

## Supporting Information

### Enhancement of electroluminescent property of iridium-complexes by decorating the ligand with hole-transporting carbazole dendrons

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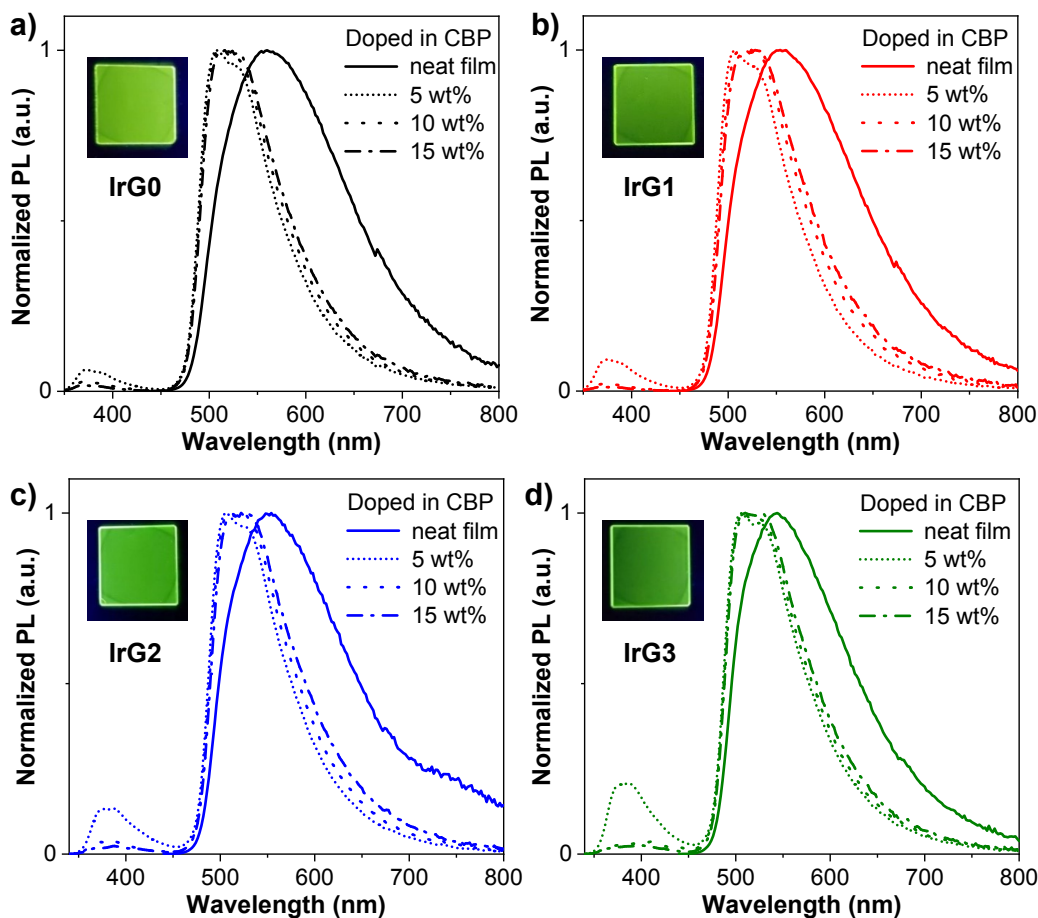
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<sup>d</sup>Department of Chemistry, Faculty of Science, Ubon Ratchathani University, Warinchumrap, Ubon Ratchathani 34190, Thailand

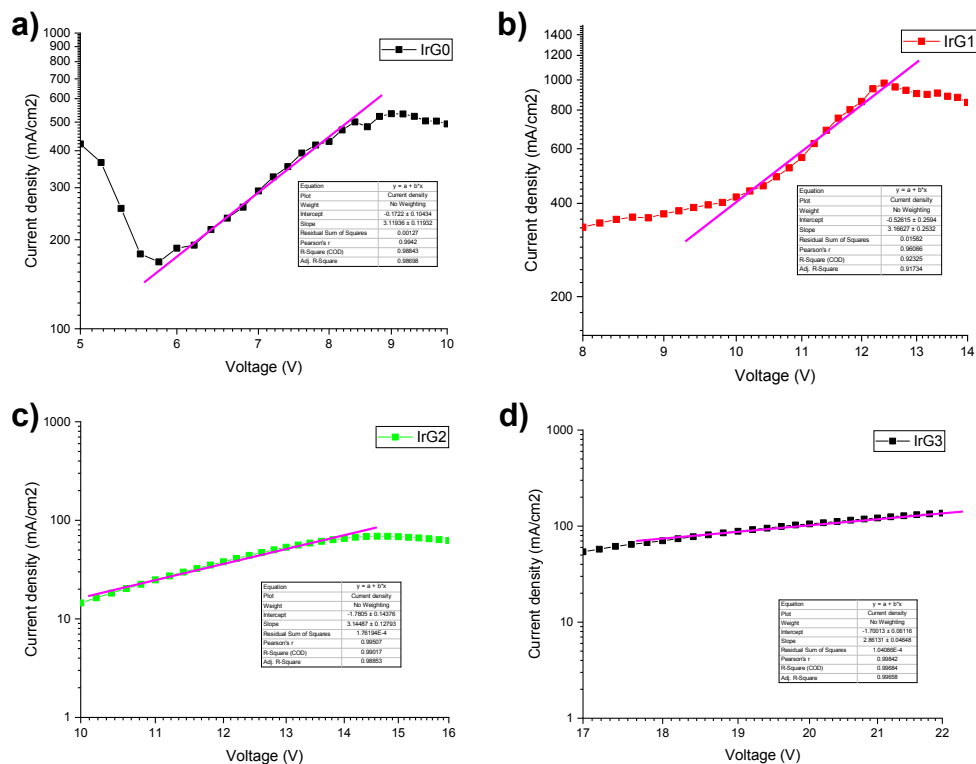
<sup>e</sup>Research Network of NANOTEC-VISTEC on Nanotechnology for Energy, Vidyasirimedhi Institute of Science and Technology, Wangchan, Rayong 21210, Thailand.

E-mail: [vinich.p@vistec.ac.th](mailto:vinich.p@vistec.ac.th)

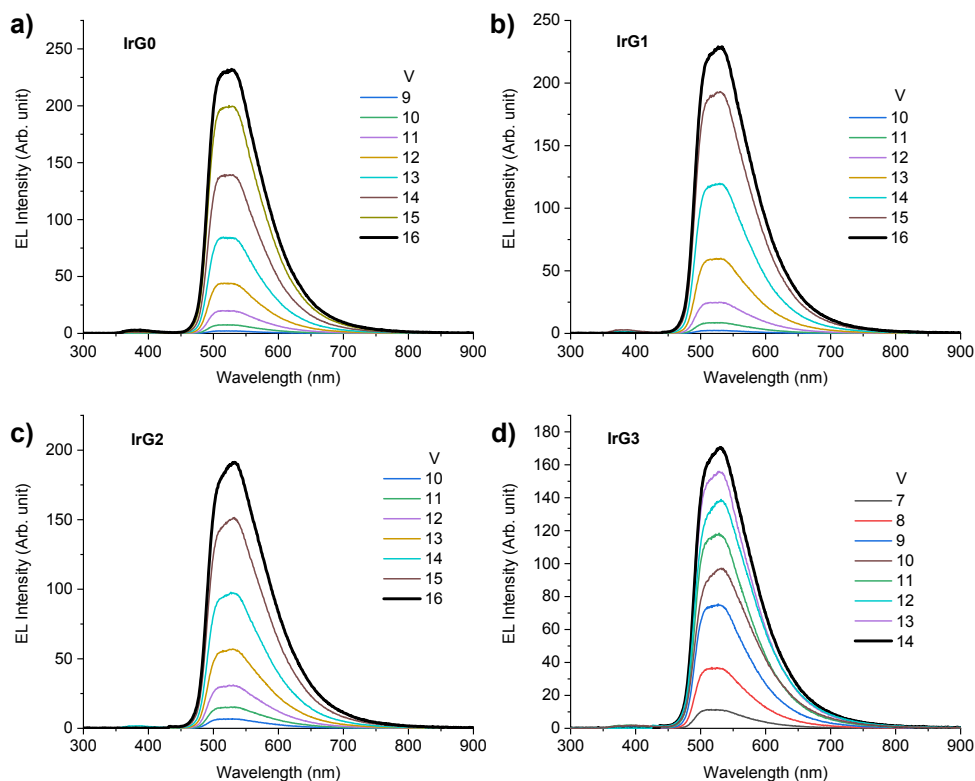
#### Additional data



**Fig. S1** Normalized PL spectra of IrG0-IrG3 as neat film, 5, 10 and 15wt% doped in CBP (Insert: photograph of 10wt% doped films under illumination at 365 nm).

