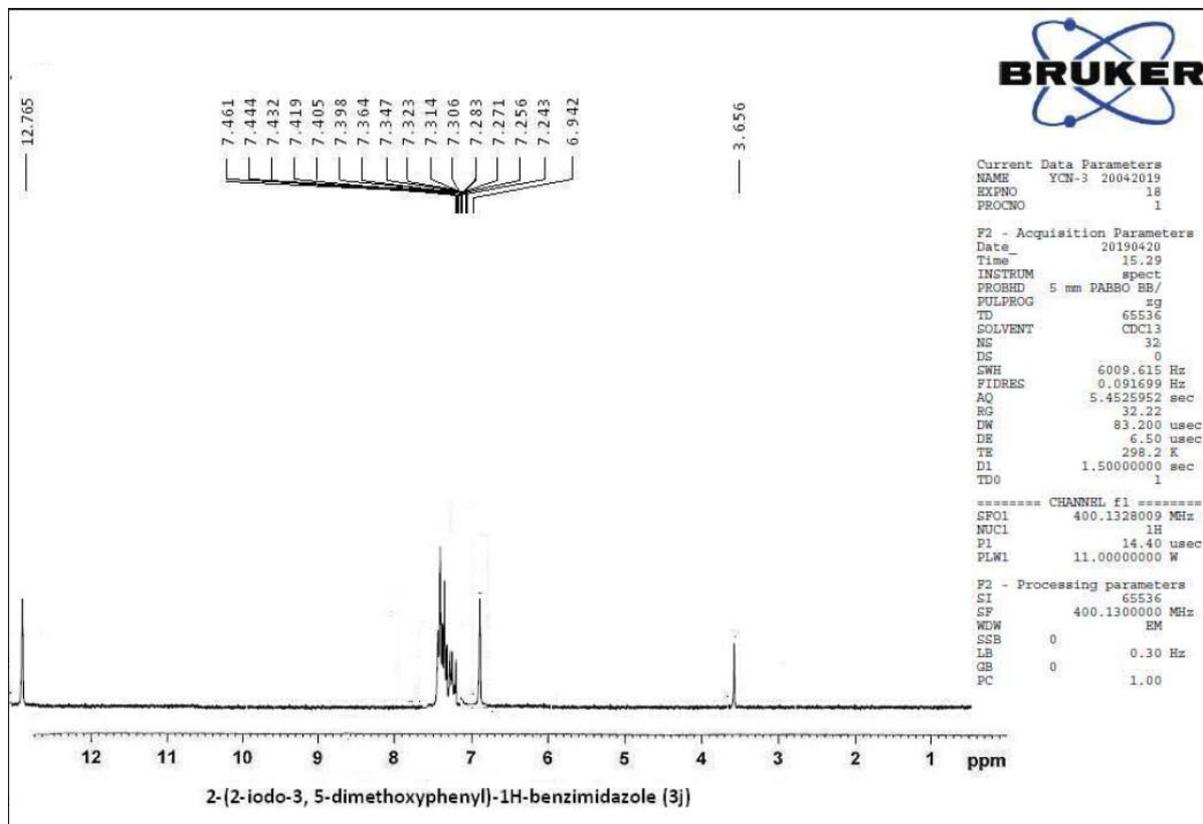
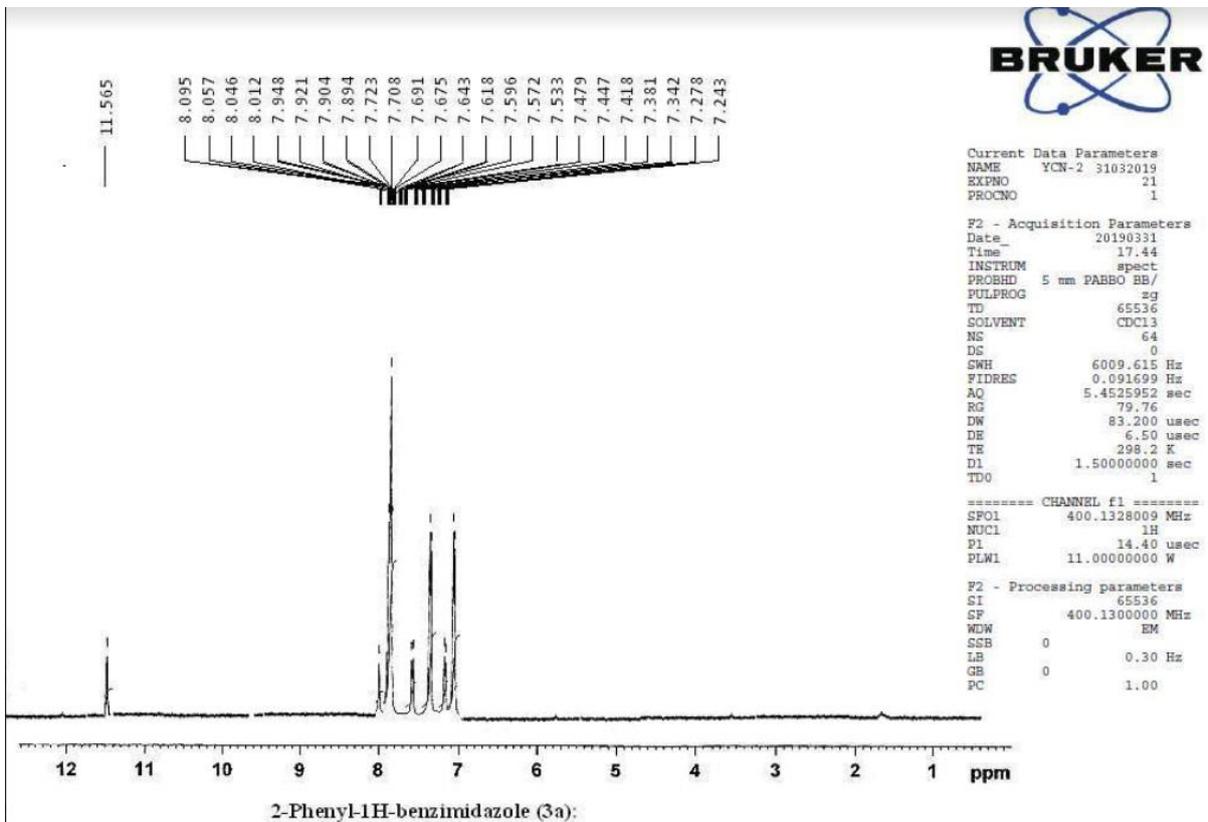
