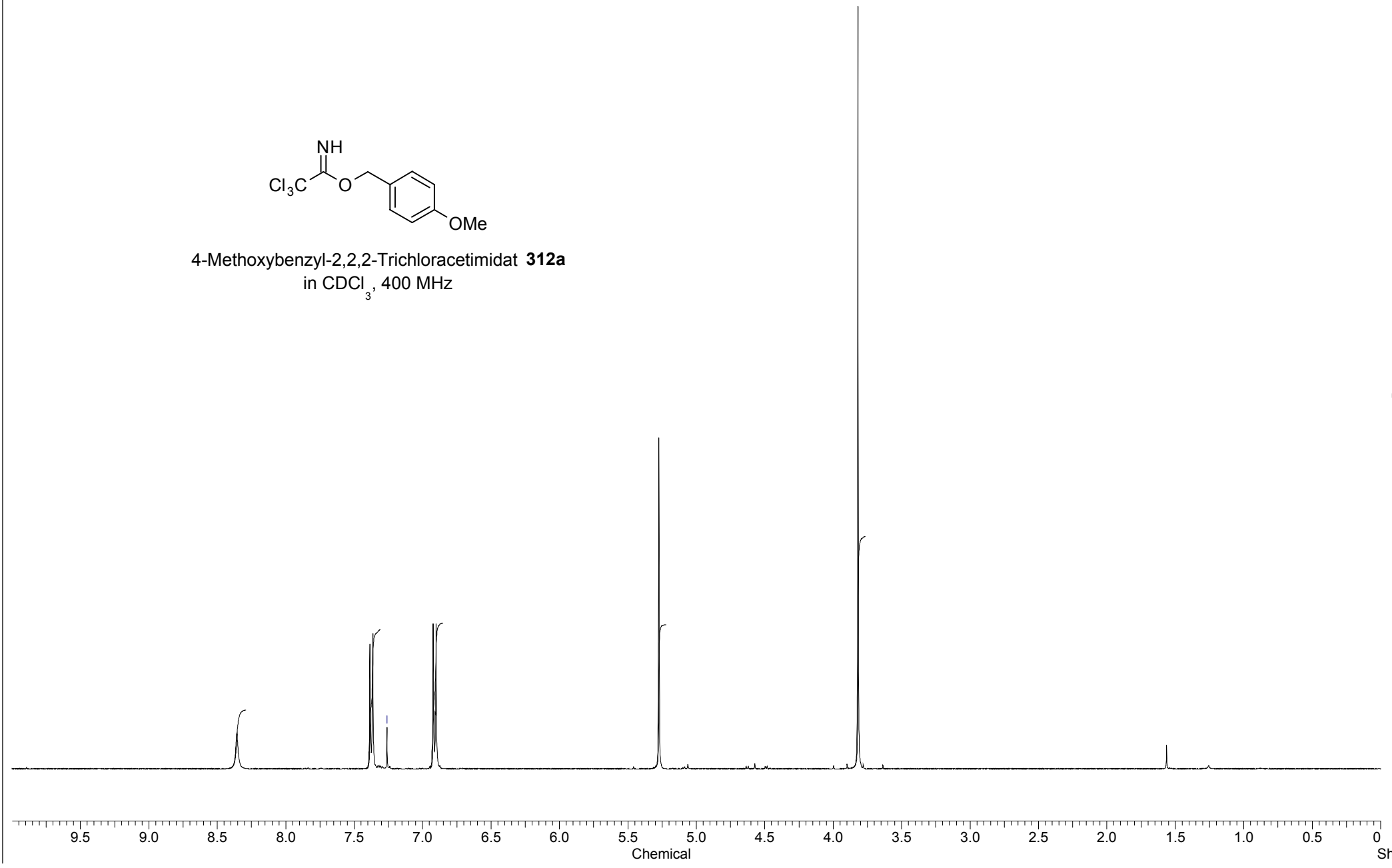


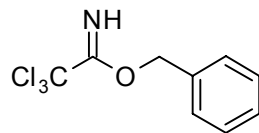




4-Methoxybenzyl-2,2,2-Trichloracetimidat **312a**
in CDCl₃, 400 MHz

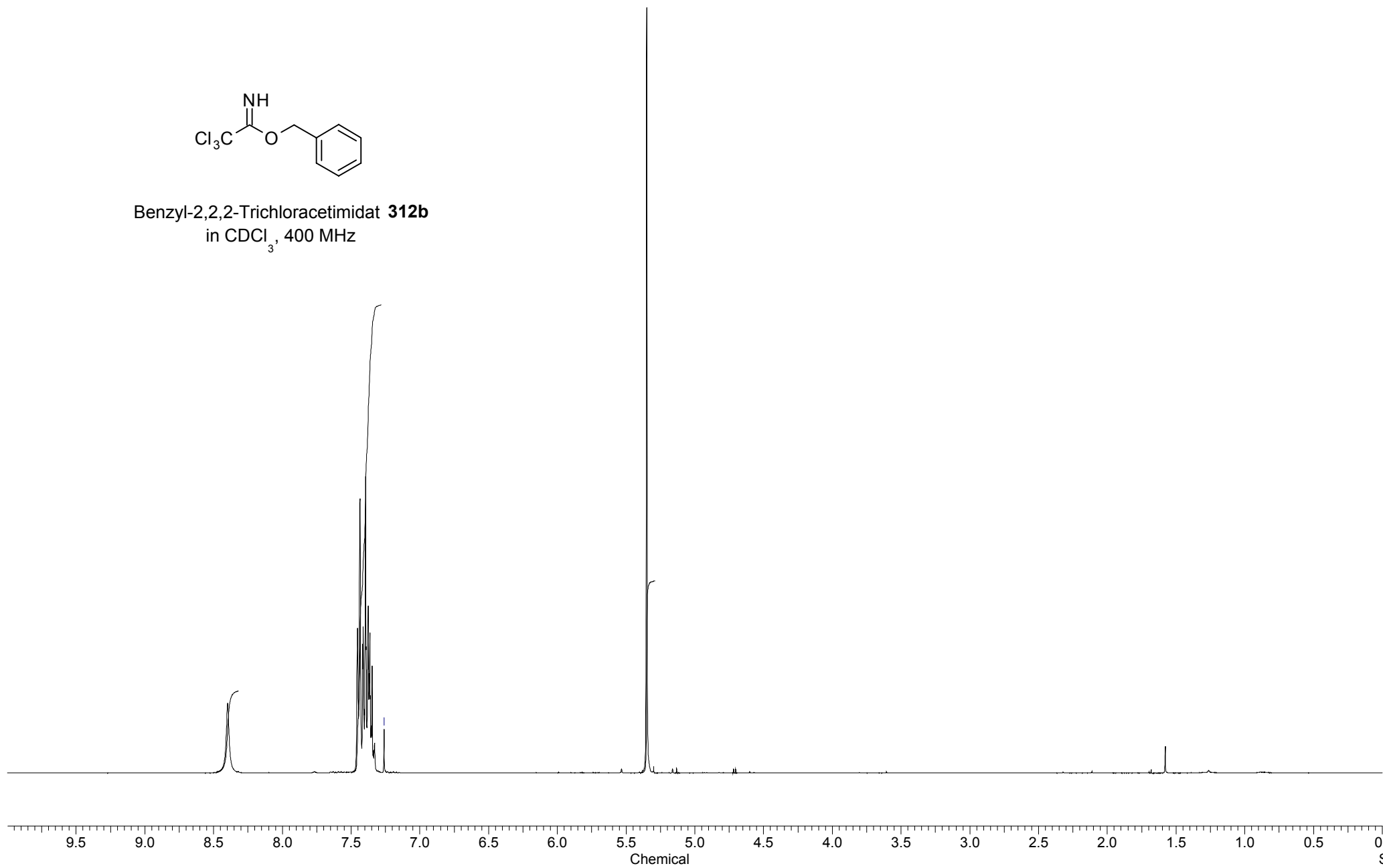
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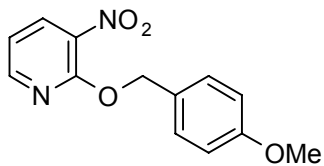




Benzyl-2,2,2-Trichloracetimidat **312b**
in CDCl₃, 400 MHz

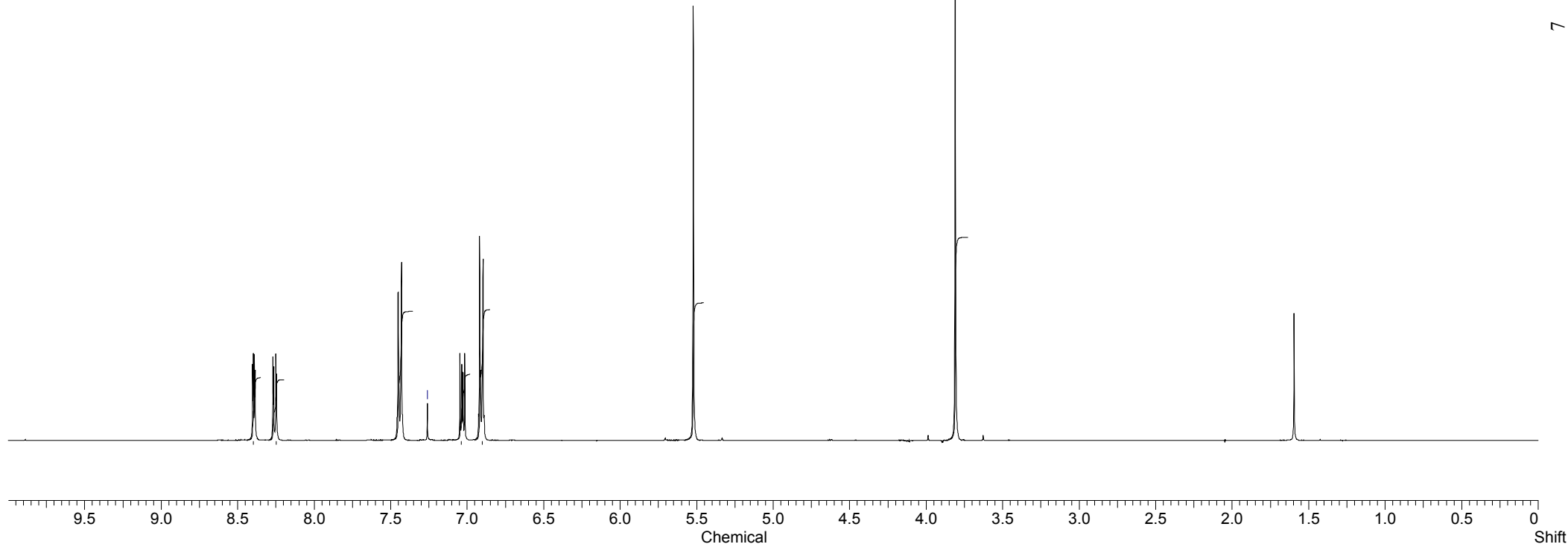
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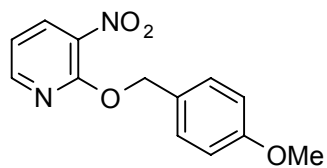




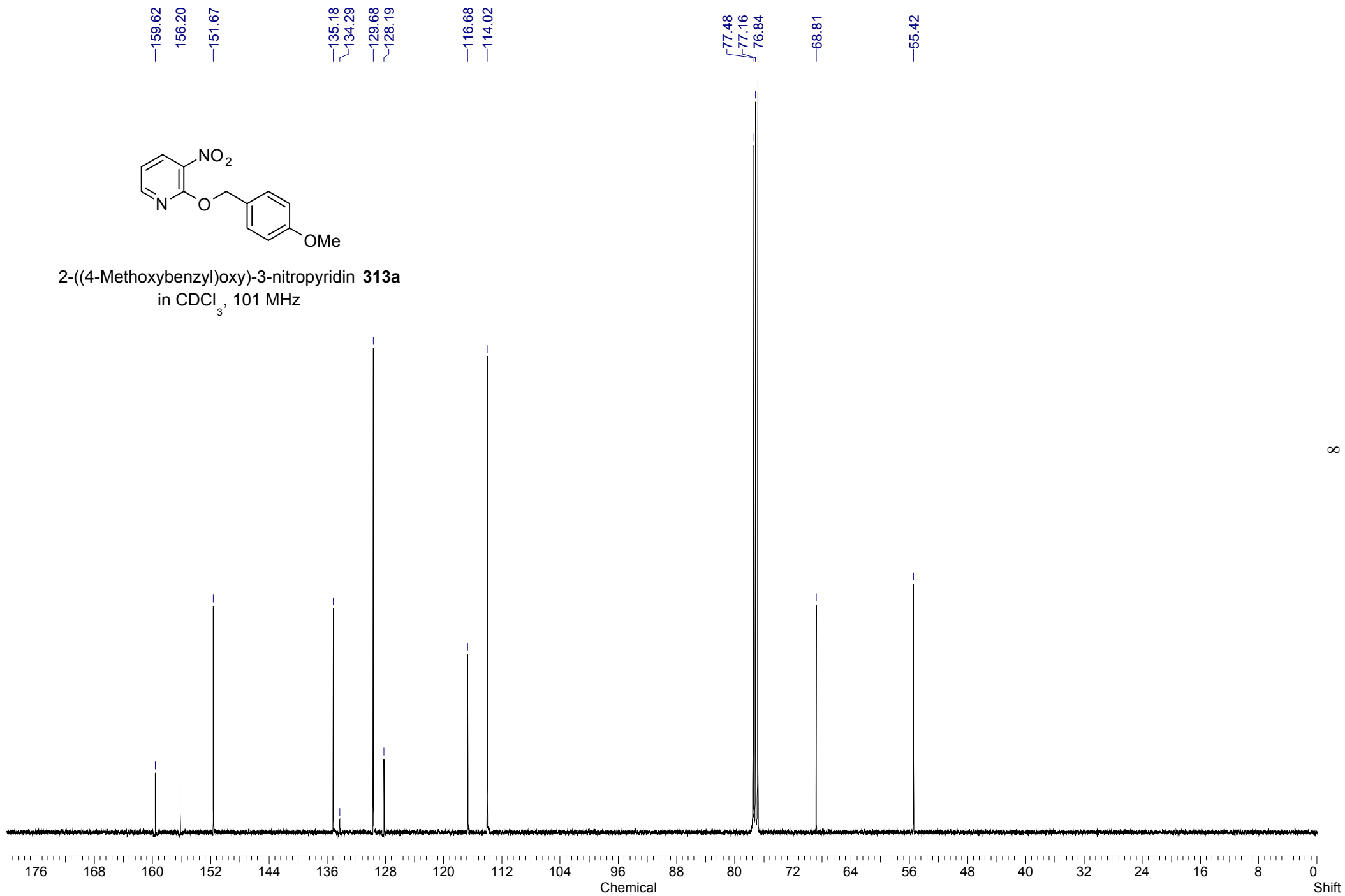
2-((4-Methoxybenzyl)oxy)-3-nitropyridin **313a**
in CDCl₃, 400 MHz

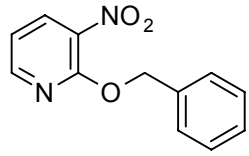
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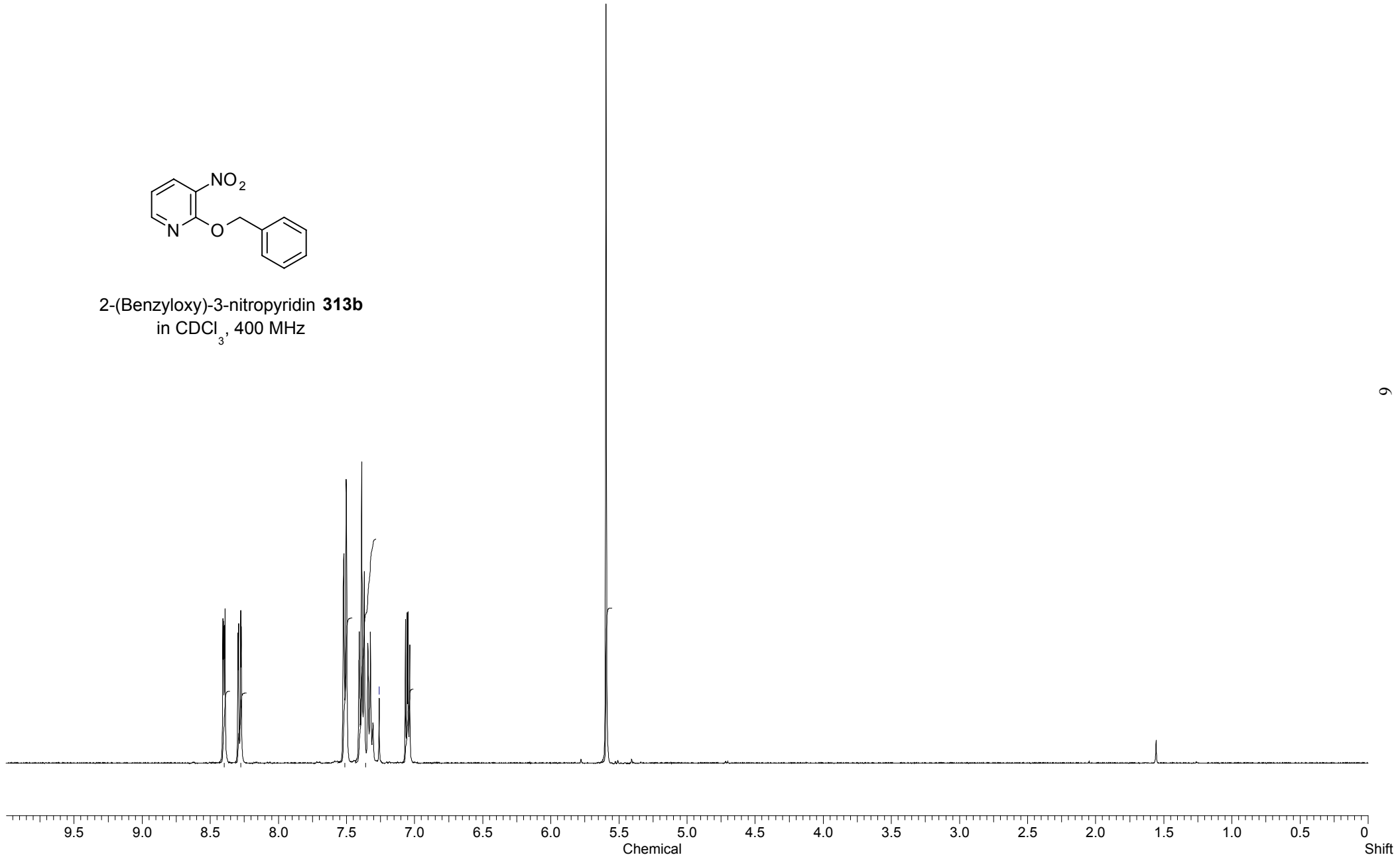
2-((4-Methoxybenzyl)oxy)-3-nitropyridin **313a**
in CDCl₃, 101 MHz

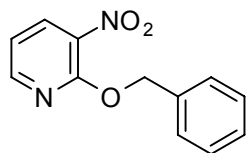
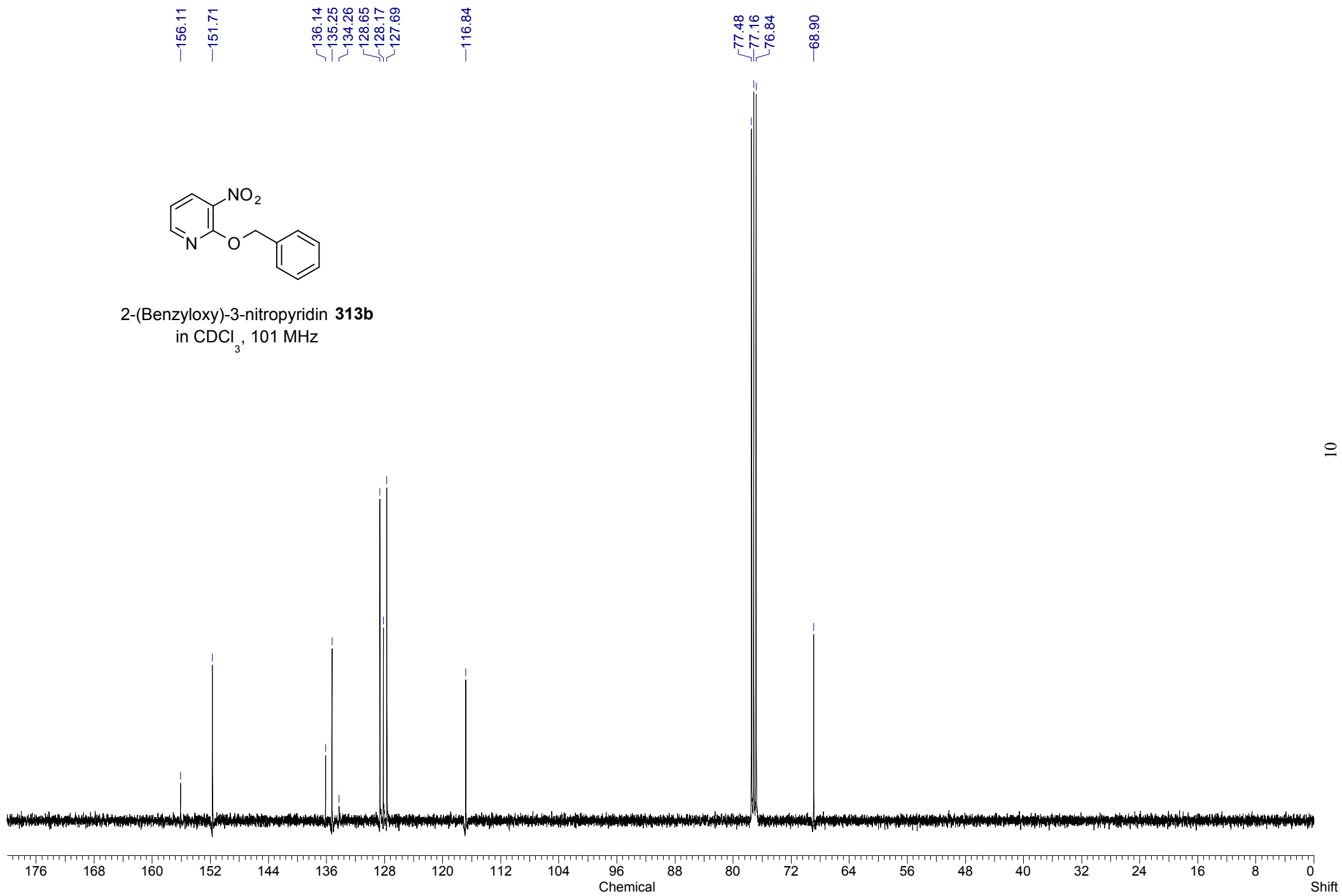




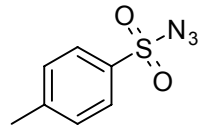
2-(Benzyloxy)-3-nitropyridin **313b**
in CDCl₃, 400 MHz

—7.26

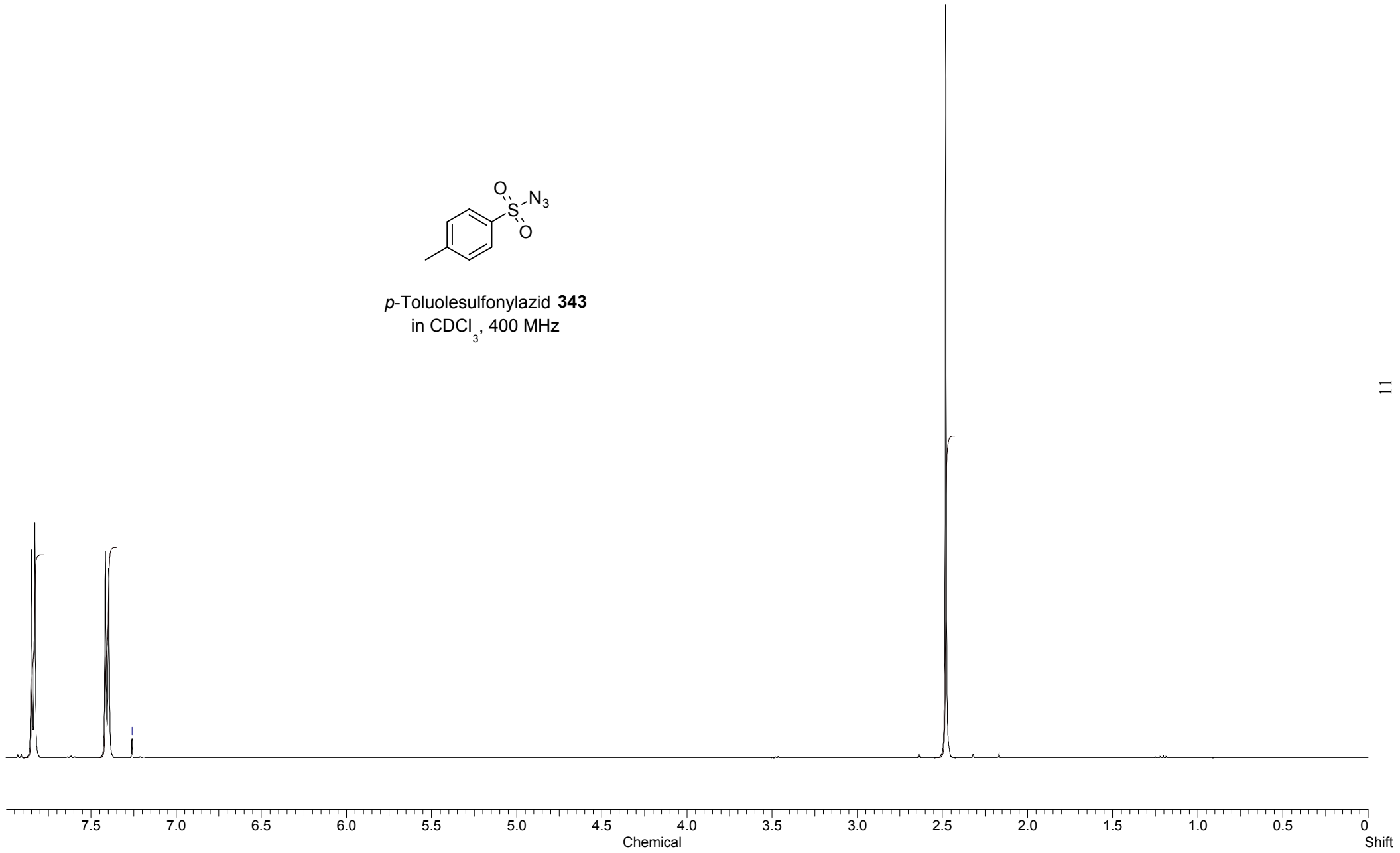


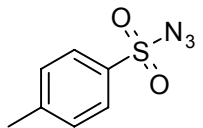
2-(Benzyloxy)-3-nitropyridin **313b**
in CDCl₃, 101 MHz

—7.260

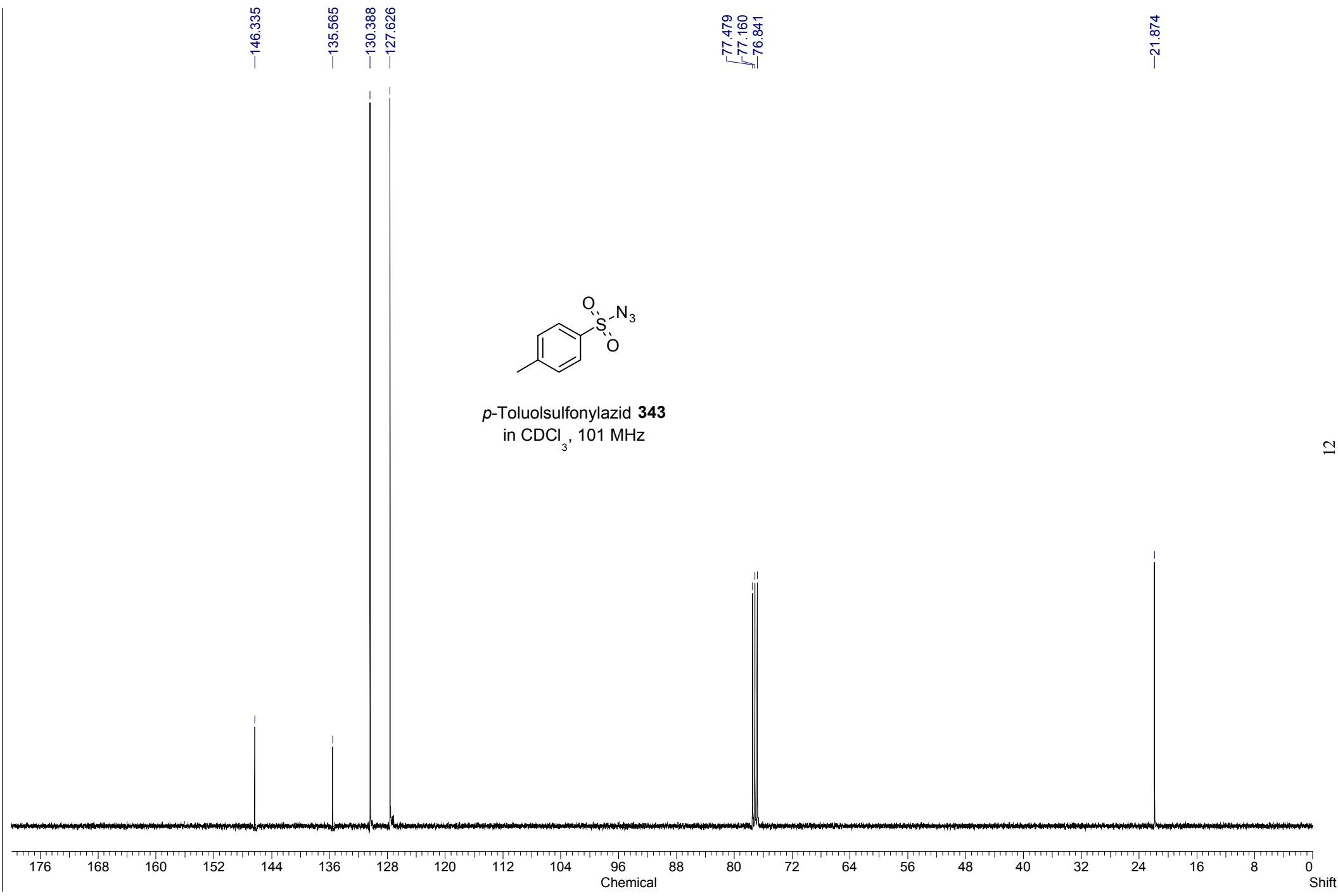


p-Toluolsulfonylazid **343**
in CDCl₃, 400 MHz

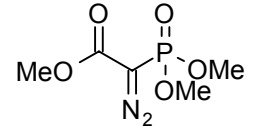




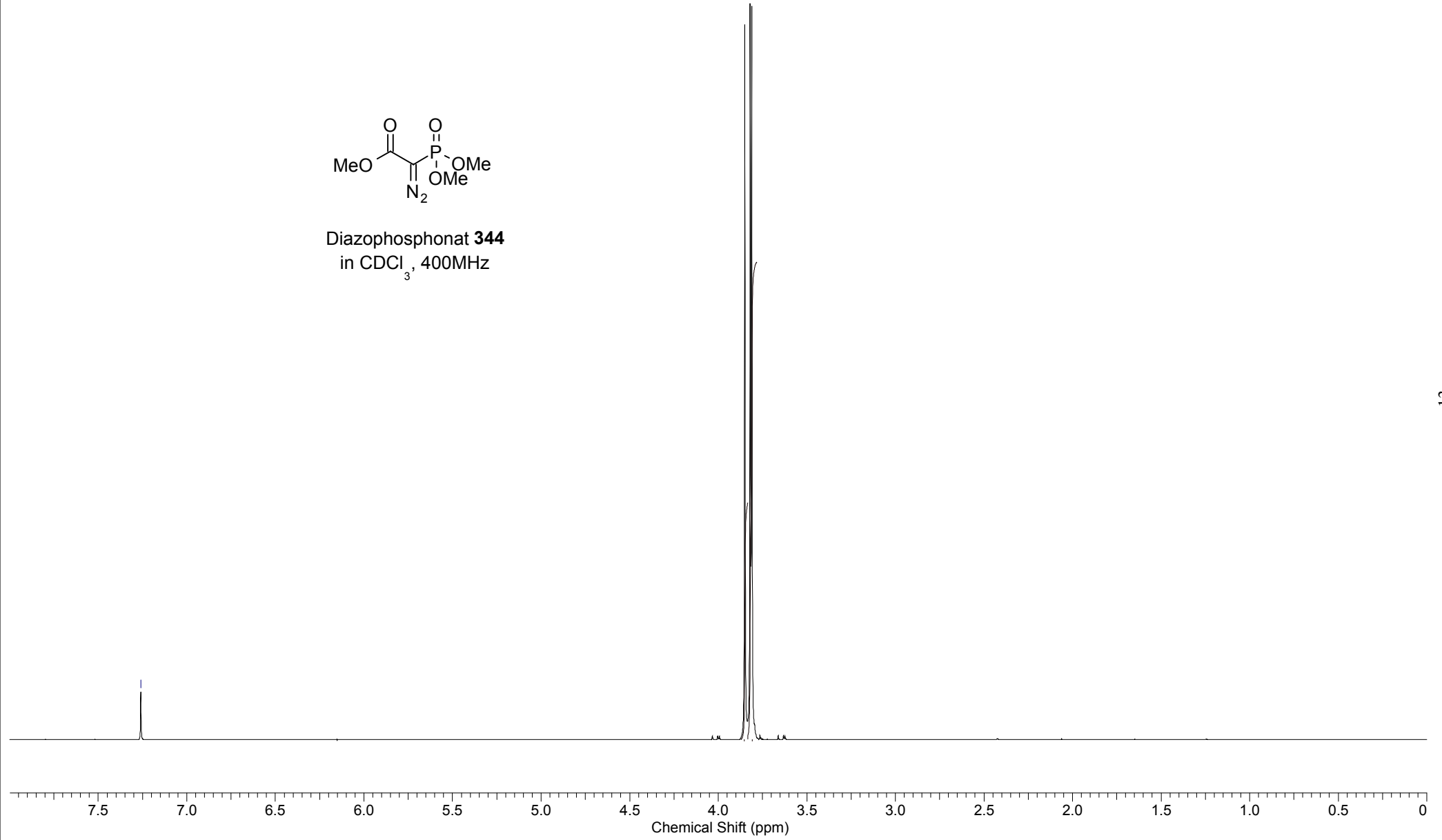
p-Toluolsulfonylazid **343**
in CDCl₃, 101 MHz

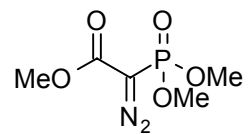


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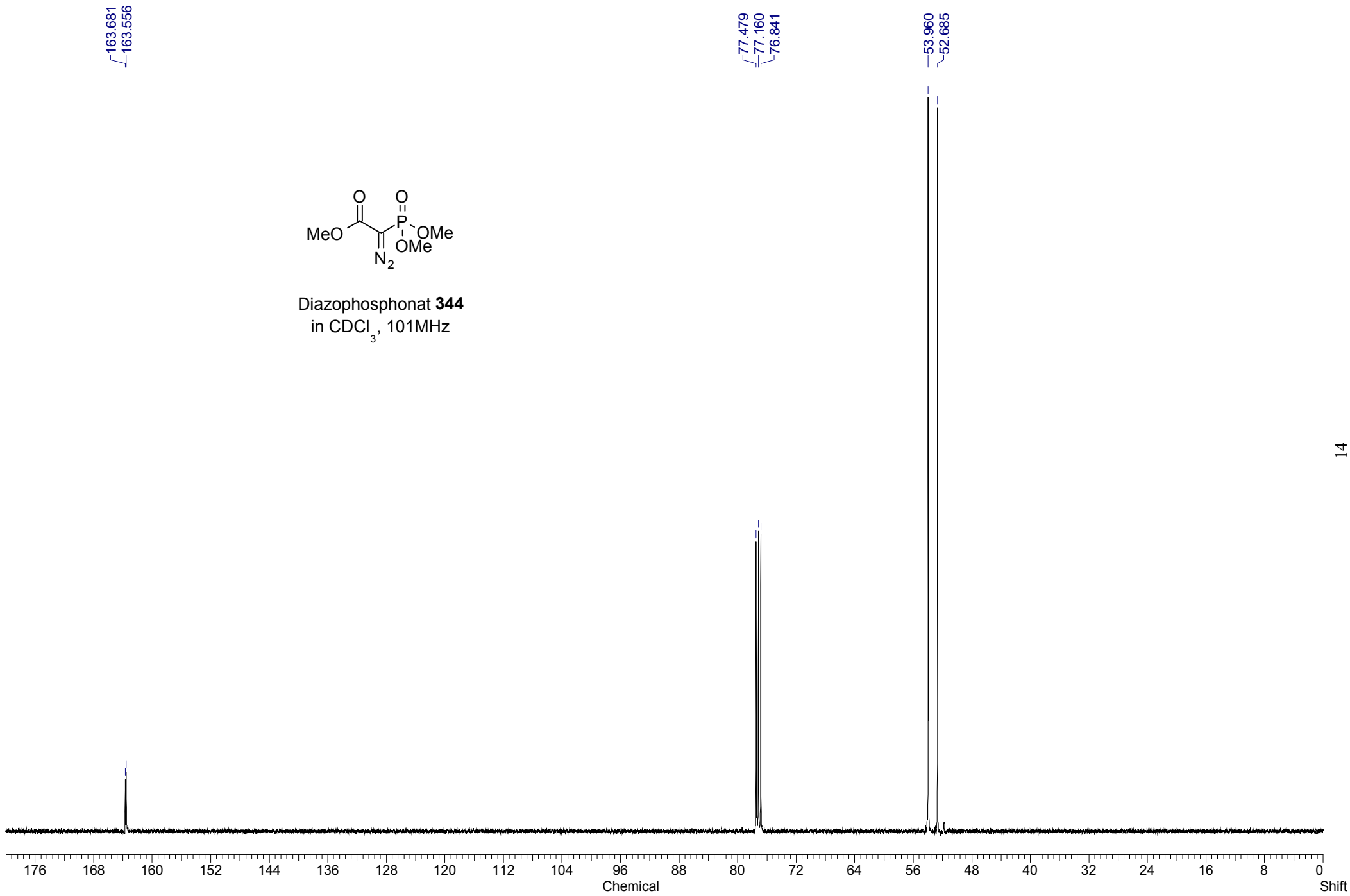


Diazophosphonat **344**
in CDCl₃, 400MHz

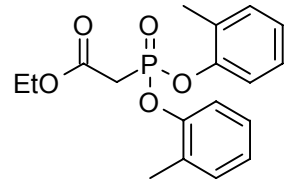




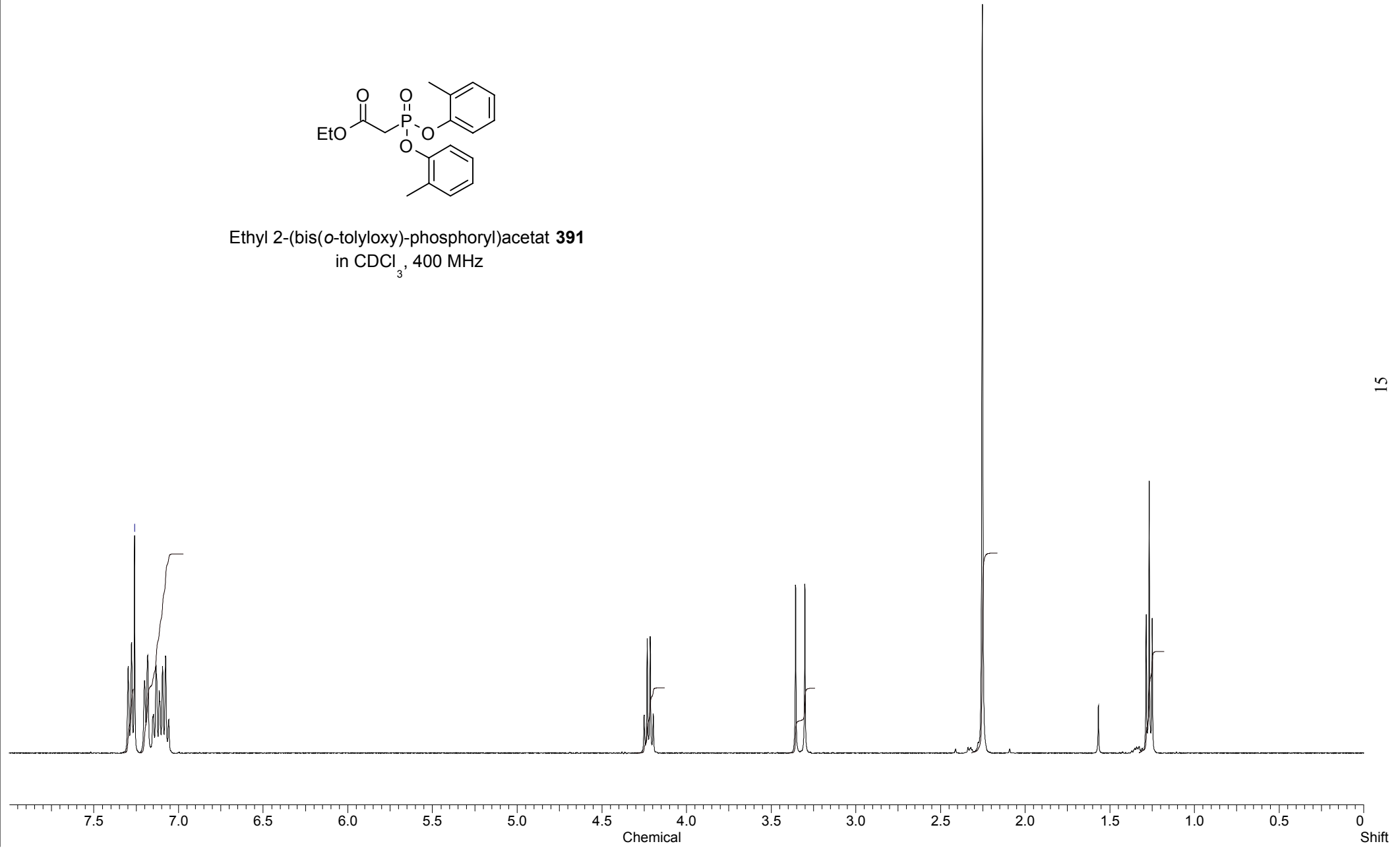
Diazophosphonat **344**
in CDCl₃, 101MHz

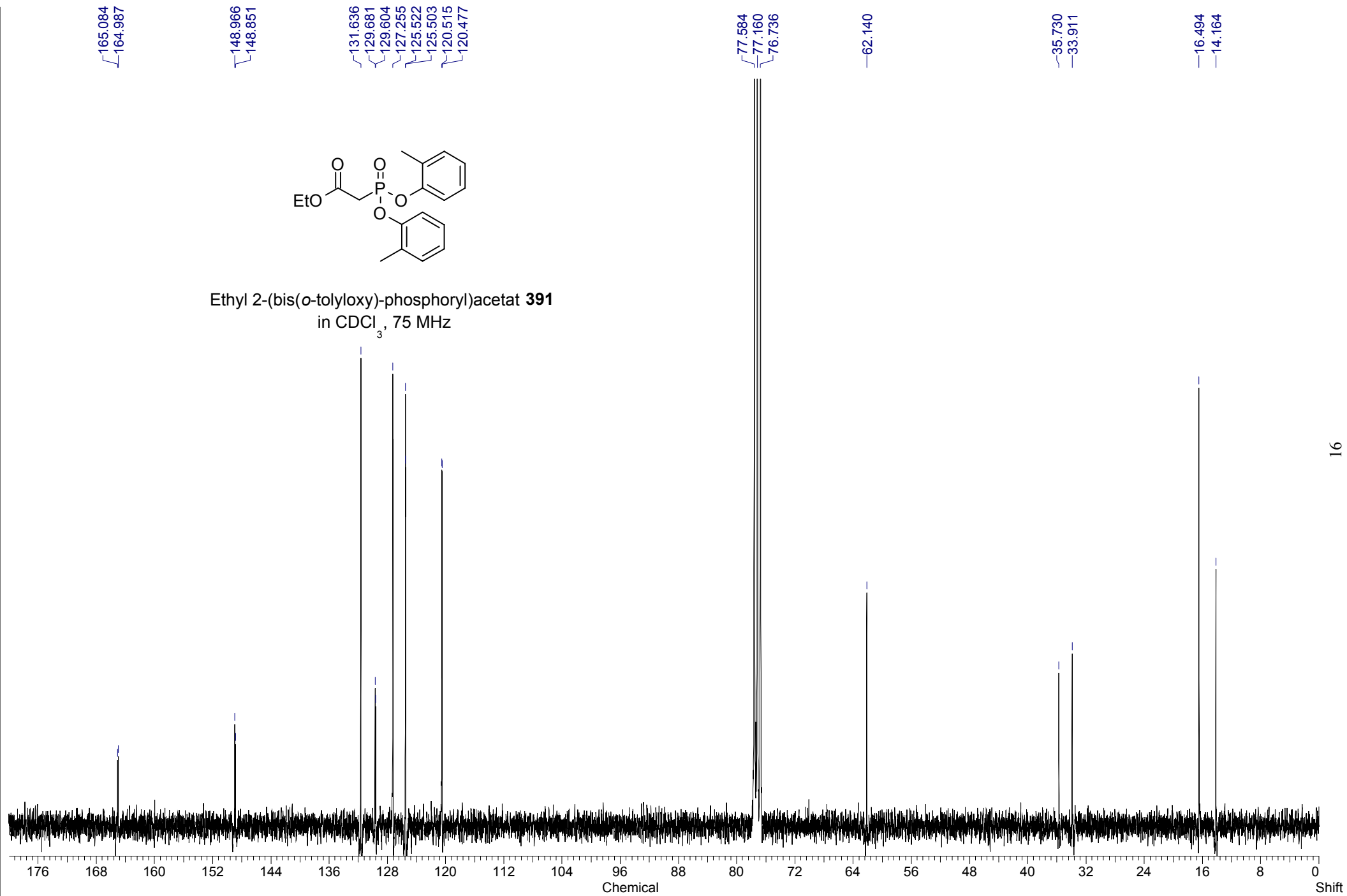


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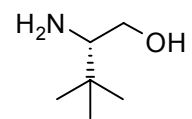


Ethyl 2-(bis(*o*-tolyl)oxy)phosphoryl)acetat **391**
in CDCl₃, 400 MHz

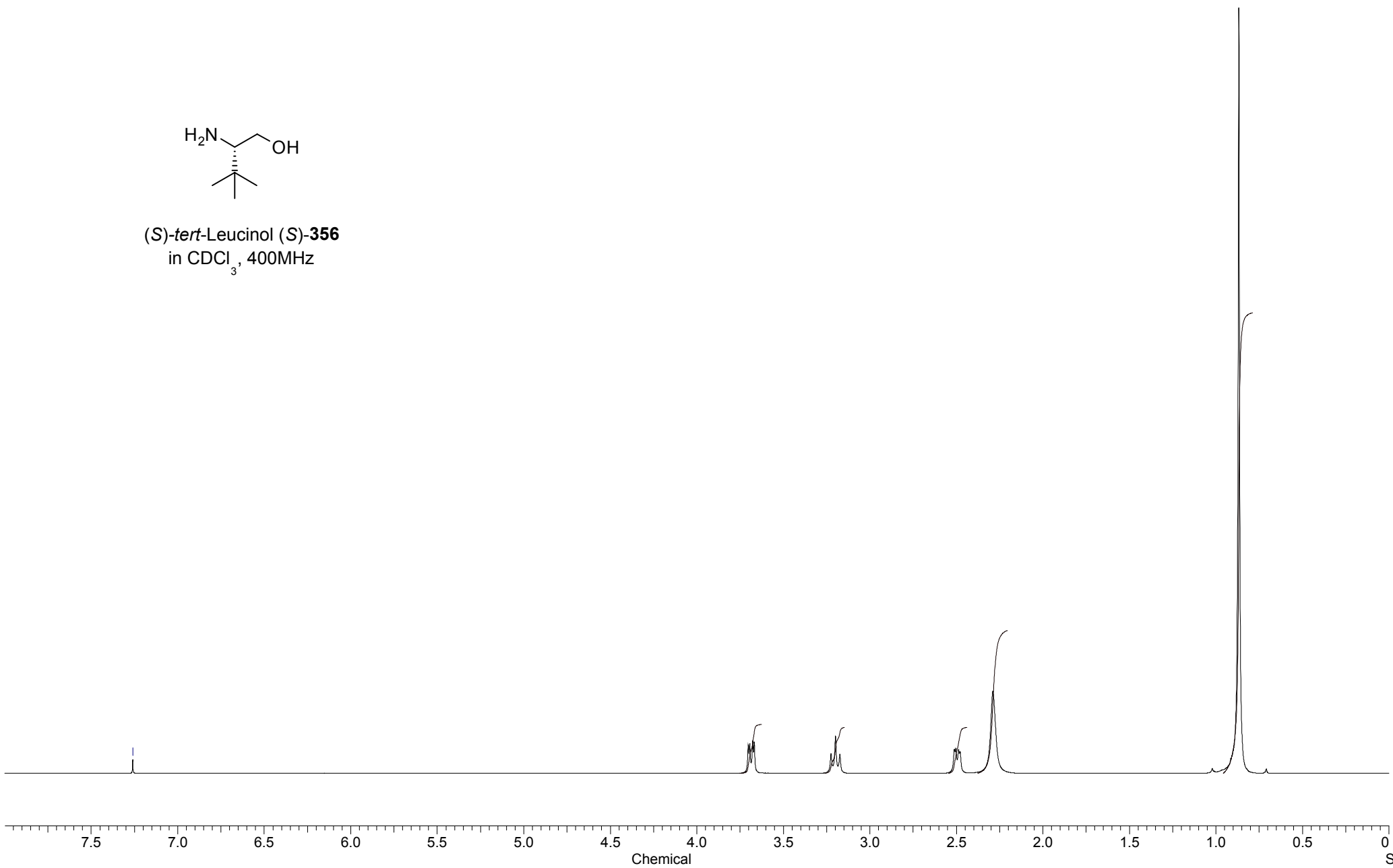


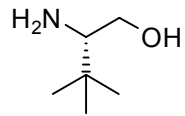


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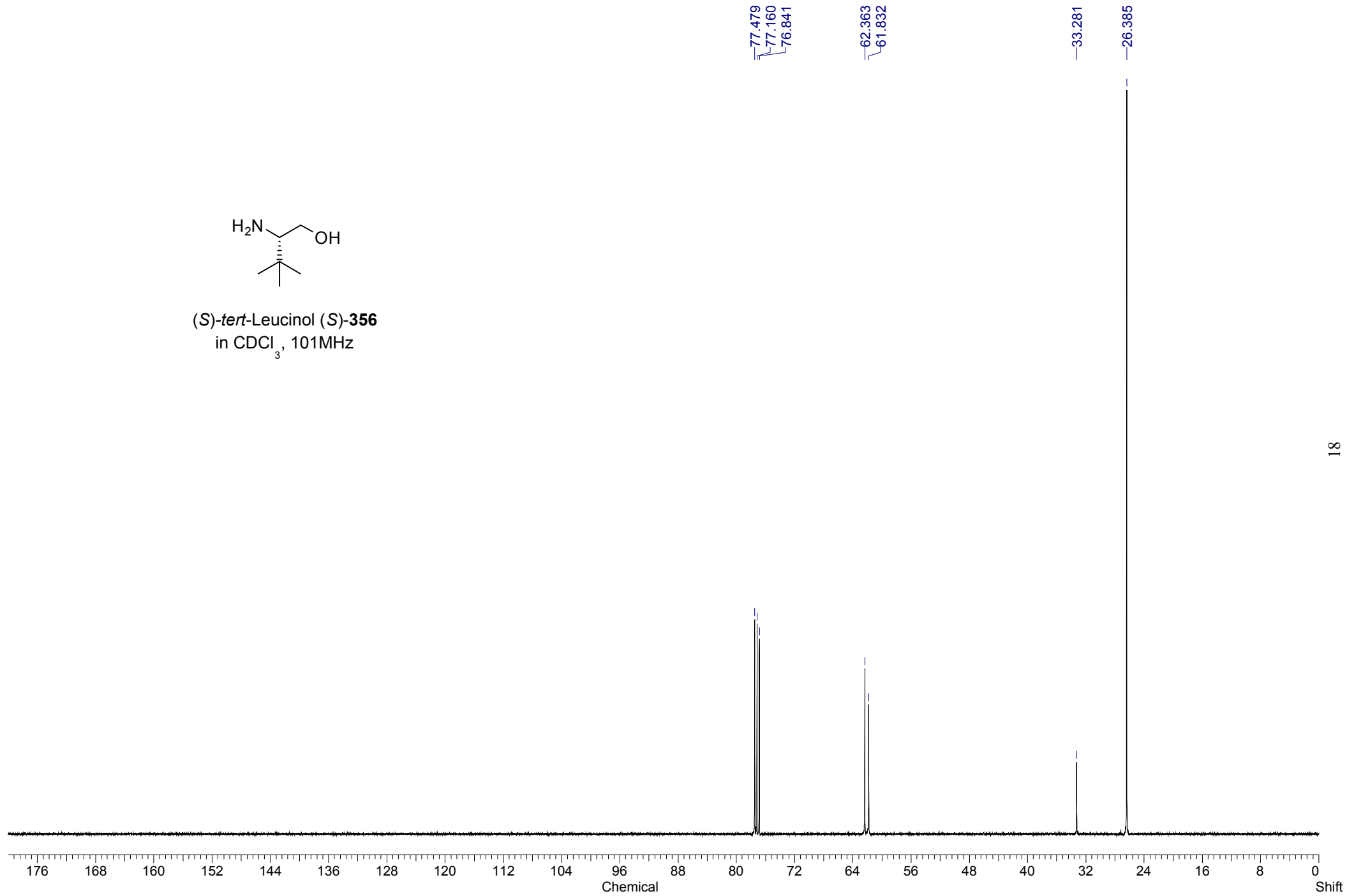


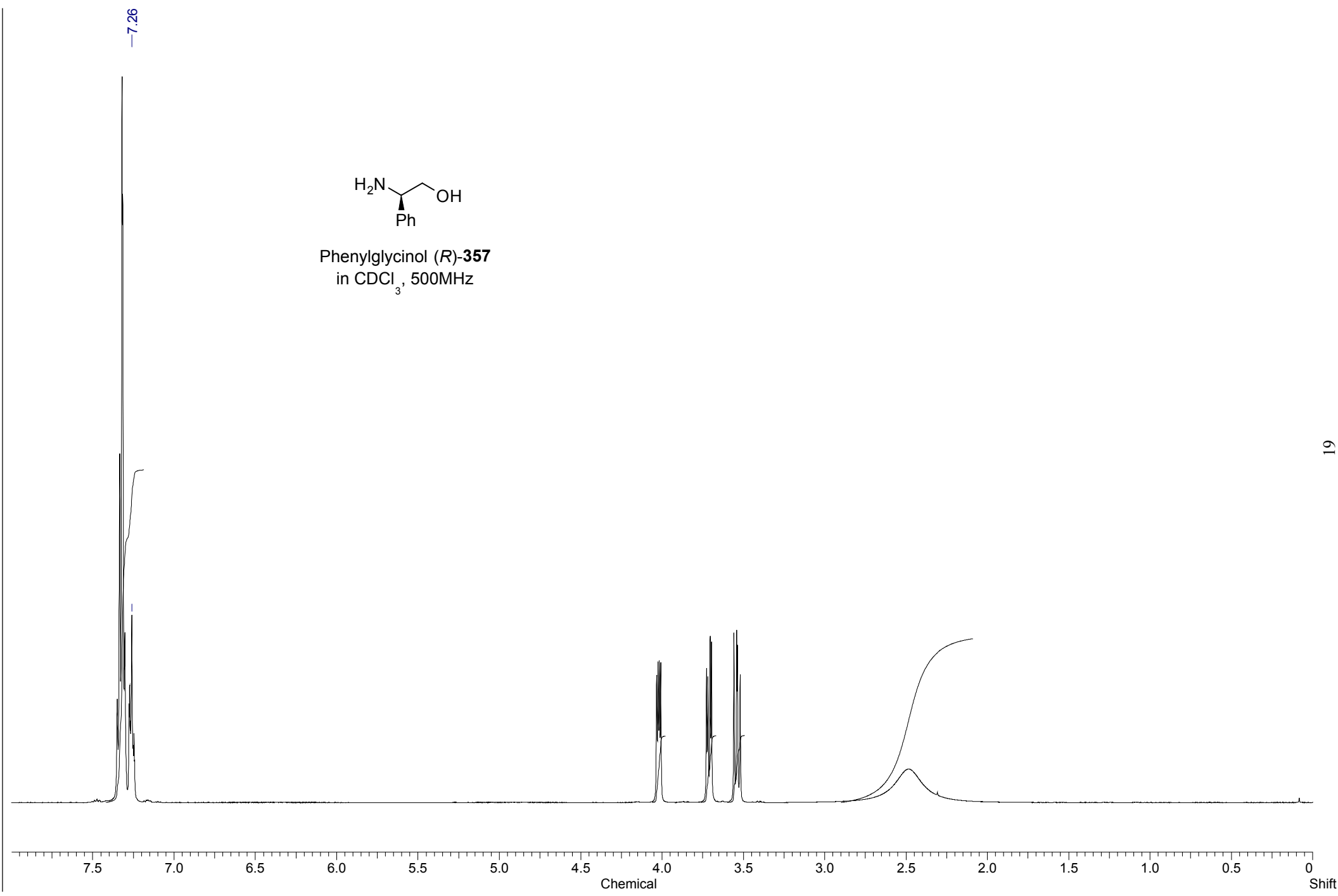
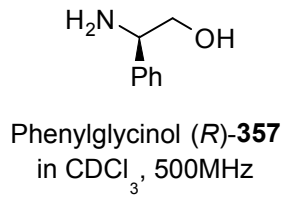
(S)-tert-Leucinol (S)-356
in CDCl₃, 400MHz

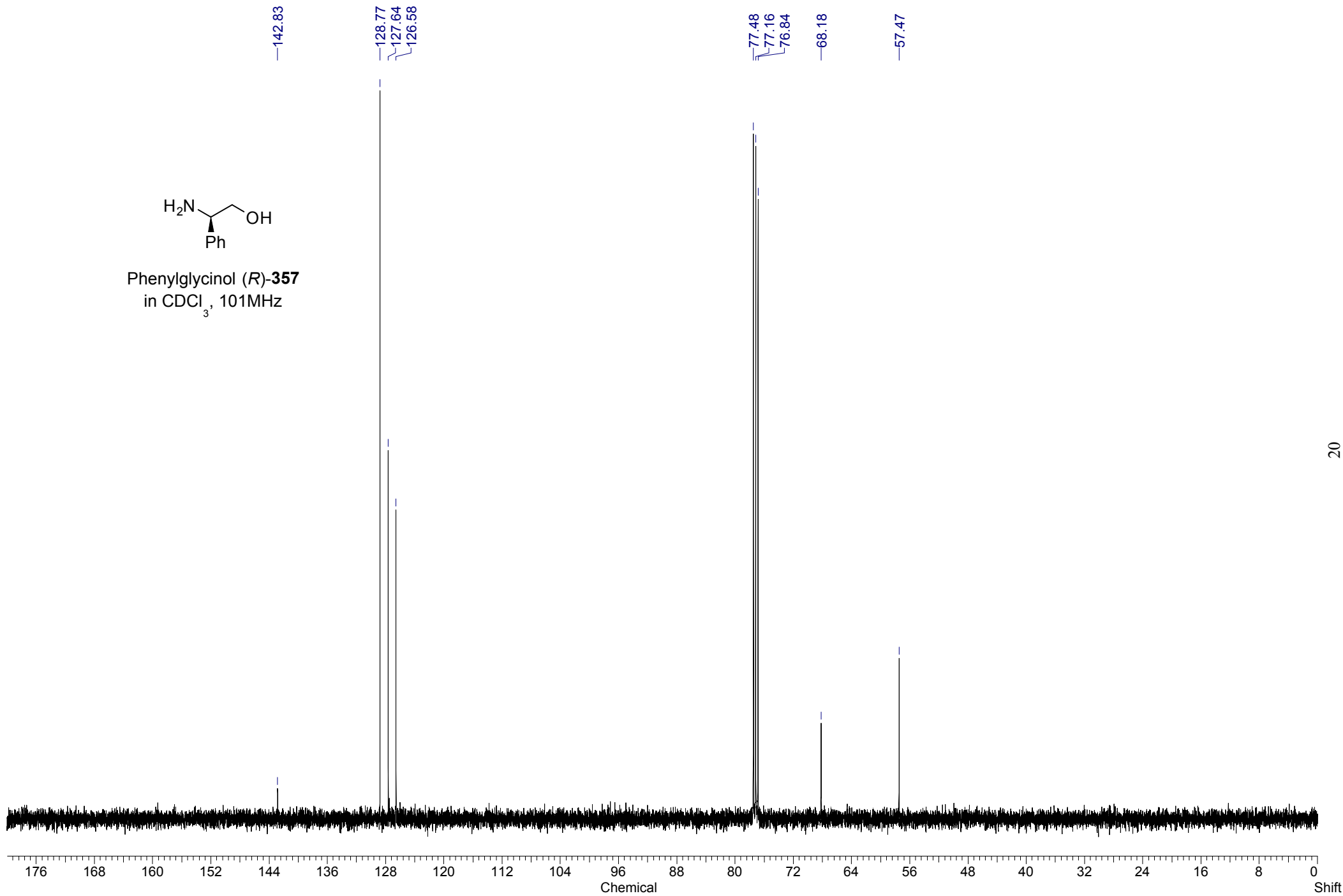
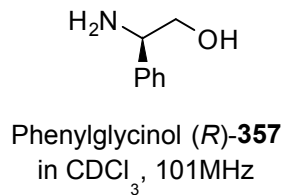


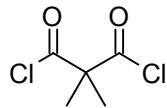


(S)-*tert*-Leucinol (S)-356
in CDCl₃, 101MHz

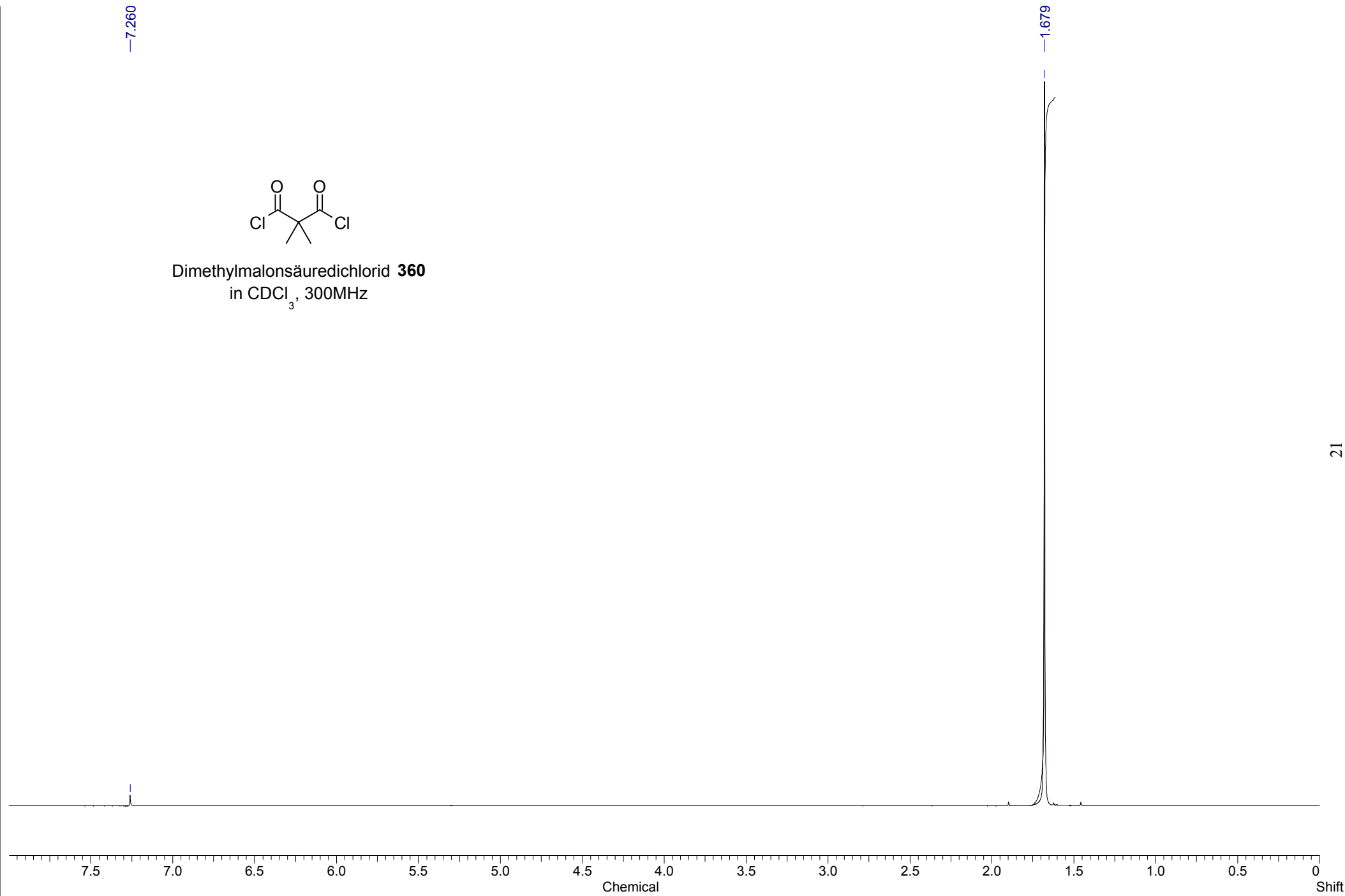


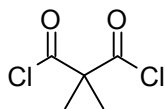




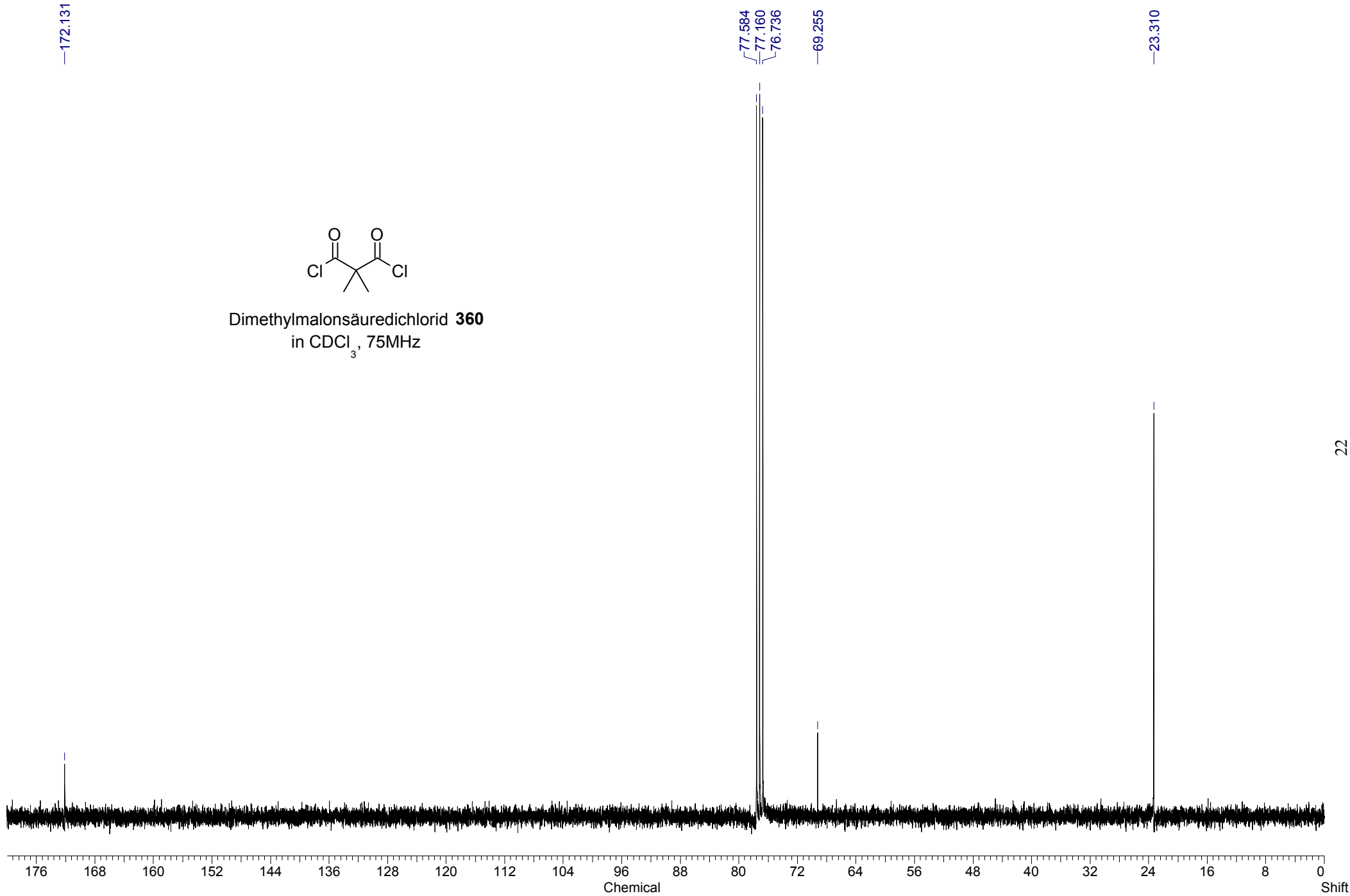


Dimethylmalonsäuredichlorid **360**
in CDCl_3 , 300MHz

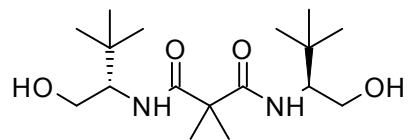




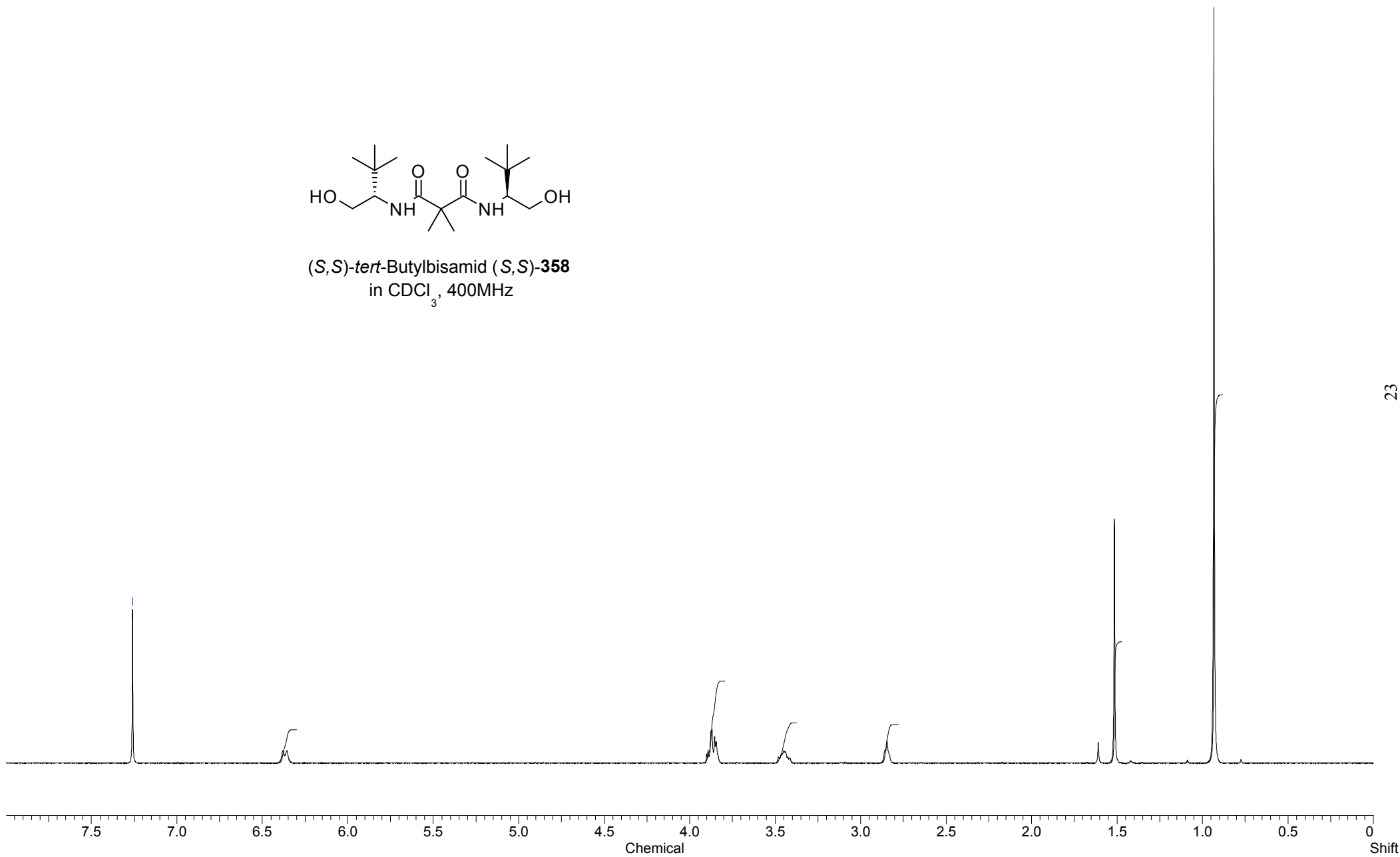
Dimethylmalonsäuredichlorid **360**
in CDCl₃, 75MHz

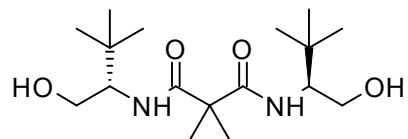


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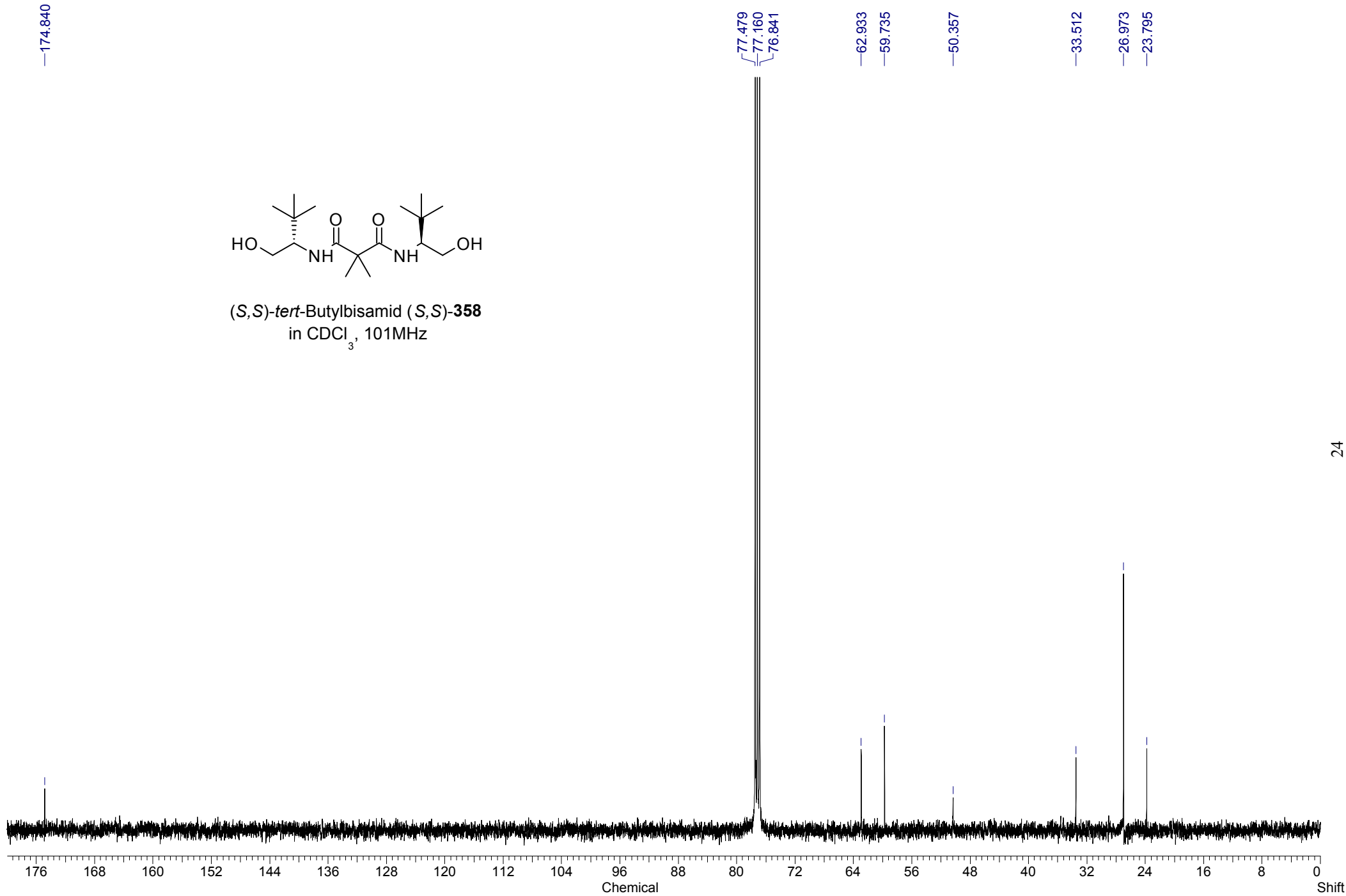


(*S,S*)-*tert*-Butylbisamid (*S,S*)-**358**
in CDCl₃, 400MHz

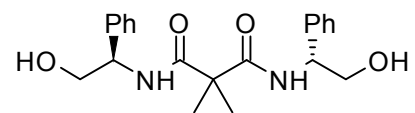




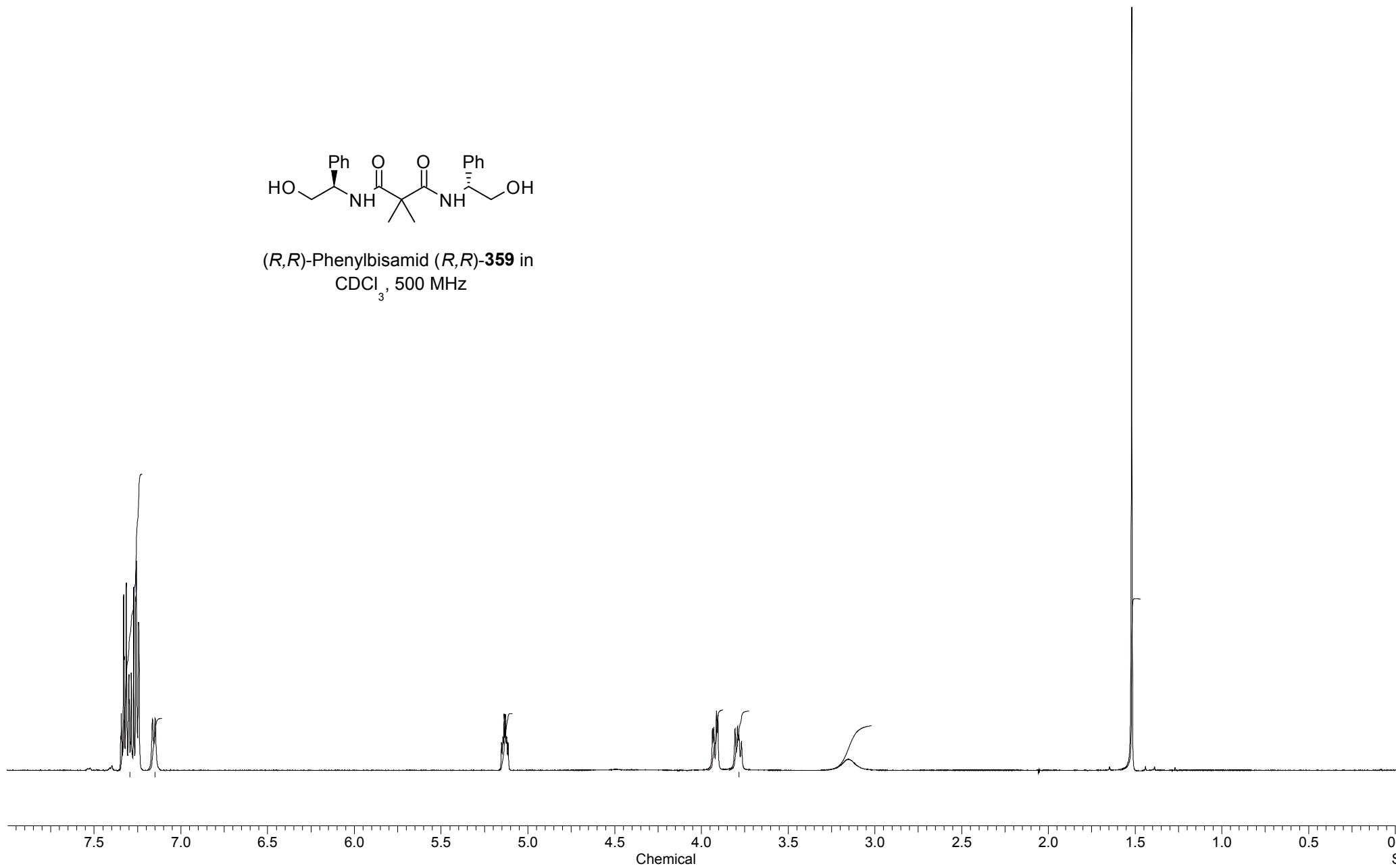
(*S,S*)-*tert*-Butylbisamid (*S,S*)-**358**
in CDCl₃, 101MHz

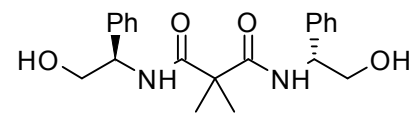


—7.260

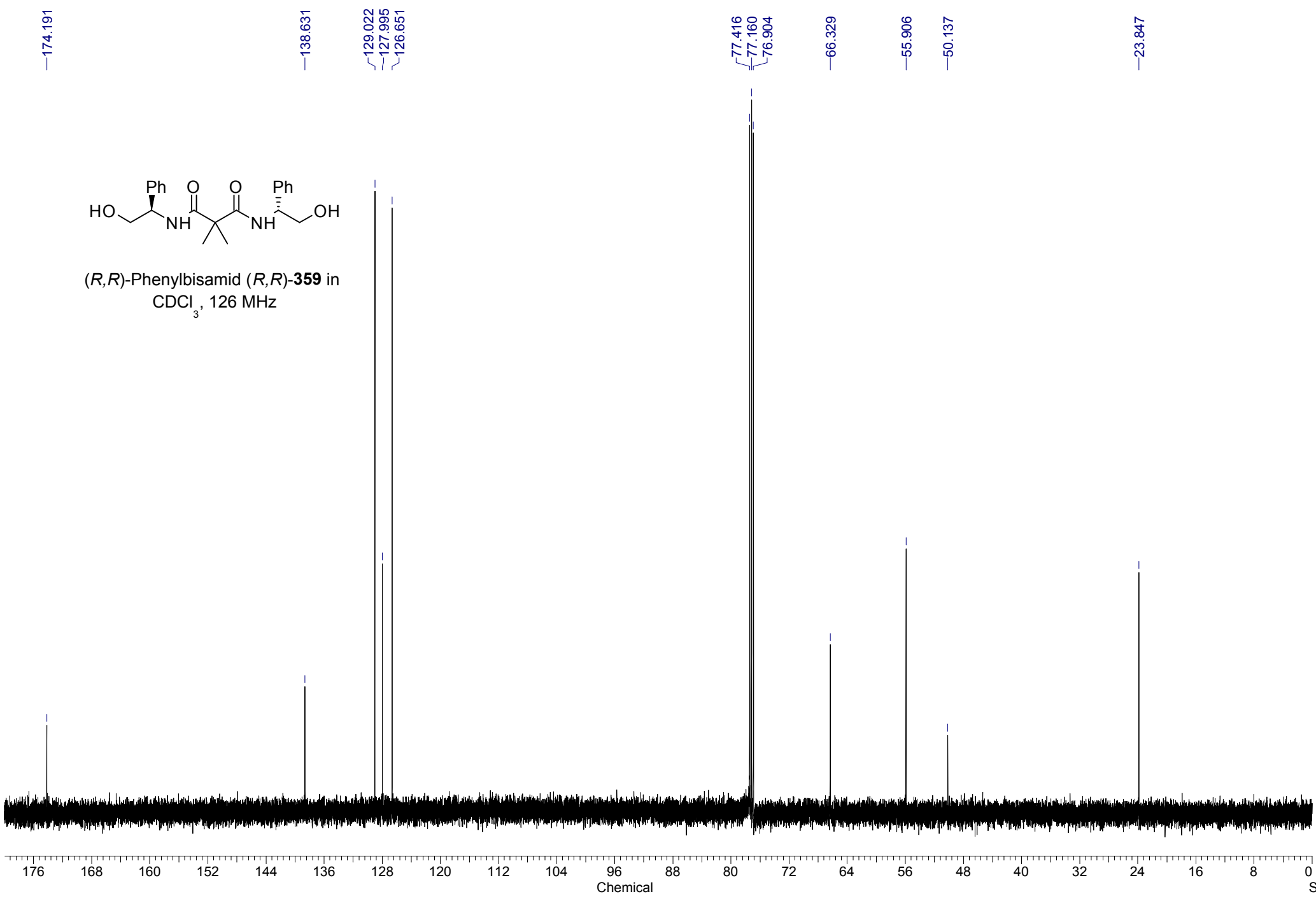


(*R,R*)-Phenylbisamid (*R,R*)-**359** in
CDCl₃, 500 MHz

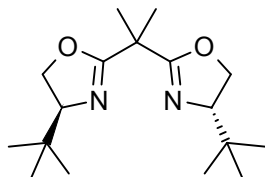




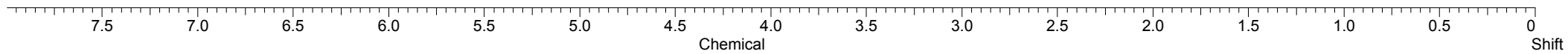
(*R,R*)-Phenylbisamid (*R,R*)-**359** in
CDCl₃, 126 MHz

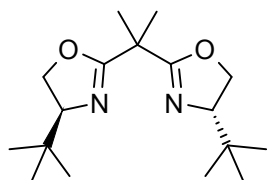


—7.260

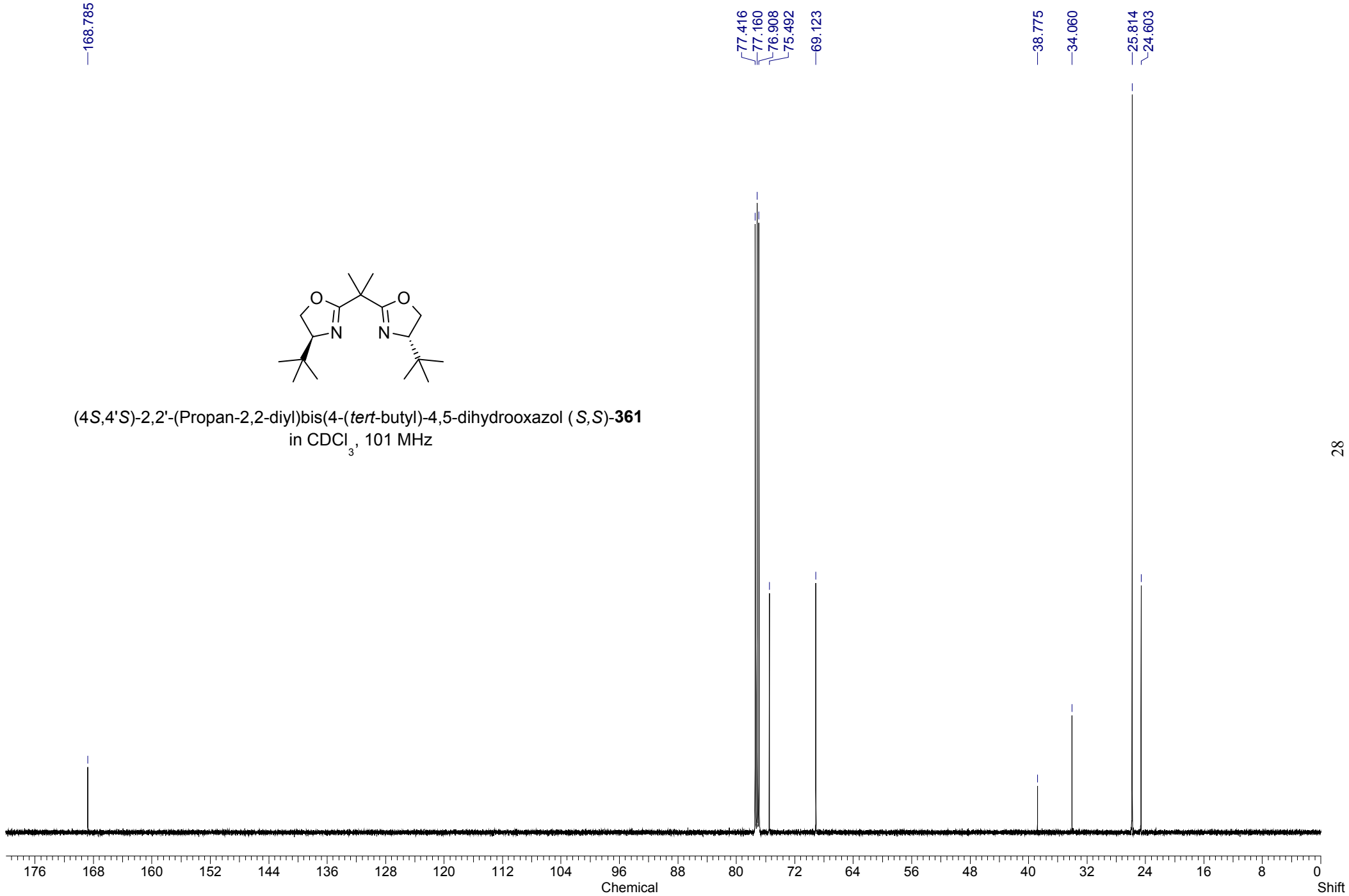


(4*S*,4'*S*)-2,2'-(Propan-2,2-diyl)bis(4-(*tert*-butyl)-4,5-dihydrooxazol (*S*,*S*)-**361**
in CDCl₃, 500 MHz

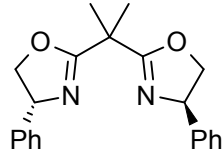




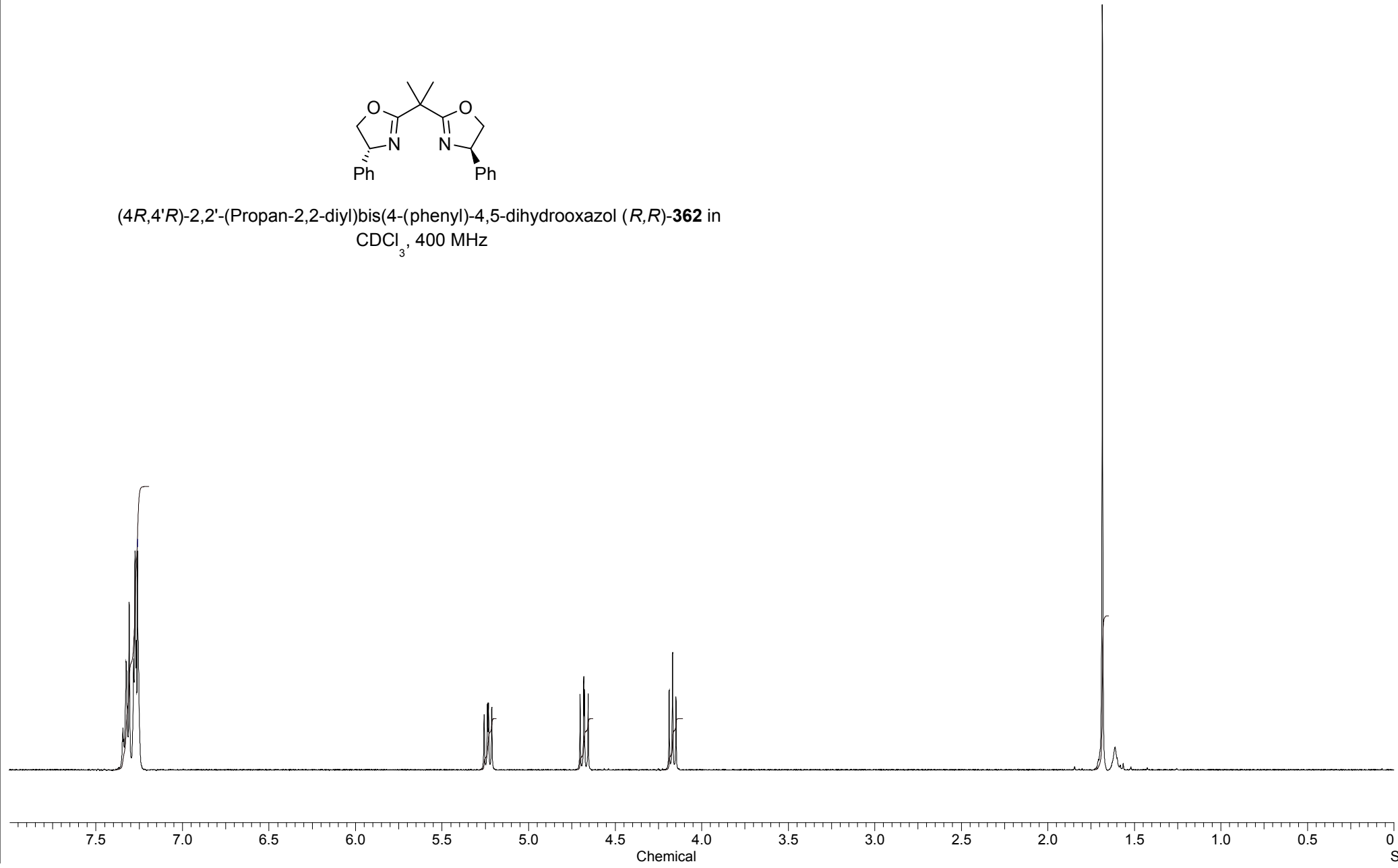
(4*S*,4'*S*)-2,2'-(Propan-2,2-diyl)bis(4-(*tert*-butyl)-4,5-dihydrooxazol (*S,S*)-**361**
in CDCl₃, 101 MHz

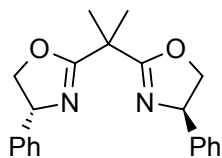


—7.260

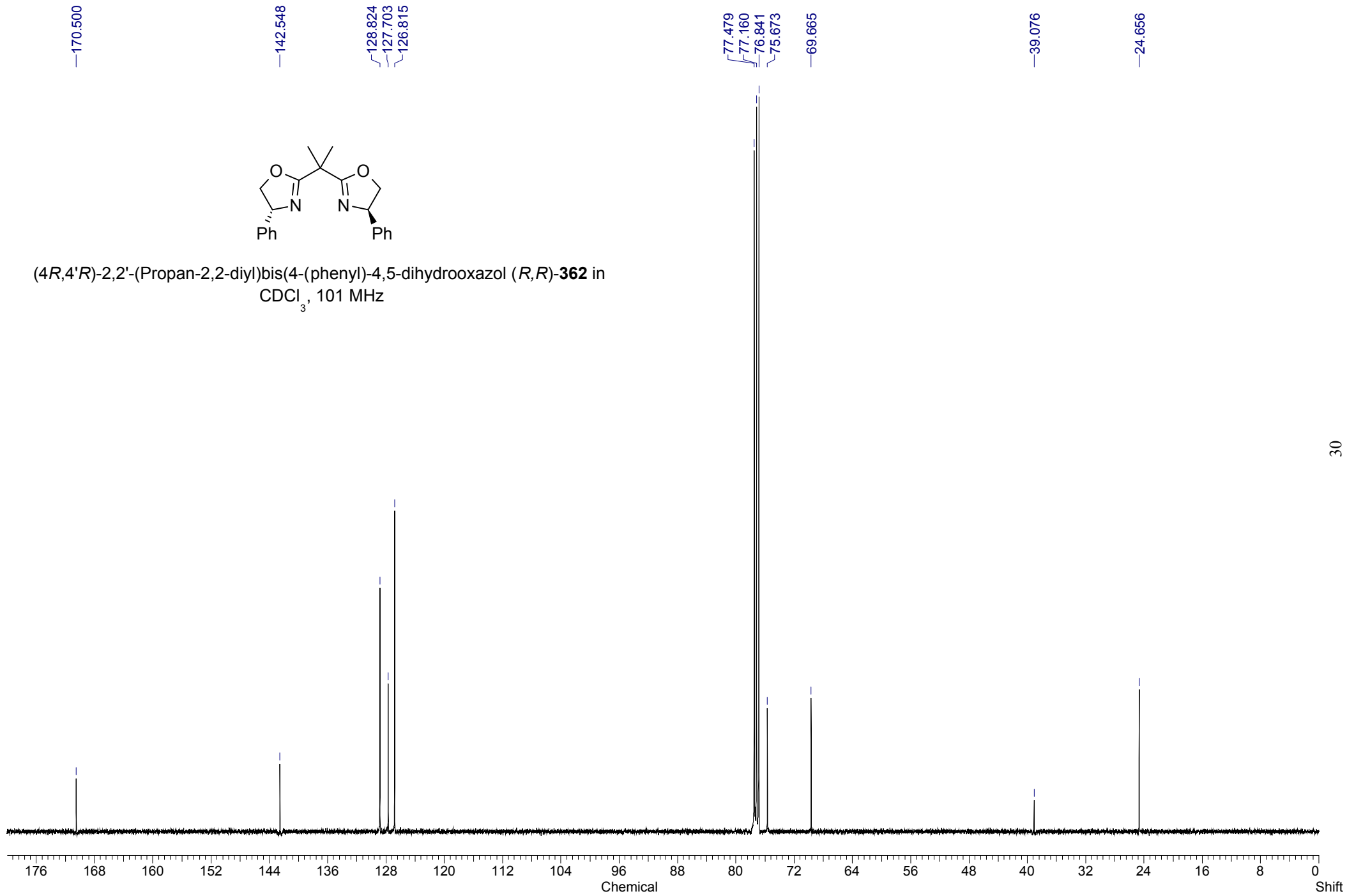


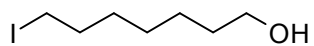
(4*R*,4'*R*)-2,2'-(Propan-2,2-diyl)bis(4-(phenyl)-4,5-dihydrooxazol (*R,R*)-**362** in
CDCl₃, 400 MHz





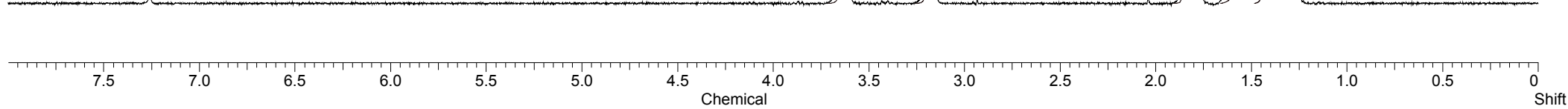
(4*R*,4'*R*)-2,2'-(Propan-2,2-diyl)bis(4-(phenyl)-4,5-dihydrooxazol (*R,R*)-**362** in CDCl_3 , 101 MHz

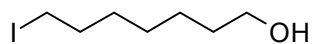




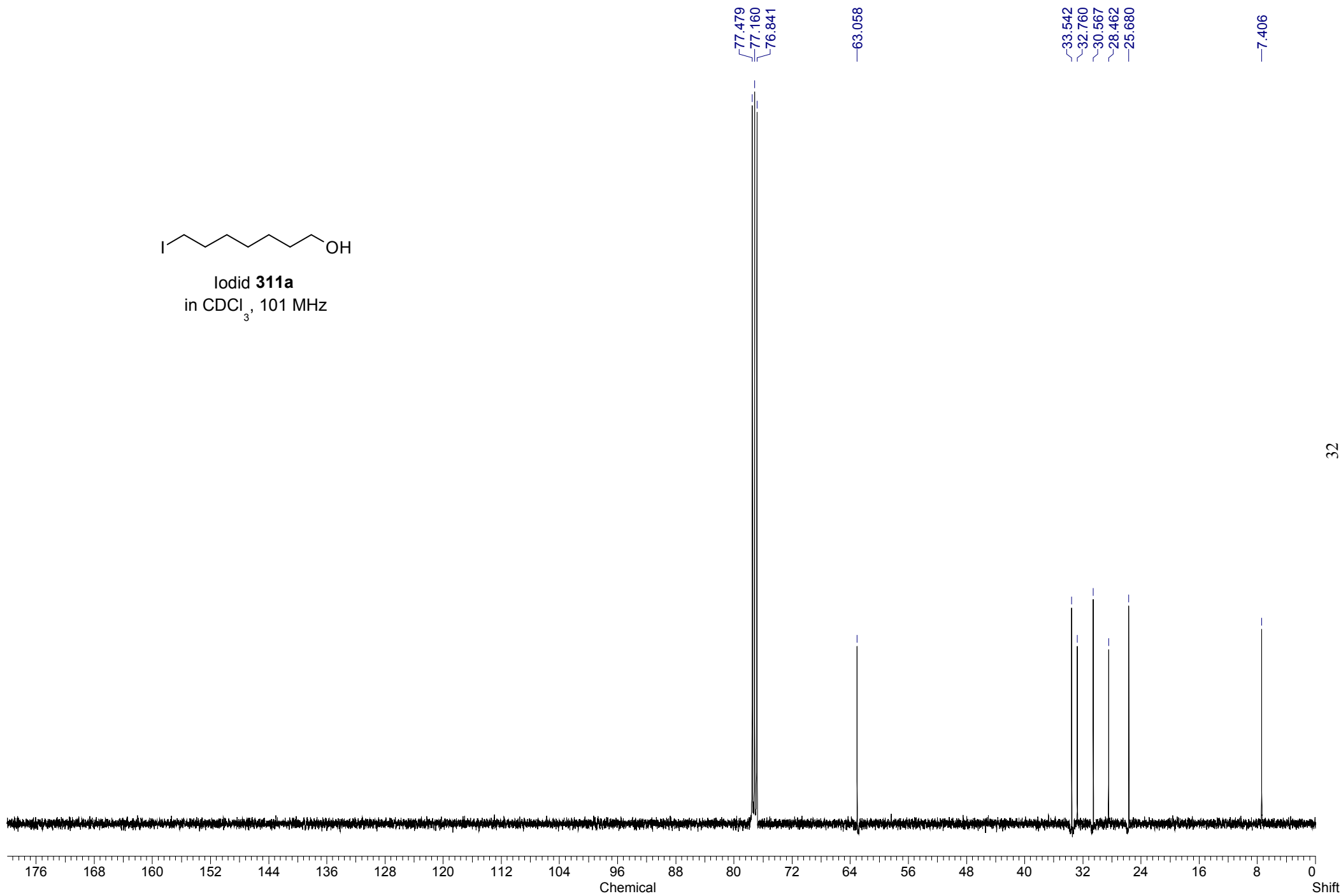
Iodid **311a**
in CDCl₃, 300 MHz

—7.260

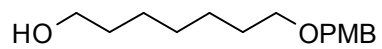




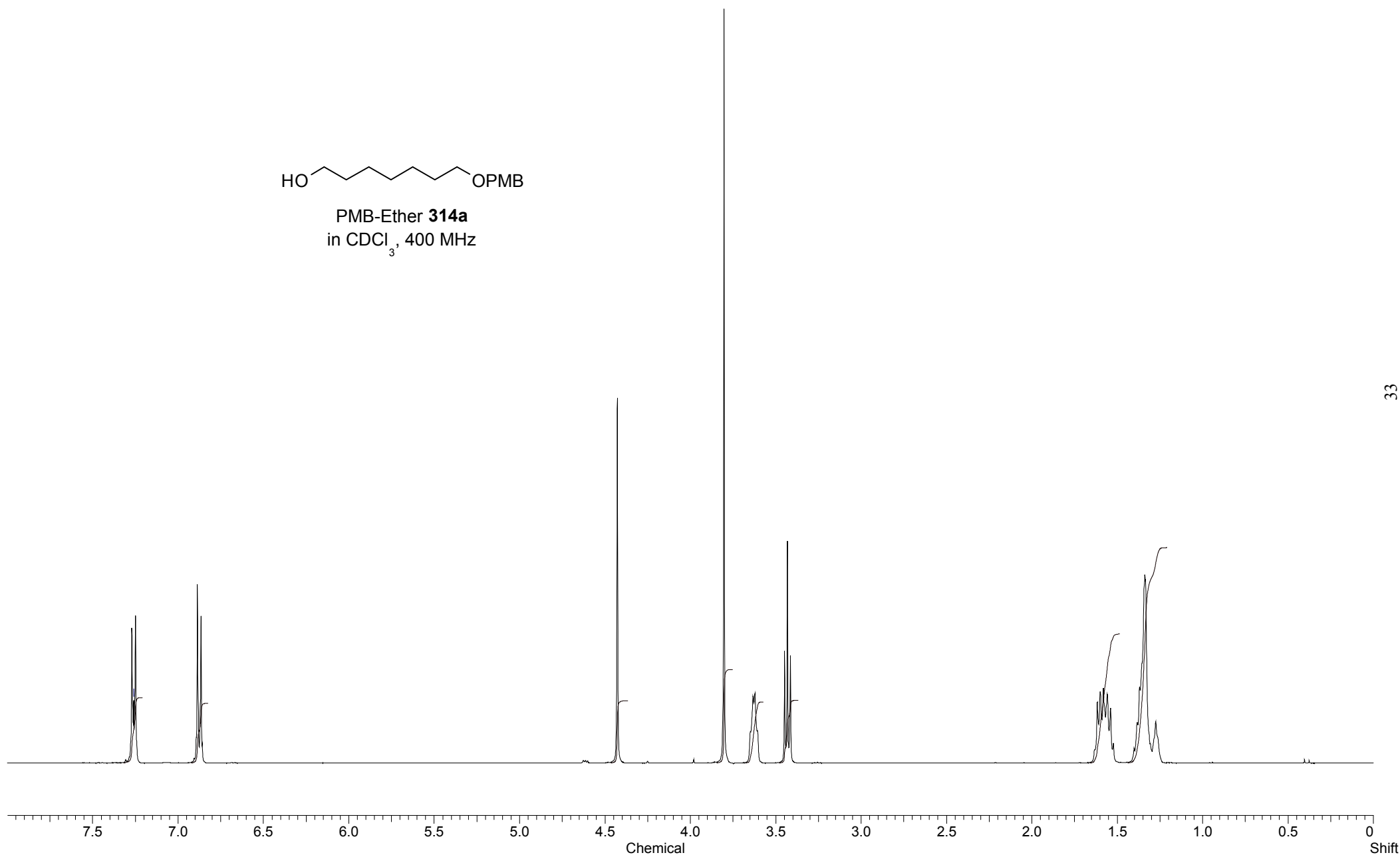
Iodid **311a**
in CDCl₃, 101 MHz

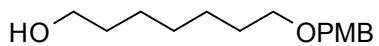


—7.260

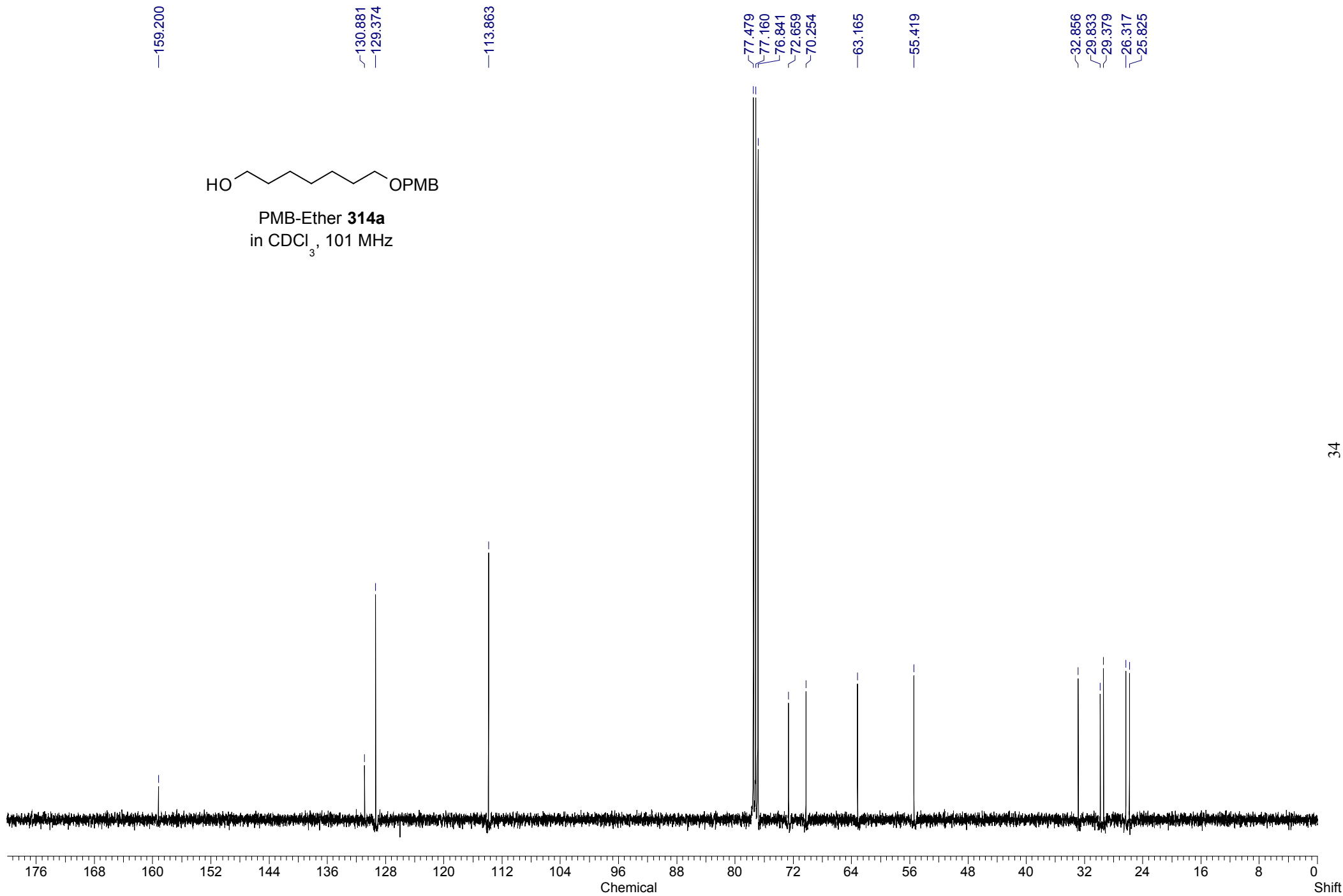


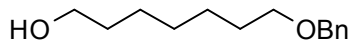
PMB-Ether 314a
in CDCl₃, 400 MHz





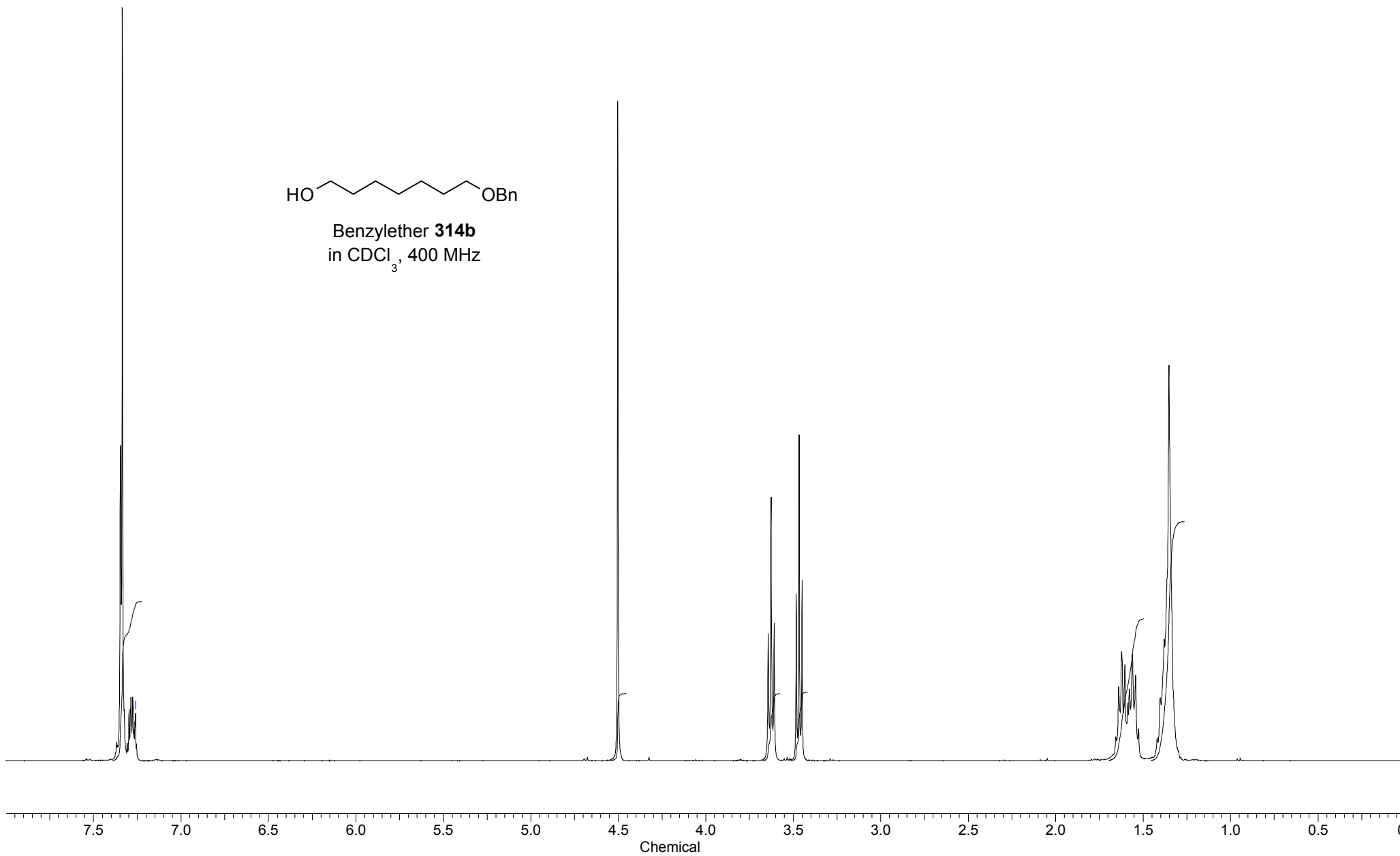
PMB-Ether **314a**
in CDCl₃, 101 MHz

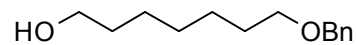




Benzylether 314b
in CDCl₃, 400 MHz

—7.260





Benzylether **314b**
in CDCl₃, 101 MHz

138.753

128.466

127.752

127.607

77.479

77.160

76.841

72.988

70.544

63.116

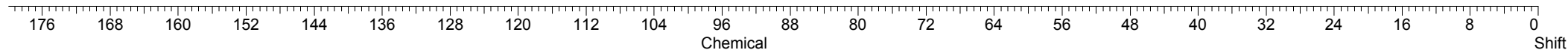
32.827

29.804

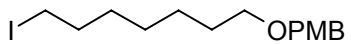
29.369

26.288

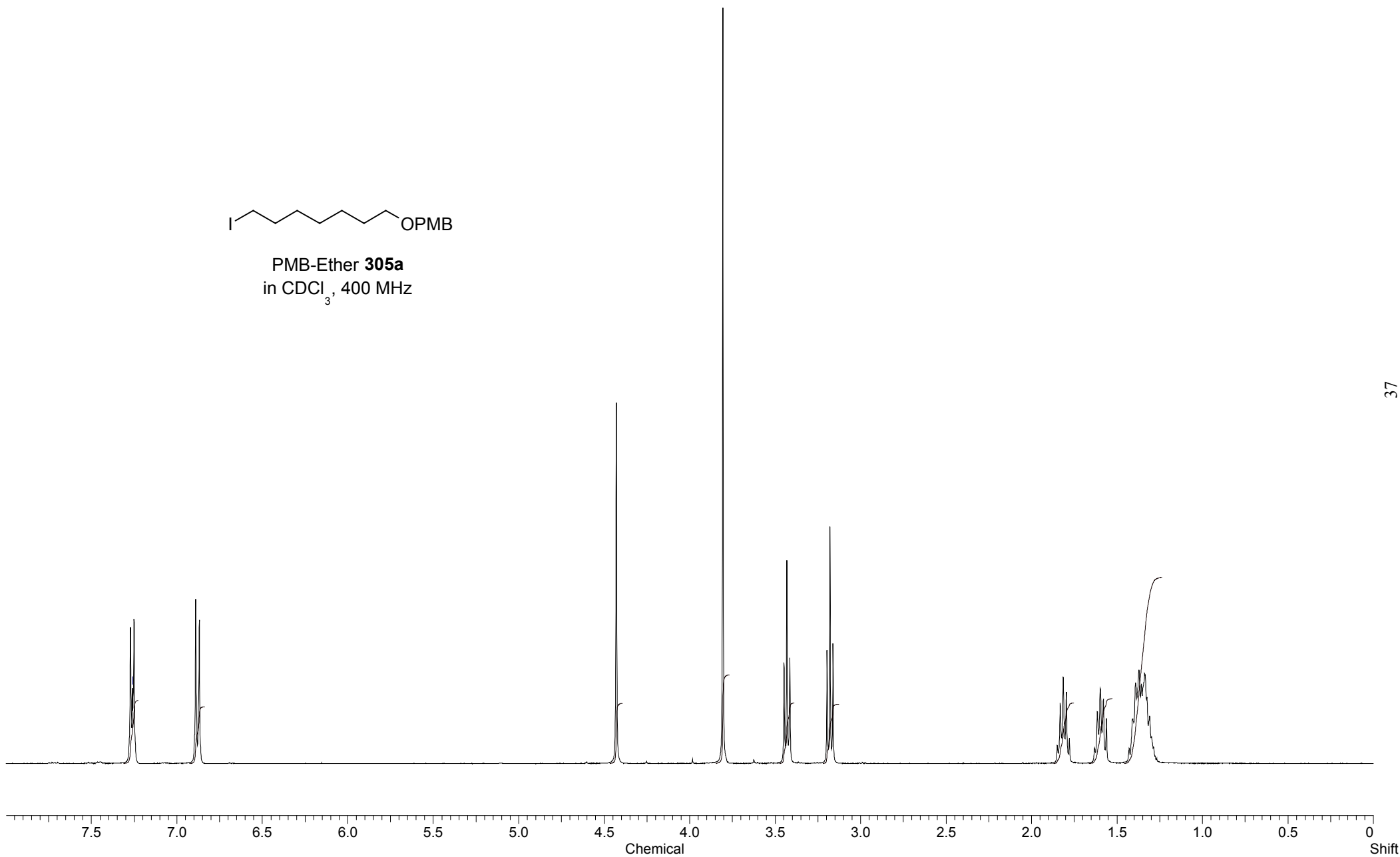
25.805

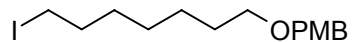


—7.260



PMB-Ether **305a**
in CDCl₃, 400 MHz





PMB-Ether **305a**
in CDCl₃, 101 MHz

159.210

130.842
129.365

113.863

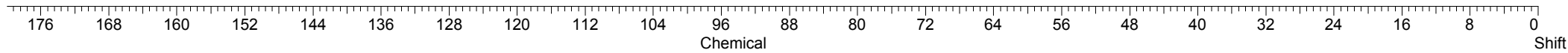
77.469
77.160
76.841

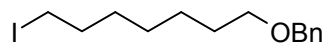
72.669
70.148

55.419

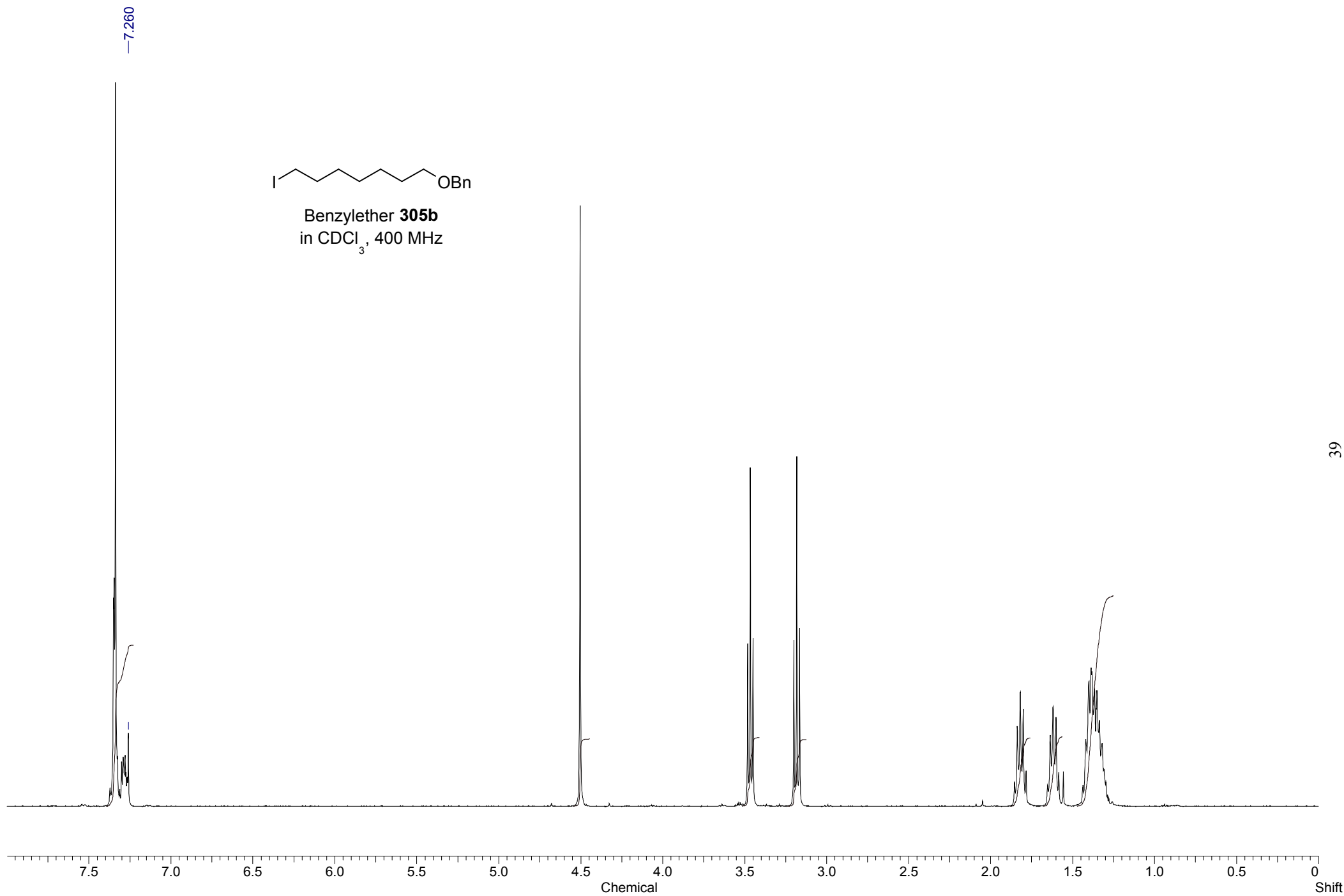
33.590
30.567
29.794
28.490
26.153

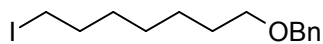
7.435





Benzylether 305b
in CDCl₃, 400 MHz





Benzylether 305b
in CDCl₃, 400 MHz

138.762

128.495

127.771

127.636

77.479

77.160

76.851

73.036

70.467

33.600

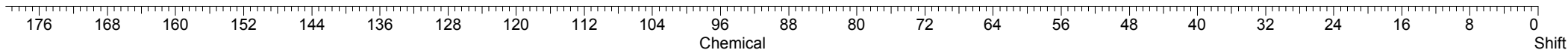
30.577

29.814

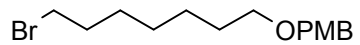
28.510

26.153

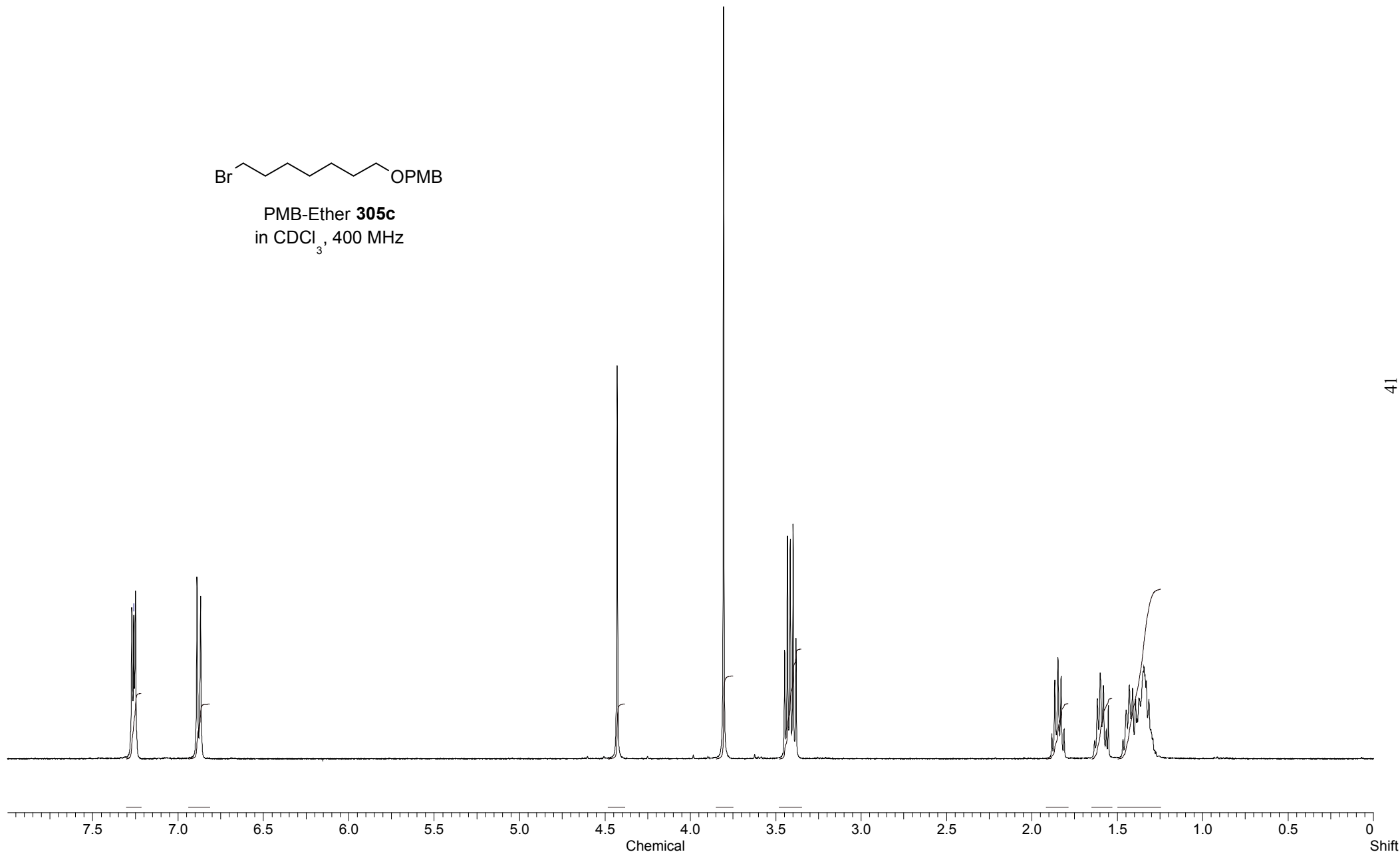
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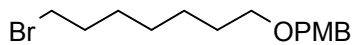


-7.260

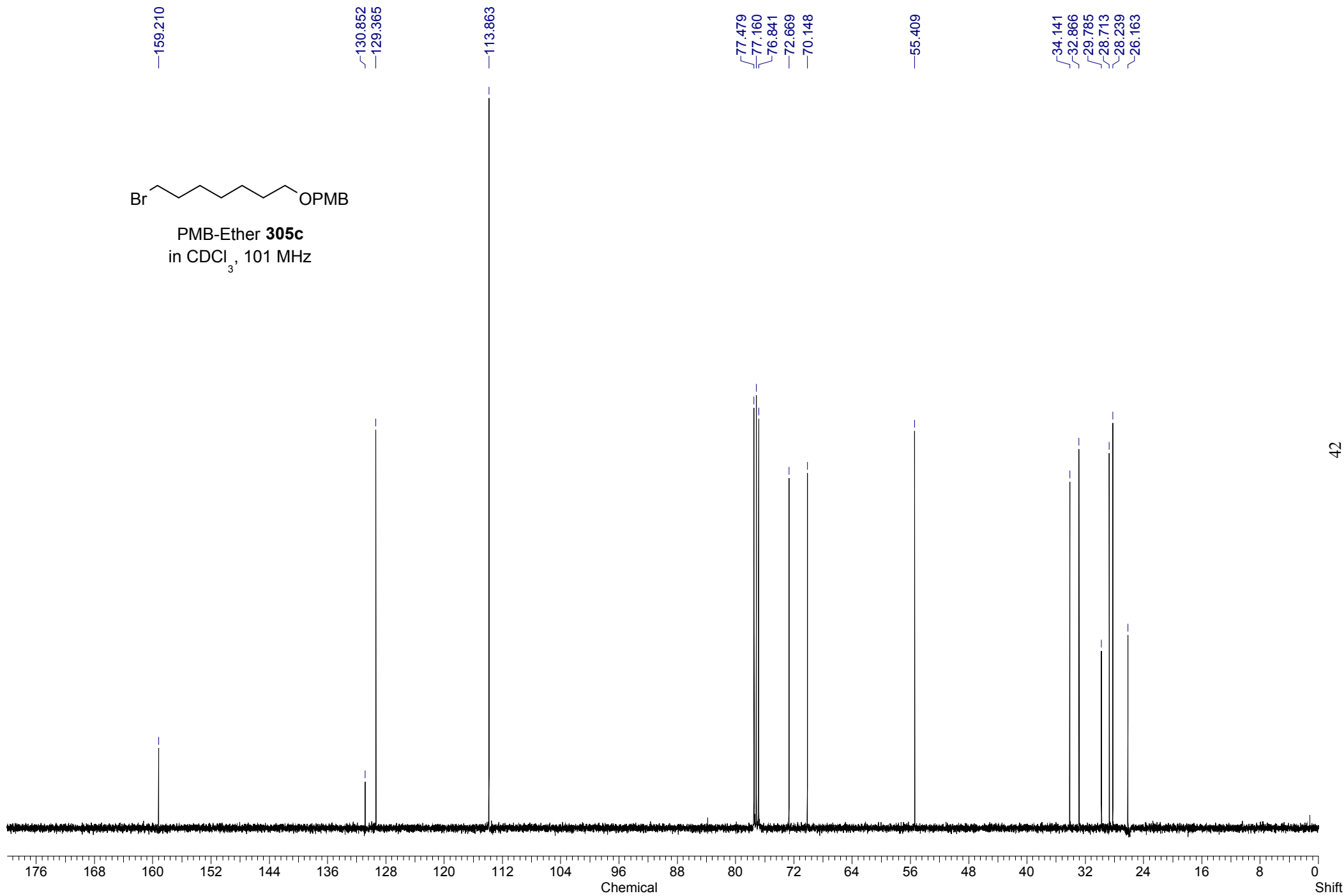


PMB-Ether **305c**
in CDCl₃, 400 MHz

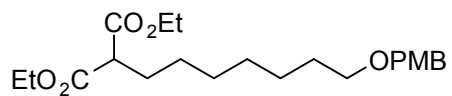




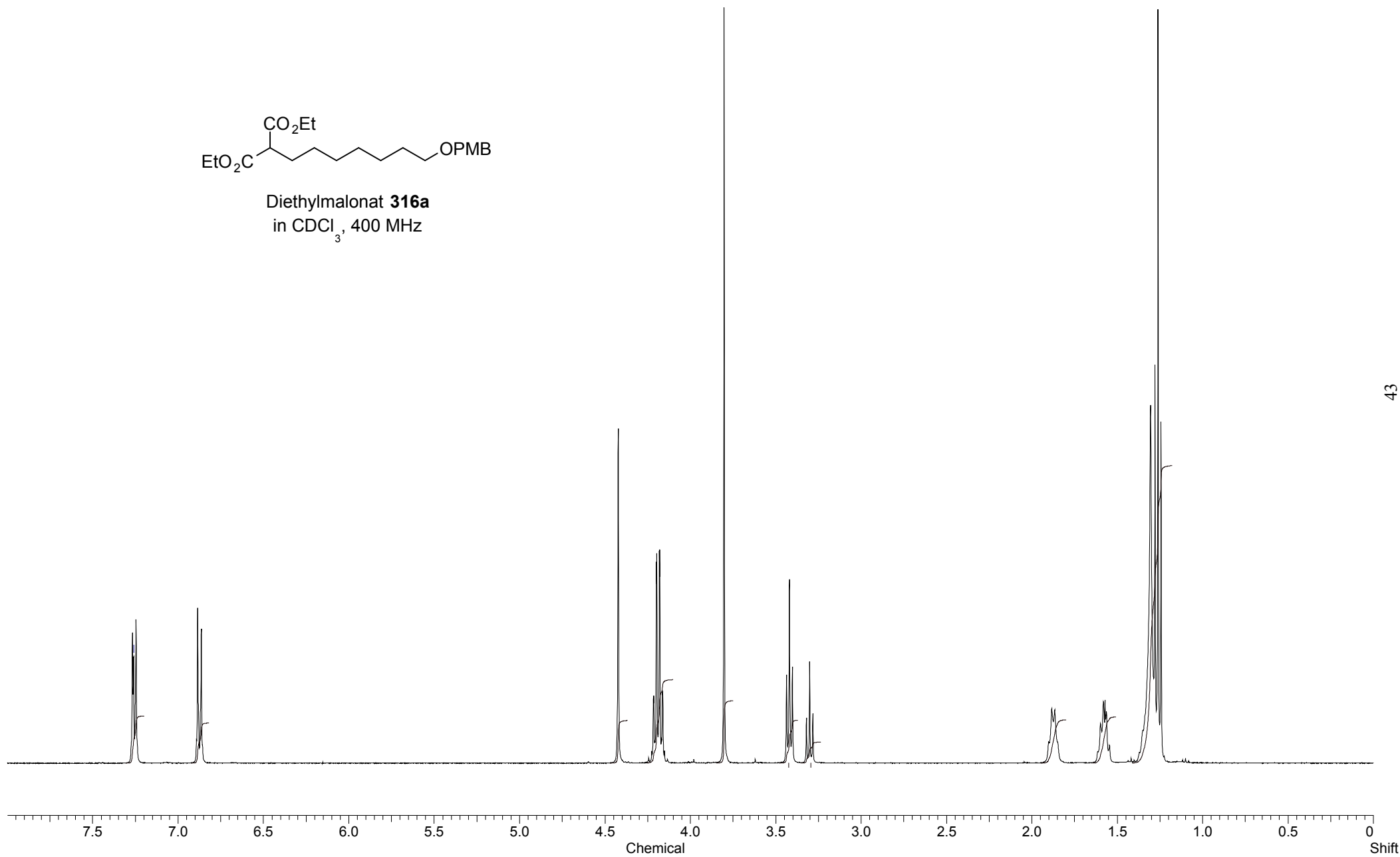
PMB-Ether **305c**
in CDCl₃, 101 MHz

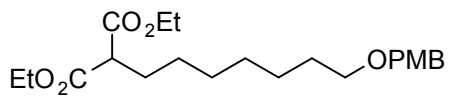


—7.260

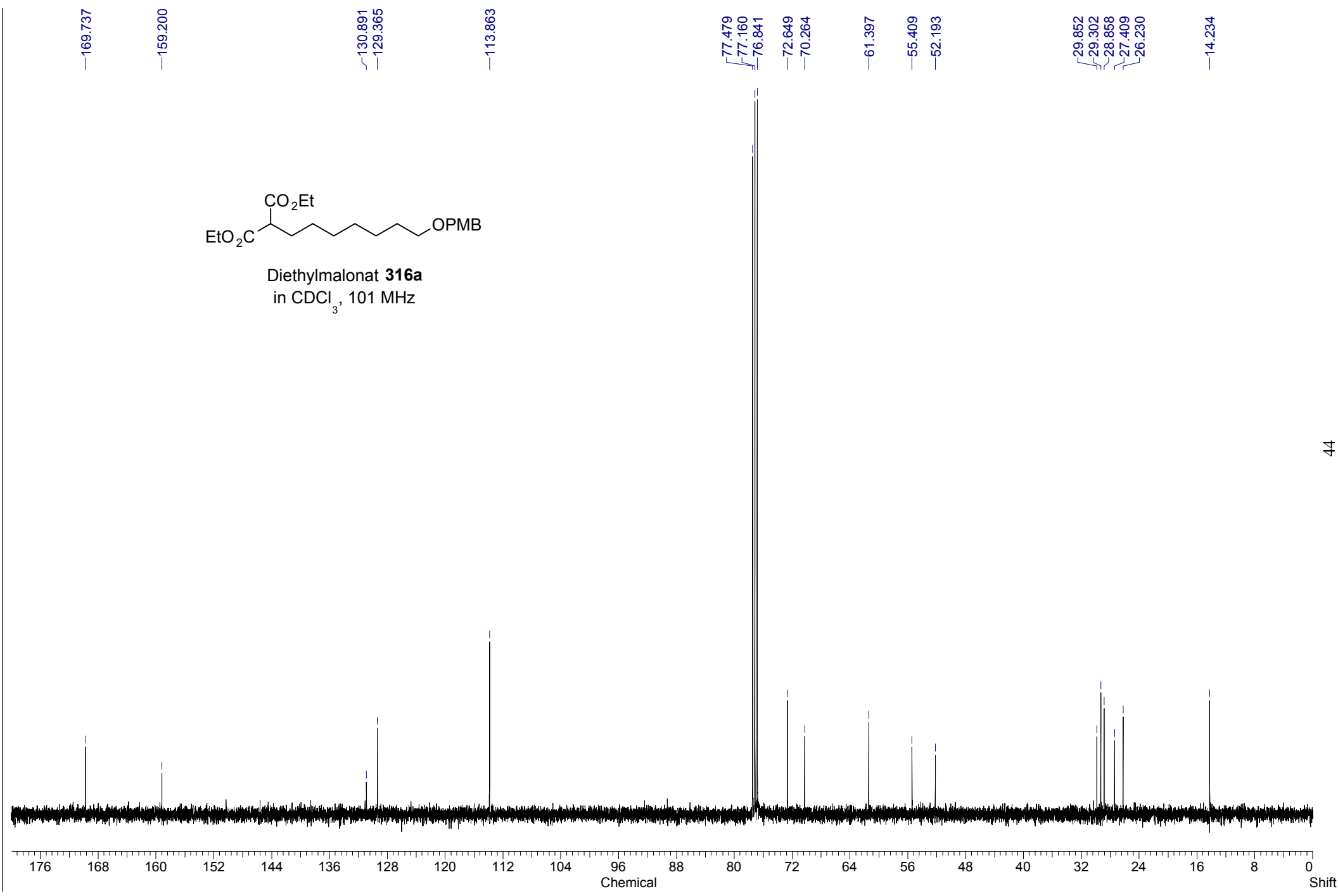


Diethylmalonat **316a**
in CDCl₃, 400 MHz

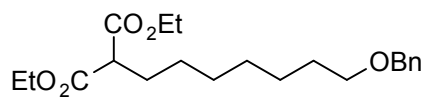




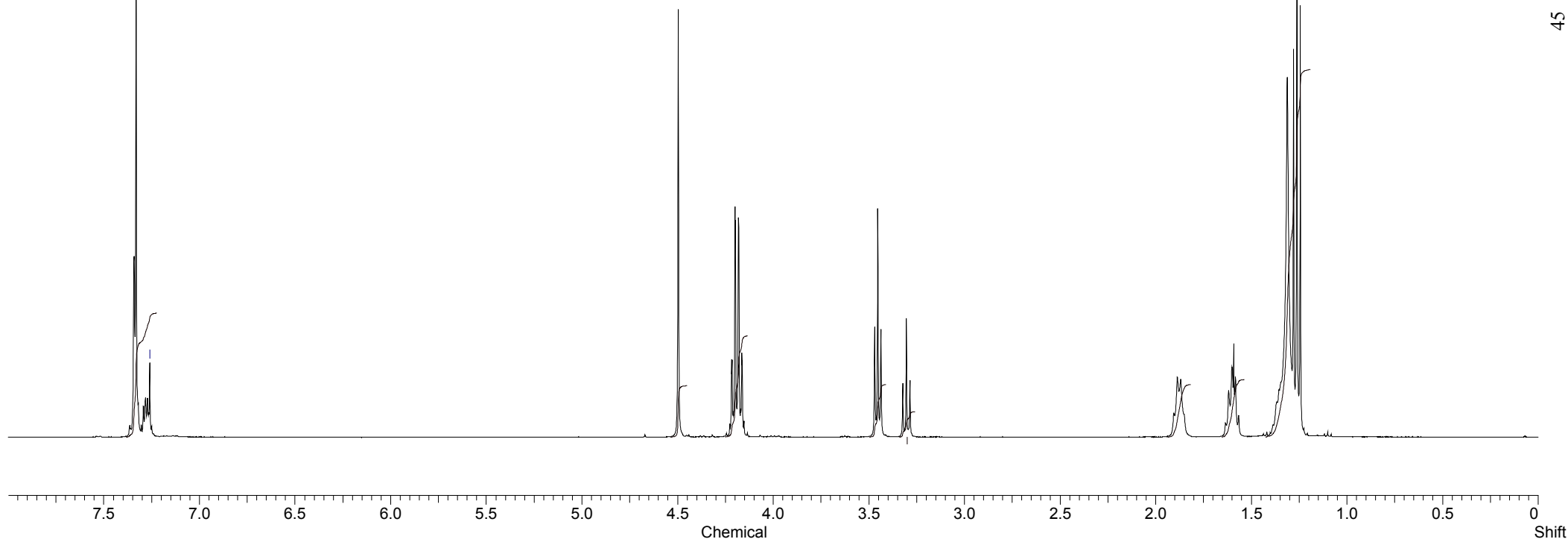
Diethylmalonat **316a**
in CDCl₃, 101 MHz

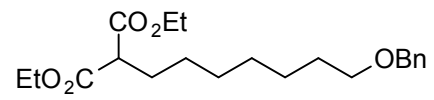


—7.260

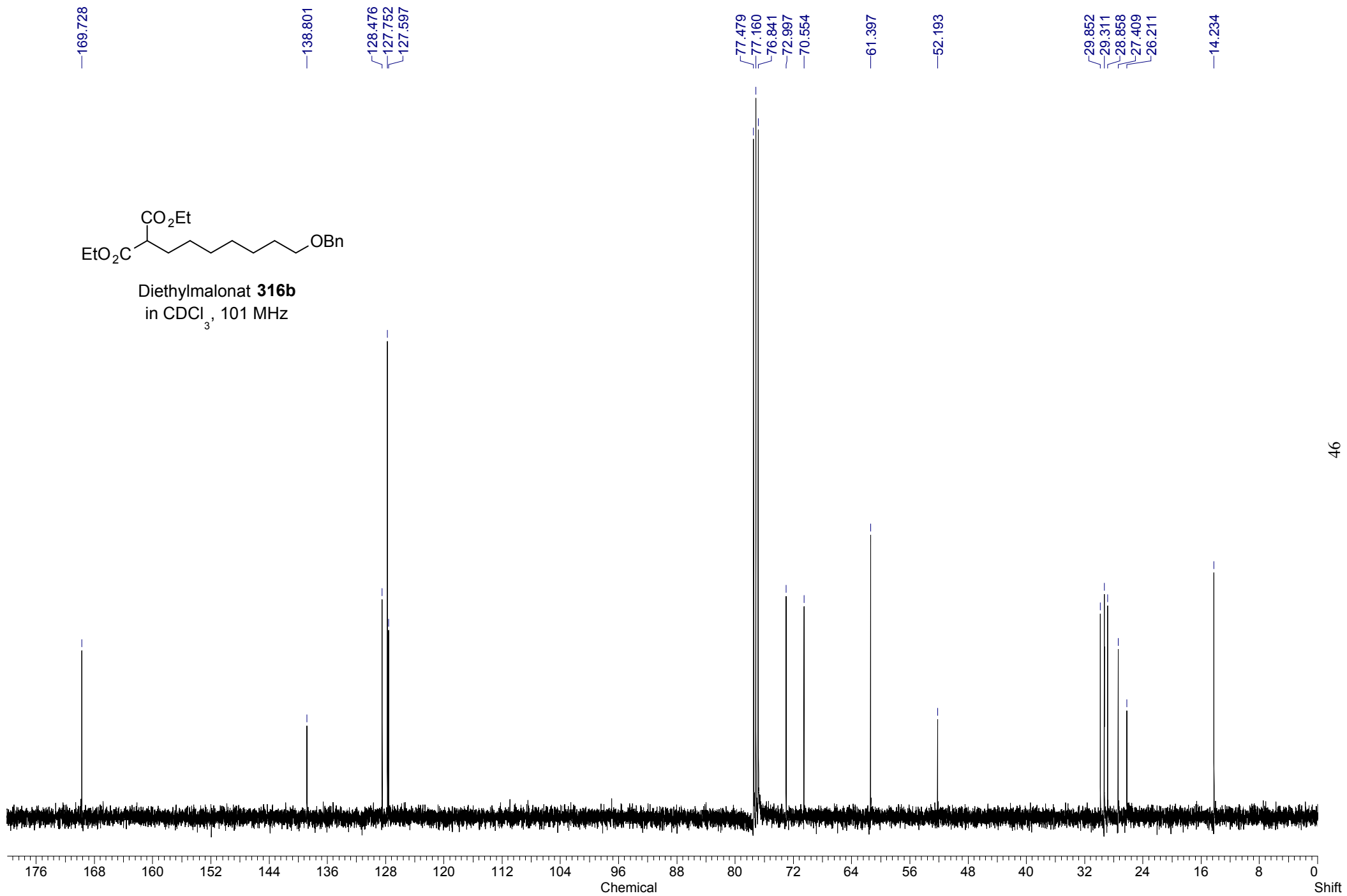


Diethylmalonat **316b**
in CDCl₃, 400 MHz

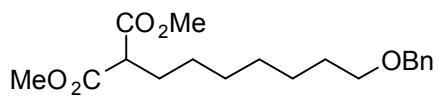




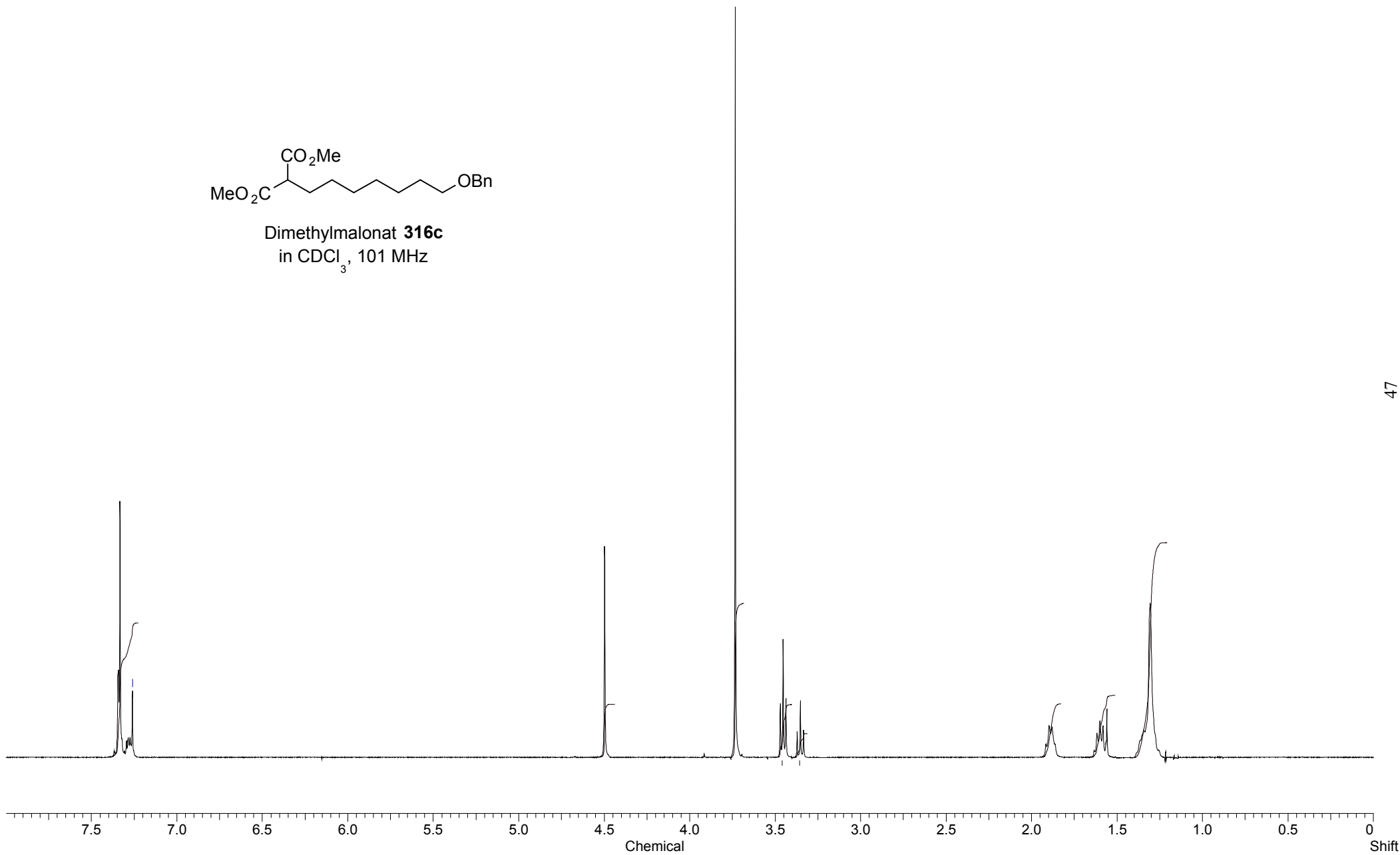
Diethylmalonat **316b**
in CDCl₃, 101 MHz

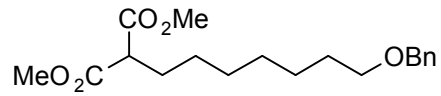


—7.260

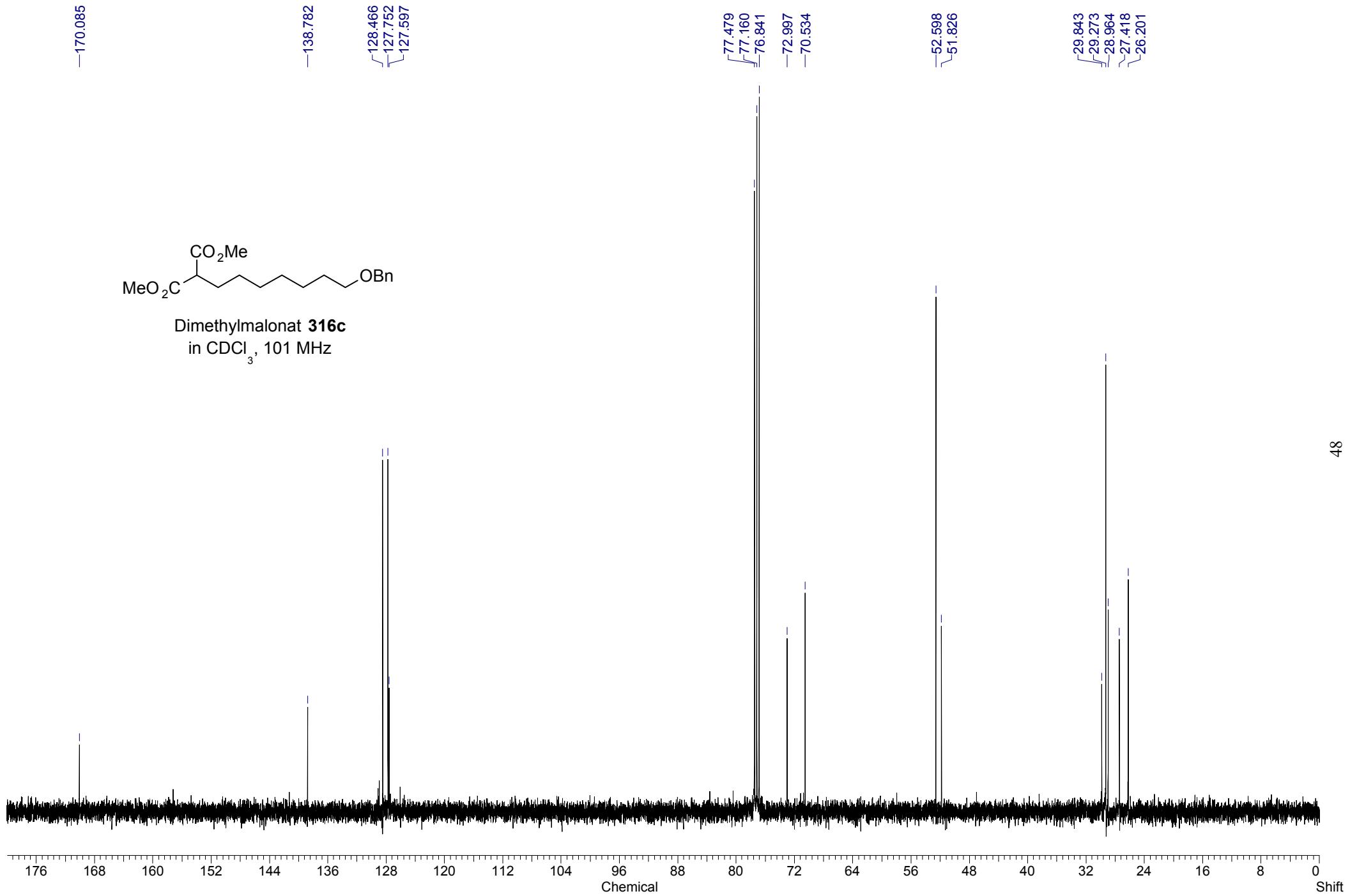


Dimethylmalonat **316c**
in CDCl₃, 101 MHz

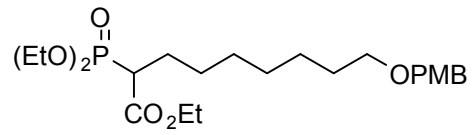




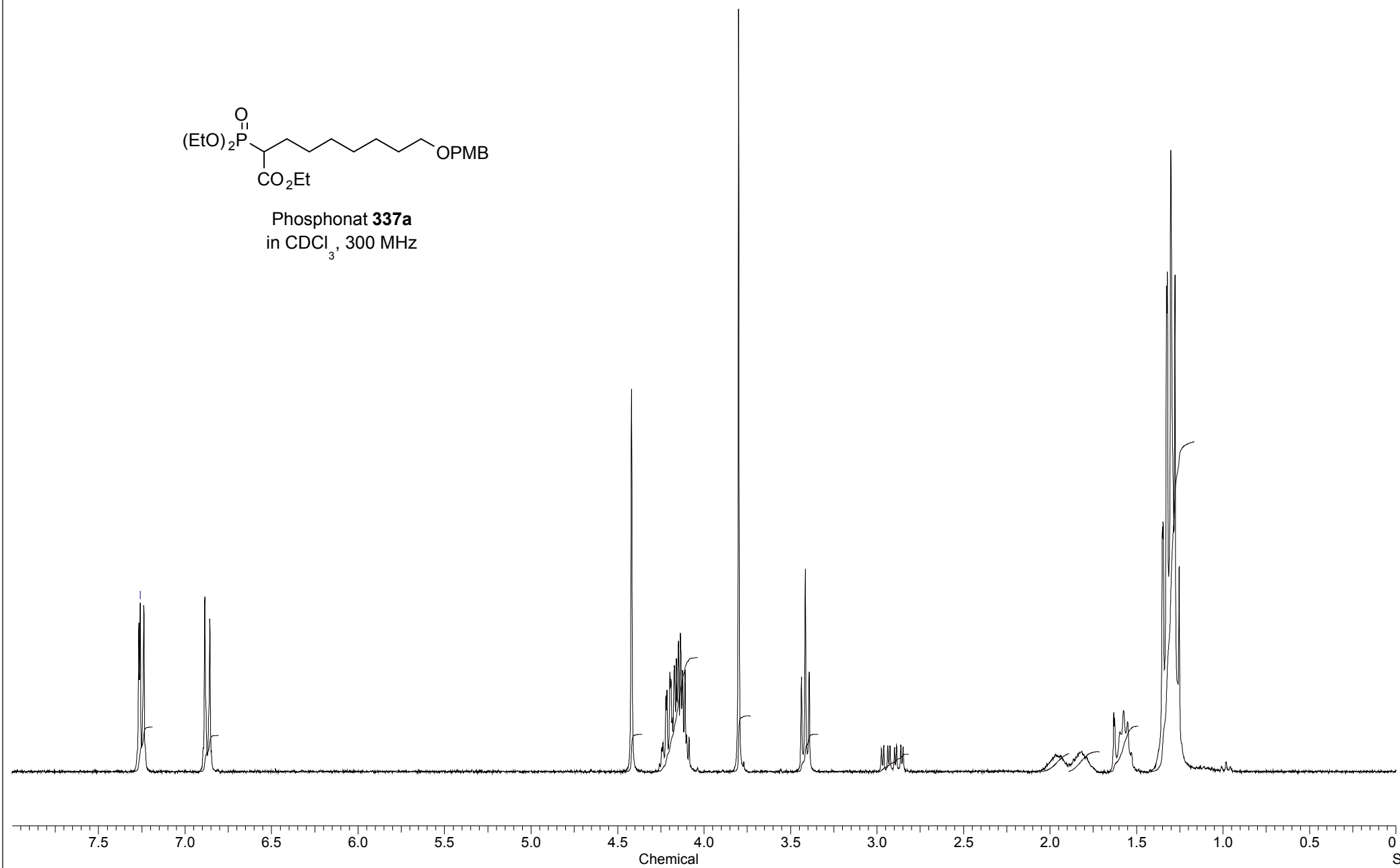
Dimethylmalonat **316c**
in CDCl₃, 101 MHz

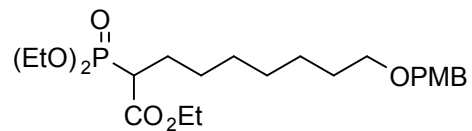


—7.260

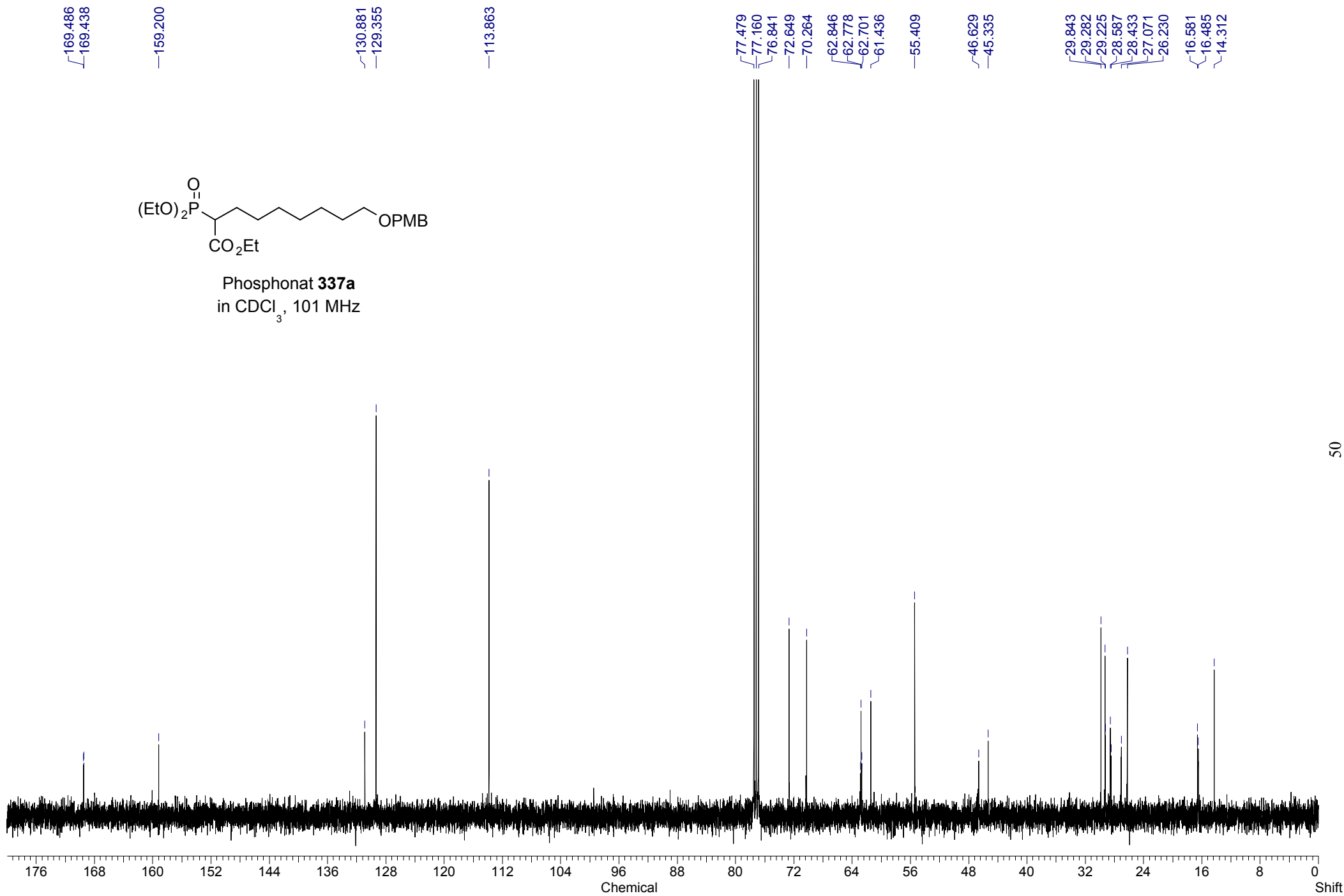


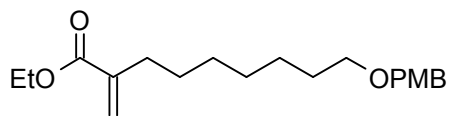
Phosphonat **337a**
in CDCl₃, 300 MHz





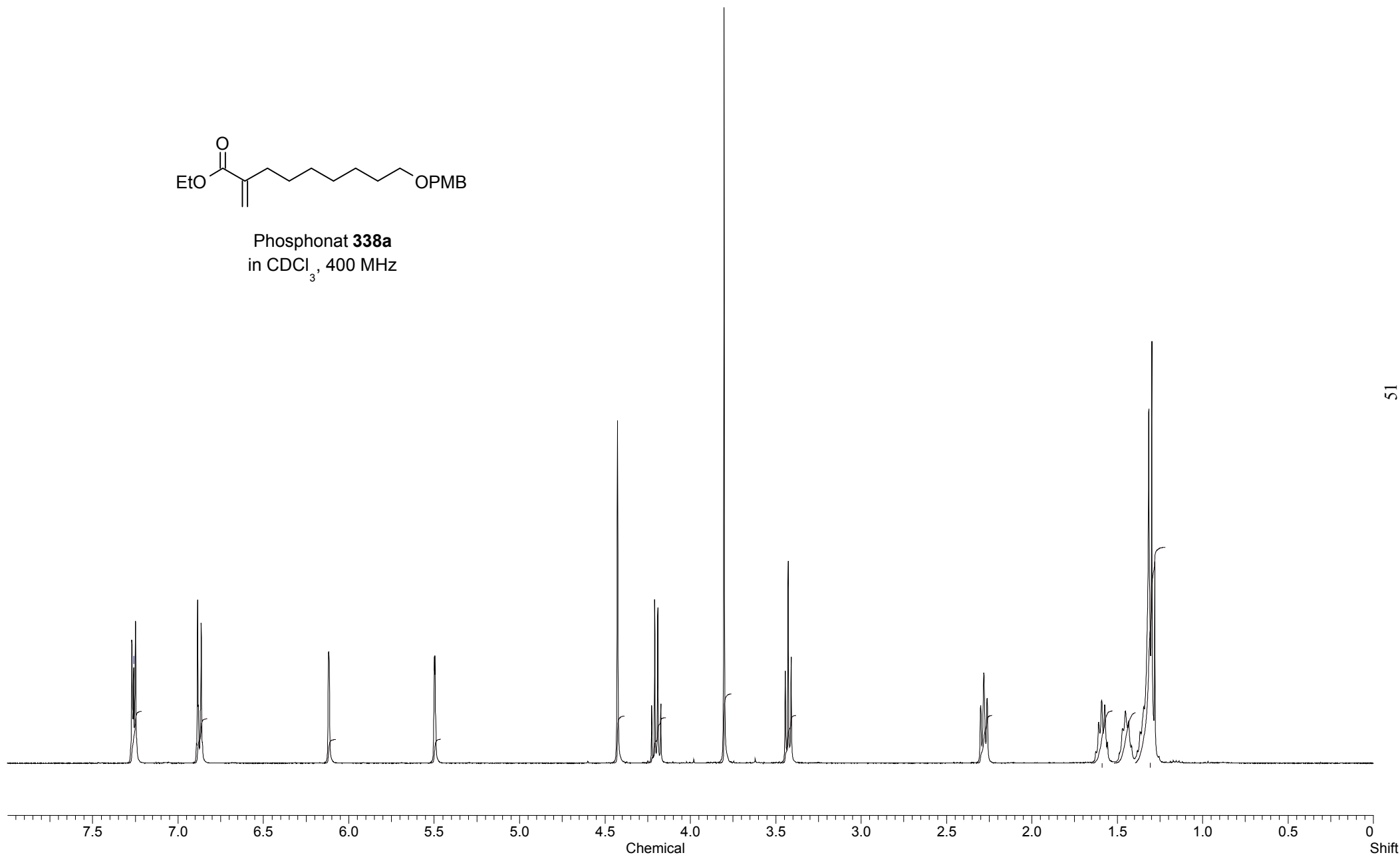
Phosphonat **337a**
in CDCl₃, 101 MHz

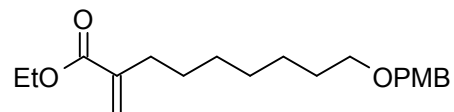




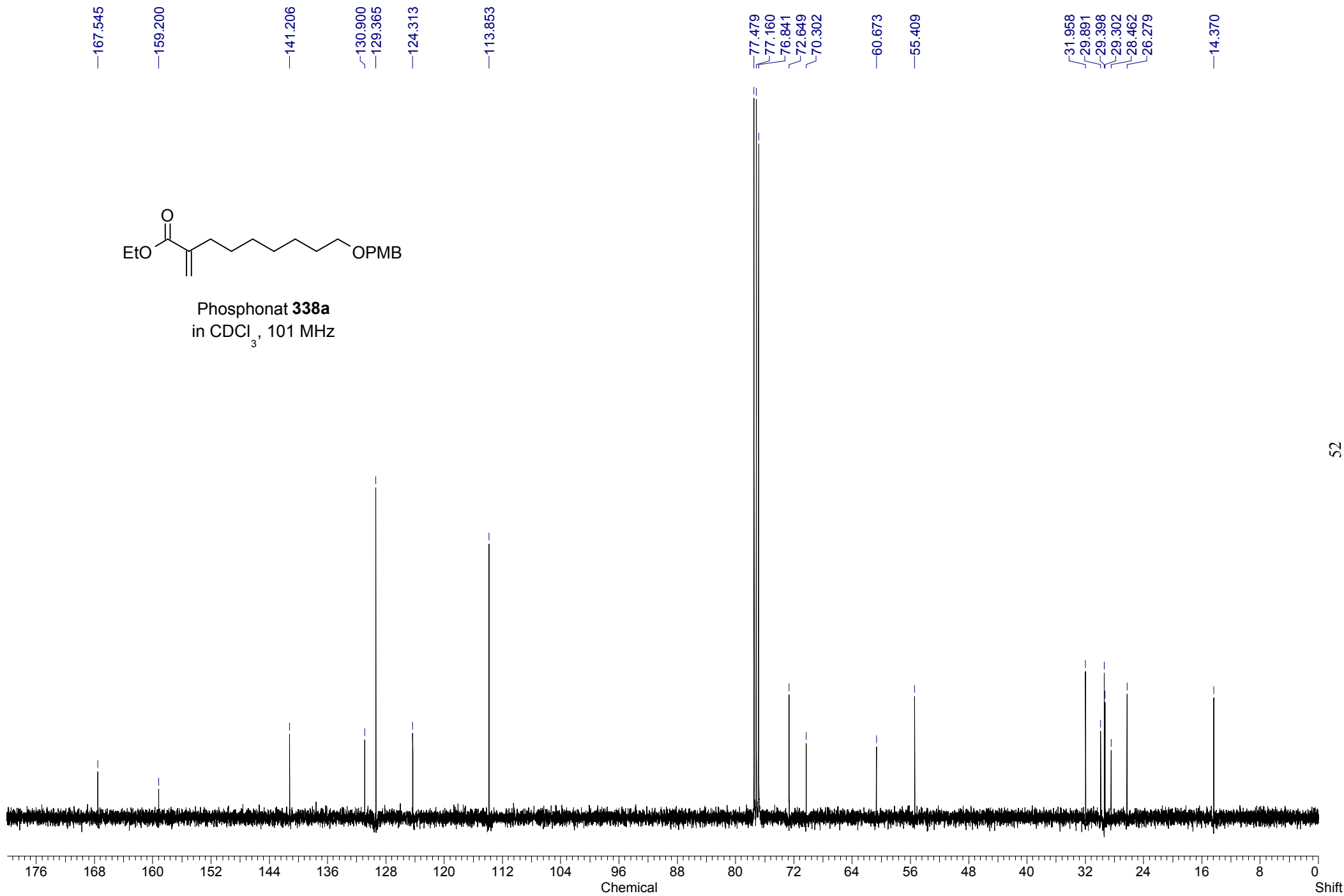
Phosphonat **338a**
in CDCl₃, 400 MHz

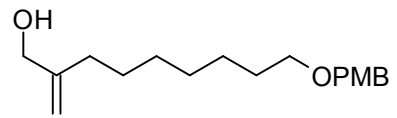
—7.260





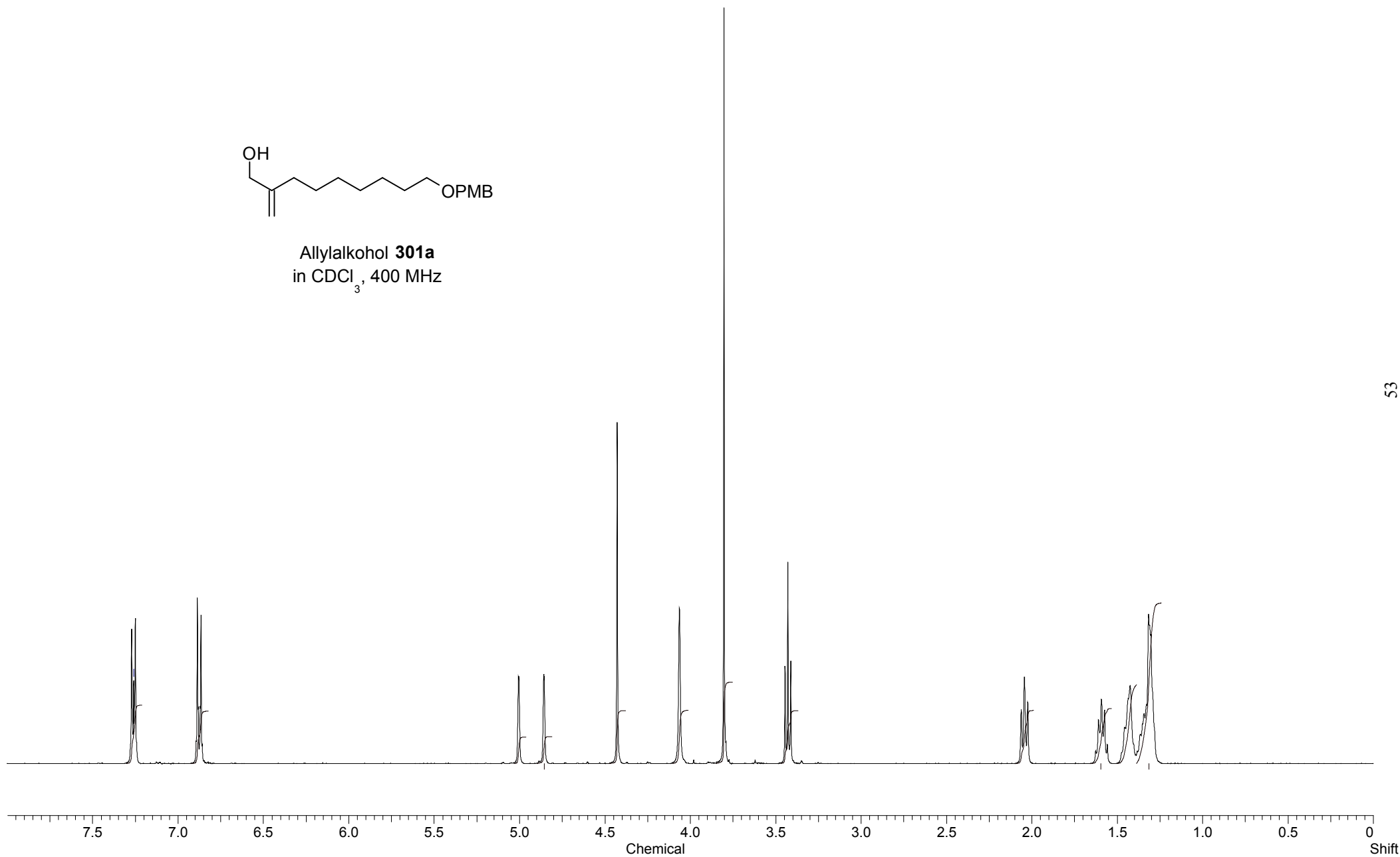
Phosphonat **338a**
in CDCl₃, 101 MHz

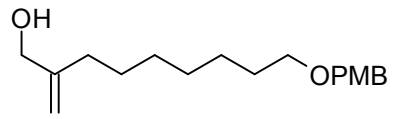




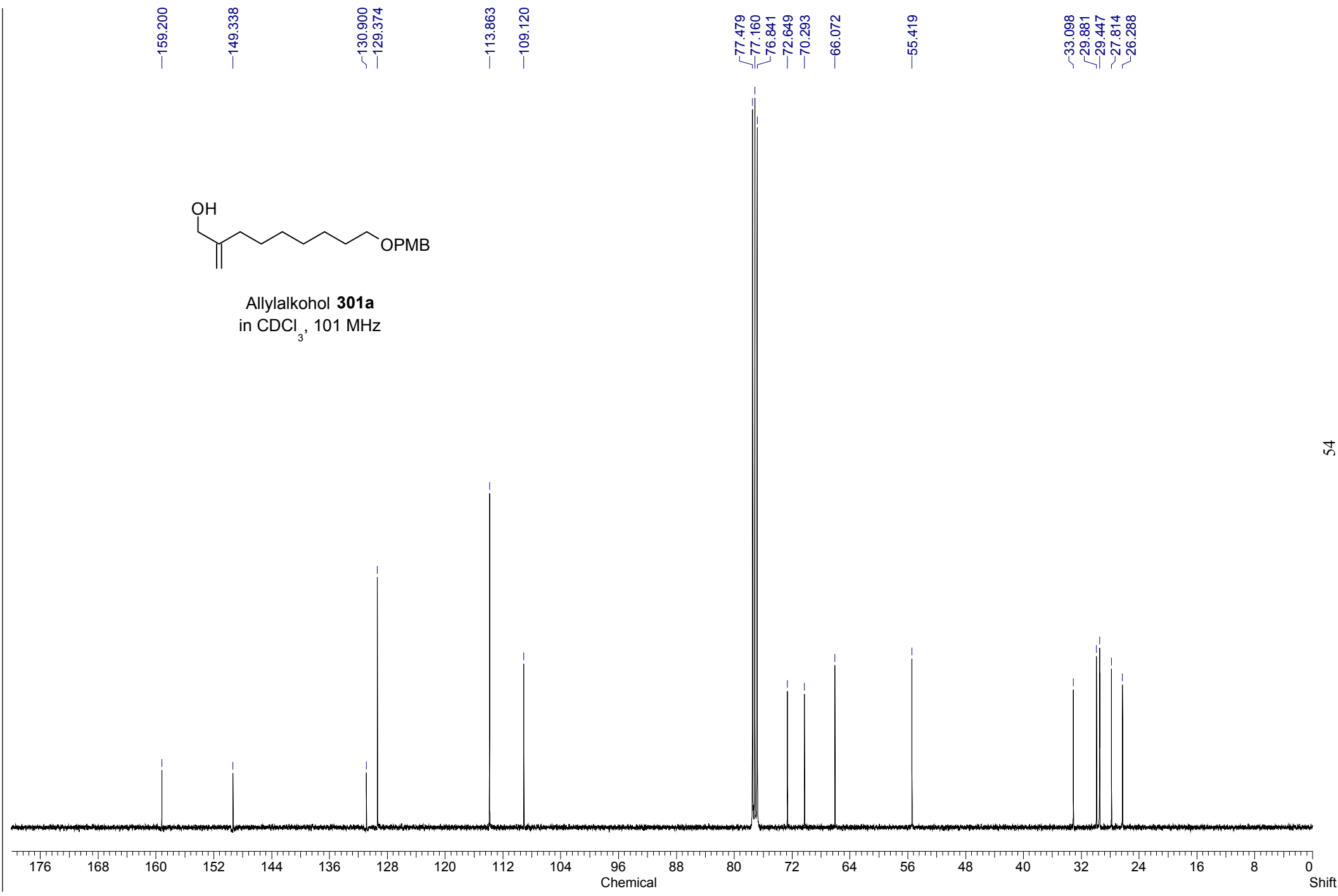
Allylalkohol **301a**
in CDCl₃, 400 MHz

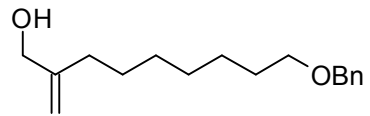
—7.260





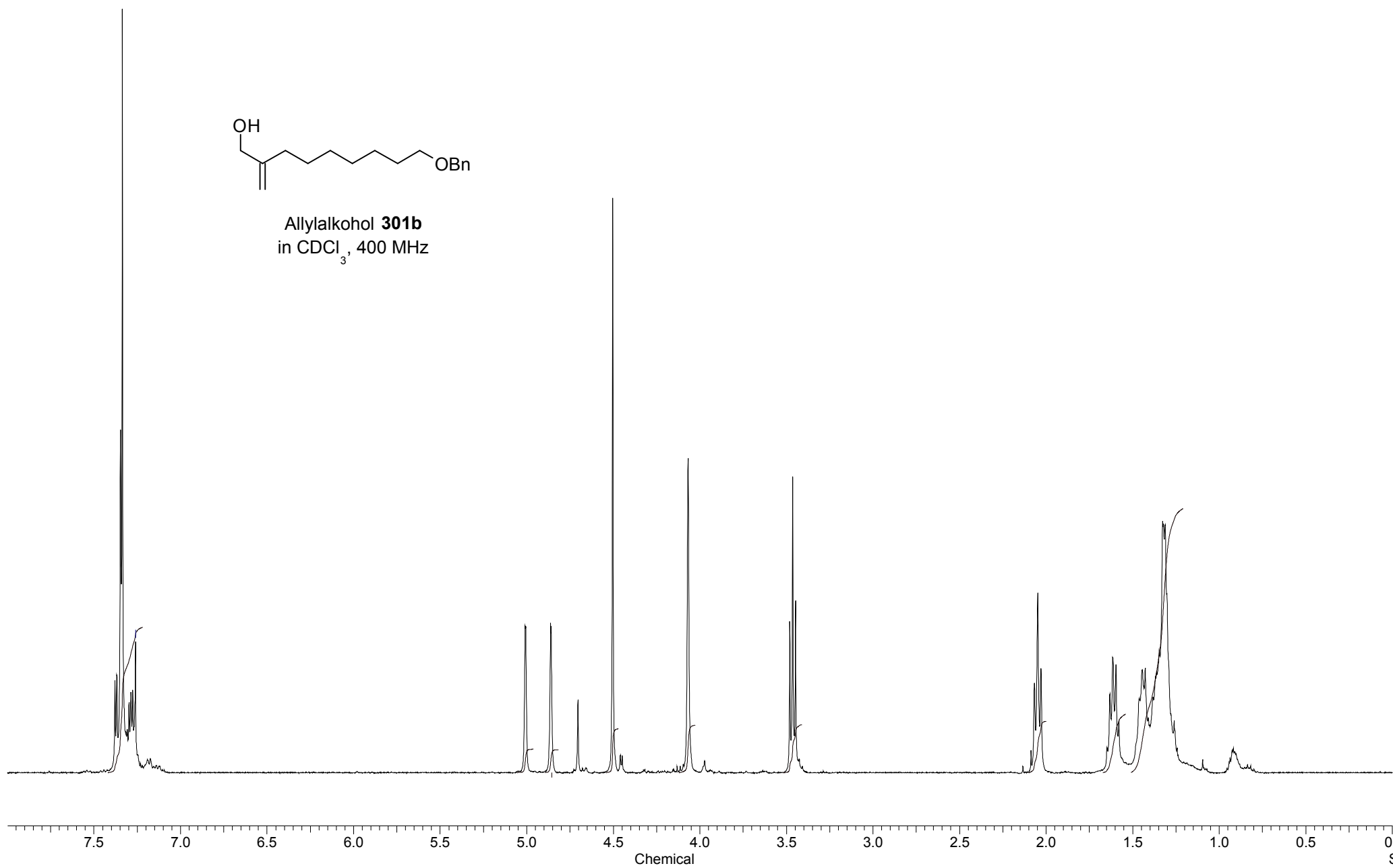
Allylalkohol **301a**
in CDCl₃, 101 MHz

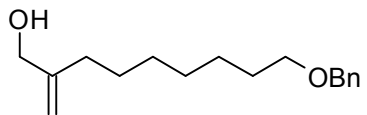




Allylkohol **301b**
in CDCl₃, 400 MHz

—7.260





Allylalkohol **301b**
in CDCl₃, 101 MHz

—149.338

—138.801

—128.486

—127.771

—127.616

—109.130

—77.479

—77.160

—76.841

—73.007

—70.602

—66.082

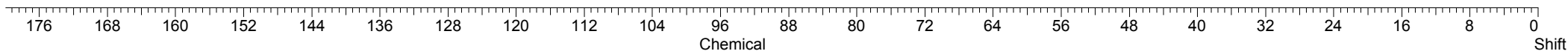
—33.098

—29.881

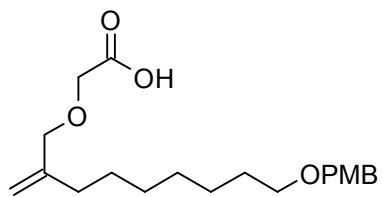
—29.456

—27.814

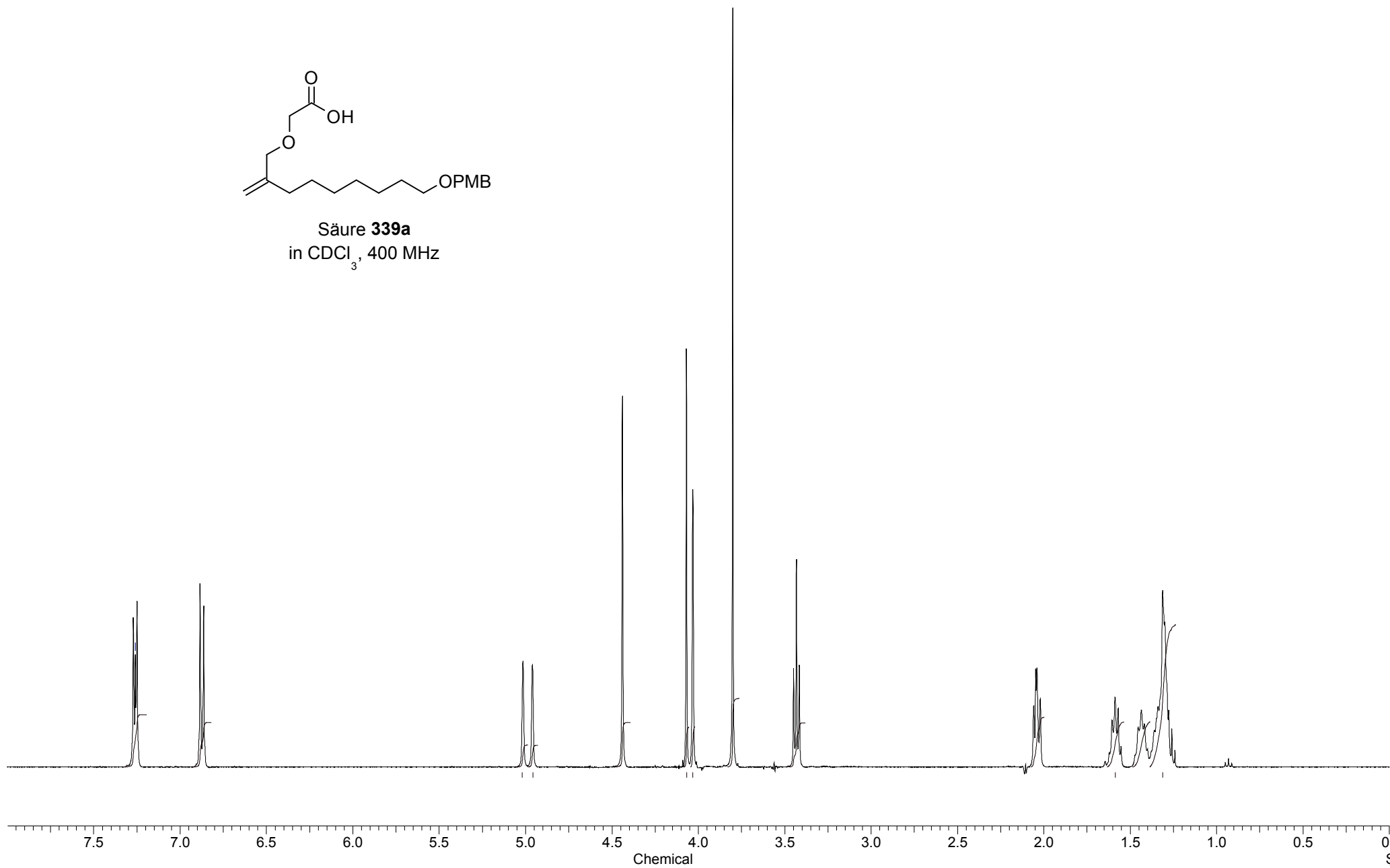
—26.279

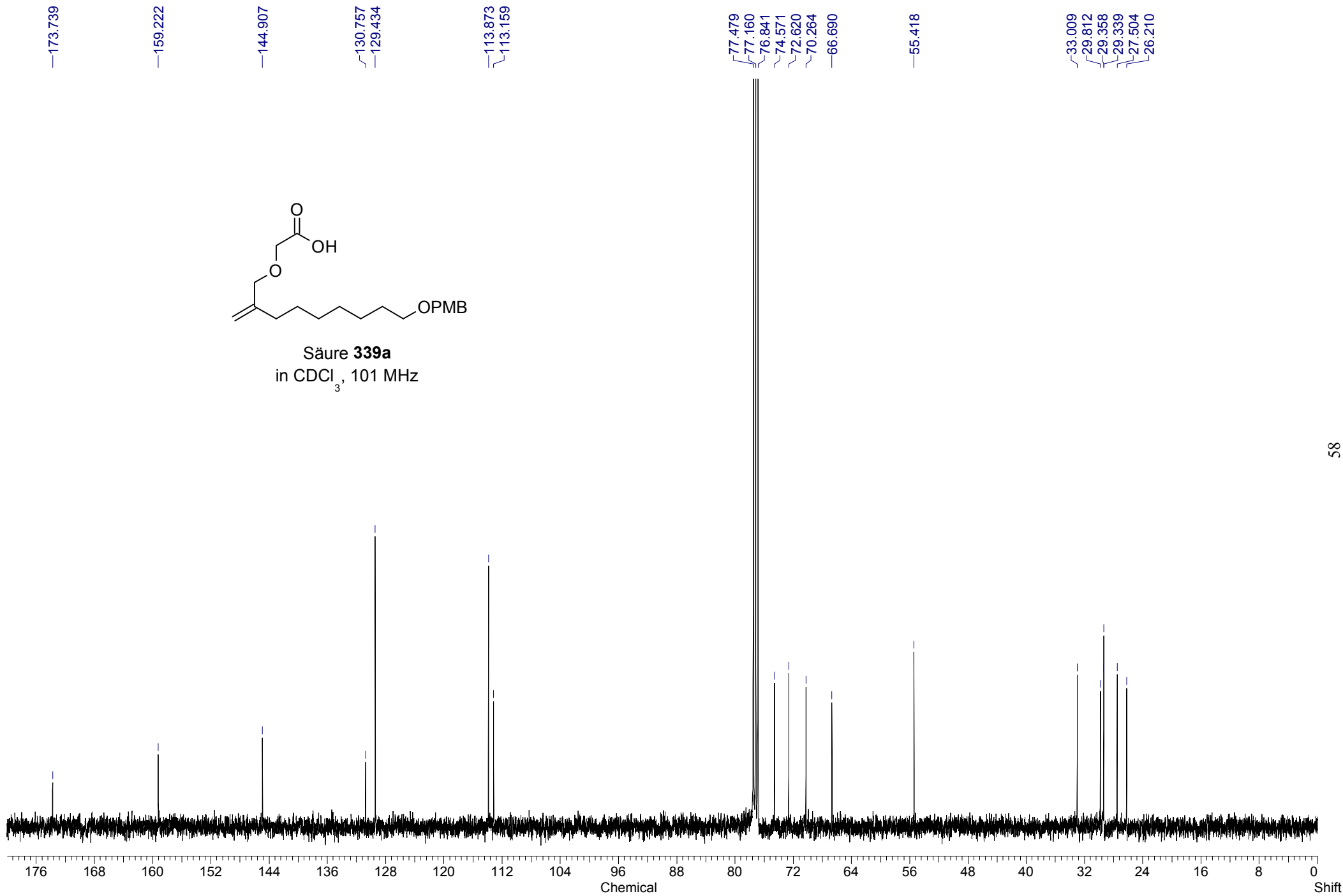


-7.260

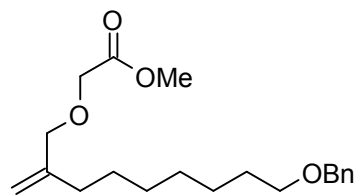


Säure **339a**
in CDCl₃, 400 MHz

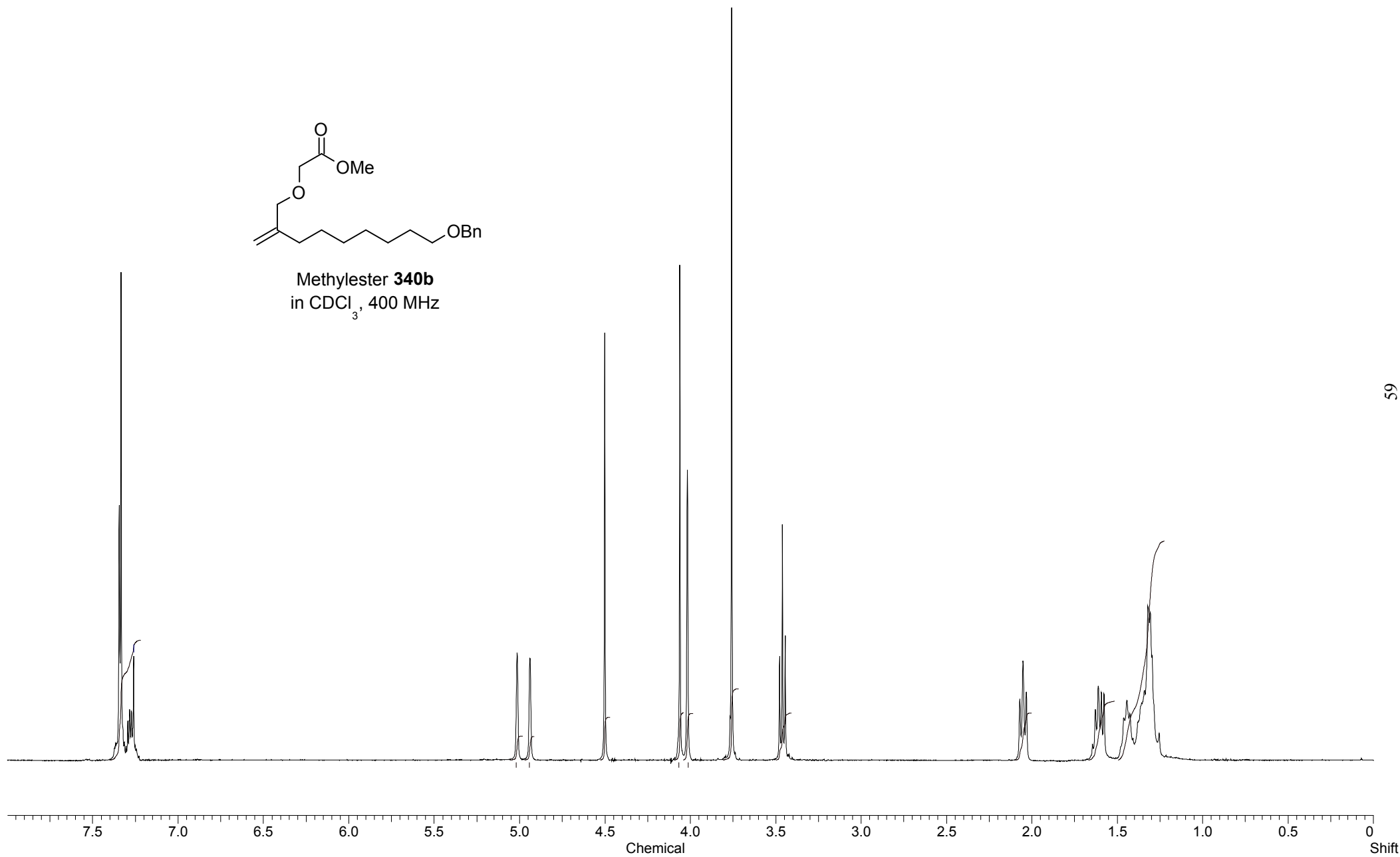




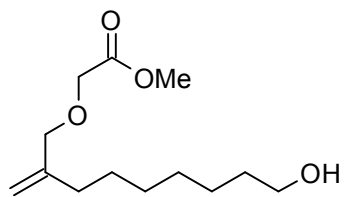
—7.260



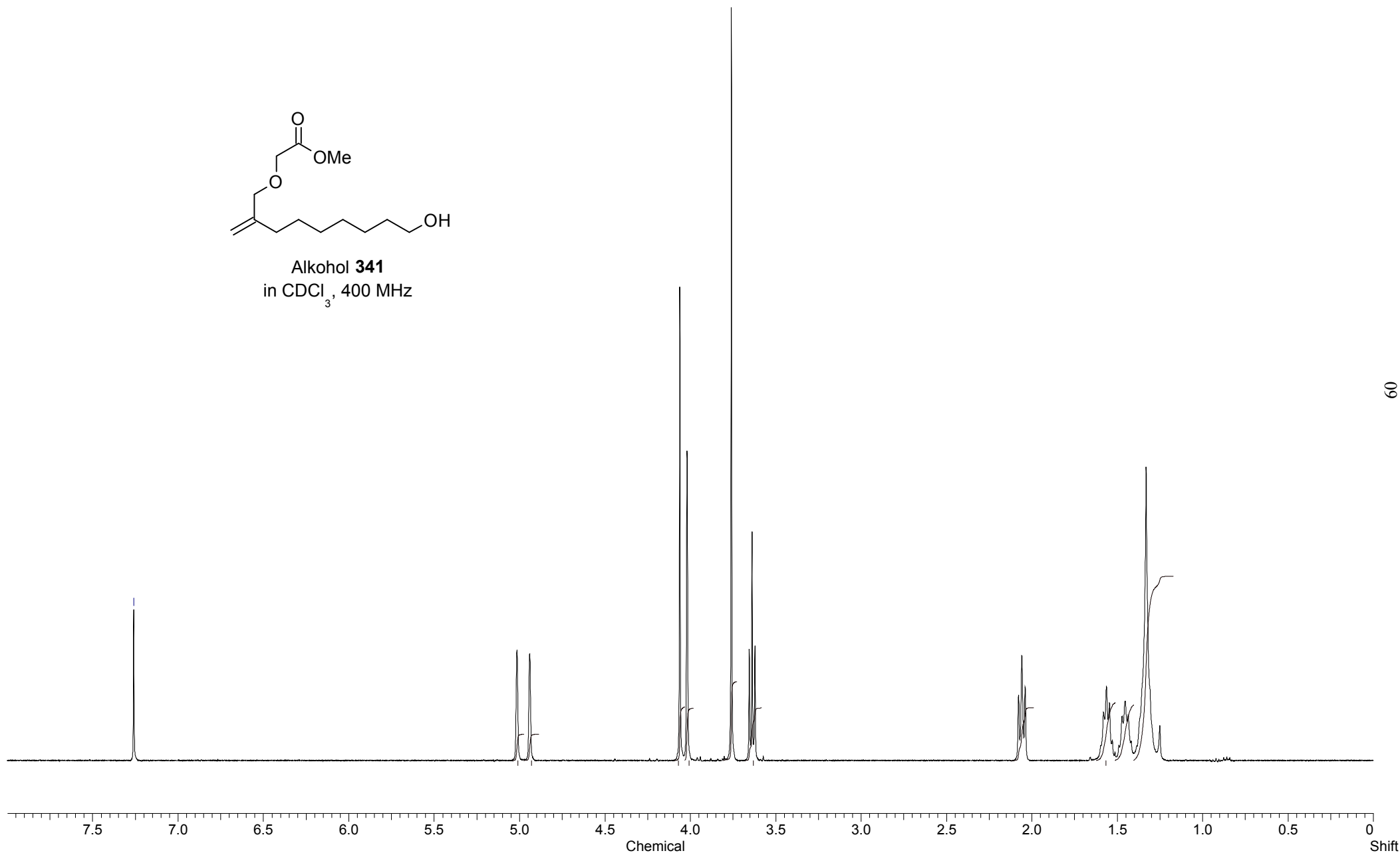
Methylester **340b**
in CDCl₃, 400 MHz

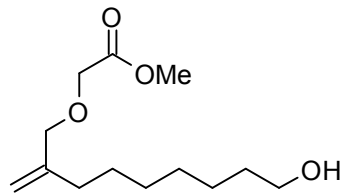


—7.260

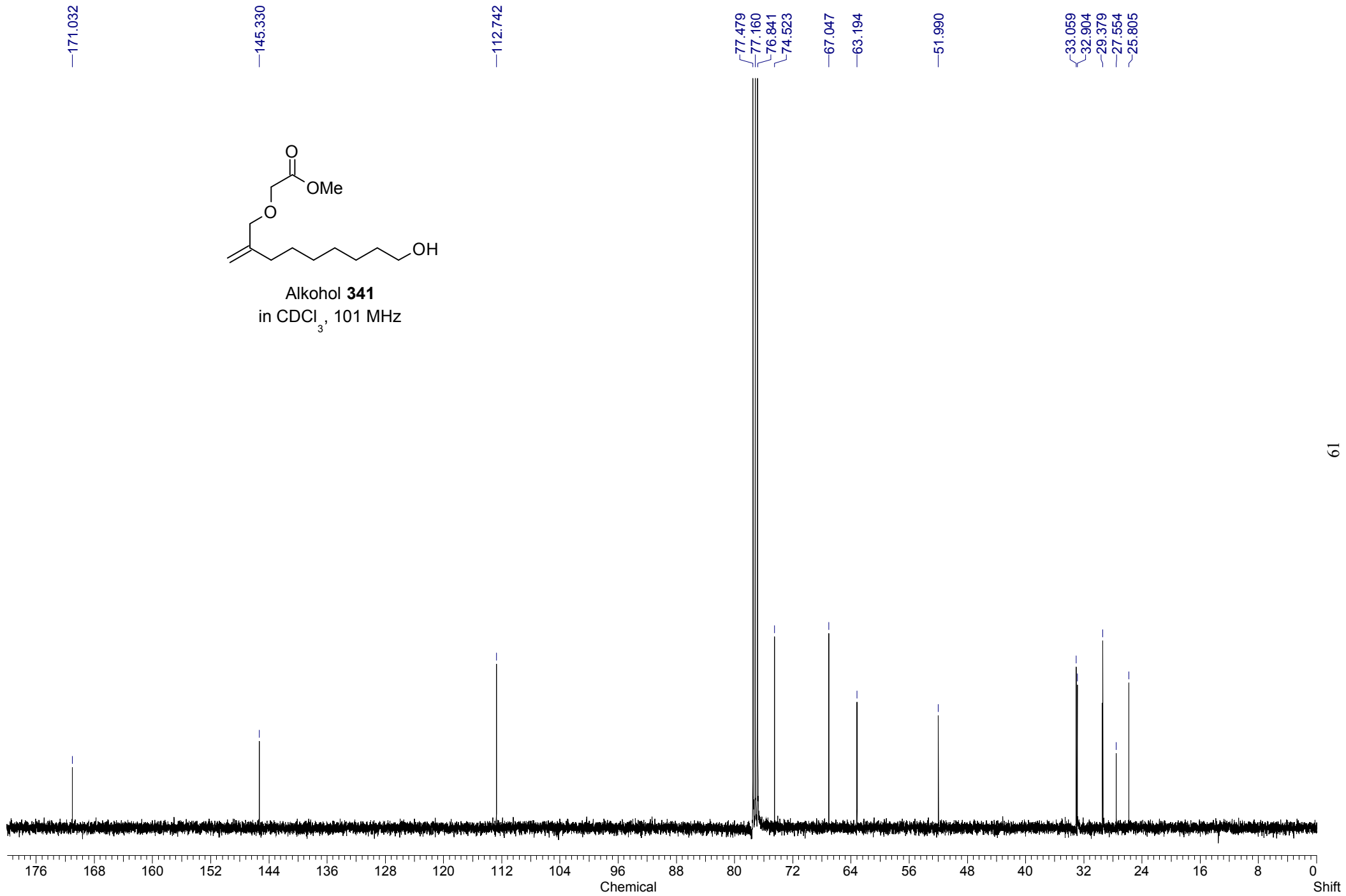


Alkohol **341**
in CDCl₃, 400 MHz





Alkohol **341**
in CDCl₃, 101 MHz



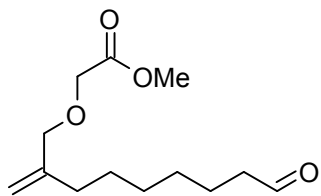
9.768
9.763
9.759

7.260

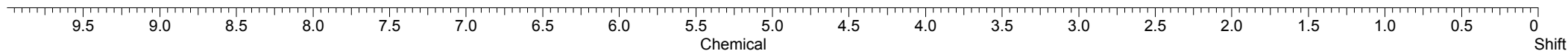
5.021
4.939

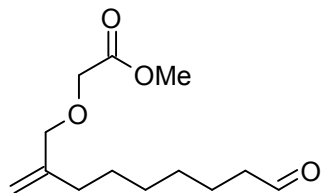
4.060
4.016
3.759

2.444
2.439
2.425
2.422
2.408
2.403
2.079
2.060
2.040
1.648
1.630
1.611
1.460
1.441
1.342
1.333
1.324

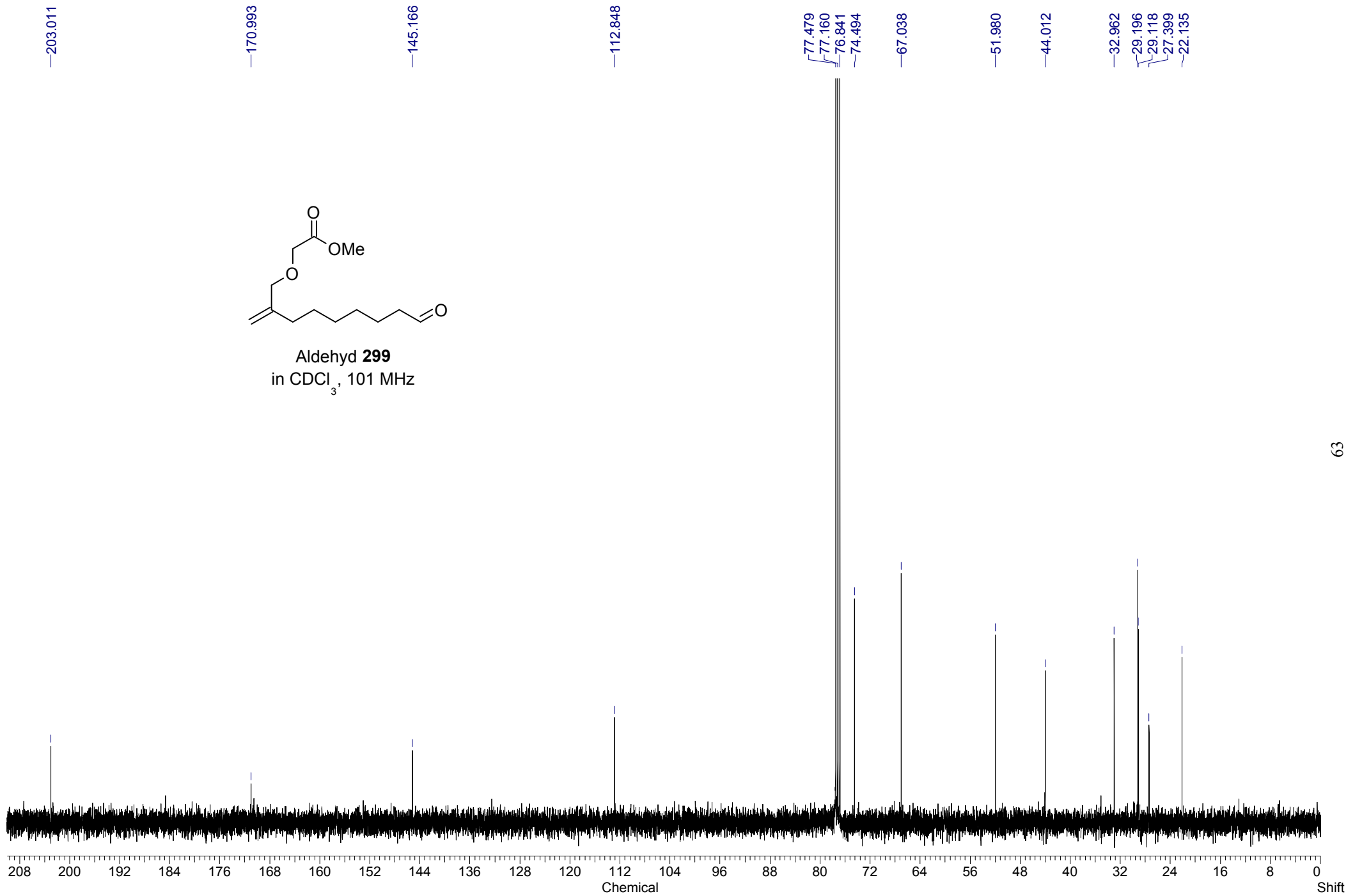


Aldehyd **299**
in CDCl₃, 400 MHz

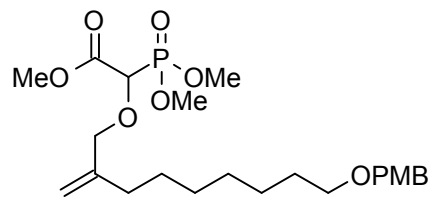




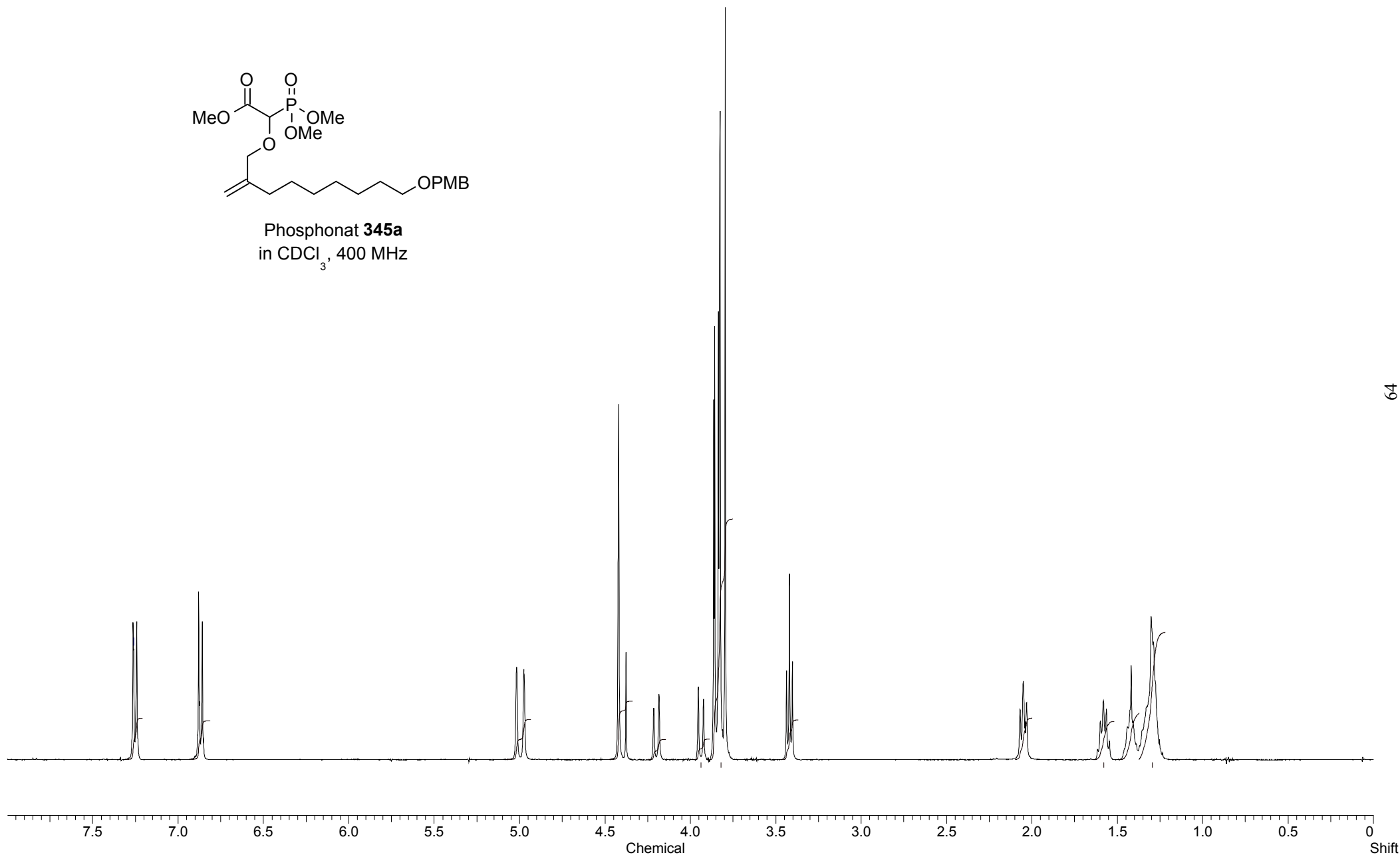
Aldehyd **299**
in CDCl₃, 101 MHz

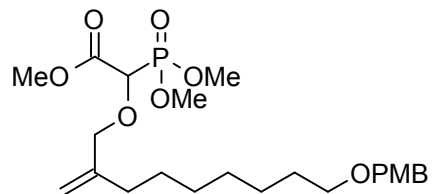


—7.260

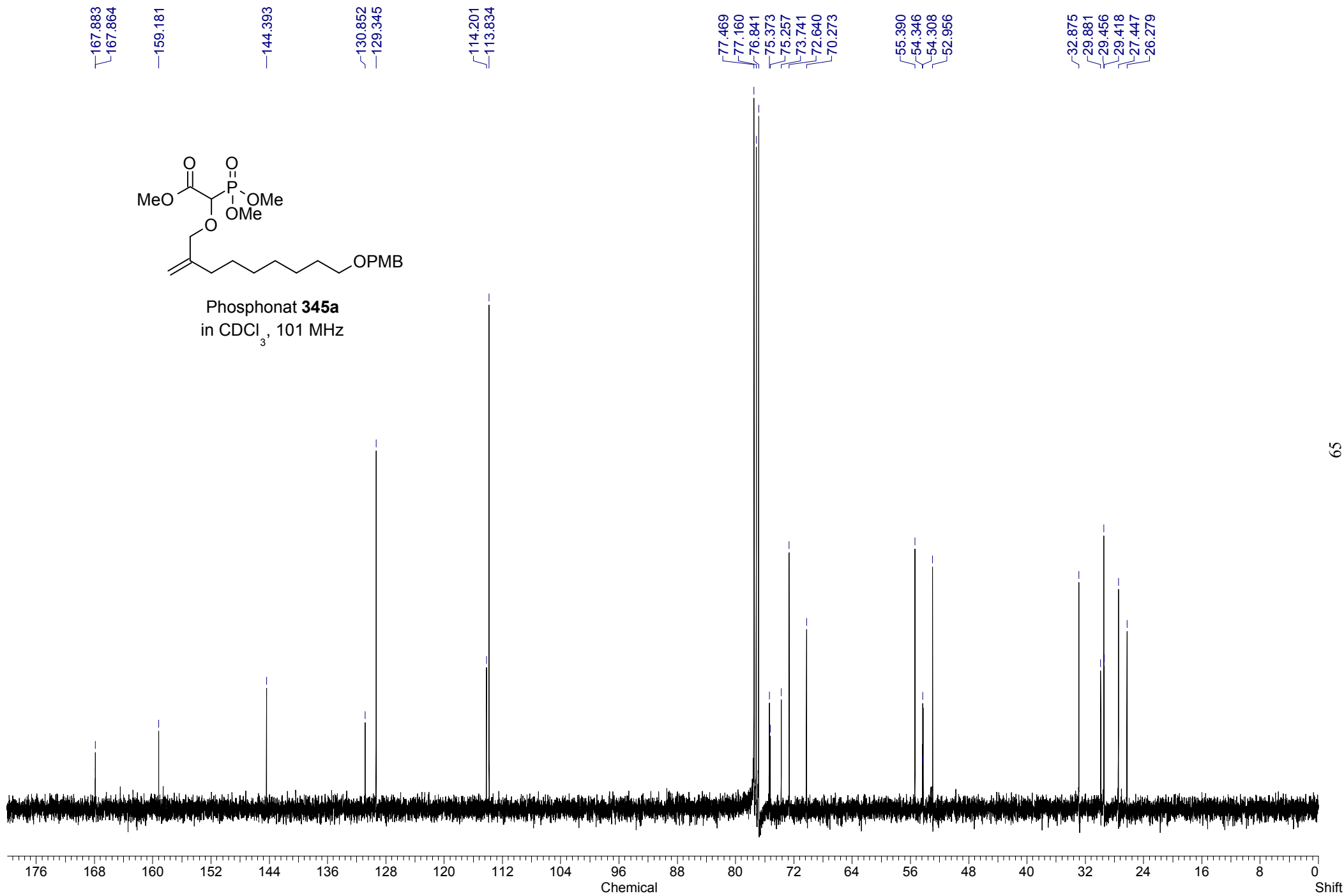


Phosphonat **345a**
in CDCl₃, 400 MHz

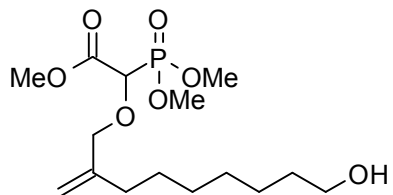




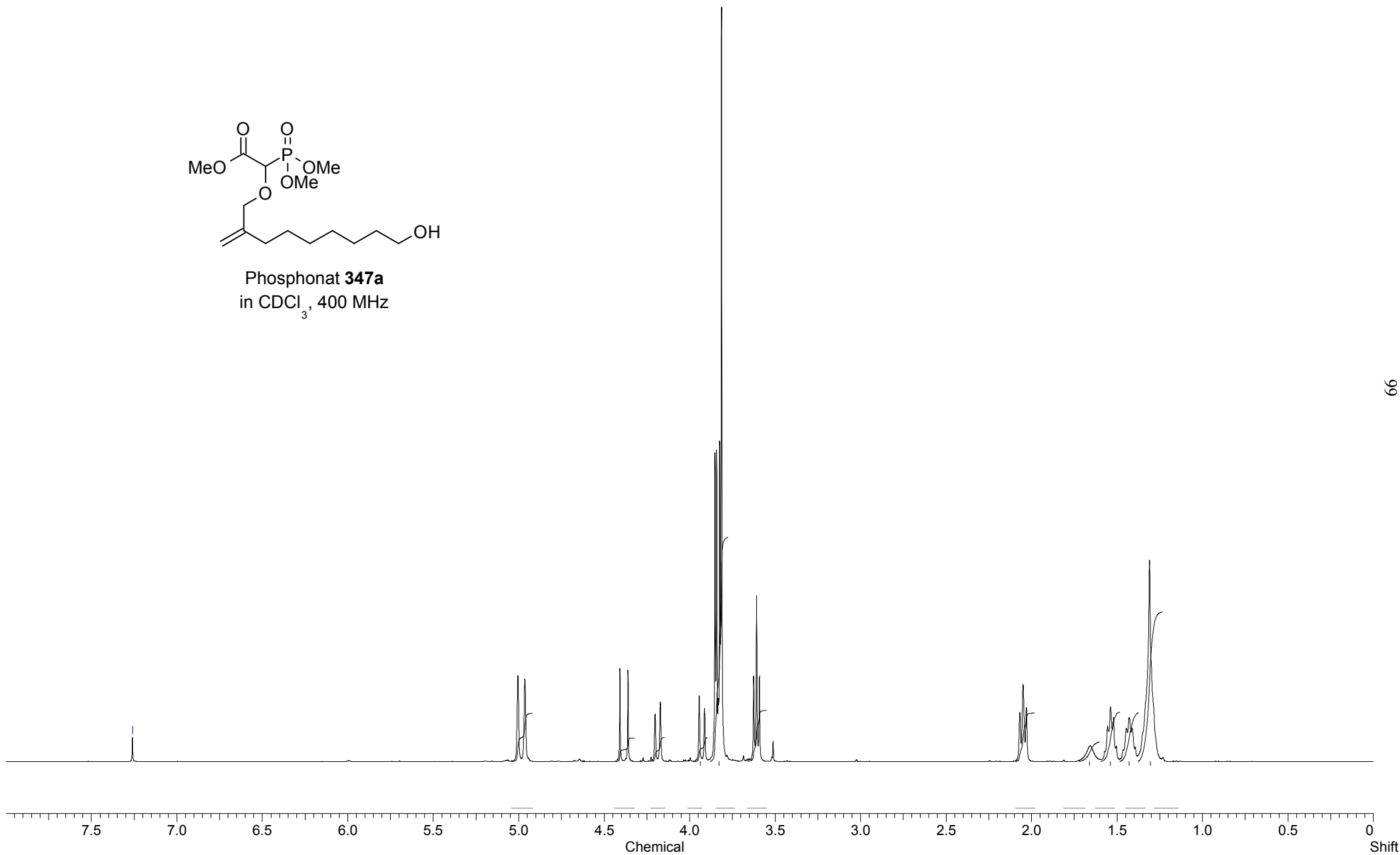
Phosphonat **345a**
in CDCl₃, 101 MHz

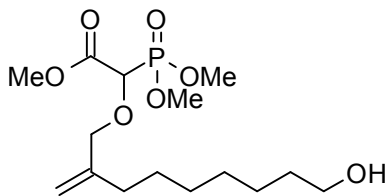


—7.260

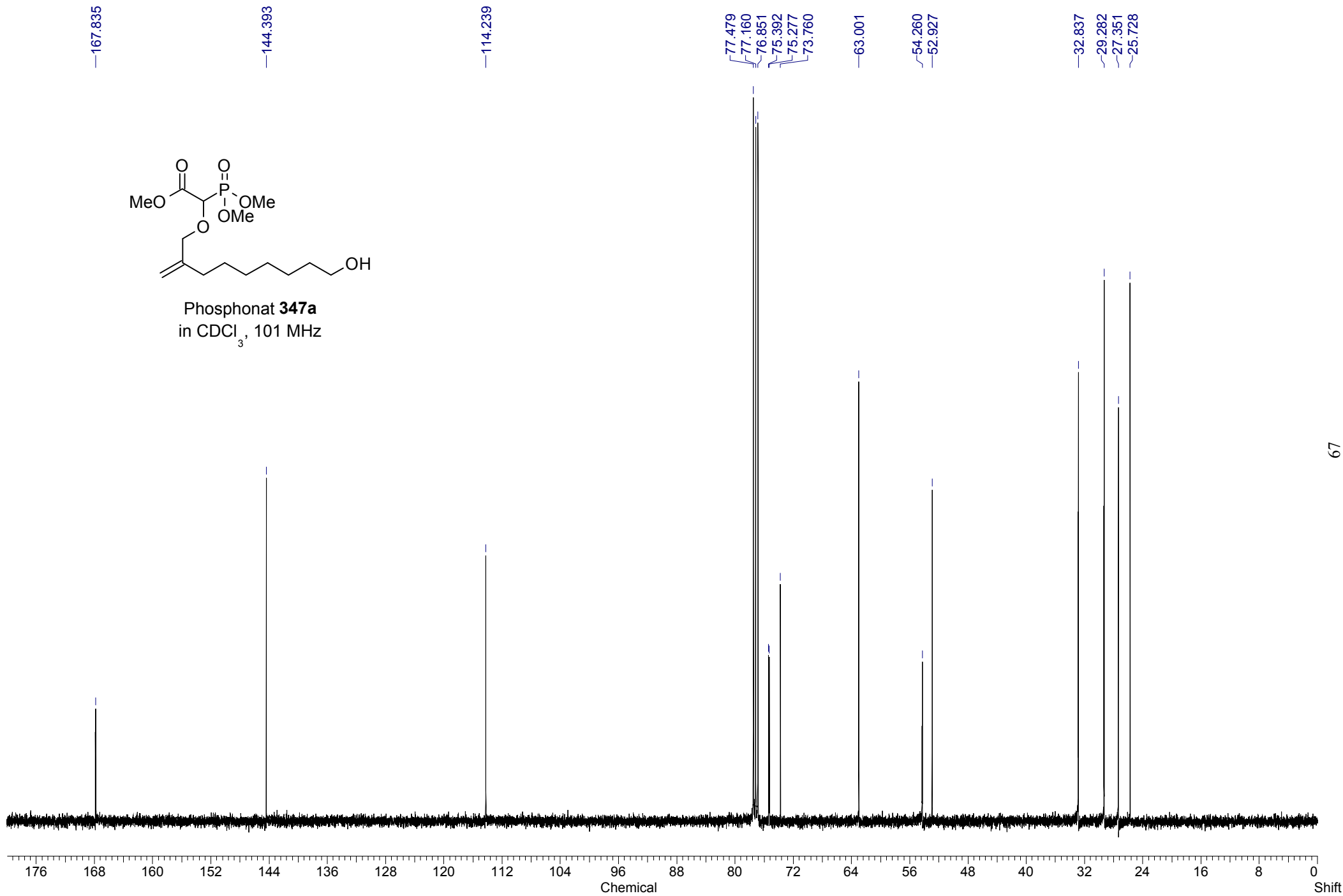


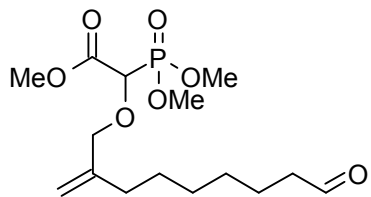
Phosphonat **347a**
in CDCl₃, 400 MHz





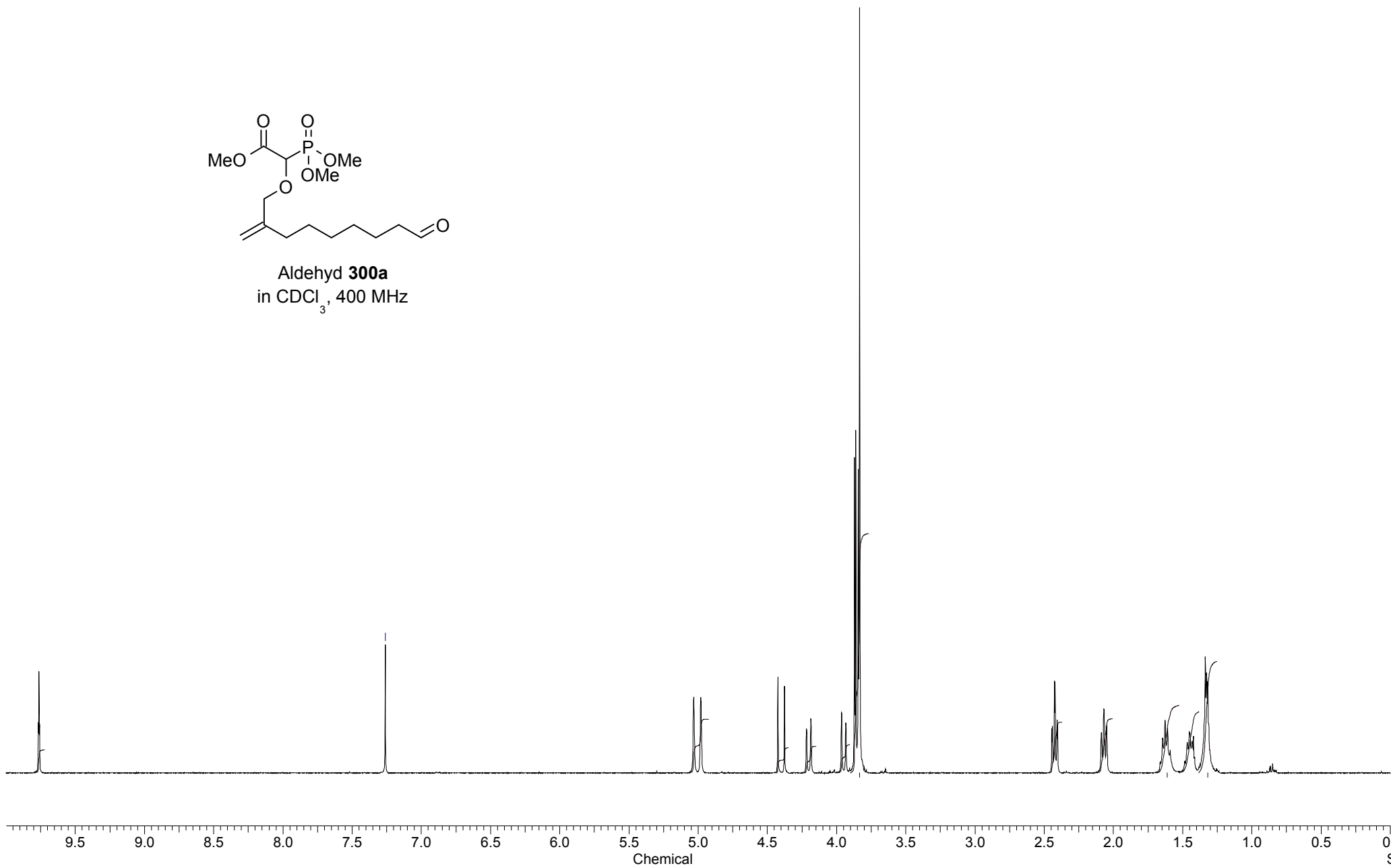
Phosphonat **347a**
in CDCl₃, 101 MHz

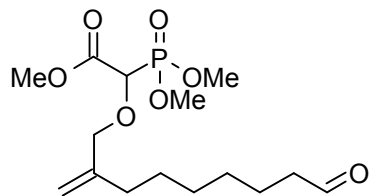




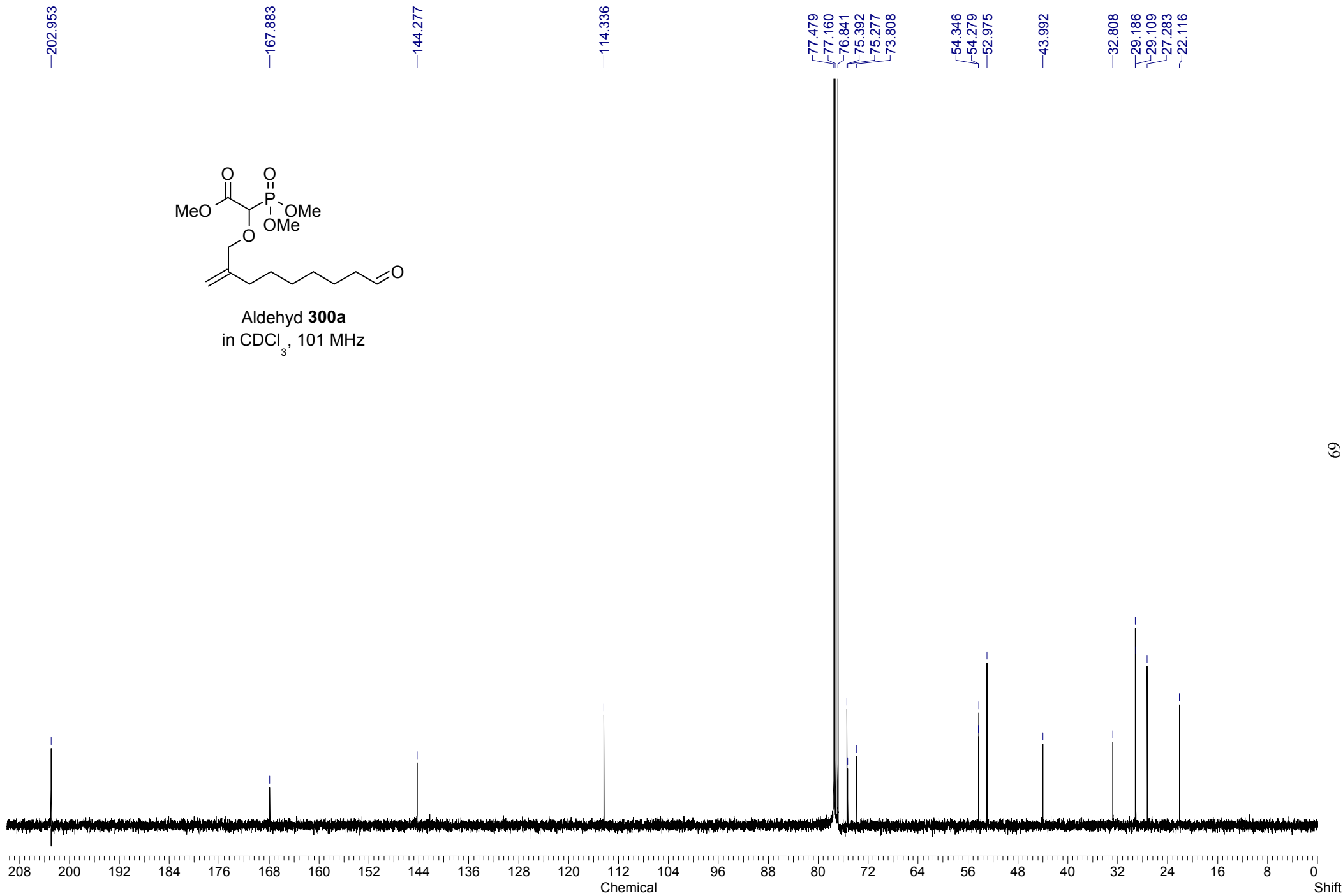
Aldehyd **300a**
in CDCl₃, 400 MHz

—7.260

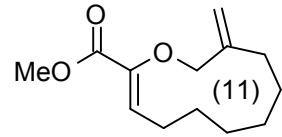




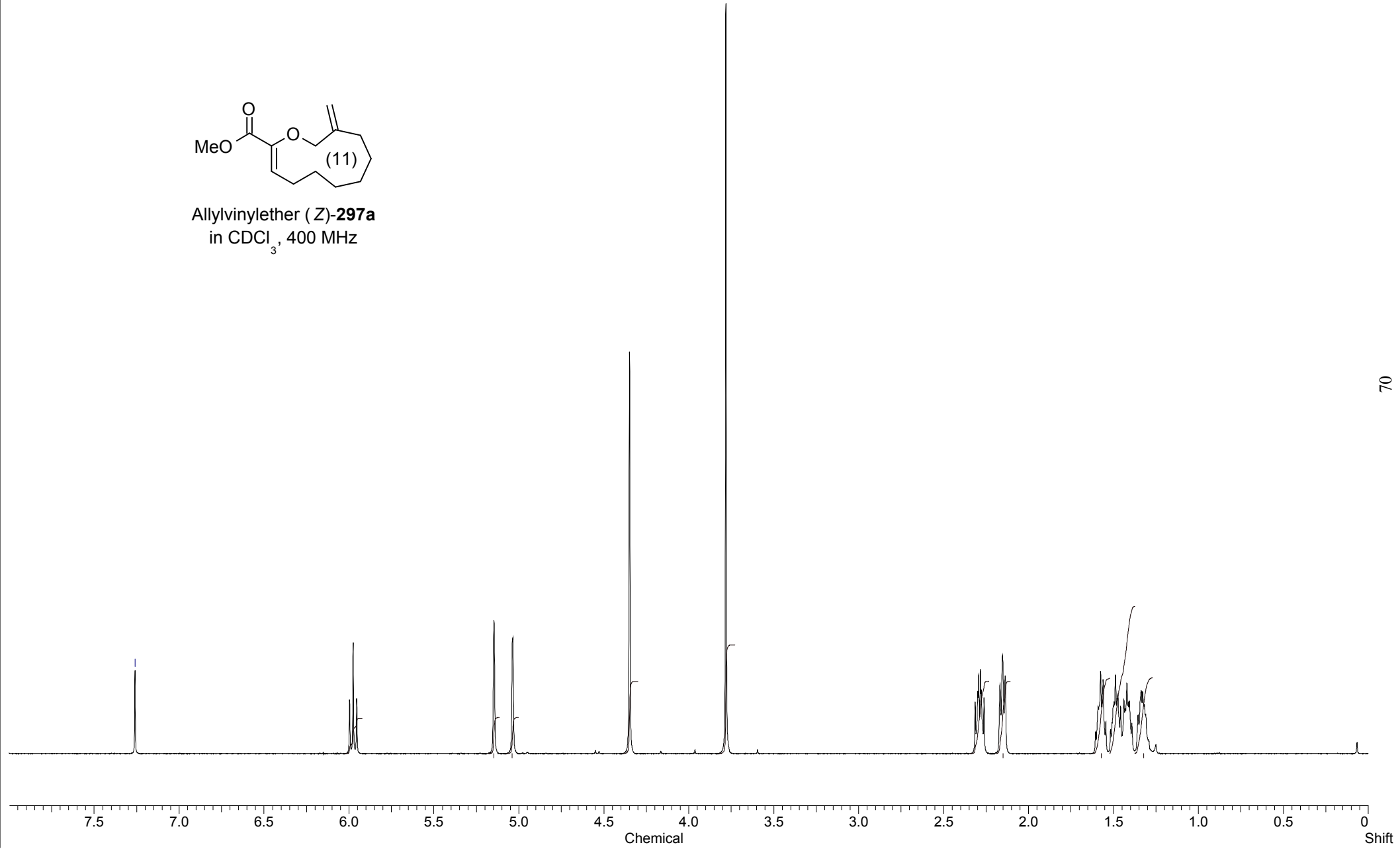
Aldehyd **300a**
in CDCl₃, 101 MHz

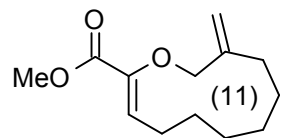


—7.260

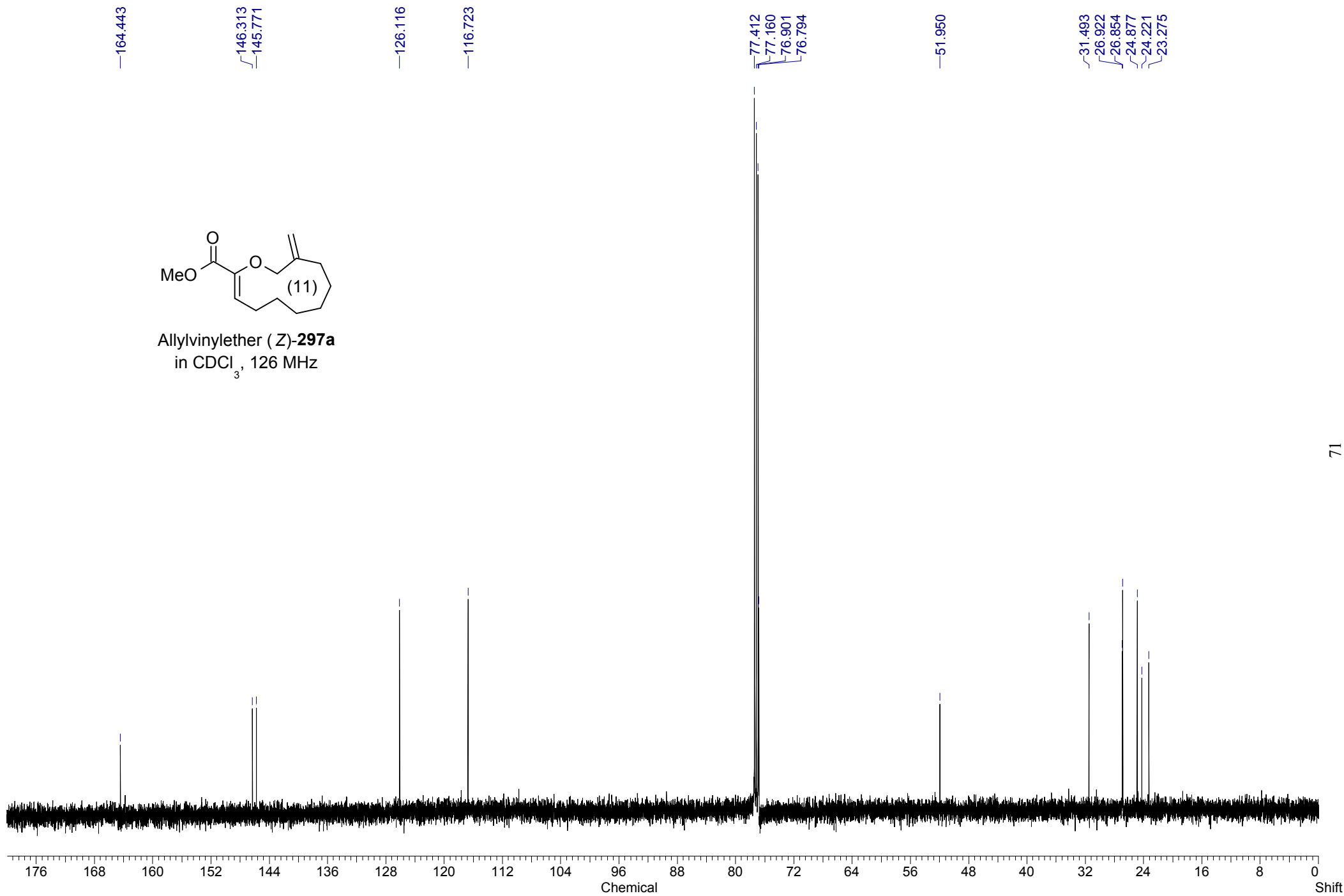


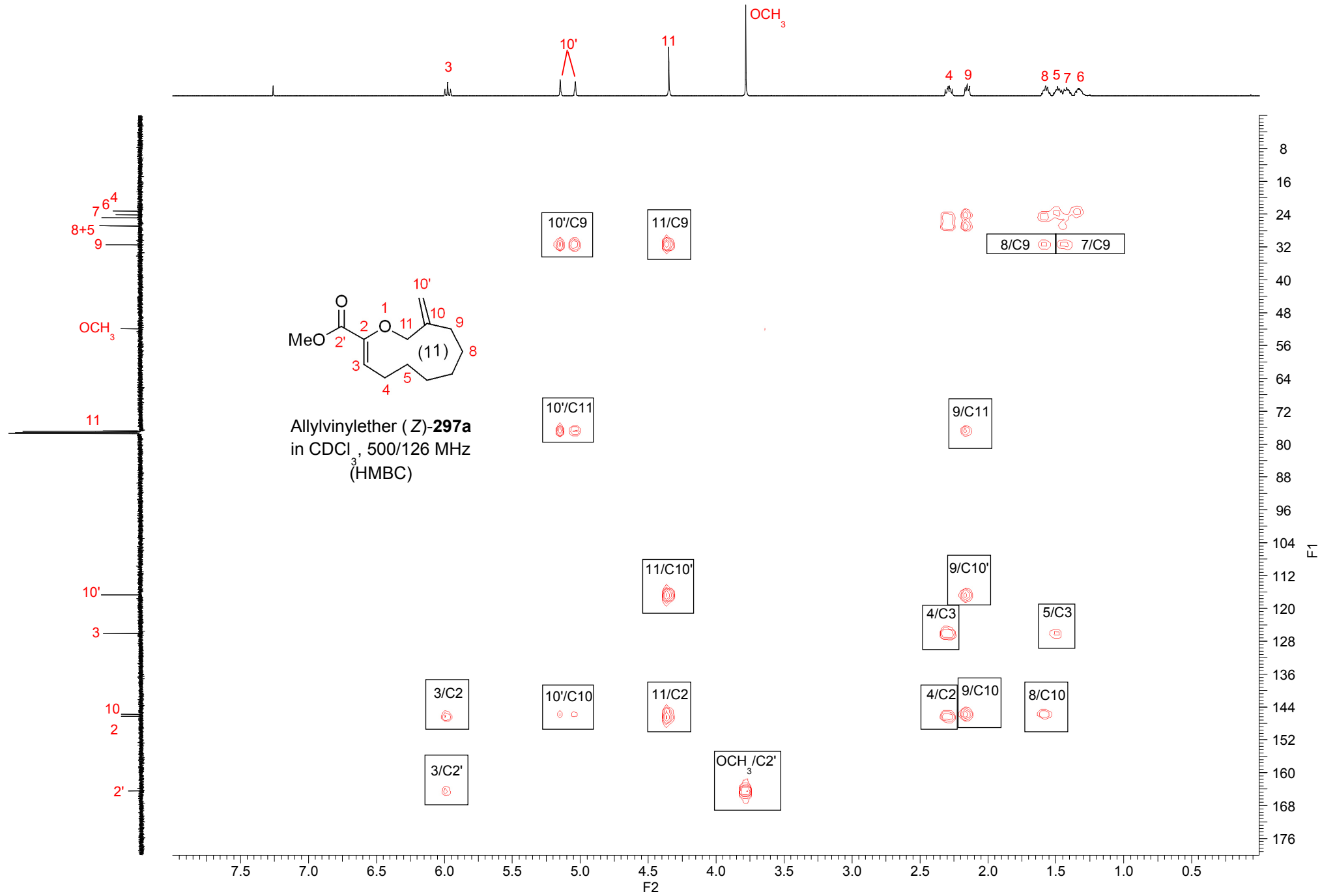
Allylvinylether (Z)-**297a**
in CDCl₃, 400 MHz

