

Supporting Information

Metal- and solvent-free synthesis of aniline- and phenol-based triarylmethanes *via* Brønsted acidic ionic liquid catalyzed Friedel-Crafts reaction

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Uthaiwan Sirion^{a,b*}

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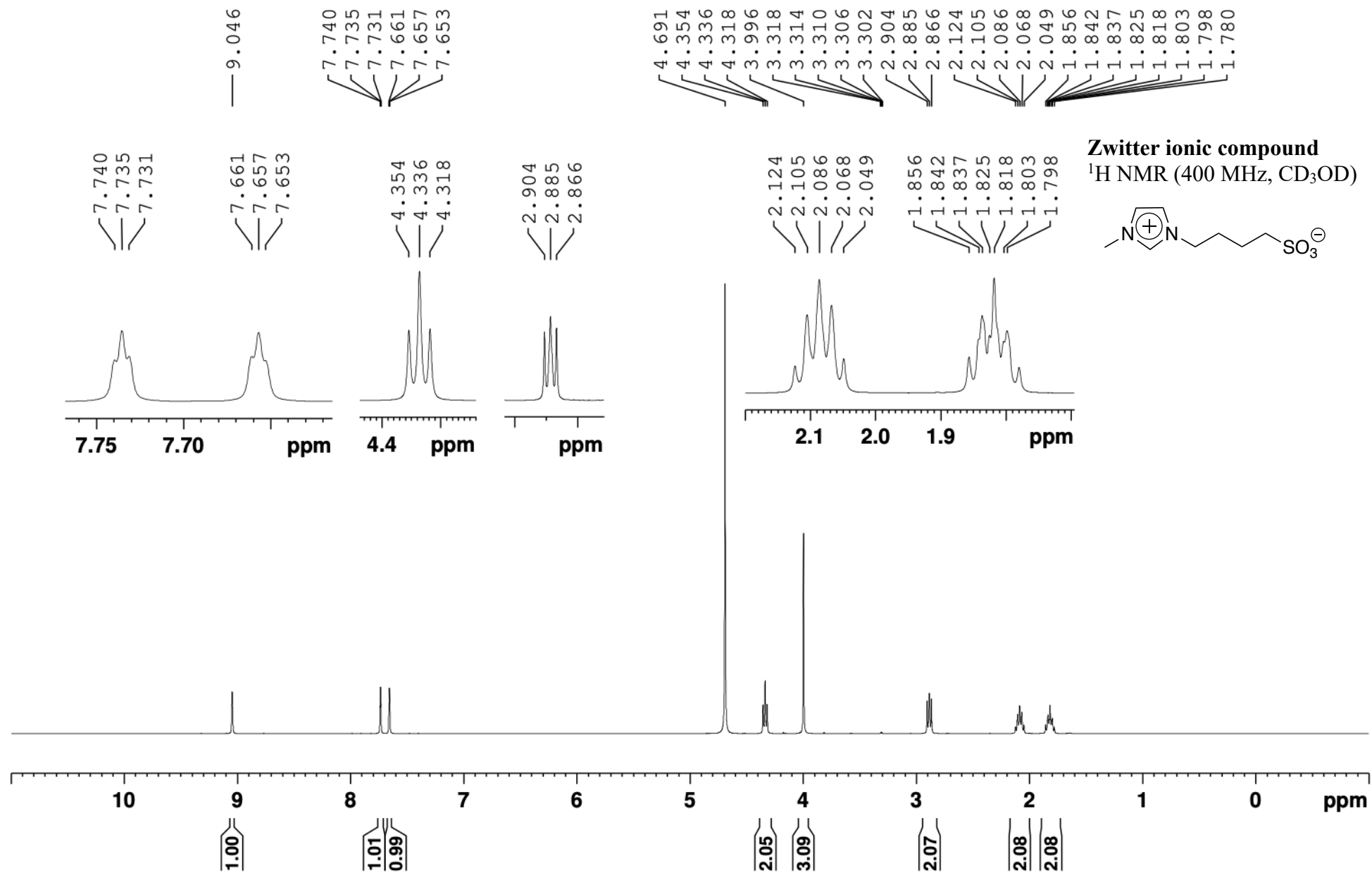
^b*The Research Unit in Synthetic Compounds and Synthetic Analogues from Natural Product for Drug Discovery (RSND), Burapha University, Chonburi 20131, Thailand.*

***Corresponding Author** *Department of Chemistry and Center for Innovation in Chemistry, Faculty of Science, Burapha University, Sangsook, Chonburi 20131, Thailand.*

E-mail: uthaiwan@go.buu.ac.th, Fax: +66-3-839-3494; Tel: +66-98-026-2181

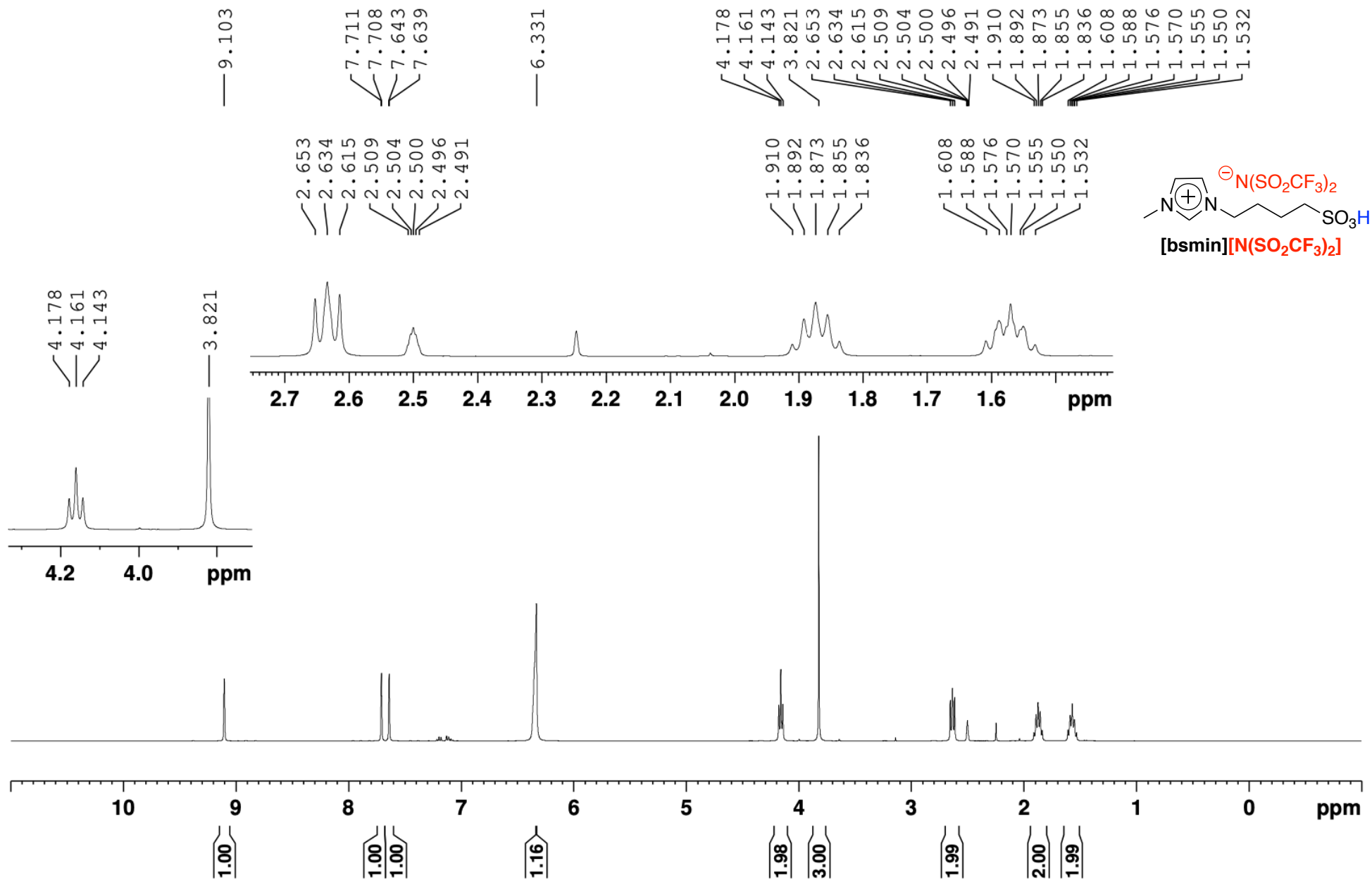
¹H and ¹³C NMR spectra of catalysts (I, II, III and IV)

Nipaphorn 23-3-64 No.2
[bsmim] zwitter ion in CD₃OD

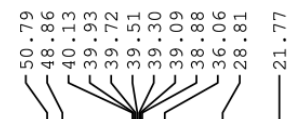
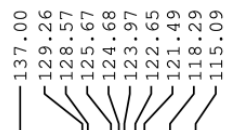


Nipaphorn 23-3-64 No.1
[bsmim][NTf2] in DMSO

1-Butylsulfonic-3-methylimidazolium bis(trifluoromethylsulfonyl)imide (I)
 ^1H NMR (400 MHz, $\text{DMSO-}d_6$)

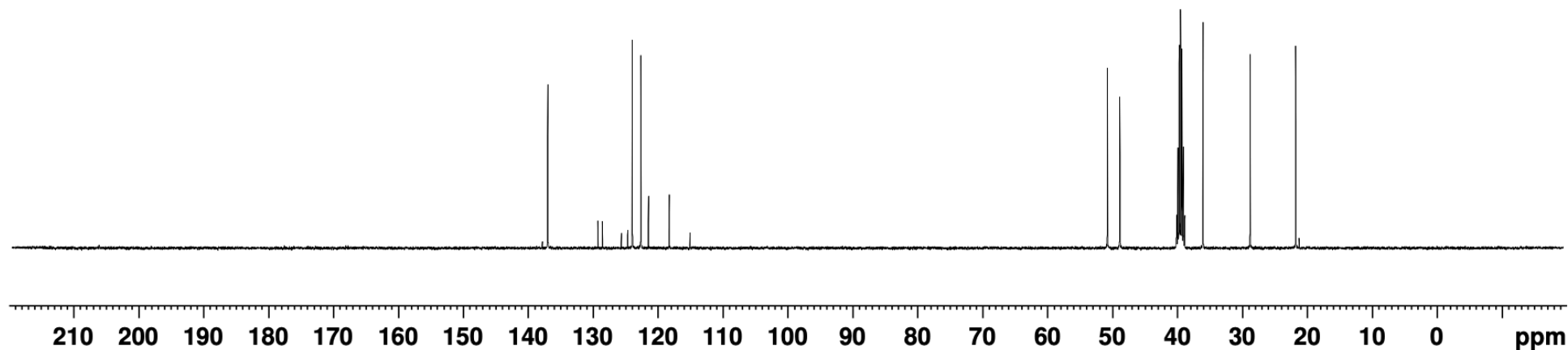


Nipaphorn 24-3-64 No.2
 ^{13}C [bsmim][NTf2] in DMSO

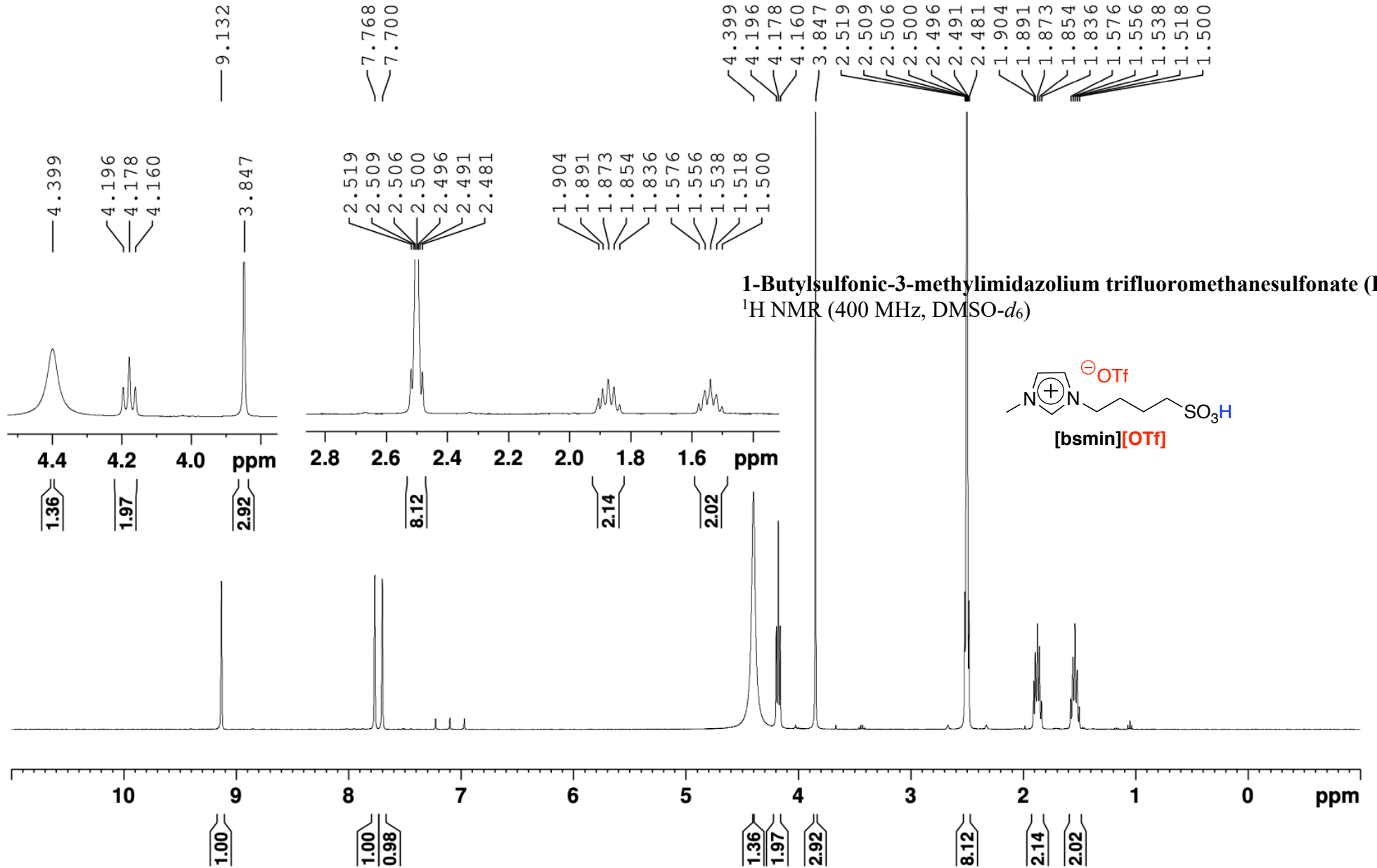


1-Butylsulfonic-3-methylimidazolium bis(trifluoromethylsulfonyl)imide (I)

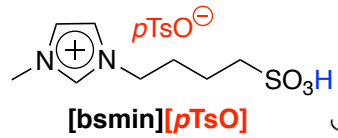
^{13}C NMR (100 MHz, DMSO- d_6)



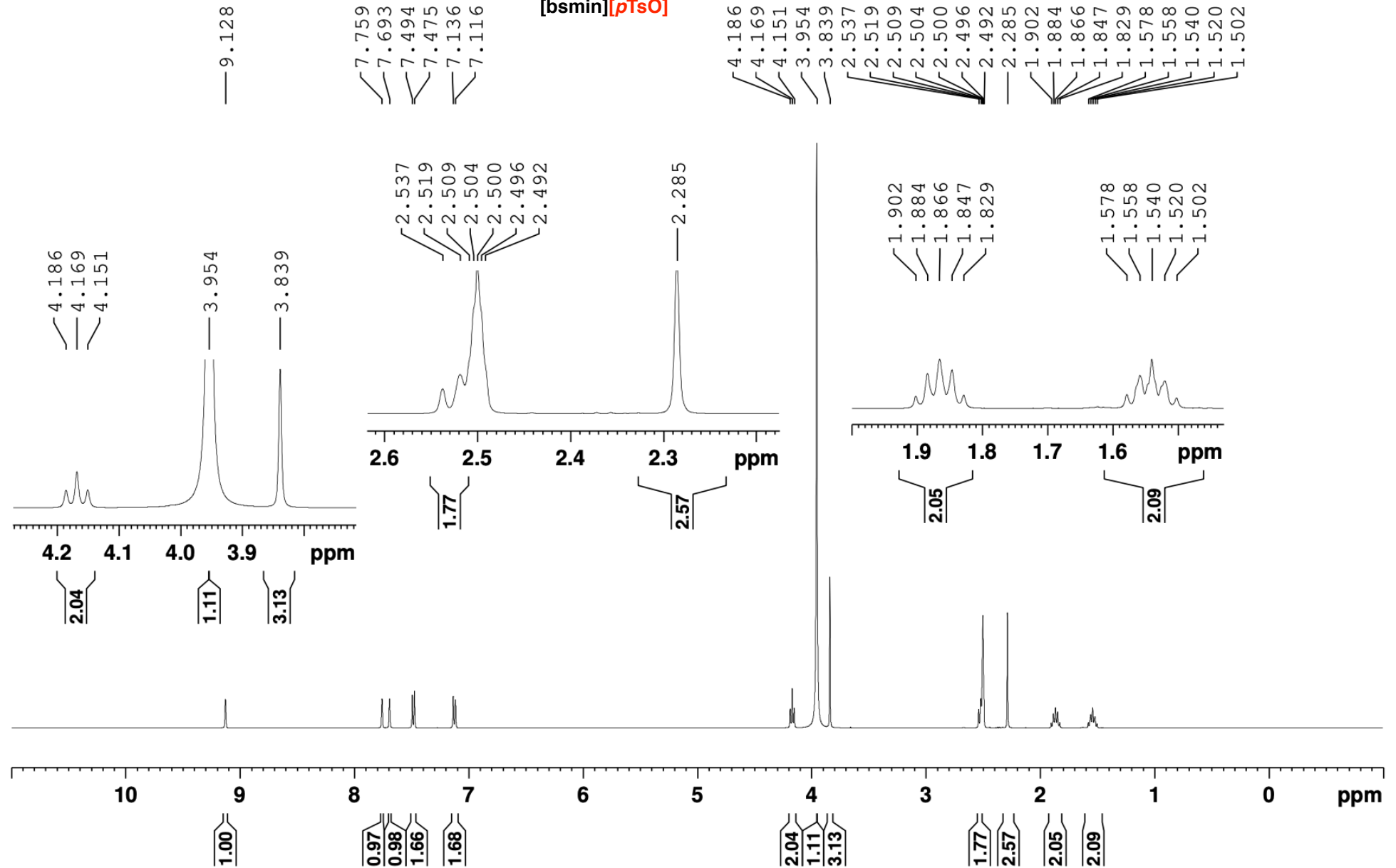
Nipaphorn 25-12-63 No.2
[bsmim][OTf] in DMSO



Nipaphorn 28-12-63 No.6
[bsmim][pTSA]. in DMSO



1-Butylsulfonic-3-methylimidazolium *p*-toluenesulfonate (III)
¹H NMR (400 MHz, DMSO-*d*₆)

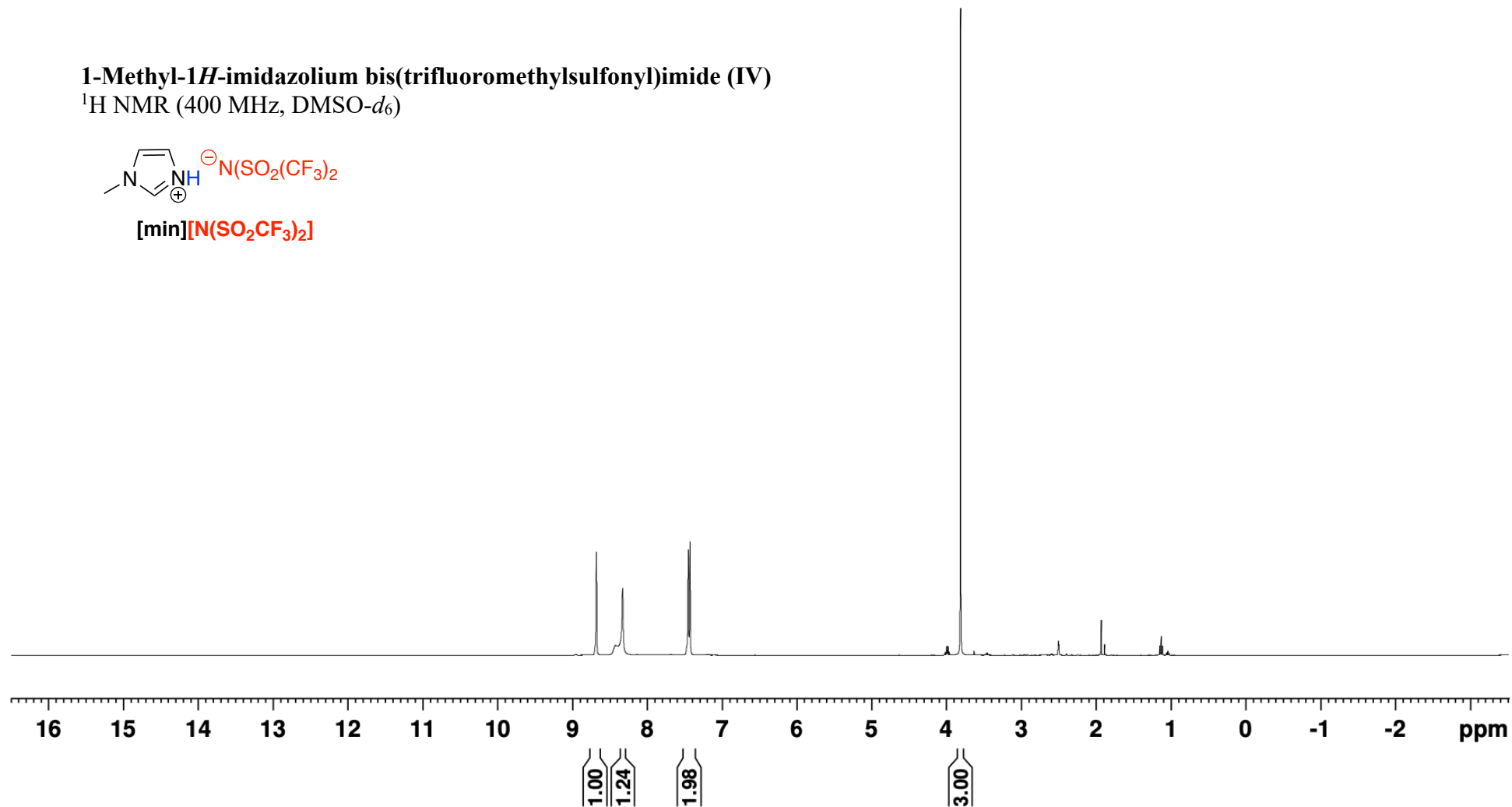


Nipaphorn 21-12-63 No.2
[mim][N(SO₂CF₃)₂] in DMSO

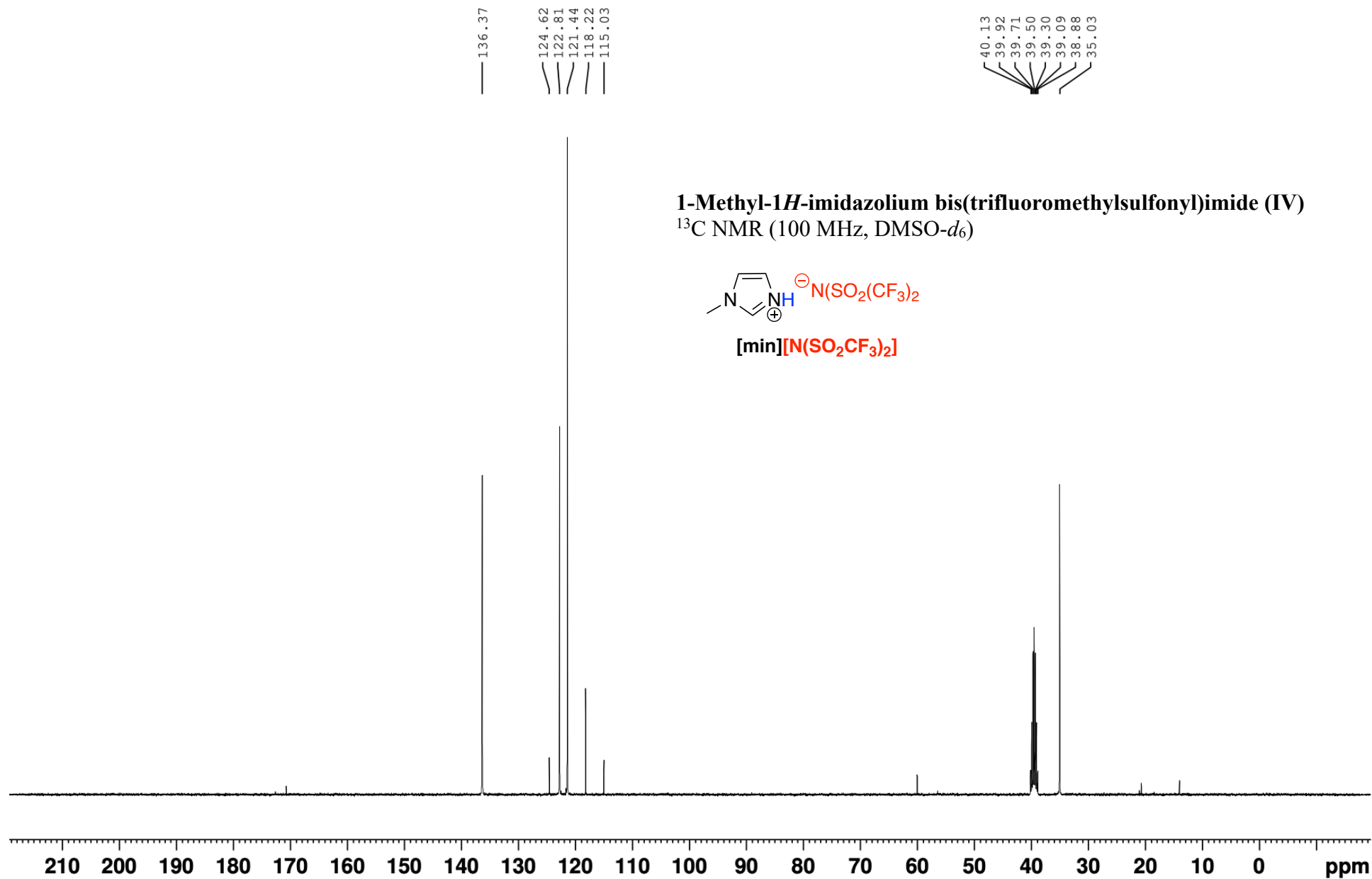
8.679
8.329
7.452
7.428
3.810
2.510
2.504
2.500
2.496
2.491

1-Methyl-1*H*-imidazolium bis(trifluoromethylsulfonyl)imide (IV)

¹H NMR (400 MHz, DMSO-*d*₆)

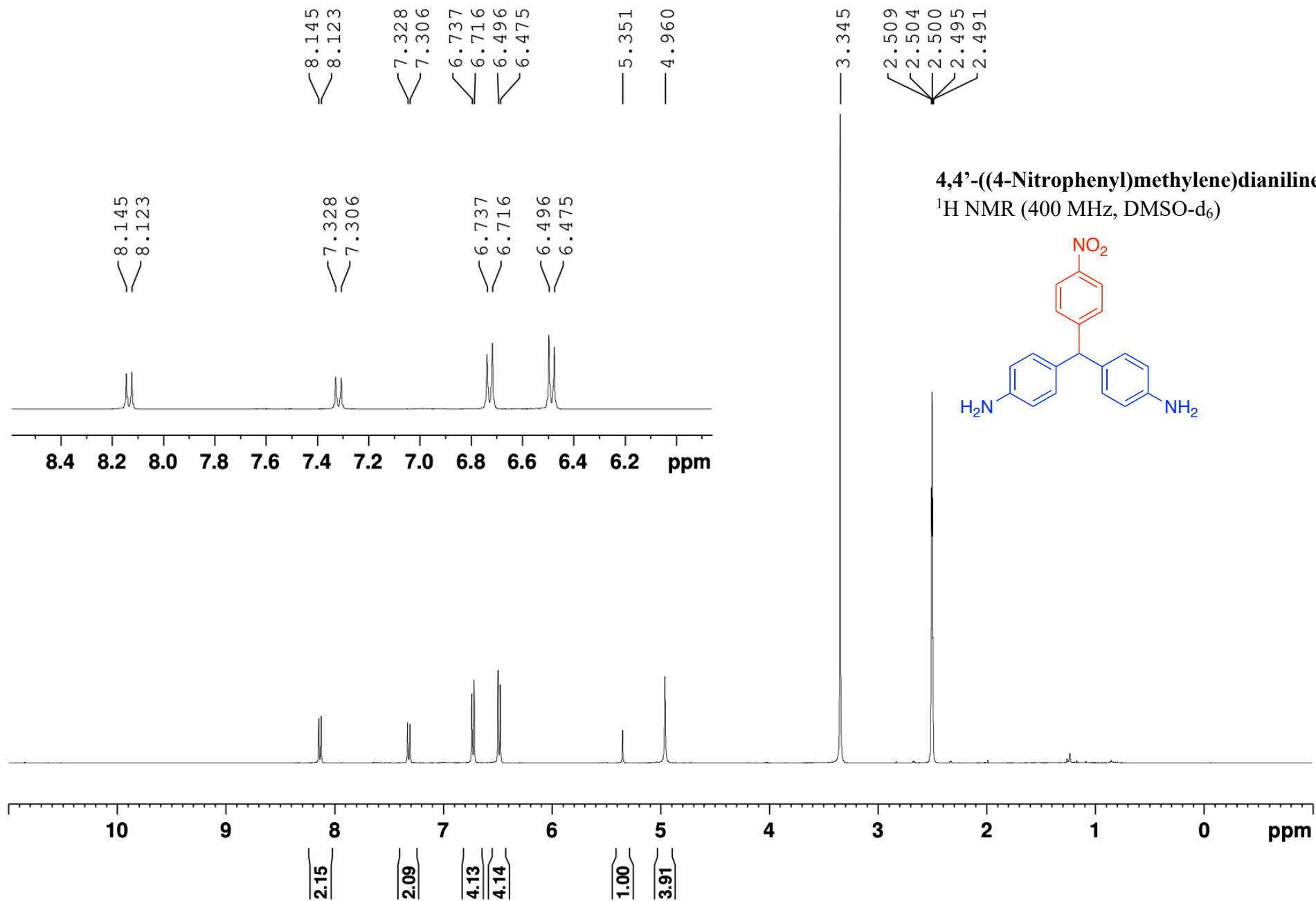


Nipaphorn 28-12-63 No.1
13C [mim][NTf2] in DMSO



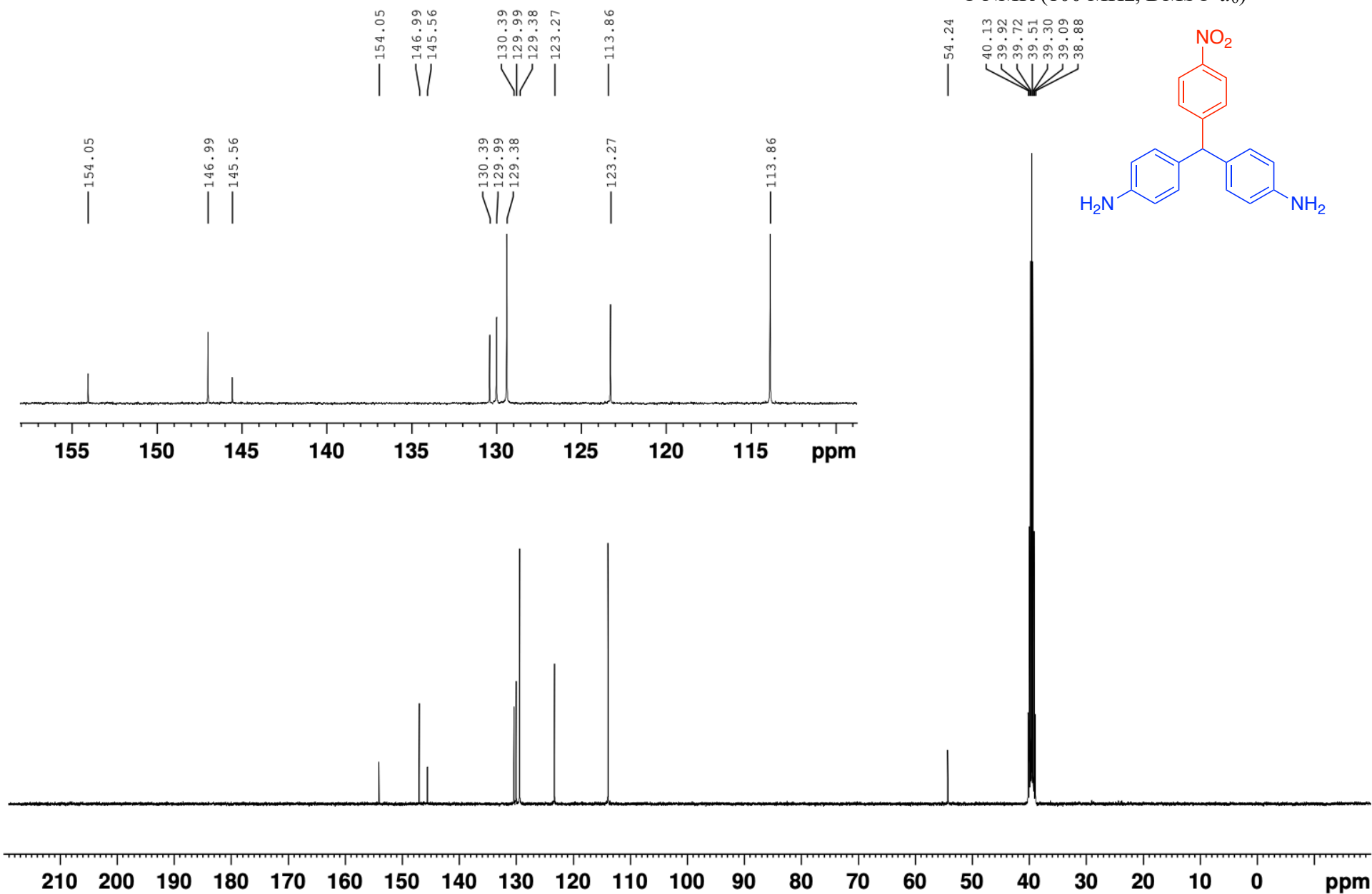
H and ¹³C NMR spectra of Triarylmethane derivatives

Nipaphorn 31-1-63 No.2
O2P2 in DMSO



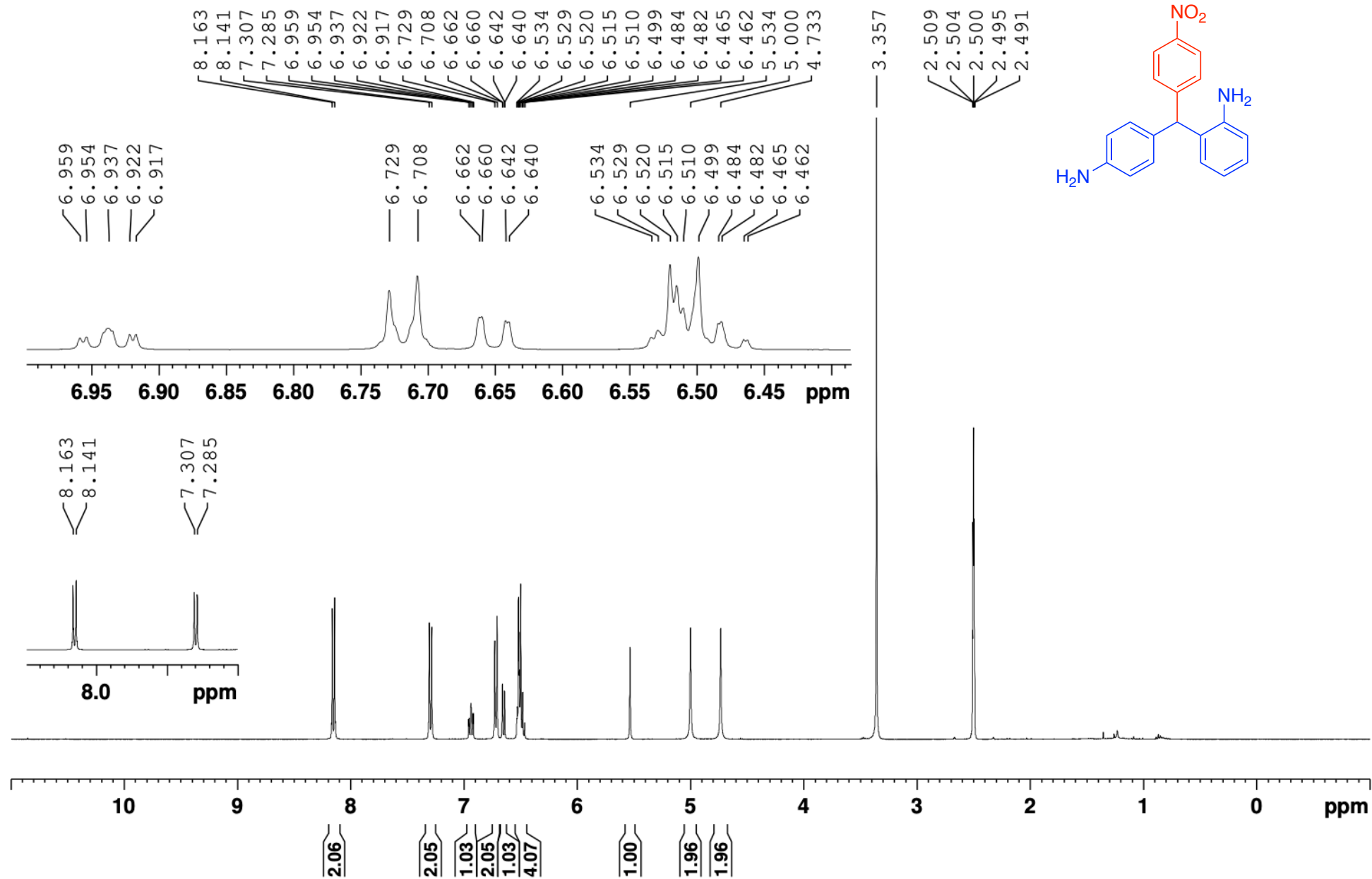
Nipaphorn 3-3-63 No.3
13C NPNV-02-2020 (2) in DMSO

4,4'-((4-Nitrophenyl)methylene)dianiline (3a)
13C NMR (100 MHz, DMSO-*d*₆)



Uthaiwan 10-6-63 No.2
US-III-82-20200505-upp in DMSO

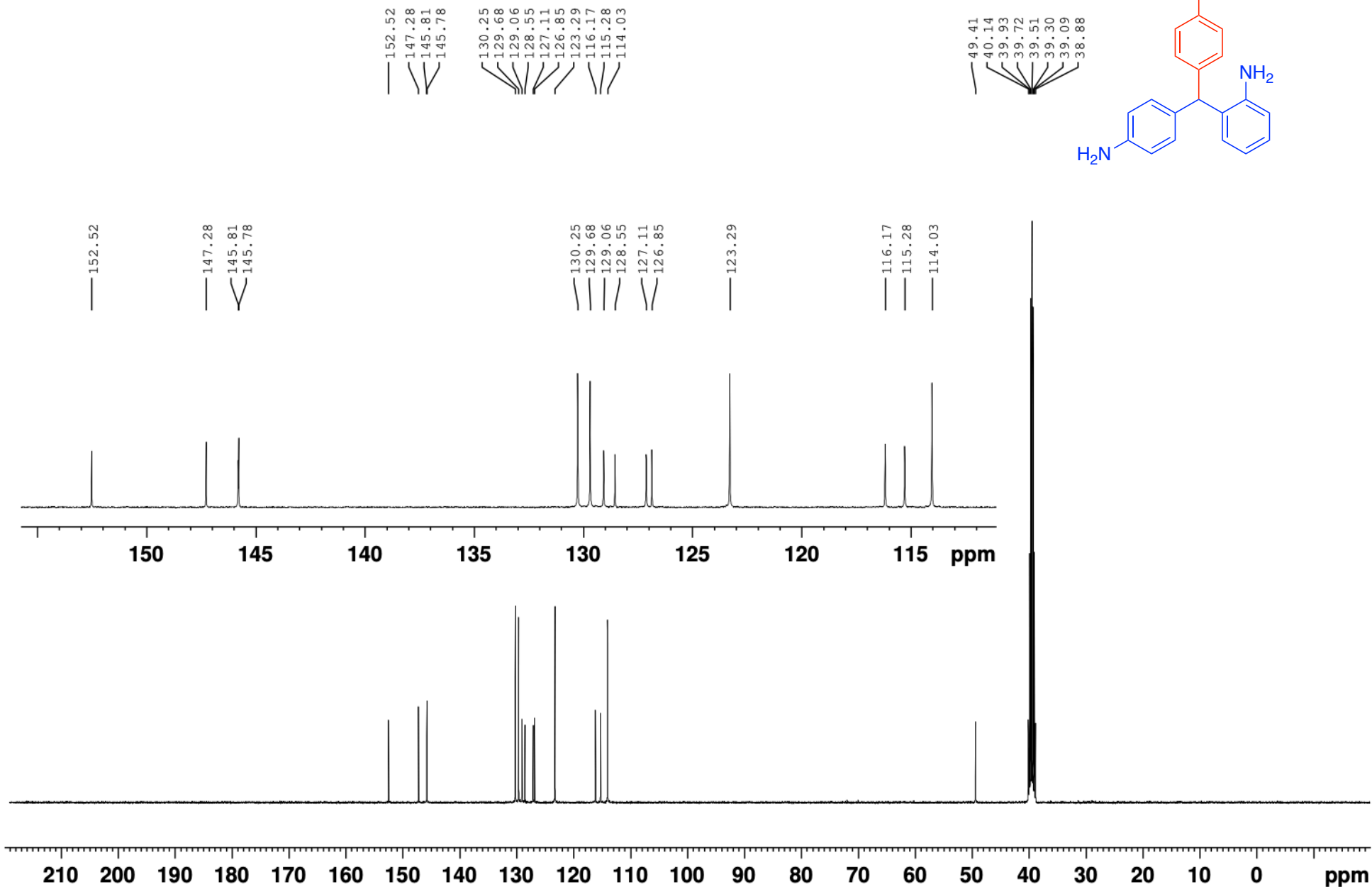
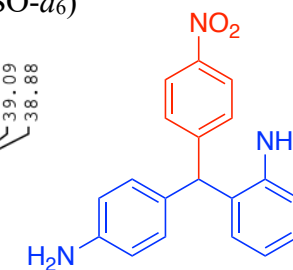
2-((4-Aminophenyl)(4-nitrophenyl)methyl)aniline (4a)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 11-6-63 No.1
13C US-III-82-20200505-upp in DMSO

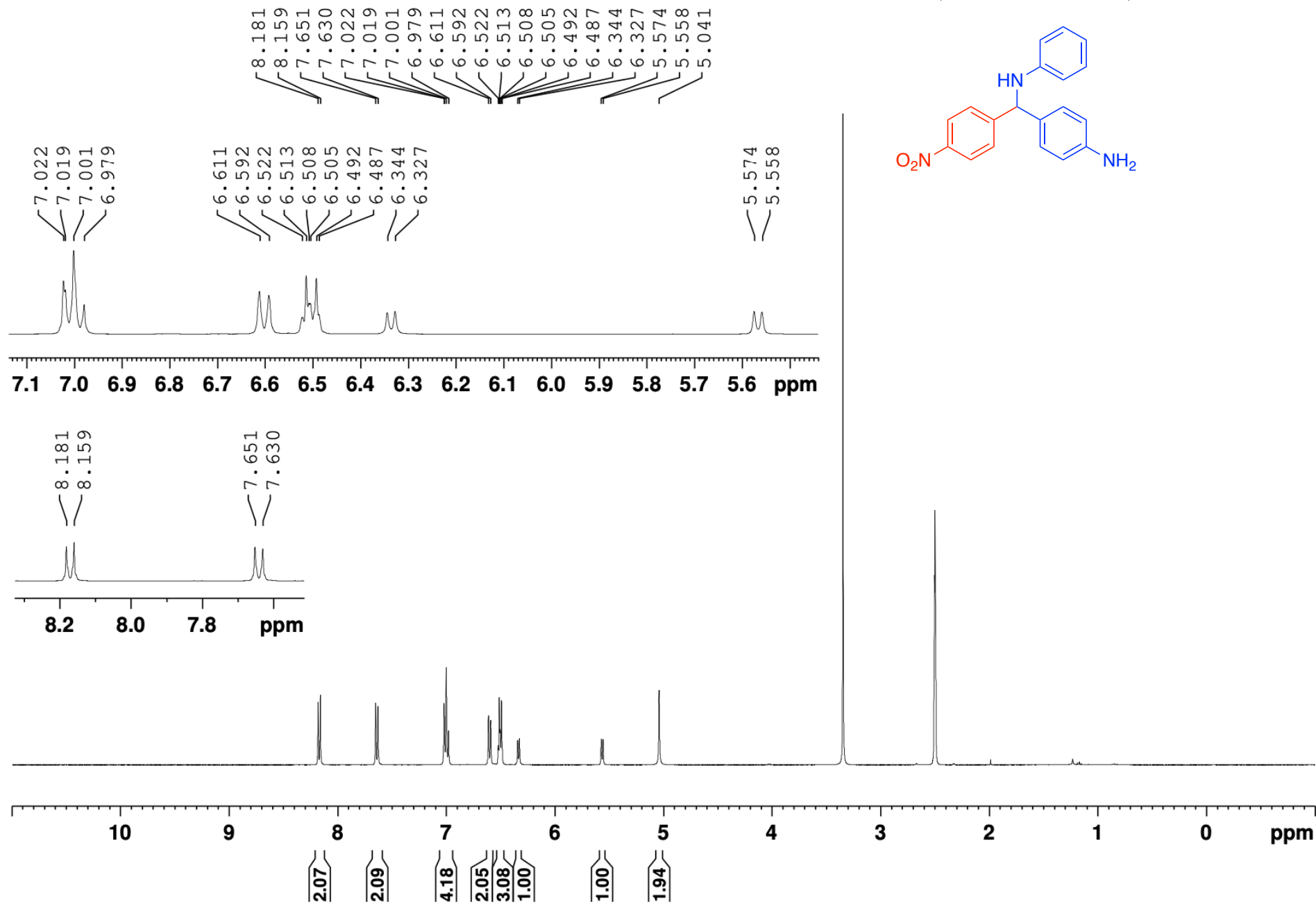
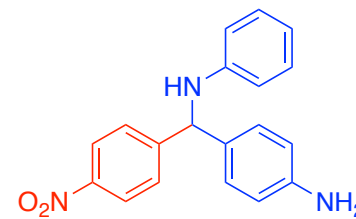
2-((4-Aminophenyl)(4-nitrophenyl)methyl)aniline (4a)

¹³C NMR (100 MHz, DMSO-*d*₆)



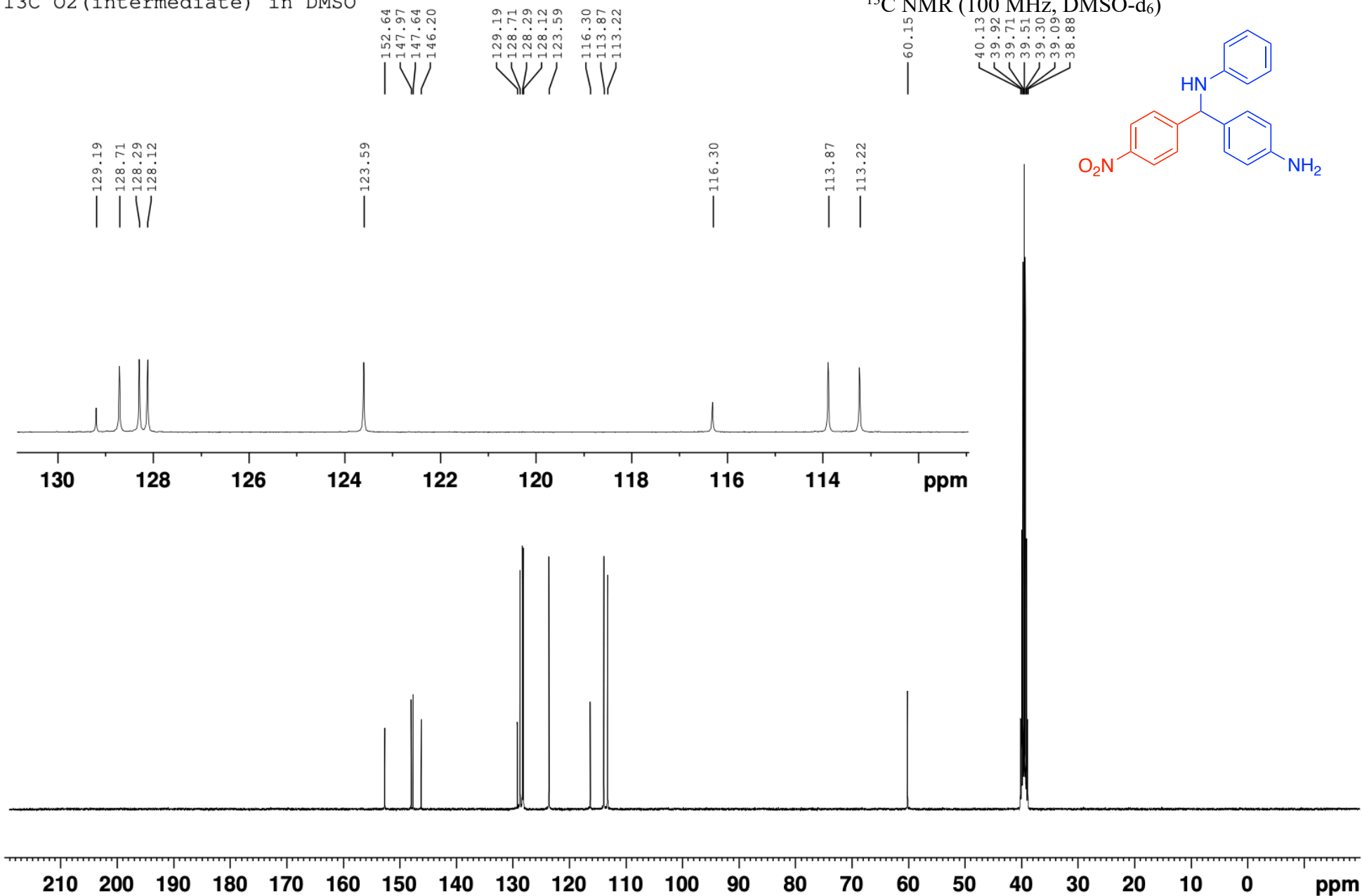
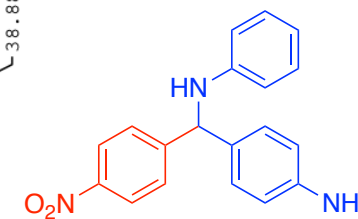
Nipaphorn 31-1-63 No.3
O2P1 in DMSO

N-((4-Aminophenyl)(4-nitrophenyl)methyl)aniline (**5a**)
¹H NMR (400 MHz, DMSO-d₆)



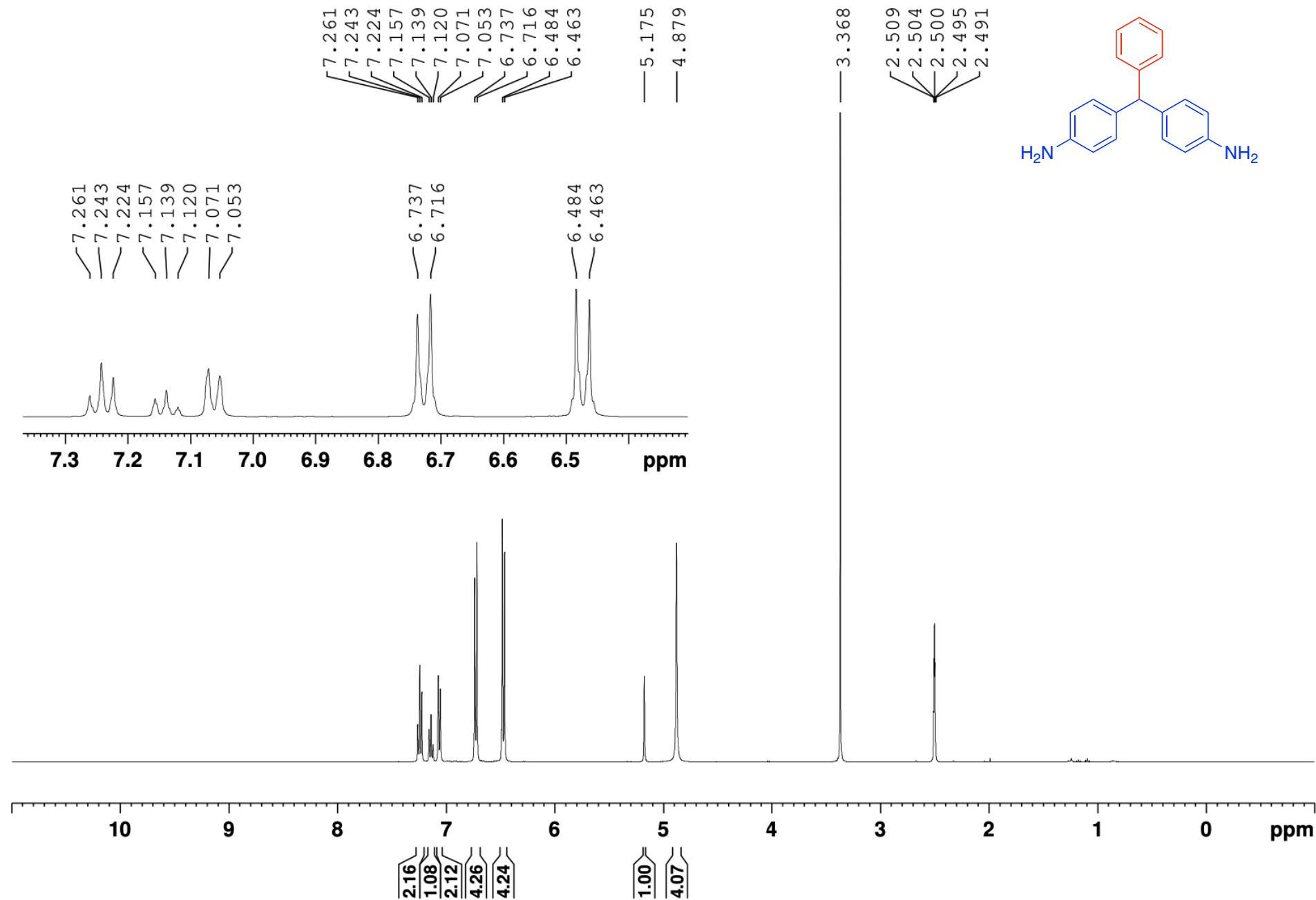
Nipaphorn 8-5-63 No.3
13C O2 (intermediate) in DMSO

***N*-((4-Aminophenyl)(4-nitrophenyl)methyl)aniline (5a)**
13C NMR (100 MHz, DMSO-d₆)



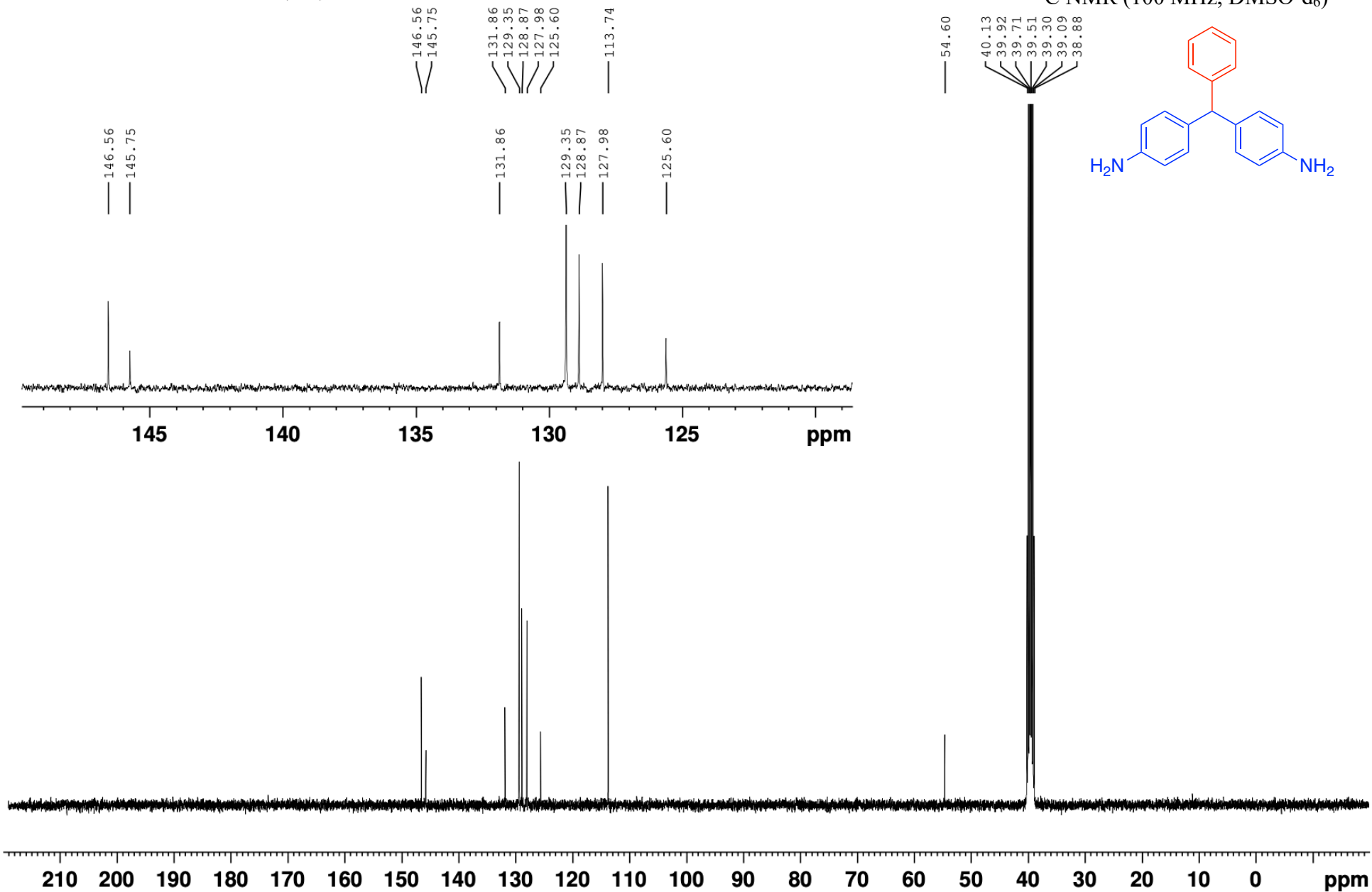
Nipaphorn 5-2-63 No.1
01(2) in DMSO

4,4'-(Phenylmethylene)dianiline (3b)
¹H NMR (400 MHz, DMSO-d₆)

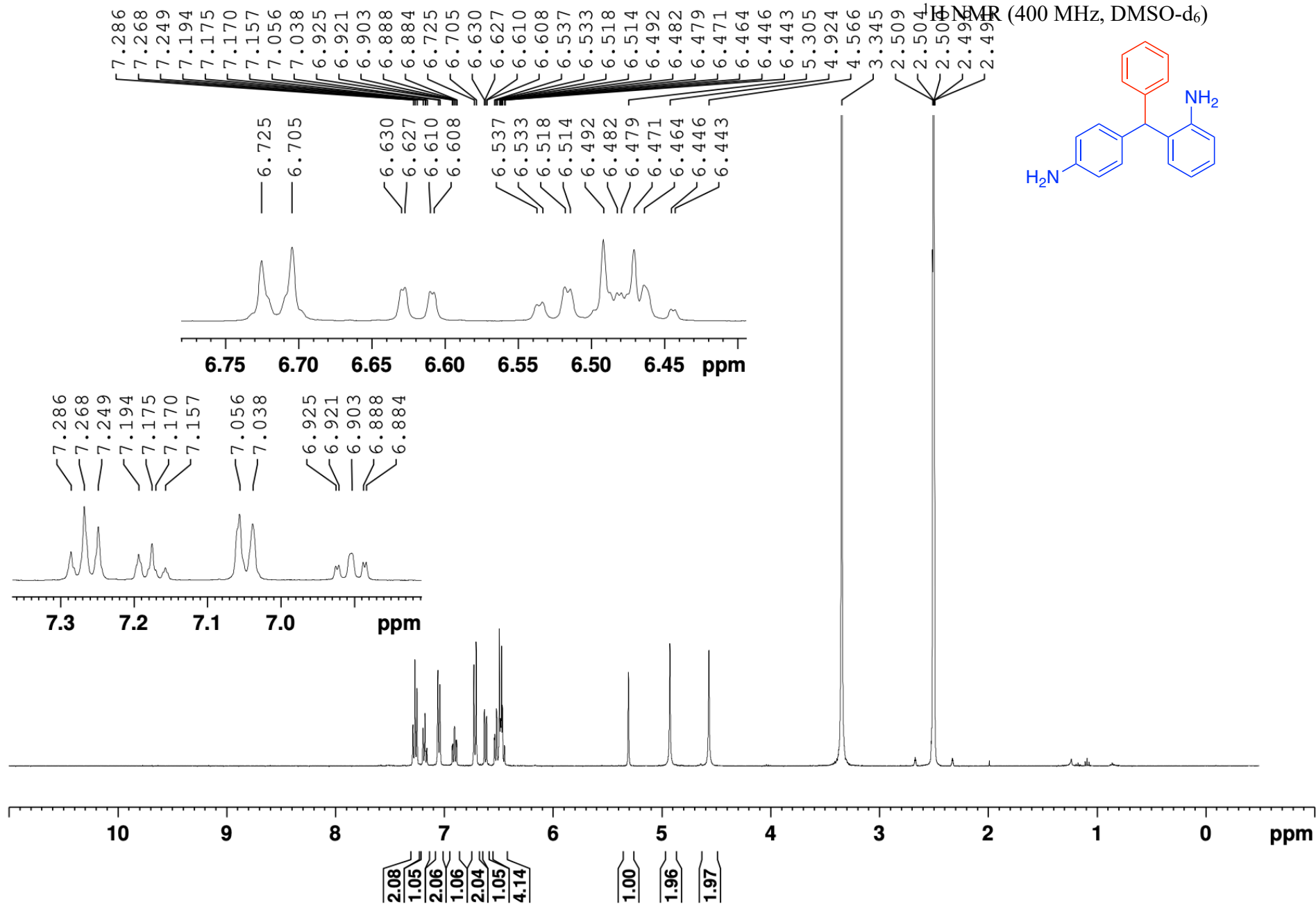


Nipaphorn 2-12-63 No.2
13C NPNV-01-20191225 (P1) in DMSO

4,4'-(Phenylmethylene)dianiline (3b)
13C NMR (100 MHz, DMSO-d₆)



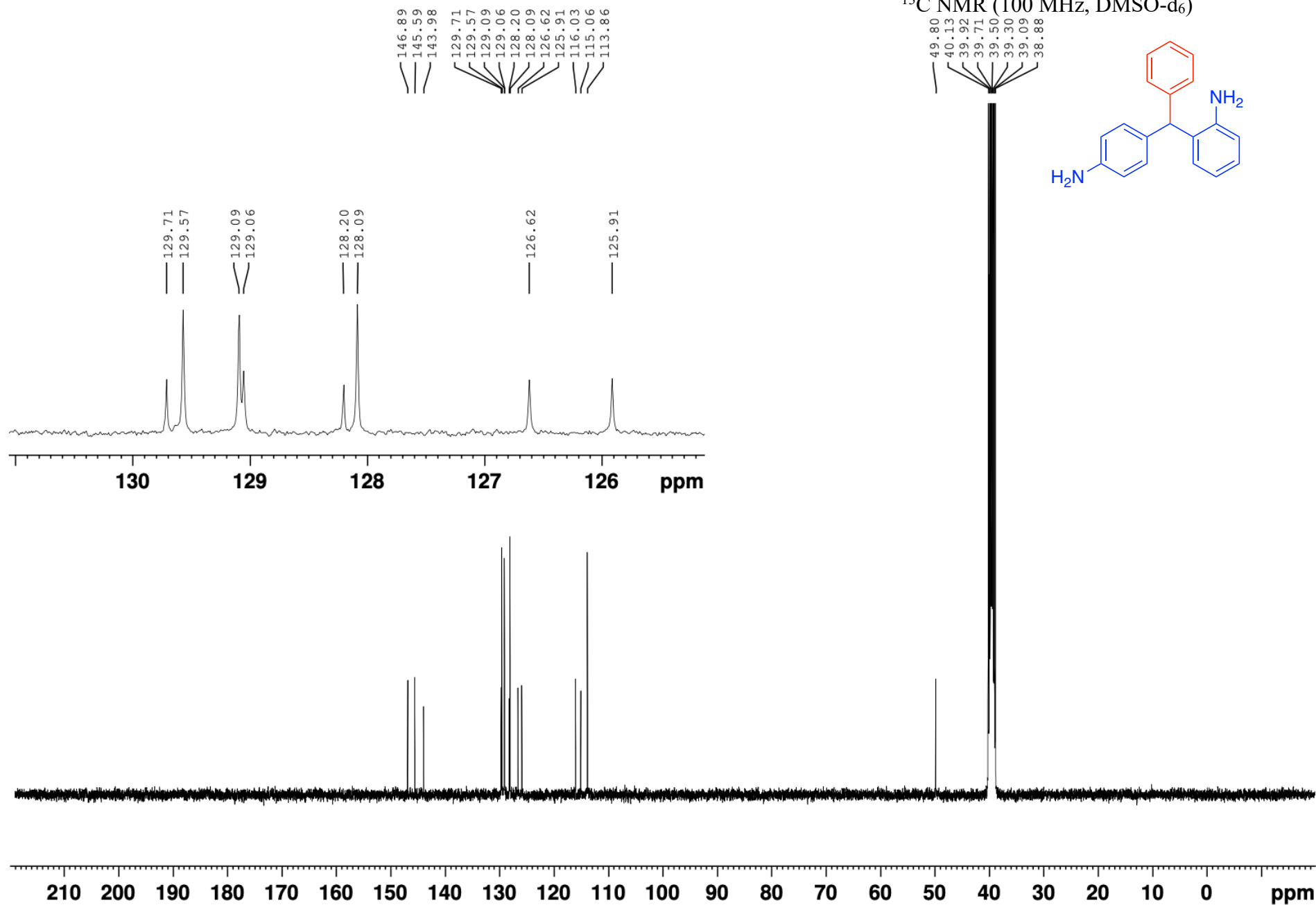
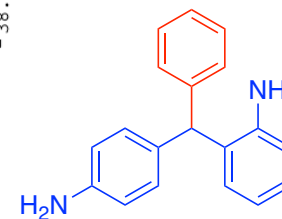
Nipaphorn 5-2-63 No.4
01(1) in DMSO

2-((4-Aminophenyl)(phenyl)methyl)aniline (4b)**¹H NMR (400 MHz, DMSO-d₆)**

Nipaphorn 26-2-63 No.1
13C O1(1) in DMSO

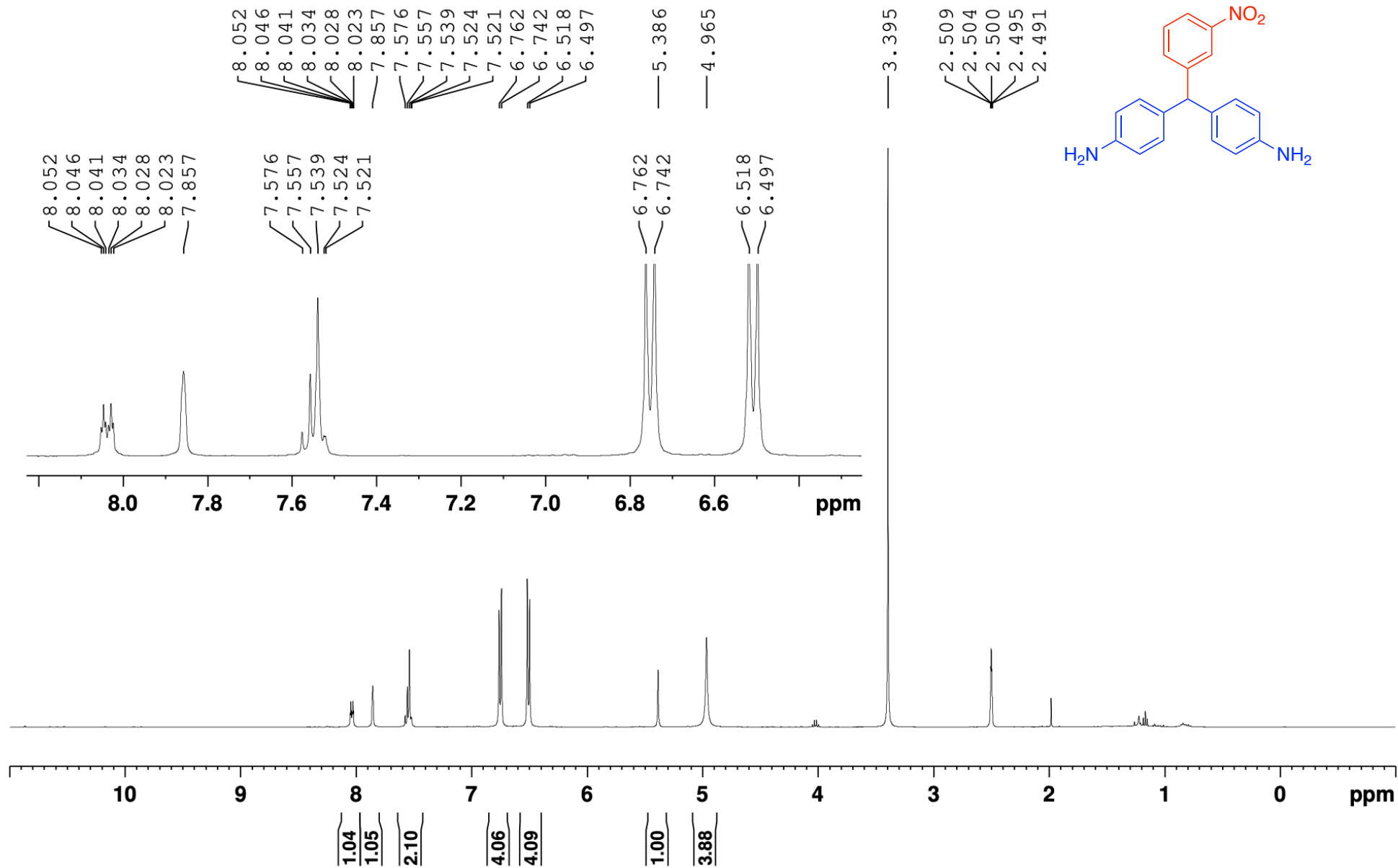
2-((4-Aminophenyl)(phenyl)methyl)aniline (4b)

¹³C NMR (100 MHz, DMSO-d₆)



Nipaphorn 16-6-63 No.3
NPNV-03-20190326 (P2) in DMSO

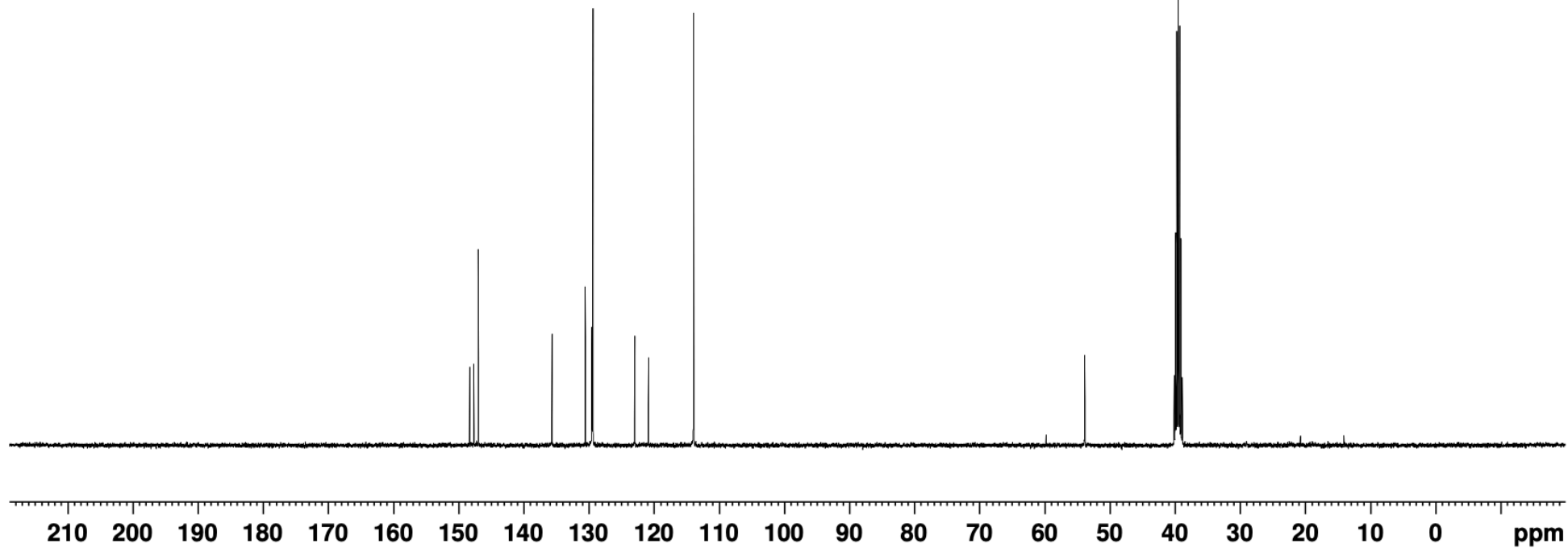
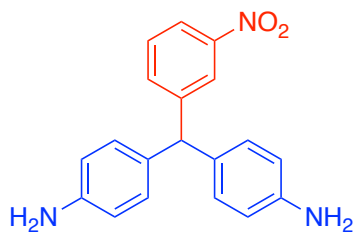
4,4'-((3-Nitrophenyl)methylene)dianiline (3c)
¹H NMR (400 MHz, DMSO-d₆)



Nipaphorn 18-6-63 No.1
13C NPNV-03-20190326 (P2) in CD3OD



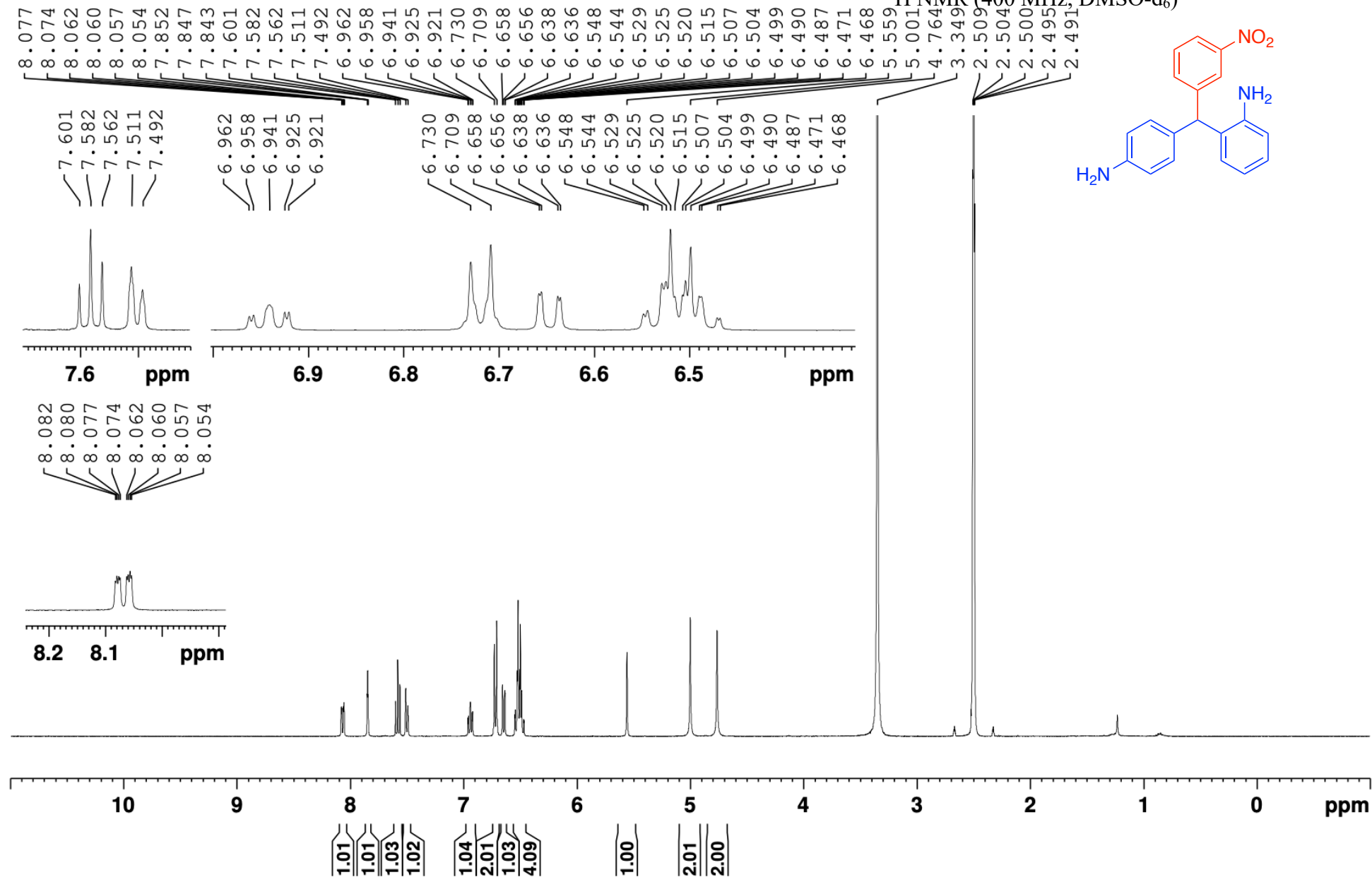
4,4'-((3-Nitrophenyl)methylene)dianiline (3c)
¹³C NMR (100 MHz, DMSO-d₆)



Nipaphorn 5-3-63 No.4
NPNV-03-2020(minor) in DMSO

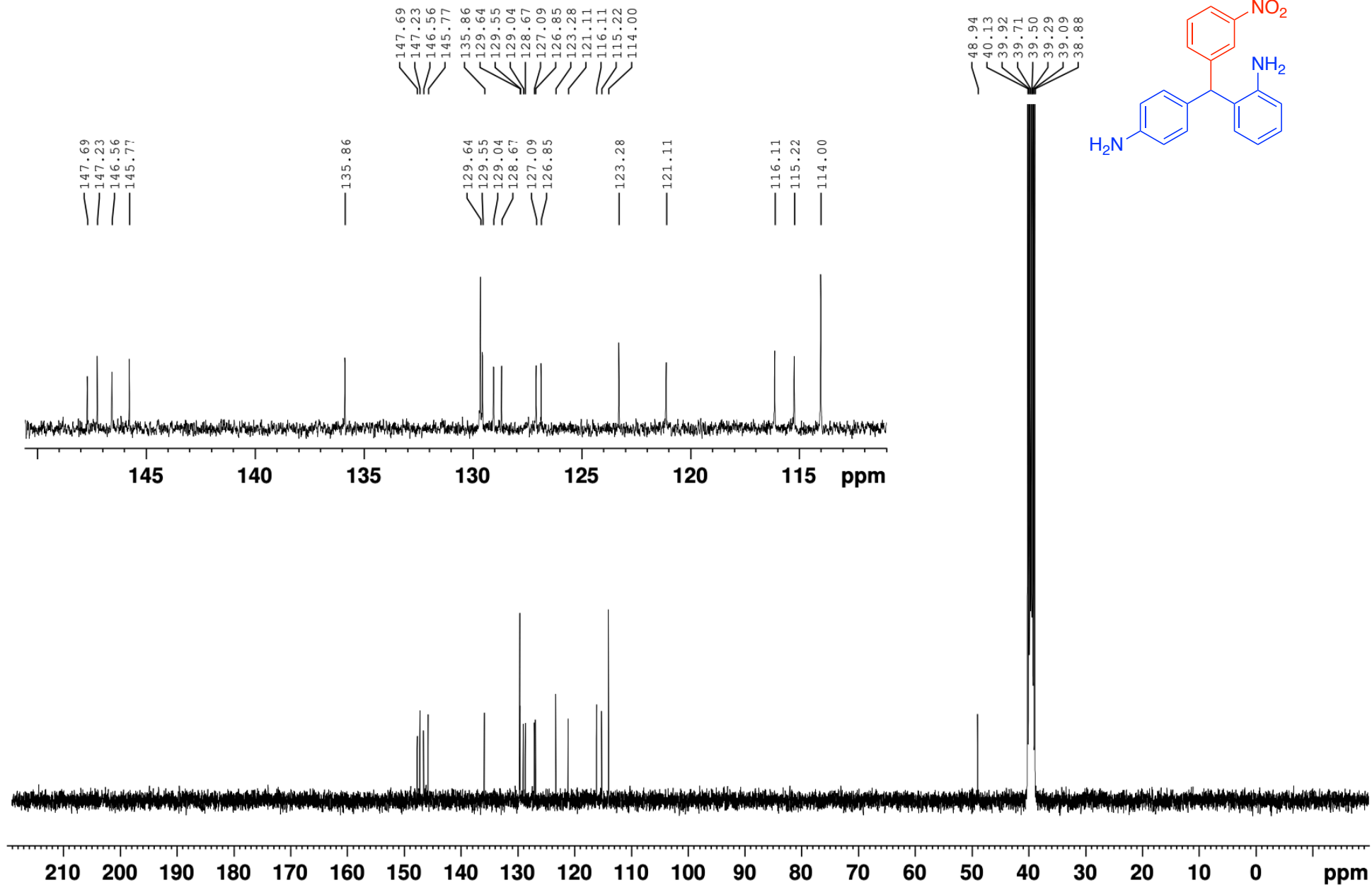
2-((4-Aminophenyl)(3-nitrophenyl)methyl)aniline (4c)

¹H NMR (400 MHz, DMSO-d₆)

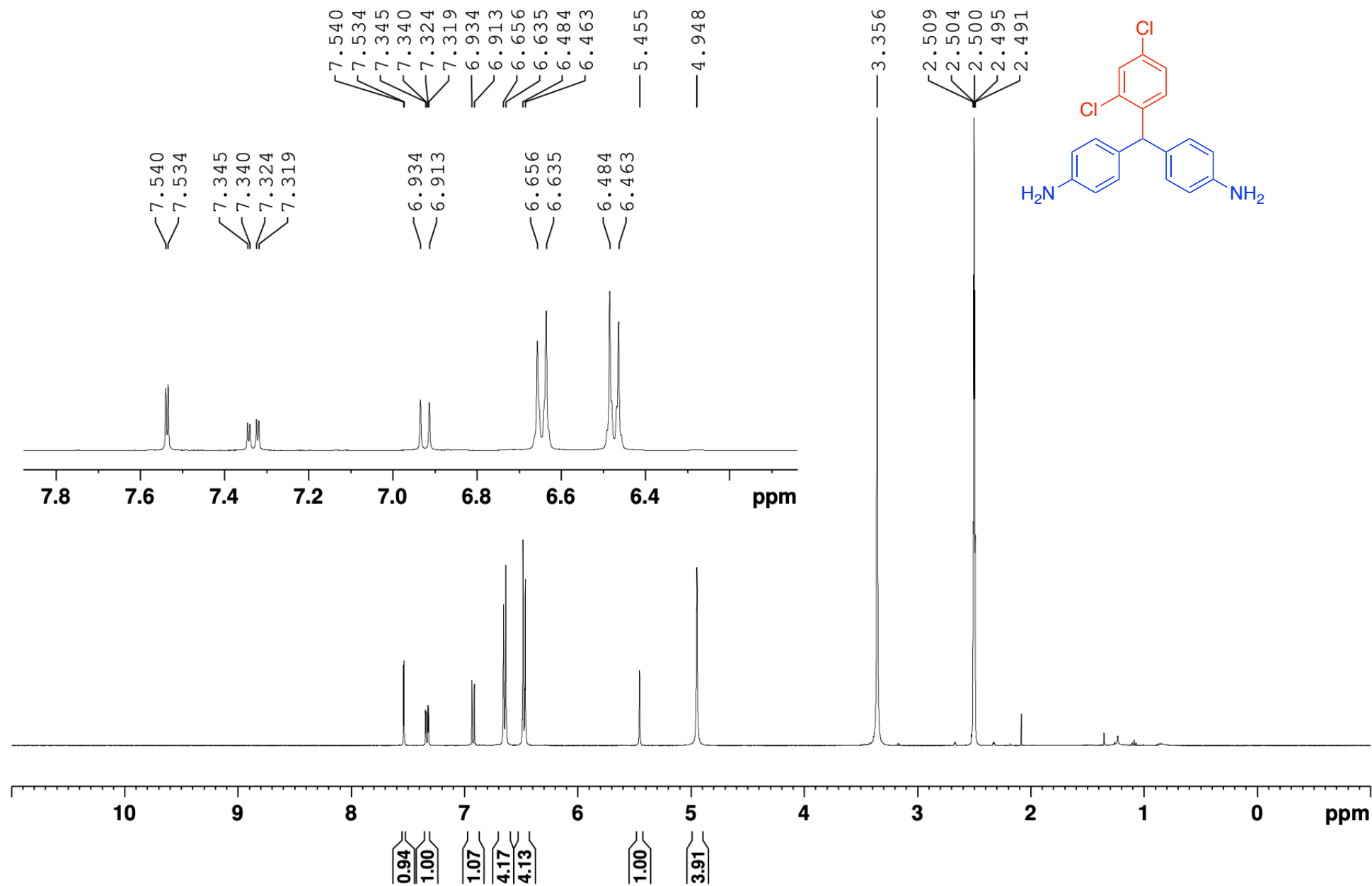


Nipaphorn 12-3-63 No.3
13C NPNV-03-2020 (minor) in DMSO

2-((4-Aminophenyl)(3-nitrophenyl)methyl)aniline (4c)
13C NMR (100 MHz, DMSO-d₆)



Uthaiwan 26-6-63 No.3
US-III-84-20200506-down in DMSO

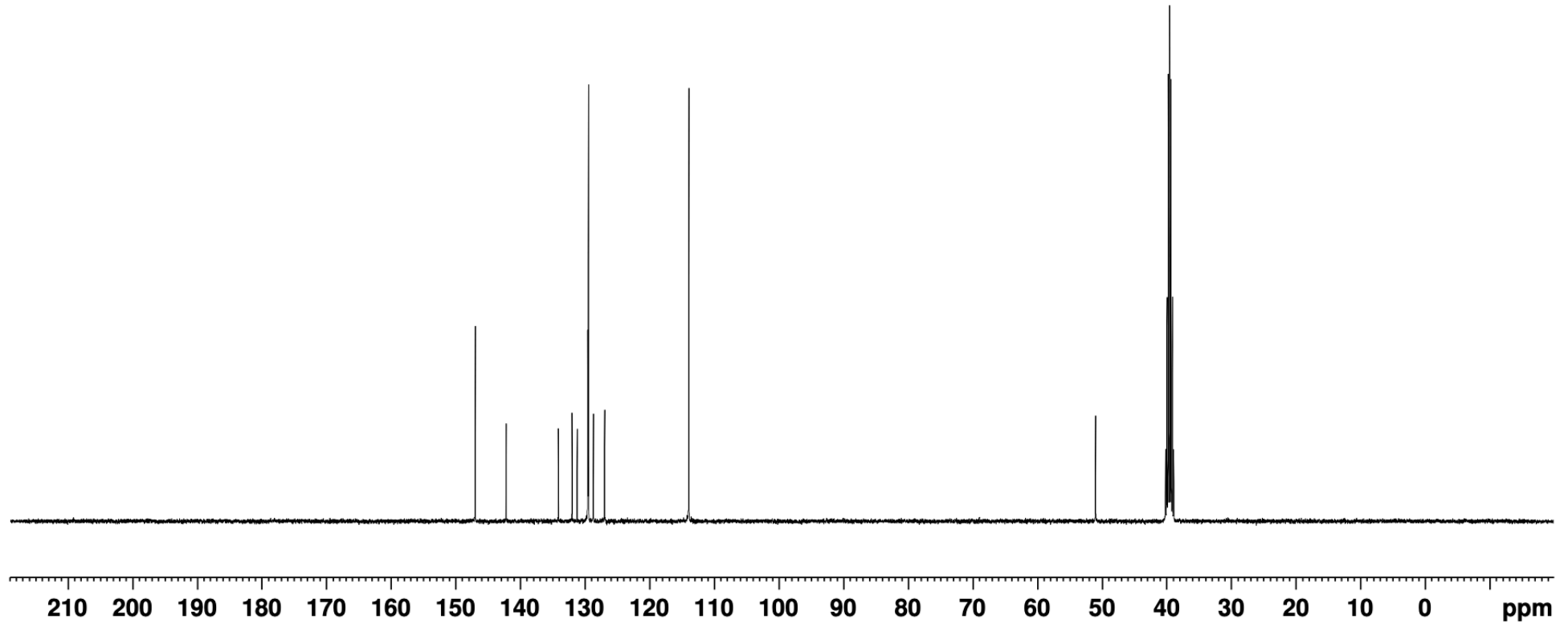
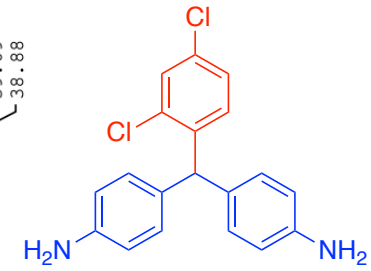
4,4'-((2,4-Dichlorophenyl)methylene)dianiline (3d)¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 30-6-63 No.1
13C US-III-84-20200506-down in DMSO