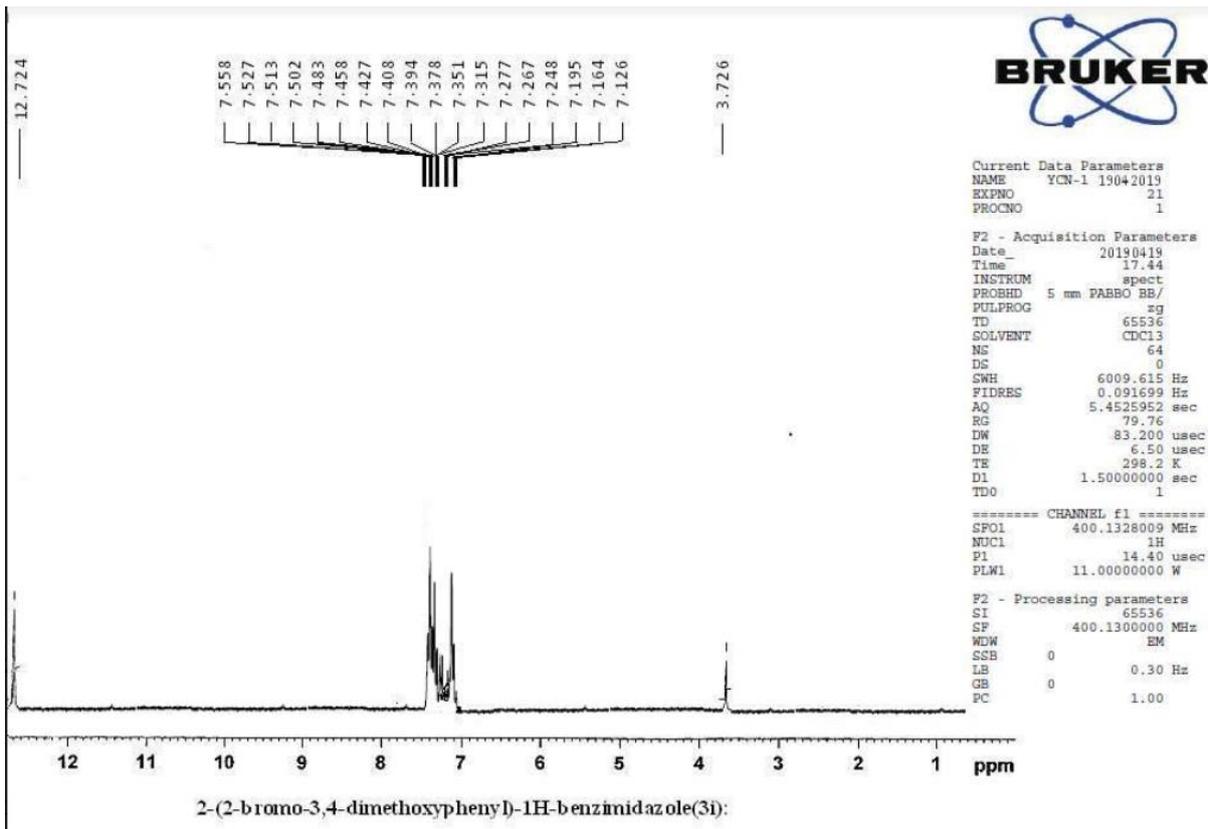
