

Supplementary Information

Polymer solar cells based on diphenylmethanofullerenes with reduced sidechain length

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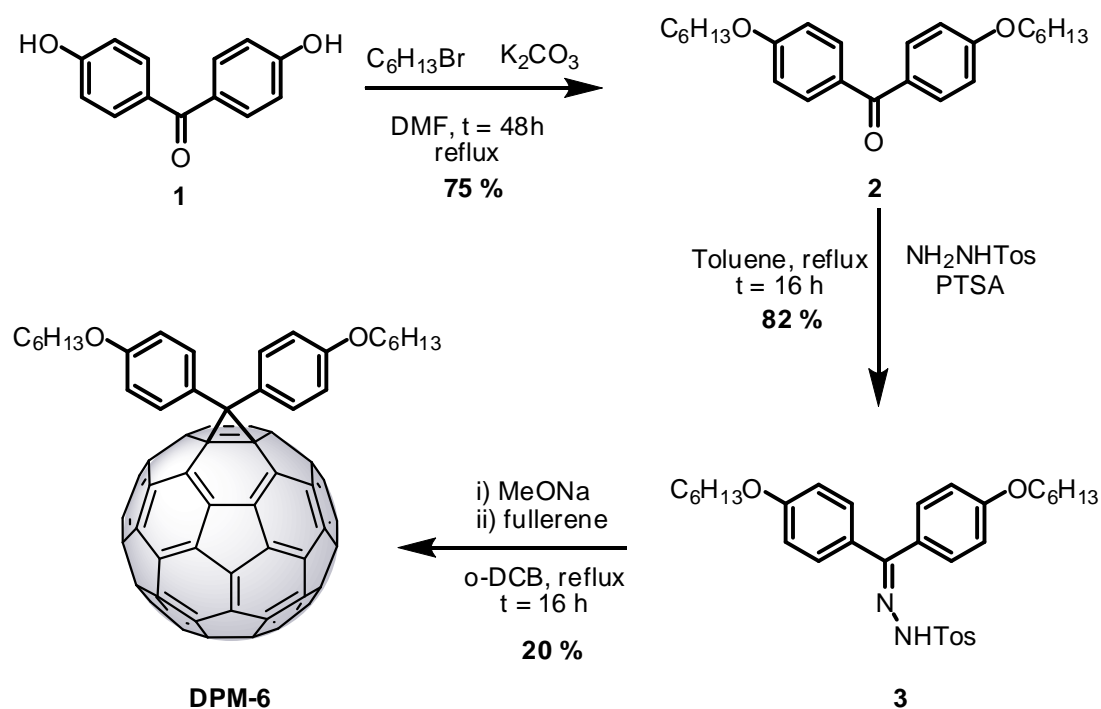
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Supplementary Information

The reaction has been performed using the procedure described elsewhere.¹



Scheme S1. Reagents and conditions used for the preparation of DPM-6.

¹ M.P. Hernández, F. Monroy, F. Ortega, R. G. Rubio, Á. Martín-Domenech E. M^a Priego, L. Sánchez, N. Martín, *Langmuir*, **2001**, 17, 3317-3328

4,4'-bis(hexyloxyphenyl)benzophenone (2)

$^1\text{H-NMR}$ (CDCl_3 , 300 MHz, 25° C): δ = 7.78 (d, J = 8.43 Hz, 4H), 6.96 (t, J = 8.43 Hz, 4H), 4.04 (t, J = 6.51 Hz, 4H), 1.82 (m, 4H), 1.51 (m, 4H), 1.36 (m, 8H), 0.92 (t, J = 6.90 Hz, 6H).

$^{13}\text{C-NMR}$ (CDCl_3 , 75 MHz, 25° C): δ = 162.47, 132.22, 130.63, 113.94, 68.28, 31.57, 29.13, 25.70, 22.60, 14.02 ppm.

