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Supporting Information for:

Synthesis of delayed-emissive poly(2,7-carbazole)s having an anchored triazine pendant at N-position

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1) General

All ^{1}H NMR and ^{13}C NMR spectra were recorded on a 400 MHz and 600 MHz Bruker FT-NMR spectrometers (400 MHz, 600 MHz, 100 MHz or 150 MHz respectively) in $CDCl_3$ by using tetramethylsilane (TMS) (δ = 0 ppm) and the centerline of the triplet of $CDCl_3$ (δ = 77.1 ppm), respectively, as internal standards. The peak patterns are indicated as follows: s, singlet; d, doublet; t, triplet; m, multiplet and br-, broad. The coupling constants, *J*, are reported in Hertz (Hz). DEPT-90 and DEPT-135 analyses were used to identify primary, secondary, tertiary and quaternary carbon sites. DMF and acetonitrile were distilled prior to use from CaH_2. After the reactions were completed, the organic extracts were concentrated by using an evaporator, and then the residues were purified by chromatography on silica gel (Kanto, 63-210μm mesh silica gel, 60N). Mass spectra were measured in positive-ion on the AB SCIEX Triplet TOF 4600 System. Ultraviolet-visible (UV-vis) spectra were recorded on a Shimadzu UV-1800 spectrophotometer. Fluorescence (FL) spectra were recorded on a Hitachi High-Technologies F-4500. Phosphorescence (Phos) spectra were recorded on a JASCO corporation FP6500. Elemental analysis of the monomers and polymers were performed with a Perkin-Elmer 2400 CHN Elemental Analyzer. The number-average molecular weight (M_n) and the weight-average molecular weight (M_w) of the polymers were estimated by a Shimadzu LC-solution GPC using polystyrene standards in $CHCl_3$. PL lifetime spectra were recorded on a HORIBA Fluorolog-3. Optical textures were observed by polarizing optical microscopy (POM) using an ECLIPS LV 100 polarizing microscope (Nikon, Japan). Cyclic voltammetry (CV) of the polymers in thin film state on Pt was carried out in CH_3CN (0.1 M Et_4NBF_4) at a sweep rate of 50 mV s^{-1} under a nitrogen atmosphere by using an HB-305 function generator and an HAL3001 potentiostat (Hokuto Denko) equipped with a Pt inlay-disk as the working electrode, a Pt plate as the counter electrode, and a saturated calomel electrode (SCE) as the reference. The electrochemical data (vs SCE) obtained by cyclic voltammetry were corrected with the redox potential (4.8 eV) of ferrocene/ferricinium^{+}.[33-35]

2) Results of DFT calculation

Table S1. Calculated HOMO, LUMO, Bandgap, S1, T1 values from DFT and TD-DFT at B3LYP/6-31g(d) level.

	HOMO(eV)	LUMO(eV)	Bandgap(eV)	S_1@S_0(eV)	T_1@S_0(eV)	ΔE_{st}(eV)
M0	-5.42	-1.95	3.47	3.04	2.70	0.35
M1	-5.41	-1.96	3.45	2.98	2.82	0.16
M2	-5.42	-1.95	3.47	2.97	2.97	0.01
M1Me	-5.23	-1.93	3.30	2.84	2.71	0.13
M1MeO	-4.85	-1.91	2.94	2.52	2.41	0.11
P0(trimer)	-5.21	-1.94	3.27	2.91	2.64	0.27
P1(trimer)	-5.12	-1.95	3.18	2.83	2.65	0.19
P2(trimer)	-5.12	-1.93	3.19	2.86	2.63	0.23
P1Me(trimer)	-5.22	-1.94	3.28	2.84	2.72	0.13
P1MeO(trimer)	-4.78	-1.86	2.92	2.51	2.41	0.10
PCzC8(trimer)	-5.06	-1.18	3.88	3.47	2.65	0.83

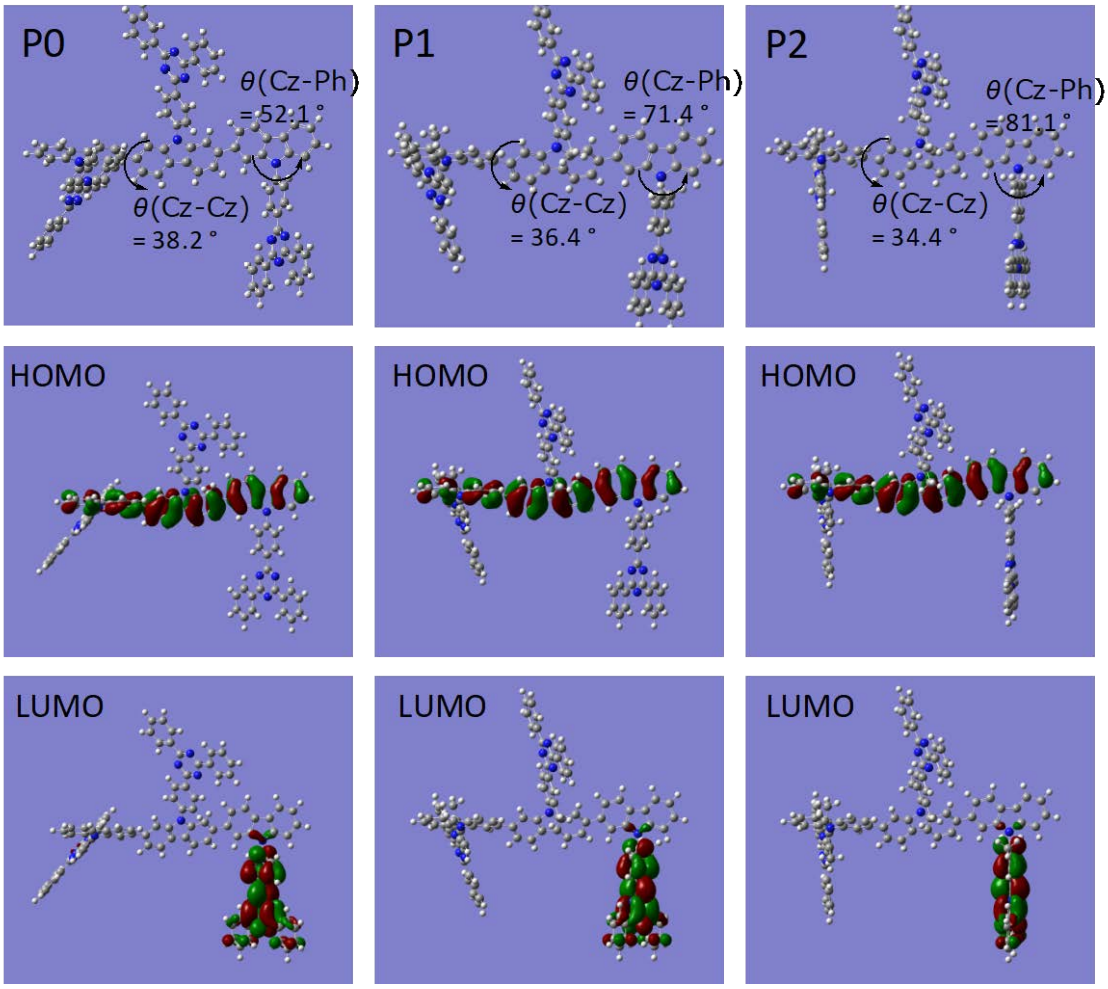


Fig. S1 Optimized geometries and calculated FMOs for trimers **P0**-**P2**.

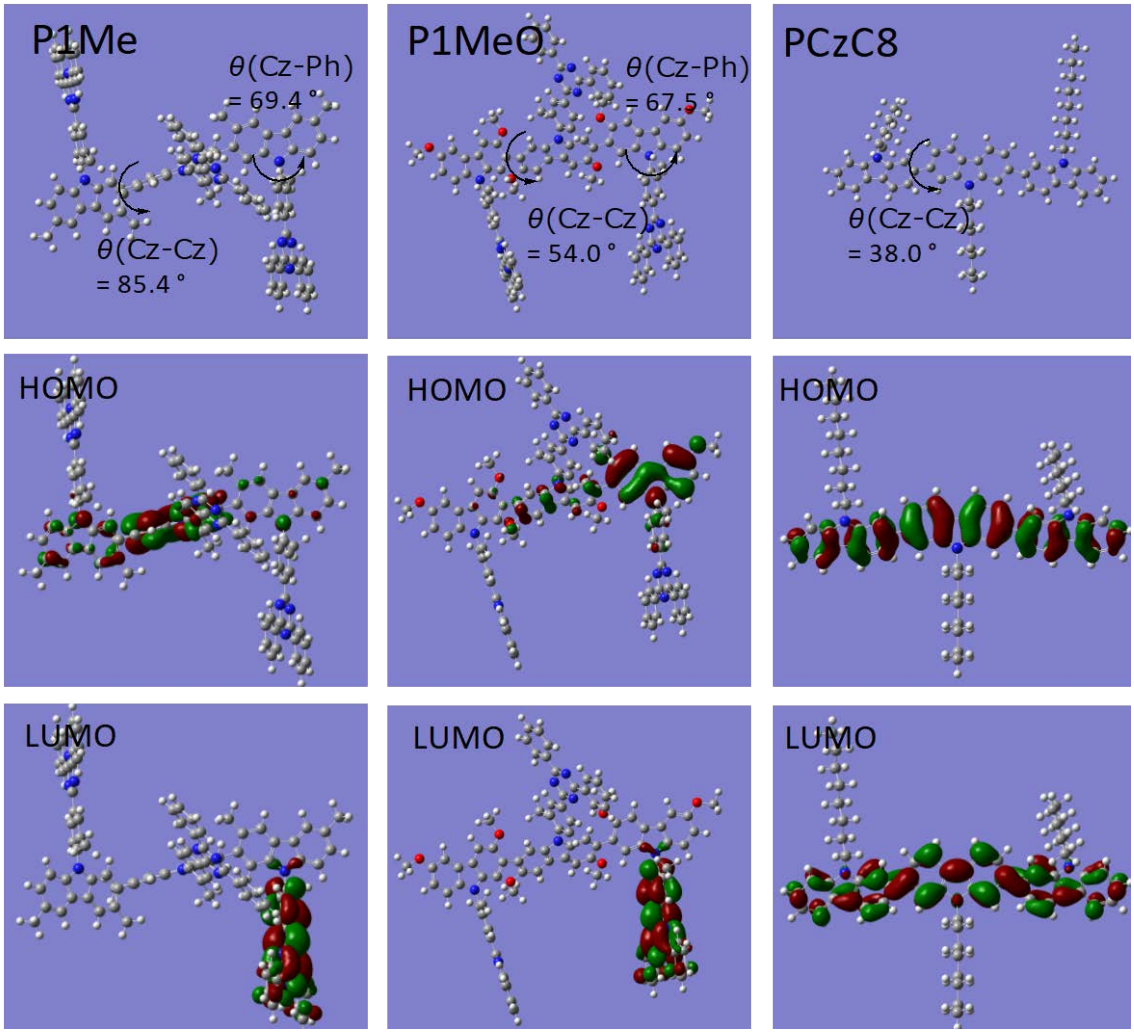


Fig. S2 Optimized geometries and calculated FMOs for trimers of **P1Me**, **P1MeO** and **PCzC8**.

3) Optical properties of polymers

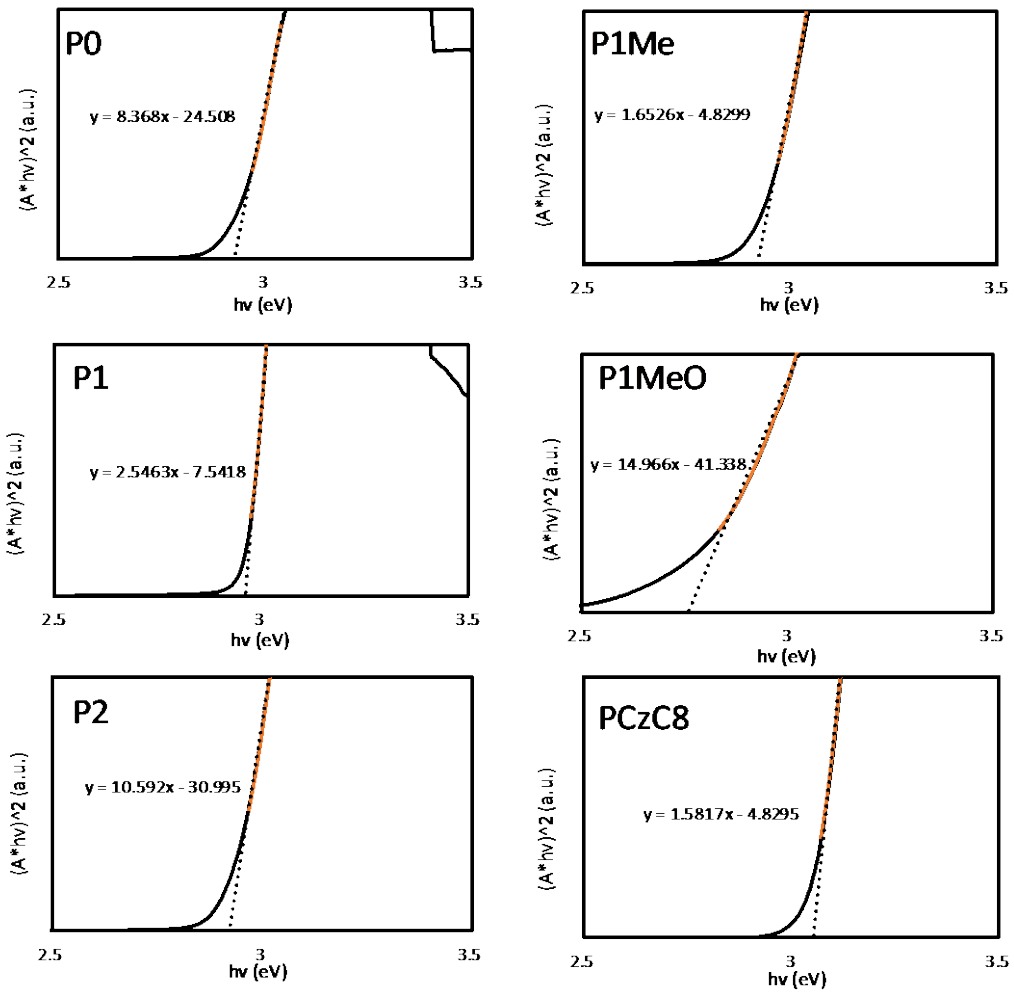


Fig. S3 Estimation of E_g values of **P0**-**P2**, **P1Me**, **P1MeO** and **PCzC8** from their absorption edges in the film state.

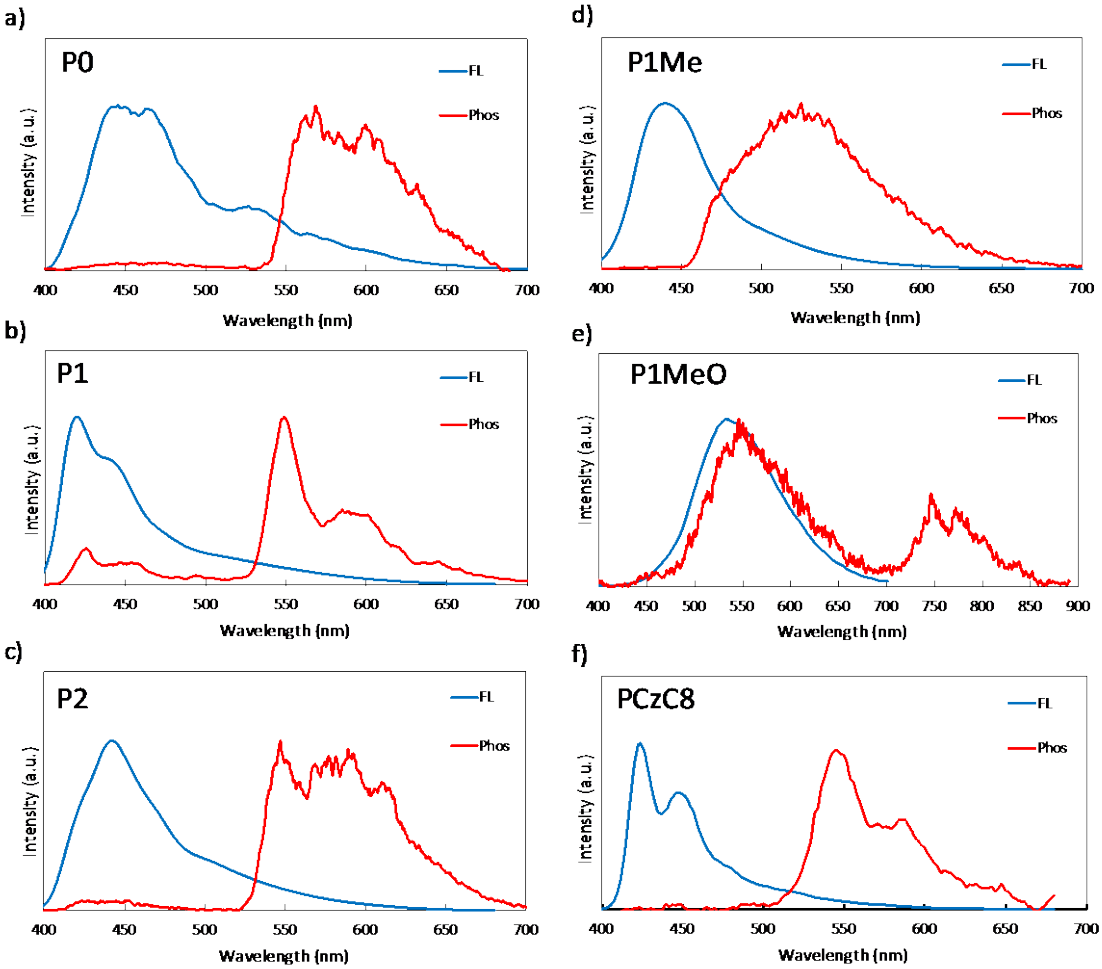


Fig. S4 Estimation of E_S and E_T values of **P0**, **P1**, **P2**, **P1Me**, **P1MeO** and **PCzC8** from their from 0-0 peak of the fluorescence and phosphorescence edges in the film state.

4) Electrochemical properties of polymers

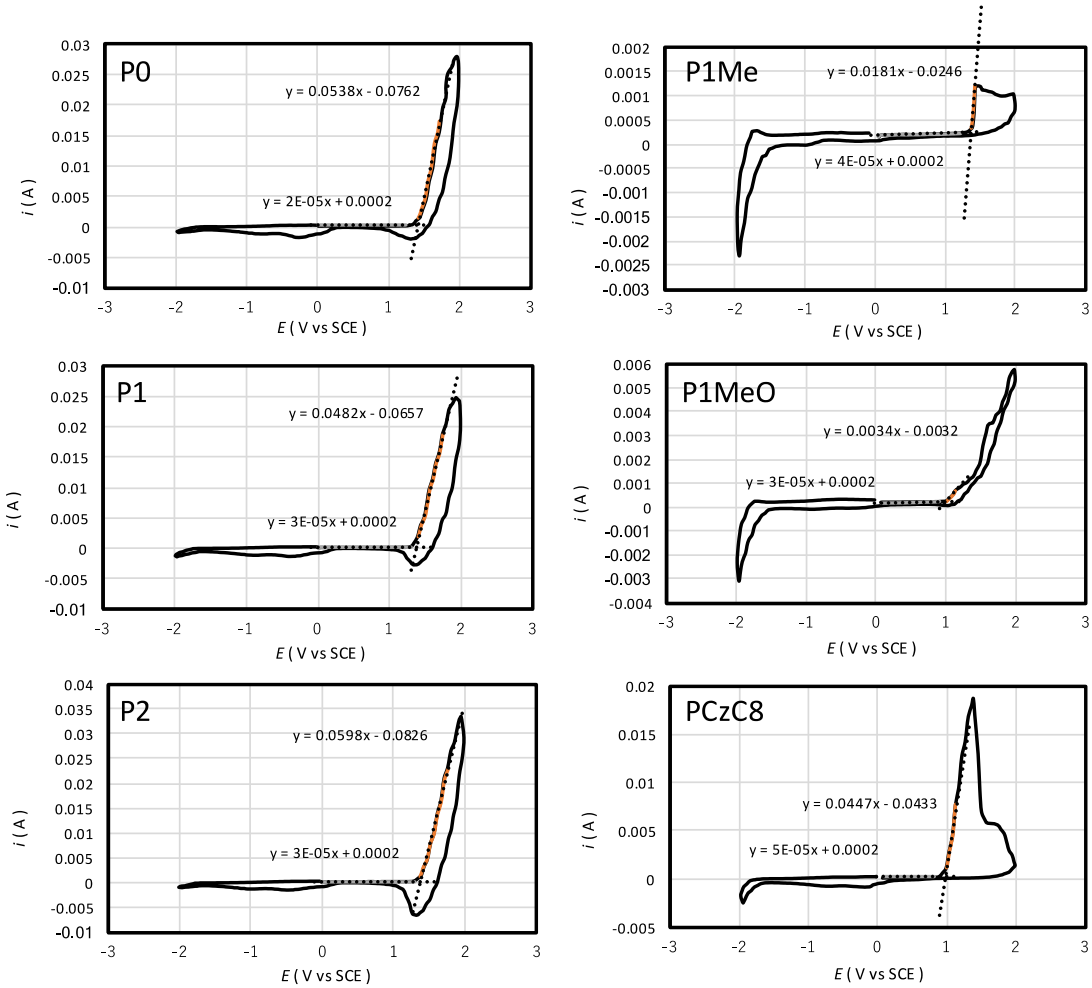


Fig. S5 Cyclic voltammograms of the **P0**-**P2**, **P1Me**, **P1MeO** and **PCzC8** measured at a scan rate of 50 mV/s in acetonitrile solution (0.1 M Et_4NBF_4).