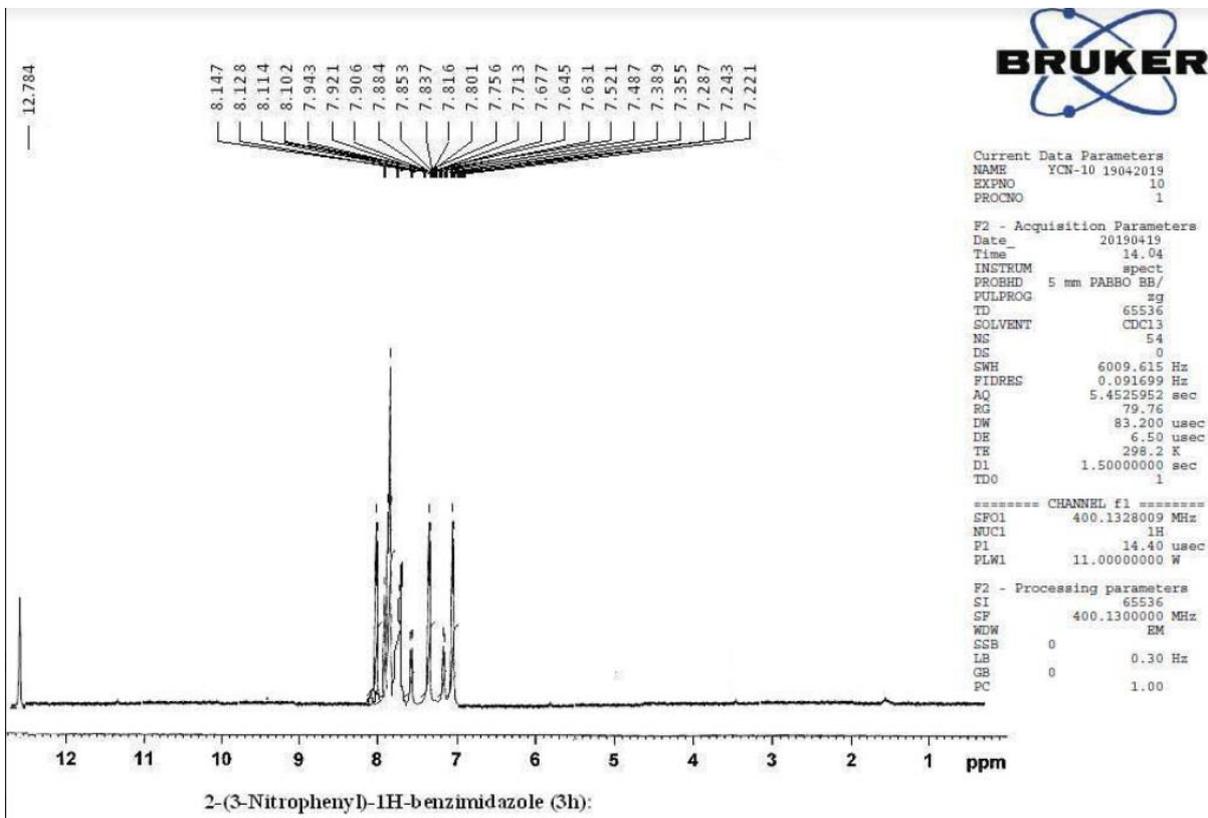
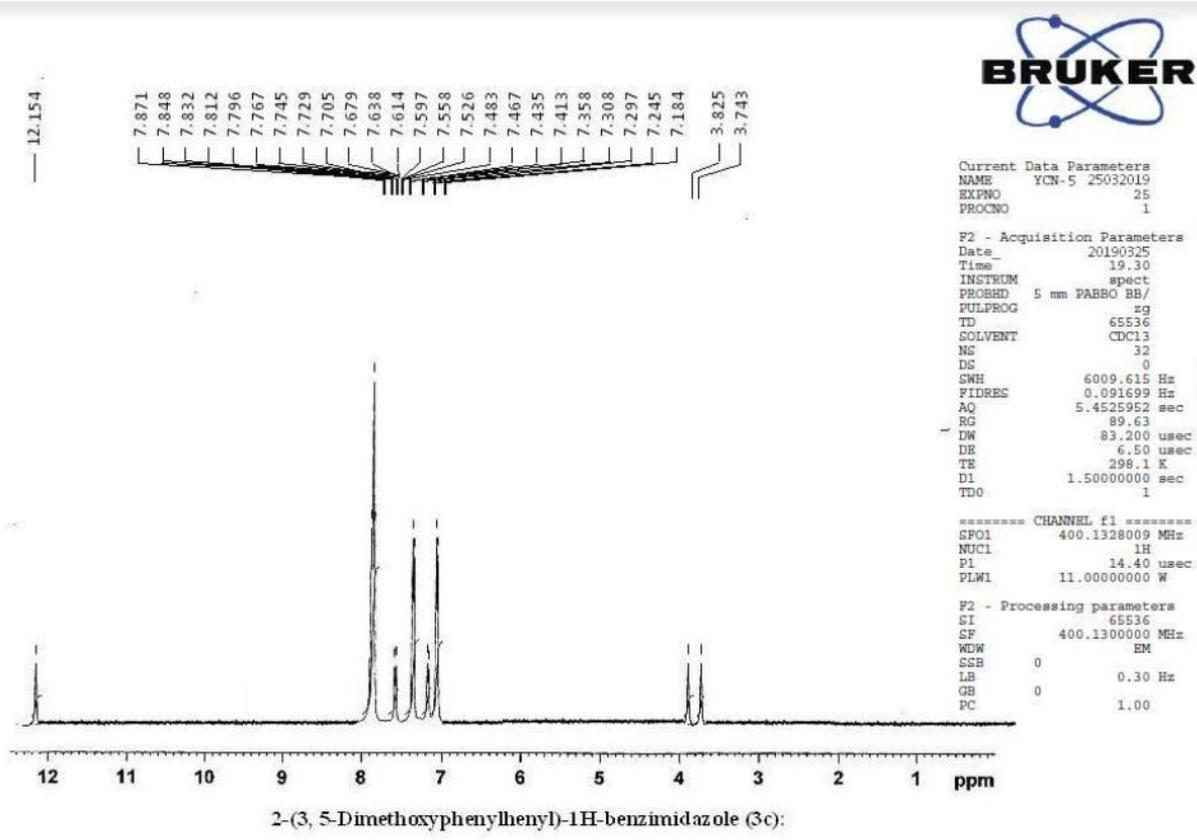


