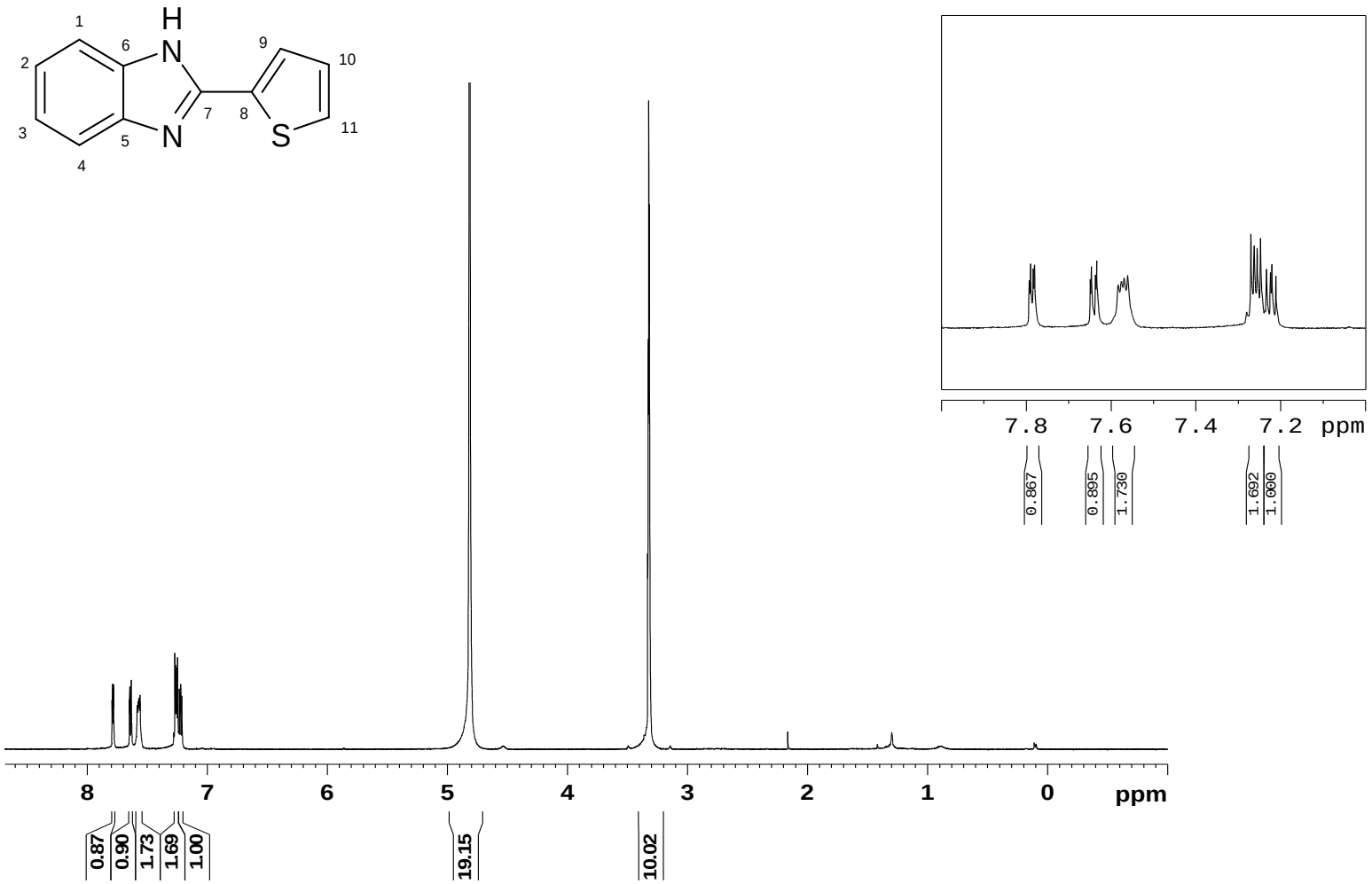


***Figure 1**: [1]H NMR Spectrum of 2-(2-thienyl)-1H-benzimidazole (**46a**)*

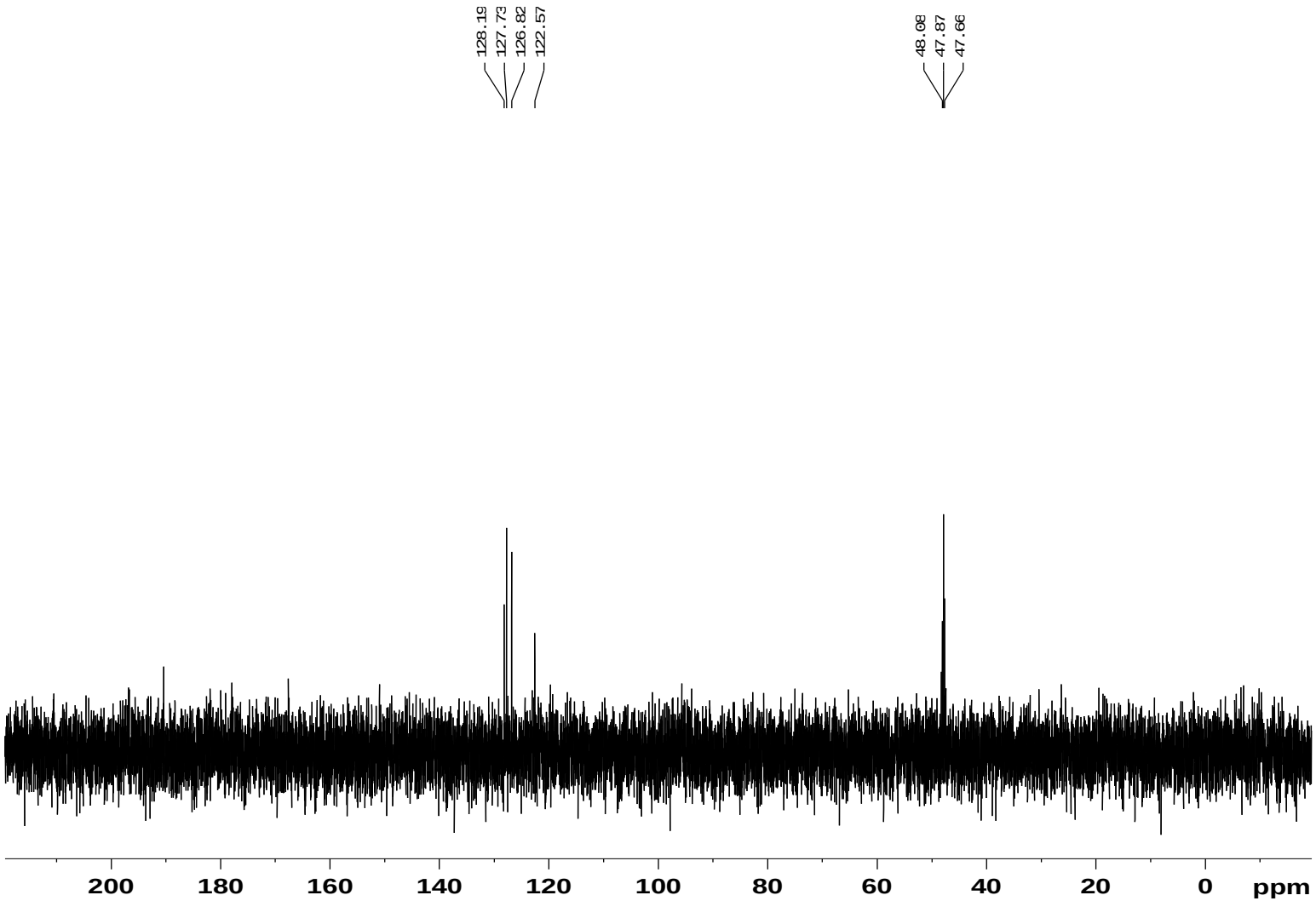


***Figure 2**: ^{13}C NMR Spectrum of 2-(2-thienyl)-1H-benzimidazole* **(*46a*)**

Elemental Composition Report **Page 1**

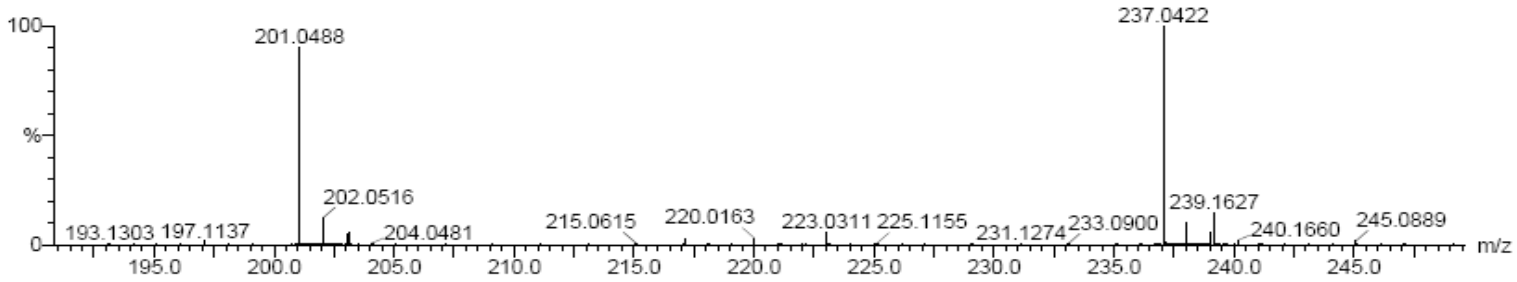
Single Mass Analysis

Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
26 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 10-15 H: 5-10 N: 0-5 S: 0-5

Bongiwe Madlala
BM46 2 (0.017) Cm (2:59)

TOF MS ES+
7.45e+004



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
201.0488	201.0486	0.2	1.0	8.5	582.6	0.0	C11 H9 N2 S

***Figure 3**: HRMS Spectrum of 2-(2-thienyl)-1H-benzimidazole* **(46a)**

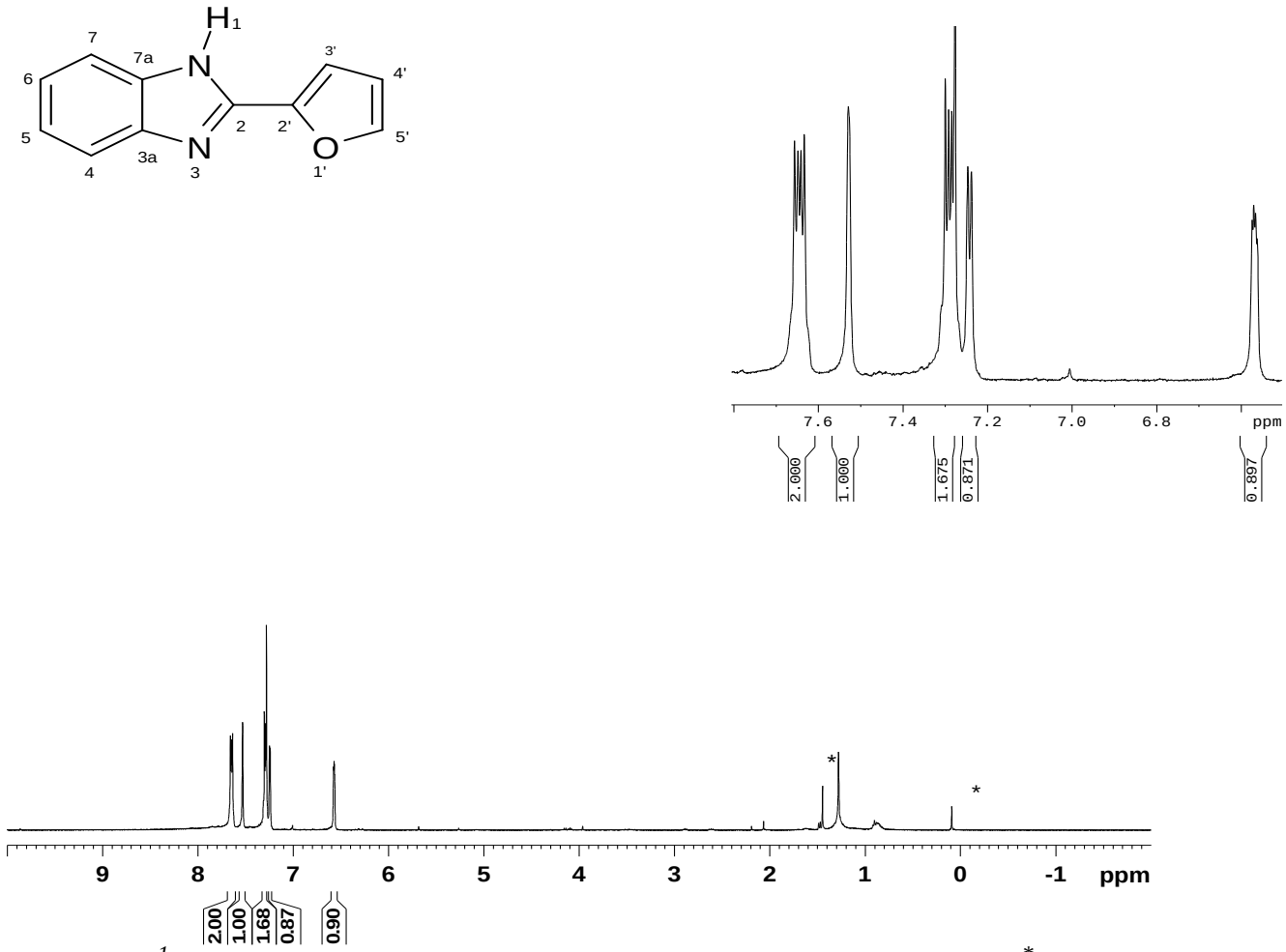


***Figure 4**: [1]H NMR Spectrum of 2-(2-furanyl)-1H-benzimidazole (**46b**)*[*]

[*] impurity

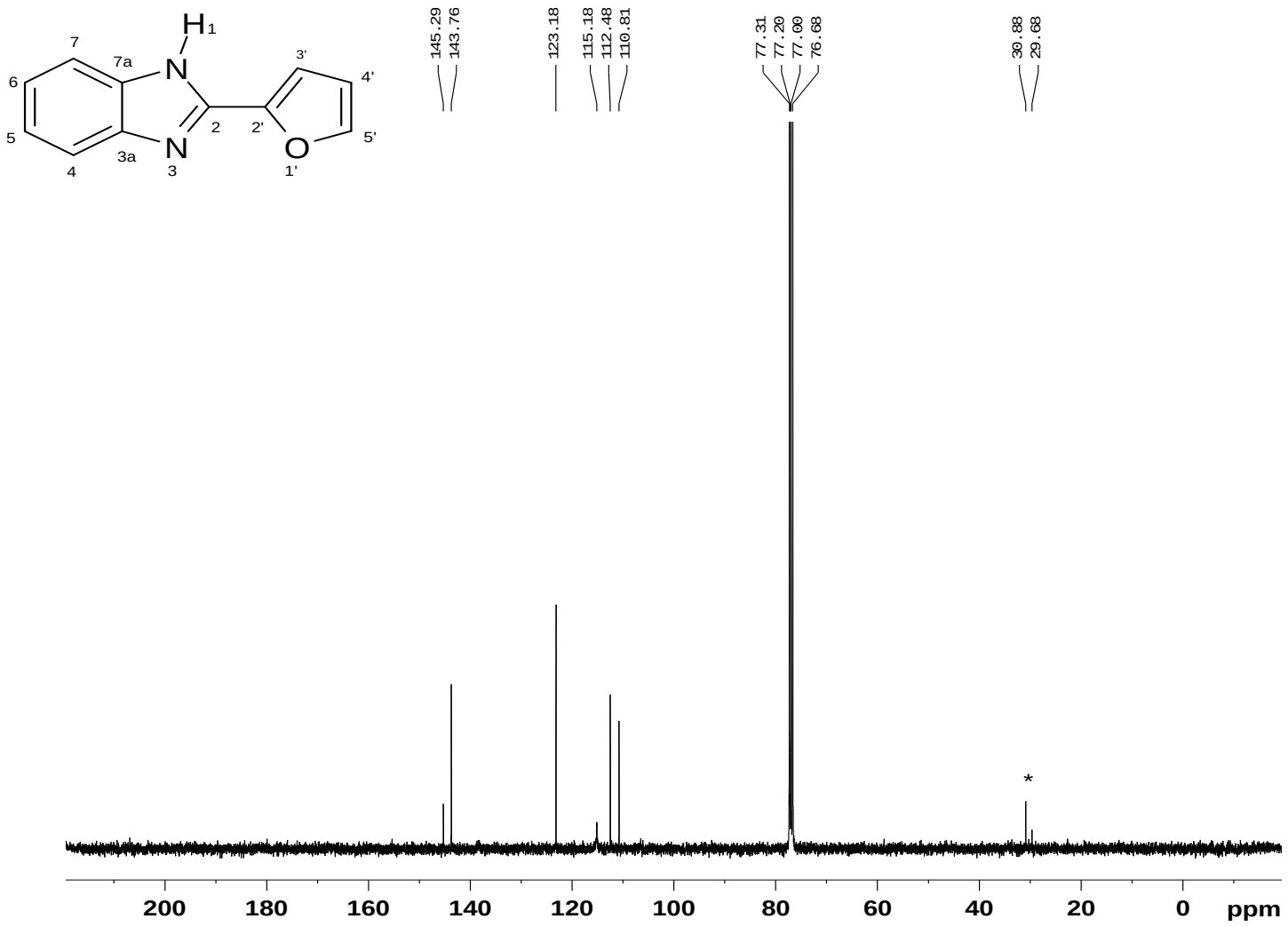


***Figure 5**: [13]C NMR Spectrum of 2-(2-furanyl)-1H-benzimidazole (**46b**)*

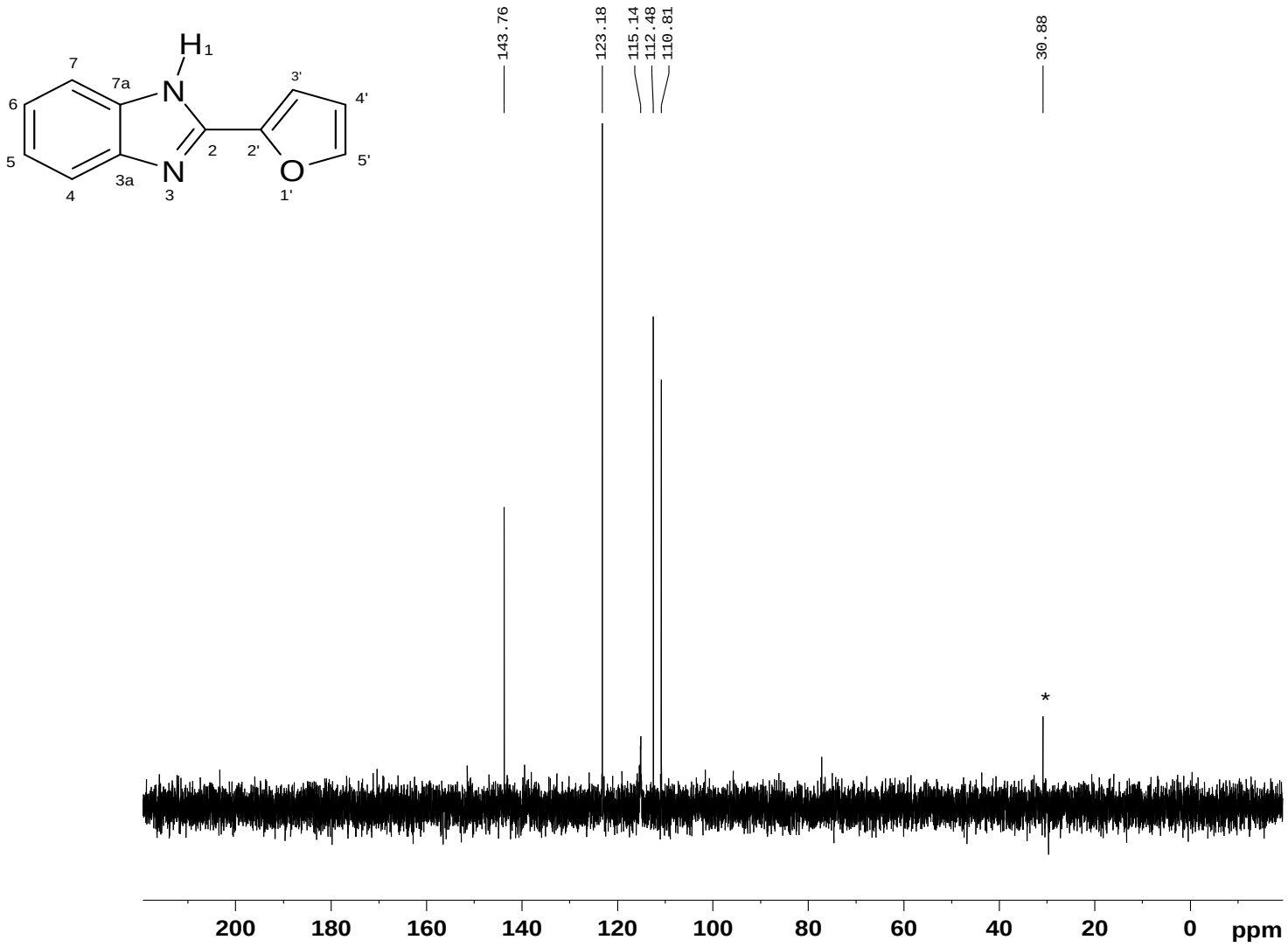


***Figure 6**: Dept 135 NMR Spectrum of 2-(2-furanyl)-1H-benzimidazole (**46b**)*

Elemental Composition Report **Page 1**

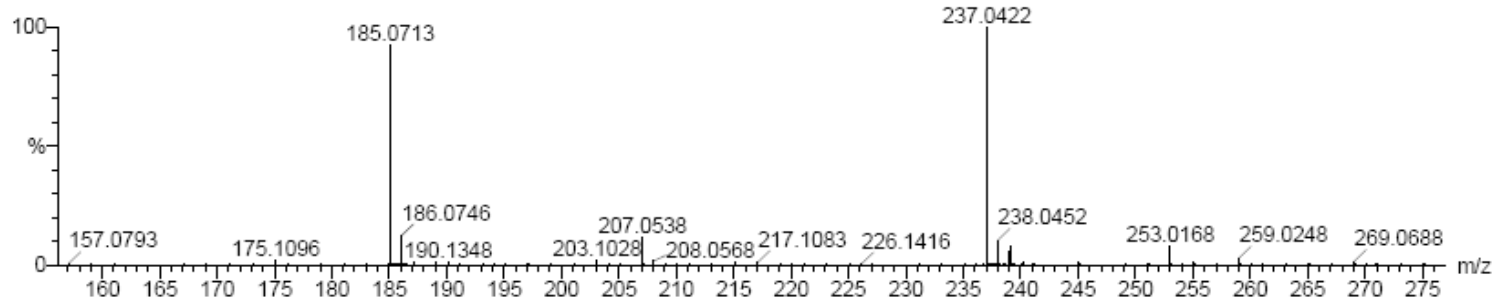
Single Mass Analysis

Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
28 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 10-15 H: 5-10 N: 0-5 O: 0-5

Bongiwe Madlala
BM48B 14 (0.221) Cm (2:59)

TOF MS ES+
1.29e+005



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
185.0713	185.0715	-0.2	-1.1	8.5	638.0	0.0	C11 H9 N2 O

