Document: Supporting Information

Role of graphene oxide as heterogeneous acid catalyst and benign oxidant for synthesis of benzimidazoles and benzothiazoles

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Contents

General information

All the products are previously reported compounds and were also confirmed by ^{1}H NMR, ^{13}C NMR, MS, elemental analysis and melting point analysis. Mass spectra of compound were analyzed by both GC-MS and MS. GC-MS analysis were obtained on Shimadzu GCMS-QP 2010 (Rtx-17, 30 m × 25mm ID, film thickness 0.25 μm df) (column flow- 2 mL/min, 80 °C to 240 °C at 10°/min. rise.) while MS spectra were obtained from Finnigan LCD Advantage Max mass spectrometer (LCQAD 30000, Thermo Electron Corporation, USA) with nitrogen sheath gas (flow rate of 40×10^{-6} m^3/min) and auxiliary N_2 (flow rate 18×10^{-6} m^3/min) where capillary temperature was maintained at 548 K with voltage of 420 V and ion spray voltage at 5 KV. Synthesized compounds were characterized by ^{1}H NMR (Varian 200 MHz NMR Spectrometer), ^{13}C NMR spectra (50 MHz). Chemical shifts are reported in parts per million (δ) relative to tetramethylsilane as internal standard. Melting point of synthesized compounds was measured by capillary method and by DSC, Q-100 (TA Instrument USA) with nitrogen flow rate of 50 mL/min.

Images of re-oxidized Graphene oxide

(a) (b) (c)

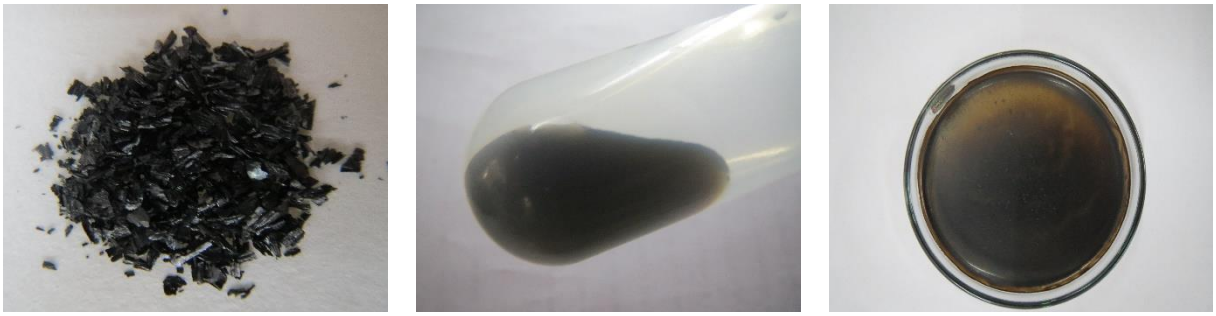


Figure S1. (a) Partially reduced GO after 5th recycle; (b) re-oxidized GO after centrifugation; (c) re-oxidized GO after drying

Table S1: Elemental analysis of pure Graphene oxide and graphene oxide recovered after 5th recycle for synthesis of benimidazoles and benzthiazoles.[1]

Sample	**Element (% Wt.)**					**O/C ratio (%)**
	C	**H**	**O**	**N**	**Associated Moisture**	
Graphene oxide	37.3	2.8	33.3	0.1	26.5	
Graphene oxide (moisture-free)	50.8	3.8	45.3	0.1	-	89.3
Graphene oxide recovered after 5th recycle (GO-R5)	60.0	1.7	13.9	4.5	19.9	
GO-R5 (moisture-free)	74.9	2.1	17.4	5.6	-	23.2

Spectral data of selected compounds

1a. 2-Phenyl-1,3-benzothiazole:[2] Yellow solid; mp: 110 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3045, 1691, 1507, 1318, 1035, 806, 755 cm^{-1}; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.11−8.07 (m, 3H), 7.92−7.90 (d, J = 8 Hz, 1H), 7.52−7.48 (m, 4H), 7.41−7.37 (t, J = 16 Hz, 1h), ^{13}C NMR (50 MHz, $CDCl_3$): δ 168.06, 154.17, 135.09, 133.66, 130.96, 129.02, 127.58, 126.31, 125.19, 123.26, 121.62; GC-MS (EI) *m/z* (%) = 211(100) M^+, 108(36), 82(11), 69(22); analytically calculated for $C_{13}H_9NS$: C, 73.92; H, 4.29; N, 6.63; S, 15.18 Found C, 73.92; H, 4.21; N, 6.54; S, 15.17

2a. 2-(4-Chlorophenyl)-1,3-benzothiazole: Yellow solid; mp: 117 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3033, 1691, 1556, 1470, 1093, 973, 829, 756; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.09−7.88 (m, 4H), 7.55−7.37 (m, 4H), ^{13}C NMR (50 MHz, $CDCl_3$): 129.32, 128.75, 126.53, 125.46, 123.32, 121.70; GC-MS (EI) *m/z* (%) = 245 (100) M^+, 210 (10), 108 (37), 69 (28); analytically calculated for $C_{13}H_8ClNS$: C, 63.54; H, 3.28; N, 5.70; S, 13.04 Found C, 63.78; H, 3.16; N, 5.58; S, 13.01

3a. 2-(3-Chlorophenyl)-1,3-benzothiazole: White solid; mp: 116 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3033, 1606, 1508, 1455, 1325, 1052, 756, 701 cm^{-1}; ^{1}H NMR (200 MHz, $CDCl_3$): δ 7.17−7.12 (m = 4H), 6.72−6.70 (d, J = 8 Hz, 2H), 6.61−6.56 (d, *J* = 16 Hz, 2H), ^{13}C NMR (50 MHz, $CDCl_3$): 148.62, 136.83, 133.72, 131.59, 130.23, 129.83, 128.27, 118.80, 118.27, 115.24; GC-MS (EI) *m/z* (%) = 245(100) M^+, 210(15), 108(46), 82(18), 69(22); analytically calculated for $C_{13}H_8ClNS$: C, 63.54; H, 3.28; N, 5.70; S, 13.05 Found C, 63.51; H, 3.19; N, 5.60; S, 13.01

4a. 2-(4-Fluorophenyl)benzothiazole: Yellow solid; mp: 99 ° C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3035, 1691, 1608, 1323, 1050, 816, 756, 701; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.13−8.04 (m, 3H), 7.93−7.89 (d, J = 16 Hz, 1H), 7.54−7.35 (m, 2H), 7.23−7.15 (m, 2H), ^{13}C NMR (50 MHz, $CDCl_3$): 166.90, 163.36, 154.25, 135.21, 129.73, 126.58, 125.41, 123.35, 121.78, 116.21; GC-MS (EI) *m/z* (%) =

229 (100) M^+, 114 (08), 108 (50), 82 (14), 69 (26); analytically calculated for $C_{13}H_8FNS$: C, 68.11; H, 3.51; N, 6.11; S, 13.98 Found C, 68.18; H, 3.41; N, 6.12; S, 13.88

5a. 2-(4-Bromophenyl)-1,3-benzothiazole: Yellow solid; mp: 126 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3310, 1596, 1070, 972, 829, 754; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.09−7.90 (m, 4H), 7.67−7.37 (m, 4H), ^{13}C NMR (50 MHz, $CDCl_3$): 154.20, 135.17, 132.38, 129.05, 126.65, 125.59, 123.45, 121.81; GC-MS (EI) *m/z* (%) = 291 (100) M^+, 210 (47), 108 (52), 69 (55); analytically calculated for $C_{13}H_8BrNS$: C, 53.81; H, 2.77; N, 4.82; S, 11.05 Found C, 53.51; H, 2.39; N, 4.78; S, 10.96

6a. 2-(4-Nitrophenyl)benzothiazole: Yellow solid; mp: 221 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3330, 1624, 1515, 1352, 1000, 754; 1H NMR (200 MHz, $CDCl_3$): δ 8.14−8.06 (m, 1H), 7.86−7.64 (m, 3H), 7.34−7.12 (m, 3H), 6.71−6.58 (m, 1H), ^{13}C NMR (50 MHz, $CDCl_3$): 155.64, 148.18, 134.03, 133.75, 132.43, 130.20, 127.89, 127.33, 126.28, 124.59, 117.67, 115.22; GC-MS (EI) *m/z* (%) = 256 (100) M^+, 239 (32), 94 (20); analytically calculated for $C_{13}H_8N_2O_2S$: C, 60.93; H, 3.15; N, 10.93; S, 12.51 Found C, 60.86; H, 3.07; N, 10.92; S, 12.64

7a. 4-Benzothiazole-2-phenyl-dimethylamine: White solid; mp: 175 ˚C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3050, 1621, 1509, 1228, 1015, 815, 755, 703; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.00−7.82 (m, 4H), 7.44−7.30 (m, 2H), 6.77−6.73 (d, J = 16 Hz, 2H), 3.06 (s, 6H), ^{13}C NMR (50 MHz, $CDCl_3$): 152.34, 134.61, 129.04, 126.15, 124.36, 122.38, 121.50, 111.84, 40.33; GC-MS (EI) *m/z* (%) = 254 (100) M^+, 238 (13), 177 (21), 142 (20), 101 (17); analytically calculated for $C_{15}H_{14}N_2S$: C, 70.83; H, 5.54; N, 11.01; S, 12.60 Found C, 70.25; H, 5.17; N, 11.01; S, 12.17

8a. 2-(4-Methylphenyl)benzothiazole: White solid; mp: 79 ˚C IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3412, 2936, 1610, 1484, 1313, 962, 829; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.02−7.82 (m, 4H), 7.47−7.20 (m, 4H), 2.37 (s, 3H), ^{13}C NMR (50 MHz, $CDCl_3$): 129.76, 127.52, 125.04, 123.07, 121.62, 21.58;

GC-MS (EI) *m/z* (%) = 225 (100) M^+, 108 (13), 82 (13), 69 (18); analytically calculated for $C_{14}H_{11}NS$: C, 74.63; H, 4.91; N, 6.21; S, 14.23 Found C, 74.31; H, 4.87; N, 6.14; S, 14.32

9a. 2-(4-Methoxyphenyl)benzothiazole: white solid; mp: 113 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3060, 1691, 1605, 1506, 1037, 758, 702 cm^{-1}; ^1H NMR (200 MHz, $CDCl_3$): δ 8.05−8.02 (d, J = 12 Hz, 3H), 7.88−7.86 (d, J = 8 Hz, 1H), 7.49−7.45 (t, J = 16 Hz, 1H), 7.37−7.33 (t, J = 16 Hz, 1H), 7.20−7.14 (m, 1H), 7.01−6.99 (d, J = 8 Hz, 2H), 3.88 (s, 3H), ^{13}C NMR (50 MHz, $CDCl_3$): 167.85, 161.94, 154.25, 137.06, 134.88, 131.92, 129.12, 128.38, 126.20, 124.79, 122.84, 121.41, 114.38, 55.47; GC-MS (EI) *m/z* (%) = 241(100) M^+, 226 (41), 198 (32); analytically calculated for $C_{14}H_{11}NOS$: C, 69.68; H, 4.59; N, 5.80; S, 13.28 Found C, 68.24; H, 4.53; N, 5.66; S, 13.11

10a. 2-(2-Thienyl)-1,3-benzothiazole: Yellow solid; mp: 90 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3015, 1693, 1606, 1505, 1318, 1052, 757, 701; ^1H NMR (200 MHz, $CDCl_3$): δ 8.05−8.01 (d, J = 16 Hz, 1H), 7.87−7.83 (d, J = 16 Hz, 1H), 7.66−7.64 (d, J = 8 Hz, 1H), 7.52−7.32 (m, 3H), ^{13}C NMR (50 MHz, $CDCl_3$): 163.00, 153.87, 137.52, 134.86, 129.42, 128.73, 128.18, 126.57, 125.37, 123.14, 121.59, 115.33; GC-MS (EI) *m/z* (%) = 217 (100) M^+, 108 (30), 82 (14), 69 (26); analytically calculated for $C_{11}H_7NS_2$: C, 60.82; H, 3.24; N, 6.44; S, 29.52 Found C, 60.61; H, 3.16; N, 6.48; S, 29.47

11a. 2-(2-Hydroxyphenyl)benzothiazole: Yellow solid; mp: 110 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3547, 1622, 1521, 1321, 1021, 806, 750, 699; ^1H NMR (200 MHz, $CDCl_3$): δ 8.62 (s, 1H), 7.68 (s, 1H), 7.44−7.36 (m, 3H), 7.01−6.73 (m, 4H), ^{13}C NMR (50 MHz, $CDCl_3$): 202.53, 159.91, 153.94, 134.62, 129.36, 126.34, 124.85, 122.52, 121.57, 116.10; MS (EI) *m/z* (%) = 227 (100) M^+, 153 (10), 113 (25); analytically calculated for $C_{13}H_9NOS$: C, 68.70; H, 3.99; N, 6.16; S, 14.10 Found C, 68.72; H, 3.63; N, 6.09; S, 13.96

12a. 2-(4-Hydroxyphenyl)benzothiazole: Yellow solid; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3573, 1606, 1508, 1318, 1035, 806, 756, 700; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.05−7.86 (m, 2H), 7.48−7.30 (m, 3H), 6.97−6.92 (d, J = 20 Hz 1H), 6.28−6.02 (m, 1H), 5.80−5.59 (m, 1H), ^{13}C NMR (50 MHz, $CDCl_3$): 160.49, 129.02, 126.41, 124.89, 122.28, 116.06; analytically calculated for $C_{13}H_9NOS$: C, 68.70; H, 3.99; N, 6.16; S, 14.10 Found C, 68.02; H, 3.91; N, 6.07; S, 13.96

13a. 2-Styrylbenzothiazole:[3] Off white solid; mp: 112 °C;[4] ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.03−8.01 (m, 1H), 7.66−7.62 (m, 2H), 7.43−7.39 (m, 3H), 7.33−7.29 (m, 2H), 7.10−7.03 (m, 3H); ^{13}C NMR (50 MHz, $CDCl_3$):129.18, 129.01, 128.95, 128.71, 126.44, 110.31; GC-MS (EI) *m/z* (%) = 236 (100) M^+, 221 (40), 193 (43), 165 (30), 76 (18)

14a. 2-Propylbenzothiazole: ^{1}H NMR (200 MHz, $CDCl_3$): δ 7.99−7.93 (m, 1H), 7.82−7.80 (m, 1H), 7.44−7.40 (m, 1H), 7.34−7.30 (m, 1H), 3.09−3.06 (t, J = 6 HZ, 2H), 1.93−1.84 (m, 2H), 1.06−1.01 (t, J = 10 HZ, 3H); ^{13}C NMR (50 MHz, $CDCl_3$): 172.20, 135.09, 125.82, 124.59, 122.45, 121.44, 36.20, 23.09, 13.70; GC-MS (EI) *m/z* (%) = 177 (25) M^+, 149 (100), 108 (20), 69 (18), 45 (17)

15a. 2-Phenylbenzimidazole:[5] Brown solid; mp: 293 °C;[6] IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3456, 1412, 1280, 1124, 972, 745; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.08−8.06 (d, J = 8 Hz, 2H), 7.66−7.64 (m, 2H), 7.52−7.46 (m, 3H), 7.30−7.26 (m, 2H), ^{13}C NMR (50 MHz, $CDCl_3$): 151.64, 130.40, 129.25, 126.70, 123.20; GC-MS (EI) *m/z* (%) = 194 (100) M^+, 166 (8), 97 (13), 63 (11); analytically calculated for $C_{13}H_{10}N_2$: C, 80.38; H, 5.18; N, 14.42; Found C, 80.15; H, 5.51; N, 14.30

16a. 2-(3-Nitrophenyl)-1H-benzimidazole: Yellow solid; mp: 205 °C; IR (KBr): $\nu_{max\ (cm^{-1})}$ = 3452, 1522, 1344, 741; ^{1}H NMR (200 MHz, $CDCl_3$): δ 8.84 (s, 1H), 8.52−8.48 (d, J = 16 Hz, 1H), 8.33−8.29 (d, J = 16 Hz, 1H), 7.75−7.67 (t, J = 16 Hz, J = 16, 3H), 7.37−7.31 (m, 2H), ^{13}C NMR (50

MHz, $CDCl_3$): 138.50, 130.95, 125.98, 125.00, 121.93, 111.50; analytically calculated for $C_{13}H_9N_3O_2$: C, 65.27; H, 3.79; N, 17.56; Found C, 65.15; H, 3.51; N, 17.50

MS (ESI): *m/z* $[M + K]^+ = 278.04$

17a 2-(3-Chlorophenyl)-1H-benzimidazole: Yellow solid; mp: 290 °C; IR (KBr): $\nu_{max\ (cm^{-1})} = 3100$, 1579, 1438, 1124, 743; ^1H NMR (200 MHz, $CDCl_3$): δ 8.00 (s, 1H), 7.88−7.82 (m, 1H), 7.39−7.36 (m, 2H), 7.26−7.21 (m, 4H), ^{13}C NMR (50 MHz, $CDCl_3$): 149.04, 148.36, 143.57, 132.48,130.70, 124.22, 123.26, 120.82, 119.23, 111.68.

MS (ESI): *m/z* $[M + K]^+ = 267.01$

18a. 2-(4-Fluorophenyl)-1H-benzimidazole: Off white; mp: 249 °C; IR (KBr): $\nu_{max\ (cm^{-1})} = 3252$, 1608, 1442, 1229, 1158, 868, 750; ^1H NMR (200 MHz, $CDCl_3$): δ 8.03−8.00 (m, 2H), 7.60−7.57 (m, 2H), 7.25−7.22 (m, 2H), 7.12−7.07 (m, 2H), ^{13}C NMR (50 MHz, $CDCl_3$): 165.20, 162.71, 151.18, 131.30, 128.70, 127.77, 126.27, 122.97, 116.30; GC-MS (EI) *m/z* (%) = 212 (100) M^+, 106 (12), 64 (11); analytically calculated for $C_{13}H_9FN_2$: C, 73.57; H, 4.27; N, 13.19; Found C, 73.15; H, 4.16; N, 13.04

19a. 2-(4-Bromophenyl)-1H-benzimidazole: White solid; mp: 296 °C; IR (KBr): $\nu_{max\ (cm^{-1})} = 3301$, 1595, 1432, 1276, 964, 829, 754; ^1H NMR (200 MHz, $CDCl_3$): δ 7.93−7.91 (d, J = 8 Hz, 2H), 7.61−7.59 (d, J = 8 Hz, 2H), 7.26−7.23 (m, 4H), ^{13}C NMR (50 MHz, $CDCl_3$): 154.02, 152.05, 150.80, 148.43, 141.65, 132.29, 128.12, 123.12; analytically calculated for $C_{13}H_9BrN_2$: C, 57.16; H, 3.32; N, 10.25; Found C, 57.18; H, 3.25; N, 10.20

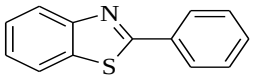
20a. 2-(2-Hydroxyphenyl)-1H-benzimidazole: Brown solid; mp: 241 °C; IR (KBr): $\nu_{max\ (cm^{-1})} = 3435$, 1597, 1458, 1262, 754; ^1H NMR (200 MHz, $CDCl_3$): δ 7.64 (br, s, 1H), 7.61−7.59 (d, J = 8 Hz, 1H), 7.39−7.28 (m, 4H), 7.16−7.12 (t, J = 16 Hz, 1H), 6.96−6.78 (m, 2H), ^{13}C NMR (50 MHz,

$CDCl_3$): 136.56, 134.91, 129.55, 126.43, 125.03, 122.92, 121.68, 116.11; GC-MS (EI) *m/z* (%) = 209 (100) M^+, 180 (22), 105 (92), 77 (88), 51 (37); analytically calculated for $C_{13}H_9ON_2$: C, 74.63; H, 4.33; N, 13.38; Found C, 74.28; H, 4.24; N, 13.25

21a. 6-(MethylPhenyl)-1H-benzimidazole:[7] White solid; mp: 245 °C; ^1H NMR (200 MHz, $CDCl_3$): δ 7.96 (s, 1H), 7.39−7.34 (d, J = 10 HZ, 2H), 7.24−7.19 (m, 3H), 7.08−7.00 (m, 2H), 2.41 (s, 3H); ^{13}C NMR (50 MHz, $CDCl_3$): 166.67, 153.79, 137.65, 130.95, 129.42, 128.93, 127.52, 126.31, 125.35, 123.19, 122.91, 121.60; GC-MS (EI) *m/z* (%) = 209 (43) M^+, 139 (12), 111 (44), 97 (87), 57 (100), 43 (64)

Copies of ^{1}H, ^{13}C NMR, MS, Elemental analysis spectra of selected products

1a. *2-Phenyl-1,3-benzothiazole*



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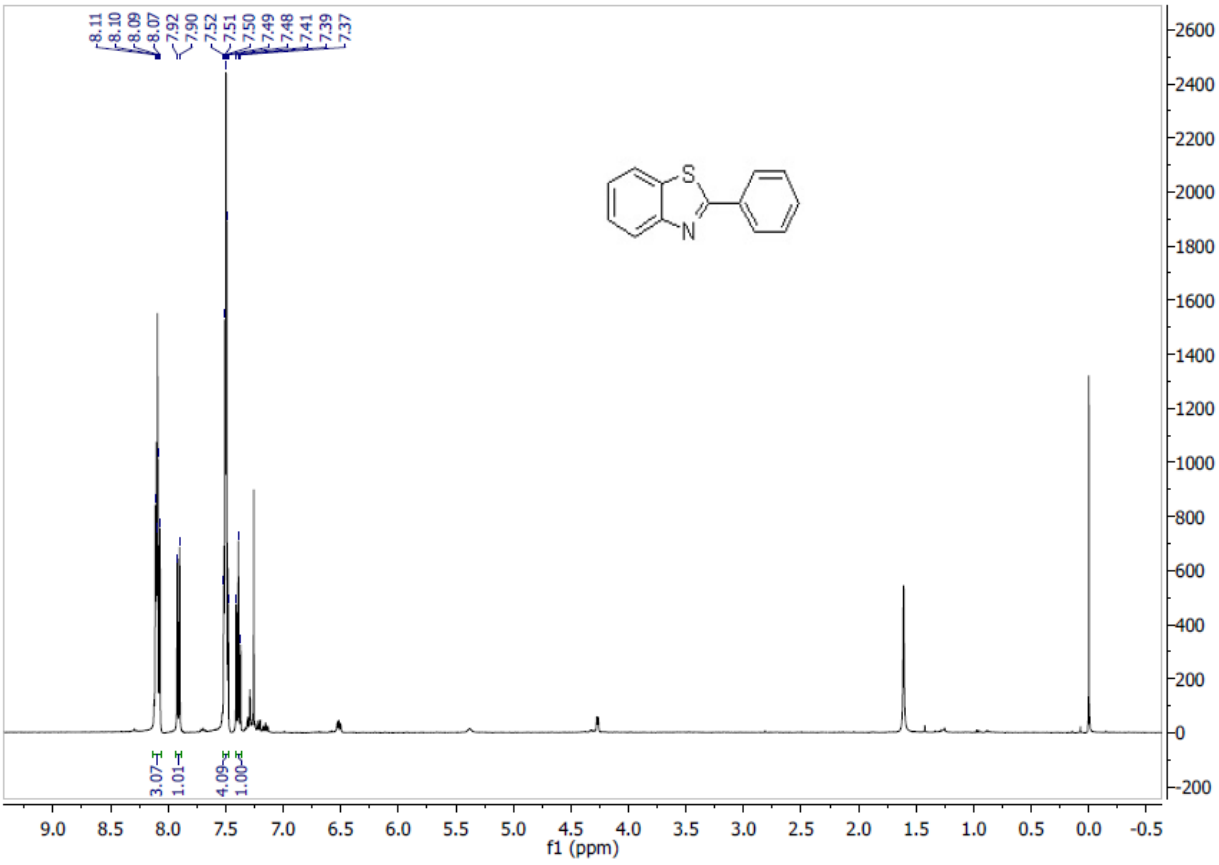

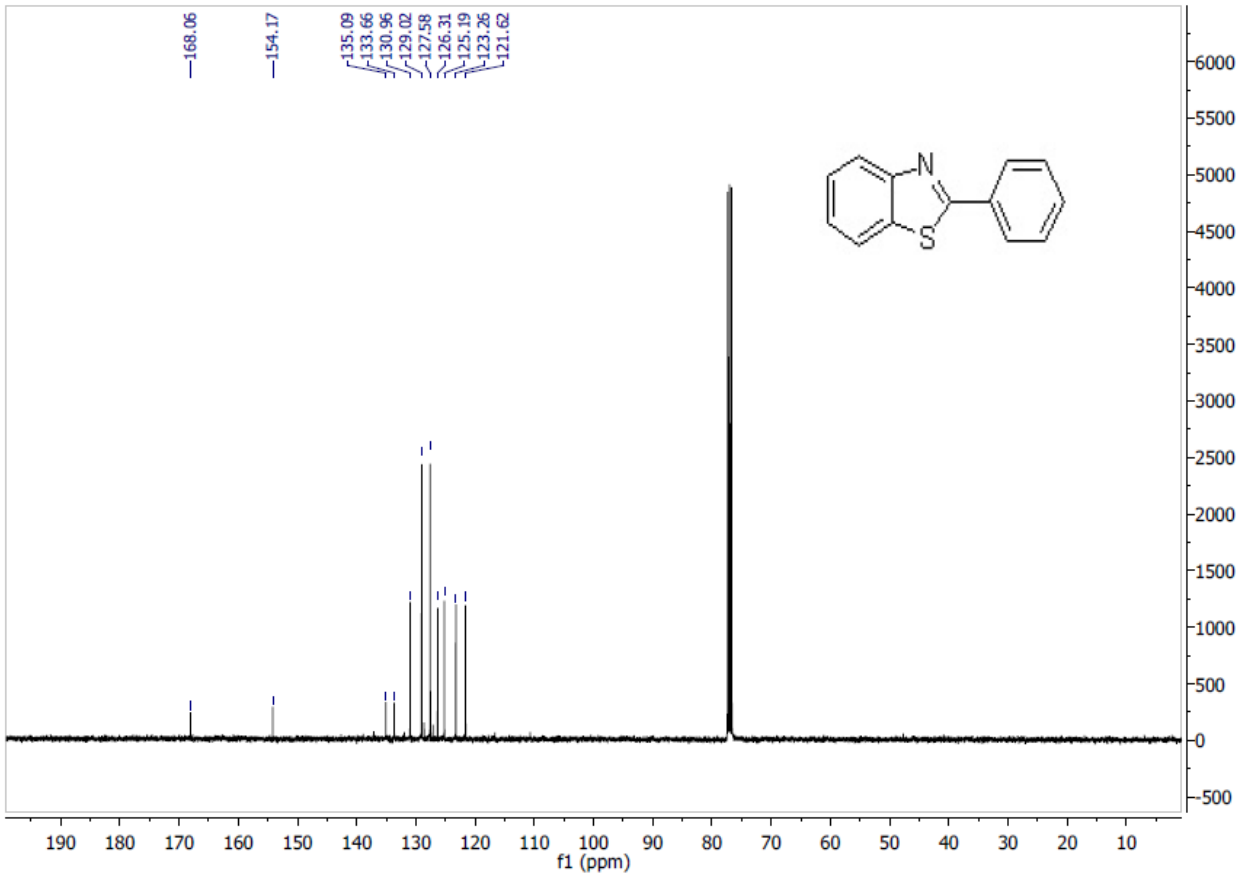

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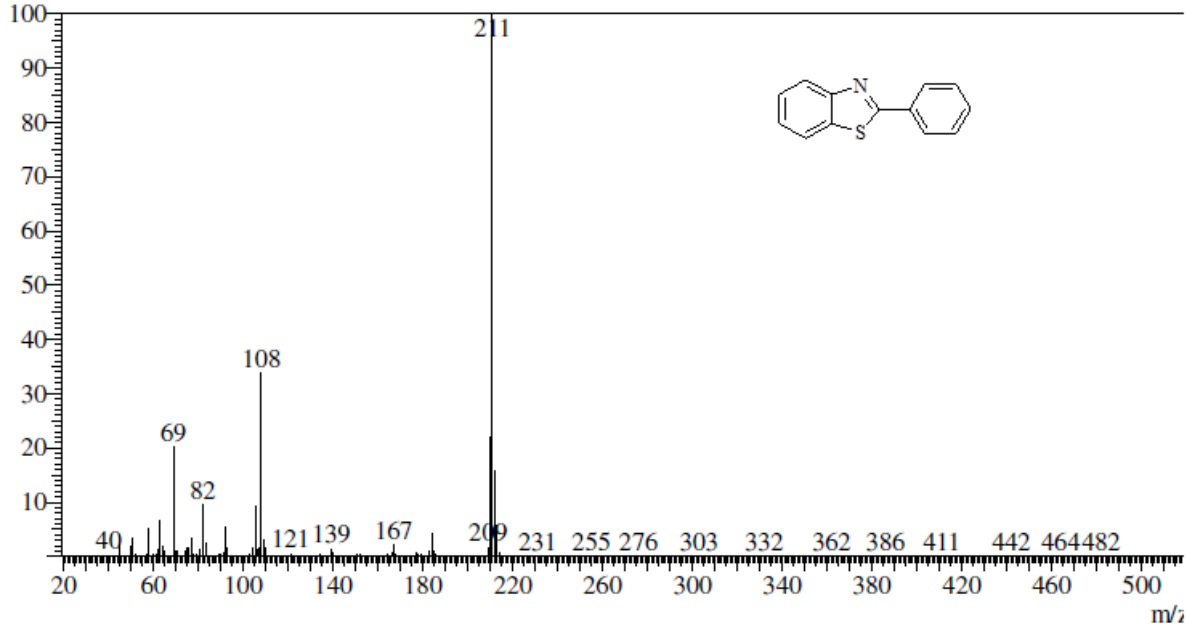

SAIF-IIT BOMBAY

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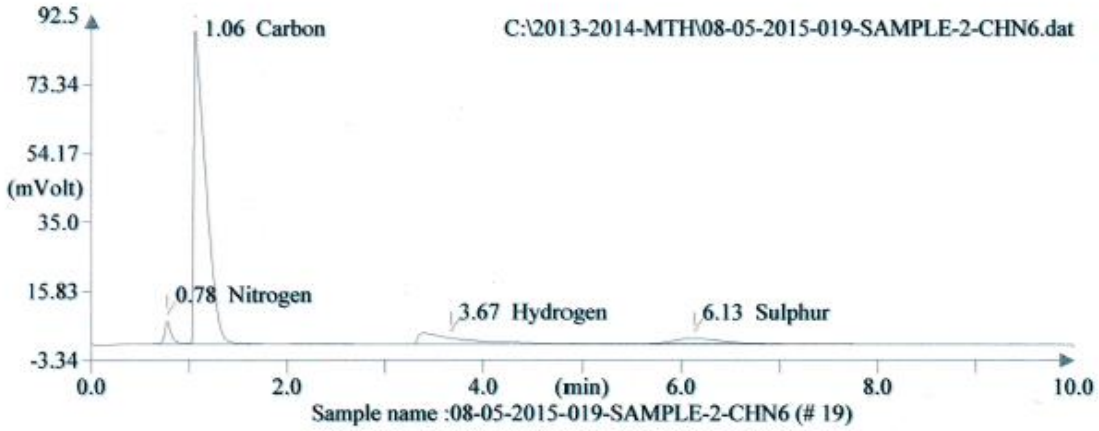