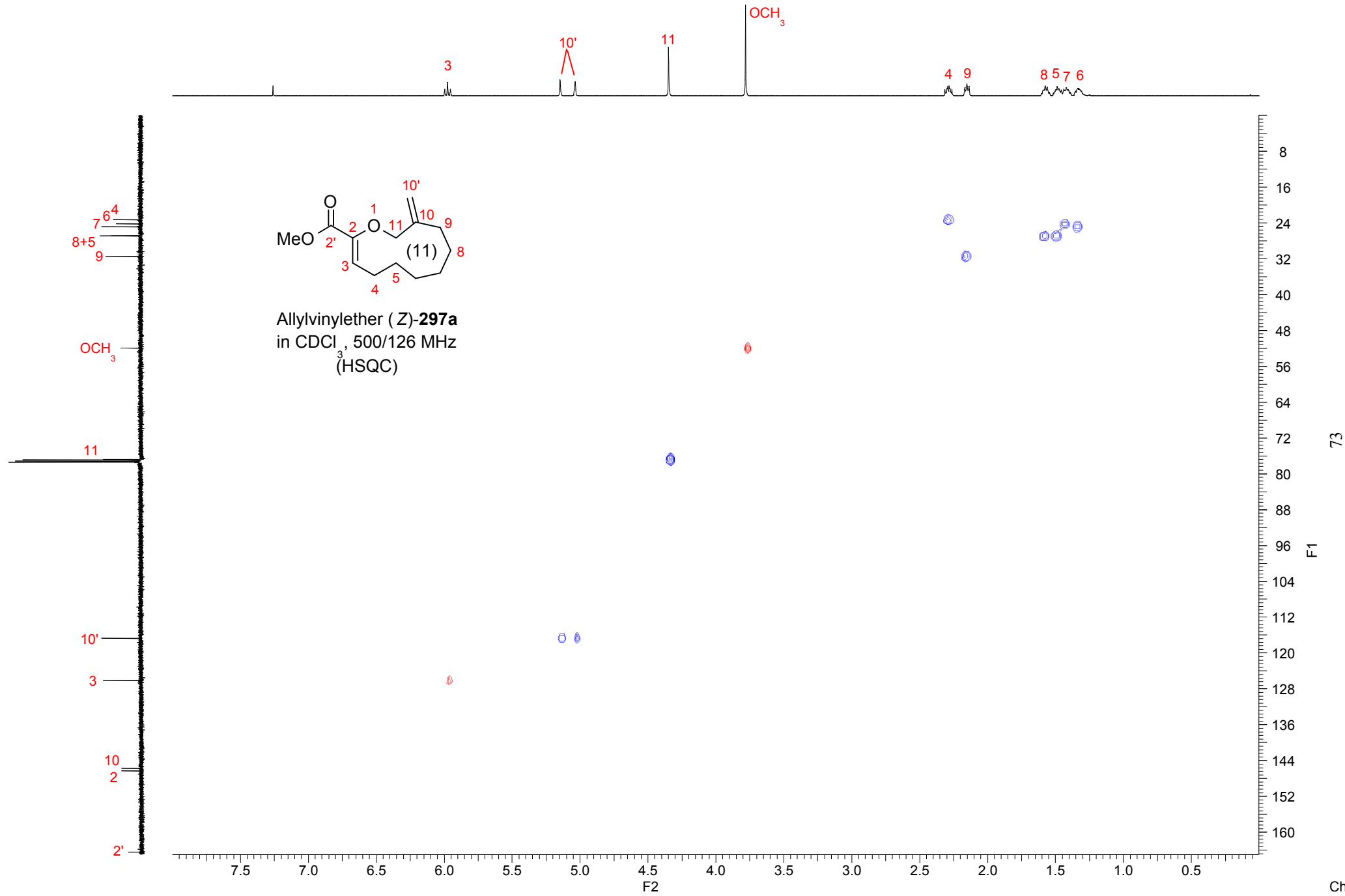


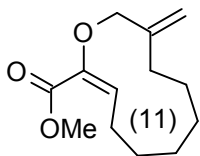


Allylvinylother (Z)-**297a**
in CDCl₃, 126 MHz

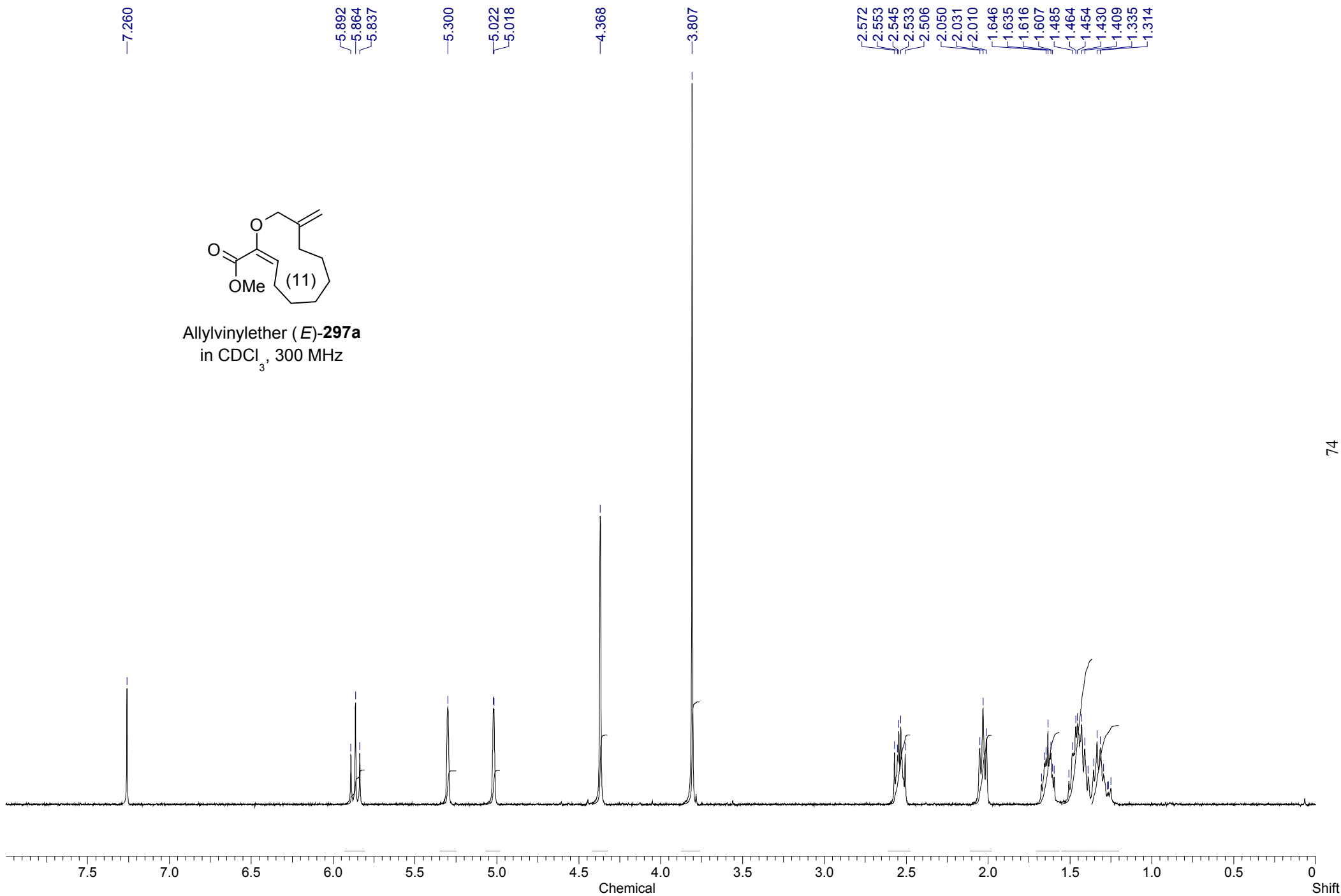


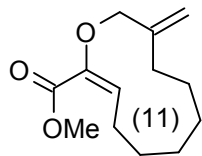




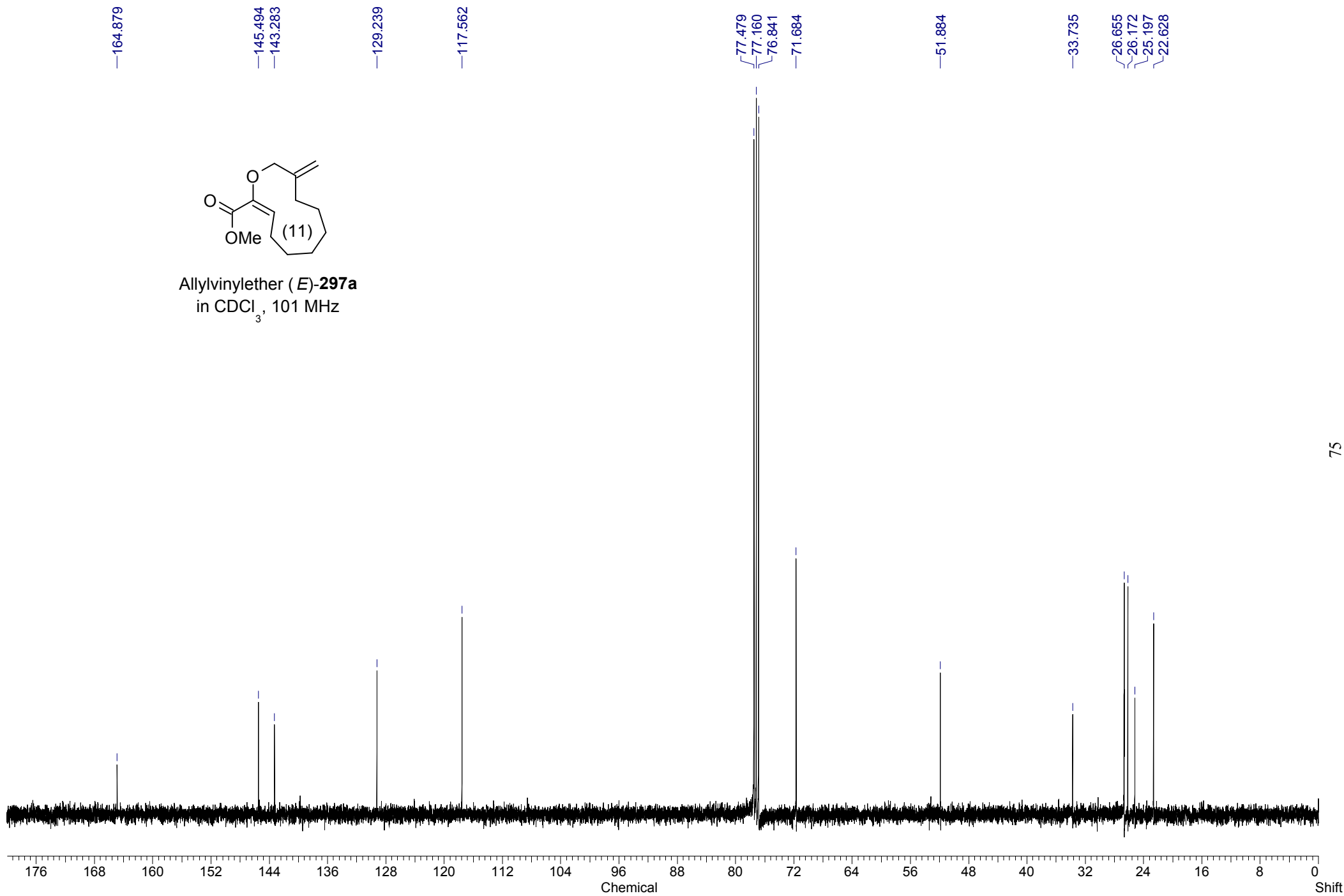


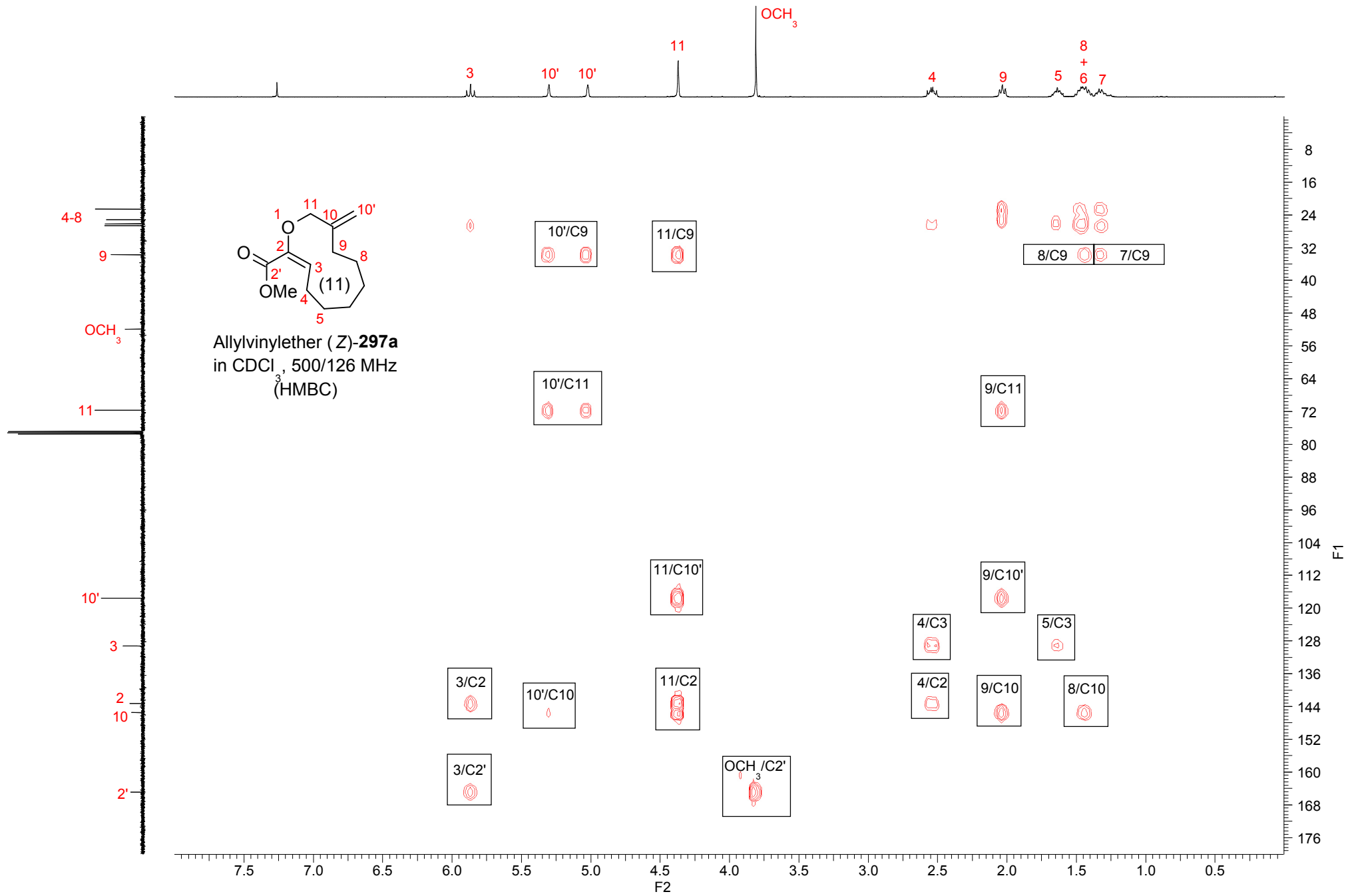
Allylvinyloxy ether (*E*)-**297a**
in CDCl₃, 300 MHz

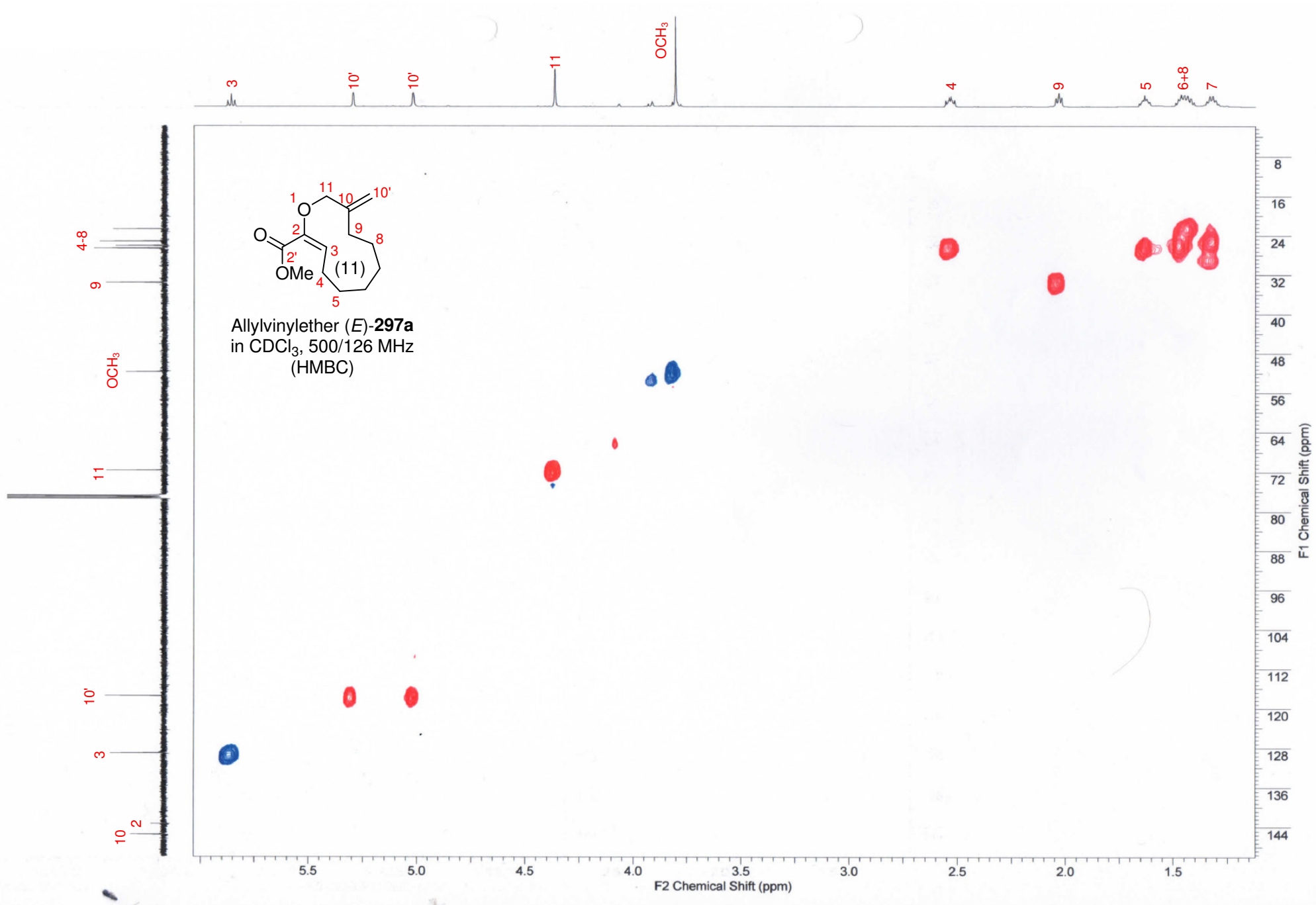




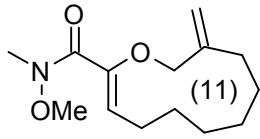
Allylvinylether (*E*)-**297a**
in CDCl₃, 101 MHz



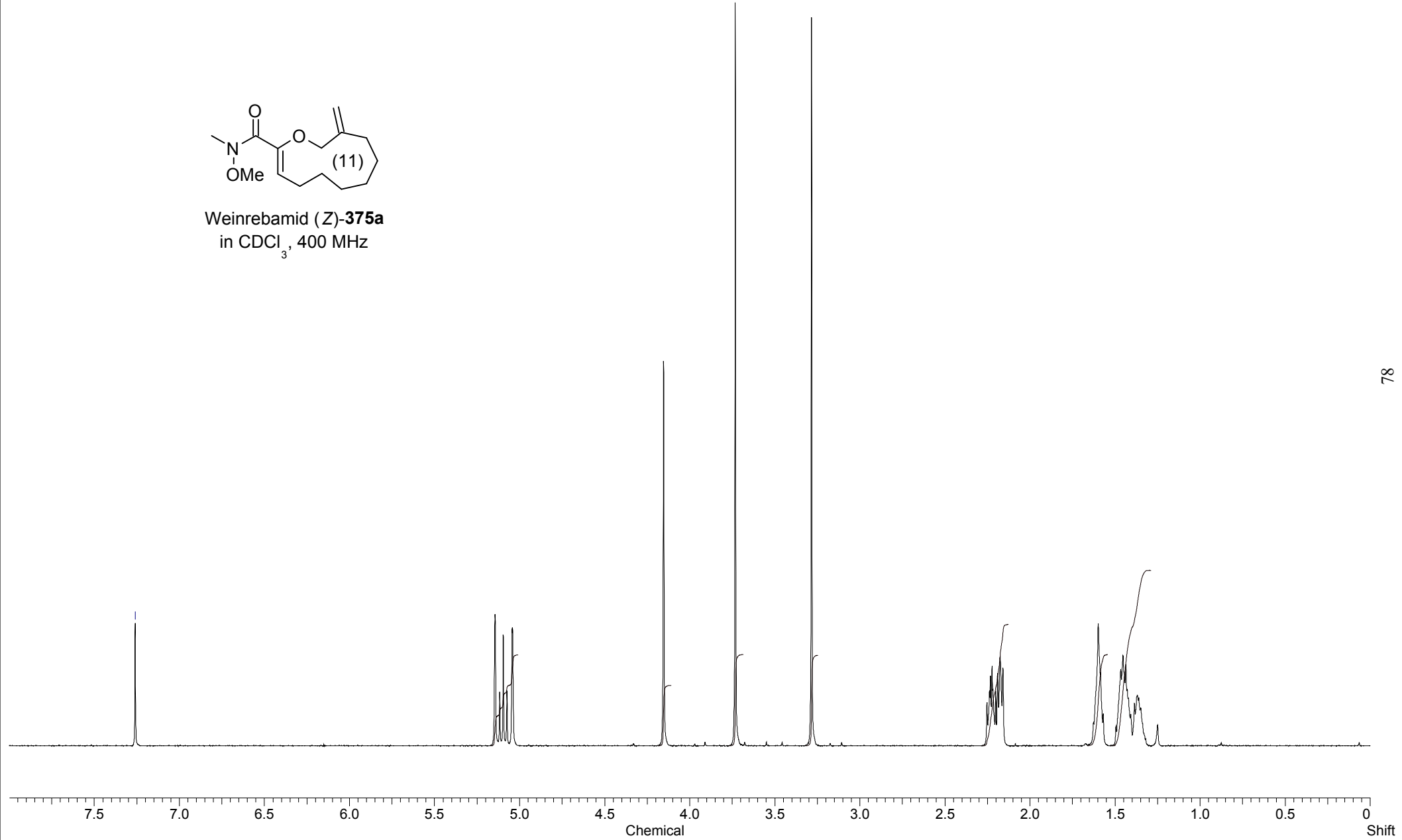


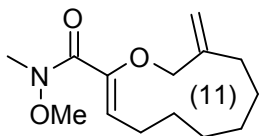


-7.260

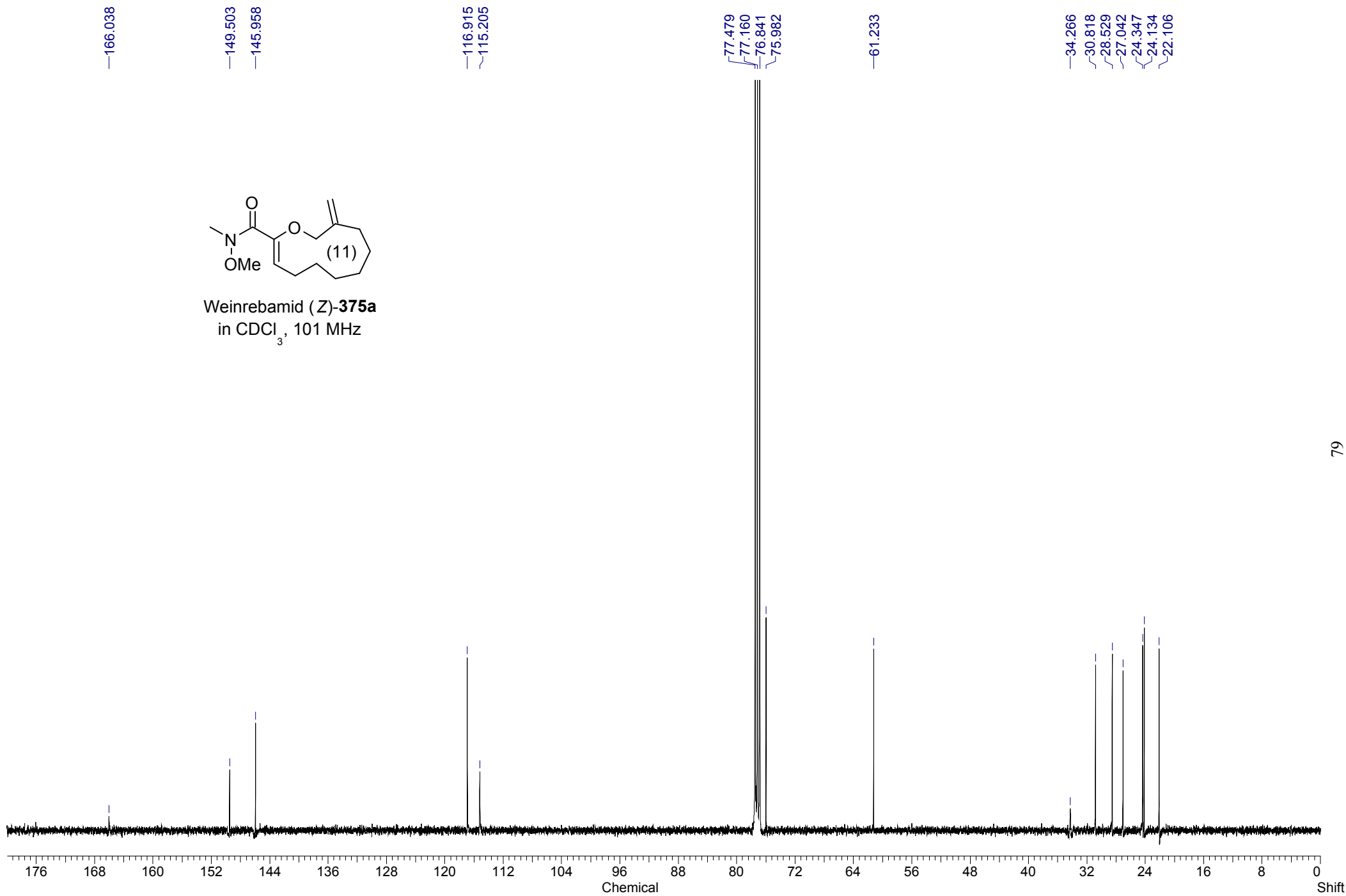


Weinrebamid (Z)-**375a**
in CDCl₃, 400 MHz

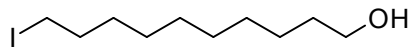




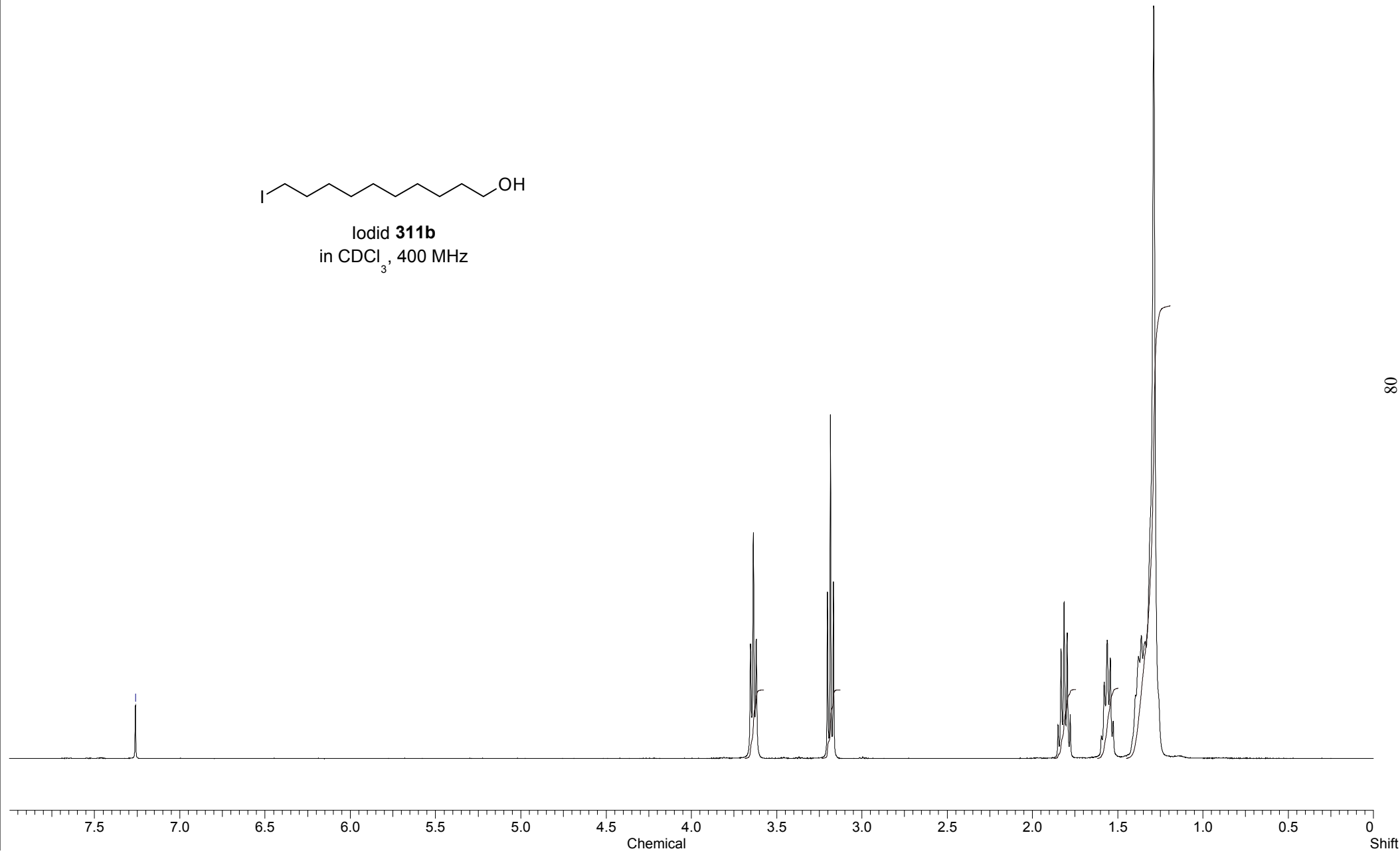
Weinrebamid (Z)-**375a**
in CDCl₃, 101 MHz

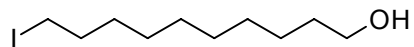


—7.260

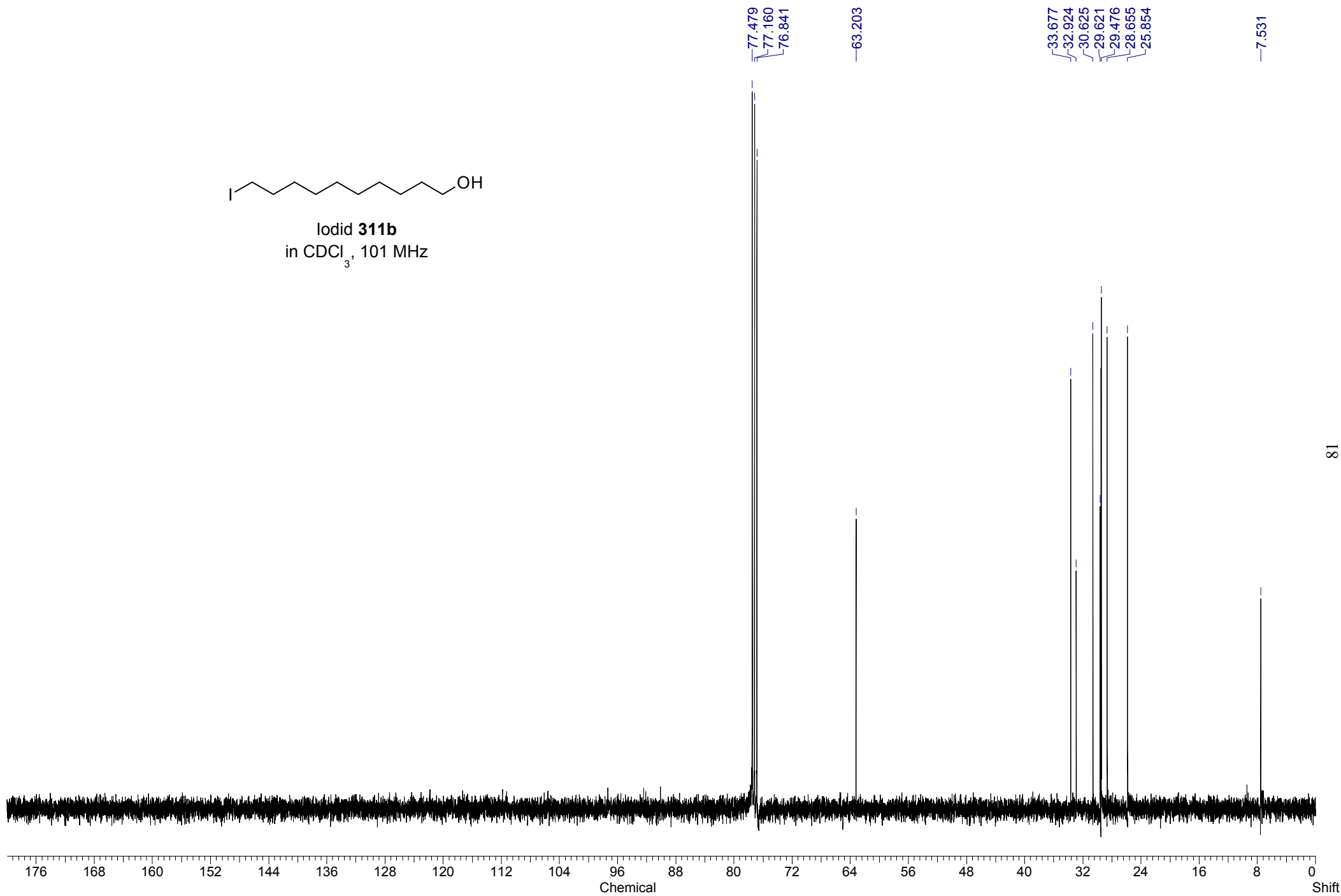


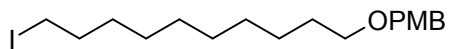
Iodid **311b**
in CDCl₃, 400 MHz





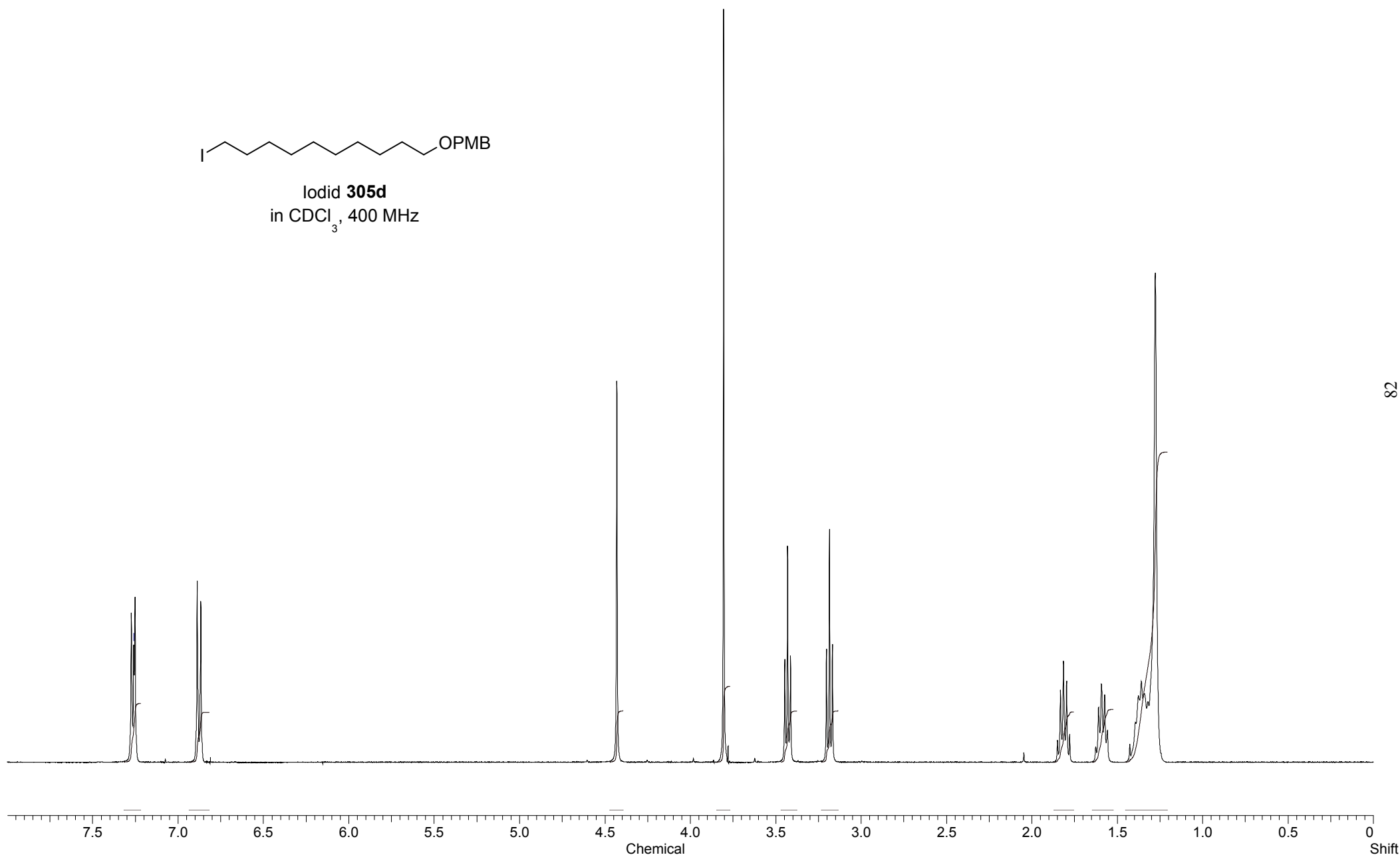
Iodid **311b**
in CDCl₃, 101 MHz

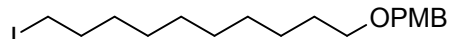




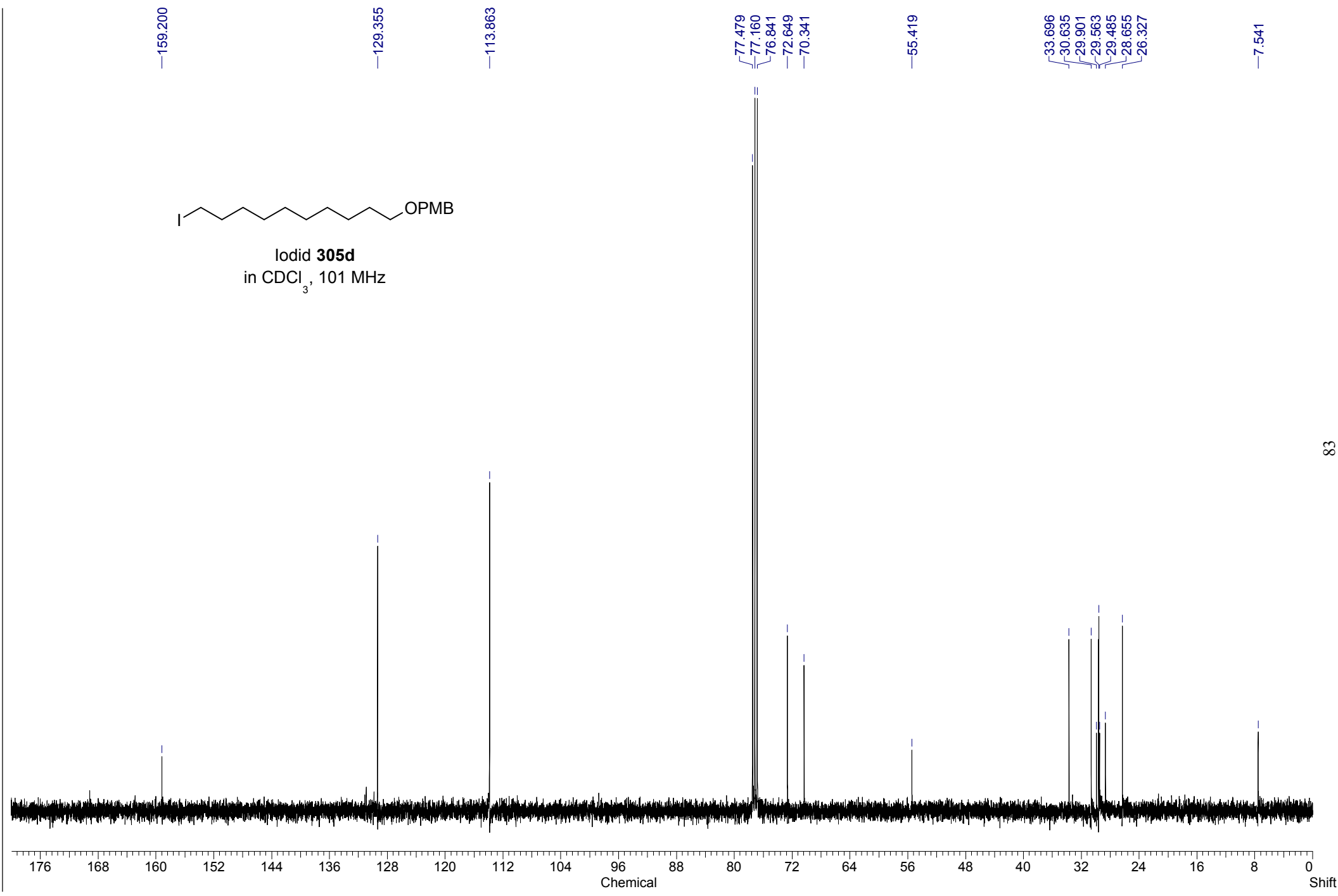
Iodid **305d**
in CDCl₃, 400 MHz

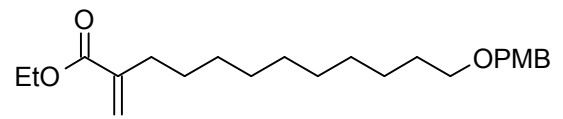
—7.260





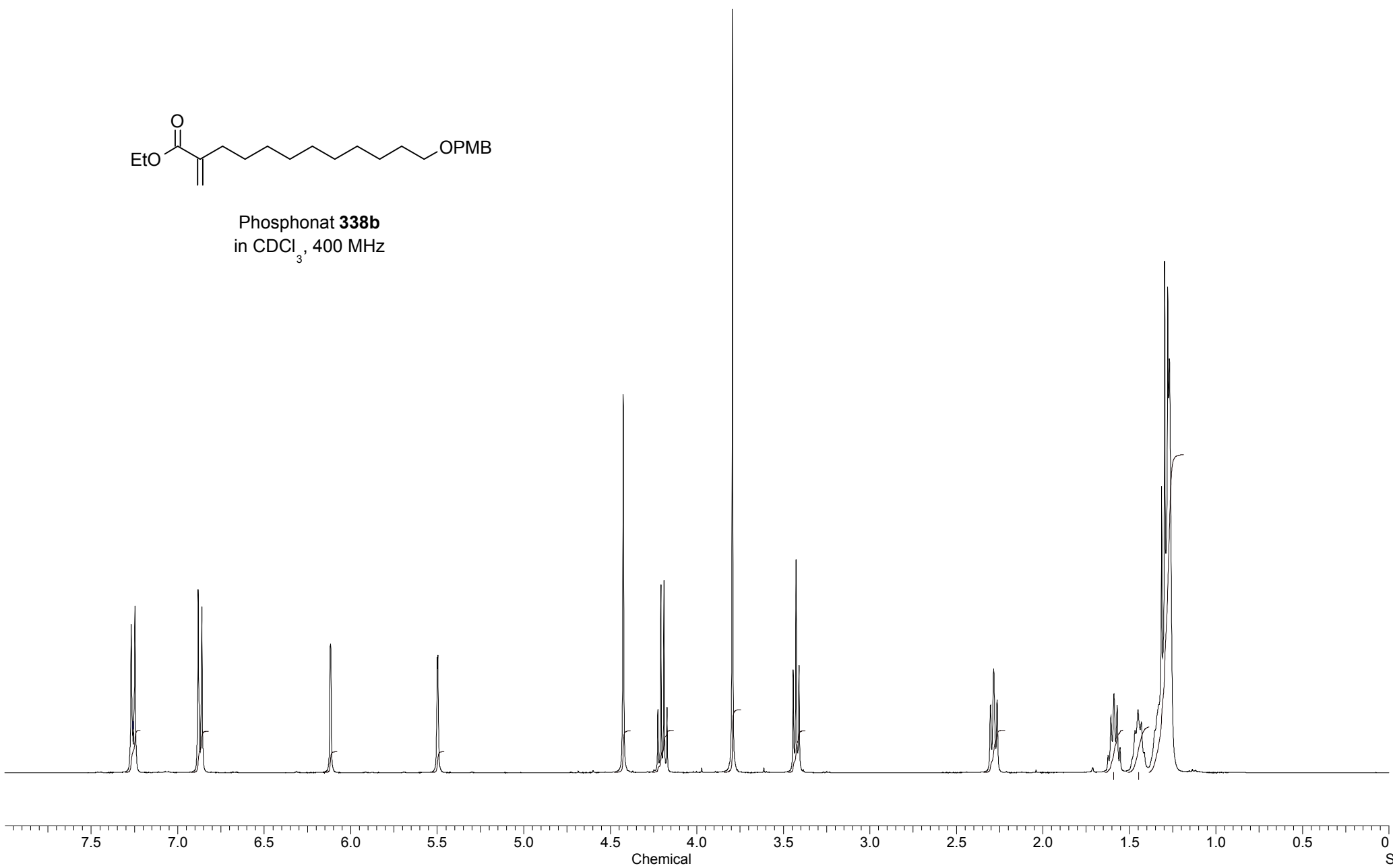
Iodid **305d**
in CDCl₃, 101 MHz

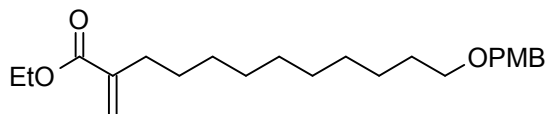




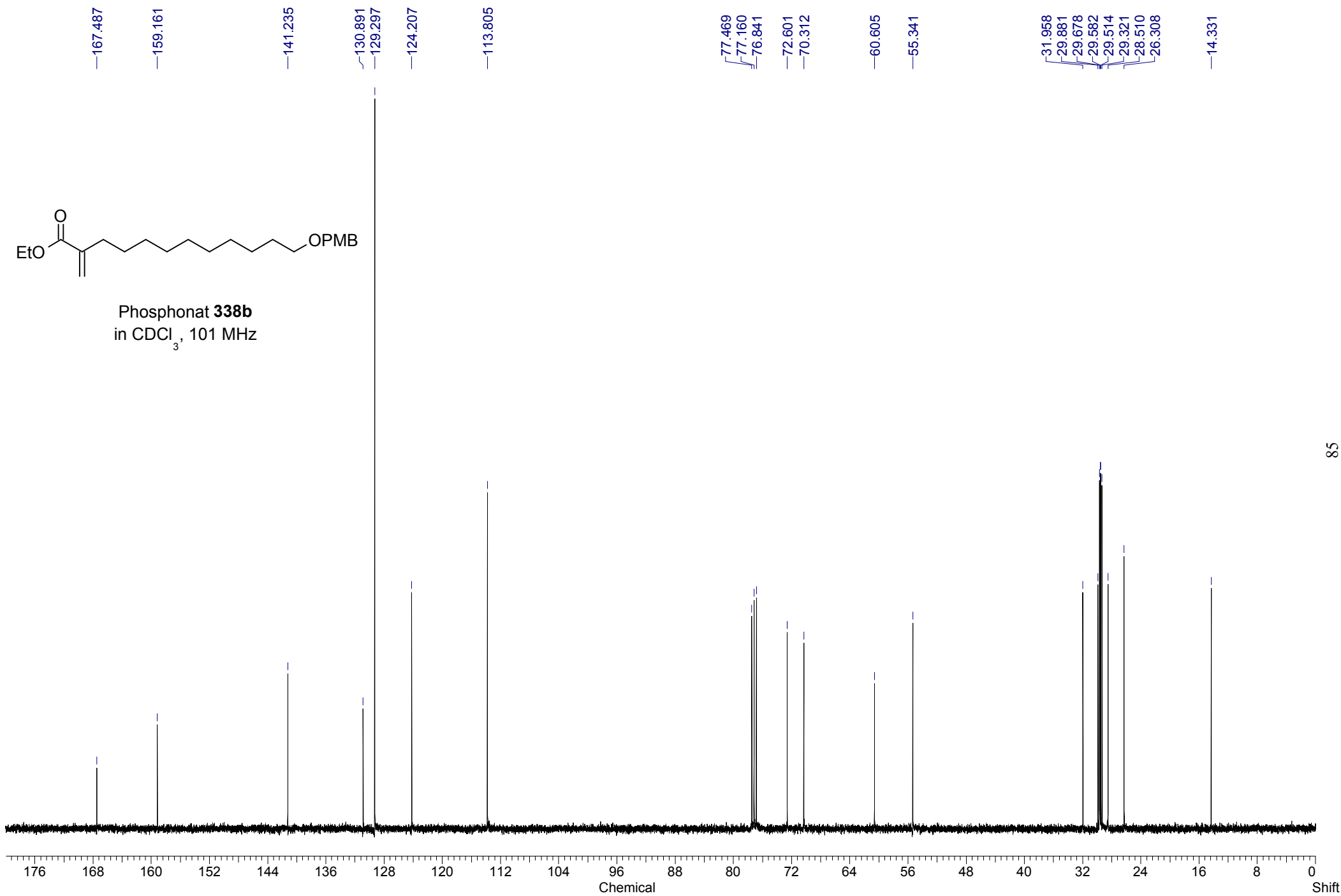
Phosphonat **338b**
in CDCl₃, 400 MHz

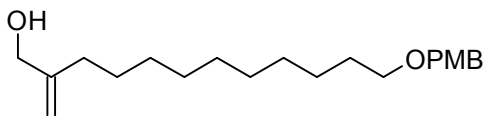
—7.260





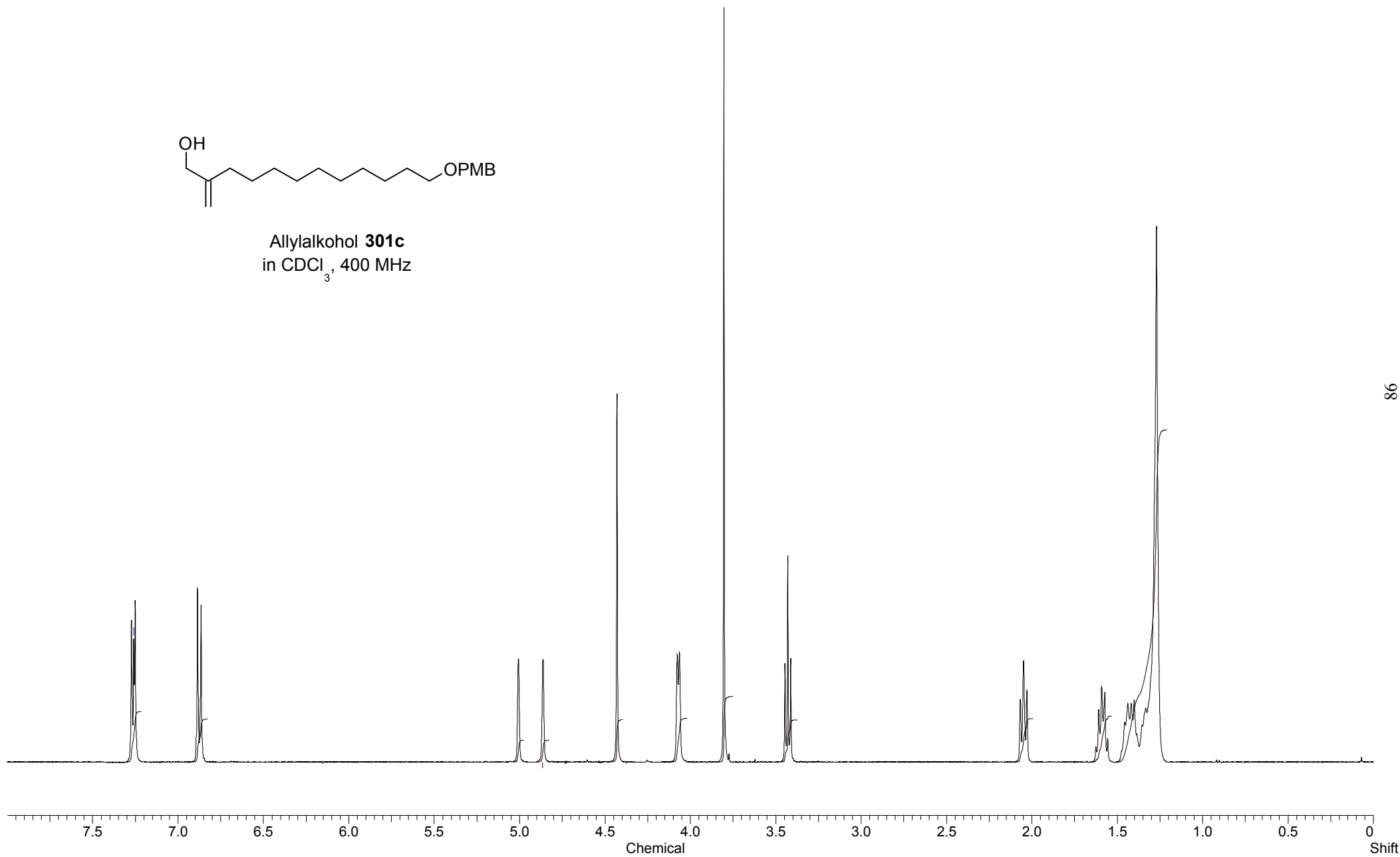
Phosphonat **338b**
in CDCl₃, 101 MHz

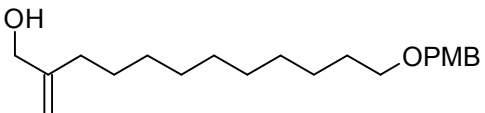




Allylalkohol **301c**
in CDCl₃, 400 MHz

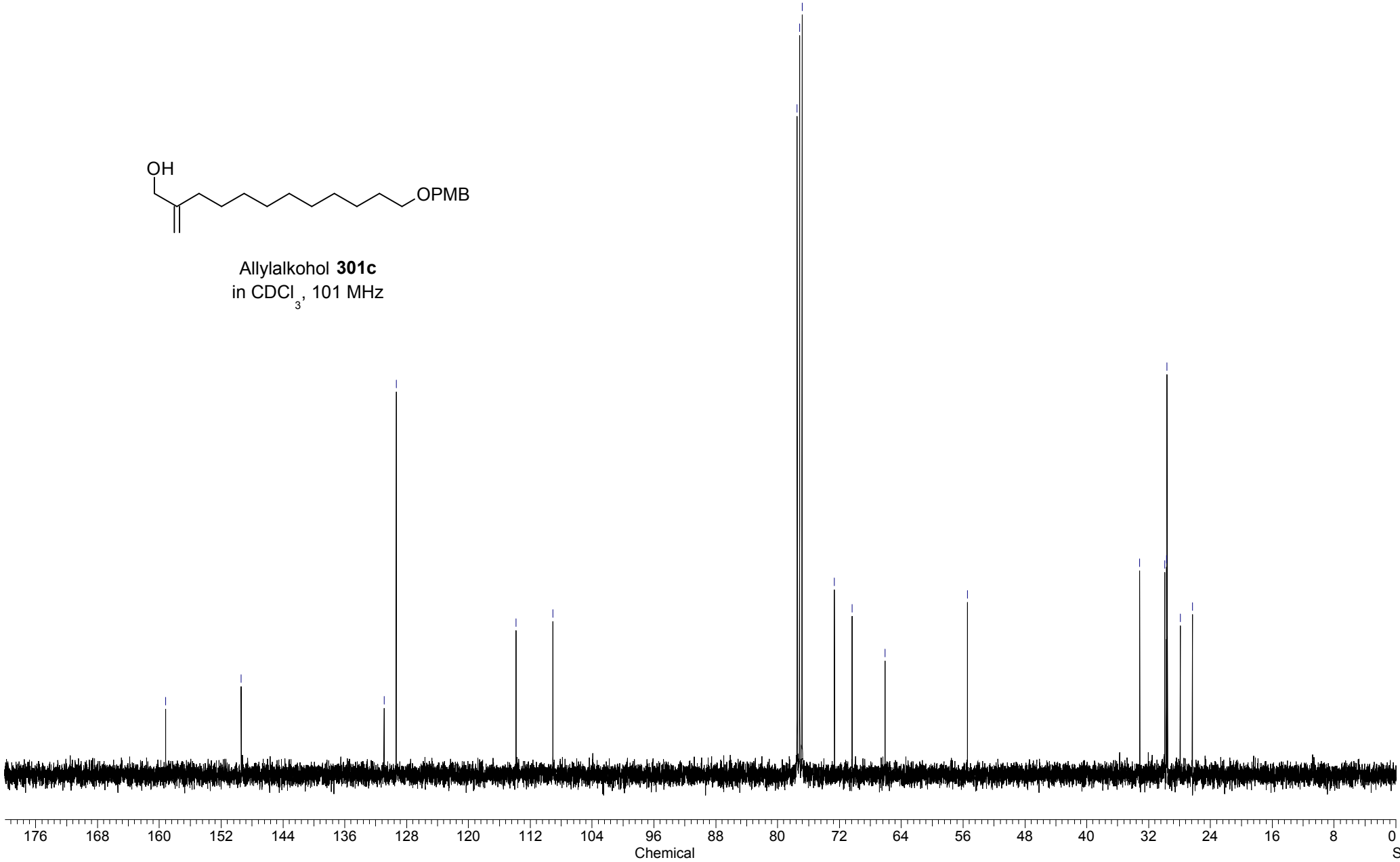
—7.260



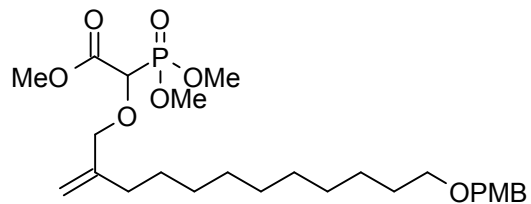


Allylalkohol **301c**
in CDCl₃, 101 MHz

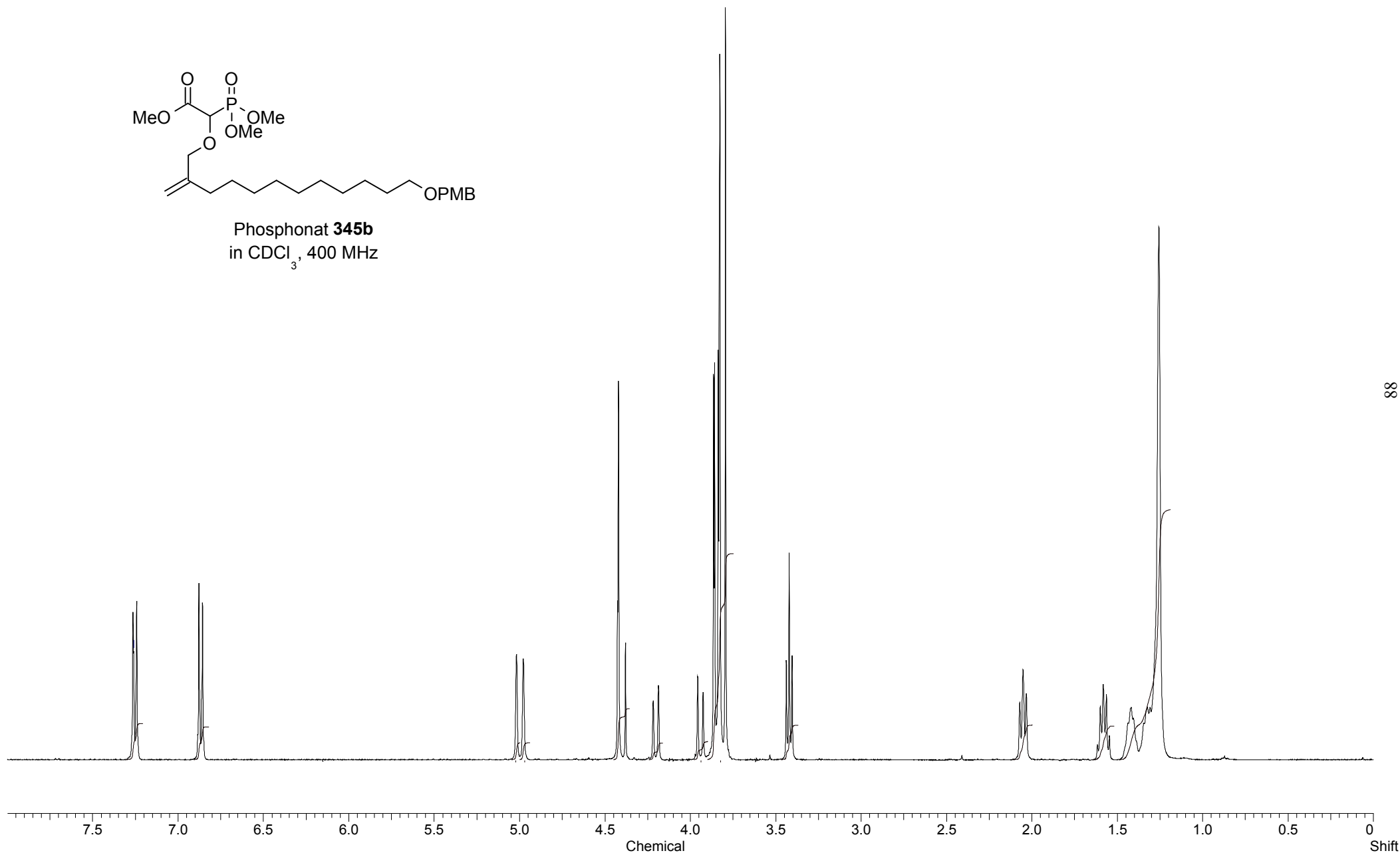
- 159.190
- 149.406
- 130.929
- 129.355
- 113.853
- 109.072
- 77.479
- 77.160
- 76.841
- 72.640
- 70.360
- 66.091
- 55.419
- 33.136
- 29.910
- 29.659
- 29.601
- 27.901
- 26.337

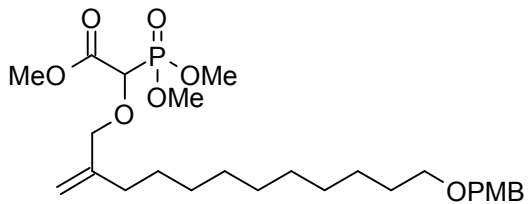


—7.260

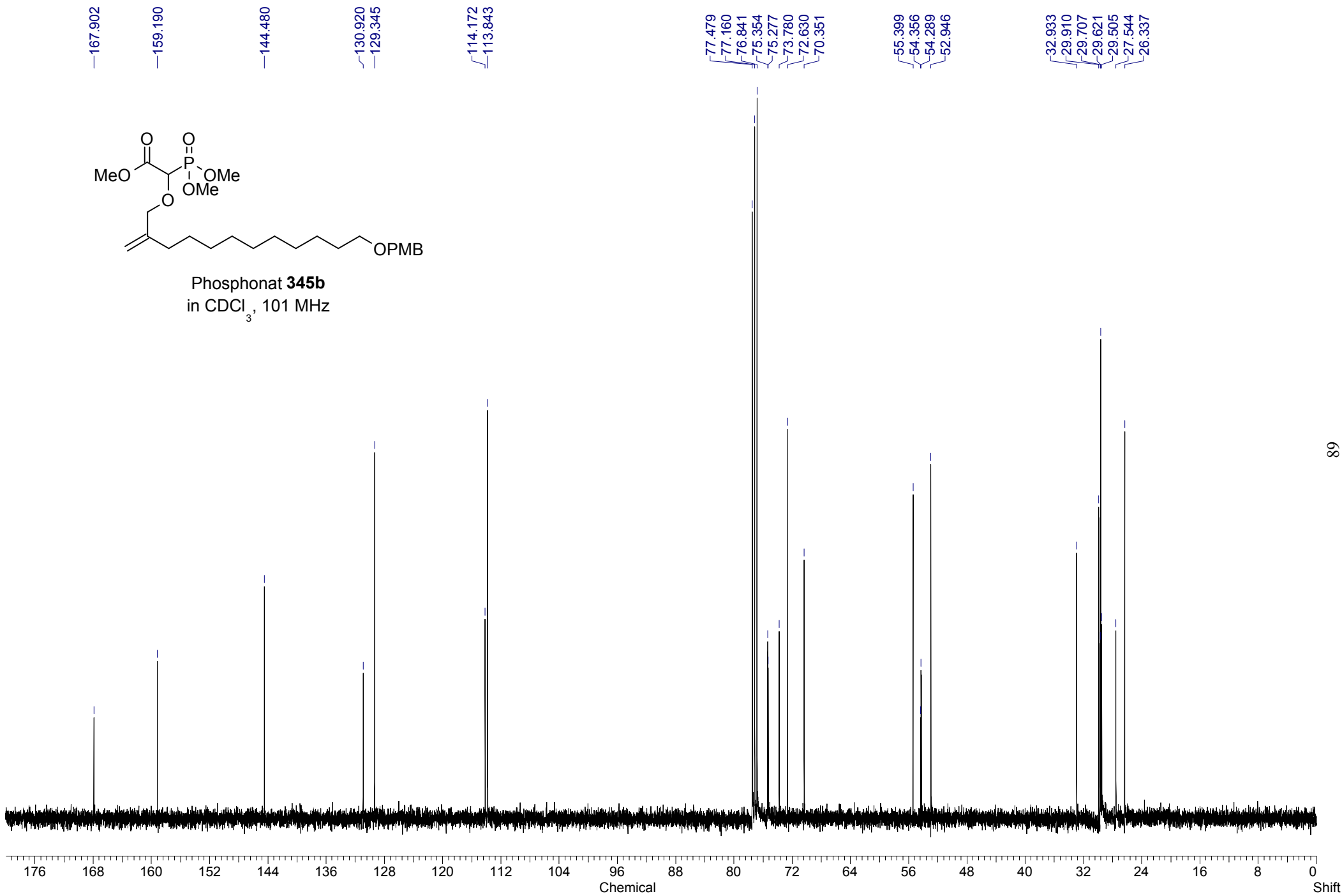


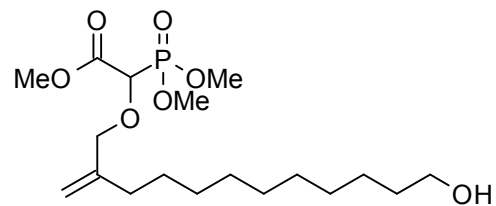
Phosphonat **345b**
in CDCl₃, 400 MHz





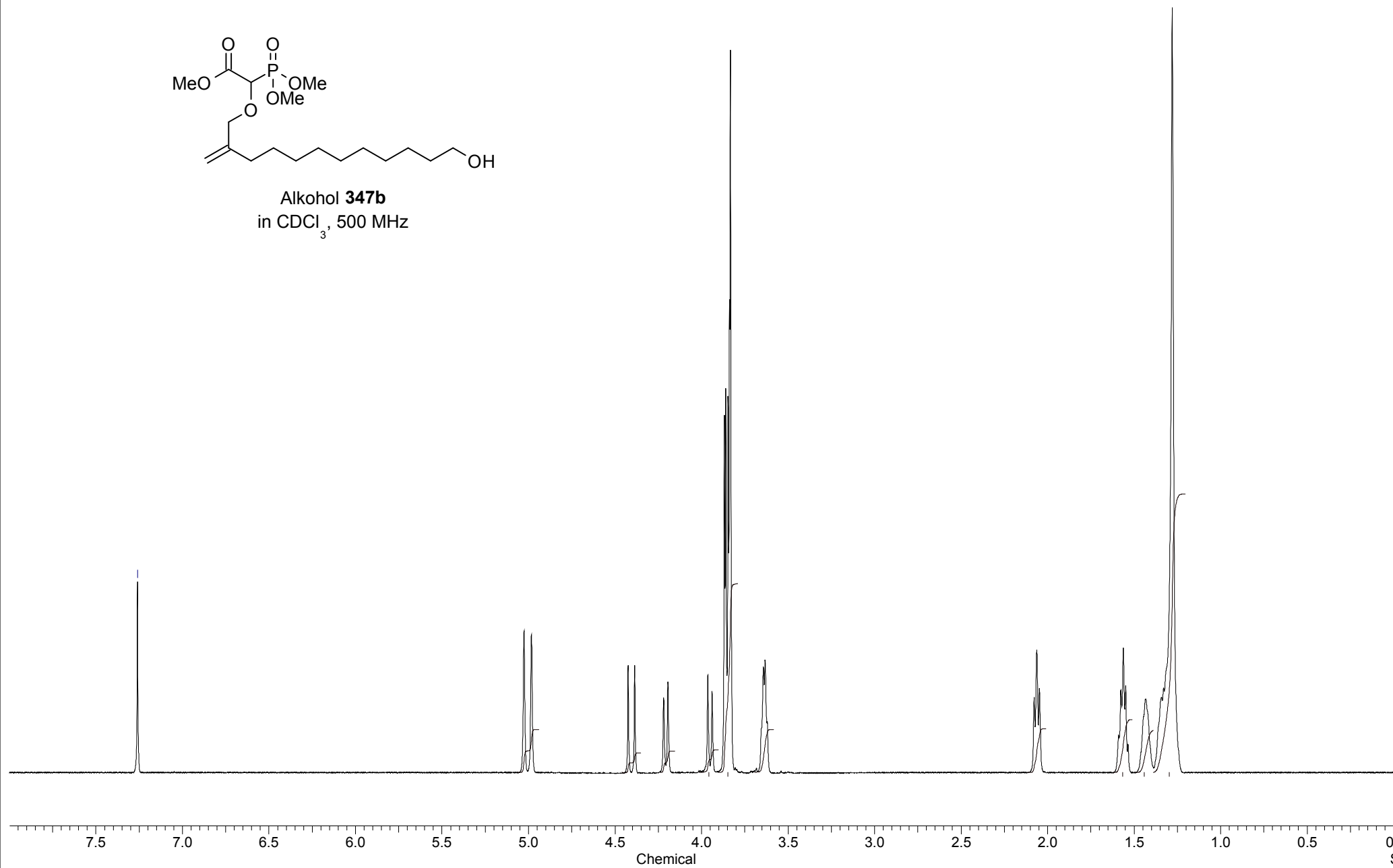
Phosphonat **345b**
in CDCl₃, 101 MHz

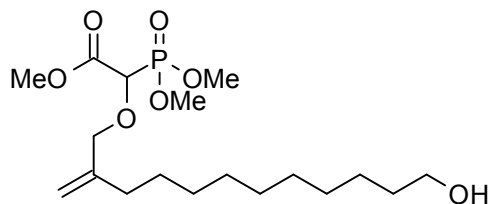




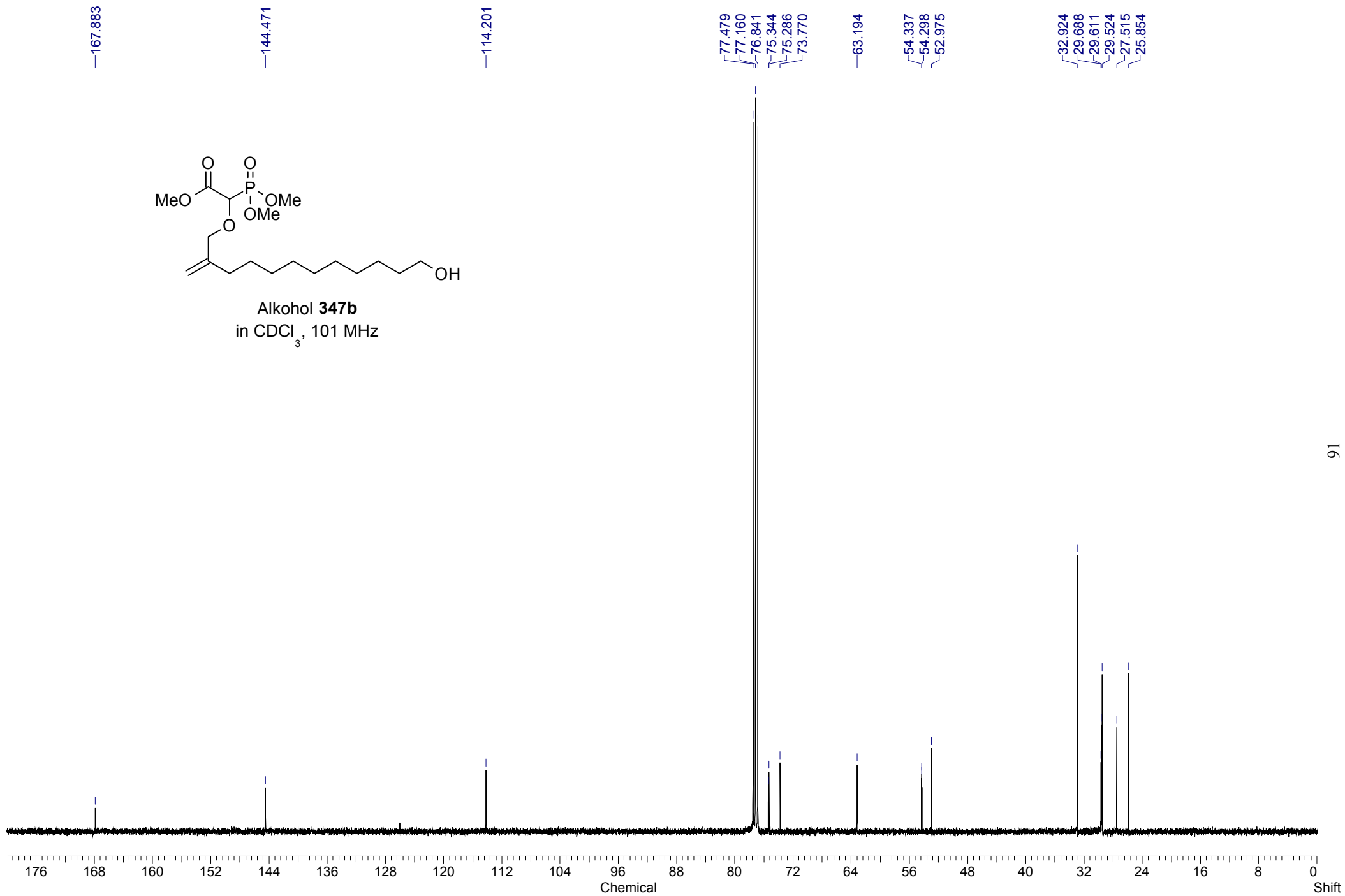
Alkohol **347b**
in CDCl₃, 500 MHz

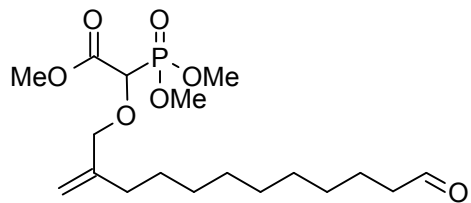
—7.260





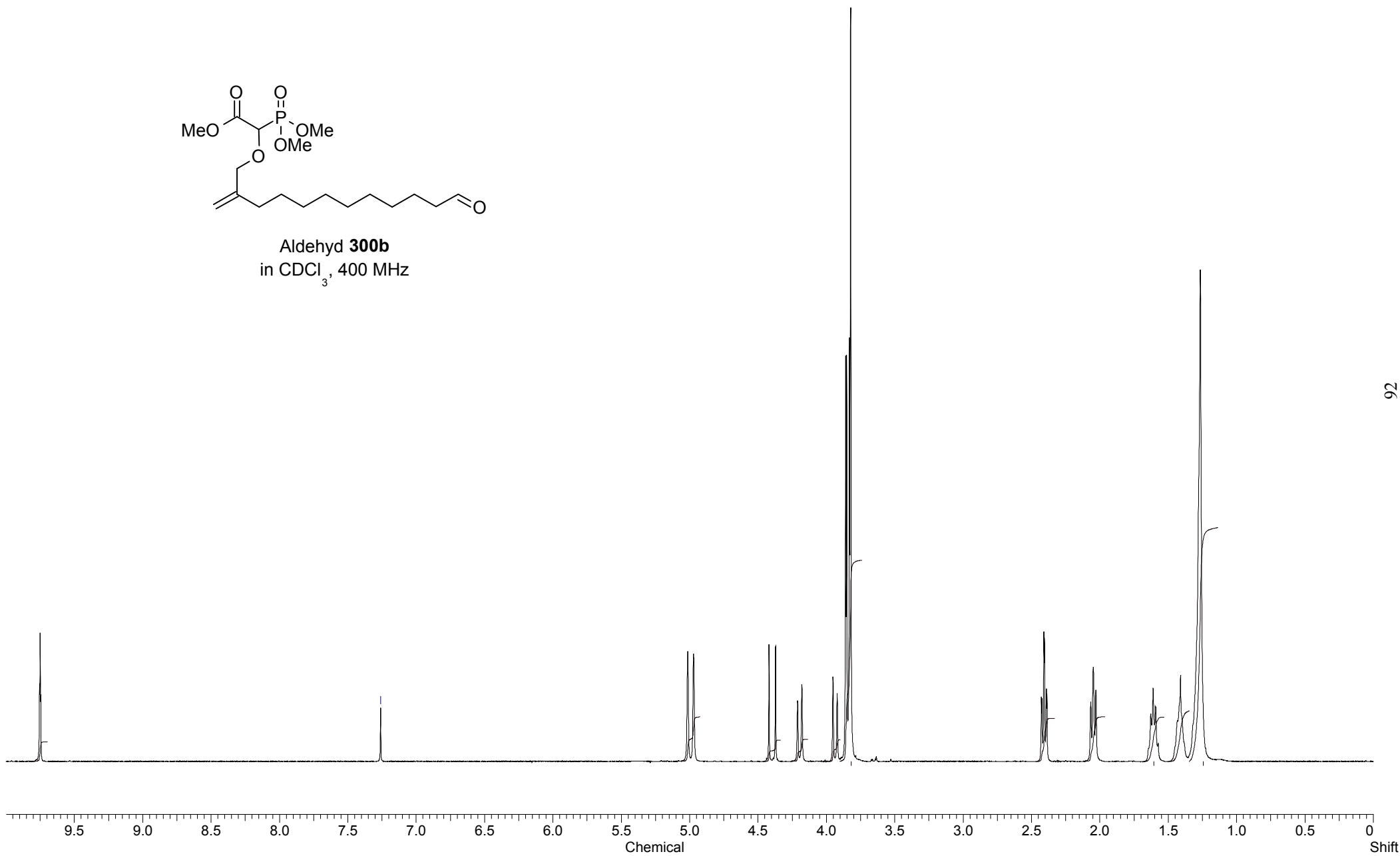
Alkohol **347b**
in CDCl_3 , 101 MHz

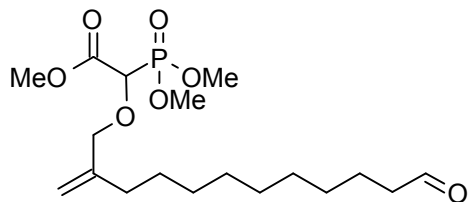




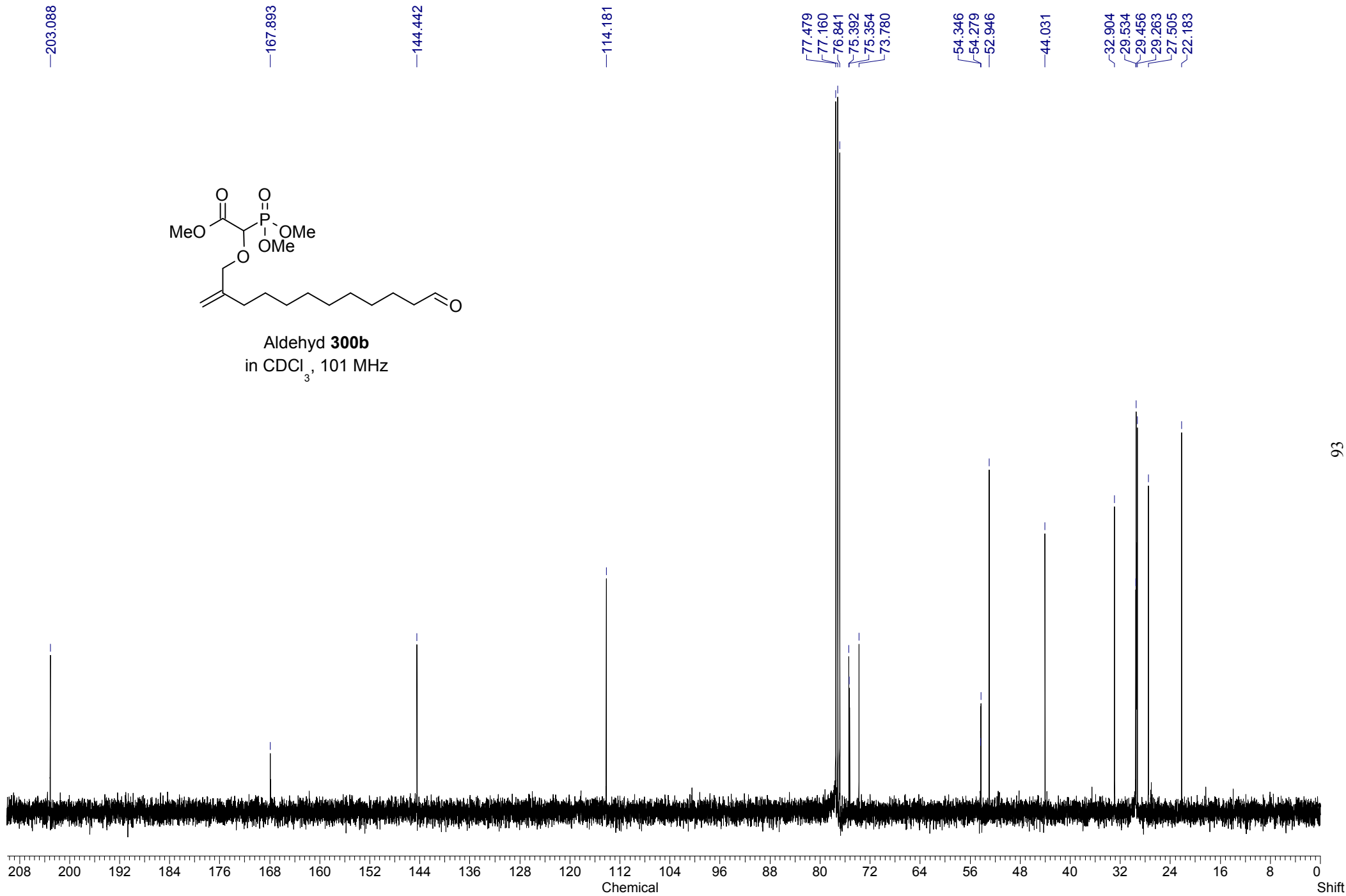
Aldehyd **300b**
in CDCl₃, 400 MHz

—7.260

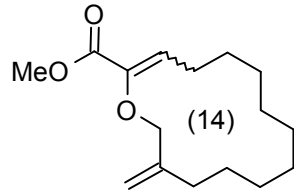




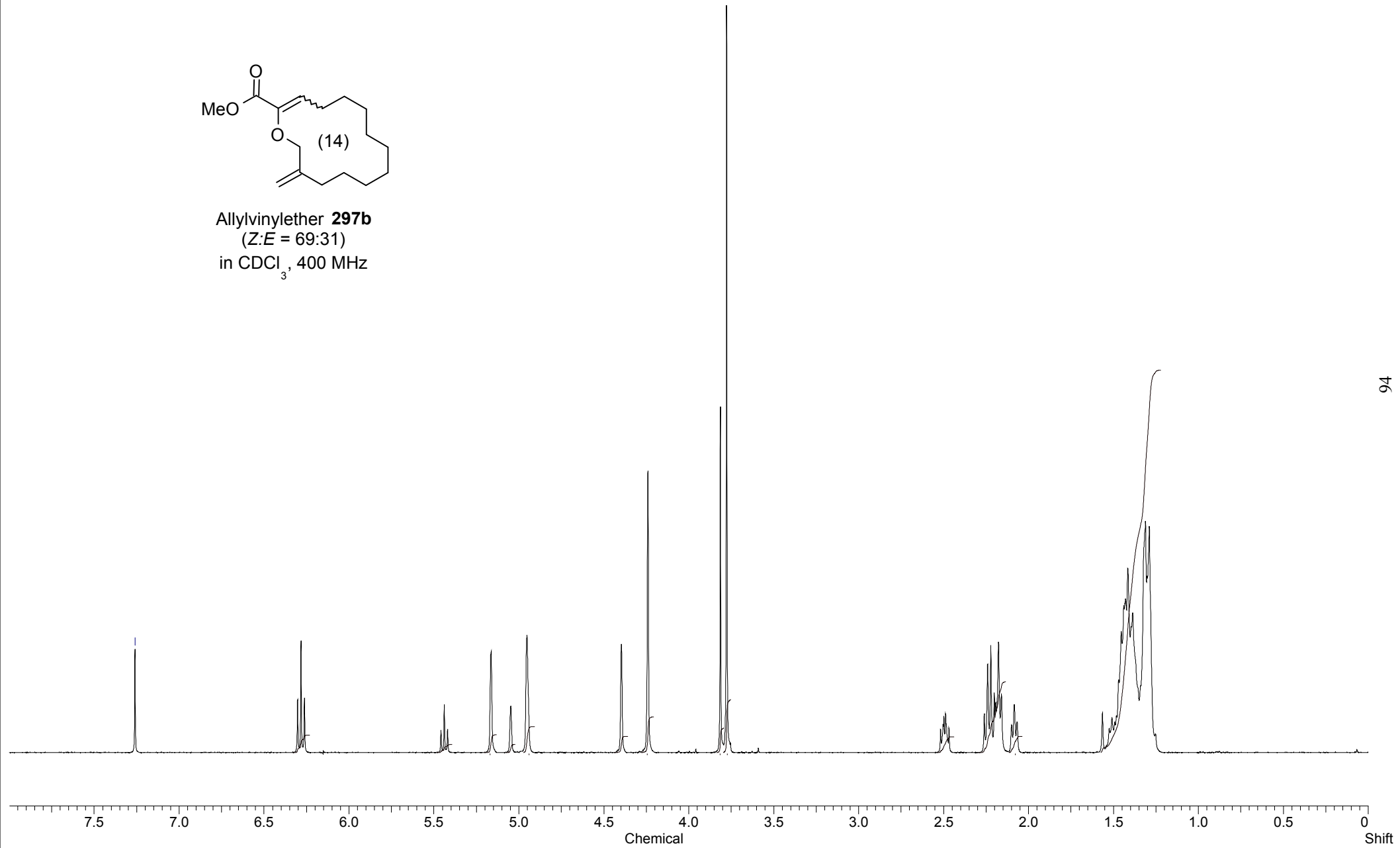
Aldehyd **300b**
in CDCl₃, 101 MHz

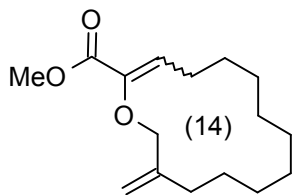


—7.260

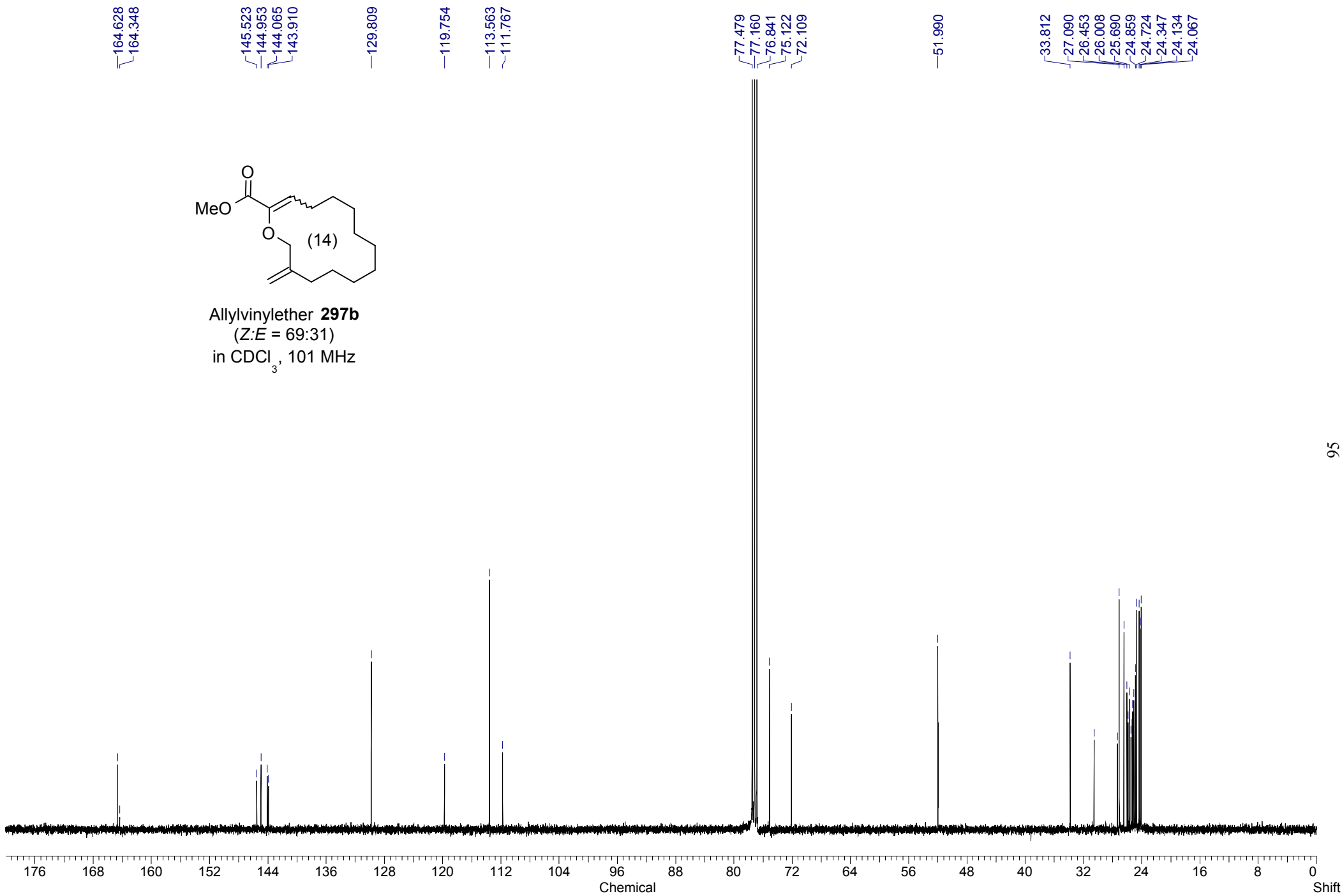


Allylvinylether **297b**
(Z:E = 69:31)
in CDCl₃, 400 MHz

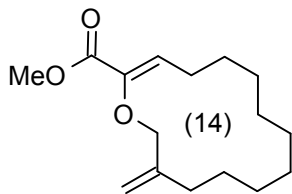




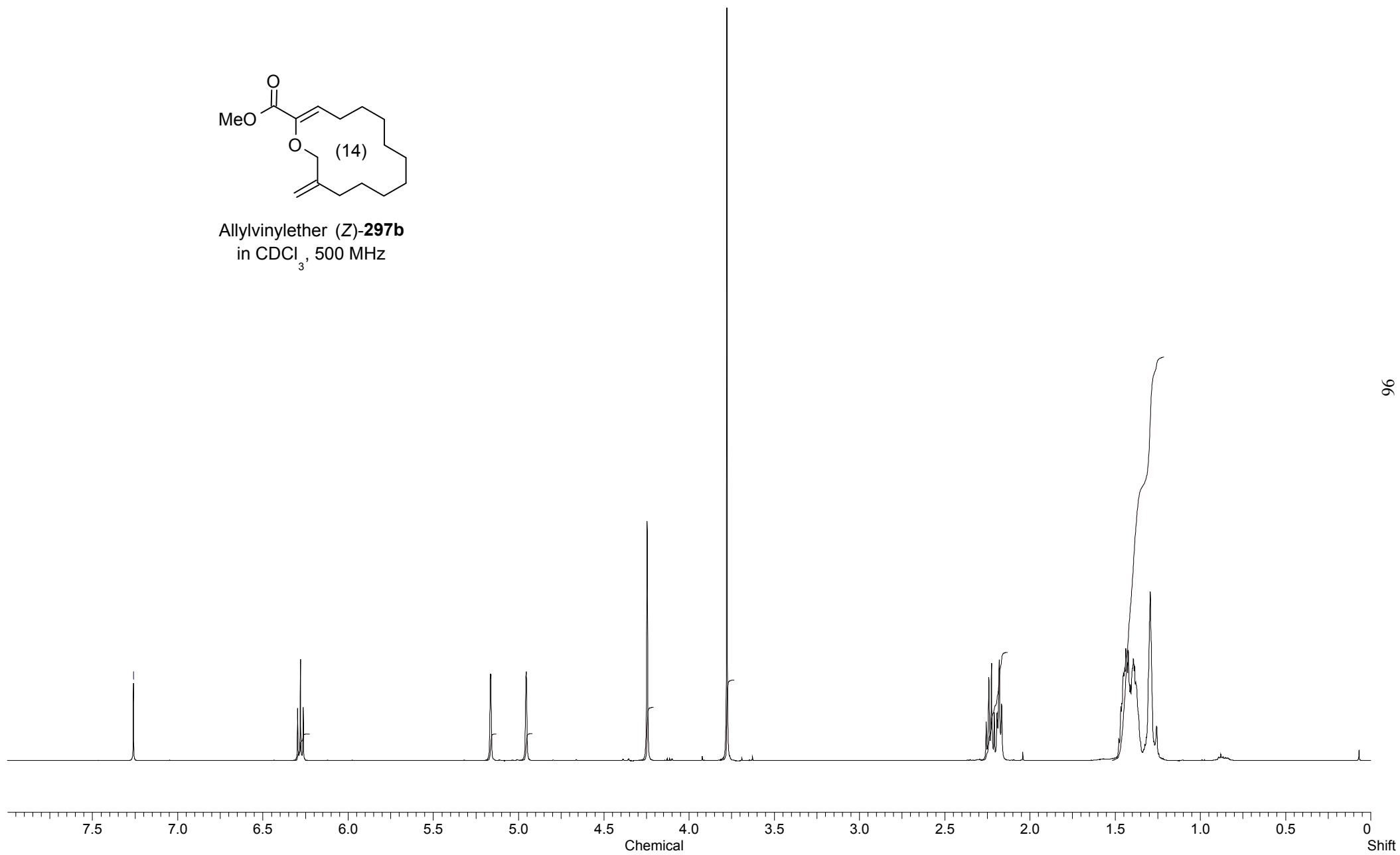
Allylvinyloxy **297b**
(*Z:E* = 69:31)
in CDCl₃, 101 MHz

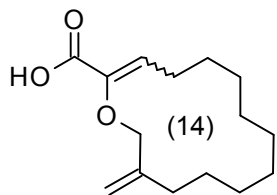


-7.260



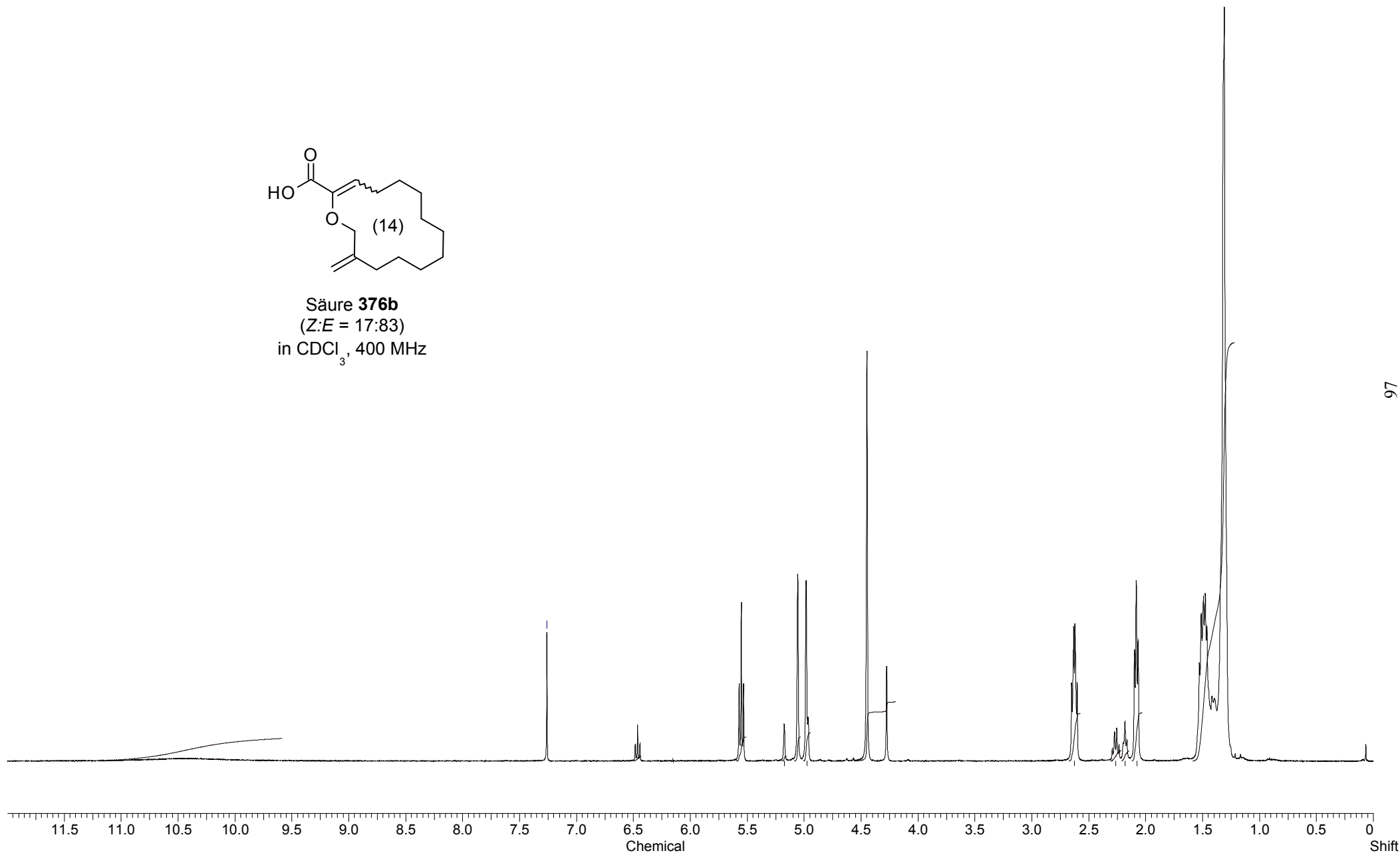
Allylvinyloxy (Z)-**297b**
in CDCl₃, 500 MHz

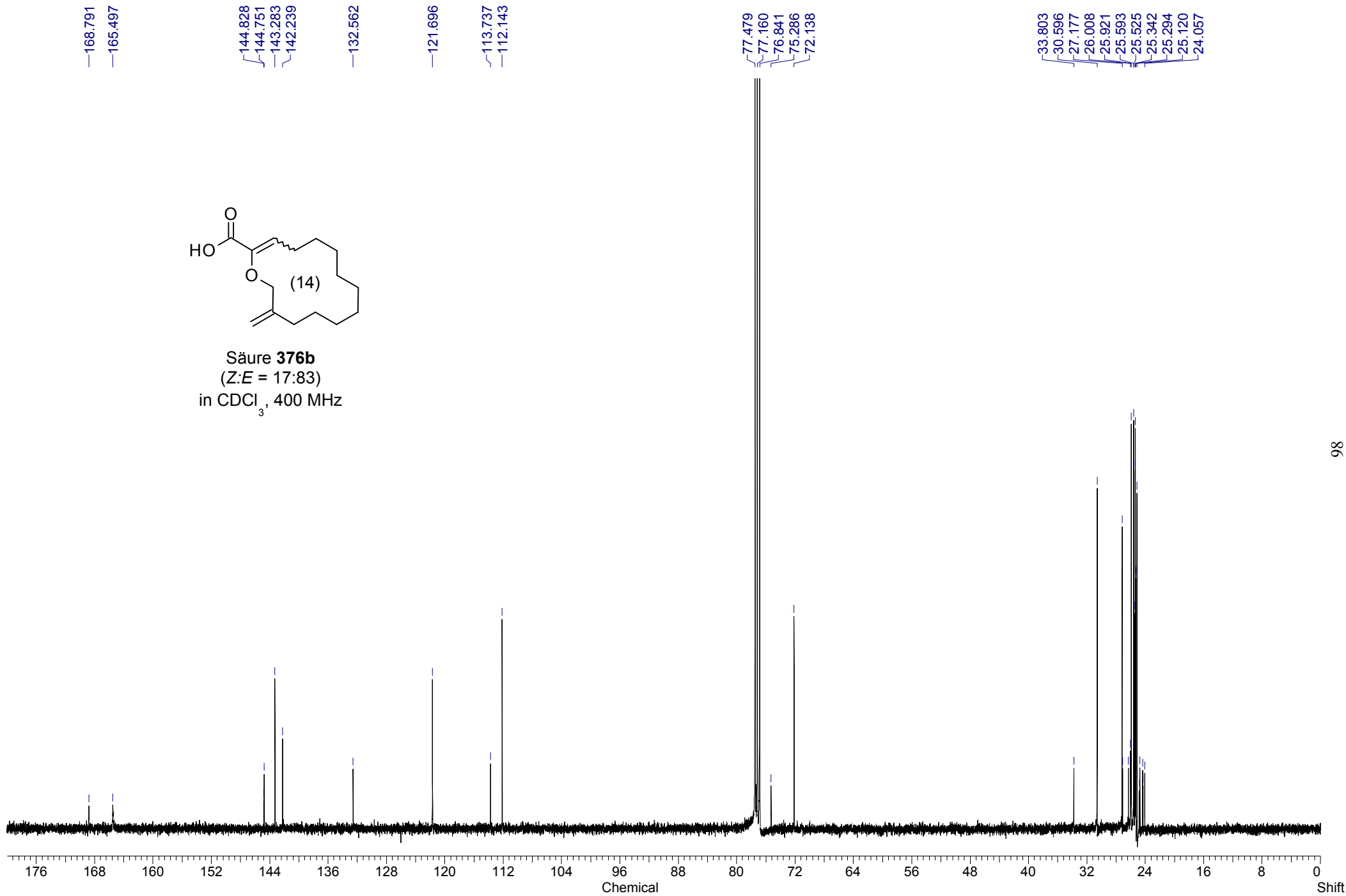




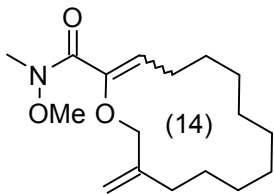
Säure **376b**
(Z:E = 17:83)
in CDCl₃, 400 MHz

-7.260

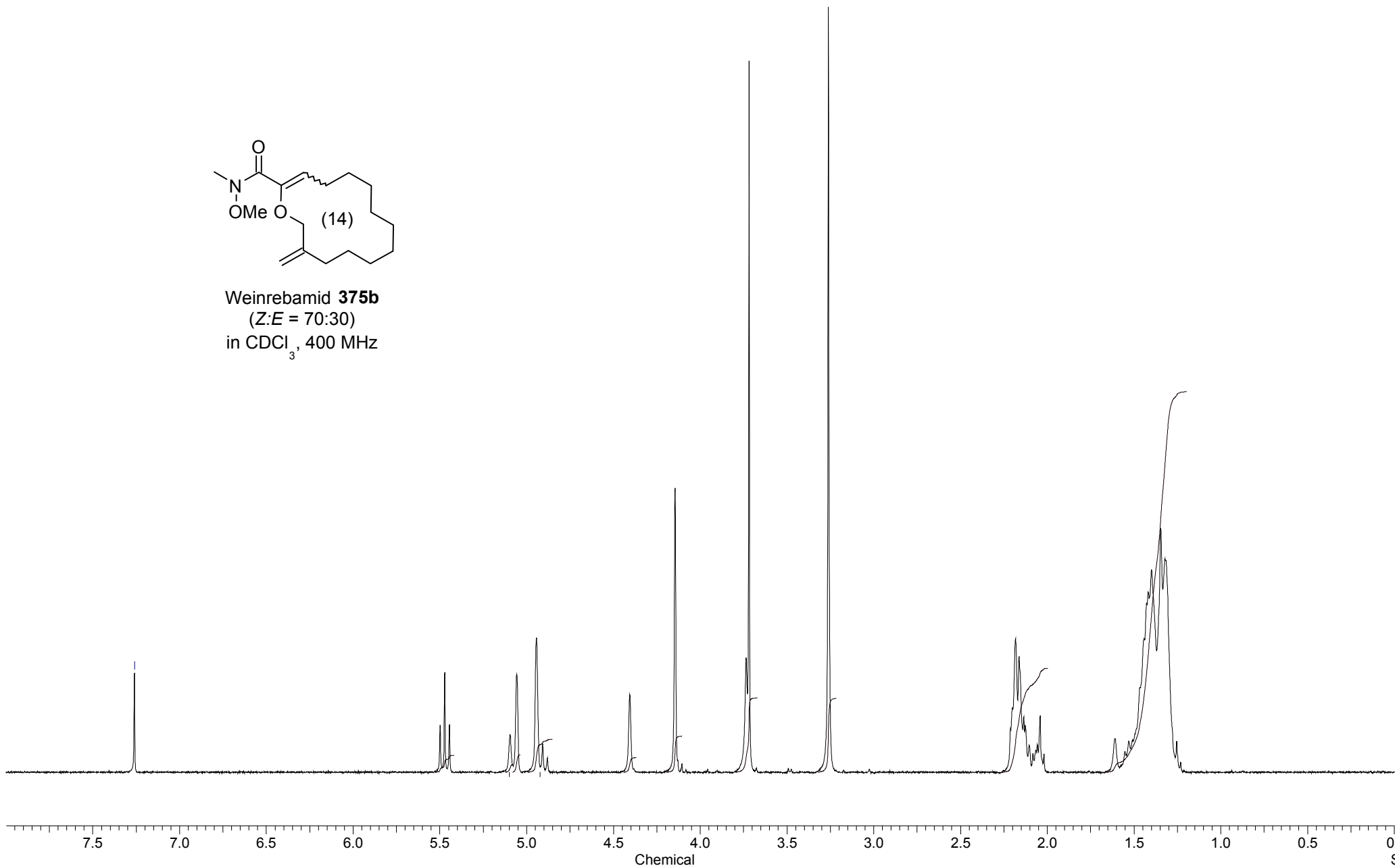




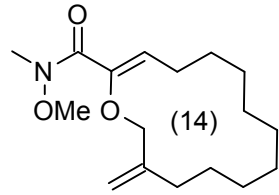
—7.260



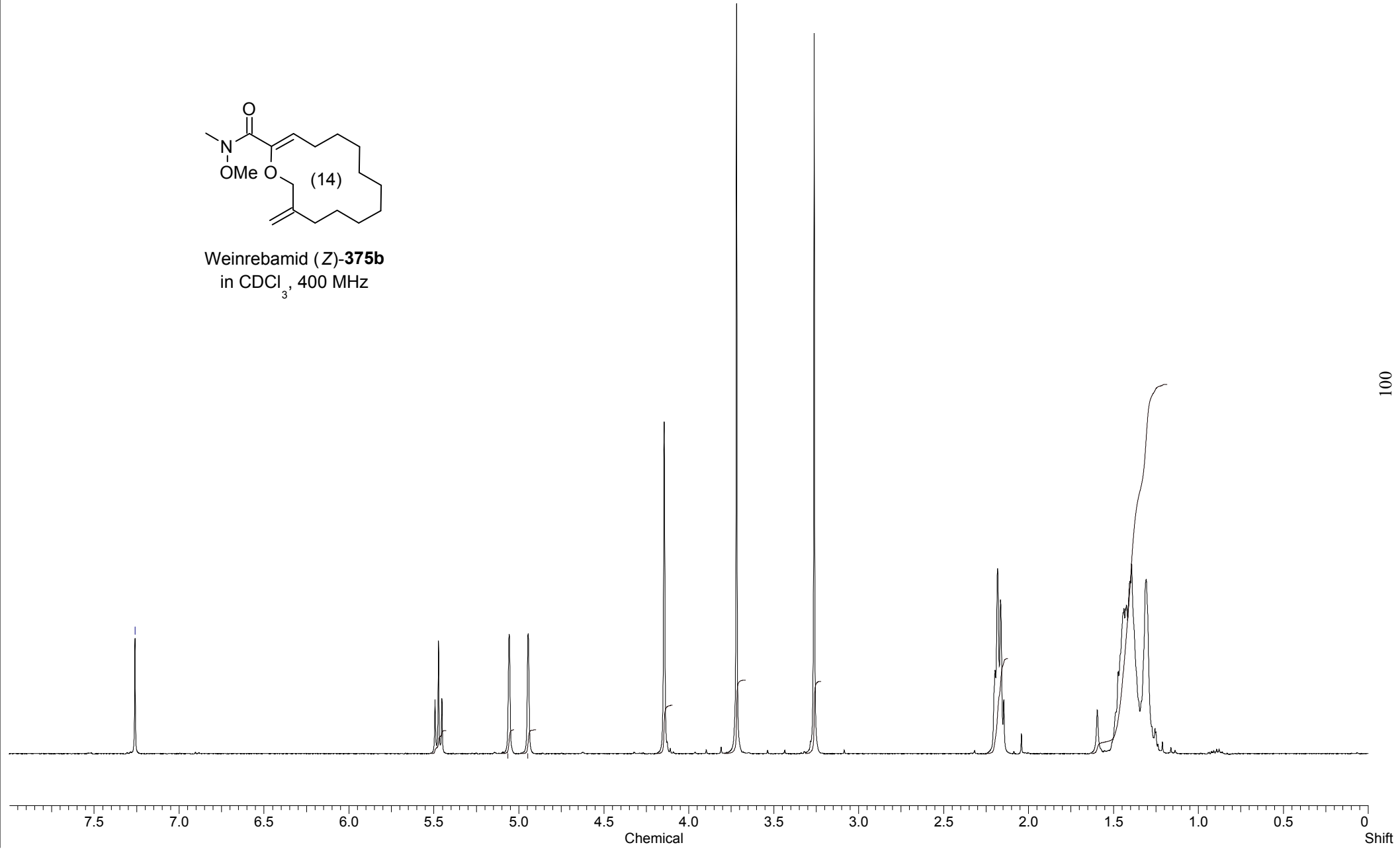
Weinrebamid **375b**
(Z:E = 70:30)
in CDCl₃, 400 MHz

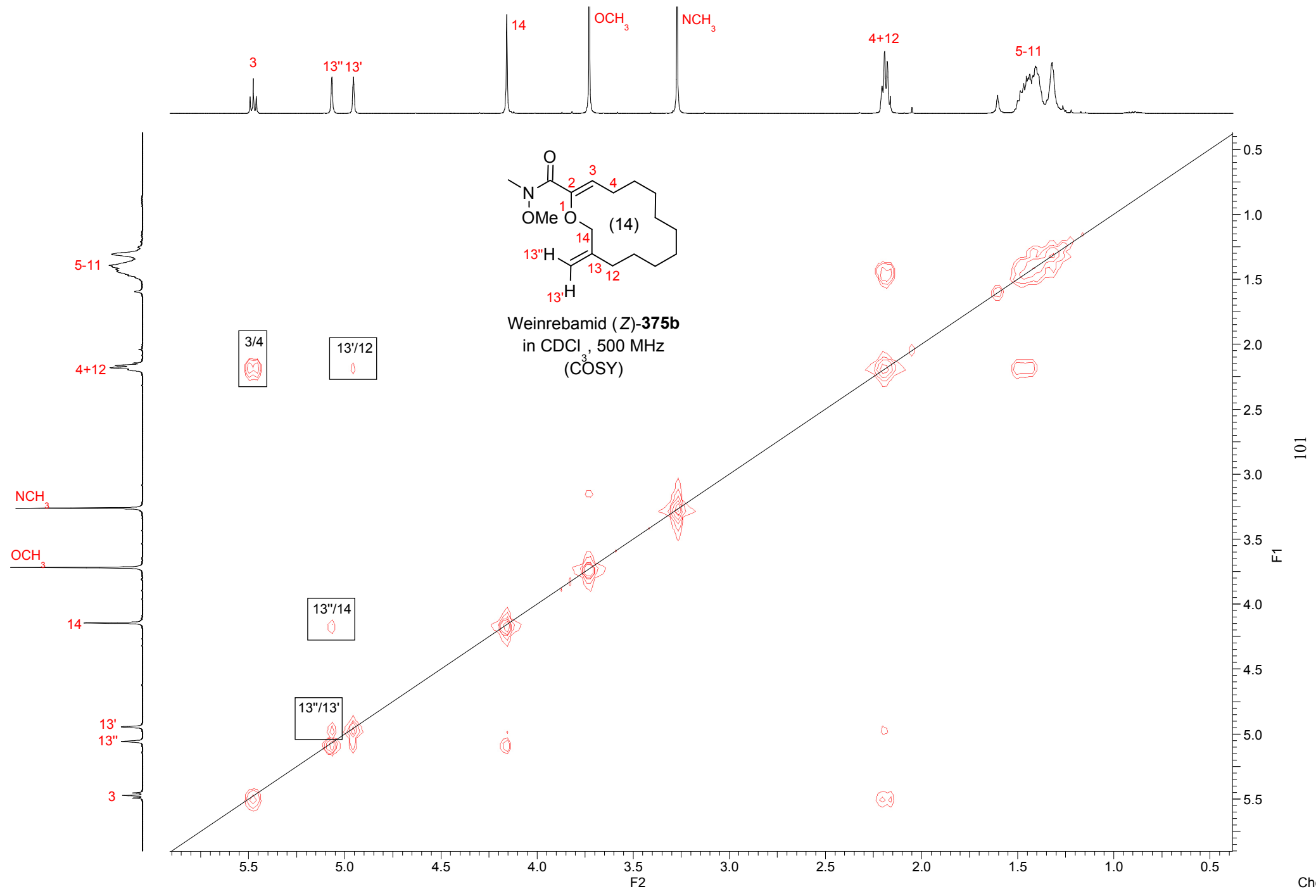


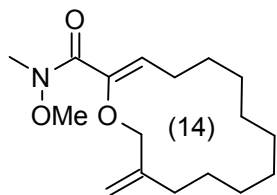
—7.260



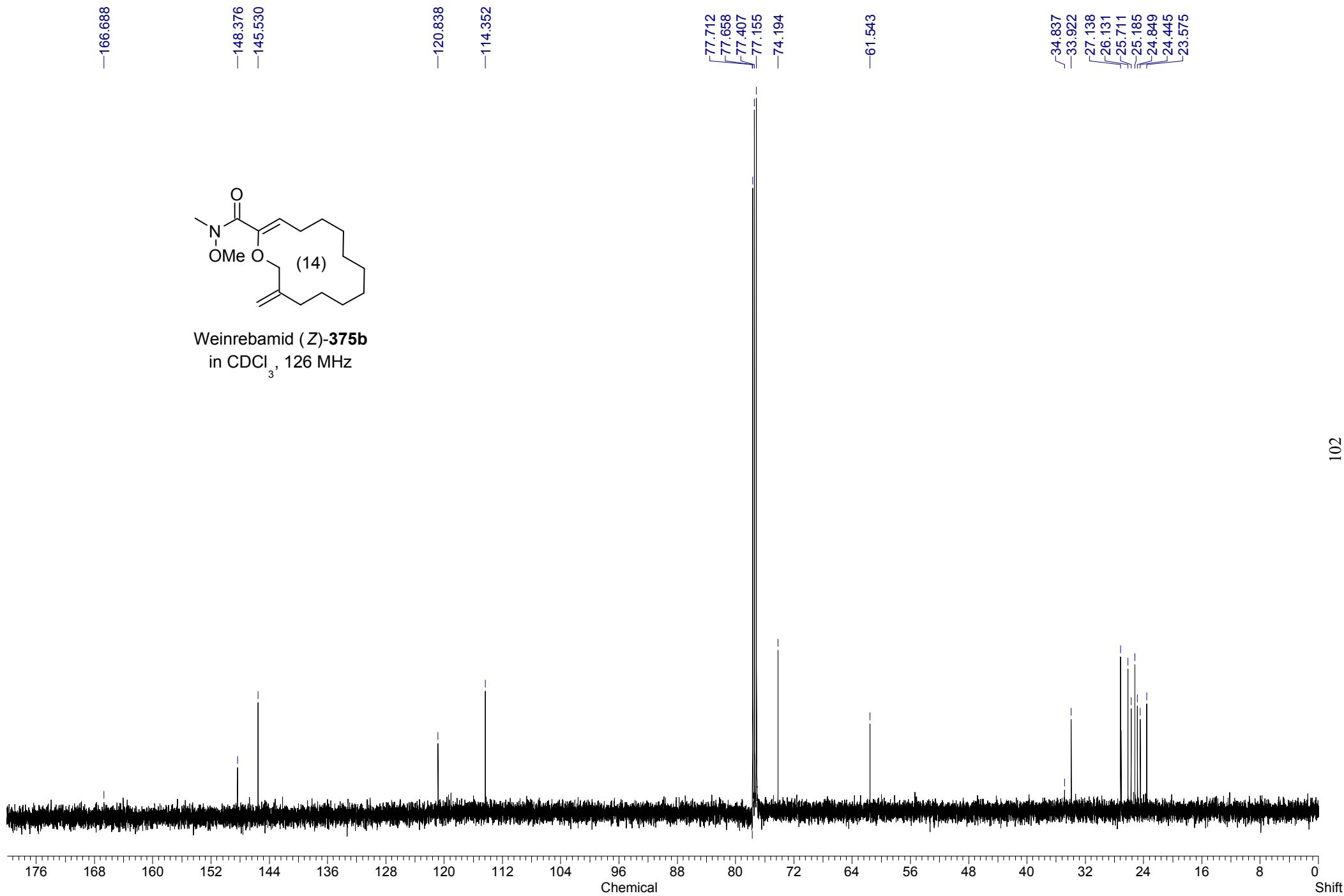
Weinrebamid (Z)-**375b**
in CDCl₃, 400 MHz

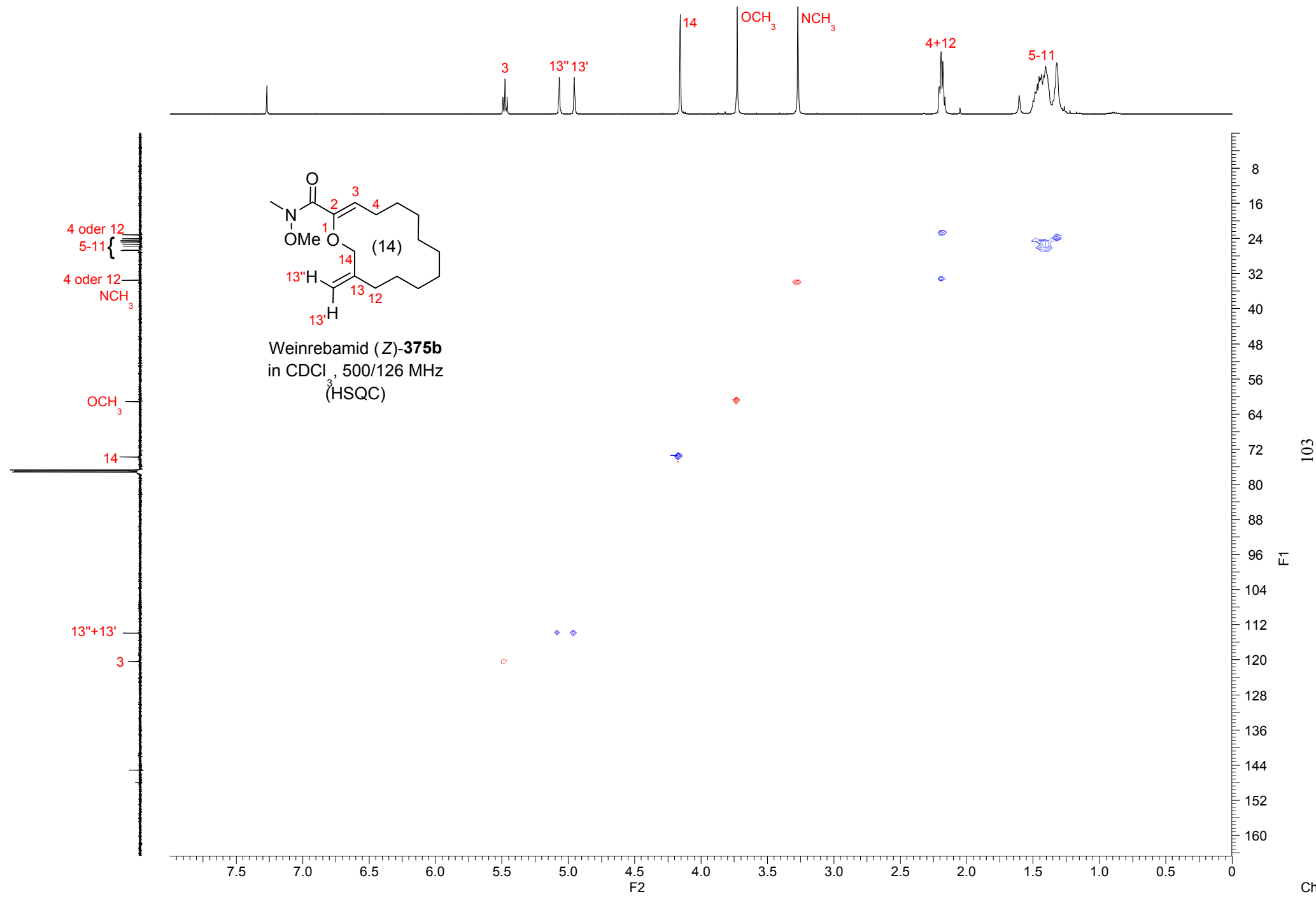


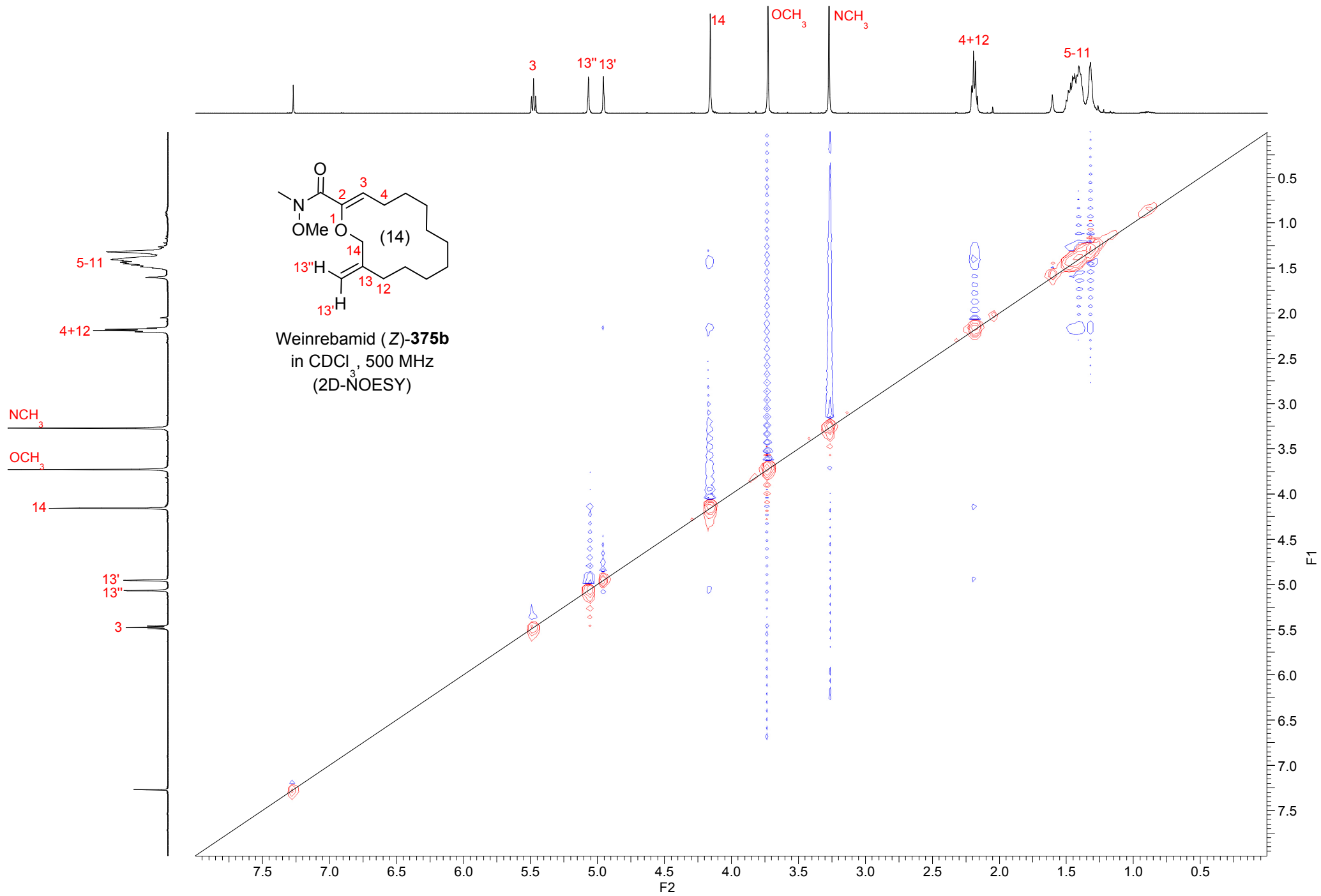




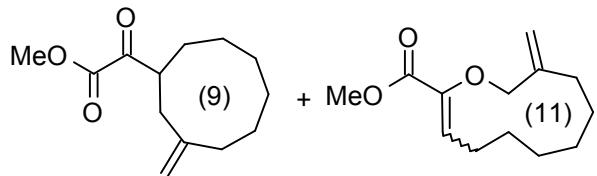
Weinrebamid (Z)-**375b**
in CDCl₃, 126 MHz



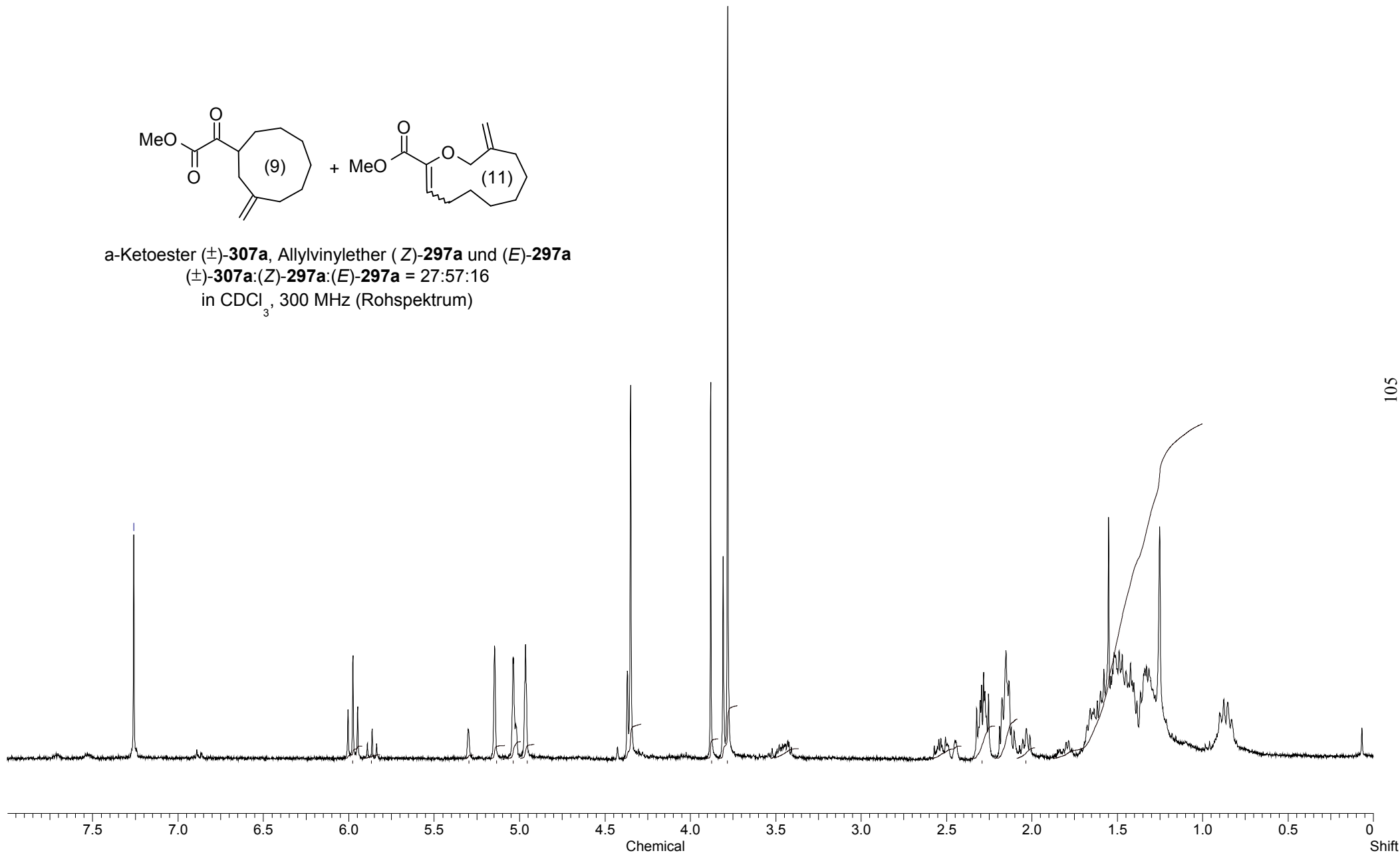


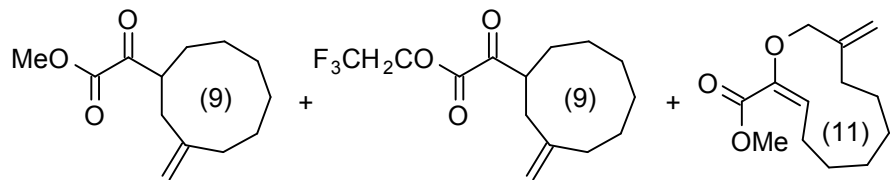


-7.260



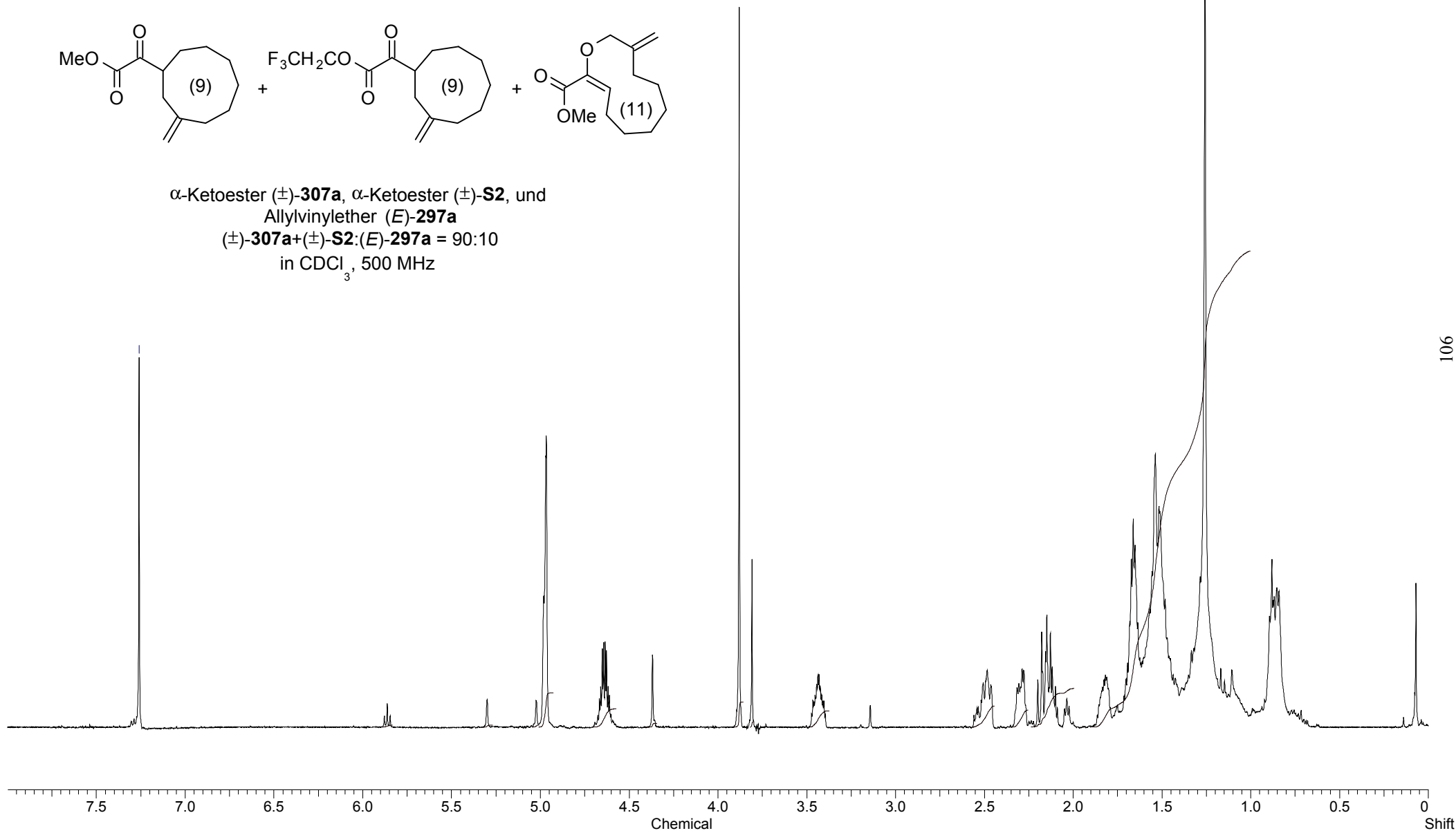
α -Ketoester (\pm)-**307a**, Allylvinylother (*Z*)-**297a** und (*E*)-**297a**
(\pm)-**307a**:(*Z*)-**297a**:(*E*)-**297a** = 27:57:16
in CDCl₃, 300 MHz (Rohspektrum)

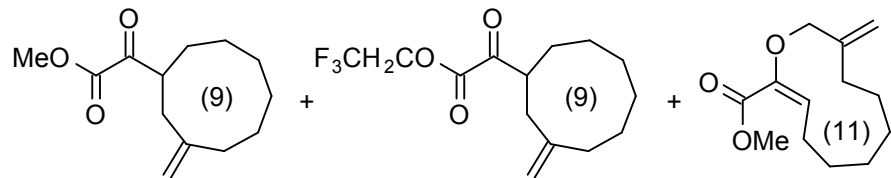




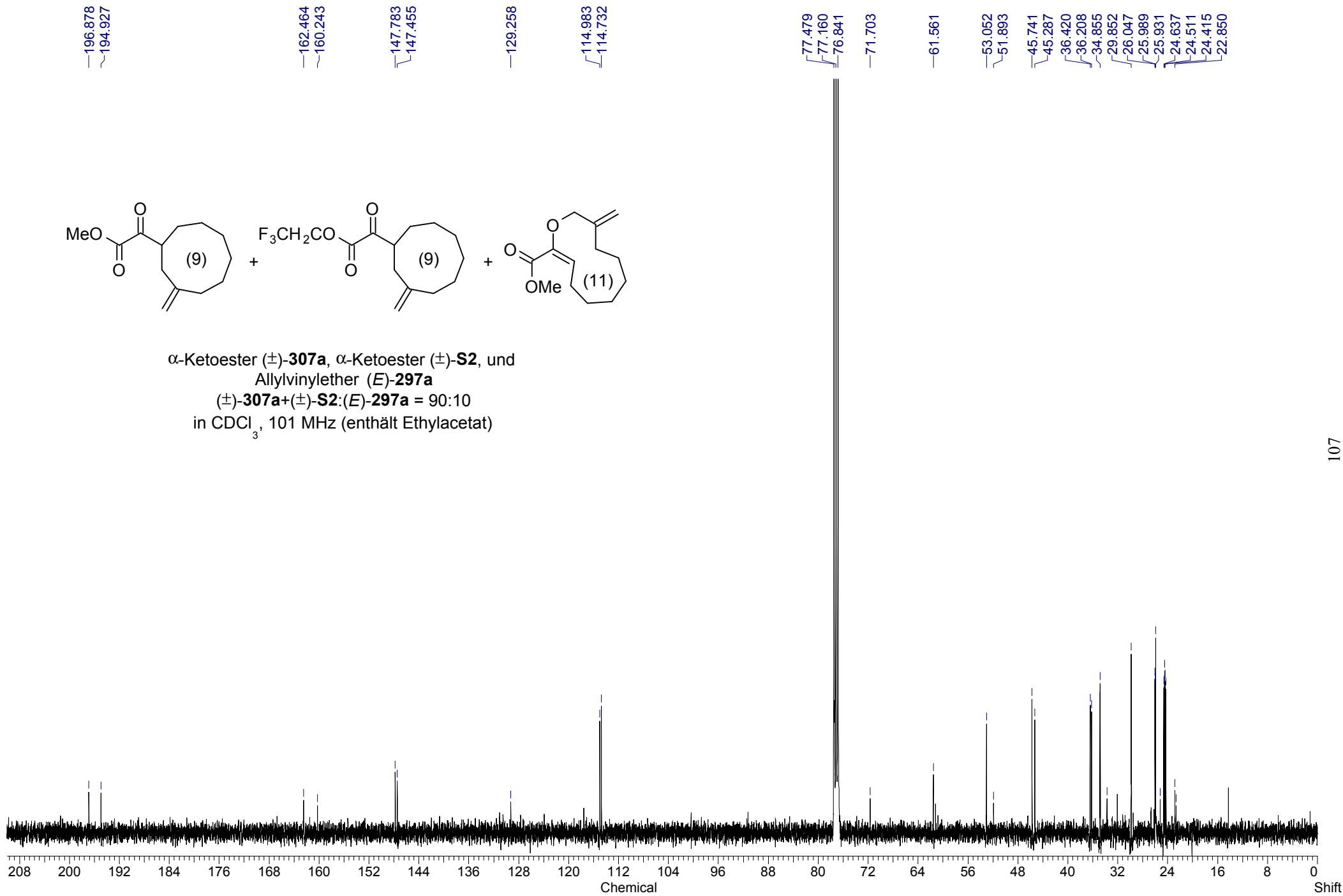
α -Ketoester (\pm)-**307a**, α -Ketoester (\pm)-**S2**, und
Allylvinylether (*E*)-**297a**
(\pm)-**307a**+(\pm)-**S2**:(*E*)-**297a** = 90:10
in CDCl₃, 500 MHz

-7.260

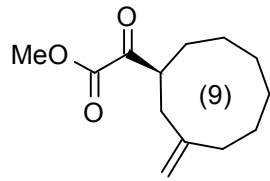




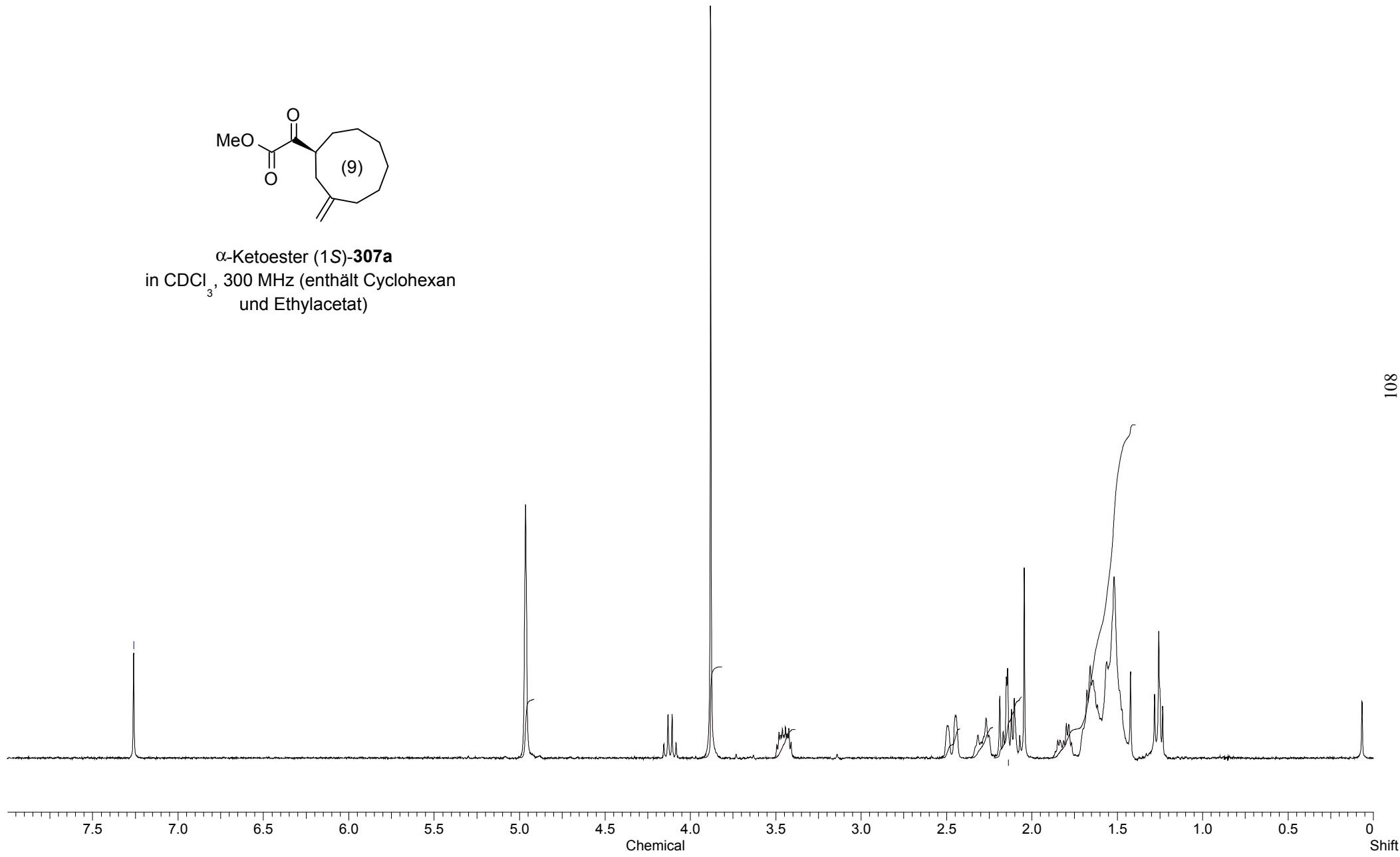
α -Ketoester (\pm)-**307a**, α -Ketoester (\pm)-**S2**, und
Allylvinylether (*E*)-**297a**
(\pm)-**307a**+(\pm)-**S2**:(*E*)-**297a** = 90:10
in CDCl₃, 101 MHz (enthält Ethylacetat)

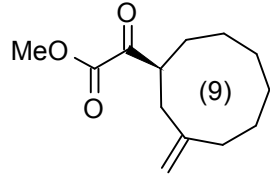


-7.260

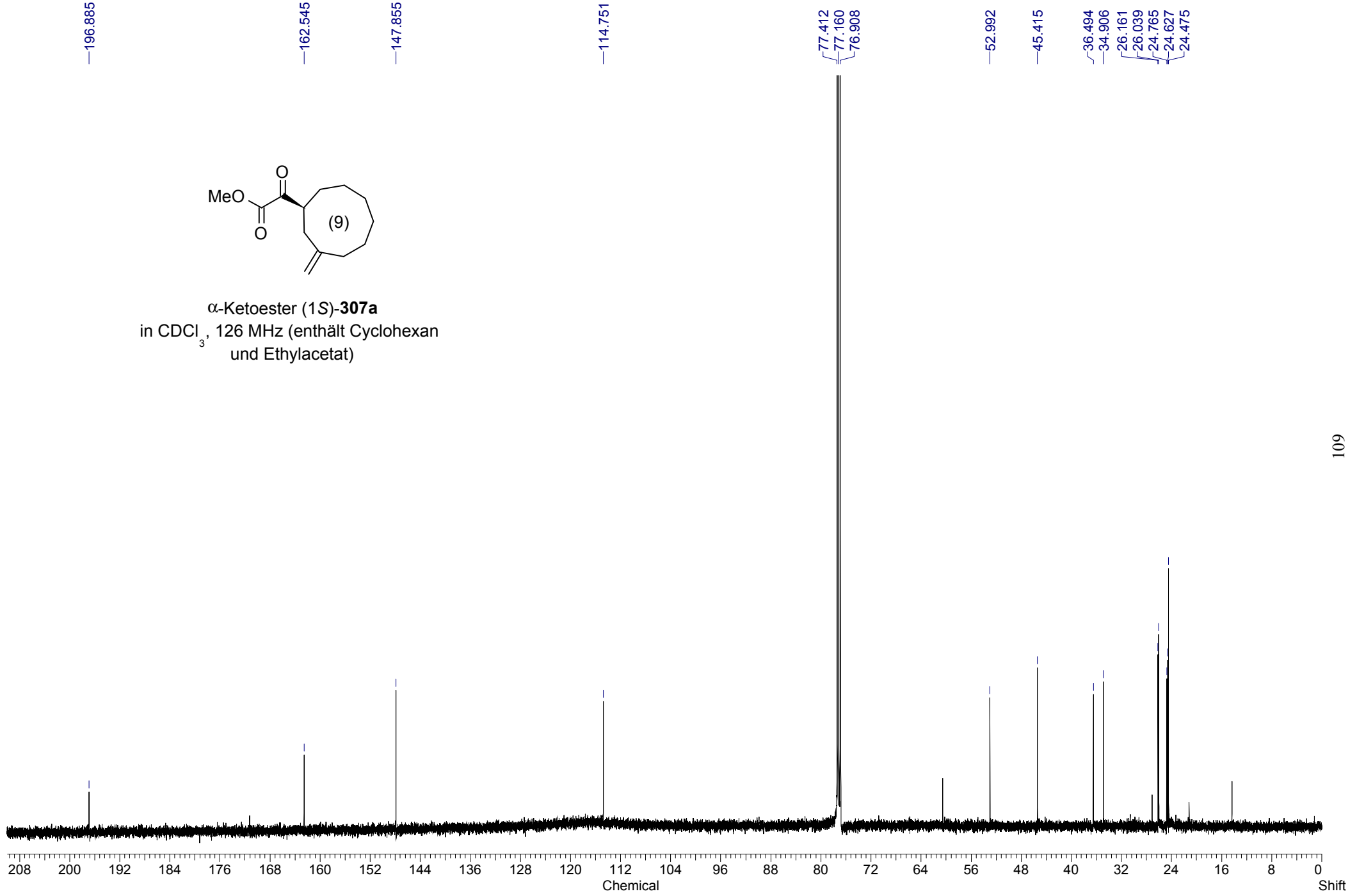


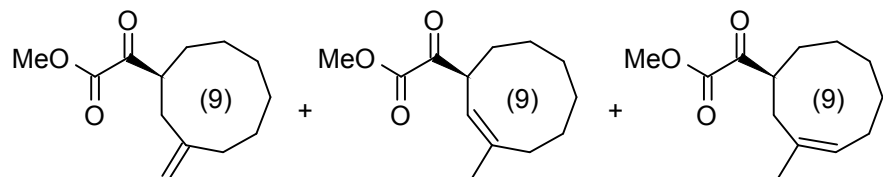
α -Ketoester (1S)-**307a**
in CDCl₃, 300 MHz (enthält Cyclohexan
und Ethylacetat)



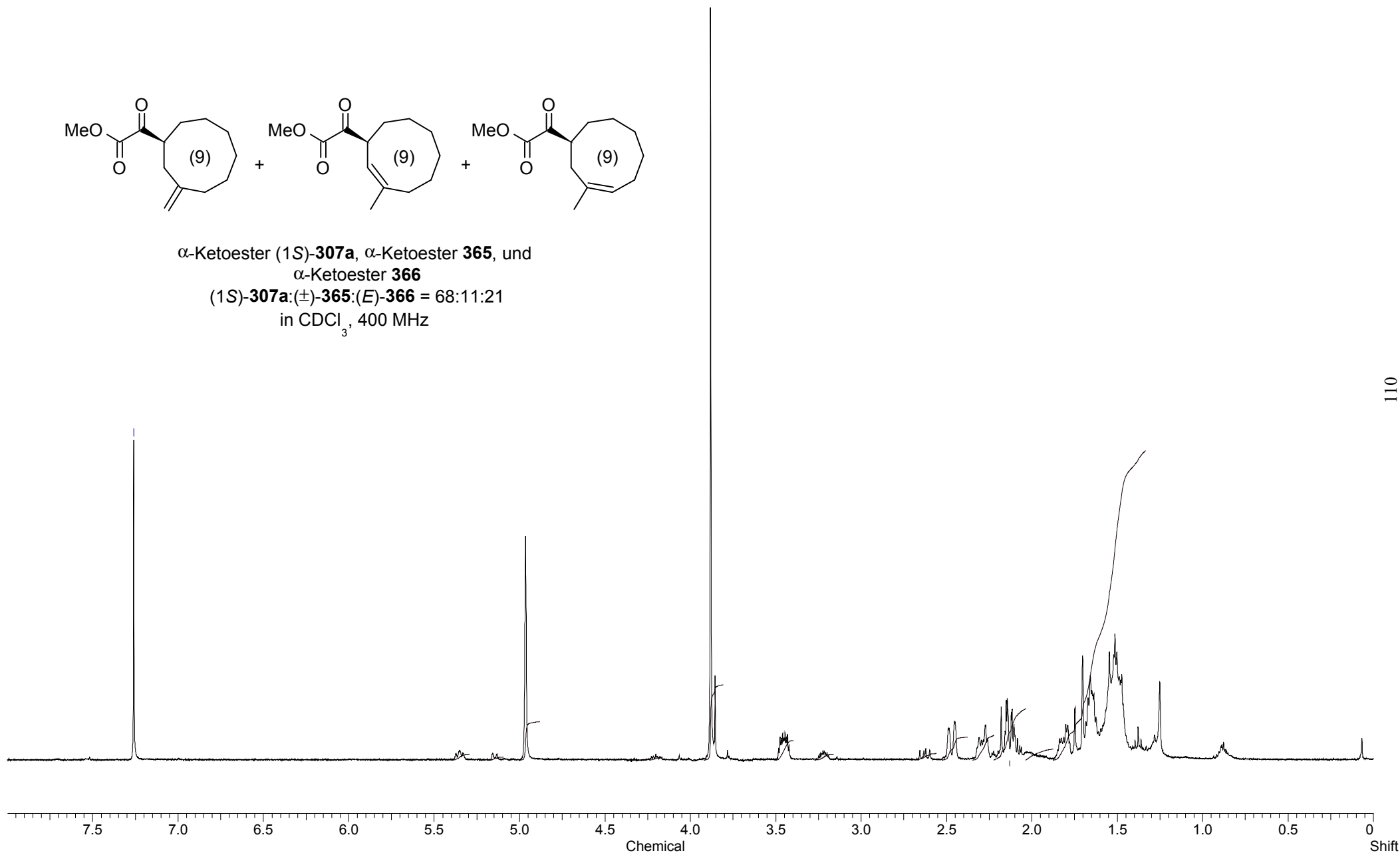


α -Ketoester (1S)-**307a**
in CDCl₃, 126 MHz (enthält Cyclohexan
und Ethylacetat)

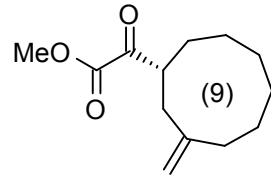




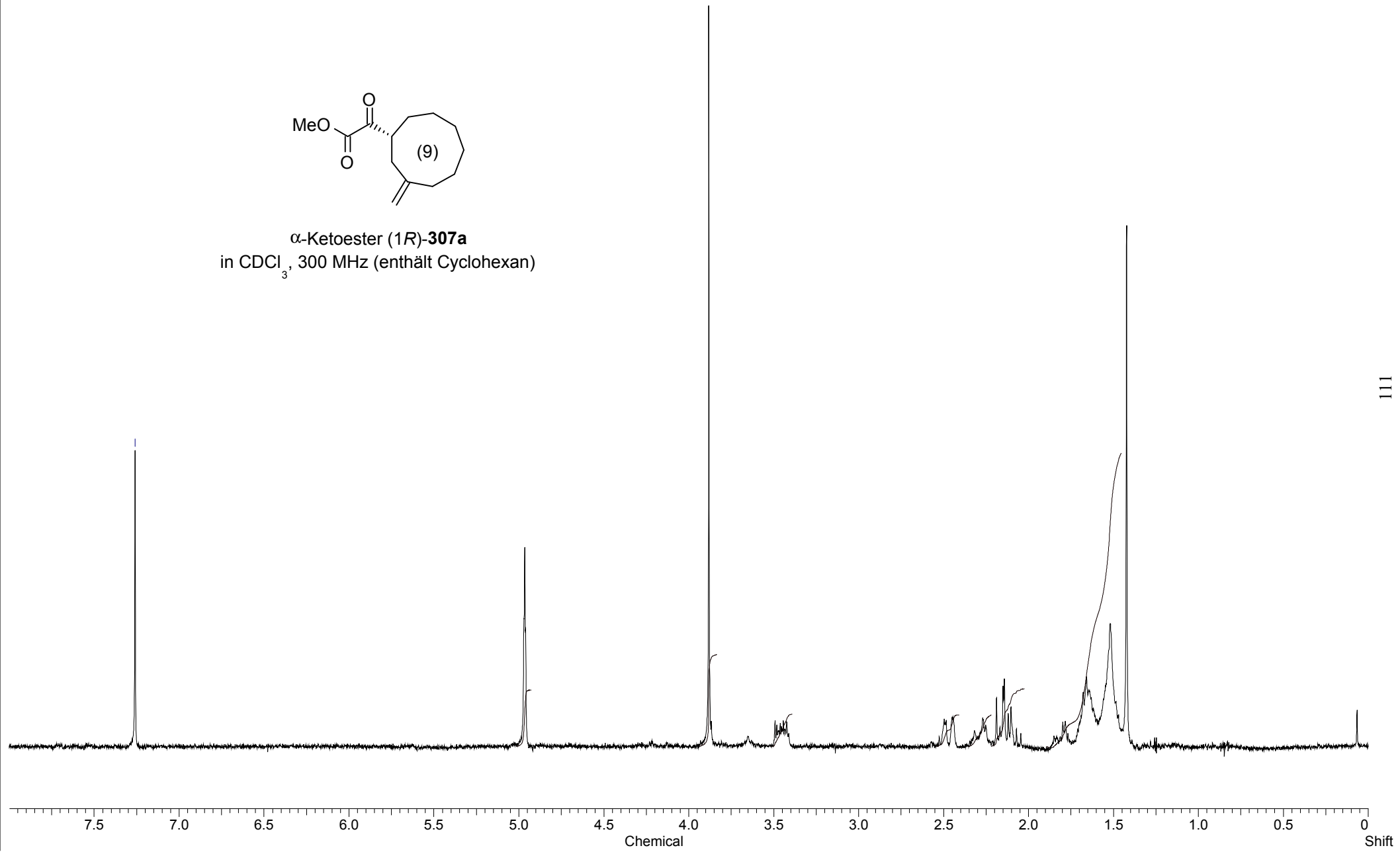
α -Ketoester (1S)-**307a**, α -Ketoester **365**, und
 α -Ketoester **366**
(1S)-**307a**:(\pm)-**365**:(E)-**366** = 68:11:21
in CDCl₃, 400 MHz



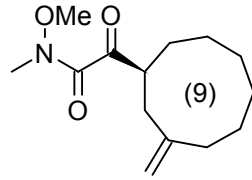
—7.260



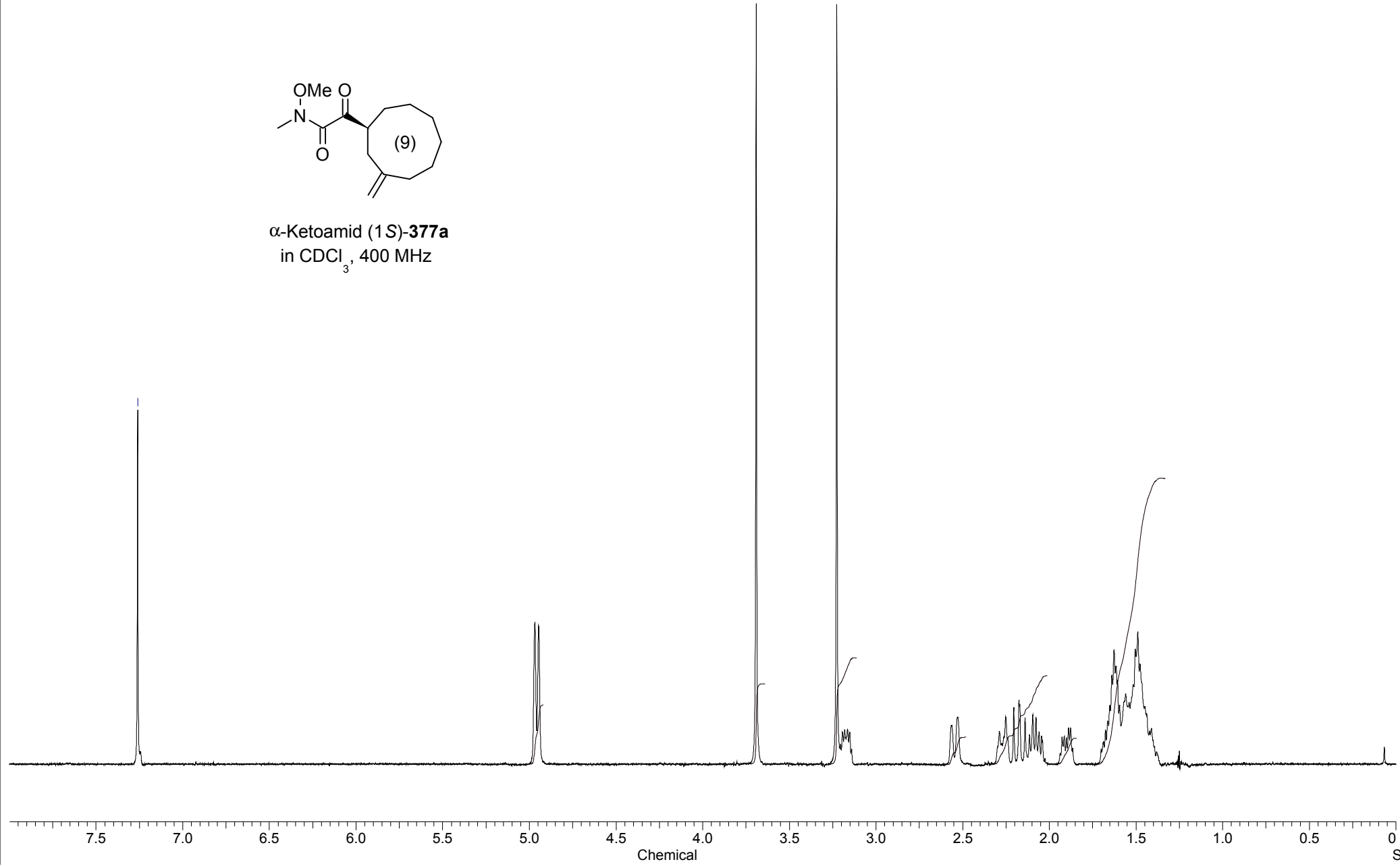
α -Ketoester (1*R*)-**307a**
in CDCl₃, 300 MHz (enthält Cyclohexan)



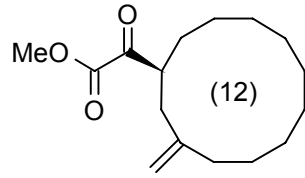
—7.260



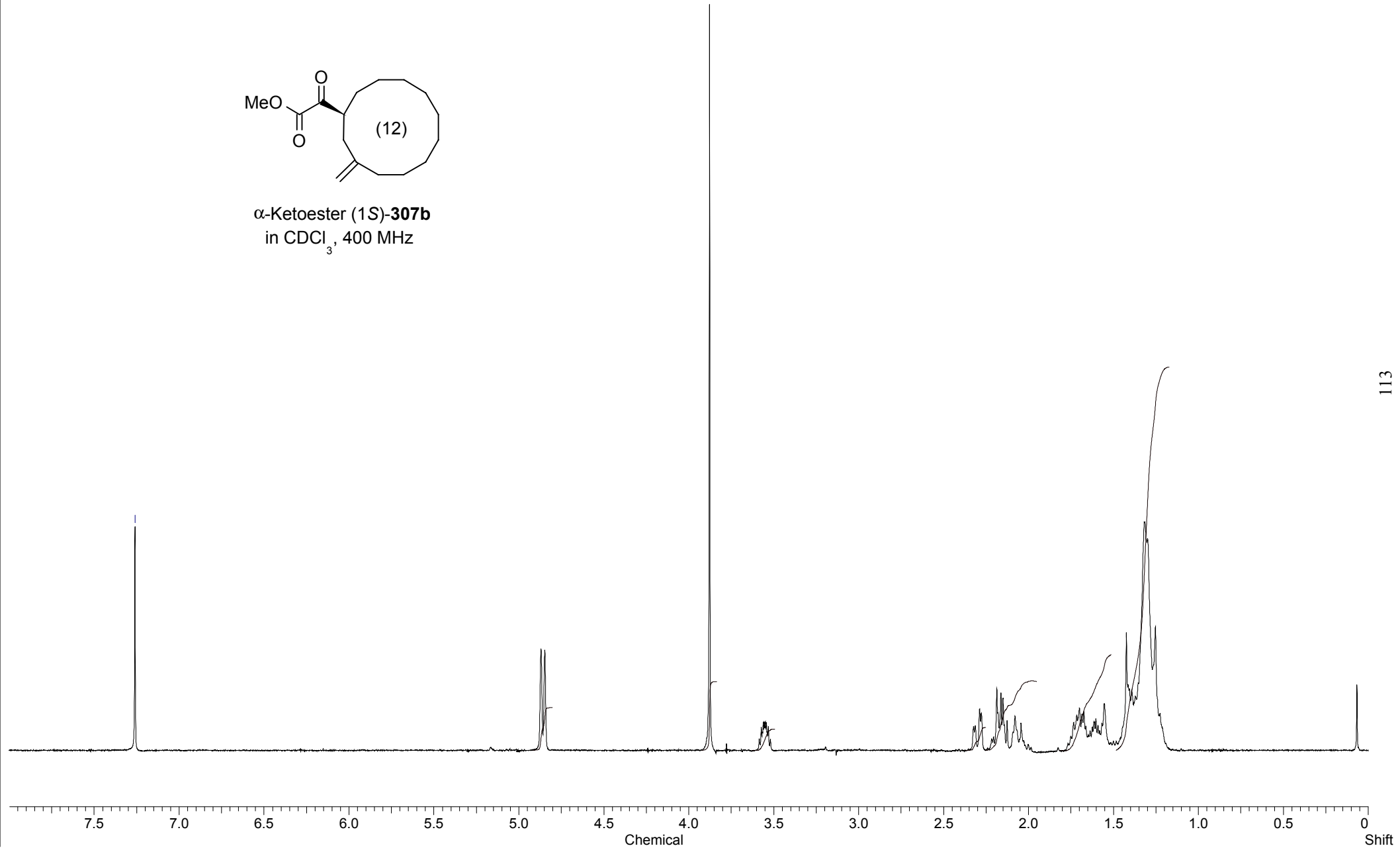
α -Ketoamid (1S)-**377a**
in CDCl₃, 400 MHz



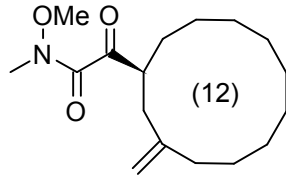
-7.260



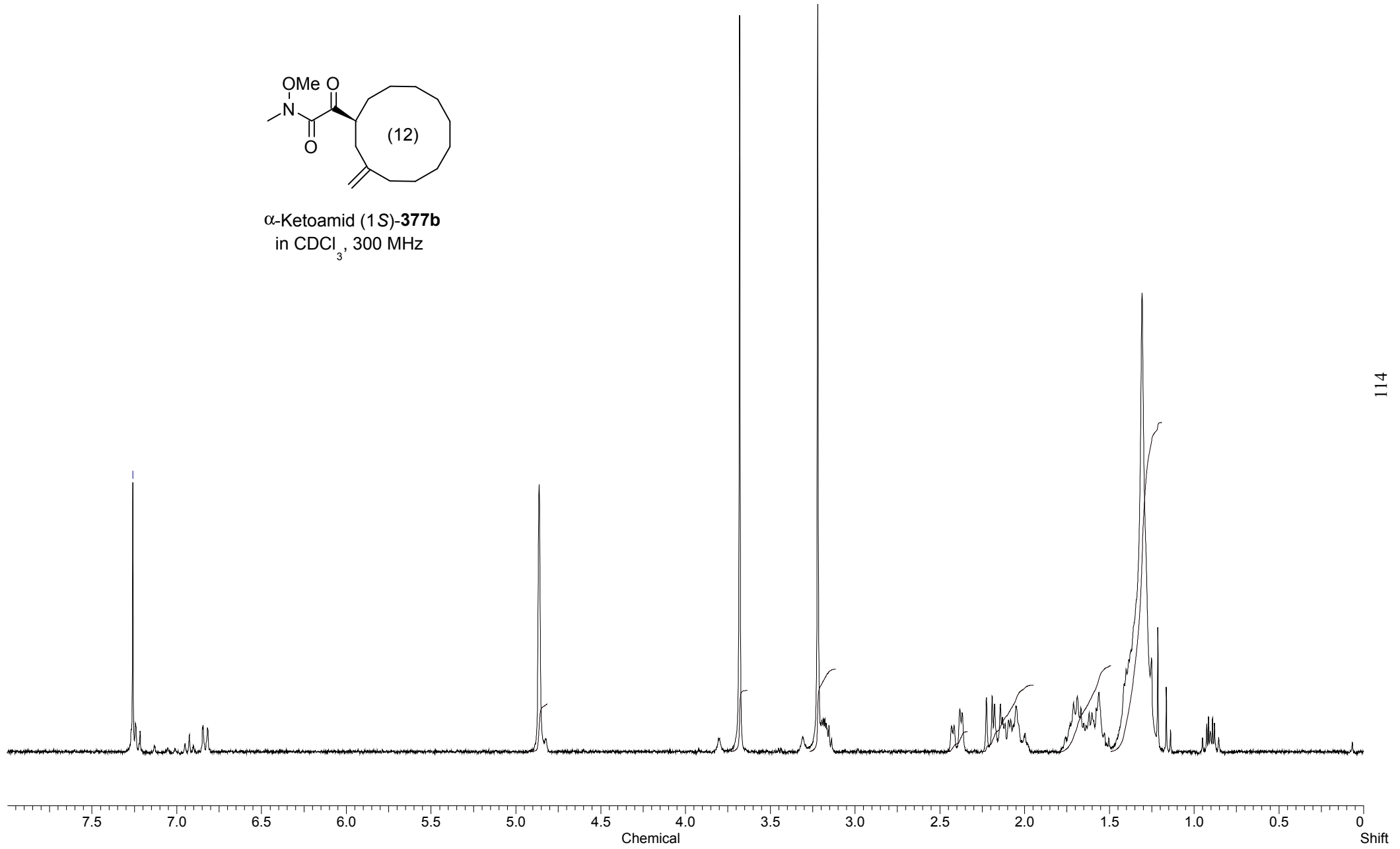
α -Ketoester (1S)-**307b**
in CDCl₃, 400 MHz



—7.260



α -Ketoamid (1S)-**377b**
in CDCl_3 , 300 MHz



—203.301

—168.530

—144.867

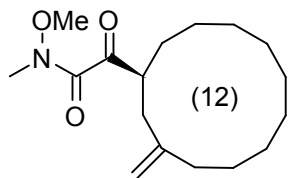
—112.829

77.469
77.160
76.841

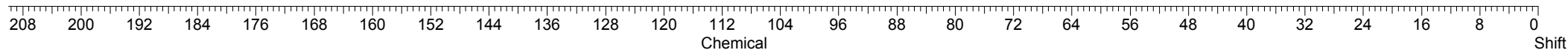
—62.276

—44.292

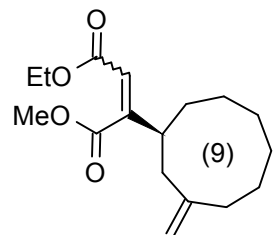
35.194
32.122
31.736
24.530
24.463
23.864
23.642
23.439
22.927
22.811



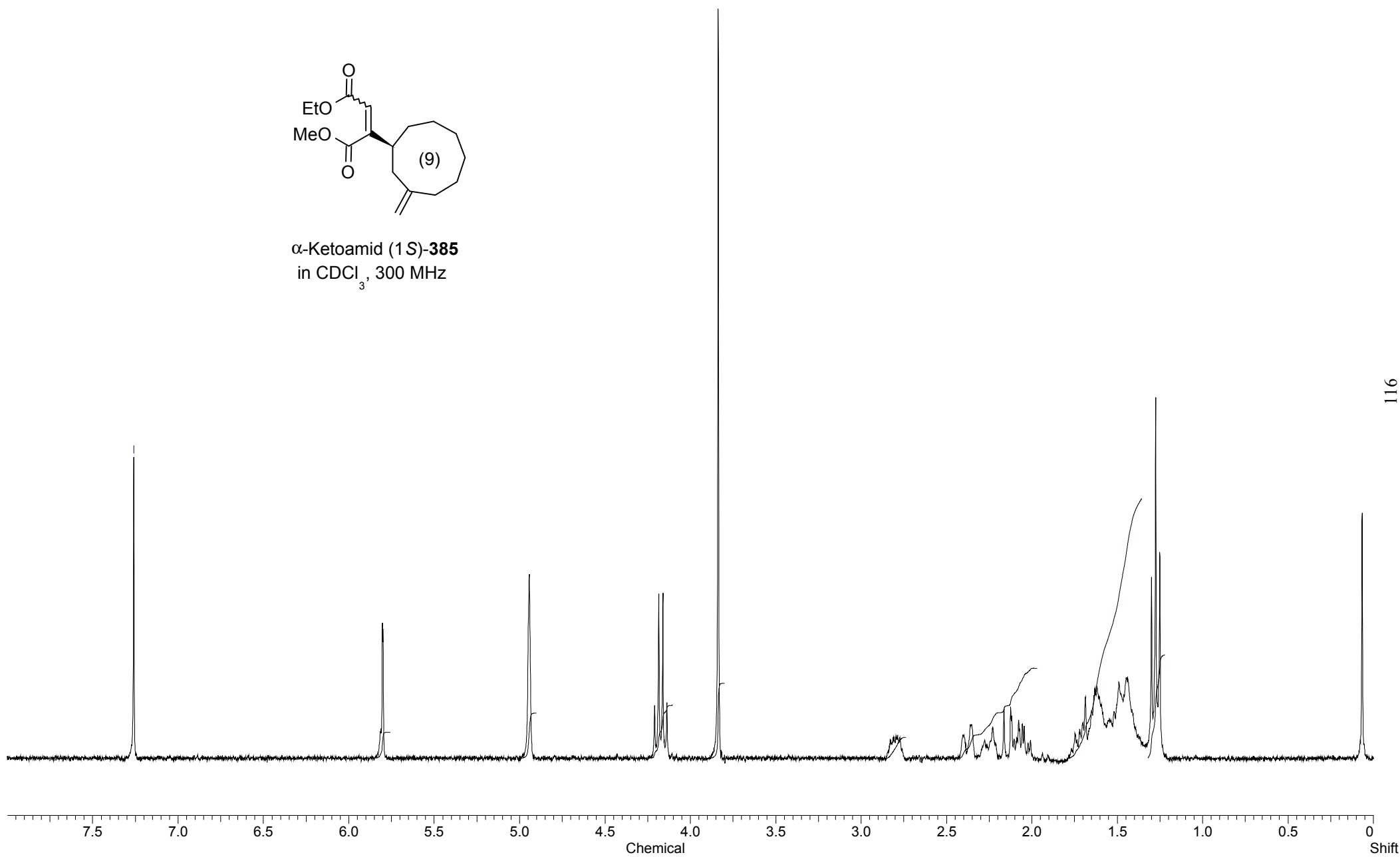
α -Ketoamid (1S)-**377b**
in CDCl₃, 101 MHz
(verunreinigt)

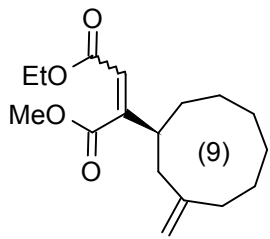


—7.260

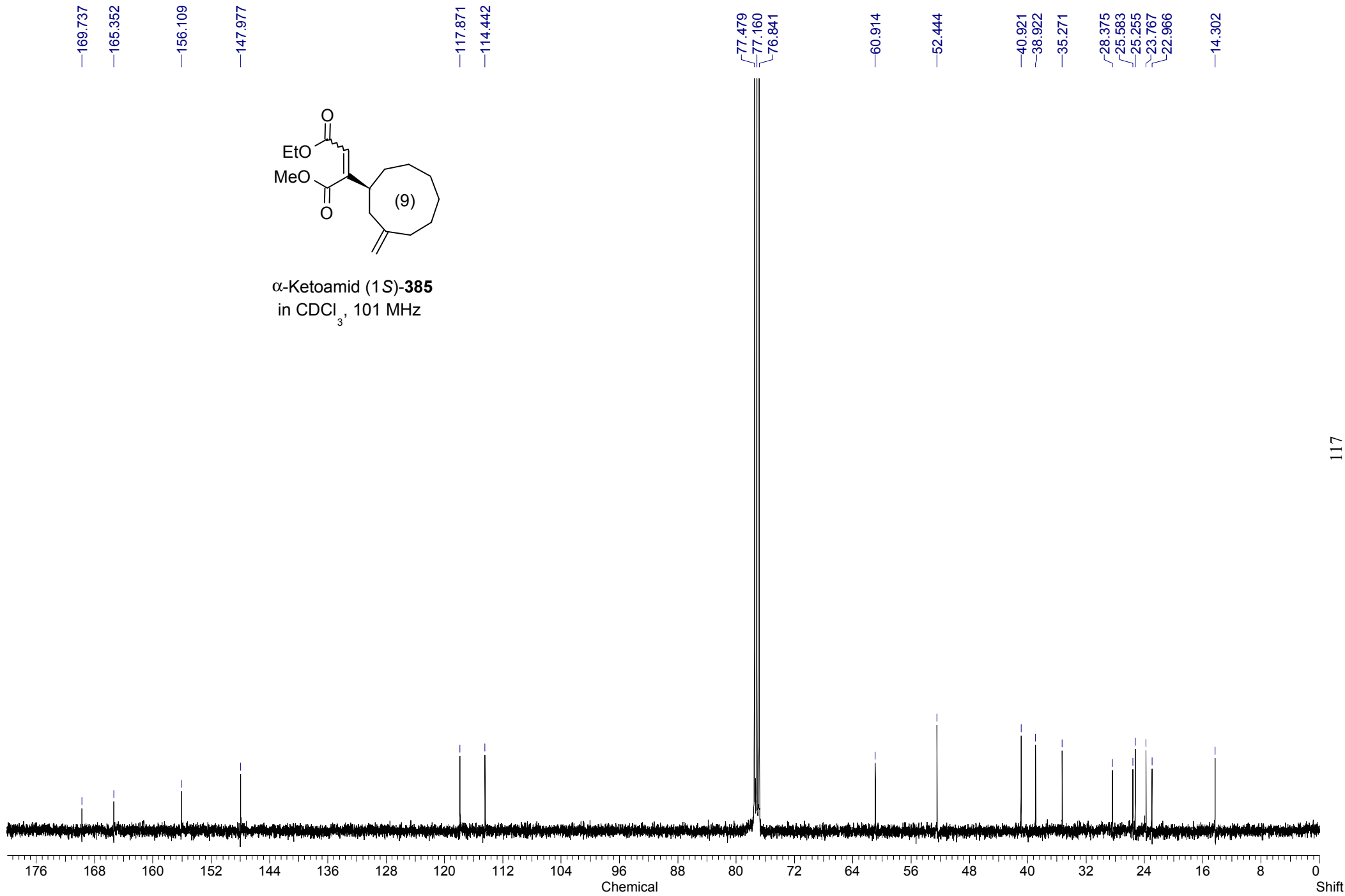


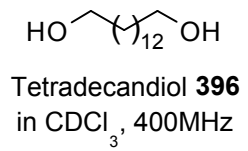
α -Ketoamid (1*S*)-**385**
in CDCl₃, 300 MHz



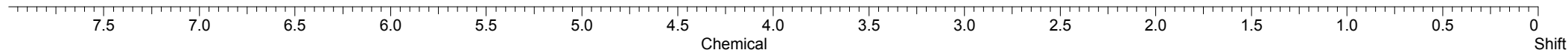


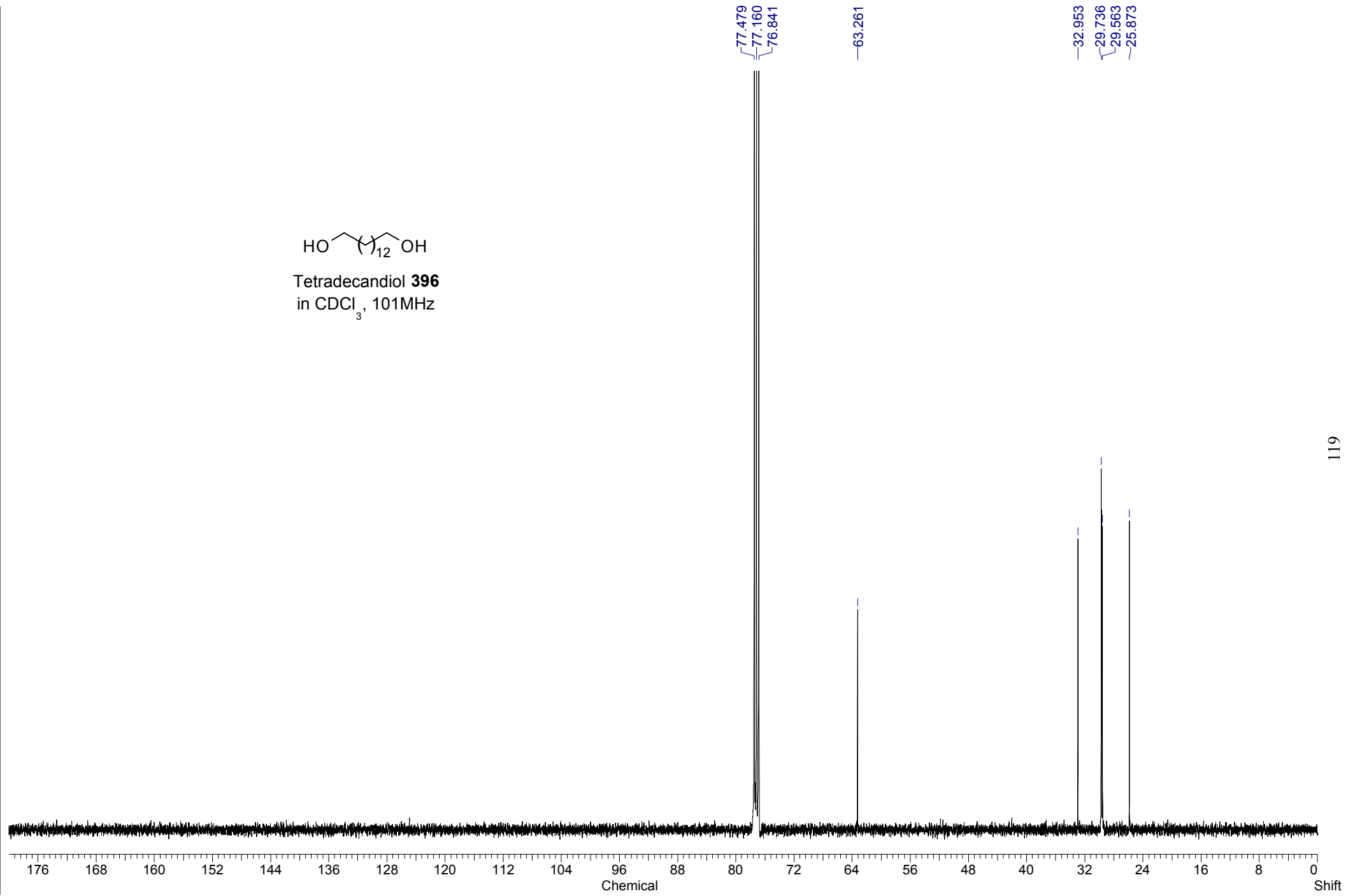
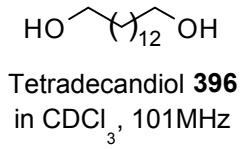
α -Ketoamid (1S)-**385**
in CDCl₃, 101 MHz



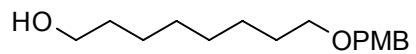


-7.260

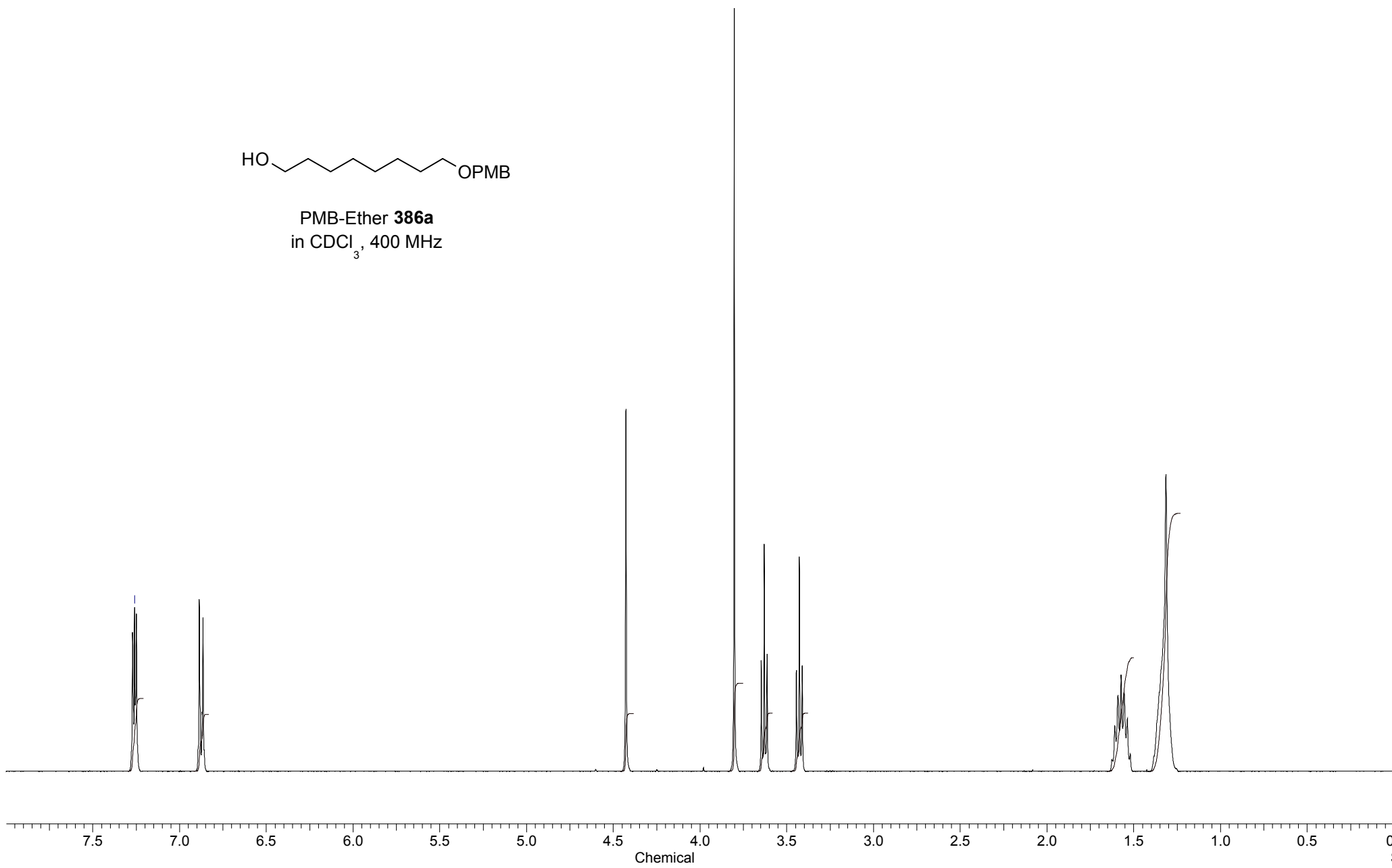


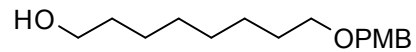


—7.260

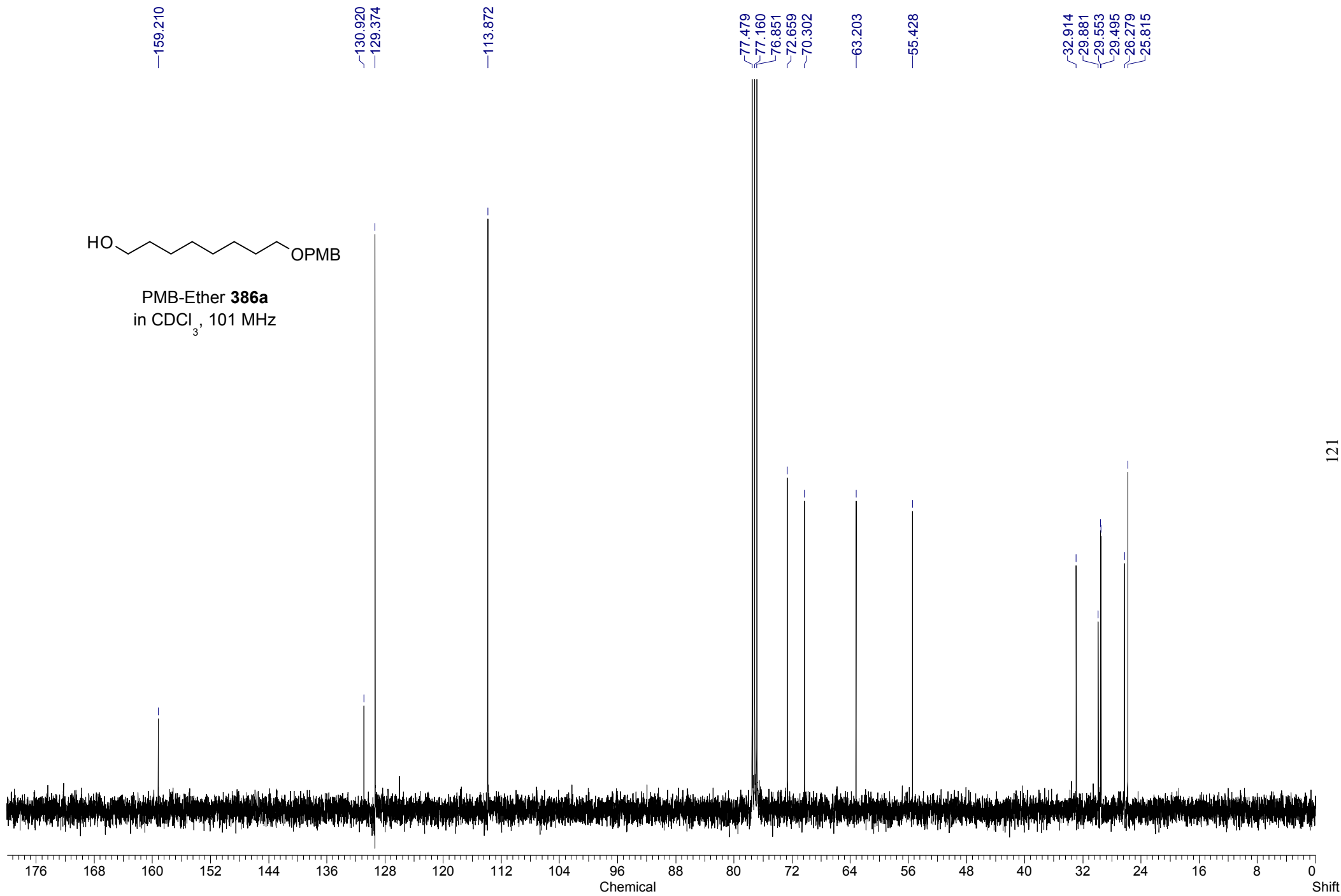


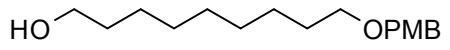
PMB-Ether **386a**
in CDCl₃, 400 MHz





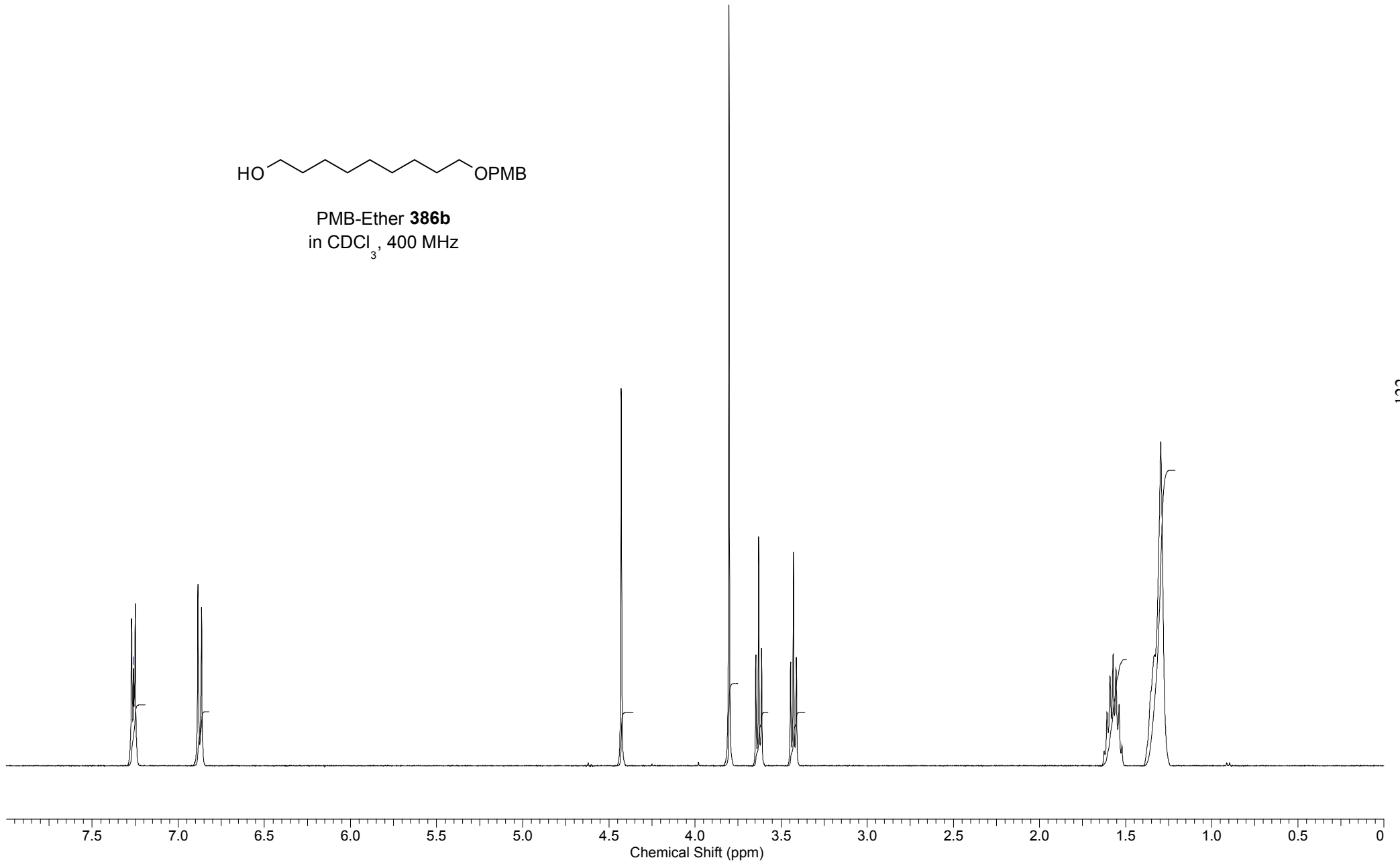
PMB-Ether **386a**
in CDCl₃, 101 MHz

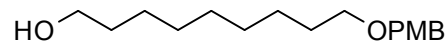




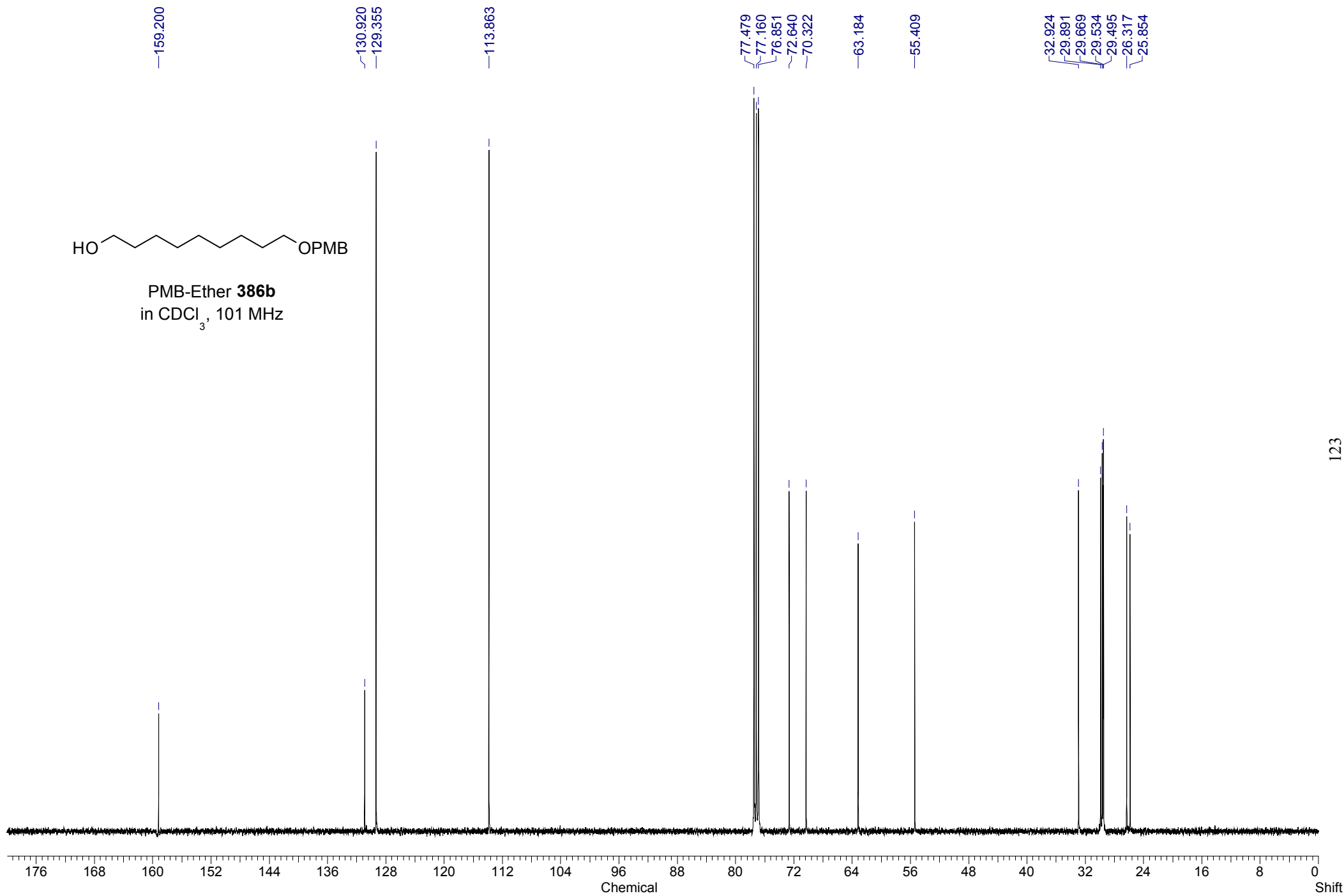
PMB-Ether **386b**
in CDCl₃, 400 MHz

—7.260

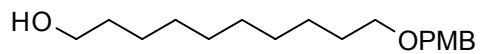




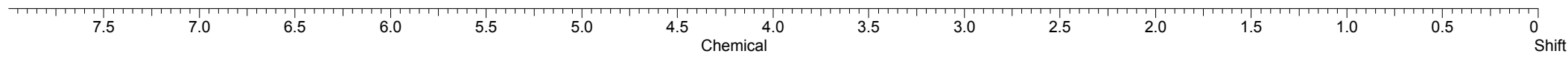
PMB-Ether **386b**
in CDCl₃, 101 MHz

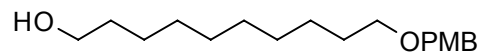


—7.260

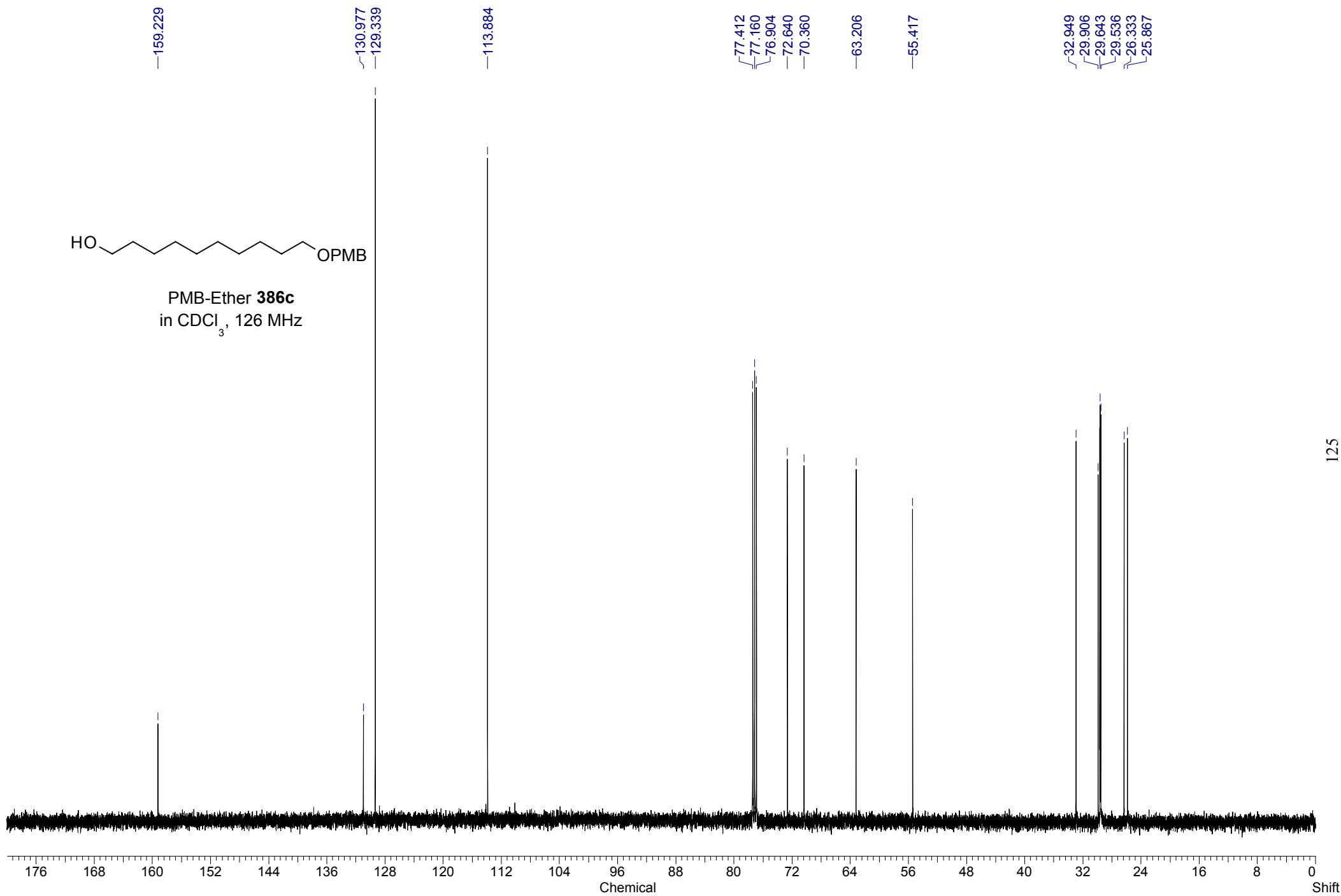


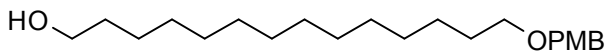
PMB-Ether **386c**
in CDCl₃, 400 MHz





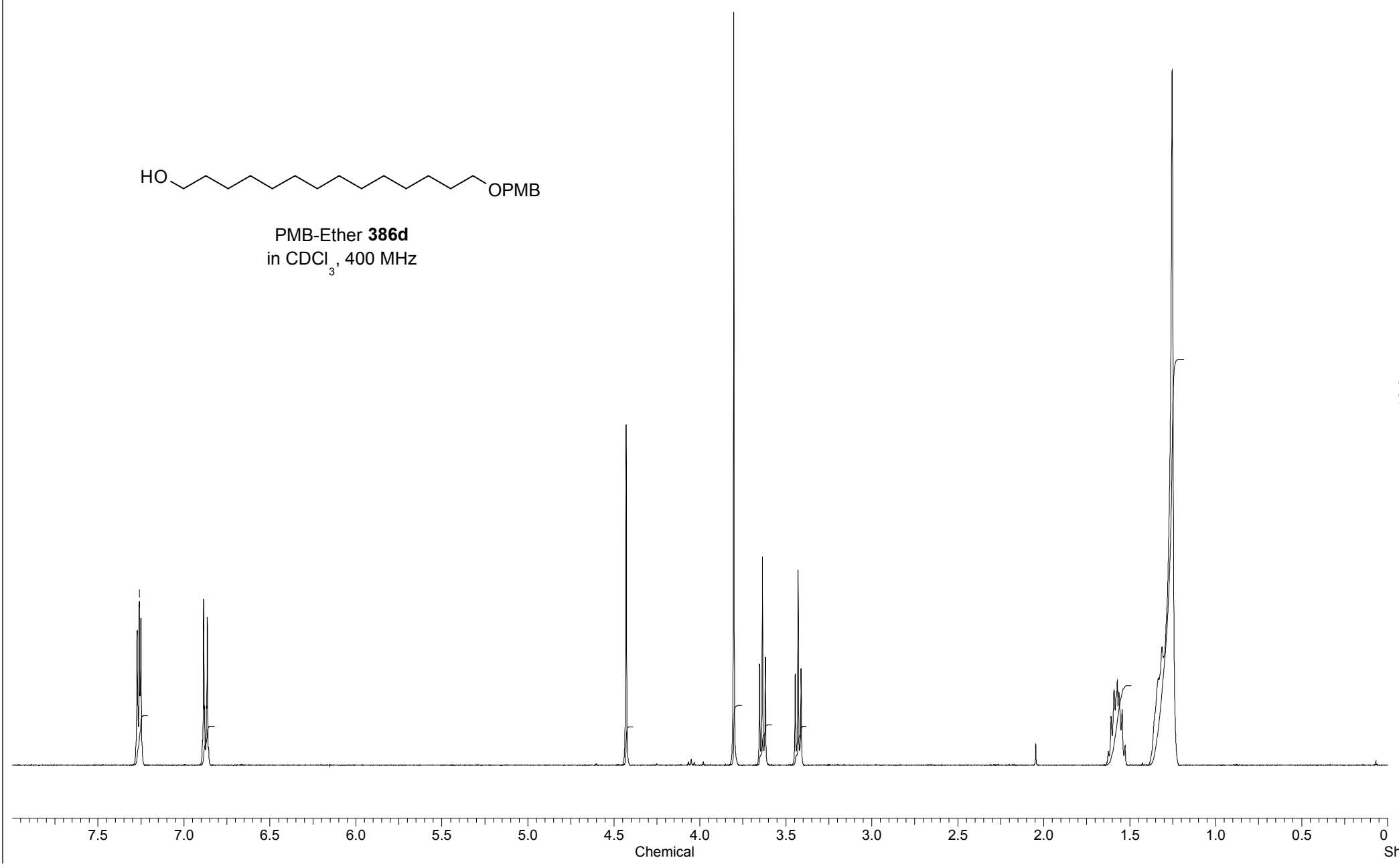
PMB-Ether **386c**
in CDCl₃, 126 MHz

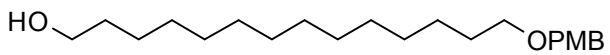




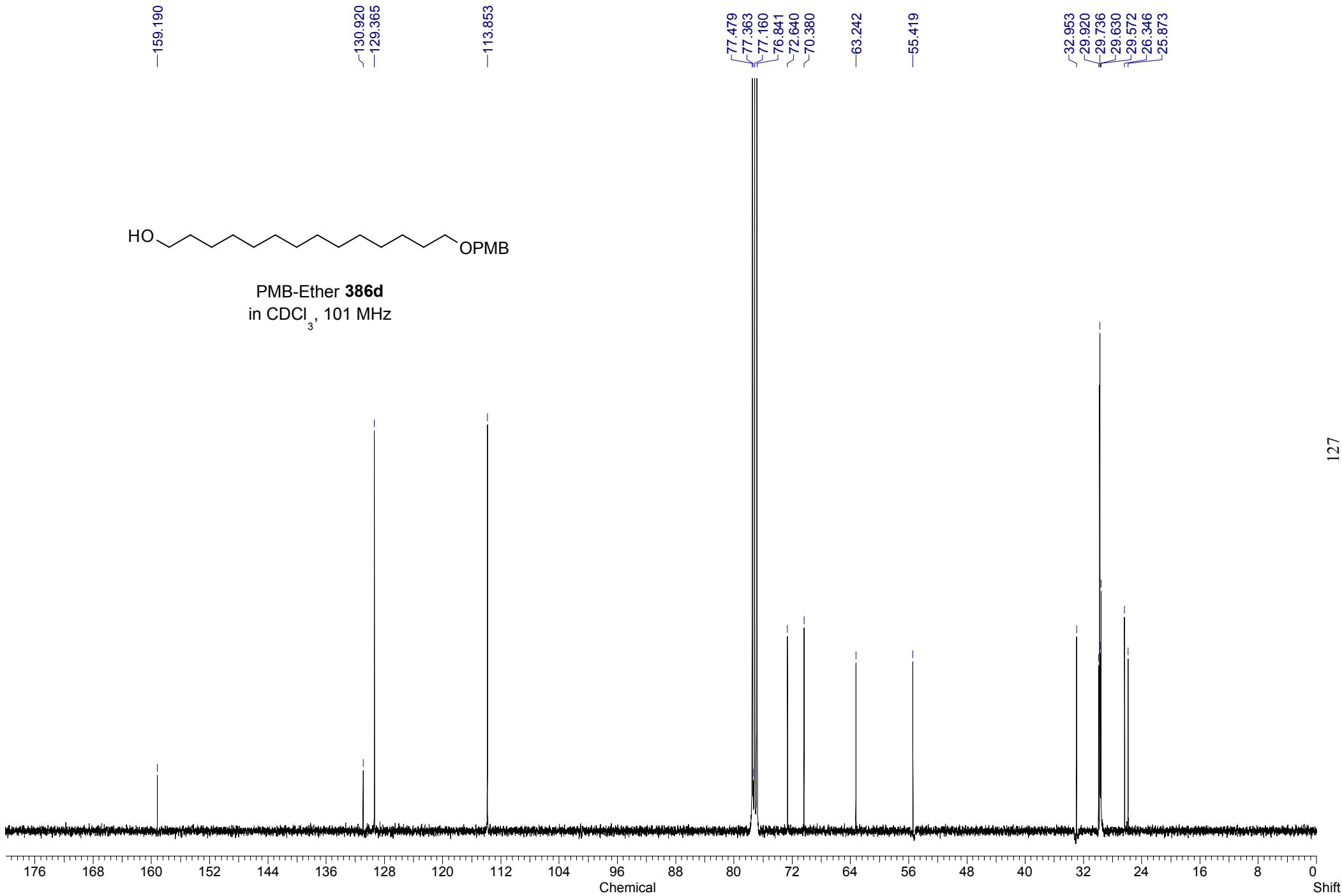
PMB-Ether **386d**
in CDCl₃, 400 MHz

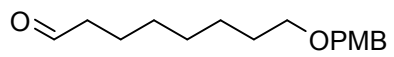
—7.260





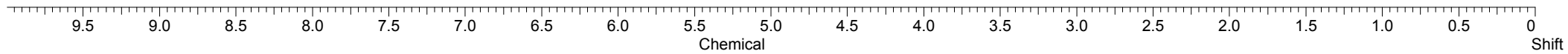
PMB-Ether **386d**
in CDCl₃, 101 MHz

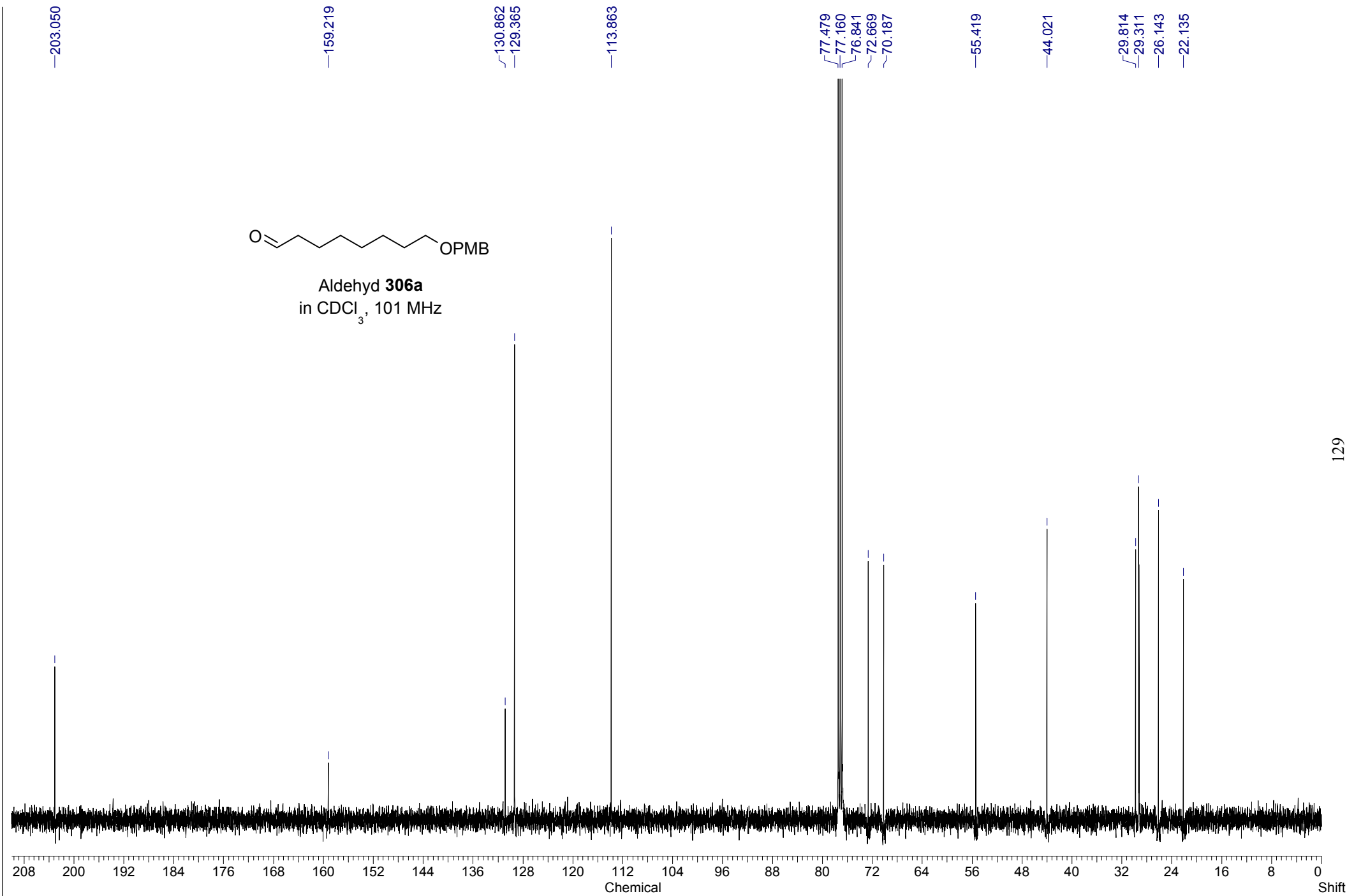


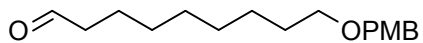


Aldehyd **306a**
in CDCl₃, 400 MHz

-7.260

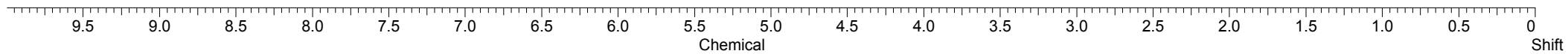


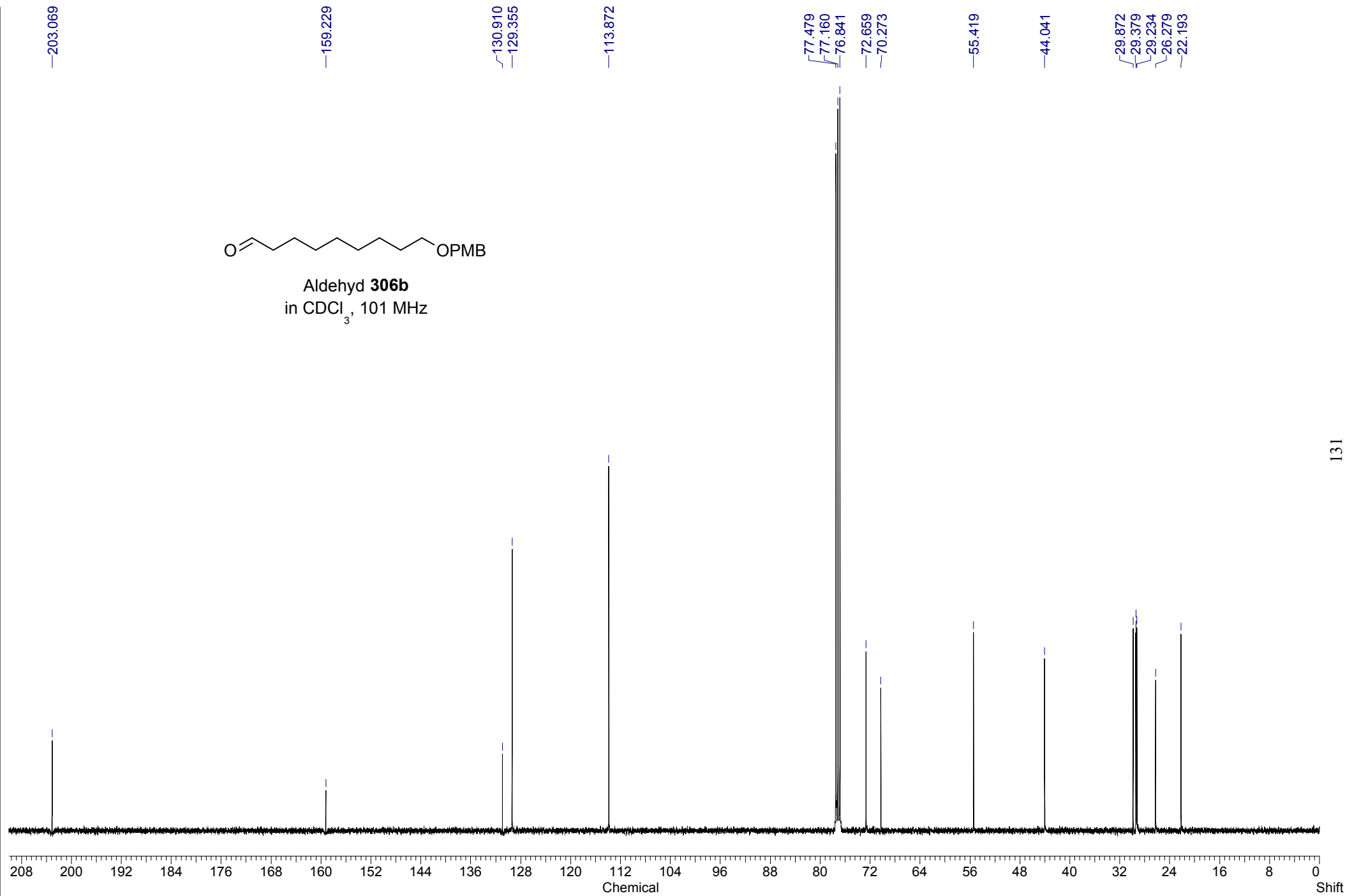


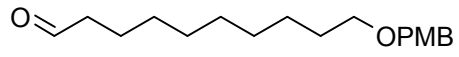


Aldehyd **306b**
in CDCl₃, 400 MHz

—7.260

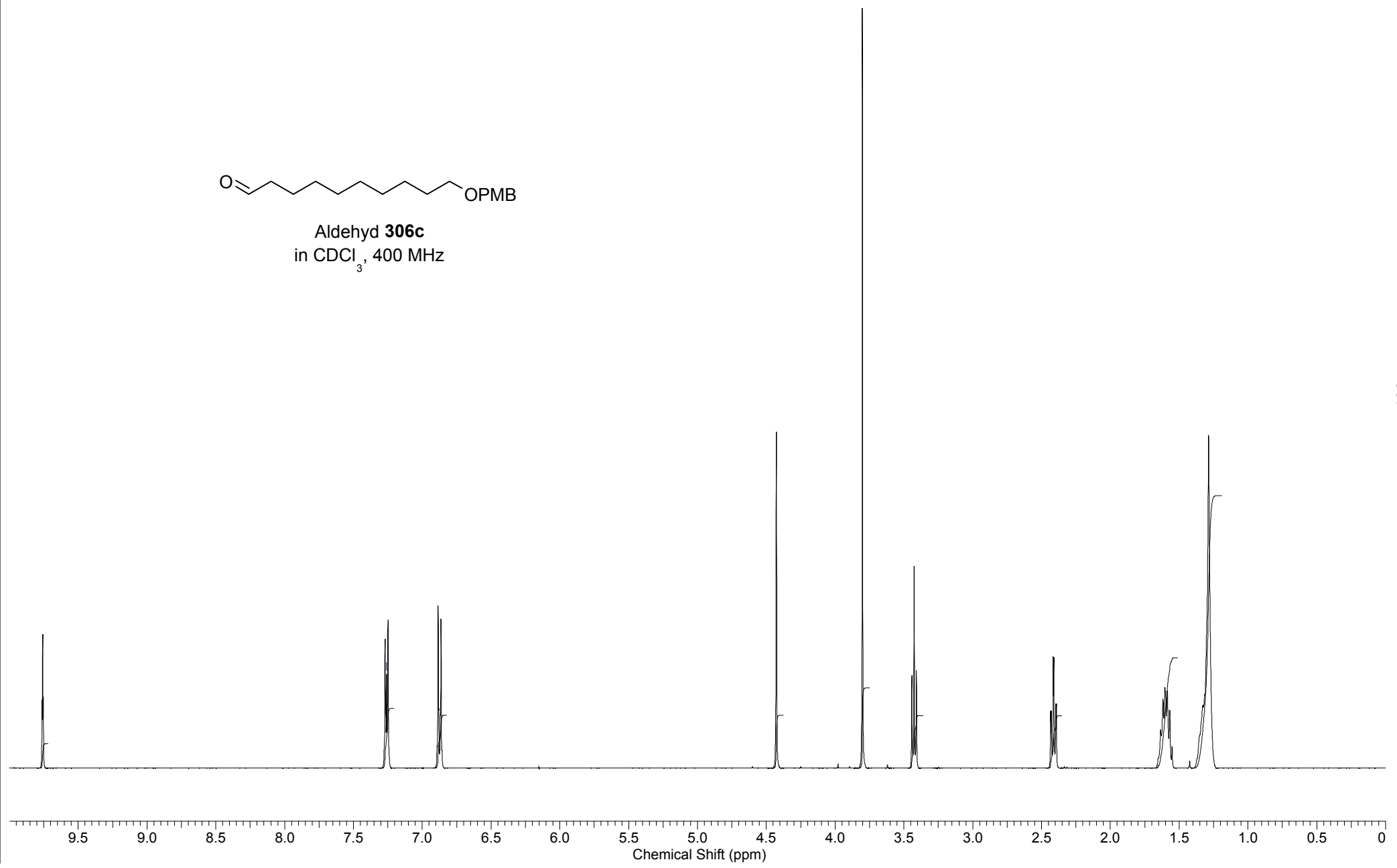


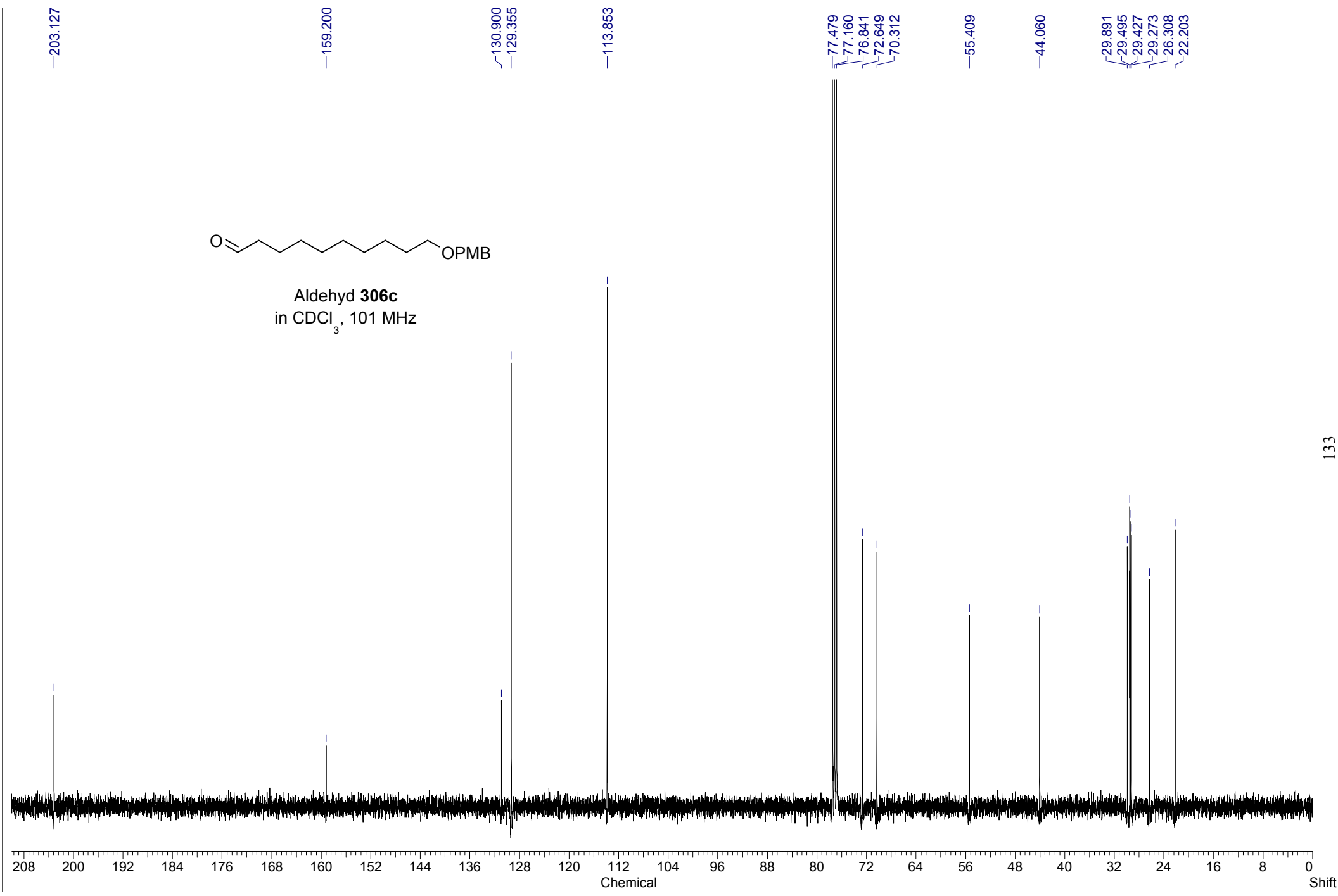


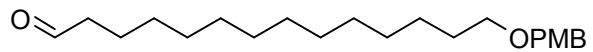


Aldehyd **306c**
in CDCl₃, 400 MHz

—7.260

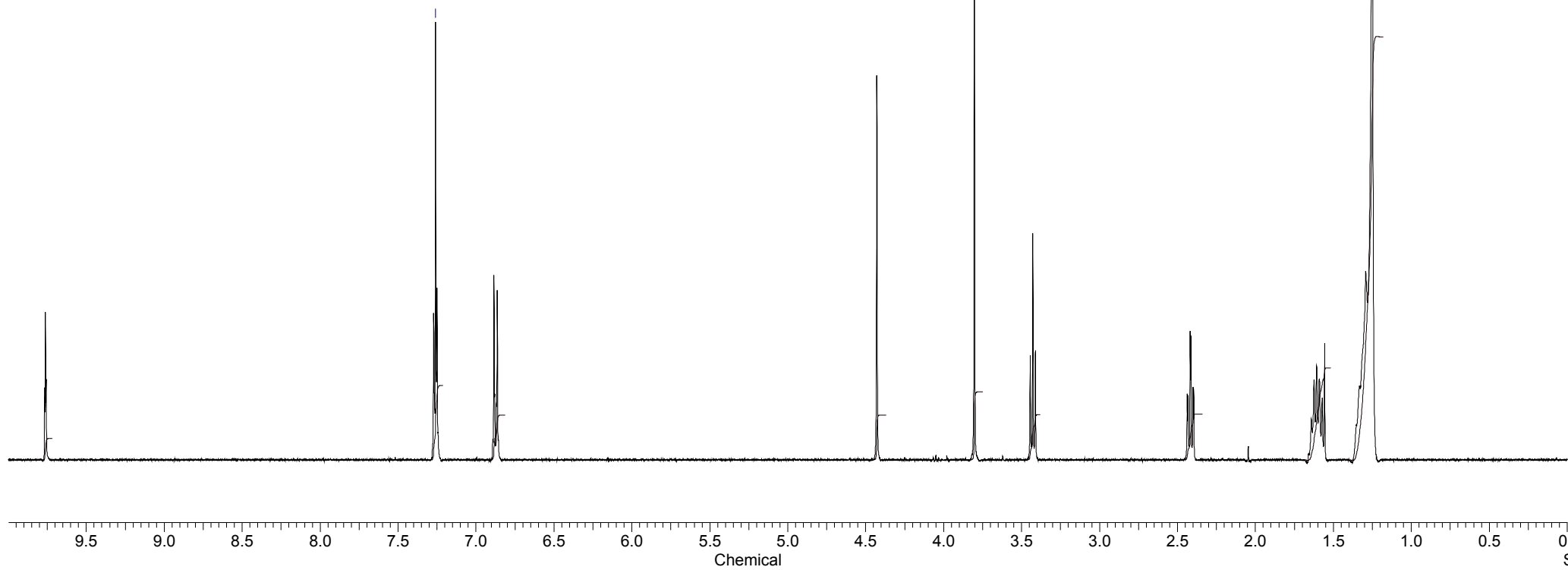


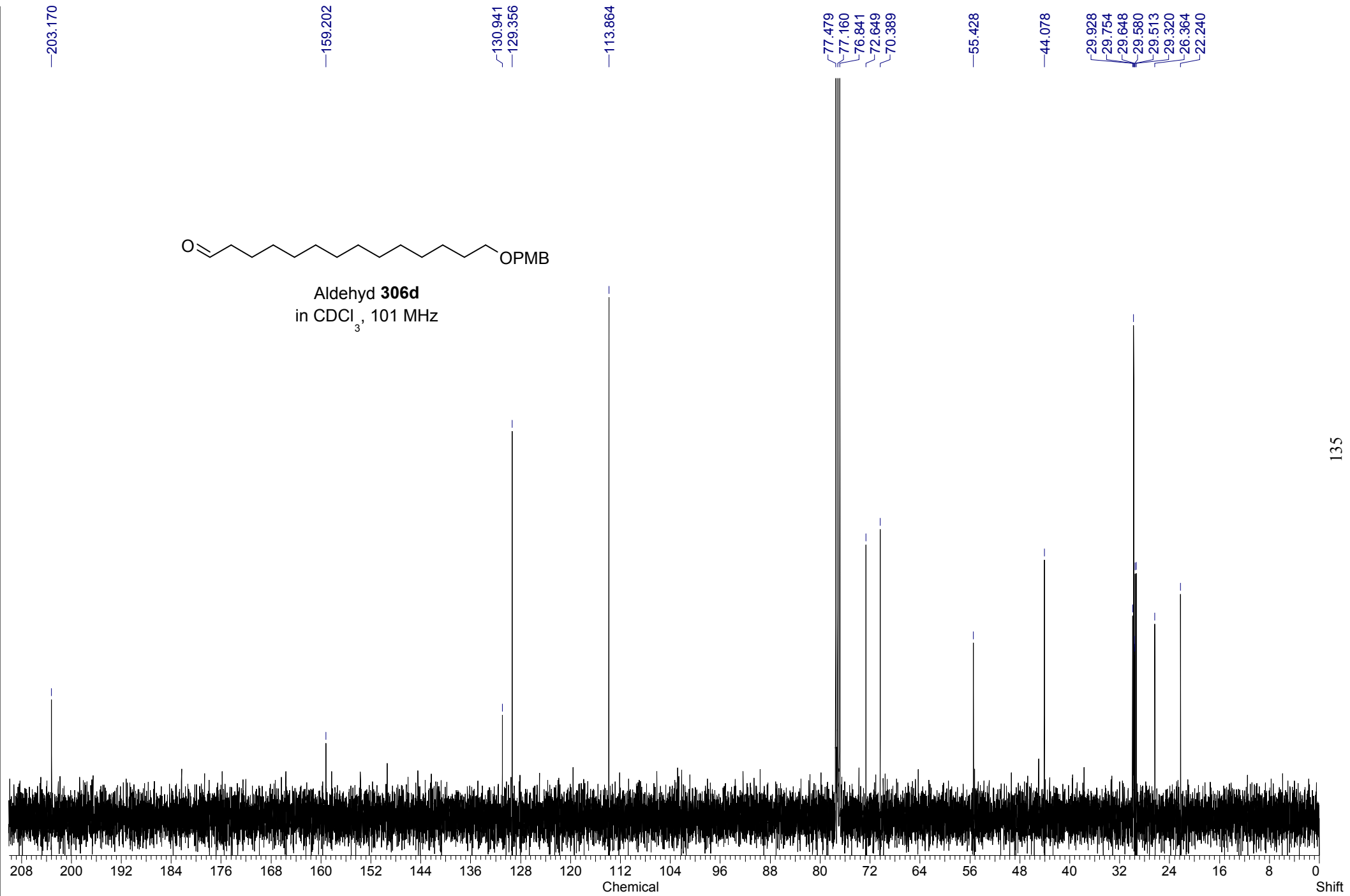




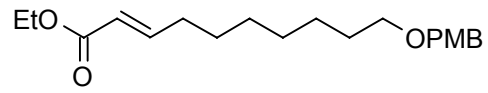
Aldehyd **306d**
in CDCl₃, 400 MHz

—7.260

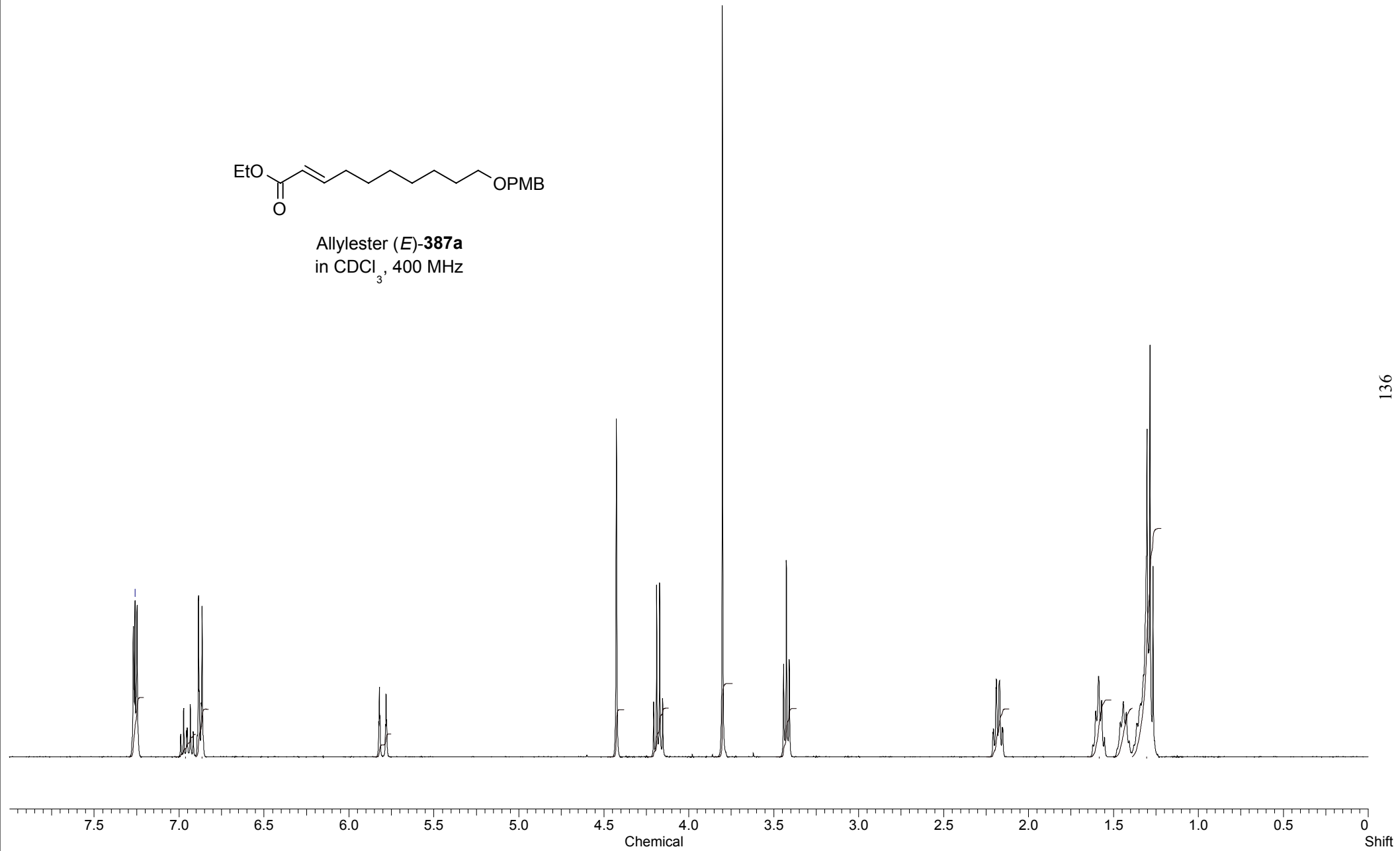


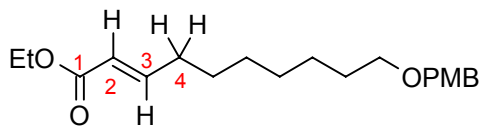


—7.260

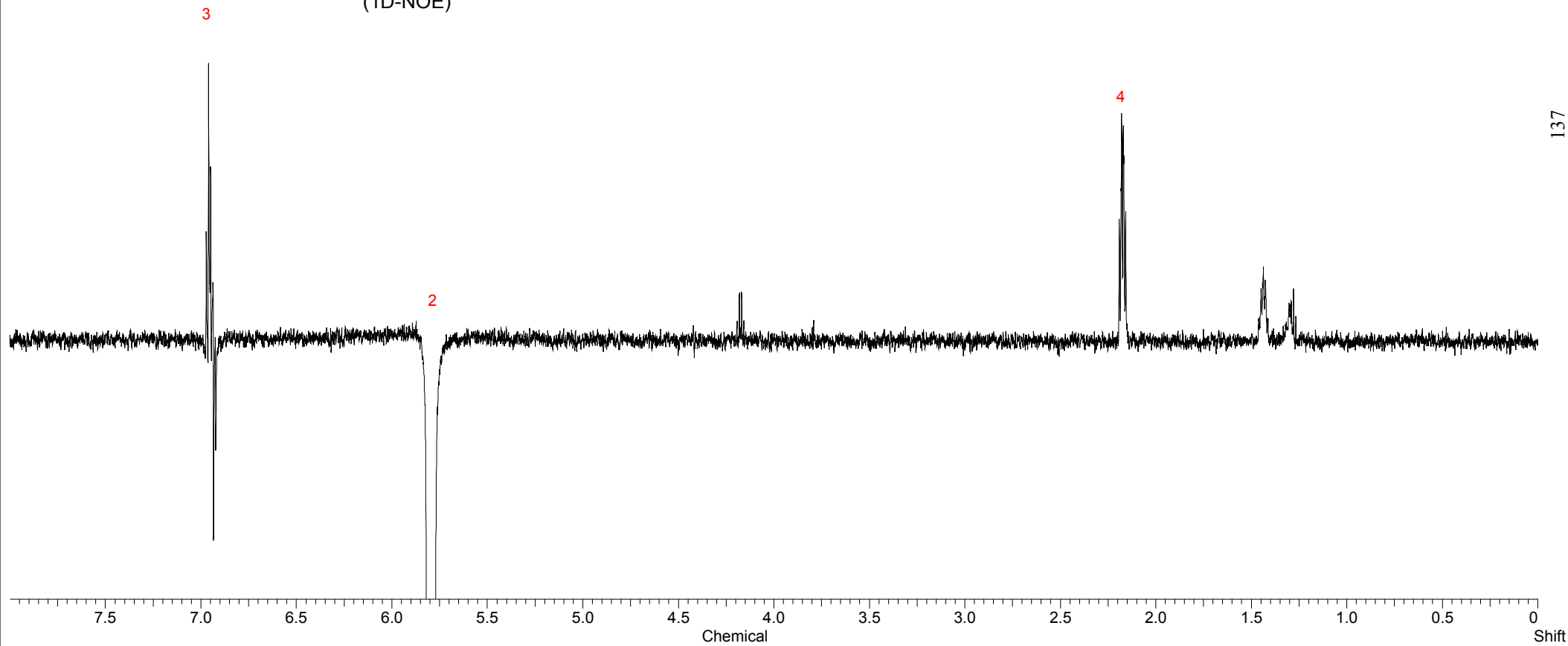


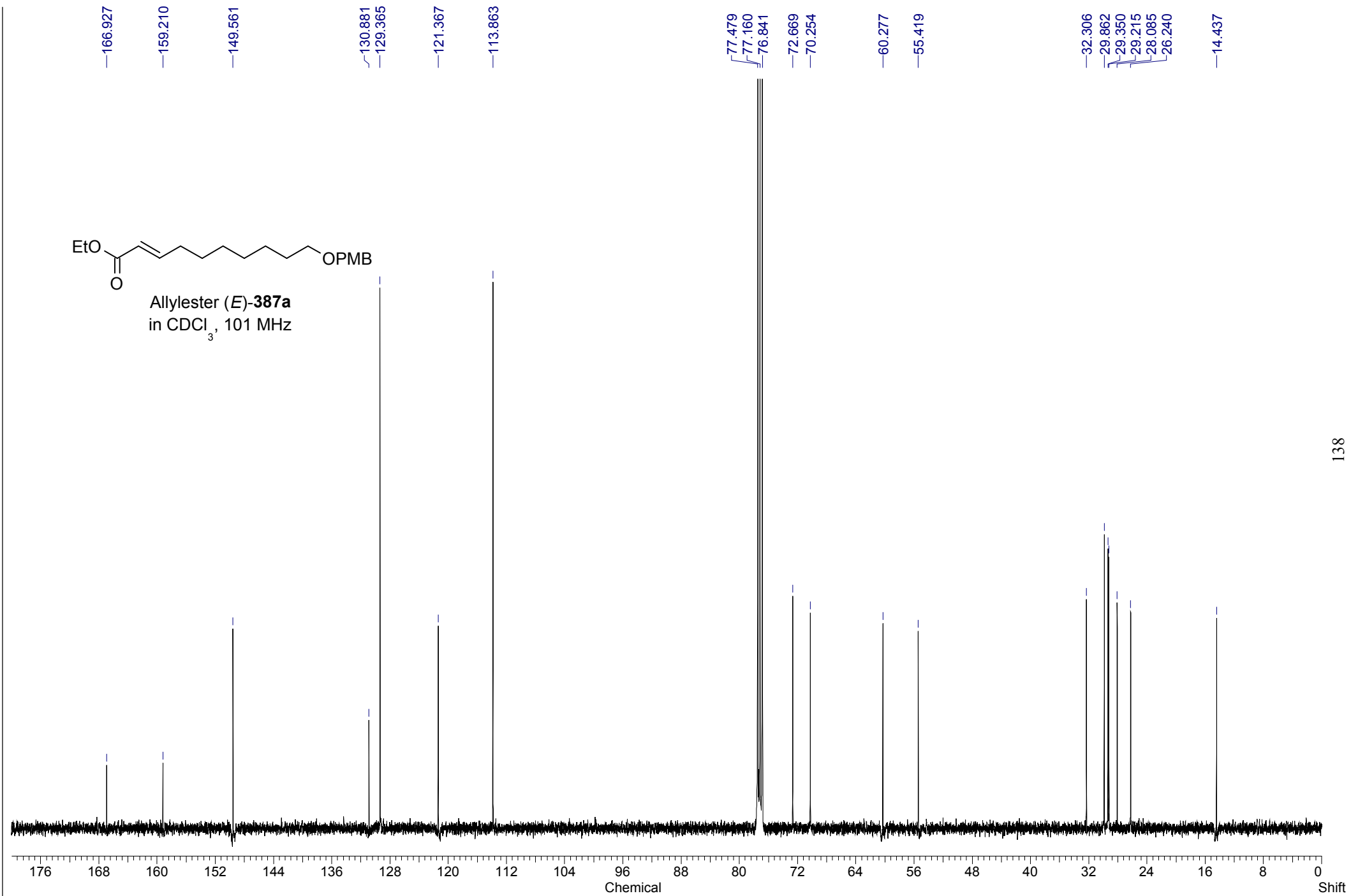
Allylester (*E*)-**387a**
in CDCl₃, 400 MHz



