

Supplementary Material

Metal-free approach for one-pot synthesis of 3-aryl-furo[3,2-c]coumarins

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¹ Department of Advanced Organic Chemistry, P. D. Patel Institute of Applied Sciences,
Charotar University of Science and Technology, Gujarat 388421, India.

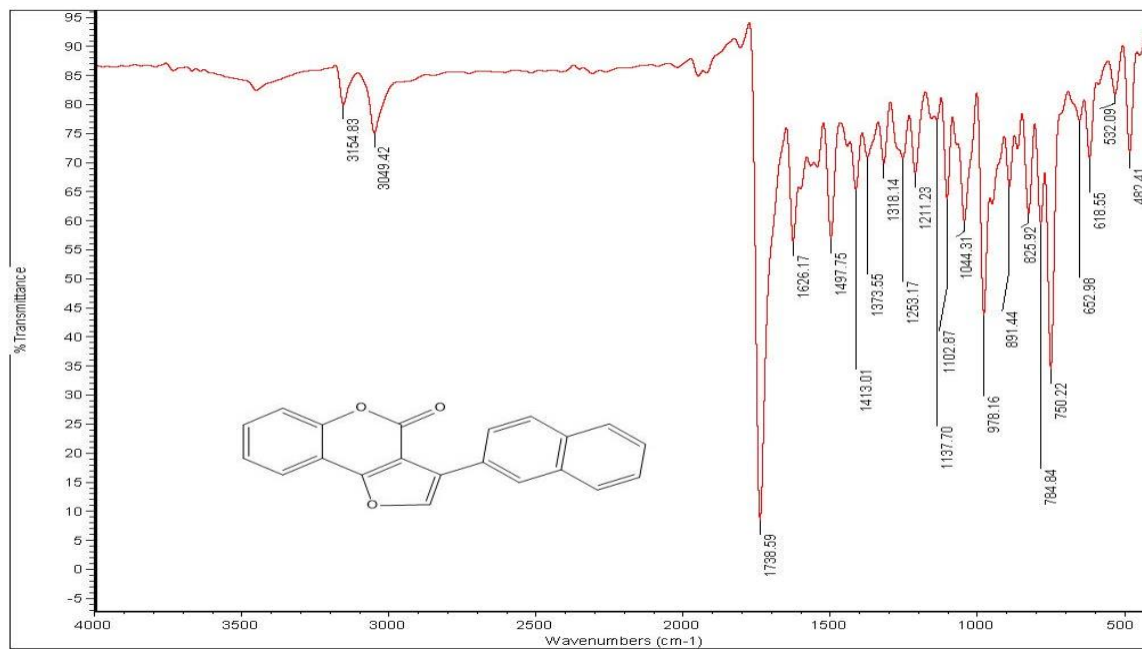
Email: kaus_chem@yahoo.com

Table of Contents

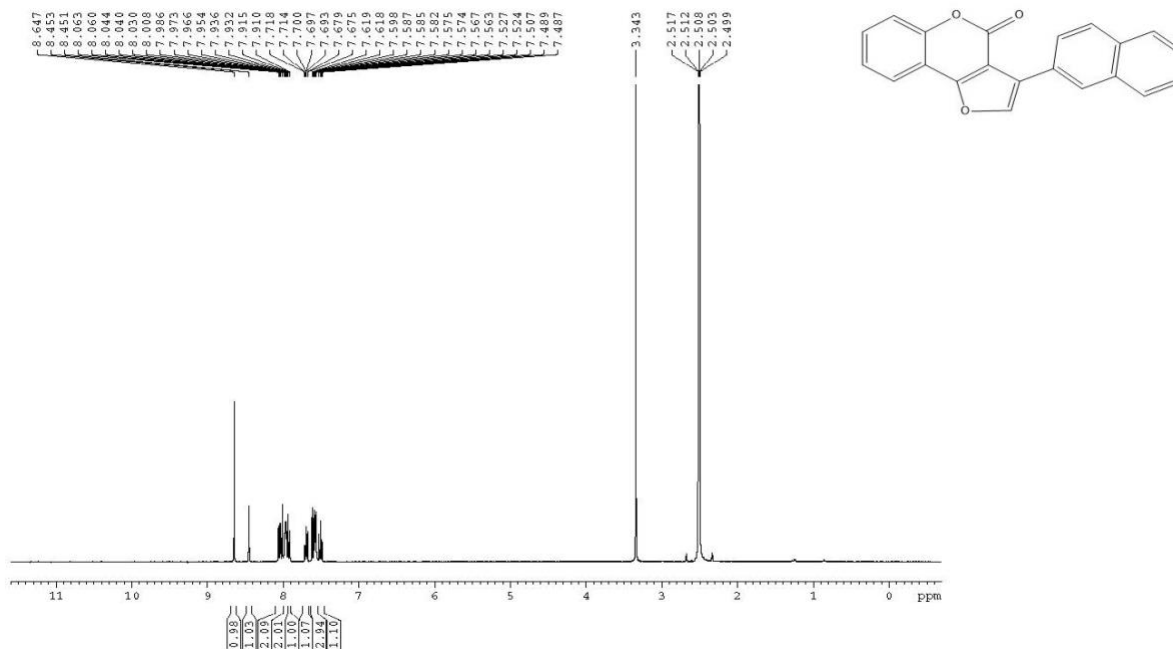
1. I.R. Spectra, ¹ H NMR, ¹³ C NMR, DEPT-90 and Mass spectra figures for 2a-2d	S2
2. I.R. Spectra, ¹ H NMR, ¹³ C NMR, DEPT-90 and Mass spectra figures for 3a-3d	S20
3. I.R. Spectra, ¹ H NMR, ¹³ C NMR, DEPT-90 and Mass spectra figures for 4a-4d	S37

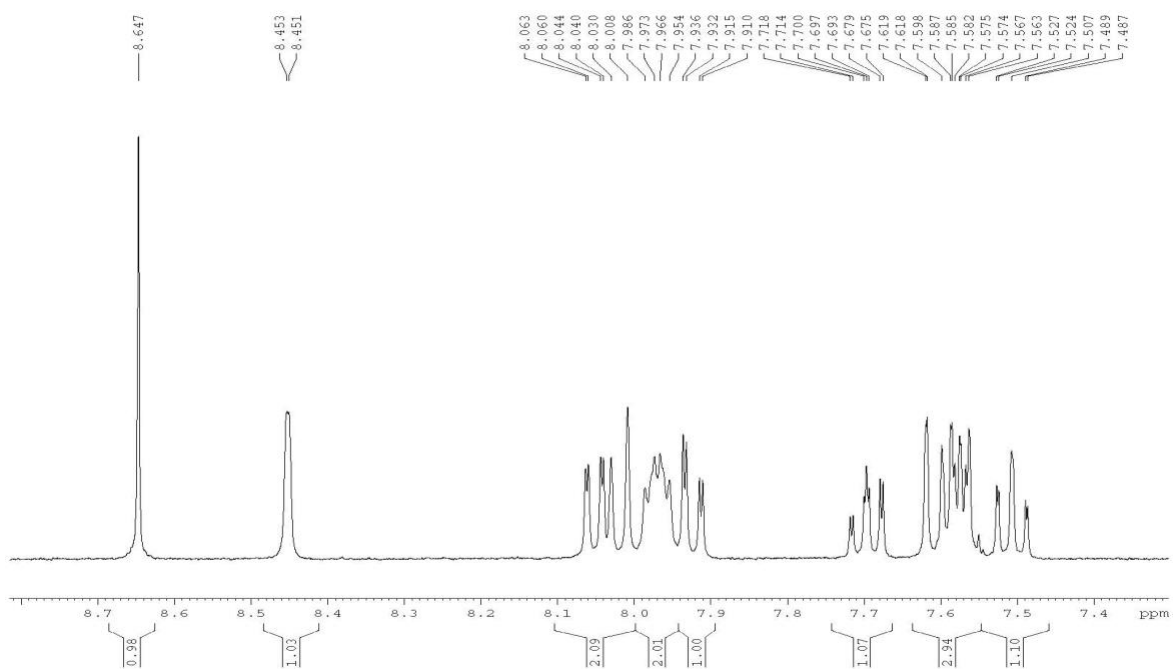
Compound 2a

Infrared Spectra

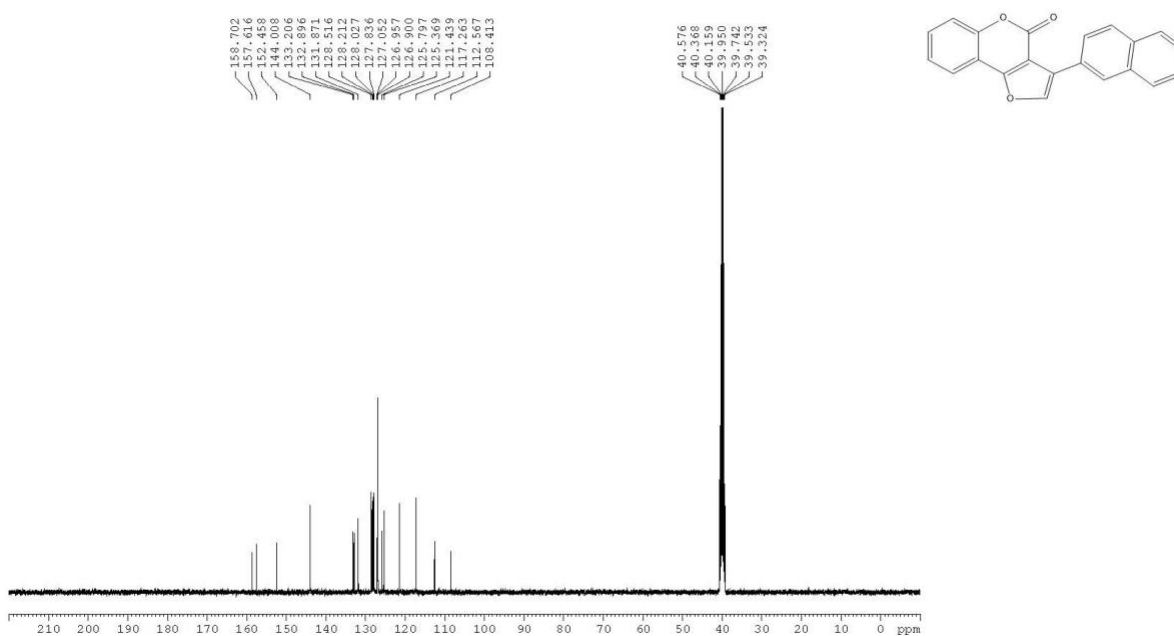


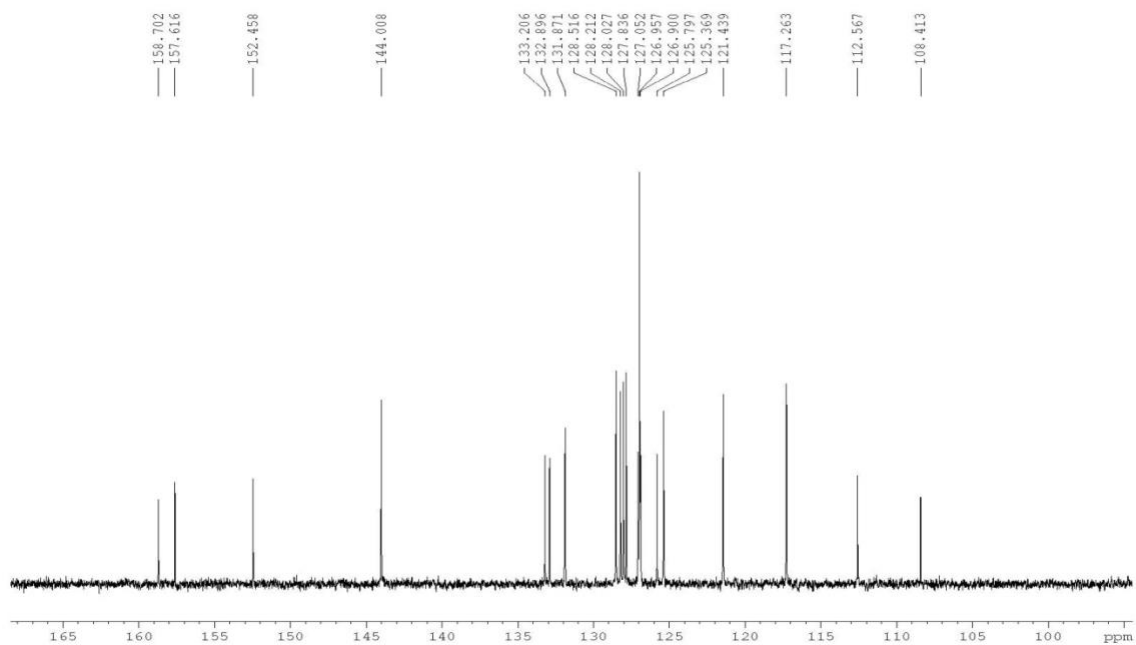
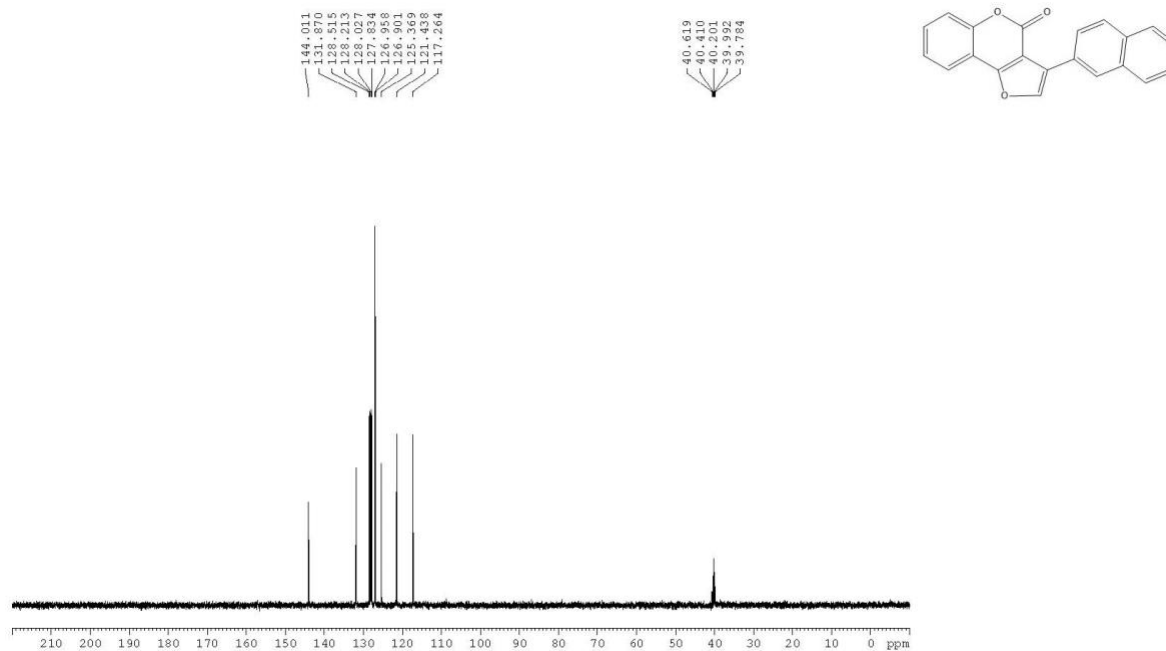
Compound 2a

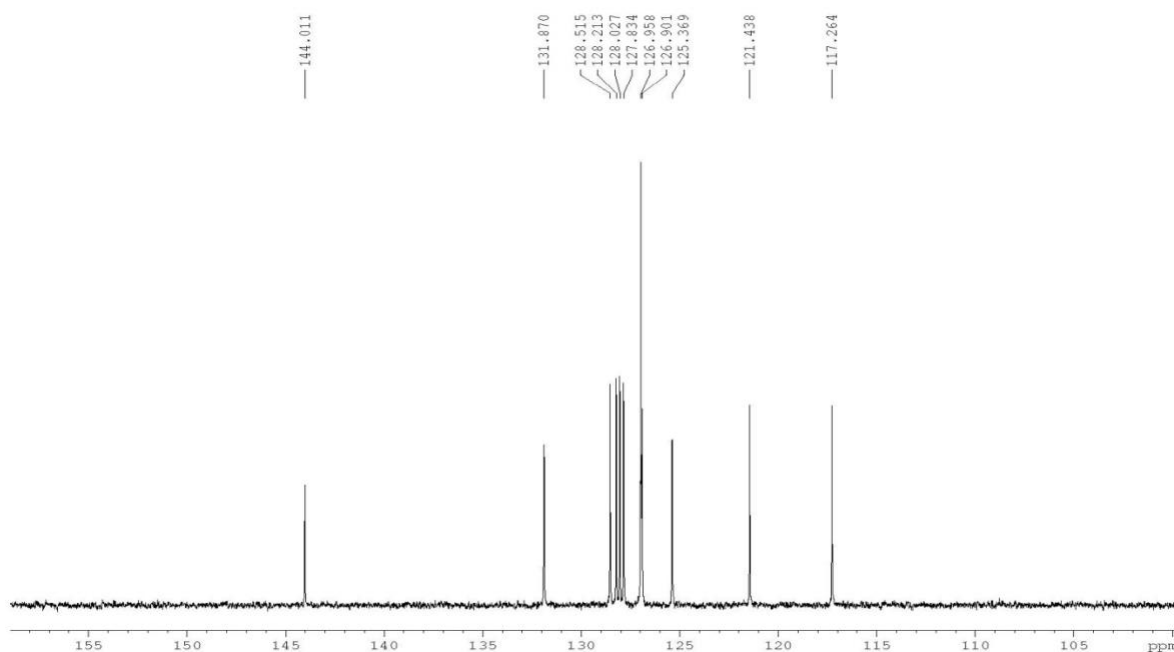
¹H NMR spectra



Compound 2a

¹³C NMR spectra

**Compound 2a****DEPT-90 spectra**



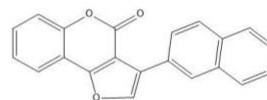
Compound 2a

Mass spectra

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Sample Information

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Analyzed : 2/3/2015 4:07:51 PM
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Sample ID : M-8
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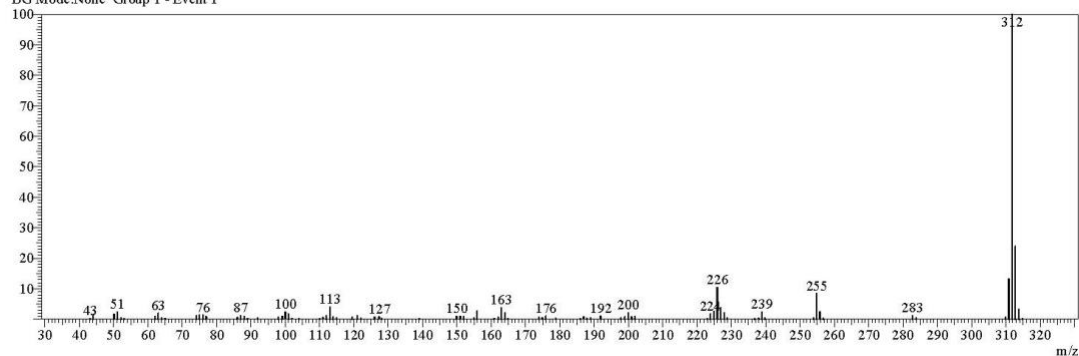