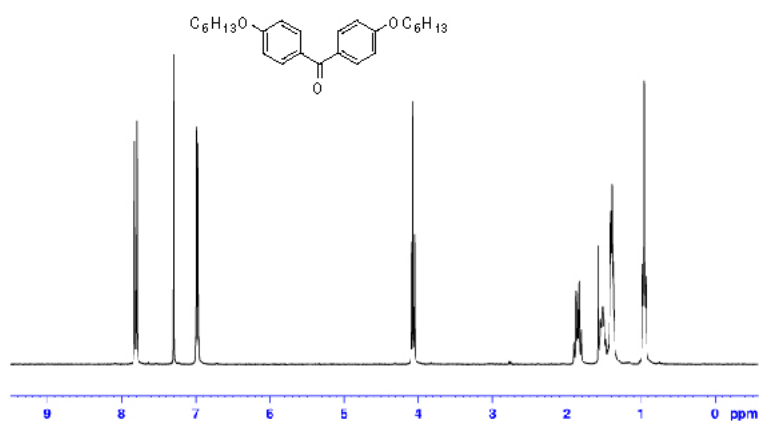


Figure S1. $^1\text{H-NMR}$ of 4,4'-bis(hexyloxyphenyl)benzophenone

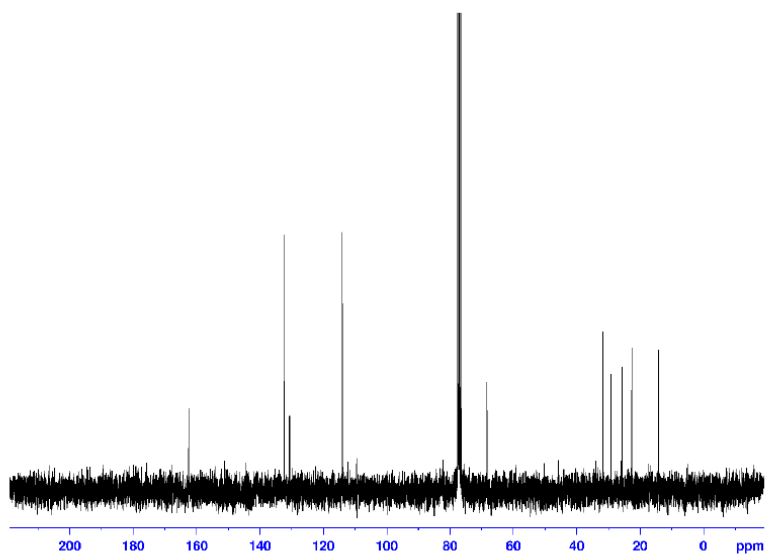


Figure S2. ^{13}C -NMR of 4,4'-bis(hexyloxyphenyl)benzophenone

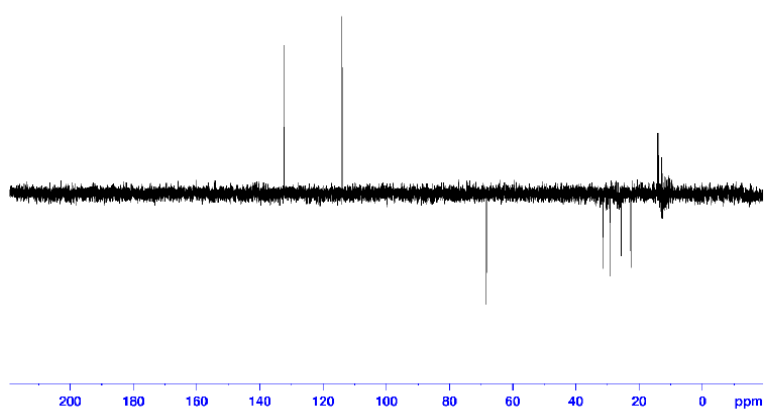


Figure S3. DEPT of 4,4'-bis(hexyloxyphenyl)benzophenone

Dihexyloxybenzophenone-4-methylbenzenesulfonylhydrazone

^1H -NMR (CDCl_3 , 300 MHz, 25° C): δ = 7.85 (d, J = 8.33 Hz, 2H), 7.78 (d, J = 8.81 Hz, 2H), 7.37 (d, J = 8.95 Hz, 2H), 7.32 (d, J = 8.06 Hz, 2H), 6.95 (d, J = 8.81 Hz, 4H), 6.79 (d, J = 8.96 Hz, 2H), 3.99 (dt, 4H), 1.87 (m, 4H), 1.49 (m, 4H), 1.36 (m, 8H), 0.92 (t, J = 6.83 Hz, 6H).

^{13}C -NMR (CDCl_3 , 75 MHz, 25° C): δ = 194.49, 162.48, 154.55, 143.93, 135.74, 132.22, 129.90, 129.59, 129.25, 127.94, 115.53, 114.08, 113.94, 68.25, 31.57, 29.15, 25.73, 25.70, 22.62, 22.60, 21.62, 14.03 ppm.