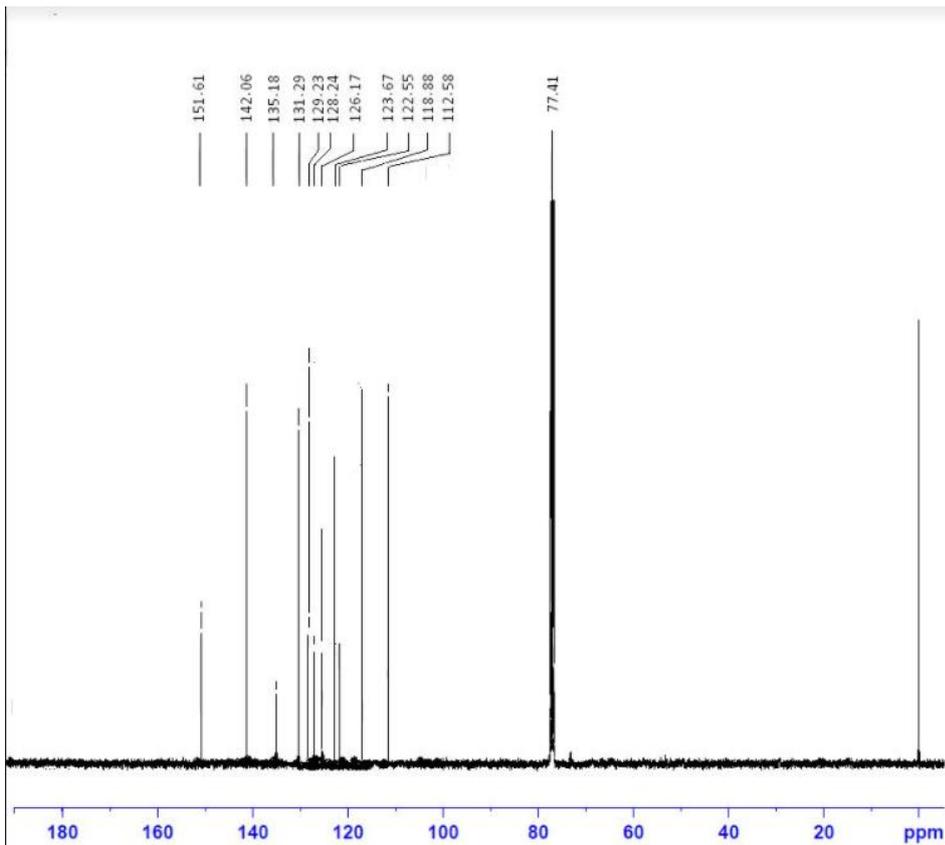
## Supporting Information

### Reusable Nano- Zirconia- Catalyzed Synthesis of Benzimidazoles and Their Antibacterial and Antifungal Activities









151.61  
142.06  
135.18  
131.29  
129.23  
128.24  
126.17  
123.67  
122.55  
118.88  
112.58

