Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Direct arylation of fluoroarenes toward linear, bent-shaped and branched π-conjugated polymers: Polycondensation and post-polymerization approaches

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Synthesis of 2-Bromo-6-octyloxynapthalene

2-bromo-6-napthol (2.23 g, 10 mmol), 1-bromooctane (2.32 g, 12 mmol) and K_2CO_3 (2.07 g, 15 mmol) were dissolved in acetone (50 mL), the mixture was stirred under refluxing and a nitrogen atmosphere for 12 hours. The product was filtered to remove K_2CO_3, and then acidified by diluted hydrochloric acid. After rotary evaporation, the residue was treated with water and extracted with chloroform. The organic layer was collected and dried over anhydrous $MgSO_4$, and then concentrated. The product was purified by column chromatography on silica gel with a mixture of hexane as eluent. The pure compound was obtained as a white solid. Yield: 93% (3.12 g). ^{1}H NMR (300 MHz, $CDCl_3$): δ 7.89 (s, 1H), 7.59 (m, 2H), 7.46 (d, J = 5.7 Hz, 1H), 7.14 (d, J = 9.0 Hz, 1H), 7.06 (s, 1H), 4.03 (t, J = 9.1 Hz, J = 12.9 Hz, 2H), 1.85 (m, 2H), 1.5-1.2 (br, 10H), 0.88 (br, 3H). ^{13}C NMR (75.45 MHz, $CDCl_3$): δ 157.44, 133.11, 129.92, 129.62, 129.51, 128.39, 128.31, 120.08, 116.86, 106.54, 68.12, 31.82, 29.36, 29.24, 29.20 26.01, 22.65, 14.08. Anal. Calcd. for ($C_{18}H_{23}BrO$): C, 64.48; H, 6.91. Found: C, 64.45; H, 6.93.

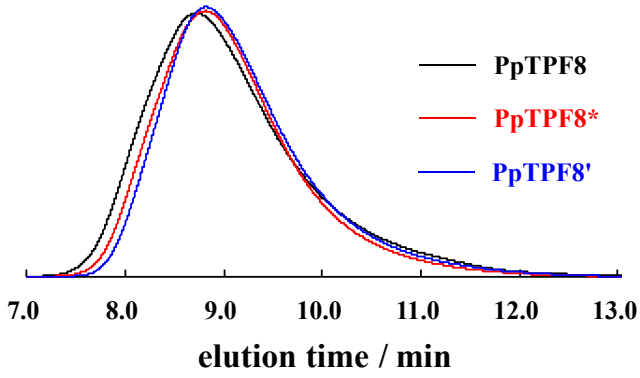

Figure S1. GPC trace of **PpTPF8s**.

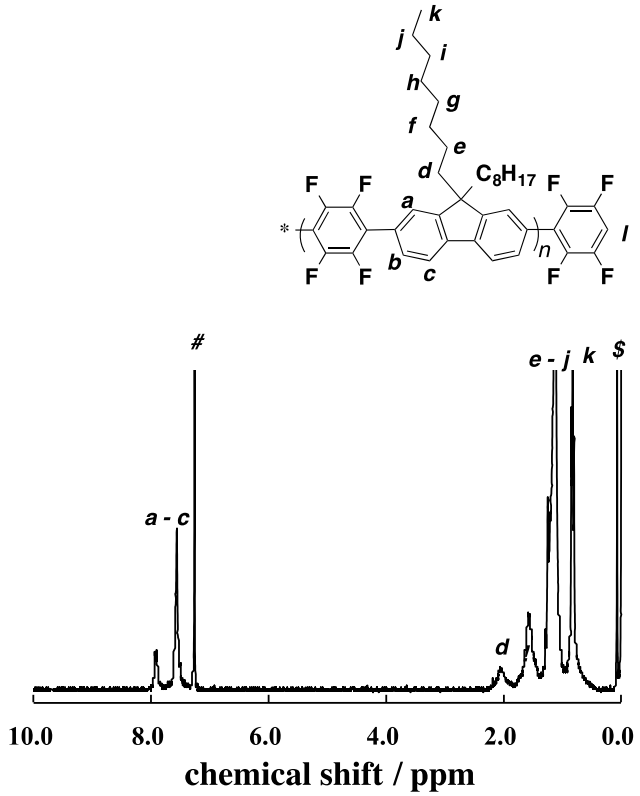

Figure S2. ^{1}H NMR spectrum of **PpTPF8**. #: $CHCl_3$. *!*: H_2O. *$*: TMS.

