

**Branched alkyl ester side chains rendering large polycyclic (*3E,7E*)-
3,7-bis(2-oxoindolin-3-ylidene)benzo[1,2-*b*:4,5-*b*']difuran-2,6(*3H,7H*)-
dione (IBDF) based donor-acceptor polymers solution-processability
for organic thin film transistors**

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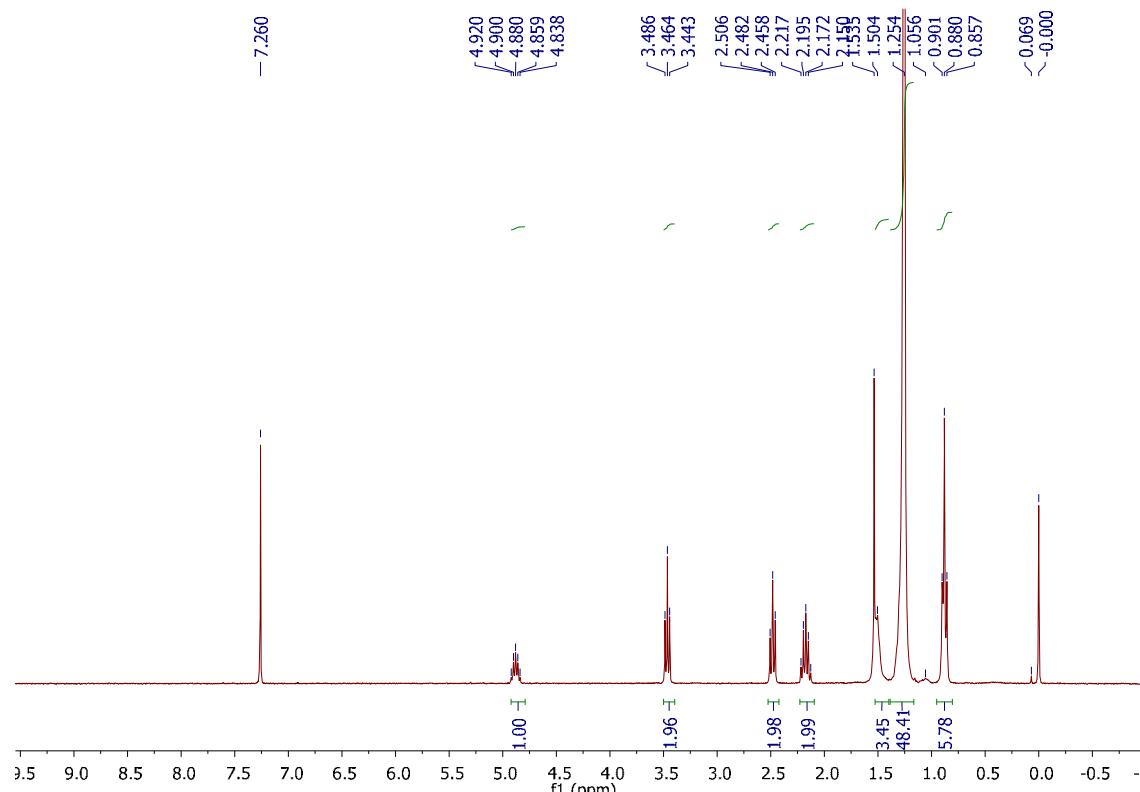


Fig. S1 300 MHz ¹H NMR spectrum for nonacosan-15-yl 4-bromobutanoate (**1a**) in CDCl₃.