146.97
142.17
134.12
132.01
131.22
129.57
129.47
128.69
126.97
113.92

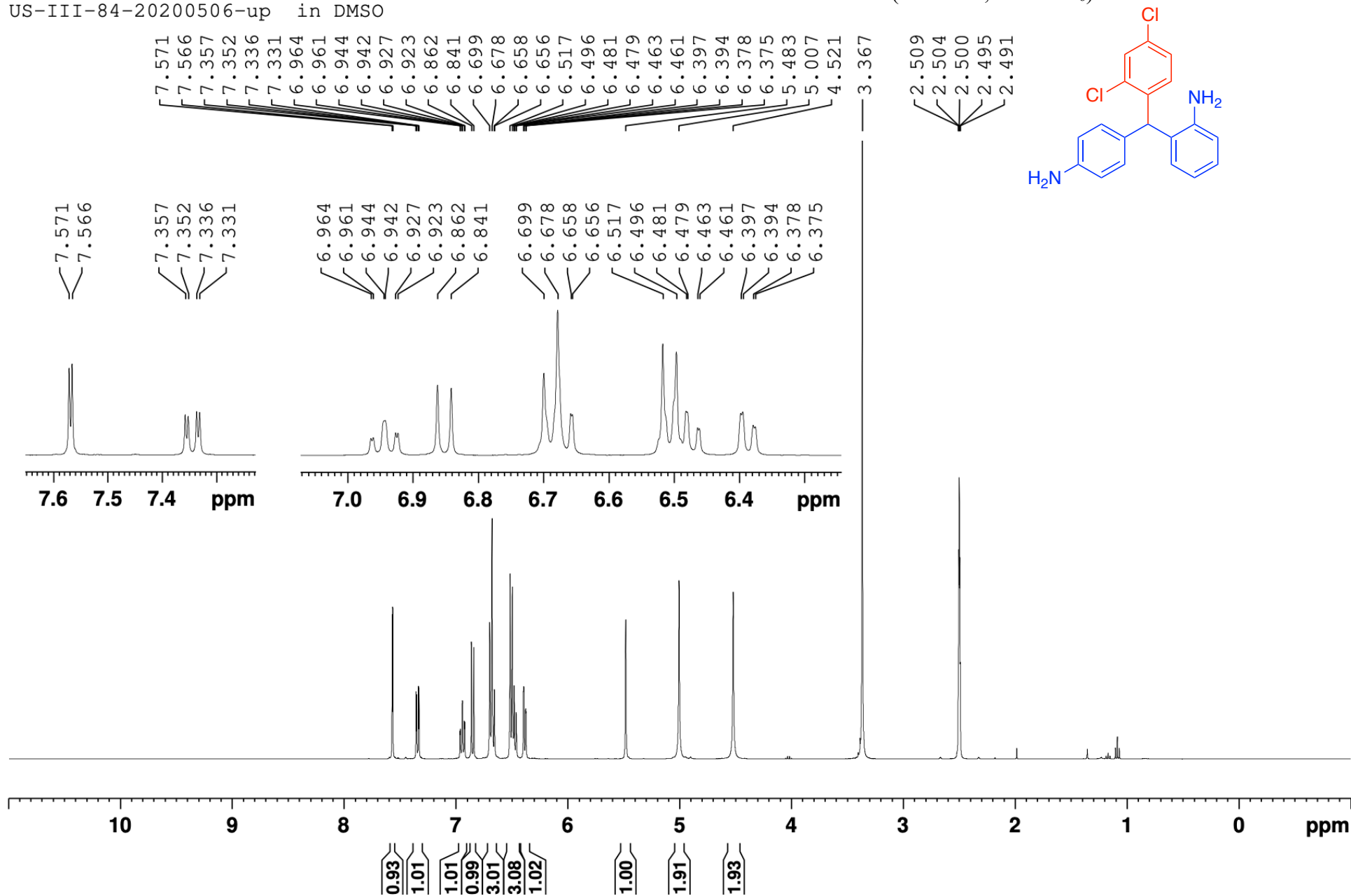
4,4'-((2,4-Dichlorophenyl)methylene)dianiline (3d)
¹³C NMR (100 MHz, DMSO-d₆)

50.98
40.13
39.93
39.72
39.51
39.30
39.09
38.88



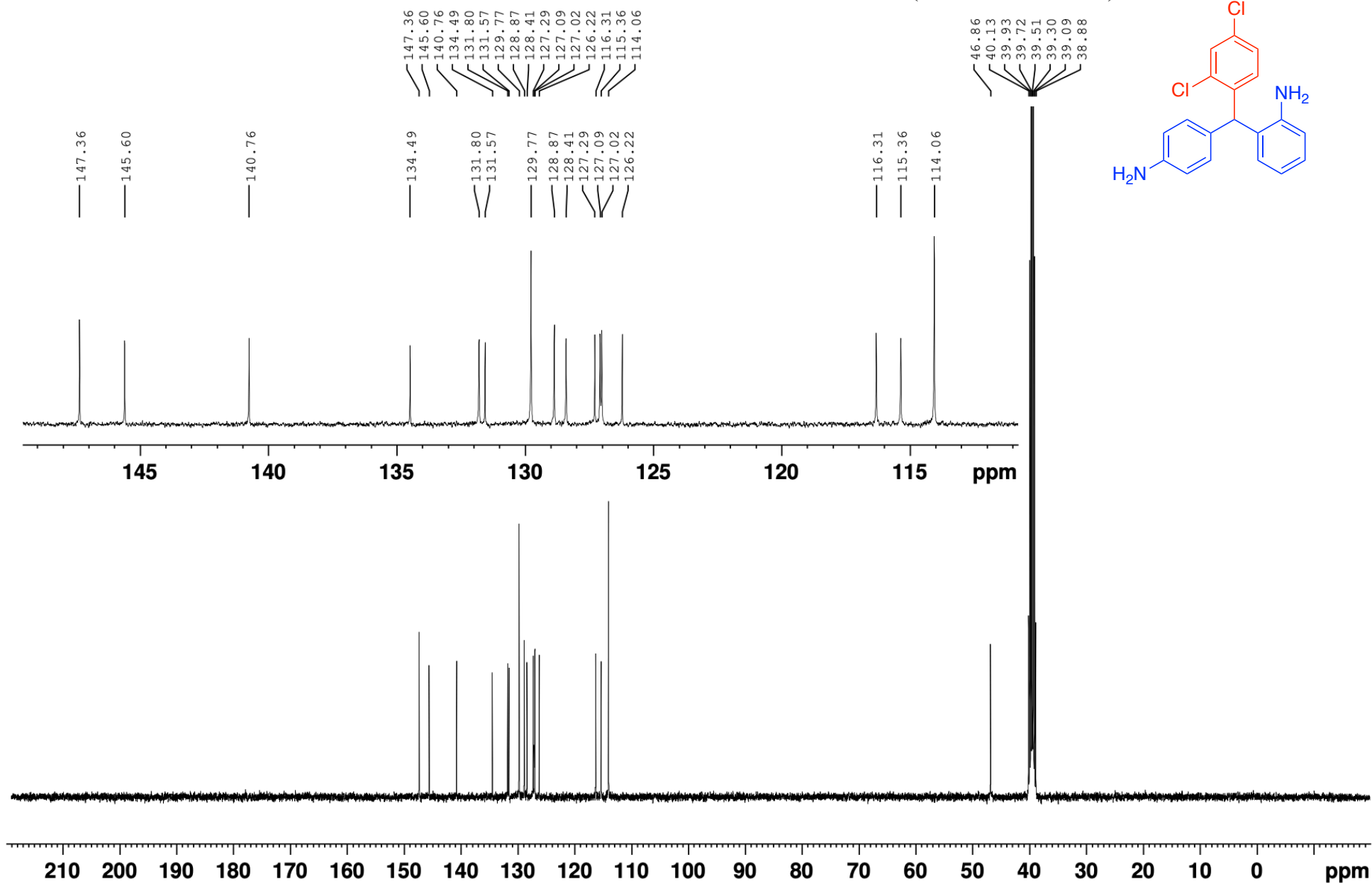
Uthaiwan 1-6-63 No.4
US-III-84-20200506-up in DMSO

2-((4-Aminophenyl)(2,4-dichlorophenyl)methyl)aniline (4d)
¹H NMR (400 MHz, DMSO-d₆)

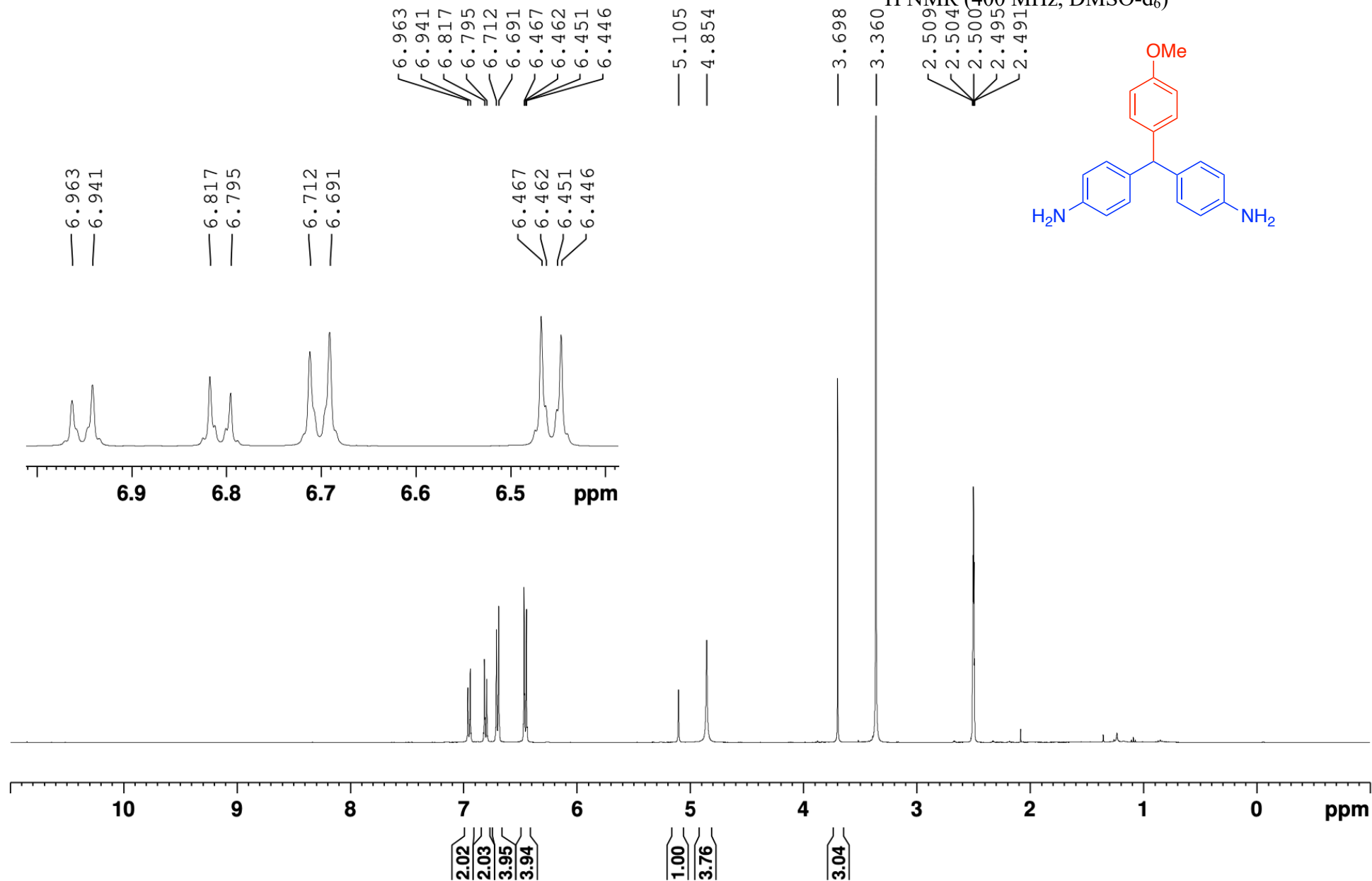
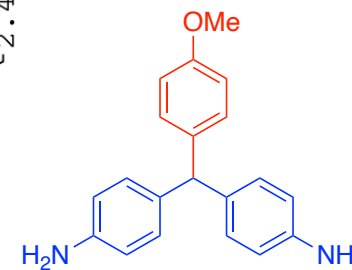


Uthaiwan 4-6-63 No.4
13C US-III-84-20200506-up in DMSO

2-((4-Aminophenyl)(2,4-dichlorophenyl)methyl)aniline (4d)
¹³C NMR (100 MHz, DMSO-d₆)

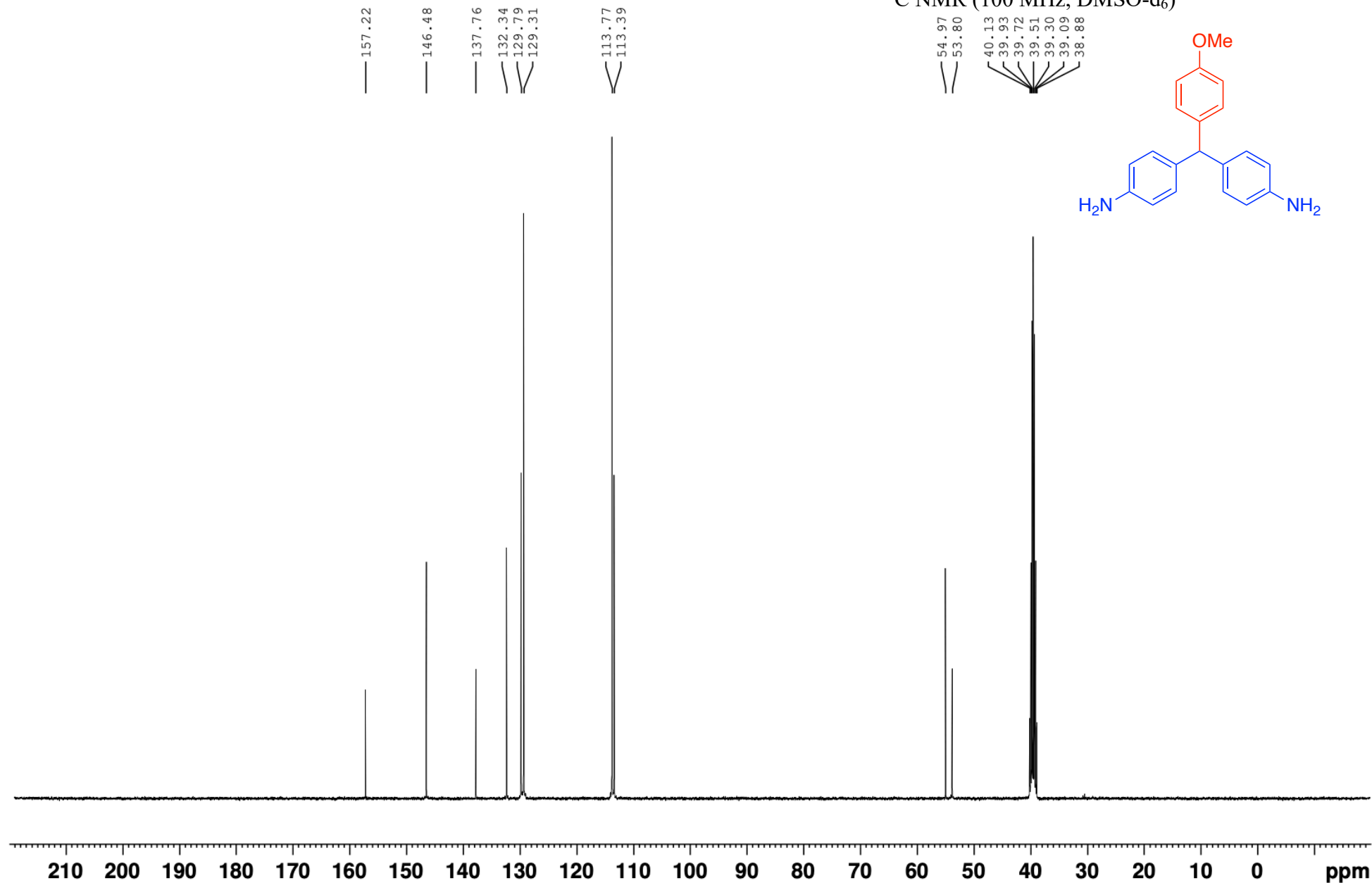


Uthaiwan 26-6-63 No.1
US-III-85-20200506-down in DMSO

4,4'-((4-Methoxyphenyl)methylene)dianiline (3e)¹H NMR (400 MHz, DMSO-d₆)

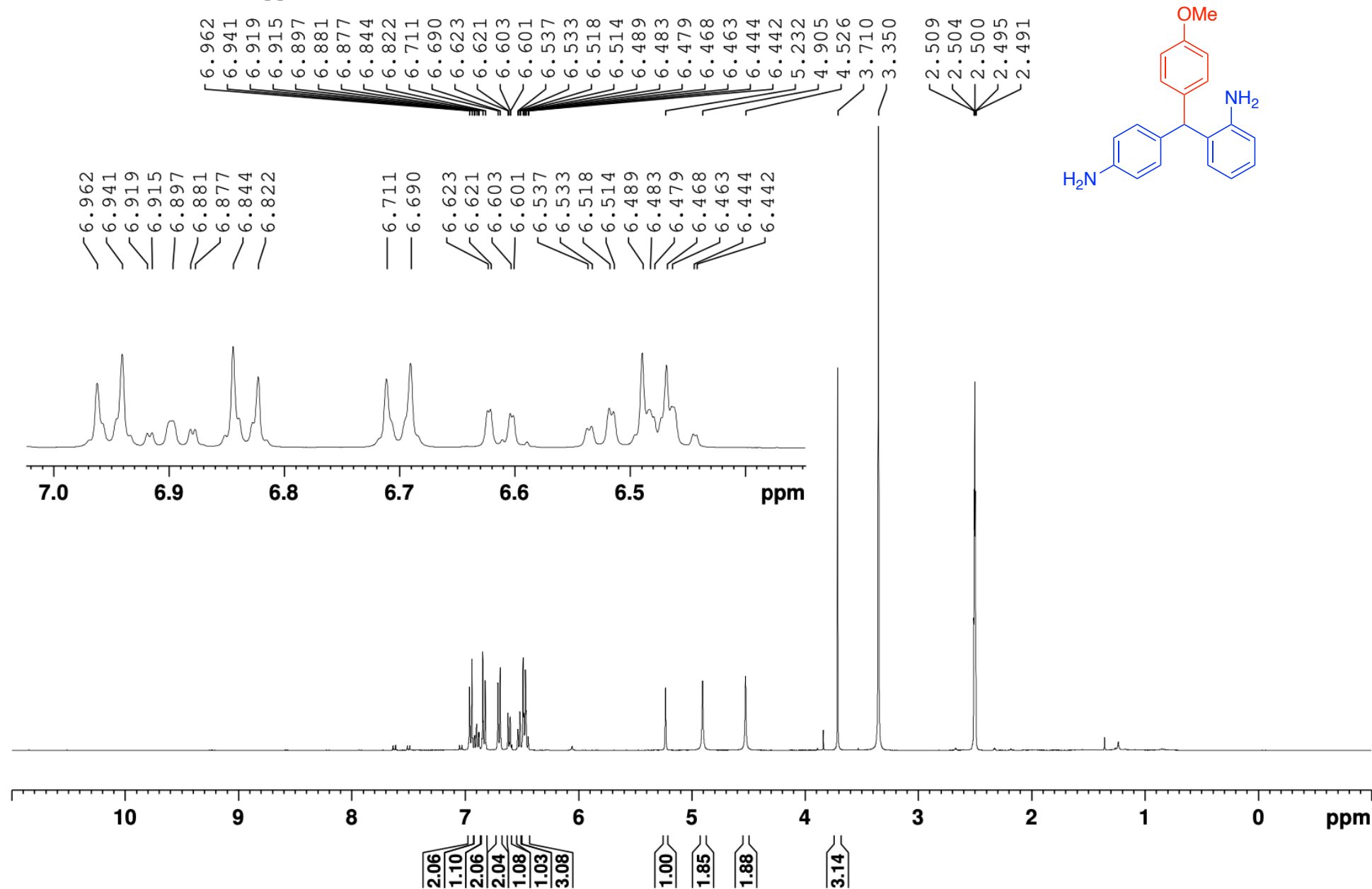
Uthaiwan 1-7-63 No.1
13C US-III-85-20200509-down in DMSO

4,4'-((4-Methoxyphenyl)methylene)dianiline (3e)
¹³C NMR (100 MHz, DMSO-d₆)



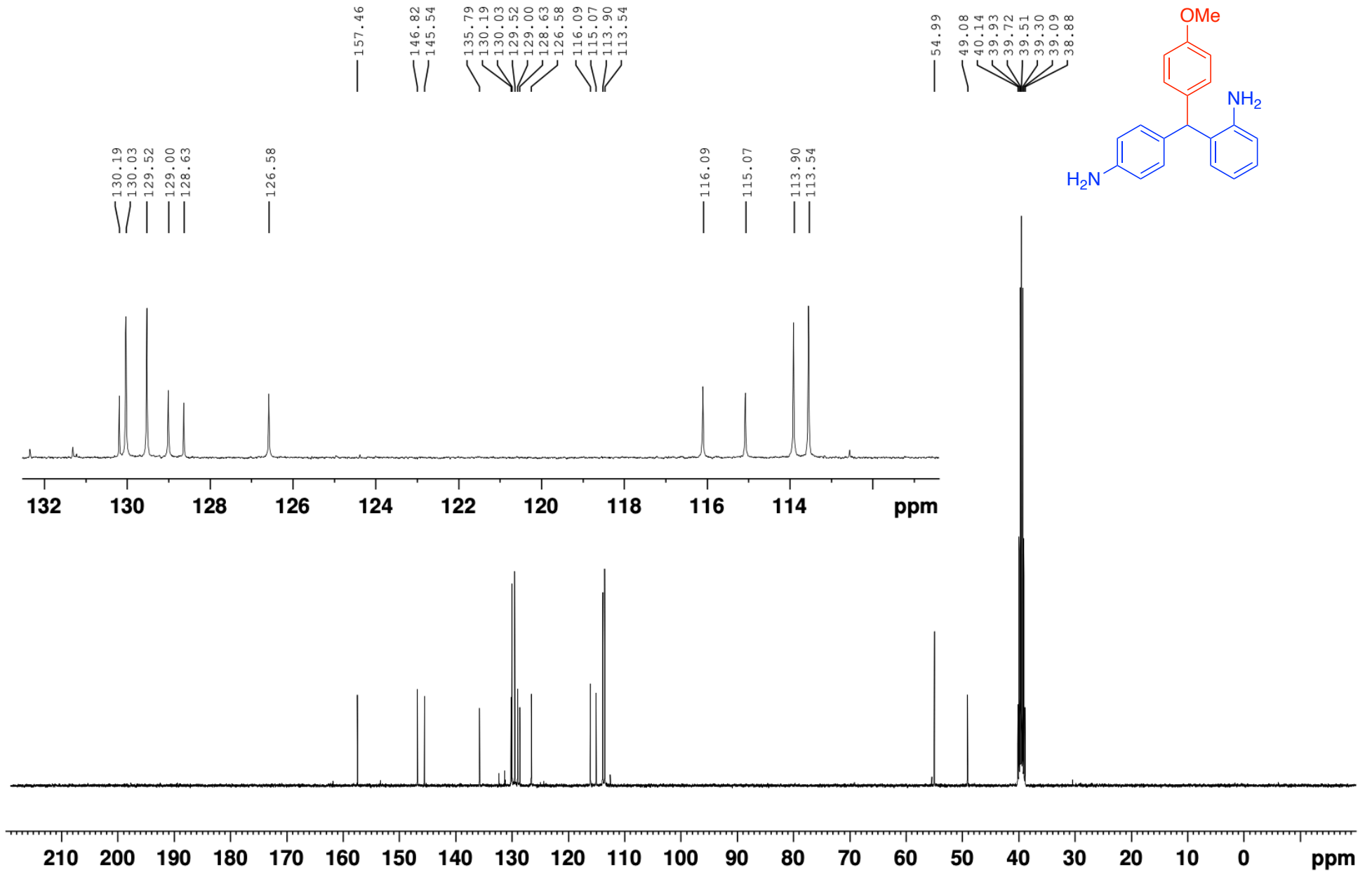
Uthaiwan 15-6-63 No.1
US-III-85-20200506-upp in DMSO

2-((4-Aminophenyl)(4-methoxyphenyl)methyl)aniline (4e)
 $^1\text{H NMR}$ (400 MHz, DMSO- d_6)

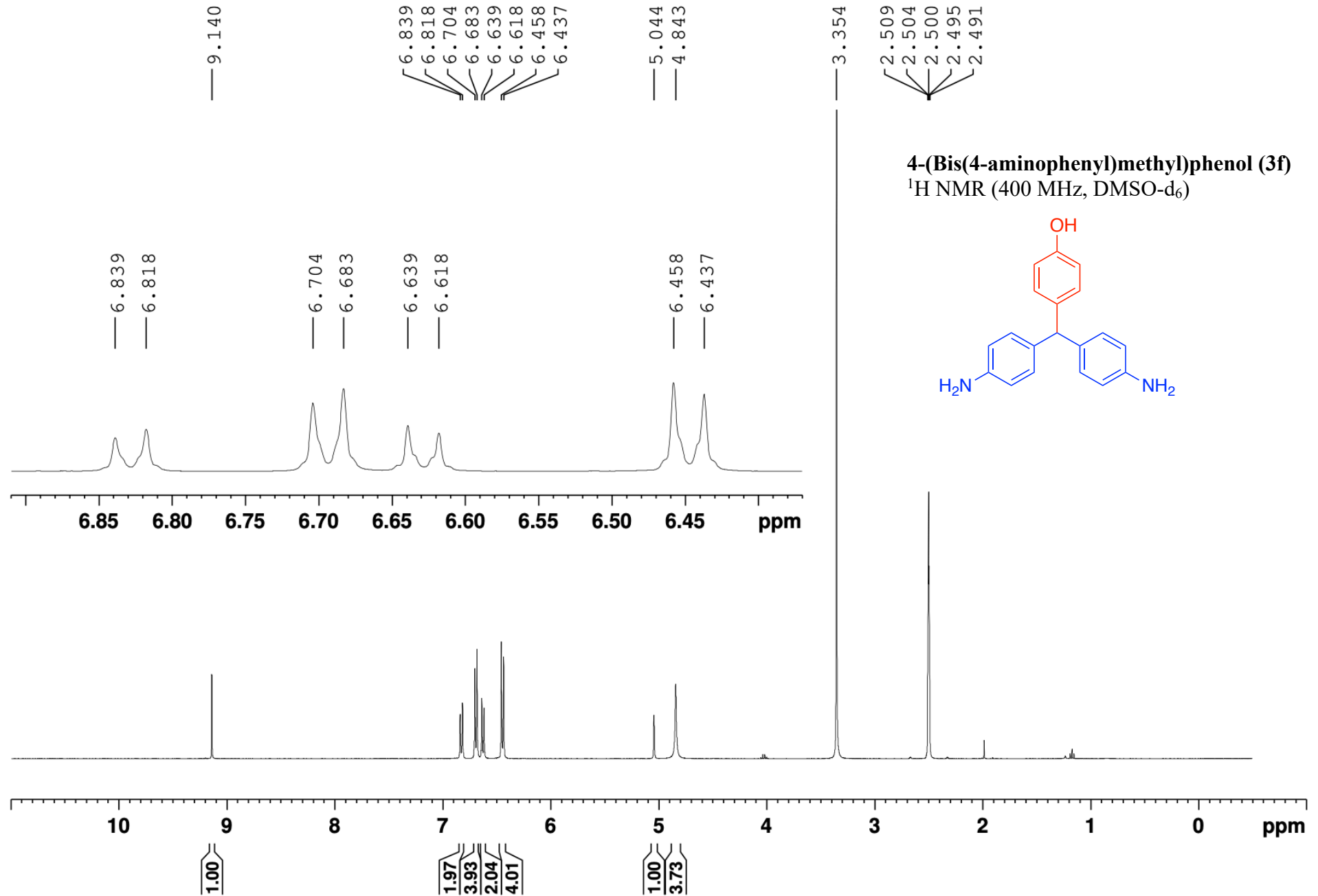


Uthaiwan 18-6-63 No.1
13C US-III-85-20200506-upp in DMSO

2-((4-Aminophenyl)(4-methoxyphenyl)methyl)aniline (4e)
13C NMR (100 MHz, DMSO-d₆)

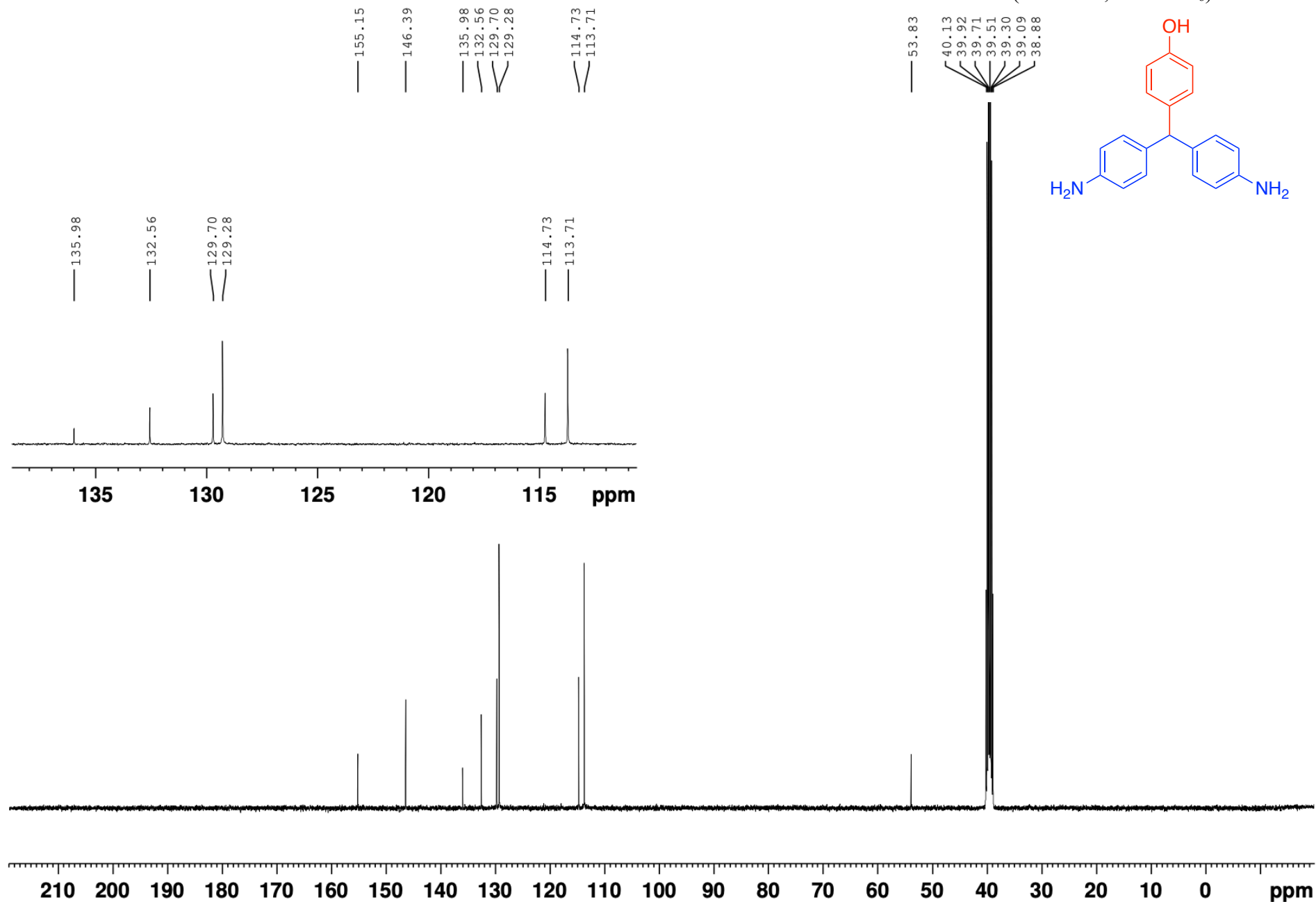


Nipaphorn 5-2-63 No.2
75(1) in DMSO



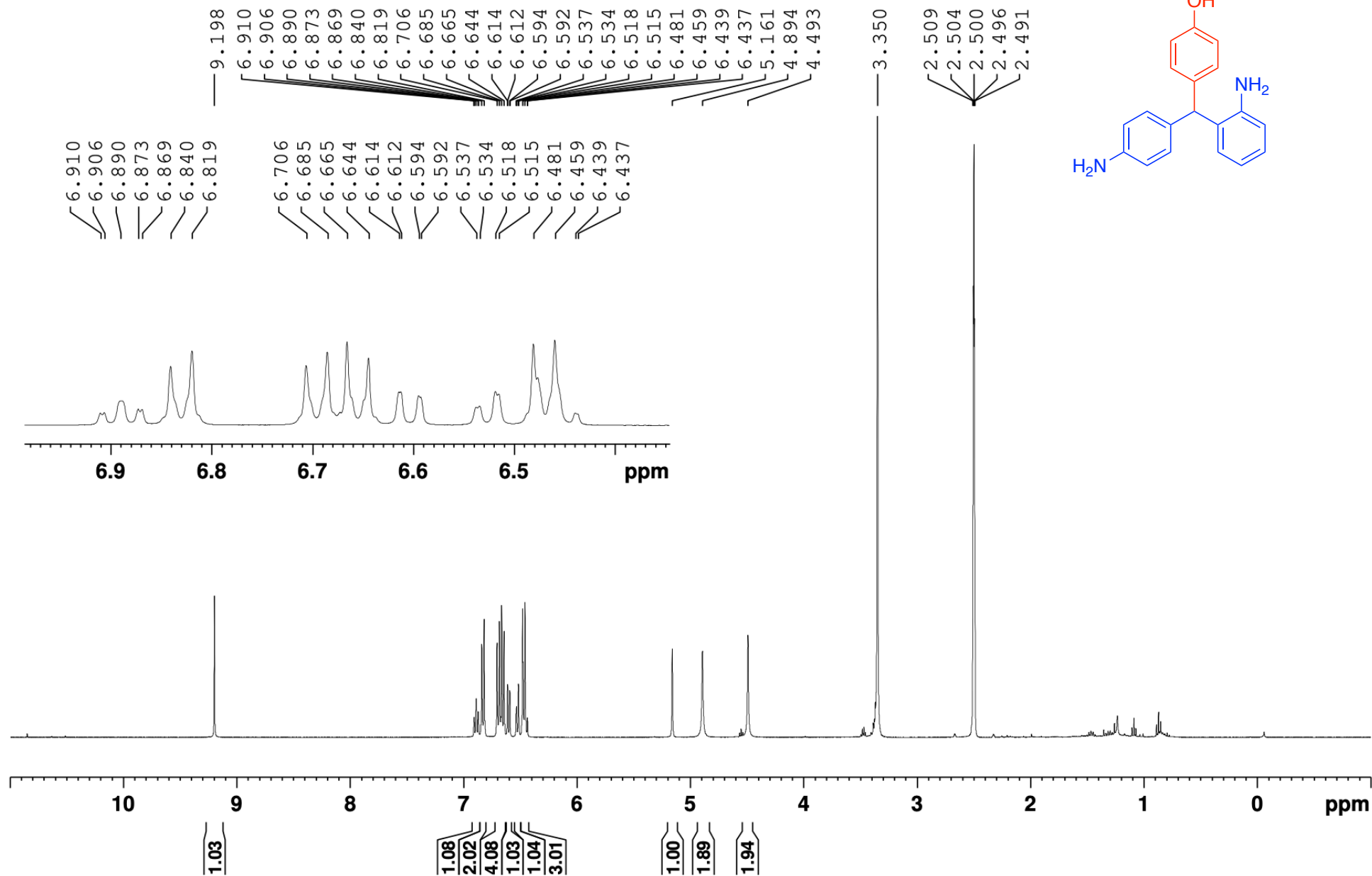
Nipaphorn 3-3-63 No.2
13C NPNV-06-2020(2) in DMSO

4-(Bis(4-aminophenyl)methyl)phenol (3f) S32
13C NMR (100 MHz, DMSO-d₆)



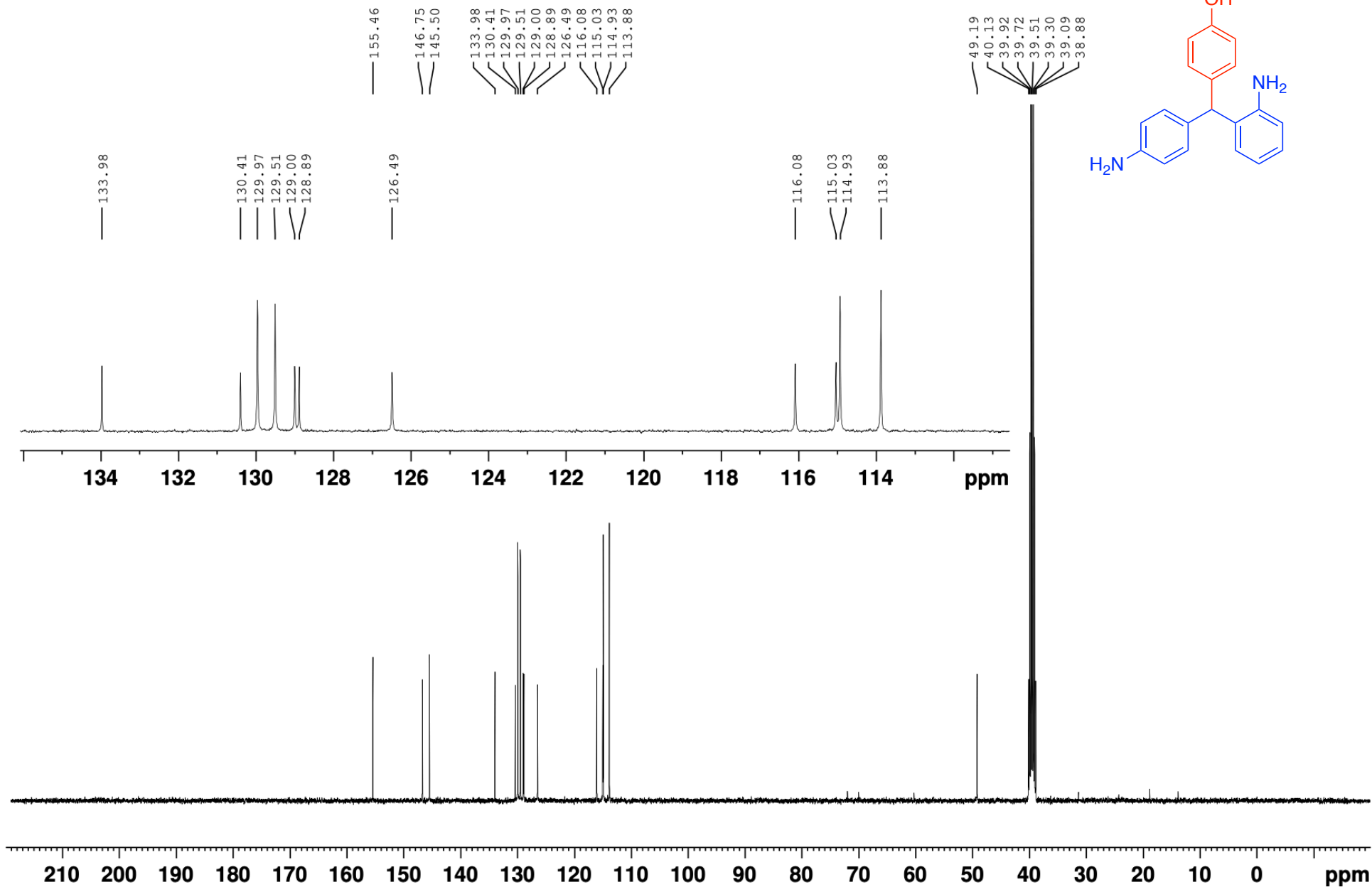
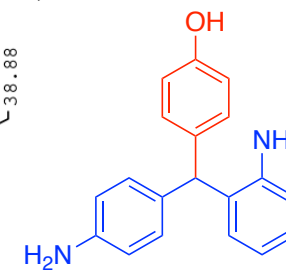
Uthaiwan 12-6-63 No.1
US-III-86-20200508-upp in DMSO

4-((2-aminophenyl)(4-aminophenyl)methyl)phenol (4f)
¹H NMR (400 MHz, DMSO-d₆)



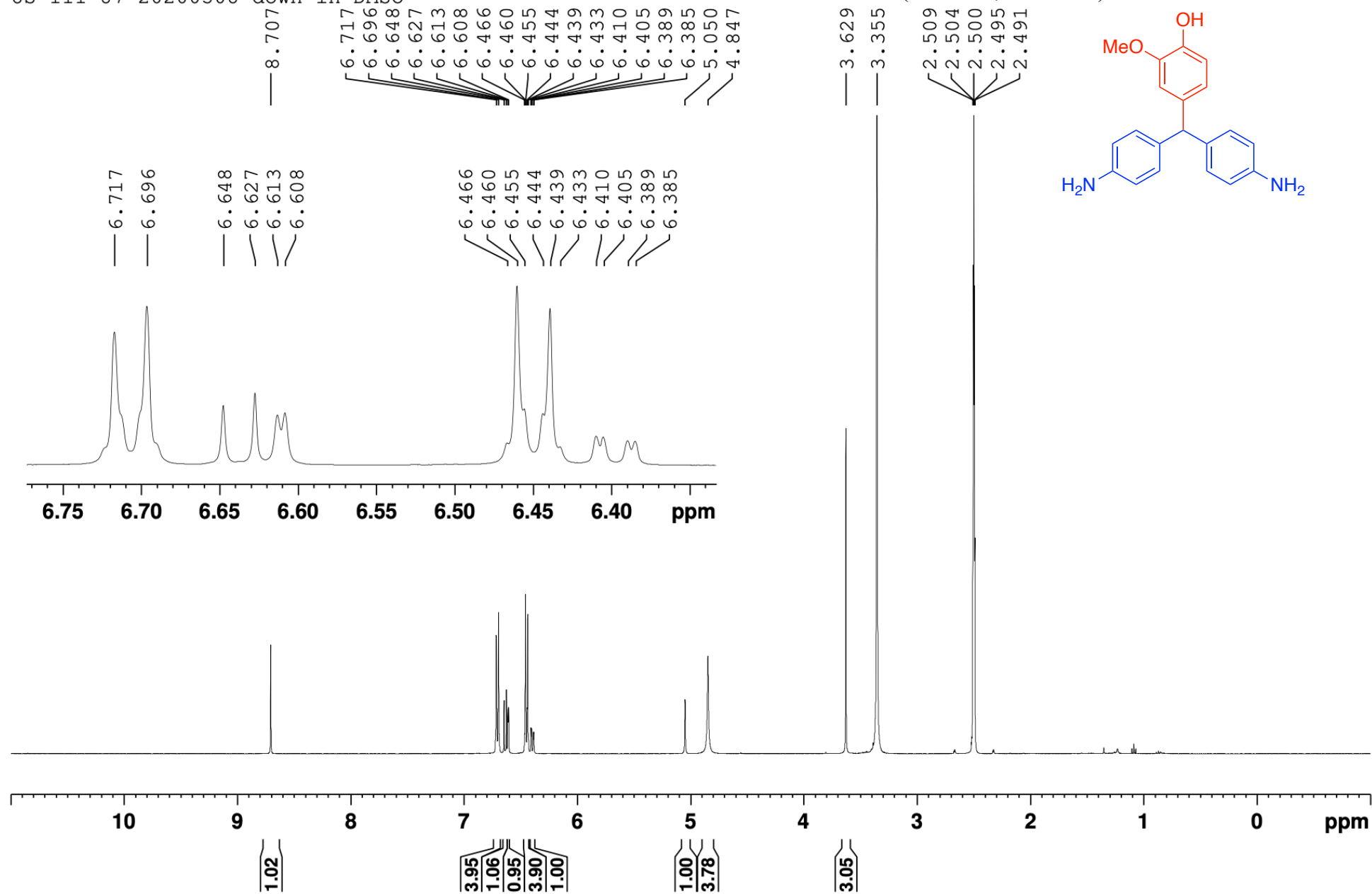
Uthaiwan 17-6-63 No.1
13C US-III-86-20200508-upp in DMSO

4-((2-aminophenyl)(4-aminophenyl)methyl)phenol (4f)
¹³C NMR (100 MHz, DMSO-d₆)



Uthaiwan 19-6-63 No.4

US-III-87-20200508-down in DMSO



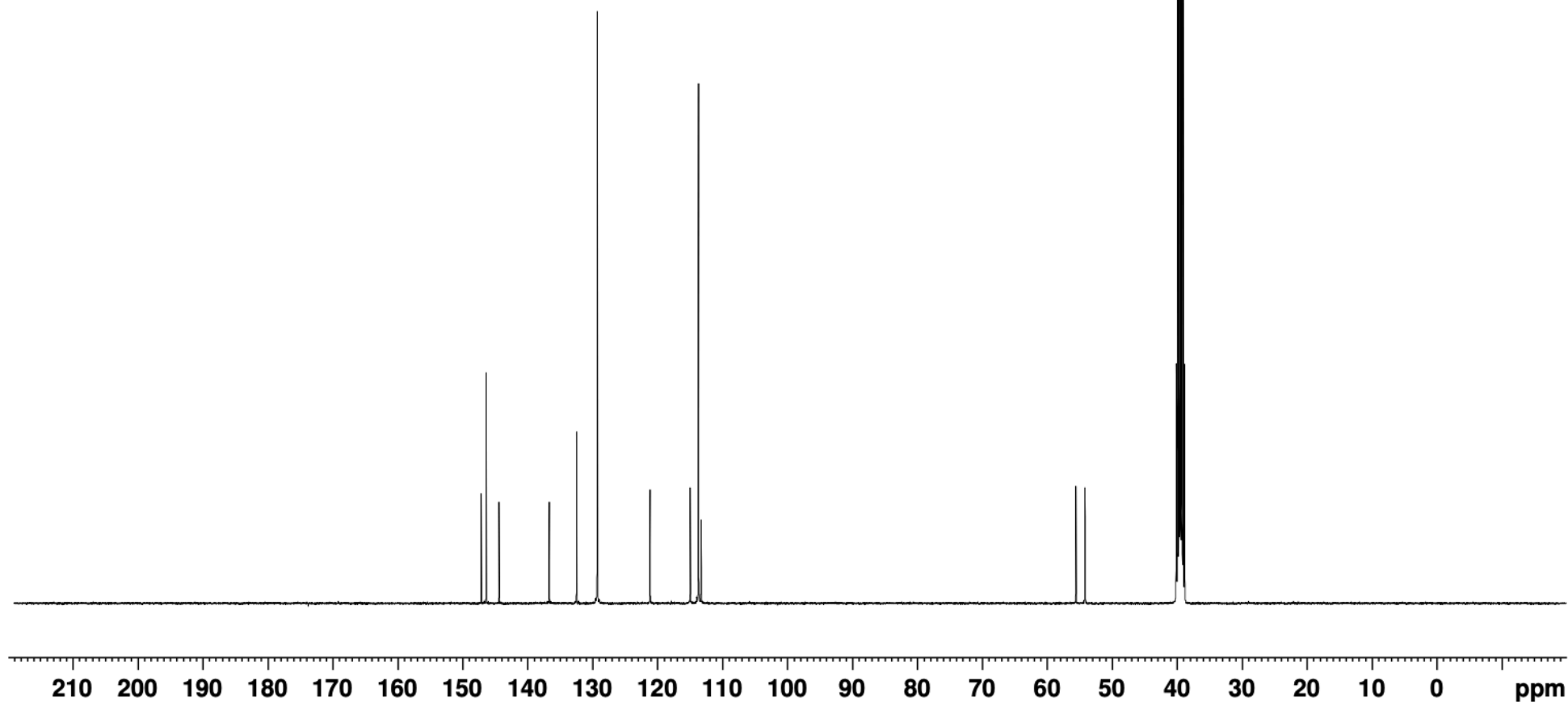
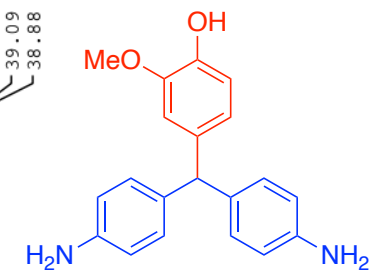
Uthaiwan 23-6-63 No.3

 ^{13}C US-III-87-20200508-down in DMSO

147.15
146.40
144.44
136.69
132.50
129.30
121.18
115.00
113.72
113.33
113.31

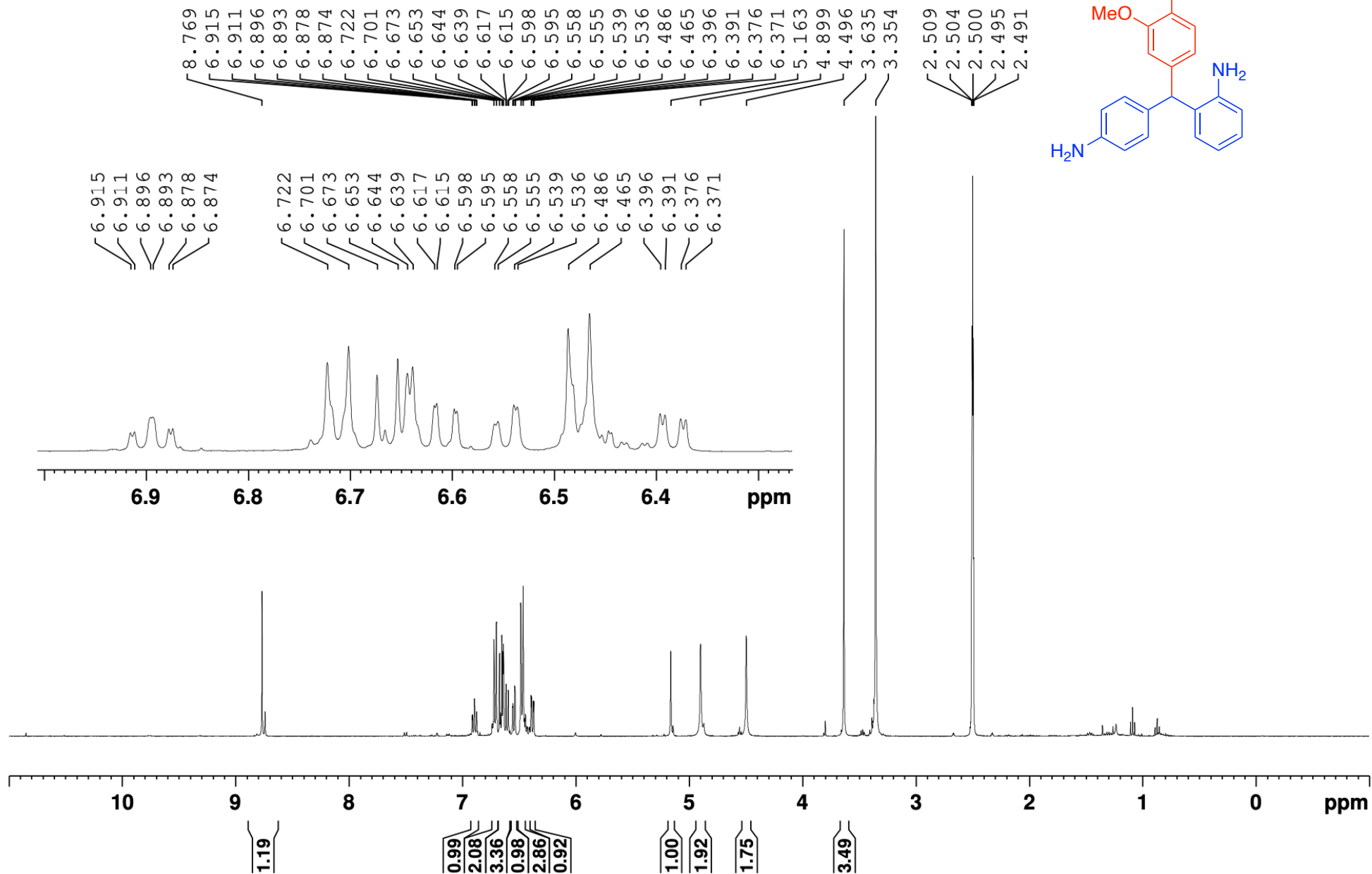
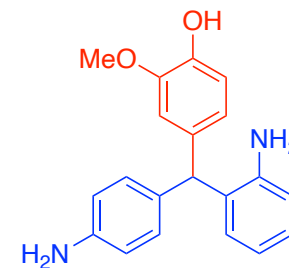
4-(bis(4-aminophenyl)methyl)-2-methoxyphenol (3g) ^{13}C NMR (100 MHz, DMSO- d_6)

55.59
54.20
40.13
39.92
39.71
39.50
39.29
39.09
38.88



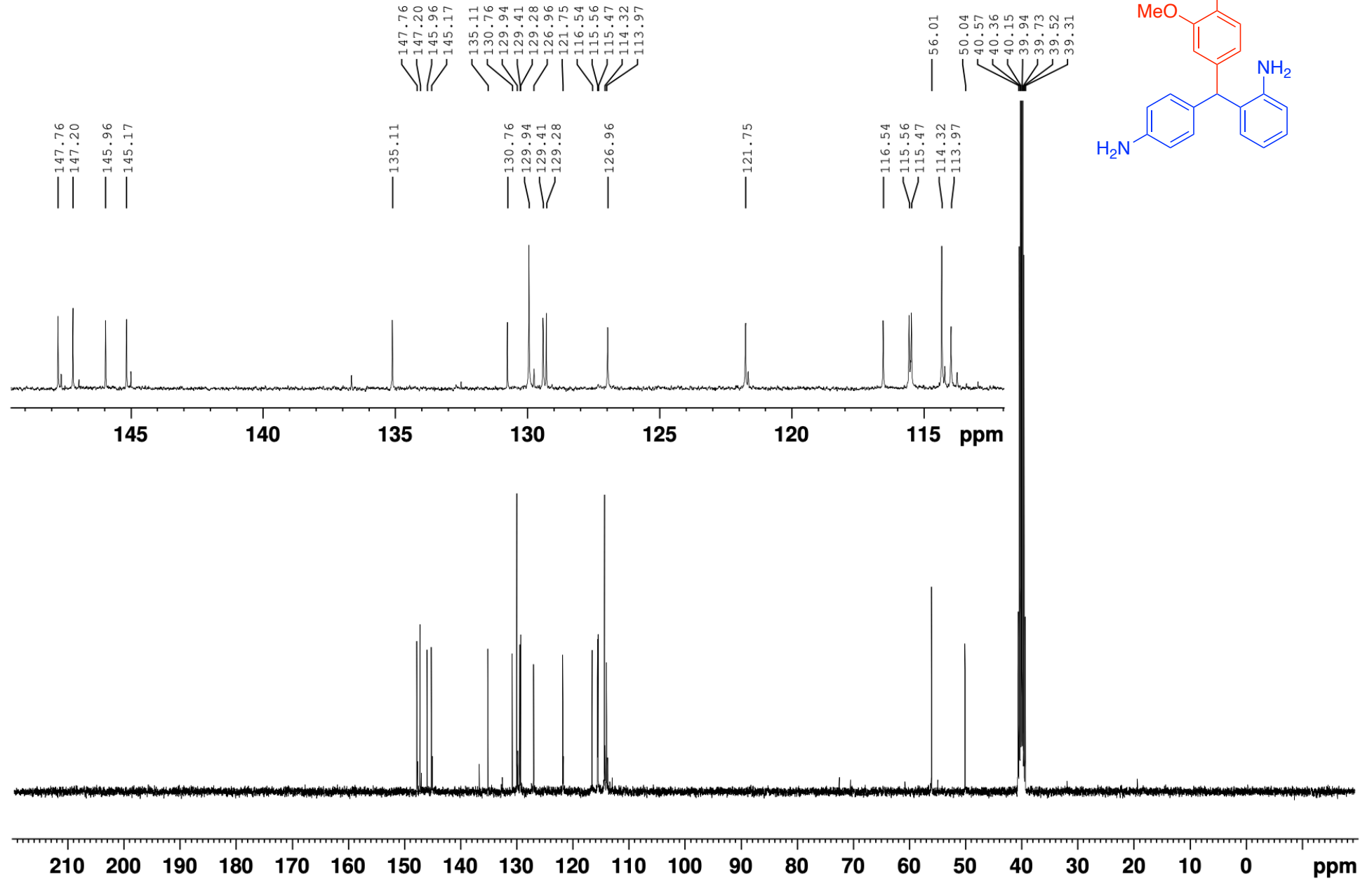
Uthaiwan 12-6-63 No.2
US-III-87-20200508-upp in DMSO

4-((2-aminophenyl)(4-aminophenyl)methyl)-2-methoxyphenol (4g)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 17-6-63 No.2
13C US-III-87-20200508-upp in DMSO

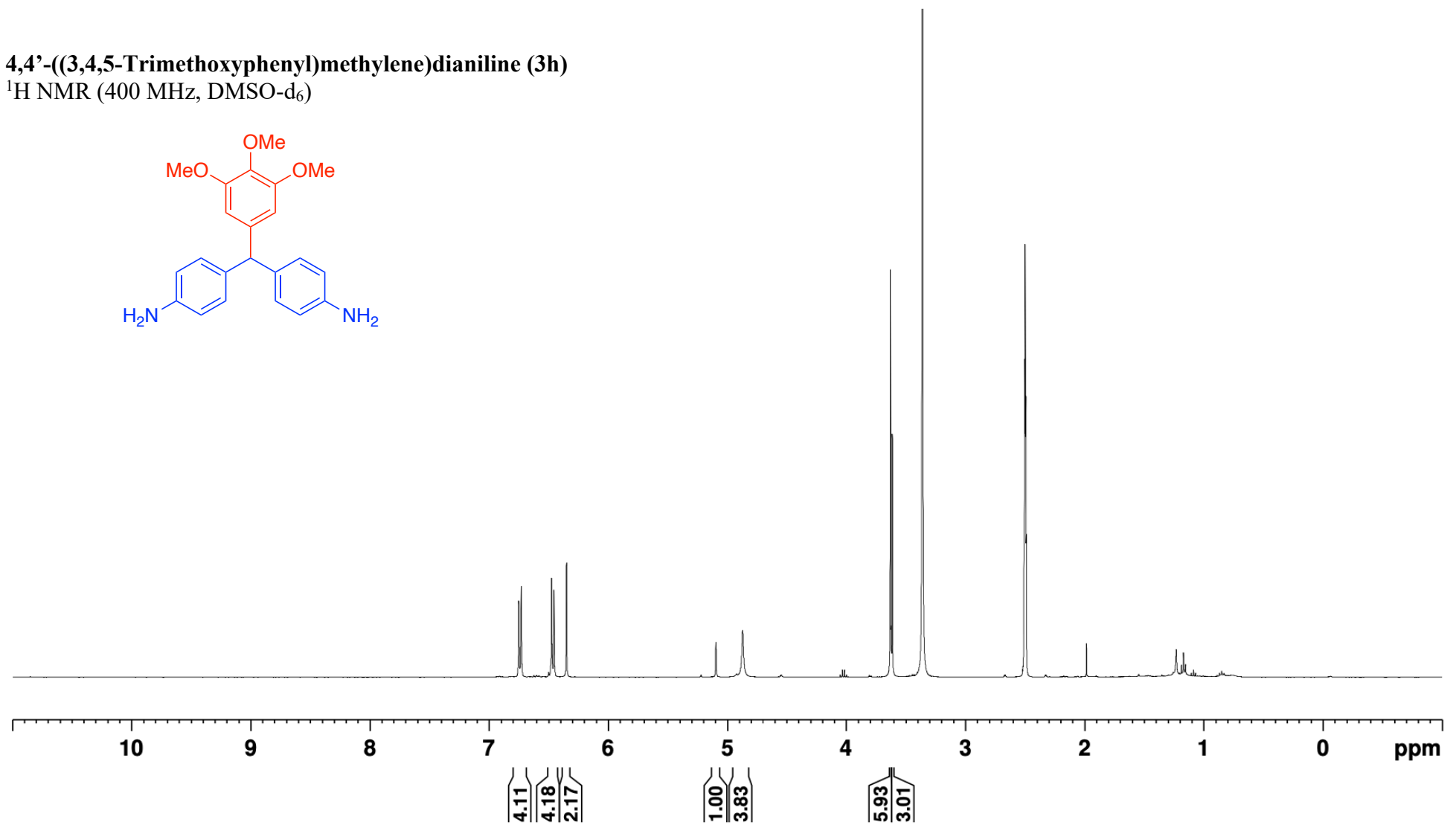
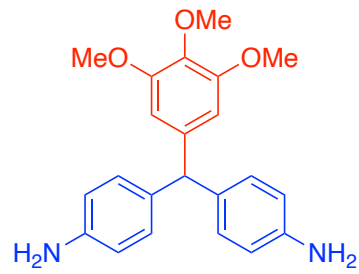
4-((2-aminophenyl)(4-aminophenyl)methyl)-2-methoxyphenol (4g)
¹³C NMR (100 MHz, DMSO-d₆)



Uthaiwan 29-6-63 No.4
US-III-88-20200508-down2 in DMSO

6.752
6.731
6.477
6.456
6.351
5.097
4.873
3.631
3.614
3.362
2.509
2.504
2.500
2.495
2.491

4,4'-((3,4,5-Trimethoxyphenyl)methylene)dianiline (3h)
¹H NMR (400 MHz, DMSO-d₆)



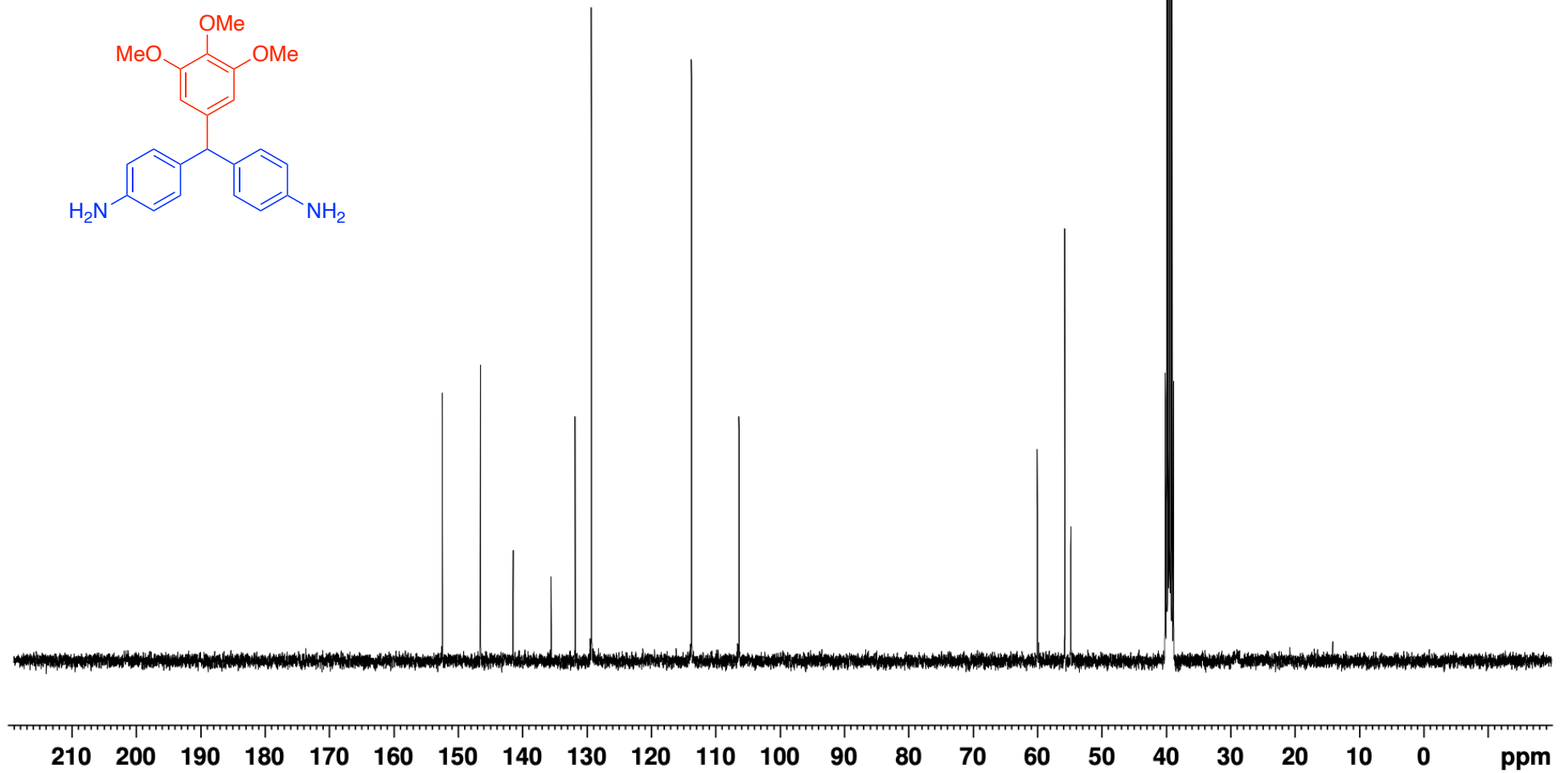
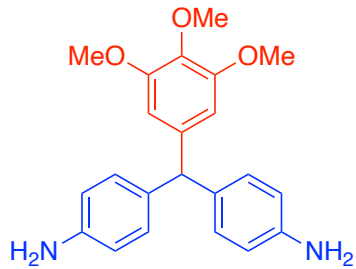
Uthaiwan 2-7-63 No.1

13C US-III-88-20200508-down2 in DMSO

152.48
146.57
141.49
135.57
131.85
129.32

113.78
106.39

60.01
55.78
54.83
40.13
39.92
39.72
39.51
39.30
39.09
38.88

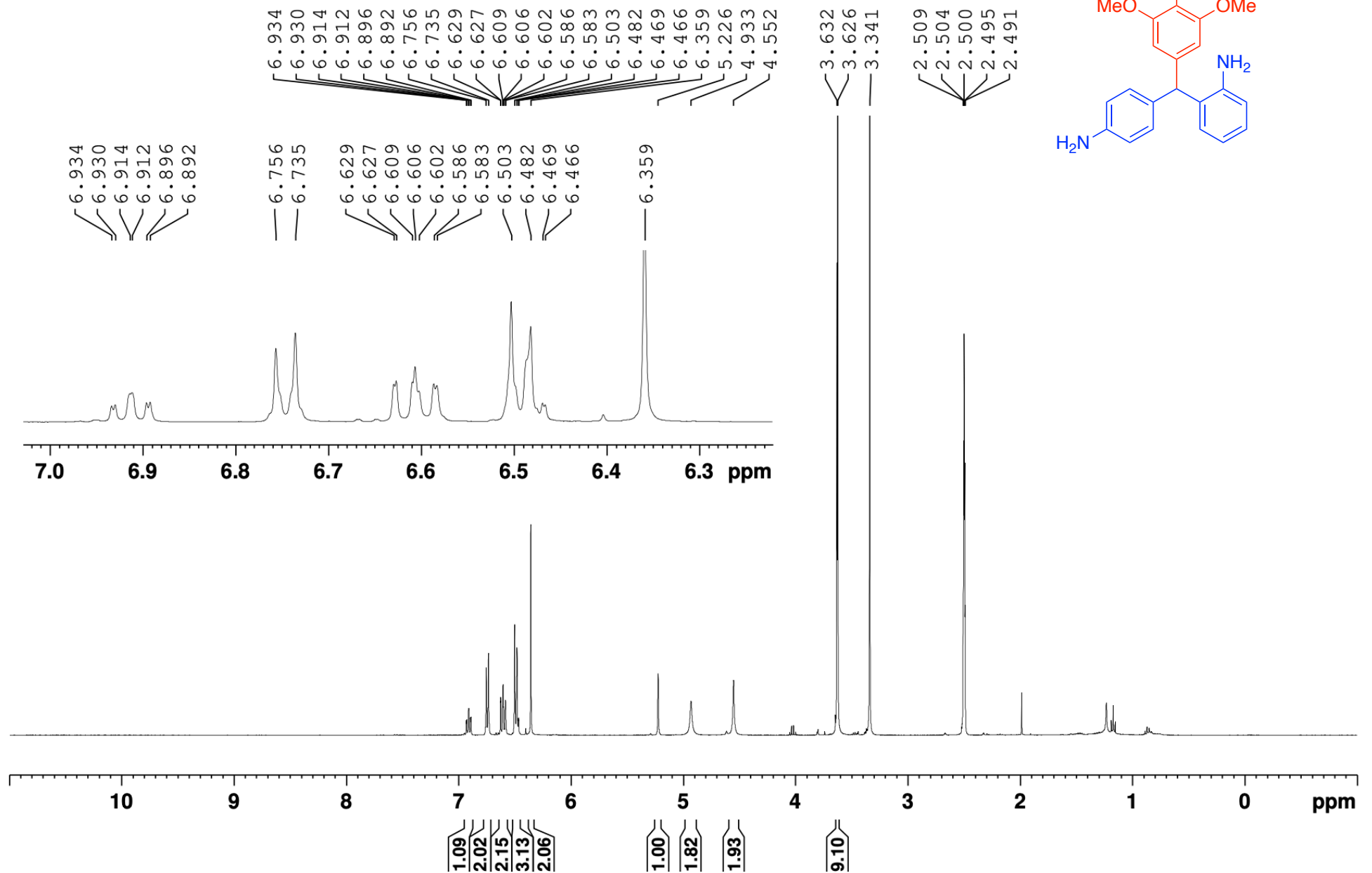
4,4'-((3,4,5-Trimethoxyphenyl)methylene)dianiline (3h)¹³C NMR (100 MHz, DMSO-d₆)

2-((4-Aminophenyl)(3,4,5-trimethoxyphenyl)methyl)aniline (4h)

¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 31-7-63 No.3

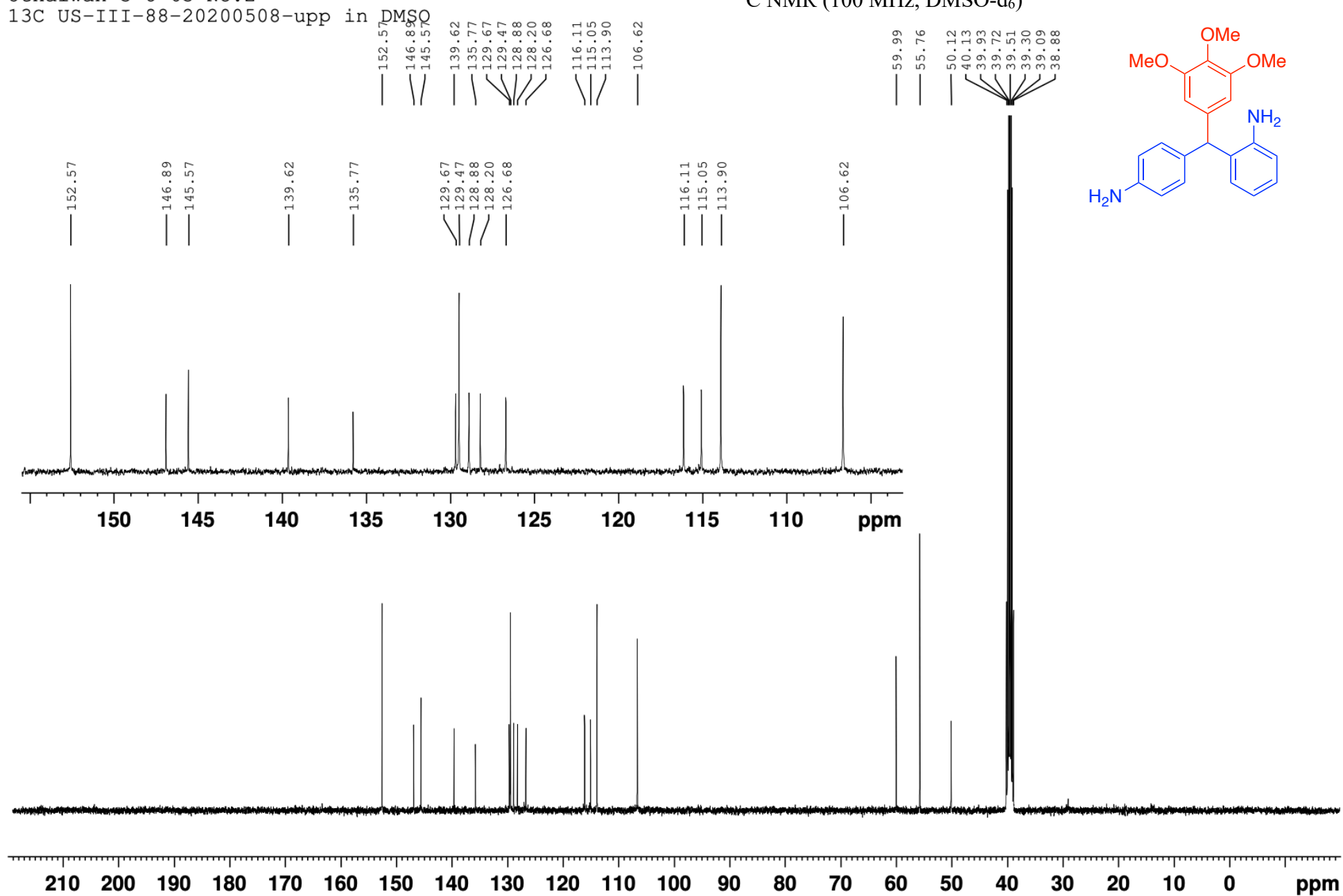
US-III-88-20200508-upp in DMSO



Uthaiwan 3-8-63 No.2

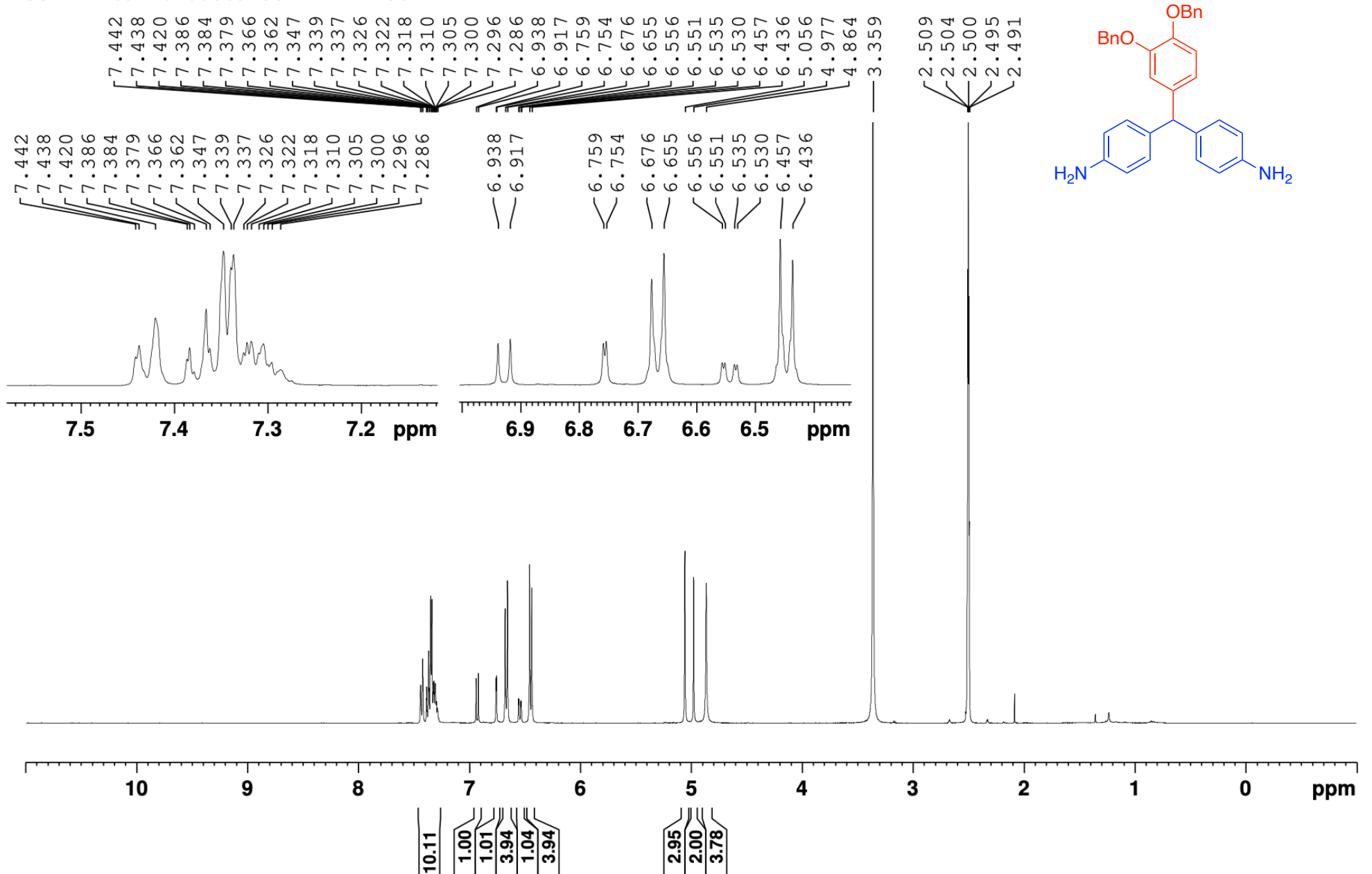
 ^{13}C US-III-88-20200508-upp in DMSO

2-((4-Aminophenyl)(3,4,5-trimethoxyphenyl)methyl)aniline (4h)

 ^{13}C NMR (100 MHz, DMSO- d_6)

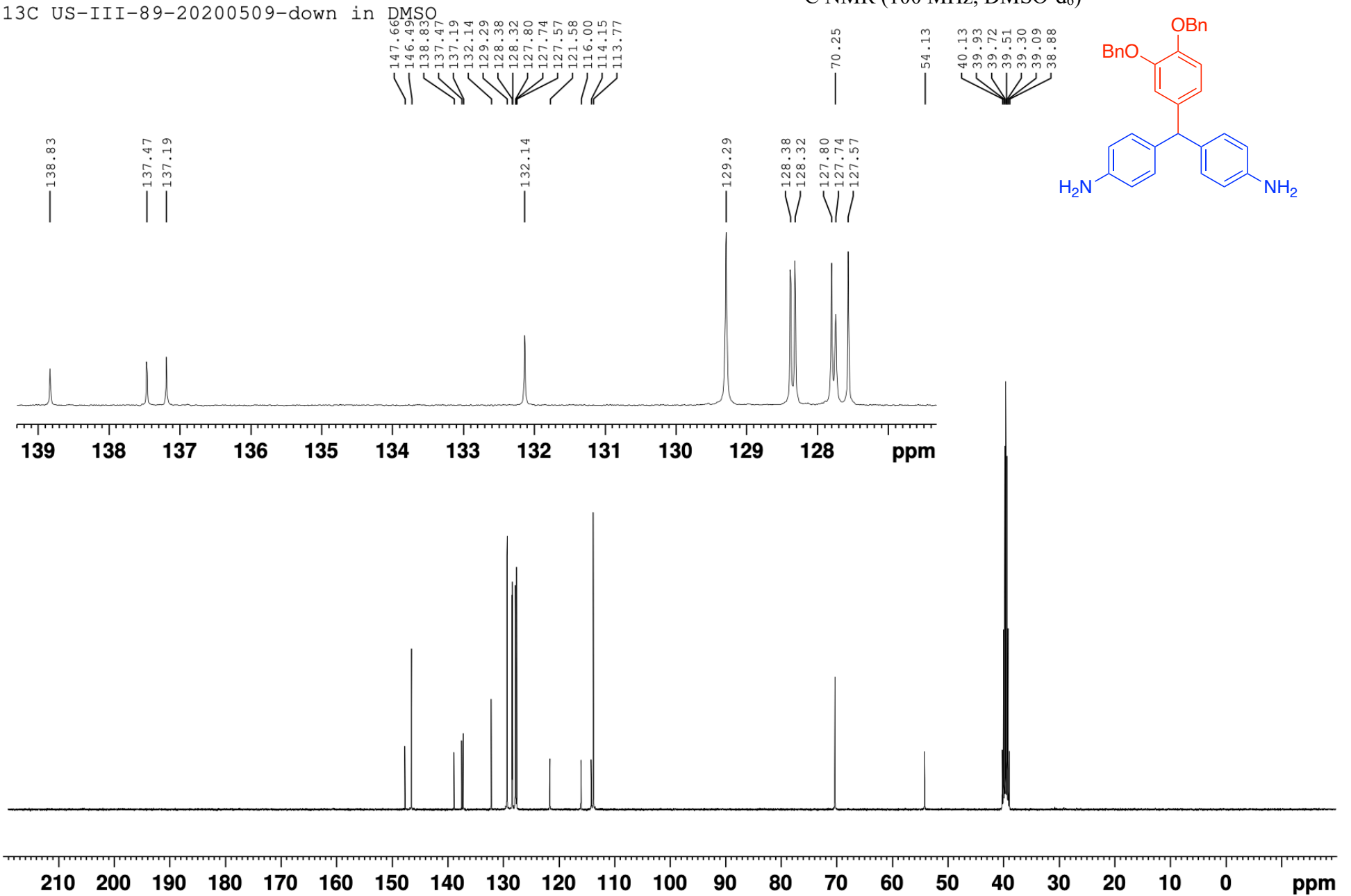
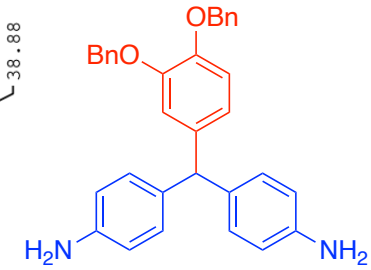
Uthaiwan 26-6-63 No.2
US-III-89-20200509-down in DMSO

4,4'-((3,4-Bis(benzyloxy)phenyl)methylene)dianiline (3i)
¹H NMR (400 MHz, DMSO-d₆)



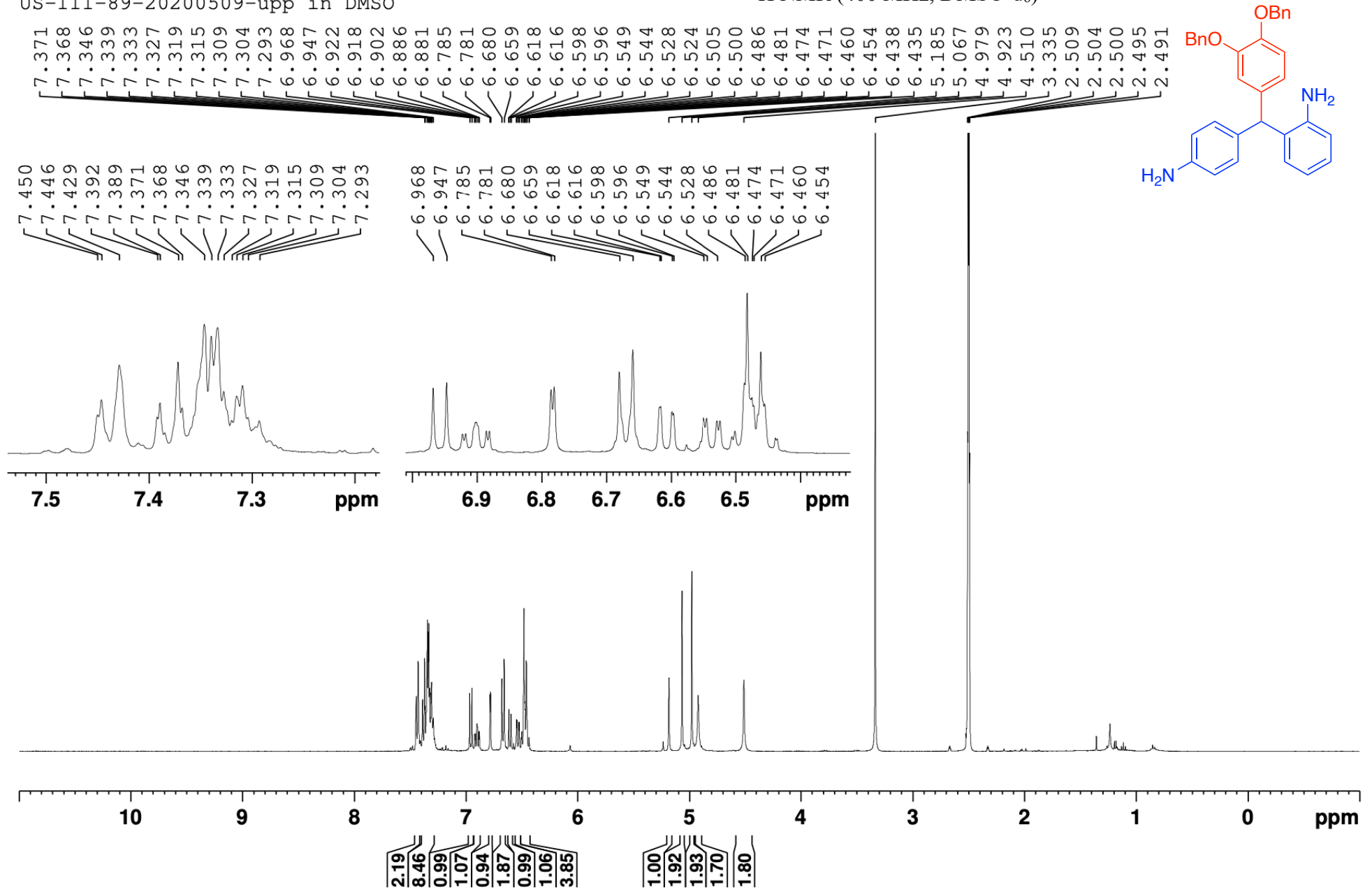
Uthaiwan 1-7-63 No.1

13C US-III-89-20200509-down in DMSO

4,4'-((3,4-Bis(benzyloxy)phenyl)methylene)dianiline (3i)¹³C NMR (100 MHz, DMSO-d₆)

Uthaiwan 31-7-63 No.1
US-III-89-20200509-upp in DMSO

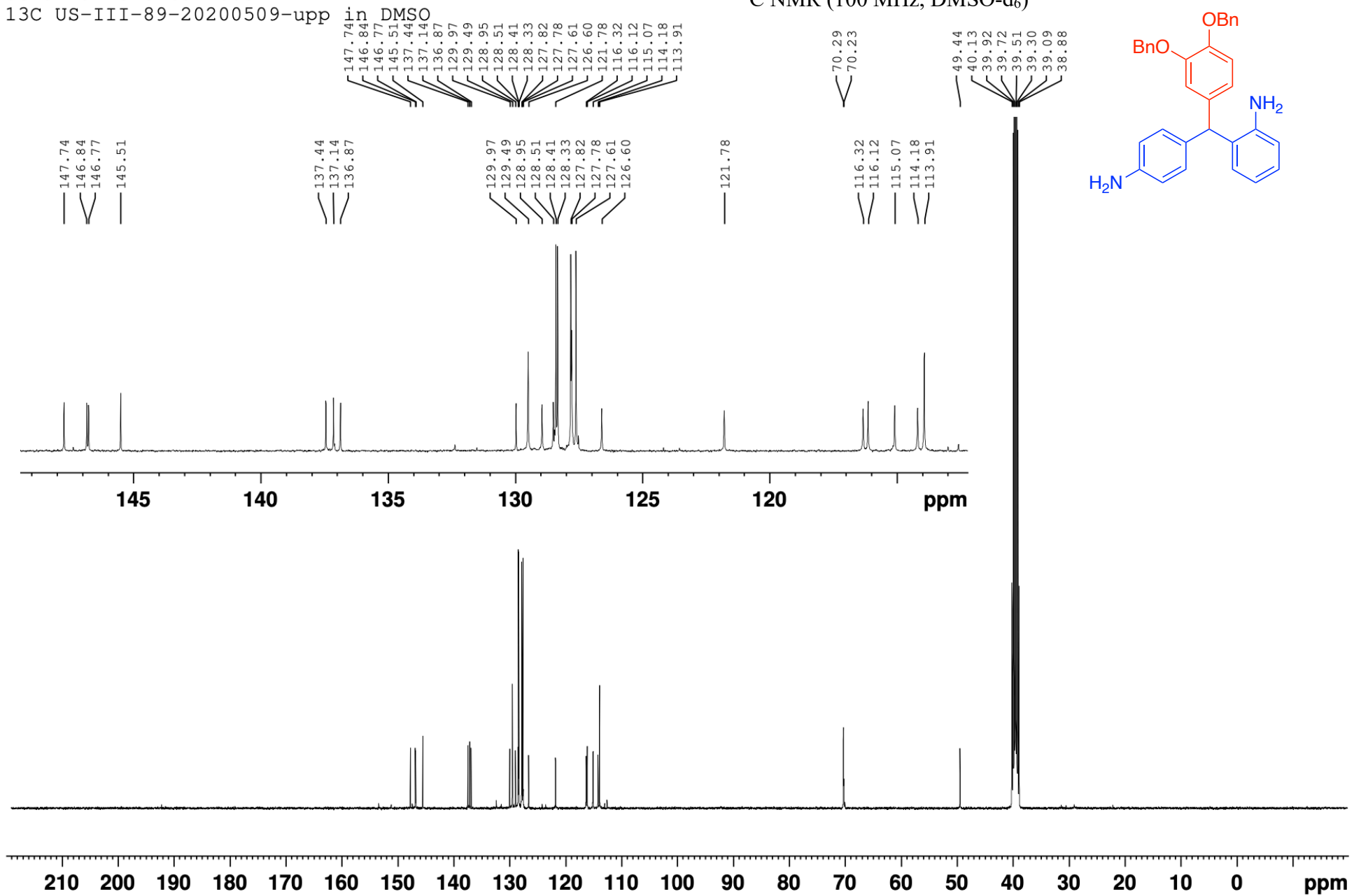
2-((4-Aminophenyl)(3,4-bis(benzyloxy)phenyl)methyl)aniline (4i)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 3-8-63 No.3