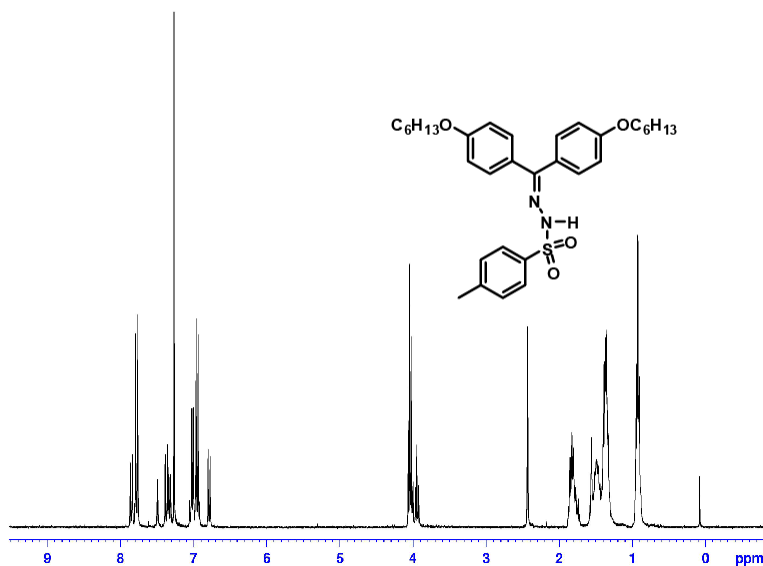


Figure S4. ^1H -NMR of Dihexyloxybenzophenone-4-methylbenzenesulfonylhydrazone

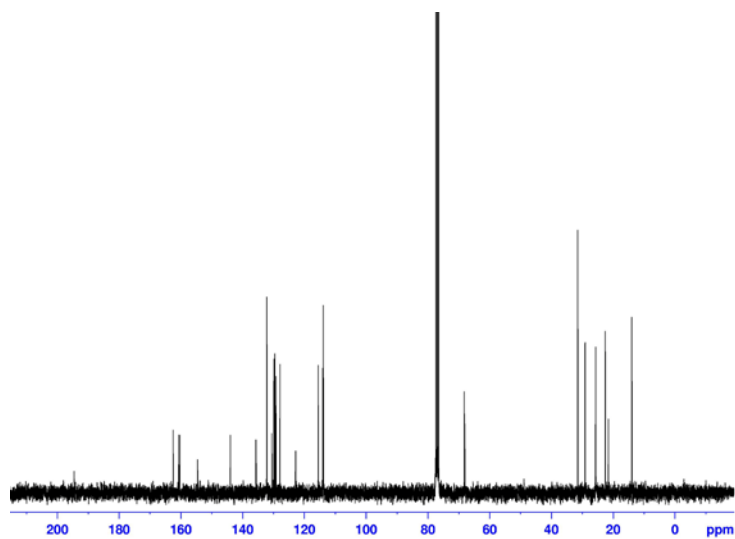


Figure S5. ^{13}C -NMR of Dihexyloxybenzophenone-4-methylbenzenesulfonylhydrazone

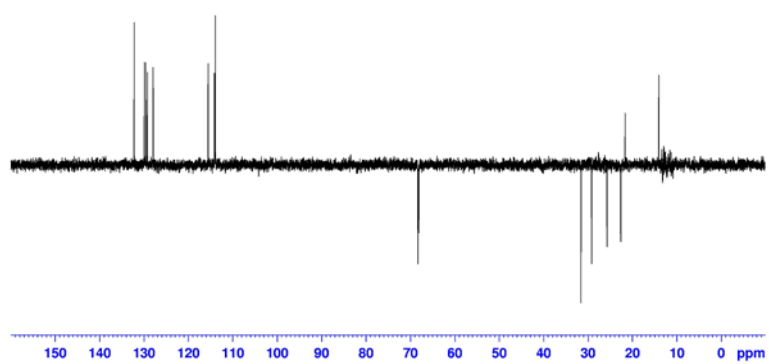


Figure S6. DEPT of Dihexyloxybenzophenone-4-methylbenzenesulfonylhydrazone

4,4'-dihexyloxydiphenylmethano[60]fullerene (DPM-6)

^1H -NMR (CDCl_3 , 300 MHz, 25° C): δ = 7.98 (d, J = 8.79 Hz, **4H**), 6.99 (d, J = 8.79 Hz, **4H**), 3.99 (t, J = 6.38 Hz, **4H**), 1.80 (m, **4H**), 1.48 (m, **4H**), 1.36 (m, **8H**), 0.92 (t, J = 6.82 Hz, **6H**).

^{13}C -NMR (CDCl_3 , 75 MHz, 25° C): δ = 159.11, 149.00, 145.81, 145.56, 145.47, 145.06, 144.61, 144.59, 144.24, 143.30, 142.72, 142.51, 141.19, 138.59, 132.22, 131.72, 115.02, 68.45, 57.77, 32.00, 29.68, 26.18, 23.01, 14.44 ppm.