77.41



Current Data Parameters  
 NAME 28102019  
 EXPNO 4  
 PROCNO 1

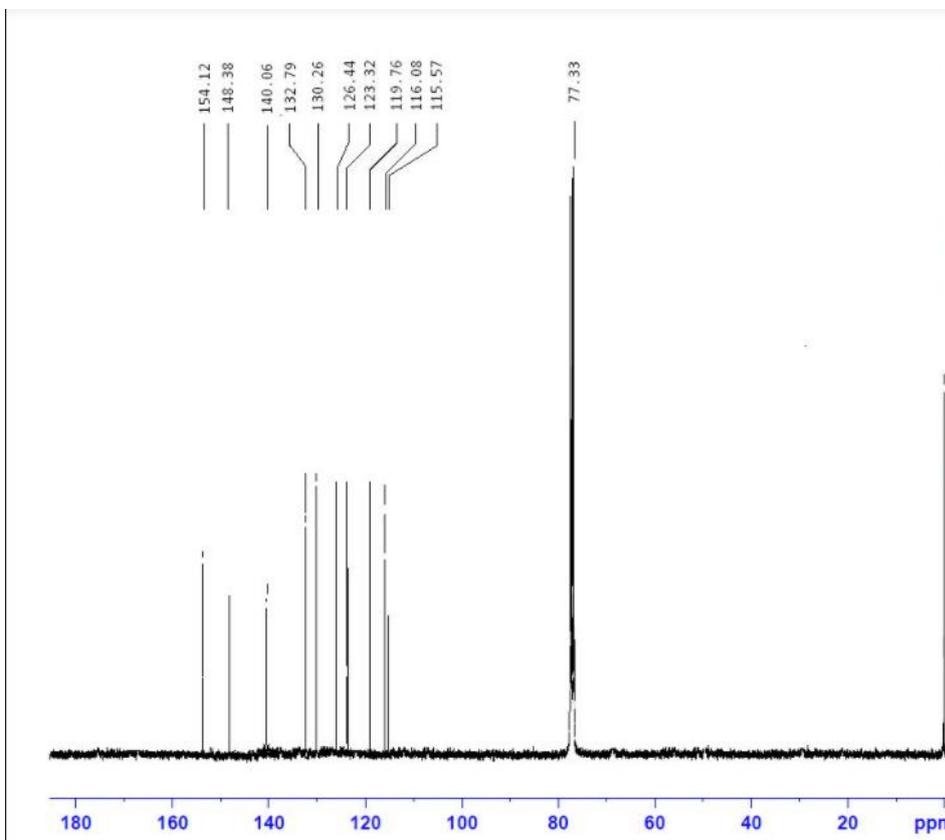
F2 - Acquisition Parameters  
 Date\_ 20191028  
 Time 11.50  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 1024  
 DS 4  
 SWH 24038.461 Hz  
 FIDRES 0.366798 Hz  
 AQ 1.3631488 sec  
 RG 204  
 DW 20.800 usec  
 DE 6.50 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1

===== CHANNEL f1 =====  
 SPO1 100.6228293 MHz  
 NUC1 13C  
 P1 9.45 usec  
 PLW1 50.00000000 W

===== CHANNEL f2 =====  
 SPO2 400.1316005 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 PCPD2 90.00 usec  
 PLW2 11.00000000 W  
 PLW12 0.27383000 W  
 PLW13 0.22180000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6127685 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

2-Phenyl-1H-benzimidazole (3a):



154.12  
148.38  
140.06  
132.79  
130.26  
126.44  
123.32  
119.76  
116.08  
115.57

77.33



Current Data Parameters  
 NAME 04102019  
 EXPNO 17  
 PROCNO 1

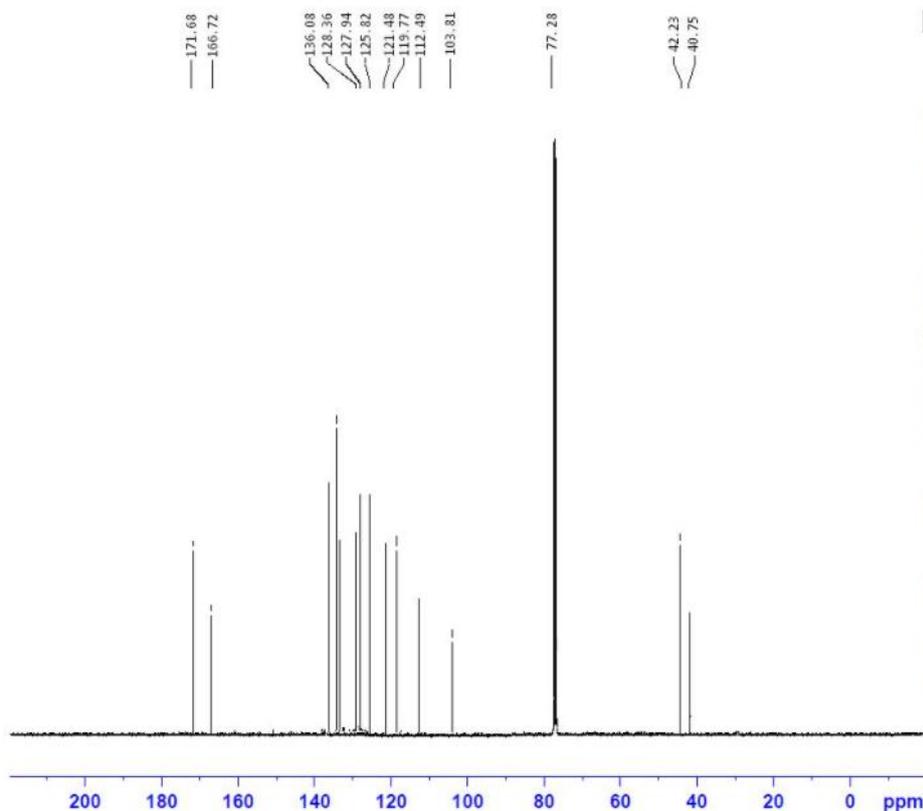
F2 - Acquisition Parameters  
 Date\_ 20191004  
 Time 14.35  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 3000  
 DS 4  
 SWH 24038.461 Hz  
 FIDRES 0.366798 Hz  
 AQ 1.3631488 sec  
 RG 204  
 DW 20.800 usec  
 DE 6.50 usec  
 TE 299.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TDO 1