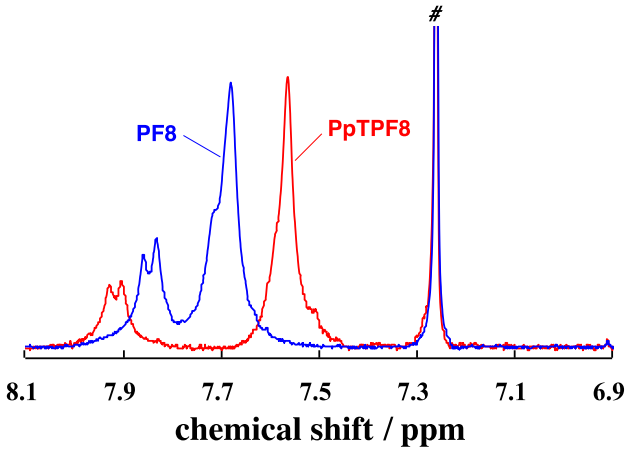

Figure S3. ^{1}H NMR spectra of **PpTPF8** (red line) and **PF8** (blue line). #: $CHCl_3$.

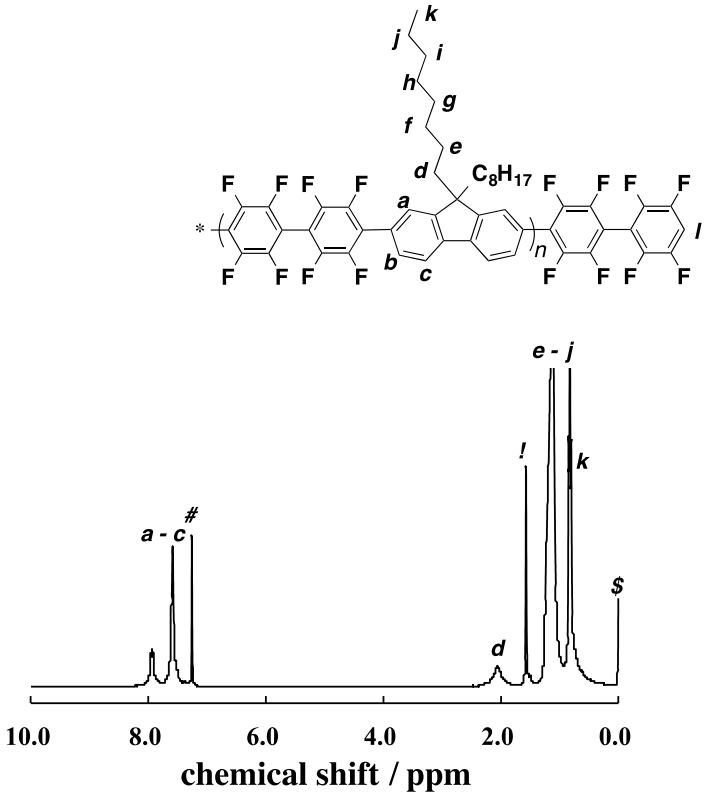

Figure S4. ^{1}H NMR spectrum of **PpOFPF8**. #: $CHCl_3$. *!*: H_2O. *$*: TMS.