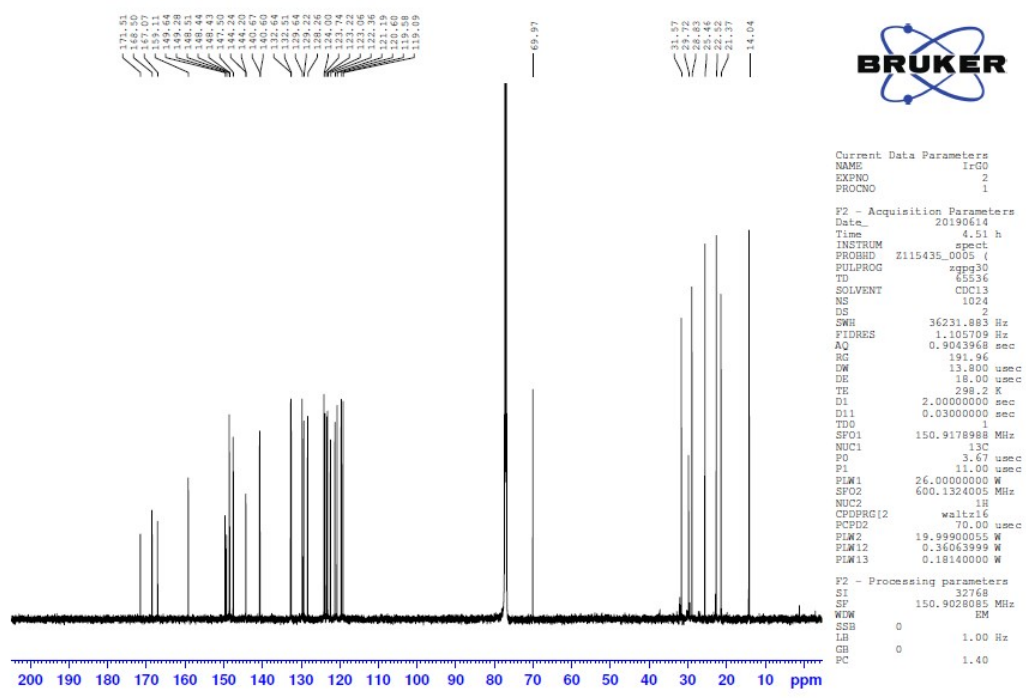
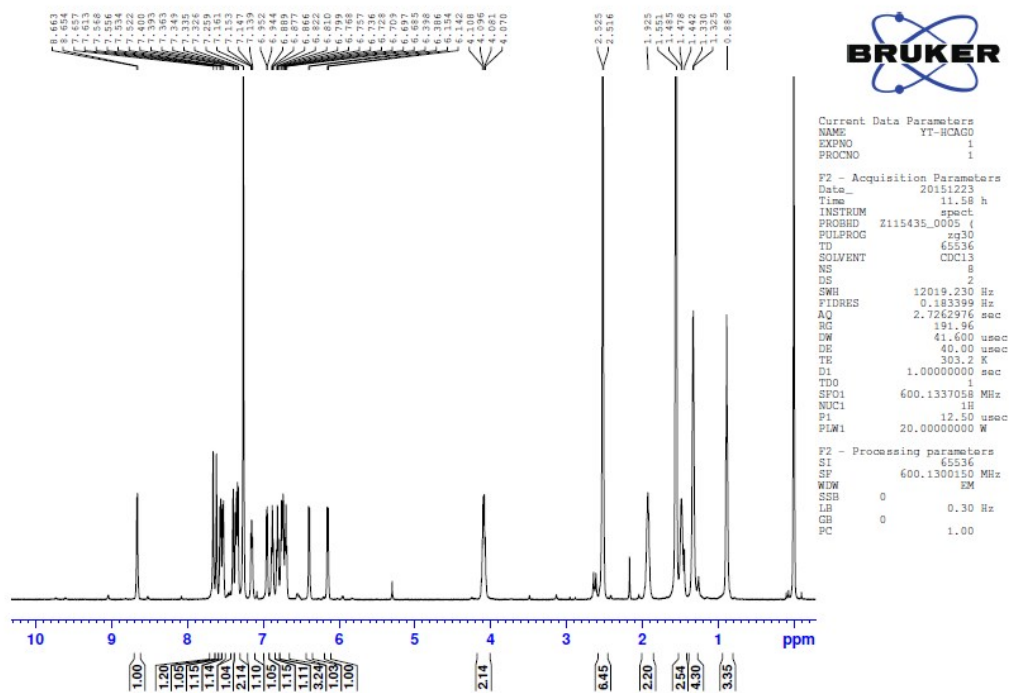


**Fig. S2** Current density-voltage ( $J$ - $V$ ) plots of hole only devices (ITO/PEDOT:PSS (35 nm)/IrG0-IrG3 (100 nm)/MoO<sub>3</sub> (10 nm)/Al (100 nm))



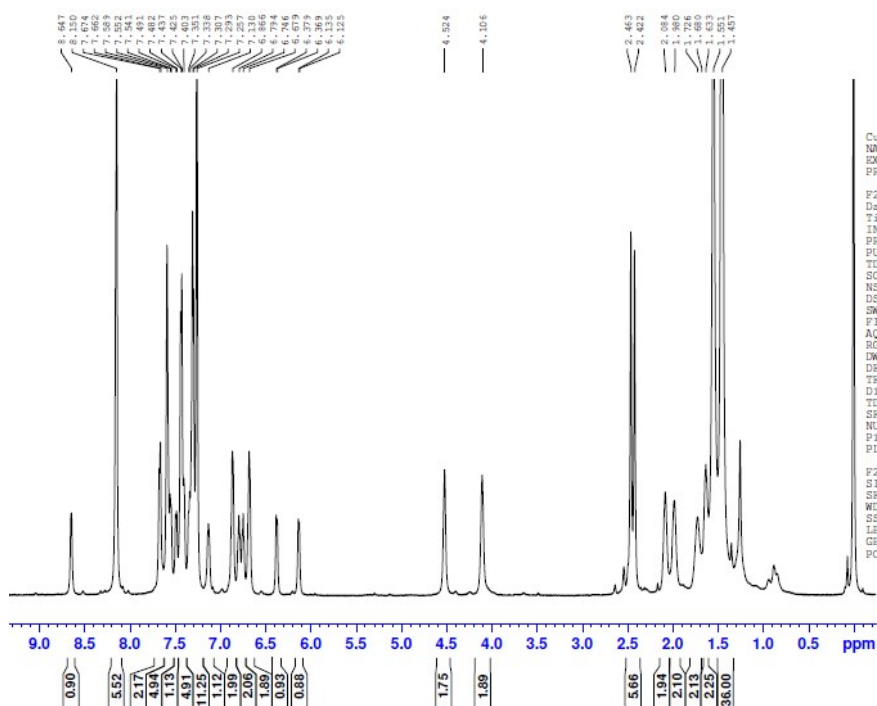
**Fig. S3** Electroluminescence (EL) spectra at various applied voltages of the fabricated OLEDs (ITO/PEDOT:PSS (40 nm)/IrG0-IrG3 10wt% doped in CBP (50 nm)/TmPyPB (40 nm)/LiF (0.5 nm)/Al (90 nm)).