Figure 7: *HRMS Spectrum of 2-(2-furanyl)-1H-benzimidazole (**46b**)*

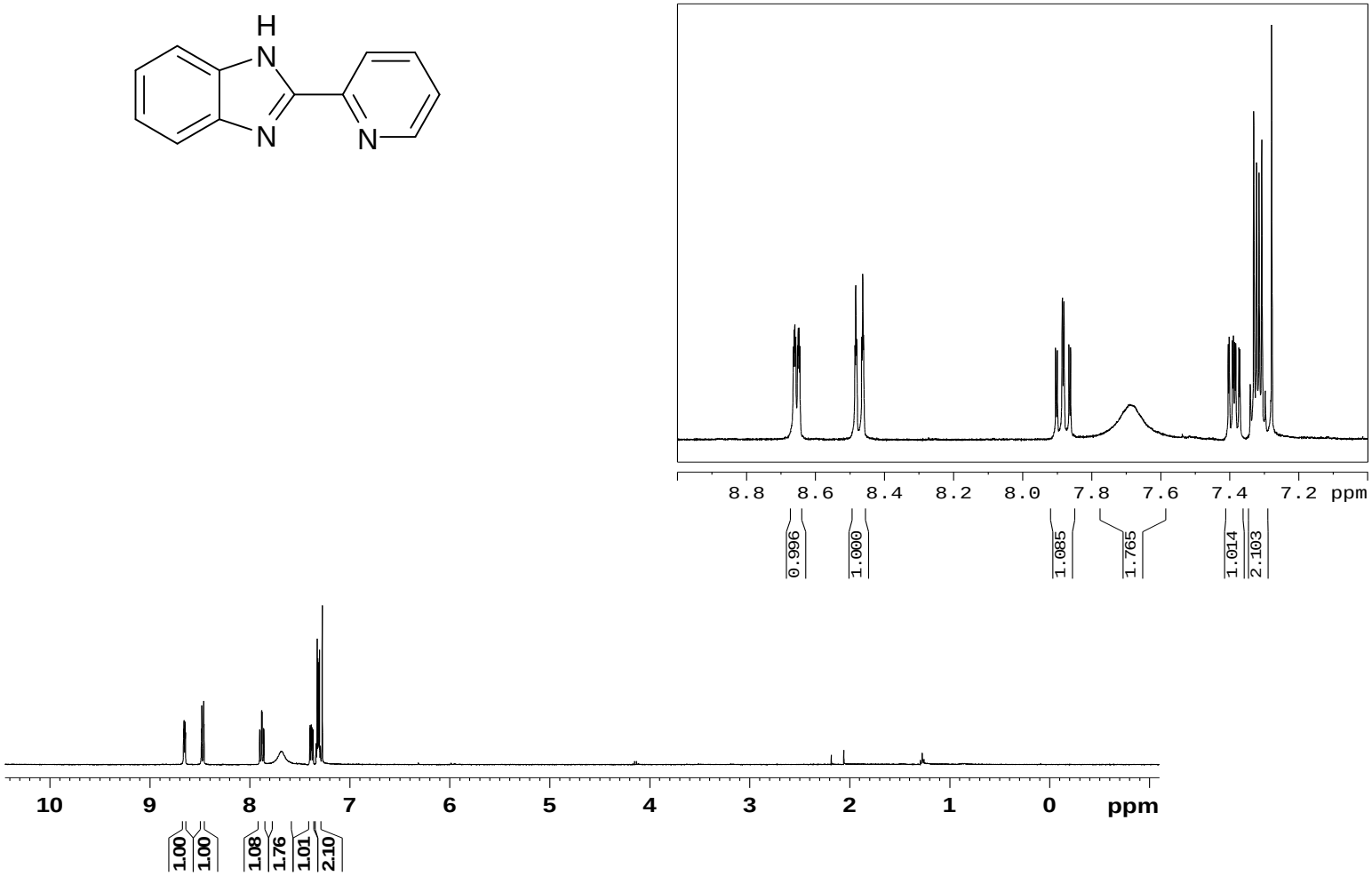


***Figure 8**: [1]H NMR Spectrum of 2-(2-Pyridyl)-1H-benzimidazole in $CDCl_3$ (**46c**)*

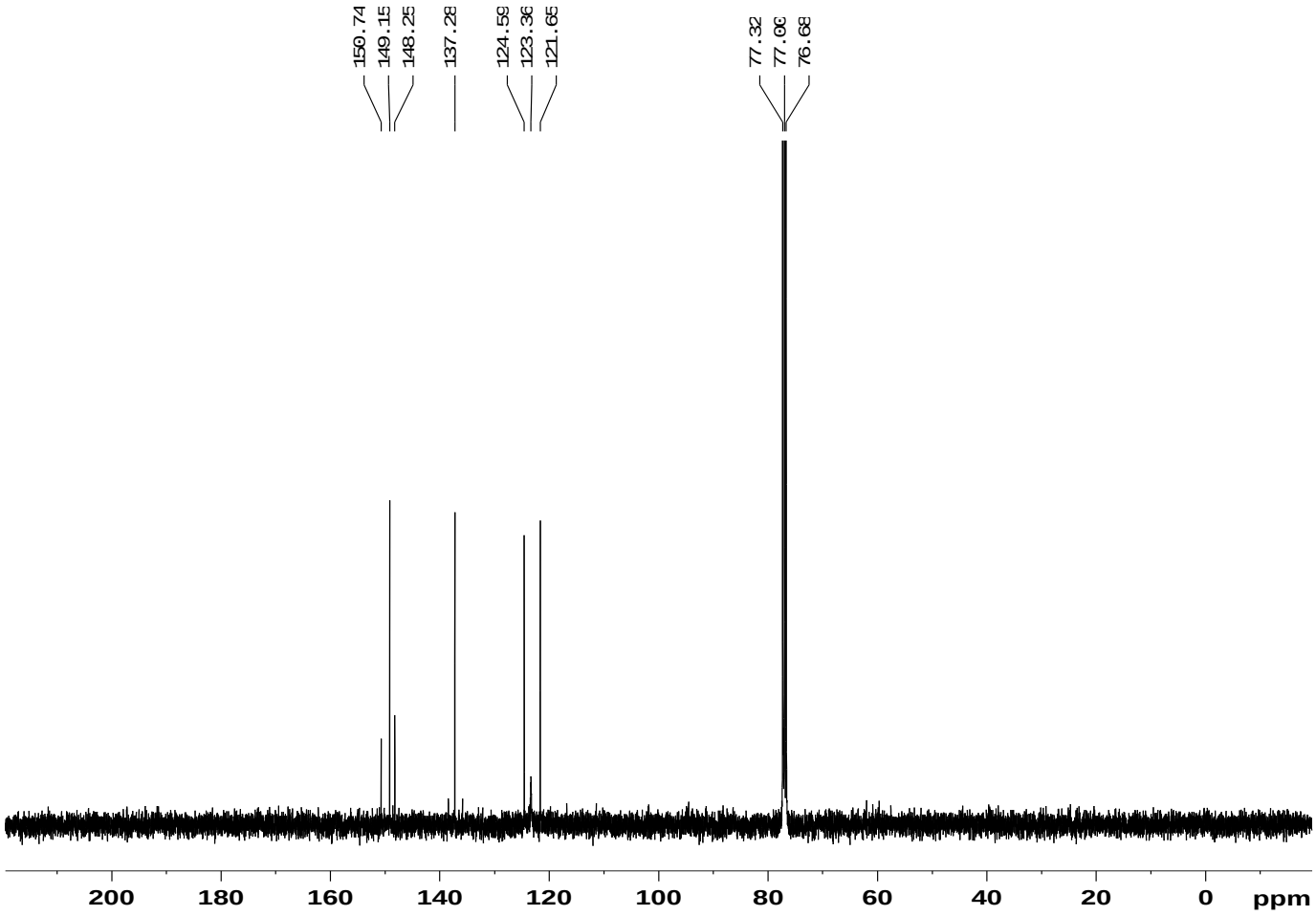


***Figure 9**: ^{13}C NMR Spectrum of 2-(2-Pyridyl)-1H-benzimidazole in $CDCl_3$ (**46c**)*

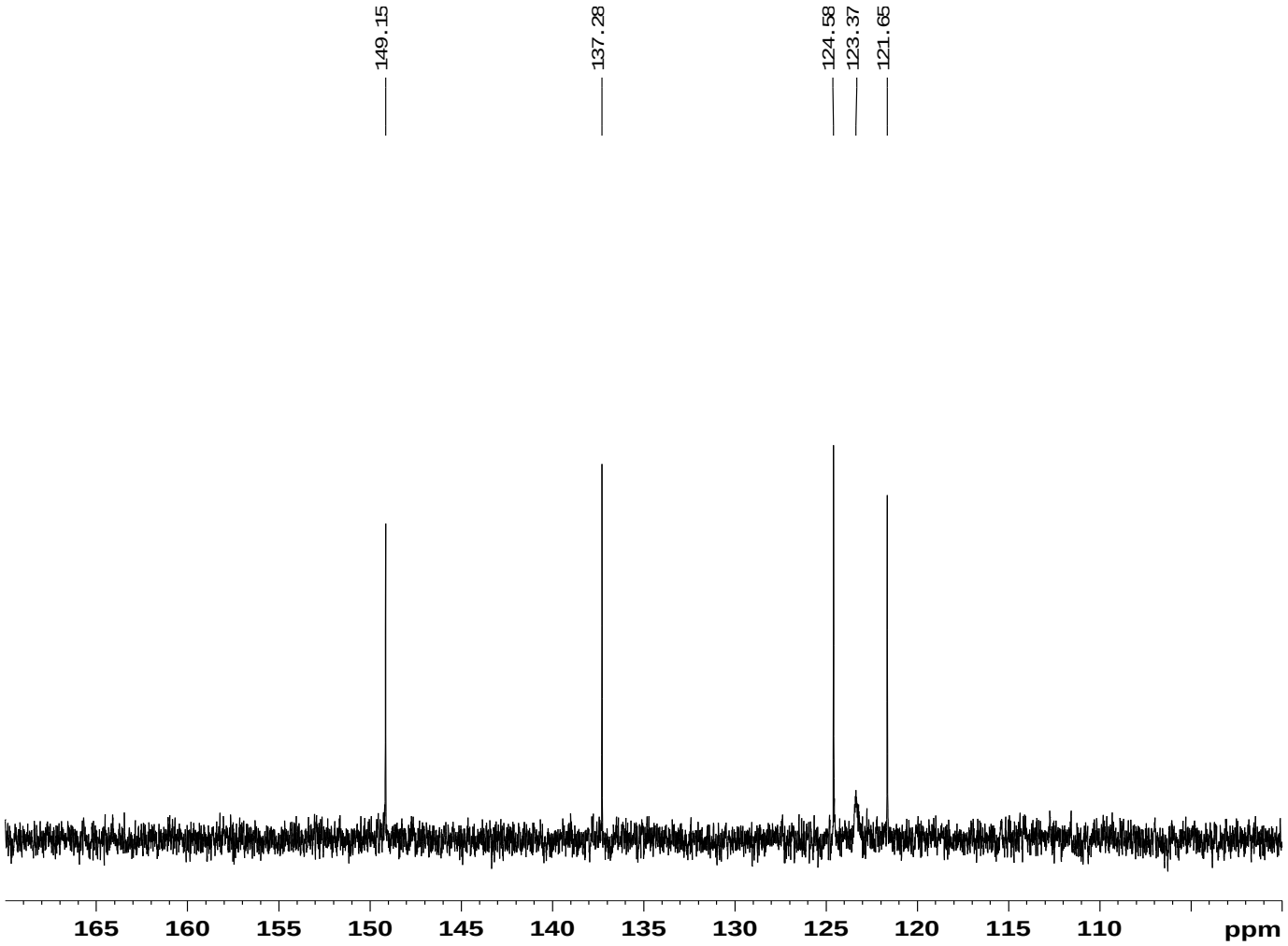
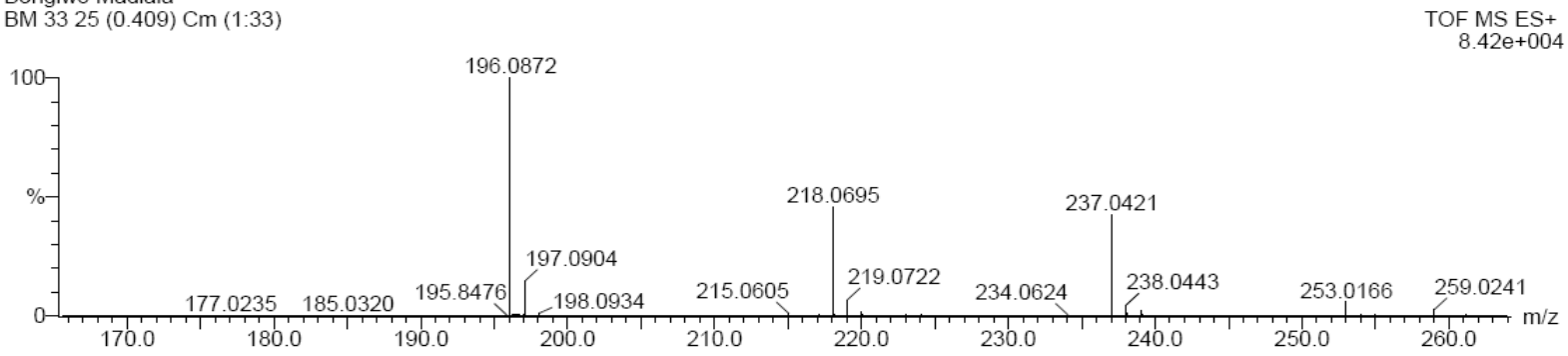


***Figure 10**: Dept 135 Spectrum of 2-(2-Pyridyl)-1H-benzimidazole in $CDCl_3$ (**46c**)*

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
27 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-30 H: 0-25 N: 0-5 Na: 0-1
Bongiwe Madlala
BM 33 25 (0.409) Cm (1:33)



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
218.0695	218.0694	0.1	0.5	9.5	491.5	0.0	C12 H9 N3 Na

***Figure 11**: HRMS Spectrum of 2-(2-Pyridyl)-1H-benzimidazole (**46c**)*

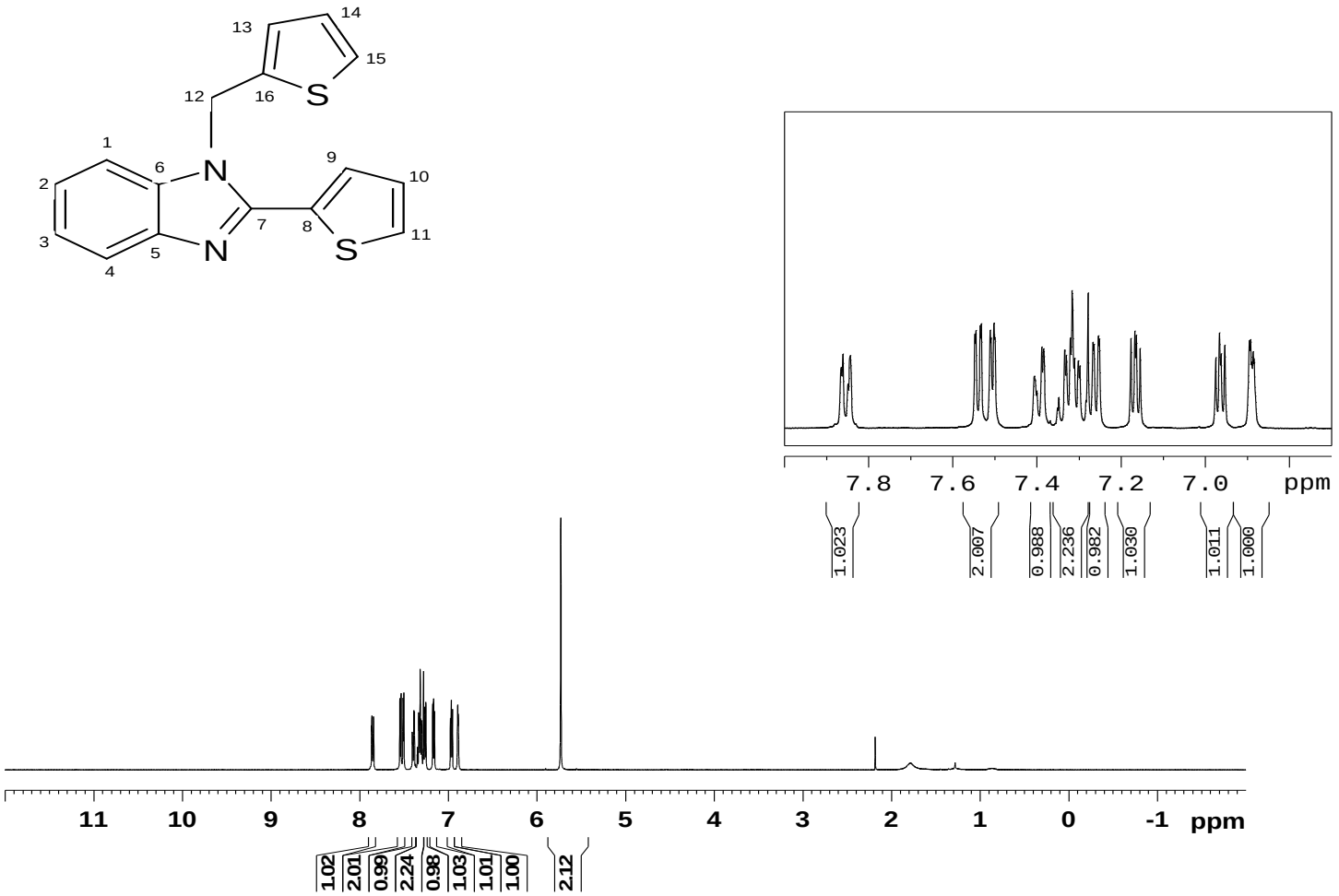


***Figure 12**: [1]H Spectrum of 1-(2-thienylmethyl)-2-(2-thienyl) benzimidazole in $CDCl_3$ (**49a**)*

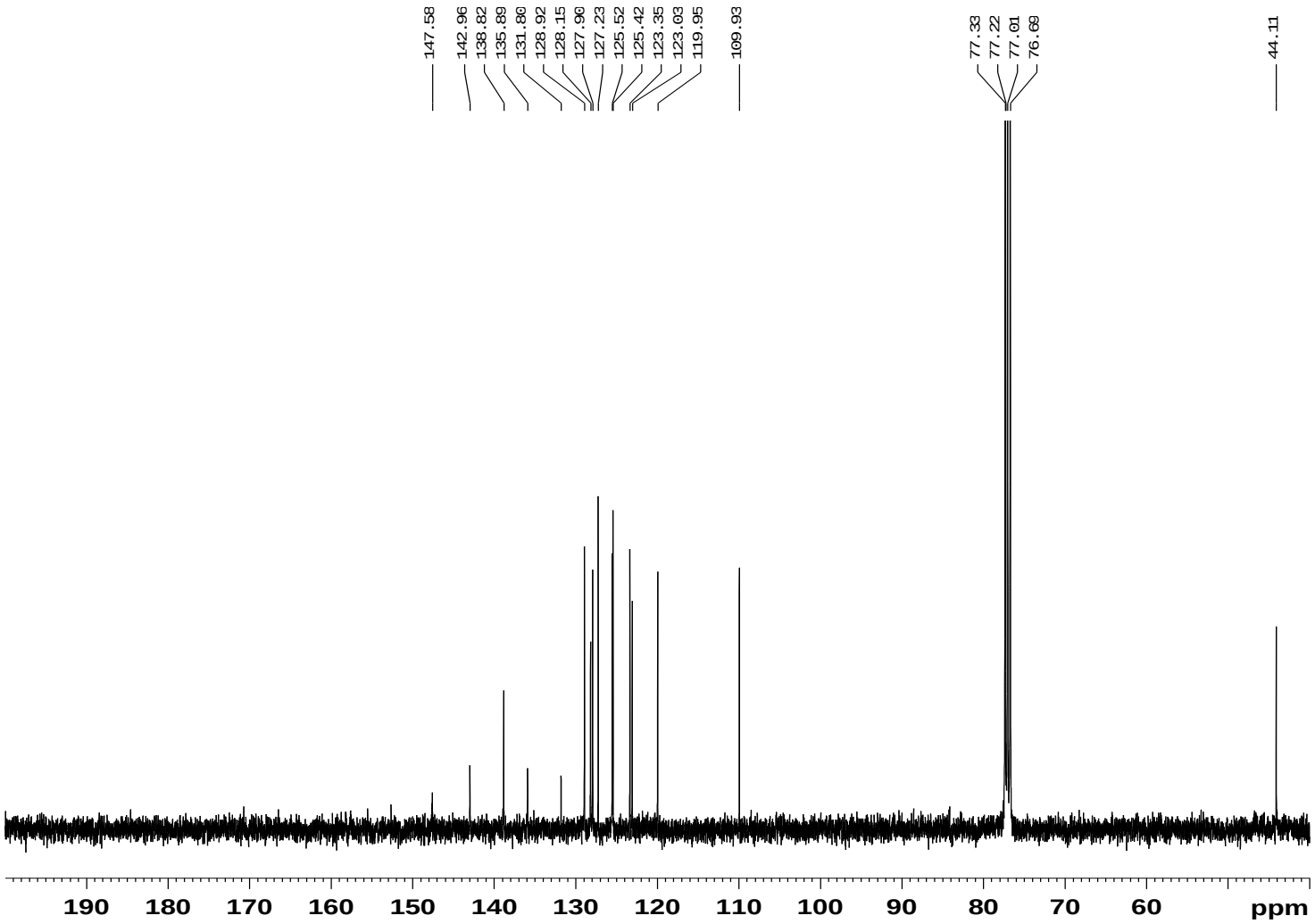


Figure 13**:** *^{13}C Spectrum of 1-(2-thienylmethyl)-2-(2-thienyl) benzimidazole in $CDCl_3$ (**49a**)*

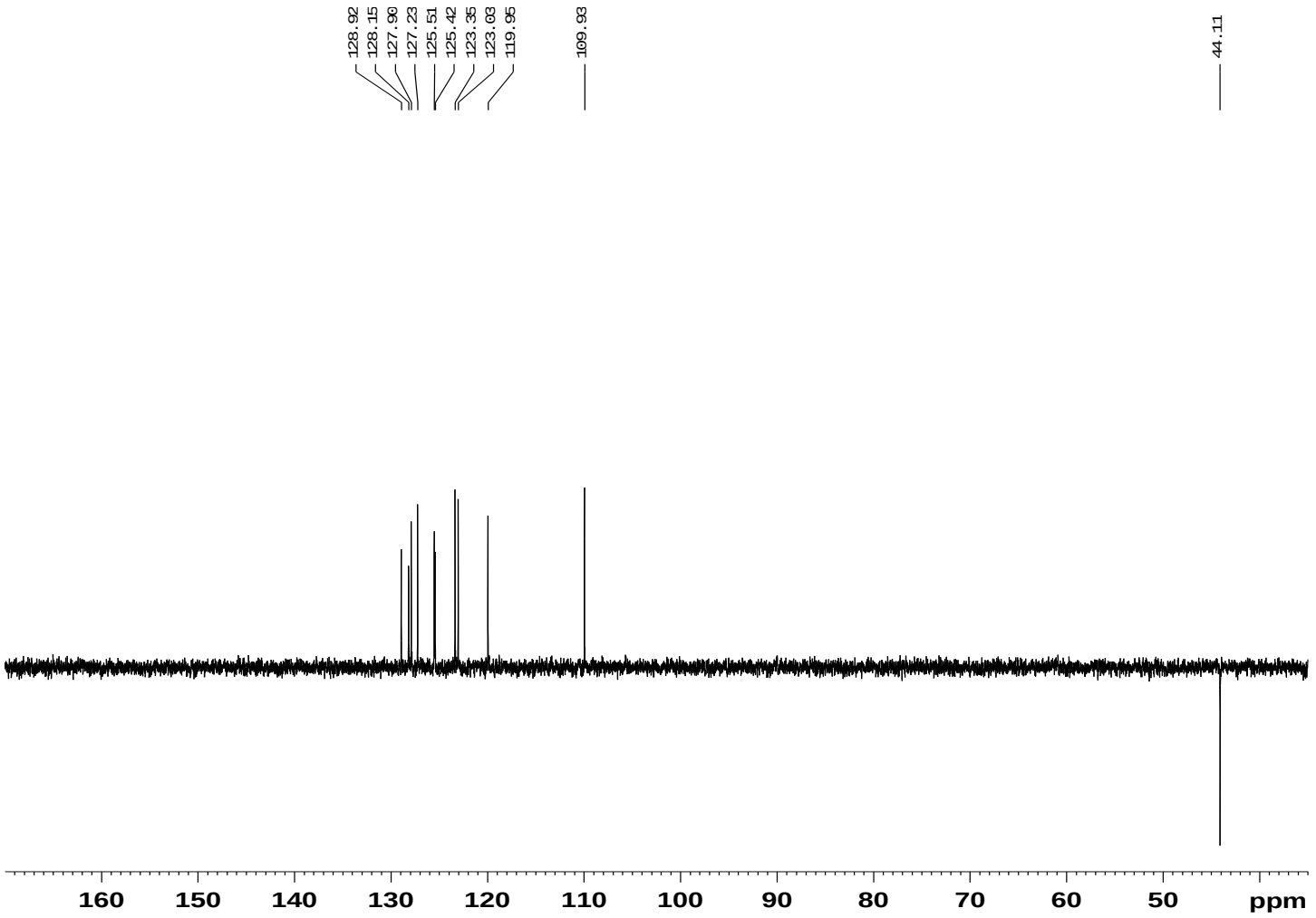


Figure 14: *Dept 135 Spectrum of 1-(2-thienylmethyl)-2-(2-thienyl) benzimidazole in* $CDCl_3$ ***(49a)***

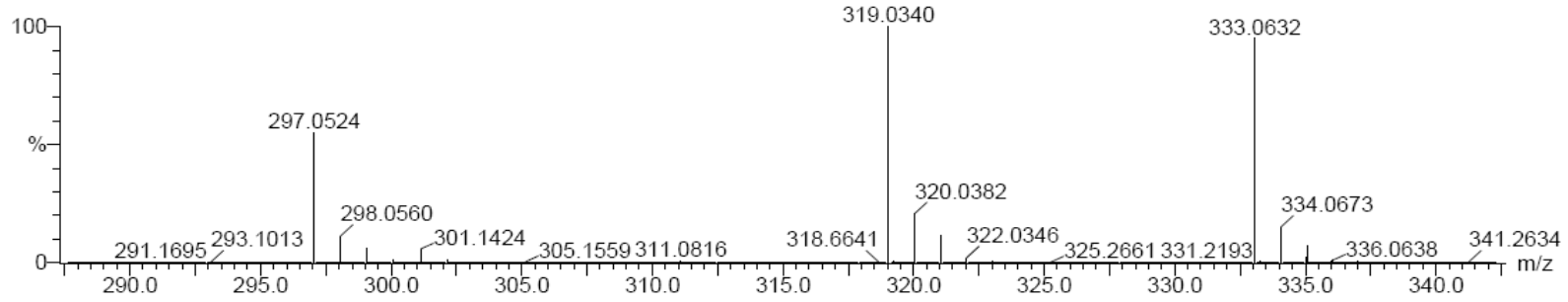
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
46 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-20 H: 10-15 N: 0-5 Na: 0-1 S: 0-5

Bongiwe Madlala
BM47 27 (0.445) Cm (1:59)

TOF MS ES+
3.69e+005



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
319.0340	319.0340	0.0	0.0	11.5	638.0	0.0	C16 H12 N2 Na S2