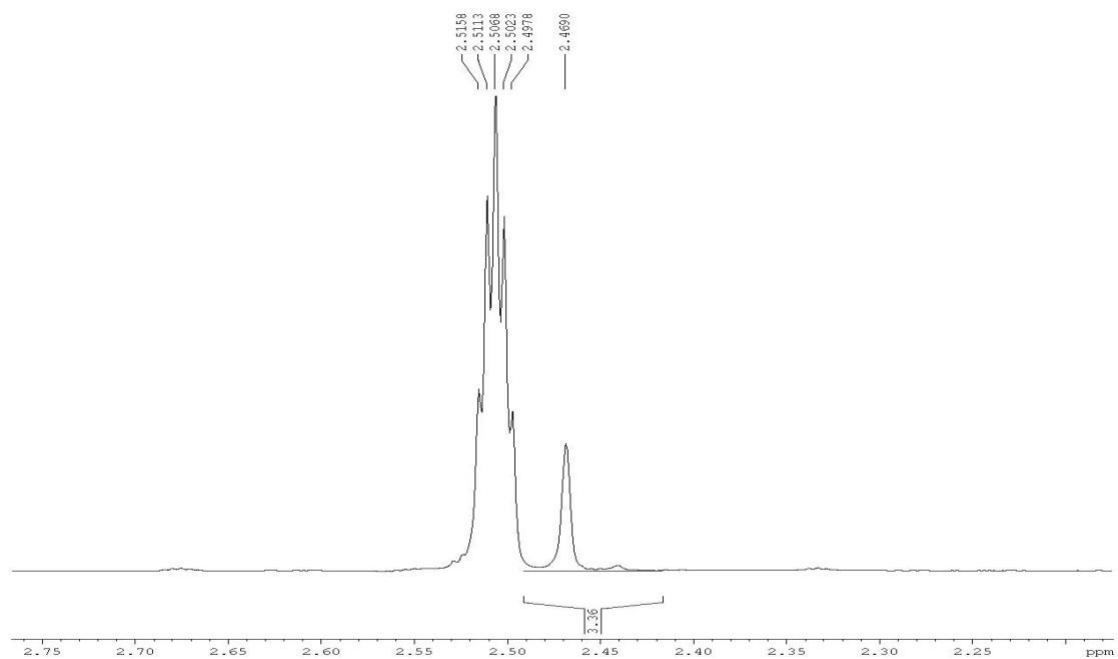
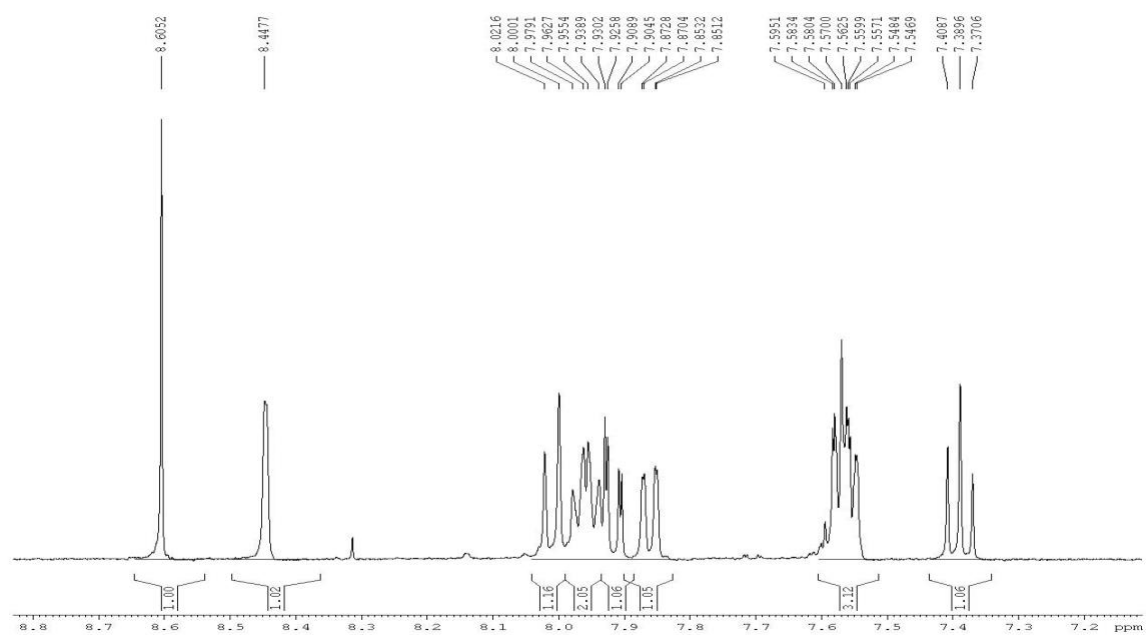
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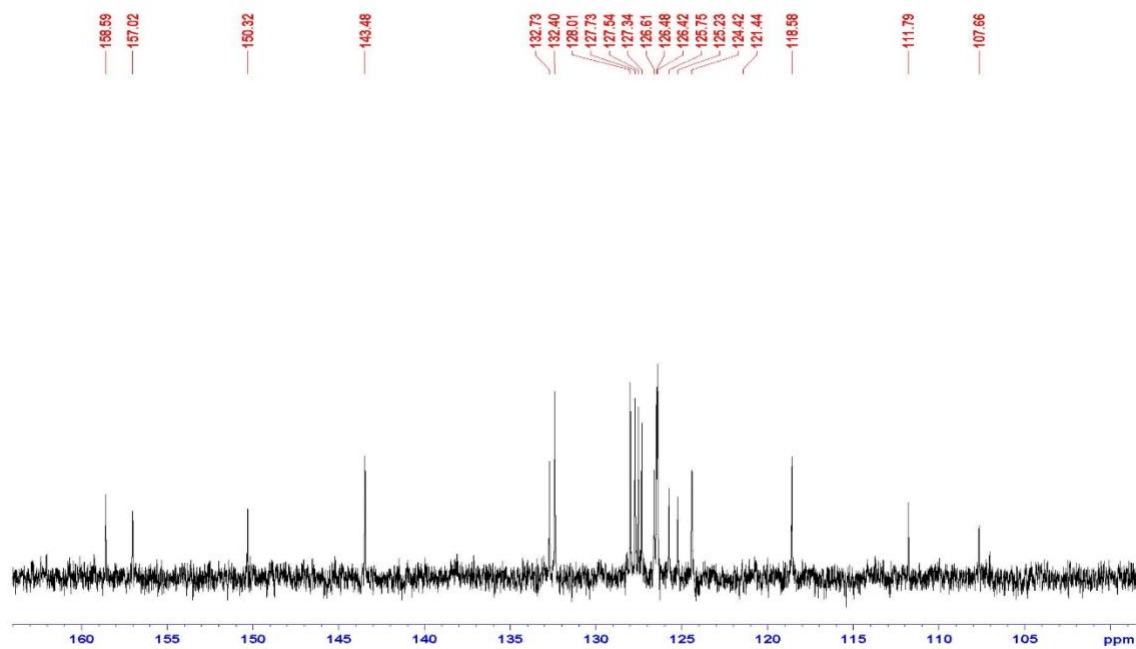
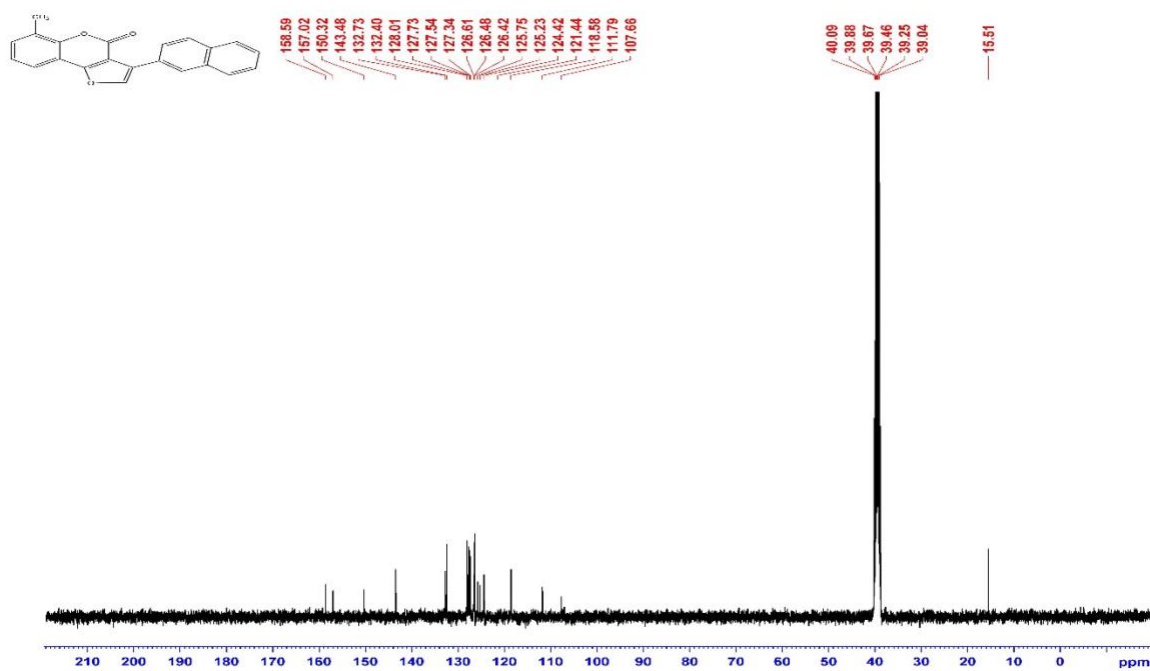
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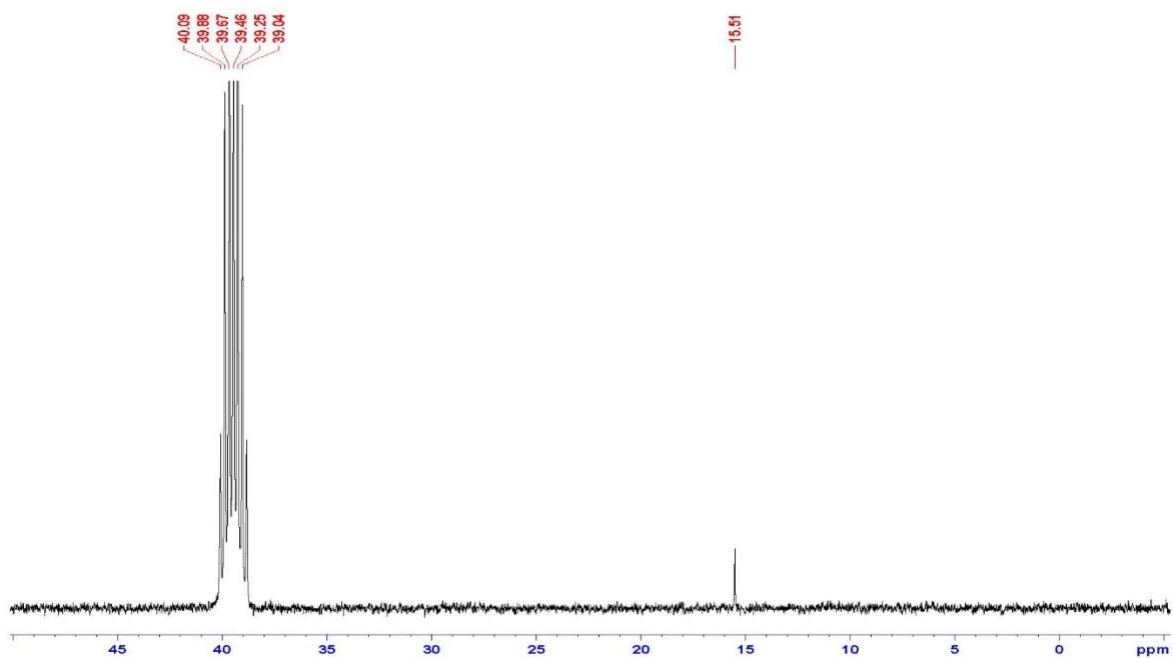
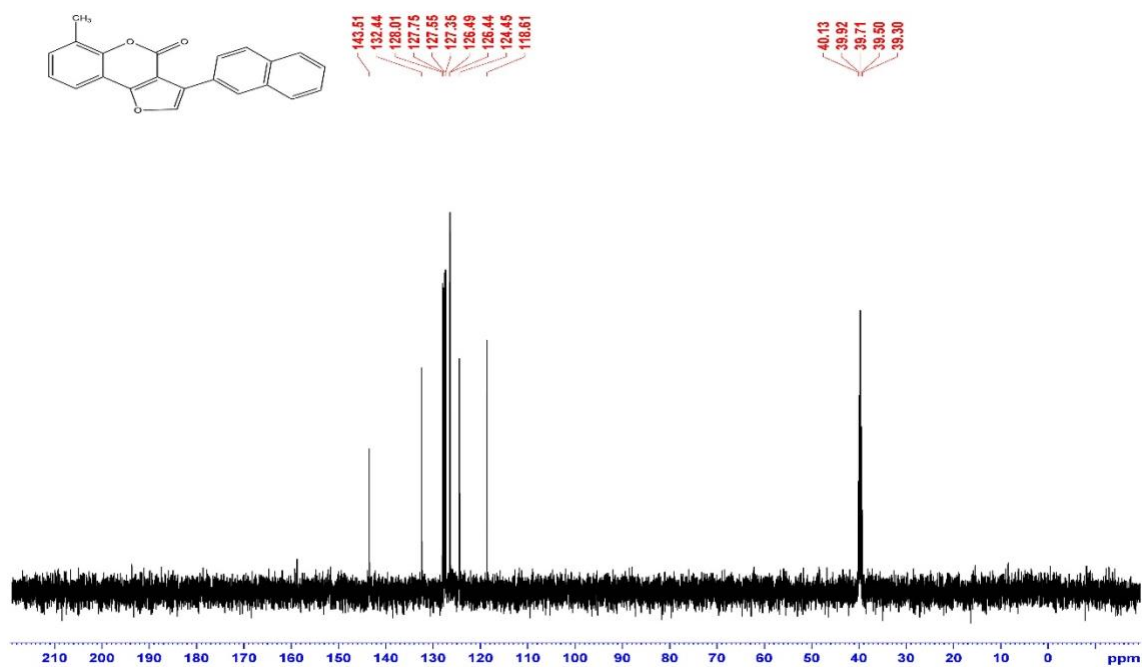
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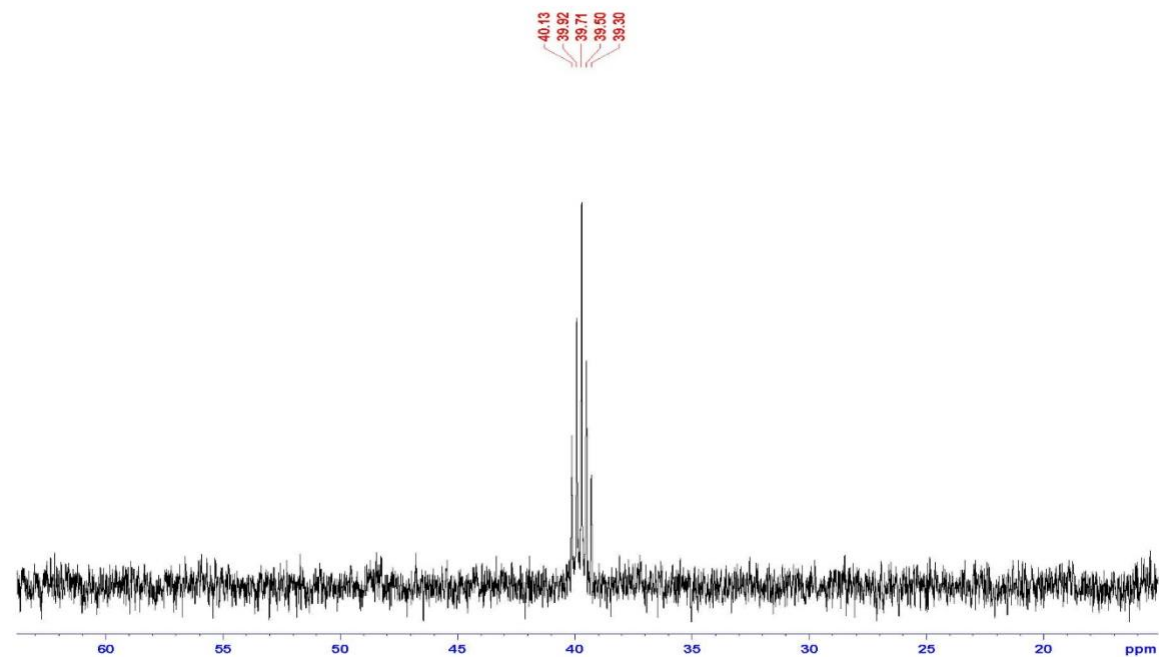
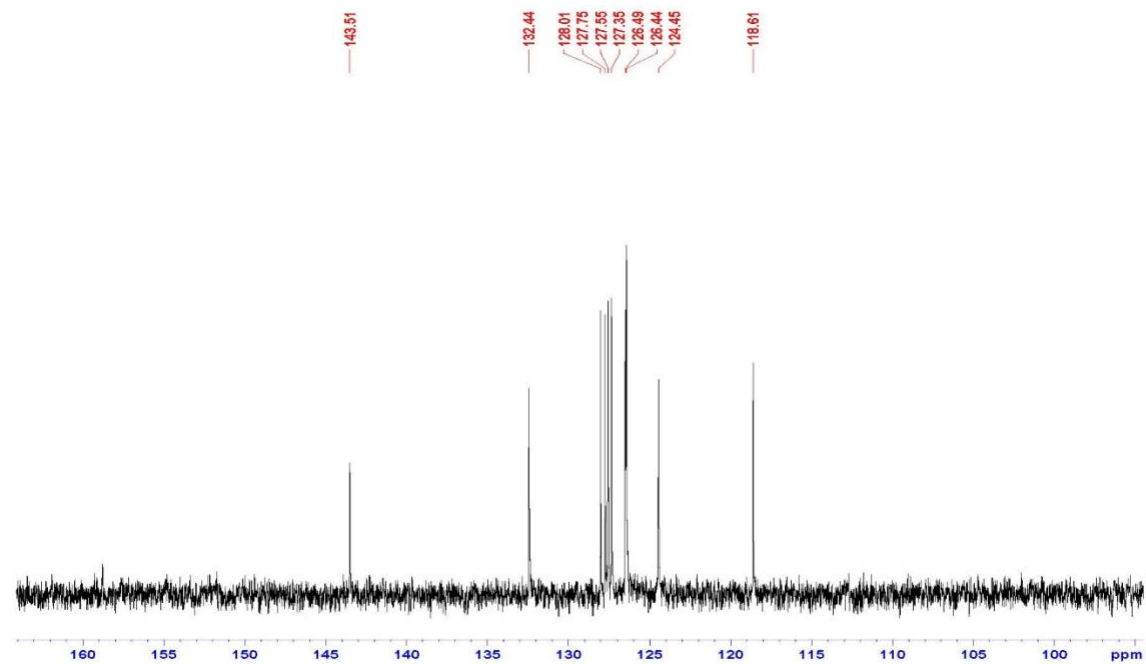




Compound 2b

 ^{13}C NMR spectra

**Compound 2b****DEPT-90 spectra**



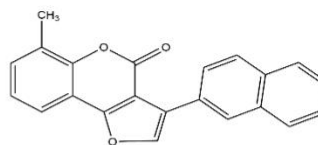
Compound 2b

Mass spectra

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Sample Information

Analyzed by : BHOLA GAURAV
Analyzed : 23/2015 1:11:55 PM
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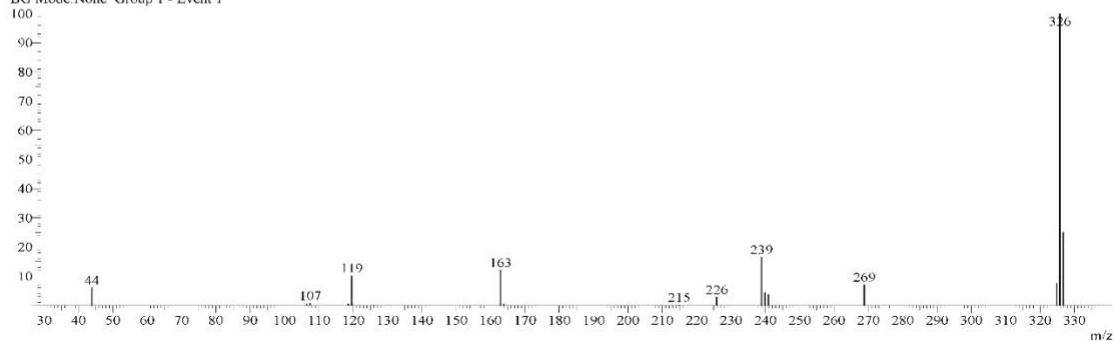


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MassPeaks: 18

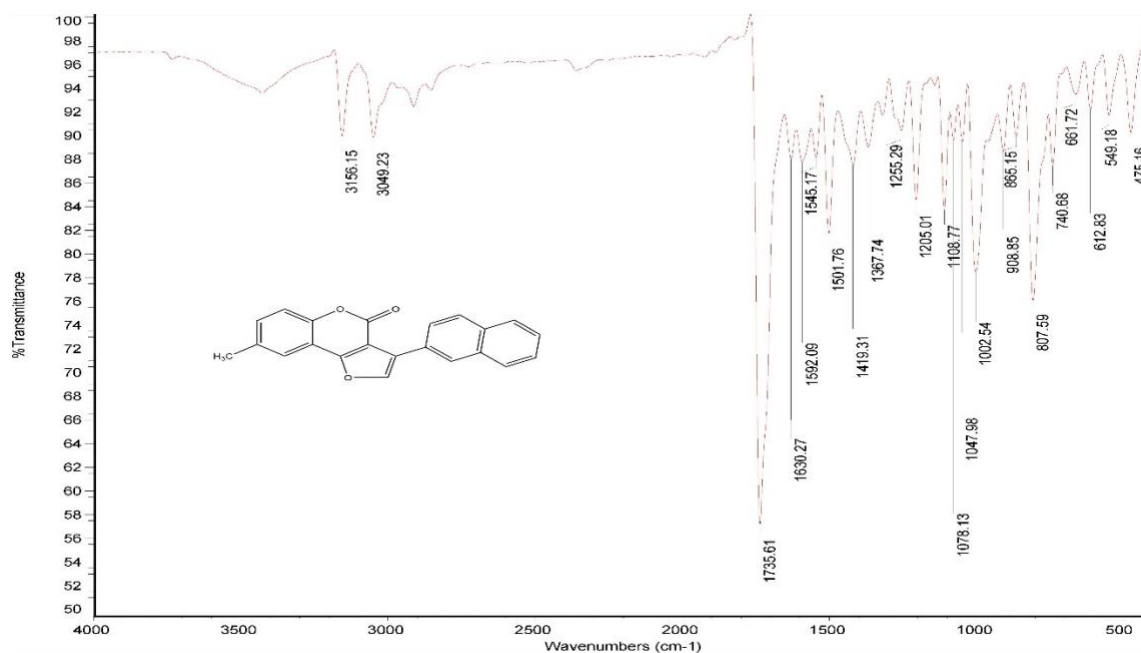
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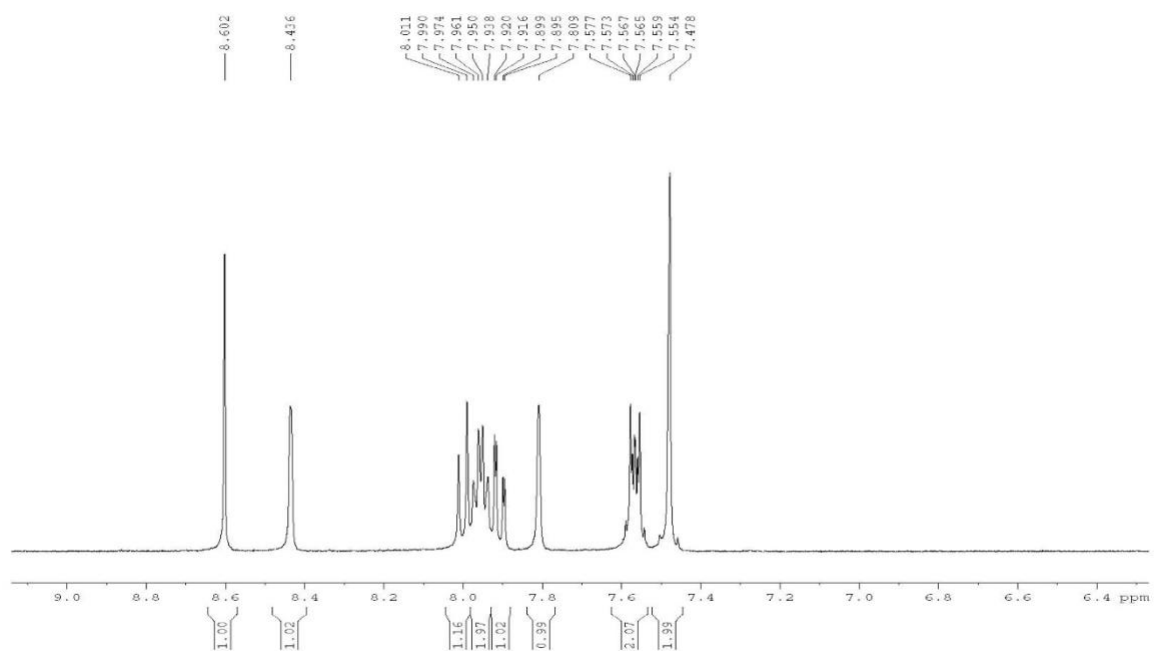
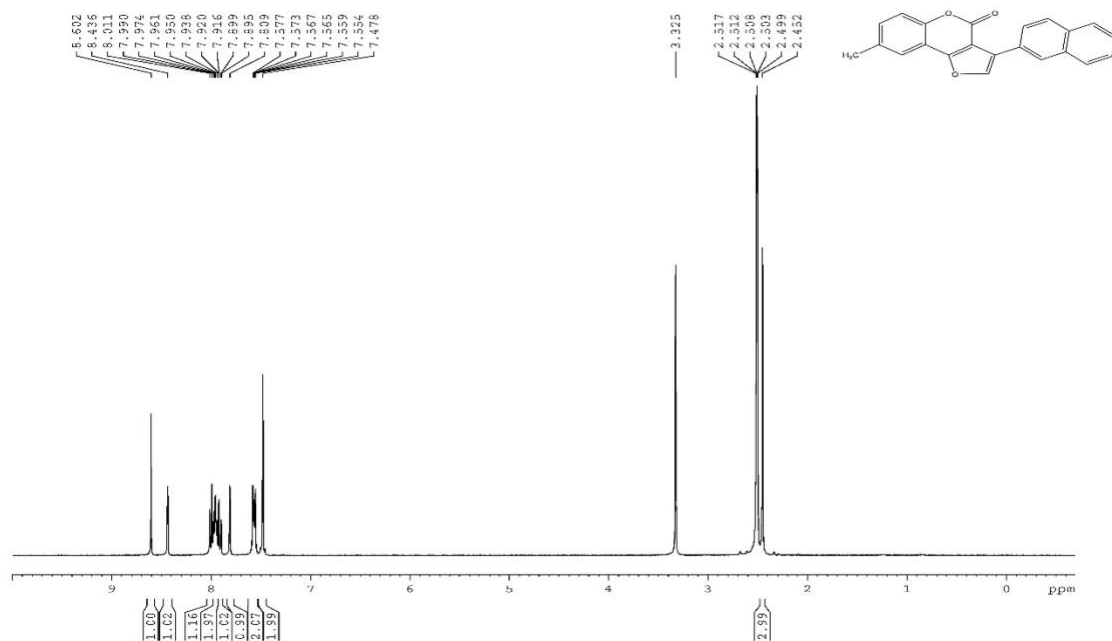


Compound 2c

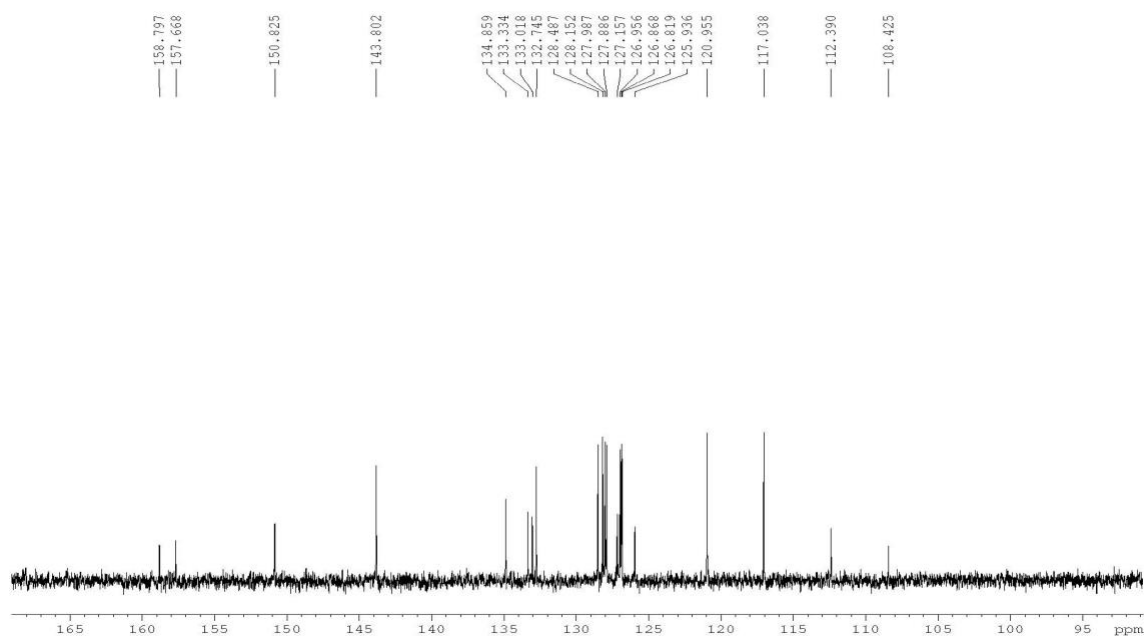
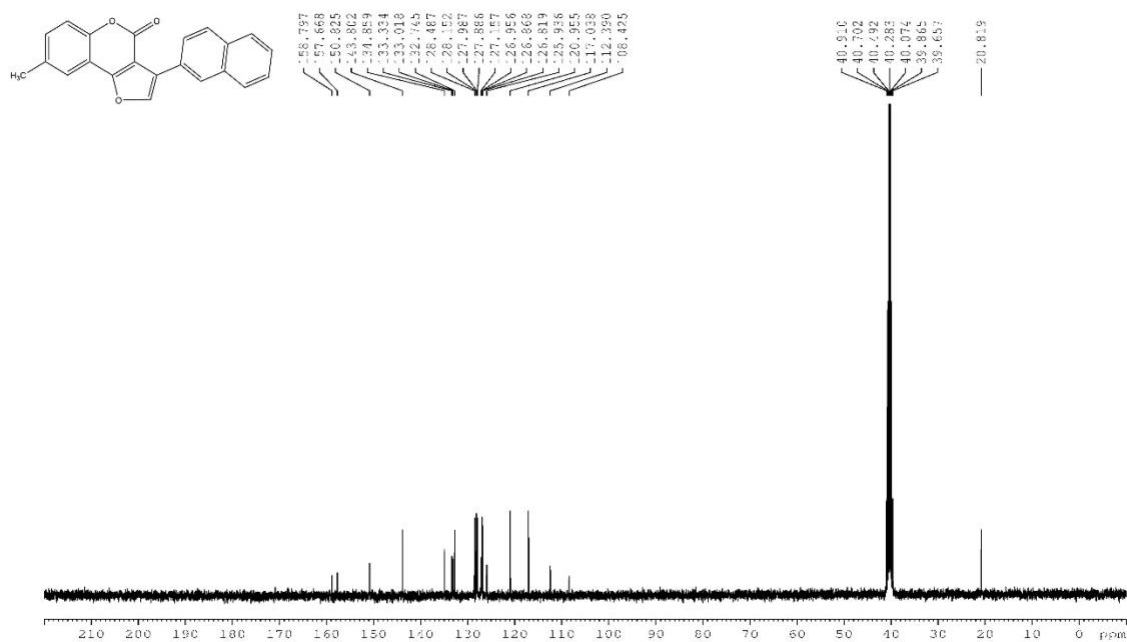
Infrared Spectra

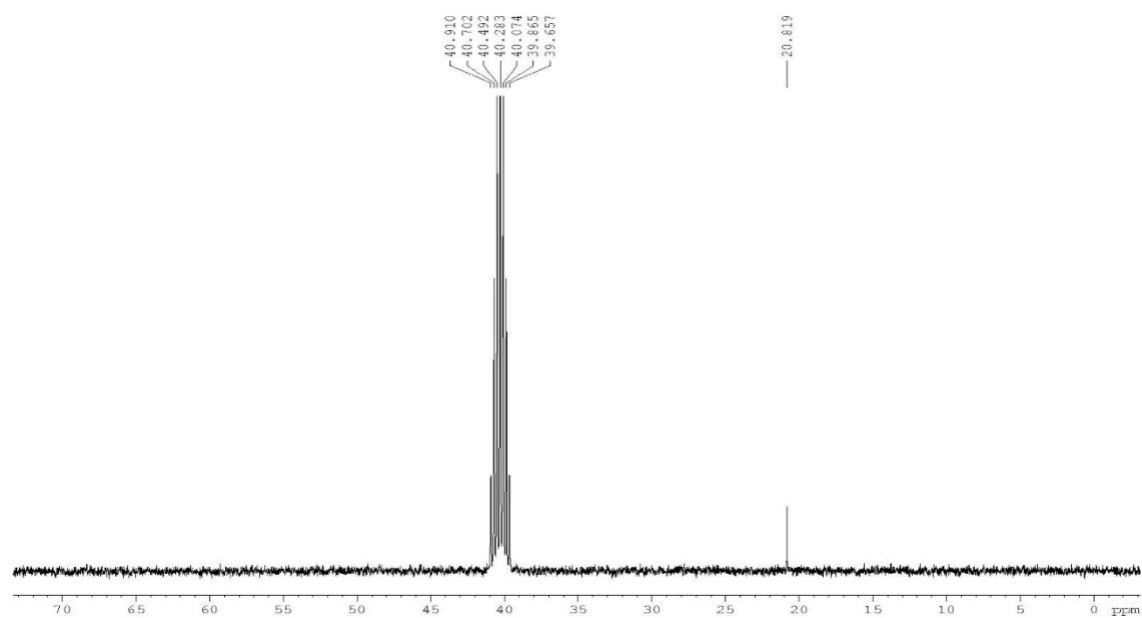
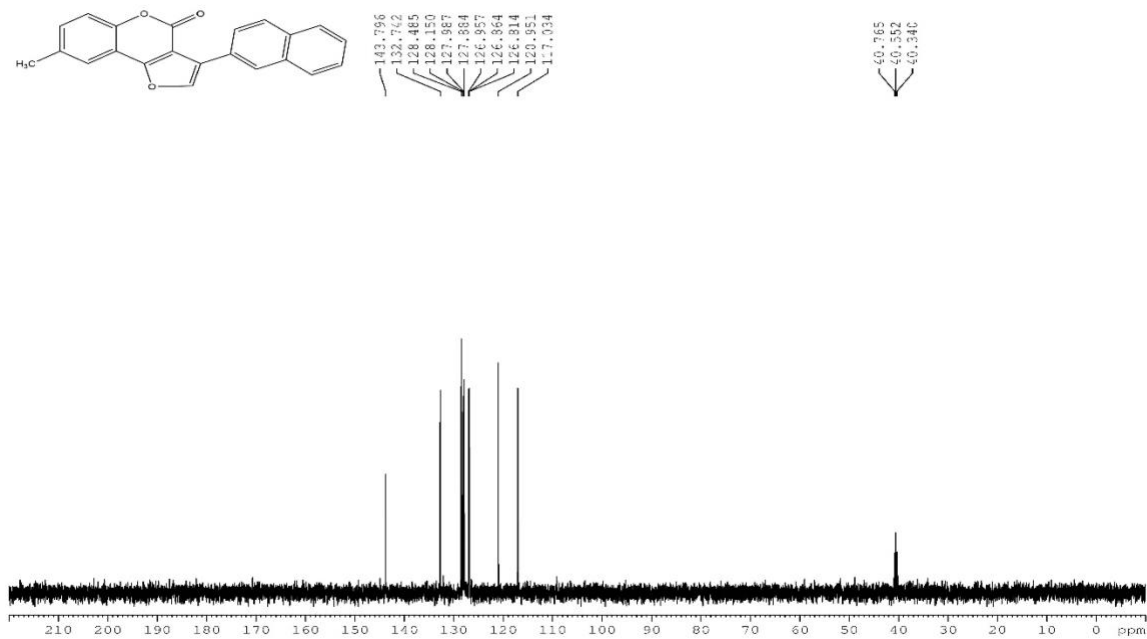