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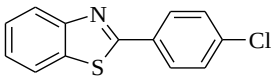
2a. *2-(4-Chlorophenyl)-1,3-benzothiazole*



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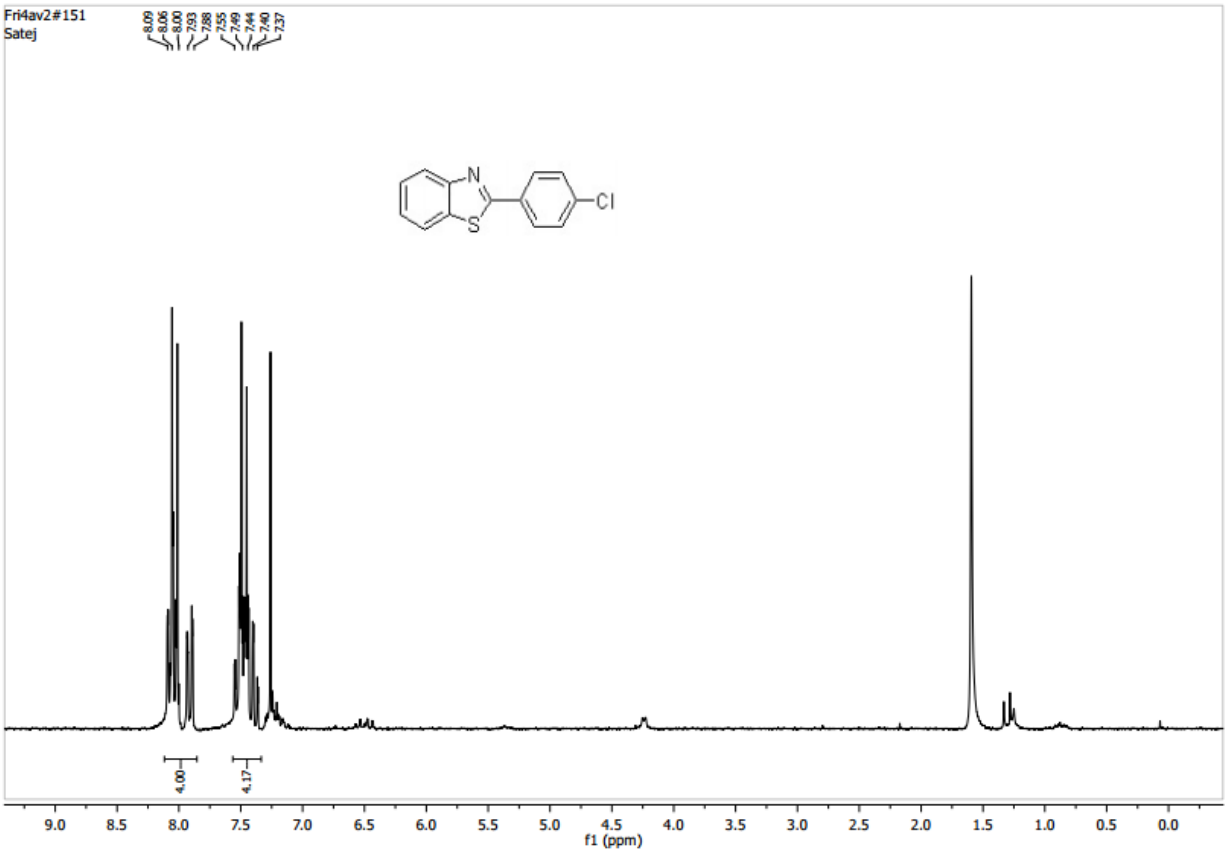

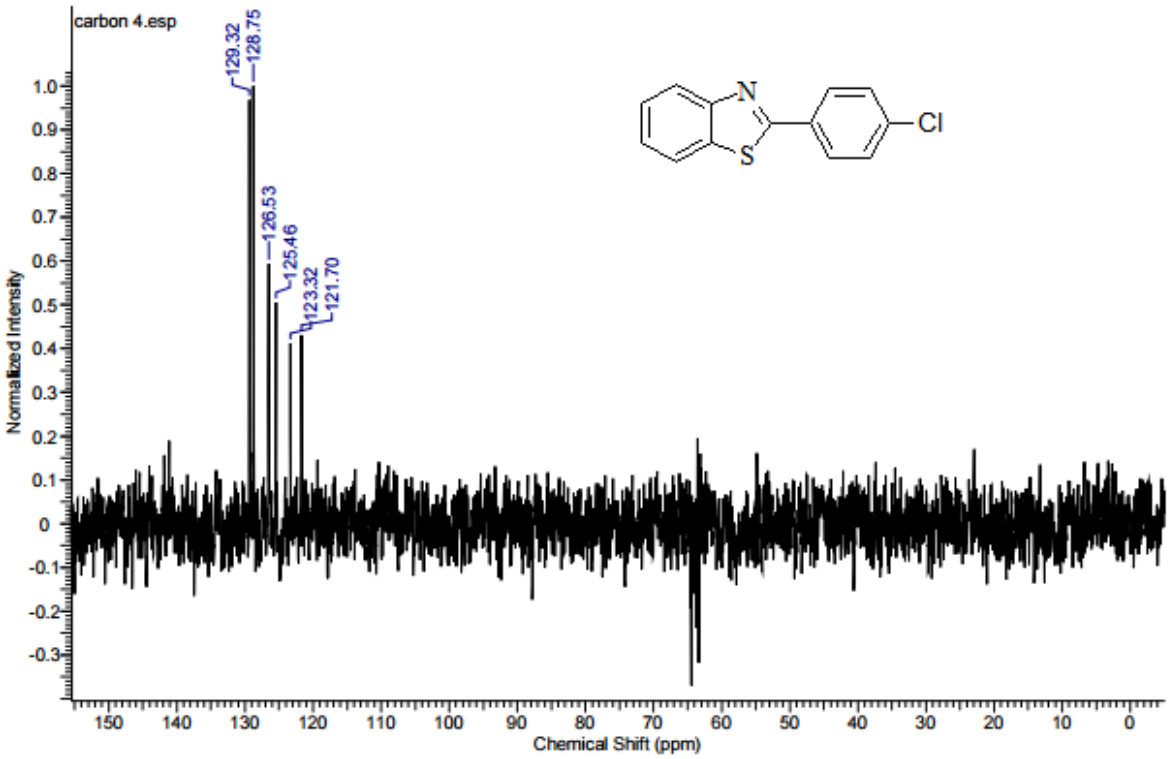

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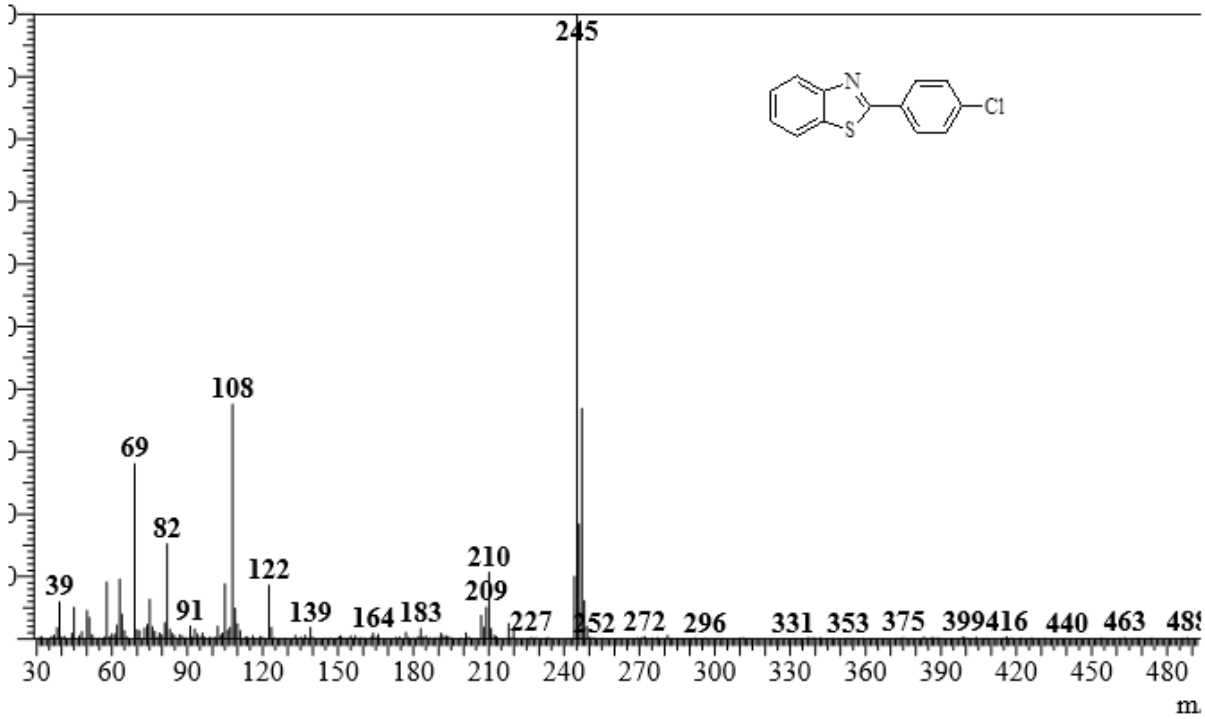
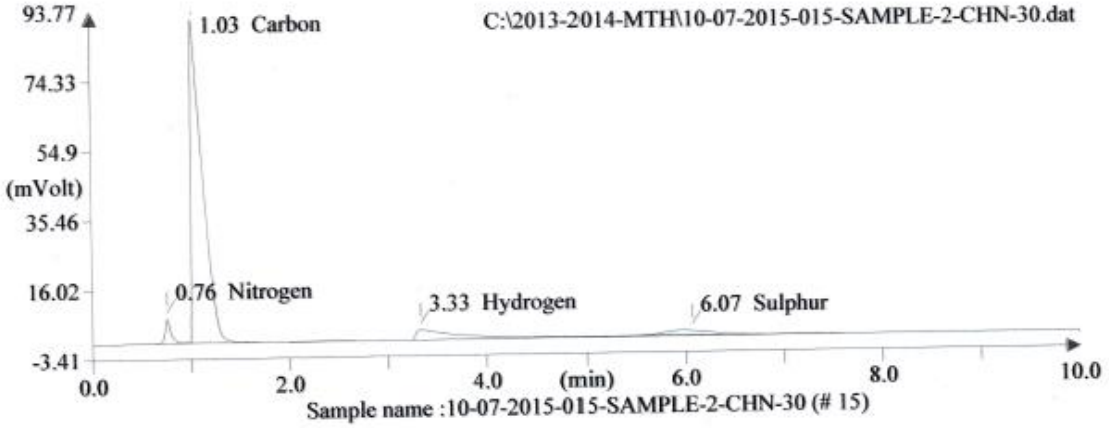
ı Mode:Averaged 19.9-19.9(2026-2028)



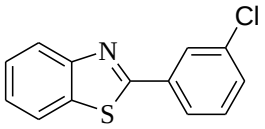
SAIF-IIT BOMBAY

Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 17:07
Printed:	07-13-2015 13:41
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-015-SAMPLE-2-CHN-30 (# 15)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-015-SAMPLE-2-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.743
Protein factor:	6.25

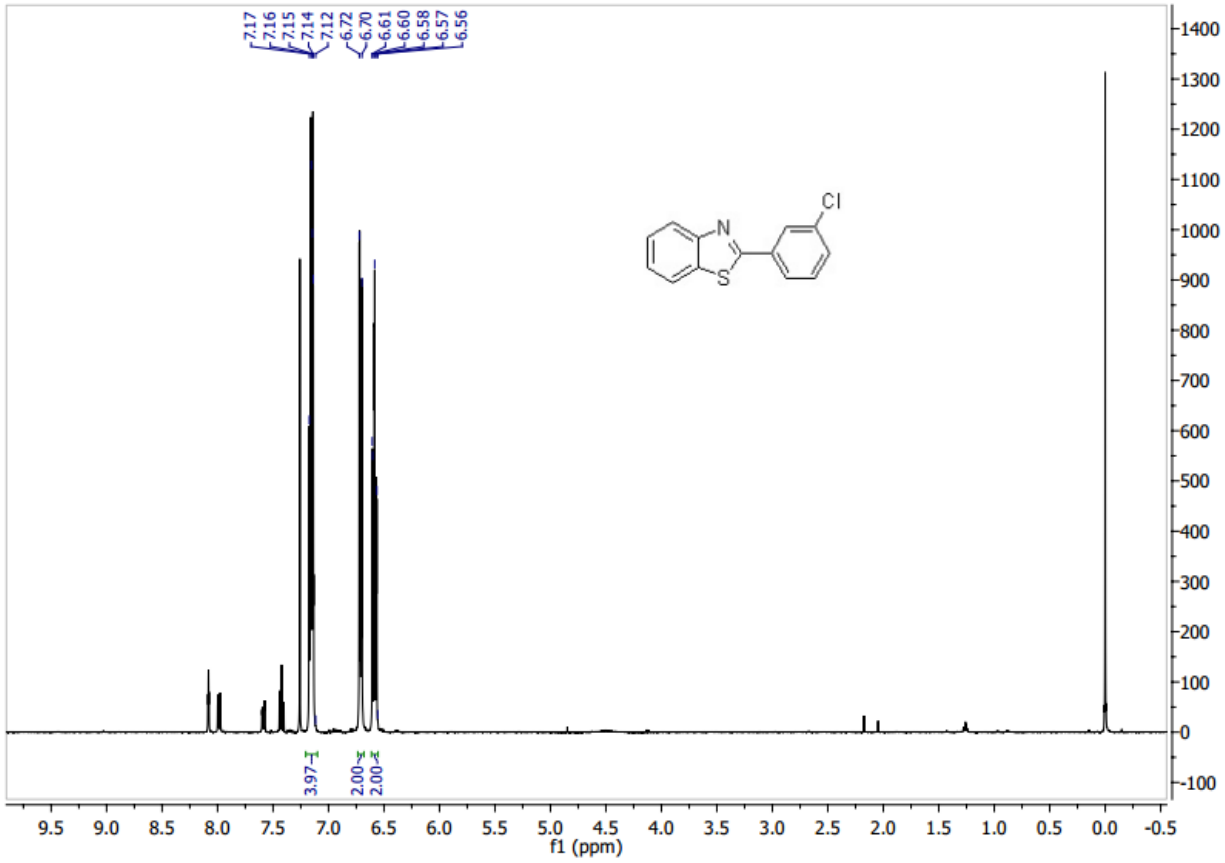


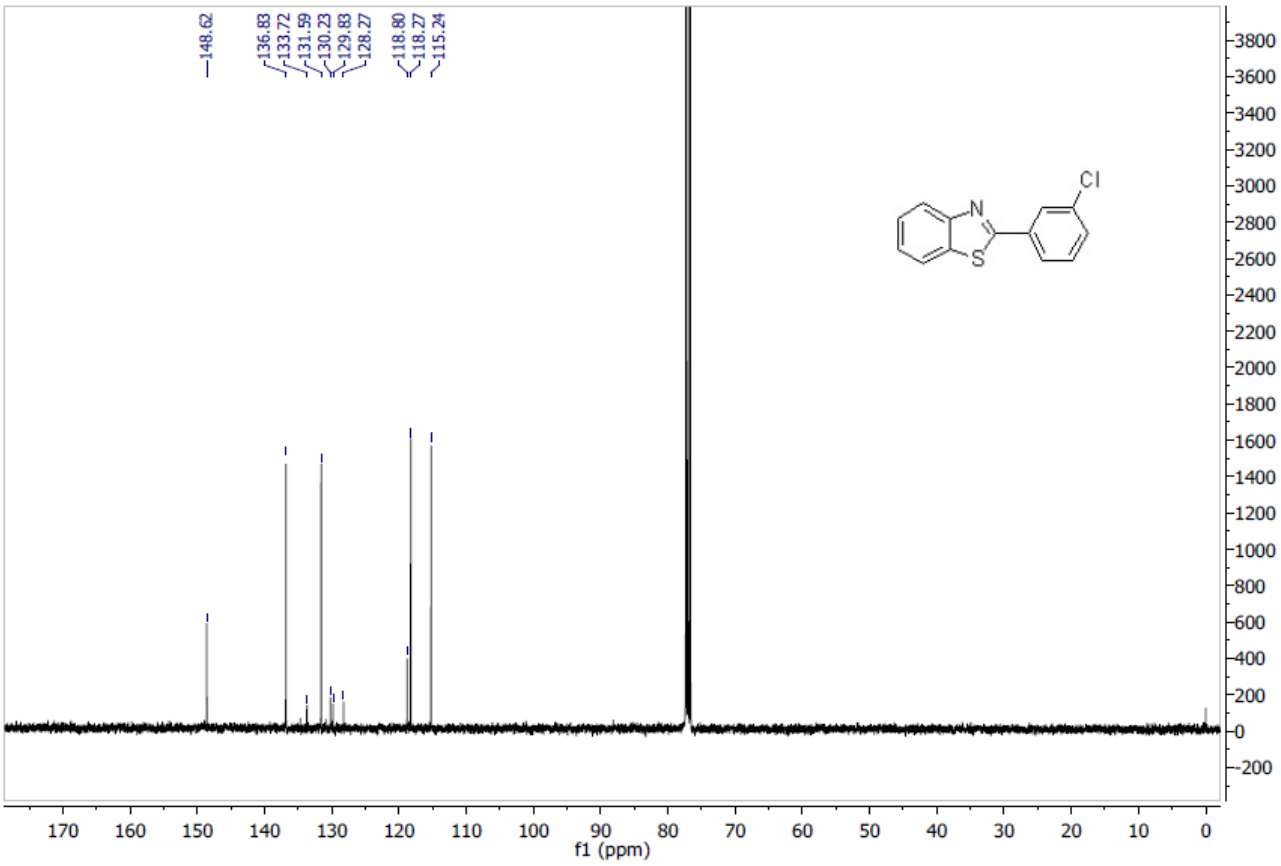
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	281346	5.586	Nitrogen
2	1.033	7347440	63.783	Carbon
3	3.333	1009268	3.161	Hydrogen
4	6.067	561713	13.010	Sulphur
		9199767	85.540	

3a. *2-(3-Chlorophenyl)-1,3-benzothiazole*

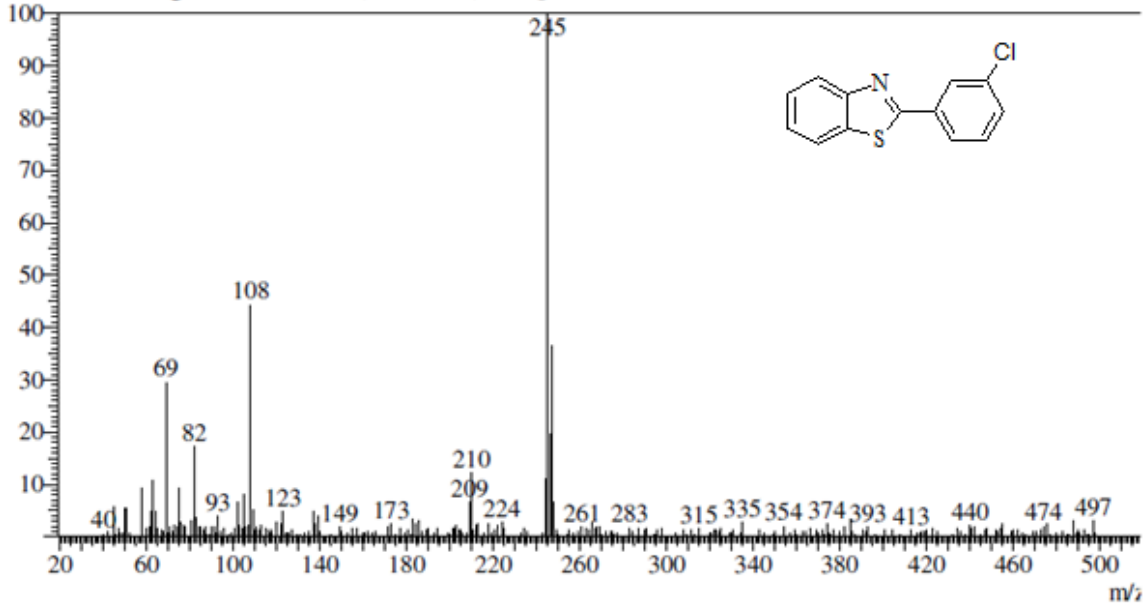


Mol. Wt.: 254.7



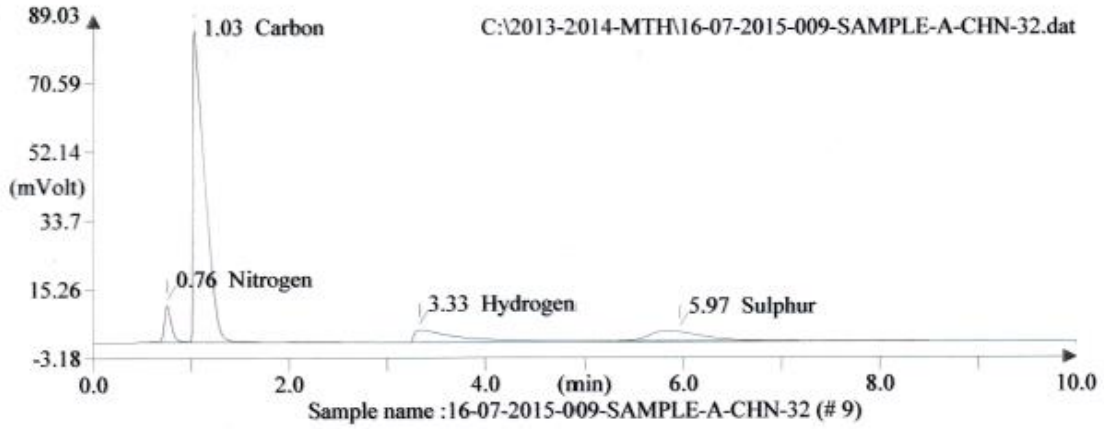


Line#:1 R.Time:34.040(Scan#:6209)
MassPeaks:290
RawMode:Averaged 34.035-34.045(6208-6210) BasePeak:245(1229)
BG Mode:Averaged 34.725-34.735(6346-6348) Group 1 - Event 1



SAIF-IIT BOMBAY

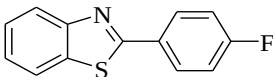
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\16-07-2014-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/16/2015 17:16
Printed:	07-17-2015 11:05
Elemental Analyser method:	
Sampler method:	
Sample ID	16-07-2015-009-SAMPLE-A-CHN-32 (# 9)
Analysis type:	UnkNown
Chromatogram filename:	16-07-2015-009-SAMPLE-A-CHN-32.dat
Calibration method:	K Factors
Sample weight:	2.849
Protein factor:	6.25



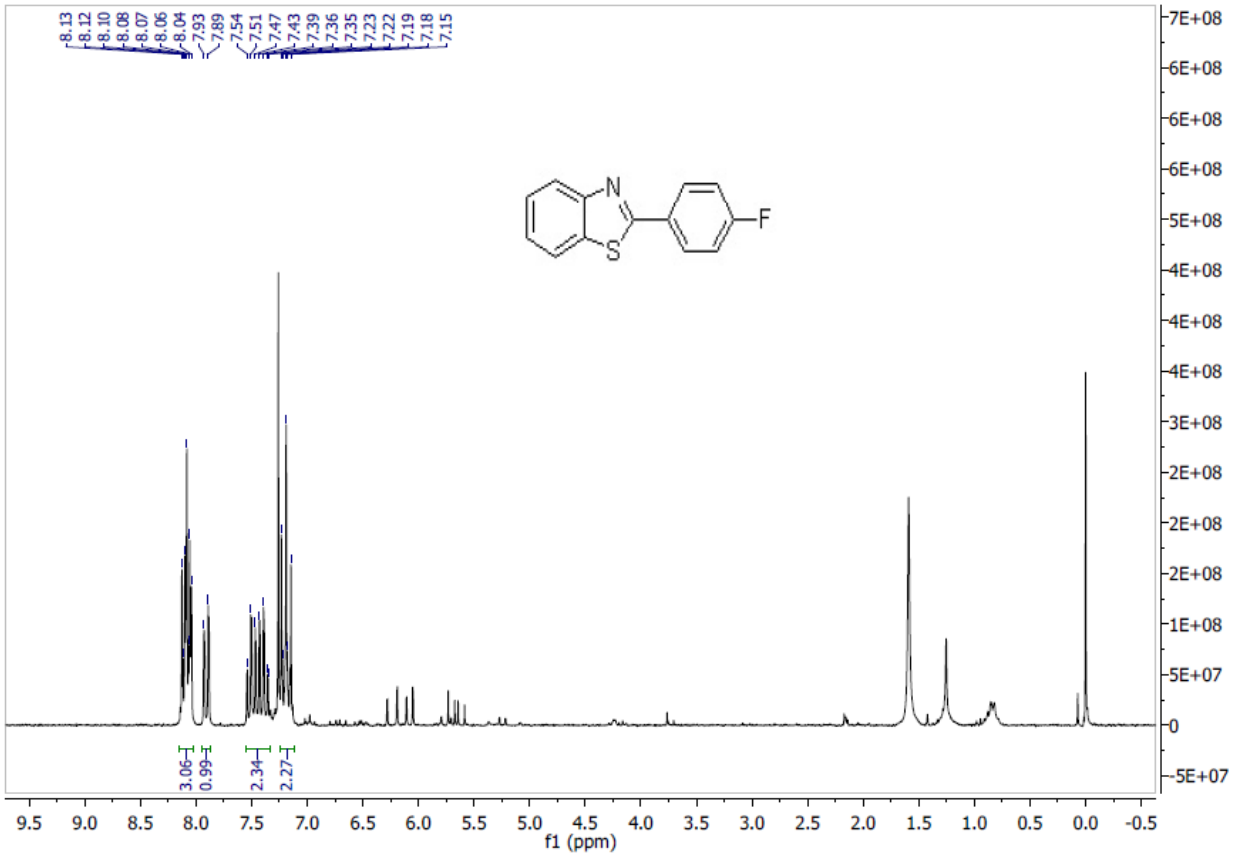
Sample name :16-07-2015-009-SAMPLE-A-CHN-32 (# 9)

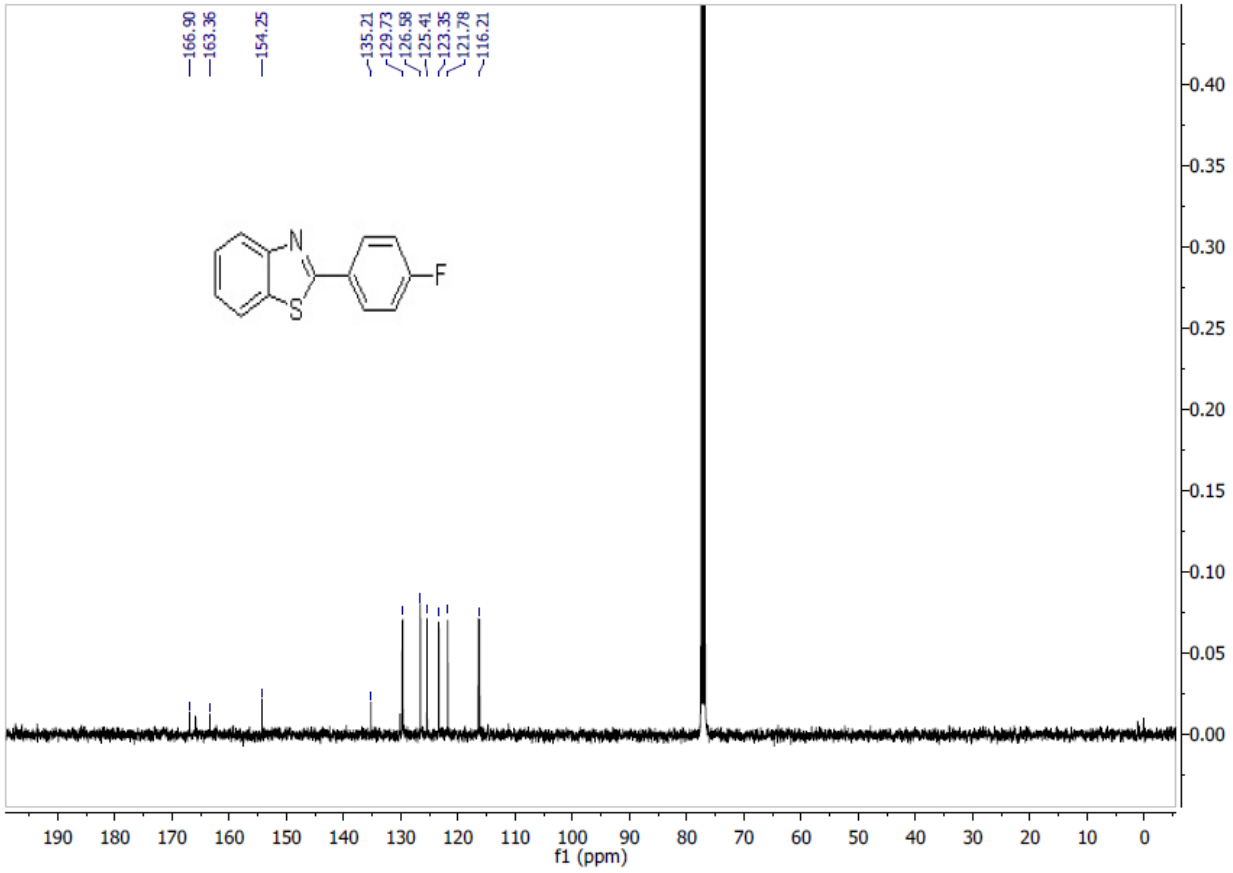
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	275524	5.601	Nitrogen
2	1.033	7547808	63.511	Carbon
3	3.333	961843	3.193	Hydrogen
4	5.967	593353	13.016	Sulphur
		9378528	85.321	