===== CHANNEL f1 =====  
 SPO1 100.6228293 MHz  
 NUC1 13C  
 P1 9.45 usec  
 PLW1 50.00000000 W

===== CHANNEL f2 =====  
 SPO2 400.1316005 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 PCPD2 90.00 usec  
 PLW2 11.00000000 W  
 PLW12 0.27383000 W  
 PLW13 0.22180000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6127685 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

2-(2-Hydroxy-5-bromophenyl)-1H-benzimidazole (3g):



Current Data Parameters  
 NAME 29102019  
 EXPNO 13  
 PROCNO 1

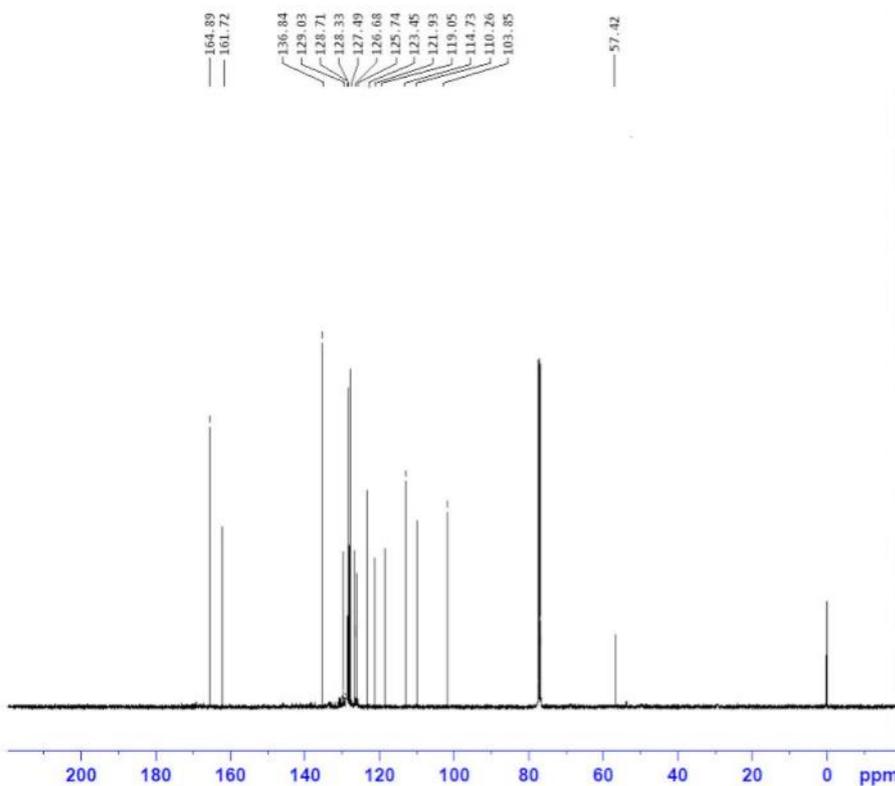
F2 - Acquisition Parameters  
 Date\_ 20191029  
 Time 19.21  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 4000  
 DS 4  
 SWH 24038.461 Hz  
 FIDRES 0.366798 Hz  
 AQ 1.3631488 sec  
 RG 204  
 DW 20.800 usec  
 DE 6.50 usec  
 TE 293.6 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 SFO1 100.6228293 MHz  
 NUC1 13C  
 P1 9.45 usec  
 PLW1 50.00000000 W

===== CHANNEL f2 =====  
 SFO2 400.1316005 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 PCPD2 90.00 usec  
 PLW2 11.00000000 W  
 PLW12 0.27383000 W  
 PLW13 0.22180000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6127685 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

2-(4-methoxyphenyl)-1H-benzimidazole (3b):