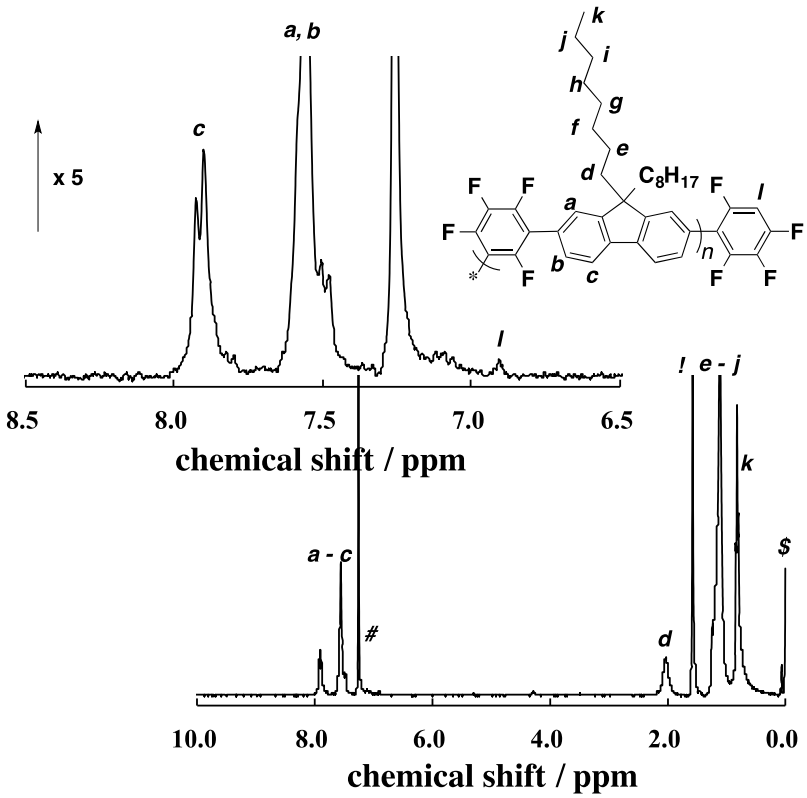

Figure S5. ^{1}H NMR spectrum of **PmTPF8**. #: $CHCl_3$. *!*: H_2O. *$*: TMS.

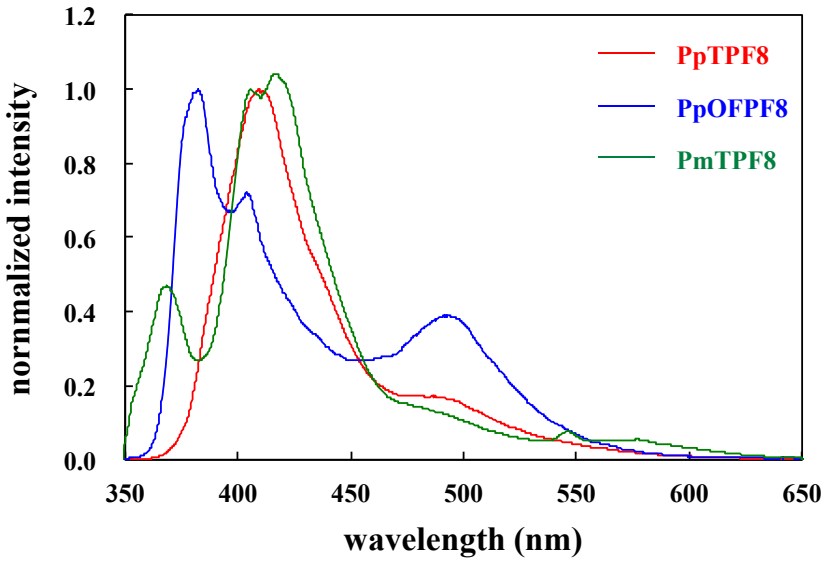

Figure S6. Fluorescence spectra of the polymers (**PpTPF8**, **PpOPF8**, **PmTPF8**) in chloroform.