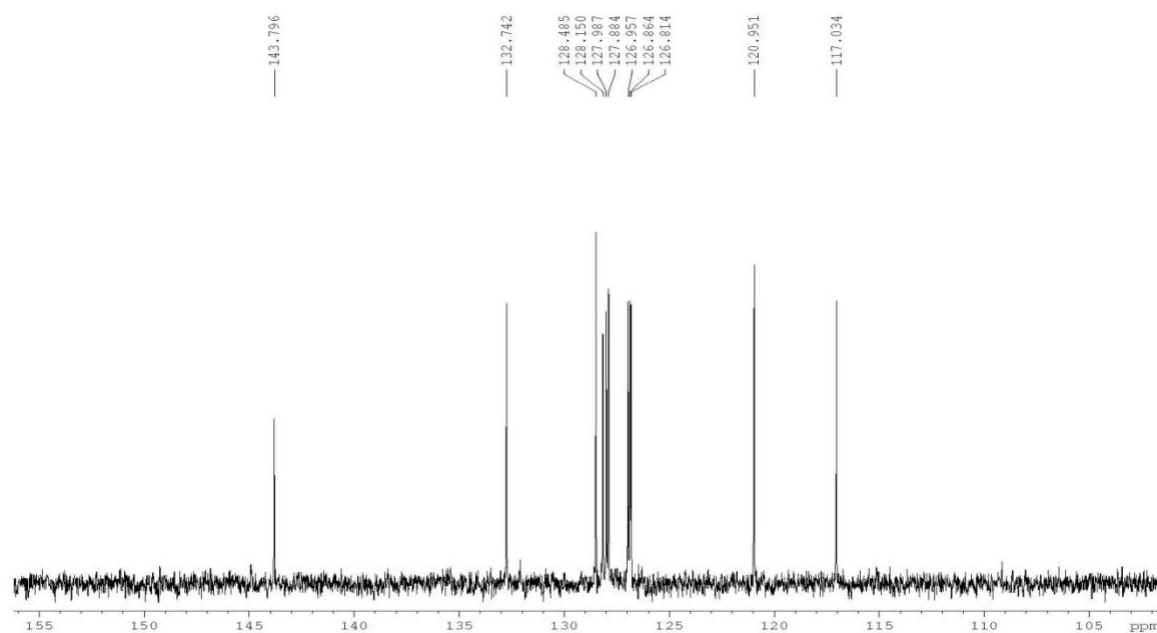
Compound 2c

 ^1H NMR spectra

Compound 2c

¹³C NMR spectra

**Compound 2c****DEPT-90 spectra**



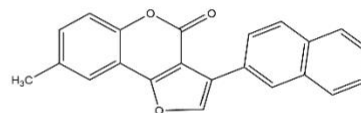
Compound 2c

Mass spectra

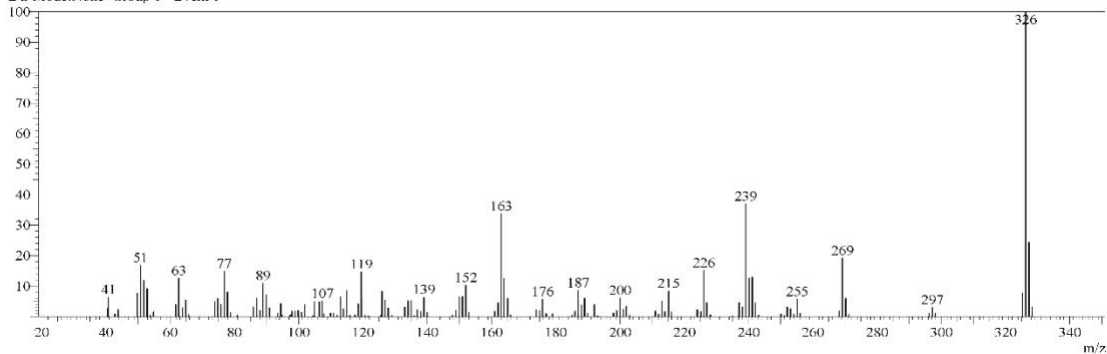
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Sample Information

Analyzed by : BHOLA GAURAV
Analyzed : 1/28/2015 4:21:57 PM
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Sample ID : M-9
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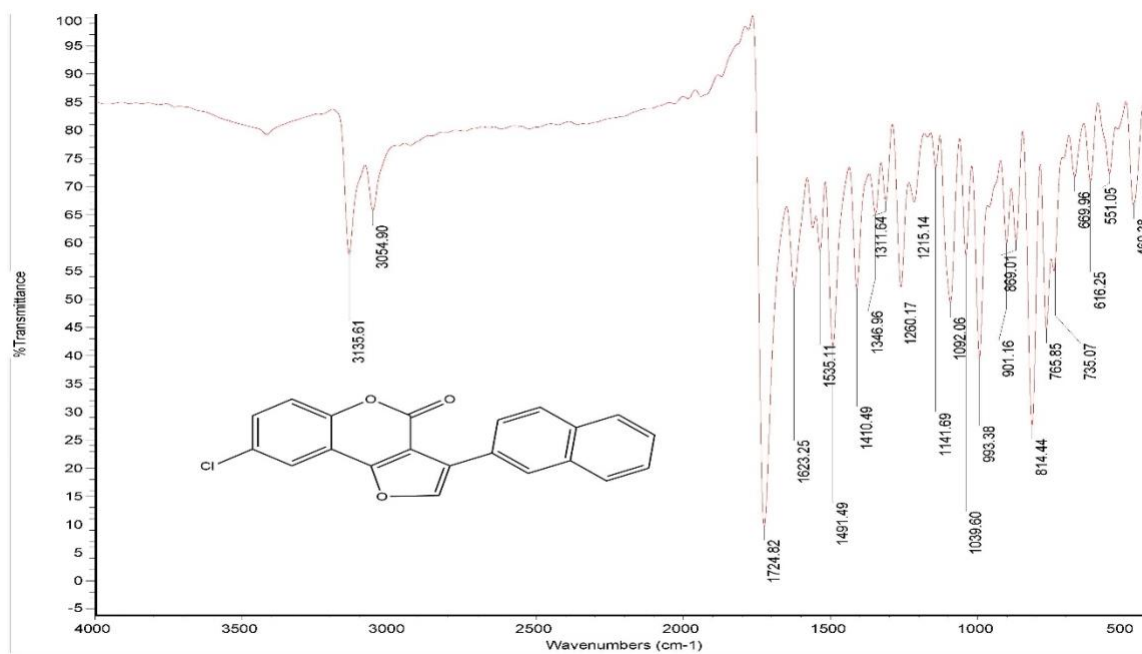


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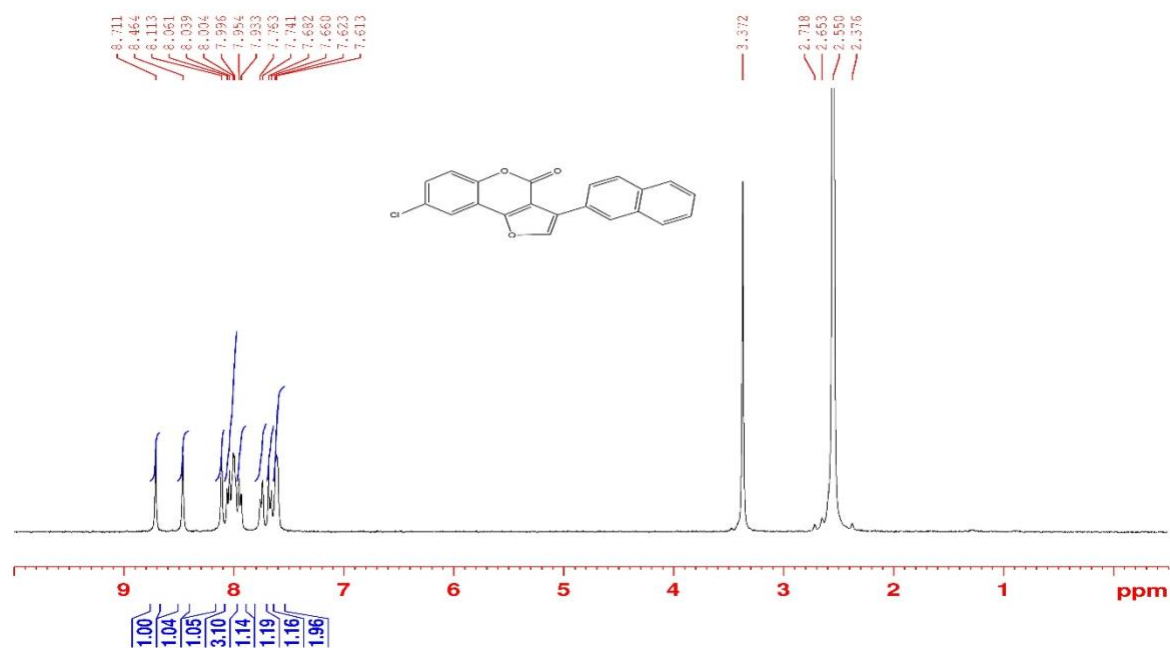


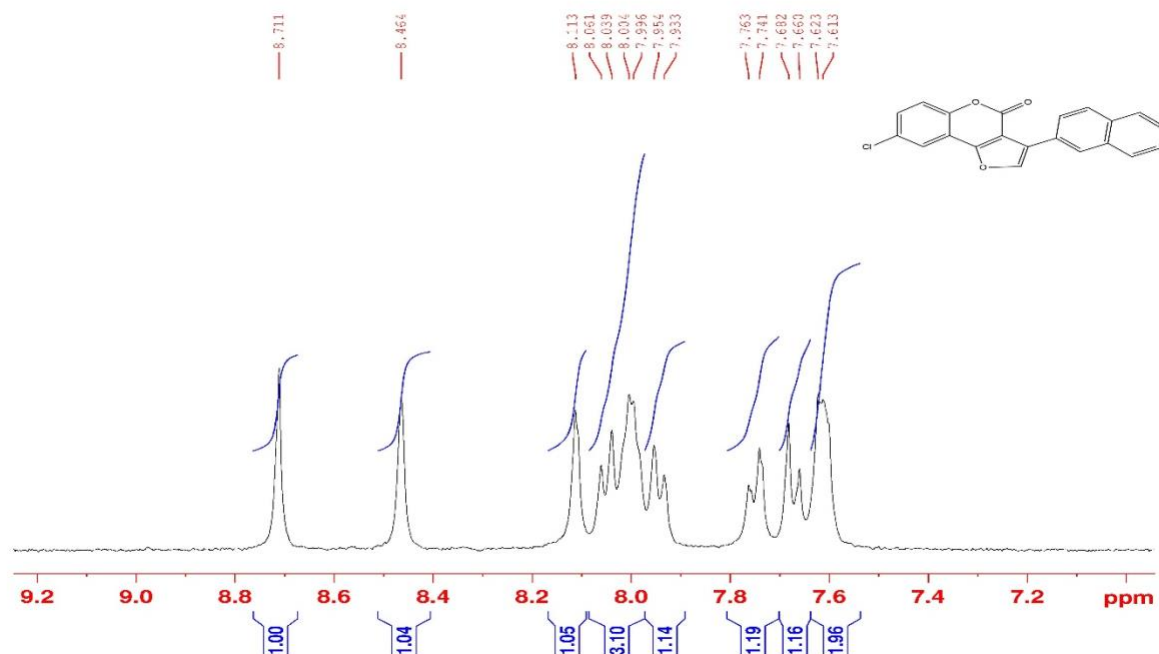
Compound 2d

Infrared Spectra

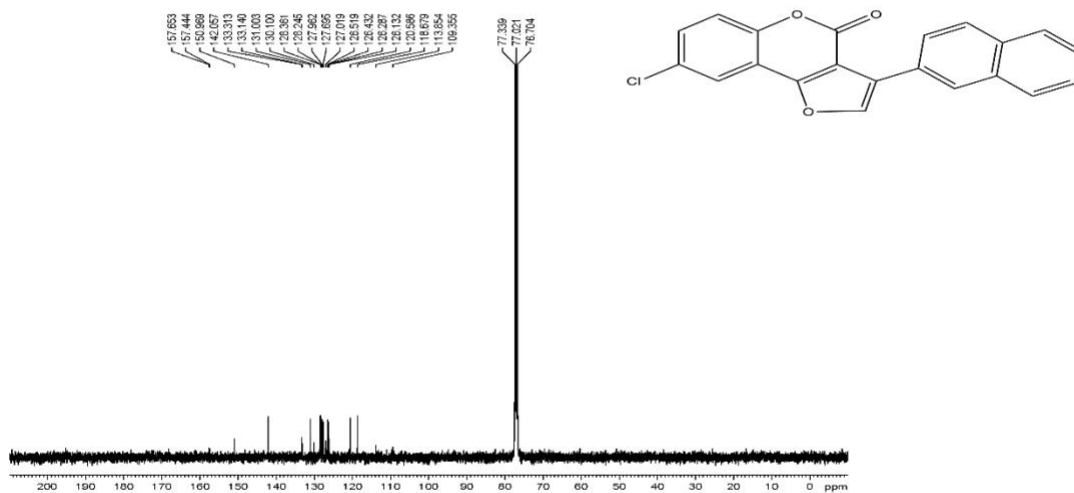


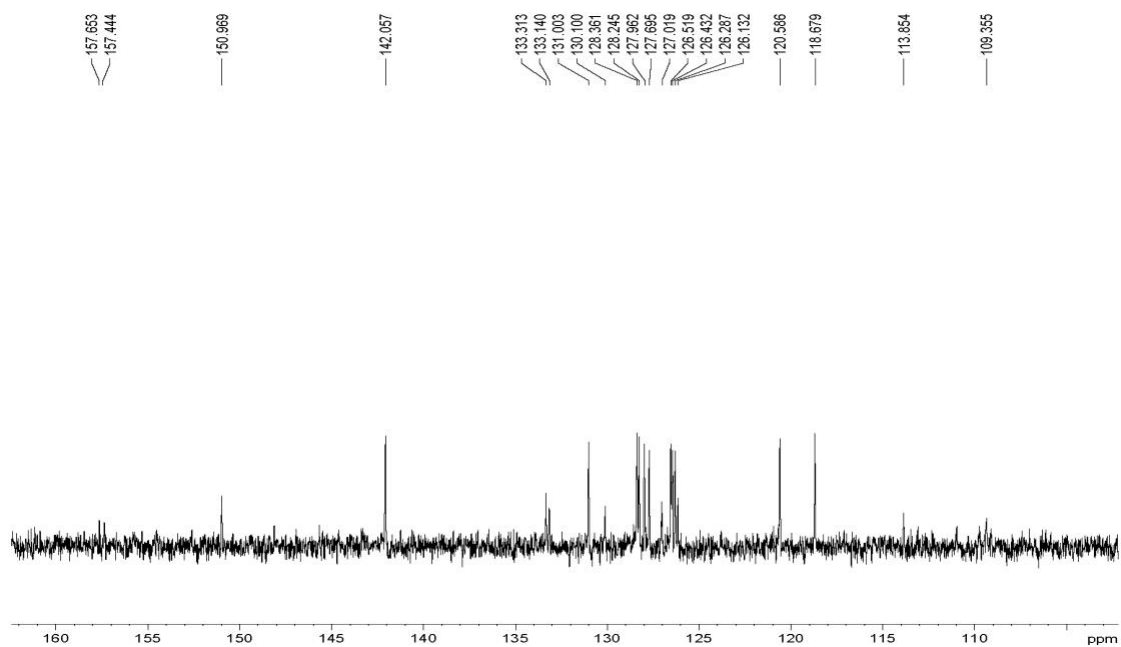
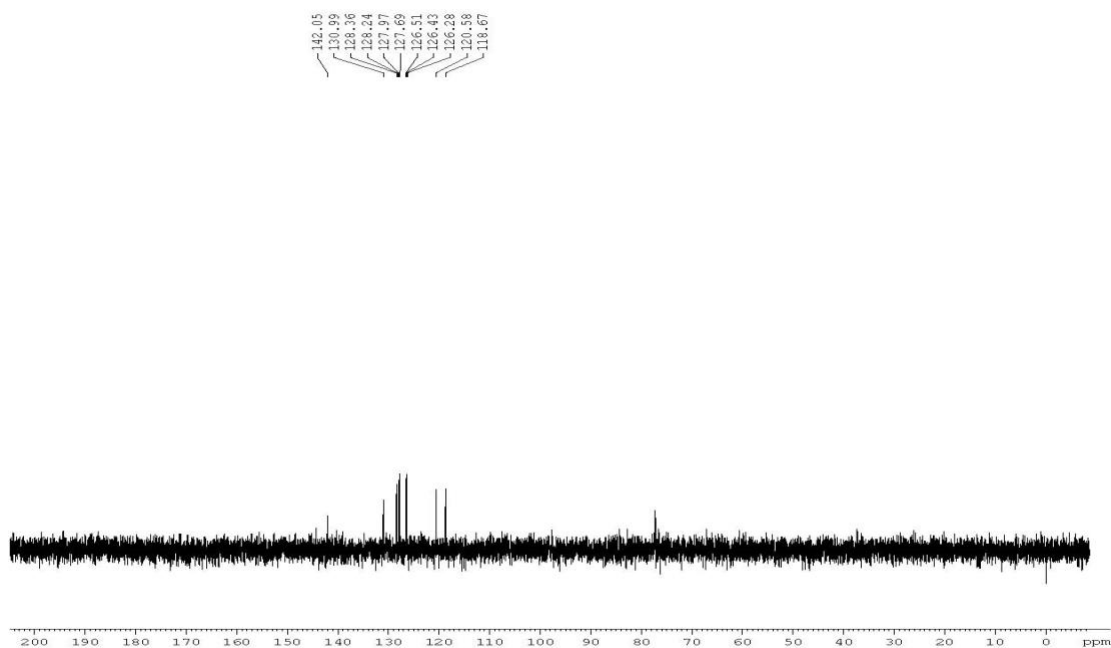
Compound 2d

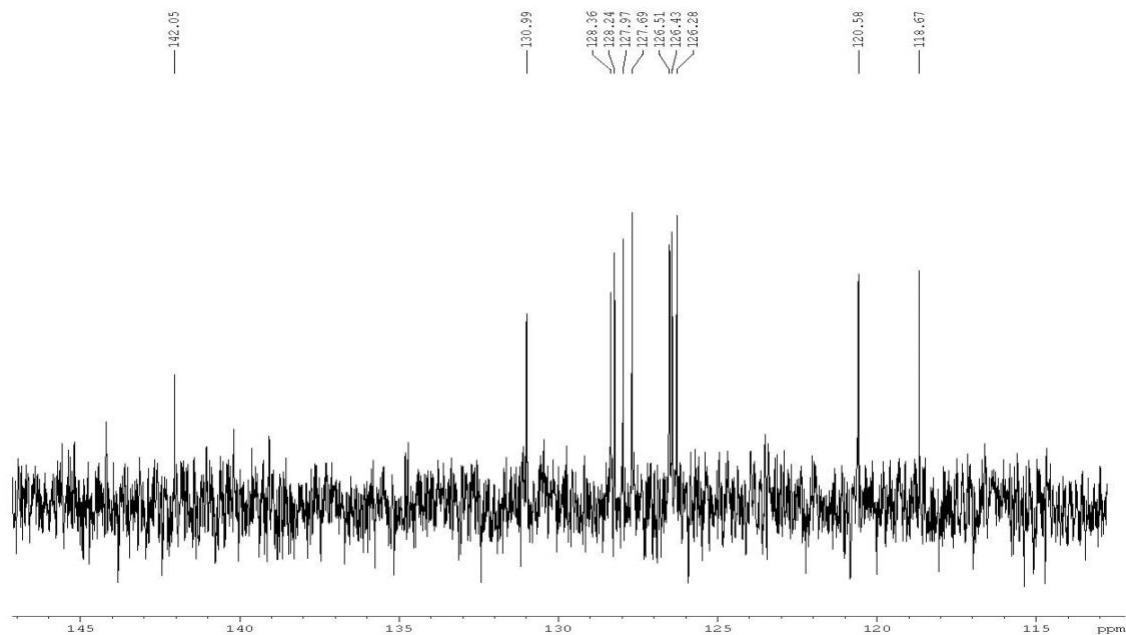
¹H NMR spectra



Compound 2d

¹³C NMR spectra

**Compound 2d****DEPT-90 spectra**



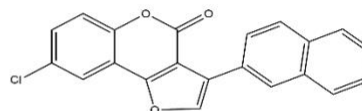
Compound 2d

Mass spectra

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Analyzed : 2/4/2015 2:22:16 PM
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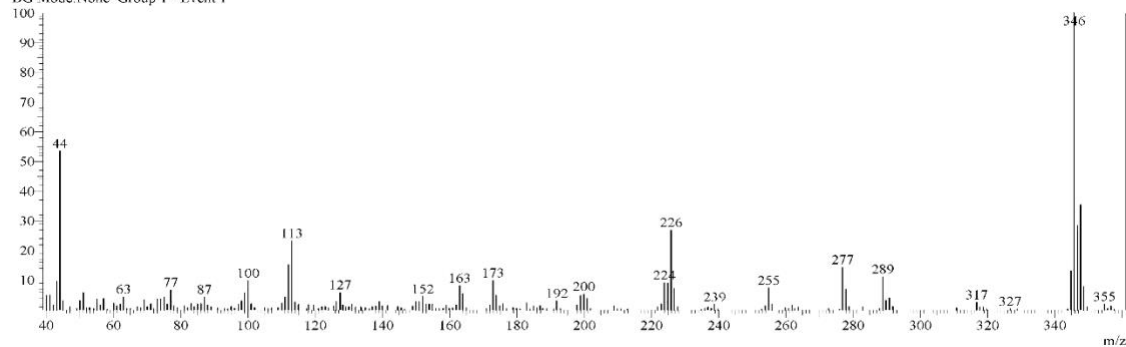


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MassPeaks:192

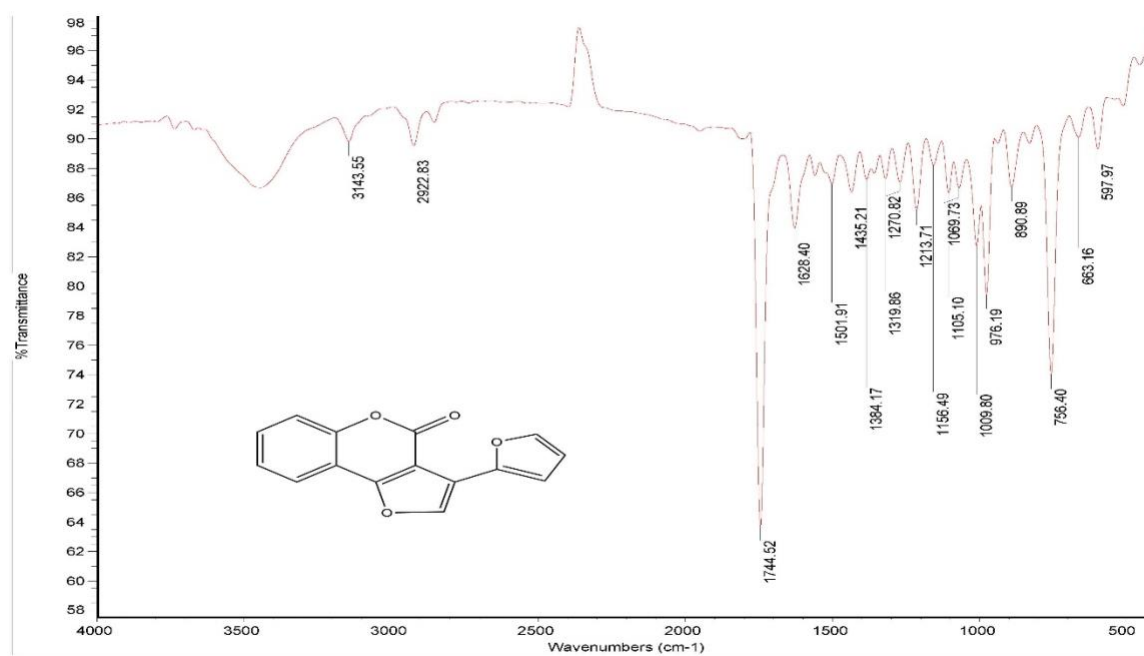
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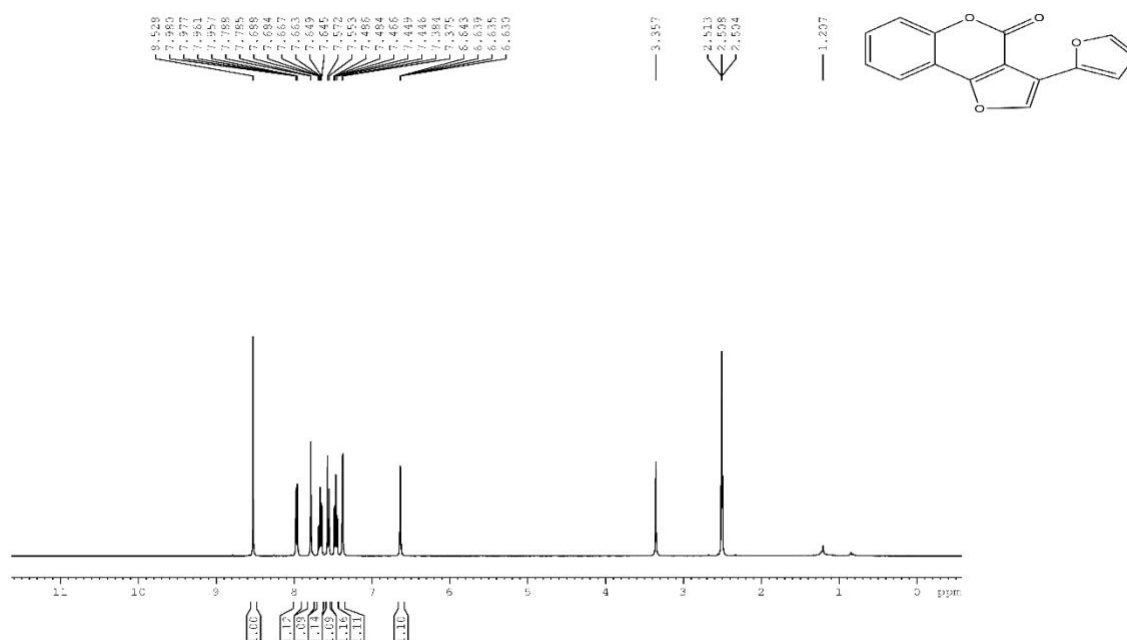