4a. *2-(4-Fluorophenyl)-1H-benzothiazole*

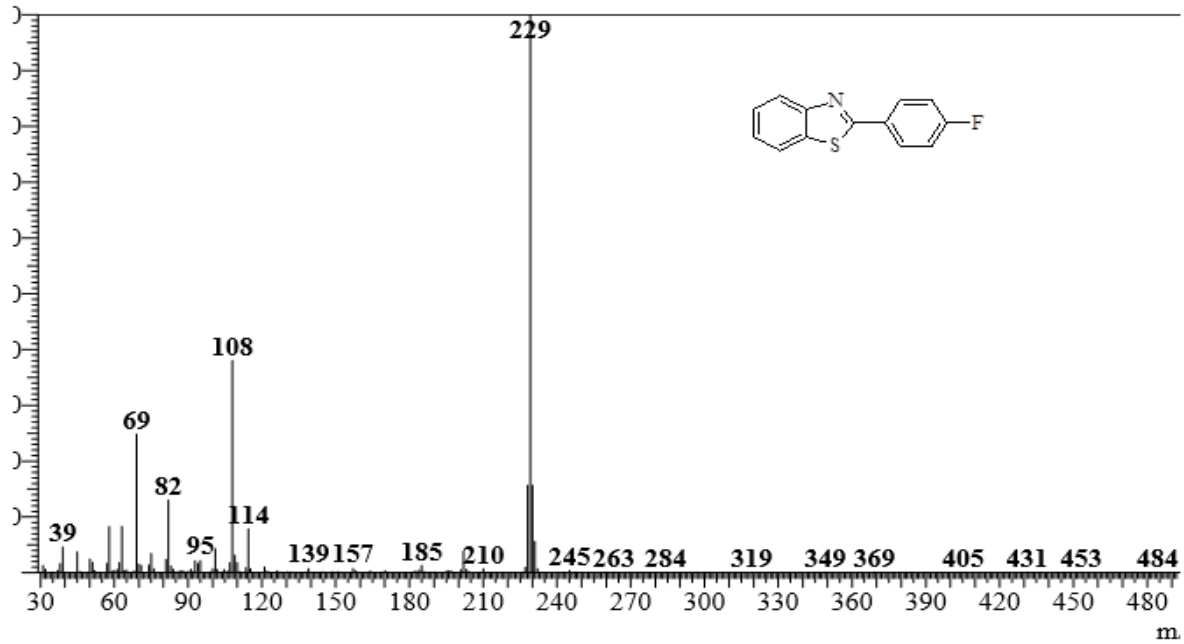


Mol. Wt.: 229.2



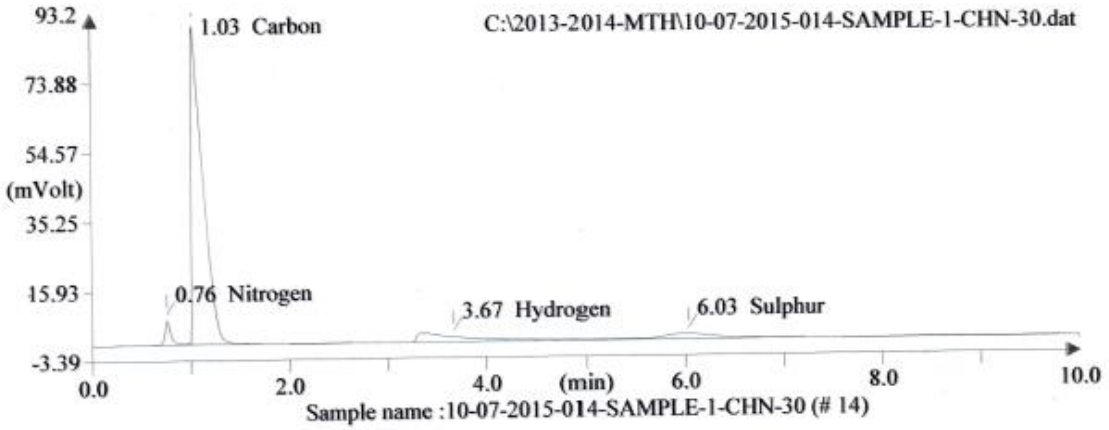


ıe#:3 R.Time:12.2(Scan#:1099)
ıssPeaks:288
wMode:Averaged 12.1-12.2(1098-1100) BasePeak:229(44132)
ŕ Mode:Averaged 15.7-15.7(1524-1526)



SAIF-IIT BOMBAY

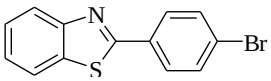
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 16:56
Printed:	07-13-2015 13:40
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-014-SAMPLE-1-CHN-30 (# 14)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-014-SAMPLE-1-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.514
Protein factor:	6.25



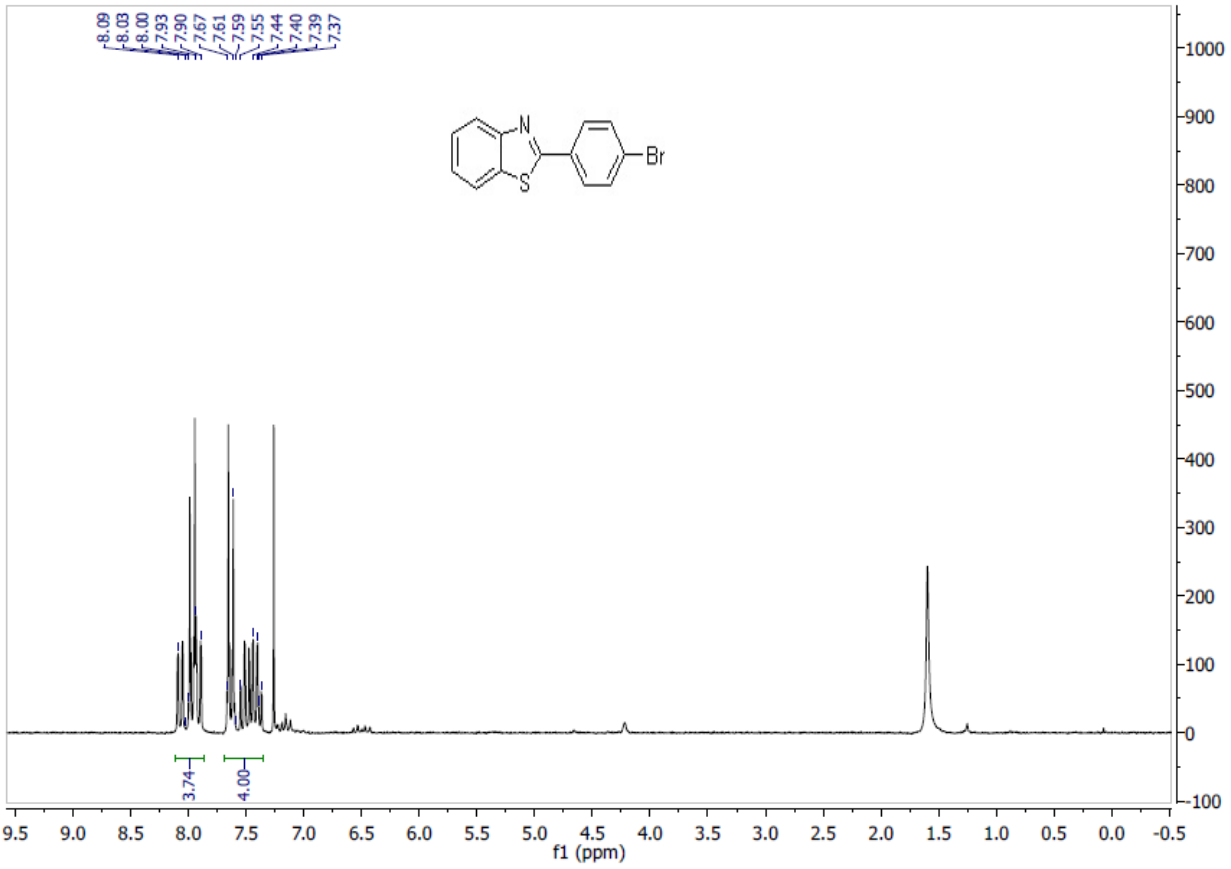
Sample name :10-07-2015-014-SAMPLE-1-CHN-30 (# 14)

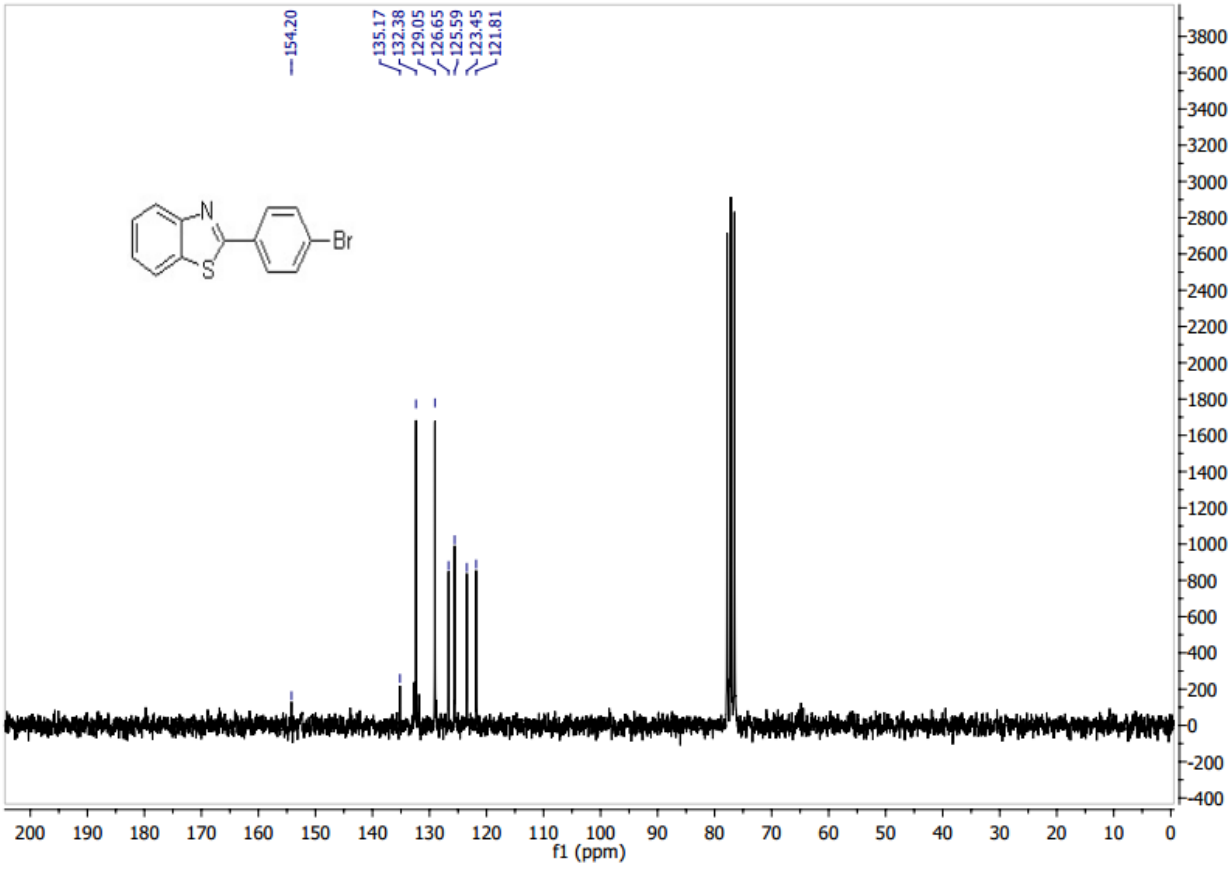
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	282472	6.123	Nitrogen
2	1.033	7199857	68.188	Carbon
3	3.667	999047	3.414	Hydrogen
4	6.033	549280	13.881	Sulphur
		9030656	91.606	

5a. *2-(4-Bromophenyl)-1,3-benzothiazole*

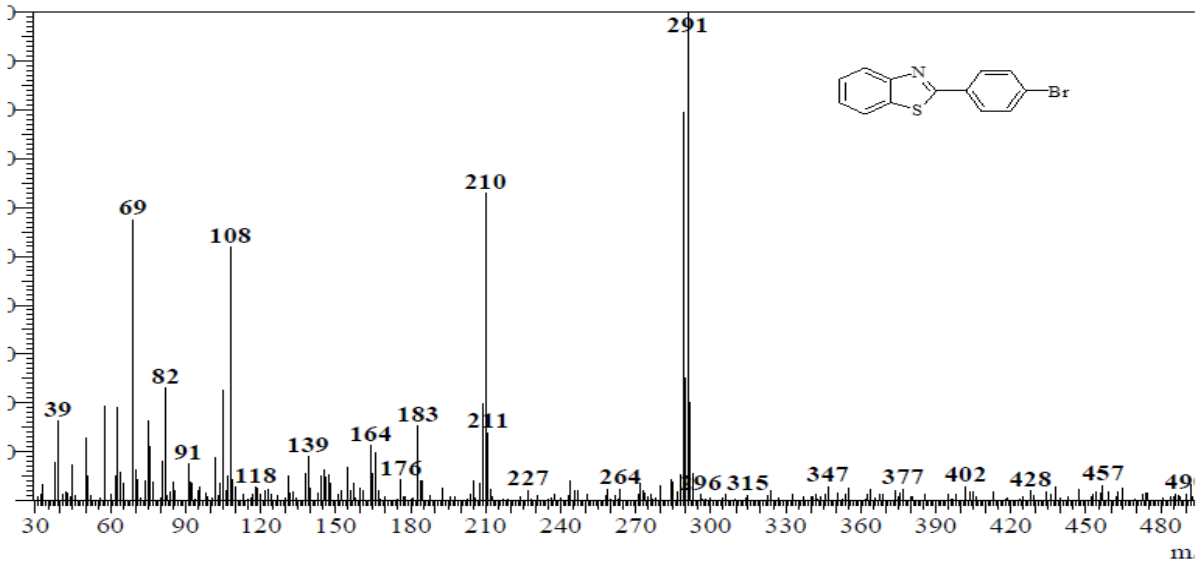


Mol. Wt.: 290.1



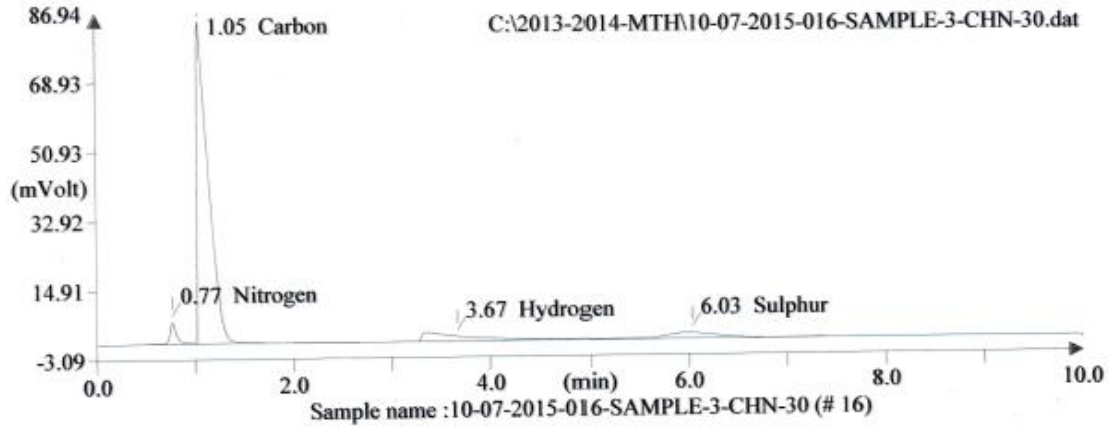


ıe#:1 R.Time:16.2(Scan#:1590)
ıssPeaks:254
wMode:Averaged 16.2-16.3(1589-1591) BasePeak:291(2215)
ı Mode:Averaged 16.4-16.4(1604-1606)



SAIF-IIT BOMBAY

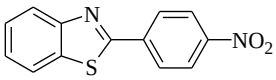
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 17:17
Printed:	07-13-2015 13:42
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-016-SAMPLE-3-CHN-30 (# 16)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-016-SAMPLE-3-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.955
Protein factor:	6.25



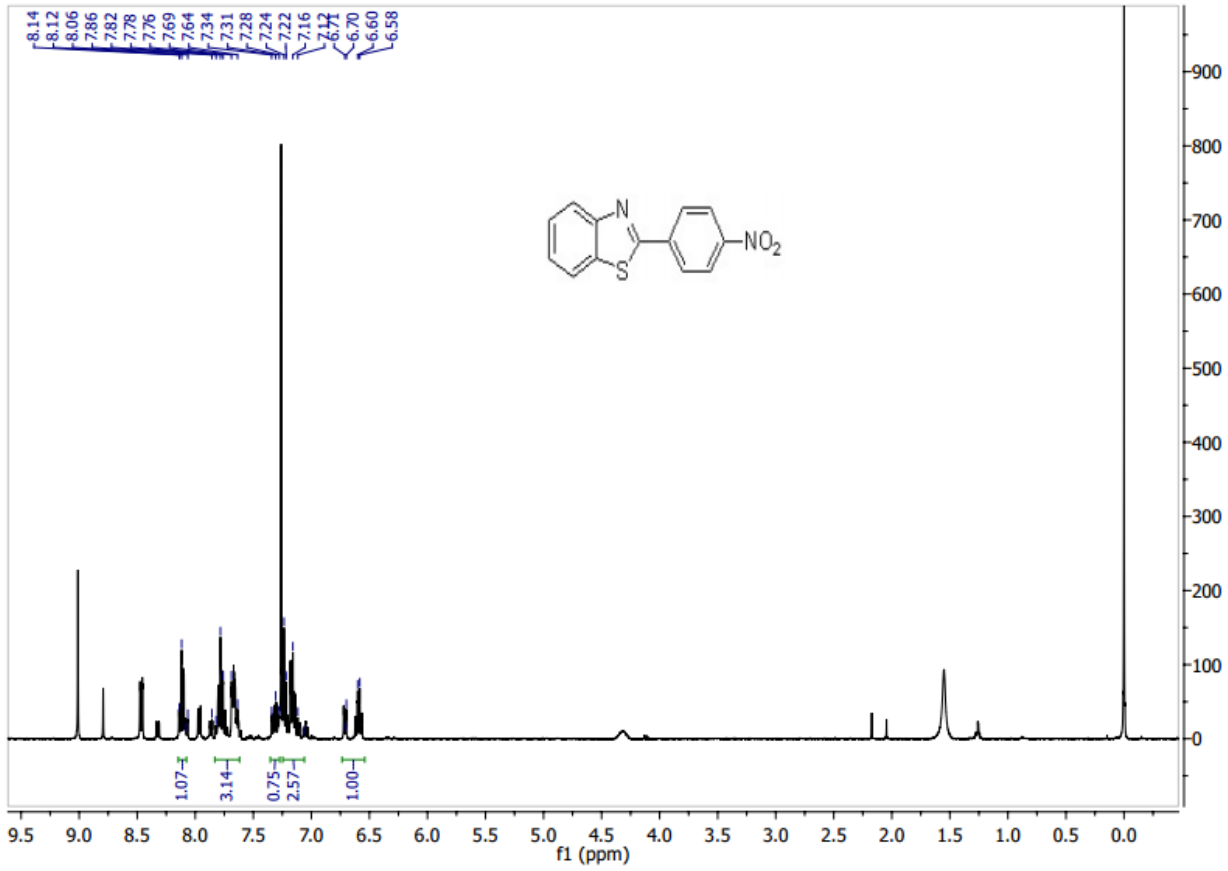
Sample name :10-07-2015-016-SAMPLE-3-CHN-30 (# 16)

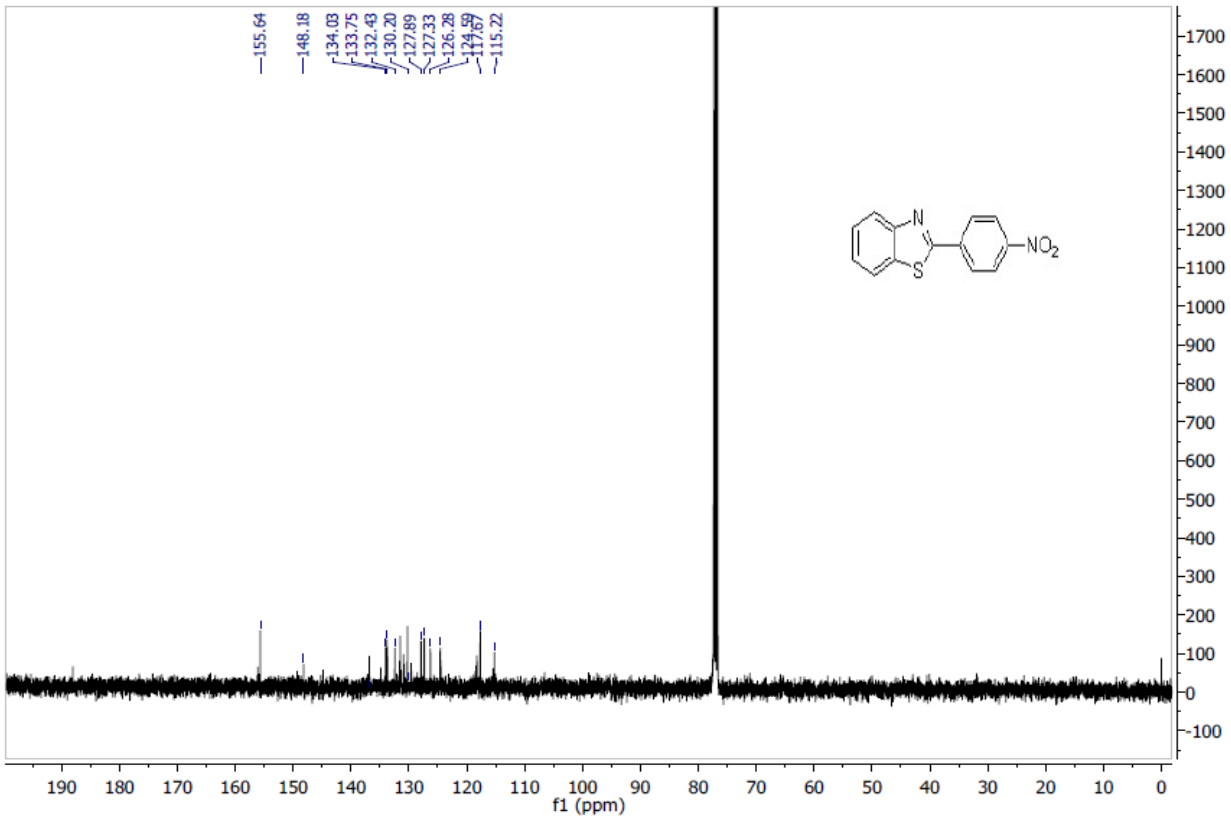
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.767	262230	4.786	Nitrogen
2	1.050	6644377	53.512	Carbon
3	3.667	823126	2.393	Hydrogen
4	6.033	509880	10.963	Sulphur
		8239613	71.654	

6a. *2-(4-Nitrophenyl)benzothiazole*

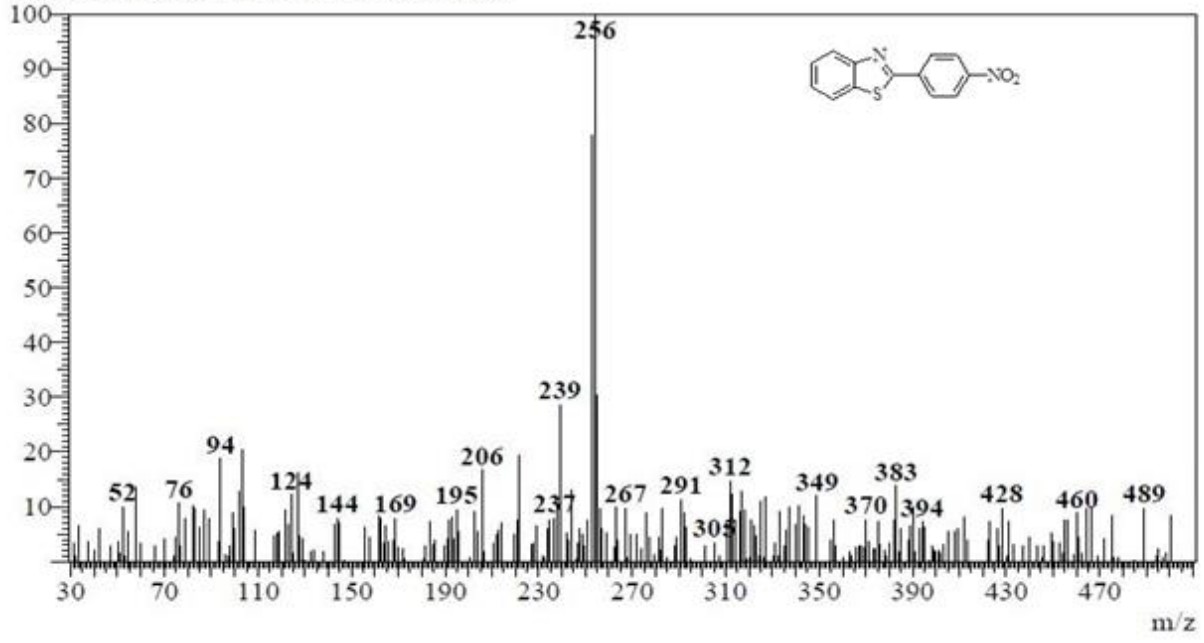


Mol. Wt.: 256



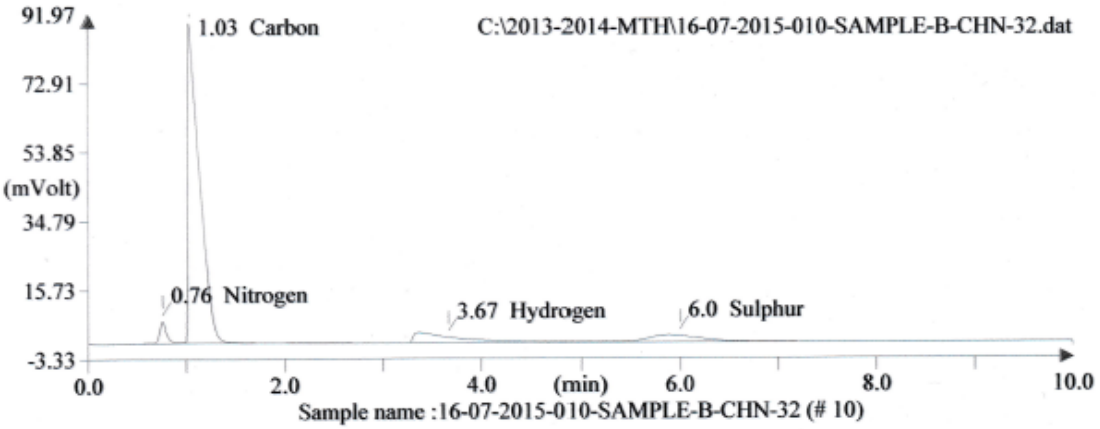


Line#:3 R.Time:27.0(Scan#:2999)
MassPeaks:248
RawMode:Averaged 27.0-27.0(2998-3000) BasePeak:254(444)
BG Mode:Averaged 28.1-28.2(3138-3140)



SAIF-IIT BOMBAY

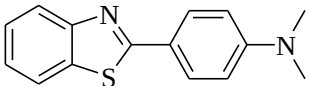
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\16-07-2014-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/16/2015 17:26
Printed:	07-17-2015 11:06
Elemental Analyser method:	
Sampler method:	
Sample ID	16-07-2015-010-SAMPLE-B-CHN-32 (# 10)
Analysis type:	UnkNown
Chromatogram filename:	16-07-2015-010-SAMPLE-B-CHN-32.dat
Calibration method:	K Factors
Sample weight:	2.591
Protein factor:	6.25



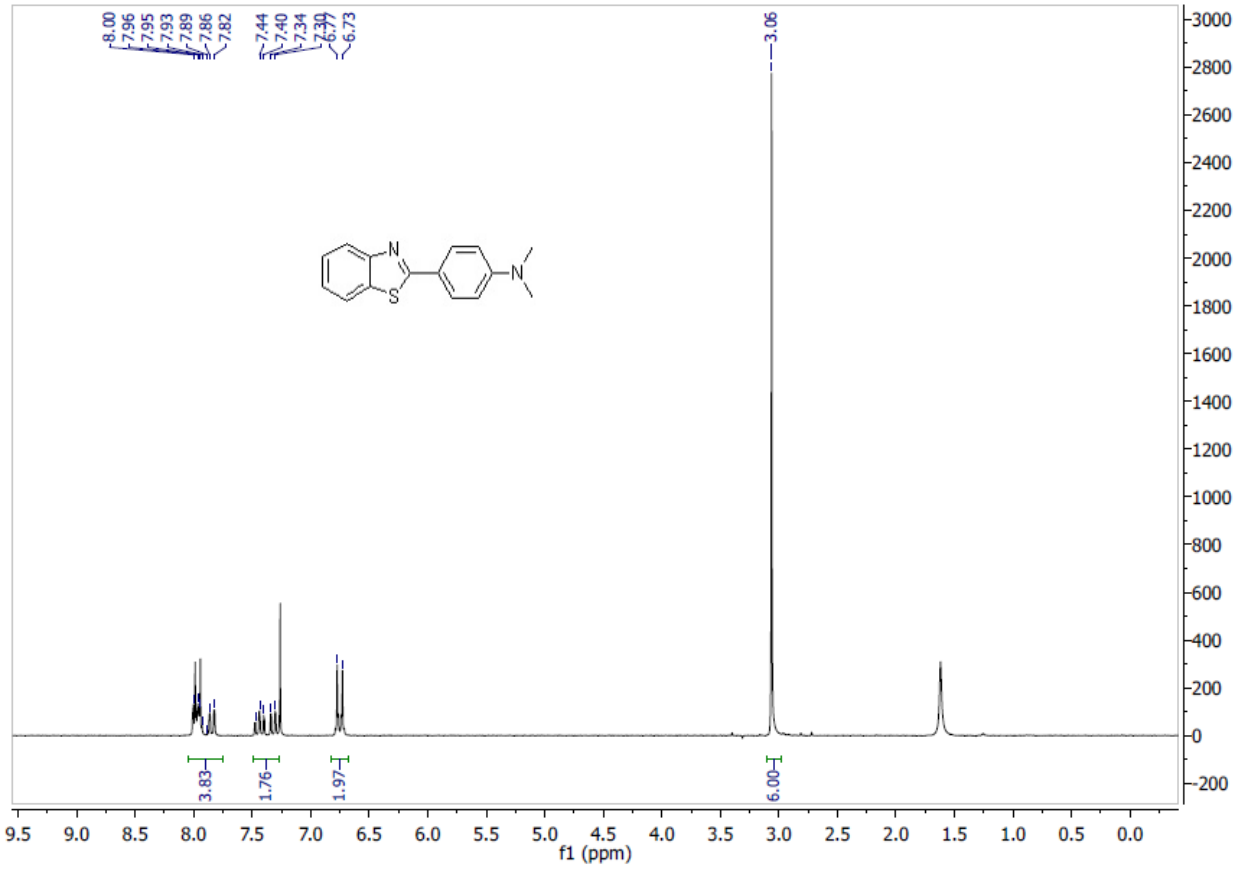
Sample name :16-07-2015-010-SAMPLE-B-CHN-32 (# 10)