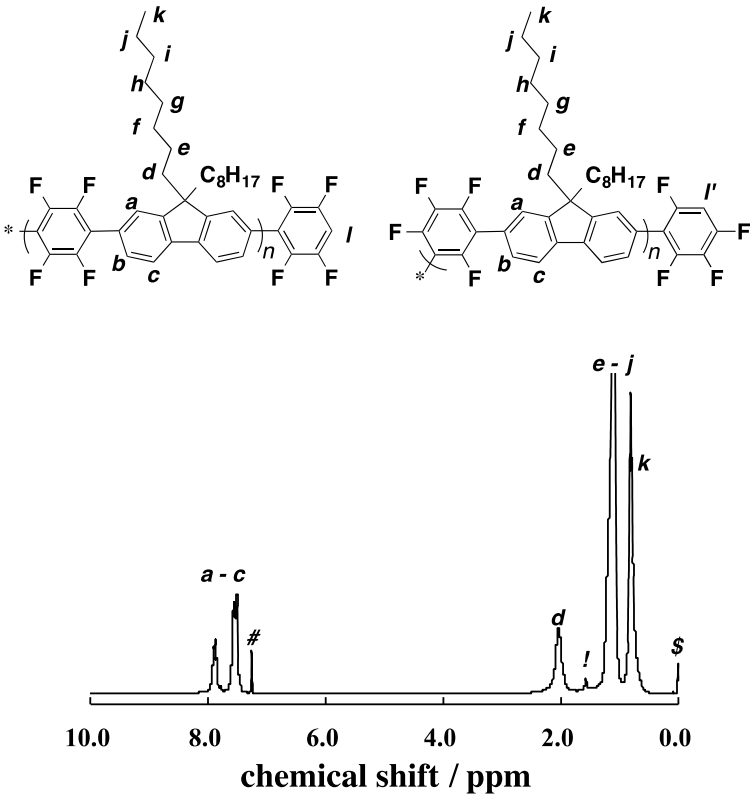

Figure S7. ^{1}H NMR spectrum of **RC2**. #: $CHCl_3$. *!*: H_2O. *$*: TMS.