***Figure 15**: HRMS Spectrum of 1-(2-thienylmethyl)-2-(2-thienyl) benzimidazole (**49a**)*

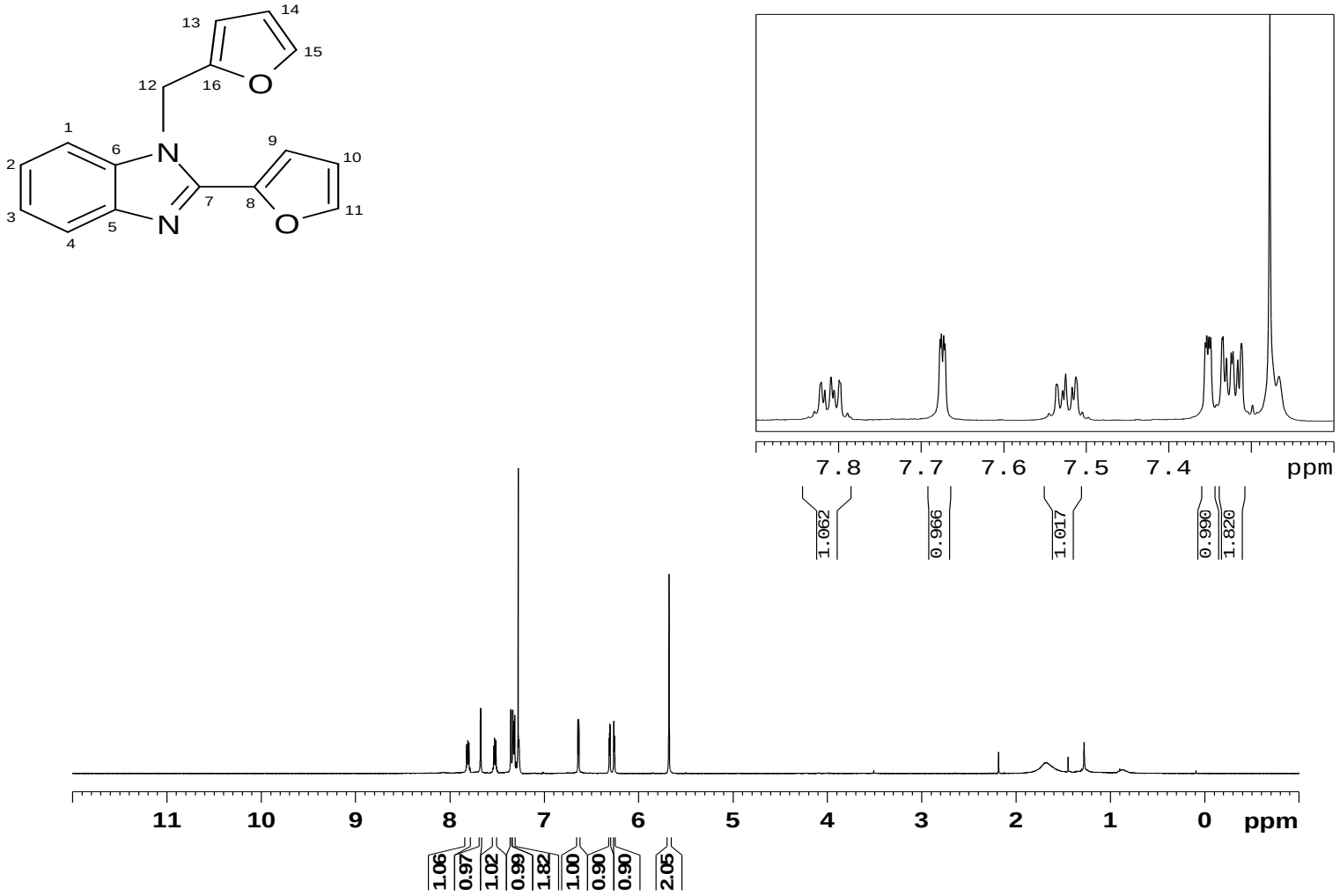


***Figure 16**: [1]H Spectrum of 1-(2-furanylmethyl)-2-(2-furanyl) benzimidazole (**49b**)*

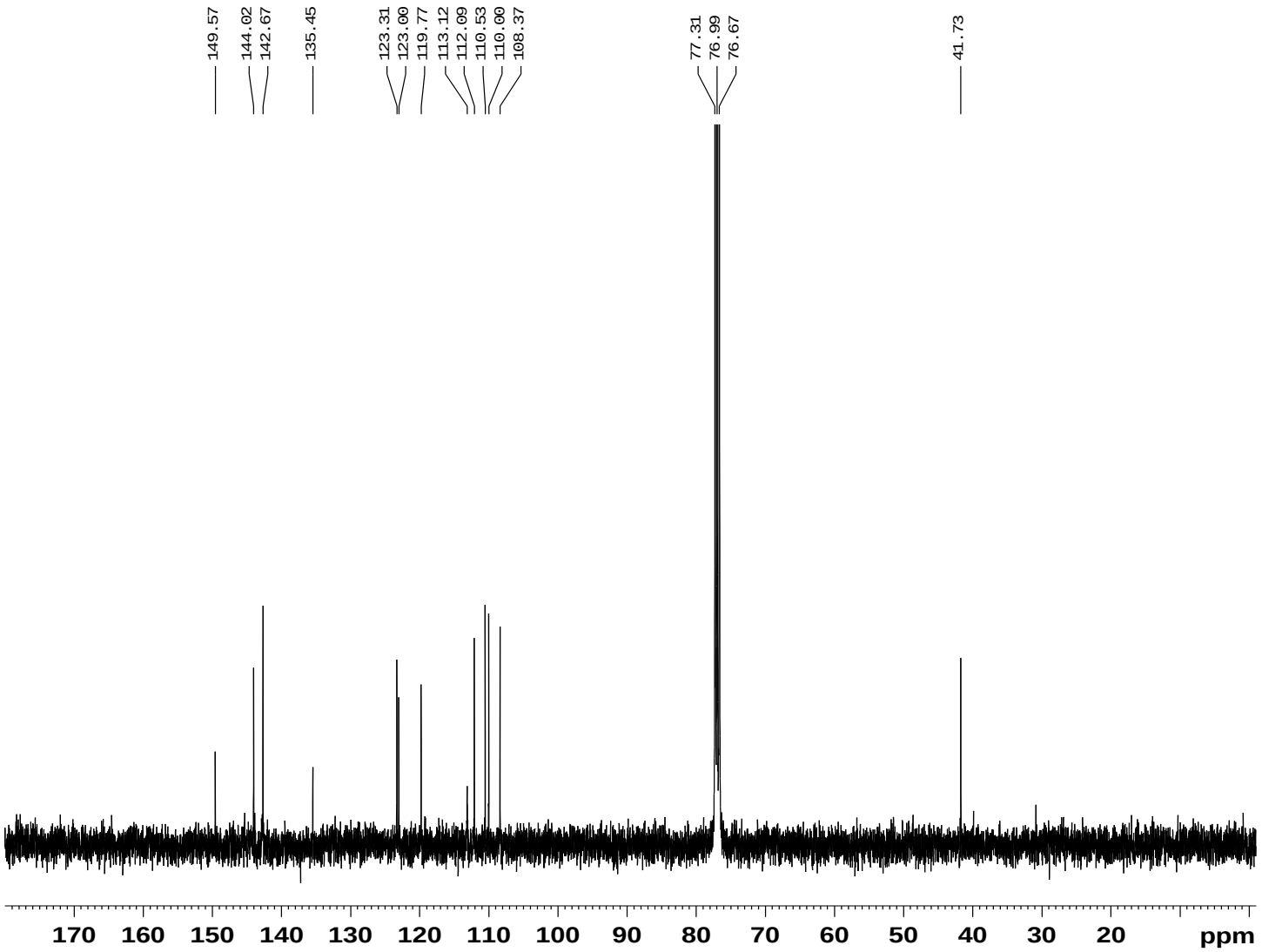


***Figure 17**: ^{13}C Spectrum of 1-(2-furanylmethyl)-2-(2-furanyl) benzimidazole (**49b**)*

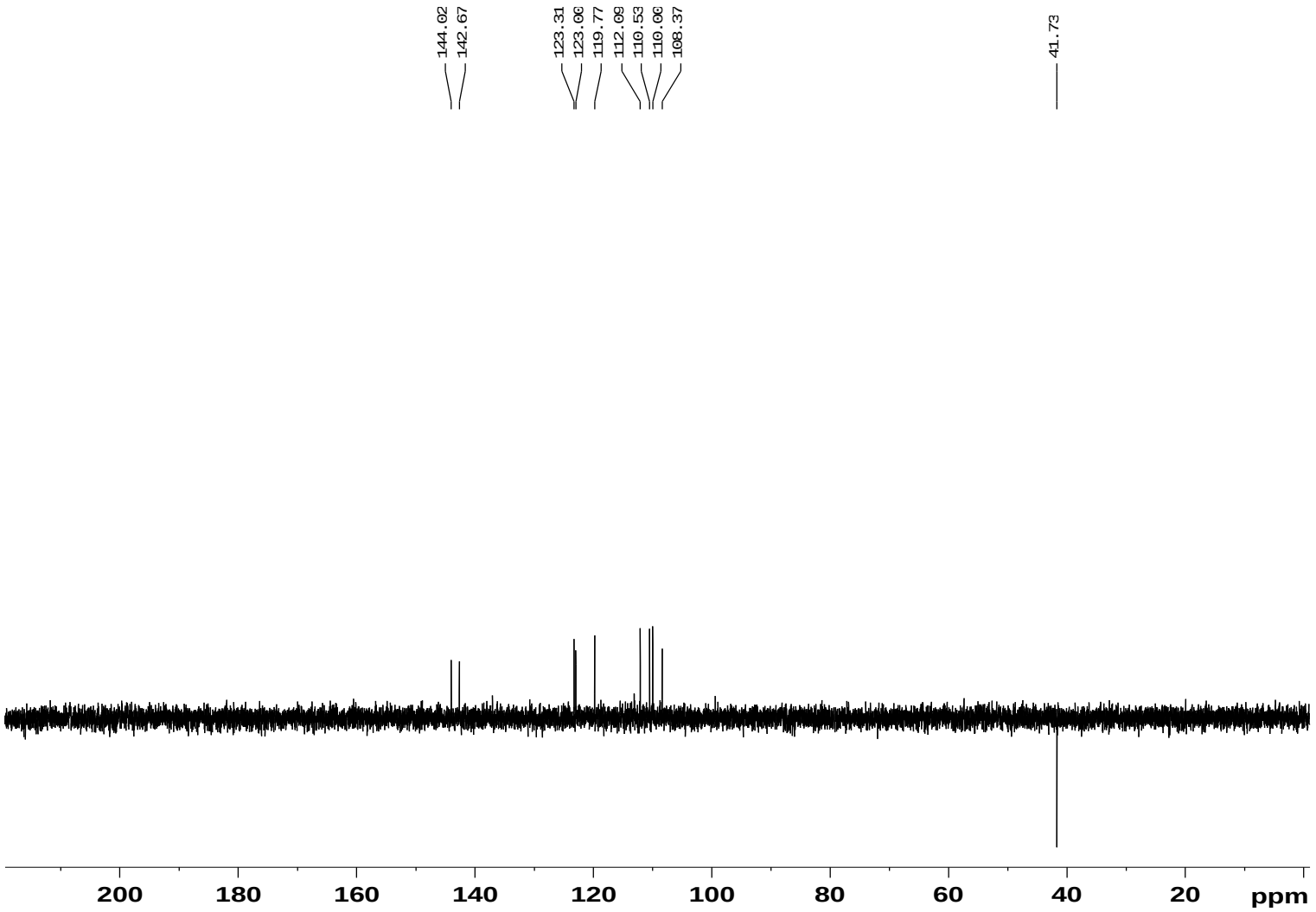


Figure 18: *Dept 135 Spectrum of 1-(2-furanylmethyl)-2-(2-furanyl) benzimidazole (**49b**)*

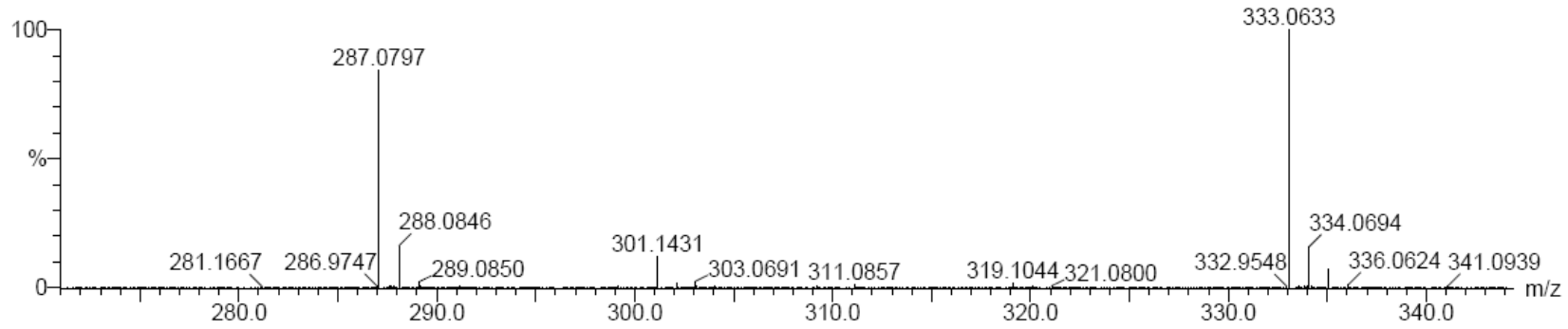
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
39 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-20 H: 10-15 N: 0-5 O: 0-5 Na: 0-1

Bongiwe Madlala
BM48 16 (0.256)

TOF MS ES+
5.25e+003



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
287.0797	287.0796	0.1	0.3	11.5	130.7	0.0	C16 H12 N2 O2 Na

***Figure 19**: HRMS Spectrum of 1-(2-furanylmethyl)-2-(2-furanyl) benzimidazole (**49b**)*

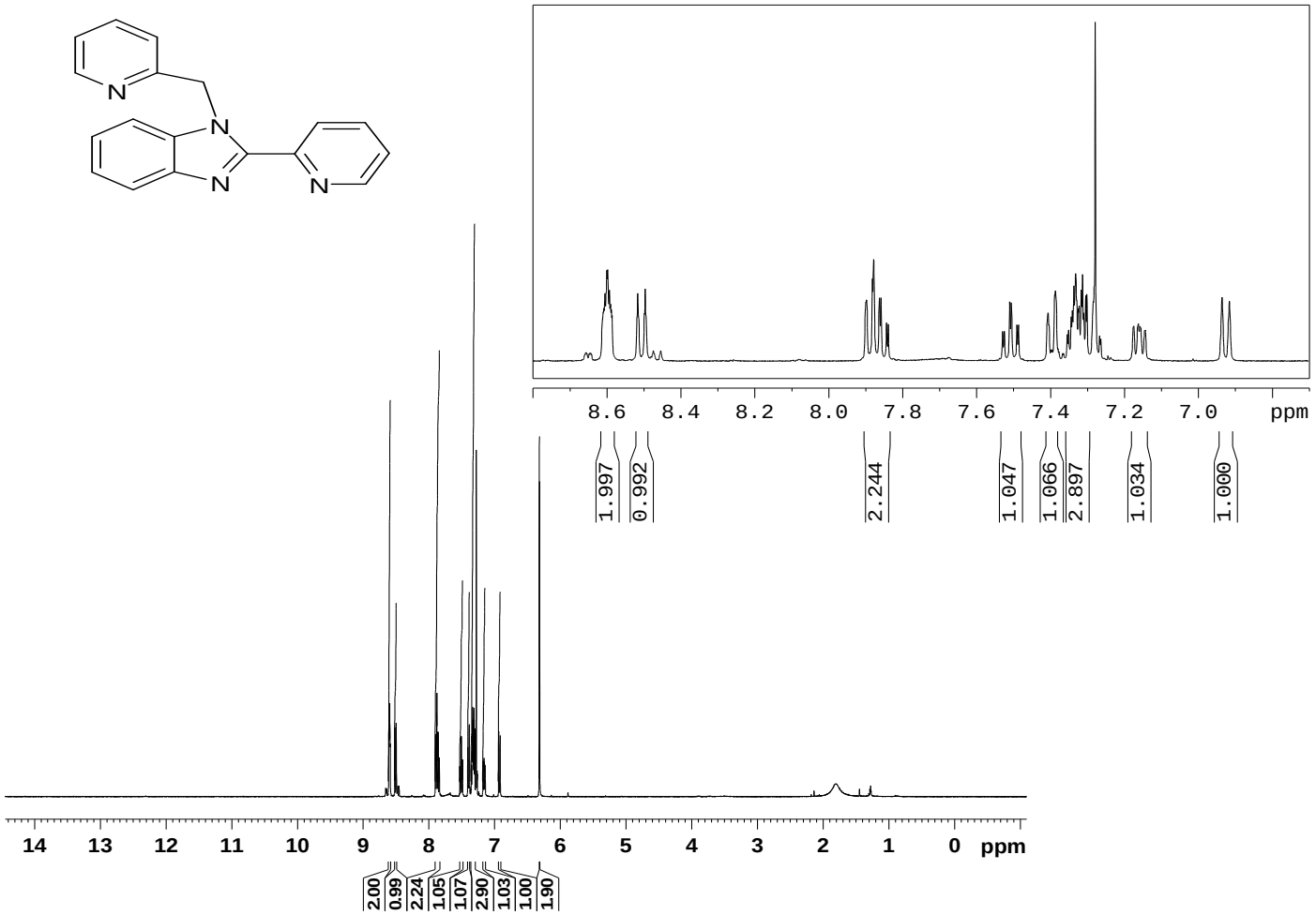


Figure 20: *^{1}H NMR Spectrum of 1-(2-Pyridylmethyl)-2-(2-pyridyl) benzimidazole in $CDCl_3$ (**49c**)*

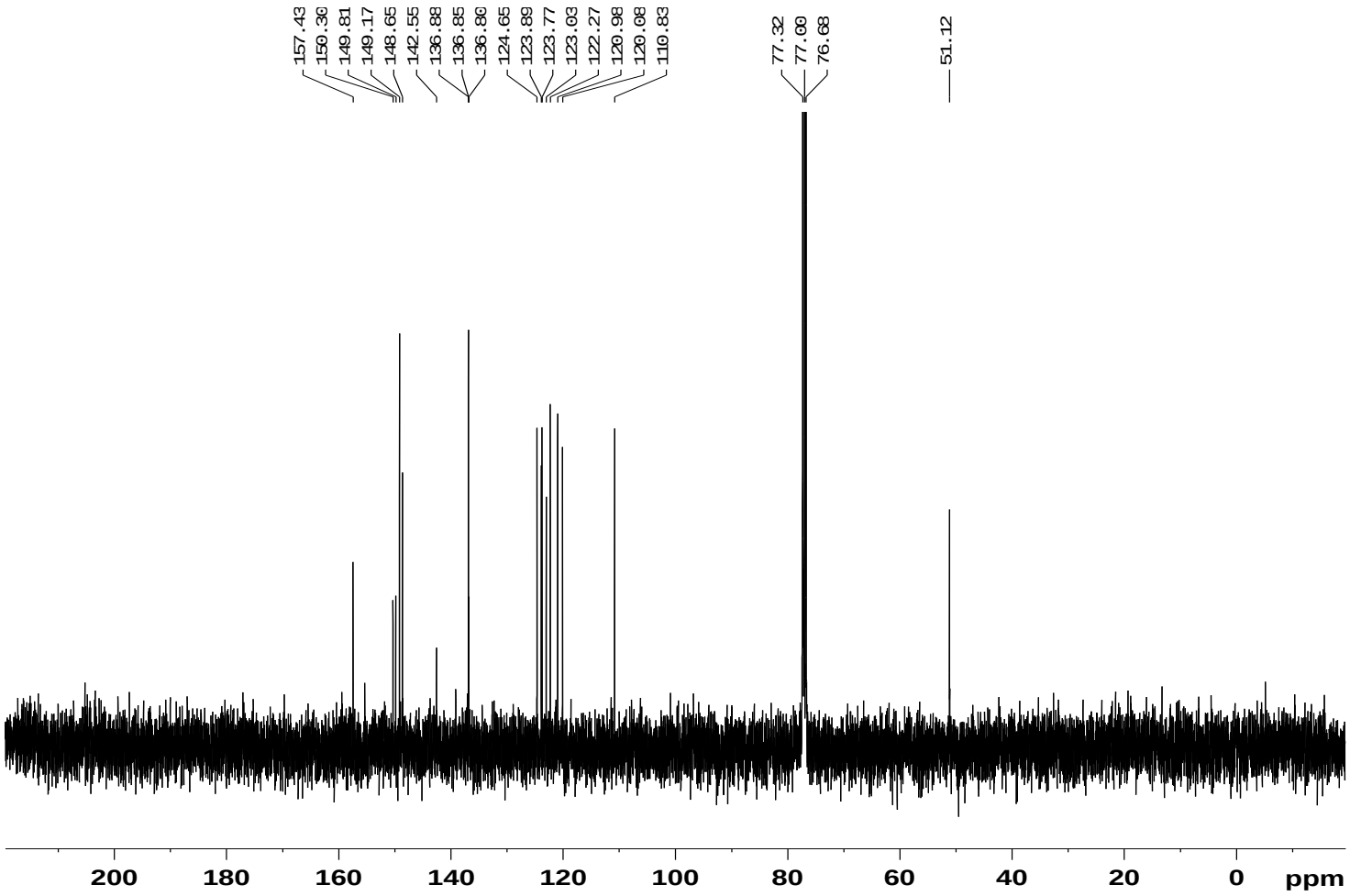


***Figure 21**: ^{13}C NMR Spectrum of 1-(2-Pyridylmethyl)-2-(2-pyridyl) benzimidazole in $CDCl_3$ (**49c**)*

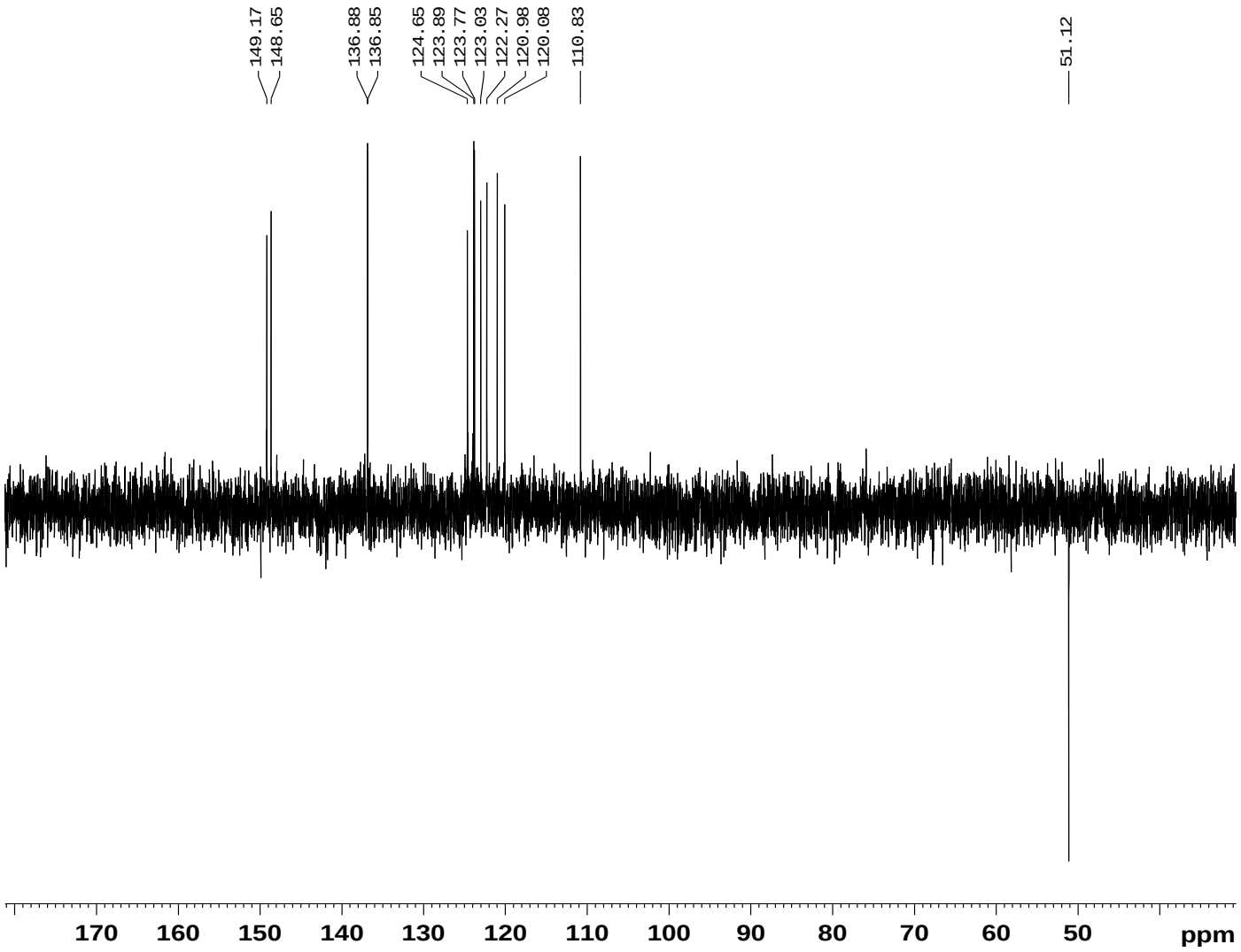


***Figure 22**: Dept 135 Spectrum of 1-(2-Pyridylmethyl)-2-(2-pyridyl) benzimidazole in $CDCl_3$ (**49c**)*

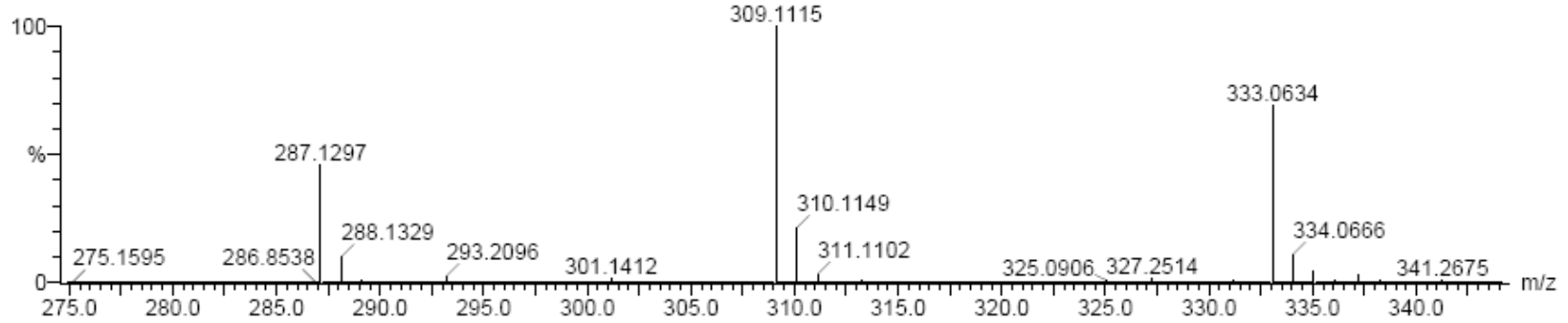
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
4 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-20 H: 10-20 N: 0-5

Bongiwe
BM 34 59 (0.990) Cm (1:59)

TOF MS ES+
4.51e+005



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
287.1297	287.1297	0.0	0.0	13.5	624.8	0.0	C18 H15 N4

Figure 23 *: HRMS Spectrum of 1-(2-Pyridylmethyl)-2-(2-pyridyl) benzimidazole (**49c**)*

