Supporting Information

Carbazole Dendrimers Containing Oligoarylfluorene Cores as Solution-Processed Hole-Transporting Non-Doped Emitters for Efficient Pure Red, Green, Blue and White Organic Light-Emitting Diodes

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Contents

1. Chemical quantum calculation results

- dodexyl and *tert*-butyl groups were adopted by methyl group for all structures
- All calculations were performed by Gaussian 09 code
- CH_2Cl_2 solvent by C-PCM model was applied for all calculations
- Geometry optimizations were done by B3LYP/6-31G(d) method

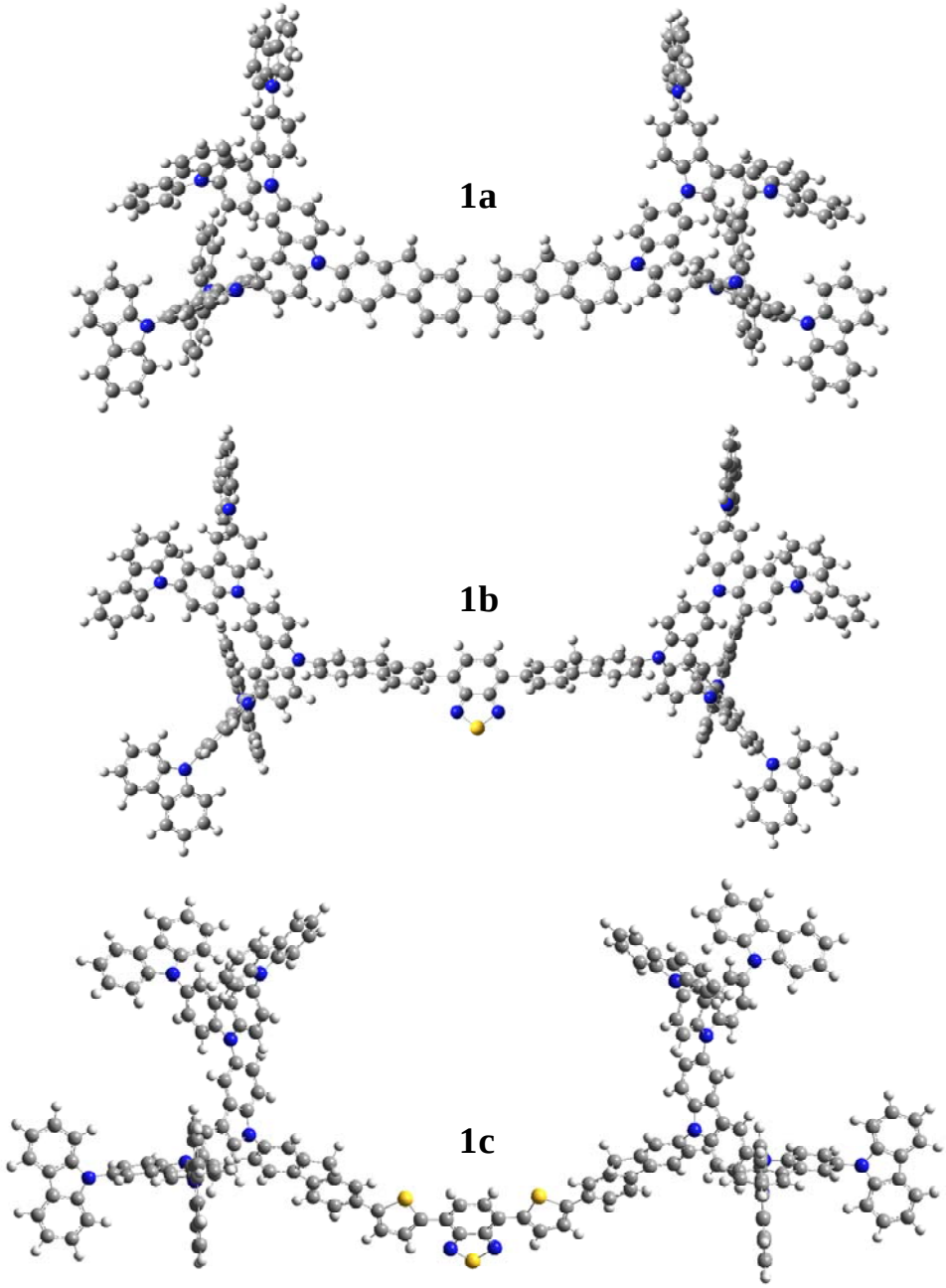


Fig. S1 The optimized structure of the dendrimers calculated by C-PCM model.