5) The orientation of polymers

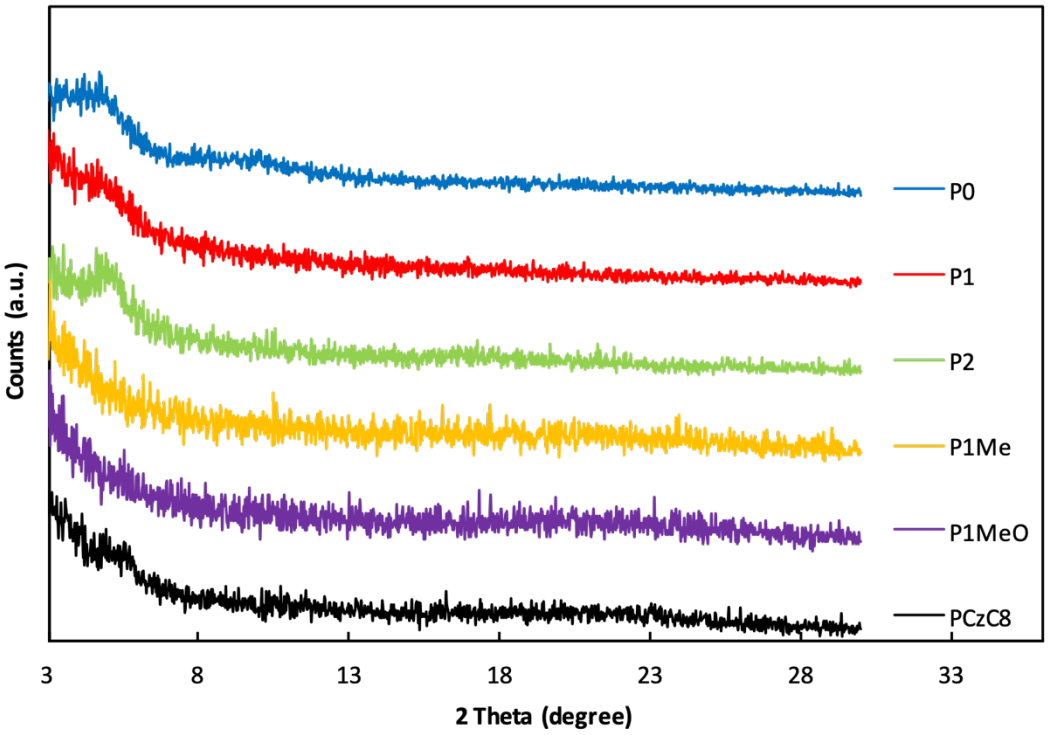


Fig. S6 X-ray diffraction patterns of the drop cast films of the polymers.

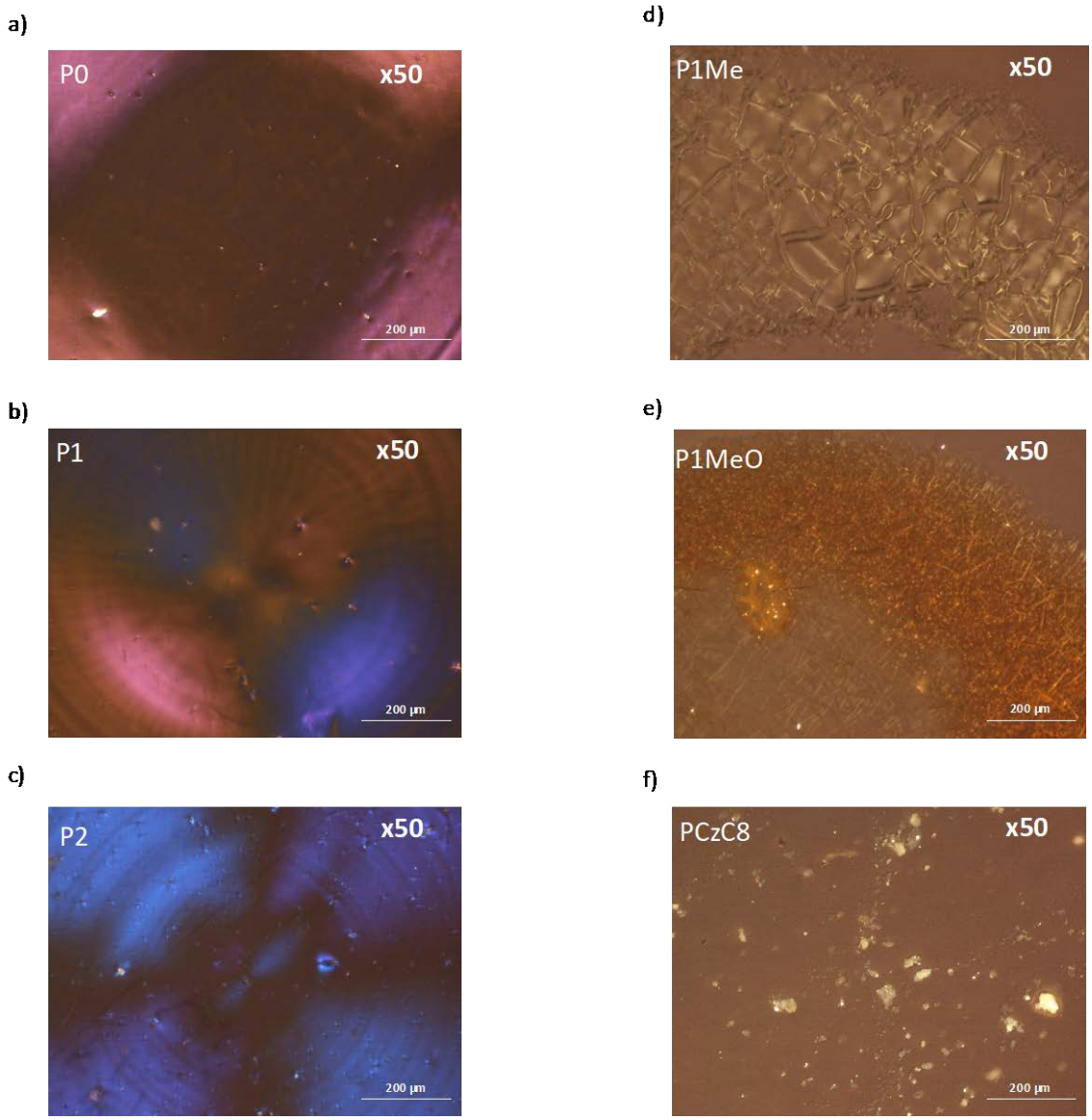


Fig. S7 Polarizing optical microscope images of drop cast films of the polymers using toluene as the solvent.

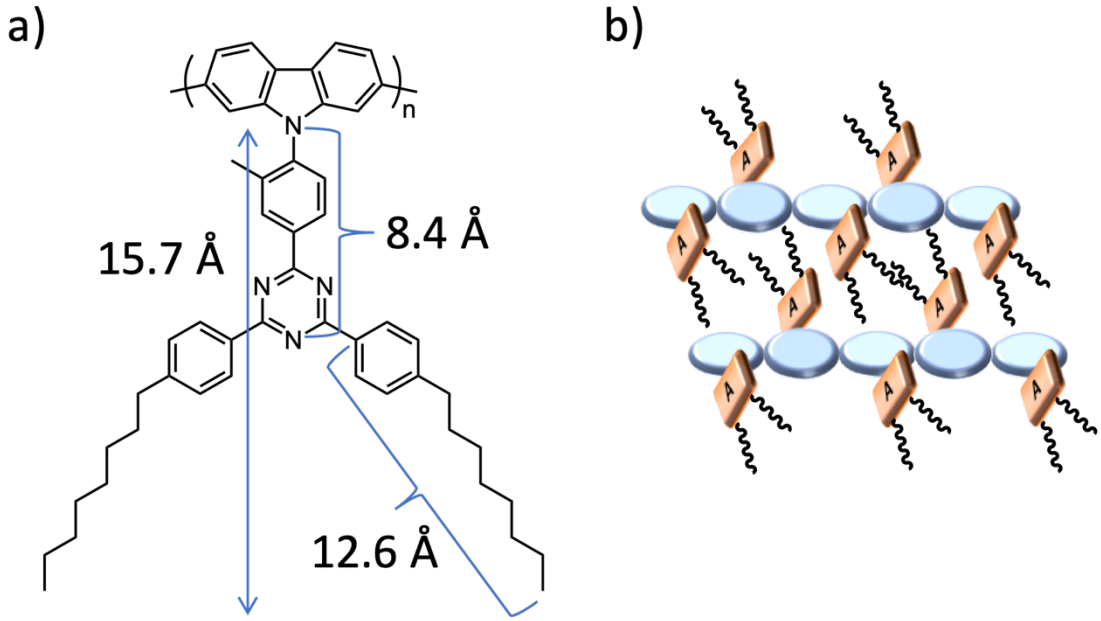
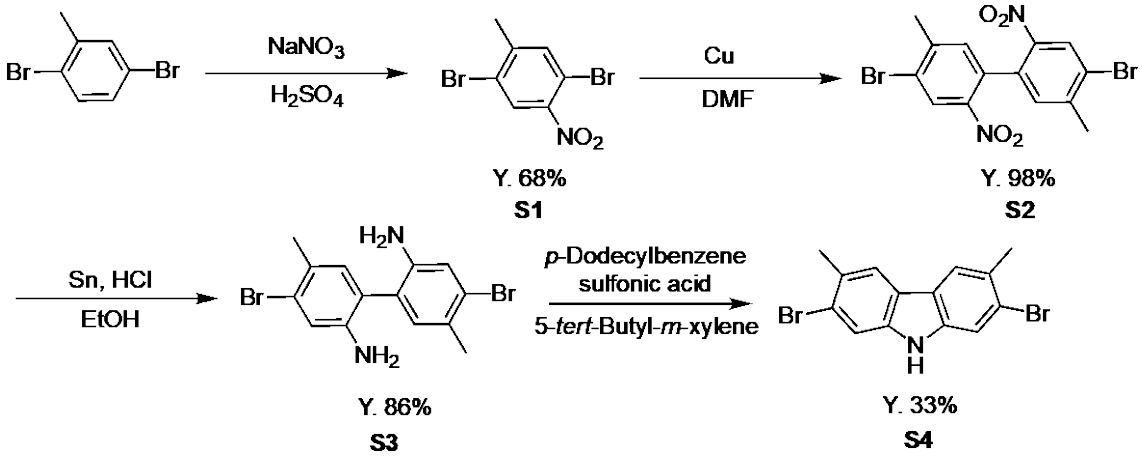


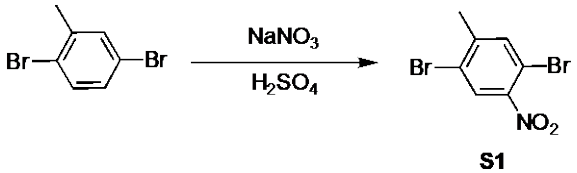
Fig. S8 a) Size of **P1** calculated by DFT. b) Image of polymer orientation at **P0**-**P2**.

6) Synthesis of monomers and polymers



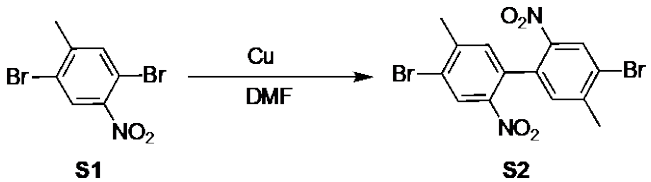
Scheme S1 Synthesis route of 3,6-dimethyl-2,7-dibromocarbazole.

2,5-Dibromo-4-nitrotoluene (**S1**)



A mixture of 2,5-Dibromotoluene (1.02 g, 4.08 mmol) was dissolved in concentrated H_2SO_4 (4 mL) and stirred magnetically at 0 °C. $NaNO_3$ (376 mg, 4.43 mmol) was added dropwise and stirring for 2 h. The reaction mixture was poured onto ice, and neutralized with NaOH. The precipitate was filtered off, washed with water, dried, and recrystallized from ethanol. The obtained crystal was further dried in vacuo to give 2,5-Dibromo-4-nitrotoluene (**S1**) as a yellow powder (527 mg, 44%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.08 (s, 1 H), 7.62 (s, 1 H), 2.46 (s, 3 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS), δ (ppm): 147.7, 144.8, 136.4, 129.4, 123.7, 113.2, 22.8.

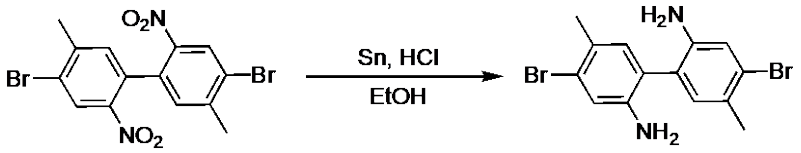
4,4'-Dibromo-5,5'-dimethyl-2,2'-dinitrobiphenyl (**S2**)



A mixture of 2,5-dibromo-4-nitrotoluene (**S1**) (296 mg, 1.02 mmol) and copper powder (153 mg, 2.42 mmol) in DMF (2.7 mL) was heated at 120 °C with stirring for 2 h. The

reaction mixture was cooled to ambient temperature. Unreacted copper powder and insoluble materials were filtered off. The filtrate was washed with a saturated NaCl solution and dried over $MgSO_4$, and then the solvent was removed in vacuo. The obtained residue was further dried in vacuo to give 4,4'-dibromo-5,5'-dimethyl-2,2'-dinitrobiphenyl (**S2**) as a yellow powder (0.21 g, 98%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.08 (s, 2 H), 7.62 (s, 2 H), 2.46 (s, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS), δ (ppm): 145.1, 145.0, 132.5, 132.3, 128.8, 124.8, 23.1. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 28.

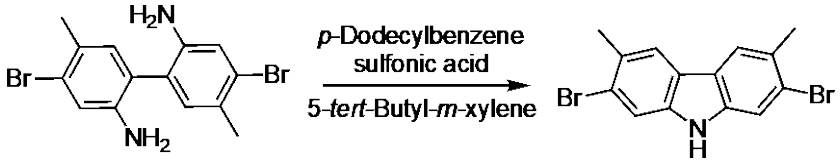
4,4'-Dibromo-5,5'-dimethylbiphenyl-2,2'-diamine (**S3**)



S2 **S3**

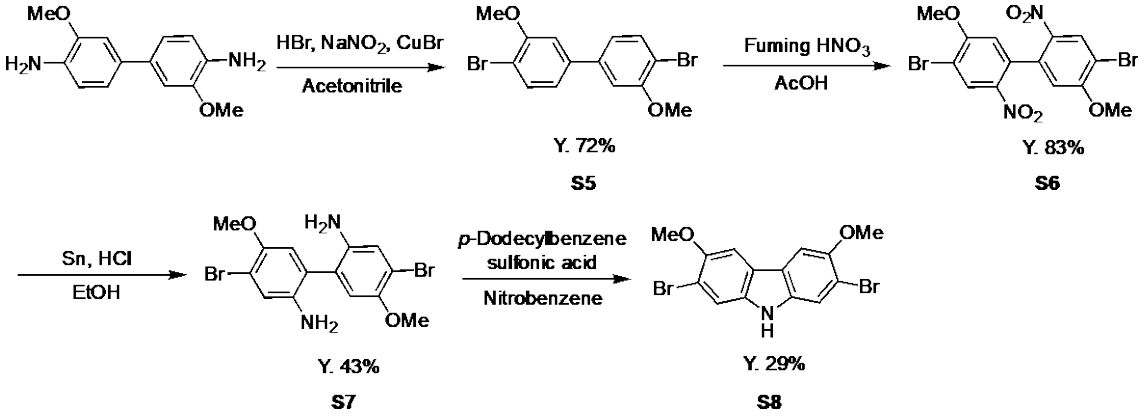
To a mixture of 4,4'-dibromo-5,5'-dimethyl-2,2'-dinitrobiphenyl (**S2**) (314 mg, 0.731 mmol), ethanol (4 mL), and 12 M hydrochloric acid (1.6 mL) was added tin powder (312 mg, 2.63 mmol). The reaction mixture was then refluxed for 1.5 h, and an additional portion of tin powder (311 mg, 2.62 mmol) was added. The reaction mixture was then refluxed 14 h. The reaction mixture was cooled to ambient temperature, and the unreacted tin powder was filtered off. The filtrate was poured onto a mixture of ice and 10 wt% NaOH aqueous solution and then extracted with CH_2Cl_2 (× 3). The organic layer was then washed with distilled water (× 3) and dried over $MgSO_4$ and then the solvent was removed in vacuo. The obtained residue was further dried in vacuo to give 4,4'-dibromo-5,5'-dimethylbiphenyl-2,2'-diamine (**S3**) as a pale yellow powder (230 mg, 85%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 6.99 (s, 2 H), 6.93 (s, 2 H), 3.63 (br-s, 4 H), 2.23 (s, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 142.0, 131.6, 126.7, 123.8, 122.1, 118.0, 20.6. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 28.

2,7-dibromo-3,6-dimethyl-9*H*-carbazole (**S4**)



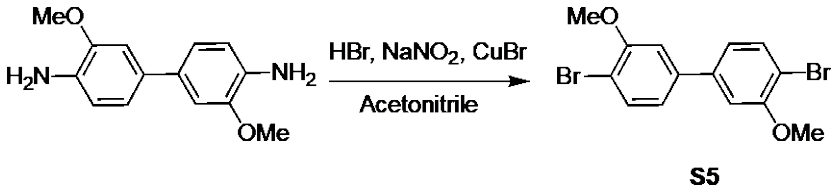
S3 **S4**

A mixture of 4,4'-dibromo-5,5'-dimethylbiphenyl-2,2'-diamine (**S3**) (179 mg, 0.481 mmol) and 4-dodecylbenzenesulfonic acid (356 mg, 1.09 mmol) in 5-*tert*-butyl-m-xylene (3 mL) was refluxed for 24 h. The solution was evaporated to dryness upon distillation of the solvent in vacuo. The residue was purified by column chromatography (hexane : toluene = 2 : 1), giving 2,7-dibromo-3,6-dimethyl-9*H*-carbazole (**S4**) as a white powder (56.1 mg, 33%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 7.85-7.82 (m, 3 H), 7.60 (s, 2 H), 2.54 (s, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm):138.9, 128.7, 122.5, 122.4, 121.4, 114.3, 23.1. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 28.



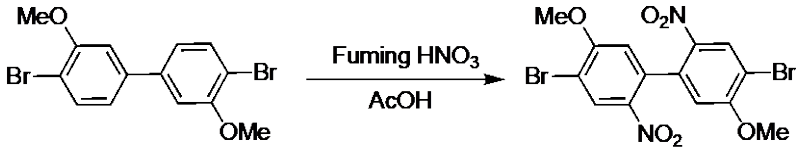
Scheme S2 Synthesis route of 3,6-dimethoxy-2,7-dibromocarbazole.

4,4'-Dibromo-3,3'-dimethoxylbiphenyl (**S5**)



o-Dianisidine (1.00 g, 5.09 mmol) was dissolved in a mixture of 8% hydrobromic acid (20 mL) and acetonitrile (16 mL). The solution was cooled to 0 °C and sodium nitrite (720 mg, 10.4 mmol) in cold water (1.4 mL) was added to the mixture with stirring, the temperature being kept below 10 °C. CuBr (1.30 g, 9.06 mmol) in hydrobromic acid (16 mL) was added to the cold above mixture with vigorous stirring, and after the mixture warmed up to the ambient temperature it was heated until the evolution of nitrogen ceased for 14 h. The mixture was extracted with chloroform, which was washed with water. The organic layer was dried over anhydrous $MgSO_4$. After filtration, the filtrate was evaporated to obtain crude product. The crude product was purified by washing with hexane : CH_2Cl_2 = 2 : 1, giving a target compound 4,4'-dibromo-3,3'-dimethoxylbiphenyl (**S5**) (1.10 g, 72%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ(ppm): 7.59 (d, J = 8.3 Hz, 2 H), 7.05-7.00 (m, 4 H), 3.97 (s, 6 H). ^{13}C NMR (100 MHz, $CDCl_3$, TMS) δ (ppm): 156.1, 141.2, 133.5, 120.5, 110.8, 76.5, 57.1. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 30, 36.

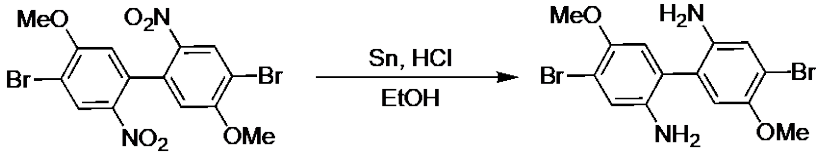
4,4'-Dibromo-2,2'-dinitro-5,5'-dimethoxybiphenyl (**S6**)



S5 **S6**

To a mixture of compound 4,4'-dibromo-3,3'-dimethoxylbiphenyl (**S5**) (1.00 g, 2.69 mmol) and AcOH (14 mL) in an ice bath was added dropwise a fuming nitric acid (4 mL). The reaction mixture was stirred at 100 °C for 2 h. The mixture was poured into water (400 mL) and the precipitate was collected by filtration and washed with water. A pale yellow solid was subjected to recrystallization from ethanol, giving a pale yellow powder 4,4'-dibromo-2,2'-dinitro-5,5'-dimethoxybiphenyl (**S6**) (1.03 g, 83%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ(ppm): 8.55 (s, 2 H), 6.66 (s, 2 H), 3.97 (s, 6 H). ^{13}C NMR (100 MHz, $CDCl_3$, TMS) δ (ppm): 159.9, 139.7, 135.6, 130.5, 112.1, 111.6, 57.1. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 30, 36.