13C US-III-89-20200509-upp

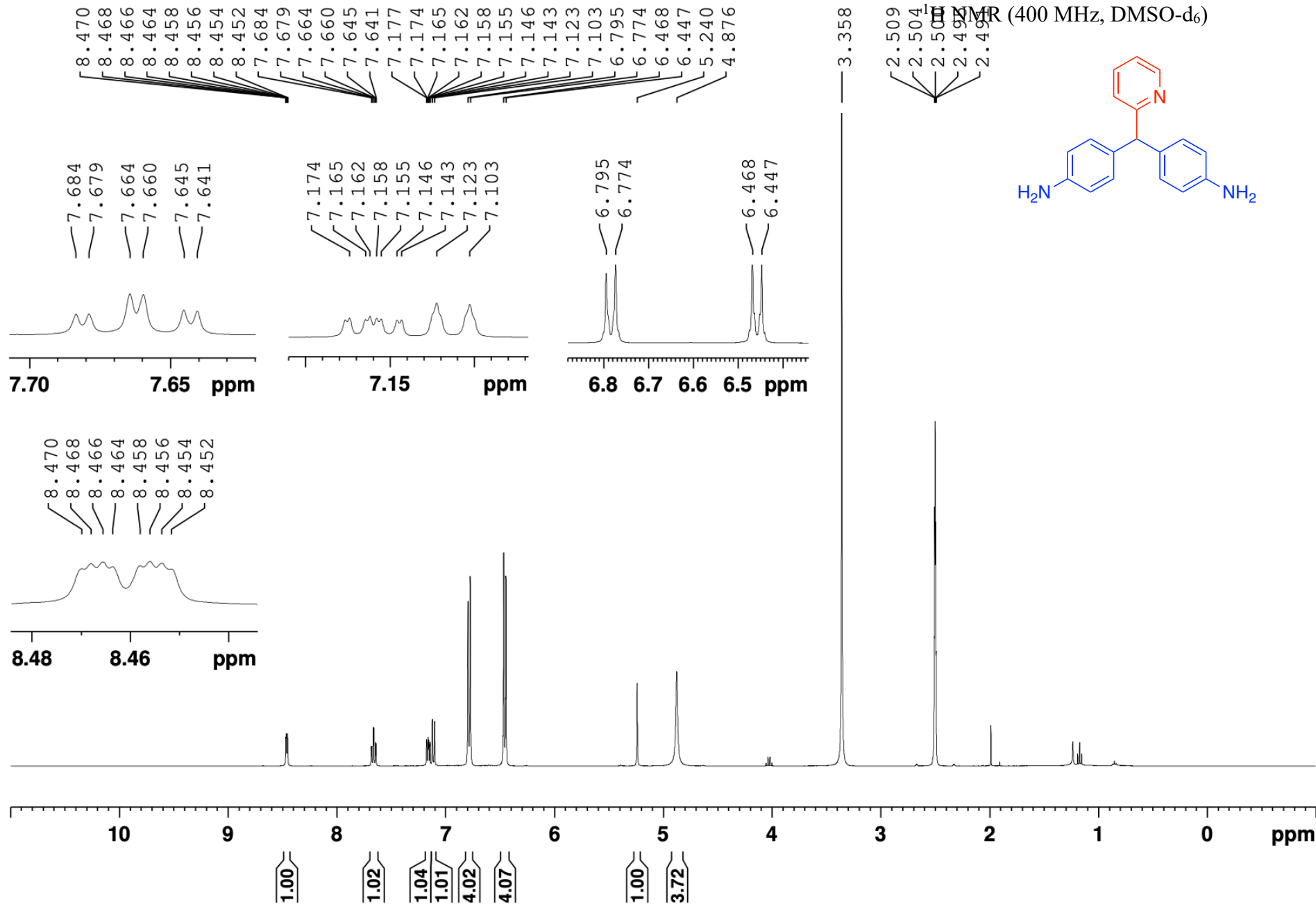
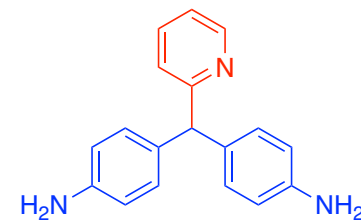
2-((4-Aminophenyl)(3,4-bis(benzyloxy)phenyl)methyl)aniline (4i)

¹³C NMR (100 MHz, DMSO-d₆)

Nipaphorn 5-3-63 No.3
NPNV-13-2020(5) in DMSO

4,4'-(Pyridin-2-ylmethylene)dianiline (3j)

¹H NMR (400 MHz, DMSO-d₆)

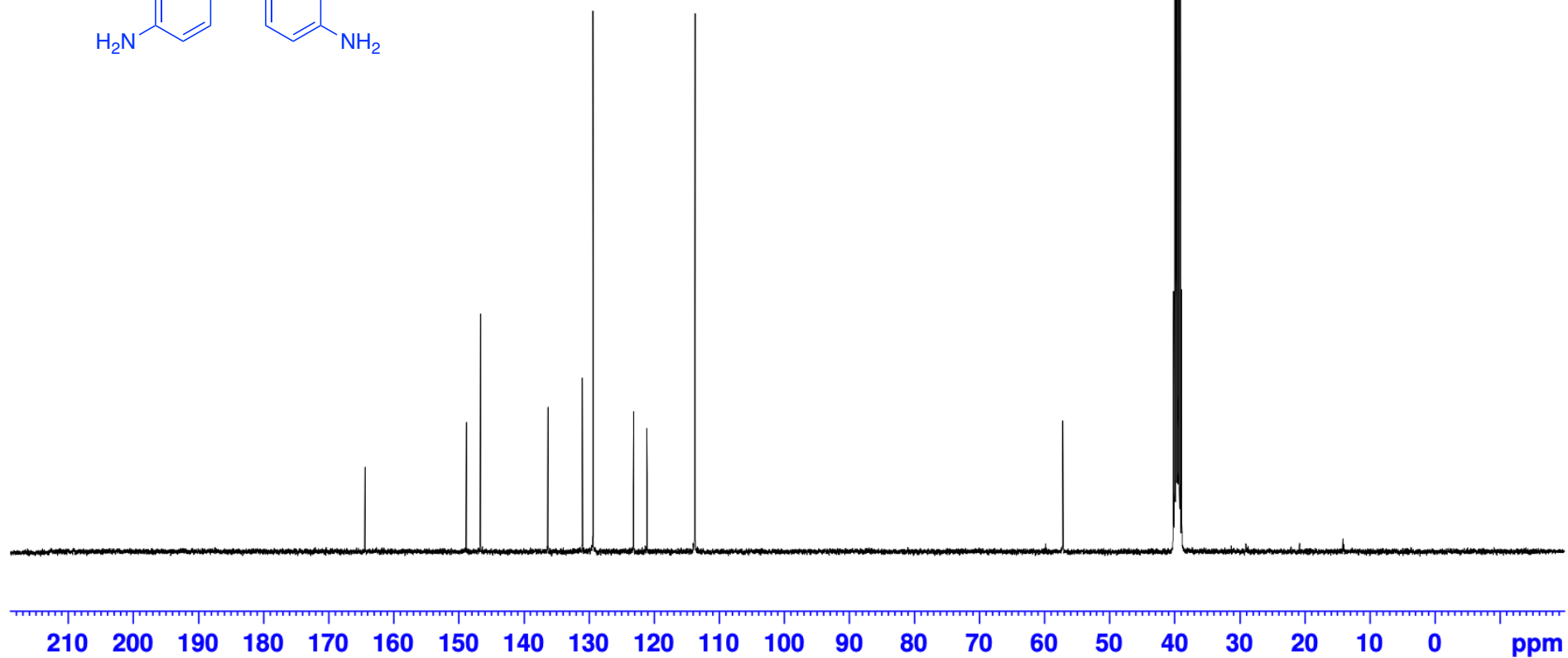
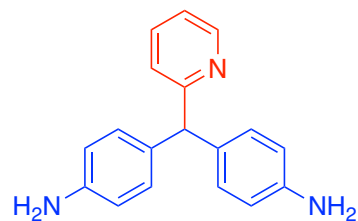


Nipaphorn 12-3-63 No.1
13C NPNV-13-2020(5) in DMSO



4,4'-(Pyridin-2-ylmethylene)dianiline (3j)

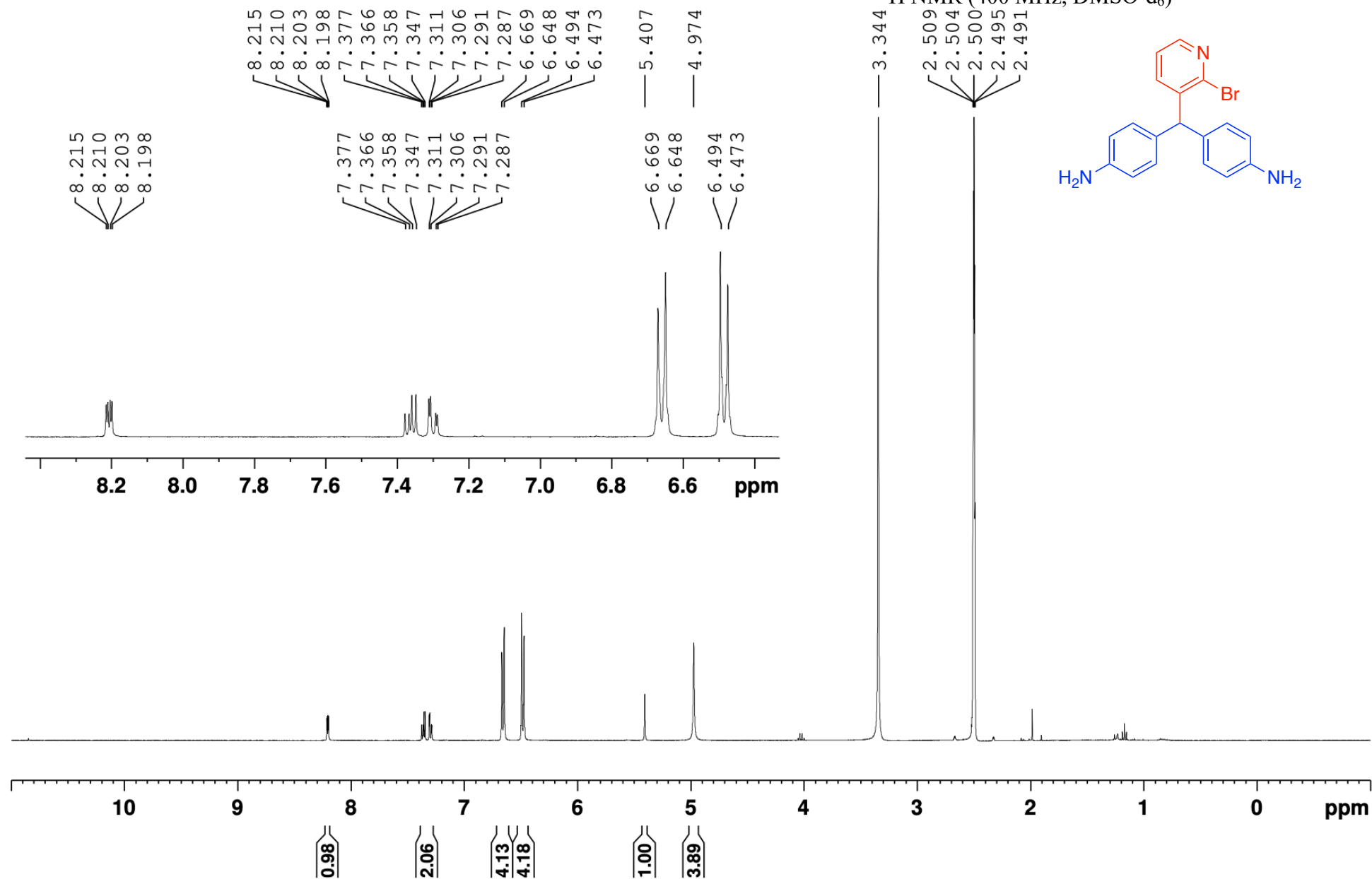
¹³C NMR (100 MHz, DMSO-d₆)



Uthaiwan 1-6-63 No.2
US-III-71-20200422-down in DMSO

4,4'-((2-Bromopyridin-3-yl)methylene)dianiline (3k)

¹H NMR (400 MHz, DMSO-d₆)

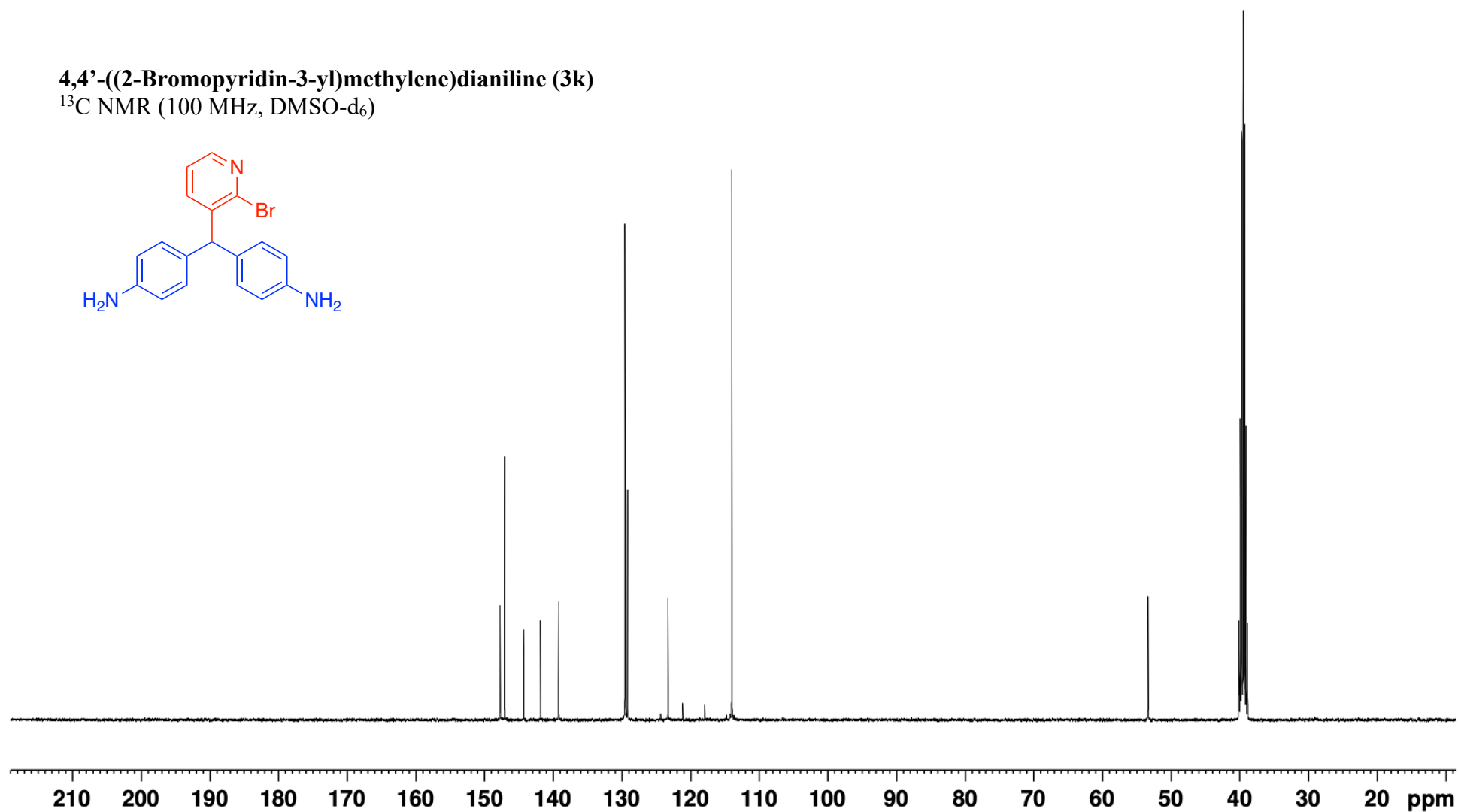
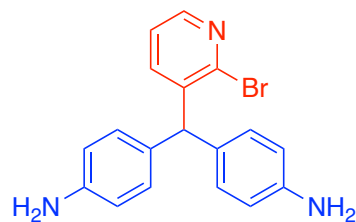


Uthaiwan 23-6-63 No.4

 ^{13}C US-III-71-20200422-down in DMSO147.74
147.08
144.31
141.86
139.22129.56
129.19
123.28

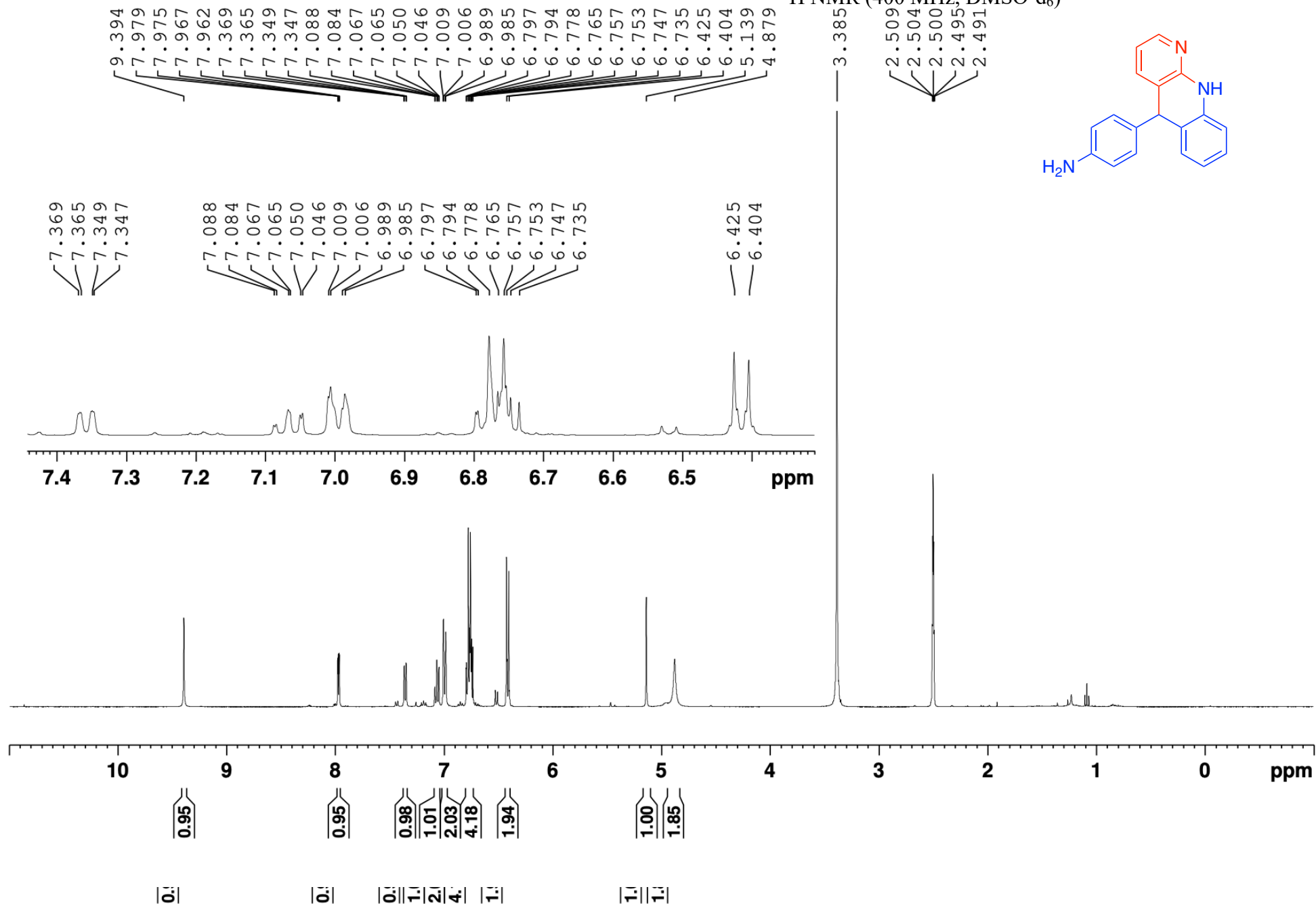
113.99

53.37

40.13
39.92
39.72
39.51
39.30
39.09
38.88**4,4'-((2-Bromopyridin-3-yl)methylene)dianiline (3k)** ^{13}C NMR (100 MHz, DMSO- d_6)

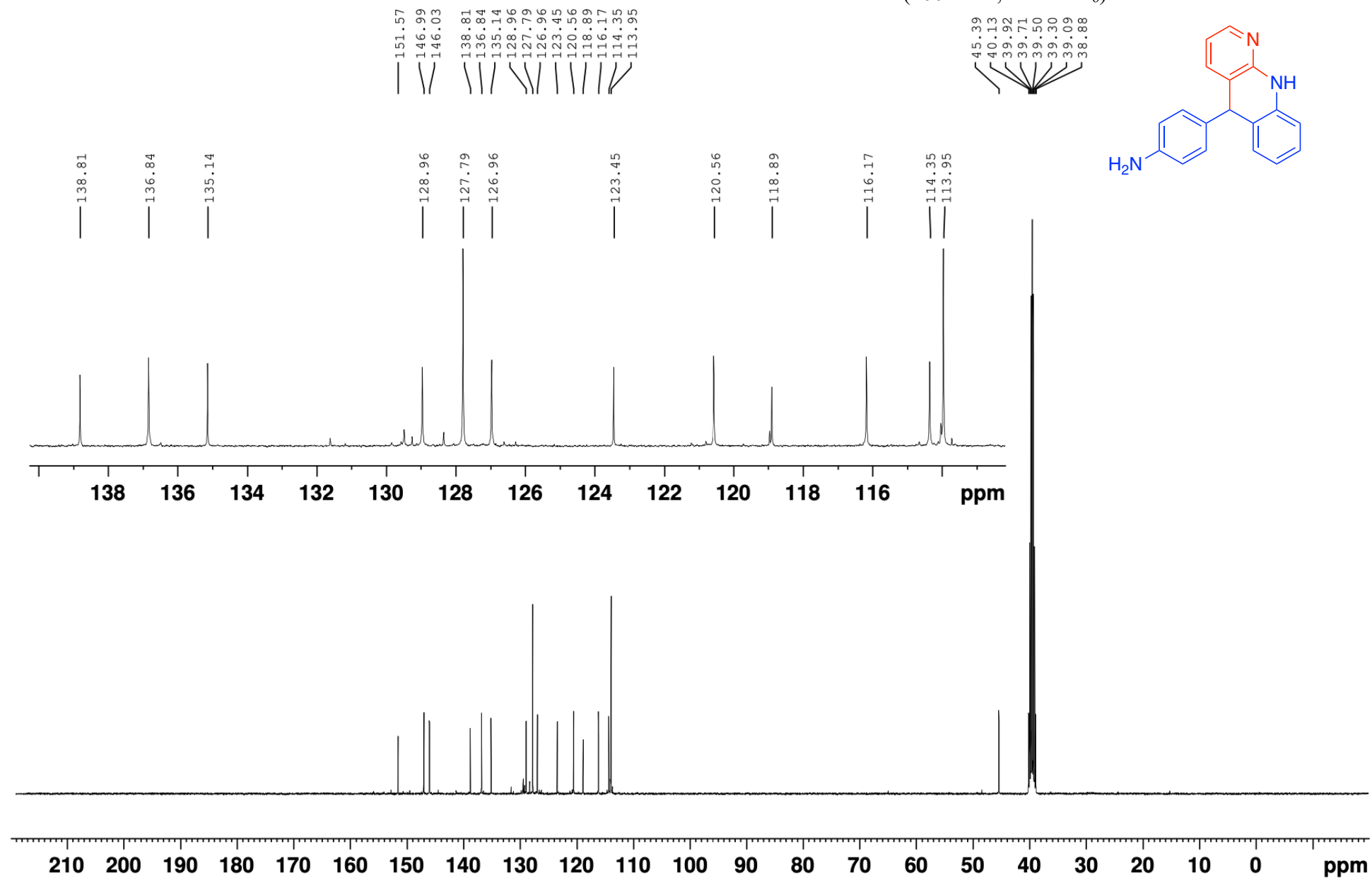
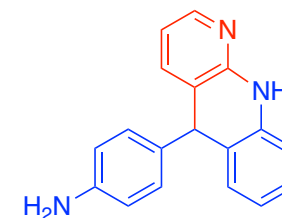
Uthaiwan 29-4-63 No.5
US-III-71-20200422-up in DMSO

4-(5,10-Dihydrobenzo[b][1,8]naphthyridine-5-yl)aniline (4k)
¹H NMR (400 MHz, DMSO-d₆)



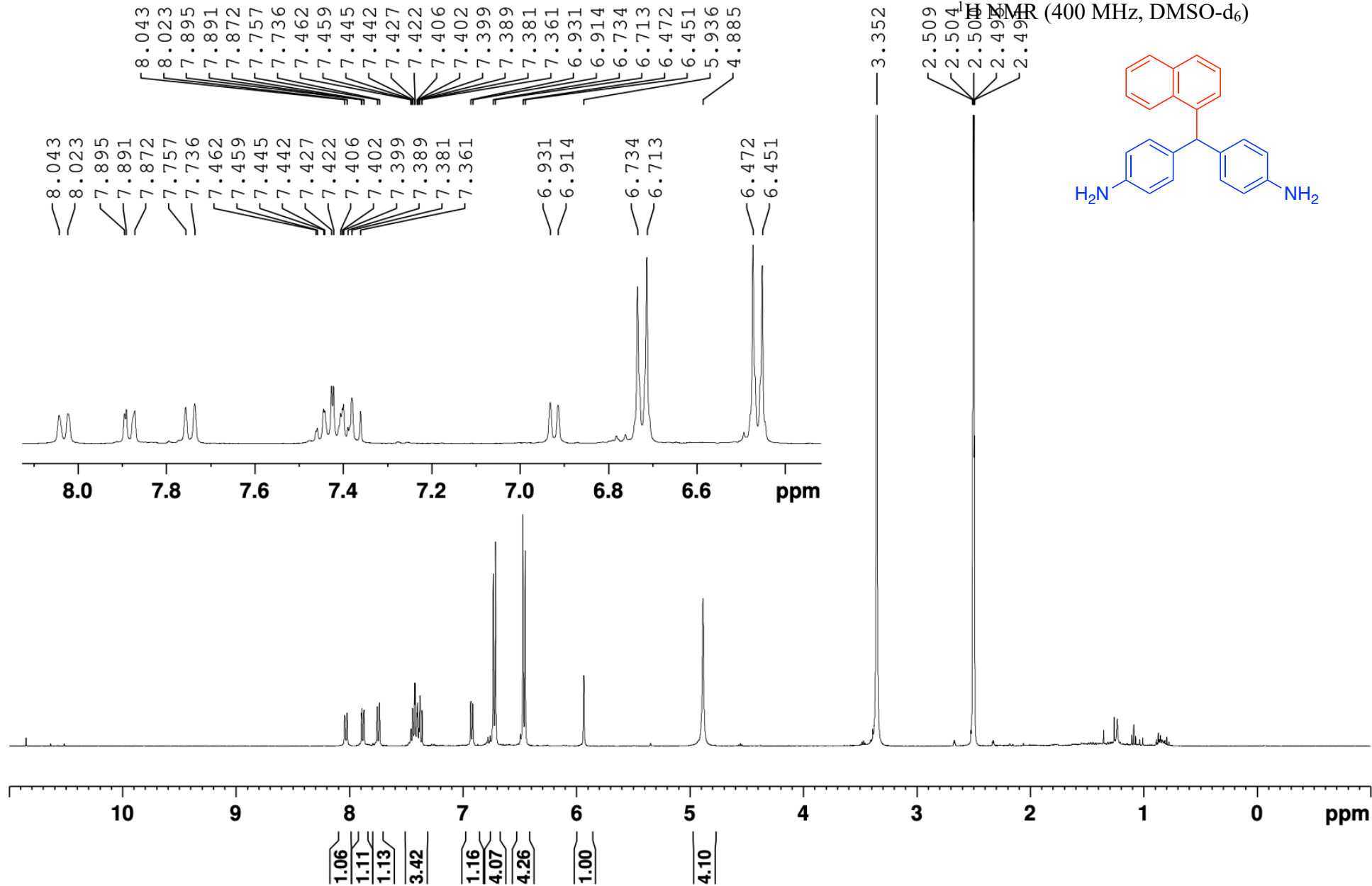
Uthaiwan 13-5-63 No.4
13C US-III-71-20200422-up in DMSO

4-(5,10-Dihydrobenzo[b][1,8]naphthyridine-5-yl)aniline (4k)
¹³C NMR (100 MHz, DMSO-d₆)

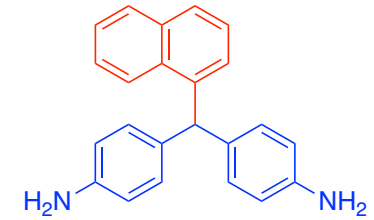


Uthaiwan 19-6-63 No.2

US-III-93-20200519-down in DMSO

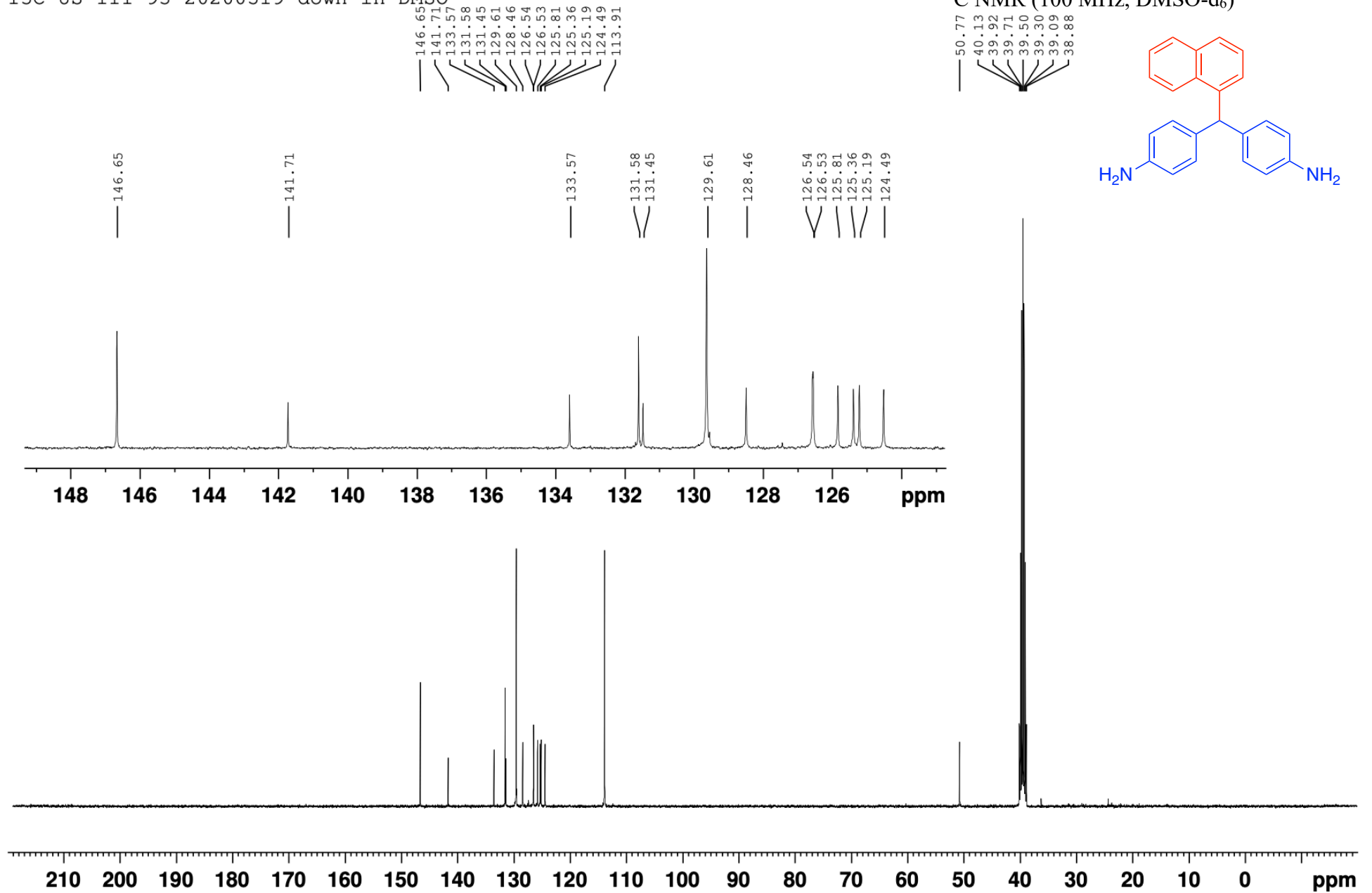
4,4'-(Naphthalen-1-ylmethylene)dianiline (3l)¹H NMR (400 MHz, DMSO-d₆)

4,4'-(Naphthalen-1-ylmethylene)dianiline (3l)

¹³C NMR (100 MHz, DMSO-d₆)

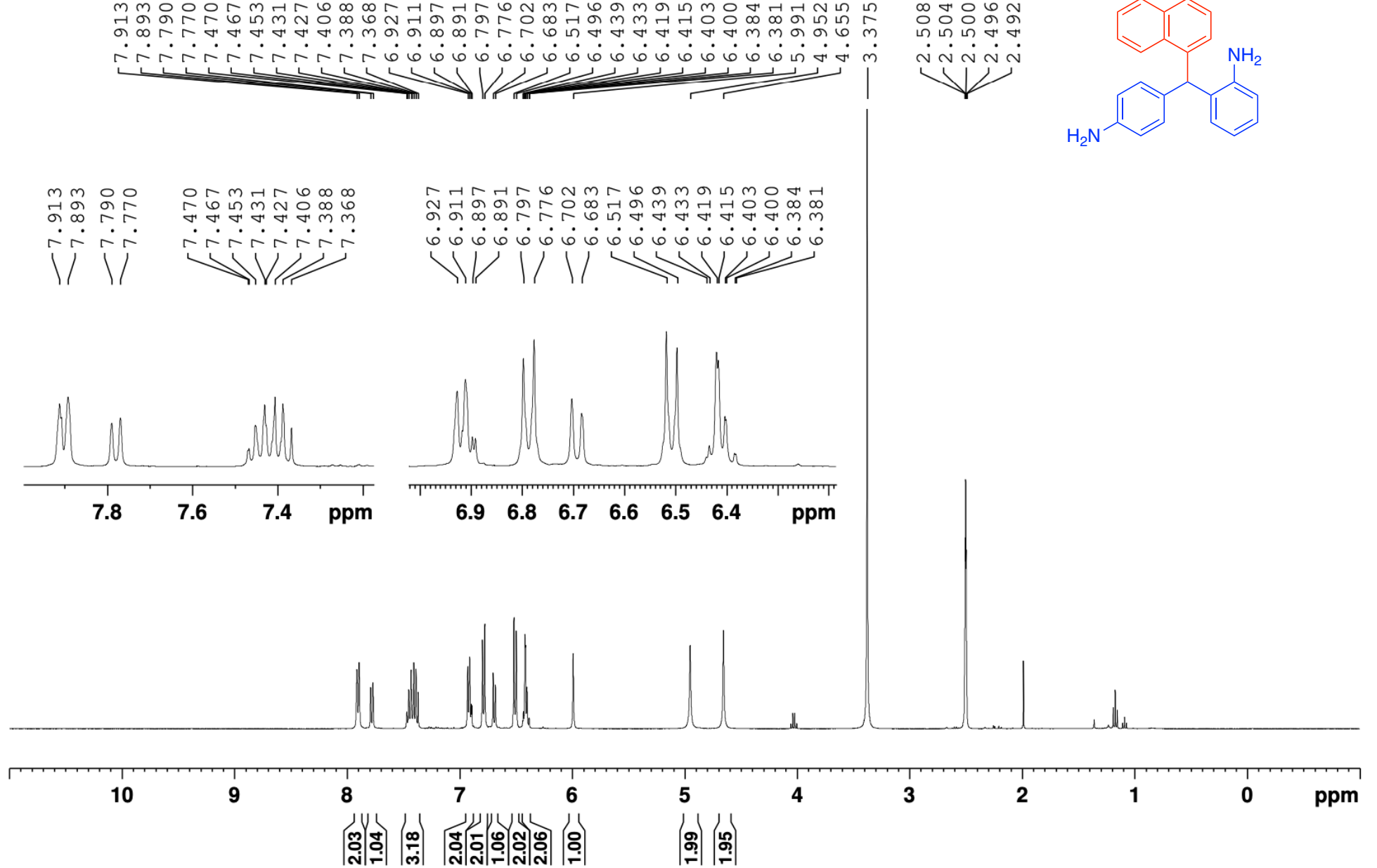
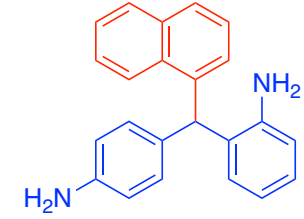
Uthaiwan 23-6-63 No.1

13C US-III-93-20200519-down in DMSO



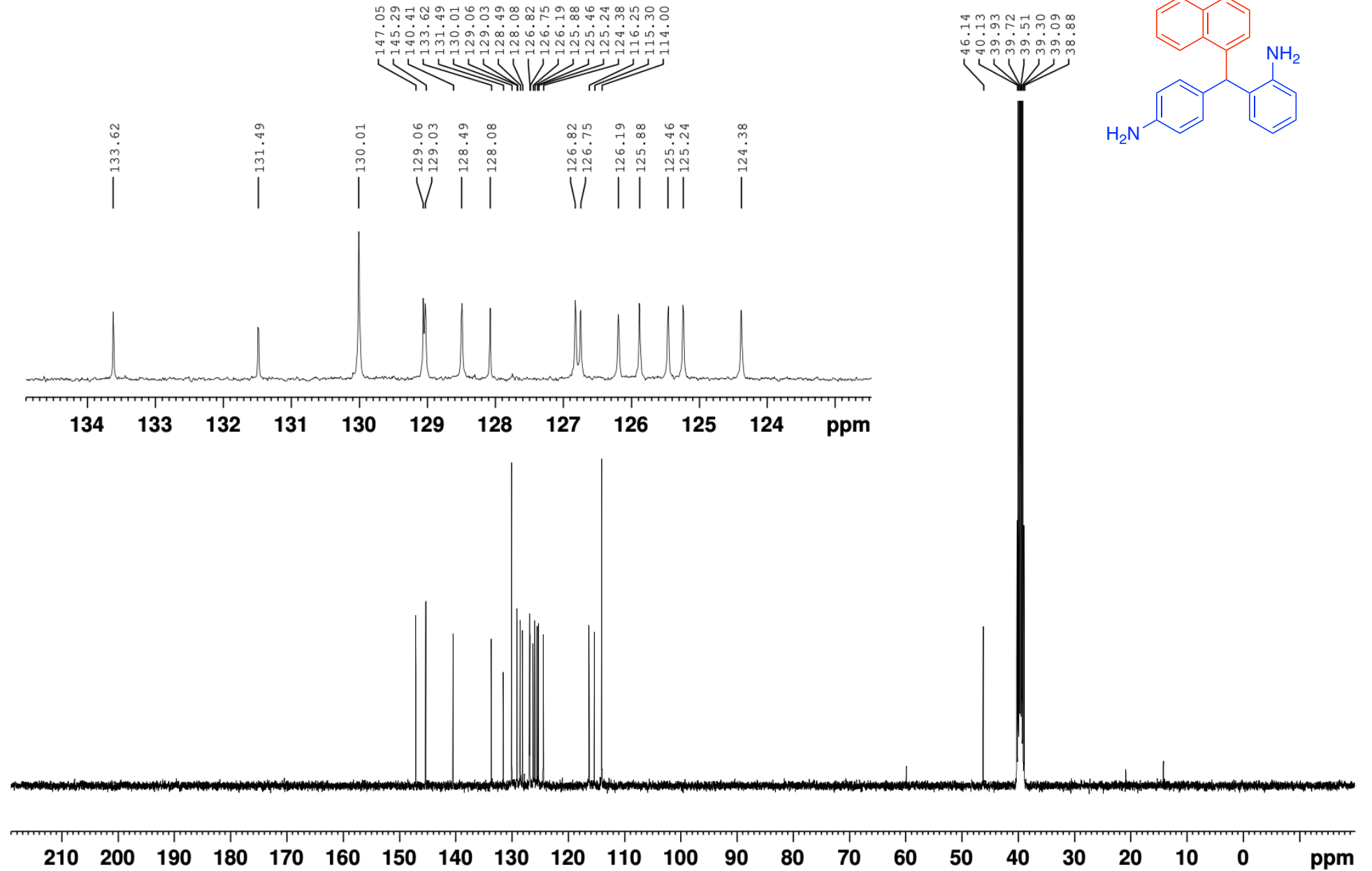
Uthaiwan 1-6-63 No.5
 US-III-93-20200519-up in DMSO

2-((4-Aminophenyl)(naphthalen-1-yl)methyl)aniline (4l)
¹H NMR (400 MHz, DMSO-d₆)



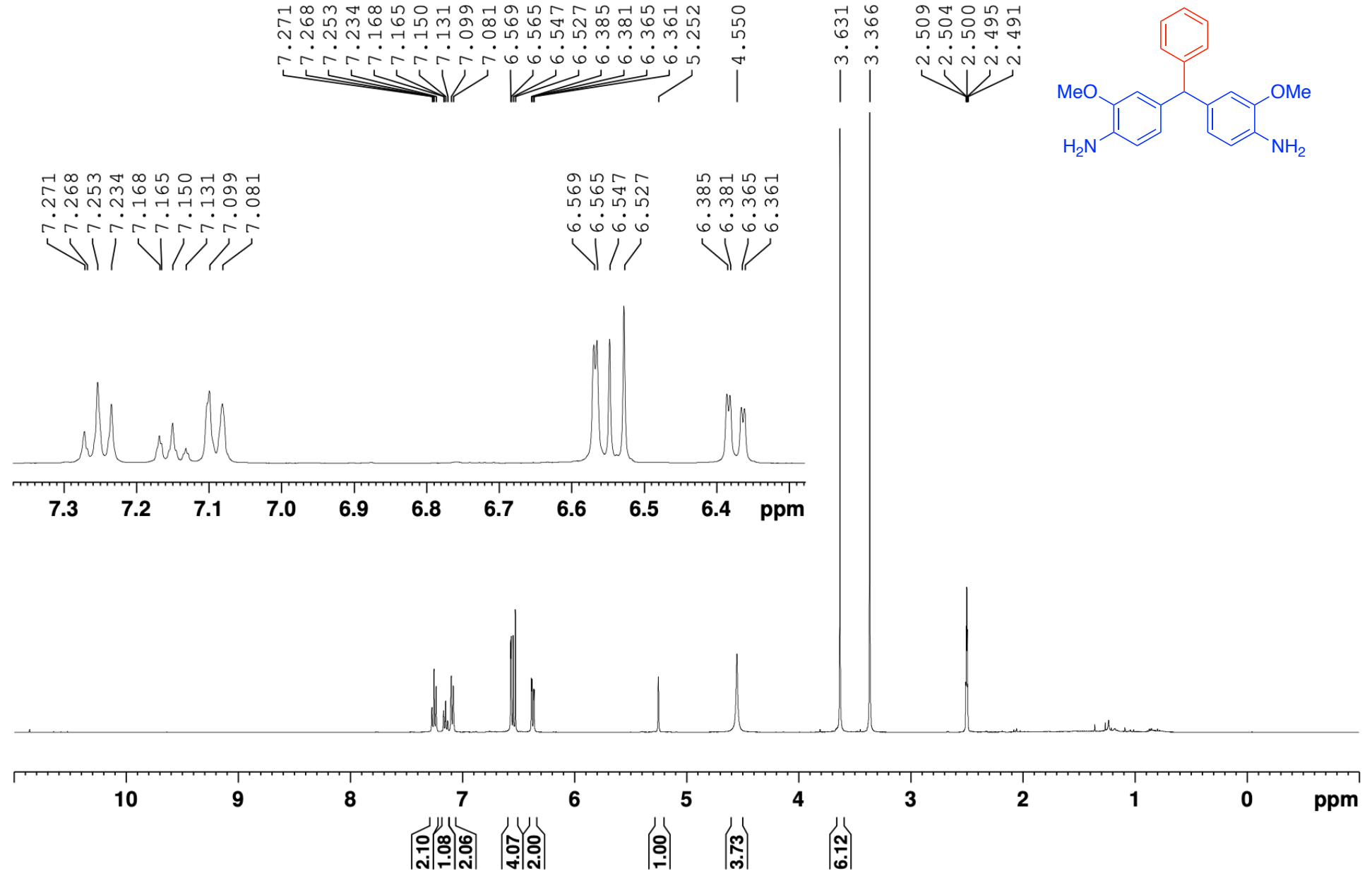
Uthaiwan 4-6-63 No.3
13C US-III-93-20200519-up in DMSO

2-((4-Aminophenyl)(naphthalen-1-yl)methyl)aniline (4I)
¹³C NMR (100 MHz, DMSO-d₆)

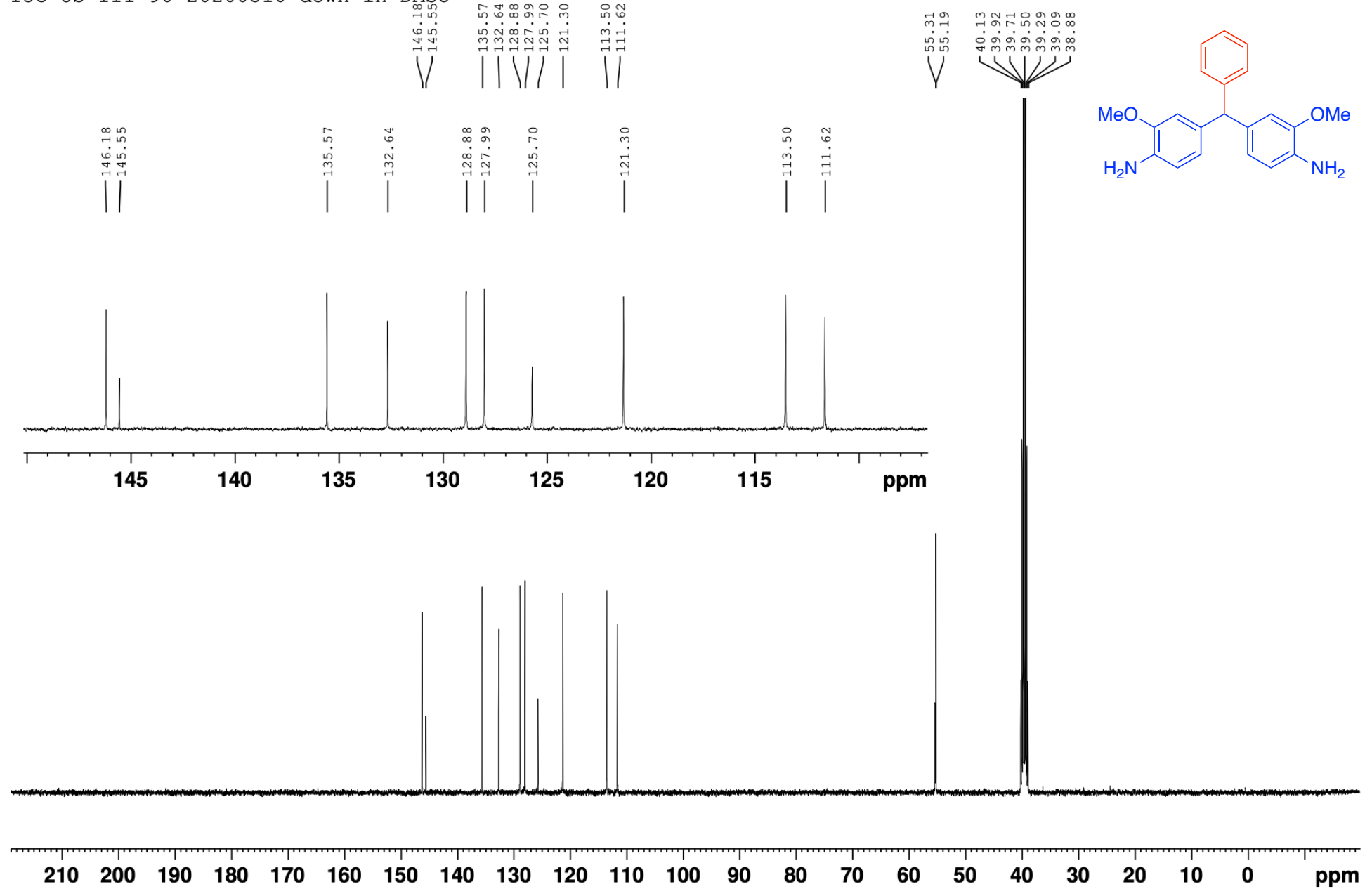


Uthaiwan 16-6-63 No.2
US-III-90-20200510-down in DMSO

4,4'-(Phenylmethylene)bis(2-methoxyaniline) (3m)
¹H NMR (400 MHz, DMSO-d₆)

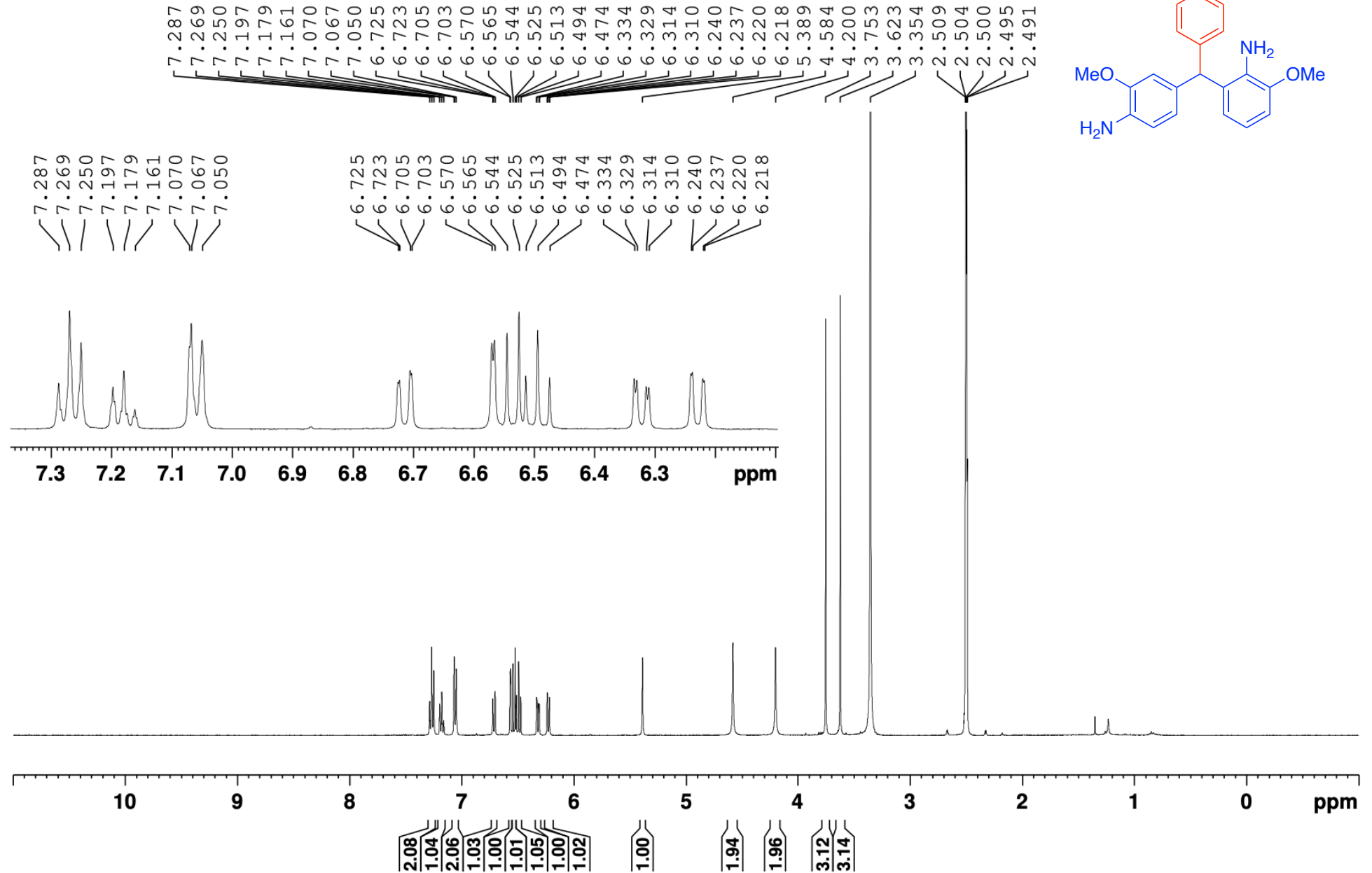


Uthaiwan 18-6-63 No.4

 ^{13}C US-III-90-20200510-down in DMSO

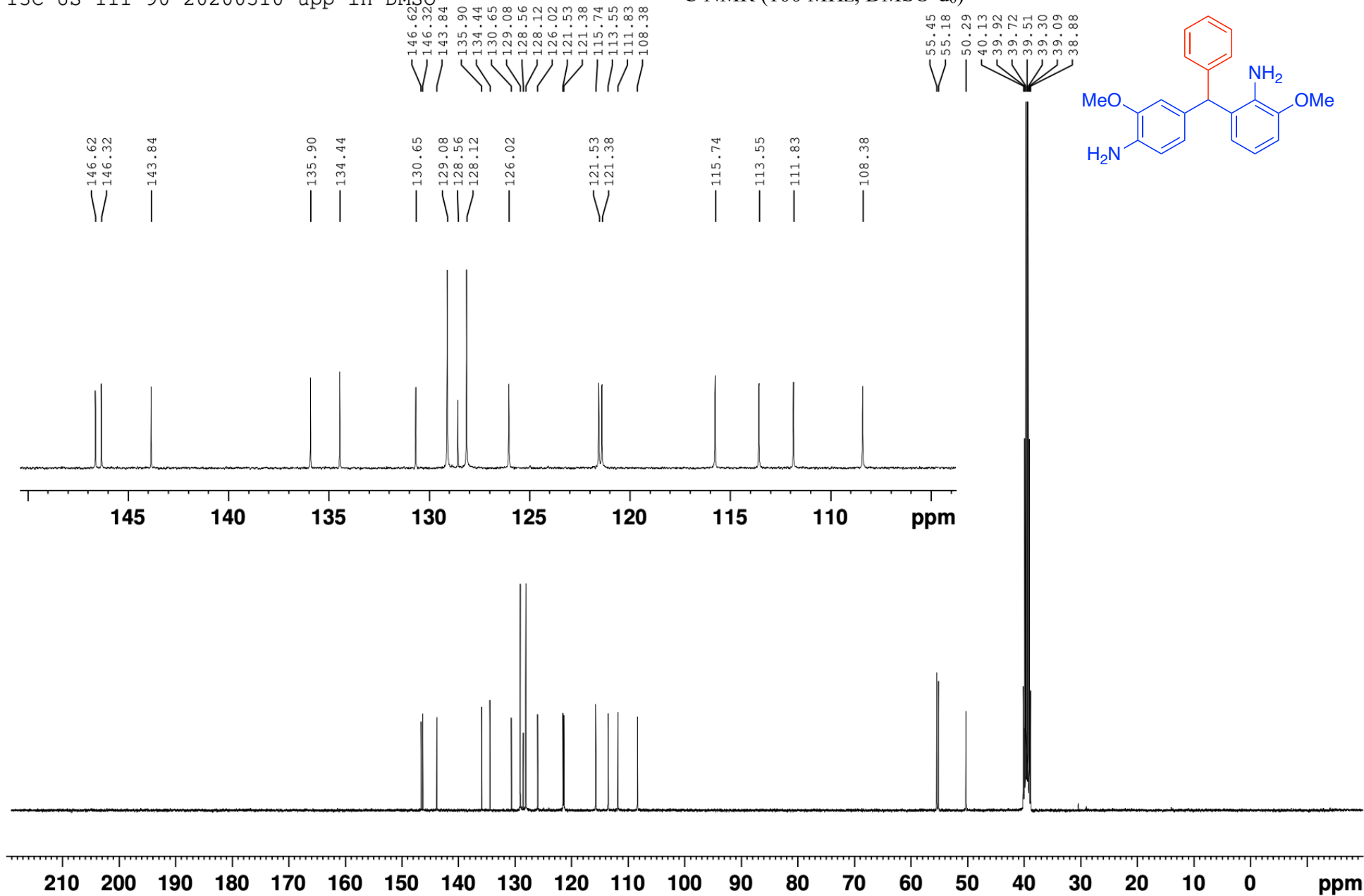
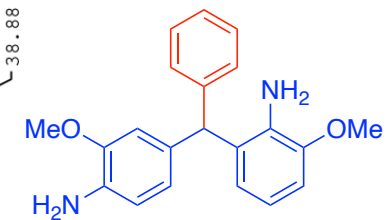
Uthaiwan 25-6-63 No.3
US-III-90-20200510-upp in DMSO

4-((2-Amino-3-methoxyphenyl)(phenyl)methyl)-2-methoxyaniline (4m)
¹H NMR (400 MHz, DMSO-d₆)



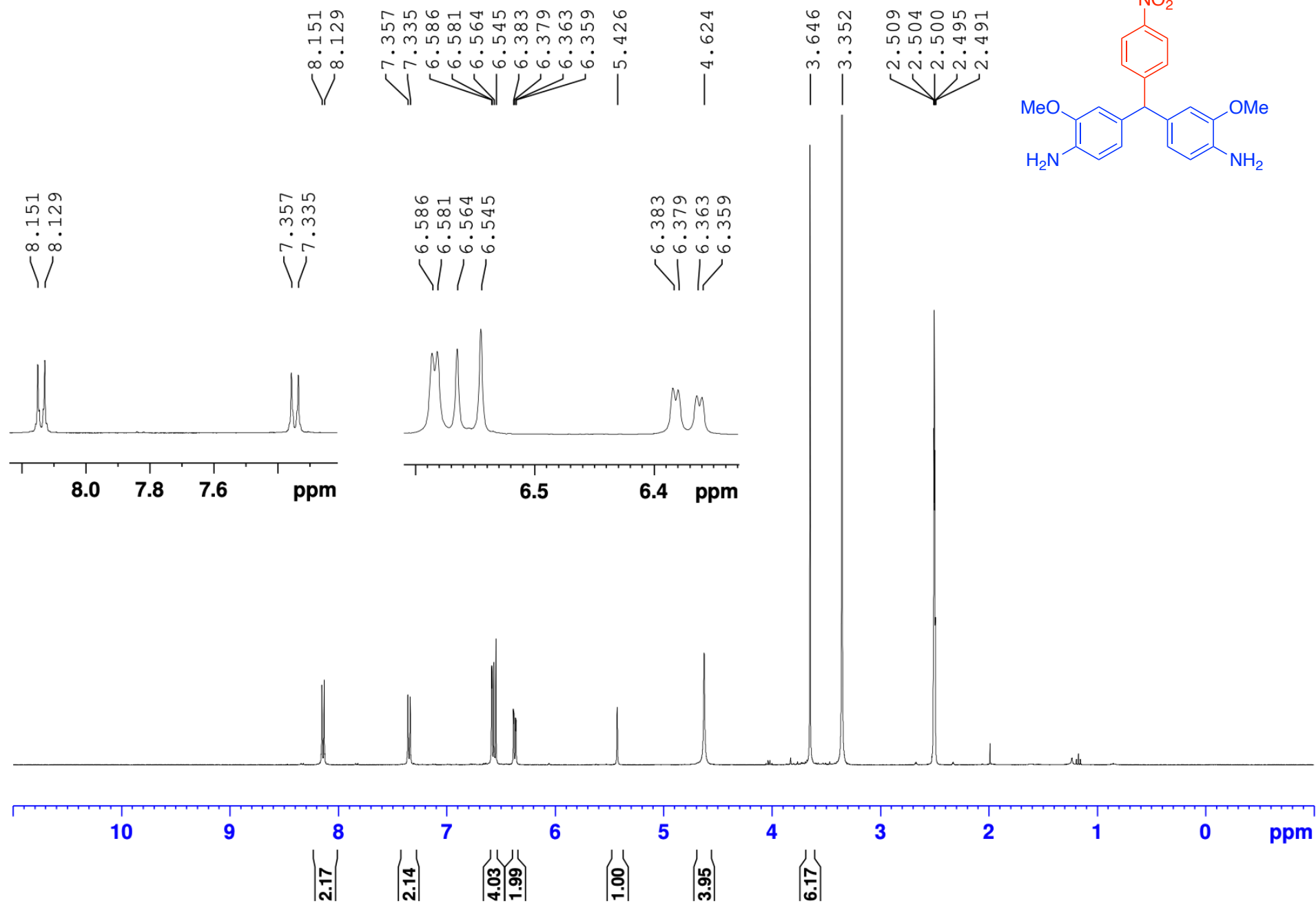
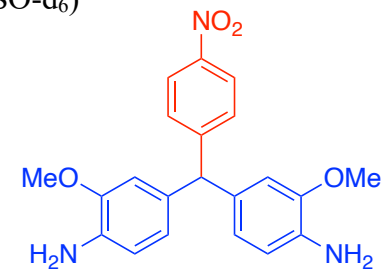
Uthaiwan 29-6-63 No.1
13C US-III-90-20200510-upp in DMSO

4-((2-Amino-3-methoxyphenyl)(phenyl)methyl)-2-methoxyaniline (4m)
13C NMR (100 MHz, DMSO-d₆)



Nipaphorn 25-2-63 No.3
NPNV-22-2020 (2) in DMSO

4,4'((4-Nitrophenyl)methylene)bis(2-methoxyaniline) (3n)
¹H NMR (400 MHz, DMSO-d₆)

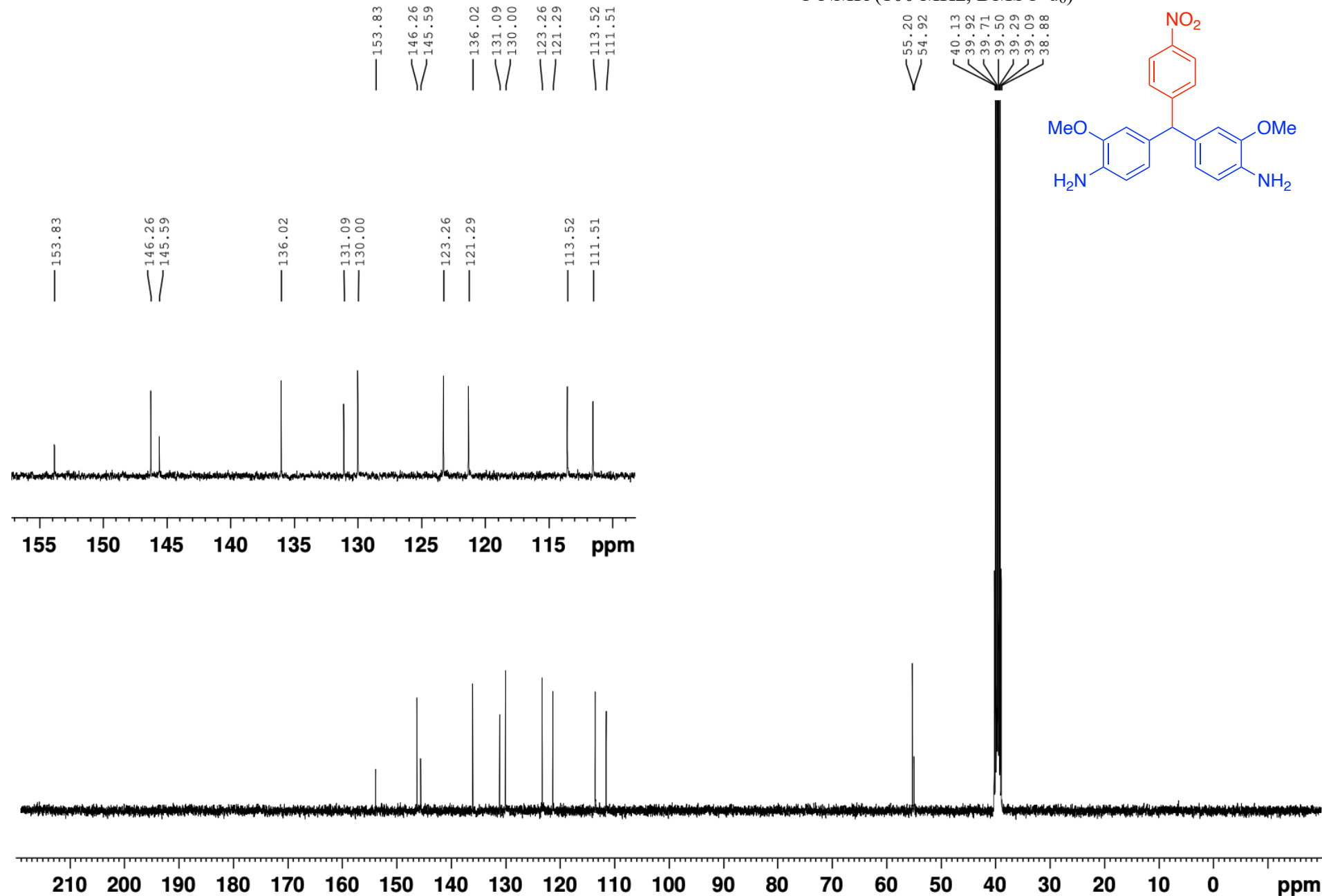


Nipaphorn 3-3-63 No.1
NPNV-22-2020(2) in DMSO

S62

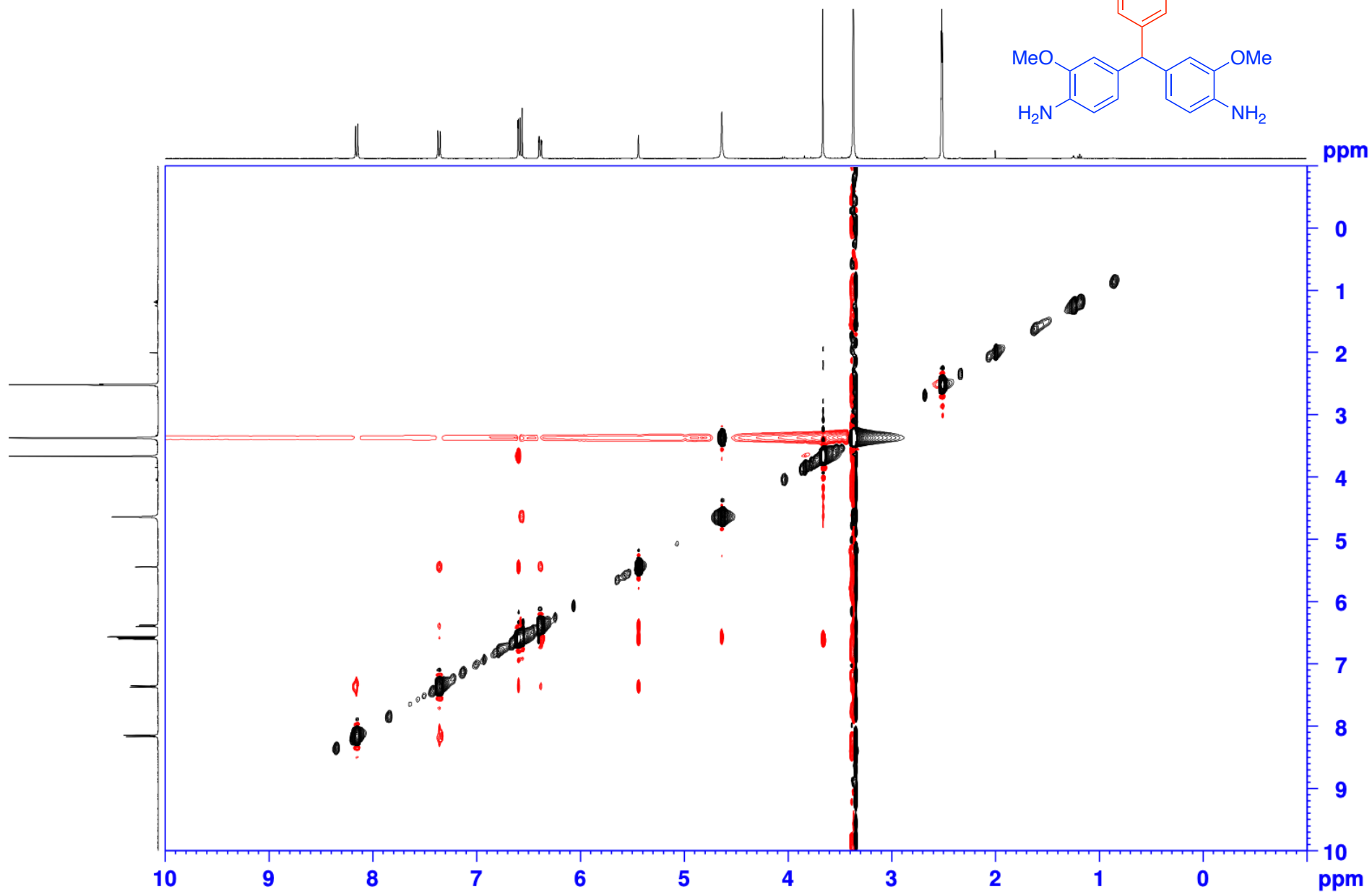
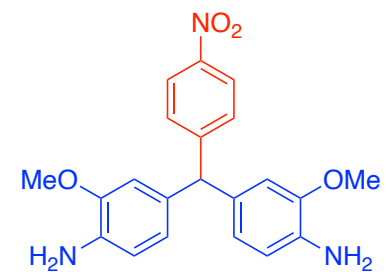
4,4'((4-Nitrophenyl)methylene)bis(2-methoxyaniline) (3n)

^{13}C NMR (100 MHz, DMSO- d_6)



4,4'((4-Nitrophenyl)methylene)bis(2-methoxyaniline) (3n)

Nipaphorn 3-3-63 No.2
NOESY NPNV-22-2020 (2) in DMSO

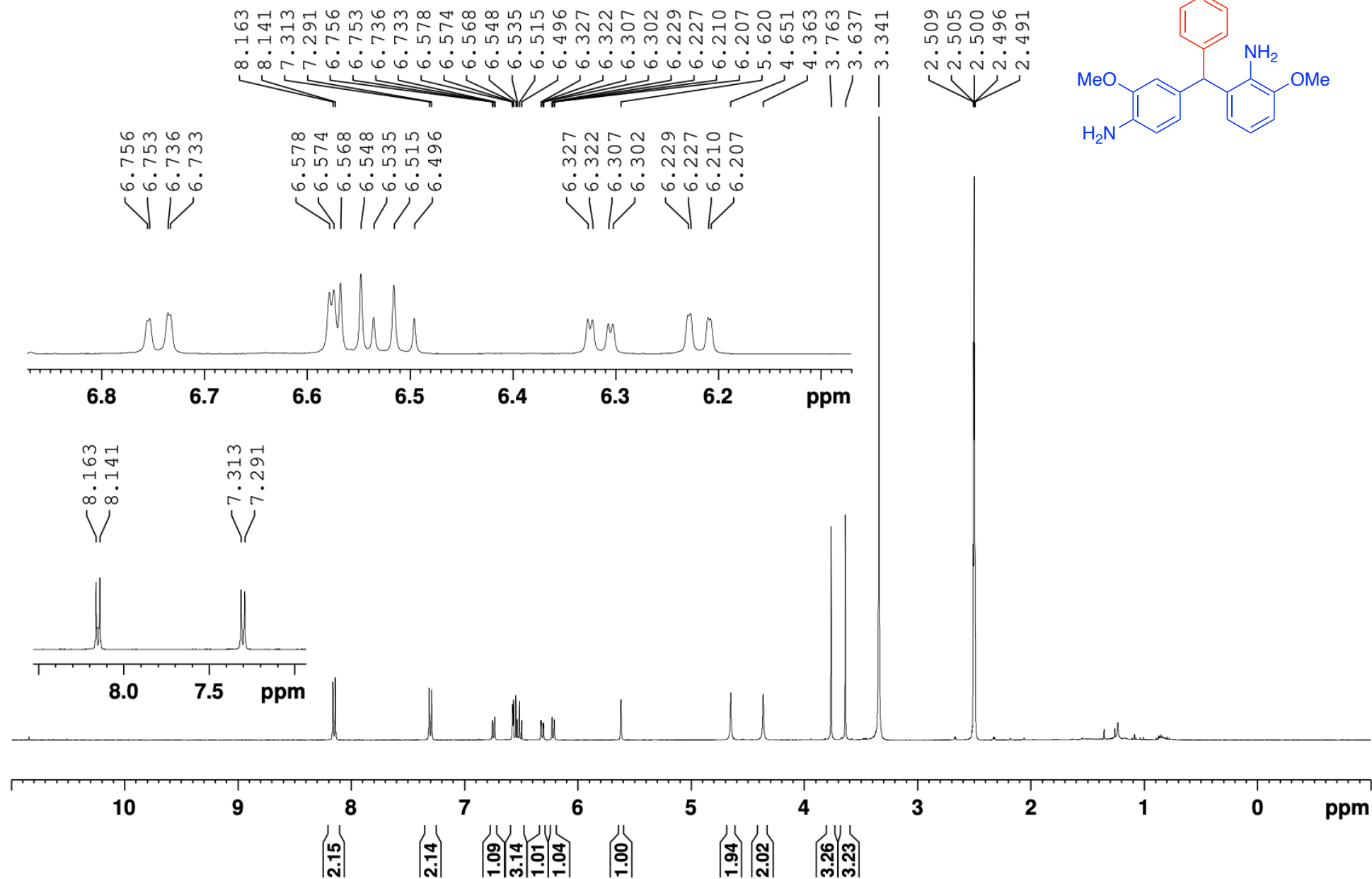


4-((2-Amino-3-methoxyphenyl)(4-nitrophenyl)methyl)-2-methoxyaniline (4n)

 ^1H NMR (400 MHz, DMSO-d_6)

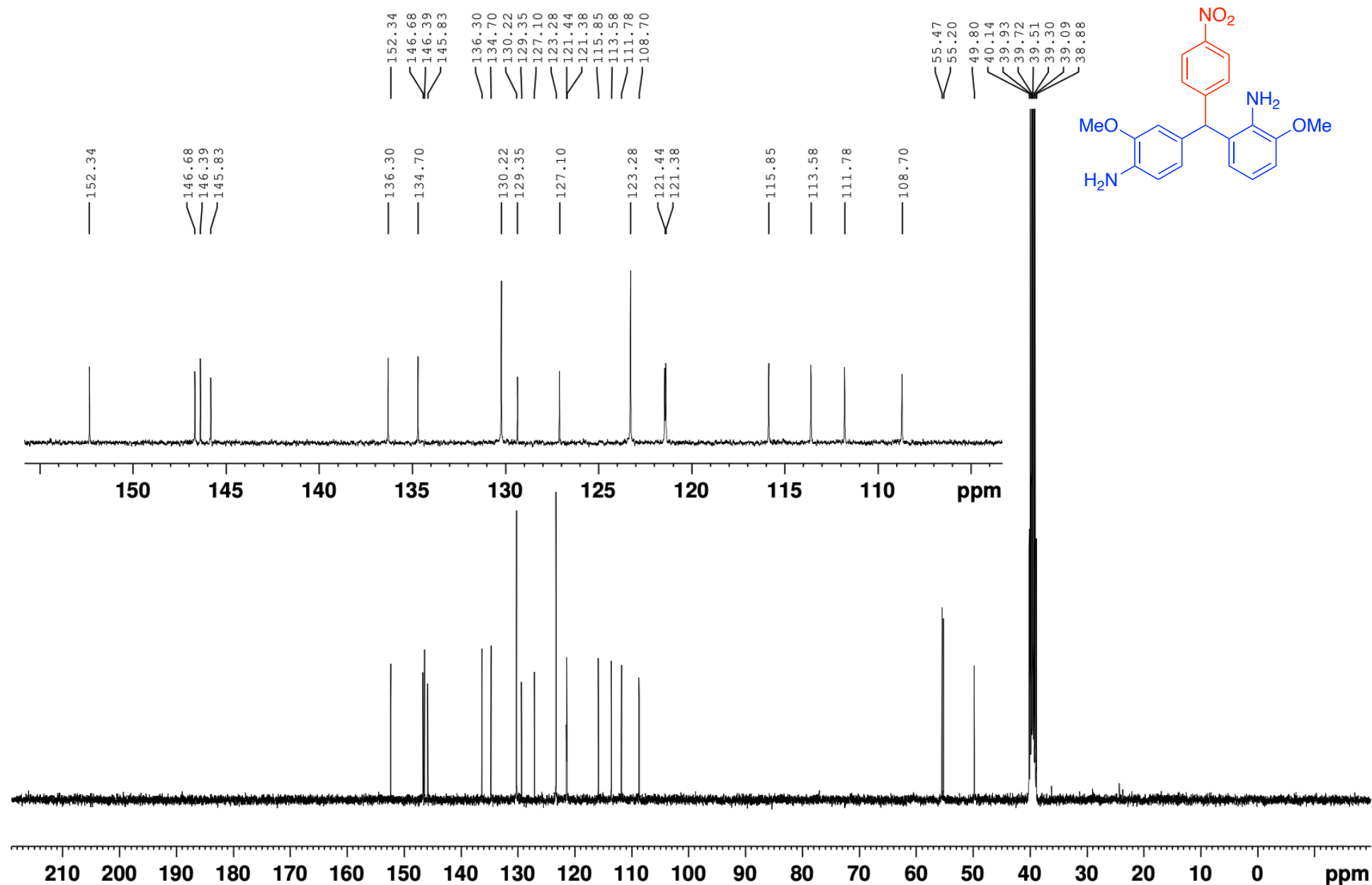
Uthaiwan 15-6-63 No.2

US-III-91-20200510-upp in DMSO



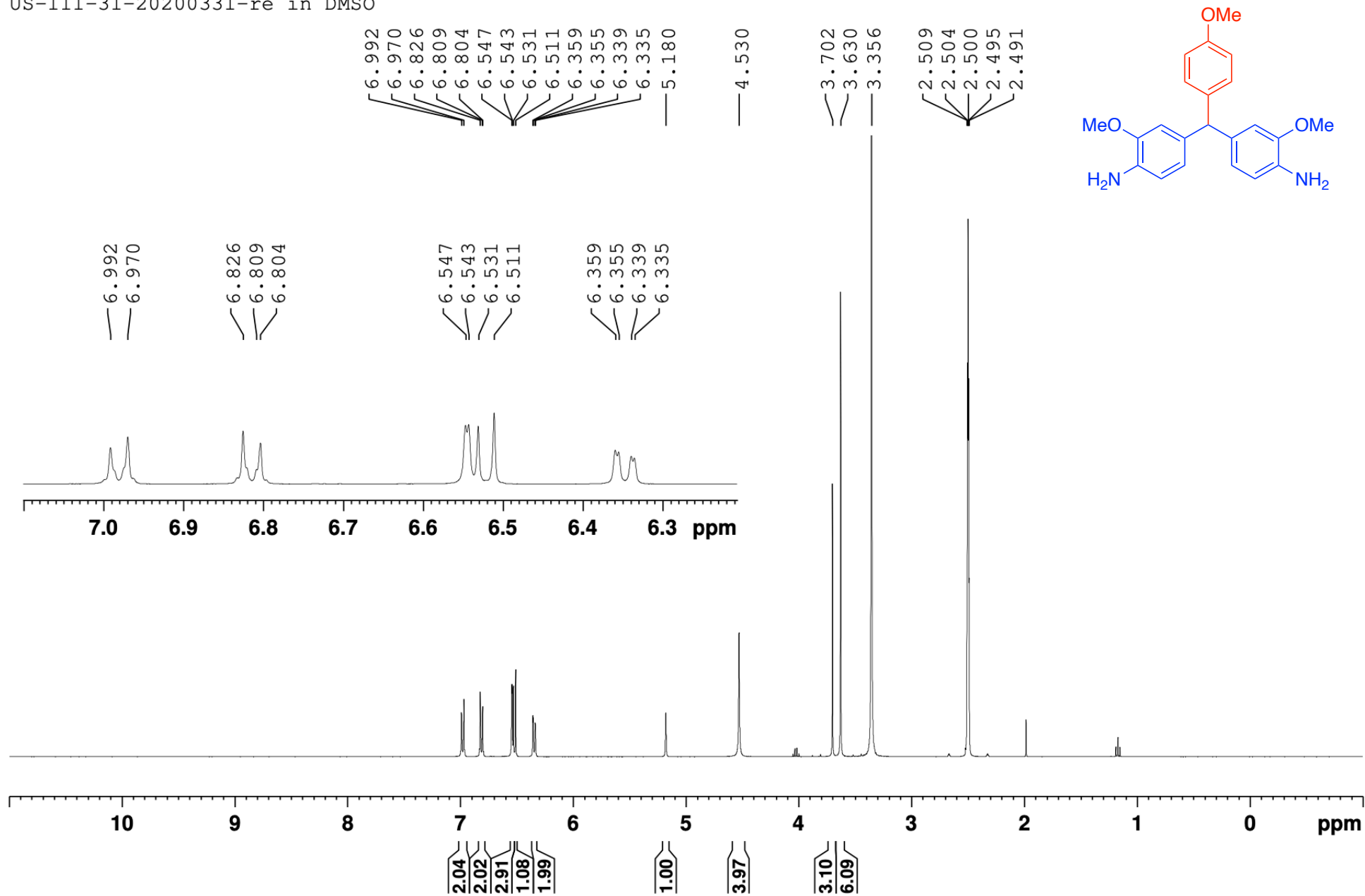
Uthaiwan 18-6-63 No.2
13C US-III-91-20200510-upp in DMSO

4-((2-Amino-3-methoxyphenyl)(4-nitrophenyl)methyl)-2-methoxyaniline (4n)
13C NMR (100 MHz, DMSO-d₆)



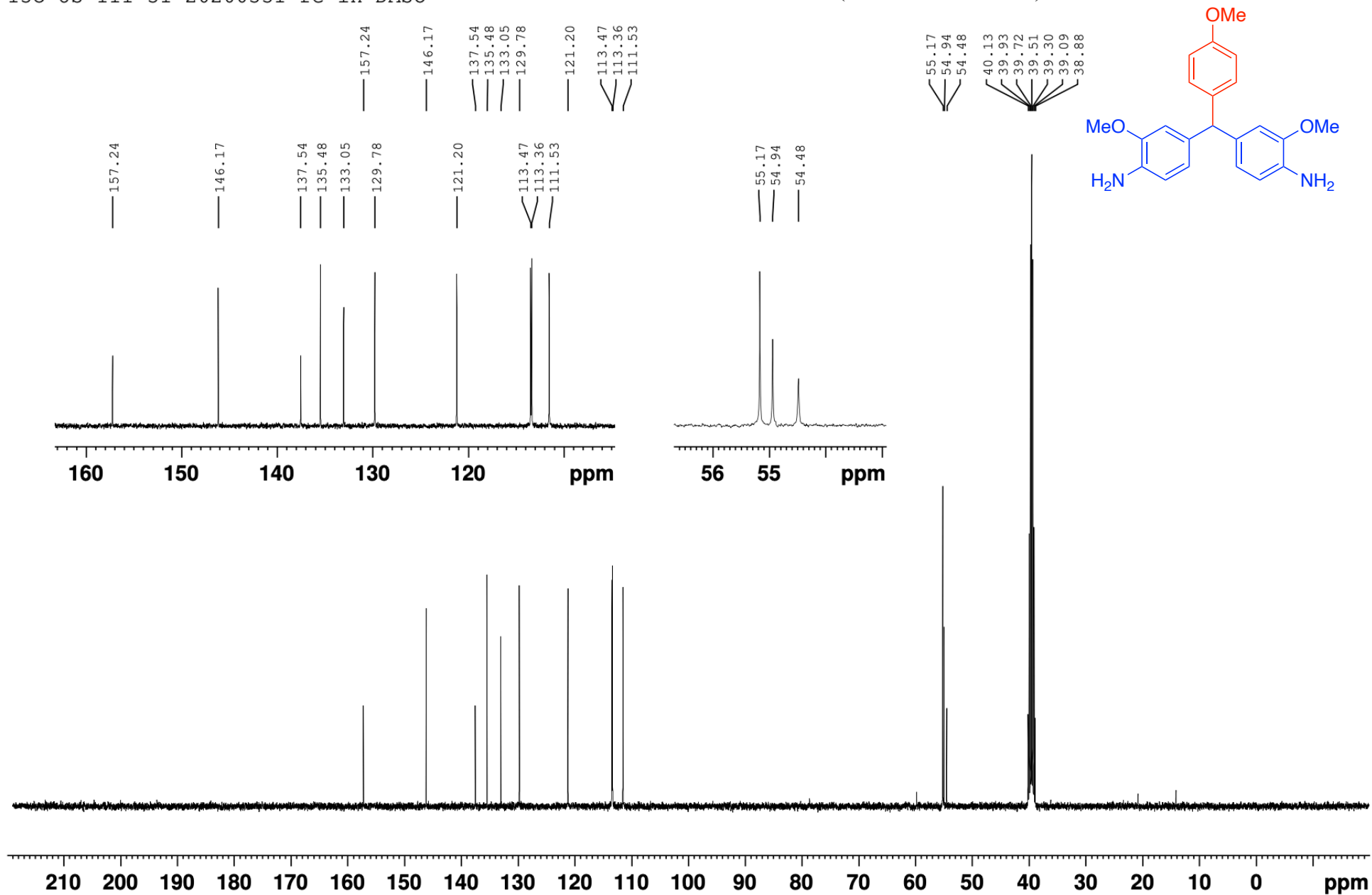
Uthaiwan 15-4-63 No.2
US-III-31-20200331-re in DMSO

4,4'-((4-Methoxyphenyl)methylene)bis(2-methoxyaniline) (3o)
¹H NMR (400 MHz, DMSO-d₆)



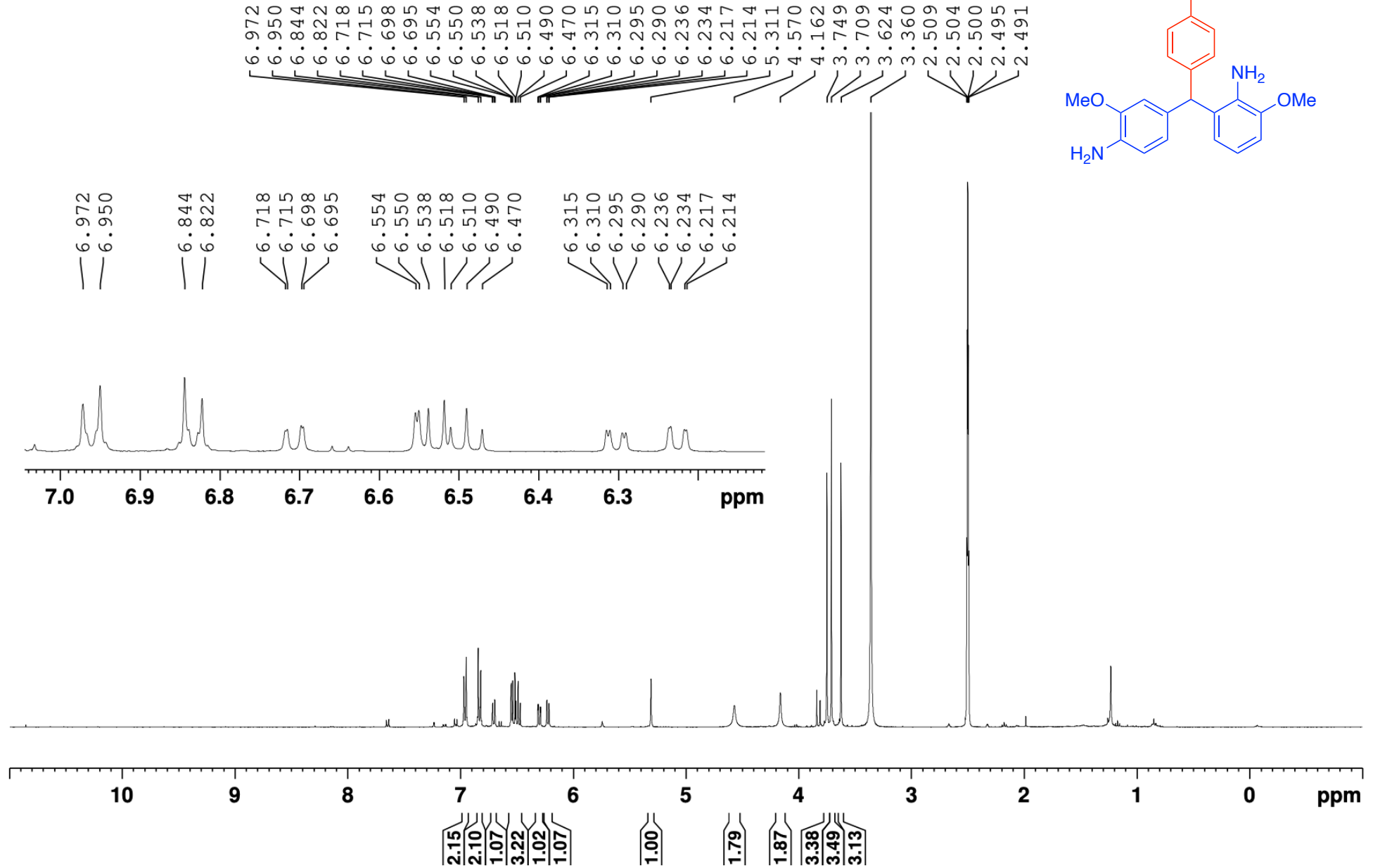
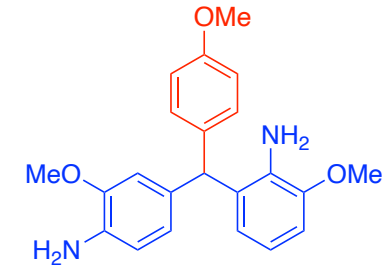
Uthaiwan 17-4-63 No.10
13C US-III-31-20200331-re in DMSO