**Fig. S4**  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR spectra  
Compound IrG0





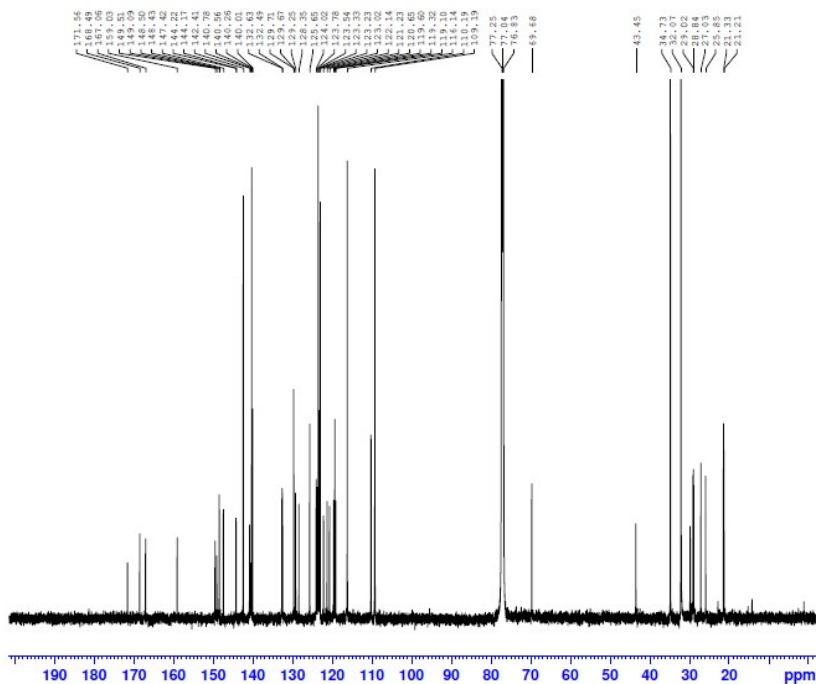
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 PROBHD: Z115435\_0005 ( )  
 PULPROG: zg30  
 TD: 65536  
 SOLVENT: CDCl3  
 NS: 8  
 DS: 2  
 SWH: 12019.230 Hz  
 FIDRES: 0.183399 Hz  
 AQ: 2.7262976 sec  
 RG: 191.96  
 DW: 41.600 usec  
 DE: 40.00 usec  
 TE: 303.2 K  
 D1: 1.00000000 sec  
 TDO: 3  
 SFO1: 600.1337058 MHz  
 NUC1: 13  
 P1: 12.50 usec  
 PLW1: 20.00000000 W

F2 - Processing parameters  
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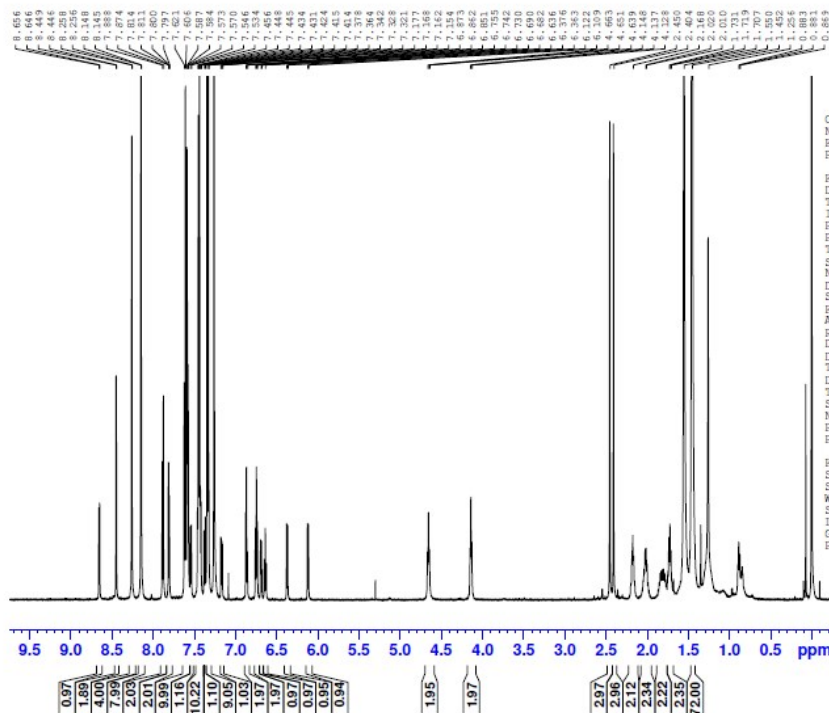


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 PROCNO: 1

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 PROBHD: Z115435\_0005 ( )  
 PULPROG: zgpg30  
 TD: 65536  
 SOLVENT: CDCl3  
 NS: 1024  
 DS: 2  
 SWH: 36231.883 Hz  
 FIDRES: 1.105709 Hz  
 AQ: 0.9043968 sec  
 RG: 191.96  
 DW: 13.800 usec  
 DE: 18.00 usec  
 TE: 298.1 K  
 D1: 2.00000000 sec  
 D11: 0.03000000 sec  
 TDO: 3  
 SFO1: 150.9178988 MHz  
 NUC1: 13C  
 P1: 3.67 usec  
 PLW1: 11.00 usec  
 PLW2: 26.00000000 W  
 SFO2: 600.1324005 MHz  
 NUC2: 1H  
 CPDPRG12: waltz16  
 PCPD2: 70.00 usec  
 PLW3: 19.99900055 W  
 PLW12: 0.36063998 W  
 PLW13: 0.18140000 W

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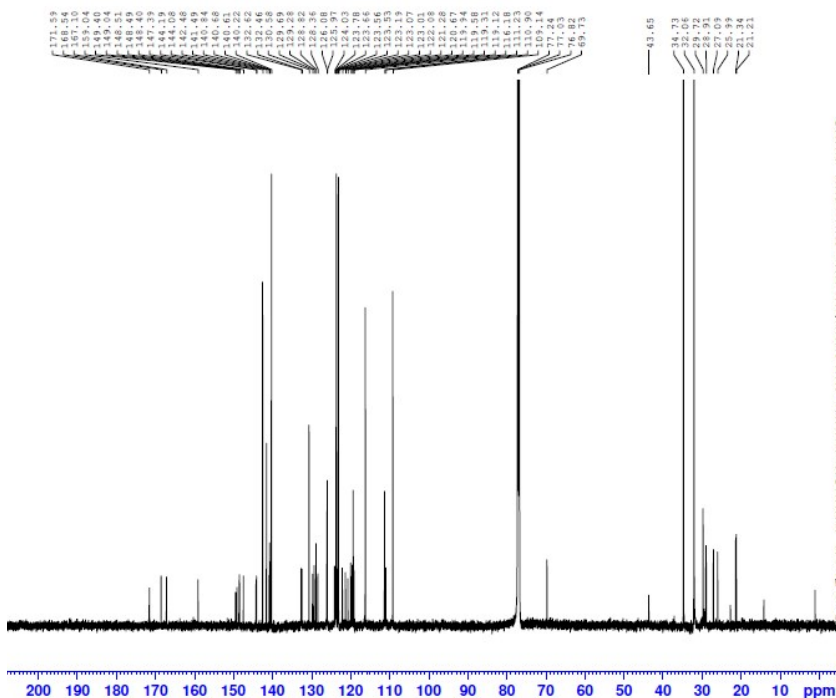


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PULPROG  zgpg30
TD        65536
SOLVENT  CDCl3
NS        8
DS        2
SWH       12019.230 Hz
FIDRES    0.366798 Hz
AQ        2.7262976 sec
RG        191.96
DW        41.600 usec
DE        40.00 usec
TE        303.2 K
D1        1.00000000 sec
TDO       1
SFO1      600.1337058 MHz
NUC1      1H
P1        9.30 usec
PLW1      20.00000000 W