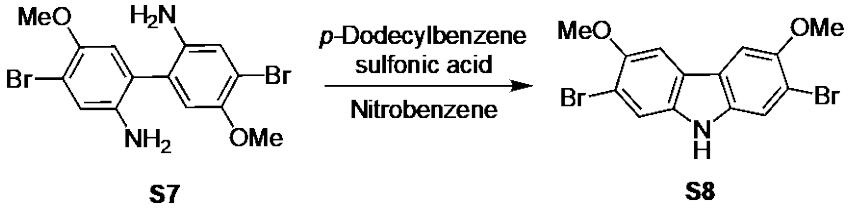
4,4'-Dibromo-5,5'-dimethoxy-2,2'-diaminobiphenyl (**S7**)



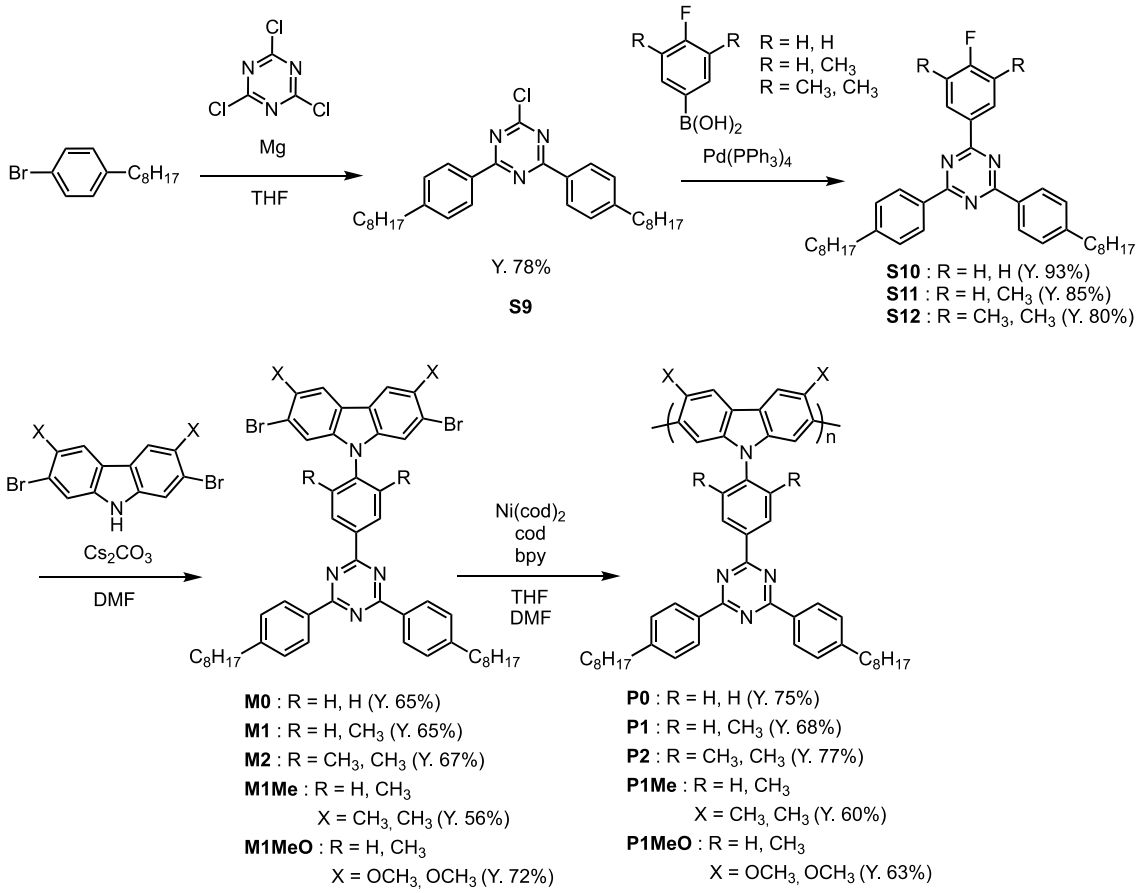
S6 **S7**

Tin powder (2.01 g, 16.9 mmol) was added to a mixture of 4,4'-dibromo-2,2'-dinitro-5,5'-dimethoxybiphenyl (**S6**) (2.02 g, 4.37 mmol), dry ethanol (24 mL), and 12 M hydrochloric acid (12 mL). The reaction mixture was then refluxed for 14 h and cooled to ambient temperature. The solvent was removed by evaporation. The precipitate was dissolved in CH_2Cl_2 and 10% aqueous NaOH was added to the solution. The organic layers were combined and dried over anhydrous $MgSO_4$. After filtration, the organic layer was evaporated to obtain crude product. The crude product was purified by washing with methanol, giving a target compound 4,4'-dibromo-5,5'-dimethoxy-2,2'-diaminobiphenyl (**S7**) as a colorless powder (1.11 g, 48%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ(ppm): 7.10 (s, 2 H), 6.72 (s, 2 H), 3.84 (s, 6 H). ^{13}C NMR (100 MHz, $CDCl_3$, TMS) δ (ppm): 149.1, 138.4, 123.8, 120.7, 114.8, 112.3, 57.0. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 30, 36.

2,7-dibromo-3,6-dimethoxy-9*H*-carbazole (**S8**)

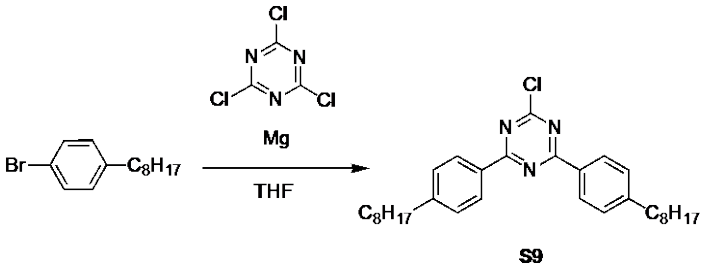


A mixture of 4,4'-dibromo-5,5'-dimethoxy-2,2'-diaminobiphenyl (**S7**) (1.01 g, 2.51 mmol) and 4-dodecylbenzenesulfonic acid (1.09 g, 4.77 mmol) in nitrobenzene (15 mL) was refluxed for 2 h. The reaction mixture was cooled to ambient temperature and the solvent was removed by evaporation. The crude product was purified by silica gel column chromatography (CH_2Cl_2) giving a target compound 2,7-dibromo-3,6-dimethoxy-9*H*-carbazole (**S8**) (30.1 mg, 29%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ(ppm): 7.79 (s, 1 H), 7.63 (s, 2 H), 7.49 (s, 2 H), 4.02 (s, 6 H). ^{13}C NMR (100 MHz, acetone-d_6) δ (ppm):149.9, 135.9, 122.8, 115.7 110.7, 103.4, 56.5. The ^{1}H-NMR and ^{13}C-NMR spectra were consistent with that reported in Ref. 30, 36.



Scheme S3 Synthesis routes of polymers.

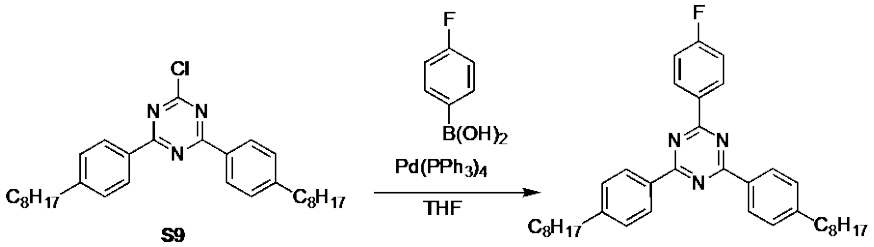
4,6-Bis(4-octaphenyl)-2-chloro-1,3,5-triazine (**S9**)



A mixture of Mg (69.7 mg, 2.87 mmol) and 1-bromo-4-n-octylbenzene (735 mg, 2.73 mmol) in THF (9 mL) was refluxed for 2 h. The reaction mixture was cooled to 0 °C, cyanuric chloride (210 mg, 1.14 mmol) in THF (2 mL) was added and the mixture was stirred at room temperature for 14 hours. After the reaction quenched with 1M HCl, the resulting product was extracted with dichloromethane (× 3) and washed with water. The combined organic extracts were dried over $MgSO_4$ and concentrated by rotary evaporation. The crude product was purified by column chromatography on silica gel

using 2 : 1 hexane / benzene as eluent to afford **S9** as a white solid (420 mg, 75%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.52 (d, J = 8.3 Hz, 4 H), 7.35 (d, J = 8.3 Hz, 4 H), 2.71 (t, J = 7.7 Hz, 4 H), 1.67-1.65 (m, 4 H), 1.34-1.28 (m, 20 H), 0.90-0.86 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 173.2, 172.0, 149.3, 132.0, 129.4, 128.9, 36.2, 31.9, 31.2, 29.5, 29.3, 29.3, 22.7, 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{31}H_{42}ClN_3Na$: 514.2965; found, 514.2929.

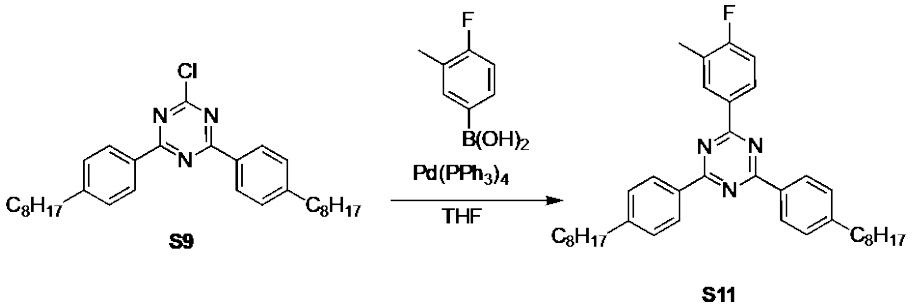
4,6-Bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S10**)



S10

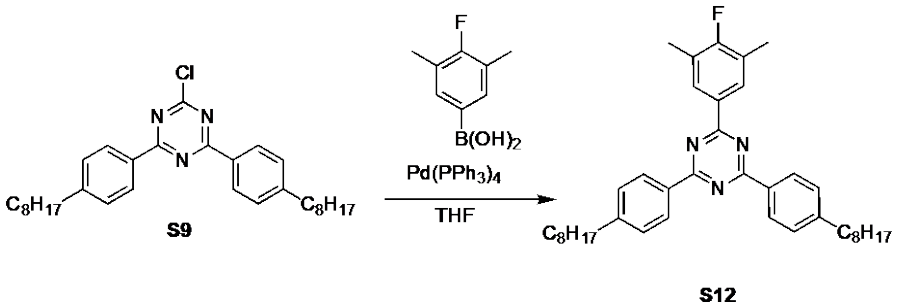
A mixture of 4-fluorophenylboronic acid (79.3 mg, 0.571 mmol), 2-chloro-4,6-diphenyl-1,3,5-triazine (**S9**) (253 mg, 0.510 mmol), potassium carbonate (170 mg, 1.21 mmol) and tetrakis(triphenylphosphine)palladium (30.2 mg, 0.031 mmol) in 5.2 mL THF and 2.3 mL water under Ar was refluxed for 8 h. After cooling to room temperature, the resulting product was extracted with dichloromethane (× 3) and washed with water. The combined organic extracts were dried over $MgSO_4$ and concentrated by rotary evaporation. The crude product was purified by column chromatography on silica gel using 6 : 1 hexane / dichloromethane as eluent to afford **S10** as a white solid (244 mg, 86%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.80-8.76 (m, 2 H), 8.66 (d, J = 8.4 Hz, 4 H), 7.37 (d, J = 8.4 Hz, 4 H), 7.24-7.22 (m, 2 H), 2.73 (t, J = 7.7 Hz, 4 H), 1.70-1.67 (m, 4 H), 1.35-1.28 (m, 20 H), 0.90-0.87 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.6, 170.4, 165.8 (d, J = 251.0 Hz), 148.1, 133.8, 132.7 (d, J = 2.7 Hz), 131.2 (d, J = 8.7 Hz), 129.0, 128.8, 115.6 (d, J = 21.6 Hz), 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 22.7, 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{37}H_{46}FN_3Na$: 574.3573; found, 574.3525.

4,6-Bis(4-octaphenyl)-2-(4-fluoro-3-methylphenyl)-1,3,5-triazine (**S11**)



4,6-Bis(4-octaphenyl)-2-(4-fluoro-3-methylphenyl)-1,3,5-triazine (**S11**) was synthesized according to the same procedure as for 4,6-bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S10**) by using 4-fluoro-3-methylphenylboronic acid (87.8 mg, 0.571 mmol) instead of 4-fluorophenylboronic acid. After evaporation of the solvent, the crude product was subjected to column chromatography on silica gel using 6 : 1 hexane / dichloromethane as eluent to afford **S11** as a white solid (239 mg, 82%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.66-8.60 (m, 6 H), 7.37 (d, J = 8.1 Hz, 4 H), 7.17 (t, J = 8.7 Hz, 1 H), 2.73 (t, J = 7.6 Hz, 4 H), 2.43 (s, 3 H), 1.70-1.65 (m, 4 H), 1.34-1.28 (m, 20 H), 0.90-0.87 (t, J = 8.7 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.5, 170.6, 165.3 (d, J = 250.2 Hz), 148.0, 133.8, 132.4 (d, J = 6.0 Hz), 132.3 (d, J = 3.0 Hz), 128.9, 128.7, 128.6 (d, J = 9.0 Hz), 125.1 (d, J = 17.5 Hz), 115.3 (d, J = 22.7 Hz), 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 22.7, 14.7 (d, J = 3.3 Hz), 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{38}H_{48}FN_3Na$: 588.3730; found, 588.3681.

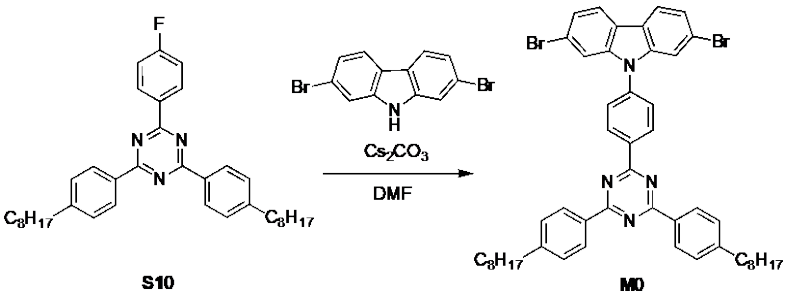
4,6-Bis(4-octaphenyl)-2-(4-fluoro-3,5-dimethylphenyl)-1,3,5-triazine (**S12**)



4,6-Bis(4-octaphenyl)-2-(4-fluoro-3,5-dimethylphenyl)-1,3,5-triazine (**S12**) was synthesized according to the same procedure as for 4,6-bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S11**) by using 4-fluoro-3,5-dimethylphenylboronic acid (95.7 mg, 0.570 mmol) instead of 4-fluorophenylboronic acid. After evaporation of the solvent, the crude product was subjected to column chromatography on silica gel using

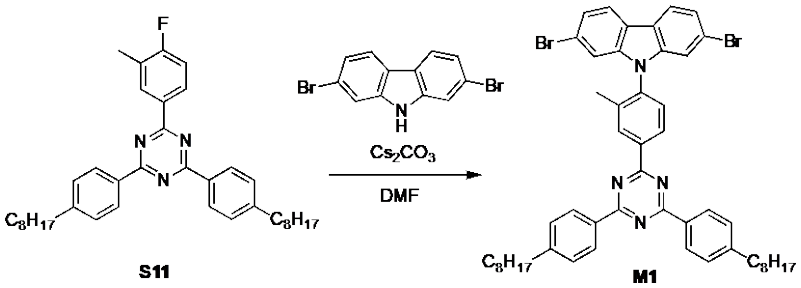
6 : 1 hexane / dichloromethane as eluent to afford **S12** as a yellow solid (230 mg, 77%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.65 (d, J = 8.4 Hz, 4 H), 8.43 (d, J = 7.2 Hz, 2 H), 7.37 (d, J = 8.4 Hz, 4 H), 2.73 (t, J = 7.7 Hz, 4 H), 2.41 (m, 6 H), 1.70-1.67 (m, 4 H), 1.34-1.28 (m, 20 H), 0.89 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.5, 170.8, 162.9 (d, J =249.1 Hz), 148.0, 133.9, 131.5 (d, J = 3.5 Hz), 129.9 (d, J = 6.0 Hz), 128.9, 128.7, 124.8 (d, J = 18.3 Hz), 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 22.7, 14.8 (d, J = 4.1 Hz), 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{39}H_{50}FN_3Na$: 602.3886; found, 602.3837.

9-(4-(4,6-Bis(4-octaphenyl)-1,3,5-triazin-2-yl)phenyl)-2,7-dibromocarbazole (**M0**)



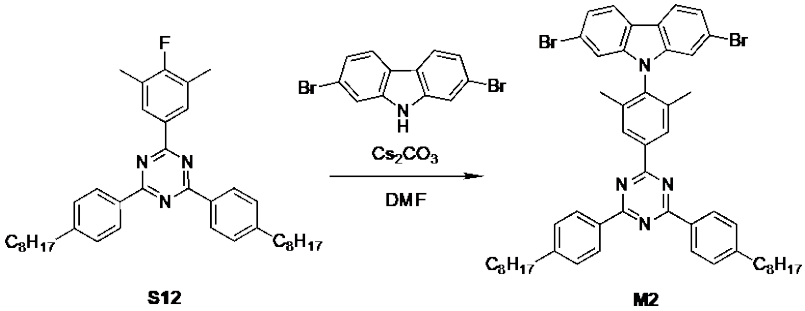
Under Ar atmosphere 2,7-dibromocarbazole (122 mg, 0.381 mmol) was added to a schlenk flask equipped with a reflux condenser. Addition of cesium carbonate (529 mg, 1.62 mmol) followed by DMF (5 mL) resulted in a suspension, which was stirred for 30 min at room temperature. Afterwards, 2-(4-fluorophenyl)-4,6-diphenyl-1,3,5-triazine (**S10**) (187.0 mg, 0.340 mmol) was poured in all in once and reaction mixture was stirred at 150 °C for 14 h. The black mixture was diluted with water and crude product was extracted with dichloromethane (× 3). Organic phases were dried over $MgSO_4$ and solvent was removed. **M0** (193 mg, 67%) was isolated as white solid after purification by column chromatography on silica gel using 4 : 1 hexane / benzene as eluent. ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 9.04 (d, J = 8.7 Hz, 2 H), 8.72 (d, J = 8.3 Hz, 4 H), 7.98 (d, J = 8.3 Hz, 2 H), 7.74 (d, J = 8.7 Hz, 2 H), 7.64 (d, J = 1.5 Hz, 2 H), 7.44 (dd, J = 1.5 Hz and J = 8.3 Hz, 2 H), 7.40 (d, J = 8.3 Hz, 4 H), 2.75 (t, J = 7.7 Hz, 4 H), 1.72-1.69 (m, 4 H), 1.36-1.29 (m, 20 H), 0.89 (t, J = 6.7 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.7, 170.4, 148.3, 141.4, 139.9, 136.2, 133.7, 130.9, 129.0, 128.8, 126.6, 124.0, 122.0, 121.5, 120.2, 113.2, 36.2, 31.9, 31.3, 29.5, 29.4, 29.3, 22.7, 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{49}H_{52}Br_2N_4Na$: 879.2436; found, 879.2403.

9-(4-(4,6-Bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromocarbazole (**M1**)



M1 was synthesized according to the same procedure as for **M0** by using 4,6-bis(4-octaphenyl)-2-(4-fluoro-3-methylphenyl)-1,3,5-triazine (**S11**) (192 mg, 0.340 mmol) instead 4,6-bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S10**). After evaporation of the solvent, the crude product was subjected to column chromatography on silica gel using 4 : 1 hexane / benzene as eluent to afford **M1** as a white solid (195 mg, 66%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.86 (d, J = 1.6 Hz, 1 H), 8.80 (dd, J = 1.6 Hz and J = 8.2 Hz, 1 H), 8.71 (d, J = 8.4 Hz, 4 H), 7.99 (d, J = 8.4 Hz, 2 H), 7.54 (d, J = 8.2 Hz, 1 H), 7.43 (dd, J = 1.5 Hz and J = 8.4 Hz, 2 H), 7.41 (d, J = 8.4 Hz, 4 H) 7.24 (d, J = 1.5 Hz, 2 H), 2.76-2.73 (t, J = 7.7 Hz, 4 H), 2.15 (s, 3 H), 1.72-1.69 (m, 4 H), 1.36-1.25 (b r-m, 20 H), 0.90-0.87 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.8, 170.1, 148.3, 141.9, 138.3, 137.6, 137.4, 133.7, 132.3, 130.9, 129.3, 129.1, 128.8, 128.3, 123.6, 121.6, 121.6, 121.6, 120.2, 113.1, 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 22.7, 17.9, 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{50}H_{54}Br_2N_4Na$: 898.2592; found, 893.2543.

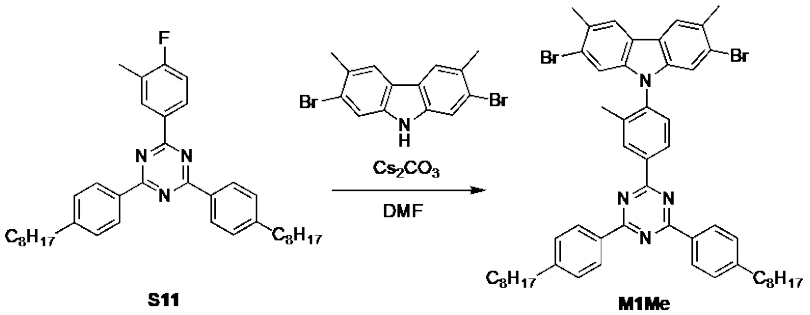
9-(4-(4,6-Bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2,6-dimethylphenyl)-2,7-dibromocarbazole (**M2**)



M2 was synthesized according to the same procedure as for **M0** by using 4,6-bis(4-octaphenyl)-2-(4-fluoro-3,5-dimethylphenyl)-1,3,5-triazine (**S12**) (197 mg, 0.343 mmol) instead 4,6-bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S10**). After evaporation

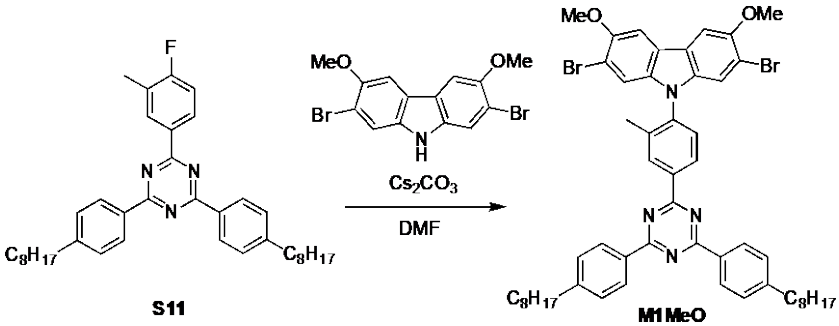
of the solvent, the crude product was subjected to column chromatography on silica gel using 4 : 1 hexane / benzene as eluent to afford **M2** as a white solid (180 mg, 60%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.71 (d, J = 8.4 Hz, 4 H), 8.65 (s, 2 H), 8.00 (d, J = 8.4 Hz, 2 H), 7.42 (dd, J = 1.5 Hz and J = 8.4 Hz, 2 H), 7.41 (d, J = 8.3 Hz, 4 H), 7.13 (d, J = 1.5 Hz, 2 H), 2.74 (t, J = 7.7 Hz, 4 H), 2.04 (s, 6 H), 1.72-1.68 (m, 4 H), 1.35-1.26 (m, 20 H), 0.99 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.8, 170.1, 148.3, 141.9, 138.3, 137.6, 137.4, 133.7, 132.3, 130.9, 129.3, 129.1, 128.8, 128.3, 123.6, 121.6, 121.6, 121.6, 120.2, 113.1, 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 22.7, 17.9, 14.1. HRMS m/z: $[M + Na]^+$ calcd. for $C_{51}H_{56}Br_2N_4Na$: 907.2749; found, 907.2701.