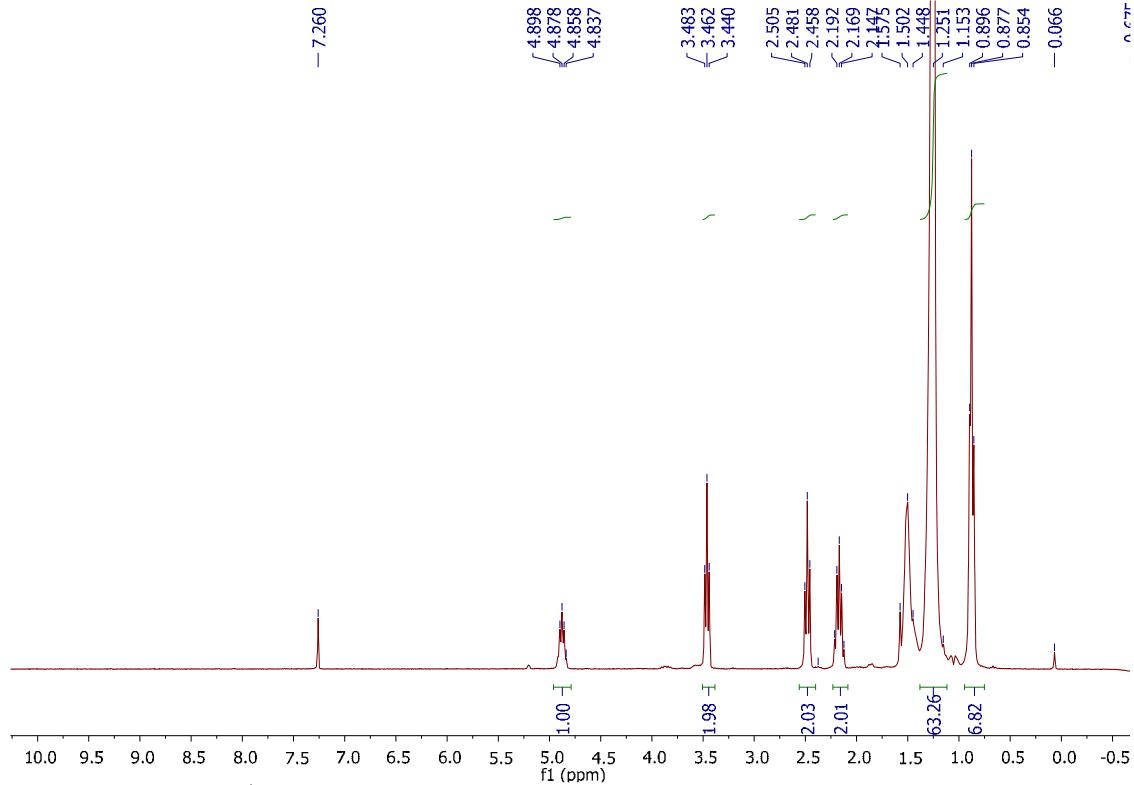


Fig. S2 300 MHz ^1H NMR spectrum for tritriacontan-17-yl 4-bromobutanoate (**1b**) in CDCl_3 .