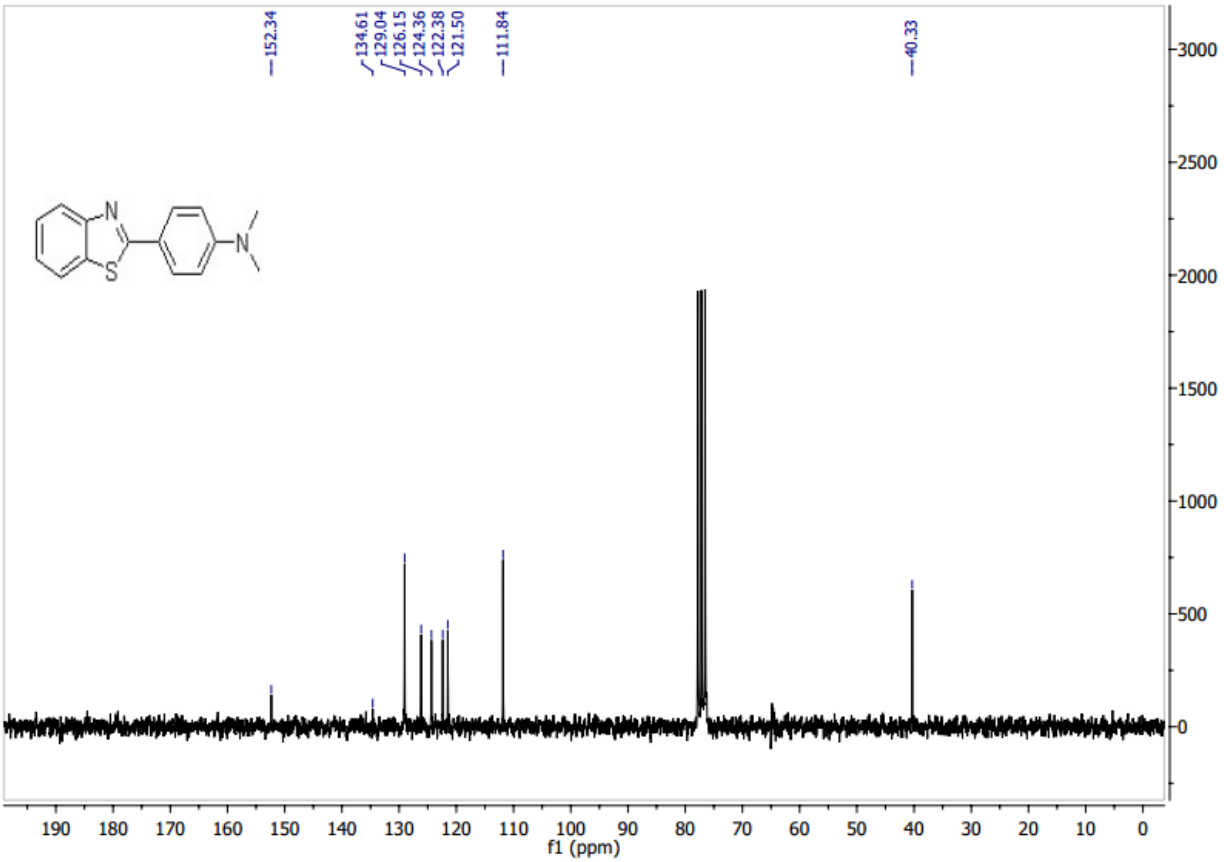
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	514778	10.922	Nitrogen
2	1.033	6577839	60.861	Carbon
3	3.667	841260	3.073	Hydrogen
4	6.000	525235	12.642	Sulphur
		8459112	87.498	

7a. *4-Benzothiazole-2-phenyl-dimethylamine*

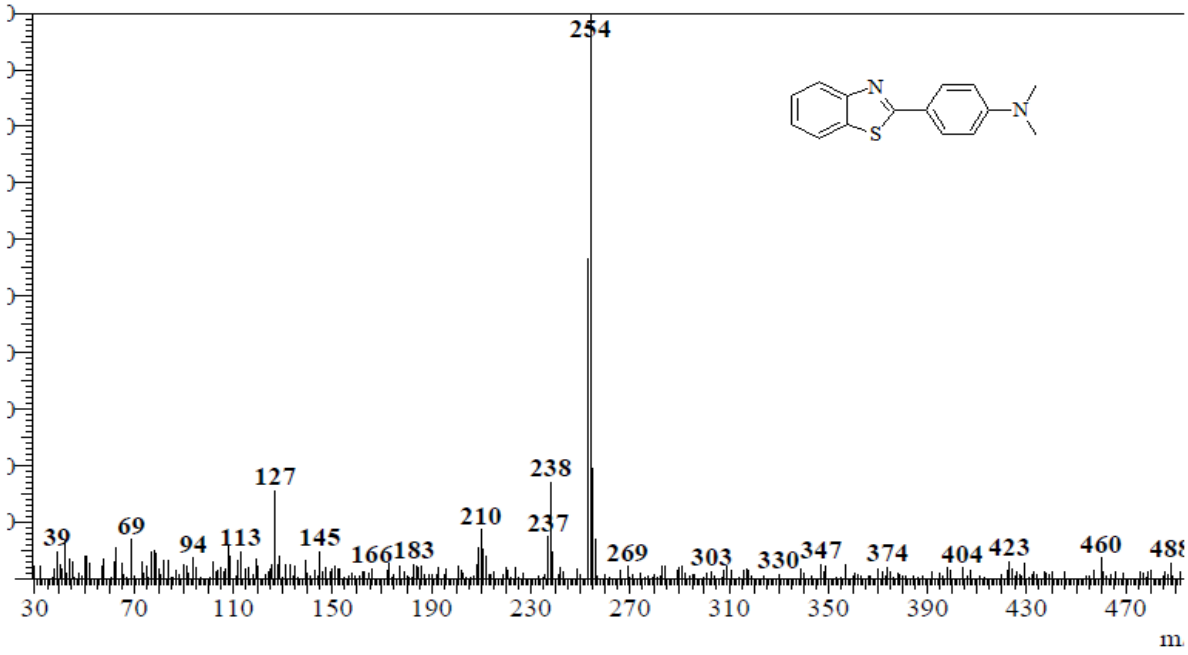


Mol. Wt.: 254.3



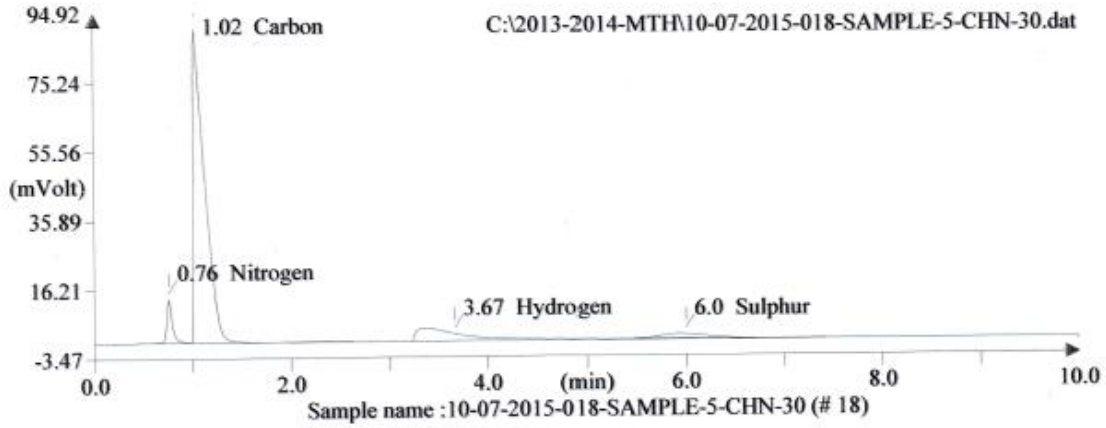


ıe#:3 R.Time:21.6(Scan#:2231)
ıssPeaks:285
wMode:Averaged 21.6-21.6(2230-2232) BasePeak:254(3396)
ı Mode:Averaged 22.8-22.8(2380-2382)



SAIF-IIT BOMBAY

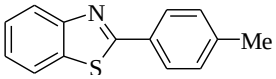
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 17:38
Printed:	07-13-2015 13:43
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-018-SAMPLE-5-CHN-30 (# 18)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-018-SAMPLE-5-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.448
Protein factor:	6.25



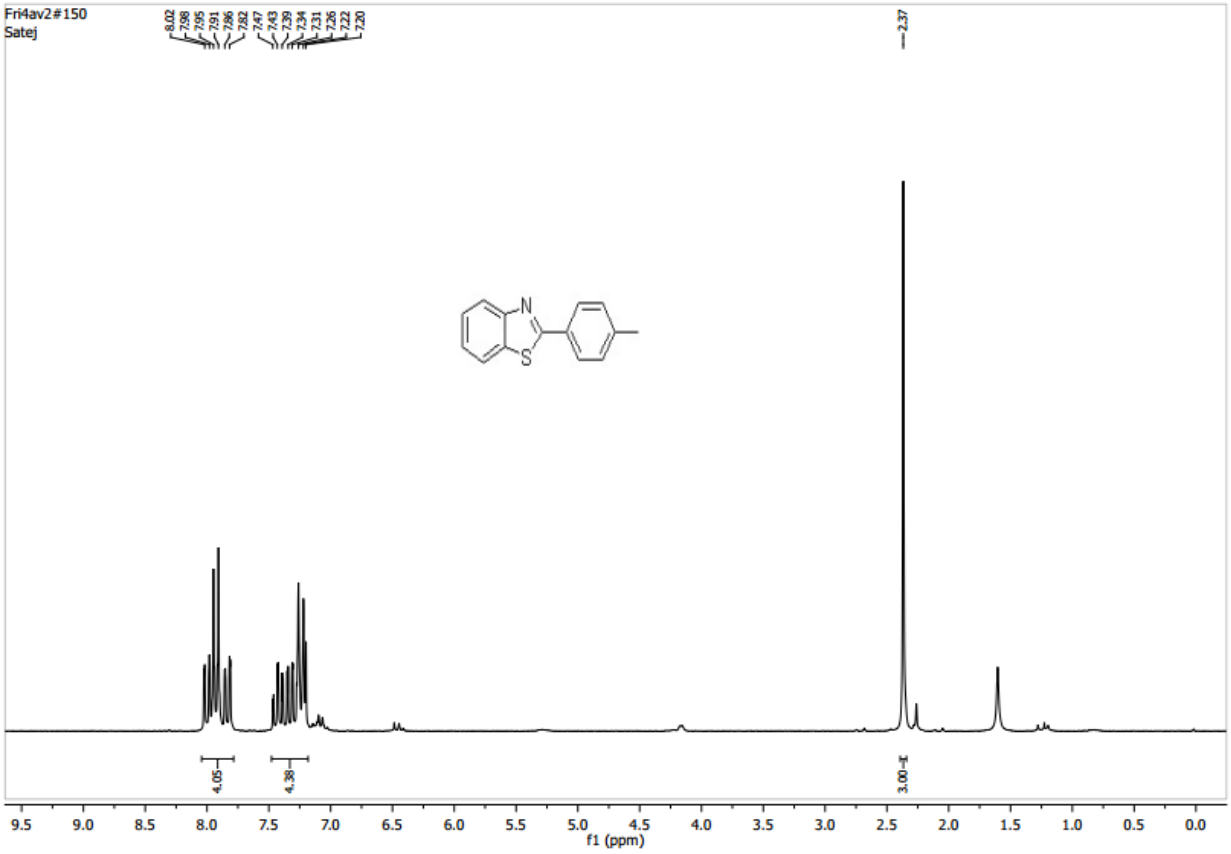
Sample name :10-07-2015-018-SAMPLE-5-CHN-30 (# 18)

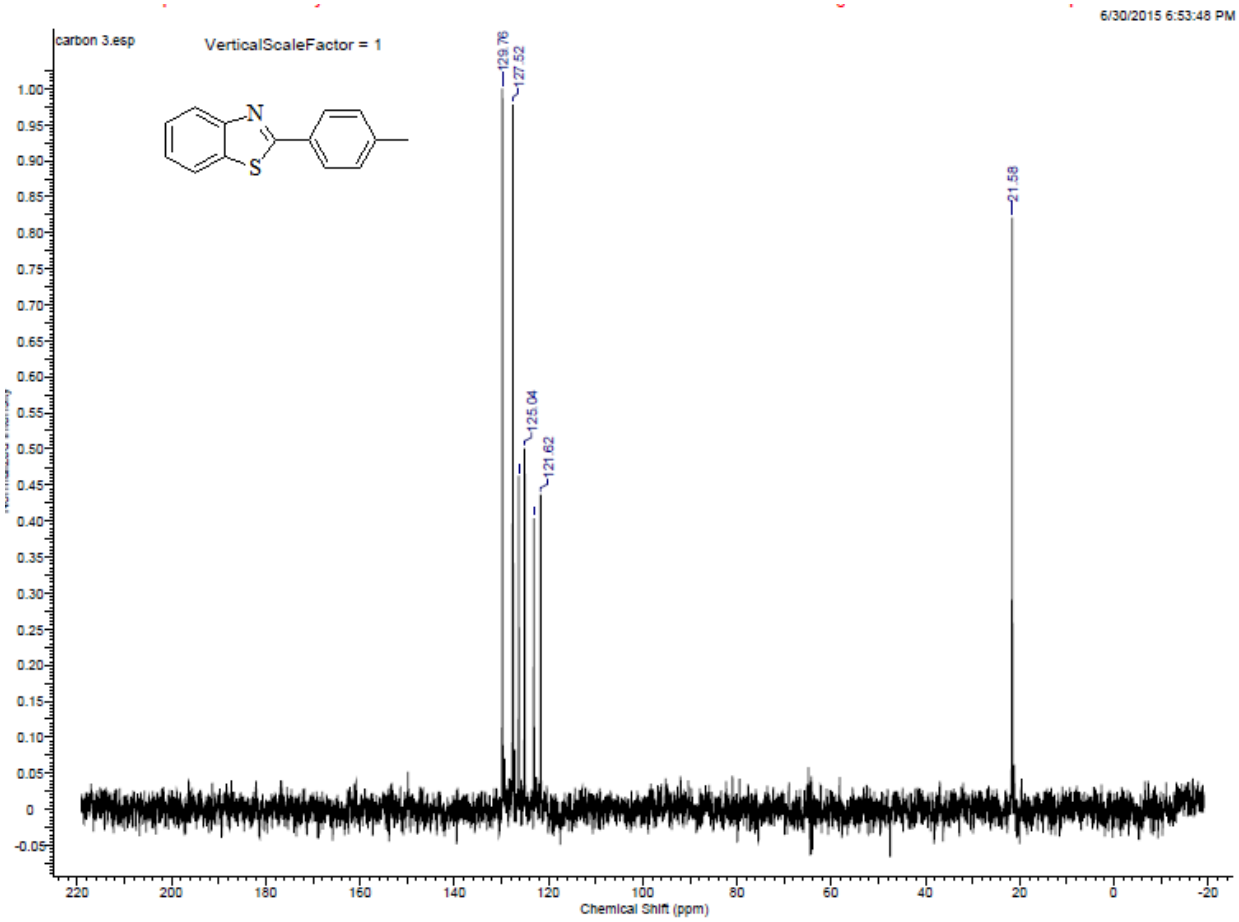
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	469765	11.019	Nitrogen
2	1.025	7223541	70.258	Carbon
3	3.667	1473334	5.171	Hydrogen
4	6.000	469128	12.175	Sulphur
		9635768	98.623	

8a. *2-(4-Methylphenyl)benzothiazole*

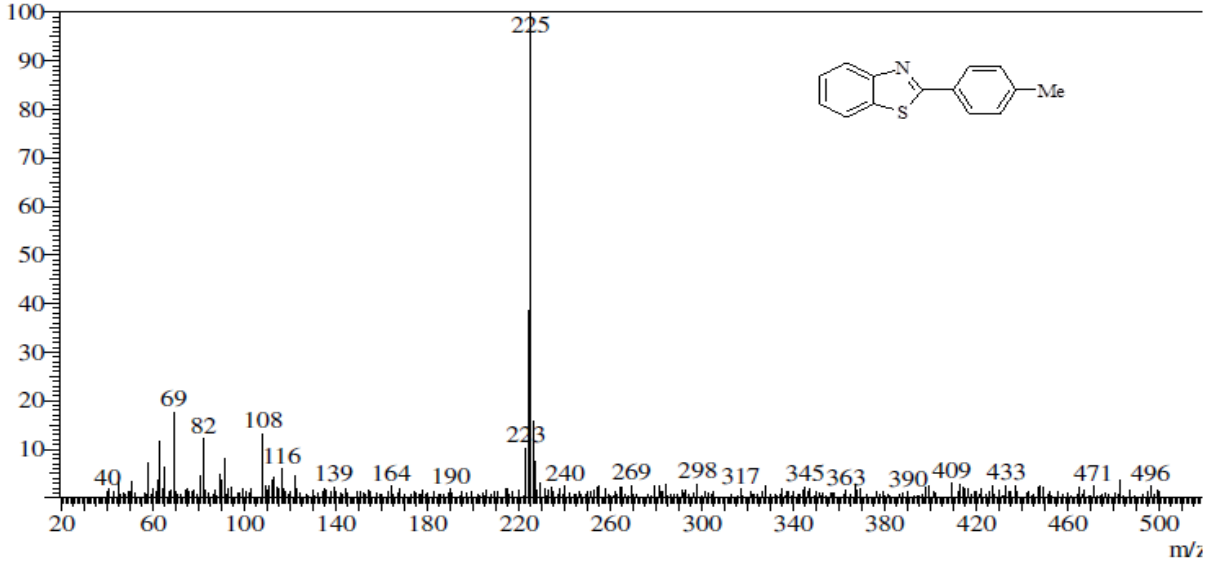


Mol. Wt.: 225.2



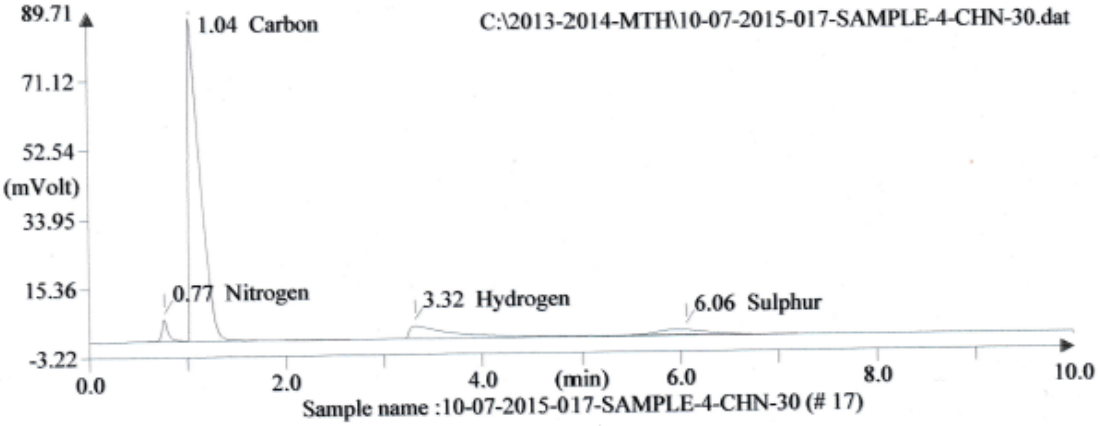


Line#:1 R.Time:33.590(Scan#:6319)
MassPeaks:348
RawMode:Averaged 33.585-33.595(6318-6320) BasePeak:225(1333)
BG Mode:Averaged 35.145-35.155(6630-6632) Group 1 - Event 1



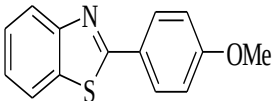
SAIF-IIT BOMBAY

Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 17:28
Printed:	07-13-2015 13:43
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-017-SAMPLE-4-CHN-30 (# 17)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-017-SAMPLE-4-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.26
Protein factor:	6.25

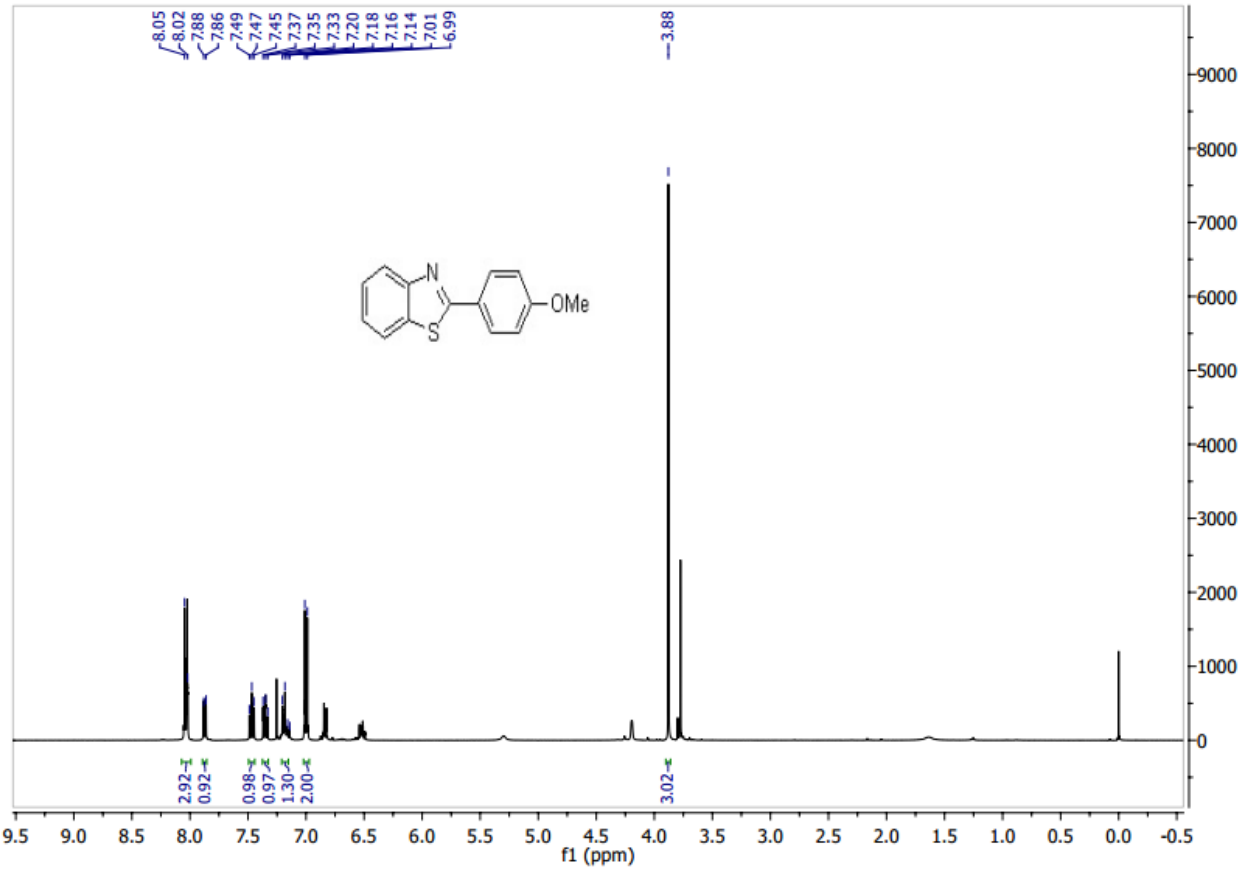


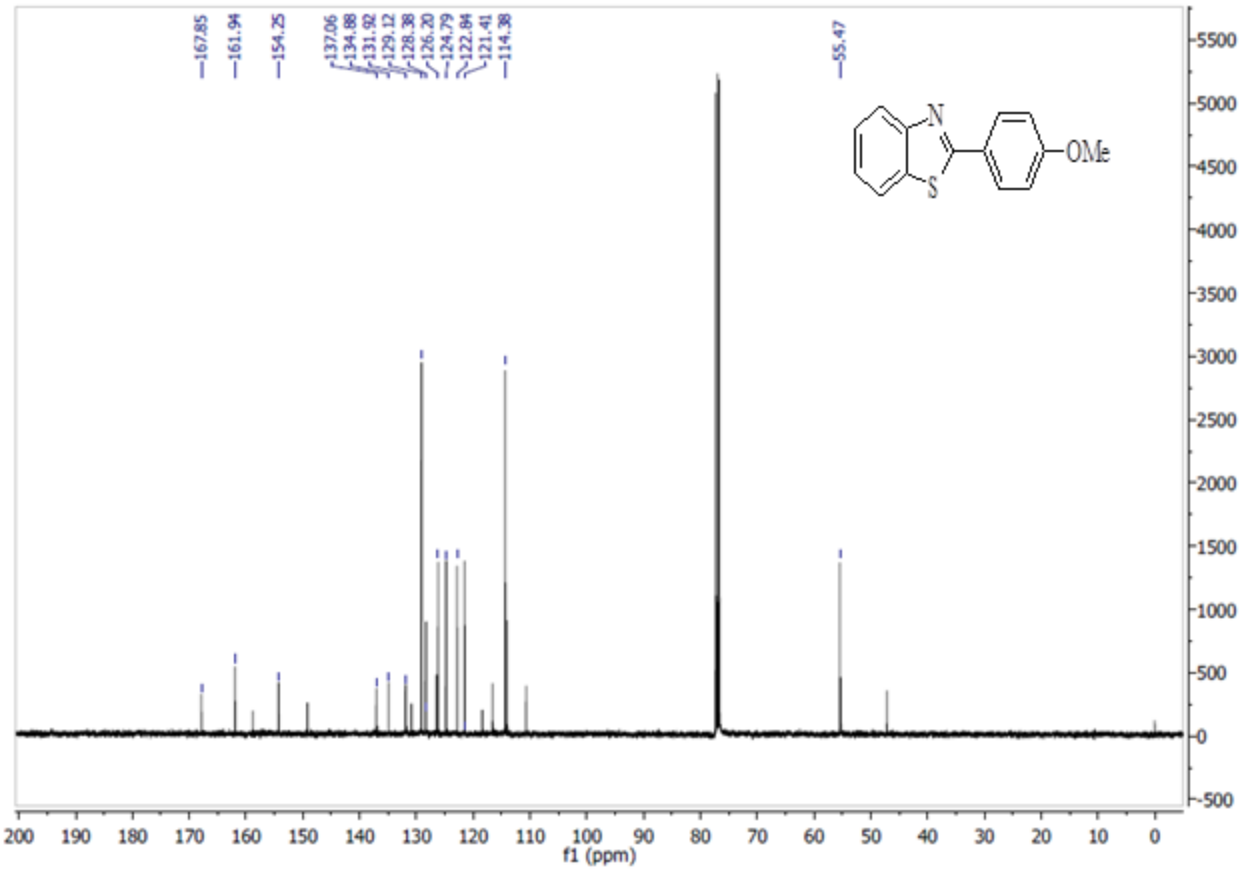
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.767	258004	6.143	Nitrogen
2	1.042	7054683	74.314	Carbon
3	3.317	1283007	4.878	Hydrogen
4	6.058	509631	14.327	Sulphur
		9105324	99.662	

9a. *2-(4-Methoxyphenyl)benzothiazole*

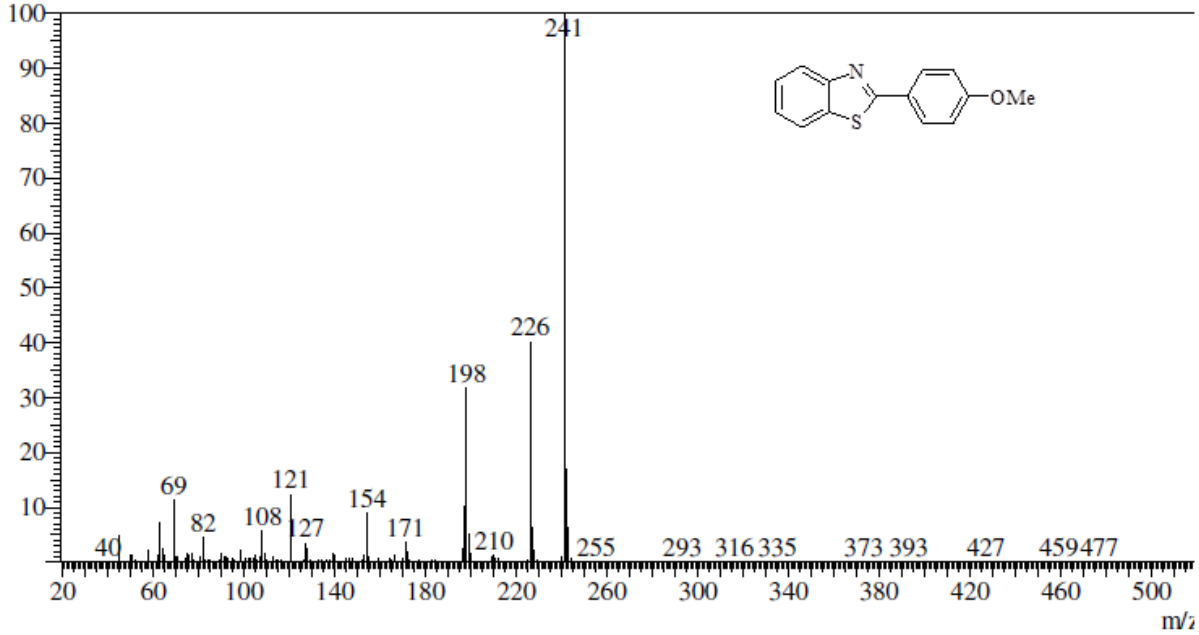


Mol. Wt.: 241.28



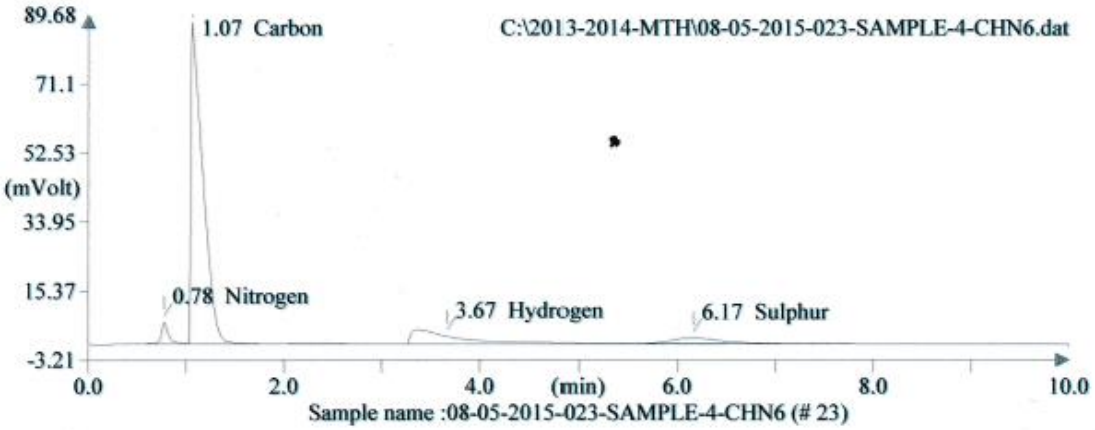


Line#:1 R.Time:25.245(Scan#:4650)
MassPeaks:343
RawMode:Averaged 25.240-25.250(4649-4651) BasePeak:241(142547)
BG Mode:Averaged 25.980-25.990(4797-4799) Group 1 - Event 1



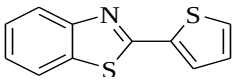
SAIF-IIT BOMBAY

Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\08-05-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	05/08/2015 18:21
Printed:	05-08-2015 18:31
Elemental Analyser method:	
Sampler method:	
Sample ID	08-05-2015-023-SAMPLE-4-CHN6 (# 23)
Analysis type:	UnkNown
Chromatogram filename:	08-05-2015-023-SAMPLE-4-CHN6.dat
Calibration method:	K Factors
Sample weight:	2.421
Protein factor:	6.25