9-(4-(4,6-Bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethylcarbazole (**M1Me**)



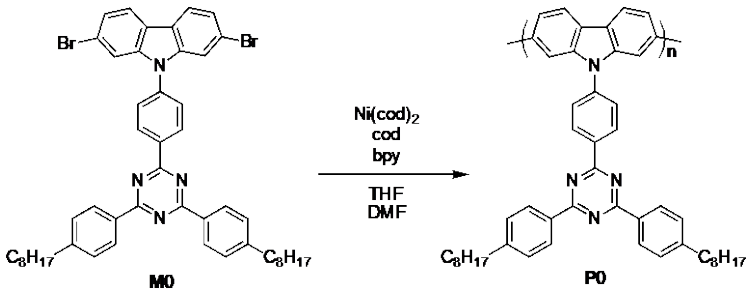
M1Me was synthesized according to the same procedure as for **M1** by using 3,6-dimethyl-2,7-dibromocarbazole (134 mg, 0.382 mmol) instead 2,7-dibromocarbazole. After evaporation of the solvent, the crude product was subjected to column chromatography on silica gel using 10 : 1 hexane / toluene as eluent to afford as **M1Me** a white solid (150 mg, 49%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.84 (d, J = 1.5 Hz, 1 H), 8.78 (dd, J = 1.5 Hz and J = 8.3 Hz, 1 H), 8.71 (d, J = 8.3 Hz, 4 H), 7.96 (s, 2 H), 7.53 (d, J = 8.3 Hz, 1 H), 7.40 (d, J = 8.3 Hz, 4 H), 7.27 (s, 2 H), 2.74 (t, J = 7.7 Hz, 4 H), 2.58 (s, 6 H), 2.15 (s, 3 H), 1.70-1.69 (m, 4 H), 1.35-1.28 (m, 20 H), 0.89 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.8, 170.8, 148.3, 140.5, 138.9, 137.3, 137.3, 133.7, 132.3, 129.2, 129.1, 129.1, 128.8, 128.2, 122.9, 122.1, 121.6, 113.5, 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 23.1, 22.7, 17.9, 14.1.

9-(4-(4,6-Bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethoxycarbazole (**M1MeO**)



M1MeO was synthesized according to the same procedure as for **M1** by using 3,6-dimethoxy-2,7-dibromocarbazole (146.2 mg, 0.382 mmol) instead 2,7-dibromocarbazole. After evaporation of the solvent, the crude product was subjected to column chromatography on silica gel using 6 : 1 hexane / ethylacetate as eluent to afford **M1MeO** as a yellow solid(196 mg, 62%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.84 (d, J = 1.5 Hz, 1 H), 8.78 (dd, J = 1.5 Hz and J = 8.2 Hz, 1 H), 8.71 (d, J = 8.3 Hz, 4 H), 7.60 (s, 2 H), 7.53 (d, J = 8.2 Hz, 1 H), 7.40 (d, J = 8.3 Hz, 4 H), 7.30 (s, 2 H), 4.06 (s, 6 H), 2.74 (t, J = 7.7 Hz, 4 H), 2.15 (s, 3 H), 1.70-1.66 (m, 4 H), 1.35-1.28 (m, 20 H), 0.89 (t, J = 6.9 Hz, 6 H). ^{13}C NMR (150 MHz, $CDCl_3$, TMS) δ (ppm): 171.8, 170.7, 150.4, 148.2, 138.9, 137.3, 137.2, 136.5, 133.7, 132.3, 129.3, 129.0, 128.8, 128.1, 122.2, 114.8, 111.6, 102.9, 57.1, 36.1, 31.9, 31.3, 29.5, 29.3, 29.3, 22.7, 17.9, 14.1.

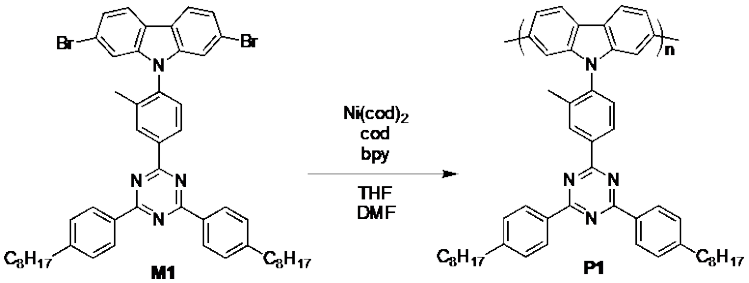
Poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)phenyl)-2,7-carbazole] (**P0**)



Into a mixture of nickelbis(cyclooctadiene) ($Ni(cod)_2$) (111 mg, 0.412 mmol), 2,2' -bipyridine (bpy) (124 mg, 0.792 mmol) and 1,5-cyclooctadiene (cod) (140 µL) in dry DMF (1 mL) was added a solution of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)phenyl)-2,7-dibromocarbazole (**M0**) (170 mg, 0.204 mmol) in dry THF (1 mL), which was heated at 80 °C for 3 days. After the reaction, bromobenzene (20 µL) was added and heated at 80 °

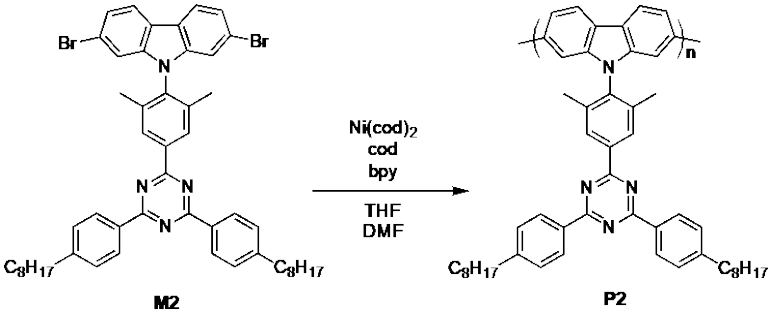
C for 3 hours to capping the active terminal of polymer. The reaction solution was poured into a solution of MeOH : conc. HCl (10:1), and the precipitated mixture was stirred for 1 h. After filtration, the solid precipitate dissolved in $CHCl_3$ was poured into a solution of MeOH : NH_3 (10:1), which was stirred for 1 h. After filtration, the solid precipitate was washed with MeOH to give polymers. The isolated product was dissolved in chloroform, which was washed with ethylenediaminetetraacetic acid (EDTA) saturated aqueous solution at pH 8. The organic layer was dried over $MgSO_4$ and evaporated under reduced pressure, giving polymers. **P0** was obtained as a yellow solid (78 mg, 56%); ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.63-7.51 (br-m, 18 H), 2.17 (br-s, 4 H), 1.74-1.45 (br-m, 4 H), 1.25-0.73 (br-m, 26 H); GPC data: M_n = 68 and M_w = 180 (kg/mol); Anal. Calcd. for $(C_{49}H_{52}N_4)_n$: C 84.20, H 7.79, N 8.02; Found: C 84.43, H 7.58, N 8.24.

Poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-carbazole] (**P1**)



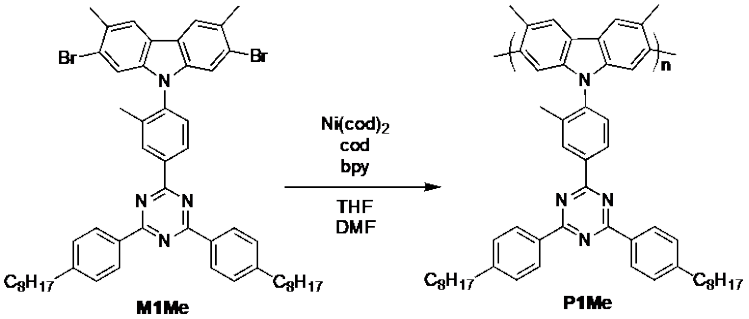
Similar to the procedure for the polymerization of **M0**, 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromocarbazole (**M1**) (66.6 mg, 0.080 mmol) in dry THF (0.4 mL) was added into a mixture of $Ni(cod)_2$ (43.6 mg, 0.161 mmol), bpy (47.8 mg, 0.322 mmol) and cod (55 µL) in dry DMF (0.4 mL), which was heated at 80 °C for 3 days. **P1** was obtained as a yellow solid (38.3 mg, 60%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.67-7.36 (br-m, 13 H), 6.99 (br-s, 4 H), 2.56-2.36 (br-m, 4 H), 1.73-1.55 (br-m, 7 H), 1.28-0.86 (br-m, 26 H + H_2O); GPC data: M_n = 96 and M_w = 140 (kg/mol); Anal. Calcd. for $(C_{50}H_{54}N_4)_n$: C 84.23, H 7.92, N 7.86; Found: C 84.20, H 7.75, N 8.02.

Poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2,6-dimethylphenyl)-2,7-carbazole] (**P2**)



Similar to the procedure for the polymerization of **M0**, 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2,6-dimethylphenyl)-2,7-dibromocarbazole (**M2**) (120.0 mg, 0.140 mmol) in dry THF (0.7 mL) was added into a mixture of Ni(cod)$_2$ (76.5 mg, 0.282 mmol), bpy (84.6 mg, 0.722 mmol) and cod (95 µL) in dry DMF (0.7 mL), which was heated at 80 °C for 3 days. **P2** was obtained as a yellow solid (67.2 mg, 68%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.64-7.36 (br-m, 10 H), 6.66-6.15(br-m, 6 H), 2.69 (br-s, 4 H), 1.53-0.88 (br-m, 36 H + H_2O).; GPC data: M_n = 120 and M_w = 200 (kg/mol); Anal. Calcd. for $(C_{51}H_{56}N_4)_n$: C 84.25, H 8.04, N 7.71; Found: C 84.14, H 8.05, N 7.75.

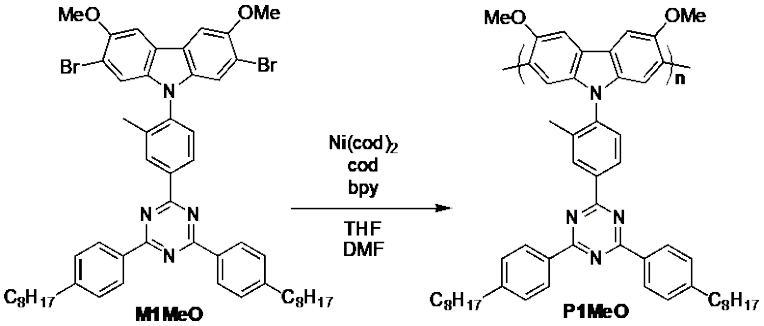
Poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-3,6-dimetyl-2,7-carbazole] (**P1Me**)



Similar to the procedure for the polymerization of **M0**, 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethylcarbazole (**M1Me**) (50.0 mg, 0.061 mmol) in dry THF (0.5 mL) was added into a mixture of Ni(cod)$_2$ (33.3 mg, 0.125 mmol), bpy (36.1 mg, 0.221 mmol) and cod (50 µL) in dry DMF (0.5 mL), which was heated at 80 °C for 3 days. **P1Me** was obtained as a yellow solid (29.7 mg, 72%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.62 (br-m, 6 H), 7.97 (br-s, 2 H), 7.52-7.26 (br-m, 5 H), 6.87 (br-s, 2 H), 2.68 (br-s, 4 H), 2.54-2.16 (br-m, 9 H), 1.64 (br-s, 4 H), 1.26 (br-s, 20 H), 0.87 (br-s, 6 H).; GPC data: M_n = 8.5 and M_w = 10.5 (kg/mol); Anal. Calcd. for $(C_{52}H_{58}N_4)_n$:

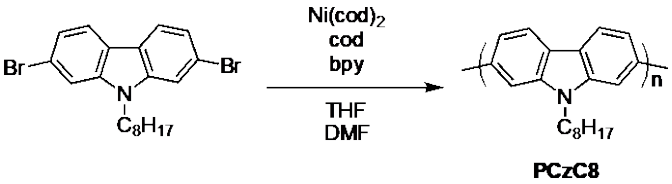
C 84.28, H 8.16, N 7.56; Found: C 83.99, H 8.25, N 7.65.

Poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-3,6-dimethoxy-2,7-carbazole] (**P1MeO**)



Similar to the procedure for the polymerization of **M0**, 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethoxycarbazole (**M1MeO**) (60.2 mg, 0.062 mmol) in dry THF (0.5 mL) was added into a mixture of $Ni(cod)_2$ (36.2 mg, 0.130 mmol), bpy (41.3 mg, 0.264 mmol) and cod (50 µL) in dry DMF (0.5 mL), which was heated at 80 °C for 3 days. **P1MeO** was obtained as an orange solid (30.4 mg, 61%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.82-8.70 (br-m, 6 H), 7.60-7.30 (br-m, 7 H), 7.04-7.01 (br-m, 2 H), 4.06-3.92 (br-m, 6 H), 2.74 (br-m, 4 H), 2.15 (br-m, 3 H), 1.67 (br-m, 4 H), 1.28 (br-m, 20 H), 0.89-0.87 (br-m, 6 H).; GPC data: M_n = 9.8 and M_w = 10.5 (g/mol); Anal. Calcd. for $(C_{52}H_{58}N_4O_2)_n$: C 80.79, H 7.82, N 7.25; Found: C 80.40, H 7.90, N 7.22.

Poly(9-octy-2,7-carbazole) (**PCzC8**)



Similar to the procedure for the polymerization of **M0**, 9-octyl-2,7-dibromocarbazole (103 mg, 0.170 mmol) in dry THF (0.8 mL) was added into a mixture of $Ni(cod)_2$ (92.5 mg, 0.342 mmol), bpy (106 mg, 0.684 mmol) and cod (80 µL) in dry DMF (0.8 mL), which was heated at 80 °C for 3 days. **PCzC8** was obtained as a yellow solid (56.2 mg, 56%).; ^{1}H NMR (400 MHz, $CDCl_3$, TMS) δ (ppm): 8.24 (br-m, 2 H), 7.76-7.52 (br-m, 4 H), 4.50-4.29 (br-m, 2 H), 2.05 (br-s, 2 H), 1.54-1.26 (br-m, 10 H), 0.85 (br-s, 6 H).; GPC data: M_n = 9.3 and M_w = 12.1 (g/mol).

7) ^{1}H, ^{13}C spectra for the monomers and polymers

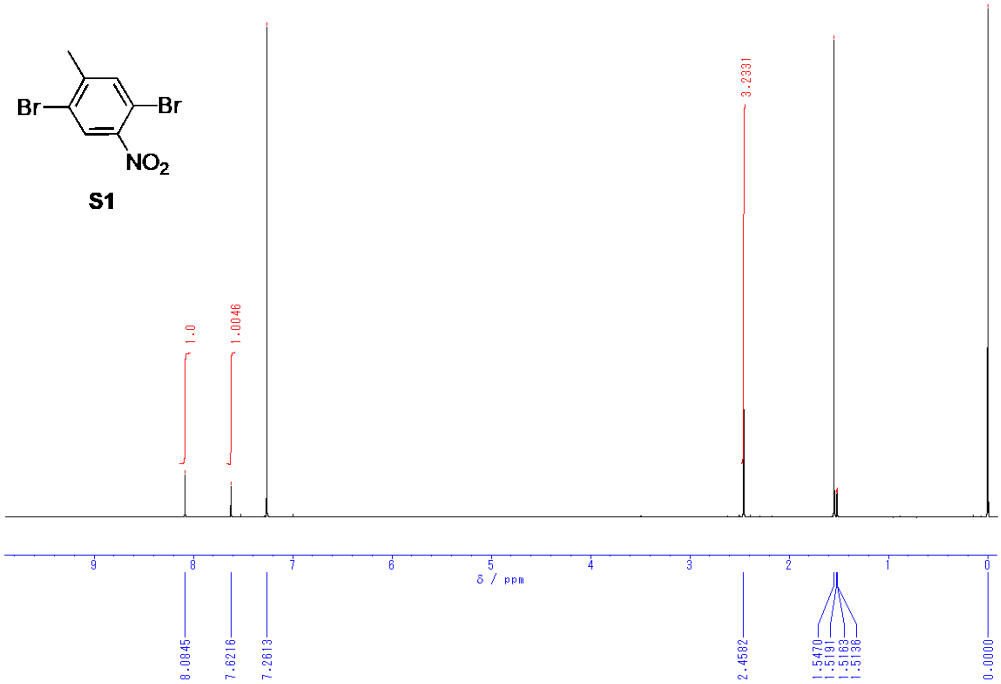


Fig. S9 ^{1}H NMR spectrum of 2,5-dibromo-4-nitrotoluene (**S1**) in $CDCl_3$ 400 MHz.

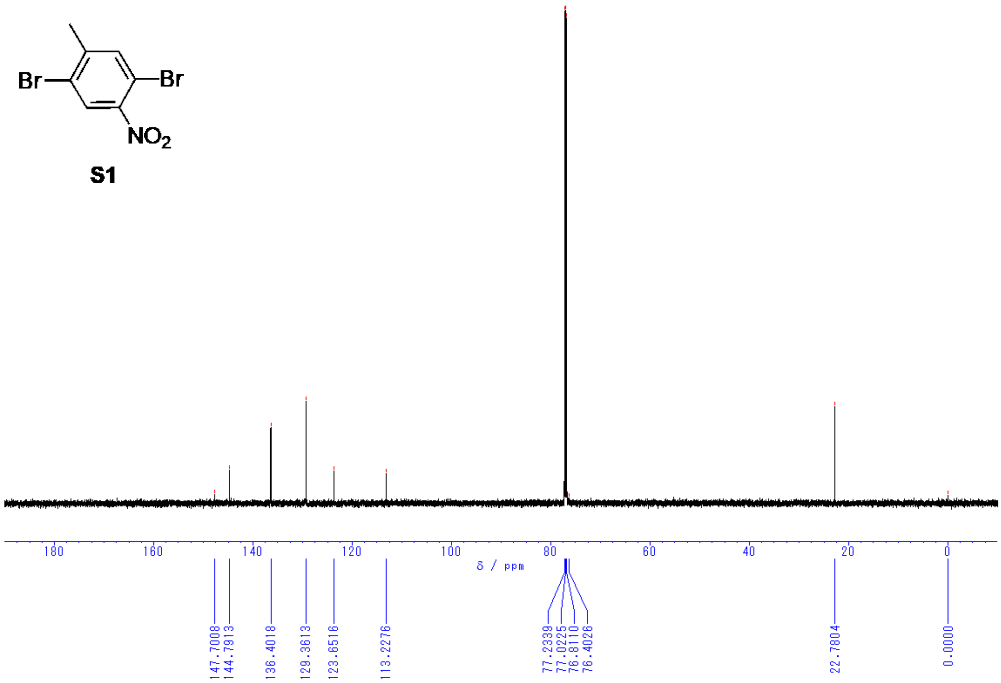


Fig. S10 ^{13}C NMR spectrum of 2,5-dibromo-4-nitrotoluene (**S1**) in $CDCl_3$ 150 MHz.

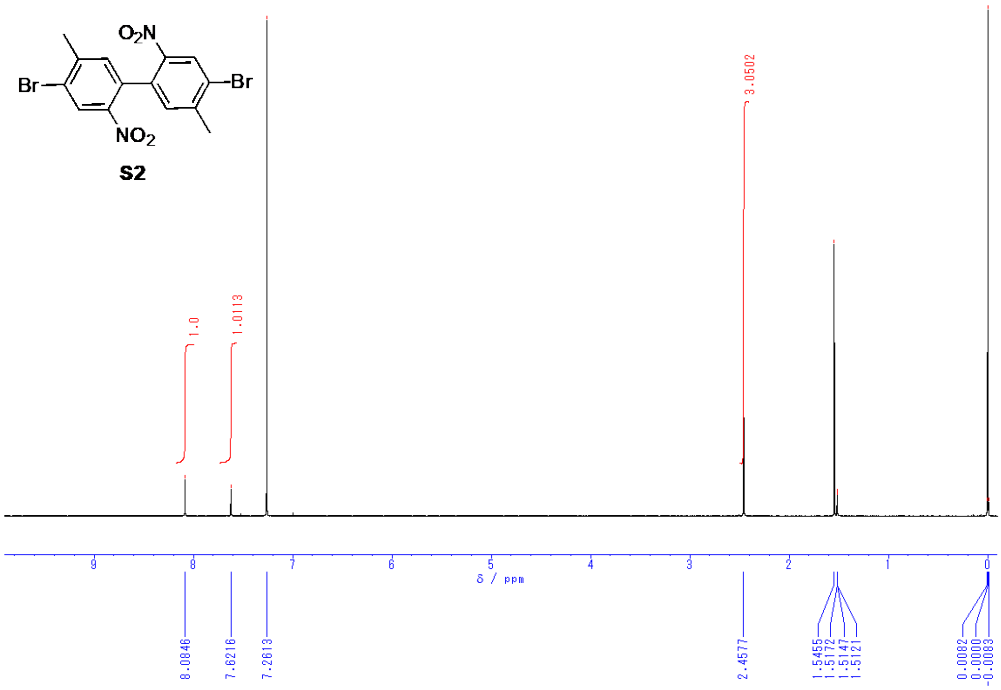


Fig. S11 ^{1}H NMR spectrum of 4,4'-dibromo-5,5'-dimethyl-2,2'-dinitrobiphenyl (**S2**) in $CDCl_3$ 400 MHz.