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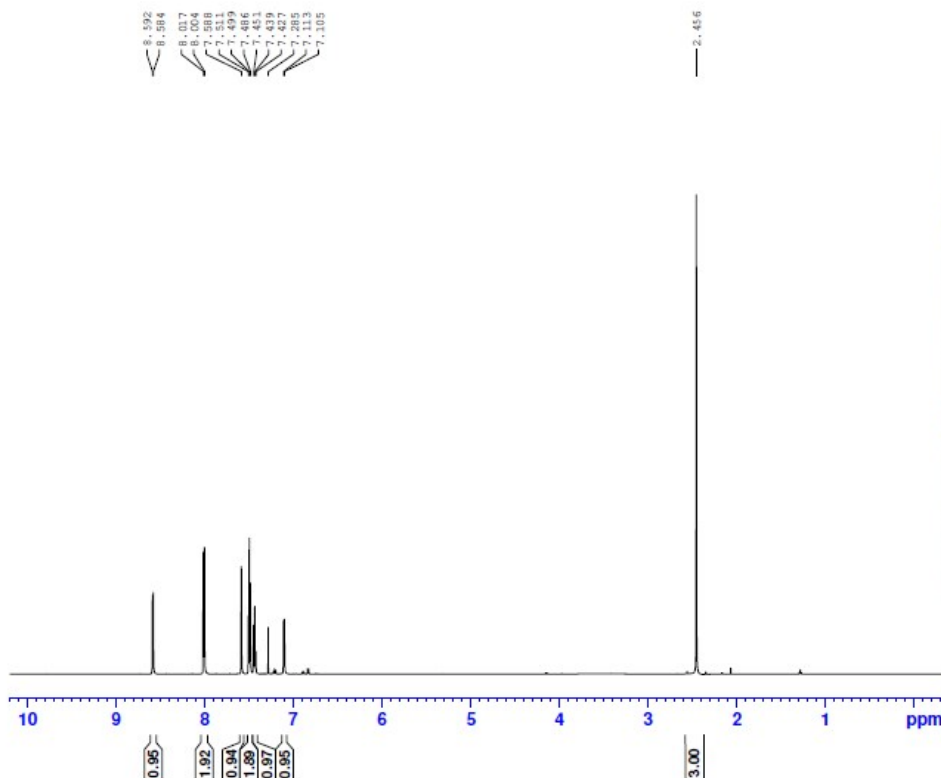
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PROCNO   1

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PULPROG  zgpg30
TD        65536
SOLVENT  CDCl3
NS        1024
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SWH       36231.883 Hz
FIDRES    1.105709 Hz
AQ        0.9043968 sec
RG        191.96
DW        13.800 usec
DE        18.00 usec
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D11       0.03000000 sec
TDO       1
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NUC1      13C
PO        3.67 usec
P1        11.00 usec
PLW1      26.00000000 W
SFO2      600.1324005 MHz
NUC2      1H
CPDPRG12 waltz16
PCPD2     70.00 usec
PLW2      19.99900055 W
PLW3      0.36063999 W
PLW13     0.18140000 W

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# Compound 2



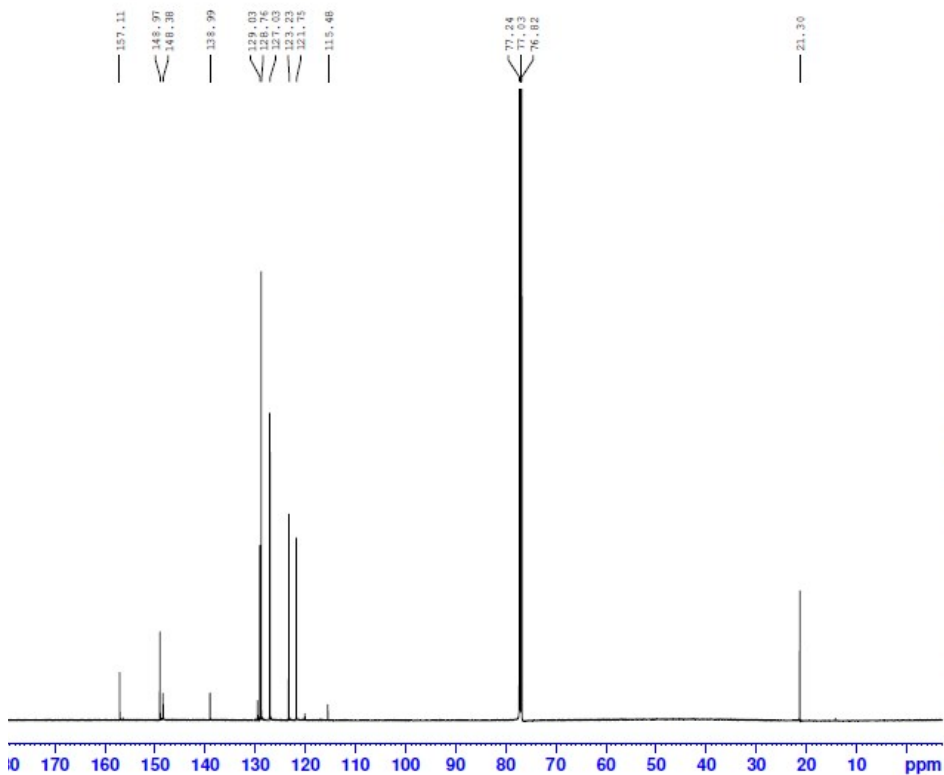
**BRUKER**

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PROCNO        1

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PULPROG       zg30
TD            65536
SOLVENT       CDCl3
NS            8
DS            2
SWH           12019.230 Hz
FIDRES        0.366798 Hz
AQ            2.7262976 sec
RG            116.94
DW            41.600 usec
DE            40.00 usec
TE            303.1 K
D1            1.0000000 sec
TD0           1
SFO1          600.1337058 MHz
NUC1          1H
P1            9.00 usec
PLW1          20.0000000 W

F2 - Processing parameters
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WDW           EM
SSB           0
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GB            0
PC            1.00
    
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**BRUKER**

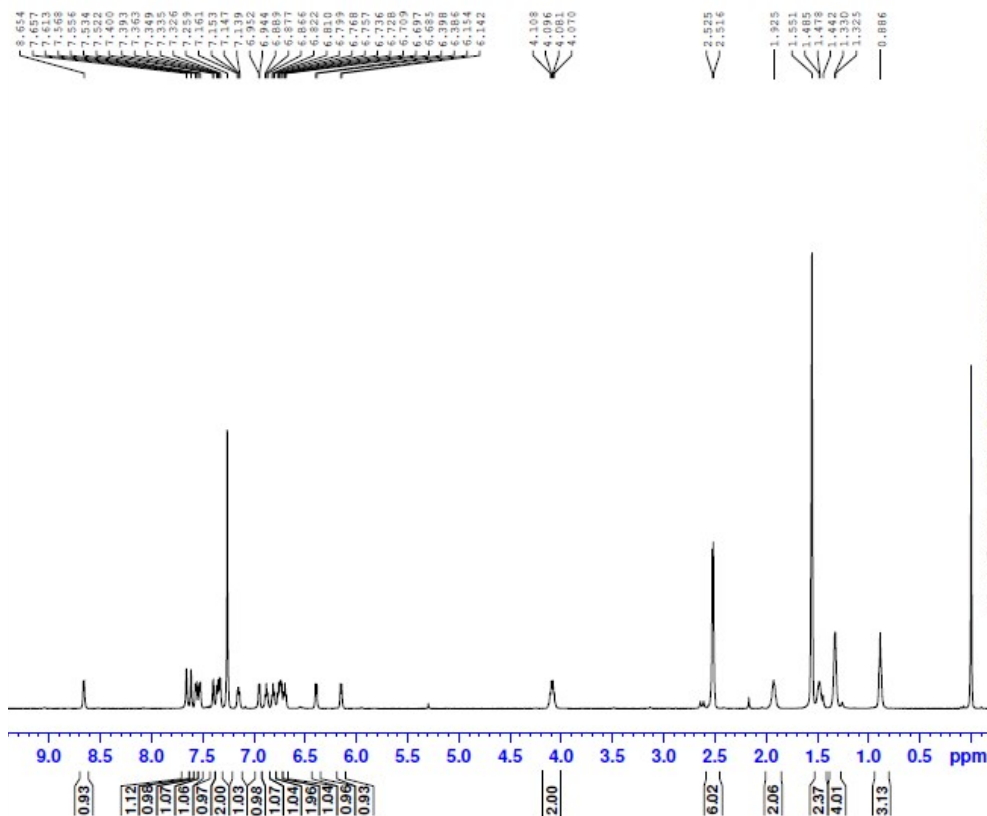
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EXPNO         4
PROCNO        1

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PULPROG       zgpg30
TD            65536
SOLVENT       CDCl3
NS            256
DS            2
SWH           36231.883 Hz
FIDRES        1.105709 Hz
AQ            0.9043968 sec
RG            191.96
DW            13.800 usec
DE            18.00 usec
TE            303.2 K
D1            2.0000000 sec
D11           0.0300000 sec
TD0           1
SFO1          150.9178988 MHz
NUC1          13C
P1            11.00 usec
PLW1          26.0000000 W
SFO2          600.1324005 MHz
NUC2          1H
CPDPRG[2]    waltz16
PCPD2         70.00 usec
PLW2          20.0000000 W
PLW12         0.33061001 W
PLW13         0.16630000 W