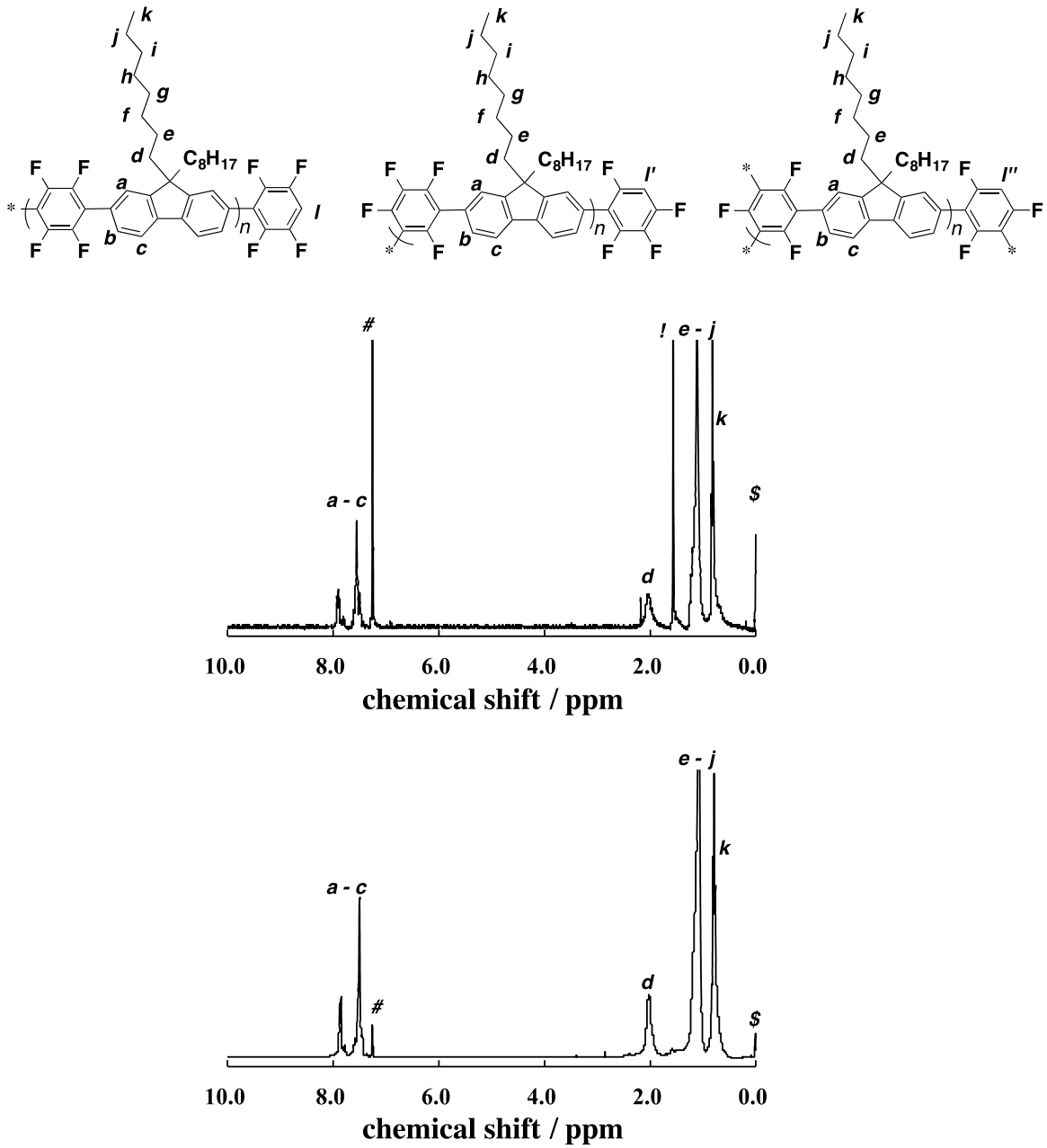

Figure S8. ^{1}H NMR spectra of **BRCA2** (top) and **BRCB2** (bottom). #: $CHCl_3$. *!*: H_2O. *$*: TMS.

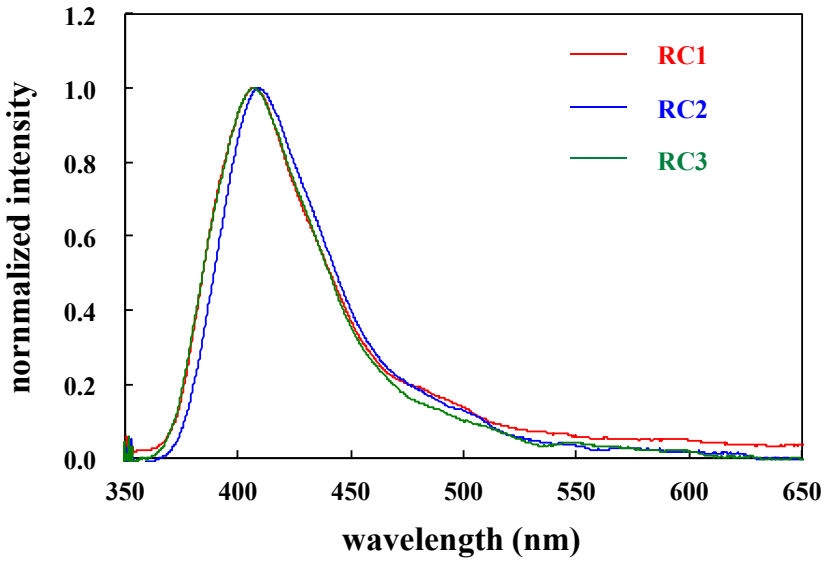

Figure S9. Fluorescence spectra of **RCs** in chloroform.