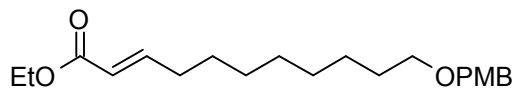


Allylester (*E*)-**387a**
in CDCl₃, 600 MHz
(1D-NOE)

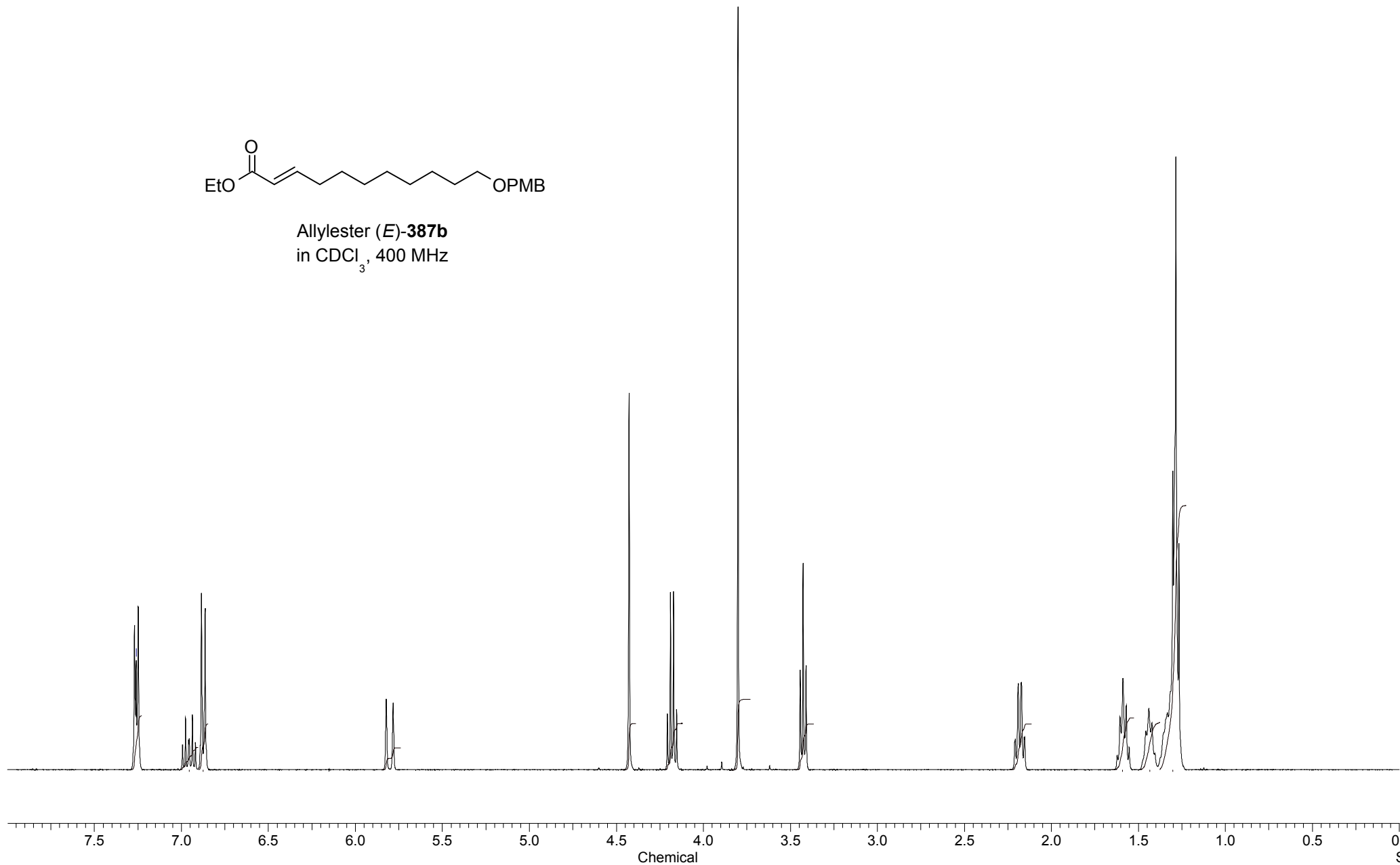


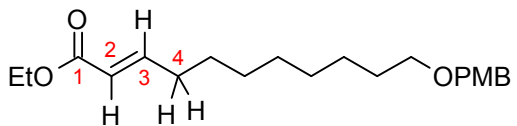


-7.260

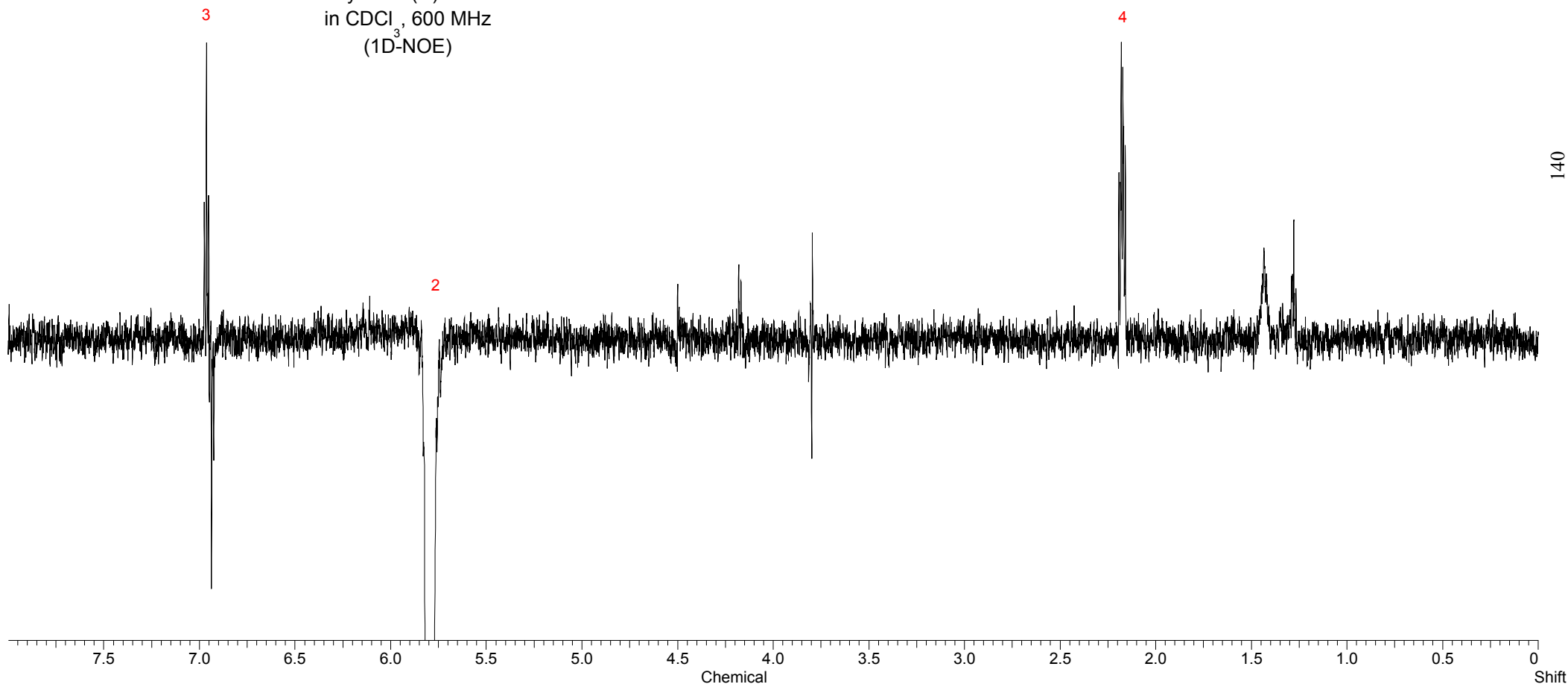


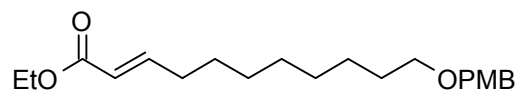
Allylester (*E*)-**387b**
in CDCl₃, 400 MHz



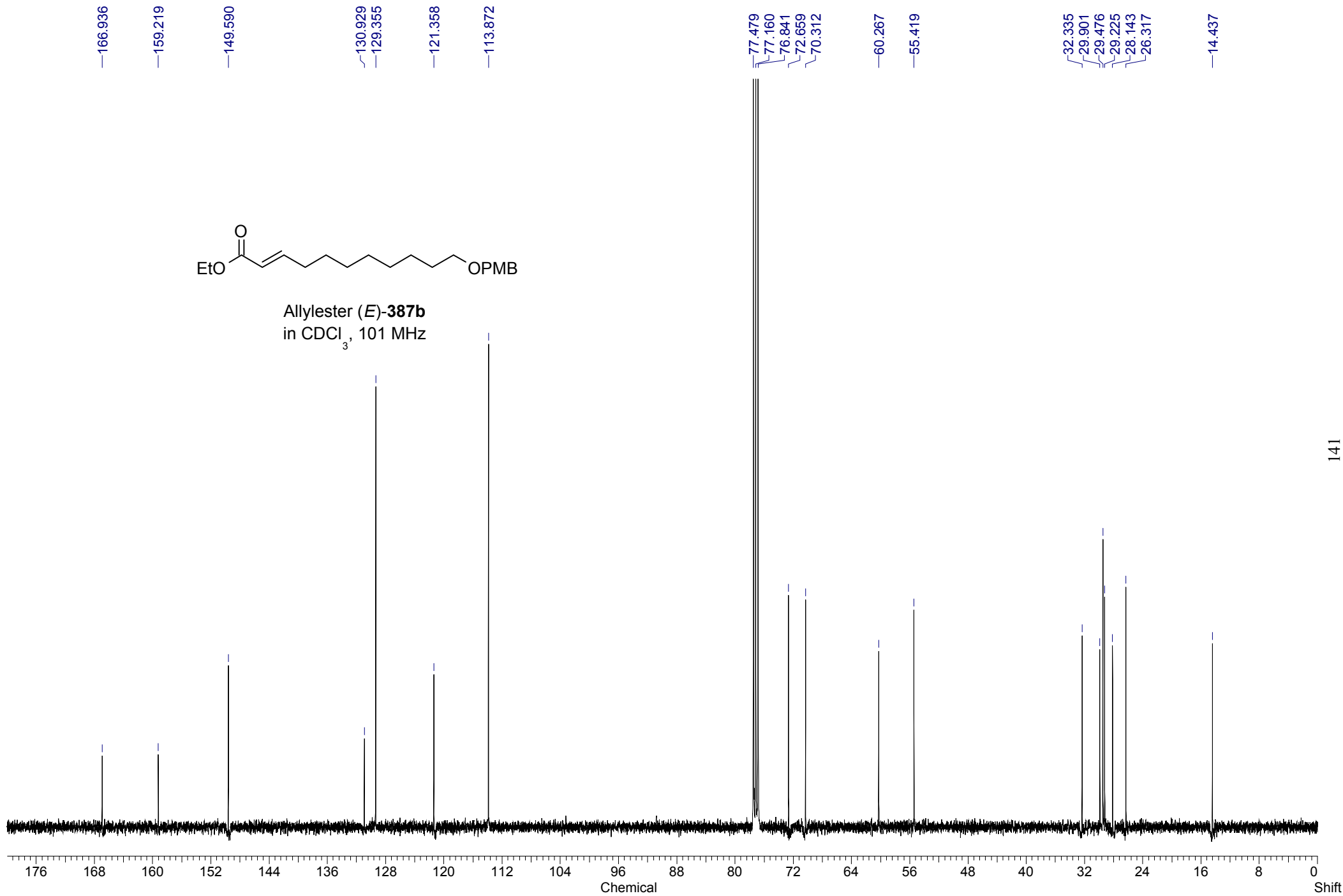


Allylester (*E*)-**387b**
in CDCl₃, 600 MHz
(1D-NOE)





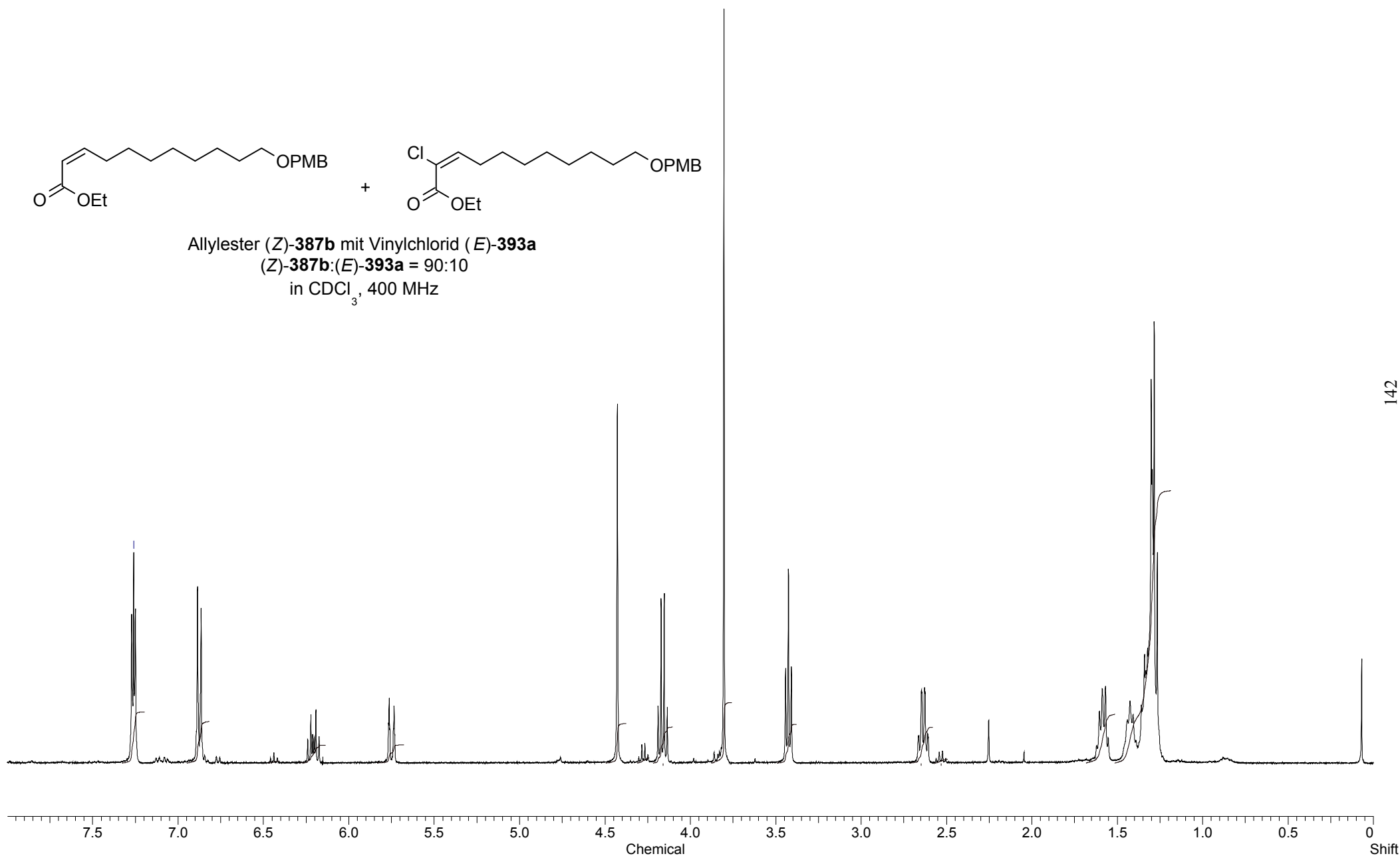
Allylester (*E*)-**387b**
in CDCl₃, 101 MHz



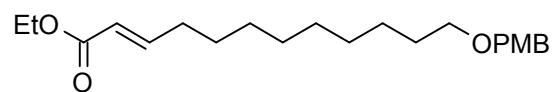


Allylester (Z)-**387b** mit Vinylchlorid (E)-**393a**
(Z)-**387b**:(E)-**393a** = 90:10
in CDCl₃, 400 MHz

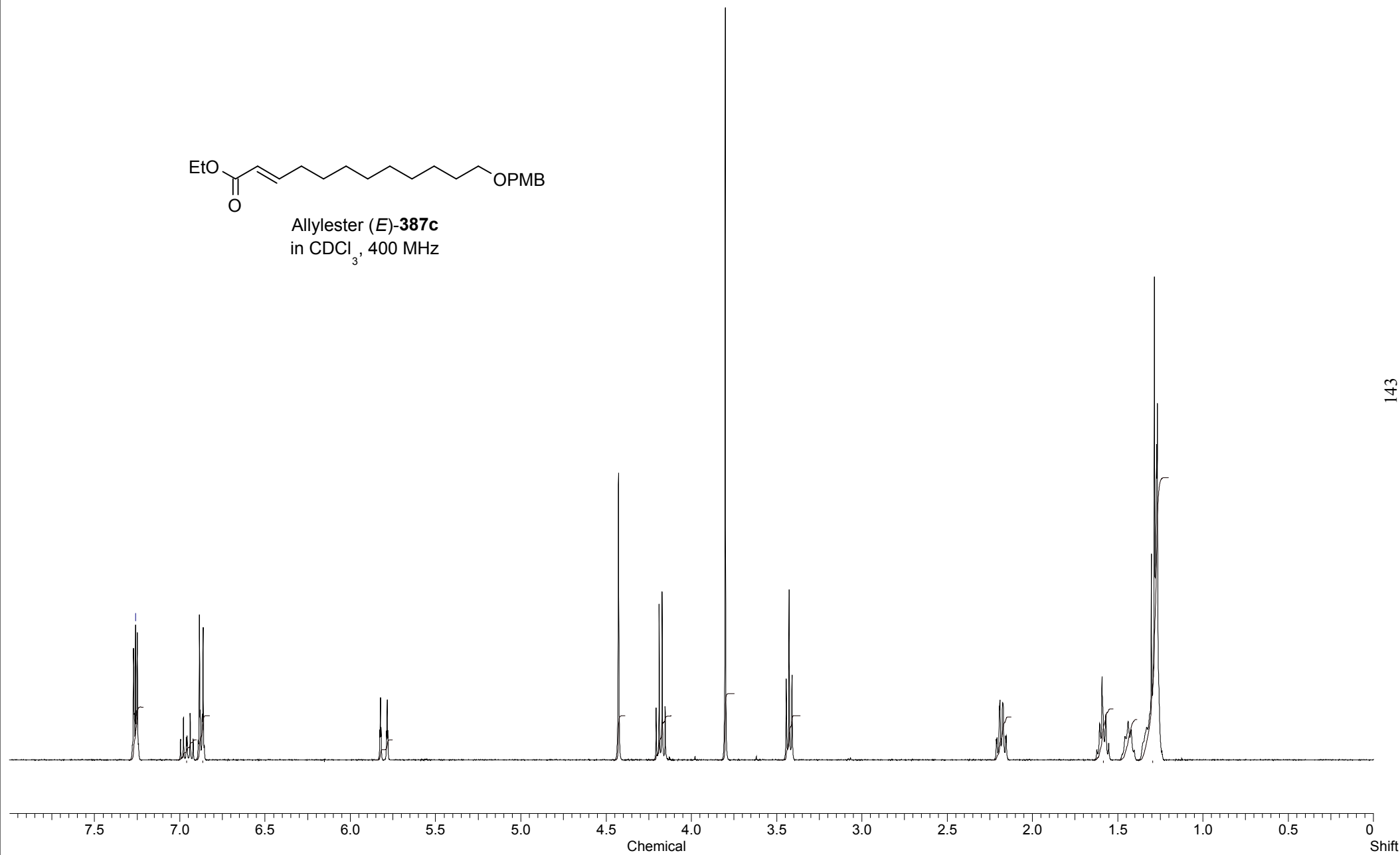
-7.260

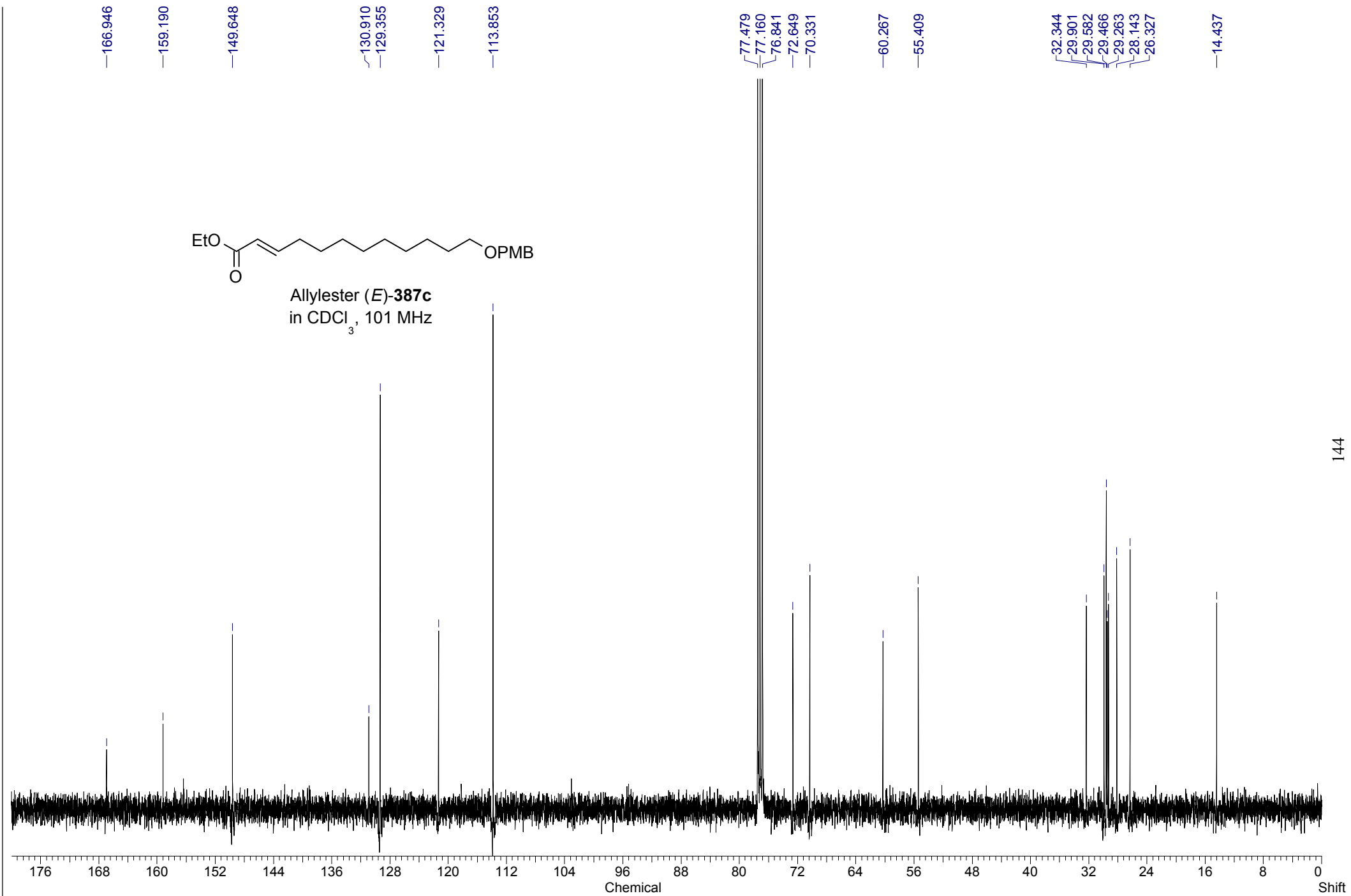


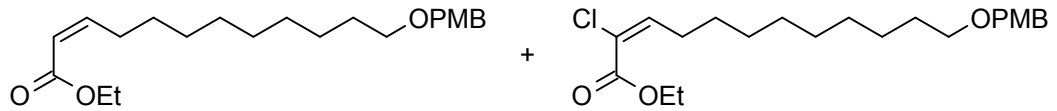
-7.260



Allylester (*E*)-**387c**
in CDCl₃, 400 MHz

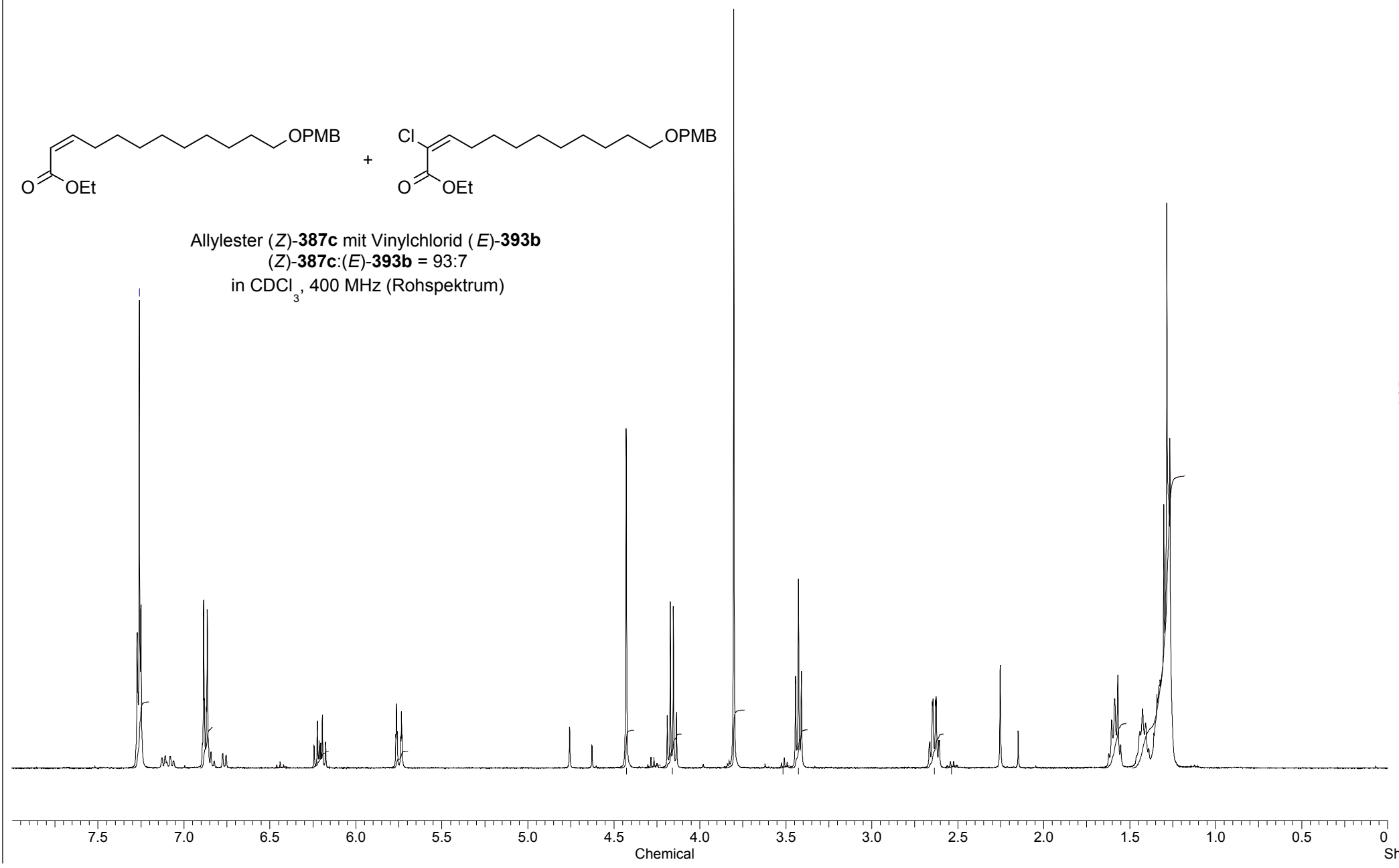


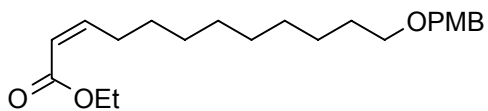




Allylester (**Z**)-**387c** mit Vinylchlorid (**E**)-**393b**
 (**Z**)-**387c**:(**E**)-**393b** = 93:7
 in CDCl₃, 400 MHz (Rohspektrum)

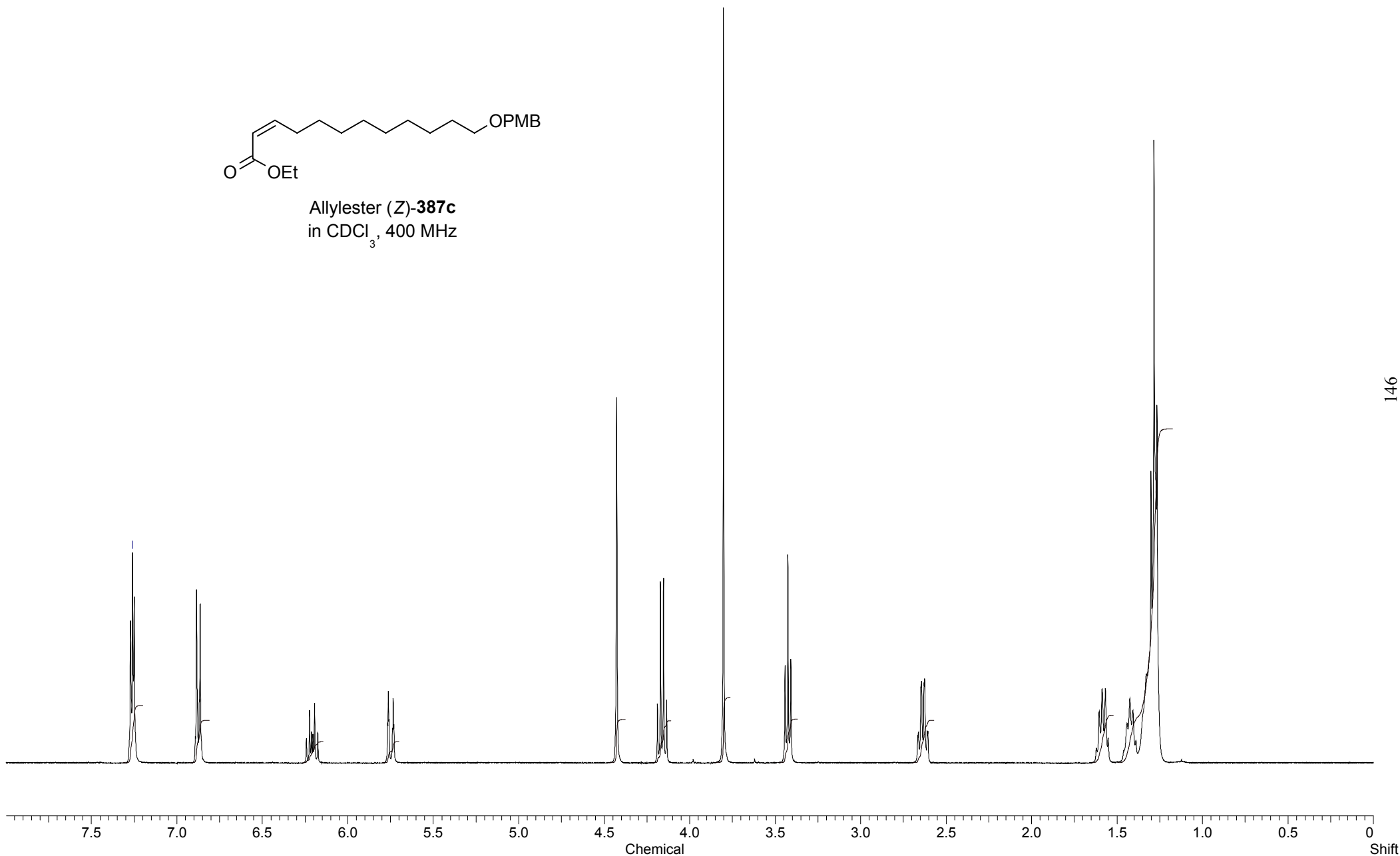
—7.260

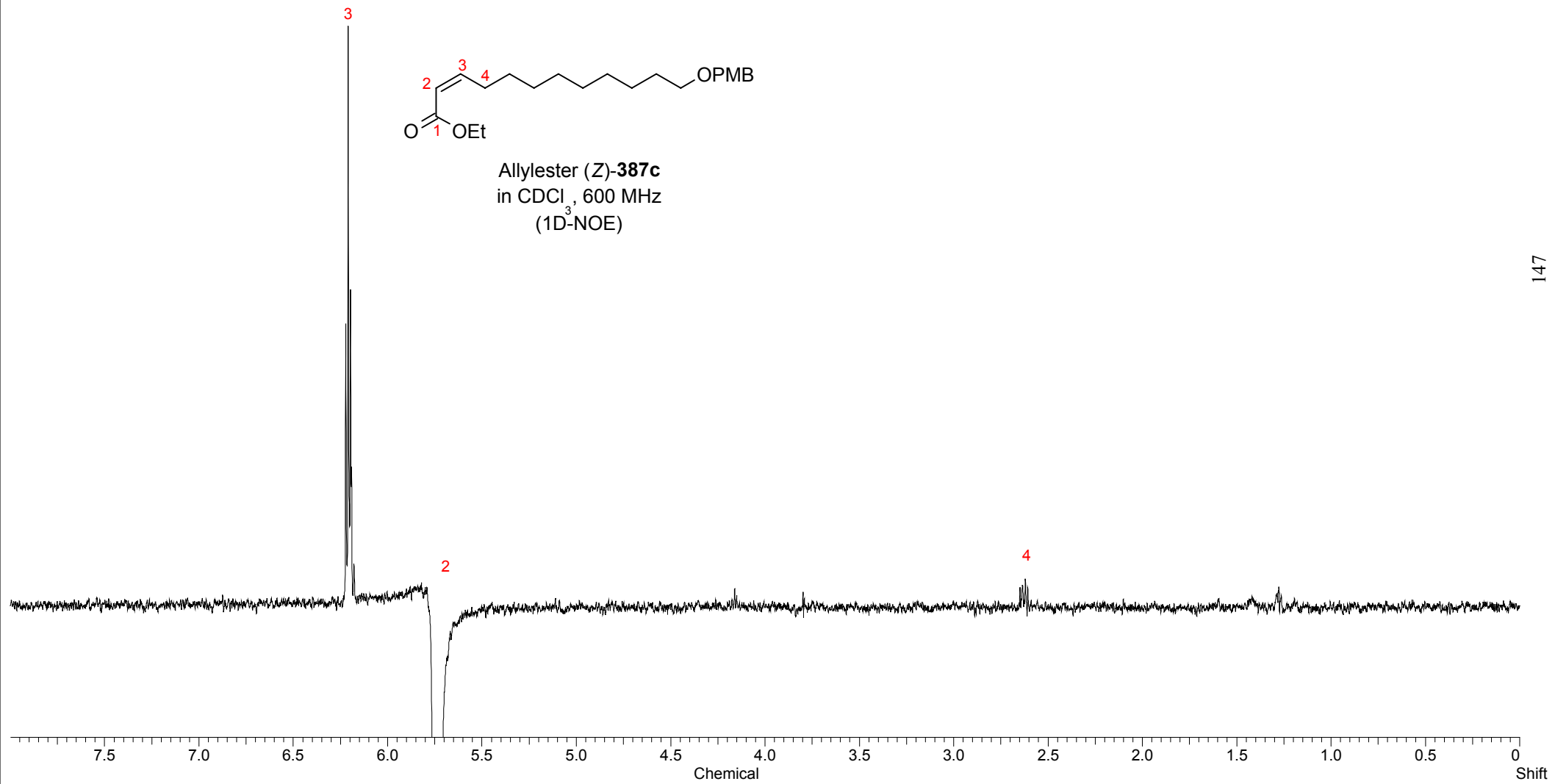


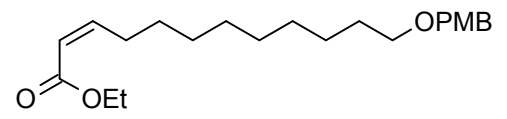


Allylester (Z)-**387c**
in CDCl₃, 400 MHz

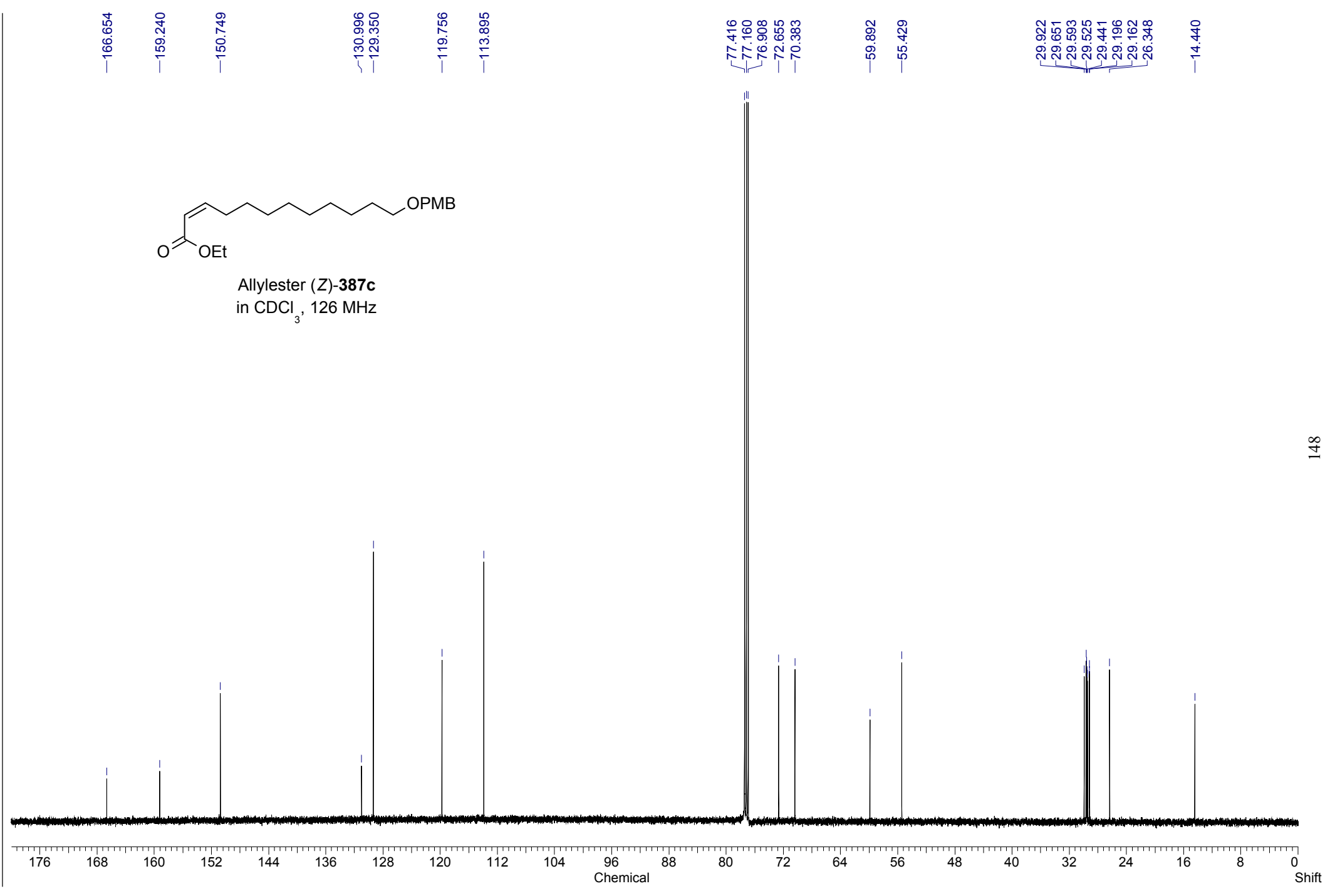
—7.260



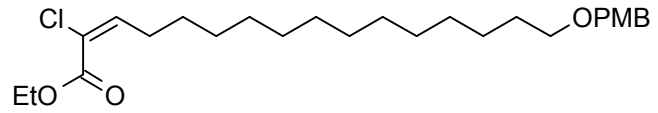




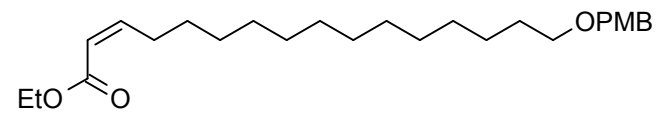
Allylester (Z)-**387c**
in CDCl₃, 126 MHz



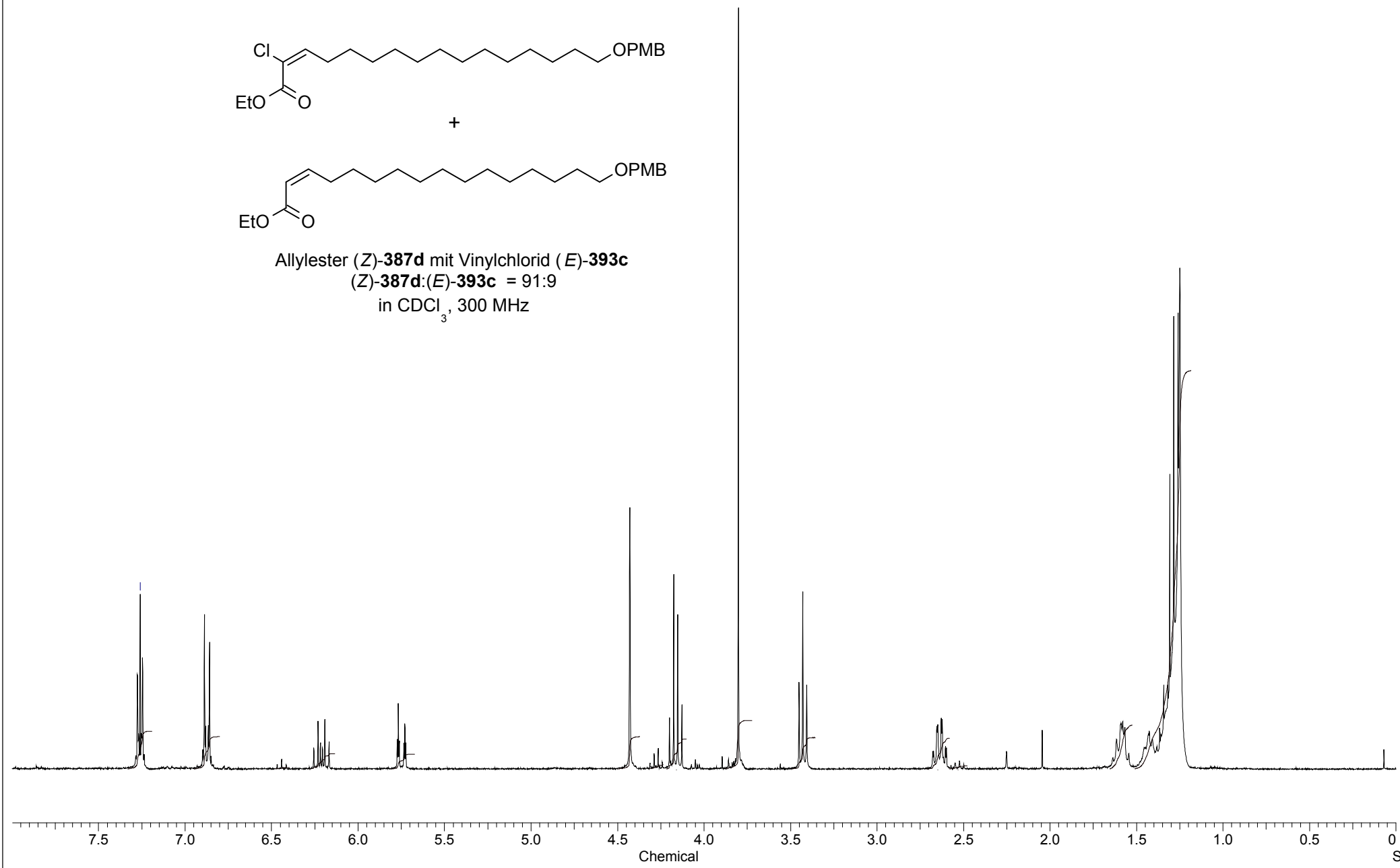
-7.260



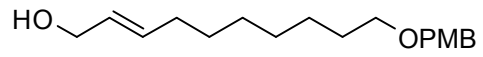
+



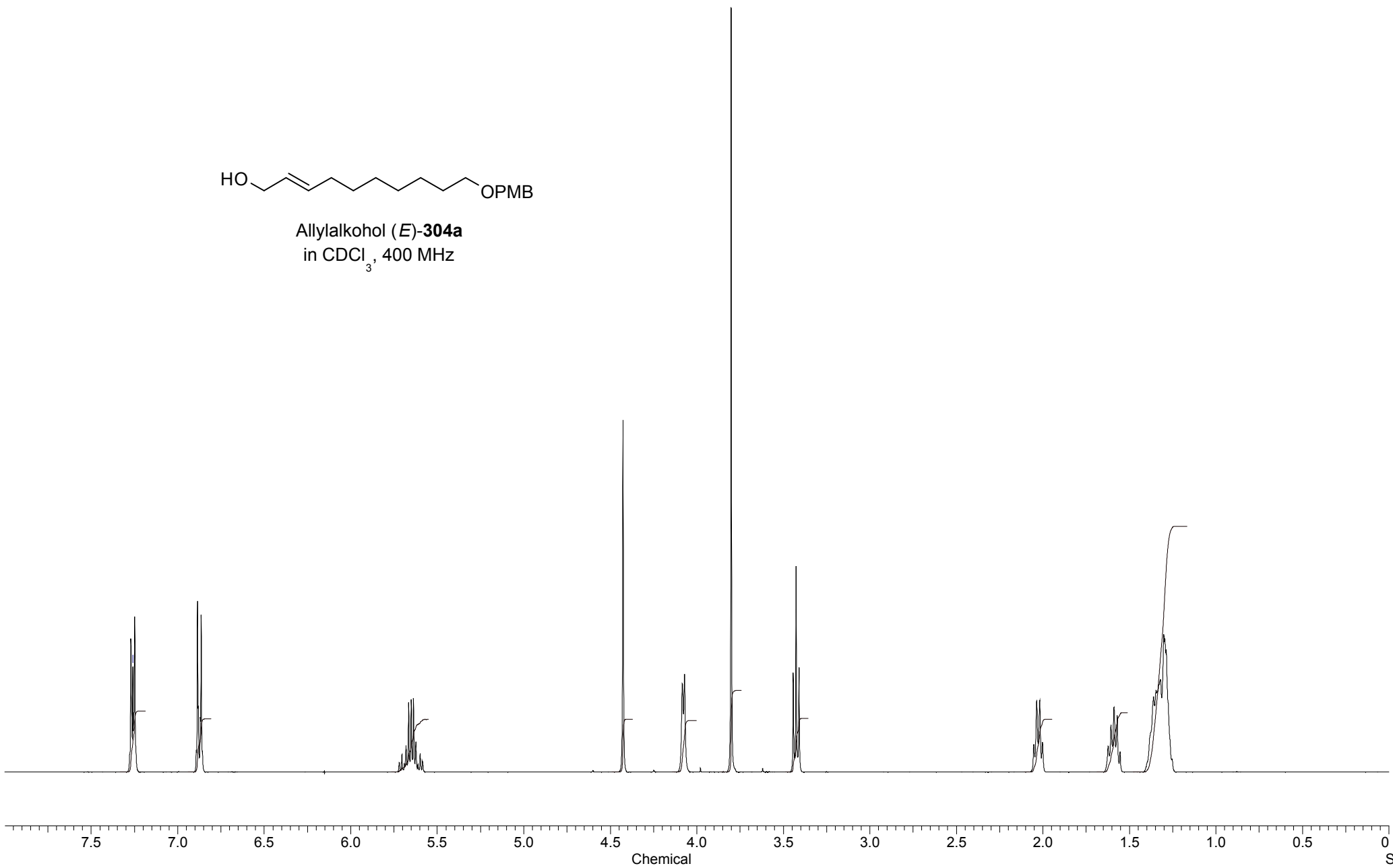
Allylester (*Z*)-**387d** mit Vinylchlorid (*E*)-**393c**
(*Z*)-**387d**:(*E*)-**393c** = 91:9
in CDCl₃, 300 MHz

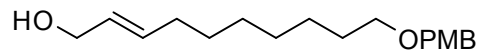


—7.260

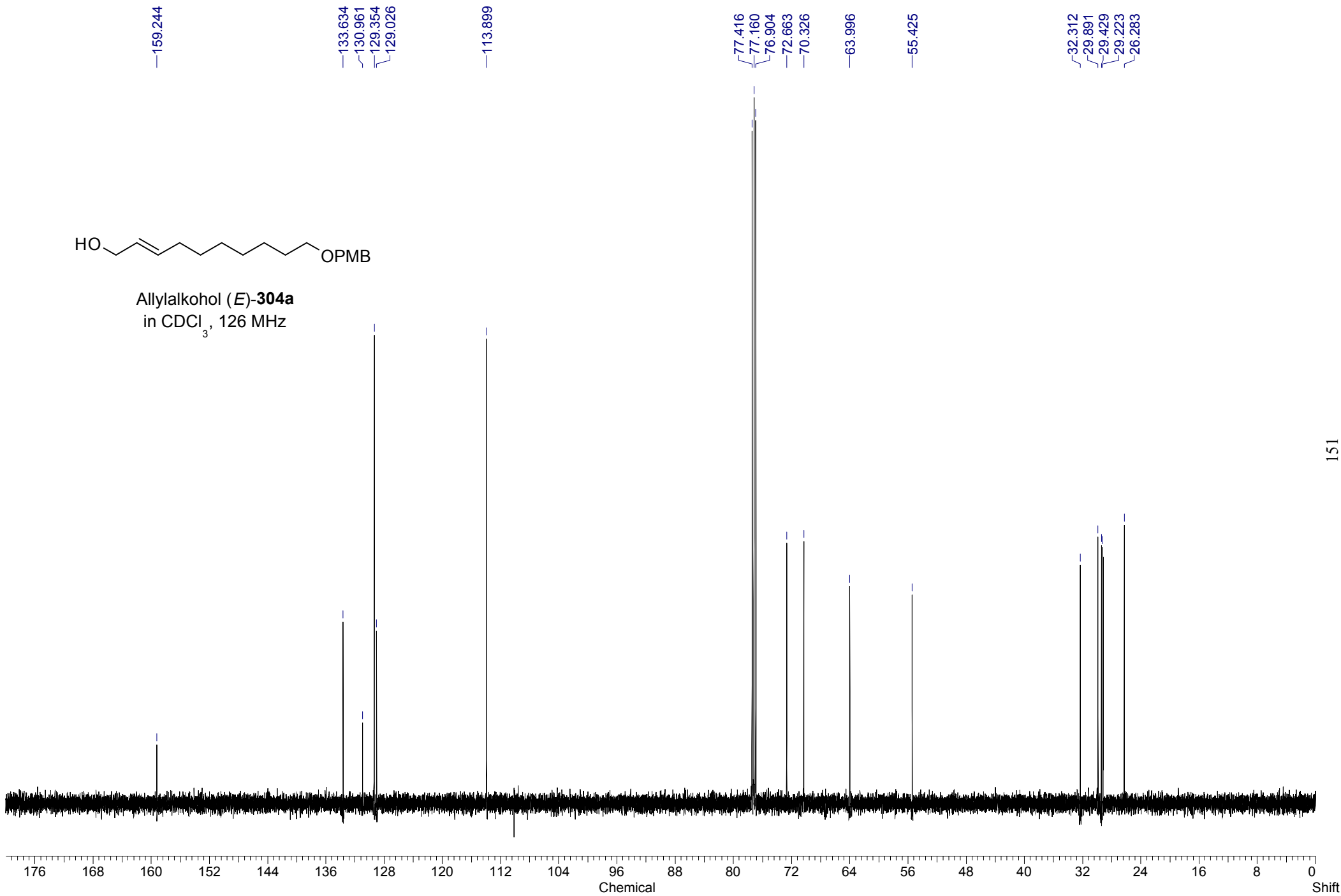


Allylalkohol (*E*)-**304a**
in CDCl₃, 400 MHz

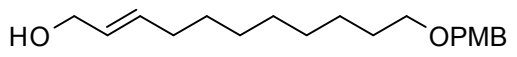




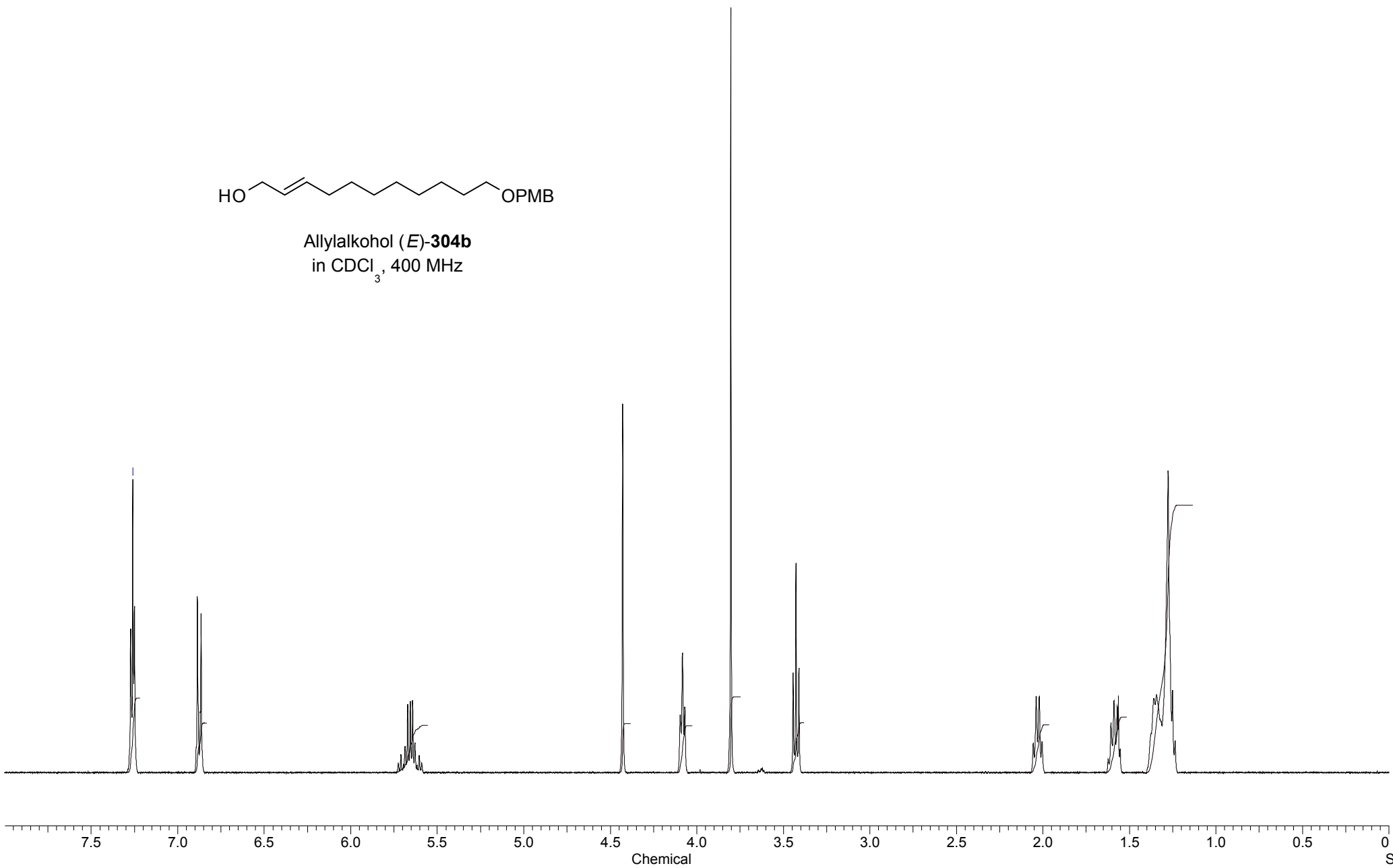
Allylkohol (*E*)-**304a**
in CDCl₃, 126 MHz

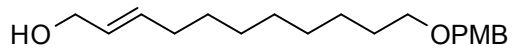


—7.260

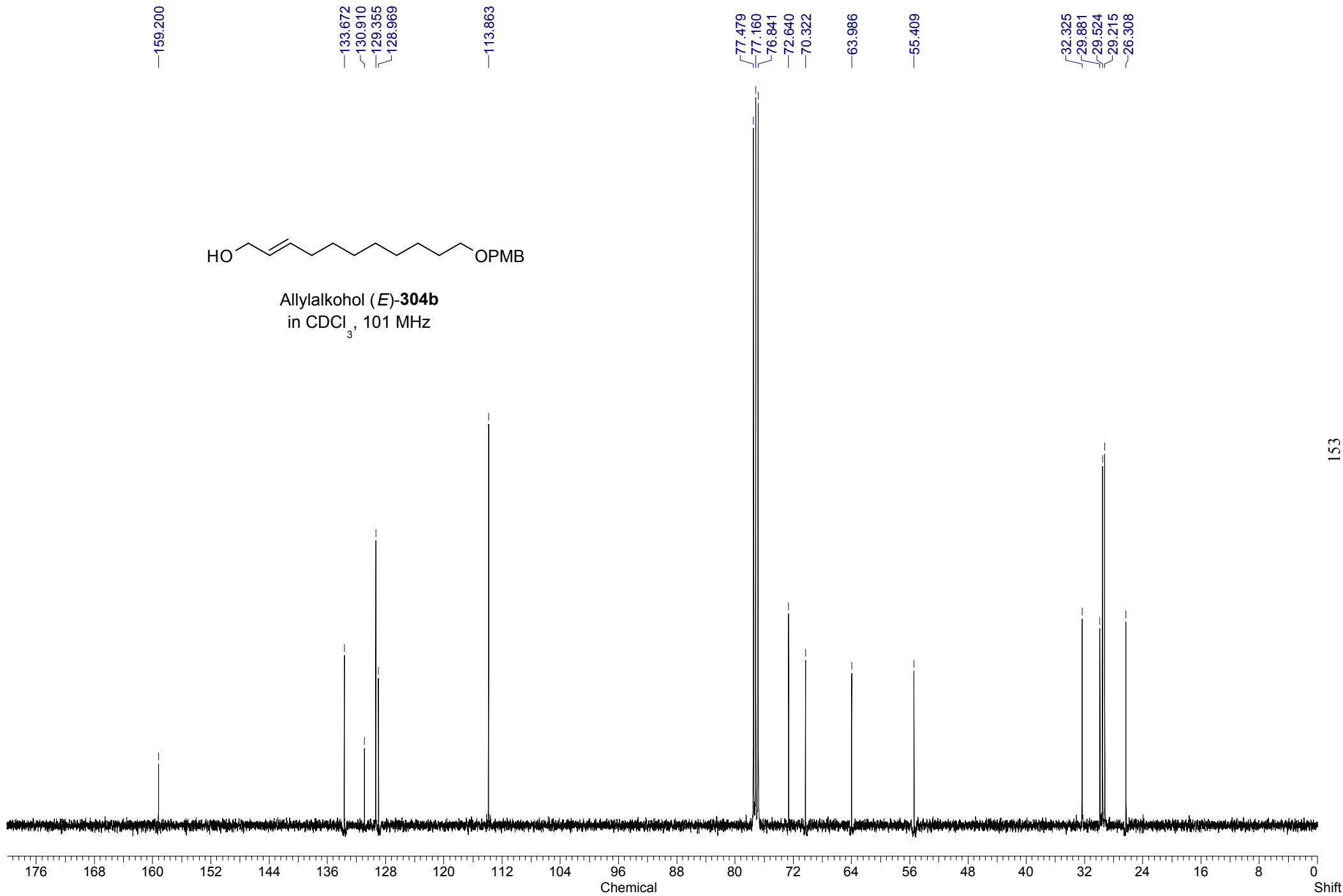


Allylalkohol (*E*)-**304b**
in CDCl₃, 400 MHz

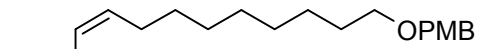




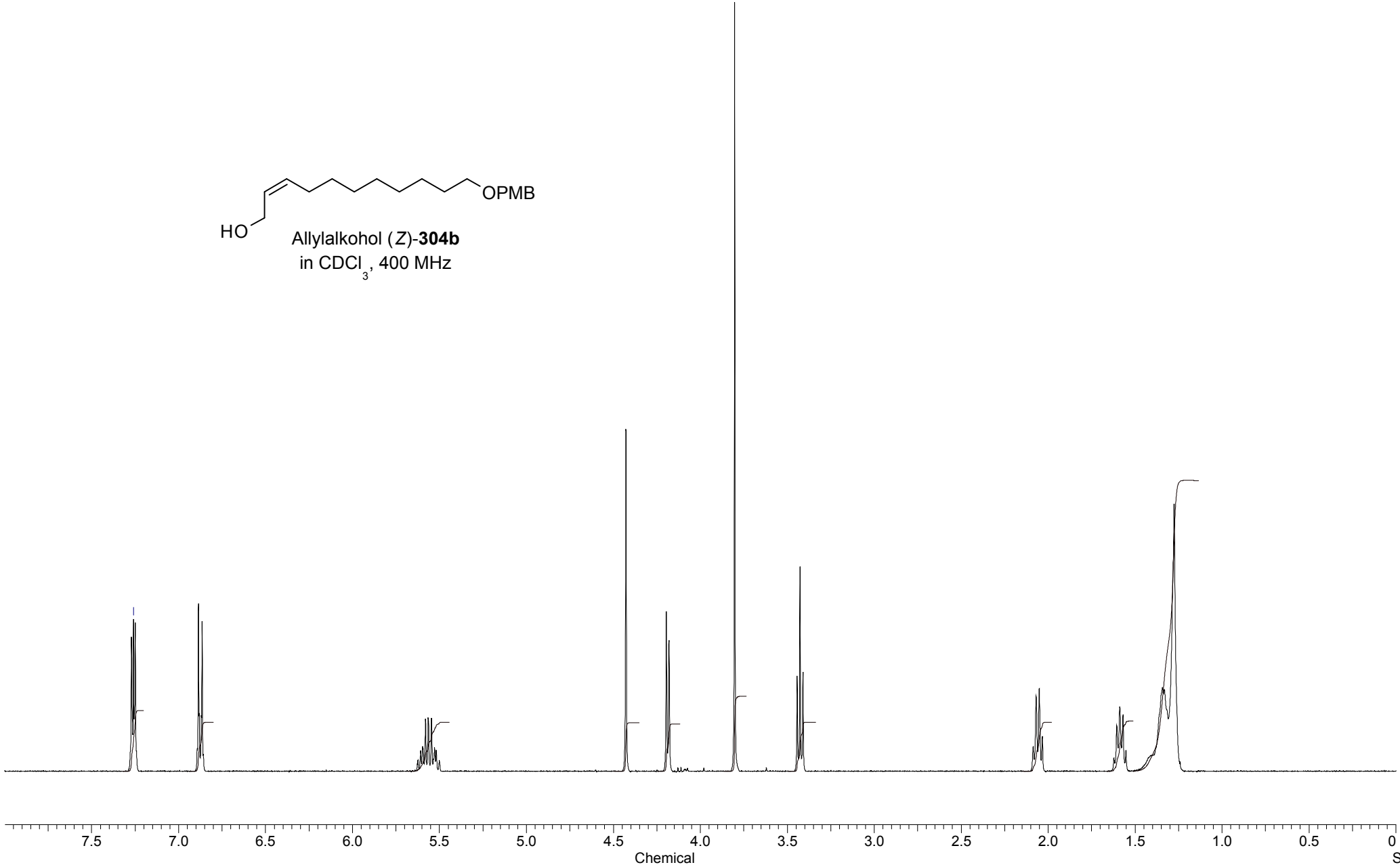
Allylalkohol (*E*)-**304b**
in CDCl₃, 101 MHz

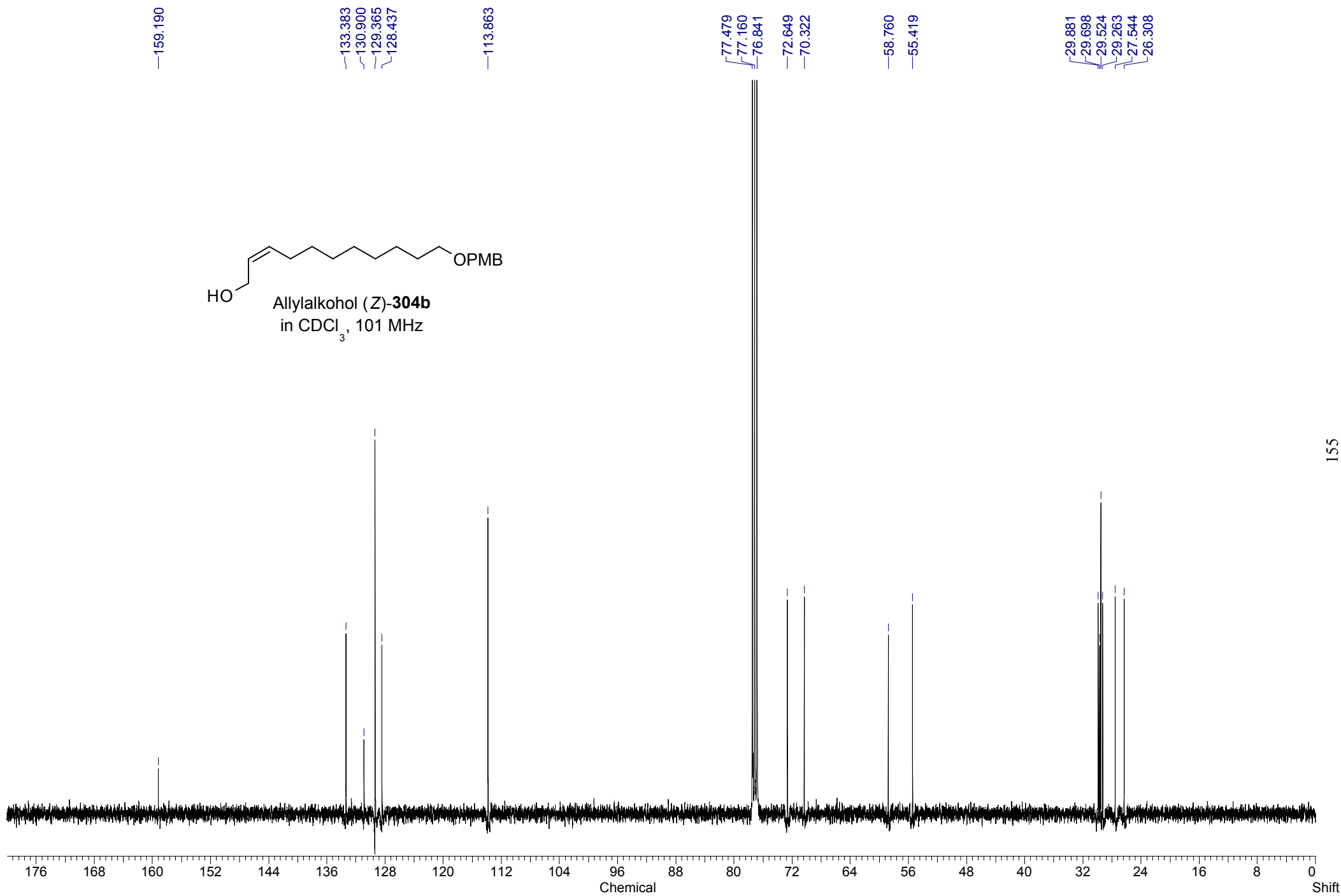
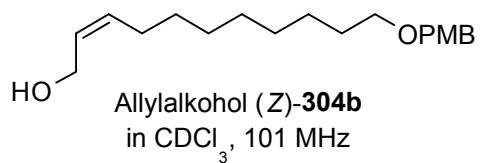


—7.260

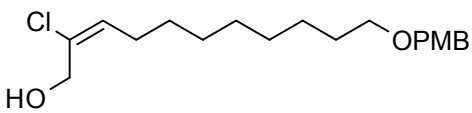


Allylkohol (Z)-304b
in CDCl₃, 400 MHz

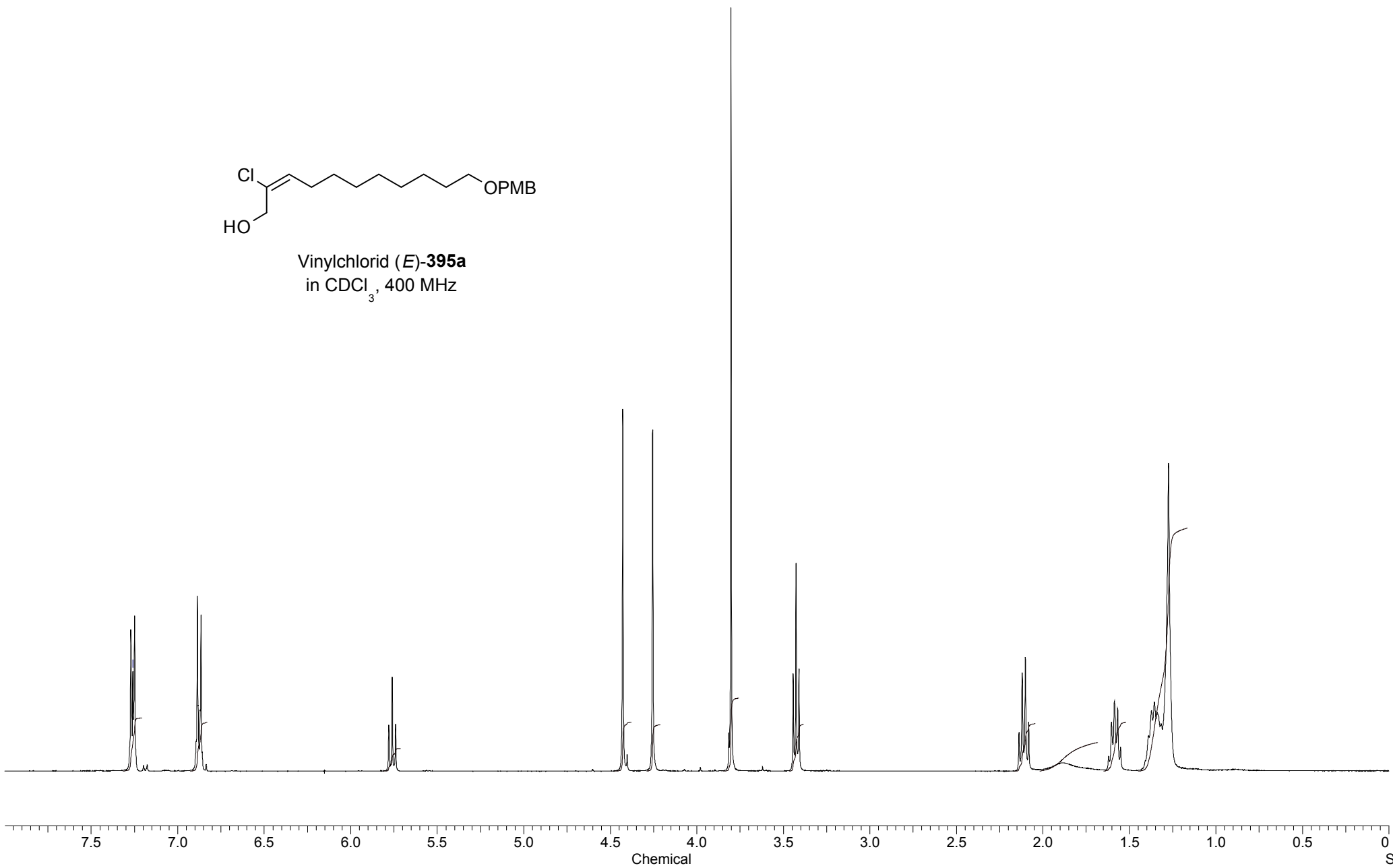


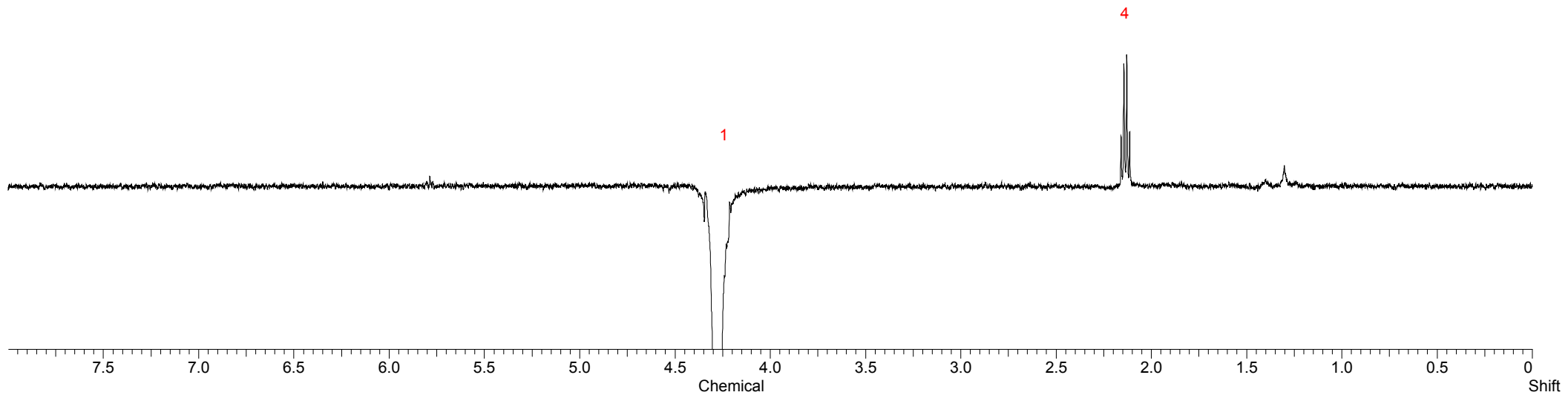
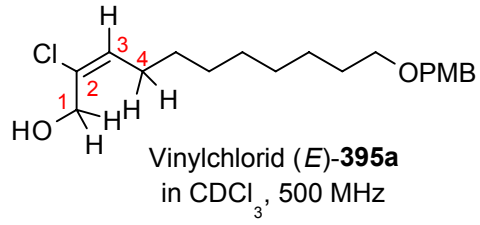


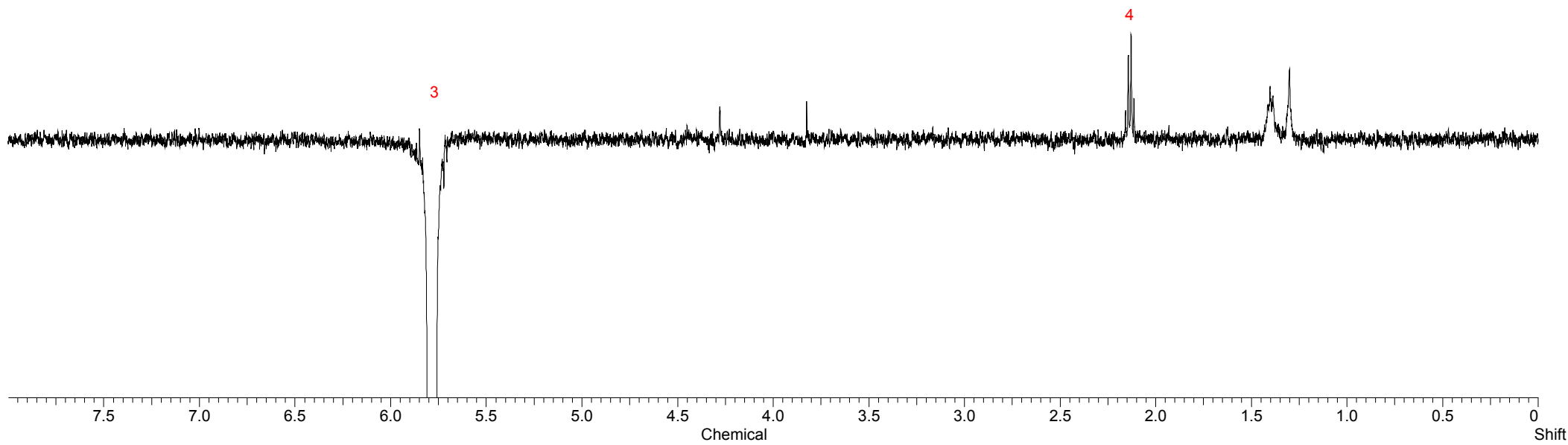
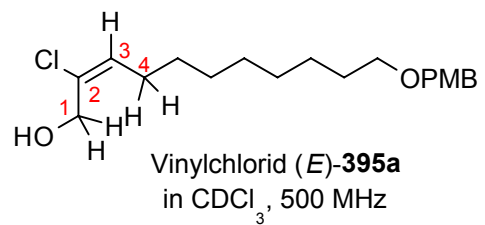
—7.260

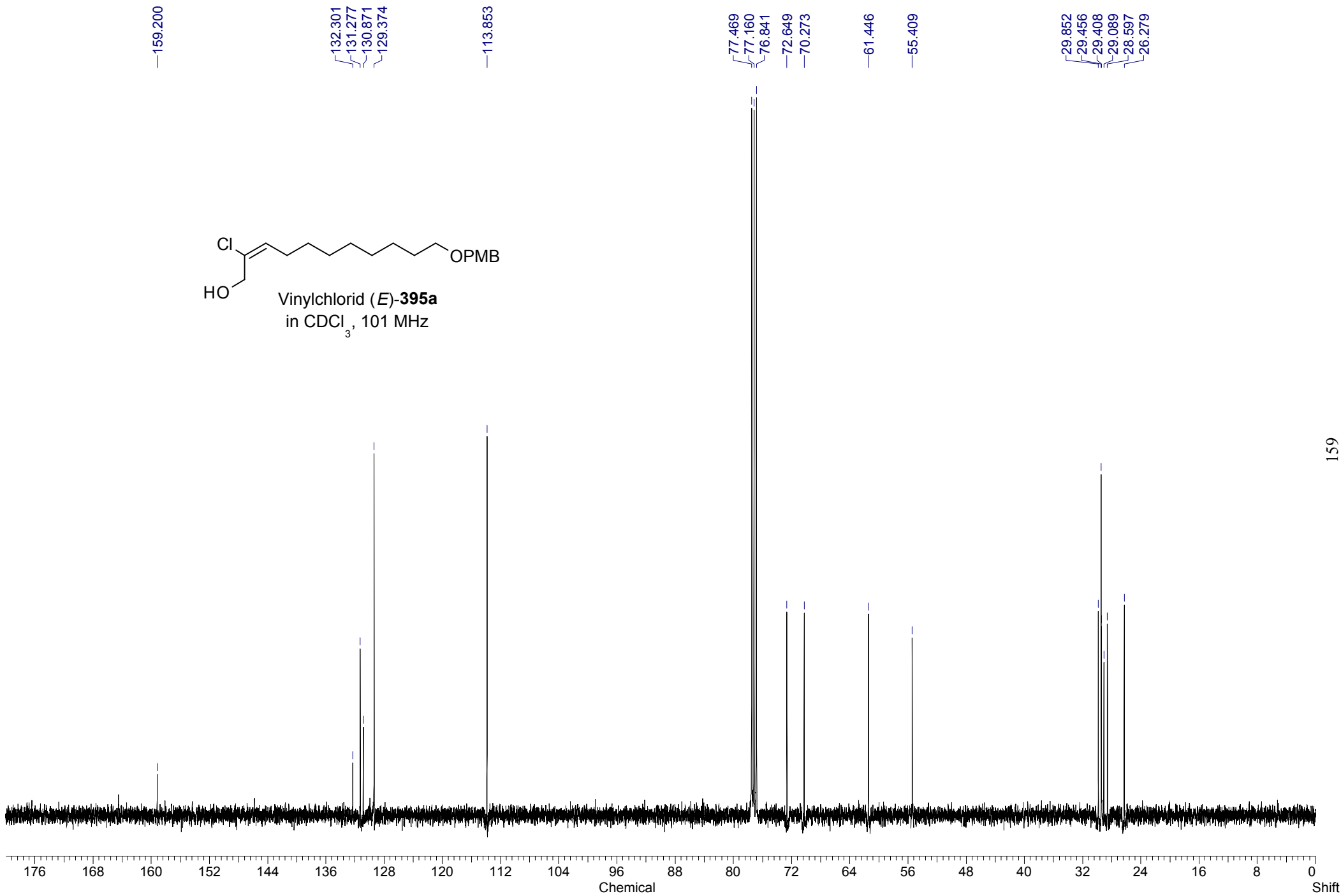
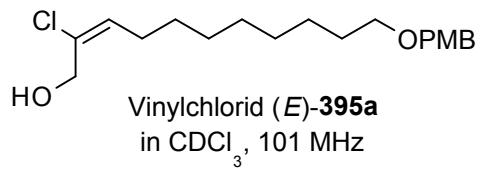


Vinylchlorid (*E*)-**395a**
in CDCl₃, 400 MHz

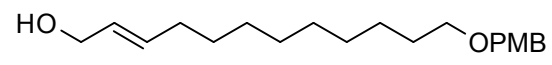




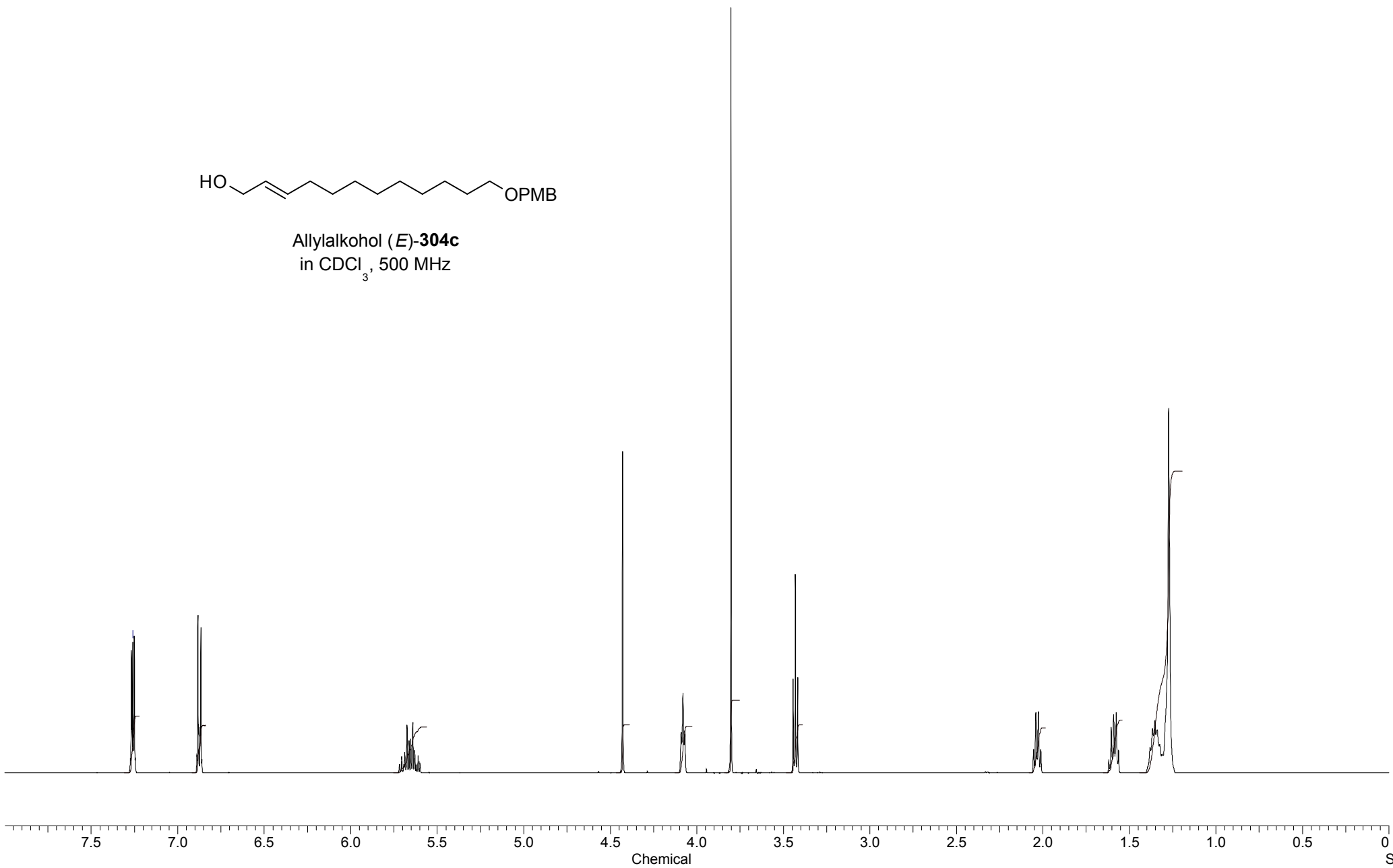


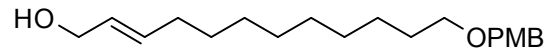


—7.260

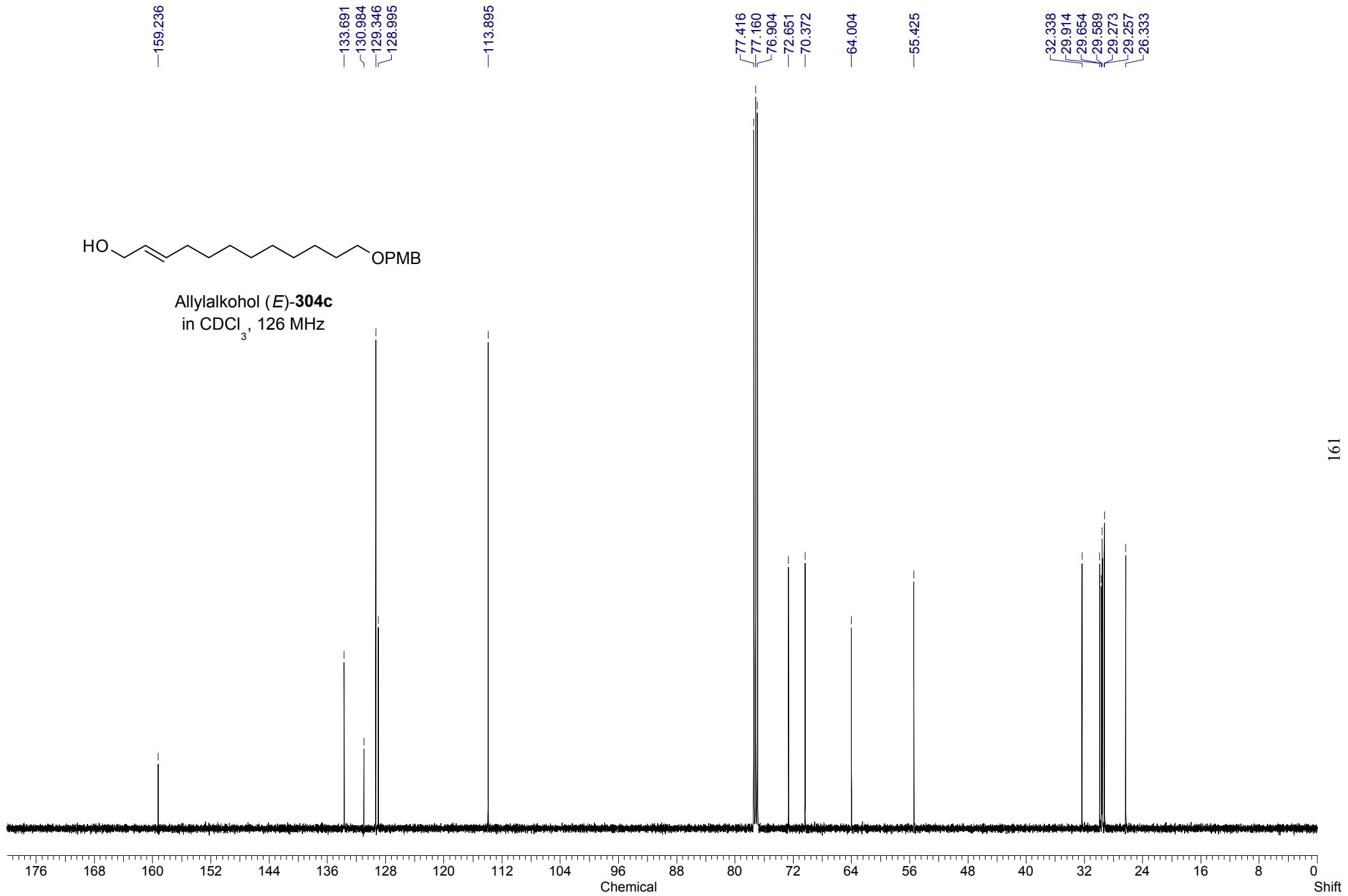


Allylalkohol (*E*)-**304c**
in CDCl₃, 500 MHz

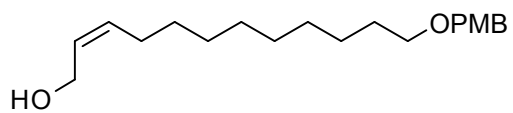




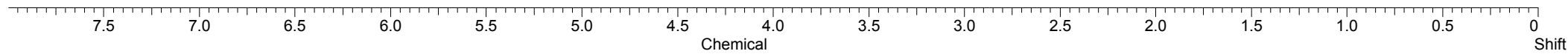
Allylalkohol (*E*)-**304c**
in CDCl₃, 126 MHz

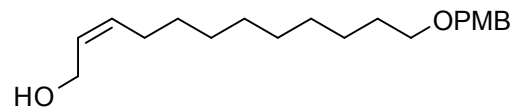


—7.260

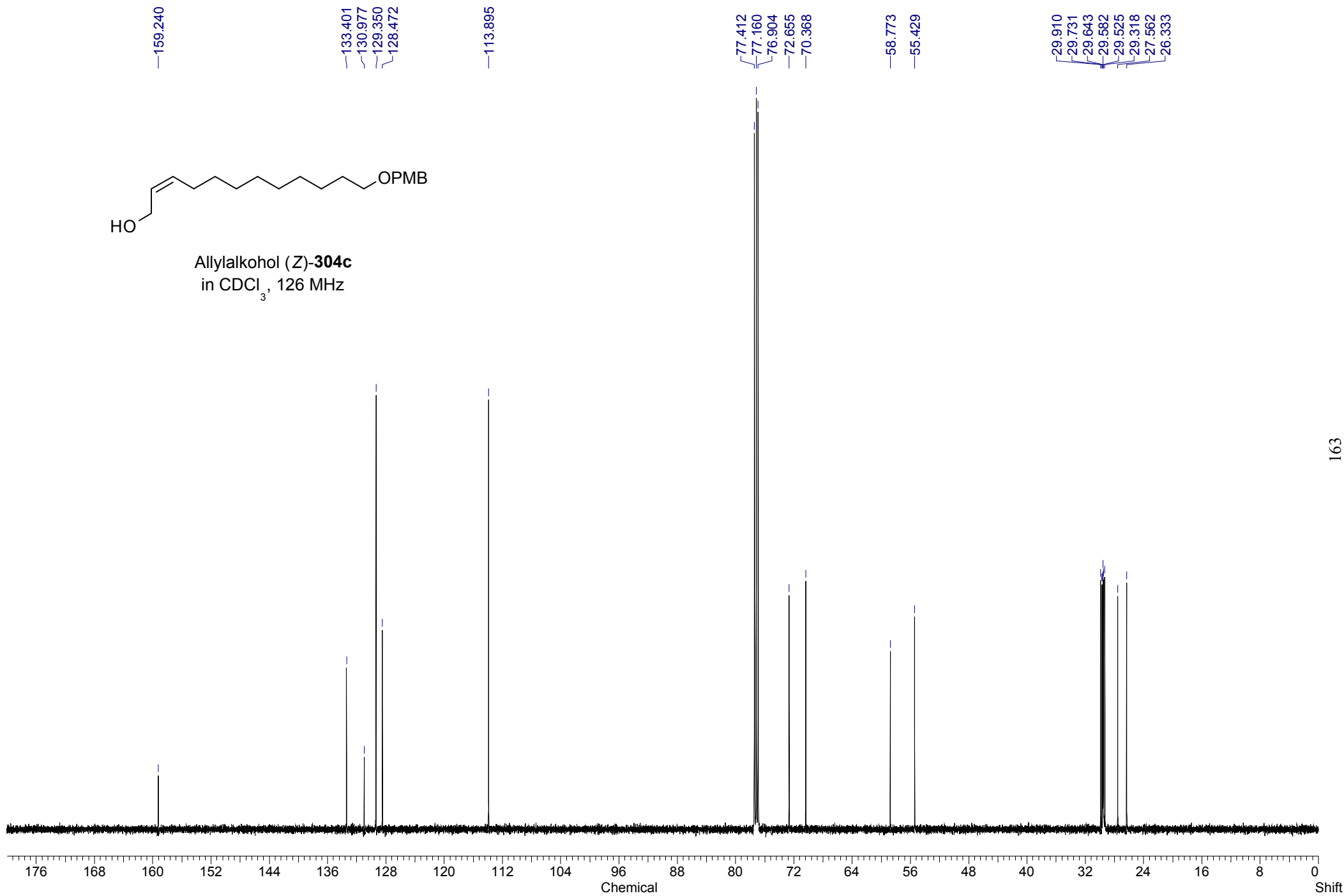


Allylalkohol (Z)-304c
in CDCl₃, 500 MHz

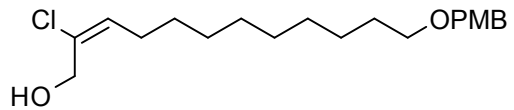




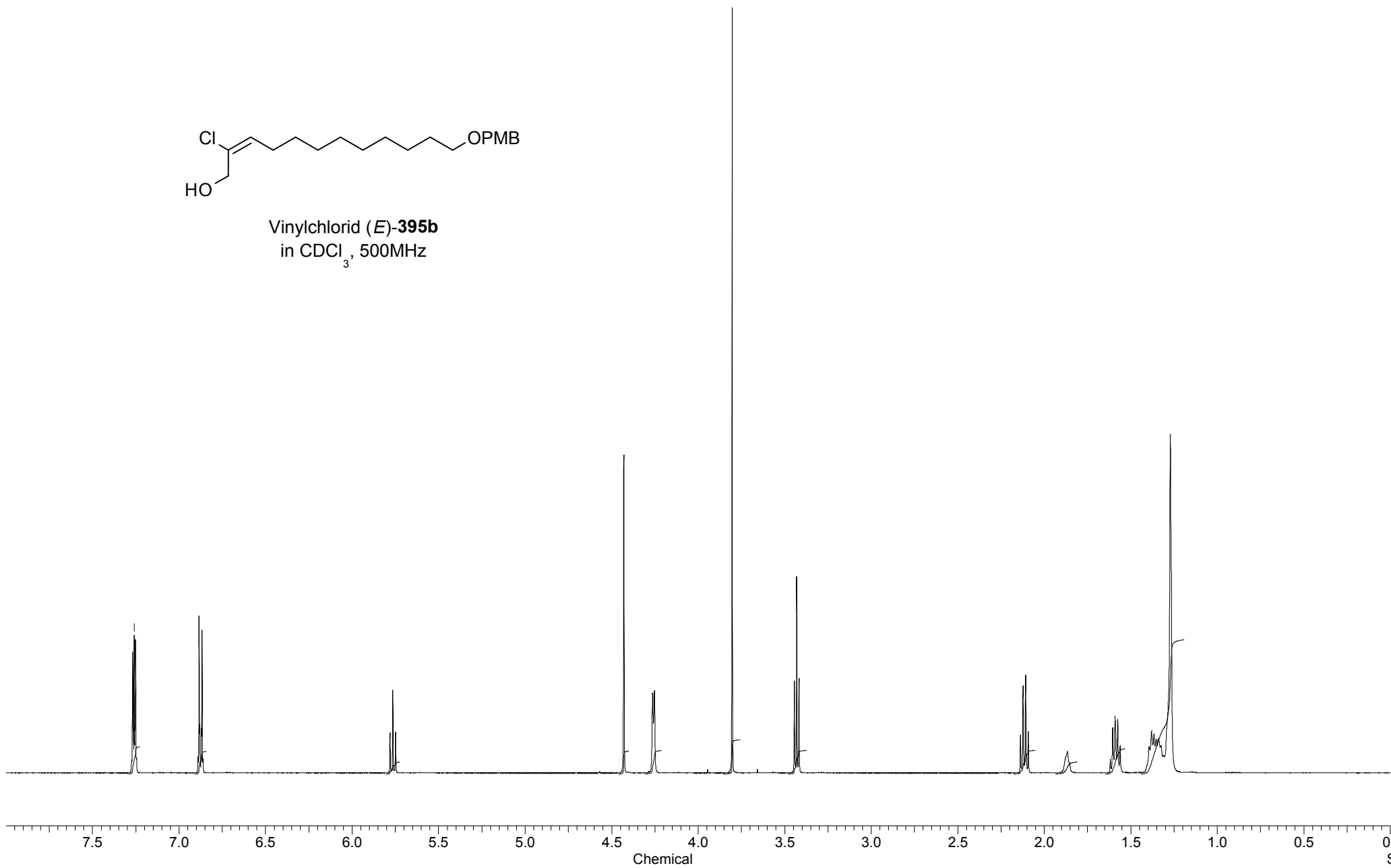
Allylkohol (Z)-**304c**
in CDCl₃, 126 MHz

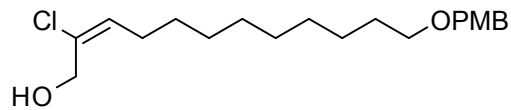


—7.260

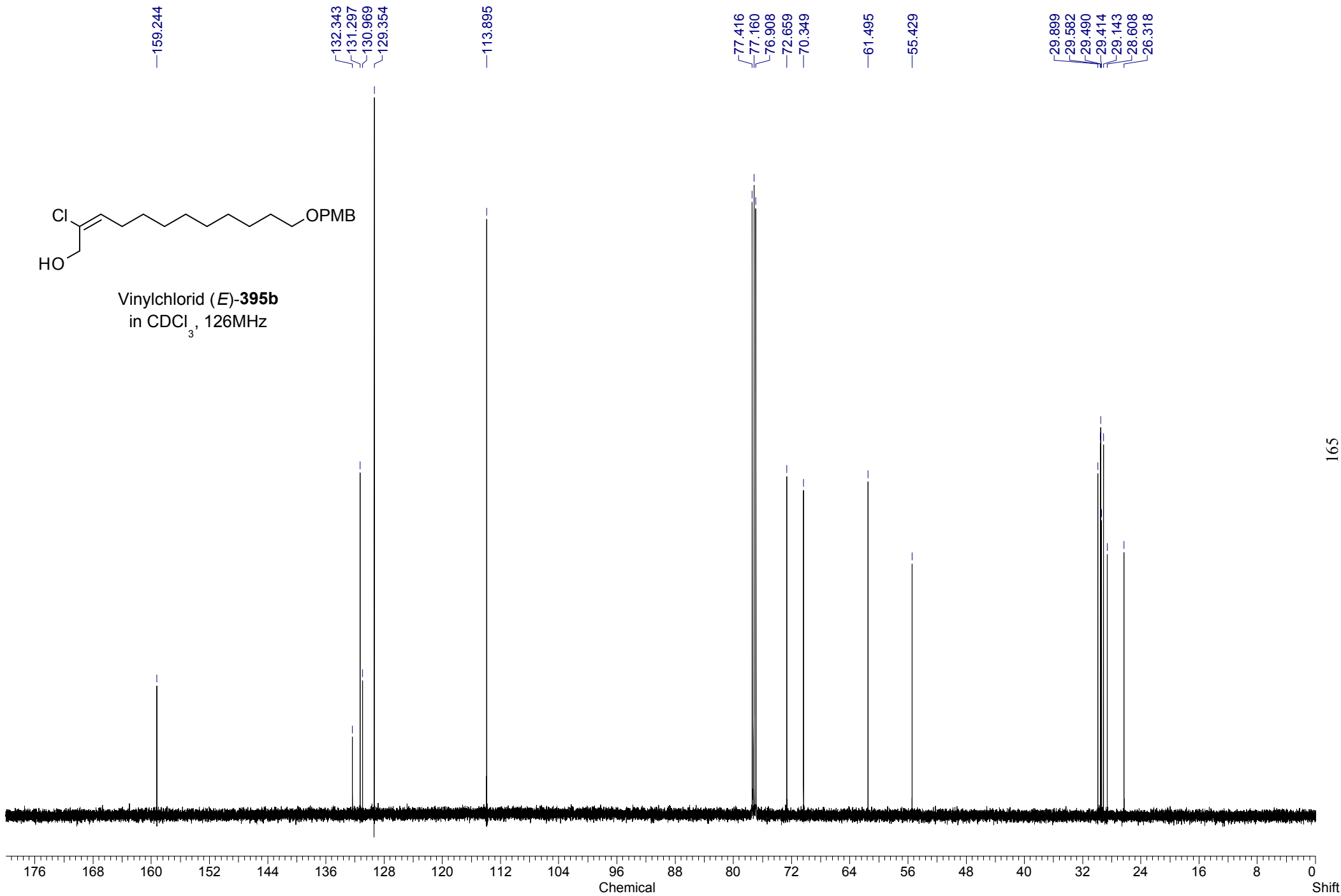


Vinylchlorid (*E*)-**395b**
in CDCl₃, 500MHz

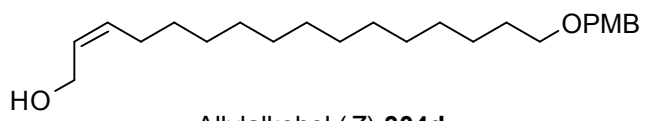




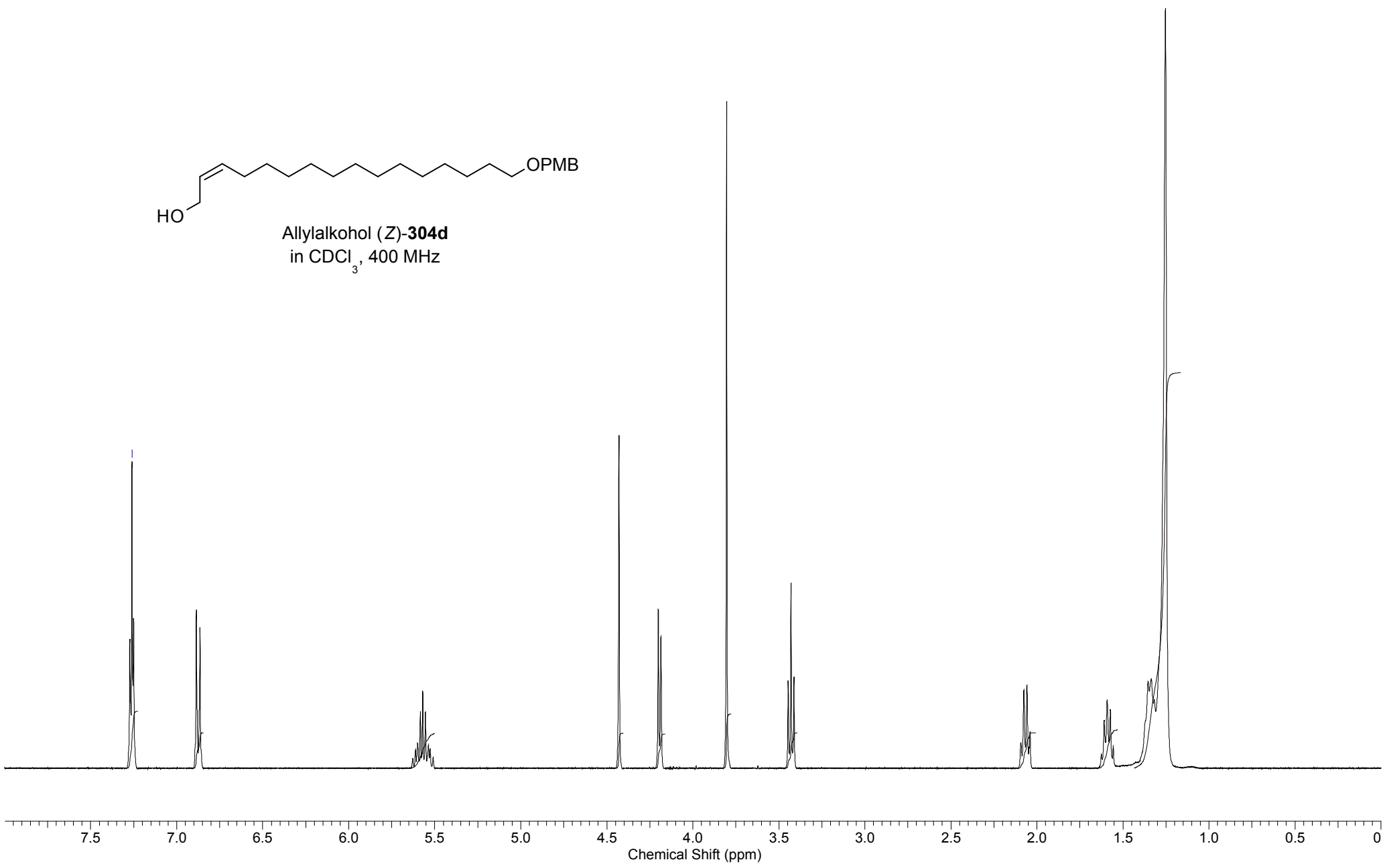
Vinylchlorid (E)-395b
in CDCl₃, 126MHz

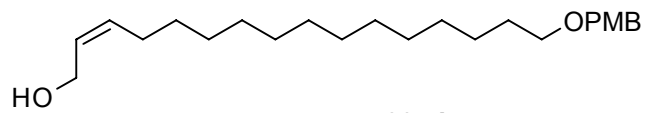


—7.260



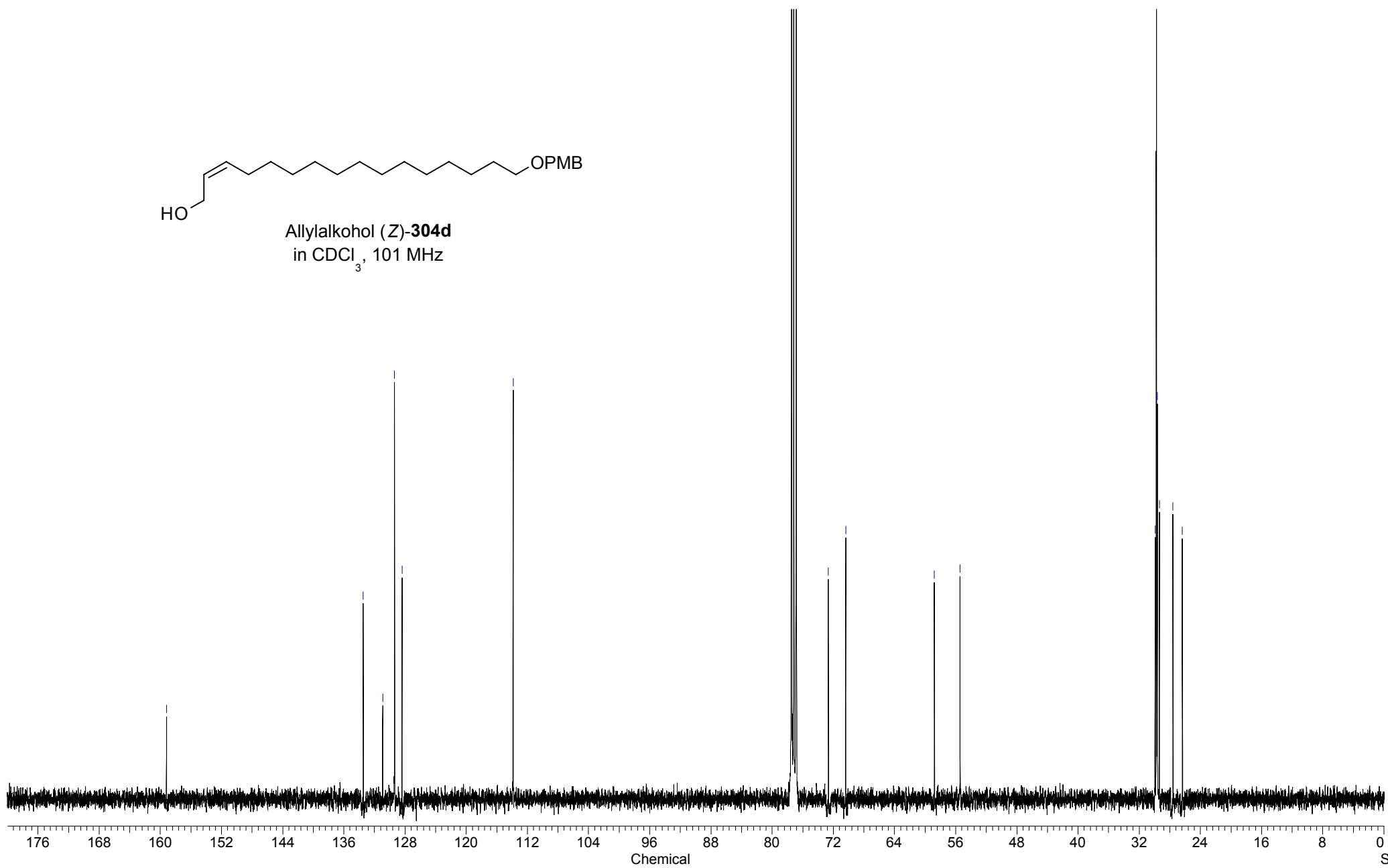
Allylalkohol (Z)-**304d**
in CDCl₃, 400 MHz

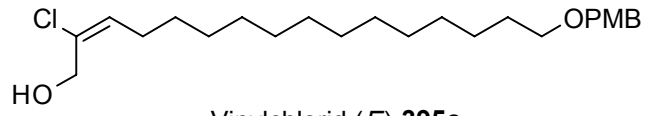




Allylalkohol (Z)-**304d**
in CDCl₃, 101 MHz

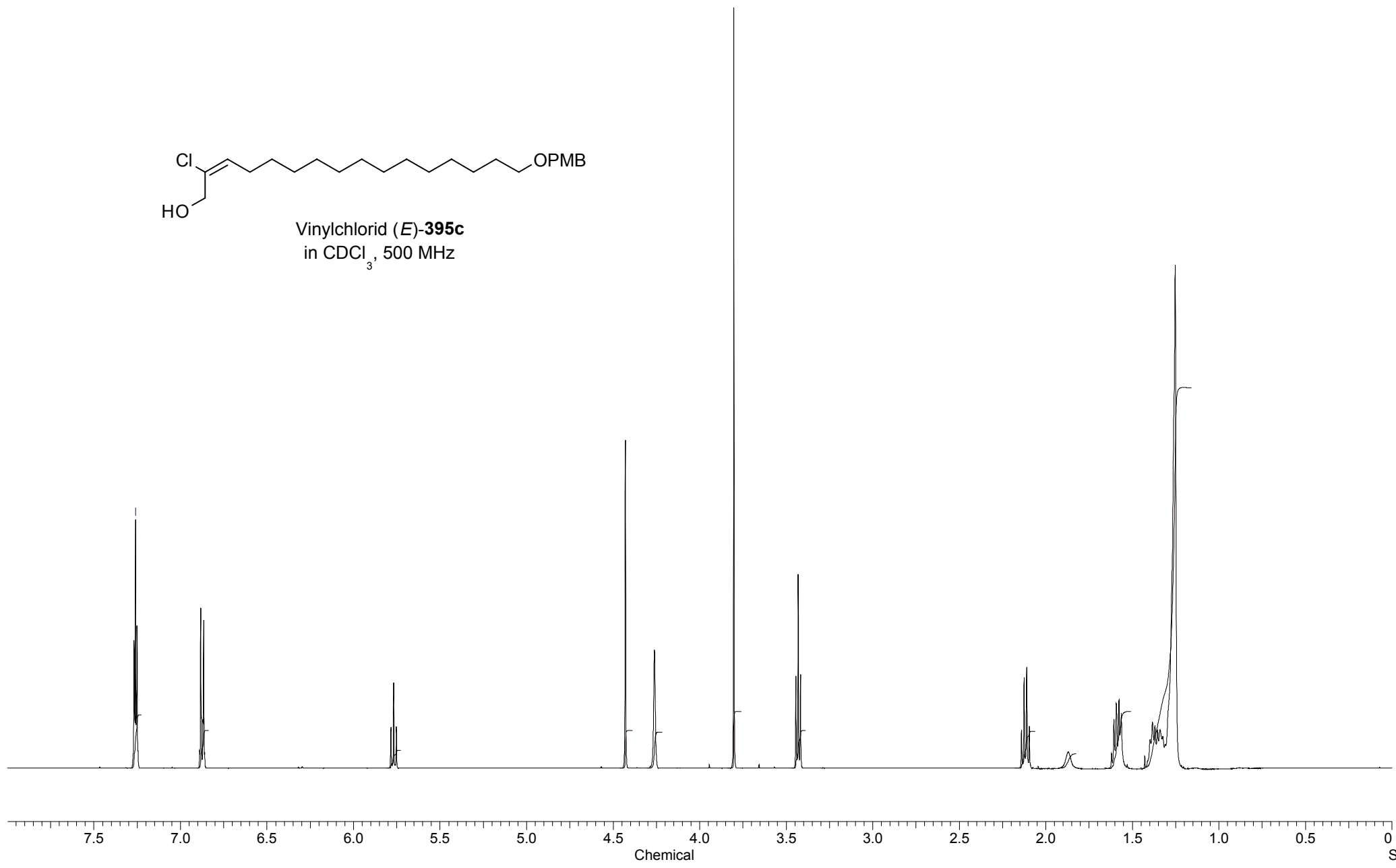
159.200
133.460
130.929
129.365
128.399
113.872
77.479
77.160
76.841
72.649
70.389
58.780
55.428
29.920
29.736
29.640
29.369
27.583
26.356

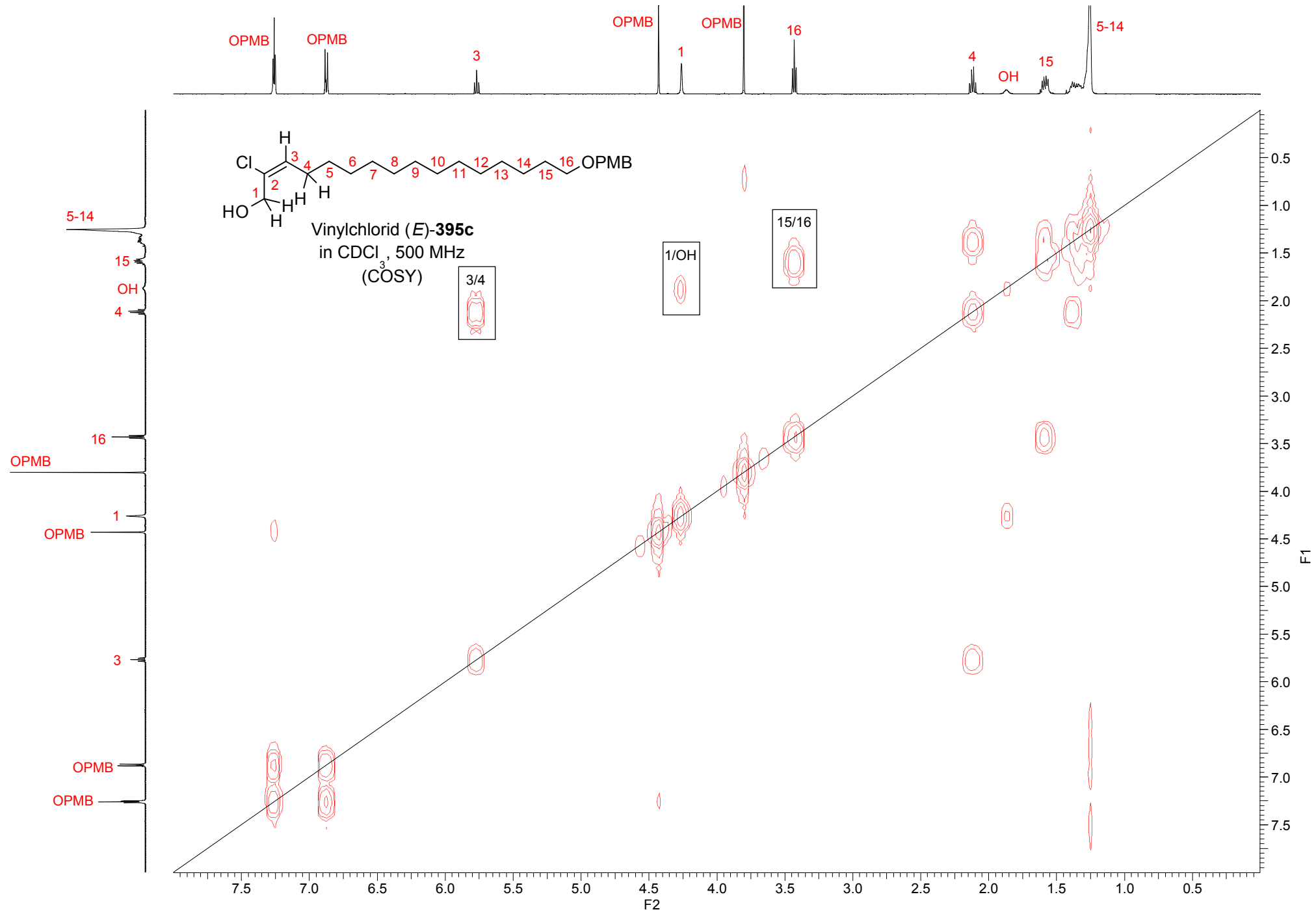


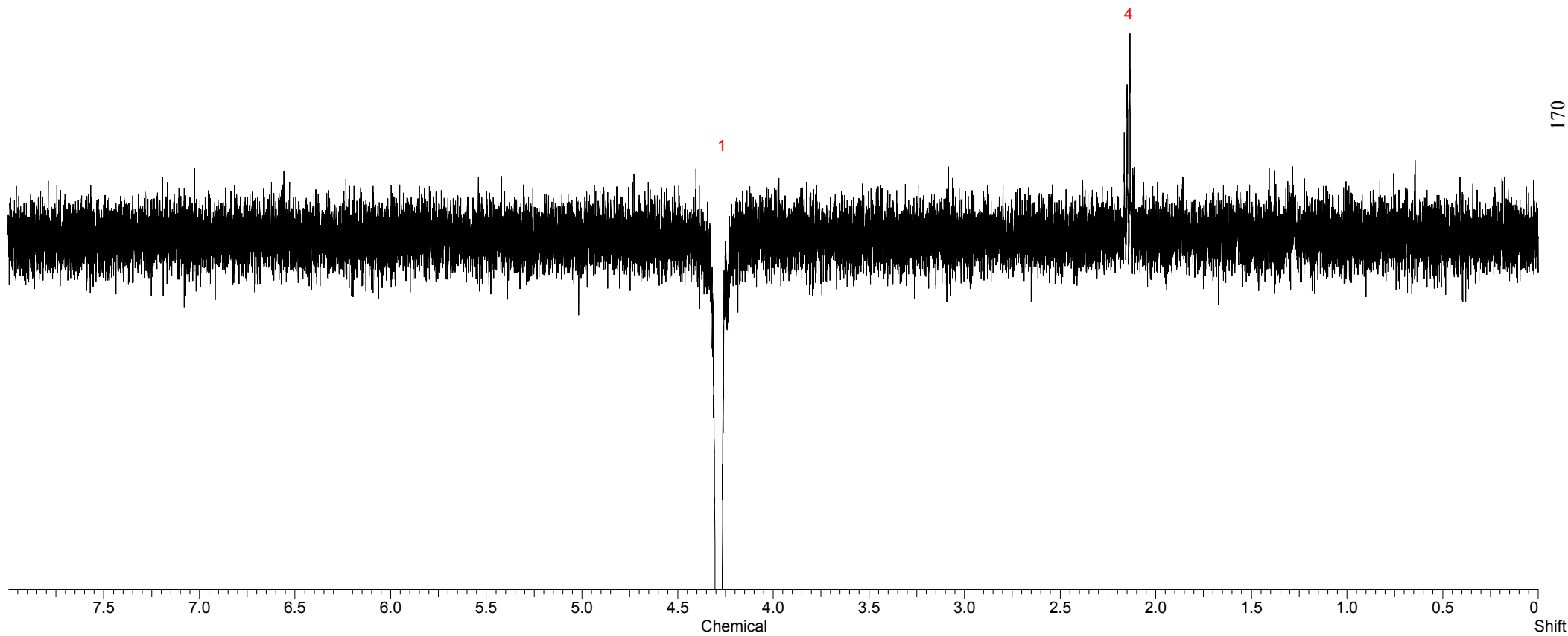
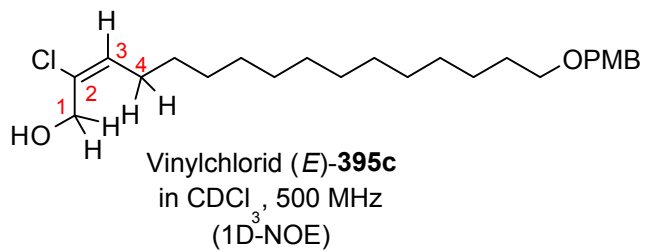


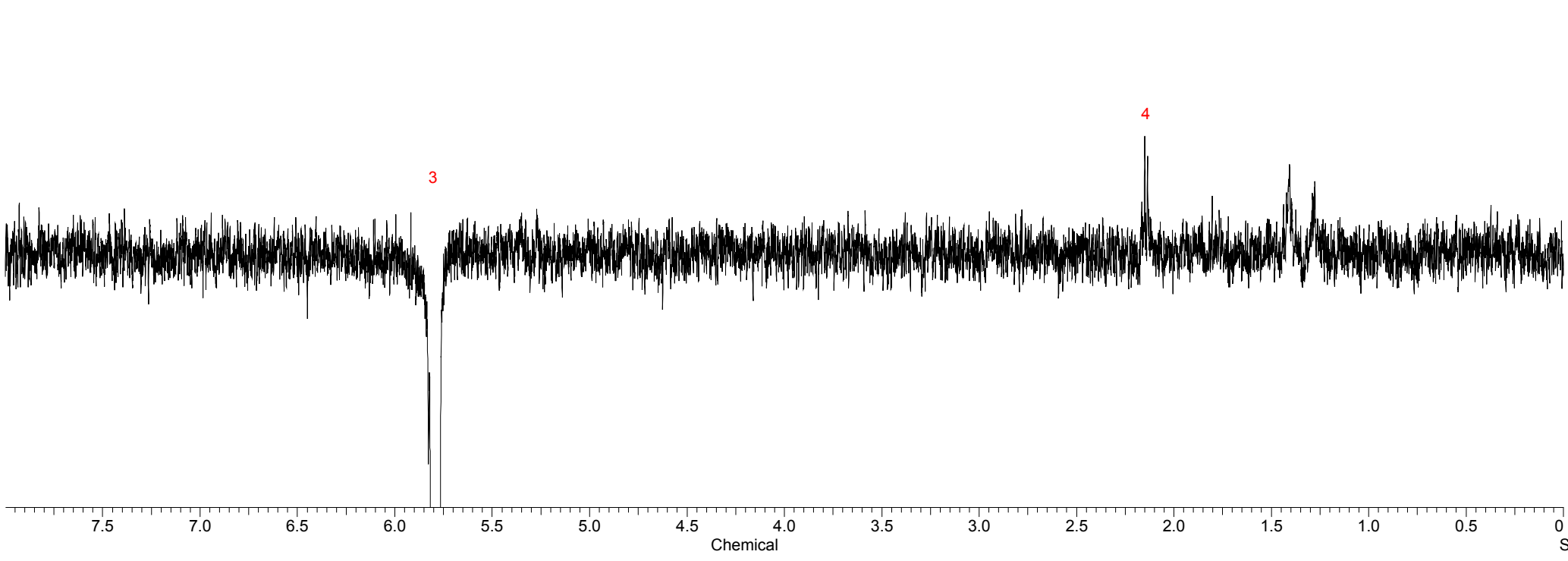
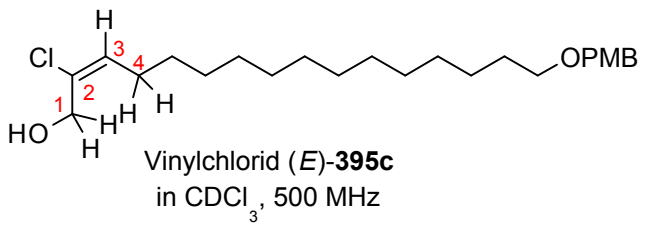
Vinylchlorid (*E*)-**395c**
in CDCl₃, 500 MHz

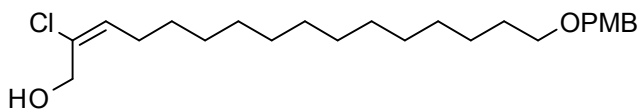
7.260



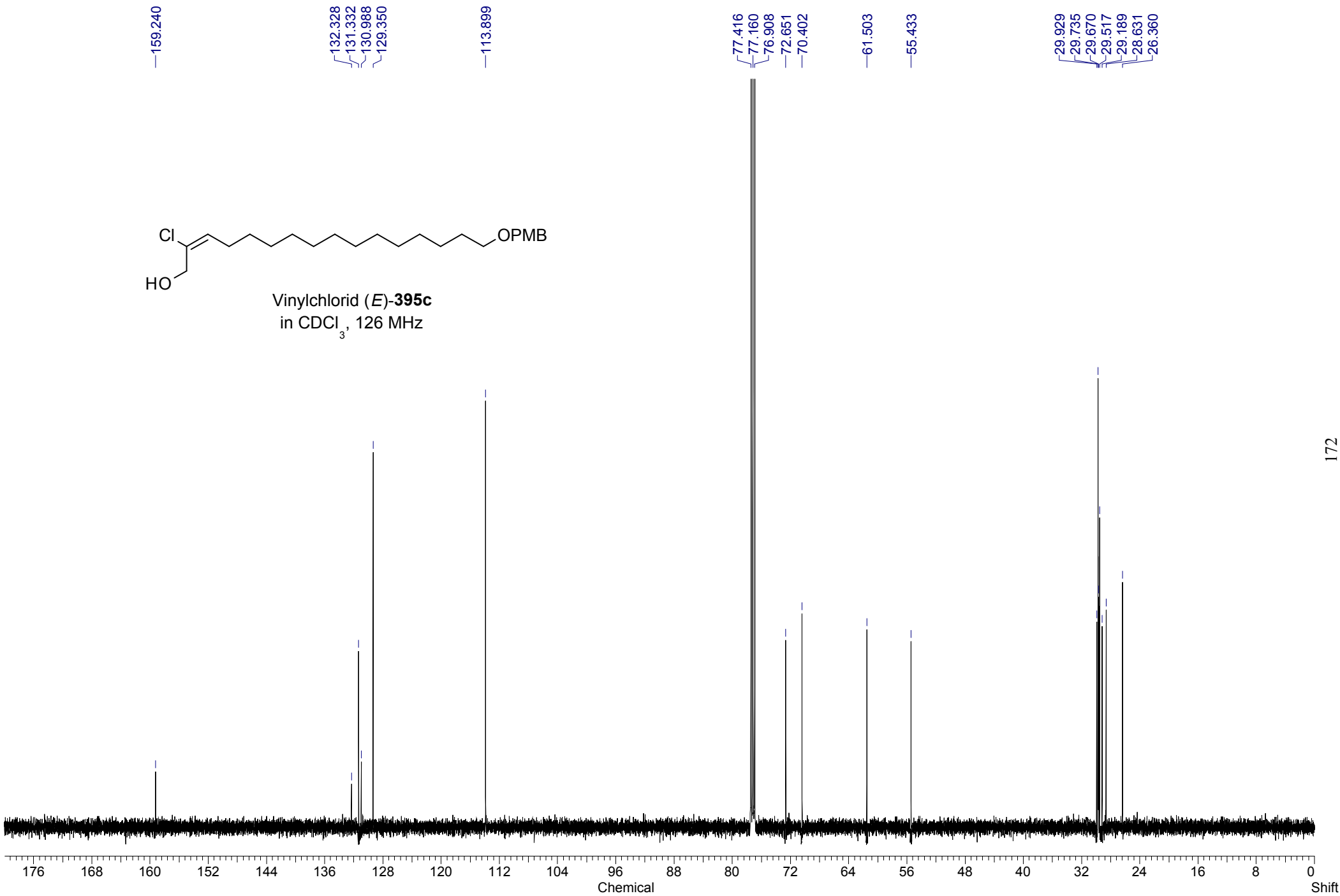


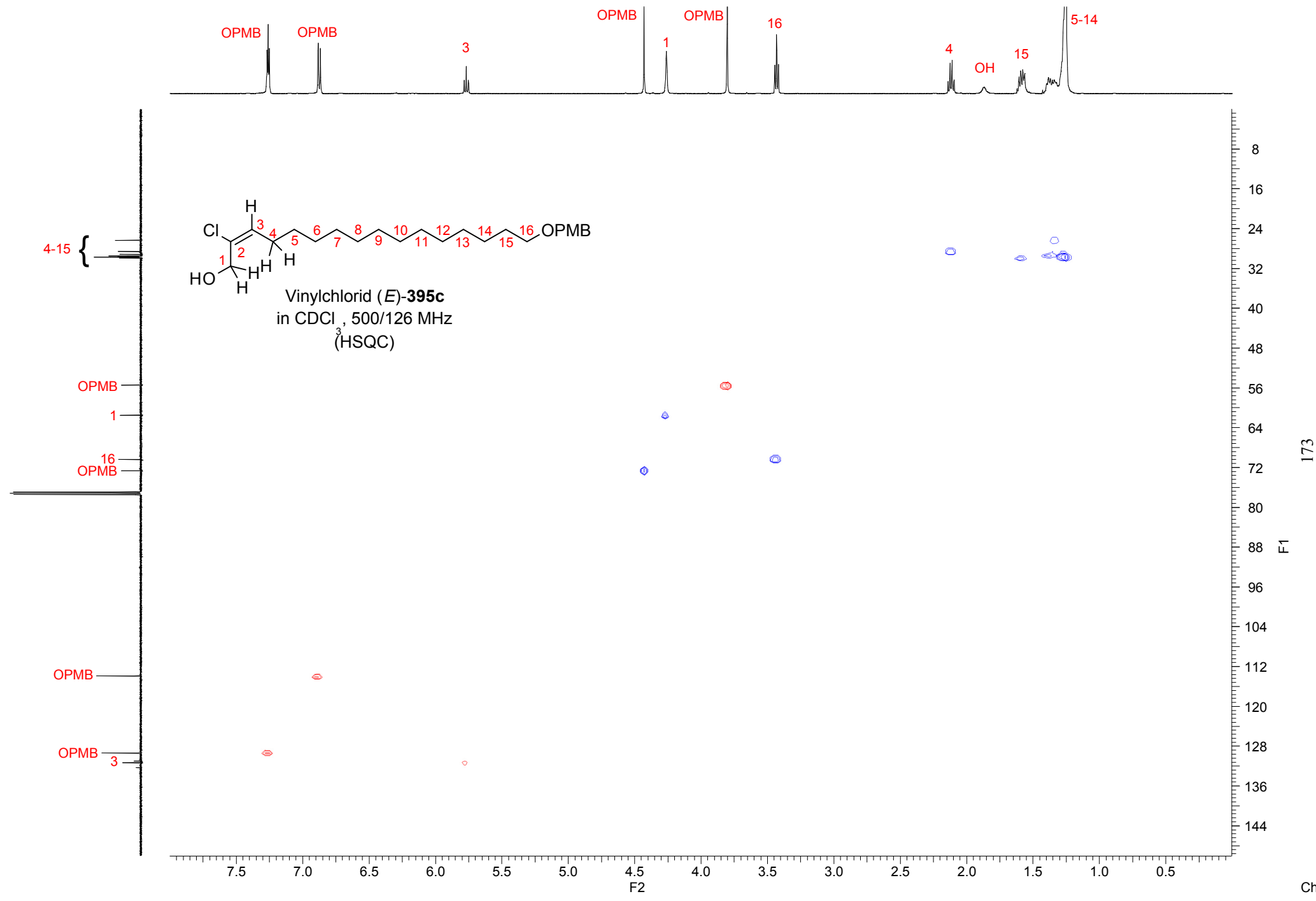




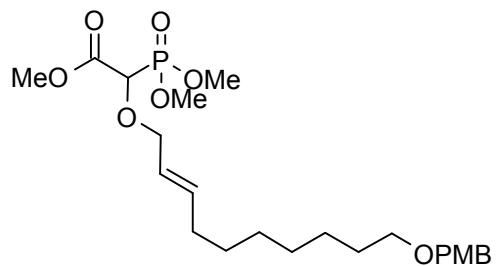


Vinylchlorid (*E*)-**395c**
in CDCl₃, 126 MHz

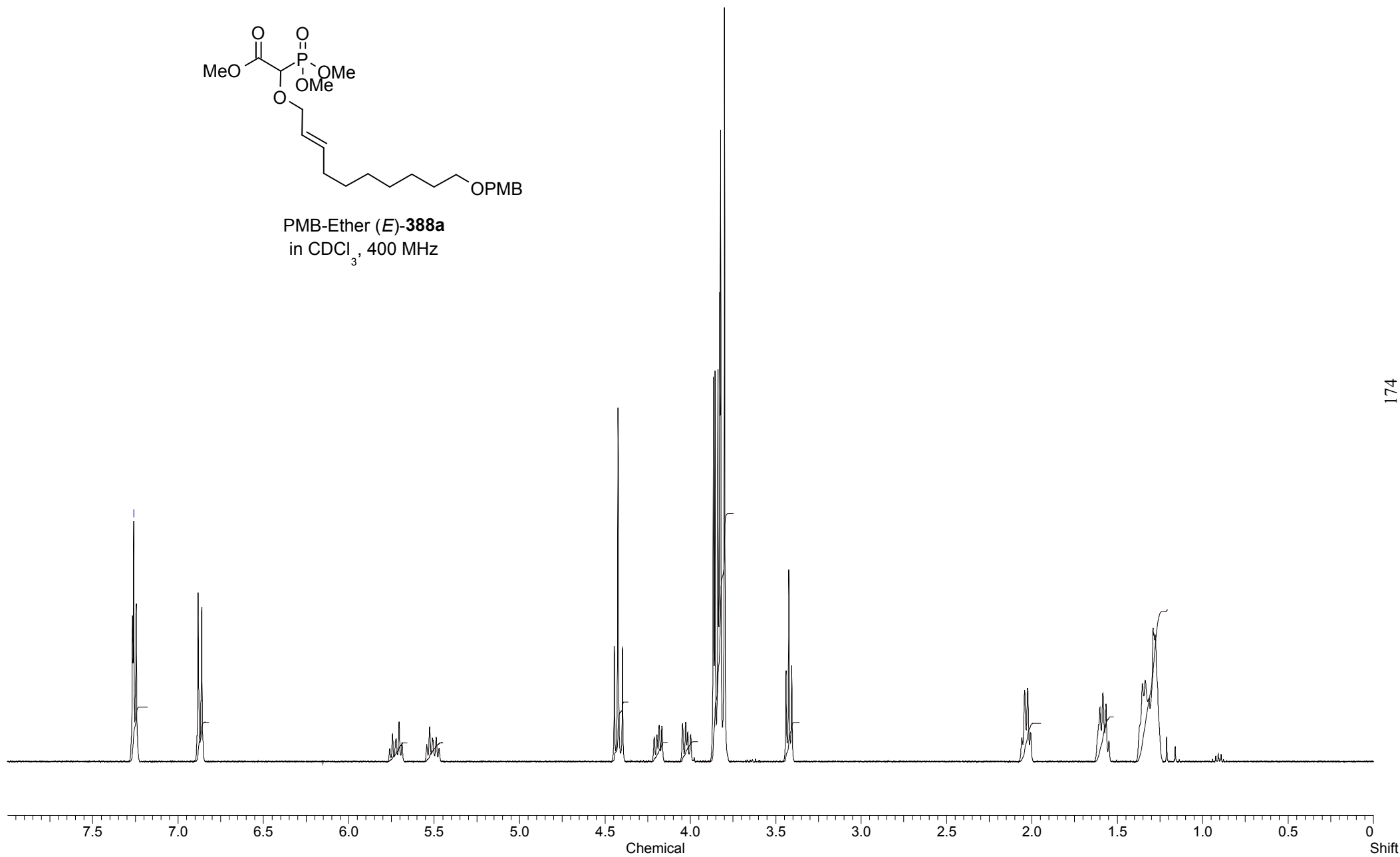


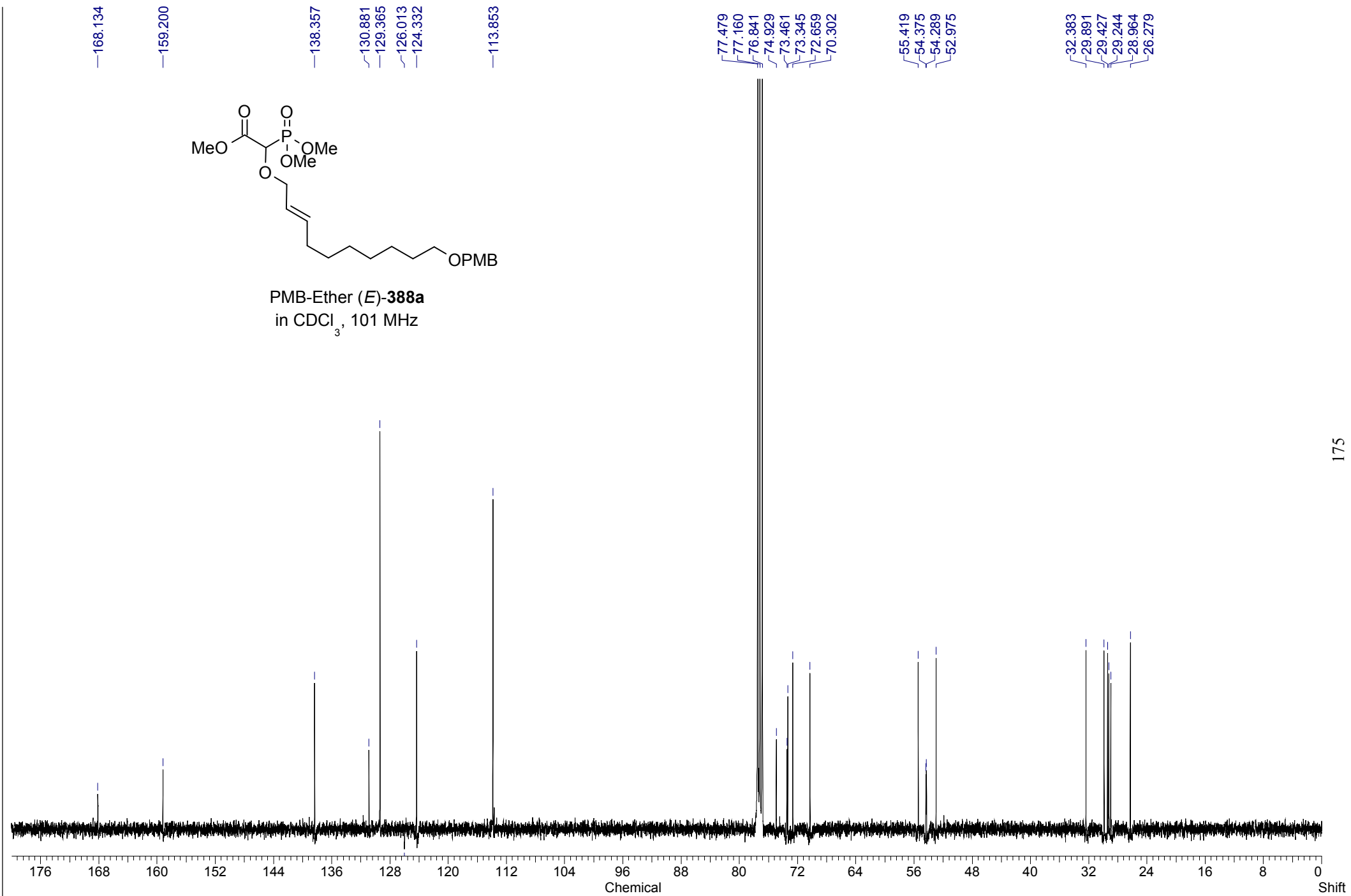


—7.260

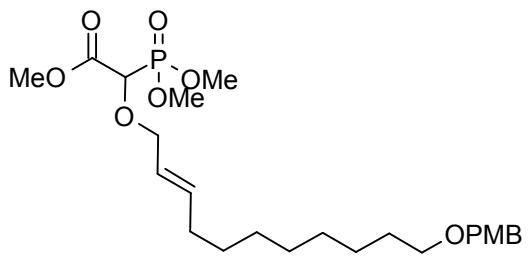


PMB-Ether (*E*)-**388a**
in CDCl₃, 400 MHz

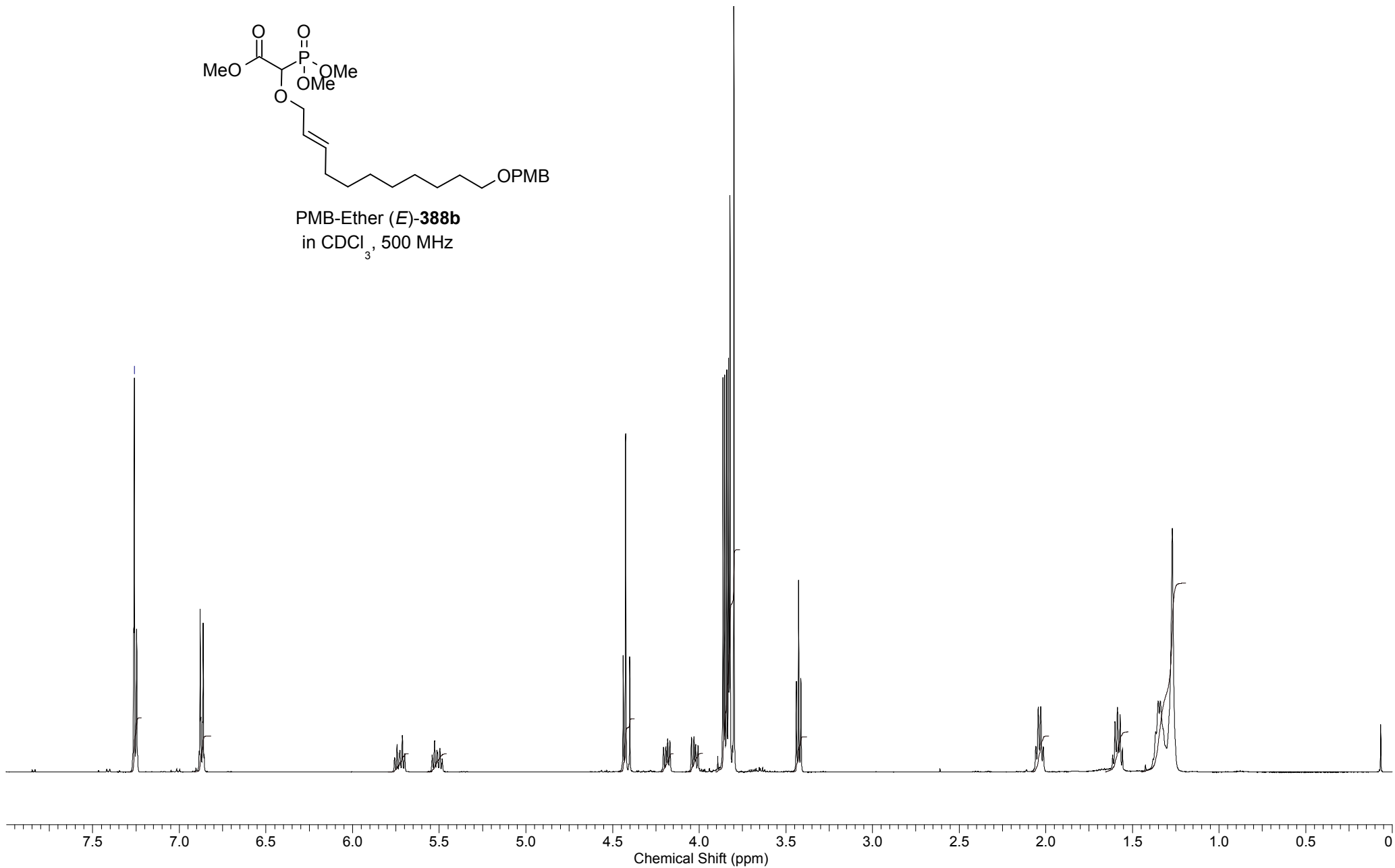


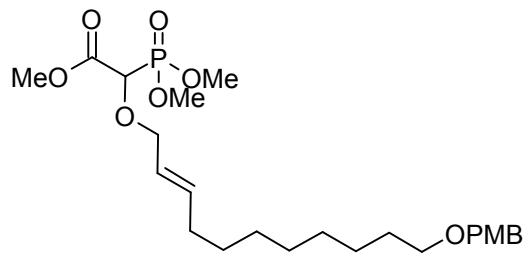


—7.260

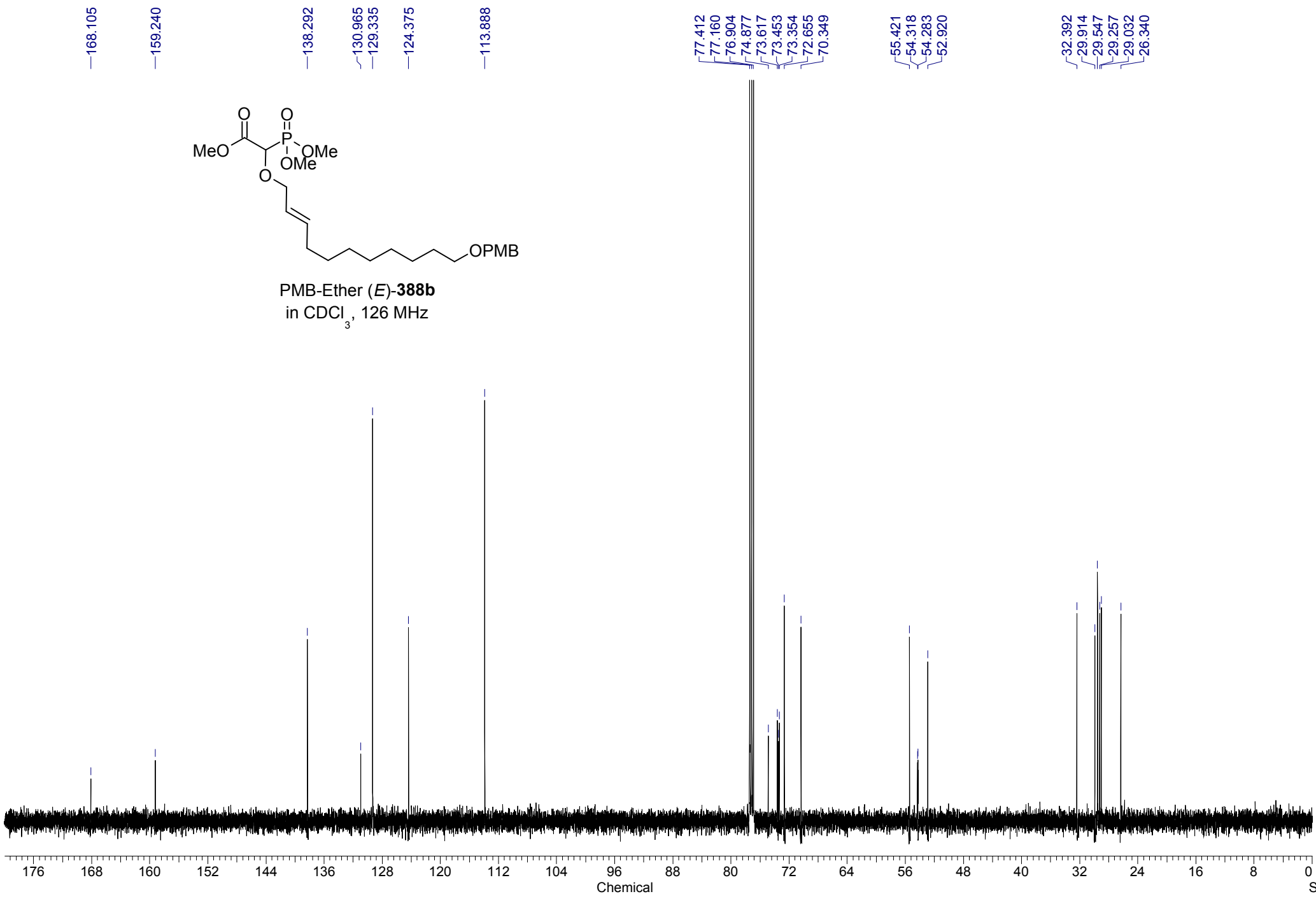


PMB-Ether (*E*)-**388b**
in CDCl₃, 500 MHz

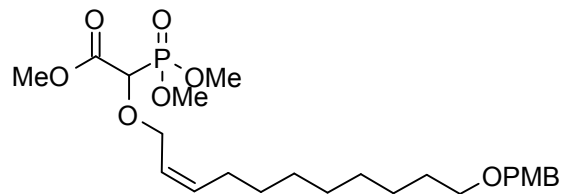




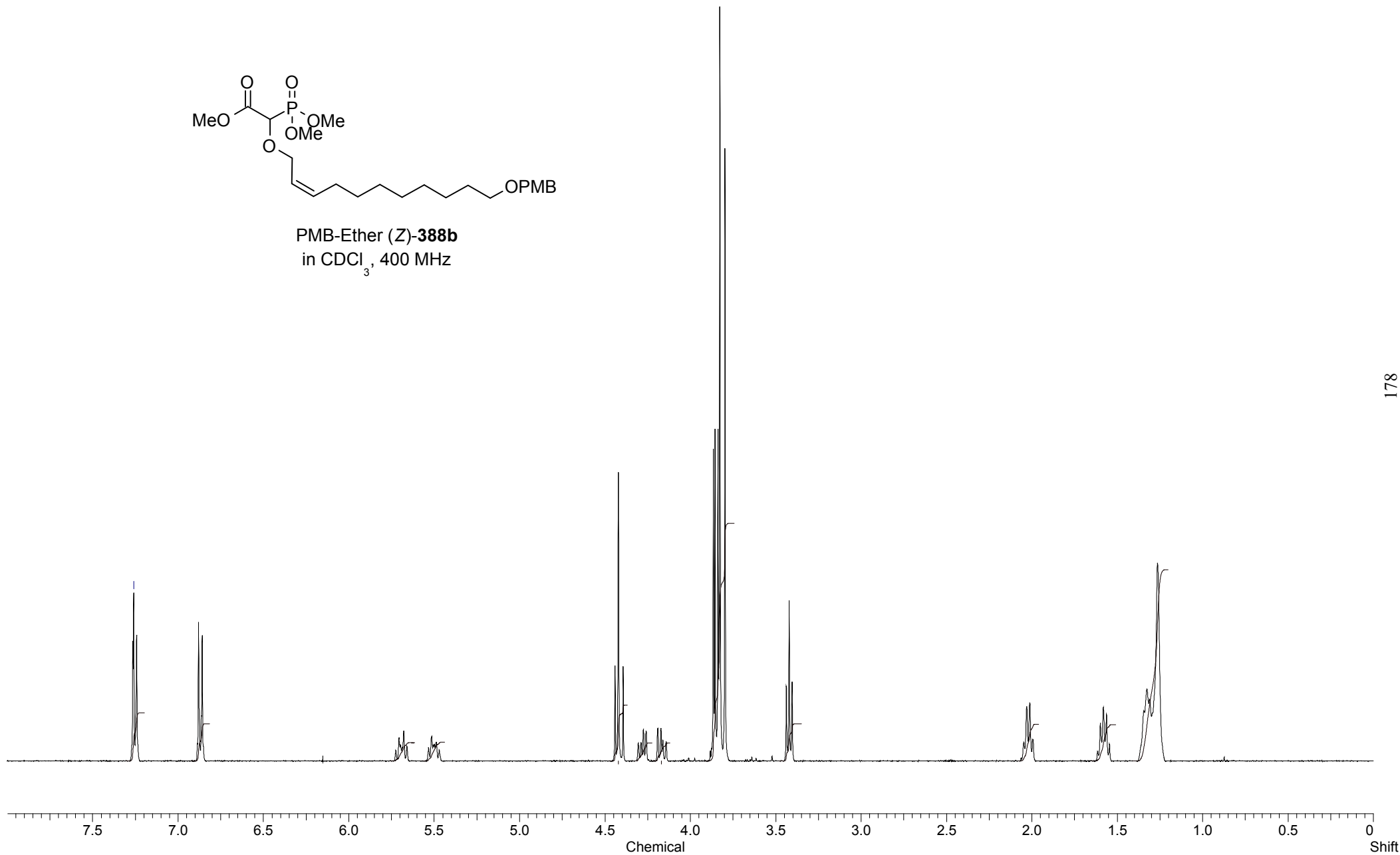
PMB-Ether (*E*)-**388b**
in CDCl₃, 126 MHz

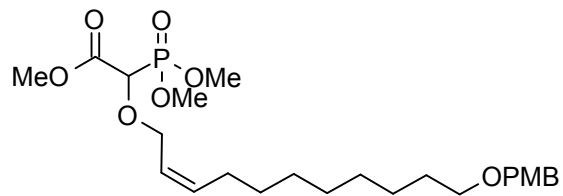


—7.260

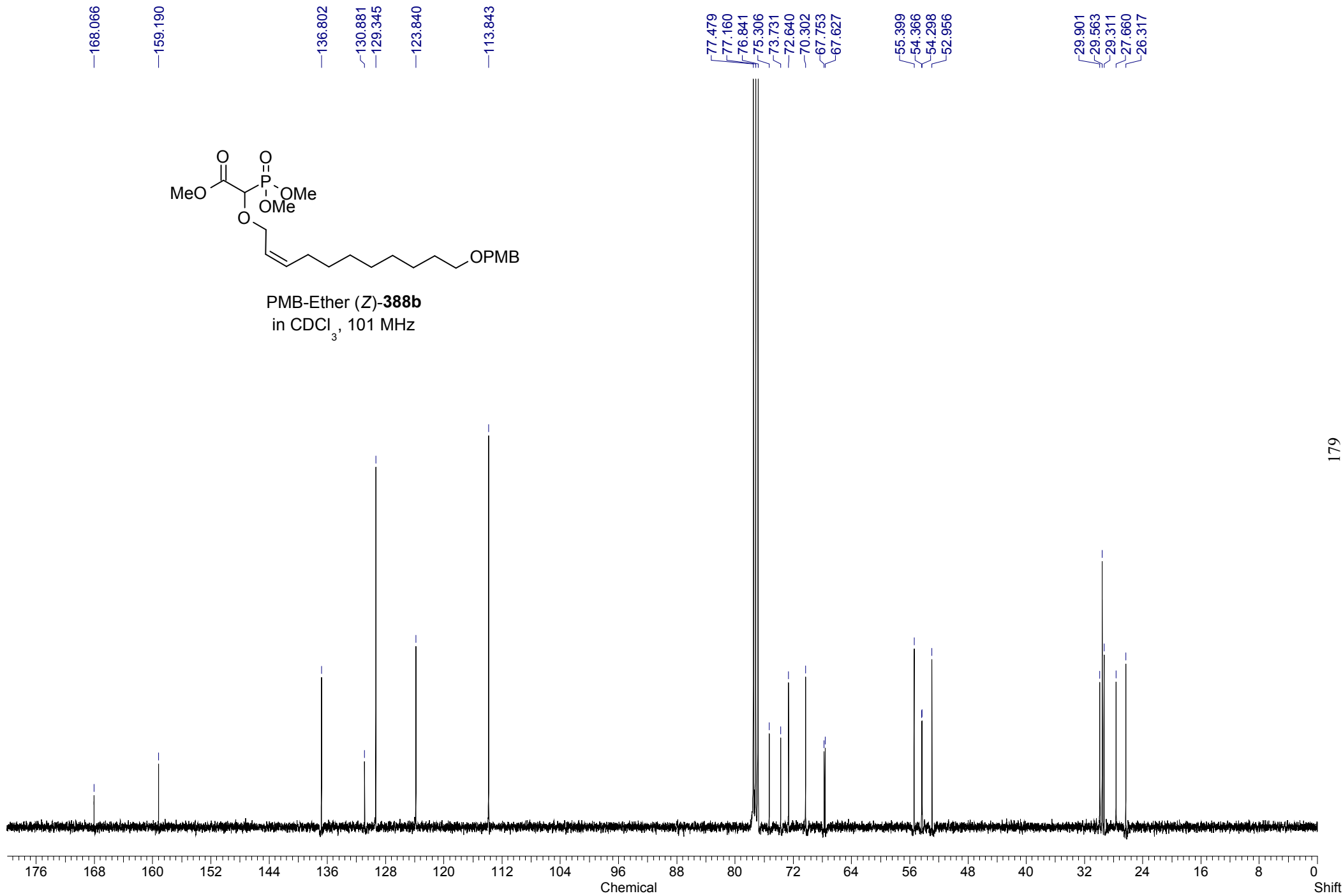


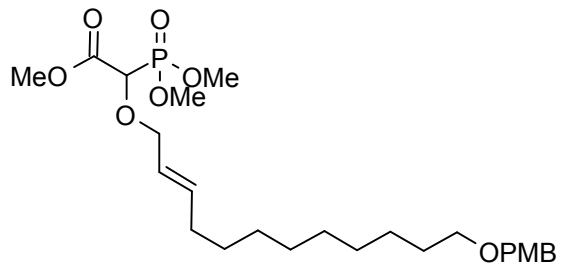
PMB-Ether (Z)-388b
in CDCl₃, 400 MHz



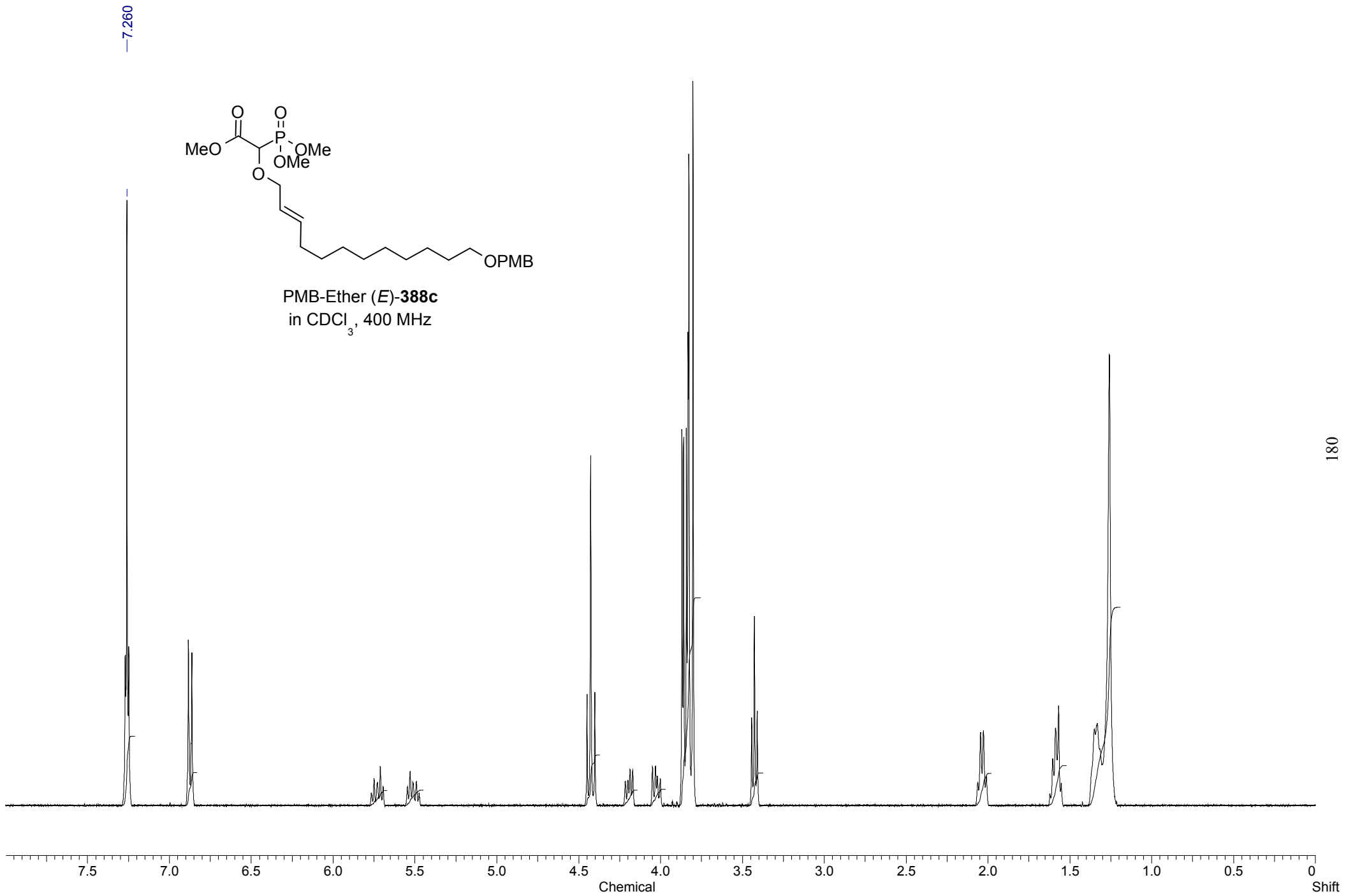


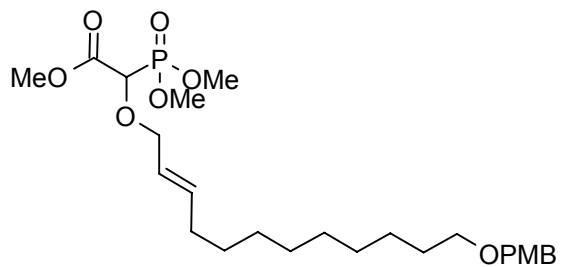
PMB-Ether (Z)-**388b**
in CDCl₃, 101 MHz



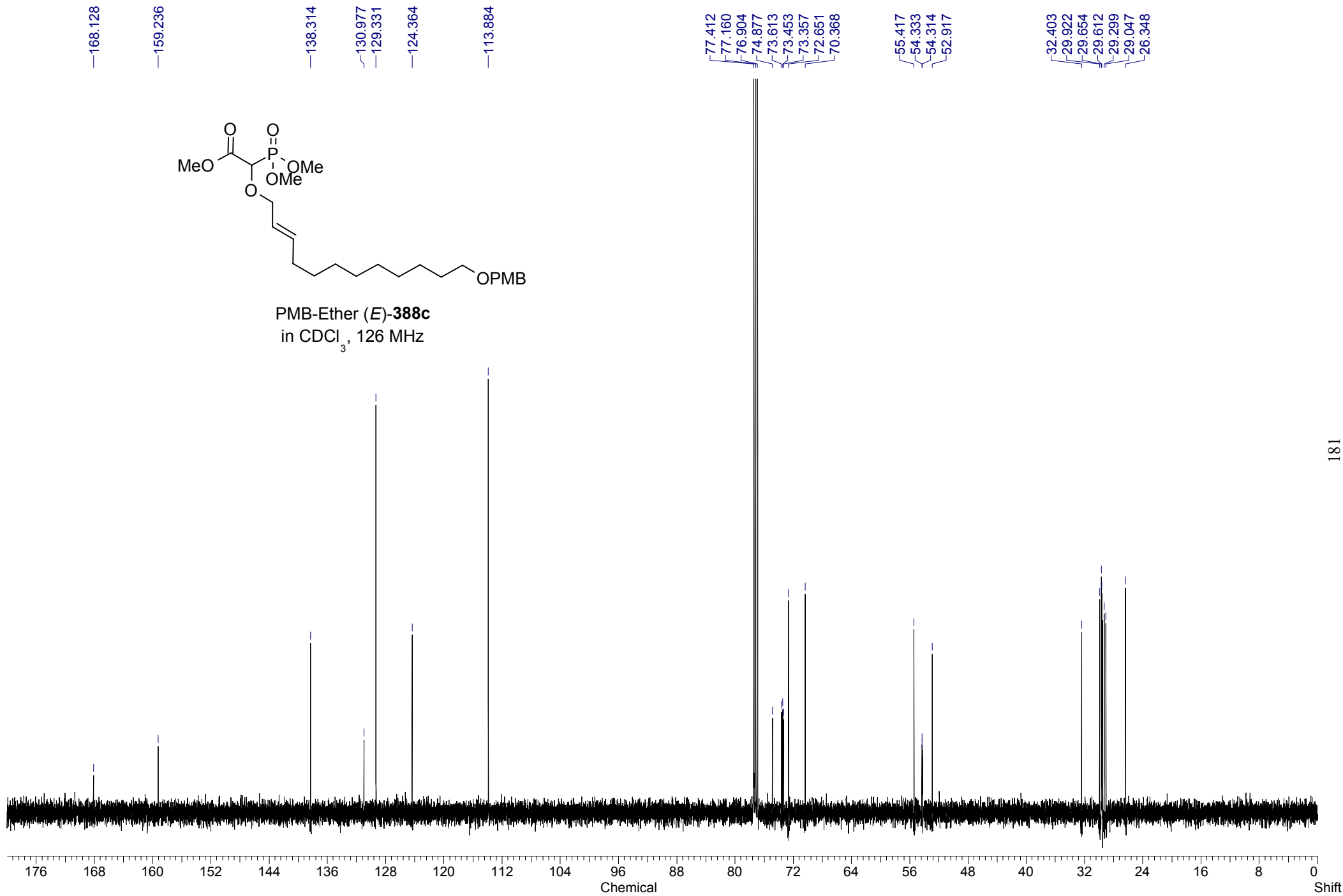


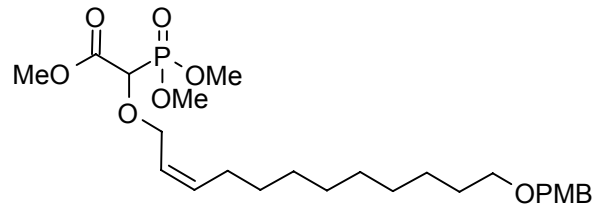
PMB-Ether (*E*)-**388c**
in CDCl₃, 400 MHz





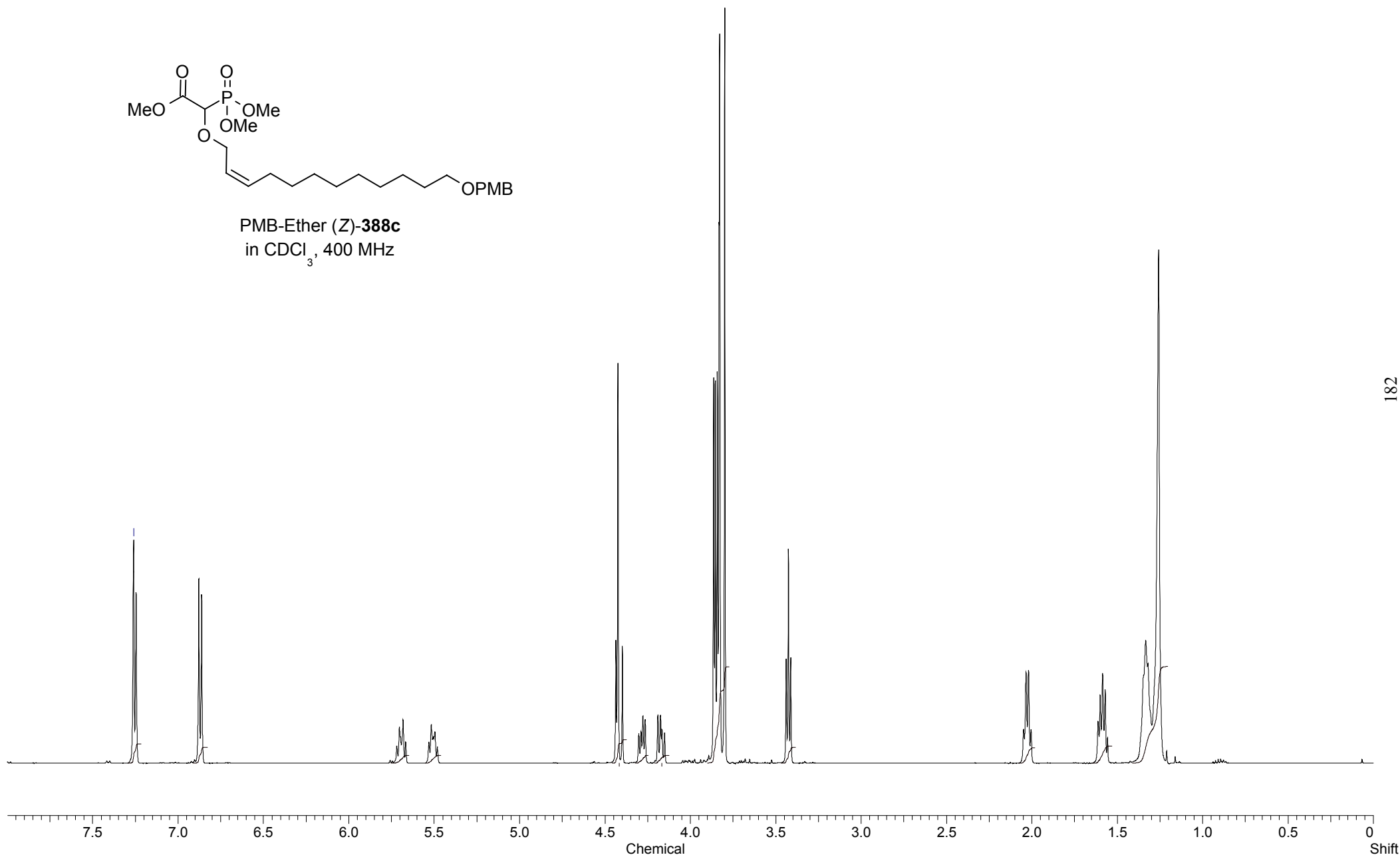
PMB-Ether (*E*)-**388c**
in CDCl₃, 126 MHz

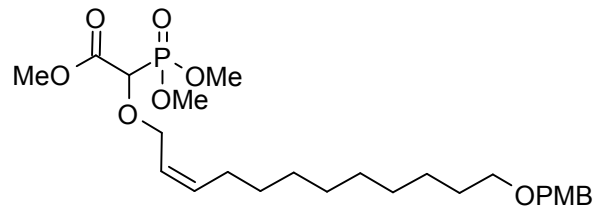




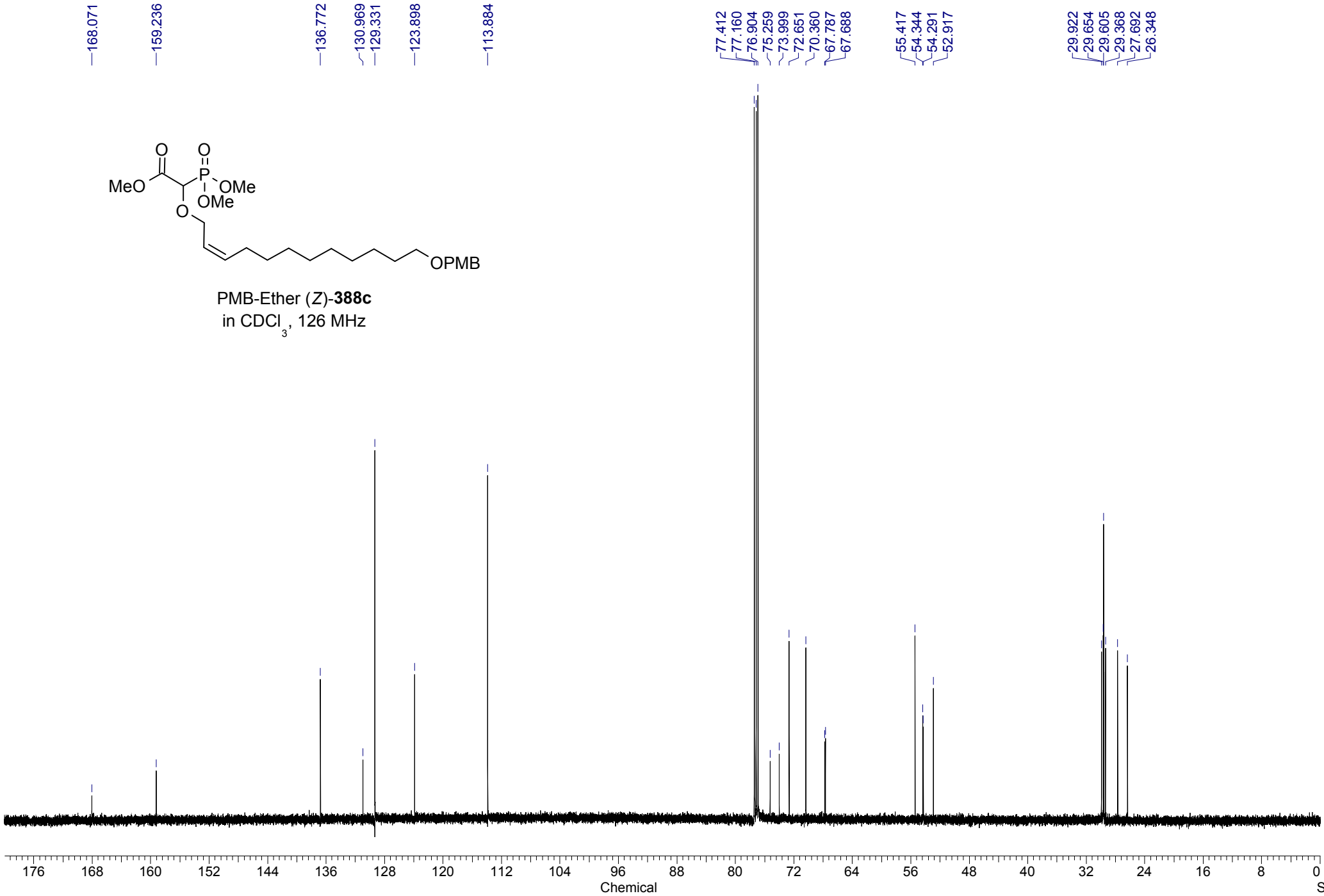
PMB-Ether (Z)-388c
in CDCl₃, 400 MHz

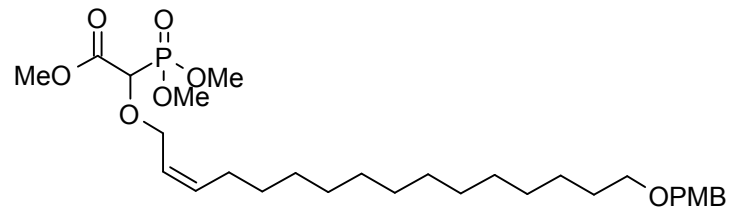
—7.260





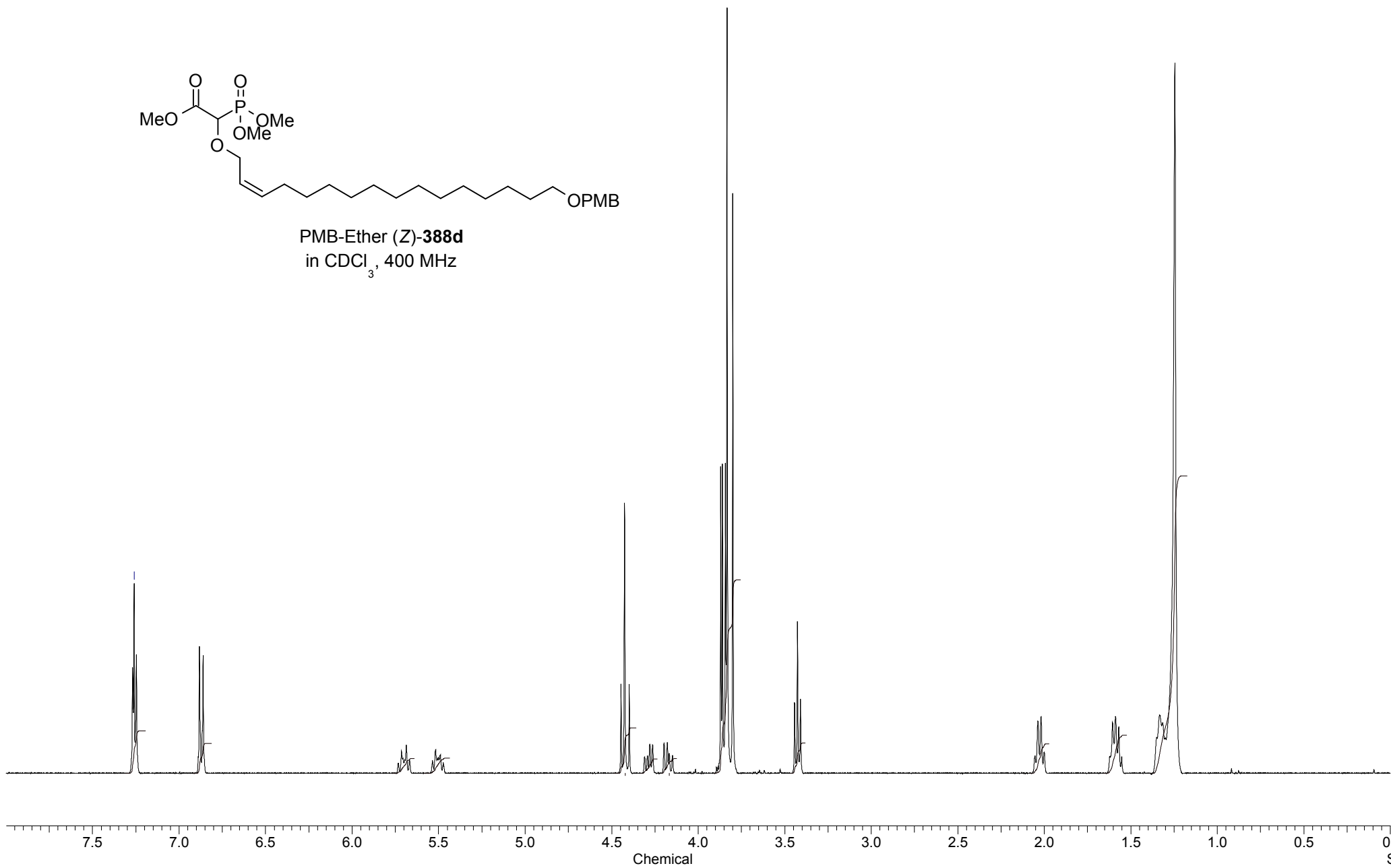
PMB-Ether (Z)-388c
in CDCl₃, 126 MHz

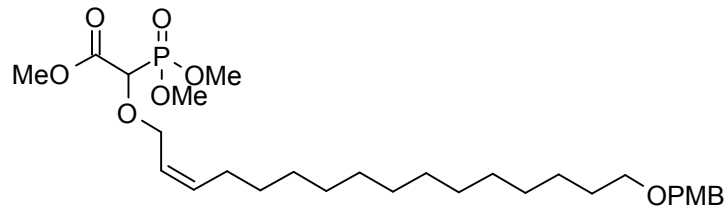




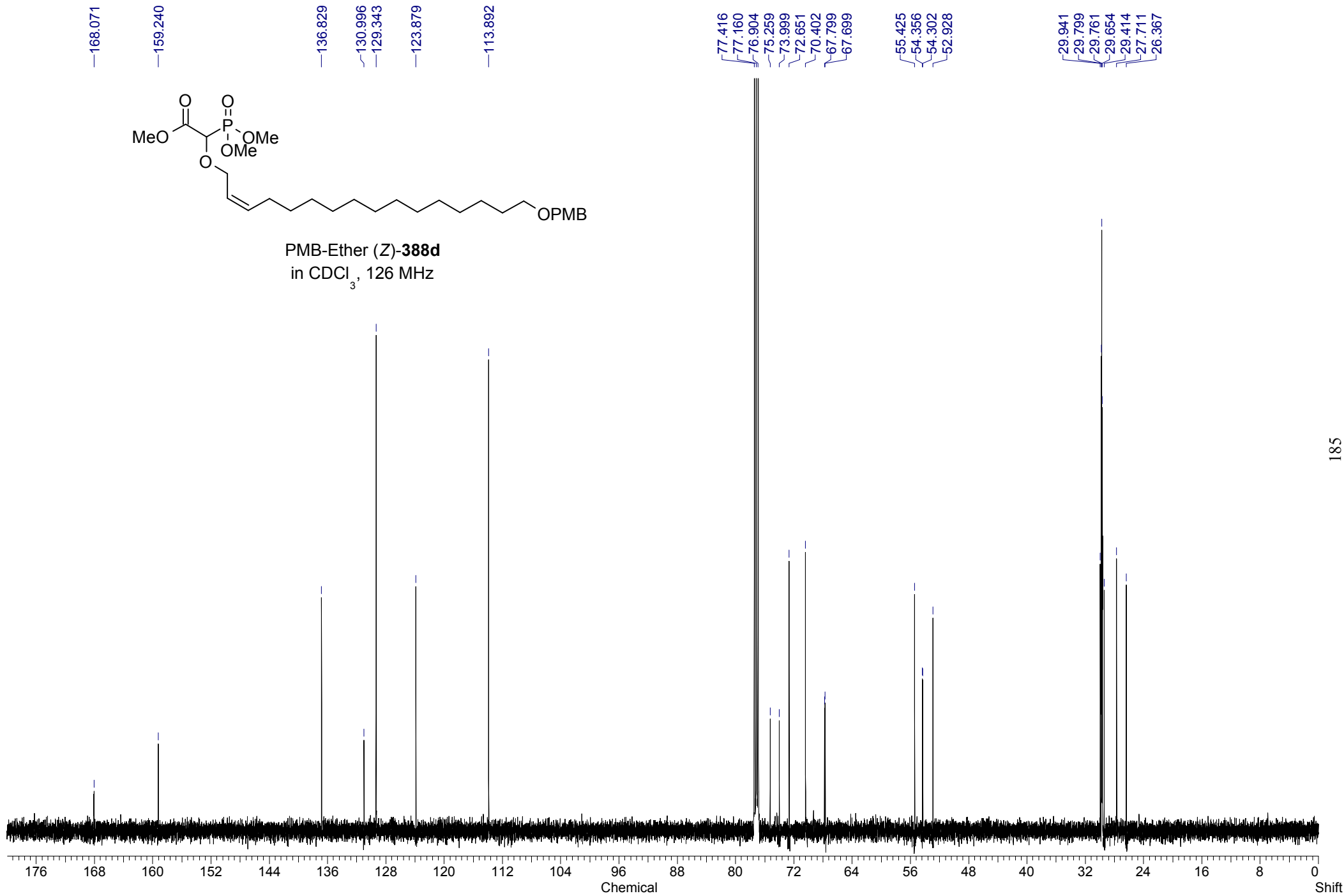
PMB-Ether (Z)-388d
in CDCl₃, 400 MHz

—7.260

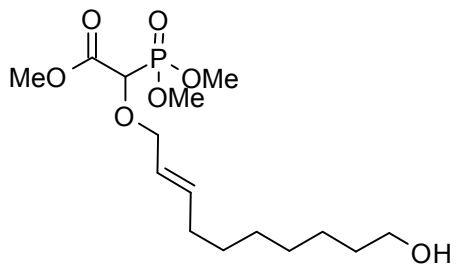




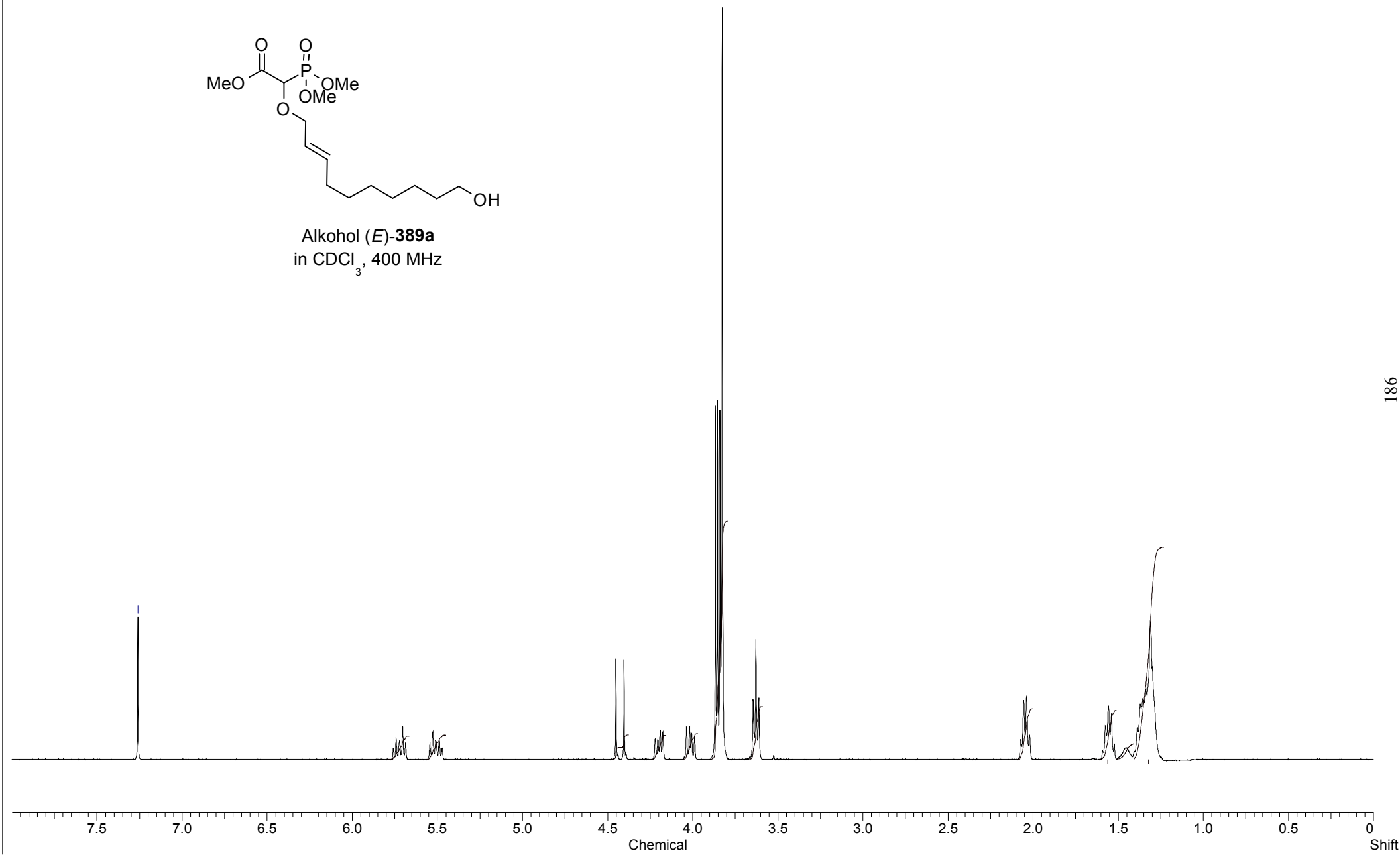
PMB-Ether (Z)-**388d**
in CDCl₃, 126 MHz

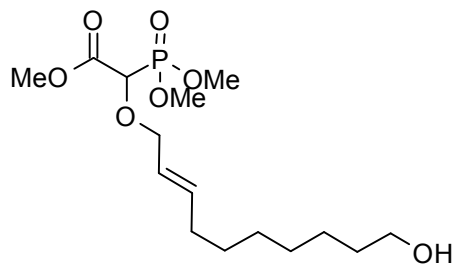


—7.260

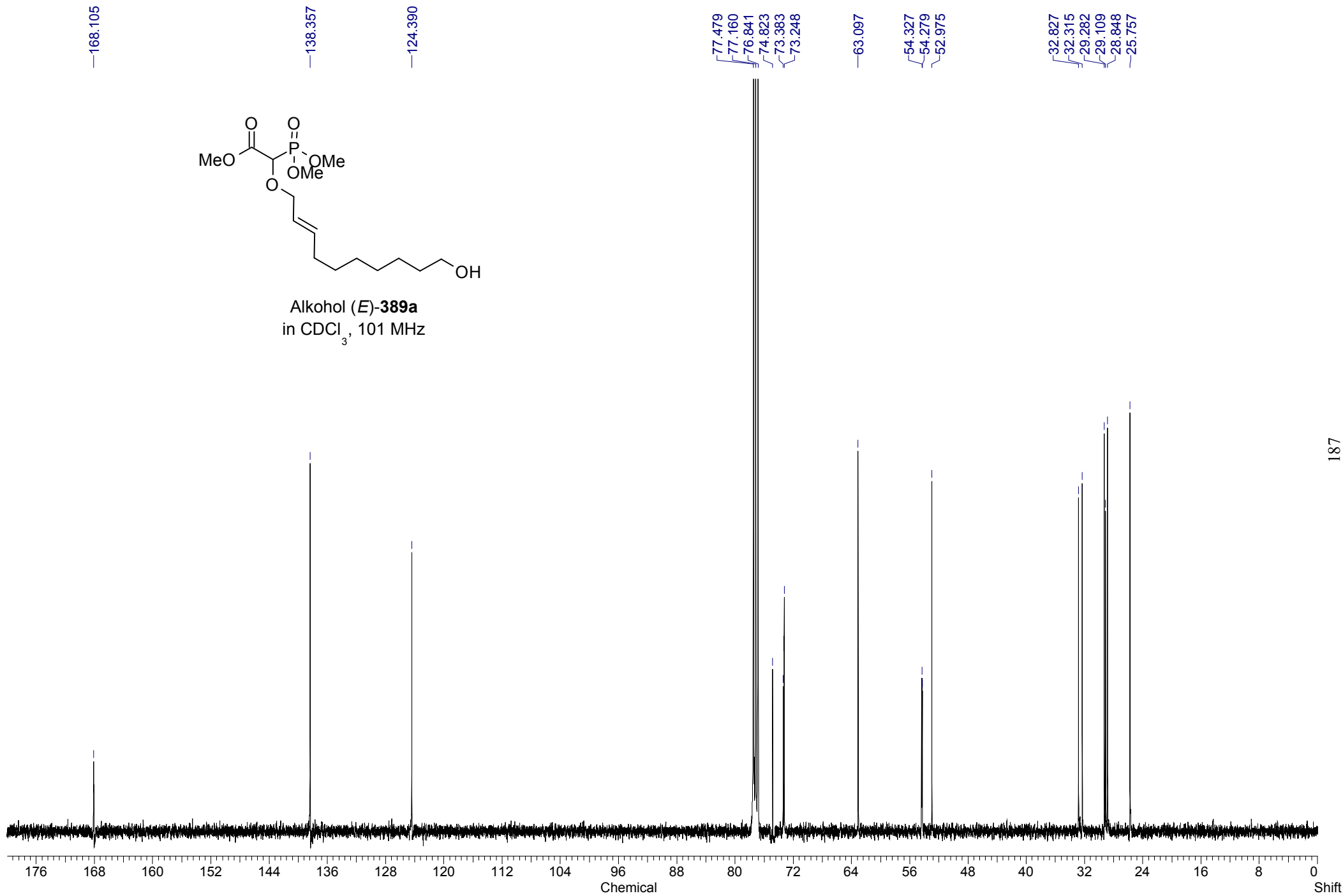


Alkohol (*E*)-**389a**
in CDCl₃, 400 MHz

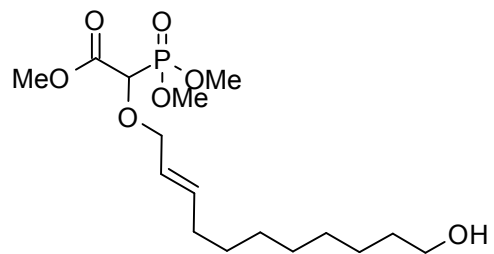




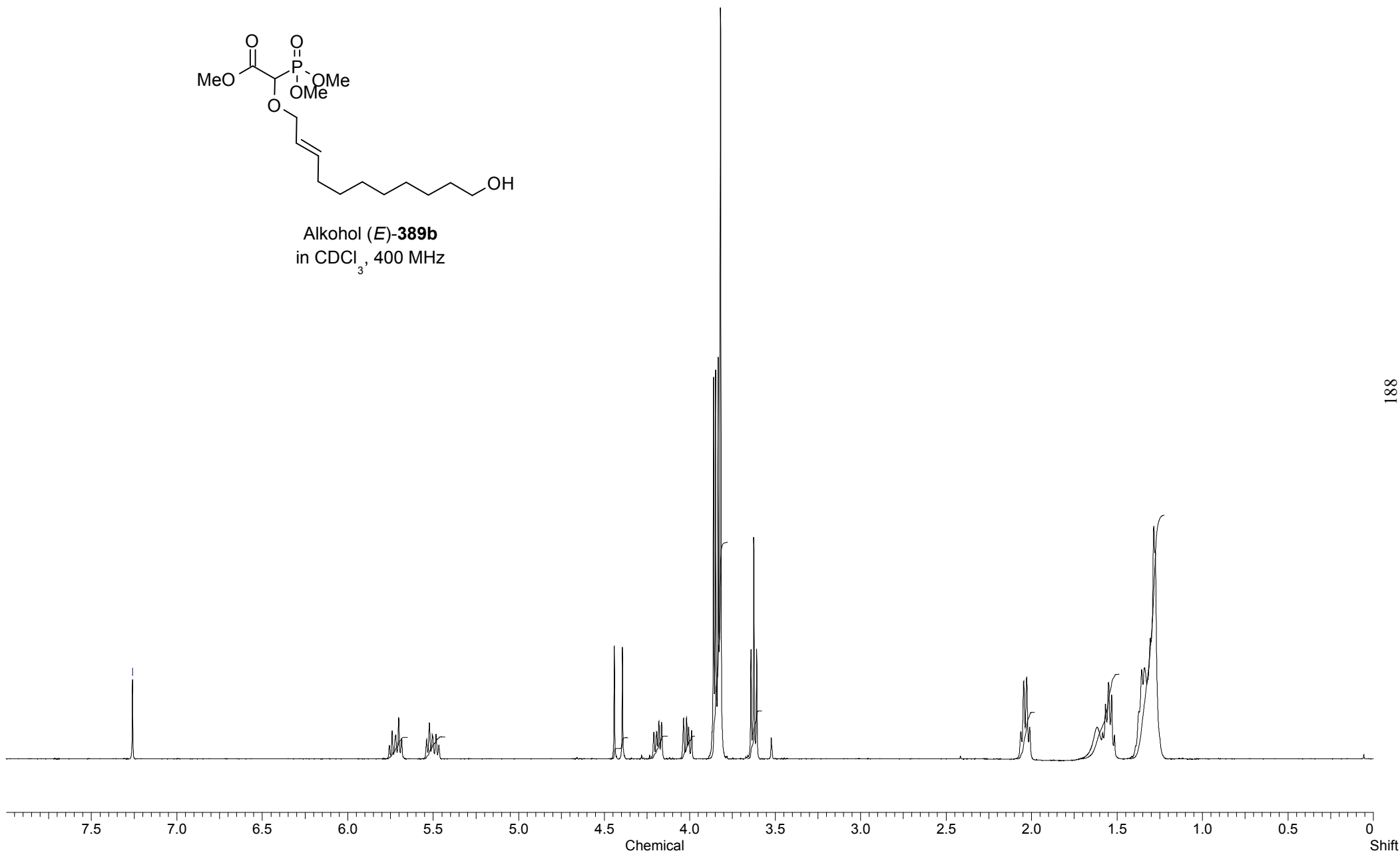
Alkohol (*E*)-**389a**
in CDCl₃, 101 MHz

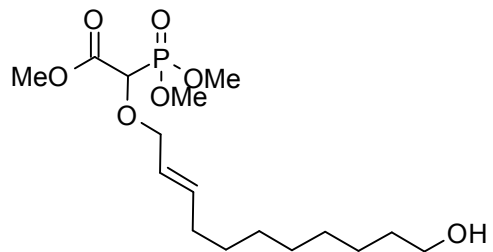


—7.260

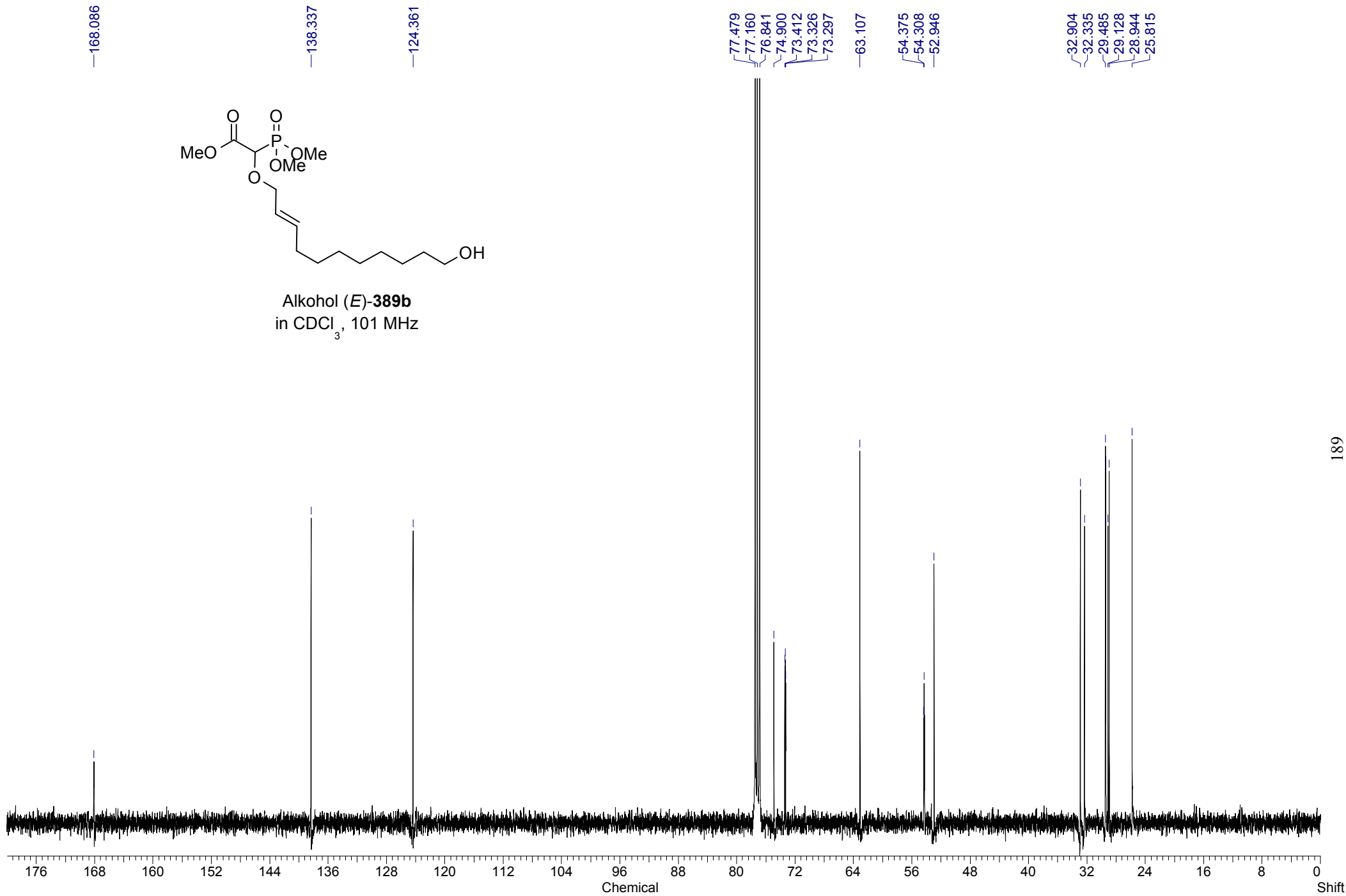


Alkohol (*E*)-**389b**
in CDCl₃, 400 MHz

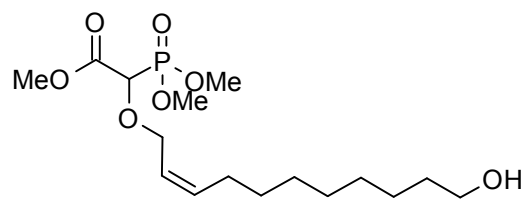




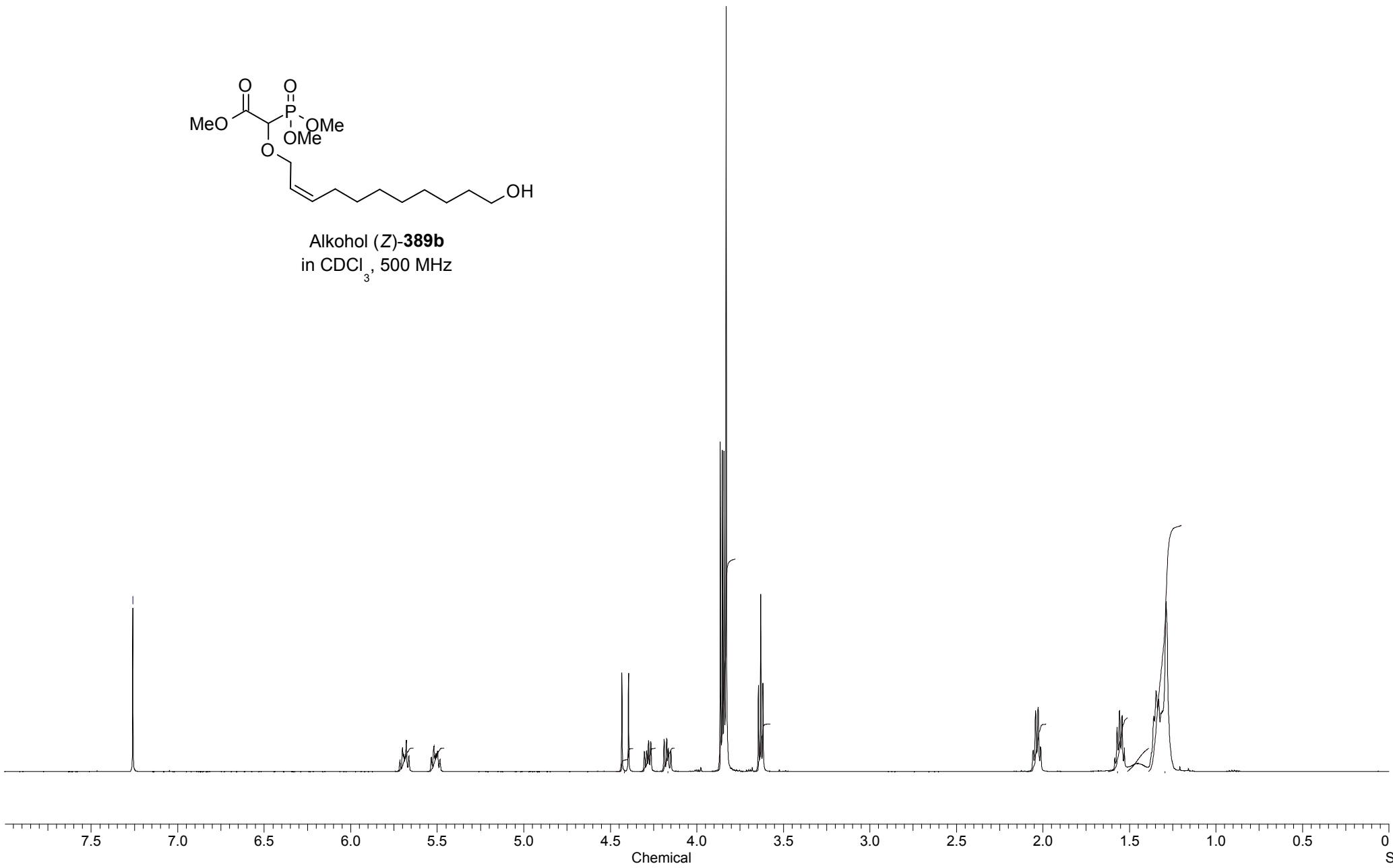
Alkohol (*E*)-**389b**
in CDCl₃, 101 MHz