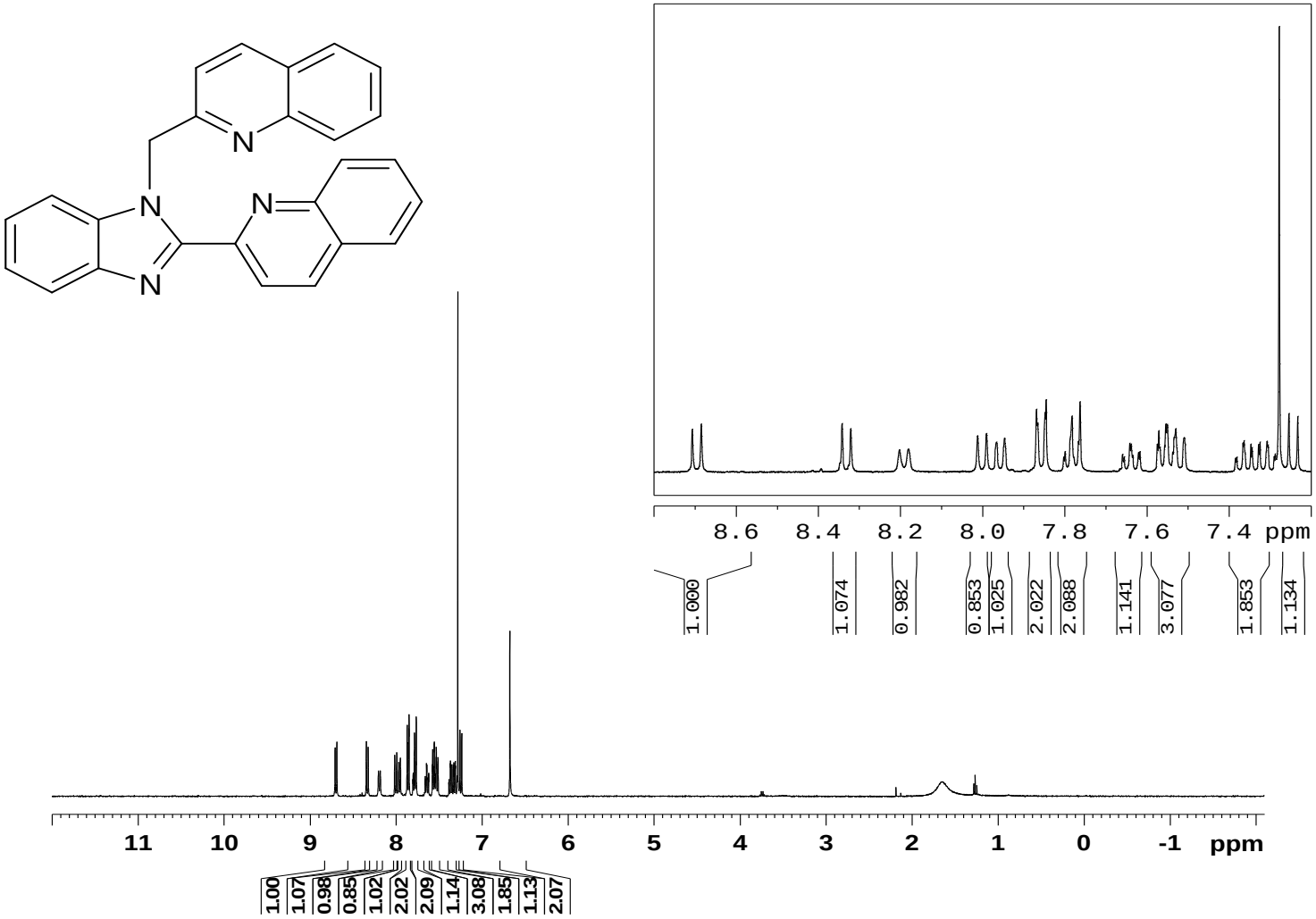


***Figure 24**: [1]H NMR Spectrum of 1-(2-quinolylmethyl)-2-(2-quinolyl) benzimidazole in $CDCl_3$ (**49d**)*

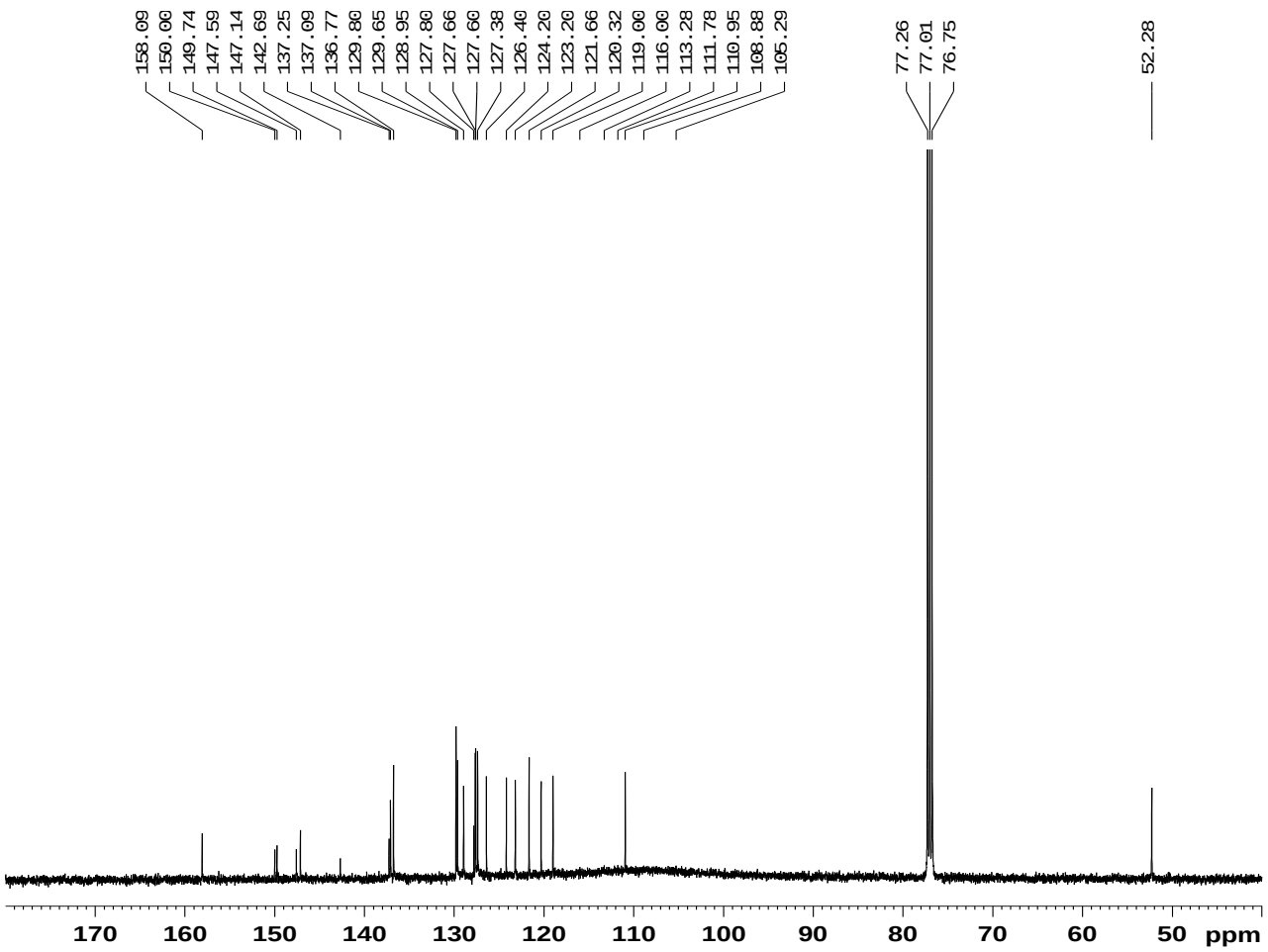


***Figure 25**: ^{13}C NMR Spectrum of 1-(2-quinolylmethyl)-2-(2-quinolyl) benzimidazole in $CDCl_3$ (**49d**)*

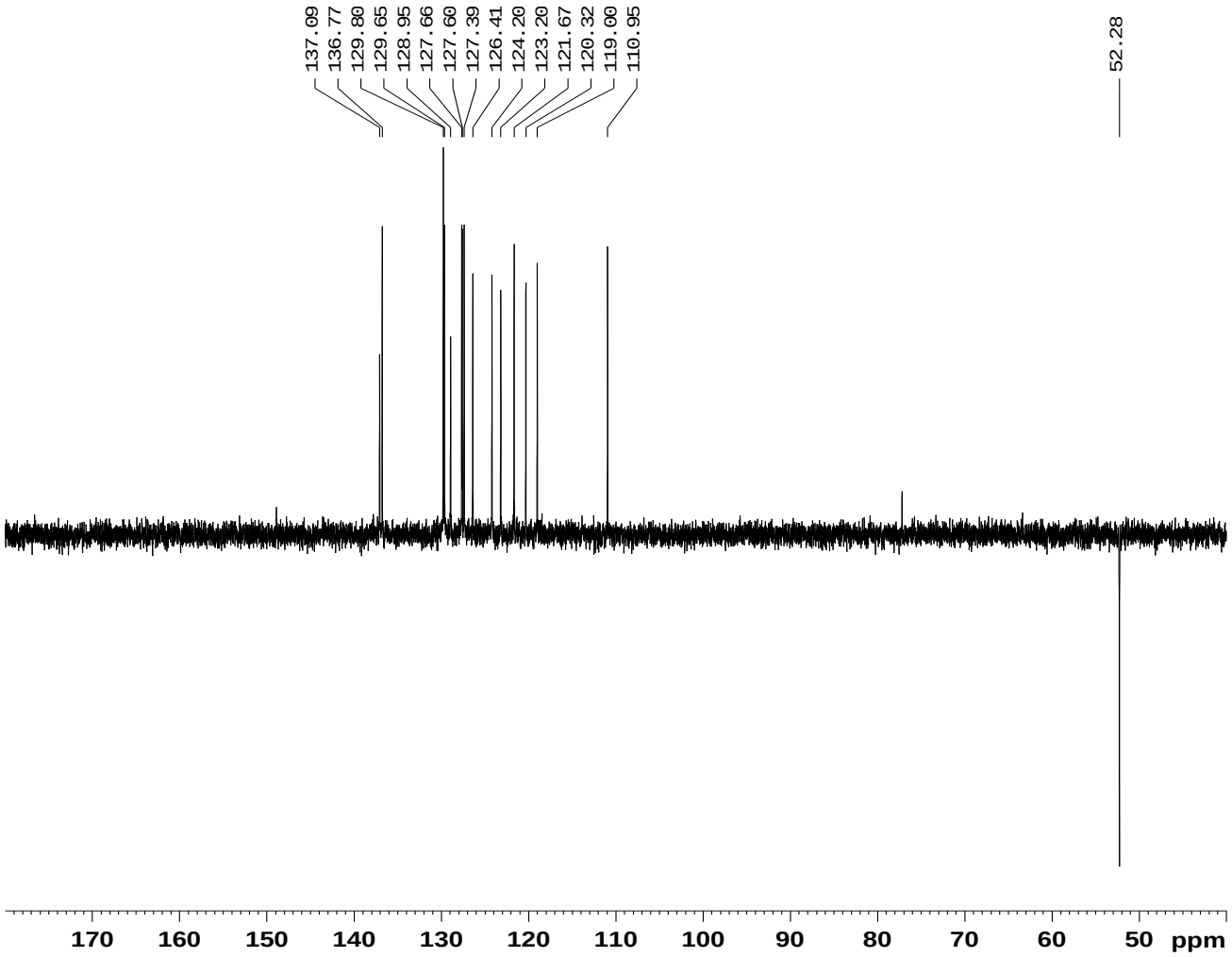


Figure 26: *Dept 135 Spectrum of 1-(2-quinolylmethyl)-2-(2-quinolyl) benzimidazole in* $CDCl_3$ *(**49d**)*

Elemental Composition Report **Page 1**

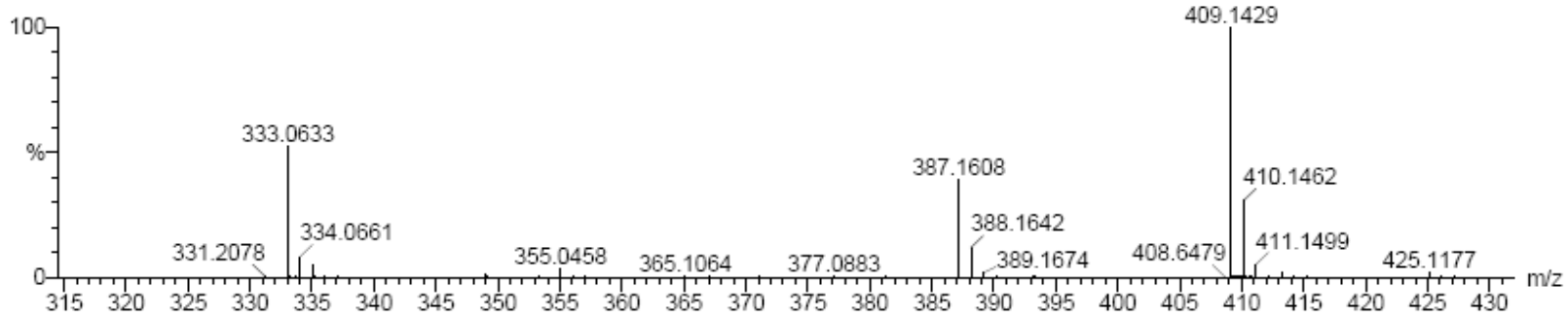
Single Mass Analysis

Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Odd and Even Electron Ions
11 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-30 H: 0-25 N: 0-5

Bongiwe Madlala
BM 39 20 (0.324) Cm (1:60)

TOF MS ES+
1.93e+005



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
387.1608	387.1610	-0.2	-0.5	19.5	501.9	0.0	C26 H19 N4

***Figure 27**: HRMS Spectrum of 1-(2-quinolylmethyl)-2-(2-quinolyl) benzimidazole (**49d**)*

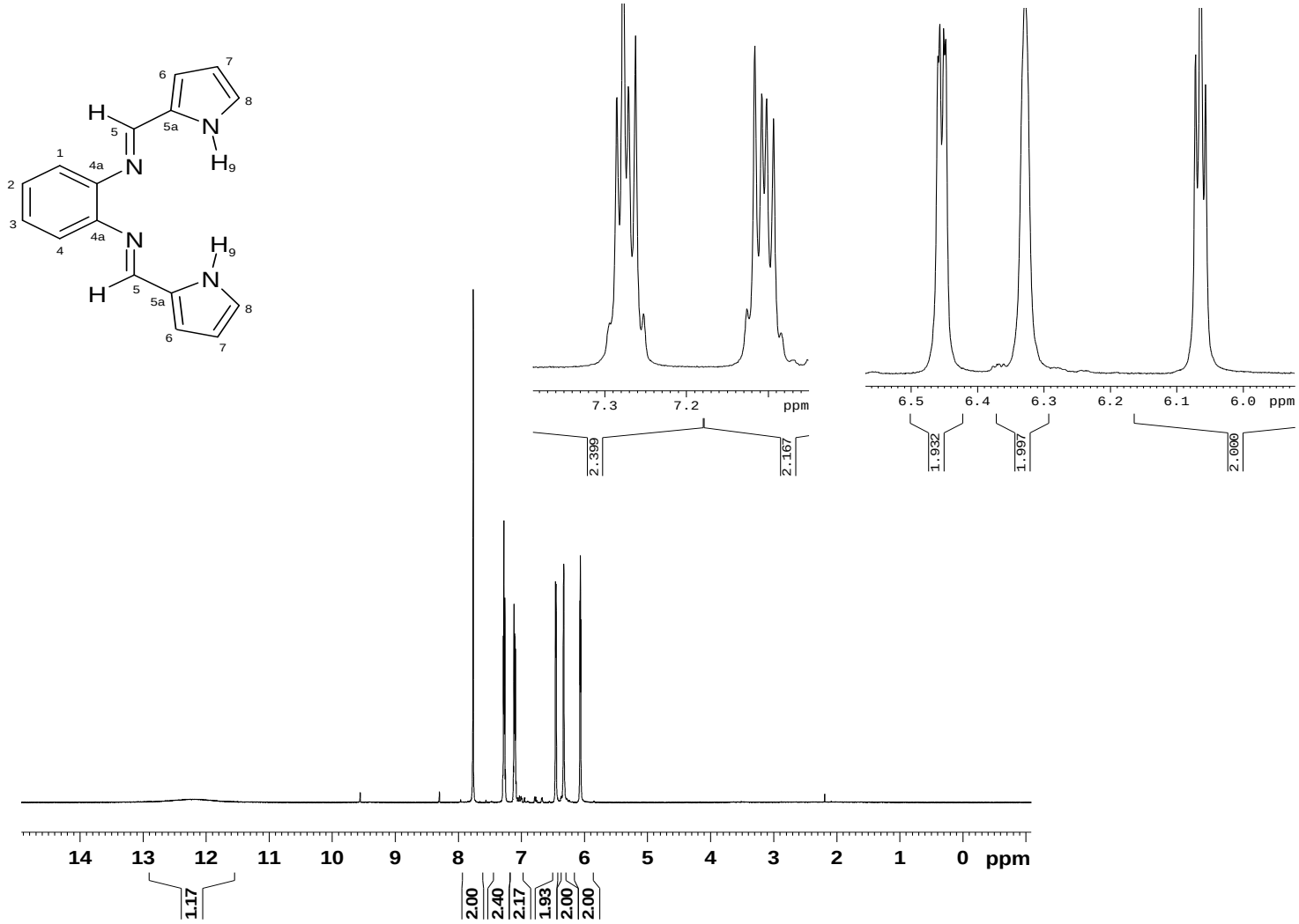


***Figure 28**: [1]H NMR Spectrum of N, N'- Bis (2-pyrrolylmethylidene)-1, 2-phenylenediamine in $CDCl_3$ (**48a**)*

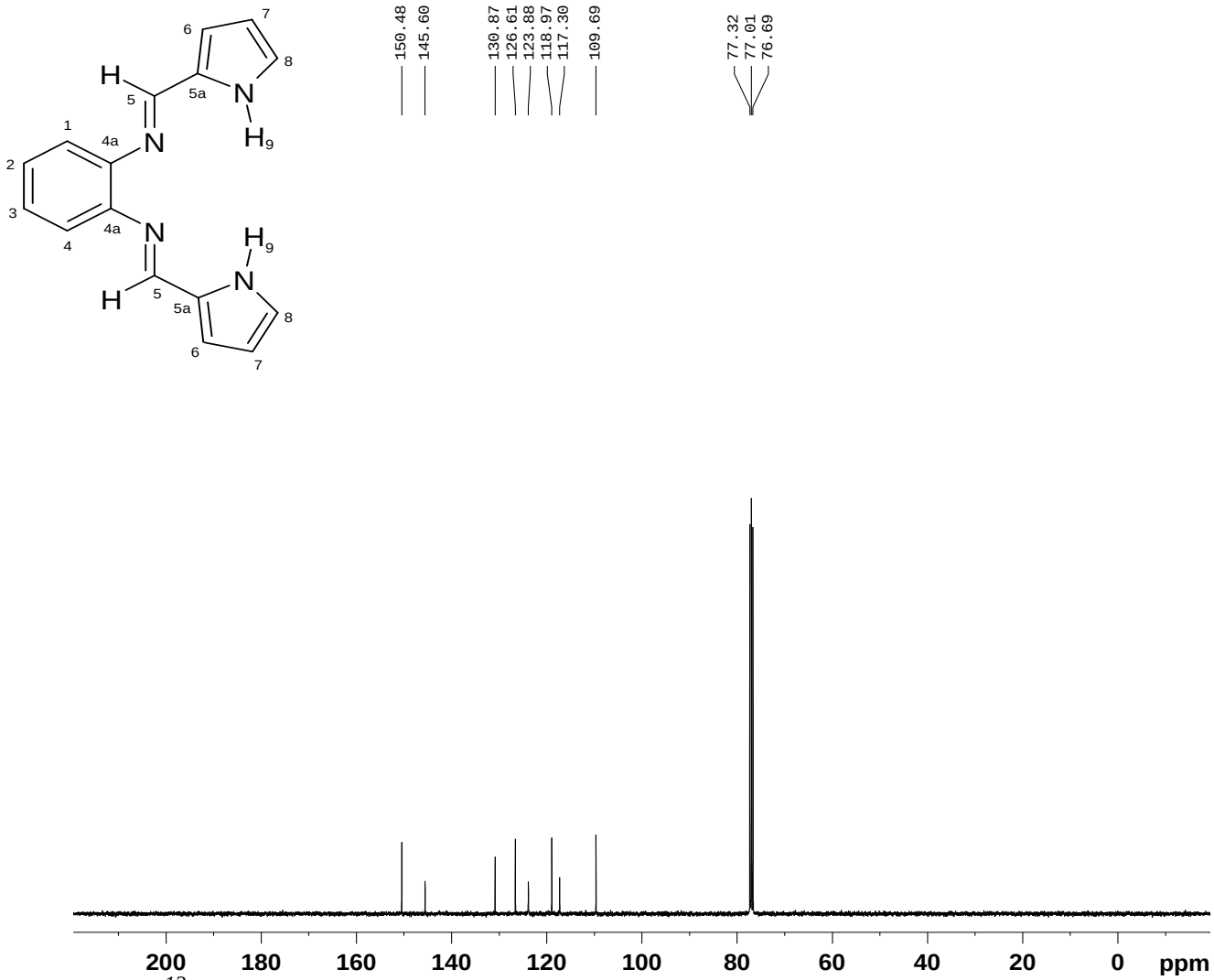


***Figure 29**: ^{13}C NMR Spectrum of N, N'- Bis (2-pyrrolylmethylidene)-1, 2-phenylenediamine in $CDCl_3$ (**48a**)*

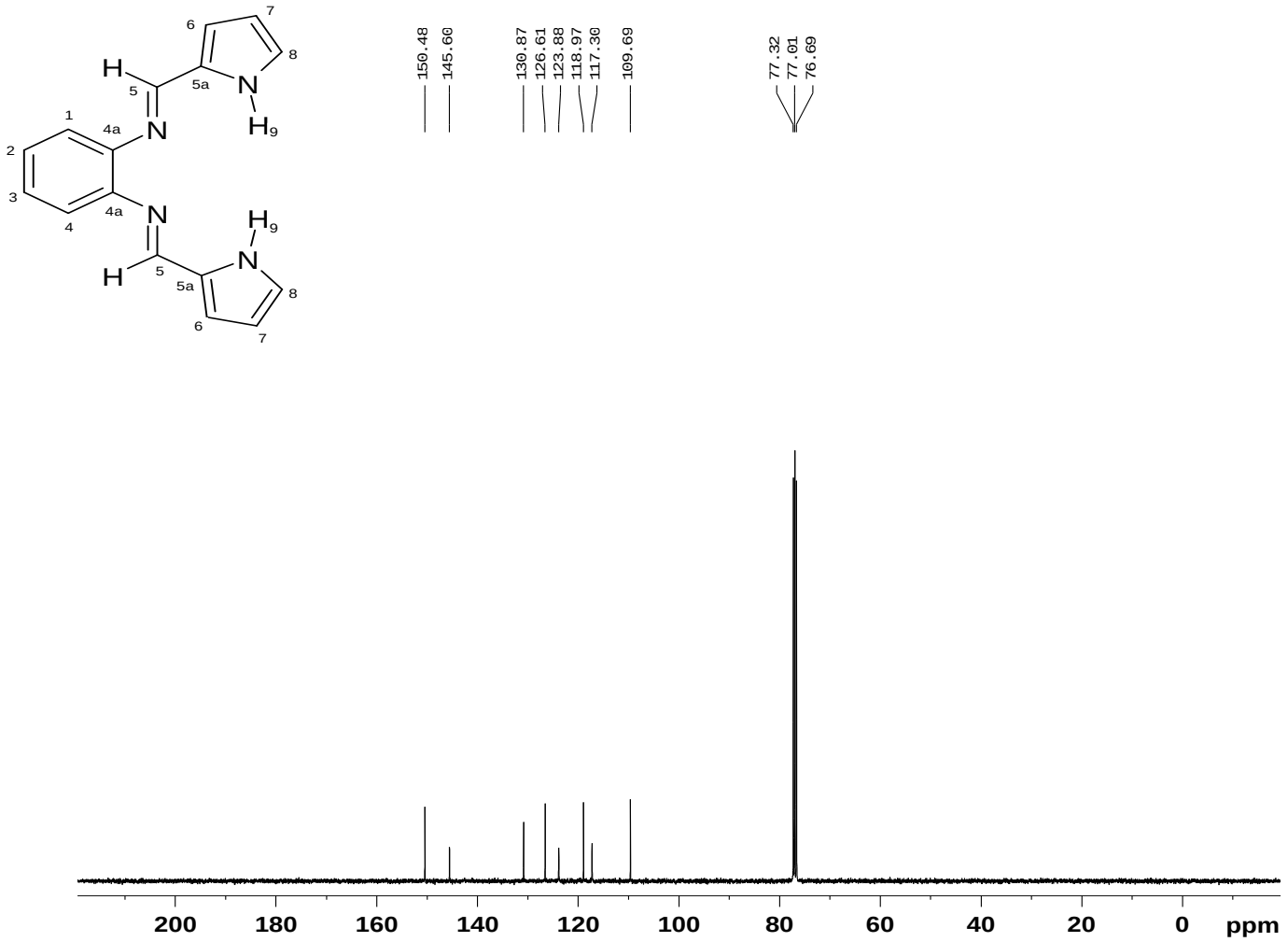


Figure 30*: Dept 135 Spectrum of N, N'- Bis (2-pyrrolylmethylidene)-1, 2-phenylenediamine in* $CDCl_3$ *(**48a**)*