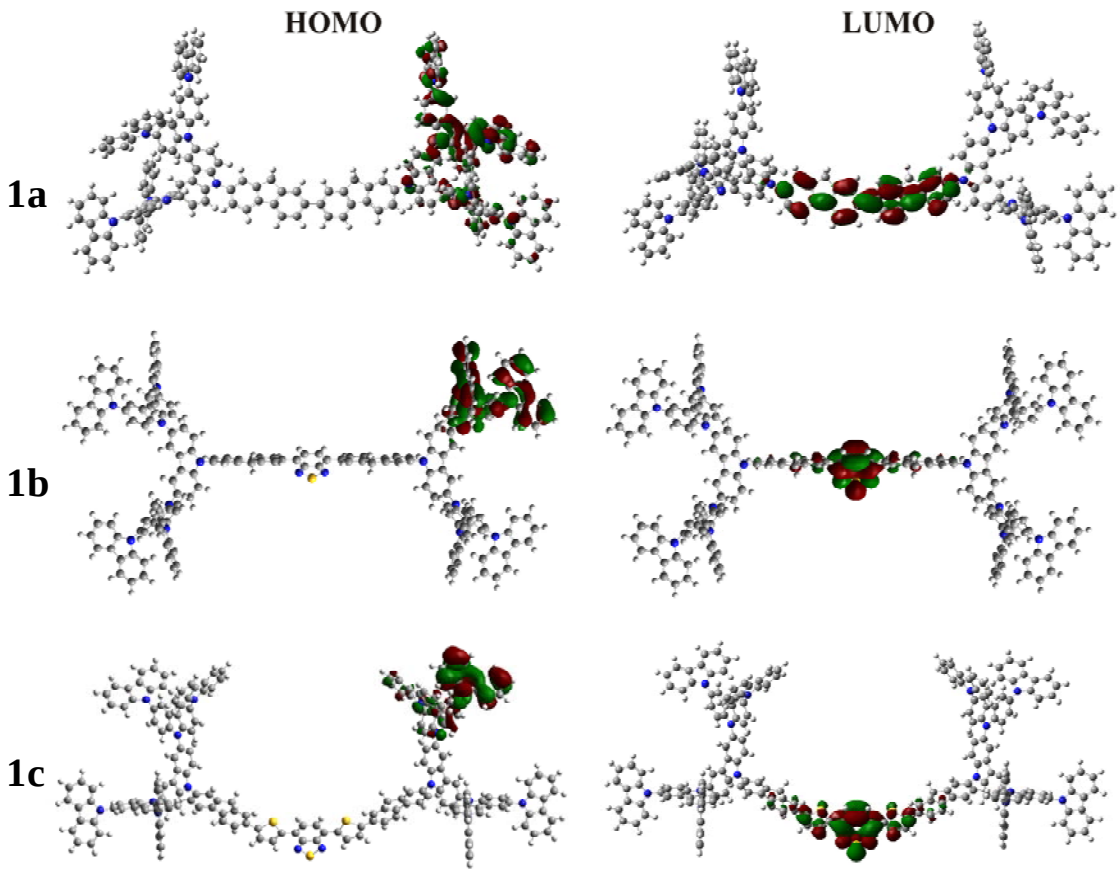


Fig. S2 HOMO (left) and LUMO (right) of the dendrimers calculated by B3LYP/6-31G(d) in CH_2Cl_2 solvent.

Table S1 The calculated HOMO, LUMO and HOMO-LUMO energy gap (Δ_{H-L}) of the studied compounds by TDDFT/B3LYP/6-31G(d) in CH_2Cl_2 solvent.

Compounds	HOMO	LUMO	[a]Δ_{H-L}	E_g^{cal} (eV)
1a	-5.28	-1.62	3.66	3.15
1b	-5.34	-2.57	2.77	2.78
1c	-5.18	-2.81	2.37	2.21

[a] Δ_{H-L} is the calculated E_g estimated from the excitation energy of single electron from HOMO to LUMO (in practical is the energy difference between HOMO and LUMO)