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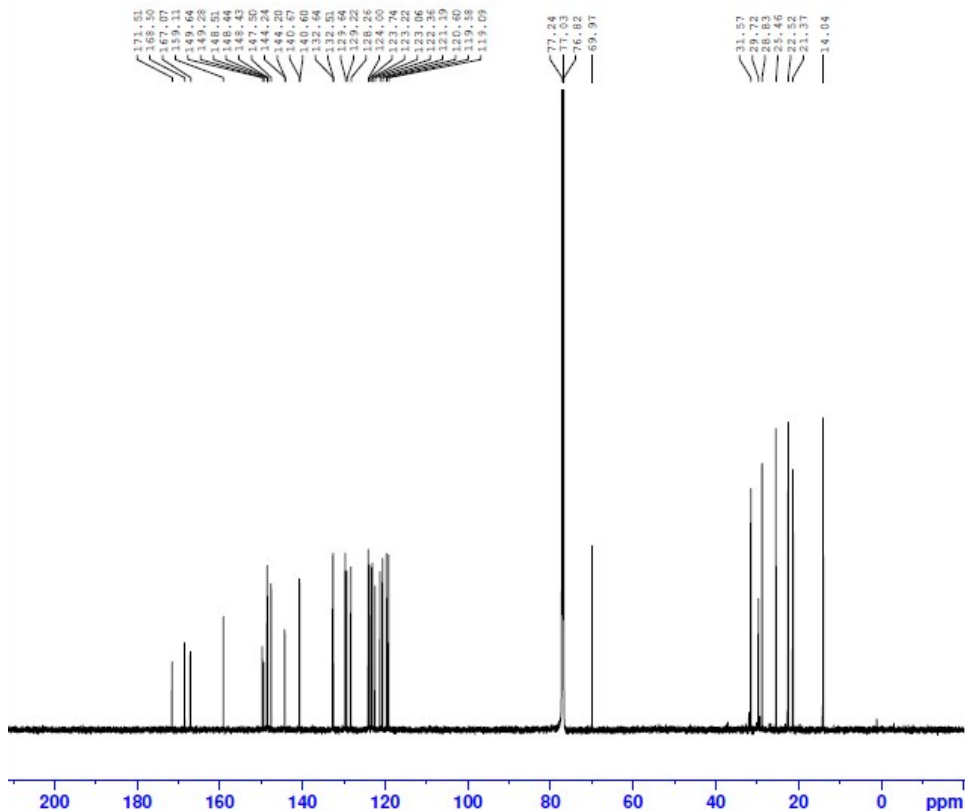
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 PROCNO 1

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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 8  
 DS 2  
 SWH 12019.230 Hz  
 FIDRES 0.183399 Hz  
 AQ 2.7262976 sec  
 RC 191.96  
 DE 41.600 usec  
 TE 303.2 K  
 D1 1.00000000 sec  
 TD0 1  
 SFO1 600.1337058 MHz  
 NUC1 1H  
 P1 12.50 usec  
 PLW1 20.00000000 W

F2 - Processing parameters  
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 SF 600.1300150 MHz  
 EM  
 SSB 0  
 LB 0.30 Hz  
 GB 0  
 PC 1.00



Current Data Parameters  
 NAME Irc0  
 EXPNO 2  
 PROCNO 1

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 PULPROG zpg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 1024  
 DS 2  
 SWH 34231.883 Hz  
 FIDRES 1.105709 Hz  
 AQ 0.9043968 sec  
 RC 191.96  
 DE 13.800 usec  
 TE 298.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 150.9178988 MHz  
 NUC1 13C  
 P0 3.67 usec  
 P1 11.00 usec  
 PLW1 26.00000000 W  
 SFO2 600.1324005 MHz  
 NUC2 1H  
 CPDPRG2 waltra6  
 PCPD2 70.00 usec  
 PLW2 19.99900055 W  
 PLW12 0.36063999 W  
 PLW13 0.18140000 W

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 SF 150.9028085 MHz  
 EM  
 SSB 0  
 LB 1.00 Hz  
 GB 0  
 PC 1.40



# Compound L1

8.101  
8.099  
8.089  
7.514  
7.510  
7.497  
7.203  
7.289

4.267  
4.248

3.376  
3.364  
3.353

1.895  
1.893  
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1.826  
1.803  
1.829  
1.462  
1.425  
1.414

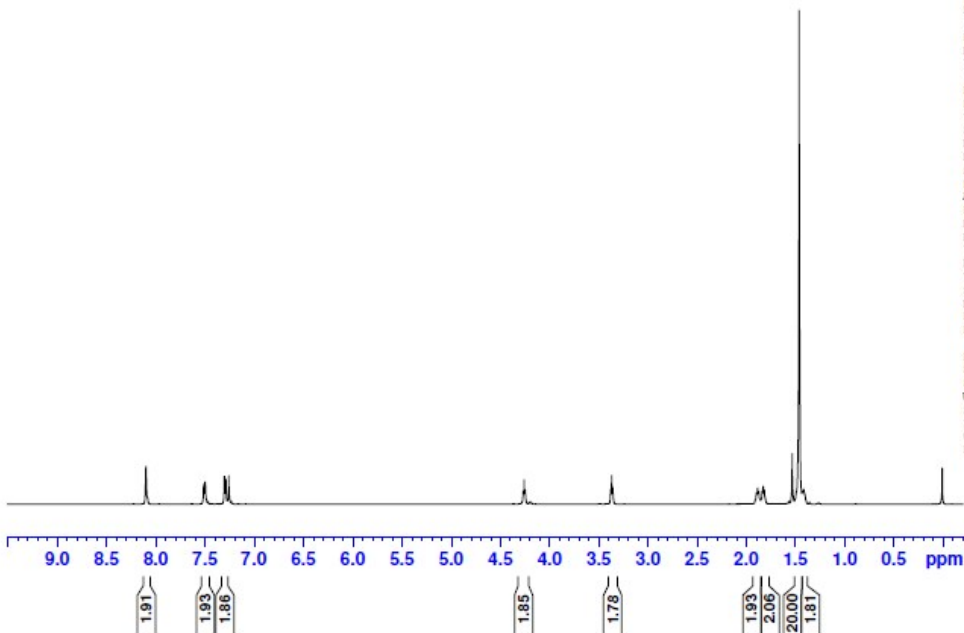


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PROCNO       1

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PULPROG      zg30
TD           65536
SOLVENT      CDCl3
NS           8
DS           2
SWH          12019.230 Hz
FIDRES       0.183399 Hz
AQ           2.7262976 sec
RG           153.47
DM           41.600 usec
DE           40.00 usec
TE           303.1 K
D1           1.00000000 sec
TD0          1
SFO1         600.1337058 MHz
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F1           12.50 usec
PLW1         20.00000000 W

F2 - Processing parameters
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WDW          EM
SSB          0
LB           0.30 Hz
GB           0
PC           1.00
    