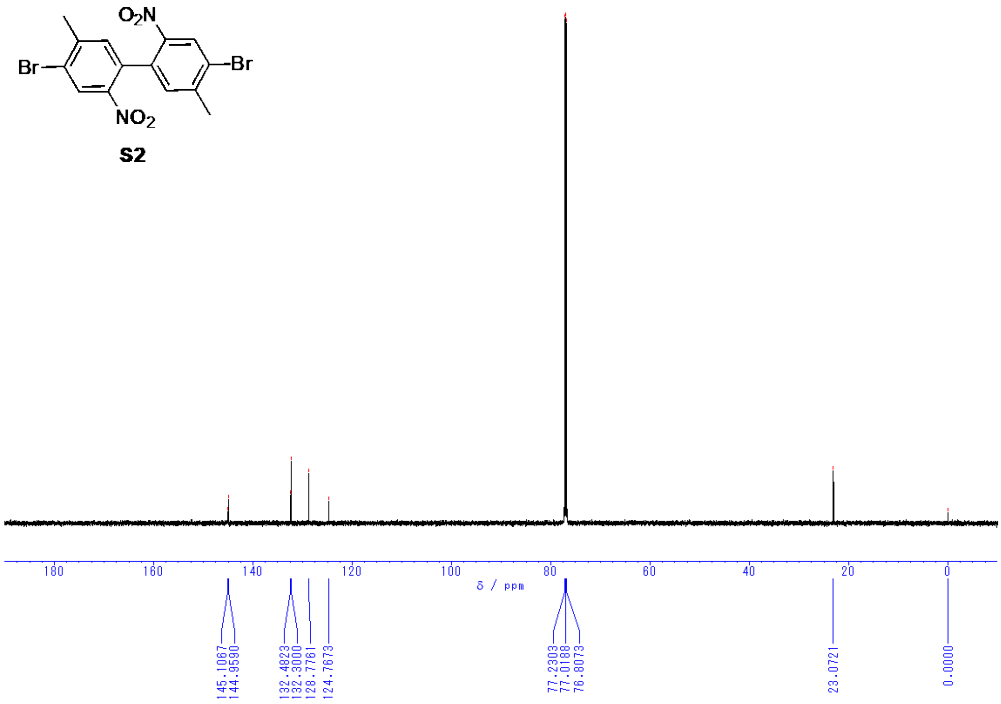


Fig. S12 ^{13}C NMR spectrum of 4,4'-dibromo-5,5'-dimethyl-2,2'-dinitrobiphenyl (**S2**) in $CDCl_3$ 150 MHz.

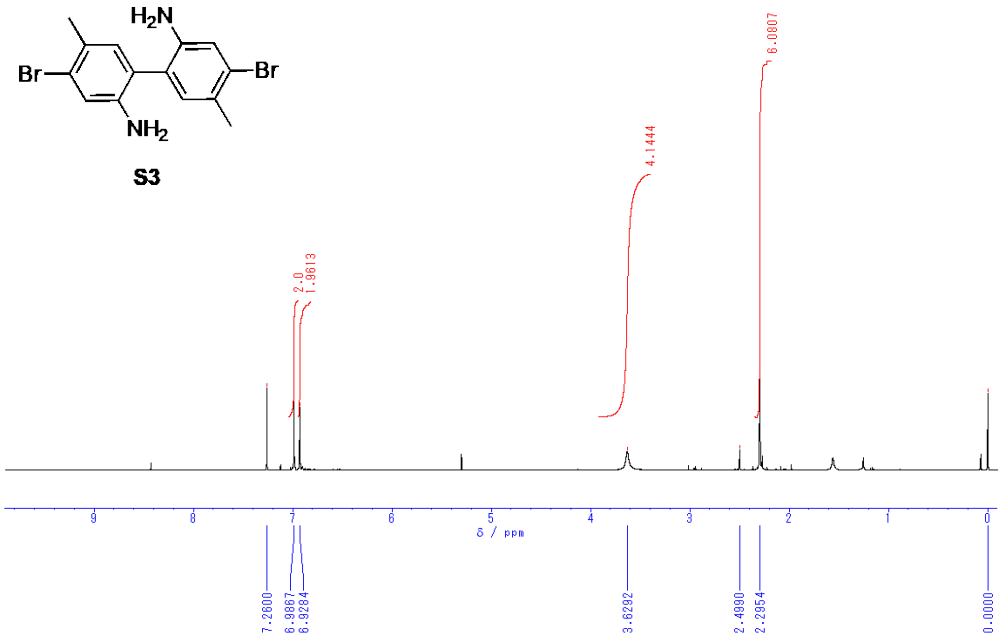


Fig. S13 ^{1}H NMR spectrum of 4,4'-dibromo-5,5'-dimethylbiphenyl-2,2'-diamine (**S3**) in $CDCl_3$ 400 MHz.

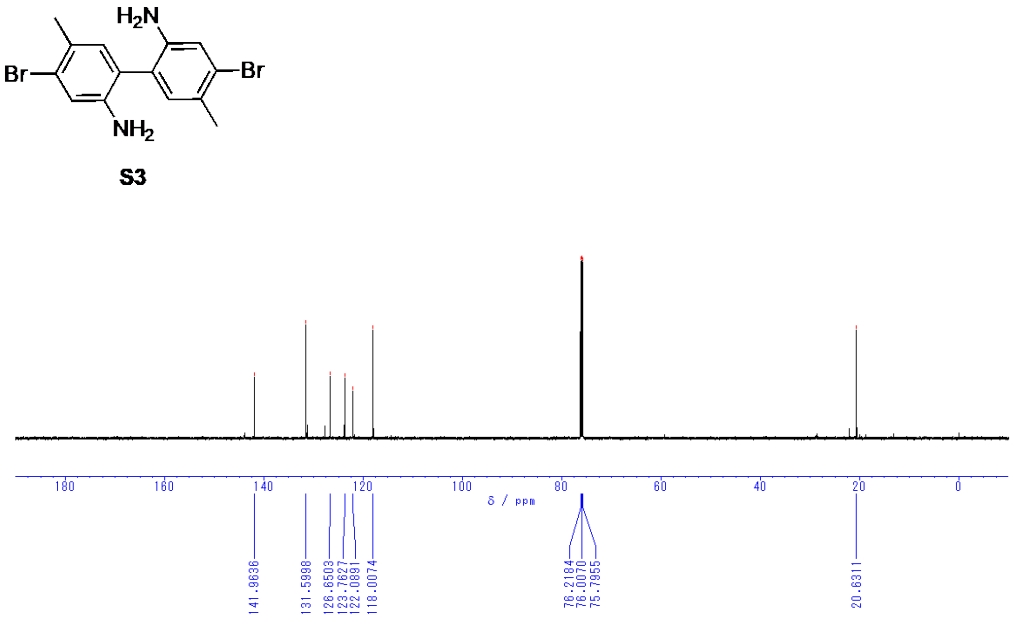


Fig. S14 ^{13}C NMR spectrum of 4,4'-dibromo-5,5'-dimethylbiphenyl-2,2'-diamine (**S3**) in $CDCl_3$ 150 MHz.

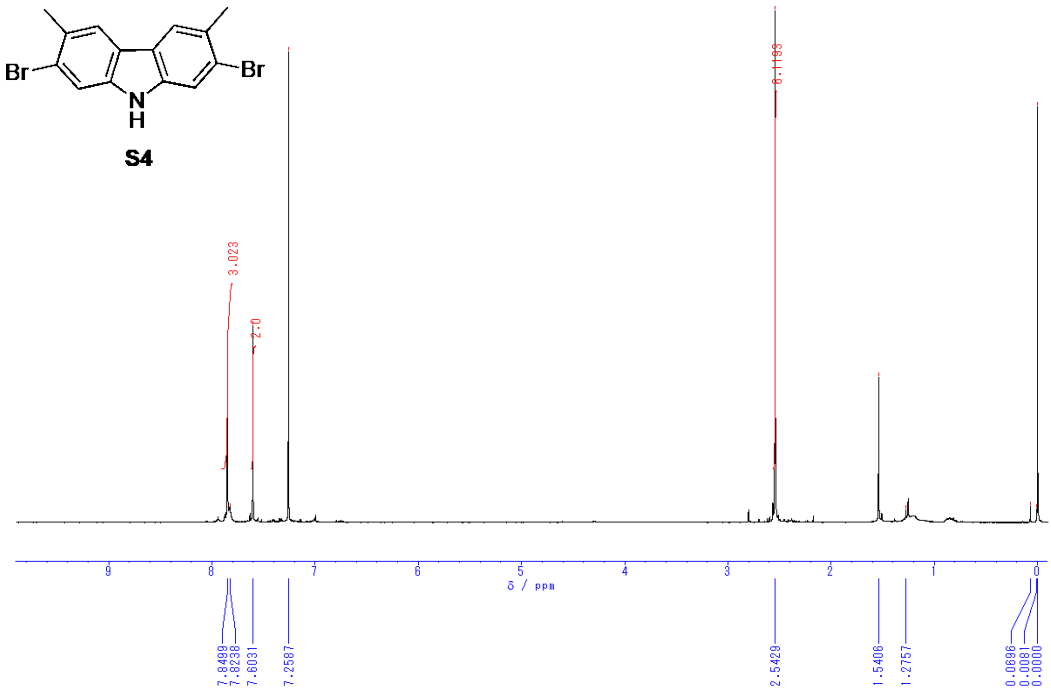


Fig. S15 ^{1}H NMR spectrum of 2,7-dibromo-3,6-dimethyl-9*H*-carbazole (**S4**) in $CDCl_3$ 400 MHz.

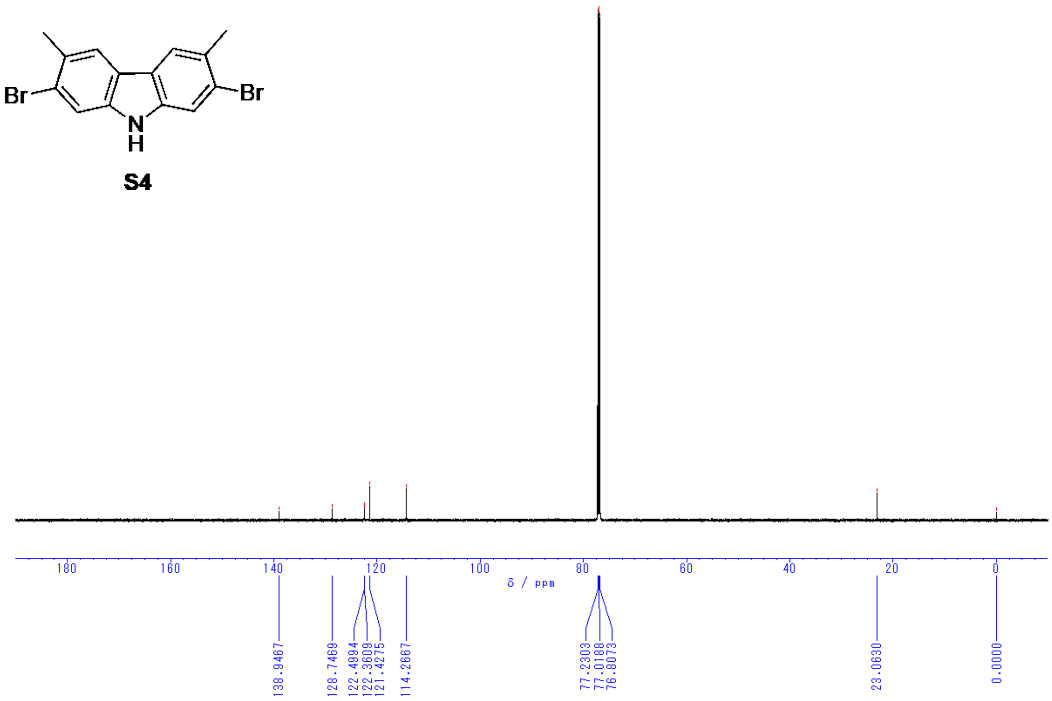


Fig. S16 ^{13}C NMR spectrum of 2,7-dibromo-3,6-dimethyl-9*H*-carbazole (**S4**) in $CDCl_3$ 150 MHz.

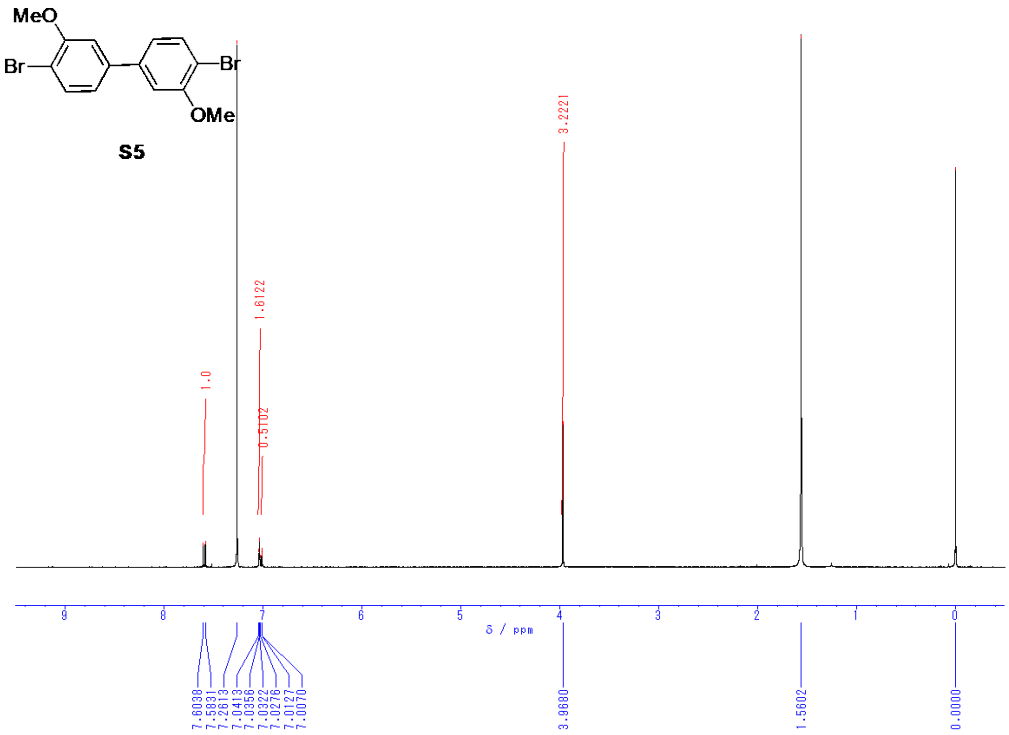


Fig. S17 ^{1}H NMR spectrum of 4,4'-dibromo-3,3'-dimethoxylbiphenyl (**S5**) in $CDCl_3$ 400 MHz.

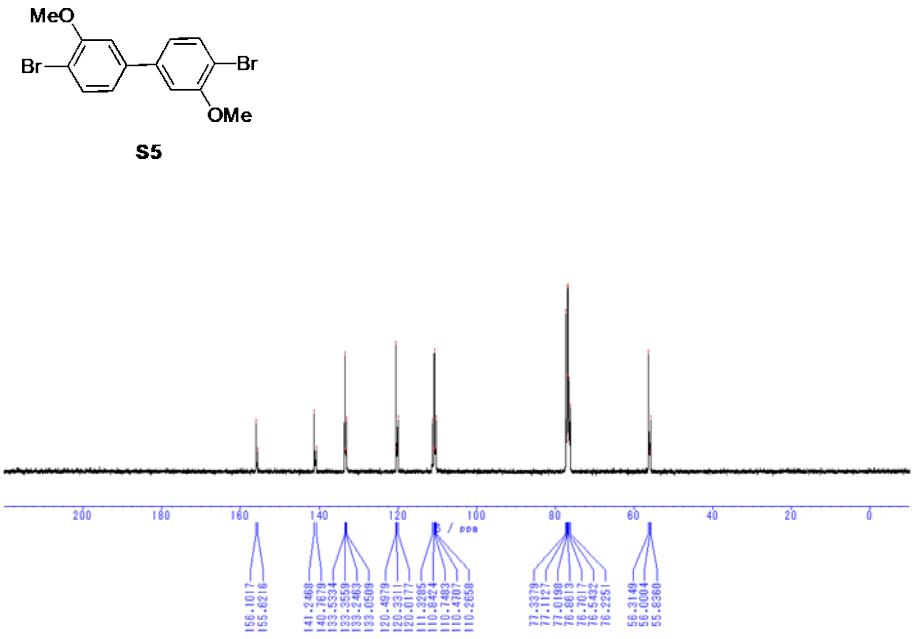


Fig. S18 ^{13}C NMR spectrum of 4,4'-dibromo-3,3'-dimethoxylbipheny (**S5**) in $CDCl_3$ 100 MHz.

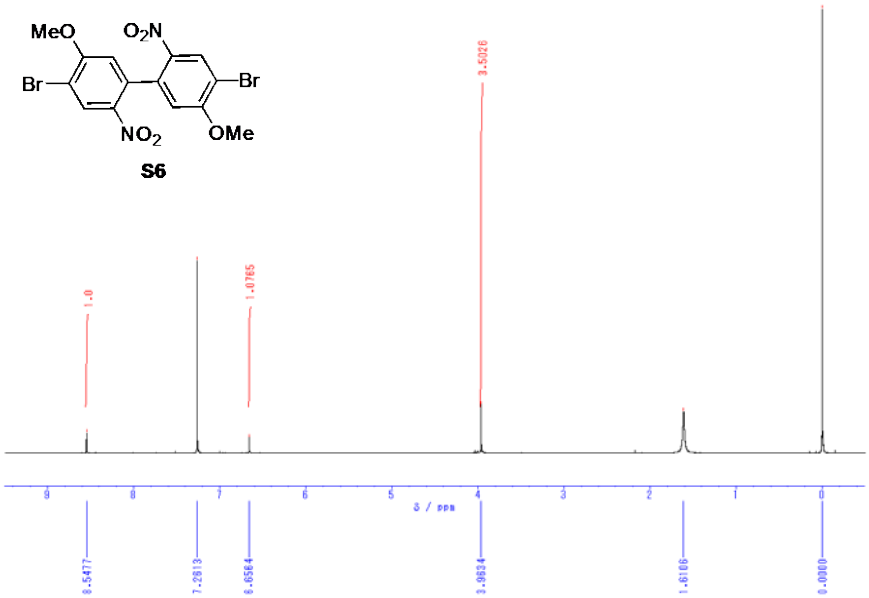


Fig. S19 ^{1}H NMR spectrum of 4,4'-dibromo-2,2'-dinitro-5,5'-dimethoxybiphenyl (**S6**) in $CDCl_3$ 400 MHz.

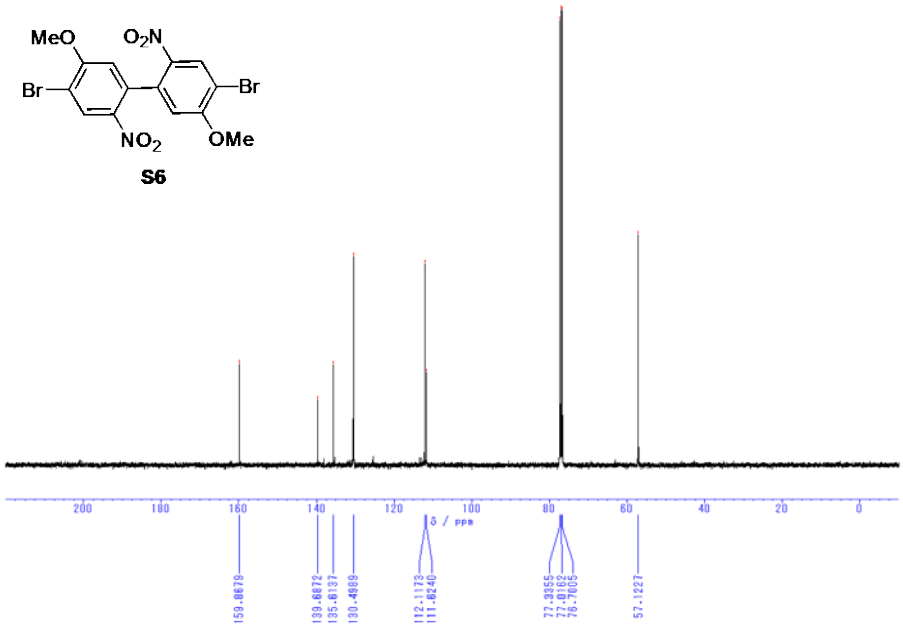


Fig. S20 ^{13}C NMR spectrum of 4,4'-dibromo-2,2'-dinitro-5,5'-dimethoxybiphenyl (**S6**) in $CDCl_3$ 100 MHz.

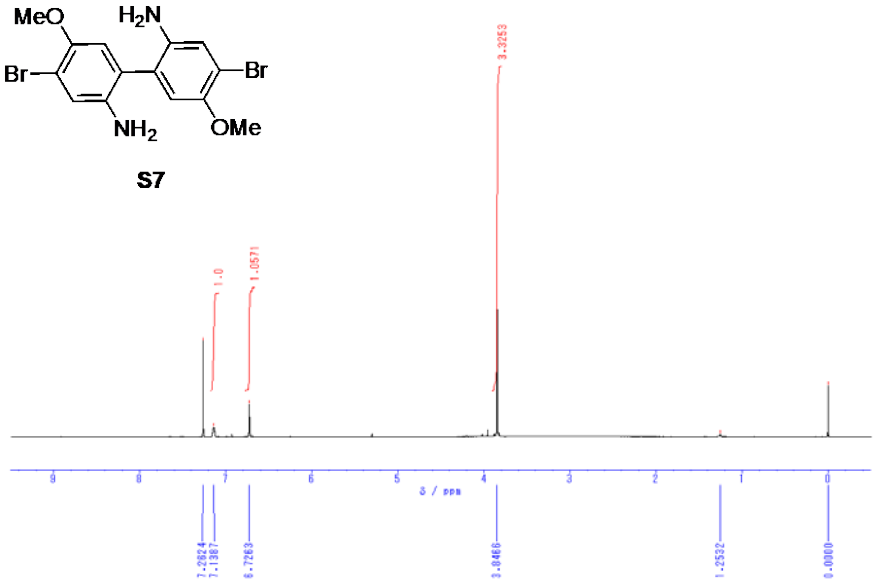


Fig. S21 ^{1}H NMR spectrum of 4,4'-dibromo-5,5'-dimethoxy-2,2'-diaminobiphenyl (**S7**) in $CDCl_3$ 400 MHz.