2. OLED results

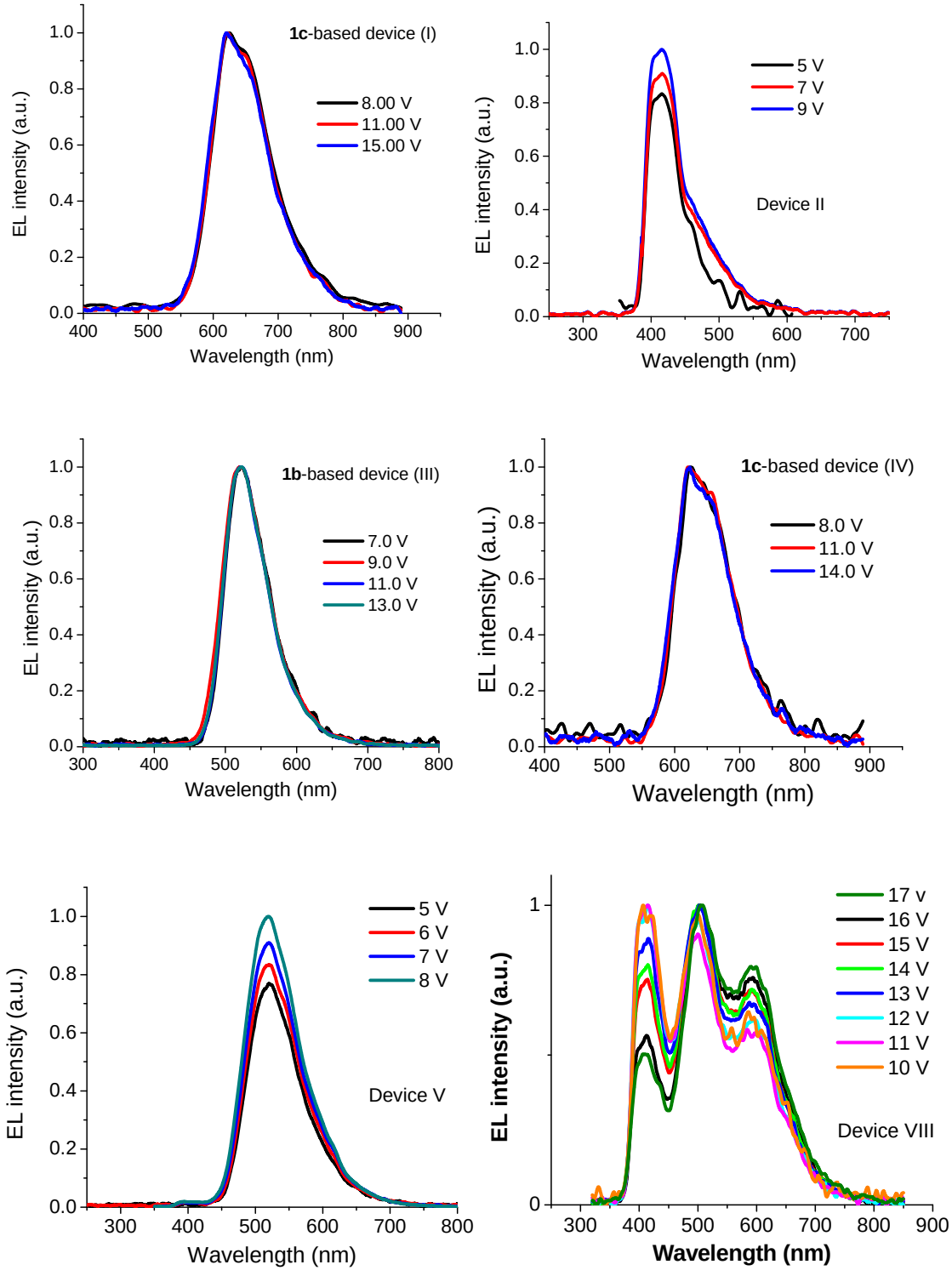
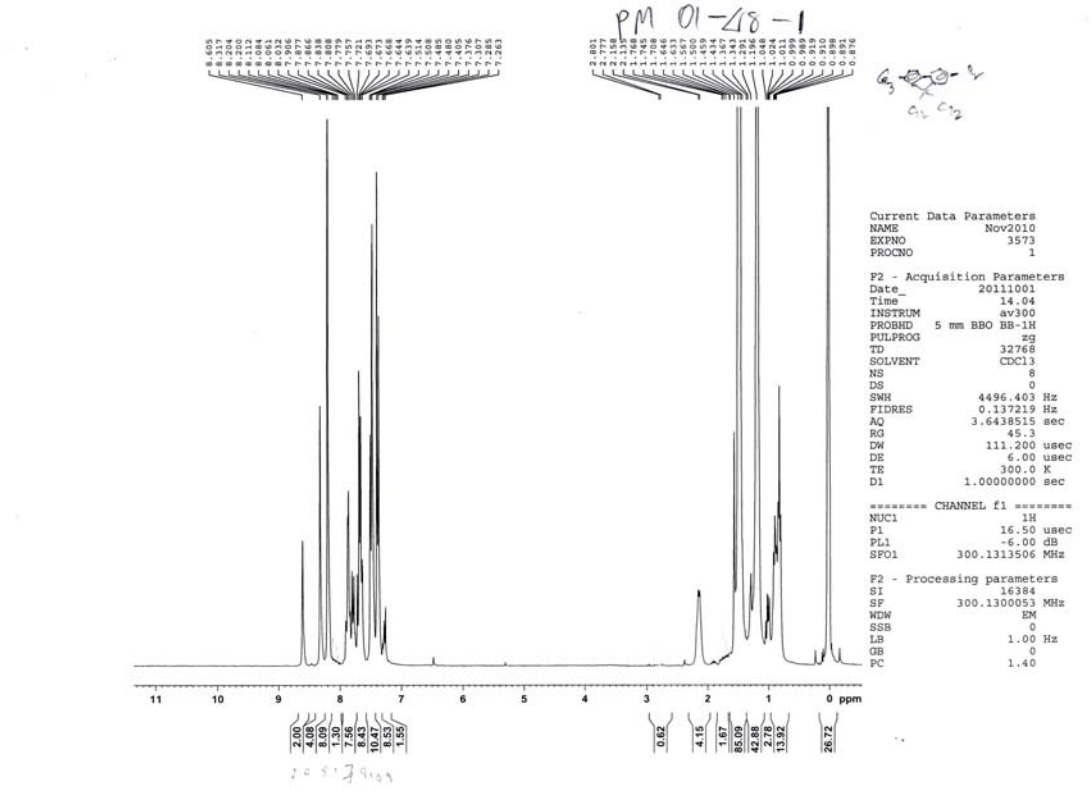
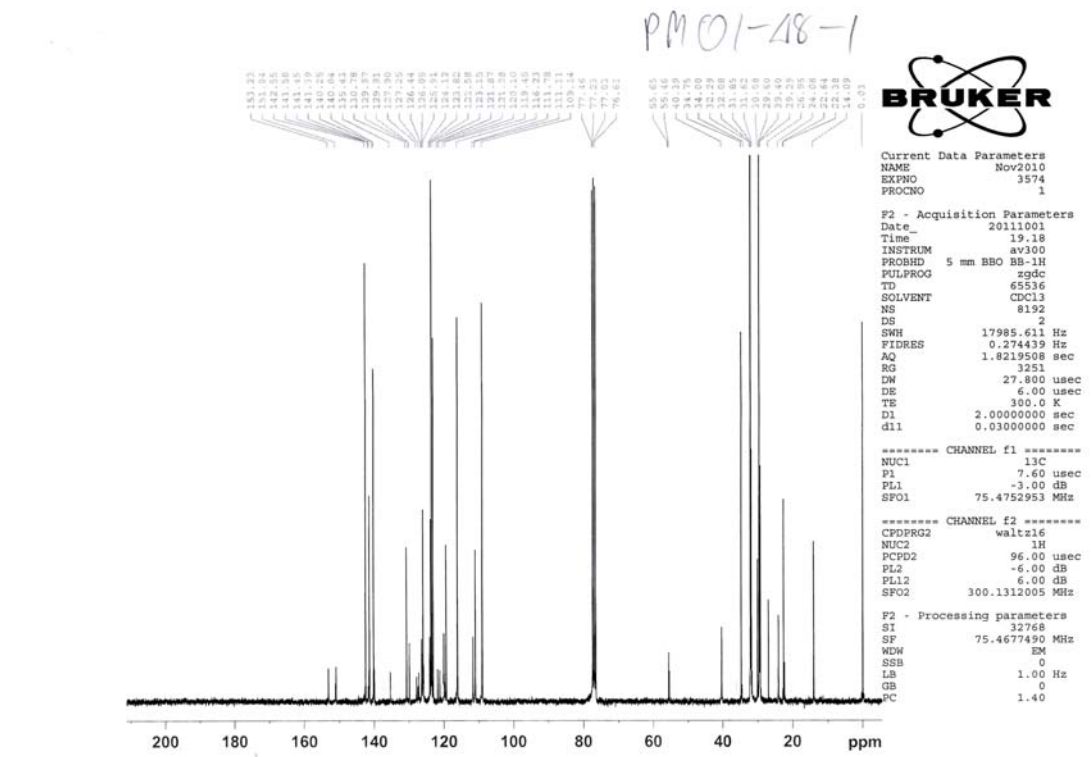


Fig. S3 Normalized EL spectra at different applied voltages of the OLEDs.