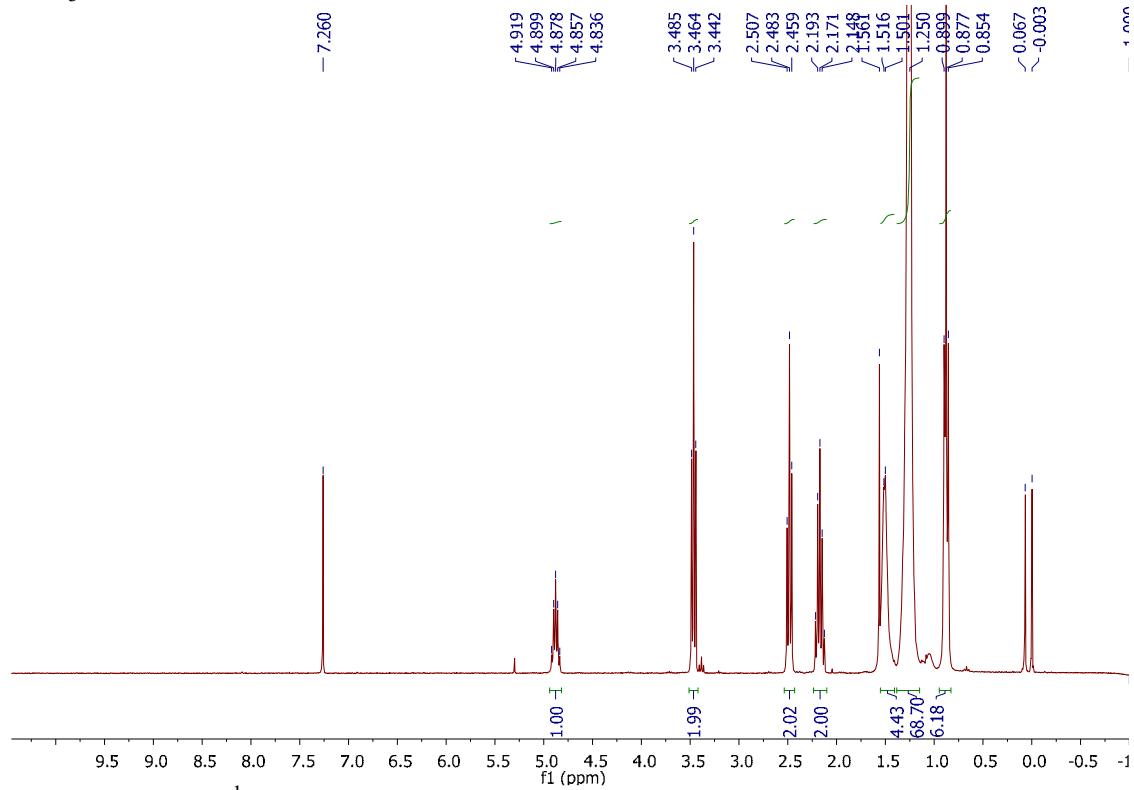


Fig. S3 300 MHz ^1H NMR spectrum for heptatriacontan-19-yl 4-bromobutanoate (**1c**) in CDCl_3 .

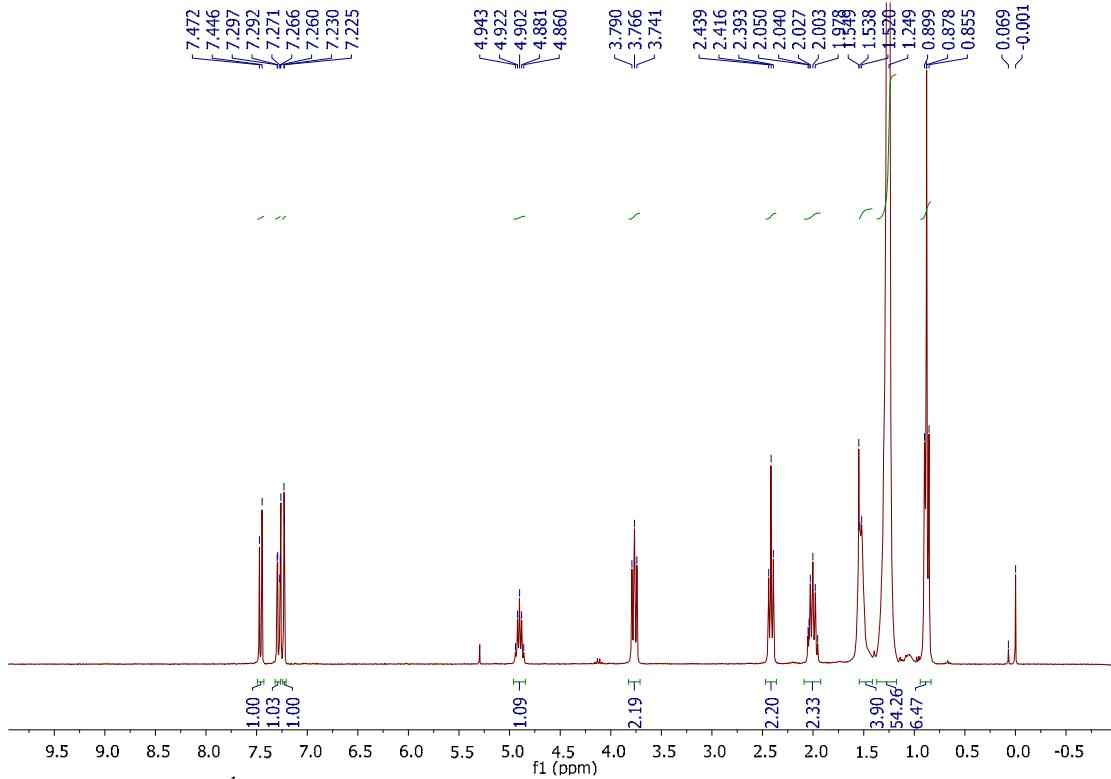


Fig. S4 300 MHz ^1H NMR spectrum for nonacosan-15-yl 4-(6-bromo-2,3-dioxoindolin-1-yl)butanoate (**2a**) in CDCl_3 .