4,4'-((4-Methoxyphenyl)methylene)bis(2-methoxyaniline) (3o)
¹³C NMR (100 MHz, DMSO-d₆)



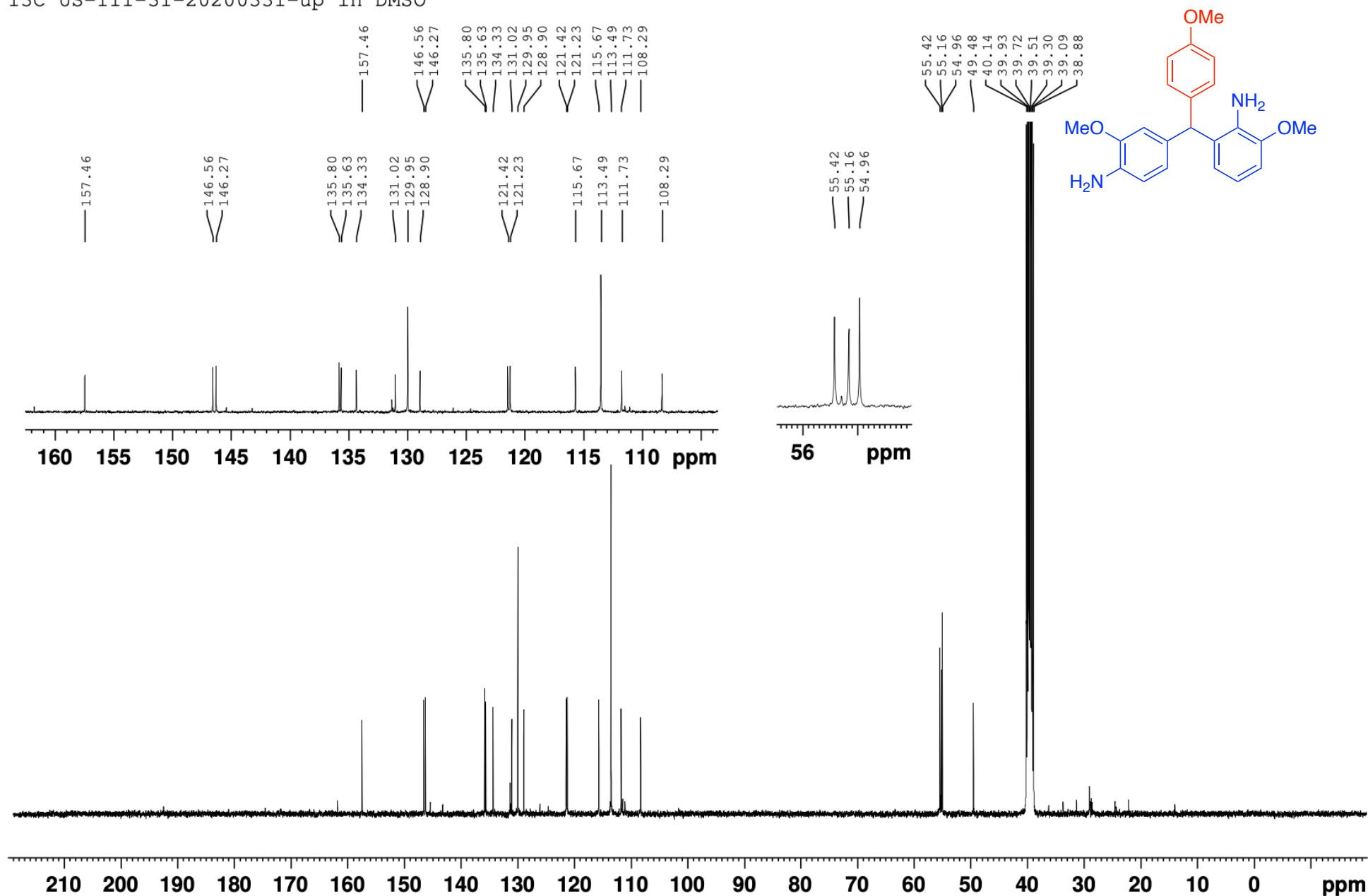
Uthaiwan 15-4-63 No.3
US-III-31-20200331-up in DMSO

4-((2-Amino-3-methoxyphenyl)(4-methoxyphenyl)methyl)12-methoxyaniline (4o)
¹H NMR (400 MHz, DMSO-d₆)



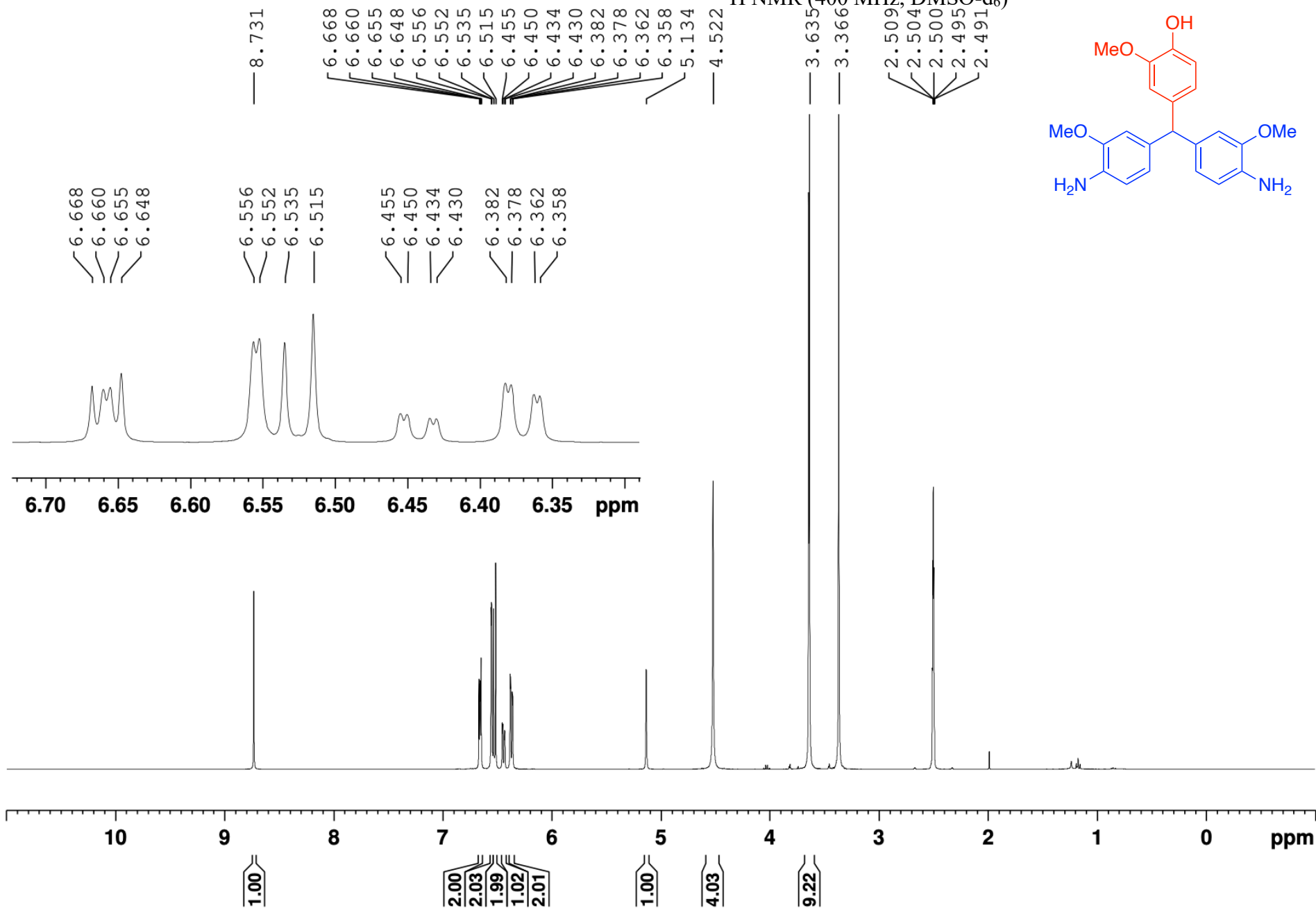
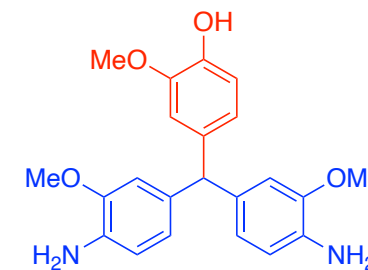
Uthaiwan 19-4-63 No.1
13C US-III-31-20200331-up in DMSO

4-((2-Amino-3-methoxyphenyl)(4-methoxyphenyl)methyl)12-methoxyaniline (4o)
¹³C NMR (100 MHz, DMSO-d₆)



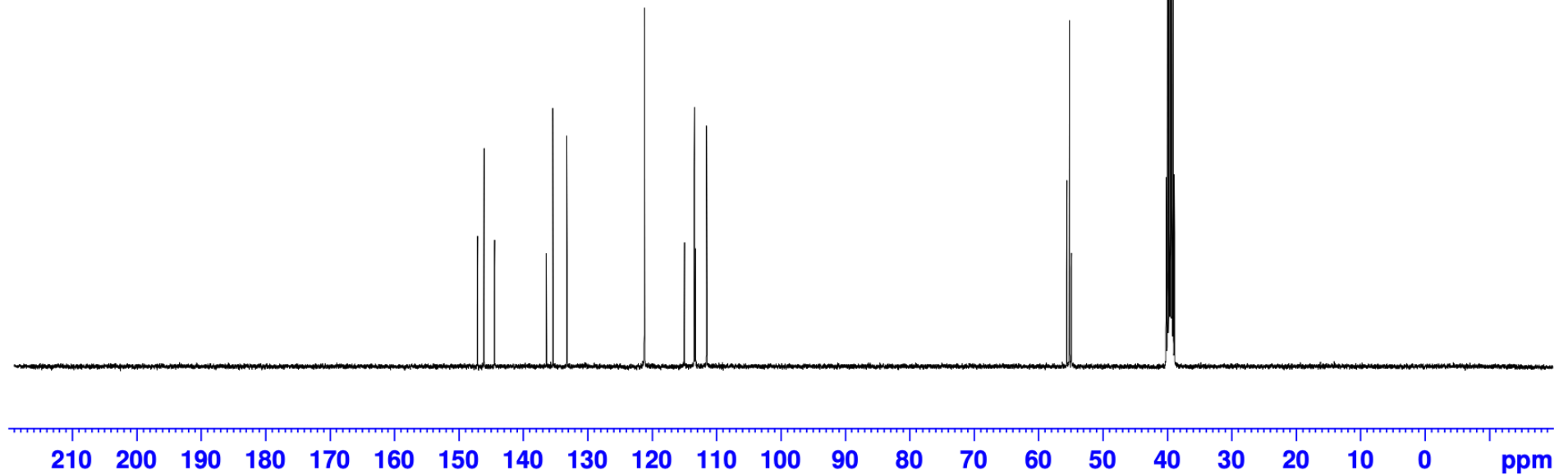
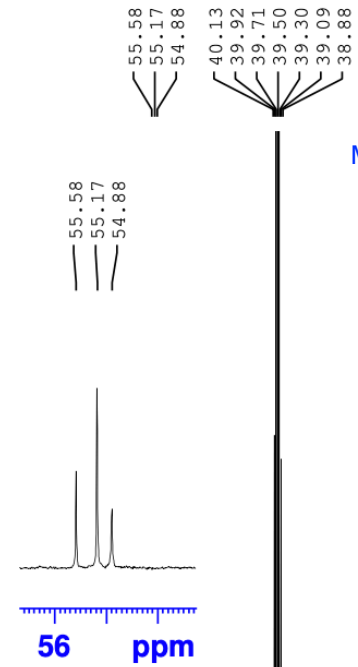
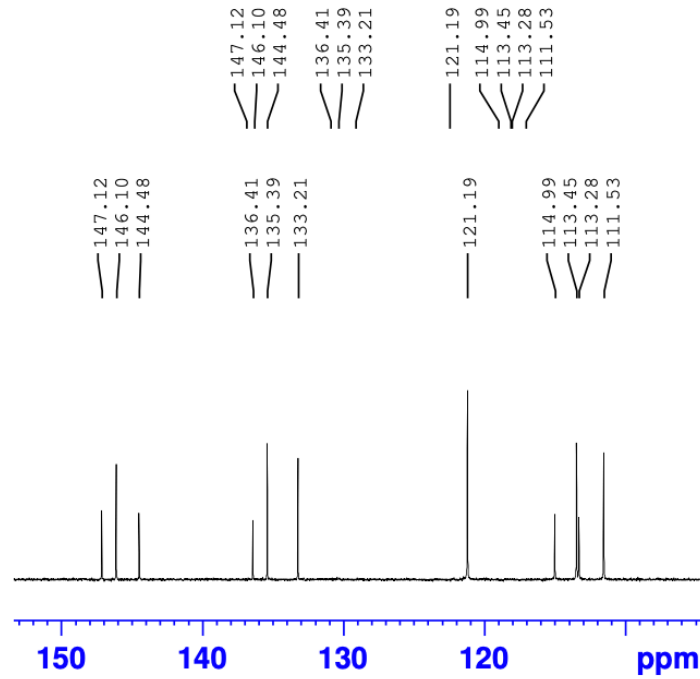
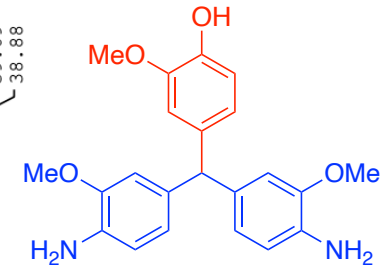
4-(Bis(4-amino-3-methoxyphenyl)methyl)-2-methoxyphenol (3p)

¹H NMR (400 MHz, DMSO-d₆)



Nipaphorn 11-3-63 No.2
 ^{13}C 19(3) in DMSO

4-(Bis(4-amino-3-methoxyphenyl)methyl)-2-methoxyphenol (3p)
 ^{13}C NMR (100 MHz, DMSO- d_6)

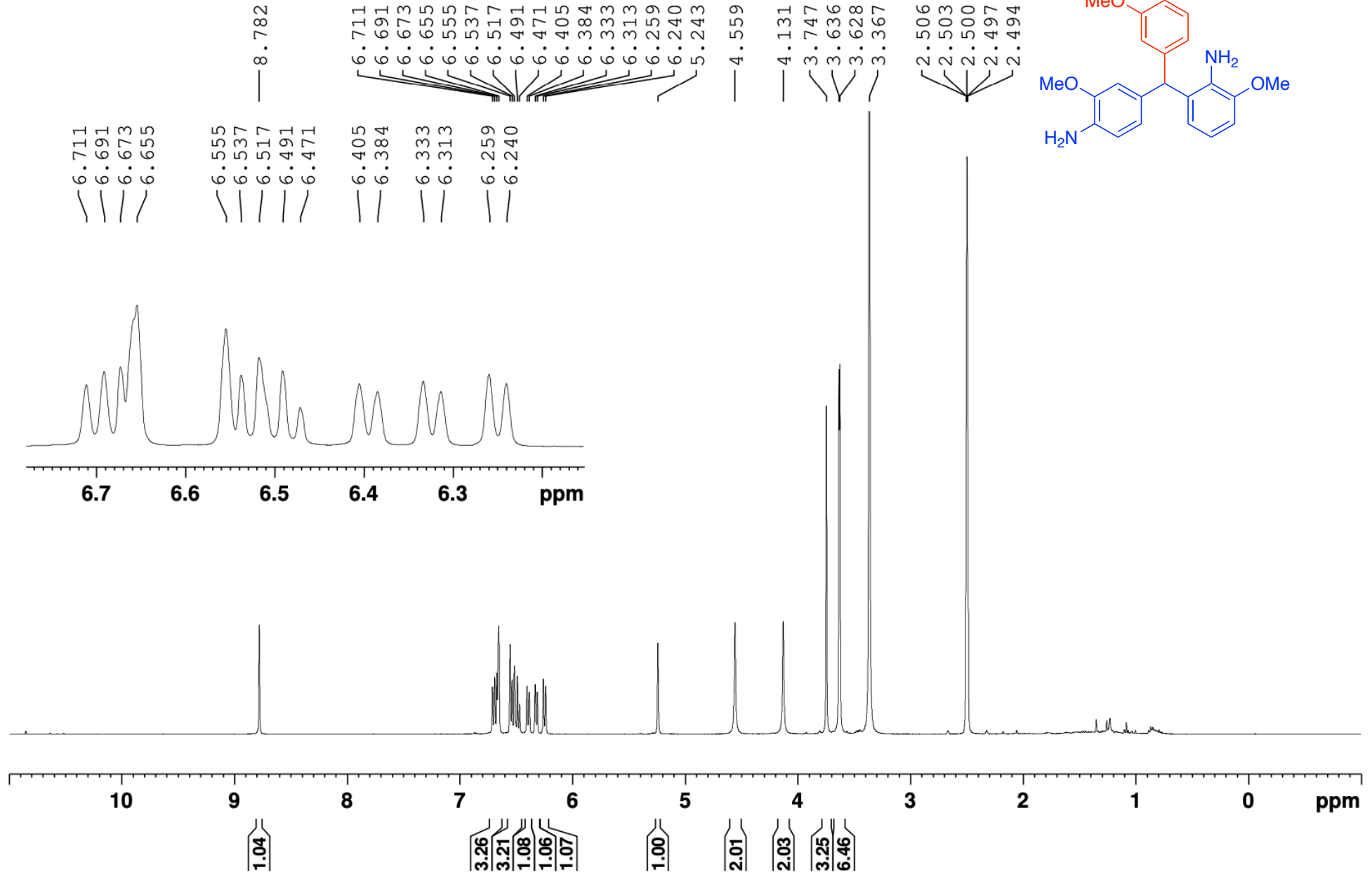


4-((2-Amino-3-methoxyphenyl)(4-amino-3-methoxyphenyl)methyl)-2-methoxyphenol (4p)

¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 25-6-63 No.1

US-III-92-20200510-upp in DMSO

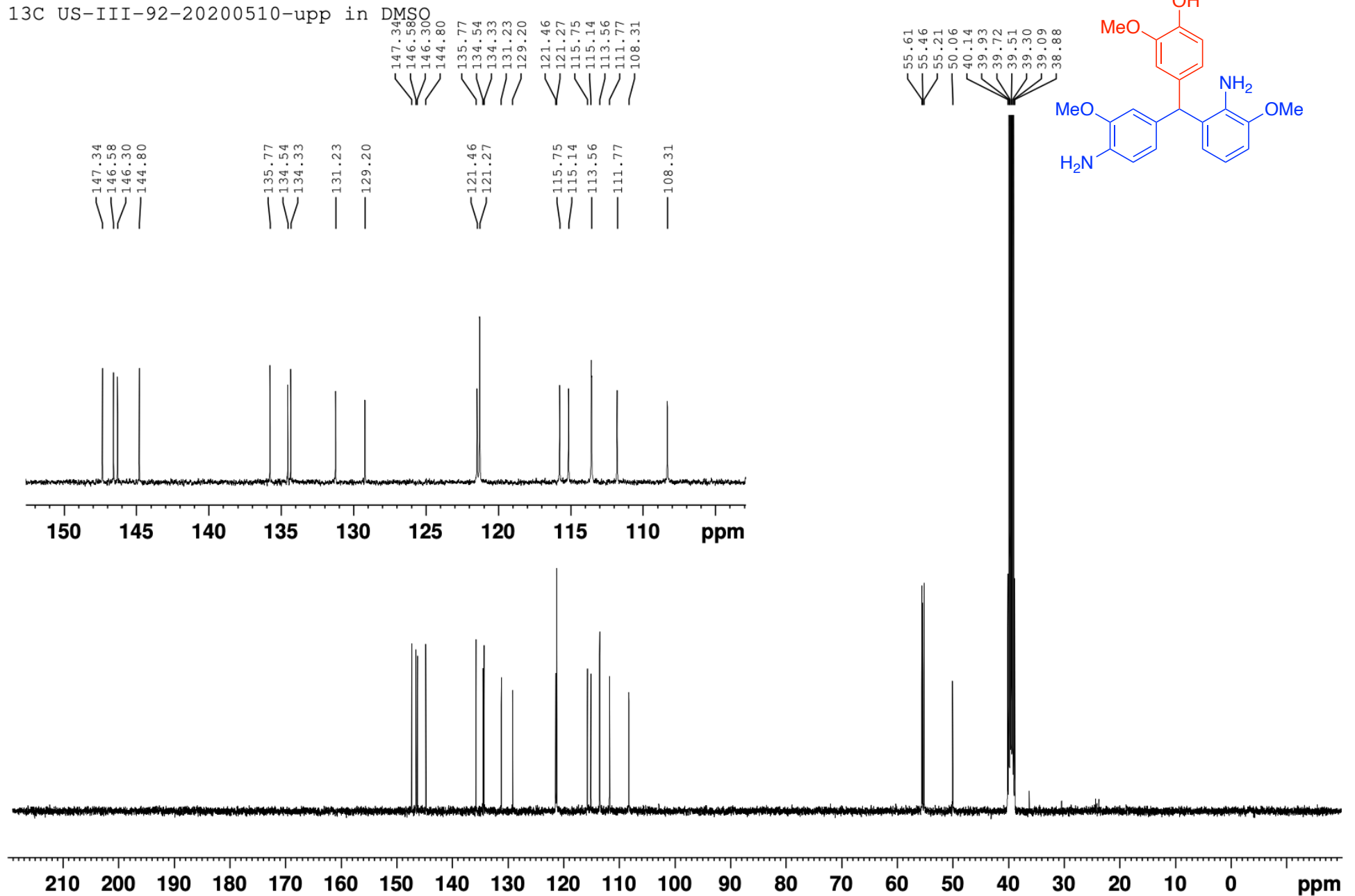


4-((2-Amino-3-methoxyphenyl)(4-amino-3-methoxyphenyl)methyl)-2-methoxyphenol (4p)

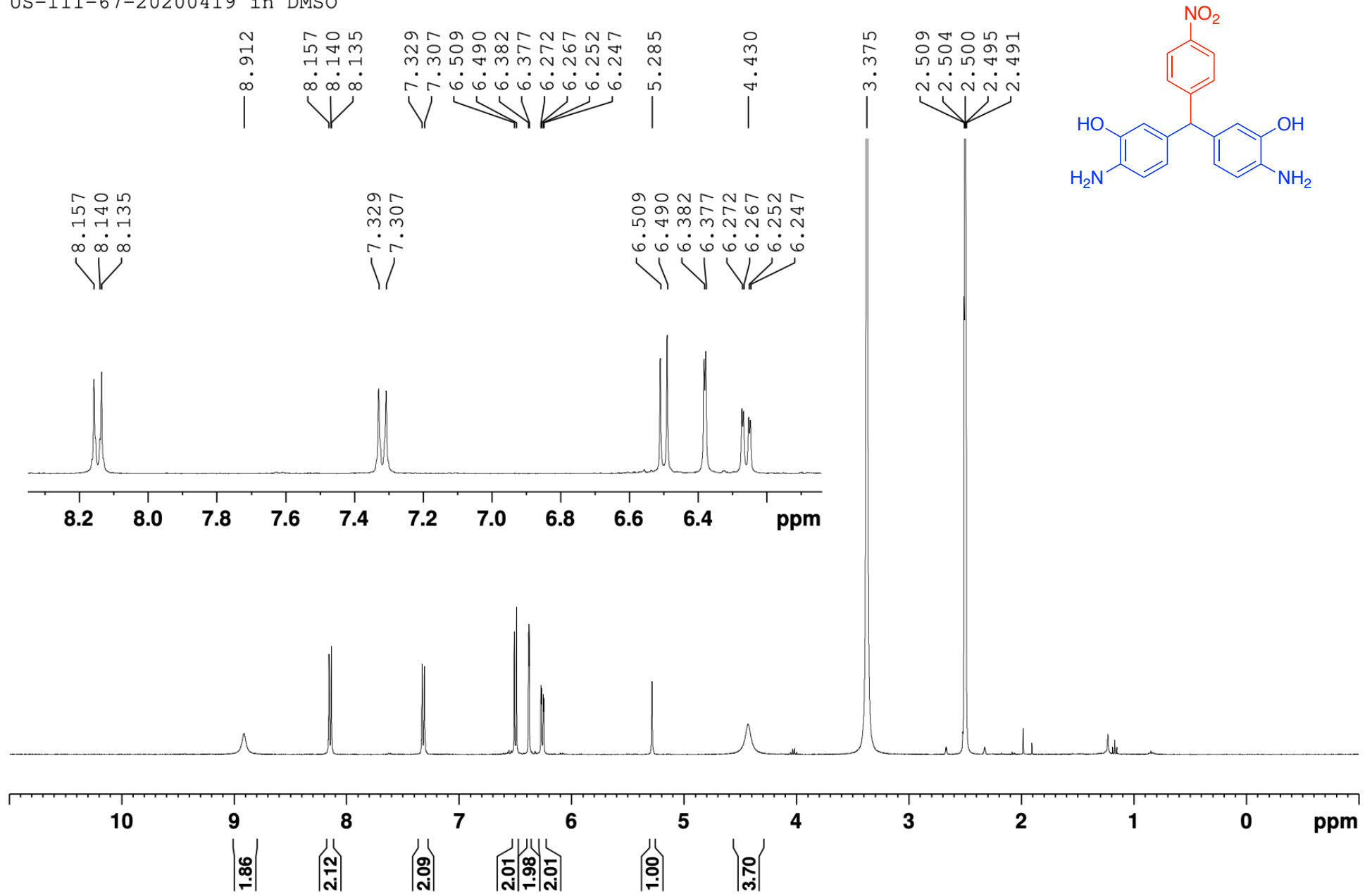
^{13}C NMR (100 MHz, DMSO- d_6)

Uthaiwan 29-6-63 No.2

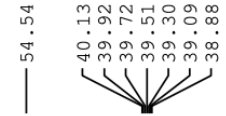
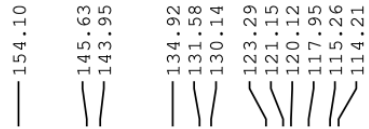
^{13}C US-III-92-20200510-upp in DMSO



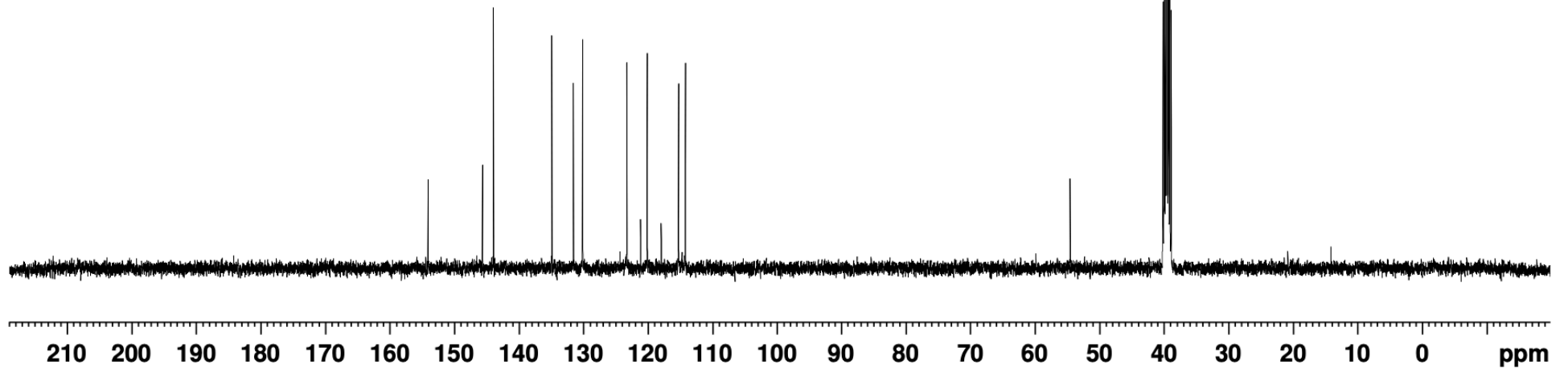
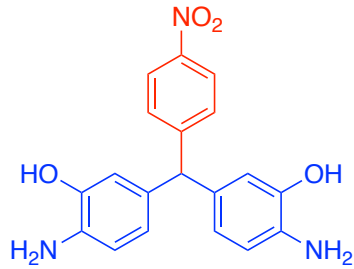
5,5'((4-Nitrophenyl)methylene)bis(2-aminophenol) (3q)

 ^1H NMR (400 MHz, DMSO- d_6)Uthaiwan 27-4-63 No.2
US-III-67-20200419 in DMSO

Uthaiwan 1-5-63 No.1
13C US-III-67-20200419 in DMSO

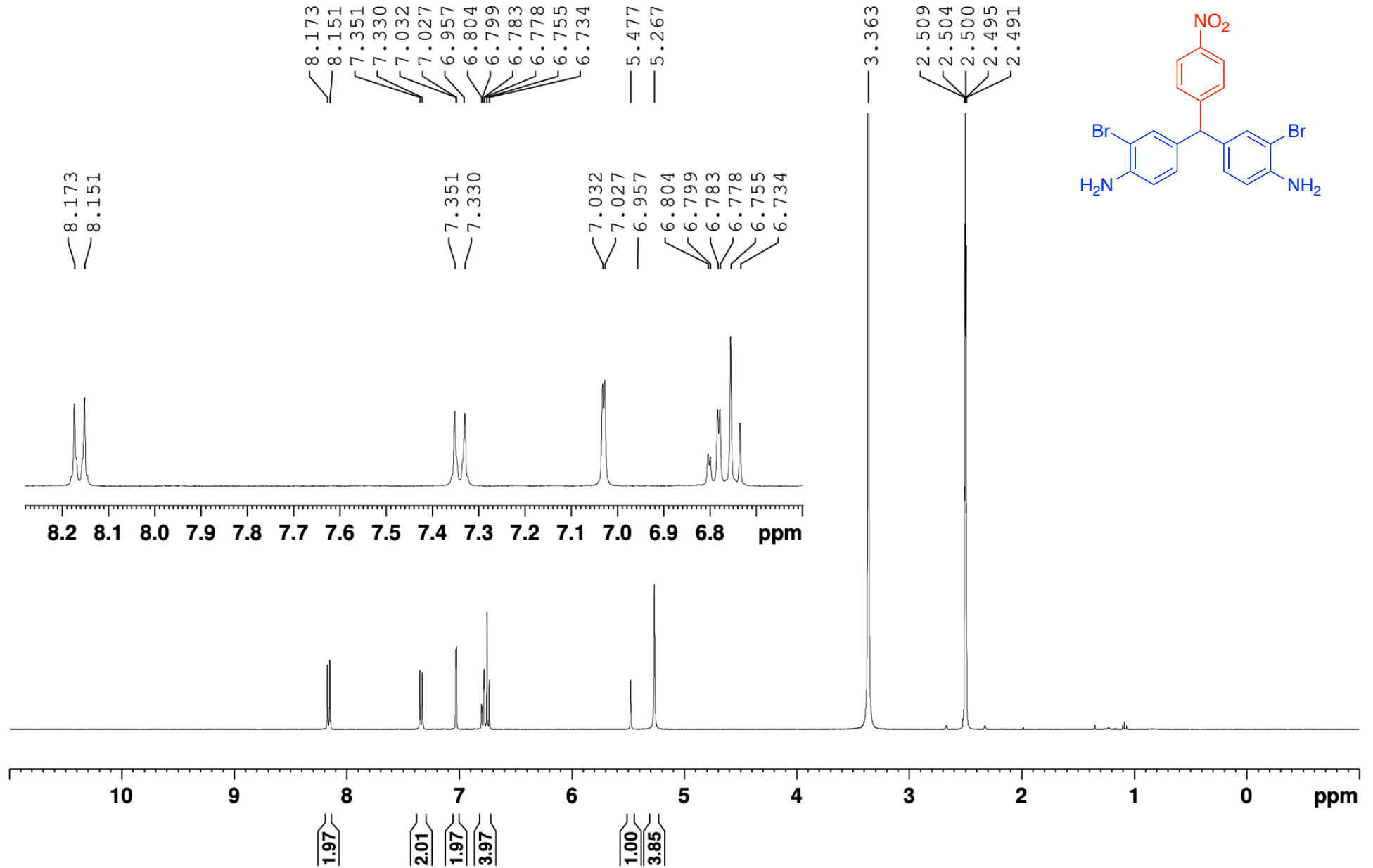


5,5'((4-Nitrophenyl)methylene)bis(2-aminophenol) (3q)
¹³C NMR (100 MHz, DMSO-d₆)



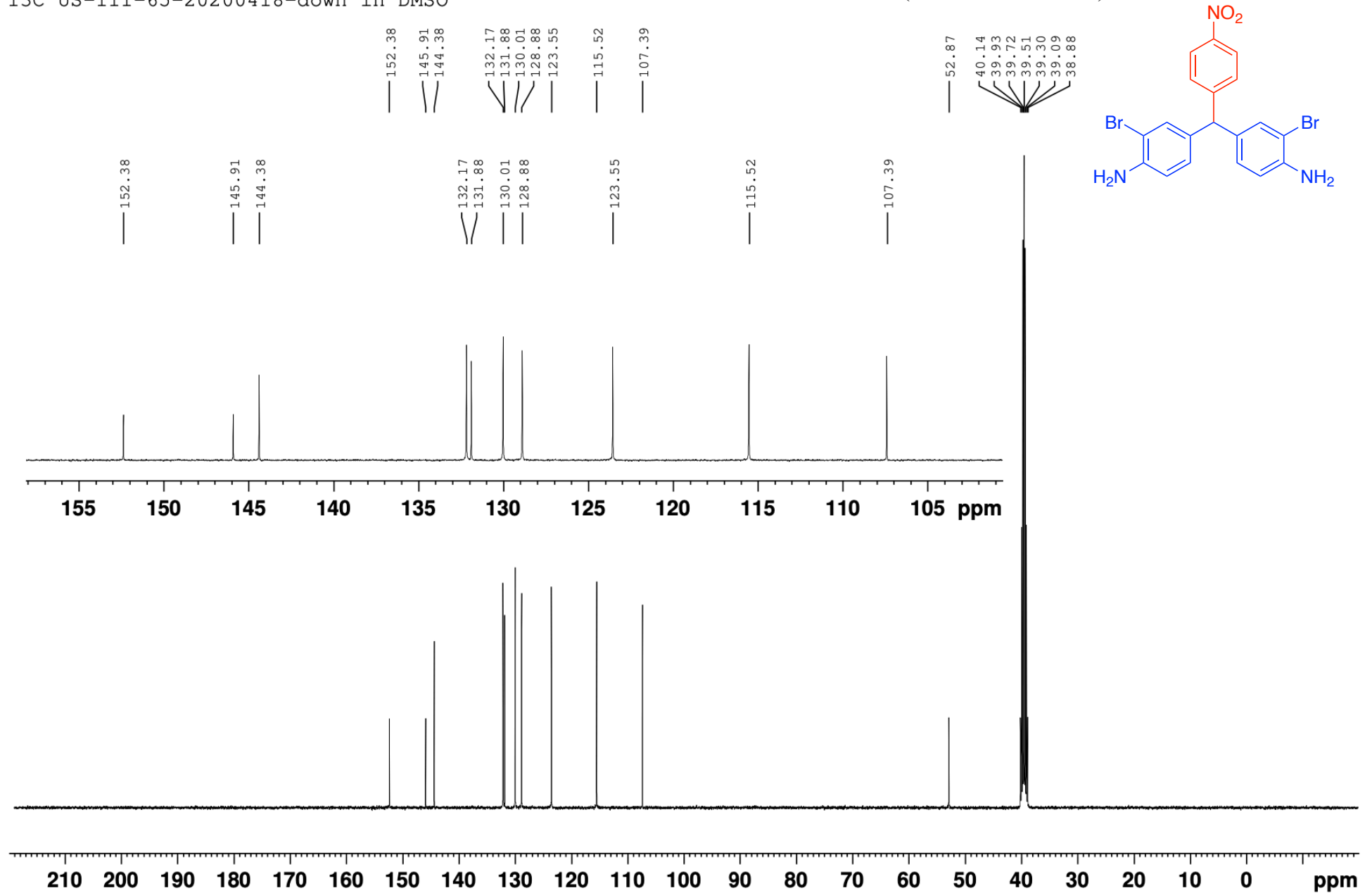
Uthaiwan 5-5-63 No.3
US-III-65-20200418-down in DMSO

4,4'((4-Nitrophenyl)methylene)bis(2-bromoaniline) (3r)
¹H NMR (400 MHz, DMSO-d₆)



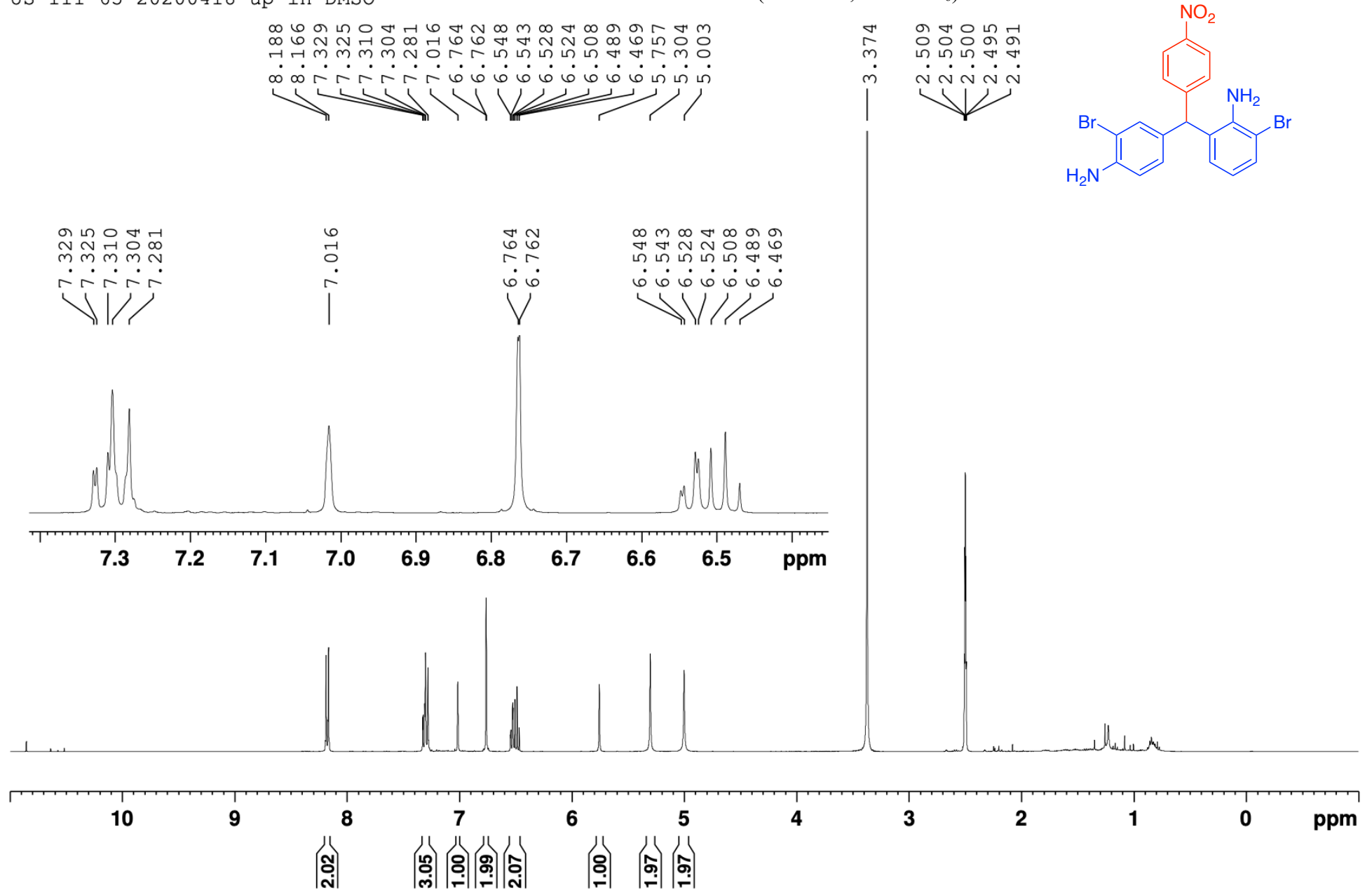
Uthaiwan 13-5-63 No.2
13C US-III-65-20200418-down in DMSO

4,4'((4-Nitrophenyl)methylene)bis(2-bromoaniline) (3r)
¹³C NMR (100 MHz, DMSO-d₆)



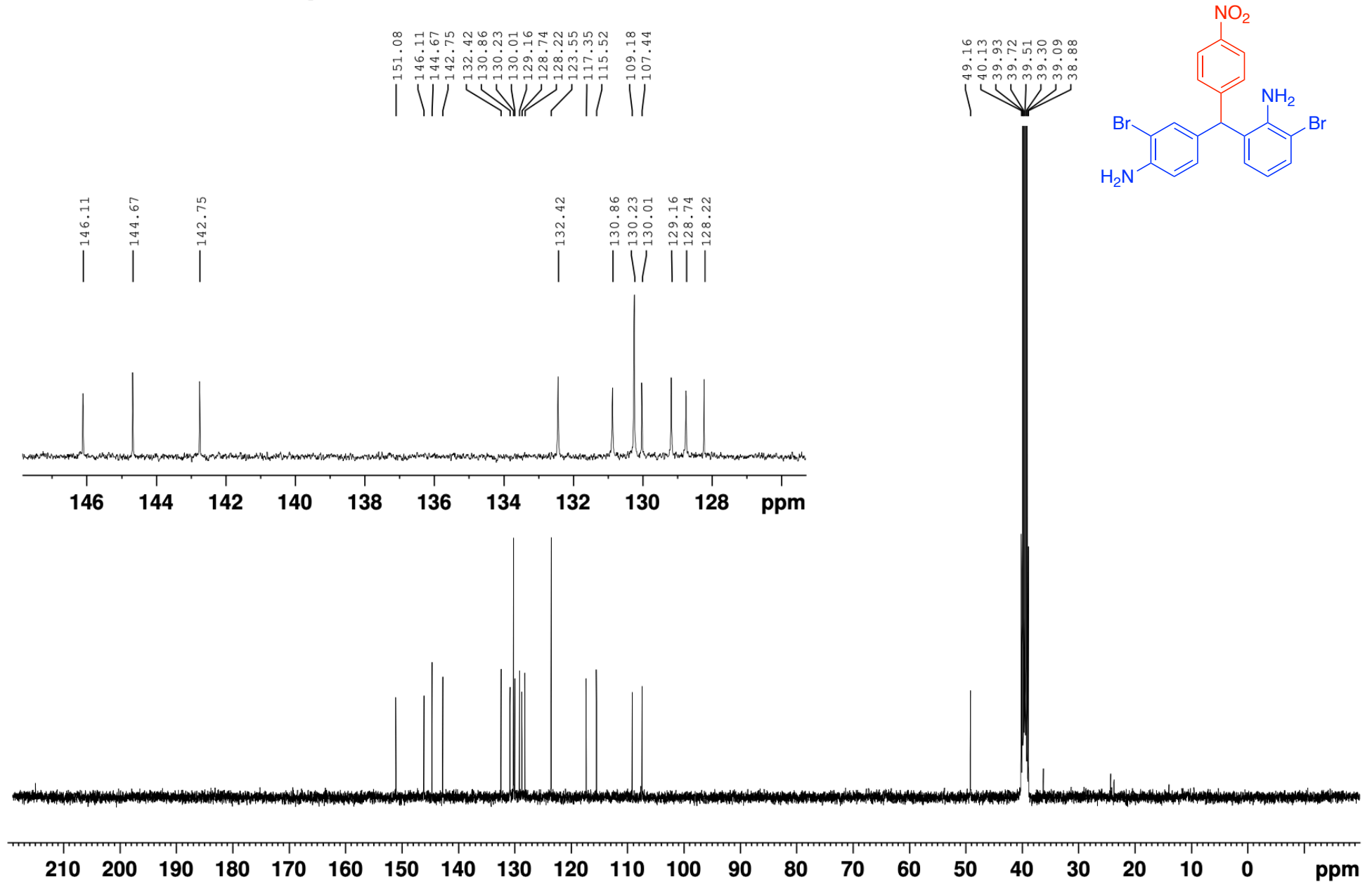
Uthaiwan 29-4-63 No.2
US-III-65-20200418-up in DMSO

4-((2-Amino-3-bromophenyl)(4-nitrophenyl)methyl)-2-bromoaniline (4r)
¹H NMR (400 MHz, DMSO-d₆)



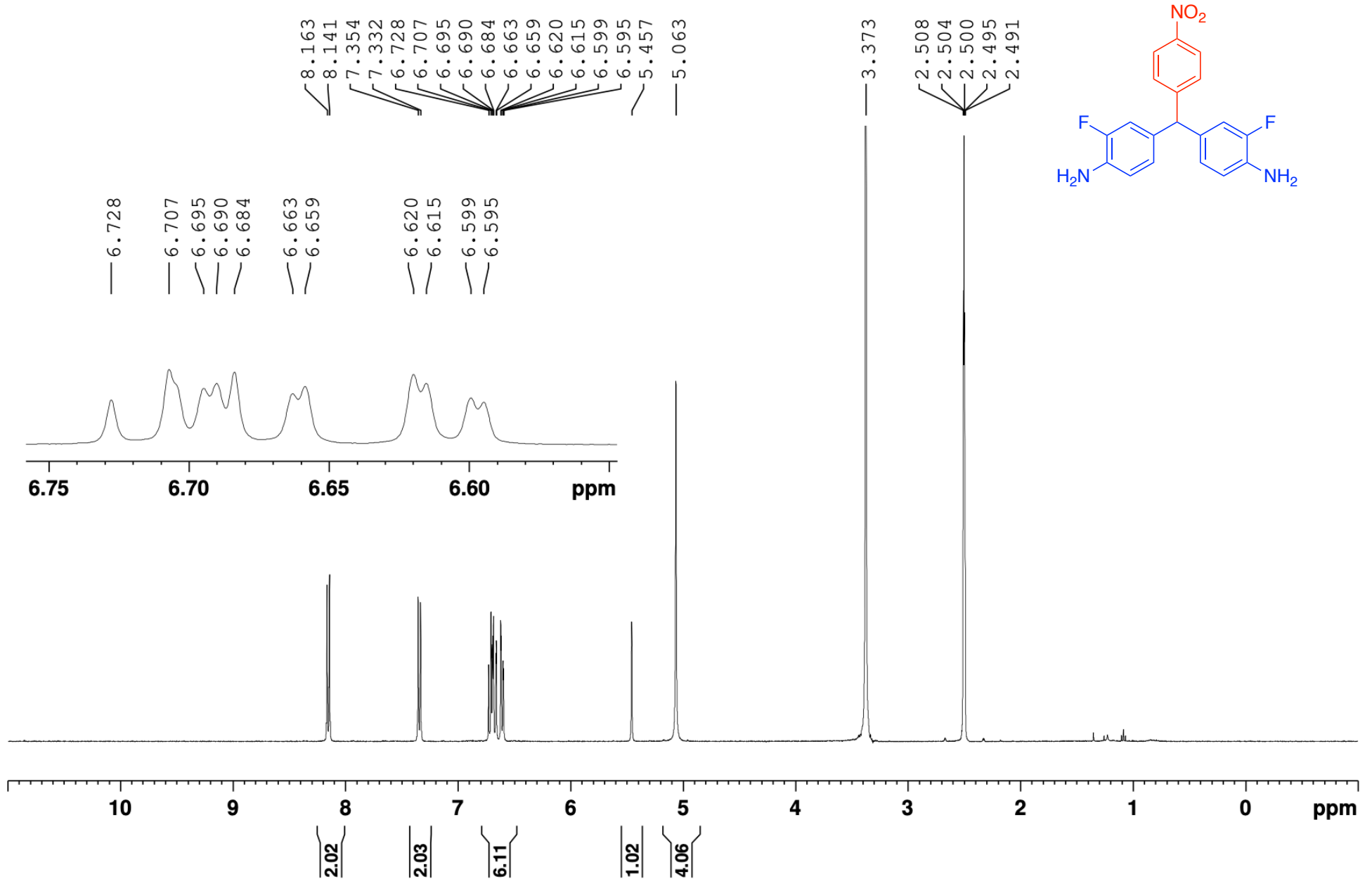
Uthaiwan 7-5-63 No.5
13C US-III-65-20200418-up in DMSO

4-((2-Amino-3-bromophenyl)(4-nitrophenyl)methyl)-2-bromoaniline (4r)
13C NMR (100 MHz, DMSO-d₆)



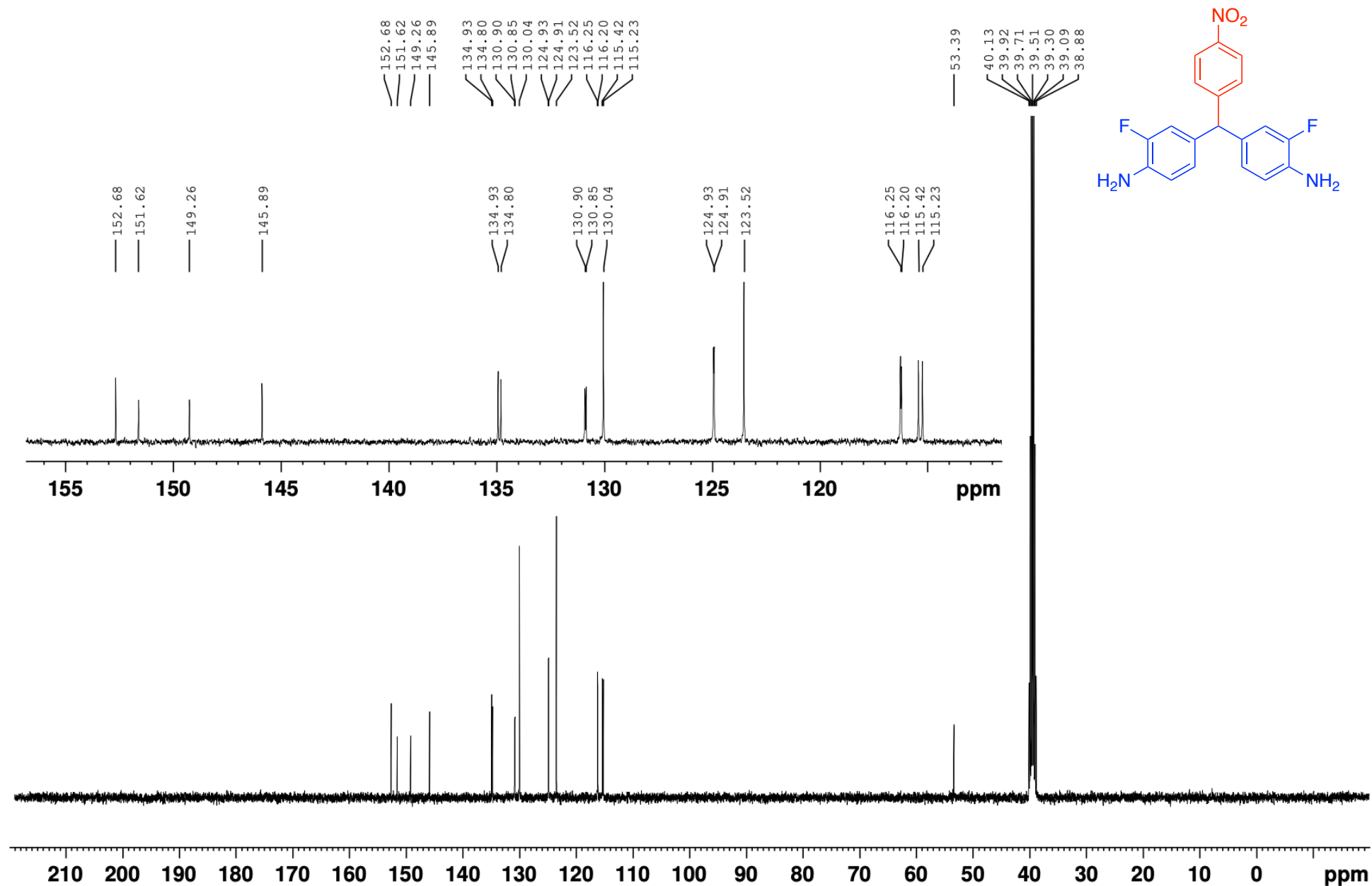
Uthaiwan 14-5-63 No.2
US-III-78-20200503-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(2-fluoroaniline) (3s)
¹H NMR (400 MHz, DMSO-d₆)



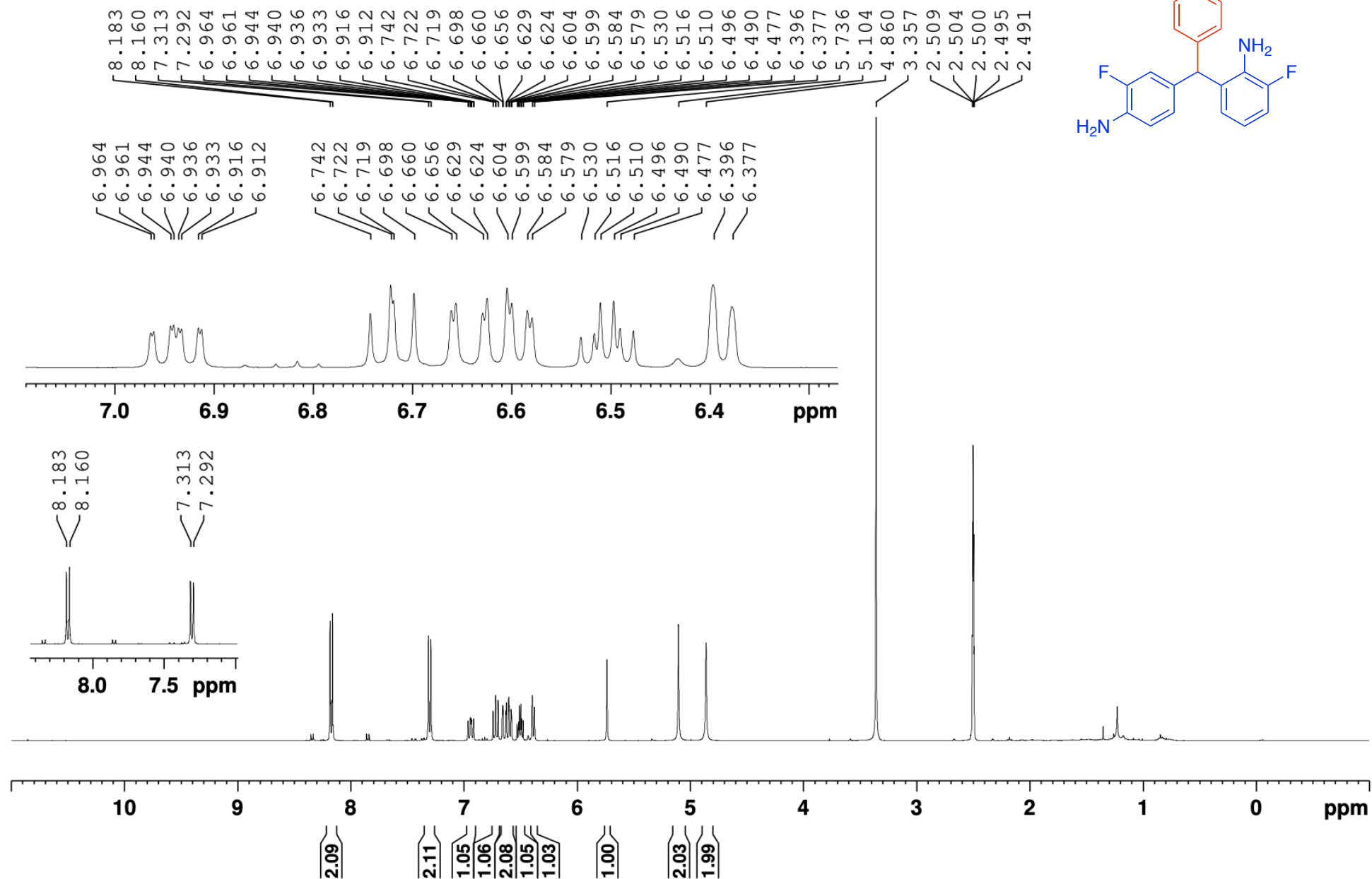
Uthaiwan 26-5-63 No.1
13C US-III-78-20200503-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(2-fluoroaniline) (3s)
¹³C NMR (100 MHz, DMSO-d₆)



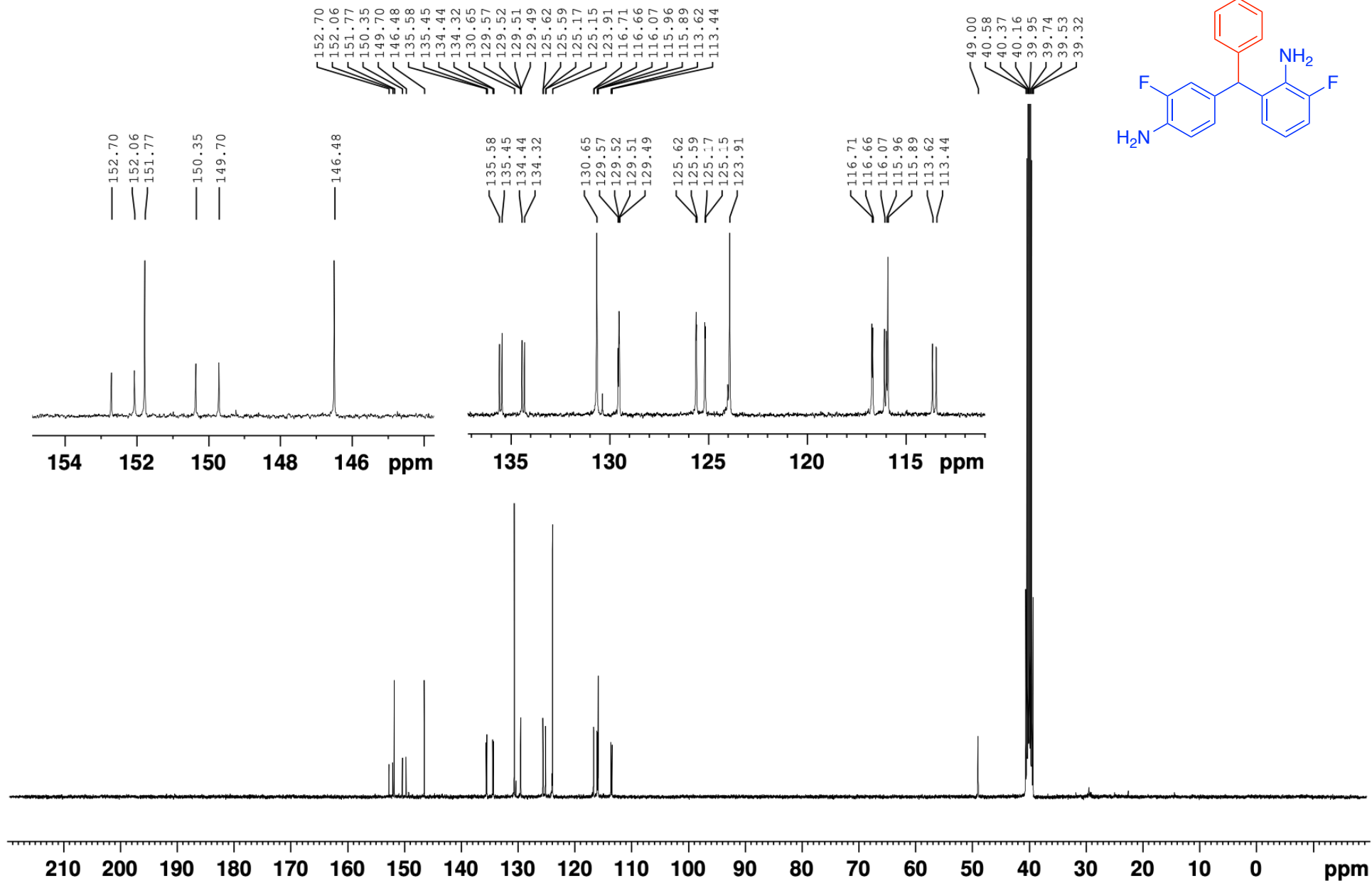
4-((2-Amino-3-fluorophenyl)(4-nitrophenyl)methyl)-2-fluoroaniline (4s)
¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 21-5-63 No.2
US-III-78-20200503-up in DMSO



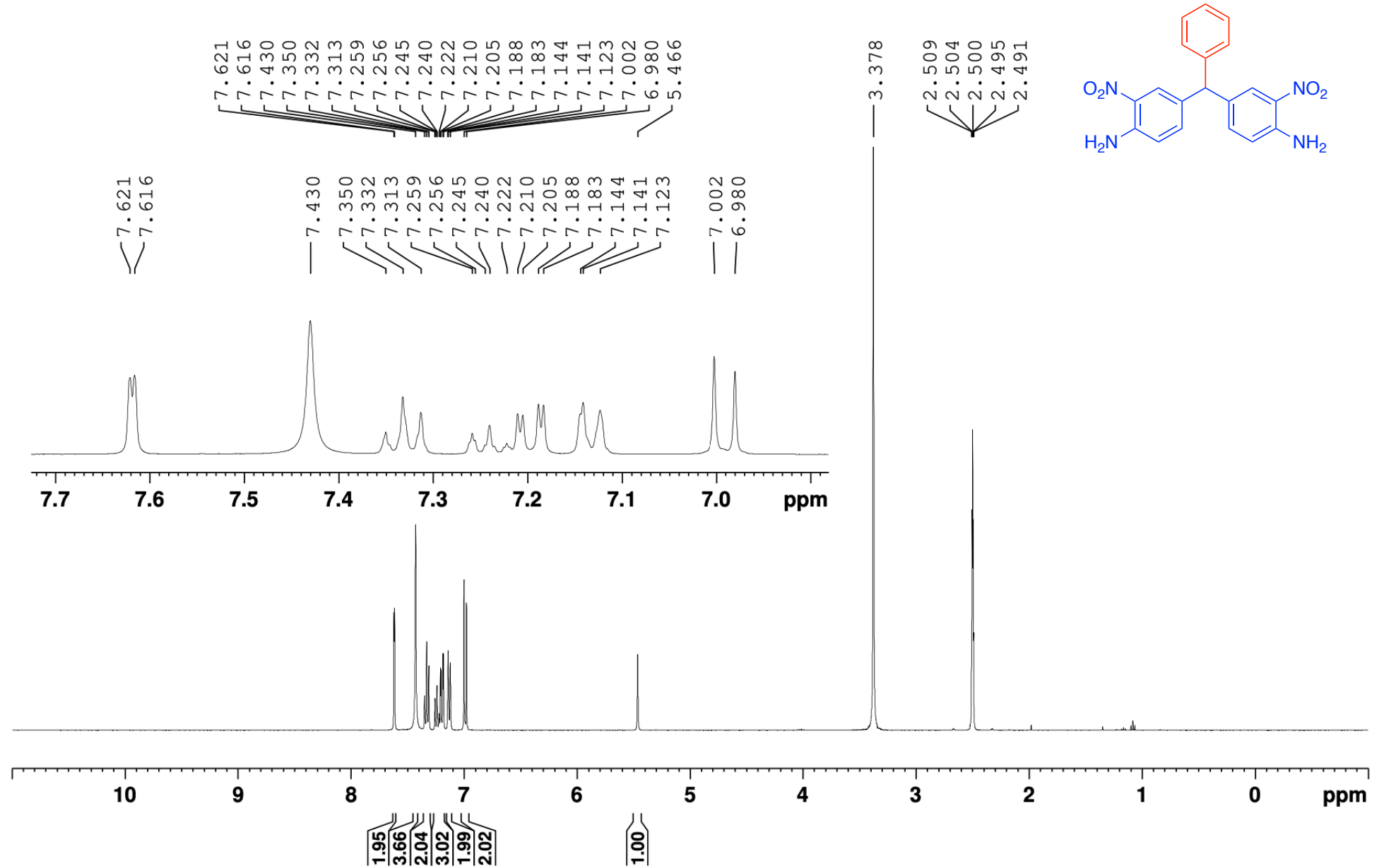
4-((2-Amino-3-fluorophenyl)(4-nitrophenyl)methyl)-2-fluoroaniline (4s)
¹³C NMR (100 MHz, DMSO-d₆)

Uthaiwan 29-5-63 No.5
13C US-III-78-20200503-up in DMSO



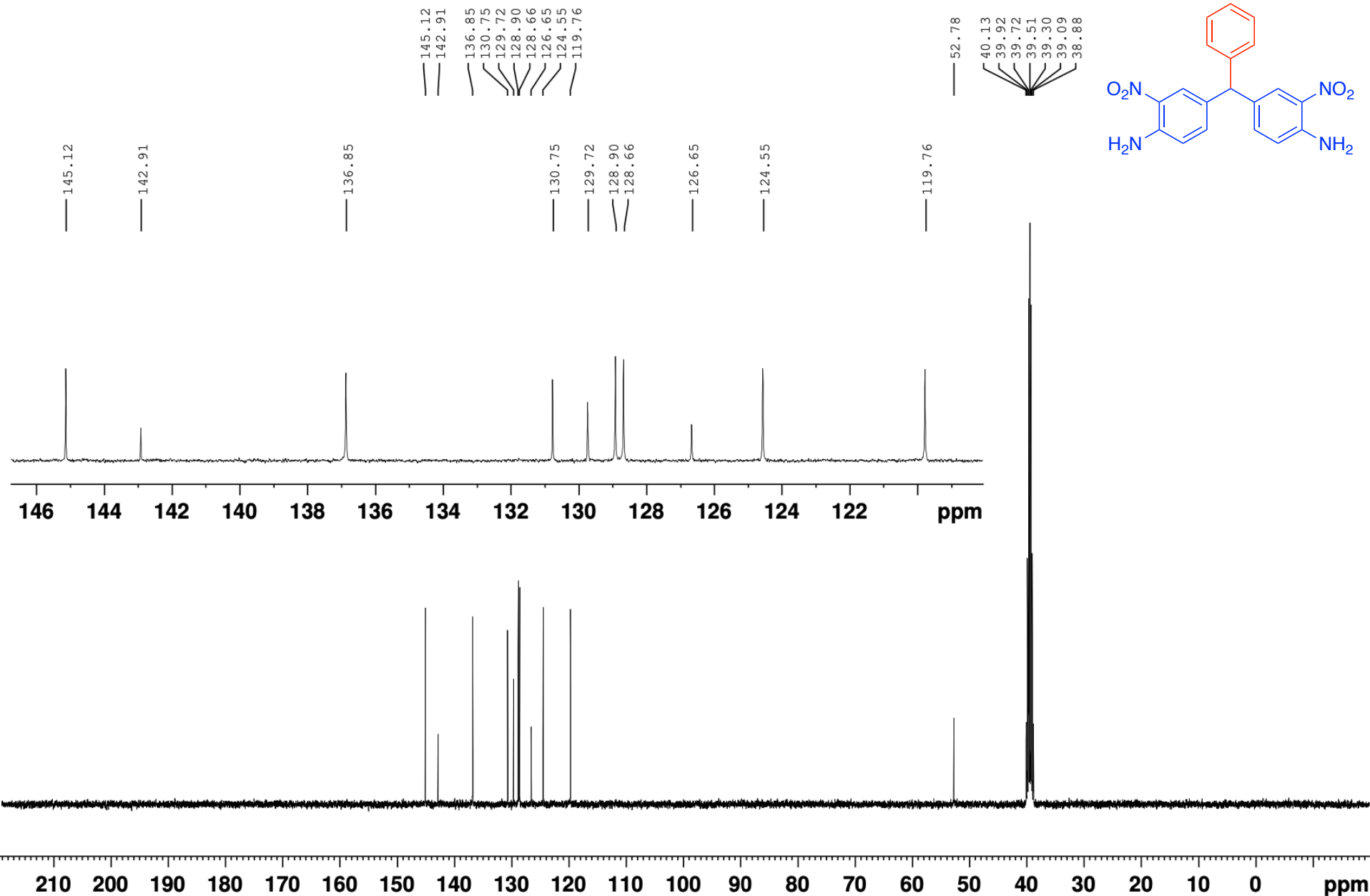
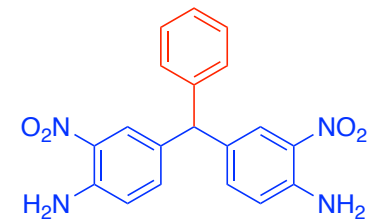
4,4'-(Phenylmethylene)bis(2-nitroaniline) (3t)
¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 12-5-63 No.4
US-III-81-20200504-down in DMSO



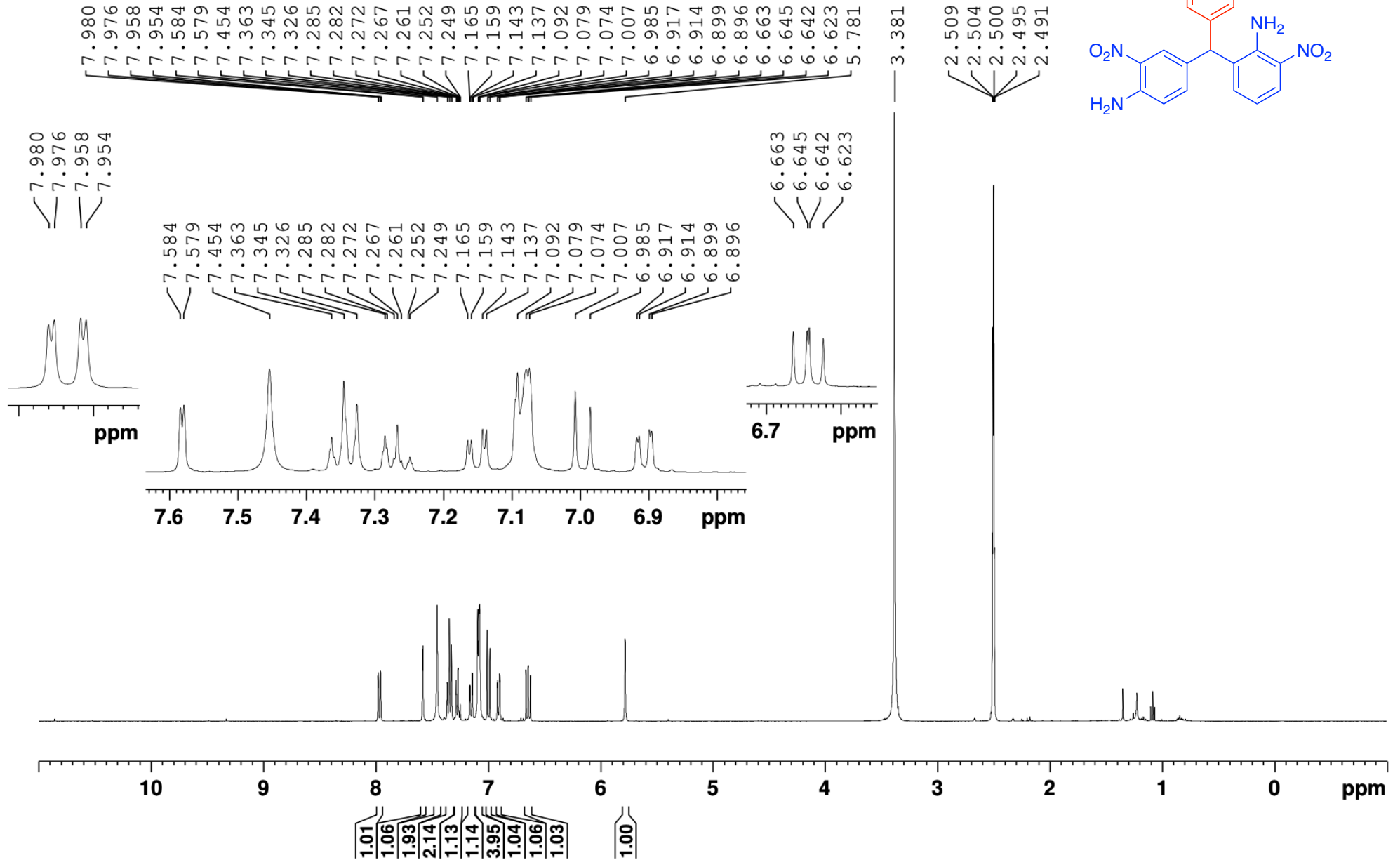
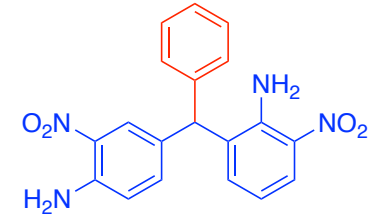
Uthaiwan 25-5-63 No.1
13C US-III-81-20200504-down in DMSO

4,4'-(Phenylmethylene)bis(2-nitroaniline) (3t)
¹³C NMR (100 MHz, DMSO-d₆)



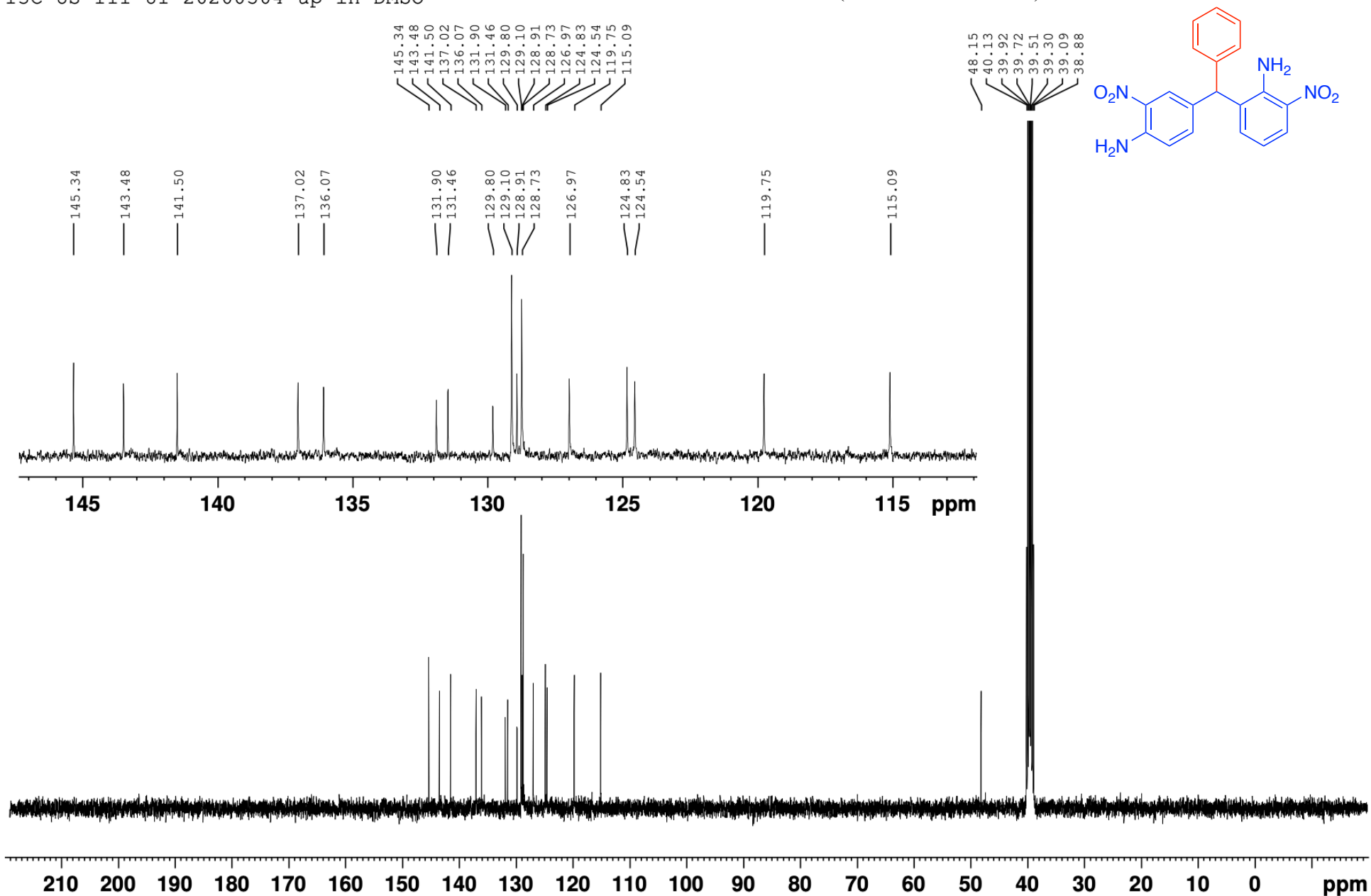
Uthaiwan 19-5-63 No.4
US-III-81-20200504-up in DMSO

4-((2-Amino-3-nitrophenyl)(phenyl)methyl)-2-nitroaniline (4t)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 27-5-63 No.1
13C US-III-81-20200504-up in DMSO

4-((2-Amino-3-nitrophenyl)(phenyl)methyl)-2-nitroaniline (4t)
¹³C NMR (100 MHz, DMSO-d₆)



145.34
143.48
141.50
137.02
136.07
131.90
131.46
129.80
129.10
128.91
128.73
128.73
126.97
124.83
124.54
119.75
115.09

48.15
40.13
39.92
39.72
39.51
39.30
39.09
38.88

145.34

143.48

141.50

137.02

136.07

131.90

131.46

129.80

129.10

128.91

128.73

128.73

126.97

124.83

124.54

119.75

115.09

145

140

135

130

125

120

115 ppm

210

200

190

180

170

160

150

140

130

120

110

100

90

80

70

60

50

40

30

20

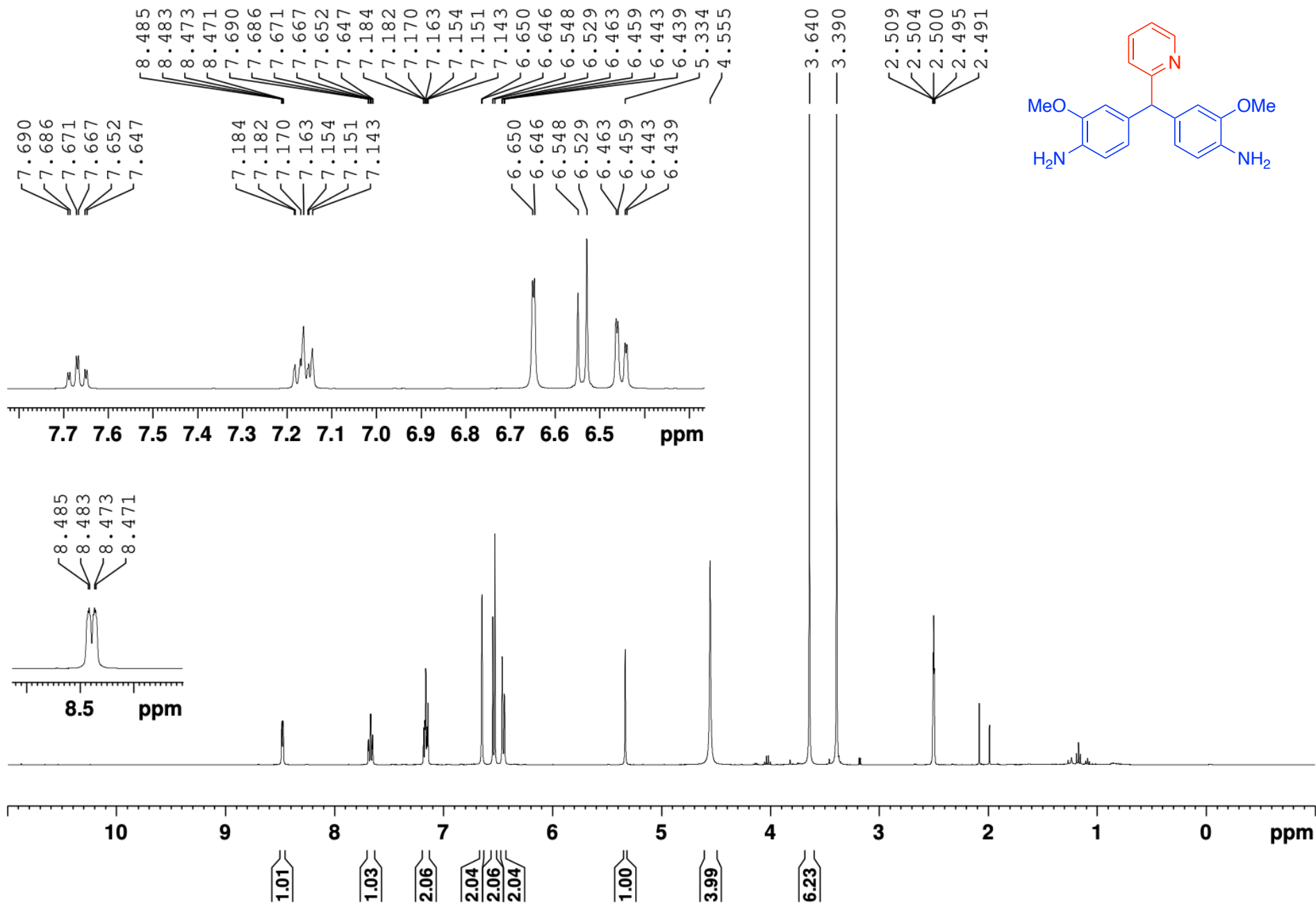
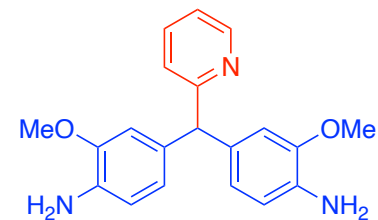
10

0

ppm

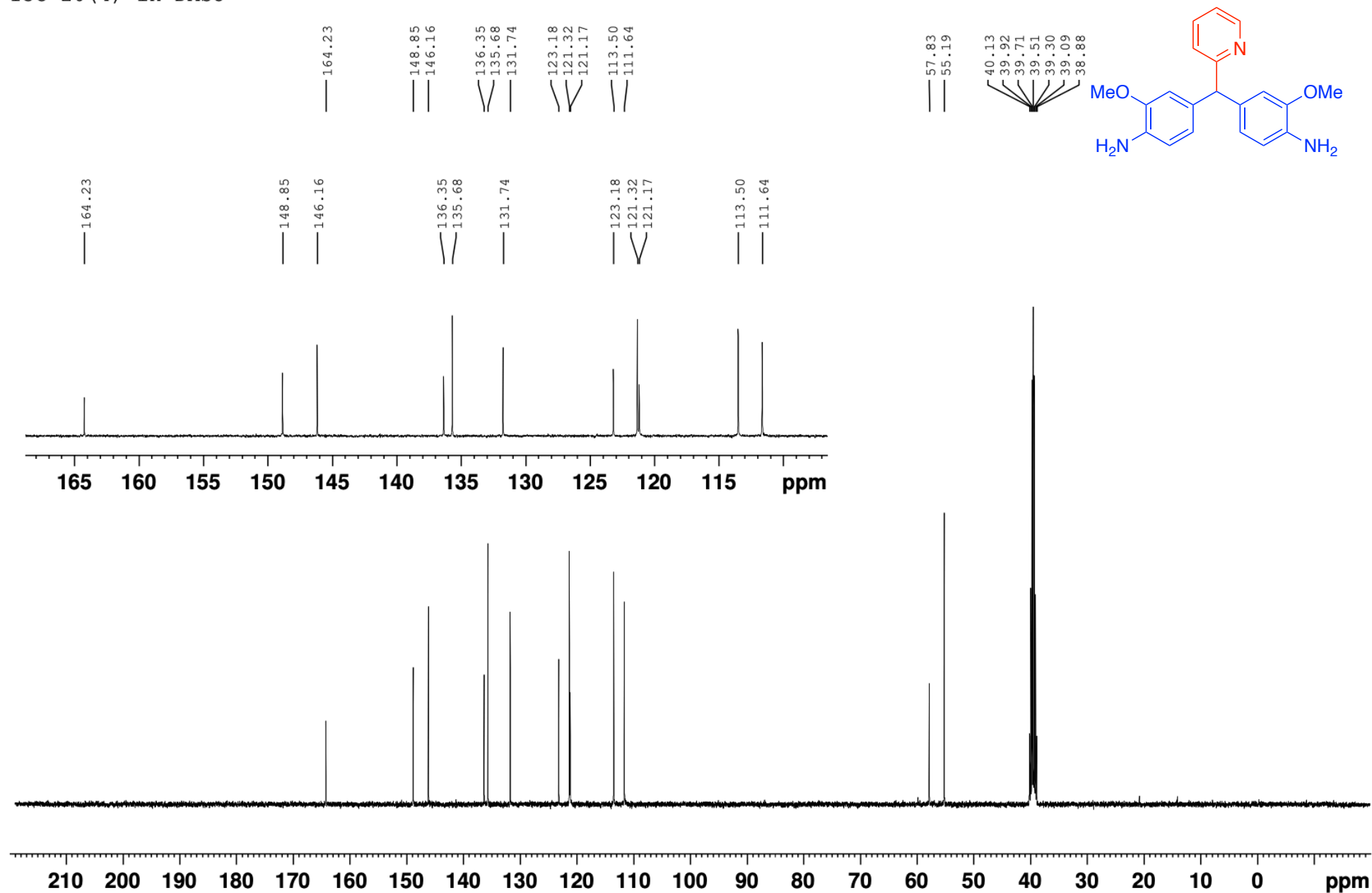
Nipaphorn 29-4-63 No.9
20(4) in DMSO

4,4'-(Pyridin-2-ylmethylene)(bis(2-methoxyaniline)) (3u)
¹H NMR (400 MHz, DMSO-d₆)



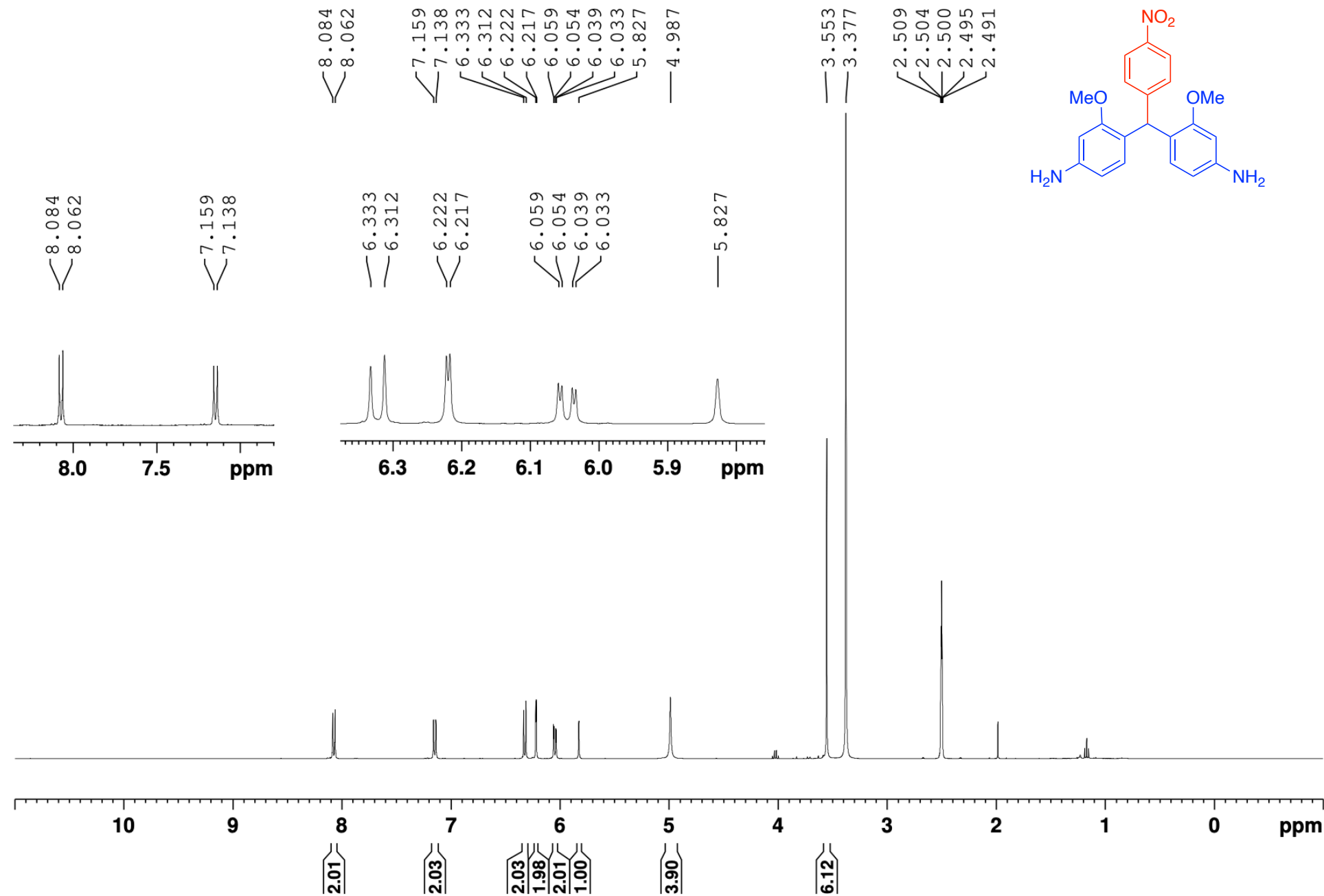
Nipaphorn 8-5-63 No.2
13C 20(4) in DMSO

4,4'-(Pyridin-2-ylmethylene)(bis(2-methoxyaniline) (3u)
13C NMR (100 MHz, DMSO-d₆)