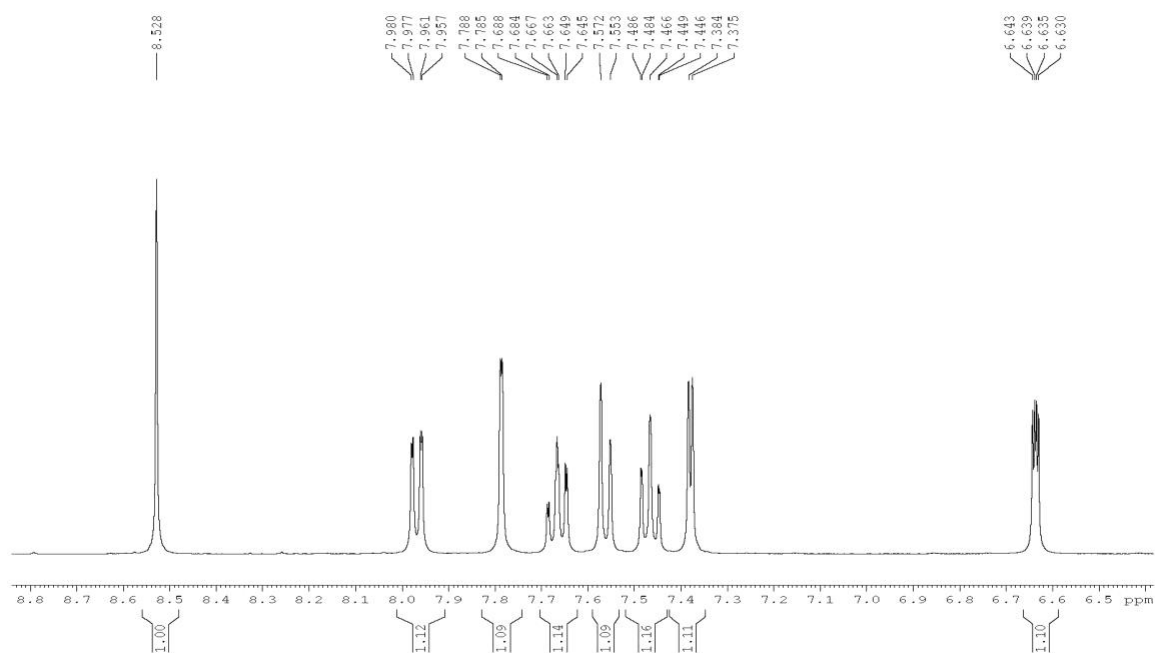
Compound 3a

Infrared Spectra

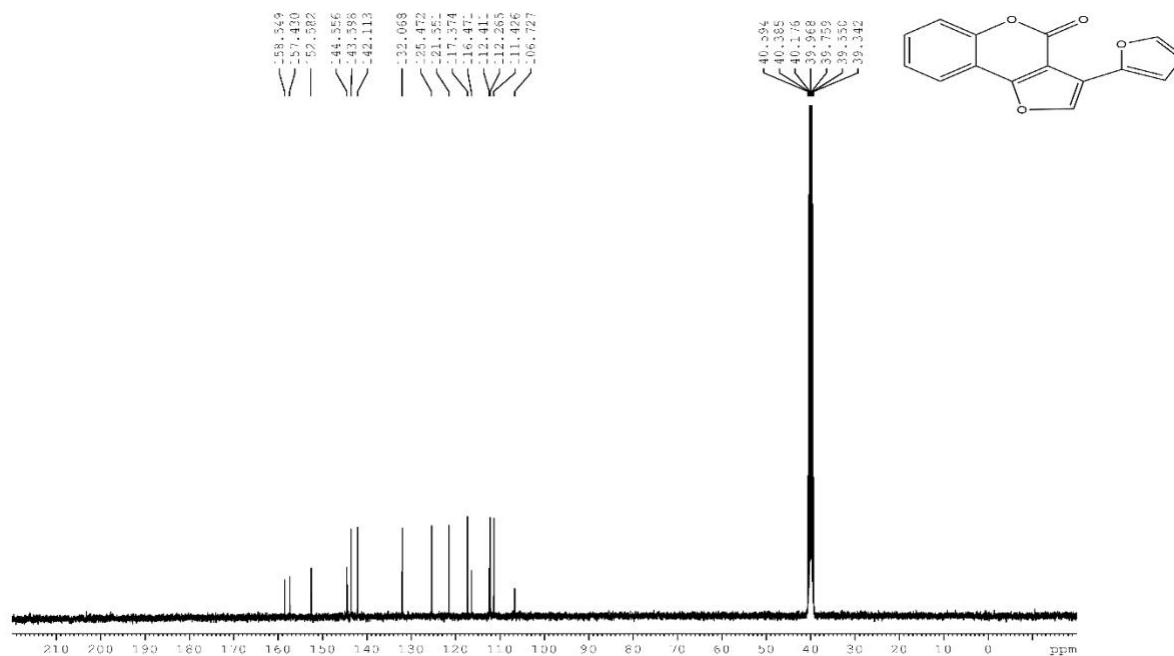


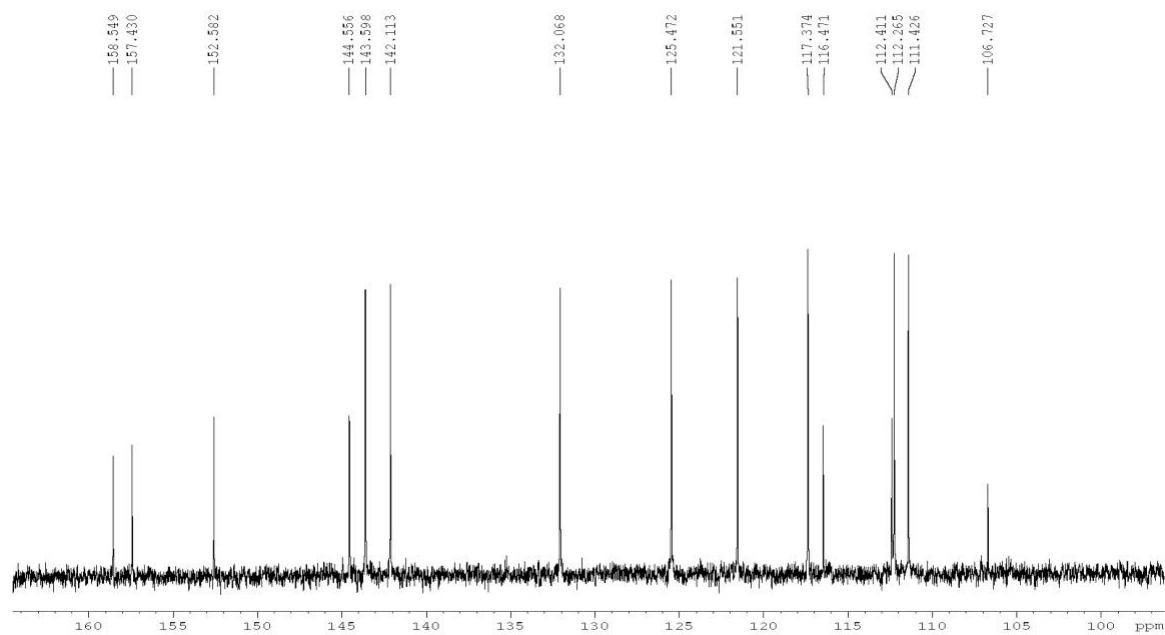
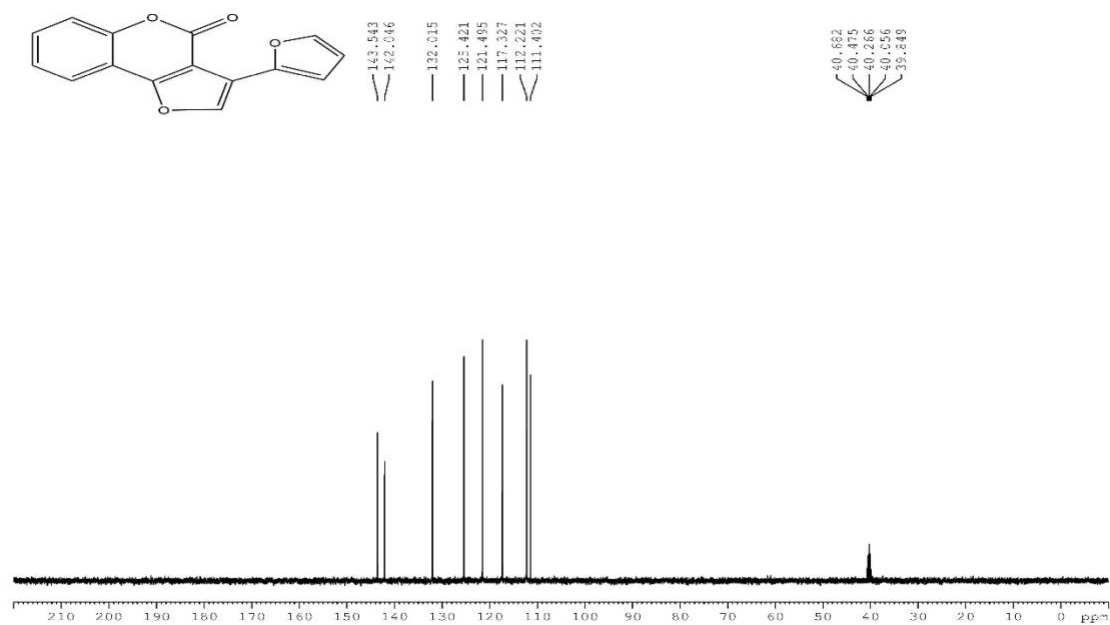
Compound 3a

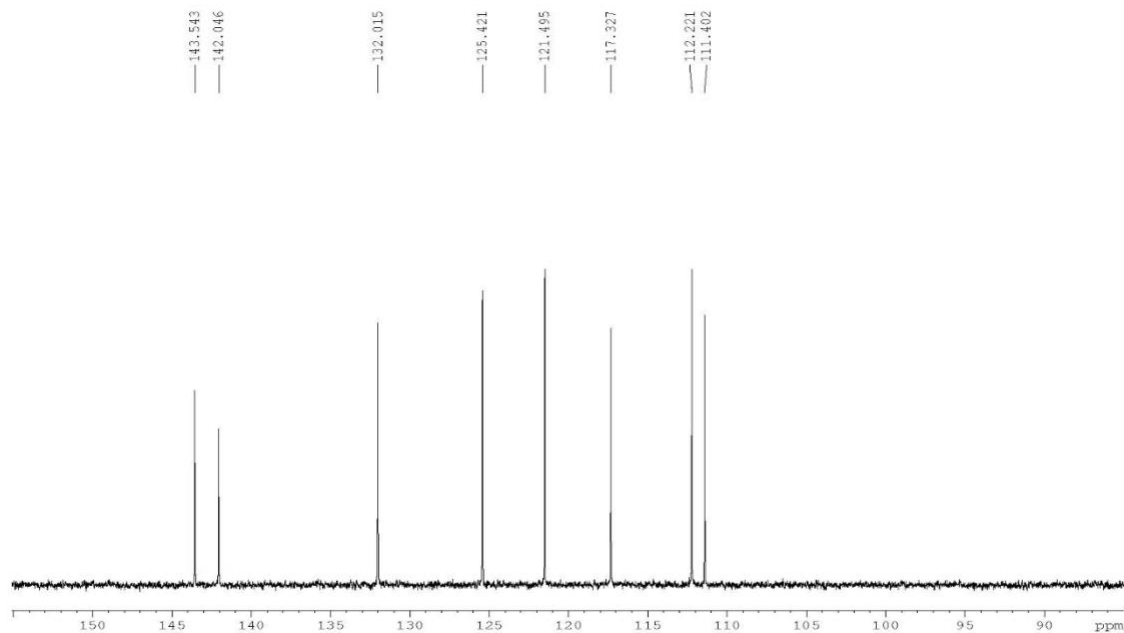
¹H NMR spectra



Compound 3a

¹³C NMR spectra

**Compound 3a****DEPT-90 spectra**



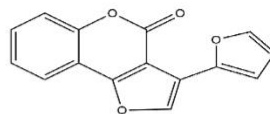
Compound 3a

Mass spectra

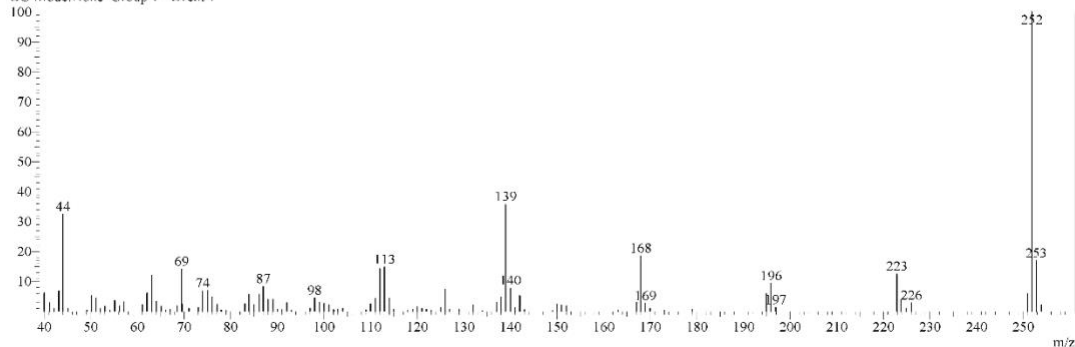
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Analyzed : 2/4/2015 2:44:08 PM
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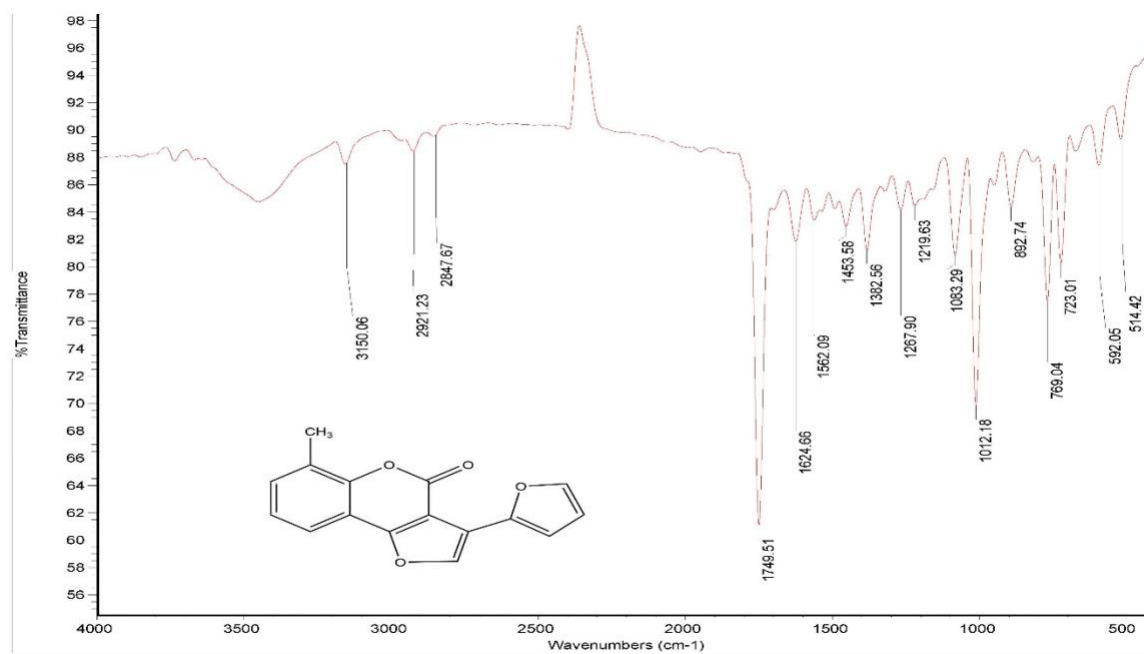


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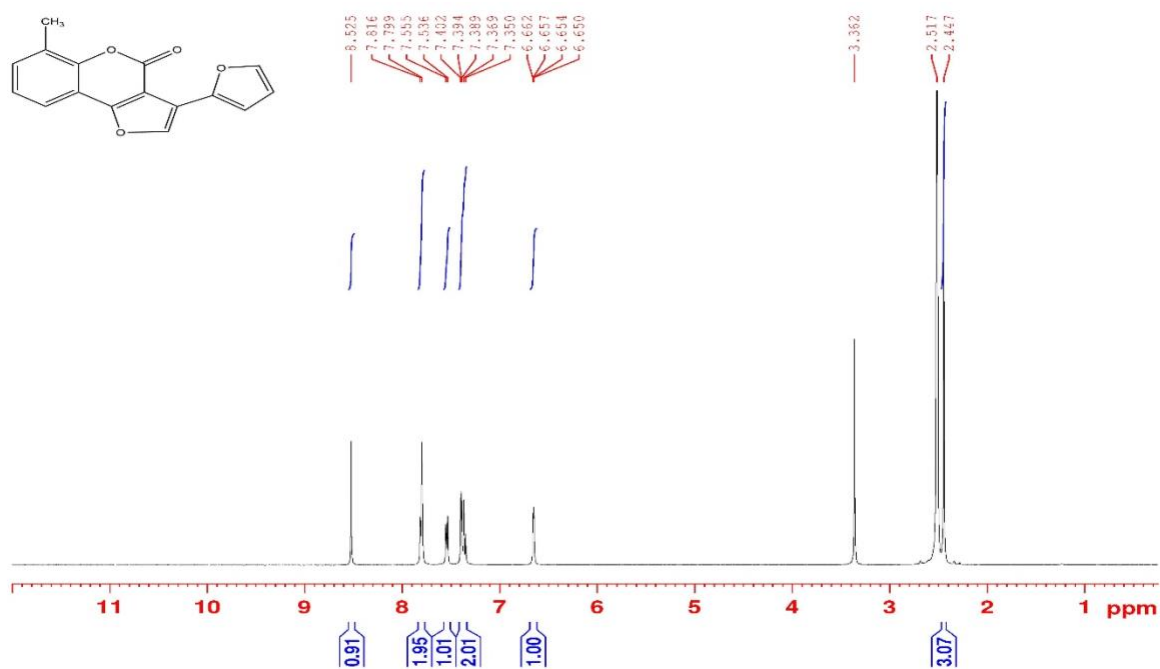


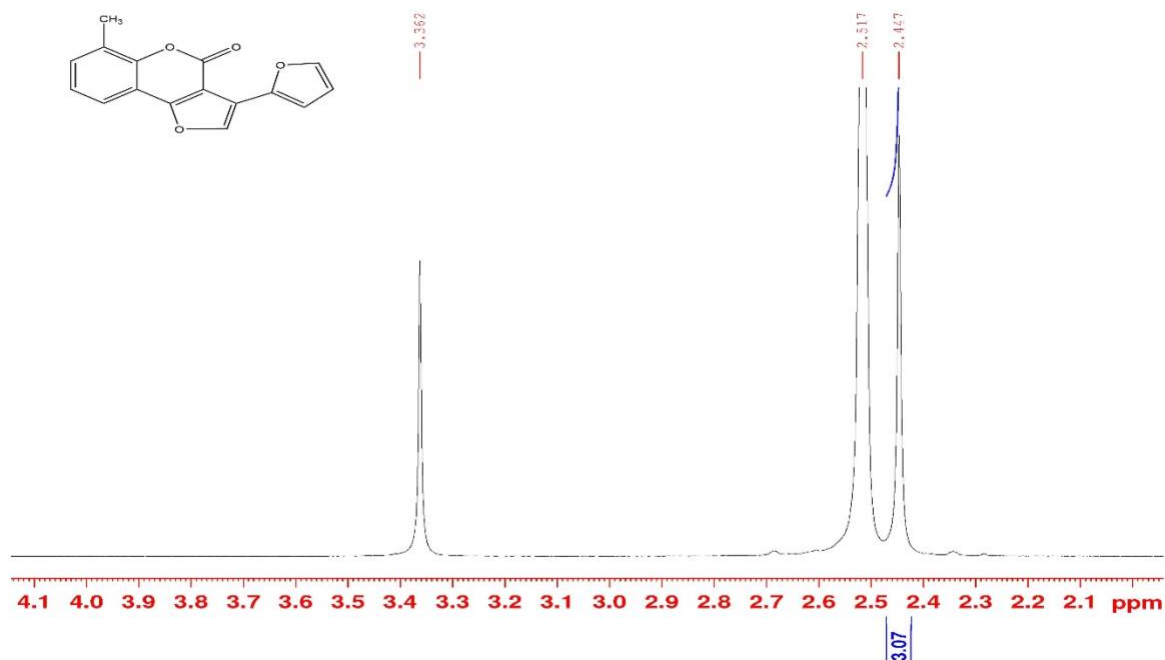
Compound 3b

Infrared Spectra

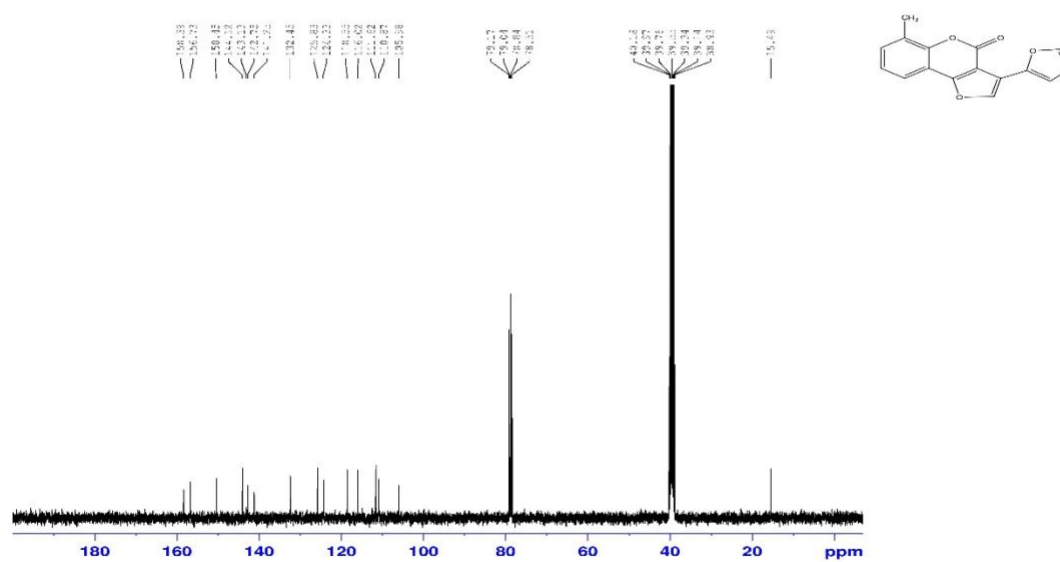


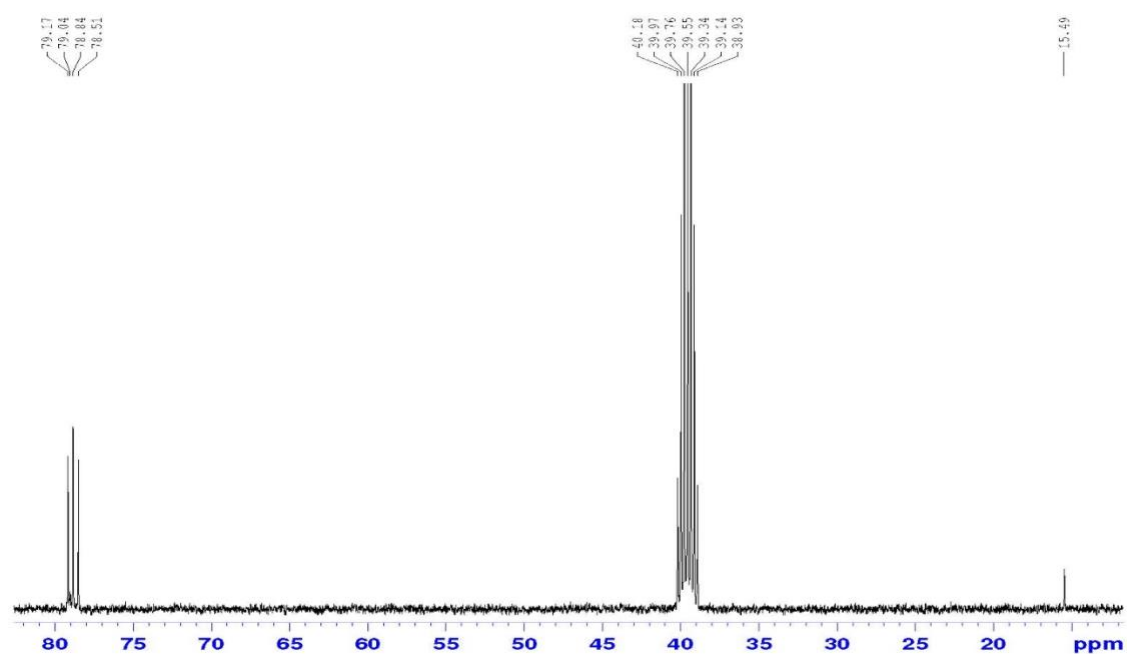
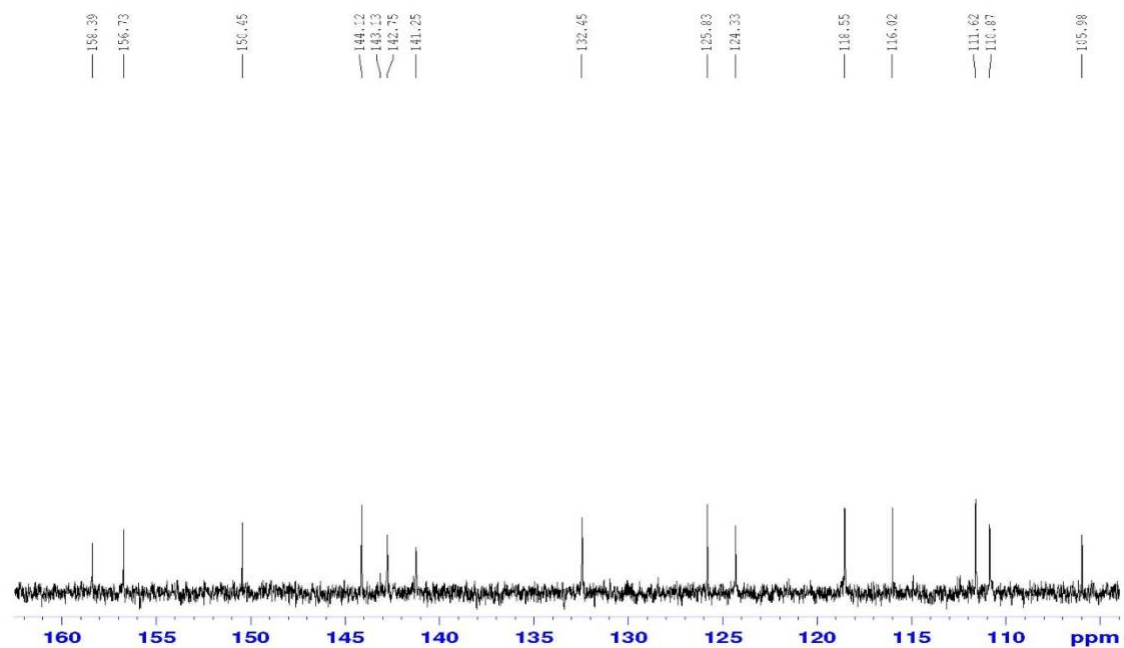
Compound 3b