Current Data Parameters  
 NAME 01112019  
 EXPNO 3  
 PROCNO 1

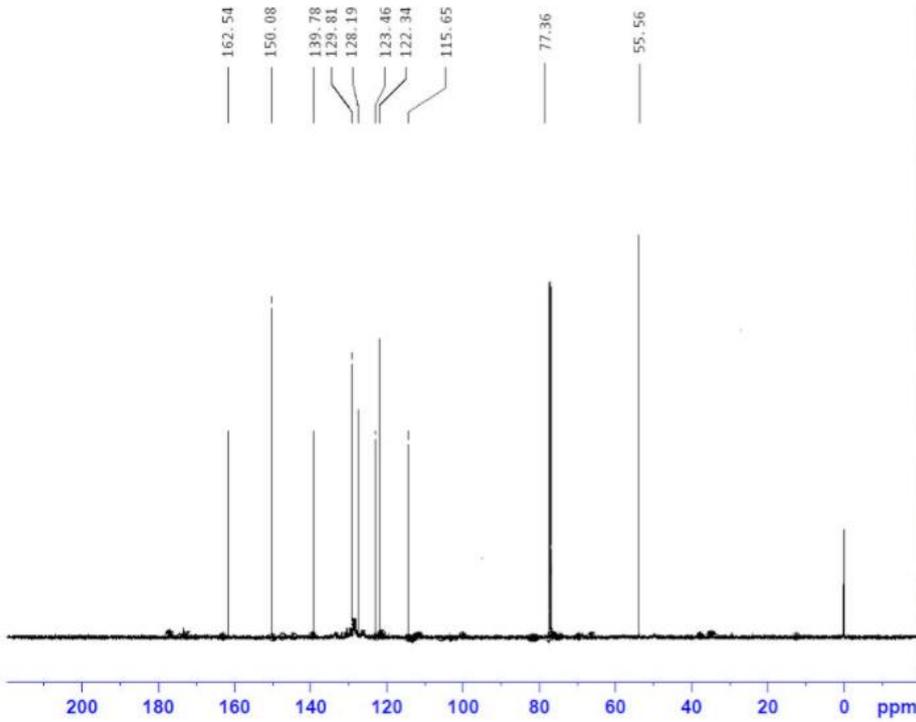
F2 - Acquisition Parameters  
 Date\_ 20191101  
 Time 11.19  
 INSTRUM spect  
 PROBHD 5 mm PABBO BB/  
 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 1024  
 DS 4  
 SWH 24038.461 Hz  
 FIDRES 0.366798 Hz  
 AQ 1.3631488 sec  
 RG 204  
 DW 20.800 usec  
 DE 6.50 usec  
 TE 298.1 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1

===== CHANNEL f1 =====  
 SFO1 100.6228293 MHz  
 NUC1 13C  
 P1 9.45 usec  
 PLW1 50.00000000 W

===== CHANNEL f2 =====  
 SFO2 400.1316005 MHz  
 NUC2 1H  
 CPDPRG[2] waltz16  
 PCPD2 90.00 usec  
 PLW2 11.00000000 W  
 PLW12 0.27383000 W  
 PLW13 0.22180000 W

F2 - Processing parameters  
 SI 32768  
 SF 100.6127685 MHz  
 WDW EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40

2-(3,5-Dimethoxyphenyl)-1H-benzimidazole



Current Data Parameters  
NAME 01112019  
EXPNO 4  
PROCNO 1

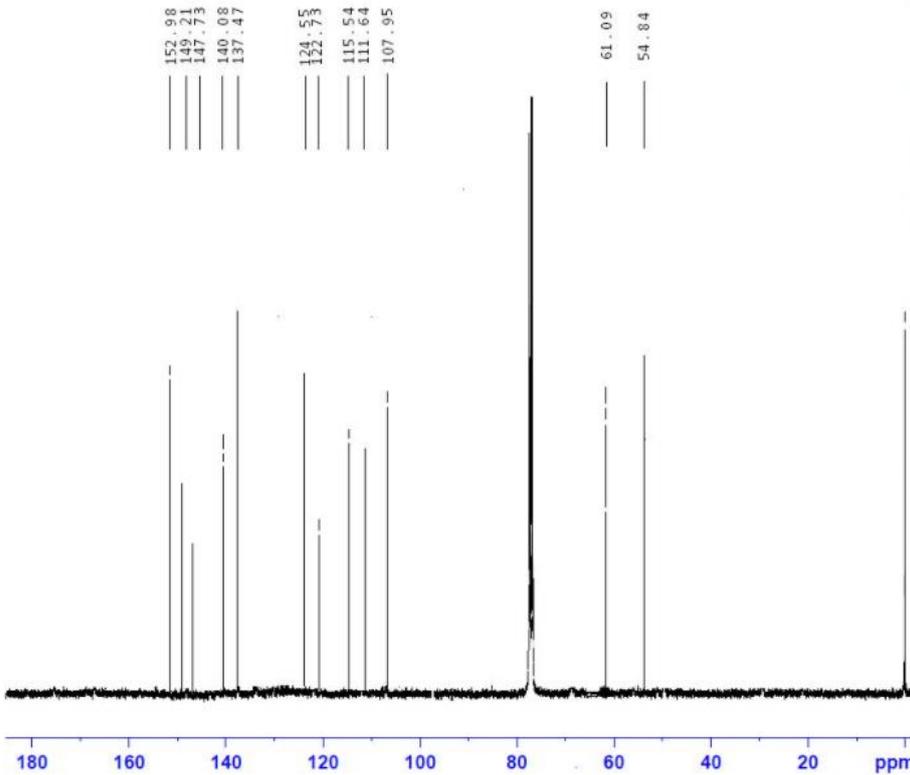
F2 - Acquisition Parameters  
Date\_ 20191101  
Time\_ 14.10  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1024  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631488 sec  
RG 204  
DW 20.800 usec  
DE 6.50 usec  
TE 298.1 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TDO 1

==== CHANNEL f1 =====  
SFO1 100.6228293 MHz  
NUC1 13C  
P1 9.45 usec  
PLW1 50.0000000 W