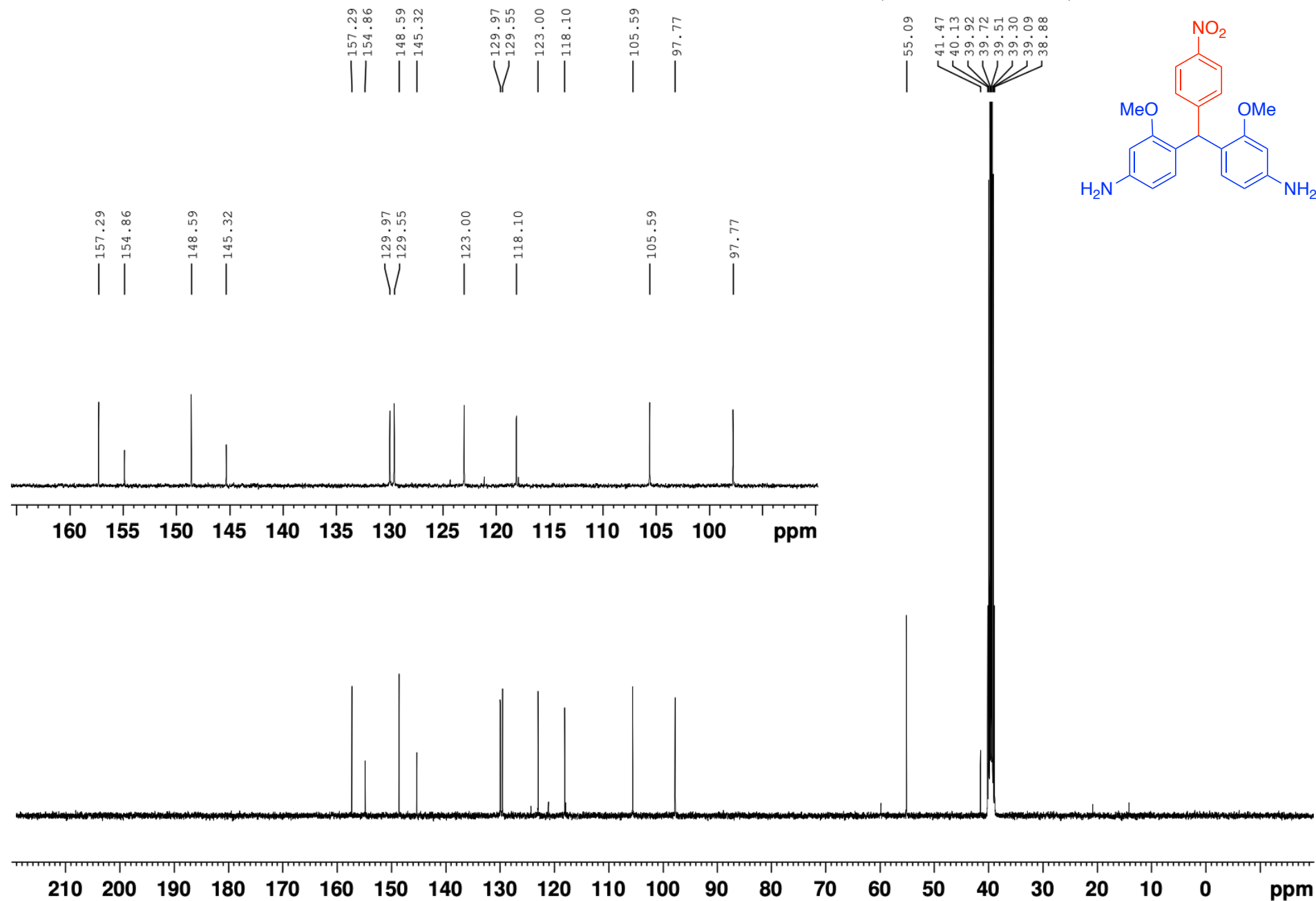
Nipaphorn 23-3-63 No.2
23(2) in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(3-methoxyaniline) (3v)
¹H NMR (400 MHz, DMSO-d₆)



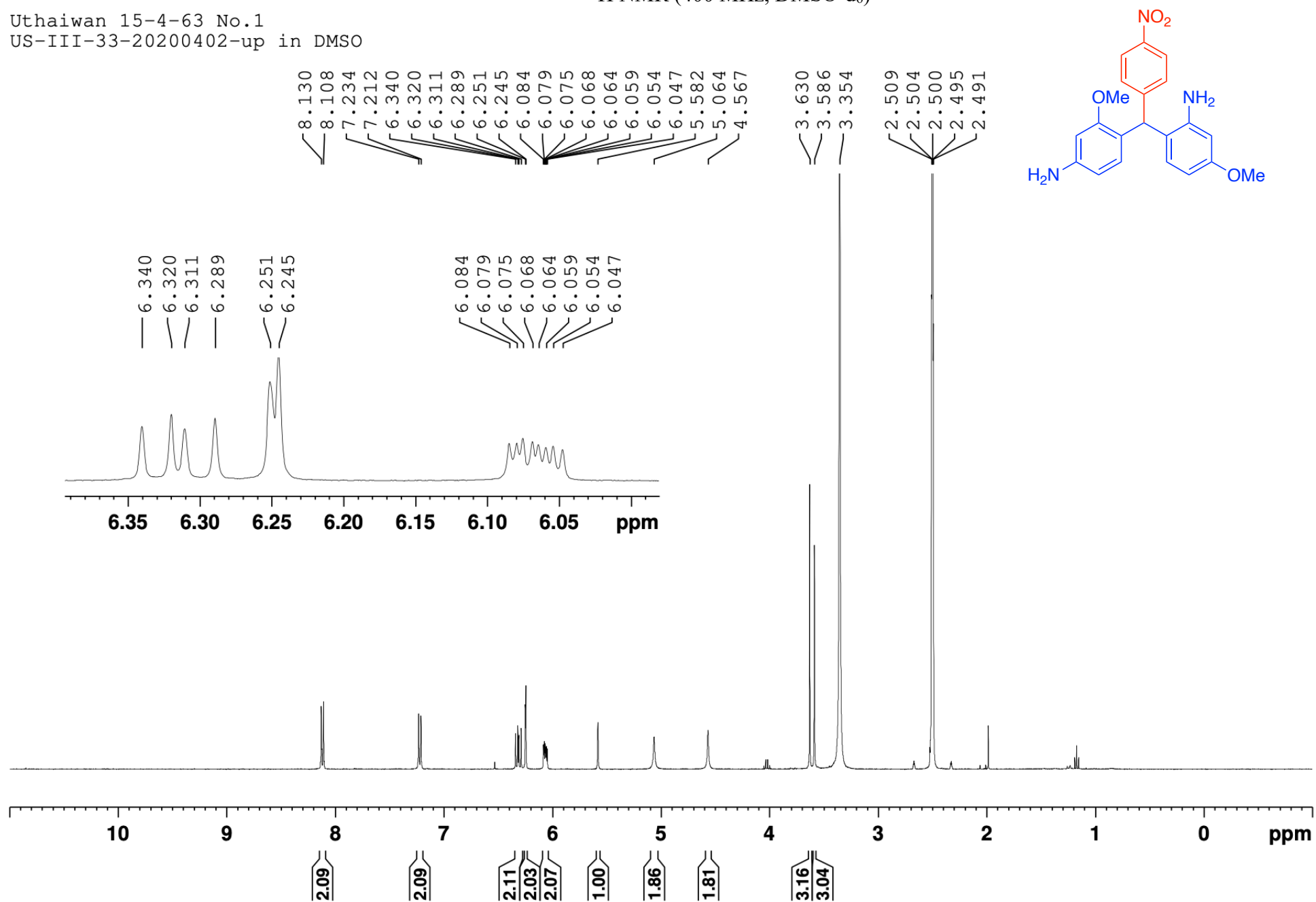
Nipaphorn 26-3-63 No.1
13C 23(2) in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(3-methoxyaniline) (3v)
13C NMR (100 MHz, DMSO-d₆)



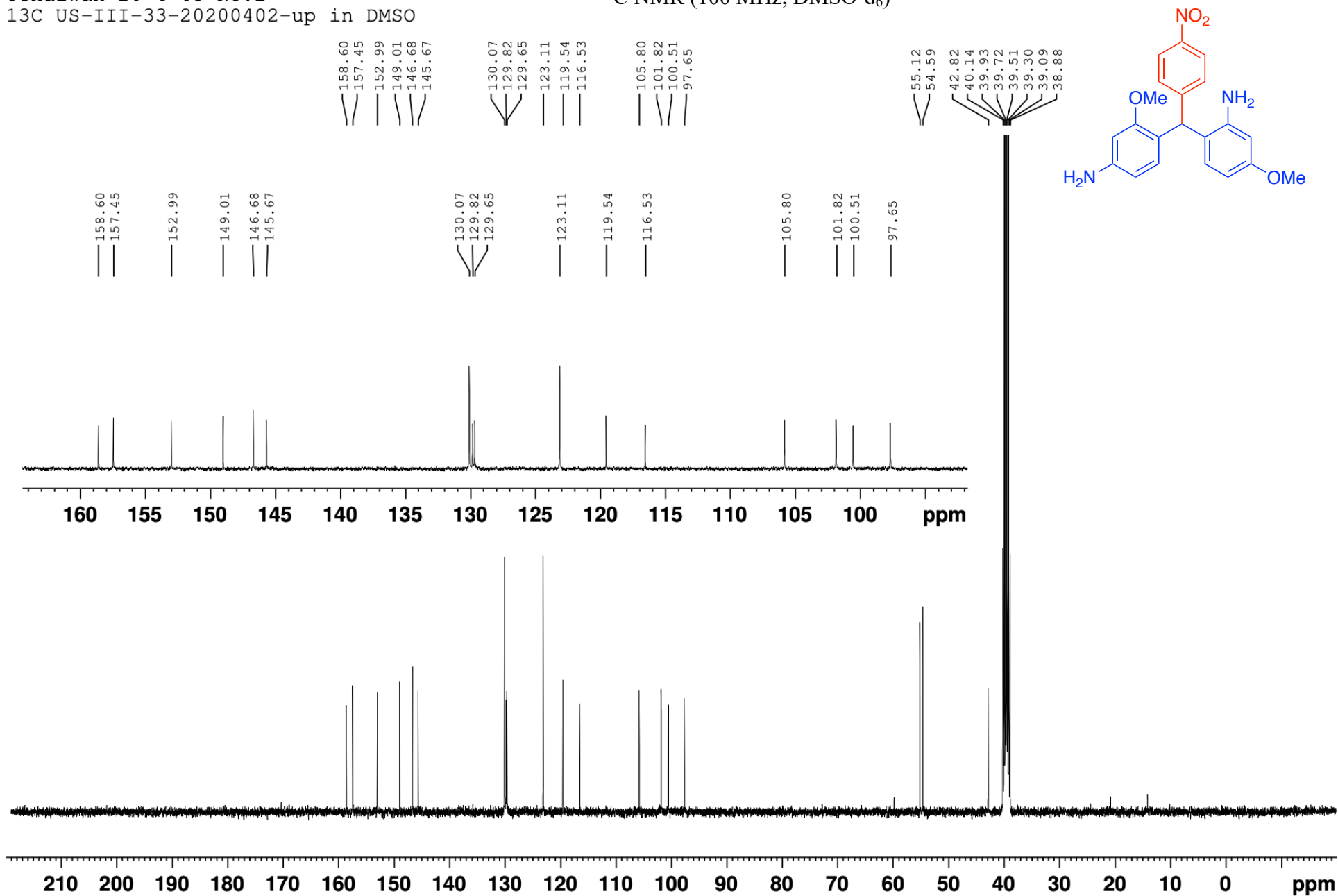
2-((4-Amino-2-methoxyphenyl)(4-nitrophenyl)methyl)-5-methoxyaniline (4v)
¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 15-4-63 No.1
US-III-33-20200402-up in DMSO



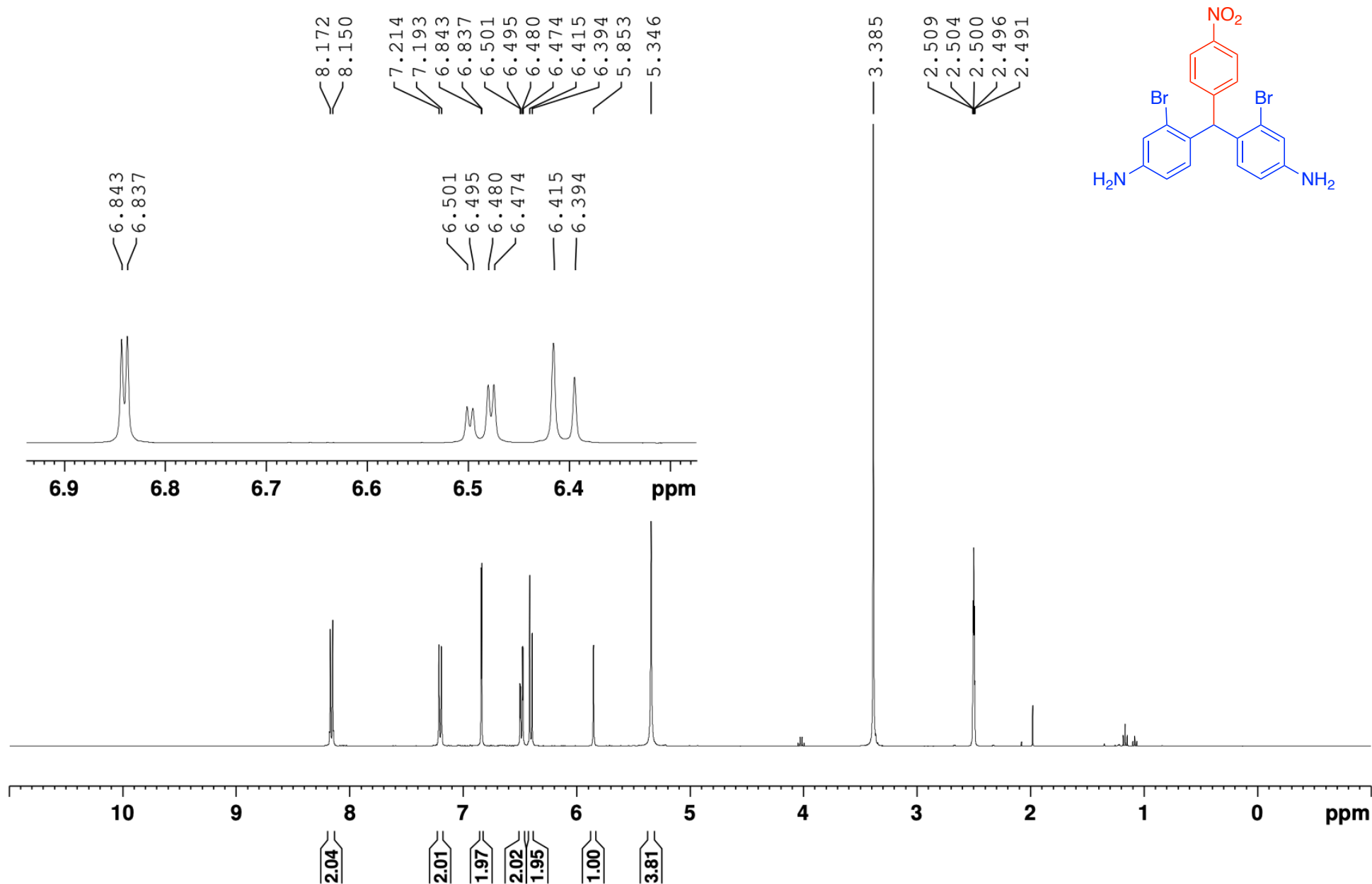
Uthaiwan 20-4-63 No.2
13C US-III-33-20200402-up in DMSO

2-((4-Amino-2-methoxyphenyl)(4-nitrophenyl)methyl)-5-methoxyaniline (4v)
¹³C NMR (100 MHz, DMSO-d₆)



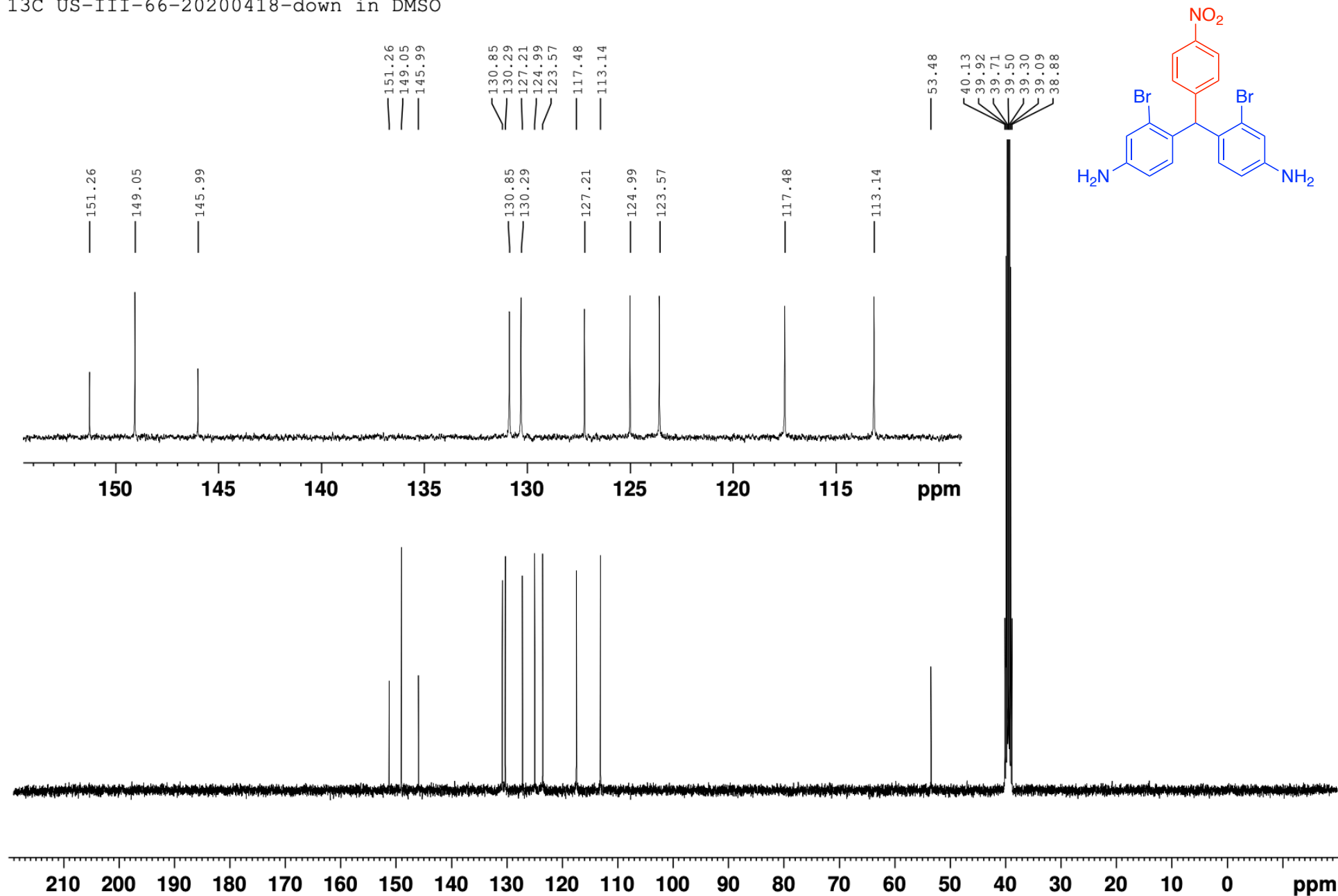
Uthaiwan 29-4-63 No.1
US-III-66-20200418-down in DMSO

4,4'((4-Nitrophenyl)methylene)bis(3-bromoaniline) (3w)
¹H NMR (400 MHz, DMSO-d₆)



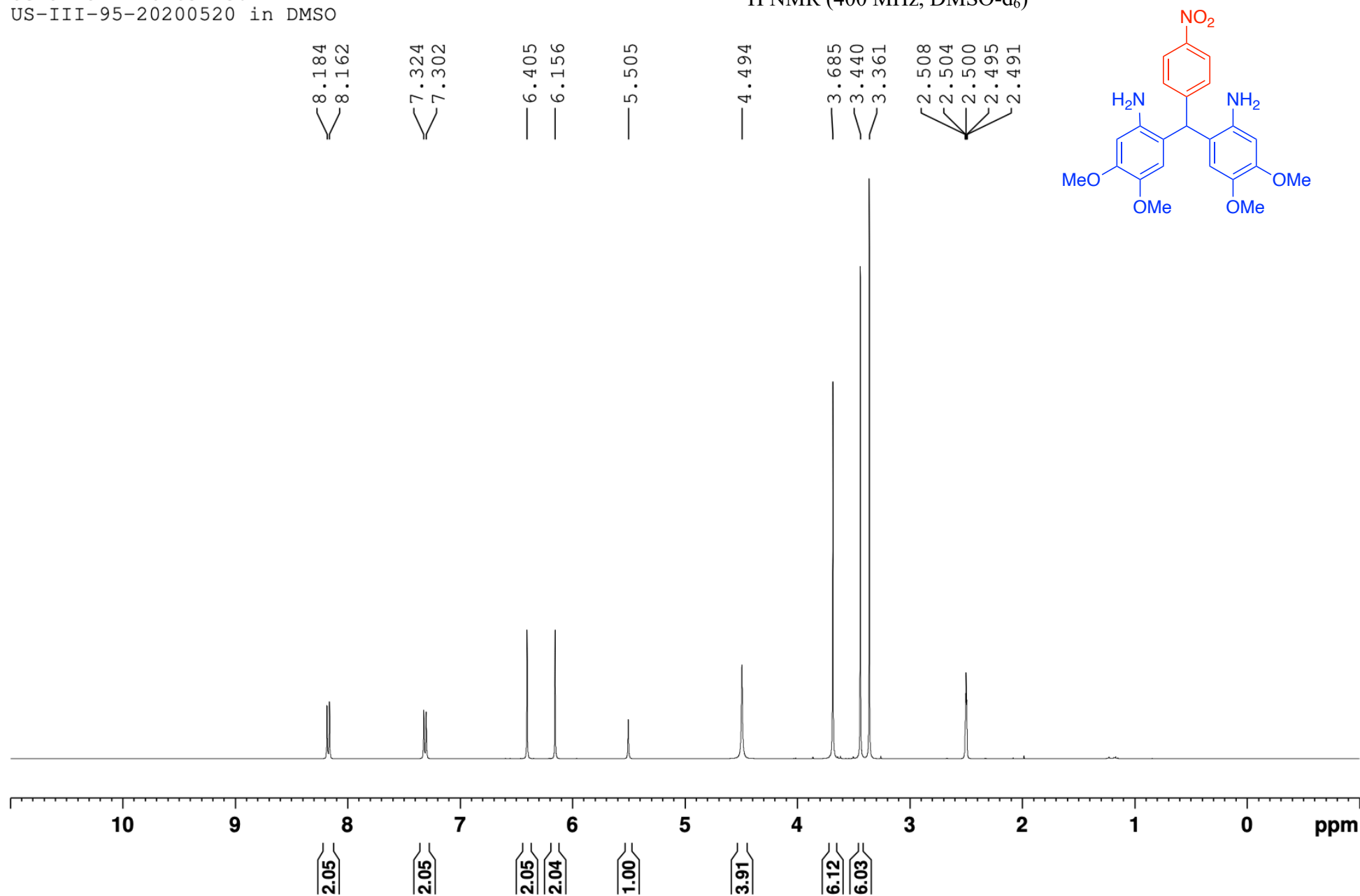
4,4'((4-Nitrophenyl)methylene)bis(3-bromoaniline) (3w)
¹³C NMR (100 MHz, DMSO-d₆)

Uthaiwan 7-5-63 No.4
13C US-III-66-20200418-down in DMSO



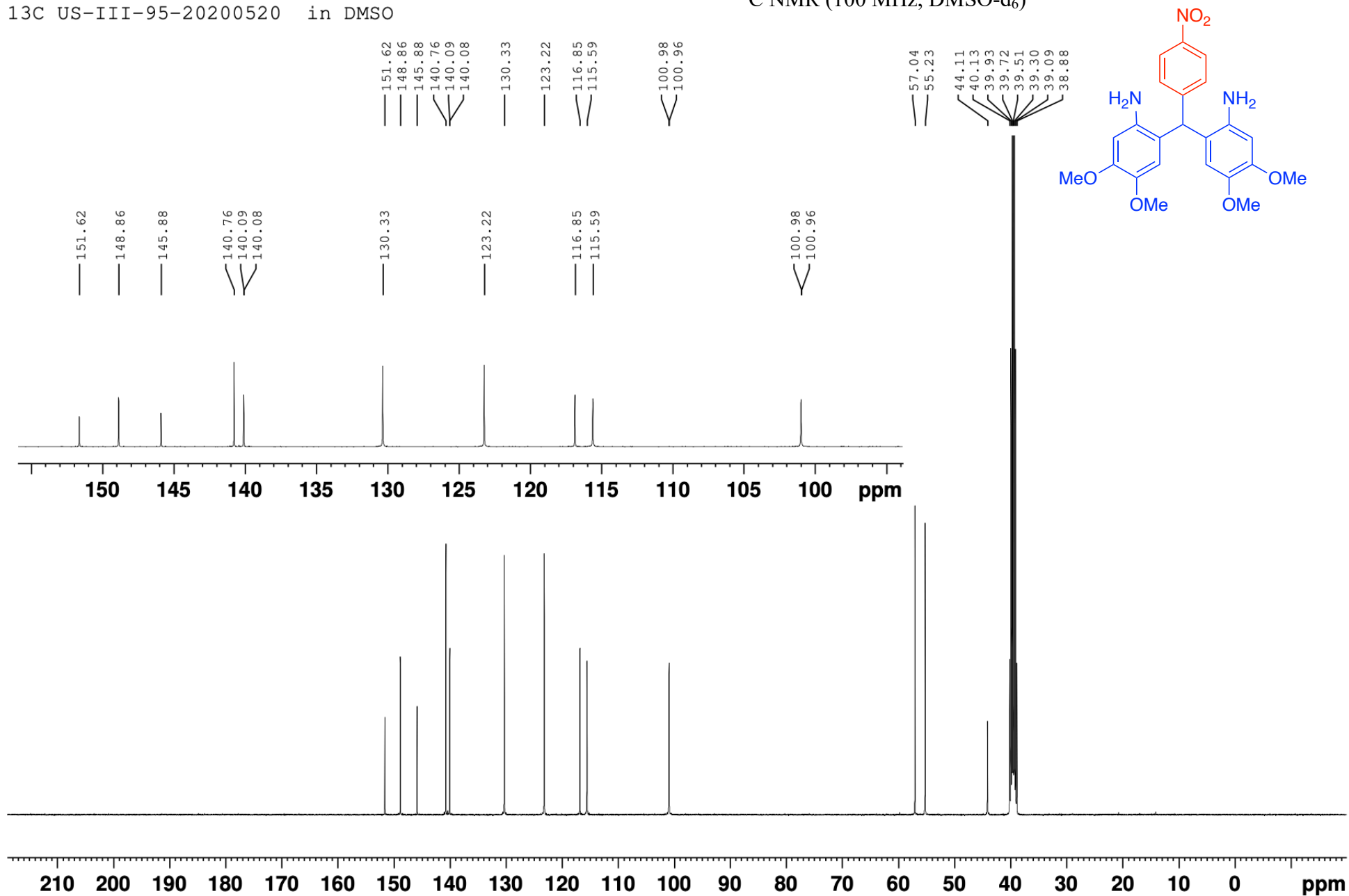
Uthaiwan 1-6-63 No.1
US-III-95-20200520 in DMSO

6,6'-((4-Nitrophenyl)methylene)bis(3,4-dimethoxyaniline) (3x)
¹H NMR (400 MHz, DMSO-d₆)



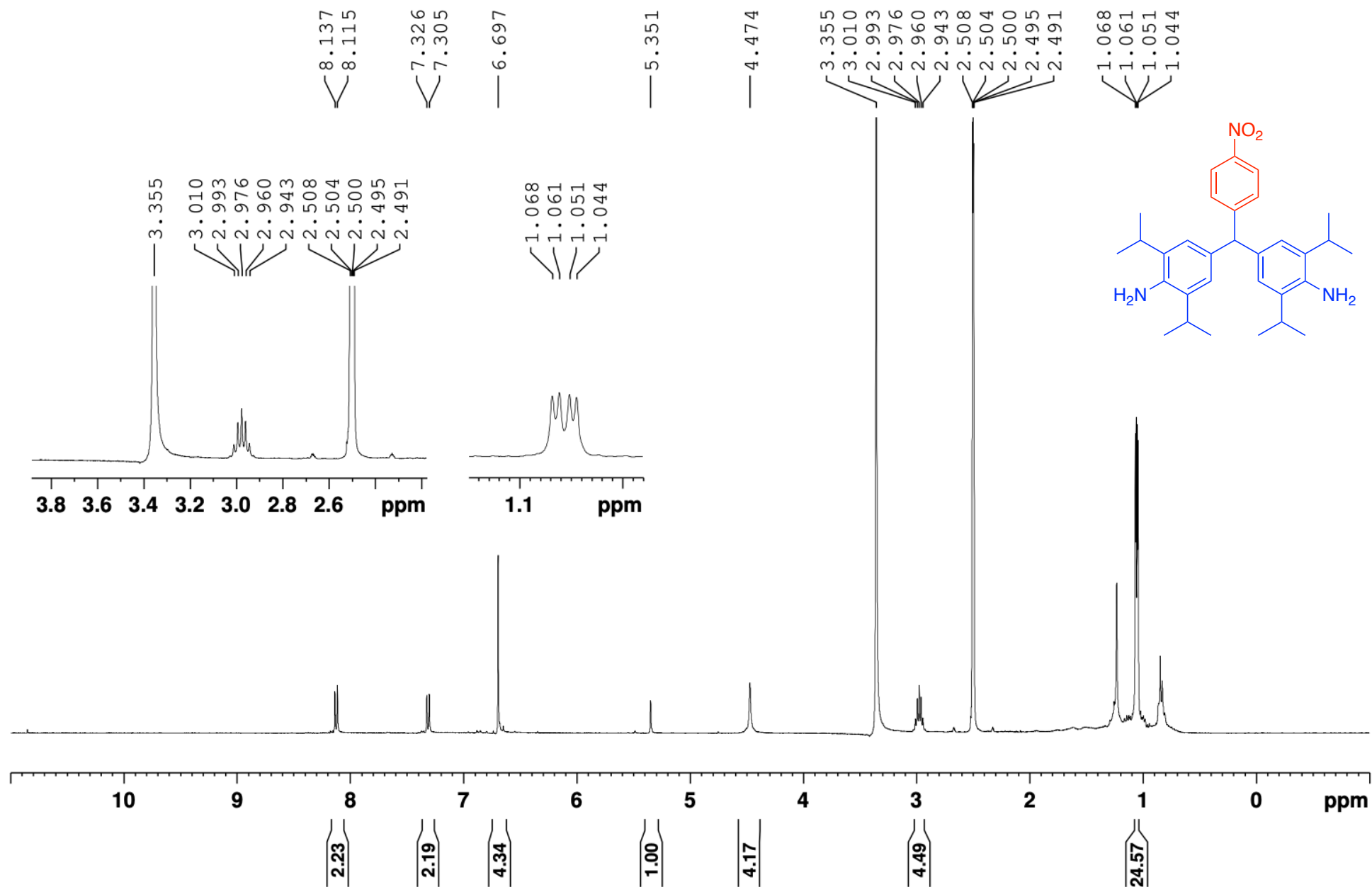
Uthaiwan 4-6-63 No.5
13C US-III-95-20200520 in DMSO

6,6'-((4-Nitrophenyl)methylene)bis(3,4-dimethoxyaniline) (3x)
¹³C NMR (100 MHz, DMSO-d₆)



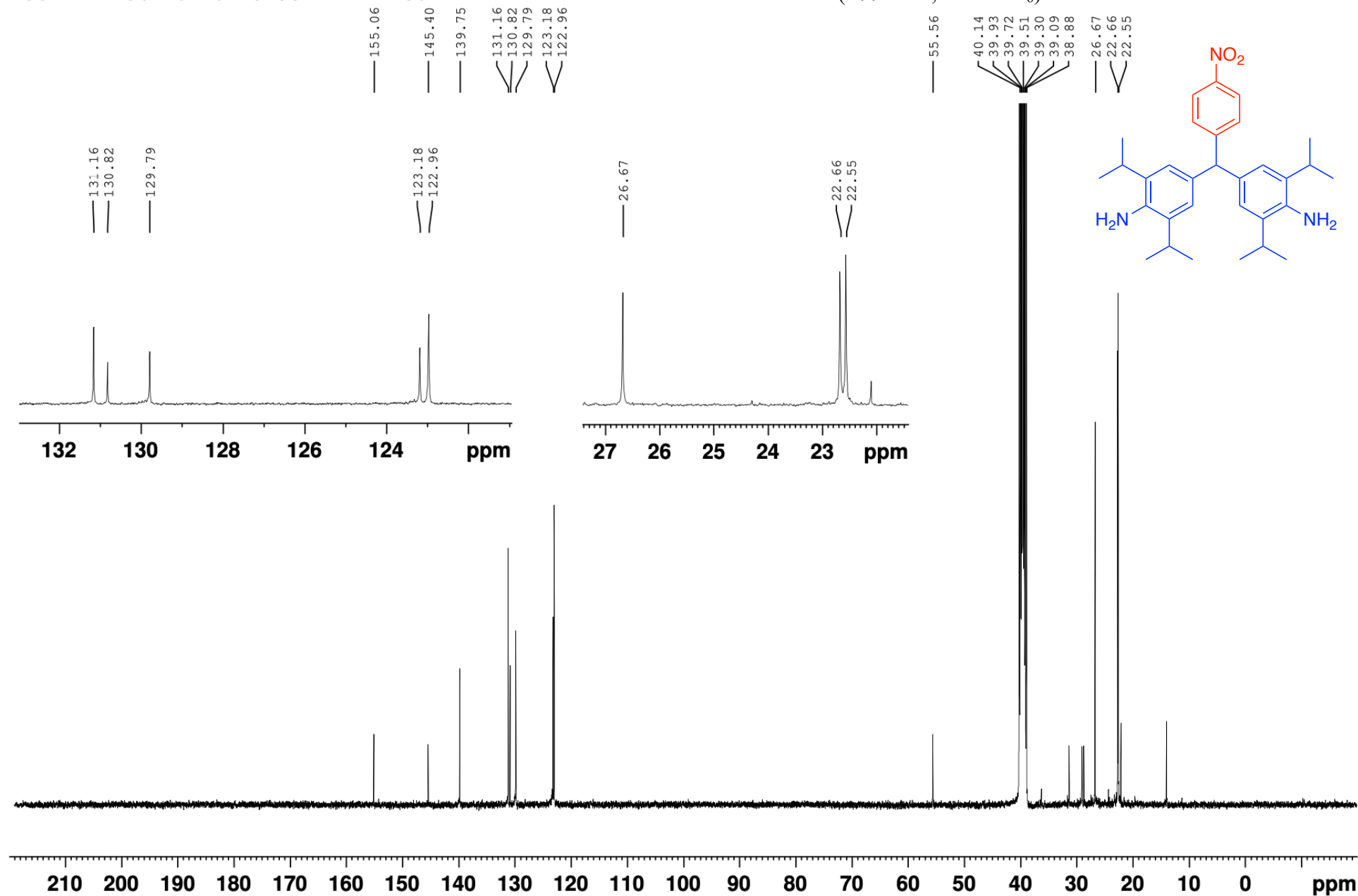
Nipaphorn 24-2-64 No.3
NPNV-36-20210218-down in DMSO

4,4'((4-Nitrophenyl)methylene)bis(2,6-diisopropylaniline) (3y)
¹H NMR (400 MHz, DMSO-d₆)

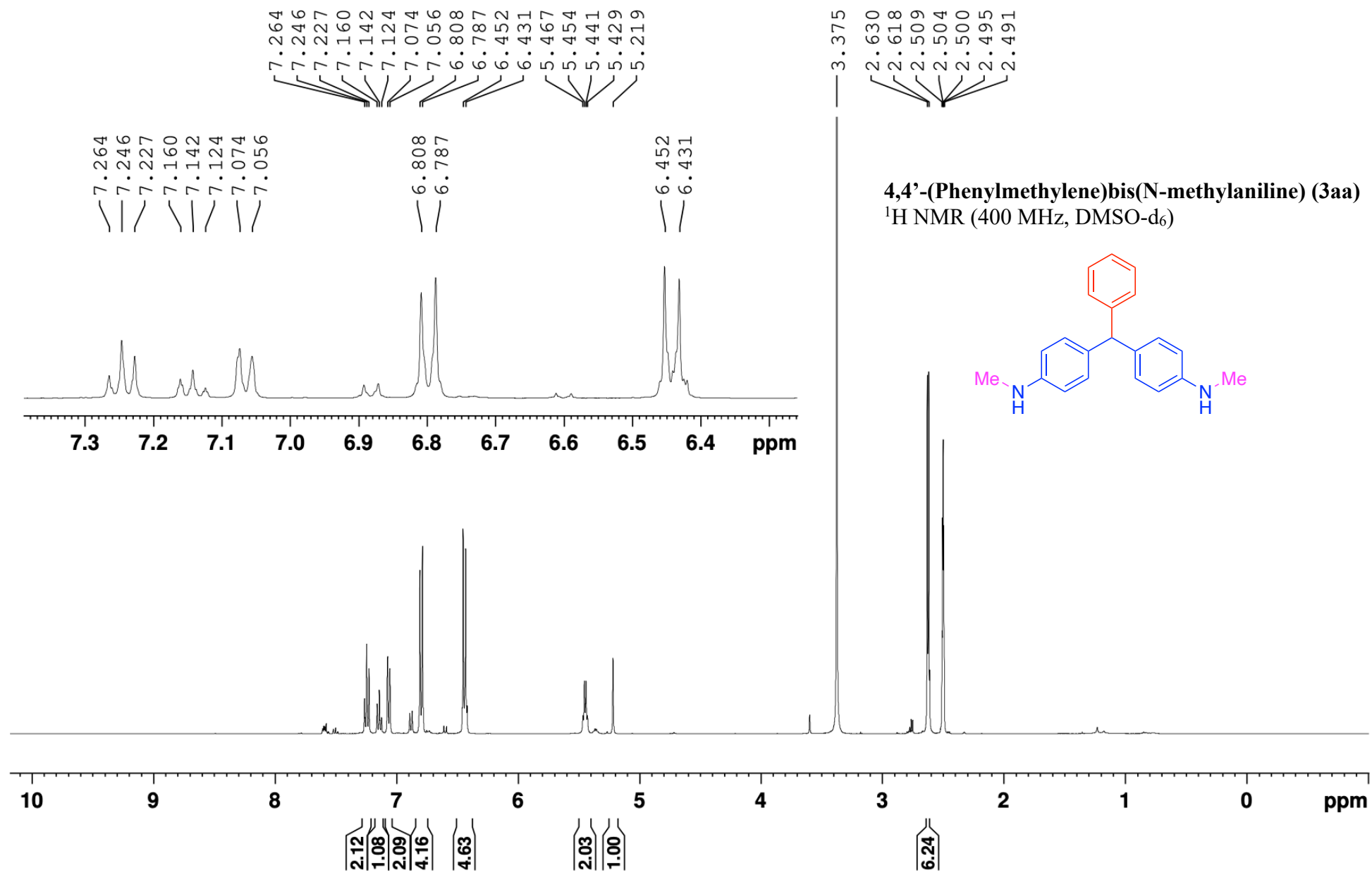


Nipaphorn 3-3-64 No.2
13C NPNV-36-20210218-down in DMSO

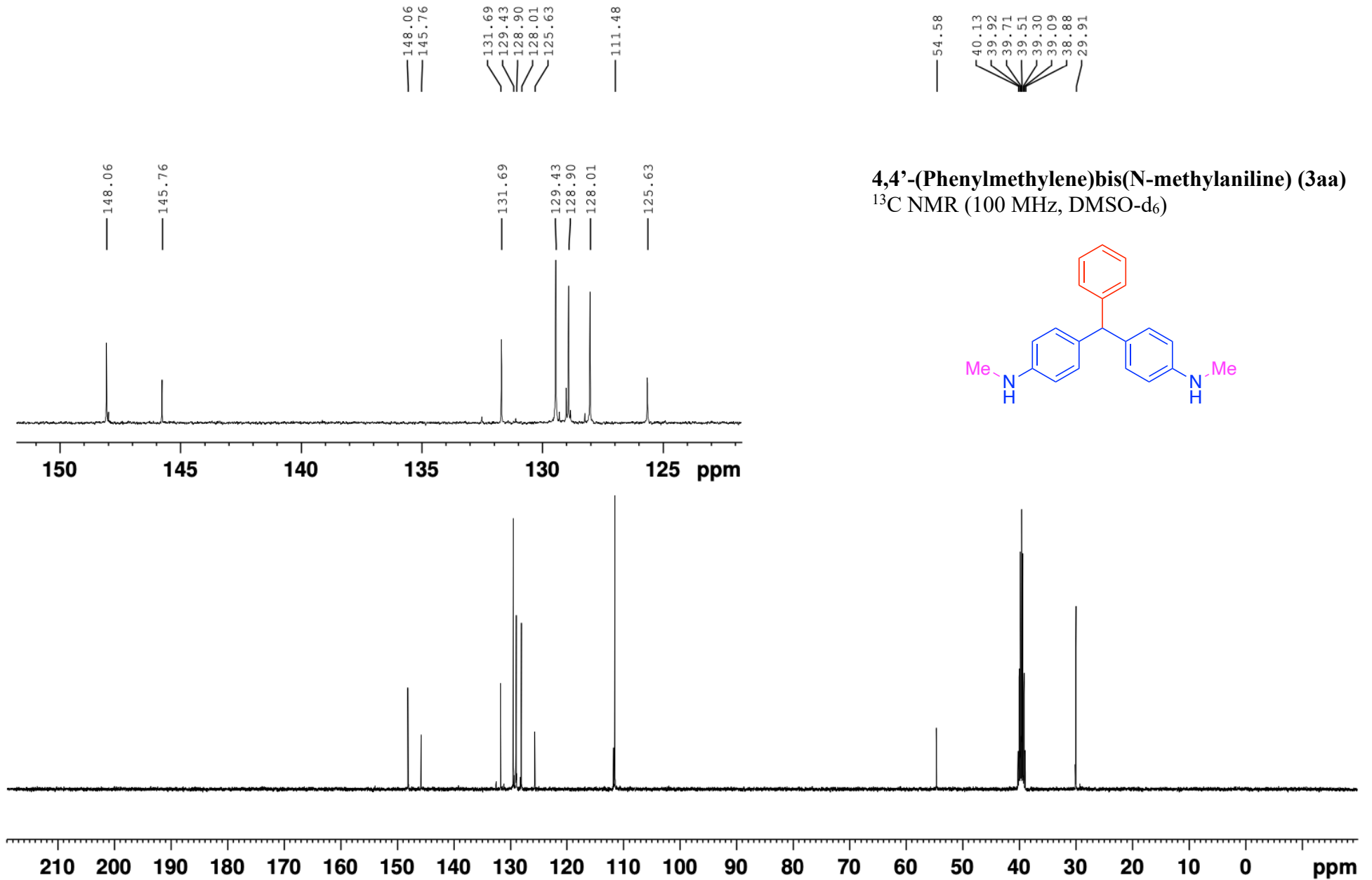
4,4'((4-Nitrophenyl)methylene)bis(2,6-diisopropylaniline) (3y)
13C NMR (100 MHz, DMSO-d₆)



Uthaiwan 29-6-63 No.6
US-III-72-20200424-down in DMSO

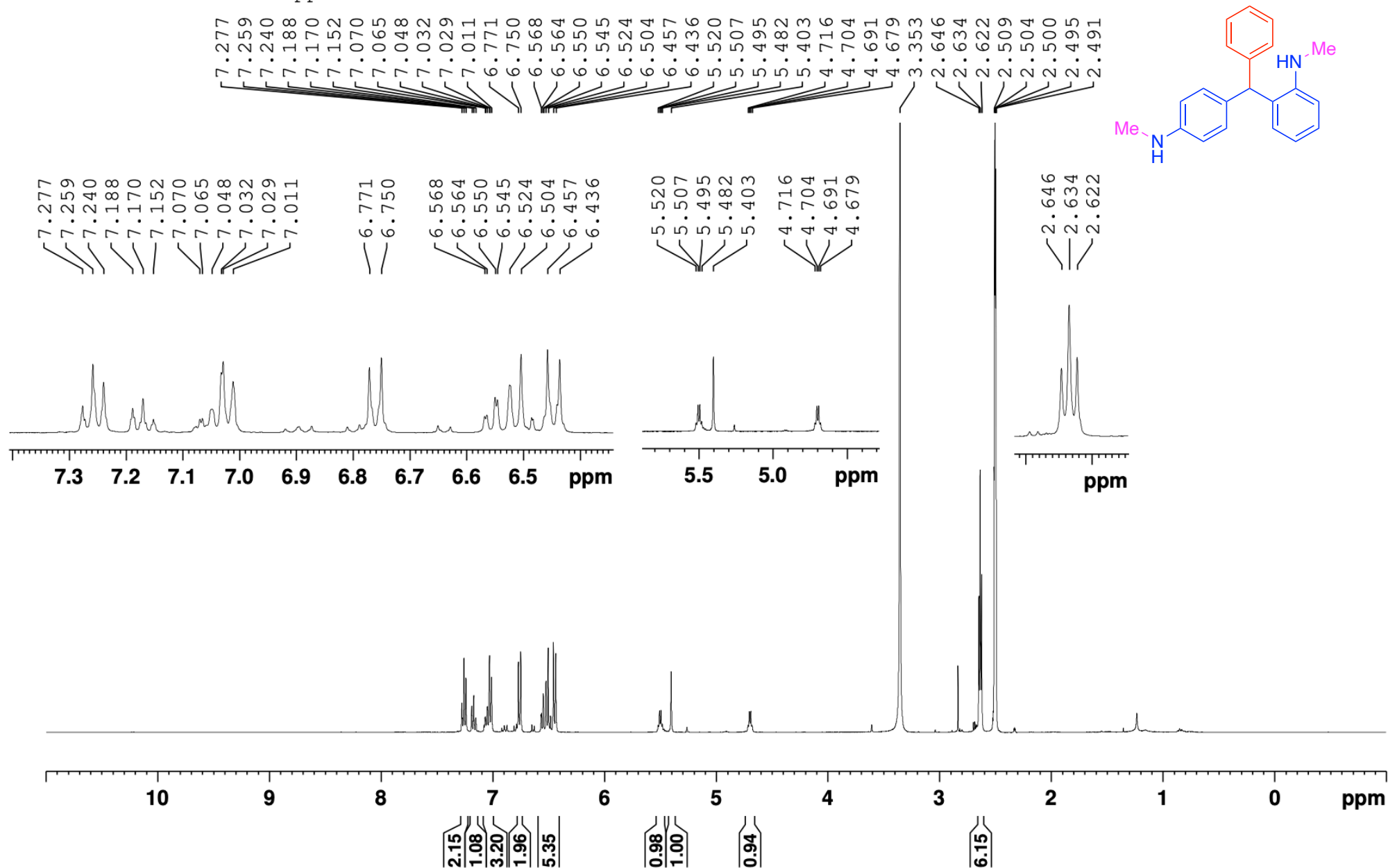


Uthaiwan 2-7-63 No.2
13C US-III-72-20200424-down in DMSO

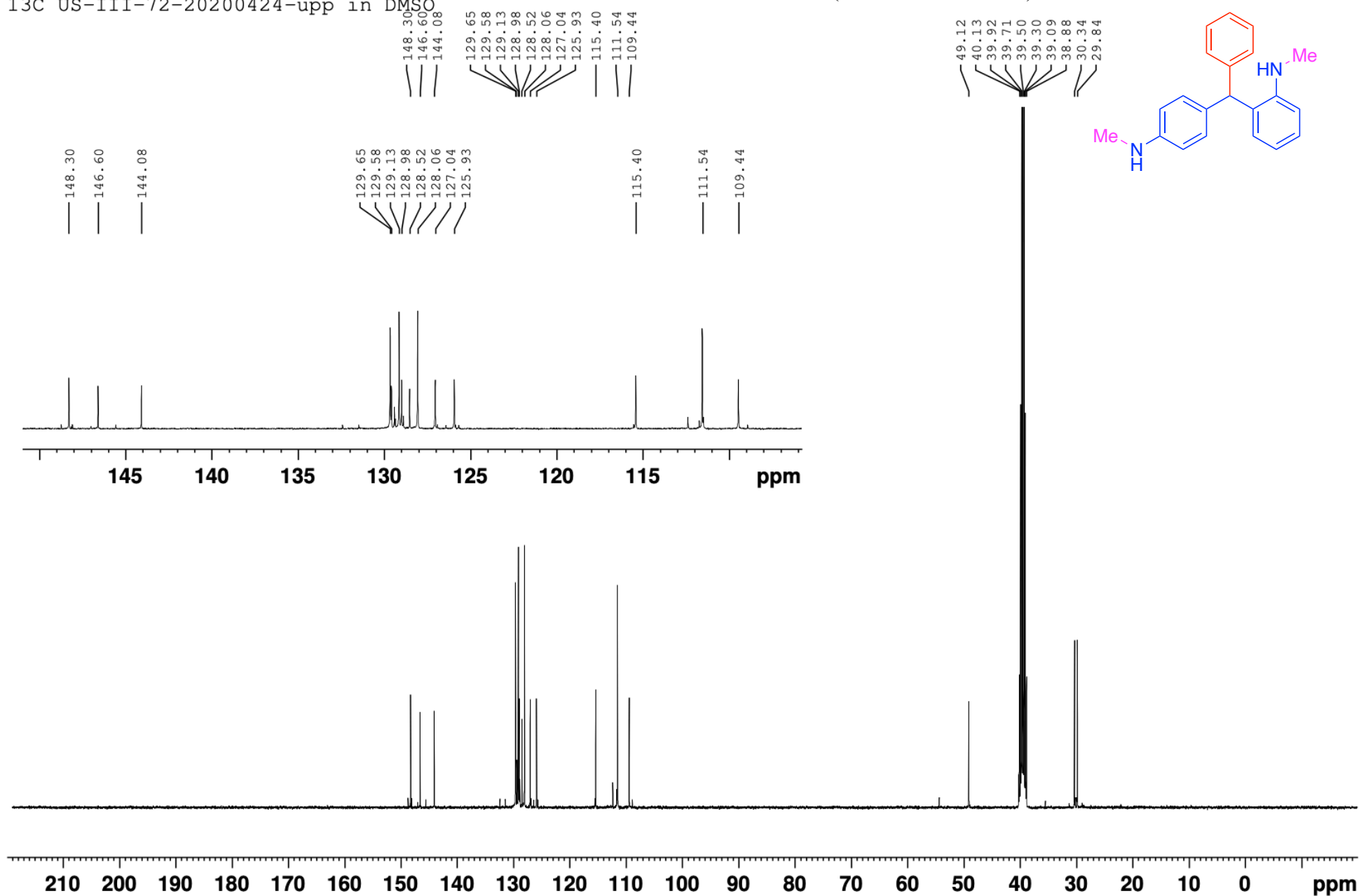


Uthaiwan 25-6-63 No.2
US-III-72-20200424-upp in DMSO

***N*-Methyl-2-((4-(methylamino)phenyl)(phenyl)methyl)aniline (4aa)**
¹H NMR (400 MHz, DMSO-d₆)

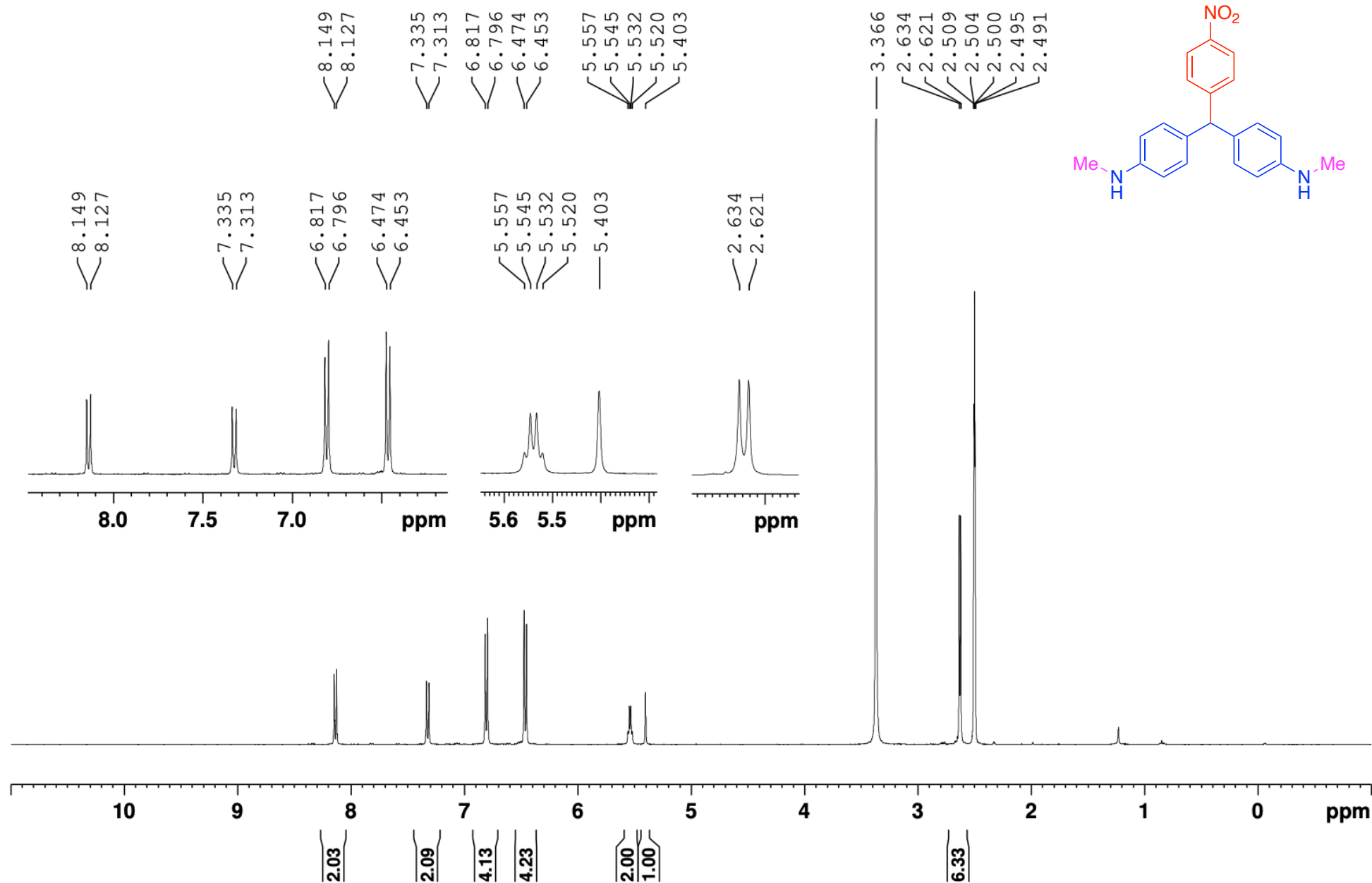


Uthaiwan 29-6-63 No.3

 ^{13}C US-III-72-20200424-upp in DMSO***N*-Methyl-2-((4-(methylamino)phenyl)(phenyl)methyl)aniline (4aa)** ^{13}C NMR (100 MHz, DMSO- d_6)

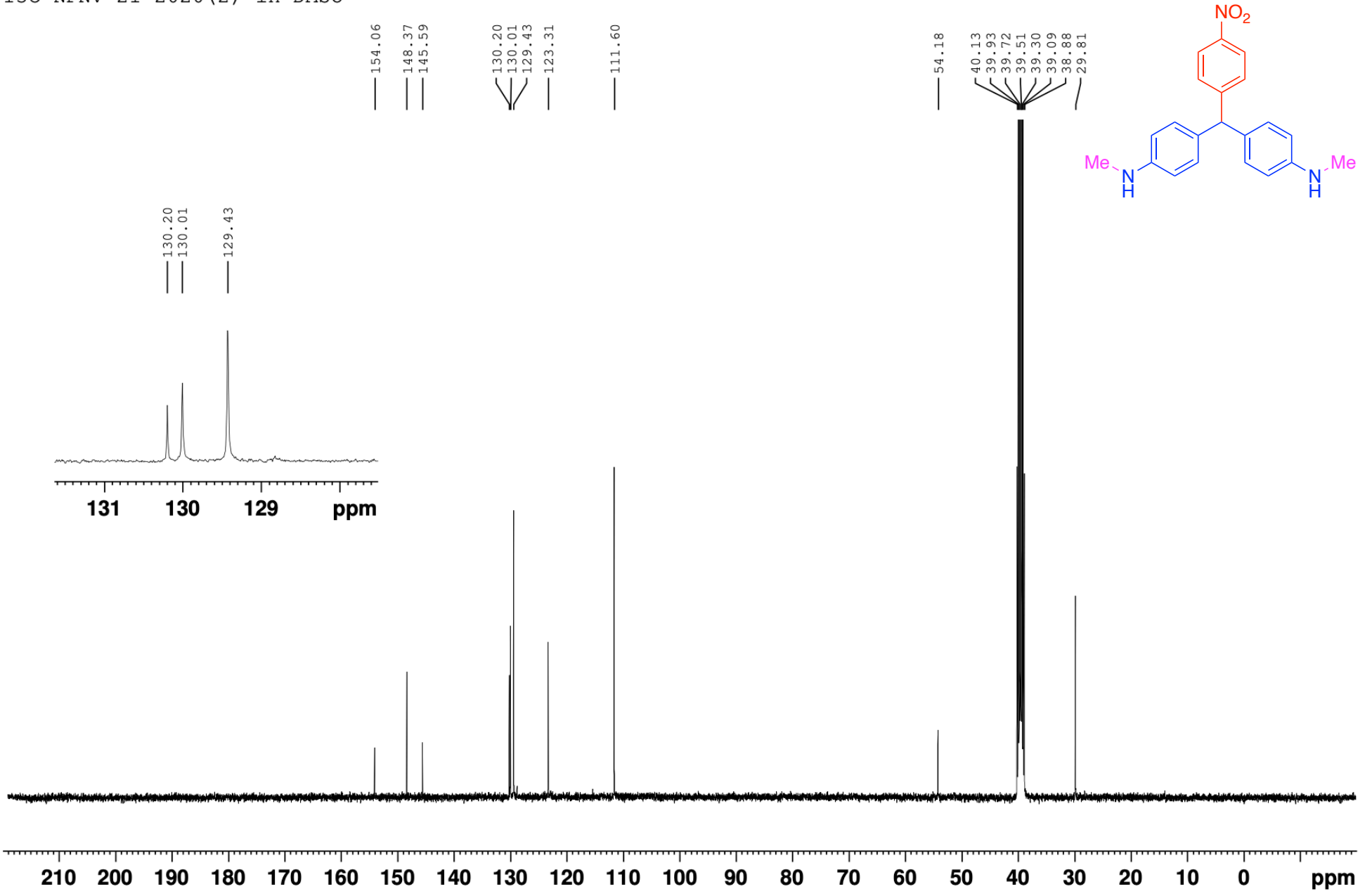
Nipaphorn 25-2-63 No.4
NPNV-21-2020 (2) in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(*N*-methylaniline) (3ab)
¹H NMR (400 MHz, DMSO-d₆)



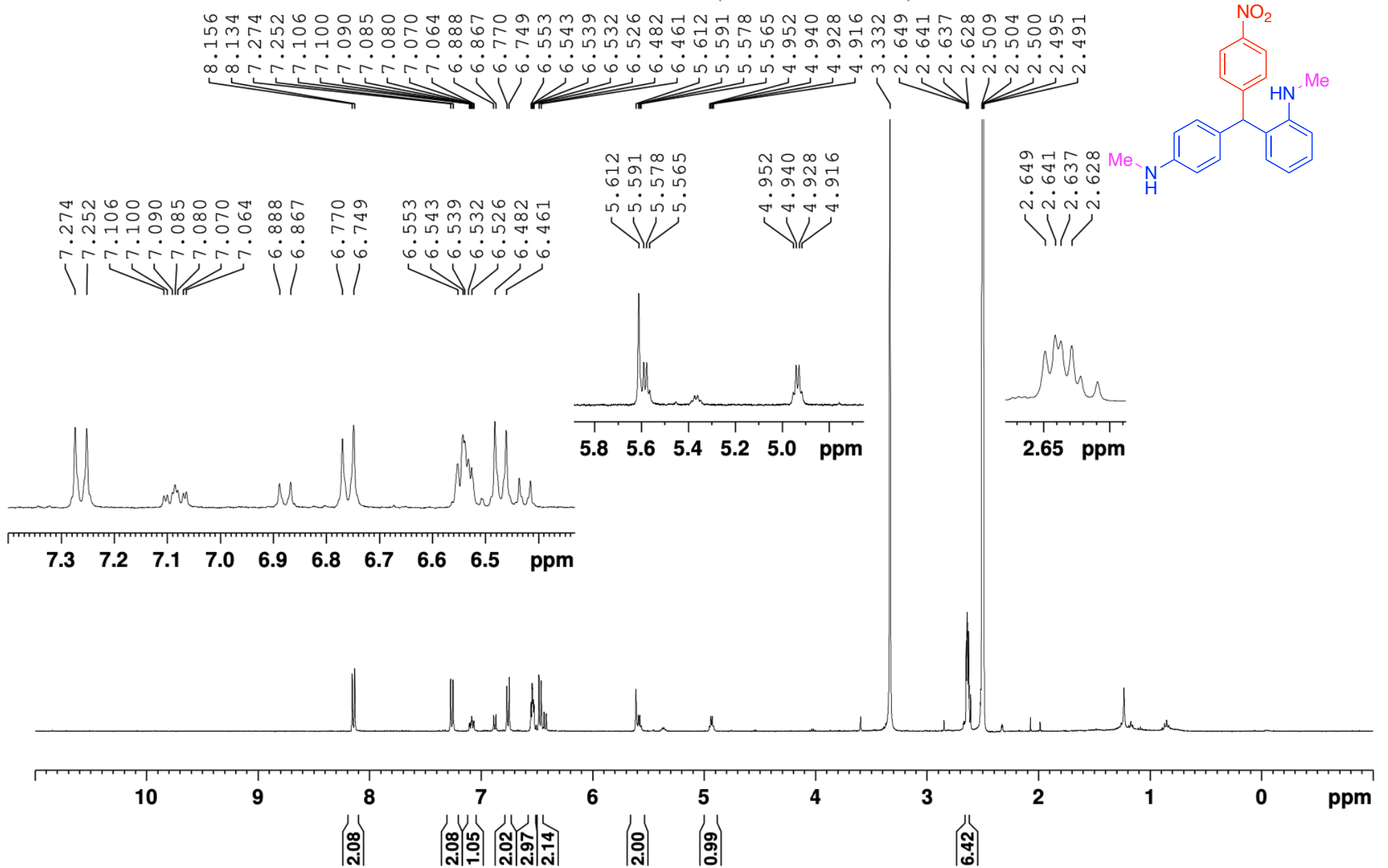
Nipaphorn 3-3-63 No.4
13C NPNV-21-2020 (2) in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(N-methylaniline) (3ab)
13C NMR (100 MHz, DMSO-d6)



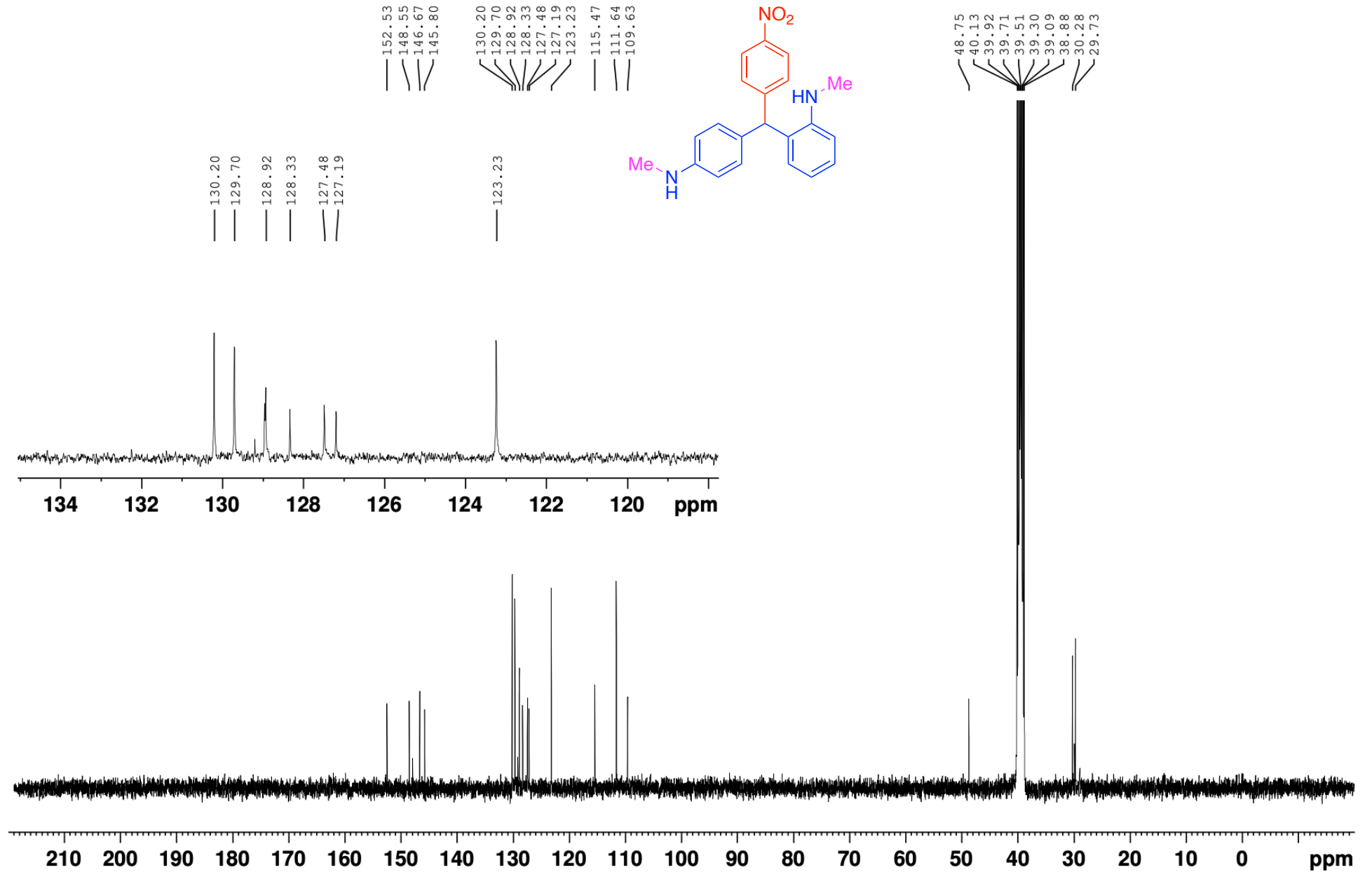
Nipaphorn 2-10-63 No.2
US-III-73-2020-up-re in DMSO

***N*-Methyl-2-((4-(methylamino)phenyl)(4-nitrophenyl)methyl)aniline (4ab)**
¹H NMR (400 MHz, DMSO-d₆)

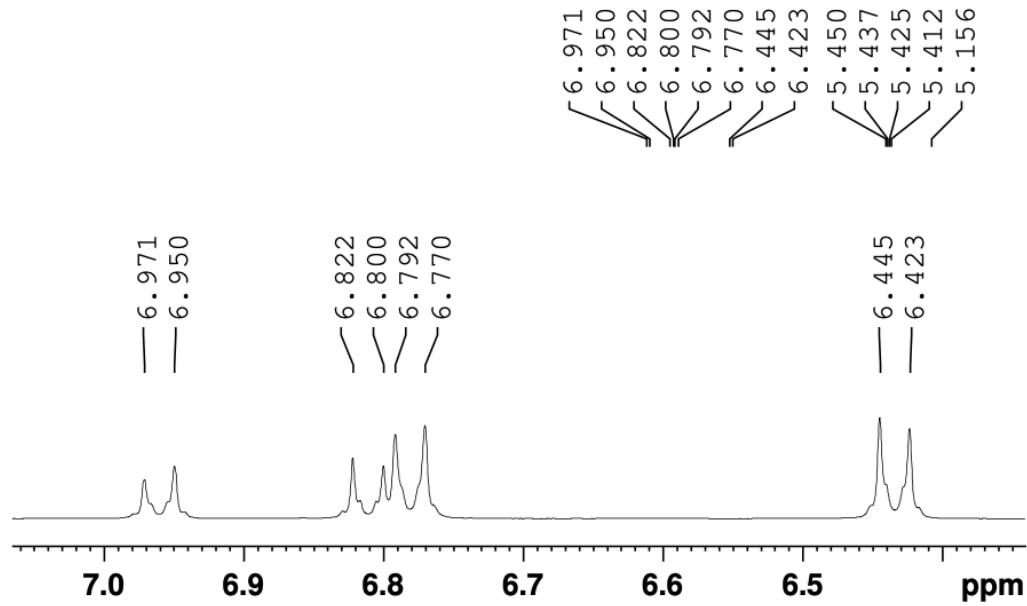


Nipaphorn 5-10-63 No.2
13C US-III-73-2020-up-re in DMSO

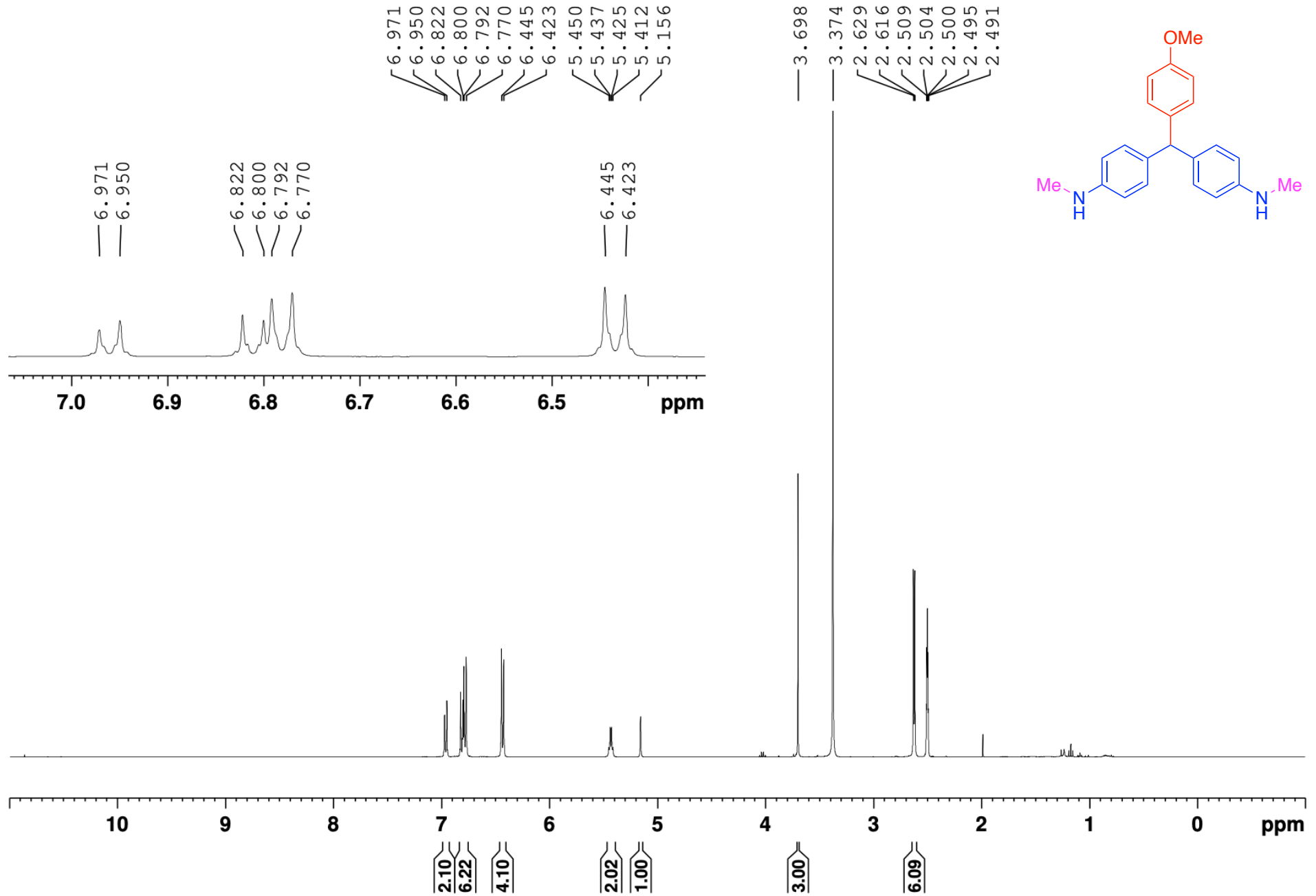
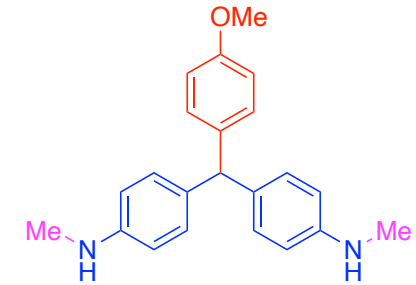
***N*-Methyl-2-((4-(methylamino)phenyl)(4-nitrophenyl)methyl)aniline (4ab)**
¹³C NMR (100 MHz, DMSO-d₆)



Nipaphorn 23-3-63 No.3
24(2) in DMSO



4,4'-((4-Methoxyphenyl)methylene)bis(N-methylaniline) (3ac)
¹H NMR (400 MHz, DMSO-d₆)

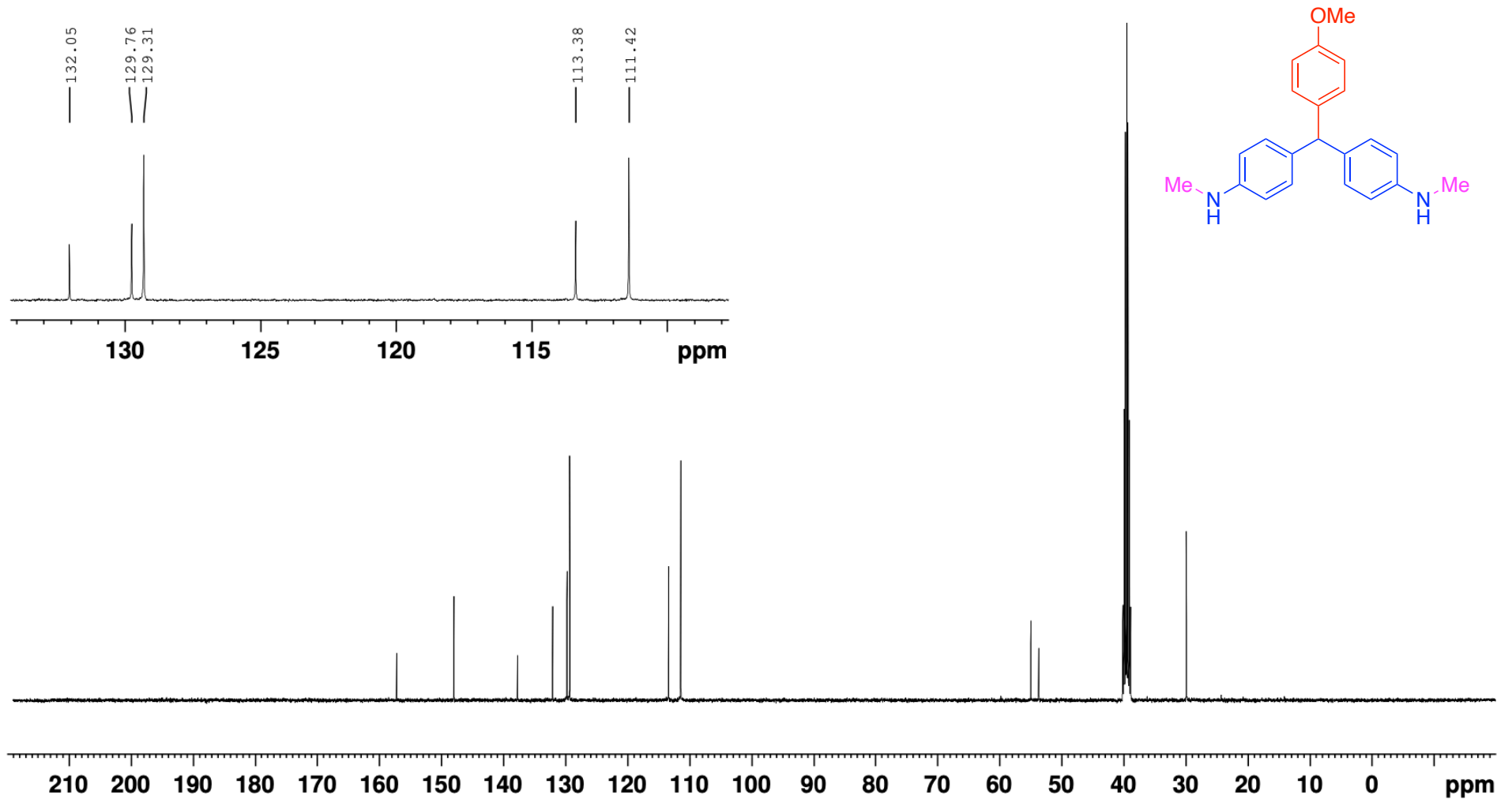


Nipaphorn 24-3-63 No.3
 ^{13}C 24(2) in DMSO

— 157.21
 — 147.97
 — 137.72
 — 132.05
 — 129.76
 — 129.31
 — 113.38
 — 111.42

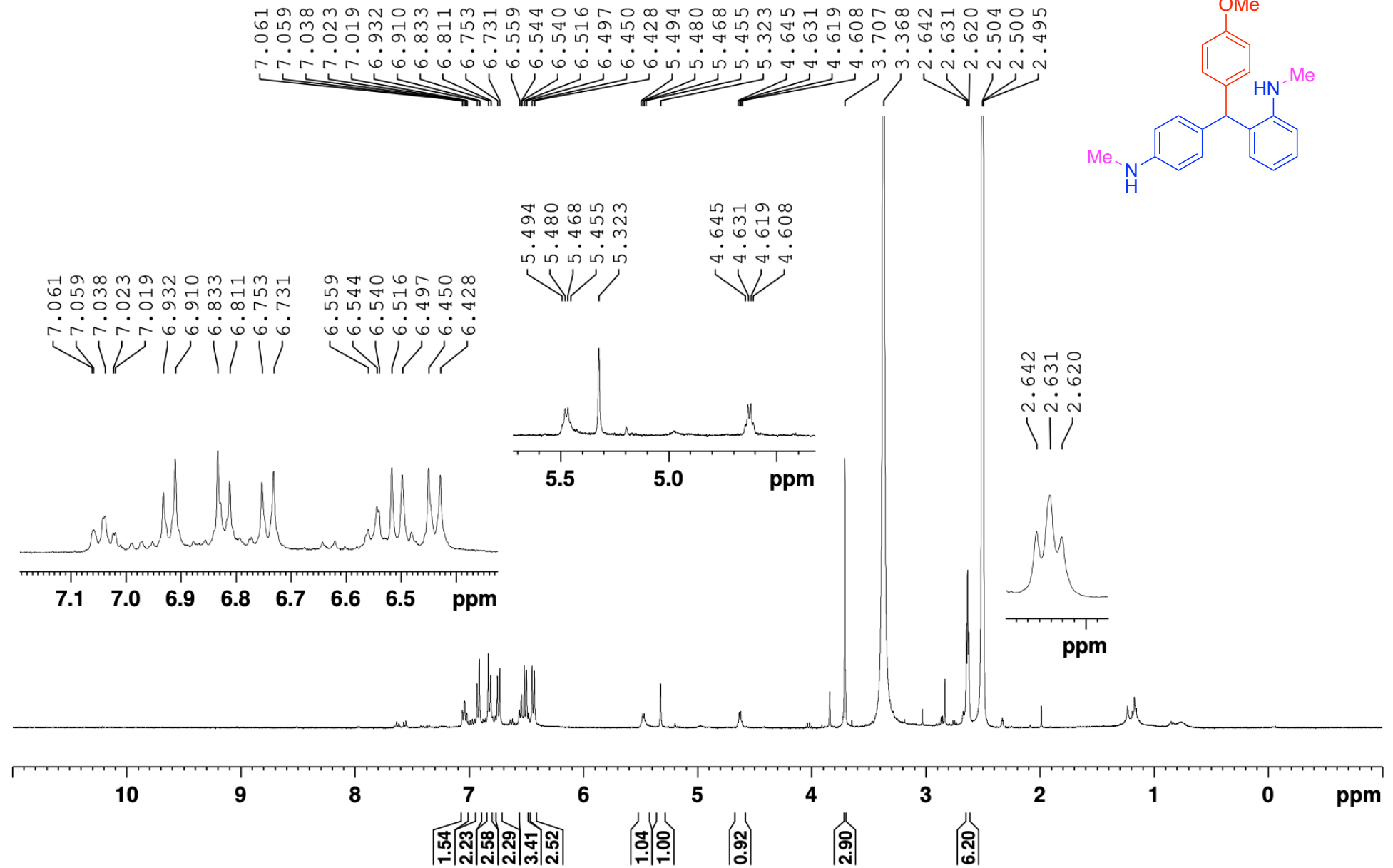
— 54.96
 — 53.69
 — 40.13
 — 39.92
 — 39.71
 — 39.51
 — 39.30
 — 39.09
 — 38.88
 — 29.90

4,4'-((4-Methoxyphenyl)methylene)bis(N-methylaniline) (3ac)
 ^{13}C NMR (100 MHz, DMSO- d_6)



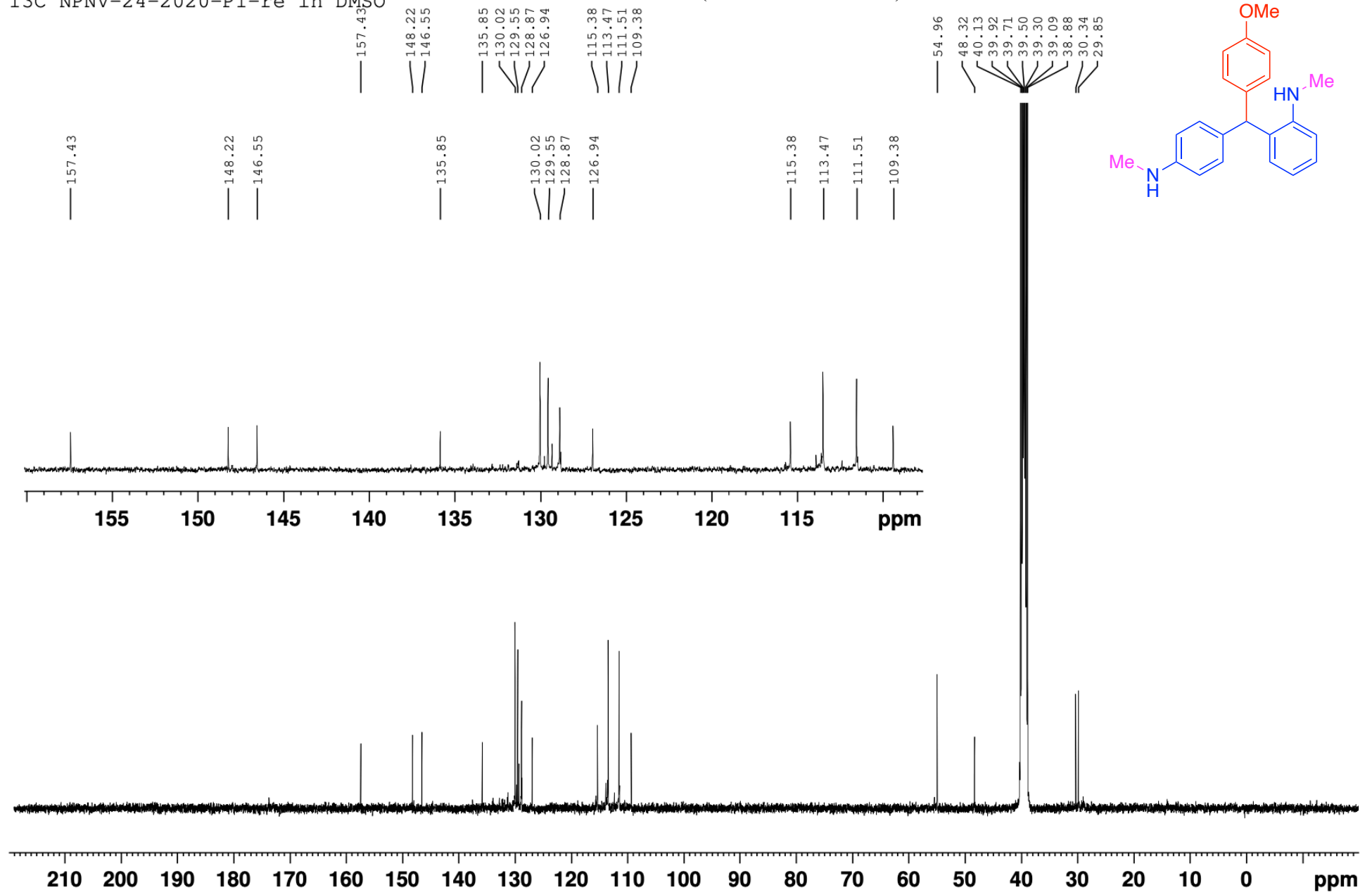
Nipaphorn 3-3-64 No.1
NPNV-24-2020-P1 in DMSO

2-((4-Methoxyphenyl)(4-(methylamino)phenyl)methyl)-*N*-methylaniline (4ac)
¹H NMR (400 MHz, DMSO-d₆)



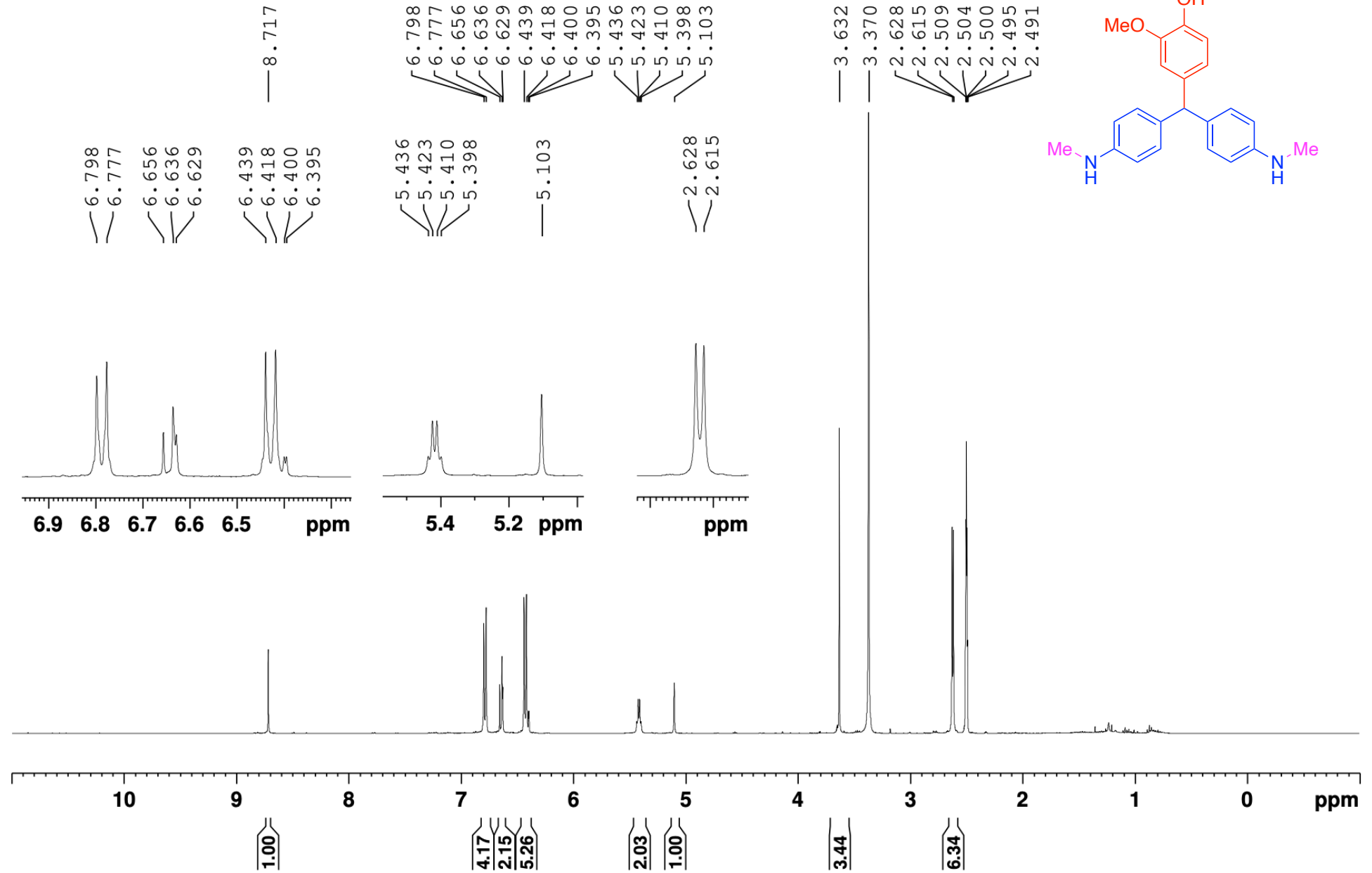
Nipaphorn 9-3-64 No.1
13C NPNV-24-2020-P1-re in DMSO