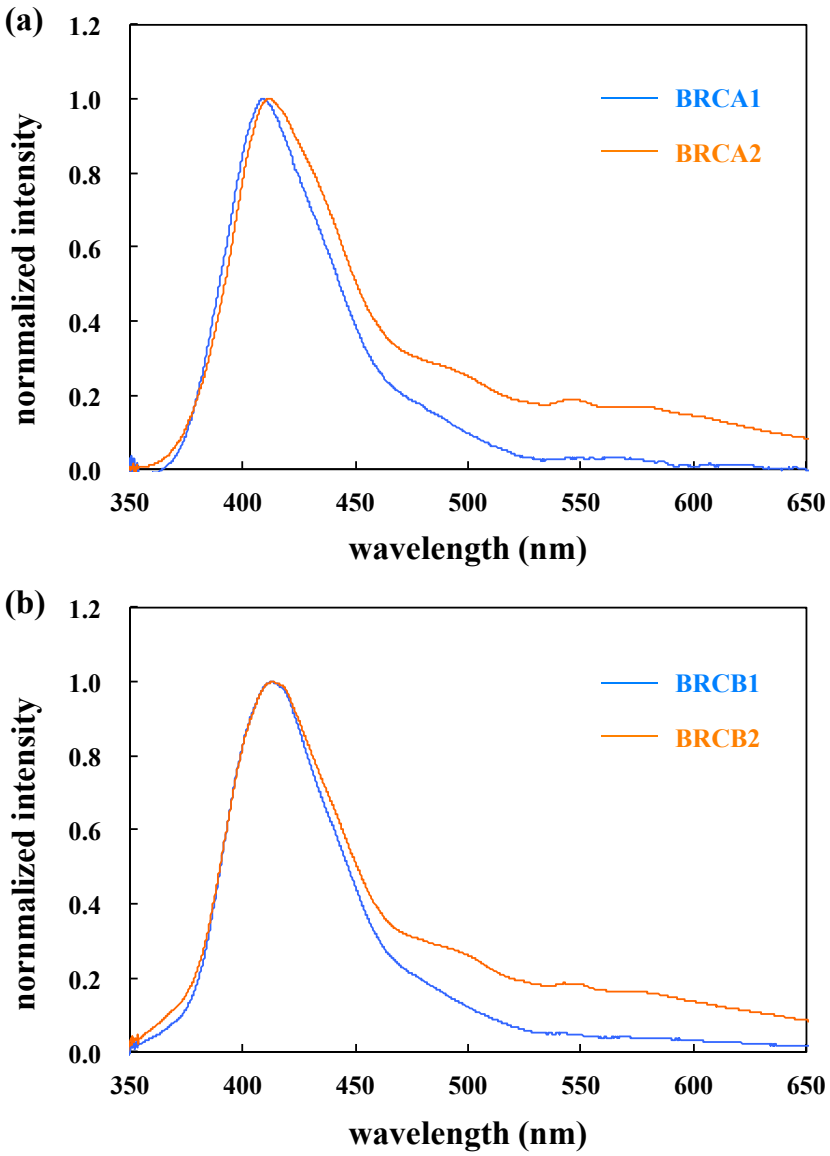

Figure S10. Fluorescence spectra of **BRCAs** (a) and **BRCBs** (b) in chloroform. #: $CHCl_3$. *!*: H_2O. *$*: TMS.