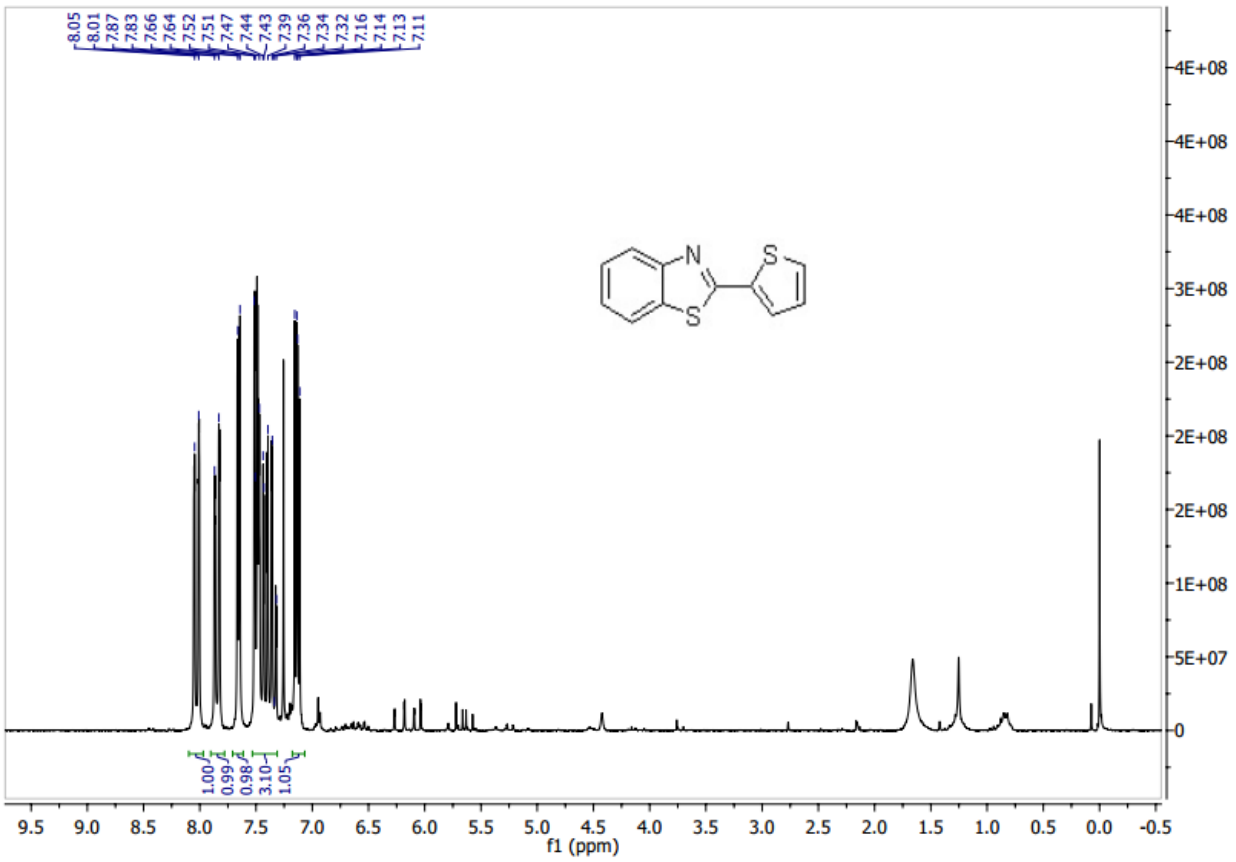


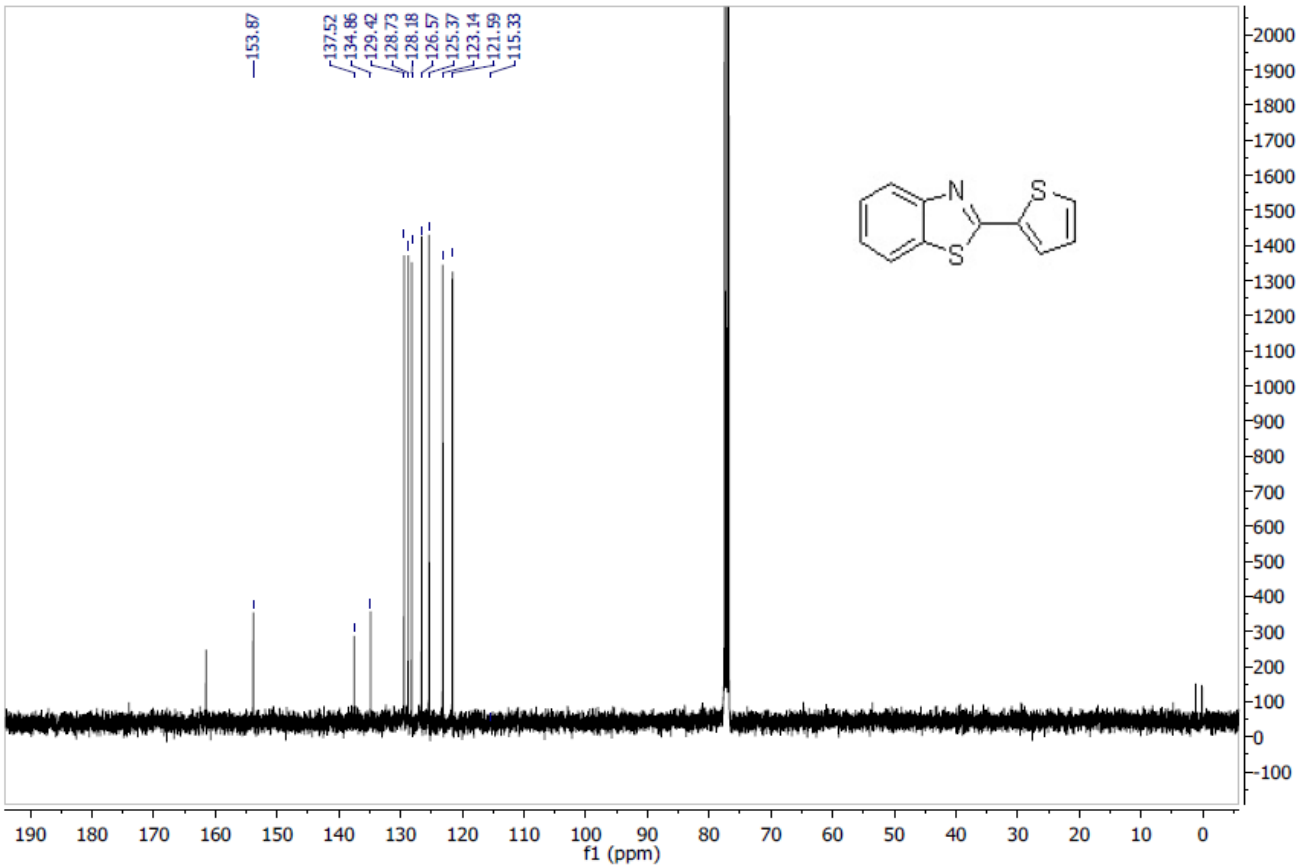
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.775	284988	5.660	Nitrogen
2	1.067	7245252	68.242	Carbon
3	3.667	1315157	4.537	Hydrogen
4	6.167	521625	13.116	Sulphur
		9367022	91.555	

10a. *2-Thienyl-1,3-benzothiazole*

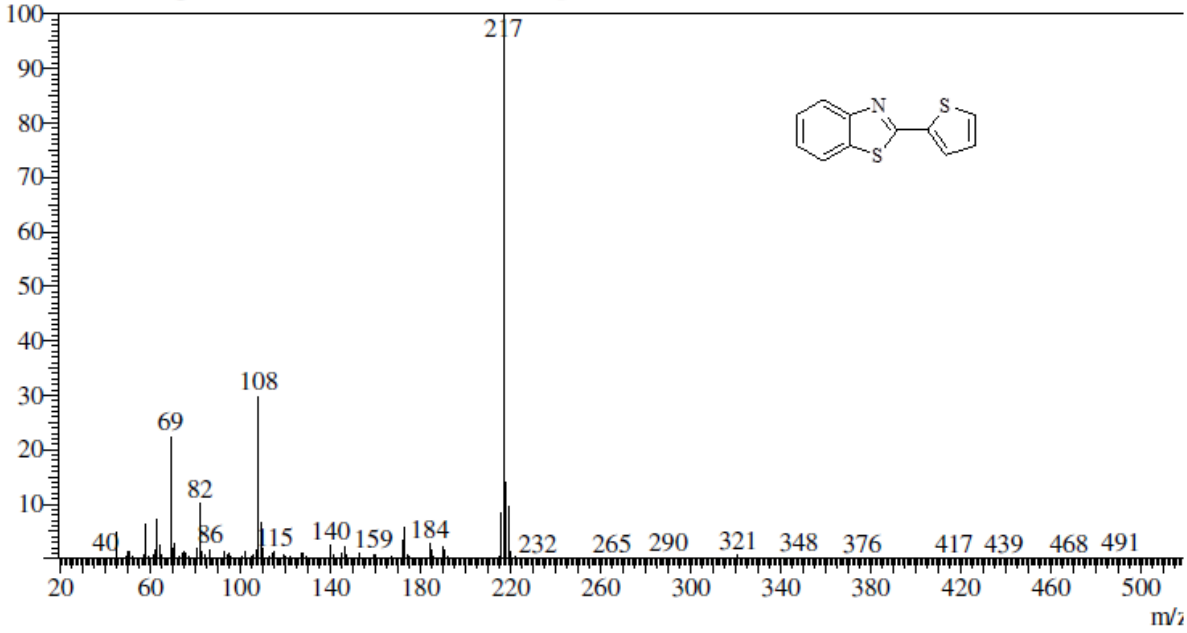


Mol. Wt.: 217.2



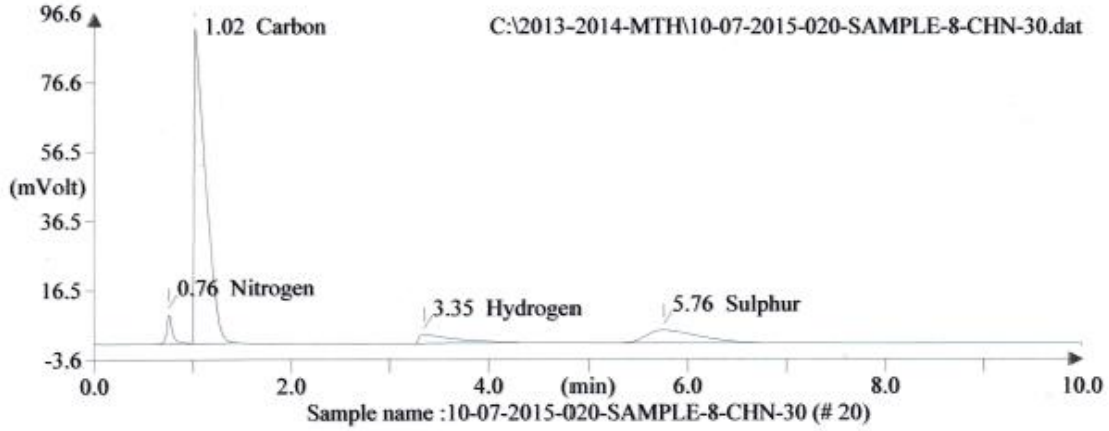


Line#:1 R.Time:16.930(Scan#:2987)
MassPeaks:298
RawMode:Averaged 16.925-16.935(2986-2988) BasePeak:217(23853)
BG Mode:Averaged 17.485-17.495(3098-3100) Group 1 - Event 1



SAIF-IIT BOMBAY

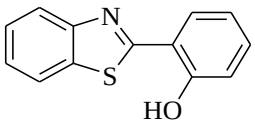
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 17:59
Printed:	07-13-2015 13:49
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-020-SAMPLE-8-CHN-30 (# 20)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-020-SAMPLE-8-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.872
Protein factor:	6.25



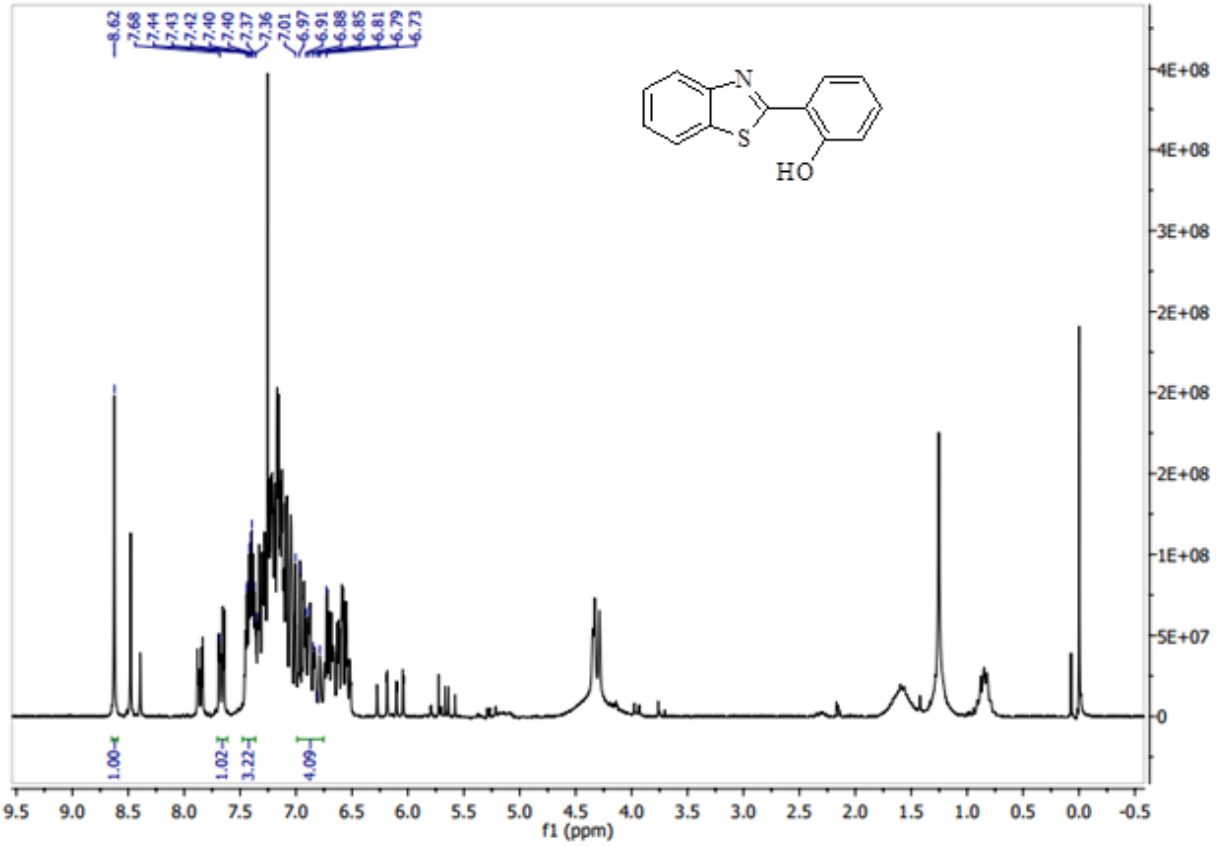
Sample name :10-07-2015-020-SAMPLE-8-CHN-30 (# 20)

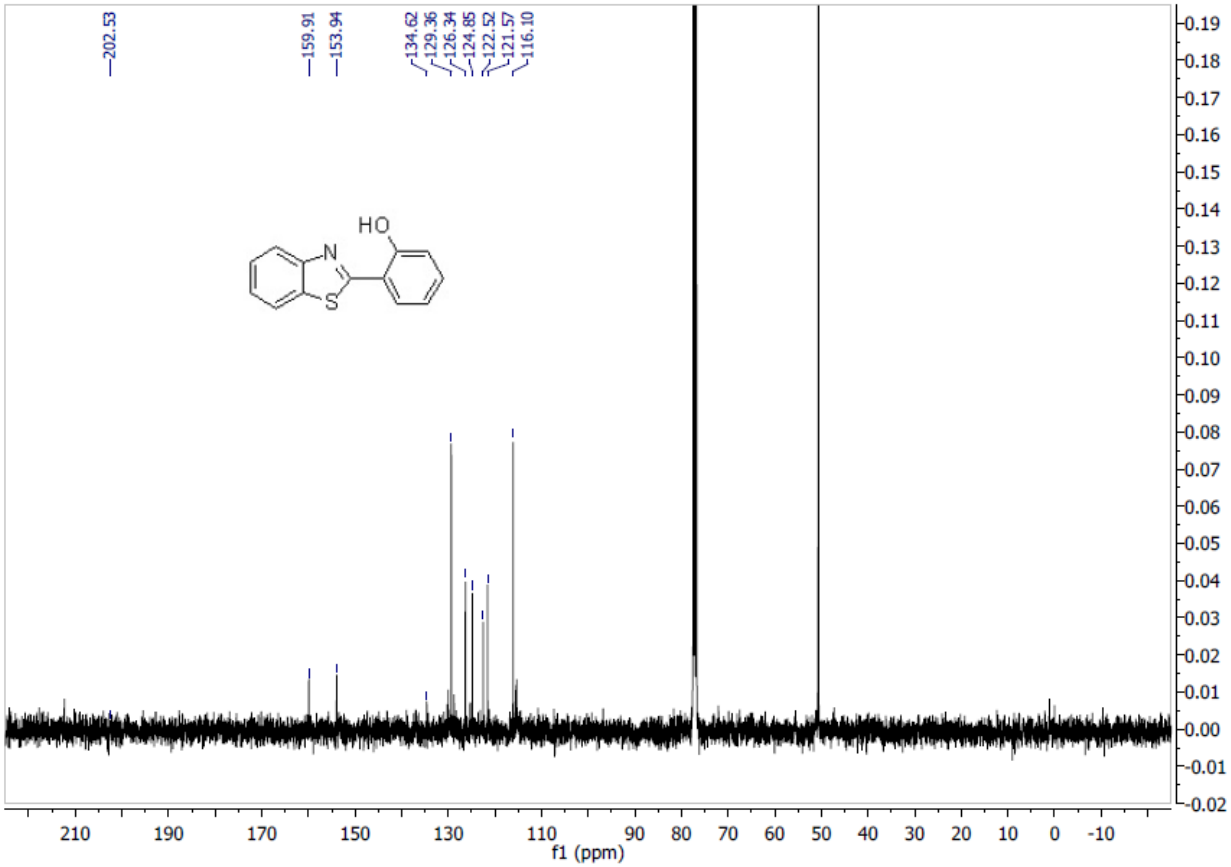
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	334917	6.485	Nitrogen
2	1.025	7311114	60.616	Carbon
3	3.350	658011	3.160	Hydrogen
4	5.758	1056026	29.474	Sulphur
		9360068	99.735	

11a. *2-(2-Hydroxyphenyl)benzothiazole*

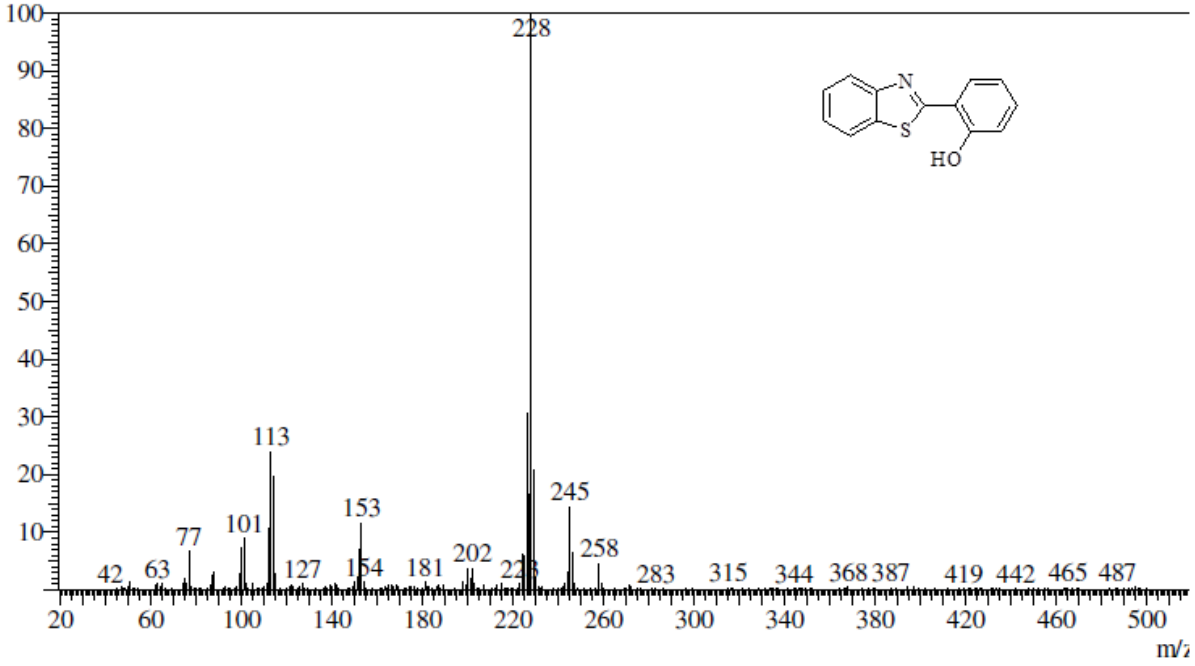


Mol. Wt. 227.1



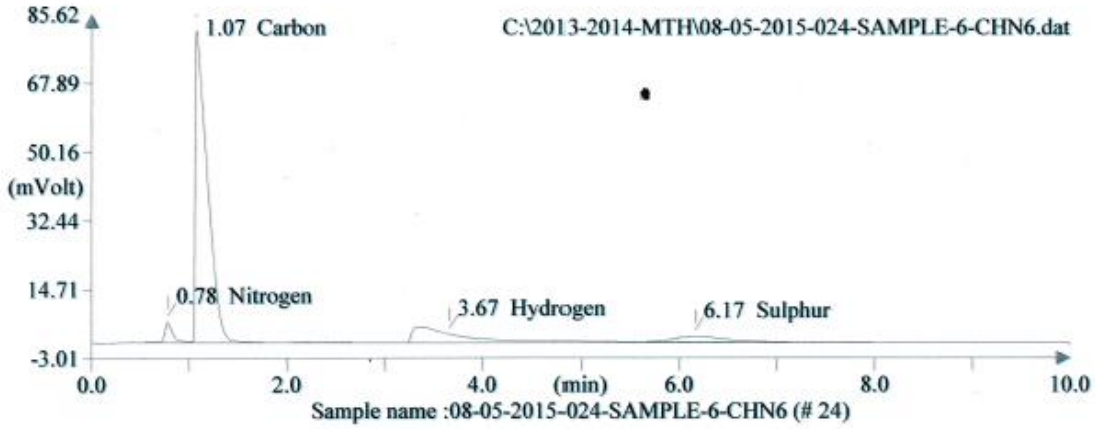


Line#:5 R.Time:24.275(Scan#:4456)
MassPeaks:338
RawMode:Averaged 24.270-24.280(4455-4457) BasePeak:228(8620)
BG Mode:Averaged 24.920-24.930(4585-4587) Group 1 - Event 1



SAIF-IIT BOMBAY

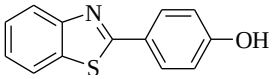
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\08-05-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	05/08/2015 18:32
Printed:	05-08-2015 18:42
Elemental Analyser method:	
Sampler method:	
Sample ID	08-05-2015-024-SAMPLE-6-CHN6 (# 24)
Analysis type:	UnkNown
Chromatogram filename:	08-05-2015-024-SAMPLE-6-CHN6.dat
Calibration method:	K Factors
Sample weight:	2.374
Protein factor:	6.25



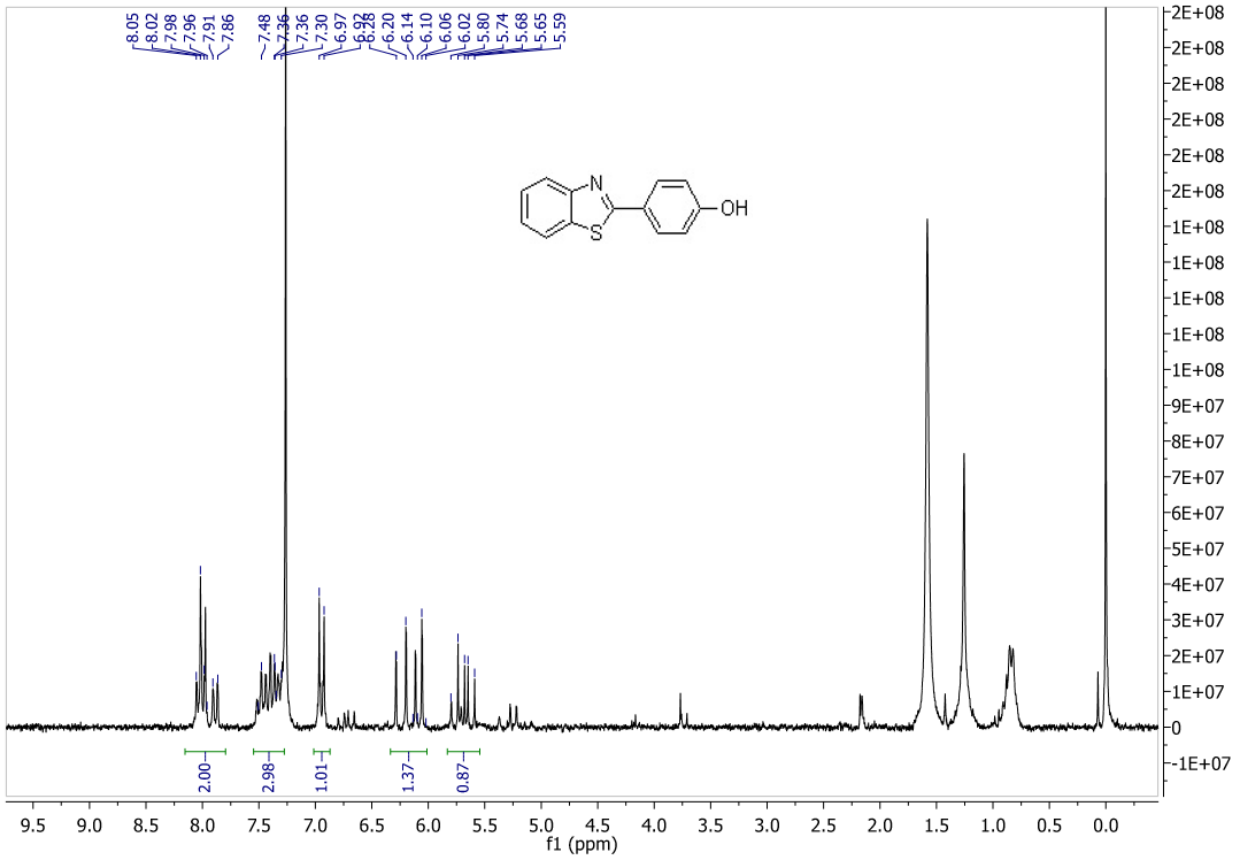
Sample name :08-05-2015-024-SAMPLE-6-CHN6 (# 24)

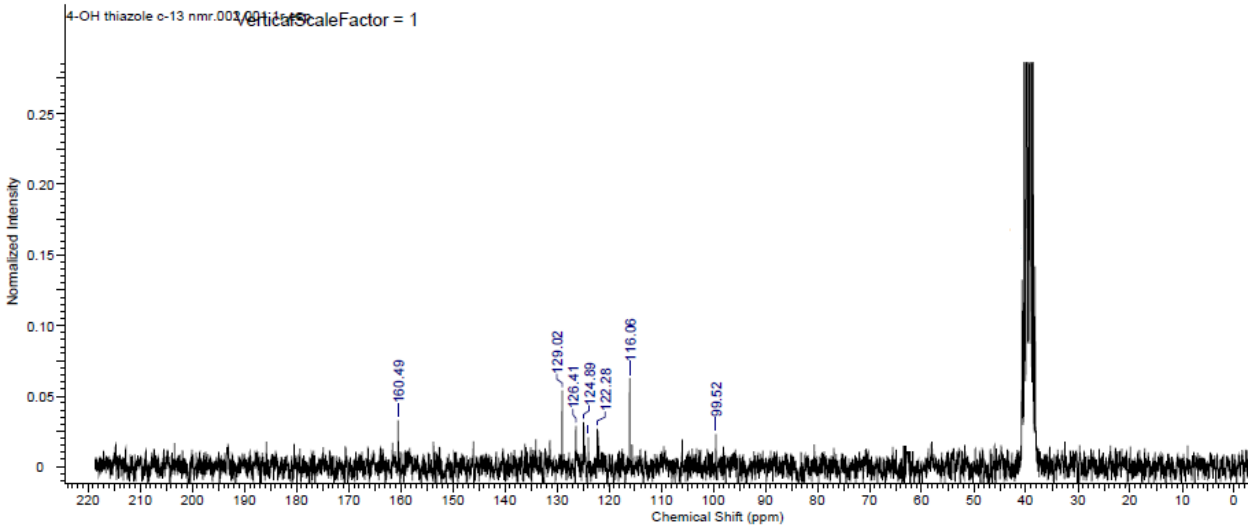
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.783	300586	6.091	Nitrogen
2	1.075	7154475	68.721	Carbon
3	3.667	1031974	3.631	Hydrogen
4	6.167	534138	13.969	Sulphur
		9021173	92.412	

12a. *2-(4-Hydroxyphenyl)benzothiazole*



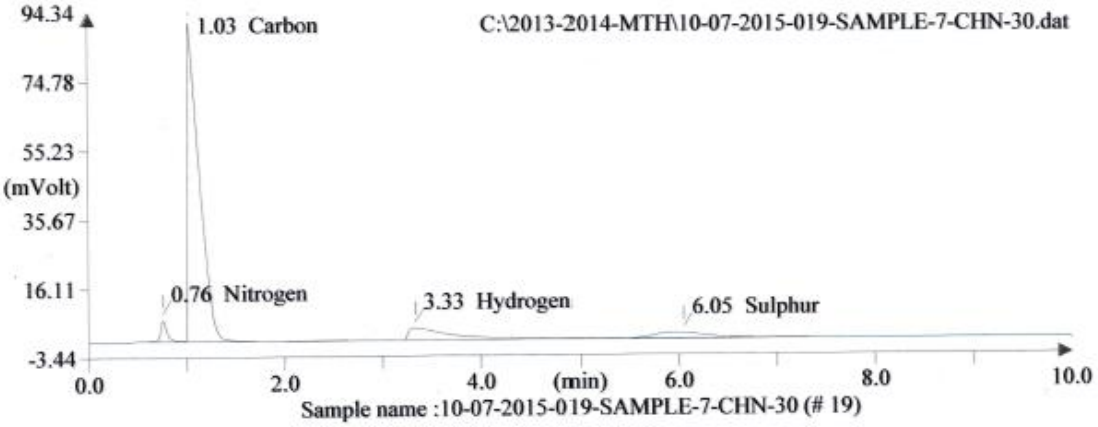
Mol. Wt.: 227.1





SAIF-IIT BOMBAY

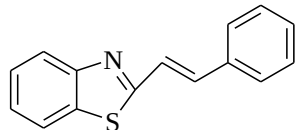
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 17:49
Printed:	07-13-2015 13:43
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-019-SAMPLE-7-CHN-30 (# 19)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-019-SAMPLE-7-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.66
Protein factor:	6.25