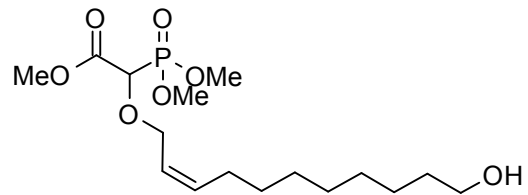


-7.260

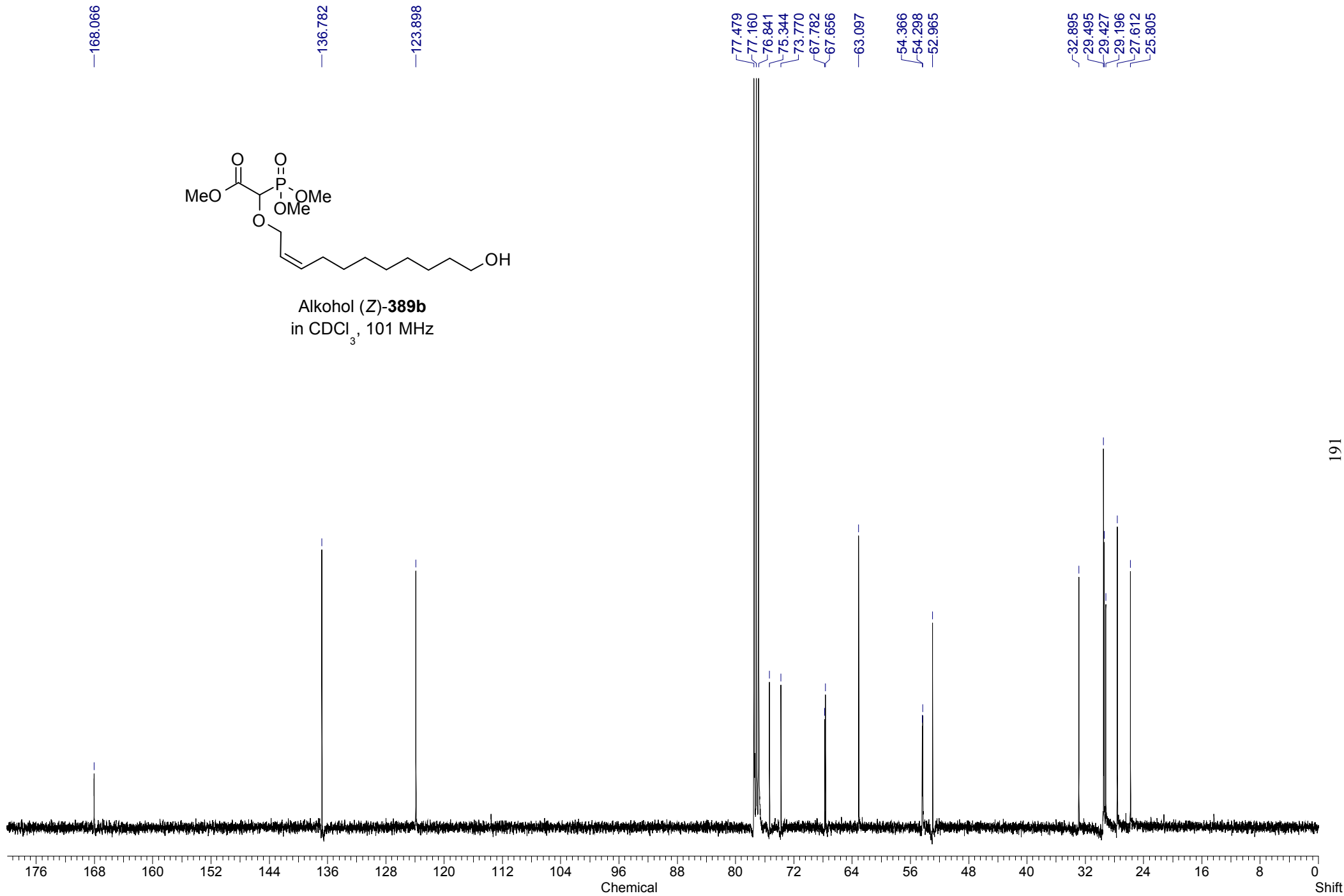


Alkohol (Z)-**389b**
in CDCl₃, 500 MHz

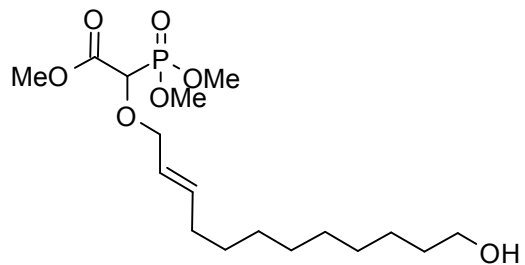




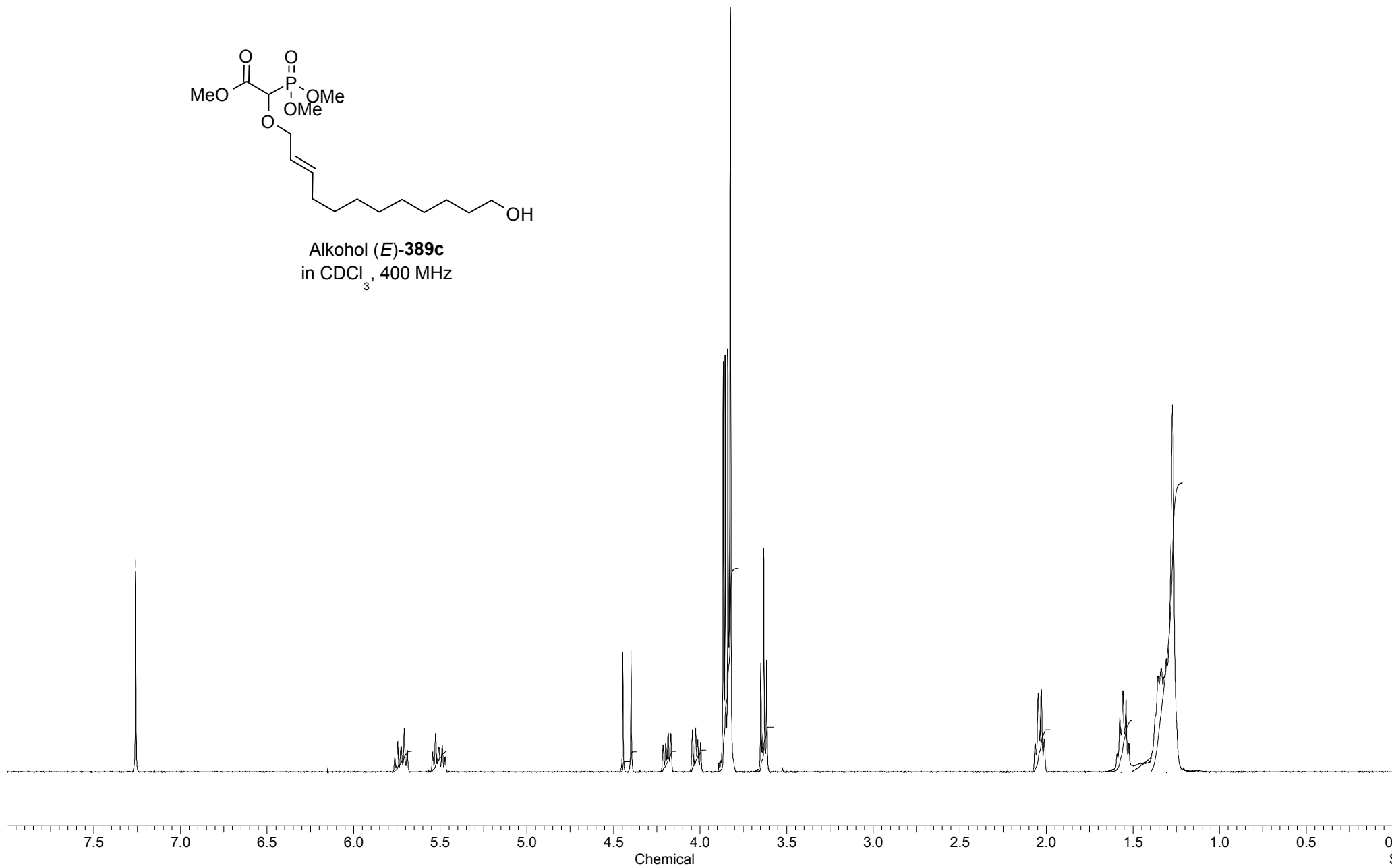
Alkohol (Z)-**389b**
in CDCl₃, 101 MHz

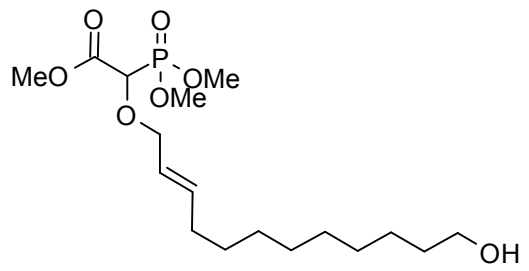


-7.260

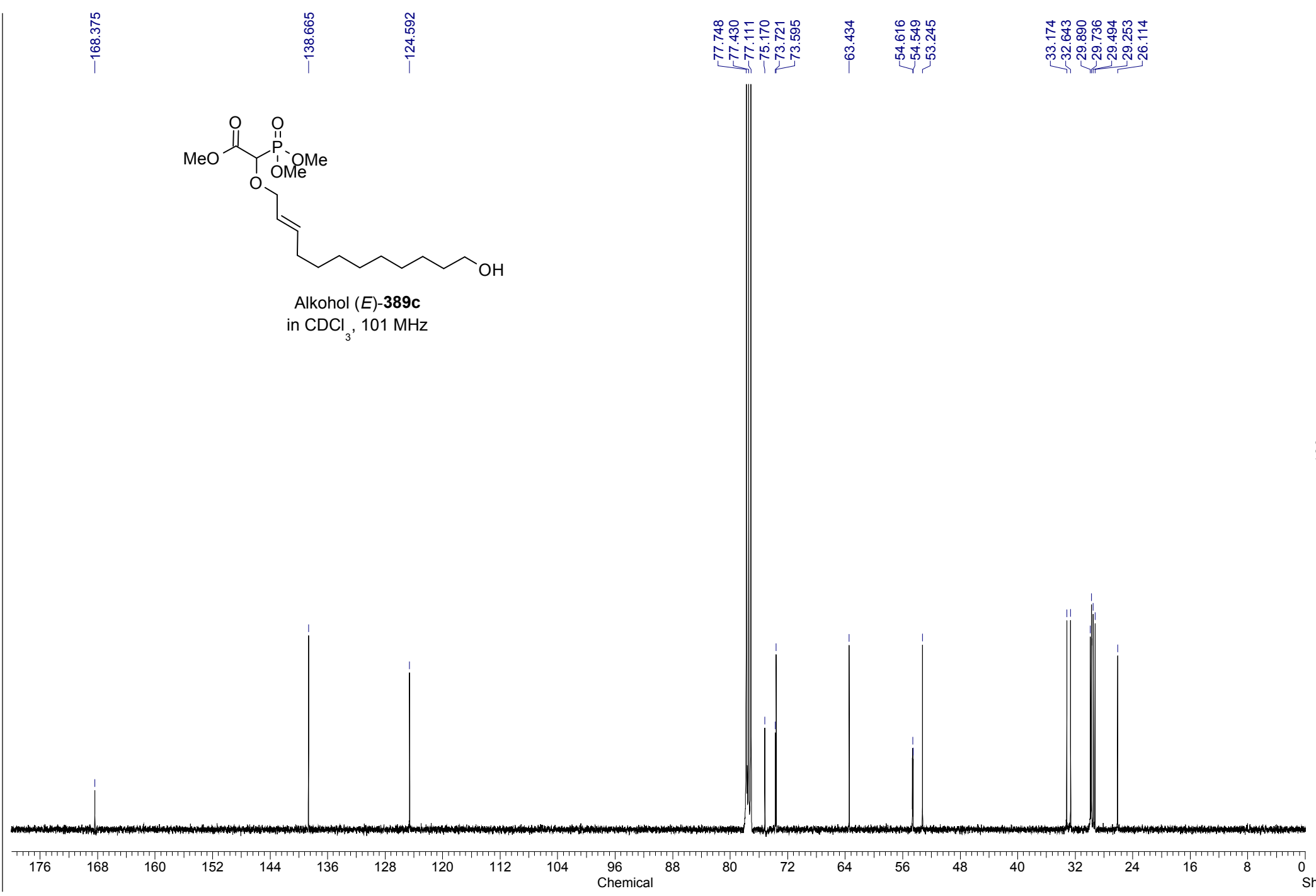


Alkohol (*E*)-**389c**
in CDCl₃, 400 MHz

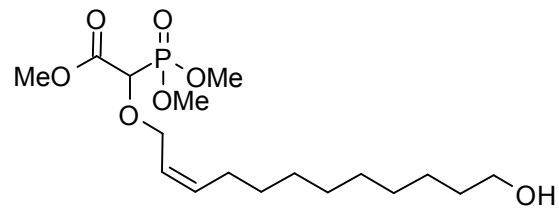




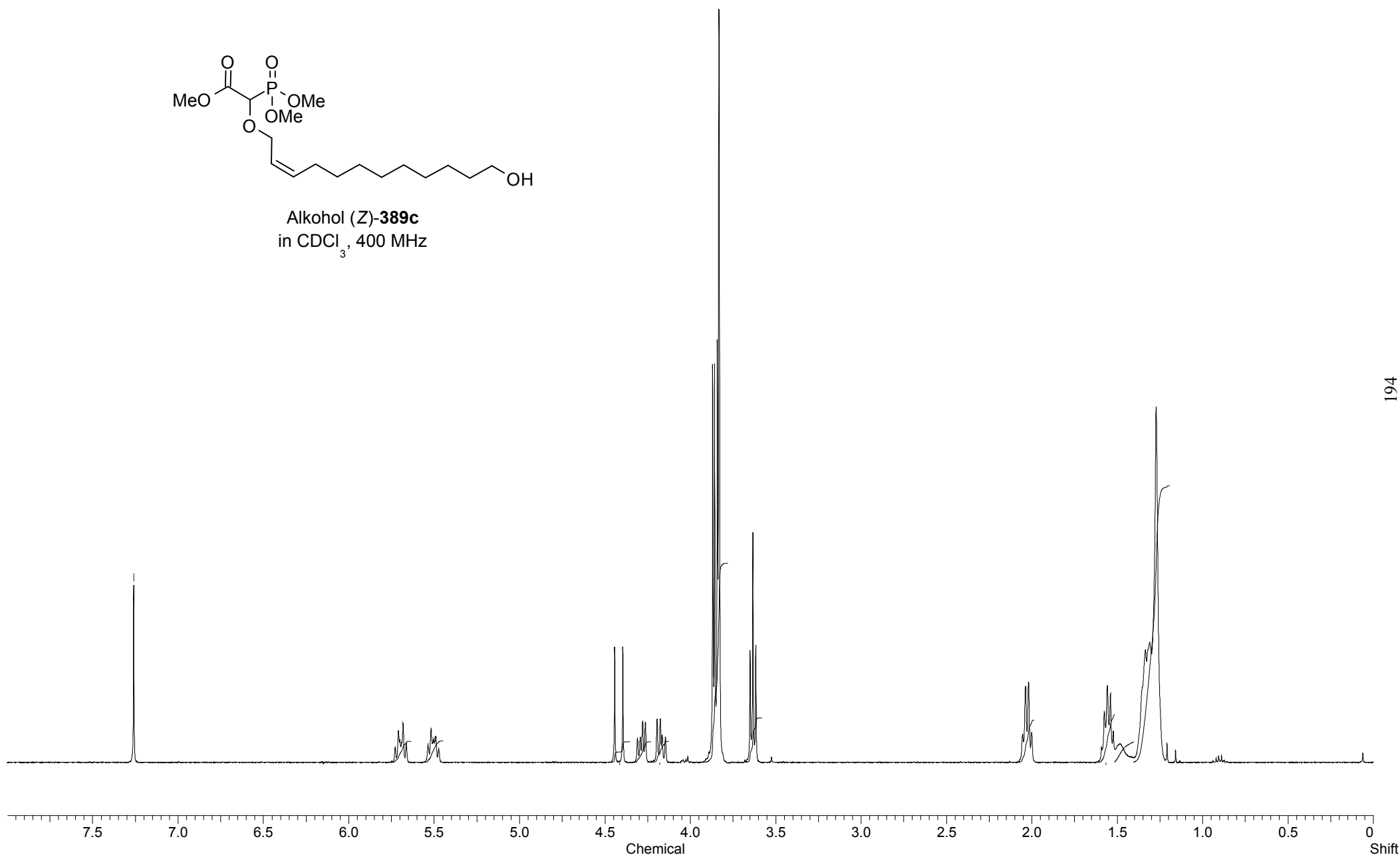
Alkohol (E)-389c
in CDCl₃, 101 MHz

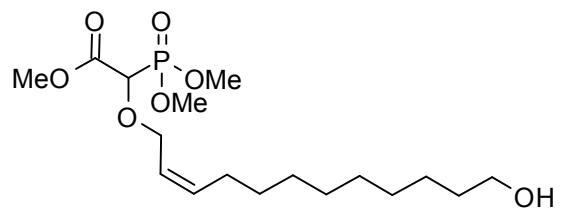


-7.260

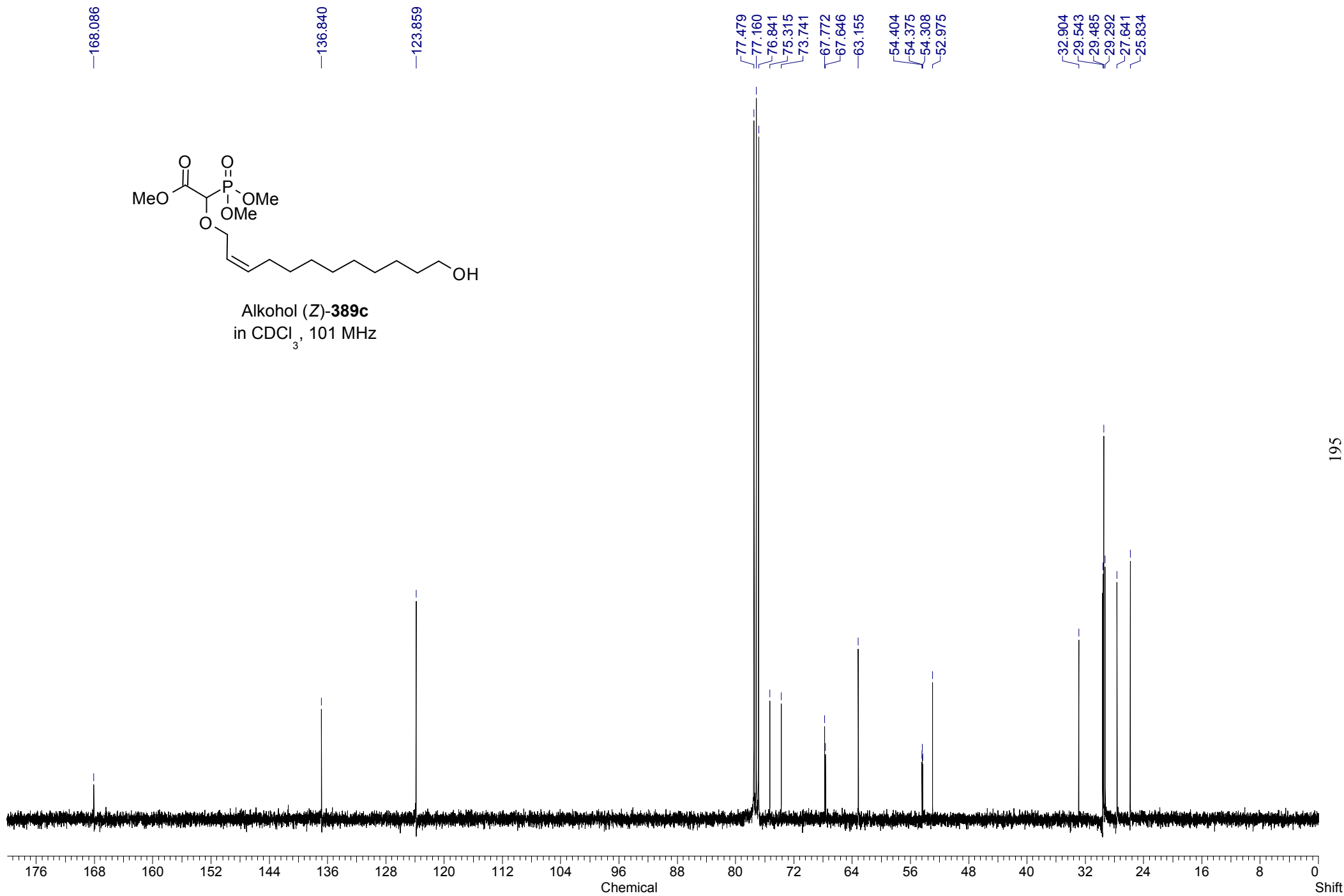


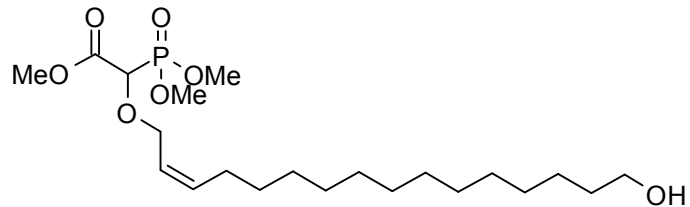
Alkohol (Z)-**389c**
in CDCl₃, 400 MHz





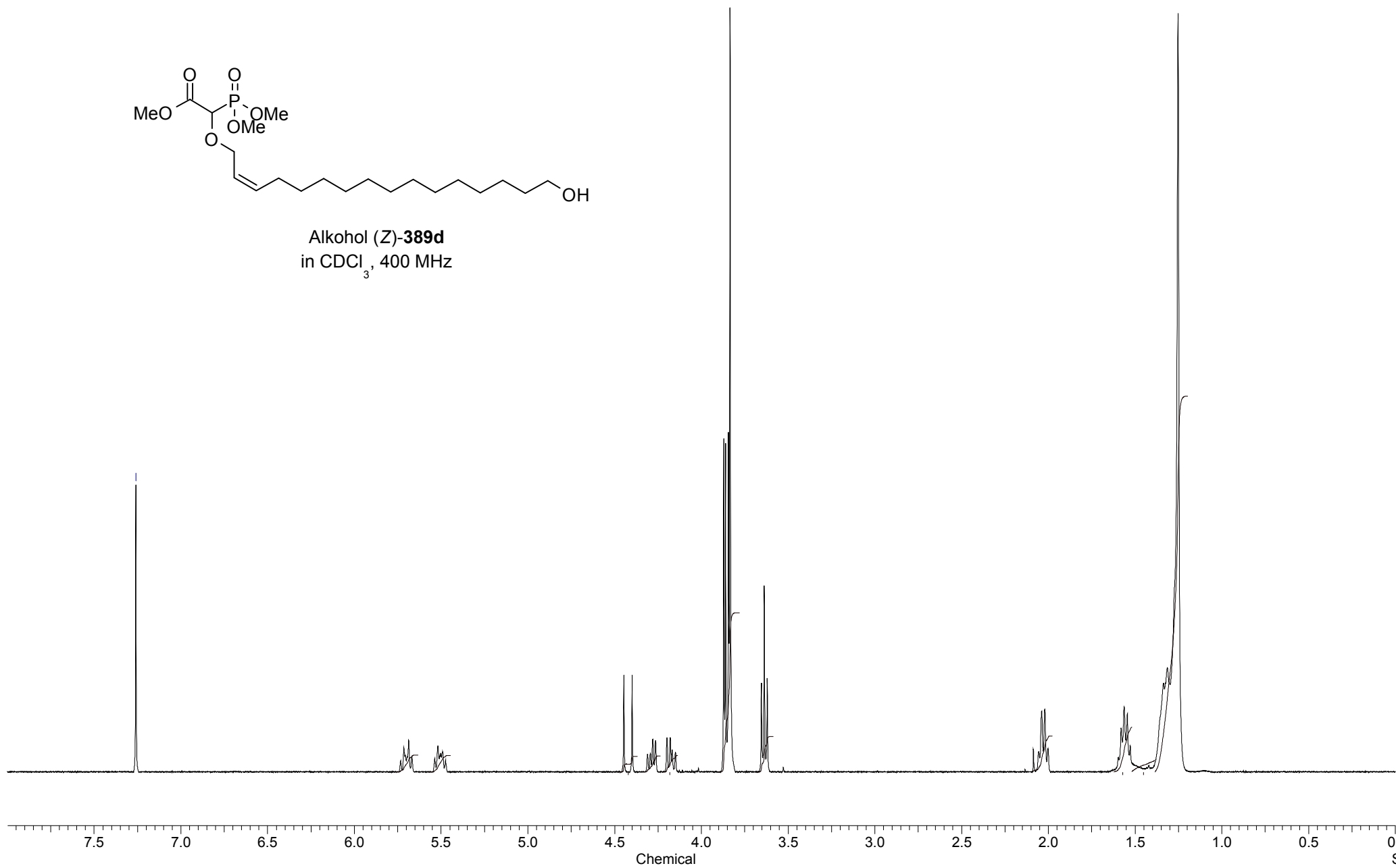
Alkohol (Z)-**389c**
in CDCl₃, 101 MHz

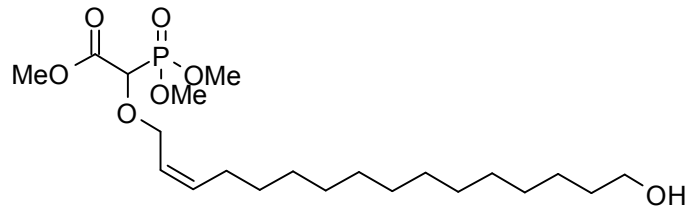




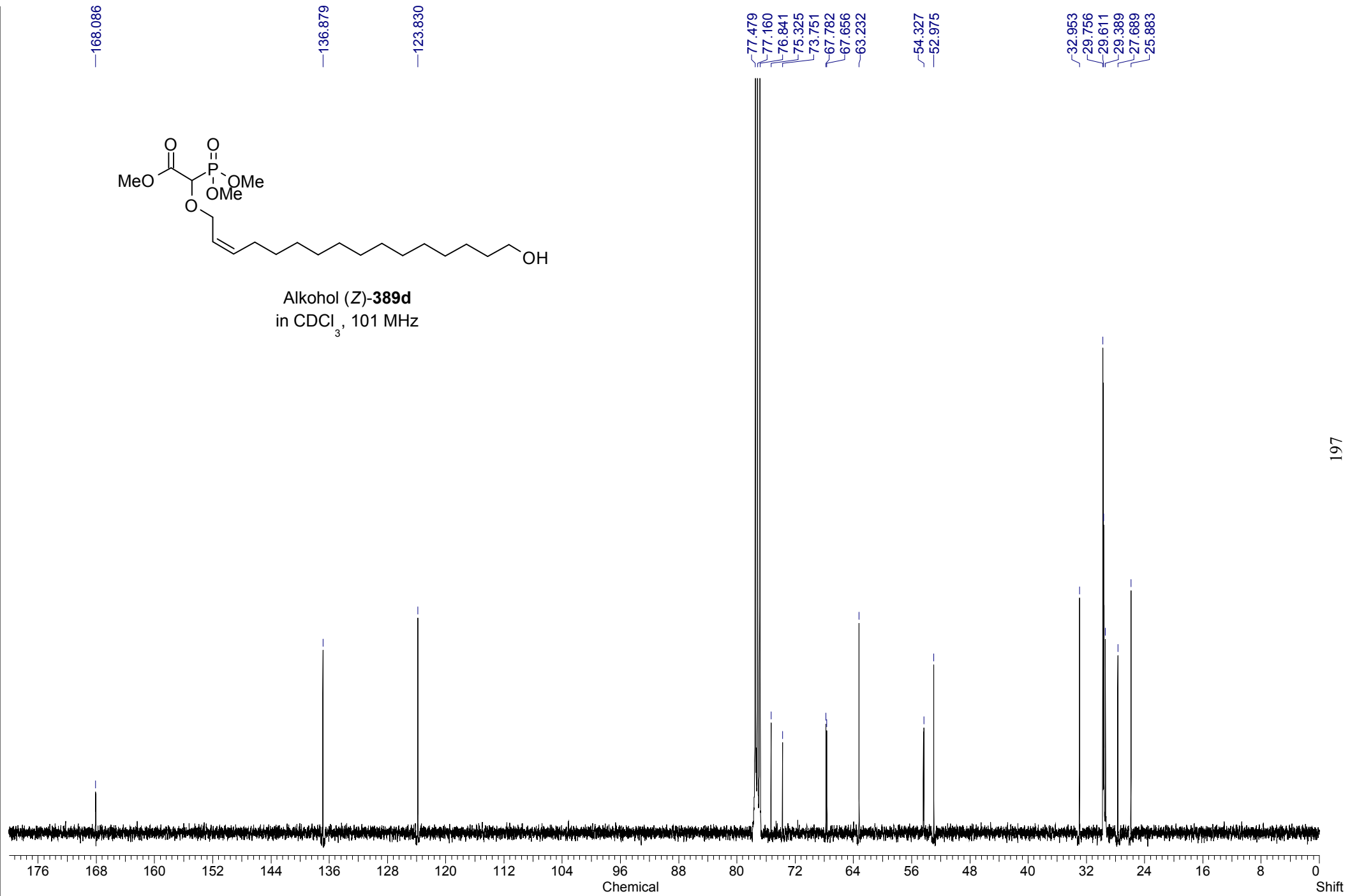
Alkohol (Z)-389d
in CDCl₃, 400 MHz

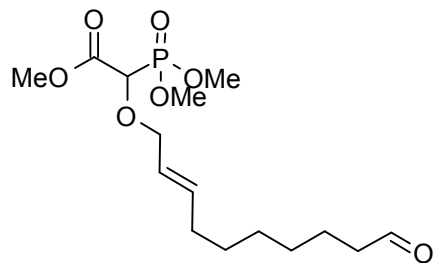
7.260





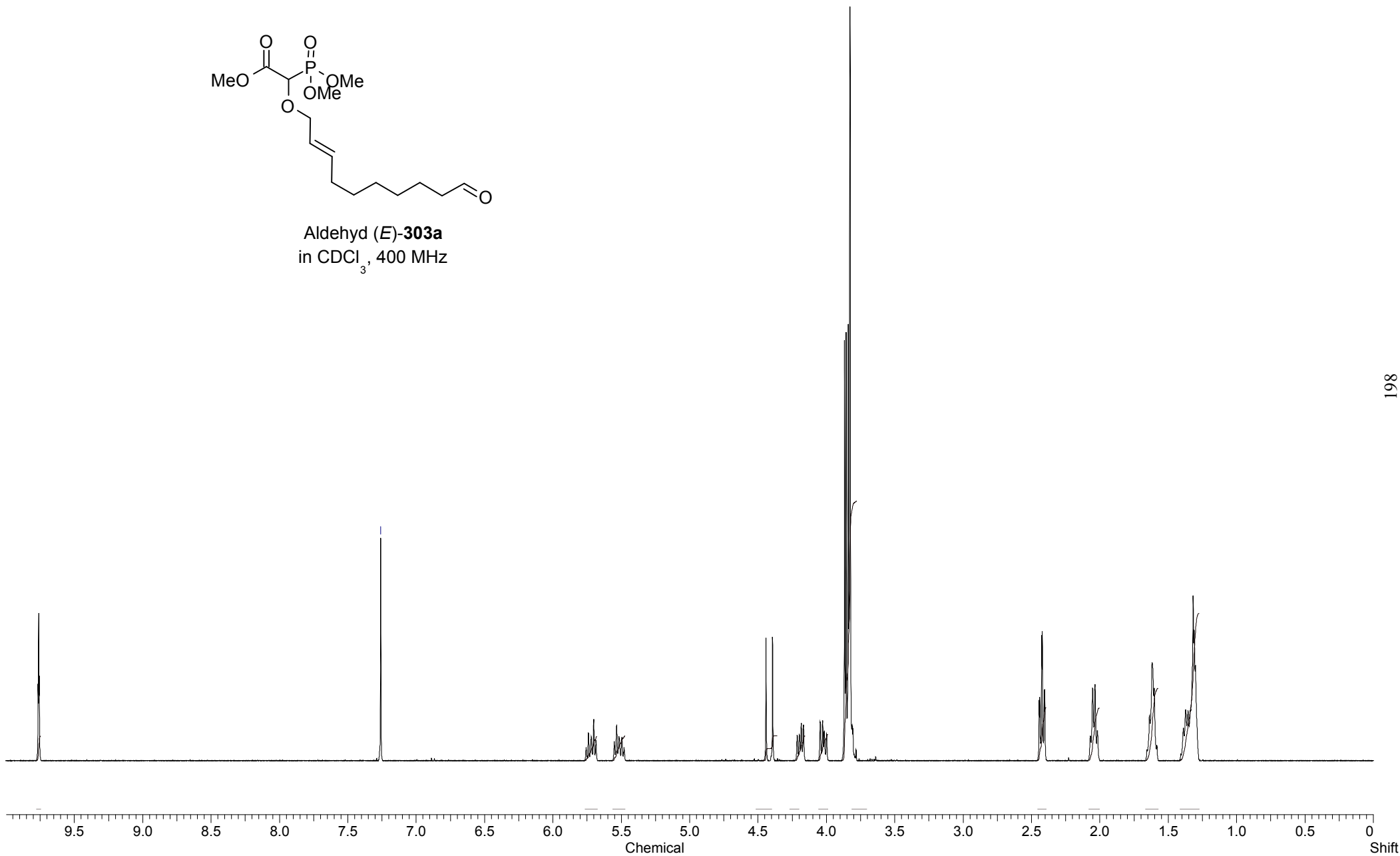
Alkohol (Z)-**389d**
in CDCl₃, 101 MHz

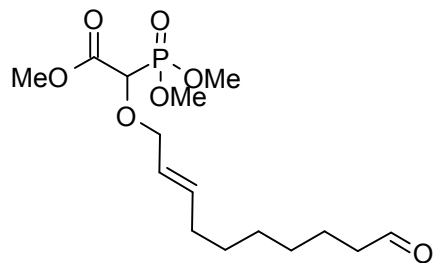




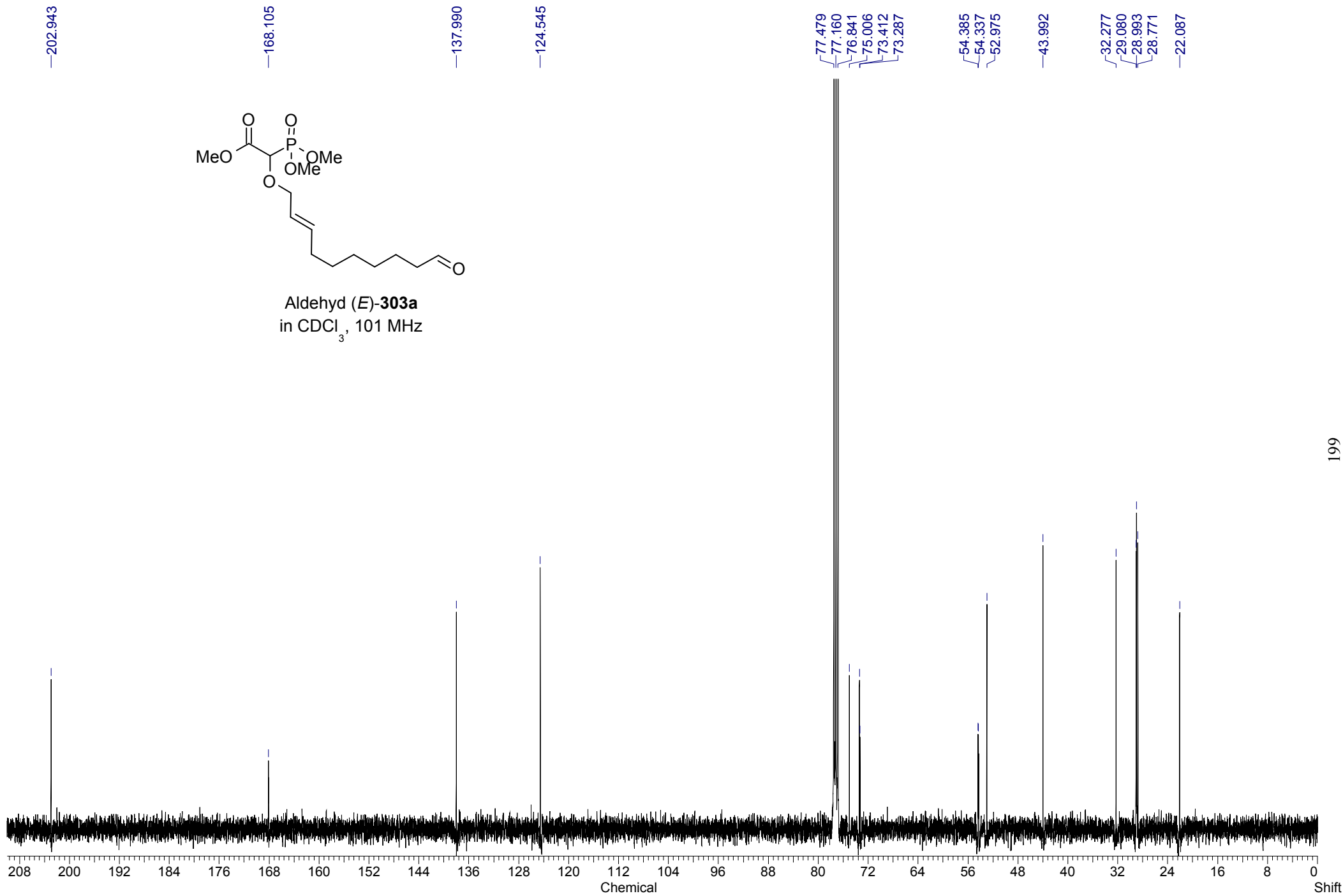
Aldehyd (*E*)-**303a**
in CDCl₃, 400 MHz

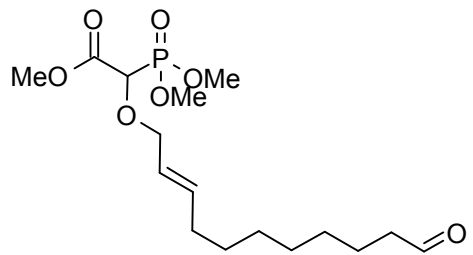
—7.260





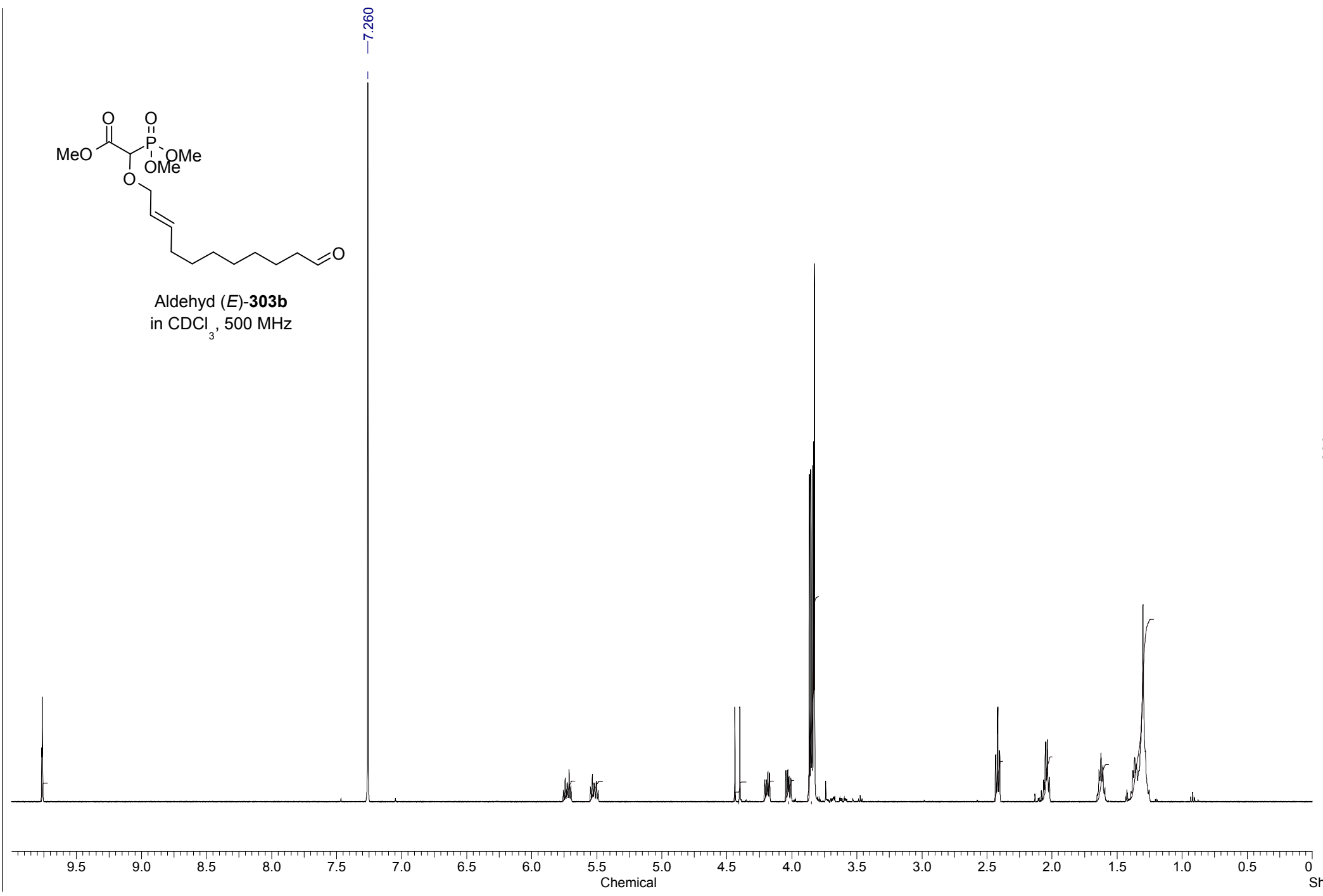
Aldehyd (*E*)-**303a**
in CDCl₃, 101 MHz

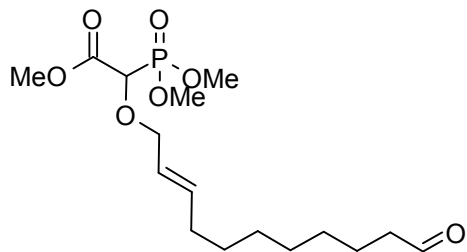




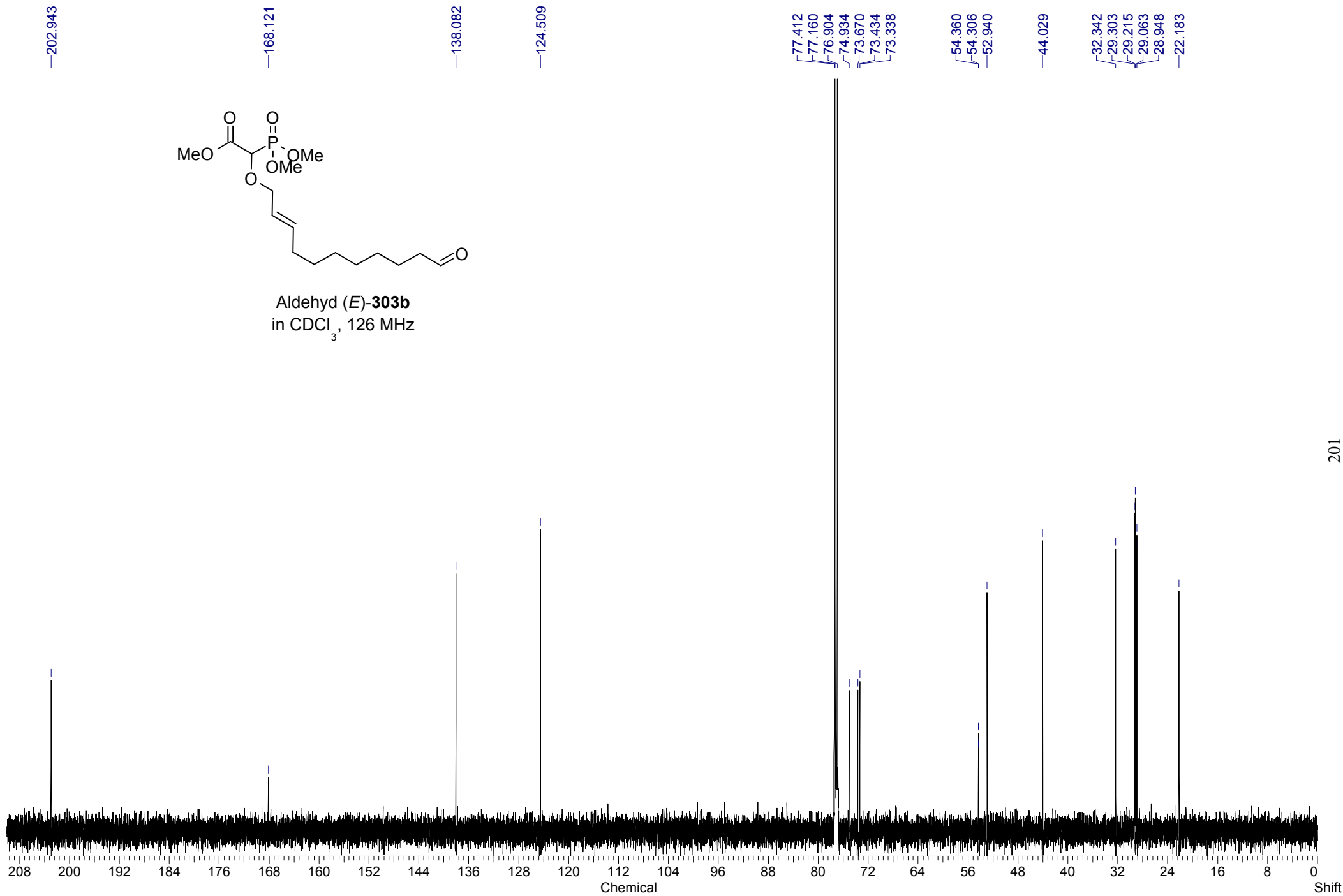
Aldehyd (*E*)-**303b**
in CDCl₃, 500 MHz

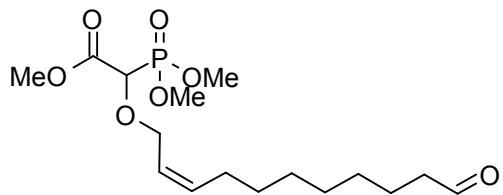
-7.260





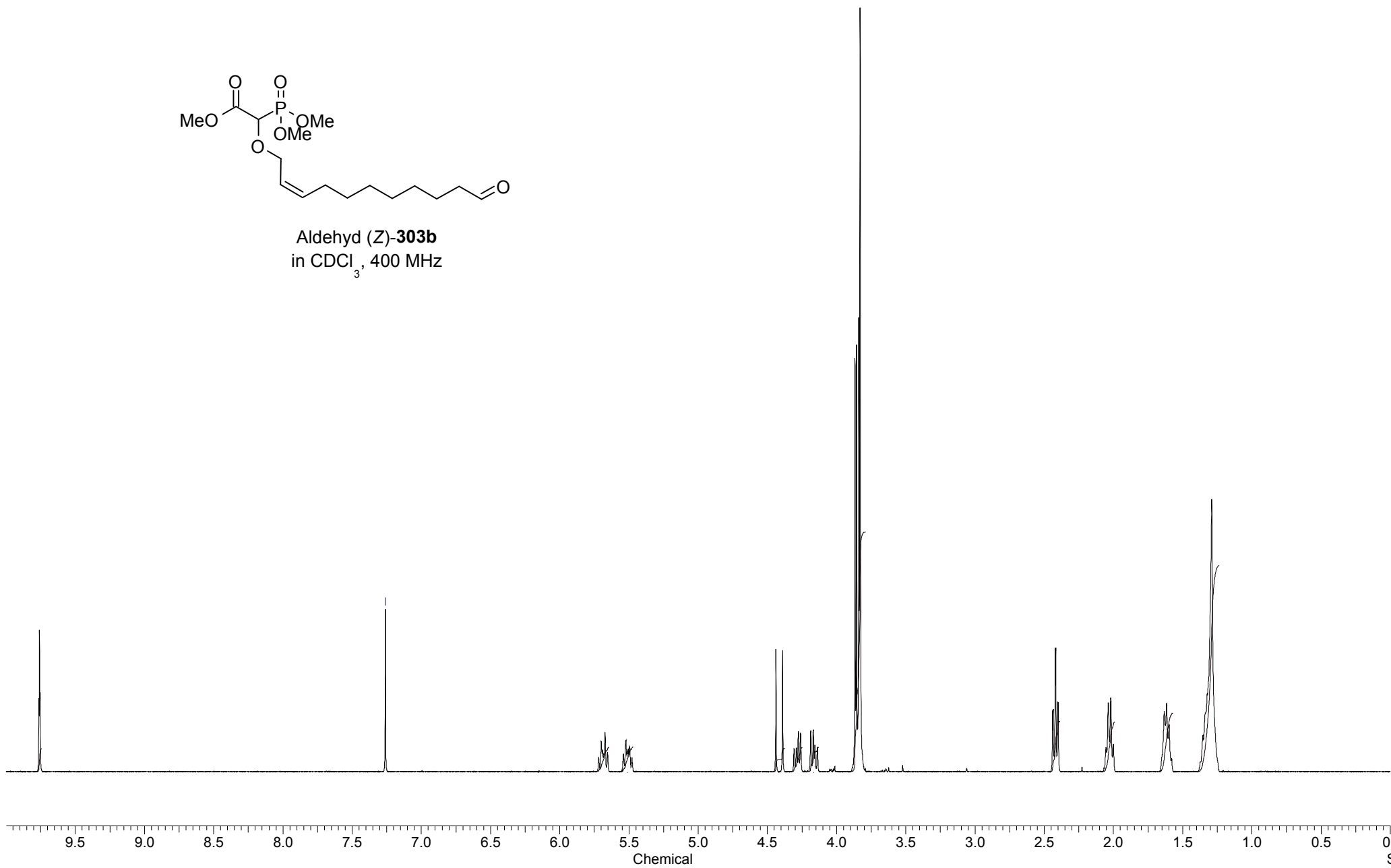
Aldehyd (*E*)-**303b**
in CDCl₃, 126 MHz

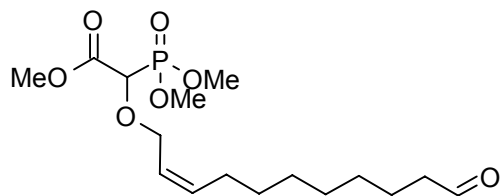




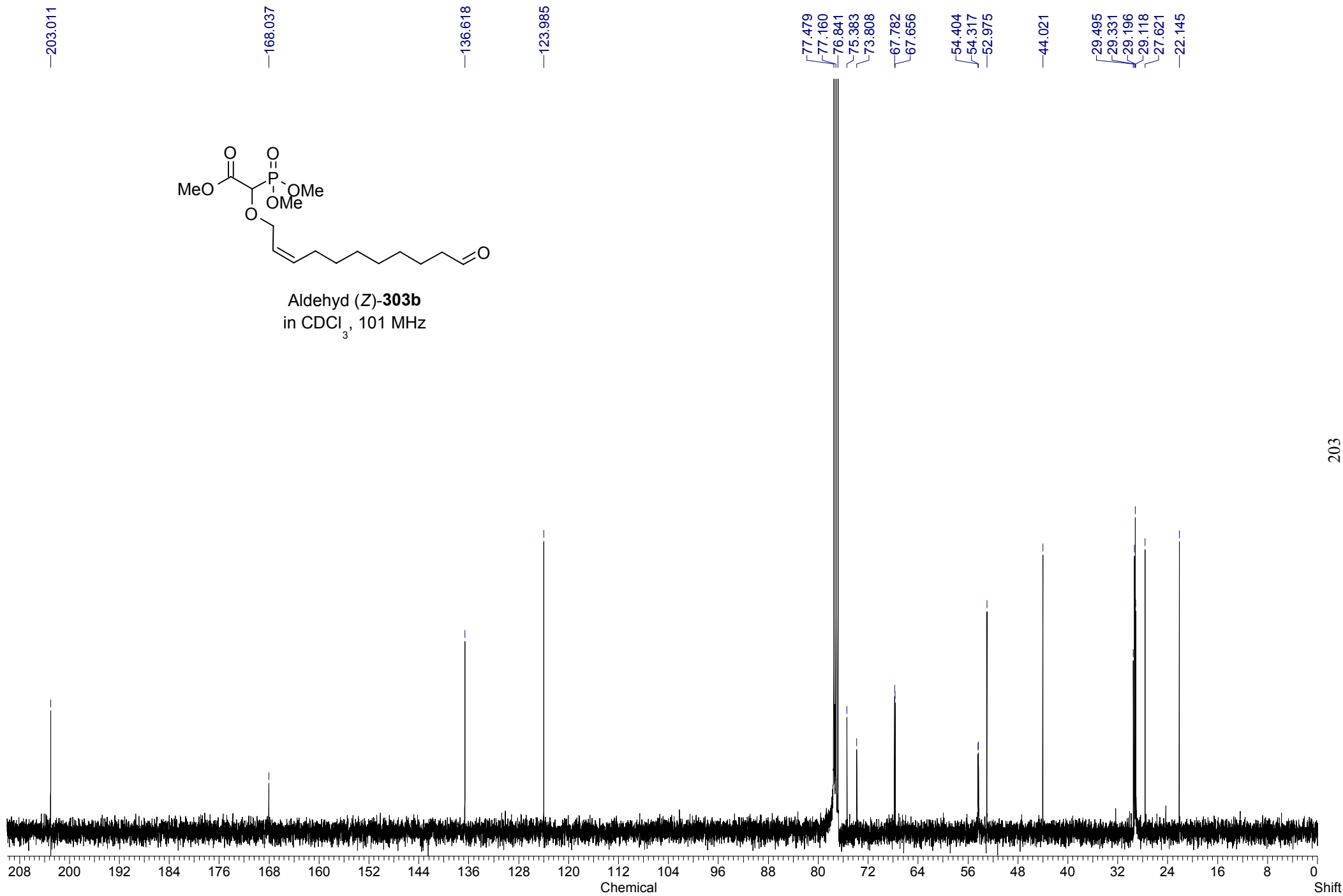
Aldehyd (Z)-**303b**
in CDCl₃, 400 MHz

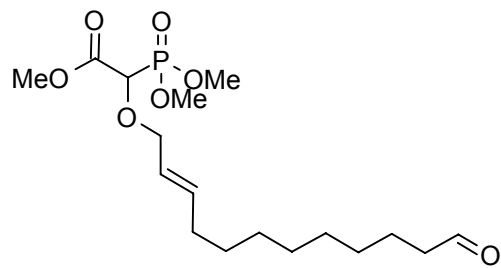
—7.260





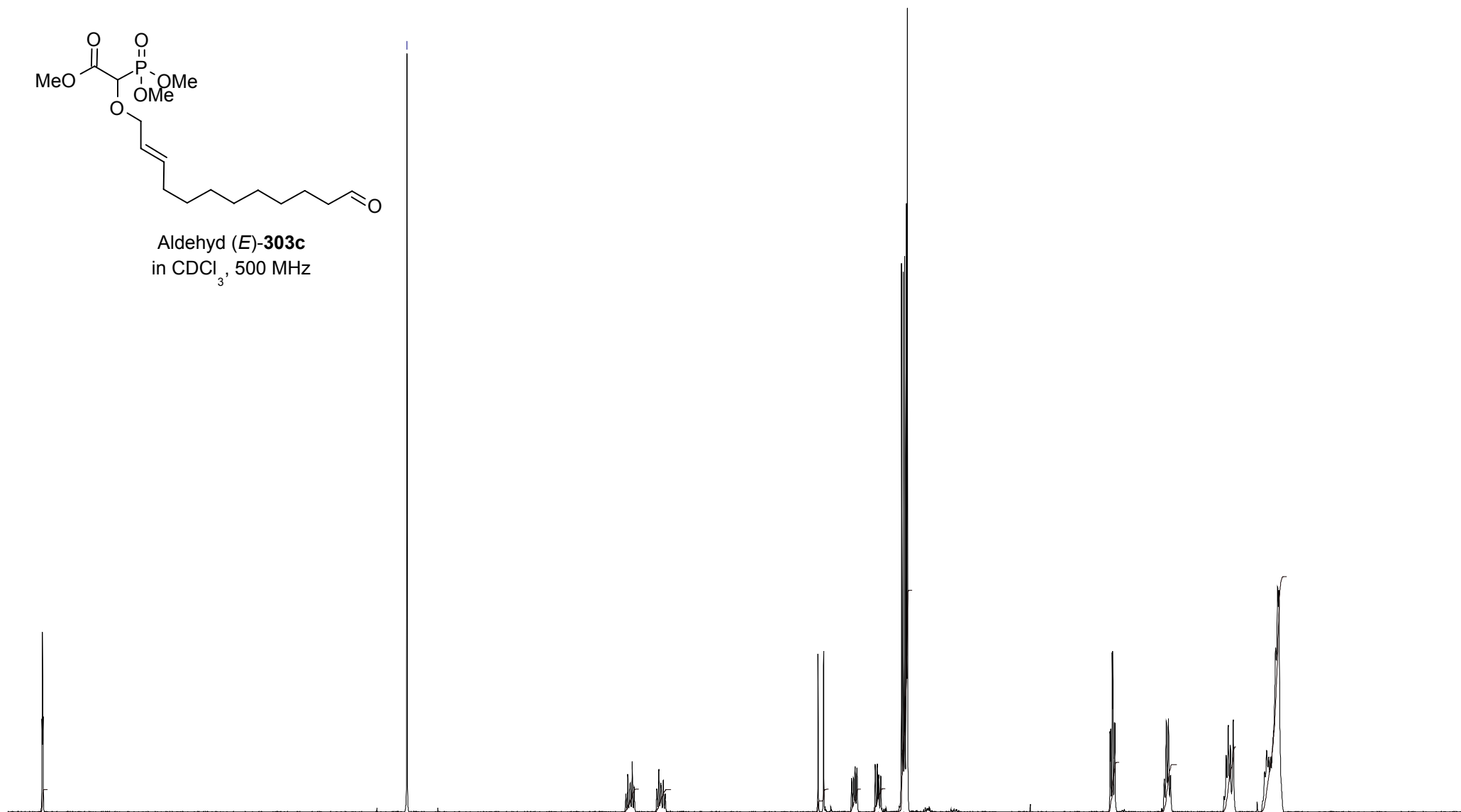
Aldehyd (Z)-**303b**
in CDCl₃, 101 MHz

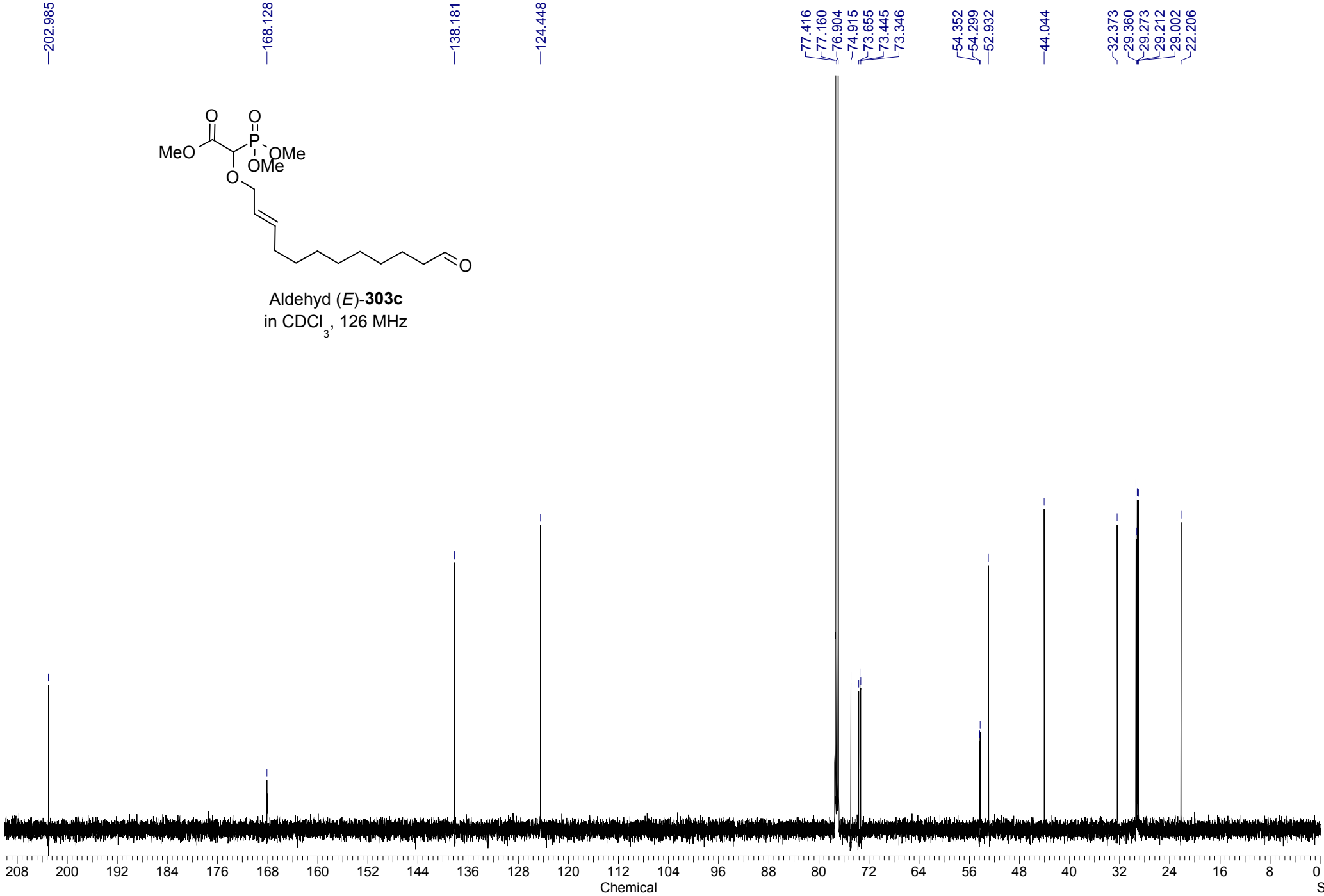


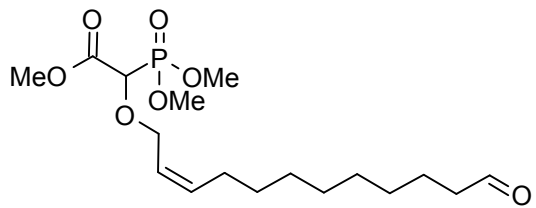


Aldehyd (*E*)-**303c**
in CDCl₃, 500 MHz

-7.260

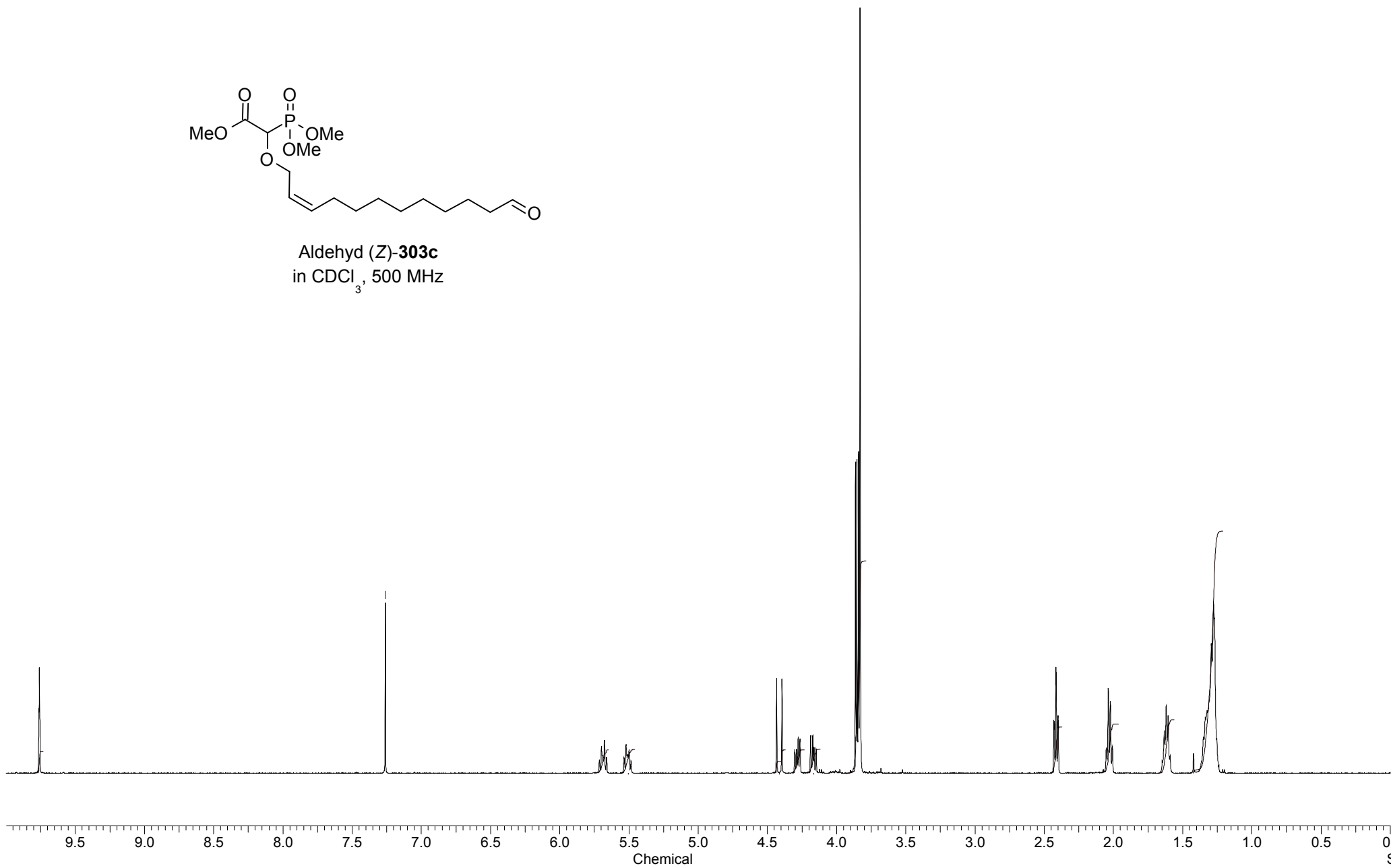


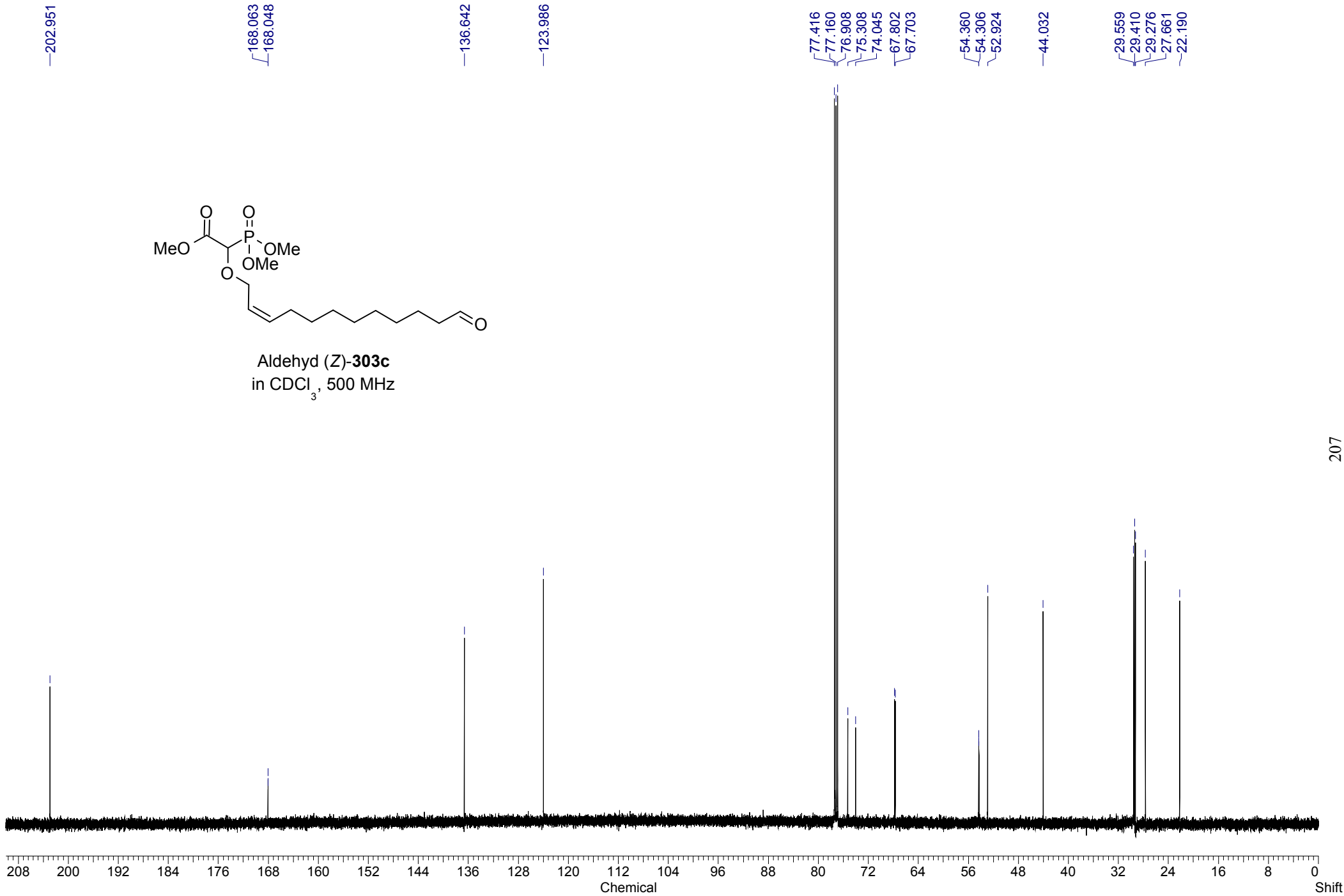


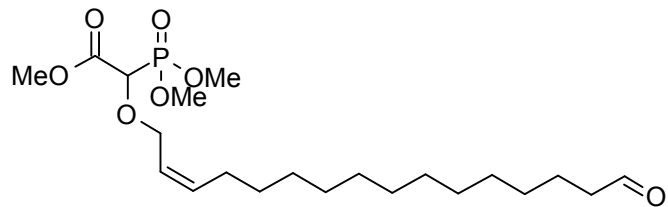


Aldehyd (Z)-**303c**
in CDCl₃, 500 MHz

—7.260

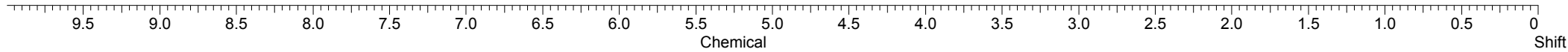


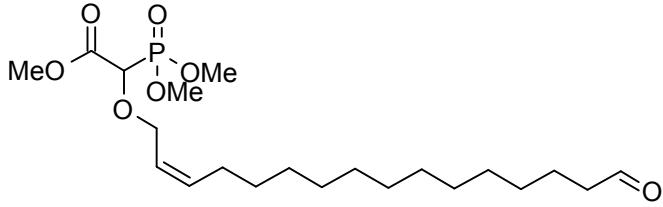




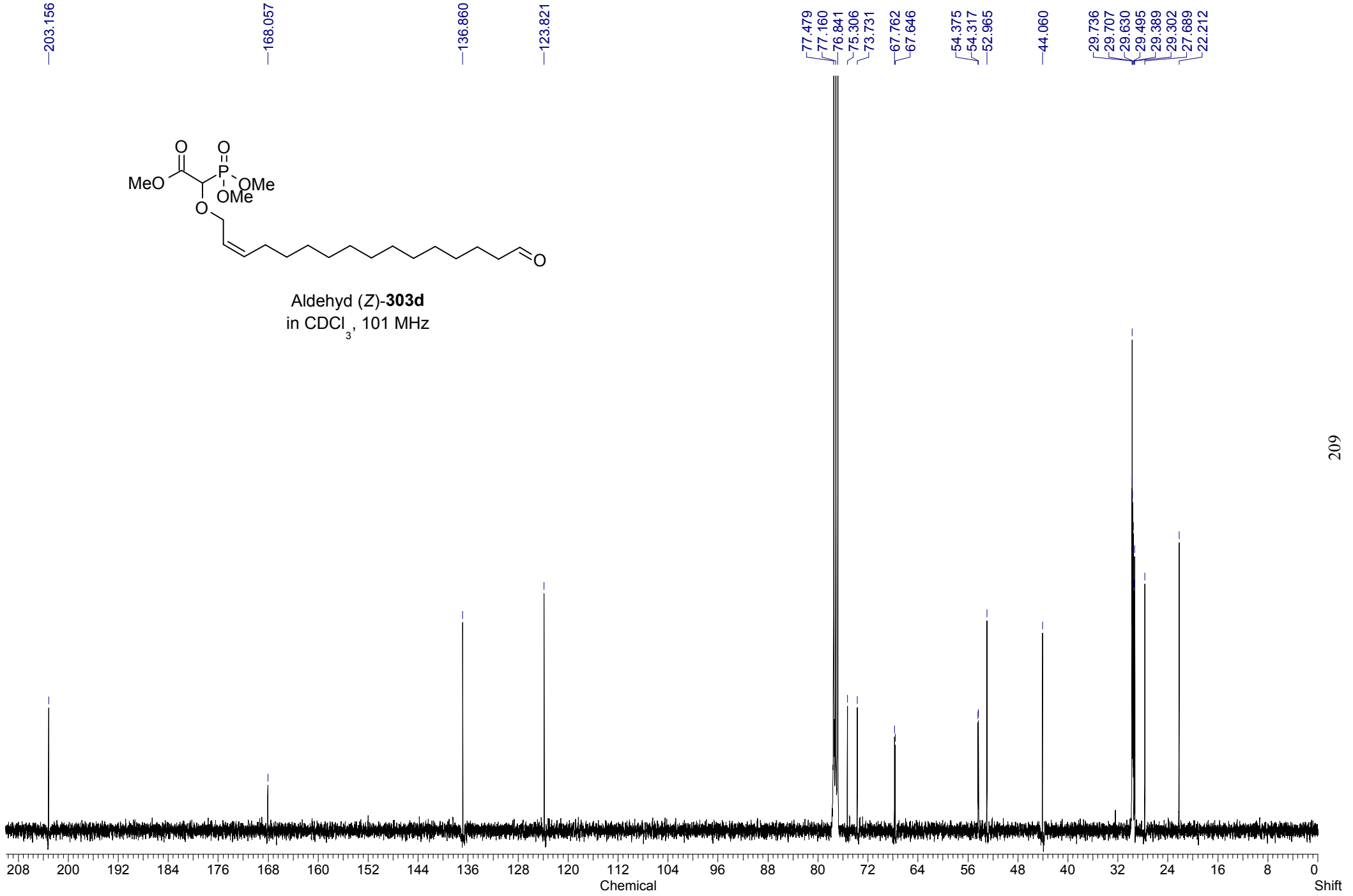
Aldehyd (Z)-**303d**
in CDCl₃, 400 MHz

-7.260

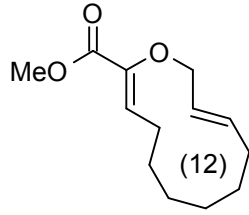




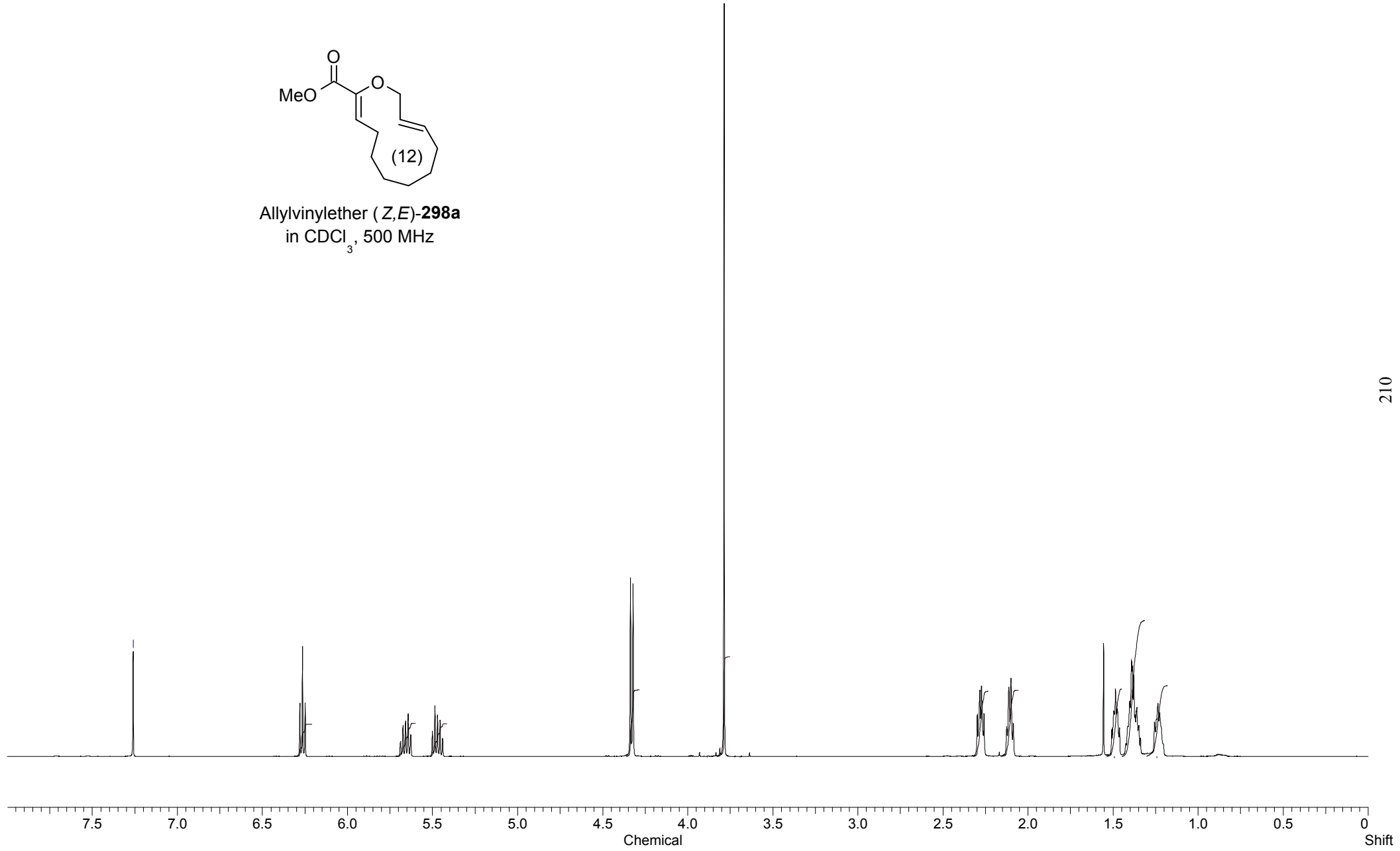
Aldehyd (Z)-**303d**
in CDCl₃, 101 MHz

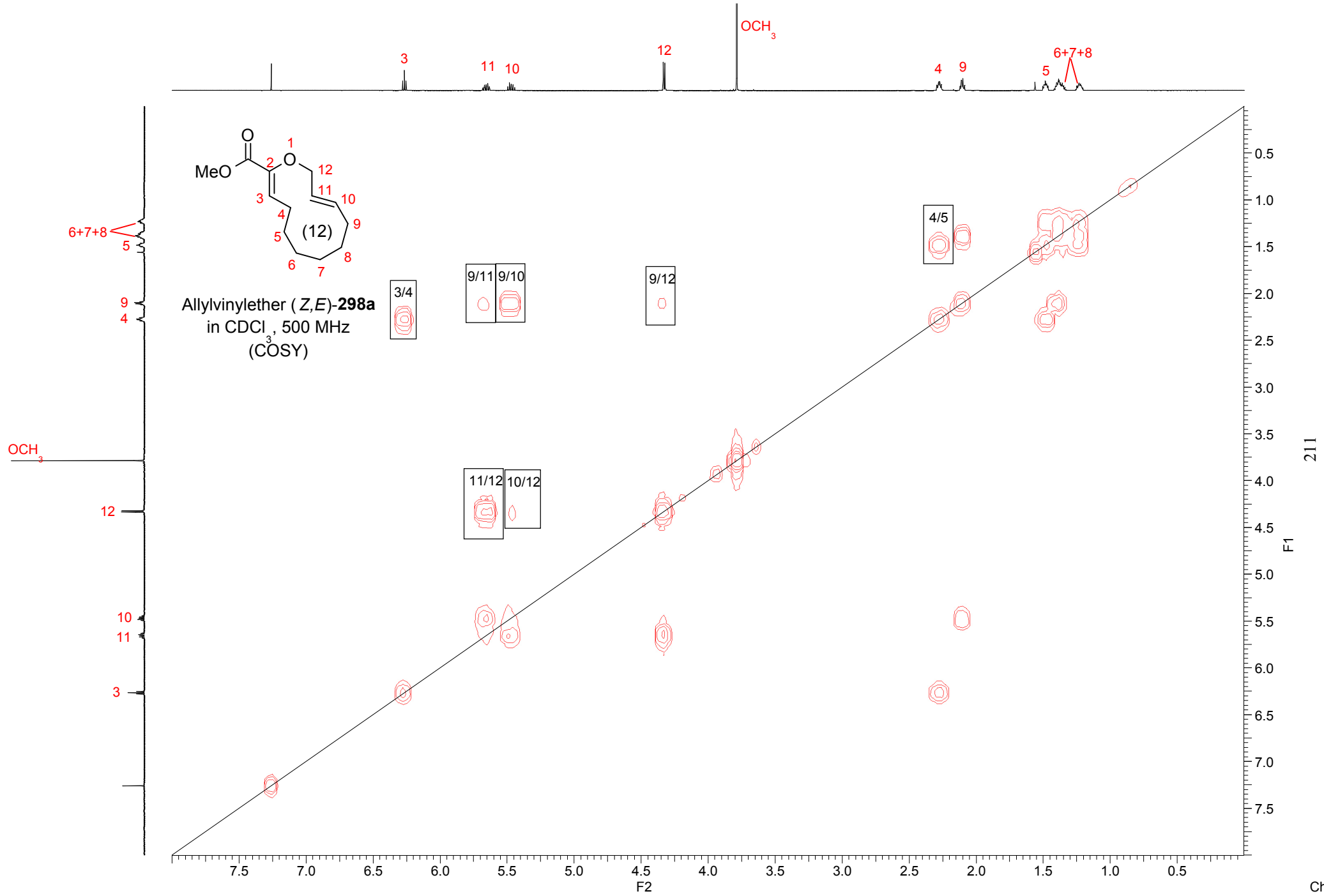


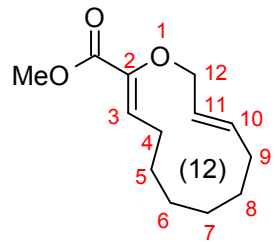
-7.260



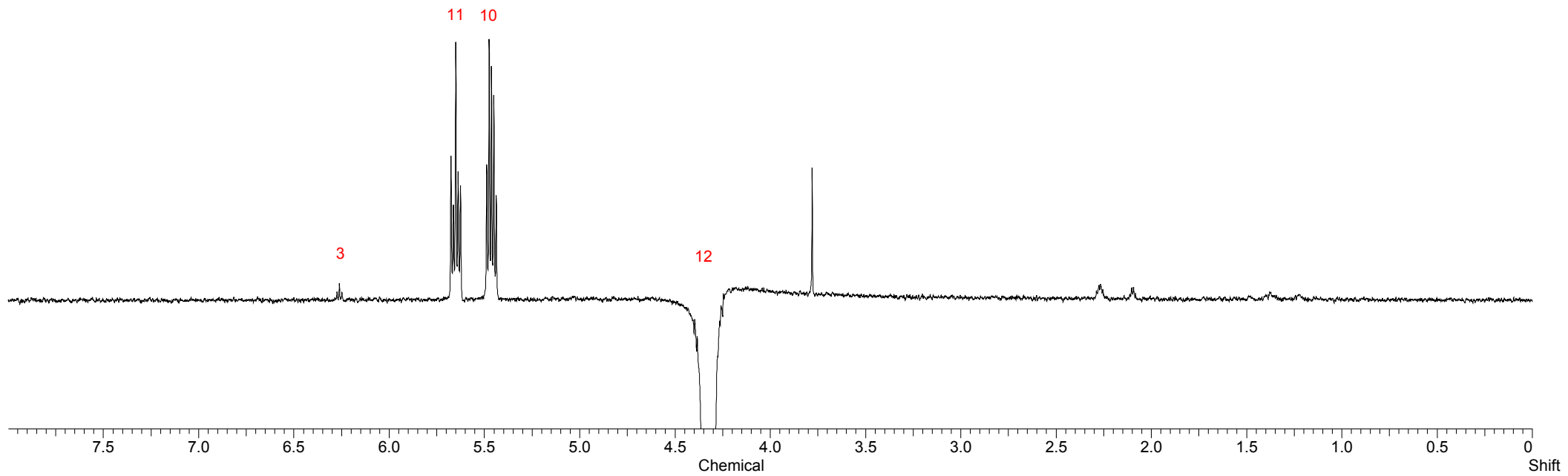
Allylvinylether (Z,E)-**298a**
in CDCl₃, 500 MHz

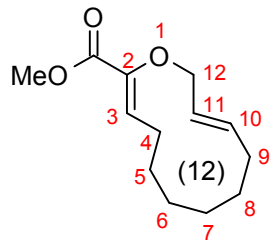




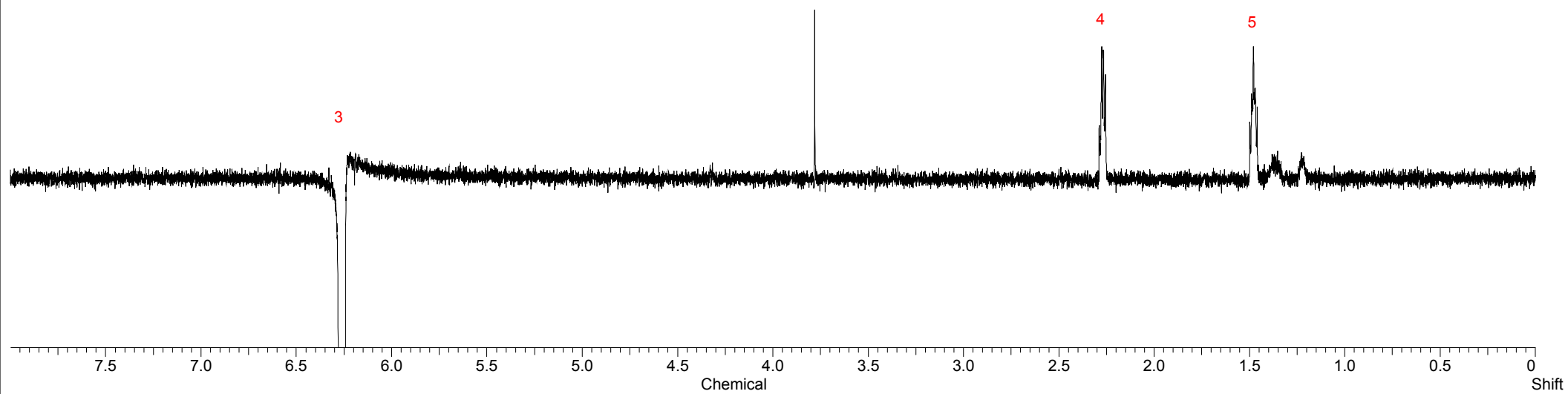


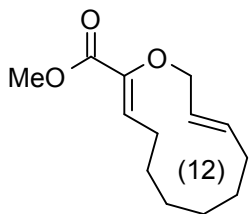
Allylvinylether (*Z,E*)-**298a**
in CDCl₃, 500 MHz



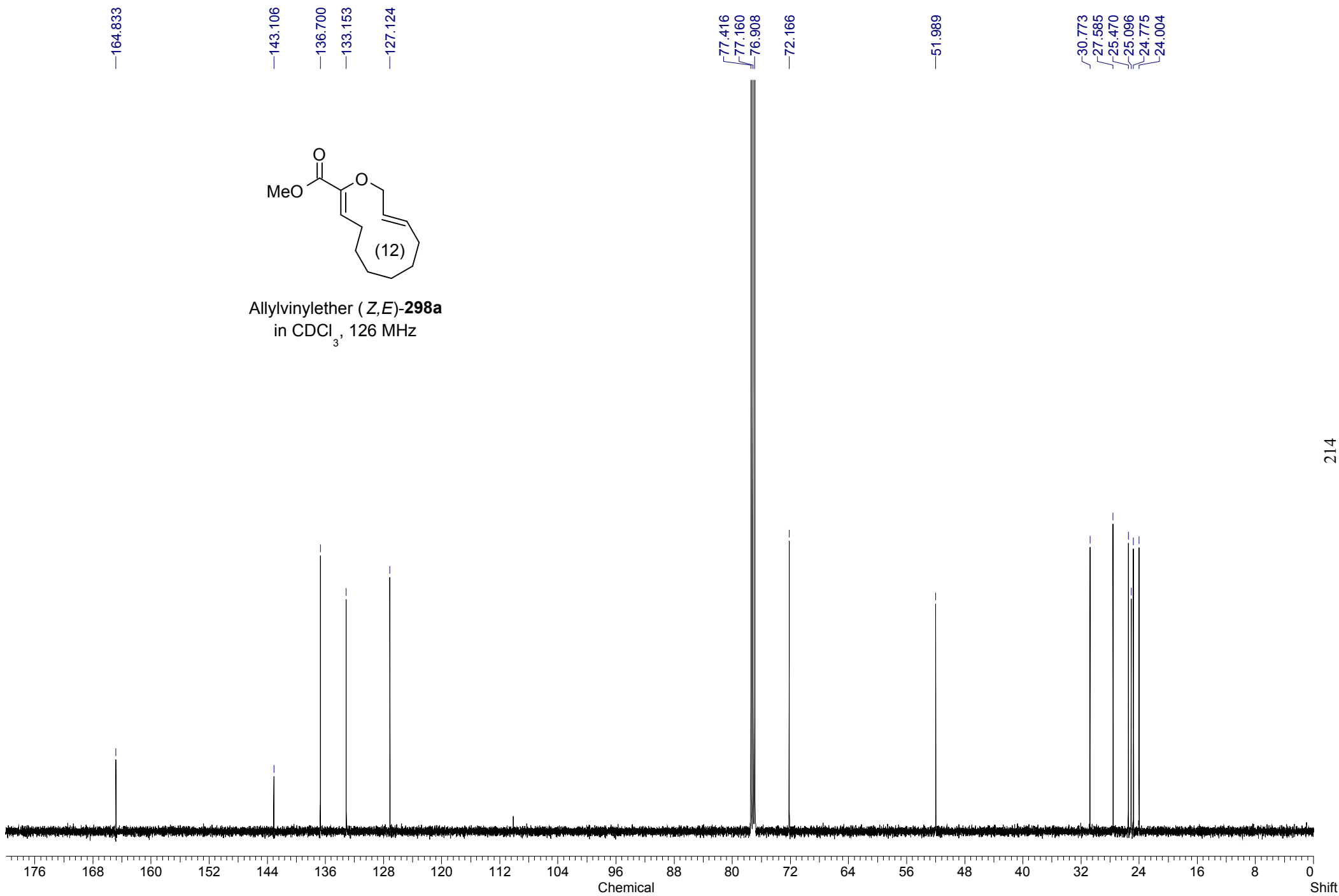


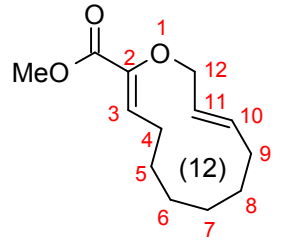
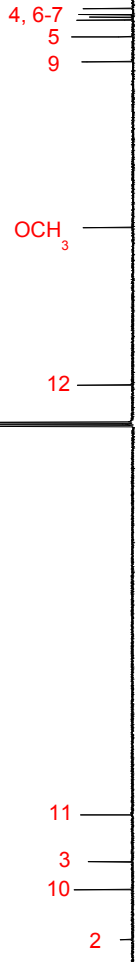
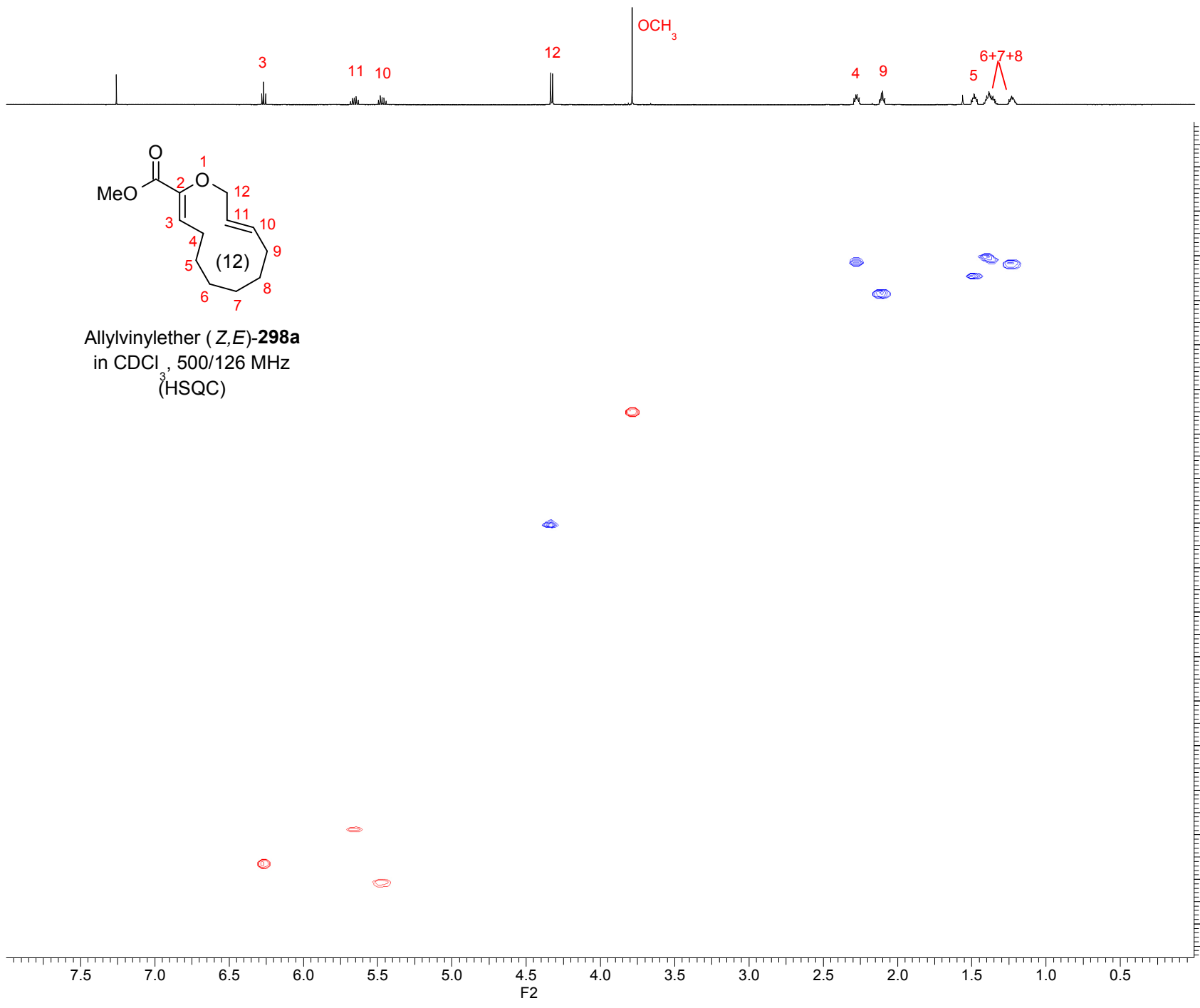
Allylvinyloxy (Z,E)-**298a**
in CDCl₃, 500 MHz
(1D-NOE)



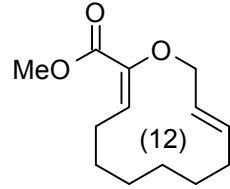


Allylvinylether (*Z,E*)-**298a**
in CDCl₃, 126 MHz

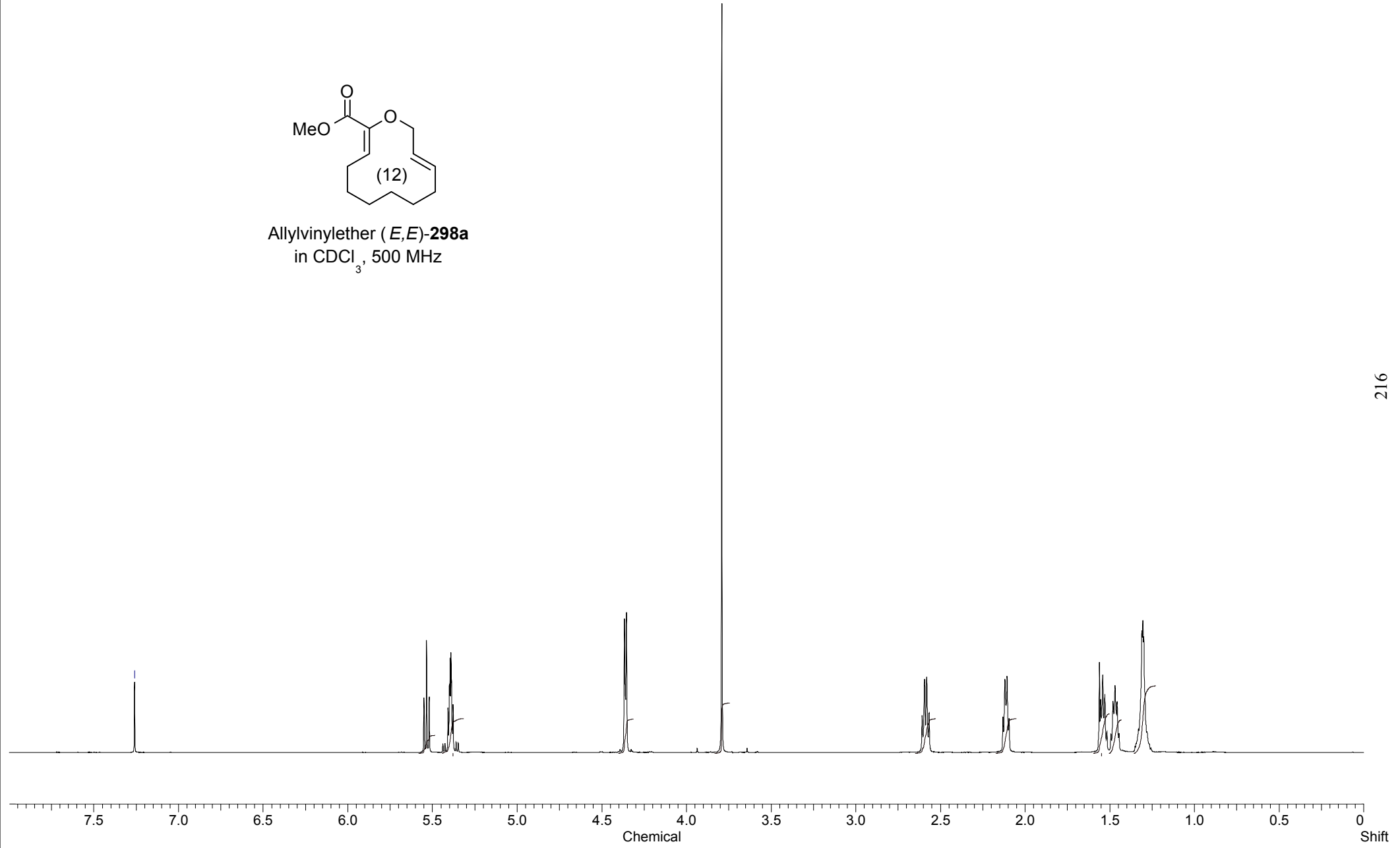


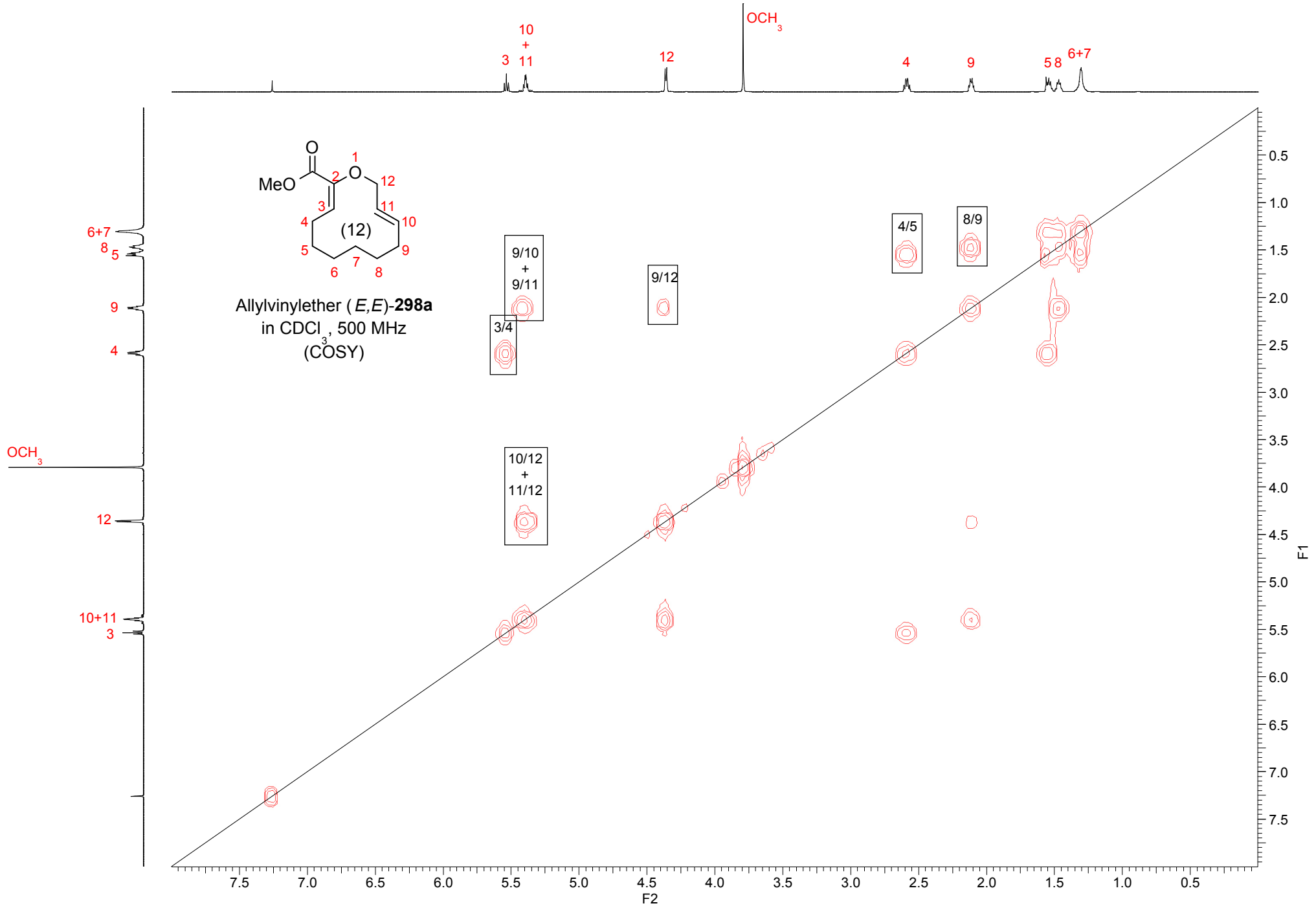


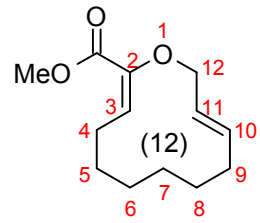
-7.260



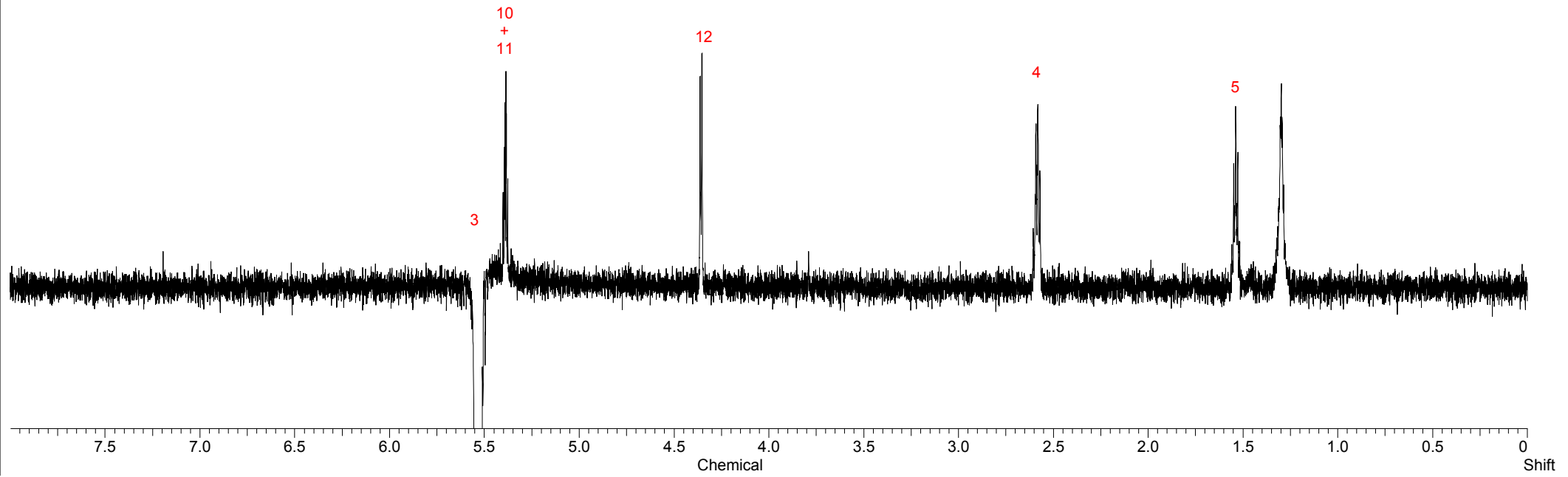
Allylvinylether (*E,E*)-**298a**
in CDCl₃, 500 MHz

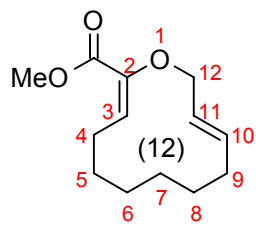




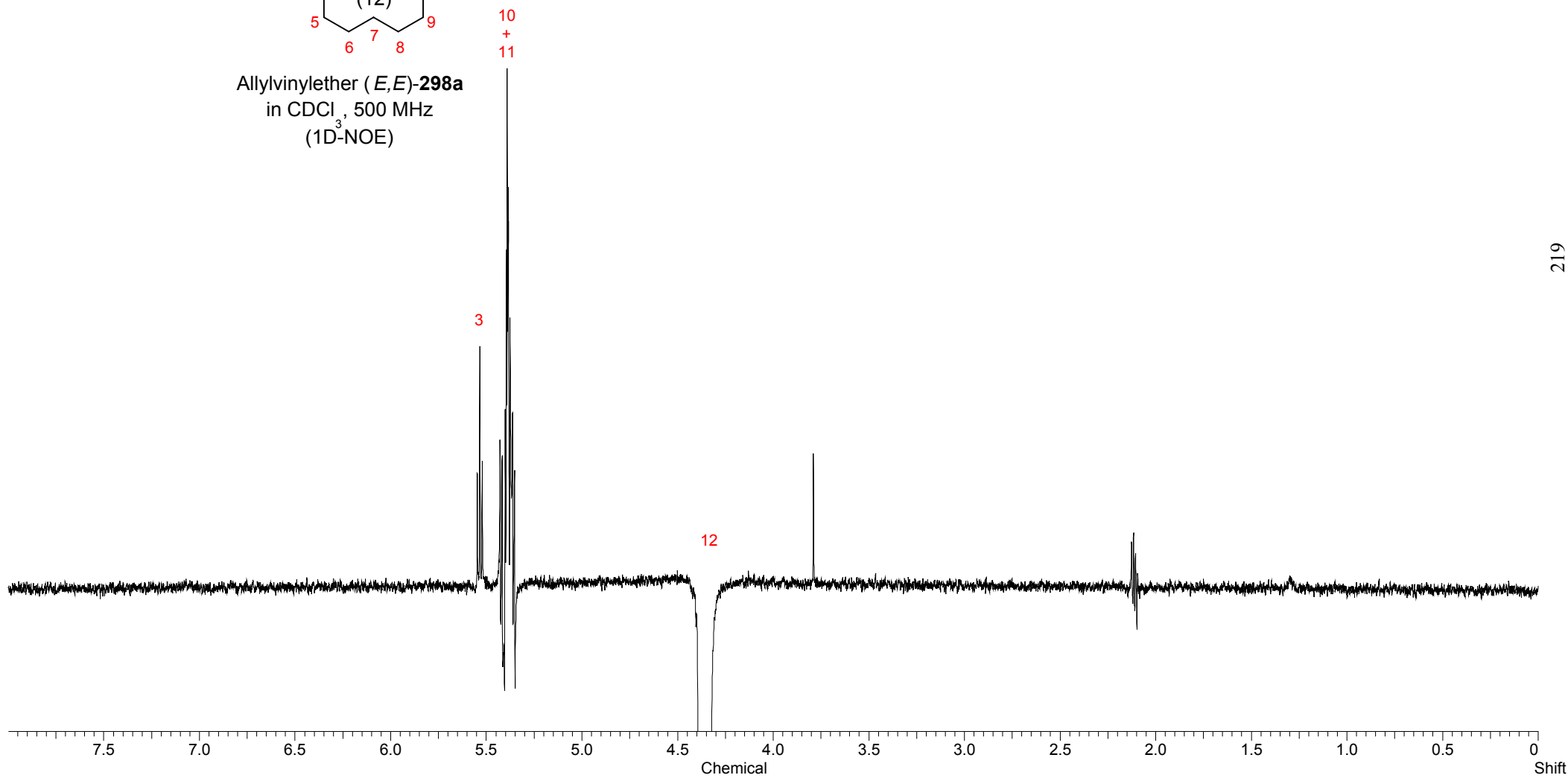


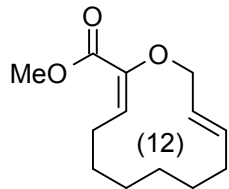
Allylvinyloxy (*E,E*)-**298a**
in CDCl₃, 500 MHz
(1D-³NOE)



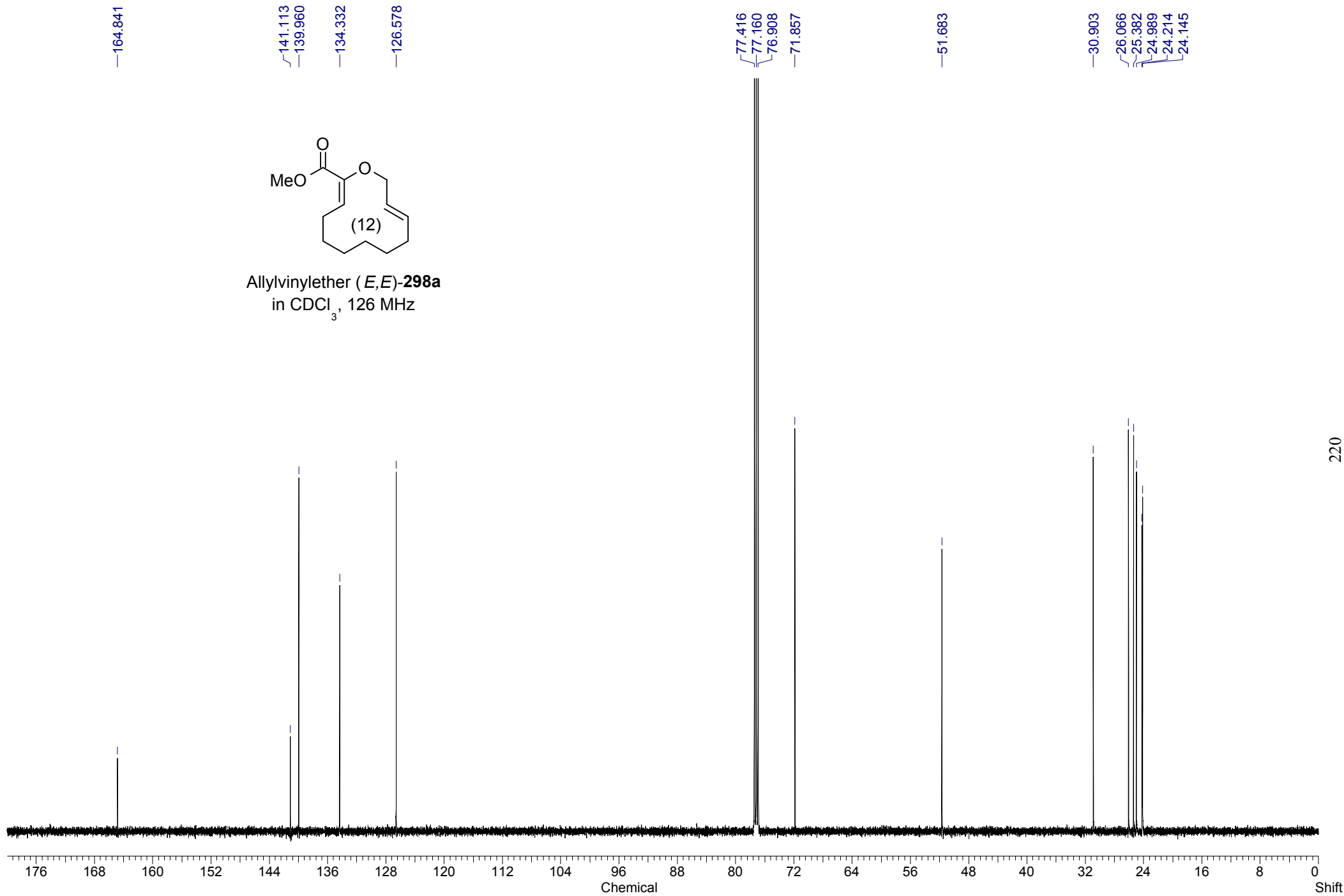


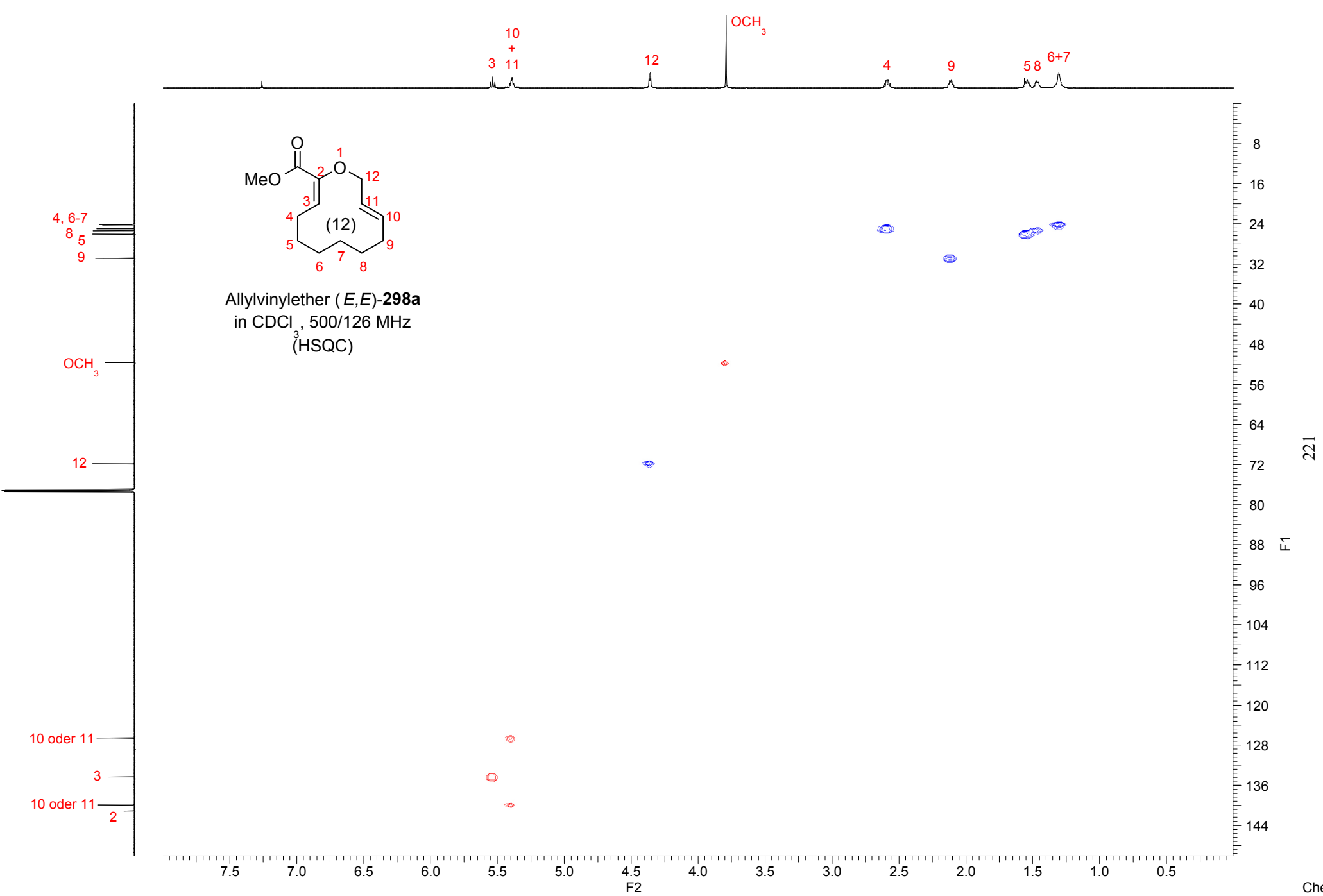
Allylvinyloxy (*E,E*)-**298a**
in CDCl₃, 500 MHz
(1D-NOE)



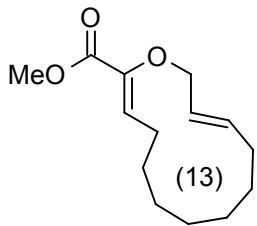


Allylvinylether (*E,E*)-**298a**
in CDCl₃, 126 MHz

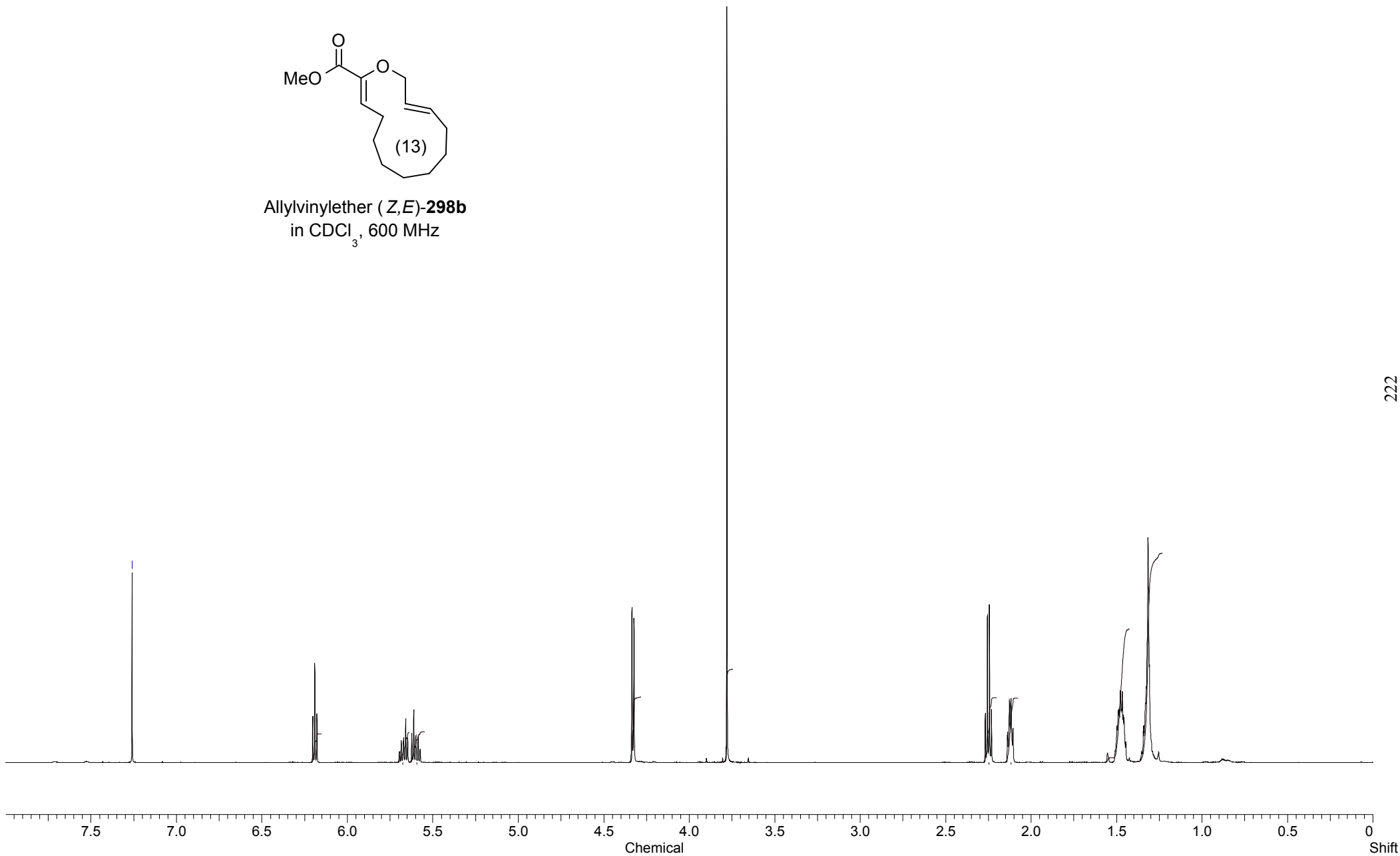


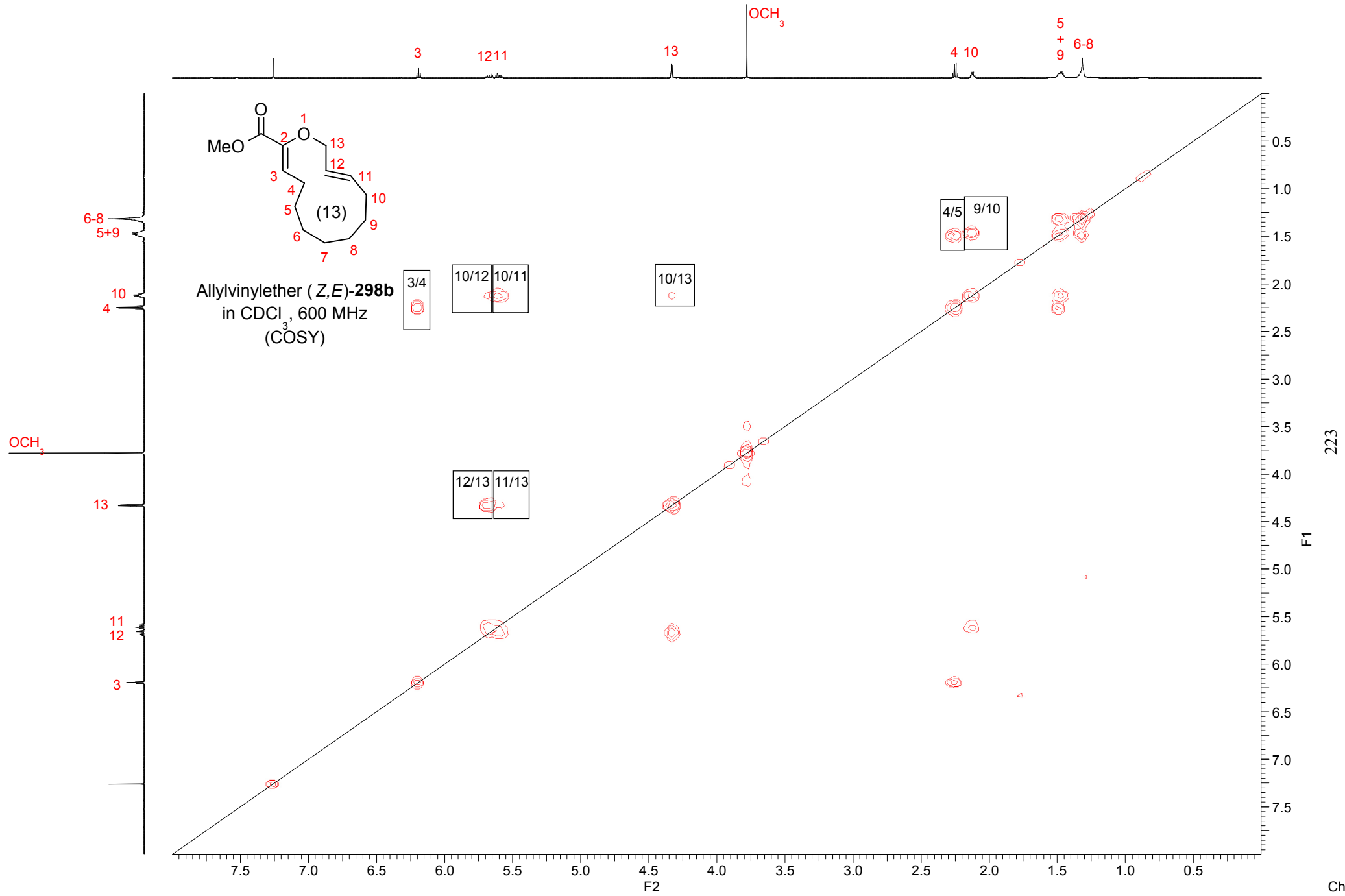


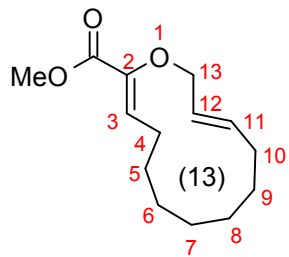
—7.260



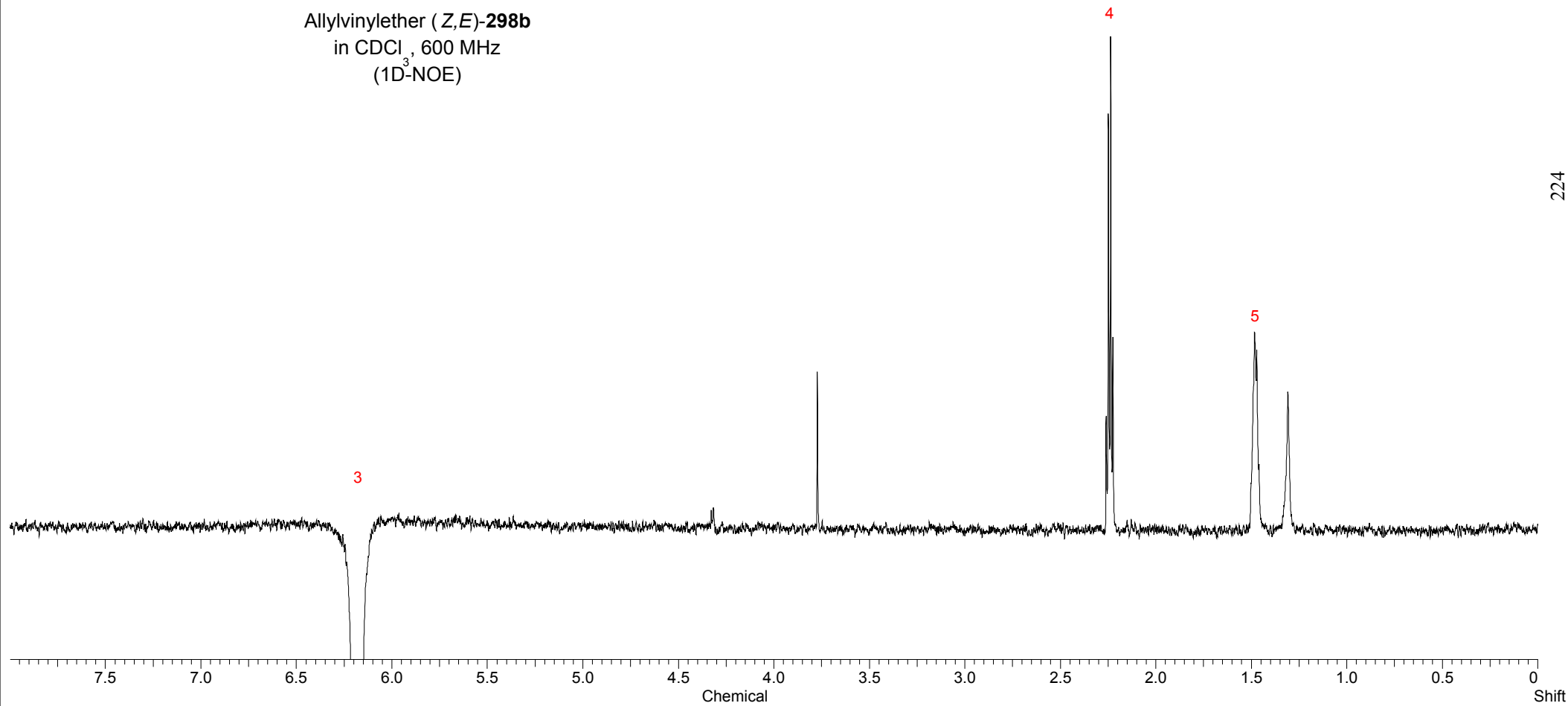
Allylvinylether (*Z,E*)-**298b**
in CDCl₃, 600 MHz

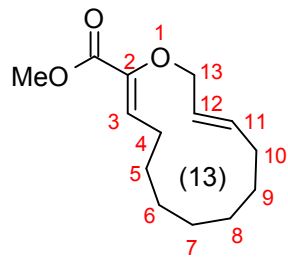




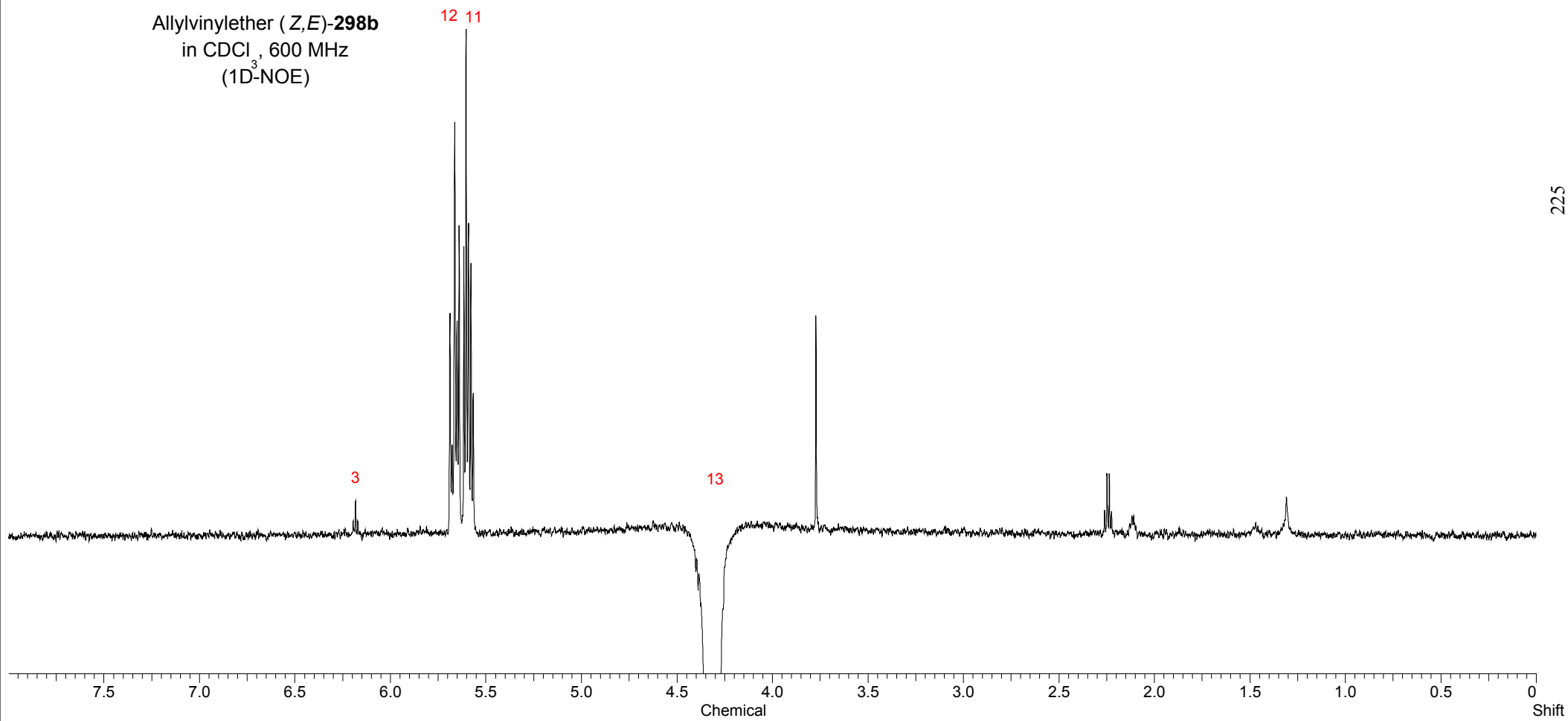


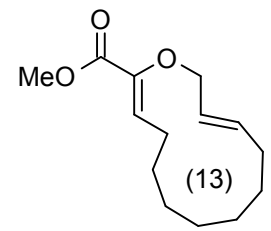
Allylvinylether (*Z,E*)-**298b**
in CDCl₃, 600 MHz
(1D-NOE)



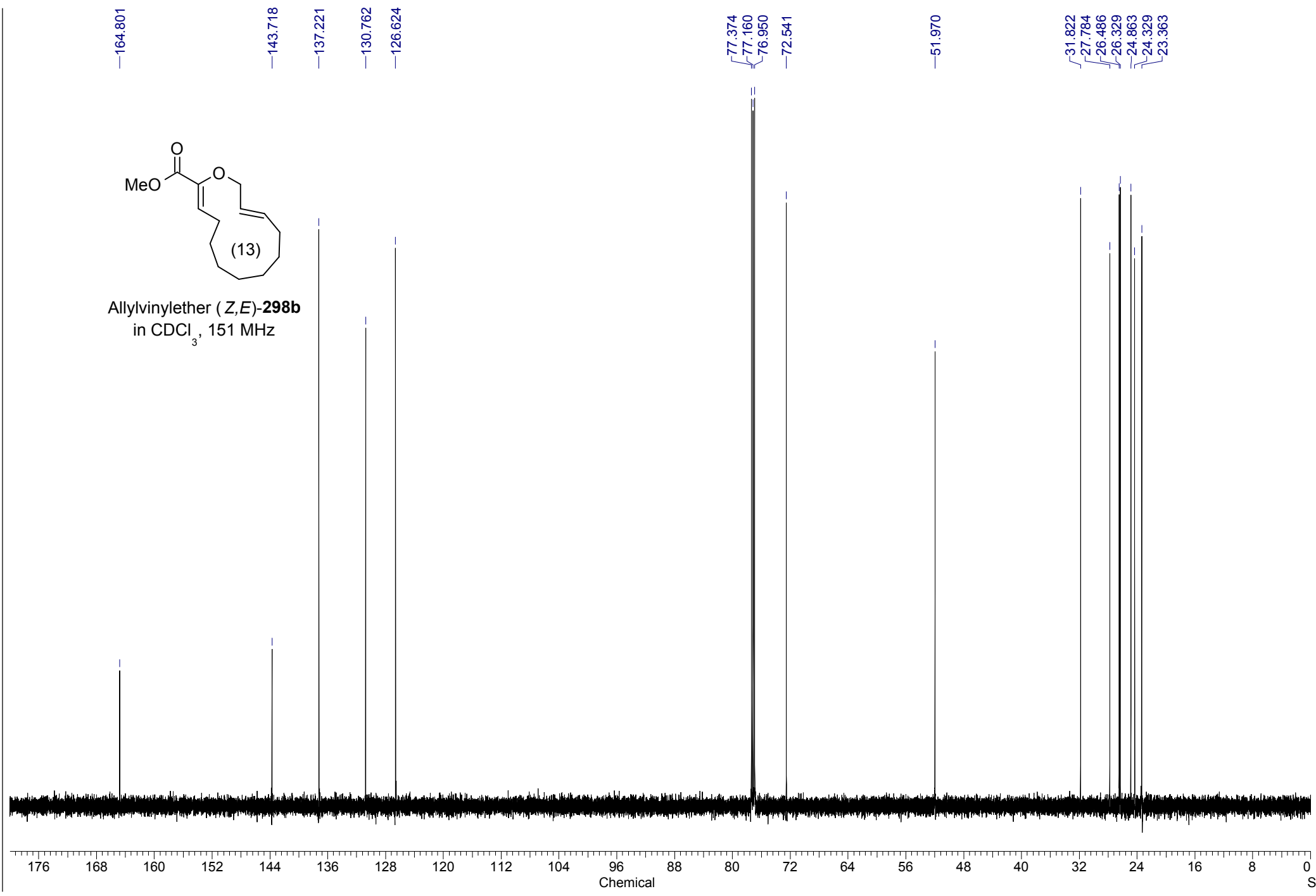


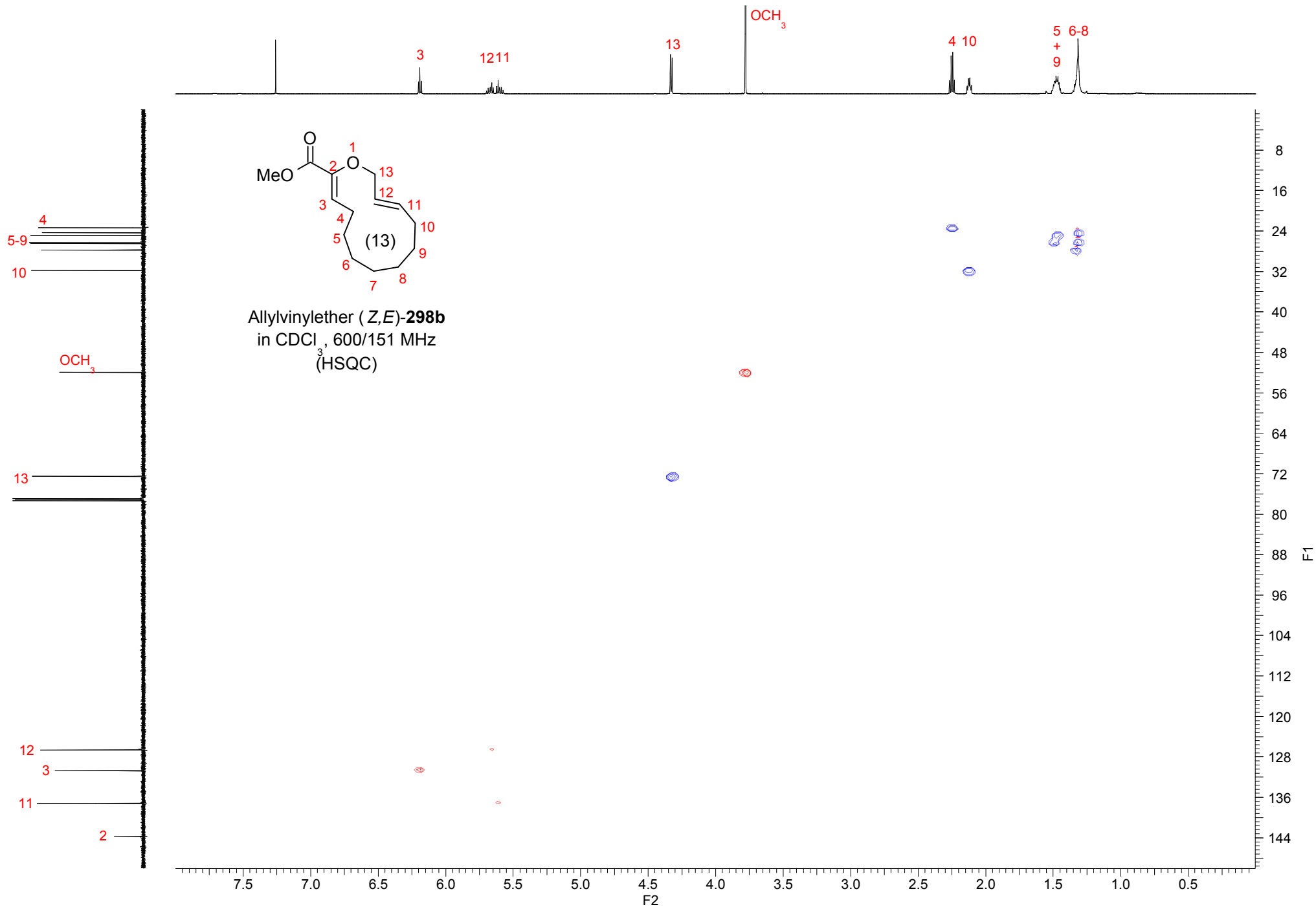
Allylvinyloxy (Z,E)-**298b**
in CDCl₃, 600 MHz
(1D³-NOE)



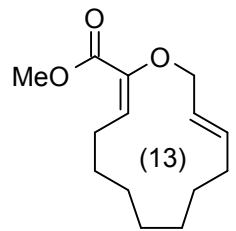


Allylvinylother (*Z,E*)-**298b**
in CDCl₃, 151 MHz

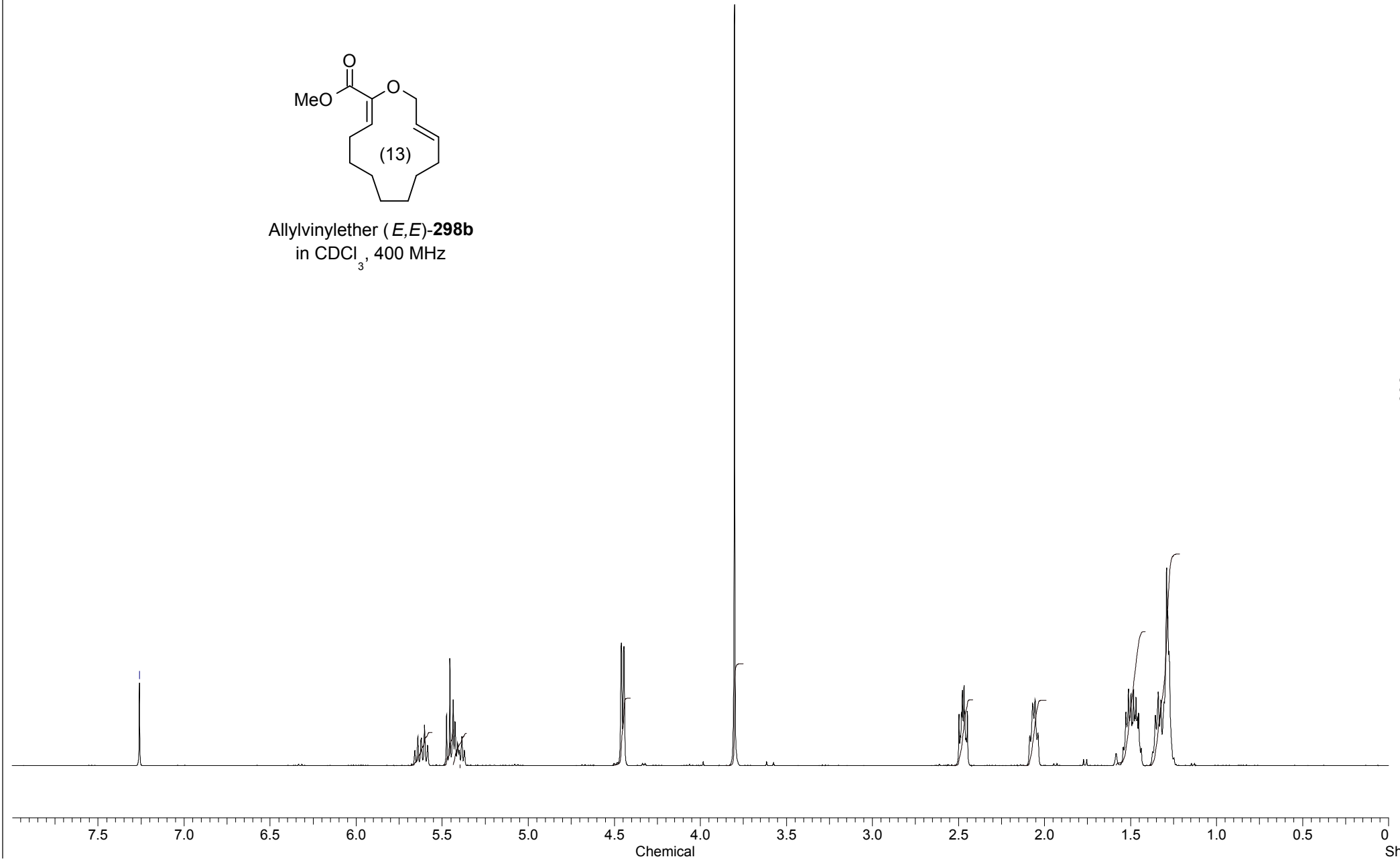


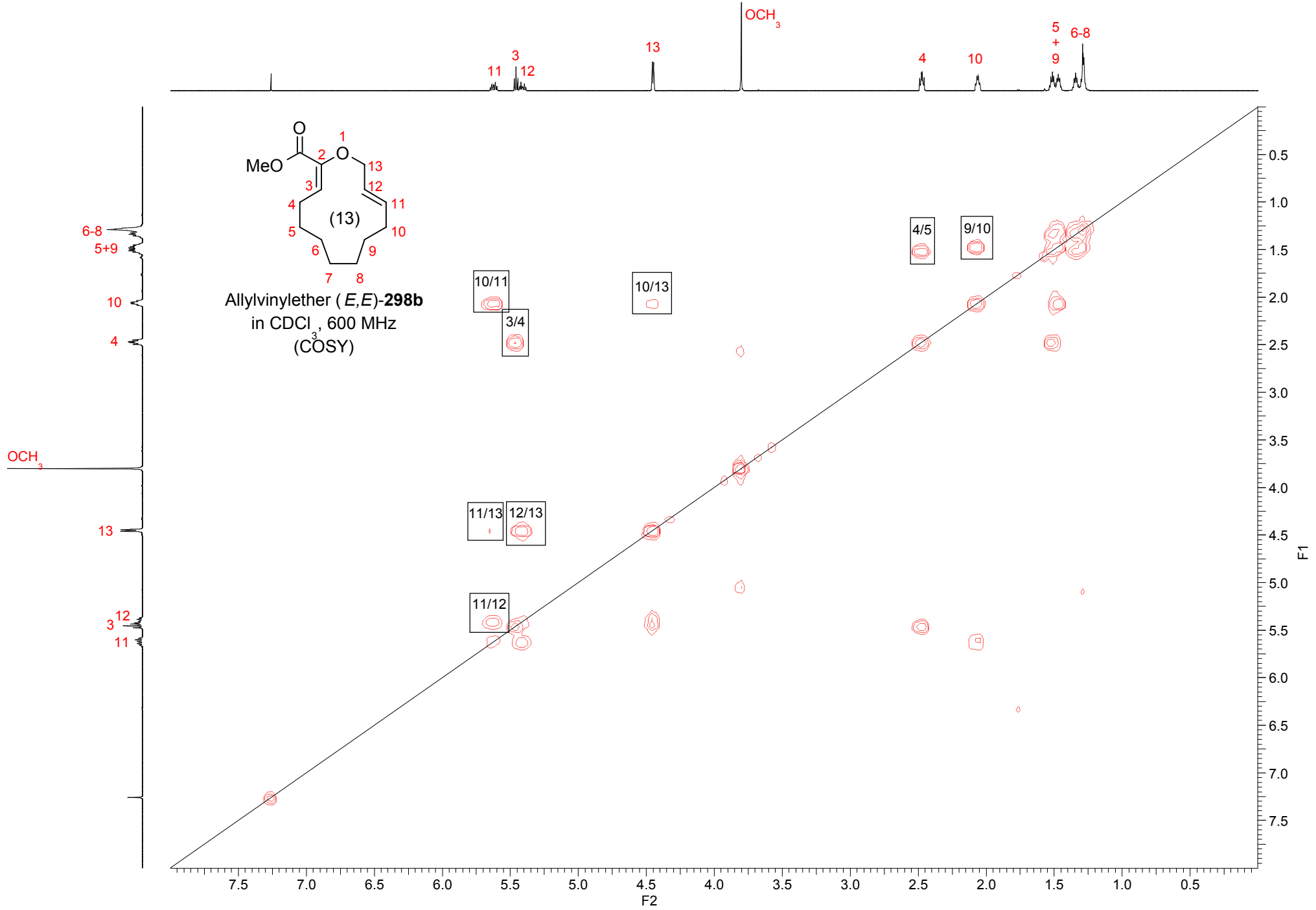


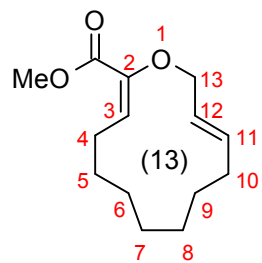
—7.260



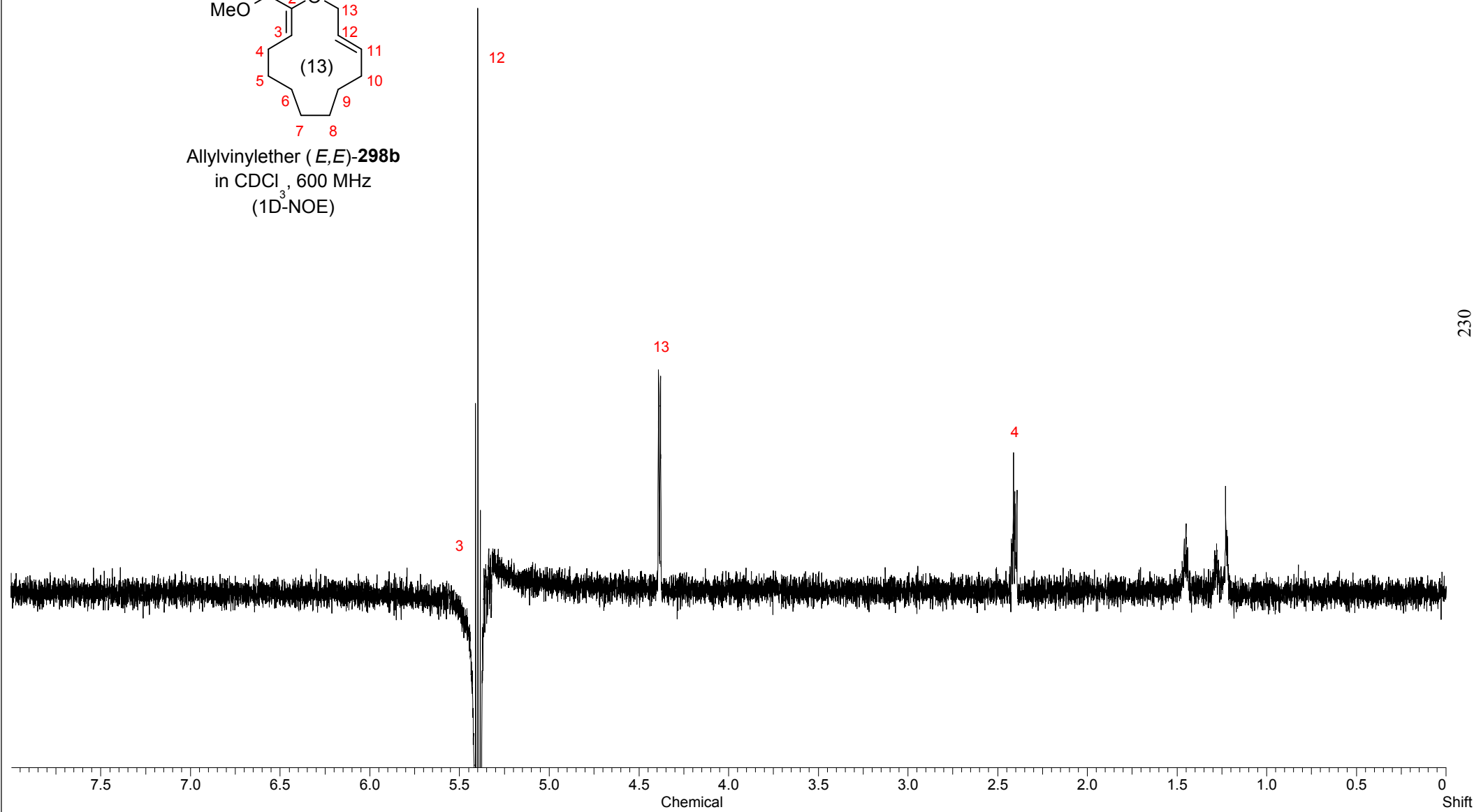
Allylvinylether (*E,E*)-**298b**
in CDCl₃, 400 MHz

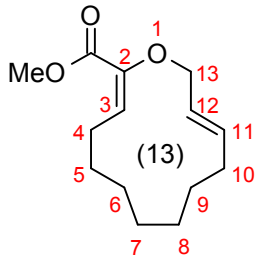




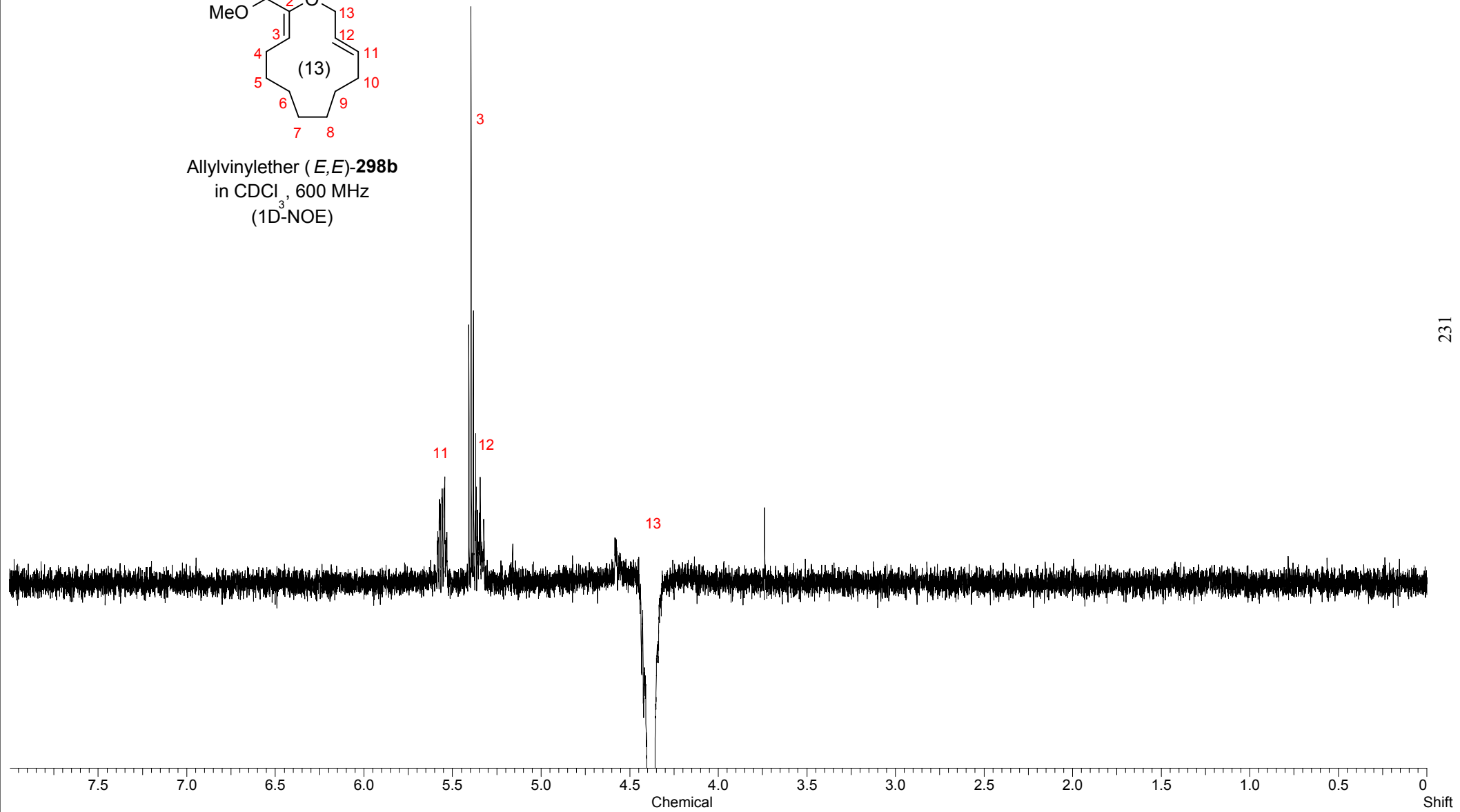


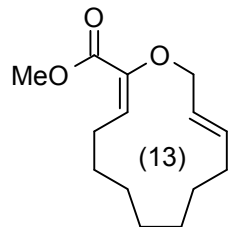
Allylvinylether (*E,E*)-**298b**
in CDCl₃, 600 MHz
(1D-NOE)



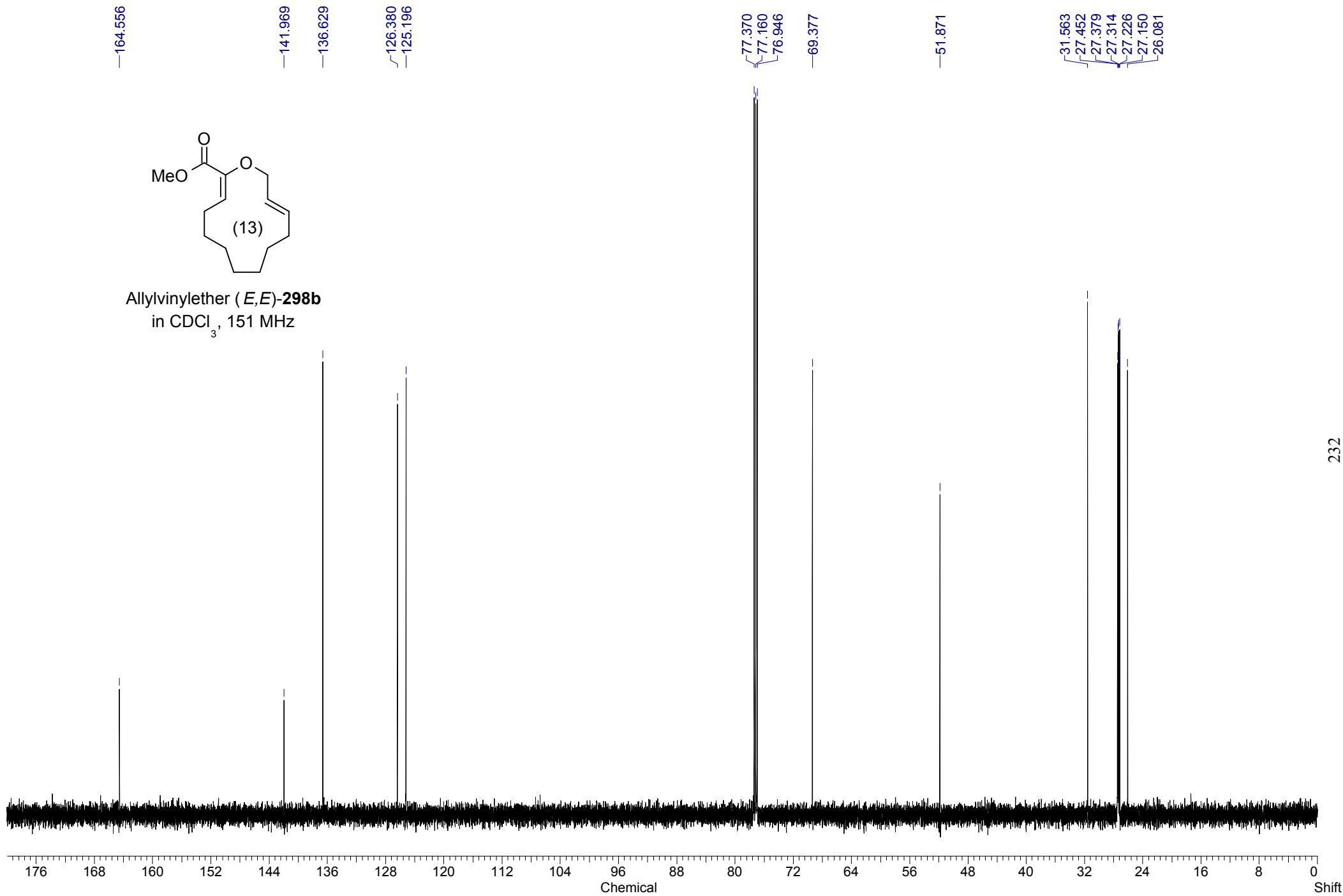


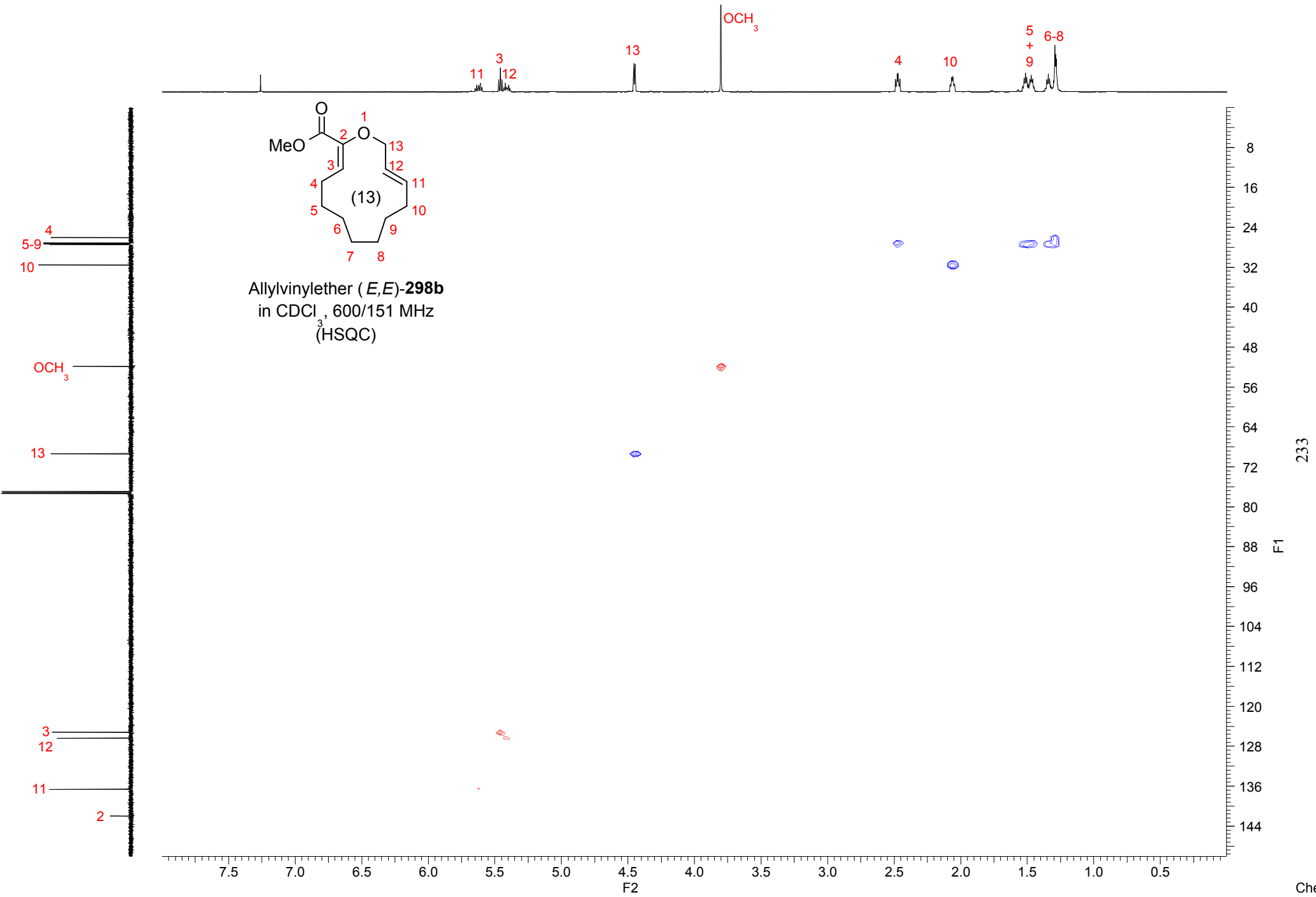
Allylvinyloxyether (*E,E*)-**298b**
in CDCl₃, 600 MHz
(1D-NOE)



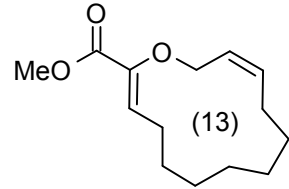


Allylvinylether (*E,E*)-**298b**
in CDCl₃, 151 MHz

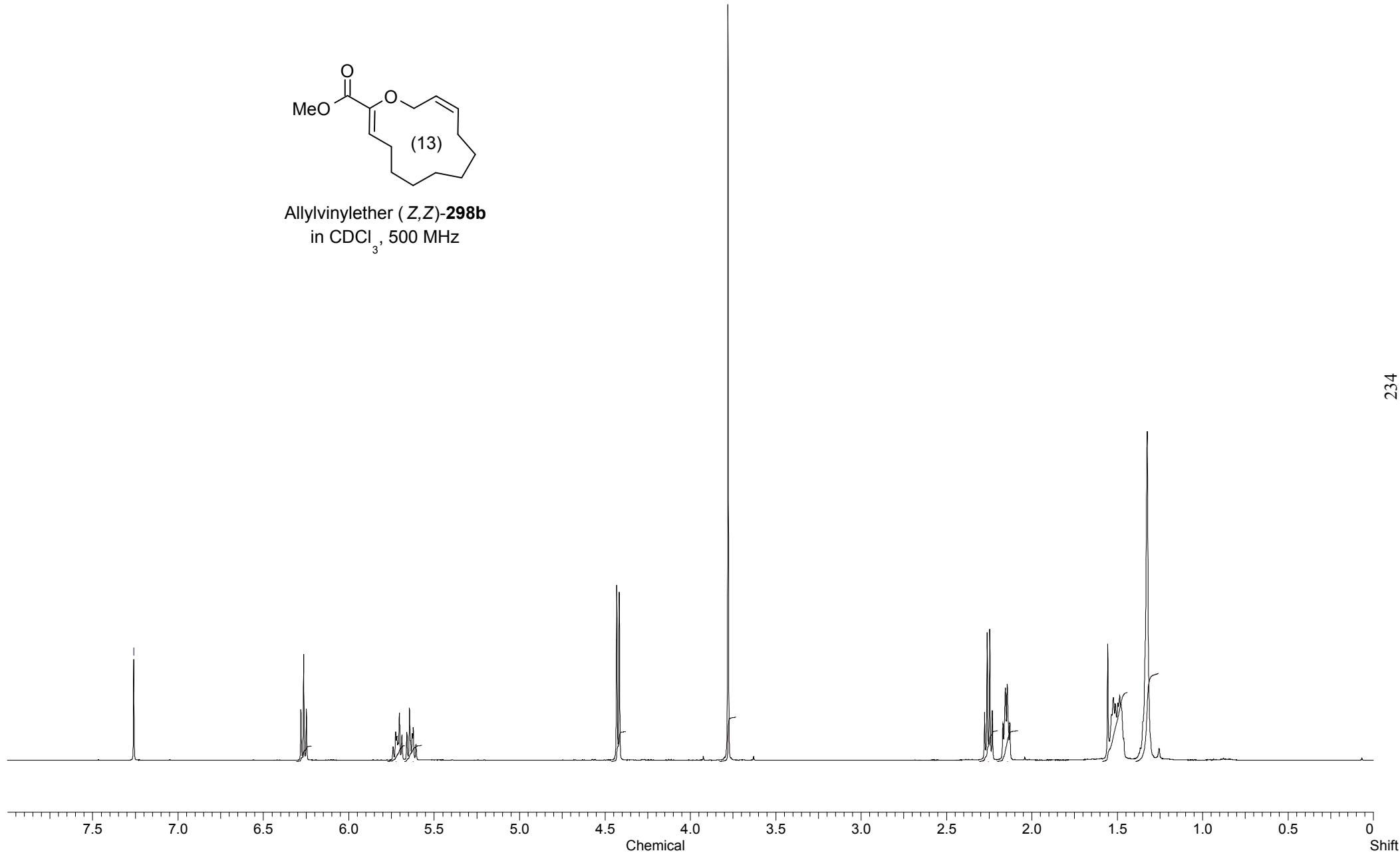


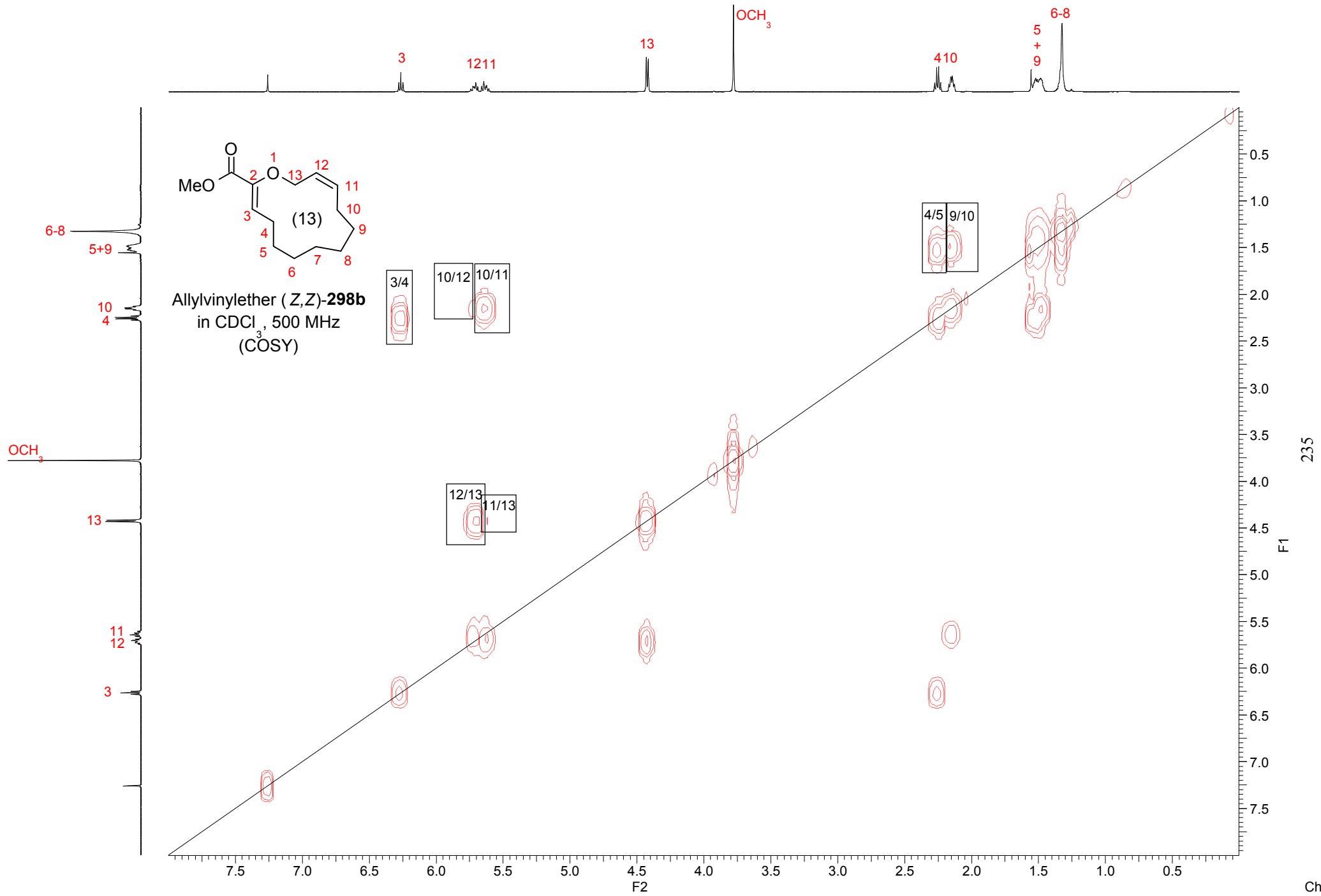


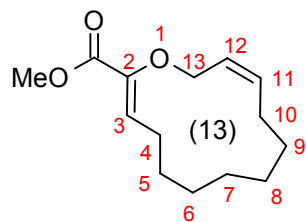
—7.260



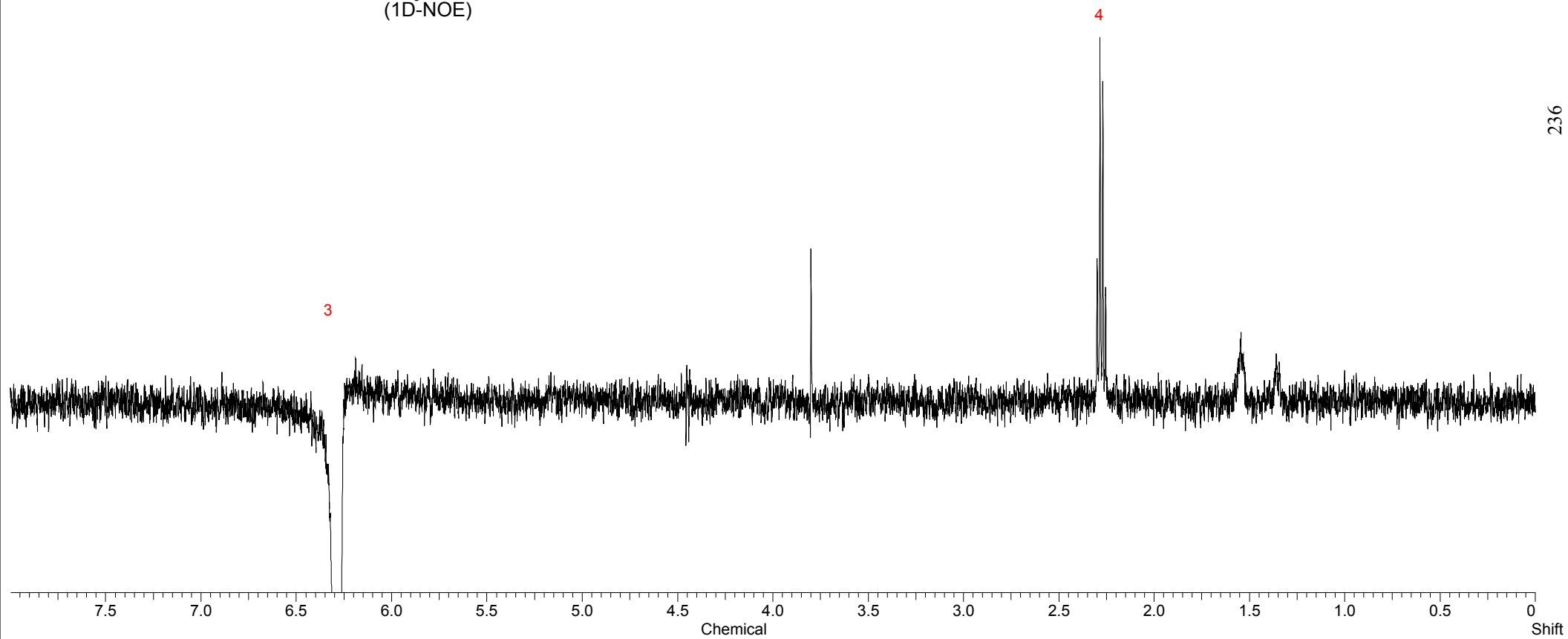
Allylvinylether (Z,Z)-**298b**
in CDCl₃, 500 MHz

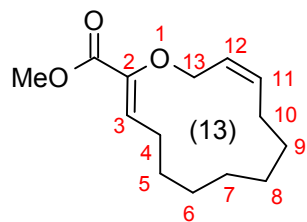




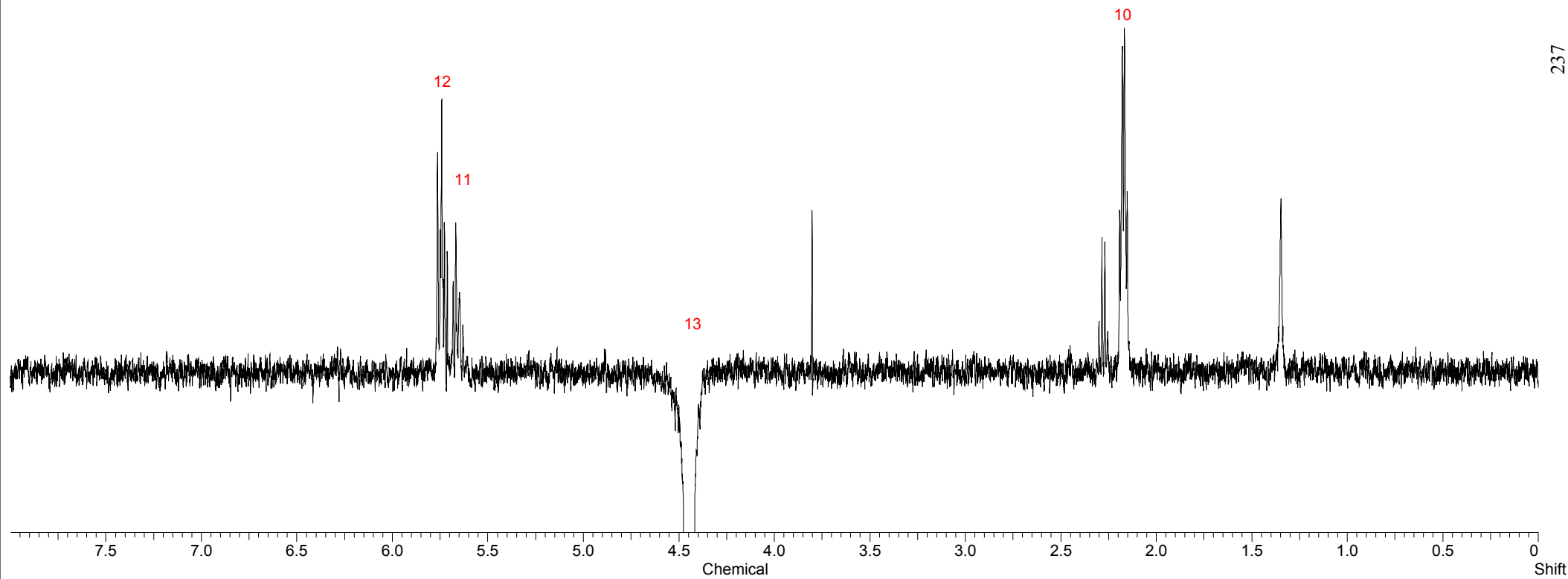


Allylvinylether (Z,Z)-**298b**
in CDCl₃, 500 MHz
(1D-NOE)





Allylvinyloxy (Z,Z)-**298b**
in CDCl₃, 500 MHz
(1D-NOE)



—164.852

—145.568

—136.222

—129.068

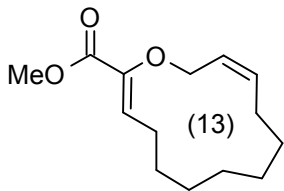
—125.036

77.416
77.160
76.904

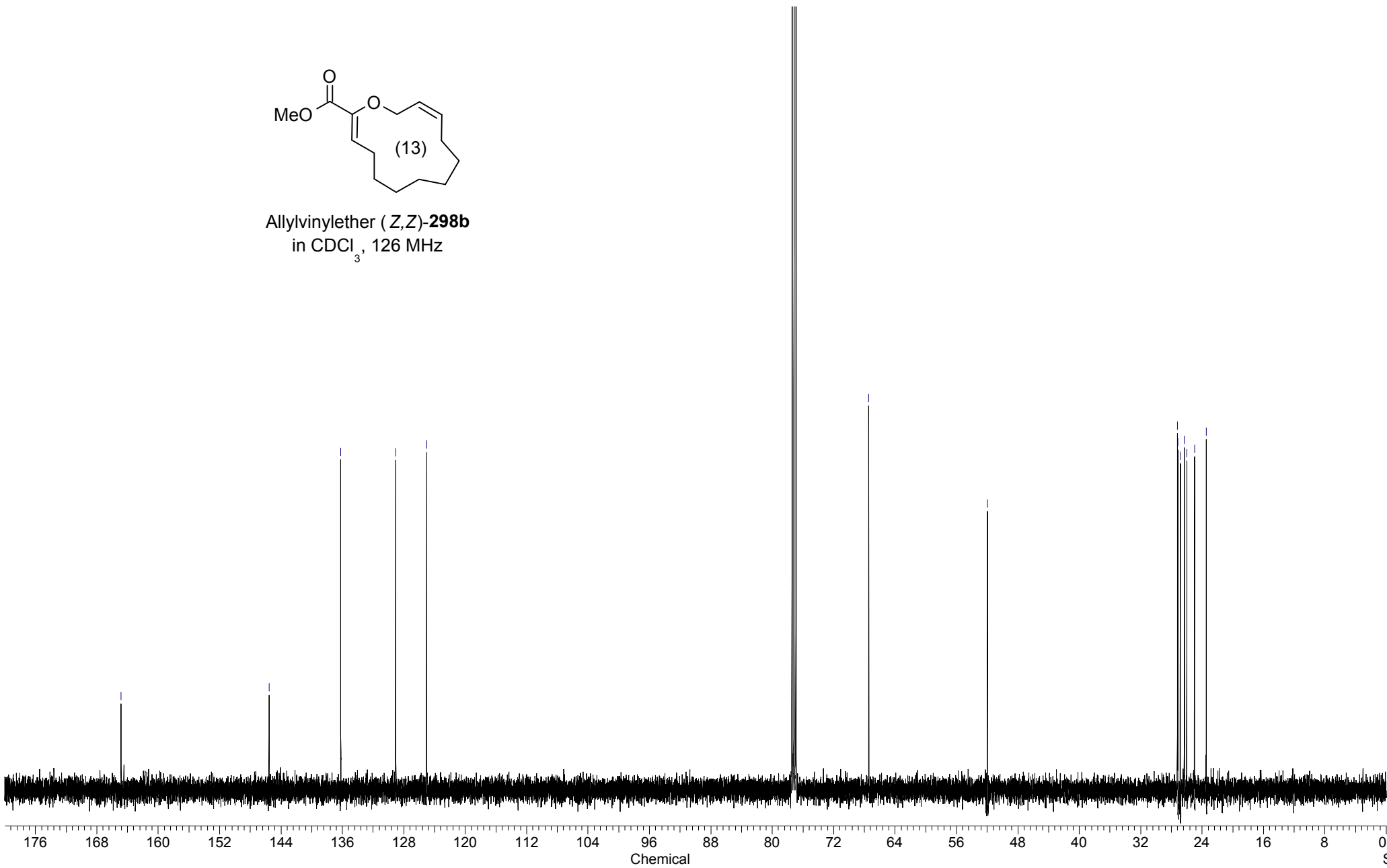
—67.421

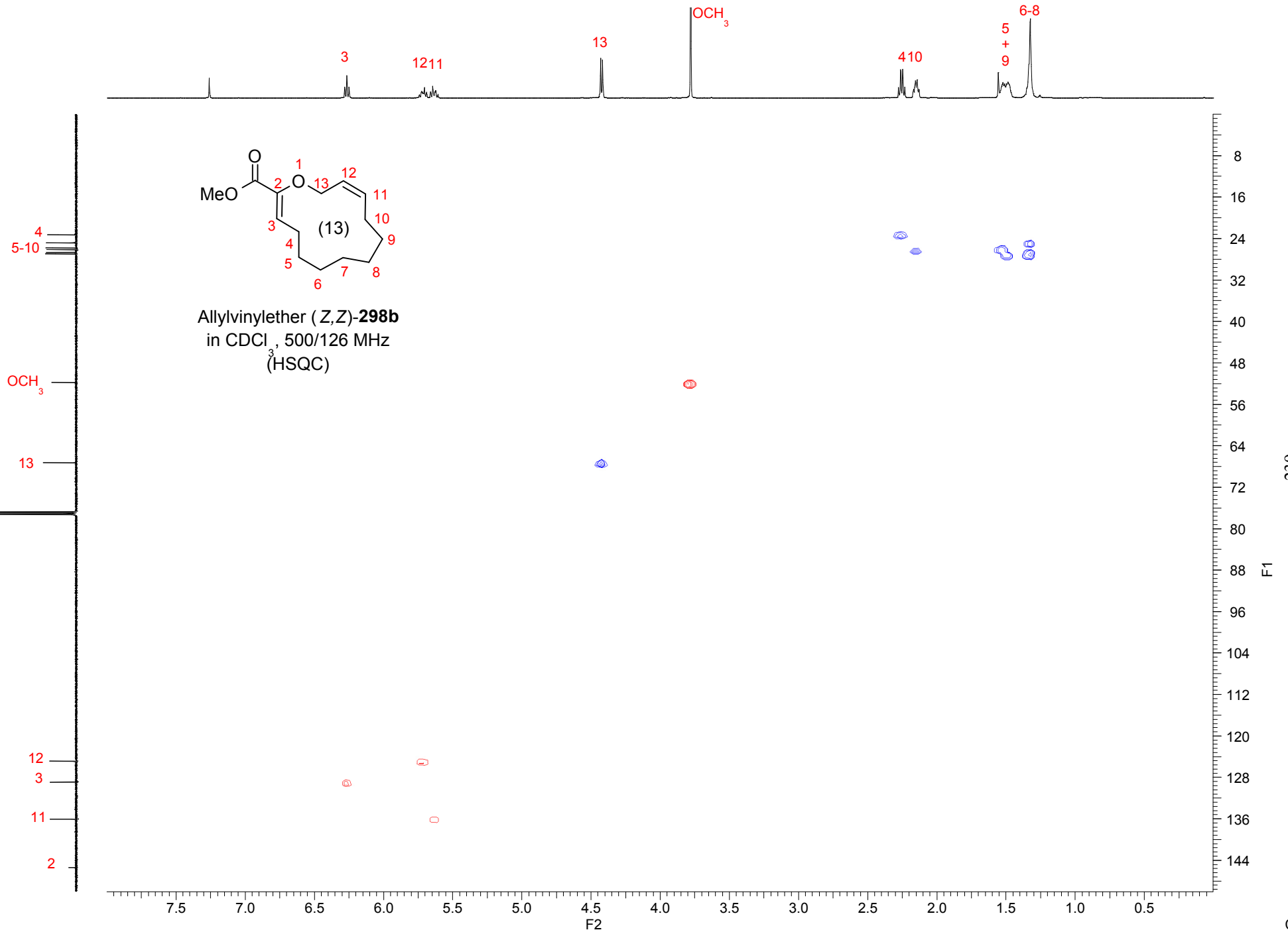
—51.970

27.203
27.150
26.837
26.302
25.989
24.981
23.450

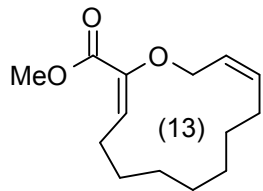


Allylvinylother (Z,Z)-**298b**
in CDCl₃, 126 MHz

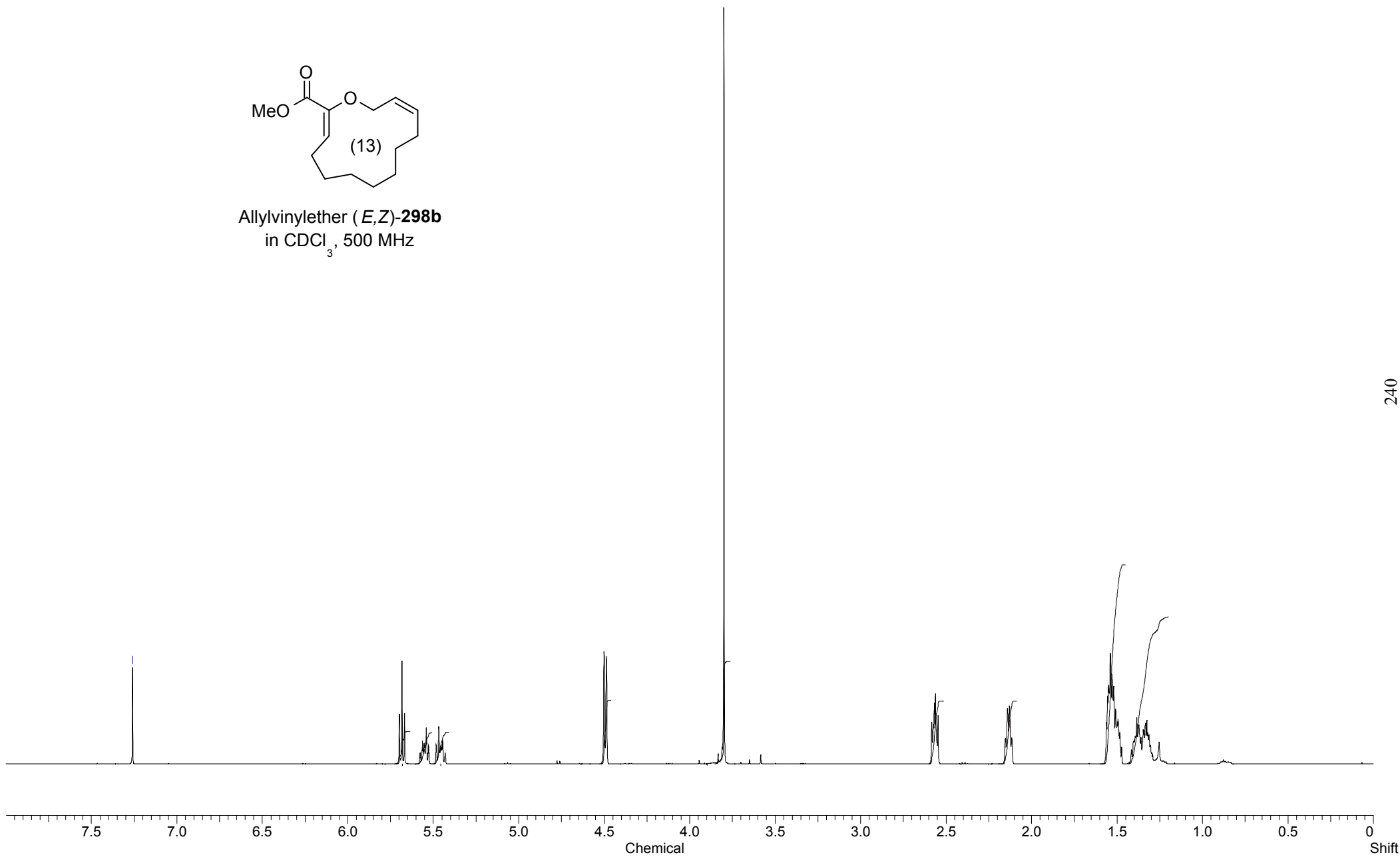


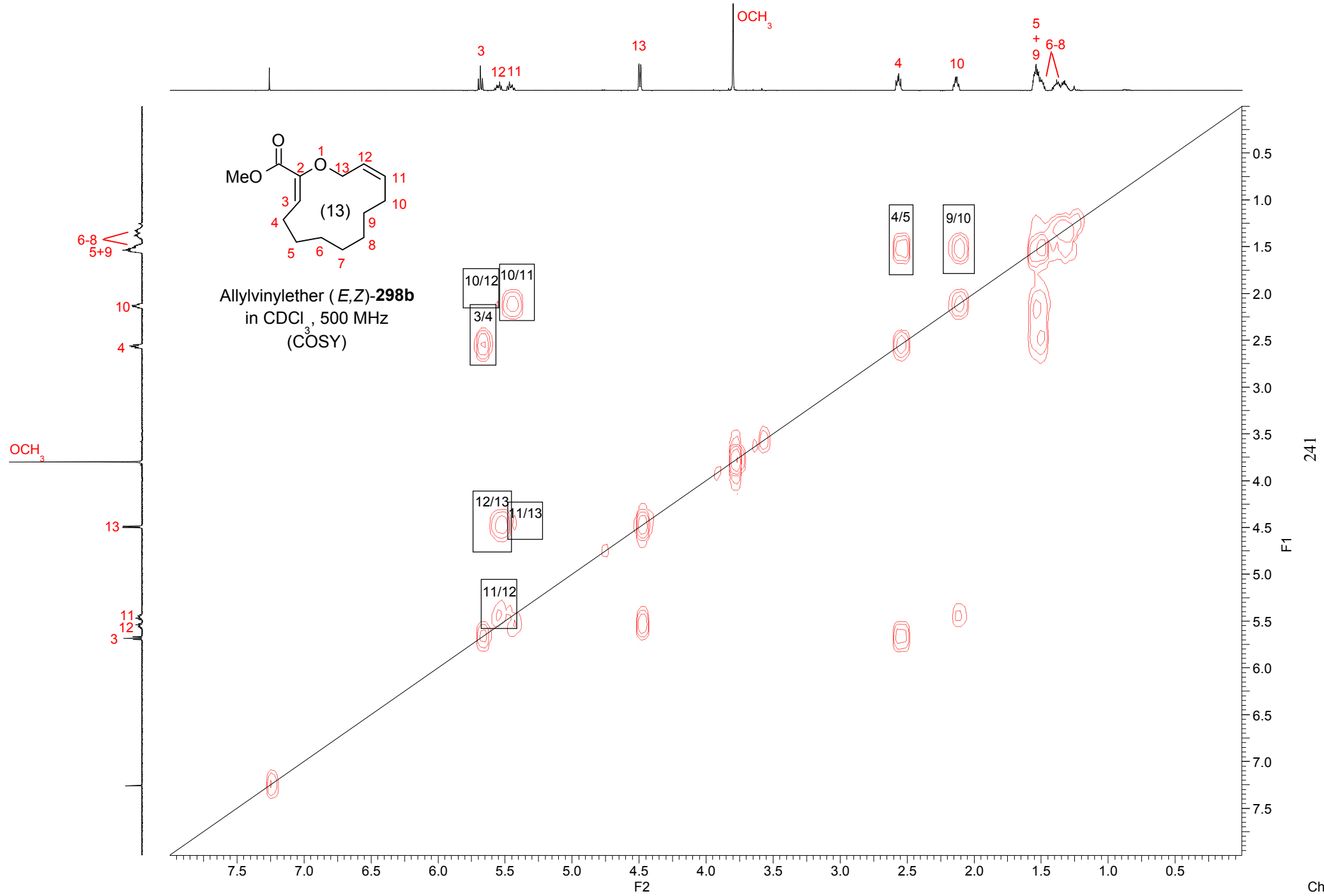


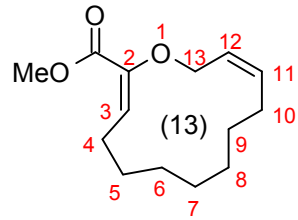
—7.260



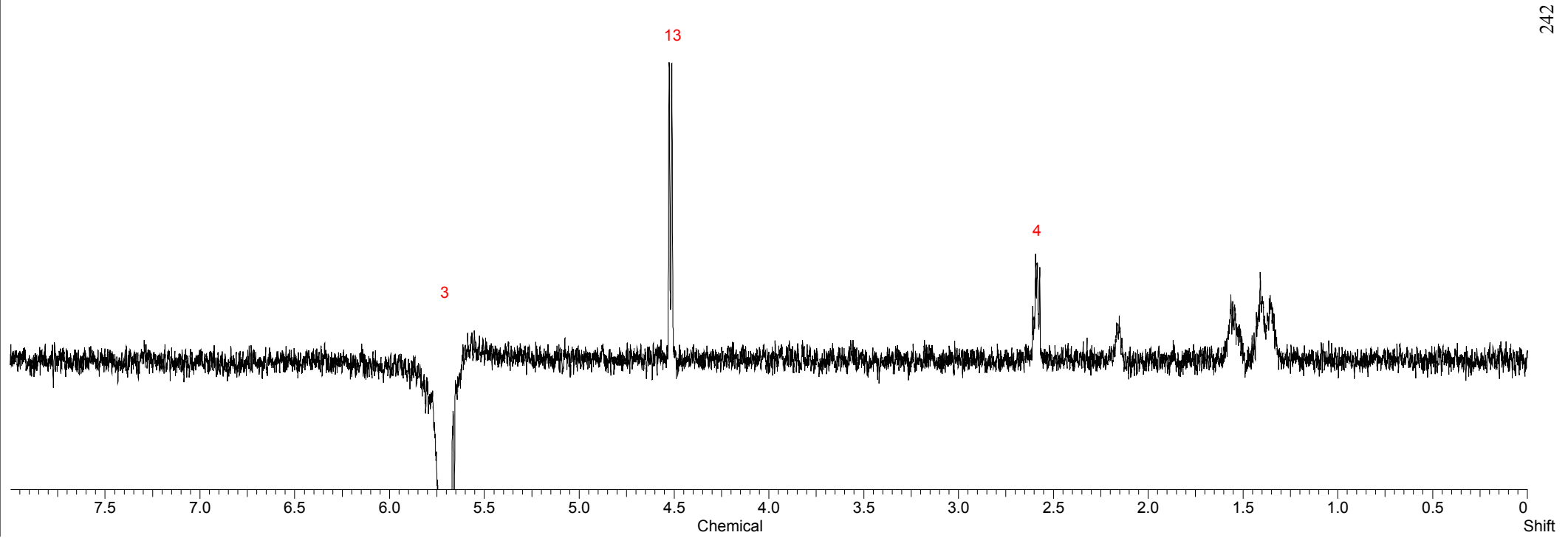
Allylvinylether (*E,Z*)-**298b**
in CDCl₃, 500 MHz

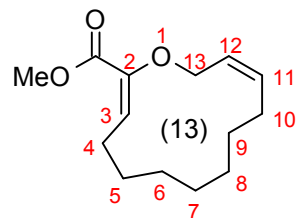




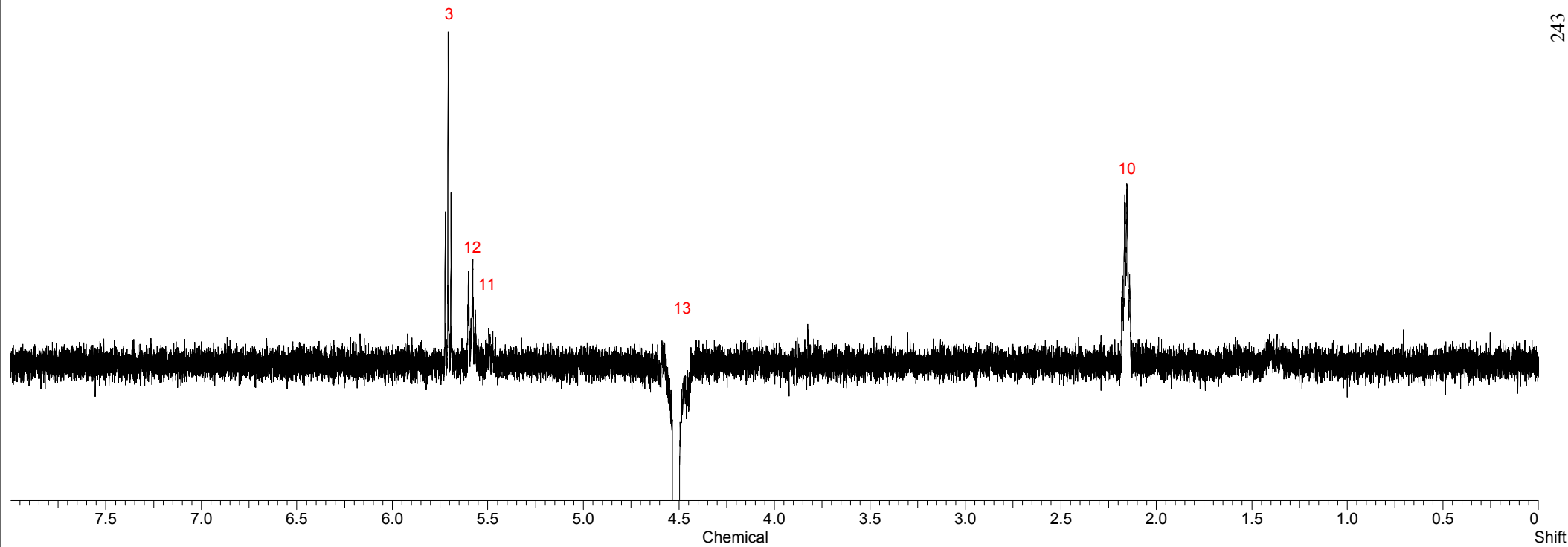


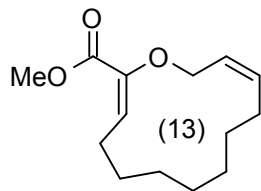
Allylvinyloxy ether (*E,Z*)-**298b**
in CDCl₃, 500 MHz
(1D³-NOE)





Allylvinylether (*E,Z*)-**298b**
in CDCl₃, 500 MHz
(1D-NOE)





Allylvinylether (*E,Z*)-**298b**
in CDCl₃, 126 MHz

—164.765

—143.247

—134.642

—126.777

—126.116

77.412

77.160

76.904

—66.970

—51.867

30.364

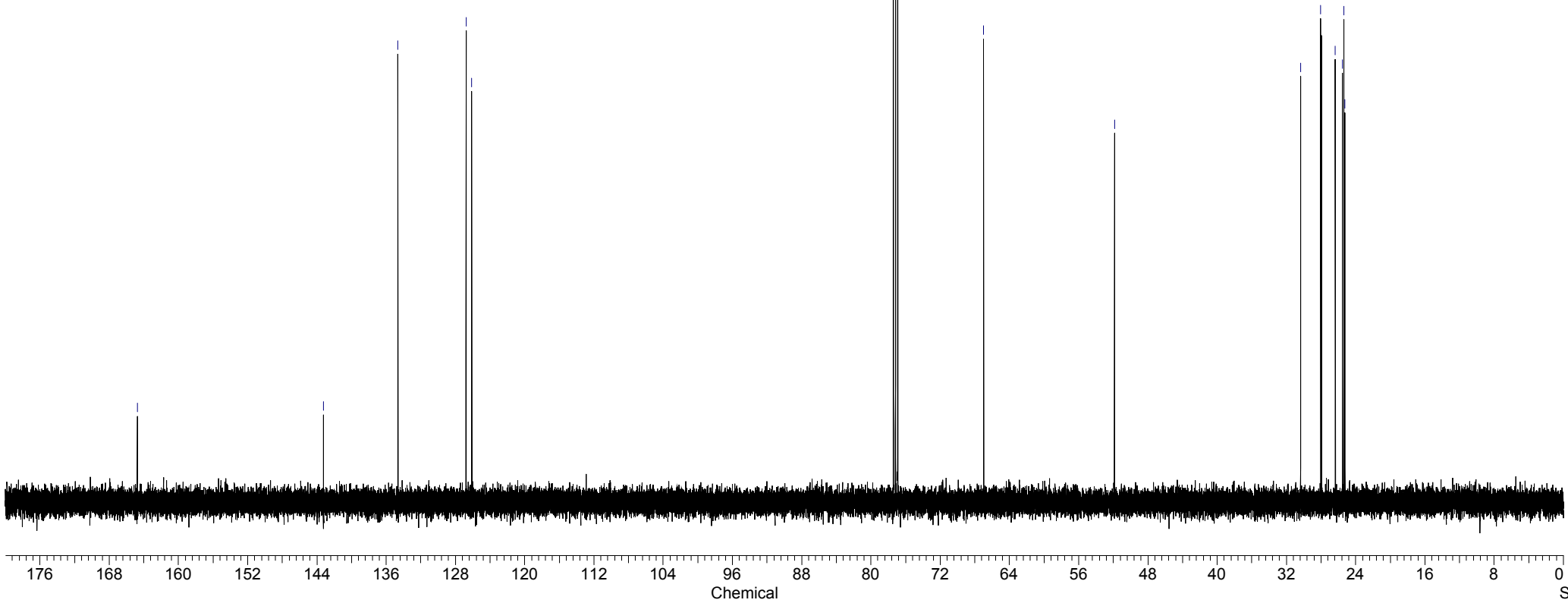
28.032

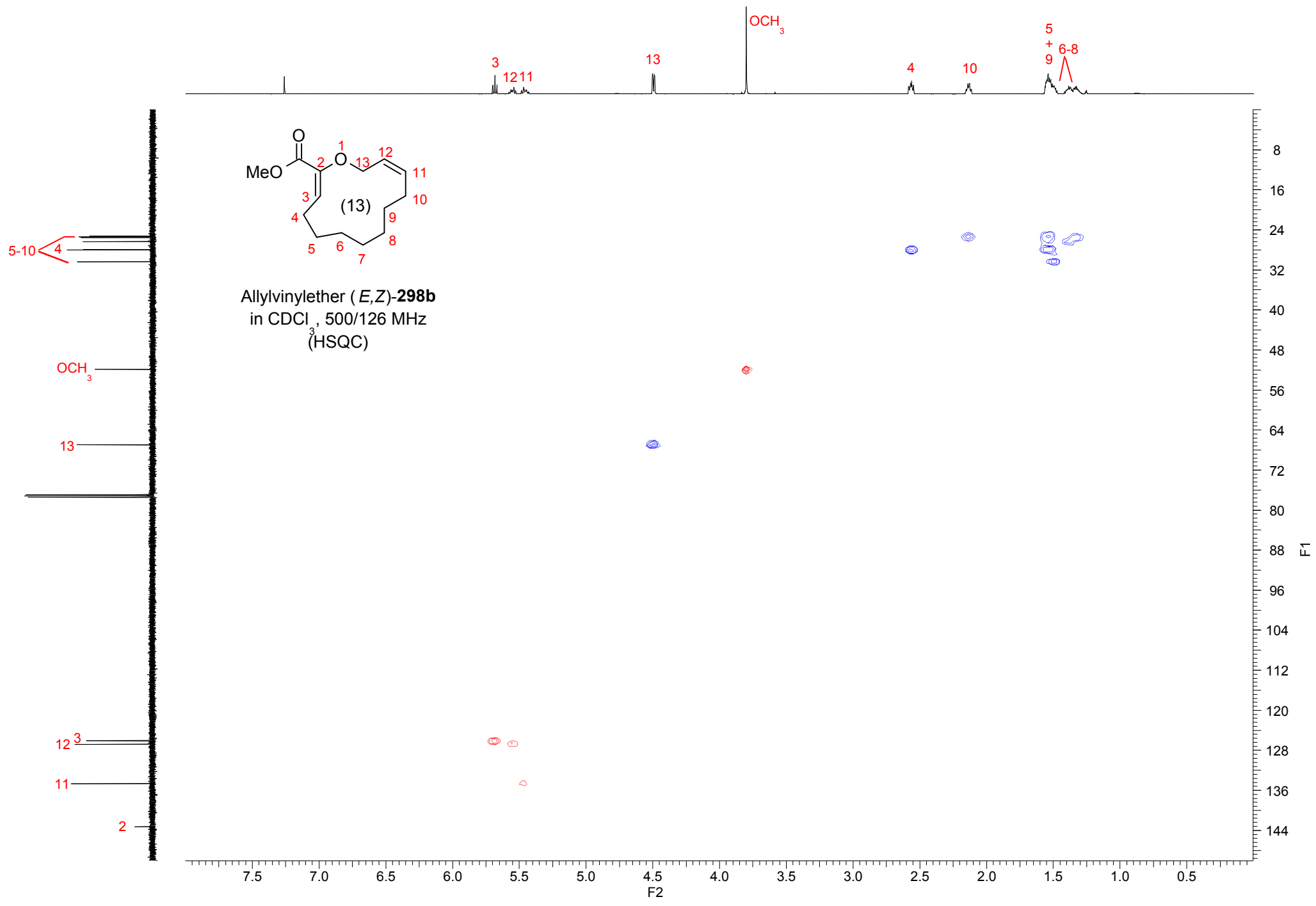
26.344

25.539

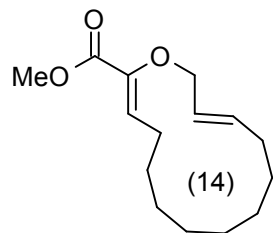
25.378

25.233

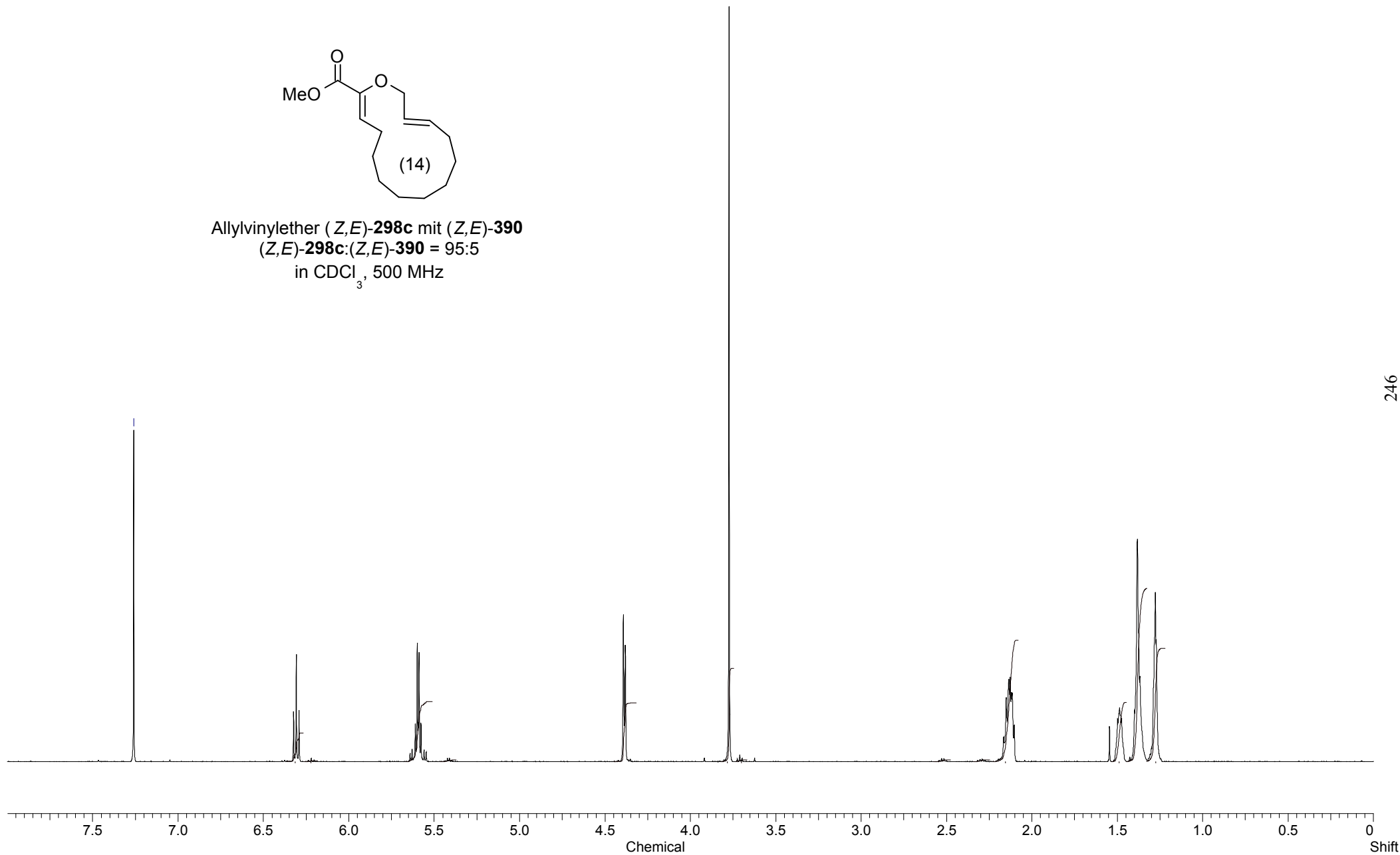


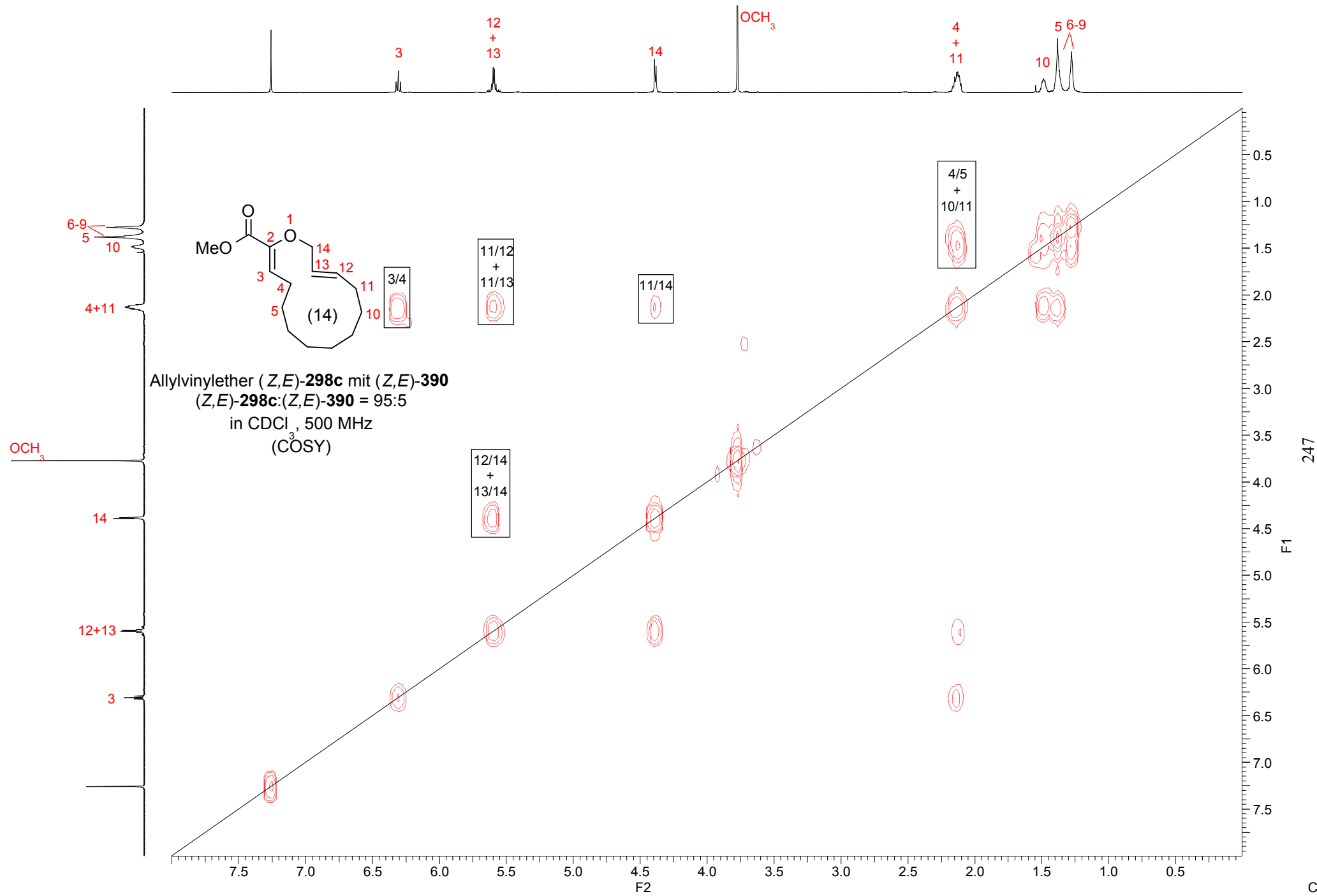


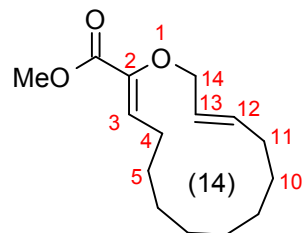
—7.260



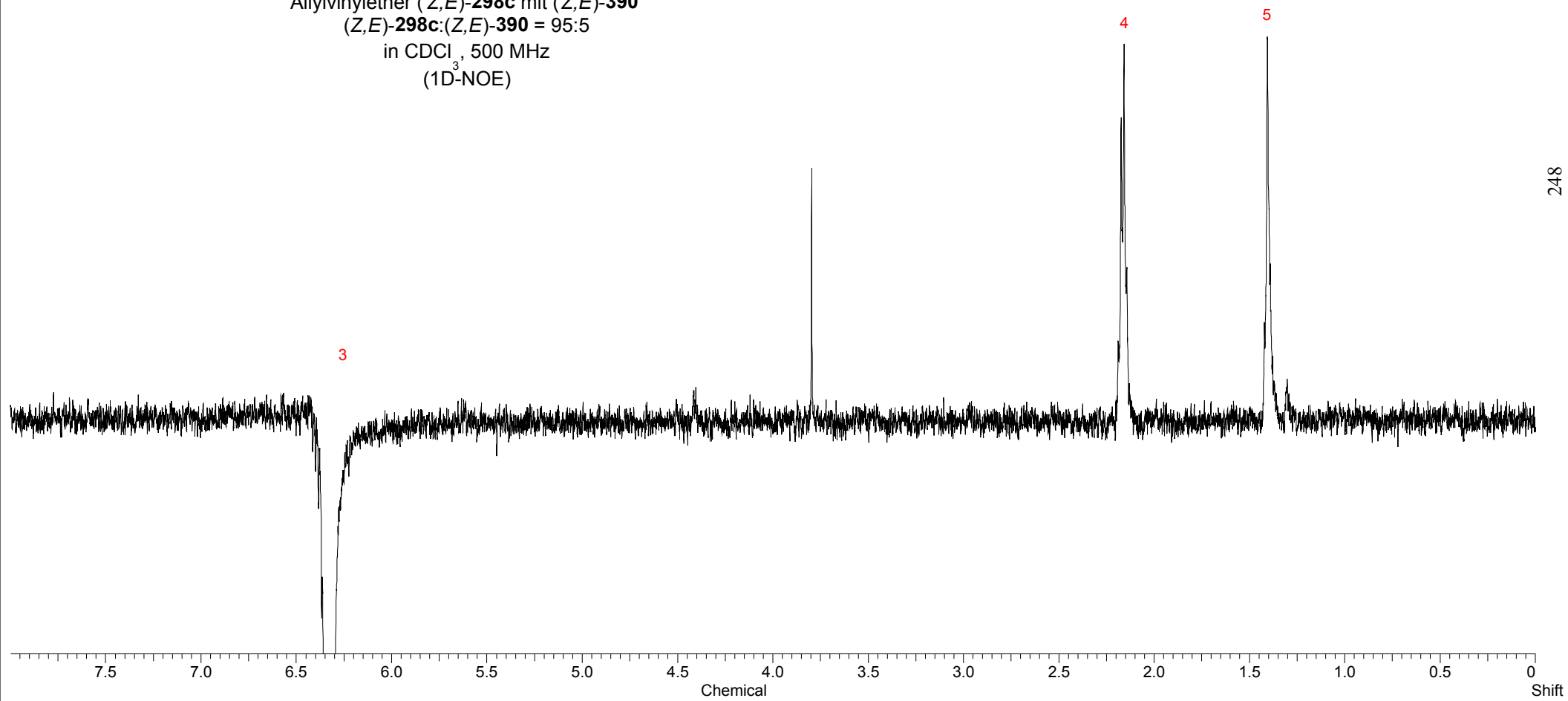
Allylvinylother (*Z,E*)-**298c** mit (*Z,E*)-**390**
(*Z,E*)-**298c**:(*Z,E*)-**390** = 95:5
in CDCl₃, 500 MHz

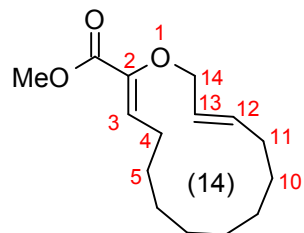






Allylvinylether (Z,E)-298c mit (Z,E)-390
(Z,E)-298c:(Z,E)-390 = 95:5
in CDCl₃, 500 MHz
(1D-NOE)

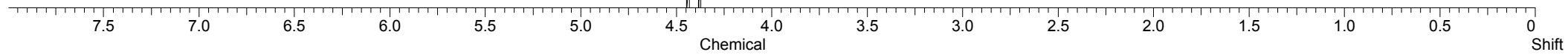


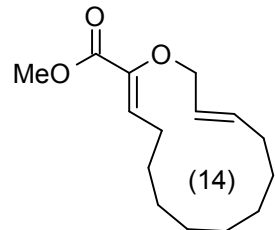


Allylvinylether (*Z,E*)-**298c** mit (*Z,E*)-**390**
(*Z,E*)-**298c**:(*Z,E*)-**390** = 95:5
in CDCl₃, 500 MHz
(1D³-NOE)

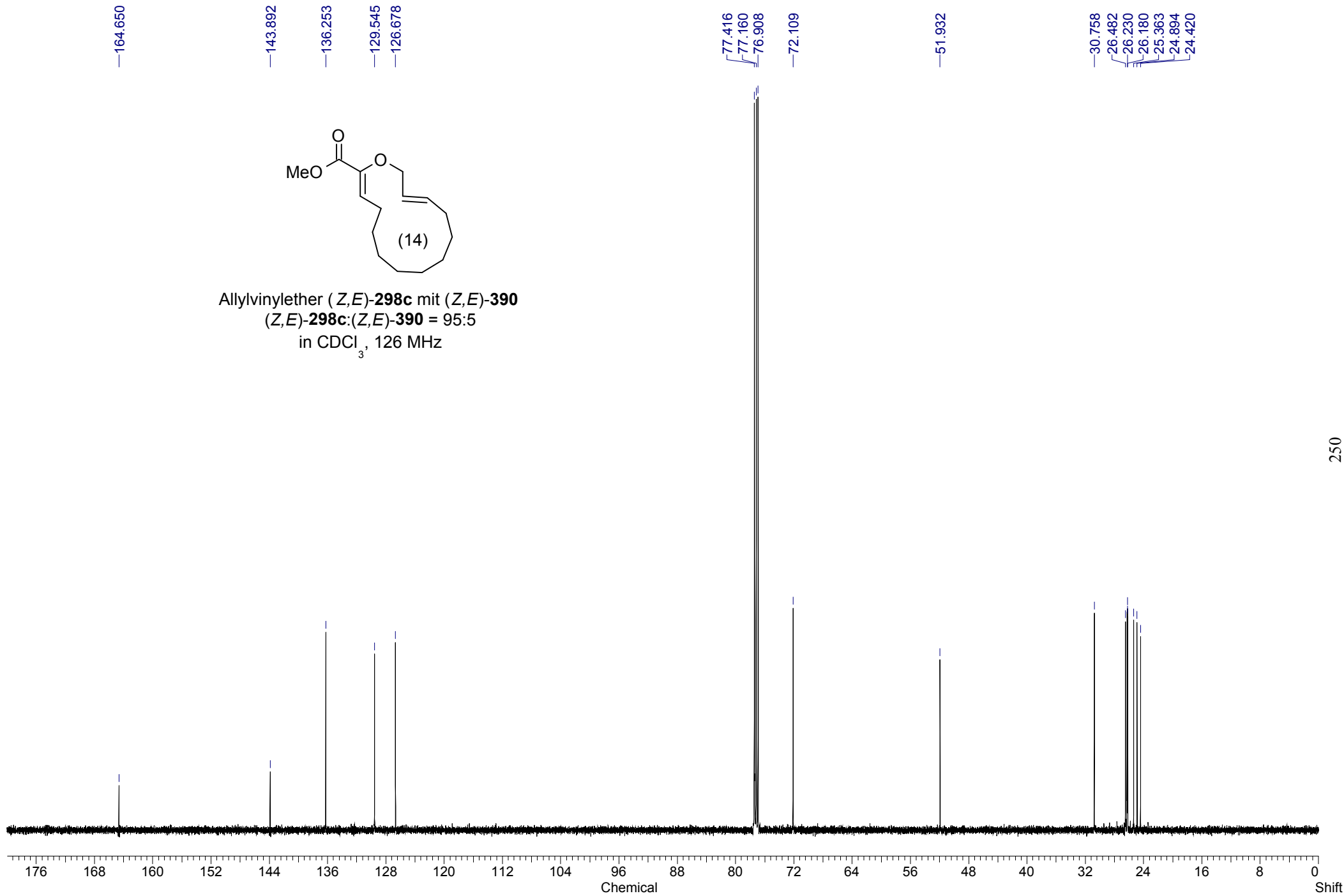
12
+
13

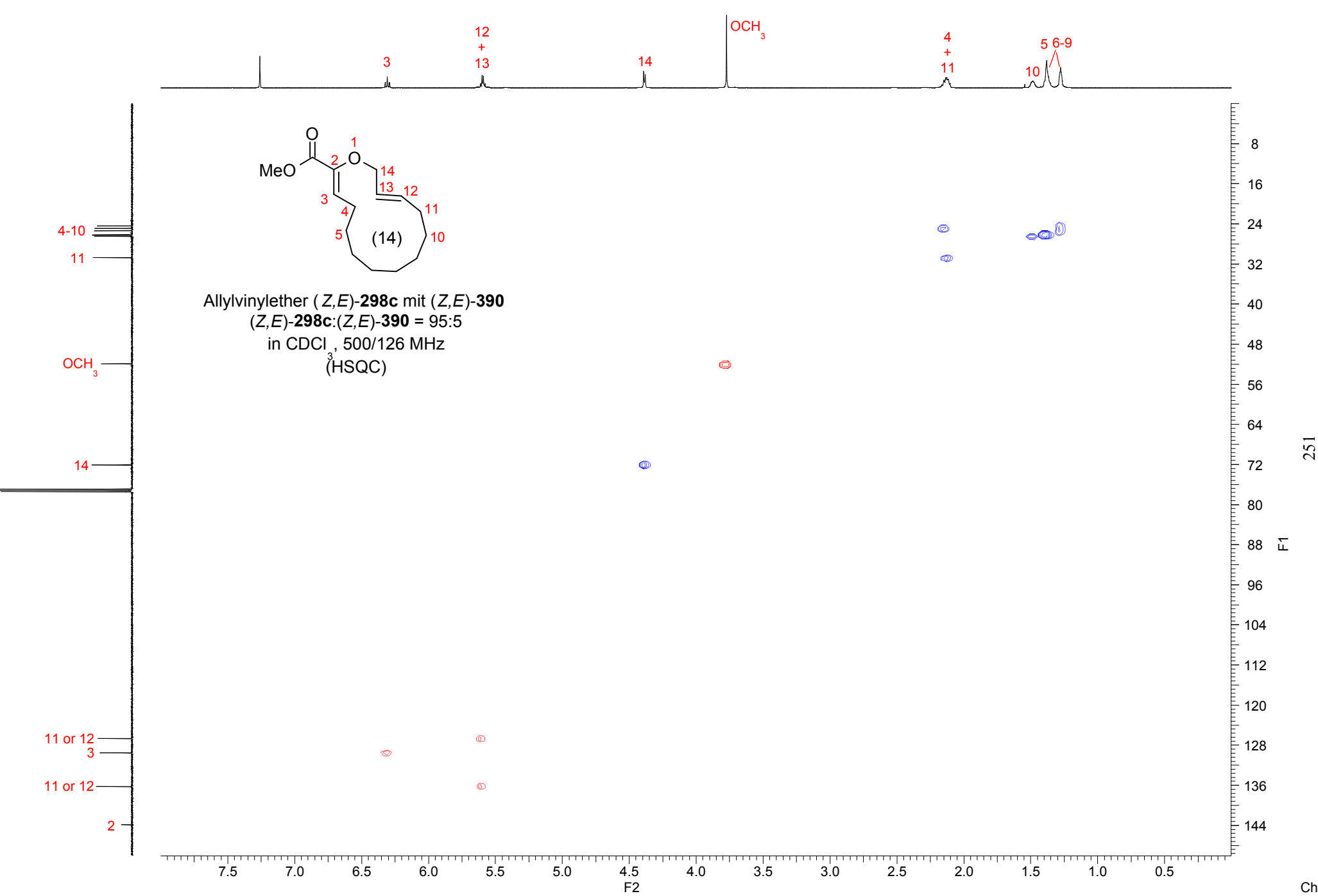
14



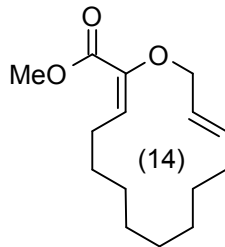


Allylvinyloxy (Z,E)-**298c** mit (Z,E)-**390**
(Z,E)-**298c**:(Z,E)-**390** = 95:5
in CDCl₃, 126 MHz

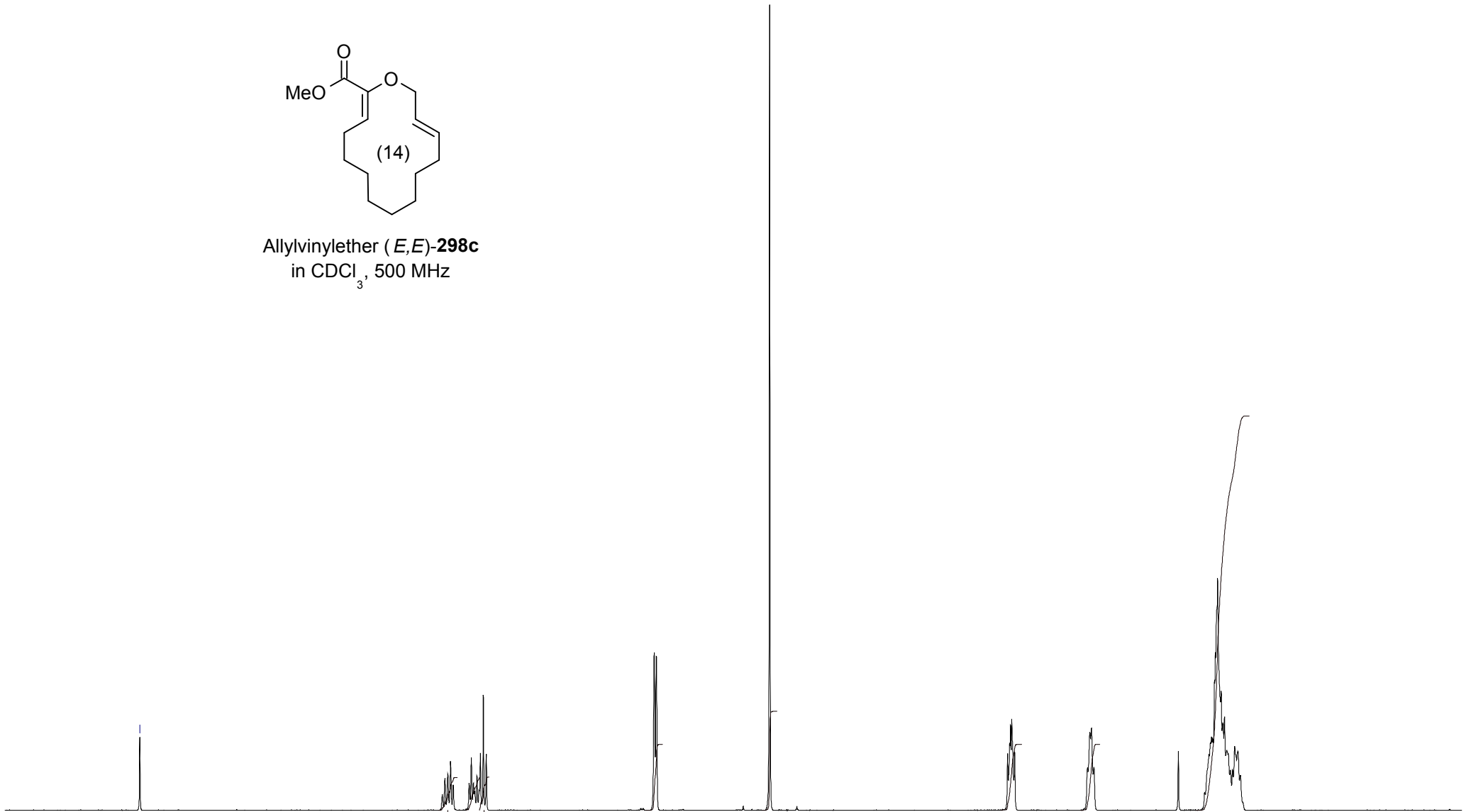




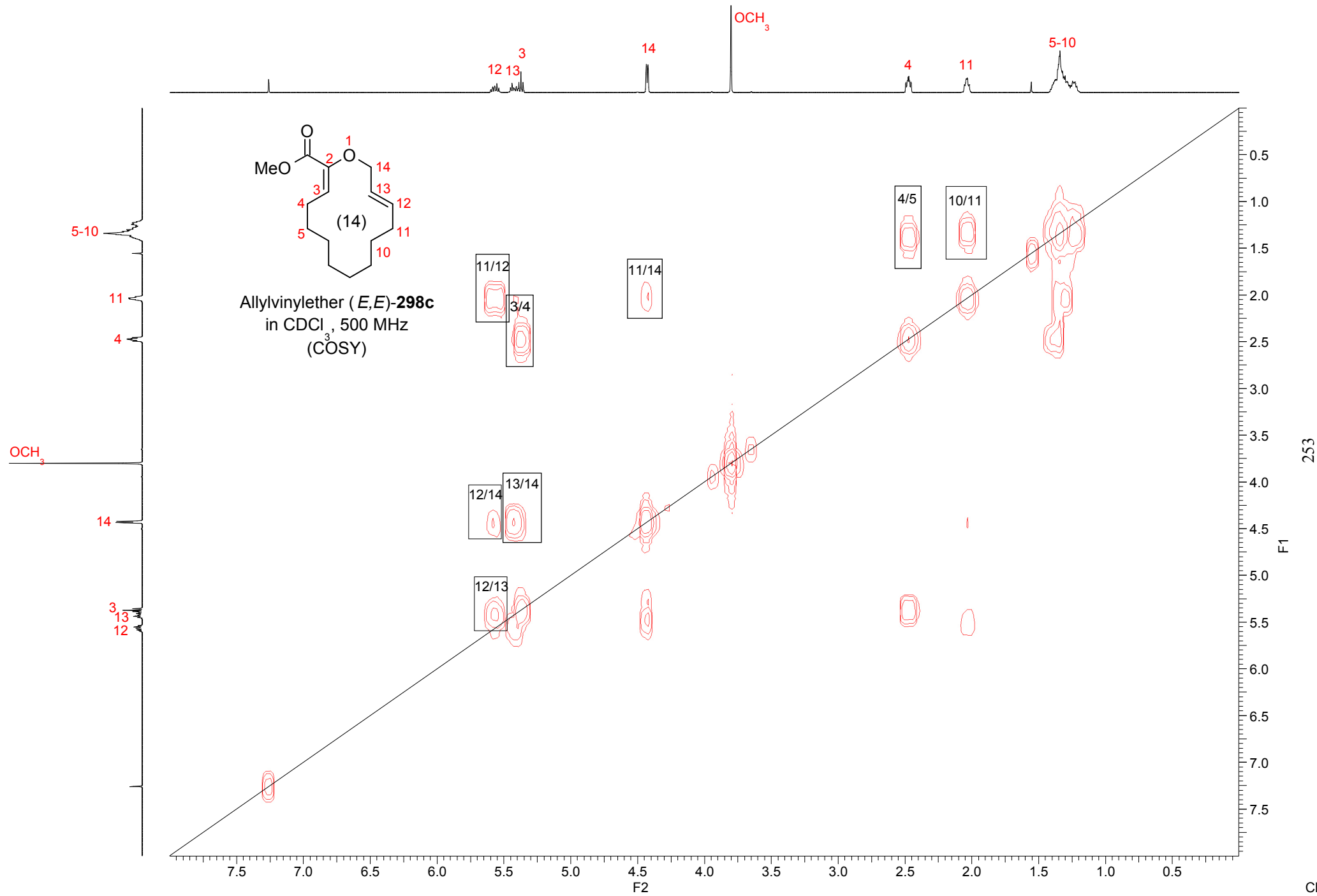
—7.260

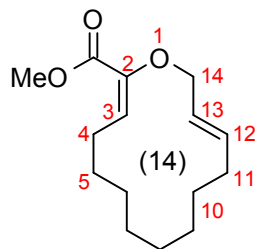


Allylvinylether (*E,E*)-**298c**
in CDCl₃, 500 MHz

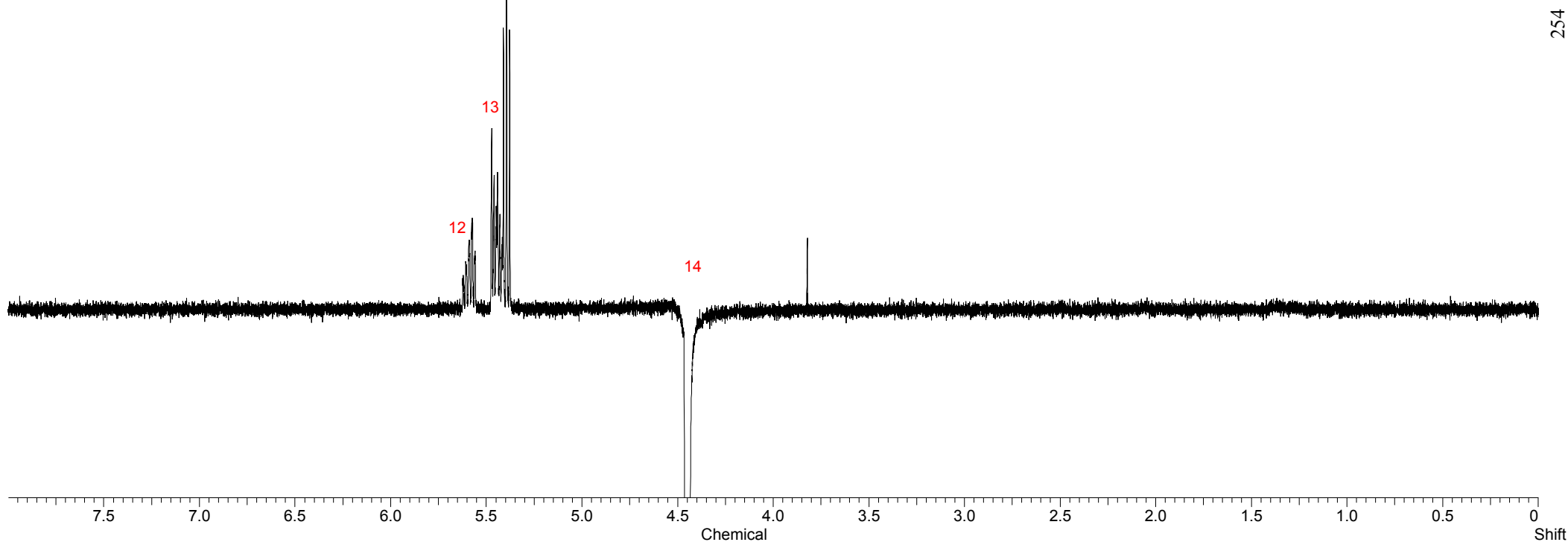


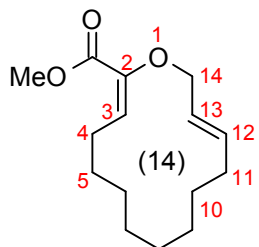
7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0