```



141.53  
138.96  
123.25  
122.71  
116.29  
107.96

77.22  
77.01  
76.80

42.96  
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33.71  
32.60  
28.98  
27.87  
26.50

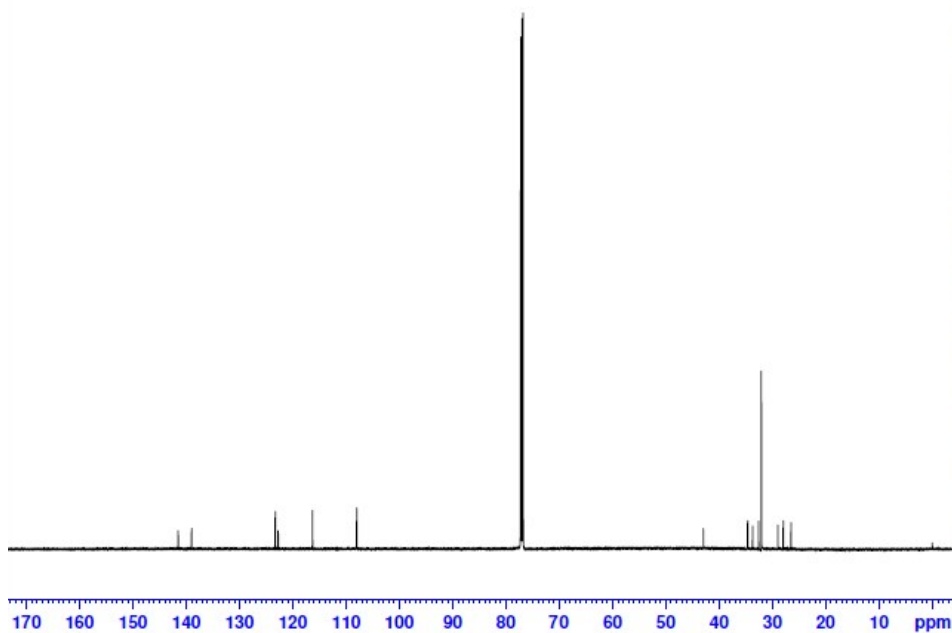


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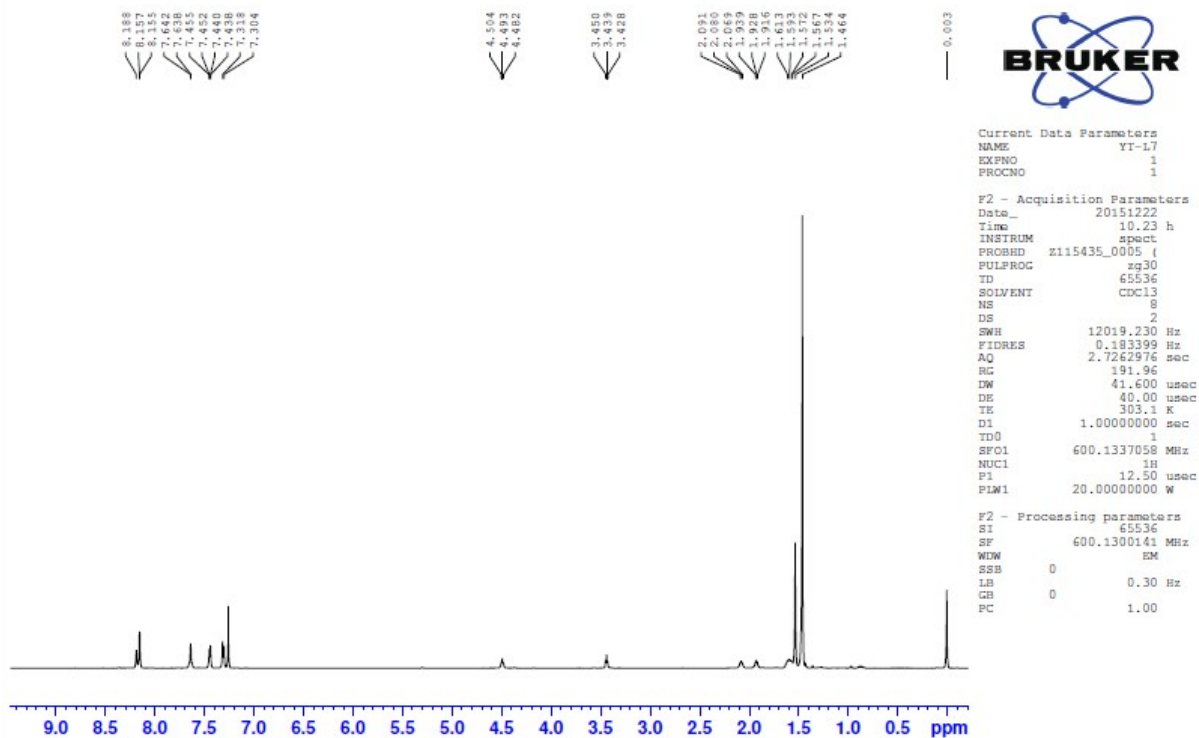
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SOLVENT      cdcl3
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RG           191.96
DM           13.800 usec
DE           18.00 usec
TE           303.1 K
D1           2.00000000 sec
D11          0.03000000 sec
TD0          1
SFO1         150.9178988 MHz
NUC1         13C
F1           10.50 usec
PLW1         26.00000000 W
SFO2         600.1324005 MHz
NUC2         1H
CPDPRG2      waltz16
PCPD2        70.00 usec
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PLW12        0.63775998 W
PLW13        0.32078999 W

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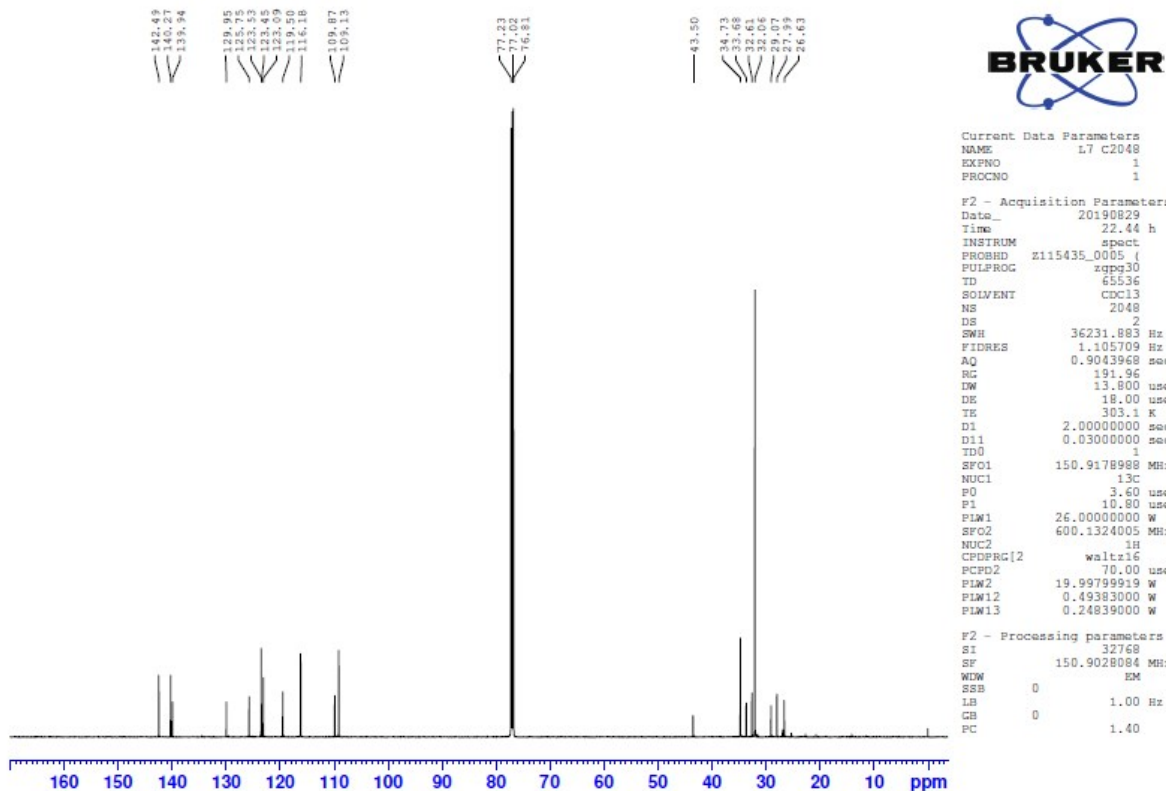
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 NS 8  
 DS 2  
 SWH 12019.230 Hz  
 FIDRES 0.183399 Hz  
 AQ 2.7262976 sec  
 RG 191.96  
 DW 41.600 usec  
 DE 40.00 usec  
 TE 303.1 K  
 D1 1.00000000 sec  
 TD0 1  
 SFO1 600.1337058 MHz  
 NUC1 1H  
 F1 12.50 usec  
 PLW1 20.00000000 W

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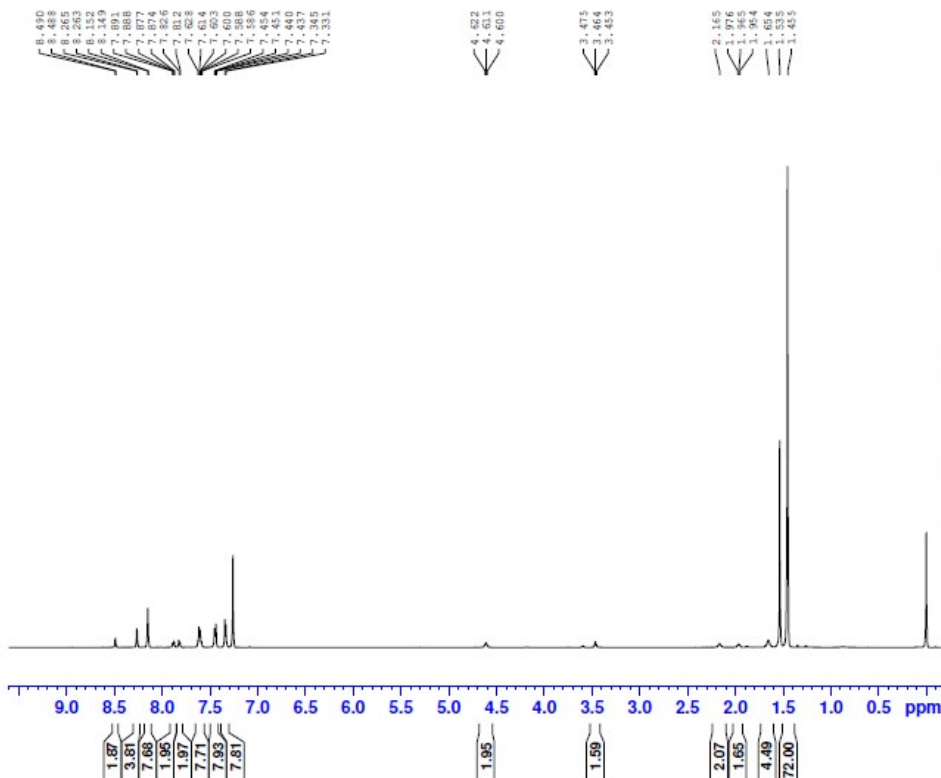