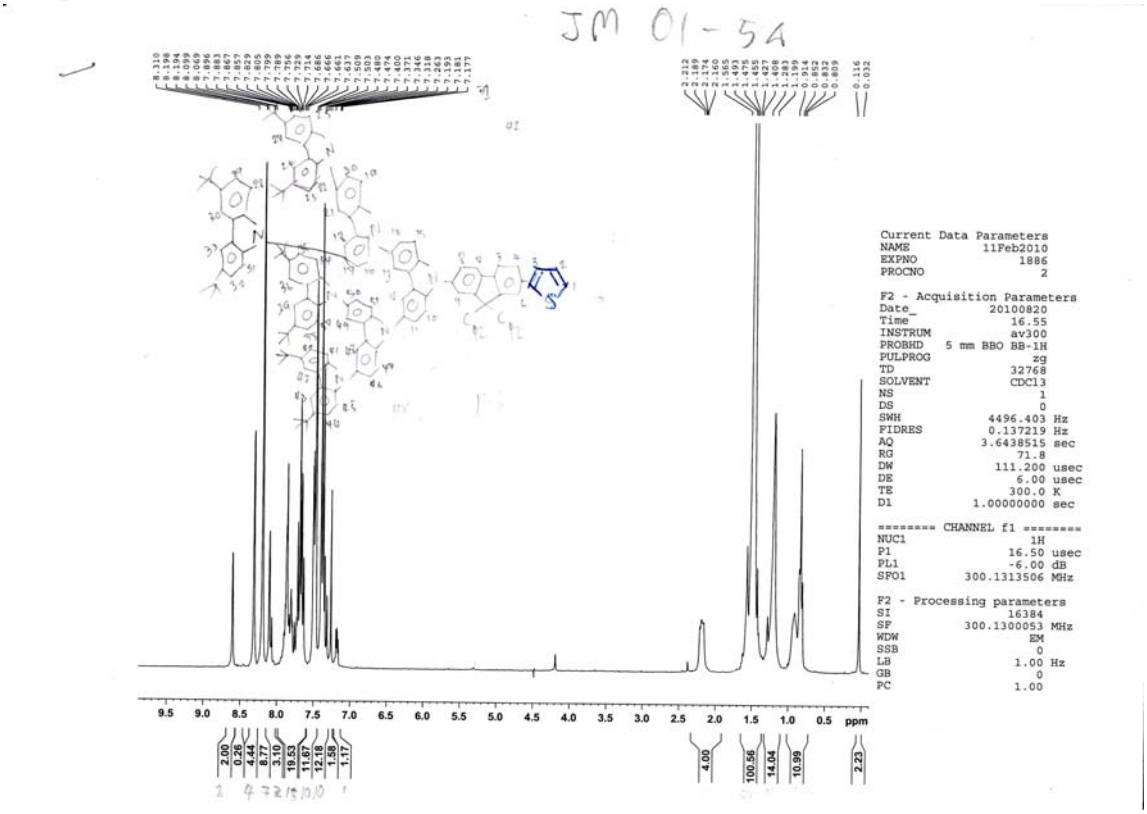
3. ^{1}H and ^{13}C NMR spectra

Compound 3





Compound 5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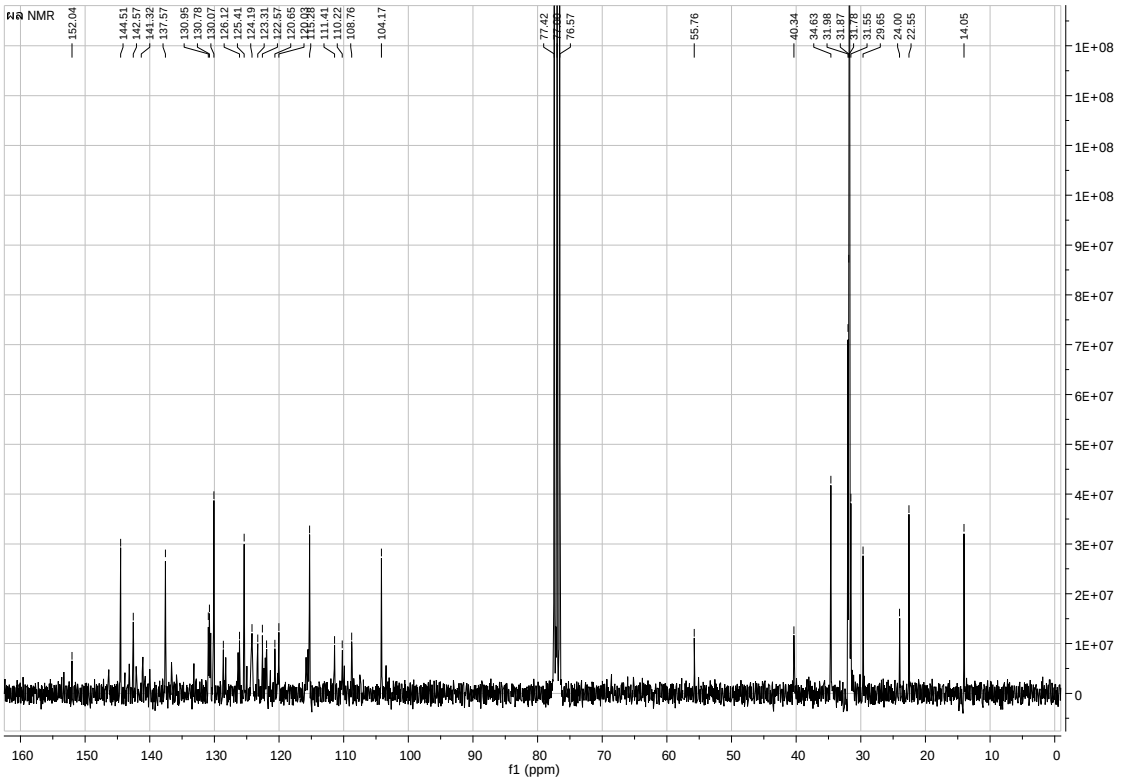