2-((4-Methoxyphenyl)(4-(methylamino)phenyl)methyl)-N-methylaniline (4ac)
¹³C NMR (100 MHz, DMSO-d₆)

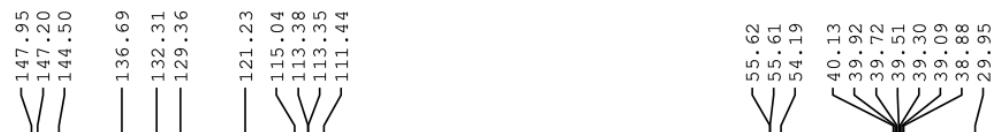


Uthaiwan 29-6-63 No.5
US-III-75-20200502-down in DMSO

4-(Bis(4-(methylamino)phenyl)methyl)-2-methoxyphenol (3ad)
¹H NMR (400 MHz, DMSO-d₆)

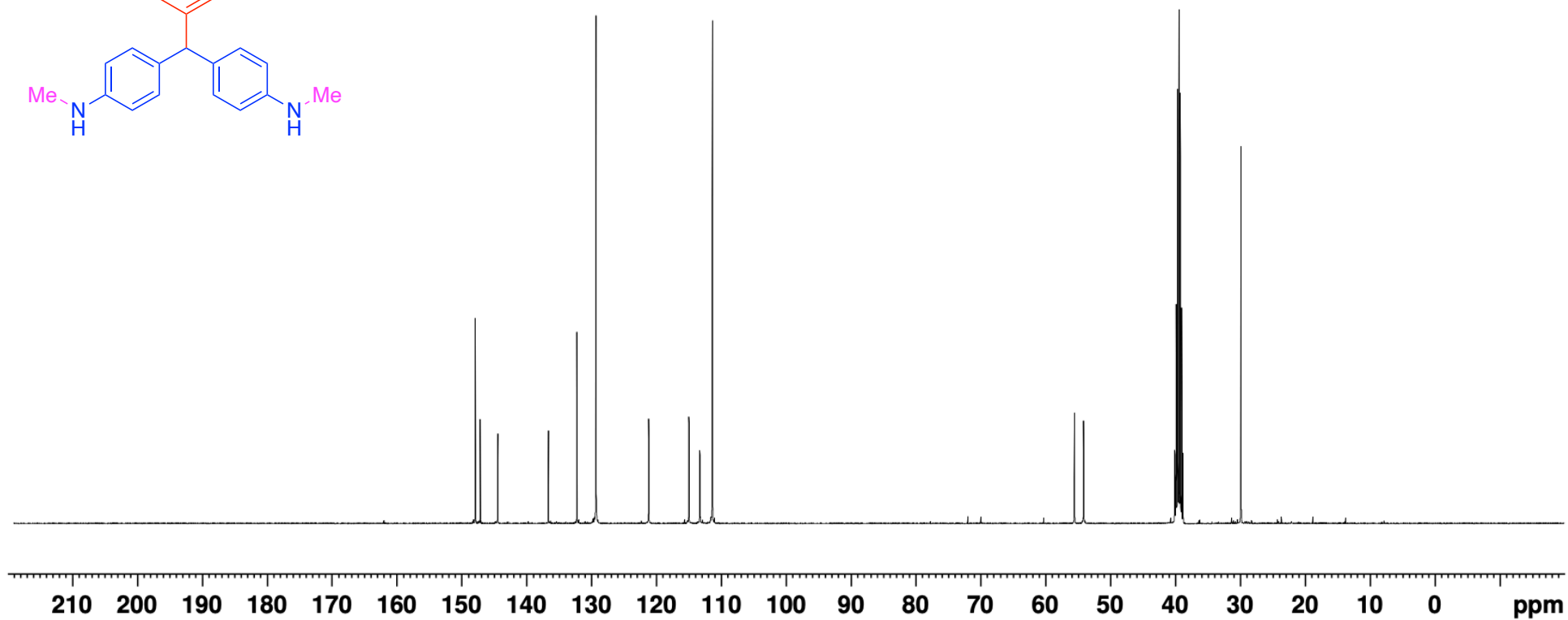
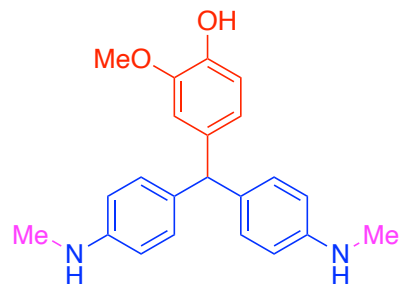


Uthaiwan 1-7-63 No.4
13C US-III-75-20200502-down in DMSO



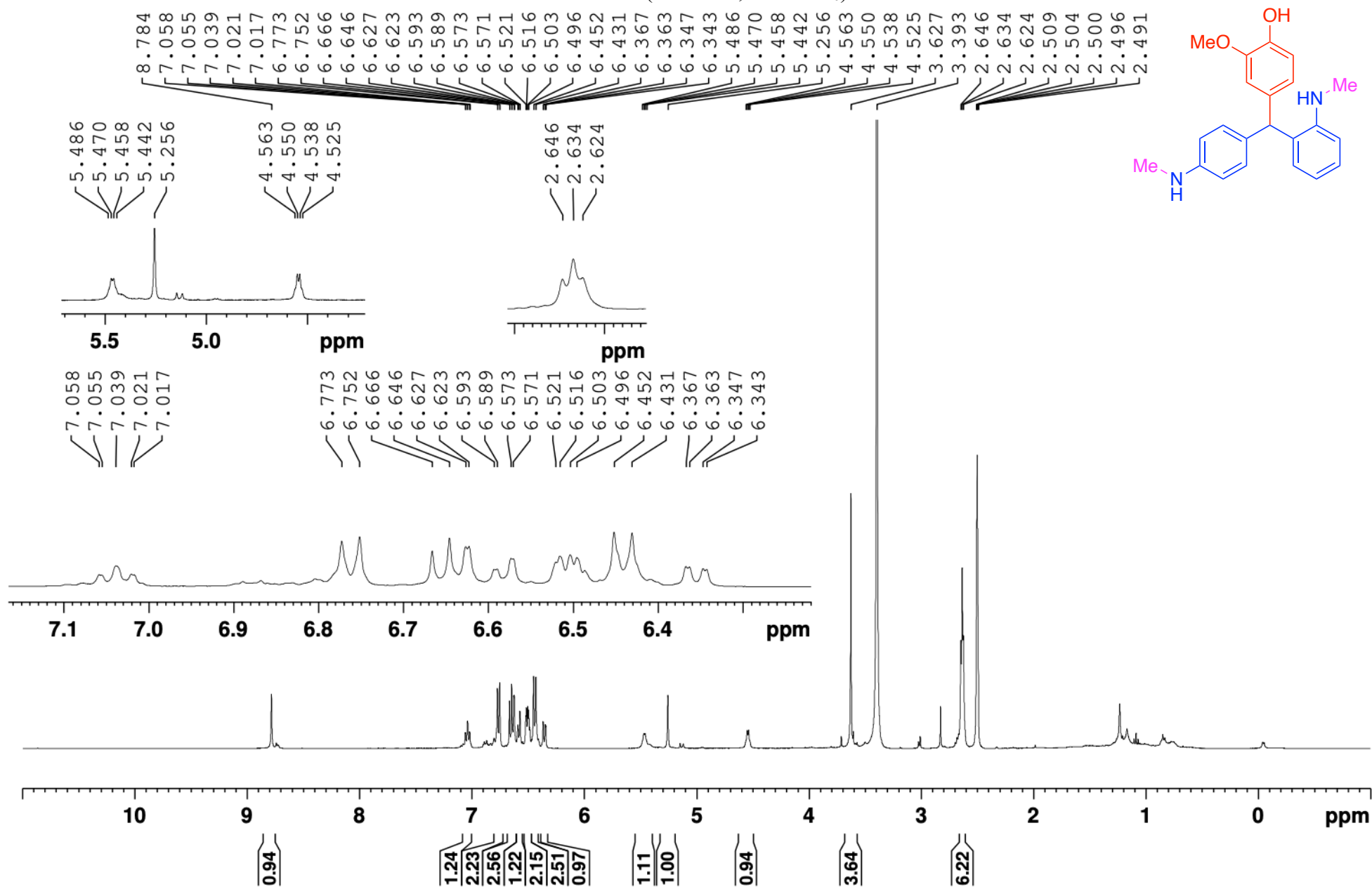
4-(Bis(4-(methylamino)phenyl)methyl)-2-methoxyphenol (3ad)

¹³C NMR (100 MHz, DMSO-d₆)



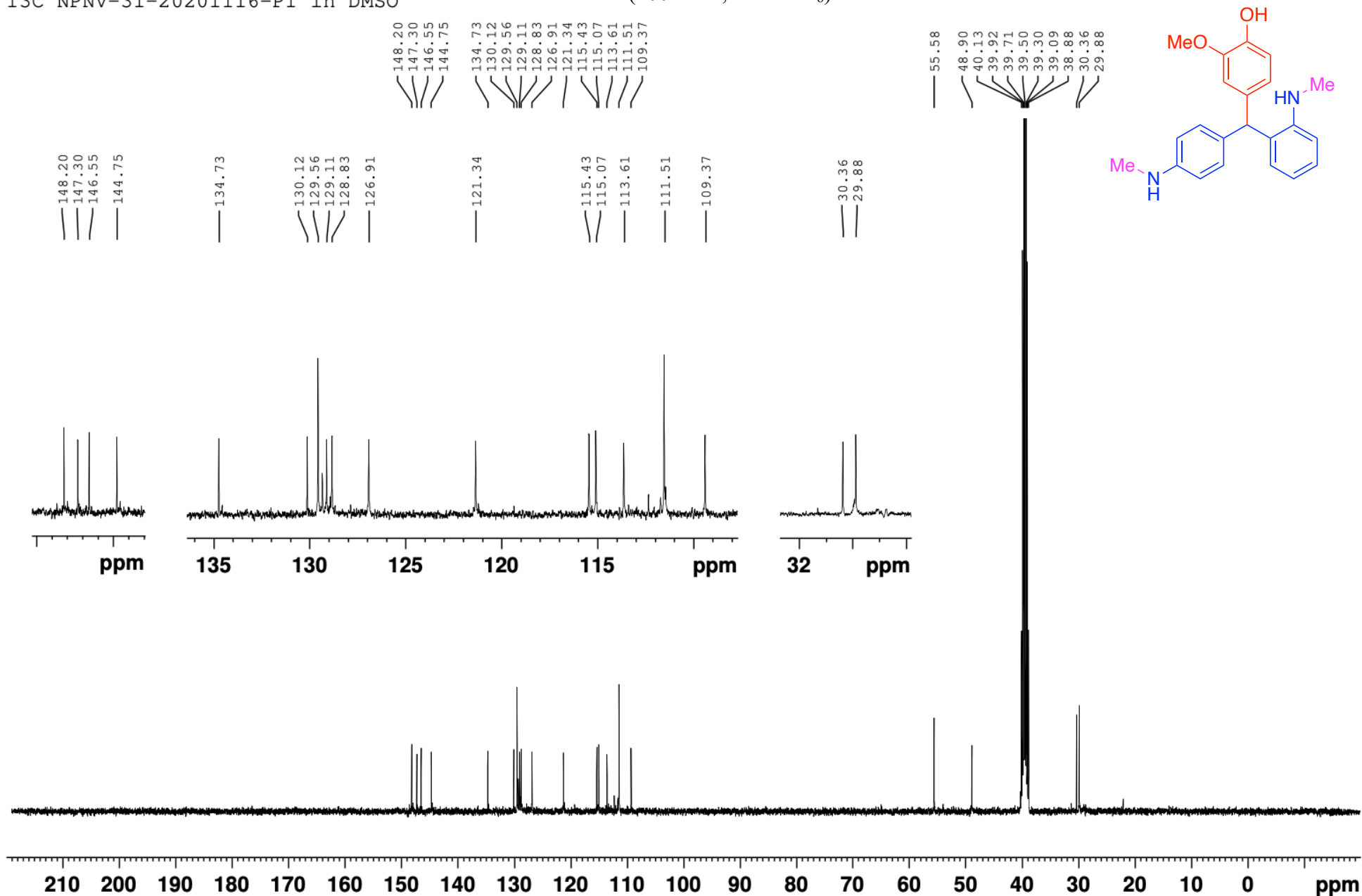
Nipaphorn 16-12-63 No.1
NPNV-31-20201116-P1 in DMSO

2-Methoxy-4-((2-(methylamino)phenyl)(4-(methylamino)phenyl)methyl)phenol (4ad)
¹H NMR (400 MHz, DMSO-d₆)



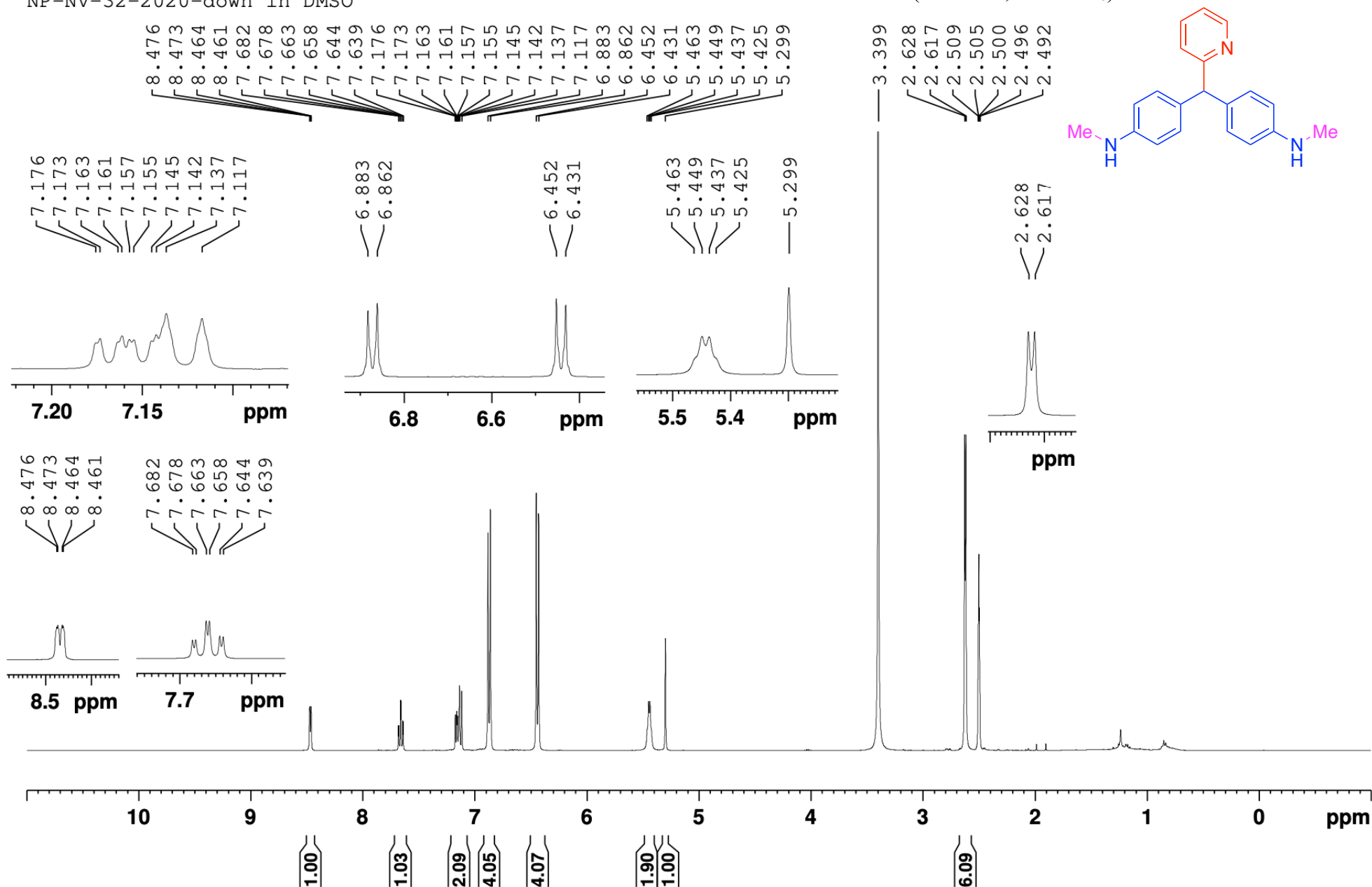
Nipaphorn 24-12-63 No.2
13C NPNV-31-20201116-P1 in DMSO

2-Methoxy-4-((2-(methylamino)phenyl)(4-(methylamino)phenyl)methyl)phenol (4ad)
13C NMR (100 MHz, DMSO-d₆)



Nipaphorn 4-3-64 No.2
NP-NV-32-2020-down in DMSO

4,4'-(Pyridin-2-ylmethylene)bis(*N*-methylaniline) (3ae)
¹H NMR (400 MHz, DMSO-d₆)

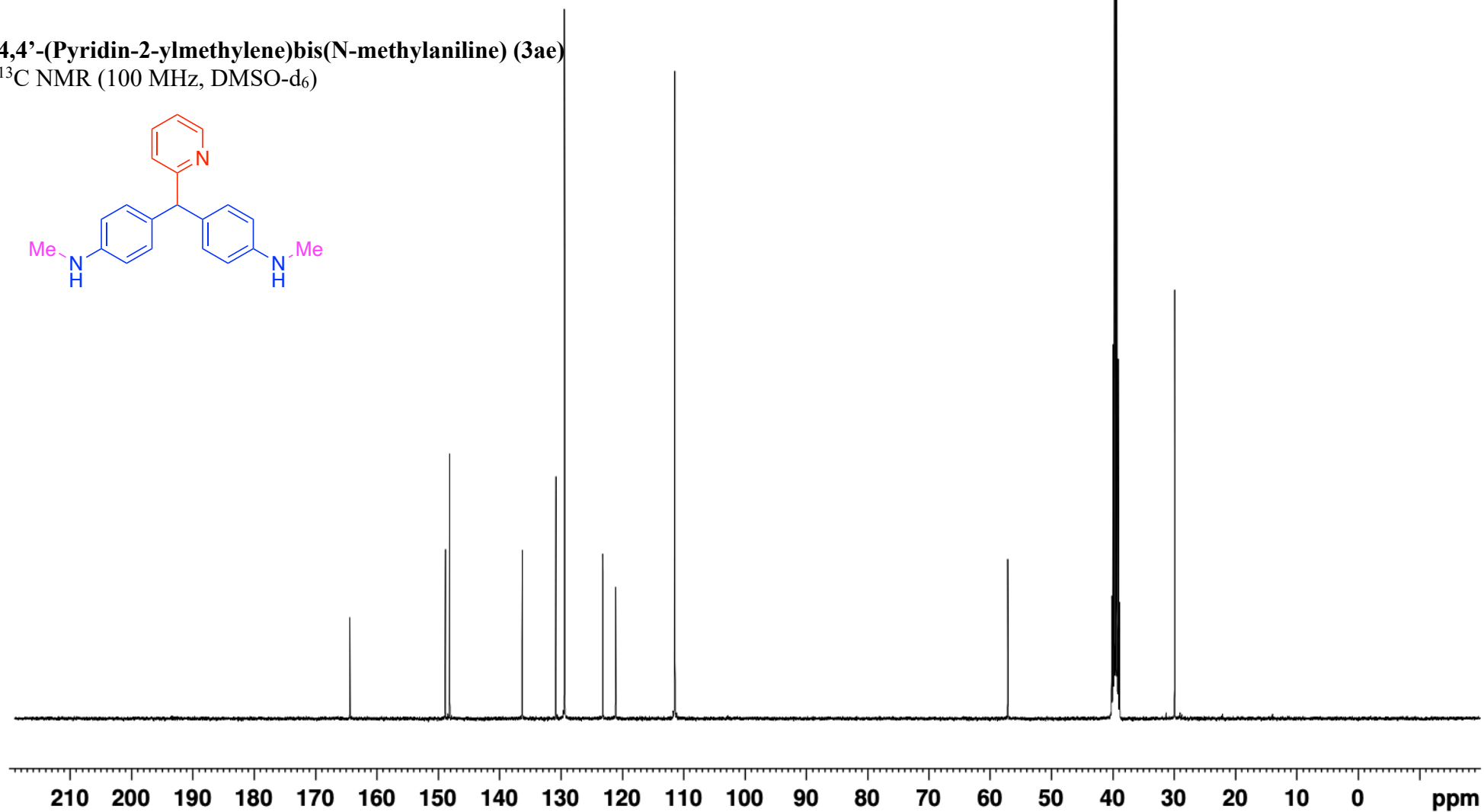
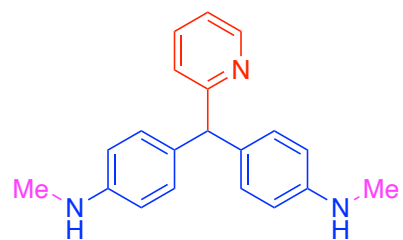


Nipaphorn 12-3-64 No.1
13C NPNV-32-20201116-P2 in DMSO



4,4'-(Pyridin-2-ylmethylene)bis(N-methylaniline) (3ae)

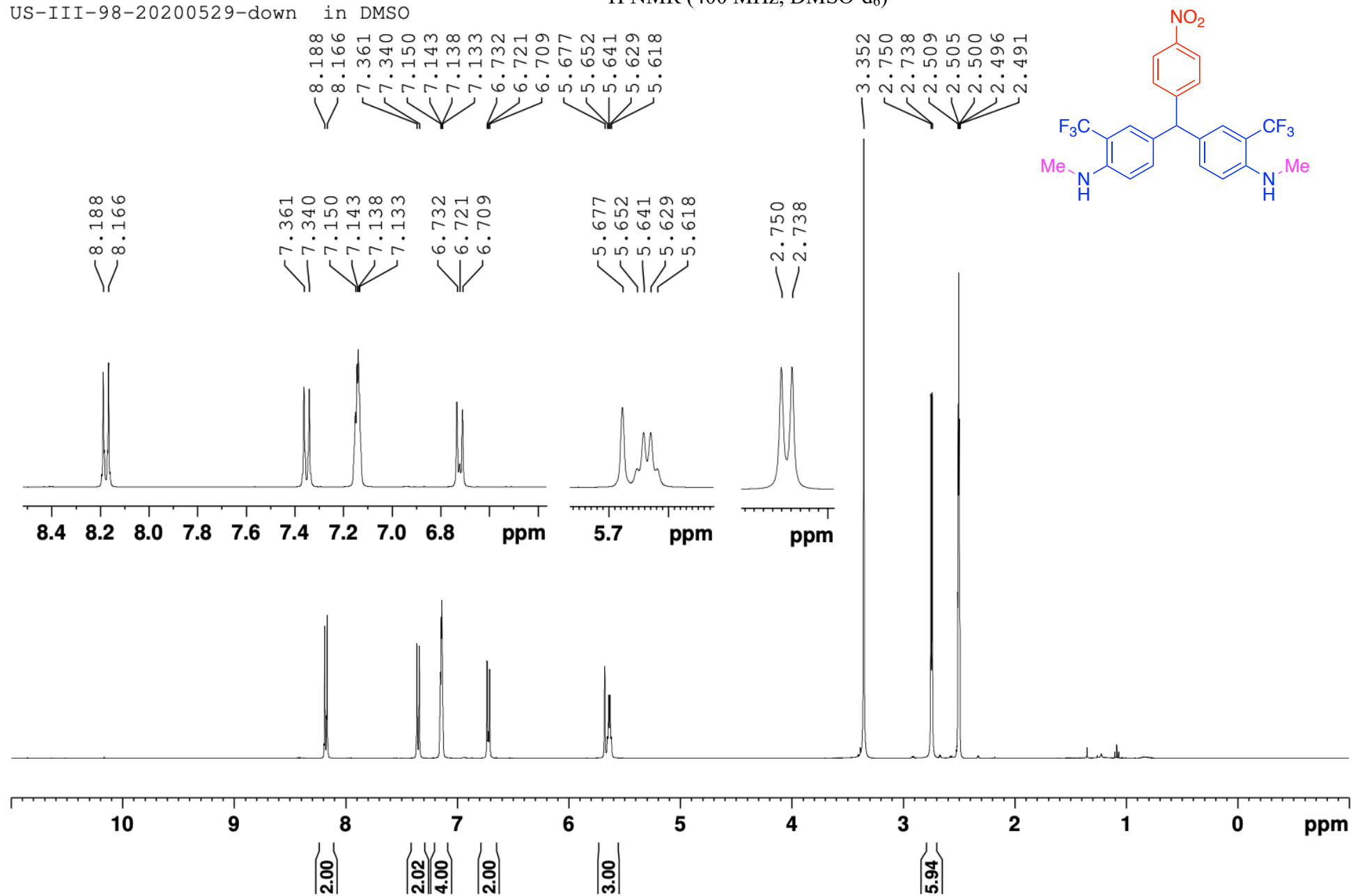
¹³C NMR (100 MHz, DMSO-d₆)



Uthaiwan 4-6-63 No.1

US-III-98-20200529-down in DMSO

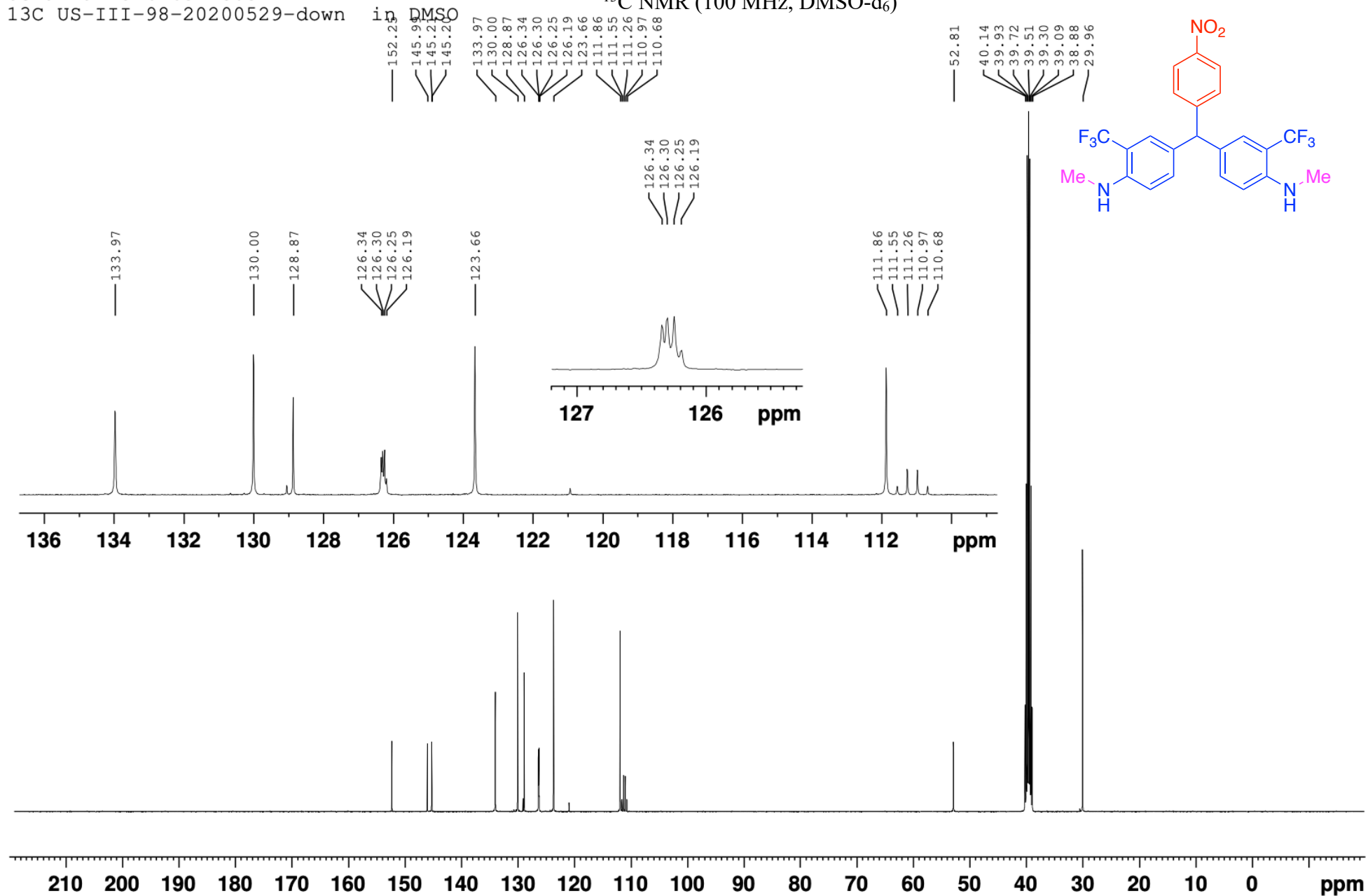
4,4'-((4-Nitrophenyl)methylene)bis(N-methyl-2-(trifluoromethyl)aniline) (3af)

¹H NMR (400 MHz, DMSO-d₆)

Uthaiwan 5-6-63 No.3
13C US-III-98-20200529-down

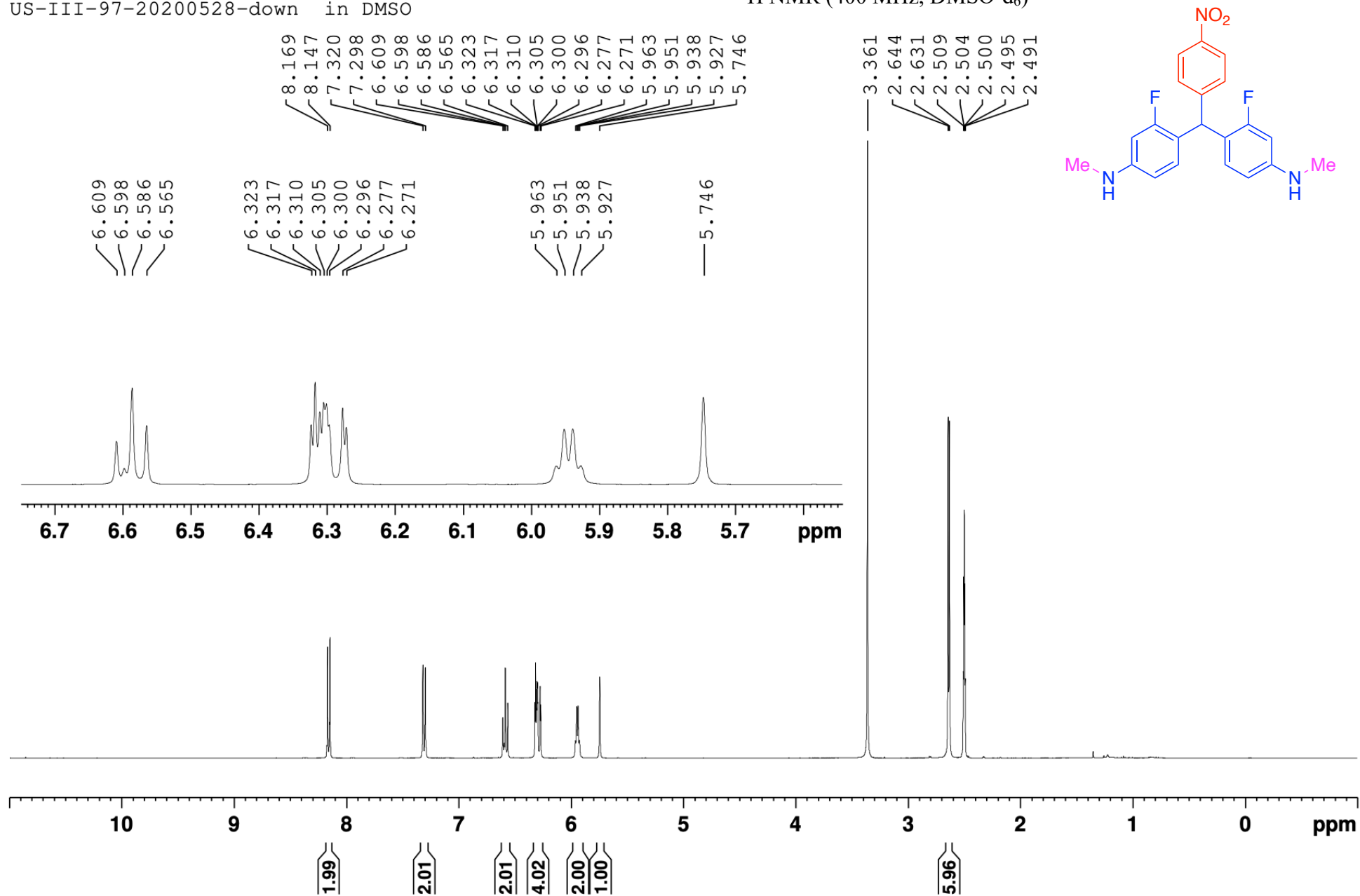
4,4'-((4-Nitrophenyl)methylene)bis(*N*-methyl-2-(trifluoromethyl)aniline) (3af)

¹³C NMR (100 MHz, DMSO-d₆)



Uthaiwan 4-6-63 No.2
US-III-97-20200528-down in DMSO

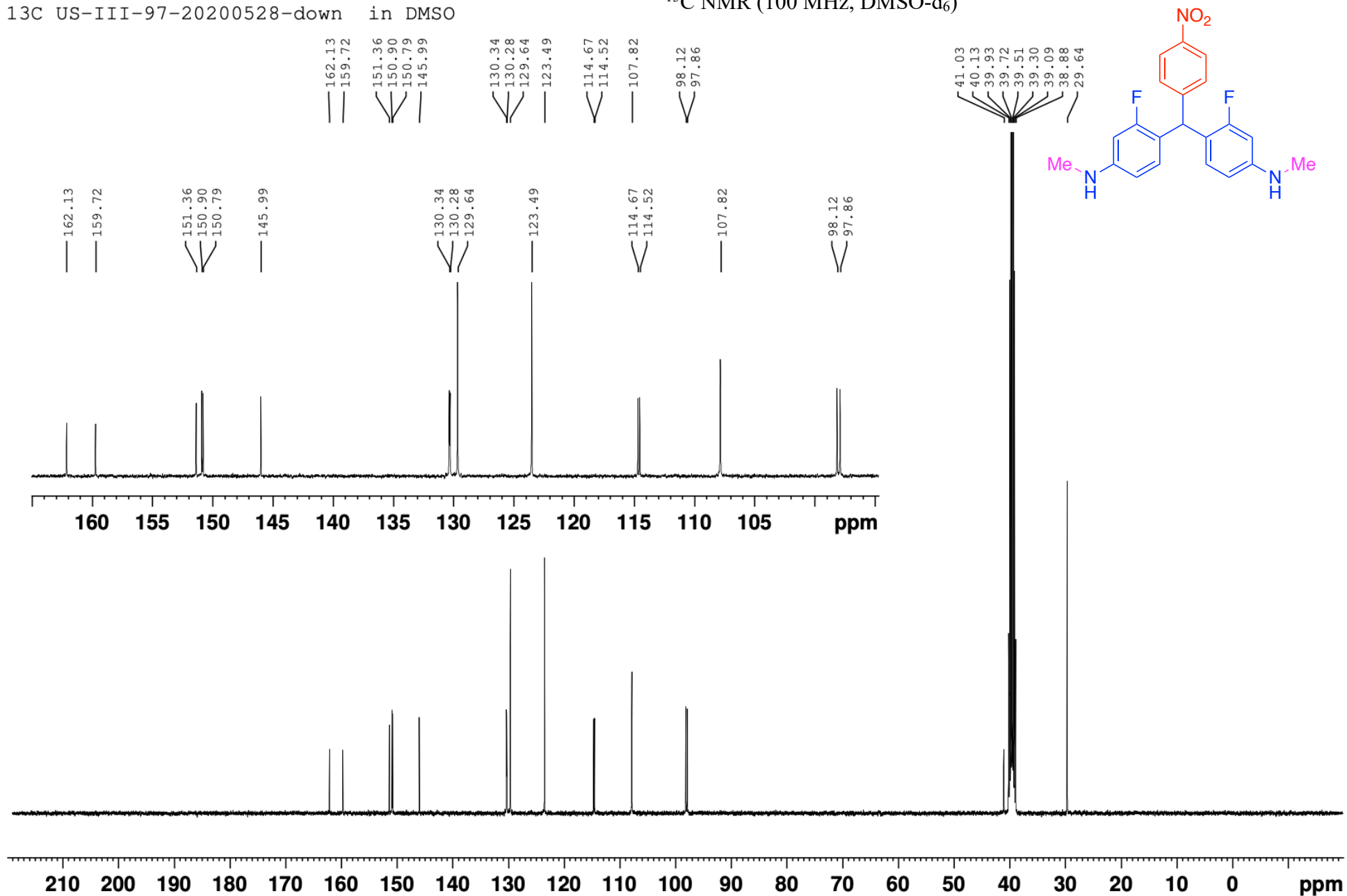
4,4'-((4-Nitrophenyl)methylene)bis(3-fluoro-N-methylaniline) (3ag)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 8-6-63 No.1

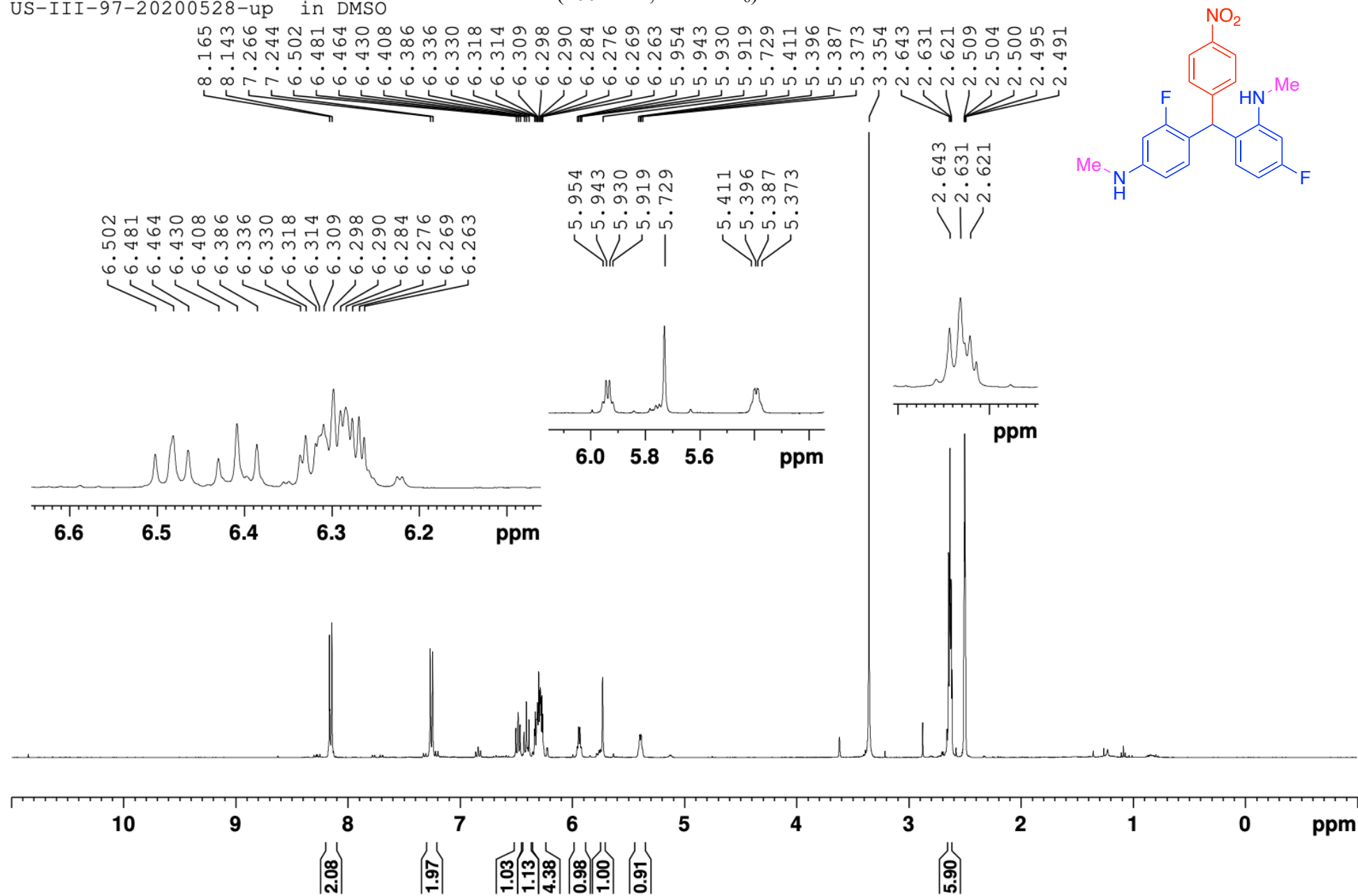
13C US-III-97-20200528-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(3-fluoro-N-methylaniline) (3ag)

 ^{13}C NMR (100 MHz, DMSO- d_6)

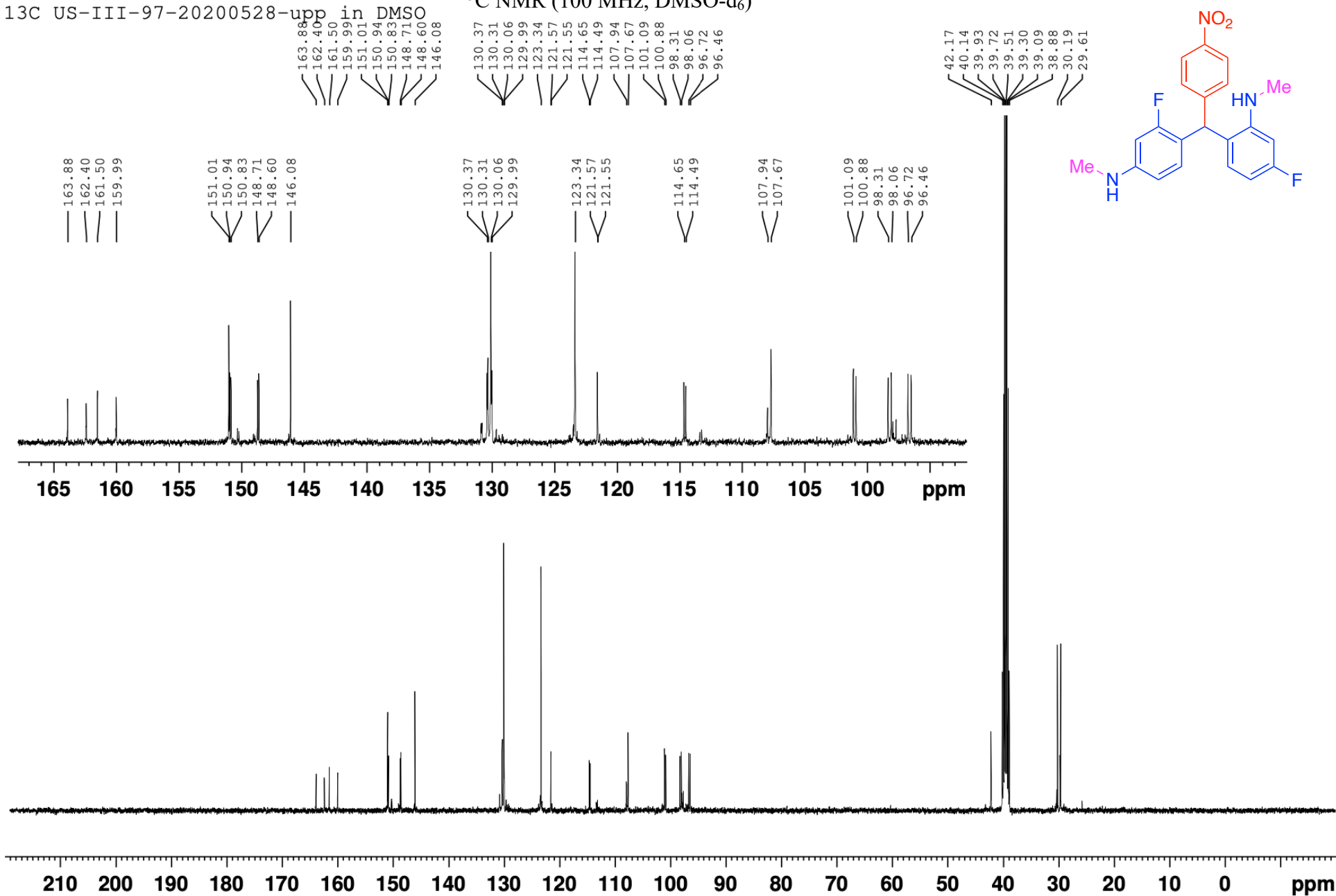
Uthaiwan 8-6-63 No.2
US-III-97-20200528-up in DMSO

5-Fluoro-2-((2-fluoro-4-(methylamino)phenyl)(4-nitrophenyl)methyl)-N-methylaniline (4ag)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 3-8-63 No.1

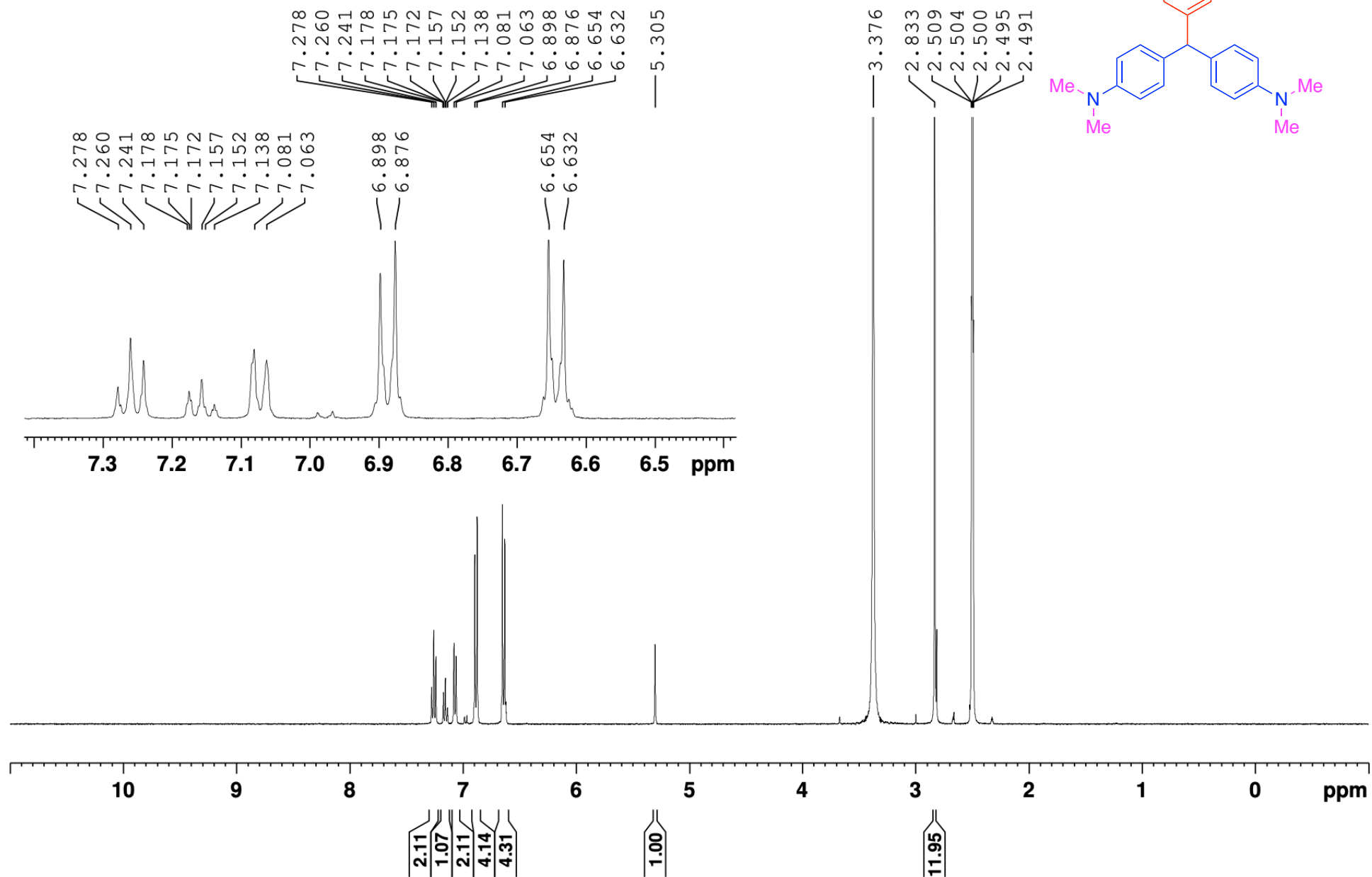
13C US-III-97-20200528-upp in DMSO

5-Fluoro-2-((2-fluoro-4-(methylamino)phenyl)(4-nitrophenyl)methyl)-N-methylaniline (4ag)¹³C NMR (100 MHz, DMSO-d₆)

4,4'-(Phenylmethylene)bis(*N,N*-dimethylaniline) (3ah)
¹H NMR (400 MHz, DMSO-d₆)

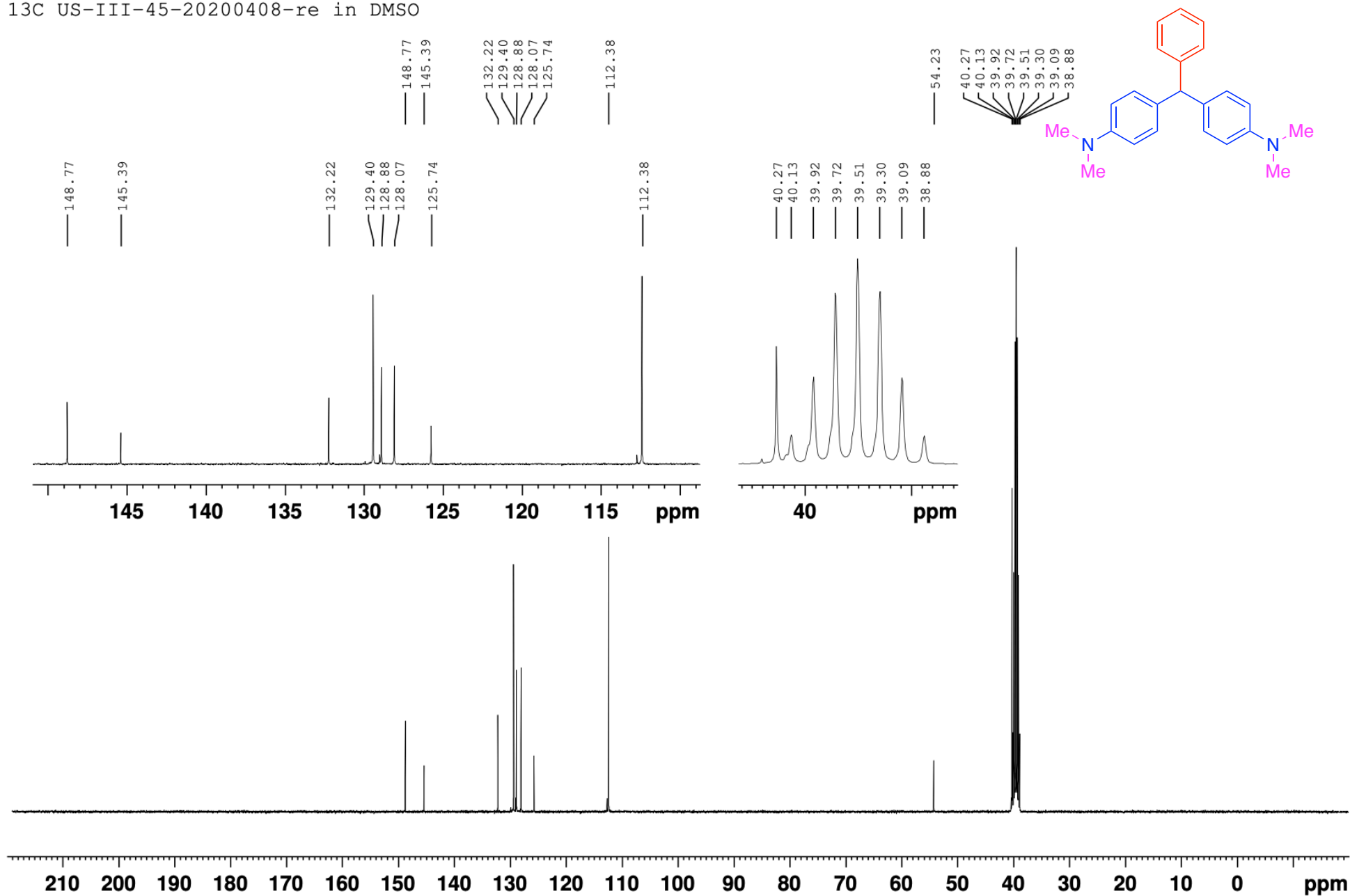
Uthaiwan 19-5-63 No.3

US-III-45-20200408-re in DMSO



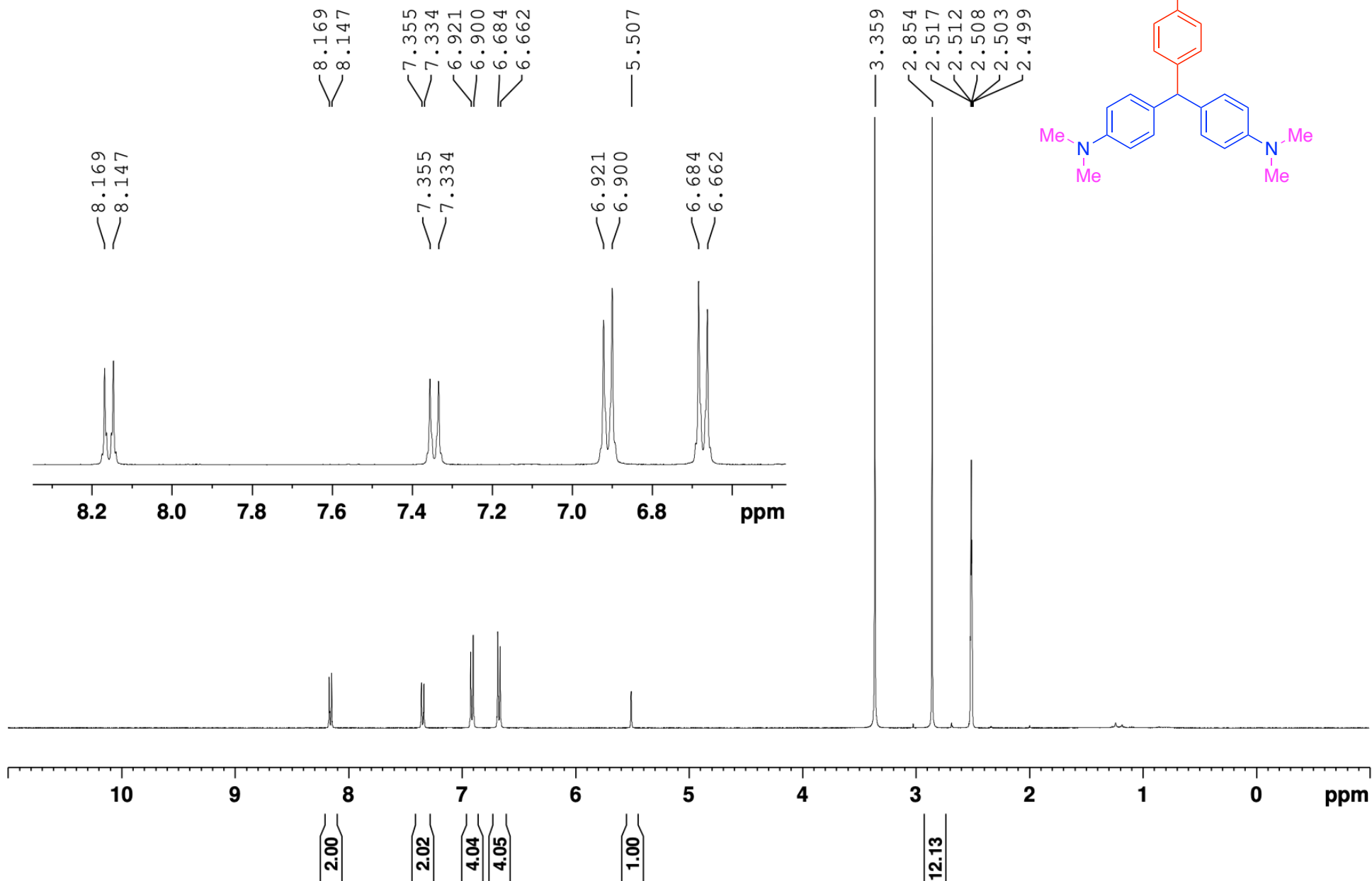
Uthaiwan 26-5-63 No.5
13C US-III-45-20200408-re in DMSO

4,4'-(Phenylmethylene)bis(*N,N*-dimethylaniline) (3ah)
¹³C NMR (100 MHz, DMSO-d₆)



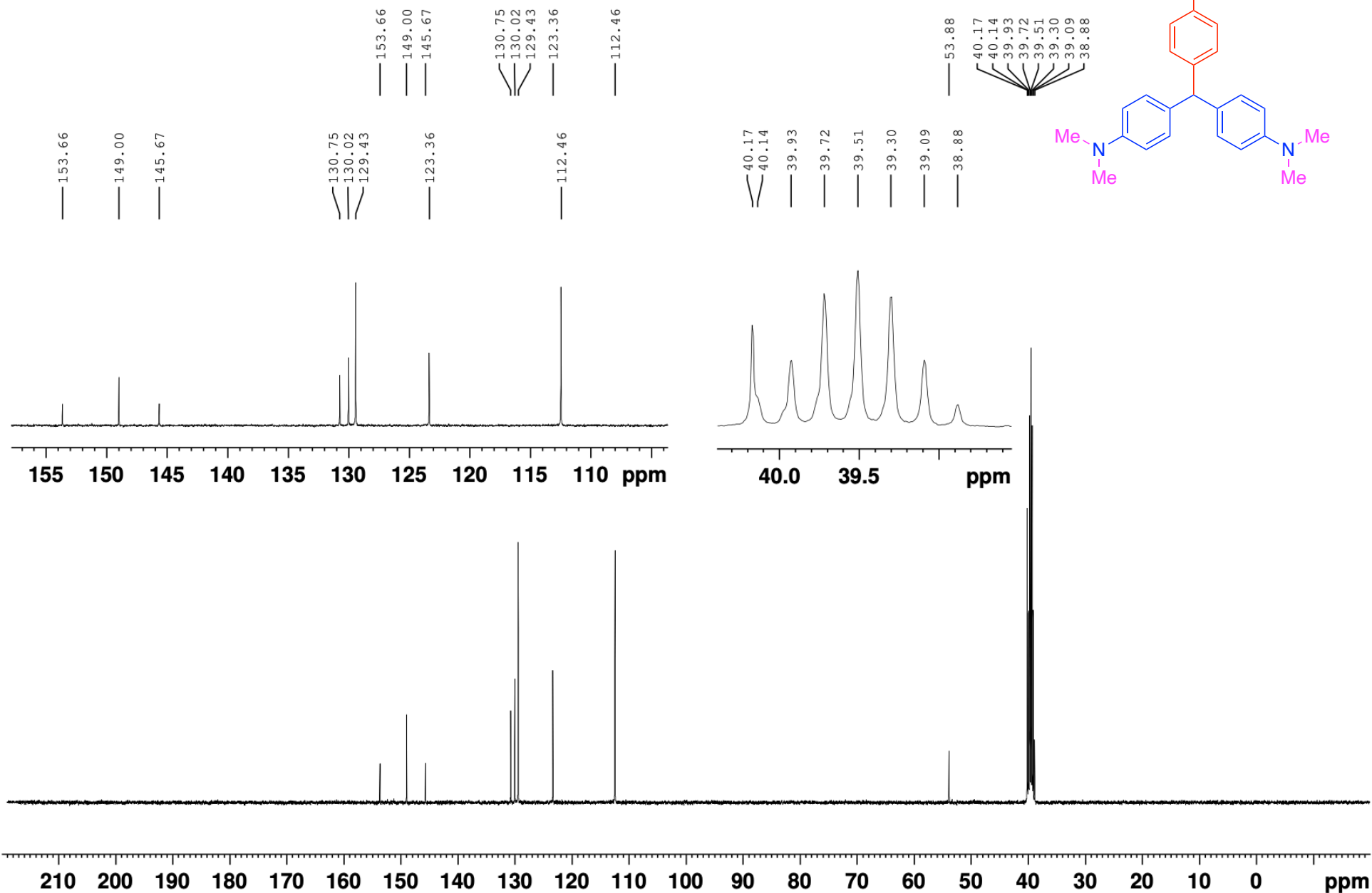
Uthaiwan 16-6-63 No.3
US-III-37-20200404 in DMSO

4,4'((4-Nitrophenyl)methylene)bis(*N,N*-dimethylaniline) (3ai)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 18-6-63 No.3
13C US-III-37-20200404 in DMSO

4,4'((4-Nitrophenyl)methylene)bis(*N,N*-dimethylaniline) (3ai)
¹³C NMR (100 MHz, DMSO-d₆)

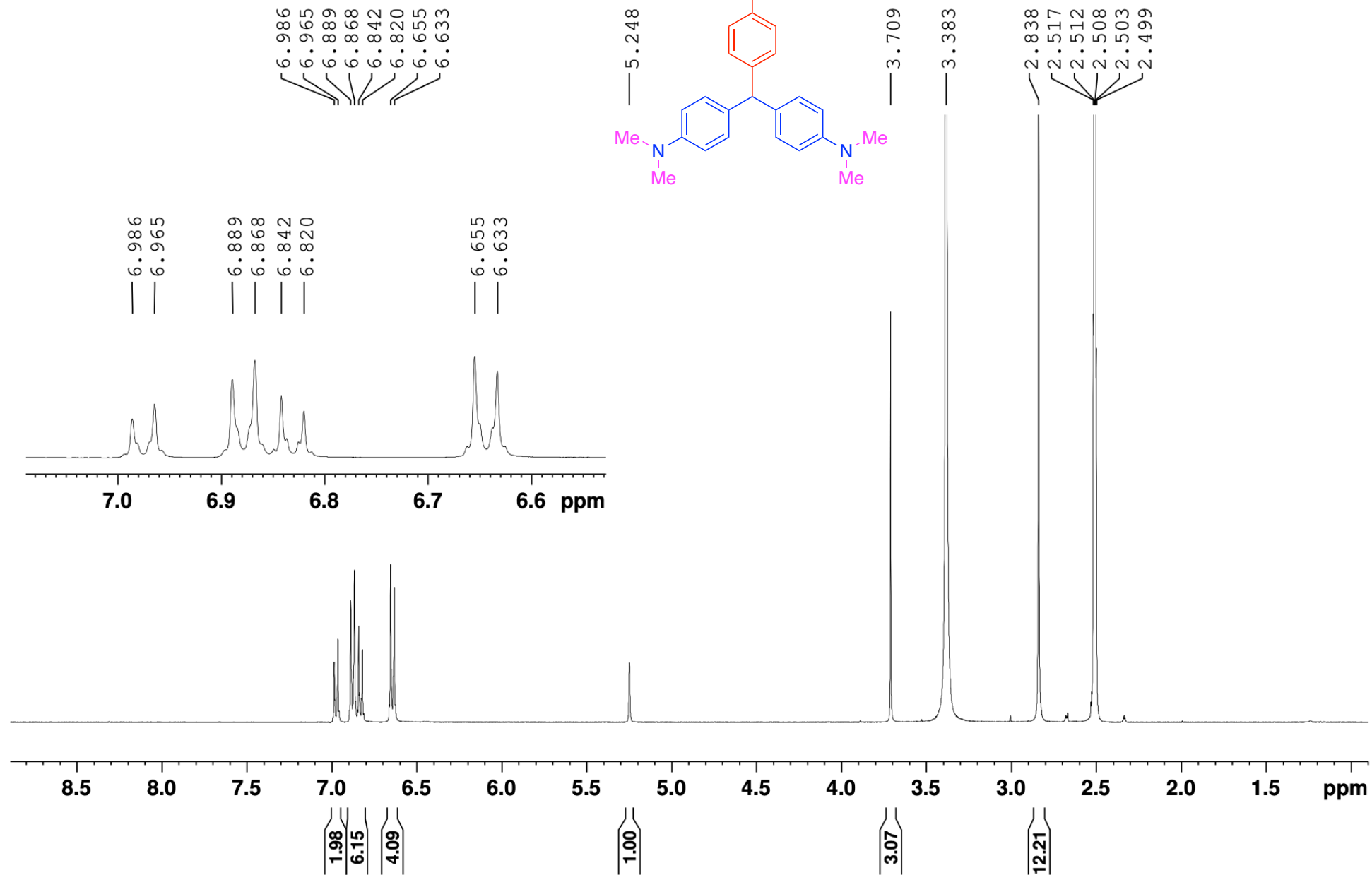


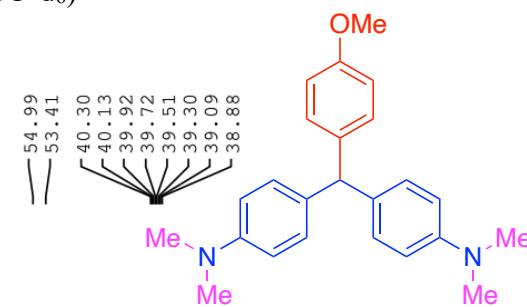
4,4'-((4-Methoxyphenyl)methylene)bis(N,N-dimethylaniline) (3aj)

 ^1H NMR (400 MHz, DMSO- d_6)

Uthaiwan 19-5-63 No.2

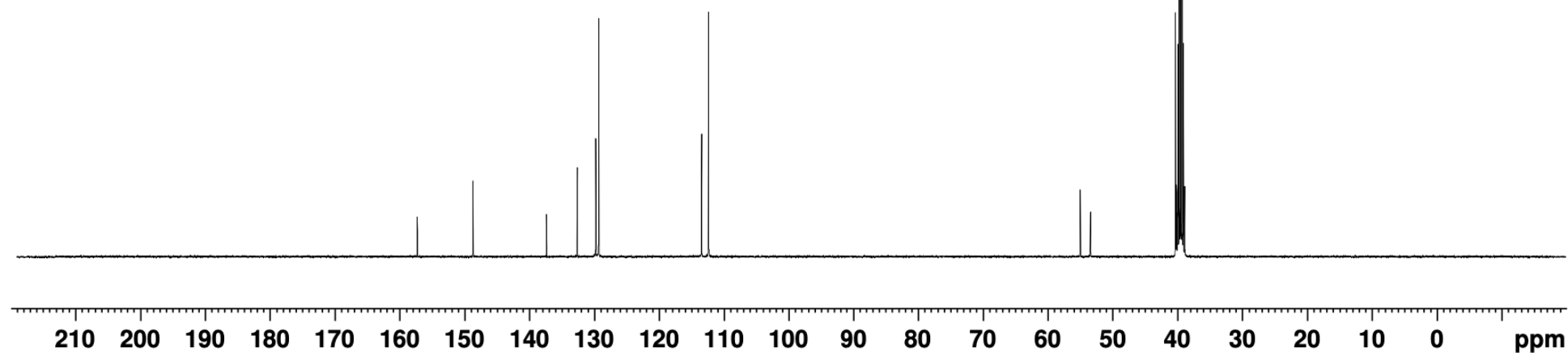
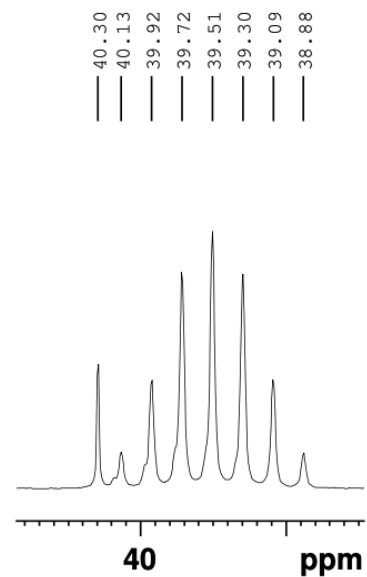
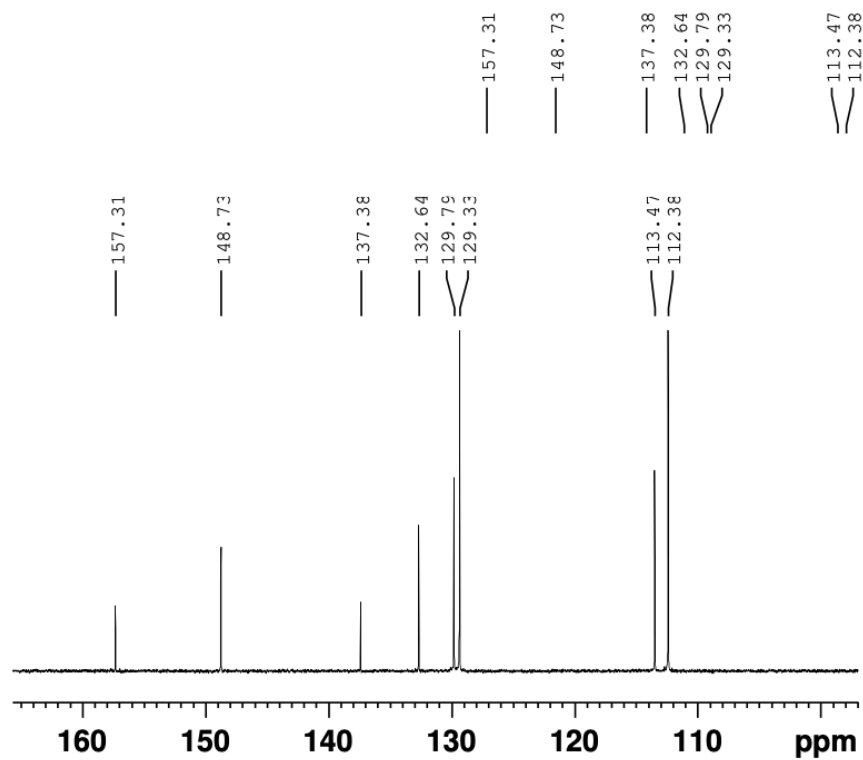
US-III-43-20200508-re in DMSO



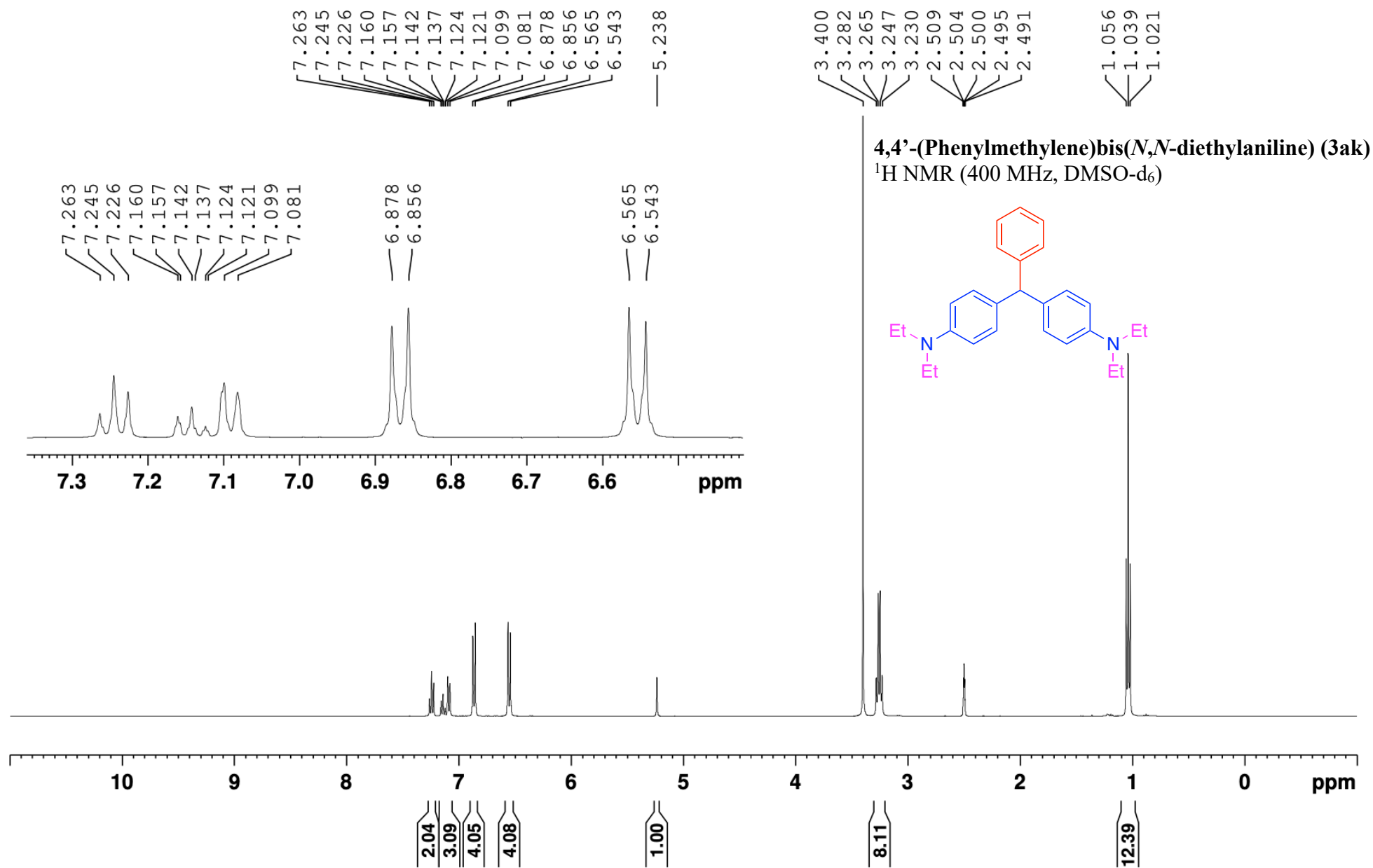
4,4'-((4-Methoxyphenyl)methylene)bis(*N,N*-dimethylaniline) (3aj) ^{13}C NMR (100 MHz, DMSO- d_6)

Uthaiwan 26-5-63 No.4

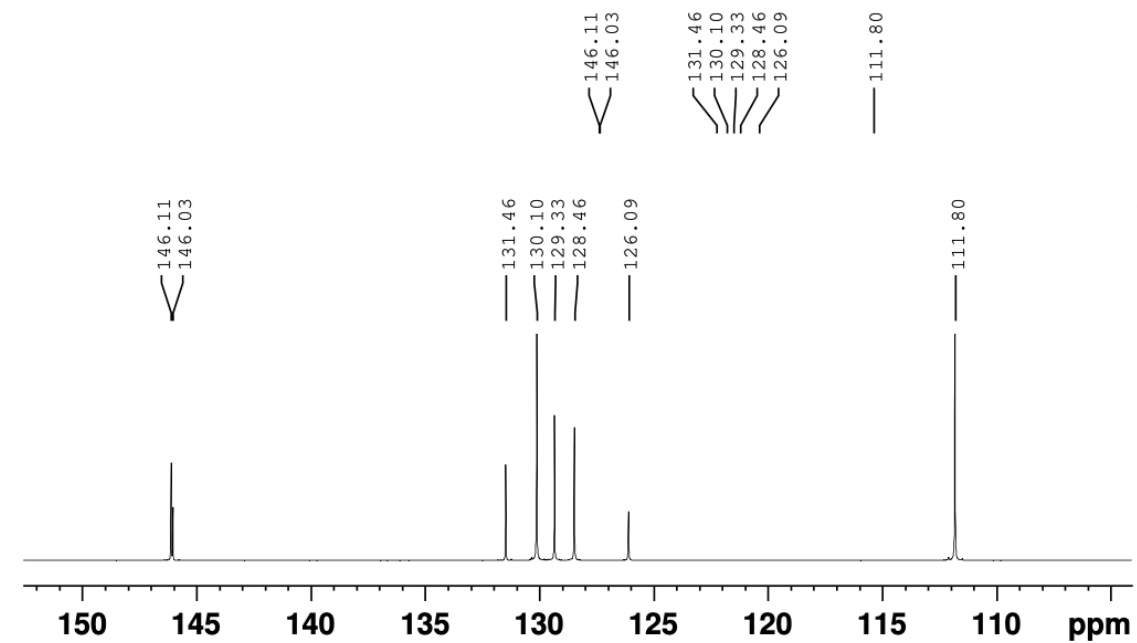
13C US-III-43-20200408-re in DMSO



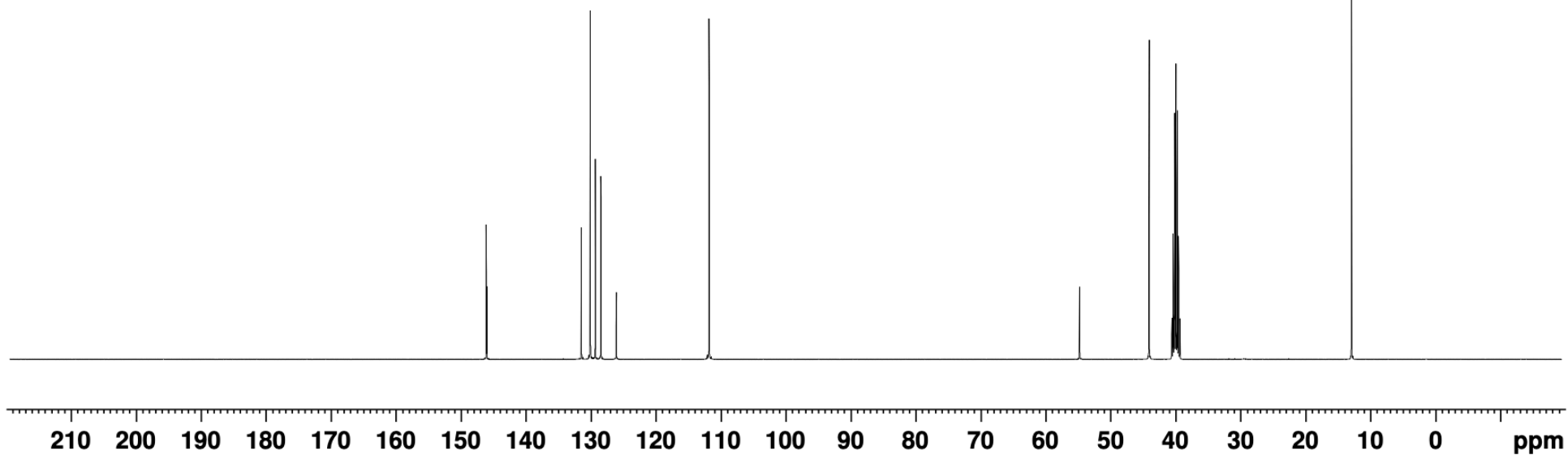
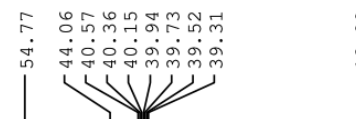
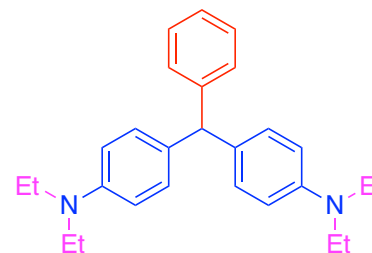
Uthaiwan 19-5-63 No.5
US-III-34-20200403-re in DMSO



Uthaiwan 26-5-63 No.8
13C US-III-34-20200403-re in DMSO



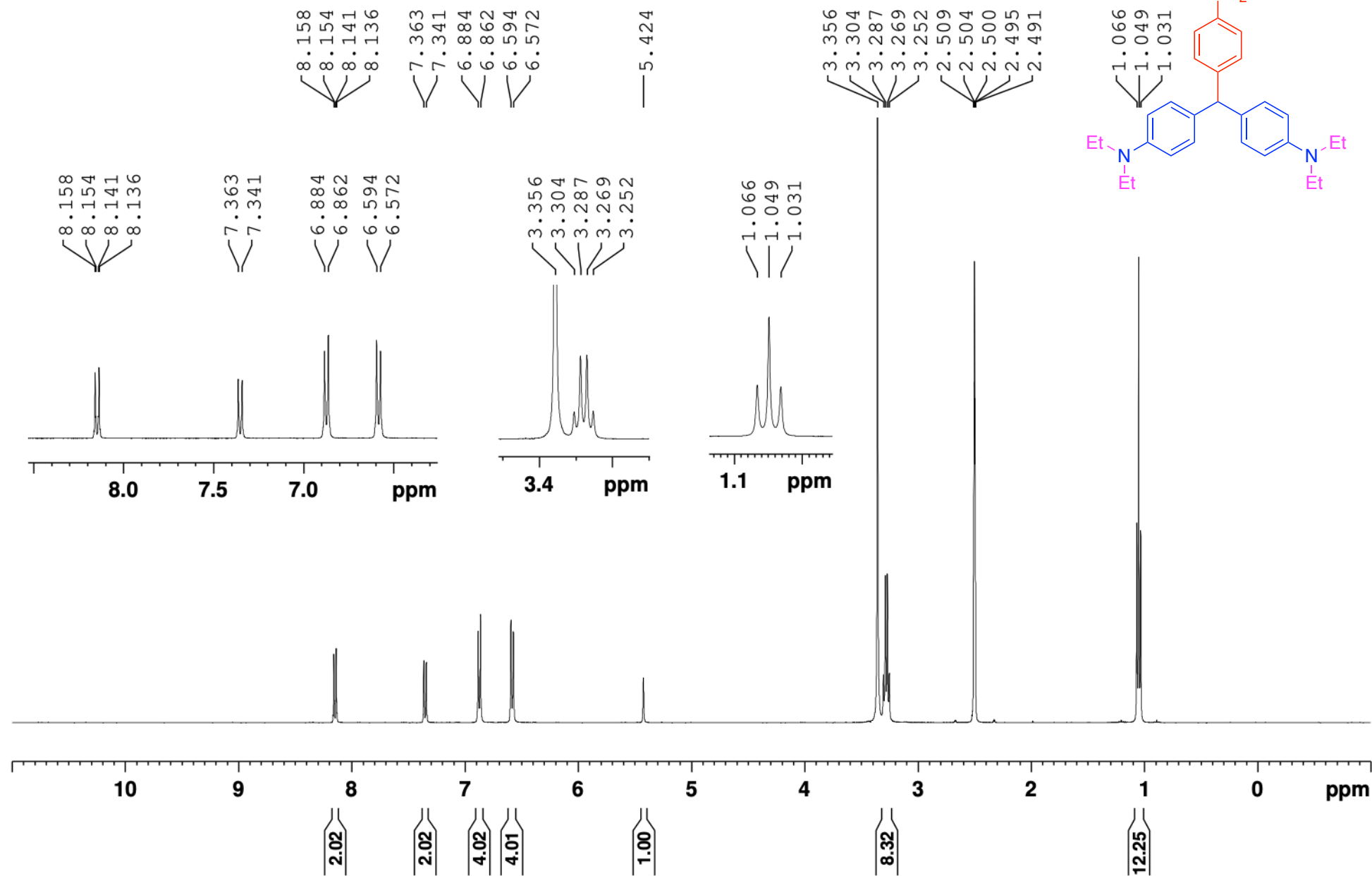
4,4'-(Phenylmethylene)bis(*N,N*-diethylaniline) (3ak)
¹³C NMR (100 MHz, DMSO-d₆)



4,4'((4-Nitrophenyl)methylene)bis(*N,N*-diethylaniline) (3a)¹H NMR (400 MHz, DMSO-d₆)

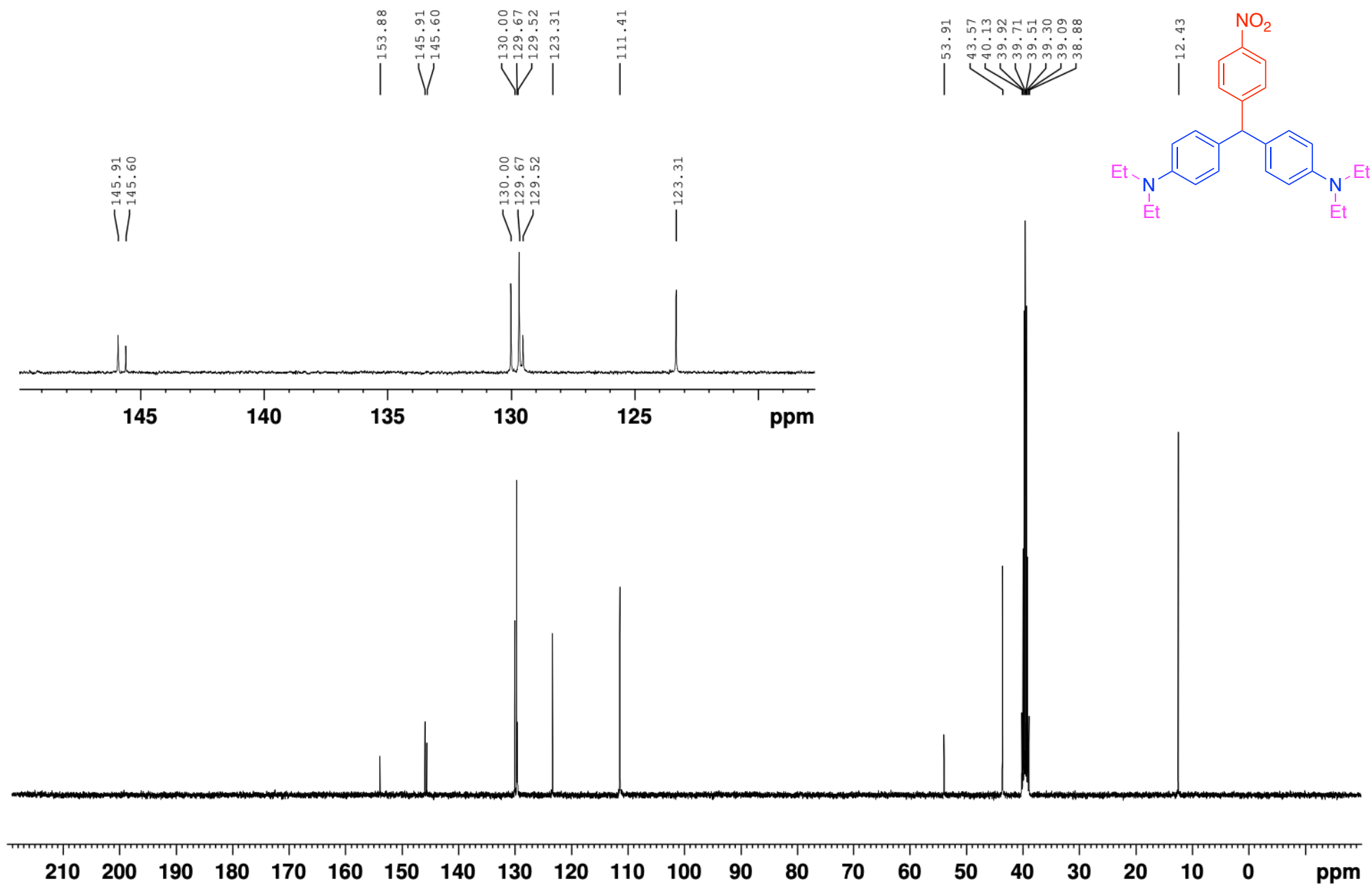
Uthaiwan 21-4-63 No.5

US-III-28-20200330-re2 in DMSO



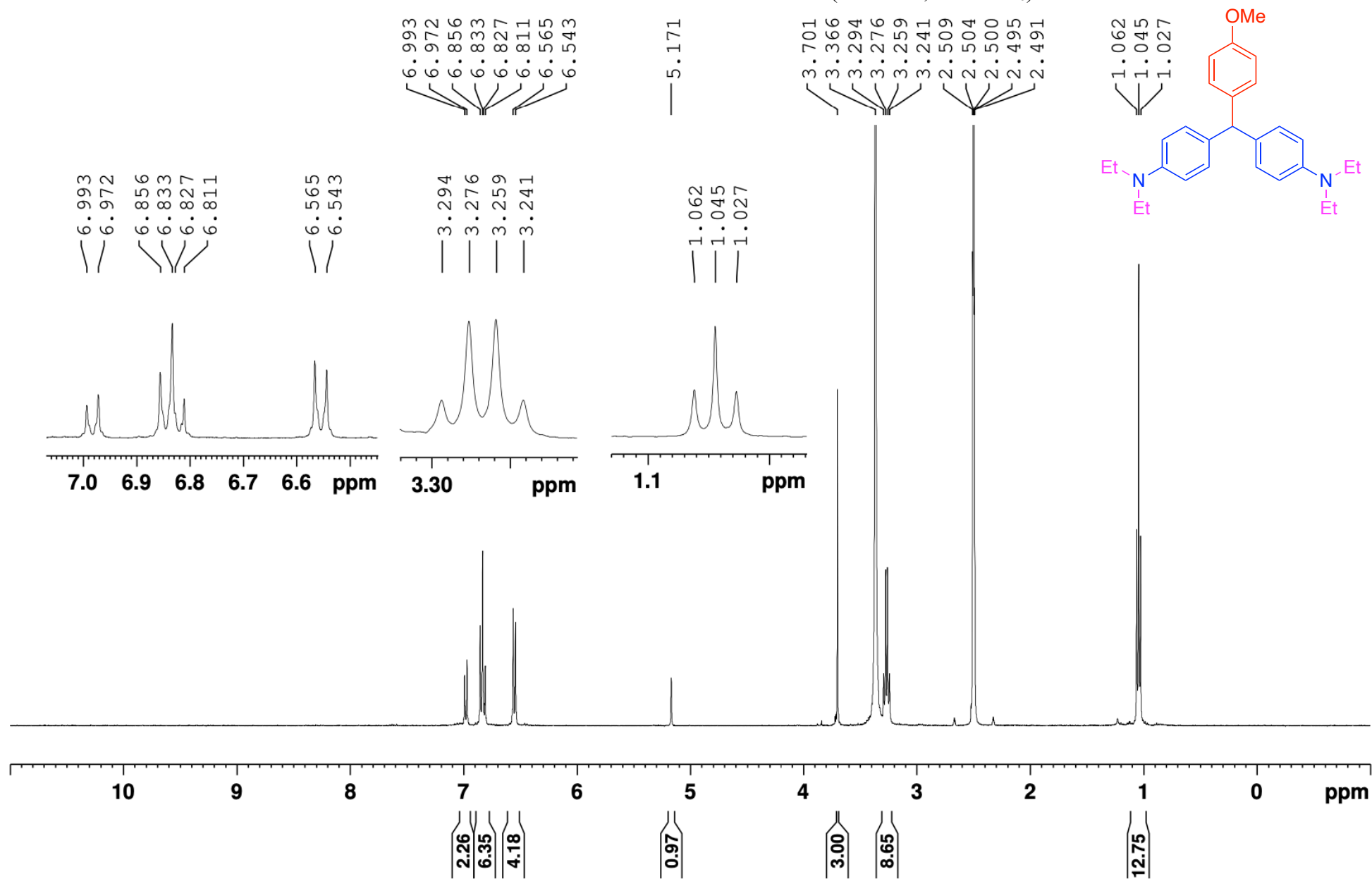
Uthaiwan 29-4-63 No.10
13C US-III-28-20200330-re2 in DMSO