¹H NMR spectra



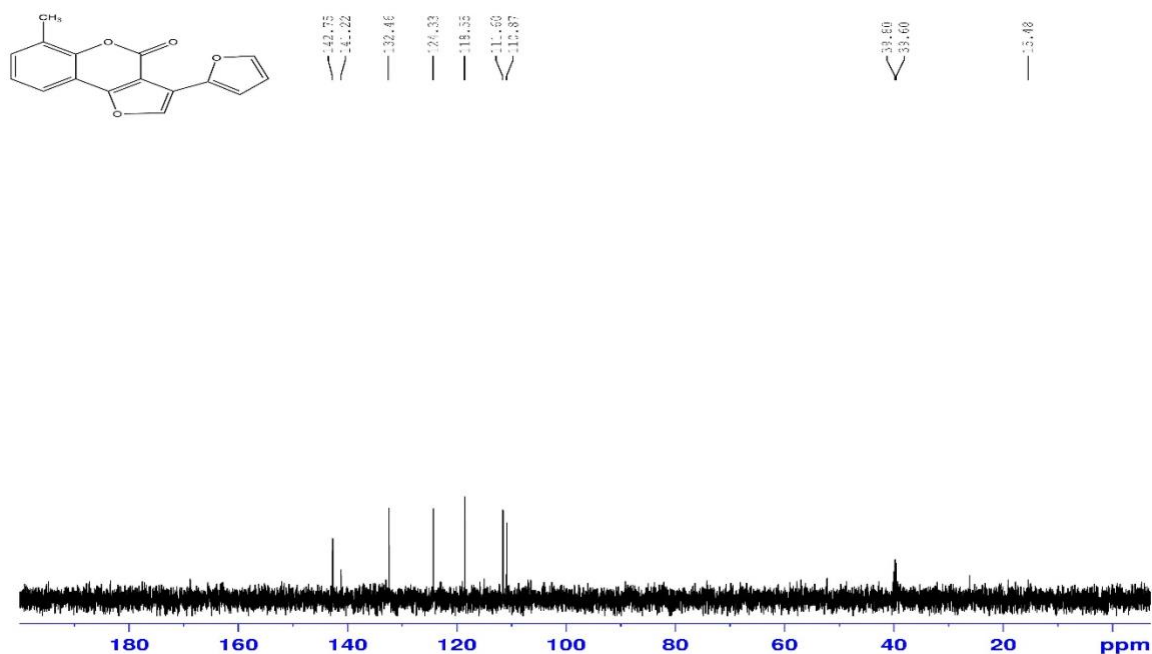
Compound 3b

¹³C NMR spectra



Compound 3b

DEPT-90 spectra

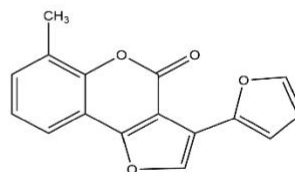


Compound 3b

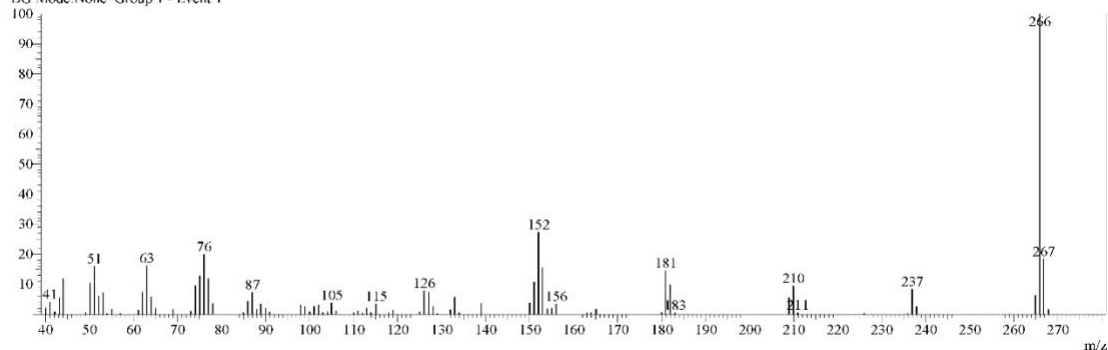
Mass spectra

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Sample Information
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Analyzed: 2/4/2015 3:24:17 PM
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Sample ID: D 18
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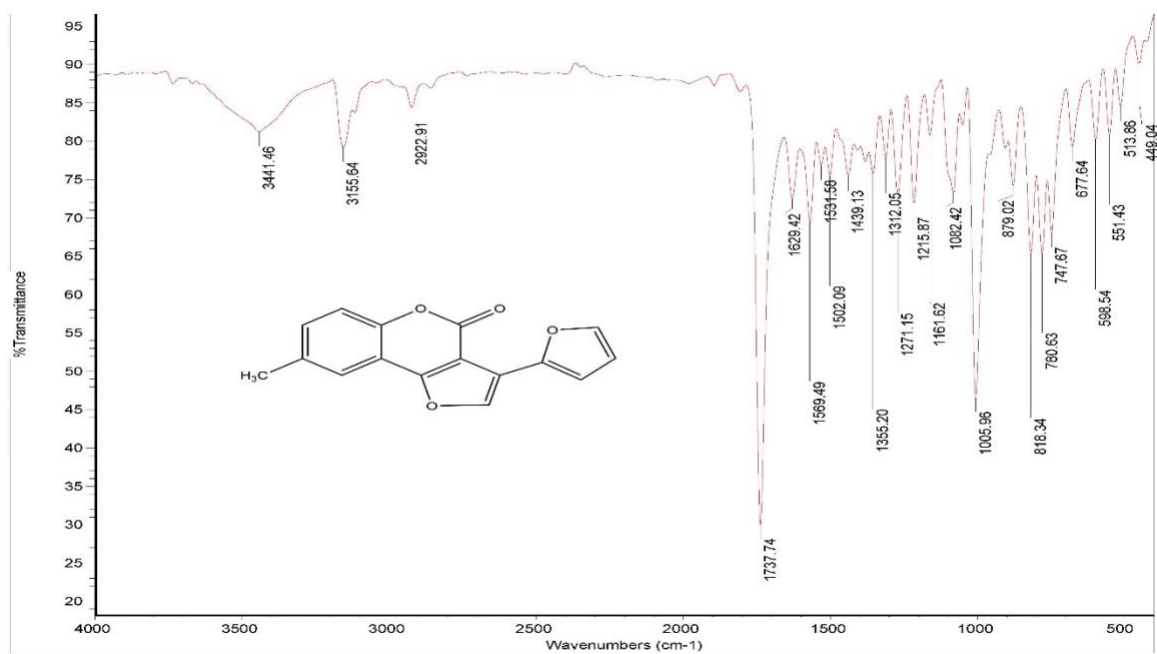


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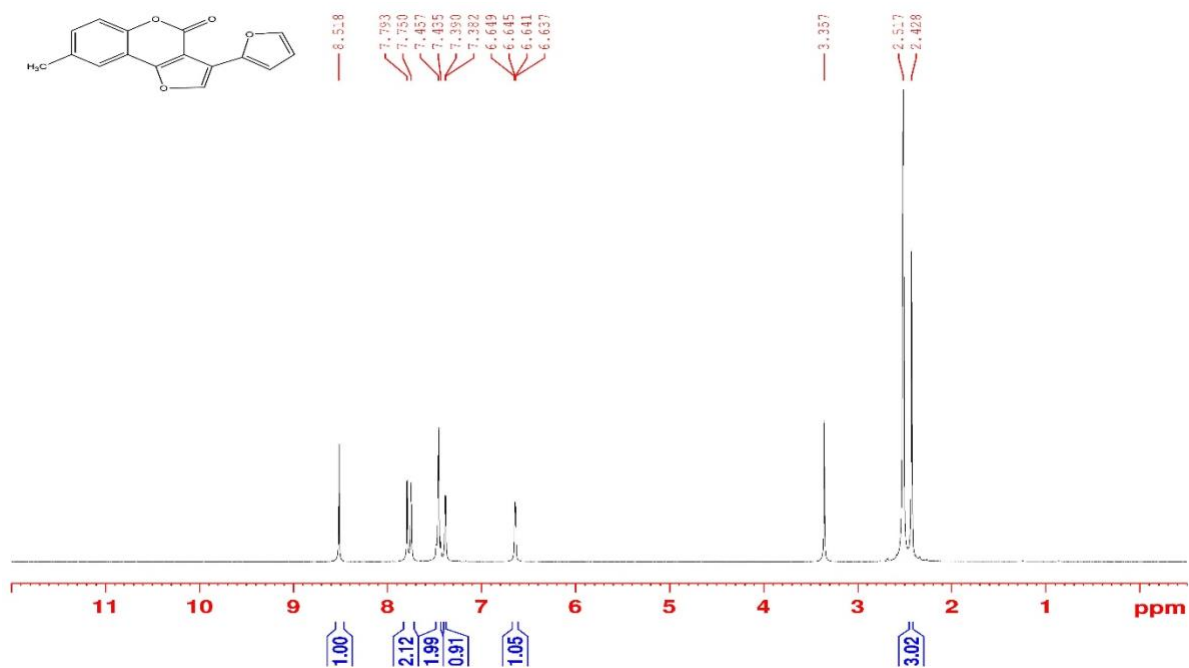


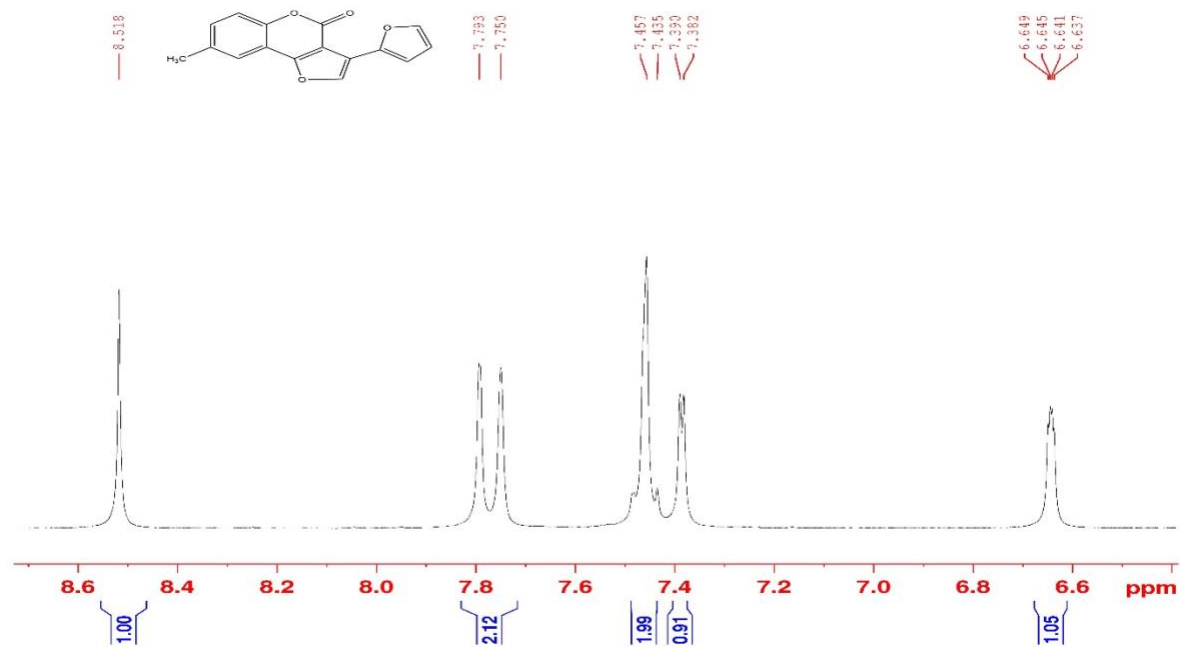
Compound 3c

Infrared Spectra

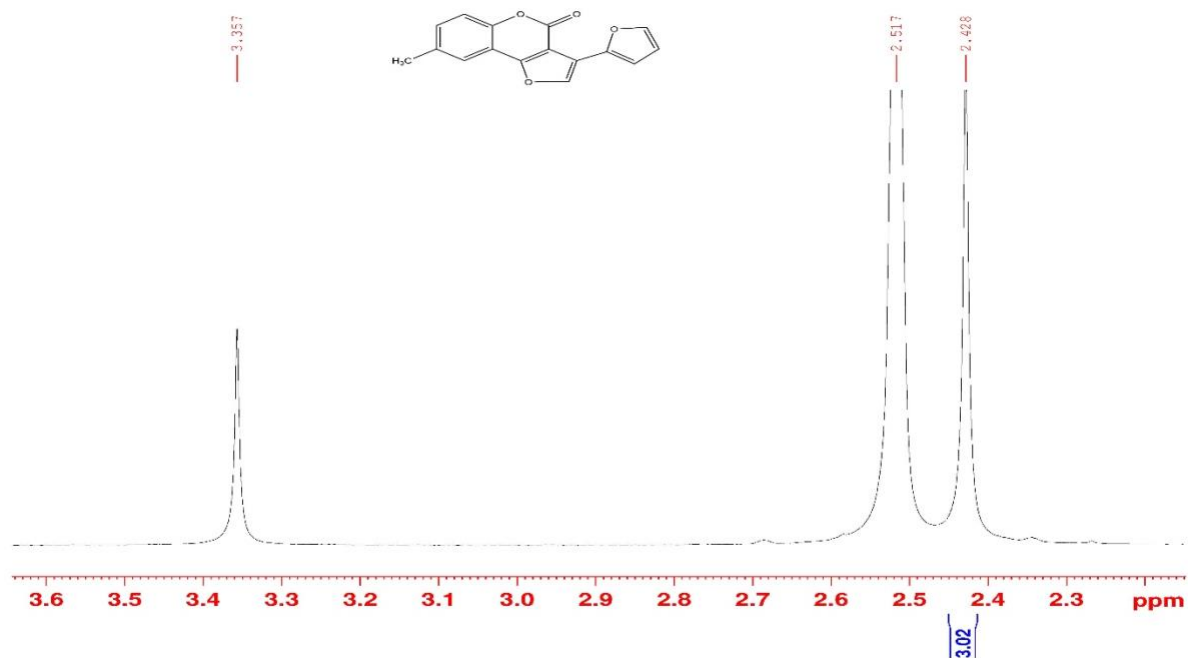


Compound 3c

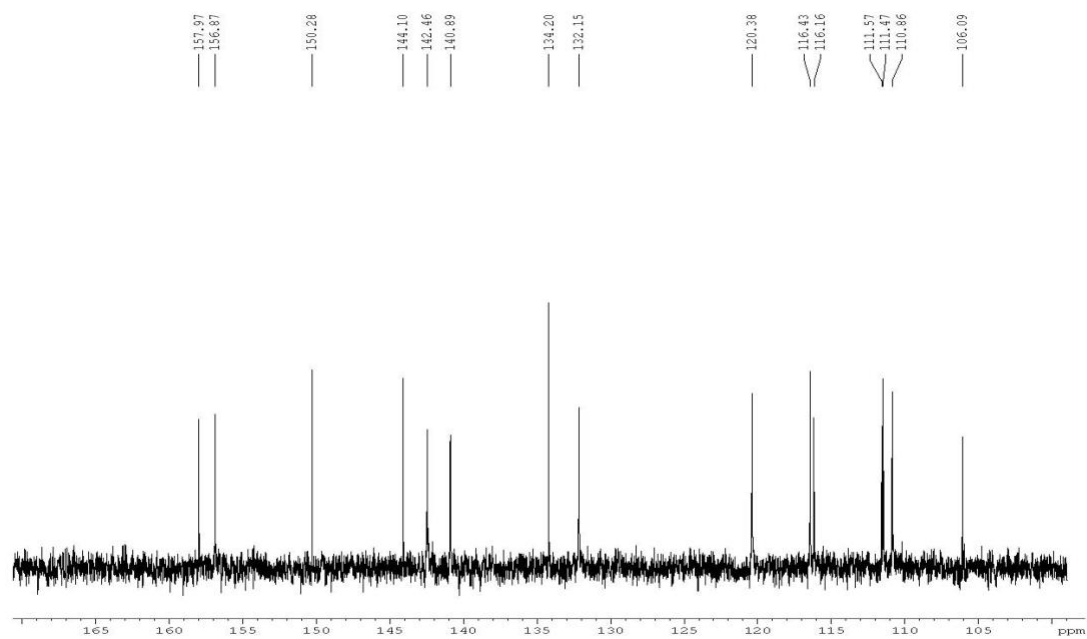
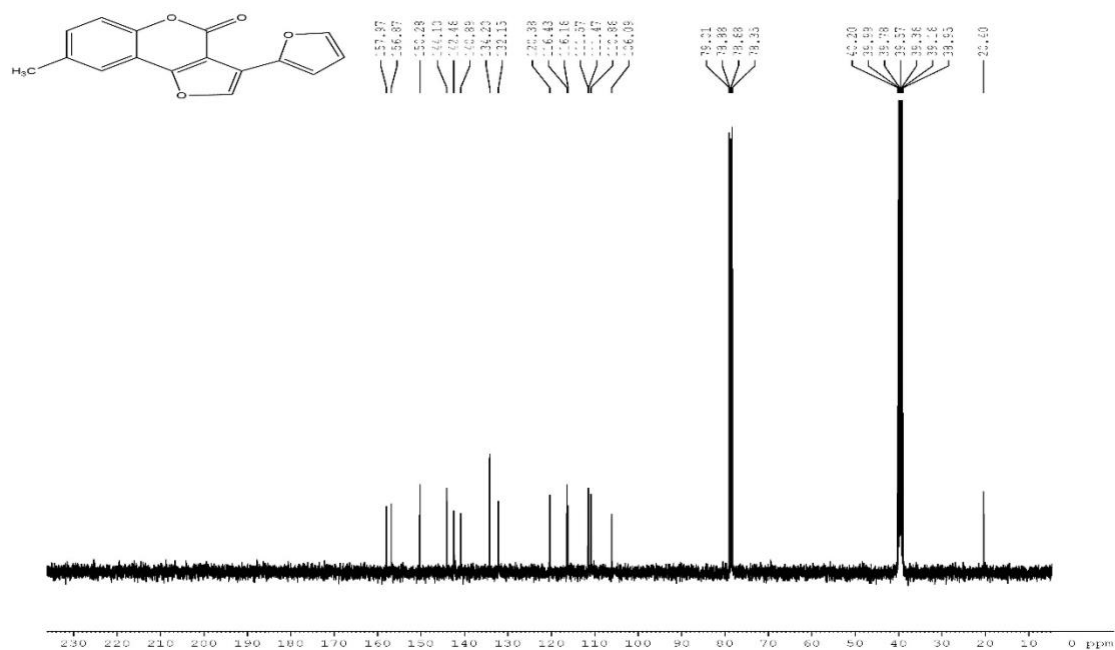
¹H NMR spectra



Compound 3c

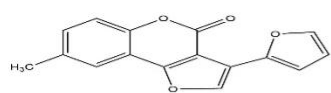
¹³C NMR spectra

Compound 3c

¹³C NMR Spectra

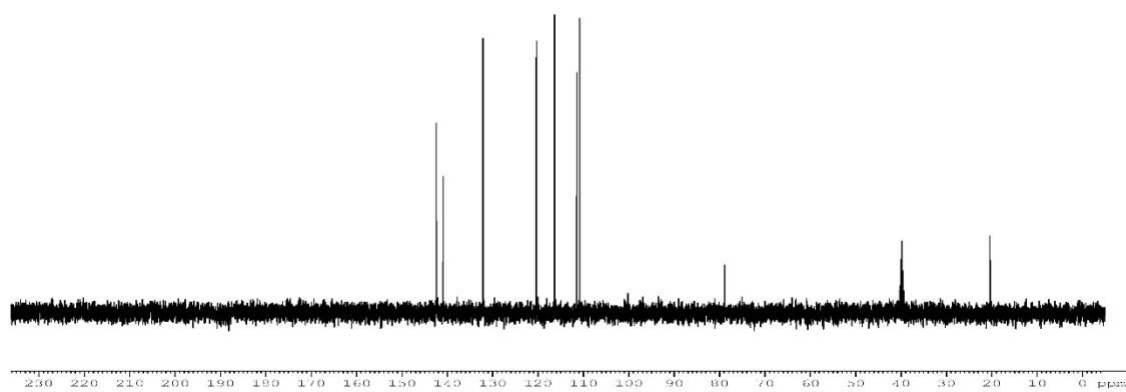
Compound 3c

DEPT-90 spectra



142.46
140.90
132.16
120.38
116.43
111.47
110.86

40.06
39.63
39.62
20.41



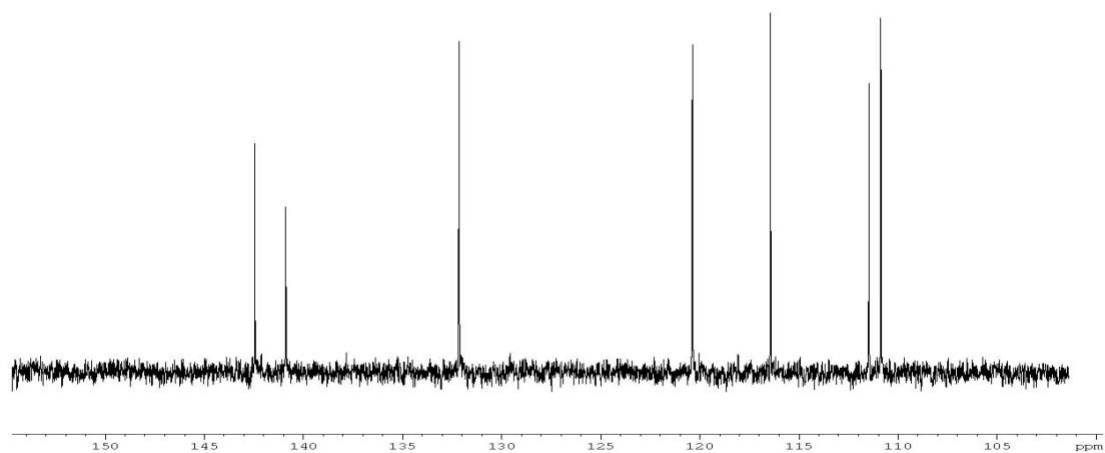
142.46
140.90

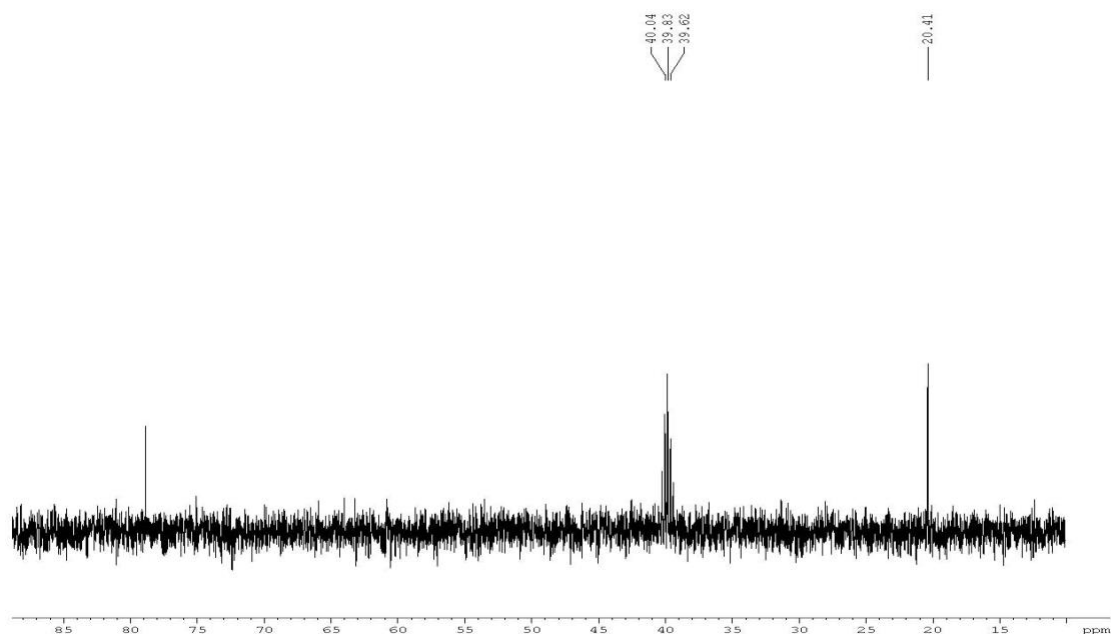
132.16

120.38

116.43

111.47
110.86





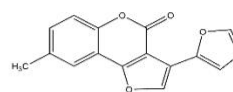
Compound 3c

Mass spectra

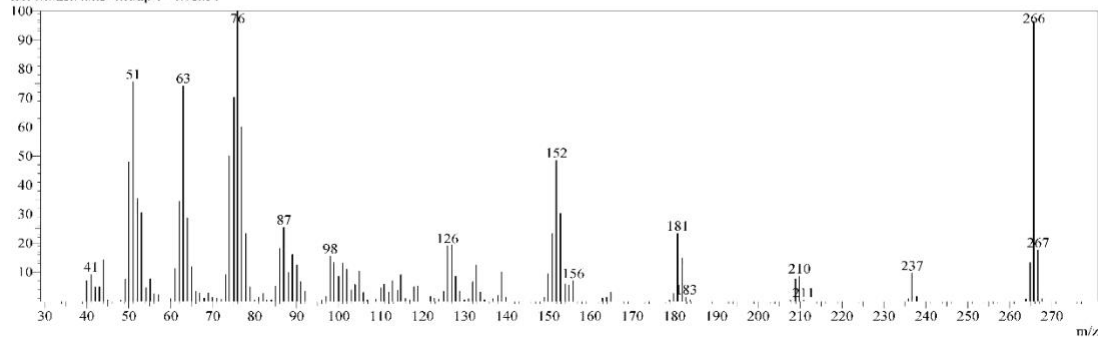
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Sample Information

Analyzed by: BHOLA GAURAV
Analyzed: 2/9/2015 2:36:14 PM
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Sample ID:
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Tuning File: C:\GCMSolution\System Tune\10020215_F1.MS.qgt

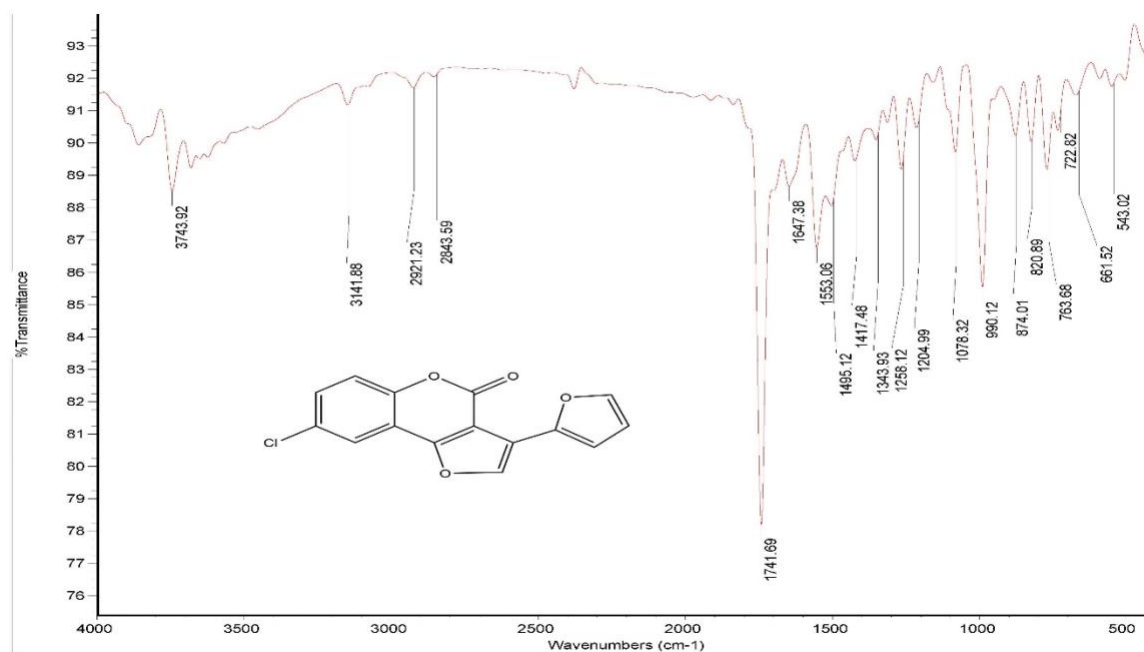


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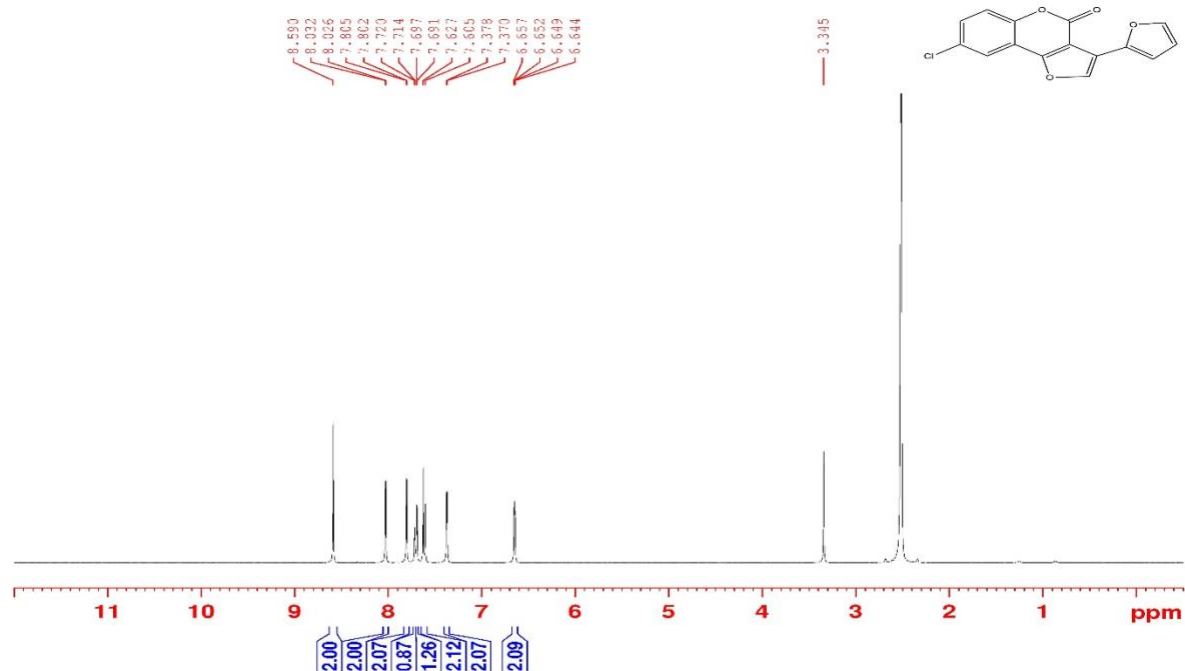