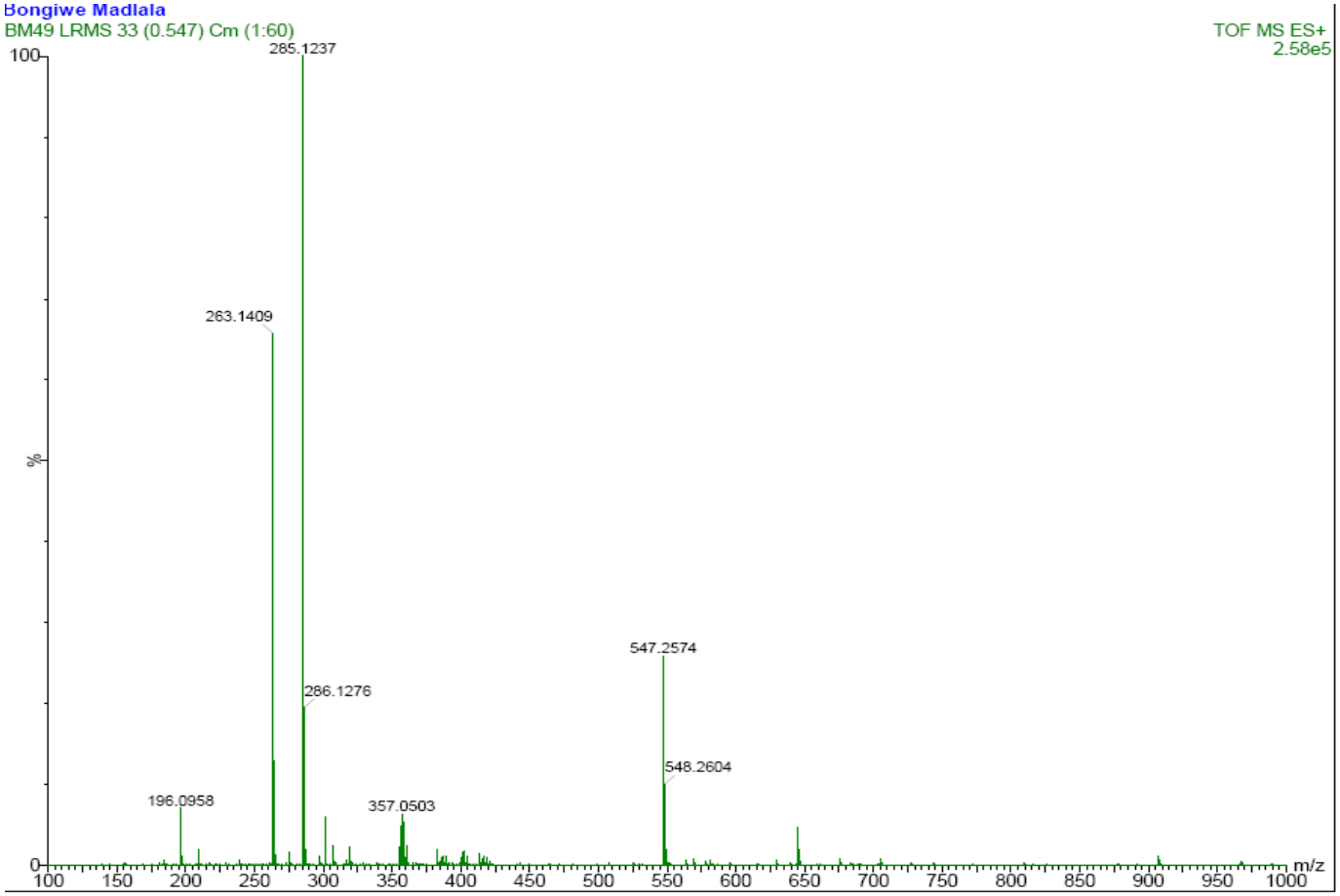


***Figure 31**: LRMS Spectrum of N, N'- Bis (2-pyrrolylmethylidene)-1, 2-phenylenediamine (**48a**)*

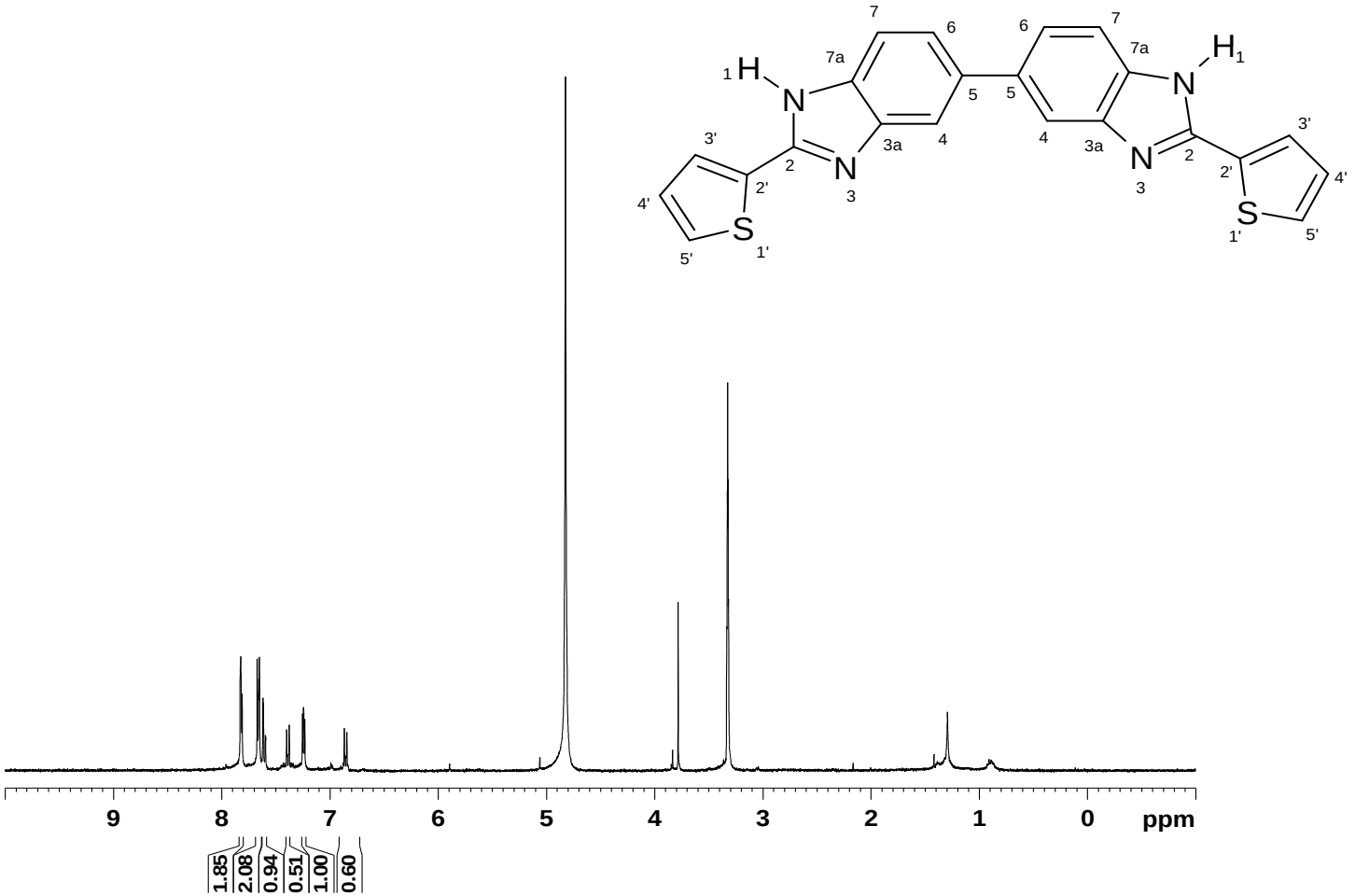


***Figure 32**: [1]H NMR Spectrum of 2, 2-di-2-thienyl-5, 5'-Bi-1H-benzimidazole (**52**)*

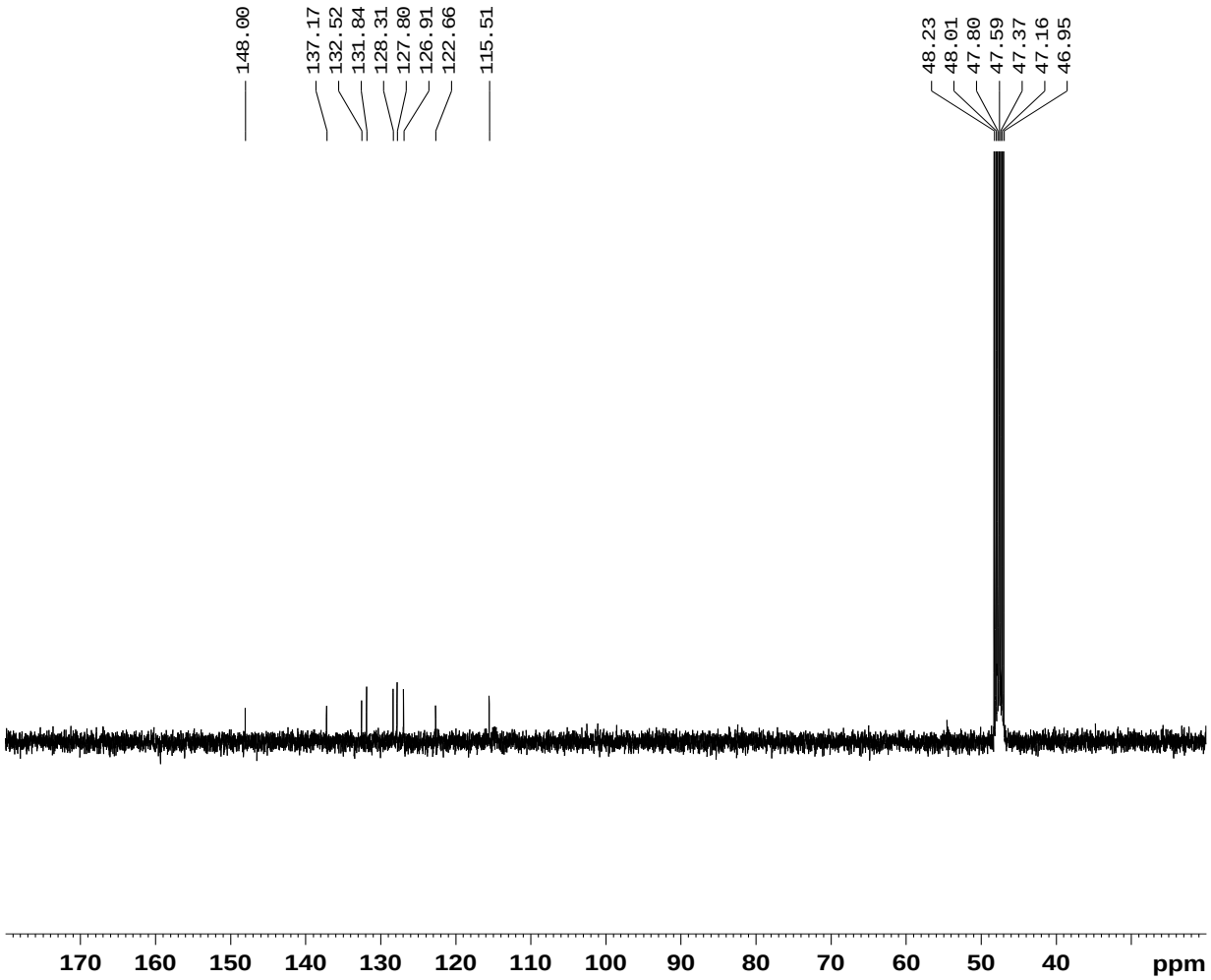


***Figure 33**: [13]C NMR Spectrum of 2, 2-di-2-thienyl-5, 5'-Bi-1H-benzimidazole (**52**)*

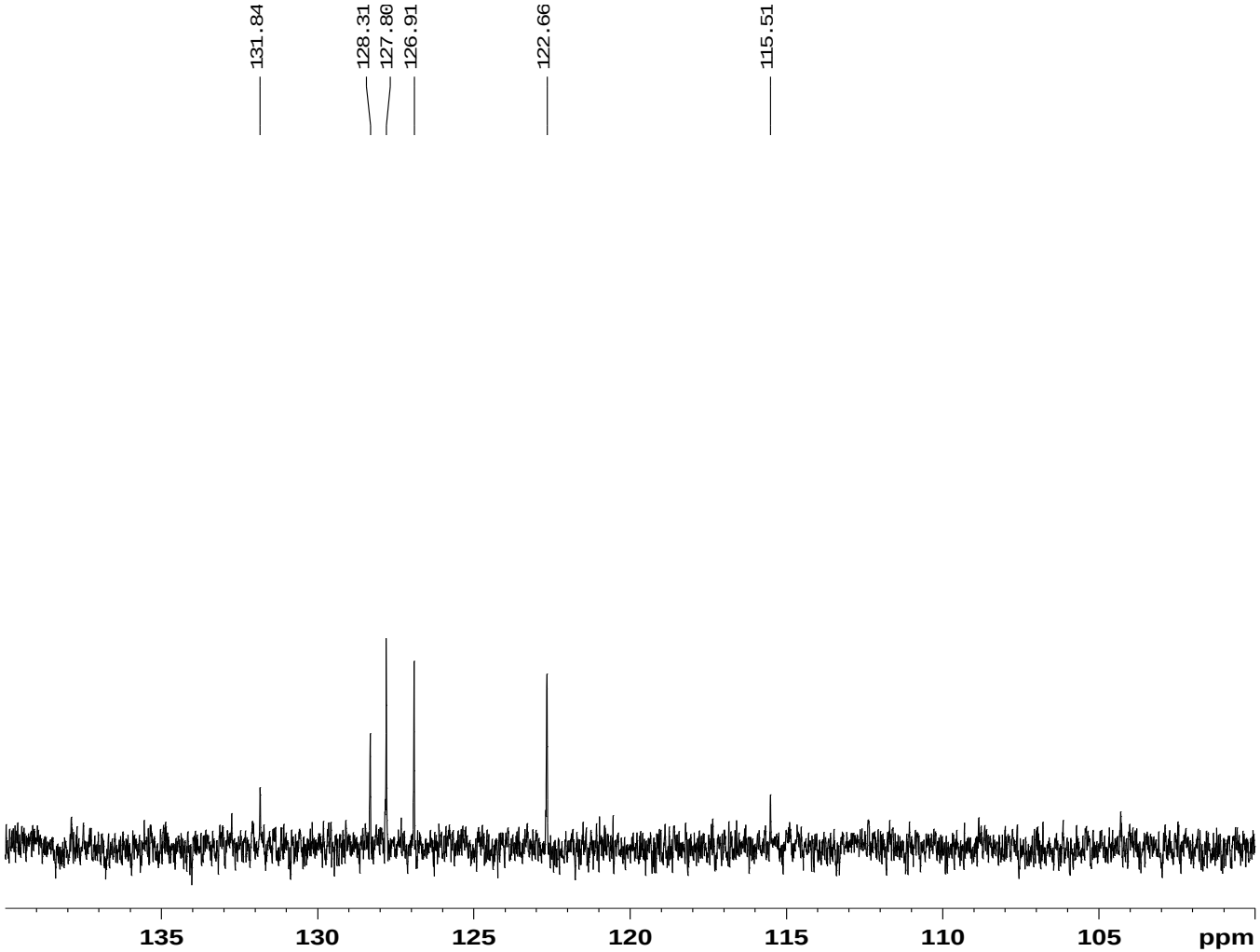


***Figure 34**: Dept 135 NMR Spectrum of 2, 2-di-2-thienyl-5, 5'-Bi-1H-benzimidazole (**52**)*

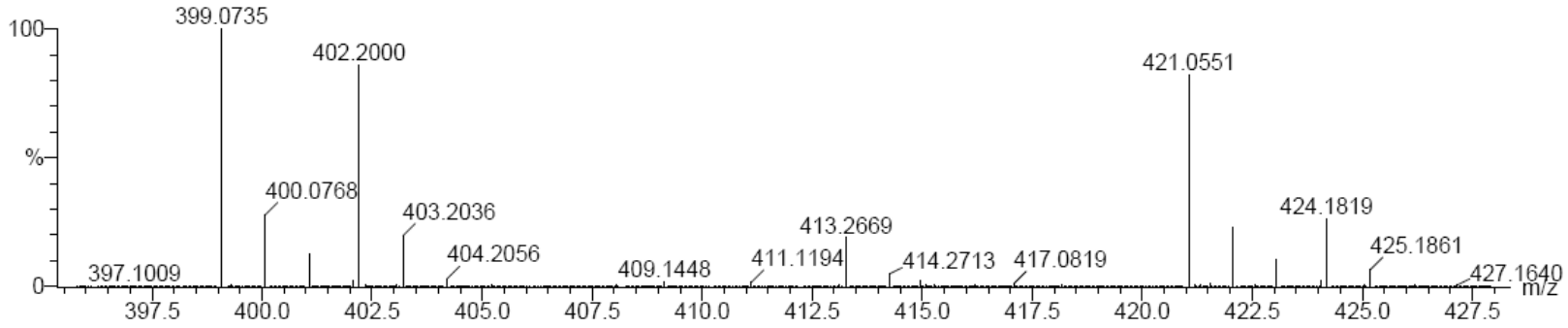
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
26 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 20-25 H: 10-20 N: 3-5 Na: 0-1 S: 0-5

Bongiwe
BM54b 12 (0.188) Cm (1:60)

TOF MS ES+
2.06e+005



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
399.0735	399.0738	-0.3	-0.8	17.5	546.5	0.0	C22 H15 N4 S2

***Figure 35**: HRMS Spectrum of 2, 2-di-2-thienyl-5, 5'-Bi-1H-benzimidazole (**52**)*

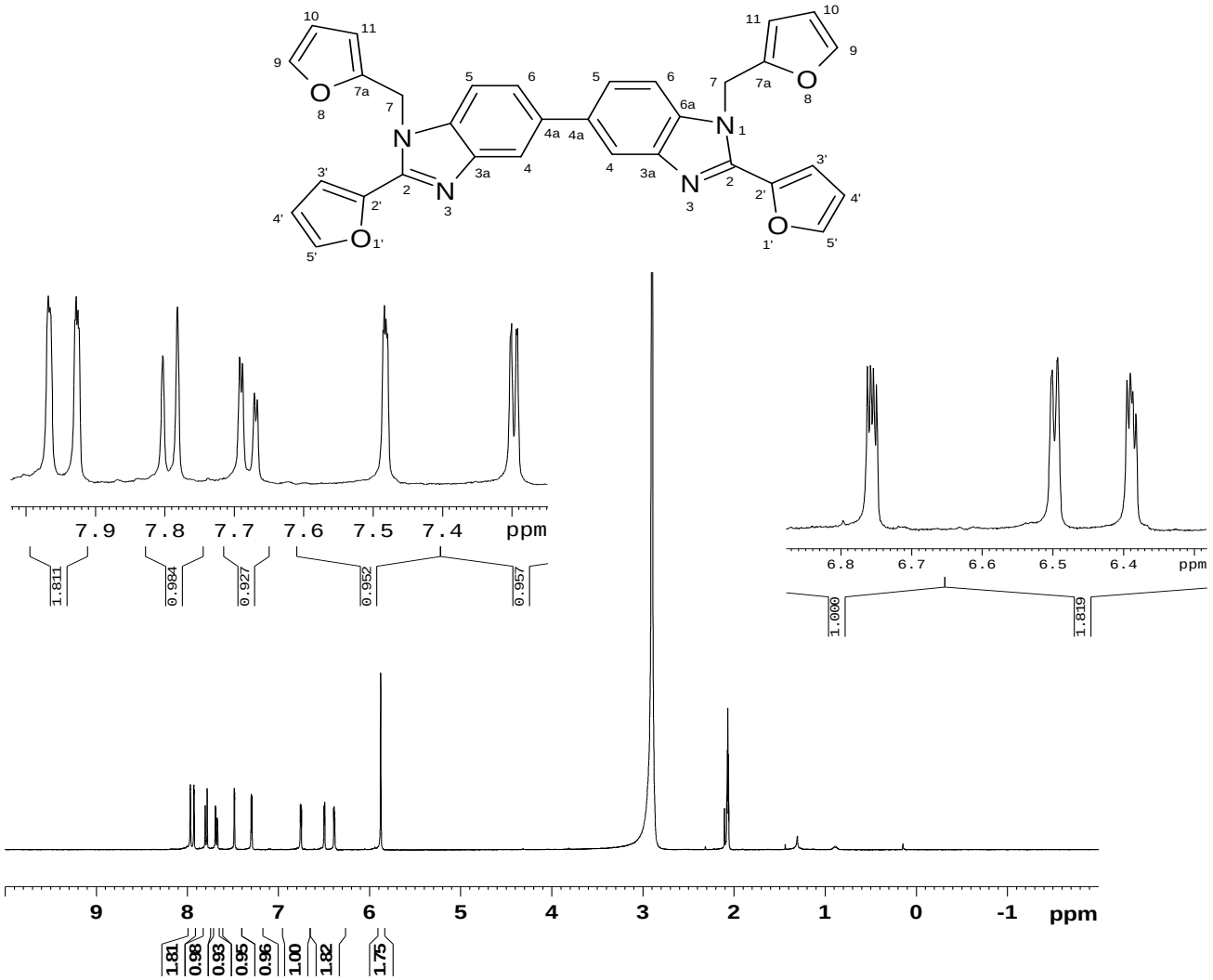


***Figure 36**: [1]H NMR Spectrum of 1, 2- di- 2-furanylmethyl-2, 2- di- 2-furanyl benzimidazole (**53**)*

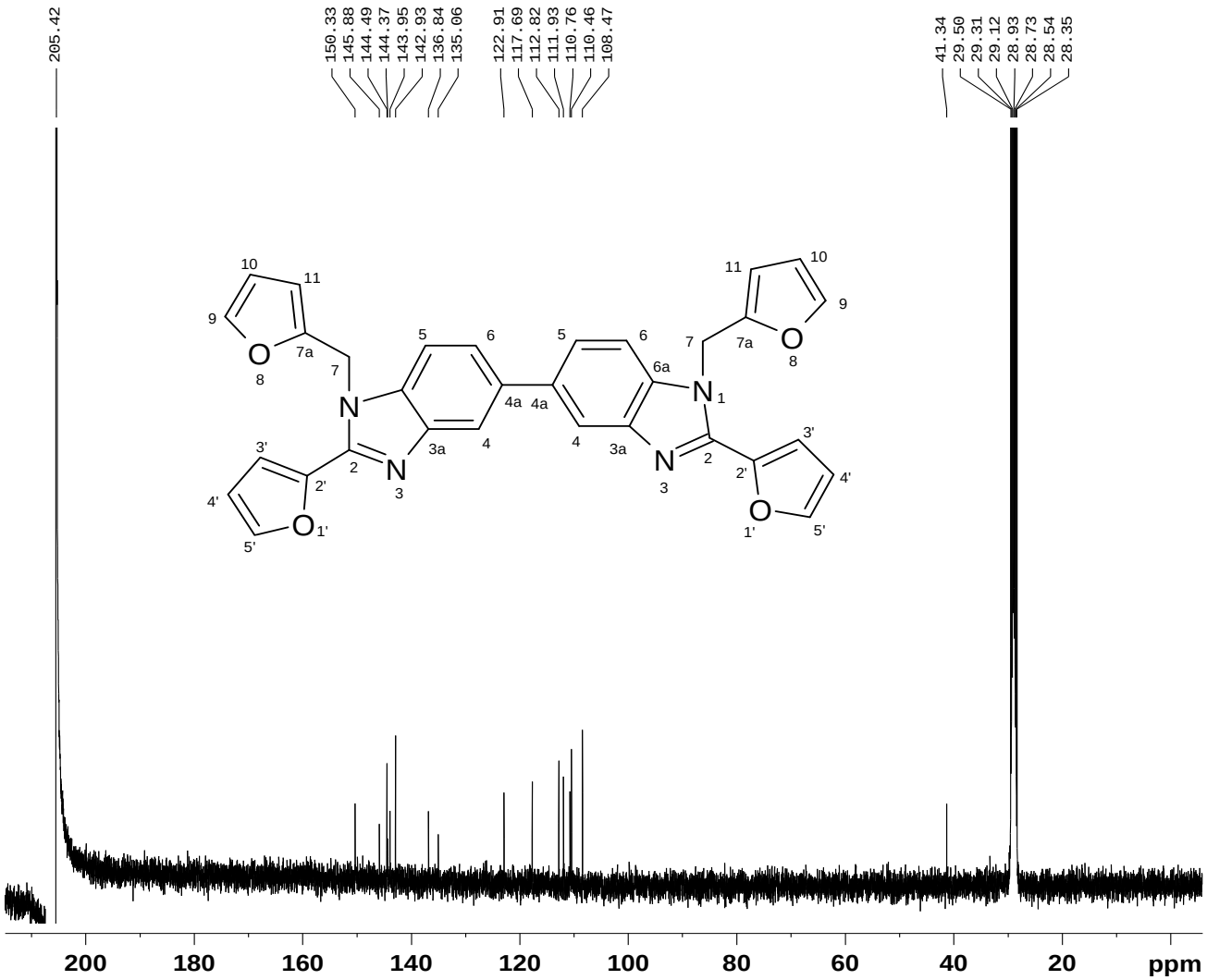


***Figure 37**: [13]C NMR Spectrum of 1, 2- di- 2-furanylmethyl-2, 2- di- 2-furanyl benzimidazole in acetone-d6 (**53**)*

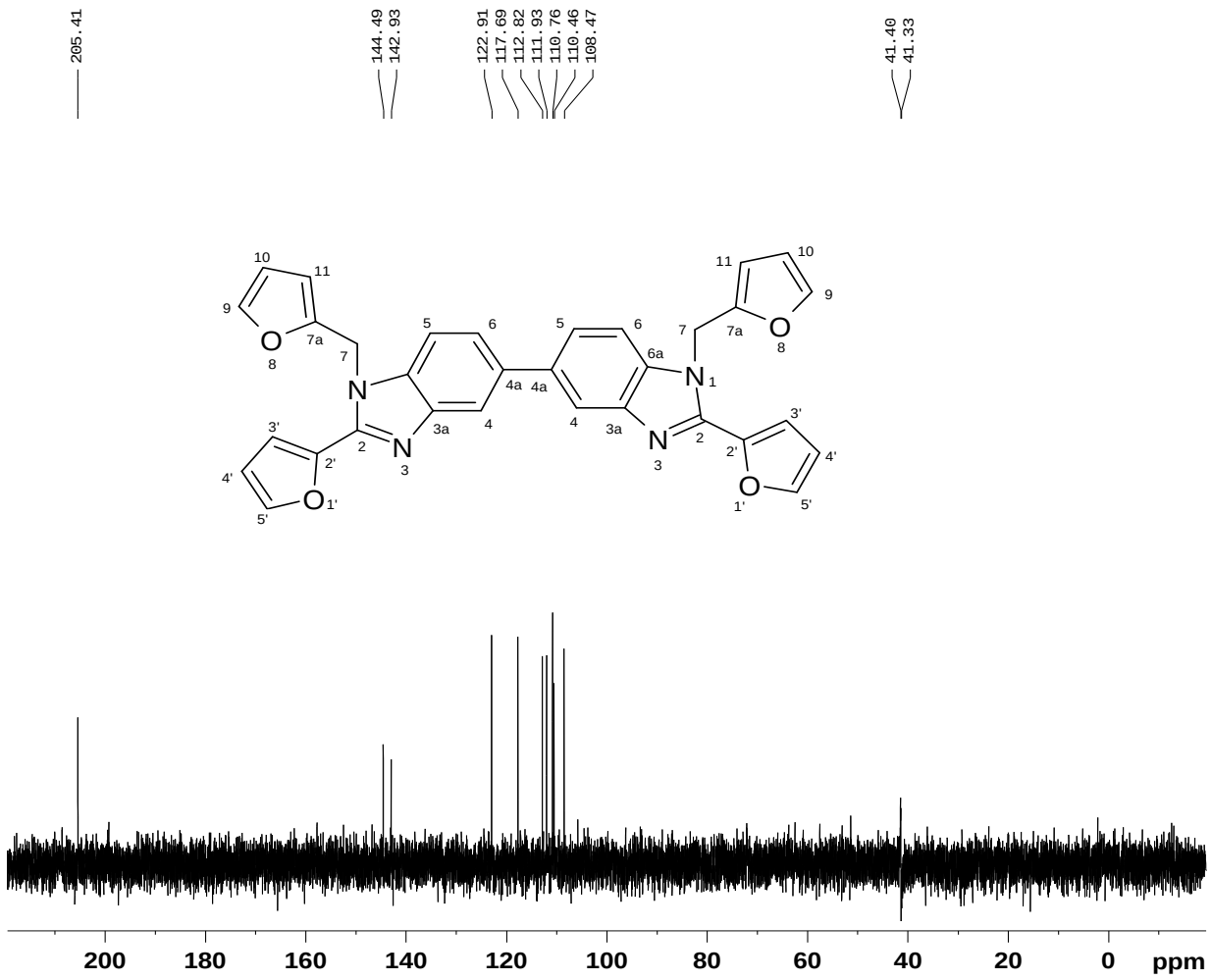


***Figure 38**: Dept 135 Spectrum 1, 2- di- 2-furanylmethyl-2, 2- di- 2-furanyl benzimidazole (**53**)*

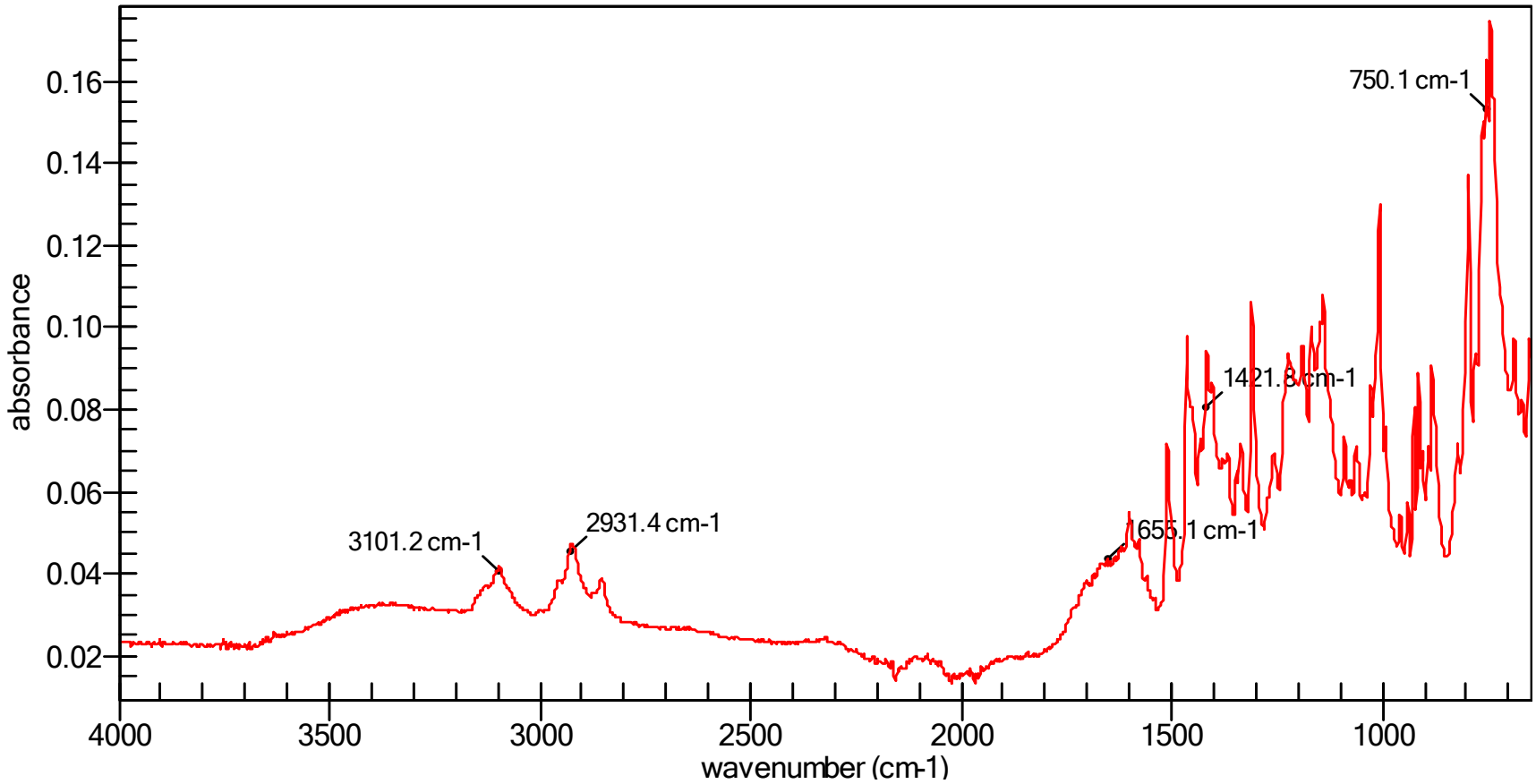


***Figure 39**: IR Spectrum of 1, 2- di- 2-furanylmethyl-2, 2- di- 2-furanyl benzimidazole (**53**)*

Elemental Composition Report **Page 1**

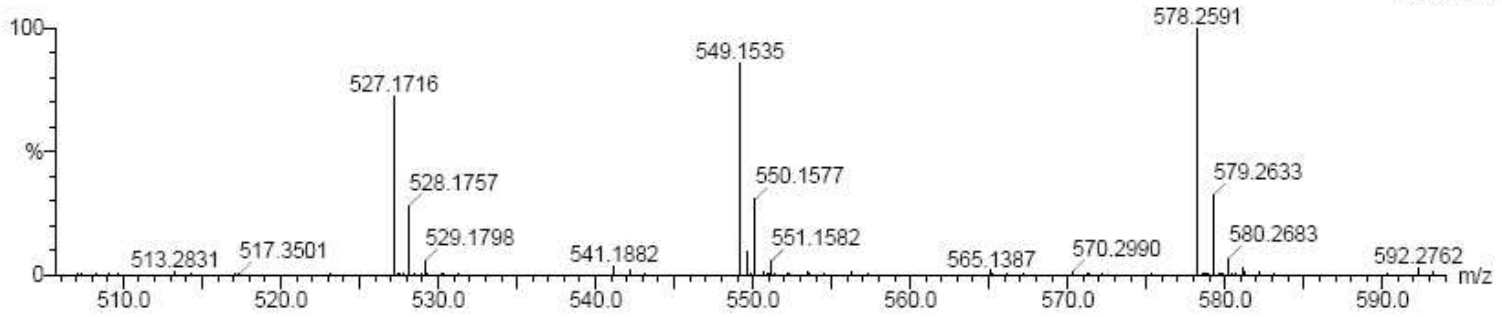
Single Mass Analysis

Tolerance = 50.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
5 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 30-35 H: 20-25 N: 3-5 O: 3-5

Bongiwe
BM51 9 (0.136)

TOF MS ES+
7.91e+003



Minimum:				-1.5			
Maximum:		5.0	50.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
527.1716	527.1719	-0.3	-0.6	23.5	93.0	0.0	C32 H23 N4 O4