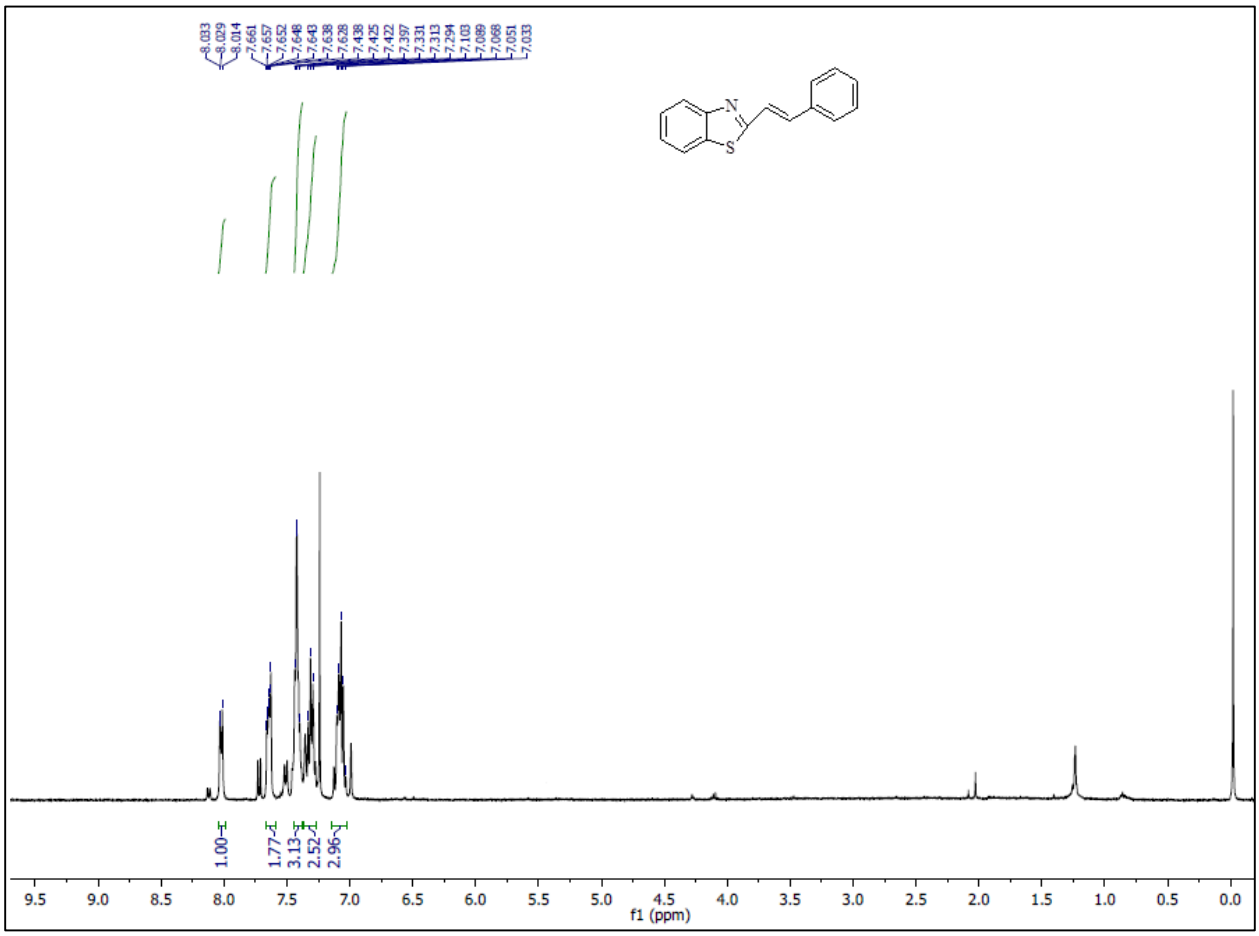
Sample name :10-07-2015-019-SAMPLE-7-CHN-30 (# 19)

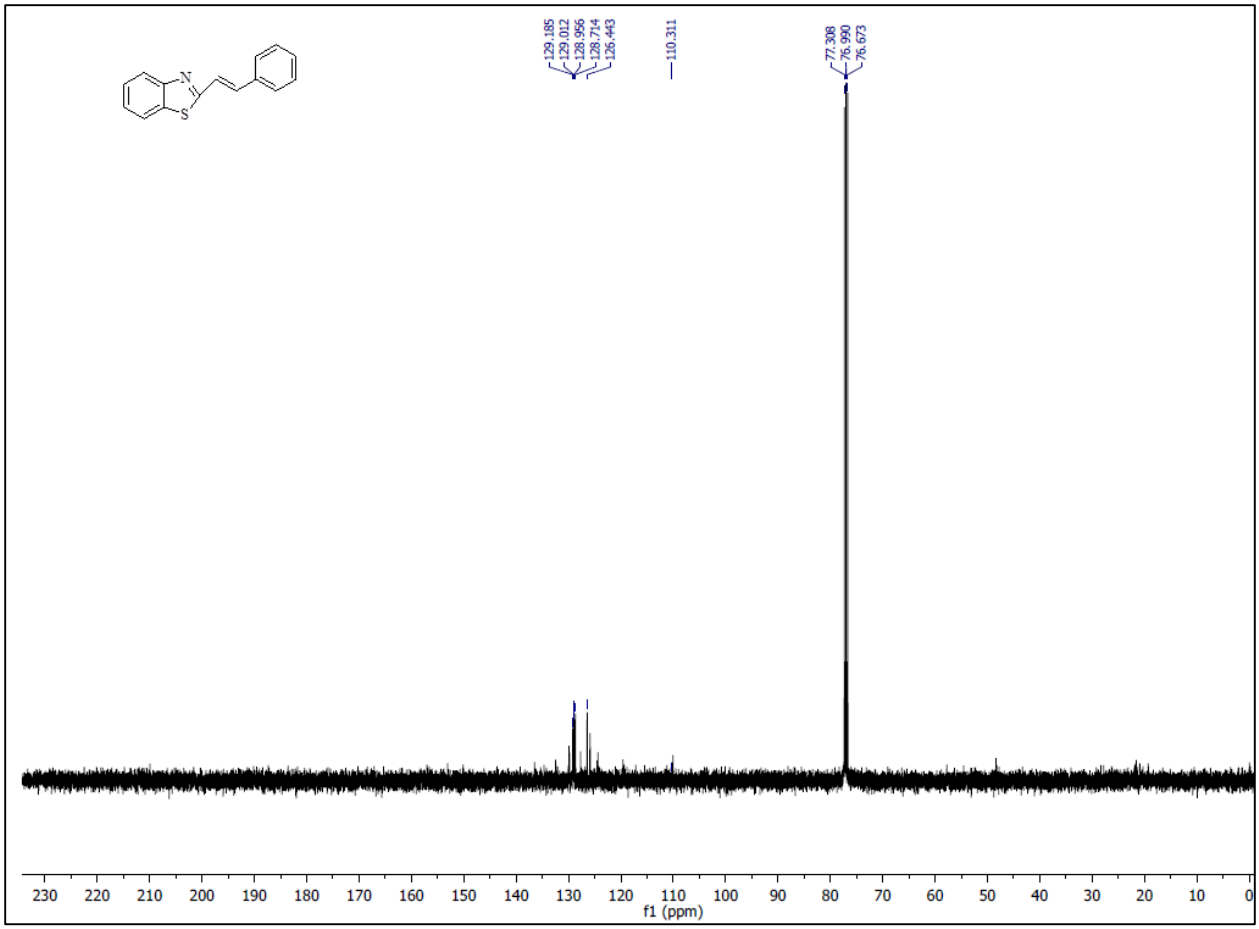
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	300368	6.074	Nitrogen
2	1.033	7597899	68.028	Carbon
3	3.333	1211749	3.913	Hydrogen
4	6.050	584512	13.961	Sulphur
		9694528	91.976	

13a. *2-Styryl-benzothiazole:*

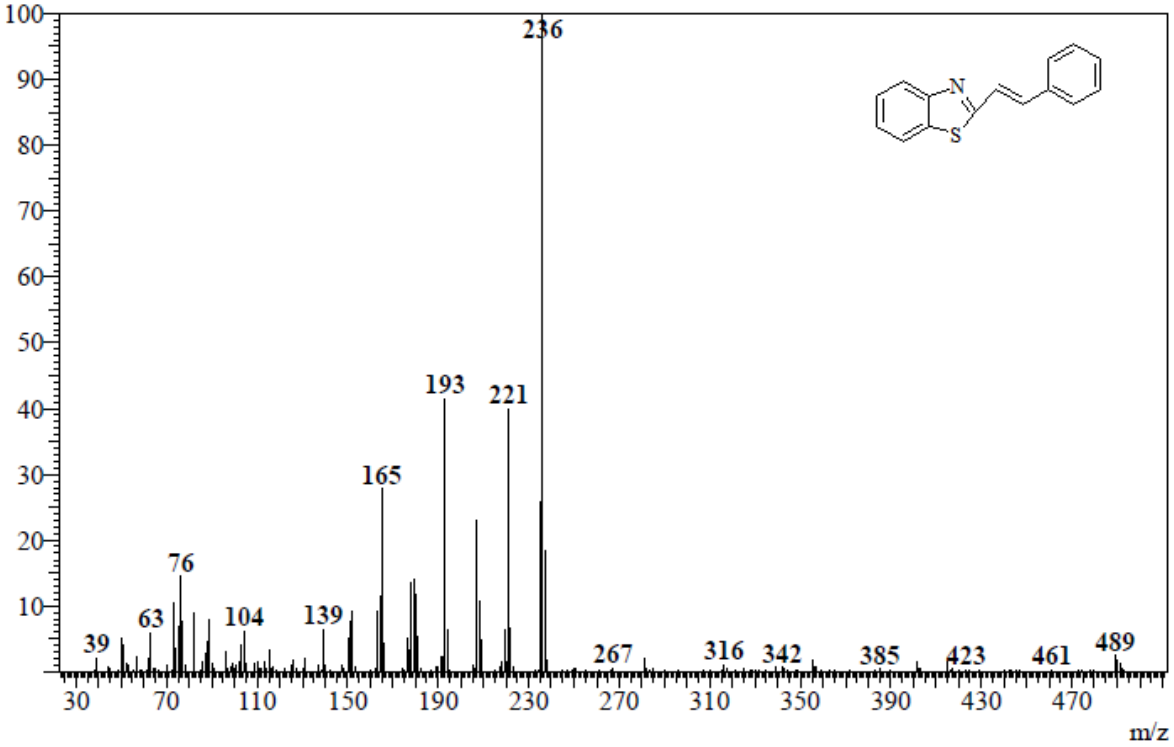


Mol. Wt.: 236

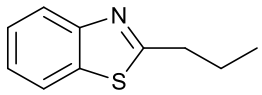



129.185
129.012
128.956
128.714
126.443
110.311
77.308
76.990
76.673
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

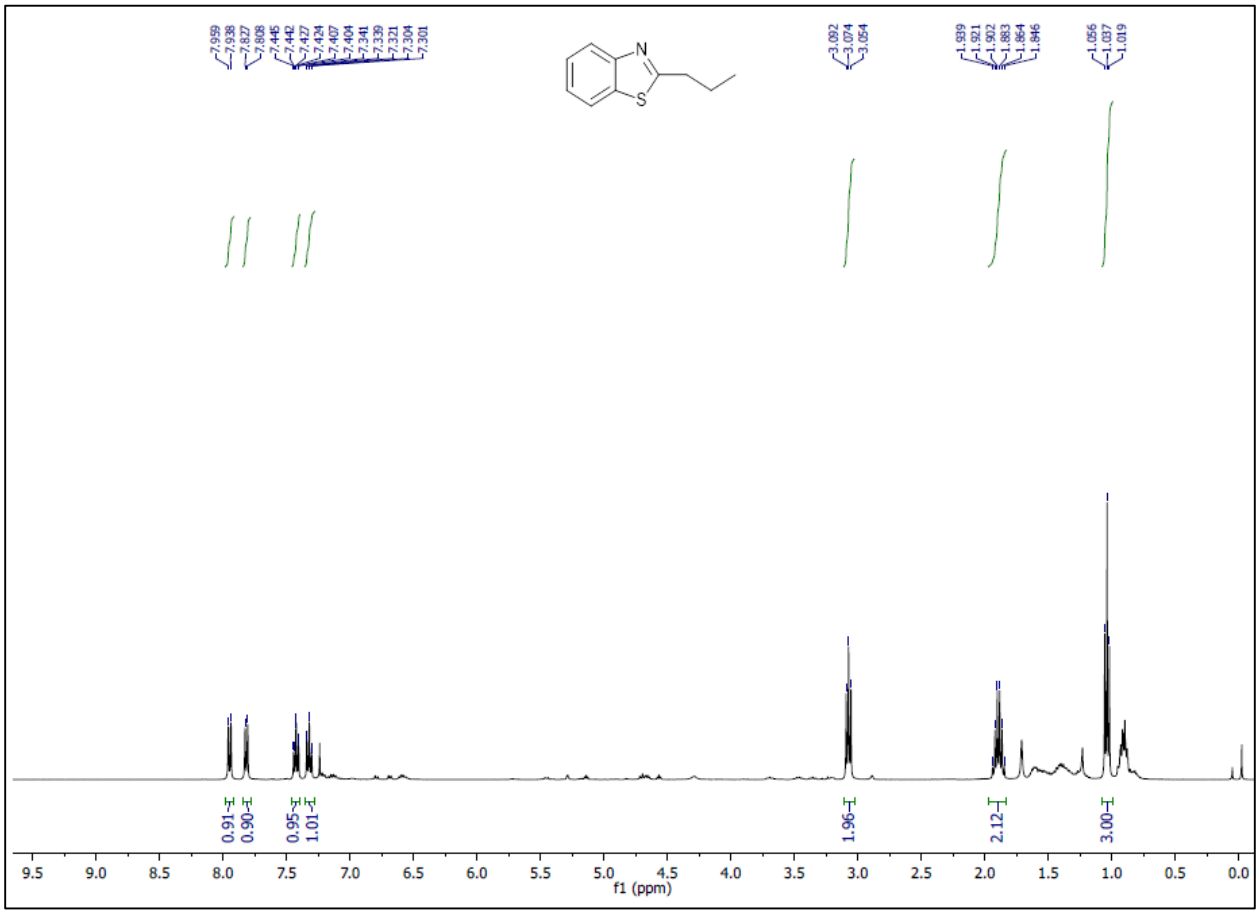
Line#:1 R.Time:18.6(Scan#:3123)
MassPeaks:302
RawMode:Averaged 18.6-18.6(3122-3124) BasePeak:236(25948)
BG Mode:Calc. from Peak

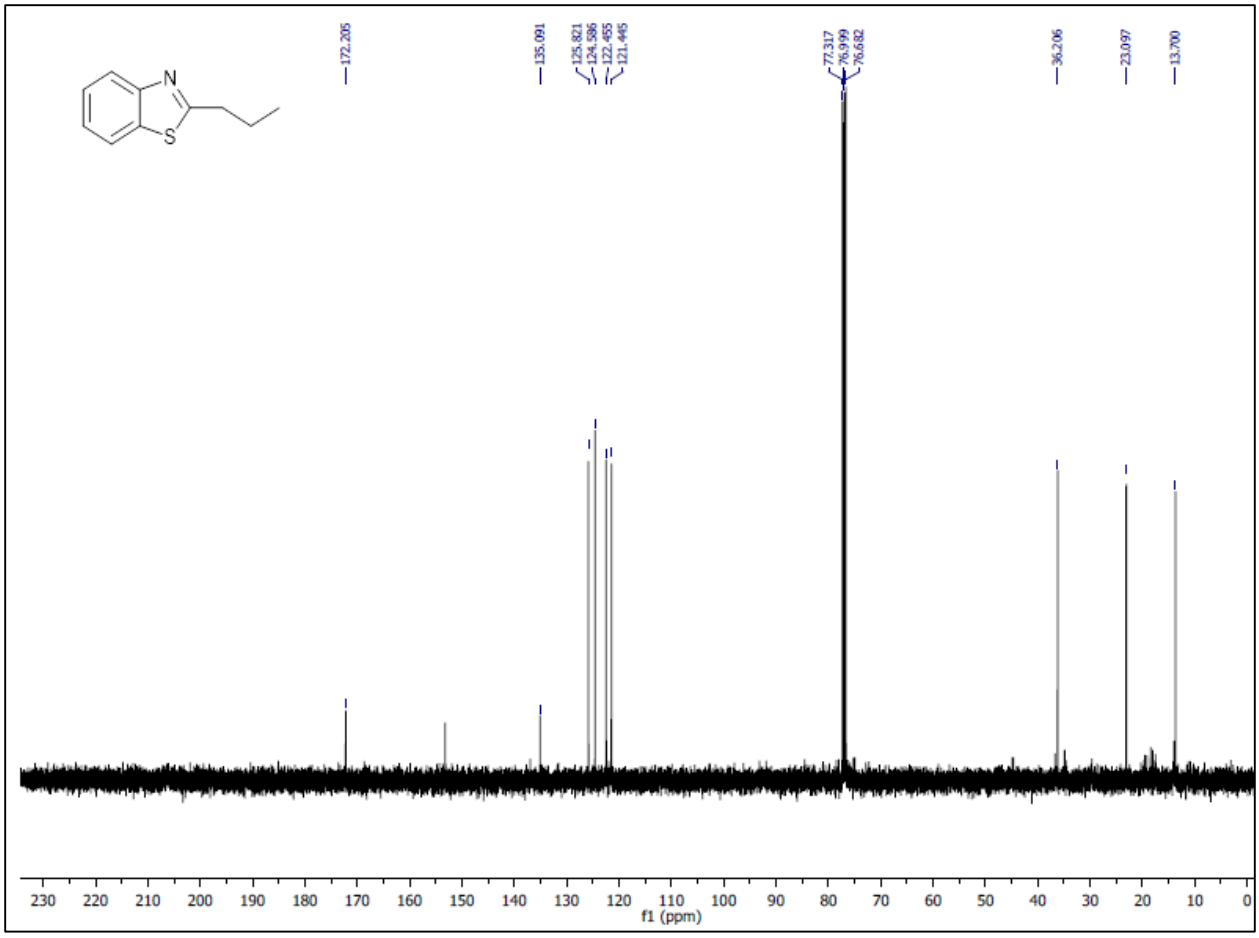


14a. *2-Butyl-benzothiazole:*

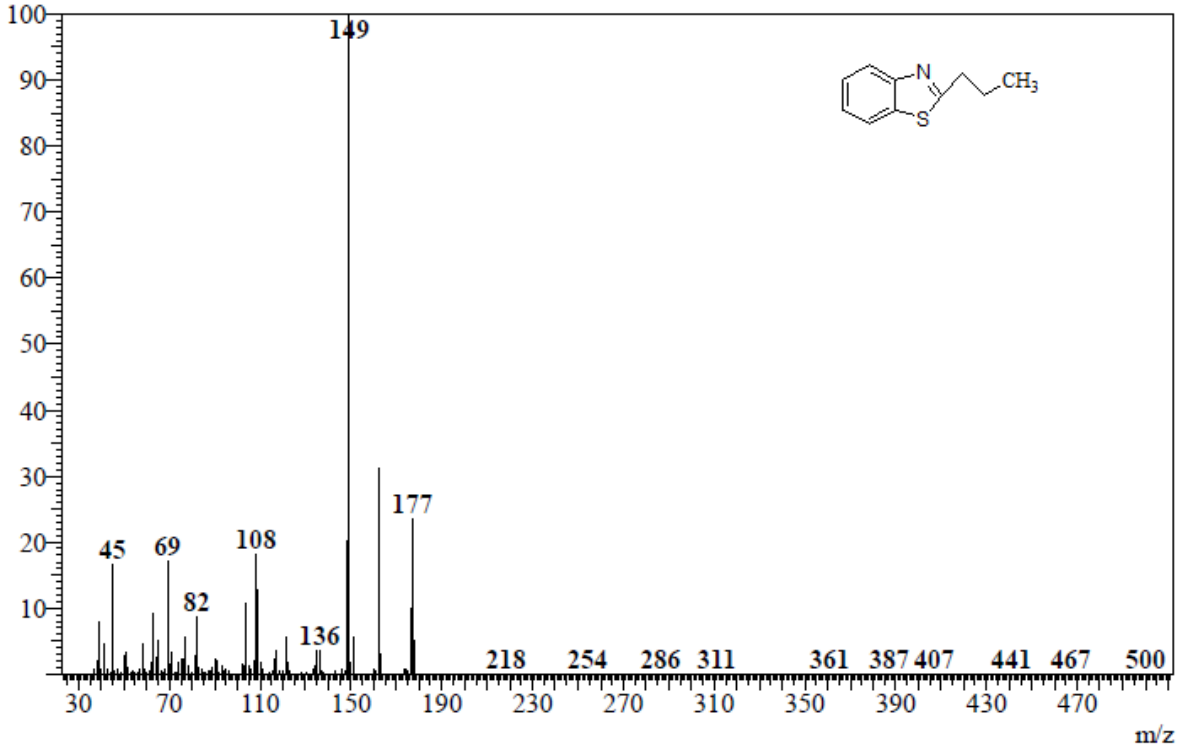


Mol. Wt.: 177

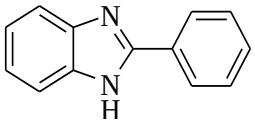



172.205
135.091
125.821
124.586
122.455
121.445
77.317
76.999
76.682
36.206
23.997
13.700
N
S
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

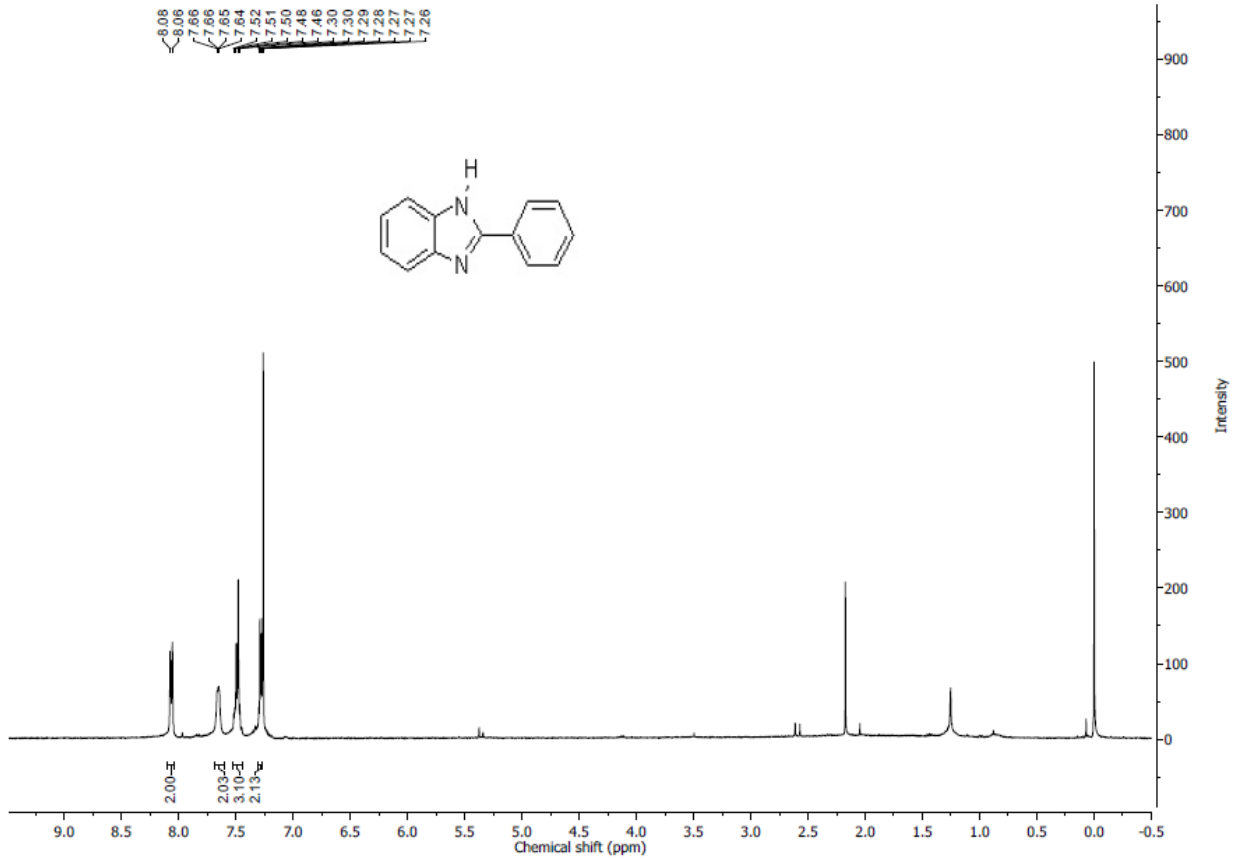
Line#:1 R.Time:10.4(Scan#:1489)
MassPeaks:297
RawMode:Averaged 10.4-10.4(1488-1490) BasePeak:149(7991066)
BG Mode:Calc. from Peak

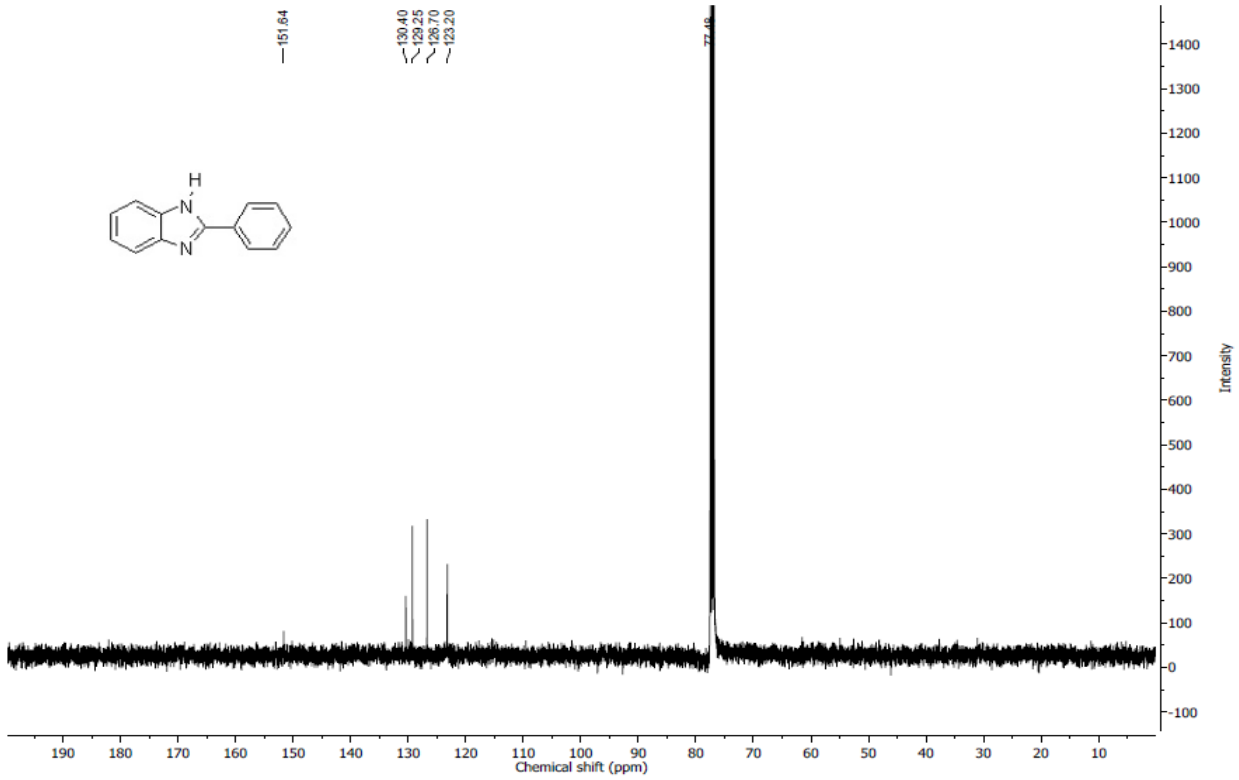


15a *2-Phenylbenzimidazole*

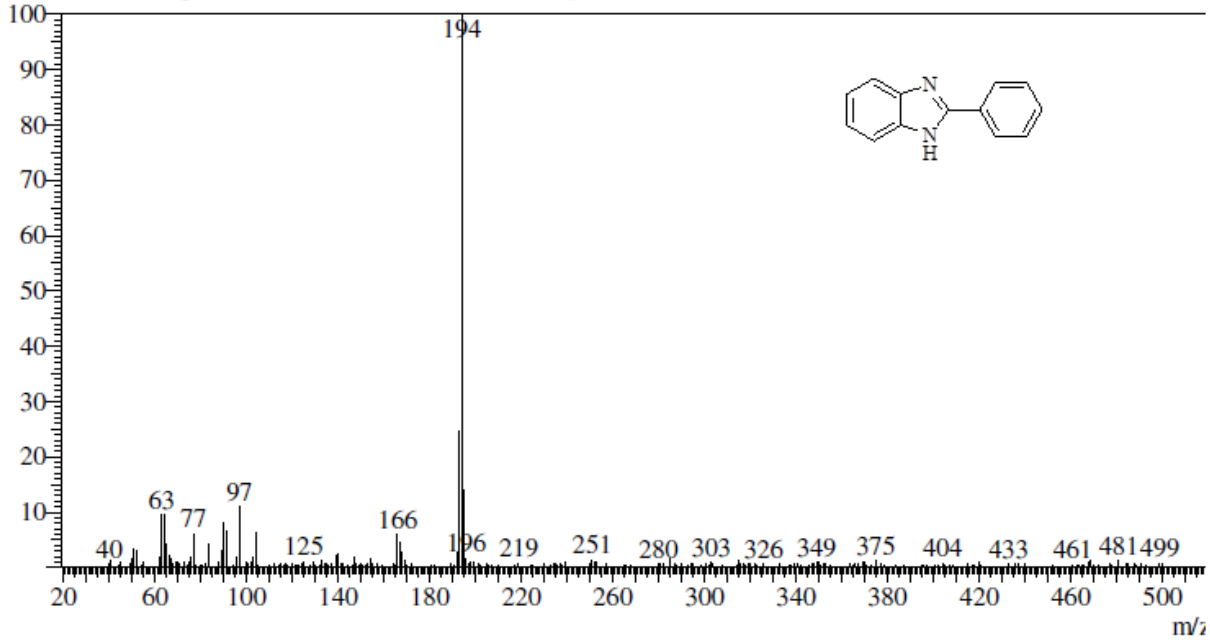


Mol. Wt.: 194.2



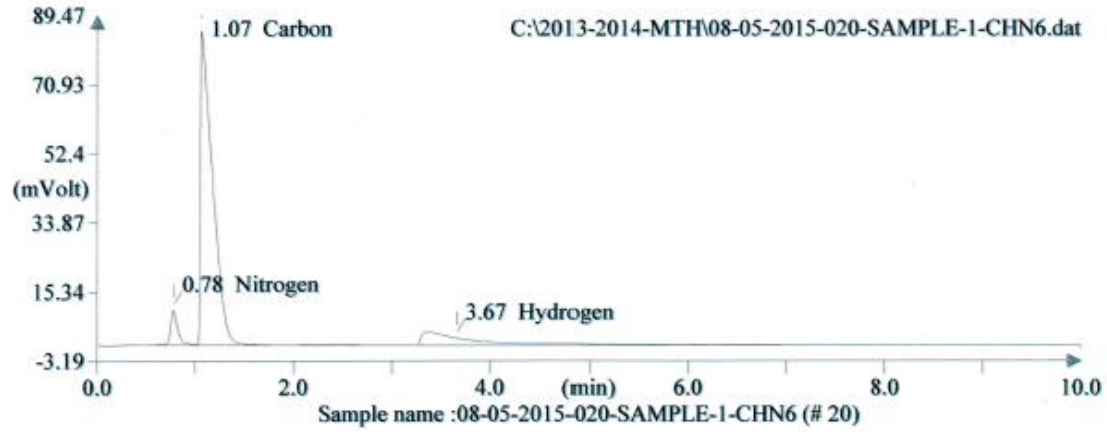


Line#:1 R.Time:17.100(Scan#:3021)
MassPeaks:303
RawMode:Averaged 17.095-17.105(3020-3022) BasePeak:194(2927)
BG Mode:Averaged 18.070-18.080(3215-3217) Group 1 - Event 1