4,4'((4-Nitrophenyl)methylene)bis(*N,N*-diethylaniline) (3a)
¹³C NMR (100 MHz, DMSO-d₆)



Uthaiwan 12-5-63 No.5
US-III-35-20200427 in DMSO

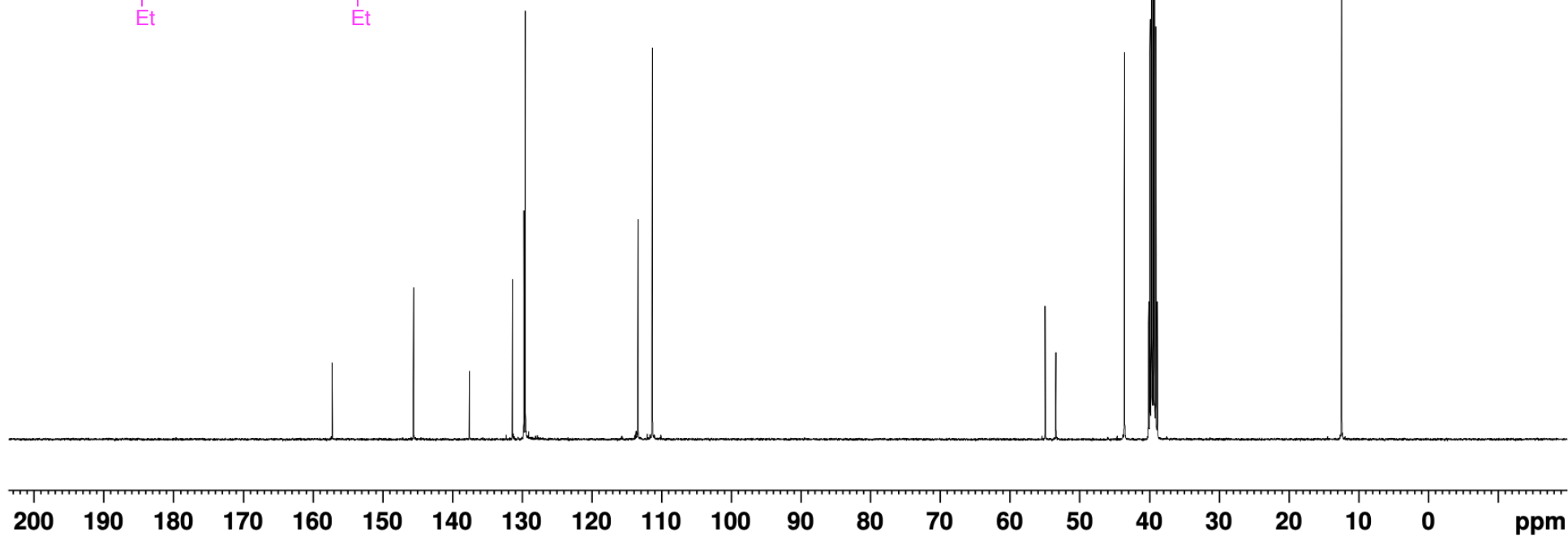
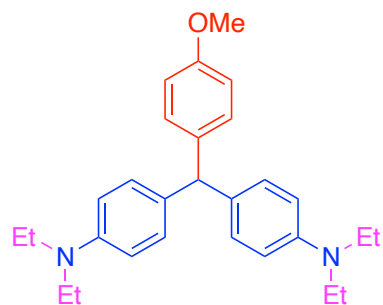
4,4-((4-methoxyphenyl)methylene)bis(*N,N*-diethylaniline) (3am)
¹H NMR (400 MHz, DMSO-d₆)



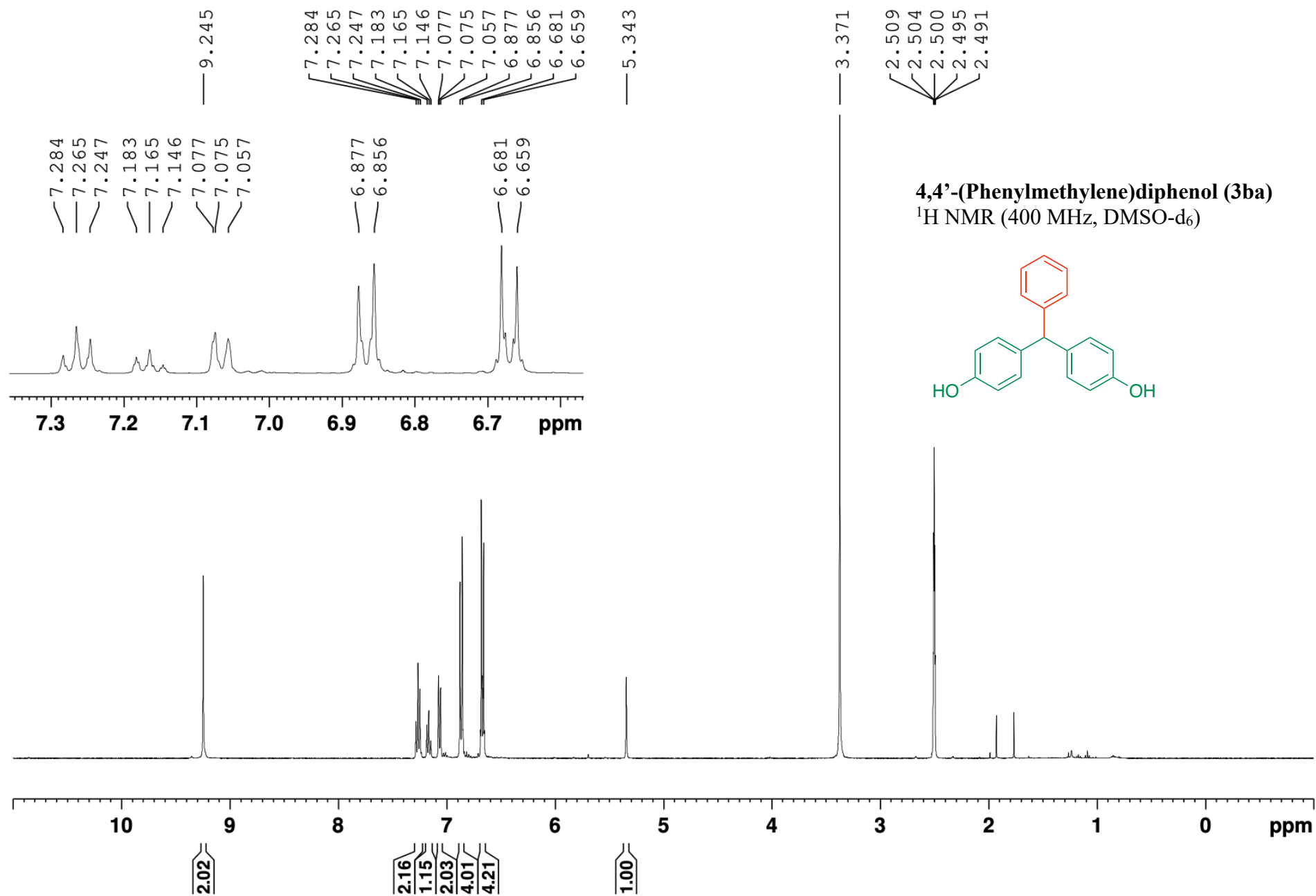
Uthaiwan 25-5-63 No.2
13C US-III-35-20200427 in DMSO



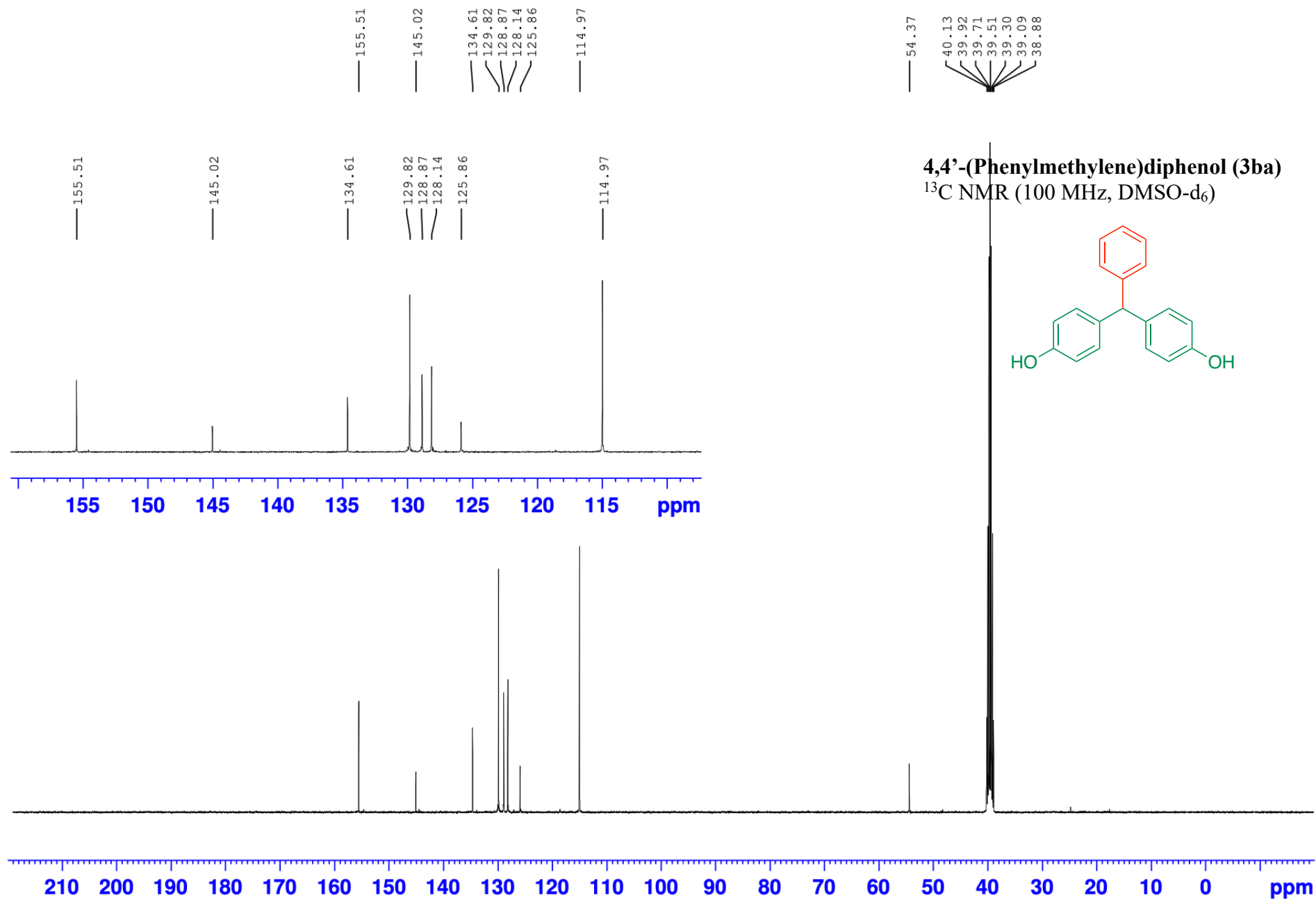
4,4-((4-methoxyphenyl)methylene)bis(N,N-diethylaniline) (3am)
¹³C NMR (100 MHz, DMSO-d₆)



Nipaphorn 10-3-63 No.1
18(2) in DMSO

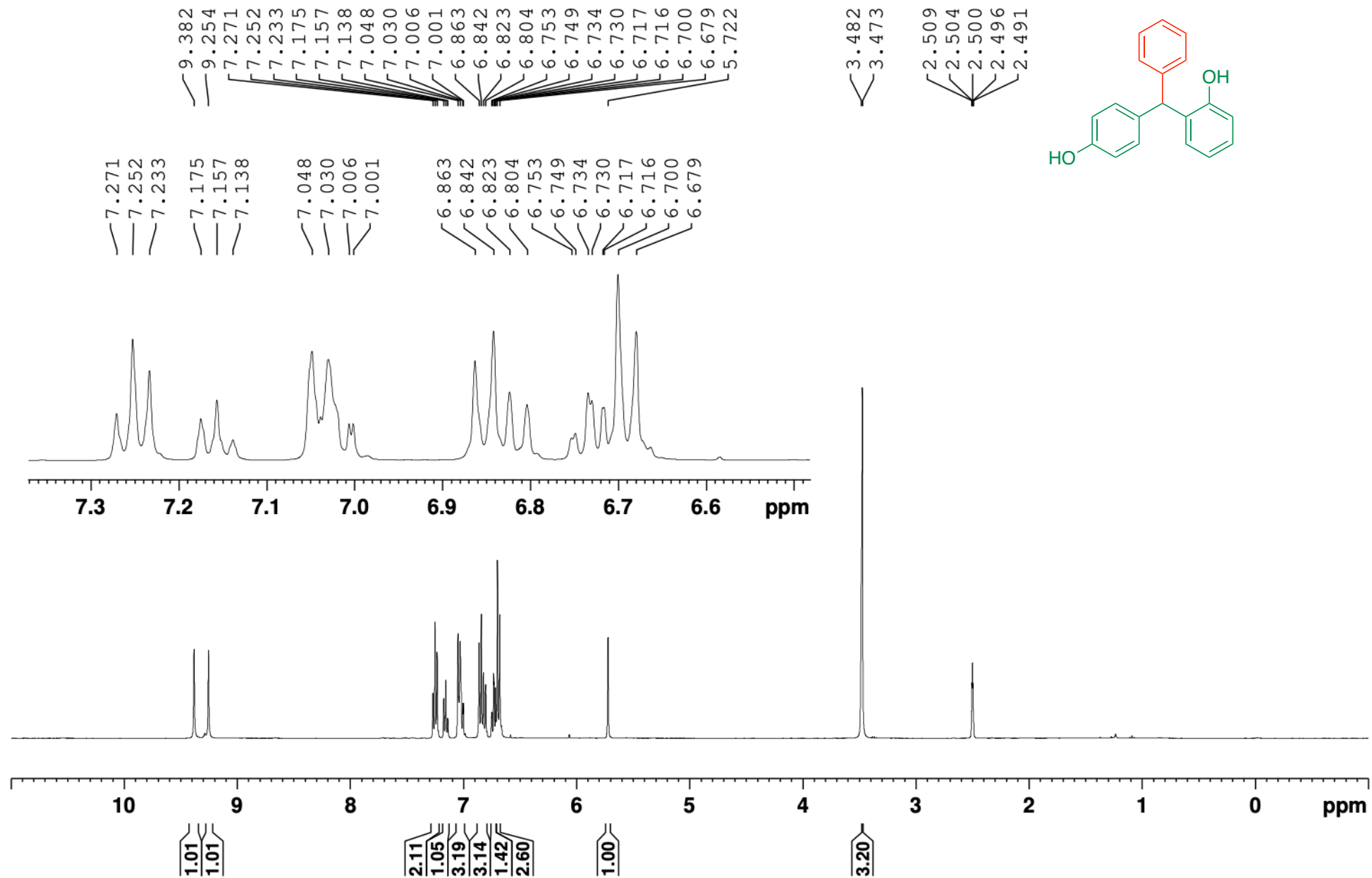


Nipaphorn 12-3-63 No.2
13C 18(2) in DMSO



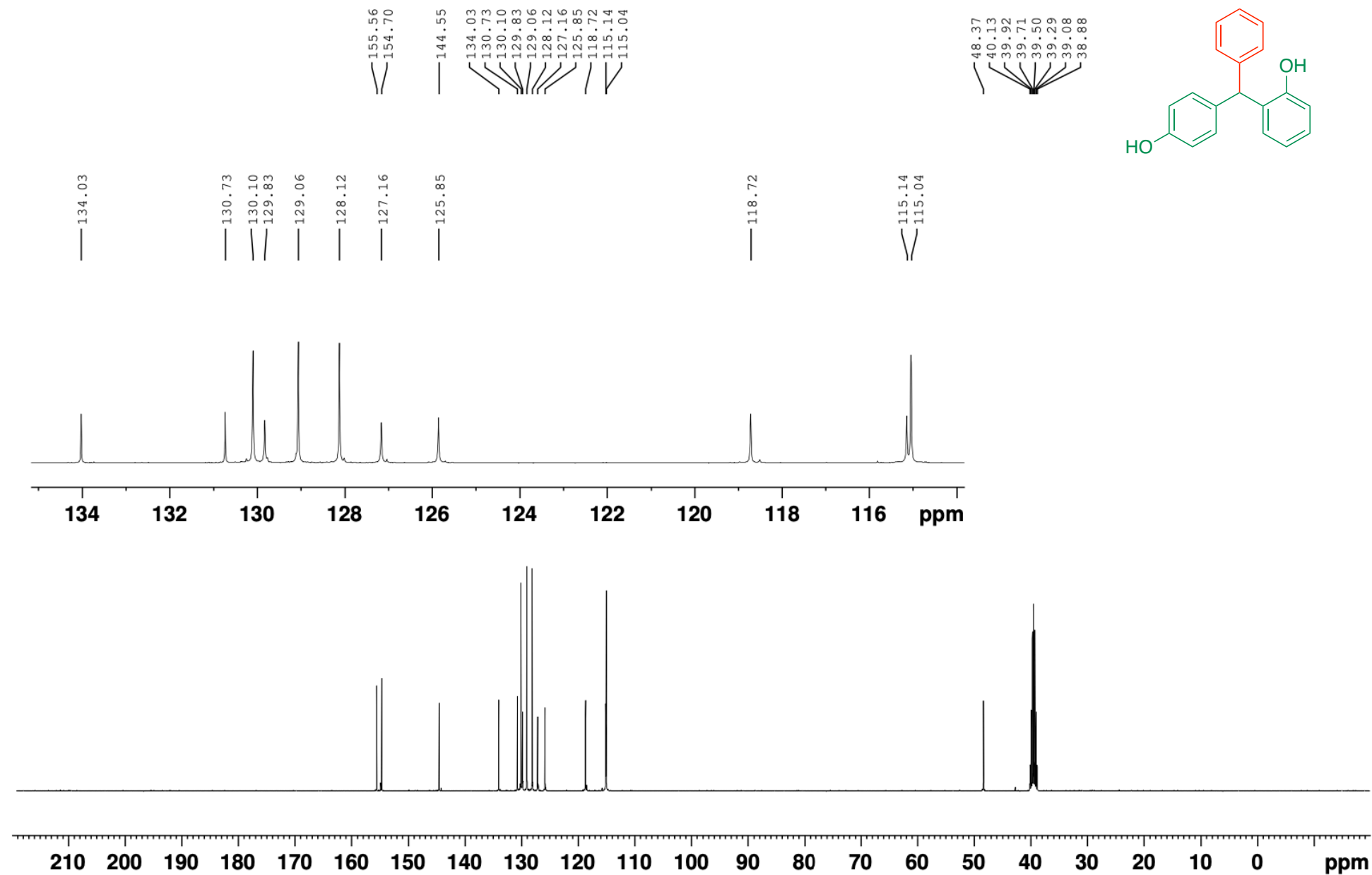
Uthaiwan 8-5-63 No.1
US-III-57-20200414-up in DMSO

2-((4-Hydroxyphenyl)(phenyl)methyl)phenol (4ba)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 21-5-63 No.4
13C US-III-57-20200414-up in DMSO

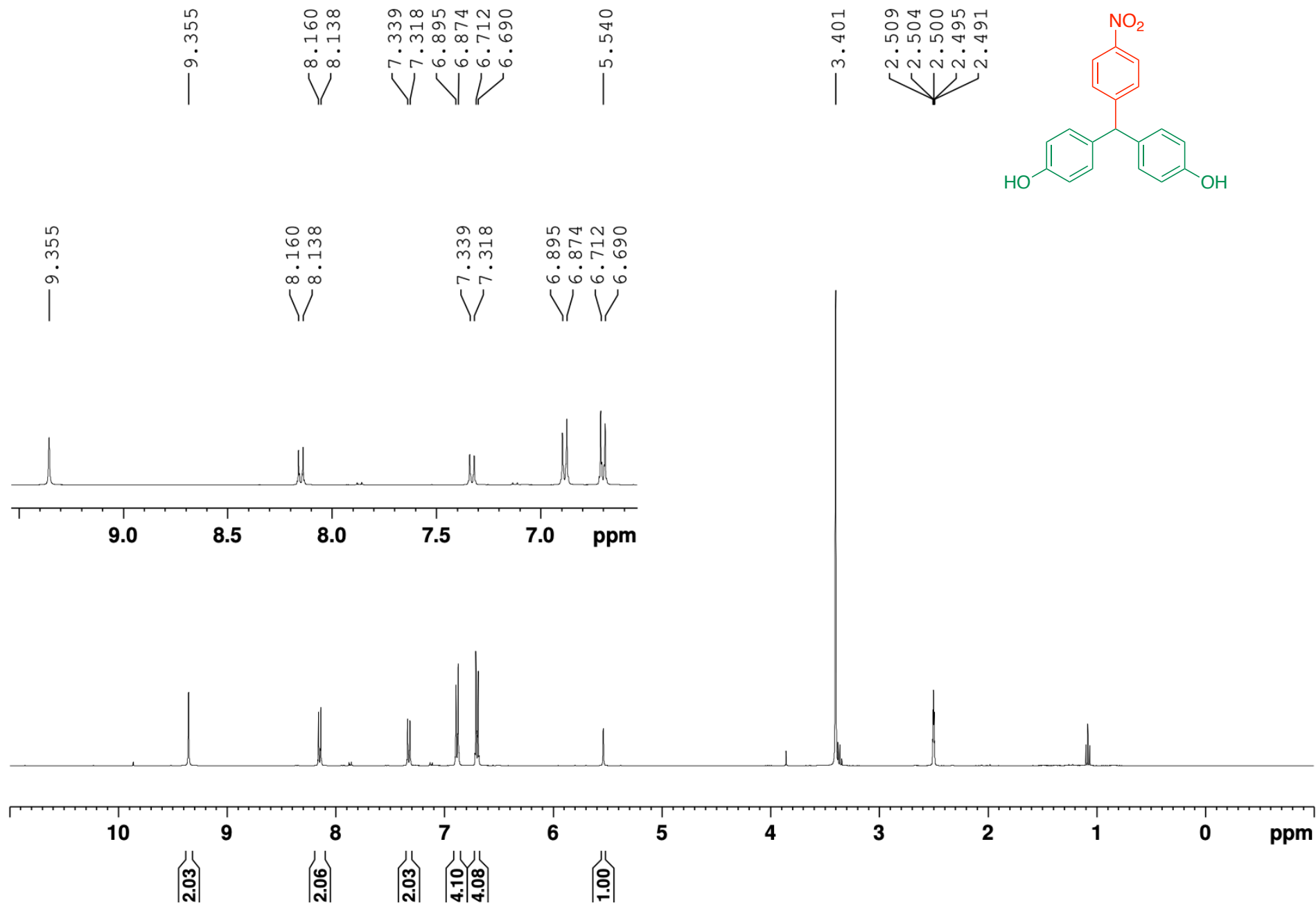
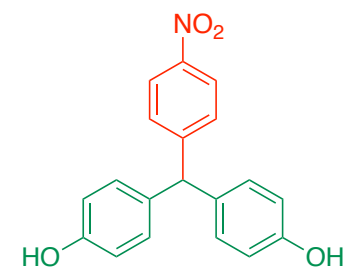
2-((4-Hydroxyphenyl)(phenyl)methyl)phenol (4ba)
13C NMR (100 MHz, DMSO-d₆)



Nipaphorn 23-3-63 No.8
16(2) in DMSO

4,4'-((4-Nitrophenyl)methylene)diphenol (3bb)

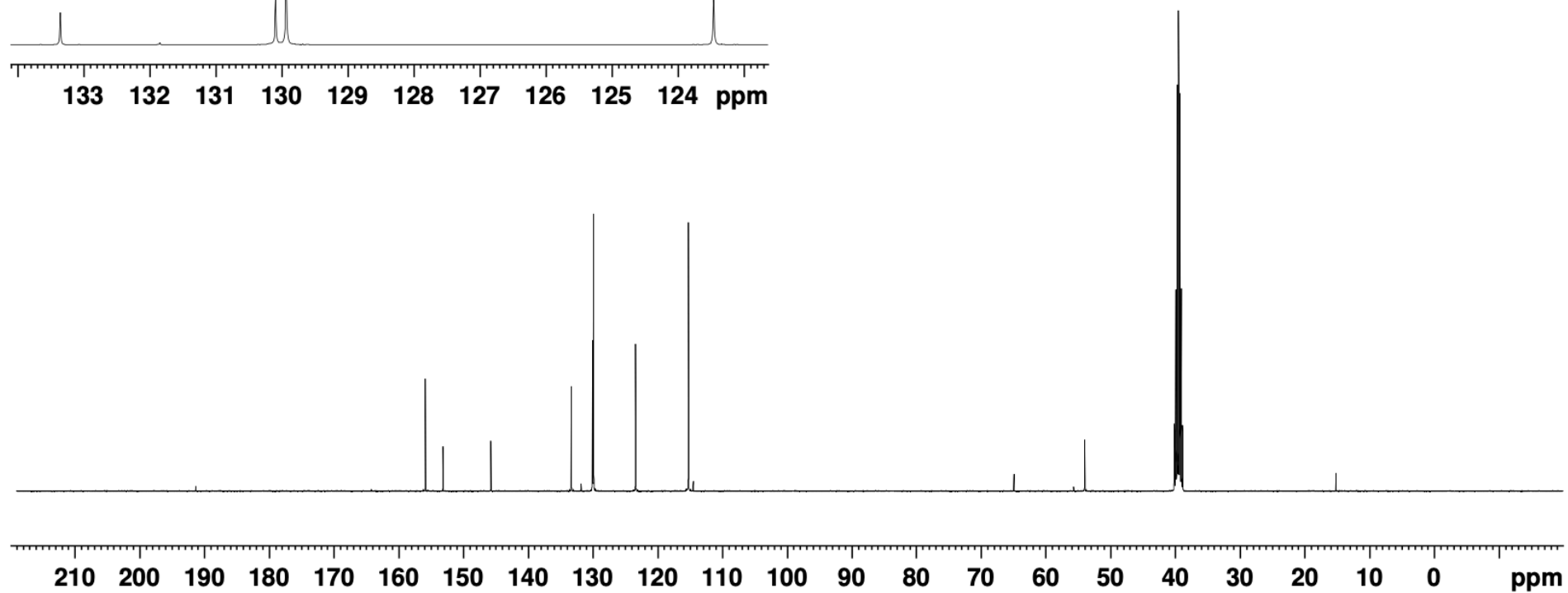
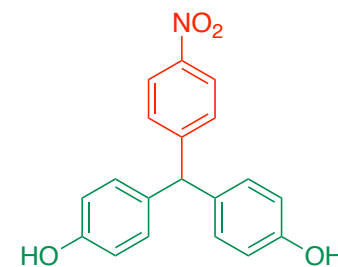
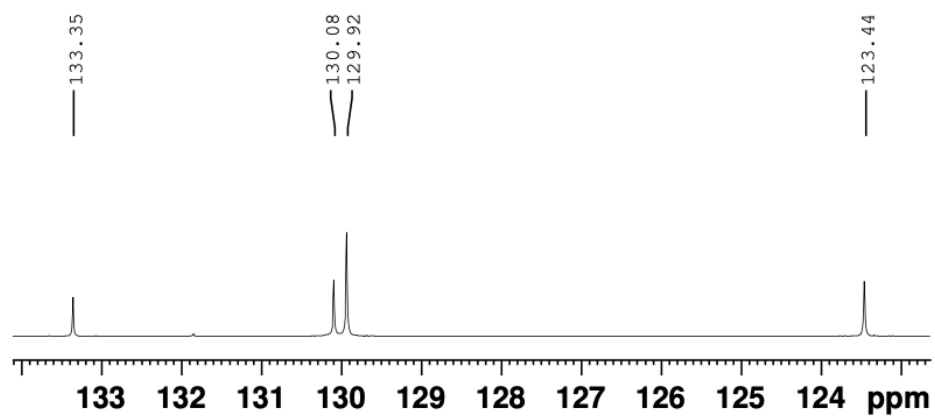
^1H NMR (400 MHz, DMSO- d_6)



Nipaphorn 25-3-63 No.2
13C 16(2) in DMSO

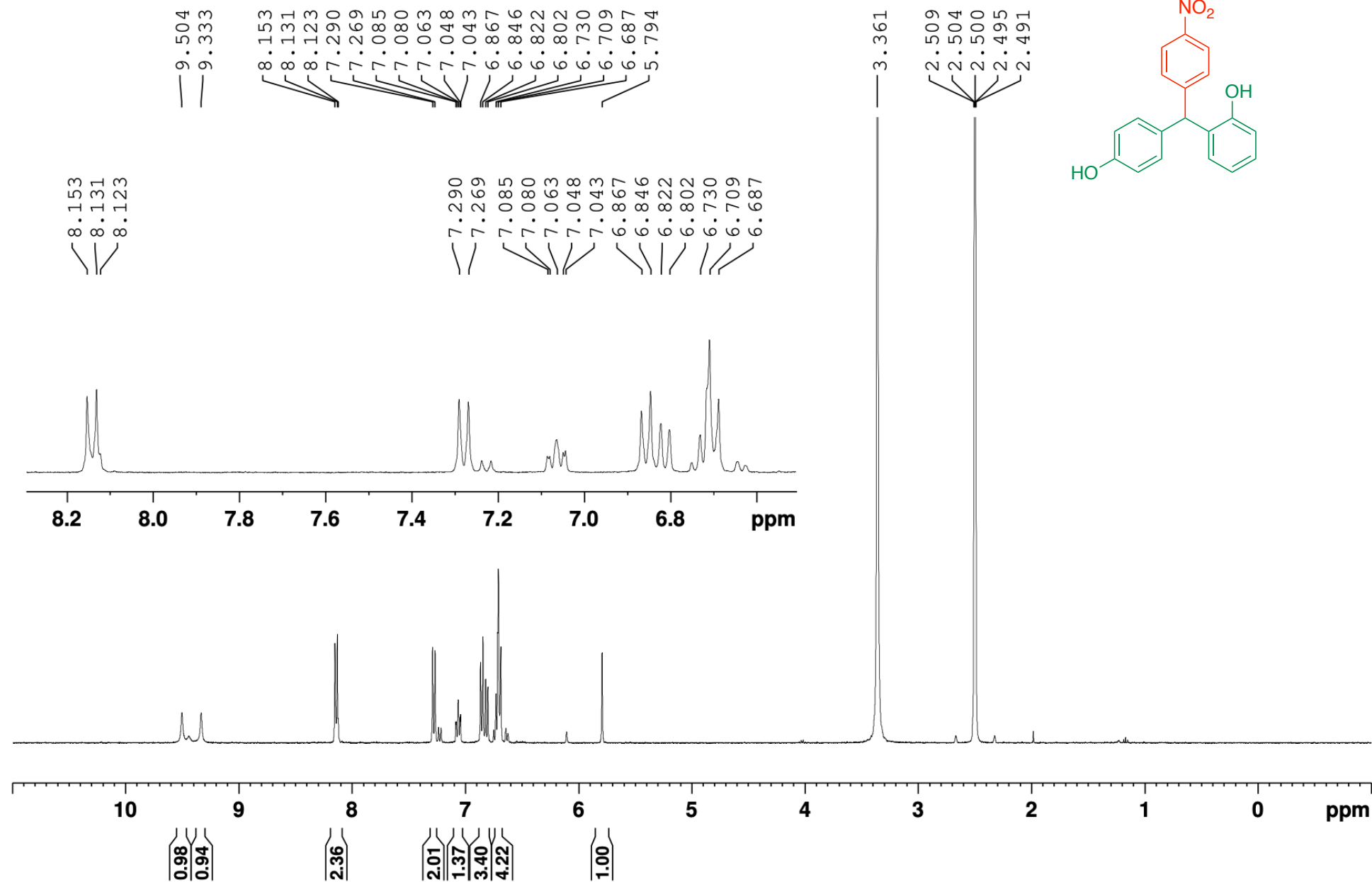


4,4'-((4-Nitrophenyl)methylene)diphenol (3bb)
¹³C NMR (100 MHz, DMSO-d₆)



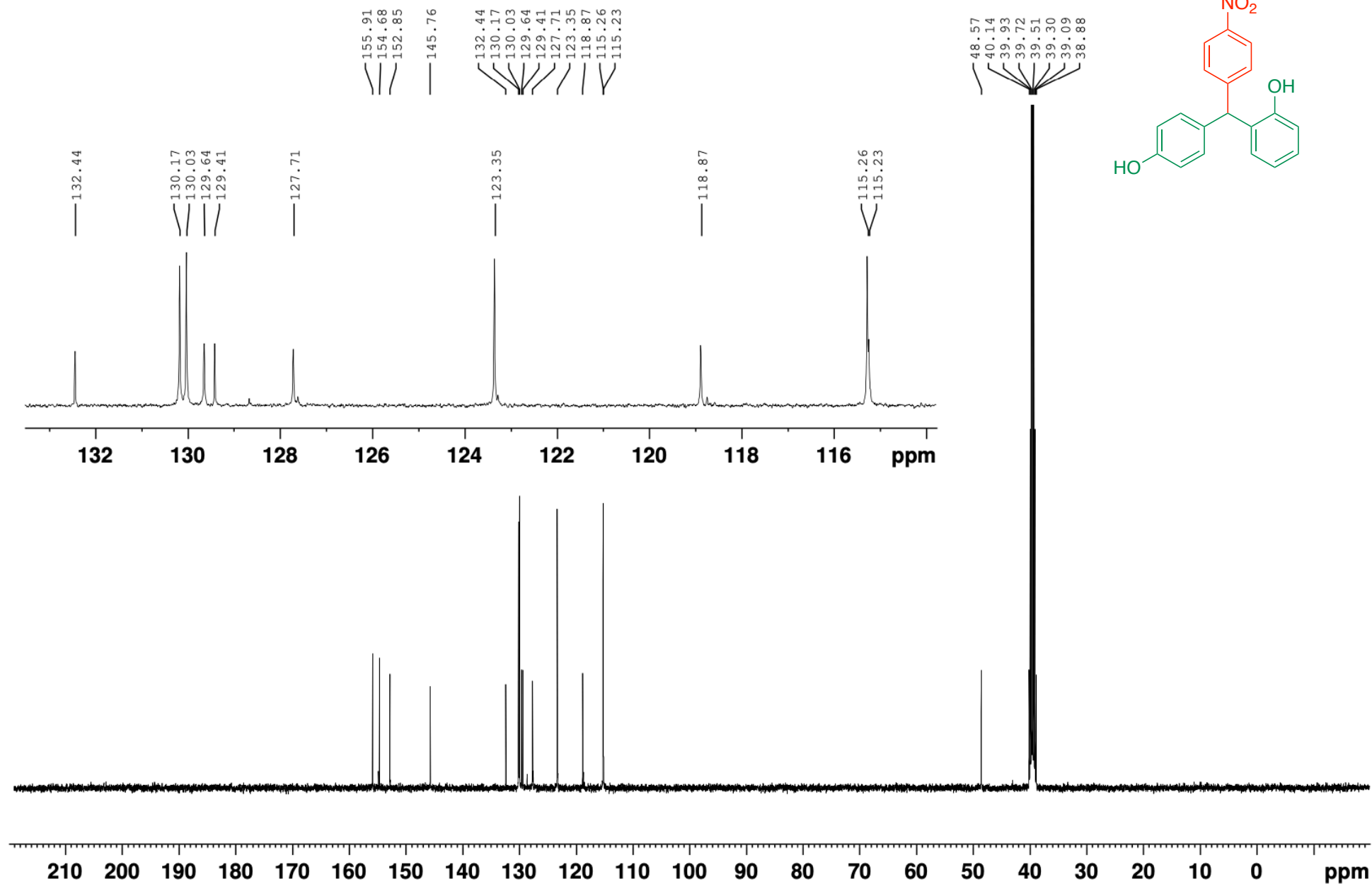
Uthaiwan 17-4-63 No.1
US-III-46-20200412-up in DMSO

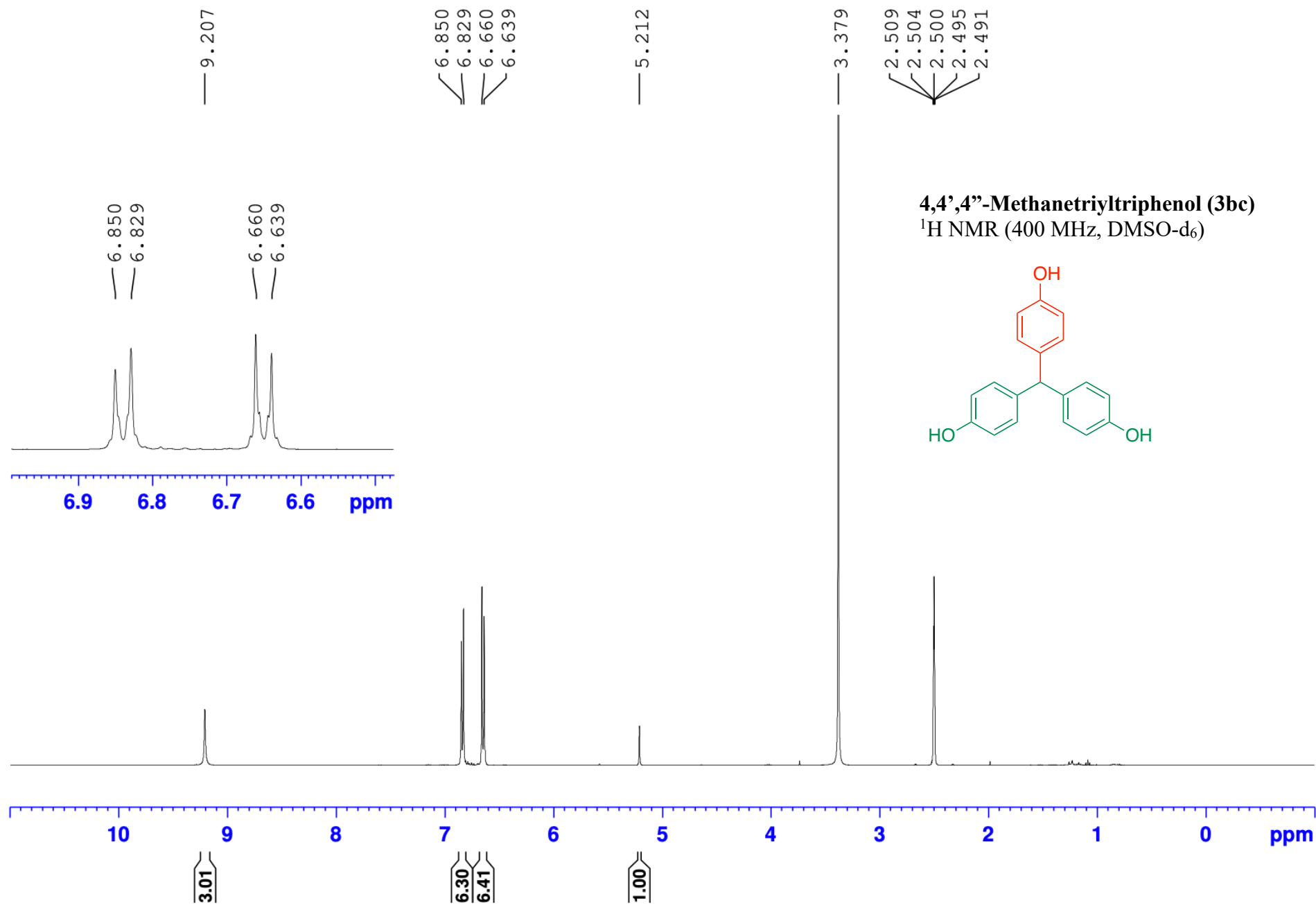
2-((4-Hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bb)
¹H NMR (400 MHz, DMSO-d₆)



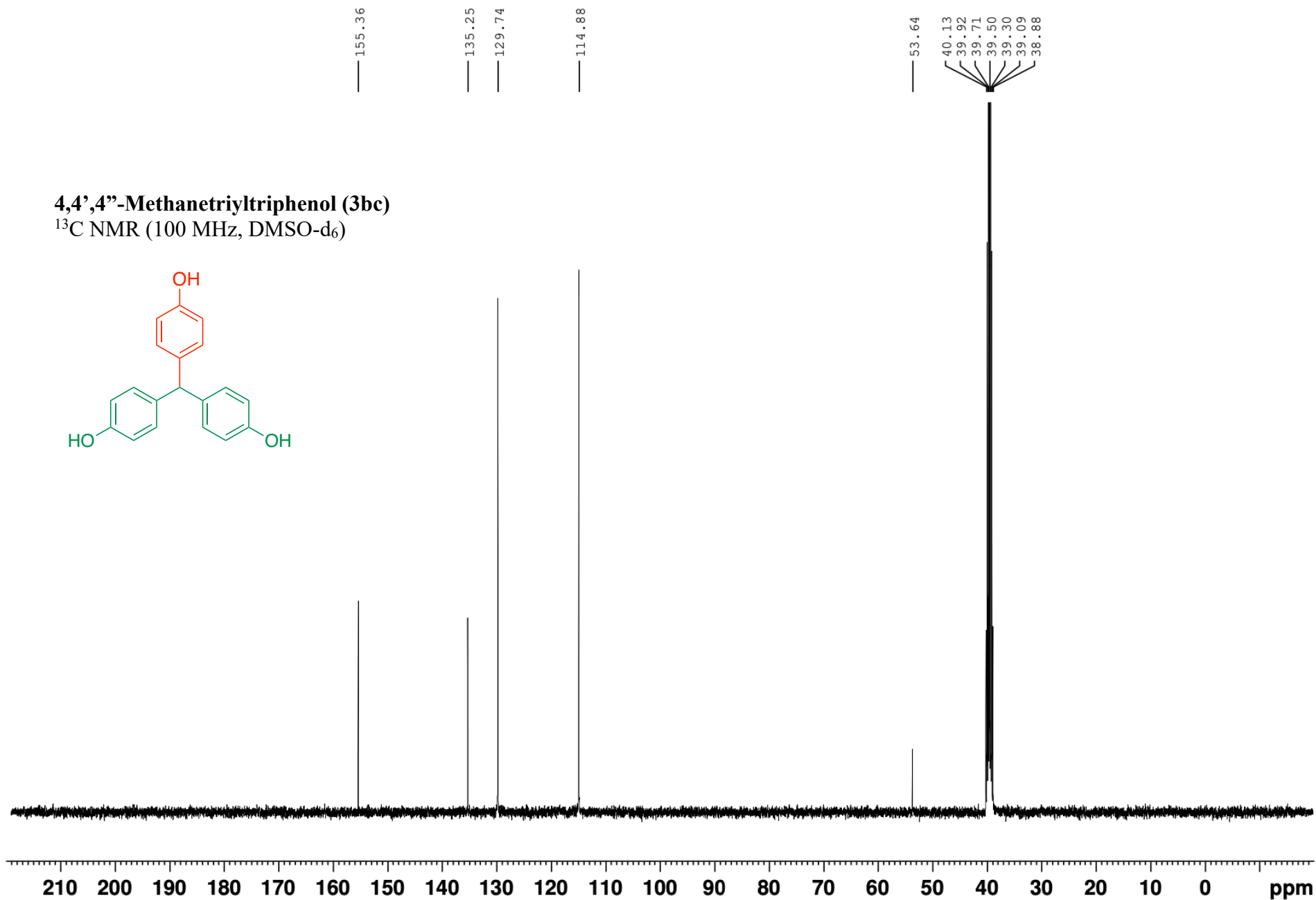
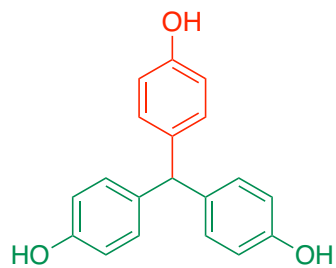
Uthaiwan 7-5-63 No.2
13C US-III-46-20200412-up in DMSO

2-((4-Hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bb)
¹³C NMR (100 MHz, DMSO-d₆)

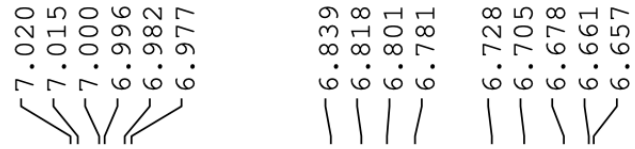
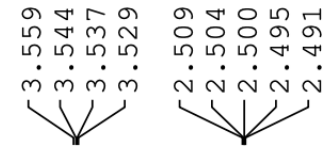
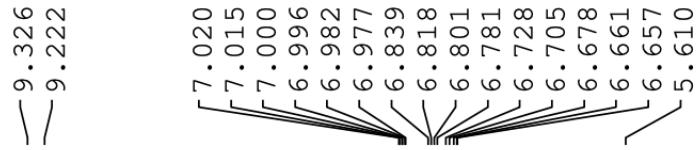




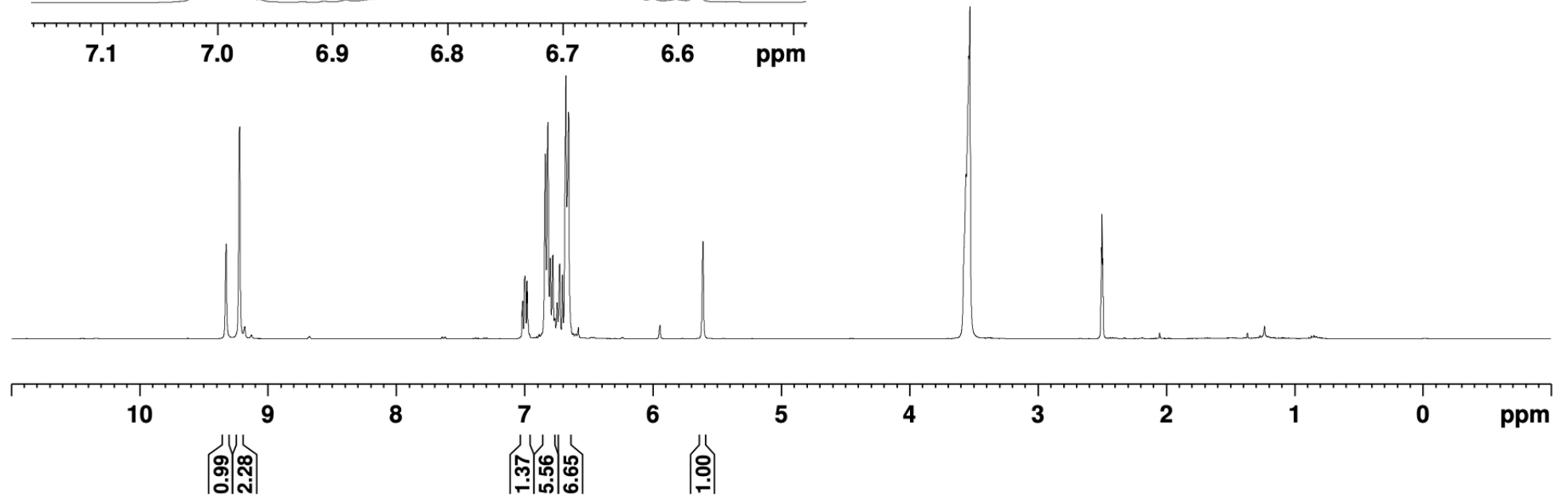
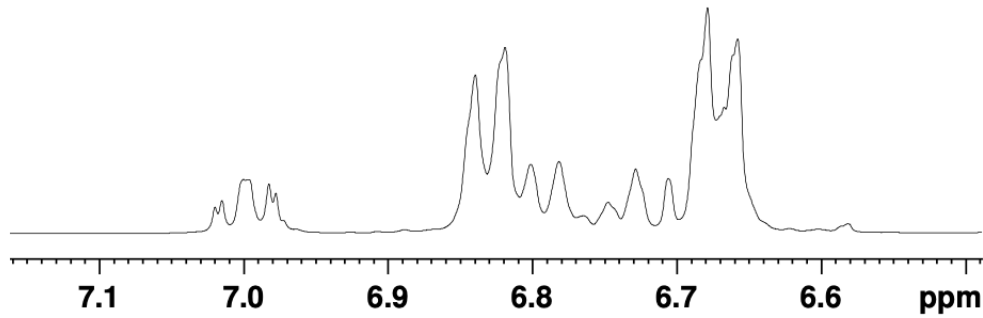
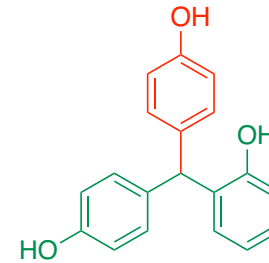
4,4',4''-Methanetriyltriphenol (3bc)
¹³C NMR (100 MHz, DMSO-d₆)

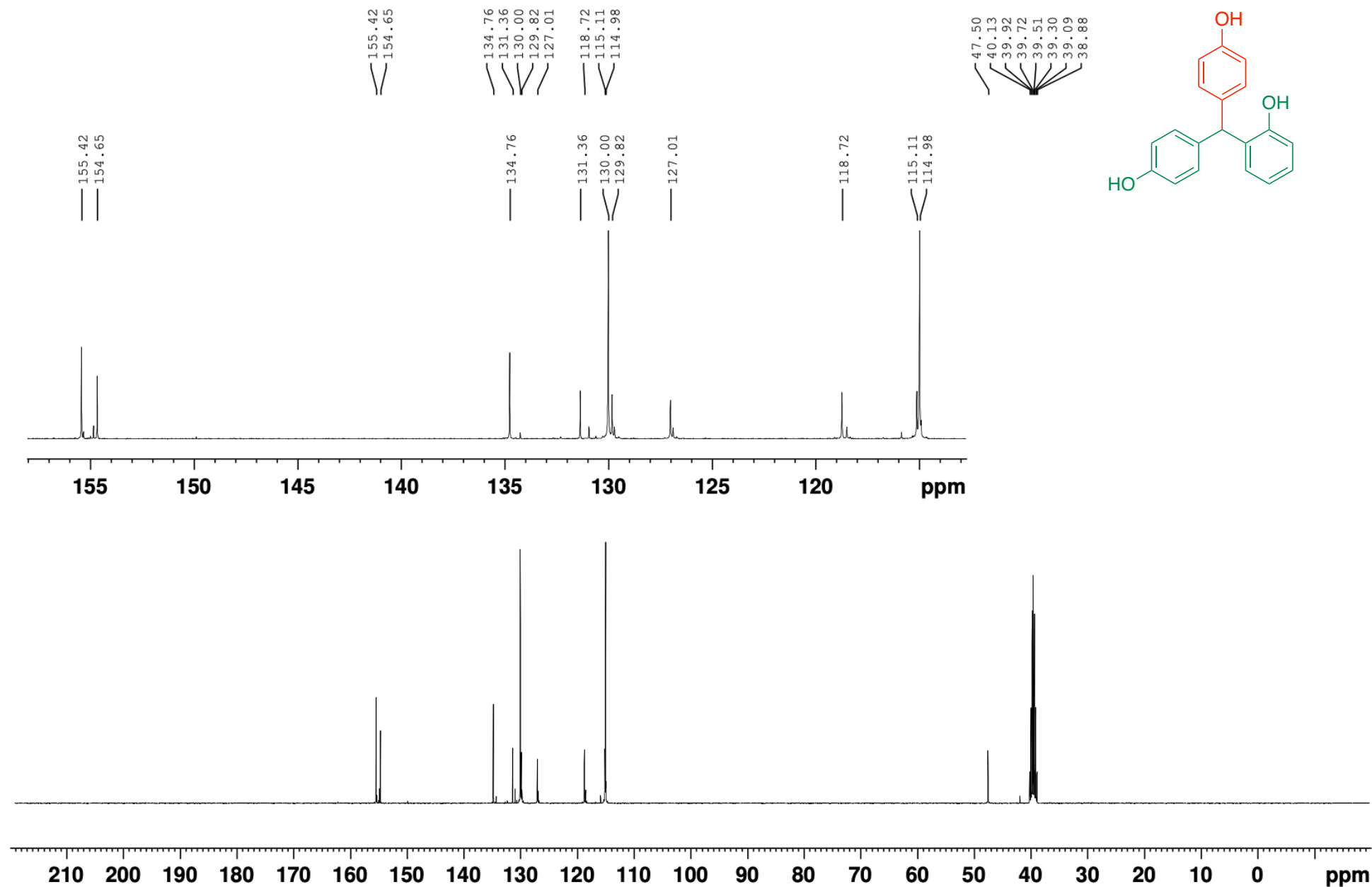


Uthaiwan 8-5-63 No.4
US-III-52-20200414-up in DMSO



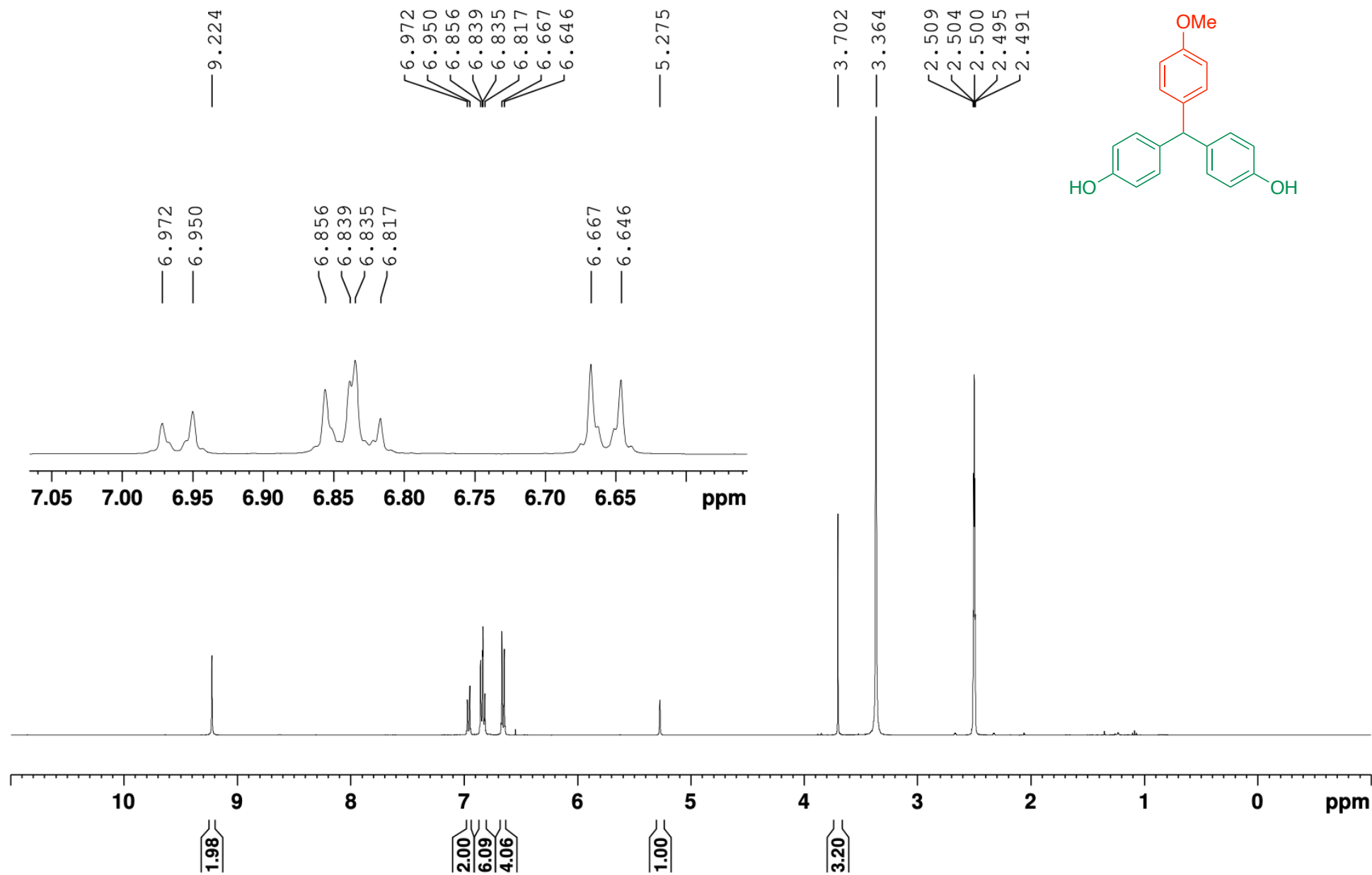
4,4'-((2-Hydroxyphenyl)methylene)diphenol (4bc)
¹H NMR (400 MHz, DMSO-d₆)



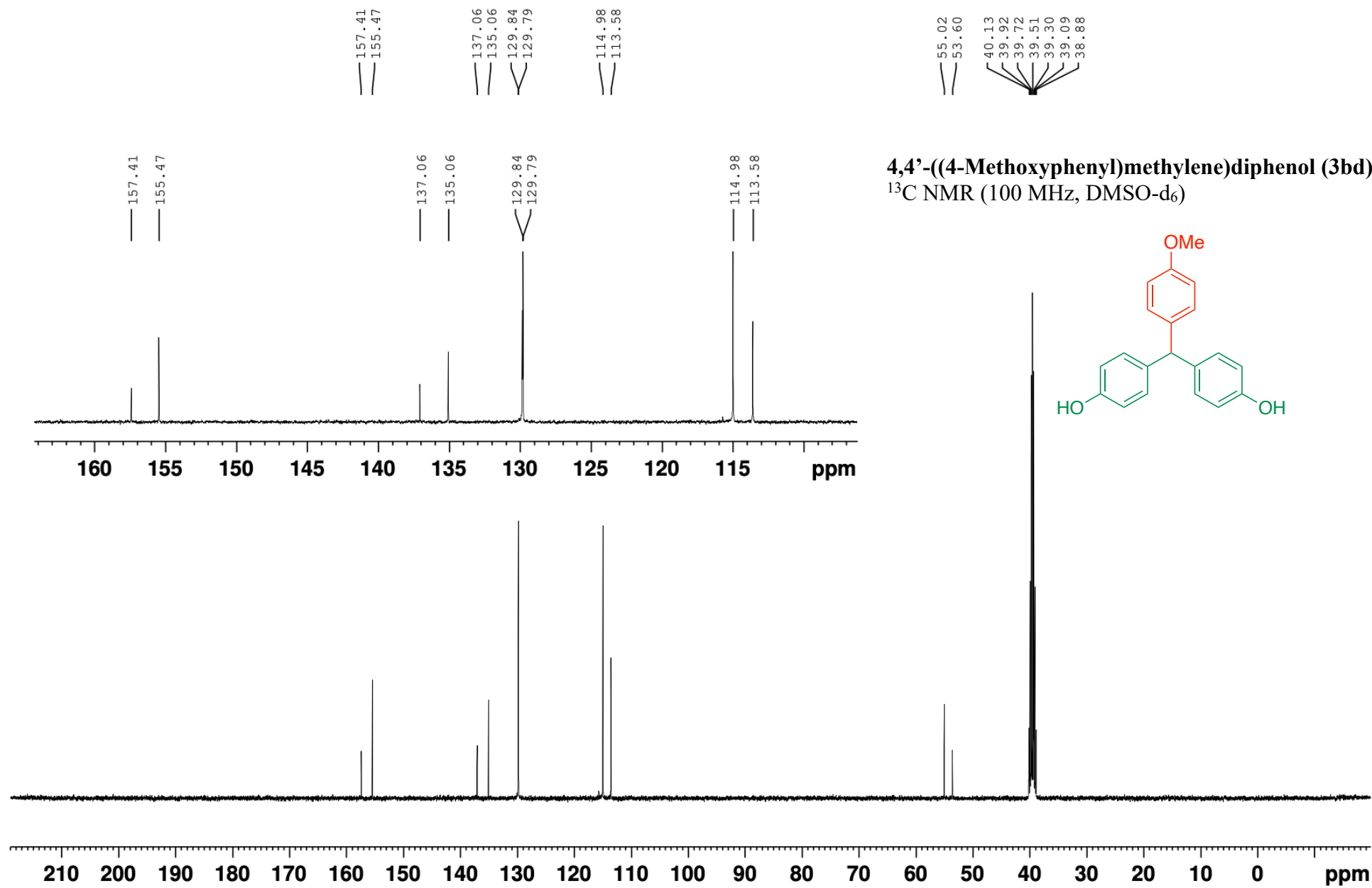
4,4'-((2-Hydroxyphenyl)methylene)diphenol (4bc)
¹³C NMR (100 MHz, DMSO-d₆)Uthaiwan 21-5-63 No.5
13C US-III-52-20200414-up in DMSO

Uthaiwan 29-4-63 No.8
US-III-54-20200414-down in DMSO

4,4'-((4-Methoxyphenyl)methylene)diphenol (3bd)
¹H NMR (400 MHz, DMSO-d₆)

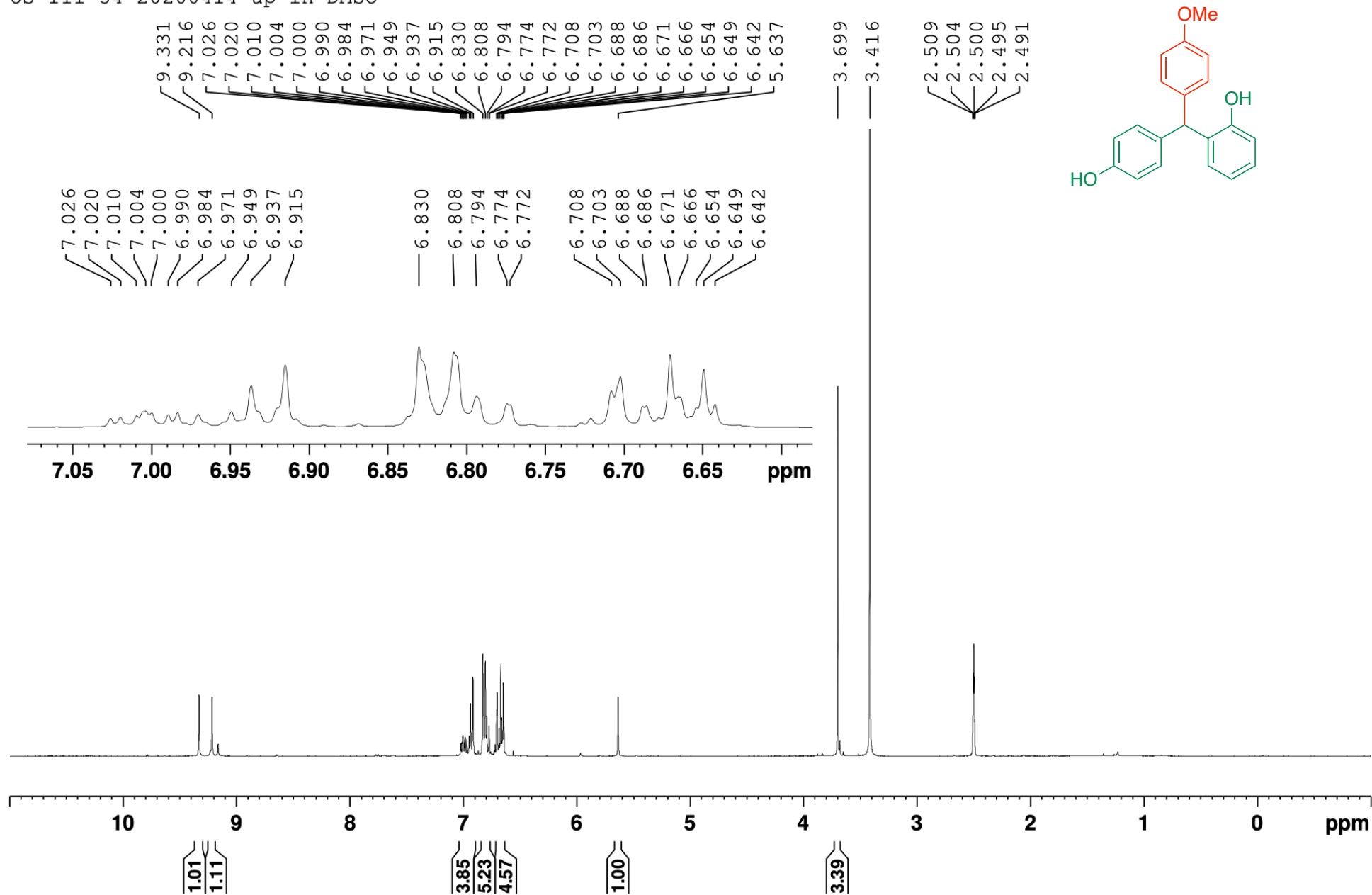


Uthaiwan 18-5-63 No.1
13C US-III-54-20200414-down in DMSO



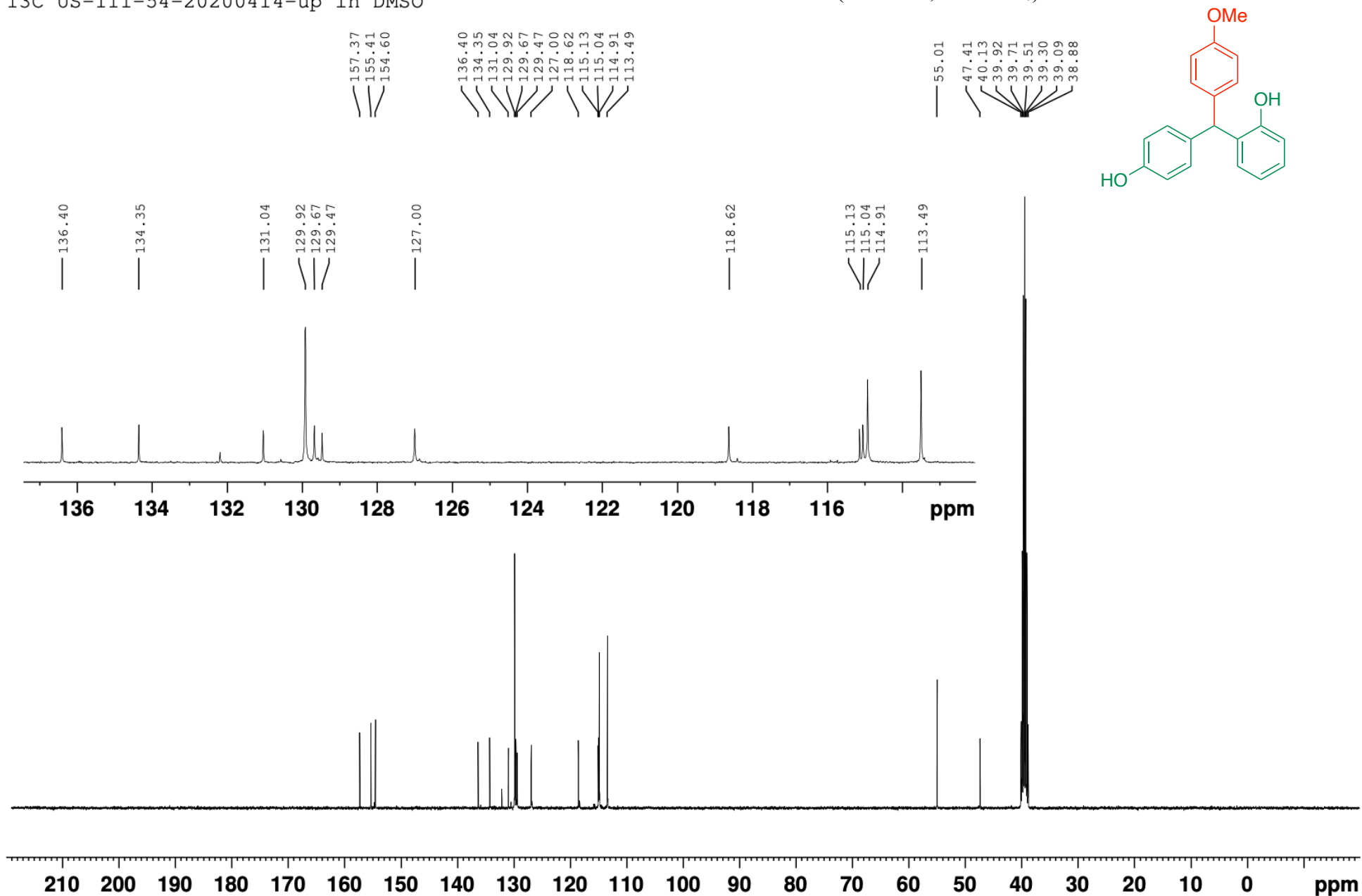
Uthaiwan 30-4-63 No.4
US-III-54-20200414-up in DMSO

2-((4-Hydroxyphenyl)(4-methoxyphenyl)methyl)phenol (4bd)
¹H NMR (400 MHz, DMSO-d₆)



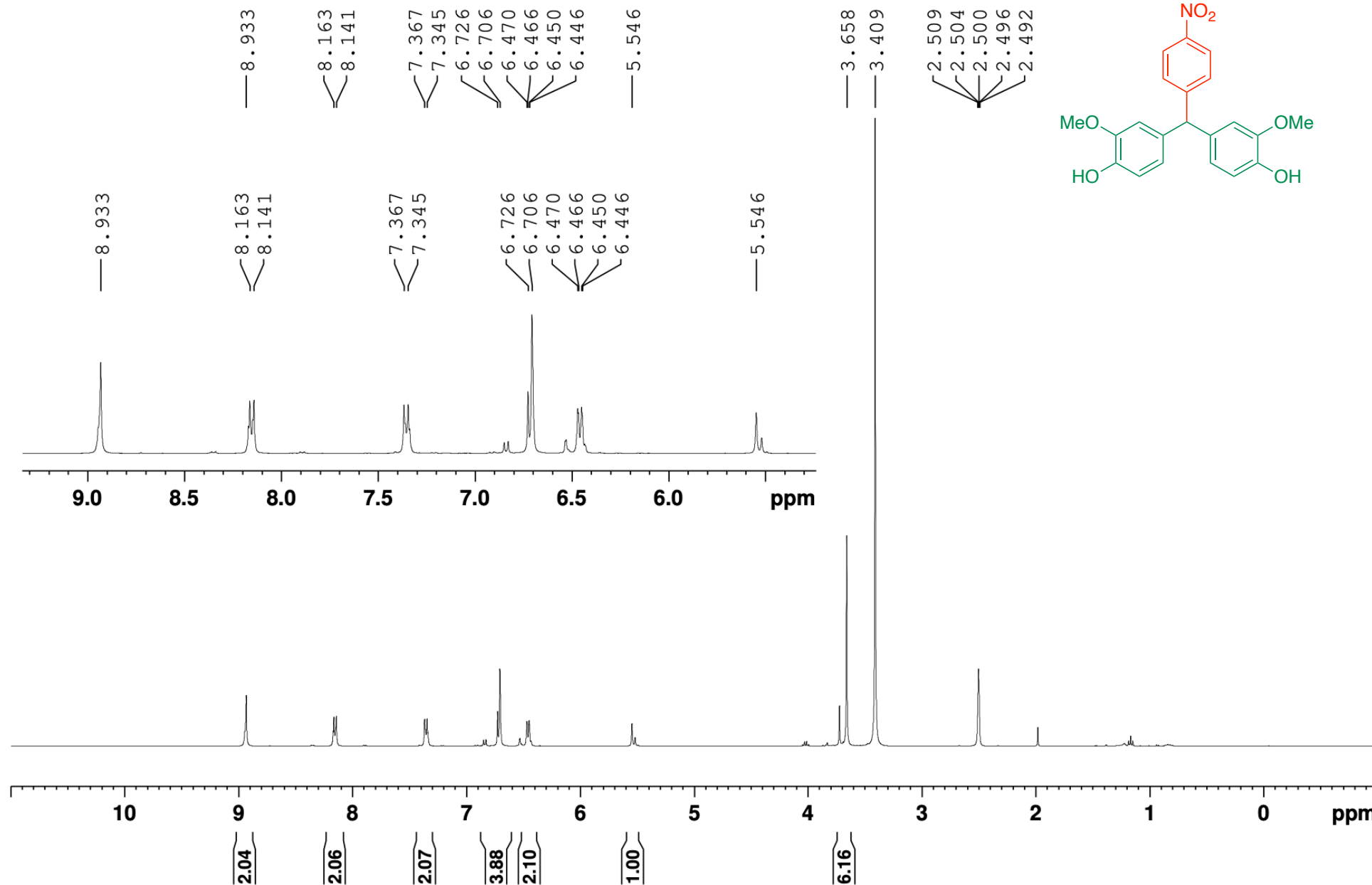
Uthaiwan 20-5-63 No.2
13C US-III-54-20200414-up in DMSO

2-((4-Hydroxyphenyl)(4-methoxyphenyl)methyl)phenol (4bd)
¹³C NMR (100 MHz, DMSO-d₆)



Nipaphorn 16-12-63 No.2
US-III-69-20200420-down in DMSO

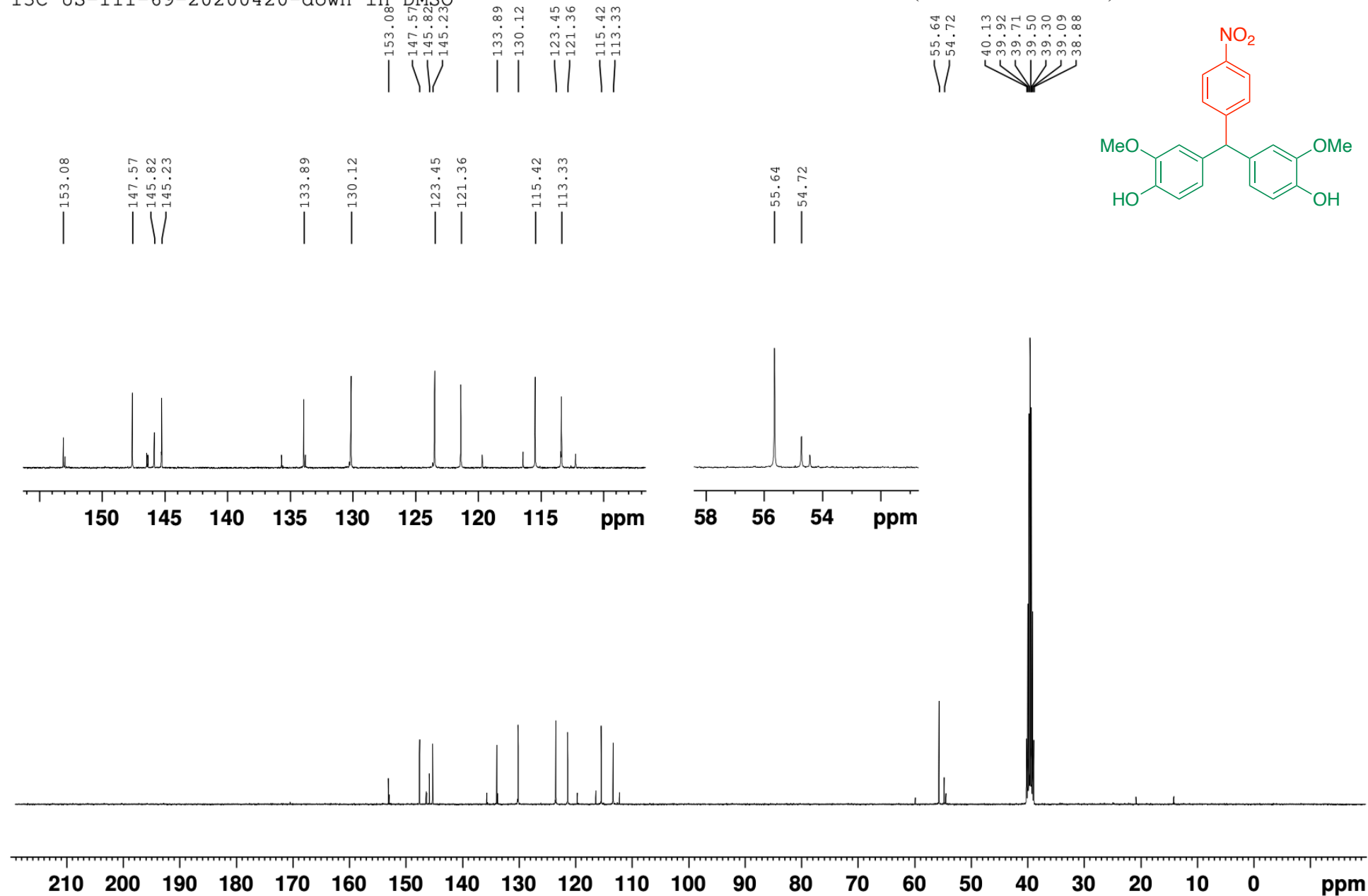
4,4'-((4-Nitrophenyl)methylene)bis(2-methoxyphenol) (3be)
¹H NMR (400 MHz, DMSO-d₆)



Nipaphorn 23-12-63 No.1

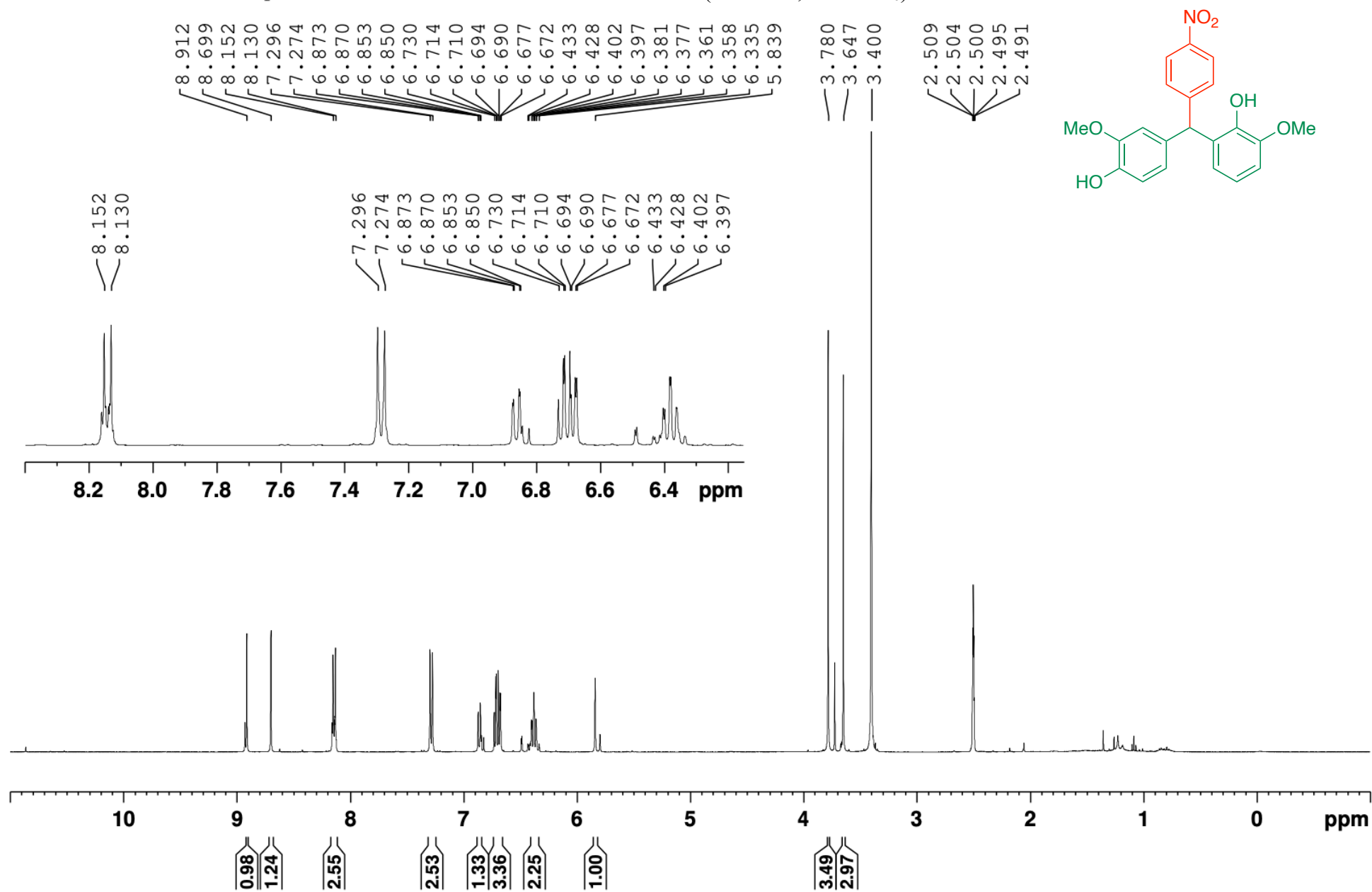
 ^{13}C US-III-69-20200420-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(2-methoxyphenol) (3be)

 ^{13}C NMR (100 MHz, DMSO- d_6)

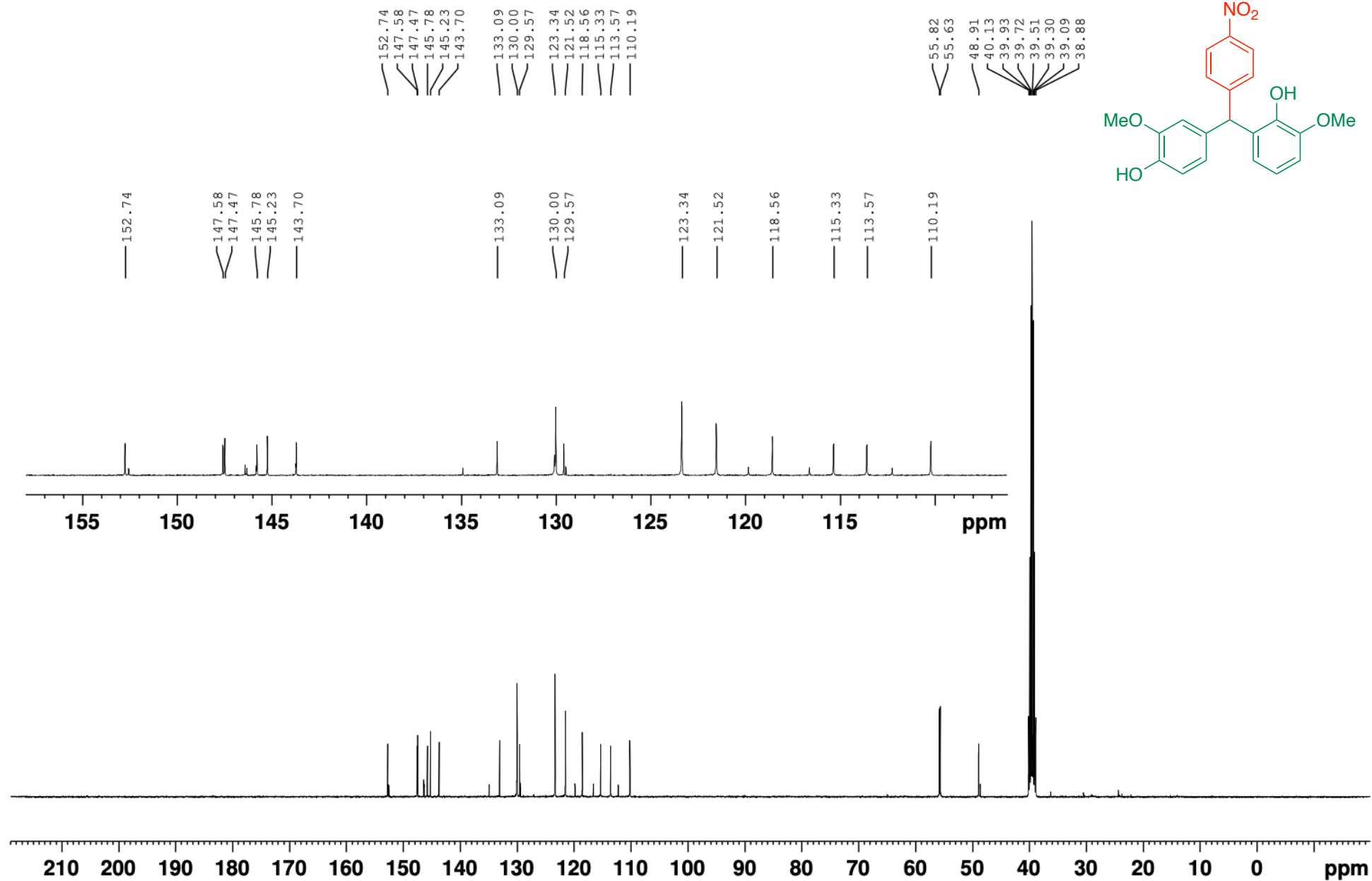
Uthaiwan 30-4-63 No.3
US-III-69-20200420-up in DMSO

4-((2-Hydroxy-3-methoxyphenyl)(4-nitrophenyl)methyl)-2-methoxyphenol (4be)
¹H NMR (400 MHz, DMSO-d₆)



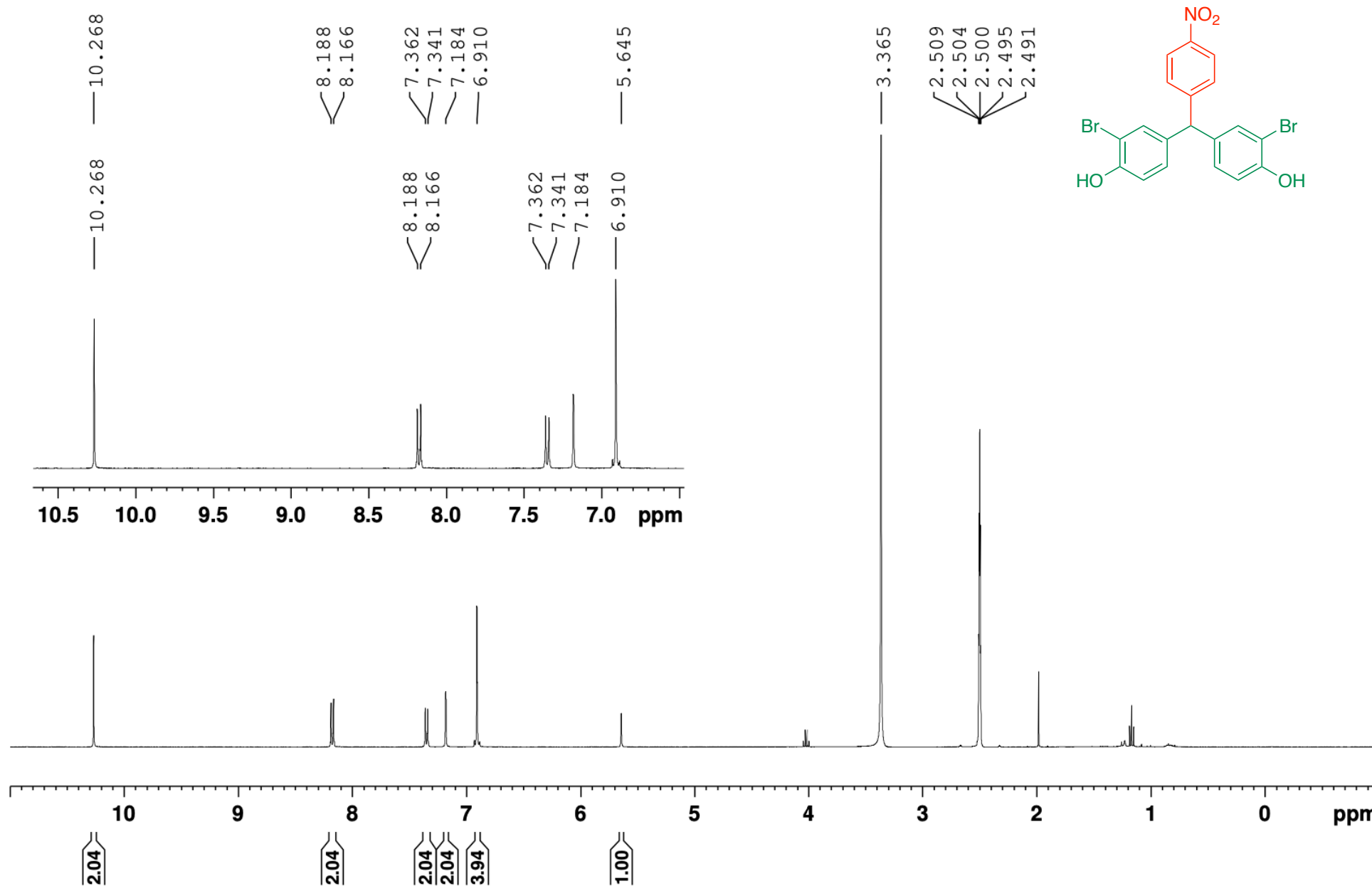
Uthaiwan 13-5-63 No.5
13C US-III-69-20200420-up in DMSO