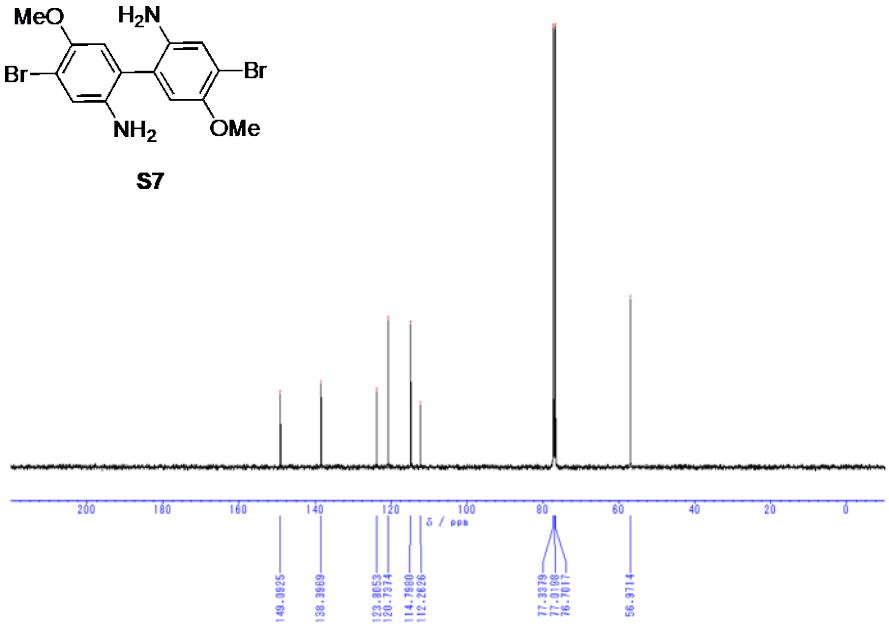


Fig. S22 ^{13}C NMR spectrum of 4,4'-dibromo-5,5'-dimethoxy-2,2'-diaminobiphenyl (**S7**) in $CDCl_3$ 100 MHz.

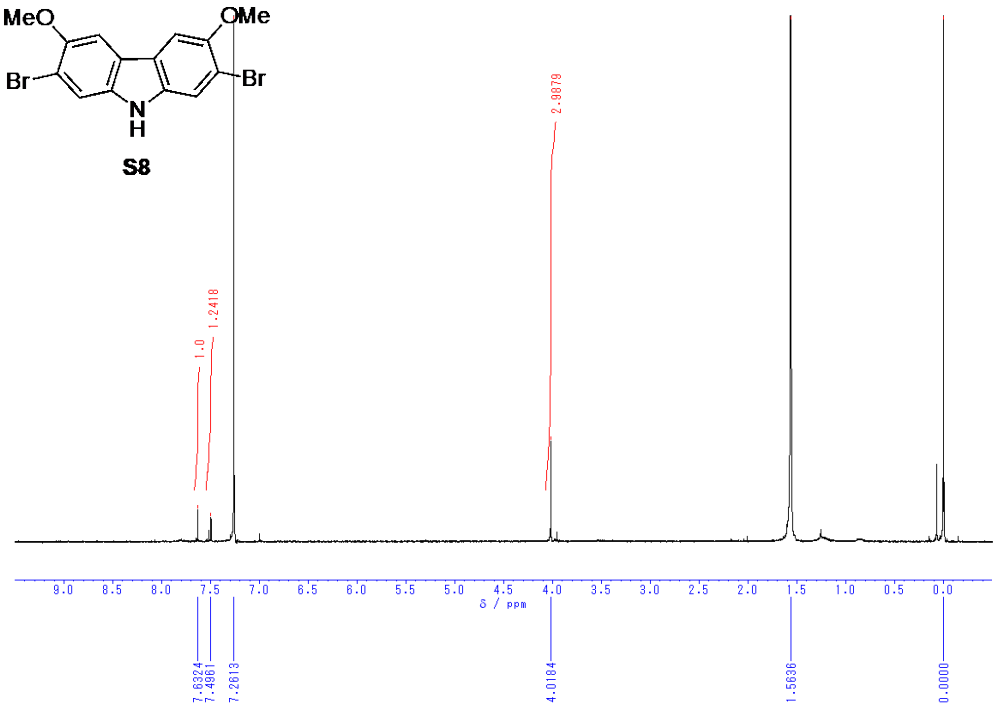


Fig. S23 ^{1}H NMR spectrum of 2,7-dibromo-3,6-dimethoxy-9*H*-carbazole (**S8**) in $CDCl_3$ 400 MHz.

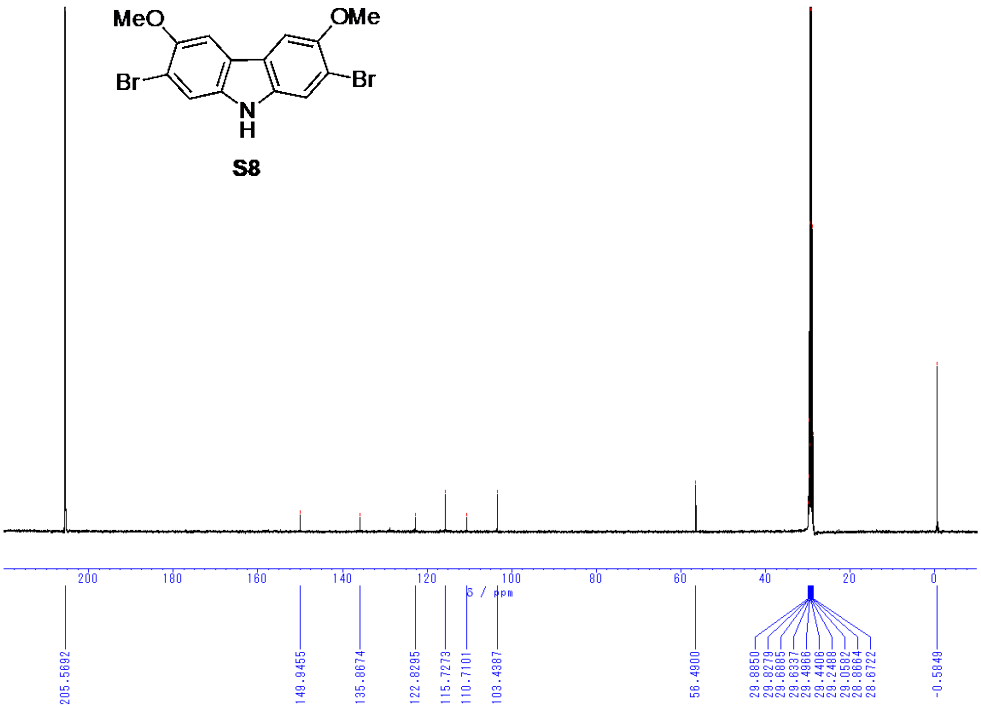


Fig. S24 ^{13}C NMR spectrum of 2,7-dibromo-3,6-dimethoxy-9*H*-carbazole (**S8**) in acetone –d_6 100 MHz.

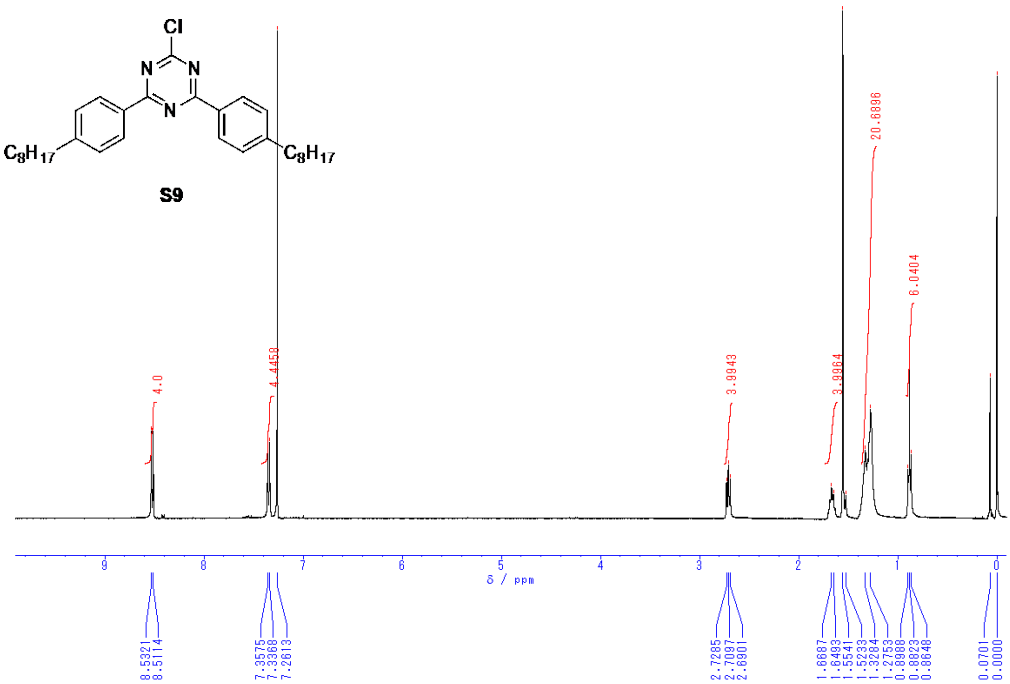


Fig. S25 ^{1}H NMR spectrum of 4,6-bis(4-octaphenyl)-2-chloro-1,3,5-triazine (**S9**) in $CDCl_3$ 400 MHz.

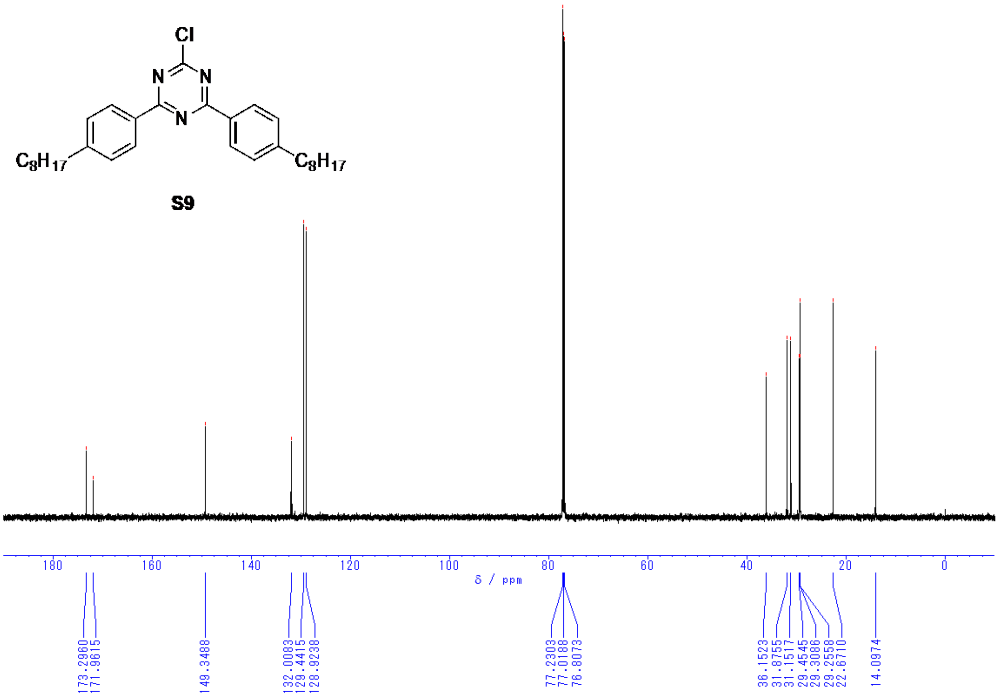


Fig. S26 ^{13}C NMR spectrum of 4,6-bis(4-octaphenyl)-2-chloro-1,3,5-triazine (**S9**) in $CDCl_3$ 150 MHz.

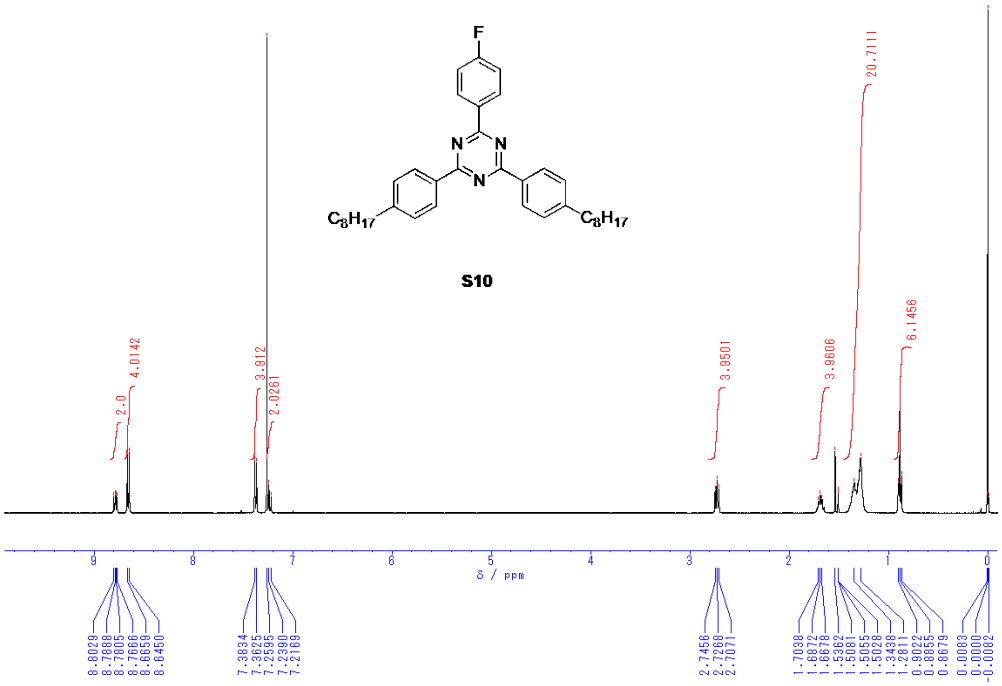


Fig. S27 ^{1}H NMR spectrum of 4,6-bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S10**) in $CDCl_3$ 400 MHz.

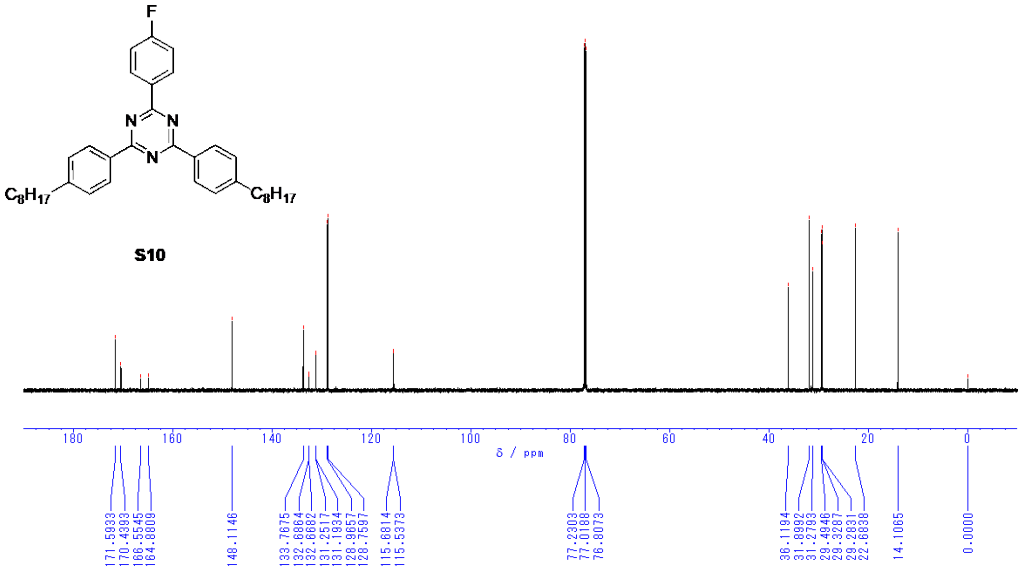


Fig. S28 ^{13}C NMR spectrum of 4,6-bis(4-octaphenyl)-2-(4-fluorophenyl)-1,3,5-triazine (**S10**) in $CDCl_3$ 150 MHz.

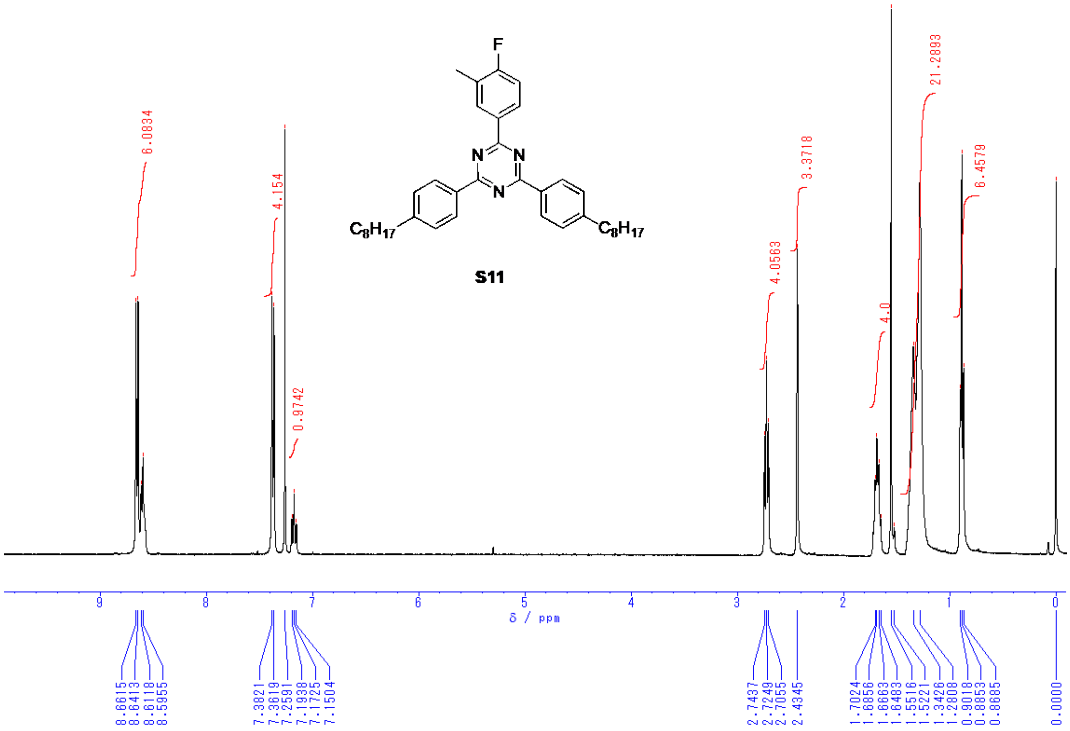


Fig. S29 ^{1}H NMR spectrum of 4,6-bis(4-octaphenyl)-2-(4-fluoro-3-methylphenyl)-1,3,5-triazine (**S11**) in $CDCl_3$ 400 MHz.

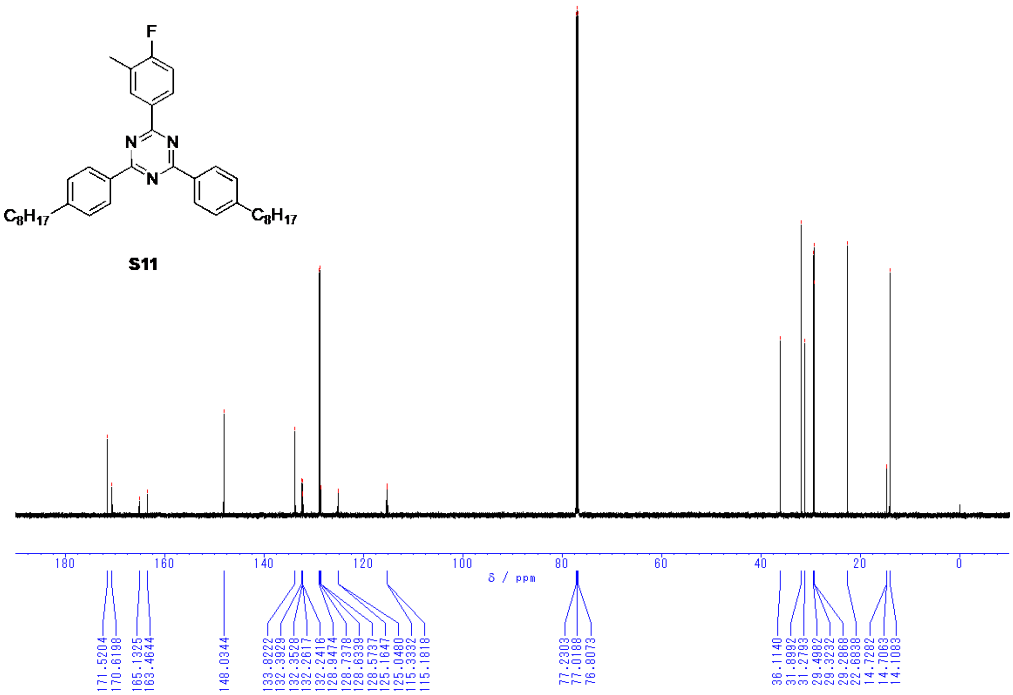


Fig. S30 ^{13}C NMR spectrum of 4,6-bis(4-octaphenyl)-2-(4-fluoro-3-methylphenyl)-1,3,5-triazine (**S11**) in $CDCl_3$ 150 MHz.