Compound 3d

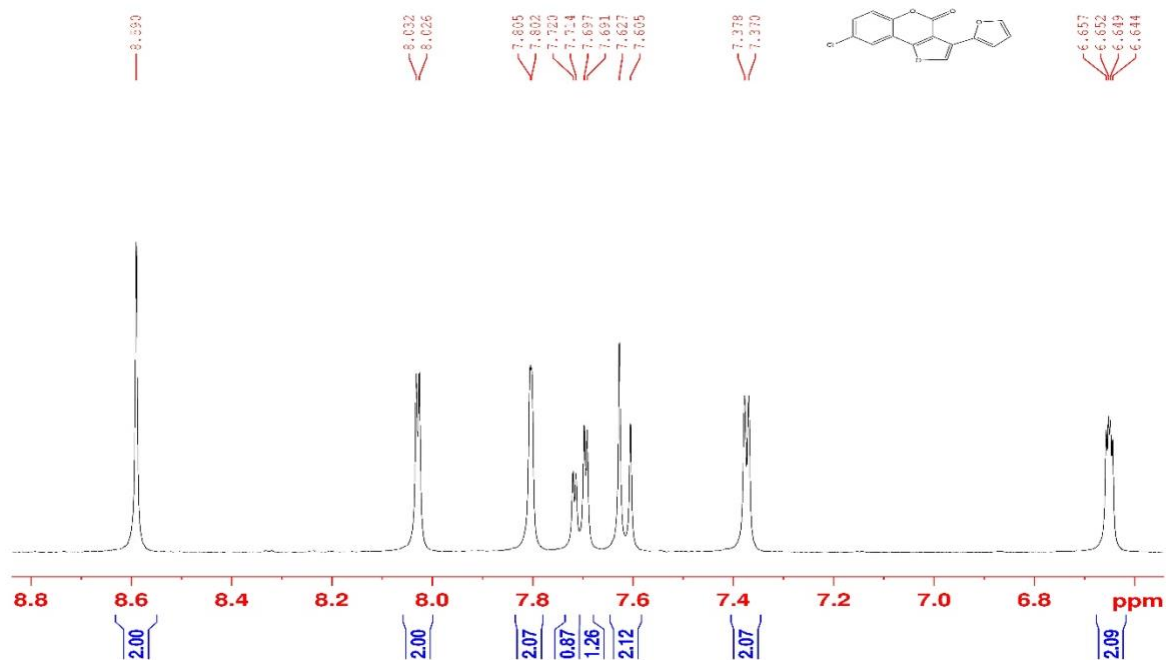
Infrared Spectra



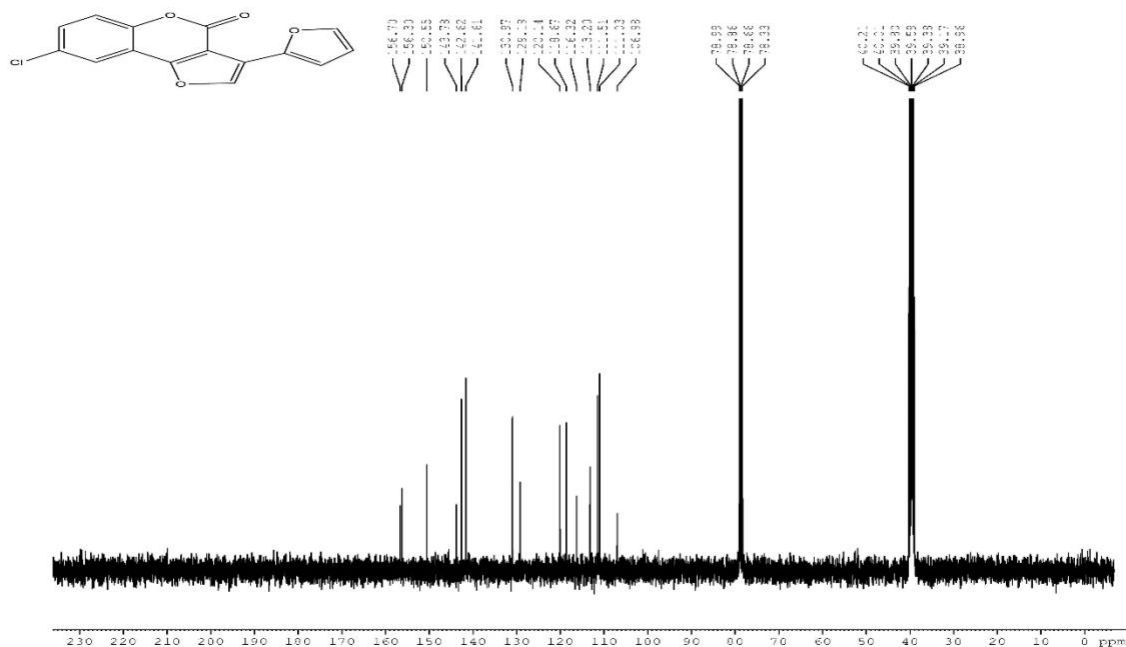
Compound 3d

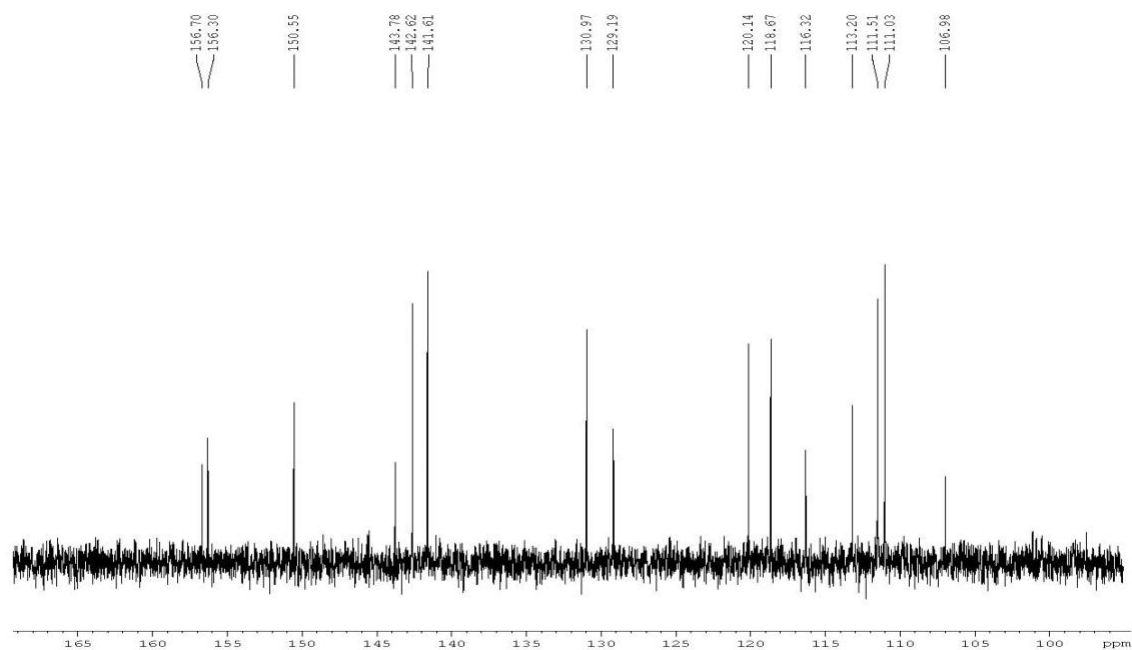
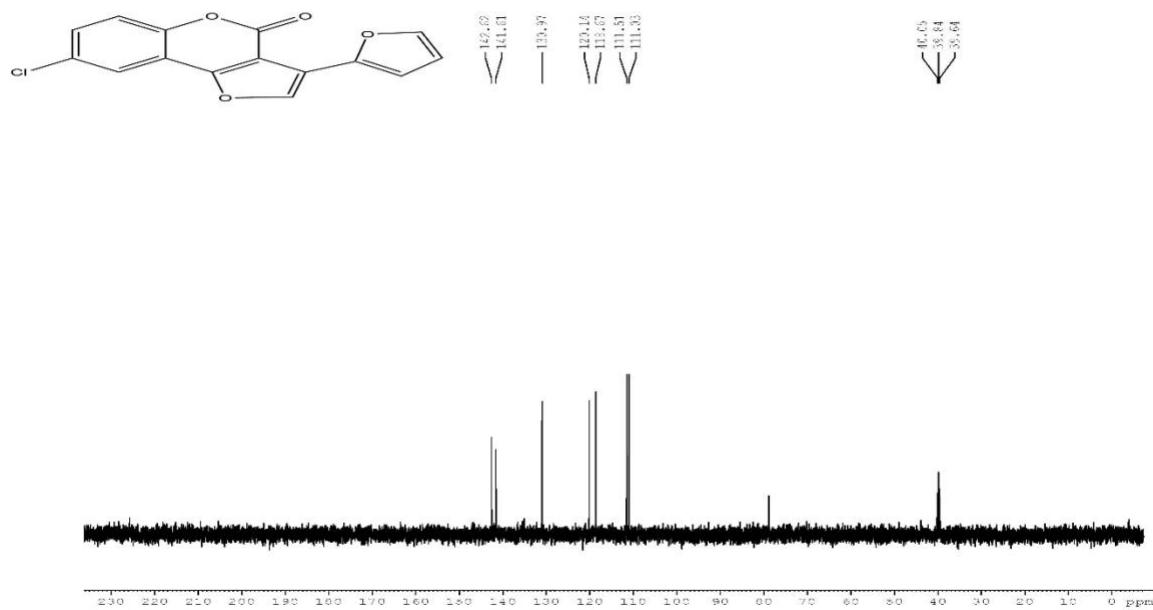
¹H NMR spectra

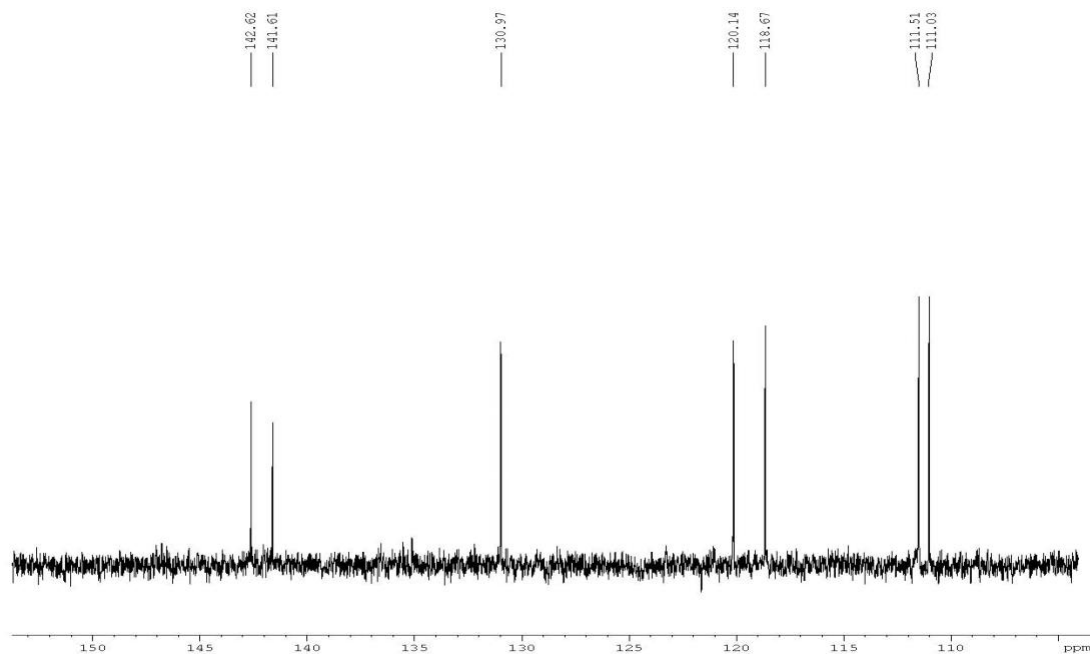
Compound 3d



Compound 3d

¹³C NMR spectra

**Compound 3d****DEPT-90 spectra**



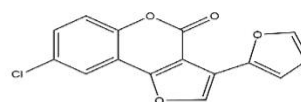
Compound 3d

Mass spectra

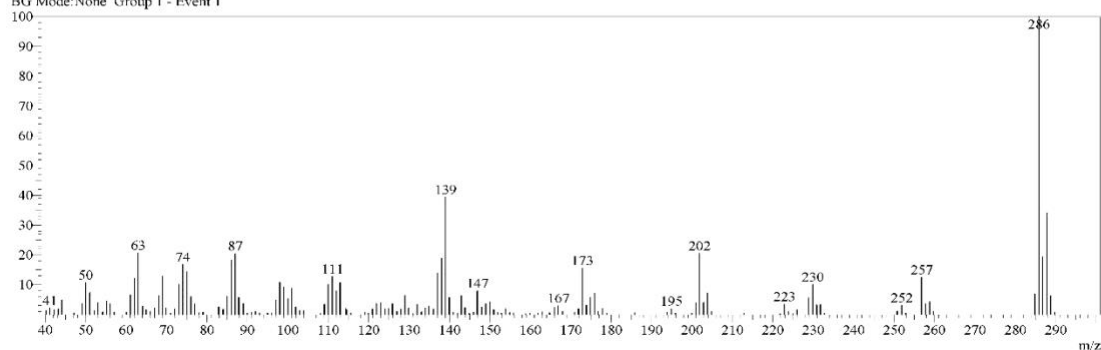
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Sample Information

Analyzed by : BELOLA G.N.
Analyzed : 24/2015 3:04:17 PM
Sample Name : D 17
Sample ID : D 17
Data File : D:\OUT OF DEP\KAUSHEL PATEL\D 17.qsd
C:\GCMSSolution\Data\Project\FDI.ms SPEED.qgm
Tuning File : C:\GCMSSolution\System1\Tune1\020215_F1.MS.qgt

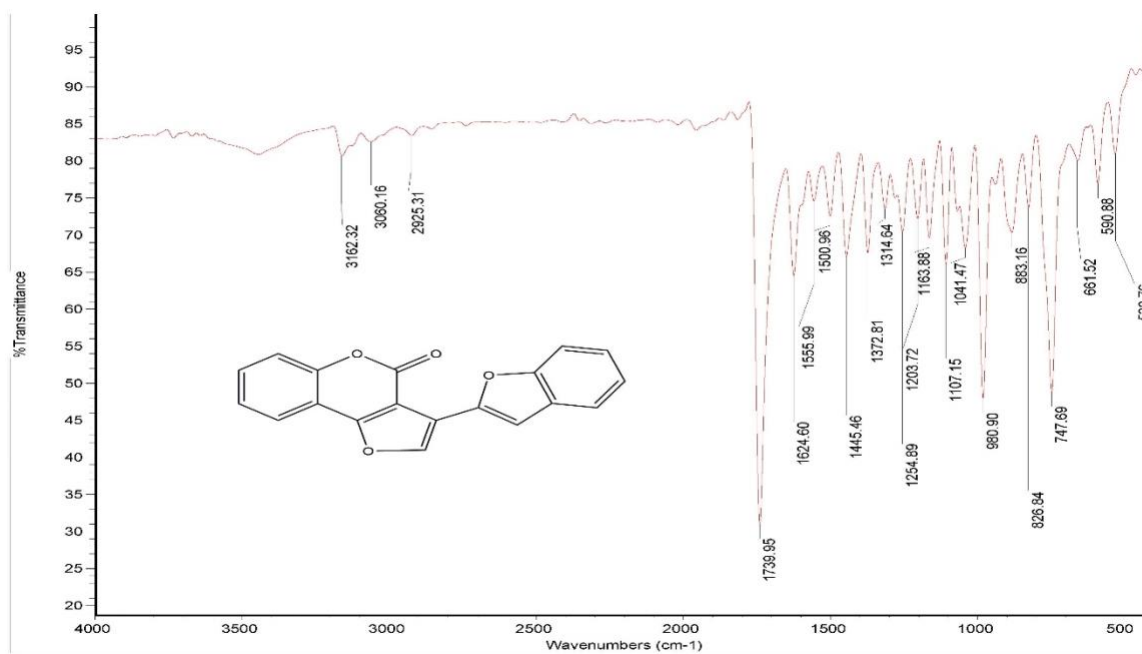


Line#: 1 R: Time: 2.5 (Scan#: 408)
Mass Peaks: 154
Raw Mode: Averaged 0.6-3.3 (17-569) Base Peak: 285.800 (16122)
BG Mode: None Group 1 - Event 1

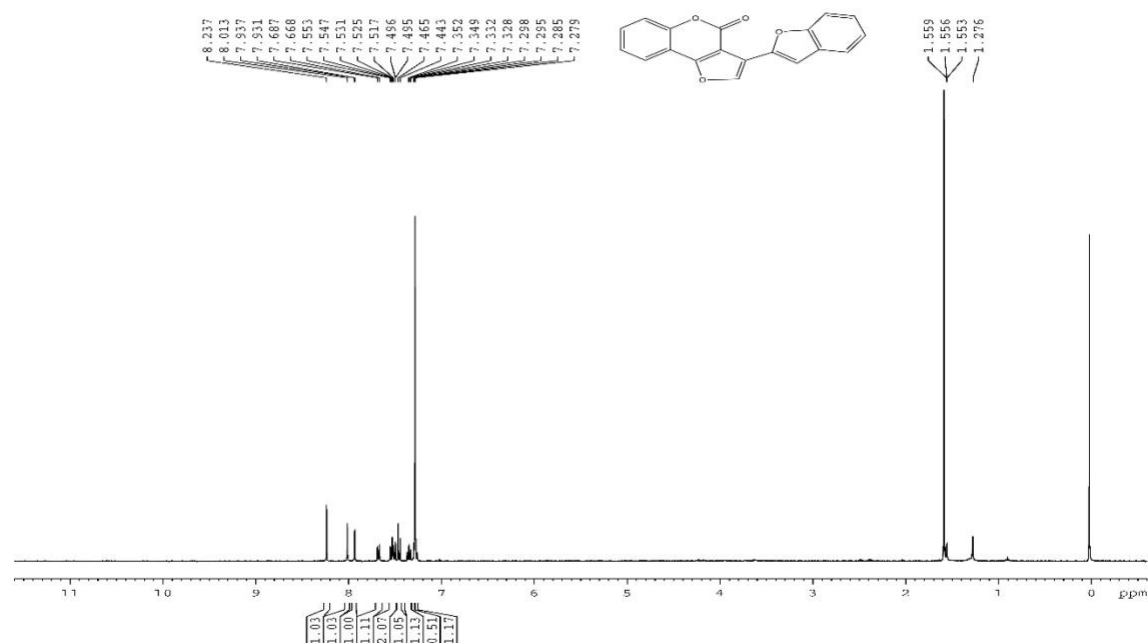


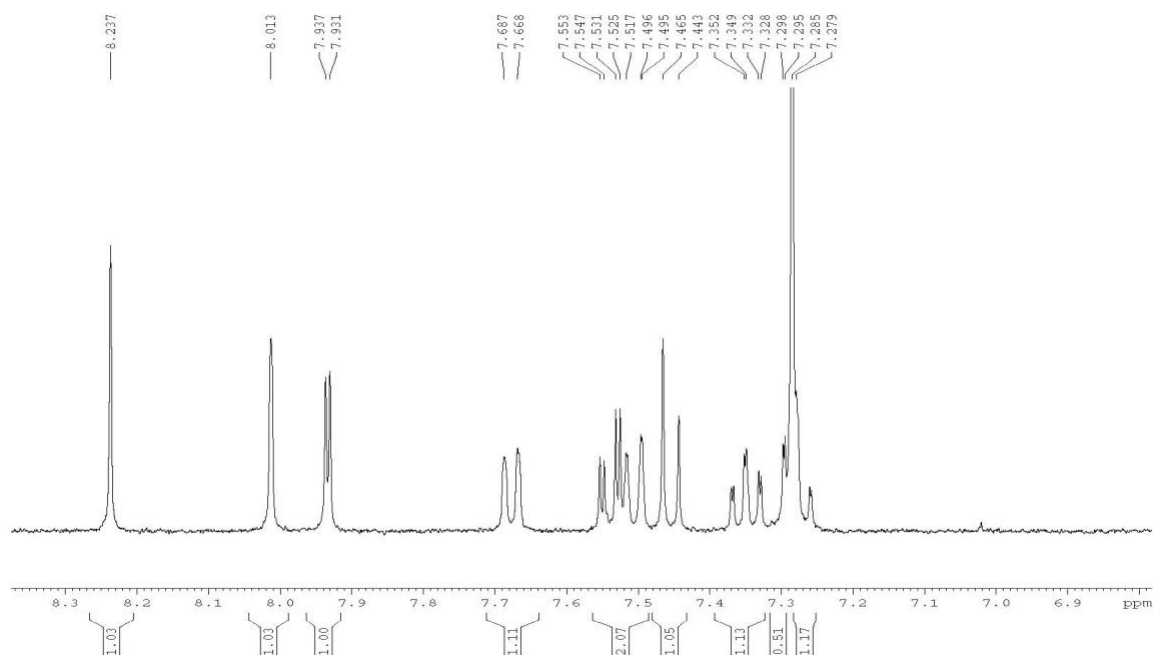
Compound 4a

Infrared Spectra

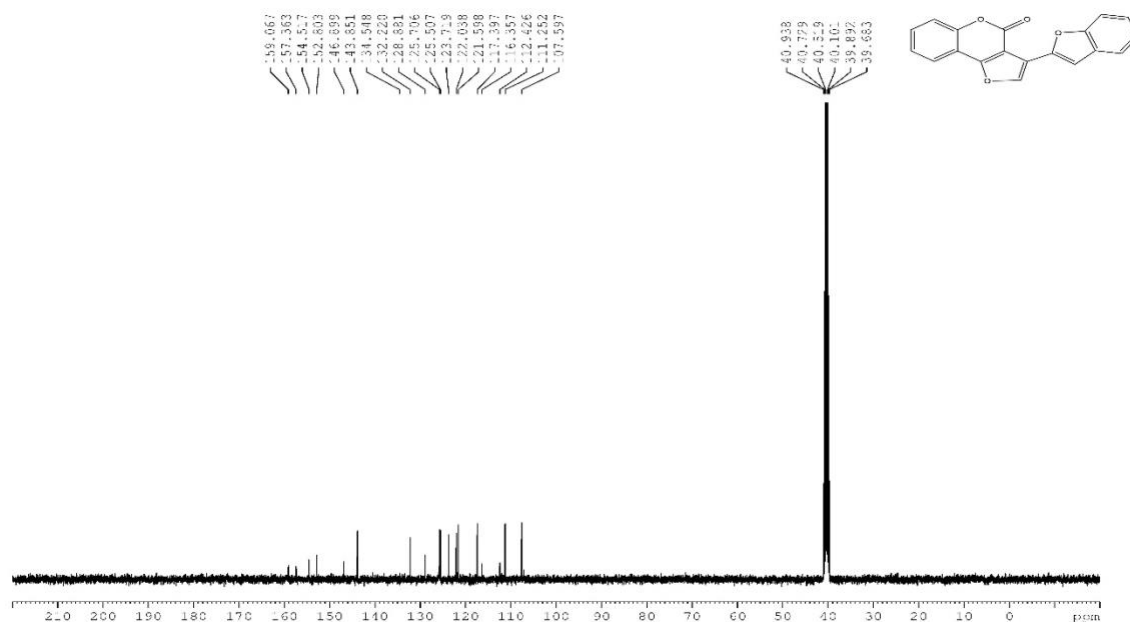


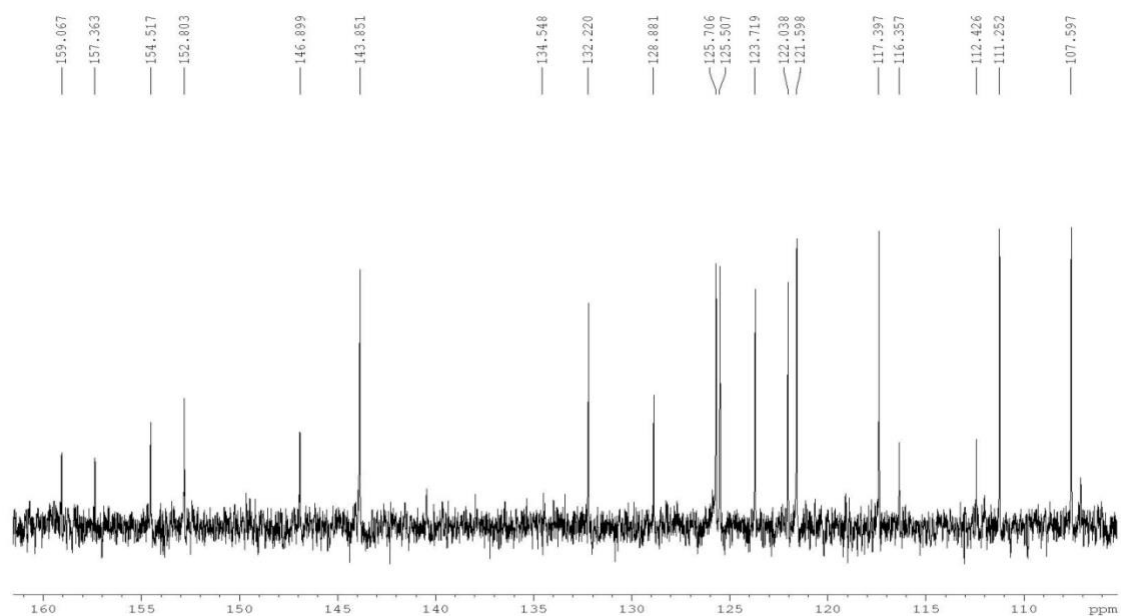
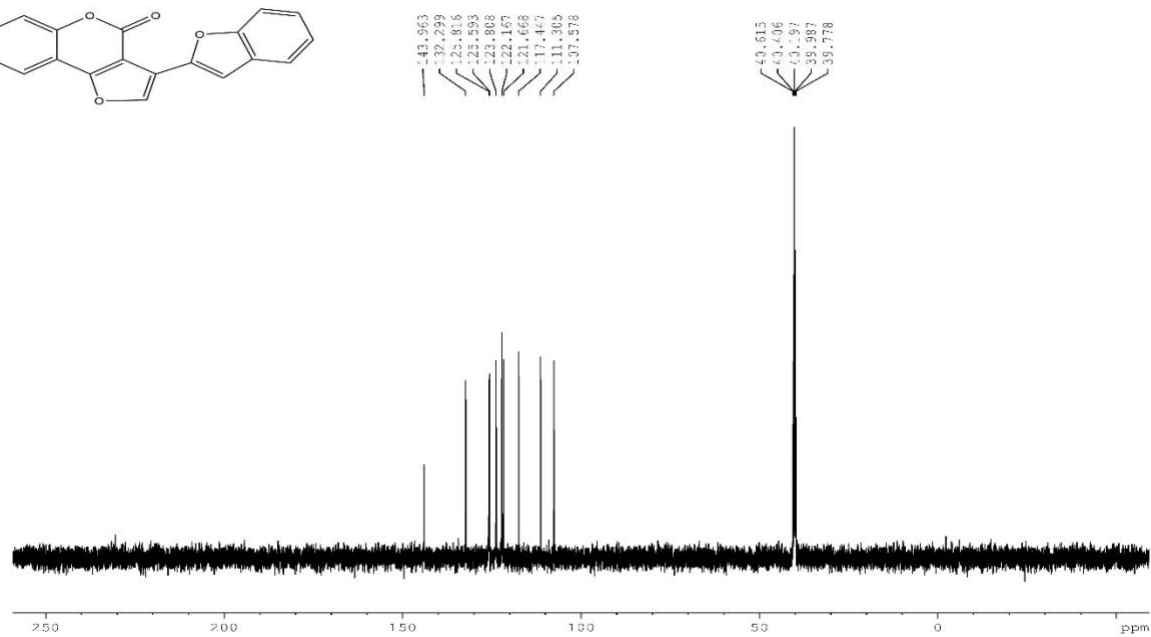
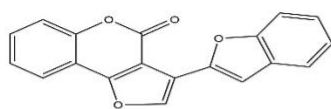
Compound 4a