4-((2-Hydroxy-3-methoxyphenyl)(4-nitrophenyl)methyl)-2-methoxyphenol (4be)
¹³C NMR (100 MHz, DMSO-d₆)



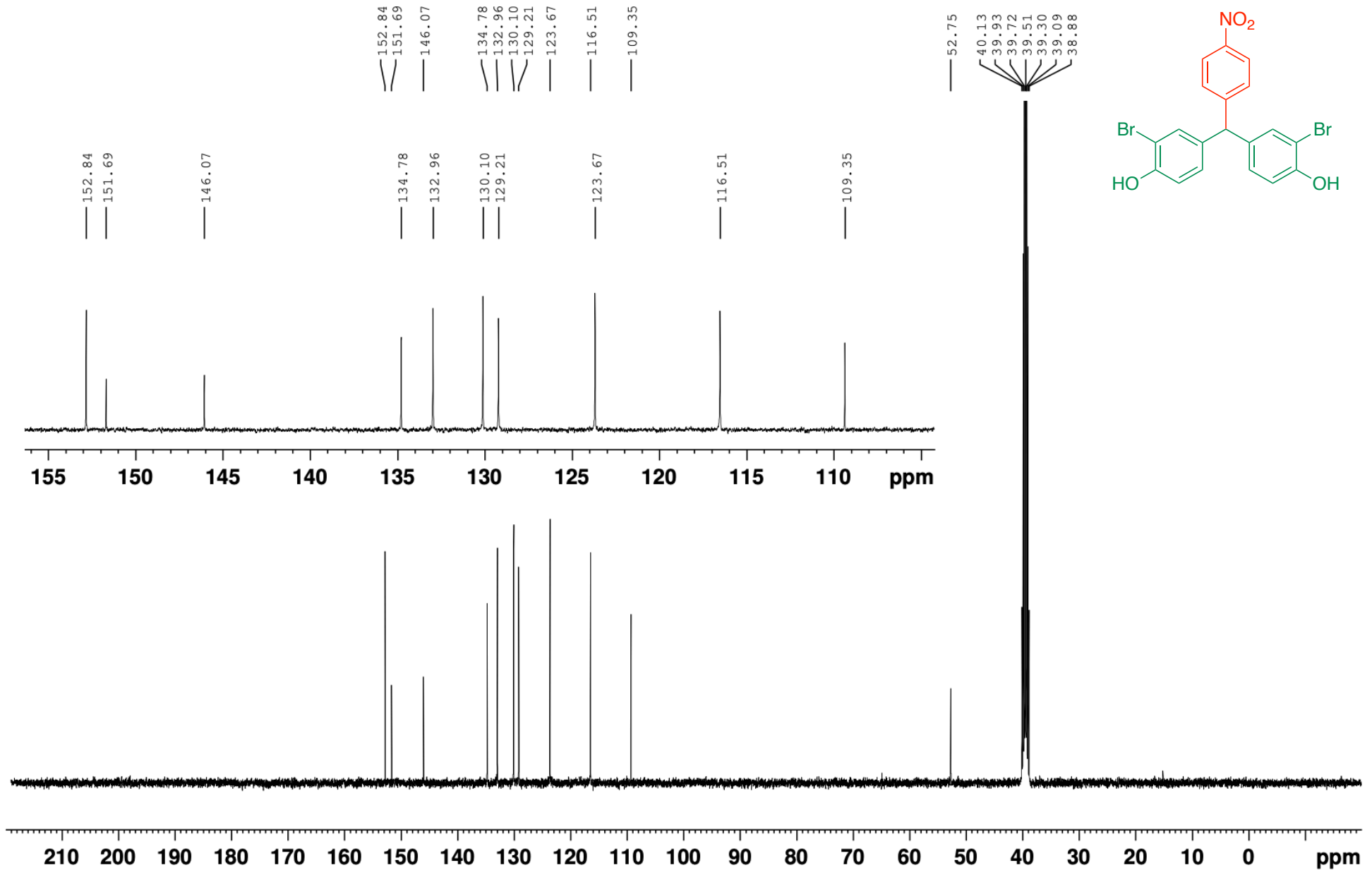
Uthaiwan 21-4-63 No.6
US-III-62-20200417-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(2-bromophenol) (3bf)
¹H NMR (400 MHz, DMSO-d₆)



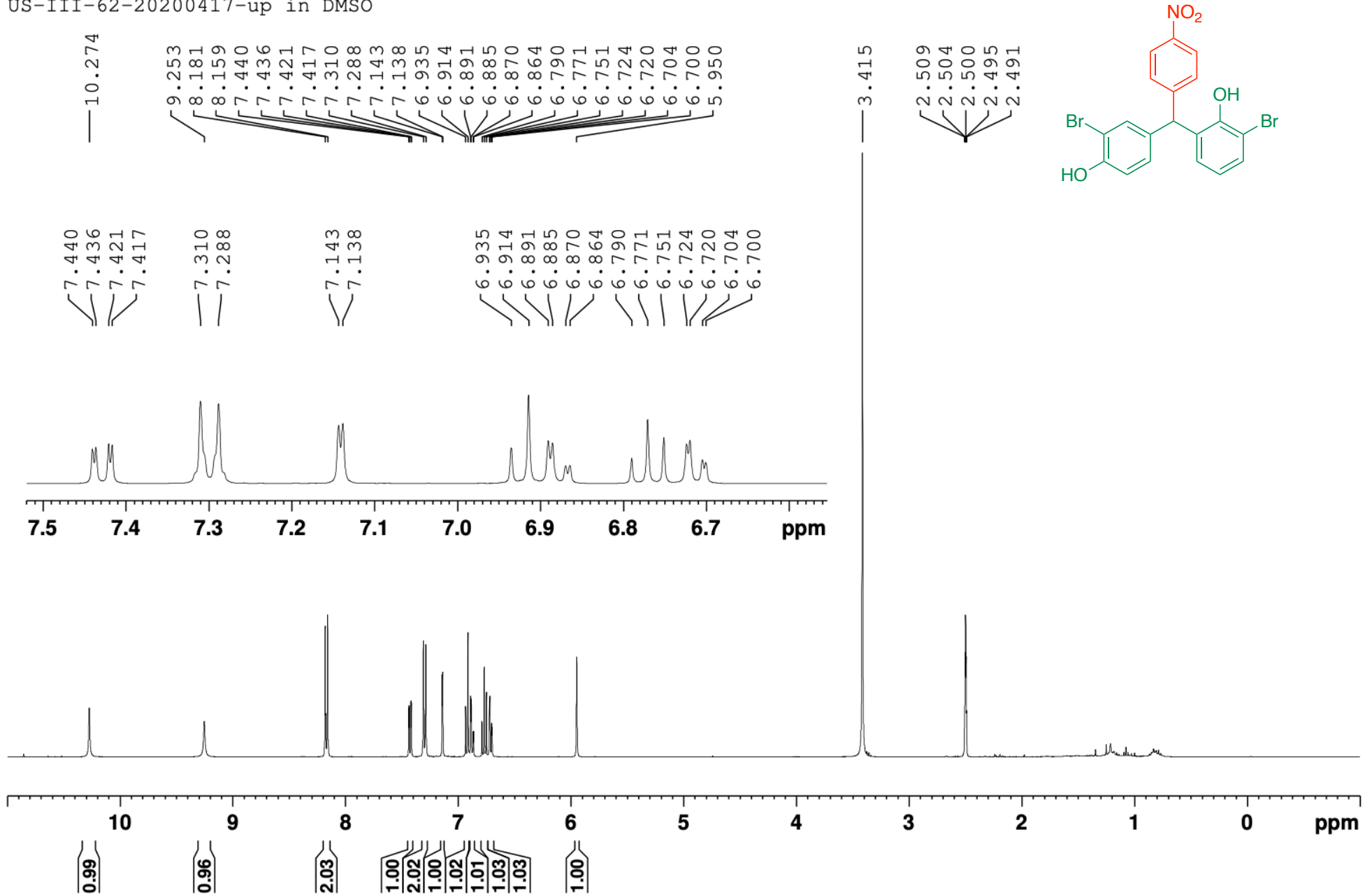
Uthaiwan 30-4-63 No.5
13C US-III-62-20200417-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(2-bromophenol) (3bf)
¹³C NMR (100 MHz, DMSO-d₆)



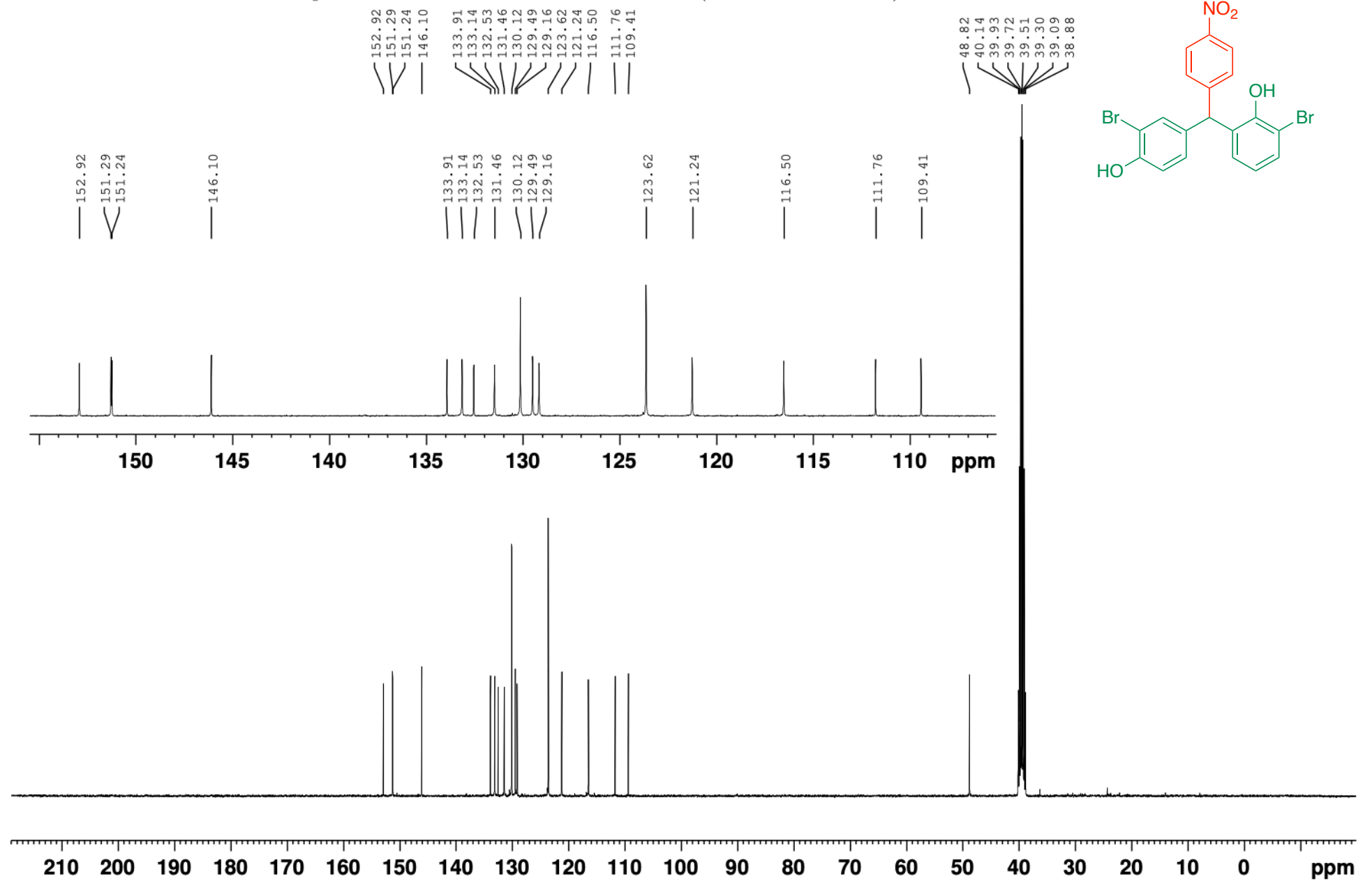
Uthaiwan 30-4-63 No.1
US-III-62-20200417-up in DMSO

2-Bromo-4-((3-bromo-2-hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bf)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 20-5-63 No.1
13C US-III-62-20200417-up in DMSO

2-Bromo-4-((3-bromo-2-hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bf)
13C NMR (100 MHz, DMSO-d₆)

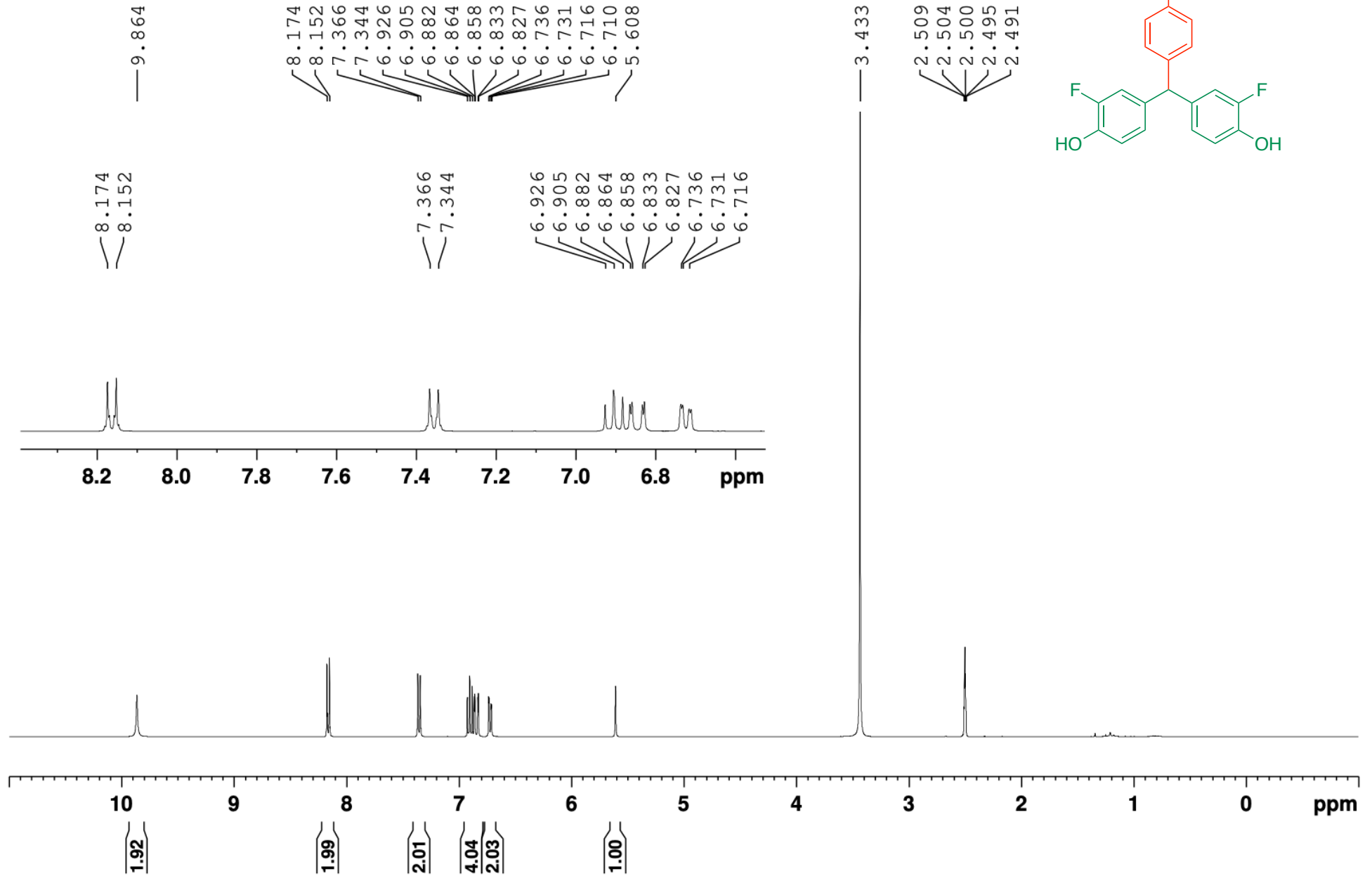


4,4'-((4-Nitrophenyl)methylene)bis(2-fluorophenol) (3bg)

 ^1H NMR (400 MHz, DMSO- d_6)

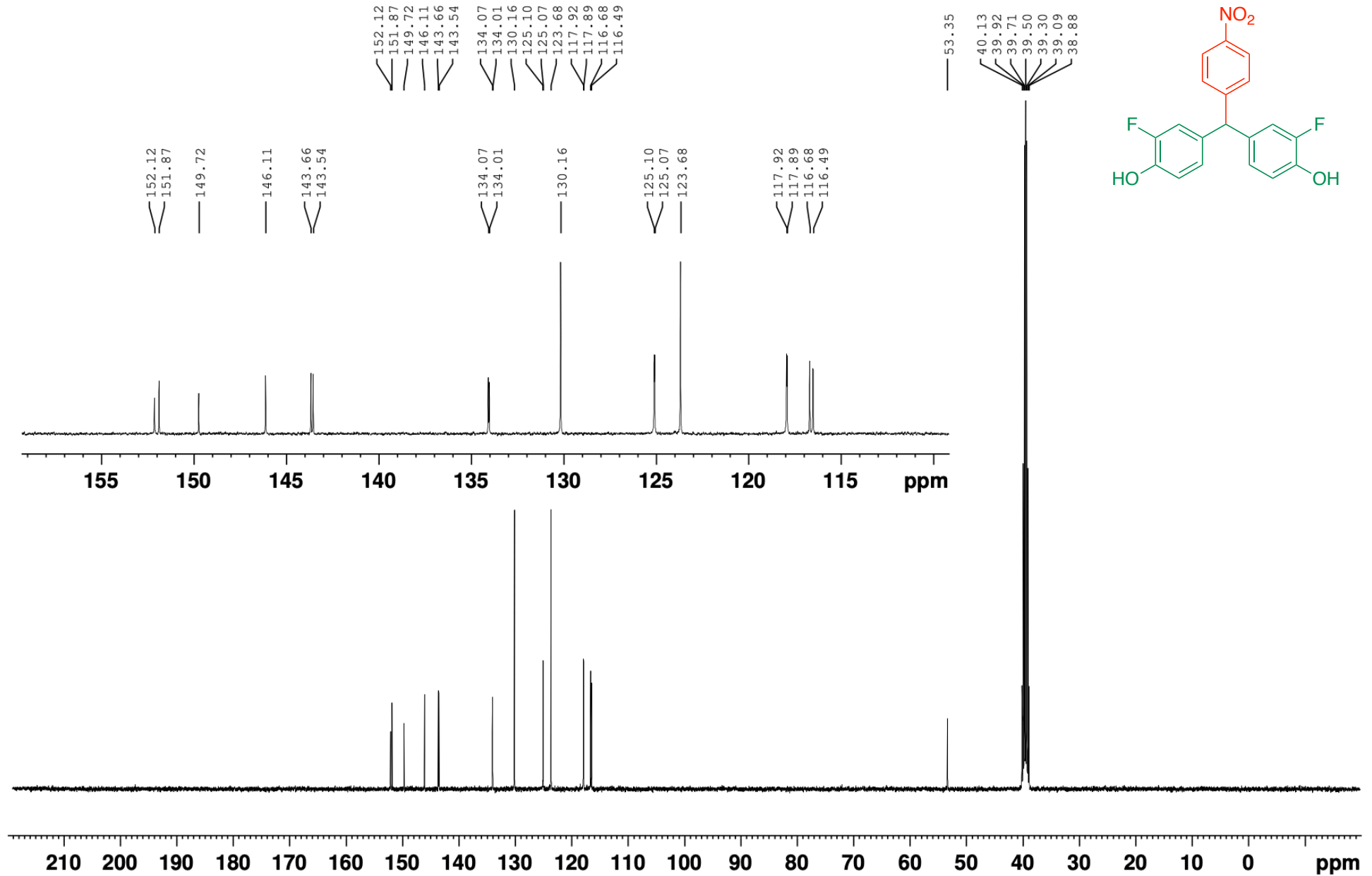
Uthaiwan 19-5-63 No.6

US-III-79-20200503-down-re in DMSO



Uthaiwan 26-5-63 No.2
13C US-III-79-20200503-down-re in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(2-fluorophenol) (3bg)
¹³C NMR (100 MHz, DMSO-d₆)

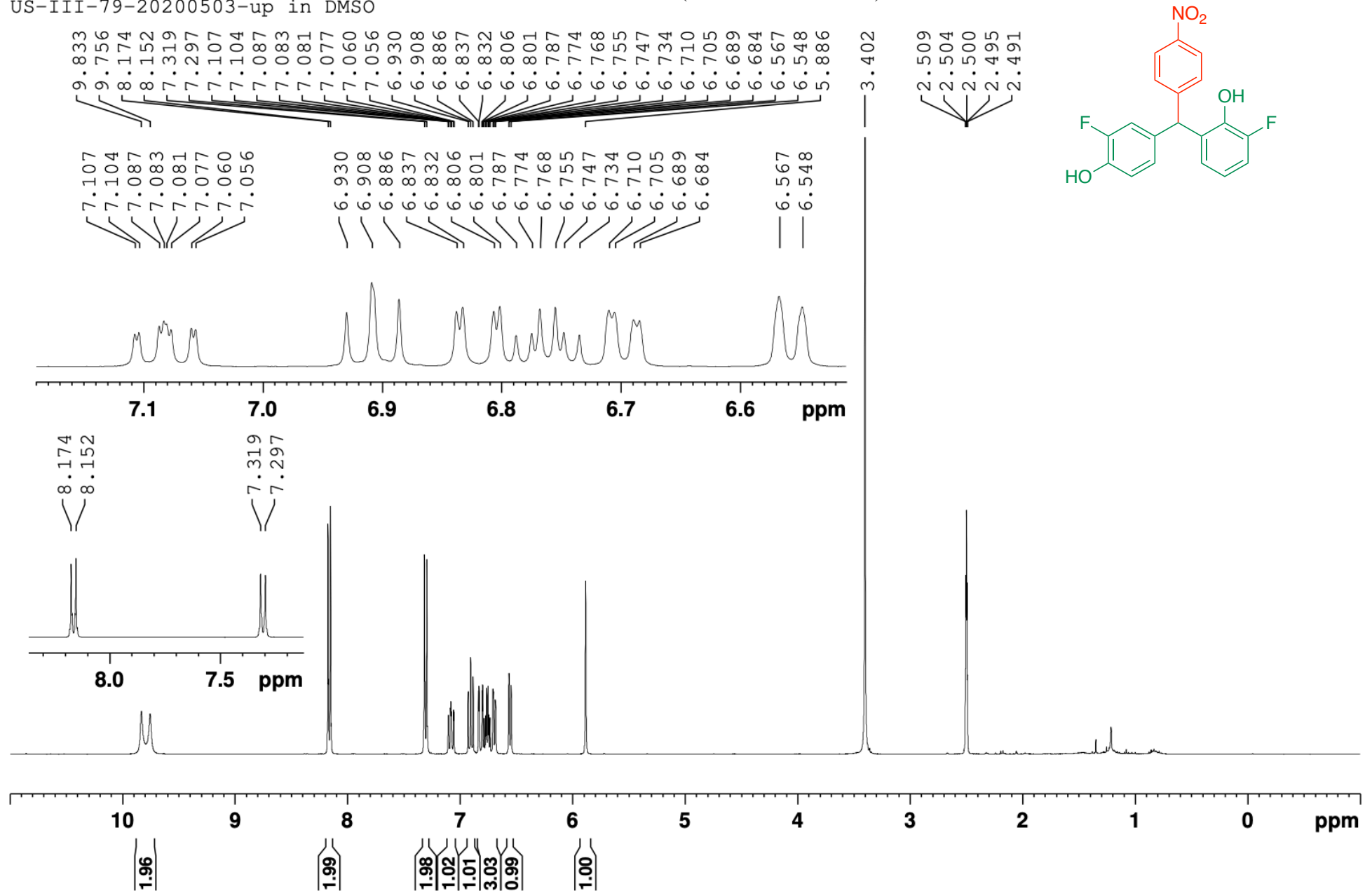


2-Fluoro-4-((3-fluoro-2-hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bg)

¹H NMR (400 MHz, DMSO-d₆)

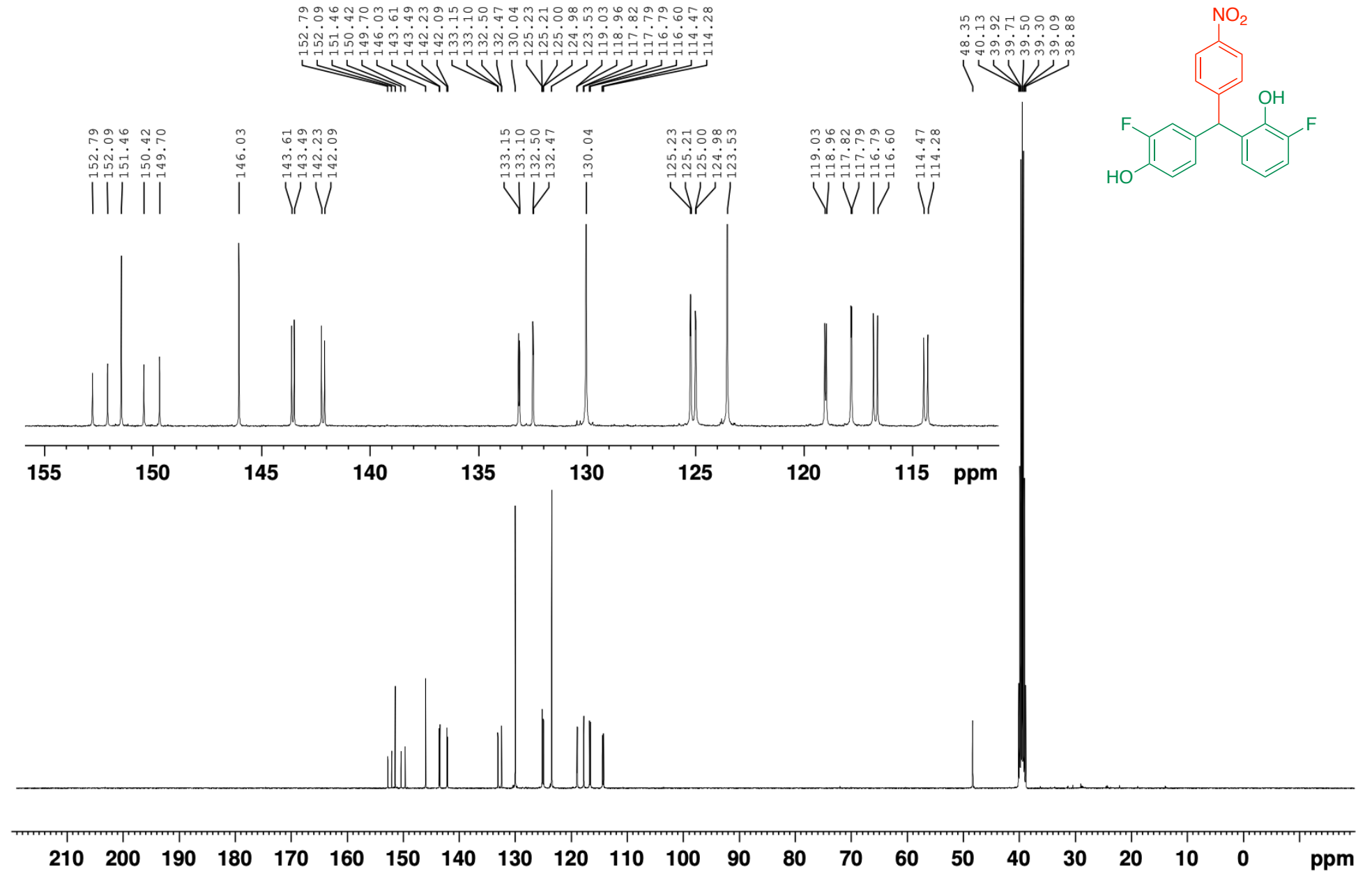
Uthaiwan 21-5-63 No.3

US-III-79-20200503-up in DMSO



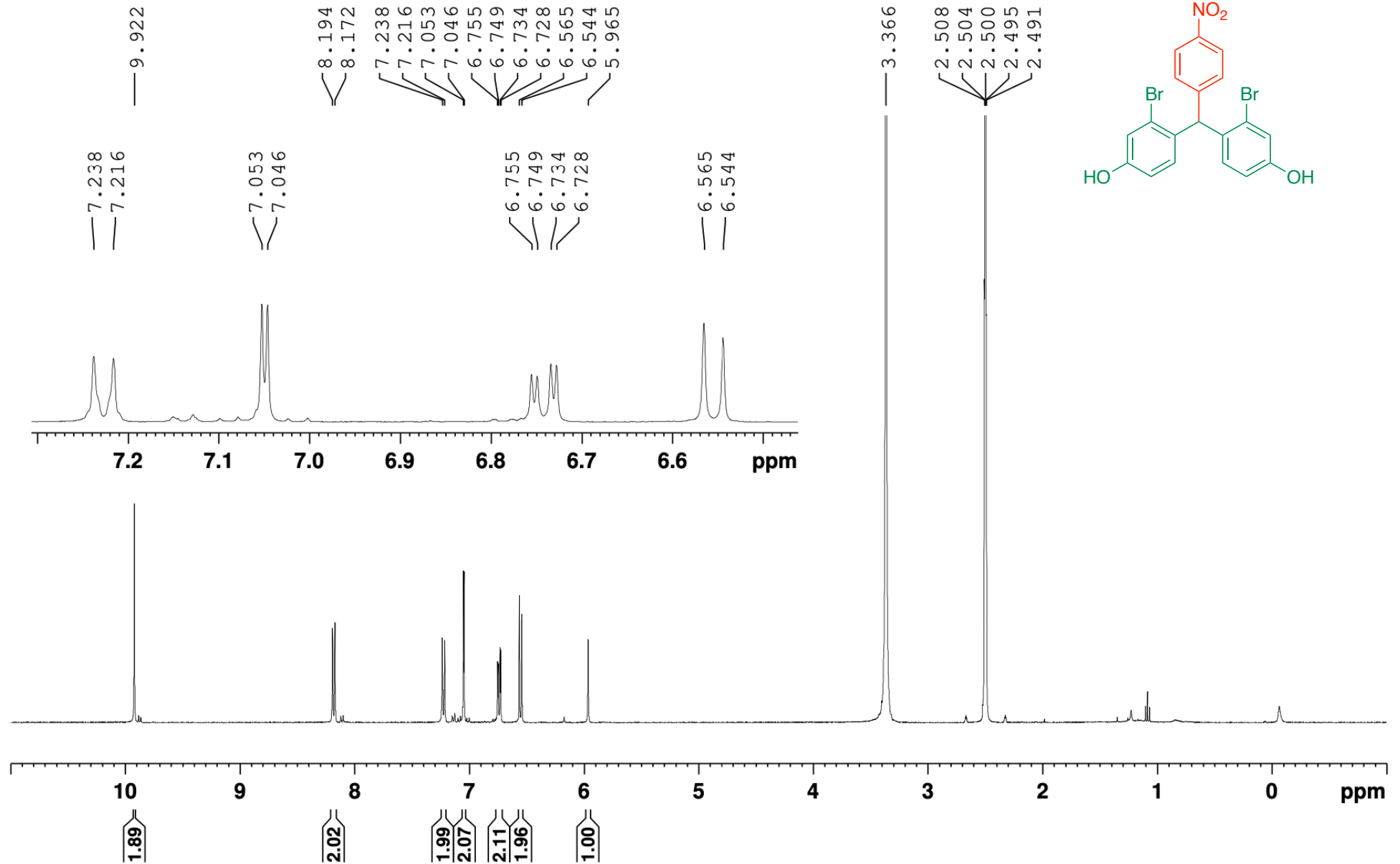
Uthaiwan 29-5-63 No.6
13C US-III-79-20200503-up in DMSO

2-Fluoro-4-((3-fluoro-2-hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bg)
¹³C NMR (100 MHz, DMSO-d₆)



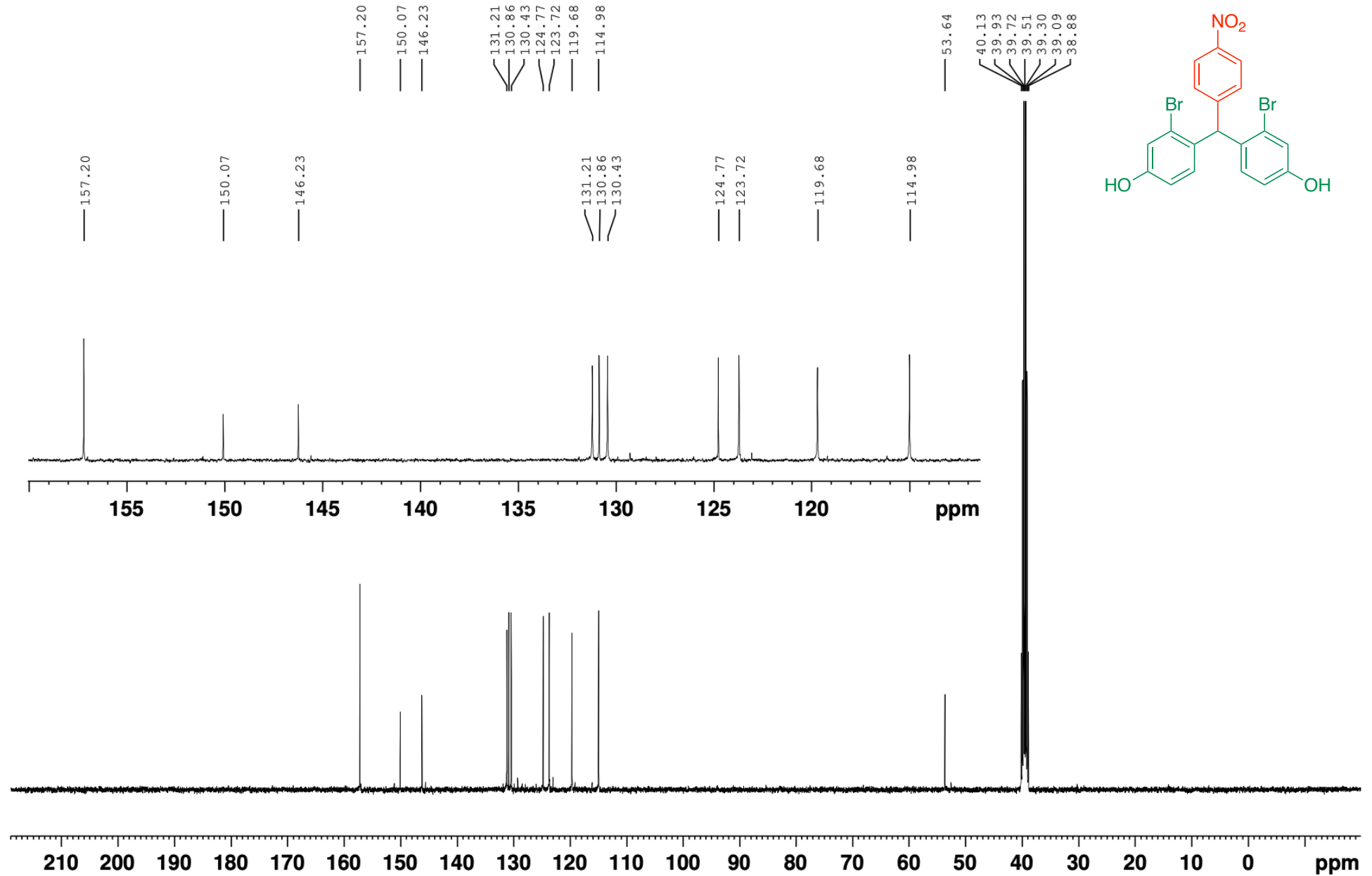
Uthaiwan 5-5-63 No.2
US-III-63-20200418-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(3-bromophenol) (3bh)
¹H NMR (400 MHz, DMSO-d₆)



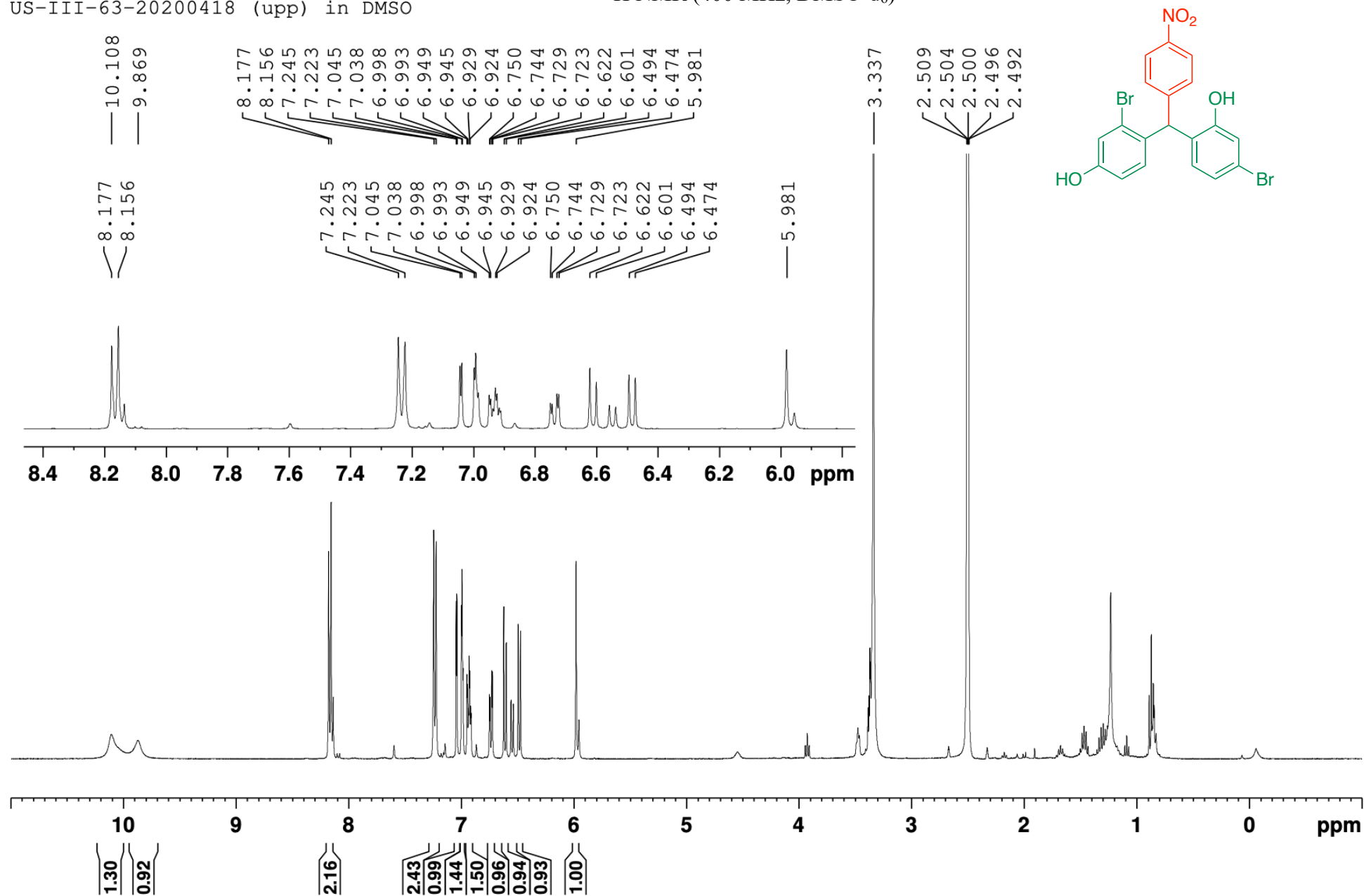
Uthaiwan 13-5-63 No.1
13C US-III-63-20200418-down in DMSO

4,4'-((4-Nitrophenyl)methylene)bis(3-bromophenol) (3bh)
¹³C NMR (100 MHz, DMSO-d₆)



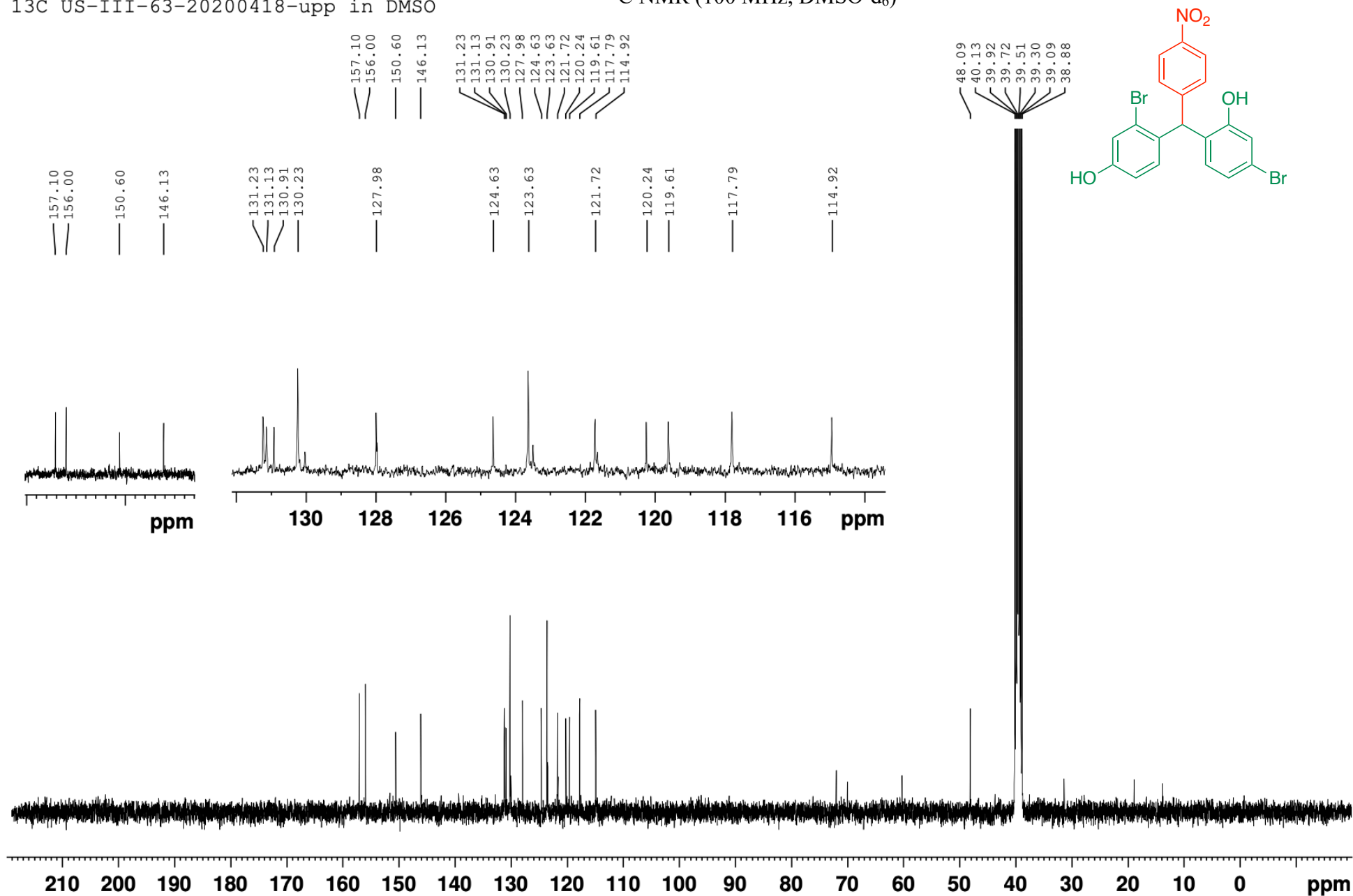
Nipaphorn 28-9-63 No.2
US-III-63-20200418 (upp) in DMSO

5-Bromo-2-((2-bromo-4-hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bh)
¹H NMR (400 MHz, DMSO-d₆)



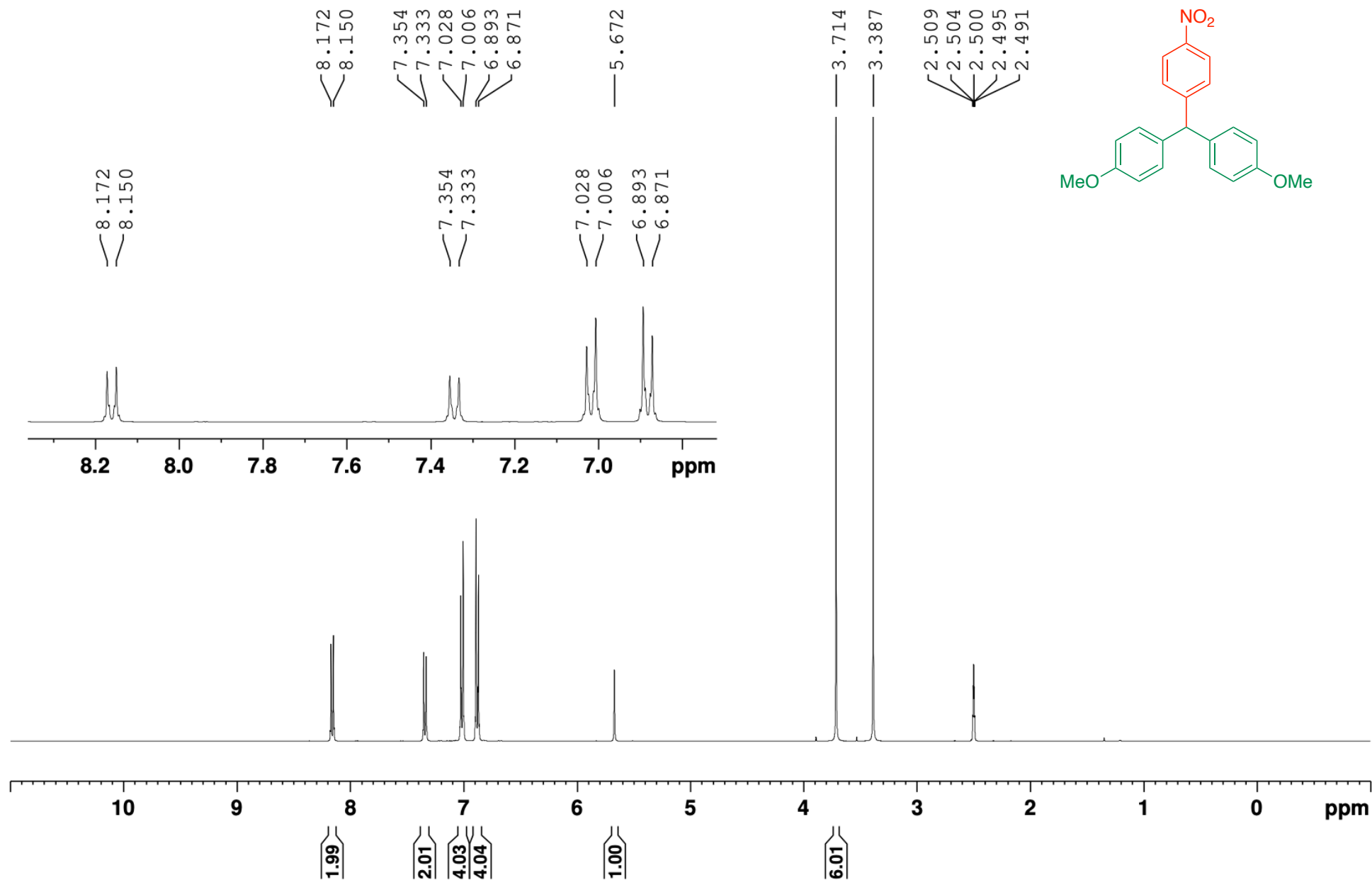
Nipaphorn 2-12-63 No.4
13C US-III-63-20200418-upp in DMSO

5-Bromo-2-((2-bromo-4-hydroxyphenyl)(4-nitrophenyl)methyl)phenol (4bh)
¹³C NMR (100 MHz, DMSO-d₆)

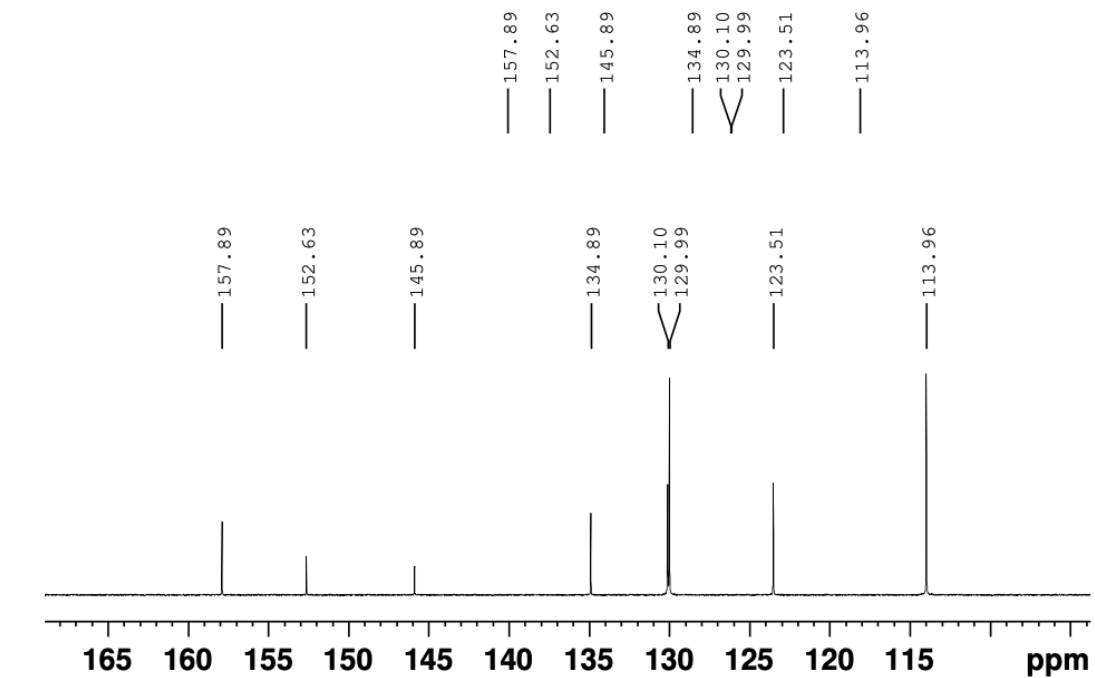


Uthaiwan 29-4-63 No.4
US-III-48-20200413-down in DMSO

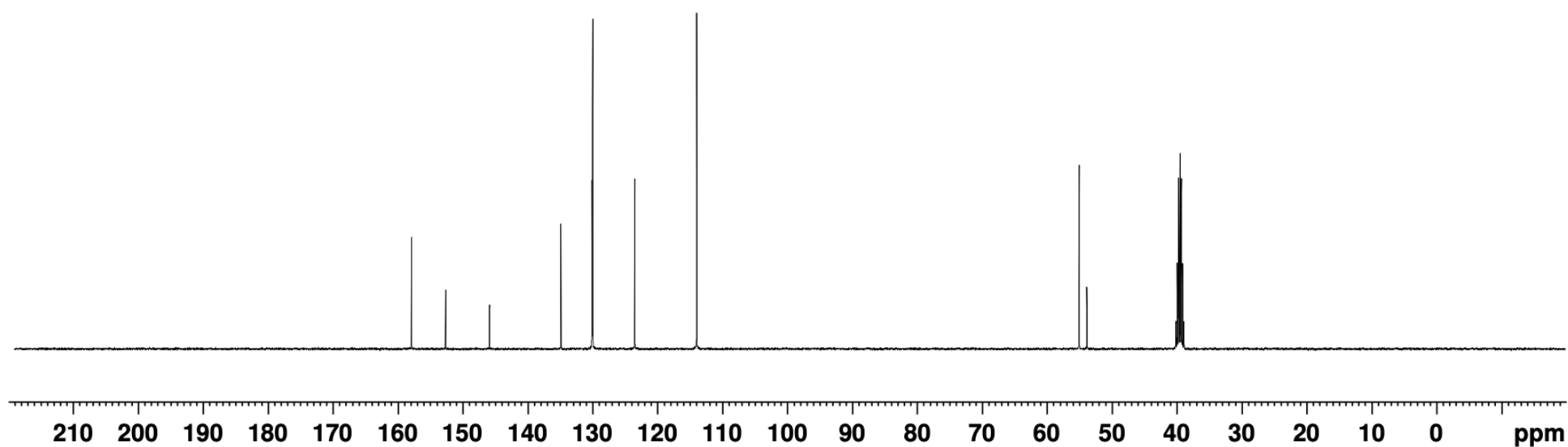
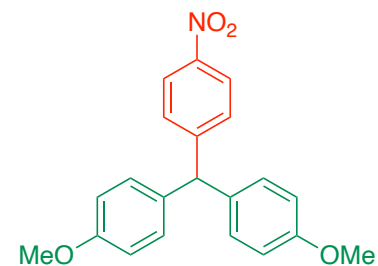
4,4'-((4-Nitrophenyl)methylene)bis(methoxybenzene) (3bi)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 7-5-63 No.3
13C US-III-48-20200413-down in DMSO

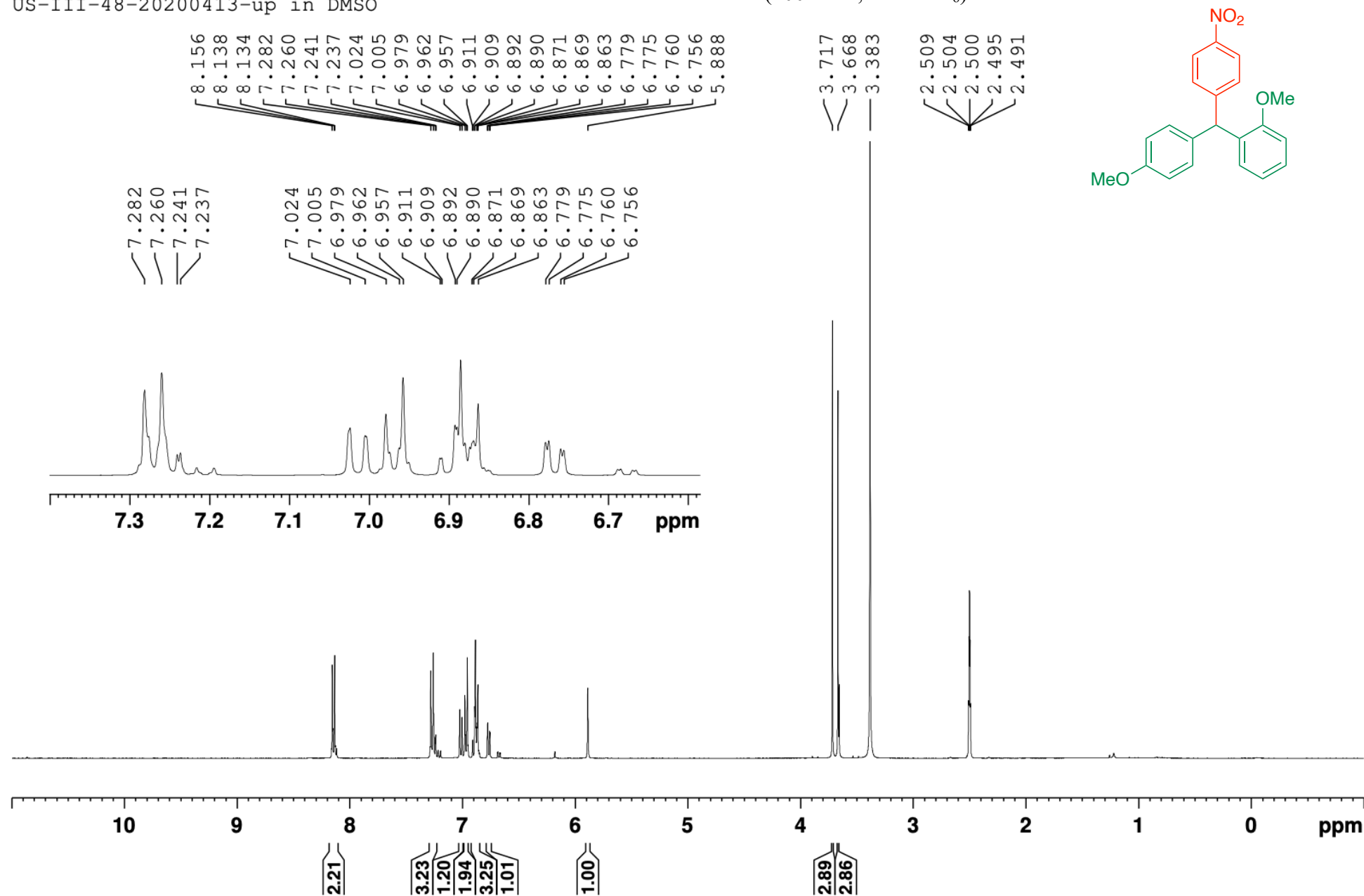


4,4'-((4-Nitrophenyl)methylene)bis(methoxybenzene) (3bi)
¹³C NMR (100 MHz, DMSO-d₆)



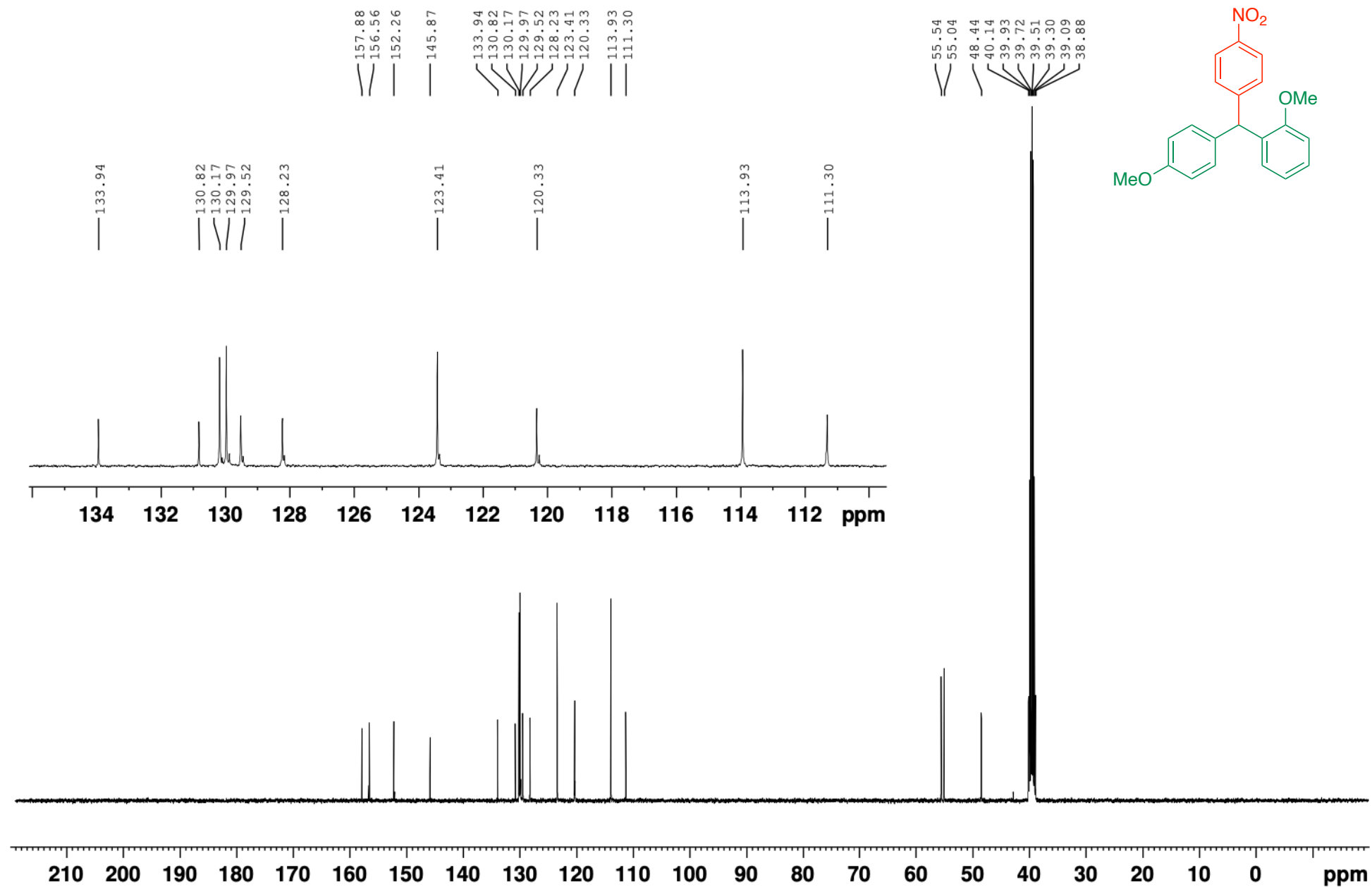
Uthaiwan 29-4-63 No.9
US-III-48-20200413-up in DMSO

1-Methoxy-2-((4-methoxyphenyl)(4-nitrophenyl)methyl)benzene (4bi)
¹H NMR (400 MHz, DMSO-d₆)



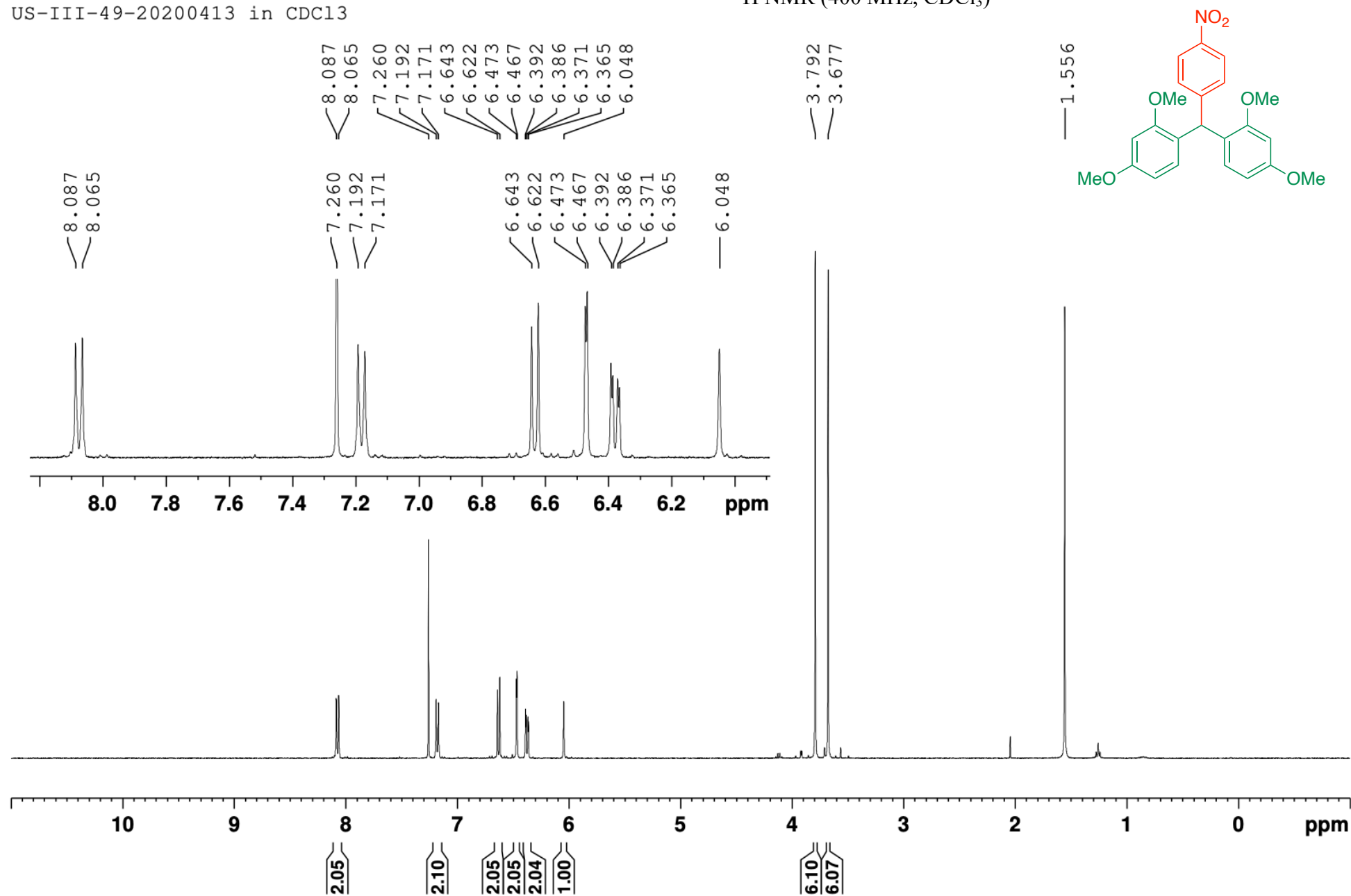
Uthaiwan 13-5-63 No.3
13C US-III-48-20200413-up in DMSO

1-Methoxy-2-((4-methoxyphenyl)(4-nitrophenyl)methyl)benzene (4bi)
¹³C NMR (100 MHz, DMSO-d₆)



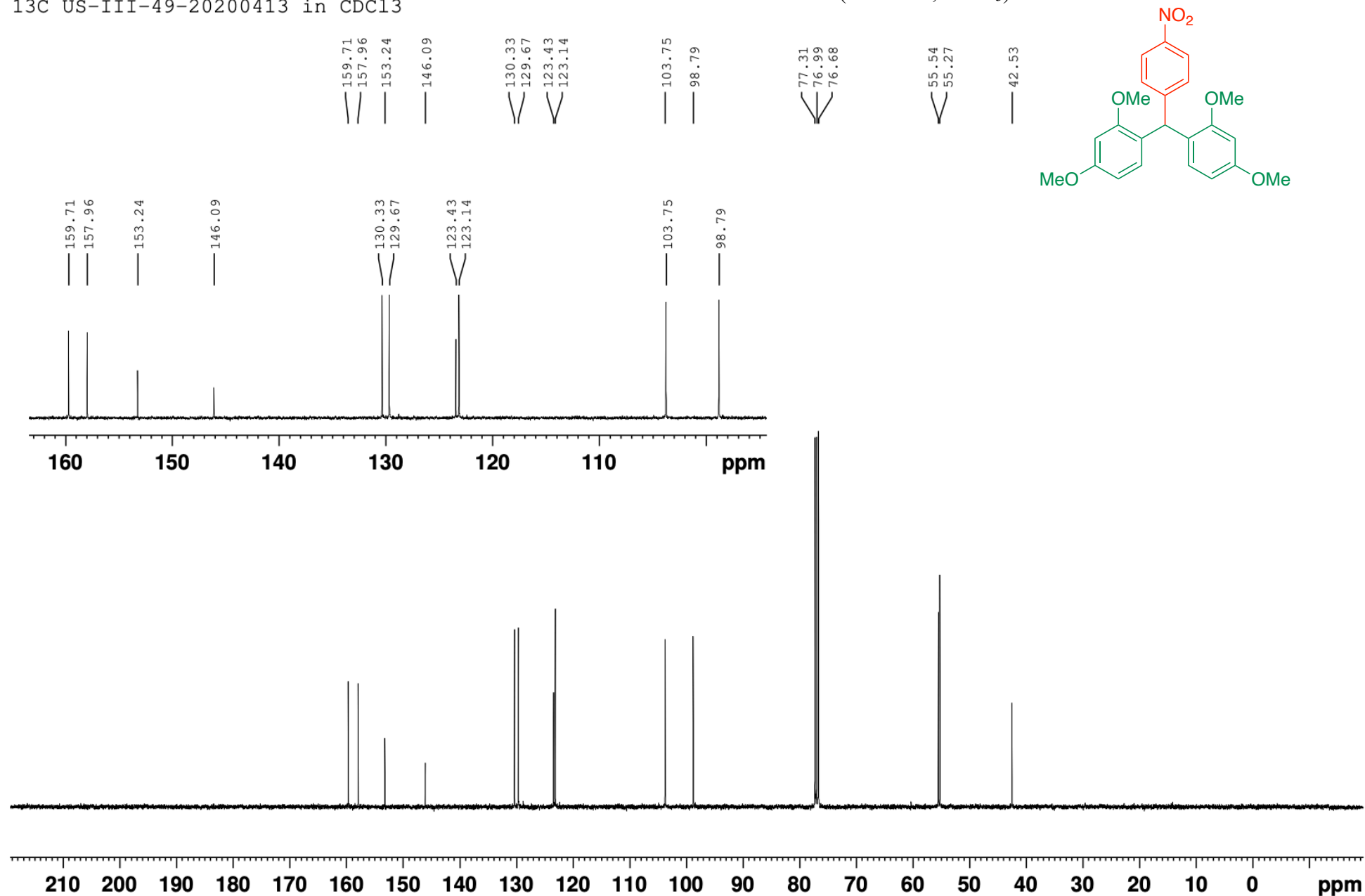
Uthaiwan 17-4-63 No.4
US-III-49-20200413 in CDCl₃

4,4'-((4-Nitrophenyl)methylene)bis(1,3-dimethoxybenzene) (3b)
¹H NMR (400 MHz, CDCl₃)

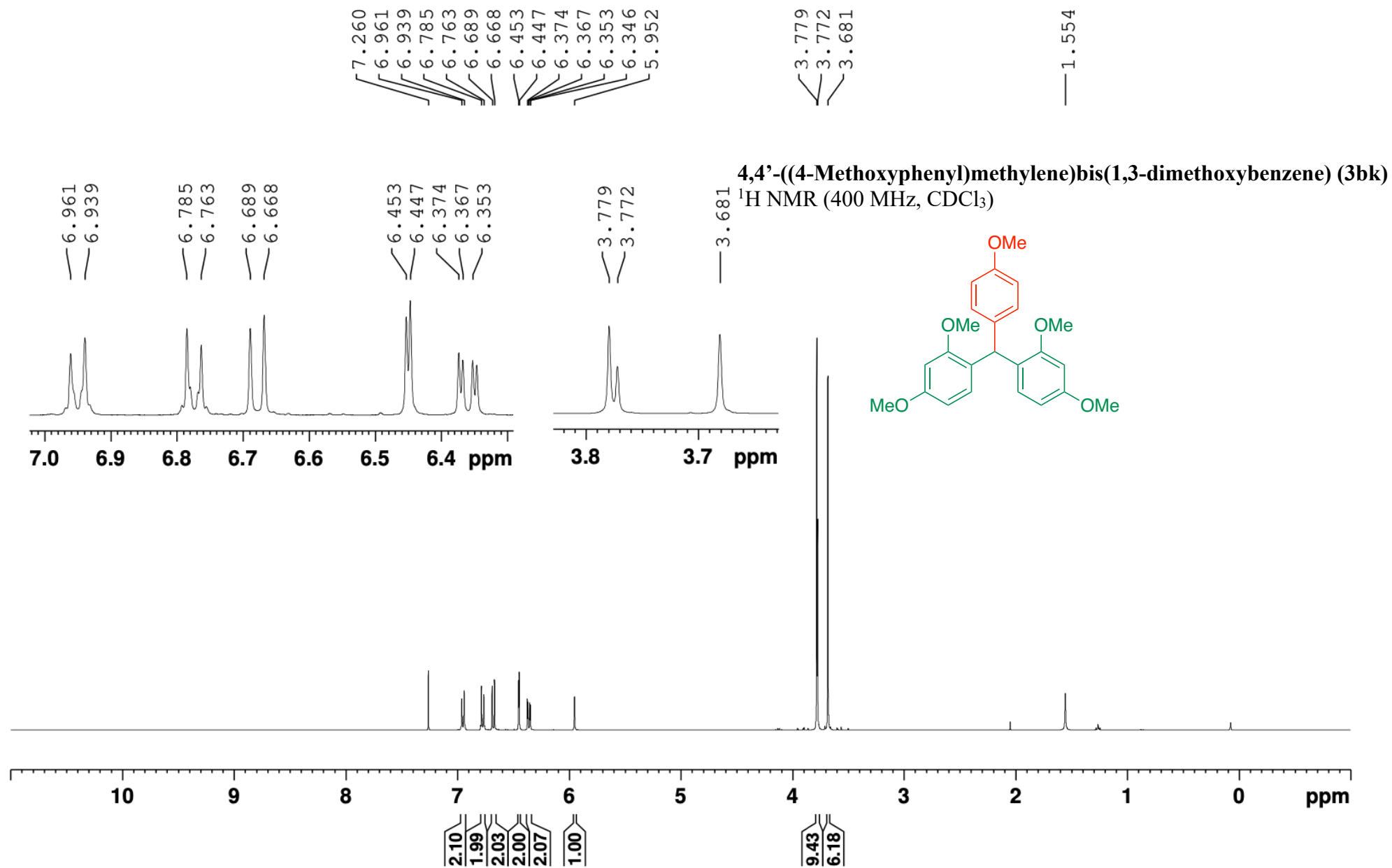


Uthaiwan 21-4-63 No.4
13C US-III-49-20200413 in CDCl3

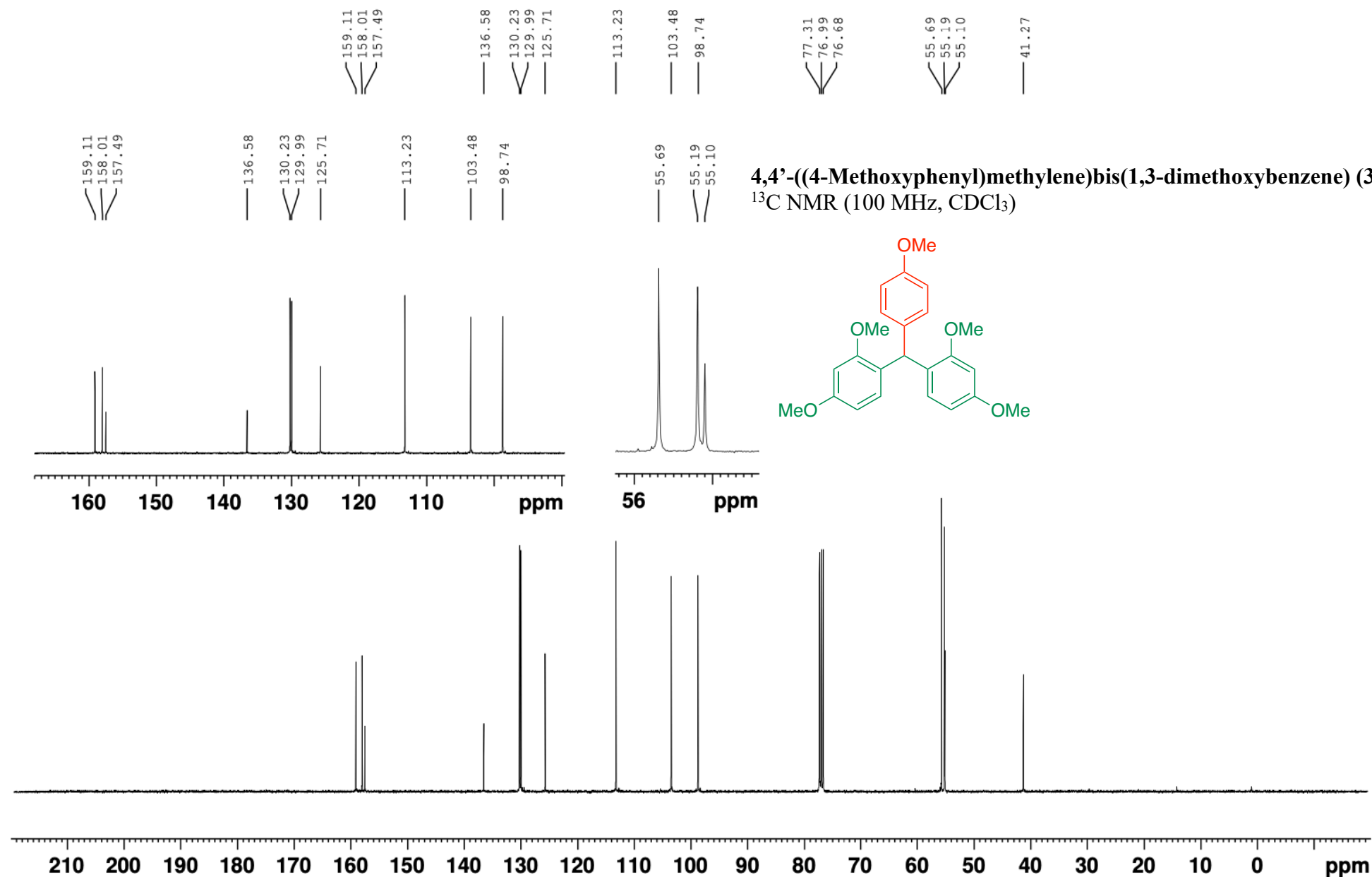
4,4'-((4-Nitrophenyl)methylene)bis(1,3-dimethoxybenzene) (3bj)
¹³C NMR (100 MHz, CDCl₃)



Uthaiwan 29-4-63 No.6
US-III-70-20200420-re in CDCl₃

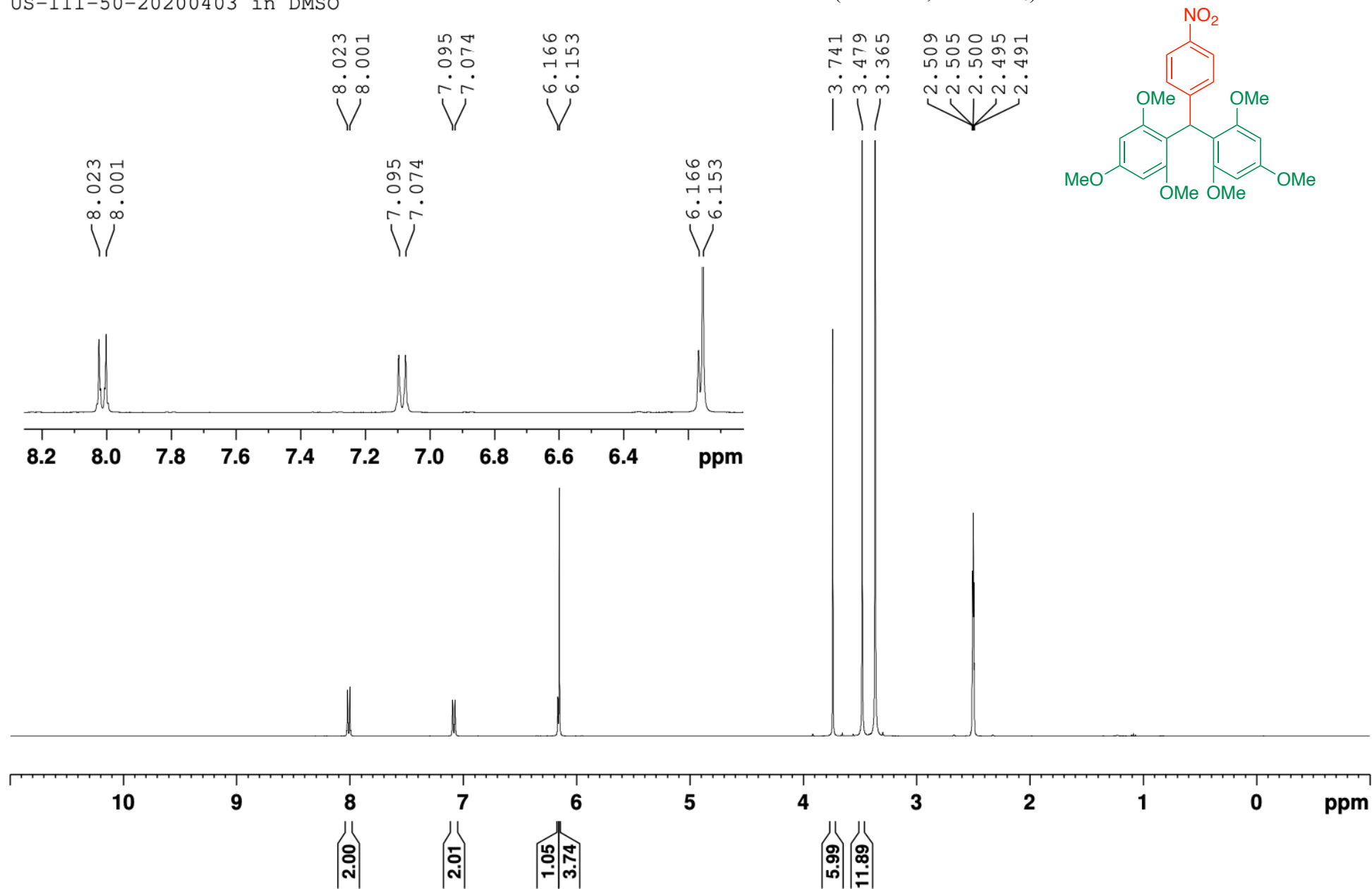


Uthaiwan 7-5-63 No.1
 13C US-III-70-20200420-re in CDCl3



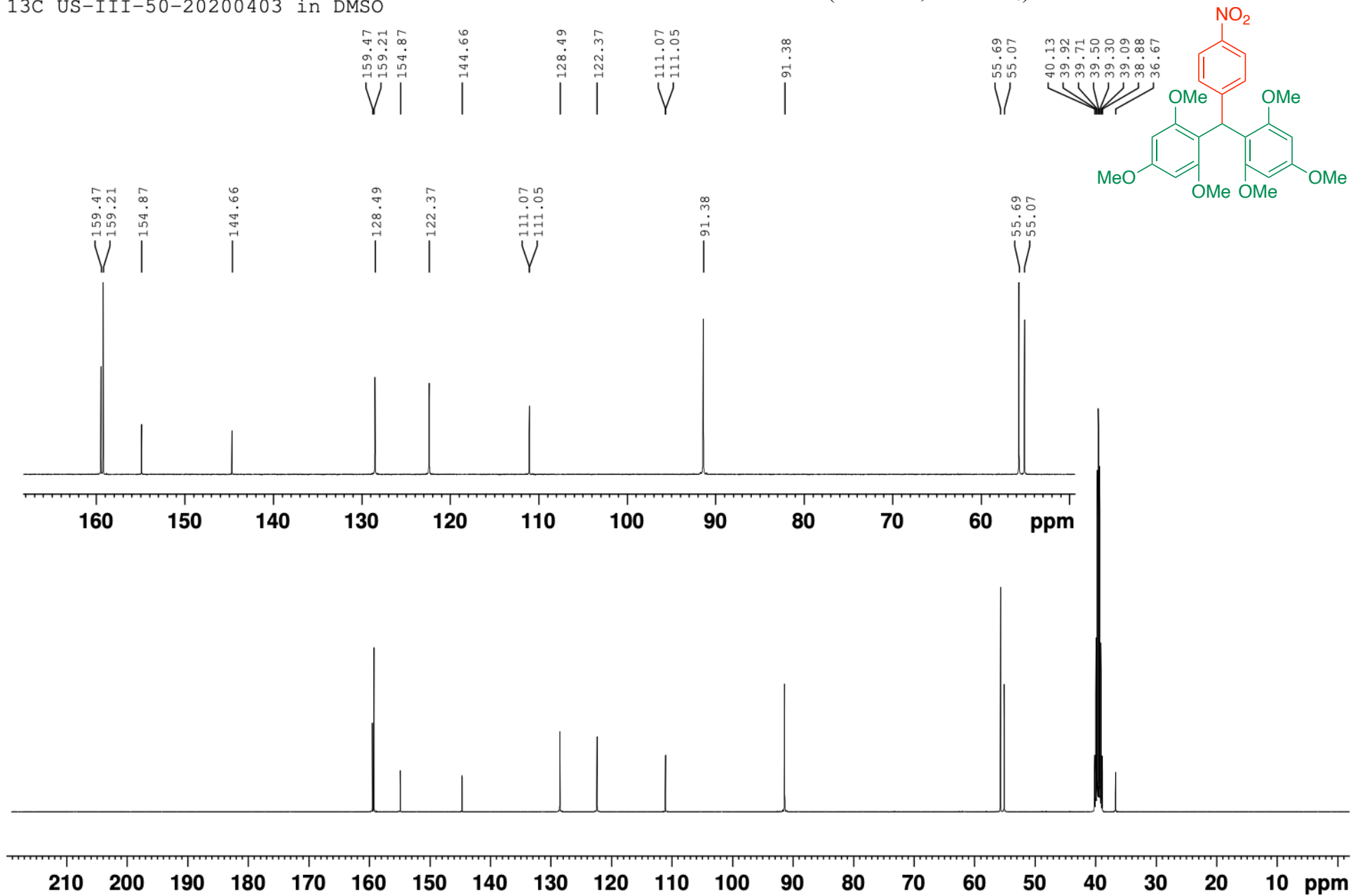
Uthaiwan 8-5-63 No.2
US-III-50-20200403 in DMSO

2,2'-(4-Nitrophenyl)methylene)bis(1,3,5-trimethoxybenzene) (3bl)
¹H NMR (400 MHz, DMSO-d₆)



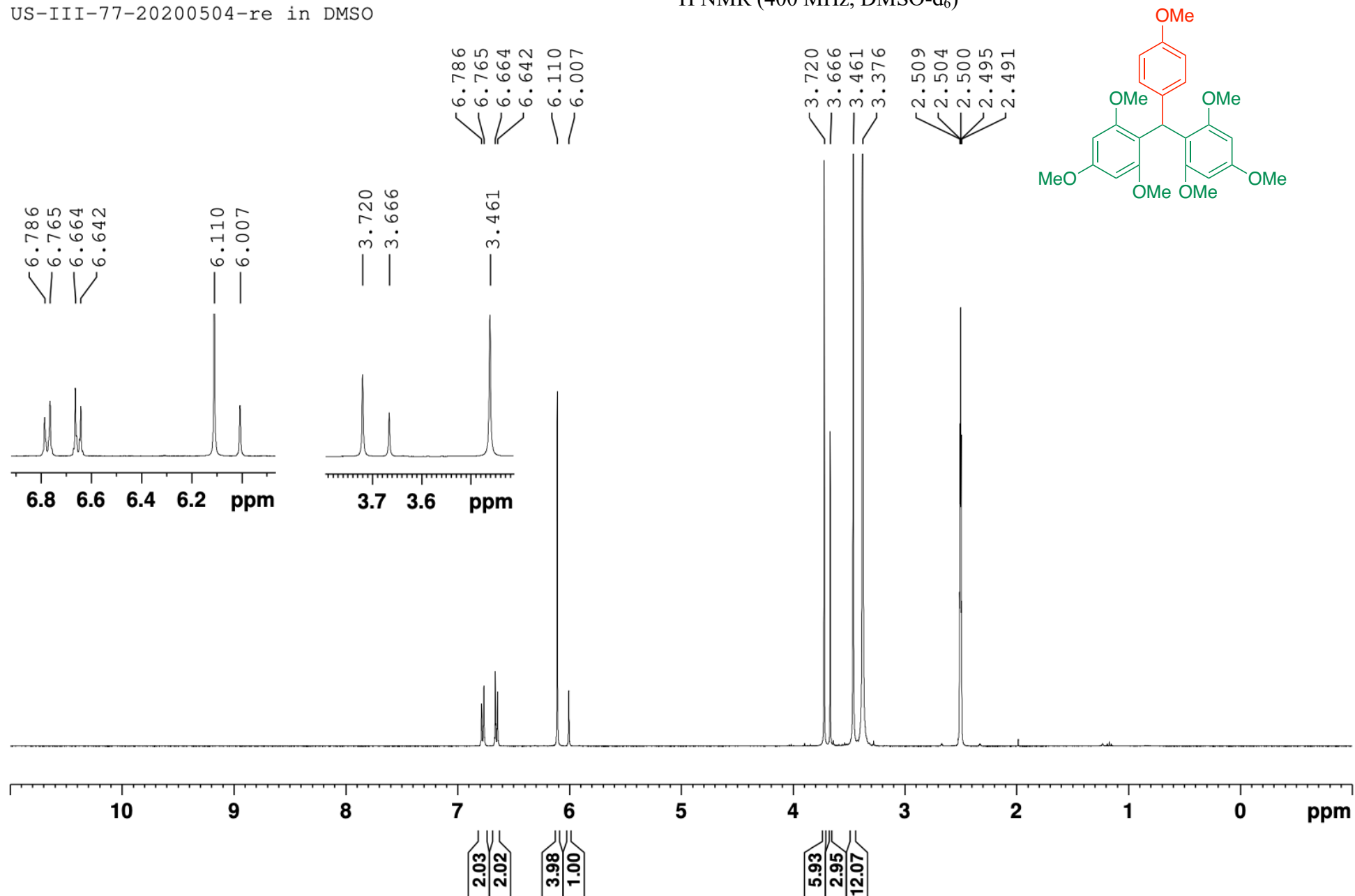
Uthaiwan 20-5-63 No.3
13C US-III-50-20200403 in DMSO

2,2'-(4-Nitrophenyl)methylenebis(1,3,5-trimethoxybenzene) (3bl)
¹³C NMR (100 MHz, DMSO-d₆)

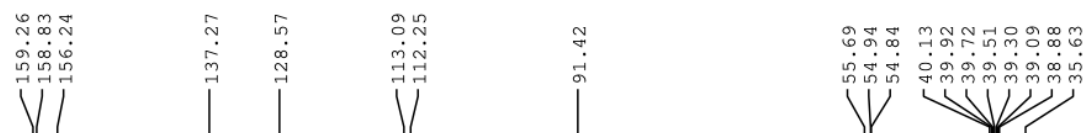


Uthaiwan 19-5-63 No.1
US-III-77-20200504-re in DMSO

2,2'-((4-Methoxyphenyl)methylene)bis(1,3,5-trimethoxybenzene) (3bm)
¹H NMR (400 MHz, DMSO-d₆)



Uthaiwan 26-5-63 No.3
13C US-III-77-20200504-re in DMSO



2,2'-((4-Methoxyphenyl)methylene)bis(1,3,5-trimethoxybenzene) (3bm)

¹³C NMR (100 MHz, DMSO-d₆)