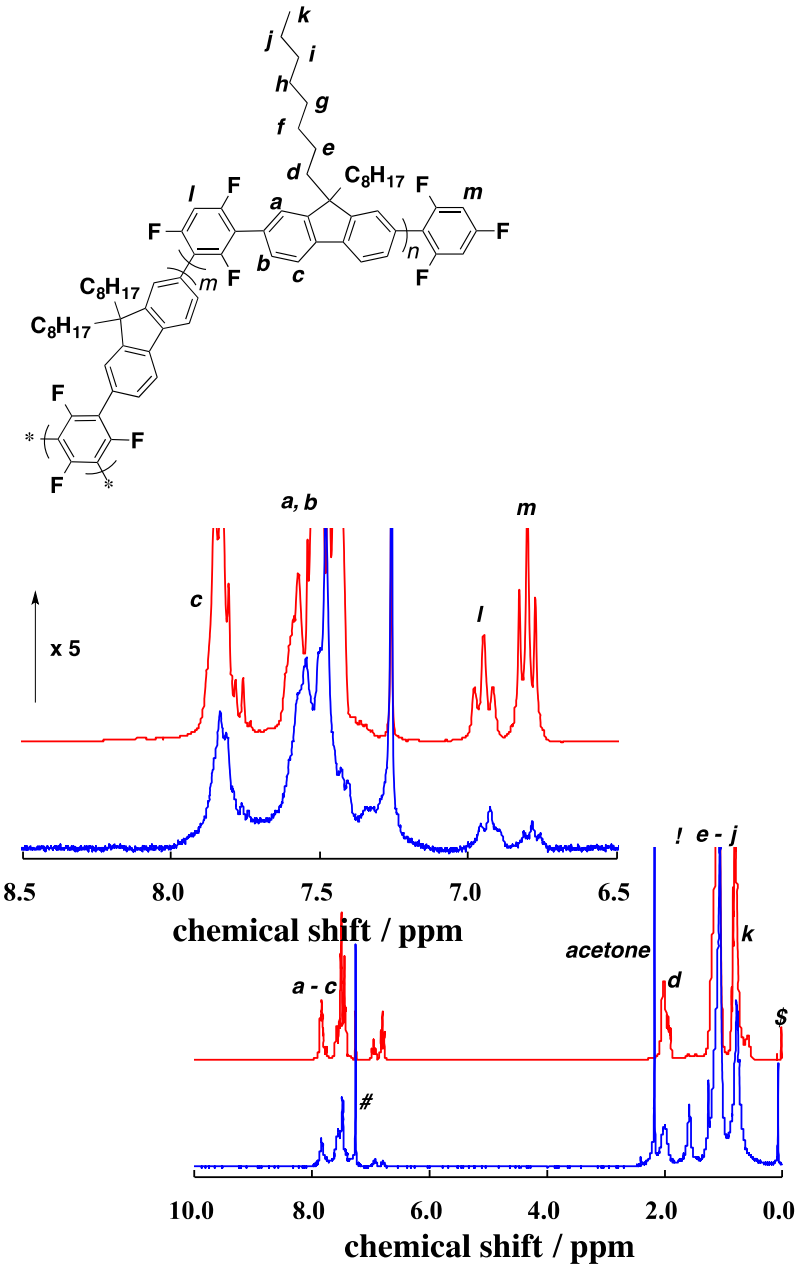

Figure S11. ^{1}H NMR spectra of **BP1** (red line) and **BP5** (blue line). #: $CHCl_3$. *!*: H_2O. *$*: TMS.