***Figure 40**: HRMS Spectrum of 1, 2- di- 2-furanylmethyl-2, 2- di- 2-furanyl benzimidazole (**53**)*

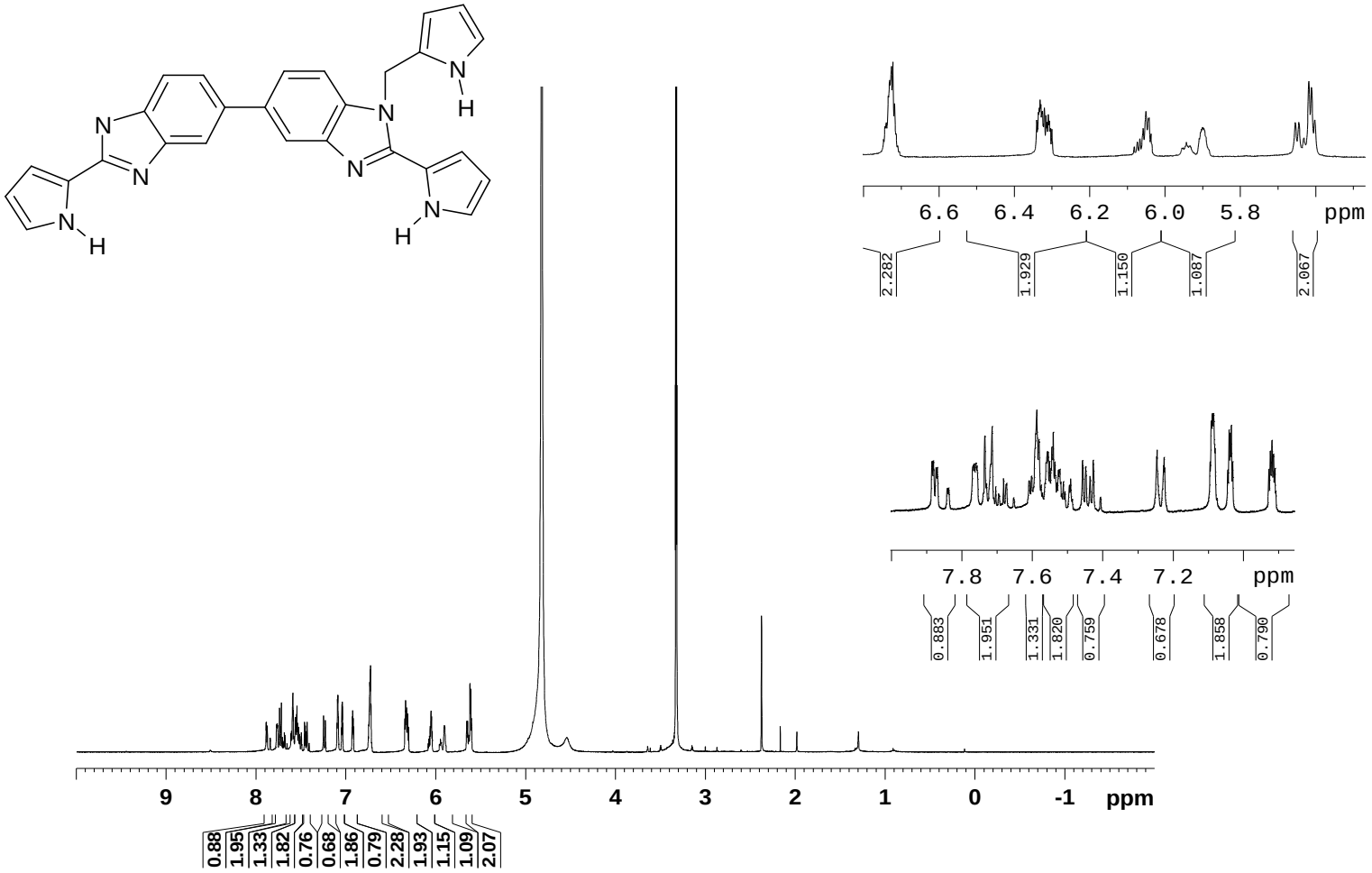


***Figure 41**: [1]H NMR Spectrum of 1, 2- di- 2-pyrrolylmethyl-2, 2- di- 2-pyrrolyl benzimidazole in methanol (**54**)*

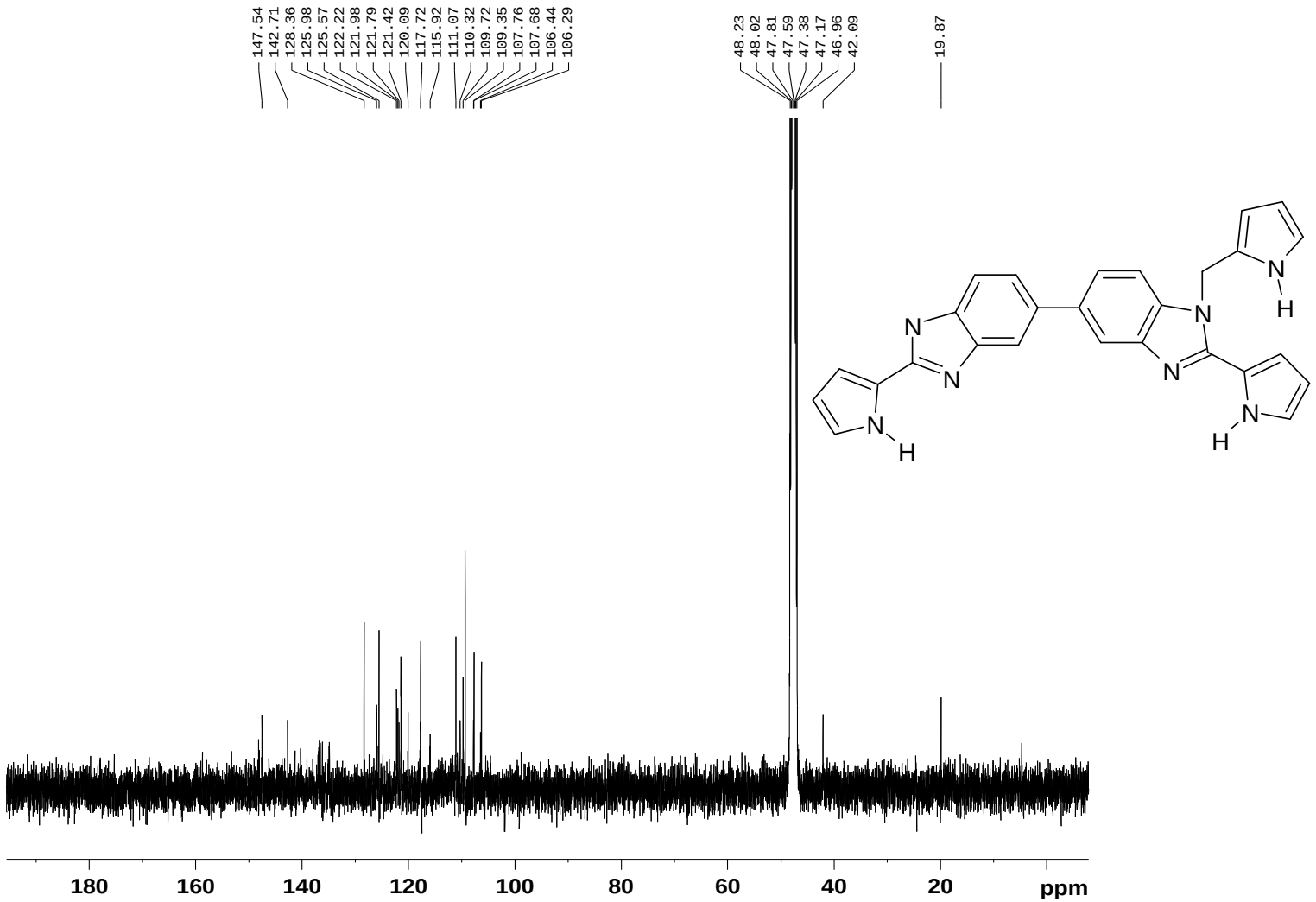


***Figure 42**: [13]C NMR Spectrum of 1, 2- di- 2-pyrrolylmethyl-2, 2- di- 2-pyrrolyl benzimidazole in methanol (**54**)*

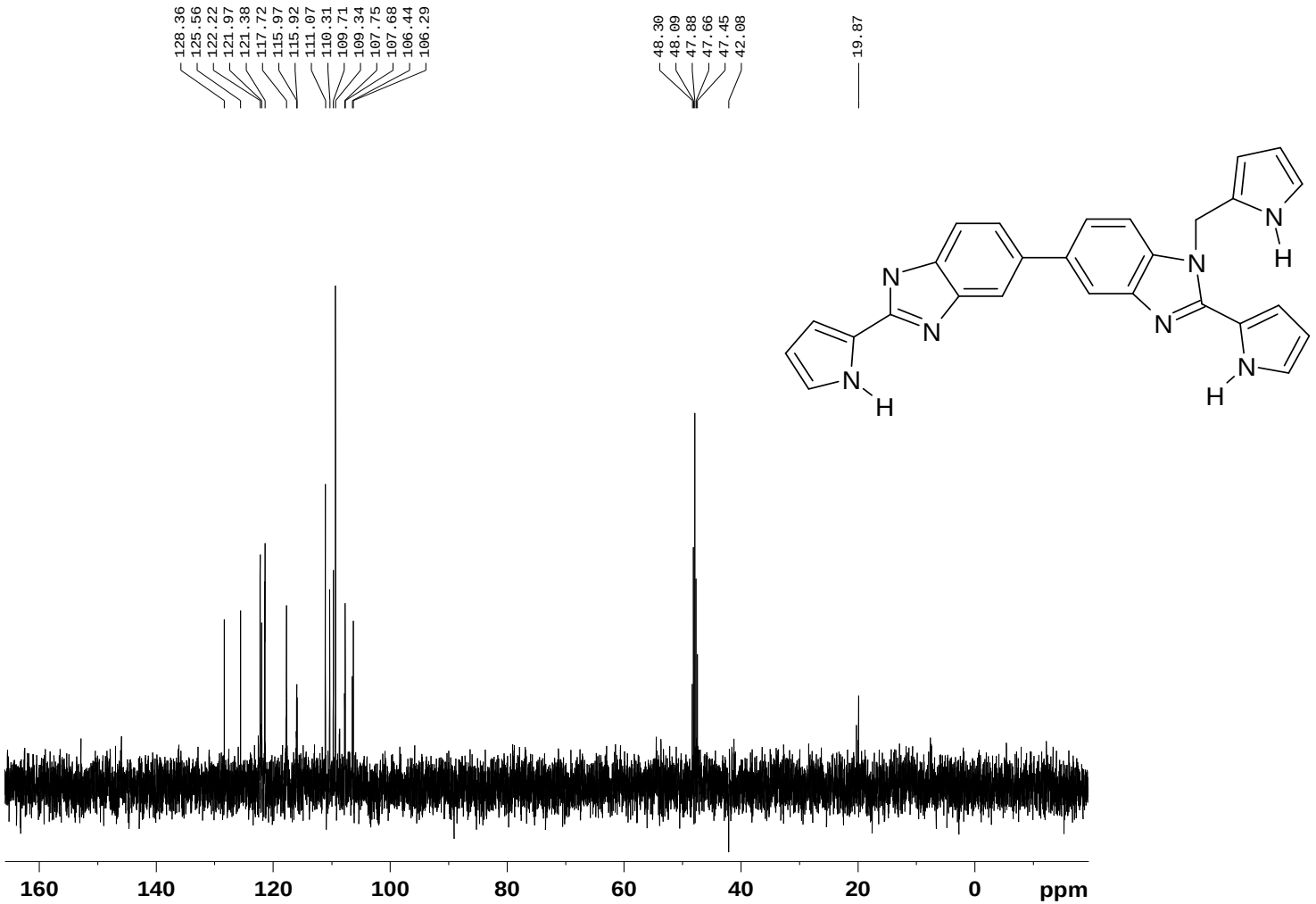


***Figure 43**: Dept 135 NMR Spectrum of 1, 2- di- 2-pyrrolylmethyl-2, 2- di- 2-pyrrolyl benzimidazole (**54**)*

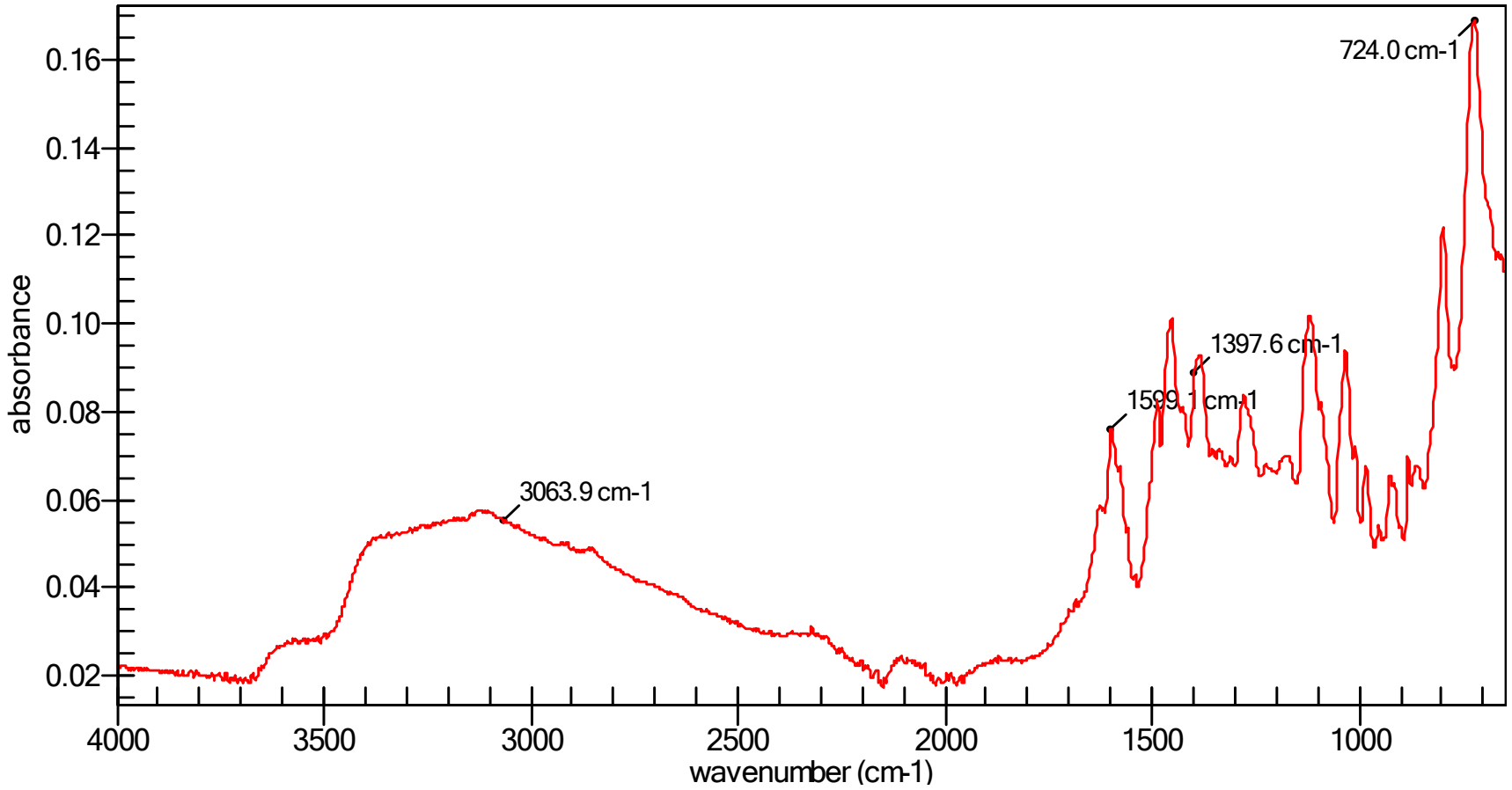


***Figure 44**: IR Spectrum of 1, 2- di- 2-pyrrolylmethyl-2, 2- di- 2-pyrrolyl benzimidazole (**54**)*

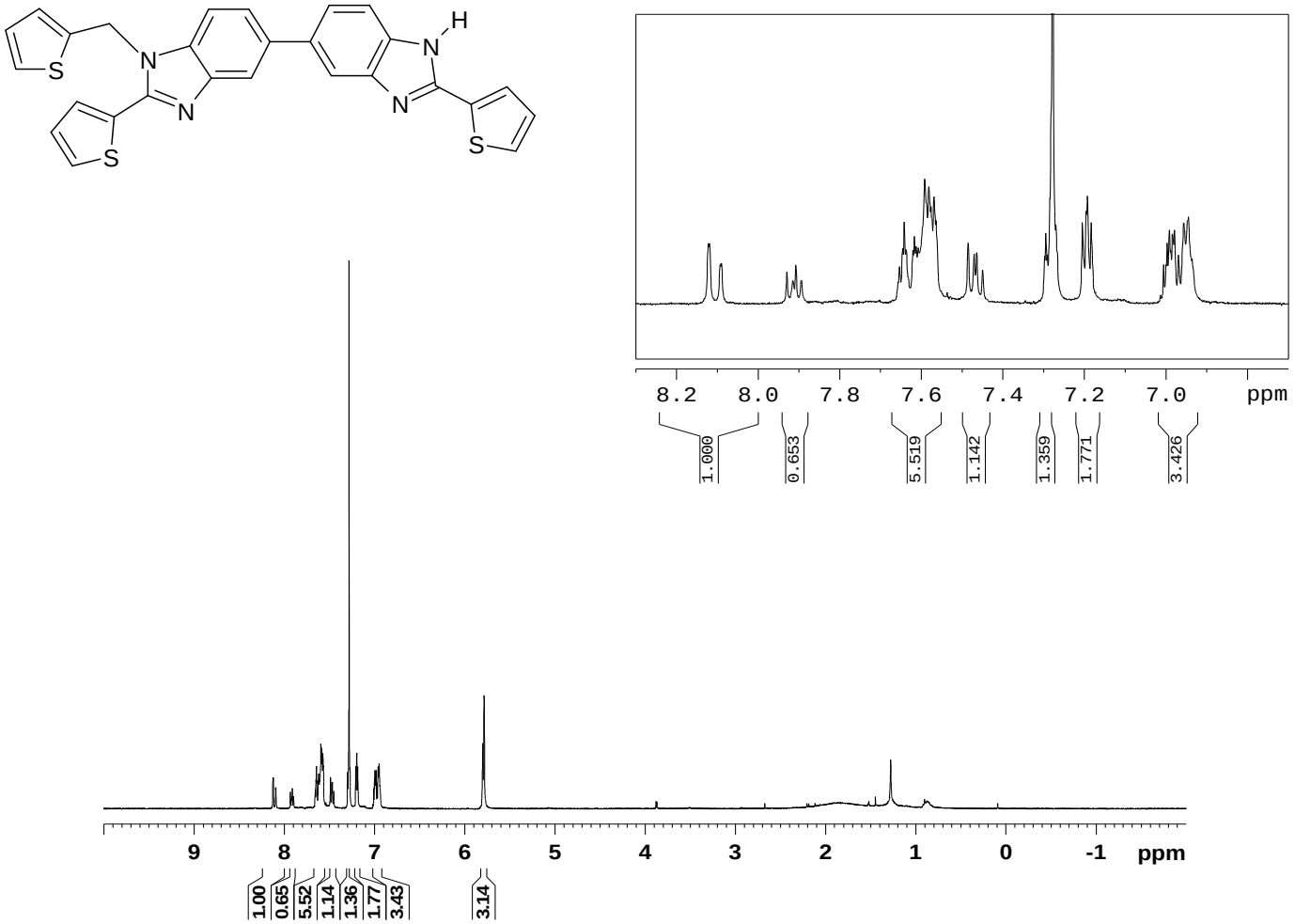


***Figure 45**: ^{1}H NMR Spectrum of 1, 2- di- 2-thienylmethyl-2, 2- di- 2-thienyl benzimidazole in $CDCl_3$ (**55**)*

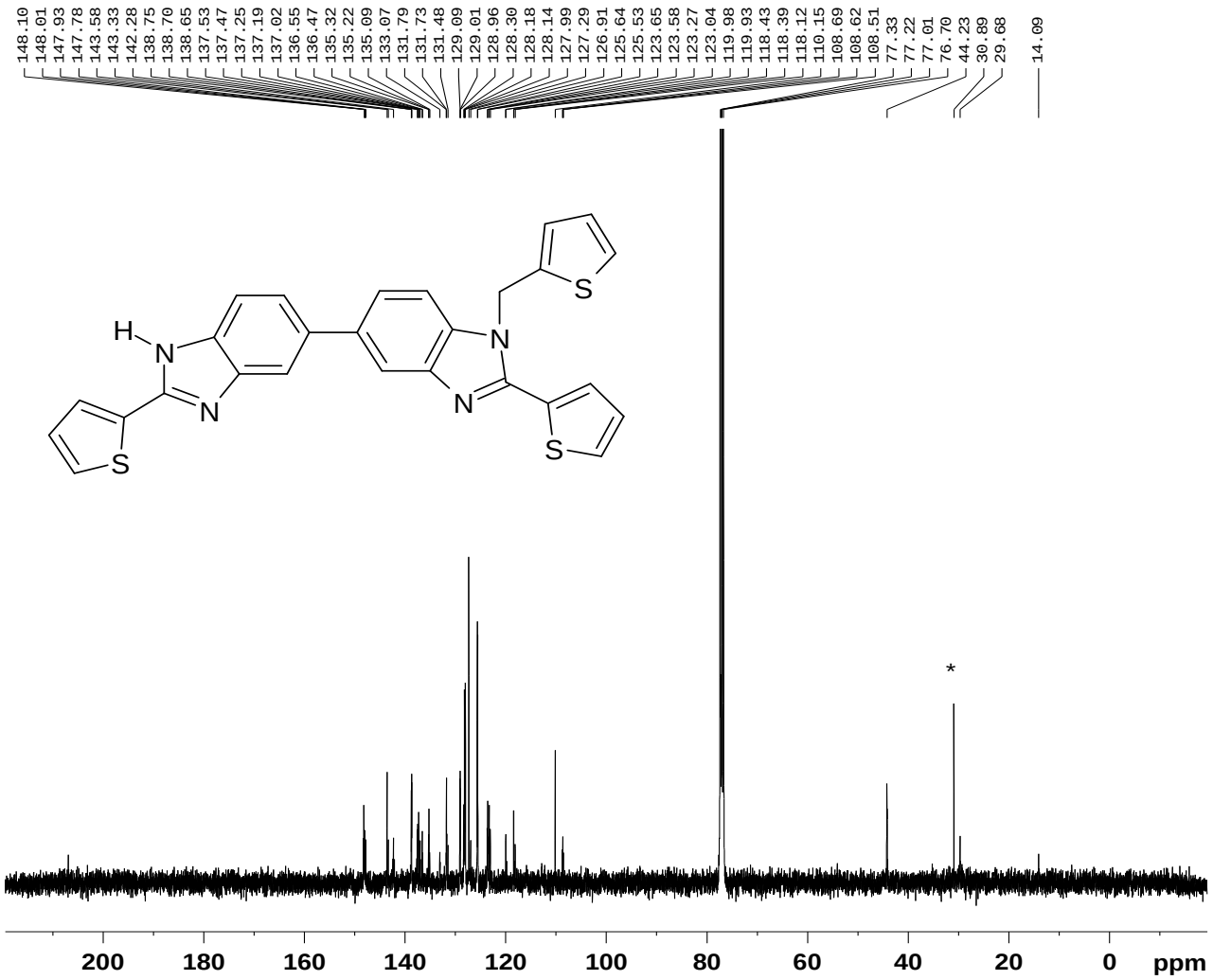


***Figure 46**: [13]C NMR Spectrum of 1, 2- di- 2-thienylmethyl-2, 2- di- 2-thienyl benzimidazole in $CDCl_3$* (**55**)

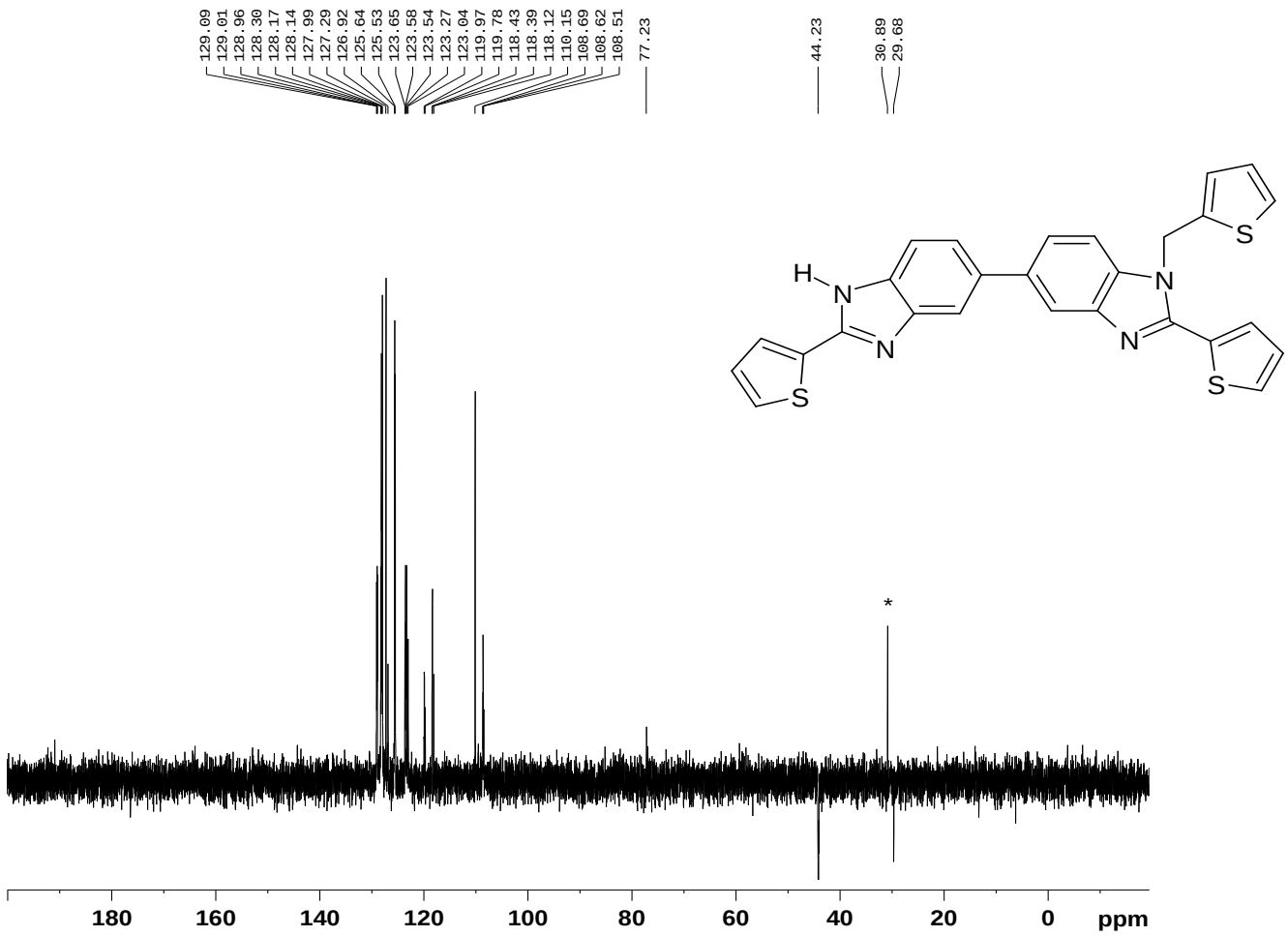


***Figure 47**: Dept 135 Spectrum of 1, 2- di- 2-thienylmethyl-2, 2- di- 2-thienyl benzimidazole* (**55**) *

* impurities

Elemental Composition Report **Page 1**

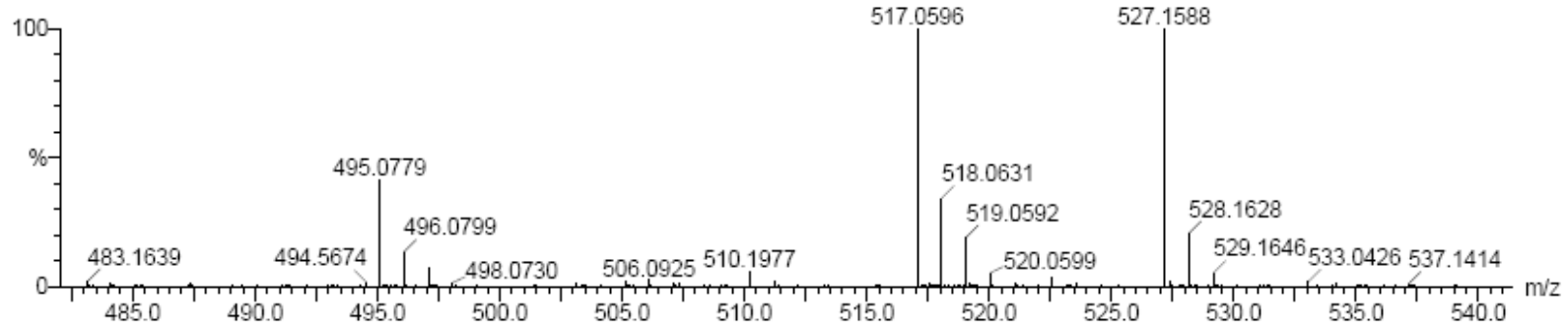
Single Mass Analysis

Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
20 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 25-28 H: 15-20 N: 3-5 Na: 0-1 S: 0-5

Bongiwe
BM54a 6 (0.086) Cm (1:56)

TOF MS ES+
8.21e+004



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
517.0596	517.0591	0.5	1.0	20.5	490.9	0.0	C27 H18 N4 Na S3

Figure 48: *HRMS Spectrum of 1, 2- di- 2-thienylmethyl-2, 2- di- 2-thienyl benzimidazole (**55**)*