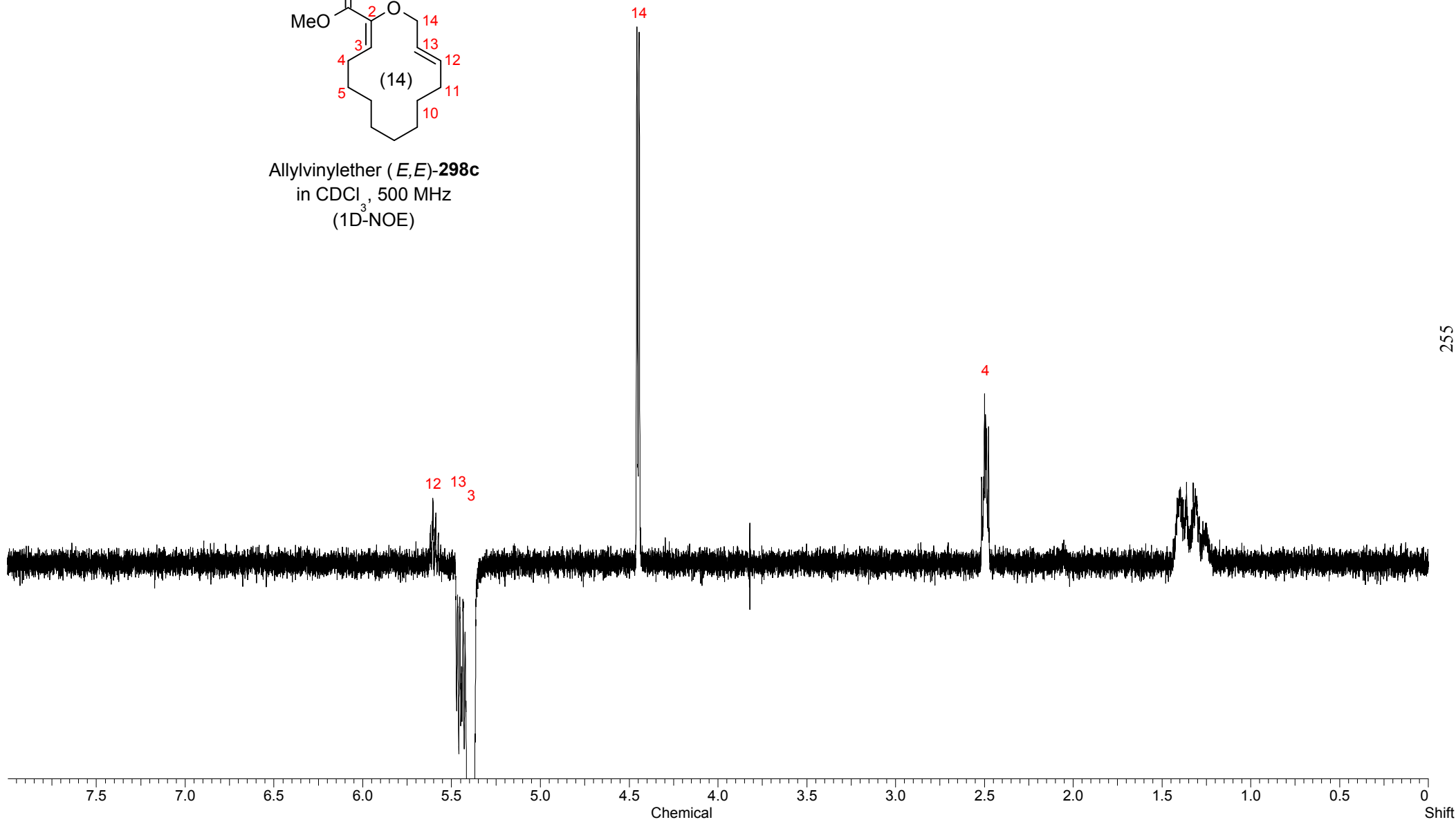


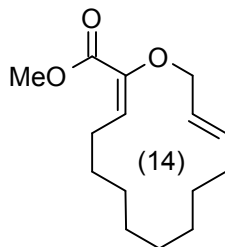
Allylvinylether (*E,E*)-**298c**
in CDCl₃, 500 MHz
(1D₃-NOE)



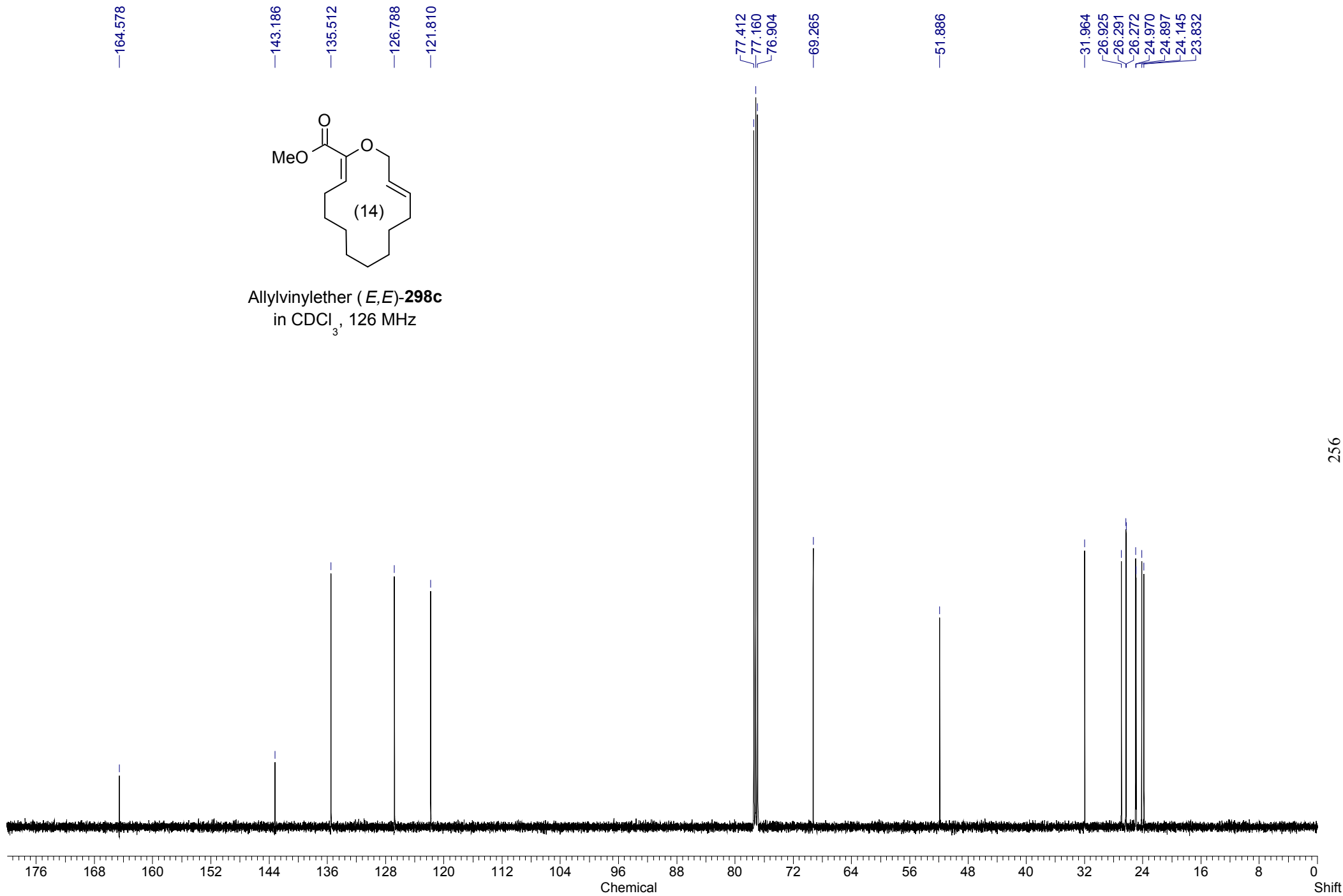


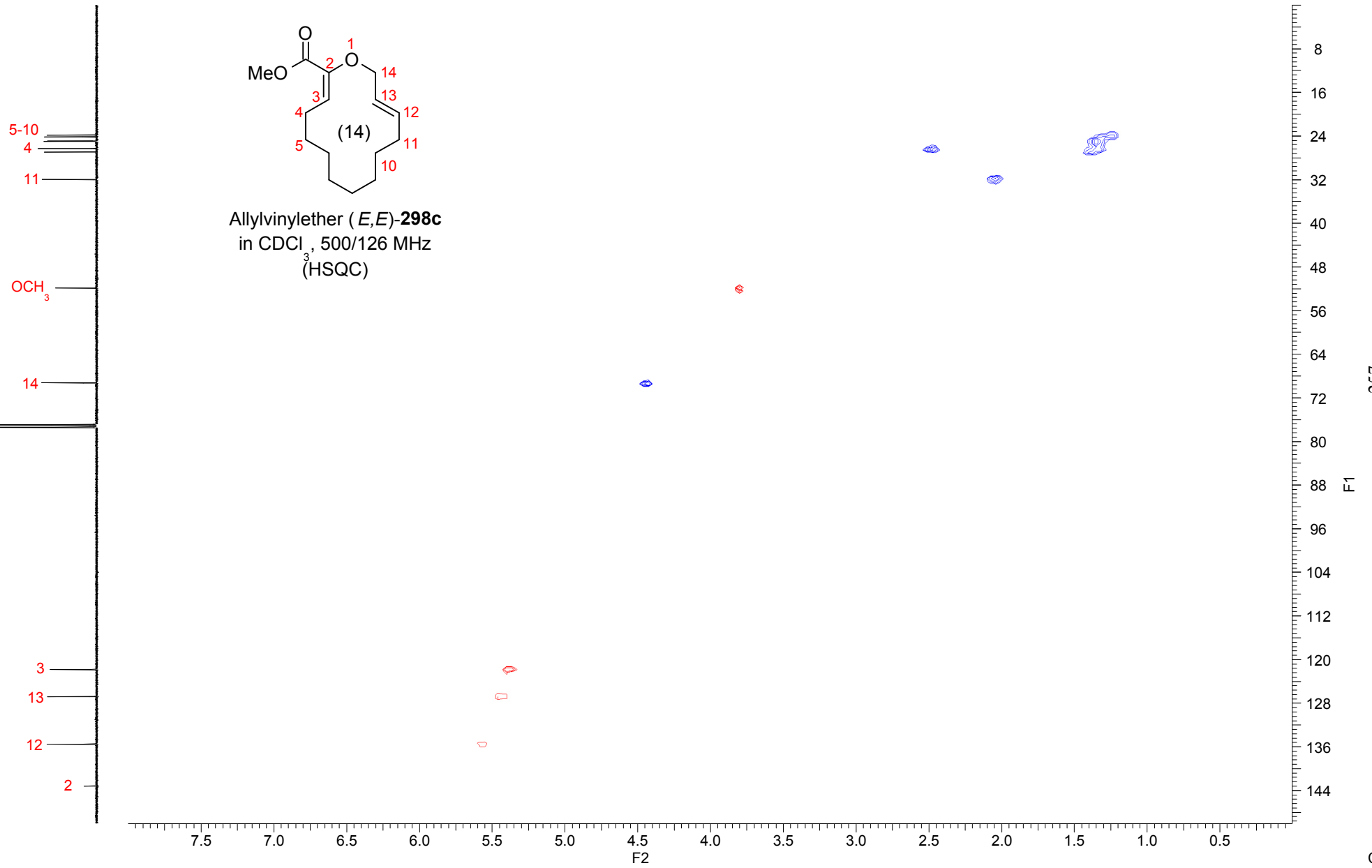
Allylvinyloxy ether (*E,E*)-**298c**
in CDCl₃, 500 MHz
(1D³-NOE)



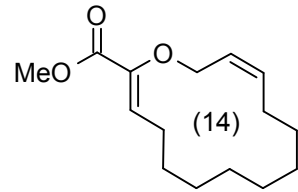


Allylvinylether (*E,E*)-**298c**
in CDCl₃, 126 MHz

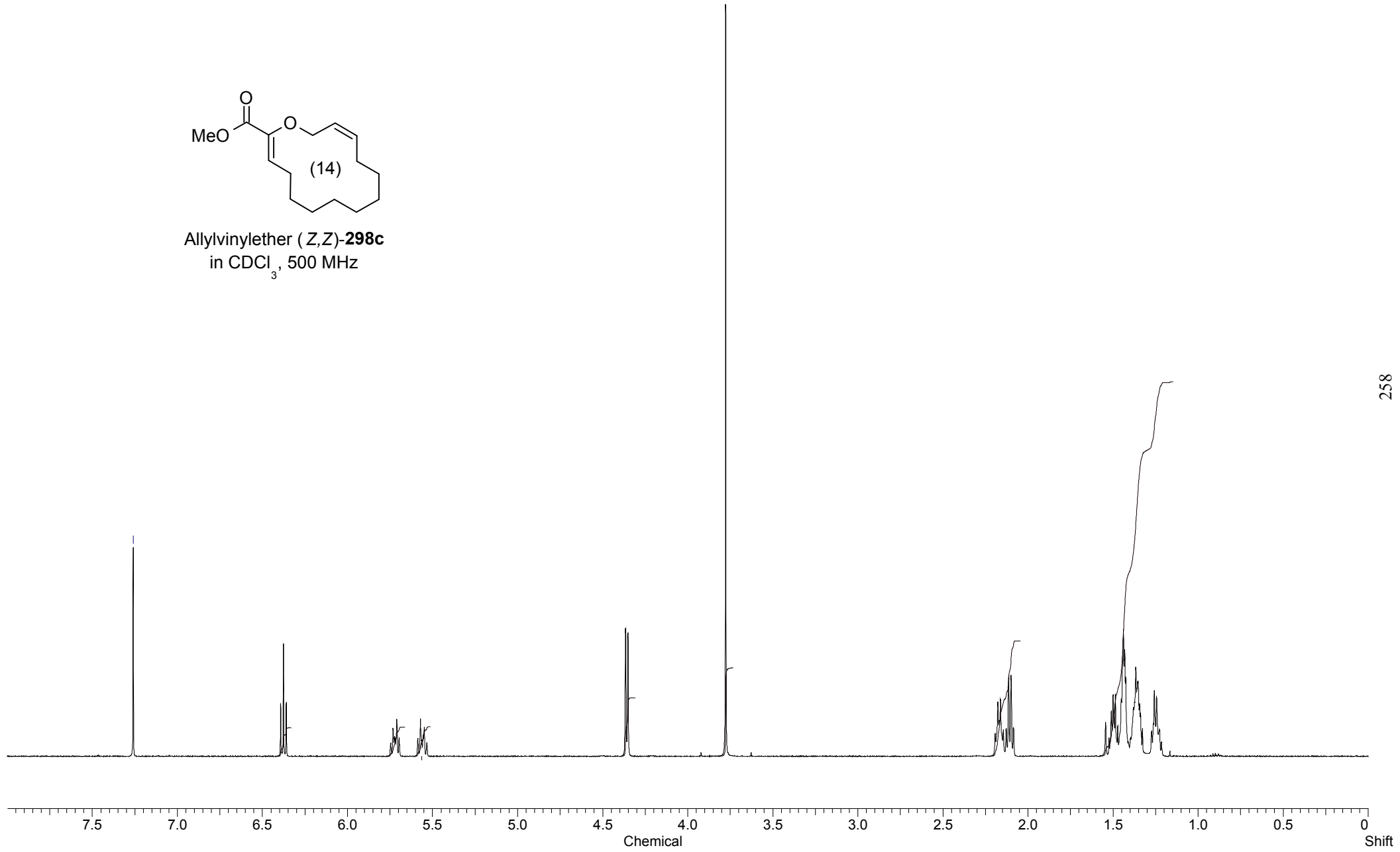


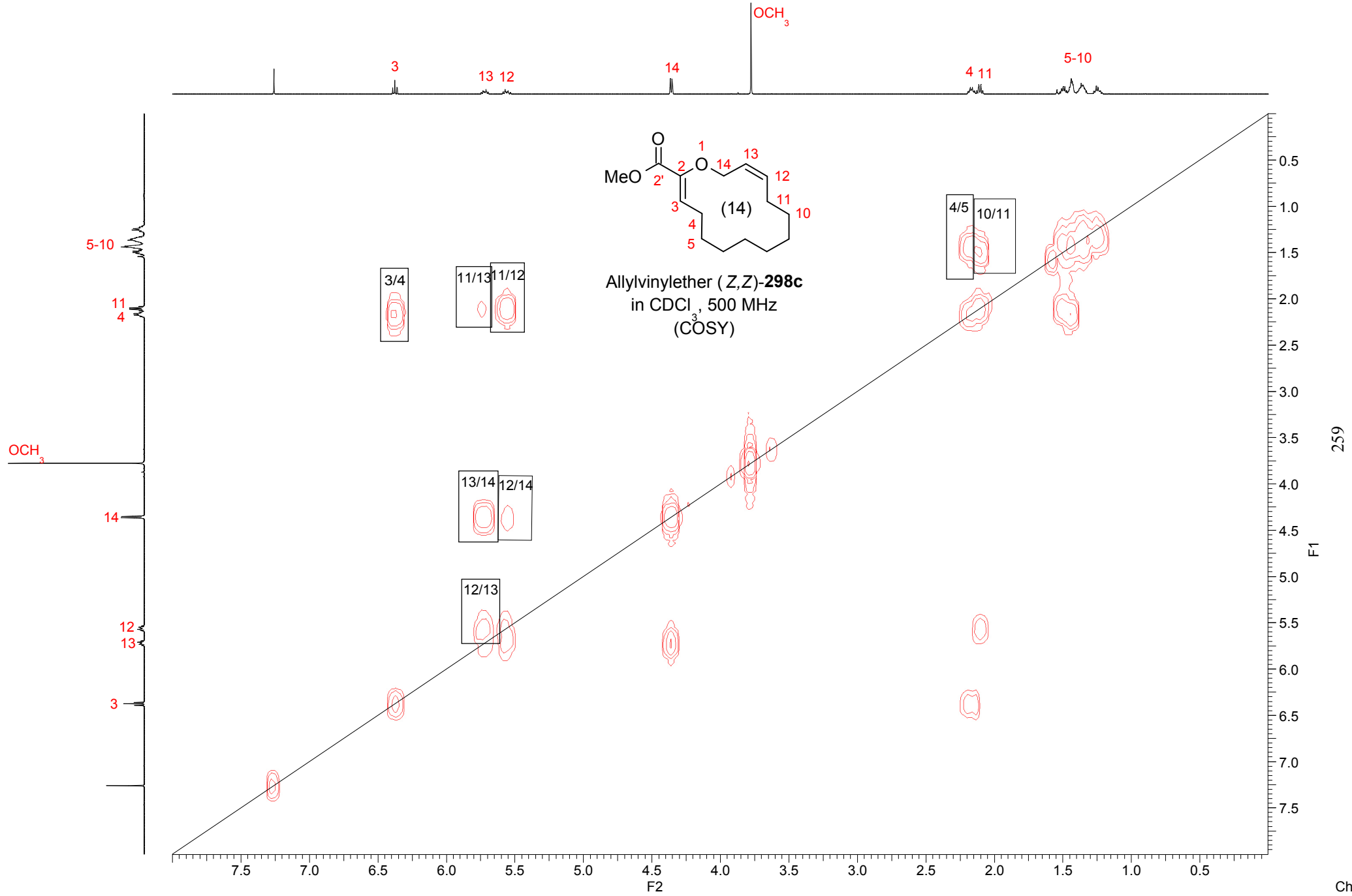


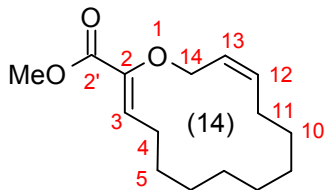
-7.260



Allylvinylether (Z,Z)-**298c**
in CDCl₃, 500 MHz







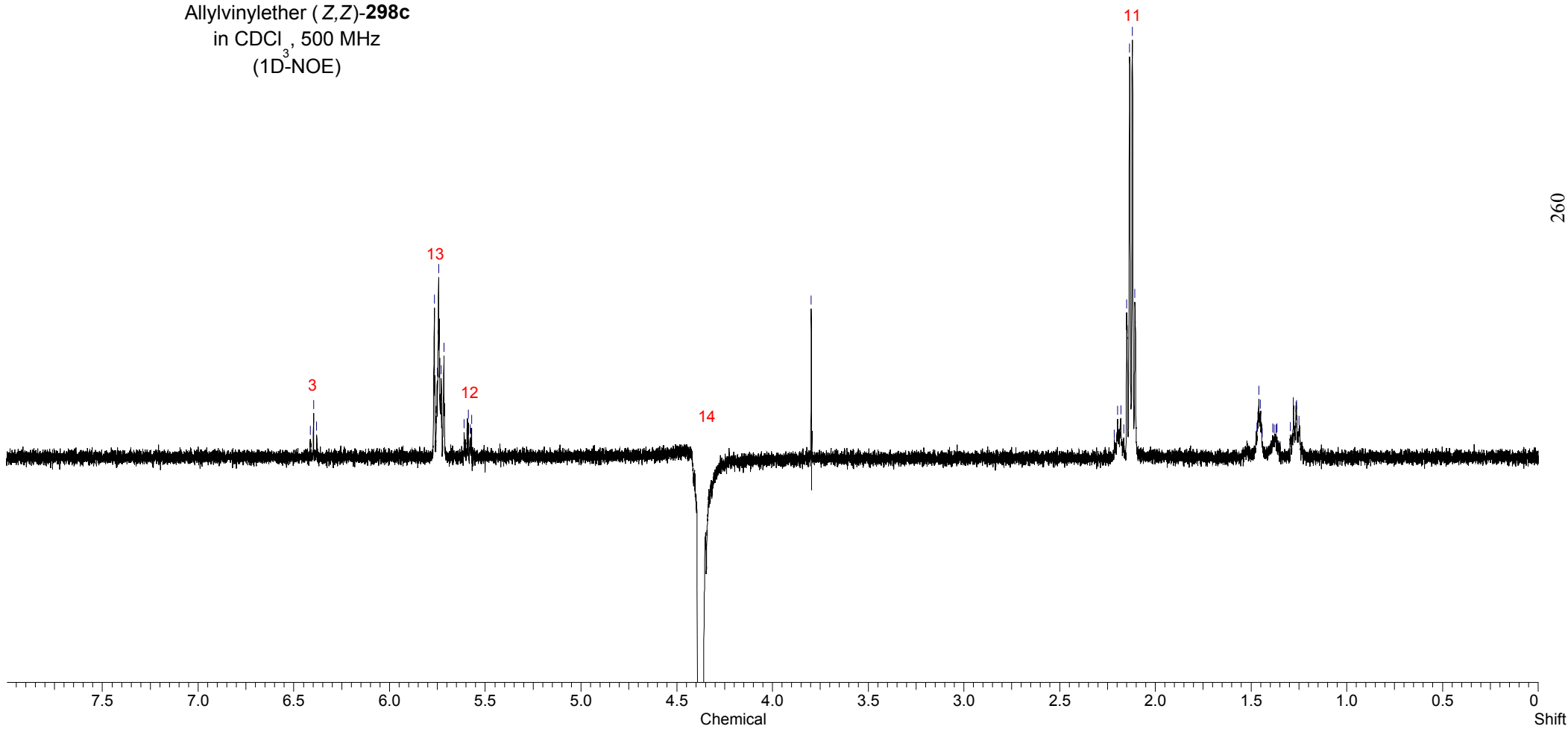
Allylvinylether (Z,Z)-**298c**
in CDCl₃, 500 MHz
(1D-NOE)

6.413
6.397
6.381
5.766
5.752
5.744
5.730
5.716
5.610
5.589
5.580
5.572

4.387
4.381
4.373
4.367

3.797

2.214
2.197
2.180
2.164
2.149
2.133
2.120
2.106
1.469
1.460
1.451
1.385
1.369
1.364
1.294
1.279
1.262
1.249

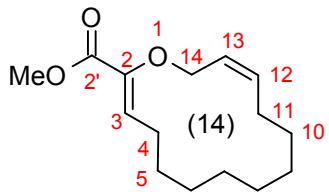


6.413
6.397
6.394
6.381

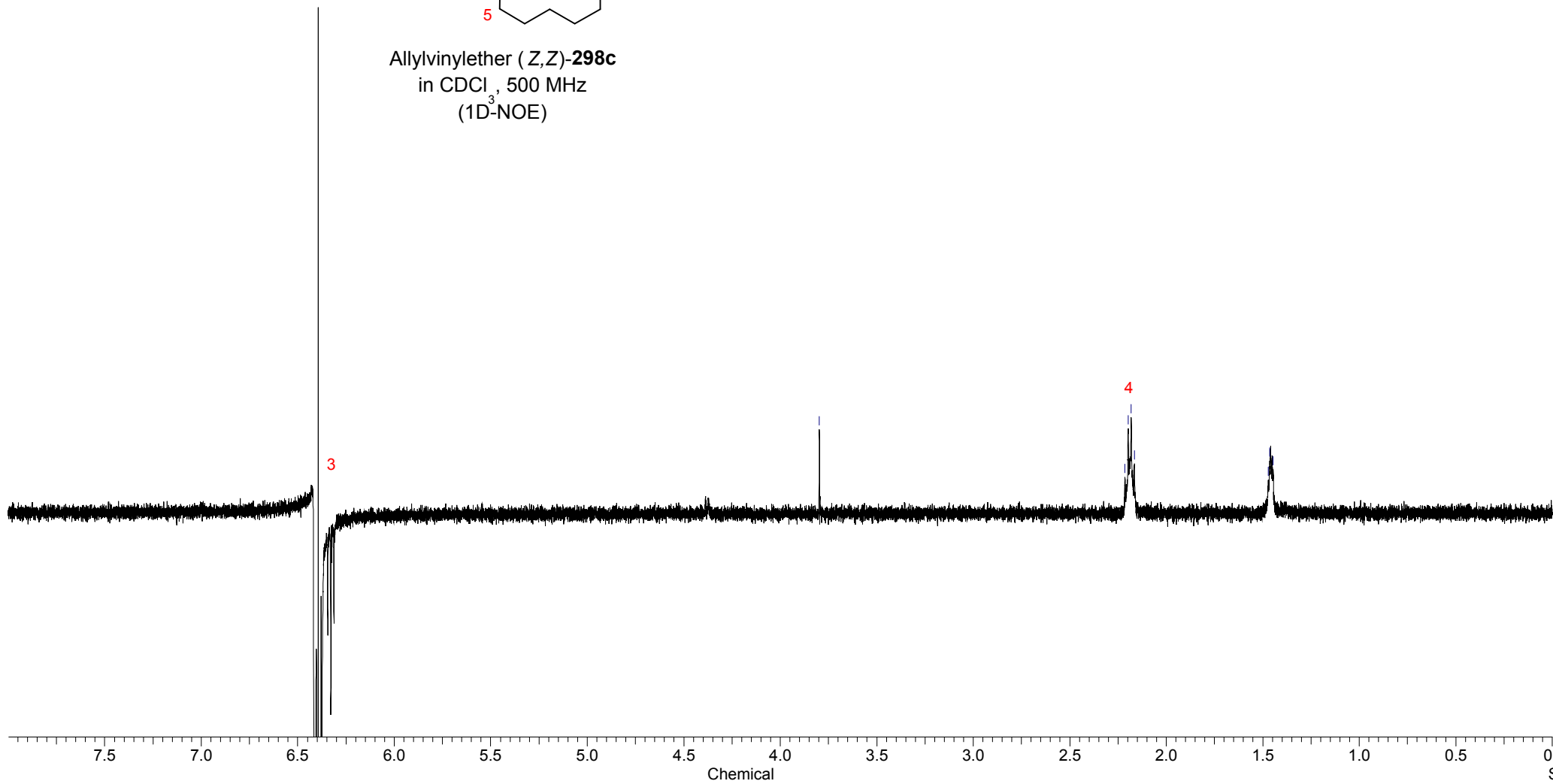
3.797

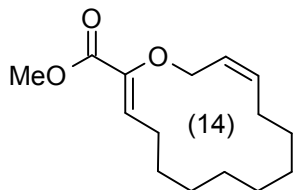
2.213
2.198
2.181
2.165

1.471
1.463
1.446

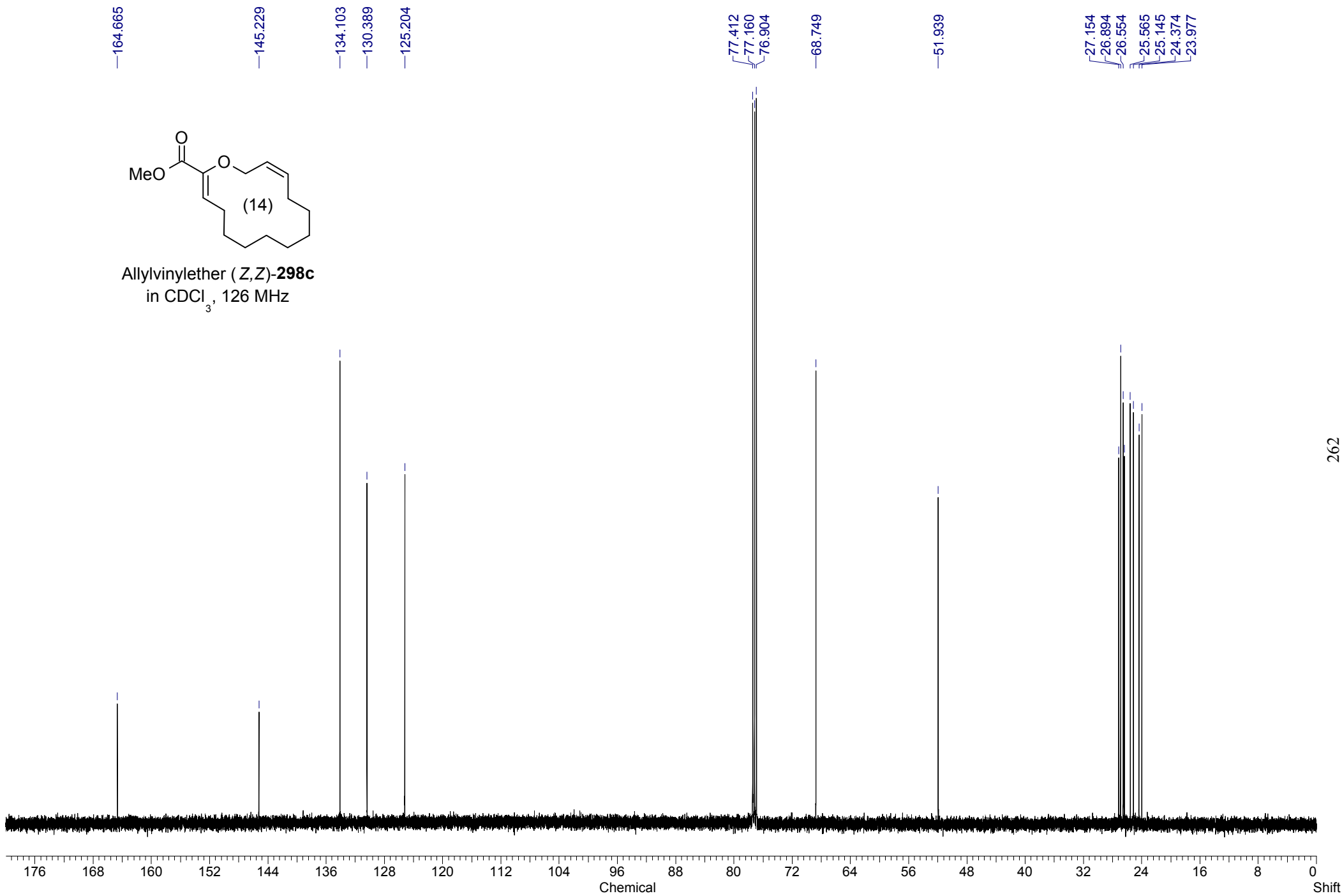


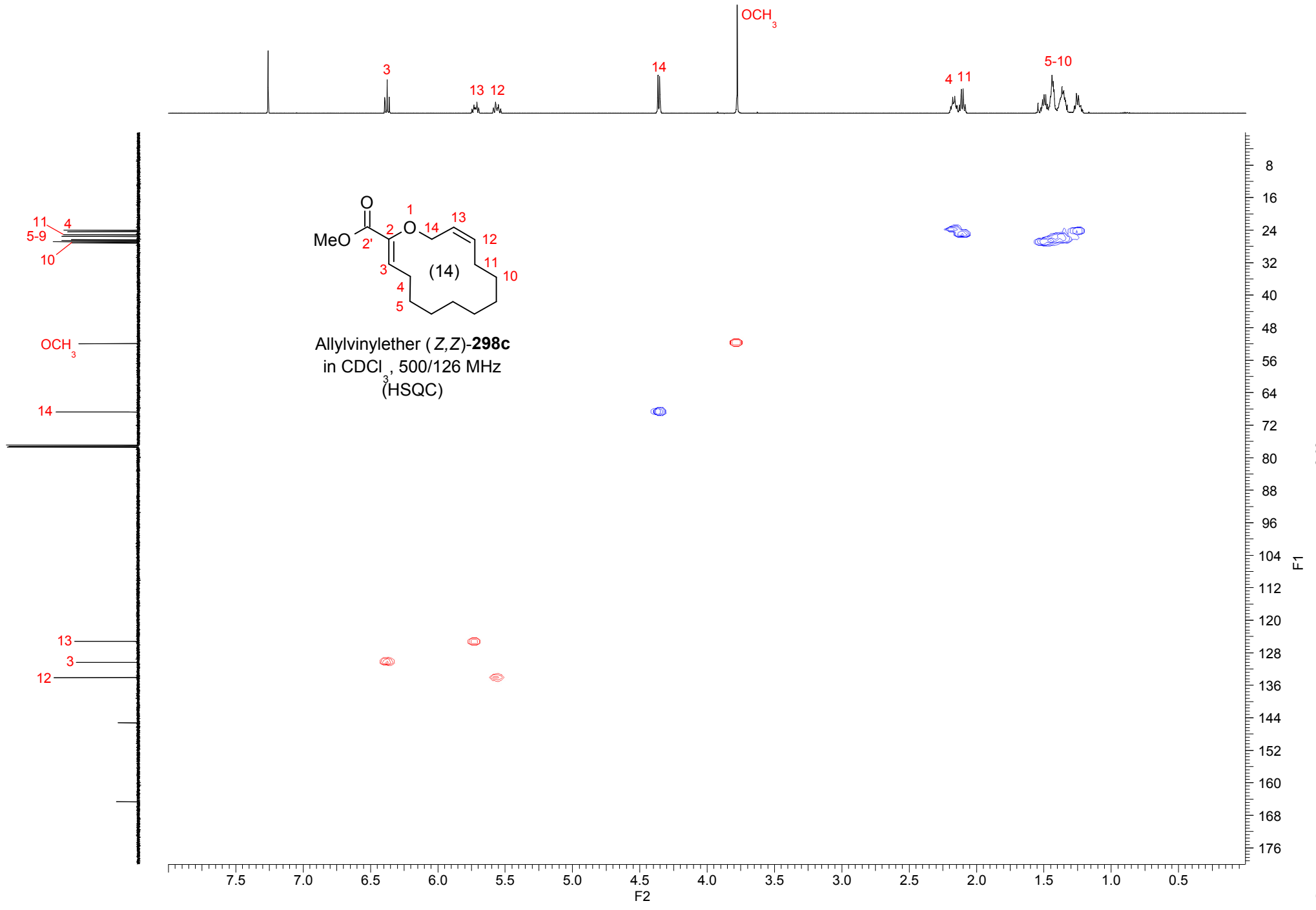
Allylvinyloxy (Z,Z)-**298c**
in CDCl₃, 500 MHz
(1D³-NOE)



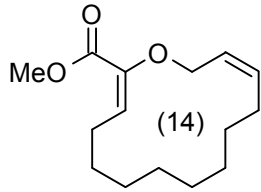


Allylvinyloxy (Z,Z)-**298c**
in CDCl₃, 126 MHz

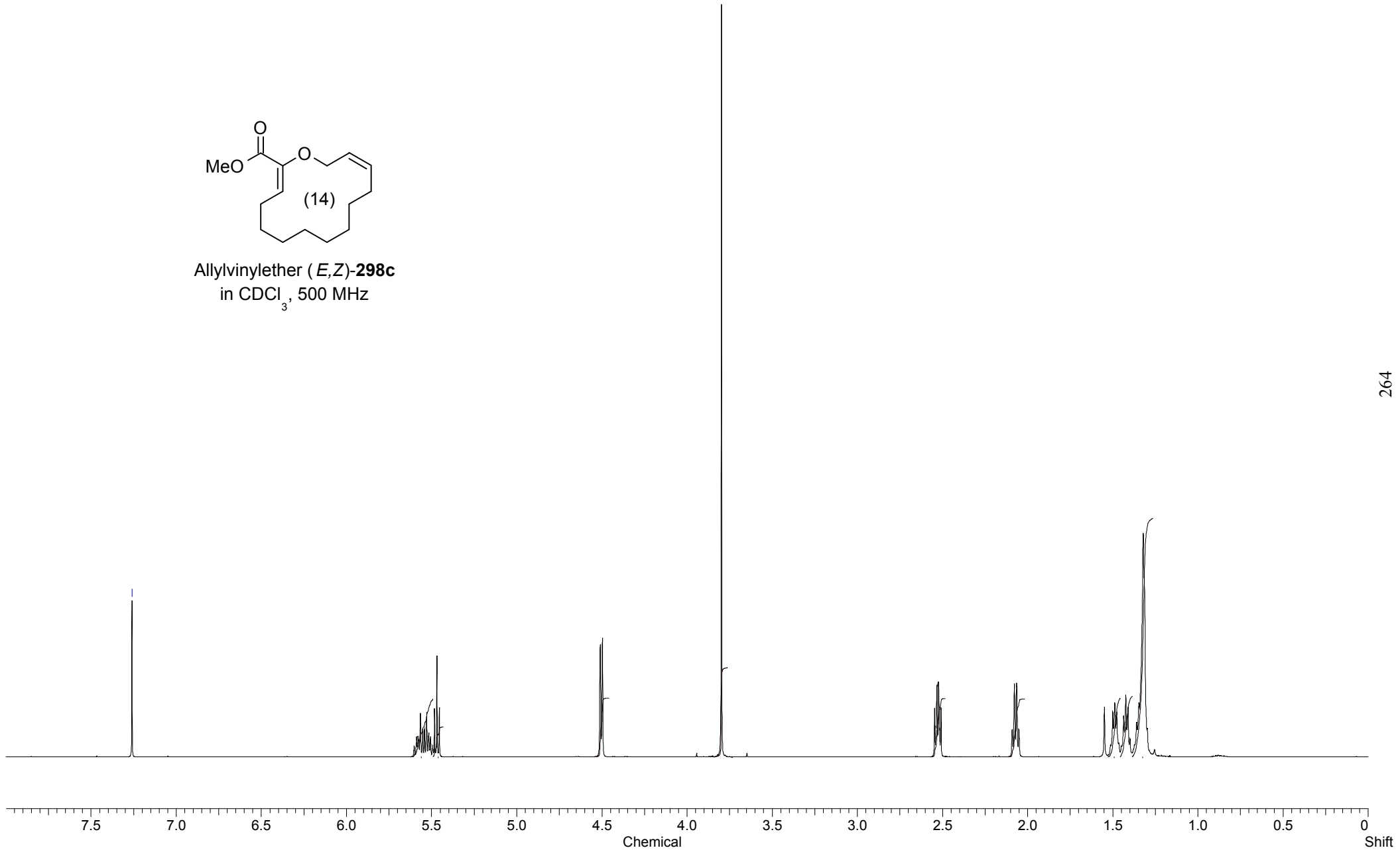


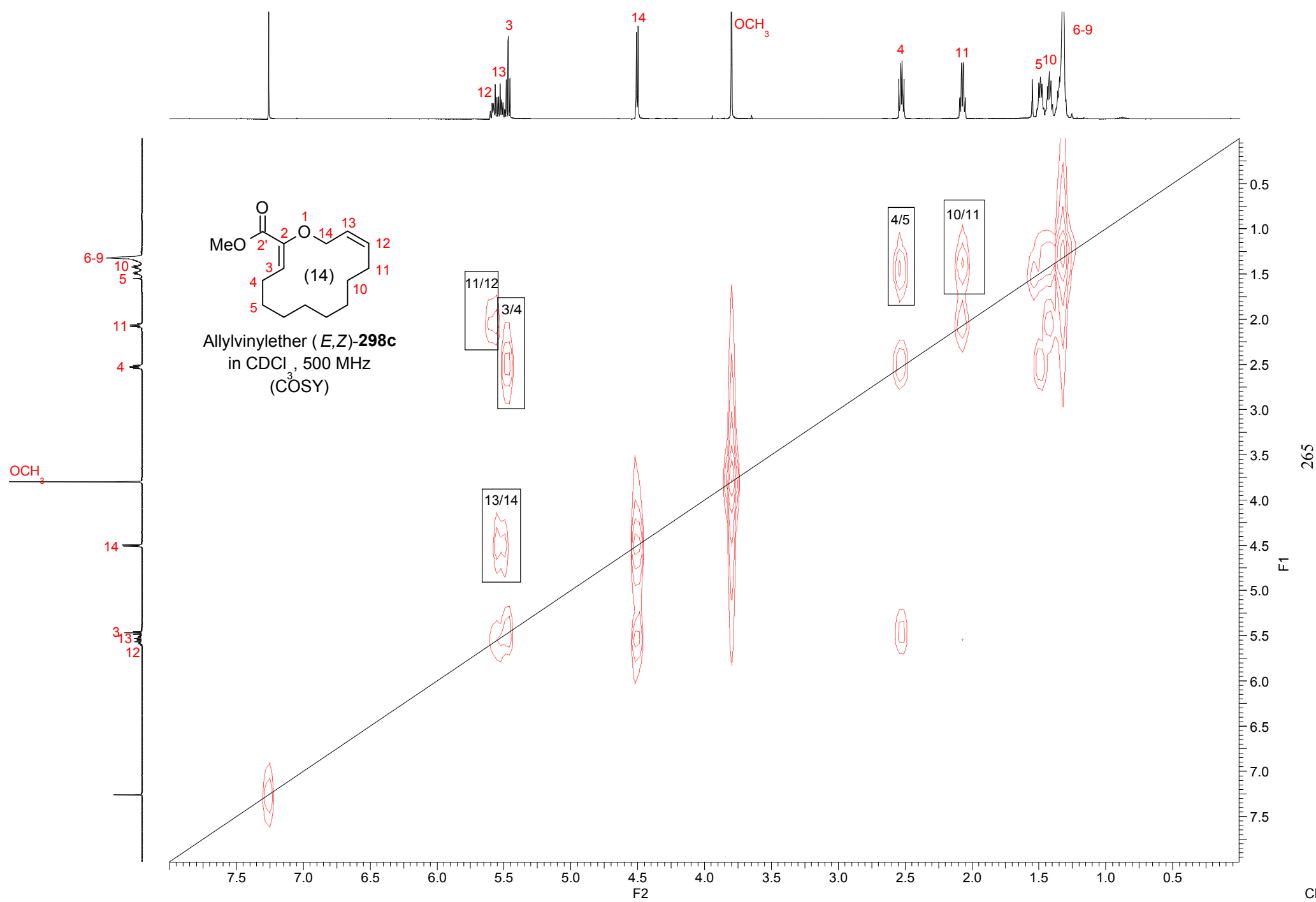


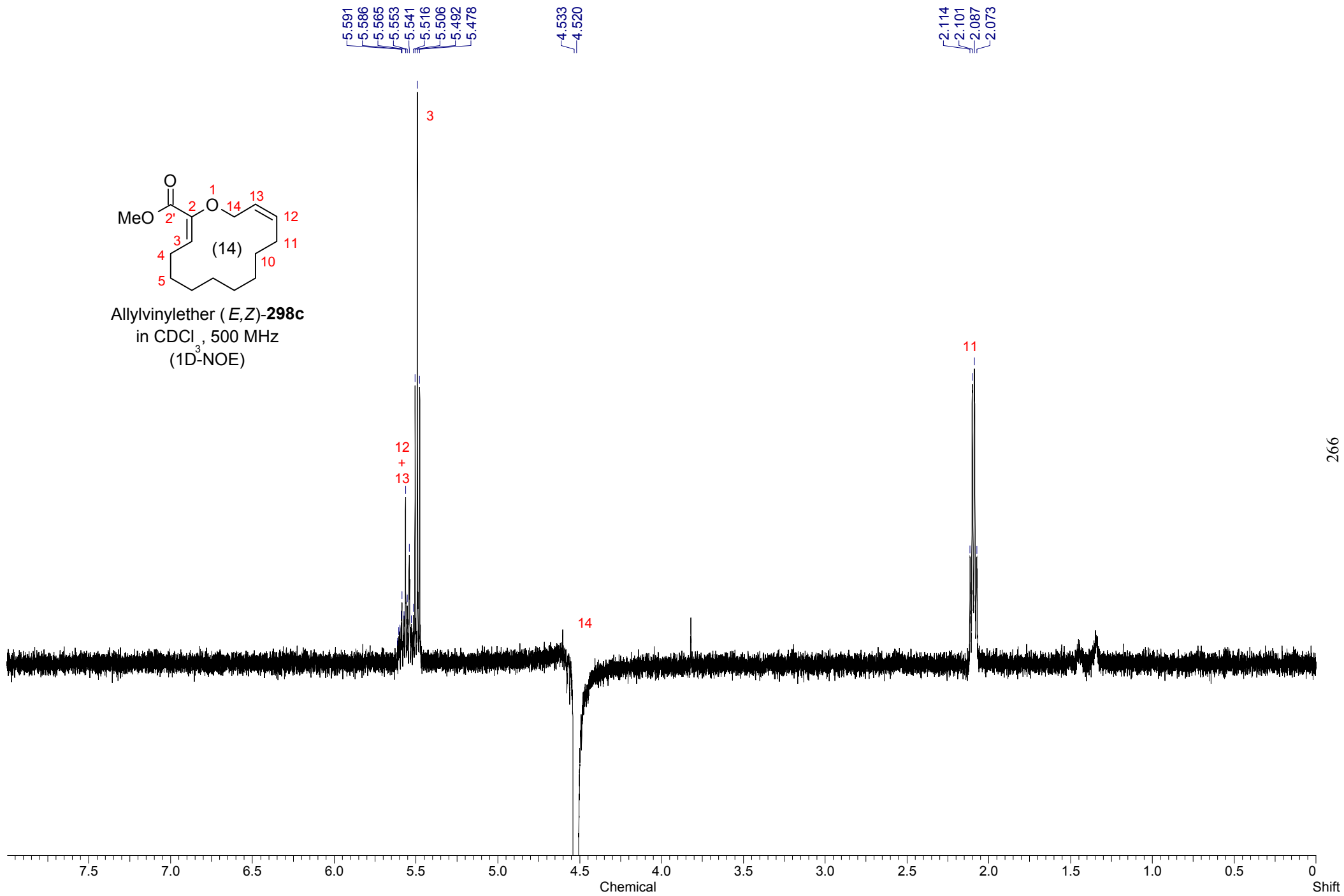
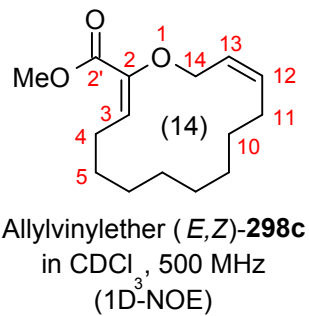
—7.260

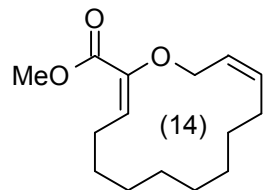


Allylvinylether (*E,Z*)-**298c**
in CDCl₃, 500 MHz

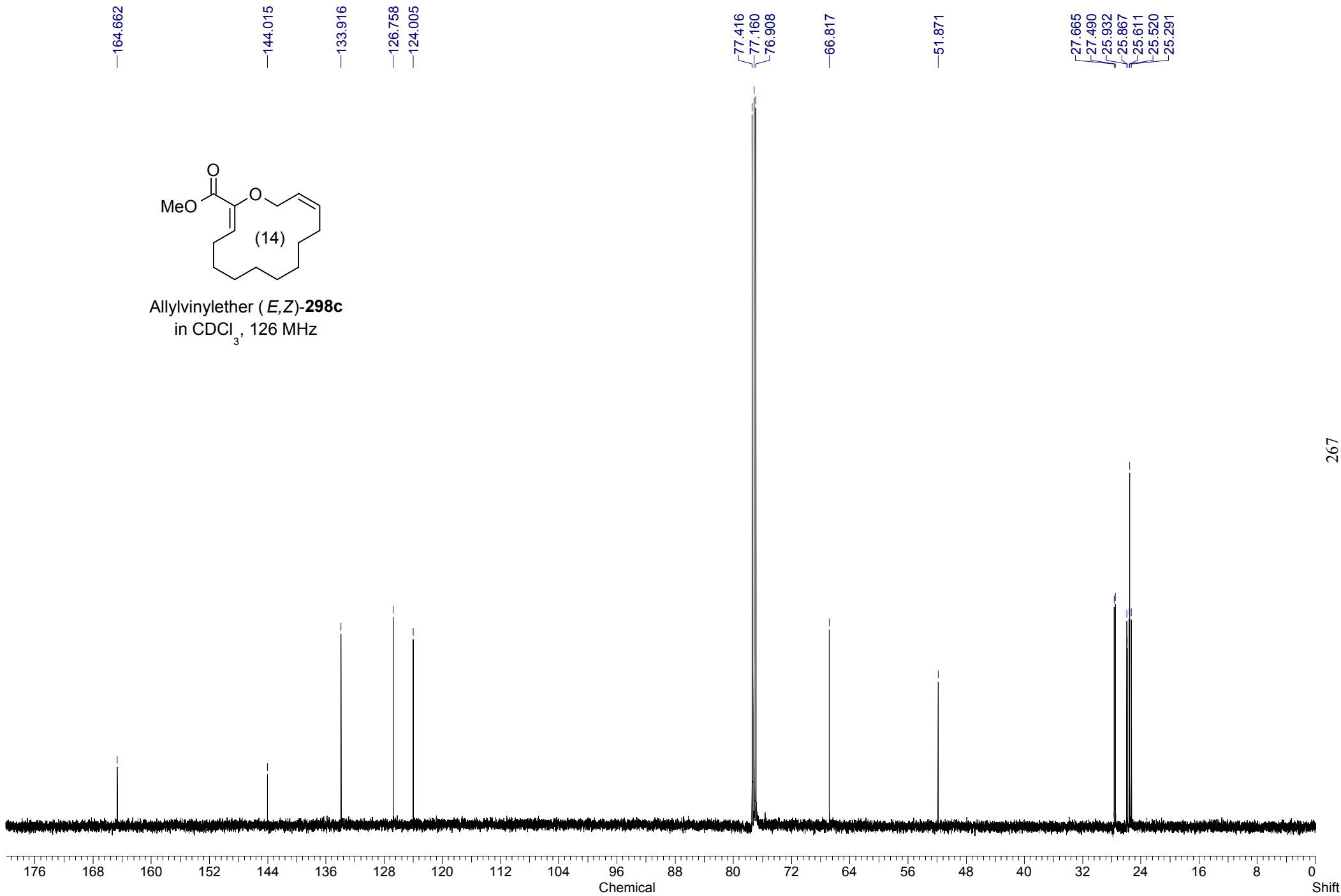


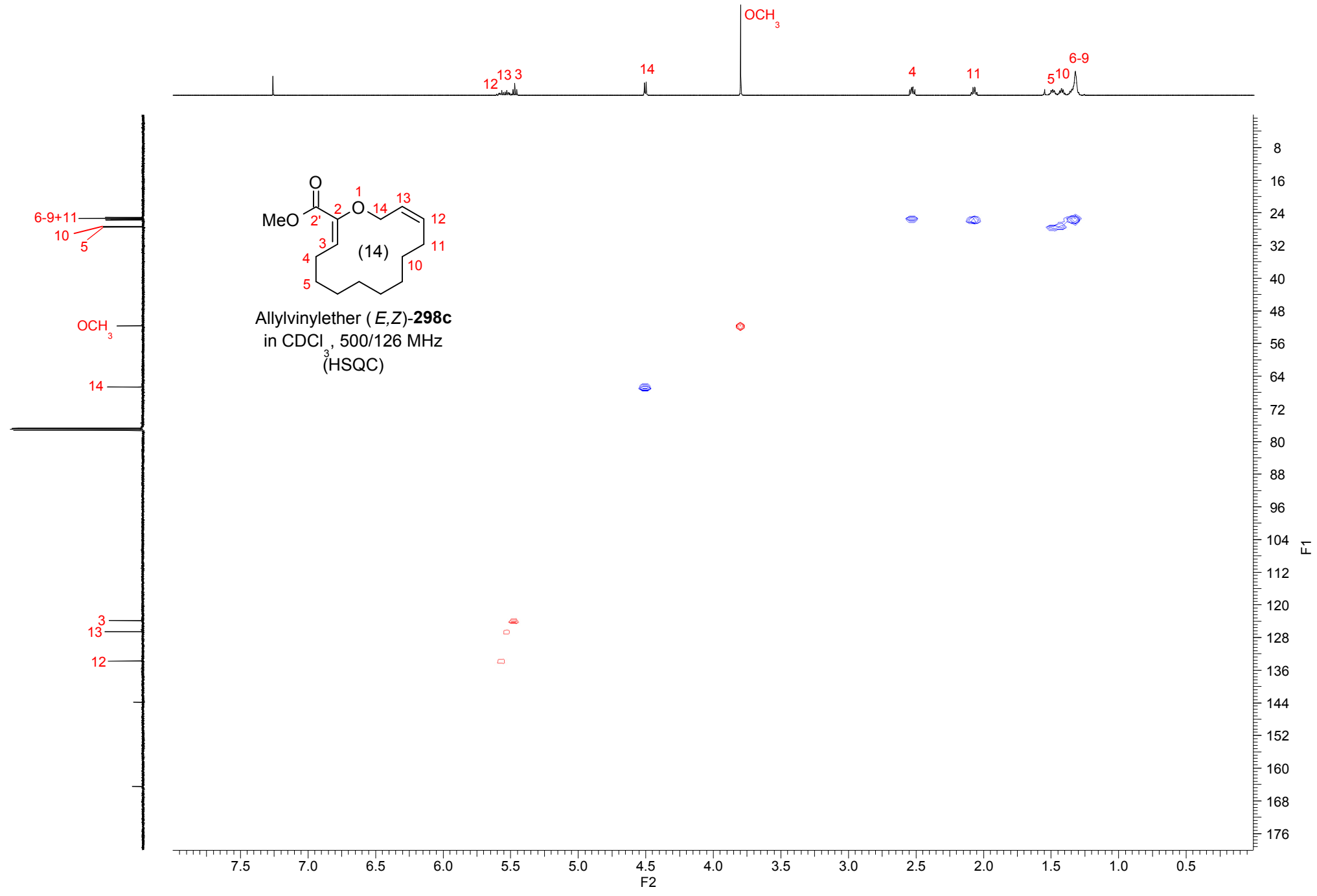




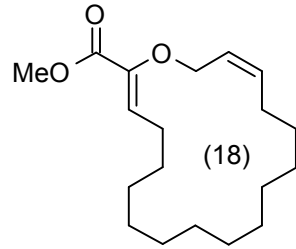


Allylvinylether (*E,Z*)-**298c**
in CDCl₃, 126 MHz

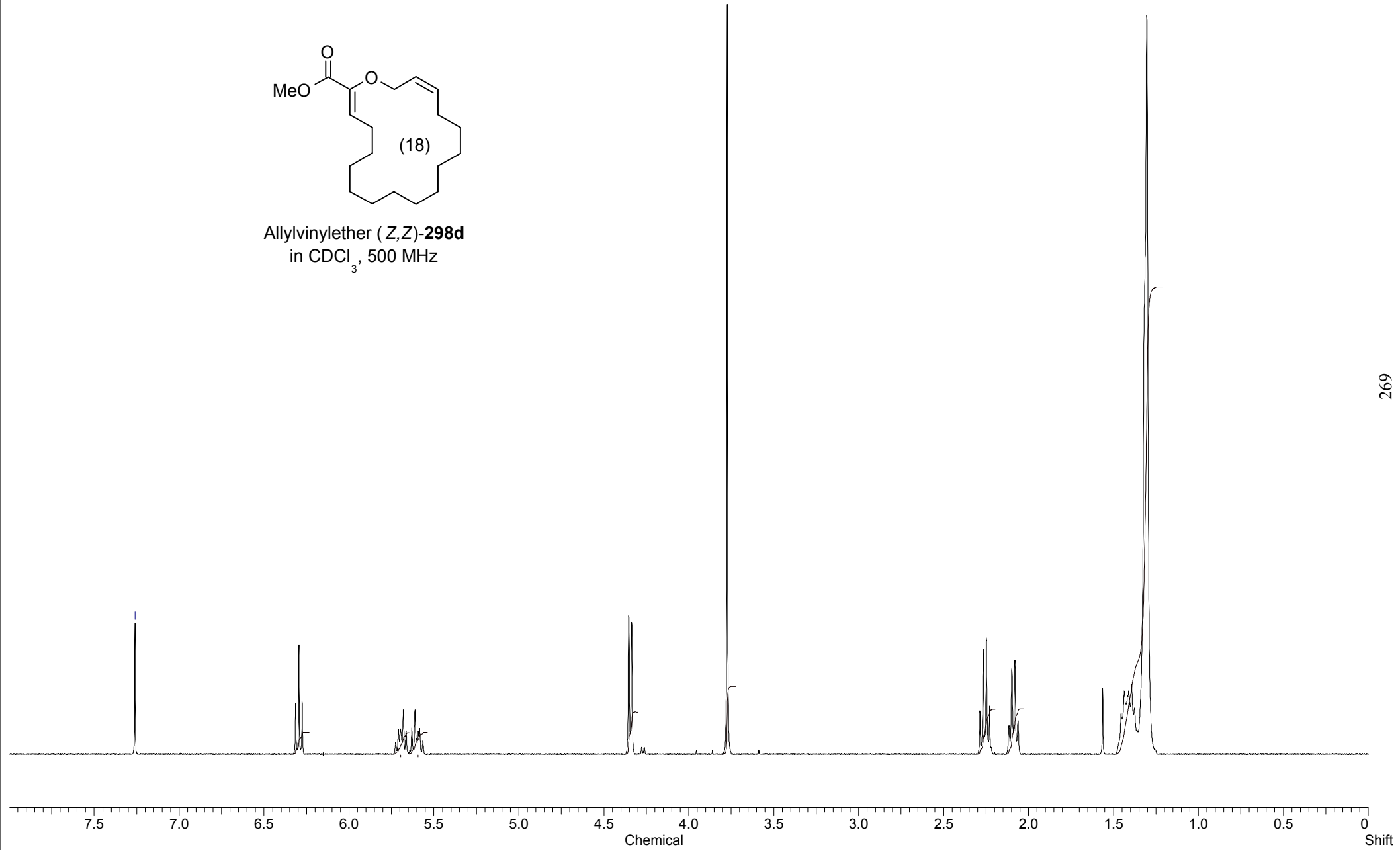


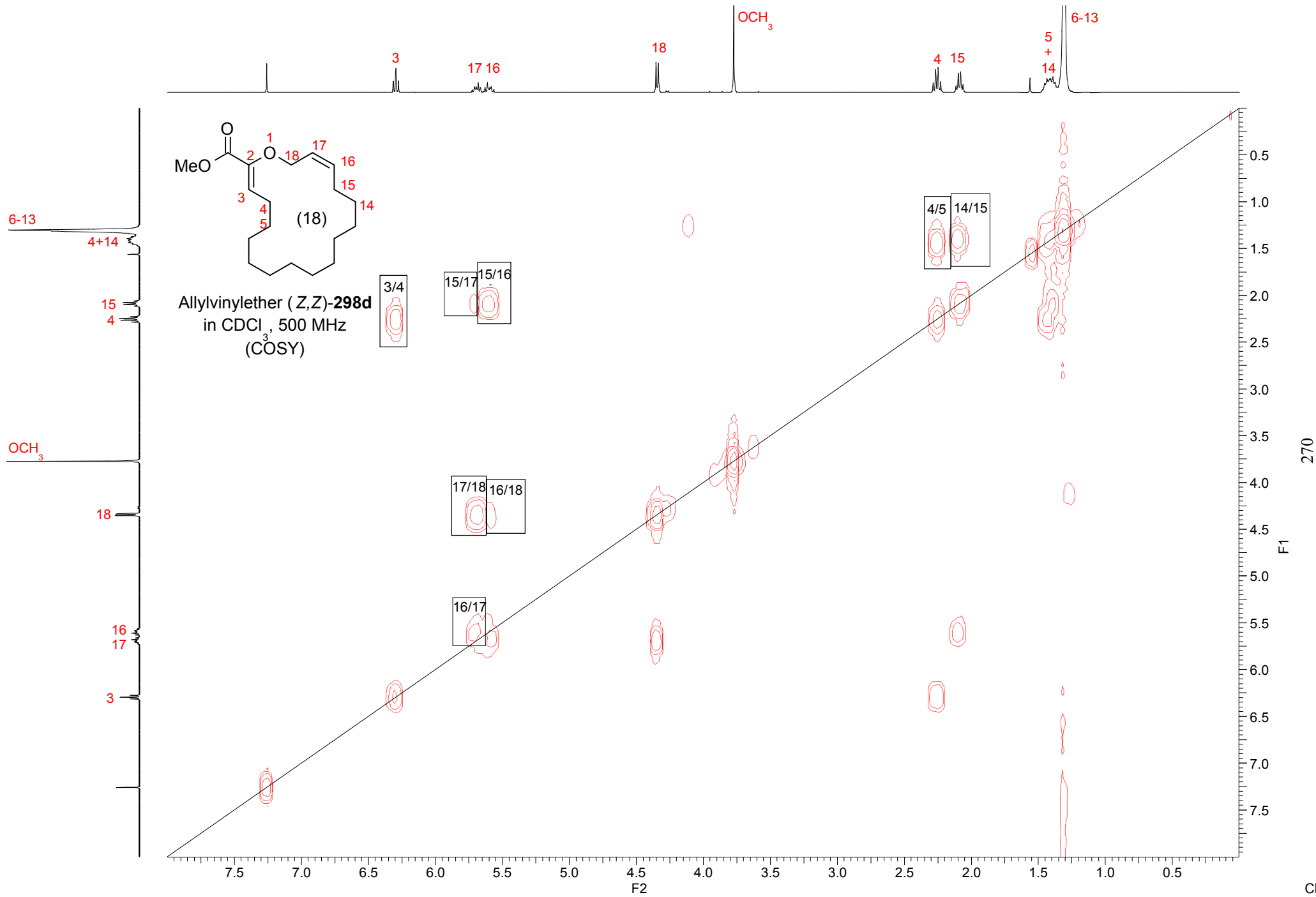


—7.260

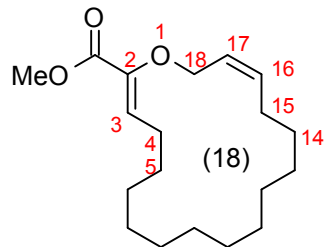


Allylvinylether (Z,Z)-**298d**
in CDCl₃, 500 MHz

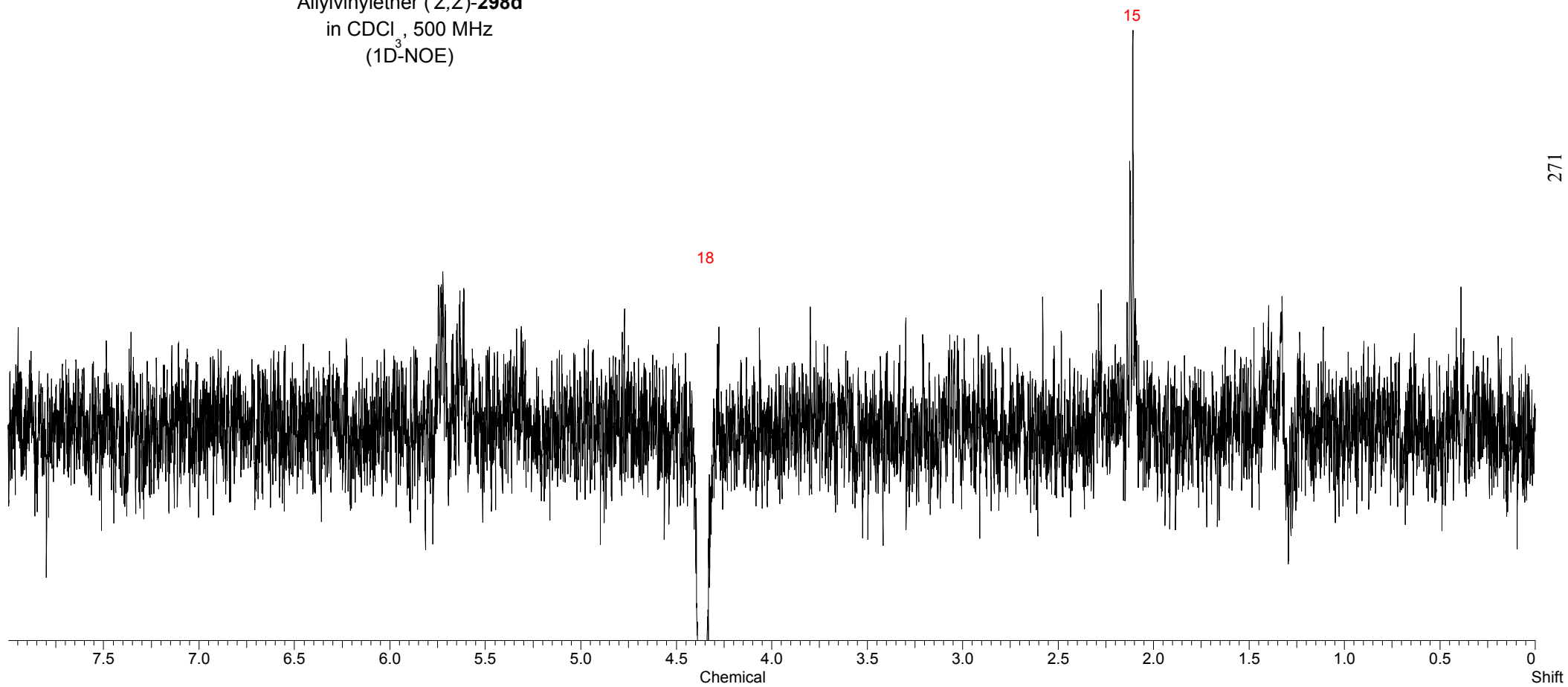


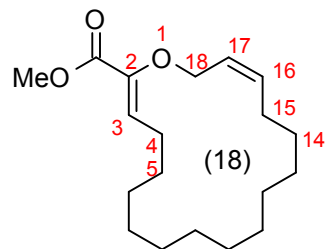


270

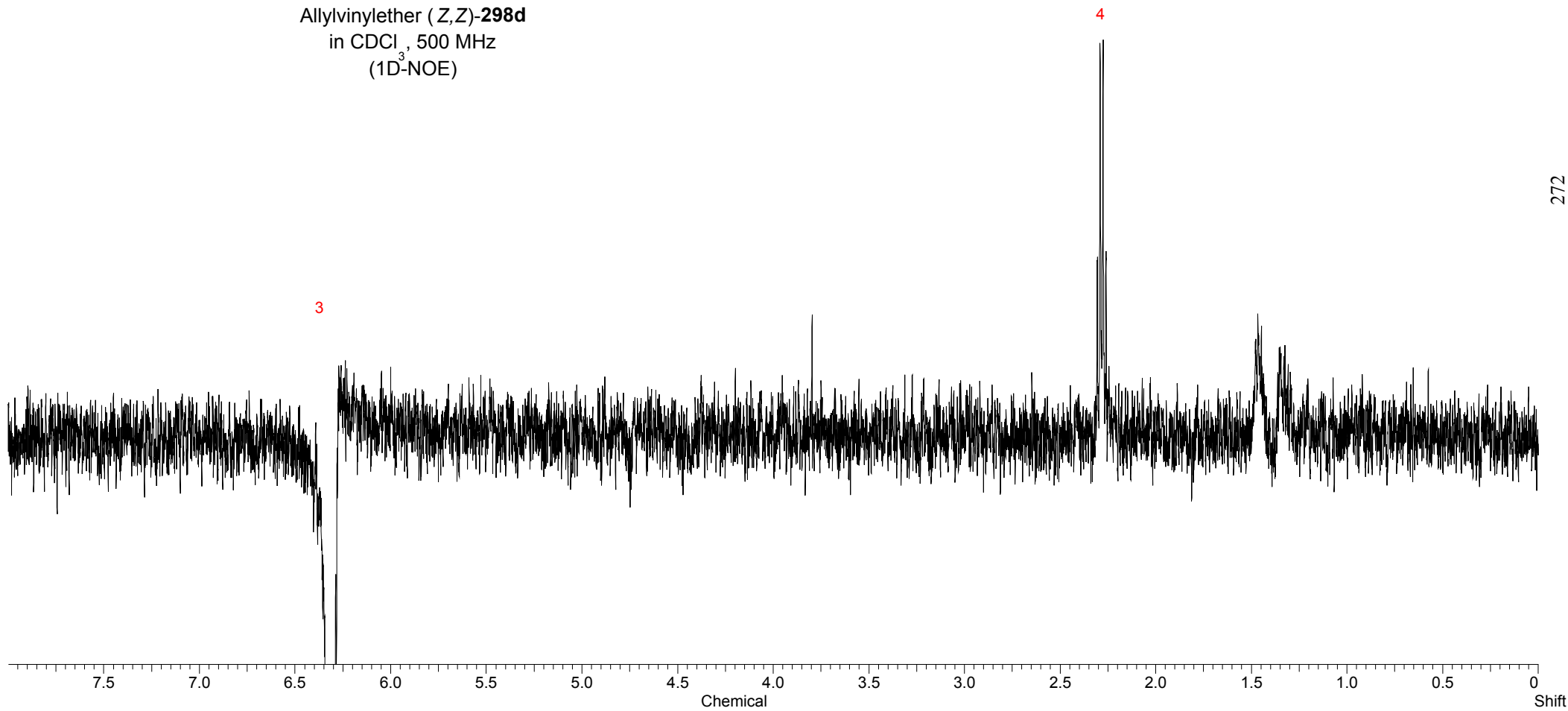


Allylvinylether (Z,Z)-**298d**
in CDCl₃, 500 MHz
(1D-NOE)

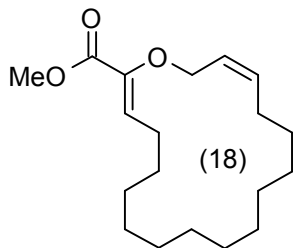




Allylvinyloxy (Z,Z)-298d
in CDCl₃, 500 MHz
(1D³-NOE)



—164.795



Allylvinylether (Z,Z)-**298d**
in CDCl₃, 126 MHz

—145.084

—134.539

—130.515

—125.212

77.416

77.160

76.908

—68.291

—51.977

28.708

28.230

27.501

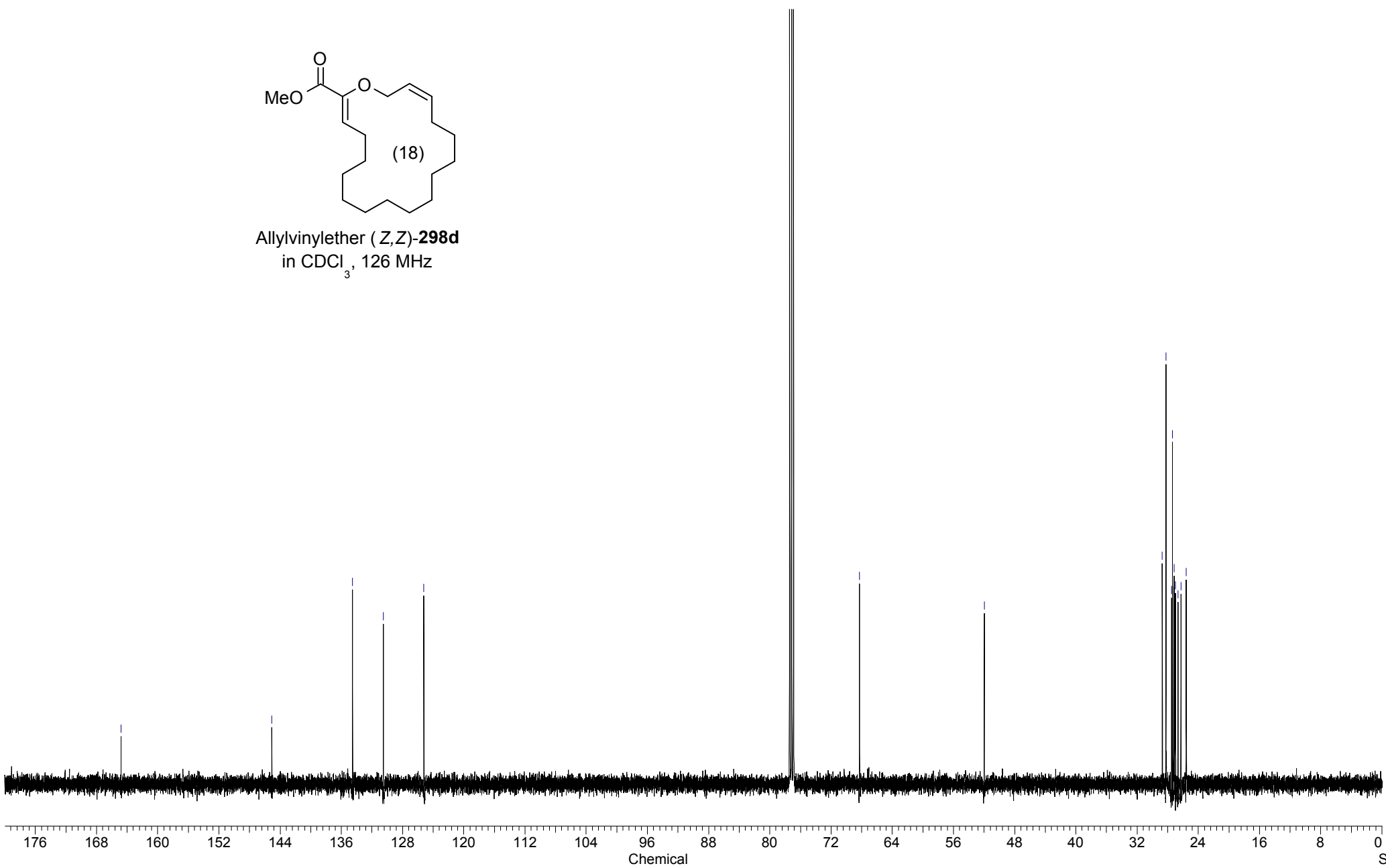
27.383

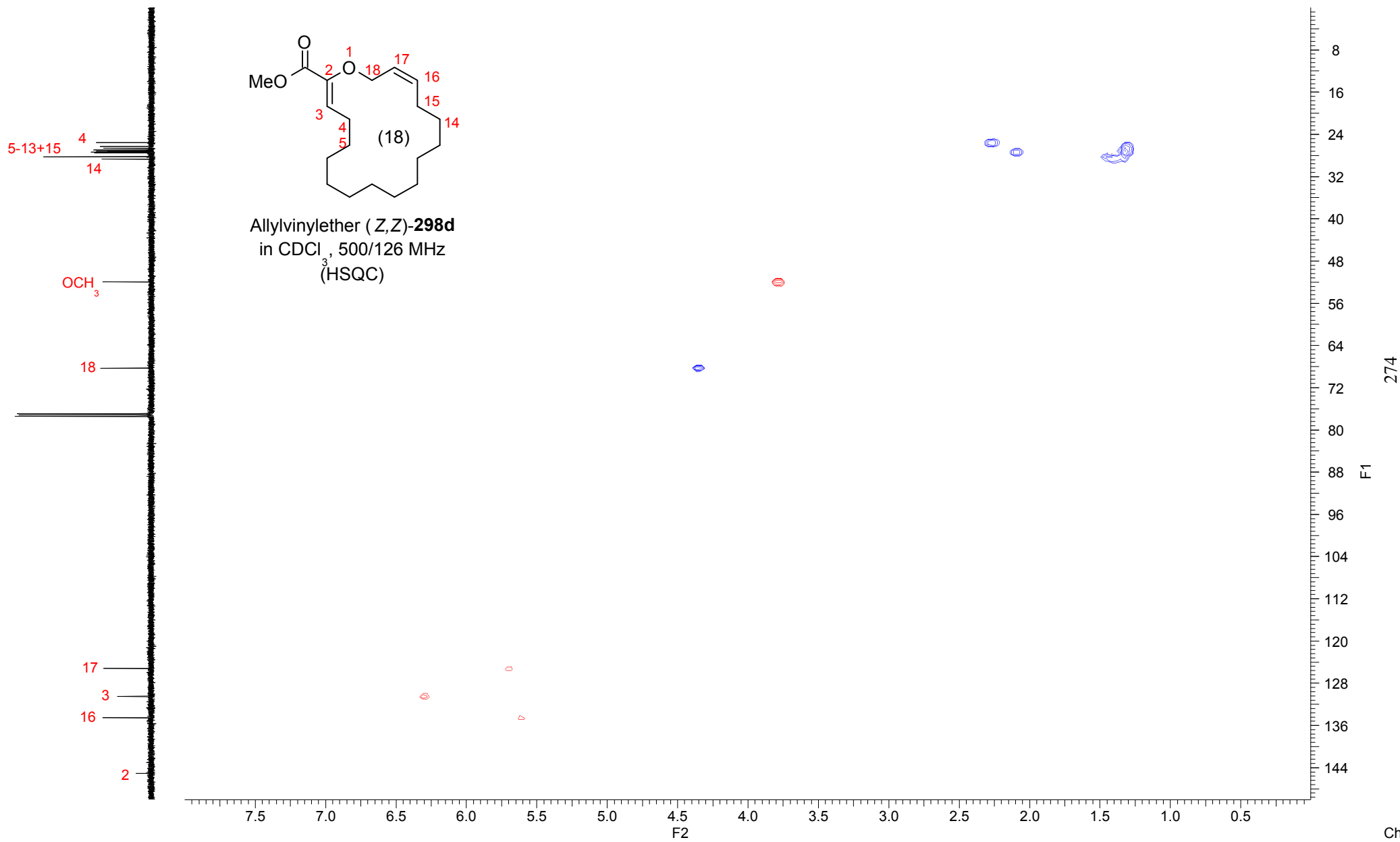
27.165

26.978

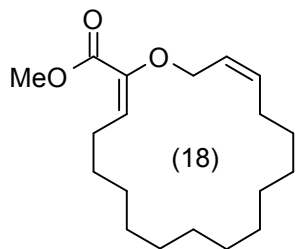
26.279

25.592

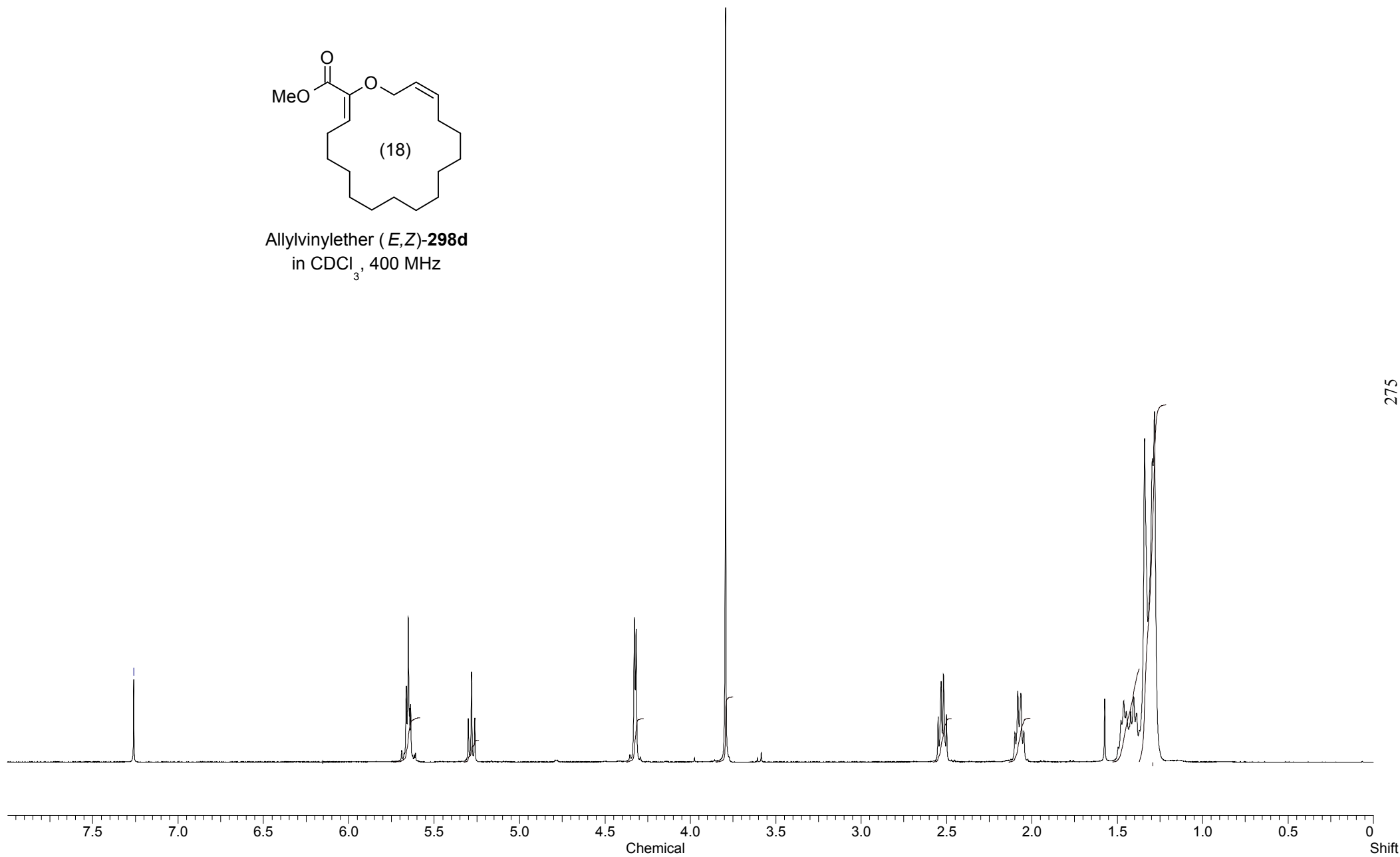


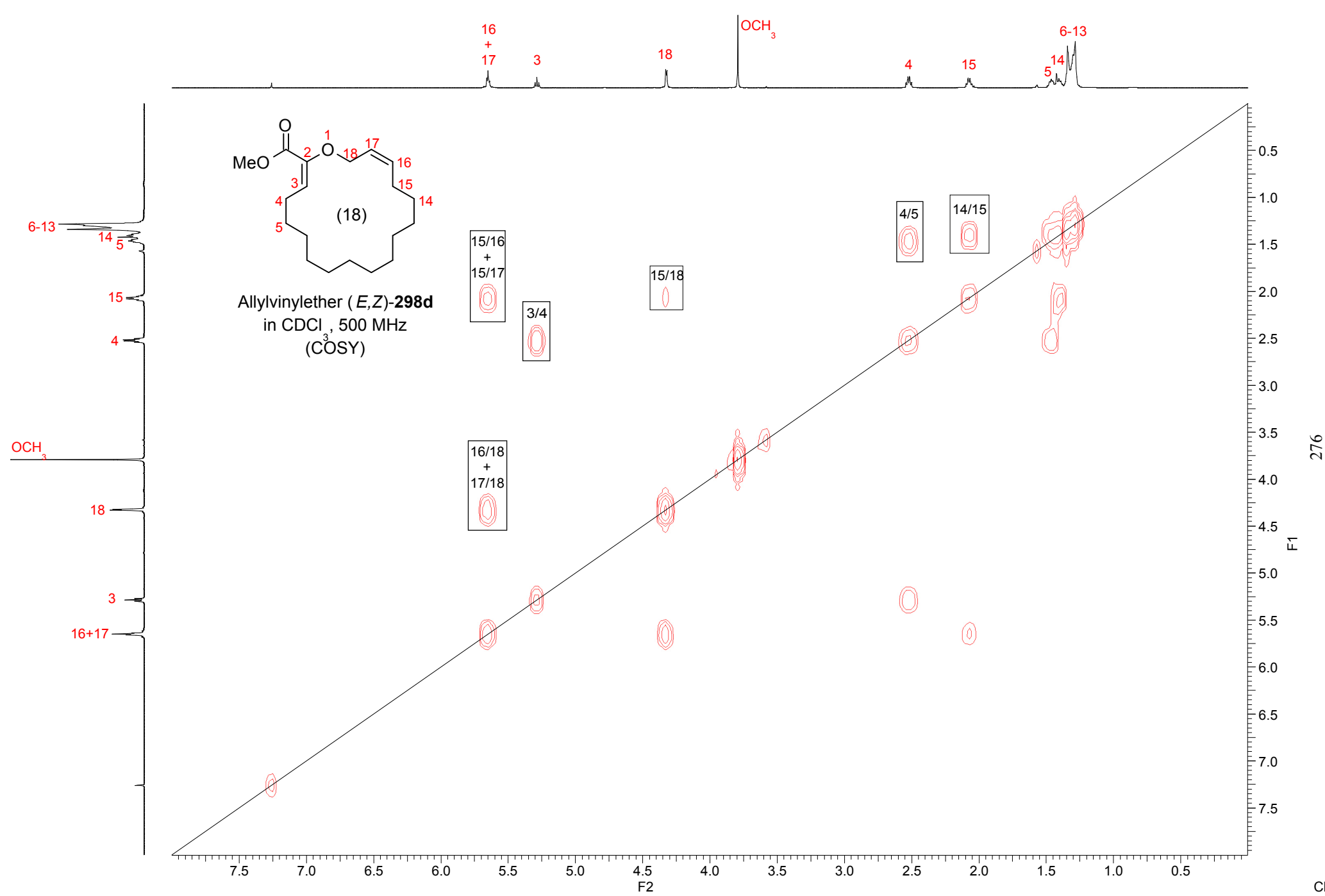


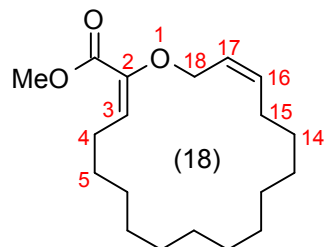
—7.260



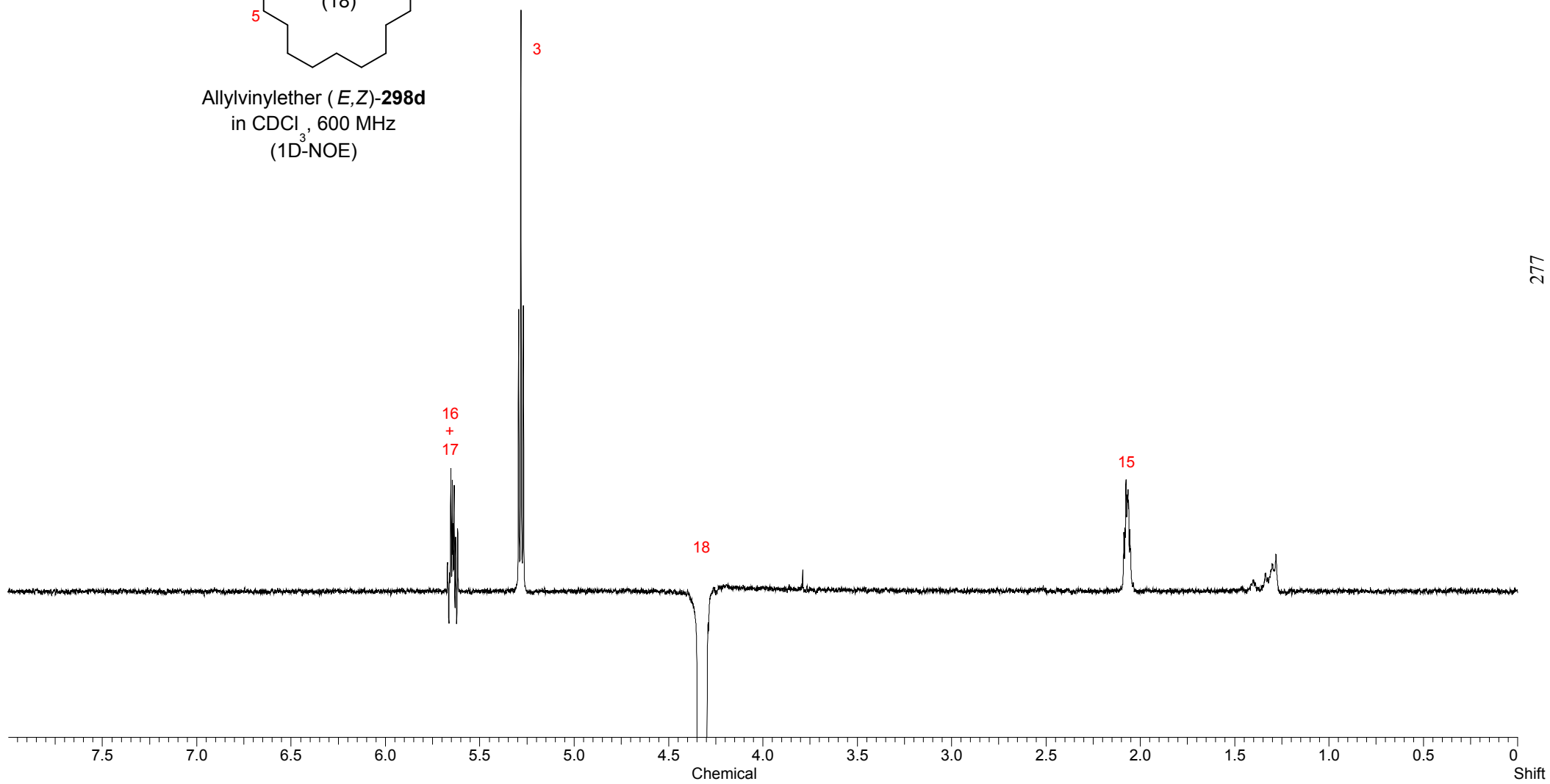
Allylvinylether (*E,Z*)-**298d**
in CDCl₃, 400 MHz

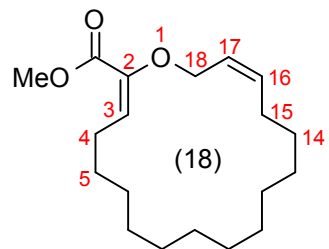




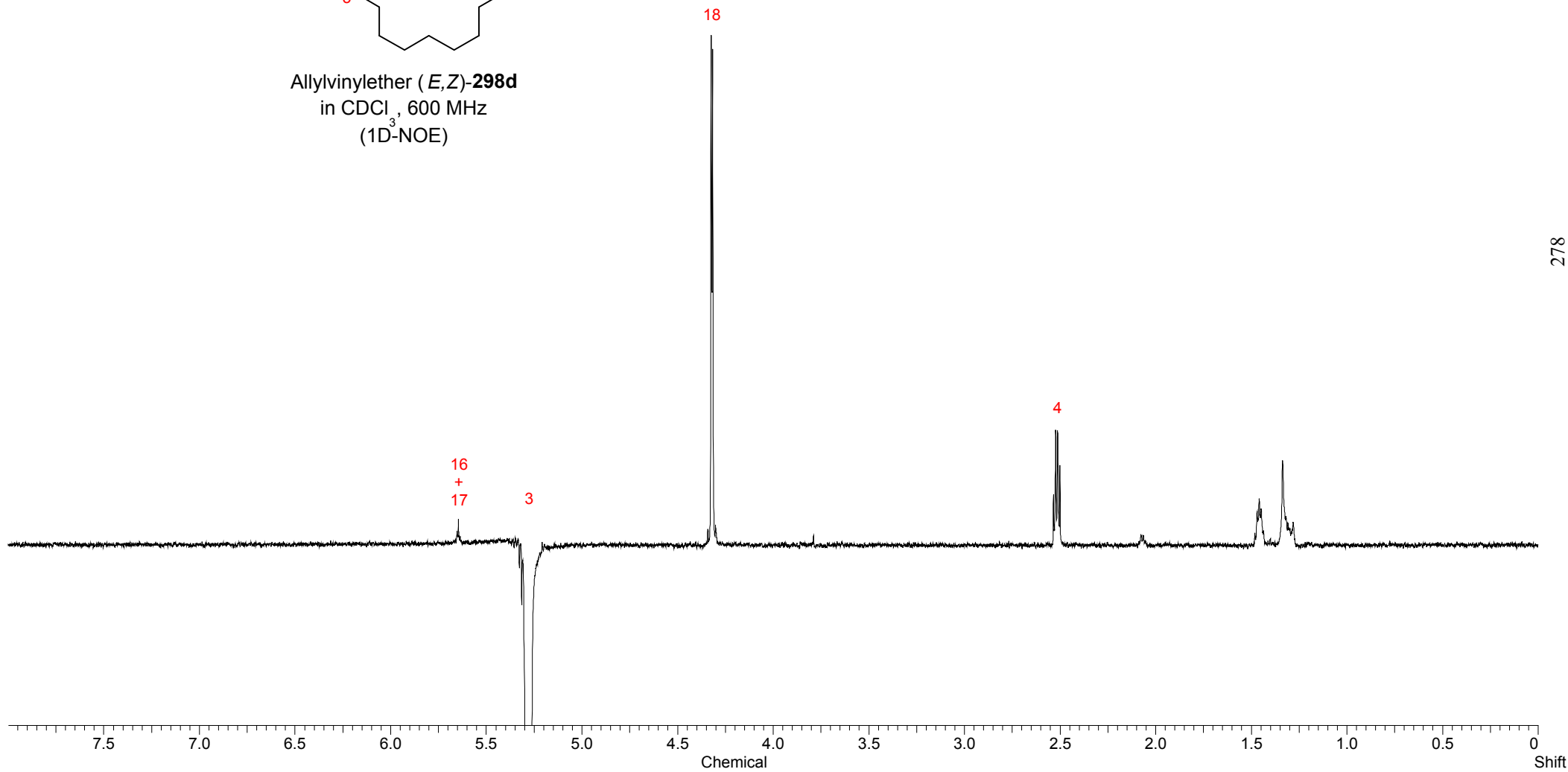


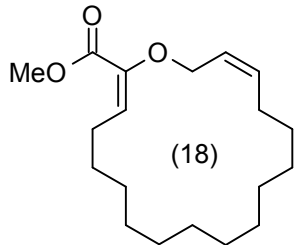
Allylvinyloxy (*E,Z*)-**298d**
in CDCl₃, 600 MHz
(1D³-NOE)



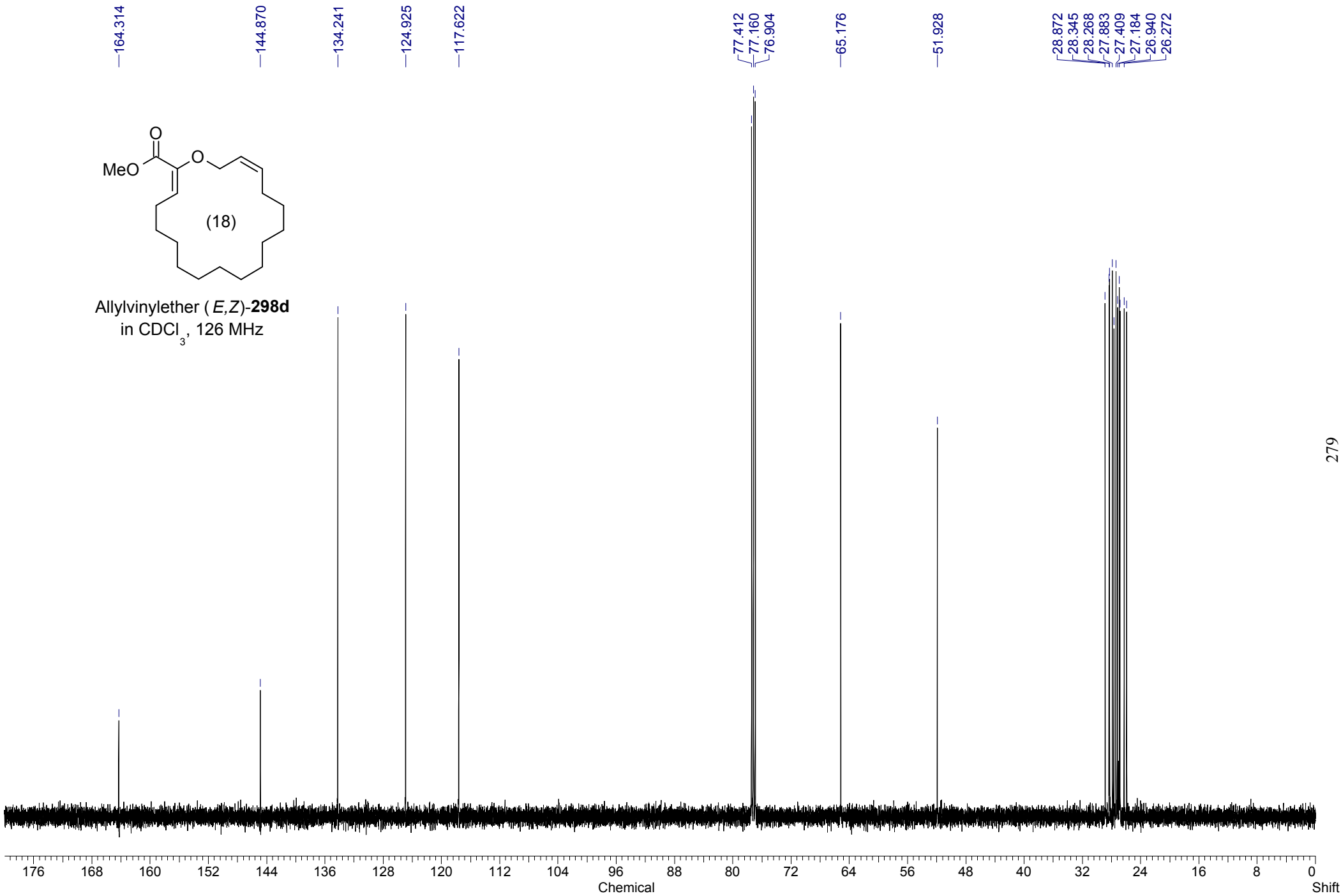


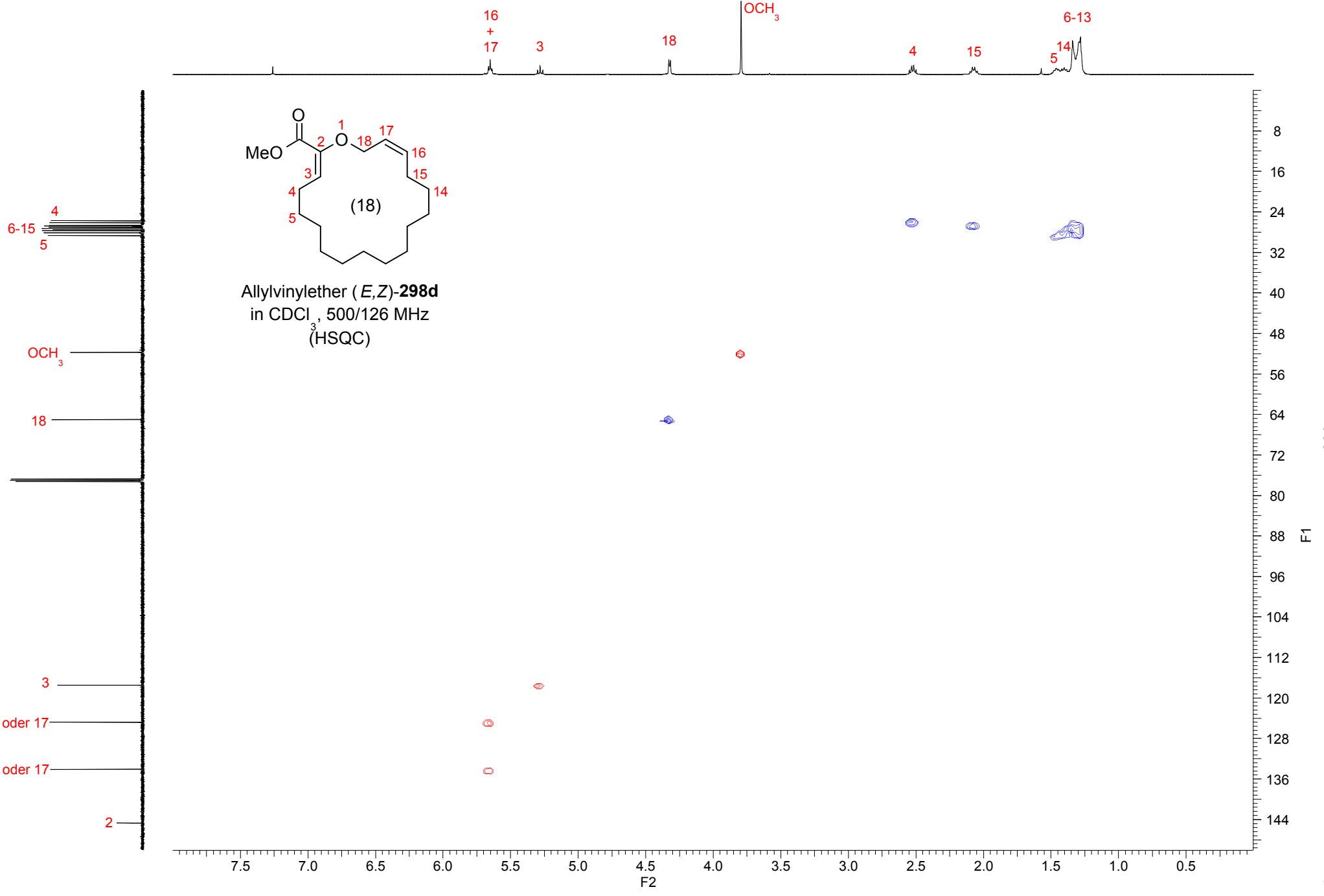
Allylvinyloxy ether (*E,Z*)-**298d**
in CDCl₃, 600 MHz
(1D-NOE)



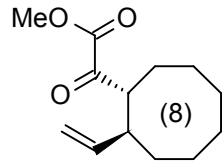


Allylvinylether (*E,Z*)-**298d**
in CDCl₃, 126 MHz

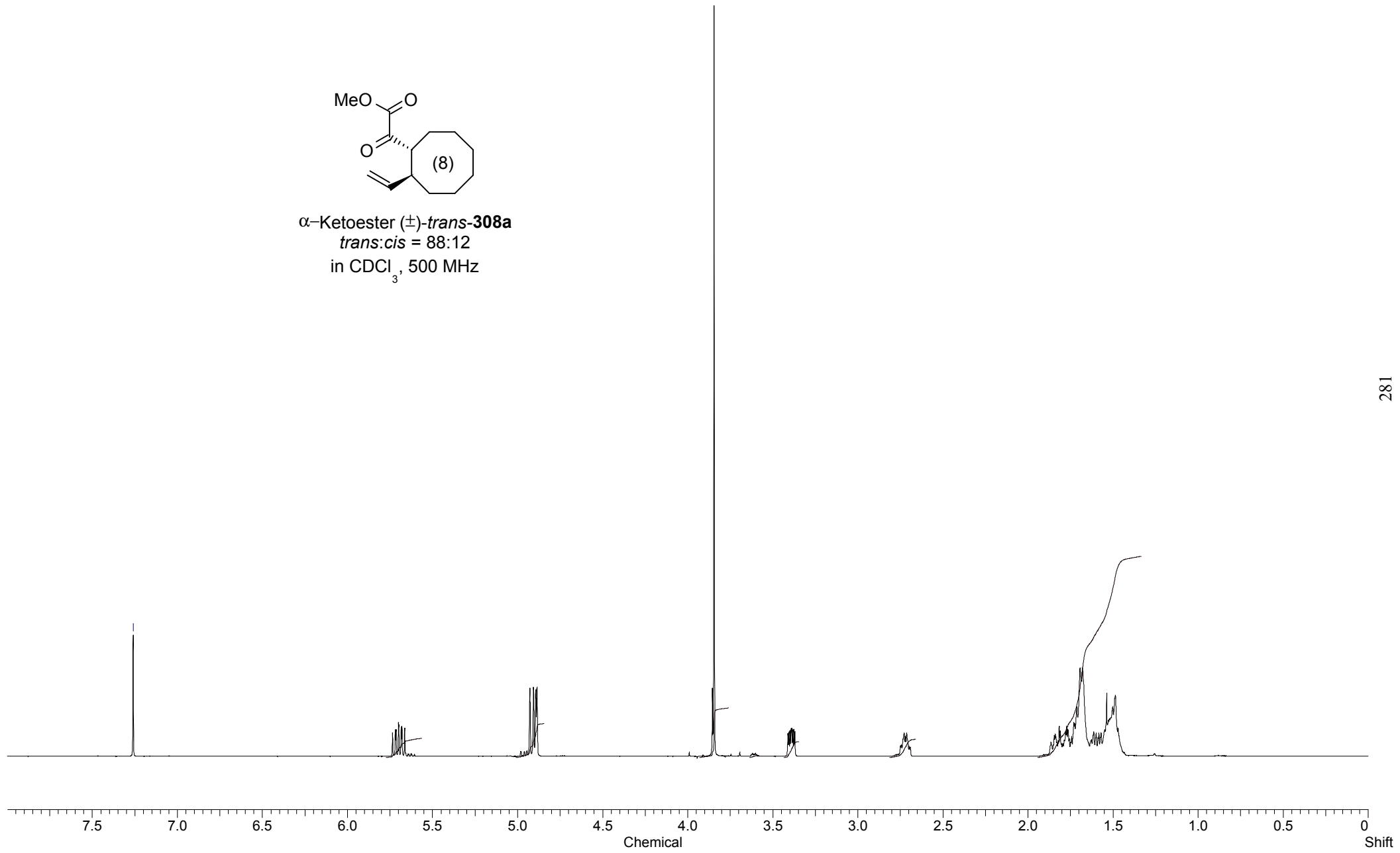


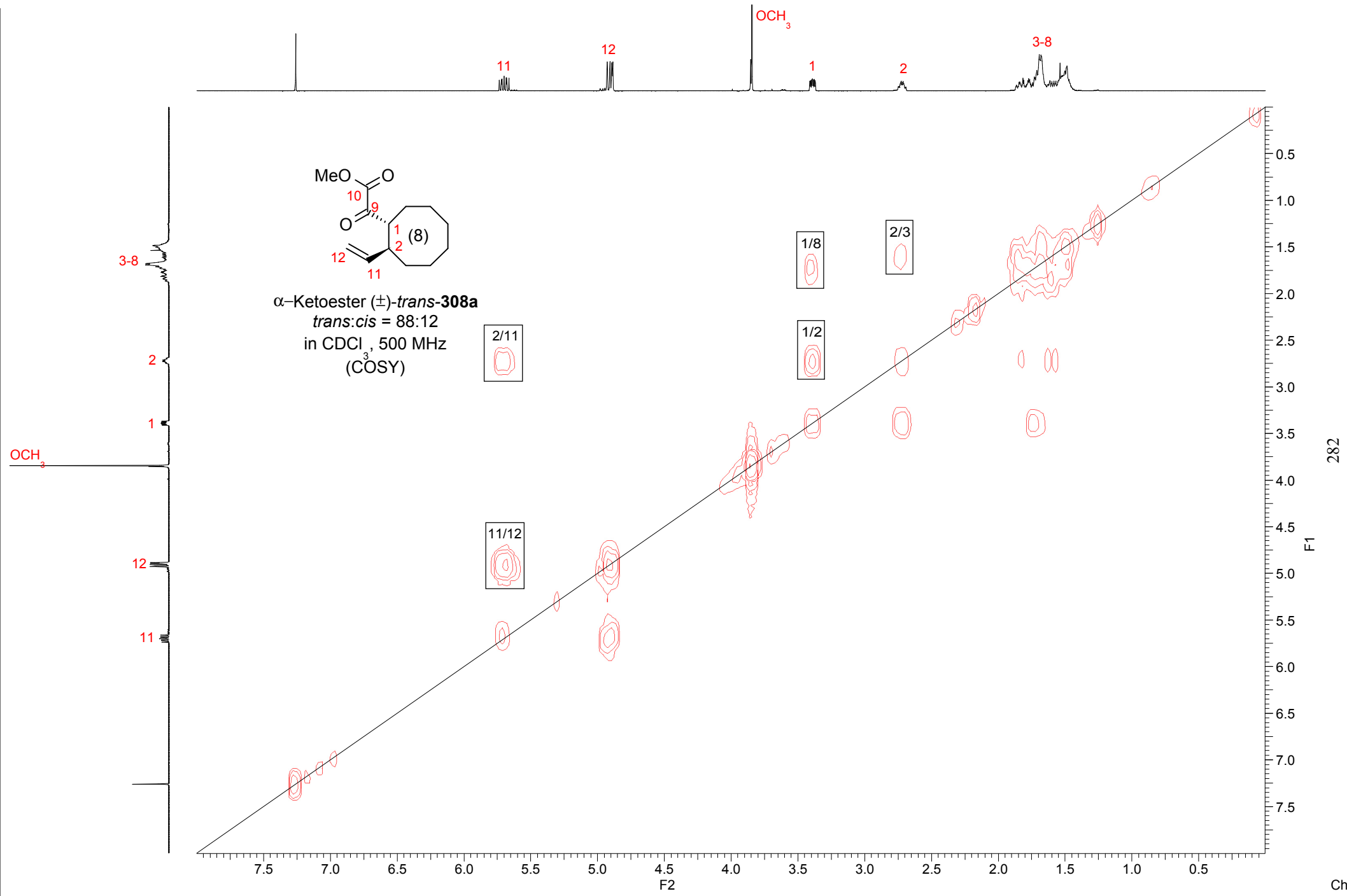


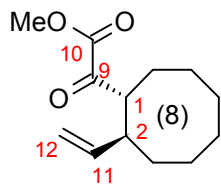
—7.260



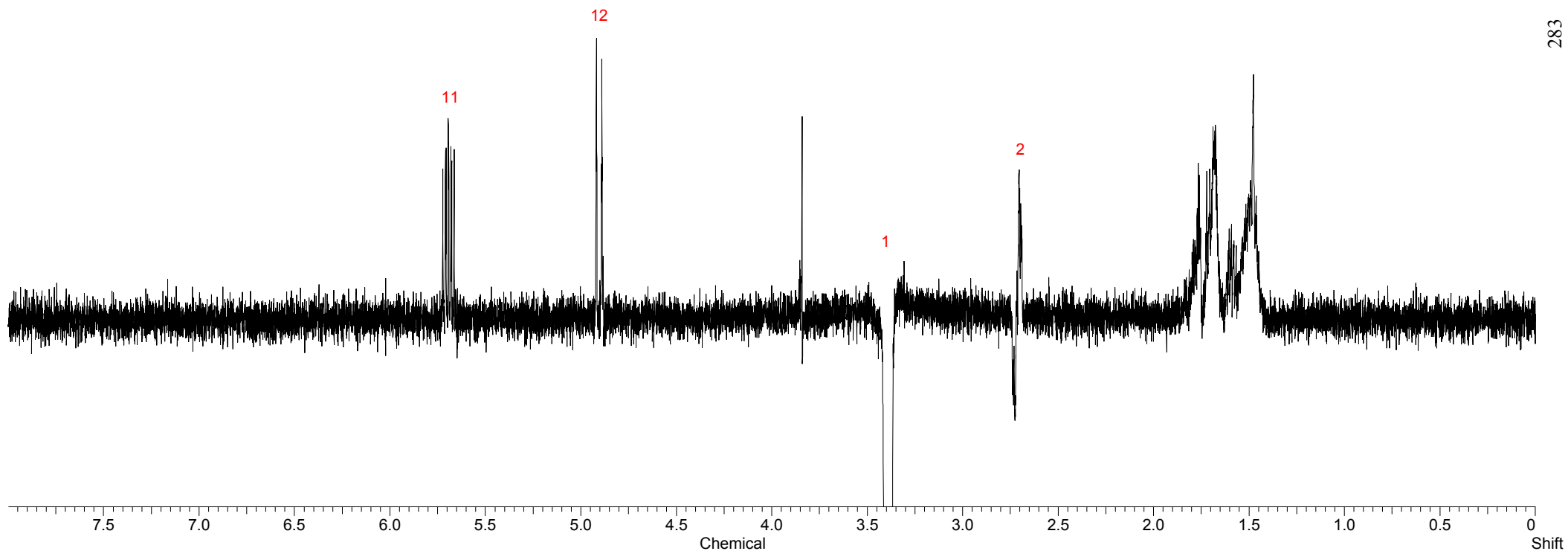
α -Ketoester (\pm)-*trans*-**308a**
trans:cis = 88:12
in CDCl_3 , 500 MHz







α -Ketoester (\pm)-*trans*-**308a**
trans:cis = 62:38
in CDCl₃, 600 MHz
(1D³-NOE)



197.216
196.338

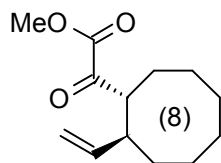
162.943
162.092

141.651
138.773

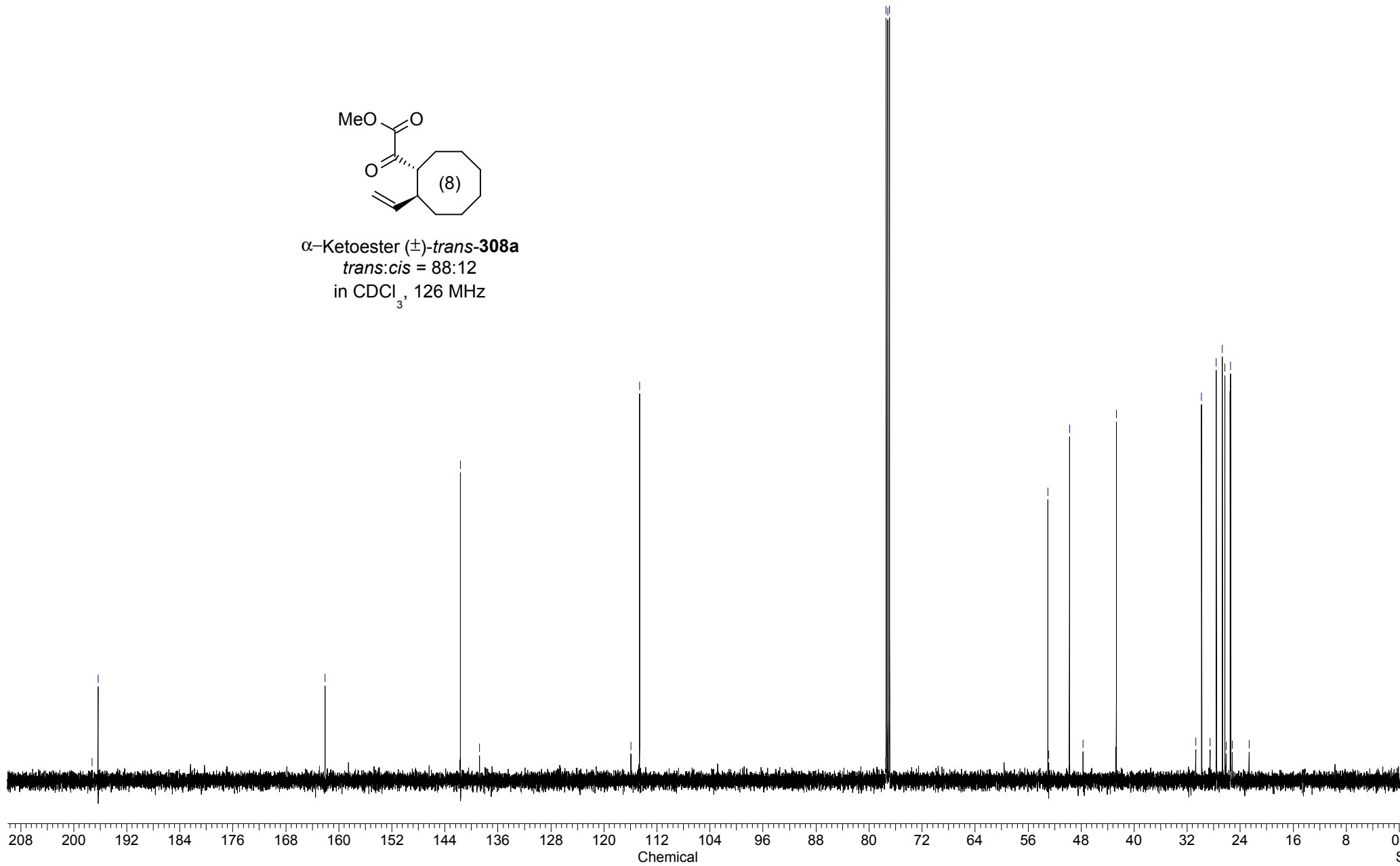
115.938
114.628

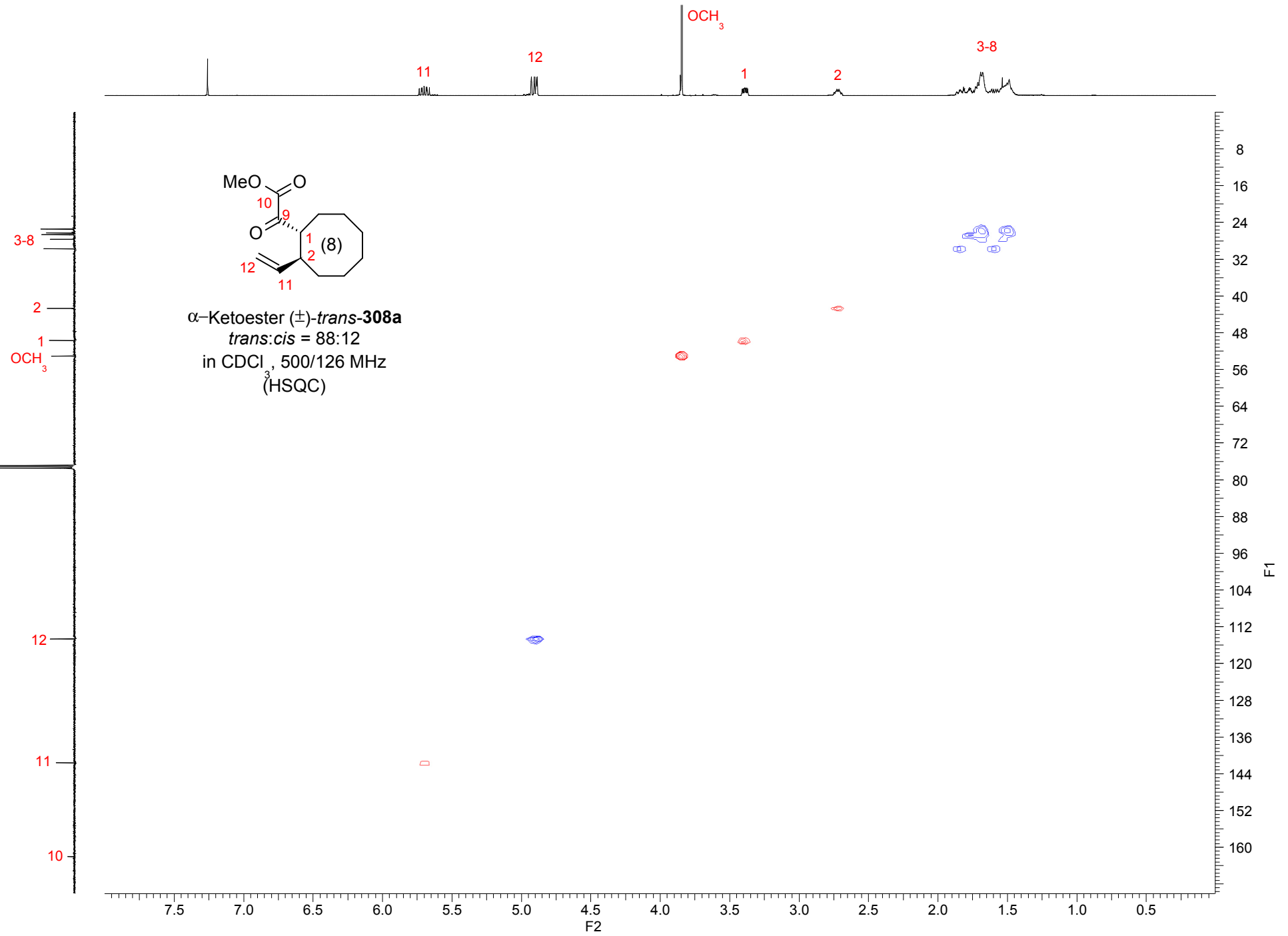
77.412
77.160
76.904

53.027
52.901
49.759
47.728
42.704
30.723
29.830
28.566
27.612
26.684
26.325
26.134
25.439
25.180
22.675

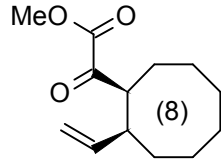


α -Ketoester (\pm)-*trans*-308a
trans:cis = 88:12
in CDCl₃, 126 MHz

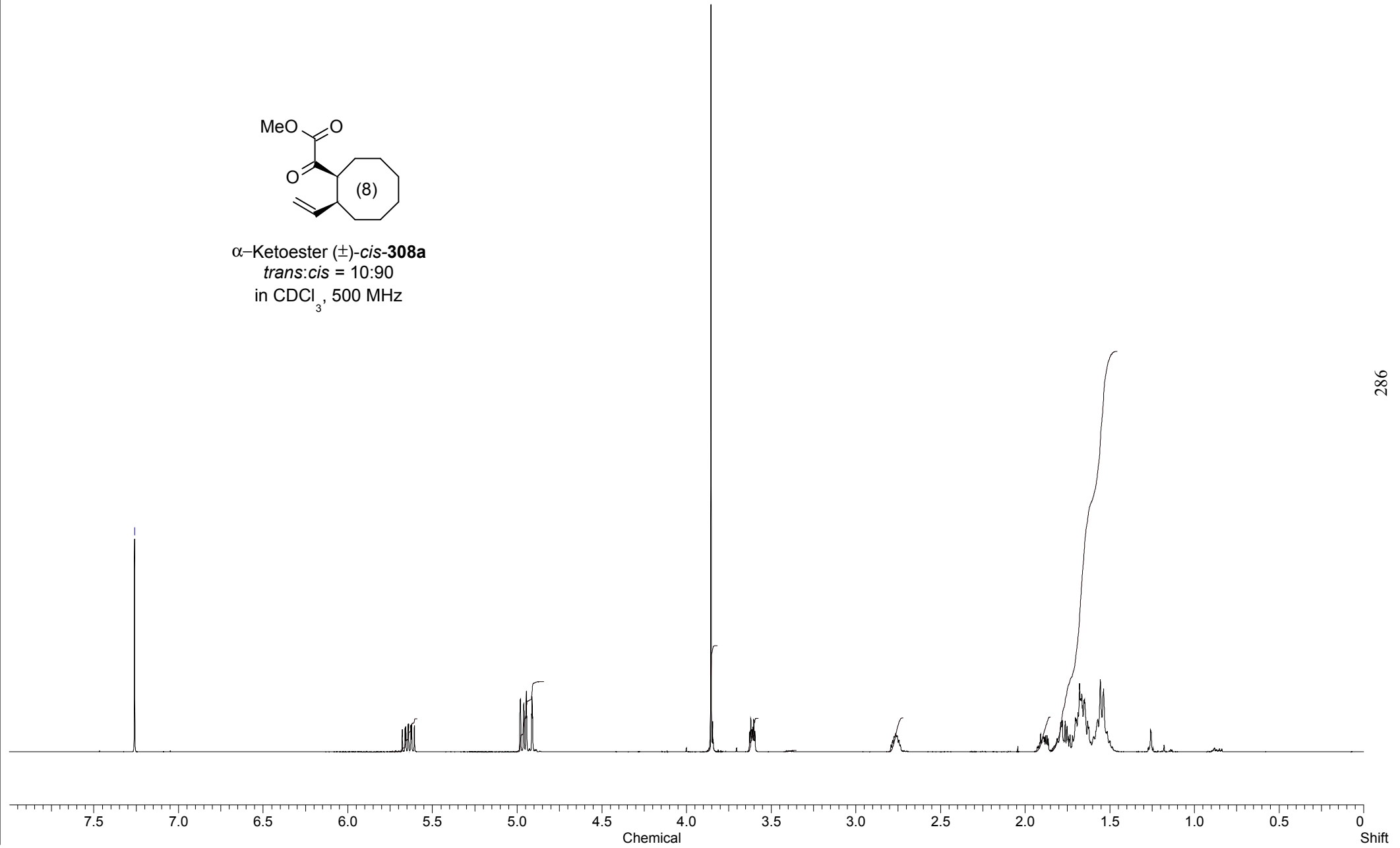


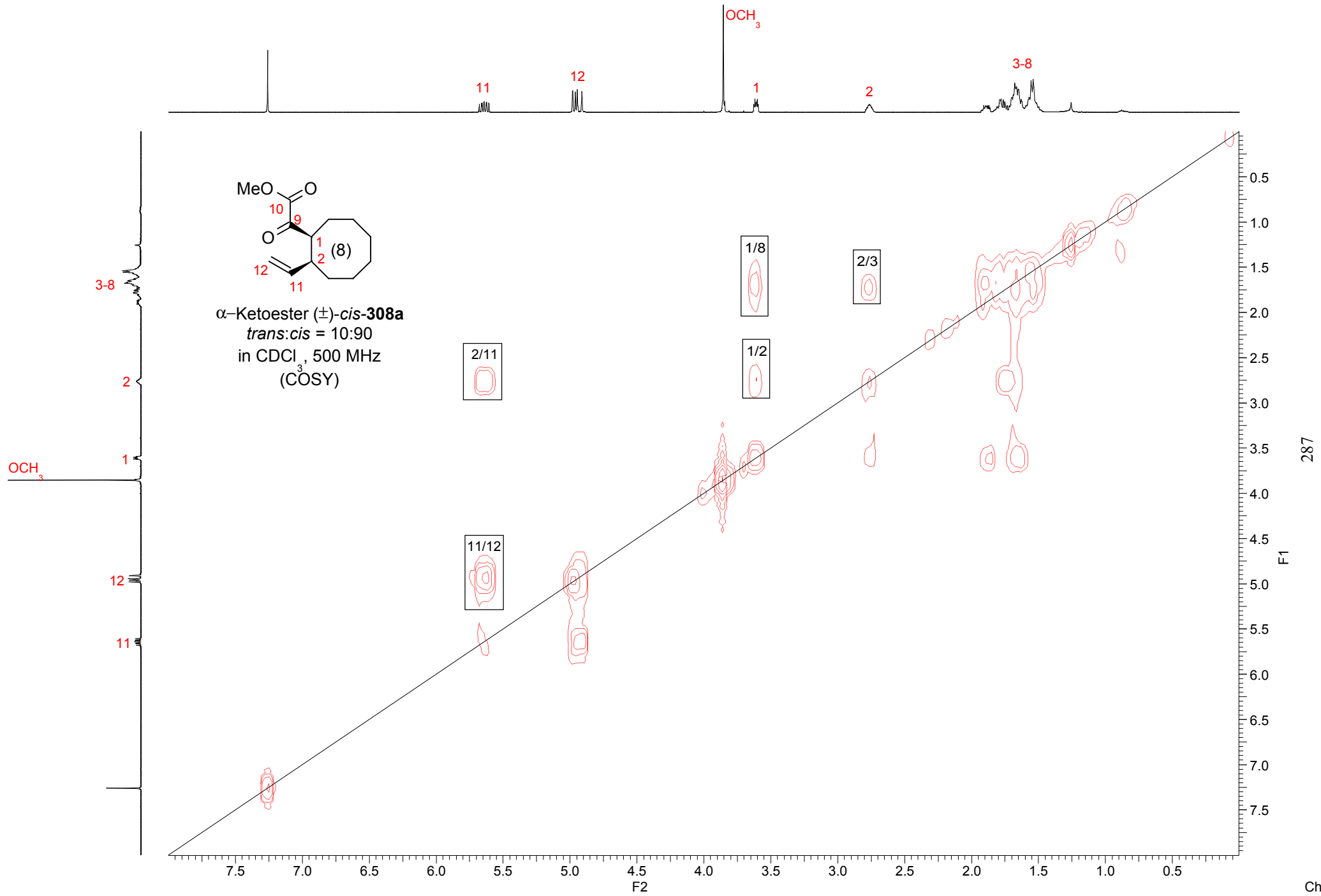


-7.260

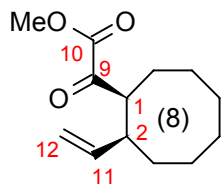


α -Ketoester (\pm)-*cis*-**308a**
trans:cis = 10:90
in CDCl₃, 500 MHz

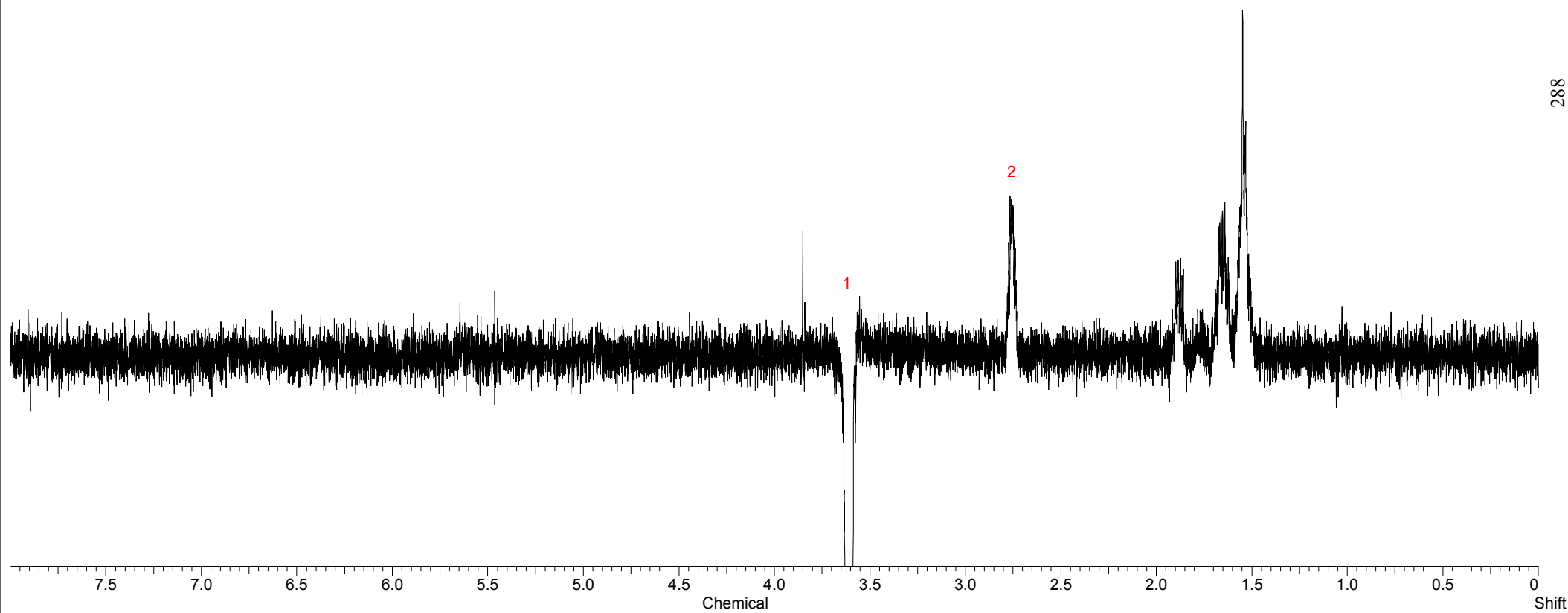


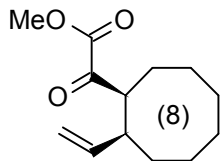


287

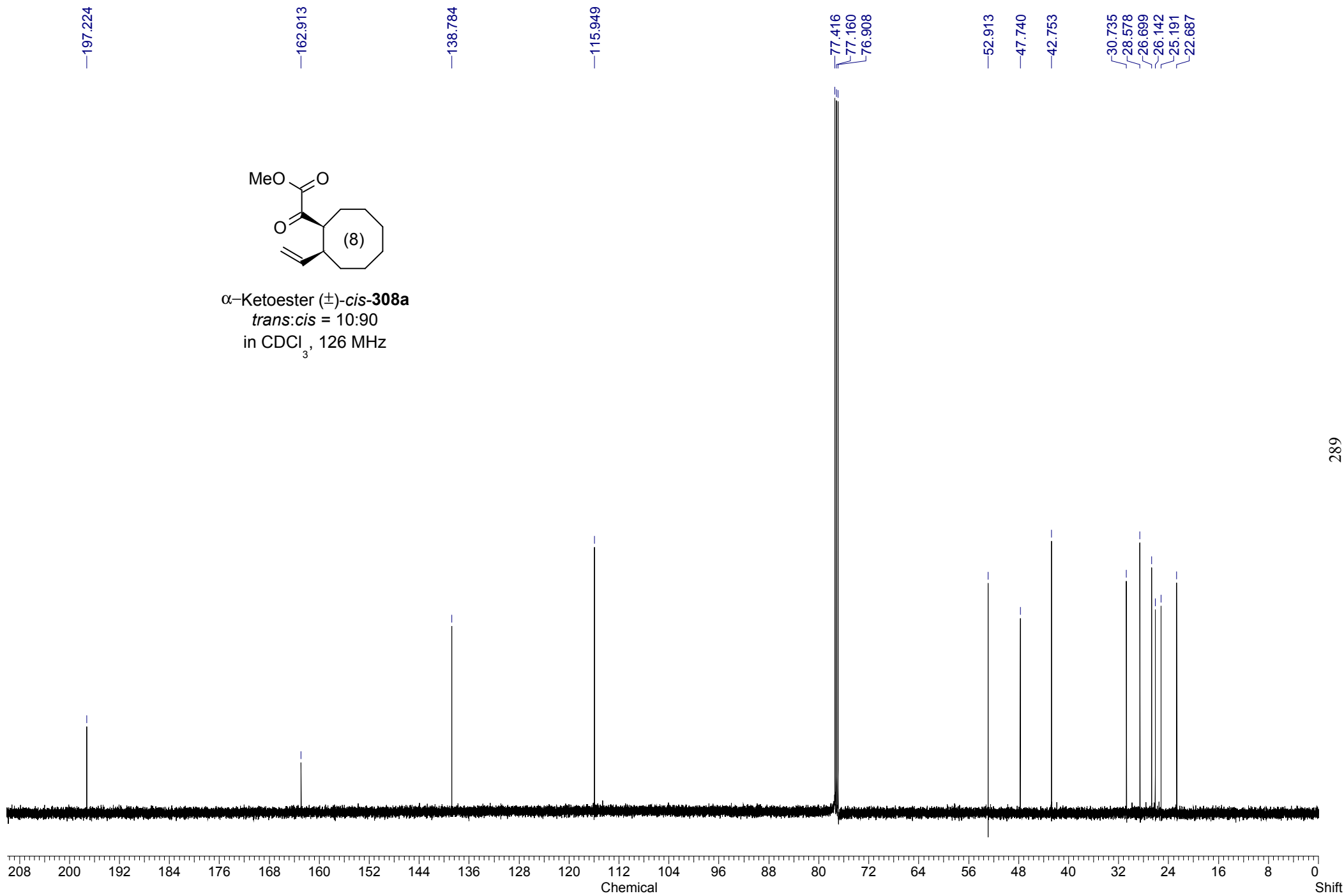


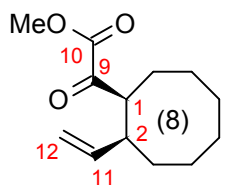
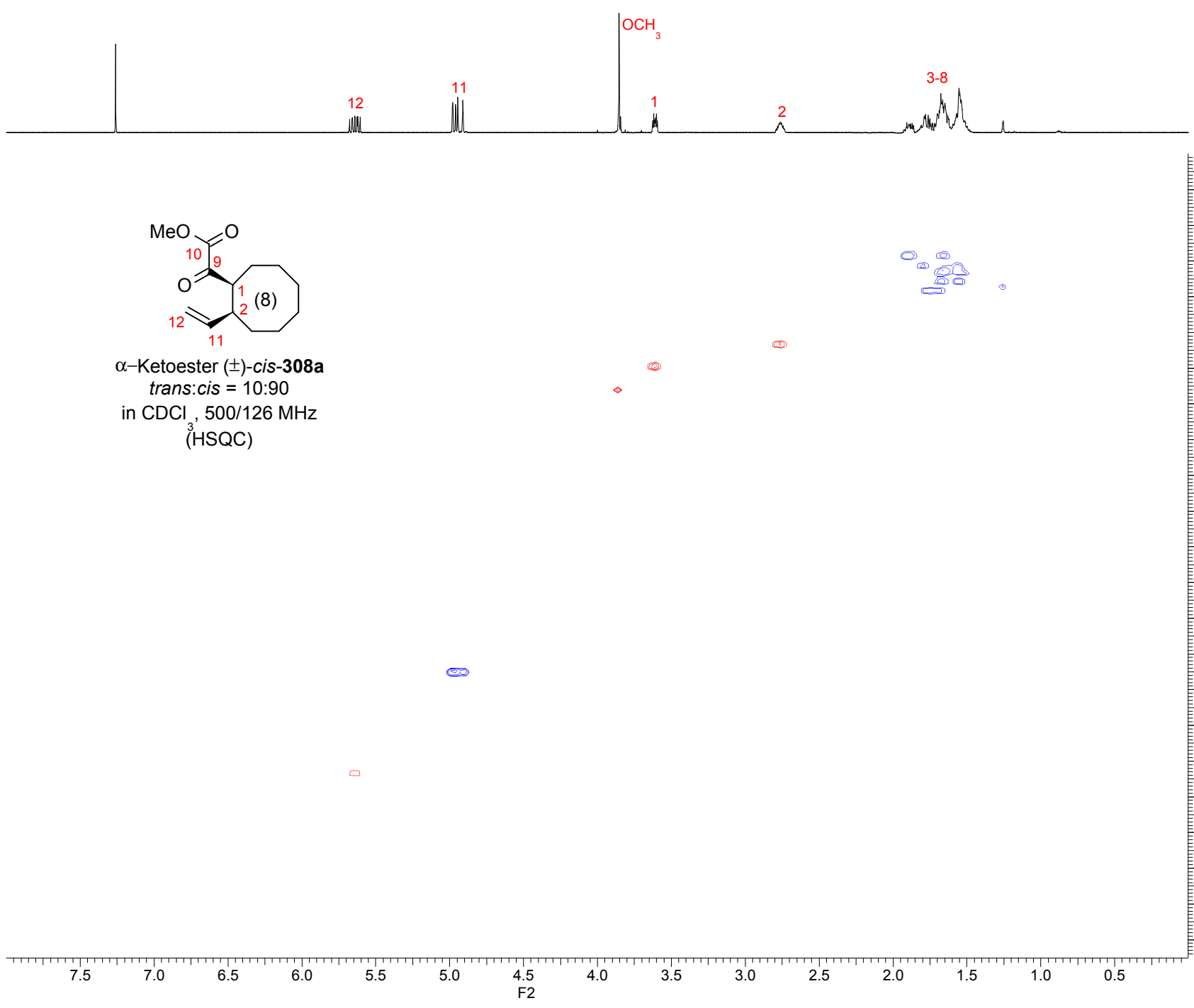
α -Ketoester (\pm)-*cis*-308a
trans:cis = 62:38
 in CDCl₃, 500 MHz
 (1D-NOE)





α -Ketoester (\pm)-*cis*-**308a**
trans:cis = 10:90
in CDCl₃, 126 MHz





α -Ketoester (±)-cis-308a
trans:cis = 10:90
in CDCl₃, 500/126 MHz
(HSQC)

13C chemical shift (F1): 3-8, 2, 1, OCH₃, 11, 12

OCH₃

3-8

12

11

1

2

3-8

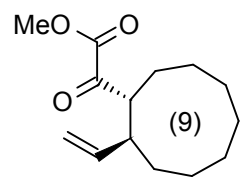
2

1

OCH₃

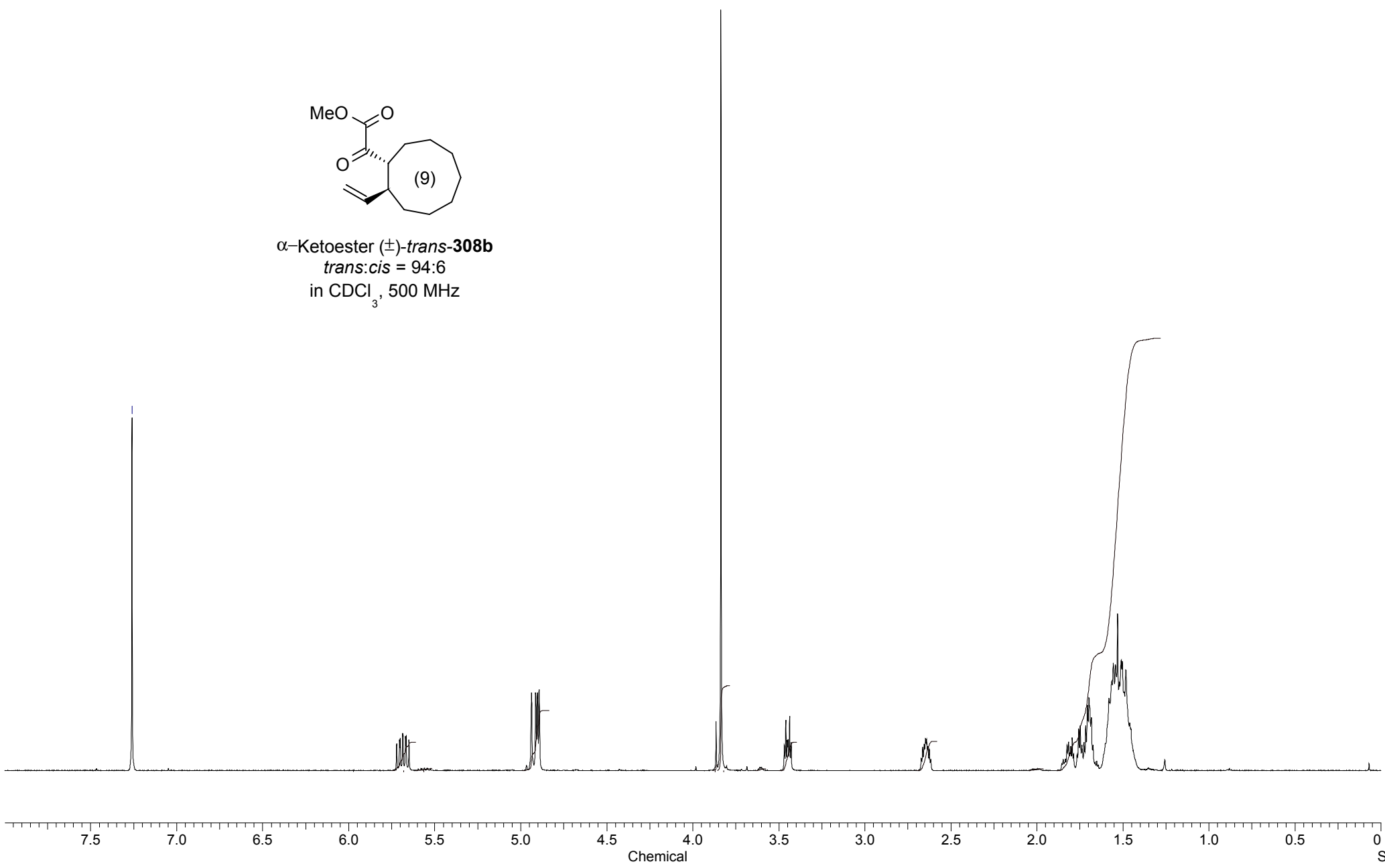
11

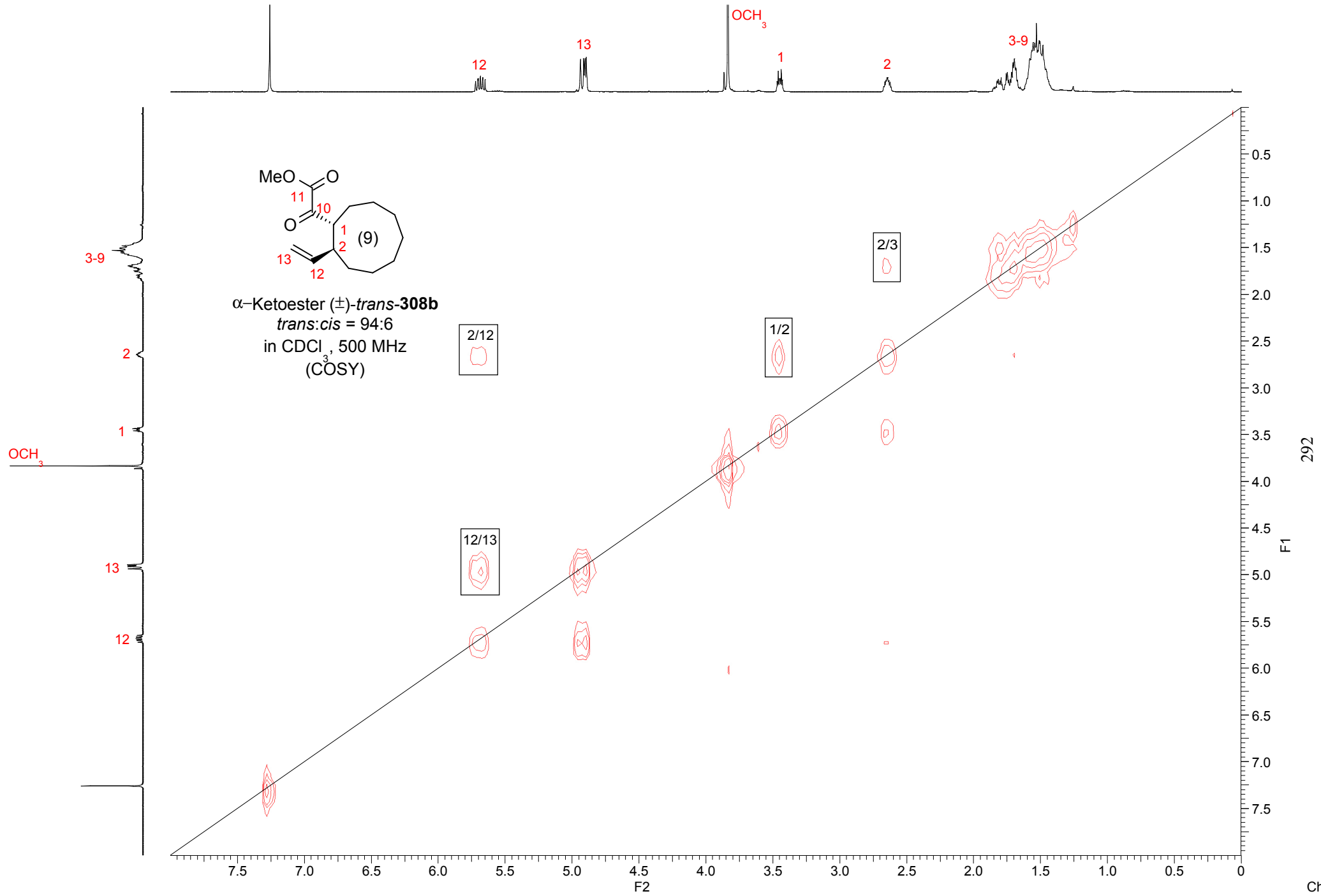
12

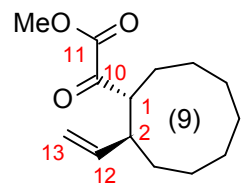


α -Ketoester (\pm)-*trans*-**308b**
trans:cis = 94:6
in CDCl₃, 500 MHz

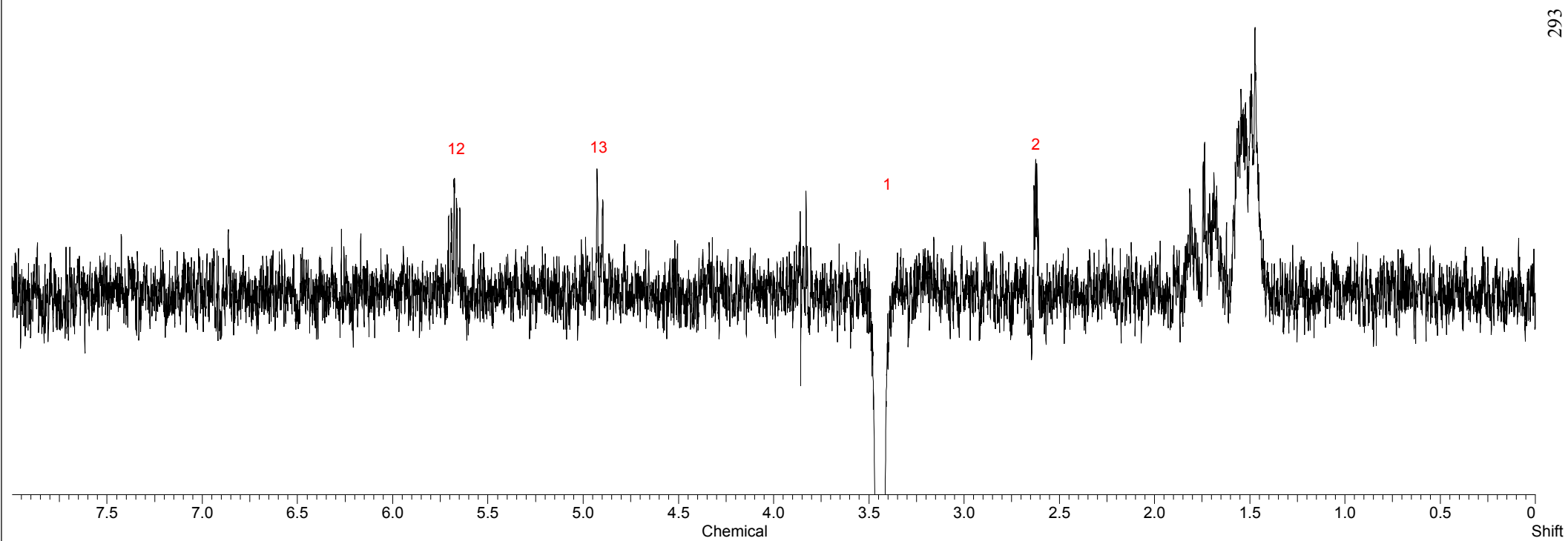
-7.260

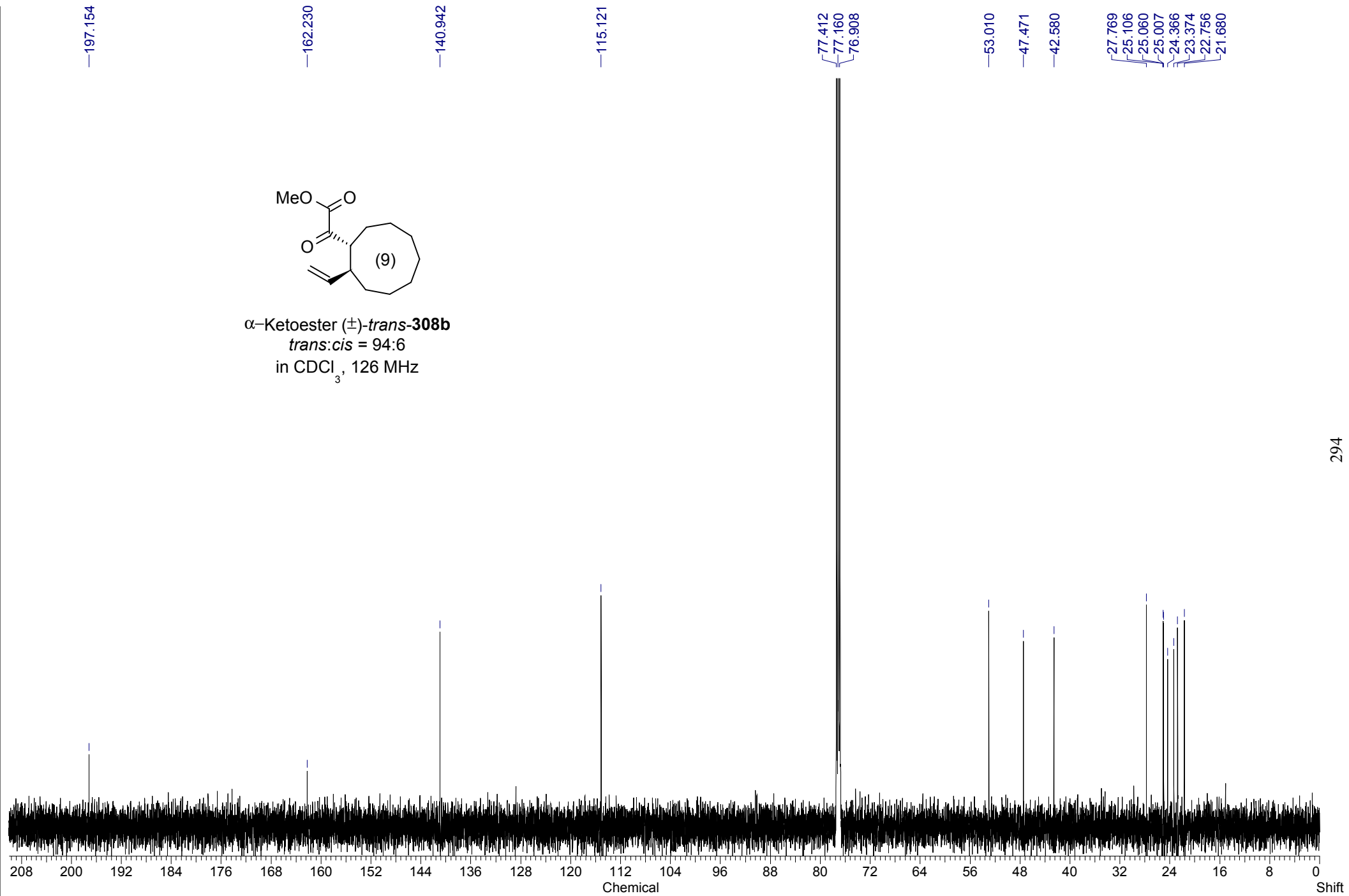


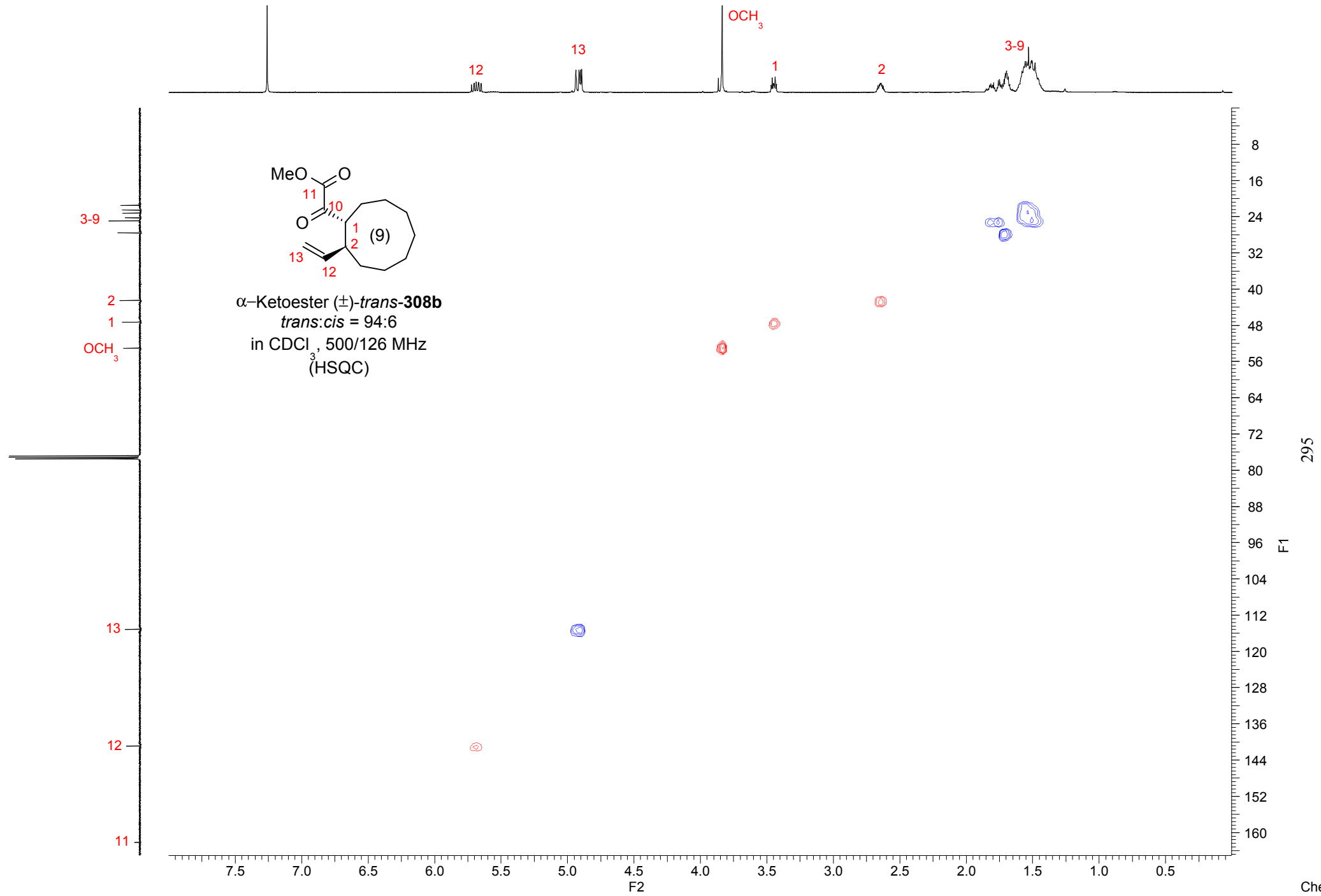




α -Ketoester (\pm)-*trans*-**308b**
trans:*cis* = 25:75
in CDCl₃, 600 MHz
(1D-NOE)



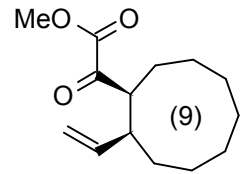




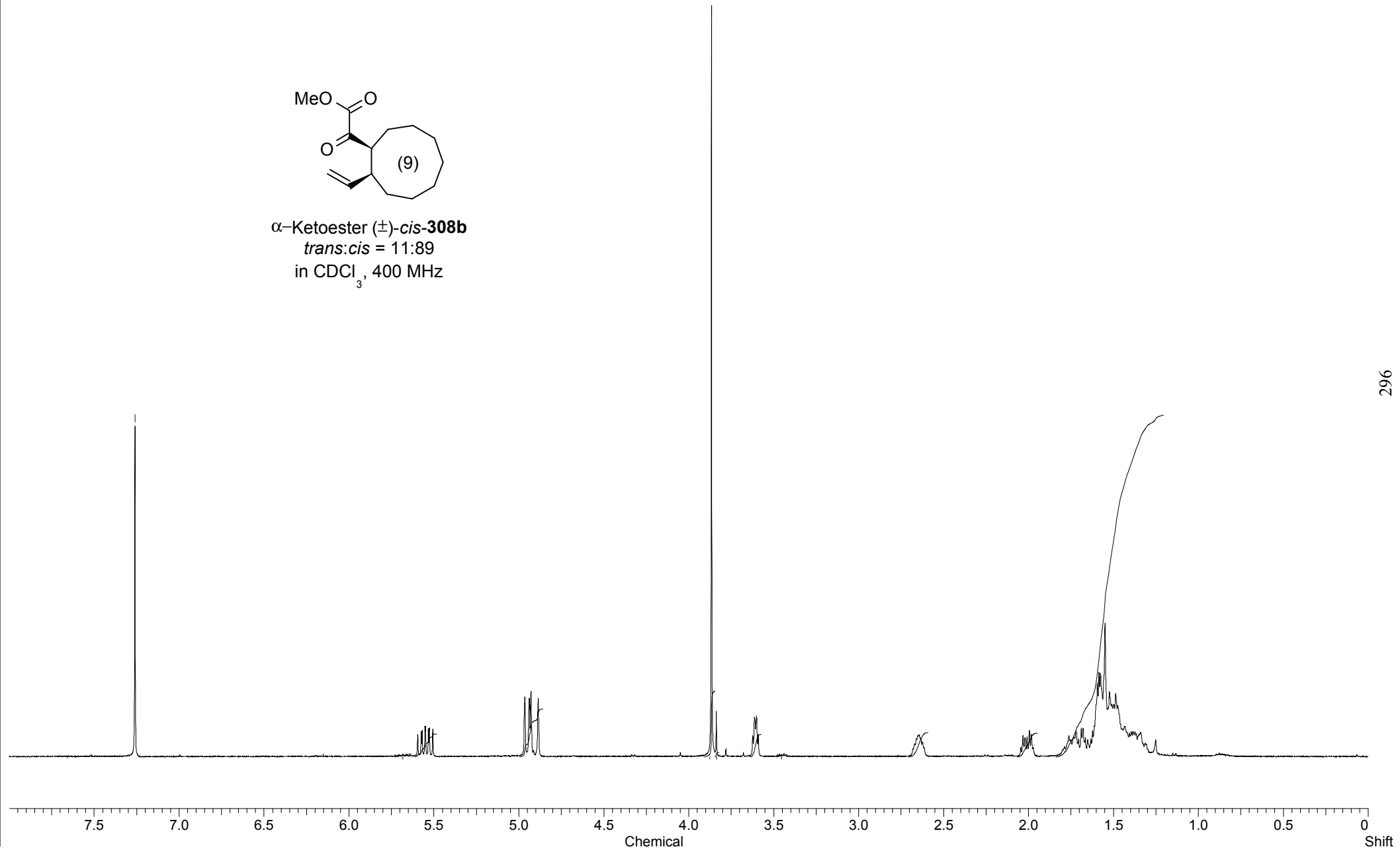
295

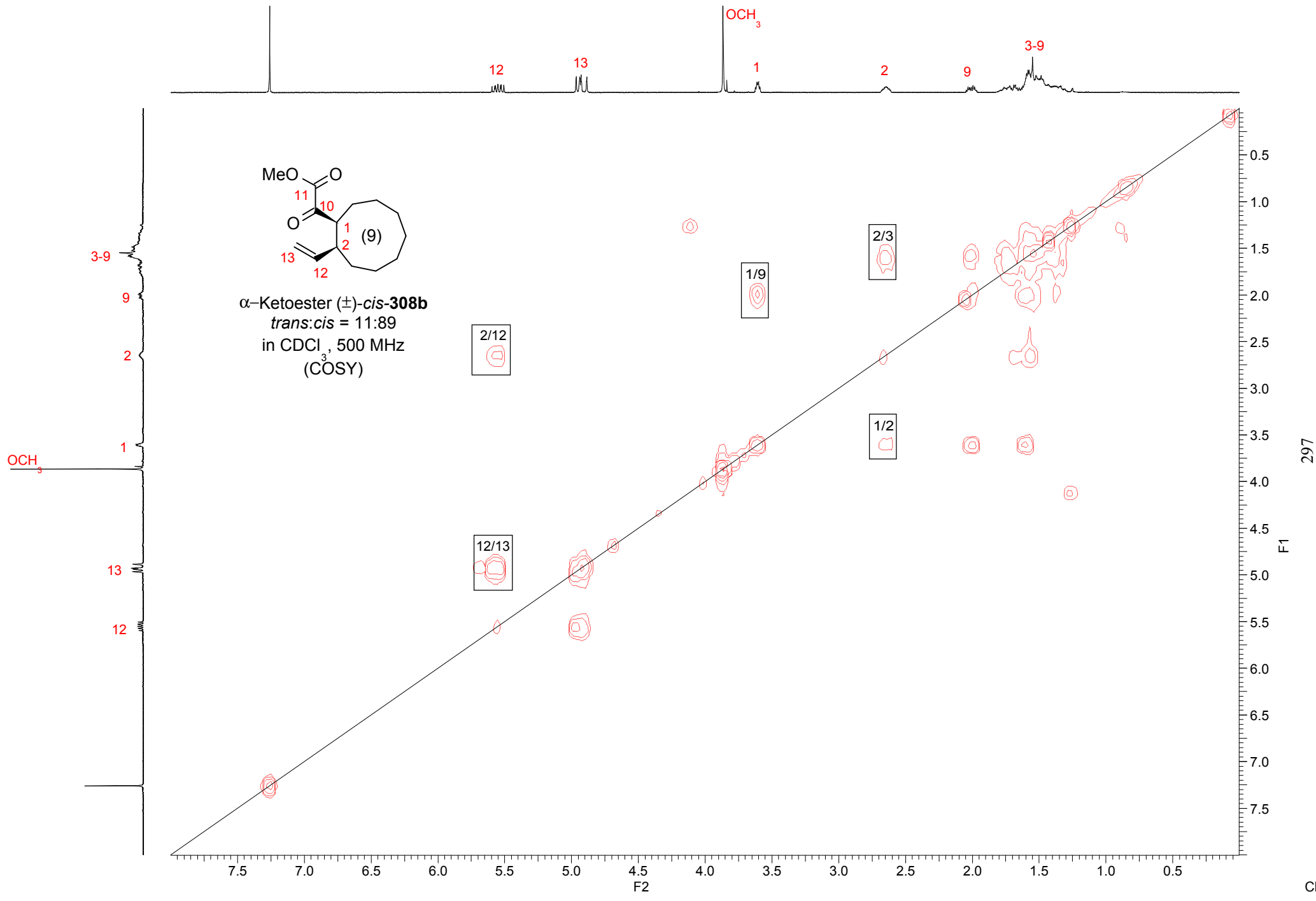
Chemica

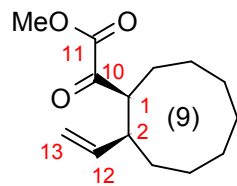
-7.260



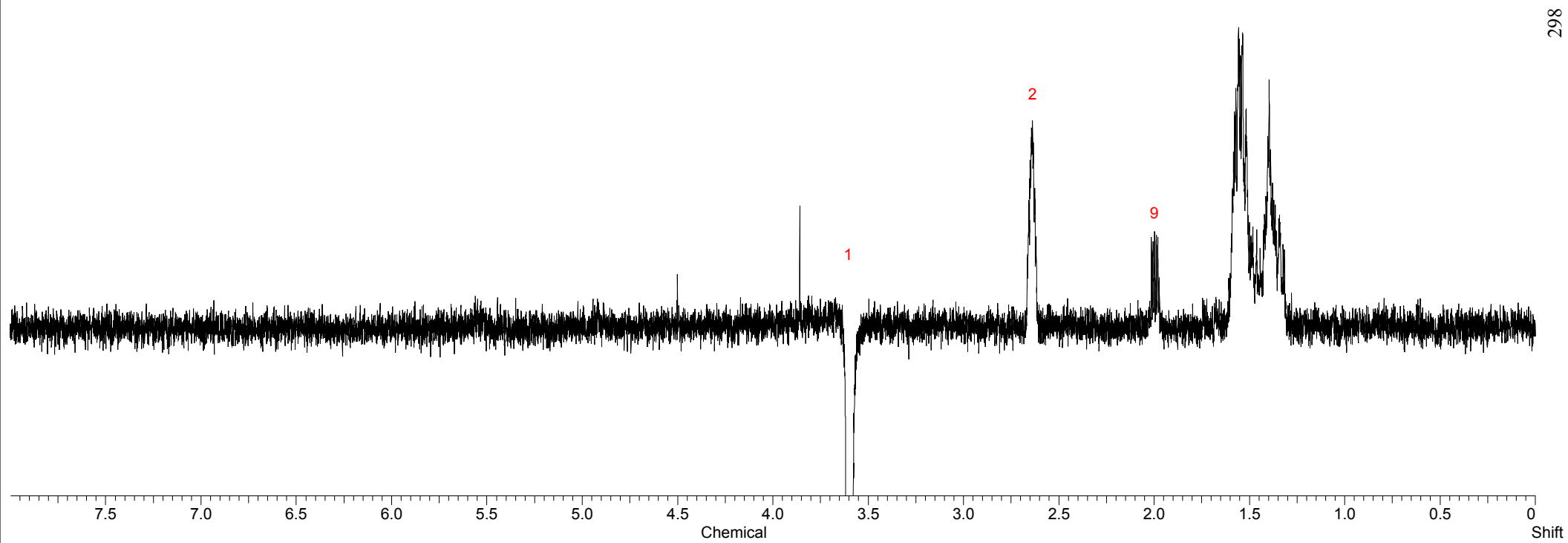
α -Ketoester (\pm)-*cis*-**308b**
trans:cis = 11:89
in CDCl₃, 400 MHz

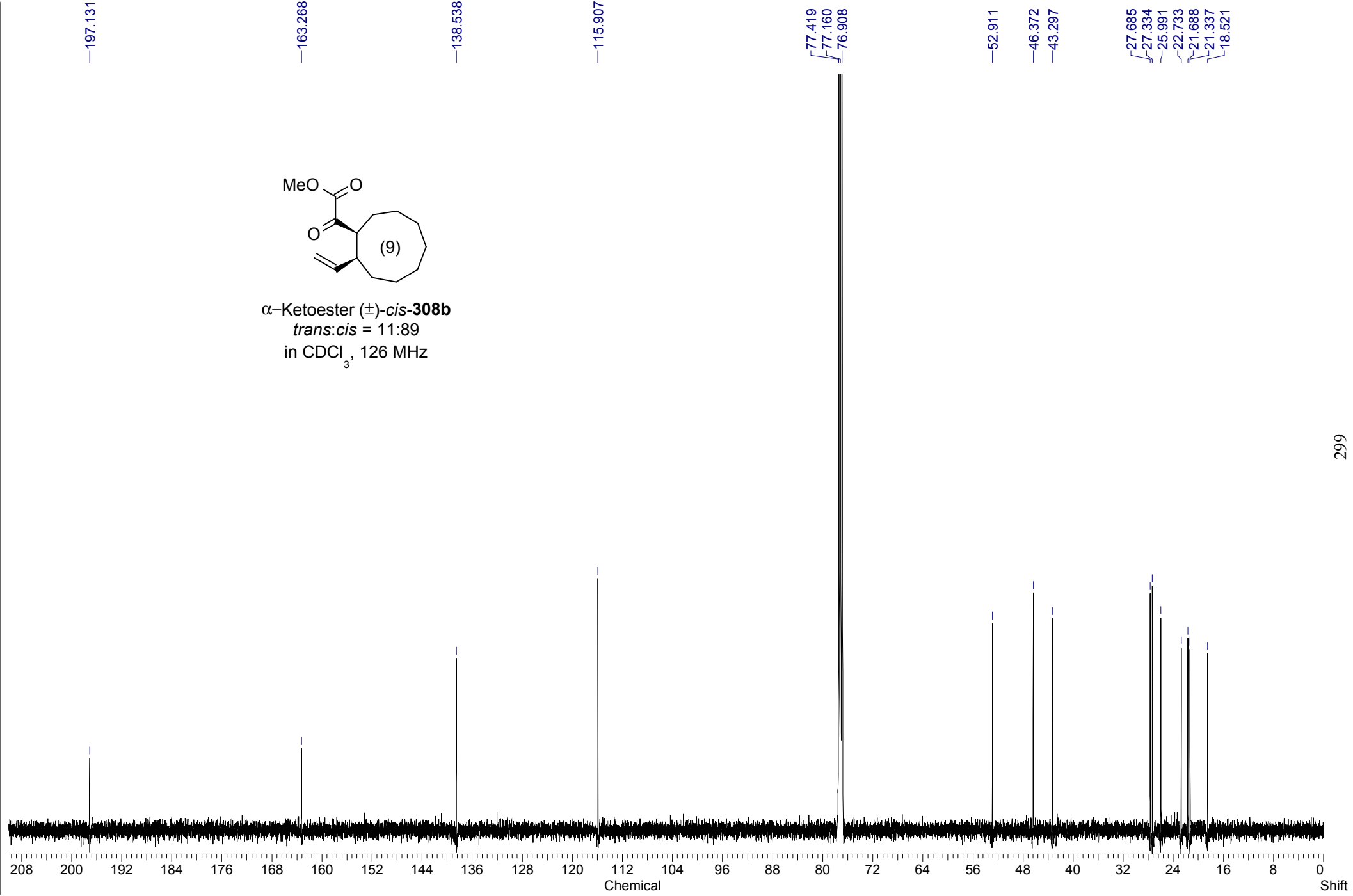


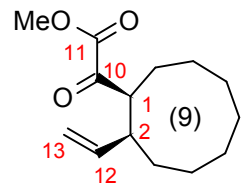
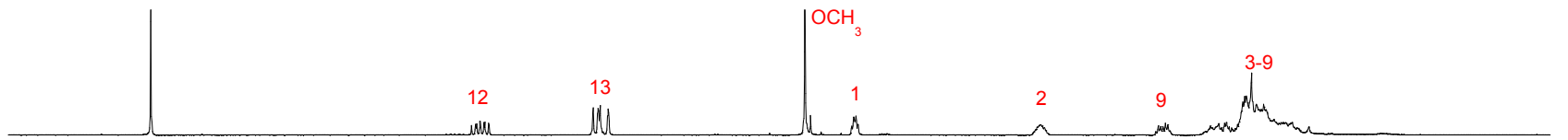




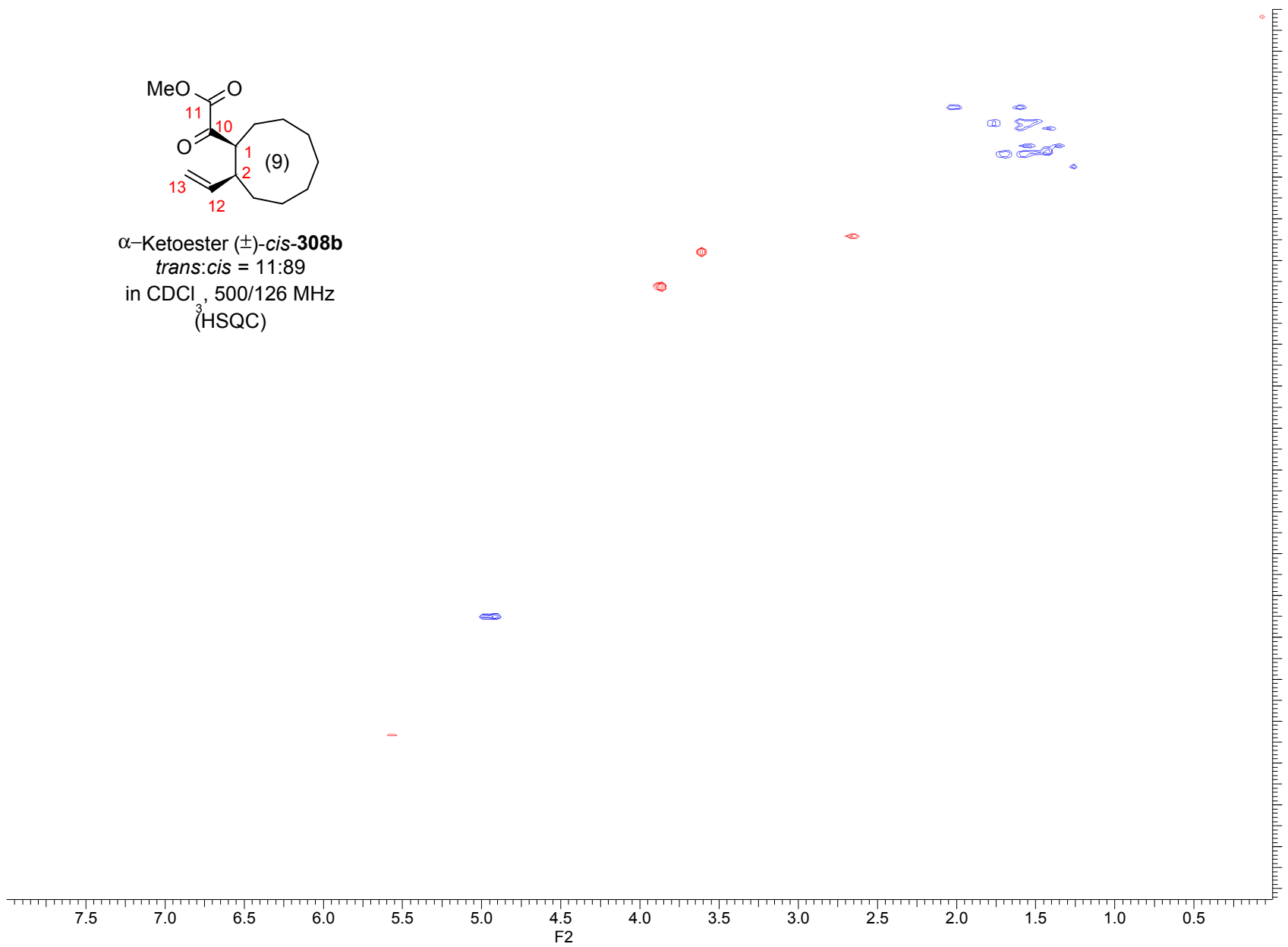
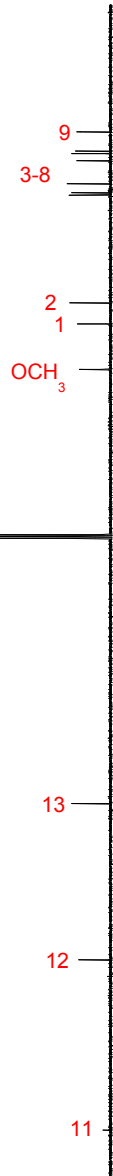
α -Ketoester (\pm)-*cis*-**308b**
trans:cis = 25:75
in CDCl₃, 600 MHz
(1D-NOE)







α -Ketoester (\pm)-*cis*-308b
trans:cis = 11:89
 in CDCl₃, 500/126 MHz
 (HSQC)

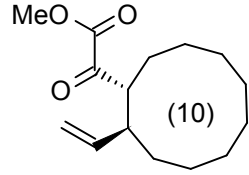


F1
300

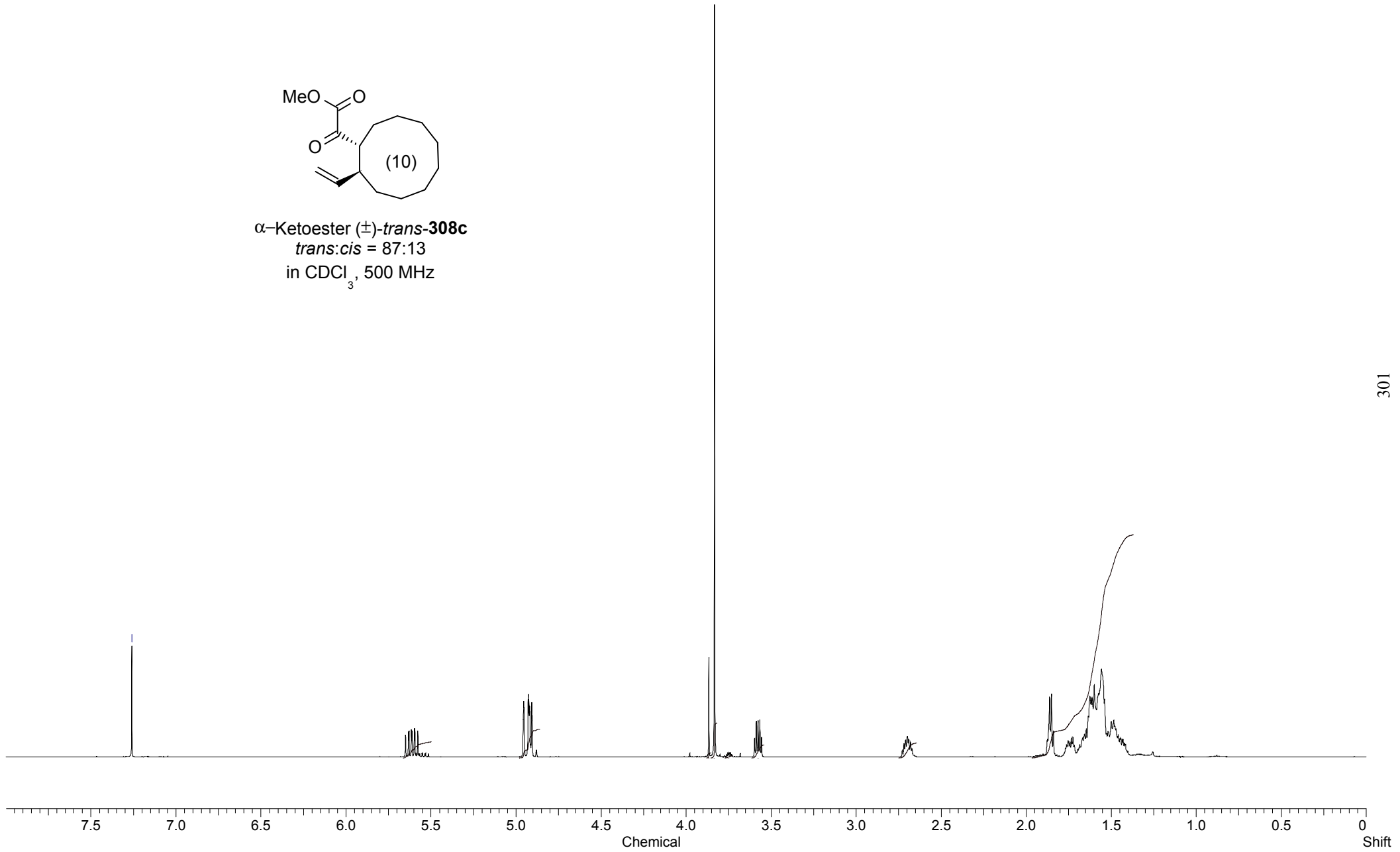
F2

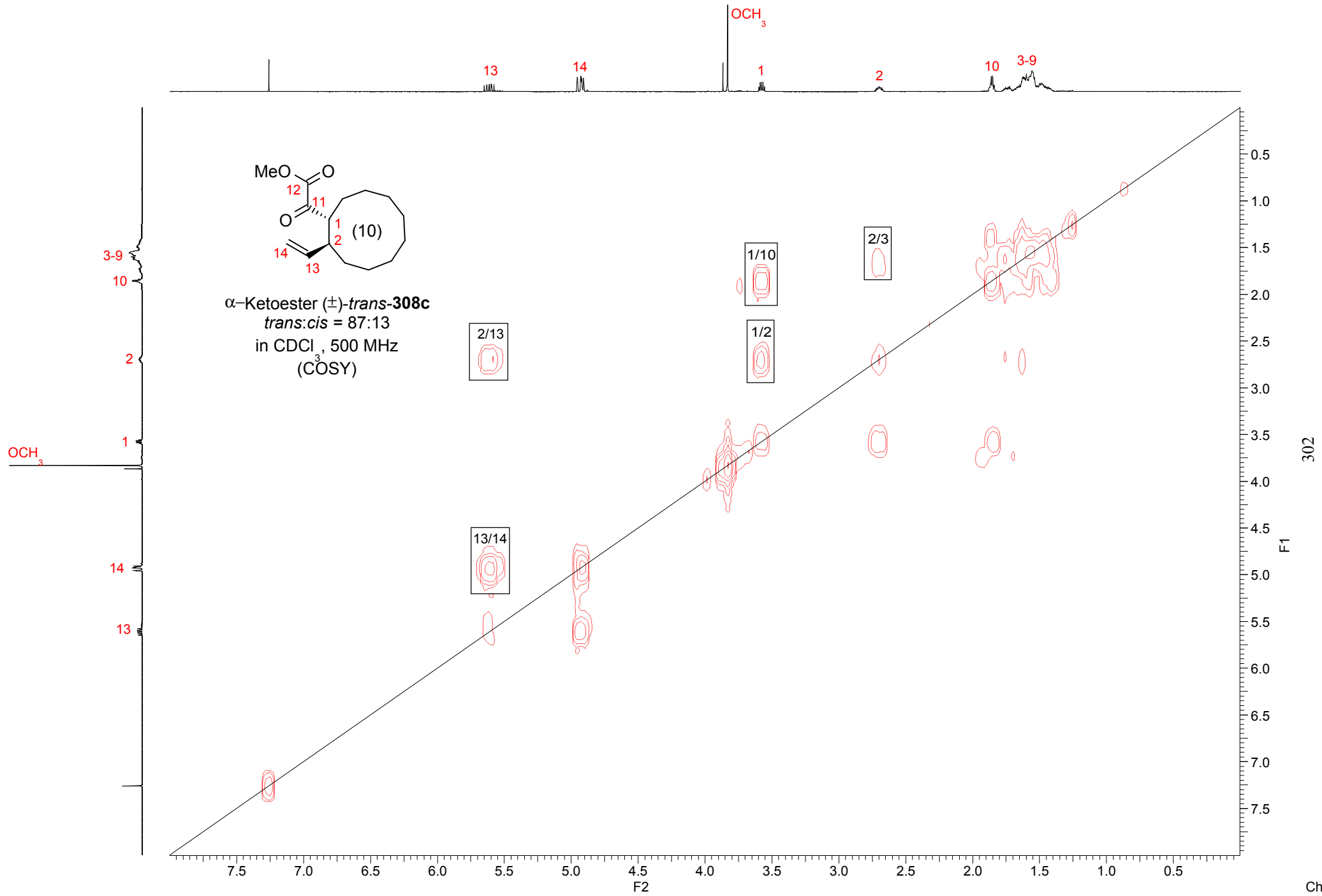
Chemical

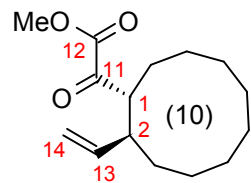
—7.260



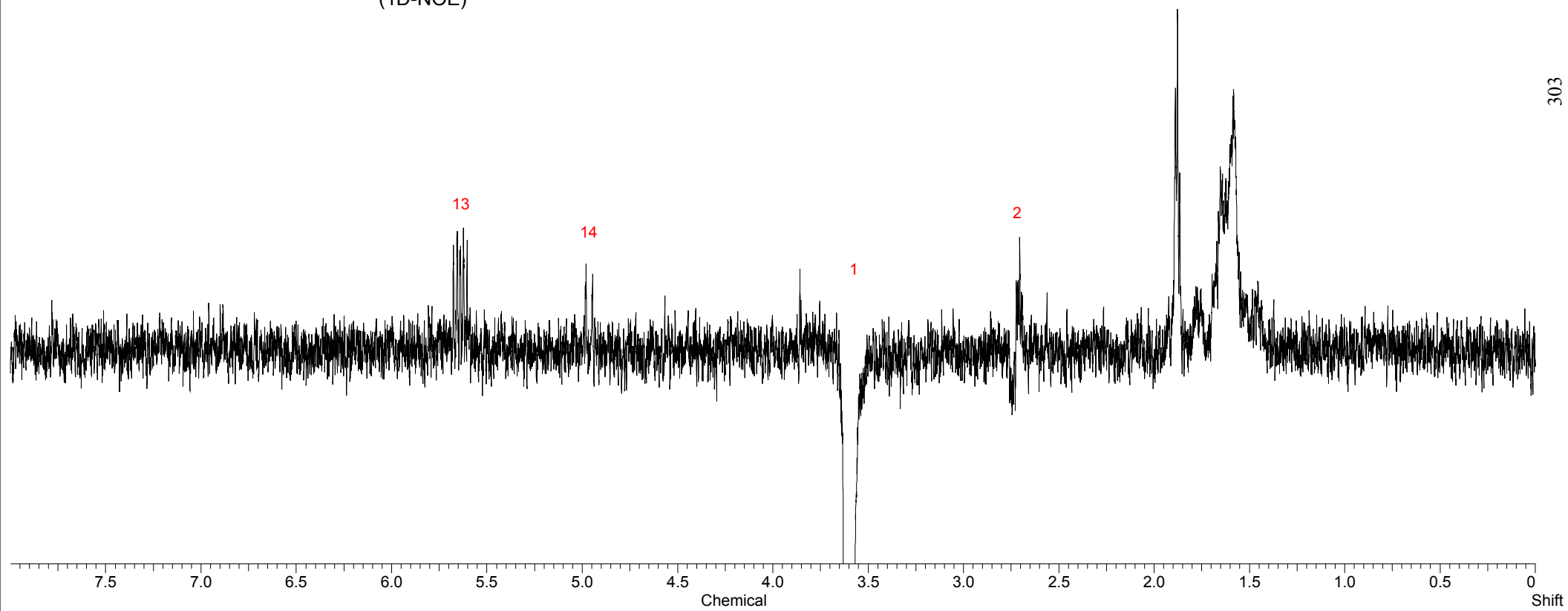
α -Ketoester (\pm)-**trans-308c**
trans:cis = 87:13
in CDCl₃, 500 MHz

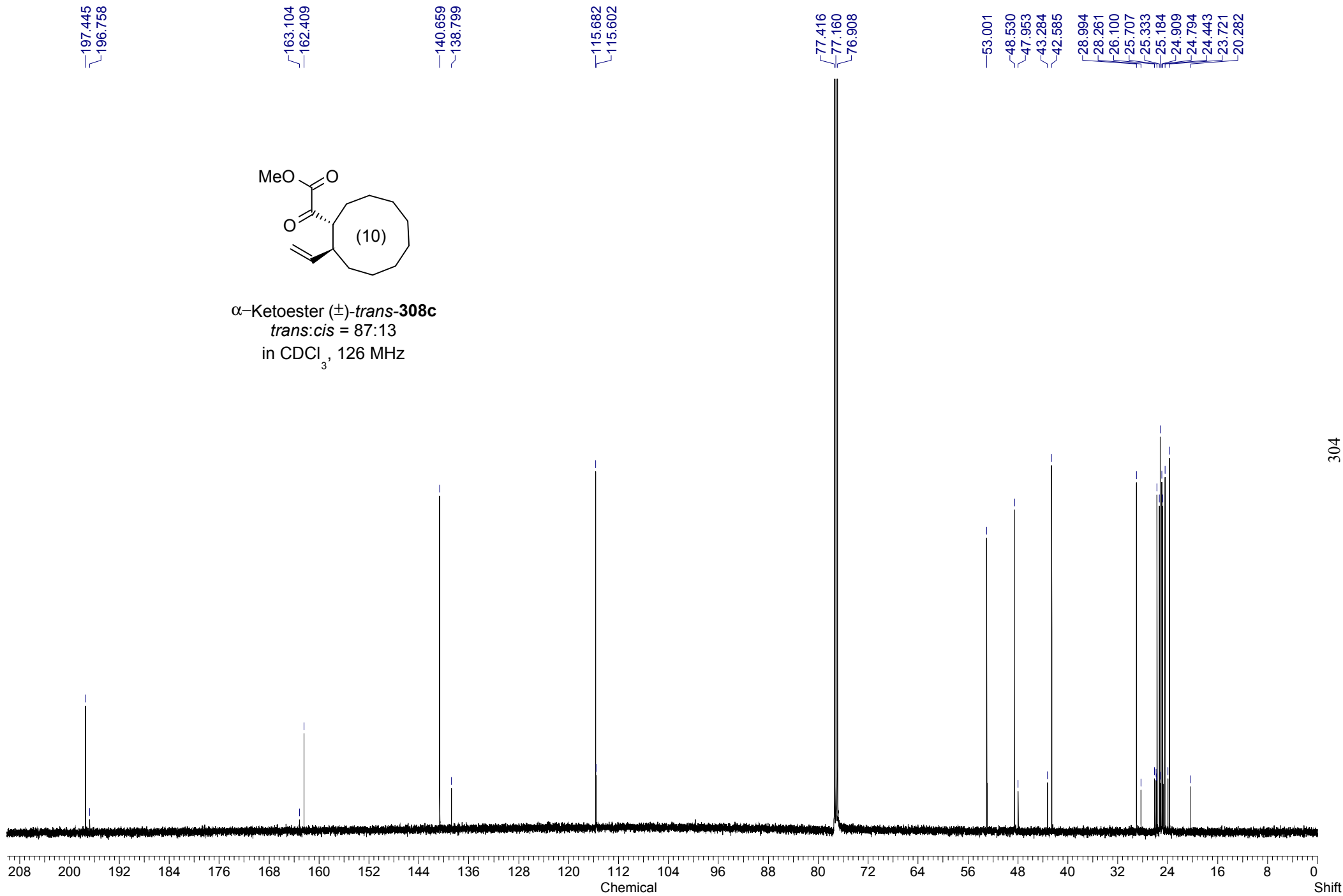






α -Ketoester (\pm)-*trans*-**308c**
trans:cis = 51:49
in CDCl₃, 500 MHz
(1D-NOE)





8

16

24

32

40

48

56

64

72

80

88

96

104

112

120

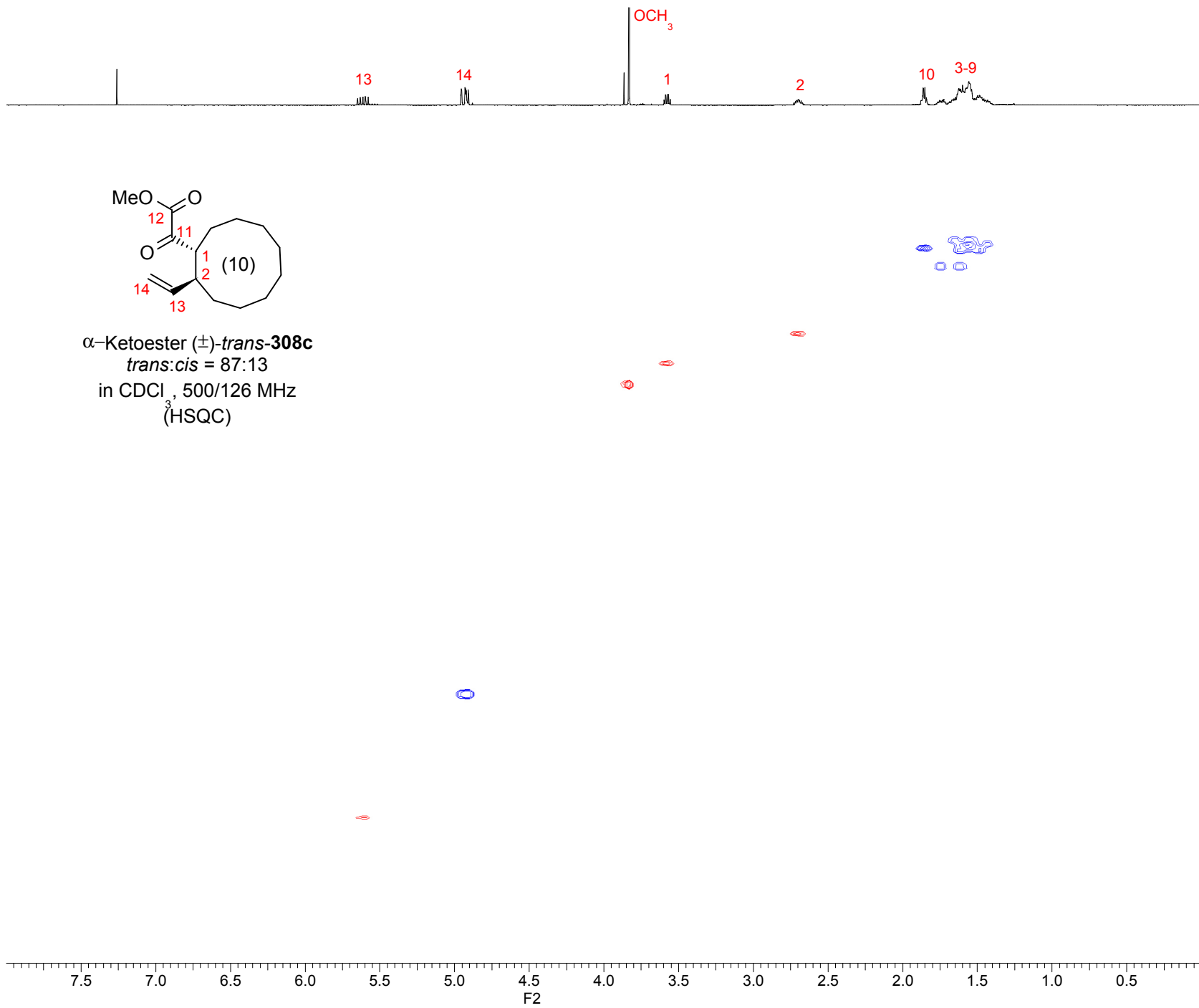
128

136

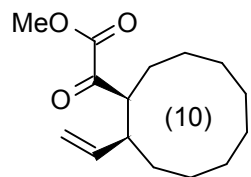
144

152

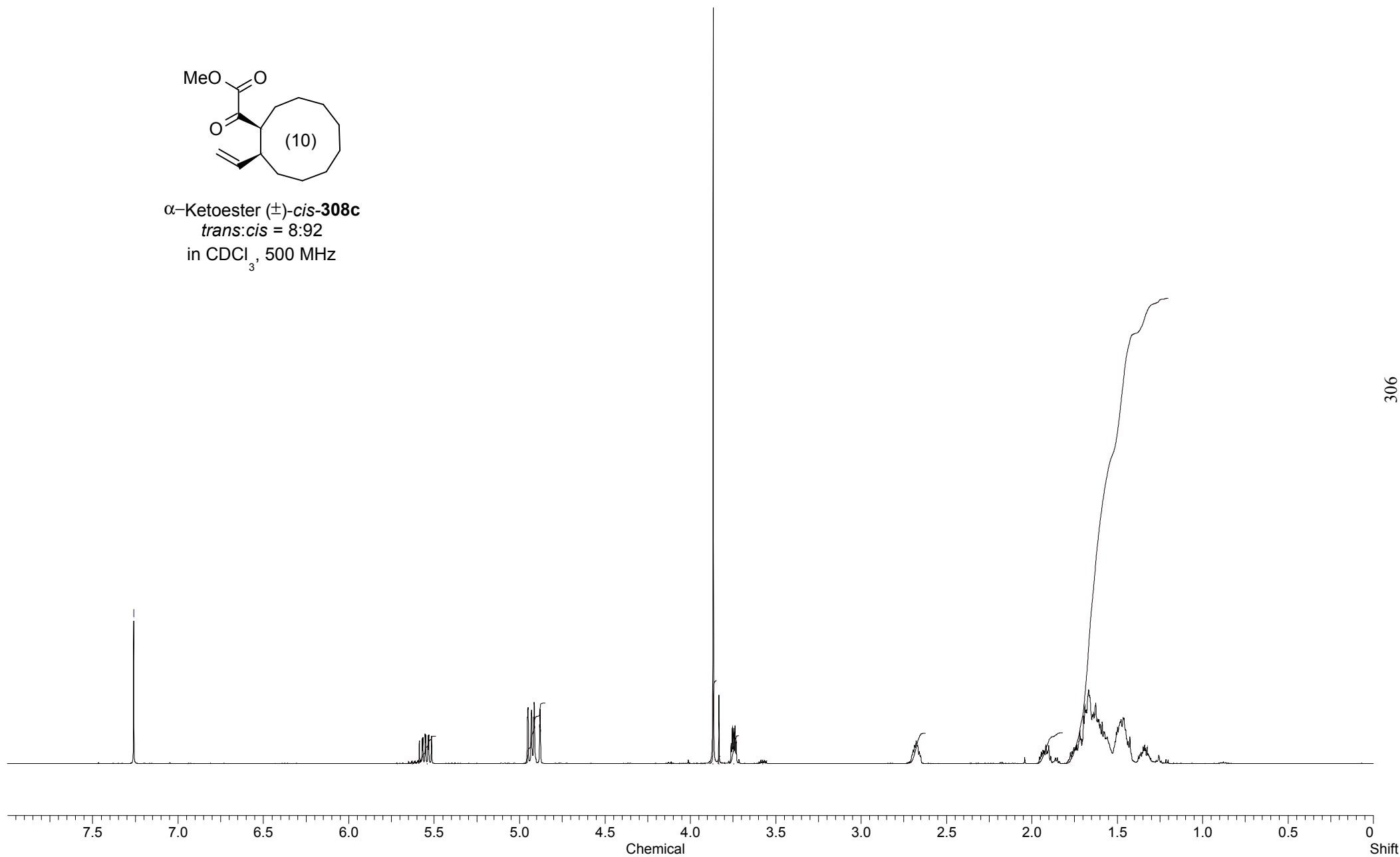
160

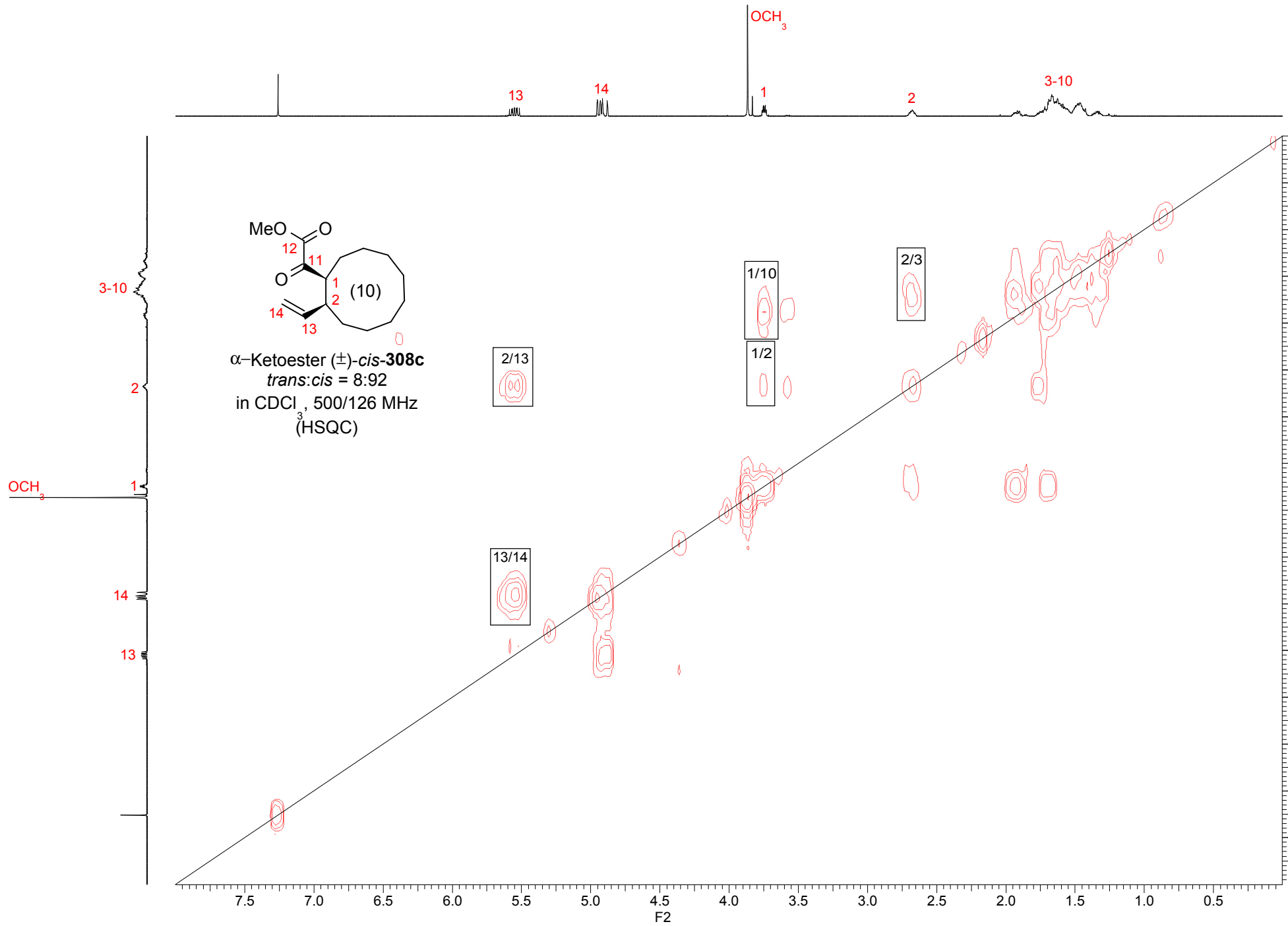


—7.260

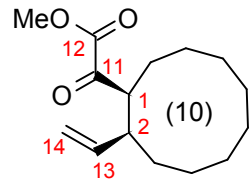


α -Ketoester (\pm)-*cis*-**308c**
trans:cis = 8:92
in CDCl₃, 500 MHz

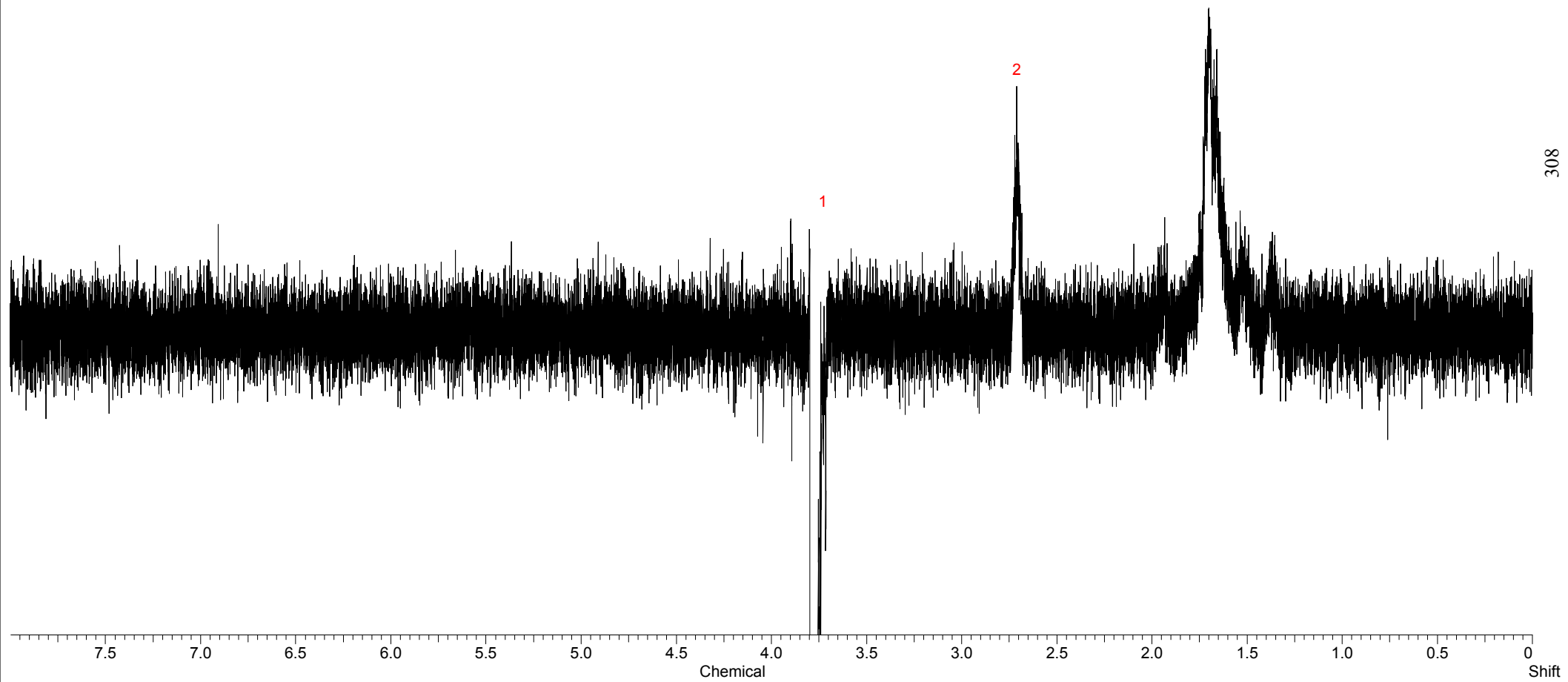


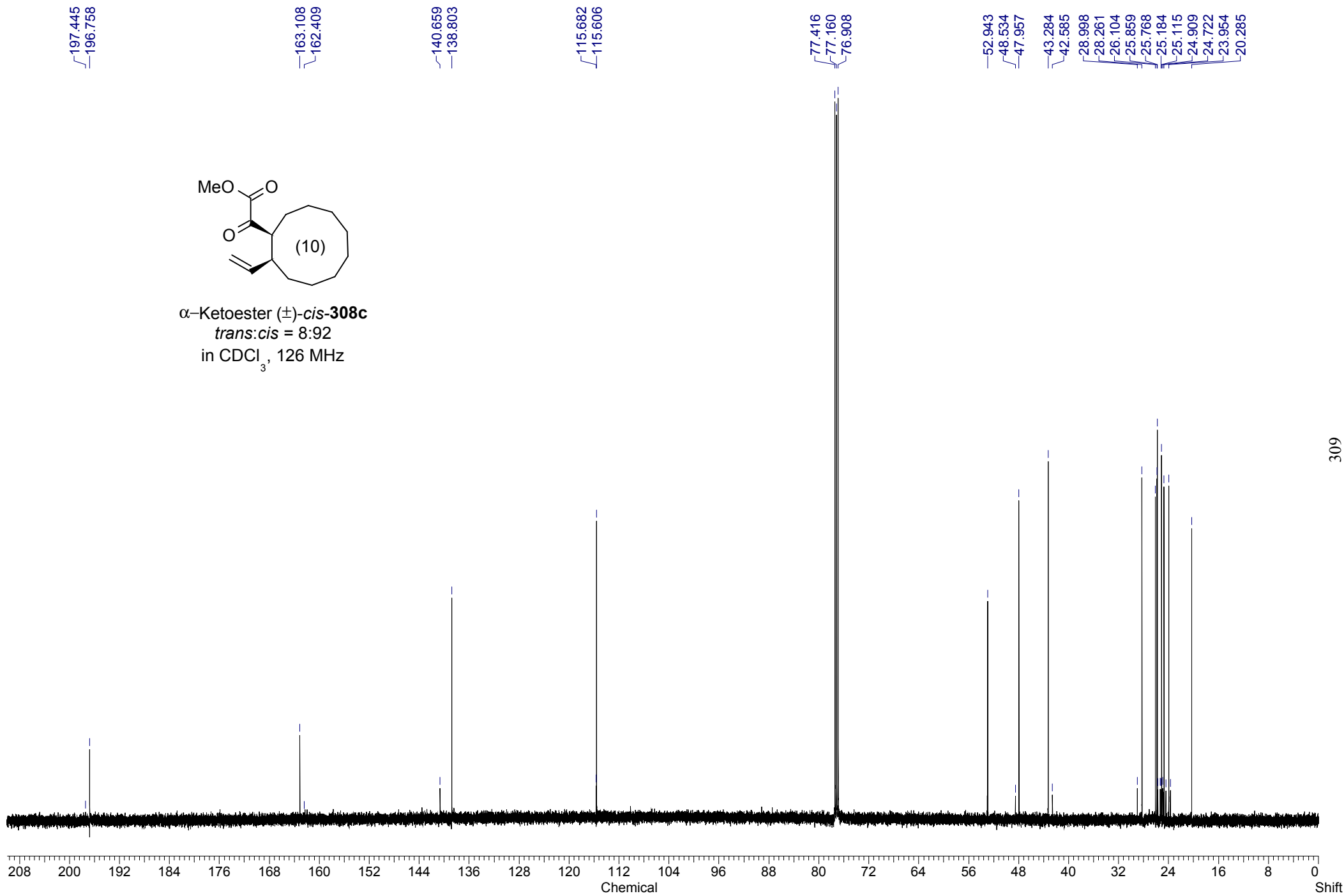


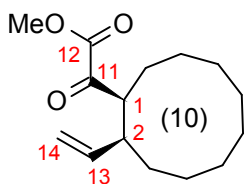
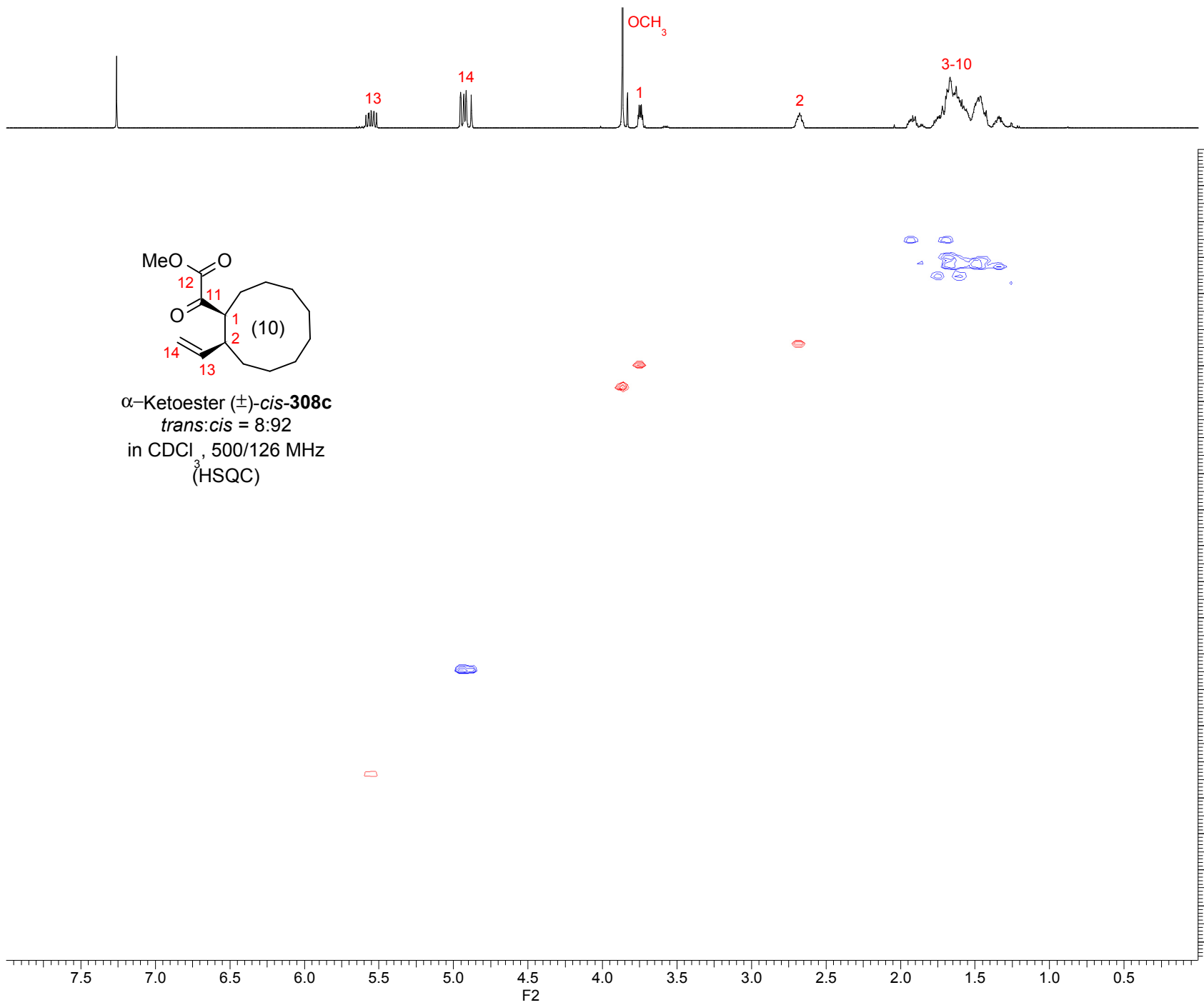
F1
307



α -Ketoester (\pm)-*cis*-**308c**
trans:cis = 51:49
 in CDCl₃, 500 MHz
 (1D-NOE)





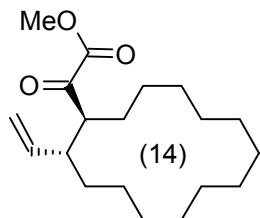


α-Ketoester (±)-**cis-308c**
trans:cis = 8:92
in CDCl₃, 500/126 MHz
(HSQC)

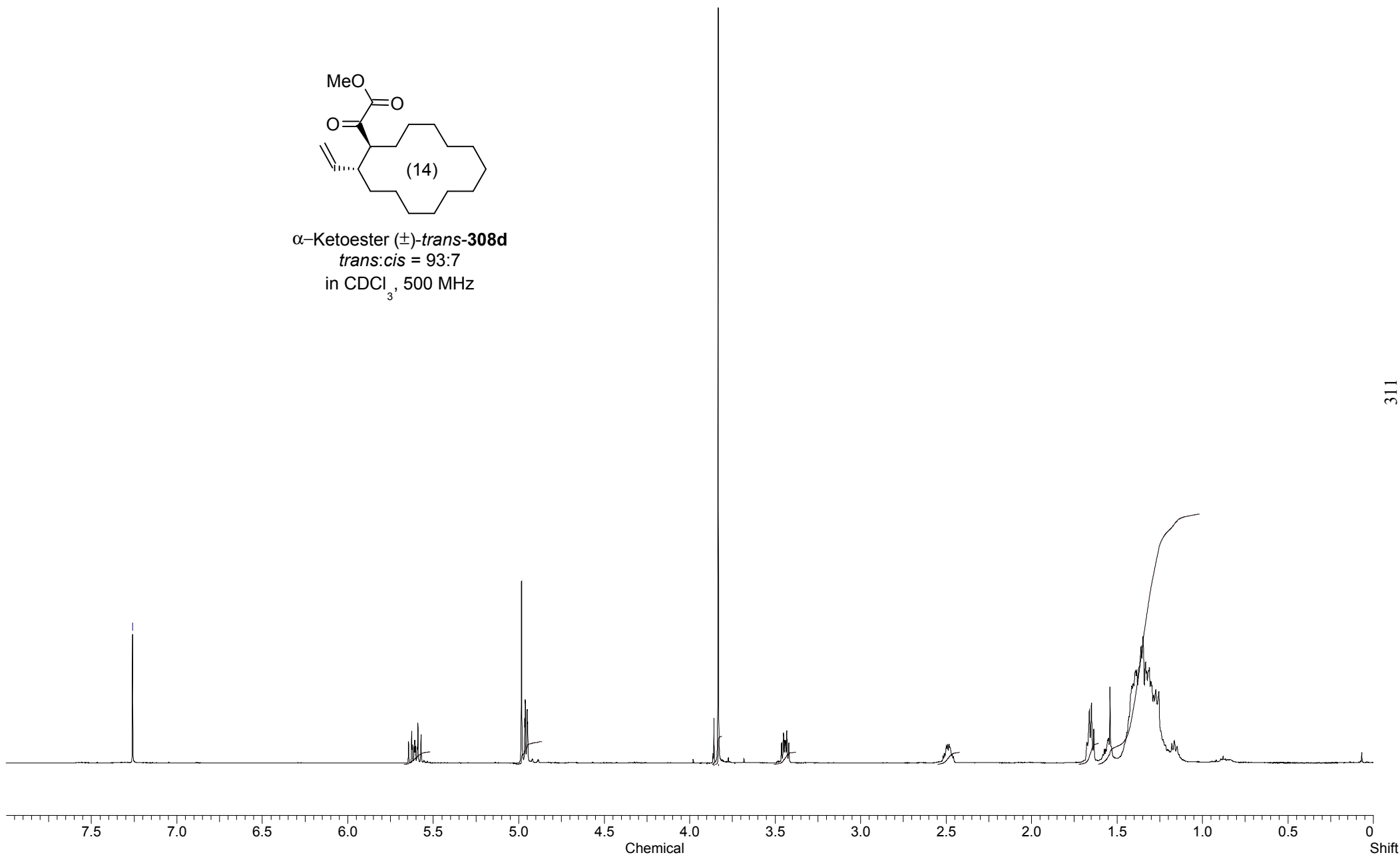
3-10
2
1
OCH₃

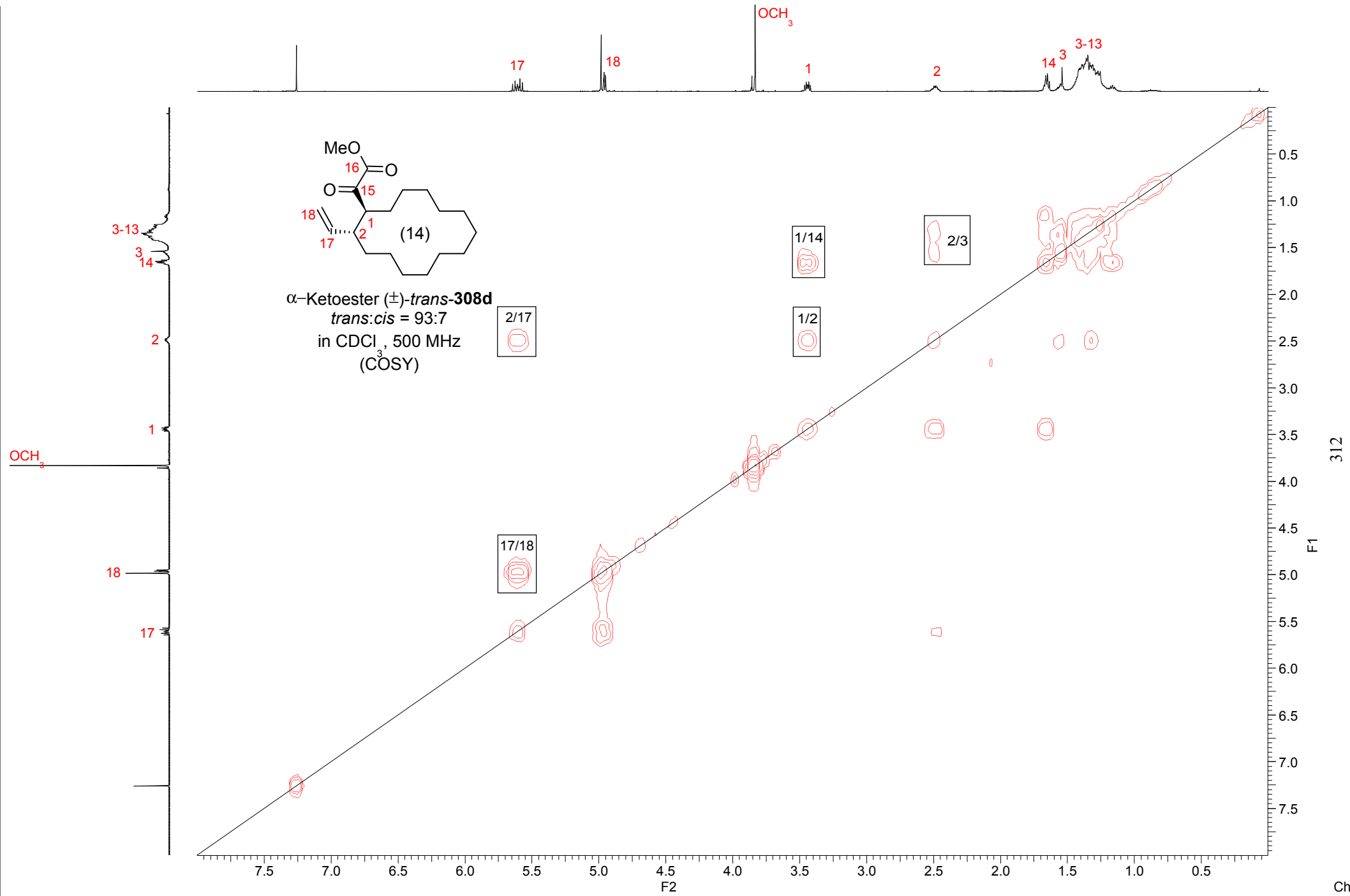
14
13

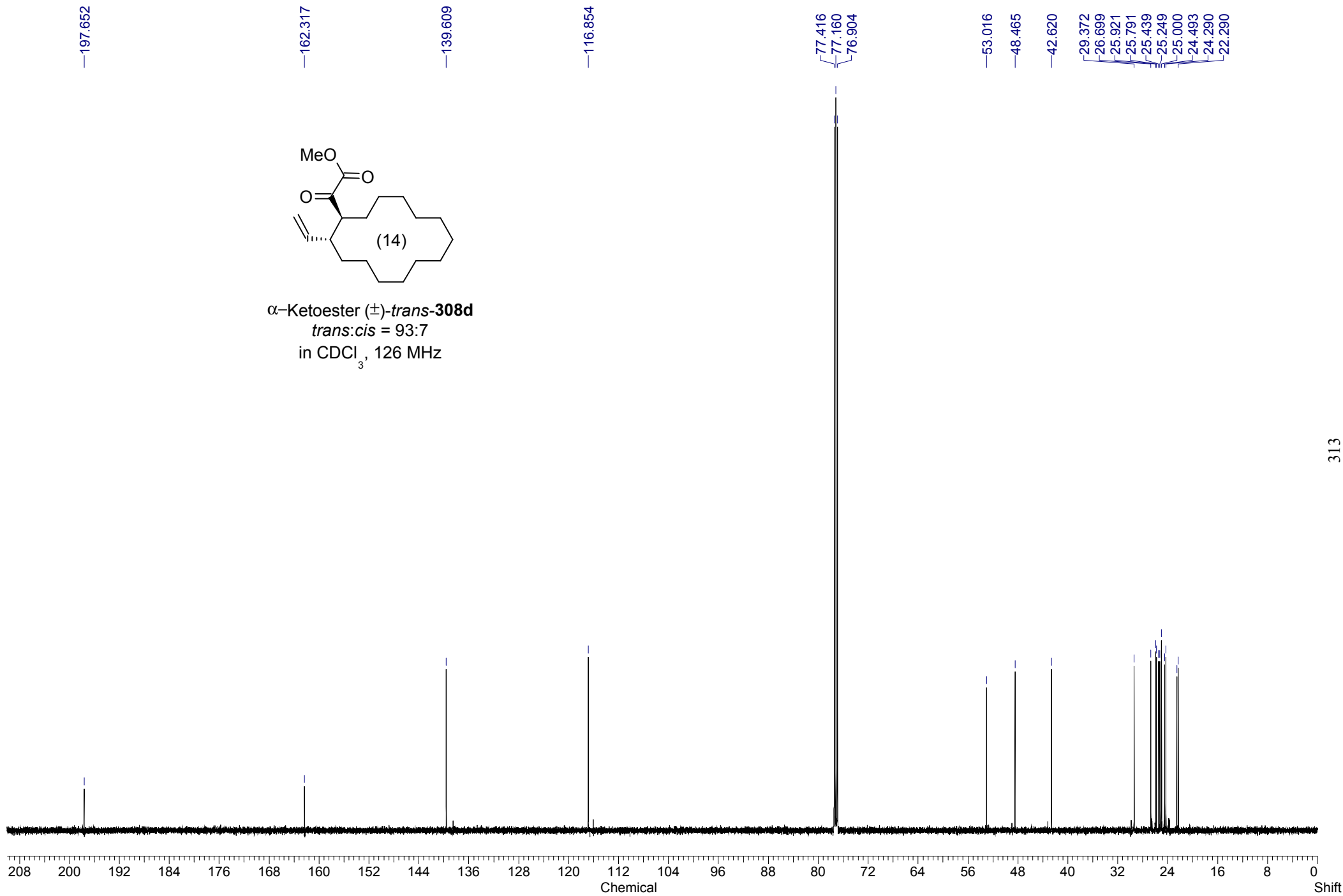
—7.260

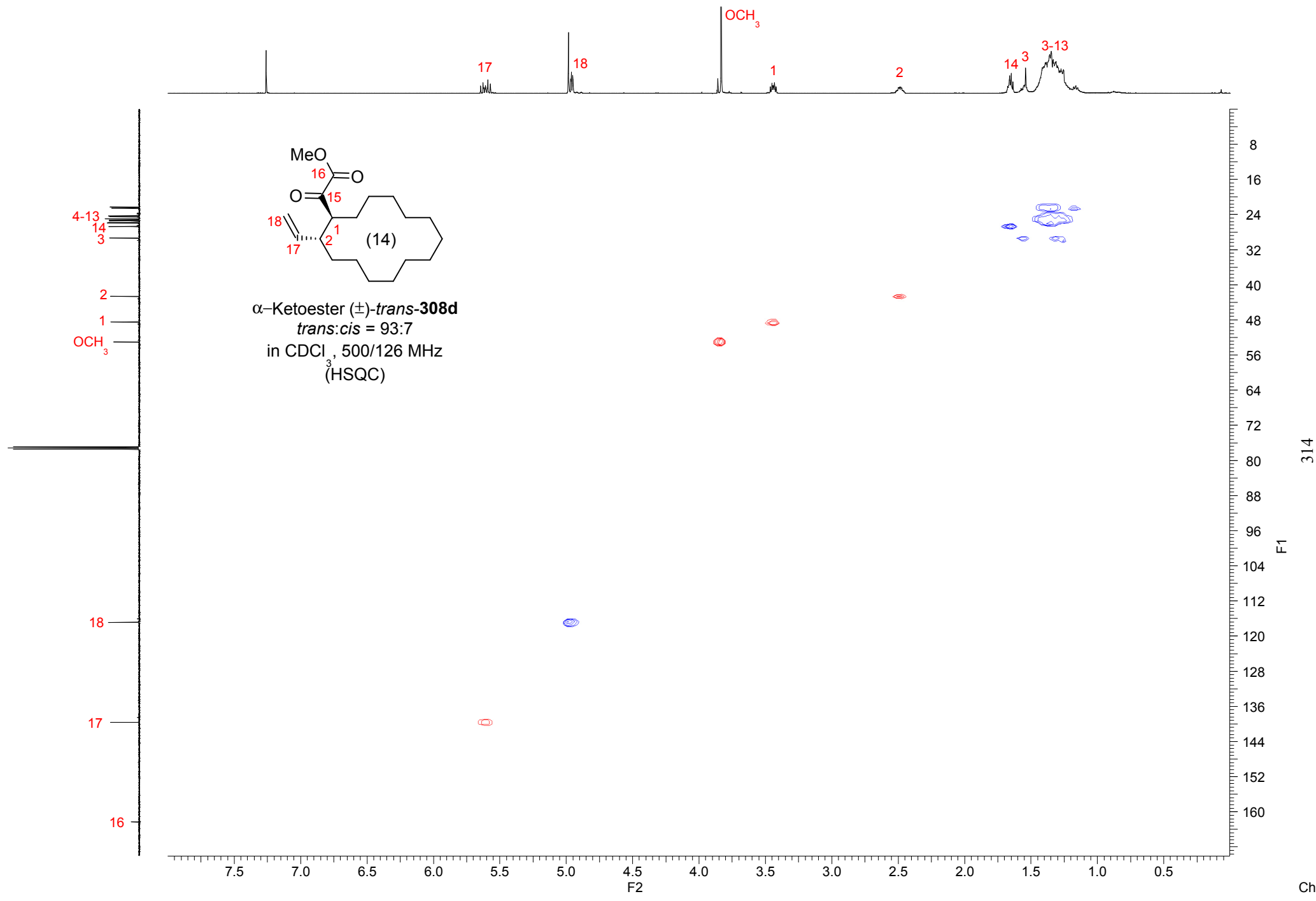


α -Ketoester (\pm)-*trans*-308d
trans:cis = 93:7
in CDCl₃, 500 MHz

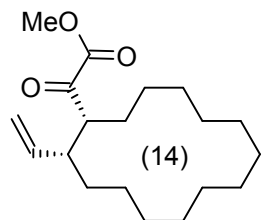




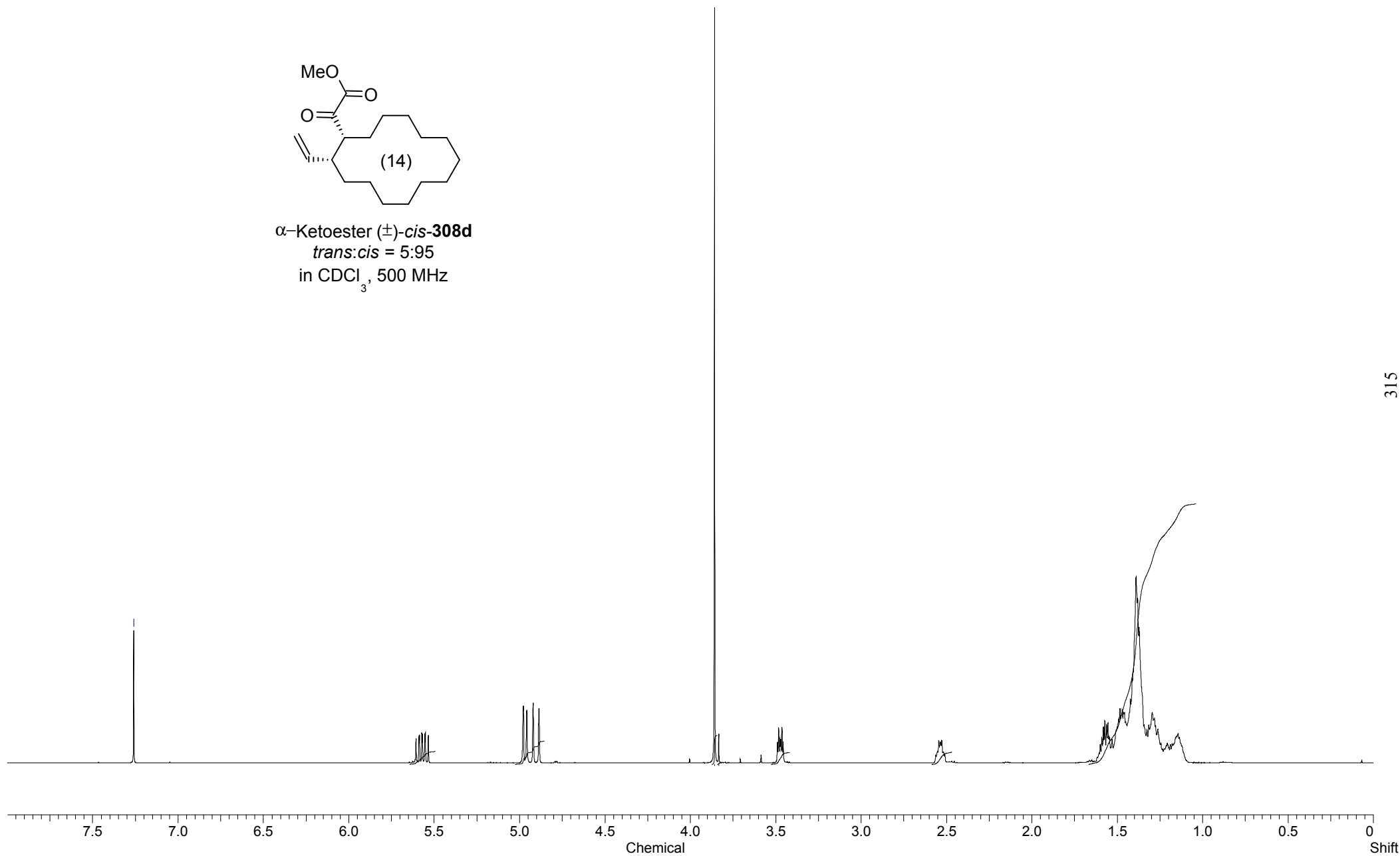


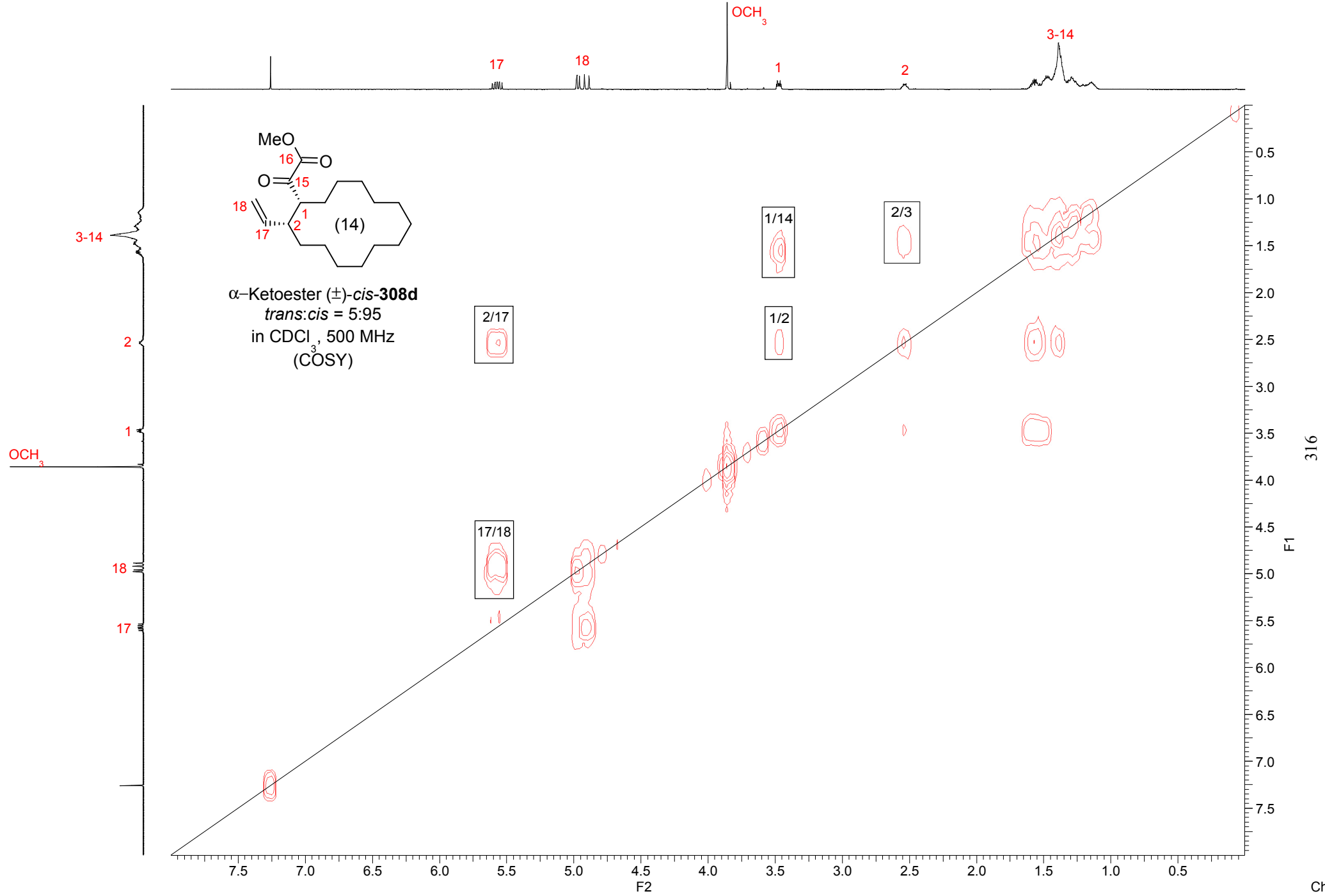


-7.260



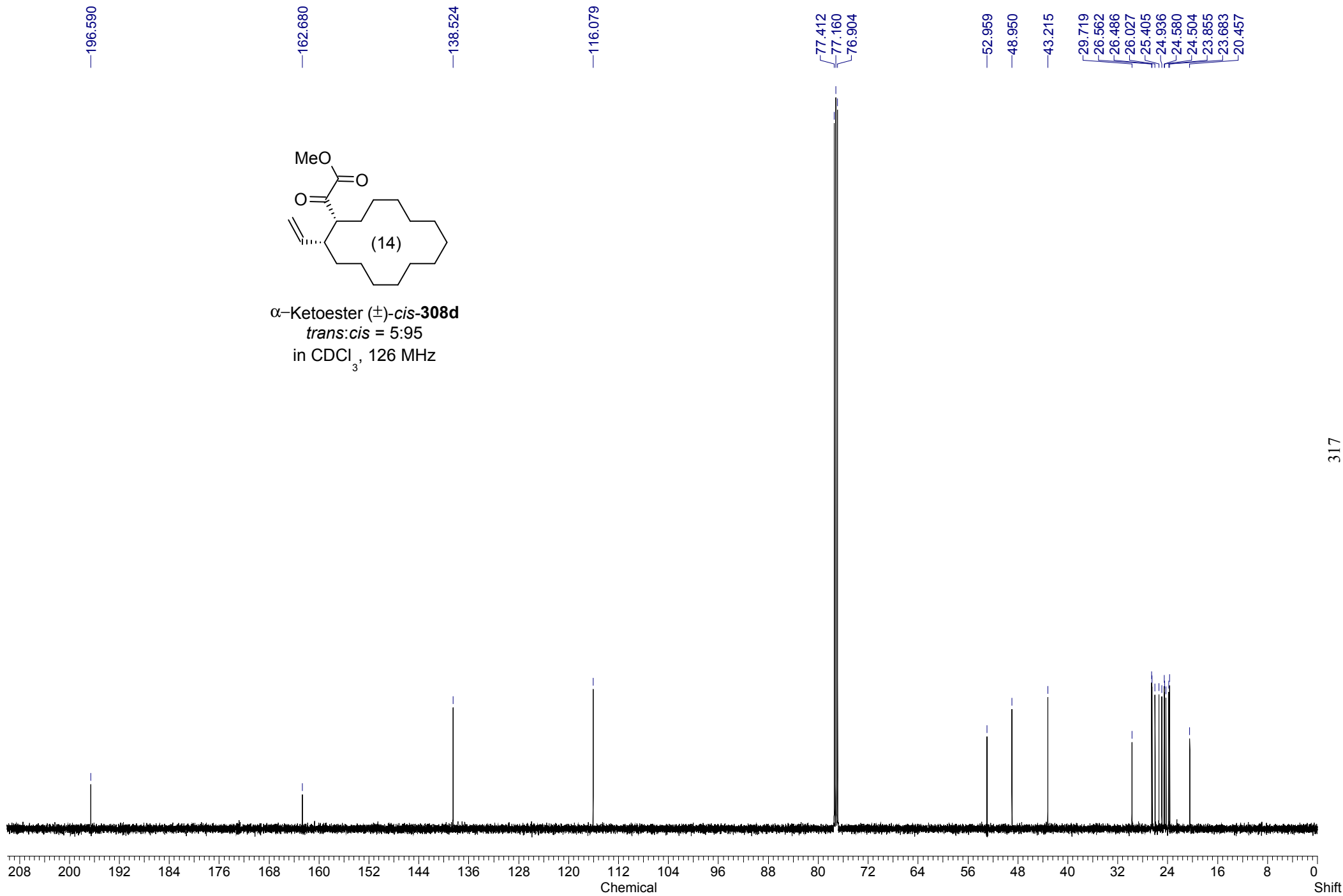
α -Ketoester (\pm)-*cis*-308d
trans:cis = 5:95
 in CDCl₃, 500 MHz