SAIF-IIT BOMBAY

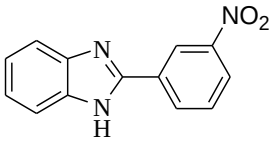
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\08-05-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	05/08/2015 17:50
Printed:	05-08-2015 18:00
Elemental Analyser method:	
Sampler method:	
Sample ID	08-05-2015-020-SAMPLE-1-CHN6 (# 20)
Analysis type:	UnkNown
Chromatogram filename:	08-05-2015-020-SAMPLE-1-CHN6.dat
Calibration method:	K Factors
Sample weight:	2.04
Protein factor:	6.25



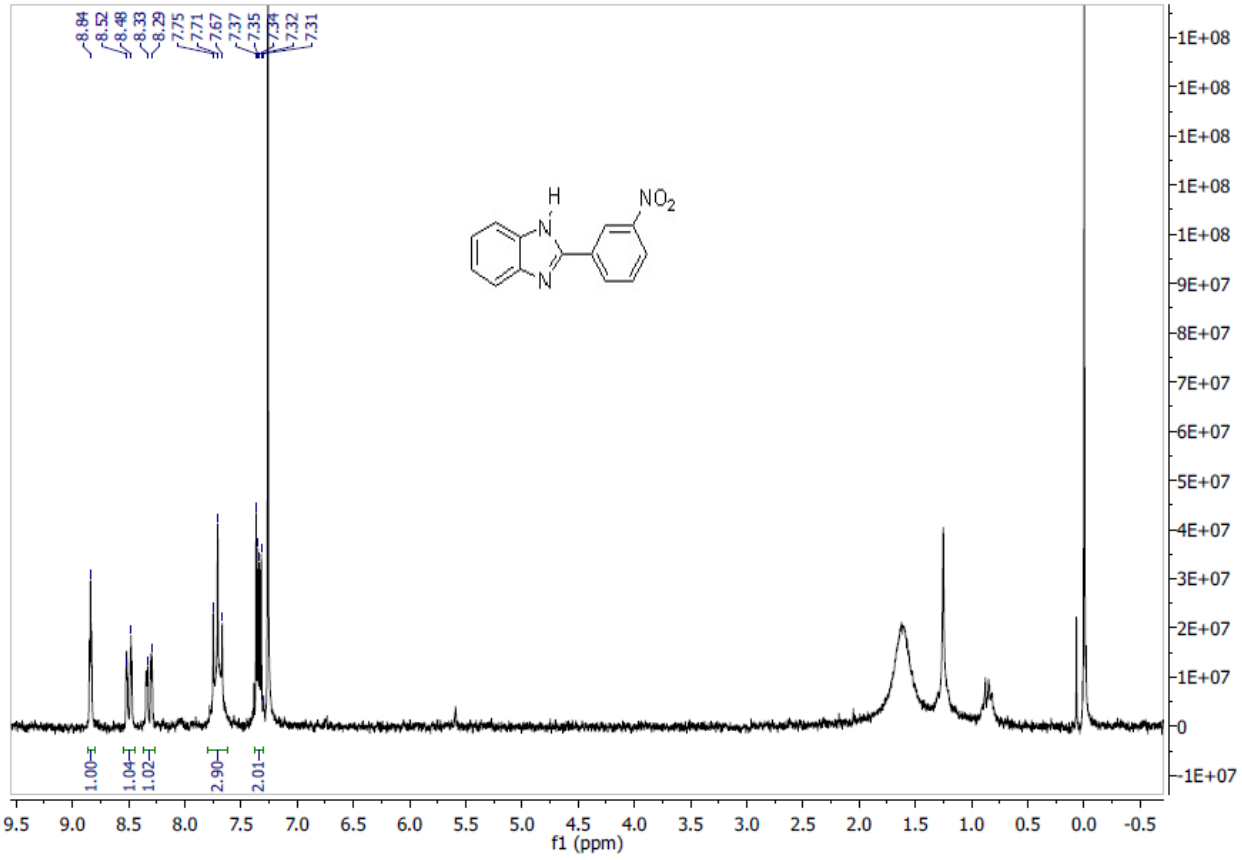
Sample name :08-05-2015-020-SAMPLE-1-CHN6 (# 20)

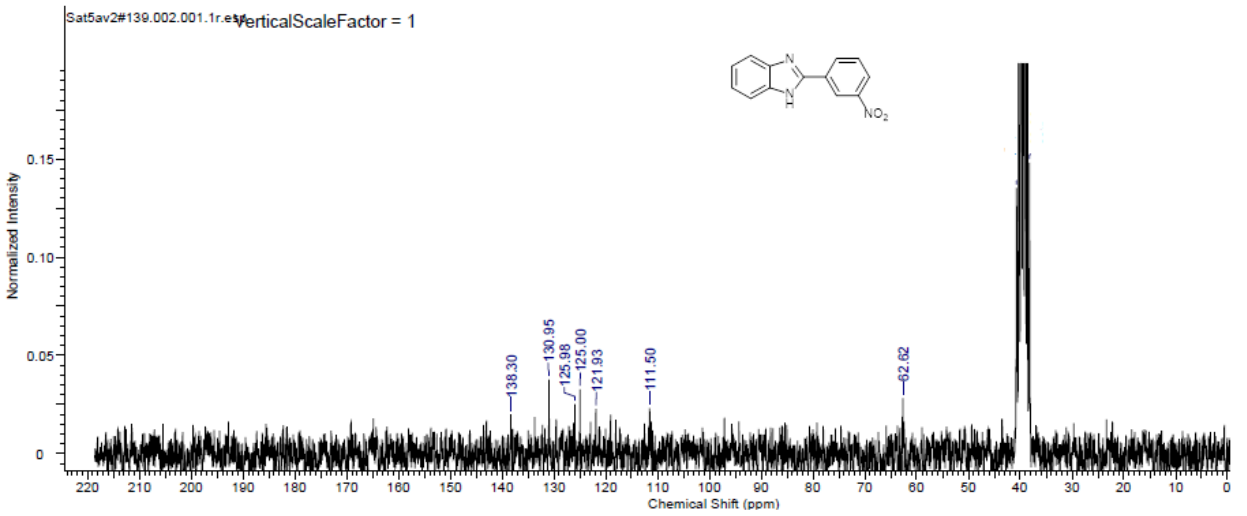
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.783	573613	14.306	Nitrogen
2	1.067	7170320	80.150	Carbon
3	3.667	1346343	5.512	Hydrogen
		9090276	99.968	

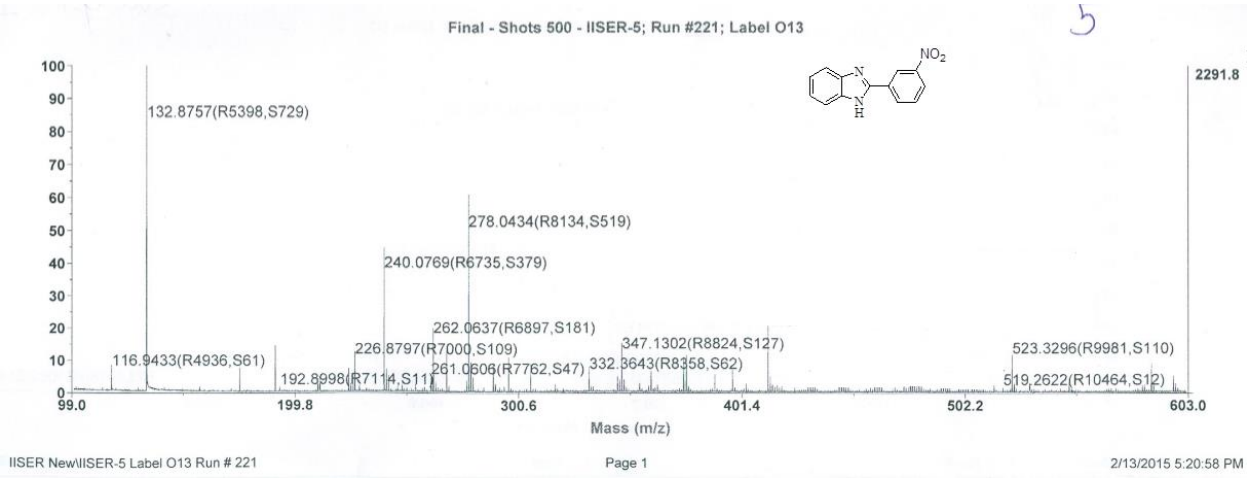
16a. *2-(3-Nitrophenyl)-1H-benzimidazole*



Mol. Wt.: 239.2

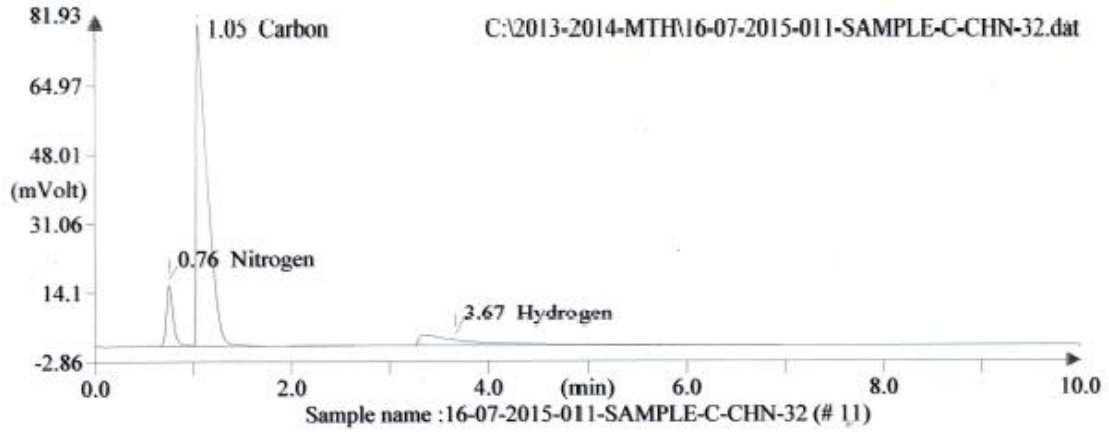



Sat5av2#139.002.001.1r.esp VerticalScaleFactor = 1
Normalized Intensity
0.15
0.10
0.05
0
138.30
130.95
126.98
125.00
121.93
111.50
62.62
220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
Chemical Shift (ppm)


Final - Shots 500 - IISER-5; Run #221; Label O13
2291.8
132.8757(R5398,S729)
278.0434(R8134,S519)
240.0769(R6735,S379)
262.0637(R6897,S181)
226.8797(R7000,S109)
347.1302(R8824,S127)
116.9433(R4936,S61)
261.0606(R7762,S47)
332.3643(R8358,S62)
523.3296(R9981,S110)
192.8998(R7114,S11)
519.2622(R10464,S12)
99.0
199.8
300.6
401.4
502.2
603.0
Mass (m/z)
IISER New\IISER-5 Label O13 Run # 221
Page 1
2/13/2015 5:20:58 PM

SAIF-IIT BOMBAY

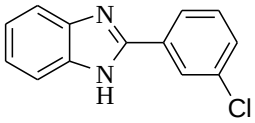
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\16-07-2014-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/16/2015 17:37
Printed:	07/17/2015 11:06
Elemental Analyser method:	
Sampler method:	
Sample ID	16-07-2015-011-SAMPLE-C-CHN-32 (# 11)
Analysis type:	UnkNown
Chromatogram filename:	16-07-2015-011-SAMPLE-C-CHN-32.dat
Calibration method:	K Factors
Sample weight:	2.401
Protein factor:	6.25



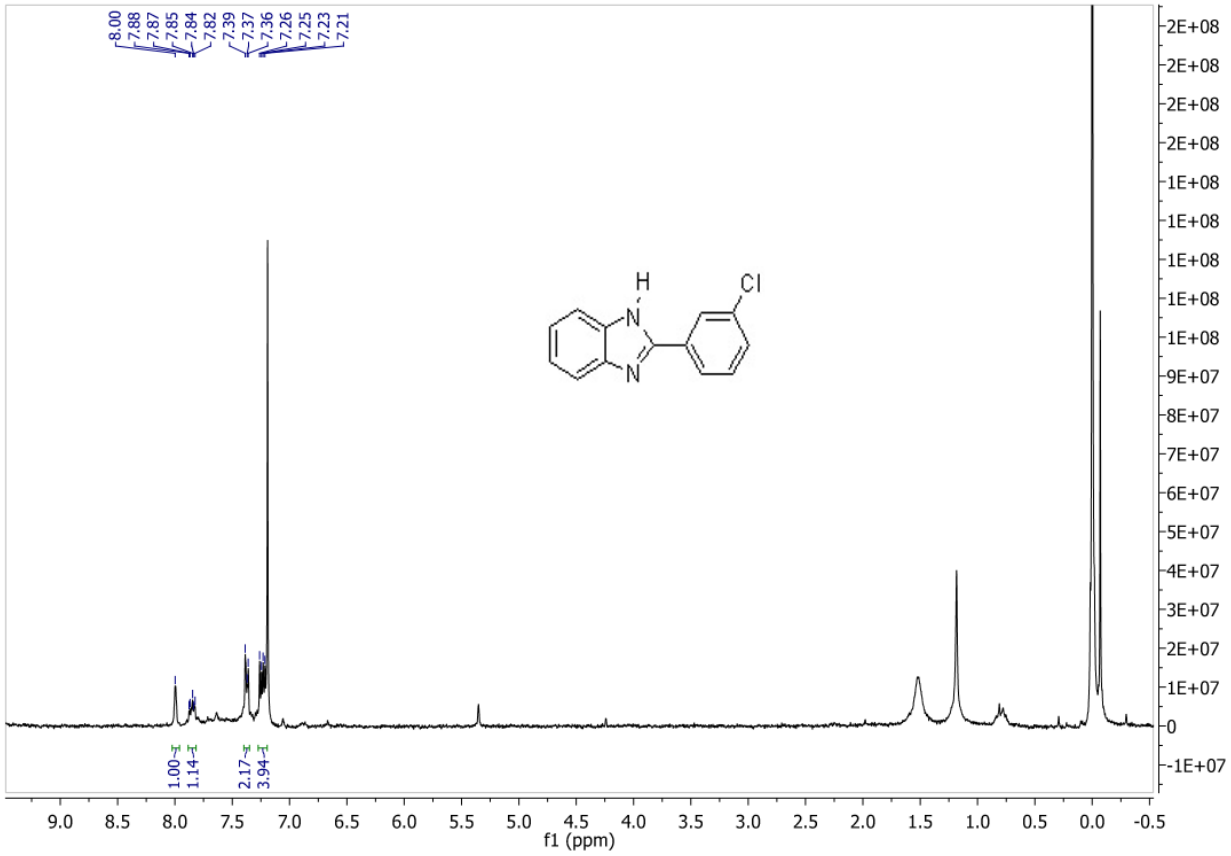
Sample name :16-07-2015-011-SAMPLE-C-CHN-32 (# 11)

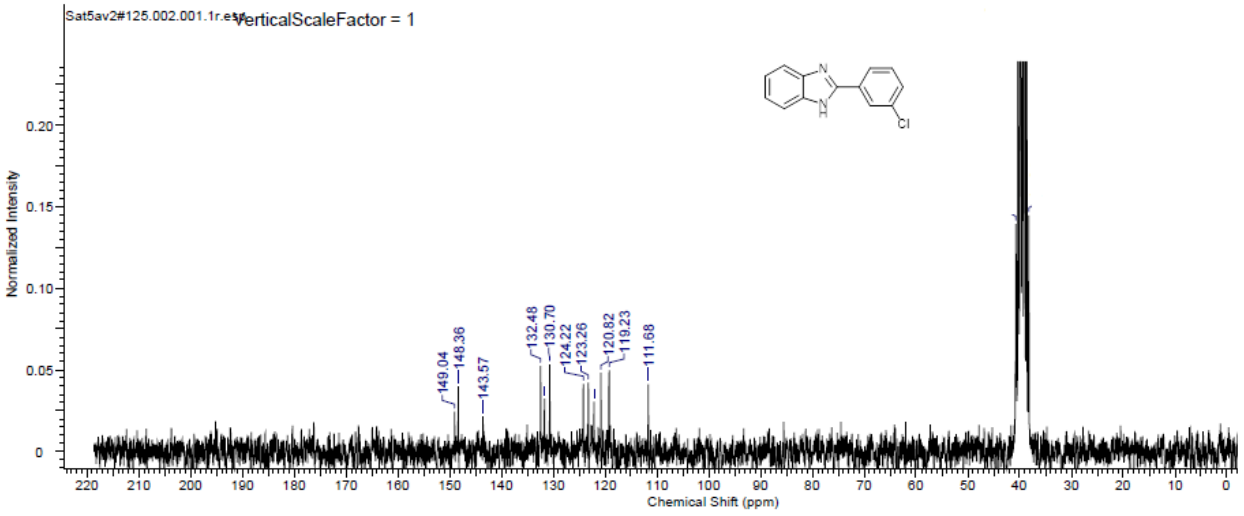
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	710007	17.502	Nitrogen
2	1.050	6525116	65.150	Carbon
3	3.667	890713	3.511	Hydrogen
		8125836	86.163	

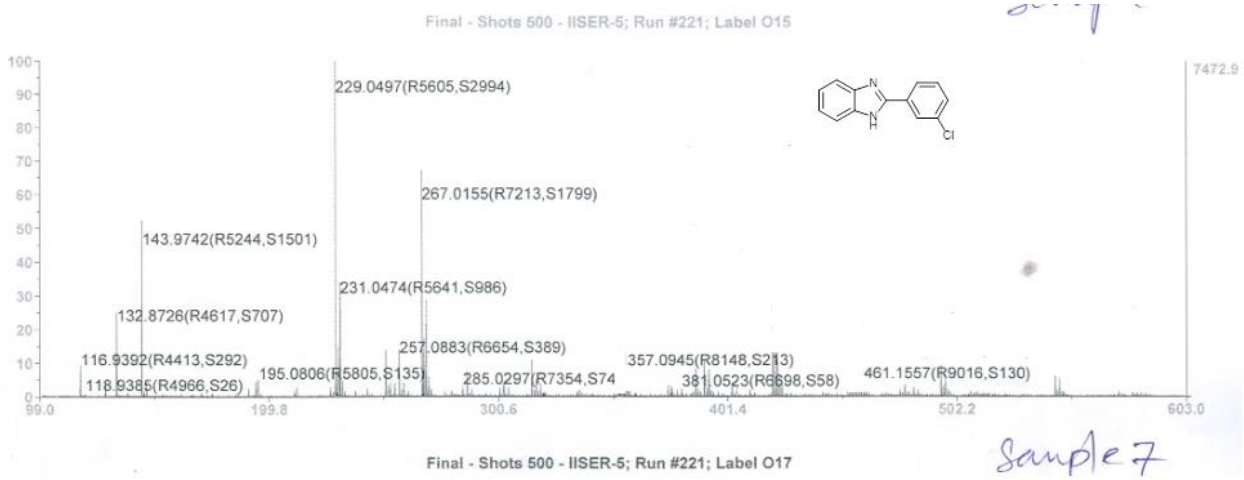
17a. *2-(3-Chlorophenyl)-1H-benzimidazole*



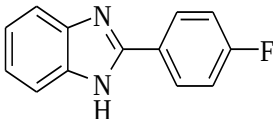
Mol. Wt.: 239.6



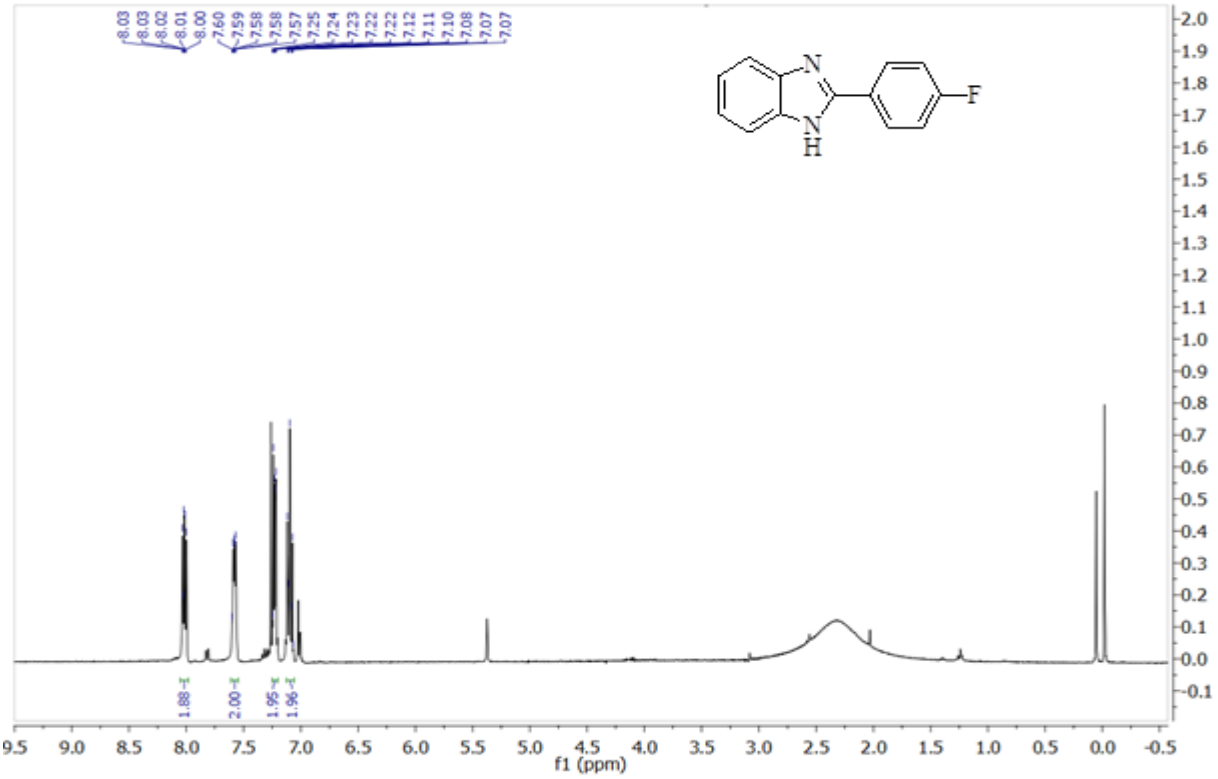

Sat5av2#125.002.001.1r.esp VerticalScaleFactor = 1
Normalized Intensity
Chemical Shift (ppm)
149.04
148.36
143.57
132.48
130.70
124.22
123.26
120.82
119.23
111.68

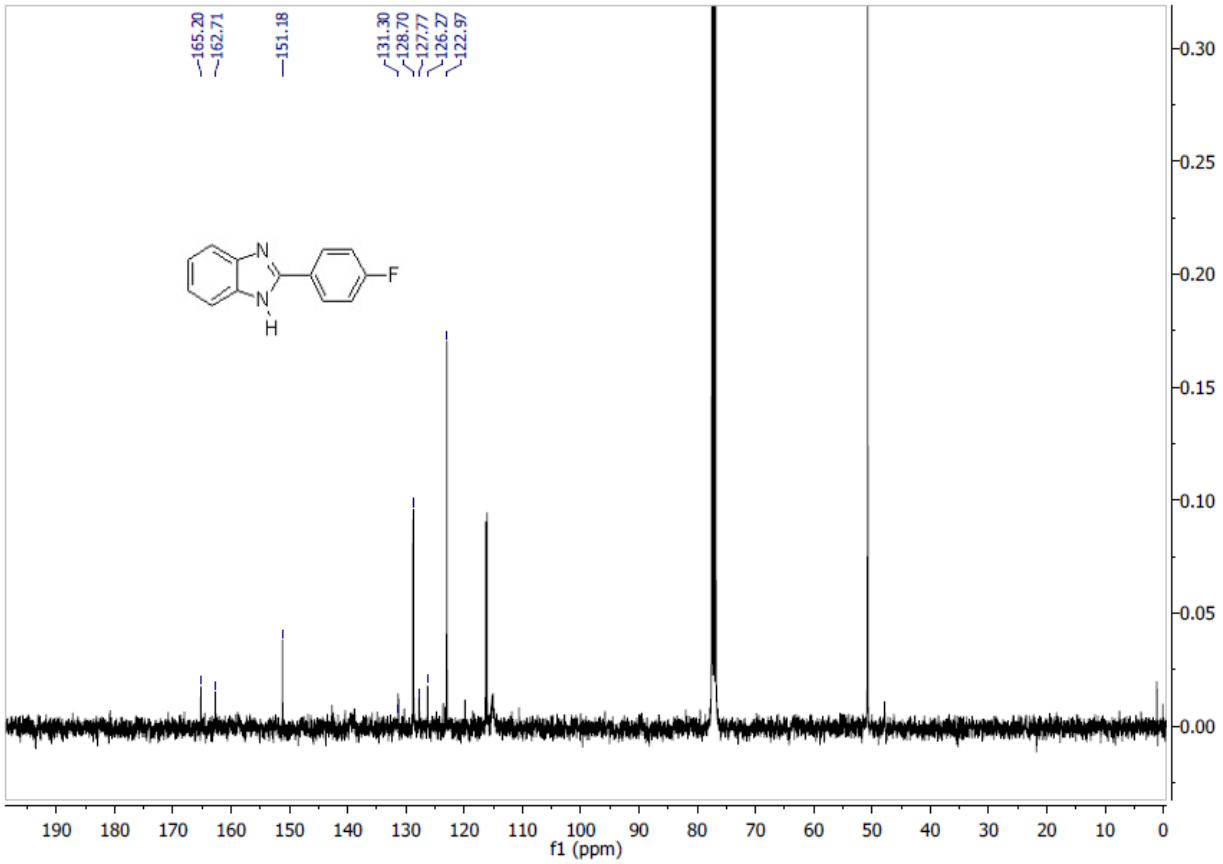

Final - Shots 500 - IISER-5; Run #221; Label O15
229.0497(R5605,S2994)
267.0155(R7213,S1799)
143.9742(R5244,S1501)
231.0474(R5641,S986)
132.8726(R4617,S707)
257.0883(R6654,S389)
116.9392(R4413,S292)
118.9385(R4966,S26)
195.0806(R5805,S135)
285.0297(R7354,S74
357.0945(R8148,S213)
381.0523(R6698,S58)
461.1557(R9016,S130)
Final - Shots 500 - IISER-5; Run #221; Label O17
Sample 7

18a. *2-(4-Fluorophenyl)-1H-benzmidazole*

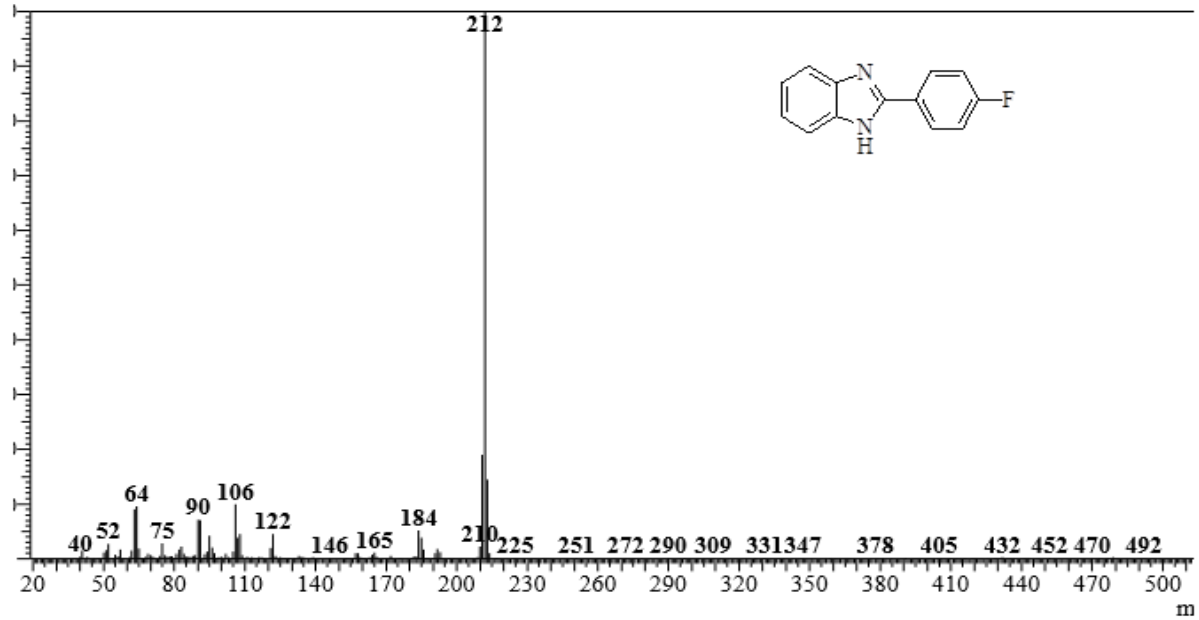


Mol. Wt.: 212.2



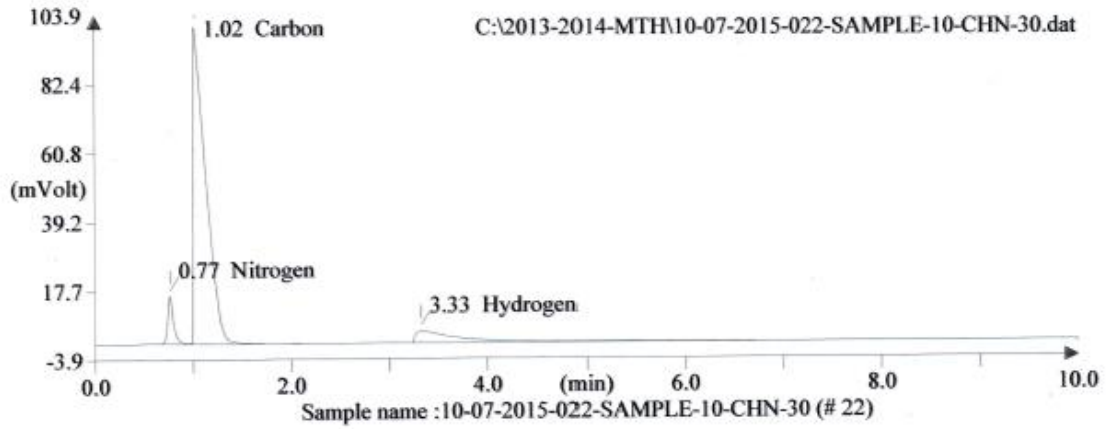


e#:1 R.Time:28.5(Scan#:3060)
ssPeaks:311
vMode:Averaged 28.5-28.5(3059-3061) BasePeak:212(11401)
Mode:Averaged 30.7-30.8(3330-3332)