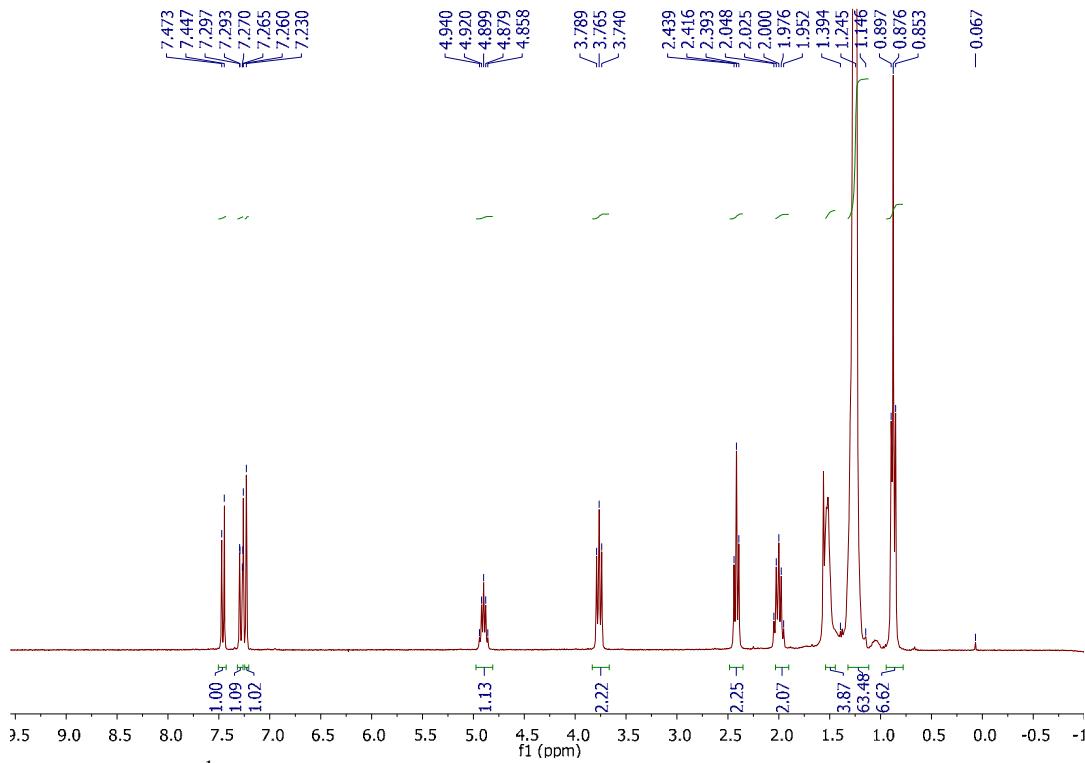


Fig. S5 300 MHz ^1H NMR spectrum for tritriacontan-17-yl 4-(6-bromo-2,3-dioxoindolin-1-yl)butanoate (**2b**) in CDCl_3 .