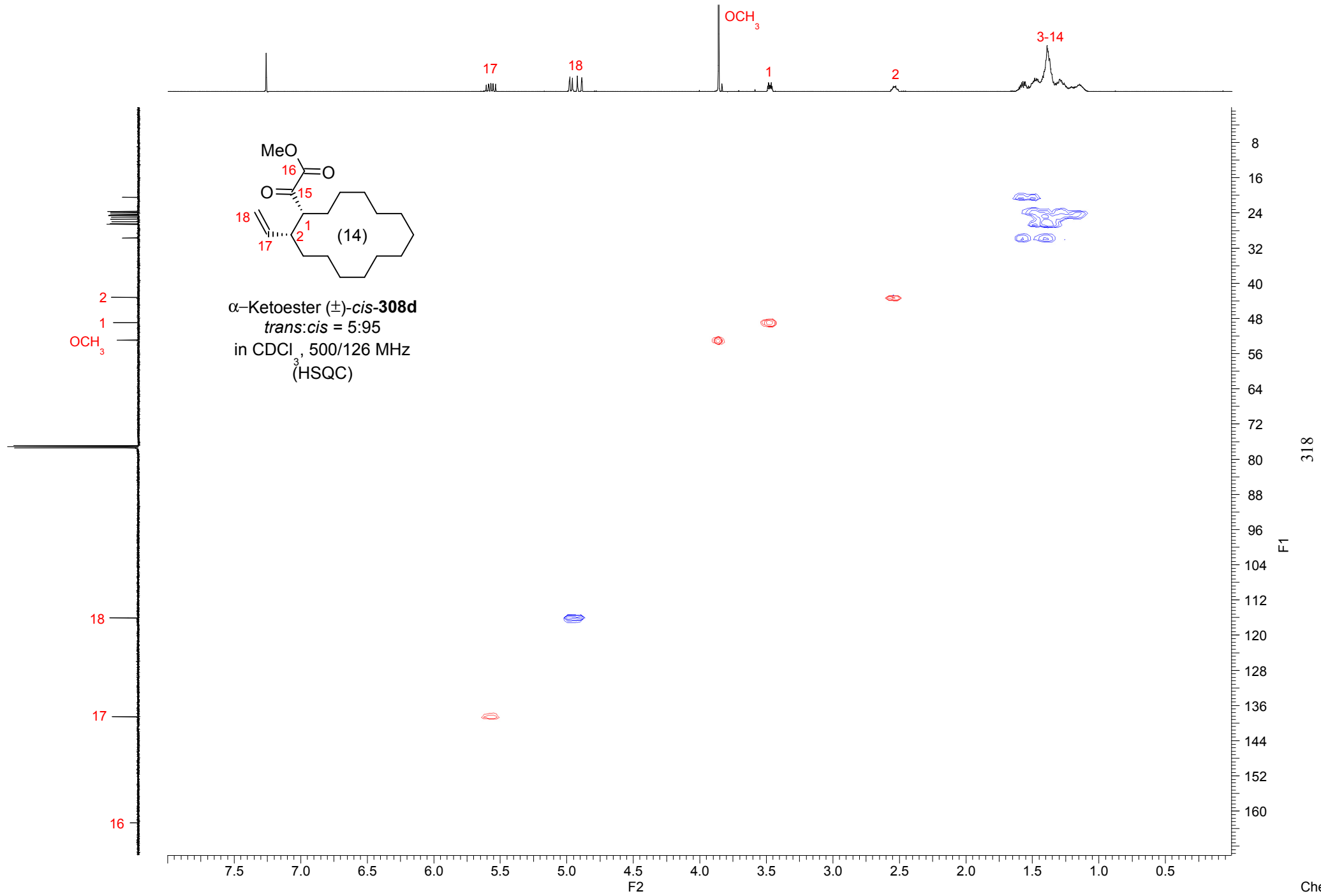


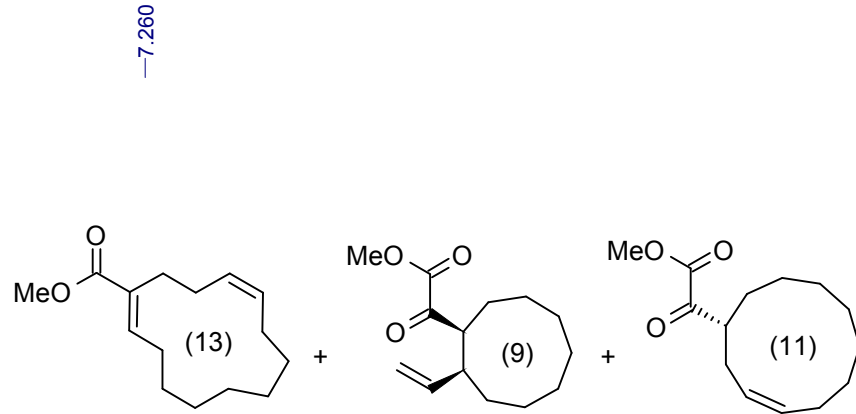


316

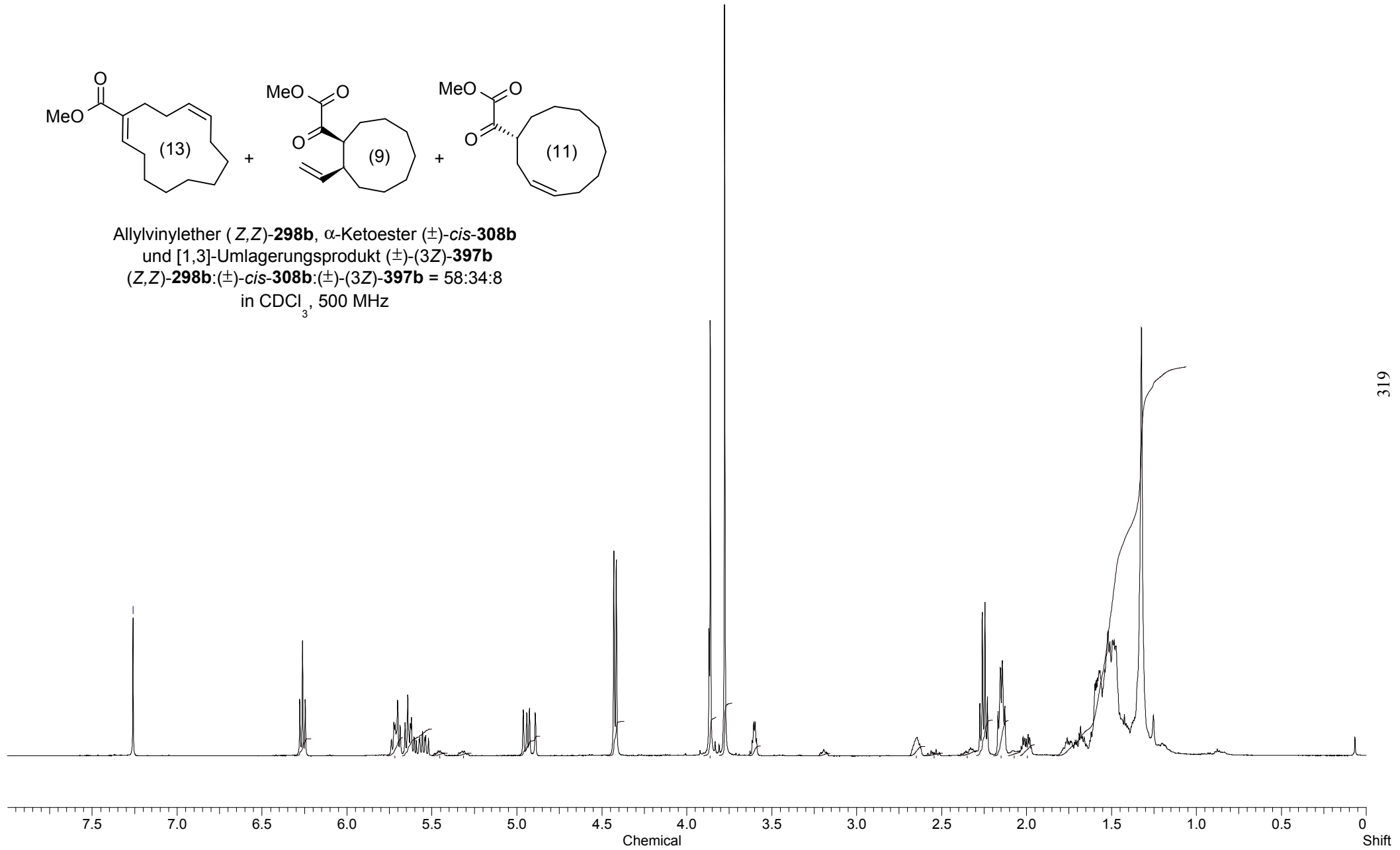
Chemio



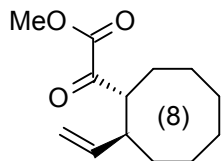




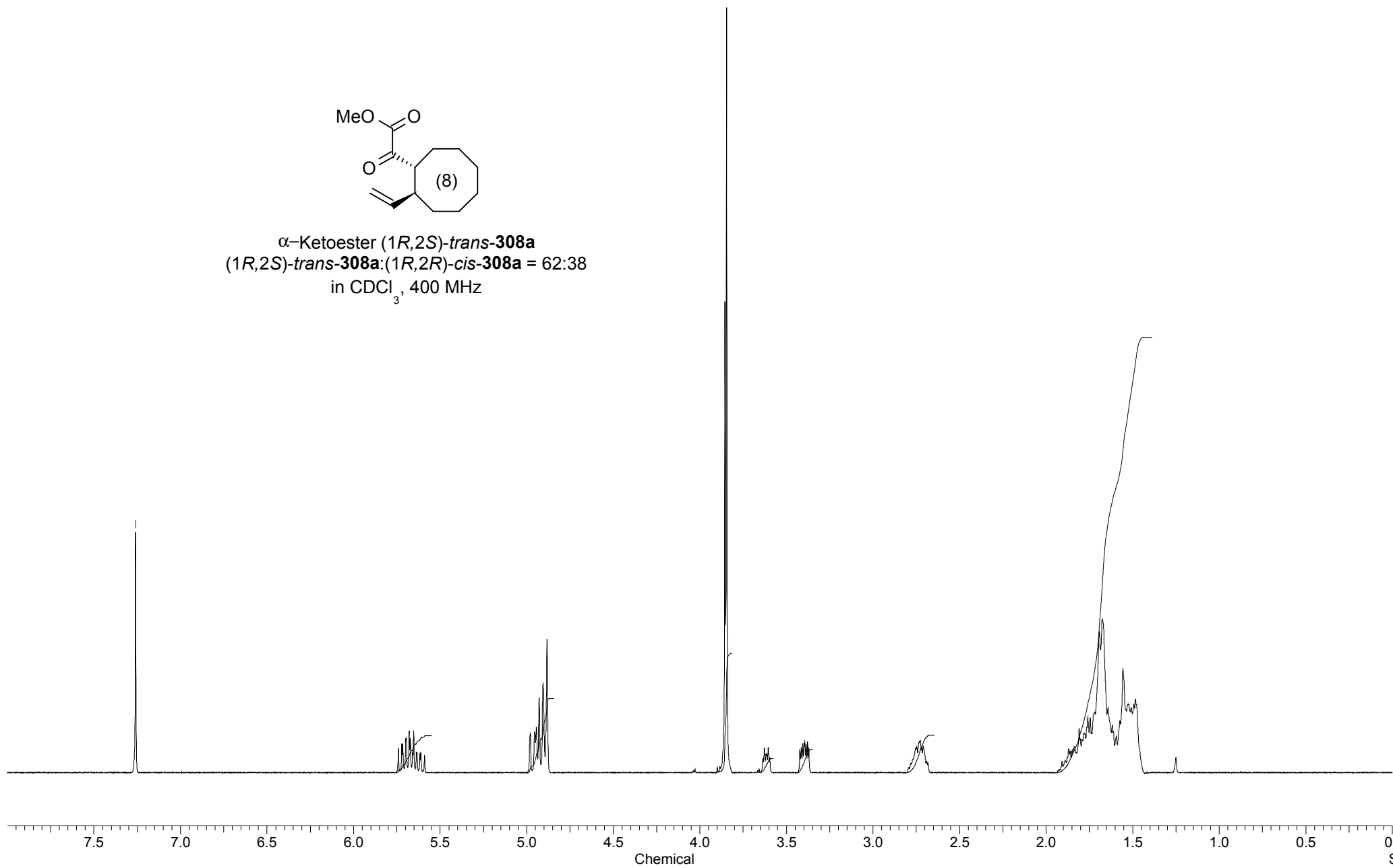
Allylvinylother (*Z,Z*)-**298b**, α -Ketoester (\pm)-*cis*-**308b**
und [1,3]-Umlagerungsprodukt (\pm)-(*3Z*)-**397b**
(*Z,Z*)-**298b**:(\pm)-*cis*-**308b**:(\pm)-(*3Z*)-**397b** = 58:34:8
in CDCl₃, 500 MHz



-7.260



α -Ketoester (1*R*,2*S*)-**trans-308a**
(1*R*,2*S*)-**trans-308a**:(1*R*,2*R*)-**cis-308a** = 62:38
in CDCl₃, 400 MHz



197.228
196.346

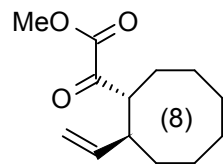
162.909
162.100

141.659
138.780

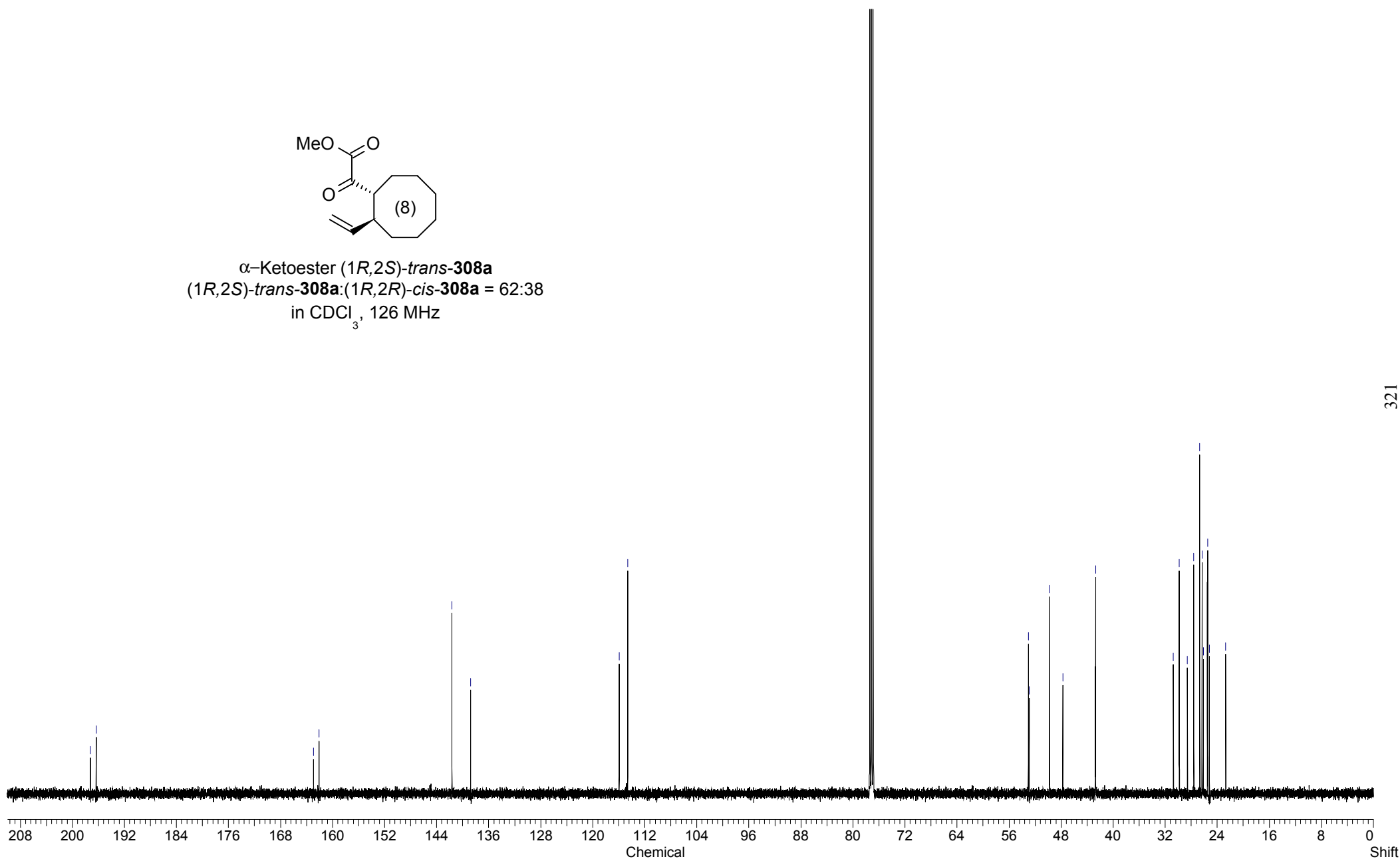
115.949
114.636

77.416
77.160
76.908

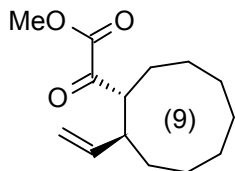
53.039
52.913
49.767
47.740
42.711
30.735
29.838
28.574
27.619
26.696
26.333
26.142
25.447
25.187
22.683



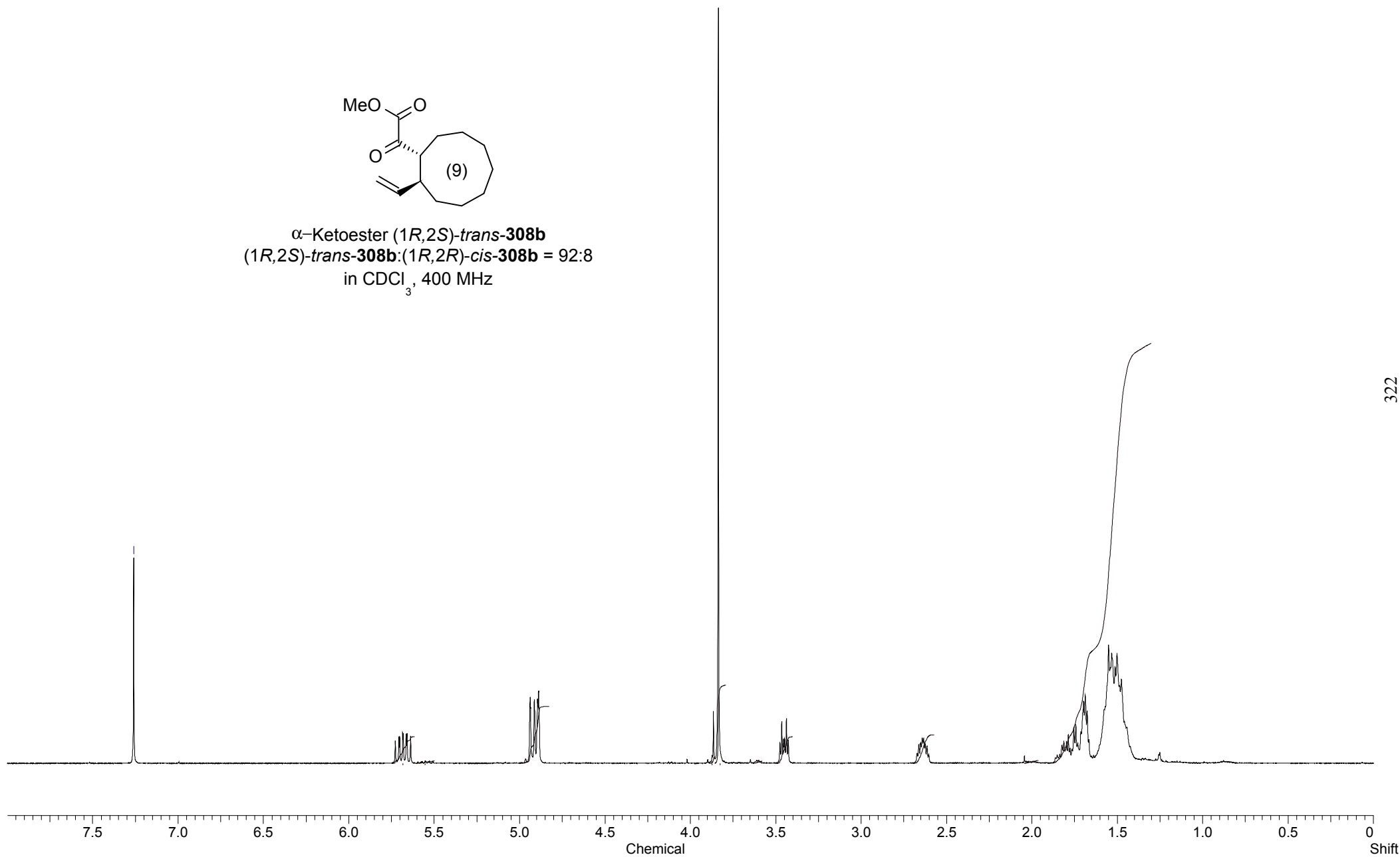
α -Ketoester (1*R*,2*S*)-**trans-308a**
(1*R*,2*S*)-**trans-308a**:(1*R*,2*R*)-**cis-308a** = 62:38
in CDCl₃, 126 MHz

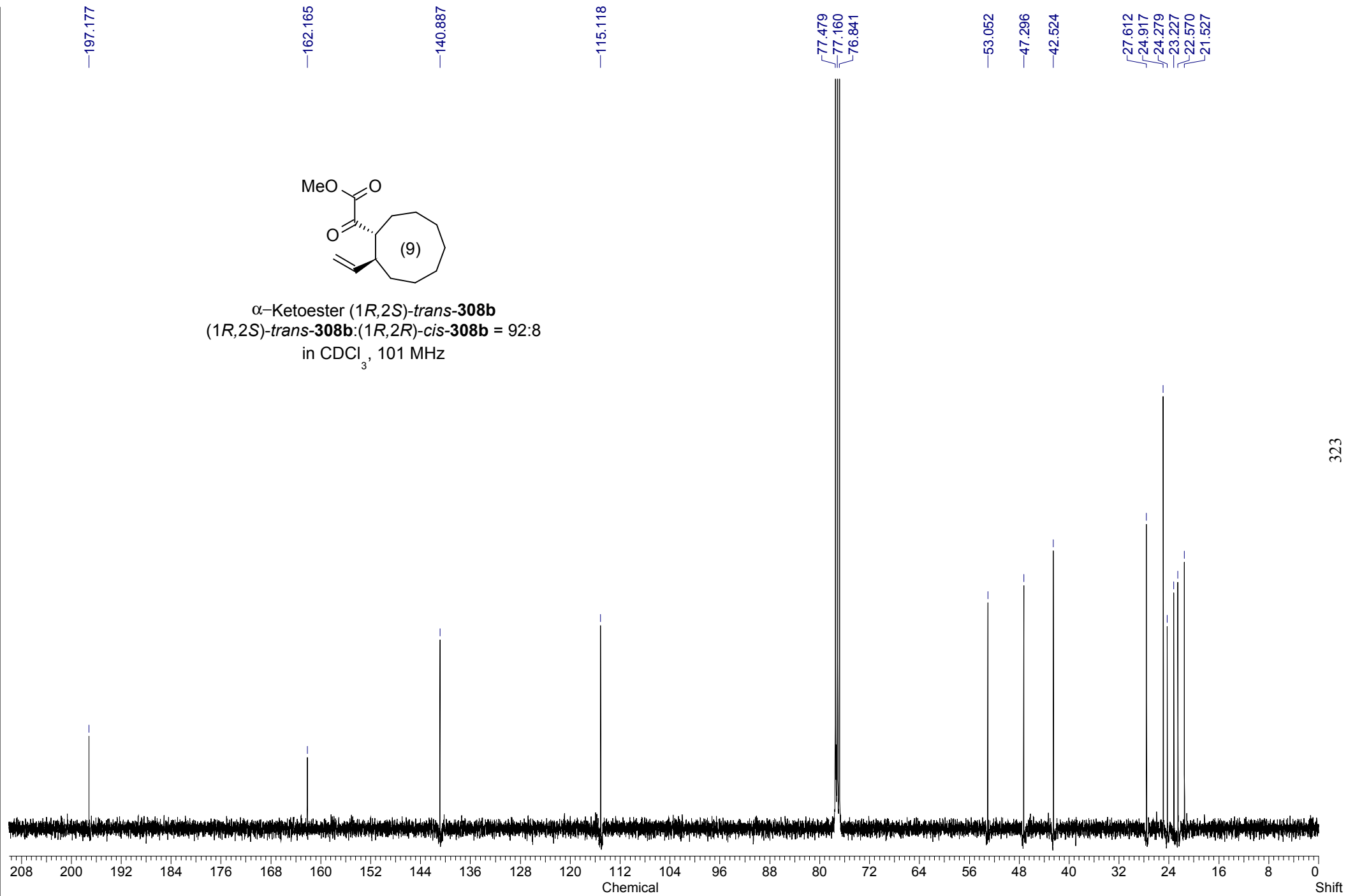


-7.260

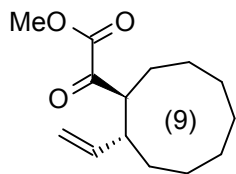


α -Ketoester (1*R*,2*S*)-**trans-308b**
(1*R*,2*S*)-**trans-308b**:(1*R*,2*R*)-**cis-308b** = 92:8
in CDCl₃, 400 MHz

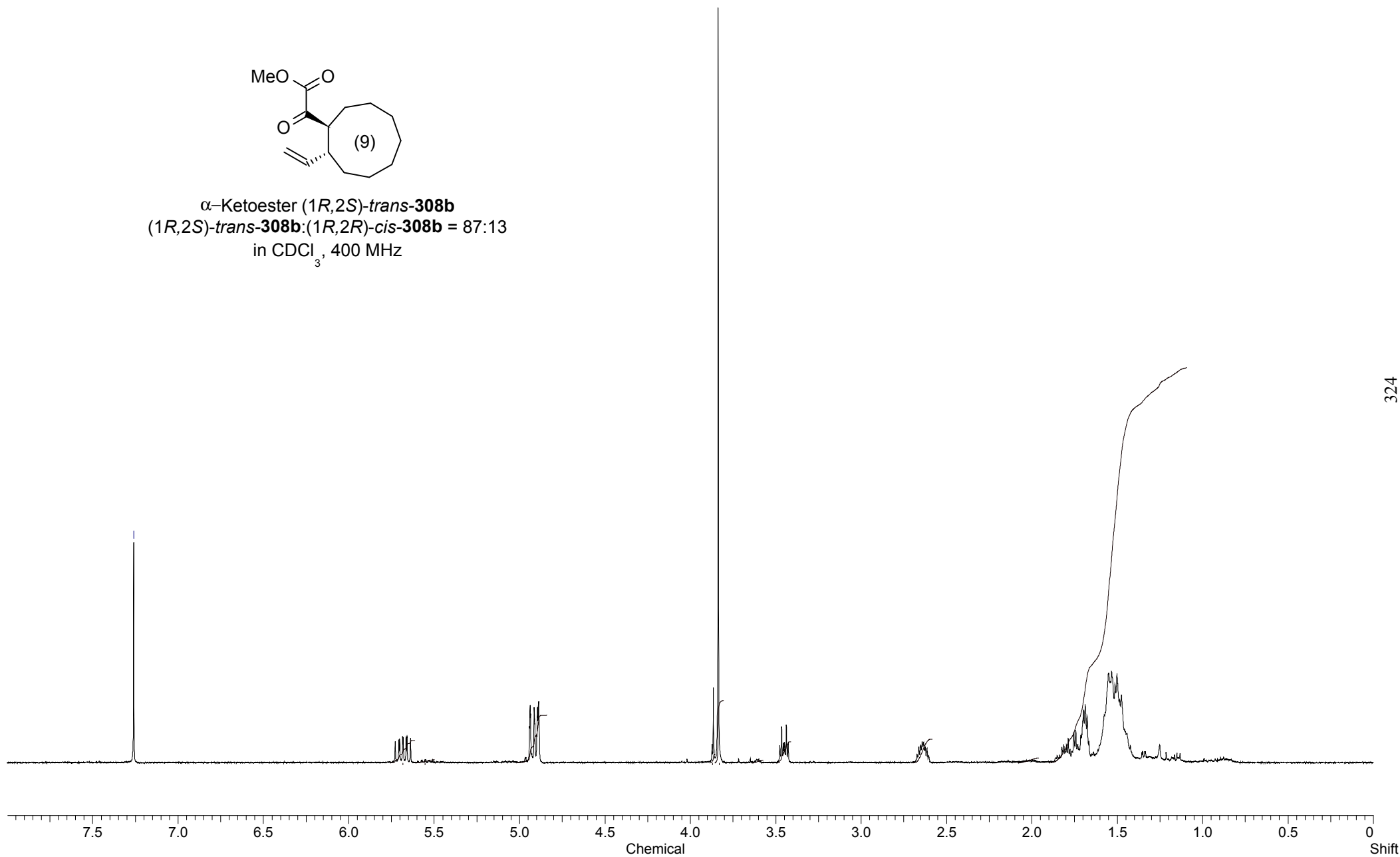


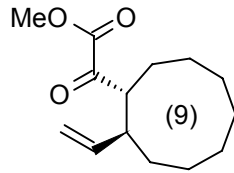


-7.260



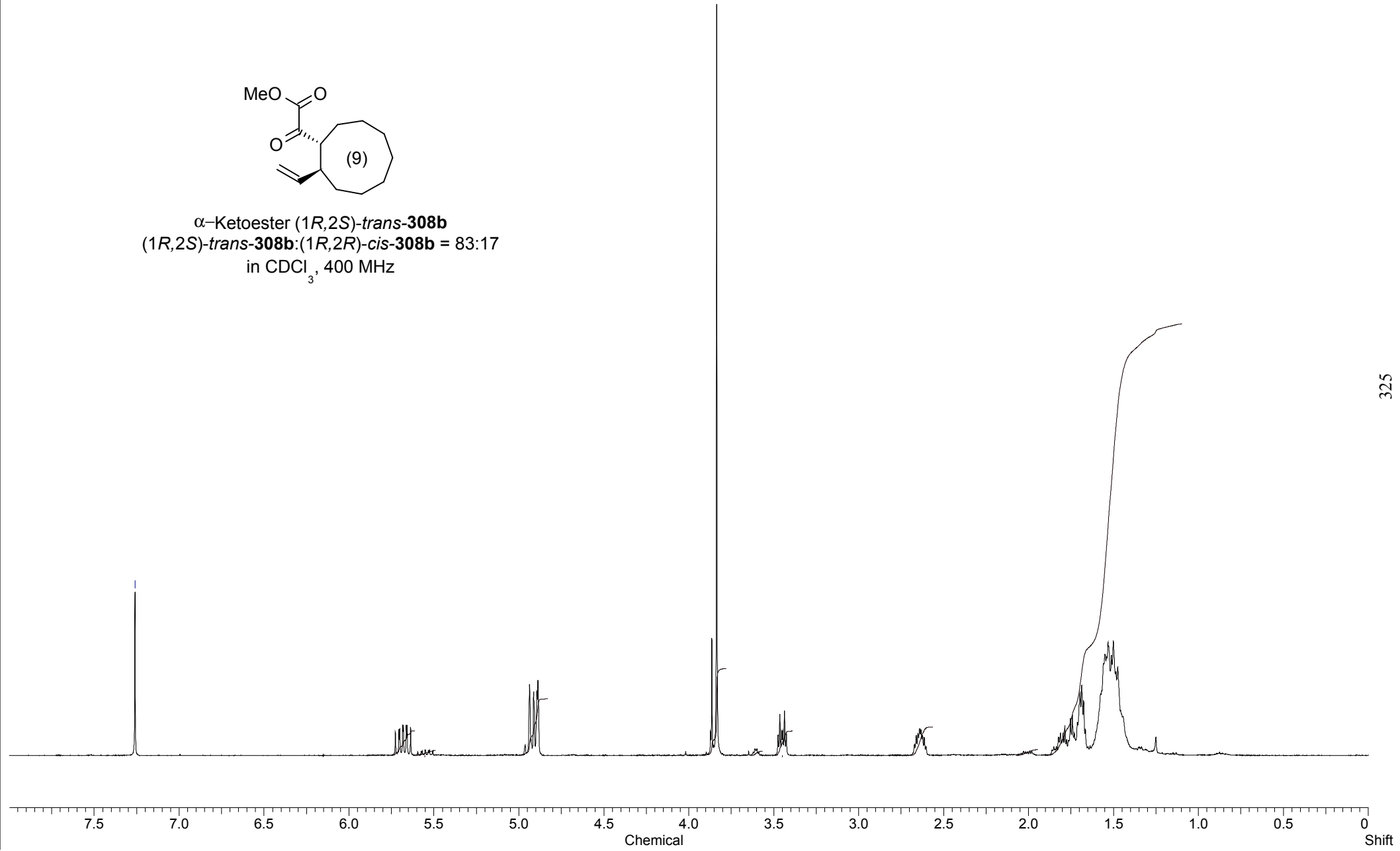
α -Ketoester (1*R*,2*S*)-**trans-308b**
(1*R*,2*S*)-**trans-308b**:(1*R*,2*R*)-**cis-308b** = 87:13
in CDCl₃, 400 MHz

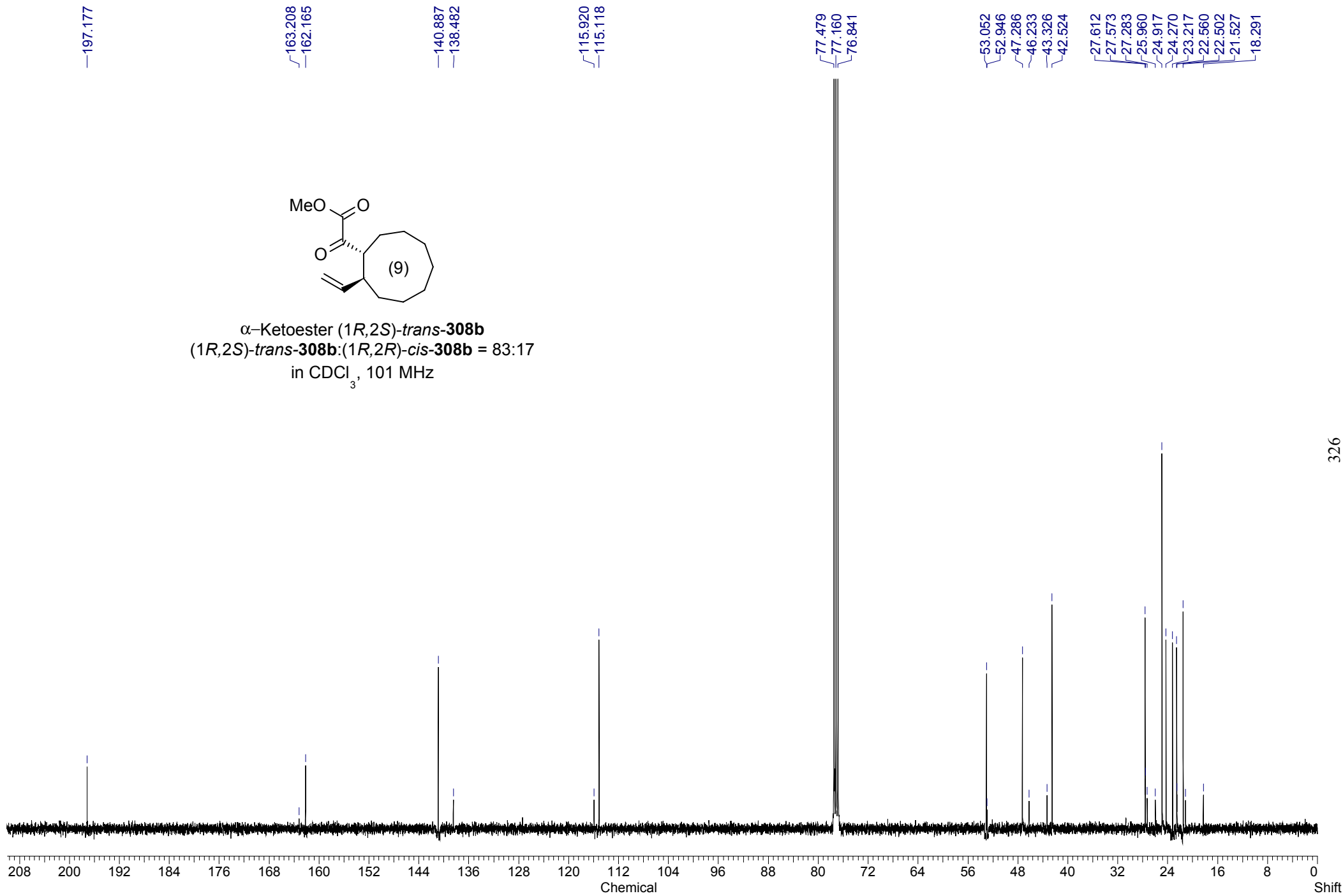




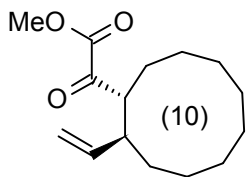
α -Ketoester (1*R*,2*S*)-**trans-308b**
(1*R*,2*S*)-**trans-308b**:(1*R*,2*R*)-**cis-308b** = 83:17
in CDCl₃, 400 MHz

-7.260

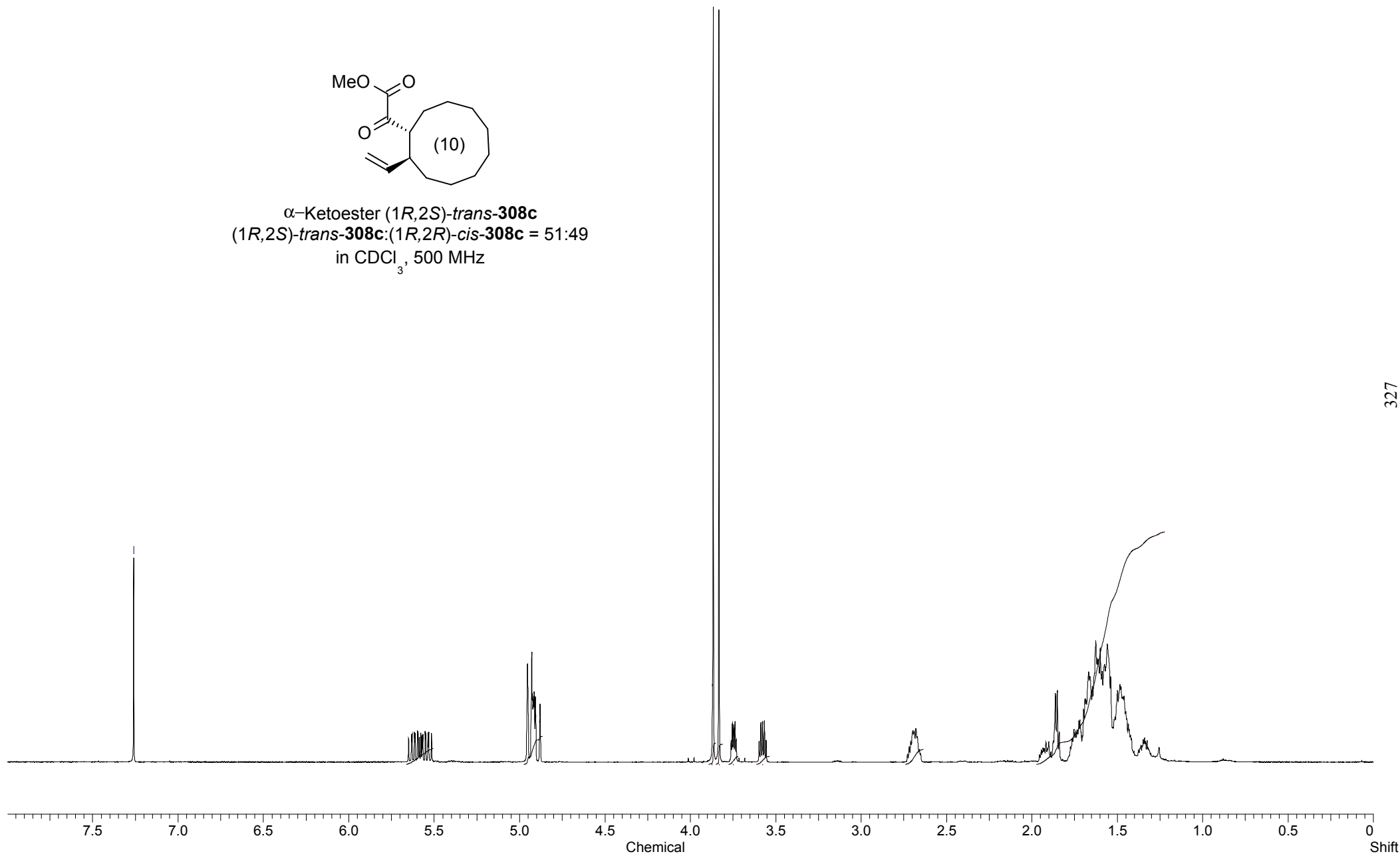


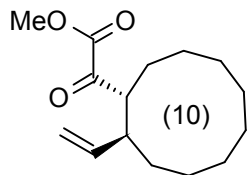


—7.260

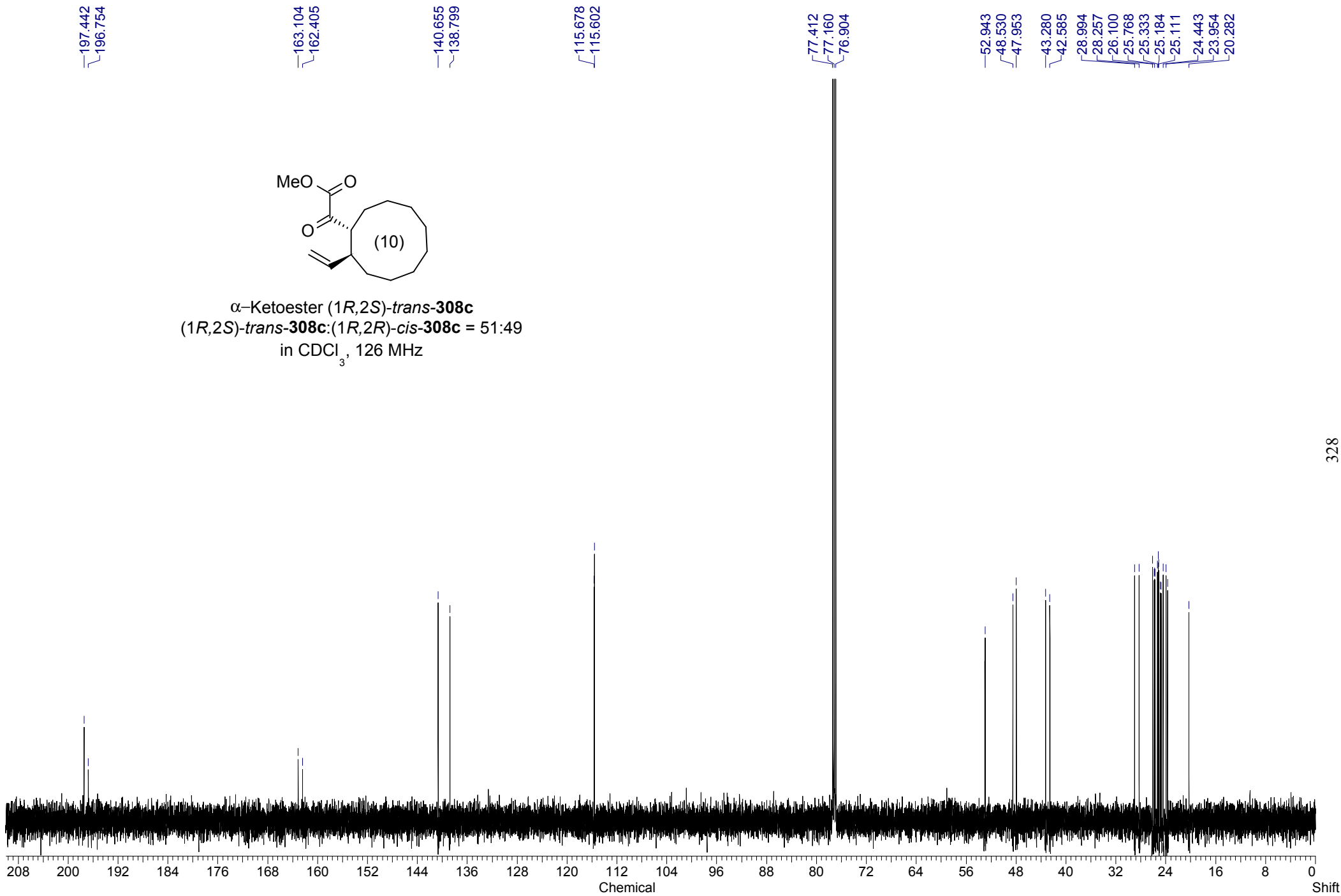


α -Ketoester (1*R*,2*S*)-**trans-308c**
(1*R*,2*S*)-**trans-308c**:(1*R*,2*R*)-**cis-308c** = 51:49
in CDCl₃, 500 MHz

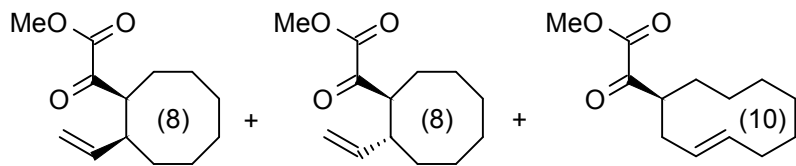




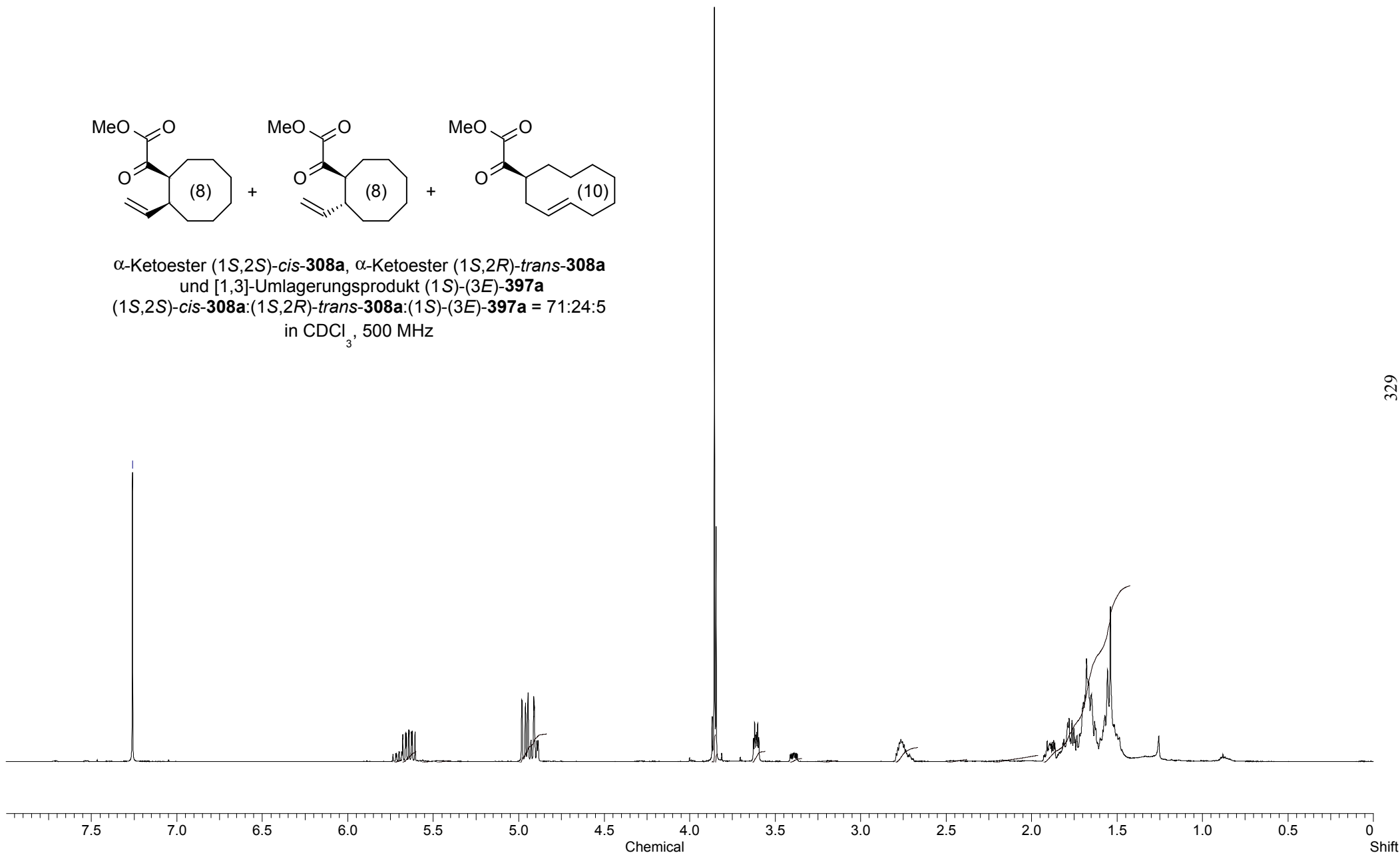
α -Ketoester (1*R*,2*S*)-**trans-308c**
(1*R*,2*S*)-**trans-308c**:(1*R*,2*R*)-**cis-308c** = 51:49
in CDCl₃, 126 MHz

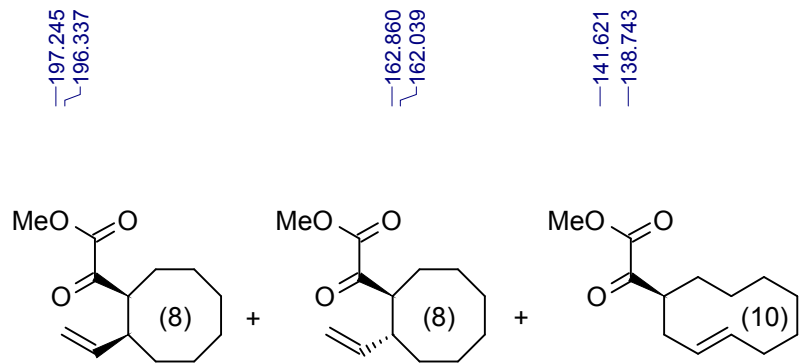


-7.260



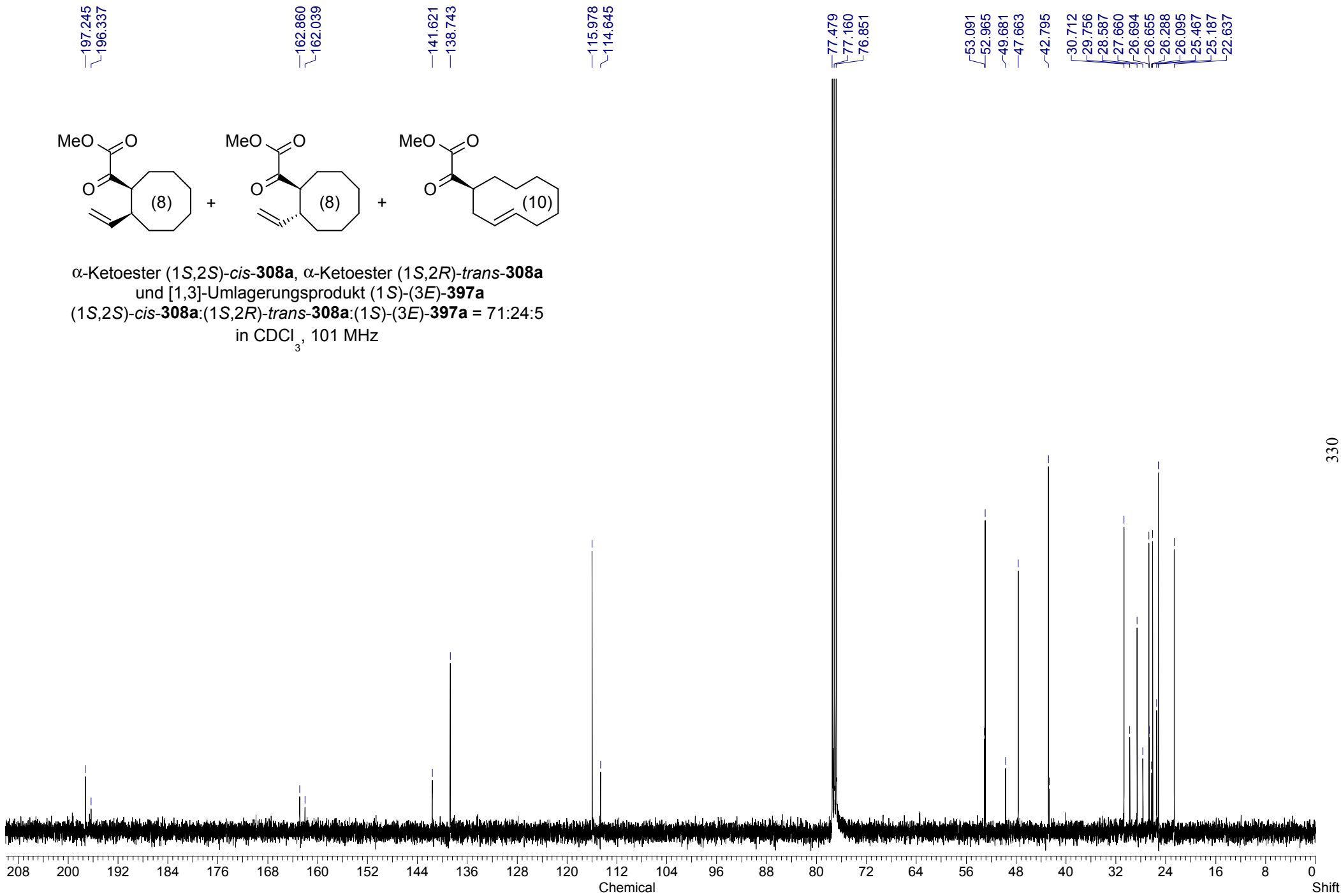
α -Ketoester (1*S*,2*S*)-*cis*-**308a**, α -Ketoester (1*S*,2*R*)-*trans*-**308a**
und [1,3]-Umlagerungsprodukt (1*S*)-(3*E*)-**397a**
(1*S*,2*S*)-*cis*-**308a**:(1*S*,2*R*)-*trans*-**308a**:(1*S*)-(3*E*)-**397a** = 71:24:5
in CDCl₃, 500 MHz



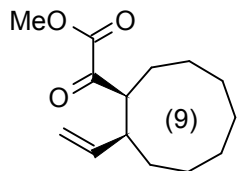


α -Ketoester (1*S*,2*S*)-*cis*-**308a**, α -Ketoester (1*S*,2*R*)-*trans*-**308a**
und [1,3]-Umlagerungsprodukt (1*S*)-(3*E*)-**397a**

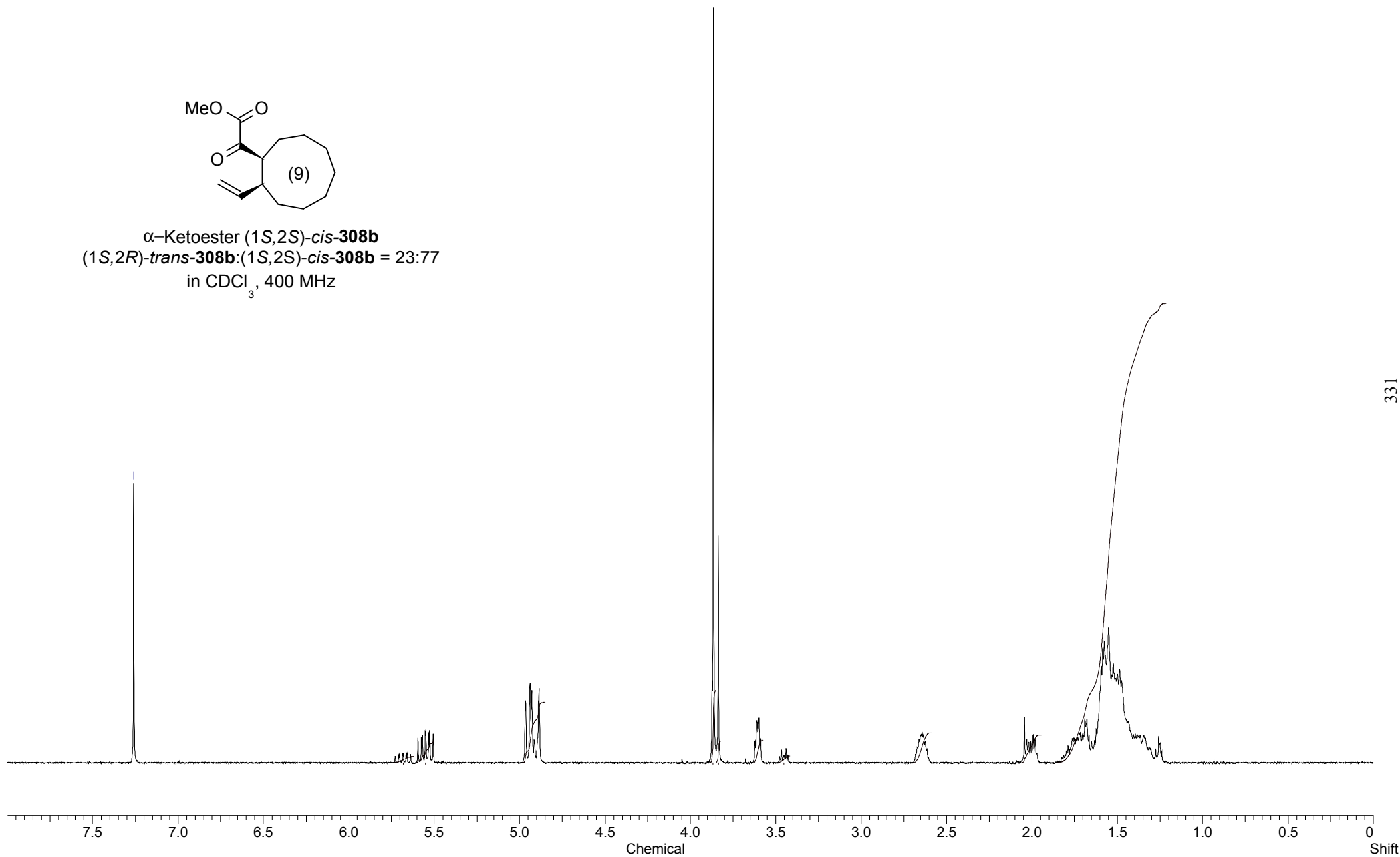
(1*S*,2*S*)-*cis*-**308a**:(1*S*,2*R*)-*trans*-**308a**:(1*S*)-(3*E*)-**397a** = 71:24:5
in CDCl₃, 101 MHz

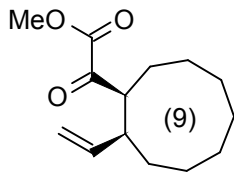


—7.260

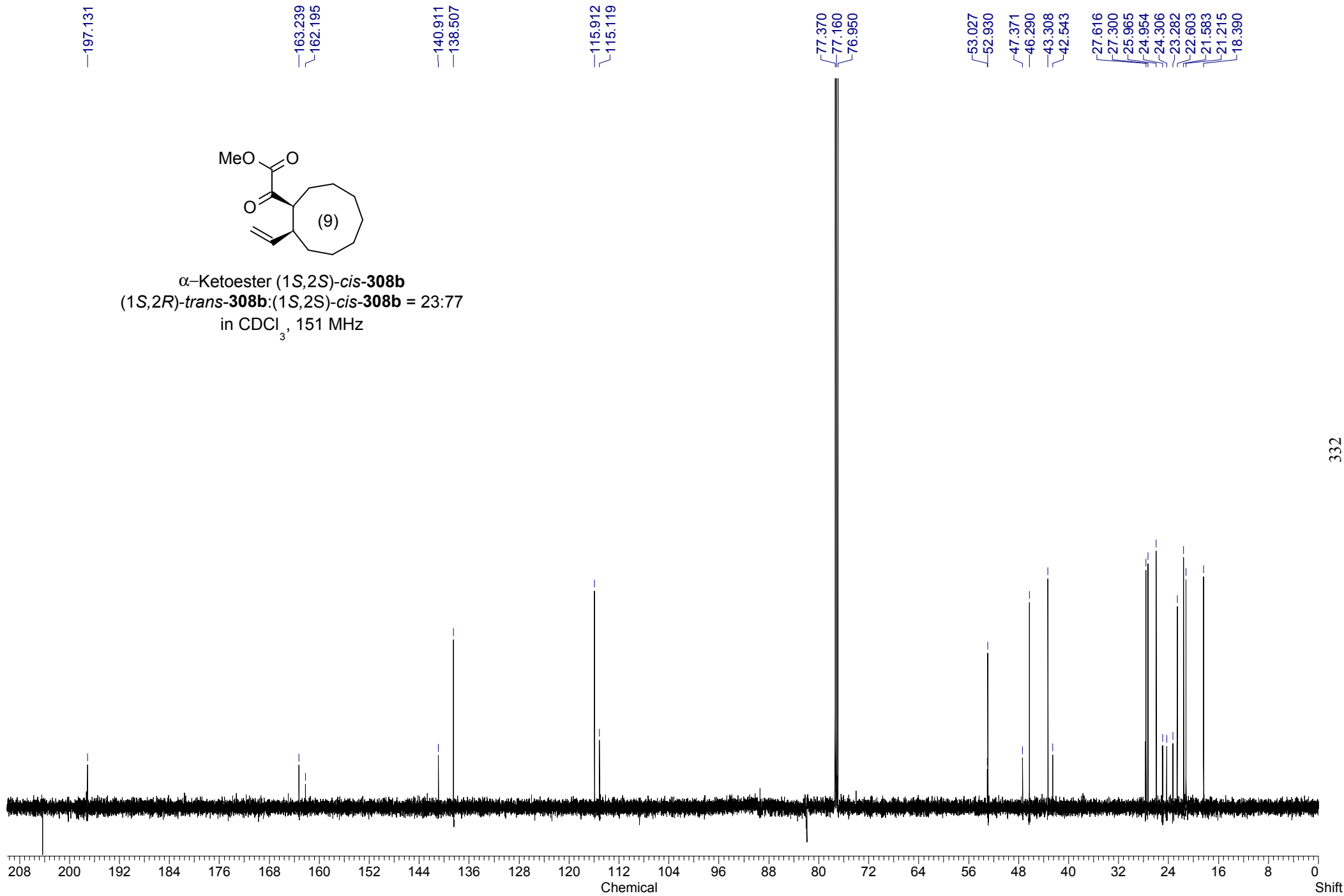


α -Ketoester (1*S*,2*S*)-**308b**
(1*S*,2*R*)-**308b**:(1*S*,2*S*)-**308b** = 23:77
in CDCl₃, 400 MHz

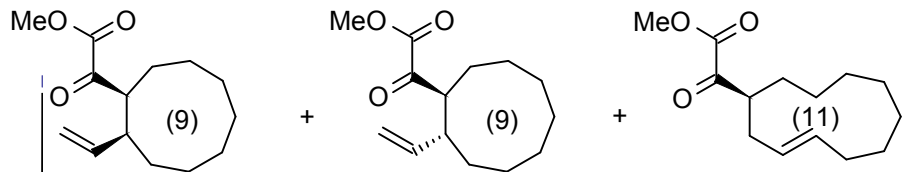




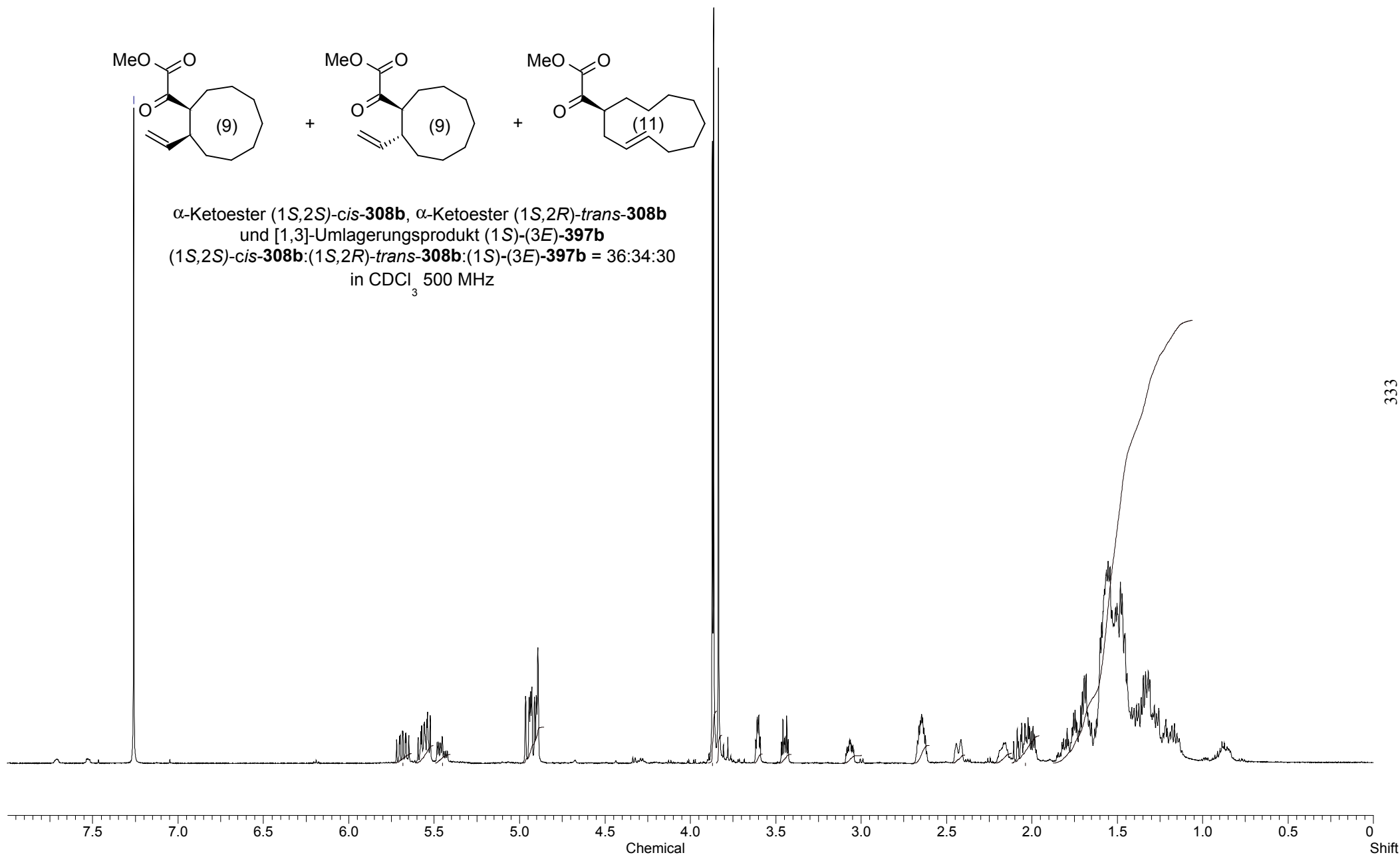
α -Ketoester (1*S*,2*S*)-**308b**
 (1*S*,2*R*)-*trans*-**308b**:(1*S*,2*S*)-*cis*-**308b** = 23:77
 in CDCl₃, 151 MHz

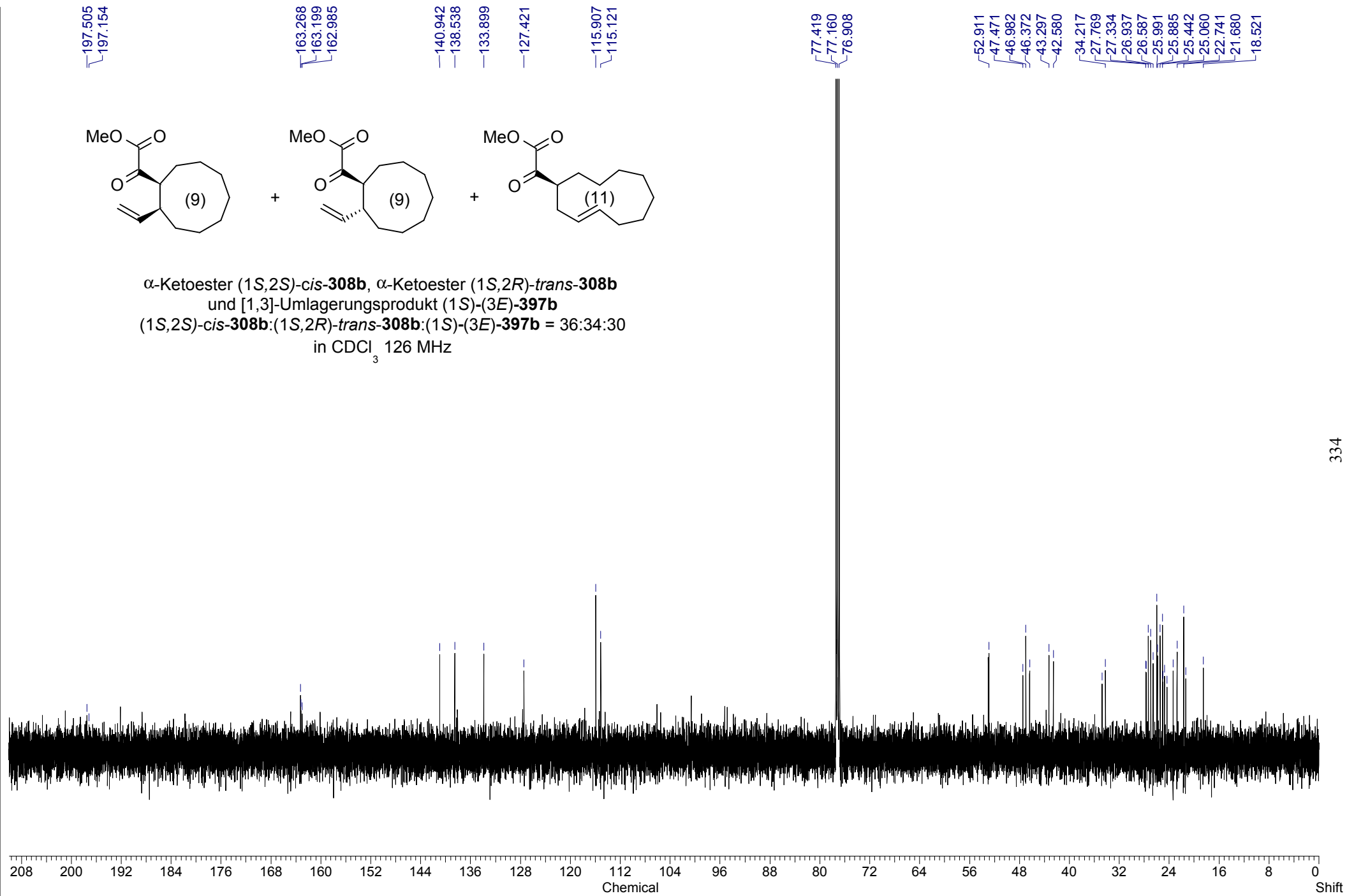


-7.260

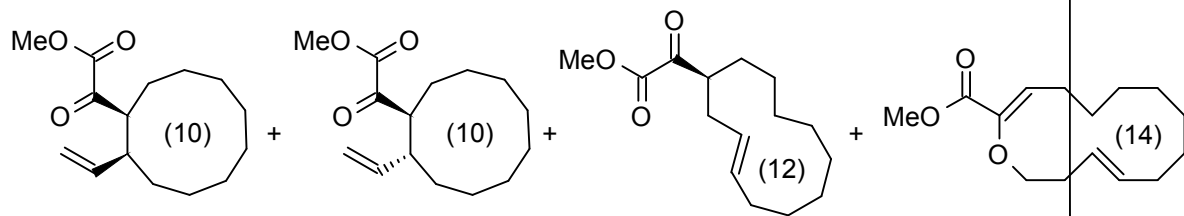


α -Ketoester (1*S*,2*S*)-*cis*-**308b**, α -Ketoester (1*S*,2*R*)-*trans*-**308b**
 und [1,3]-Umlagerungsprodukt (1*S*)-(3*E*)-**397b**
 (1*S*,2*S*)-*cis*-**308b**:(1*S*,2*R*)-*trans*-**308b**:(1*S*)-(3*E*)-**397b** = 36:34:30
 in CDCl₃ 500 MHz

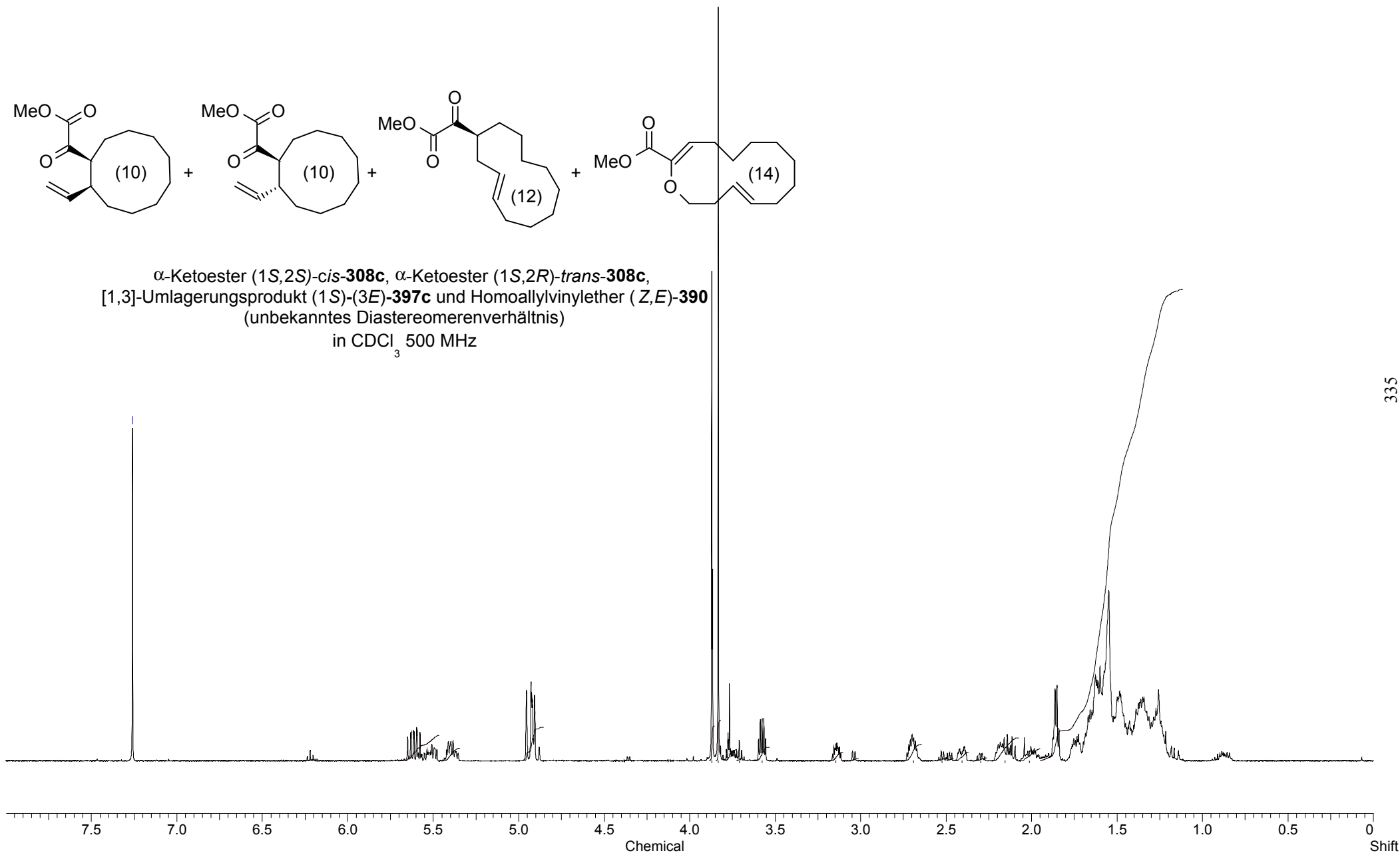




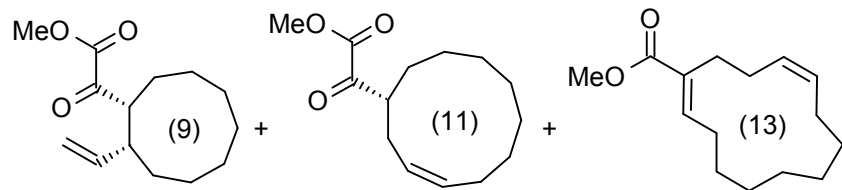
—7.260



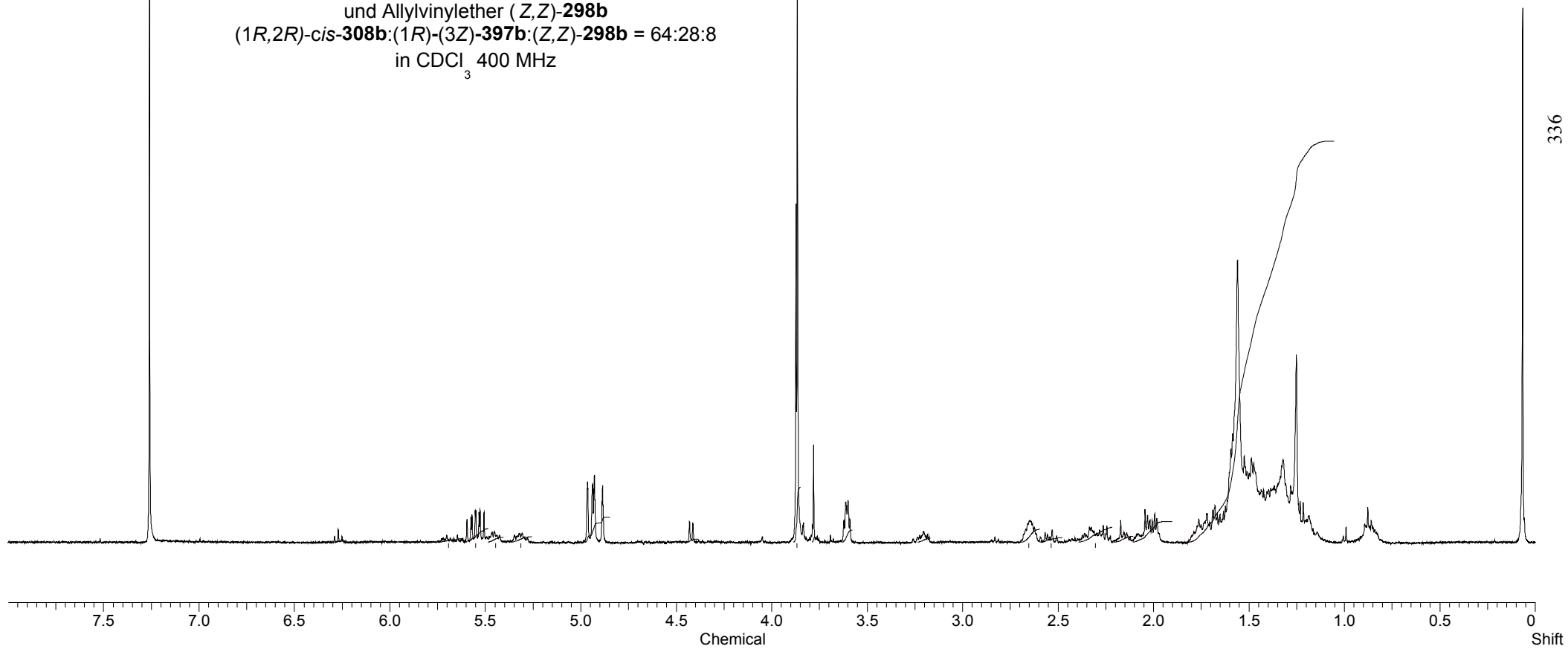
α -Ketoester (1*S*,2*S*)-**cis-308c**, α -Ketoester (1*S*,2*R*)-**trans-308c**,
[1,3]-Umlagerungsprodukt (1*S*)-(3*E*)-**397c** und Homoallylvinylether (*Z,E*)-**390**
(unbekanntes Diastereomerenverhältnis)
in CDCl₃ 500 MHz



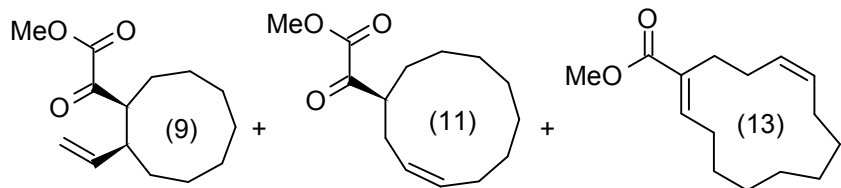
-7.260



α -Ketoester (1*R*,2*R*)-*cis*-**308b**, [1,3]-Umlagerungsprodukt (1*R*)-(3*Z*)-**397b**
und Allylvinylother (Z,Z)-**298b**
(1*R*,2*R*)-*cis*-**308b**:(1*R*)-(3*Z*)-**397b**:(Z,Z)-**298b** = 64:28:8
in CDCl₃ 400 MHz



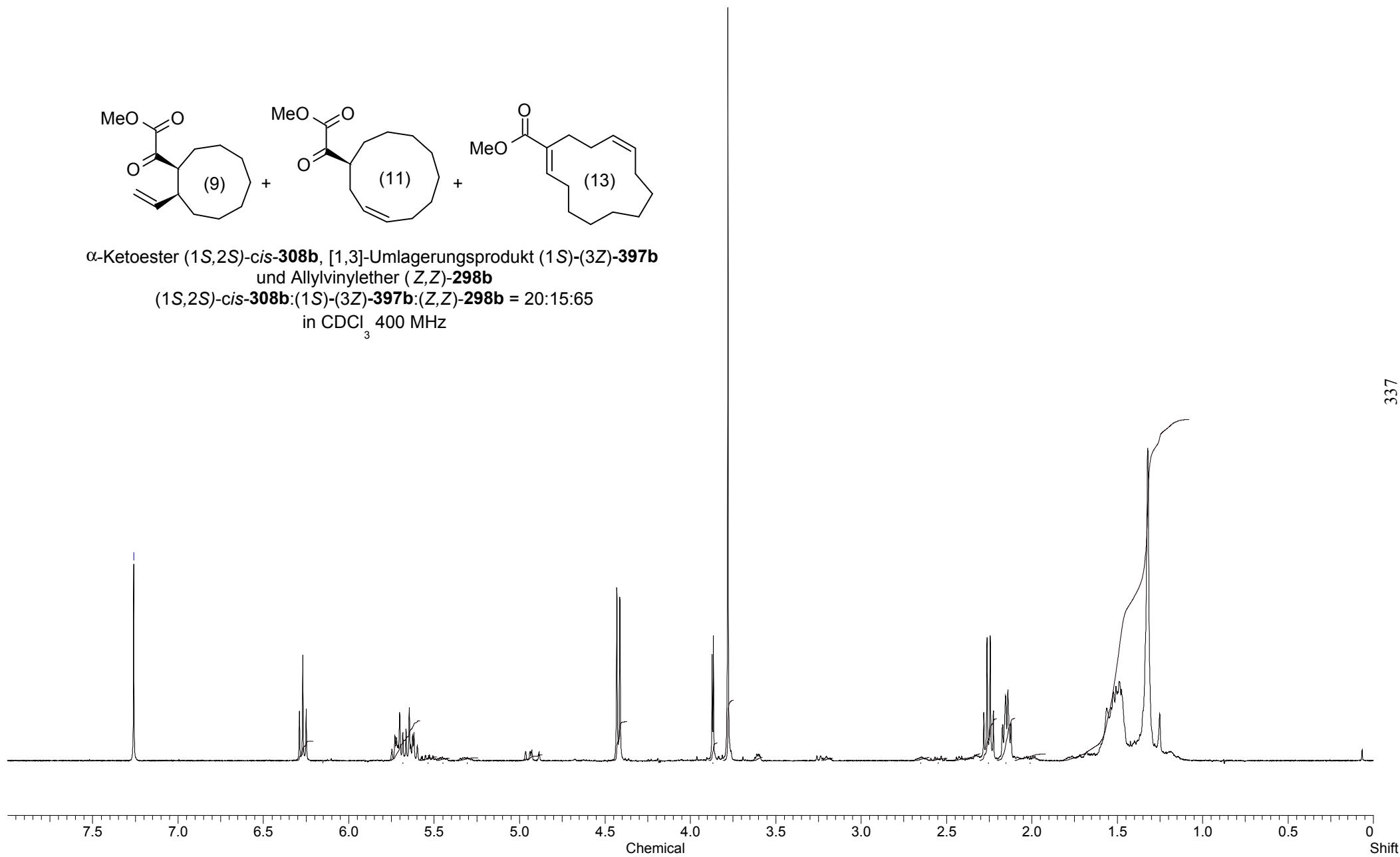
-7.260



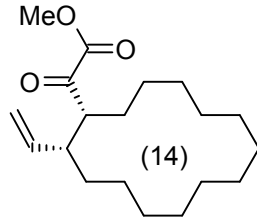
α -Ketoester (1*S*,2*S*)-*cis*-**308b**, [1,3]-Umlagerungsprodukt (1*S*)-(3*Z*)-**397b**
und Allylvinylether (Z,Z)-**298b**

(1*S*,2*S*)-*cis*-**308b**:(1*S*)-(3*Z*)-**397b**:(Z,Z)-**298b** = 20:15:65

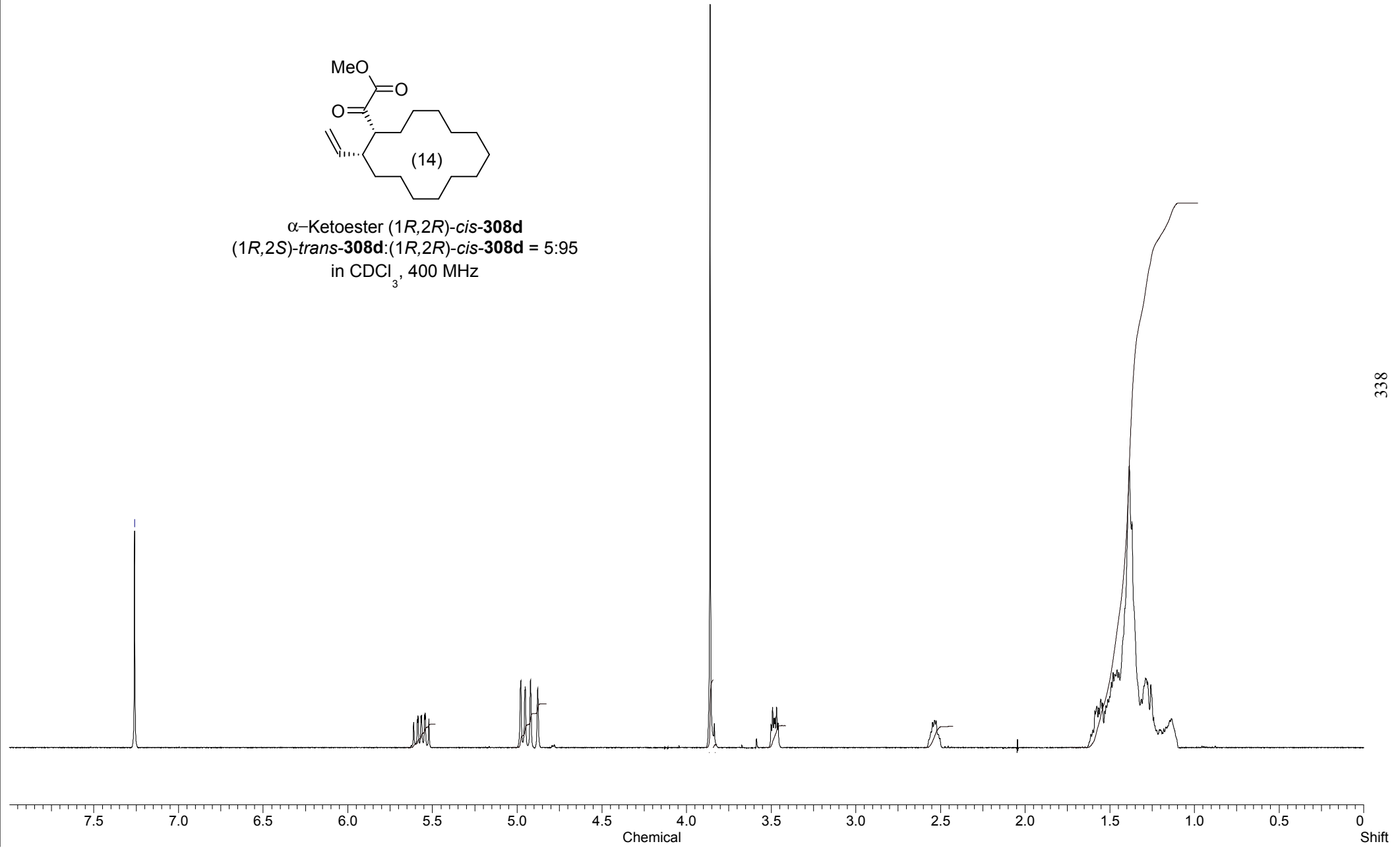
in CDCl₃ 400 MHz



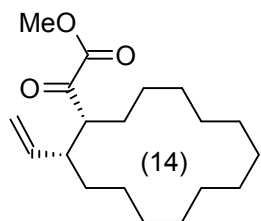
—7.260



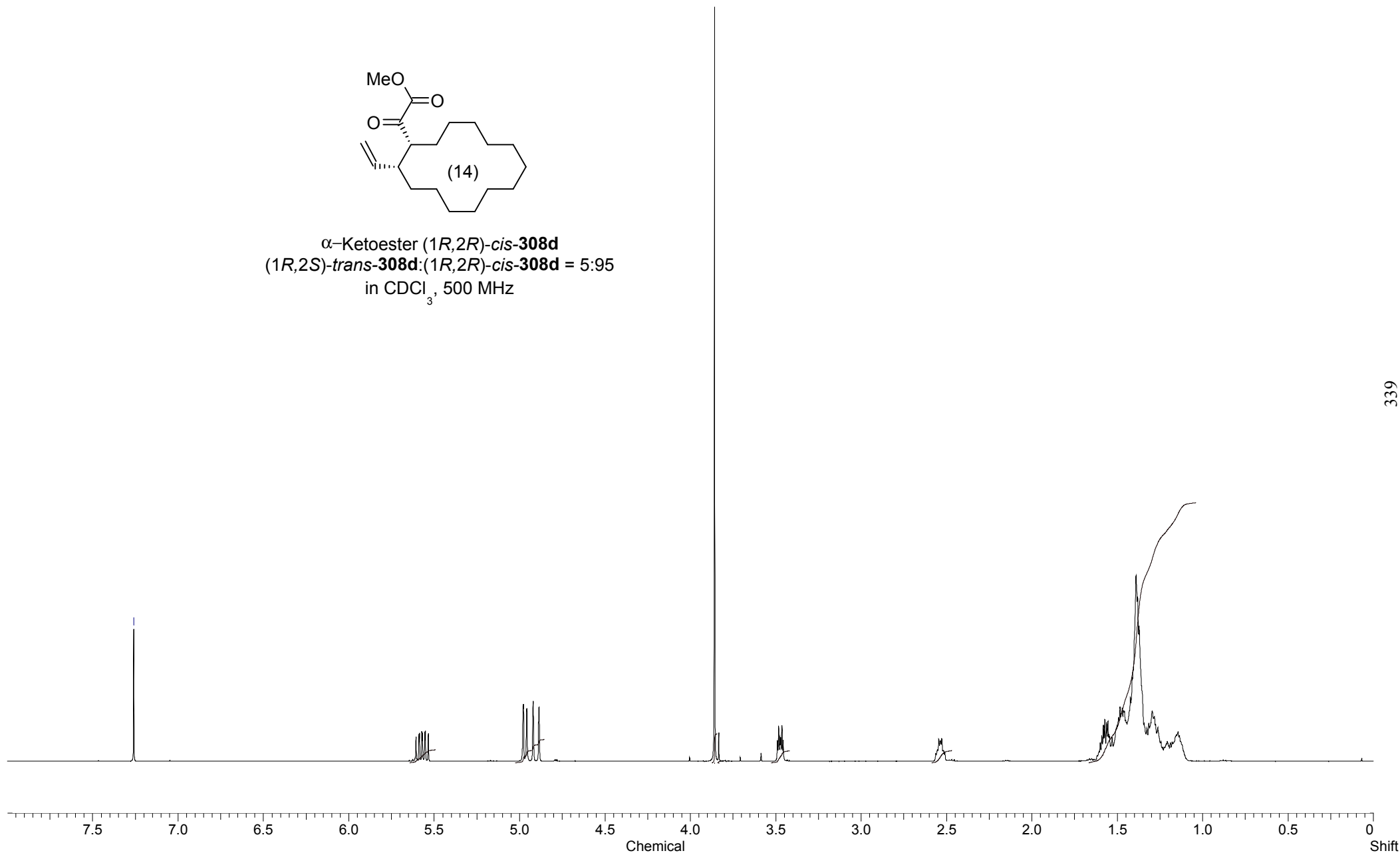
α -Ketoester (1*R*,2*R*)-**308d**
(1*R*,2*S*)-*trans*-**308d**:(1*R*,2*R*)-*cis*-**308d** = 5:95
in CDCl₃, 400 MHz

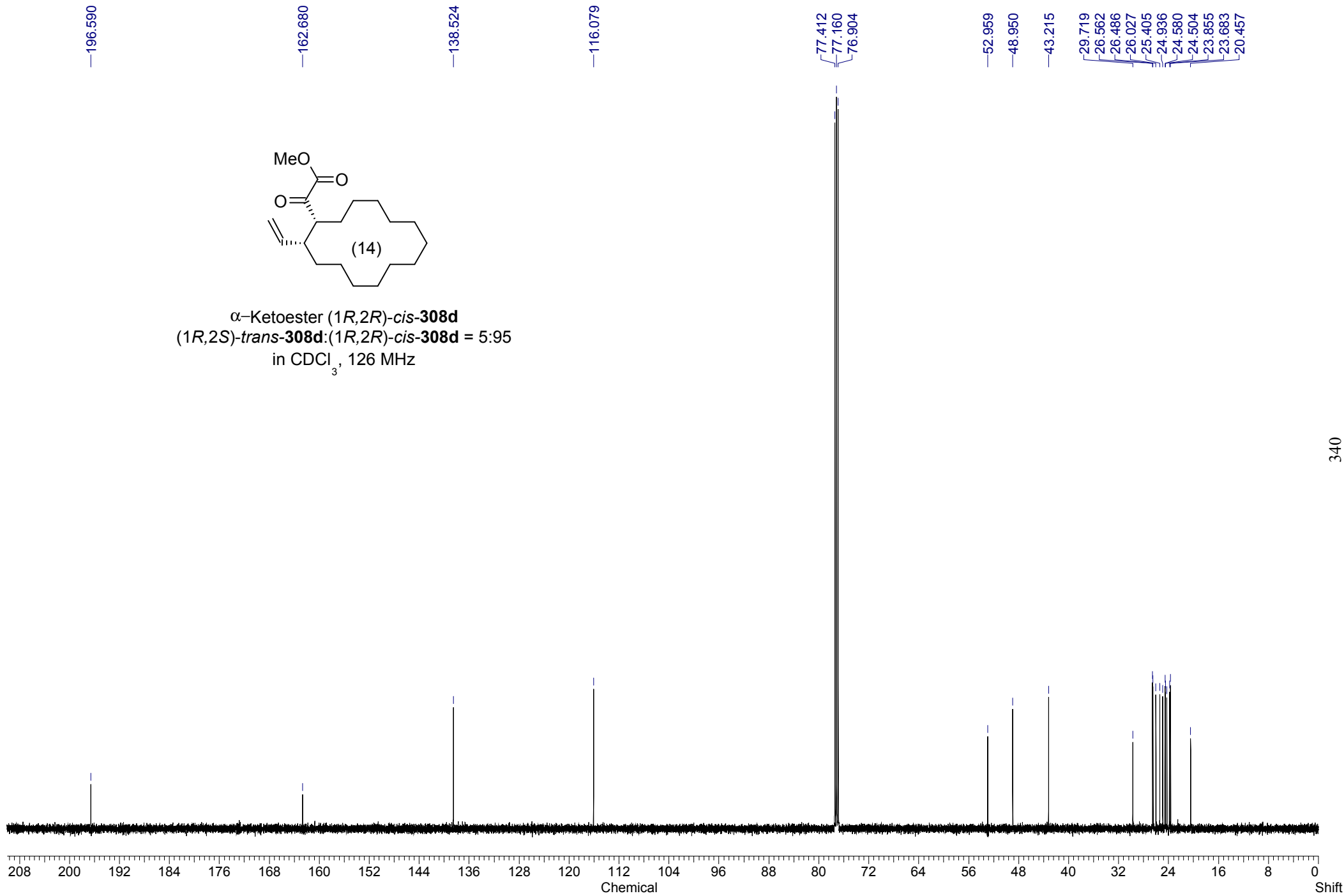


-7.260

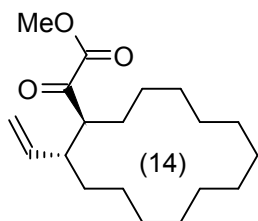


α -Ketoester (1*R*,2*R*)-**cis-308d**
(1*R*,2*S*)-**trans-308d**:(1*R*,2*R*)-**cis-308d** = 5:95
in CDCl₃, 500 MHz

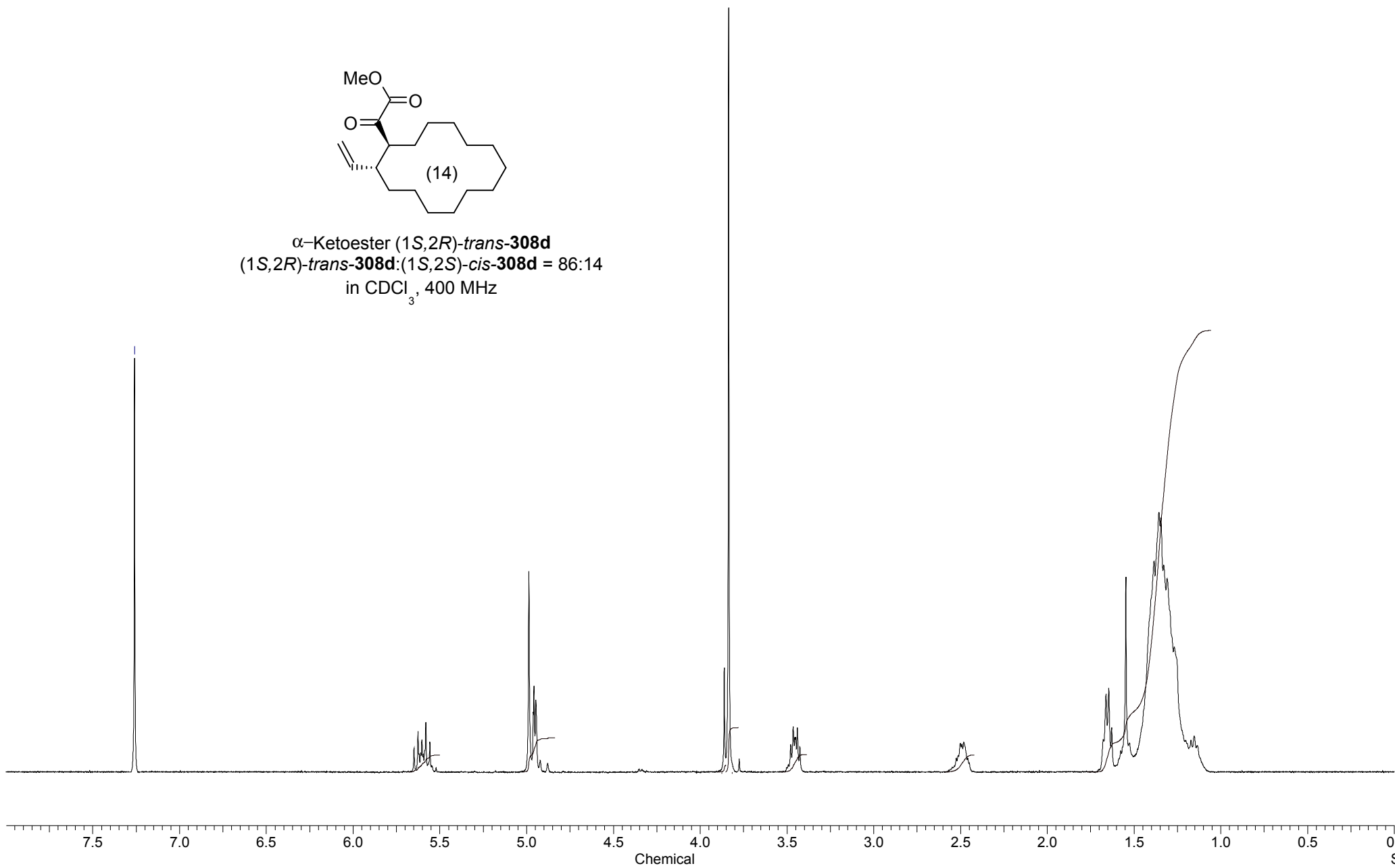


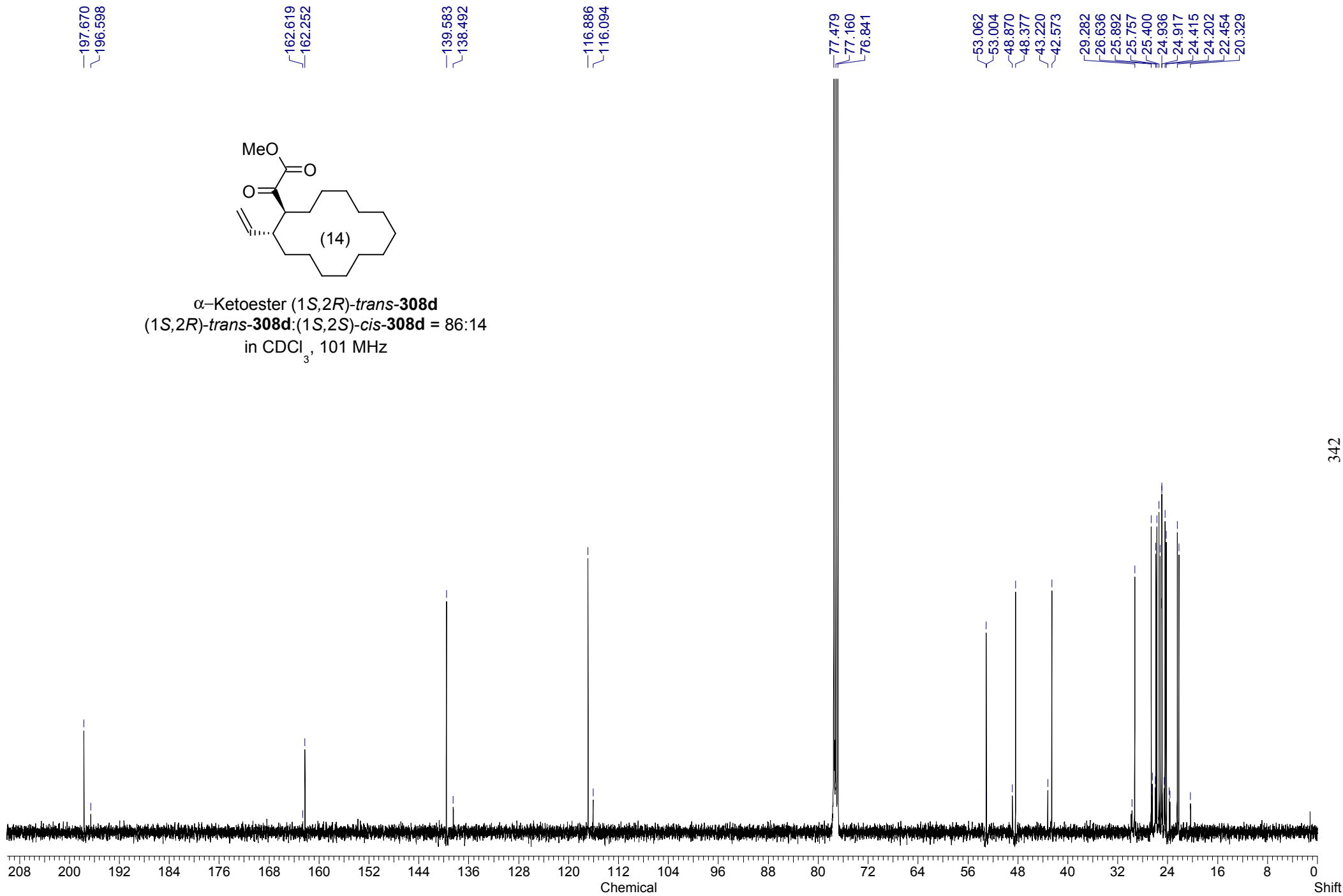


—7.260

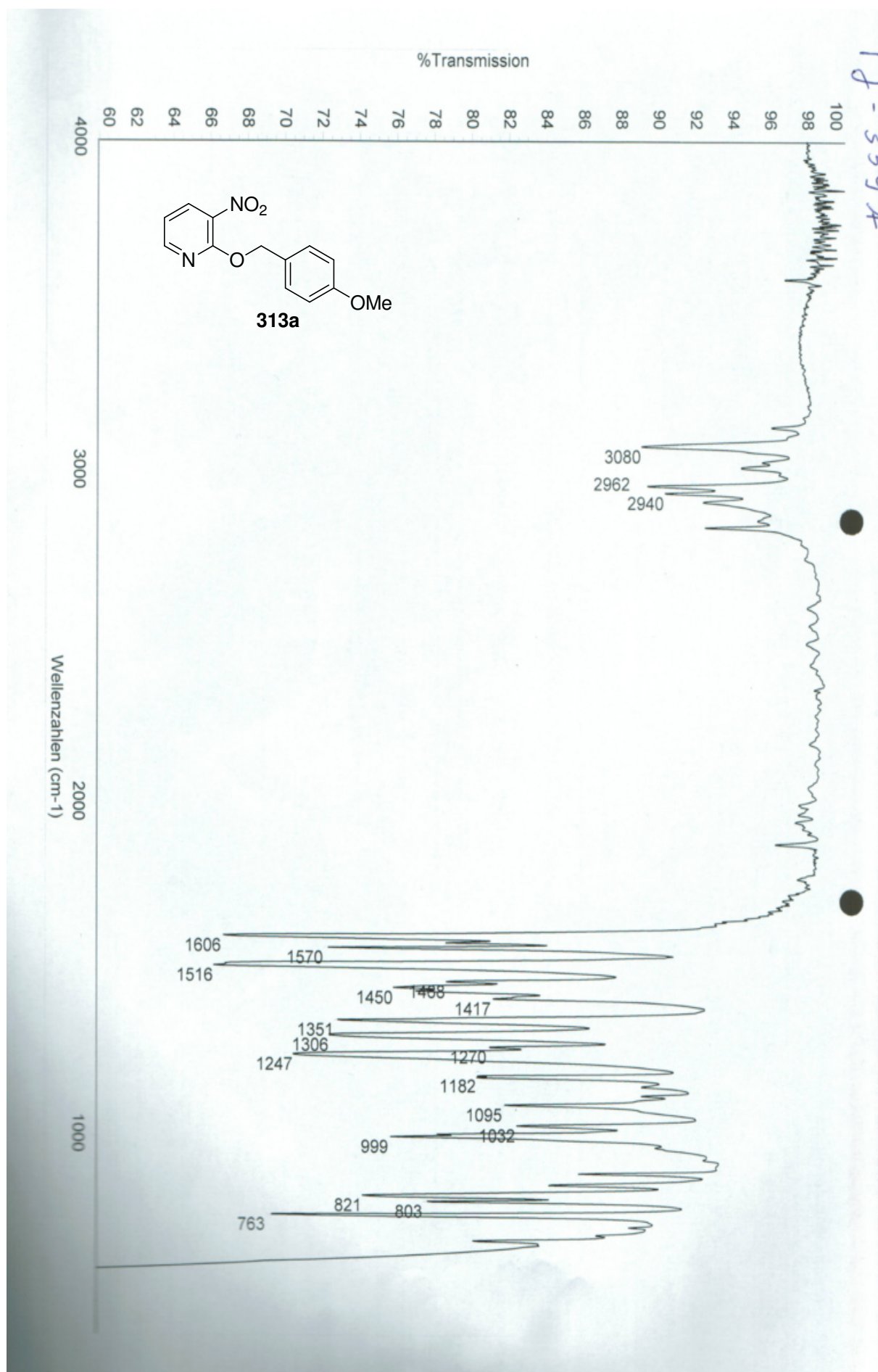


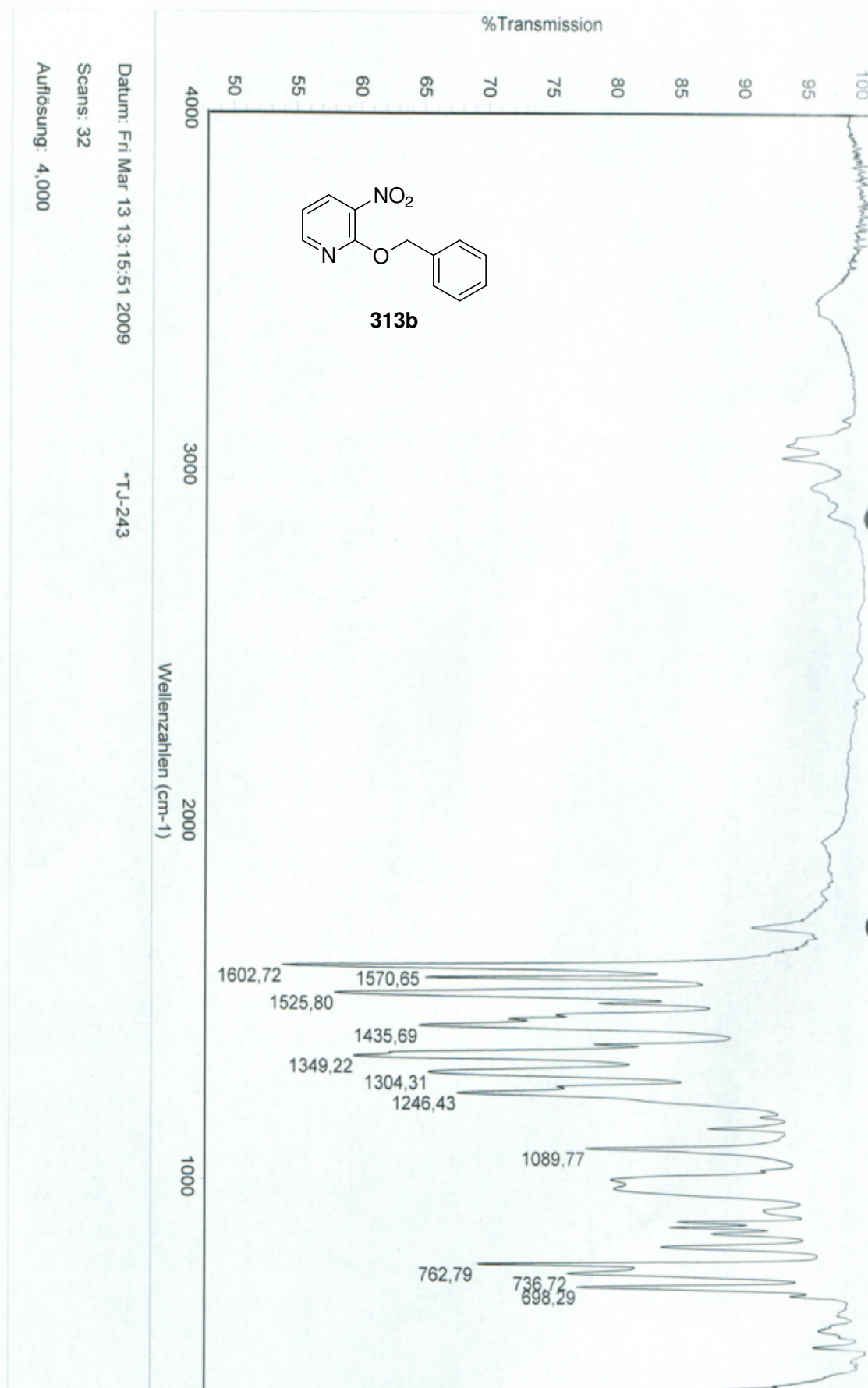
α -Ketoester (1*S*,2*R*)-**trans-308d**
(1*S*,2*R*)-**trans-308d**:(1*S*,2*S*)-**cis-308d** = 86:14
in CDCl₃, 400 MHz

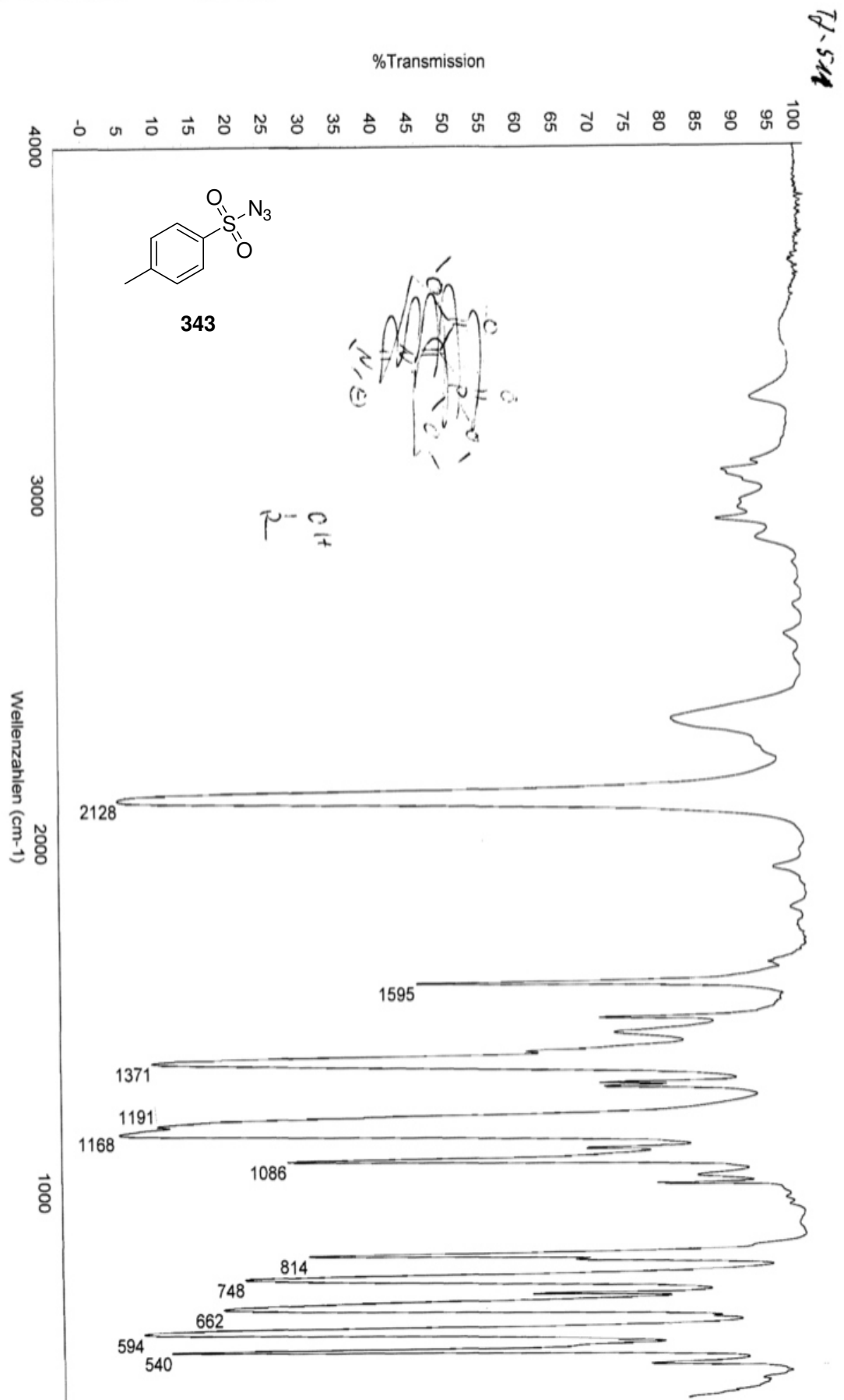


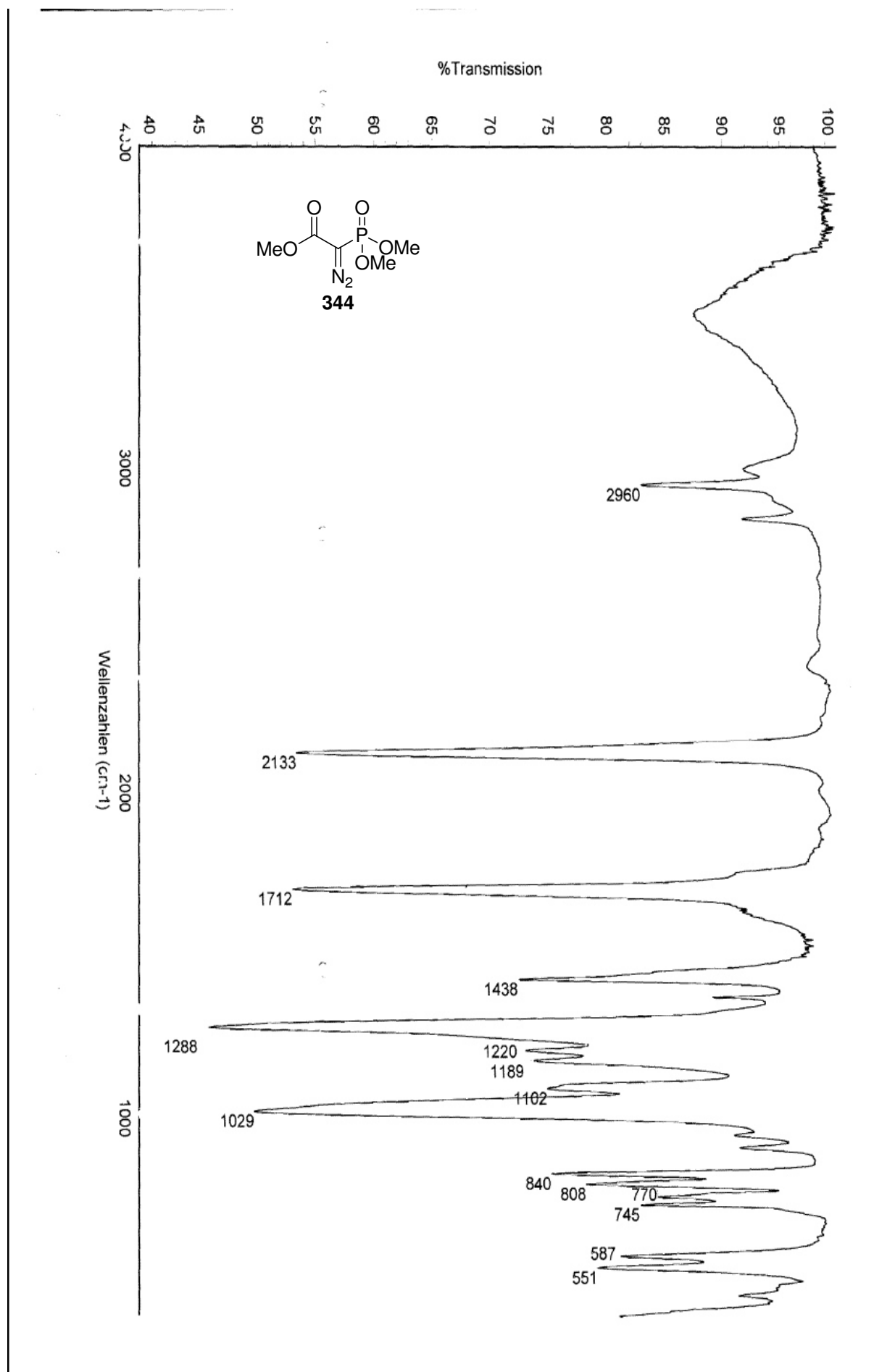


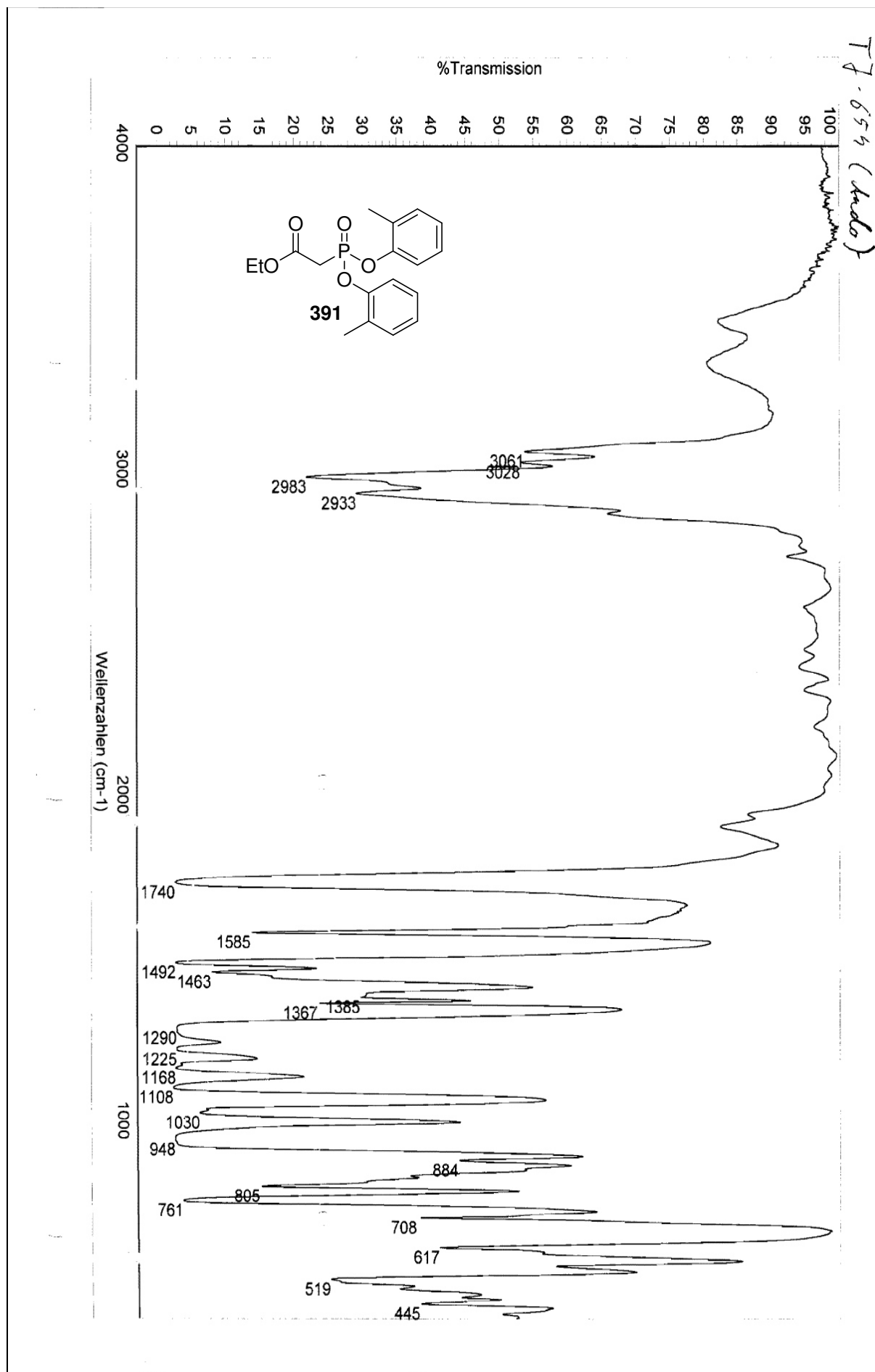
IR-Spektren



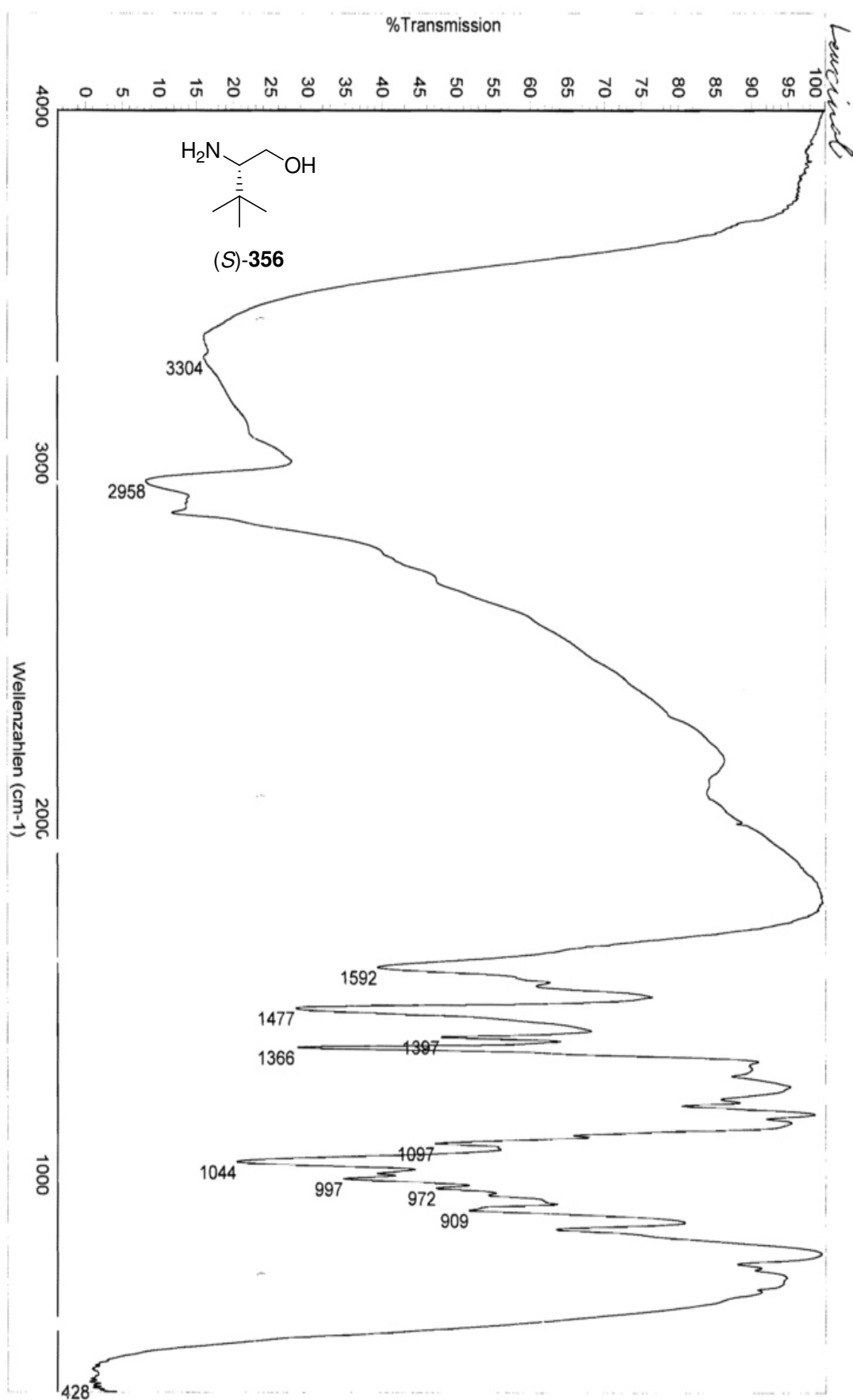


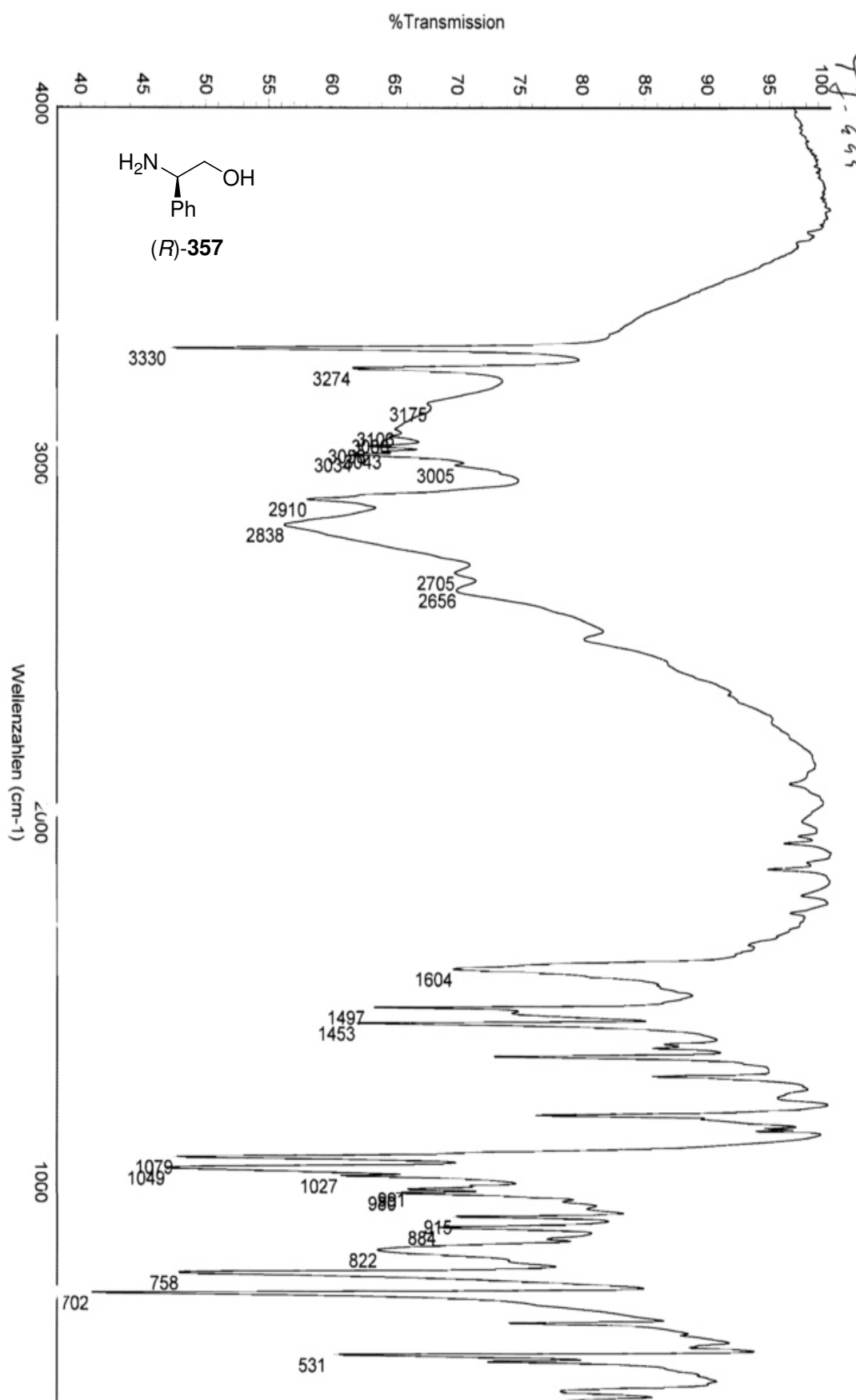


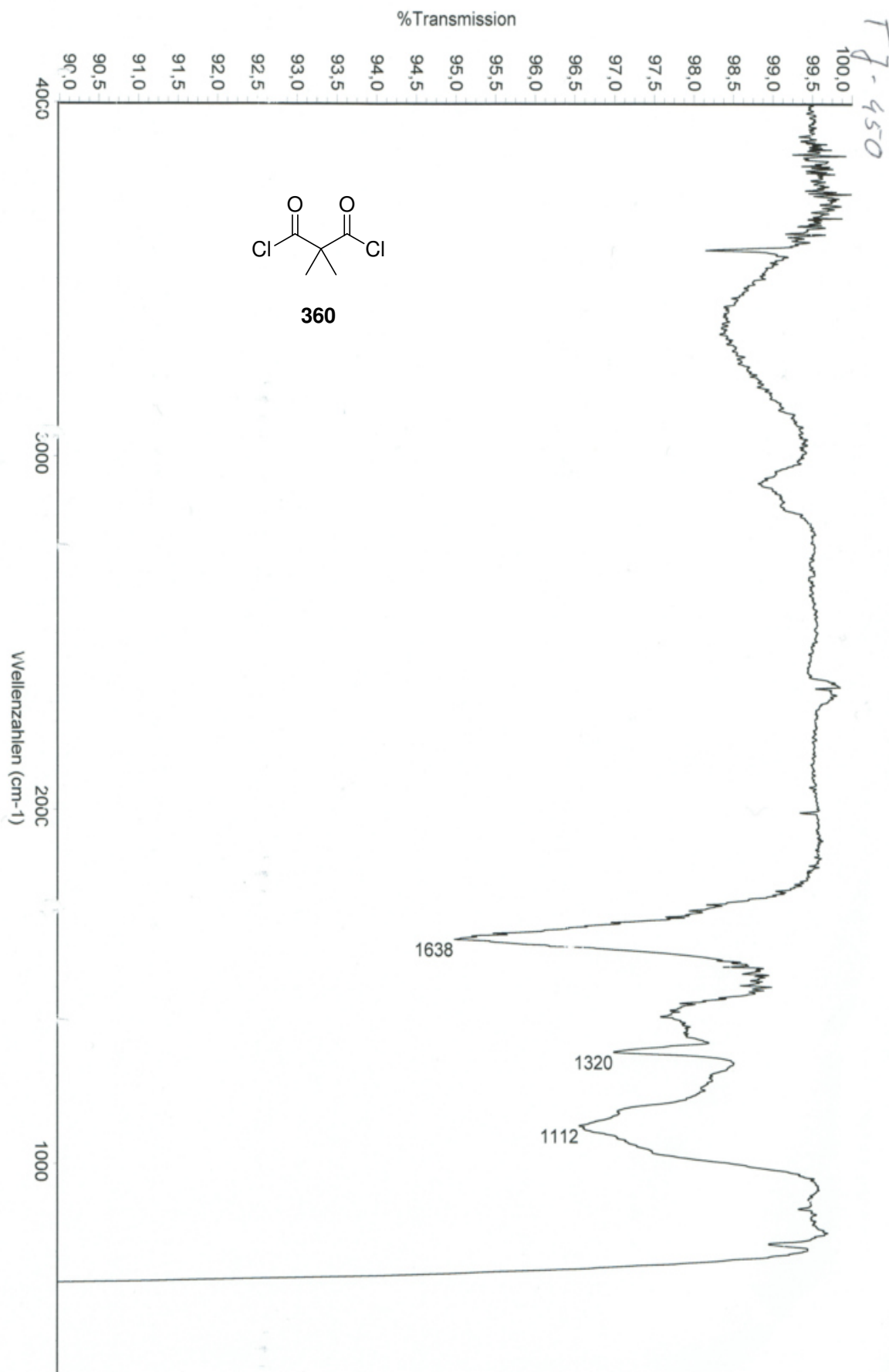


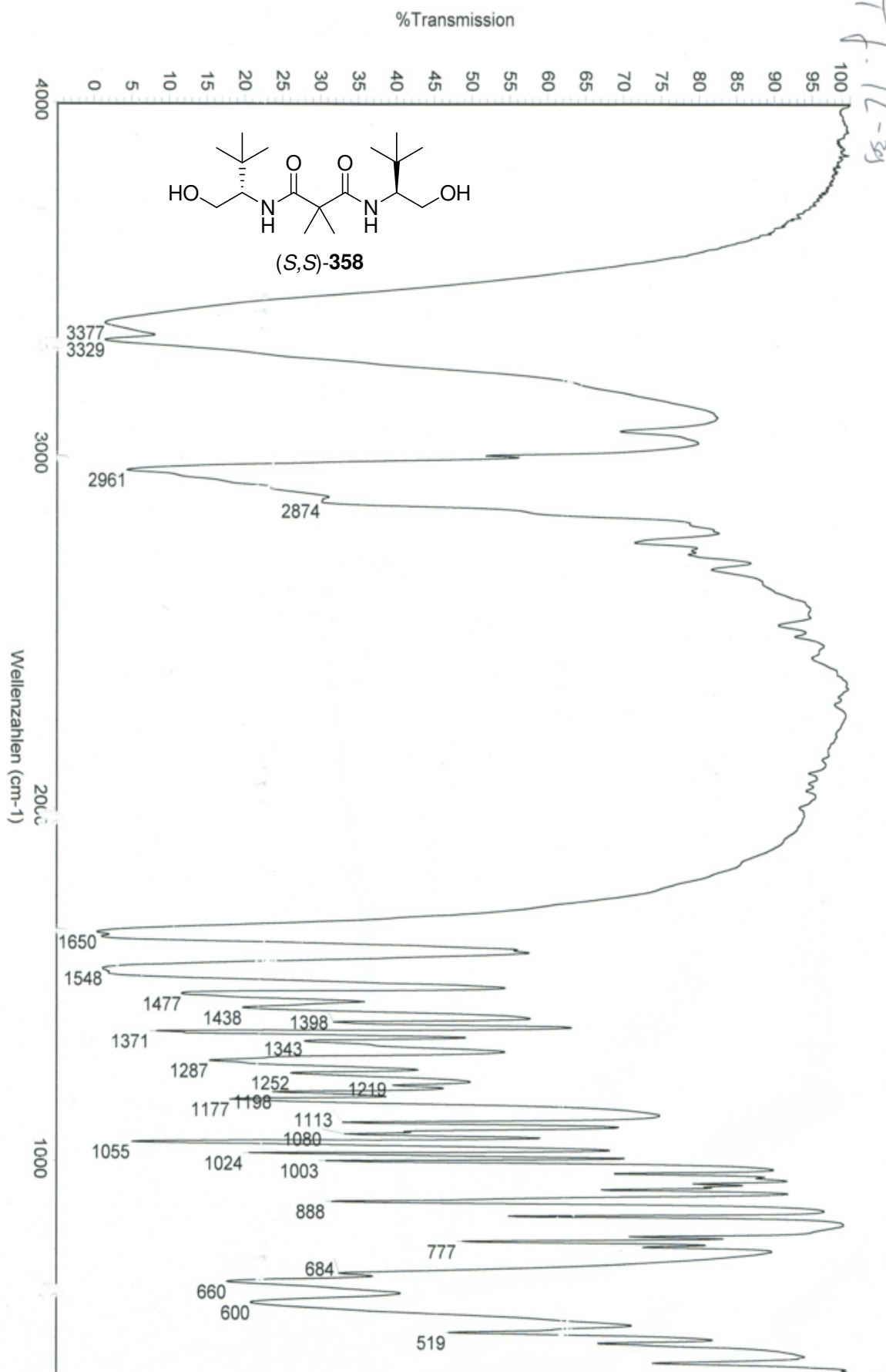


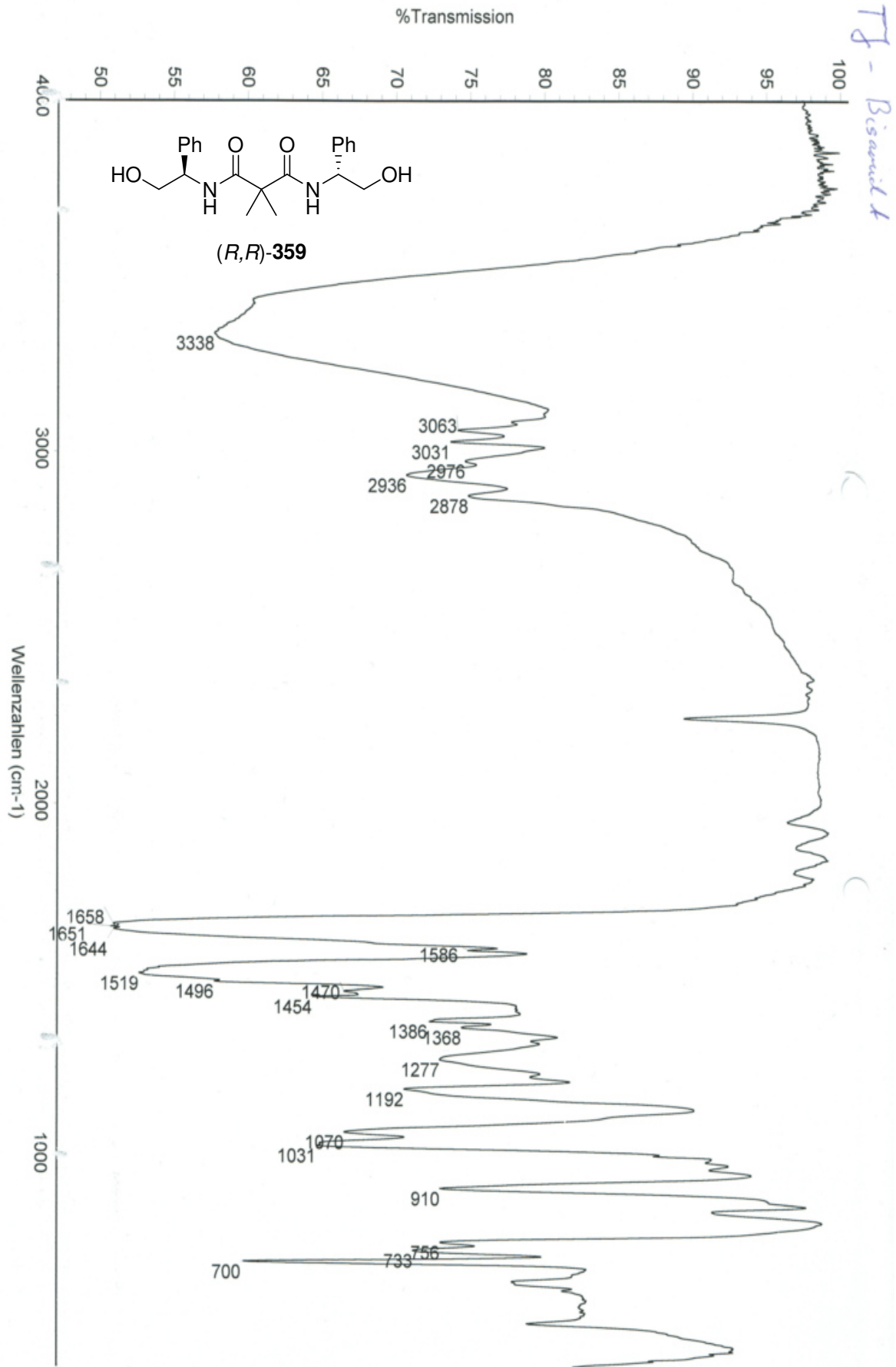
TJ-653 (Kolo)