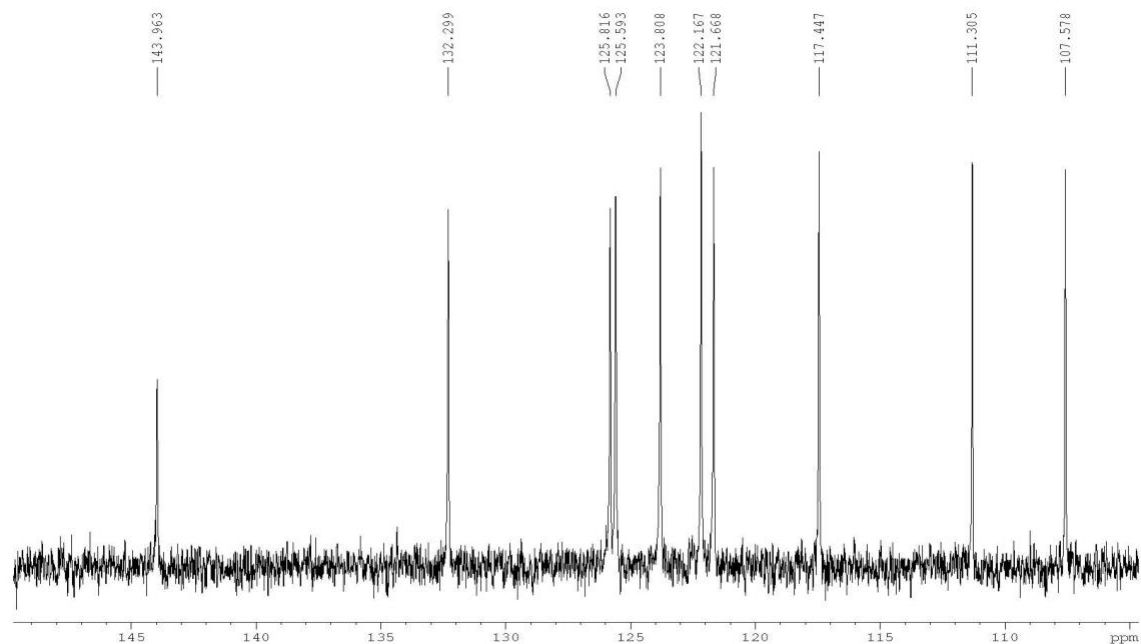
¹H NMR spectra



Compound 4a

¹³C NMR spectra

**Compound 4a****DEPT-90 spectra**



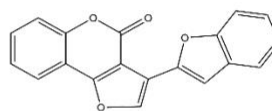
Compound 4a

Mass spectra

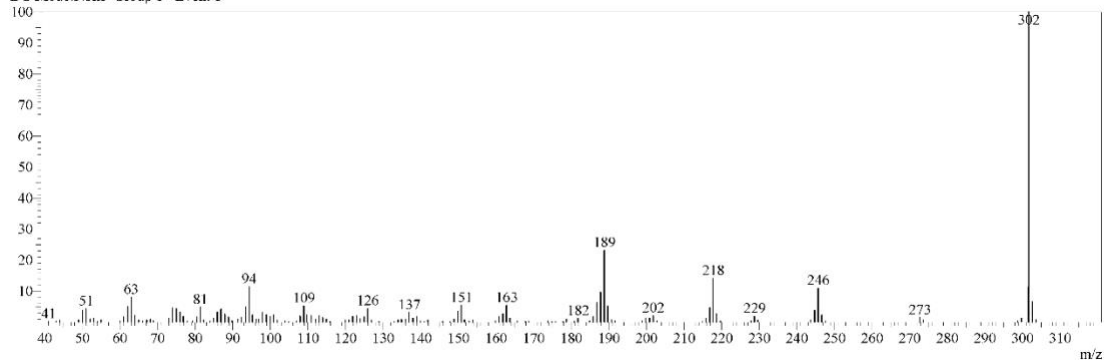
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Sample Information

Analyzed by : BHOLA GAURAV
Analyzed : 2/9/2015 11:41:03 AM
Sample Name : D 12
Sample ID : D 12
Data File : D:\OUT OF DEP\KAUSHAL PATEL\D 12.qsd
C:\GCMSSolution\Data\Project\DI12.ms SPEED-igm
Tuning File : C:\GCMSSolution\System1\Tune1\020215_F1_MS.qgf

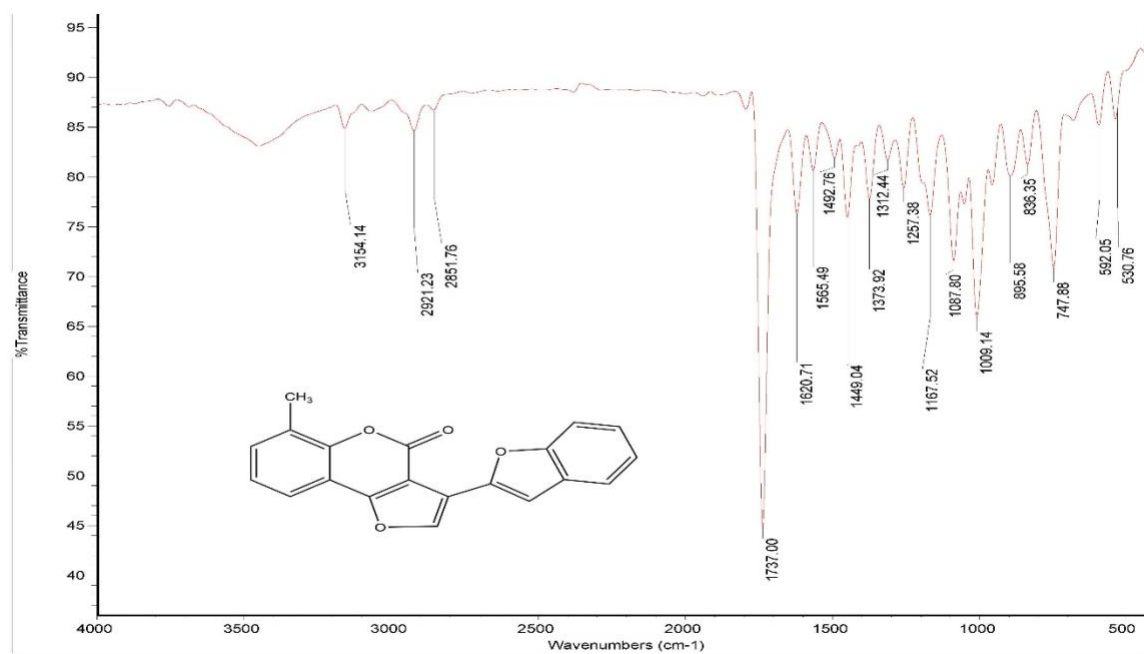


Line#:1 R Time:3.5(Scan#:595)
MassPeaks:138
RawMode:Averaged 1.8-4.8(257-857) BasePeak:301.650(113433)
BG Mode:None Group 1 - Lvent 1

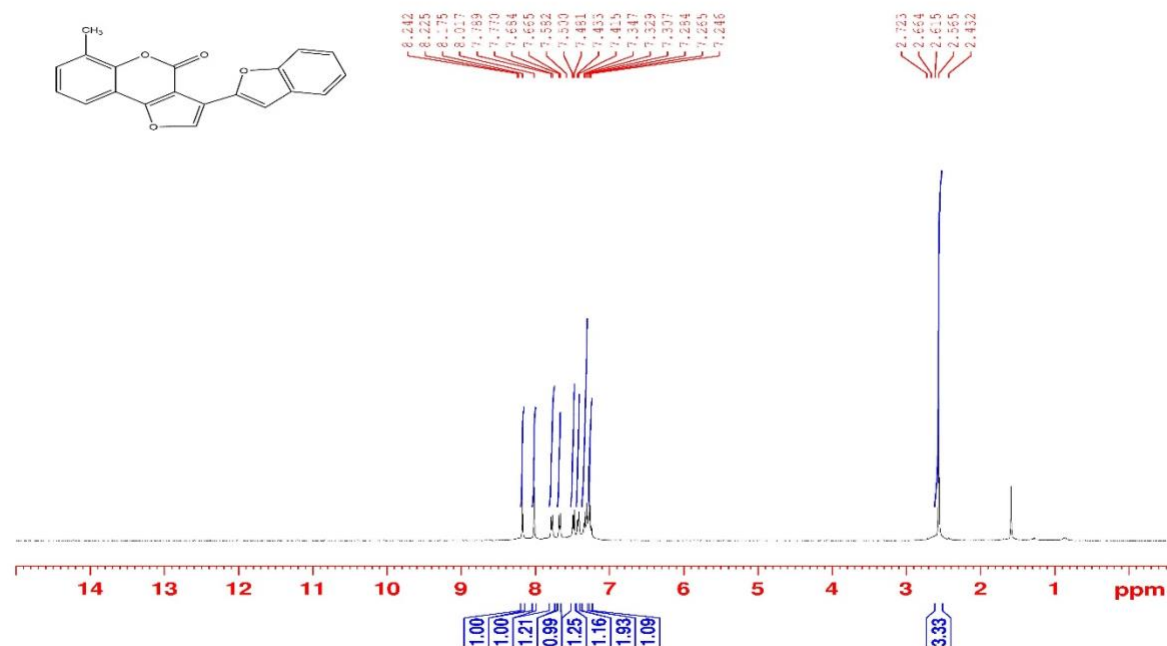


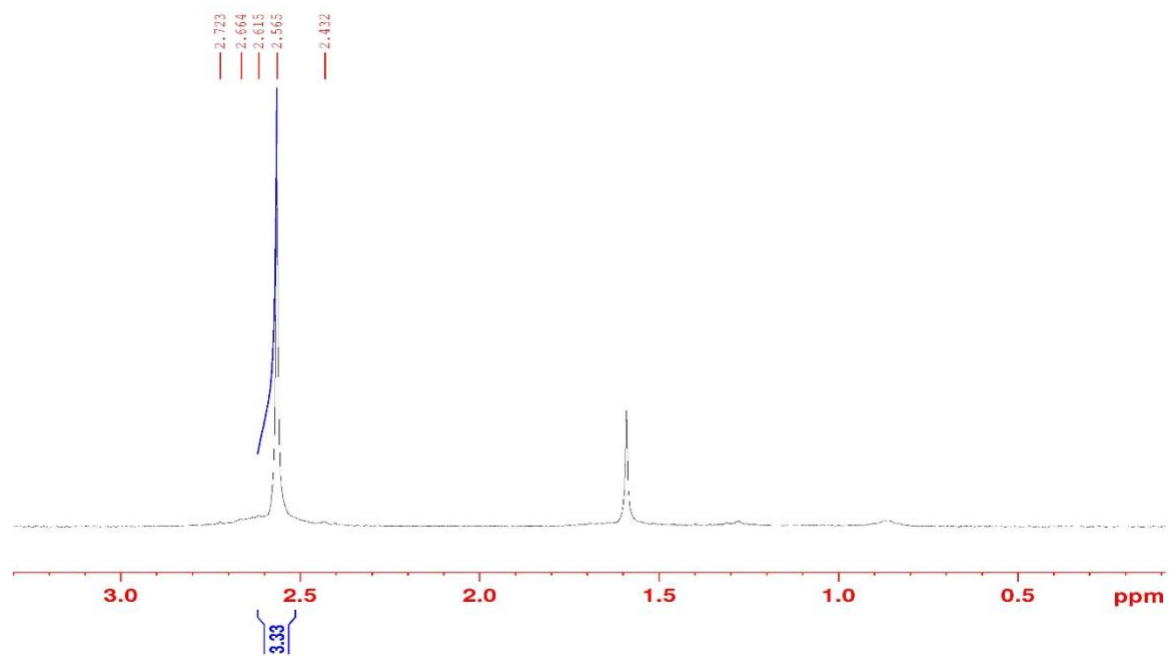
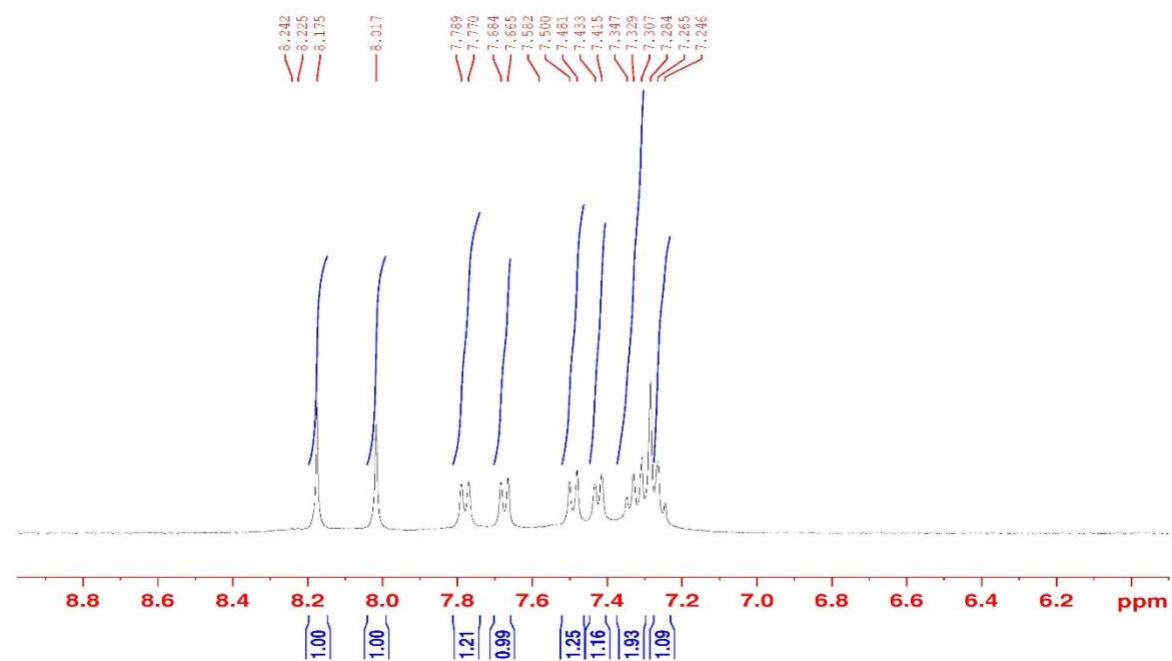
Compound 4b

Infrared Spectra

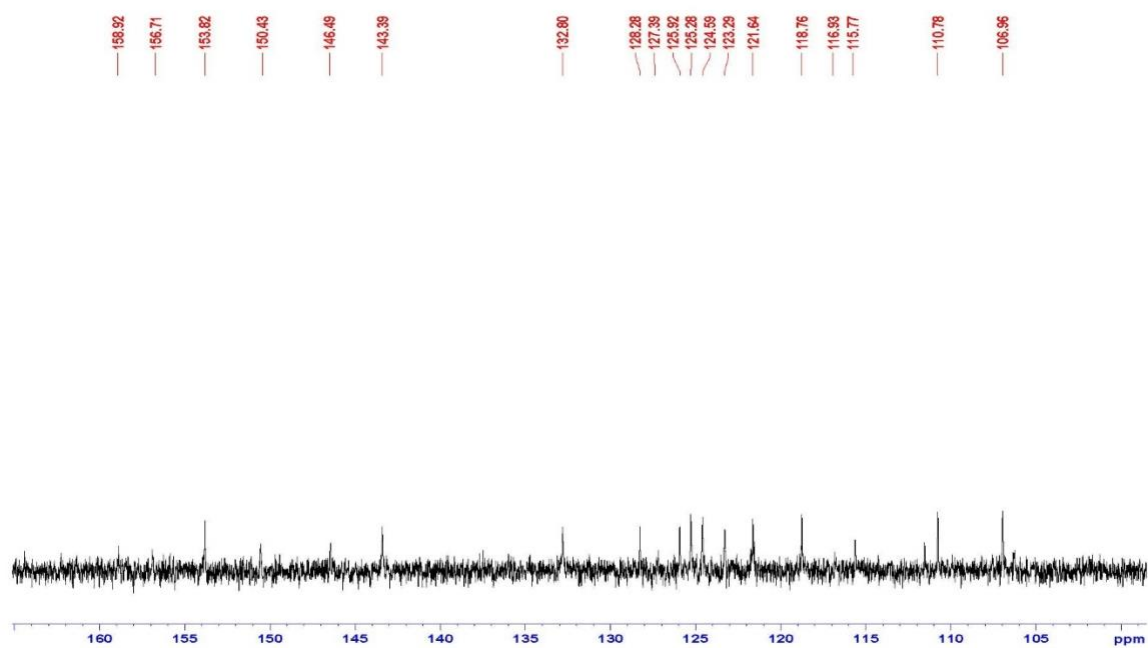
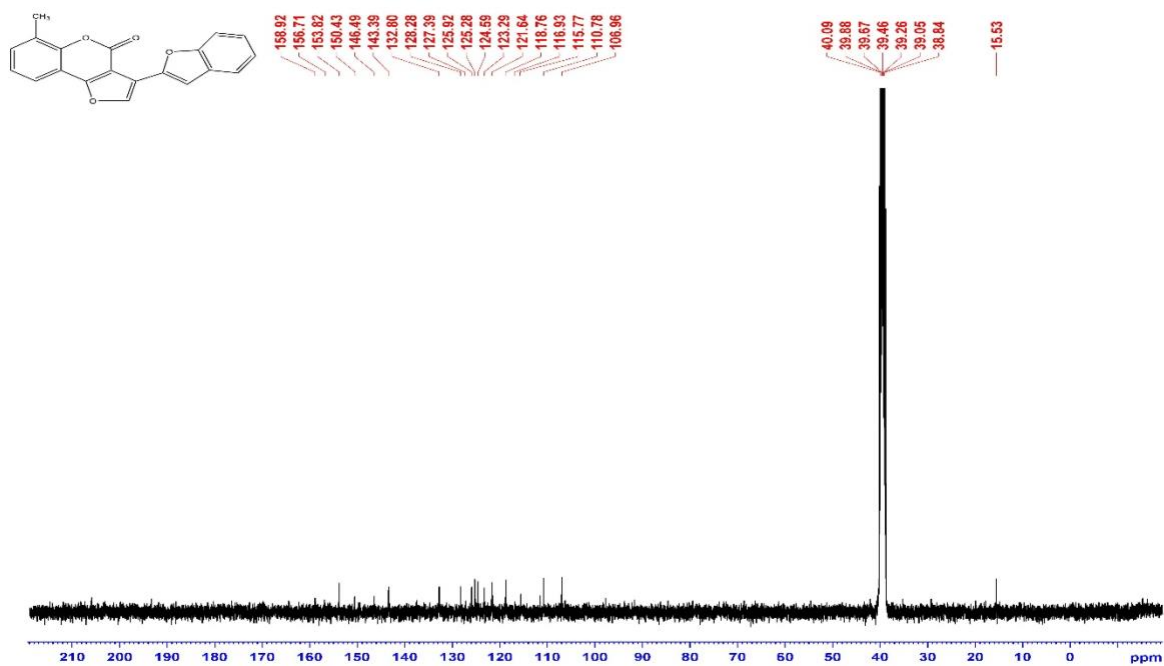


Compound 4b

¹H NMR spectra

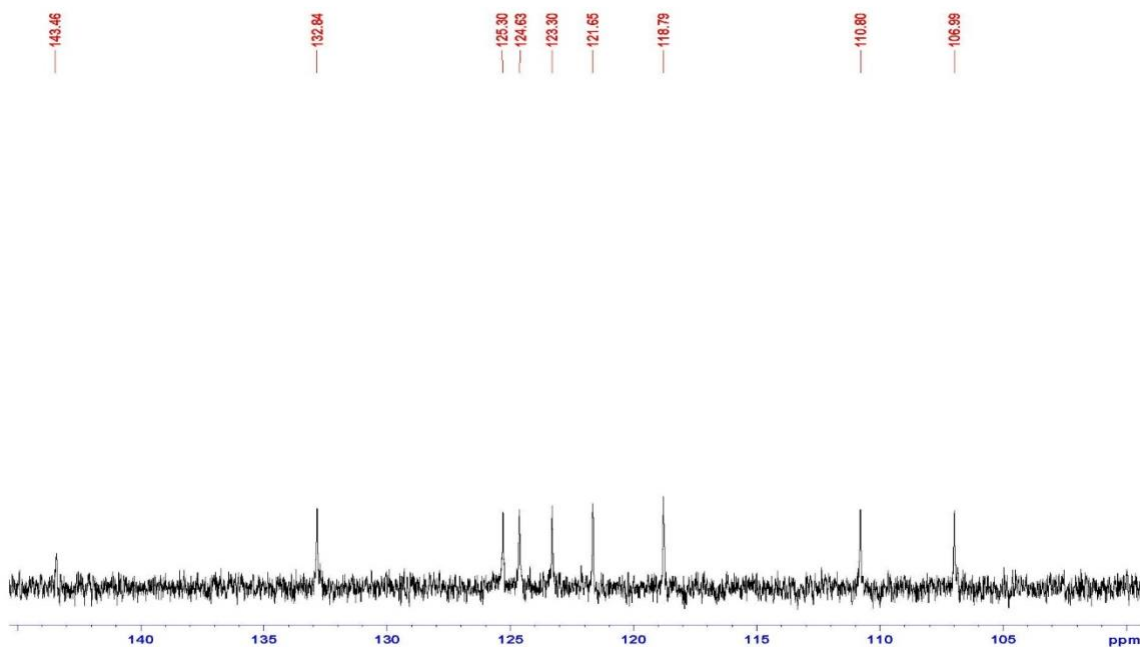
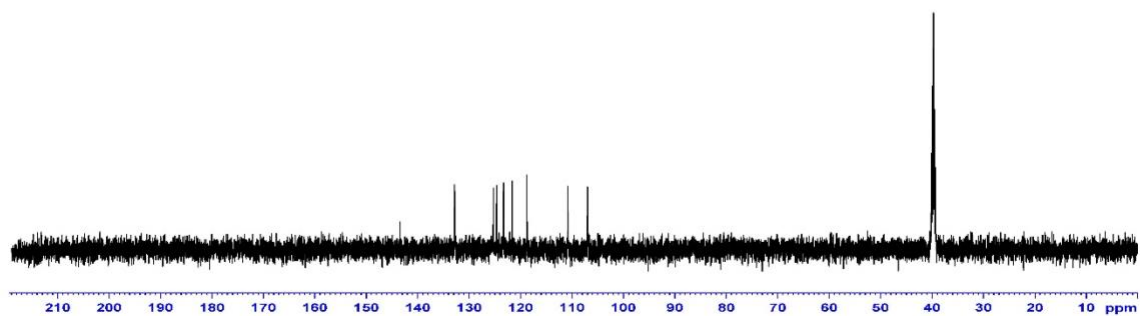
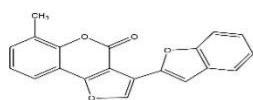


Compound 4b

 ^{13}C NMR spectra

Compound 4b

DEPT-90 spectra



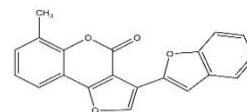
Compound 4b

Mass spectra

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Sample Information

Analyzed by :BHOLA GAURAV
Analyzed : 2/9/2015 2:16:23 PM
Sample Name : D 15
Sample ID : D 15
Data File : D:\OUT OF DEPKAUSTHA\PATIL\ND 15.ngd
Tuning File : C:\GCMS\software\System1\msd1020215_F1.MS.gct

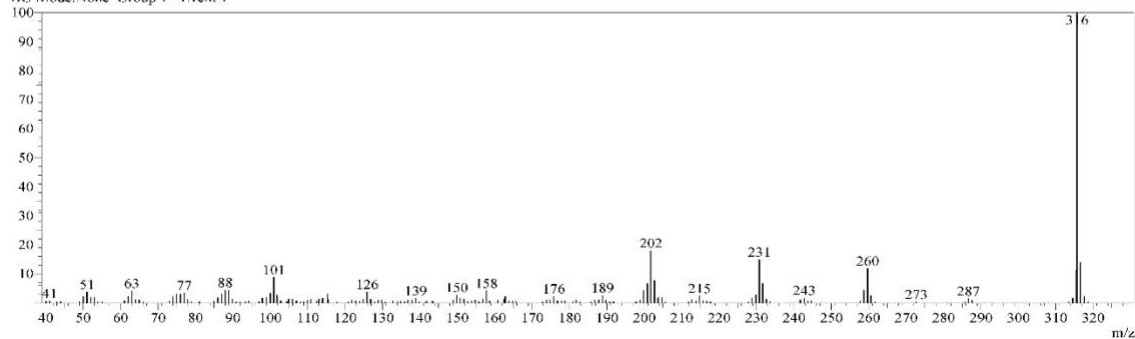


Line# : 1 R Time: 3.0 (Scan#: 507)

Mass Peaks: 156

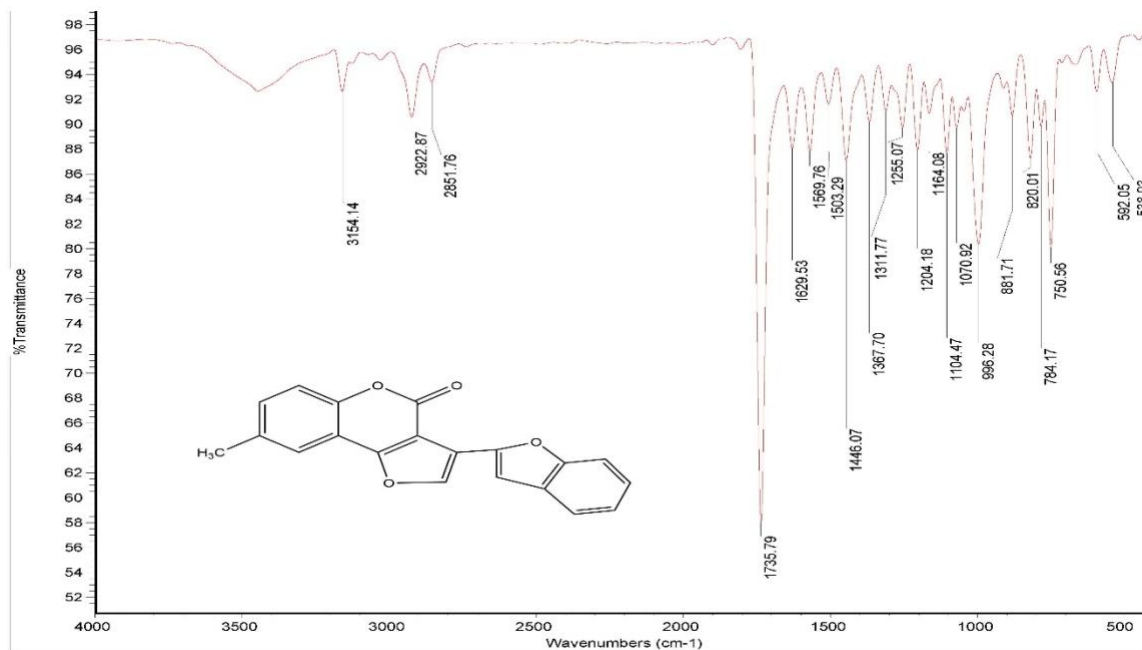
Raw Mode: Averaged 2.0-3.8 (302-656) Base Peak: 315.700 (1100008)