SAIF-IIT BOMBAY

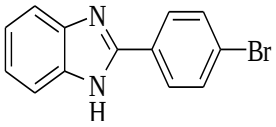
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 18:20
Printed:	07-13-2015 13:45
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-022-SAMPLE-10-CHN-30 (# 22)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-022-SAMPLE-10-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.819
Protein factor:	6.25



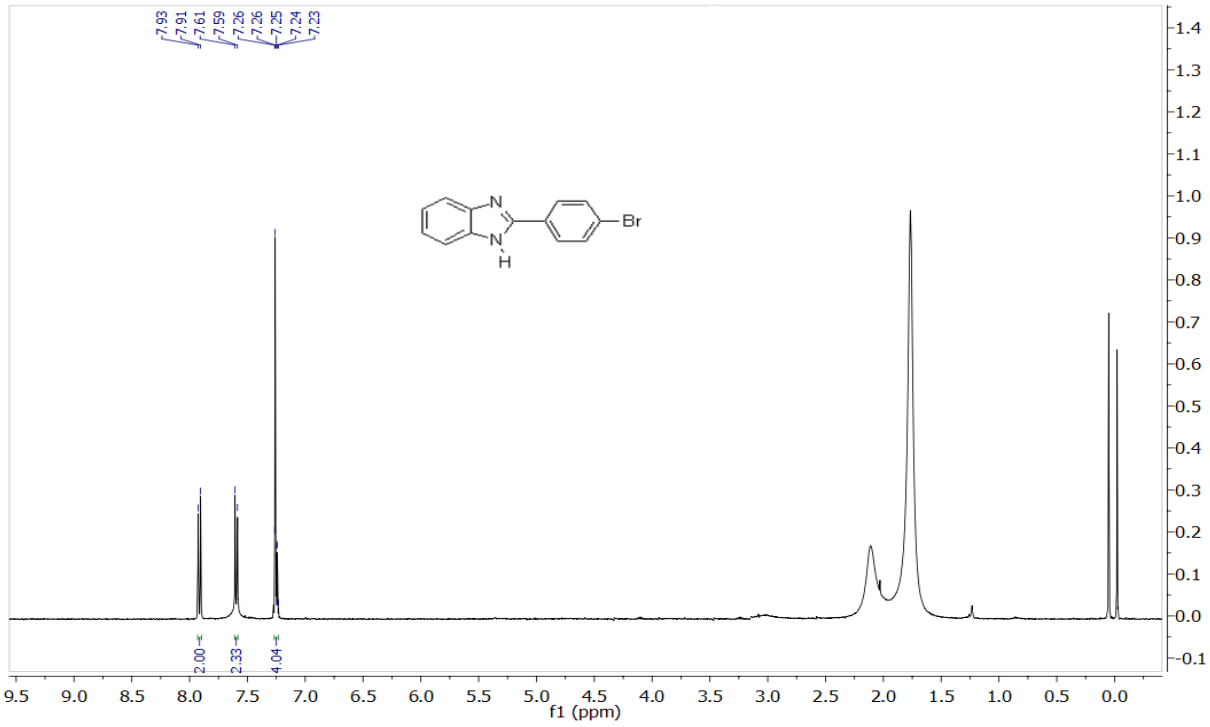
Sample name :10-07-2015-022-SAMPLE-10-CHN-30 (# 22)

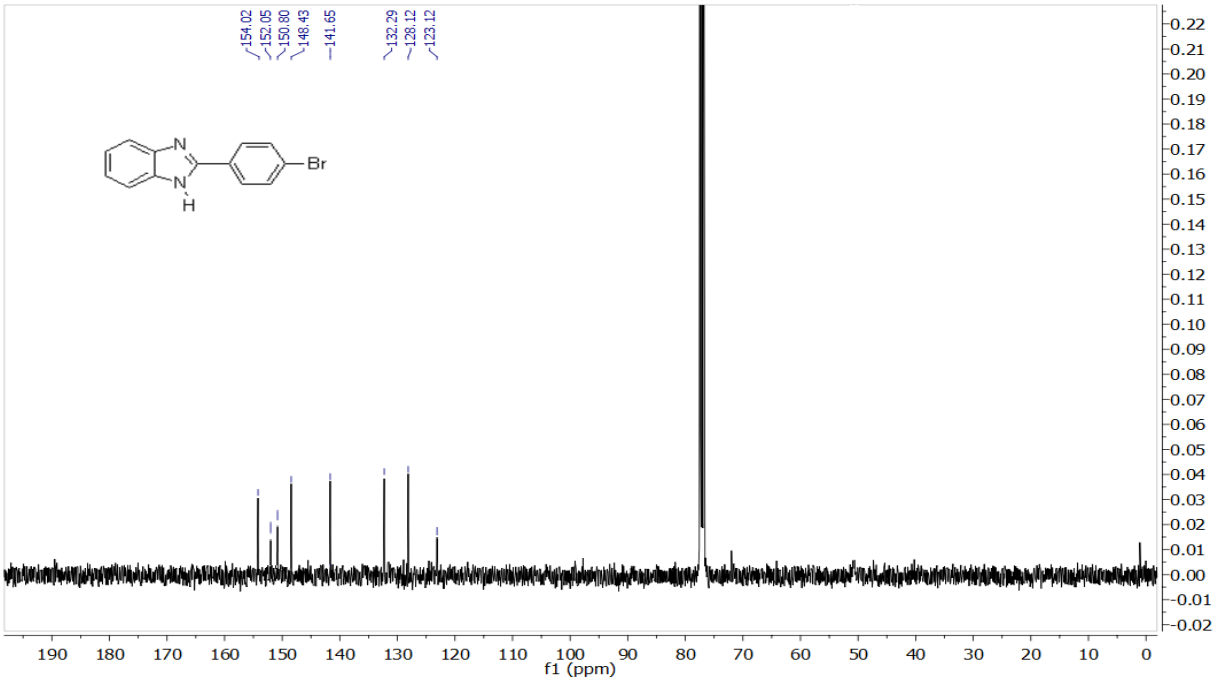
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.767	629914	13.043	Nitrogen
2	1.025	8653016	73.150	Carbon
3	3.325	1364987	4.160	Hydrogen
		10647917	89.981	

19a. *2-(4-Bromophenyl)-1H-benzimidazole*



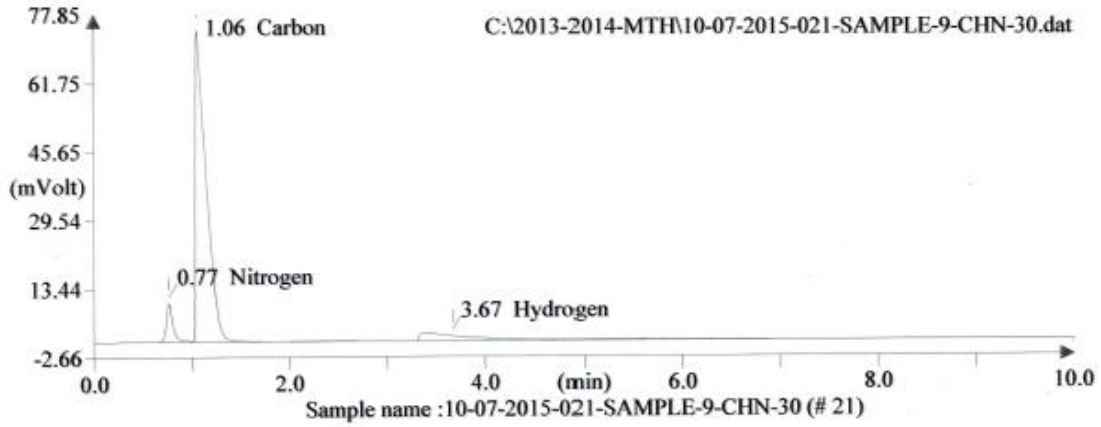
Mol. Wt.: 290.1




154.02
152.05
150.80
148.43
141.65
132.29
128.12
123.12
N
N
H
Br
0.22
0.21
0.20
0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
-0.01
-0.02
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
f1 (ppm)

SAIF-IIT BOMBAY

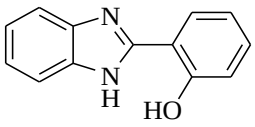
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\10-07-2015-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/10/2015 18:10
Printed:	07-13-2015 13:44
Elemental Analyser method:	
Sampler method:	
Sample ID	10-07-2015-021-SAMPLE-9-CHN-30 (# 21)
Analysis type:	UnkNown
Chromatogram filename:	10-07-2015-021-SAMPLE-9-CHN-30.dat
Calibration method:	K Factors
Sample weight:	2.279
Protein factor:	6.25



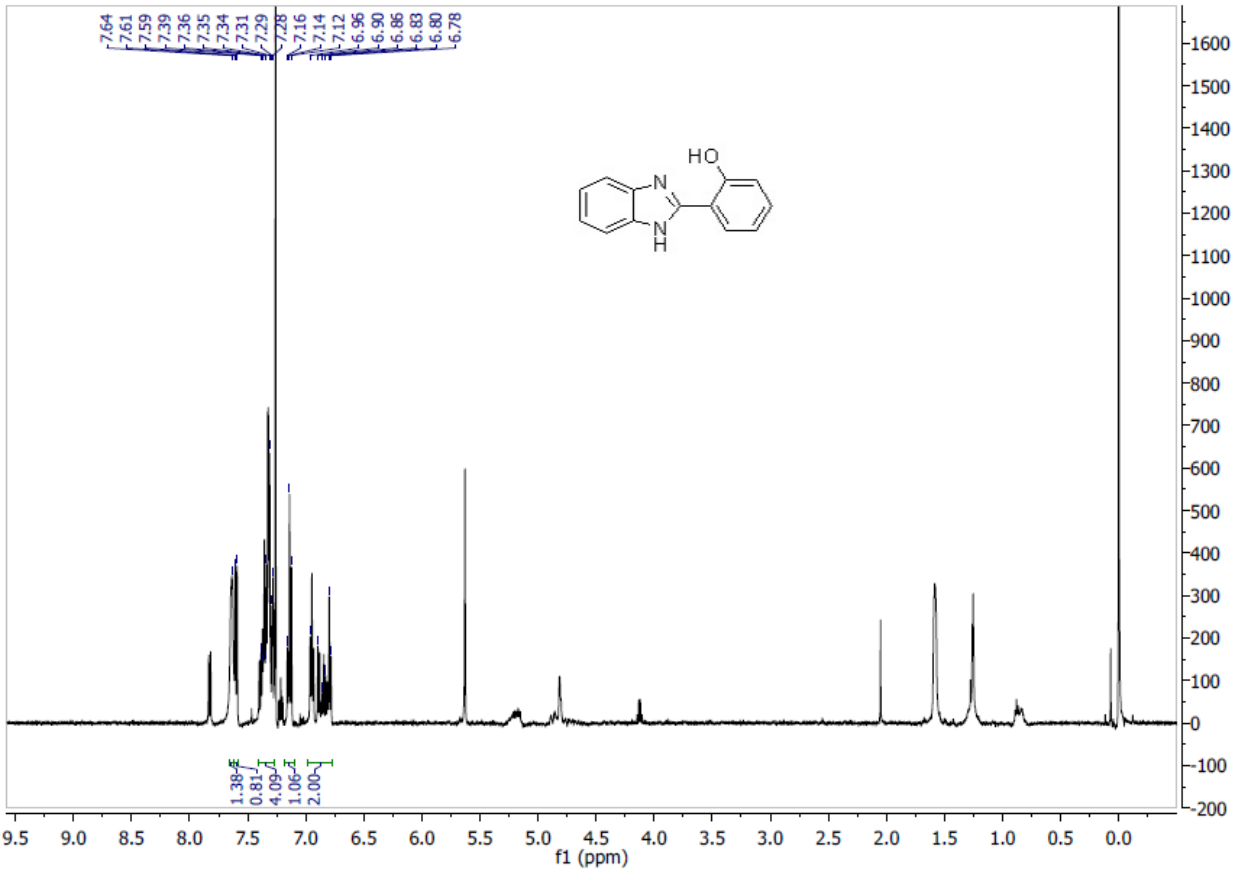
Sample name :10-07-2015-021-SAMPLE-9-CHN-30 (# 21)

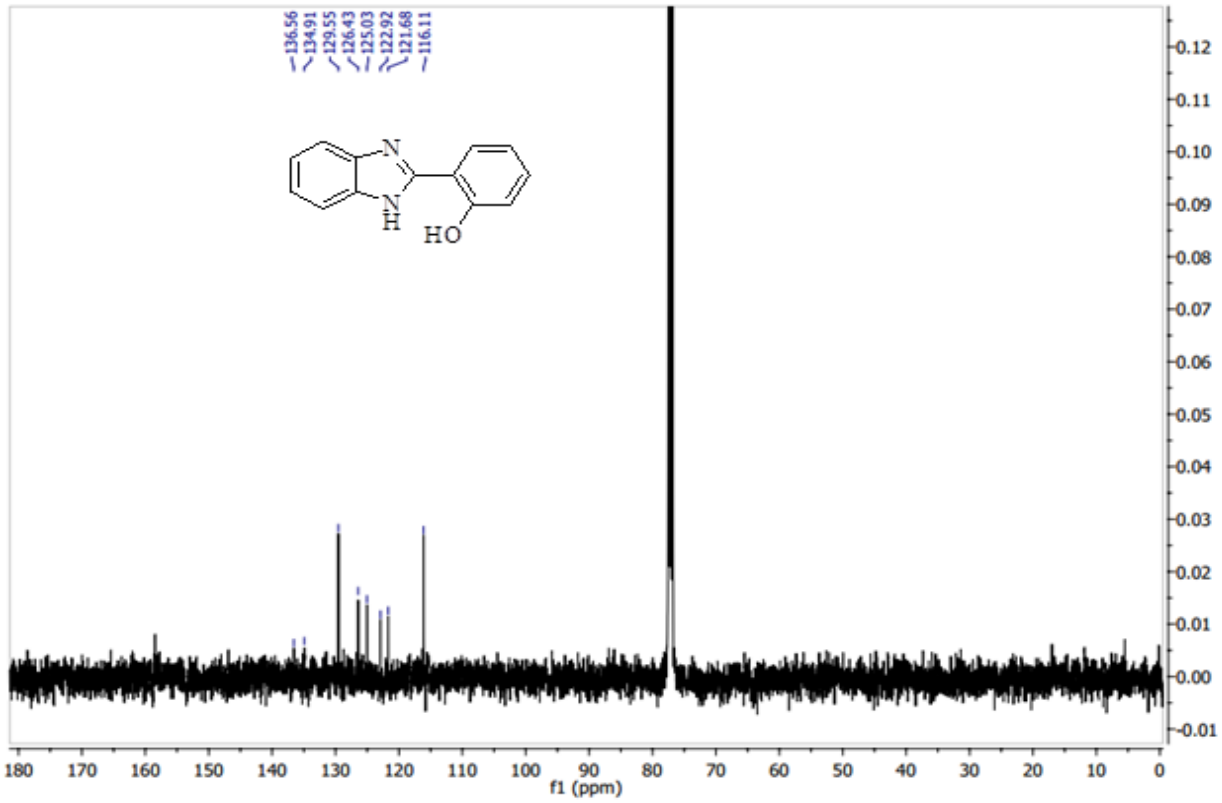
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.767	409480	10.202	Nitrogen
2	1.058	5483198	57.188	Carbon
3	3.667	863737	3.256	Hydrogen
		6756415	70.646	

20a. *2-(2-Hydroxyphenyl)-1H-benzimidazole*

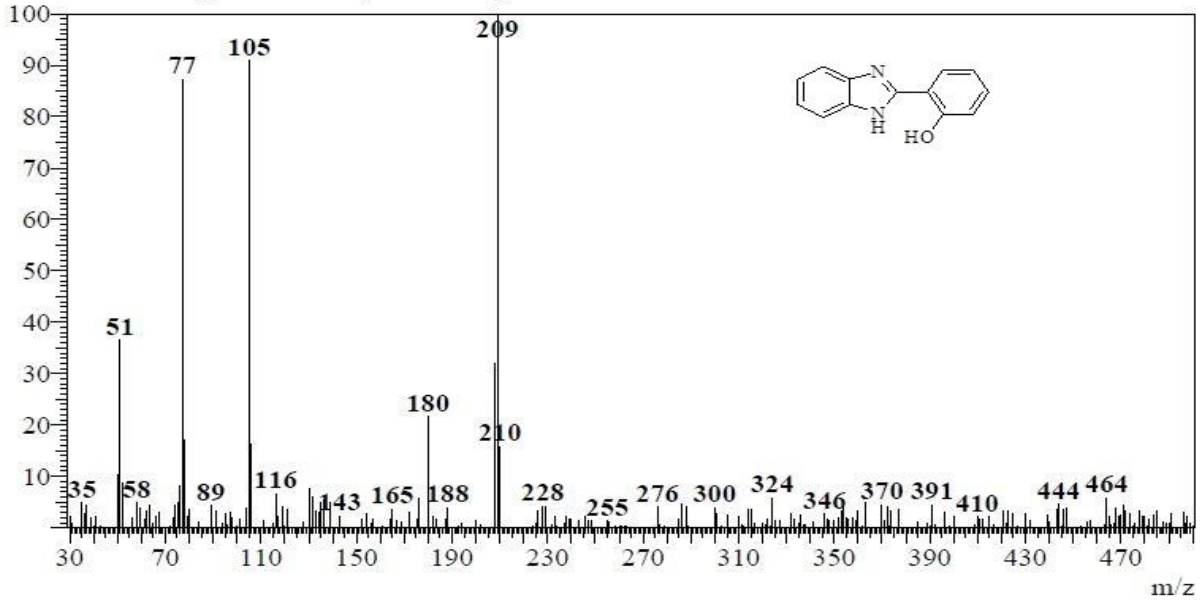


Mol. Wt.: 209.2



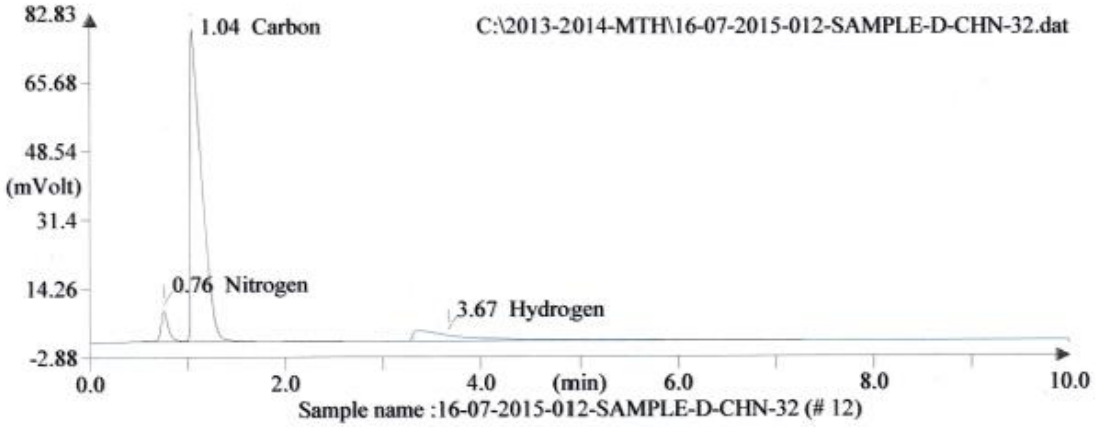


Line#:2 R.Time:16.0(Scan#:1677)
MassPeaks:222
RawMode:Averaged 16.0-16.0(1676-1678) BasePeak:209(1062)
BG Mode:Averaged 16.7-16.7(1760-1762)



SAIF-IIT BOMBAY

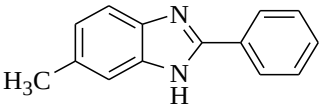
Operator ID:	IIT-B
Company name:	ThermoFinnigan
Method filename:	C:\2013-2014-MTH\16-07-2014-CHNS.mth
Method name:	Nitrogen/Carbon/Hydrogen/Sulphur
Analysed:	07/16/2015 17:51
Printed:	07-17-2015 11:06
Elemental Analyser method:	
Sampler method:	
Sample ID	16-07-2015-012-SAMPLE-D-CHN-32 (# 12)
Analysis type:	UnkNown
Chromatogram filename:	16-07-2015-012-SAMPLE-D-CHN-32.dat
Calibration method:	K Factors
Sample weight:	2.054
Protein factor:	6.25



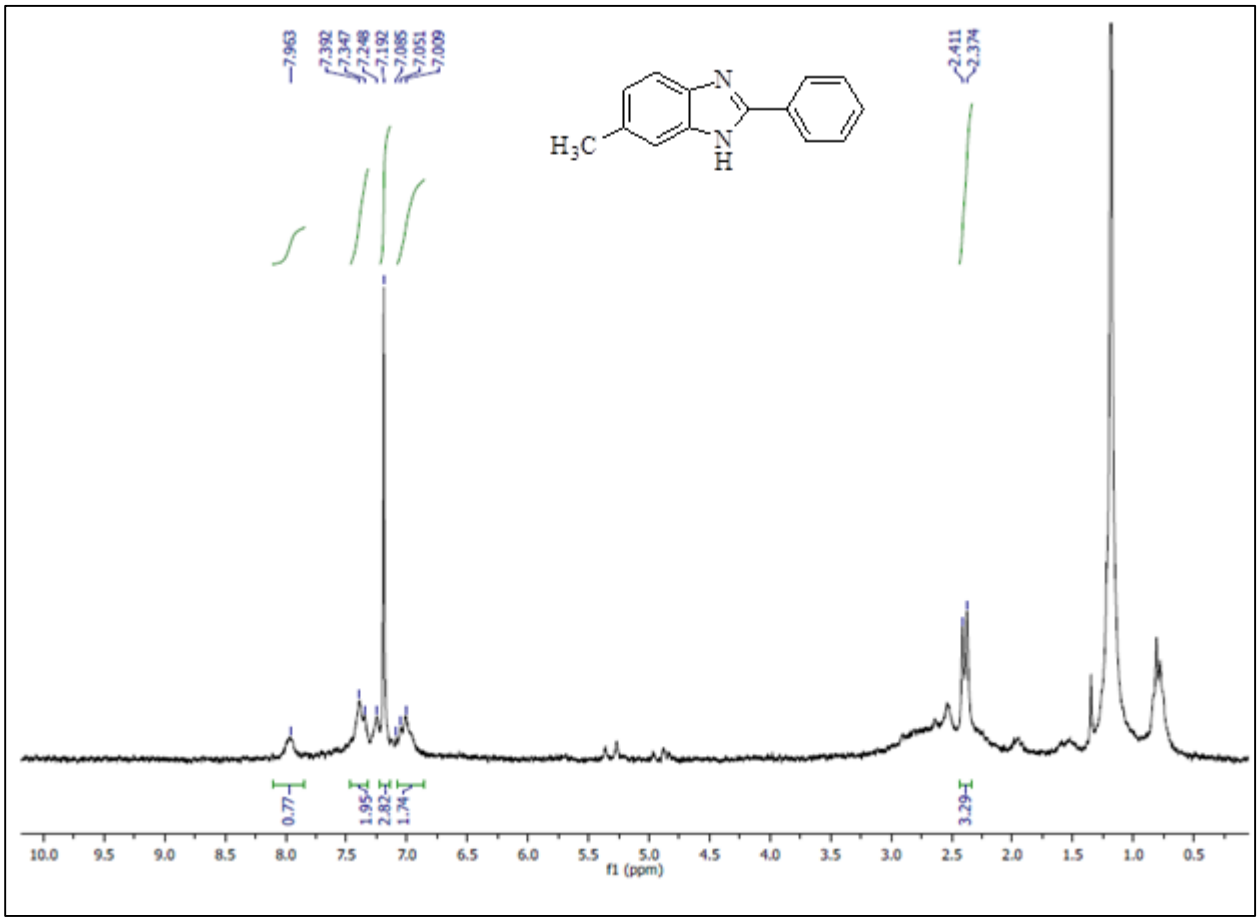
Sample name :16-07-2015-012-SAMPLE-D-CHN-32 (# 12)

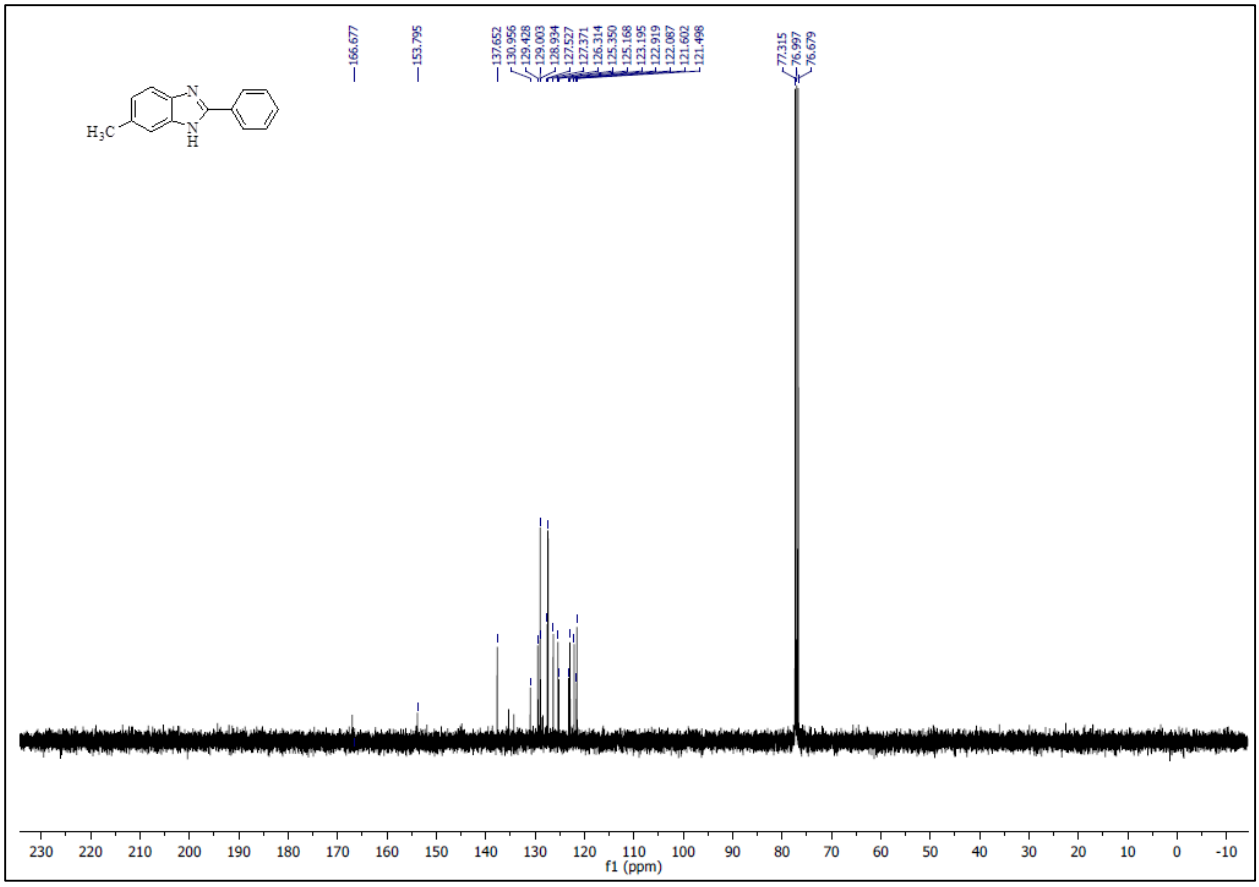
Peak Number (#)	Retention Time (min)	Area (.1*uV*sec)	Element %	Component
1	0.758	479690	13.259	Nitrogen
2	1.042	6365052	74.289	Carbon
3	3.667	920197	4.240	Hydrogen
		7764939	91.788	

21a. *6-Methyl-2-phenyl-1H-benzimidazole*

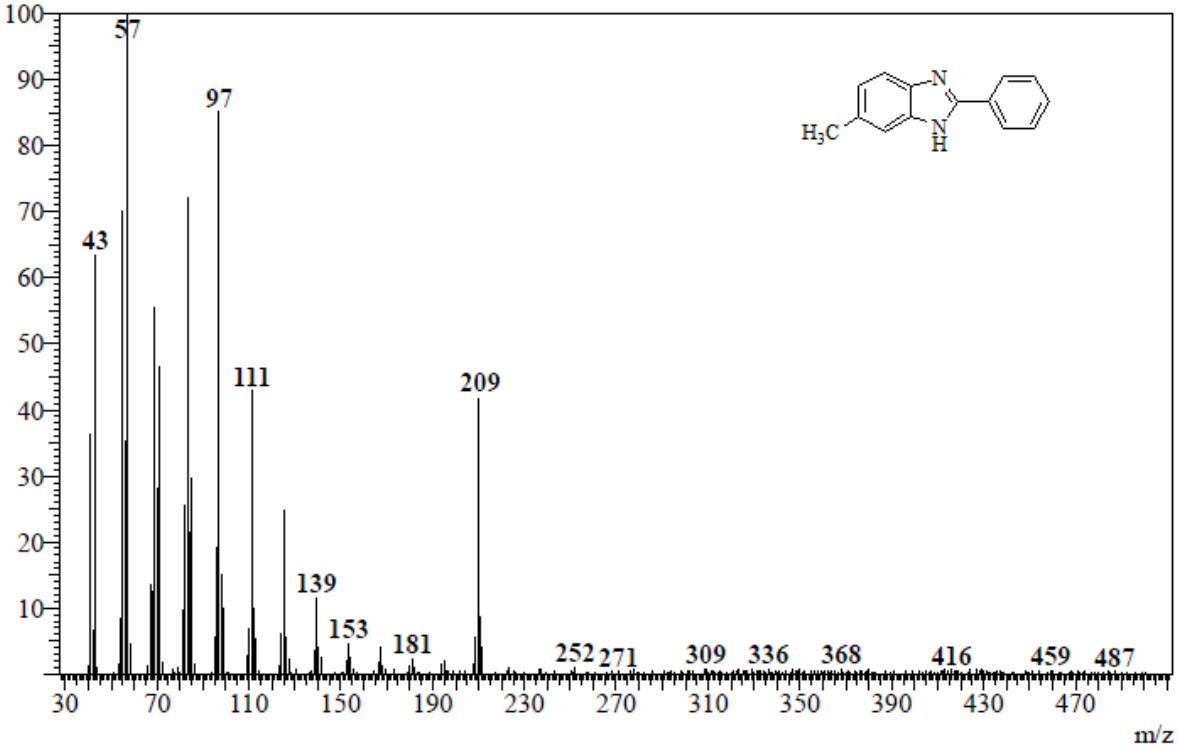


Mol. Wt.: 209




166.677
153.795
137.652
130.956
129.428
129.003
128.934
127.527
127.371
126.314
125.350
125.168
123.195
122.919
122.087
121.602
121.498
77.315
76.997
76.679
H3C
N
N
H
230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 -10
f1 (ppm)

Line#:1 R.Time:21.7(Scan#:2368)
MassPeaks:312
RawMode:Averaged 21.7-21.7(2367-2369) BasePeak:57(4504)
BG Mode:Calc. from Peak



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