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 PROCNO 1

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 PULPROG zgpg30  
 TD 65536  
 SOLVENT CDC13  
 NS 2048  
 DS 2  
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 FIDRES 1.105709 Hz  
 AQ 0.9043968 sec  
 RG 191.96  
 DW 13.800 usec  
 DE 18.00 usec  
 TE 303.1 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 150.9178988 MHz  
 NUC1 13C  
 P0 3.60 usec  
 P1 10.80 usec  
 PLW1 26.00000000 W  
 SFO2 600.1324005 MHz  
 NUC2 1H  
 CPDPRG2 waltz16  
 PCPD2 70.00 usec  
 PLW2 19.99799919 W  
 PLW12 0.49383000 W  
 PLW13 0.24839000 W

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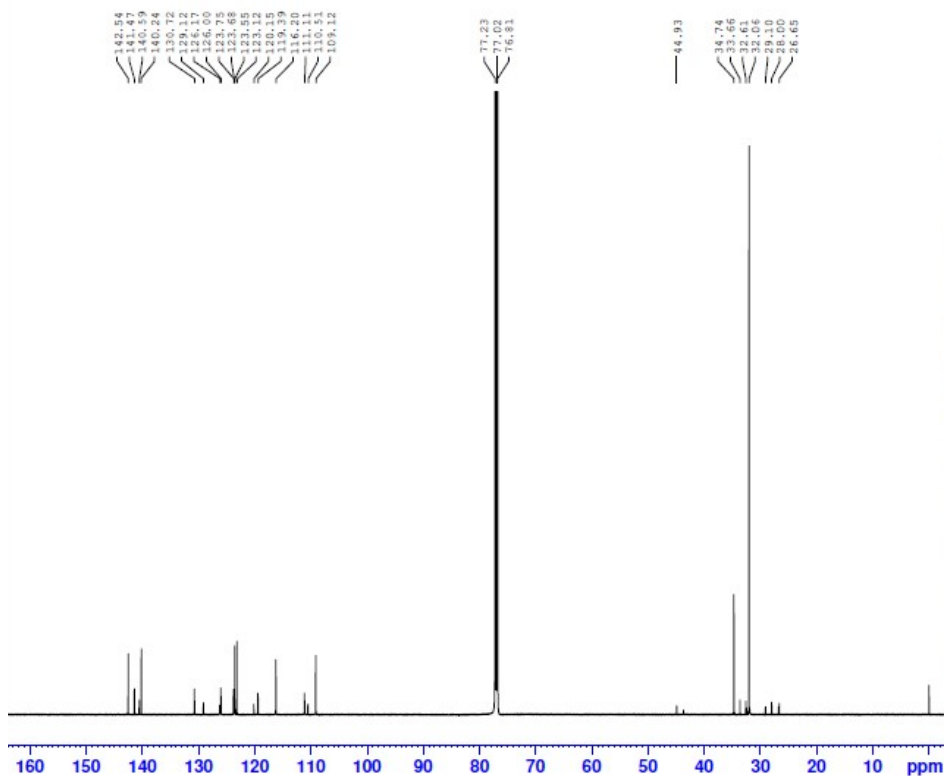
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 PROCNO 1

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 PULPROG zg30  
 TD 65536  
 SOLVENT CDCl3  
 NS 8  
 DS 2  
 SWH 12019.230 Hz  
 FIDRES 0.183399 Hz  
 AQ 2.7262976 sec  
 RG 191.96  
 DW 41.600 usec  
 DE 40.00 usec  
 TE 303.1 K  
 D1 1.00000000 sec  
 TD0 1  
 SFO1 600.1337058 MHz  
 NUC1 1H  
 P1 12.50 usec  
 PLW1 20.00000000 W

F2 - Processing parameters  
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 SF 600.1300142 MHz  
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 LB 0.30 Hz  
 GB 0  
 PC 1.00



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 PROCNO 1

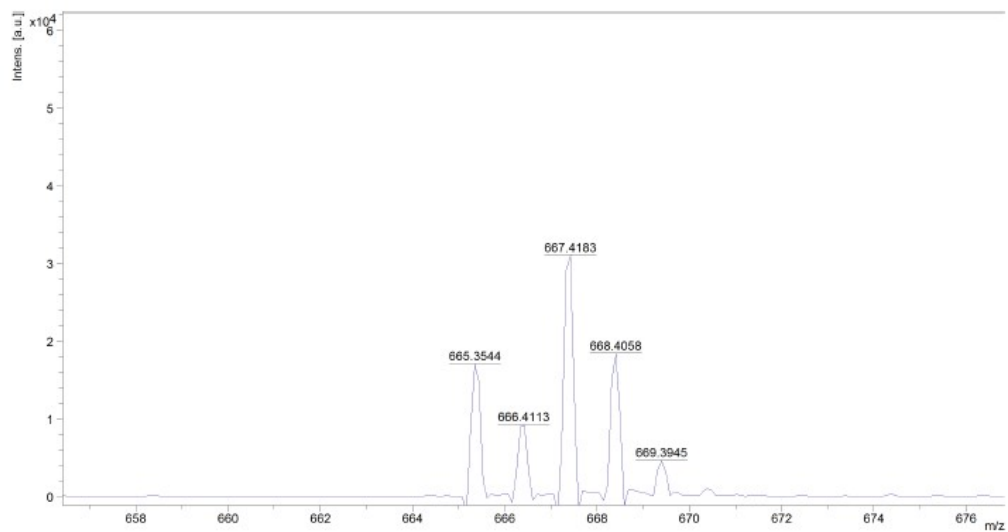