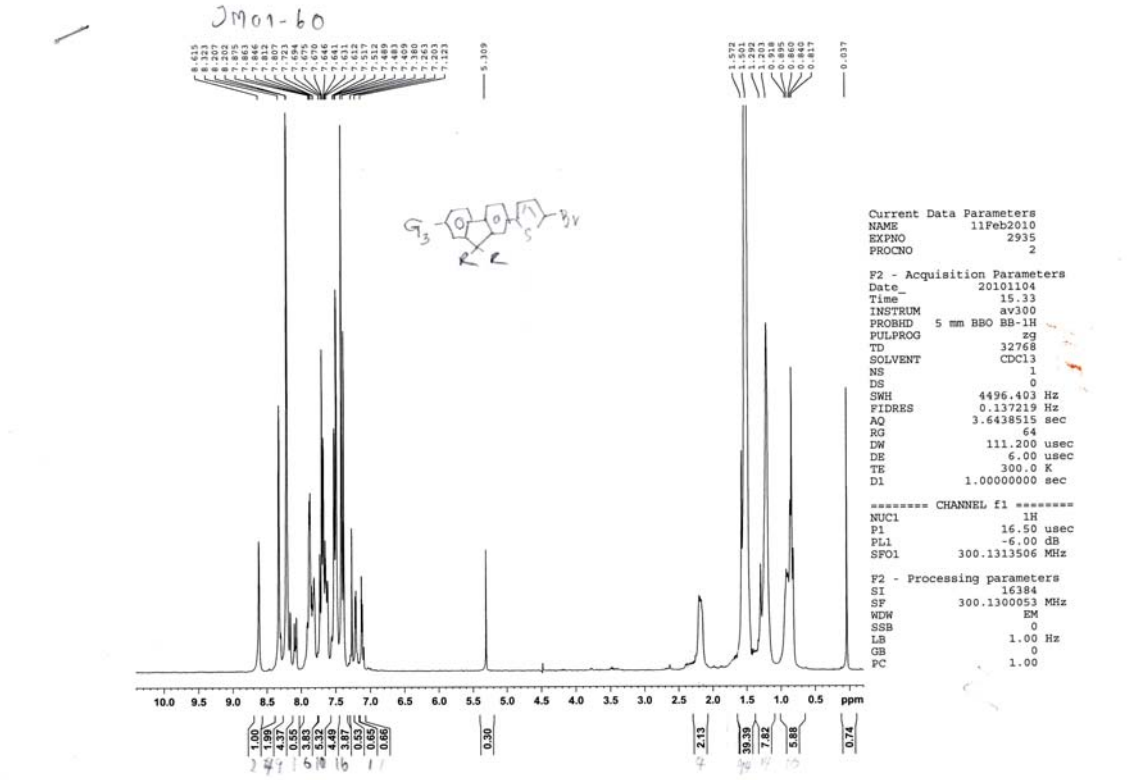

13C NMR
f1 (ppm)

Compound 6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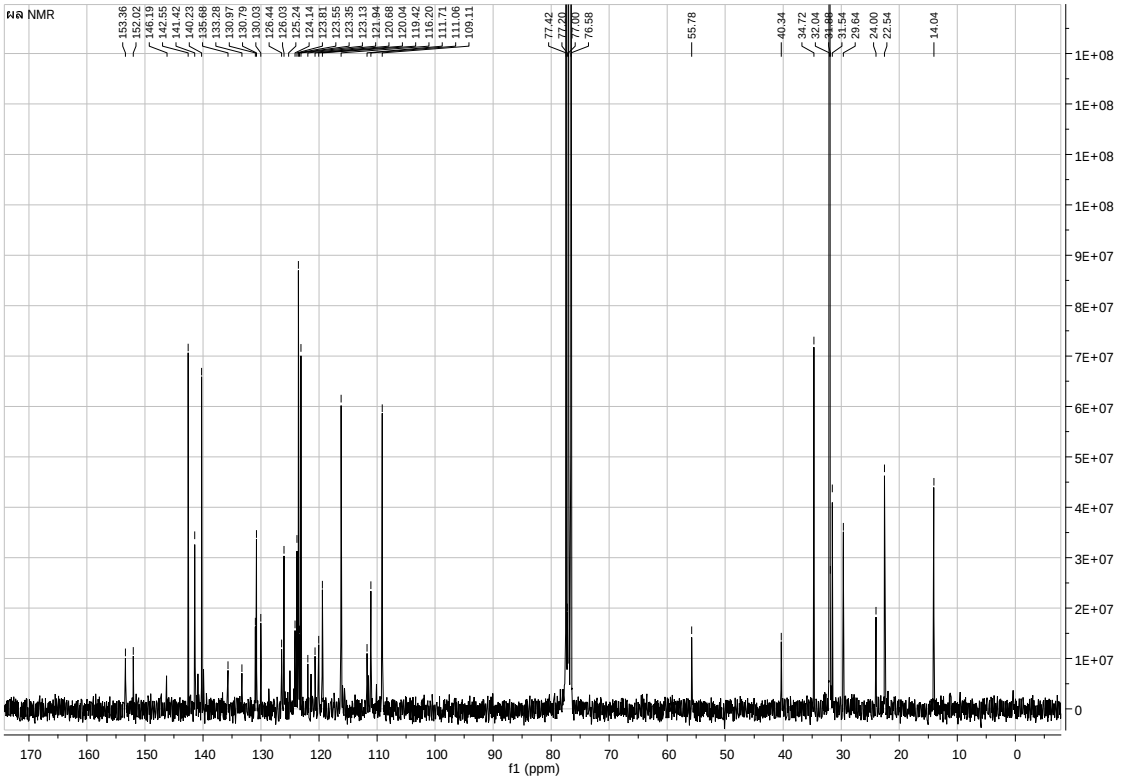
13C NMR
f1 (ppm)