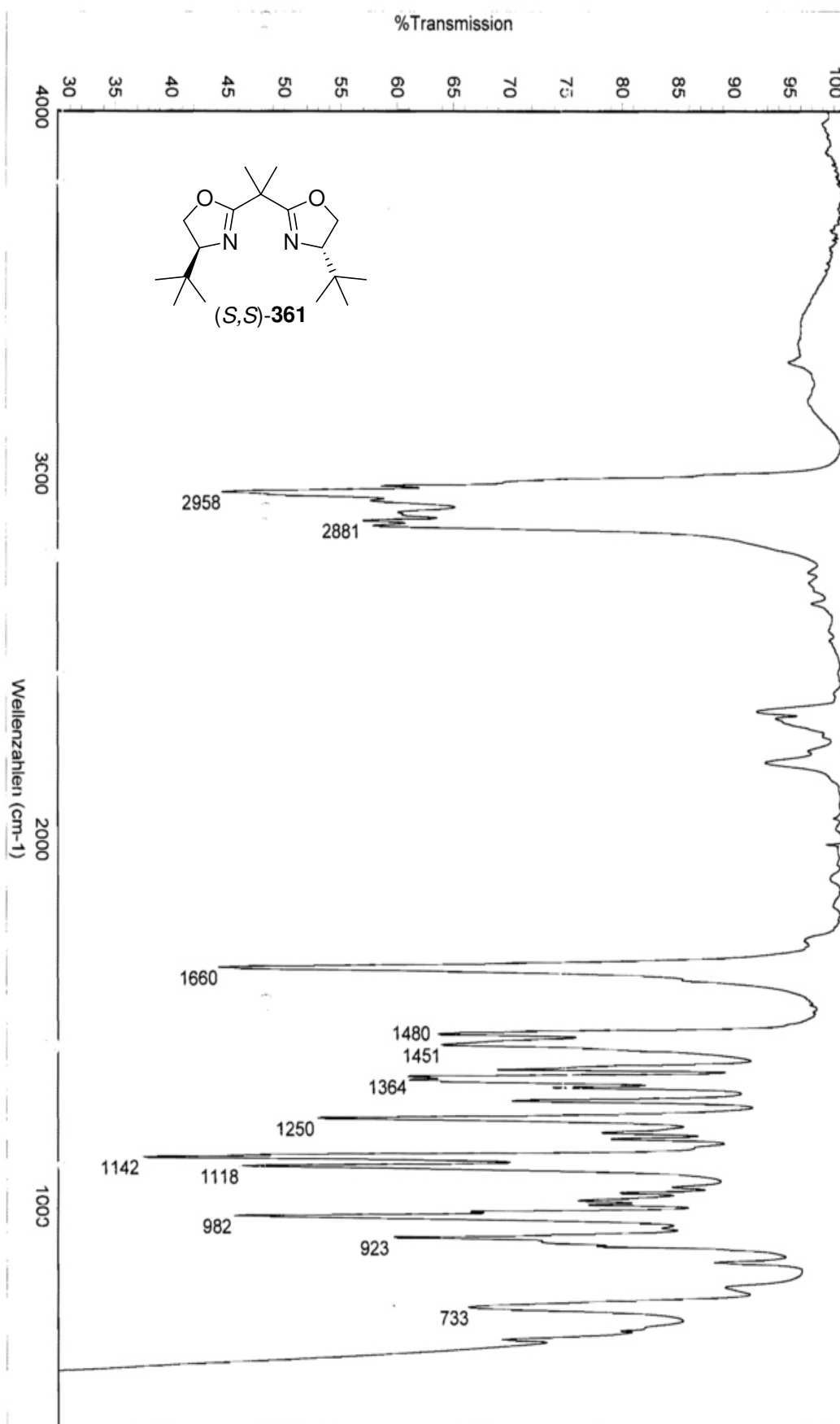


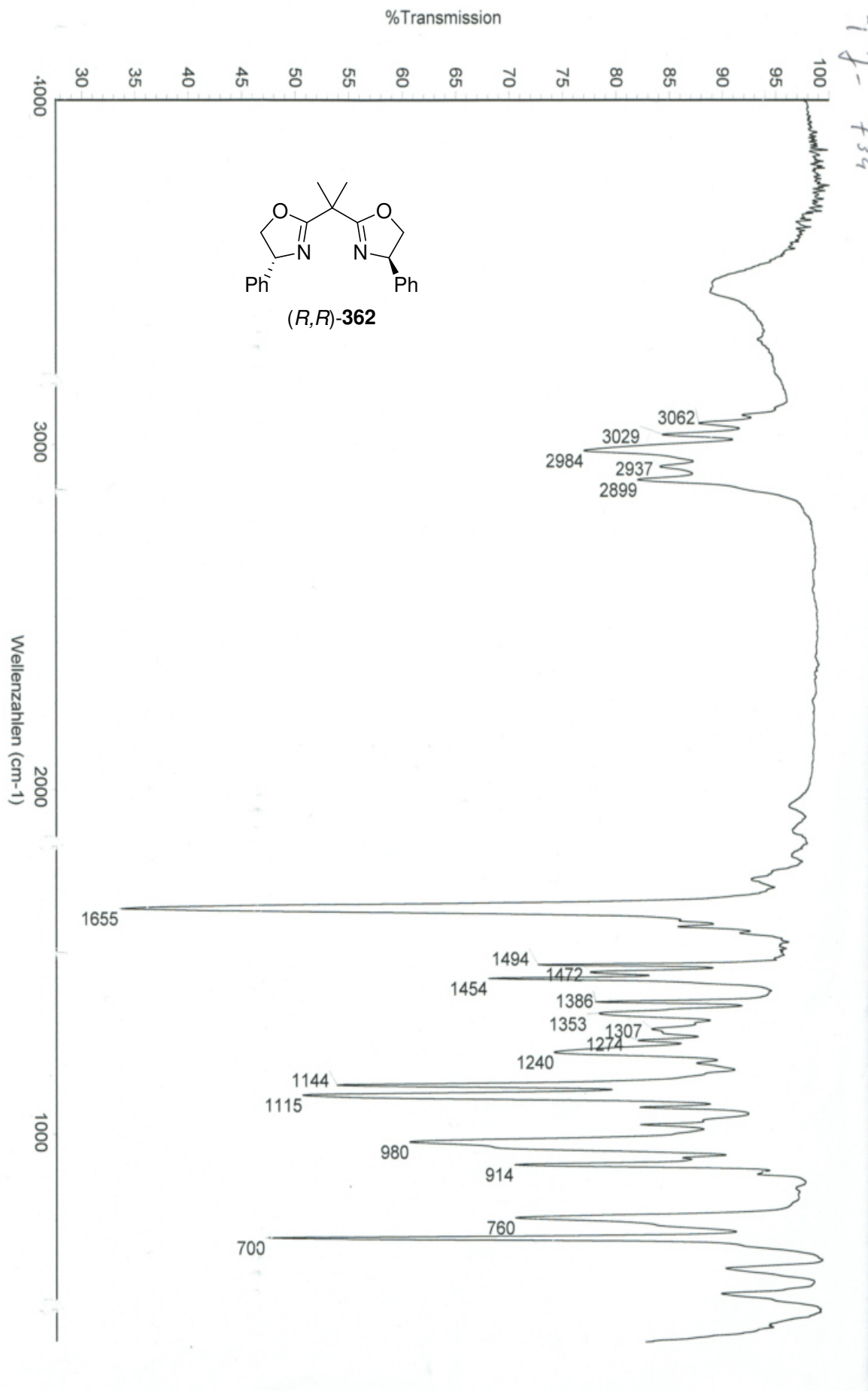


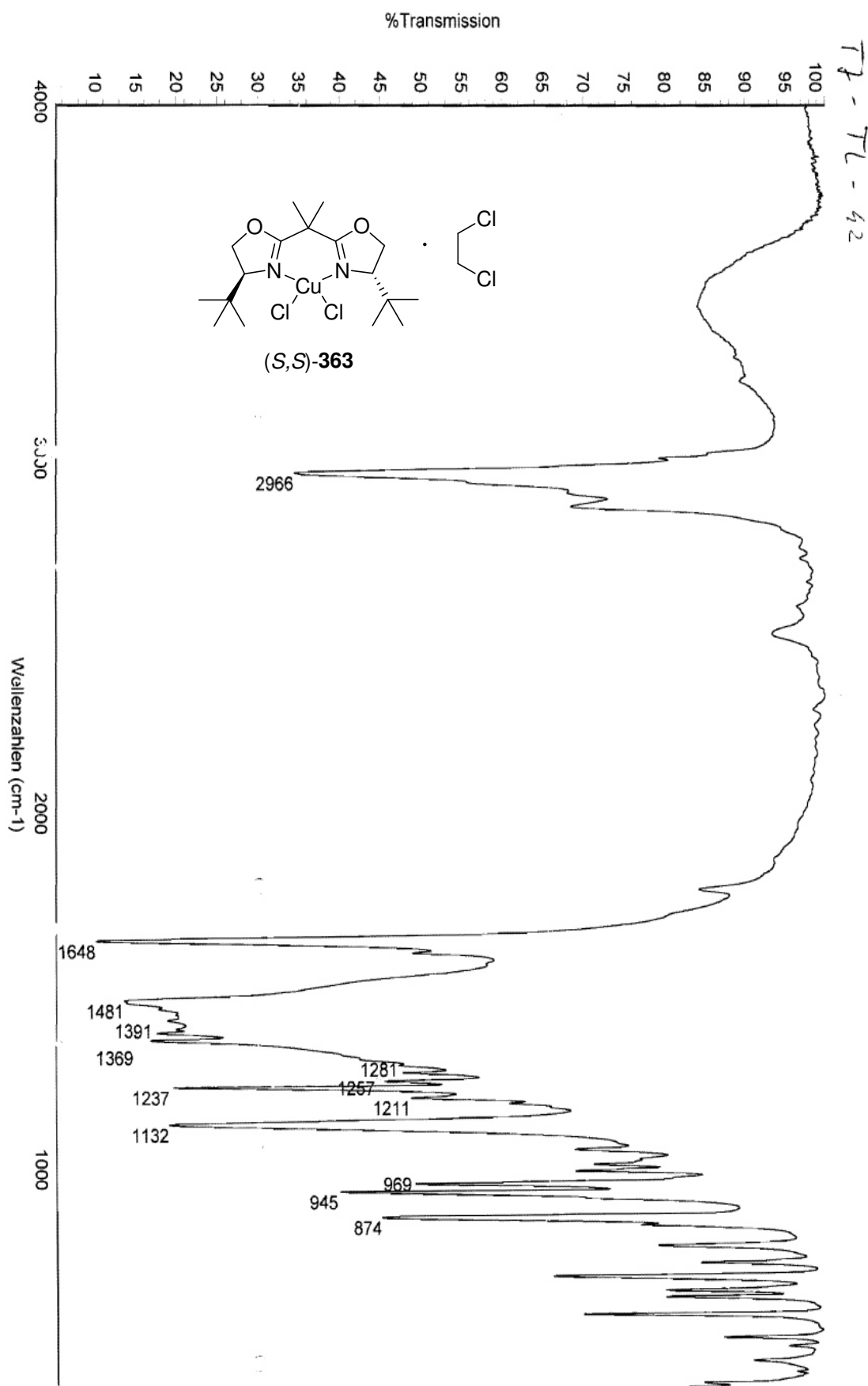


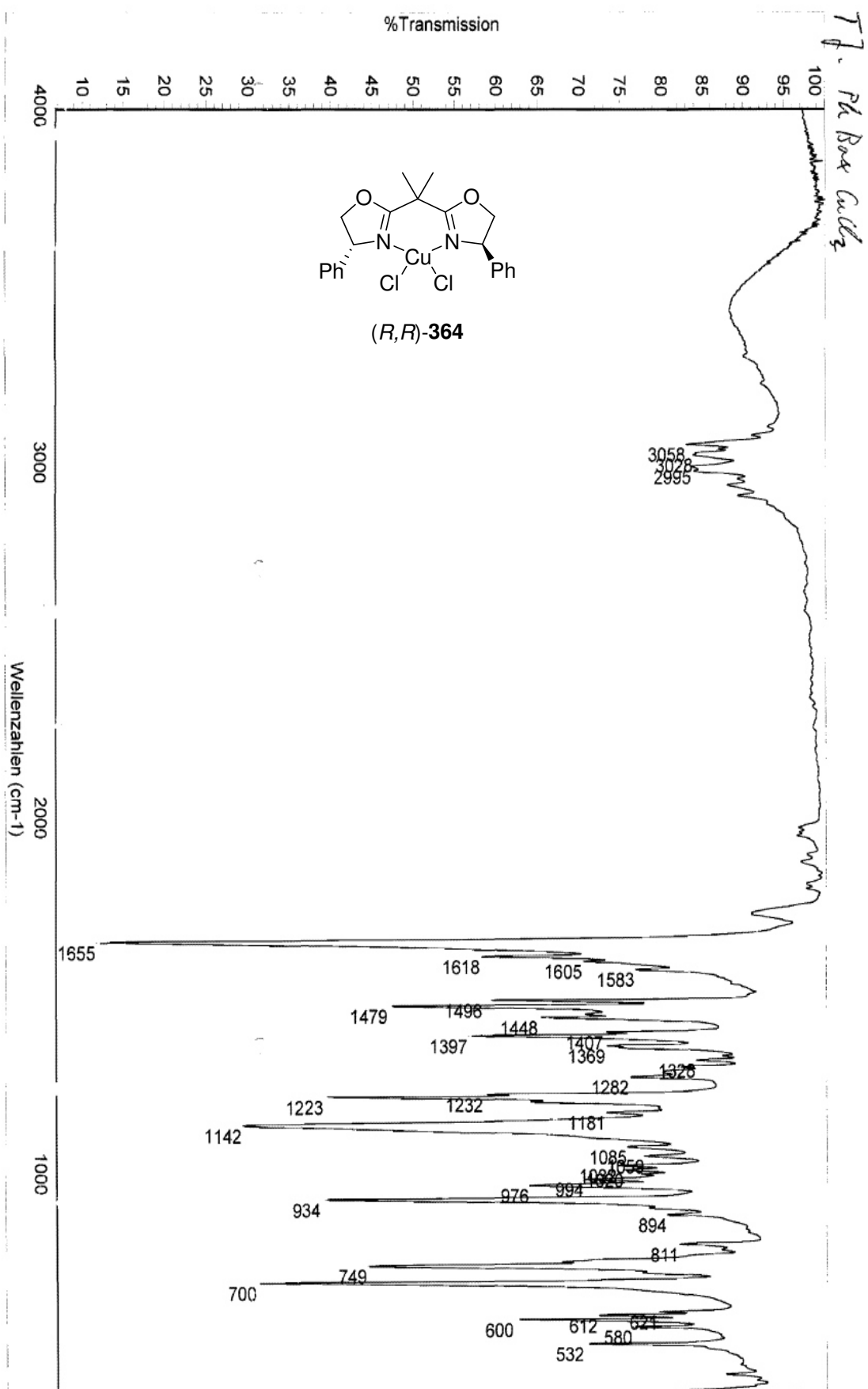


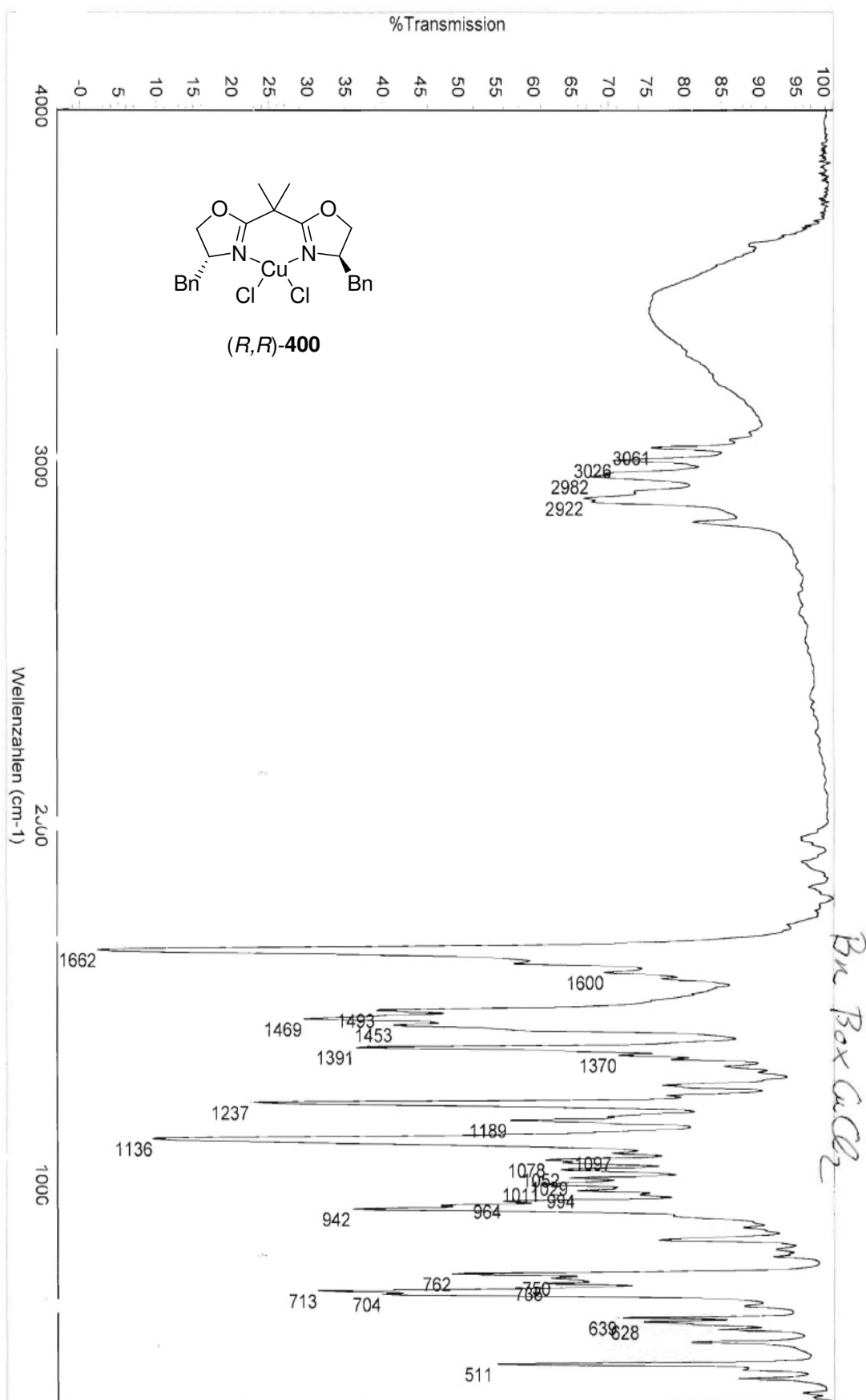


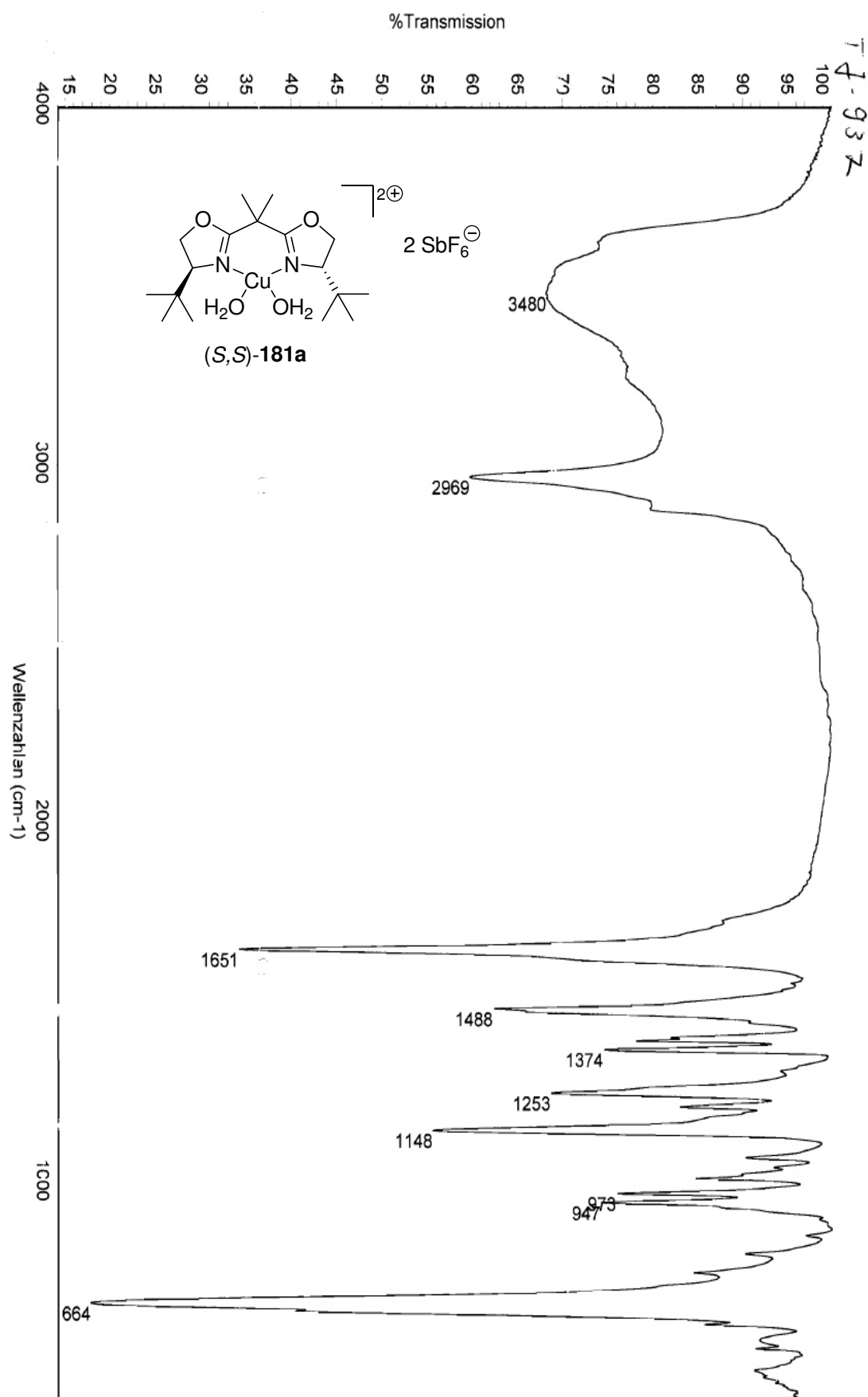


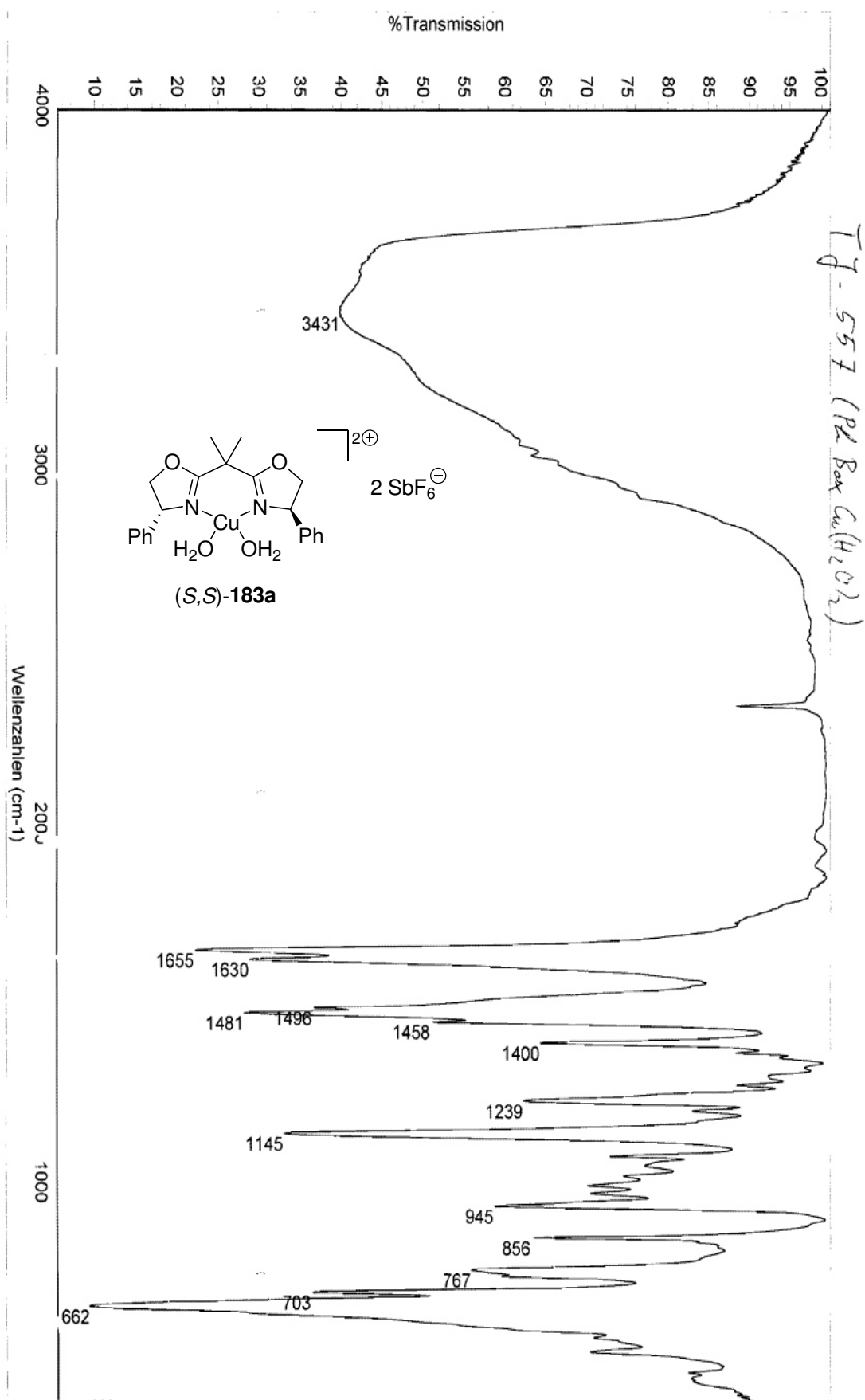


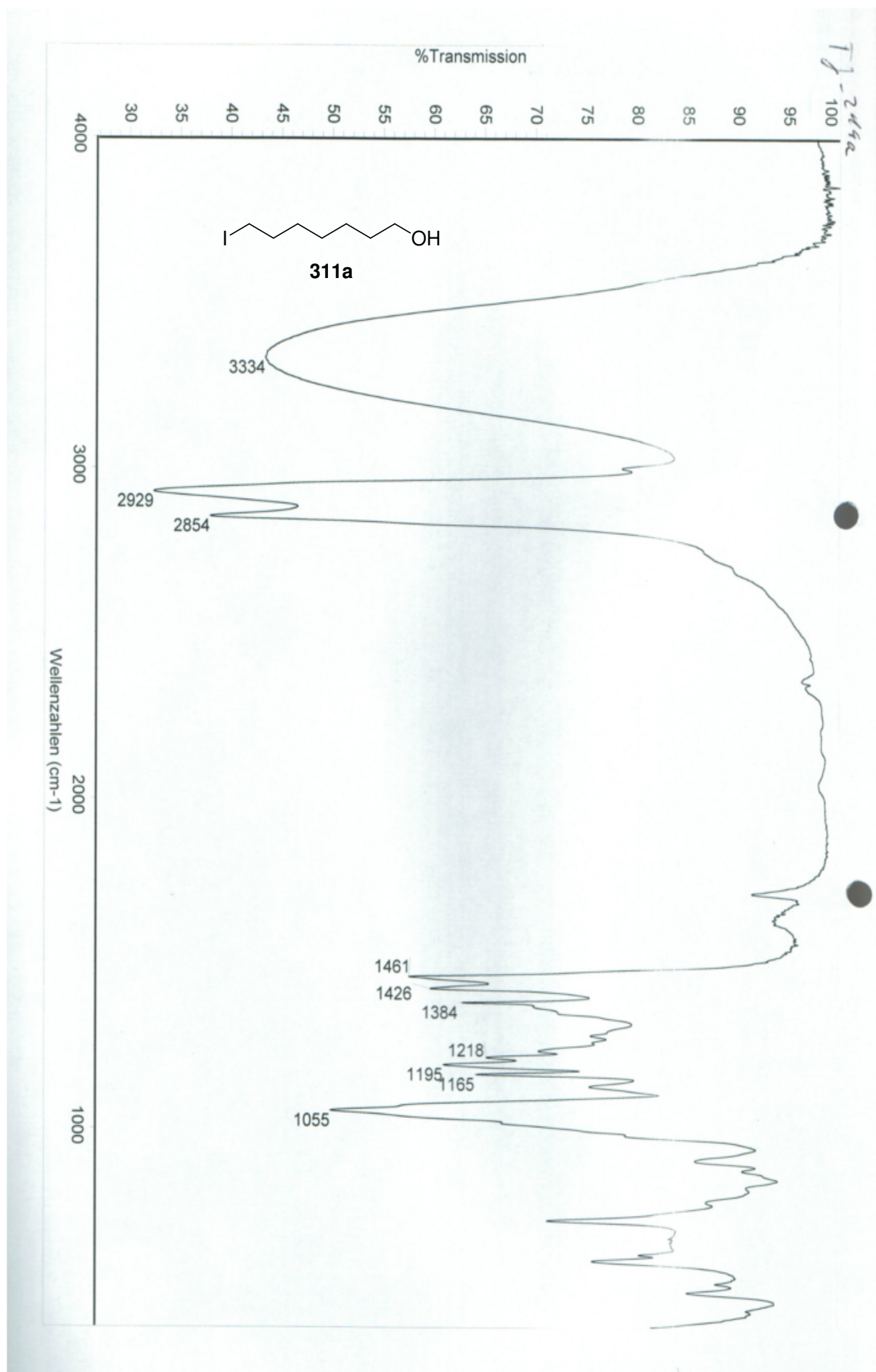


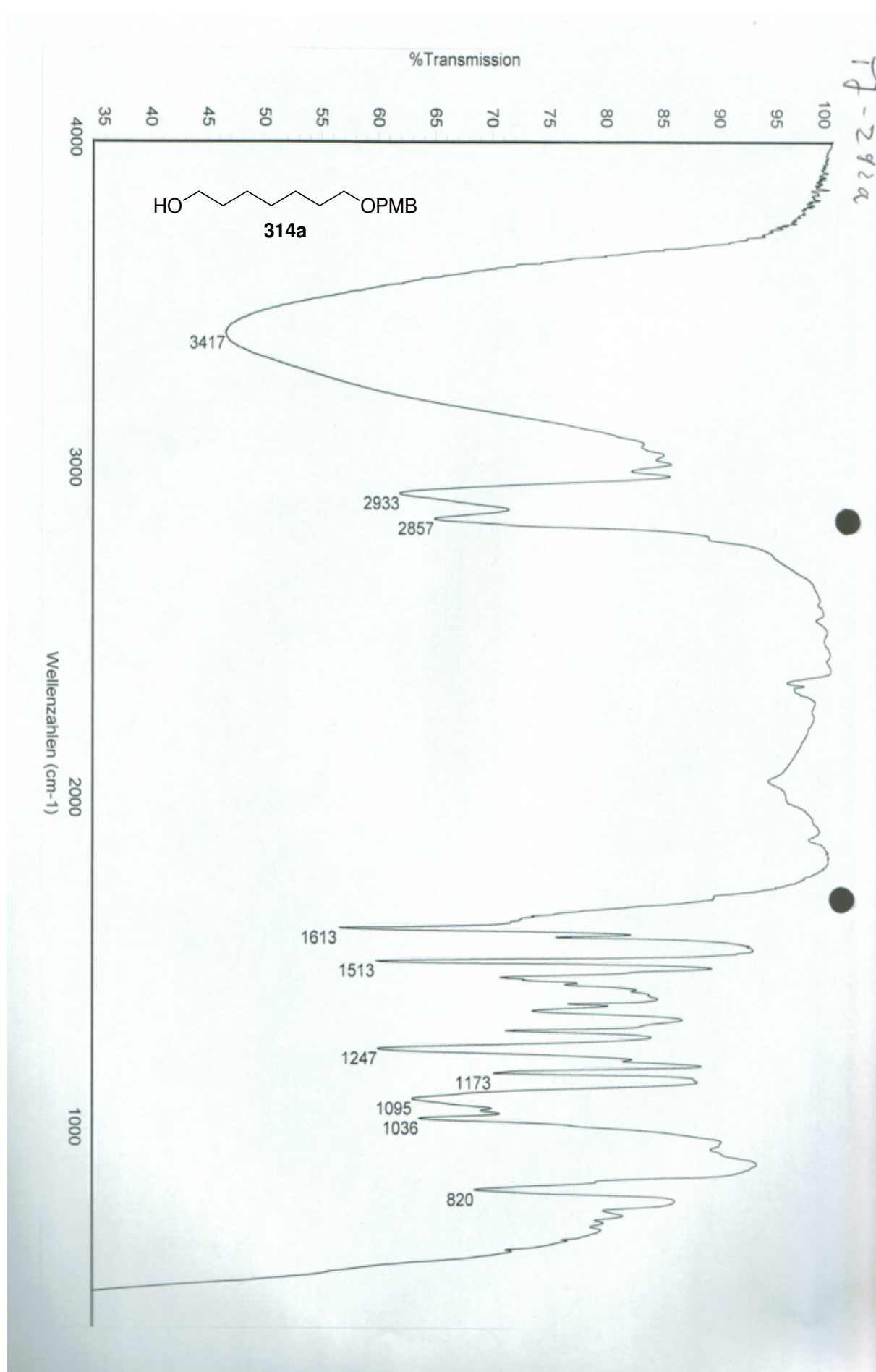


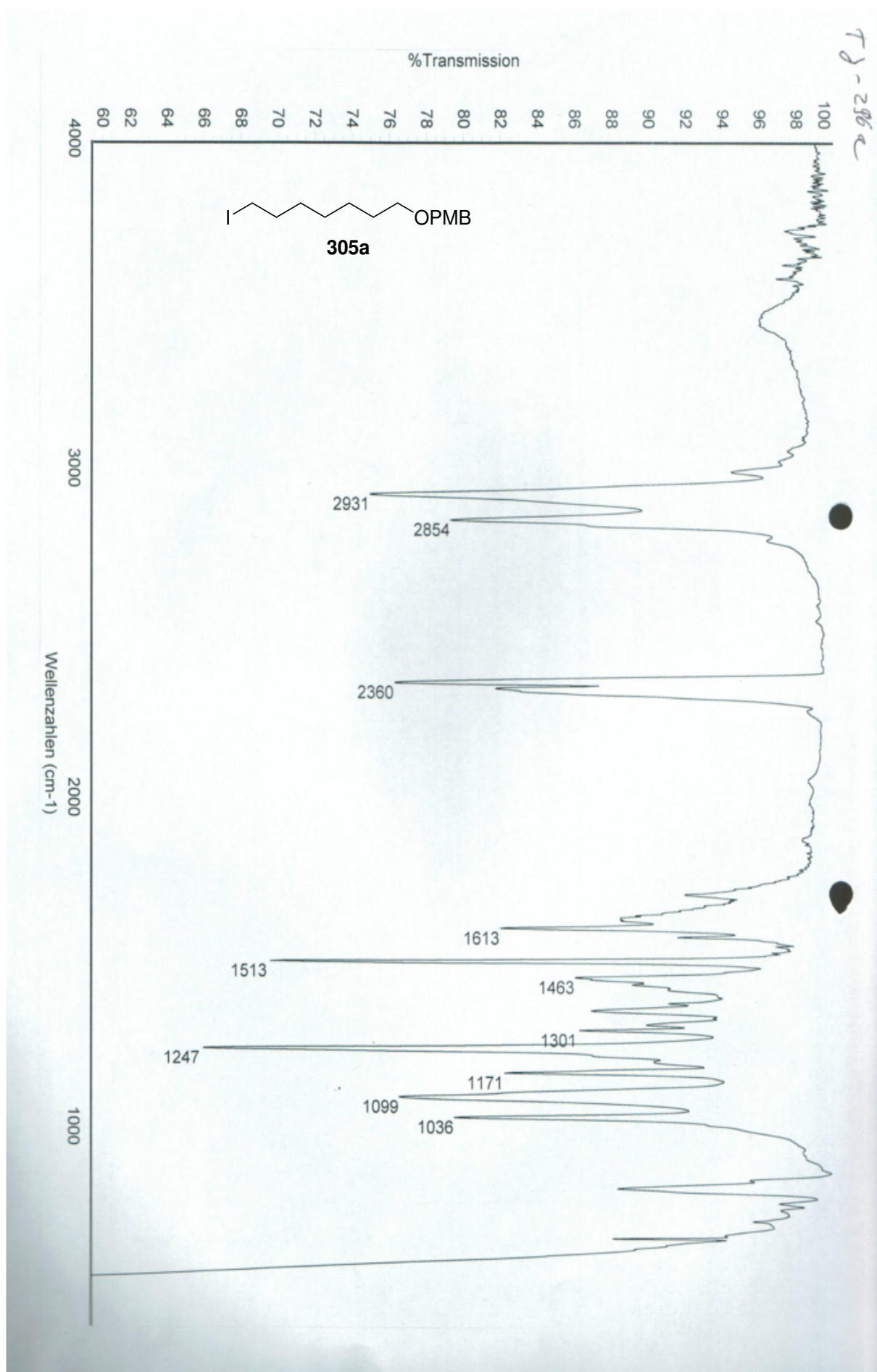


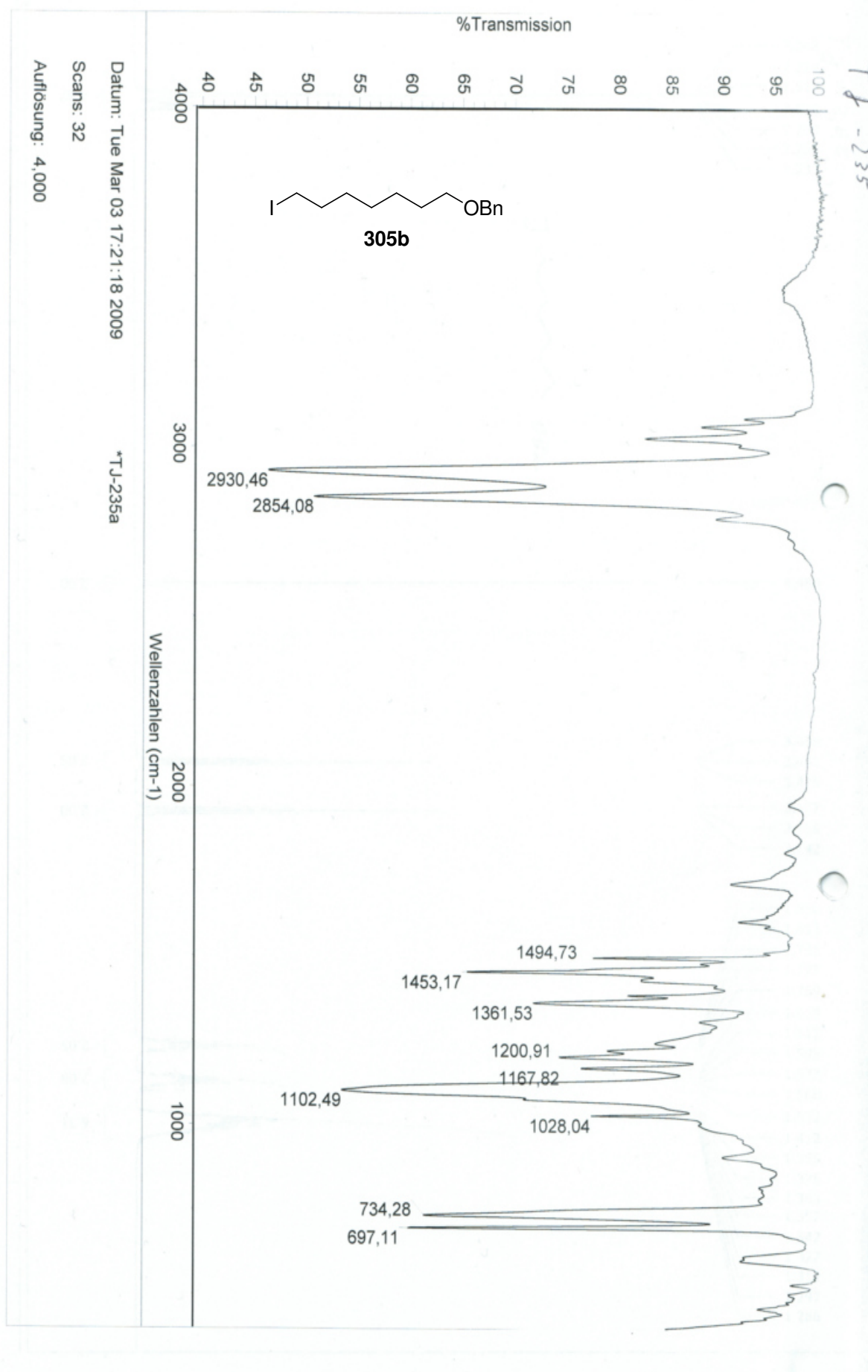


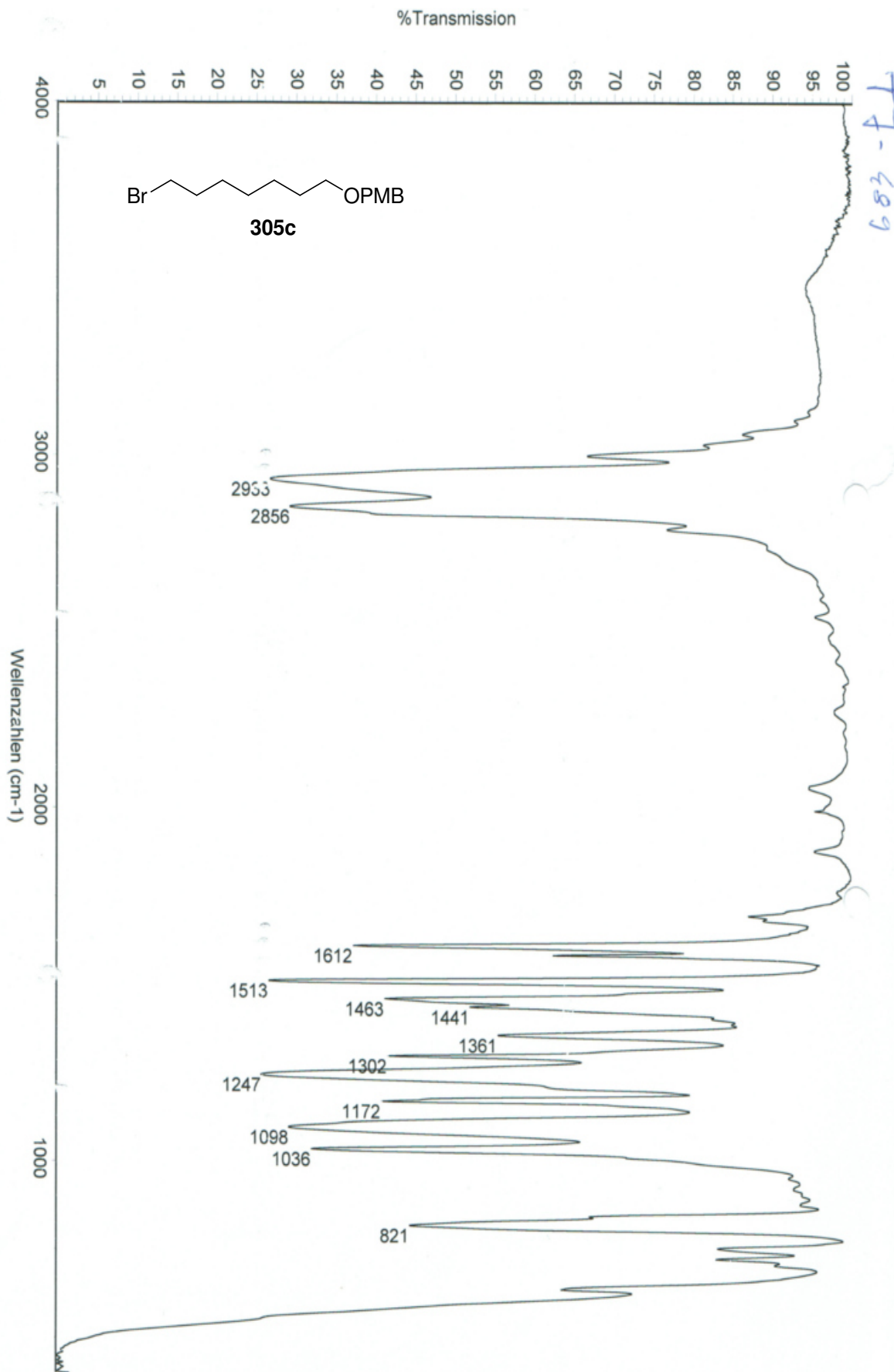


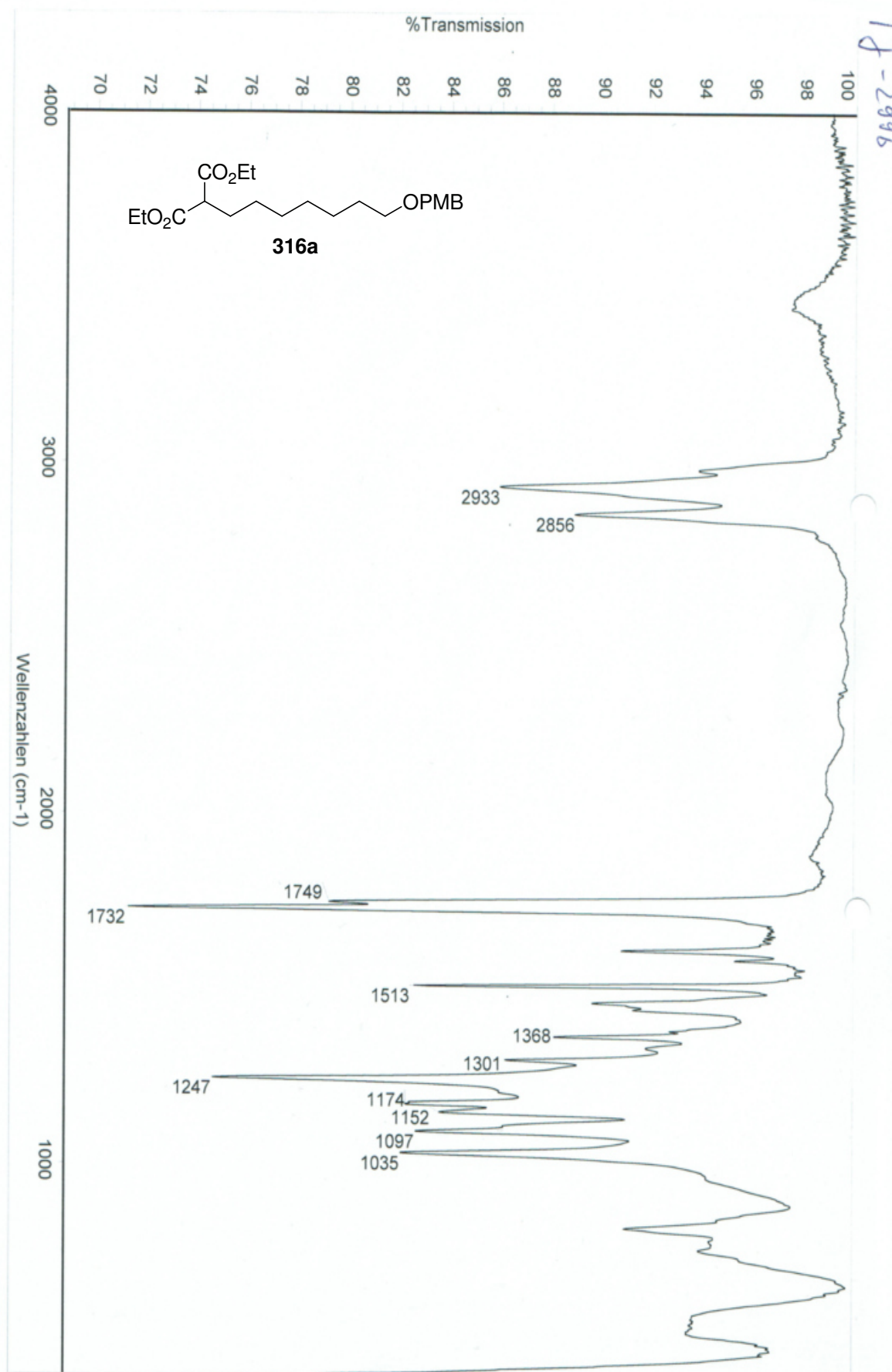


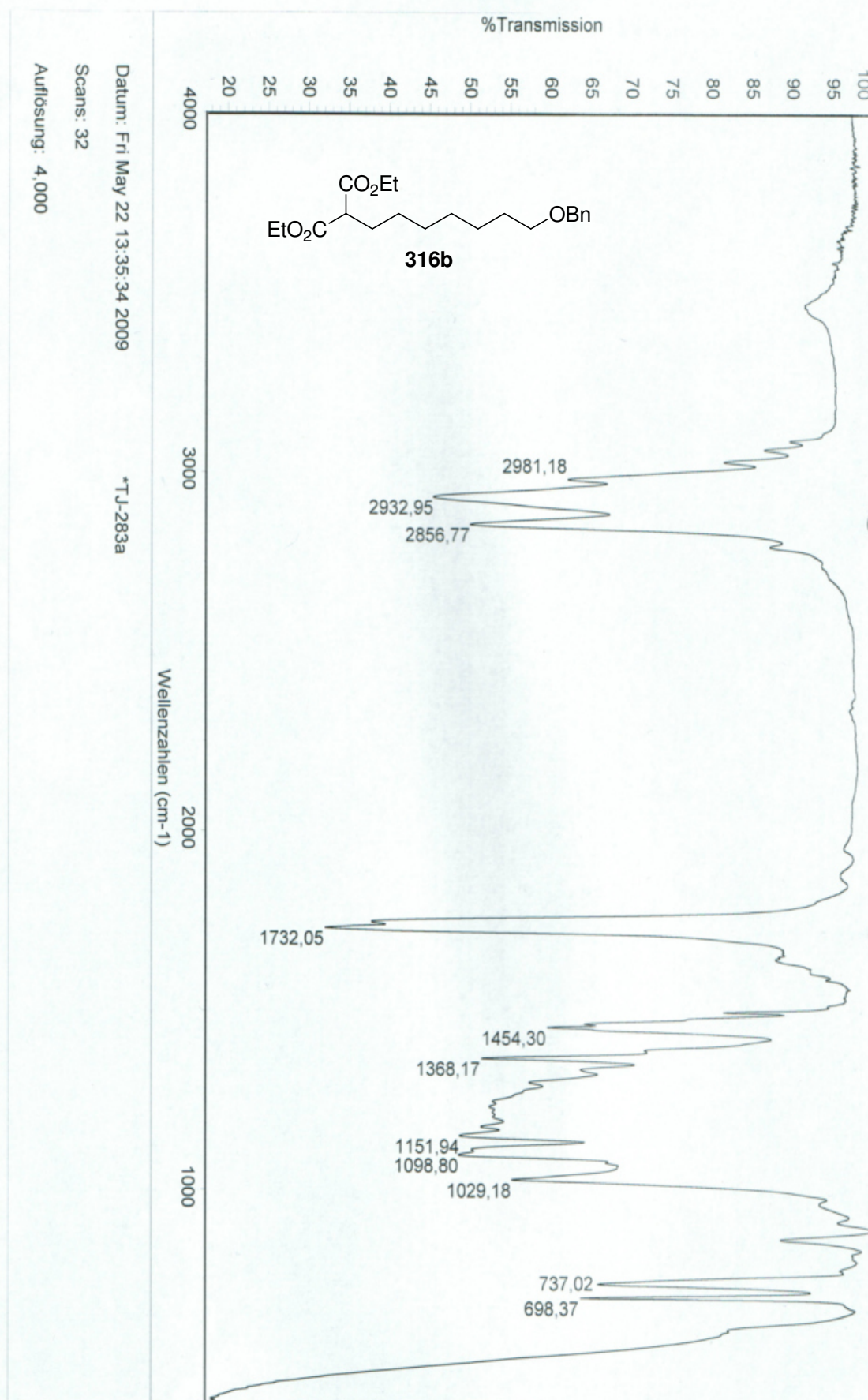


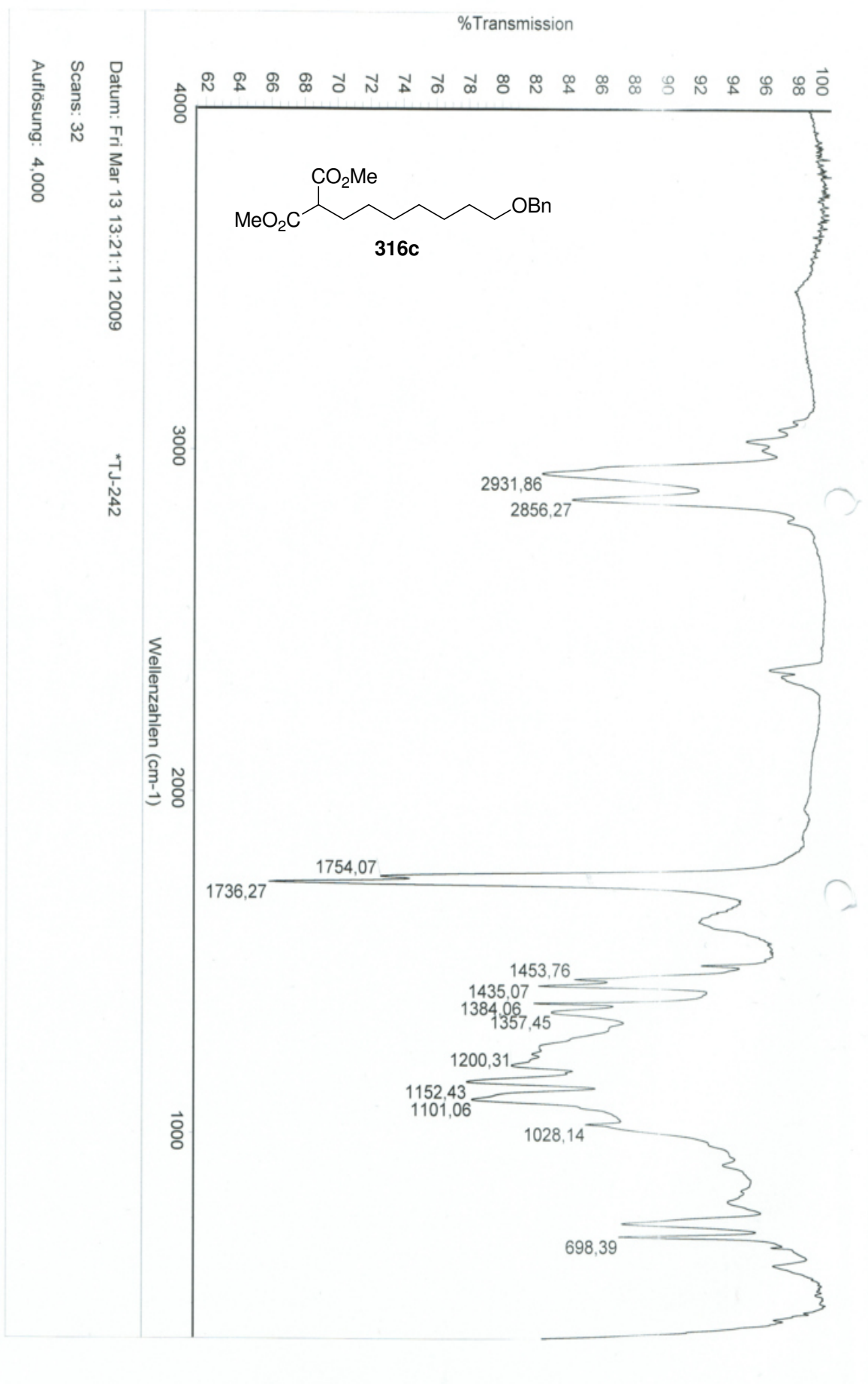


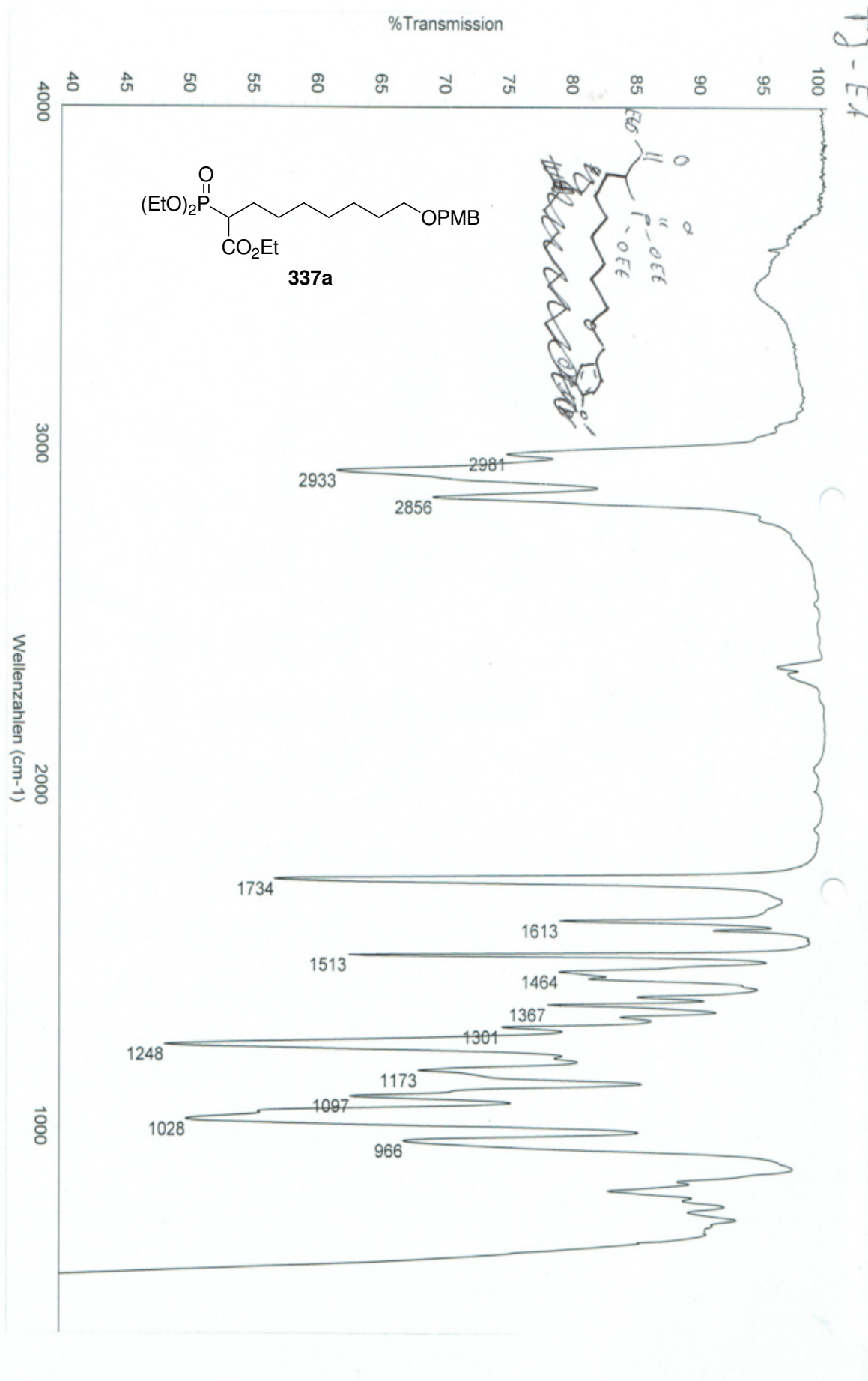


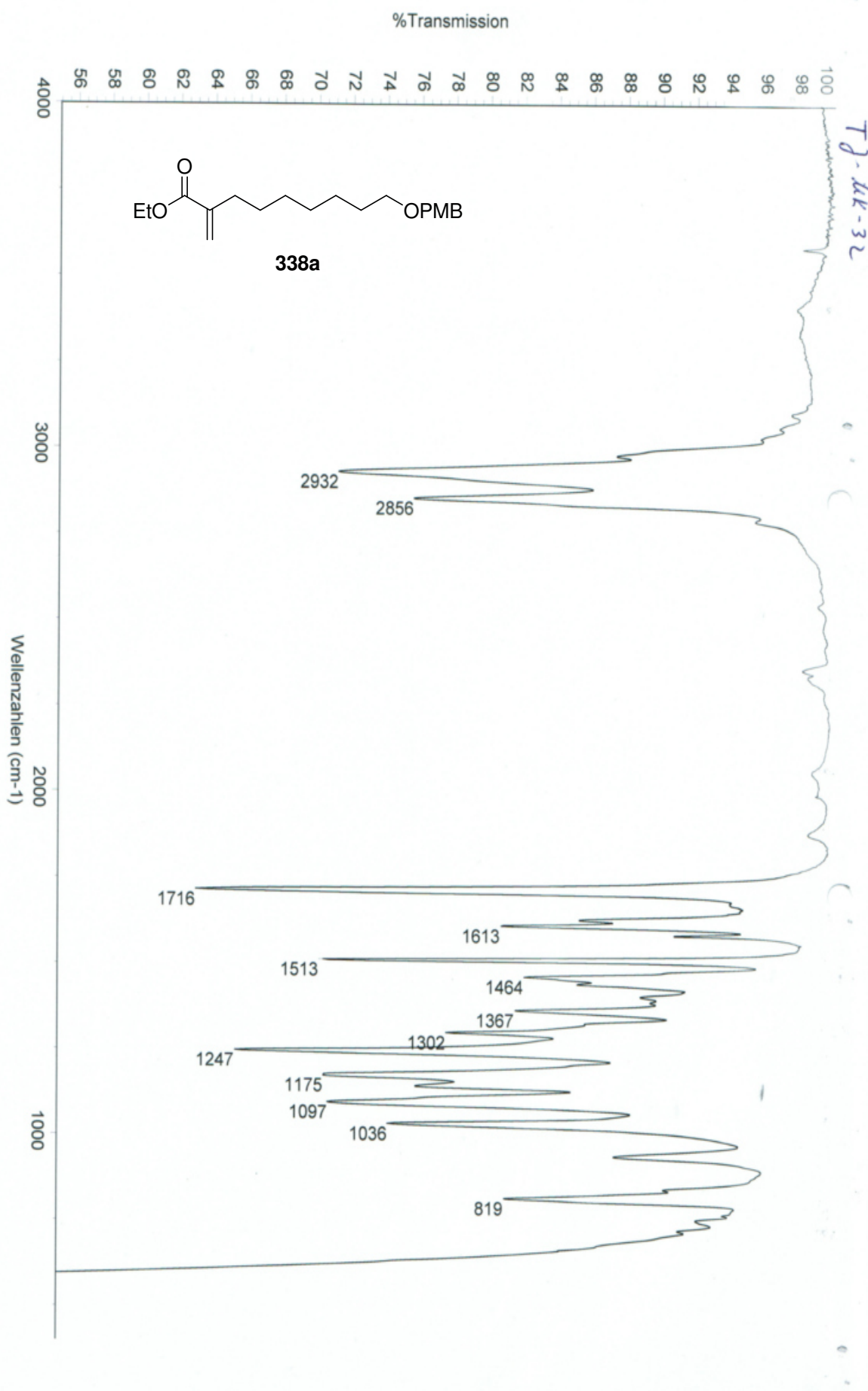


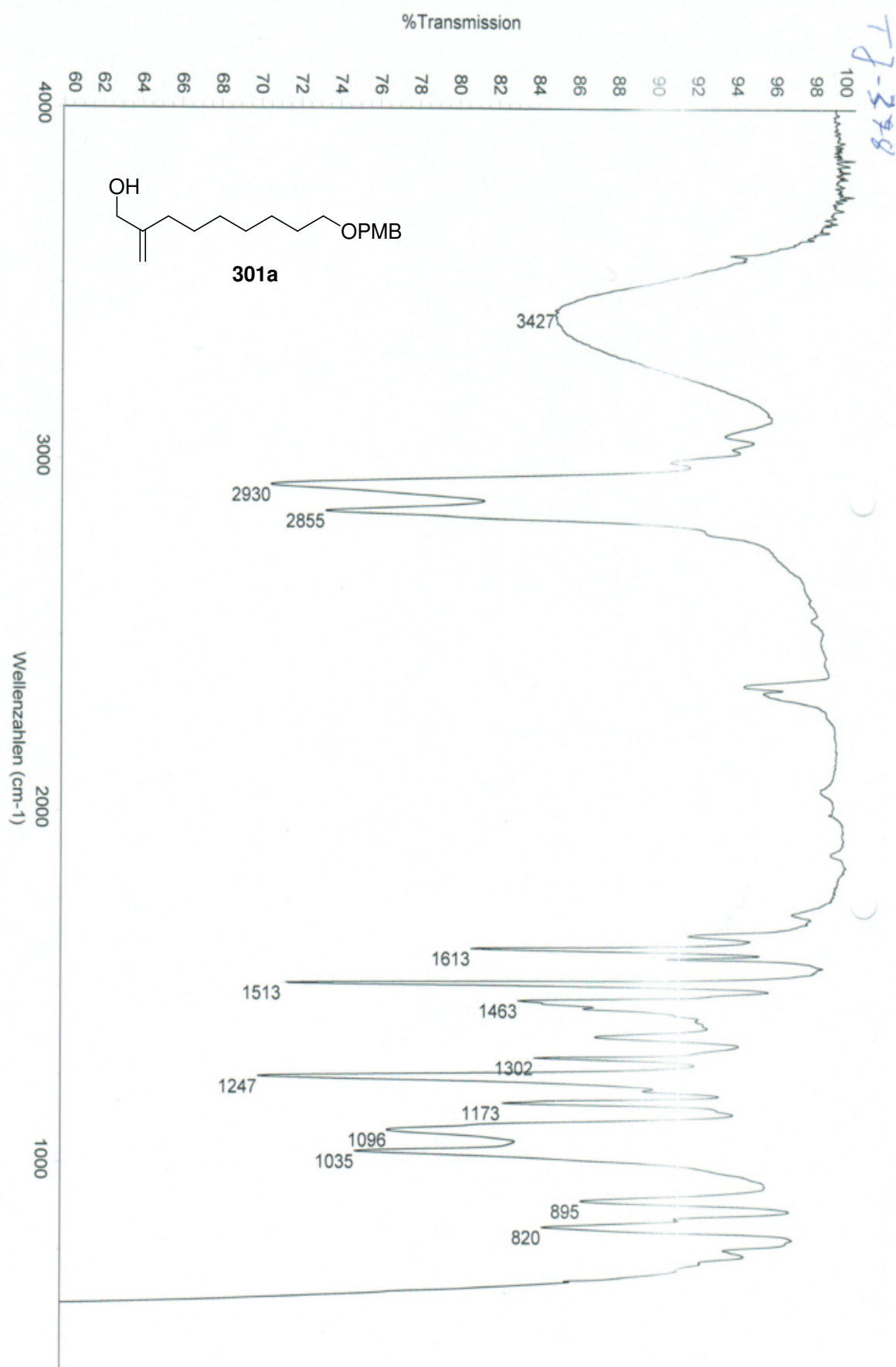


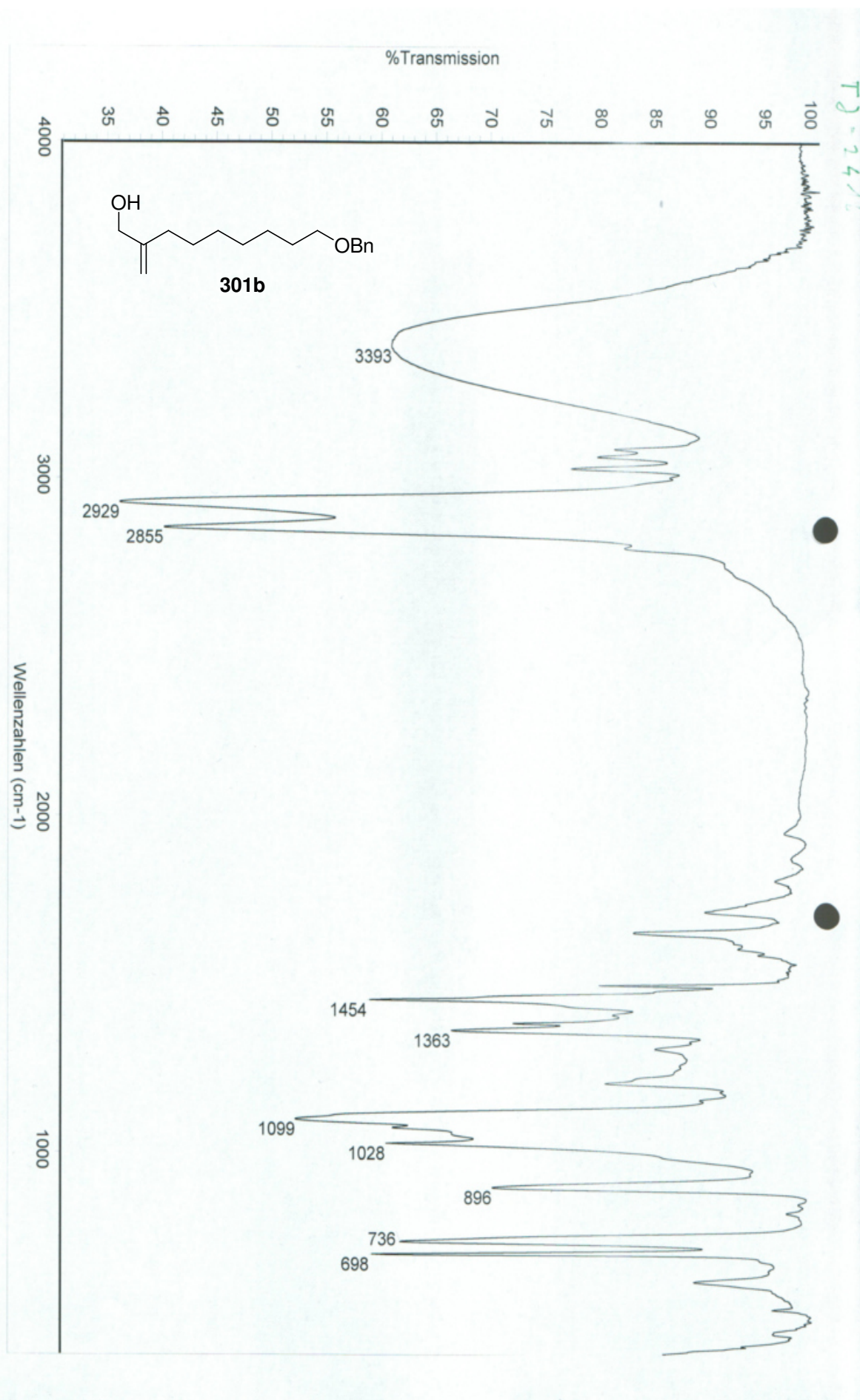


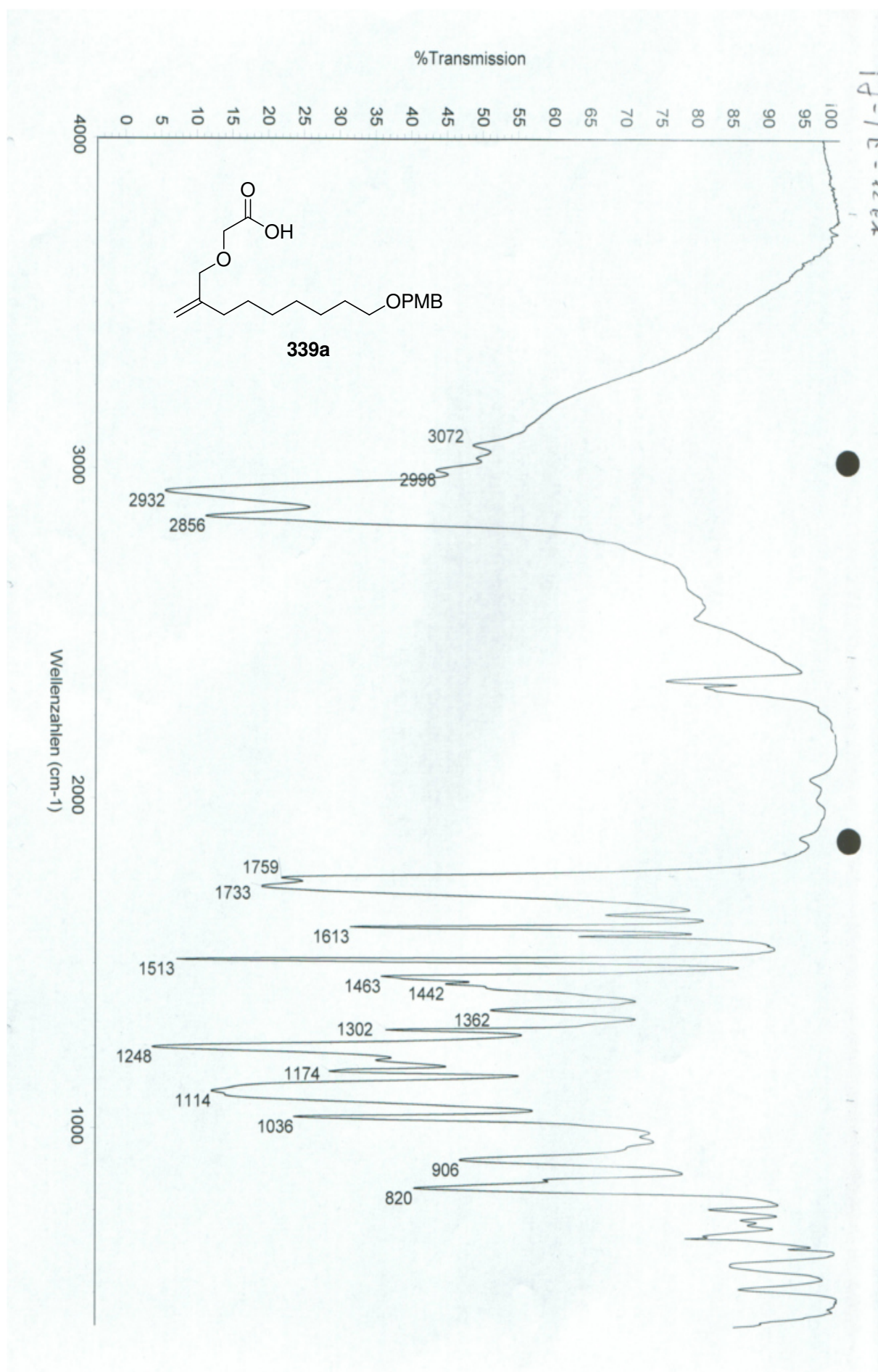


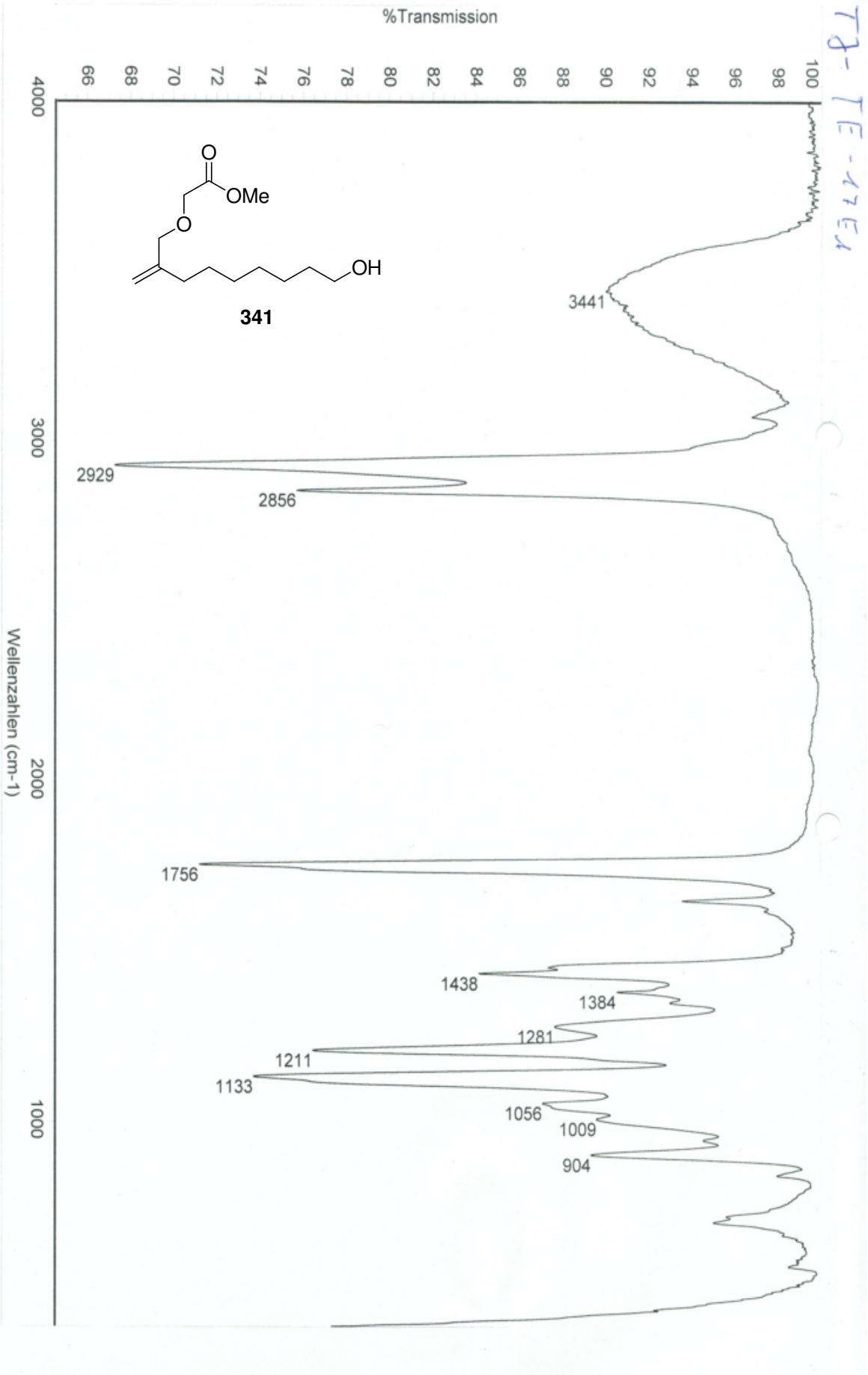


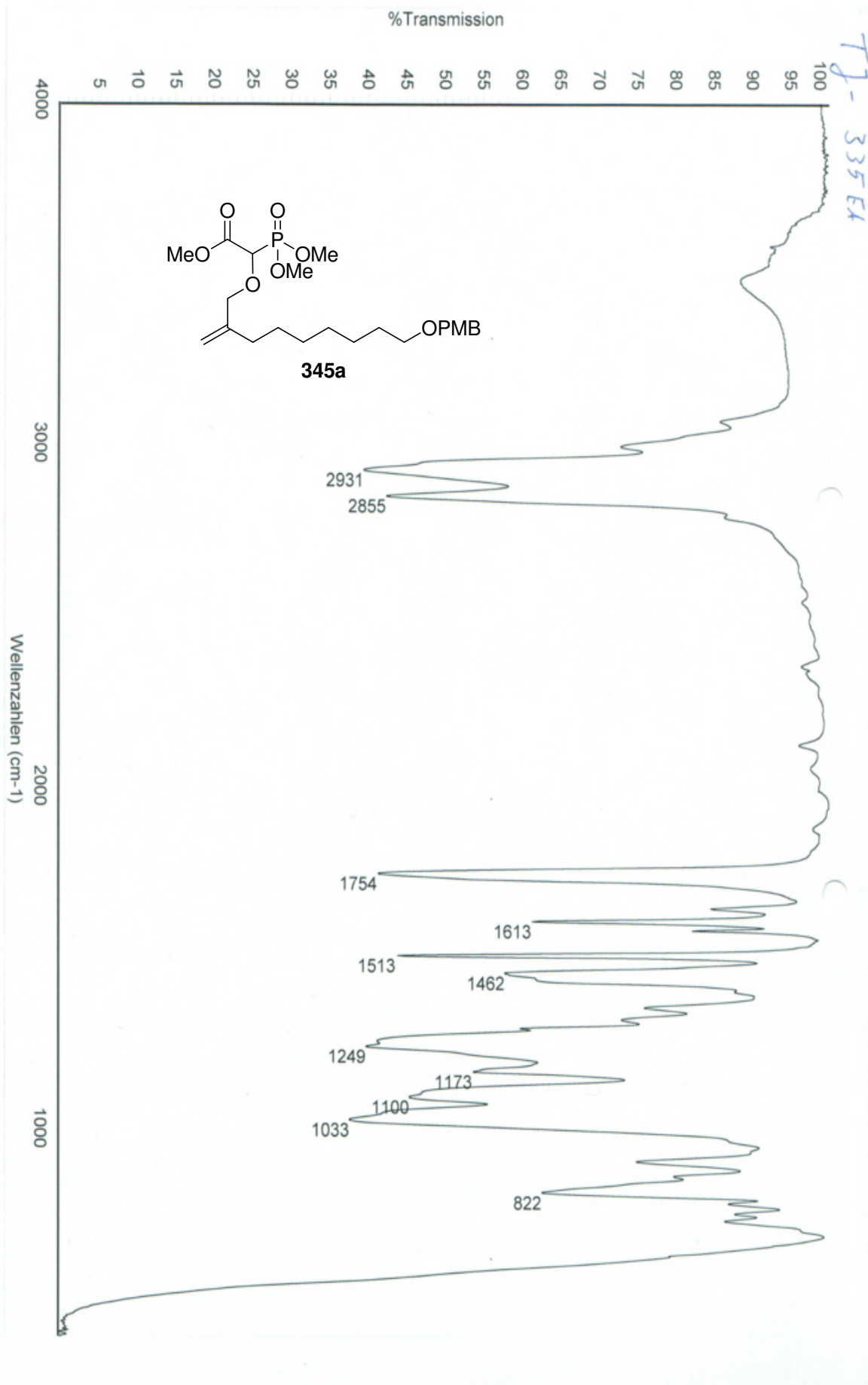


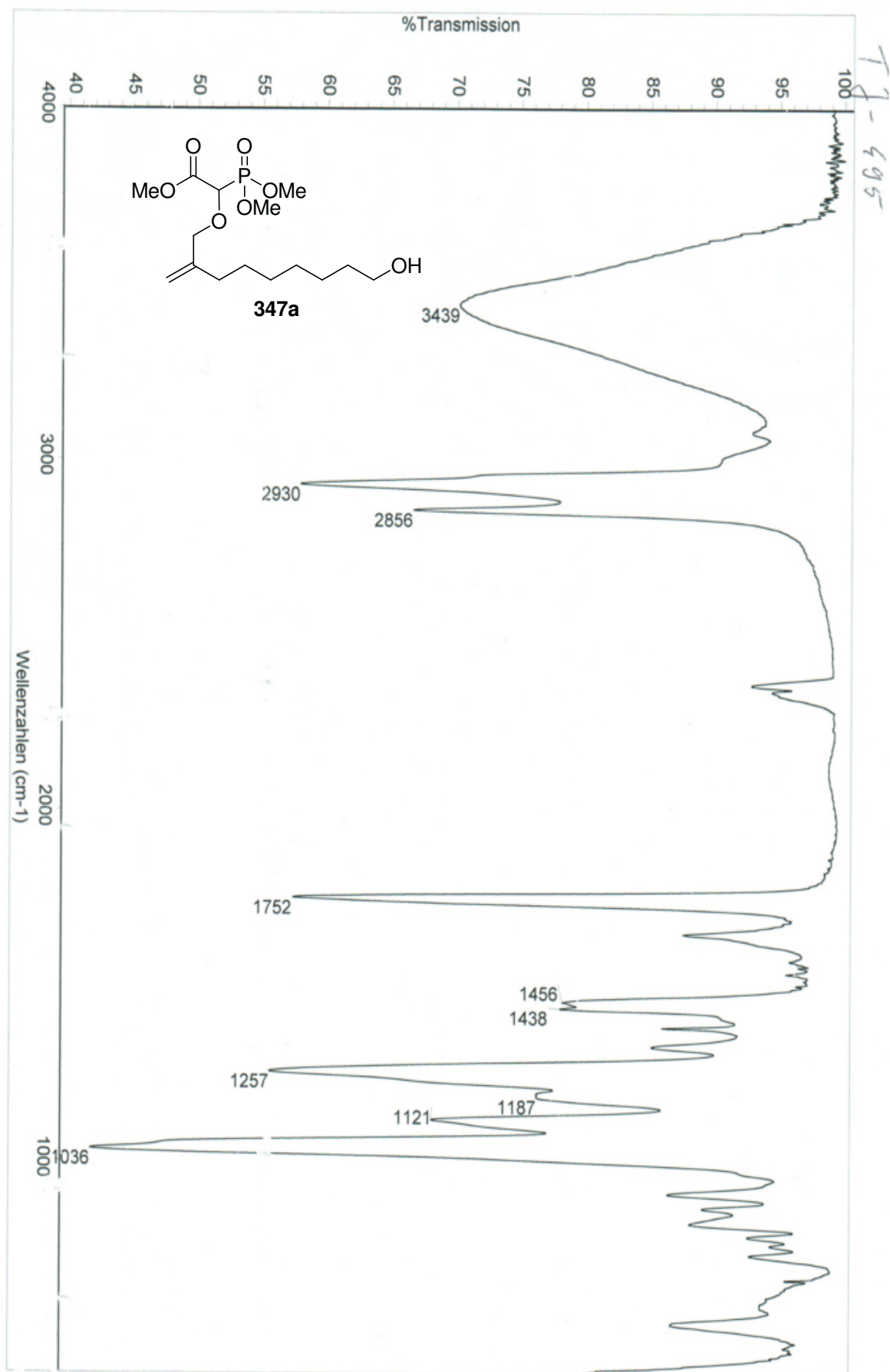


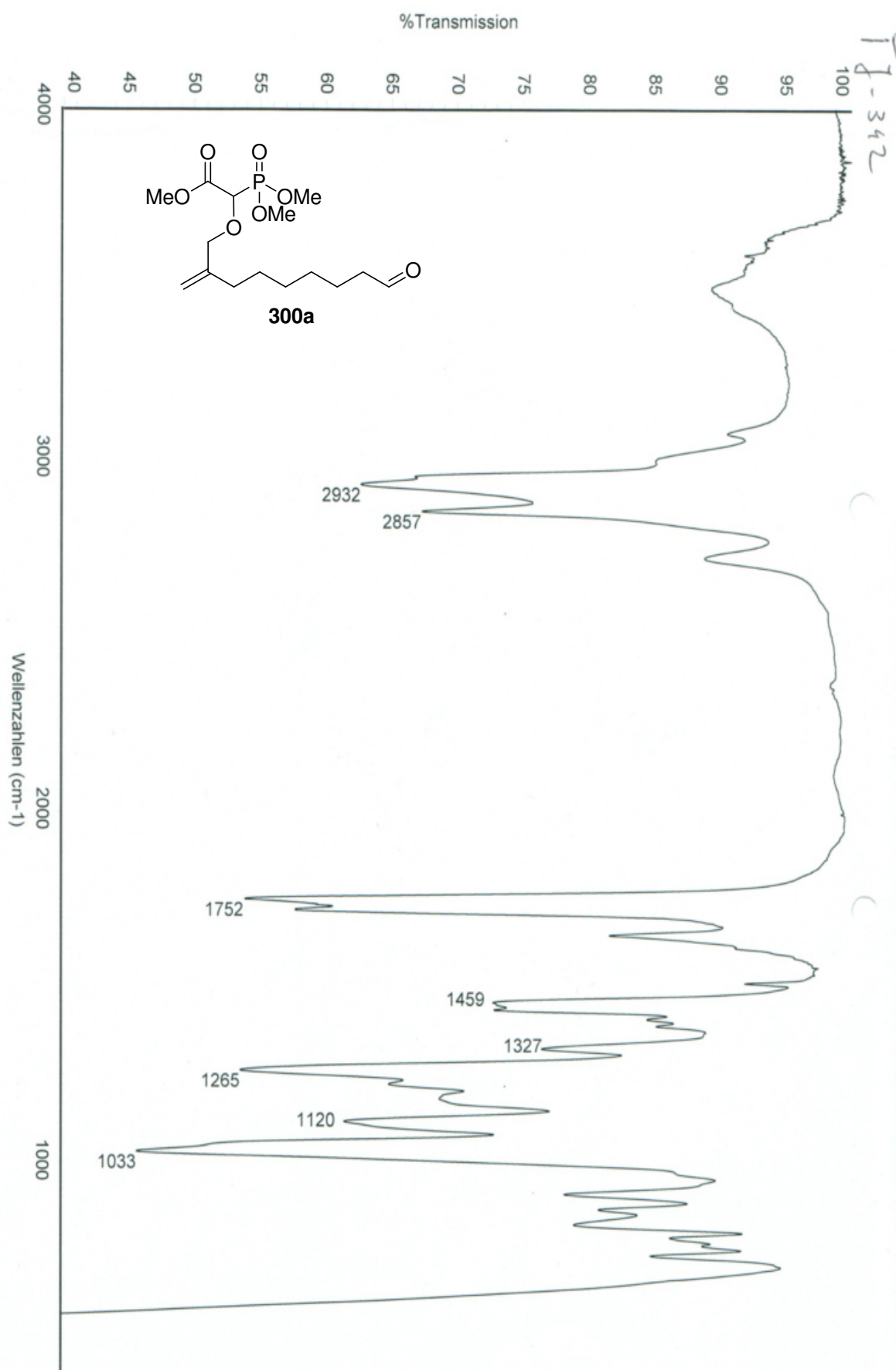


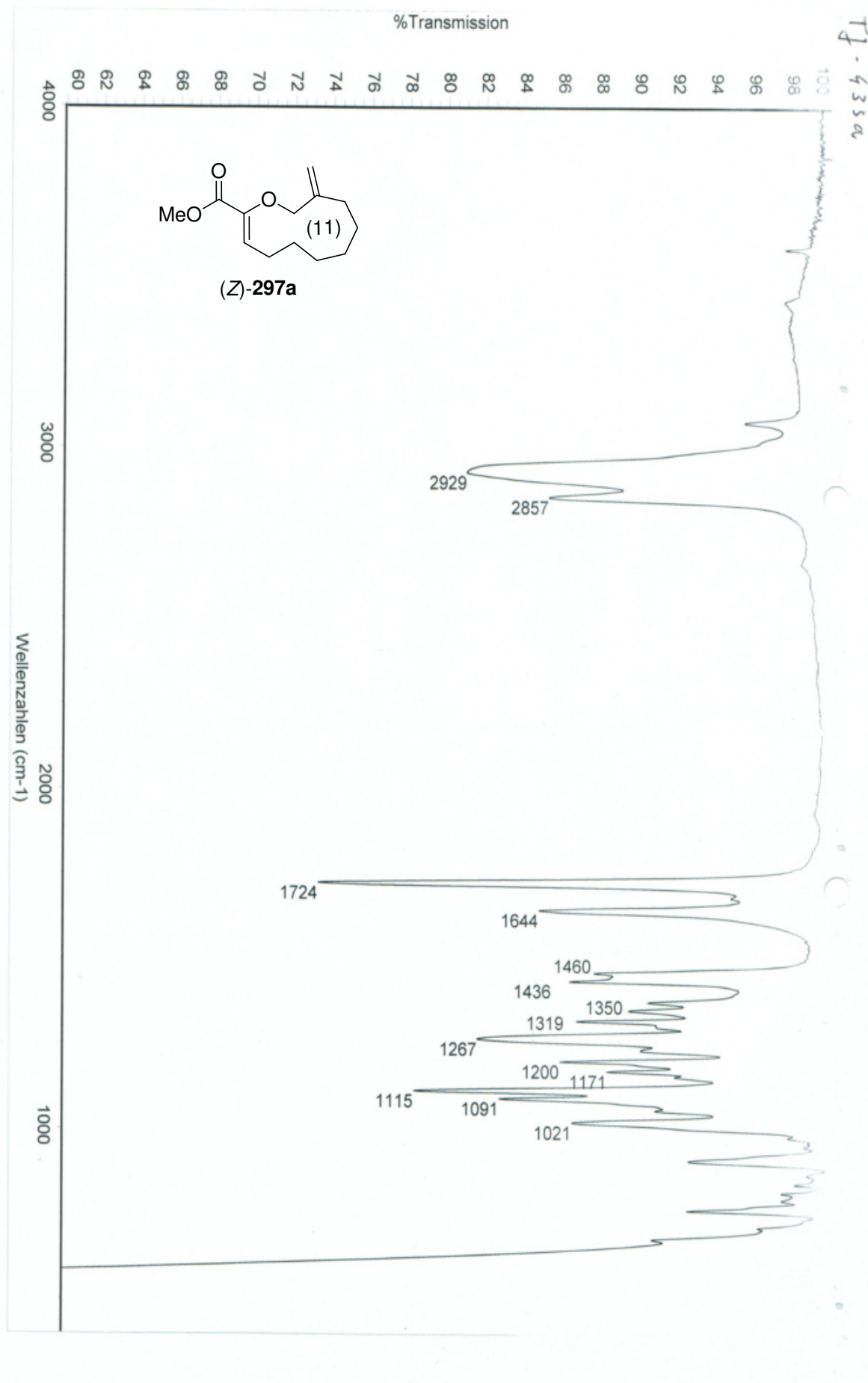


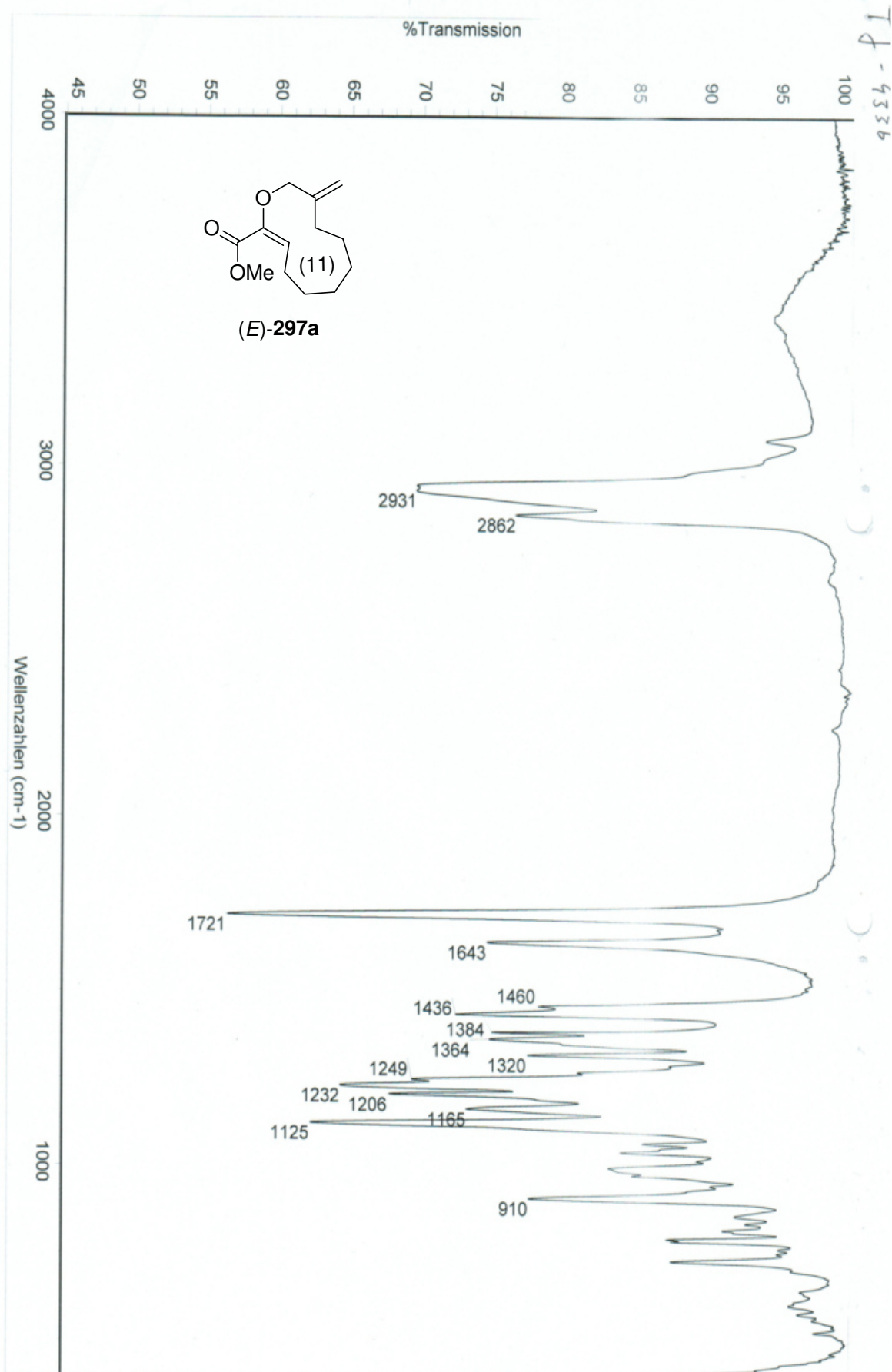


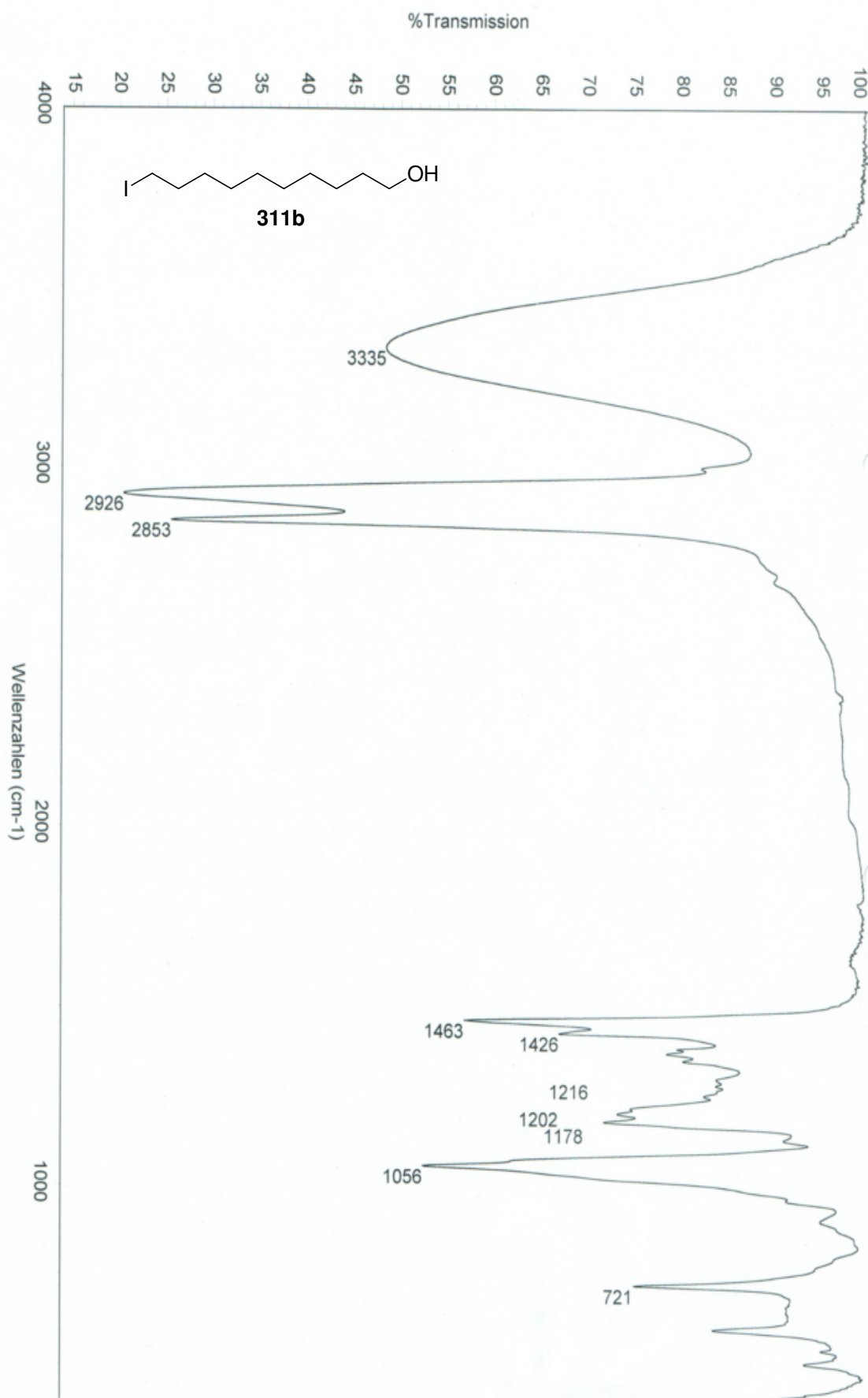




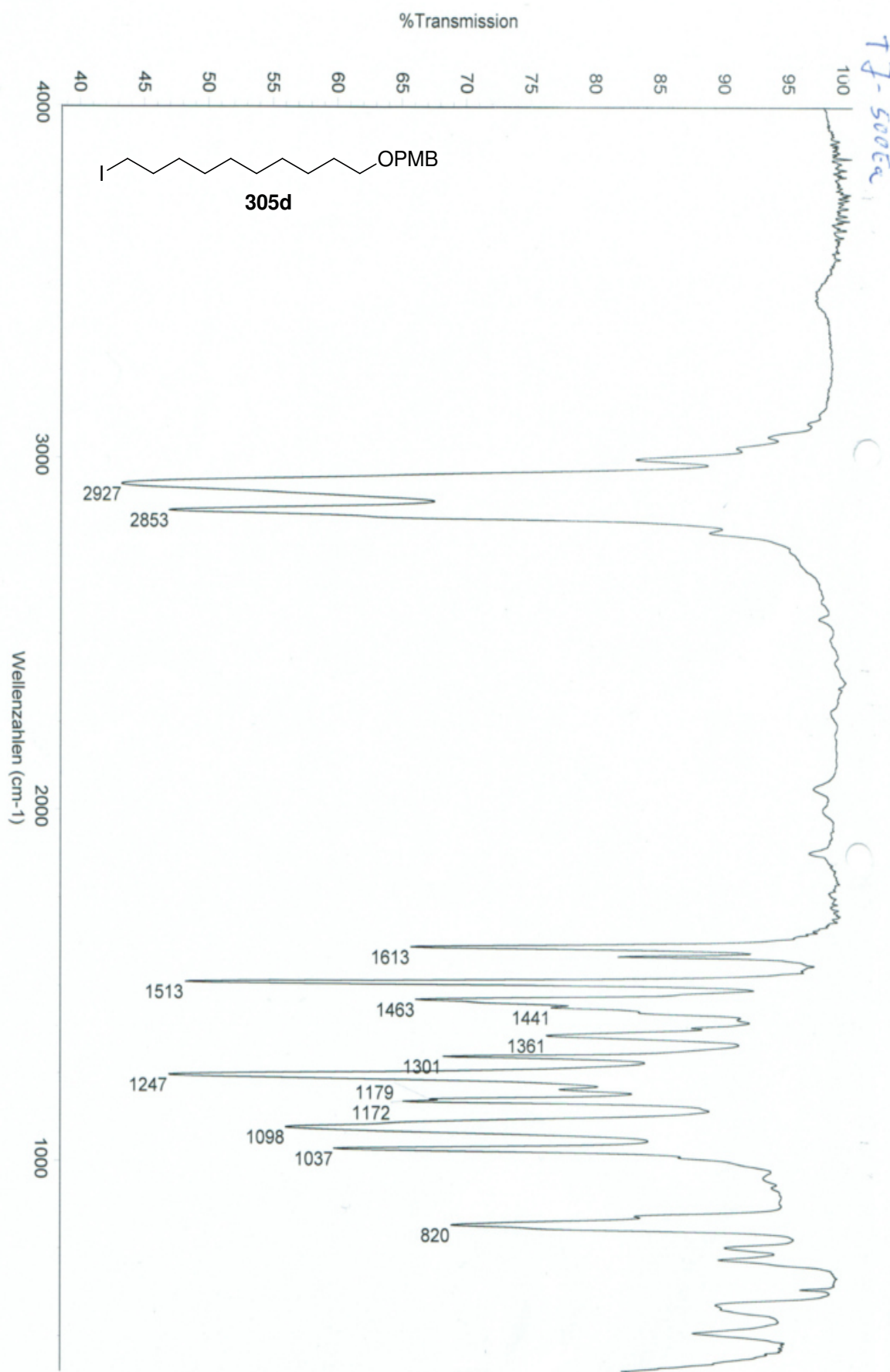


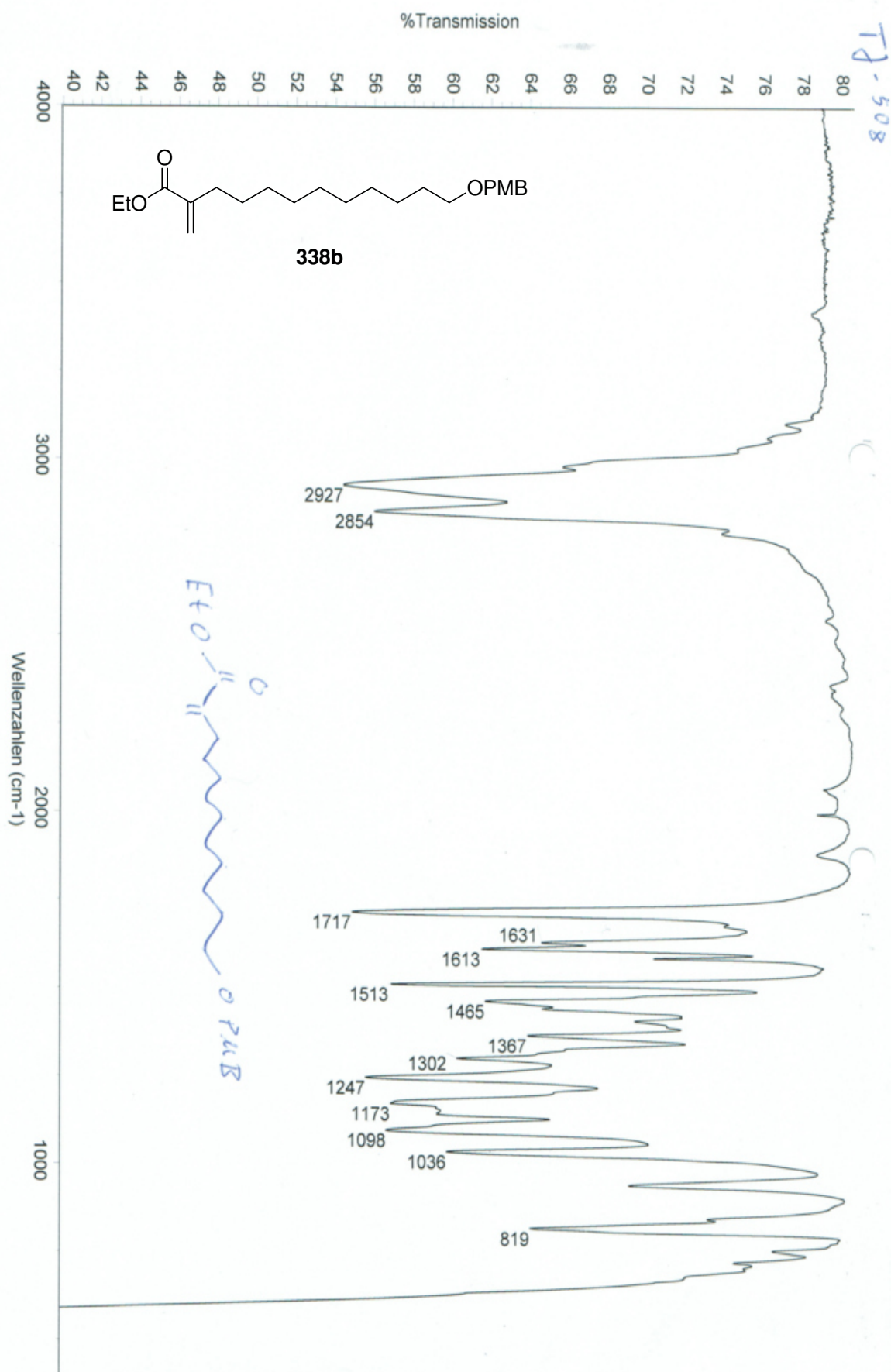


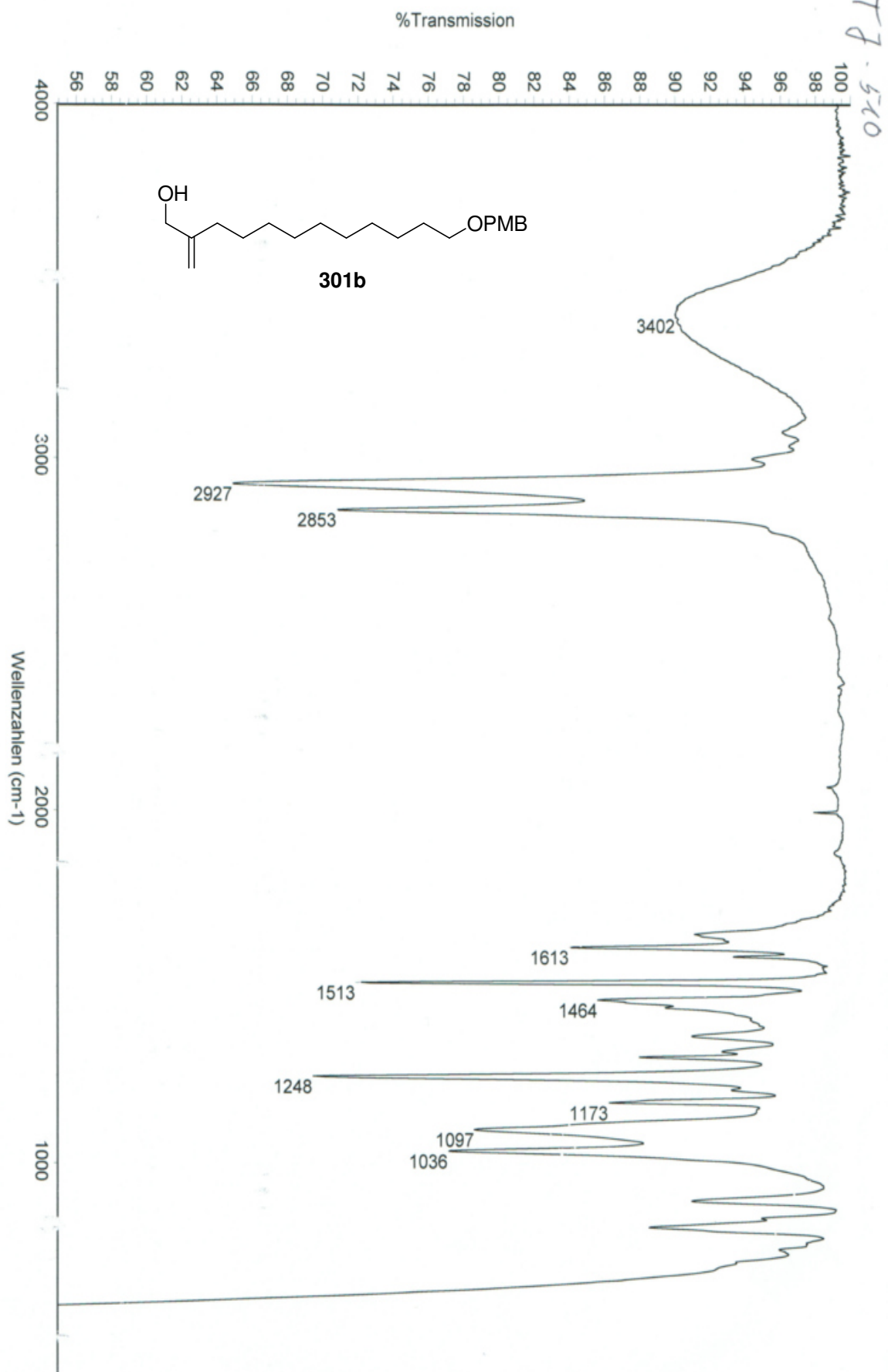


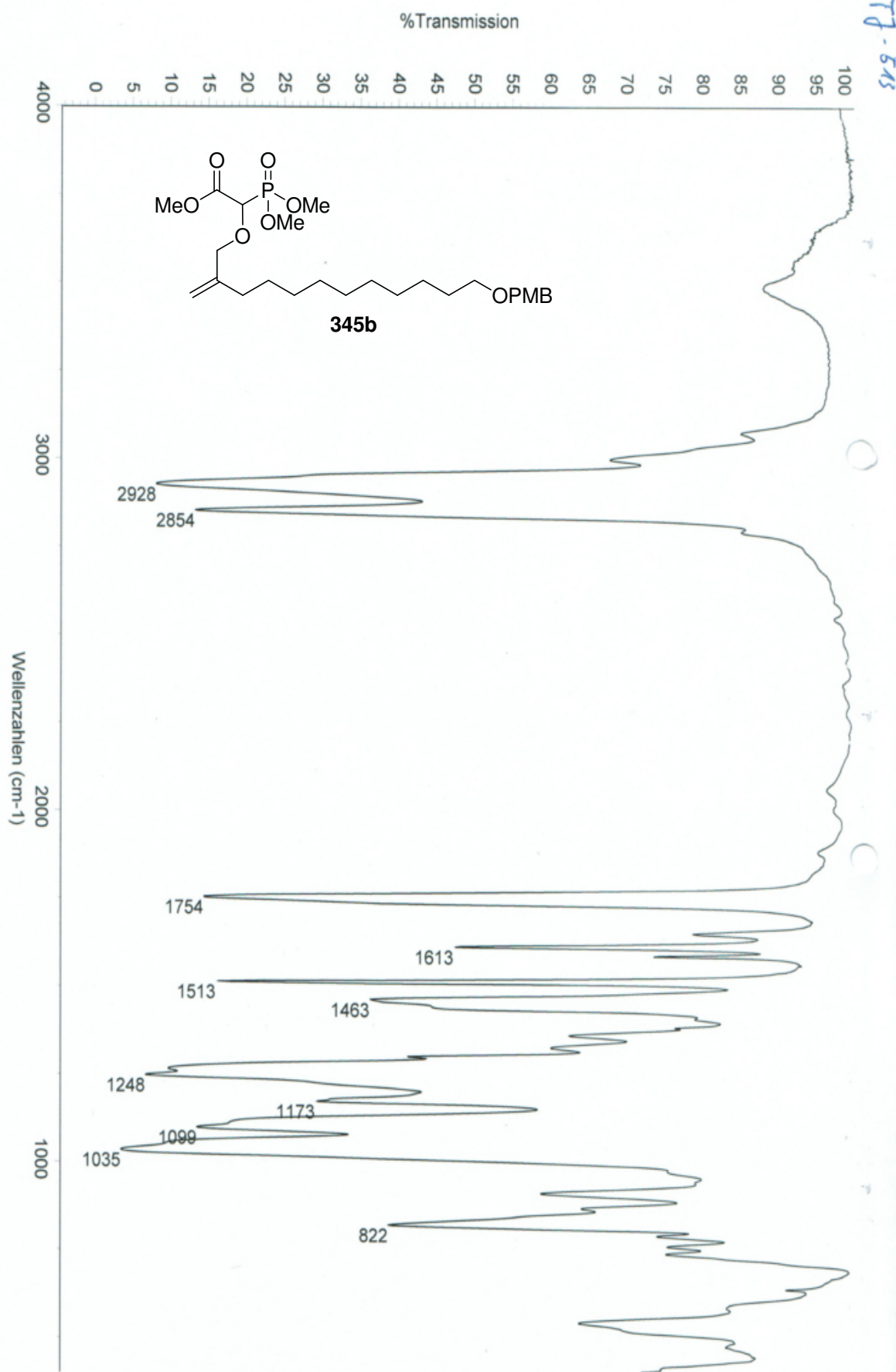


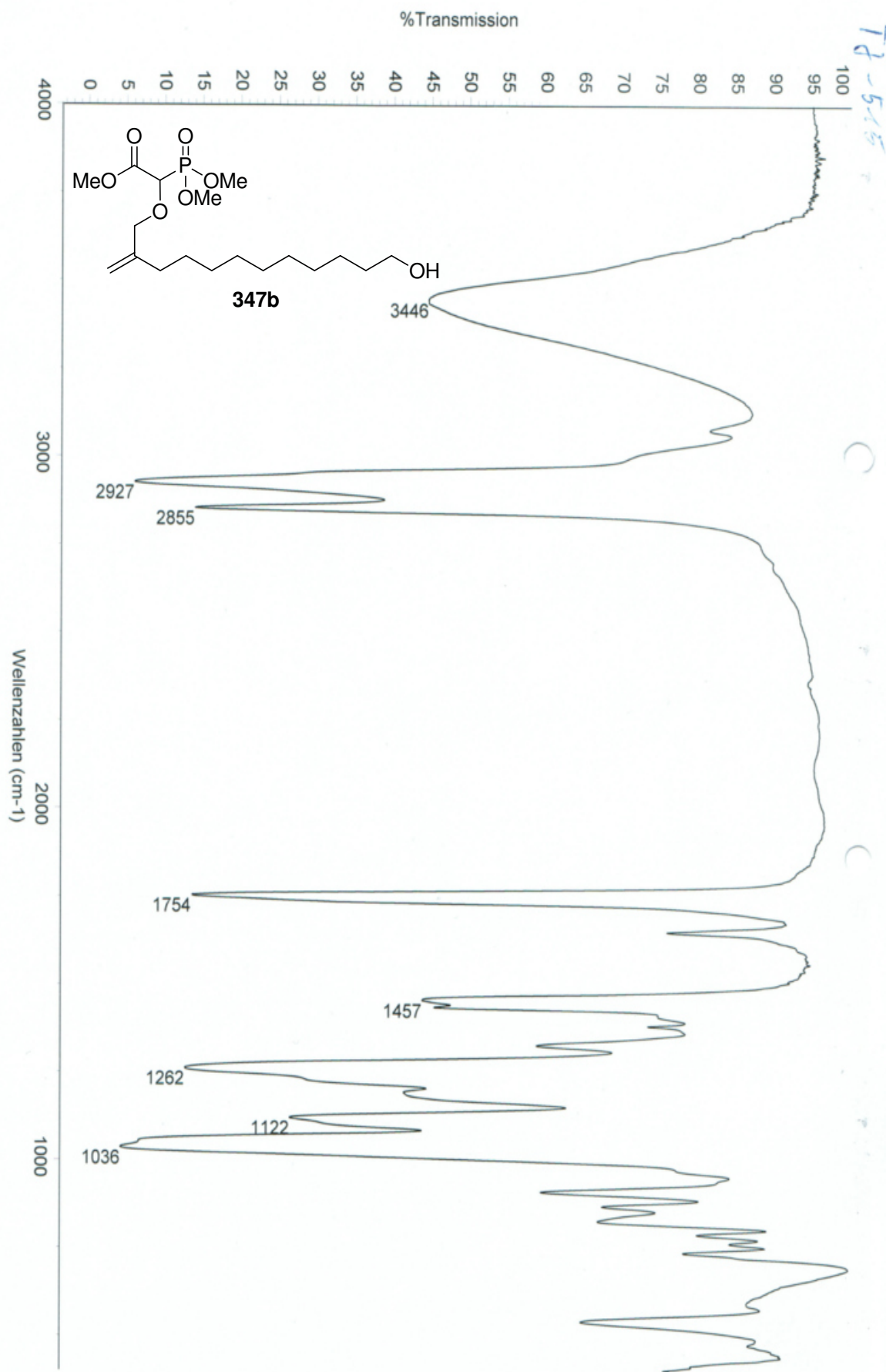
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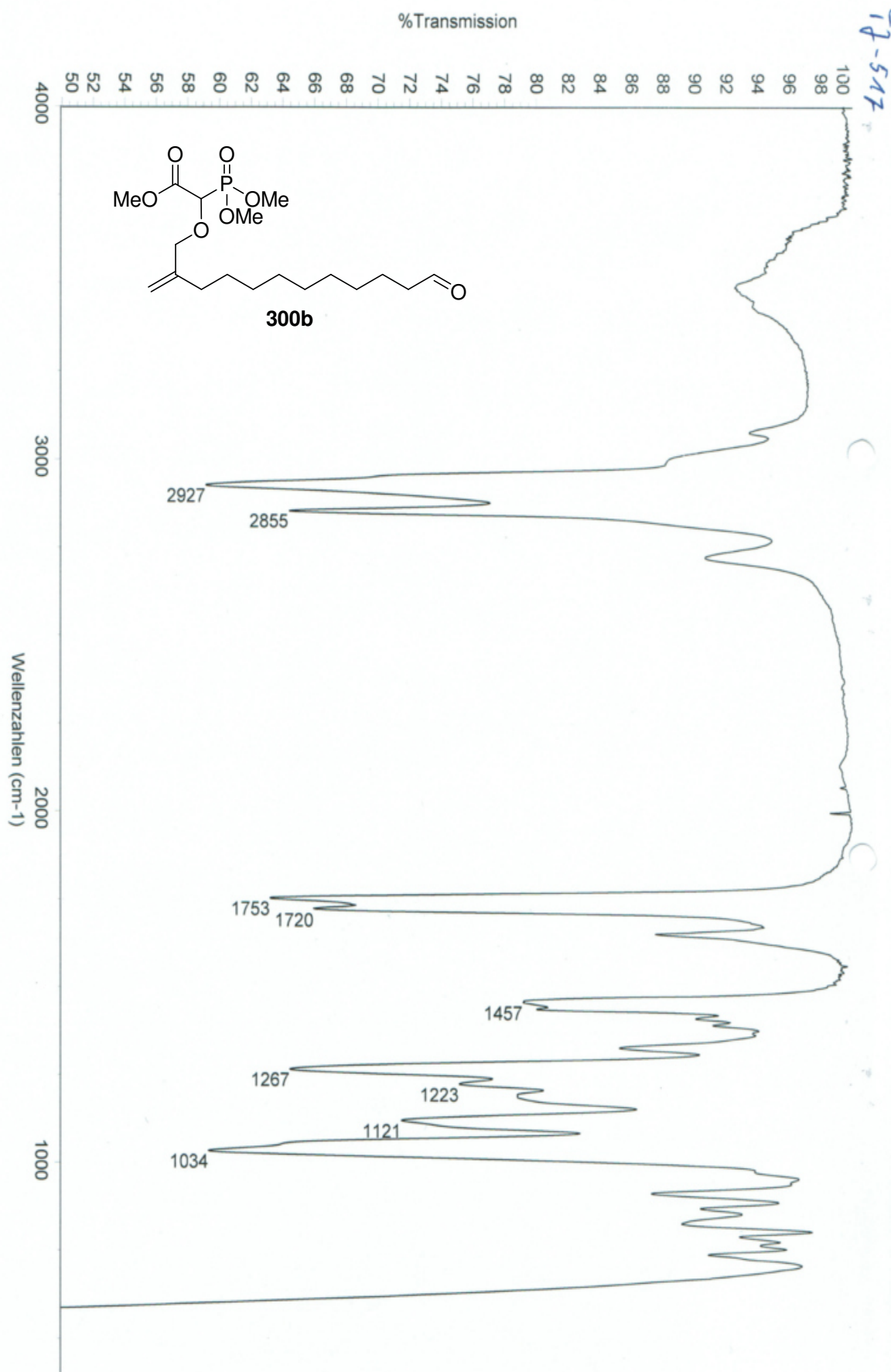


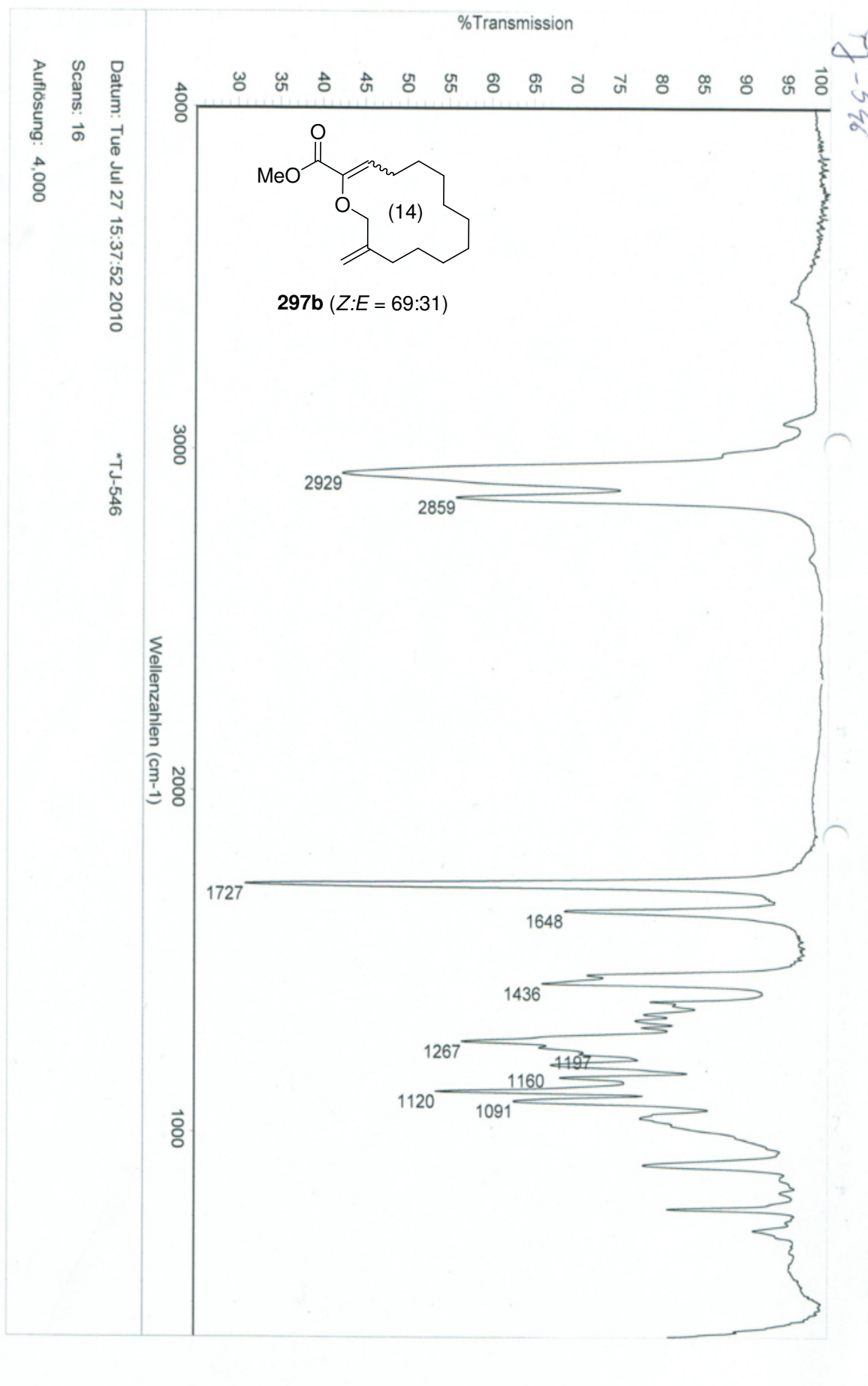


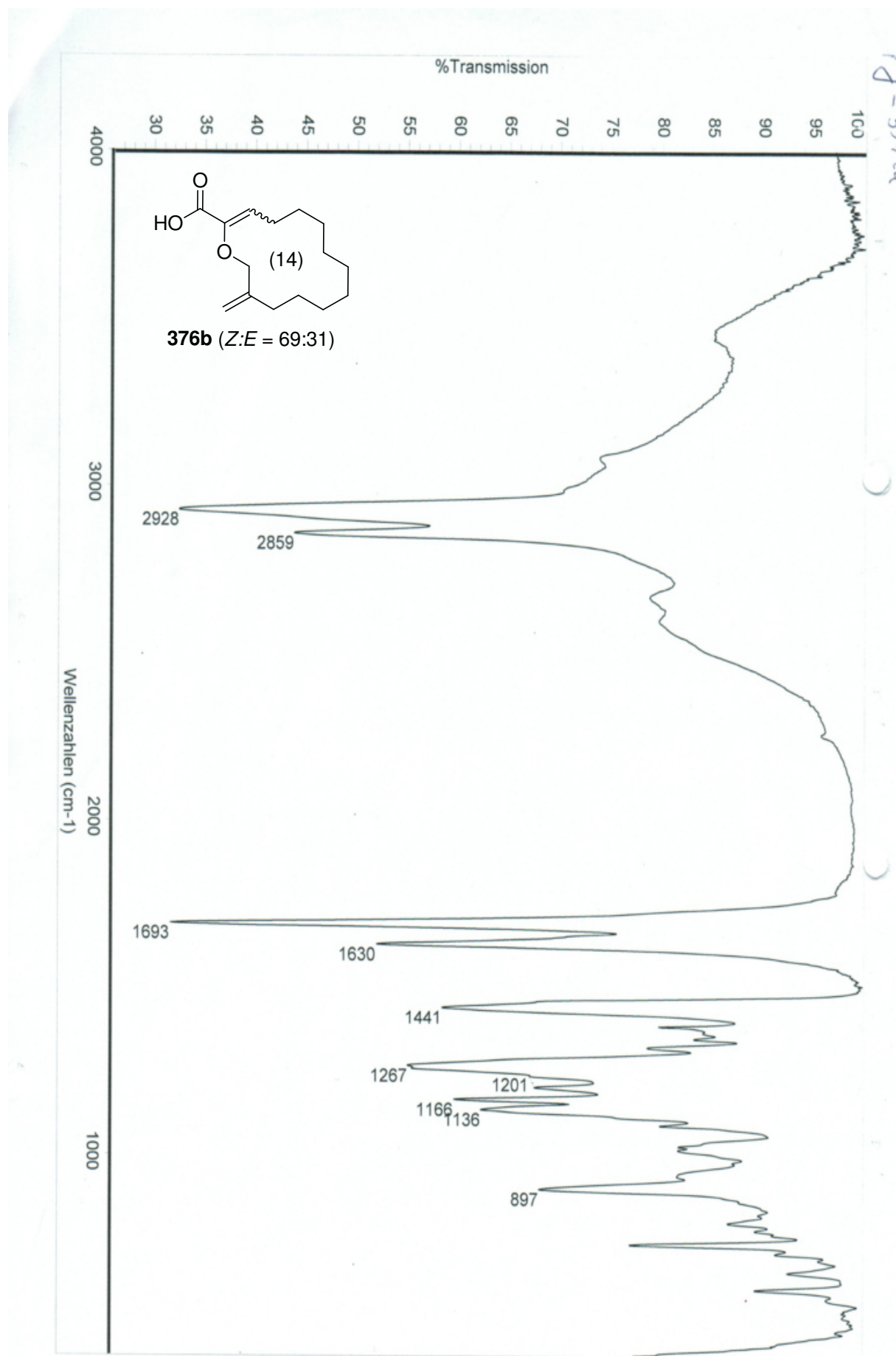


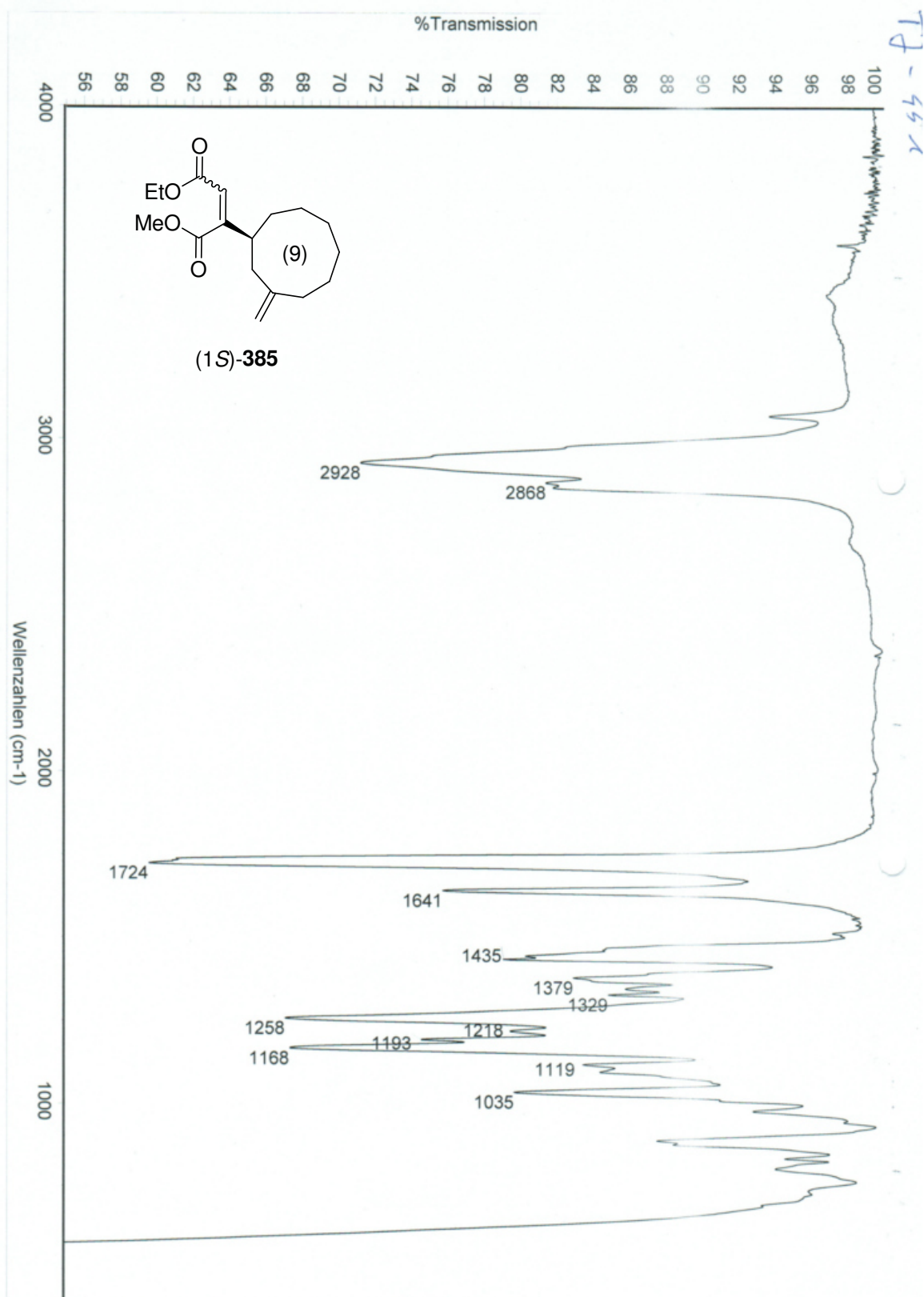


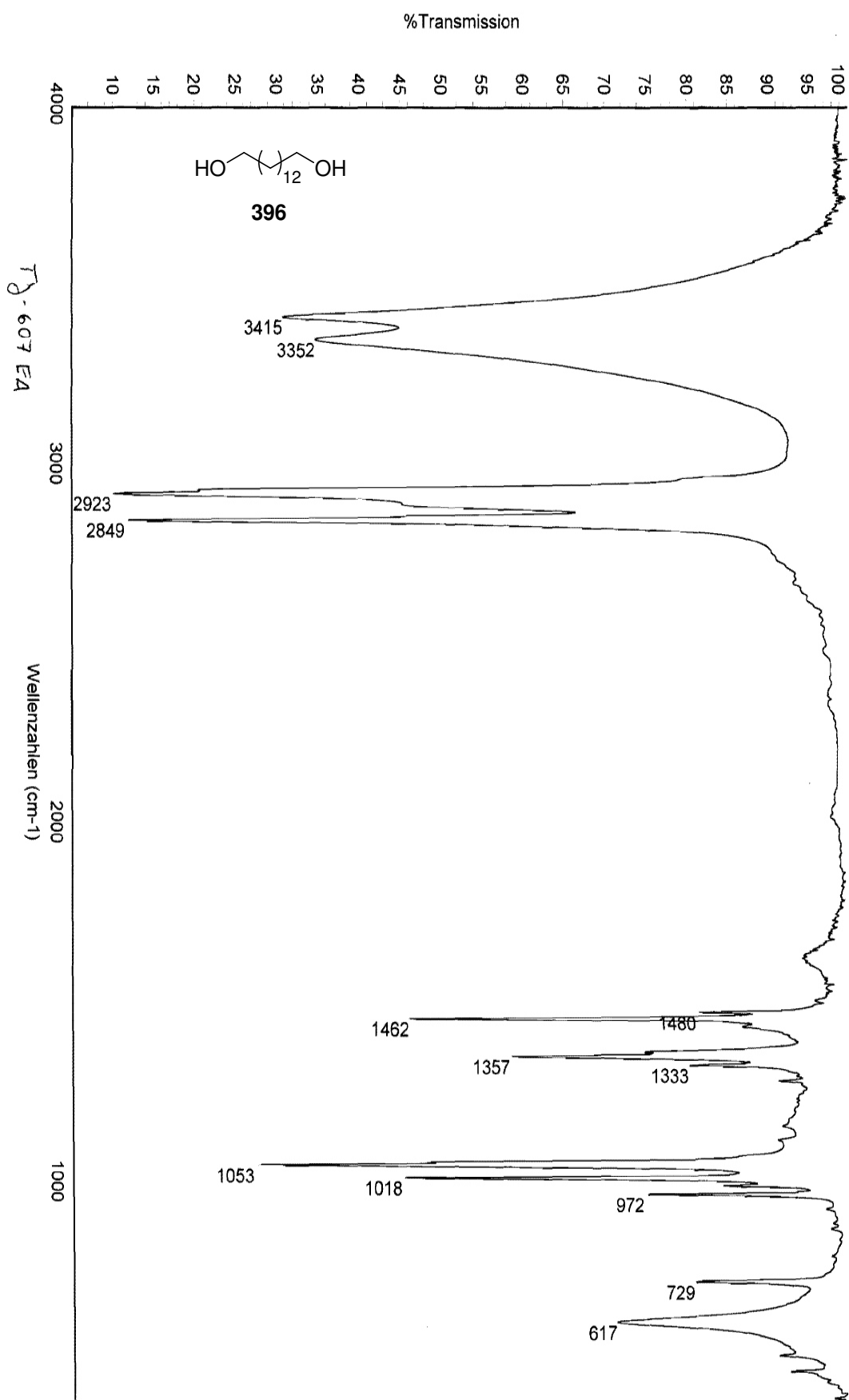


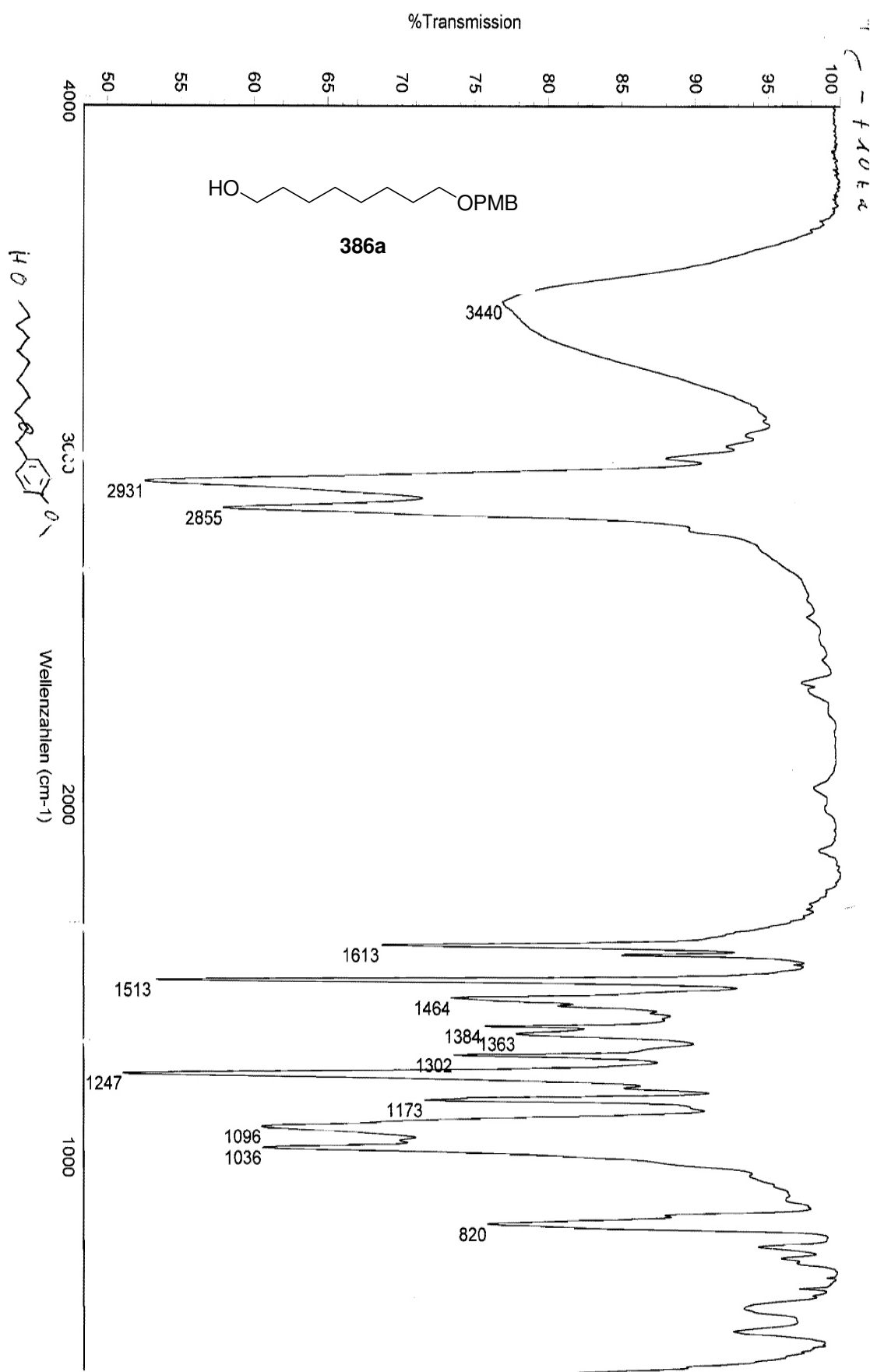


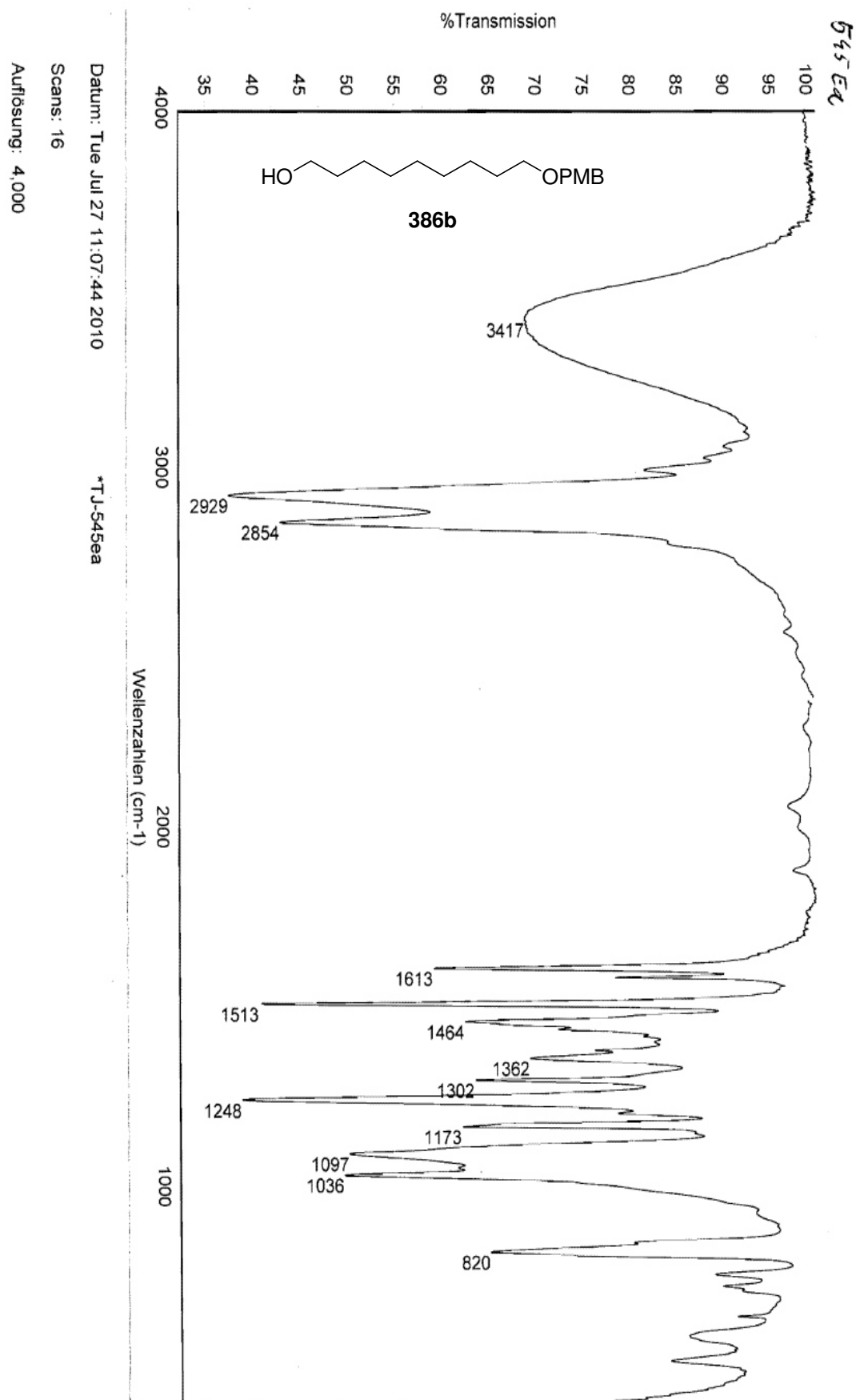


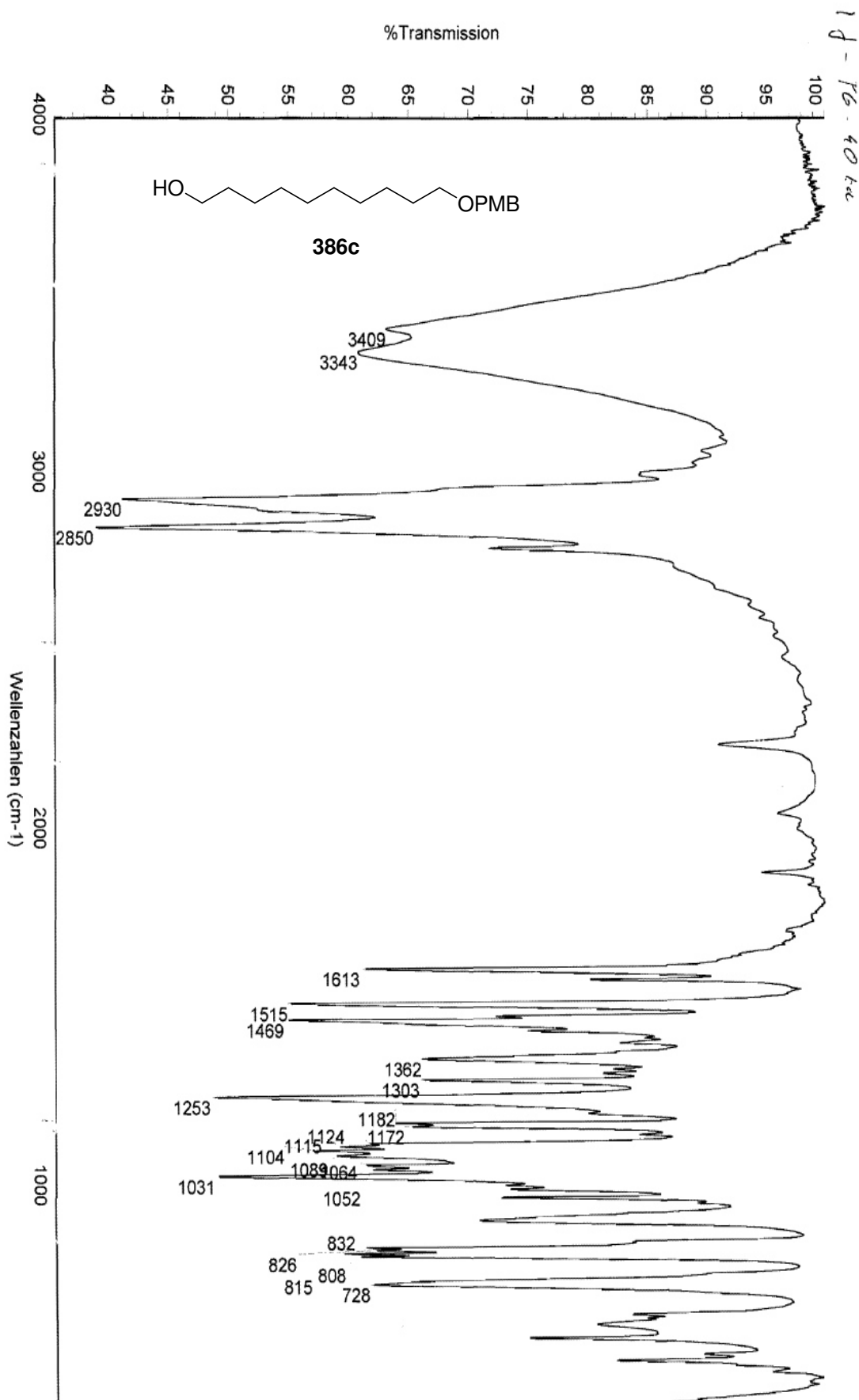


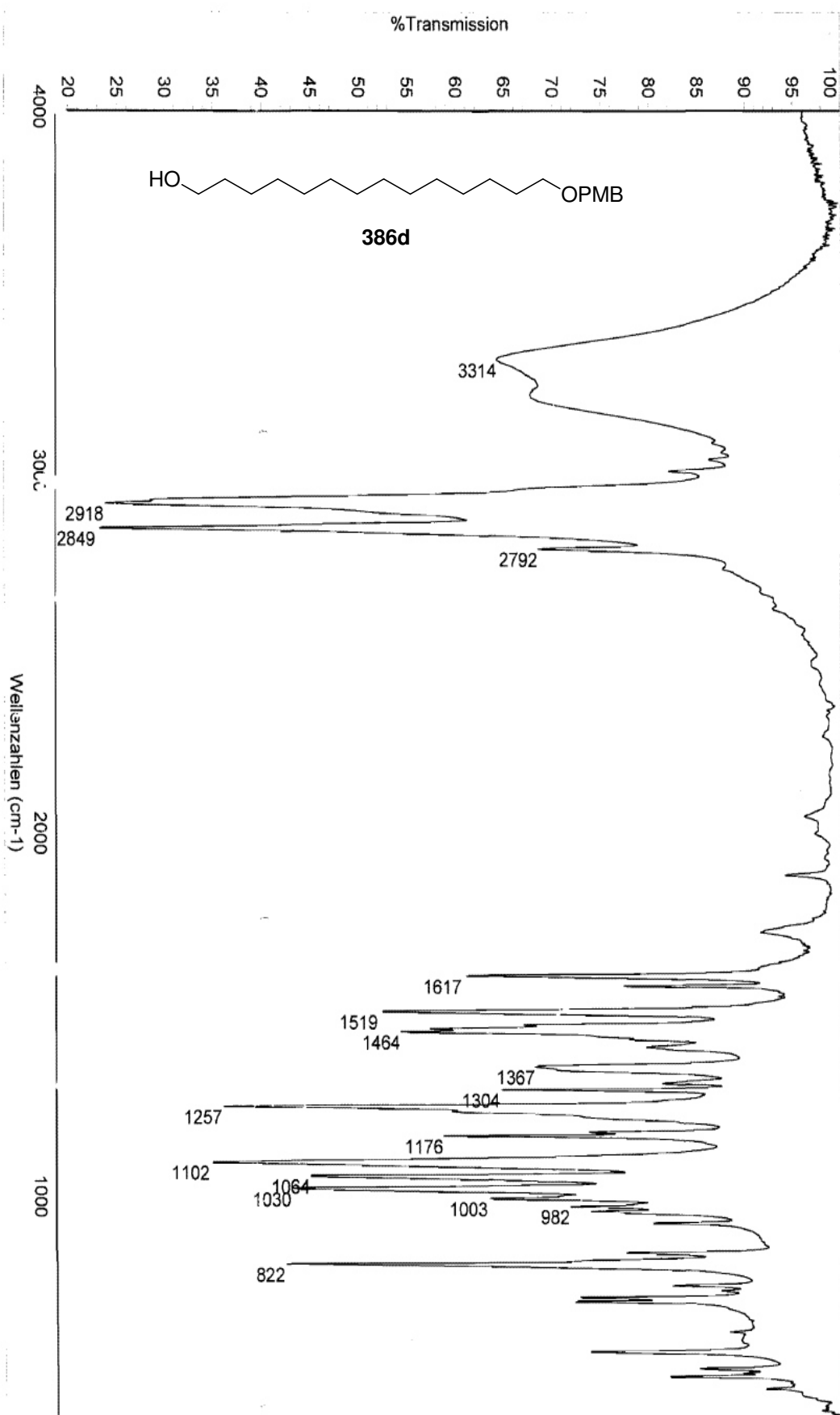


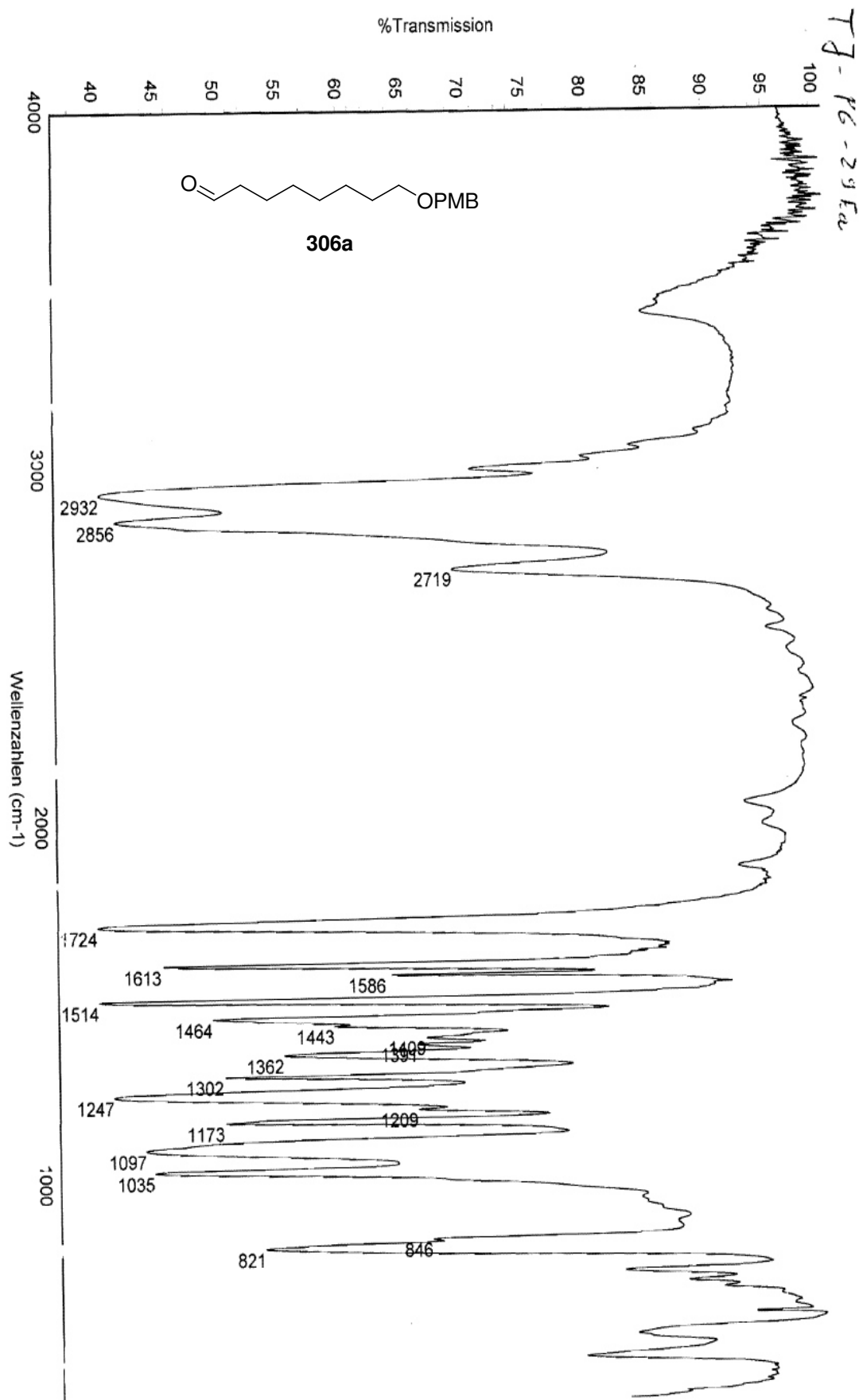


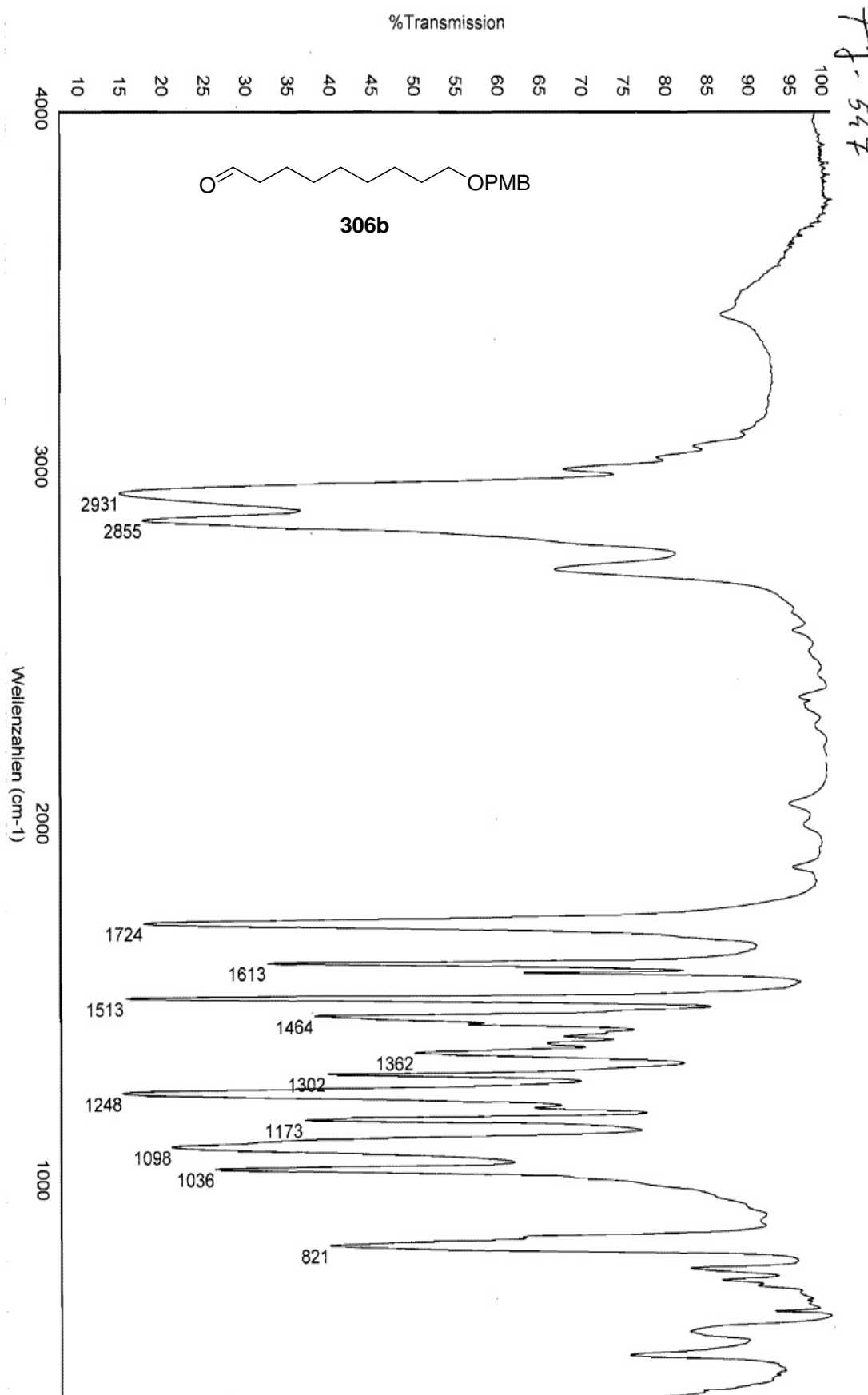


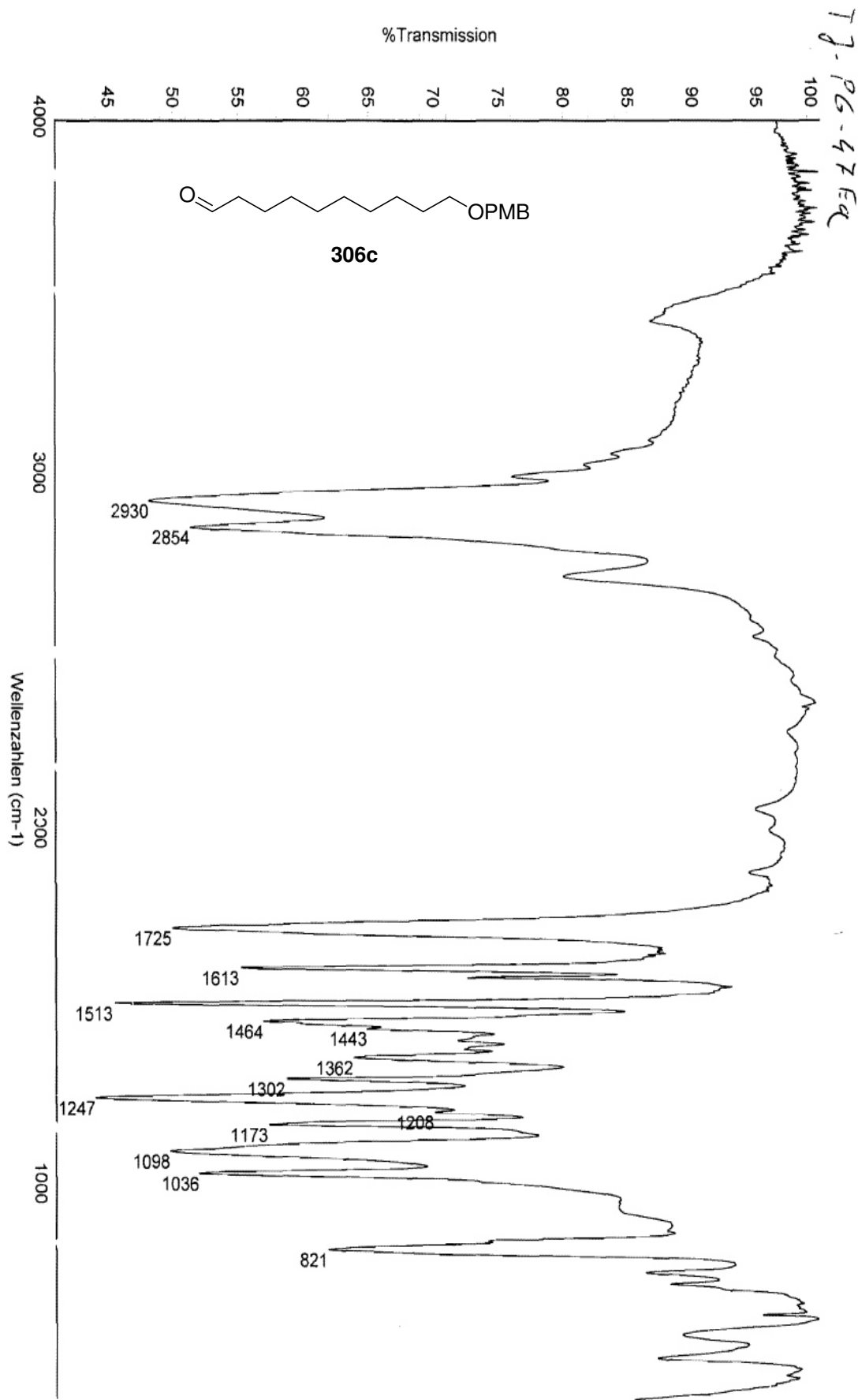


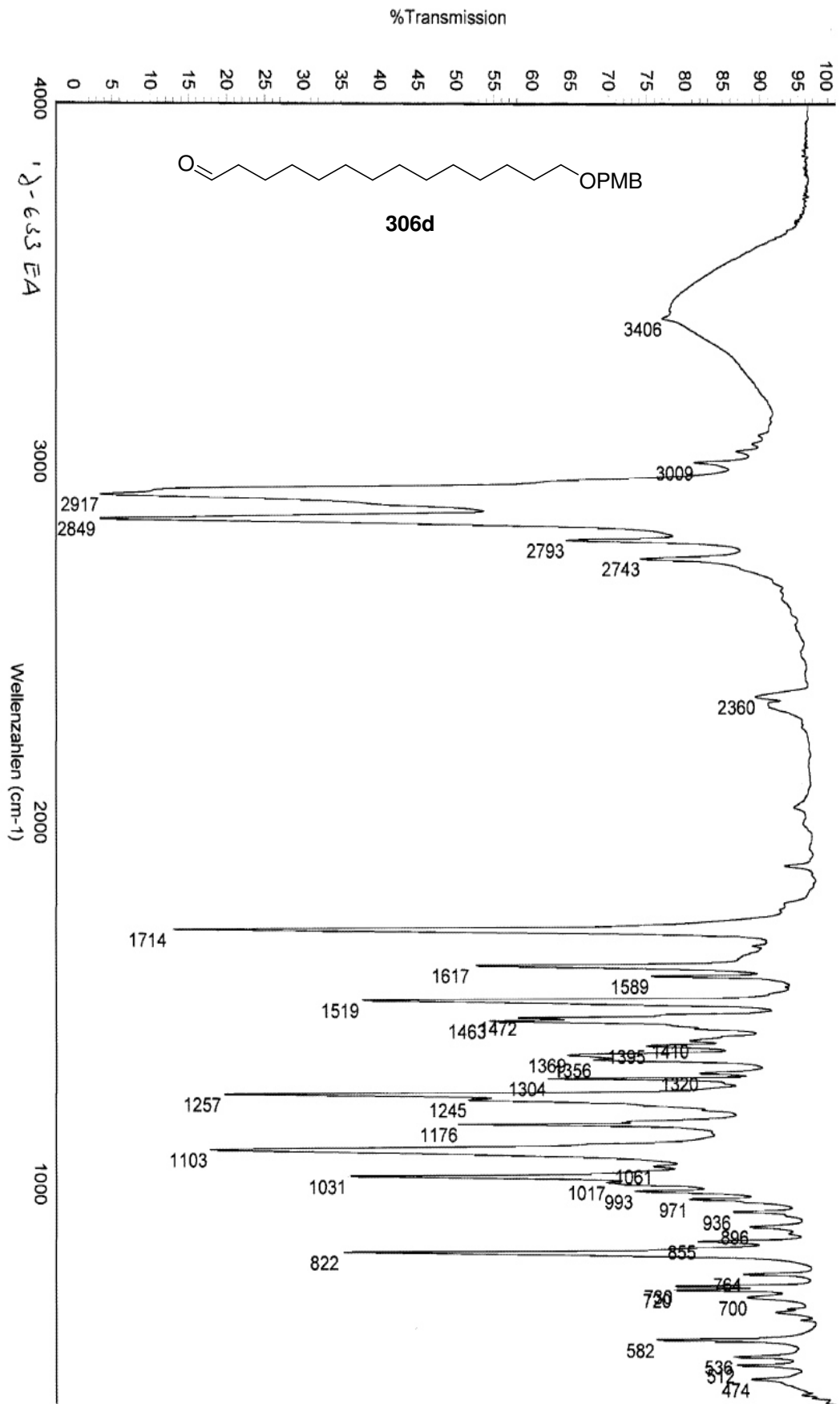


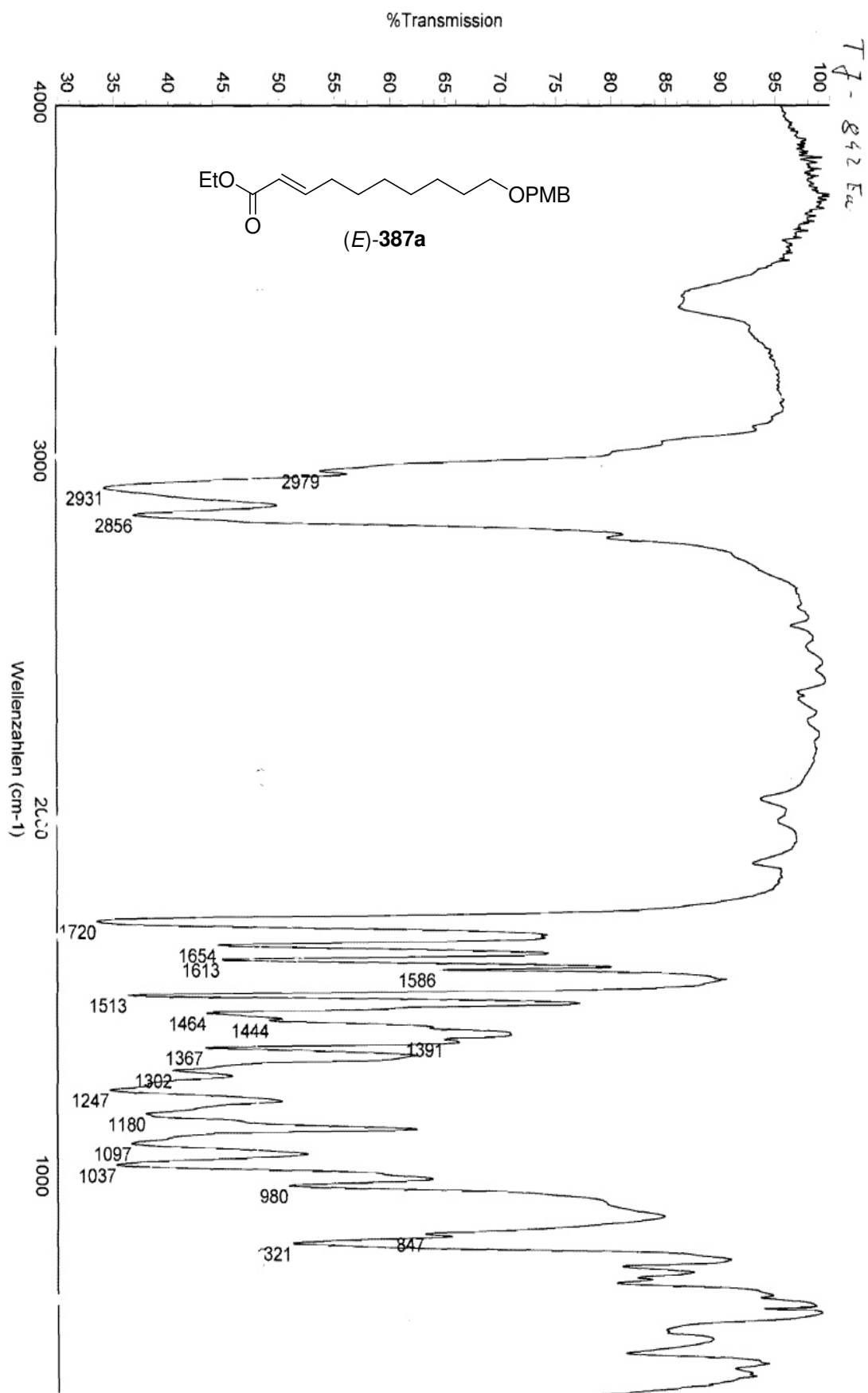


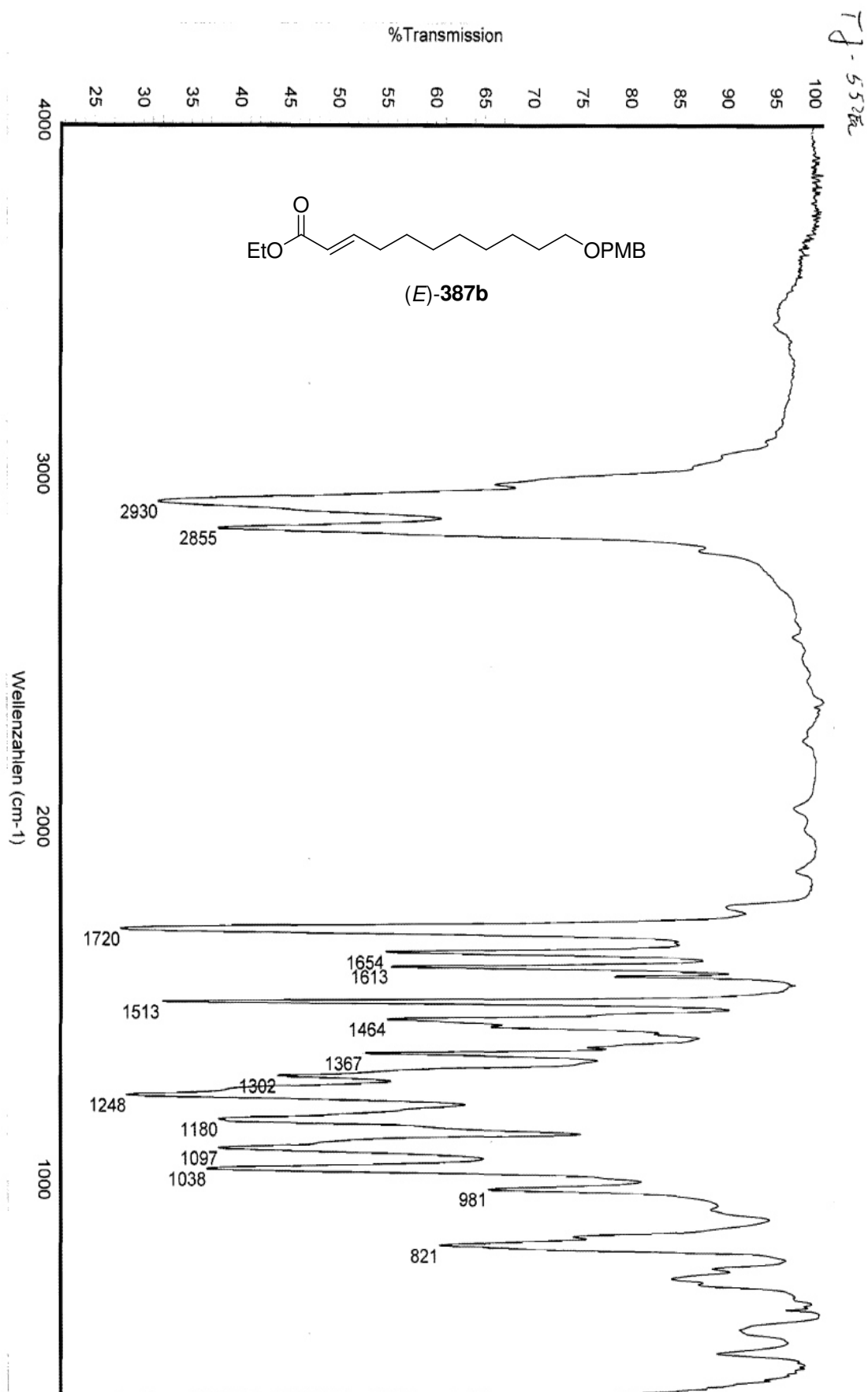


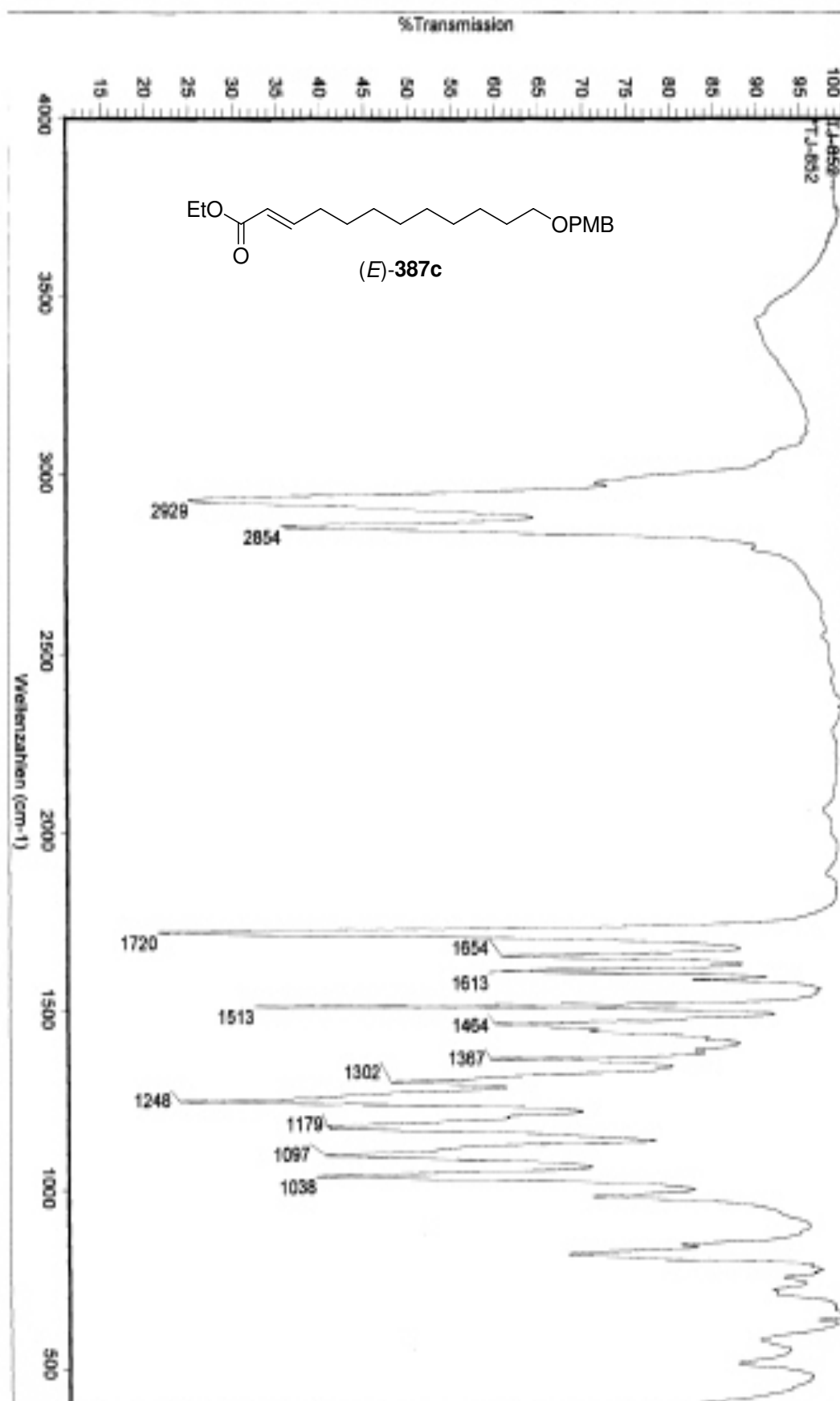


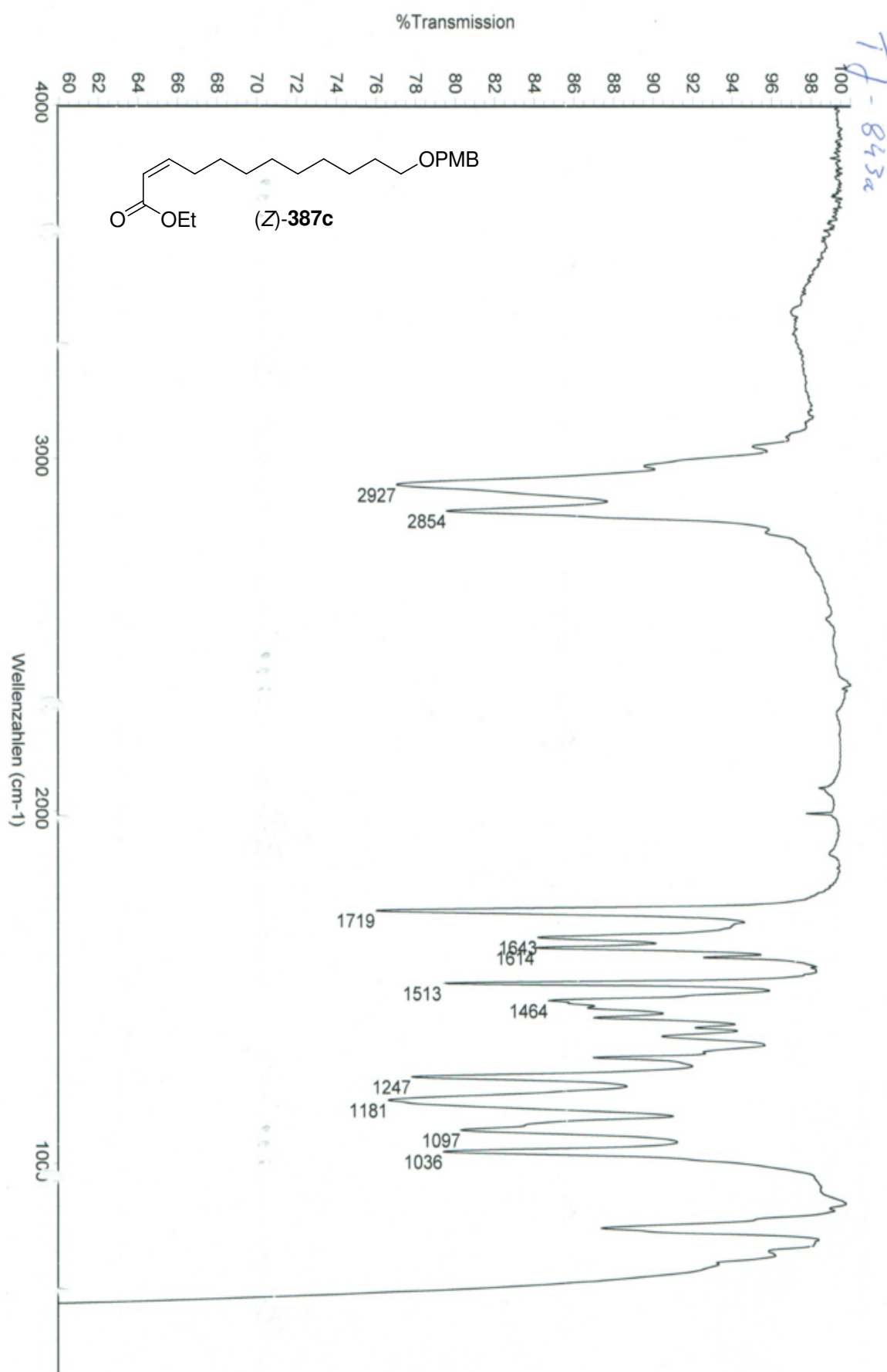


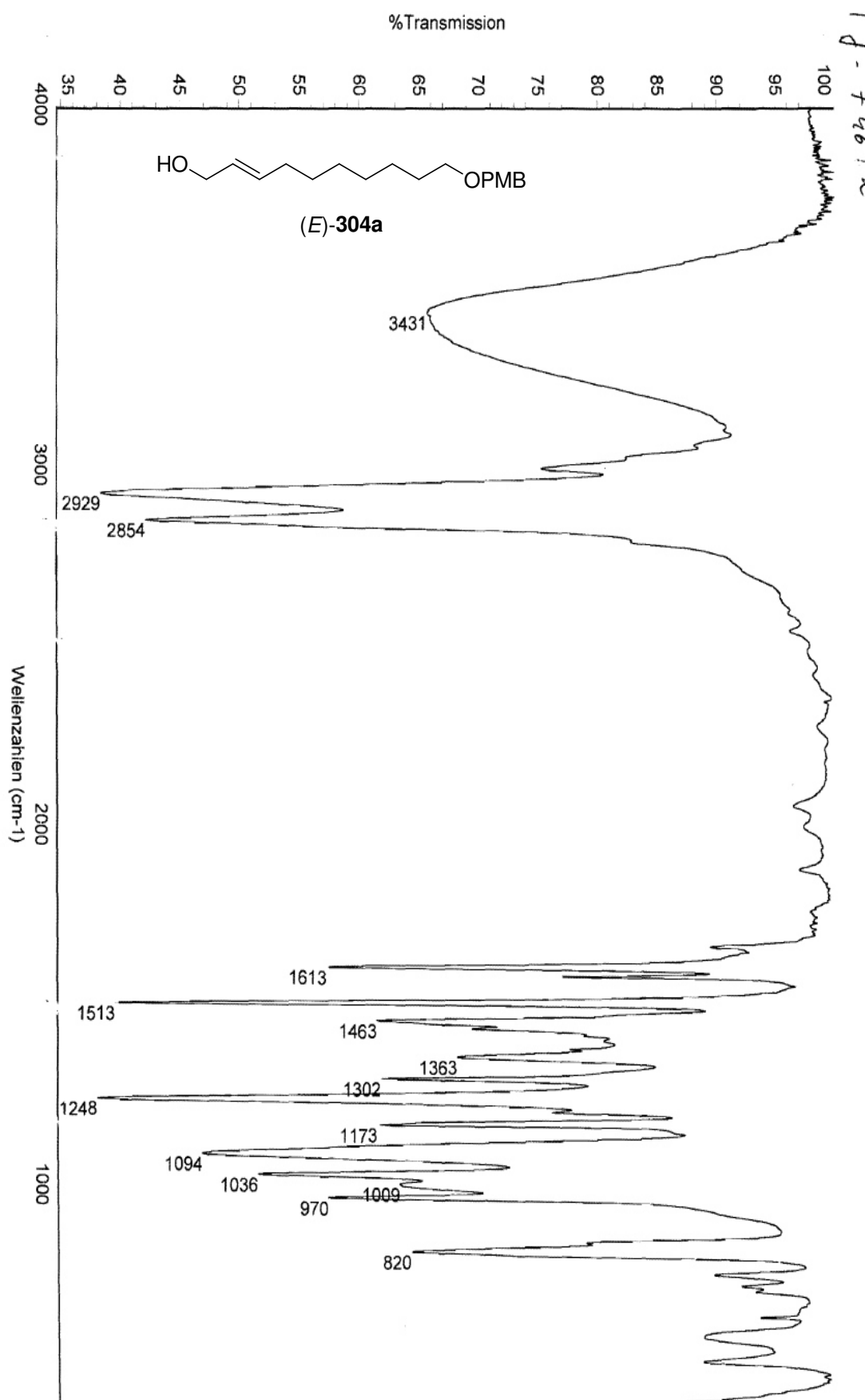


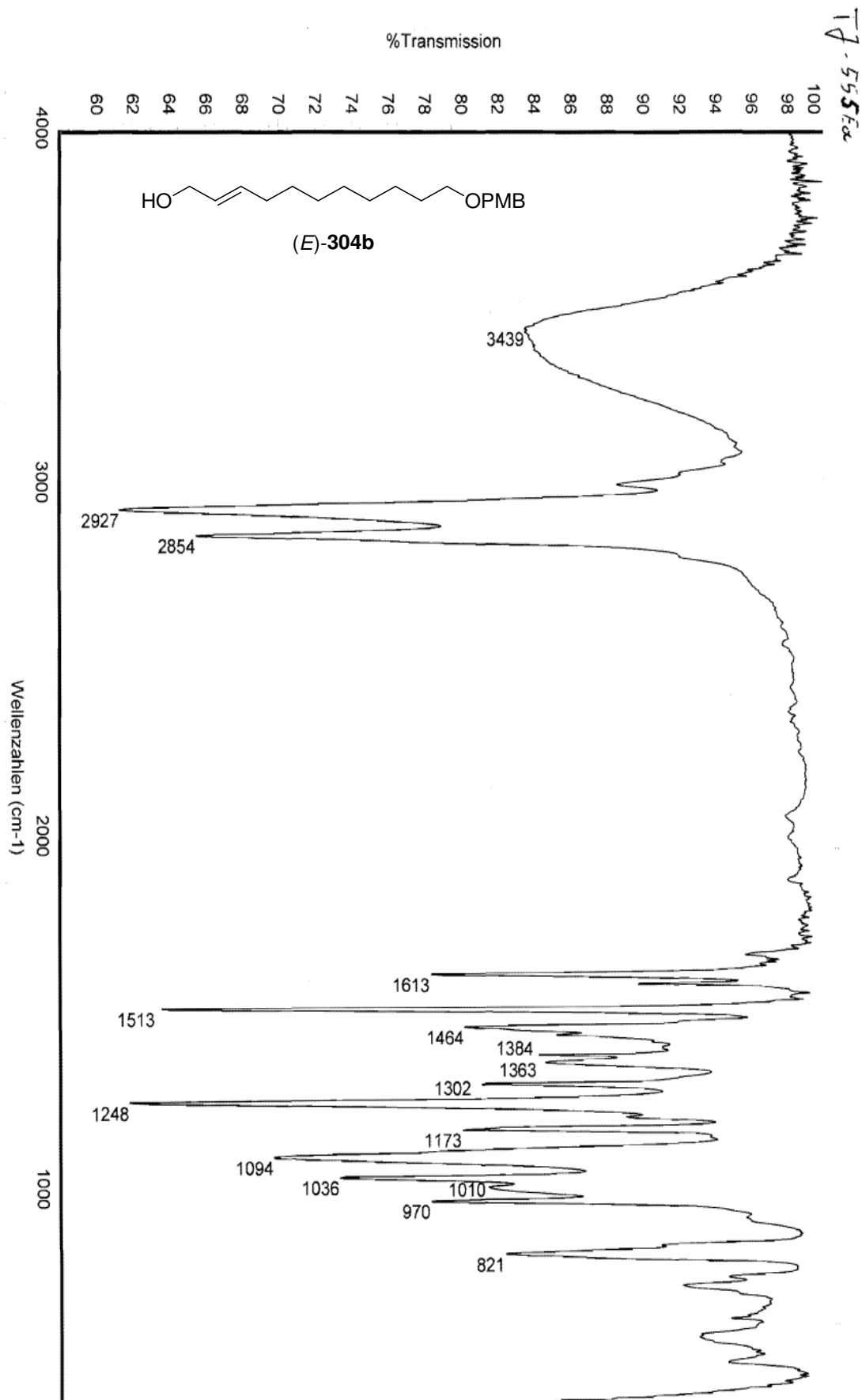


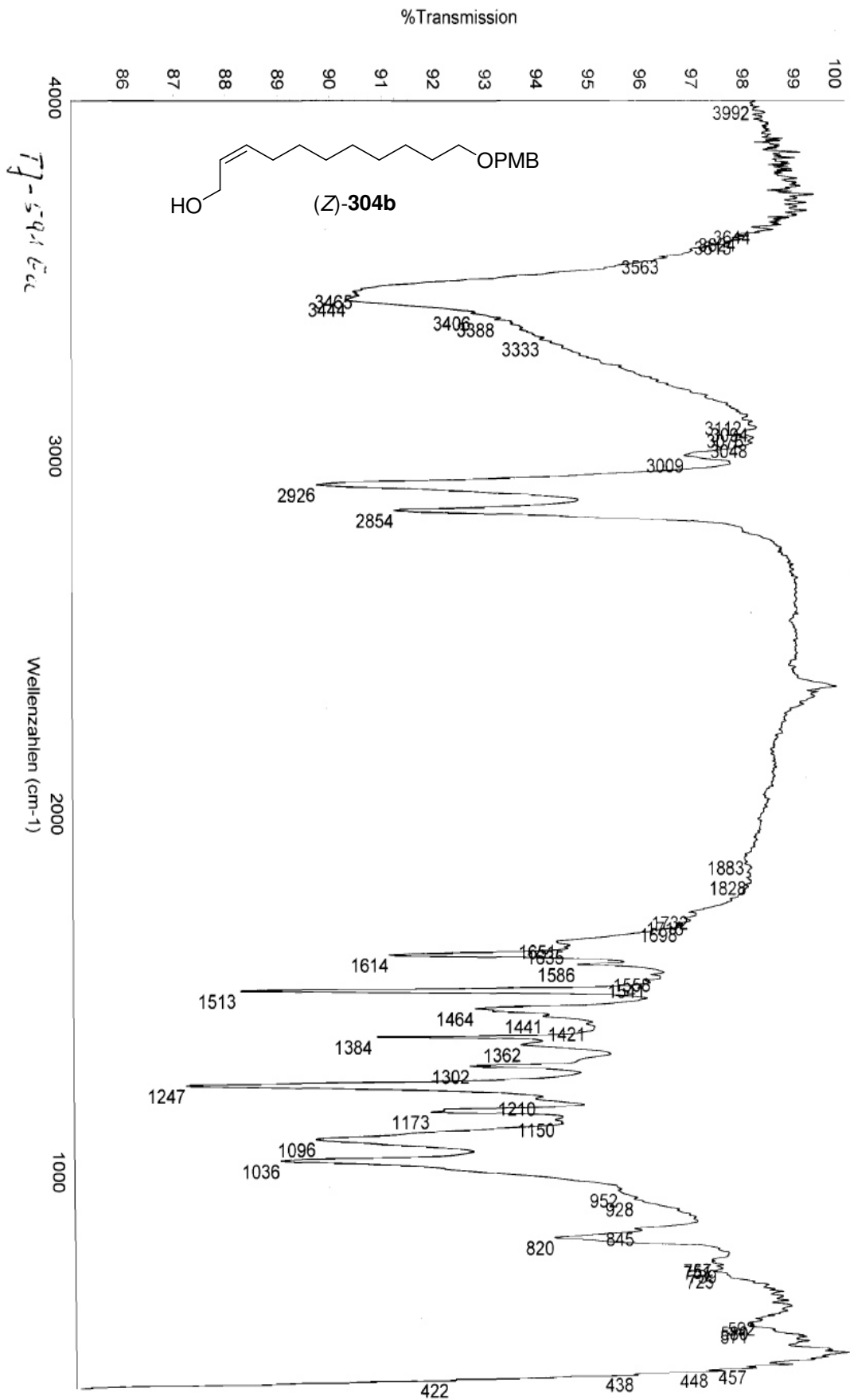


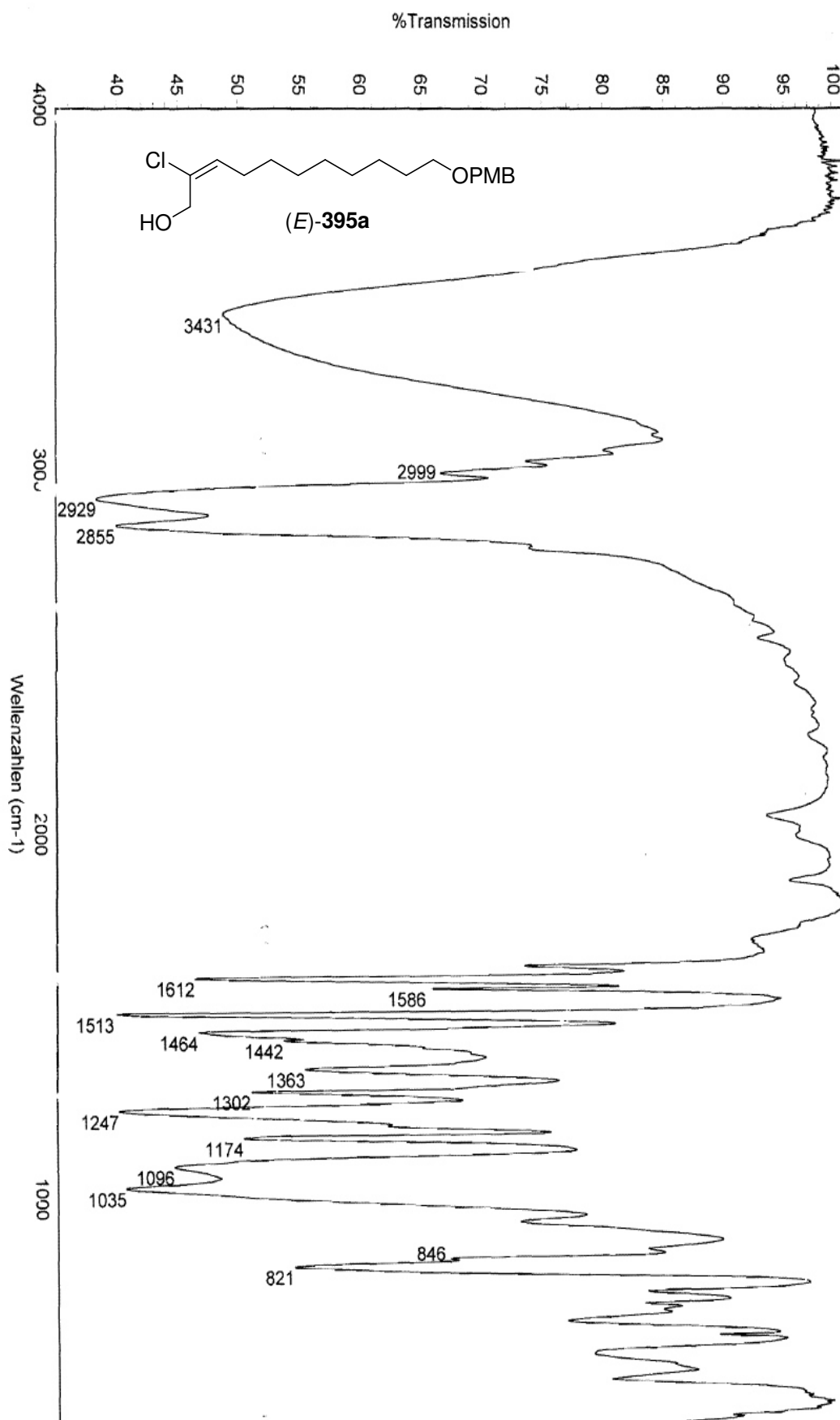


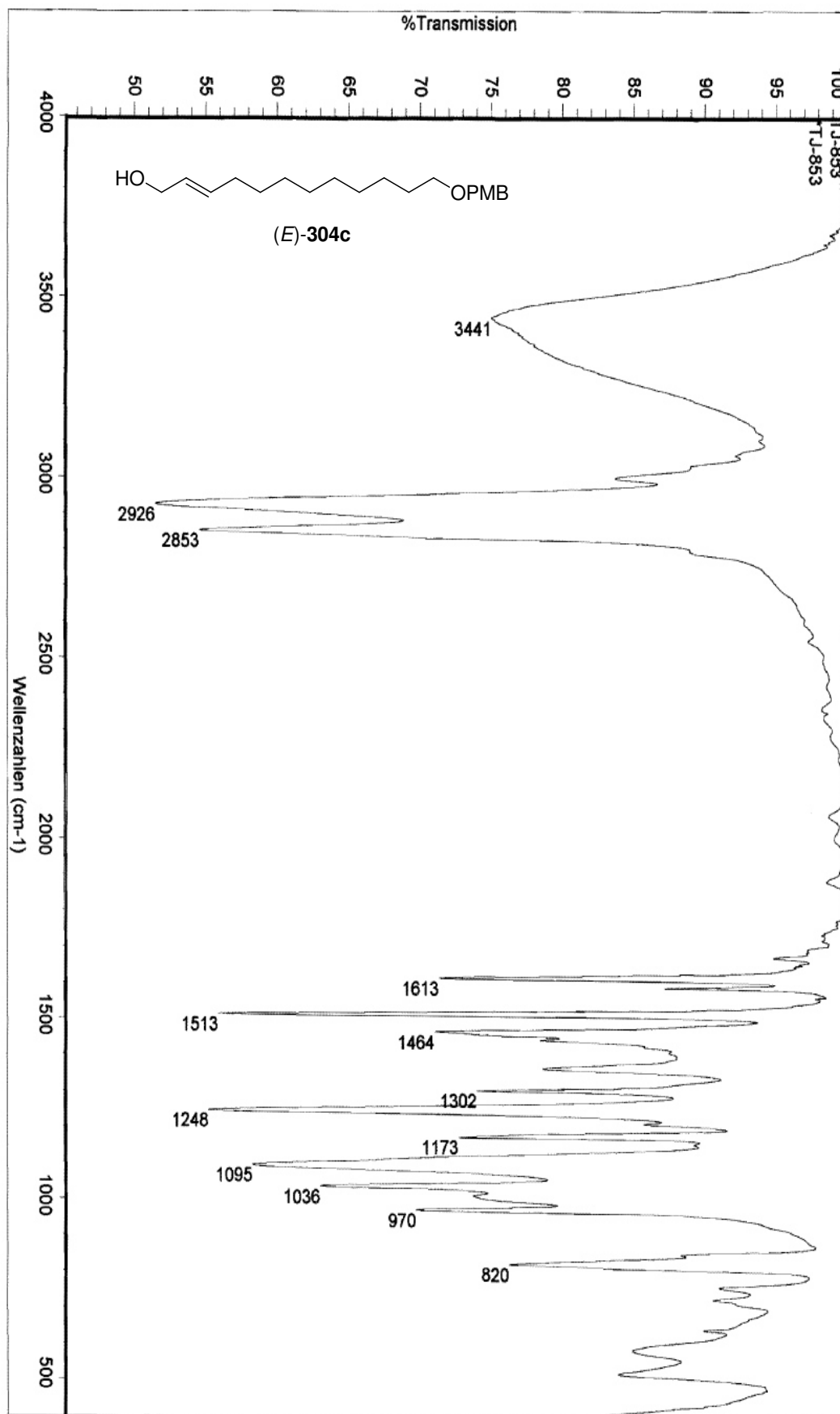


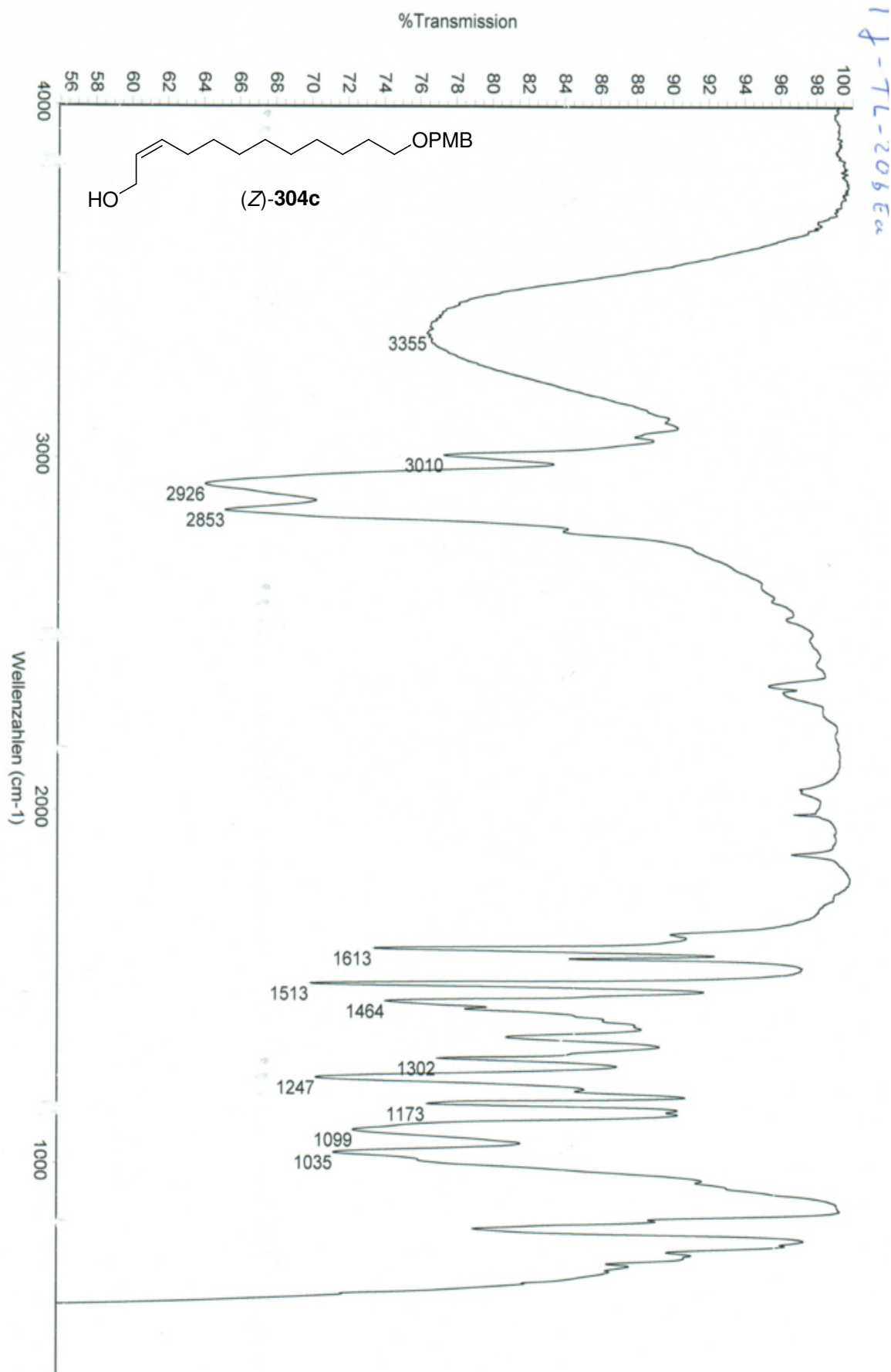


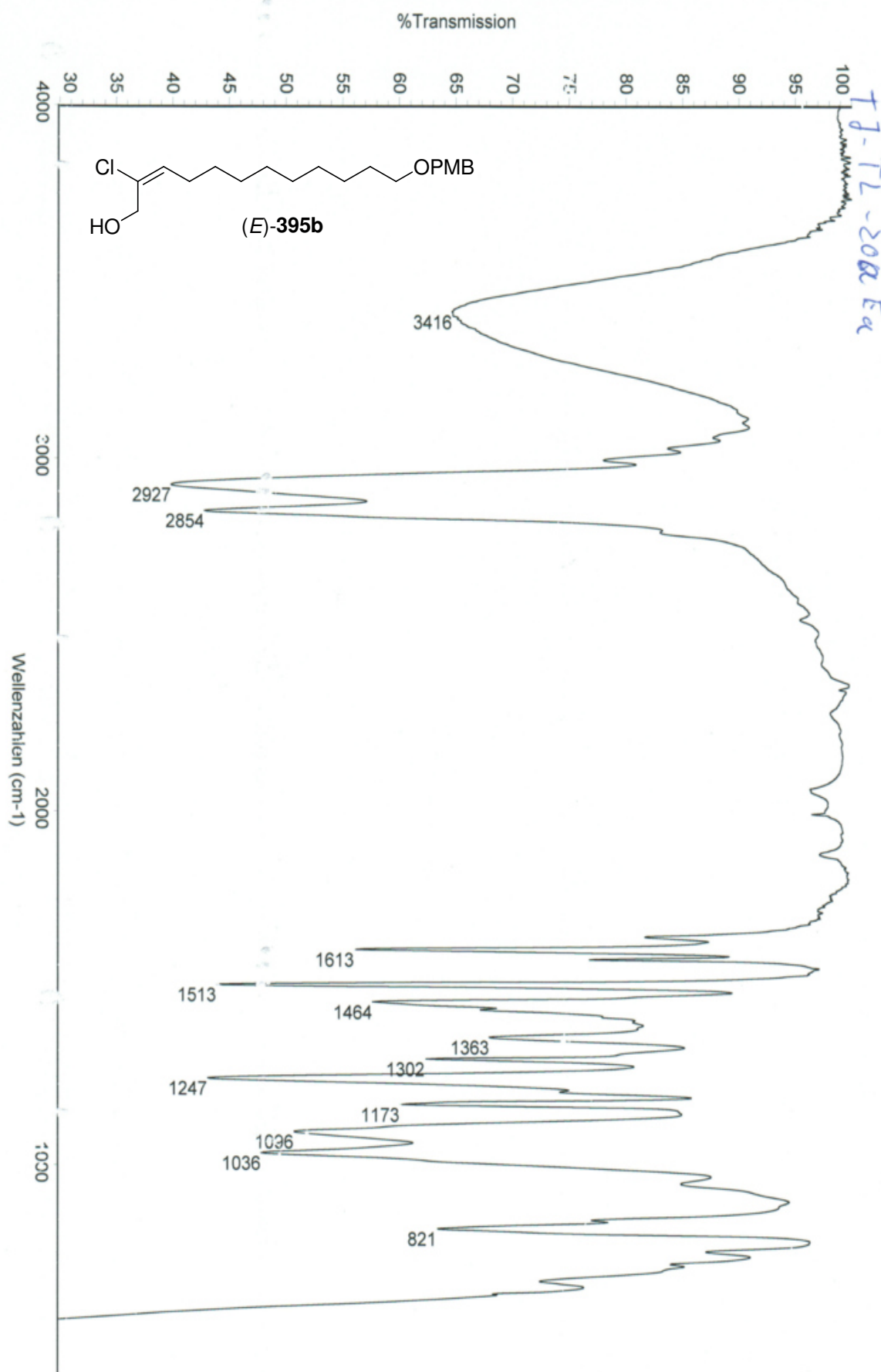


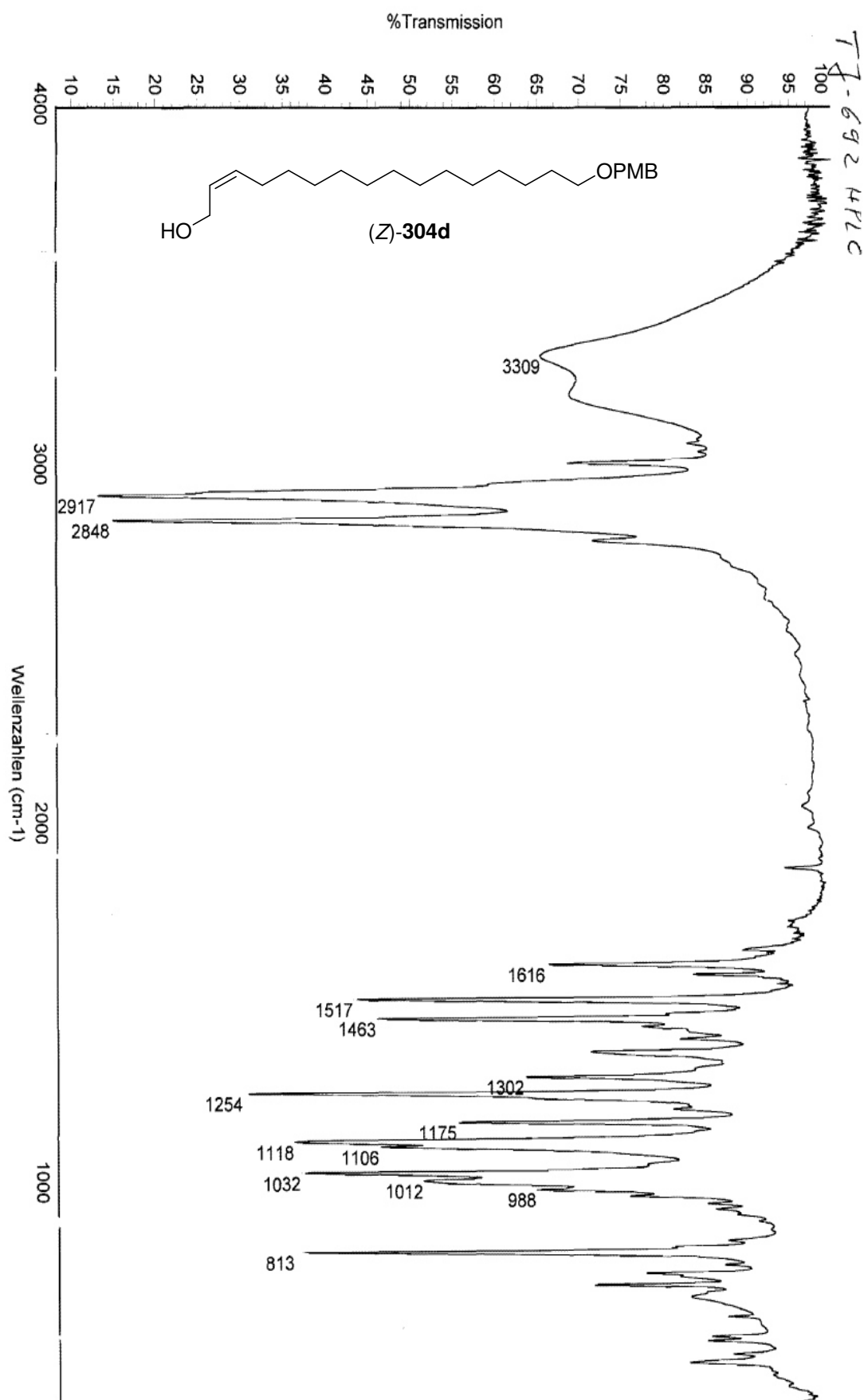


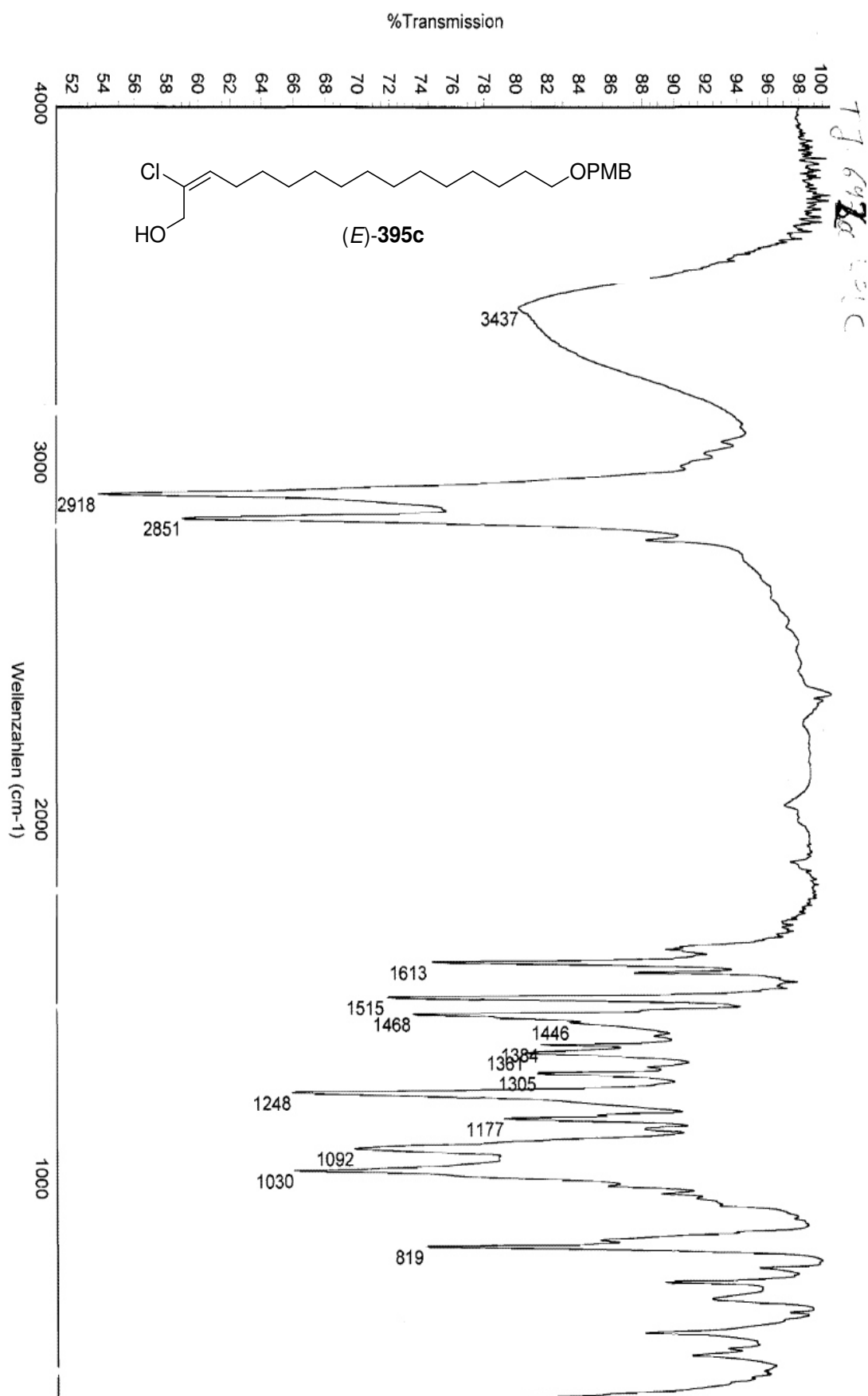


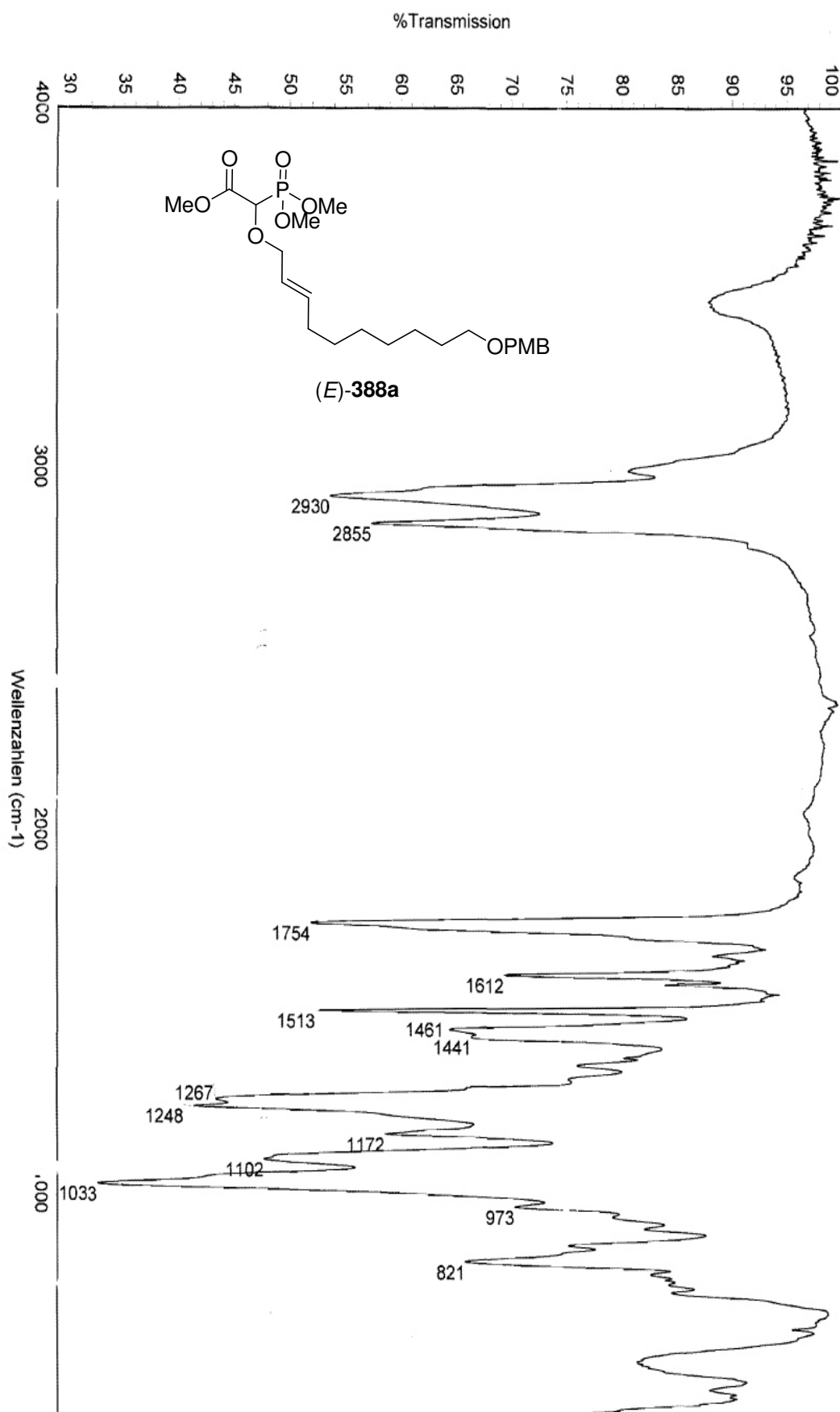


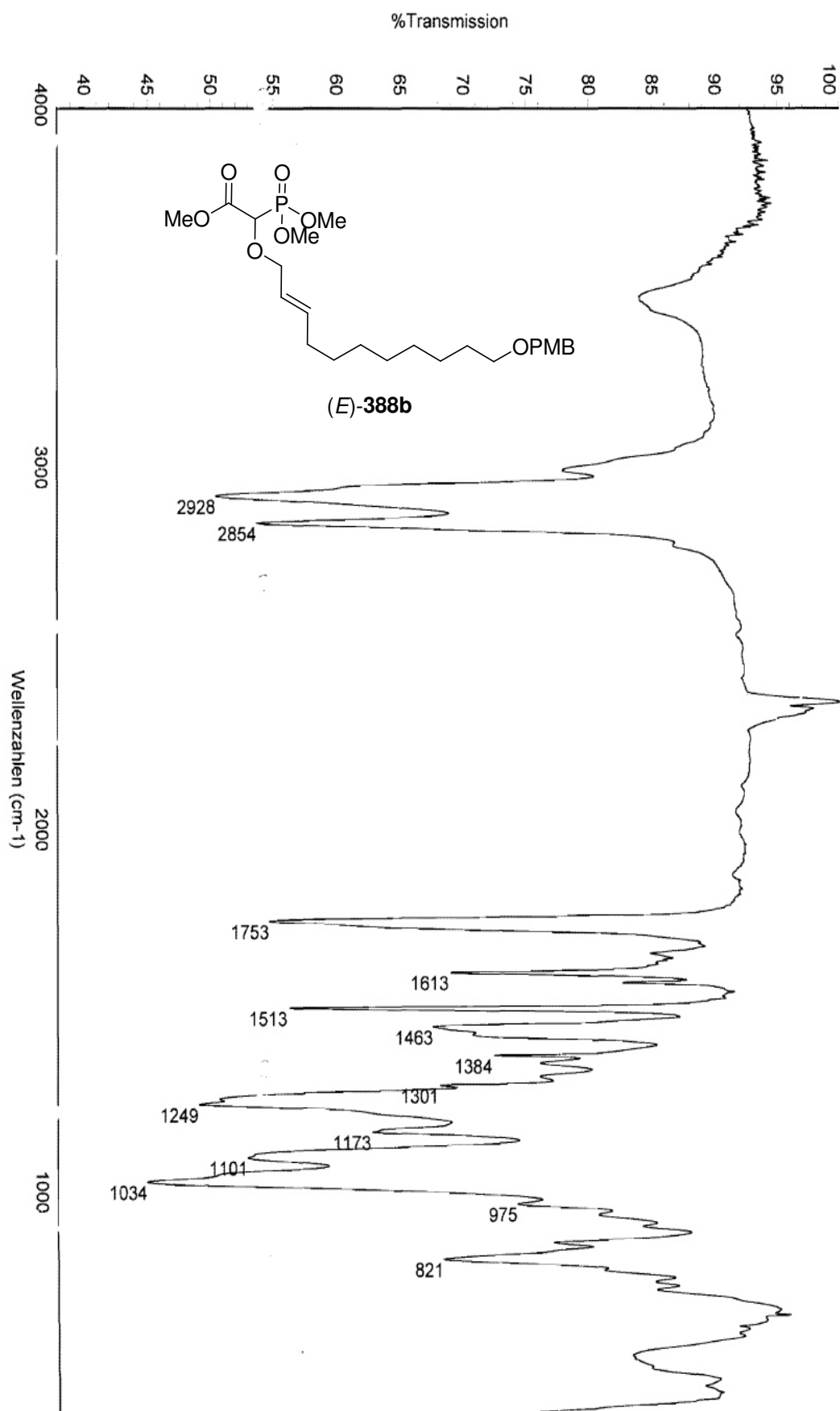


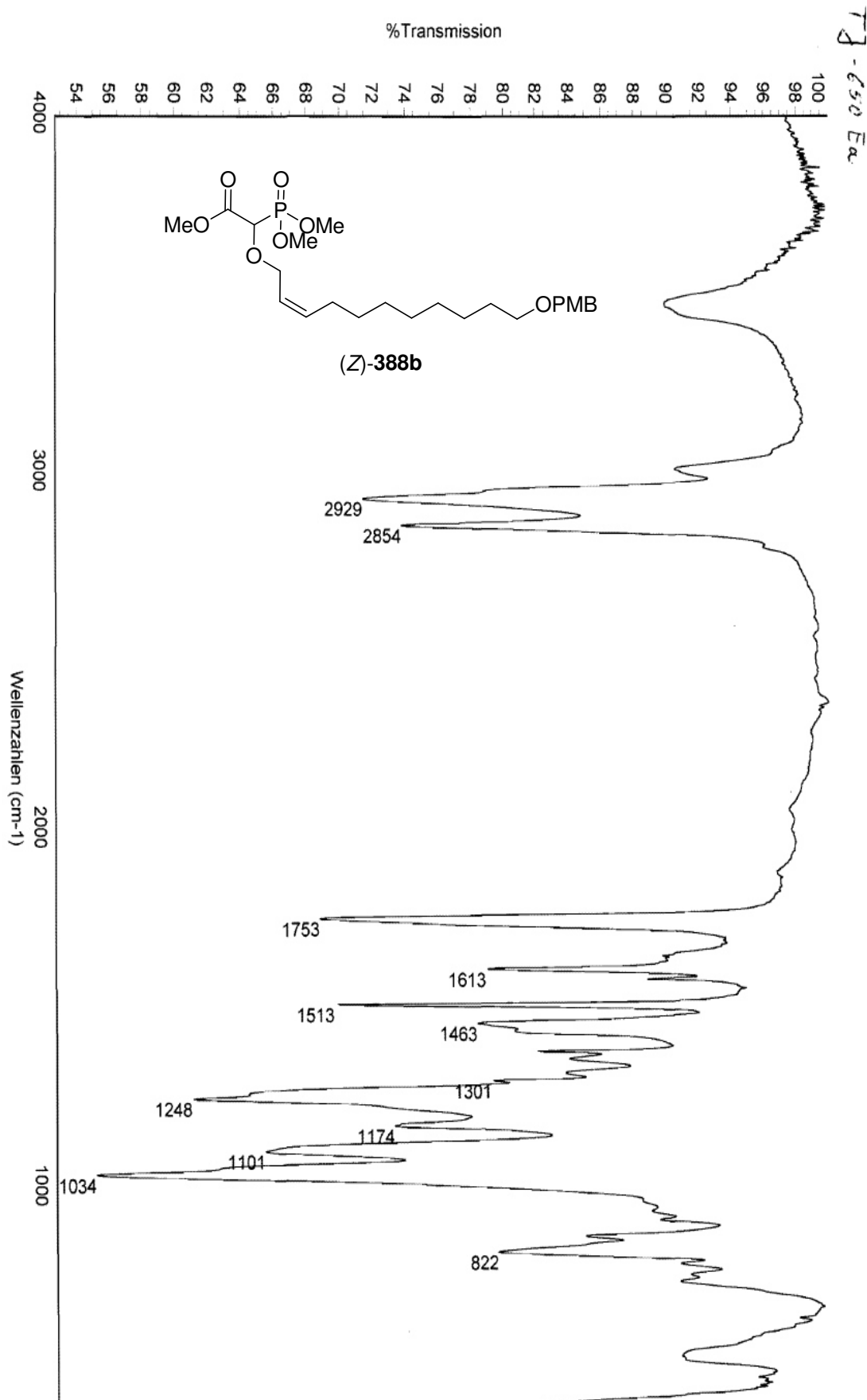


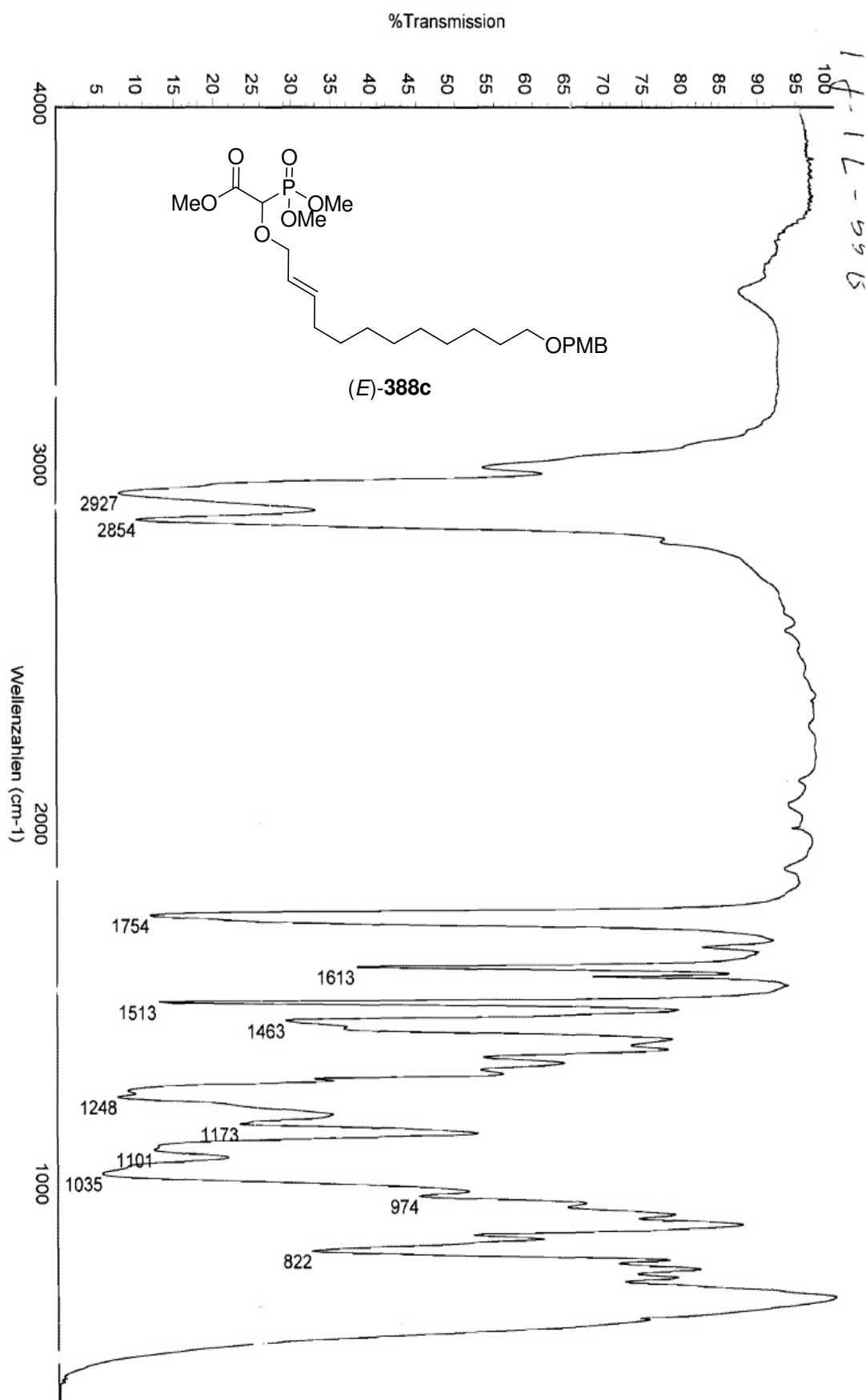


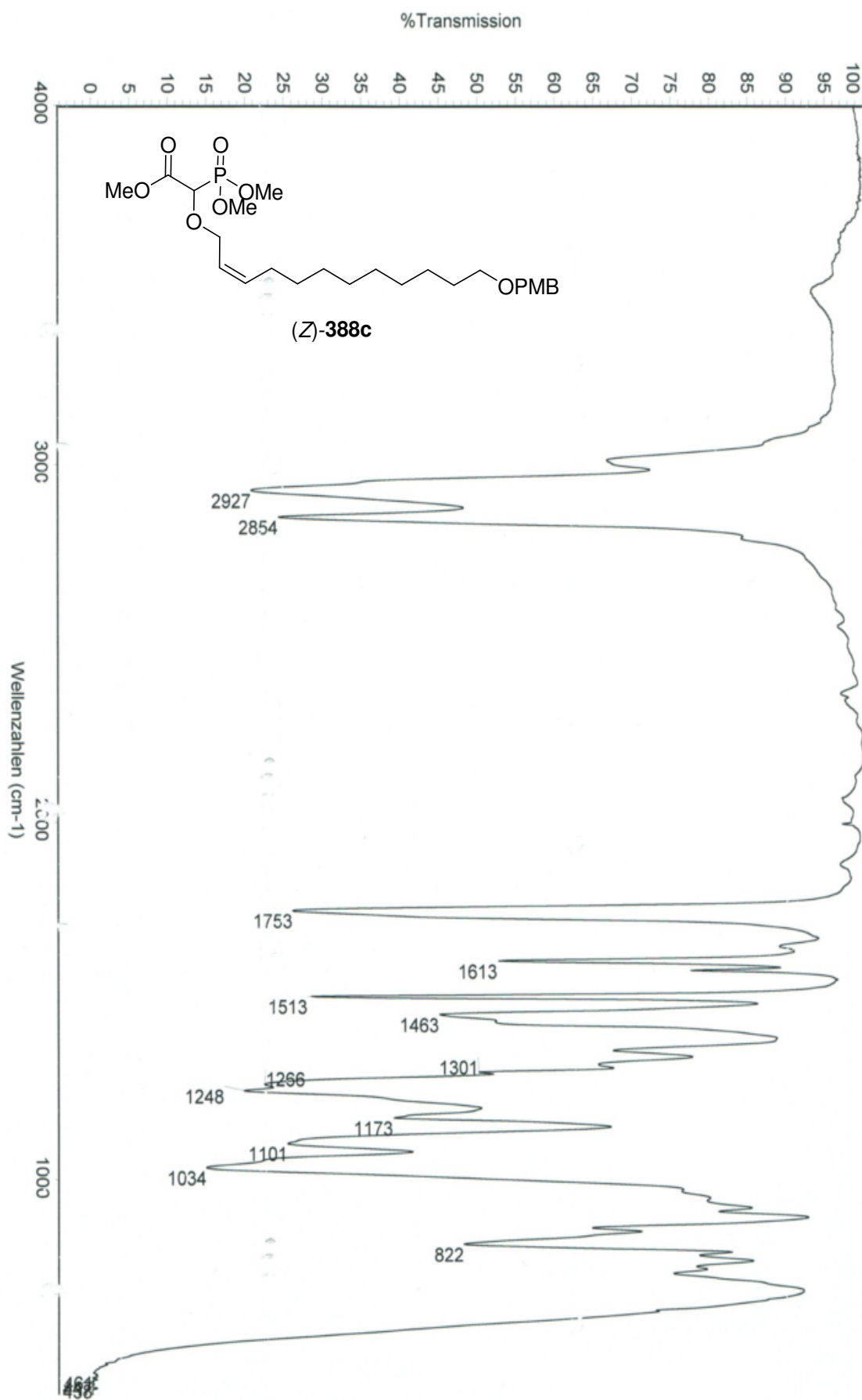


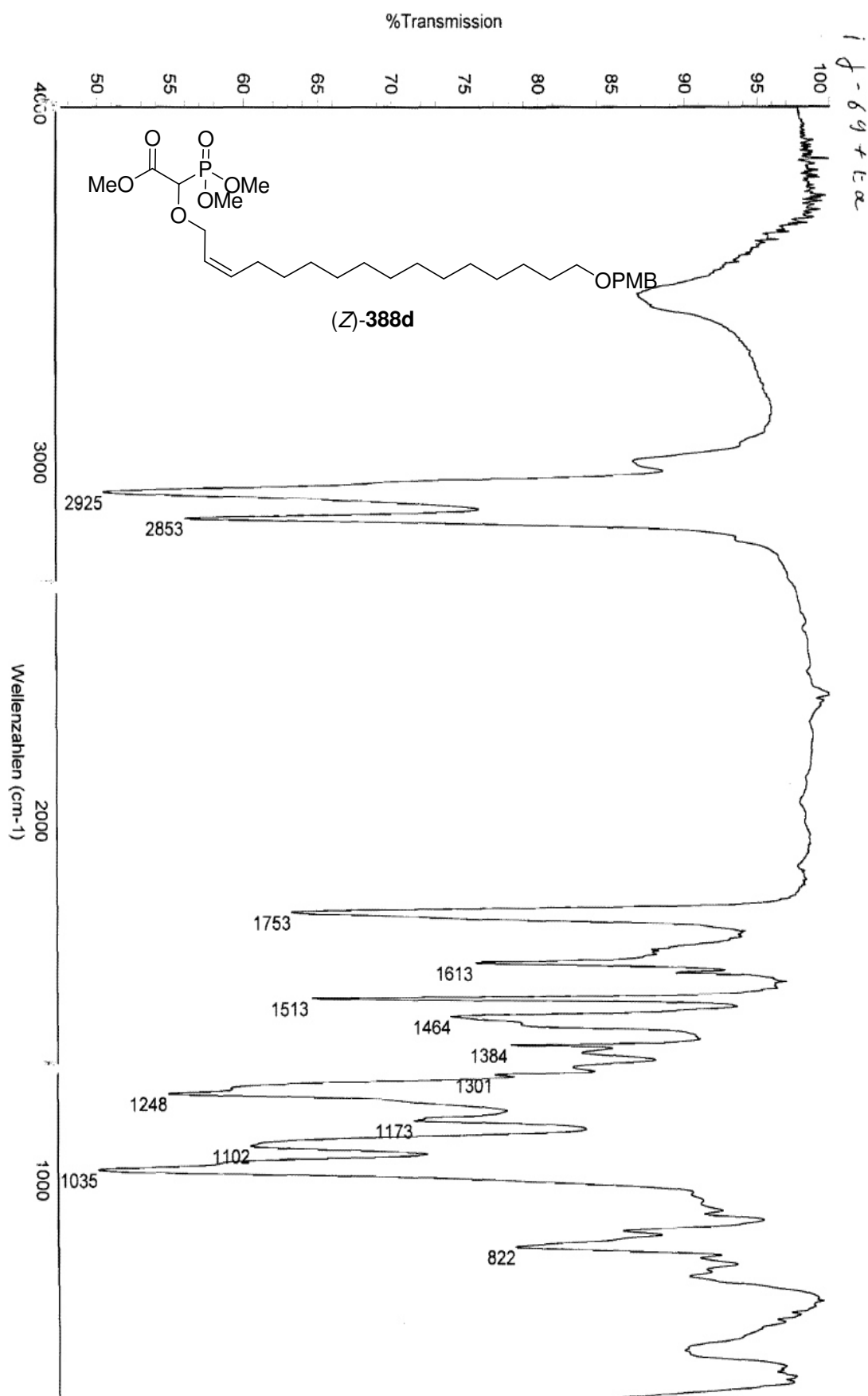


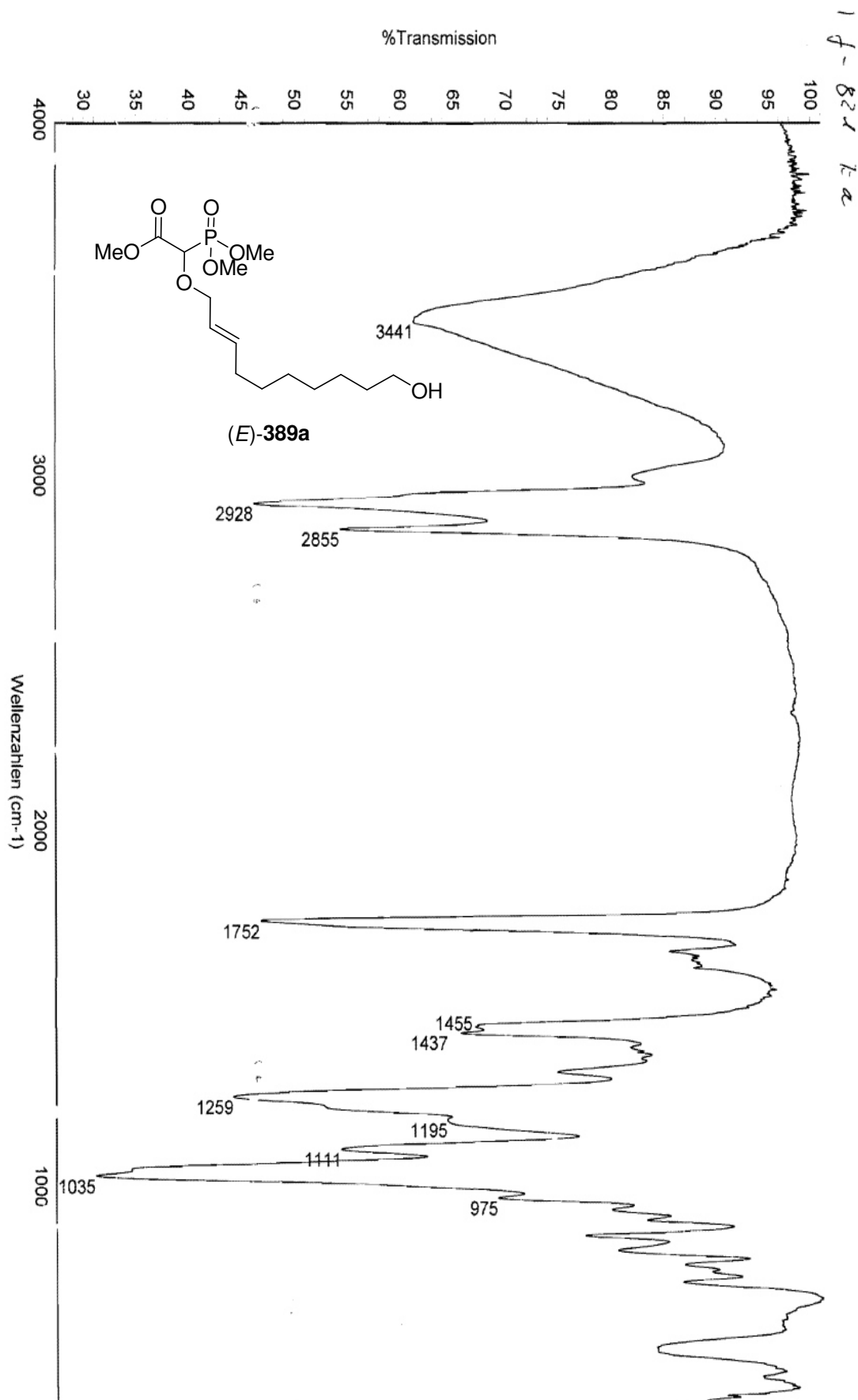


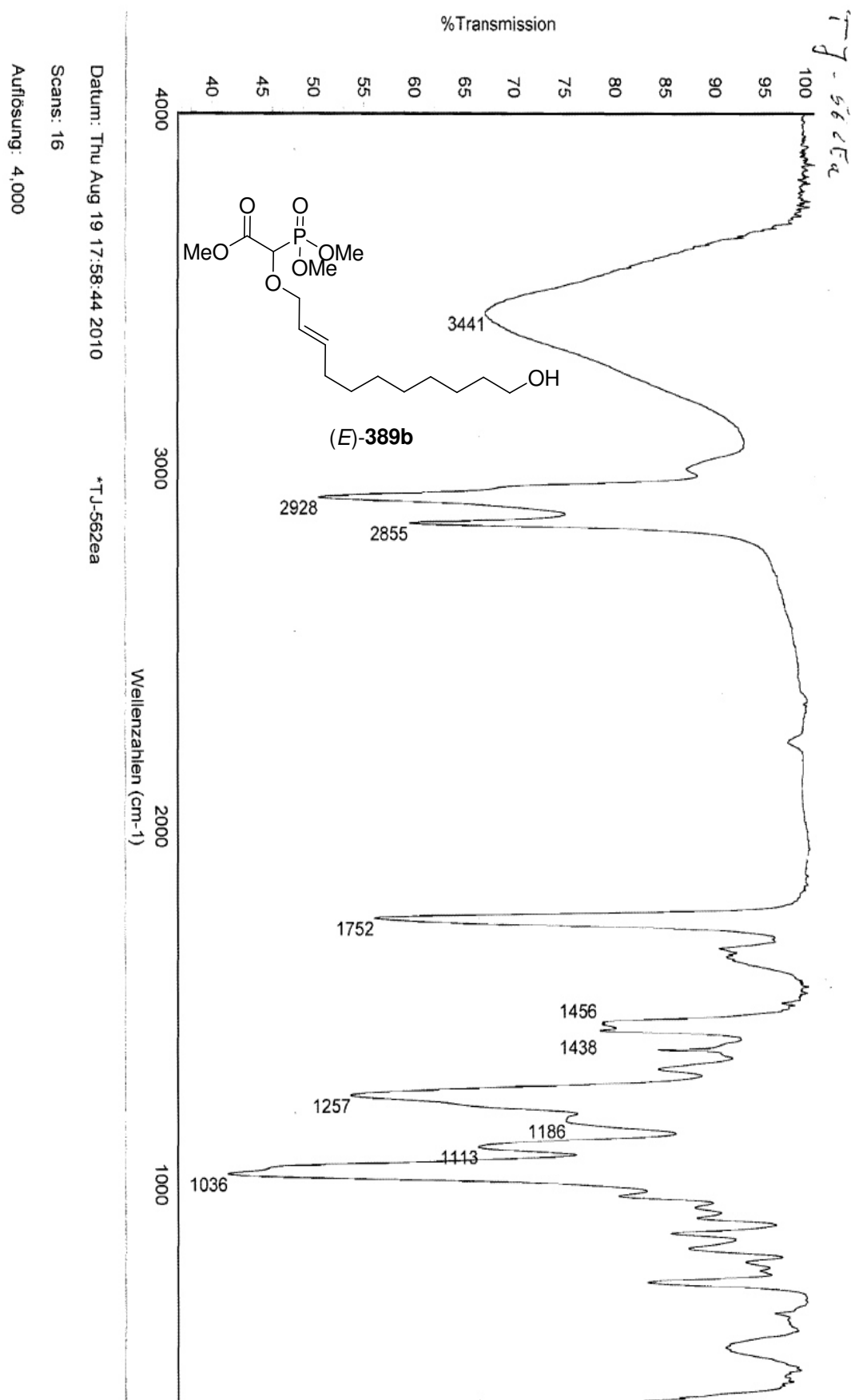


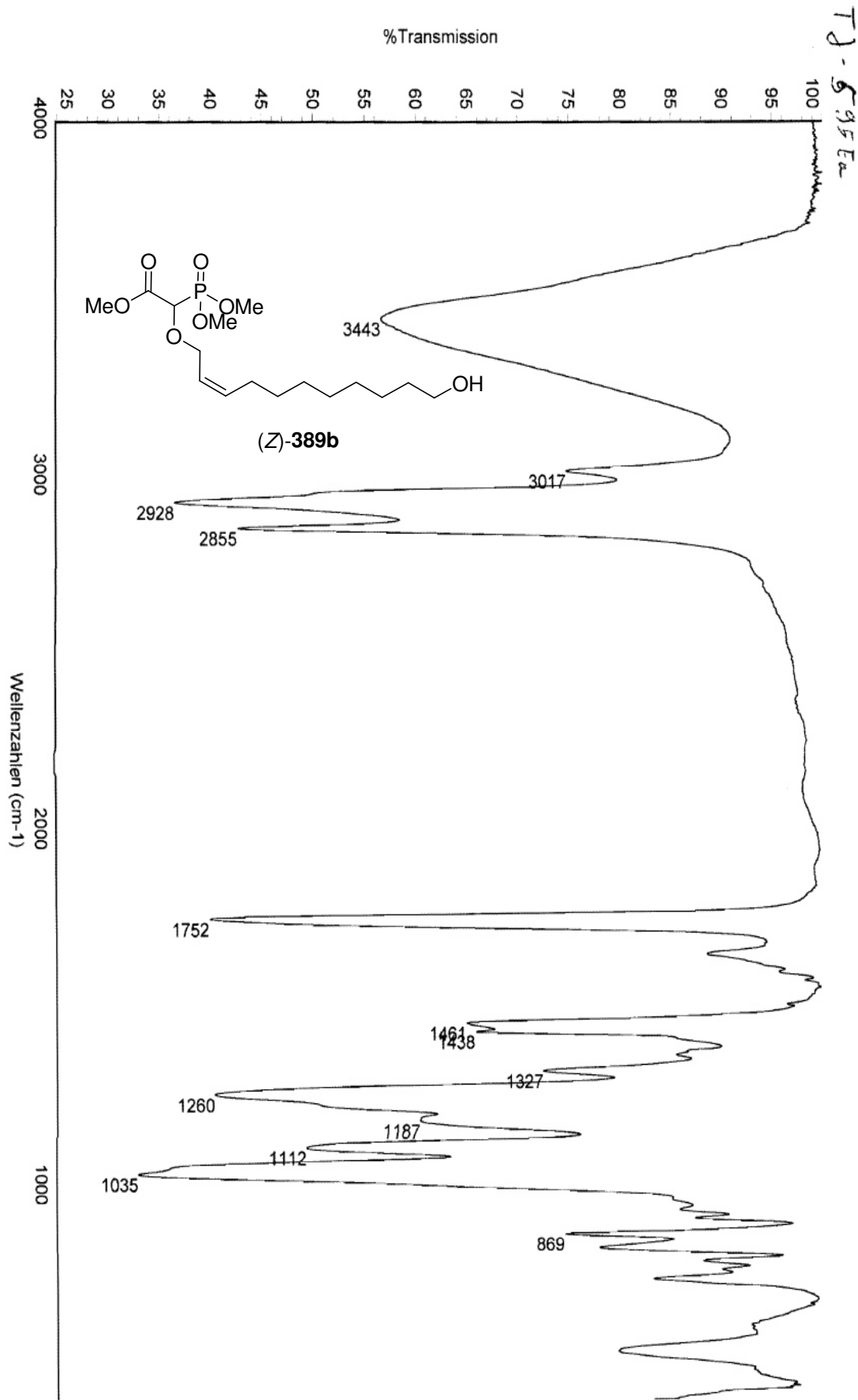


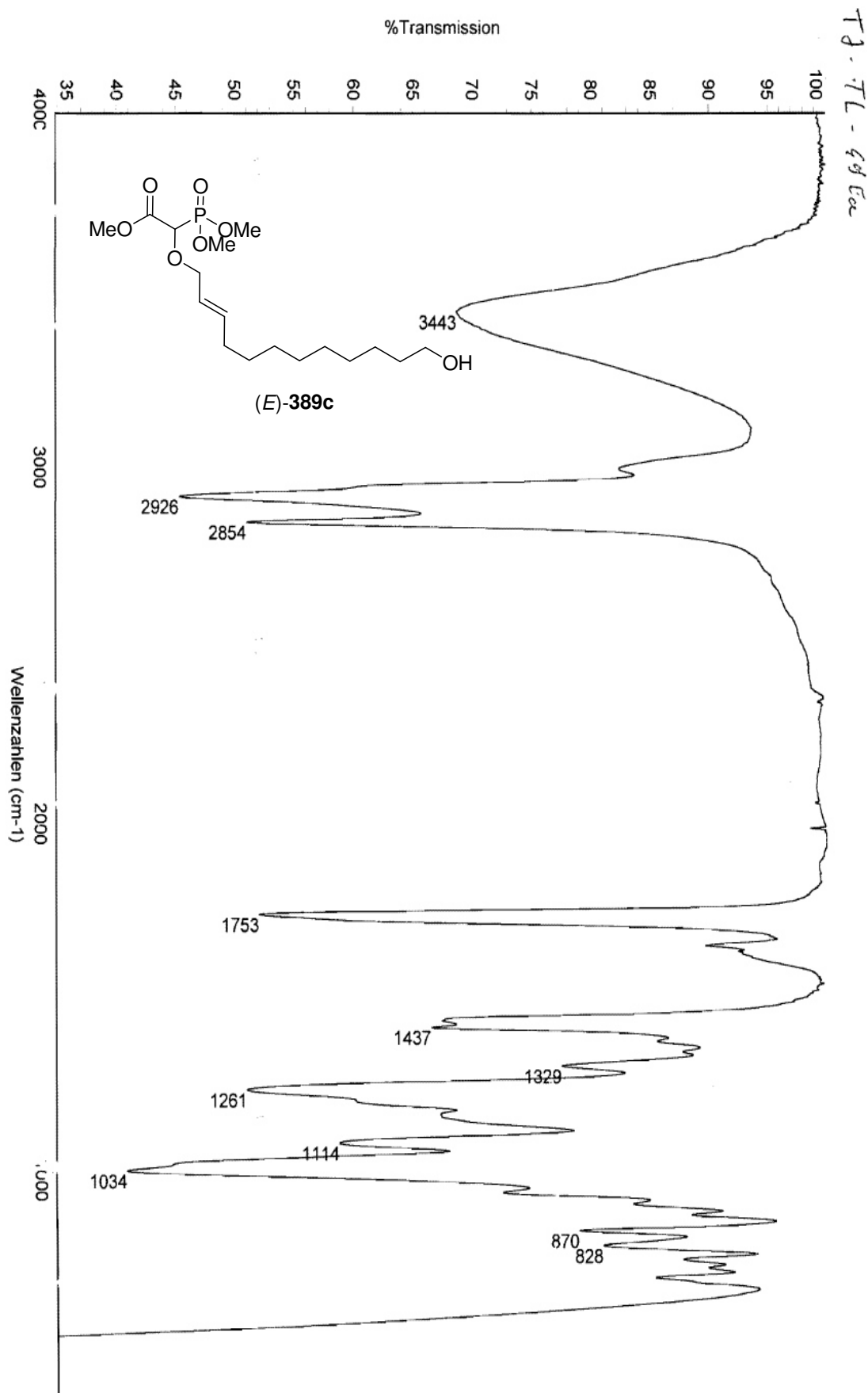


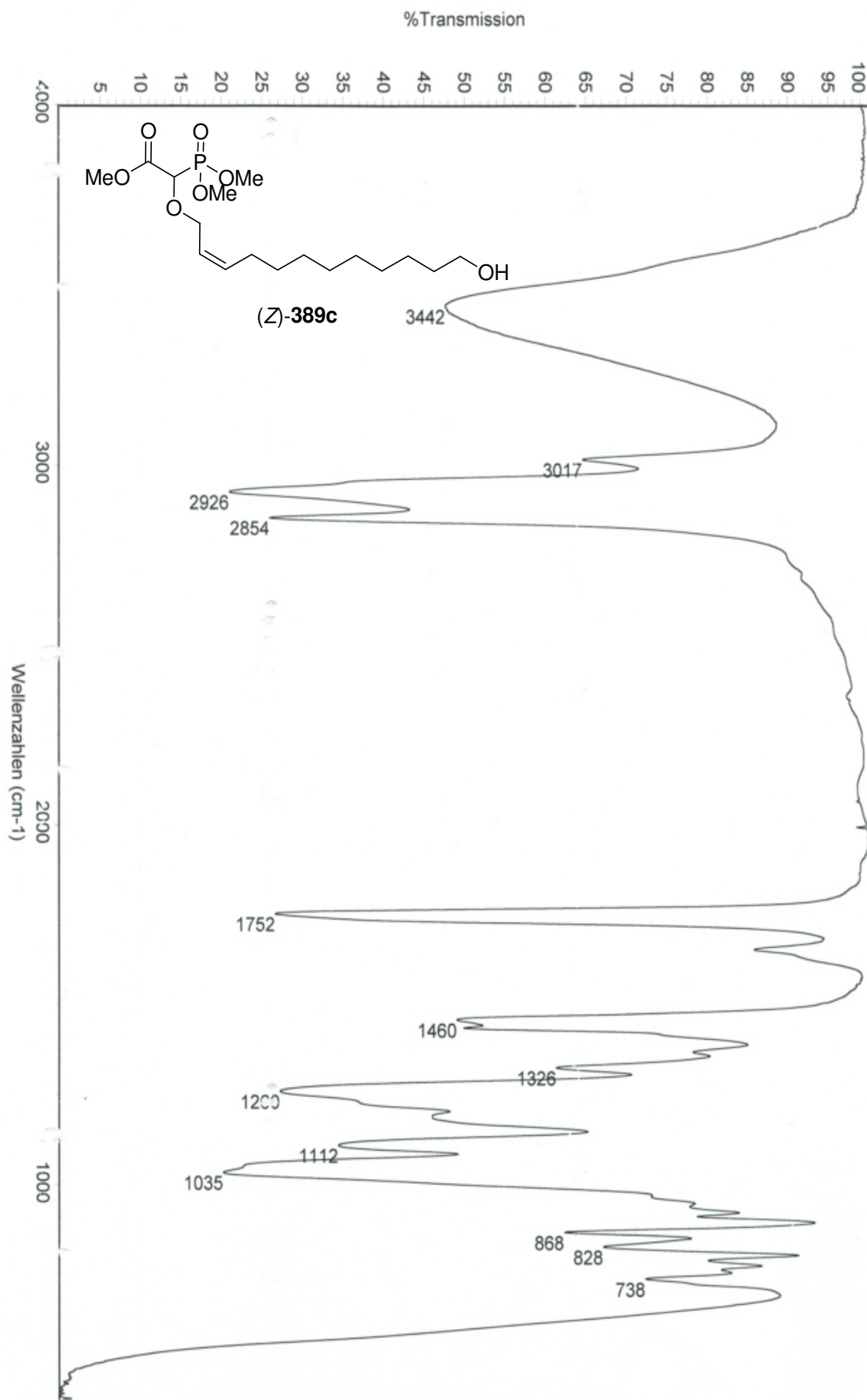




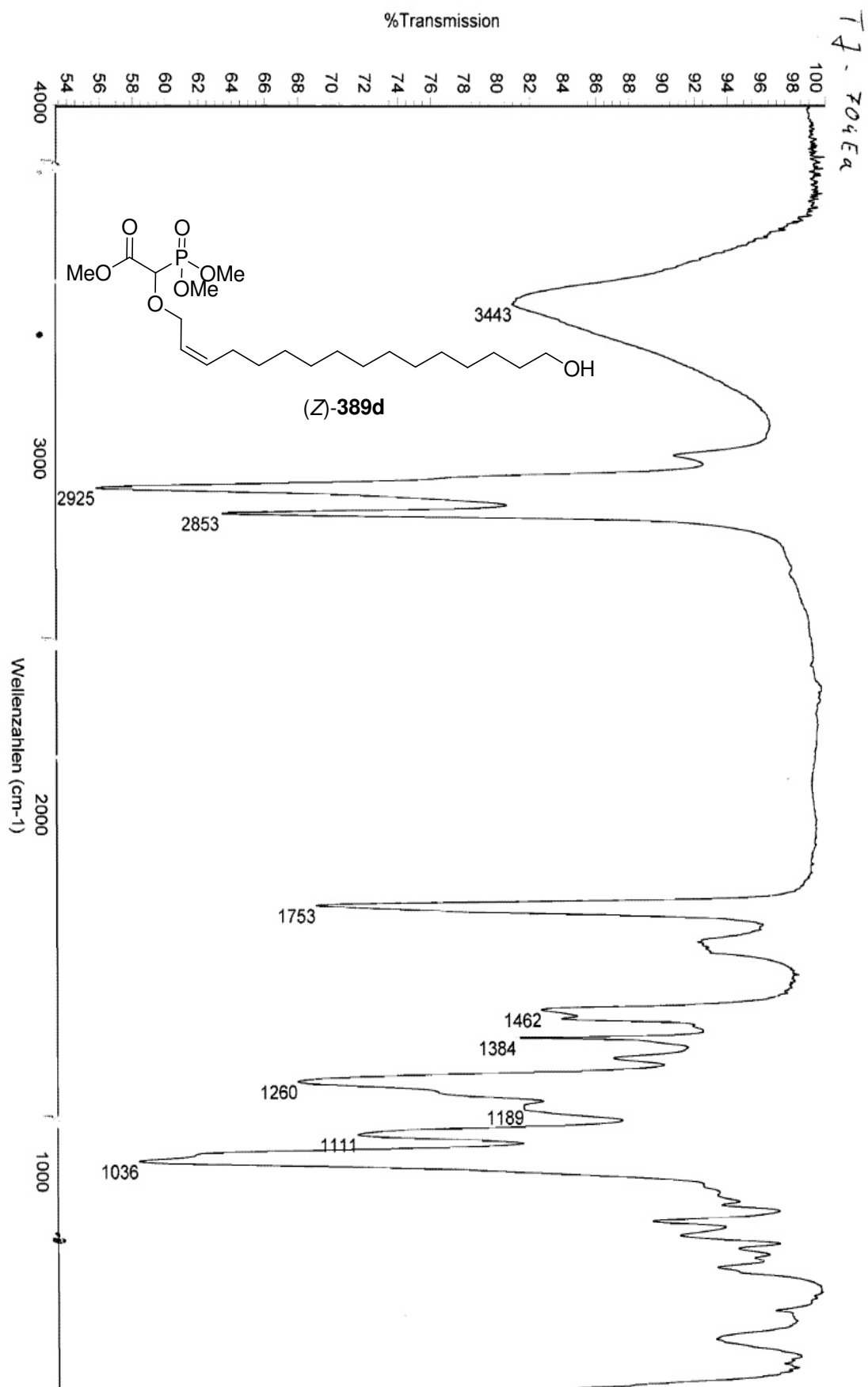


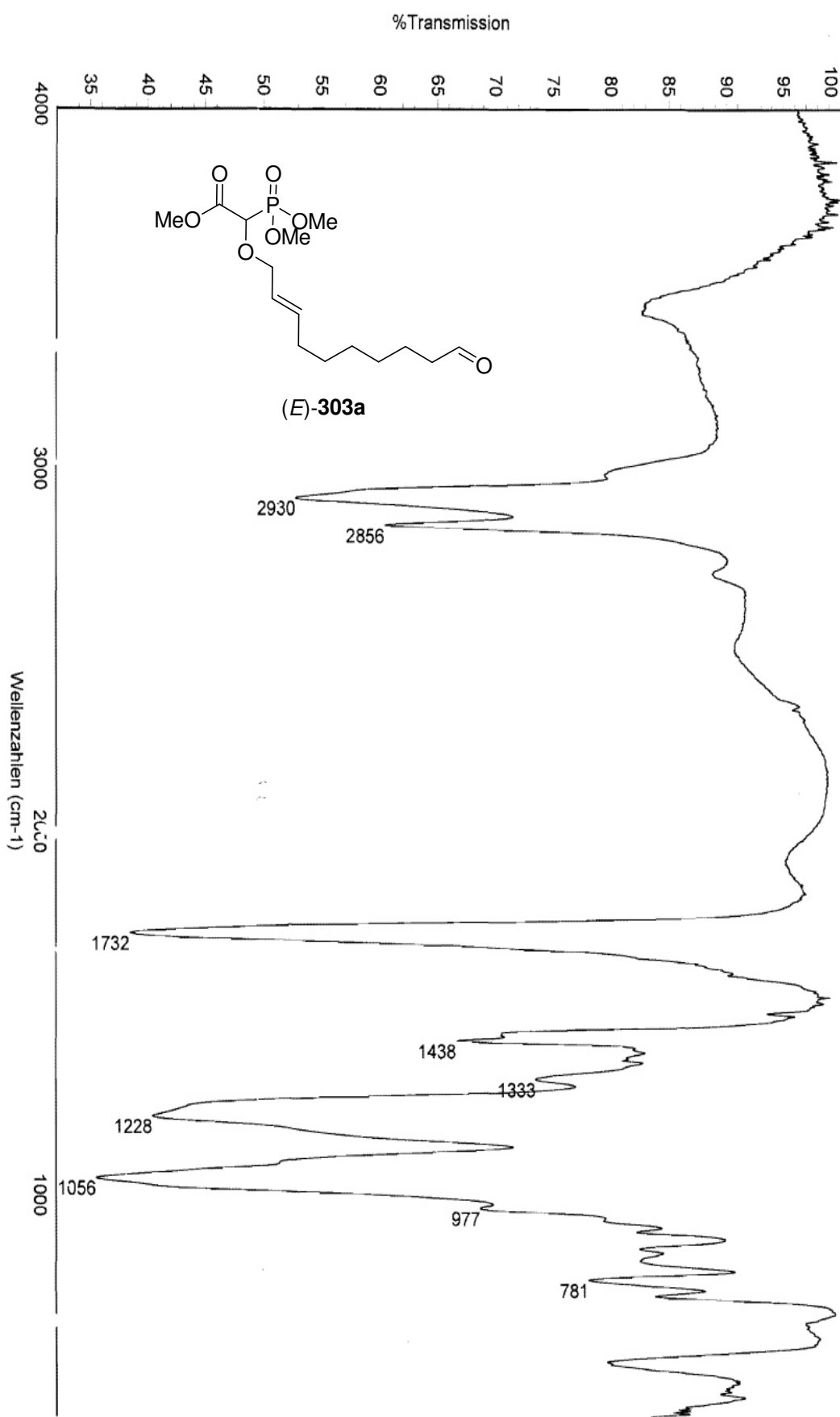


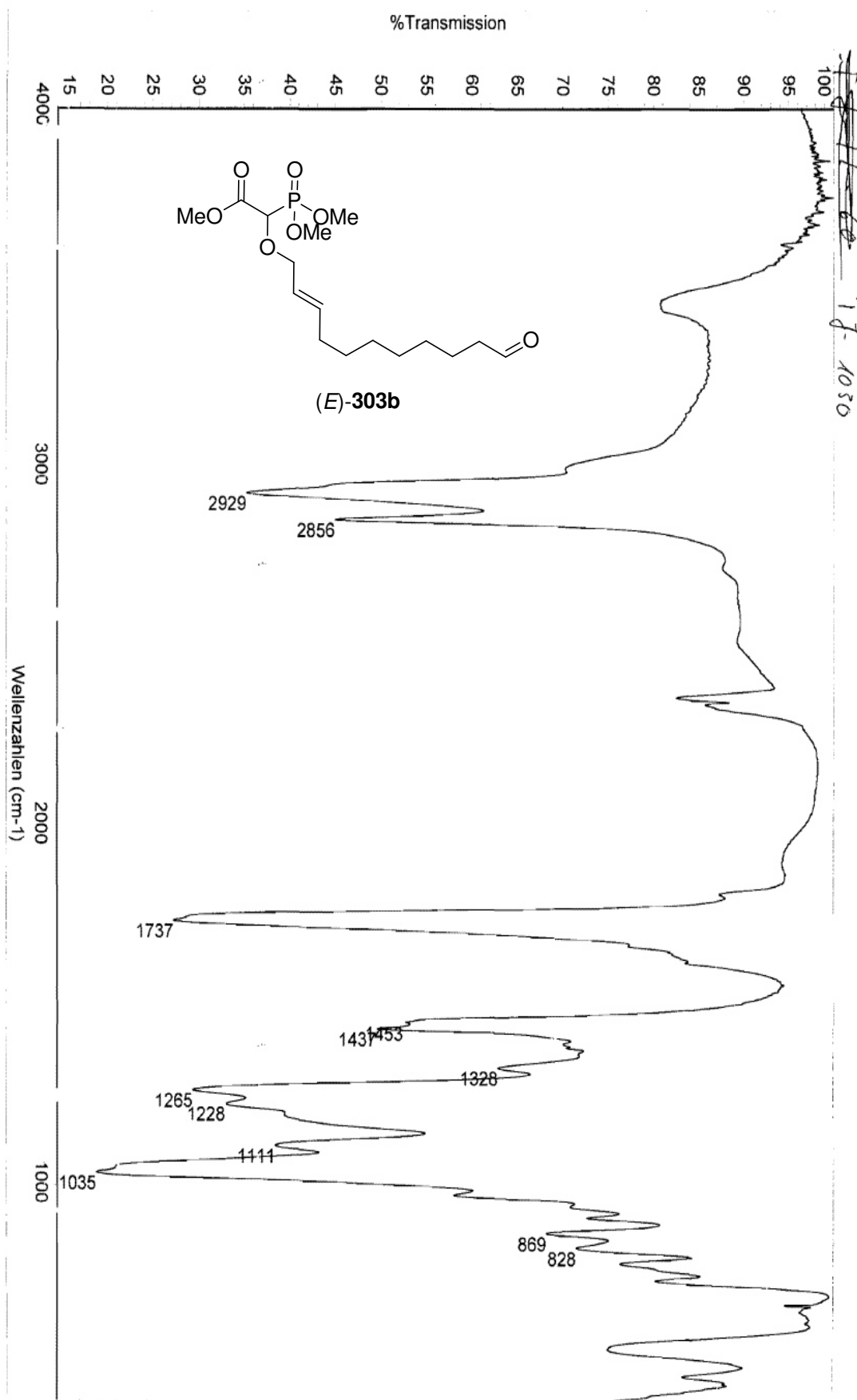


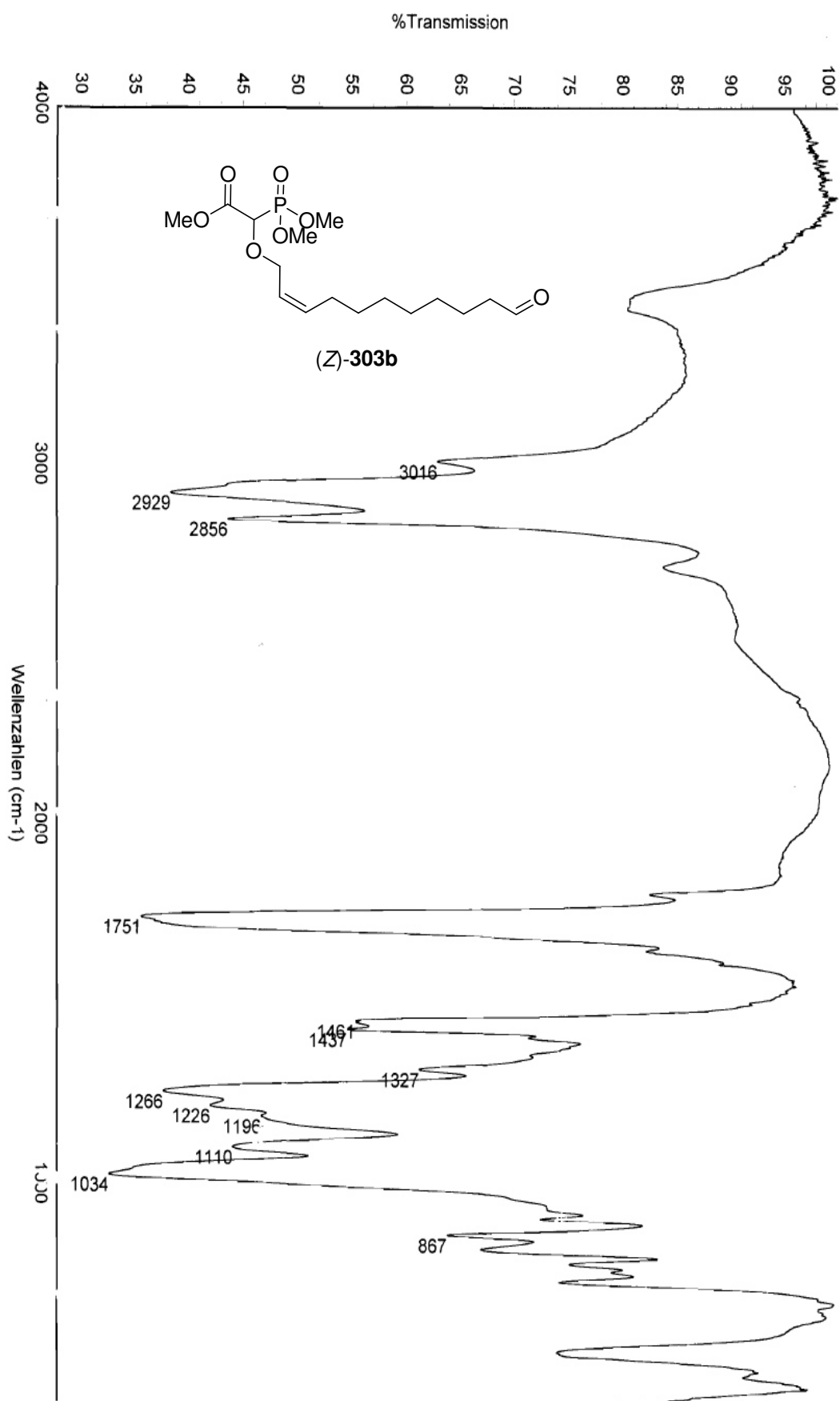


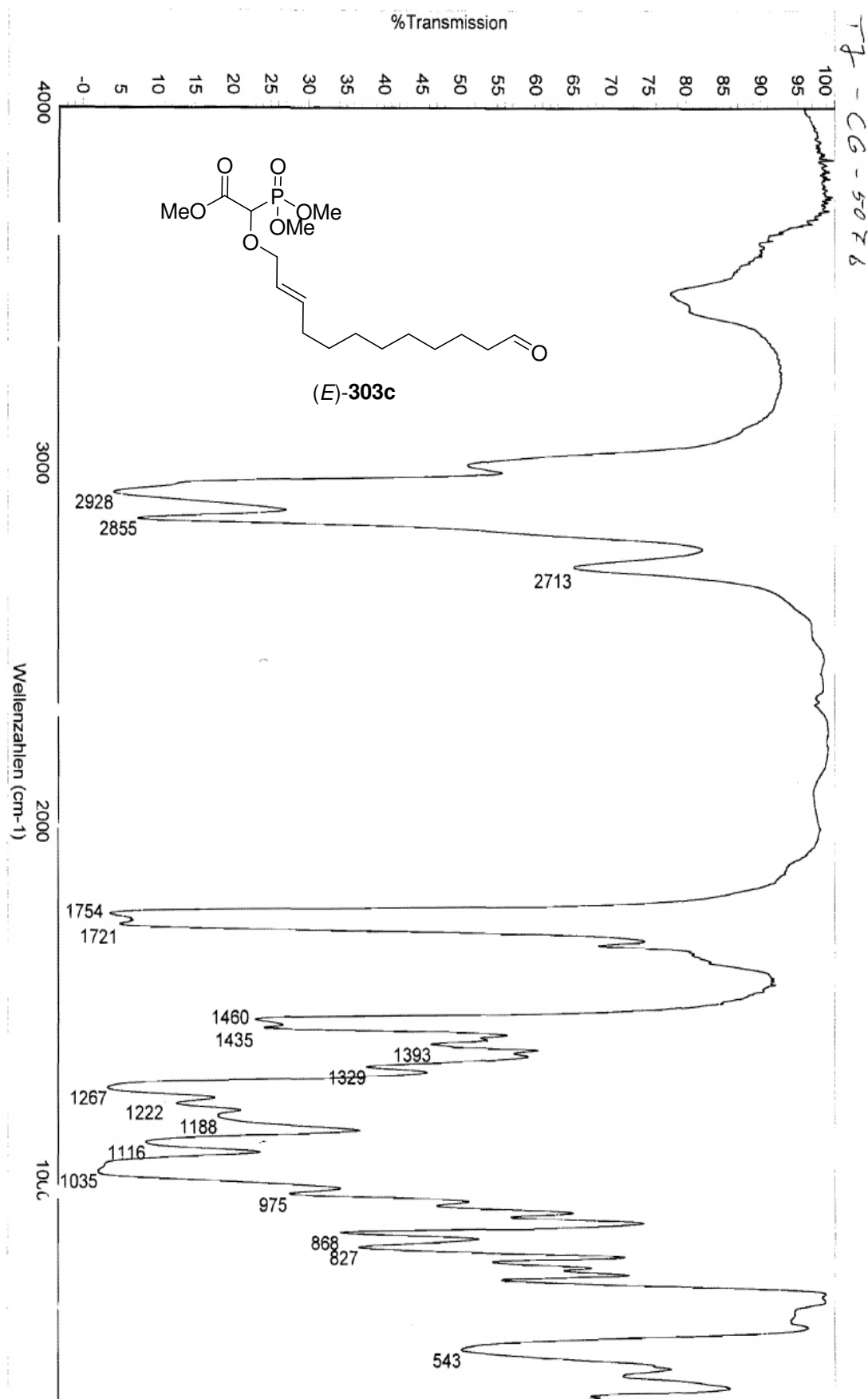
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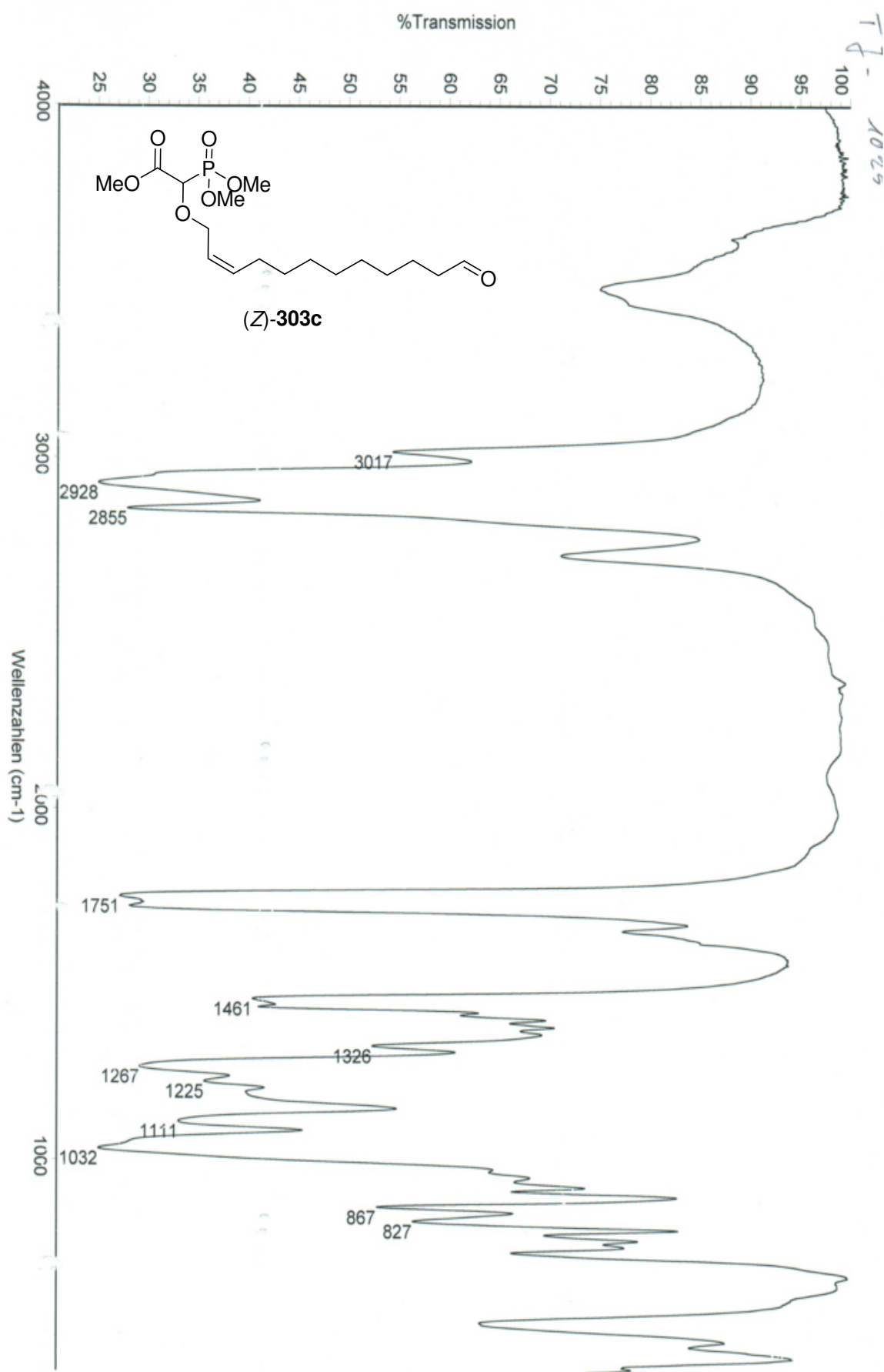


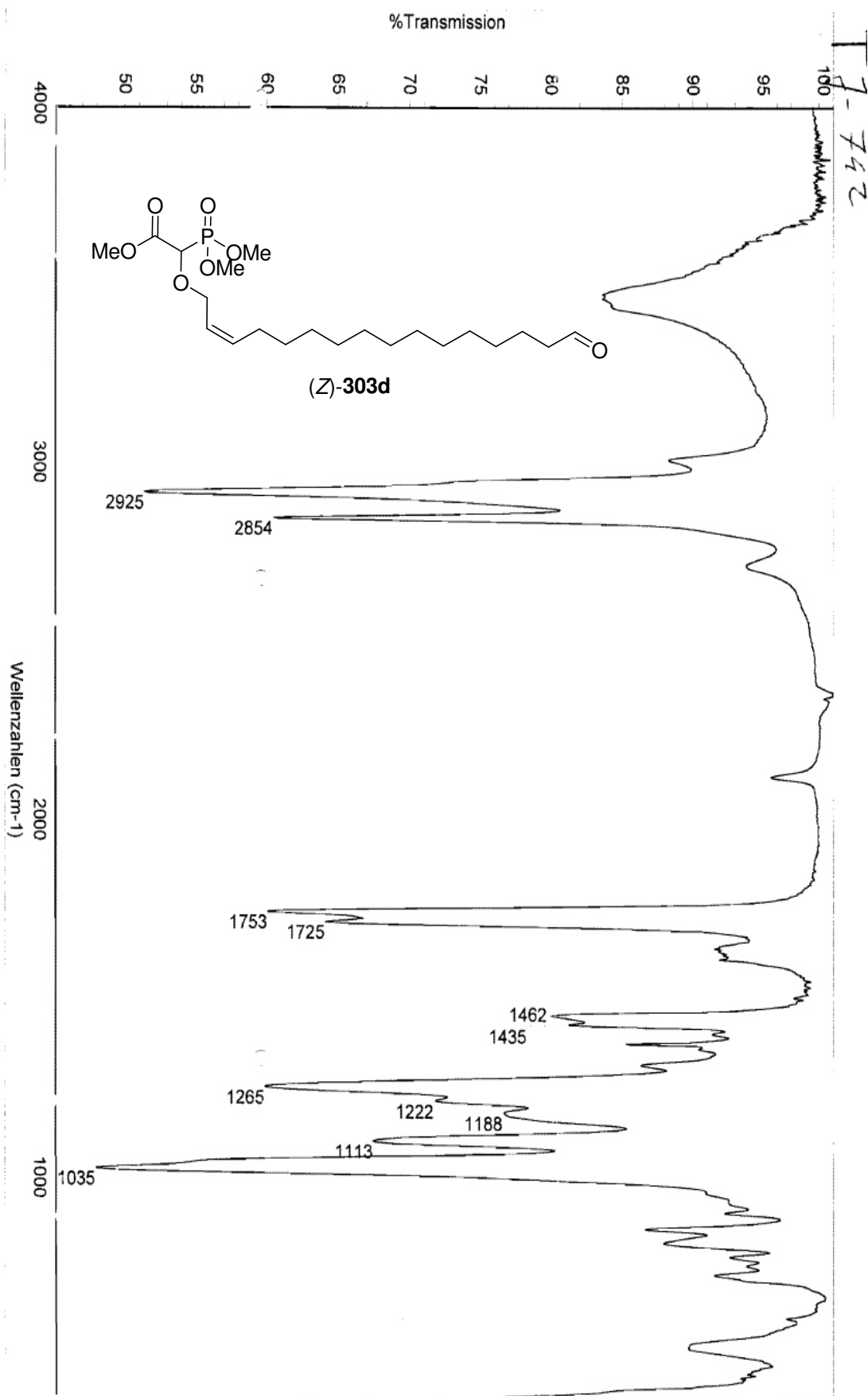


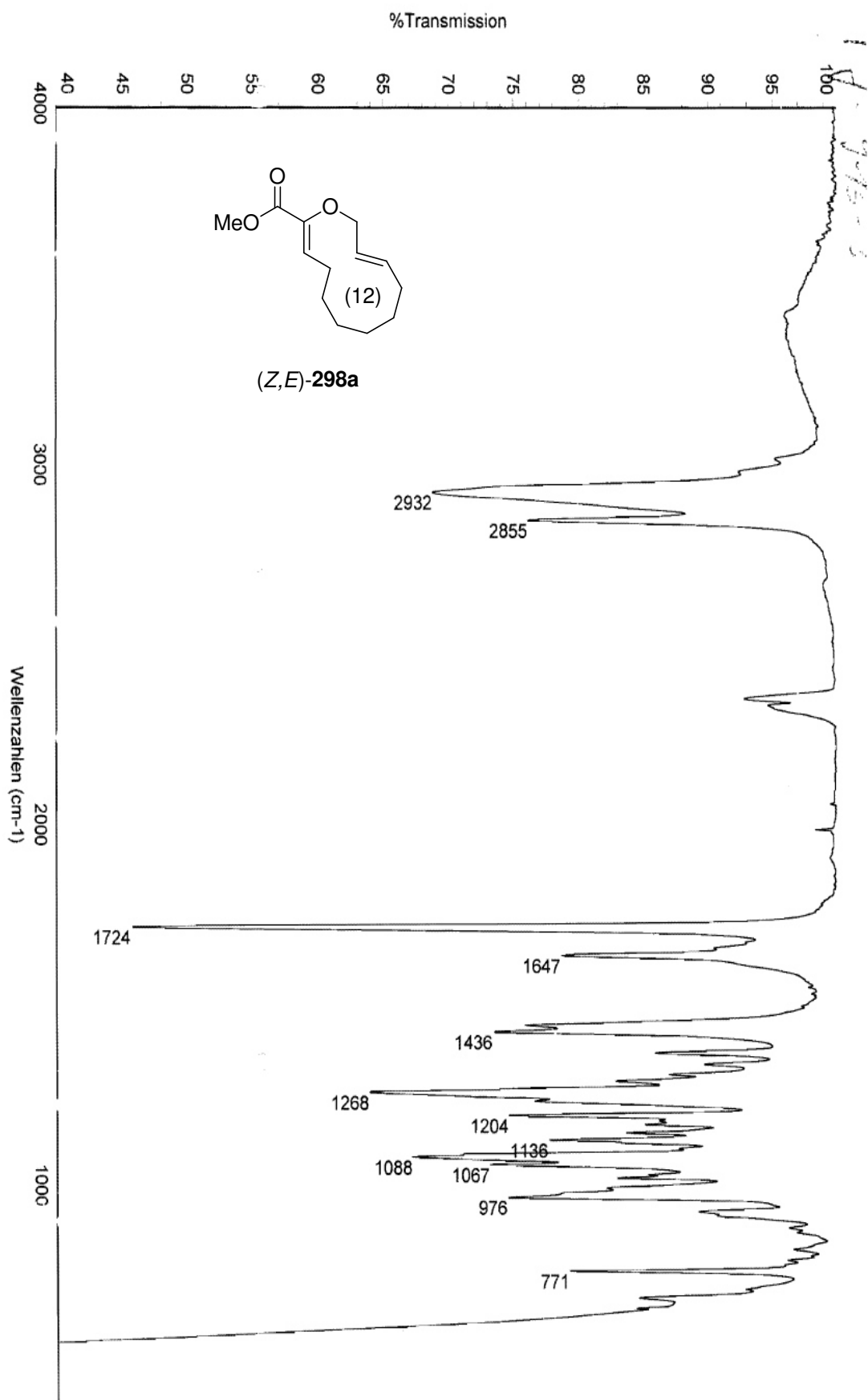


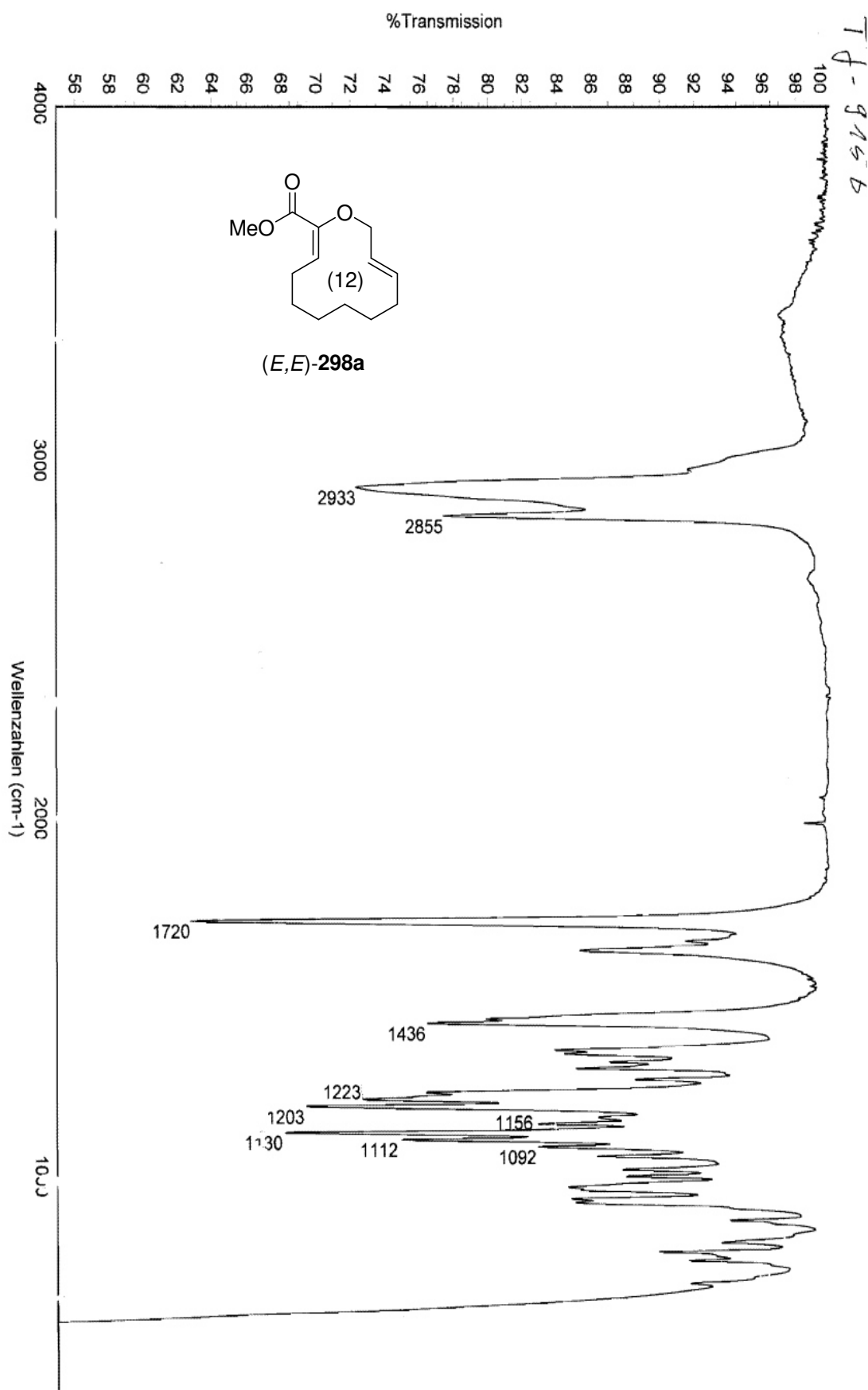


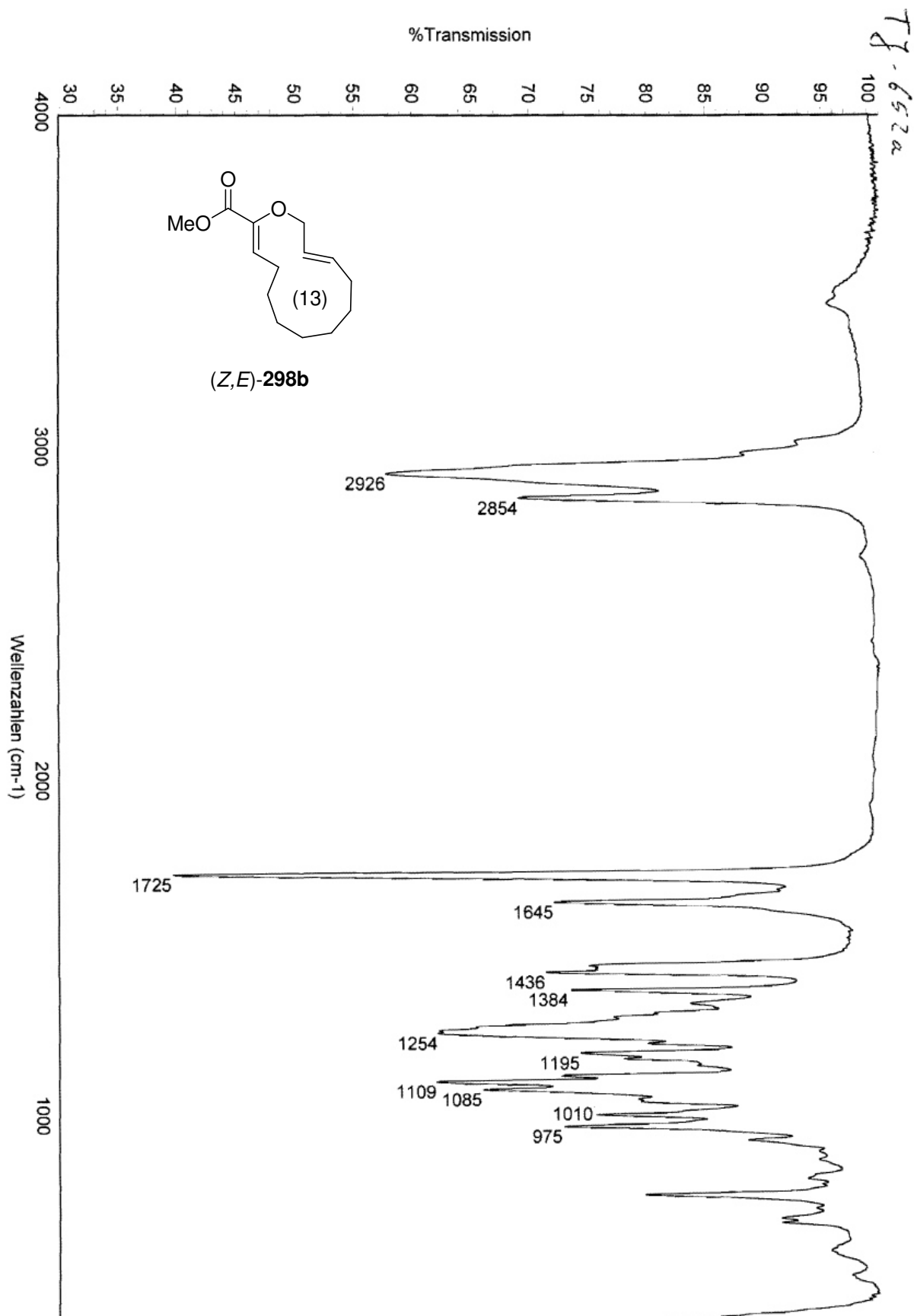




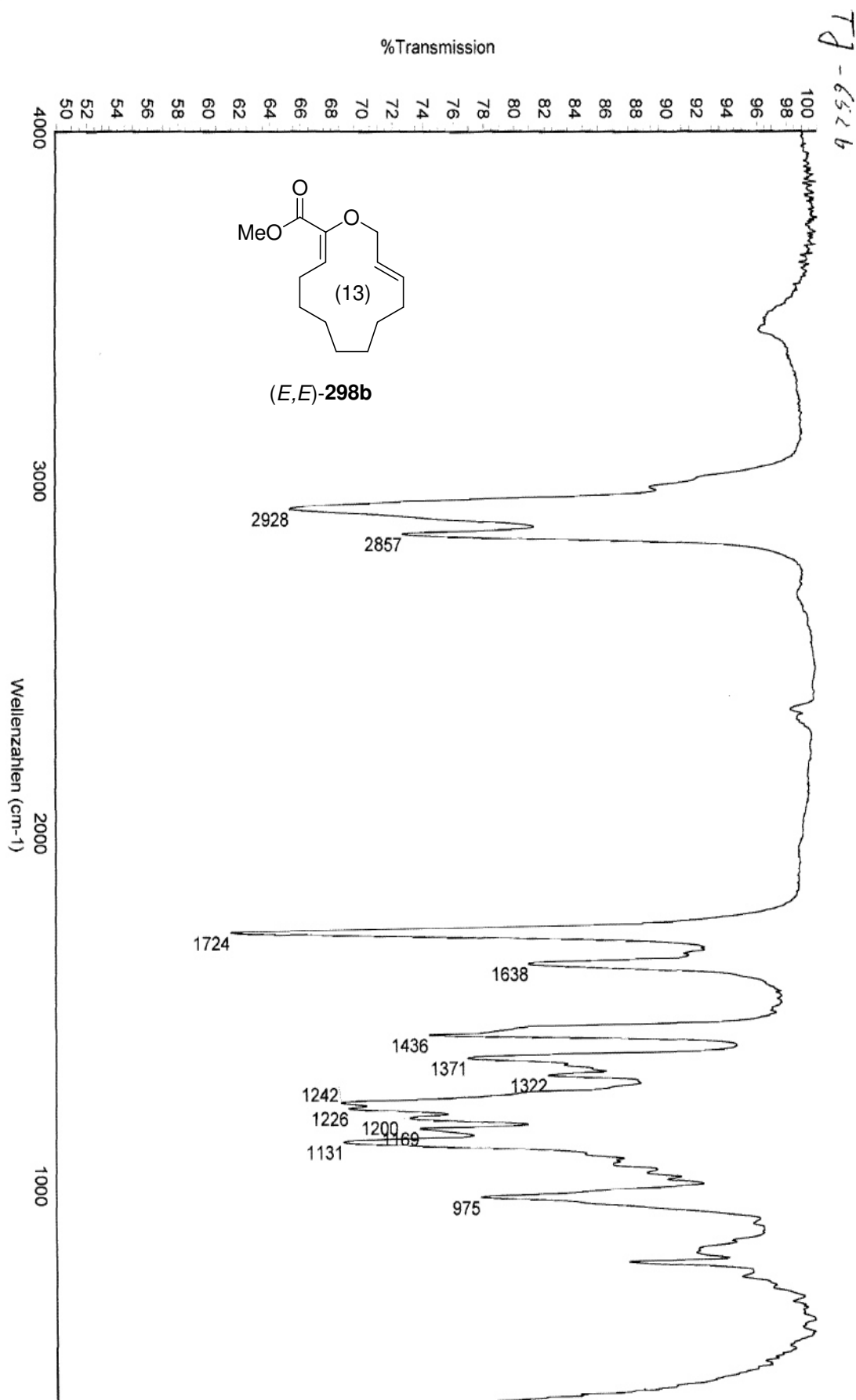


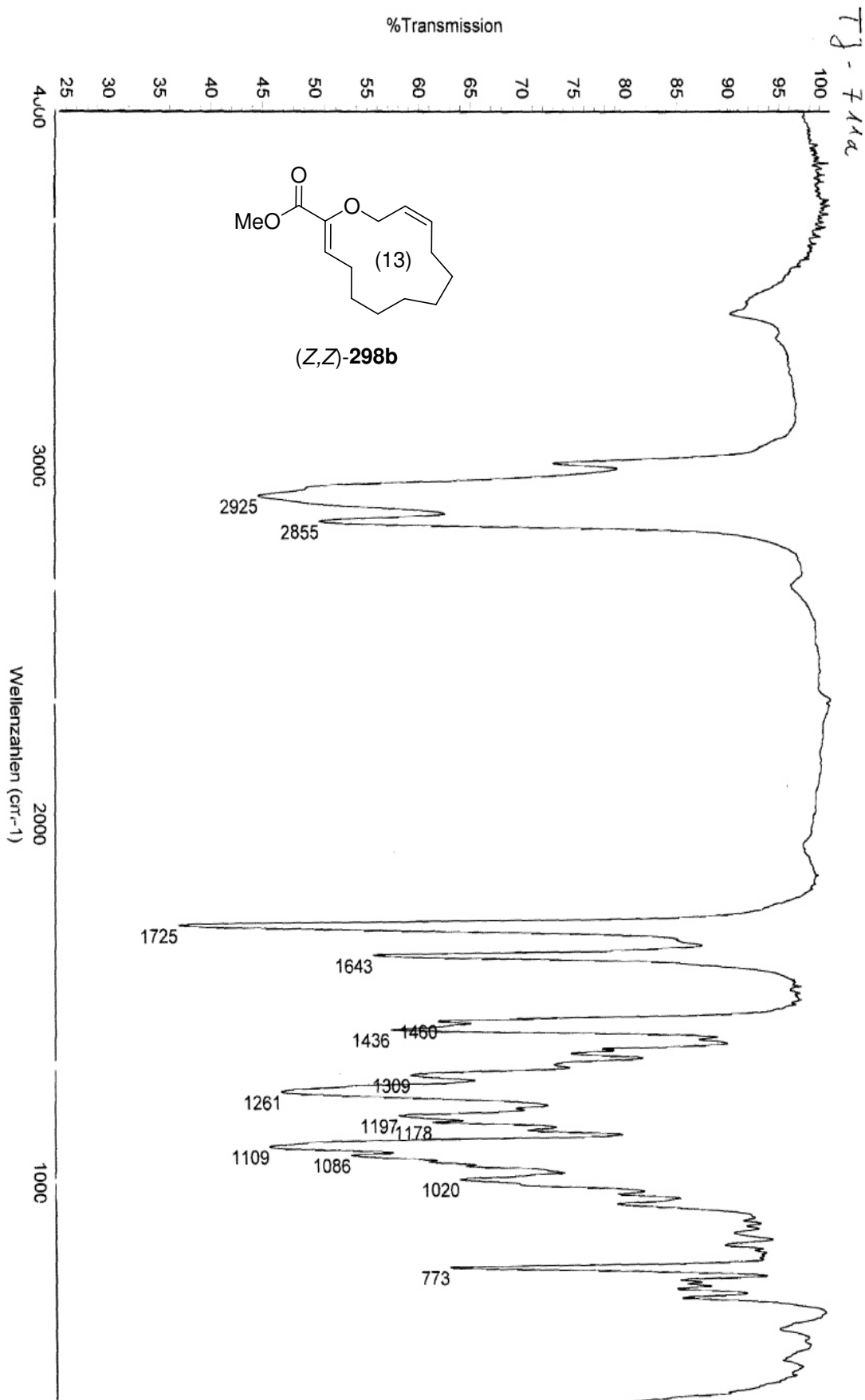


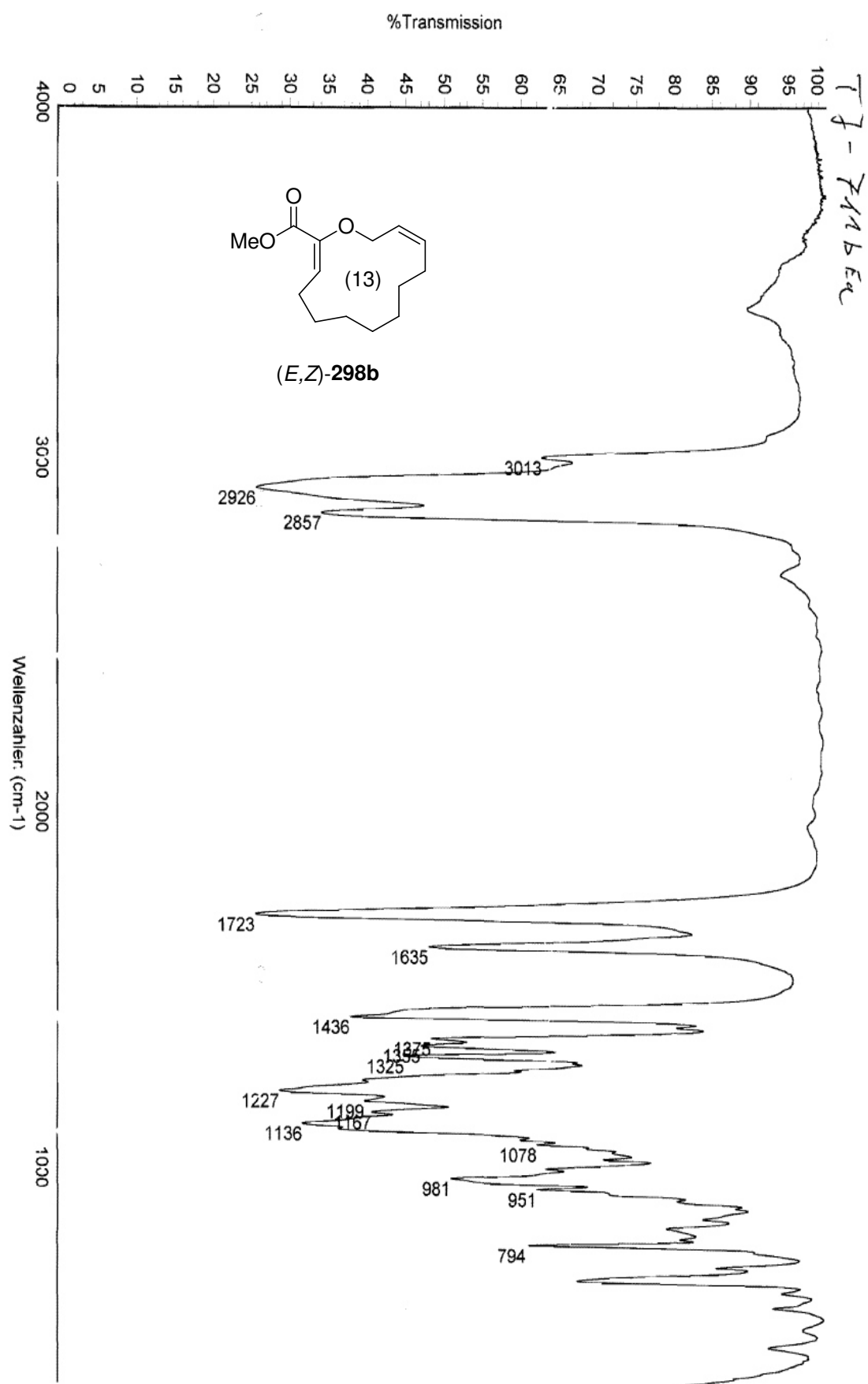


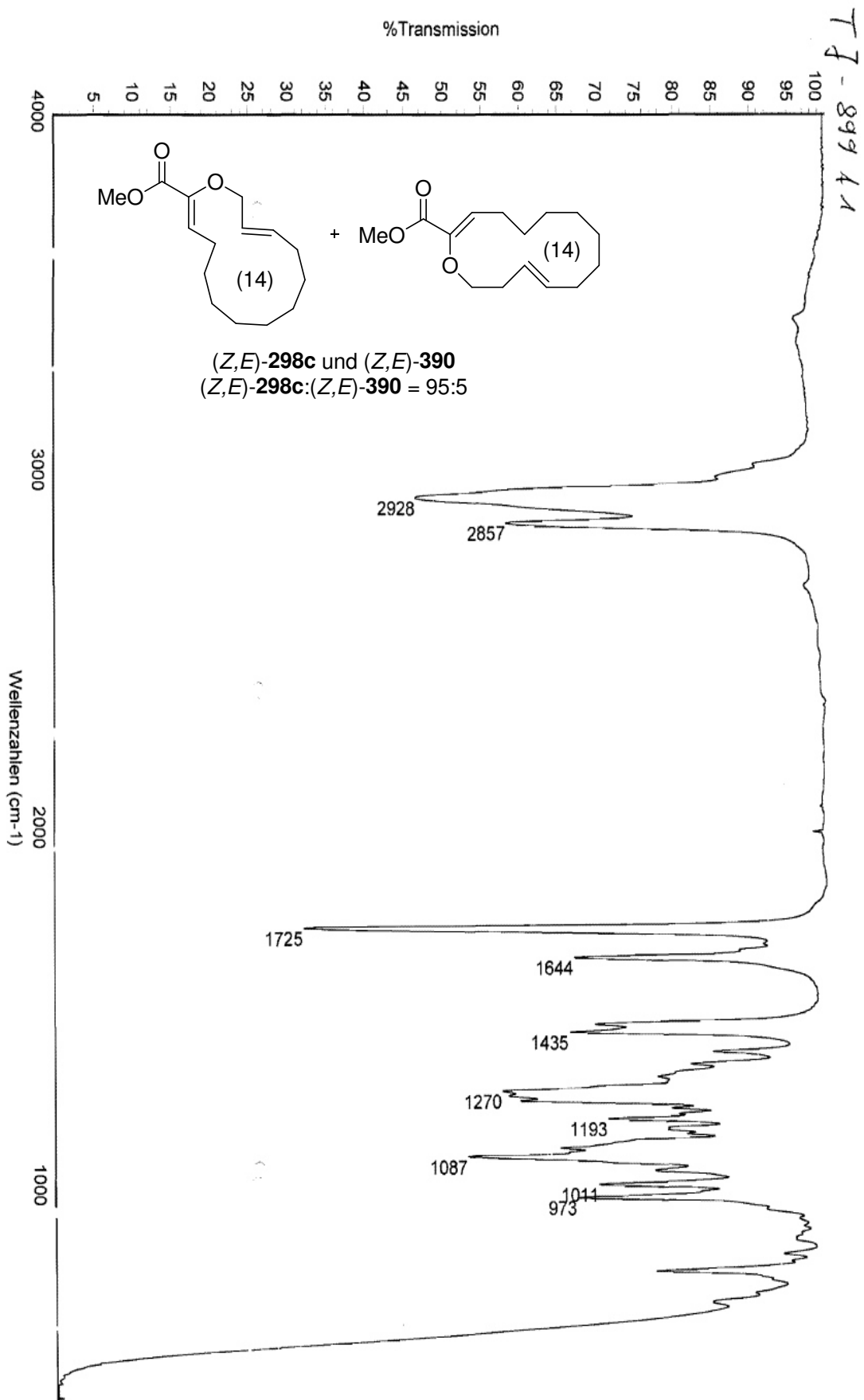


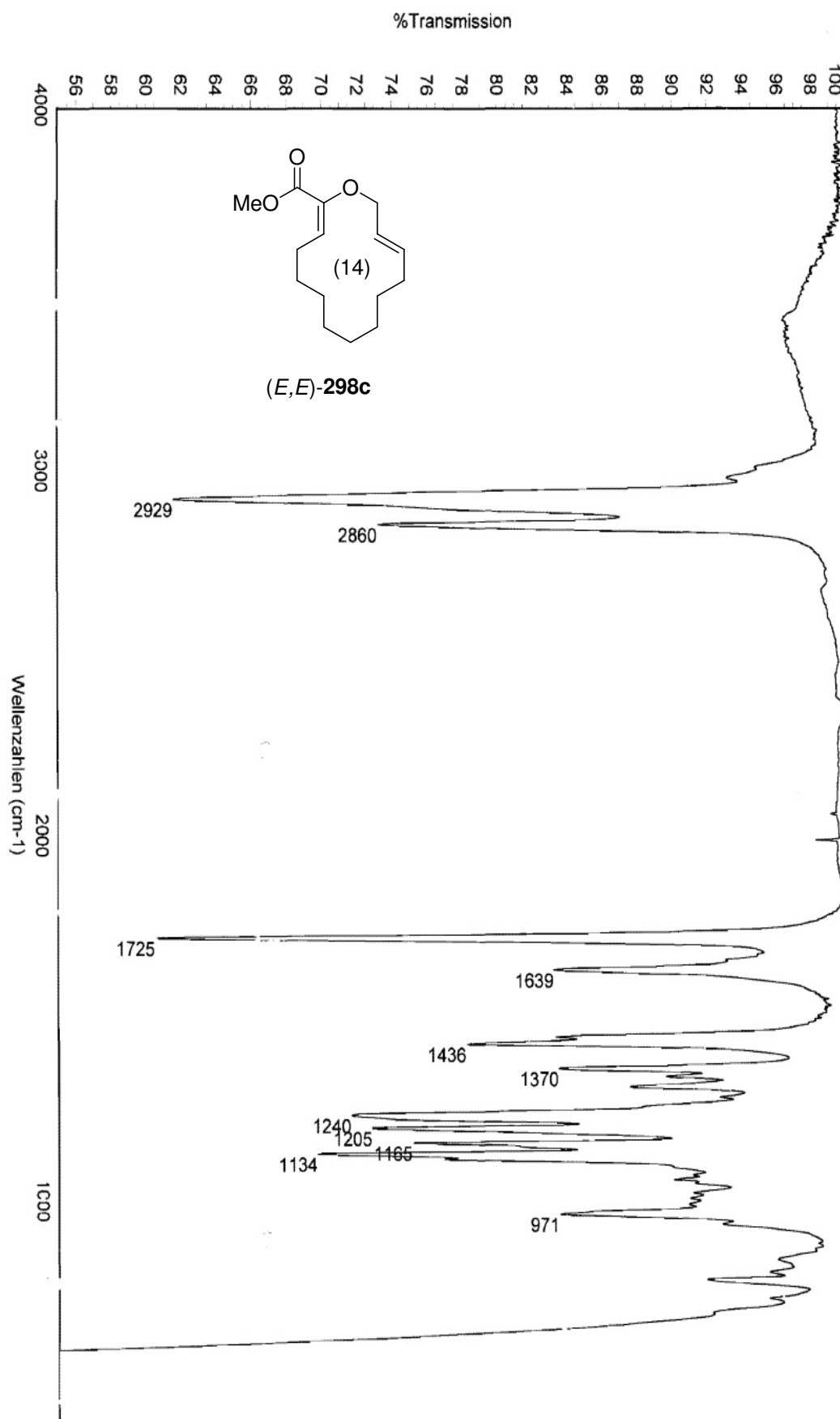
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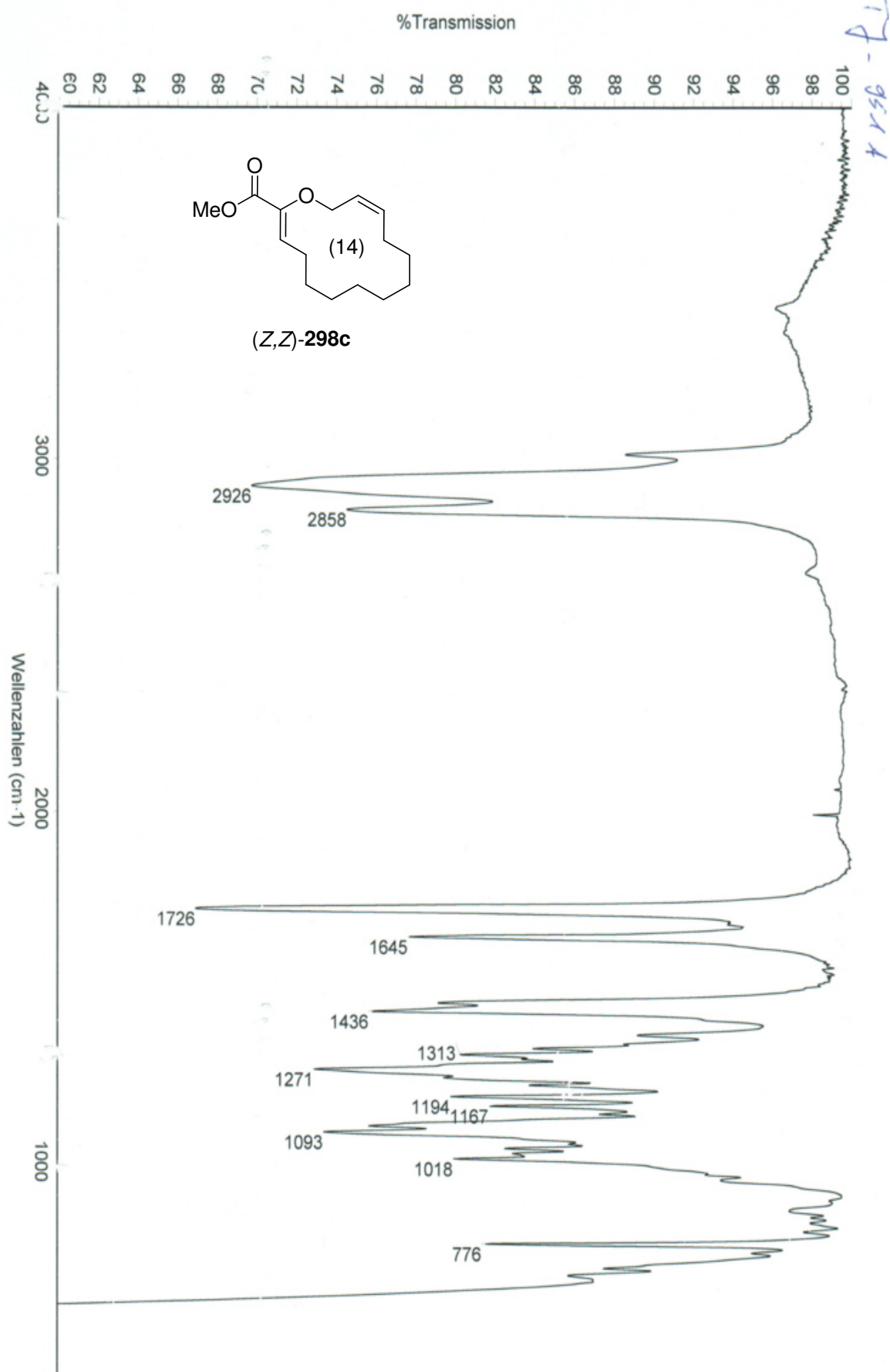