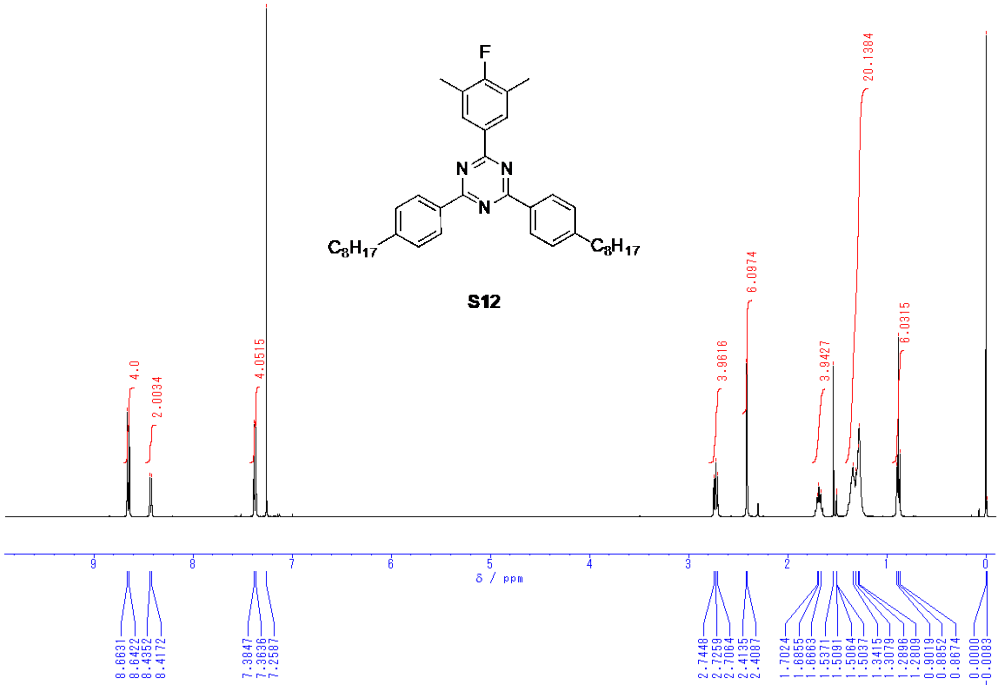


Fig. S31 ^{1}H NMR spectrum of 4,6-bis(4-octaphenyl)-2-(4-fluoro-3,5-dimethylphenyl)-1,3,5-triazine (**S12**) in $CDCl_3$ 400 MHz.

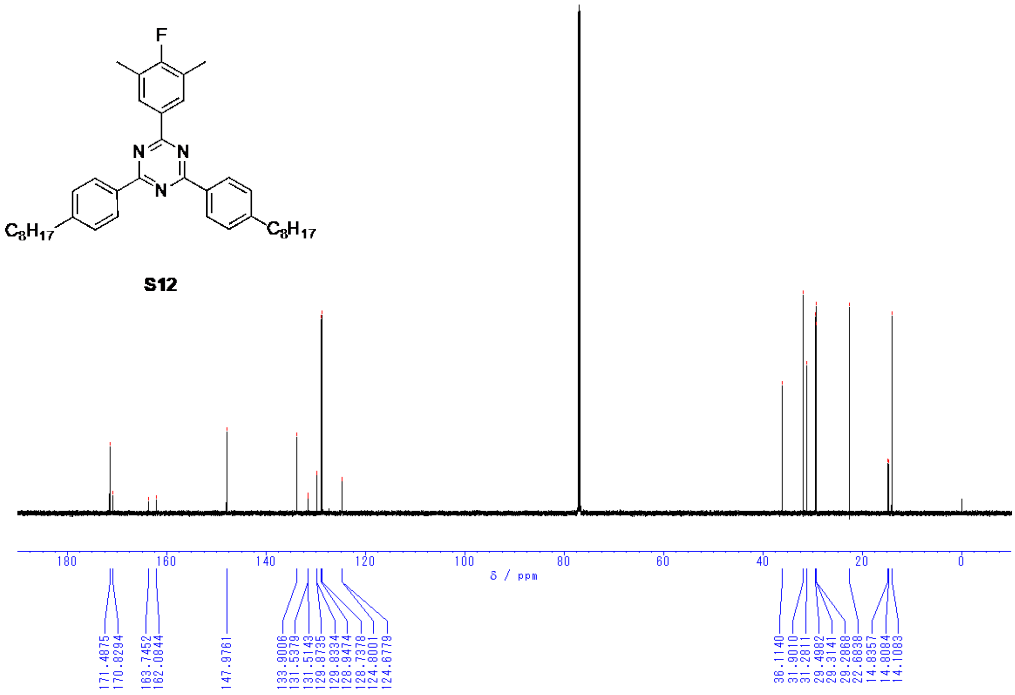


Fig. S32 ^{13}C NMR spectrum of 4,6-bis(4-octaphenyl)-2-(4-fluoro-3,5-dimethylphenyl)-1,3,5-triazine (**S12**) in $CDCl_3$ 150 MHz.

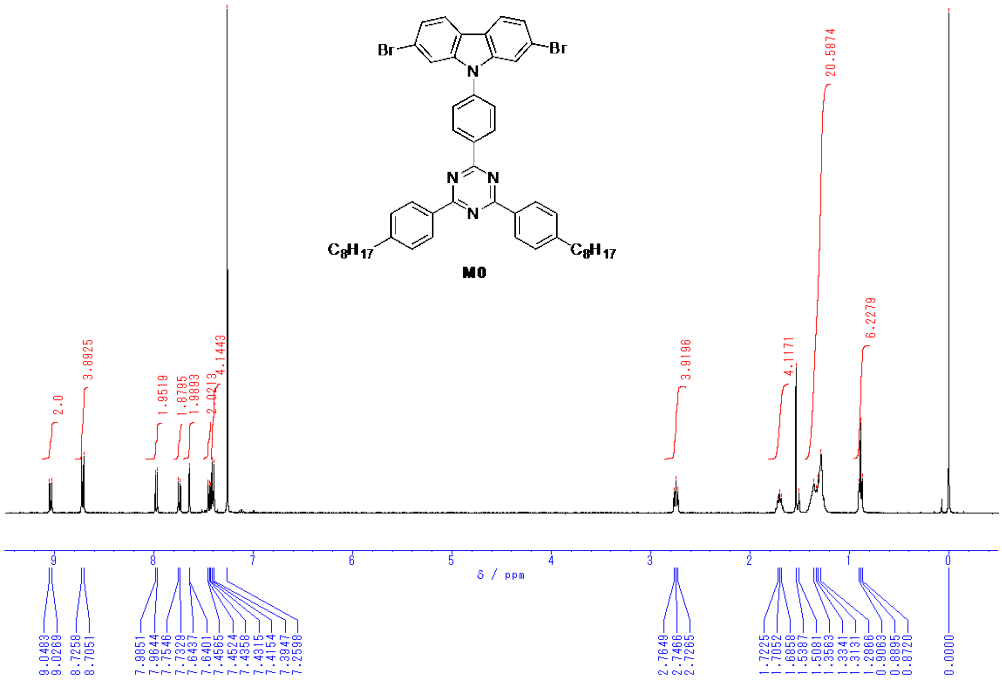


Fig. S33 ^{1}H NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)phenyl)-2,7-dibromocarbazole (**M0**) in $CDCl_3$ 400 MHz.

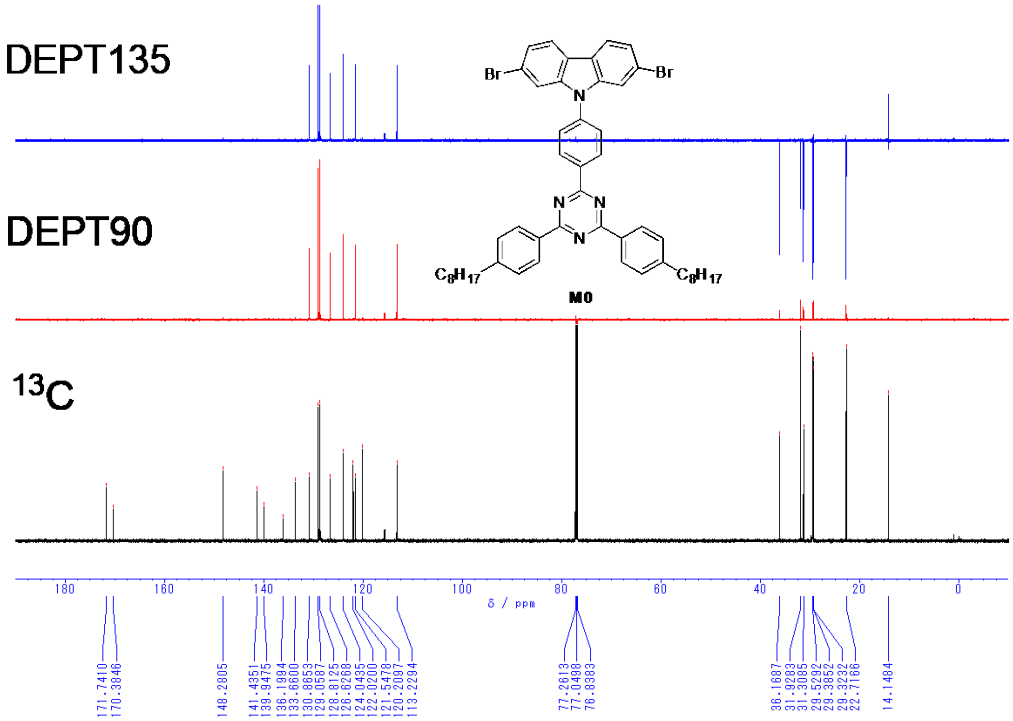


Fig. S34 ^{13}C NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)phenyl)-2,7-dibromocarbazole (**M0**) in $CDCl_3$ 150 MHz.

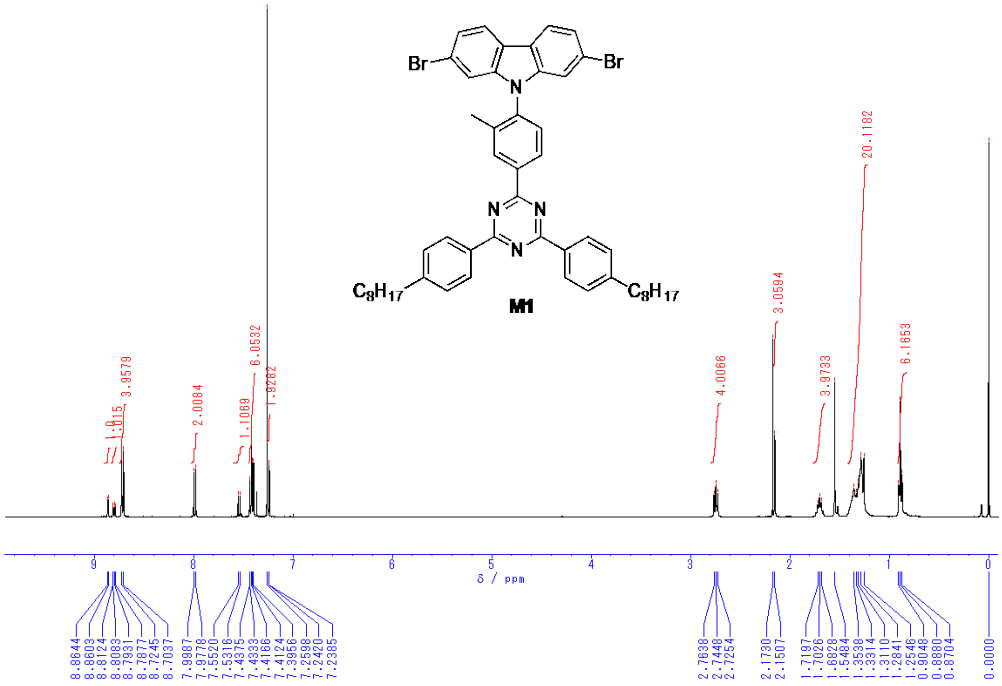


Fig. S35 ^{1}H NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromocarbazole (**M1**) in $CDCl_3$ 400 MHz.

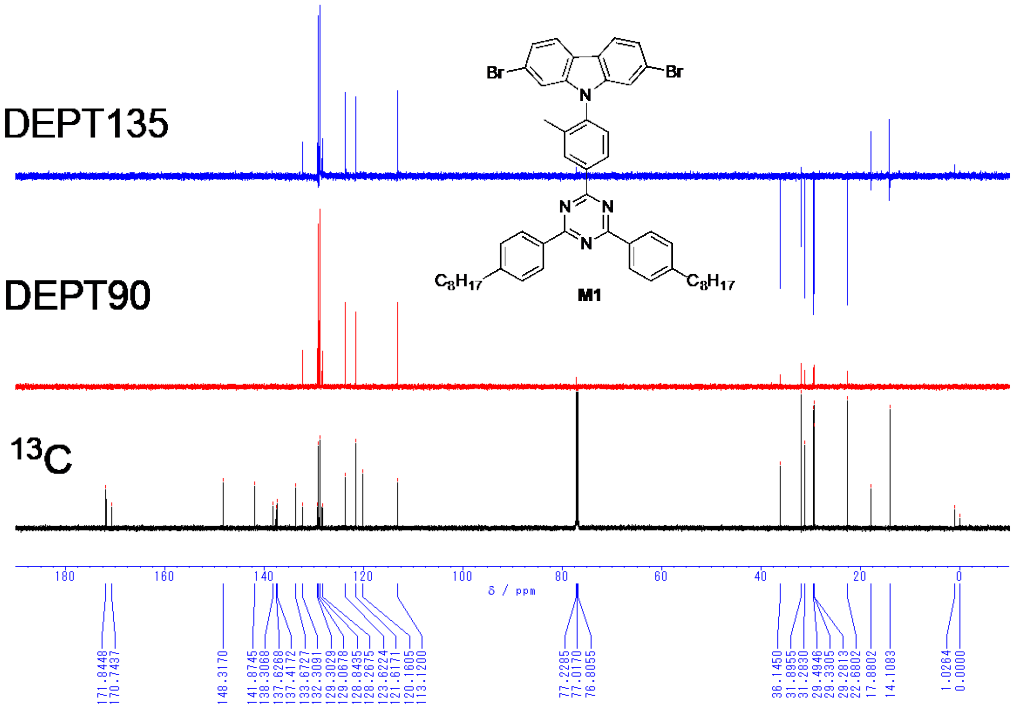


Fig. S36 ^{13}C NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromocarbazole (**M1**) in $CDCl_3$ 150 MHz.

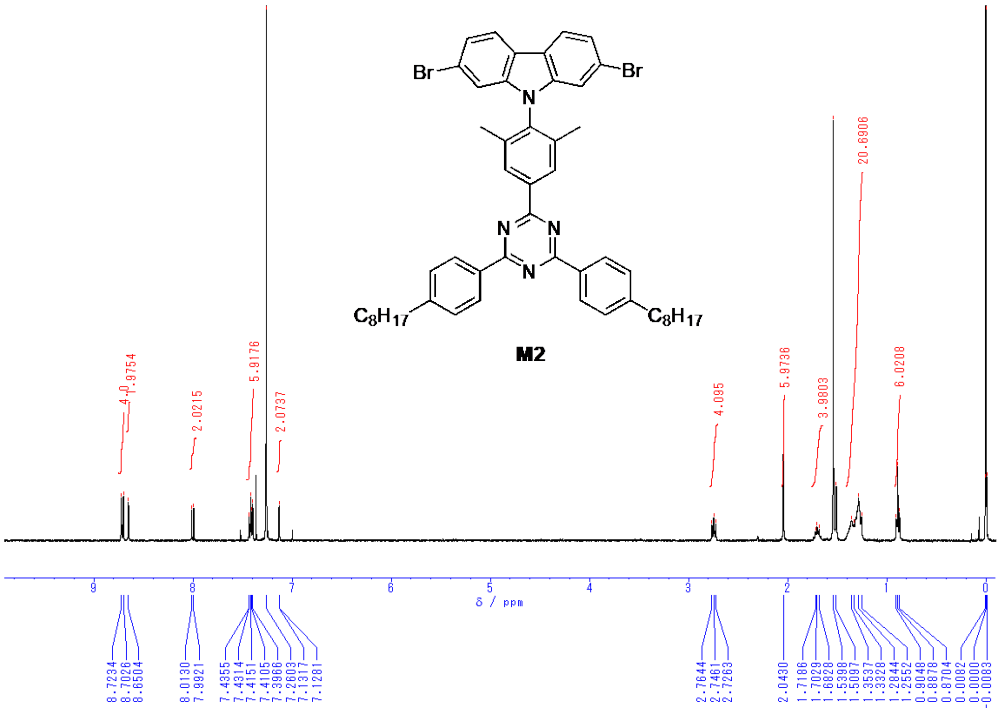


Fig. S37 ^{1}H NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2,6-dimethylphenyl)-2,7-dibromocarbazole (**M2**) in $CDCl_3$ 400 MHz.

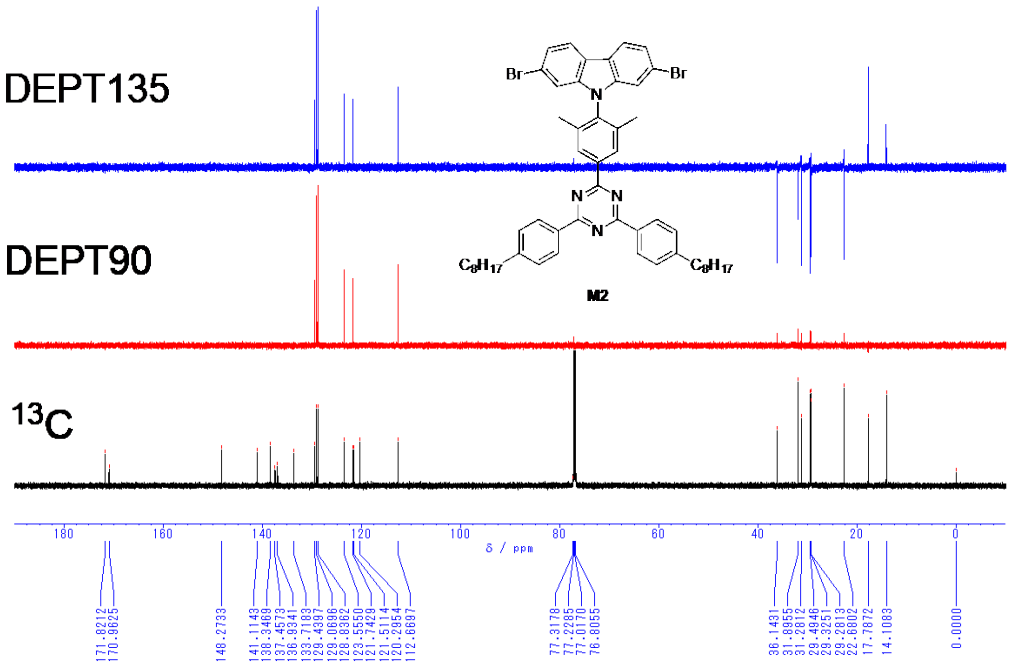


Fig. S38 ^{13}C NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2,6-dimethylphenyl)-2,7-dibromocarbazole (**M2**) in $CDCl_3$ 150 MHz.

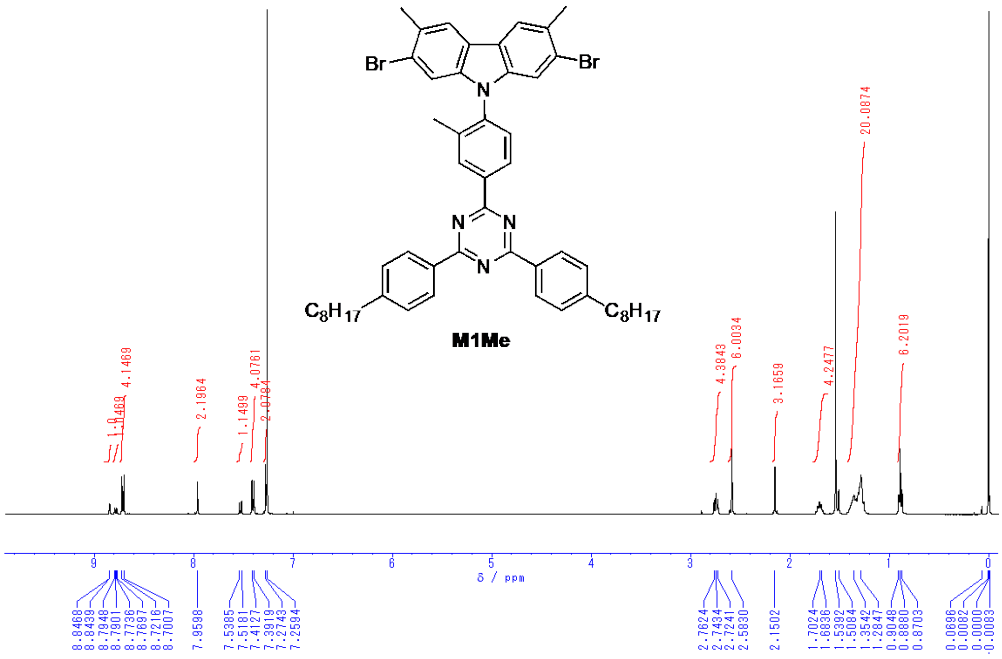


Fig. S39 ^{1}H NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethylcarbazole (**M1Me**) in $CDCl_3$ 400 MHz.