MS(MALDI-TOF; positive mode detection) : Calculated for $[\text{M}+\text{H}]^+$: 1087,26 ; found 1087,24.

MS(MALDI-TOF; negative mode detection) : Calculated for $[\text{M}]^-$: 1086,26 ; found 1086,20.

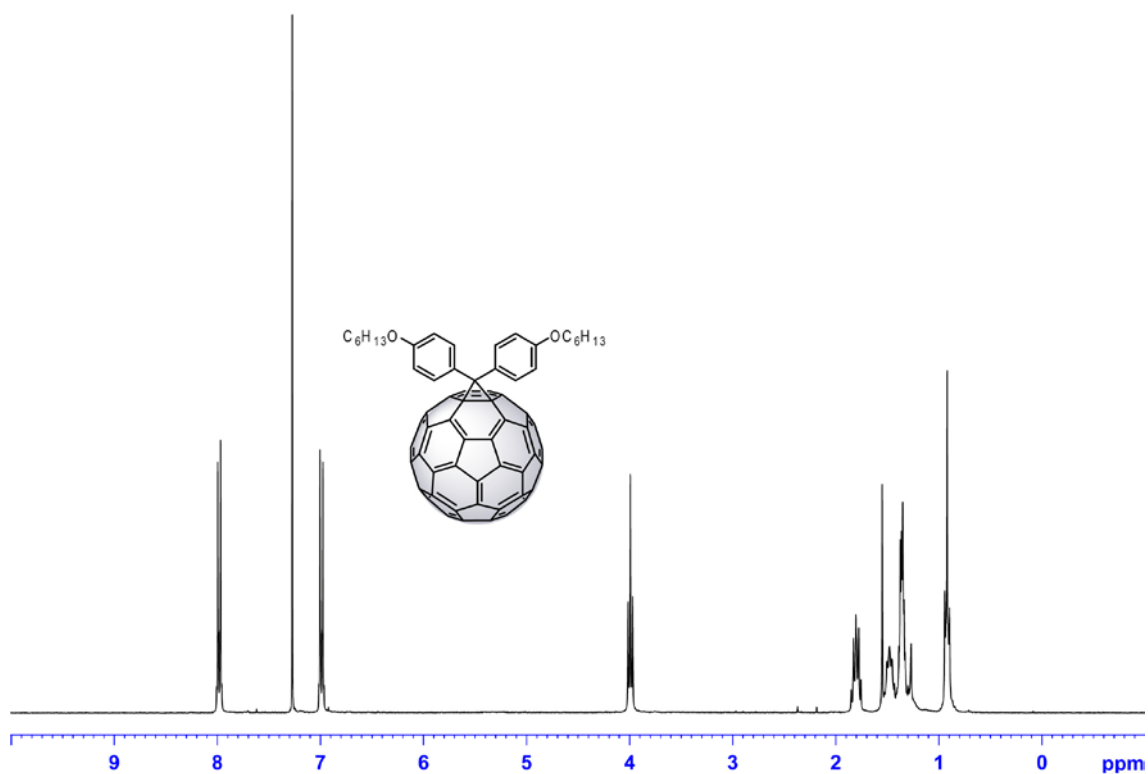


Figure S7. ^1H -NMR of DPM-6

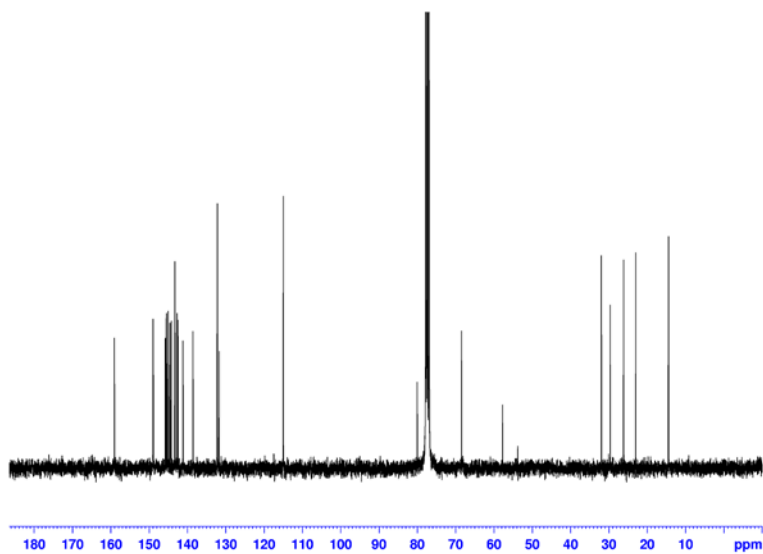


Figure S8. ^{13}C -NMR of DPM-6

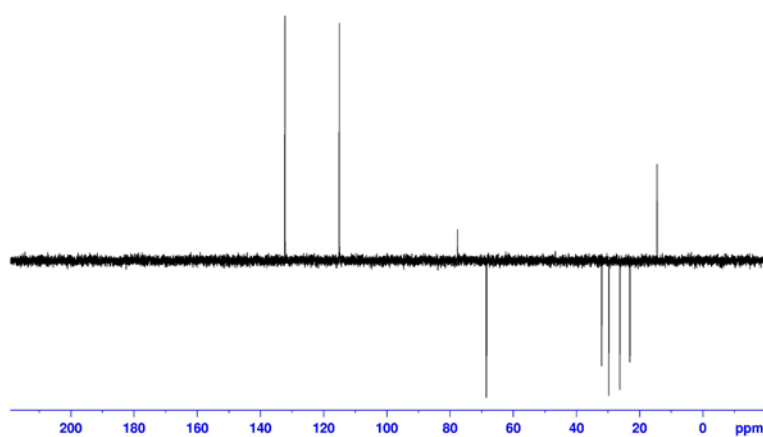
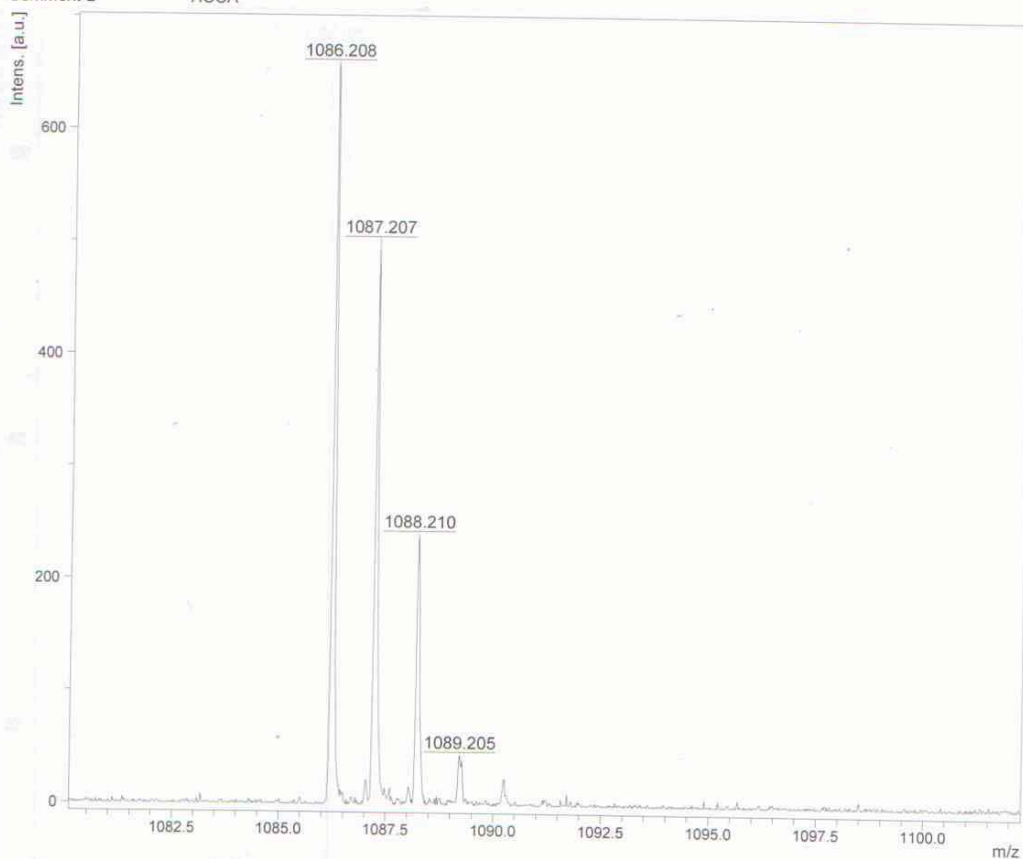


Figure S9. DEPT of DPM-6.

D:\Data\UEM\2009-02\01-01\AL014-1\NEG10_E3\1

Comment 1

Comment 2 HCCA



Acquisition Parameter

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Number of shots	50
Name of spectrum used for calibration	cal pept nega\0_E2\1
Calibration reference list used	NegPeptideCalibStandard mono

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Figure S10: mass spectrum of DPM-6