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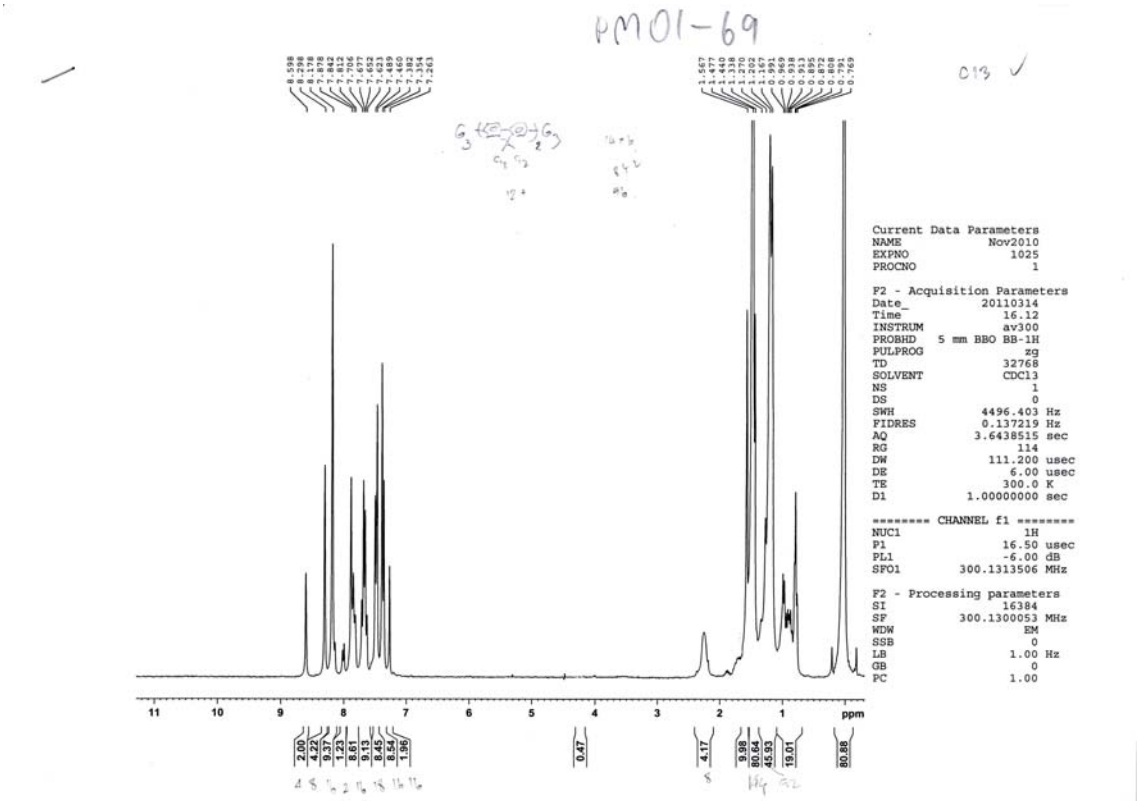
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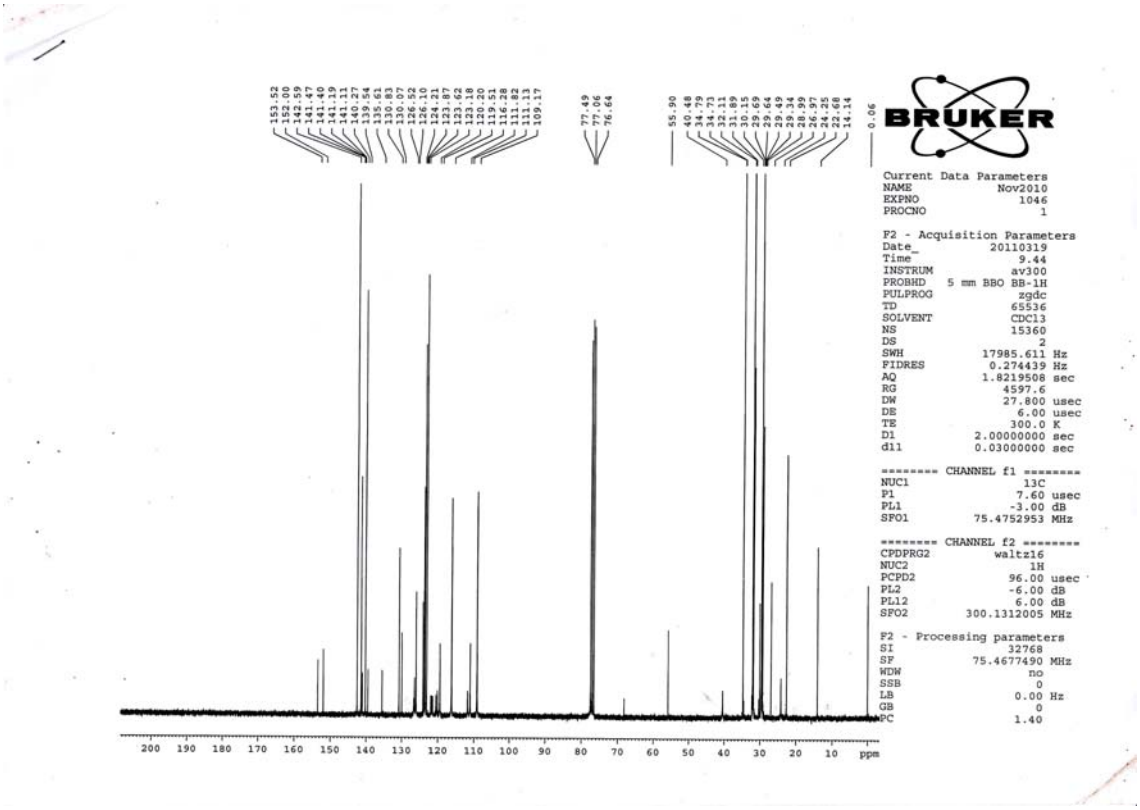
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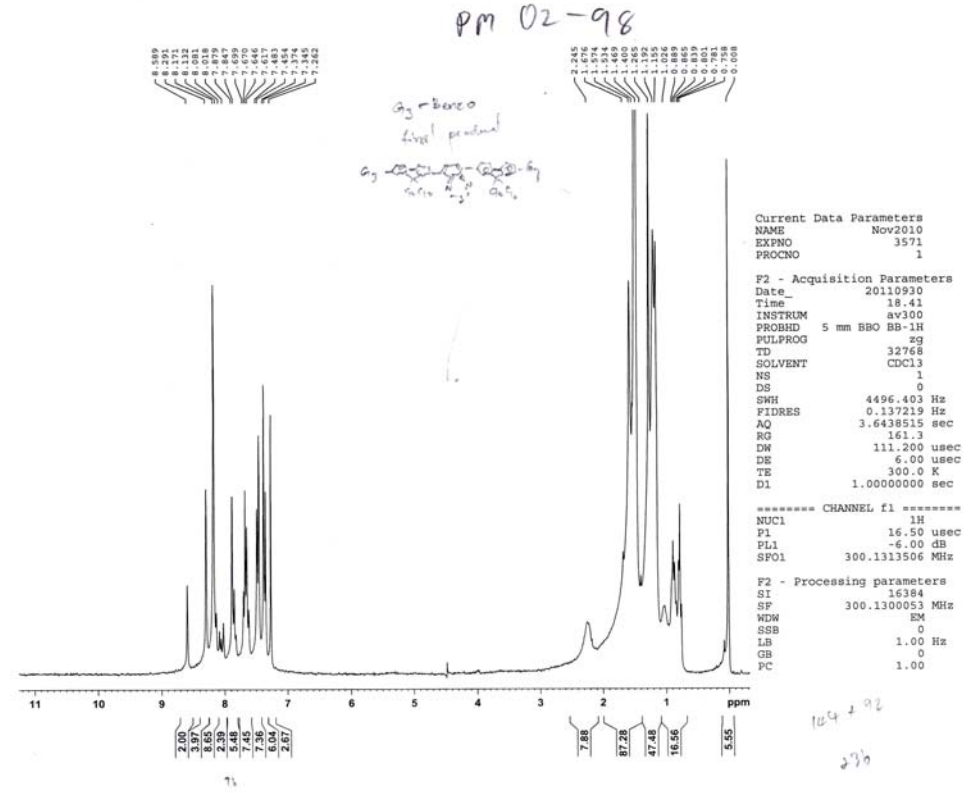
Compound 1b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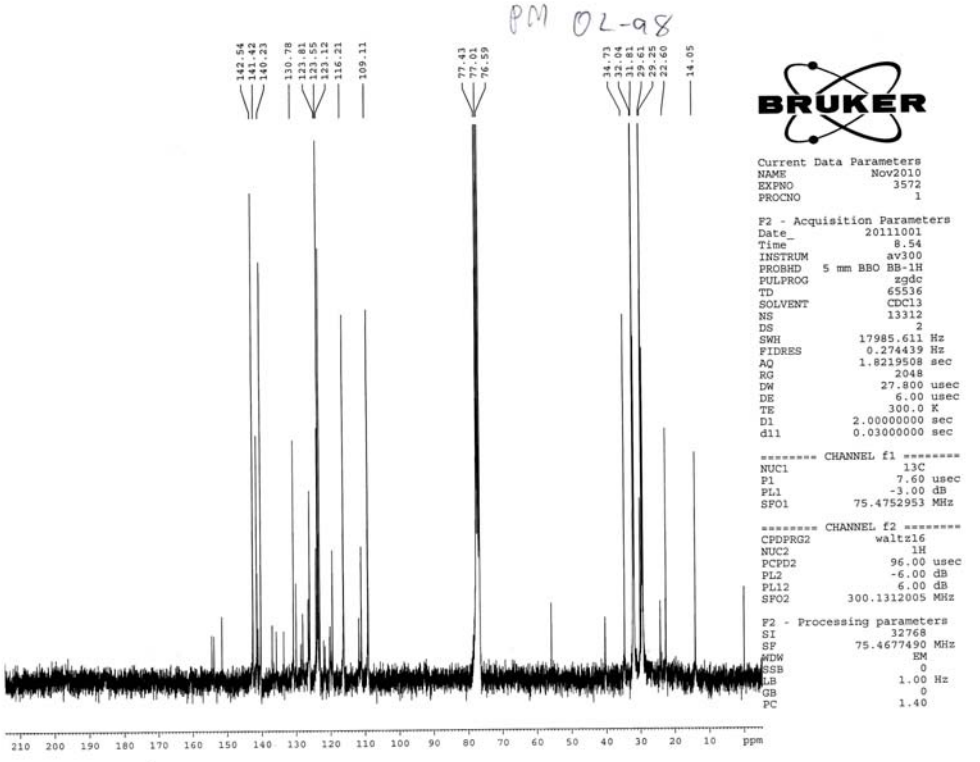