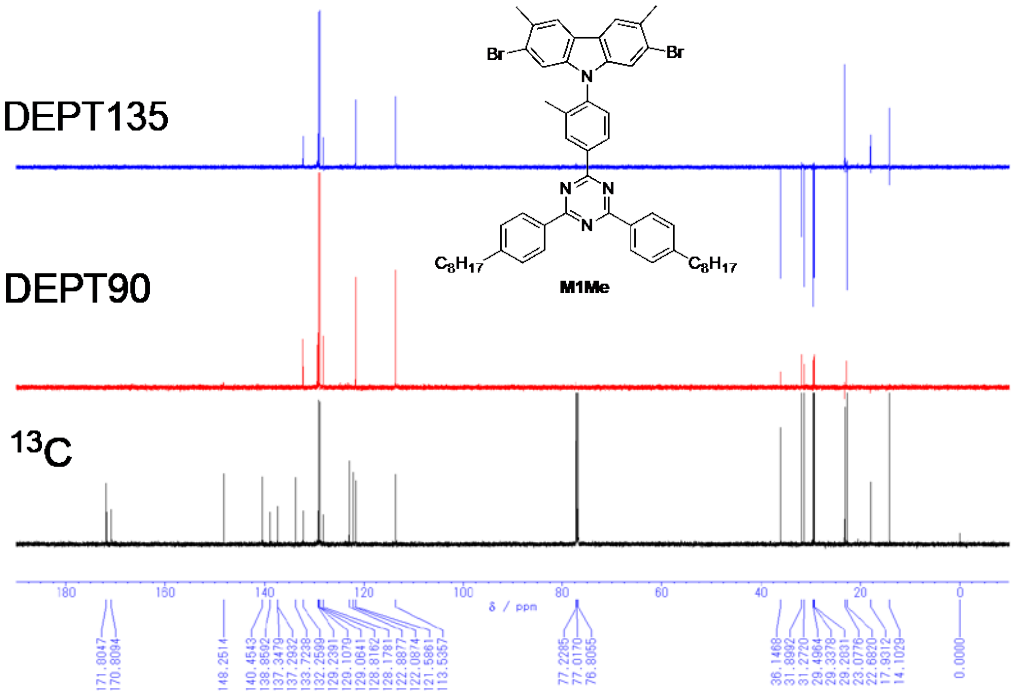


Fig. S40 ^{13}C NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethylcarbazole (**M1Me**) in $CDCl_3$ 150 MHz.

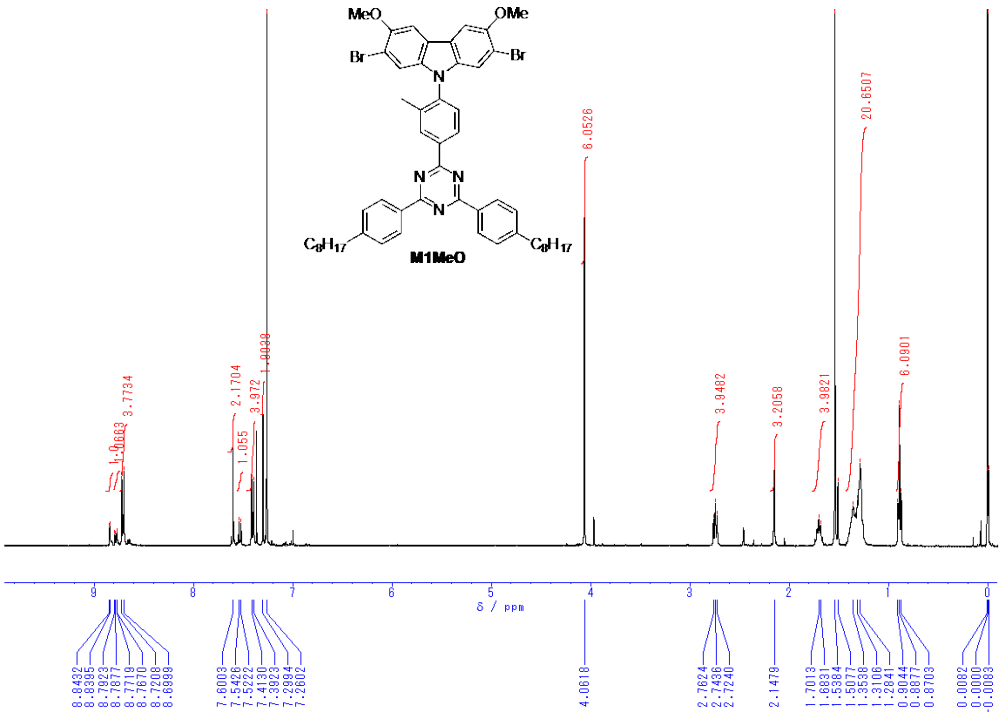


Fig. S41 ^{1}H NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethoxycarbazole (**M1MeO**) in $CDCl_3$ 400 MHz.

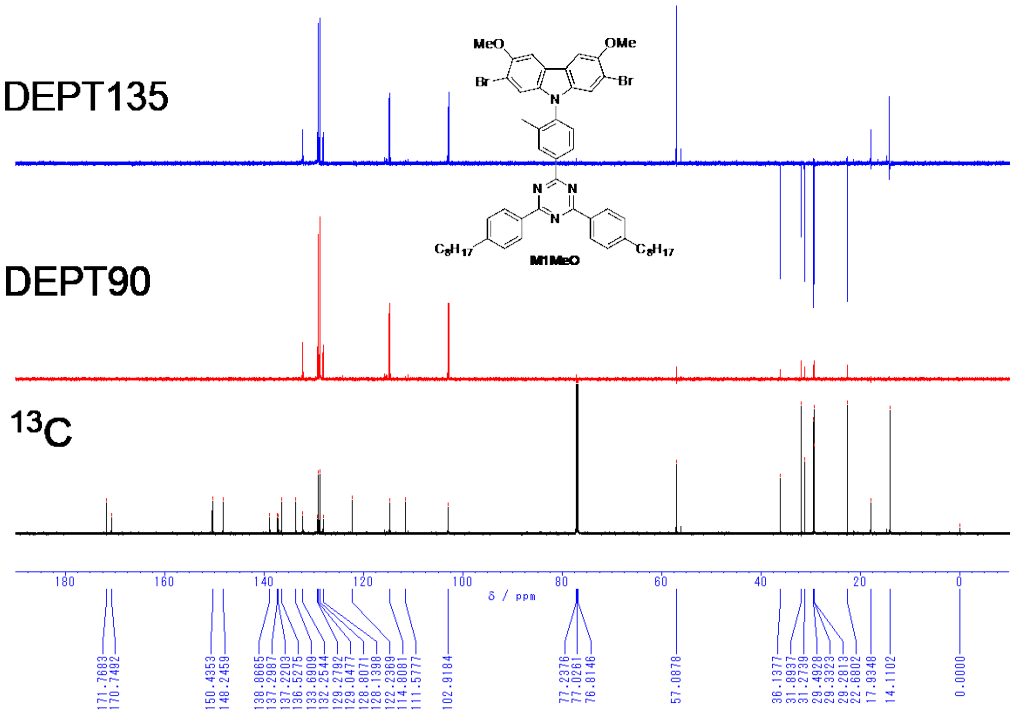


Fig. S42 ^{13}C NMR spectrum of 9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-dibromo-3,6-dimethoxycarbazole (**M1MeO**) in $CDCl_3$ 150 MHz.

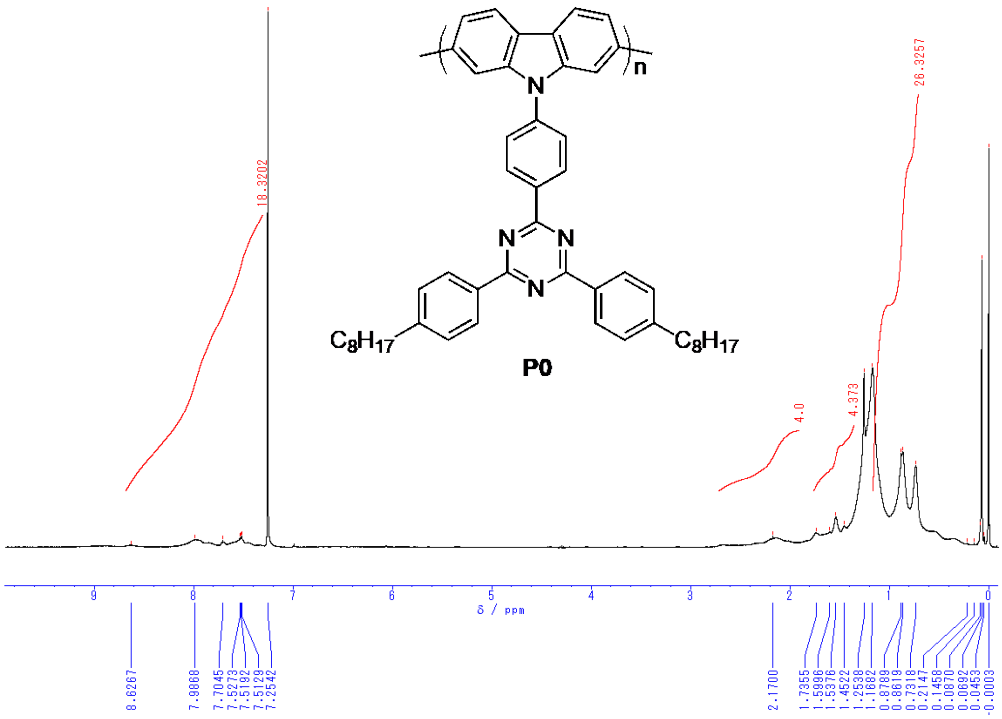


Fig. S43 ^{1}H NMR spectrum of poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)phenyl)-2,7-carbazole] (**P0**) in $CDCl_3$ 400 MHz.

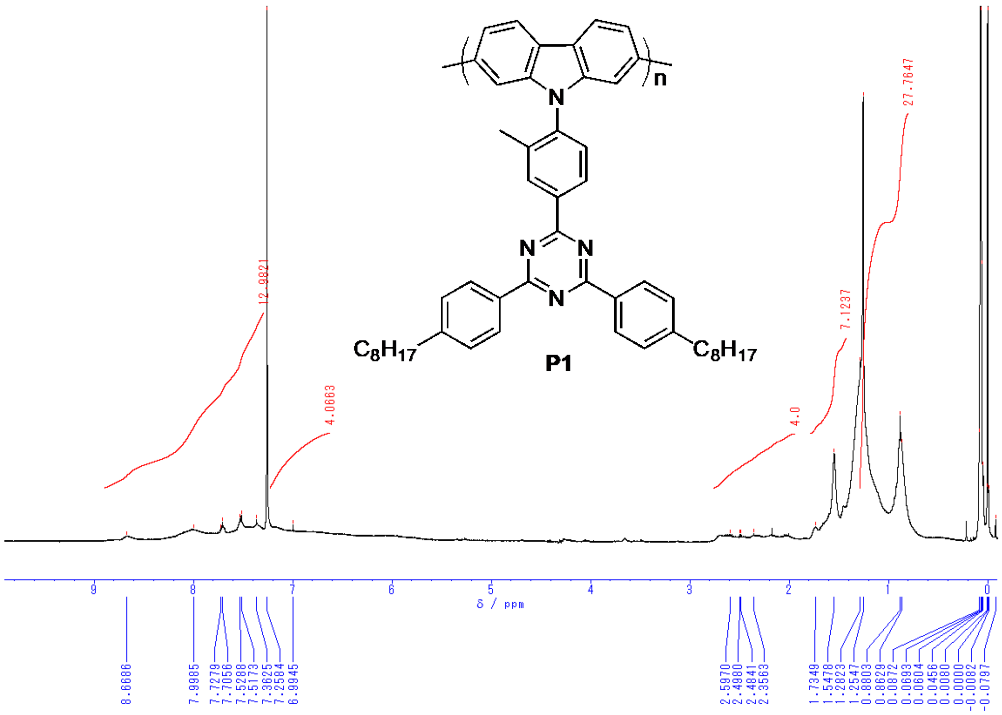


Fig. S44 ^{1}H NMR spectrum of poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-2,7-carbazole] (**P1**) in $CDCl_3$ 400 MHz.

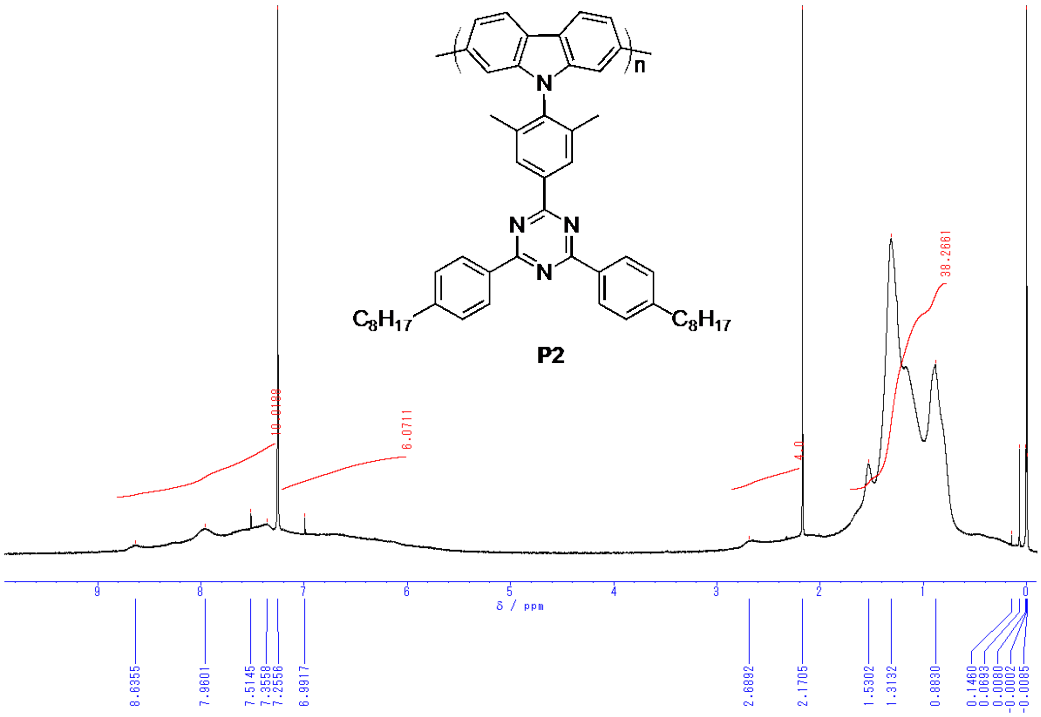


Fig. S45 ^{1}H NMR spectrum of poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2,6-dimethylphenyl)-2,7-carbazole] (**P2**) in $CDCl_3$ 400 MHz.

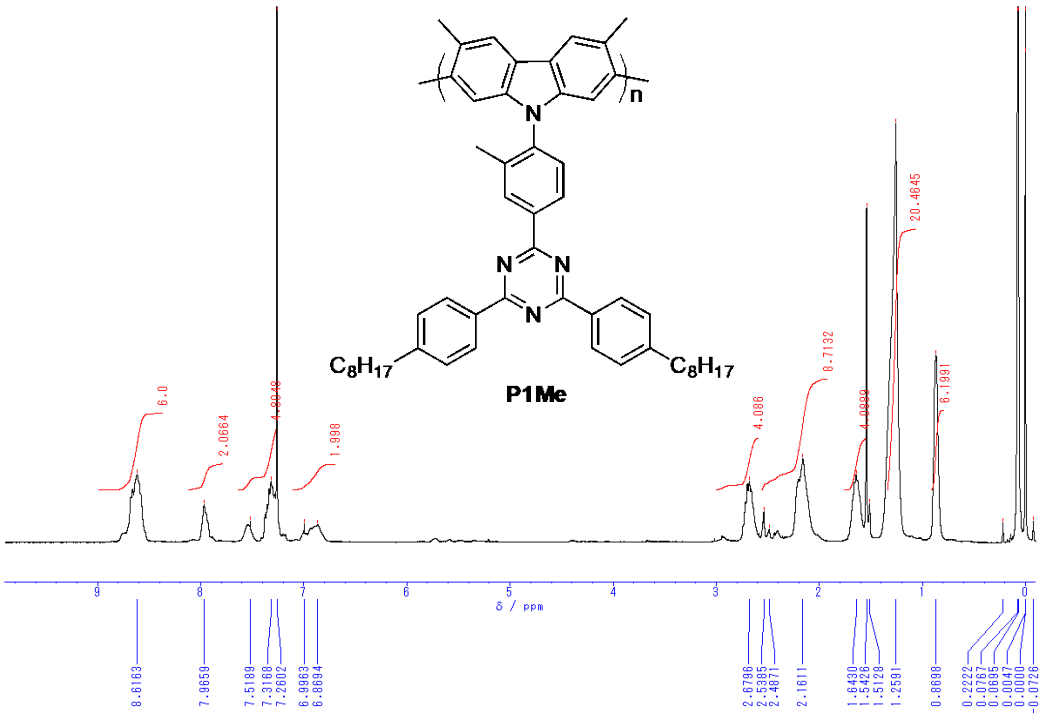


Fig. S46 ^{1}H NMR spectrum of poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-3,6-dimetyl-2,7-carbazole] (**P1Me**) in $CDCl_3$ 400 MHz.

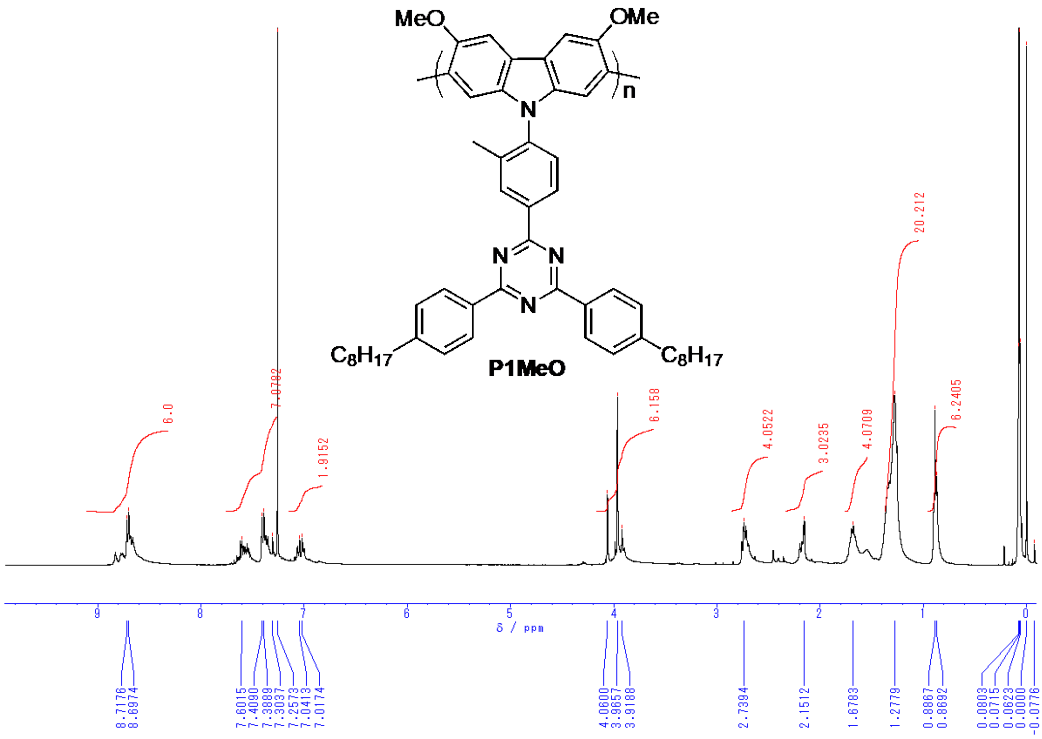


Fig. S47 ^{1}H NMR spectrum of poly[9-(4-(4,6-bis(4-octaphenyl)-1,3,5-triazin-2-yl)-2-methylphenyl)-3,6-dimethoxy-2,7-carbazole] (**P1MeO**) in $CDCl_3$ 400 MHz.

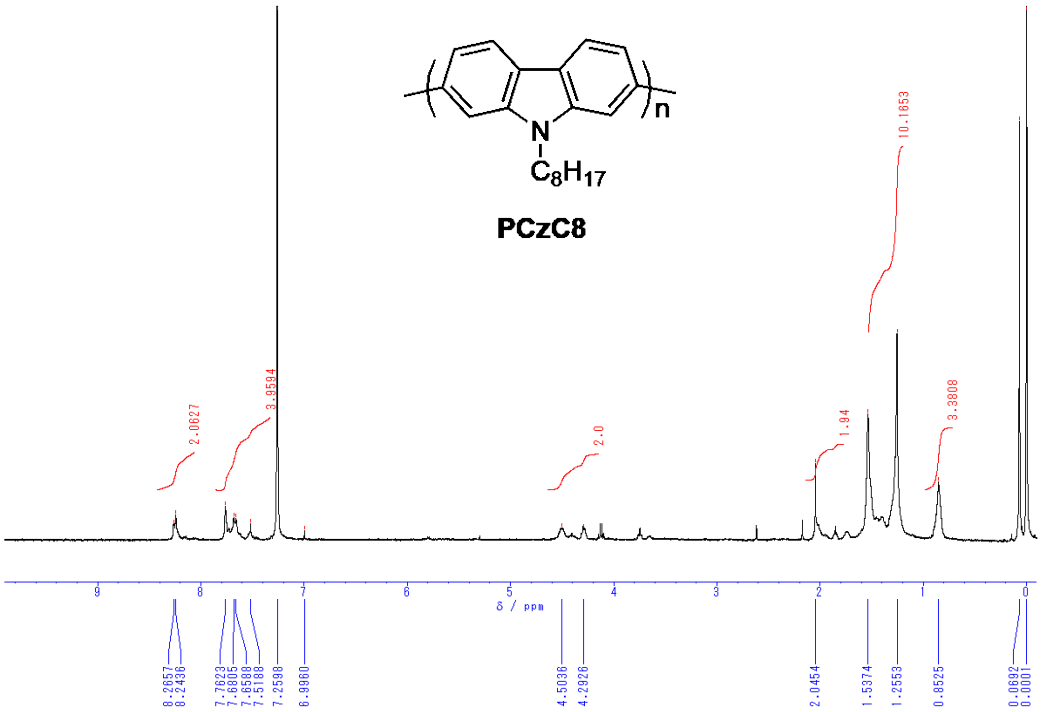


Fig. S48 ^{1}H NMR spectrum of poly(9-octy-2,7-carbazole) (**PCzC8**) in $CDCl_3$ 400 MHz.