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 SOLVENT CDCl3  
 NS 2048  
 DS 2  
 SWH 36231.883 Hz  
 FIDRES 1.105709 Hz  
 AQ 0.9043968 sec  
 RG 191.96  
 DW 13.800 usec  
 DE 18.00 usec  
 TE 303.2 K  
 D1 2.00000000 sec  
 D11 0.03000000 sec  
 TD0 1  
 SFO1 150.9178988 MHz  
 NUC1 13C  
 P0 3.60 usec  
 P1 10.80 usec  
 PLW1 26.00000000 W  
 SFO2 600.1324005 MHz  
 NUC2 1H  
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 PCPD2 70.00 usec  
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 PLW12 0.49383000 W  
 PLW13 0.24839000 W

F2 - Processing parameters  
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 SF 150.9028066 MHz  
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 GB 0  
 PC 1.40

**Fig. S5** Copies of HRMS mass spectra  
Compound 4

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Comment 1  
Comment 2

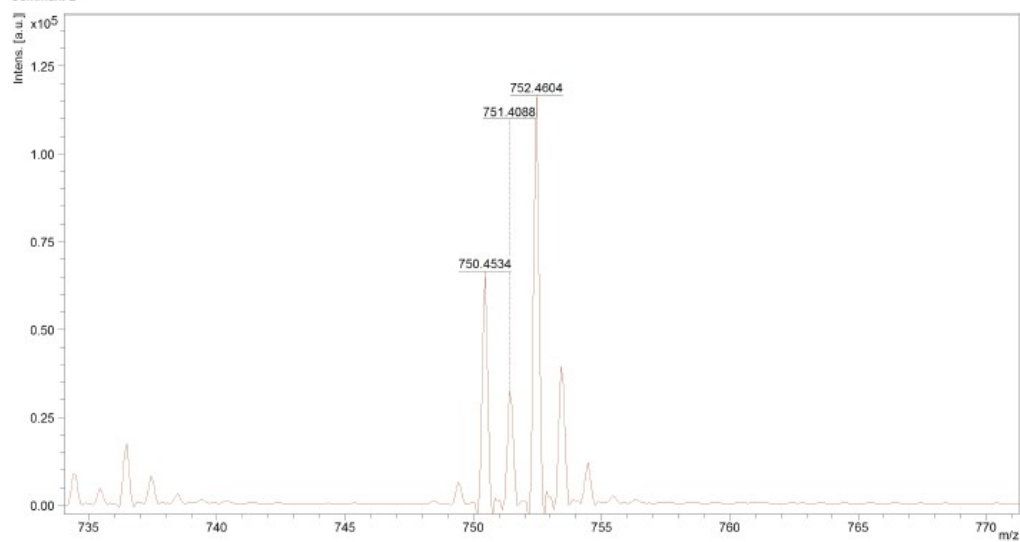


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### Compound IrG0

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Comment 2



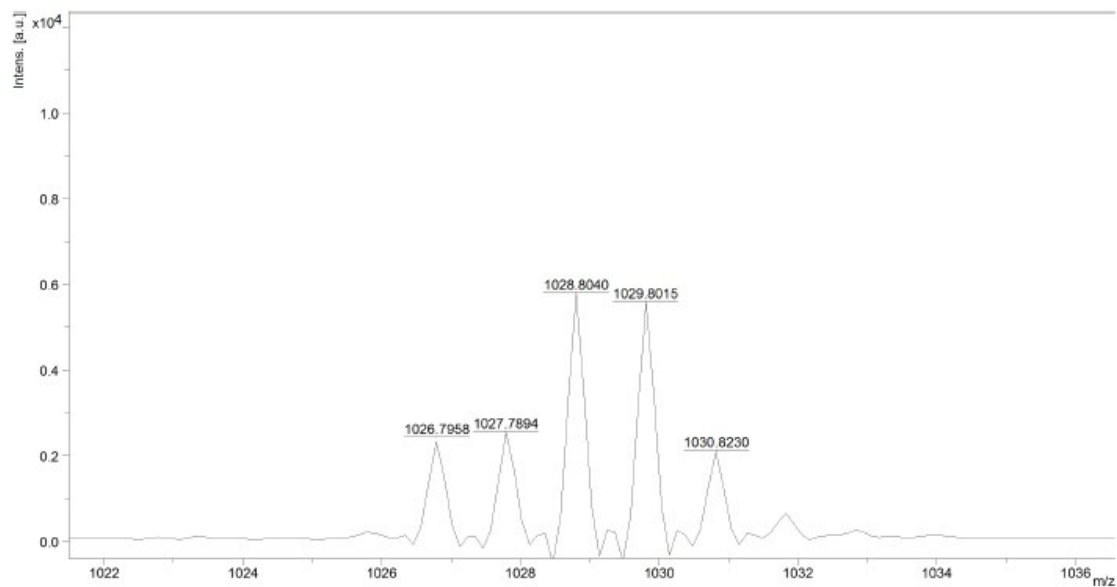
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Comment 1

Comment 2



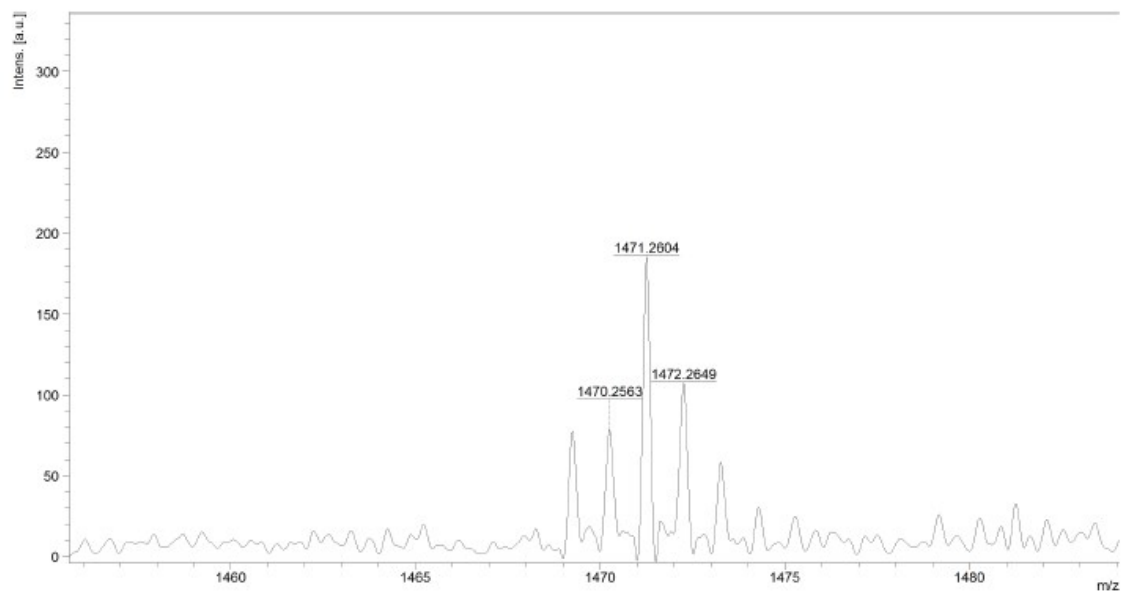
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Comment 1

Comment 2

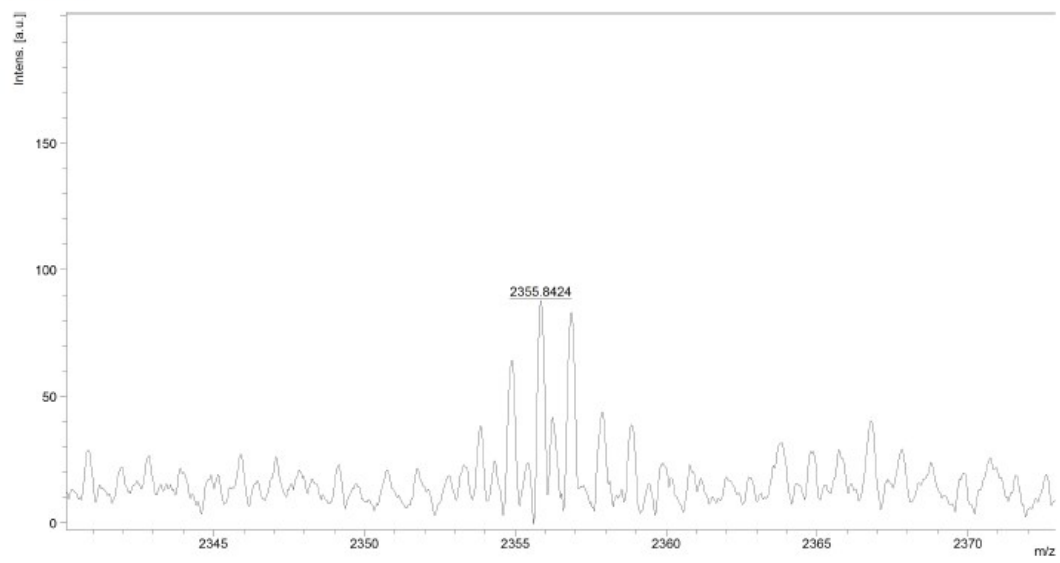


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Comment 2



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