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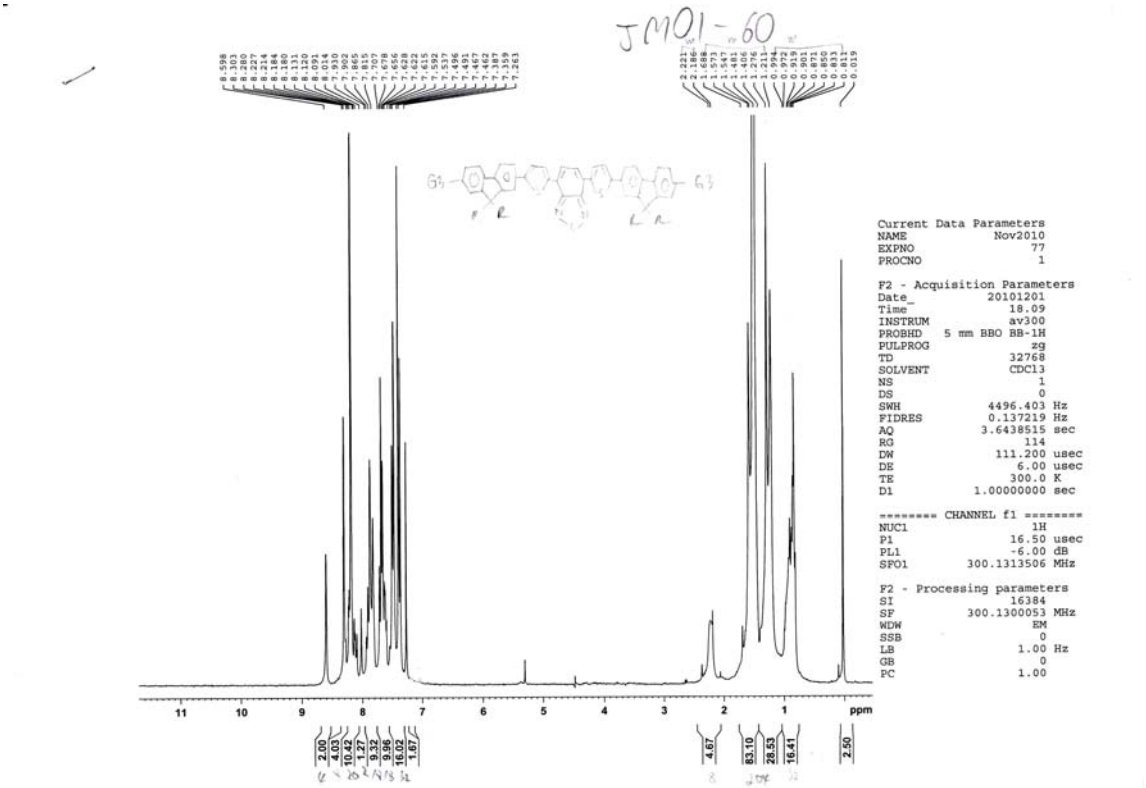
Compound 1c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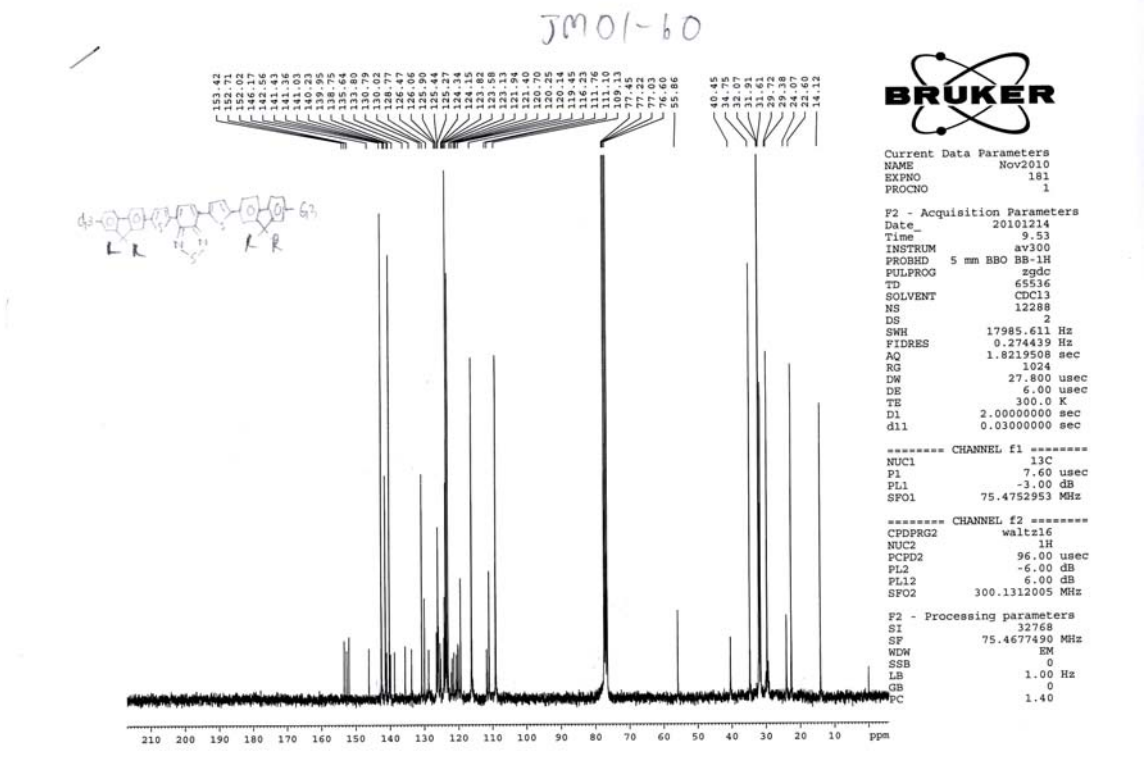
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d11 0.03000000 sec
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P1 7.60 usec
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SFO1 75.4752953 MHz
======== CHANNEL f2 ========
CPDPRG2 waltz16
NUC2 1H
PCPD2 96.00 usec
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PL12 6.00 dB
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SI 32768
SF 75.4677490 MHz
WDW EM
SSB 0
LB 1.00 Hz
GB 0
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ppm