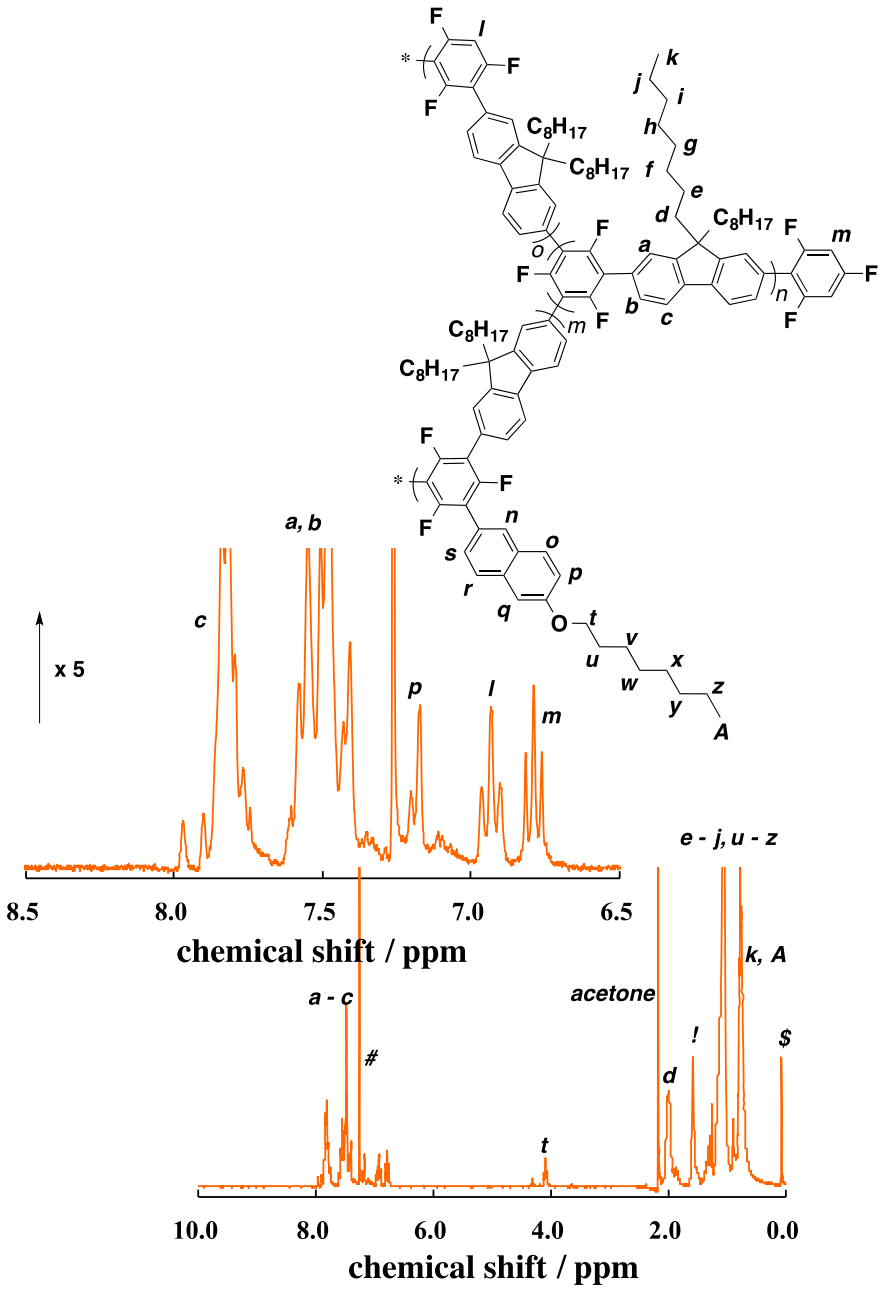

Figure S12. ^{1}H NMR spectrum of **BPNap**. #: $CHCl_3$. *!*: H_2O. *$*: TMS.

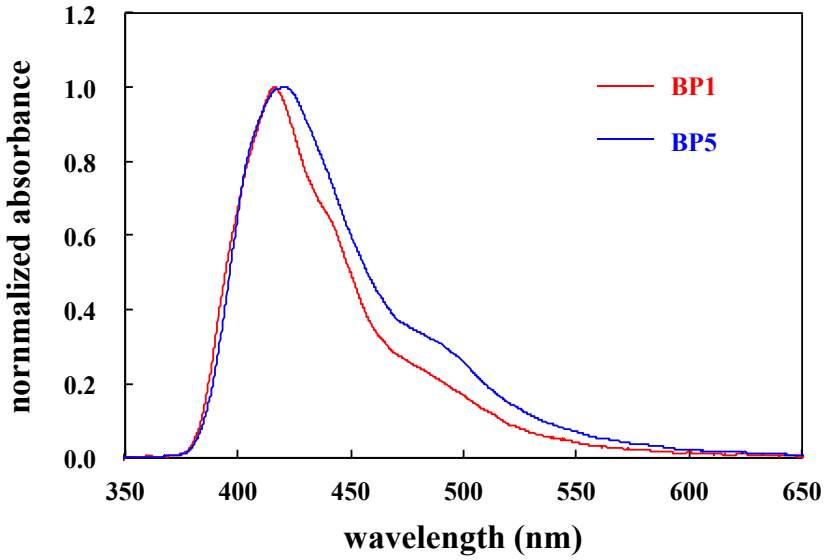

Figure S13. Fluorescence spectra of **BPs** in chloroform.

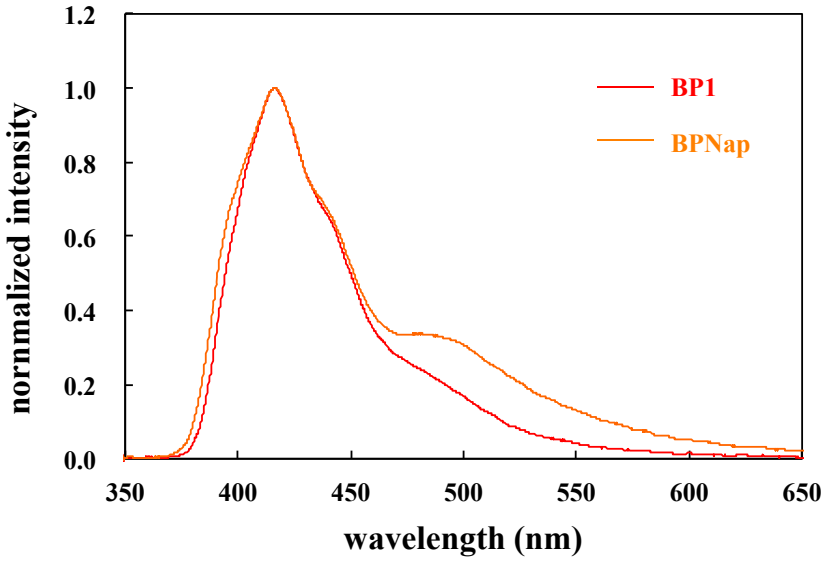

Figure S14. Fluorescence spectra of **BP1** and **BPNap** in chloroform.