==== CHANNEL f2 =====  
SFO2 400.1316005 MHz  
NUC2 1H  
CPDPRG2 waltz16  
PCPD2 90.00 usec  
PLW2 11.0000000 W  
PLW12 0.27383000 W  
PLW13 0.22180000 W

F2 - Processing parameters  
SI 32768  
SF 100.6127685 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

2-(4-methoxyphenyl)-1H-benzimidazole (3b):



Current Data Parameters  
Date\_ 26102019  
EXPNO 5  
PROCNO 1

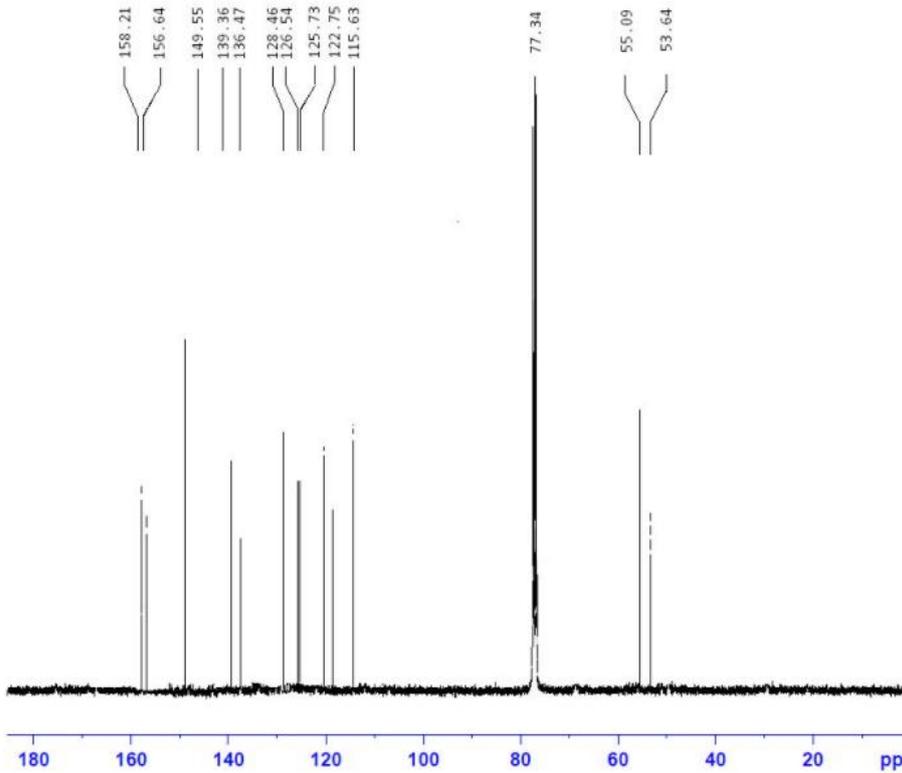
F2 - Acquisition Parameters  
Date\_ 20191026  
Time\_ 17.50  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDCl3  
NS 1004  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631488 sec  
RG 204  
DW 20.800 usec  
DE 6.50 usec  
TE 298.2 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TDO 1

==== CHANNEL f1 =====  
SFO1 100.6228293 MHz  
NUC1 13C  
P1 9.45 usec  
PLW1 50.0000000 W

==== CHANNEL f2 =====  
SFO2 400.1316005 MHz  
NUC2 1H  
CPDPRG2 waltz16  
PCPD2 90.00 usec  
PLW2 11.0000000 W  
PLW12 0.27383000 W  
PLW13 0.22180000 W

F2 - Processing parameters  
SI 32768  
SF 100.6127685 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

2-(2-bromo-3,4-dimethoxyphenyl)-1H-benzimidazole(3i):



Current Data Parameters  
NAME 02112019  
EXPNO 17  
PROCNO 1

F2 - Acquisition Parameters  
Date\_ 20191102  
Time 15.00  
INSTRUM spect  
PROBHD 5 mm PABBO BB/  
PULPROG zgpg30  
TD 65536  
SOLVENT CDC13  
NS 3000  
DS 4  
SWH 24038.461 Hz  
FIDRES 0.366798 Hz  
AQ 1.3631488 sec  
RG 204  
DW 20.800 usec  
DE 6.50 usec  
TE 299.2 K  
D1 2.0000000 sec  
D11 0.0300000 sec  
TDO 1

===== CHANNEL f1 =====  
SFO1 100.6229293 MHz  
NUC1 13C  
P1 9.45 usec  
PLW1 50.00000000 W

===== CHANNEL f2 =====  
SFO2 400.1316005 MHz  
NUC2 1H  
CPDPRG [2] waltz16  
PCPD2 90.00 usec  
PLW2 11.00000000 W  
PLW12 0.27383000 W  
PLW13 0.22180000 W

F2 - Processing parameters  
SI 32768  
SF 100.6127685 MHz  
WDW EM  
SSB 0  
LB 1.00 Hz  
GB 0  
PC 1.40

2-(2-iodo-3,5-dimethoxyphenyl)-1H-benzimidazole (3j):