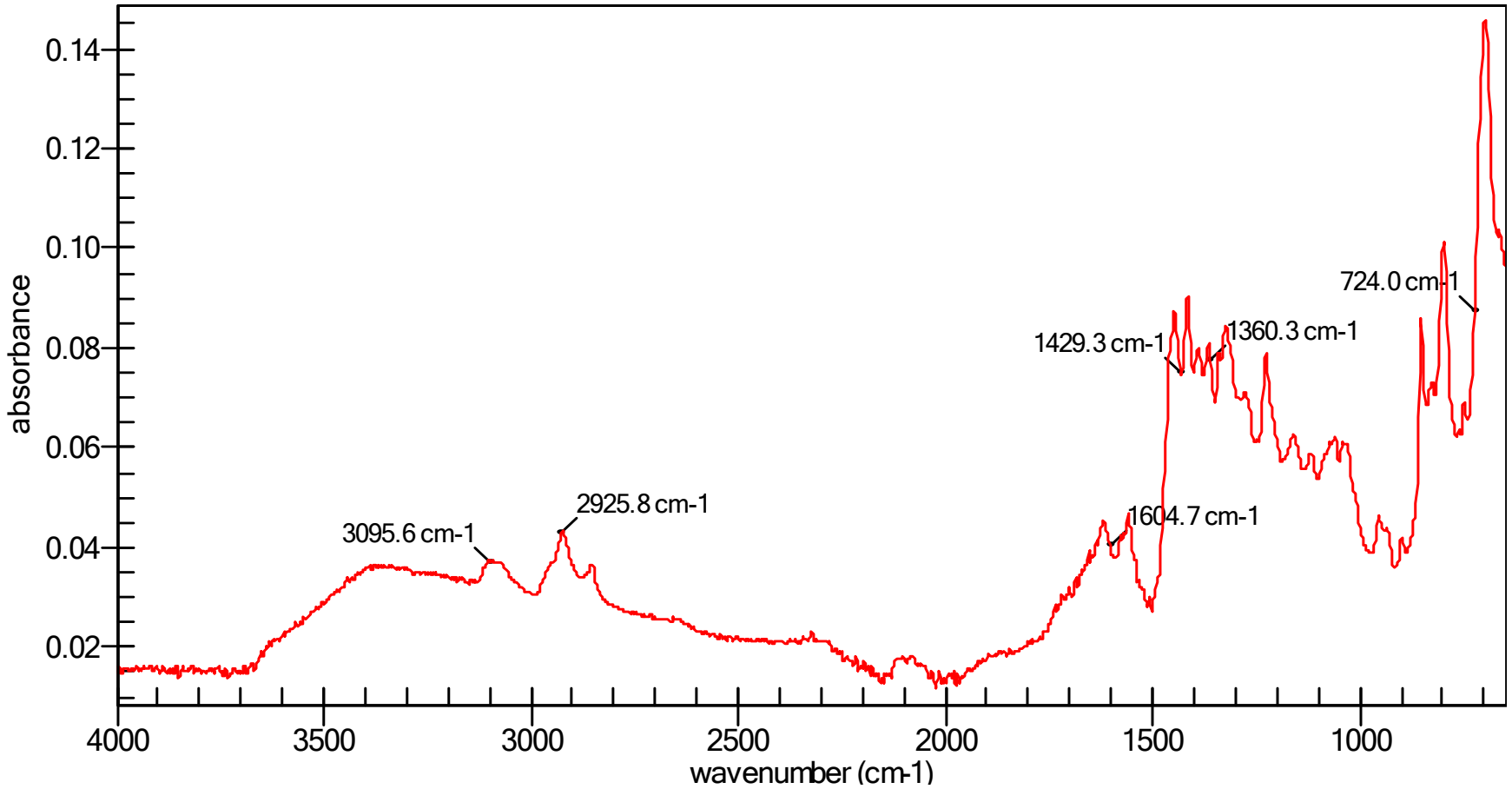


***Figure 49**: IR Spectrum of 1, 2- di- 2-thienylmethyl-2, 2- di- 2-thienyl benzimidazole (**55**)*

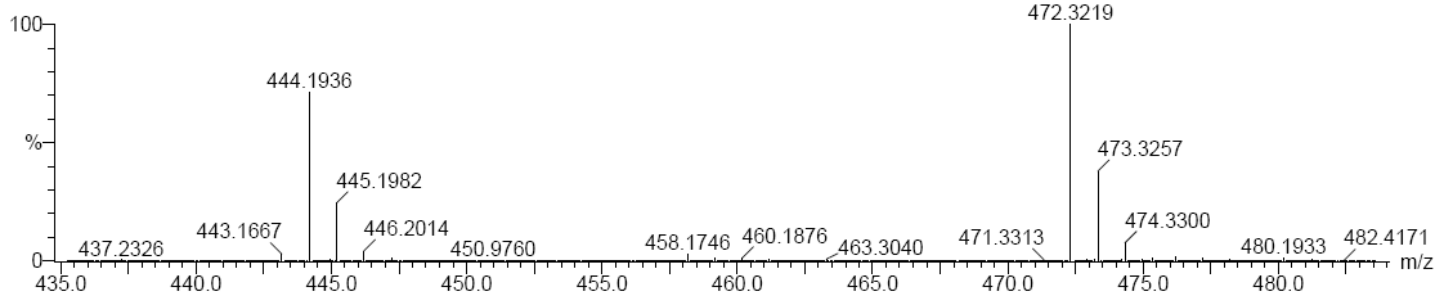
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 25-30 H: 20-25 N: 0-10

Bongiwe
BM 58a 44 (0.733) Cm (1:60)

TOF MS ES+
6.09e+005



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
444.1936	444.1937	-0.1	-0.2	20.5	617.9	0.0	C27 H22 N7

***Figure 50**: HRMS Spectrum of 1, 2- di- 2-thienylmethyl-2, 2- di- 2-thienyl benzimidazole (**55**)*

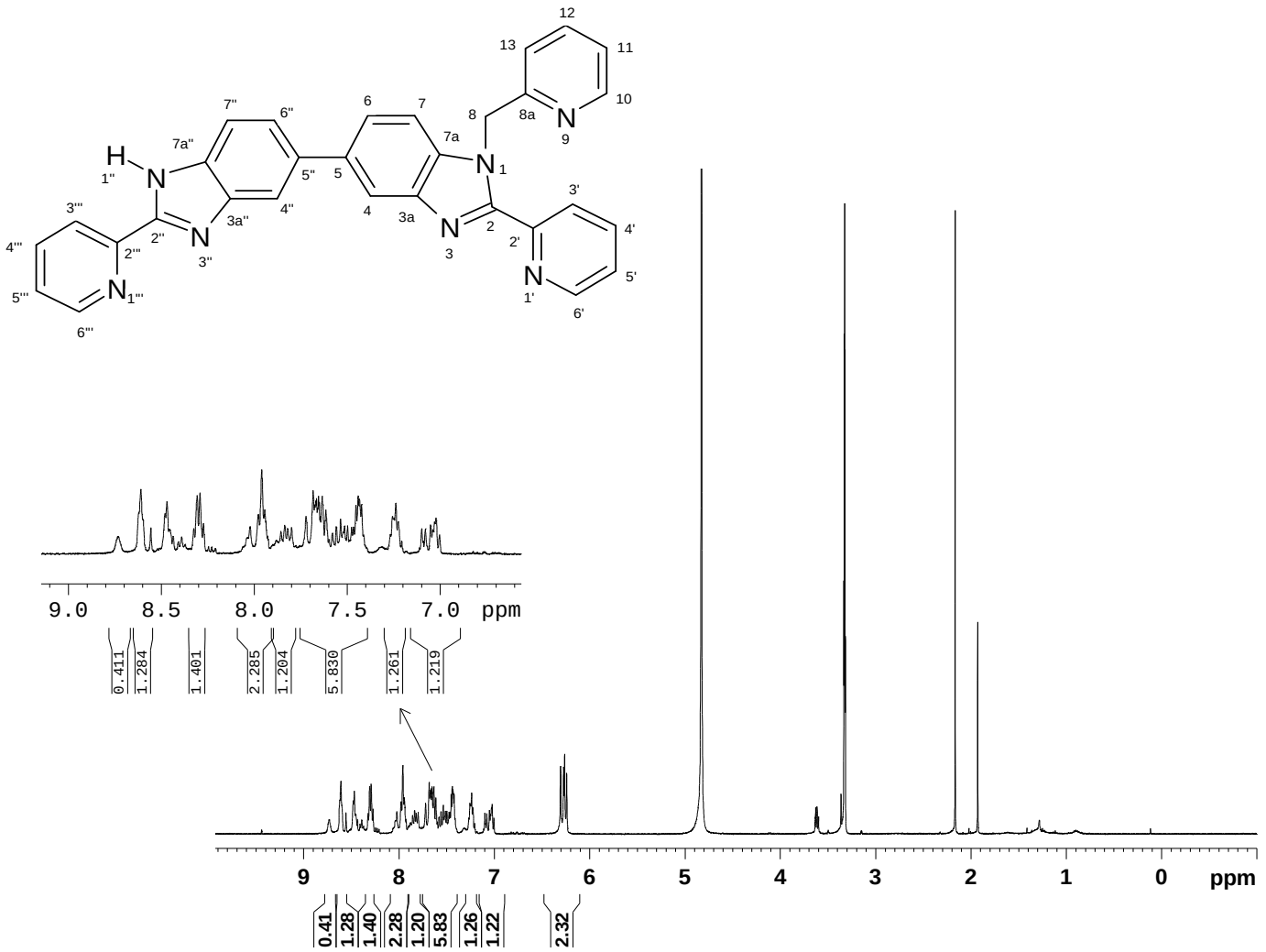


Figure 51: *^{1}H NMR Spectrum of 1, 2- di- 2-pyridylylmethyl-2, 2- di- 2-pyridyl benzimidazole in methanol* (**56**)

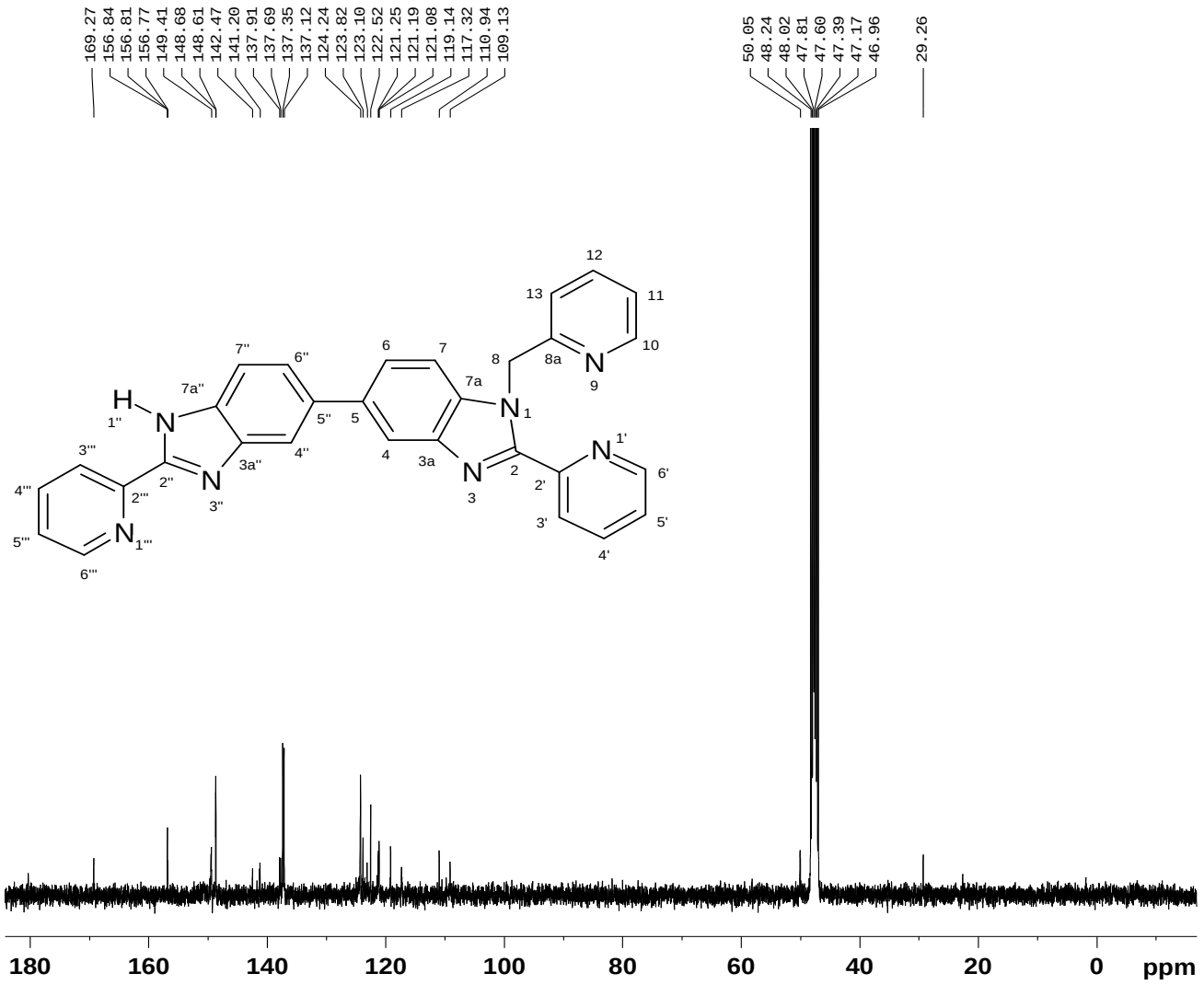


***Figure 52**: [13] C NMR Spectrum of 1, 2- di- 2-pyridylylmethyl-2, 2- di- 2-pyridyl benzimidazole in methanol (**56**)*

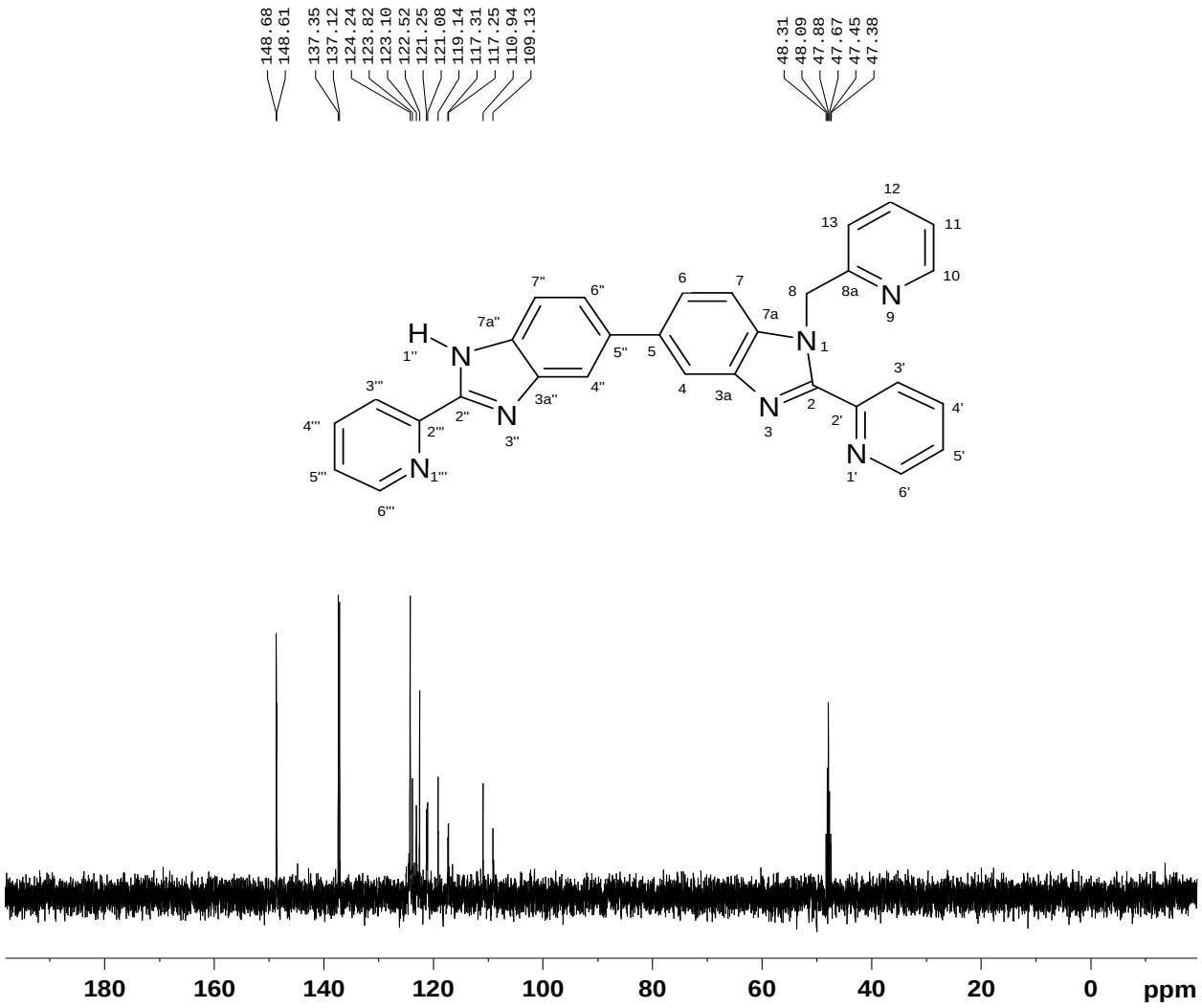


***Figure 53**: Dept 135 Spectrum of 1, 2- di- 2-pyridylylmethyl-2, 2- di- 2-pyridyl benzimidazole in methanol (**56**)*

Elemental Composition Report **Page 1**

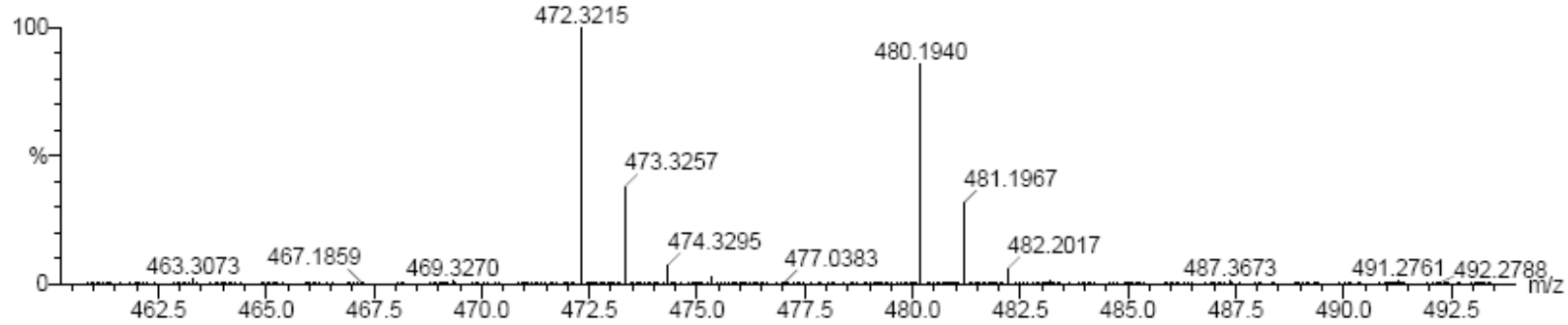
Single Mass Analysis

Tolerance = 5.0 PPM / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3 formula(e) evaluated with 1 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 25-35 H: 20-25 N: 5-10

Bongiwe Madlala
BM55 2 (0.017) Cm (2:31)

TOF MS ES+
1.66e+004



Minimum:				-1.5			
Maximum:		5.0	5.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
480.1940	480.1937	0.3	0.6	23.5	385.5	0.0	C30 H22 N7

Figure 54: *HRMS Spectrum of 1, 2- di- 2-pyridylylmethyl-2, 2- di- 2-pyridyl benzimidazole* (**56**)

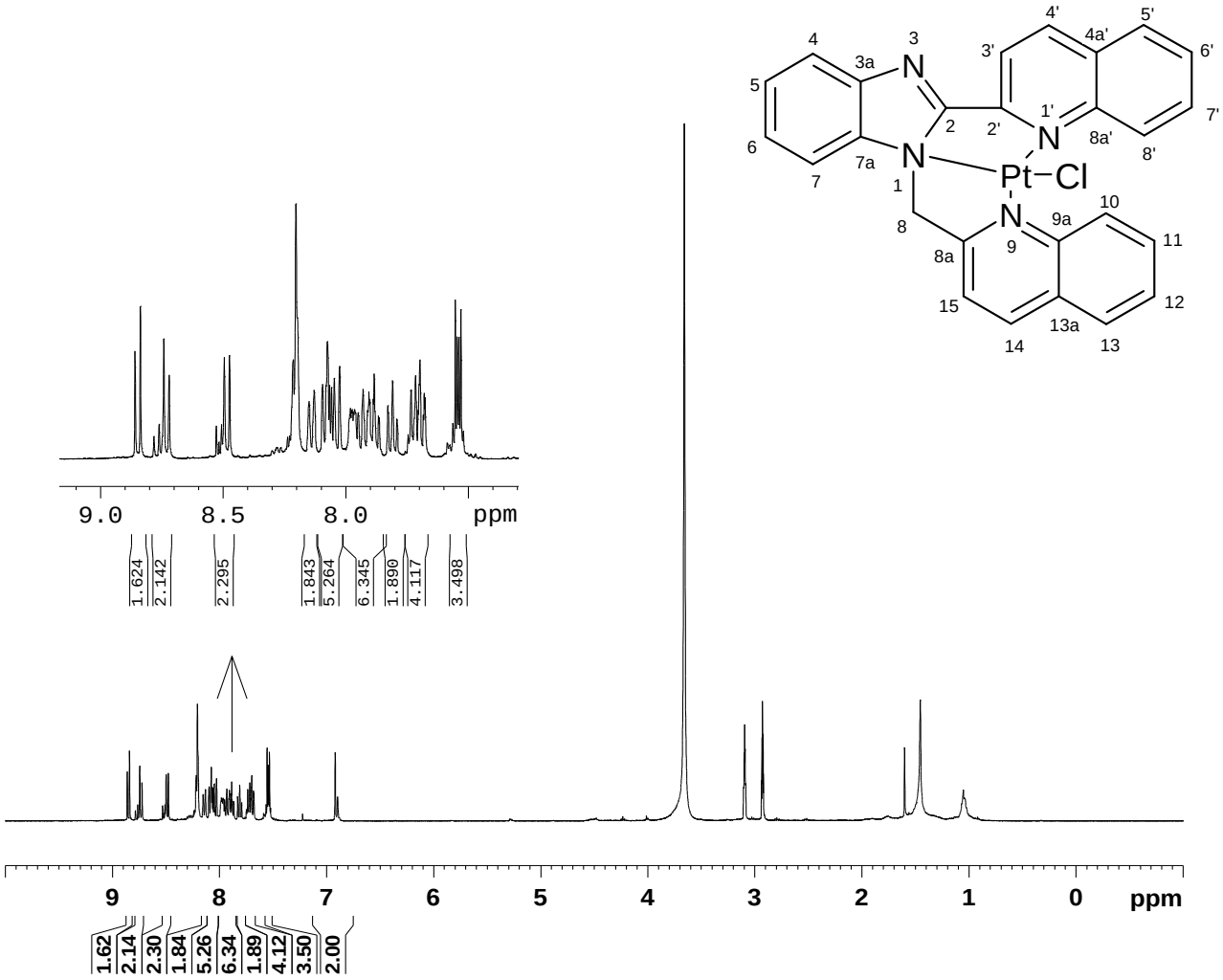


***Figure 55**: [1]H NMR Spectrum of 2-quinolyl-1-quinolylethyl-1H-benzimidazole Pt (II) complex in DMF (**60**)*

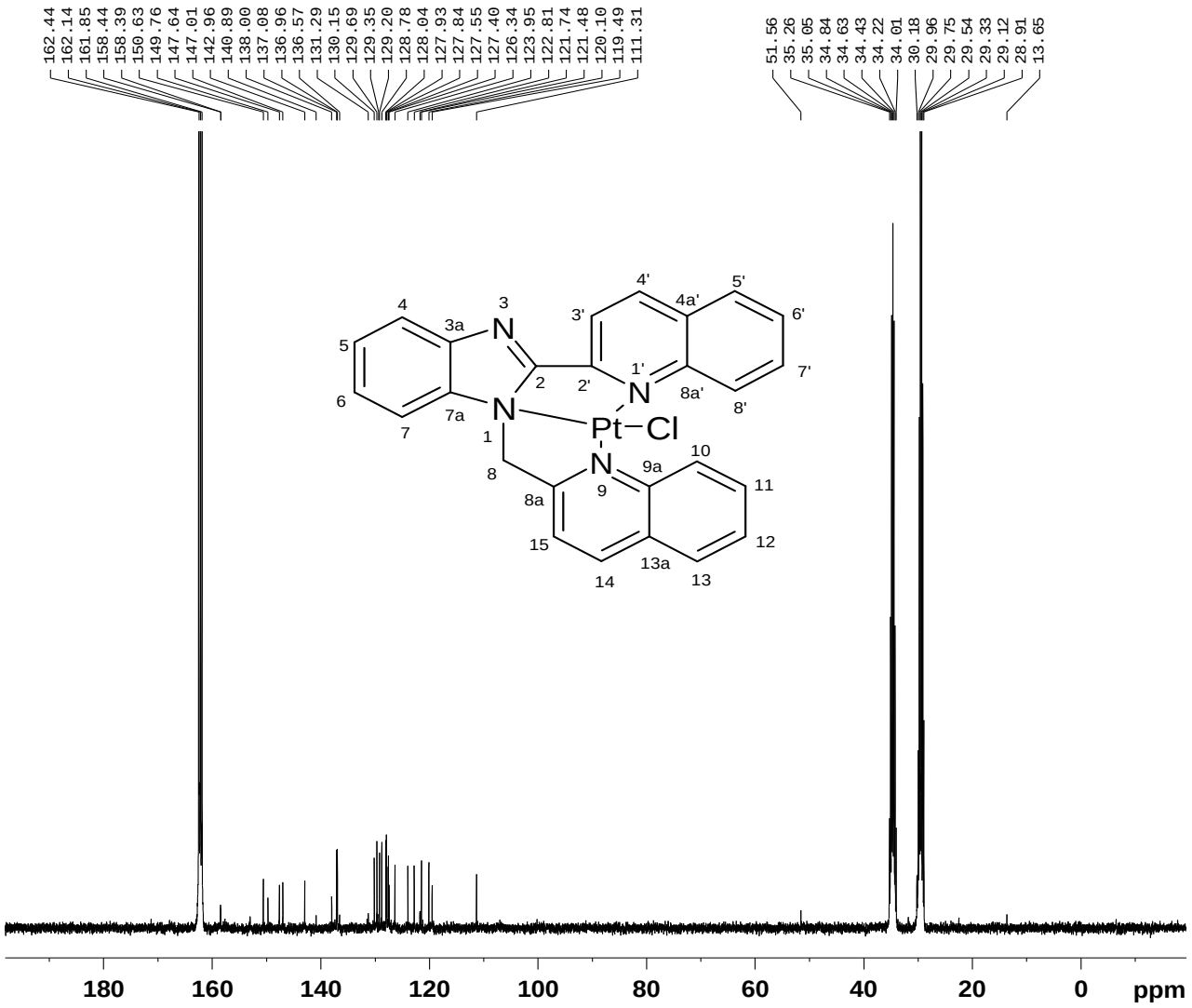


Figure 56: *^{13}C NMR Spectrum of 2-quinolyl-1-quinolylethyl-1H-benzimidazole Pt (II) complex in DMF (**60**)*