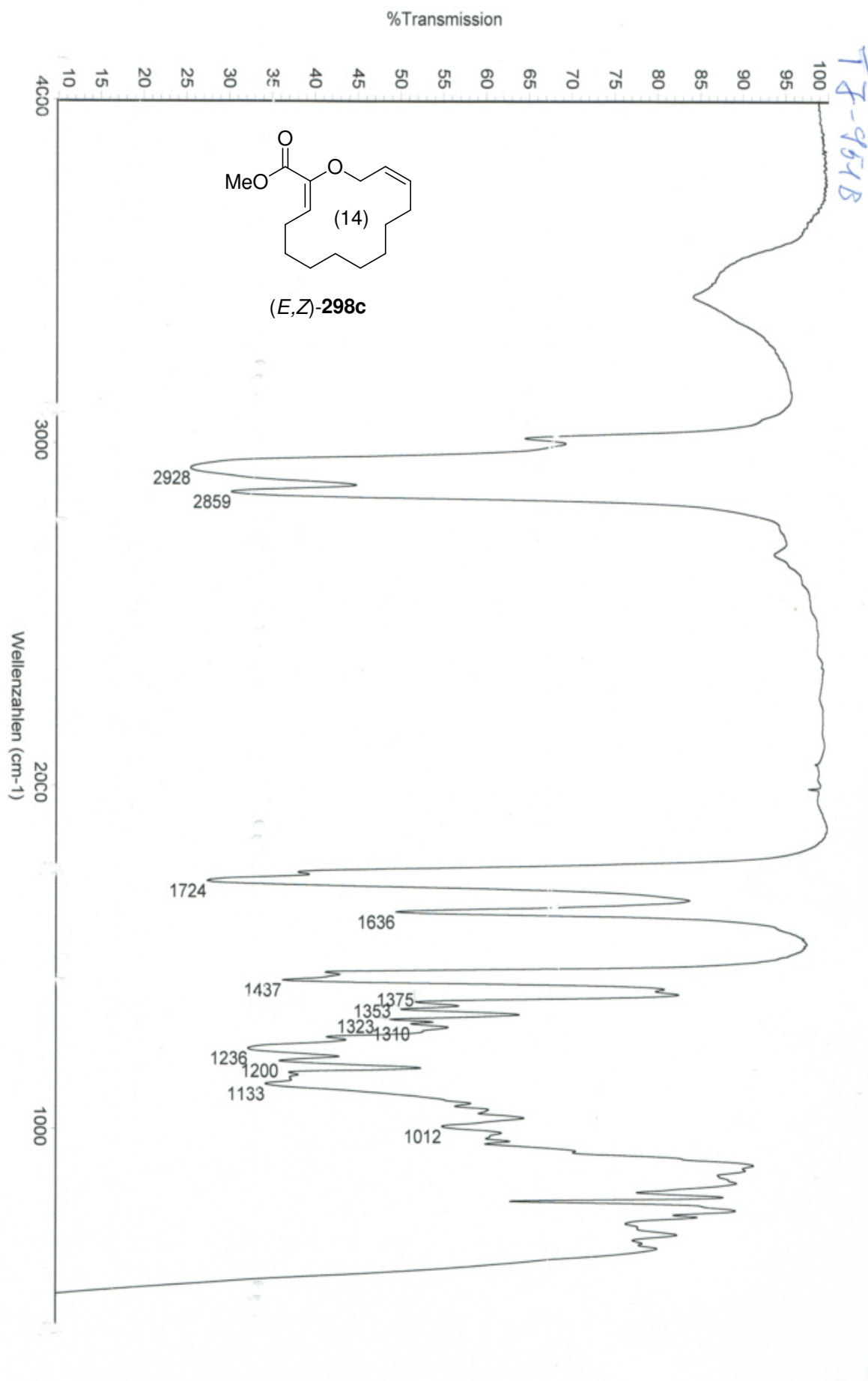


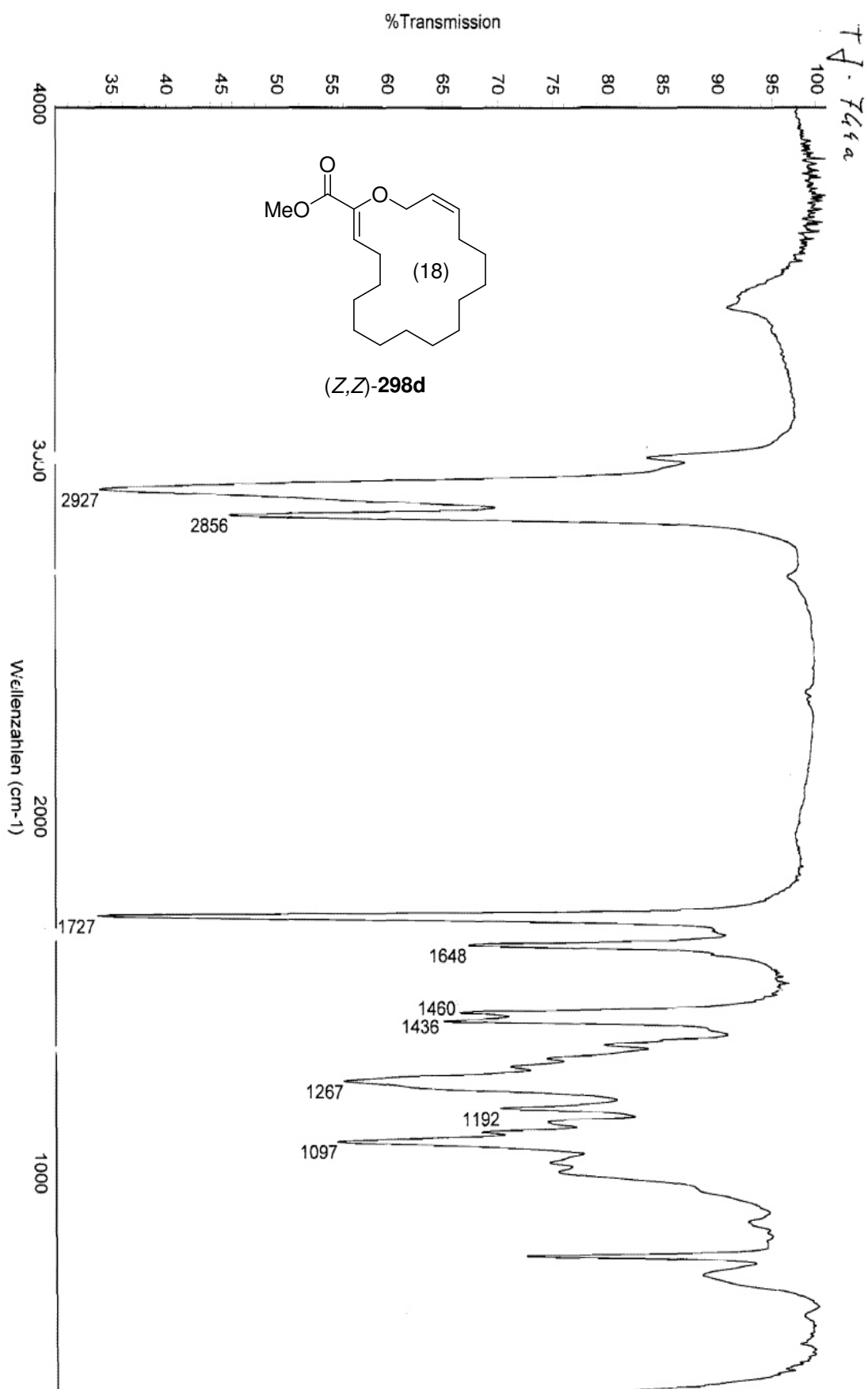


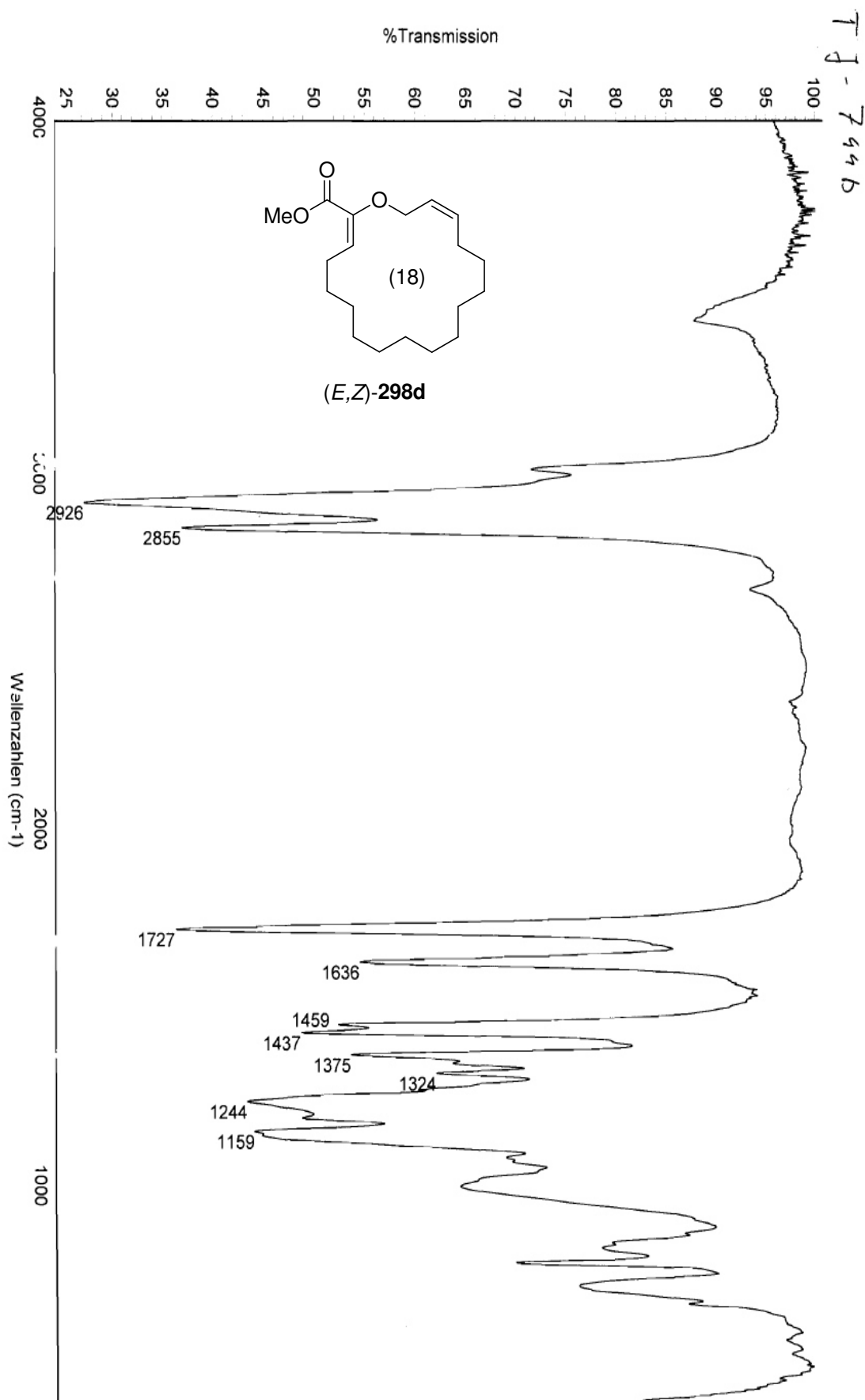


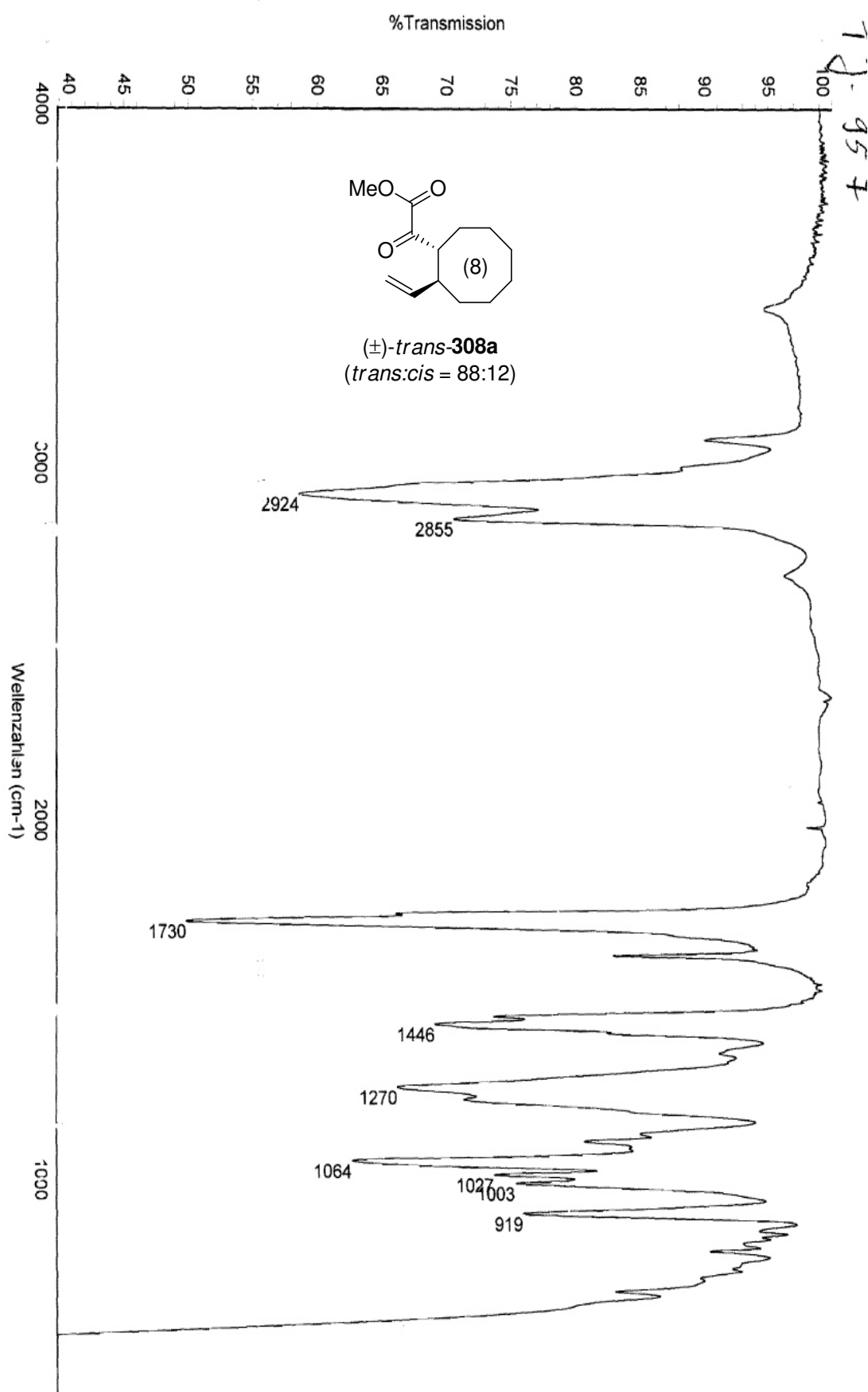


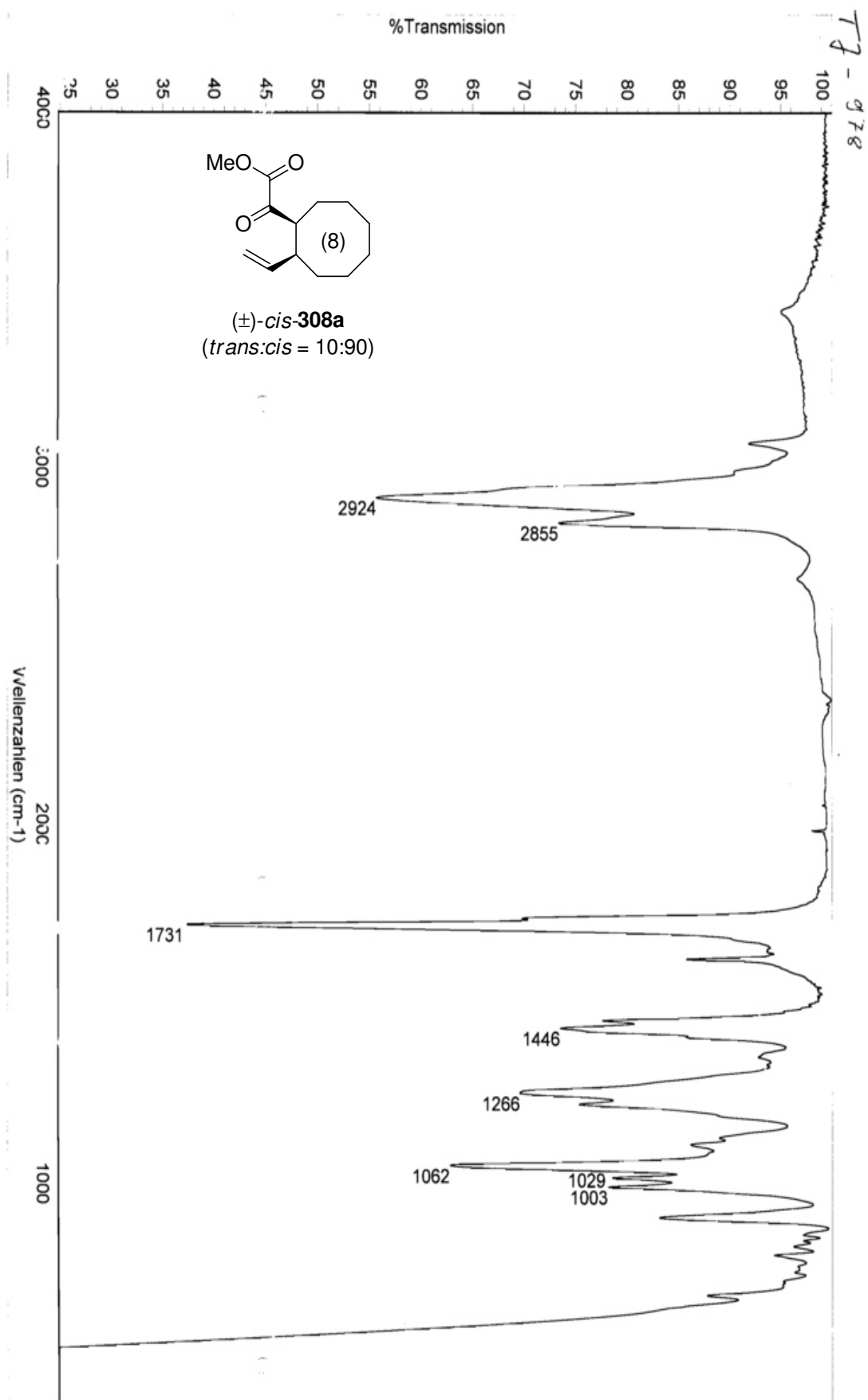


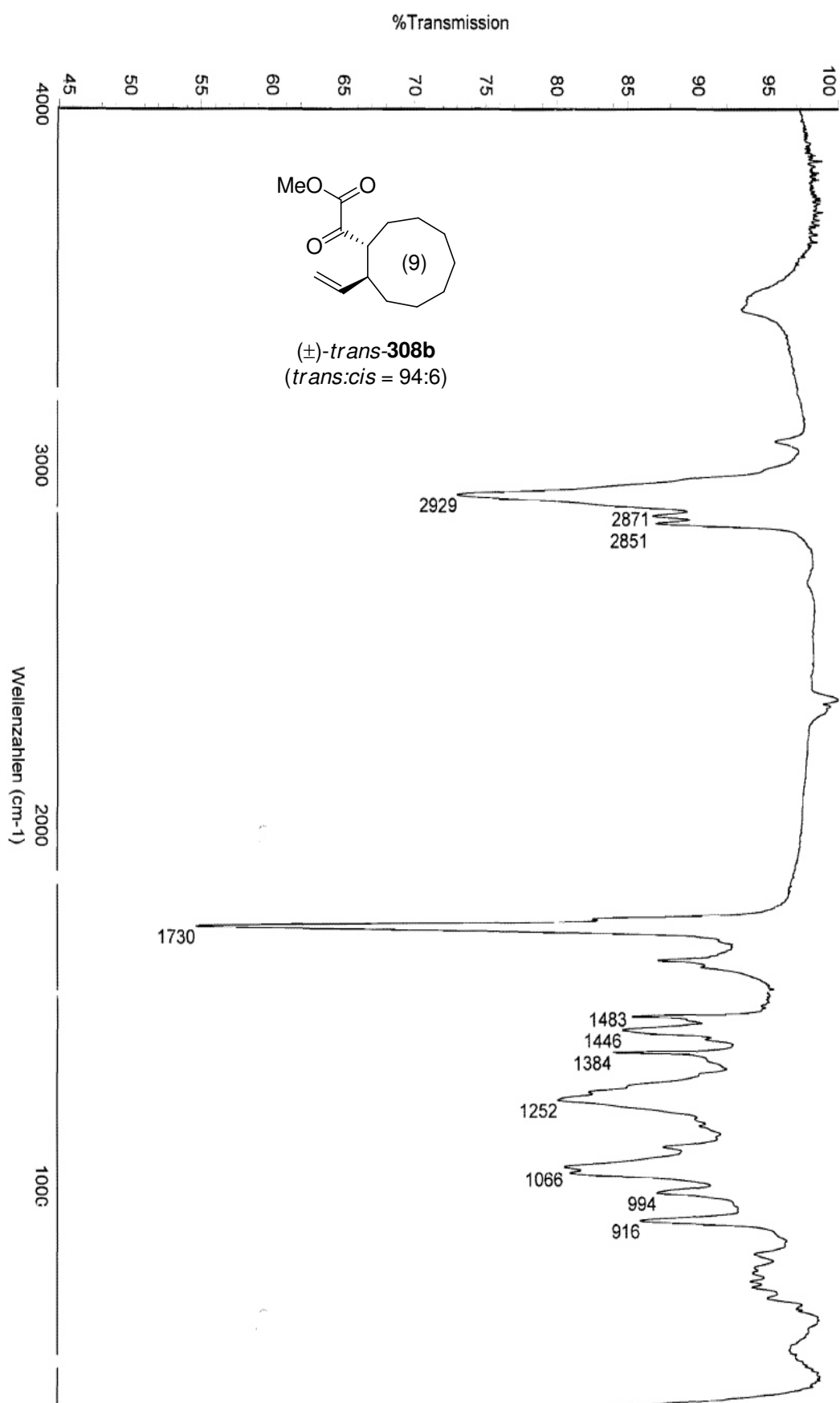


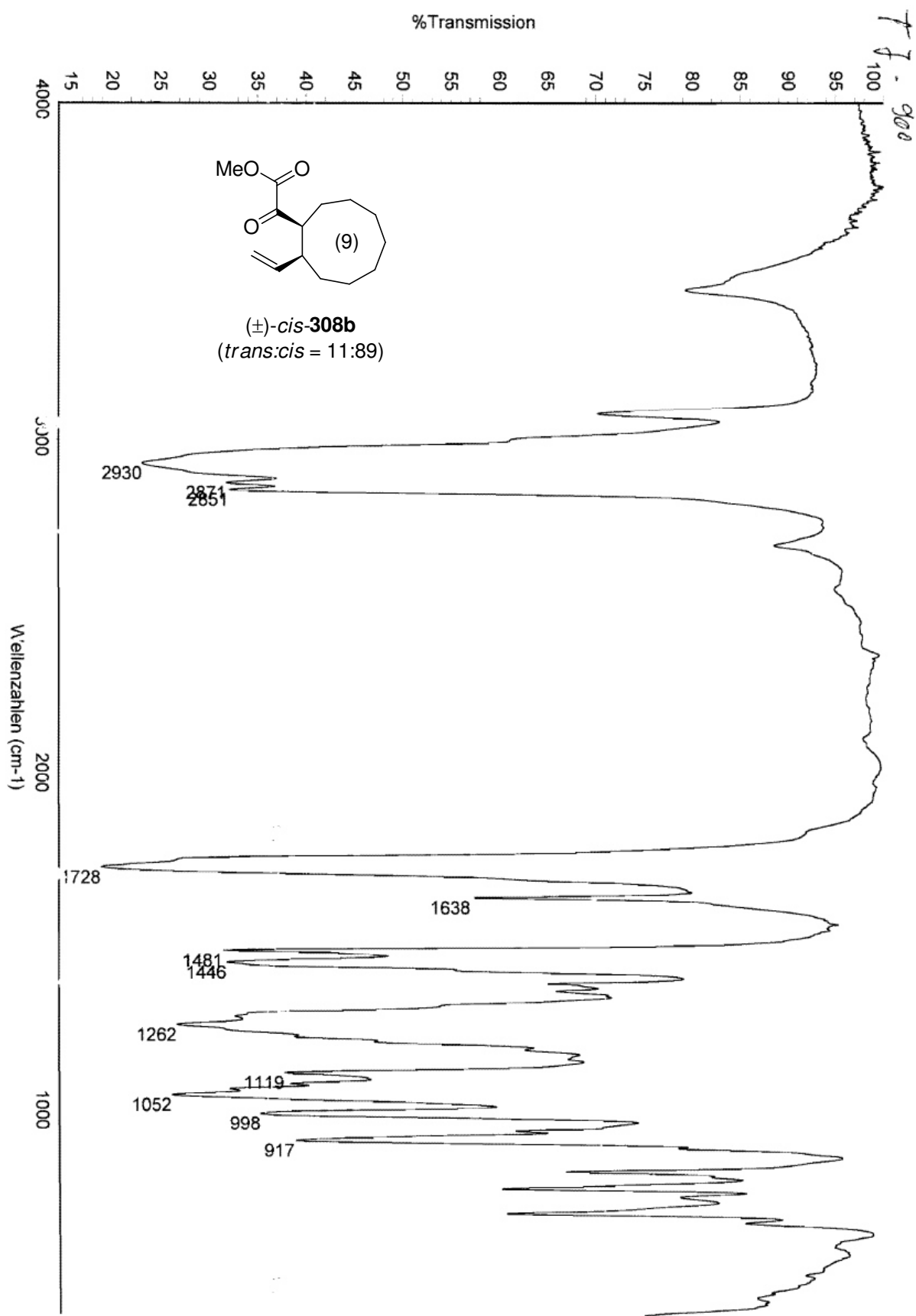


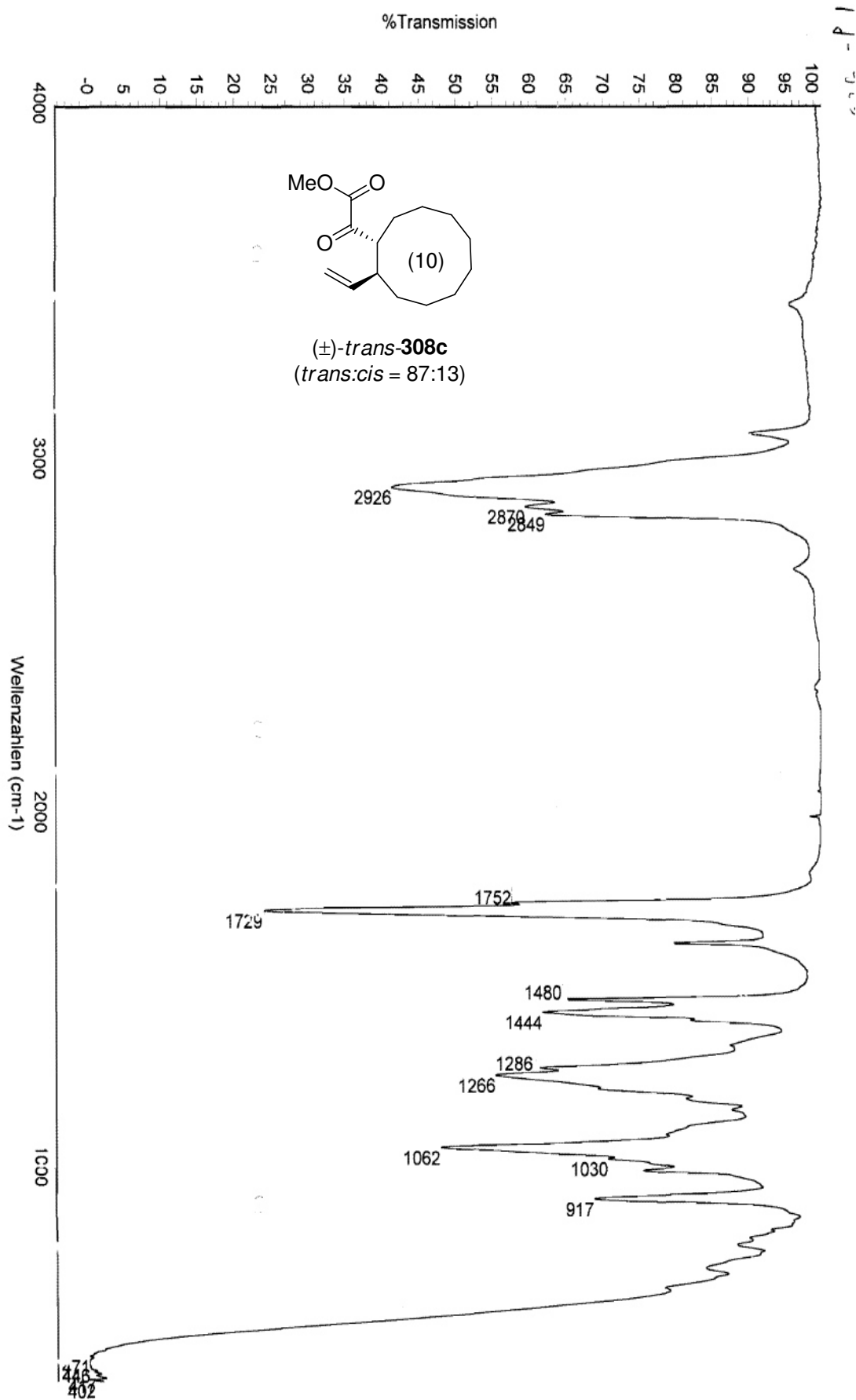


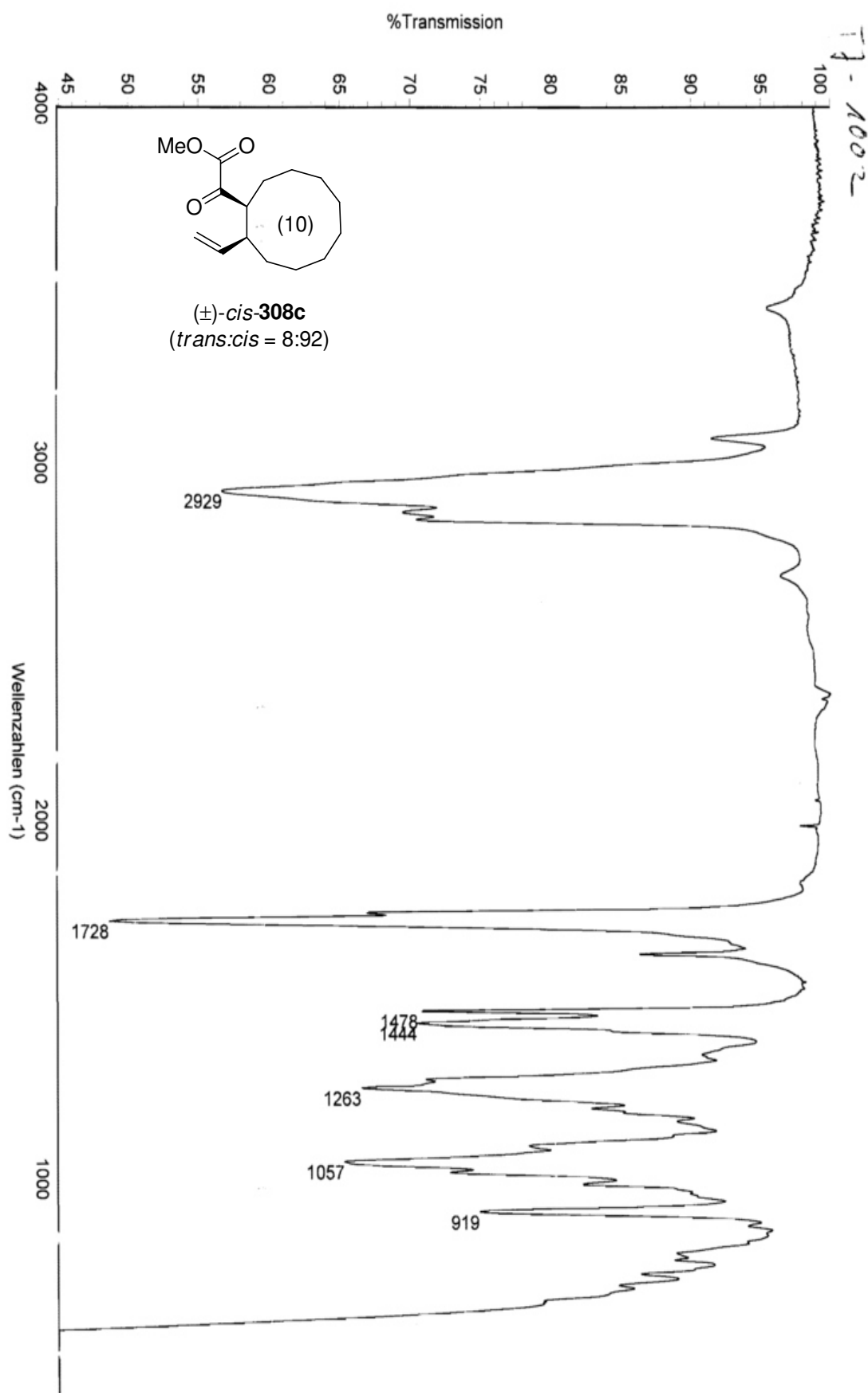


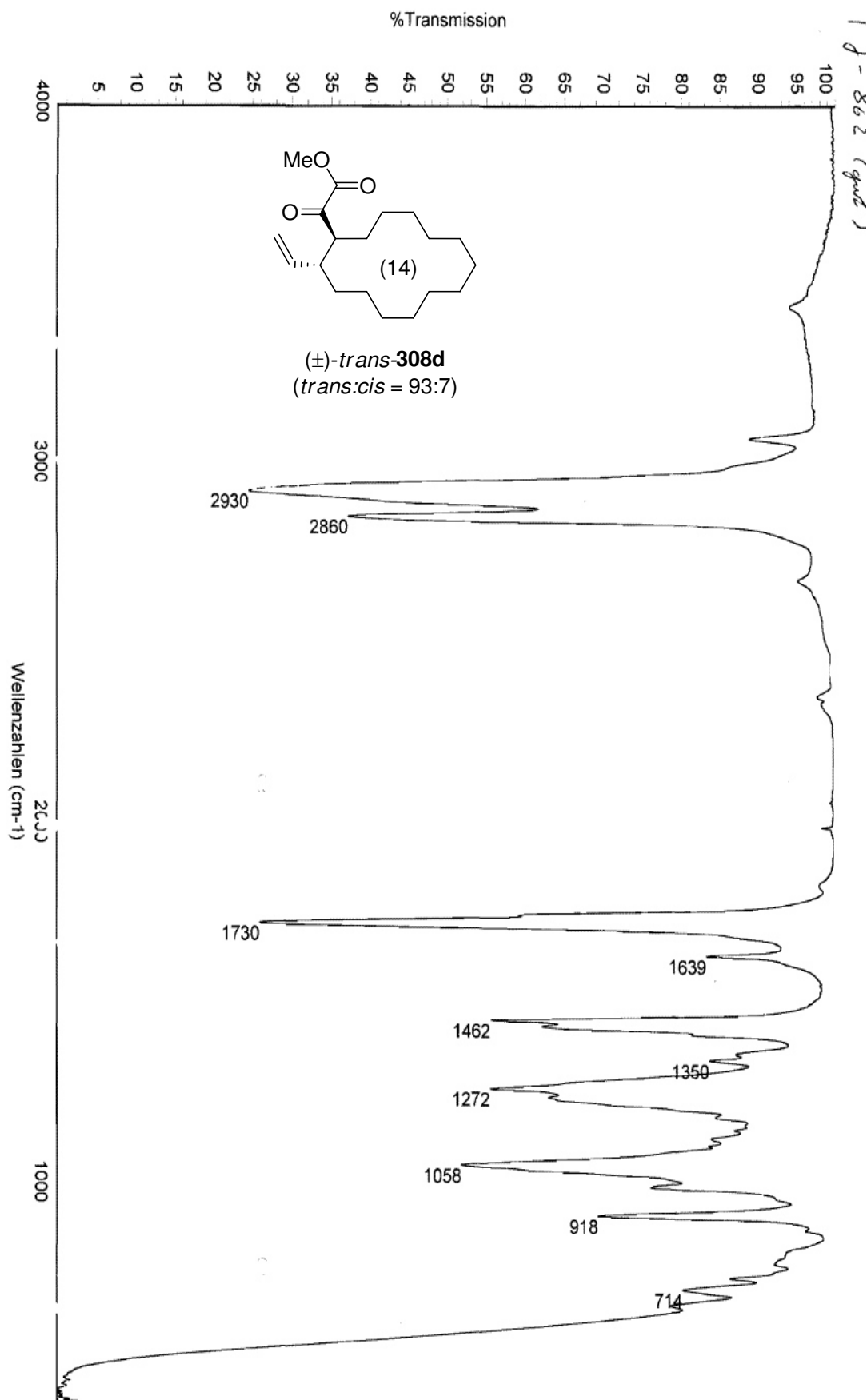


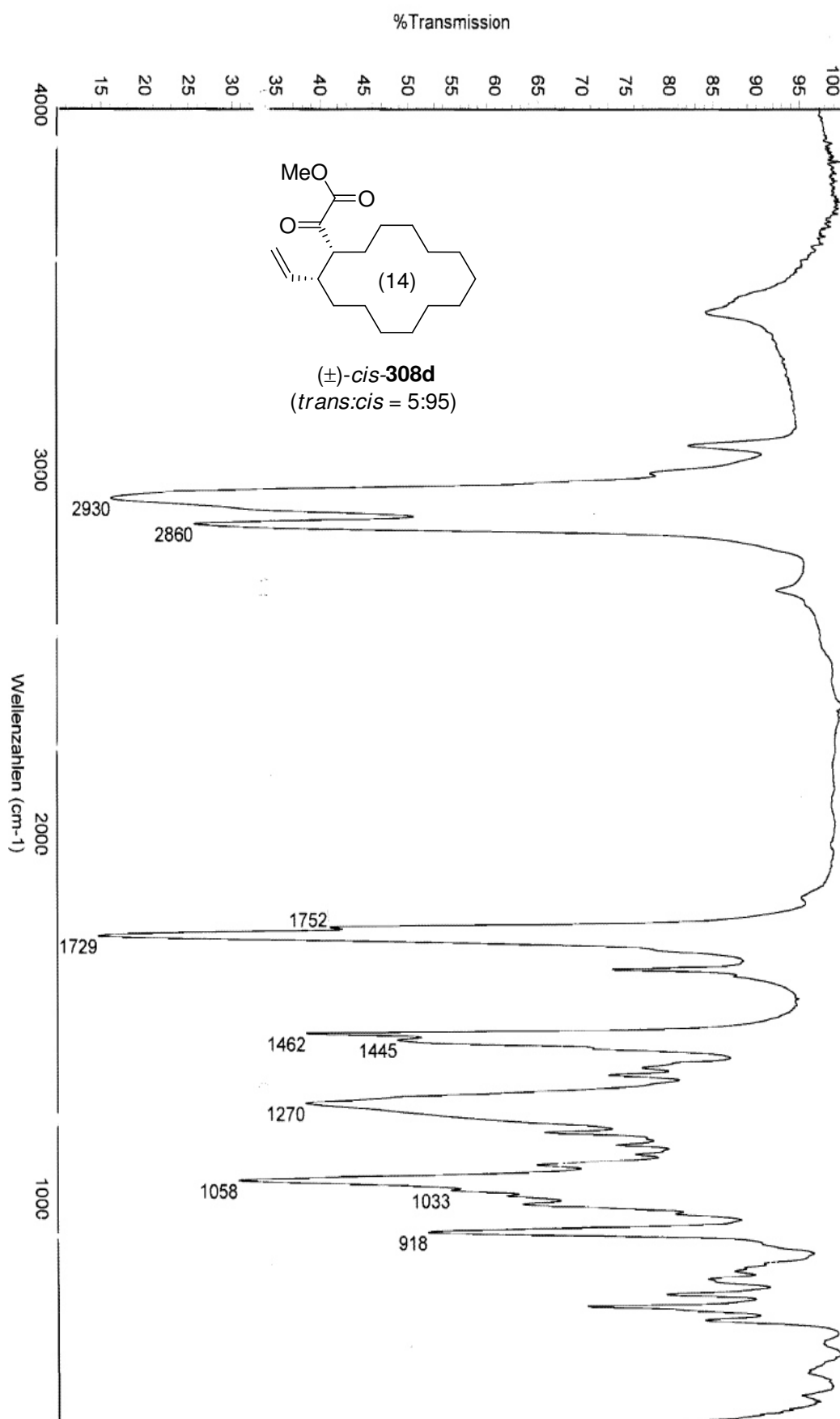












Elementaranalysen und HRMS-Spektren

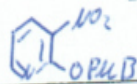
Elementaranalysenauftrag

Jaschinski 6.149
Auftraggeber Tel.

7.12.09
Datum

TJ-359
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält:



M Smp.: _____

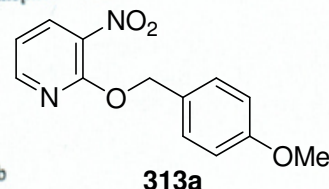
auf Abruf? X

Luftempfindlich:

Hygroskopisch:

Sdp.: _____

Bemerkungen: bei längerem Stehen bei Rt zerfällt sich das Produkt



Einwaage:

theor.

prax.

a

b

a) 1,491

% C: 60,00

59,9

60,3

b) 2,306

% H: 4,65

4,4

4,7

% N: 10,76

10,7

10,9

Hiersemann
Arbeitskreisleiter

8.1.10 M. Kipfler
Datum der Ausführung

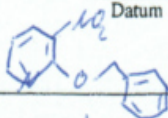
Elementaranalysenauftrag

Jaschinski 6.149
Auftraggeber Tel.

31.3.10
Datum

TJ-TE-1EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält:



M Smp.: _____

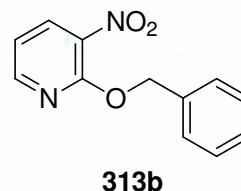
auf Abruf? X

Luftempfindlich:

Hygroskopisch:

Sdp.: _____

Bemerkungen: _____



Einwaage:

theor.

prax.

a

b

a) 1,210

% C: 62,60

62,6

62,8

b) 1,448

% H: 4,38

4,3

4,6

% N: 12,17

12,0

12,1

Hiersemann
Arbeitskreisleiter

14.4.10 M. Kipfler
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

2.3.2010
Datum

TJ-444
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : Ph CH₂ OH

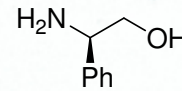
M Smp.: _____ auf Abruf ? X

Sdp.: _____

Bemerkungen : _____

Luftempfindlich :

Hygroskopisch :



(R)-357

	Einwaage :	theor.		prax.	
		a	b	a	b
a.)	<u>1,545</u>				
		% C : <u>70,04</u>	<u>70,6</u>	<u>70,1</u>	
b.)	<u>1,333</u>	% H : <u>8,08</u>	<u>8,1</u>	<u>8,0</u>	
		% N : <u>10,21</u>	<u>10,2</u>	<u>10,1</u>	

Hiersemann
Arbeitskreisleiter

1.4.10 M. Köpfer
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 5897
Auftraggeber Tel.

16.2.2012
Datum

TJ-TL-41
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 6149 auf Abruf ? X

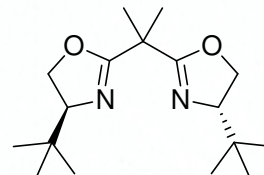
M Smp.: _____

Sdp.: _____

Bemerkungen : _____

Luftempfindlich :

Hygroskopisch :



(S,S)-361

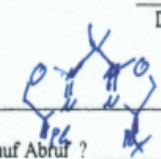
	Einwaage :	theor.		prax.	
		a	b	a	b
a.)	<u>2,058</u>				
		% C : <u>69,35</u>	<u>69,3</u>	<u>69,1</u>	
b.)	<u>1,425</u>	% H : <u>10,27</u>	<u>10,3</u>	<u>9,9</u>	
		% N : <u>9,51</u>	<u>9,5</u>	<u>9,4</u>	

Hiersemann
Arbeitskreisleiter

7.3.12 M. Köpfer
Datum der Ausführung

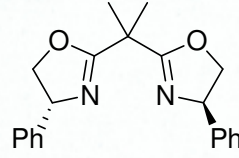
Elementaranalysenauftrag

Jaschinski 6149 1.4.2010 TJ-455 EA
 Auftraggeber Tel. Datum Probenbezeichnung
 (max. 7 Stellen)

Die Substanz enthält:  _____
 M Smp.: _____ auf Abruf? Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: _____

Einwaage:

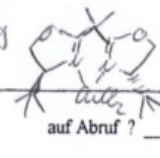
	theor.	prax.	
a) 1,355		a	b
% C: <u>75,42</u>	<u>75,0</u>	<u>75,2</u>	
b) 1,607			
% H: <u>6,63</u>	<u>6,8</u>	<u>6,7</u>	
% N: <u>8,38</u>	<u>8,2</u>	<u>8,2</u>	


 (R,R)-362

Hiersemann 94.10 M. Diefen
 Arbeitskreisleiter Datum der Ausführung

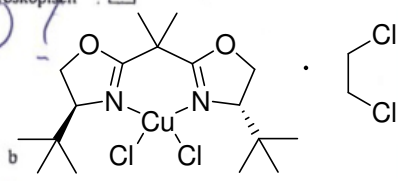
Elementaranalysenauftrag

Jaschinski 3897 15.2.2012 TJ-TL-42
 Auftraggeber Tel. Datum Probenbezeichnung
 (max. 7 Stellen)

Die Substanz enthält:  _____
 M Smp.: _____ auf Abruf? Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: nicht gewichtstabil (-)!

Einwaage:

	theor.	prax.	
a) 2,050		a	b
% C: <u>43,23</u>	<u>43,7</u>	<u>43,6</u>	
b) 1,774			
% H: <u>6,49</u>	<u>6,8</u>	<u>6,7</u>	
% N: <u>5,31</u>	<u>5,3</u>	<u>5,3</u>	


 (S,S)-363

Hiersemann 30.3.12 M. Diefen
 Arbeitskreisleiter Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. _____ Datum: 12.6.2012 Probenbezeichnung: TJ-1031
(max. 7 Stellen)

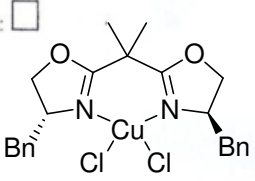
Die Substanz enthält: C₂₃H₂₆Cl₂CuN₂O₂
 M Smp.: _____ auf Abruf? X Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: _____

Einwaage:

	theor.	prax.	
		a	b
a) <u>1,410</u>			
b) <u>1,899</u>	% C: <u>55,59</u>	<u>55,5</u>	<u>55,5</u>
	% H: <u>5,27</u>	<u>5,3</u>	<u>5,4</u>
	% N: <u>5,64</u>	<u>5,4</u>	<u>5,5</u>

Hirsemann
Arbeitskreisleiter

13.6.12 M. Kipfer
Datum der Ausführung



(R,R)-400

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. _____

Datum: 11.2.09

Probenbezeichnung: TJ-214a
(max. 7 Stellen)

Die Substanz enthält: C₇H₁₅JO

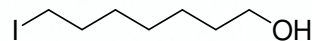
M Smp.: _____ auf Abruf? X

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



311a

Einwaage:

	theor.	prax.	
		a	b
a) <u>1,798</u>			
b) <u>2,330</u>	% C: <u>34,73</u>	<u>35,1</u>	<u>35,1</u>
	% H: <u>6,25</u>	<u>5,9</u>	<u>5,8</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hirsemann
Arbeitskreisleiter

13.2.09 M. Kipfer
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

3.6.09
Datum

TJ-292 E1
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: P.M.R. 014

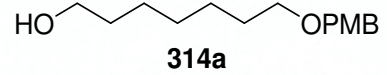
M Smp.: _____ auf Abruf? X

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax.

a) 1,732

a

b

% C: 71,4

71,4

71,4

b) 1,727

% H: 9,6

9,5

9,4

% N: _____

/

/

Hörsemann
Arbeitskreisleiter

8.6.09 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

12.5.09
Datum

277a
TJ-~~277~~
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: HO 03n

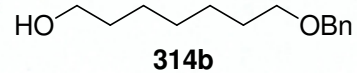
M Smp.: _____ auf Abruf? X

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax.

a) 2.025

a

b

% C: 75,63

75,0

75,3

b) 2,172

% H: 9,97

10,3

10,4

% N: _____

/

/

Hörsemann
Arbeitskreisleiter

20.5.09 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

5.6.09
Datum

TJ-296EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PMBO ~~~~~ J

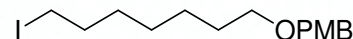
M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax.

305a

a) 1,772

a

b

% C: 49,73

49,9

49,9

b) 2,231

% H: 6,4

6,7

6,4

% N: /

/

/

Hiersemann
Arbeitskreisleiter

8.6.09 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

9.6.09
Datum

TJ-299EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: EtO₂C ~~~~~ EtO₂C ~~~~~ OPMB

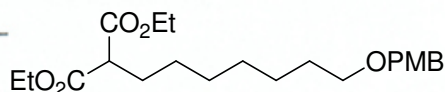
M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax.

316a

a) 2,277

a

b

% C: 66,98

67,3

67,4

b) 2,263

% H: 8,69

8,8

9,0

% N: _____

/

/

Hiersemann
Arbeitskreisleiter

16.6.09 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6140
Auftraggeber Tel.

18.5.09
Datum

TJ-283 EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: CCOC(=O)CCCCCCCCCCCCCOC1=CC=CC=C1

M Smp.: _____ auf Abruf ? _____

Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage : theor. prag.

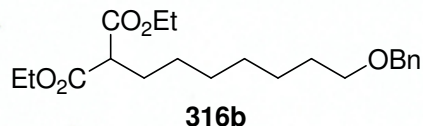
a) 1,957

a

b

b) 2,007

	theor.	prag.	b
% C :	69,20	69,8	69,2
% H :	8,85	9,2	9,1
% N :	/	/	/



Hiersemann
Arbeitskreisleiter

18.5.09 M. Kippen
Datum der Ausführung

TJ-EA

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

14.9.09
Datum

TJ-MK-15
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: CCOC(=O)CCCCCCCCCCCCCOP(=O)(OCC)OCC

M Smp.: _____ auf Abruf ?

Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage : theor. prag.

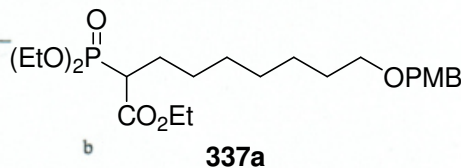
a) 1,719

a

b

b) 1,782

	theor.	prag.	b
% C :	60,25	60,3	60,4
% H :	8,57	8,5	8,4
% N :	/	/	/



Hiersemann
Arbeitskreisleiter


21.9.09 M. Kippen
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6.149
Auftraggeber Tel.

7.12.09
Datum

TJ-MK-32
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 

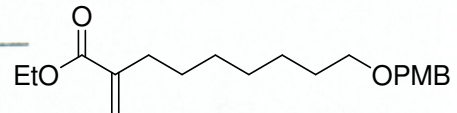
M Smp.: _____ auf Abruf ? X

Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____



Einwaage : theor. prax.

a

b

338a

a) 1,897

% C : 71,82

71,5

b) 2,178

% H : 9,04

9,0

% N : /

/

Hirsemann
Arbeitskreisleiter

17.12.09 M. Kippen
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6.149
Auftraggeber Tel.

3.11.09
Datum

TJ-378 EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 

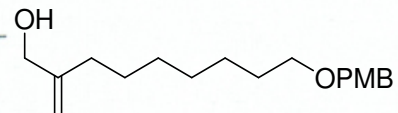
M Smp.: _____ auf Abruf ? X

Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____



Einwaage : theor. prax.

a

b

301a

a) 1,858

% C : 73,93

74,1

73,7

b) 1,806

% H : 9,65

9,7

9,6

% N : /

/

/

Hirsemann
Arbeitskreisleiter

17.11.09 M. Kippen
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

14.3.2010
Datum

TJ-7E-12E1
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 

M Smp.: _____ auf Abruf ? X

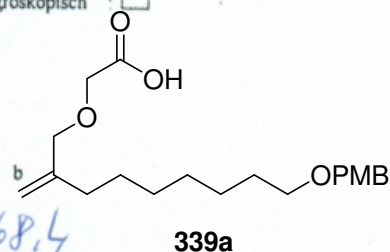
Sdp.: _____

Bemerkungen : _____

Luftempfindlich :

Hygroskopisch :

Einwaage :	theor.	prax.
a) <u>1,924</u>		a
b) <u>1,737</u>	% C : <u>68,54</u>	<u>68,2</u>
	% H : <u>8,63</u>	<u>8,4</u>
	% N : <u>/</u>	<u>/</u>



Hiersemann
Arbeitskreisleiter

7.5.10 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

13.8.09
Datum

TJ-335c
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 

M Smp.: _____ auf Abruf ? X

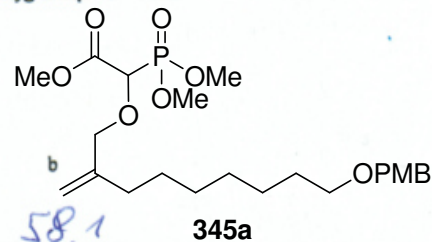
Sdp.: _____

Bemerkungen : _____

Luftempfindlich :

Hygroskopisch :

Einwaage :	theor.	prax.
a) <u>2,007</u>		a
b) <u>2,360</u>	% C : <u>58,46</u>	<u>58,3</u>
	% H : <u>7,89</u>	<u>7,8</u>
	% N : _____	_____



Hiersemann
Arbeitskreisleiter

10.8.09 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149
Auftraggeber Tel.

10.5.2010
Datum

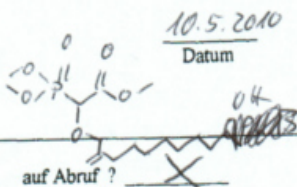
TJ-495 EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : _____

M
Smp.: _____

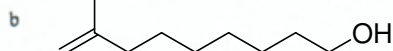
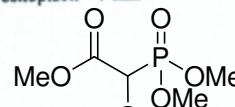
Sdp.: _____

Bemerkungen : _____



Luftempfindlich :

Hygroskopisch :



347a

Einwaage :

theor.

prax.

a) 1.070

% C : 54,43

50,9

50,6

b) 1.824

% H : 8,30

8,3

8,3

% N : _____

Hiersemann
Arbeitskreisleiter

27.5.10 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149
Auftraggeber Tel.

10.5.2010
Datum

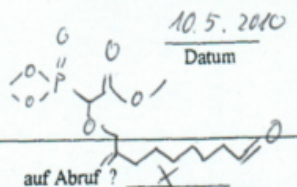
TJ-496 EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : _____

M
Smp.: _____

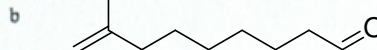
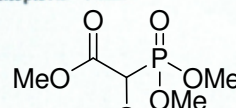
Sdp.: _____

Bemerkungen : _____



Luftempfindlich :

Hygroskopisch :



300a

Einwaage :

theor.

prax.

a) 1.782

% C : 51,92

51,3

51,3

b) 1.695

% H : 7,77

7,9

7,9

% N : _____

Hiersemann
Arbeitskreisleiter

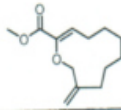
10.5.10 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski Büro 6149
Auftraggeber Lab: 3897
Tel.

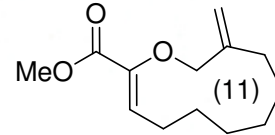
28.07.2011
Datum

TJ-PG-42A
Probenbezeichnung
(max. 7 Stellen)



Die Substanz enthält : _____
M Smp.: _____ auf Abruf ? _____
Sdp.: _____
Bemerkungen : _____

Luftempfindlich :
Hygroskopisch :



(Z)-297a

Einwaage :	theor.		prax.	
	a	b	a	b
a) 1.994	% C : 69.6	69.8	_____	_____
b.)	% H : 9.0	9.0	_____	_____
	% N : /	/	_____	_____

Hiersemann
Arbeitskreisleiter

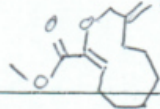
29.7.11 M. Kiffer
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

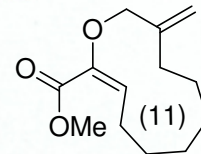
2.3.2010
Datum

TJ-4336
Probenbezeichnung
(max. 7 Stellen)



Die Substanz enthält : _____
M Smp.: _____ auf Abruf ?
Sdp.: _____
Bemerkungen : _____

Luftempfindlich :
Hygroskopisch :



(E)-297a

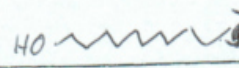
Einwaage :	theor.		prax.	
	a	b	a	b
a) 2.062	% C : 69.61	69.9	69.8	69.9
b) 1.974	% H : 8.99	9.0	9.1	9.0
	% N : /	/	/	/

Hiersemann
Arbeitskreisleiter

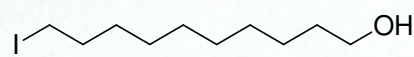
5.3.10 M. Kiffer
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149 10.5.2010 TJ-497EA
 Auftraggeber Tel. Datum Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: HO 

M Smp.: _____ auf Abruf? X Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: _____



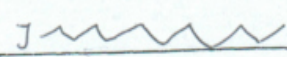
311b

Einwaage:		theor.		prax.	
		a	b	a	b
a)	<u>0.906</u>	% C: <u>42,26</u>	<u>42,3</u>	<u>42,3</u>	
b)	<u>2.268</u>	% H: <u>7,45</u>	<u>7,5</u>	<u>7,5</u>	
		% N: _____	_____	_____	

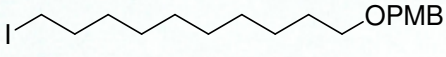
Hiersemann 25.5.10 M. Kipfler
 Arbeitskreisleiter Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149 19.5.2010 TJ-500EA
 Auftraggeber Tel. Datum Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: J  OPMB

M Smp.: _____ auf Abruf? X Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: _____



305d

Einwaage:		theor.		prax.	
		a	b	a	b
a)	<u>2.046</u>	% C: <u>53,47</u>	<u>53,8</u>	<u>54,0</u>	
b)	<u>2.667</u>	% H: <u>7,25</u>	<u>7,1</u>	<u>7,2</u>	
		% N: _____	_____	_____	

Hiersemann 27.5.10 M. Kipfler
 Arbeitskreisleiter Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149
Auftraggeber Tel.

31.5.2010
Datum

TJ-508 EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: CCOC(=O)C=C(C)CCCCCCCCCCCCCCCCCOPMB

M Smp.: _____

auf Abruf?

Luftempfindlich:

Sdp.: _____

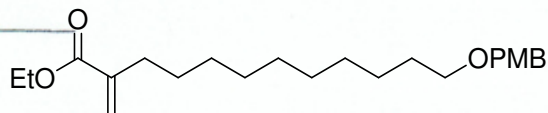
Hygroskopisch:

Bemerkungen: _____

Einwaage:

theor.

prax.



a) 1,850

a

b

338b

b) 1,836

% C: 73,37

73,4

73,5

% H: 9,64

9,7

9,7

% N: _____

Hiersemann

Arbeitskreisleiter

1.6.10 M. Löffler
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149
Auftraggeber Tel.

31.5.2010
Datum

TJ-510 EA
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: CC(O)C=C(C)CCCCCCCCCCCCCCCCCOPMB

M Smp.: _____

auf Abruf?

Luftempfindlich:

Sdp.: _____

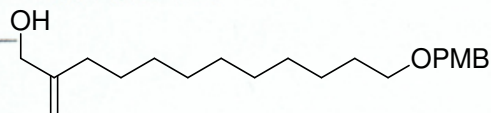
Hygroskopisch:

Bemerkungen: _____

Einwaage:

theor.

prax.



a) 1,206

a

b

301b

b) 1,532

% C: 75,41

75,2

75,0

% H: 10,25

9,9

10,4

% N: _____

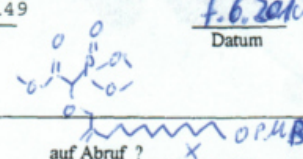
Hiersemann

Arbeitskreisleiter

11.6.10 M. Löffler
Datum der Ausführung

Elementaranalysenauftrag

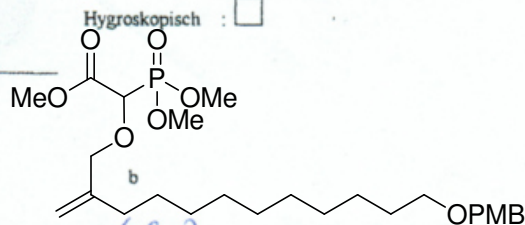
Auftraggeber: Jaschinski 3897/6149 Tel. Datum: 7.6.2010 Probenbezeichnung: TJ-513EA
(max. 7 Stellen)

Die Substanz enthält: 
M Smp.: _____ auf Abruf? OPMB Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	
a) <u>1,925</u>		a	
b) <u>1,805</u>	% C: <u>60,69</u>	<u>60,2</u>	<u>60,3</u>
	% H: <u>8,42</u>	<u>8,6</u>	<u>8,5</u>
	% N: _____	_____	_____

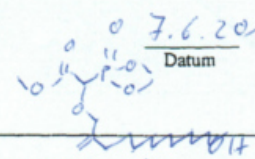
Hiersemann _____ Datum der Ausführung: 15.6.10 M. Linßner
Arbeitskreisleiter

345b



Elementaranalysenauftrag

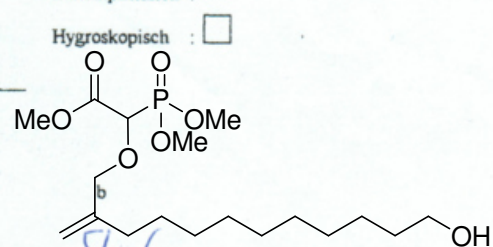
Auftraggeber: Jaschinski 3897/6149 Tel. Datum: 7.6.2010 Probenbezeichnung: TJ-515EA
(max. 7 Stellen)

Die Substanz enthält: 
M Smp.: _____ auf Abruf? OH Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	
a) <u>1,746</u>		a	
b) <u>1,432</u>	% C: <u>54,81</u>	<u>54,6</u>	<u>54,6</u>
	% H: <u>8,94</u>	<u>9,0</u>	<u>8,8</u>
	% N: _____	_____	_____

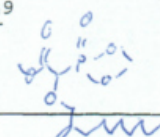
Hiersemann _____ Datum der Ausführung: 15.6.10 M. Linßner
Arbeitskreisleiter

347b



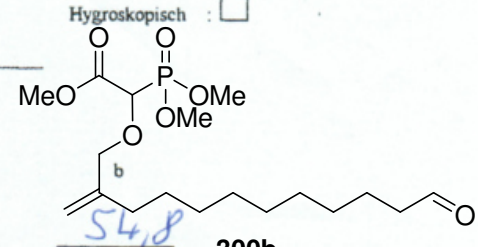
Elementaranalysenauftrag

Jaschinski 3897/6149 10.6.2010 TJ-517EA
 Auftraggeber Tel. Datum Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: 
 M Smp.: _____ auf Abruf?
 Sdp.: _____
 Bemerkungen: _____

Luftempfindlich:
 Hygroskopisch:

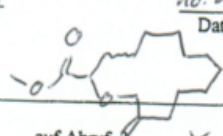
Einwaage:	theor.	prax.	
a) <u>2.022</u>		a	
b) <u>1.916</u>	% C: <u>55,09</u>	<u>54,6</u>	<u>54,8</u>
	% H: <u>8,48</u>	<u>8,4</u>	<u>8,4</u>
	% N: _____	_____	_____

 **300b**

Hiersemann 15.6.10 M. Kipfm
 Arbeitskreisleiter Datum der Ausführung

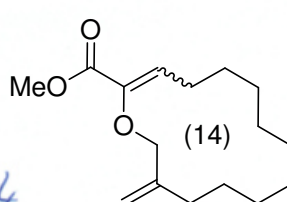
Elementaranalysenauftrag

Jaschinski Lab: 3897 16.8.2010 TJ-561EA
 Auftraggeber Tel. Datum Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: 
 M Smp.: _____ auf Abruf?
 Sdp.: _____
 Bemerkungen: _____

Luftempfindlich:
 Hygroskopisch:

Einwaage:	theor.	prax.	
a) <u>1.140</u>		a	
b) <u>1.157</u>	% C: <u>72,14</u>	<u>72,1</u>	<u>72,4</u>
	% H: <u>9,84</u>	<u>9,9</u>	<u>9,9</u>
	% N: _____	_____	_____

 **297b** (Z:E = 69:31)

Hiersemann 8.9.10 M. Kipfm
 Arbeitskreisleiter Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski Lab: 3897 Datum: 16.8.2010 Probenbezeichnung: TJ-554 EA
 (max. 7 Stellen)

Die Substanz enthält: HO
 Smp.: _____ auf Abruf? X Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: _____

Einwaage:	theor.	prax.	
		a	b
a) <u>1.707</u>	% C: <u>71,39</u>	<u>71,2</u>	<u>71,2</u>
b) <u>1.720</u>	% H: <u>9,59</u>	<u>9,5</u>	<u>9,4</u>
	% N: _____	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

23.8.10 M. Hieslauer
Datum der Ausführung

(14)
376b (Z:E = 69:31)

Elementaranalysenauftrag

Auftraggeber: 6149 Jaschinski Tel. Datum: 14.3.2010 Probenbezeichnung: TJ-454
 (max. 7 Stellen)

Die Substanz enthält: EtO
 Smp.: _____ auf Abruf? X Luftempfindlich:
 Sdp.: _____ Hygroskopisch:
 Bemerkungen: _____

Einwaage:	theor.	prax.	
		a	b
a) <u>1.173</u>	% C: <u>69,36</u>	<u>69,0</u>	<u>68,9</u>
b) <u>1.463</u>	% H: <u>8,90</u>	<u>8,8</u>	<u>8,7</u>
	% N: _____	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

22.4.10 M. Hieslauer
Datum der Ausführung

(9)
(1S)-385

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. Datum: 30.5.2011 Probenbezeichnung: TJ-710Ea
(max. 7 Stellen)

Die Substanz enthält: PMBO ~~OH~~ OH

M Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

HO-CCCCCCCCCCCC-OPMB

Einwaage: **386a**

	<u>theor.</u>	<u>prax.</u>	
		a	b
a) <u>1,526</u>			
b) <u>1,546</u>	% C: <u>72,1</u>	<u>72,2</u>	<u>72,1</u>
	% H: <u>9,8</u>	<u>10,0</u>	<u>9,6</u>
	% N: <u>X</u>	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

20.6.11 M. Hiersemann
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897/6149 Tel. Datum: 2.8.2010 Probenbezeichnung: TJ-545Ea
(max. 7 Stellen)

Die Substanz enthält: PMBO ~~OH~~ OH

M Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

HO-CCCCCCCCCCCC-OPMB

Einwaage: **386b**

	<u>theor.</u>	<u>prax.</u>	
		a	b
a) <u>1,381</u>			
b) <u>1,738</u>	% C: <u>72,82</u>	<u>73,2</u>	<u>73,3</u>
	% H: <u>10,06</u>	<u>10,0</u>	<u>9,8</u>
	% N: _____	_____	_____

Hiersemann
Arbeitskreisleiter

3.8.10 M. Hiersemann
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6199
Auftraggeber Tel.

11.7.2011
Datum

TJ-P6-40 Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PMBO ~~18~~ OH

M
Smp.: _____

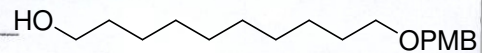
auf Abruf? X

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax. **386c**

		a	b
a.)	<u>1.934</u>	<u>73.2</u>	<u>73.3</u>
b.)	<u>2.254</u>	<u>73.4*</u>	<u>73.3</u>
	% C:	<u>10.3</u>	<u>10.7</u>
	% H:	<u>10.5</u>	<u>10.7</u>
	% N:	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

14.7.11 M. M. K.
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897
Auftraggeber Tel.

11.7.2011
Datum

TJ-625 Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: ~~10~~ ~~18~~ OH OPMB

M
Smp.: _____

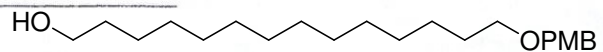
auf Abruf? X

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax. **386d**

		a	b
a.)	<u>1.388</u>	<u>75.5</u>	_____
b.)	_____	<u>75.9</u>	_____
	% C:	<u>10.9</u>	_____
	% H:	<u>10.9</u>	_____
	% N:	_____	_____

Hiersemann
Arbeitskreisleiter

22.7.11 M. M. K.
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.
389 Z

15.9.2011
Datum

TJ-P6-31Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: OPMB

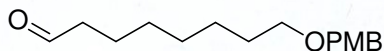
M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage:

theor.

prax.

306a

a.) 1,939

a

b

% C: 72,69

72,2

72,4

b.) 1,784

% H: 9,15

9,3

9,1

% N: /

/

/

Hiersemann
Arbeitskreisleiter

22.9.11 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149
Auftraggeber Tel.

2.8.2010
Datum

TJ-547
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PABO

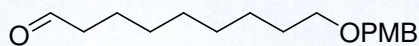
M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage:

theor.

prax.

306b

a.) 1,856

a

b

% C: 73,34

73,8

73,3

b.) 1,748

% H: 9,41

9,5

9,5

% N: /

/

/

Hiersemann
Arbeitskreisleiter

12.8.10 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel. 3897

6.6.2011
Datum

TJ-PG-97Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: OPMB

M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____ O=C\CCCCCCCCCCCCOPMB

Einwaage: theor. prax. **306c**

		a	b
a) <u>2,333</u>	% C: <u>73,93</u>	<u>73,9</u>	<u>74,0</u>
b) <u>2,650</u>	% H: <u>9,65</u>	<u>10,0</u>	<u>10,2</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hirsemann
Arbeitskreisleiter

12.9.11 M. Siffert
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897
Auftraggeber Tel. 6149

11.9.2011
Datum

~~TJ-842Ea~~
TJ-842Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: C₂₀H₄₀O ~~PUBO~~ PUBO CCOC(=O)/C=C\CCCCCCCCCCCCOPMB

M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____ CCOC(=O)/C=C\CCCCCCCCCCCCOPMB

Einwaage: theor. prax. **(E)-387a**

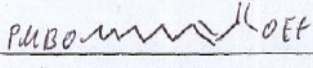
		a	b
a) <u>1,896</u>	% C: <u>71,8</u>	<u>72,0</u>	<u>71,8</u>
b) <u>1,857</u>	% H: <u>9,04</u>	<u>9,5</u>	<u>9,4</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hirsemann
Arbeitskreisleiter

13.10.11 M. Siffert
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897/6149 Tel. _____ Datum: 7.8.2010 Probenbezeichnung: TJ-552Ea
(max. 7 Stellen)

Die Substanz enthält: PMBO 

M Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

CCOC(=O)/C=C/CCCCCCCCCCCCCCCCOPMB
(E)-387b

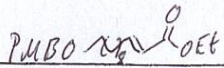
Einwaage:	theor.	prax.	
		a	b
a.) <u>2,188</u>			
b.) <u>2,036</u>	% C: <u>72,38</u>	<u>72,5</u>	<u>72,4</u>
	% H: <u>9,26</u>	<u>9,5</u>	<u>9,3</u>
	% N: _____	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

12.8.10 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 31.10.2011 Probenbezeichnung: TJ-852Ea
(max. 7 Stellen)

Die Substanz enthält: PMBO 

M Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

CCOC(=O)/C=C/CCCCCCCCCCCCCCCCOPMB
(E)-387c

Einwaage:	theor.	prax.	
		a	b
a.) <u>1,428</u>			
b.) <u>1,542</u>	% C: <u>72,84</u>	<u>72,7</u>	<u>72,8</u>
	% H: <u>9,45</u>	<u>9,4</u>	<u>9,3</u>
	% N: _____	_____	_____

Hiersemann
Arbeitskreisleiter

2.11.11 M. Köpf
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 5897
Tel.: 6149

Datum: 7.10.2011

Probenbezeichnung: TJ-843Ea
(max. 7 Stellen)

Die Substanz enthält: PKBO

M Smp.: _____ auf Abruf?

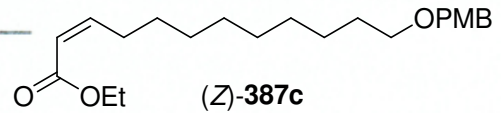
Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____

Einwaage:	theor.	prax.
a) <u>2,263</u>		a
b) <u>1,848</u>		b
% C:	<u>72,81</u>	<u>73,0</u>
% H:	<u>9,45</u>	<u>9,8</u>
% N:	_____	/



Hirseemann
Arbeitskreisleiter


13.10.11
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

11.7.2011
Datum

TJ-746Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PMBO  OH

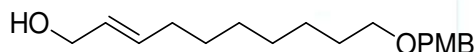
Smp.: _____ auf Abruf? X

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage:

theor.

prax.

(E)-304a

a) 1.914

a

b

b) 2.059

% C: 73,93

74,0

74,0

% H: 9,65

9,7

9,5

% N: /

/

/

Hiersemann
Arbeitskreisleiter


12.8.11 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897/6149
Auftraggeber Tel.

2.8.2010
Datum

TJ-555Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PMBO  OH

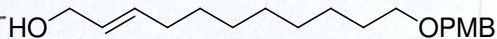
Smp.: _____ auf Abruf? _____

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage:

theor.

prax.

(E)-304b

a) 1.913

a

b

b) 1.907

% C: 74,97

74,7

74,8

% H: 9,87

10,2

10,0

% N: _____

/

/

Hiersemann
Arbeitskreisleiter

16.8.10 M. Kiffner
Datum der Ausführung


Bille 1 Tag vorher melden

Elementaranalysenauftrag

Jaschinski Lab: 3897
Auftraggeber Tel.

25.10.2010
Datum

TJ-5915a
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PMBO  014

M Smp.: _____

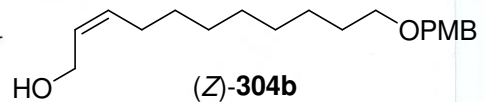
auf Abruf? 8

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax.

a.) 2.020

a

b

% C: 74,47

74,5

74,8

b.) 2.068

% H: 9,87

10,1

10,0

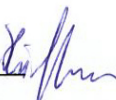
% N: _____

/

/

Hirsemann

Arbeitskreisleiter

17.11.10 
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897
Auftraggeber Tel.

29.6.2011
Datum

TJ-696a HPLC
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: PMBO  014

M Smp.: _____

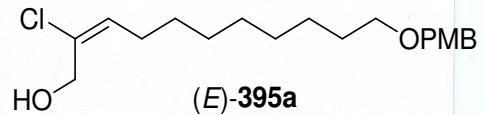
auf Abruf? 8

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____



Einwaage: theor. prax.

a.) 2.281

a

b

% C: 66,9

67,0

67,2

b.) 2.252

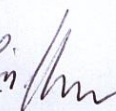
% H: 8,6

8,7

8,6

% N: _____

Hirsemann
Arbeitskreisleiter

30.6.11 
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 31.10.2011 Probenbezeichnung: TJ-853Ea
(max. 7 Stellen)

Die Substanz enthält: PUBO ~~12~~ 014

Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

HO CCCCCCCCCCCC=CCCCCCCC OPMB

Einwaage: (E)-304c

	theor.	prax.	
		a	b
a) <u>2,414</u>			
b) <u>1,320</u>	% C: <u>74,96</u>	<u>75,0</u>	<u>74,5</u>
	% H: <u>10,06</u>	<u>10,5</u>	<u>9,8</u>
	% N: _____	_____	_____

Hiersemann
Arbeitskreisleiter

3.11.11 M. Kipfler
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Büro Tel. 3897 Lab. Datum: 12.1.2012 Probenbezeichnung: TJ-TL-206Ea
(max. 7 Stellen)

Die Substanz enthält: PUBO ~~12~~ 014

Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

HO CCCCCCCCCCCC=CCCCCCCC OPMB

Einwaage: (Z)-304c

	theor.	prax.	
		a	b
a) <u>1,277</u>			
b) <u>1,350</u>	% C: <u>74,96</u>	<u>74,8</u>	<u>74,6</u>
	% H: <u>10,06</u>	<u>9,8</u>	<u>9,6</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

23.1.12 M. Kipfler
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6.149 Büro 12.12.2012 TJ-TL-20a Ea
 Auftraggeber Tel. Datum Probenbezeichnung
 3897 Lab. OH
 (max. 7 Stellen)

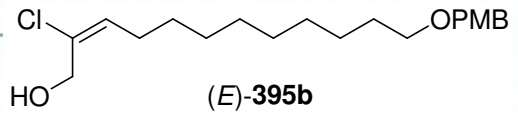
Die Substanz enthält: PHBO 

M Smp.: _____ auf Abruf? Luftpfindlich:
 Sdp.: _____ Hygroskopisch:

Bemerkungen: _____

Einwaage: theor. prax.

	a	b
a) <u>1.595</u>		
b) <u>2.126</u>		
% C: <u>67.69</u>	<u>67.7</u>	<u>67.6</u>
% H: <u>8.90</u>	<u>8.9</u>	<u>8.7</u>
% N: <u>/</u>	<u>/</u>	<u>/</u>




Hiersemann
Arbeitskreisleiter

23.1.12 M. Köpfer
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski Lab: 3897 11.5.2014 TJ-692
 Auftraggeber Tel. Datum Probenbezeichnung
 (max. 7 Stellen)

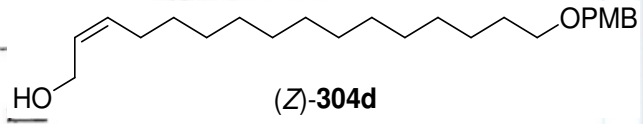
Die Substanz enthält: HO 

M Smp.: _____ auf Abruf? Luftpfindlich:
 Sdp.: _____ Hygroskopisch:

Bemerkungen: _____

Einwaage: theor. prax.

	a	b
a) <u>1.191</u>		
b) <u>1.463</u>		
% C: <u>76.55</u>	<u>76.4</u>	<u>76.3</u>
% H: <u>10.71</u>	<u>10.5</u>	<u>10.6</u>
% N: _____	_____	_____



Hiersemann
Arbeitskreisleiter

18.5.14 M. Köpfer
Datum der Ausführung

anrufen

Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897 Teil: _____ Datum: 30.6.2011 Probenbezeichnung: TJ-692a HPLC
(max. 7 Stellen)

Die Substanz enthält: PMBO ~~1/2~~ -Cl
 M Smp: _____ auf Abruf? X 014 Luftpfeindlich:
 Sdp: _____ Hyroskopisch:
 Bemerkungen: _____

Einwaage: theor. HO (E)-395c

		a	b
a.) <u>2,333</u>	% C:	<u>70,13</u>	<u>70,3</u>
b.) <u>1,866</u>	% H:	<u>9,58</u>	<u>9,4</u>
	% N:	<u>/</u>	<u>/</u>

Arbeitskreisleiter: _____ Datum der Ausfuhrung: 19.7.11 M. *[Signature]*

Elementaranalysenauftrag

Auftraggeber: Jaschinski 3847 Tel.: 6149 Datum: 28.9.2011 Probenbezeichnung: TJ-870Ea1
(max. 7 Stellen)

Die Substanz enthält: OPMB

M Smp.: _____ auf Abruf? X Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	
a.) <u>1,722</u>		a	b
b.) <u>1,524</u>	% C: <u>58,46</u>	<u>58,1</u>	<u>58,1</u>
	% H: <u>7,9</u>	<u>7,6</u>	<u>7,5</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

30.9.11 M. Köpf
Datum der Ausführung

(E)-388a

Elementaranalysenauftrag

Auftraggeber: Jaschinski Lab: 3897 Tel.: _____ Datum: 4.10.2010 Probenbezeichnung: TJ-TE-53E1
(max. 7 Stellen)

Die Substanz enthält: OPMB

M Smp.: _____ auf Abruf? X Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	
a.) <u>1,577</u>		a	b
b.) <u>1,925</u>	% C: <u>59,25</u>	<u>58,9</u>	<u>58,8</u>
	% H: <u>8,08</u>	<u>8,2</u>	<u>8,0</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

7.10.10 M. Köpf
Datum der Ausführung

(E)-388b

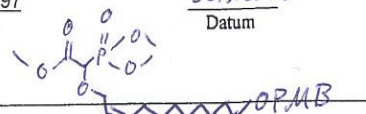
Bitte 1 Tag vorher anrufen

Elementaranalysenauftrag

Jaschinski Lab: 3897
Auftraggeber Tel.

22.3.2011
Datum

TJ-650 Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 

M Smp.: _____

auf Abruf ?

Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage :

theor.

prax.

a) 1,593

a

% C : 59,26

59,0

58,7

(Z)-388b

b) 1,686

% H : 8,08

8,1

8,0

% N : /

/

/

Hiersemann

Arbeitskreisleiter

28.4.11 M. Küfler
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897
Auftraggeber Tel.

6149

21.3.2012
Datum

TJ-72-654
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : C₂₅H₄₁O₃P

M Smp.: _____

auf Abruf ?

Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage :

theor.

prax.

a) 1,968

a

% C : 59,99

59,8

59,8

(E)-388c

b) 1,367

% H : 8,26

8,2

8,1

% N : /

/

/

Hiersemann
Arbeitskreisleiter

28.3.12 M. Küfler
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel. 3897

8.2.2012
Datum

TJ-IL-28Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: C₂₅H₄₁O₈P

M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____

Einwaage:

theor.

prax.

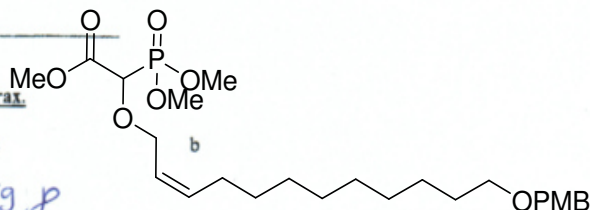
a) 1,380

% C: 60,0 59,8

b) _____

% H: 8,3 8,3

% N: _____



(Z)-388c

Hiersemann
Arbeitskreisleiter

20.2.12 M. Kroll
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski Lab: 3897
Auftraggeber Tel.

11.5.2011
Datum

TJ-697Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: _____

M Smp.: _____ auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: _____

Einwaage:

theor.

prax.

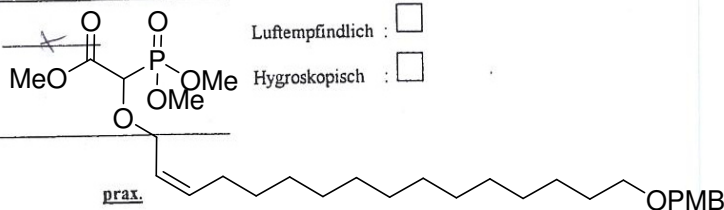
a) 1,248

% C: 62,6 62,2 62,1

b) 1,317

% H: 8,9 8,9 8,7

% N: _____



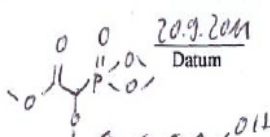
(Z)-388d

Hiersemann
Arbeitskreisleiter

11.5.11 M. Kroll
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 20.9.2011 Probenbezeichnung: TJ-821Fa
(max. 7 Stellen)

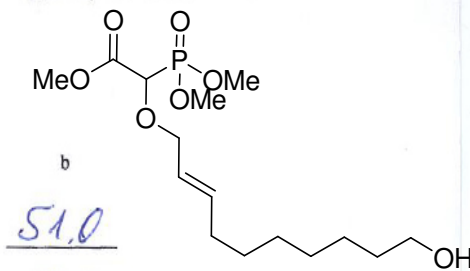
Die Substanz enthält:  auf Abruf?

M Smp.: _____ Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	a	b
a) <u>2,511</u>				
b) <u>1,960</u>	% C: <u>51,13</u>	<u>51,1</u>	<u>51,0</u>	
	% H: <u>8,3</u>	<u>8,7</u>	<u>8,1</u>	
	% N: <u>/</u>	<u>/</u>	<u>/</u>	

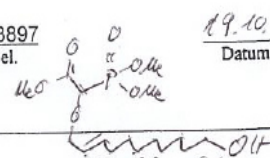
Hiersemann
Arbeitskreisleiter

26.9.11 M. Köpfer
Datum der Ausführung


(E)-389a

Elementaranalysenauftrag

Auftraggeber: Jaschinski Lab: 3897 Tel. 3897 Datum: 19.10.2010 Probenbezeichnung: TJ-587Ea
(max. 7 Stellen)

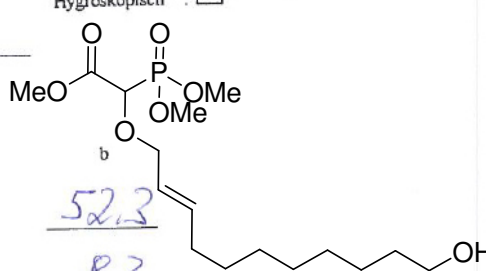
Die Substanz enthält:  auf Abruf?

M Smp.: _____ Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	a	b
a) <u>2,097</u>				
b) <u>2,400</u>	% C: <u>52,45</u>	<u>52,4</u>	<u>52,3</u>	
	% H: <u>8,53</u>	<u>8,4</u>	<u>8,3</u>	
	% N: _____	_____	_____	

Hiersemann
Arbeitskreisleiter

10.11.10 M. Köpfer
Datum der Ausführung


(E)-389b

Bille 1 Tag vorher melden

Elementaranalysenauftrag

Jaschinski Lab: 3897
Auftraggeber Tel.

2.11.2010
Datum

TJ-595 Fa
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : 

M Smp.: _____

auf Abruf ?

Luftempfindlich :

Sdp.: _____

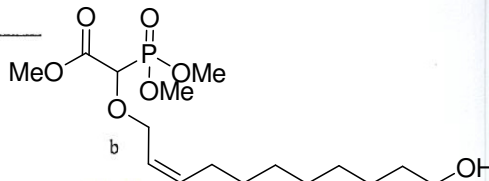
Hygroskopisch :

Bemerkungen : _____

Einwaage :

theor.

prax.



a.) 2.339

a

b.) 2.049

% C : 52,45

52,5

52,4

(Z)-389b

% H : 8,53

8,5

8,3

% N : _____

Hiersemann

Arbeitskreisleiter

17.11.10 M. Kipfler
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6449
Auftraggeber Tel. 3897

9.3.2012
Datum

TJ-TL-494
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : $C_{17}H_{32}O_2P$

M Smp.: _____

auf Abruf ?

Luftempfindlich :

Sdp.: _____

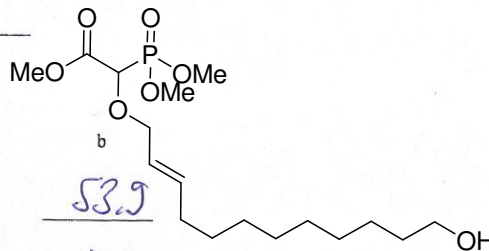
Hygroskopisch :

Bemerkungen : _____

Einwaage :

theor.

prax.



a.) 1,637

a

b.) 1,588

% C : 53,7

53,8

53,9

(E)-389c

% H : 8,7

8,9

8,9

% N : /

/

/

Hiersemann
Arbeitskreisleiter

14.3.12 M. Kipfler
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 8.2.2012 Probenbezeichnung: TJ-TL-38Fa
(max. 7 Stellen)

Die Substanz enthält: C₁₇H₃₃O₇P

M Smp.: _____ auf Abruf? X Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:

	theor.	prax.	
a) <u>1,626</u>		a	
b) <u>1,649</u>	% C: <u>53,7</u>	<u>53,7</u>	<u>53,7</u>
	% H: <u>8,7</u>	<u>8,7</u>	<u>8,8</u>
	% N: _____	_____	_____

Hiersemann
Arbeitskreisleiter

20.2.12 N. Köpf
Datum der Ausführung

COC(=O)C(OP(=O)(OC)OC)OCC=CCCCCCCCCCCCCCCCO
(Z)-389c

Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897 Tel. _____ Datum: 11.5.2011 Probenbezeichnung: TJ-704 Ea
(max. 7 Stellen)

Die Substanz enthält: _____

M Smp.: _____ auf Abruf? X Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:

	theor.	prax.	
a) <u>1,553</u>		a	
b) <u>1,442</u>	% C: <u>57,8</u>	<u>57,3</u>	<u>57,8</u>
	% H: <u>9,5</u>	<u>9,5</u>	<u>9,4</u>
	% N: _____	_____	_____

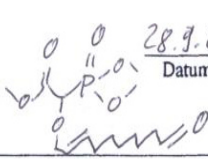
Hiersemann
Arbeitskreisleiter

1.6.11 N. Köpf
Datum der Ausführung

COC(=O)C(OP(=O)(OC)OC)OCC=CCCCCCCCCCCCCCCCO
(Z)-389d

Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897 Tel. 6149 Datum: 28.9.2011 Probenbezeichnung: TJ-833 Ea
(max. 7 Stellen)

Die Substanz enthält: 

M Smp.: _____ auf Abruf? Luftempfindlich:
B Sdp.: _____ Hygroskopisch:

Bemerkungen: _____

Einwaage:	theor.	prax.	
a) <u>1,956</u>		a	b
b) <u>2,182</u>	% C: <u>51,42</u>	<u>51,2</u>	<u>51,2</u>
	% H: <u>7,77</u>	<u>8,0</u>	<u>8,0</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

Hiersemann
Arbeitskreisleiter

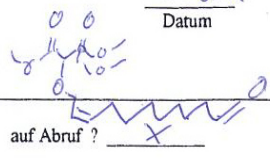
7.10.11 M. Köpf
Datum der Ausführung

(E)-303a

COCC(=O)C(OP(=O)(OC)OC)C/C=C/CCCCCCCC=O

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. Labor 3897 Datum: 9.9.2011 Probenbezeichnung: TJ-769 Ea
(max. 7 Stellen)

Die Substanz enthält: 

M Smp.: _____ auf Abruf? Luftempfindlich:
B Sdp.: _____ Hygroskopisch:

Bemerkungen: _____

Einwaage:	theor.	prax.	
a) <u>1,641</u>		a	b
b) <u>1,779</u>	% C: <u>52,74</u>	<u>52,6</u>	<u>52,8</u>
	% H: <u>8,02</u>	<u>8,4</u>	<u>8,2</u>
	% N: _____	_____	_____

Hiersemann
Arbeitskreisleiter

16.9.11 M. Köpf
Datum der Ausführung

(Z)-303b

COCC(=O)C(OP(=O)(OC)OC)C/C=C\CCCCCCCC=O

Elementaranalysenauftrag

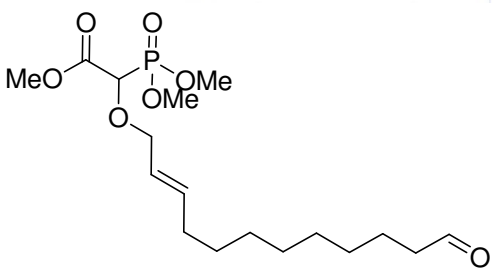
Auftraggeber: Jaschinski ~~6149~~ Tel. 0170 6648943 Datum 3.5.2012 Probenbezeichnung L6-5076
(max. 7 Stellen)

Die Substanz enthält: C₁₇H₃₁O₂P

M Smp.: _____ auf Abruf? X

Sdp.: _____

Bemerkungen: _____



(E)-303c

Einwaage:	theor.		prax.	
			a	
a.) <u>1,814</u>				
b.) <u>2,424</u>	% C:	<u>53,96</u>	<u>53,9</u>	<u>53,4</u> <u>53,6</u>
c) <u>2,012</u>	% H:	<u>8,26</u>	<u>8,6</u>	<u>8,7</u> <u>8,4</u>
	% N:	<u>/</u>	<u>/</u>	<u>/</u> <u>/</u>

Hiersemann
Arbeitskreisleiter

11.5.12 M. Küffner
Datum der Ausführung

Elementaranalysenauftrag

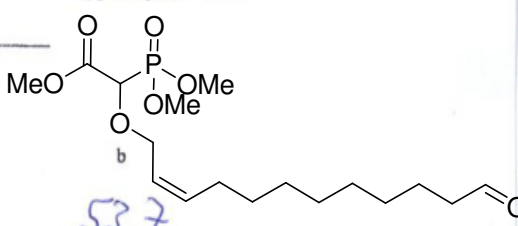
Auftraggeber: Jaschinski 5892 Tel. 6149 Datum 29.3.2012 Probenbezeichnung T7-1025
(max. 7 Stellen)

Die Substanz enthält: C₁₇H₃₁O₂P

M Smp.: _____ auf Abruf? X

Sdp.: _____

Bemerkungen: _____



(Z)-303c

Luftempfindlich:

Hygroskopisch:

Einwaage:	theor.		prax.	
			a	
a.) <u>1,856</u>				
b.) <u>1,736</u>	% C:	<u>53,96</u>	<u>53,7</u>	<u>53,7</u>
	% H:	<u>8,26</u>	<u>8,1</u>	<u>8,0</u>
	% N:	_____	_____	_____

Hiersemann
Arbeitskreisleiter

30.3.12 M. Küffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel. 3897

23.2.2012
Datum

TJ-915A
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : _____

M Smp.: _____ auf Abruf ?

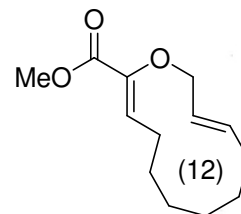
Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage :	theor.	prax.	
		a	b
a) <u>1.672</u>			
b) <u>1.756</u>	% C : <u>69,61</u>	<u>70,0</u>	<u>70,1</u>
	% H : <u>8,99</u>	<u>9,1</u>	<u>9,2</u>
	% N : <u>/</u>	<u>/</u>	<u>/</u>



(Z,E)-298a

Hiersemann
Arbeitskreisleiter

7.3.12 M. Hüfner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 3897
Auftraggeber Tel. 6149

6.3.2012
Datum

TJ-915B1
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : _____

M Smp.: _____ auf Abruf ?

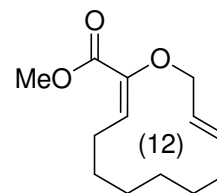
Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage :	theor.	prax.	
		a	b
a) <u>2,032</u>			
b) <u>1,868</u>	% C : <u>69,61</u>	<u>69,6</u>	<u>69,9</u>
	% H : <u>8,99</u>	<u>9,1</u>	<u>9,0</u>
	% N : <u>/</u>	<u>/</u>	<u>/</u>



(E,E)-298a

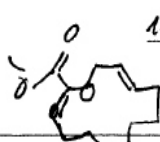
Hiersemann
Arbeitskreisleiter

7.3.12 M. Hüfner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6449
Auftraggeber Tel.

19.4.2011
Datum



TJ-652a
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : _____

M
Smp: _____

auf Abruf ?

Luftempfindlich :

Sdp: _____

Hygroskopisch :

Bemerkungen: Bei längerem Stehen bei Rt zersetzt sich

die Verbindung

Einwaage:

theor.

prax.

a

b

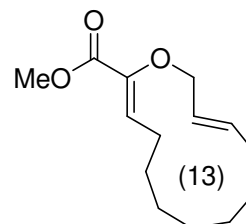
a) 2,041

b) 1,493

% C: 70,56 70,4 70,6

% H: 9,30 9,5 9,2

% N: _____



(Z,E)-298b


Arbeitskreisleiter

21.4.11 M. Hoffmann
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6449
Auftraggeber Tel.

19.4.2011
Datum



TJ-652b
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält : _____

M
Smp: _____

auf Abruf ?

Luftempfindlich :

Sdp: _____

Hygroskopisch :

Bemerkungen: Bei längerem Stehen bei Rt zersetzt sich

die Verbindung

Einwaage:

theor.

prax.

a

b

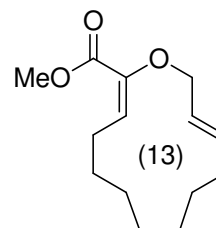
a) 1,656

b) 1,373

% C: 70,56 70,4 70,3

% H: 9,30 9,1 9,0

% N: _____



(E,E)-298b

Arbeitskreisleiter

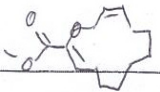
21.4.11 M. Hoffmann
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

30.5.2011
Datum

TJ-7Ma Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: 

M
Smp.: _____

auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: zersetzt sich bei RT nach längerer Zeit

Einwaage:

theor.

prax.

a) 1.632

a

b

% C: 70,56

70,6

70,4

b) 1.668

% H: 9,3

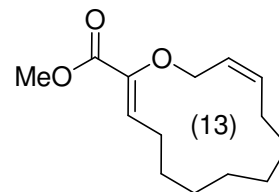
9,3

9,3

% N: /

/

/



(Z,Z)-298b

Hiersemann
Arbeitskreisleiter

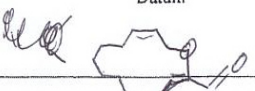
8.6.11 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Jaschinski 6149
Auftraggeber Tel.

30.5.2011
Datum

TJ-7Mb Ea
Probenbezeichnung
(max. 7 Stellen)

Die Substanz enthält: 

M
Smp.: _____

auf Abruf?

Luftempfindlich:

Sdp.: _____

Hygroskopisch:

Bemerkungen: zersetzt sich bei RT nach längerer Zeit

Einwaage:

theor.

prax.

a) 1.668

a

b

% C: 70,56

70,6

70,7

b) 1.644

% H: 9,3

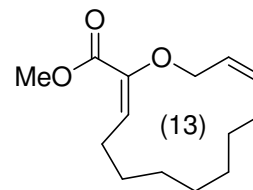
9,6

9,4

% N: /

/

/



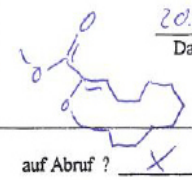
(E,Z)-298b

Hiersemann
Arbeitskreisleiter

8.6.11 M. Kiffner
Datum der Ausführung

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 20.1.2012 Probenbezeichnung: TJ-899A1
(max. 7 Stellen)

Die Substanz enthält:  auf Abruf? COC(=O)C=C1CC2CC3CC4CC5CC6C1C2C3C4C5C6 (14)

M Smp.: _____ Sdp.: _____ Bemerkungen: _____

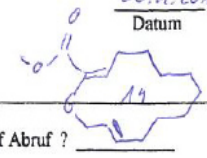
Einwaage: theor.

	theor.	prax.	(Z,E)-298c und (Z,E)-390 (Z,E)-298c:(Z,E)-390 = 95:5
a) <u>1.533</u>	% C: <u>71.59</u>	<u>71.6</u>	<u>71.7</u> 71.6
b) <u>1.703</u>	% H: <u>9.59</u>	<u>9.8</u>	<u>9.6</u>
	% N: _____	_____	_____

Hiersemann Arbeitskreisleiter Datum der Ausführung: 26.1.12 M. Kipfler

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 20.1.2012 Probenbezeichnung: TJ-899B1
(max. 7 Stellen)

Die Substanz enthält:  auf Abruf? COC(=O)C=C1CC2CC3CC4CC5CC6C1C2C3C4C5C6 (14)

M Smp.: _____ Sdp.: _____ Bemerkungen: _____

Luftempfindlich: Hygroskopisch:

Einwaage: theor. prax.

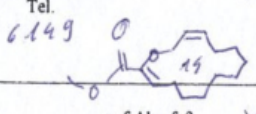
	theor.	prax. a	b
a) <u>1.752</u>	% C: <u>71.39</u>	<u>71.6</u>	<u>71.7</u>
b) <u>1.610</u>	% H: <u>9.59</u>	<u>9.7</u>	<u>9.6</u>
	% N: _____	_____	_____

Hiersemann Arbeitskreisleiter Datum der Ausführung: 26.1.12 M. Kipfler

(E,E)-298c

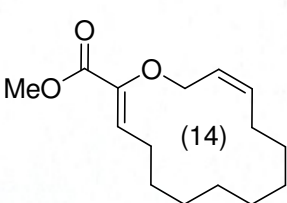
Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897 Tel. 6149 Datum: 12.3.2012 Probenbezeichnung: TJ-951 B1
(max. 7 Stellen)

Die Substanz enthält:  auf Abruf?

M Smp.: _____ Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

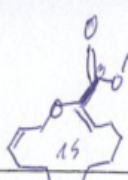
Einwaage:	theor.	prax.	
a) <u>1,795</u>		a	b
b) <u>1,733</u>	% C: <u>71,39</u>	<u>71,3</u>	<u>71,7</u>
	% H: <u>9,59</u>	<u>9,6</u>	<u>9,5</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>


(Z,Z)-298c

Hirsemann Arbeitskreisleiter Datum der Ausführung: 23.3.12 M. Kuffner

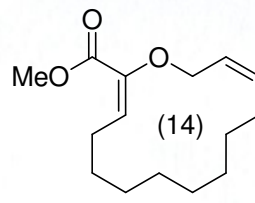
Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897 Tel. 6149 Datum: 12.3.2012 Probenbezeichnung: TJ-951 A1
(max. 7 Stellen)

Die Substanz enthält:  auf Abruf?

M Smp.: _____ Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	
a) <u>1,605</u>		a	b
b) <u>1,822</u>	% C: <u>71,39</u>	<u>71,6</u>	<u>72,0</u>
	% H: <u>9,59</u>	<u>9,6</u>	<u>9,6</u>
	% N: _____	_____	_____


(E,Z)-298c

Hirsemann Arbeitskreisleiter Datum der Ausführung: 22.3.12 M. Kuffner

Elementaranalysenauftrag

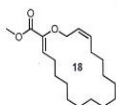
Jaschinski Büro 6149
Auftraggeber Lab: 3897
Tel.

28.07.2011

Datum

TJ-744 a HPLC

Probenbezeichnung
(max. 7 Stellen)



Die Substanz enthält : _____

M Smp.: _____ auf Abruf ? _____

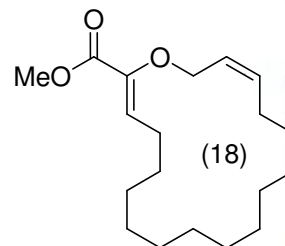
Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage :	theor.	prax.	
		a	b
a.) 1,628	% C : 74,0	74,0	73,9
b.) 1,438	% H : 10,5	10,3	10,2
	% N : _____	_____	_____



(Z,Z)-298d

Hiersemann

Arbeitskreisleiter

29.7.11 M. Hoffmann
Datum der Ausführung

Elementaranalysenauftrag

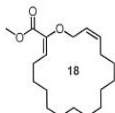
Jaschinski Büro 6149
Auftraggeber Lab: 3897
Tel.

28.07.2011

Datum

TJ-744 b HPLC

Probenbezeichnung
(max. 7 Stellen)



Die Substanz enthält : _____

M Smp.: _____ auf Abruf ? _____

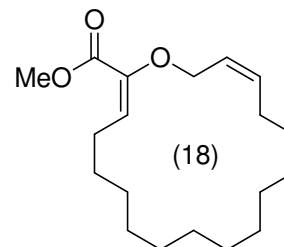
Luftempfindlich :

Sdp.: _____

Hygroskopisch :

Bemerkungen : _____

Einwaage :	theor.	prax.	
		a	b
a.) 1,336	% C : 74,0	73,6	74,1
b.) 1,692	% H : 10,5	10,2	10,3
	% N : _____	_____	_____



(E,Z)-298d

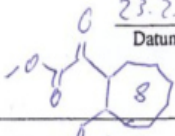
Hiersemann

Arbeitskreisleiter

29.7.11 M. Hoffmann
Datum der Ausführung

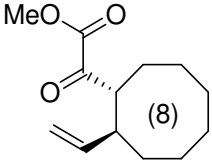
Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 23.2.2012 Probenbezeichnung: TJ-957
(max. 7 Stellen)

Die Substanz enthält:  auf Abruf?

Smp.: _____ Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

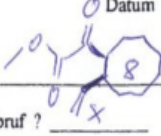
Einwaage:	theor.	prax.	
		a	b
a) <u>1,627</u>	% C: <u>69,61</u>	<u>69,7</u>	<u>69,7</u>
b) <u>1,890</u>	% H: <u>8,99</u>	<u>9,1</u>	<u>9,1</u>
	% N: _____	_____	_____

 (±)-trans-308a

A. Hersemann Arbeitskreisleiter Datum der Ausführung: 20.3.12 M. Köpfer

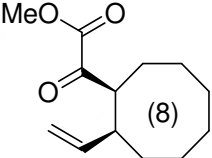
Elementaranalysenauftrag

Auftraggeber: Jaschinski 3897 Tel. 6149 Datum: 28.3.2012 Probenbezeichnung: TJ-978
(max. 7 Stellen)

Die Substanz enthält:  auf Abruf?

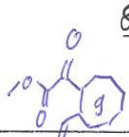
Smp.: _____ Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	
		a	b
a) <u>1,182</u>	% C: <u>69,61</u>	<u>69,0</u>	<u>69,3</u>
b) <u>1,856</u>	% H: <u>8,99</u>	<u>8,9</u>	<u>8,8</u>
	% N: <u>/</u>	<u>/</u>	<u>/</u>

 (±)-cis-308a

Hersemann Arbeitskreisleiter Datum der Ausführung: 30.3.12 M. Köpfer

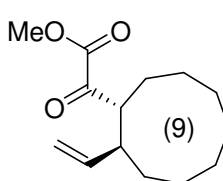
Elementaranalysenauftrag

Jaschinski 6199 8.8.2011 TJ-681Ea
 Auftraggeber Tel. Datum Probenbezeichnung
 3897  (max. 7 Stellen)

Die Substanz enthält : _____
 M Smp.: _____ auf Abruf ? Luftempfindlich :
 Sdp.: _____ Hygroskopisch :
 Bemerkungen : _____

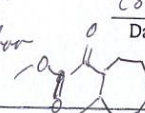
Einwaage :

	theor.	prax.	
		a	b
a) <u>2.064</u>	% C : <u>70.56</u>	<u>70.3</u>	<u>70.4</u>
b) <u>2.097</u>	% H : <u>9.3</u>	<u>9.8</u>	<u>9.6</u>
	% N : <u>/</u>	<u>/</u>	<u>/</u>

 (9)
 (±)-trans-308b

Hiersemann 23.8.11 M. Kiffer
 Arbeitskreisleiter Datum der Ausführung

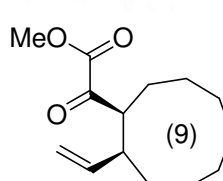
Elementaranalysenauftrag

Jaschinski 6199 28.11.2011 TJ-683
 Auftraggeber Büro Tel. Datum Probenbezeichnung
 3897 Labor  (max. 7 Stellen)

Die Substanz enthält : _____
 M Smp.: _____ auf Abruf ? Luftempfindlich :
 Sdp.: _____ Hygroskopisch :
 Bemerkungen : _____

Einwaage :

	theor.	prax.	
		a	b
a) <u>1.465</u>	% C : <u>70.56</u>	<u>70.7</u>	<u>70.8</u>
b) <u>1.475</u>	% H : <u>9.30</u>	<u>9.2</u>	<u>9.1</u>
	% N : _____	_____	_____

 (9)
 (±)-cis-308b

Hiersemann 2.12.11 M. Kiffer
 Arbeitskreisleiter Datum der Ausführung

Elementaranalysenauftrag

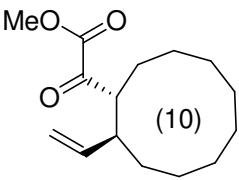
Auftraggeber: Jaschinski 6149 Tel. 3897 Datum: 8.2.2012 Probenbezeichnung: TJ-942
(max. 7 Stellen)

Die Substanz enthält: C₁₅H₂₄O₃

M Smp.: _____ auf Abruf? X Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:		theor.		prax.	
		a	b	a	b
a)	<u>1,742</u>	% C: <u>71,4</u>	<u>71,5</u>	<u>72,0</u>	
b)	<u>2,729</u>	% H: <u>9,6</u>	<u>9,7</u>	<u>9,8</u>	
		% N: _____	<u>/</u>	<u>/</u>	

Arbeitskreisleiter: Hierse mann Datum der Ausführung: 6.3.12 M. Köpf



(±)-trans-308c

Elementaranalysenauftrag

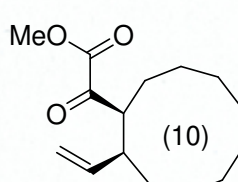
Auftraggeber: Jaschinski 3897 Tel. 6149 Datum: 26.3.2012 Probenbezeichnung: TJ-1002
(max. 7 Stellen)

Die Substanz enthält: C₁₅H₂₄O₃

M Smp.: _____ auf Abruf? X Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:		theor.		prax.	
		a	b	a	b
a)	<u>1,331</u>	% C: <u>71,39</u>	<u>71,6</u>	<u>71,4</u>	
b)	<u>1,603</u>	% H: <u>9,59</u>	<u>9,4</u>	<u>9,4</u>	
		% N: _____	<u>/</u>	<u>/</u>	

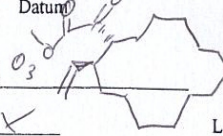
Arbeitskreisleiter: Hierse mann Datum der Ausführung: 30.3.12 M. Köpf



(±)-cis-308c

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel.: 3897 Datum: 28.11.2011 Probenbezeichnung: TJ-797
(max. 7 Stellen)

Die Substanz enthält: C₁₉H₃₂O₃ 

Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	a	b
a) <u>1.664</u>				
b)	% C: <u>73,98</u>	<u>74,1</u>	_____	_____
	% H: <u>10,46</u>	<u>10,6</u>	_____	_____
	% N: _____	_____	_____	_____

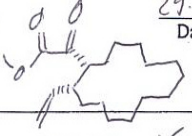
Hierseman
Arbeitskreisleiter

2.12.11 M. Dröflm
Datum der Ausführung

(±)-trans-308d

Elementaranalysenauftrag

Auftraggeber: Jaschinski 6149 Tel.: 3897 Datum: 29.9.2011 Probenbezeichnung: TJ-830
(max. 7 Stellen)

Die Substanz enthält: C₁₉H₃₂O₃ 

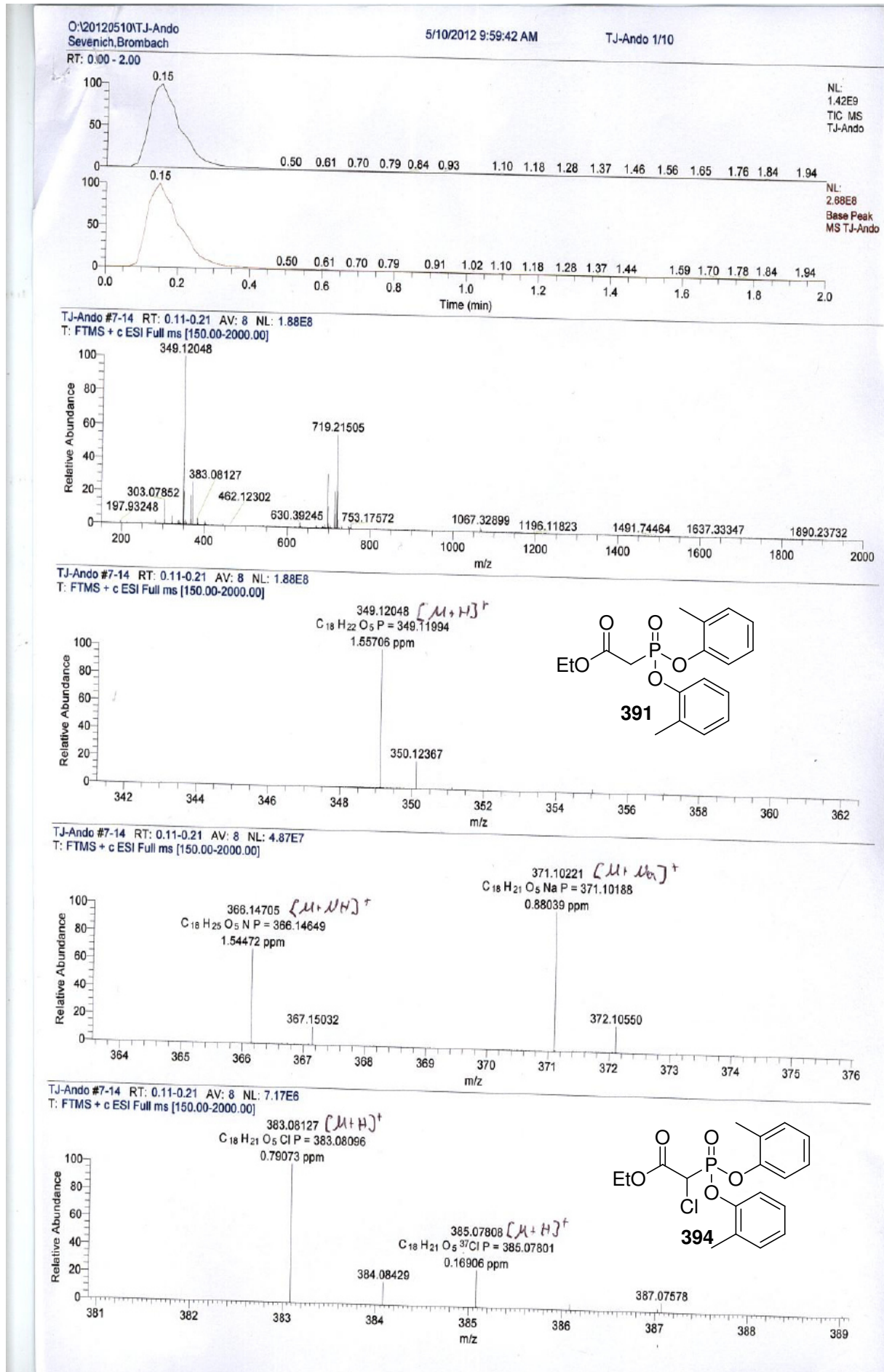
Smp.: _____ auf Abruf? Luftempfindlich:
Sdp.: _____ Hygroskopisch:
Bemerkungen: _____

Einwaage:	theor.	prax.	a	b
a) <u>1.787</u>				
b) <u>1.687</u>	% C: <u>74,0</u>	<u>74,4</u>	<u>74,4</u>	_____
	% H: <u>10,5</u>	<u>10,5</u>	<u>10,3</u>	_____
	% N: <u>/</u>	<u>/</u>	<u>/</u>	_____

Hierseman
Arbeitskreisleiter

30.9.11 M. Dröflm
Datum der Ausführung

(±)-cis-308d

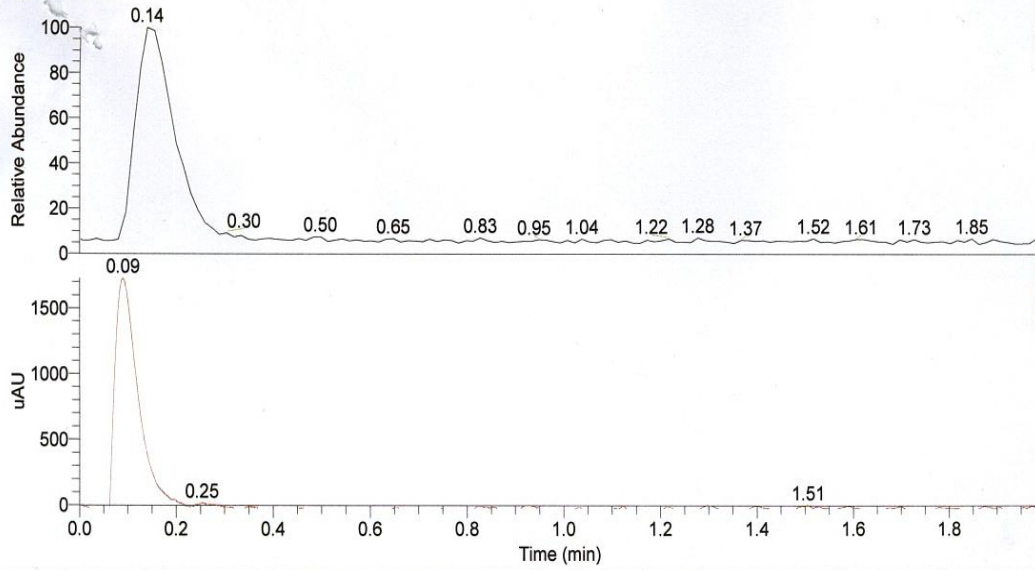


\\Orbitrap\orbitrapdaten\20110809\TJ-607
Heitbrink

8/9/2011 10:54:47 AM

TJ-607 1/10

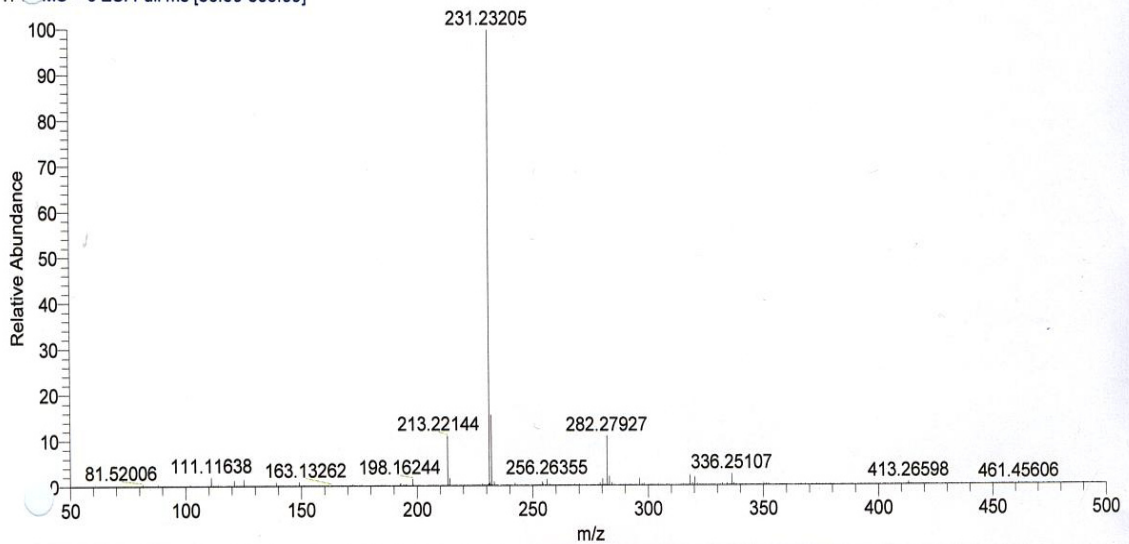
RT: 0.10 - 1.98



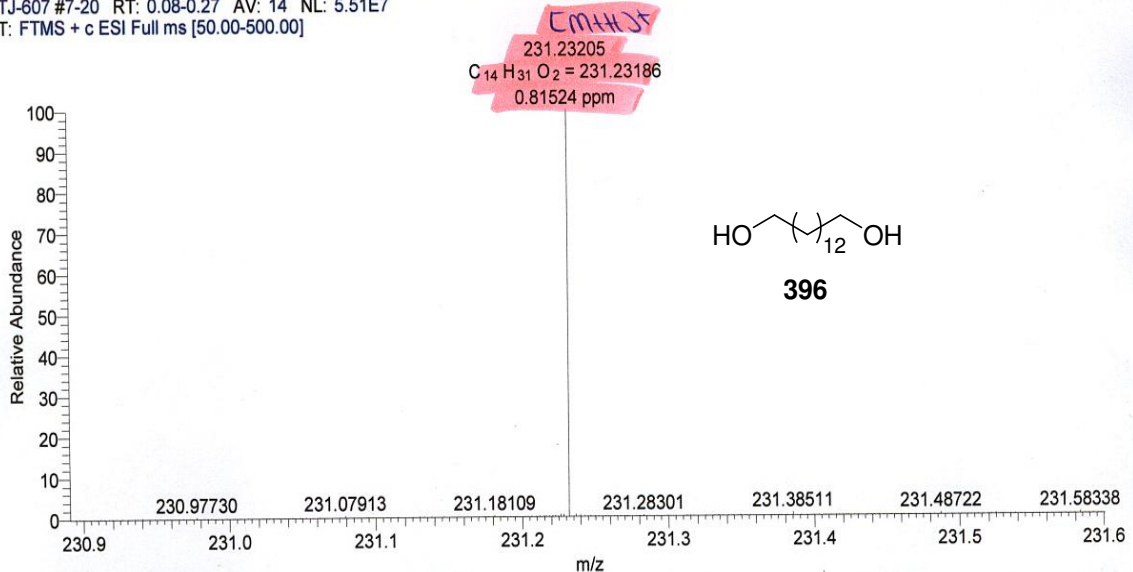
NL:
2.57E8
TIC MS
TJ-607

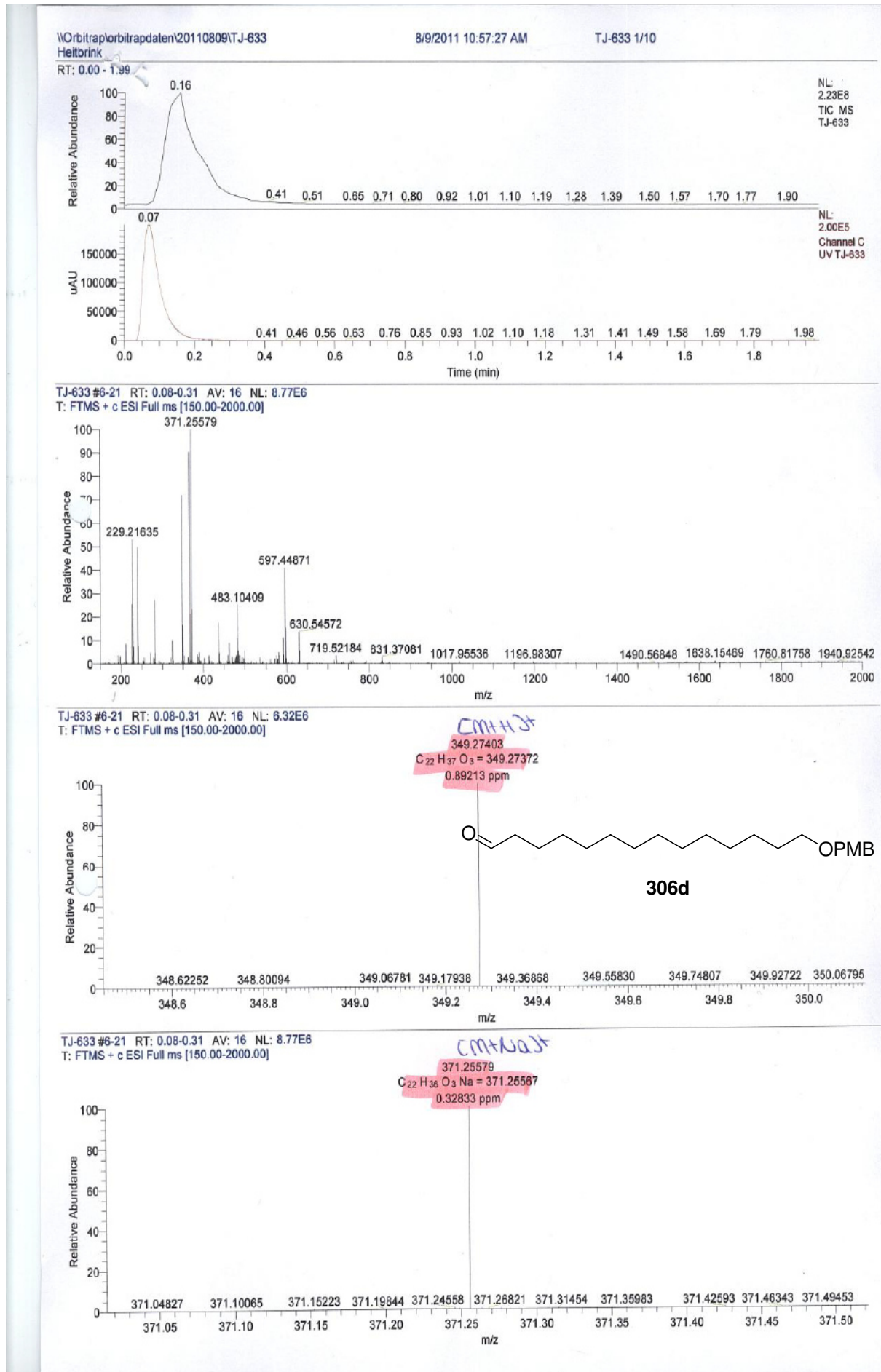
NL:
1.73E3
Channel C
UV TJ-607

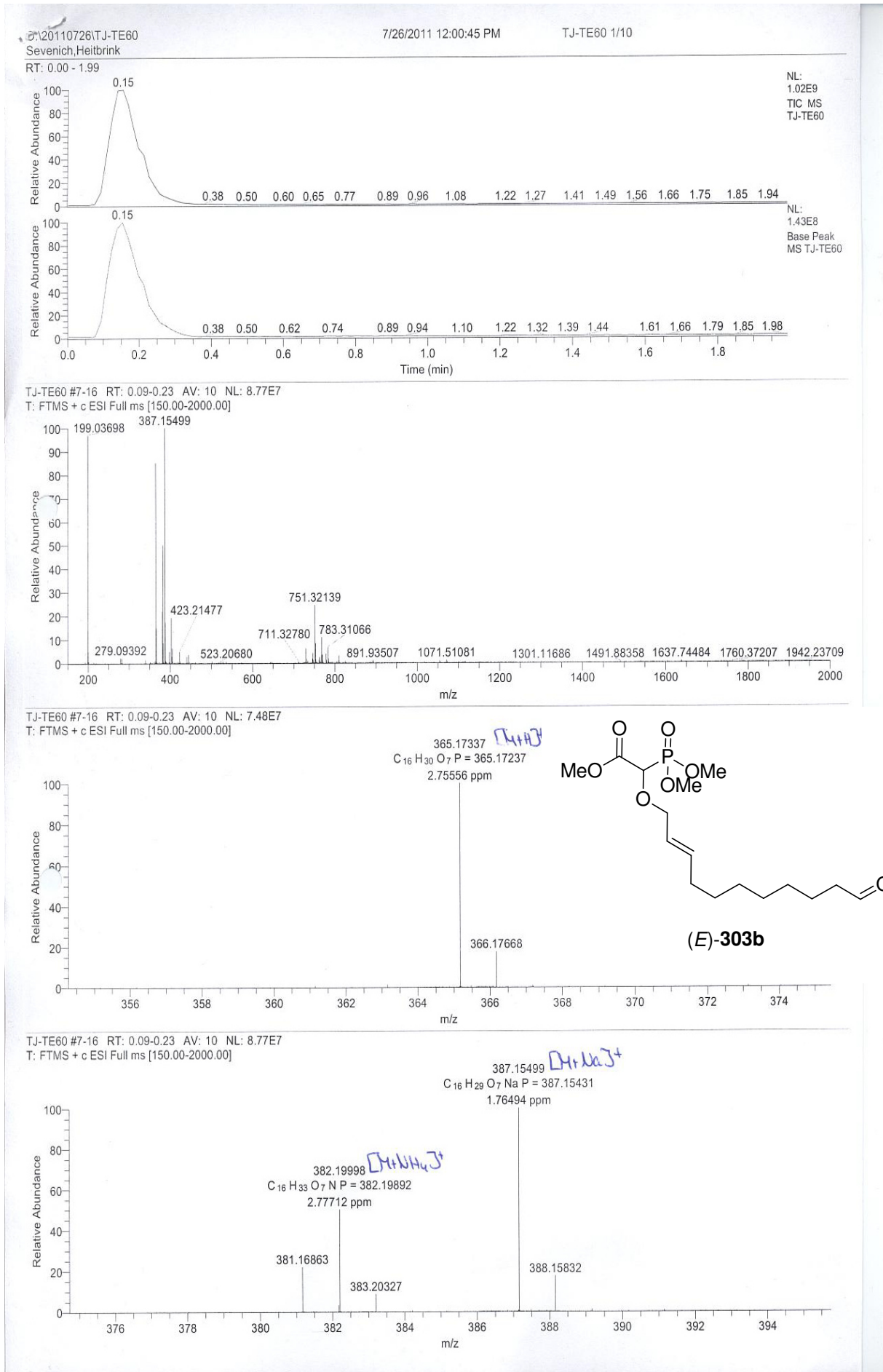
TJ-607 #7-20 RT: 0.08-0.27 AV: 14 NL: 5.51E7
T: MS + c ESI Full ms [50.00-500.00]

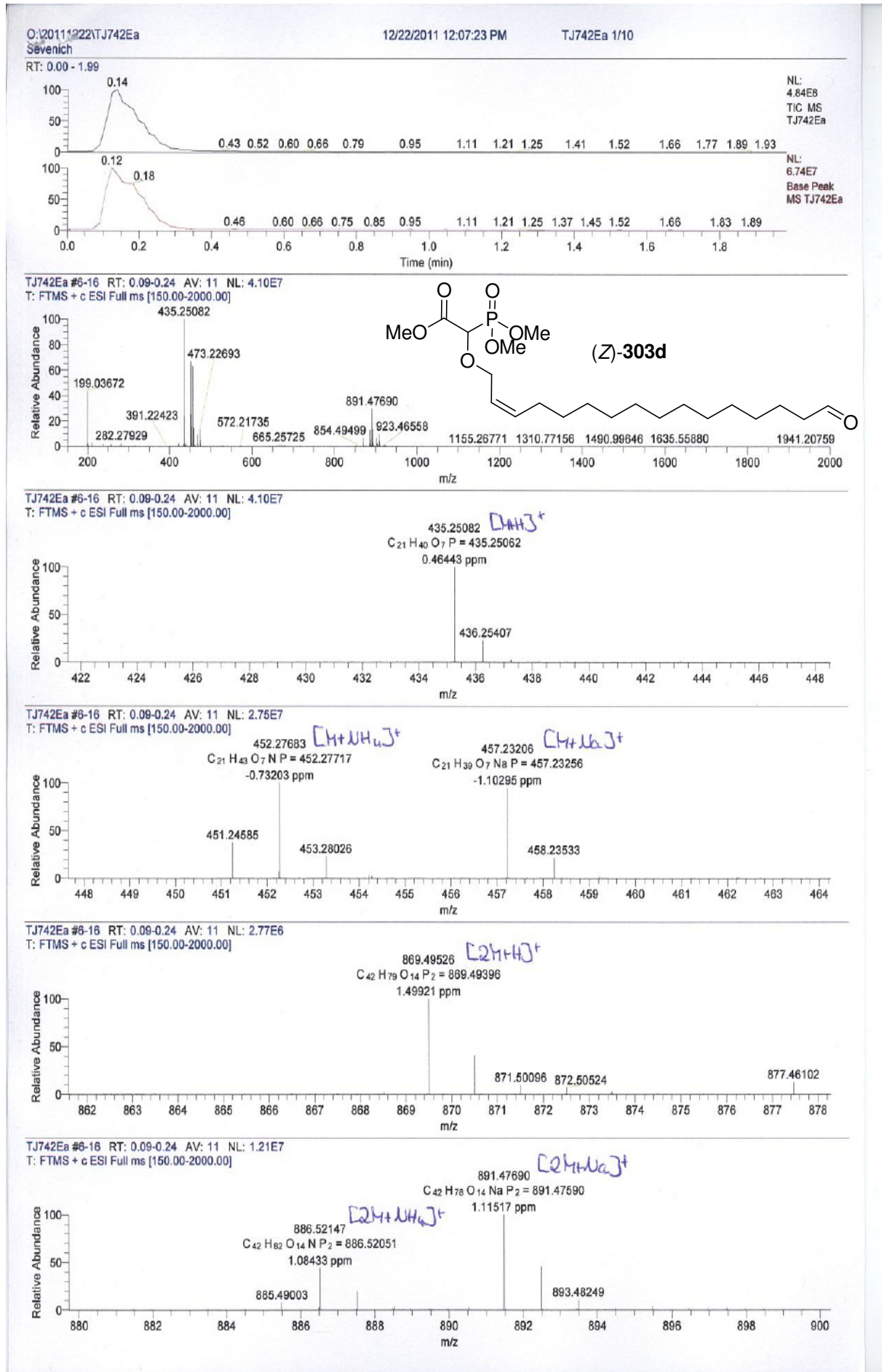


TJ-607 #7-20 RT: 0.08-0.27 AV: 14 NL: 5.51E7
T: FTMS + c ESI Full ms [50.00-500.00]



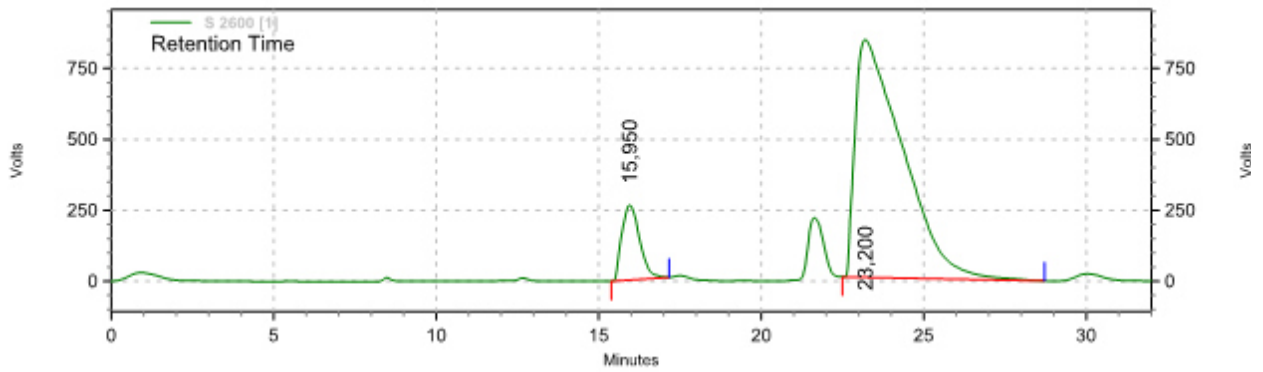






HPLC-Chromatogramme

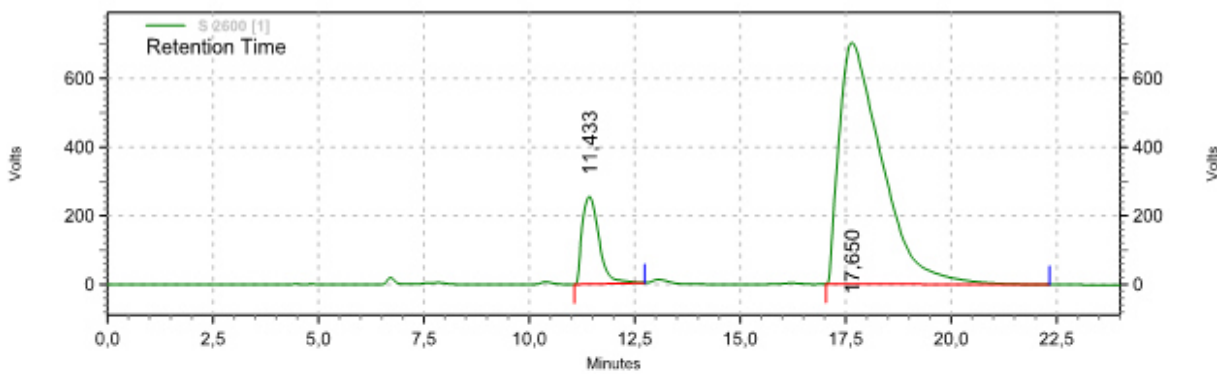
Chromatogramm 1: Trennung von Allylkohol (Z)-**304b** und Vinylchlorid (E)-**395a** Eluent: *n*-Heptan/Ethylacetat 3/1; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
15,950	10082038	10,55	263660	23,94
23,200	85440579	89,45	837490	76,06
Totals	95522617	100,00	1101150	100,00

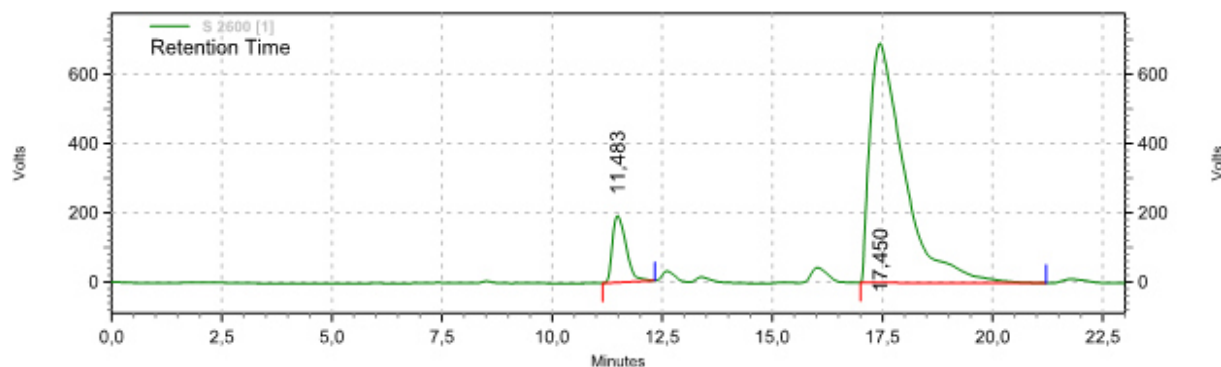
Chromatogramm 2: Trennung von Allylkohol (Z)-**304c** und Vinylchlorid (E)-**395b** Eluent: *n*-Heptan/Ethylacetat 3/1; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
11,433	7082466	12,56	255277	26,64
17,650	49319212	87,44	703131	73,36
Totals	56401678	100,00	958408	100,00

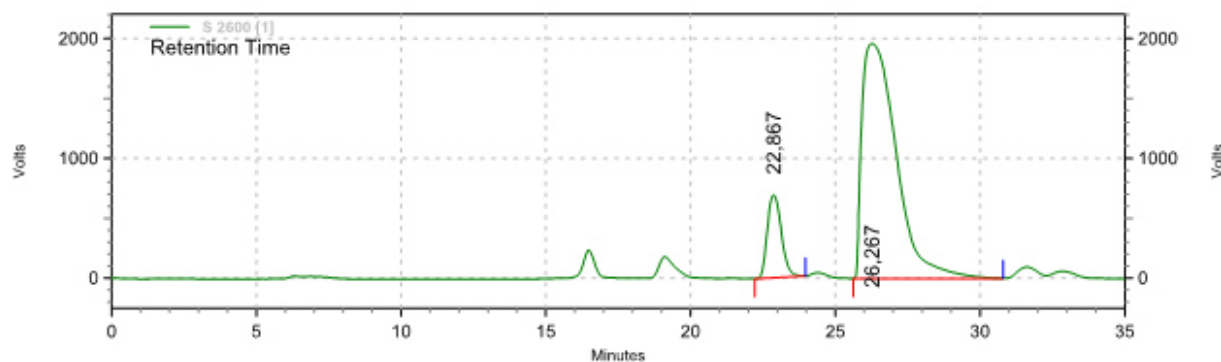
Chromatogramm 3: Trennung von Allylalkohol (*Z*)-**304d** und Vinylchlorid (*E*)-**395c** Eluent: *n*-Heptan/Ethylacetat 3/1; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
11,483	4168135	10,04	192638	21,79
17,450	37341193	89,96	691333	78,21
Totals	41509328	100,00	883971	100,00

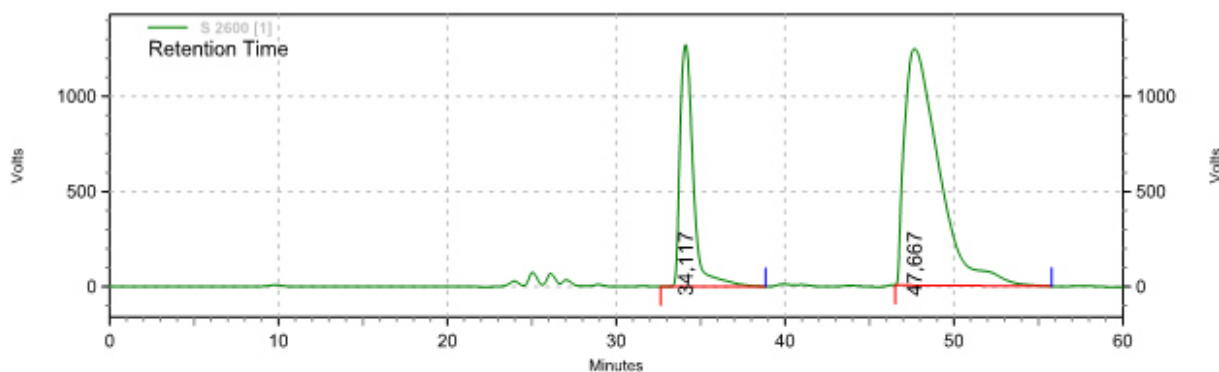
Chromatogramm 4: Trennung der Allylvinylether (*Z,E*)-**298a** und (*E,E*)-**298a** Eluent: *n*-Heptan/Ethylacetat 97/3; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
22,867	23228238	12,52	689491	26,00
26,267	162252911	87,48	1962663	74,00
Totals	185481149	100,00	2652154	100,00

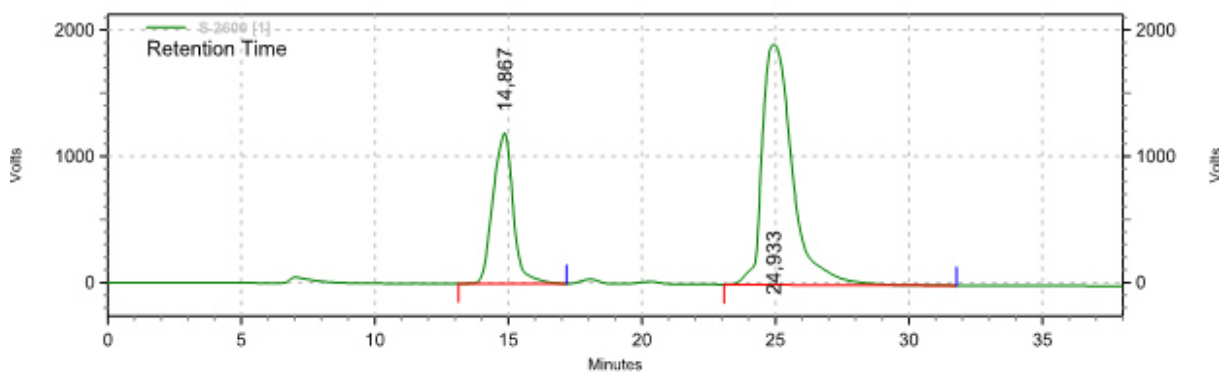
Chromatogramm 5: Trennung der Allylvinylother (*Z,E*)-**298b** und (*E,E*)-**298b** Eluent: *n*-Heptan/Ethylacetat 99/1; Flow: 25 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
34,117	69440372	28,20	1271209	50,58
47,667	176774739	71,80	1242164	49,42
Totals	246215111	100,00	2513373	100,00

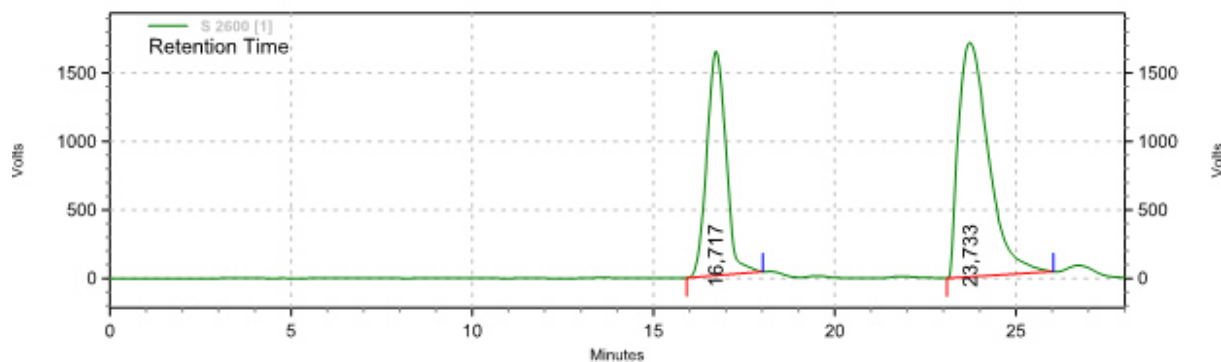
Chromatogramm 6: Trennung der Allylvinylother (*Z,Z*)-**298b** und (*E,Z*)-**298b** Eluent: *n*-Heptan/Ethylacetat 97/3; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
14,867	62447027	29,46	1192174	38,52
24,933	149525478	70,54	1902768	61,48
Totals	211972505	100,00	3094942	100,00

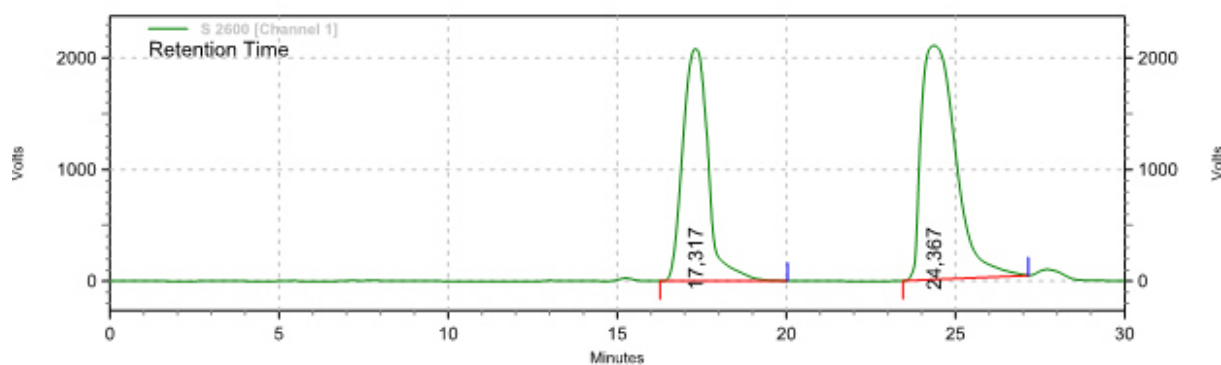
Chromatogramm 7: Trennung der Allylvinyether (*Z,E*)-**298c** und (*E,E*)-**298c** Eluent: *n*-Heptan/Ethylacetat 97/3; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
16,717	59941892	37,80	1637632	48,91
23,733	98640143	62,20	1710492	51,09
Totals	158582035	100,00	3348124	100,00

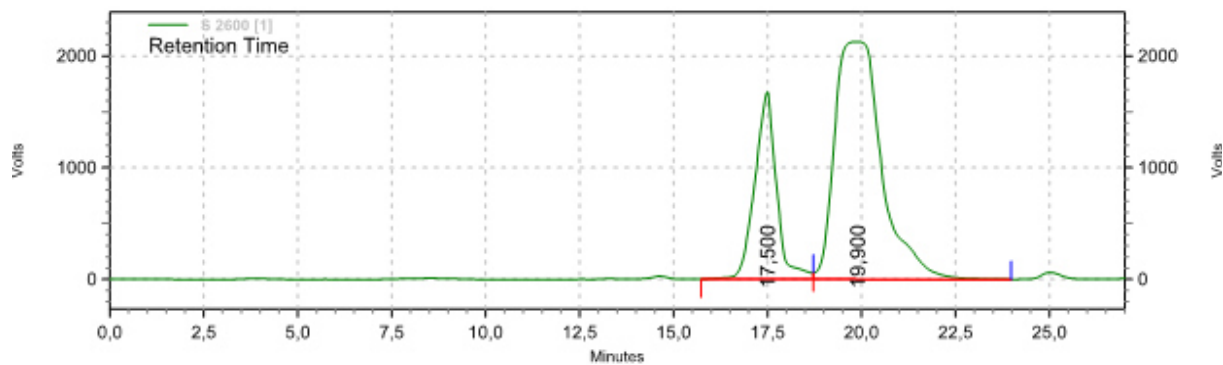
Chromatogramm 8: Trennung der Allylvinyether (*Z,Z*)-**298c** und (*E,Z*)-**298c** Eluent: *n*-Heptan/Ethylacetat 97/3; Flow: 30 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
17,317	108701077	42,24	2082347	49,81
24,367	148666457	57,76	2098046	50,19
Totals	257367534	100,00	4180393	100,00

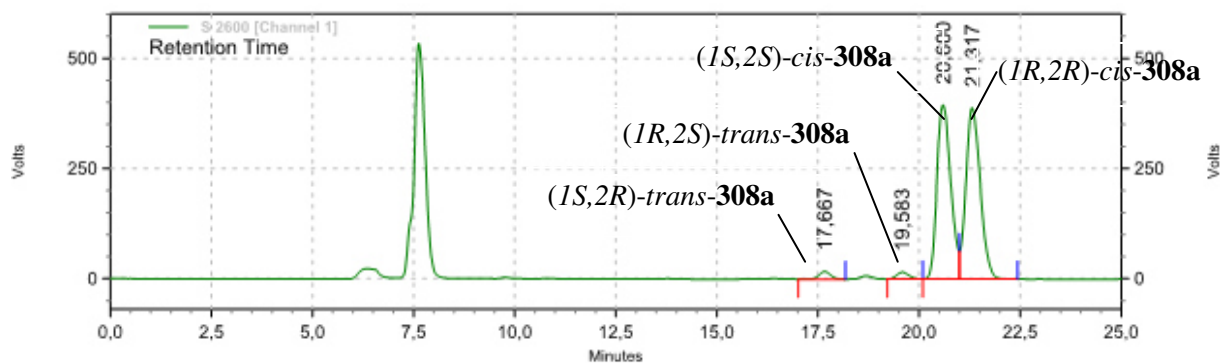
Chromatogramm 9: Trennung der Allylvinylether (*Z,Z*)-**298d** und (*E,Z*)-**298d** Eluent: *n*-Heptan/Ethylacetat 97/3; Flow: 30 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,500	67151235	26,68	1675935	44,08
19,900	184571209	73,32	2126277	55,92
Totals	251722444	100,00	3802212	100,00

Chromatogramm 10: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (Z,E)-**298a** zu (±)-*cis*-**308a** (*trans:cis* = 10:90)¹; Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.5 ml/min.

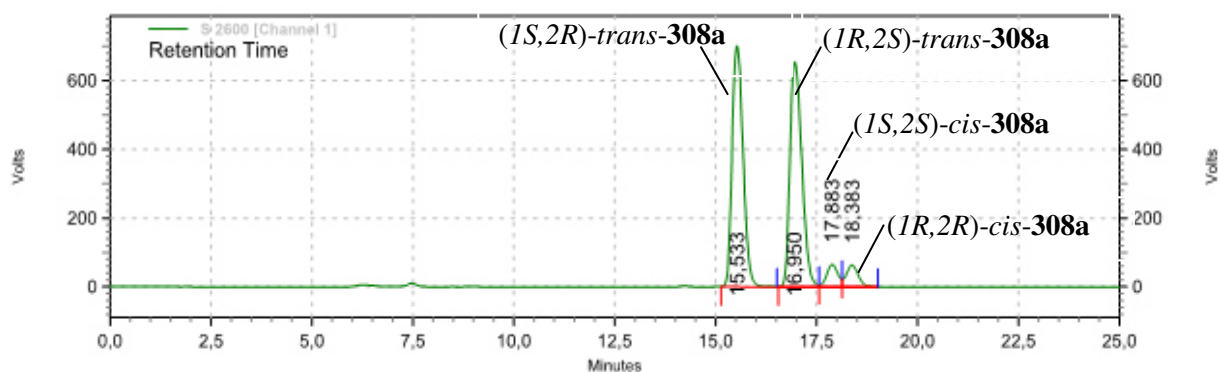


**S 2600 [Channel 1]
1) Results**

Retention Time	Area	Area %	Height	Height %
17,667	353172	1,78	17857	2,18
19,583	336908	1,70	16046	1,96
20,600	9420623	47,61	395093	48,34
21,317	9677651	48,91	388335	47,51
Totals	19788354	100,00	817331	100,00

¹ Bestimmt durch ¹H-NMR-Spektroskopie des gereinigten Produktes.

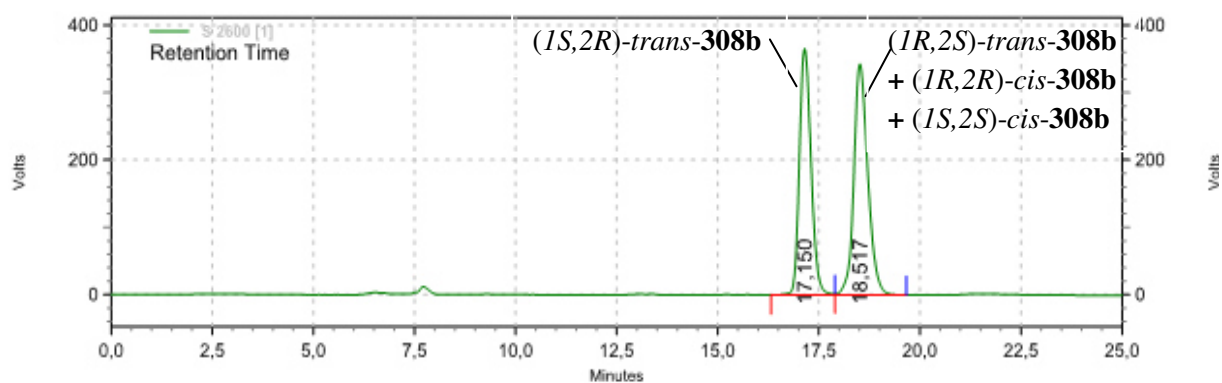
Chromatogramm 11: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (*E,E*)-**298a** zu (\pm)-*trans*-**308a** (*trans*:*cis* = 88:12)¹; Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
15,533	13303067	45,28	701205	47,17
16,950	13497293	45,95	655635	44,10
17,883	1257950	4,28	65605	4,41
18,383	1318413	4,49	64095	4,31
Totals	29376723	100,00	1486540	100,00

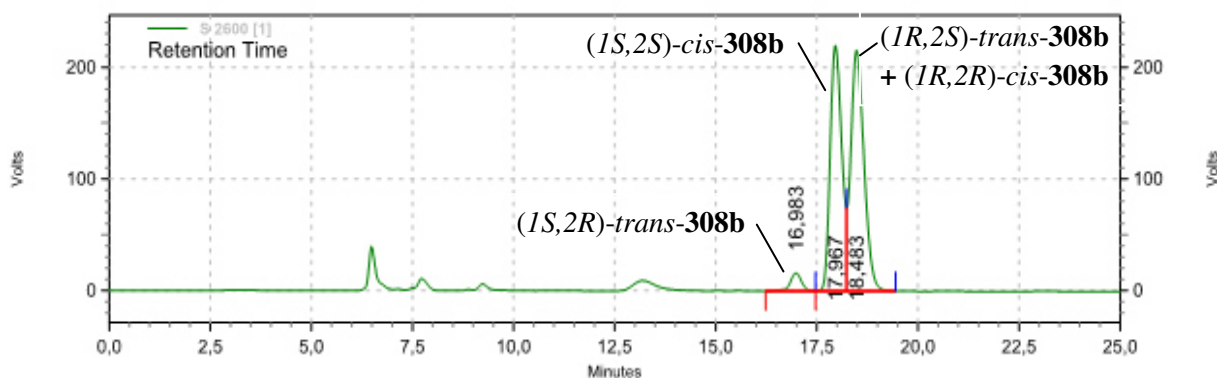
Chromatogramm 12: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** zu (\pm)-*trans*-**308b** (*trans:cis* = 94:6)¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,150	7365640	47,08	366006	51,61
18,517	8277993	52,92	343200	48,39
Totals	15643633	100,00	709206	100,00

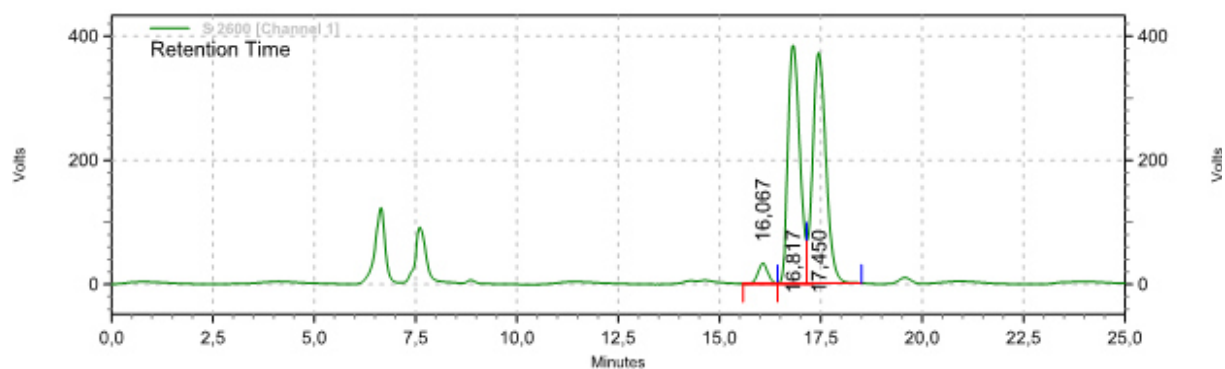
Chromatogramm 13: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (Z,E)-**298b** zu (\pm)-*cis*-**308b** (*trans:cis* = 11:89)¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
16,983	325750	3,38	16218	3,59
17,967	4367888	45,27	219579	48,64
18,483	4954416	51,35	215672	47,77
Totals	9648054	100,00	451469	100,00

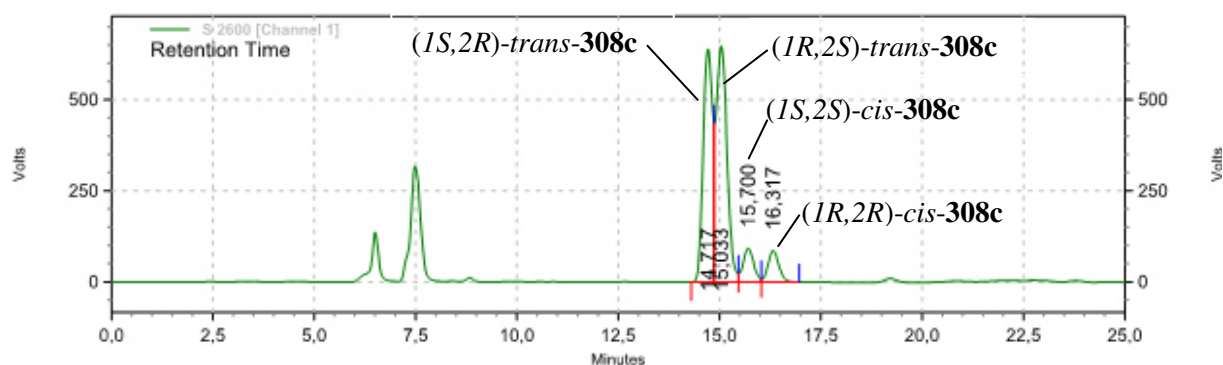
Chromatogramm 14: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (*E,Z*)-**298b** zu (\pm)-*cis*-**308b** (*trans:cis* = 8:92)¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



**S 2600 [Channel
1] Results**

Retention Time	Area	Area %	Height	Height %
16,067	550715	3,27	32866	4,17
16,817	7811639	46,37	383827	48,67
17,450	8483284	50,36	371953	47,16
Totals	16845638	100,00	788646	100,00

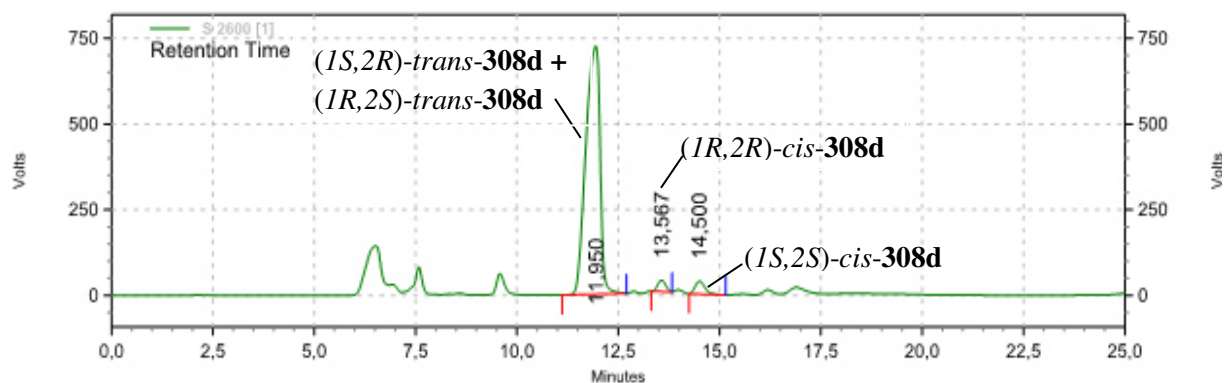
Chromatogramm 15: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (*E,E*)-**298c** zu (\pm)-*trans*-**308c** (*trans:cis* = 87:13)¹; Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.5 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
14,717	10267007	39,73	639656	43,60
15,033	12246825	47,39	648238	44,18
15,700	1699902	6,58	92801	6,33
16,317	1627449	6,30	86495	5,90
Totals	25841183	100,00	1467190	100,00

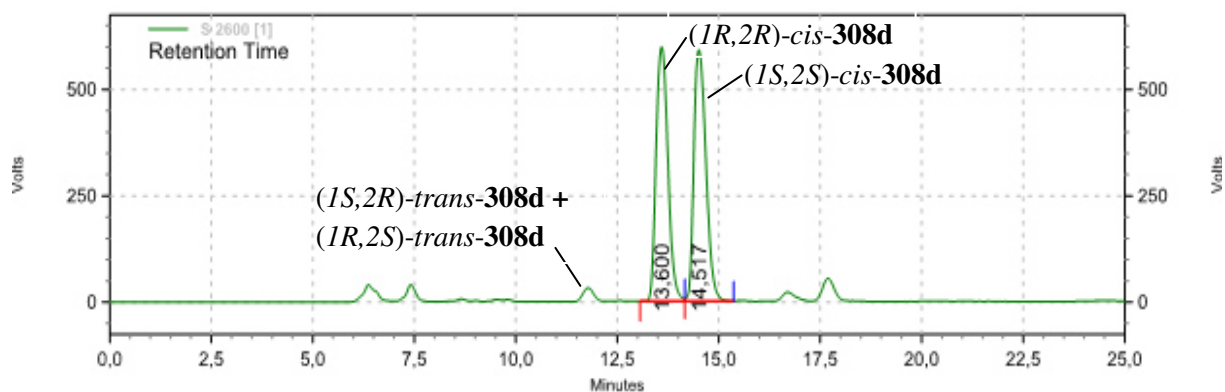
Chromatogramm 16: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (Z,Z)-**298d** zu (±)-*trans*-**308d** (*trans*:*cis* = 93:7)¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
11,950	17678775	94,24	723117	91,12
13,567	449713	2,40	33069	4,17
14,500	630226	3,36	37438	4,72
Totals	18758714	100,00	793624	100,00

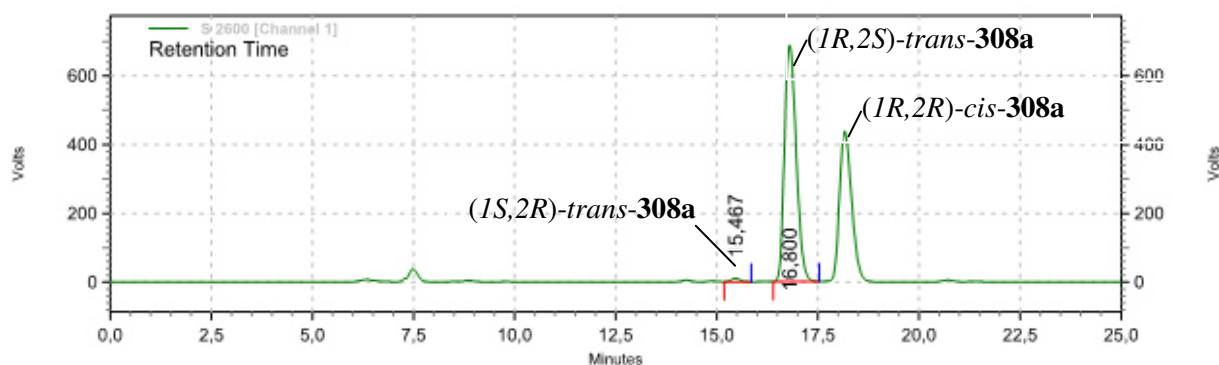
Chromatogramm 17: Unkatalysierte {1,6}-transannulare Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** zu (\pm)-*cis*-**308d** (*trans:cis* = 5:95)¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,600	12196795	49,83	597717	50,30
14,517	12279437	50,17	590661	49,70
Totals	24476232	100,00	1188378	100,00

Chromatogramm 18: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298a** mit (*S,S*)-**181b** zu (\pm)-*trans*-**308a** [(*1R,2S*)-*trans*-**308a**:(*1R,2R*)-*cis*-**308a** = 62:38]¹; Eluent: Heptan/Isopropanol 99,5/0,5; Flow: 0.75 ml/min.

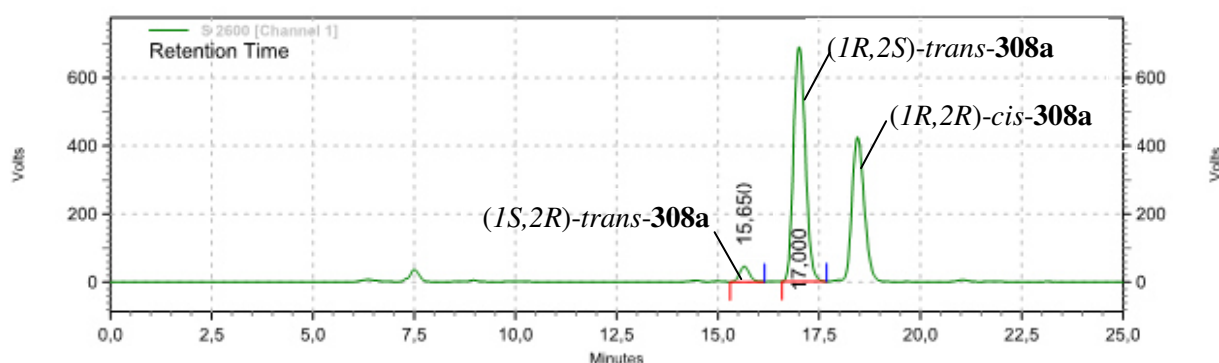


S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
15,467	162386	1,15	10392	1,49
16,800	13935272	98,85	687613	98,51

Totals	14097658	100,00	698005	100,00
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Chromatogramm 19: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298a** mit (*S,S*)-**181b** zu (\pm)-*trans*-**308a** [(*1R,2S*)-*trans*-**308a**:(*1R,2R*)-*cis*-**308a** = 62:38]¹ versetzt mit 8% (\pm)-*trans*-**308a** (*trans*:*cis* = 88:12); Eluent: Heptan/Isopropanol 99,5/0,5; Flow: 0.75 ml/min.

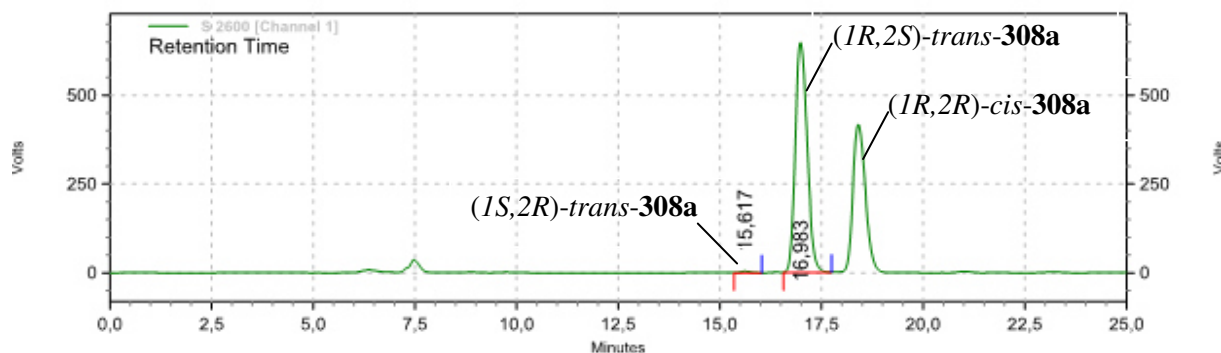


S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
15,650	769841	5,21	45608	6,21
17,000	14003499	94,79	688431	93,79

Totals	14773340	100,00	734039	100,00
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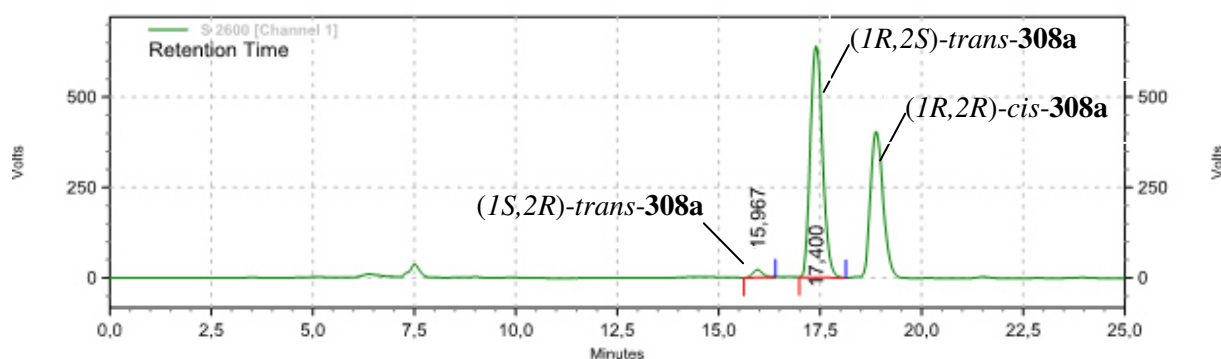
Chromatogramm 20: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298a** mit (*S,S*)-**181a** zu (\pm)-*trans*-**308a** [(*1R,2S*)-*trans*-**308a**:(*1R,2R*)-*cis*-**308a** = 62:38]¹; Eluent: Heptan/Isopropanol 99,5/0,5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
15,617	67624	0,51	4147	0,64
16,983	13212264	99,49	647301	99,36
Totals	13279888	100,00	651448	100,00

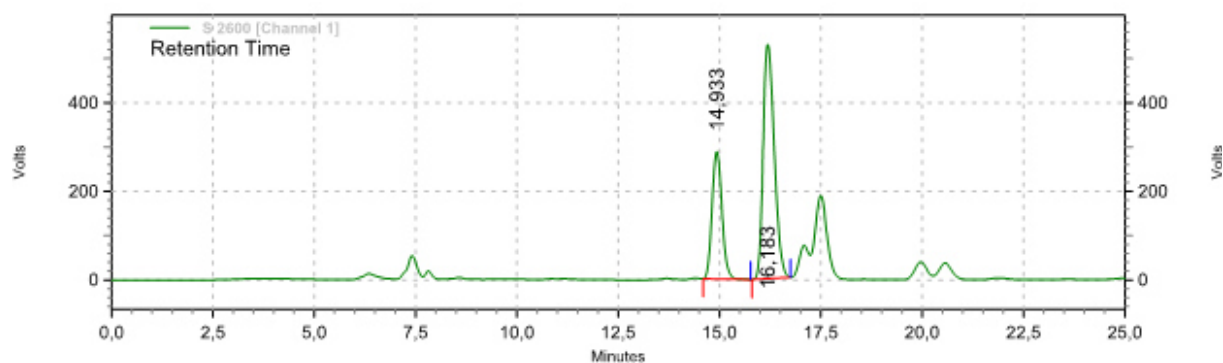
Chromatogramm 21: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298a** mit (*S,S*)-**181a** zu (\pm)-*trans*-**308a** [(*1R,2S*)-*trans*-**308a**:(*1R,2R*)-*cis*-**308a** = 62:38]¹ versetzt mit 4% (\pm)-*trans*-**308a** (*trans*:*cis* = 88:12); Eluent: Heptan/Isopropanol 99,5/0,5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
15,967	361358	2,62	21612	3,27
17,400	13418622	97,38	639422	96,73
Totals	13779980	100,00	661034	100,00

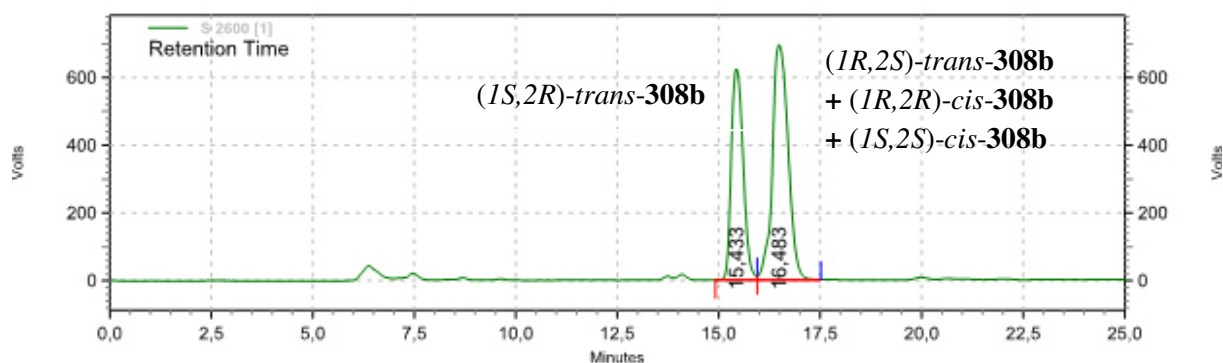
Chromatogramm 22: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298a** mit (*S,S*)-**183b** zu (\pm)-*trans*-**308a** [(*1R,2S*)-*trans*-**308a**:(*1R,2R*)-*cis*-**308a**:(*1R*)-(*E*)-**396a** = 71:24:5]¹; Eluent: Heptan/Isopropanol 99,5/0,5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
14,933	4878110	32,56	287735	35,25
16,183	10103853	67,44	528541	64,75
Totals	14981963	100,00	816276	100,00

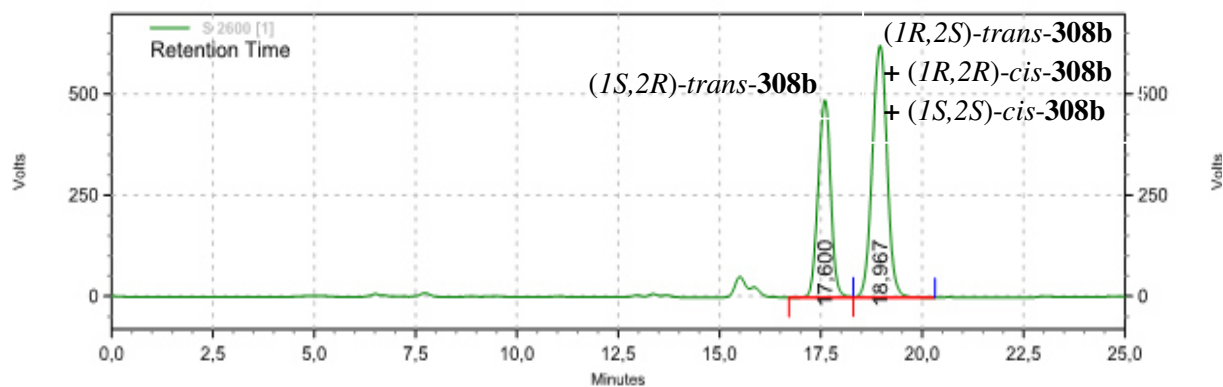
Chromatogramm 23: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*R,R*)-**183b** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 92:8]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.75 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
15,433	12762705	40,53	623908	47,33
16,483	18729640	59,47	694376	52,67
Totals	31492345	100,00	1318284	100,00

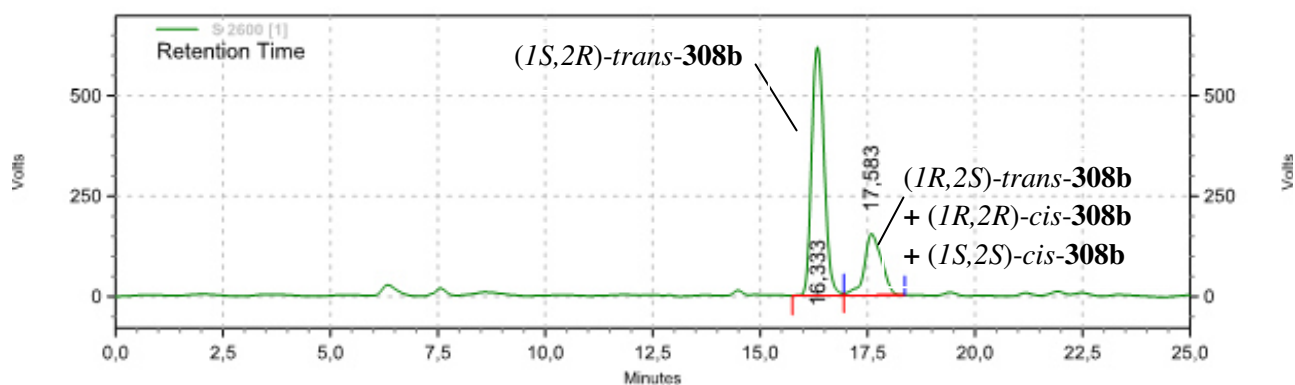
Chromatogramm 24: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*R,R*)-**183a** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 92:8]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,600	10585121	40,17	488461	43,98
18,967	15764622	59,83	622253	56,02
Totals	26349743	100,00	1110714	100,00

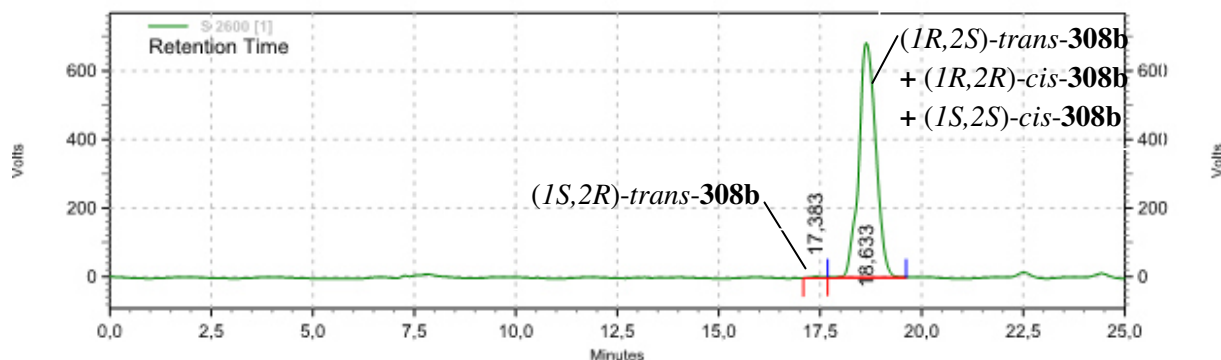
Chromatogramm 25: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*R,R*)-**400** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 87:13]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
16,333	12535039	74,51	619032	80,15
17,583	4289222	25,49	153297	19,85
Totals	16824261	100,00	772329	100,00

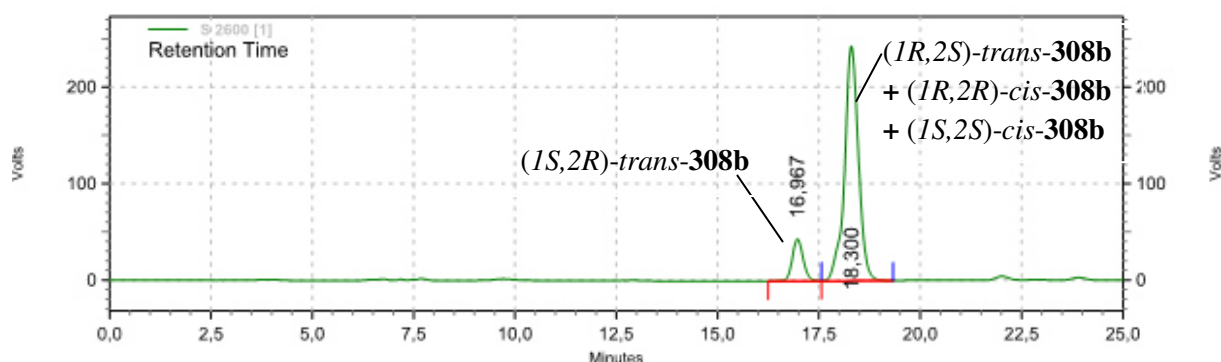
Chromatogramm 26: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*S,S*)-**181a** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 83:17]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,383	74893	0,37	3719	0,54
18,633	19998282	99,63	683998	99,46
Totals	20073175	100,00	687717	100,00

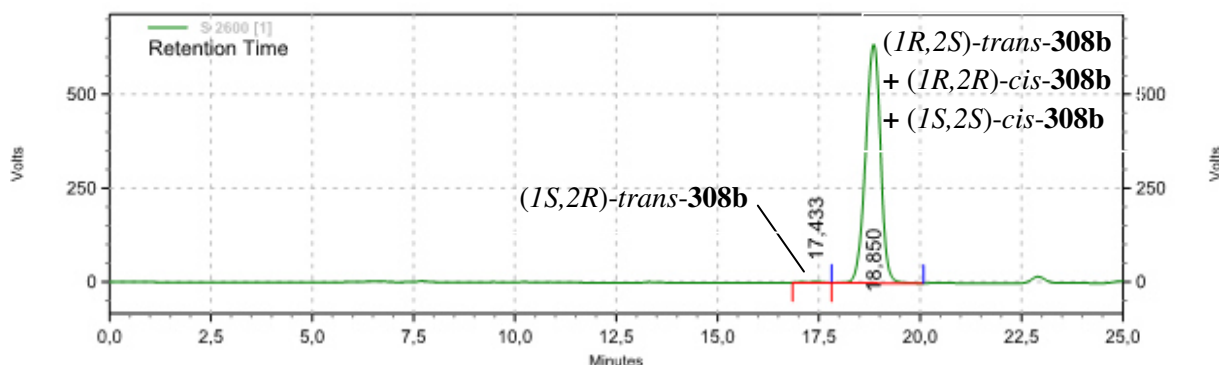
Chromatogramm 27: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*S,S*)-**181a** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 83:17]¹ versetzt mit 25% (\pm)-*trans*-**308b** (*trans*:*cis* = 94:6); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
16,967	826361	12,46	43646	15,20
18,300	5804914	87,54	243481	84,80
Totals	6631275	100,00	287127	100,00

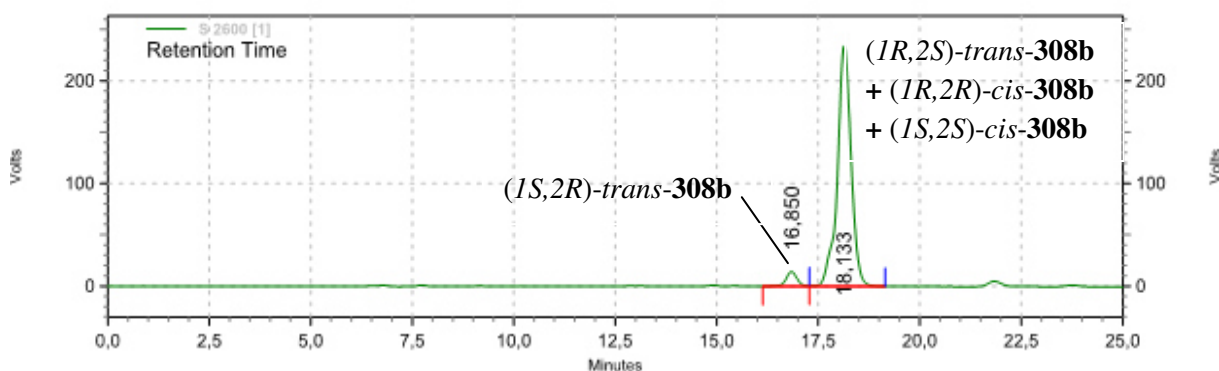
Chromatogramm 28: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*S,S*)-**181b** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 83:17]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,433	91130	0,55	3274	0,51
18,850	16356117	99,45	636845	99,49
Totals	16447247	100,00	640119	100,00

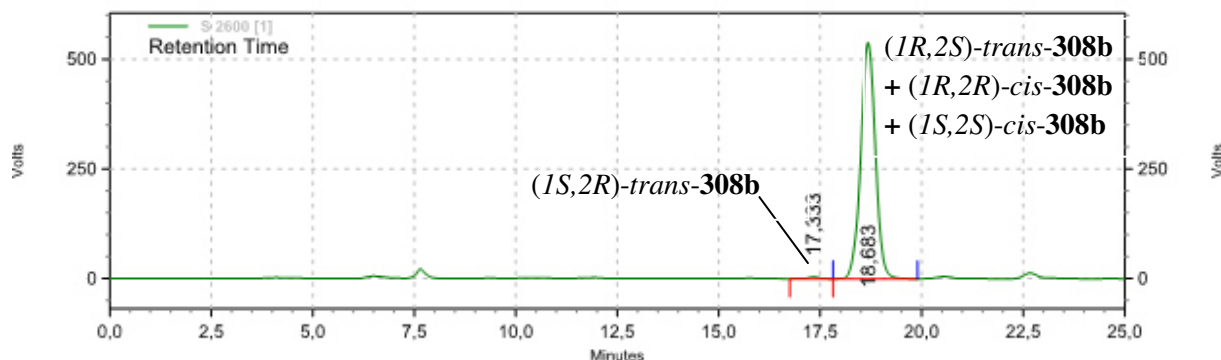
Chromatogramm 29: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*S,S*)-**181b** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 83:17]¹ versetzt mit 8% (\pm)-*trans*-**308b** (*trans*:*cis* = 94:6); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
16,850	277706	4,77	14366	5,77
18,133	5542847	95,23	234446	94,23
Totals	5820553	100,00	248812	100,00

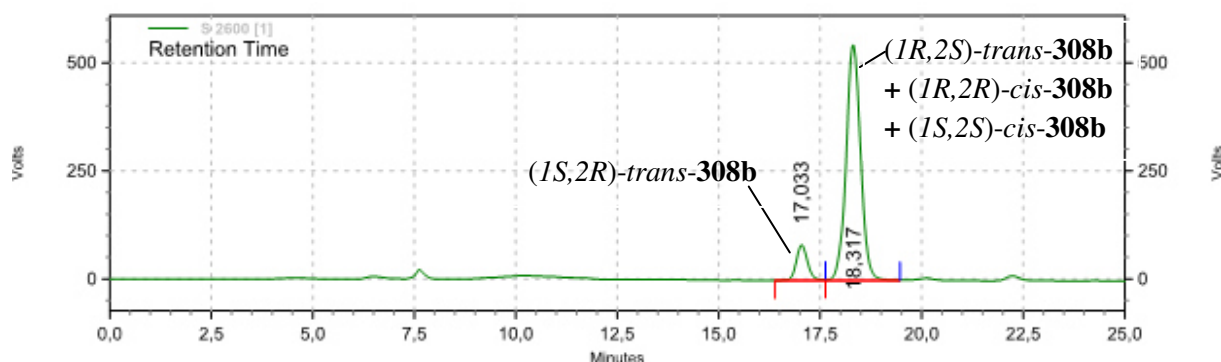
Chromatogramm 30: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*S,S*)-**181c** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 83:17]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,333	76938	0,57	3987	0,74
18,683	13527458	99,43	537764	99,26
Totals	13604396	100,00	541751	100,00

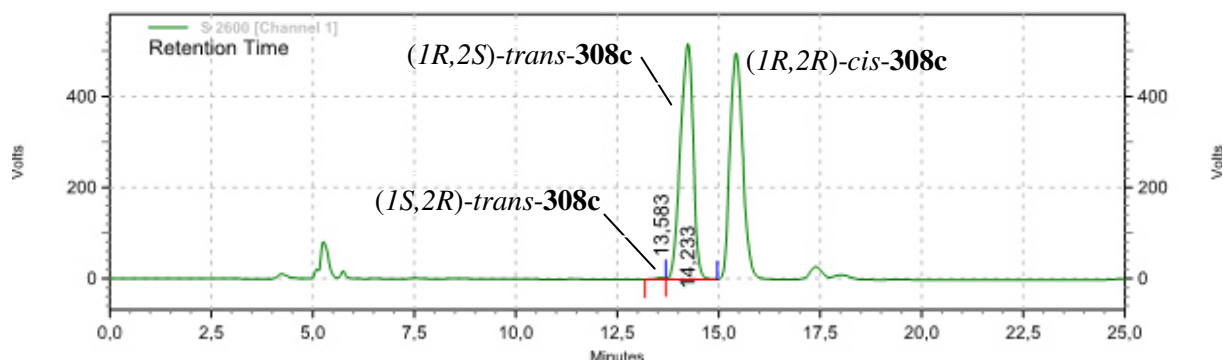
Chromatogramm 31: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298b** mit (*S,S*)-**181c** zu (\pm)-*trans*-**308b** [(*1R,2S*)-*trans*-**308b**:(*1R,2R*)-*cis*-**308b** = 83:17]¹ versetzt mit 21% (\pm)-*trans*-**308b** (*trans*:*cis* = 94:6); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
17,033	1585683	10,52	81567	13,04
18,317	13484400	89,48	544186	86,96
Totals	15070083	100,00	625753	100,00

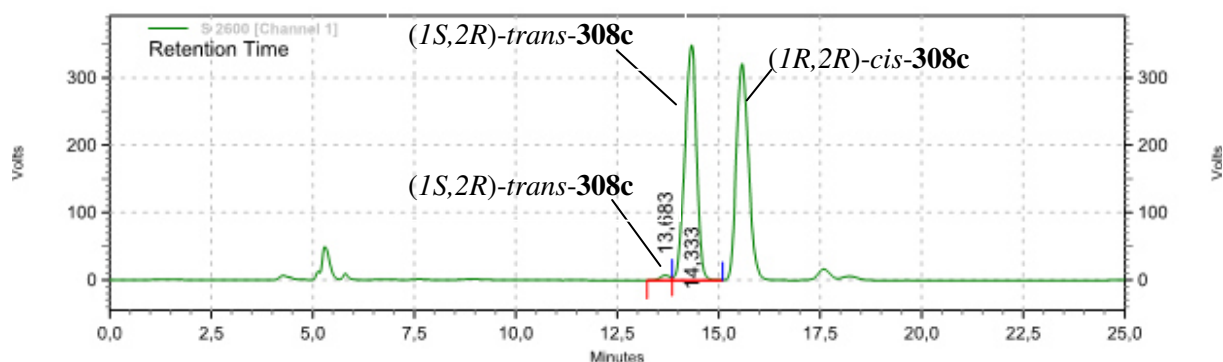
Chromatogramm 32: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298c** mit (*S,S*)-**181b** zu (*1R,2S*)-**trans-308c** [(*1R,2S*)-**trans-308c**:(*1R,2R*)-*cis-308c* = 51:41]¹; Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
13,583	60404	0,53	3850	0,74
14,233	11350599	99,47	517003	99,26
Totals	11411003	100,00	520853	100,00

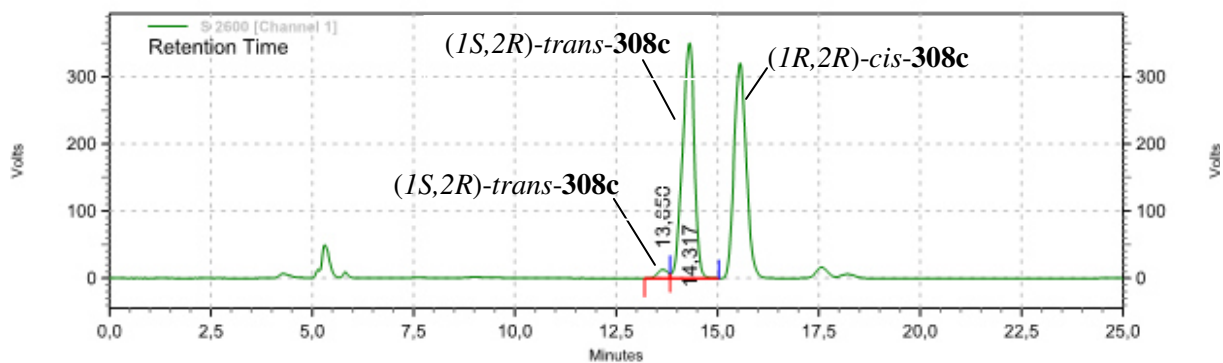
Chromatogramm 33: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298c** mit (*S,S*)-**181b** zu (*1R,2S*)-**trans-308c** [(*1R,2S*)-**trans-308c**:(*1R,2R*)-*cis-308c* = 51:41]¹ versetzt mit 2% (\pm)-**trans-308c** (*trans:cis* = 87:13); Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
13,683	129708	1,81	7531	2,11
14,333	7055855	98,19	349004	97,89
Totals	7185563	100,00	356535	100,00

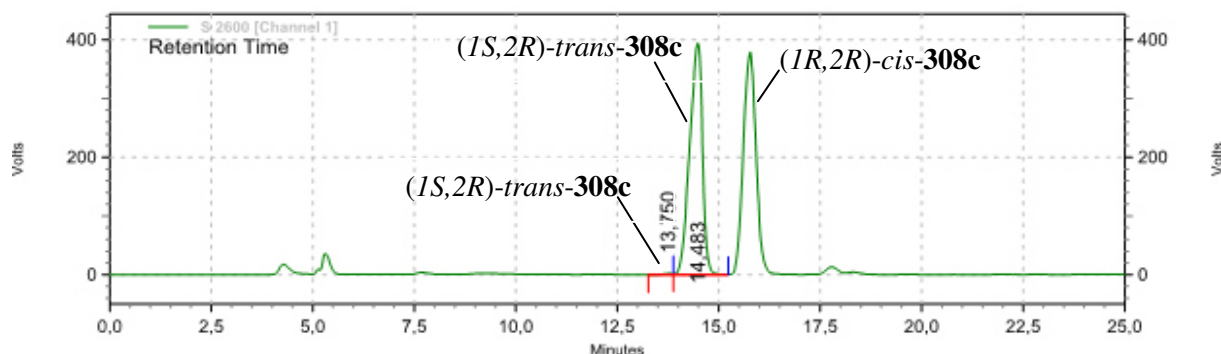
Chromatogramm 34: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298c** mit (*S,S*)-**181b** zu (*1R,2S*)-**trans-308c** [(*1R,2S*)-**trans-308c**:(*1R,2R*)-*cis-308c* = 51:41]¹ versetzt mit 6% (\pm)-**trans-308c** (*trans:cis* = 87:13); Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
13,650	241040	3,27	13596	3,73
14,317	7120895	96,73	350586	96,27
Totals	7361935	100,00	364182	100,00

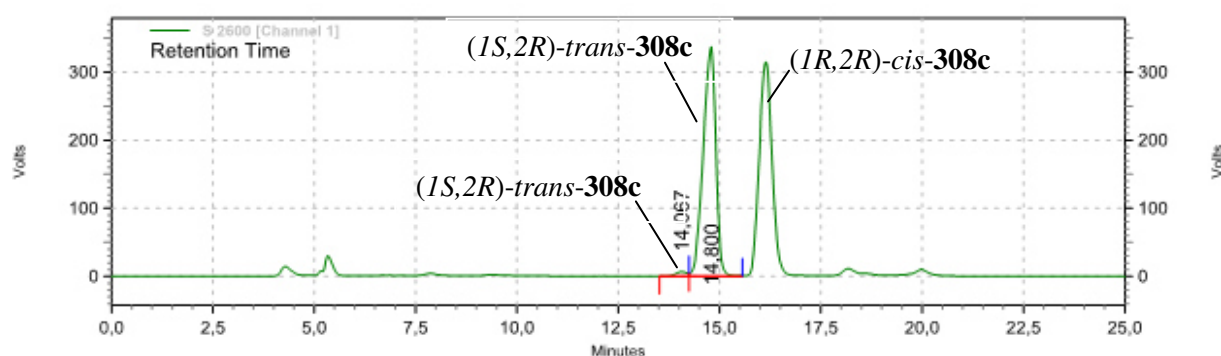
Chromatogramm 35: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298c** mit (*S,S*)-**181a** zu (*1R,2S*)-**trans-308c** [(*1R,2S*)-**trans-308c**:(*1R,2R*)-*cis-308c* = 51:41]¹; Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
13,750	30400	0,35	1907	0,48
14,483	8621370	99,65	393756	99,52
Totals	8651770	100,00	395663	100,00

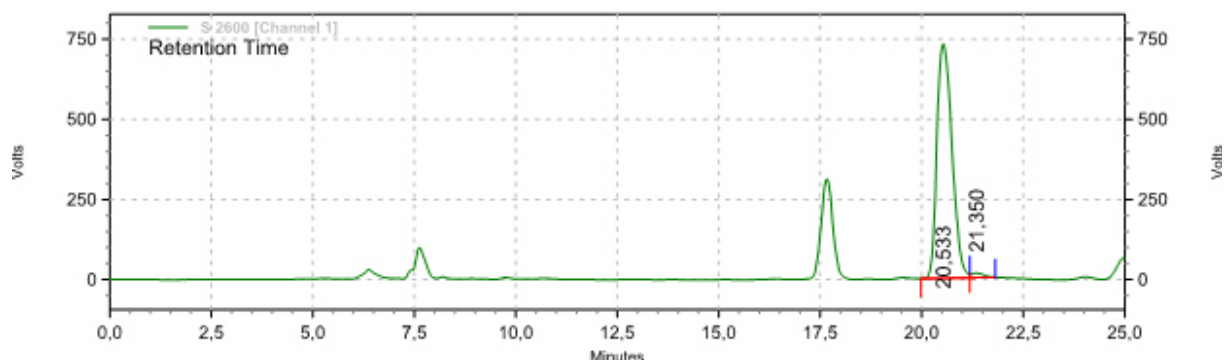
Chromatogramm 36: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,E*)-**298c** mit (*S,S*)-**181a** zu (*1R,2S*)-**trans-308c** [(*1R,2S*)-**trans-308c**:(*1R,2R*)-*cis-308c* = 51:41]¹ versetzt mit 2.5% (\pm)-**trans-308c** (*trans:cis* = 87:13); Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.75 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
14,067	125593	1,69	6722	1,96
14,800	7303232	98,31	336682	98,04
Totals	7428825	100,00	343404	100,00

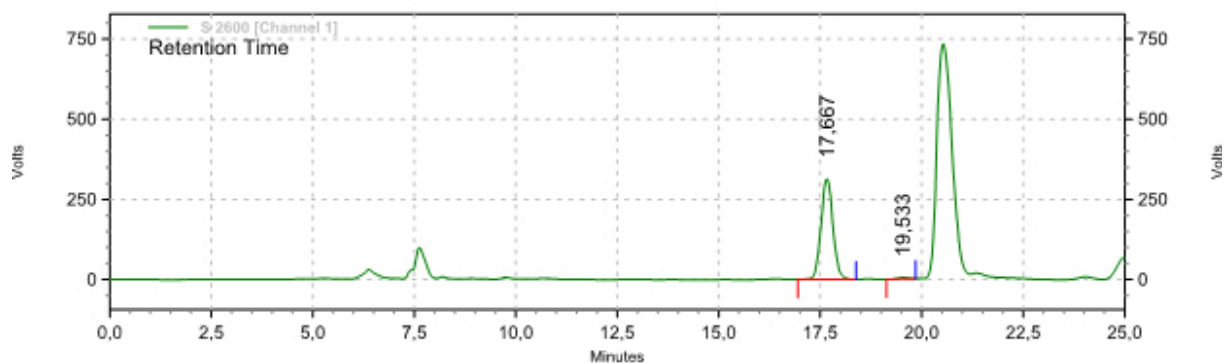
Chromatogramm 37: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*Z,E*)-**298a** mit (*S,S*)-**181b** zu (*1S,2S*)-*cis*-**308a** [(*1S,2R*)-*trans*-**308a**:(*1S,2S*)-*cis*-**308a**:(*1S*)-(3*E*)-**396a** = 24:71:5]¹; Eluent: Heptan/Isopropanol 99.5/0.5; Flow: 0.5 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
20,533	18948923	98,44	730402	98,07
21,350	299897	1,56	14338	1,93

Totals	Area	Area %	Height	Height %
	19248820	100,00	744740	100,00

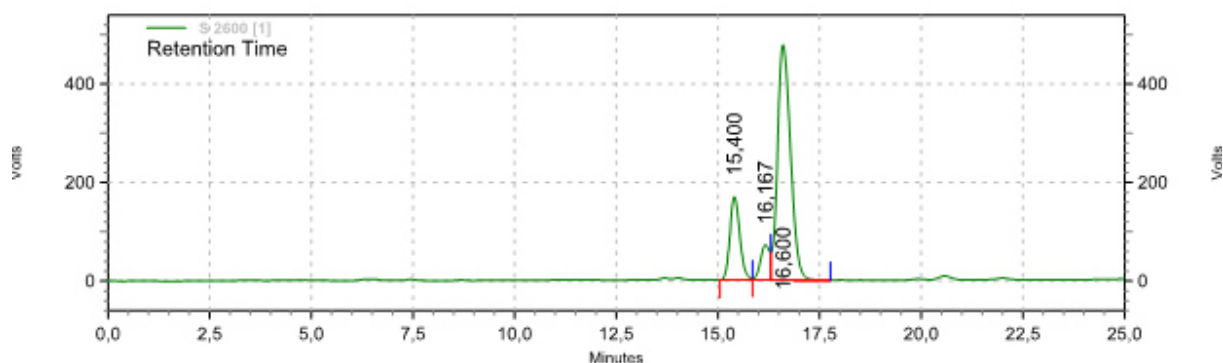


S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
17,667	6406952	98,59	313847	98,53
19,533	91517	1,41	4687	1,47

Totals	Area	Area %	Height	Height %
	6498469	100,00	318534	100,00

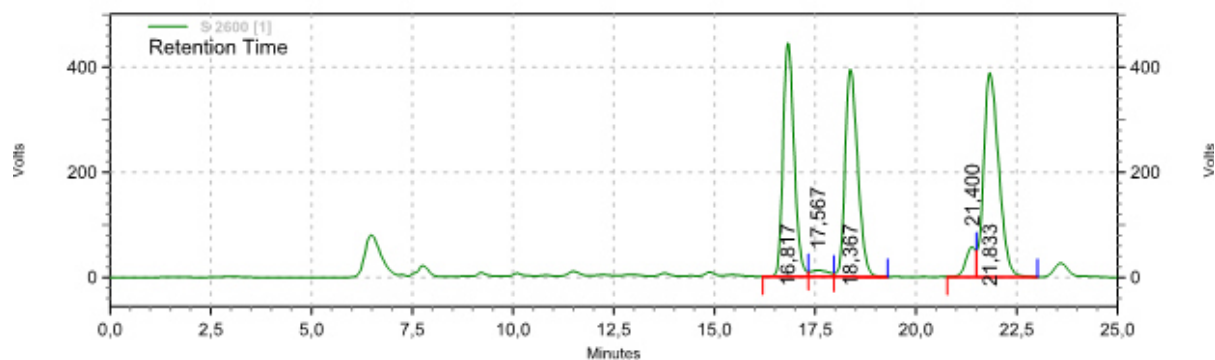
Chromatogramm 38: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*Z,E*)-**298b** mit (*S,S*)-**183b** zu (*1S,2S*)-*cis*-**308b** [(*1S,2R*)-*trans*-**308c**:(*1S,2S*)-*cis*-**308c**:(*1S*)-(3*E*)-**396a** = 23:77]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.75 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
15,400	2861257	19,51	168743	23,52
16,167	1103726	7,53	71275	9,93
16,600	10698360	72,96	477561	66,55
Totals	14663343	100,00	717579	100,00

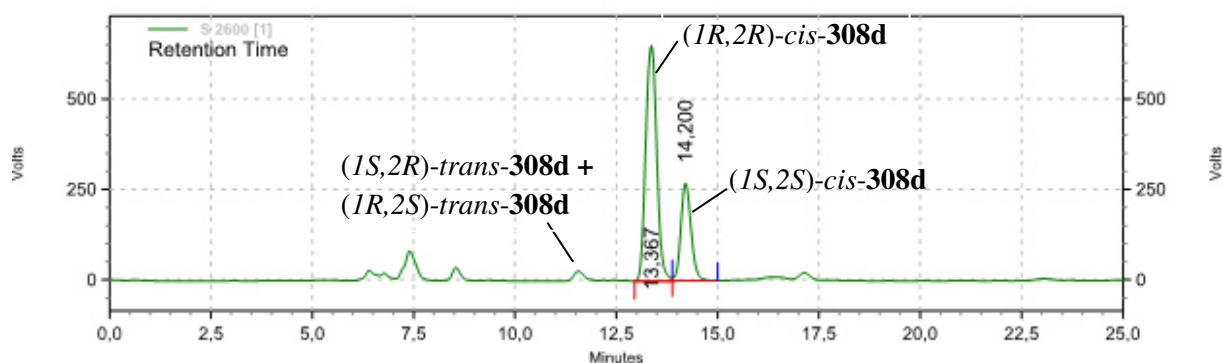
Chromatogramm 39: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*Z,E*)-**298b** mit (*S,S*)-**181b** zu (*1S,2S*)-*cis*-**308b** [(*1S,2R*)-*trans*-**308b**:(*1S,2S*)-*cis*-**308b**:(*1S*)-(*3E*)-**396b** = 33:36:31]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
16,817	8486530	29,70	444161	34,23
17,567	377500	1,32	12588	0,97
18,367	8618542	30,17	395132	30,45
21,400	951539	3,33	56944	4,39
21,833	10136103	35,48	388705	29,96
Totals	28570214	100,00	1297530	100,00

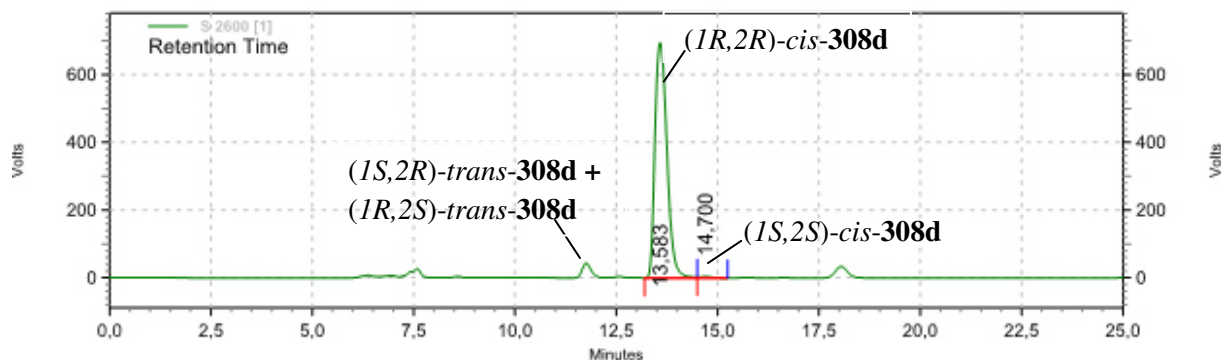
Chromatogramm 40: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**183b** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,367	12366798	72,36	649893	70,73
14,200	4723746	27,64	269006	29,27
Totals	17090544	100,00	918899	100,00

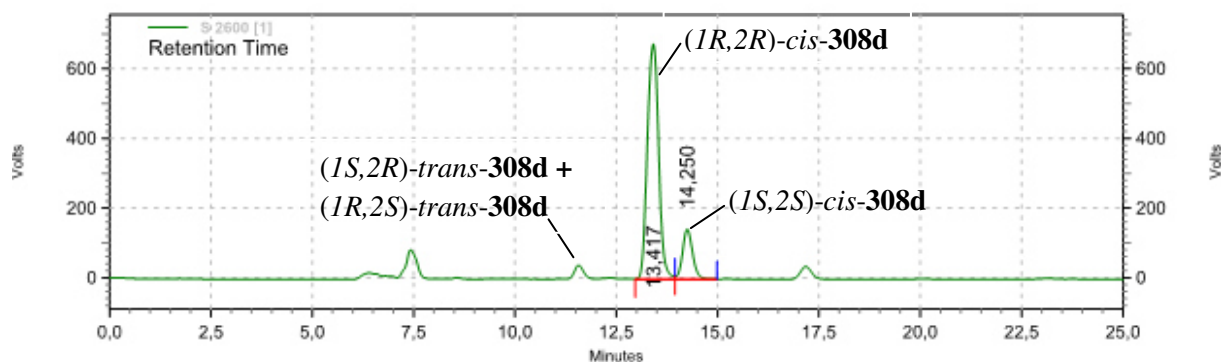
Chromatogramm 41: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**181b** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,583	14332273	99,47	694740	99,46
14,700	76218	0,53	3758	0,54
Totals	14408491	100,00	698498	100,00

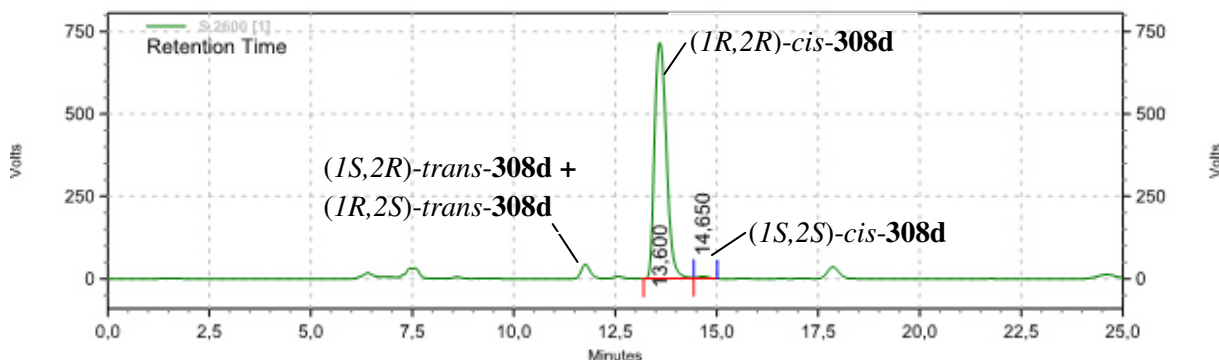
Chromatogramm 42: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**181b** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹ versetzt mit 30% (\pm)-*cis*-**308d** (*trans*:*cis* = 5:95); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,417	13112368	84,09	675426	82,47
14,250	2480775	15,91	143560	17,53
Totals	15593143	100,00	818986	100,00

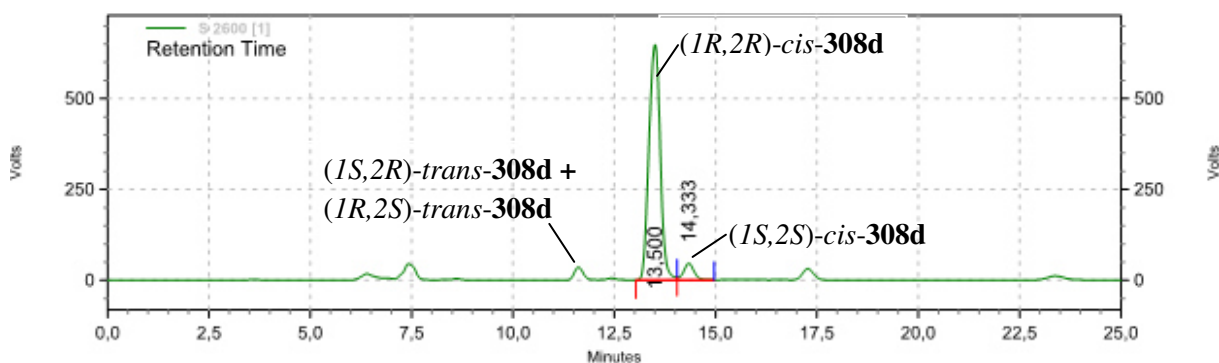
Chromatogramm 43: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**181c** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,600	14590264	99,12	715436	99,05
14,650	129931	0,88	6885	0,95
Totals	14720195	100,00	722321	100,00

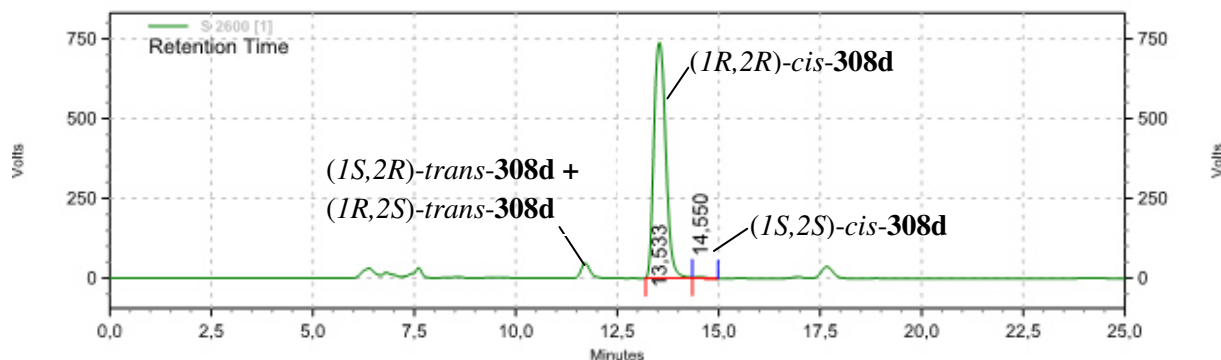
Chromatogramm 44: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**181c** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹ versetzt mit 10% (\pm)-*cis*-**308d** (*trans*:*cis* = 5:95); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,500	12610897	93,81	648068	93,36
14,333	831790	6,19	46112	6,64
Totals	13442687	100,00	694180	100,00

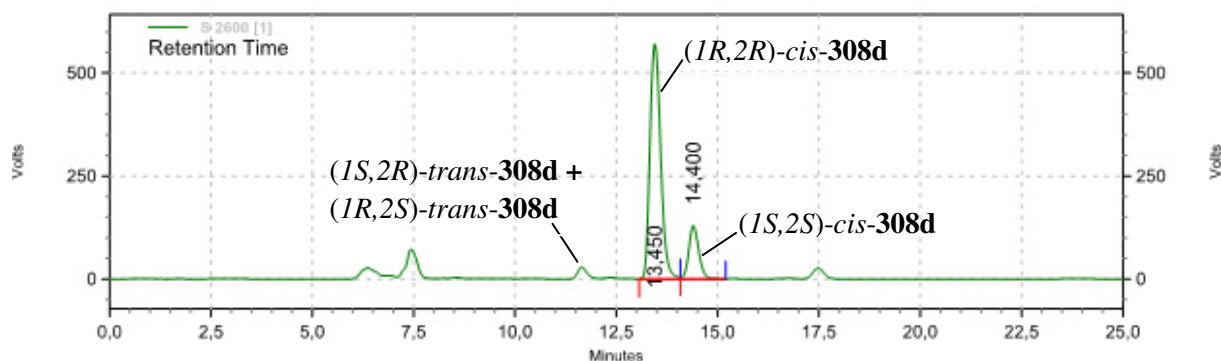
Chromatogramm 45: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**181a** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,533	15020246	99,46	737001	99,46
14,550	81732	0,54	4029	0,54
Totals	15101978	100,00	741030	100,00

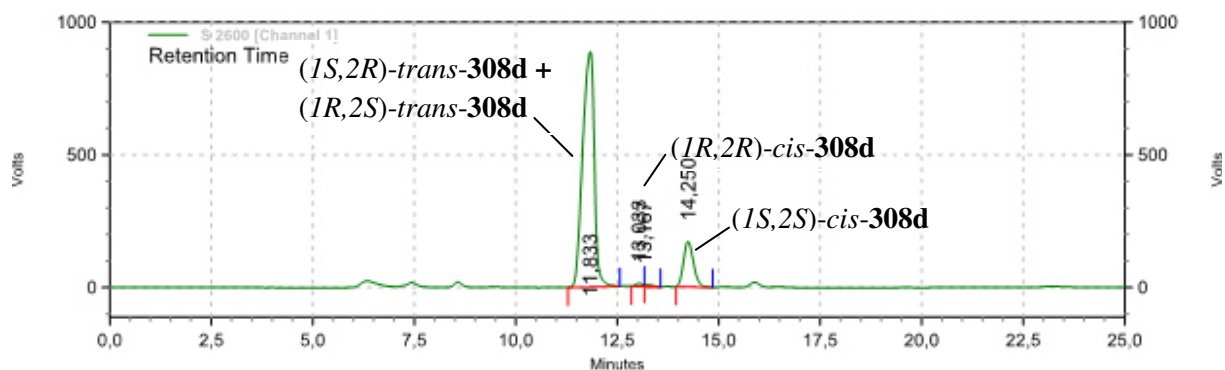
Chromatogramm 46: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (*E,Z*)-**298d** mit (*S,S*)-**181a** zu (*1R,2R*)-*cis*-**308d** [(*1R,2S*)-*trans*-**308d**:(*1R,2R*)-*cis*-**308d** = 5:95]¹ versetzt mit 32% (\pm)-*cis*-**308d** (*trans*:*cis* = 5:95); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
13,450	10491703	82,51	570863	81,42
14,400	2224022	17,49	130267	18,58
Totals	12715725	100,00	701130	100,00

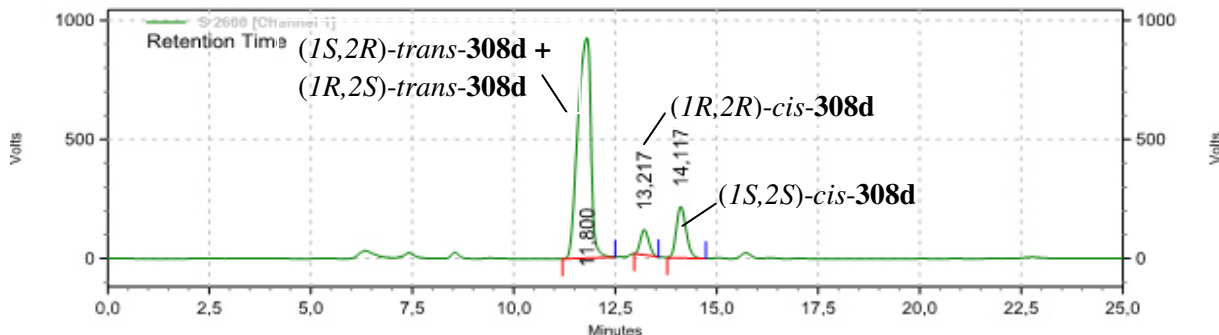
Chromatogramm 47: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (Z,Z)-**298d** mit (S,S)-**181b** zu (1S,2R)-*trans*-**308d** [(1S,2R)-*trans*-**308d**:(1S,2S)-*cis*-**308d** = 86:14]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



**S 2600 [Channel 1]
1] Results**

Retention Time	Area	Area %	Height	Height %
11,833	17678673	84,99	887240	82,48
13,033	138118	0,66	11181	1,04
13,167	92170	0,44	6793	0,63
14,250	2891241	13,90	170443	15,85
Totals	20800202	100,00	1075657	100,00

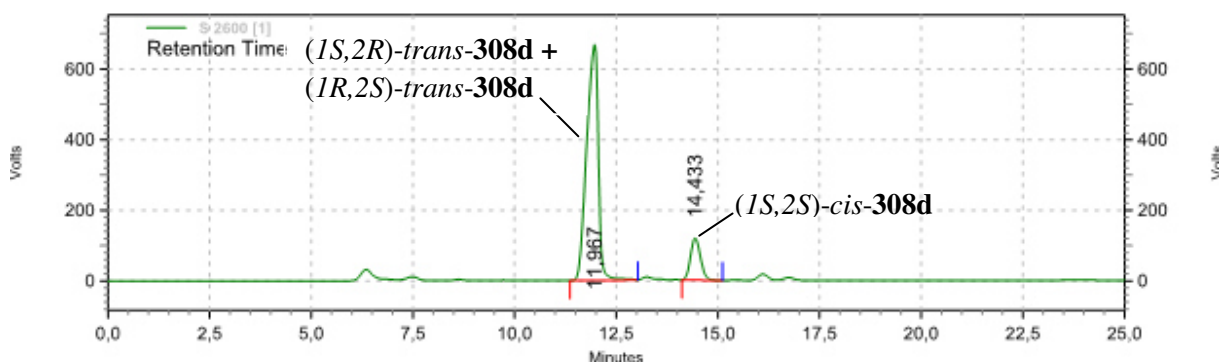
Chromatogramm 48: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (Z,Z)-**298d** mit (S,S)-**181b** zu (1S,2R)-**trans-308d** [(1S,2R)-**trans-308d**:(1S,2S)-**cis-308d** = 86:14]¹ versetzt mit 5% (1R,2R)-**cis-308d** (*trans:cis* = 5:95; >98% *ee*); Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [Channel 1] Results

Retention Time	Area	Area %	Height	Height %
11,800	20764099	80,11	924266	74,19
13,217	1515164	5,85	105800	8,49
14,117	3640309	14,04	215826	17,32
Totals	25919572	100,00	1245892	100,00

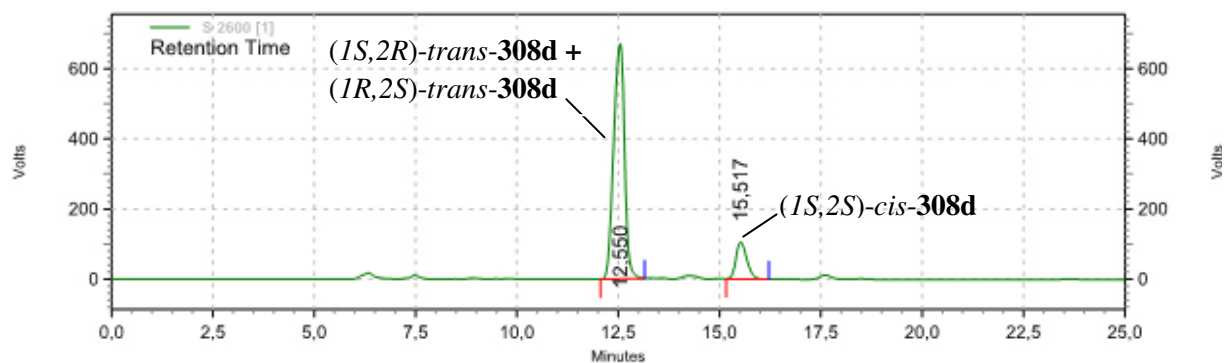
Chromatogramm 49: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (Z,Z)-**298d** mit (S,S)-**181c** zu (1S,2R)-**trans-308d** [(1S,2R)-**trans-308d**:(1S,2S)-**cis-308d** = 86:14]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
11,967	13408074	86,81	668508	84,93
14,433	2037599	13,19	118576	15,07
Totals	15445673	100,00	787084	100,00

Chromatogramm 50: {1,6}-Transannulare katalytisch asymmetrische Gosteli-Claisen-Umlagerung von (Z,Z)-**298d** mit (S,S)-**181a** zu (1S,2R)-**trans-308d** [(1S,2R)-**trans-308d**:(1S,2S)-**cis-308d** = 86:14]¹; Eluent: Heptan/Isopropanol 99/1; Flow: 0.5 ml/min.



S 2600 [1] Results

Retention Time	Area	Area %	Height	Height %
12,550	12528602	86,46	670324	86,47
15,517	1961228	13,54	104900	13,53
Totals	14489830	100,00	775224	100,00