BG Mode: None Group 1 - Event 1

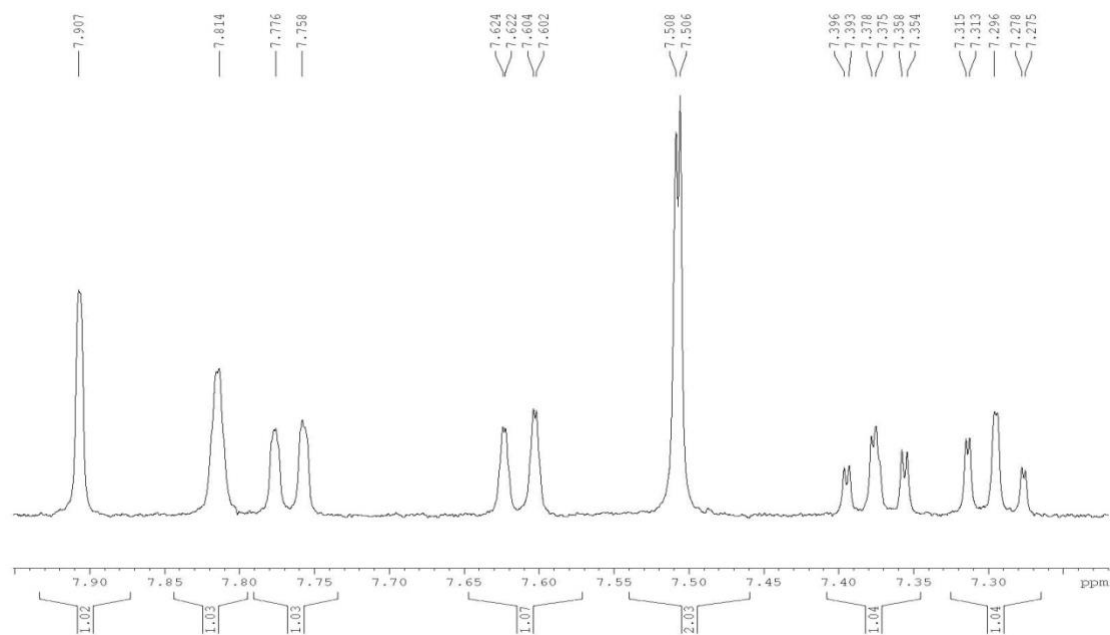
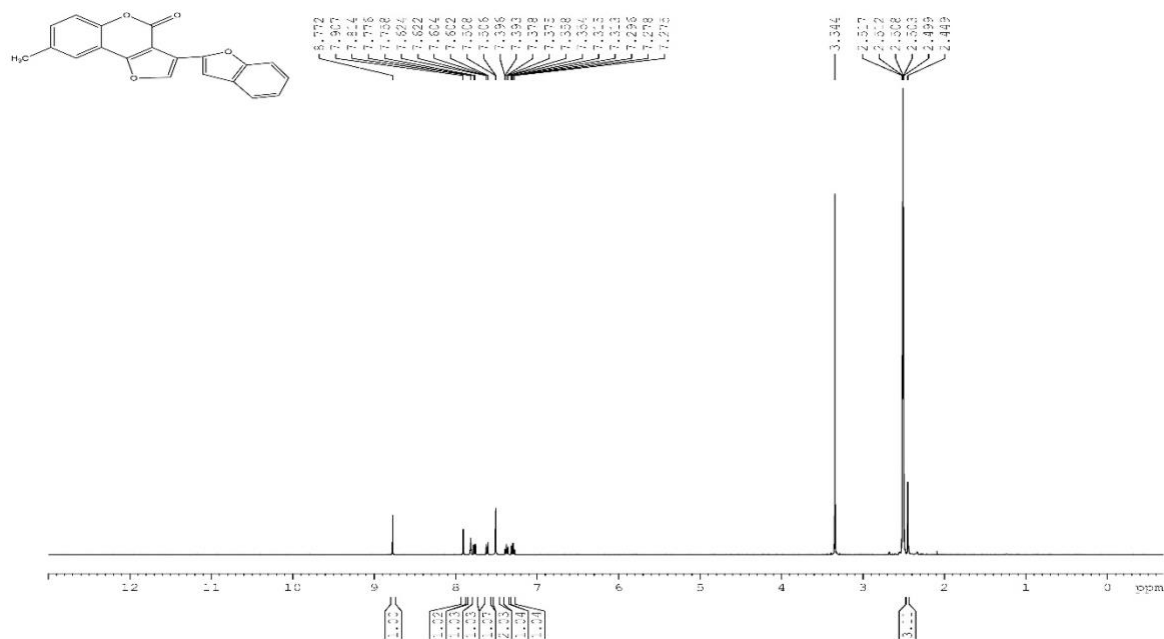


Compound 4c

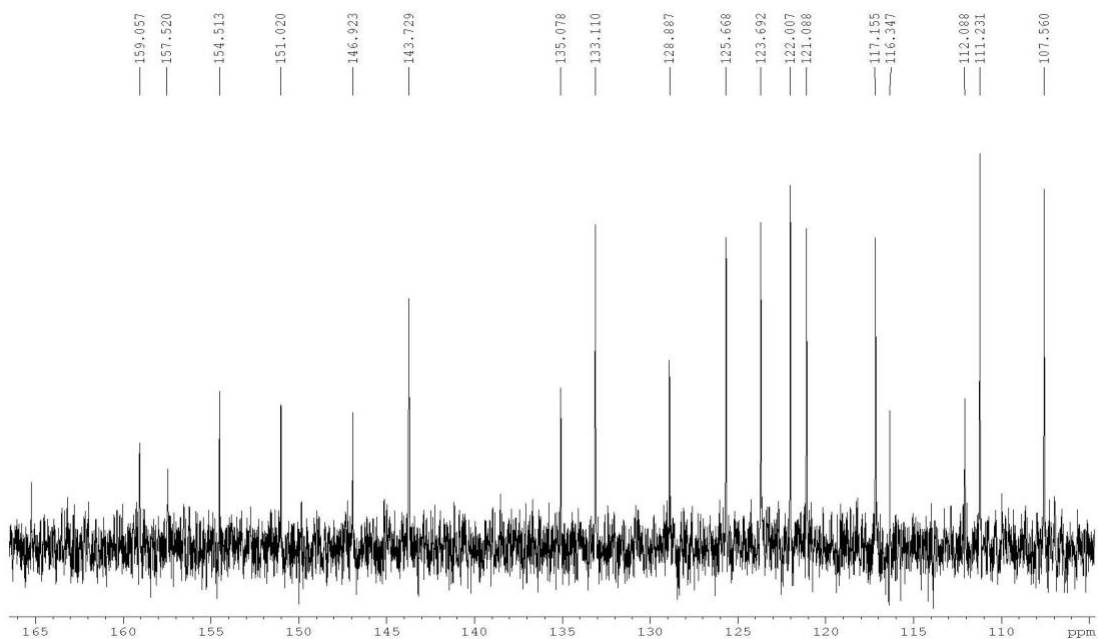
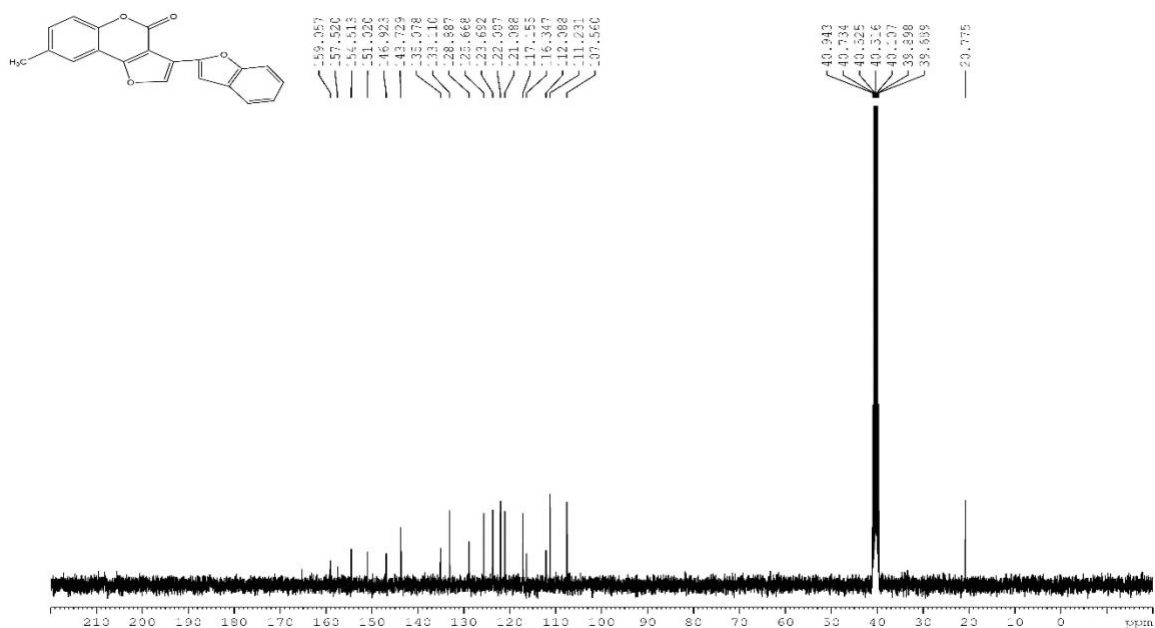
Infrared Spectra

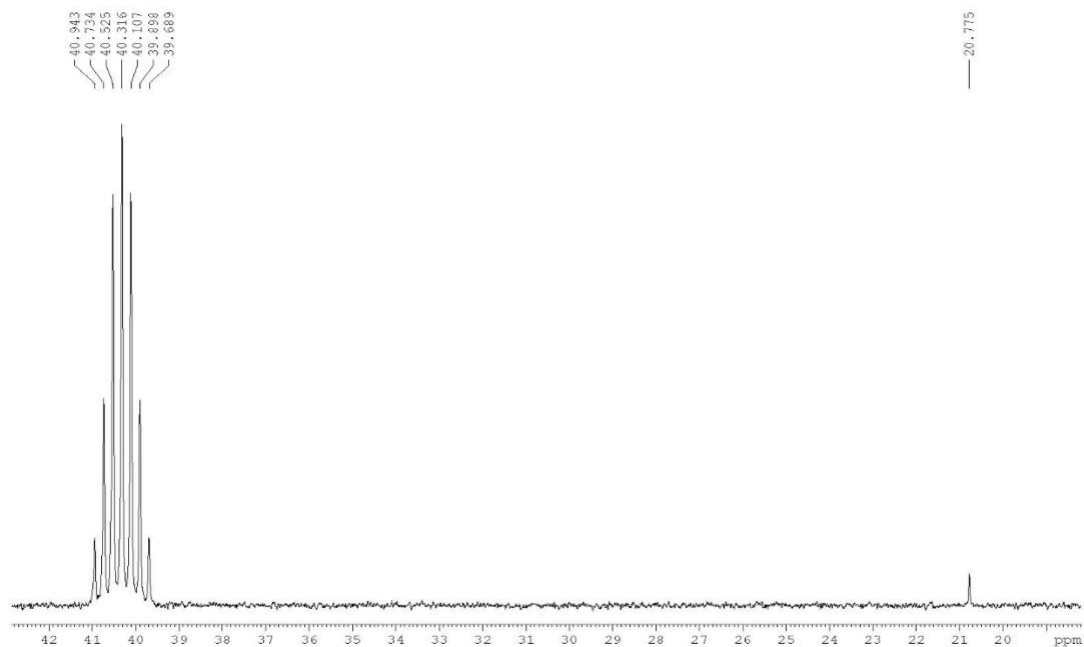
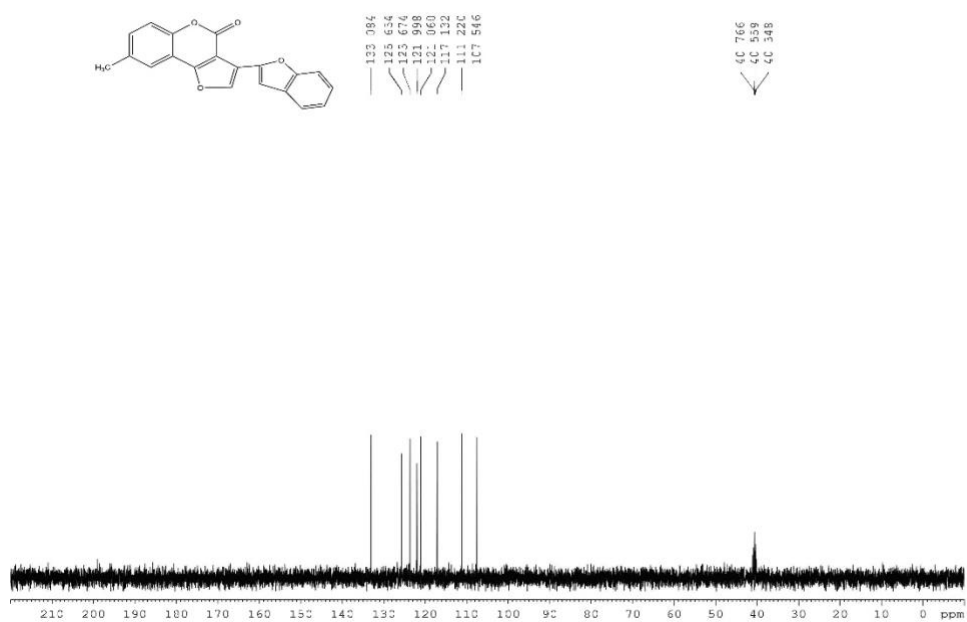


Compound 4c



Compound 4c

 ^{13}C NMR spectra

**Compound 4c****DEPT-90 spectra**

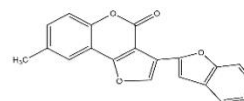
Compound 4c

Mass spectra

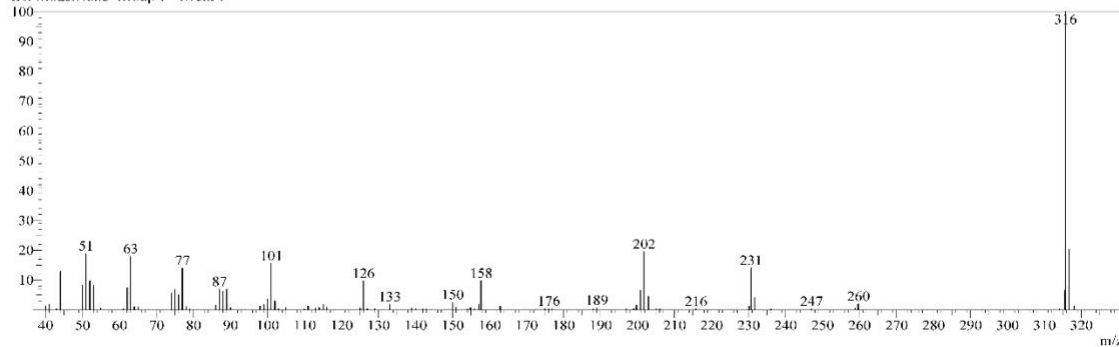
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RAJKOT-360005

Sample Information

Analyzed by : BHOLA GAURAV
Analyzed : 2/9/2015 3:16:09 PM
Sample Name : D13
Sample ID :
Data File : D:\OUT OF DEP\KAUSHAL PATEL\D13.qgd
C:\GCMSoftware\Data\Project1\DI.ms.SPEED.qgm
Tuning File : C:\GCMSoftware\System1\Tune1\020215_F1_NSR.qgt

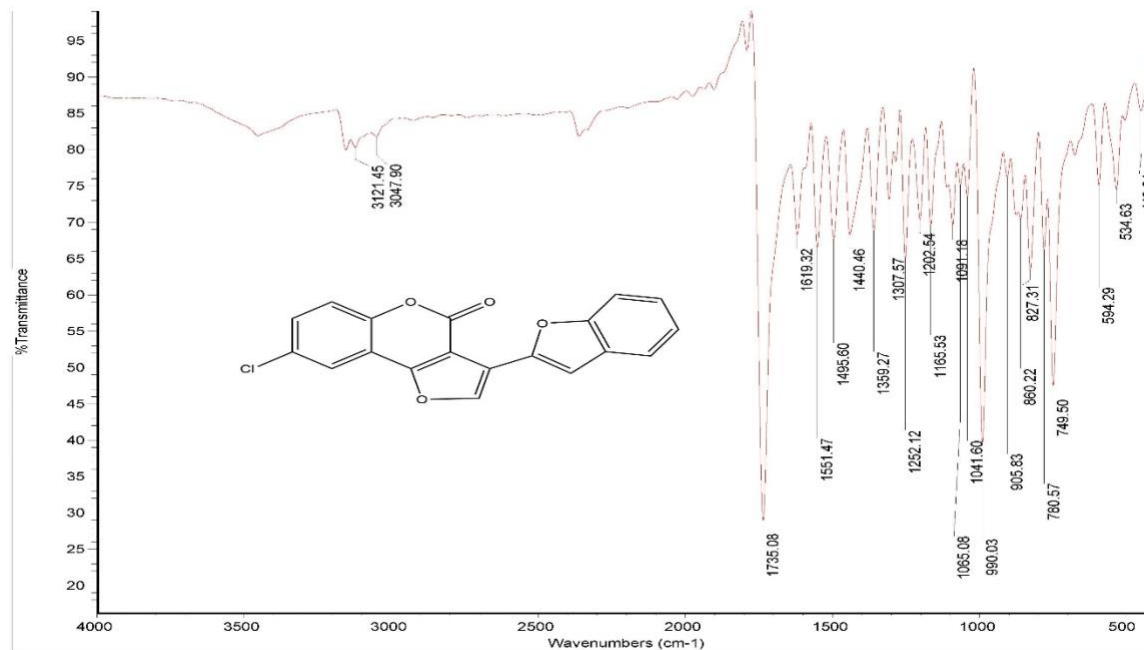


Line#:1 R.Time:2.3(Scan#:351)
MassPeaks:81
RawMode:Averaged 1,3-3,5(153-597) BasePeak:315.700(764)
BG Mode:None Group 1 - Event 1

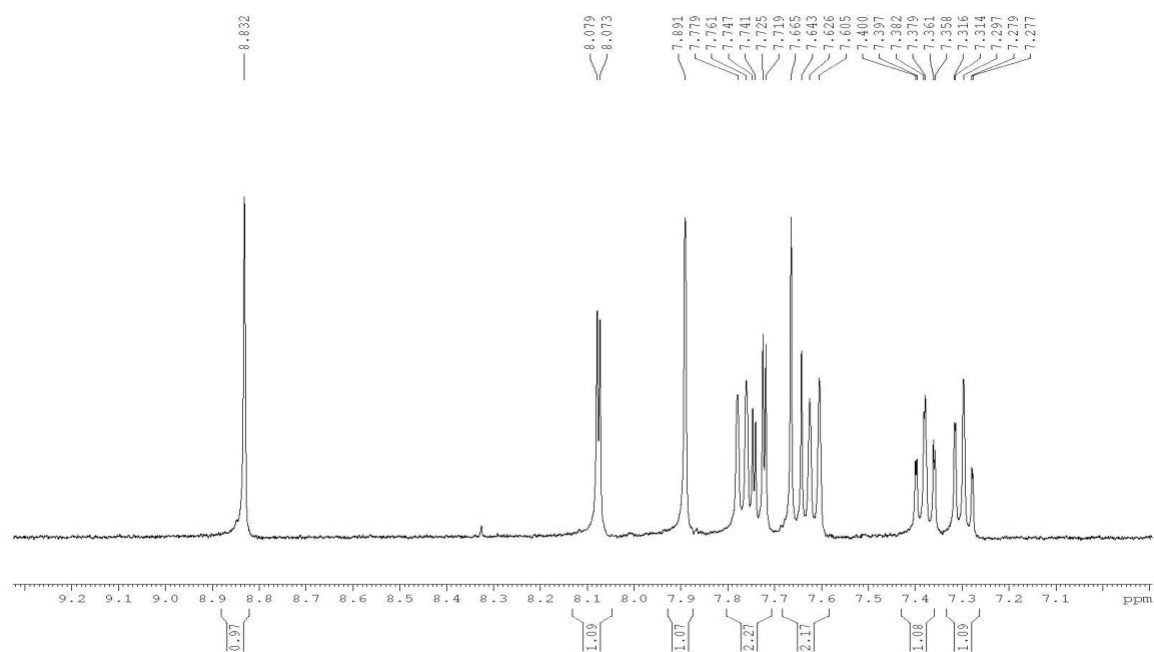
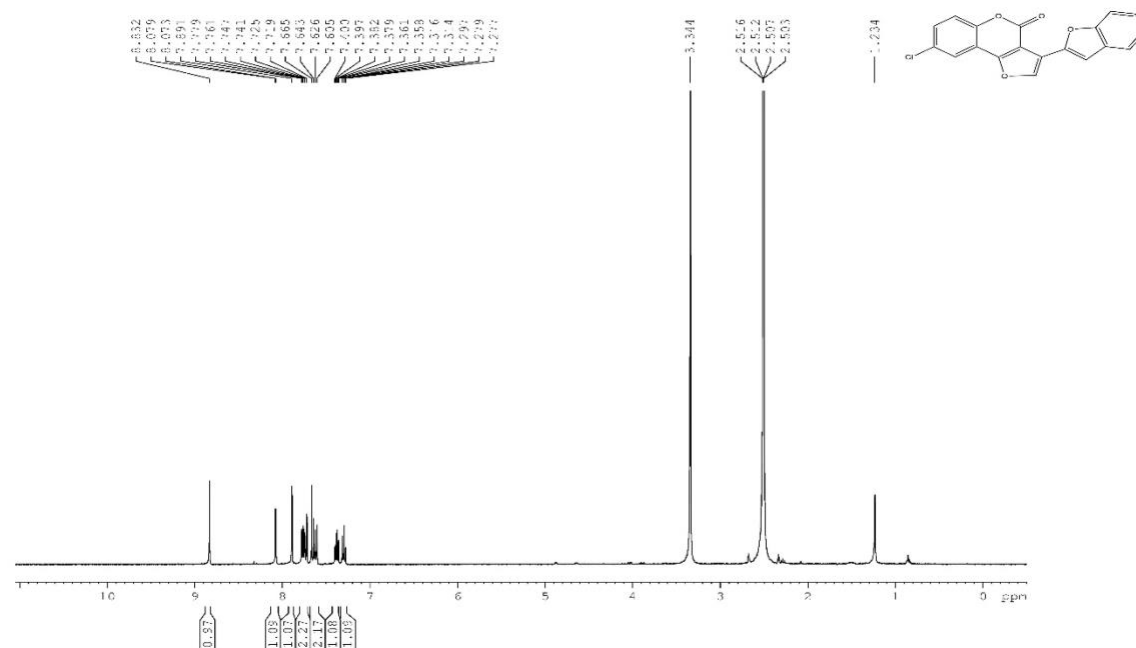


Compound 4d

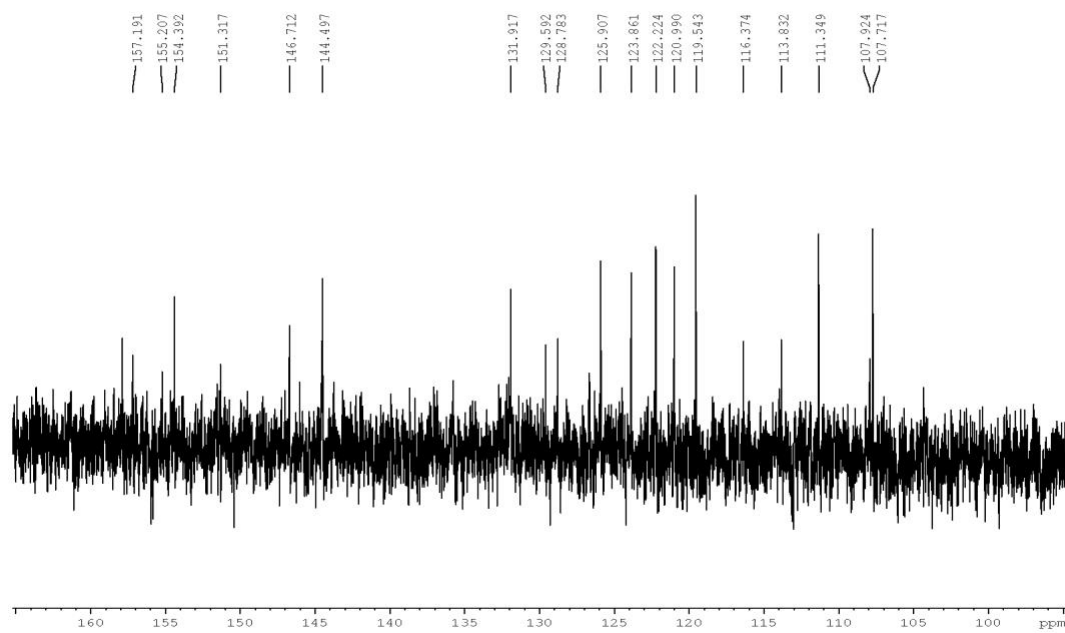
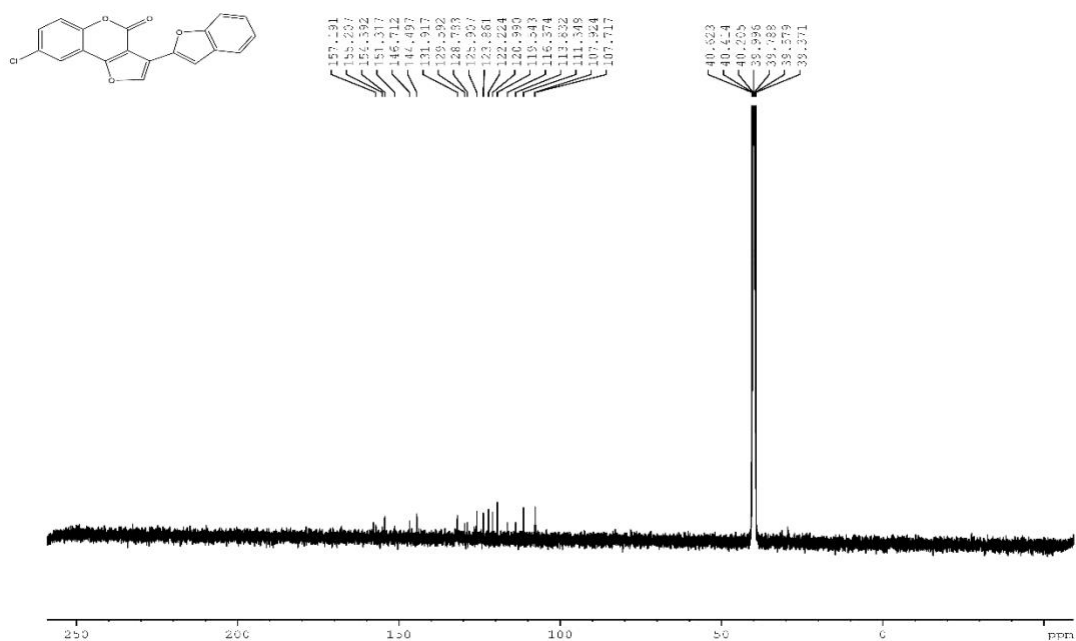
Infrared Spectra



Compound 4d

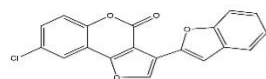
 ^1H NMR spectra

Compound 4d

 ^{13}C NMR spectra

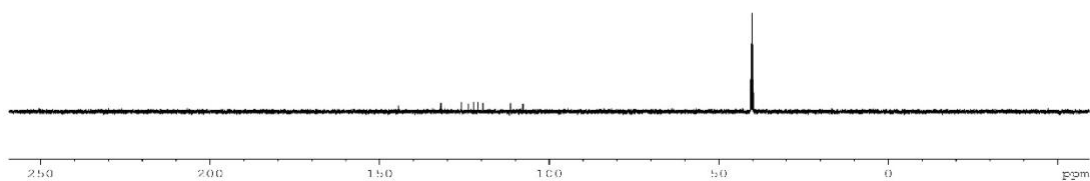
Compound 4d

DEPT-90 spectra



144.498
131.916
125.909
123.860
122.228
120.990
119.540
111.345
107.710

40.636
40.527
40.219
40.009
39.800



144.498

131.916

125.909

123.860

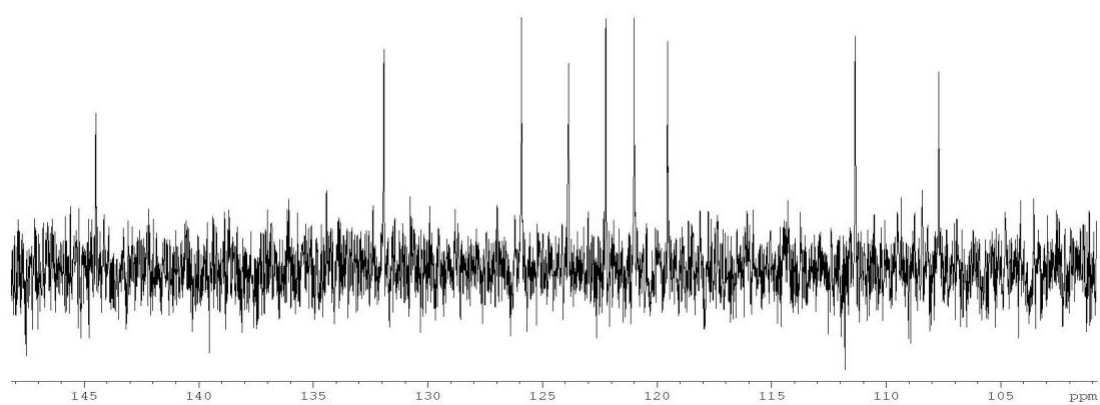
122.228

120.990

119.540

111.345

107.710



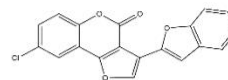
Compound 4d

Mass spectra

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Sample Information

Analyzed by BHOLA GAURAV
Analyzed 2/9/2015 3:36:13 PM
Sample Name D 14
Sample ID
Data File D:\OUT OF DEP\KAUSHAL PATEL\D 14.qgd
Tuning File C:\GCMSolution\Data\Project1\DI.ms.SPL.D.qgm
C:\GCMSolution\System\Tune1\020215_F1.MS.qgd



Line#:1 R.Time:3.3(Scan#:552)
MassPeaks:138
RawMode:Averaged 2.5-3.7(405-640) BasePeak:335.600(672168)
BG Mode:None Group 1 - Event 1