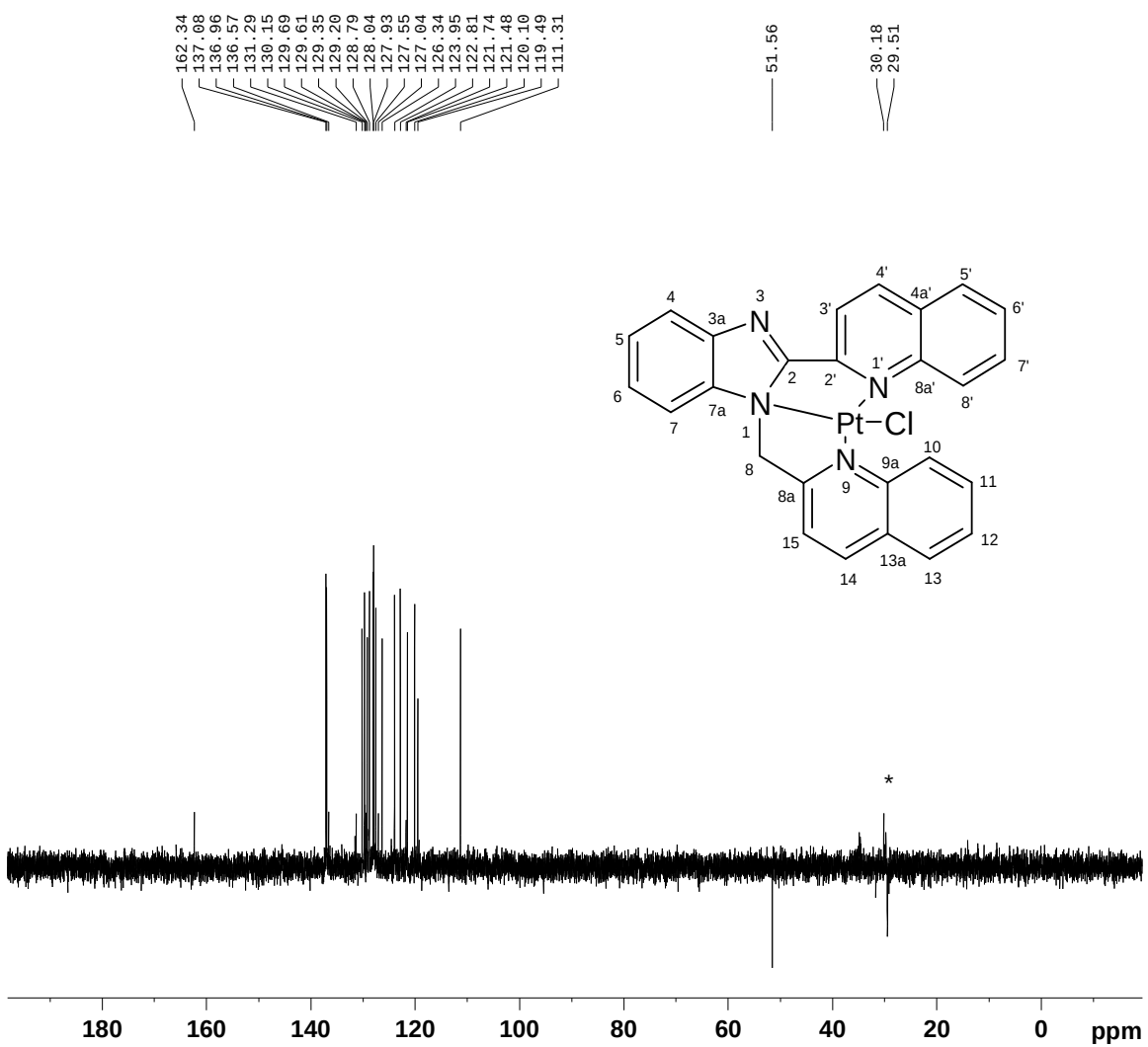


***Figure 57**: Dept 135 Spectrum of 2-quinolyl-1-quinolylethyl-1H-benzimidazole Pt (II) complex in DMF (**60**)*

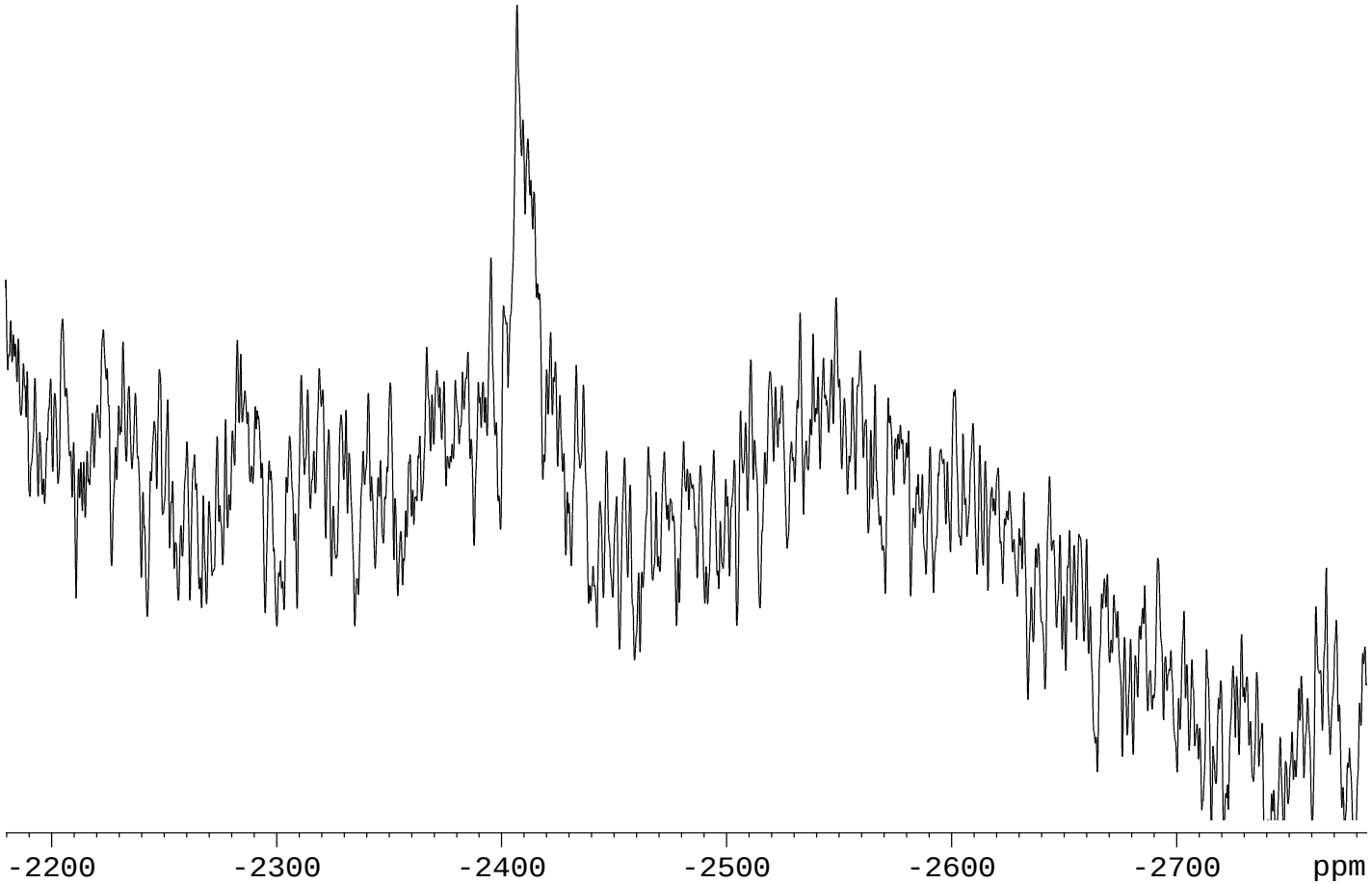


Figure 58: *^{195}Pt NMR Spectrum of 2-quinolyl-1-quinolylethyl-1H-benzimidazole Pt (II) complex in DMF (**60**)*

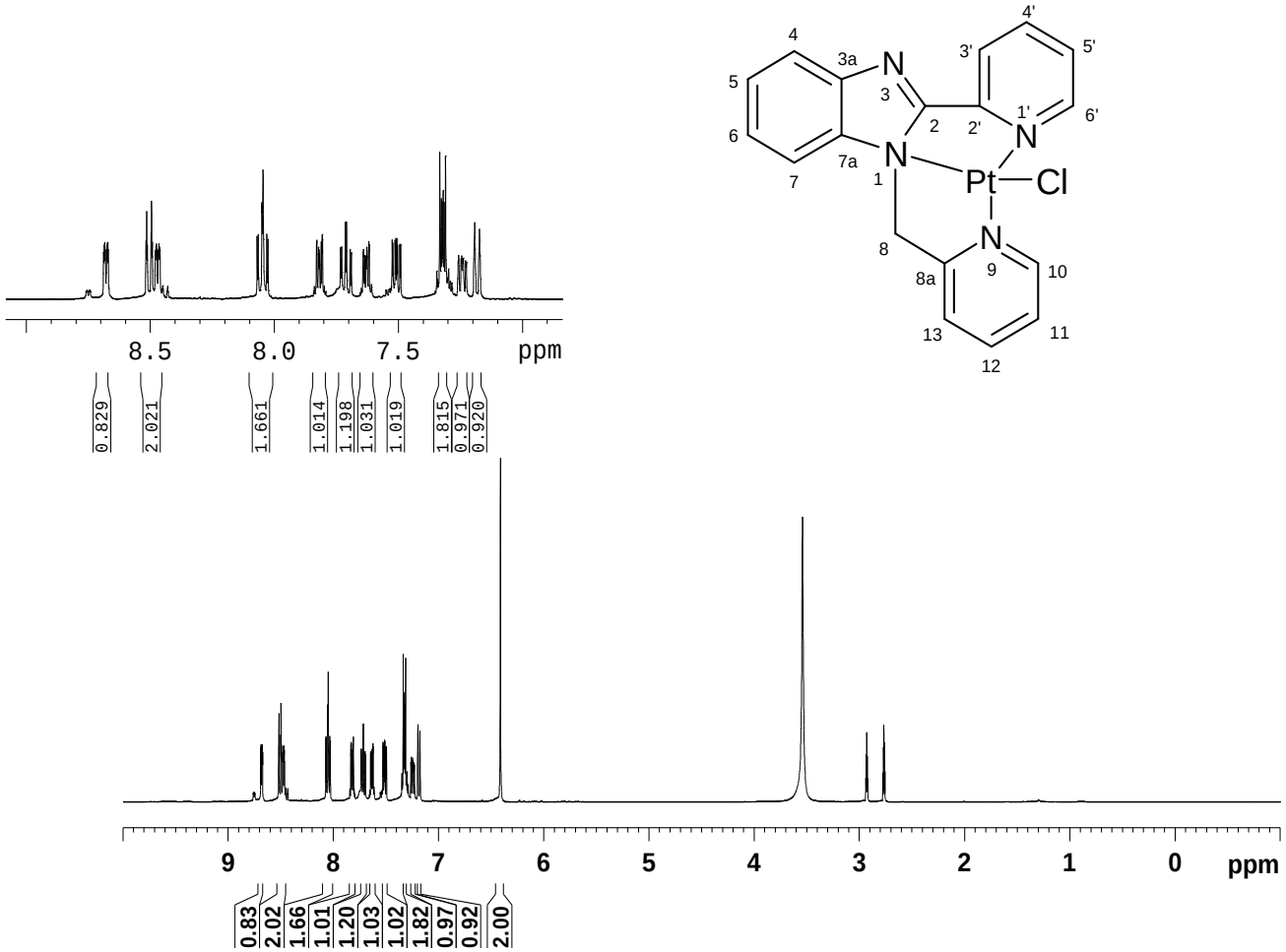


Figure 59: *^{1}H NMR Spectrum of 2-Pyridyl-1-pyridylmethyl-1H-benzimidazole Pt (II) complex in DMF* ***(63)***

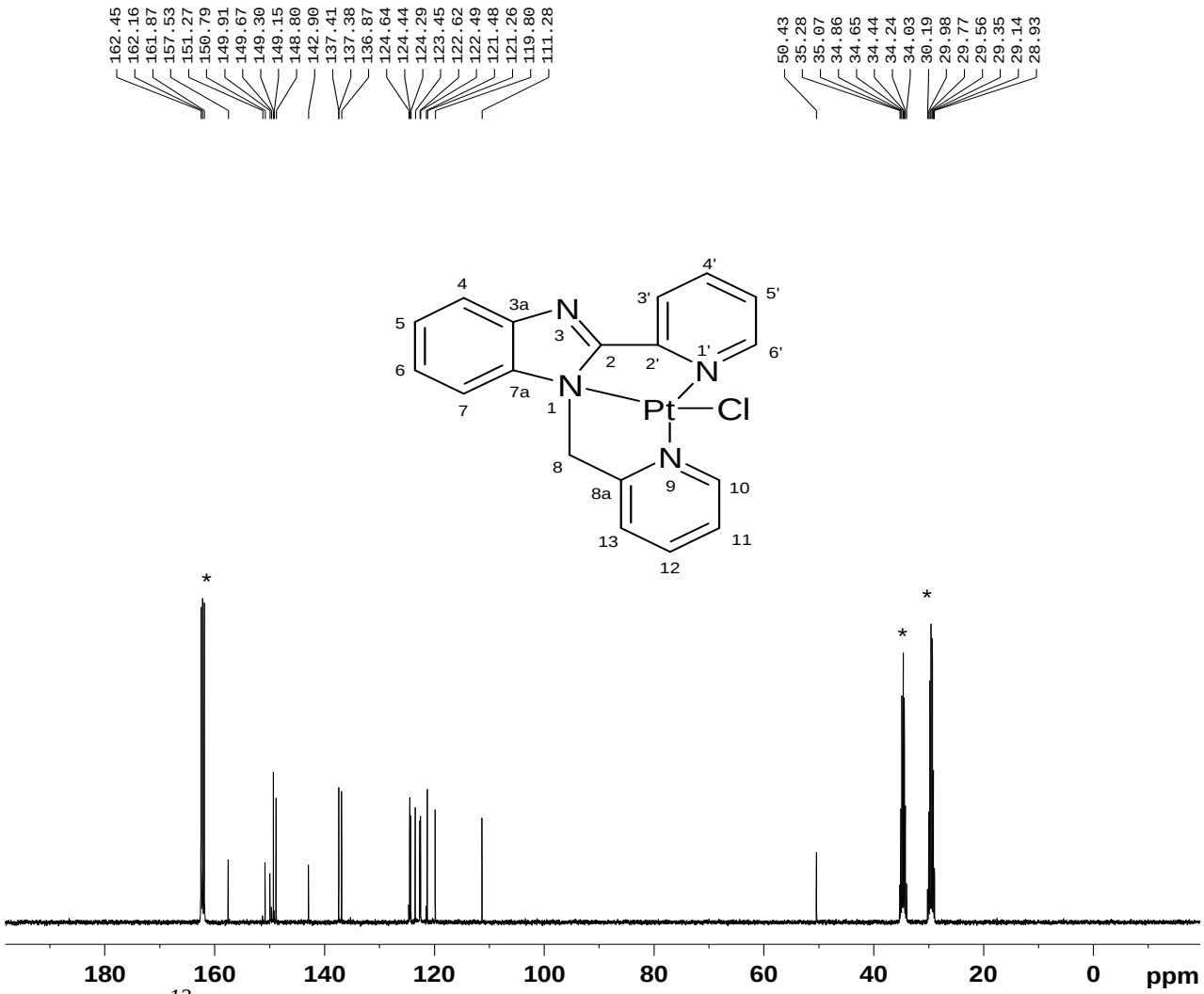


***Figure 60**: [13]C NMR Spectrum of 2-Pyridyl-1-pyridylmethyl-1H-benzimidazole Pt (II) complex in DMF (**63**)*[*]

[*] Solvent: DMF

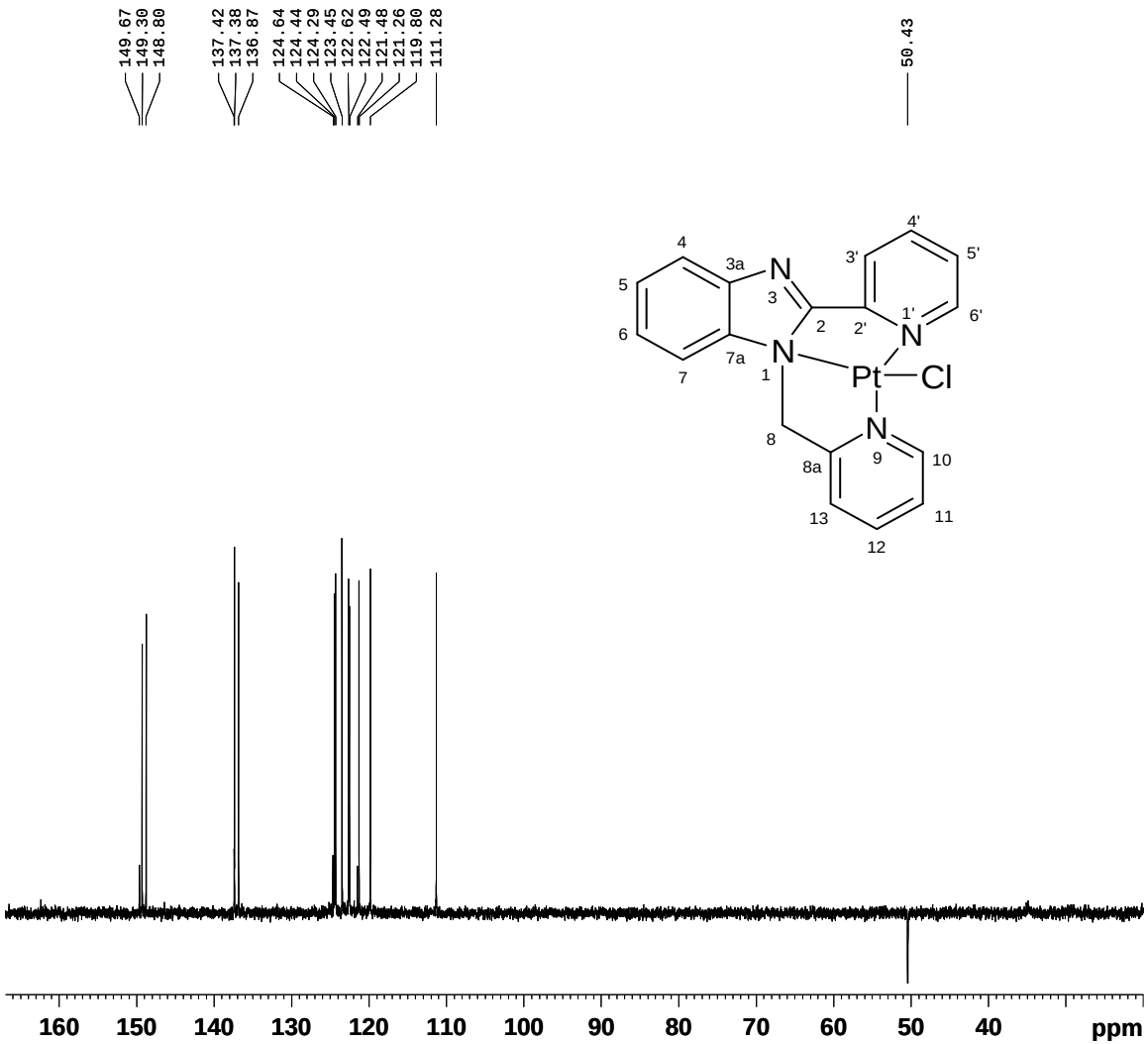


Figure 61: *Dept 135 Spectrum of 2-Pyridyl-1-pyridylmethyl-1H-benzimidazole Pt (II) complex in DMF (**63**)*

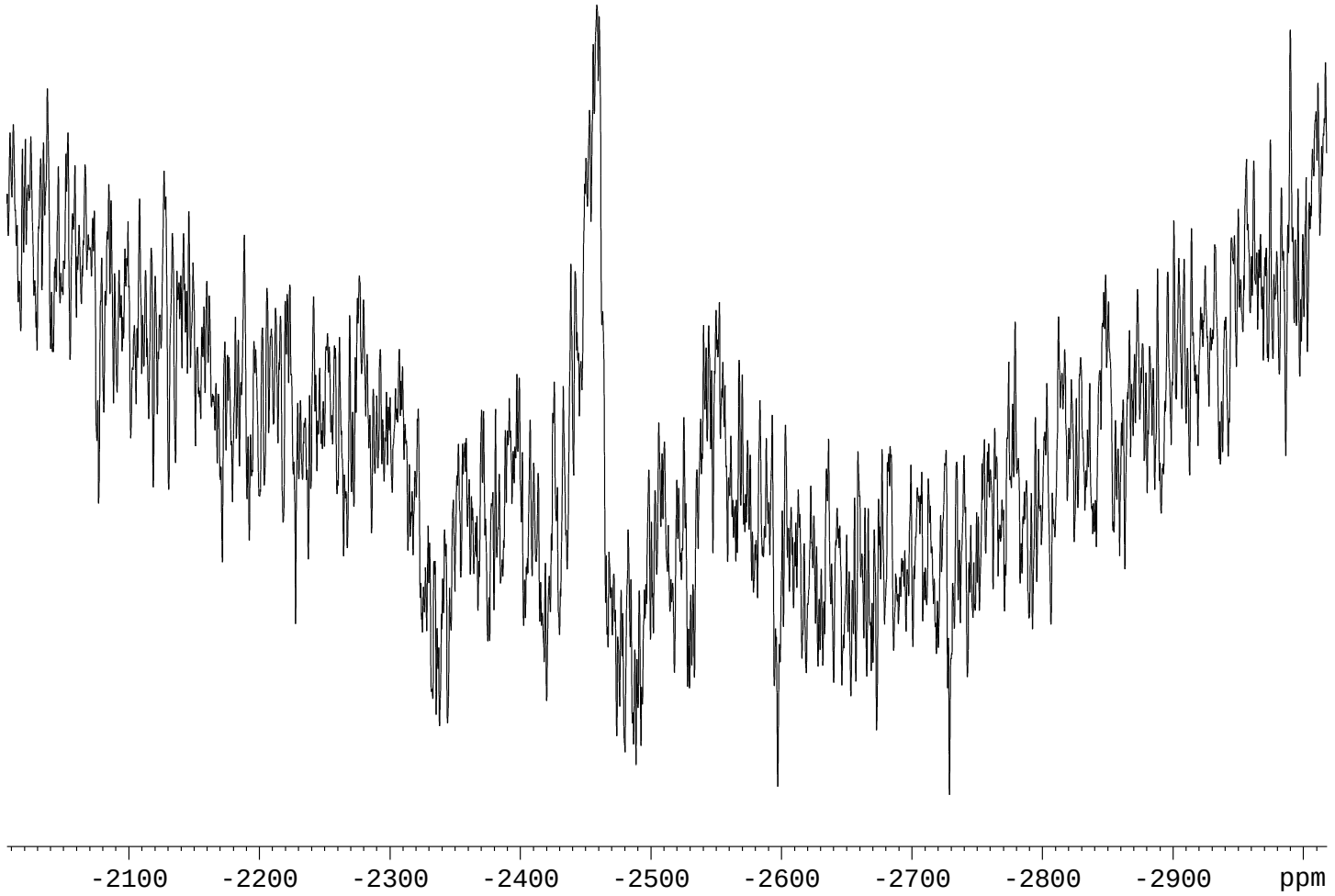


Figure 62: *^{195}Pt NMR Spectrum of 2-Pyridyl-1-pyridylmethyl-1H-benzimidazole Pt (II) complex in DMF (**63**)*

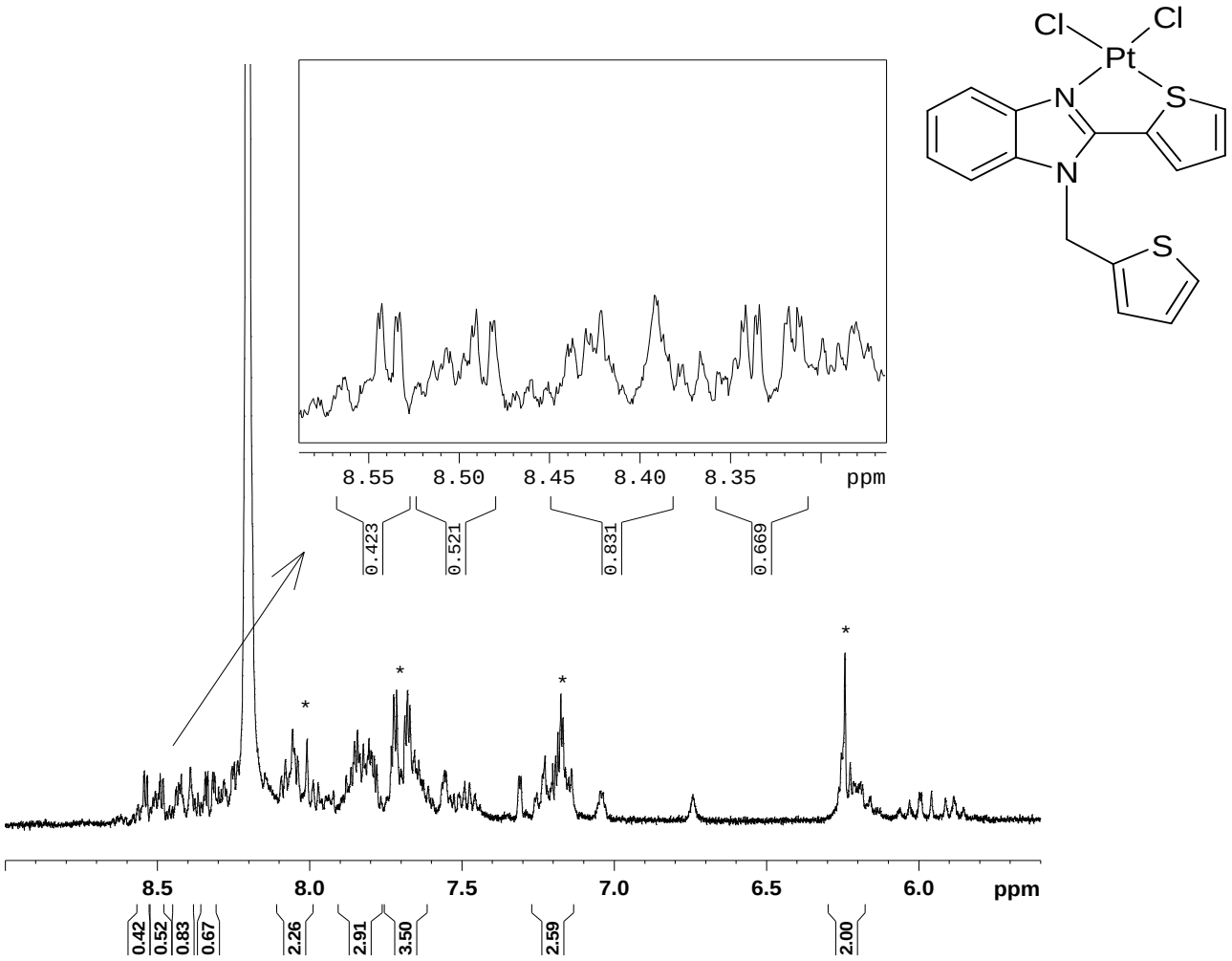


Figure 63: *^{1}H NMR Spectrum of 2-thienyl-1-thienylmethyl-1H-benzimidazole Pt (II) complex (**64**)*[*]

[*] Ligand peaks

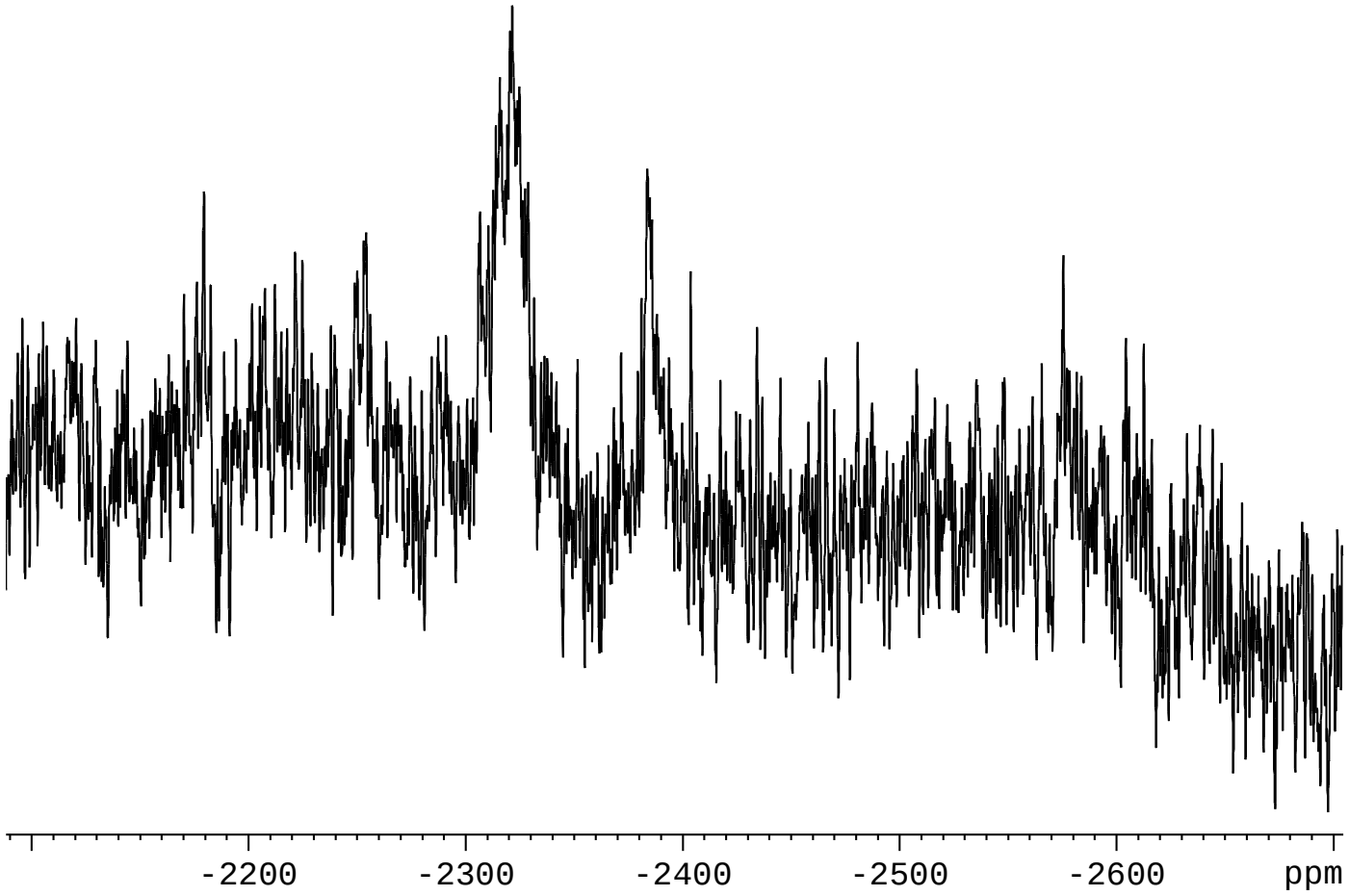


Figure 64: *^{195}Pt NMR Spectrum of 2-thienyl-1-thienylmethyl-1H-benzimidazole Pt (II) complex (**64**)*