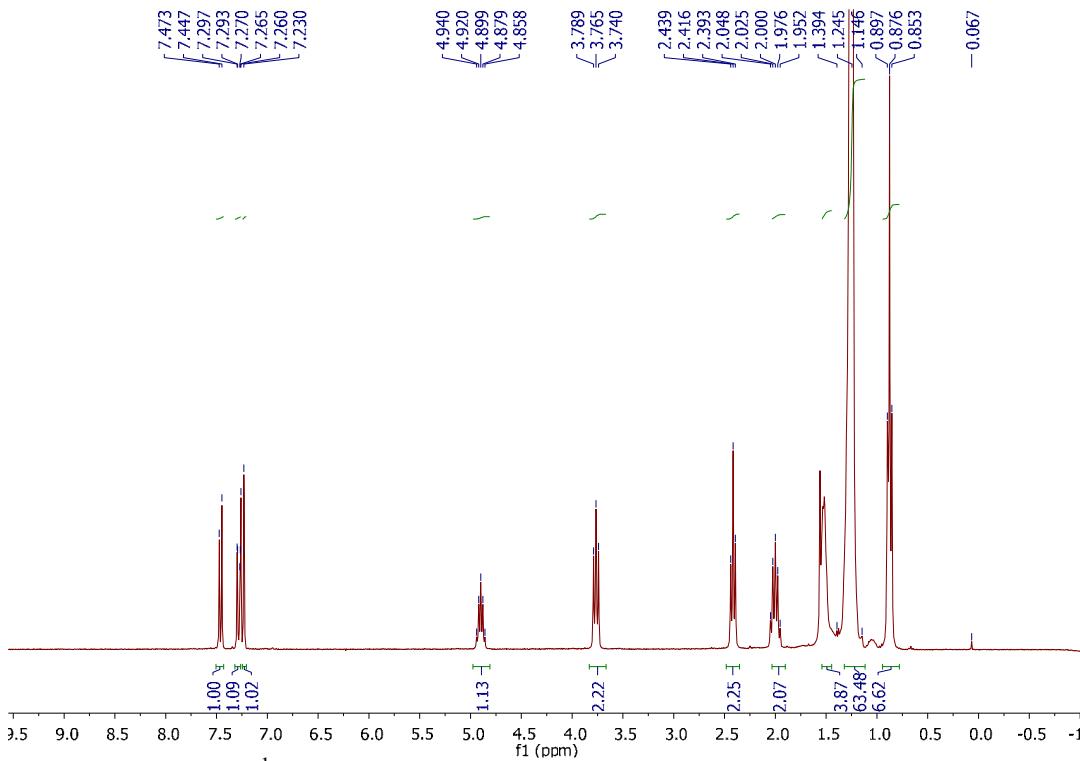


Fig. S6 300 MHz ^1H NMR spectrum for heptatriacontan-19-yl 4-(6-bromo-2,3-dioxoindolin-1-yl)butanoate (**2b**) in CDCl_3 .

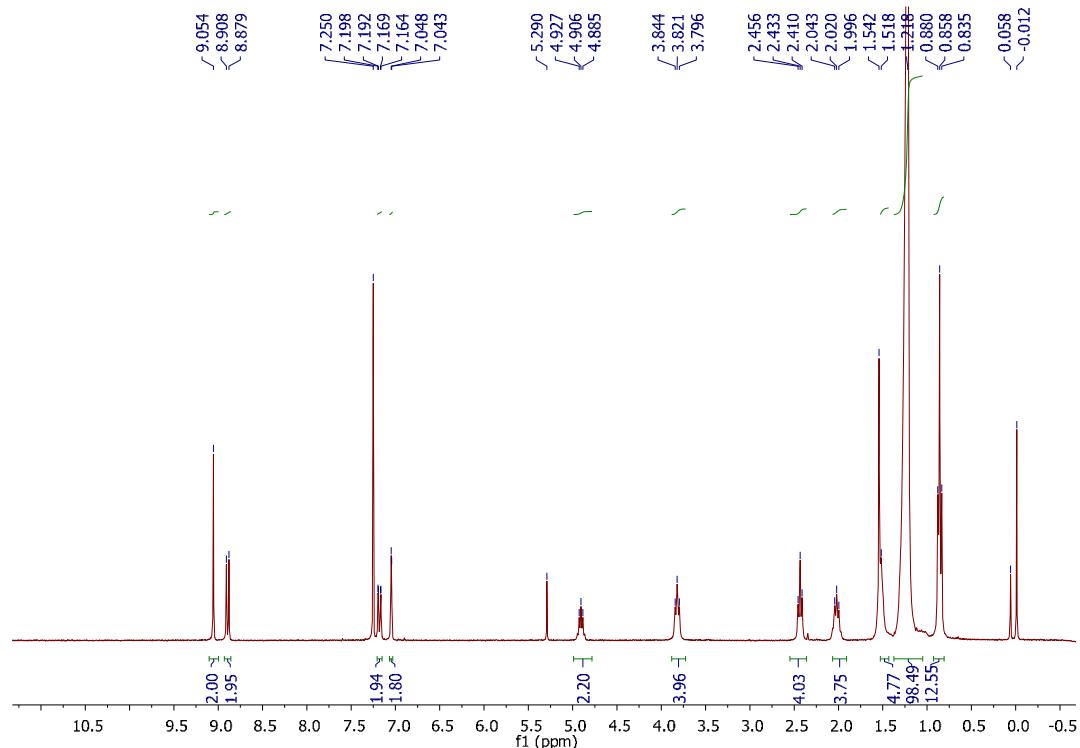


Fig. S7 300 MHz ^1H NMR spectrum for di(nonacosan-15-yl) 4,4'-($(3\text{E},3'\text{E})$ -(2,6-dioxobenzo[1,2-b:4,5-b']difuran-3,7(2H,6H)-diylidene)bis(6-bromo-2-oxoindoline-1-yl-3-ylidene))dibutyrate (**3a**) in CDCl_3 .

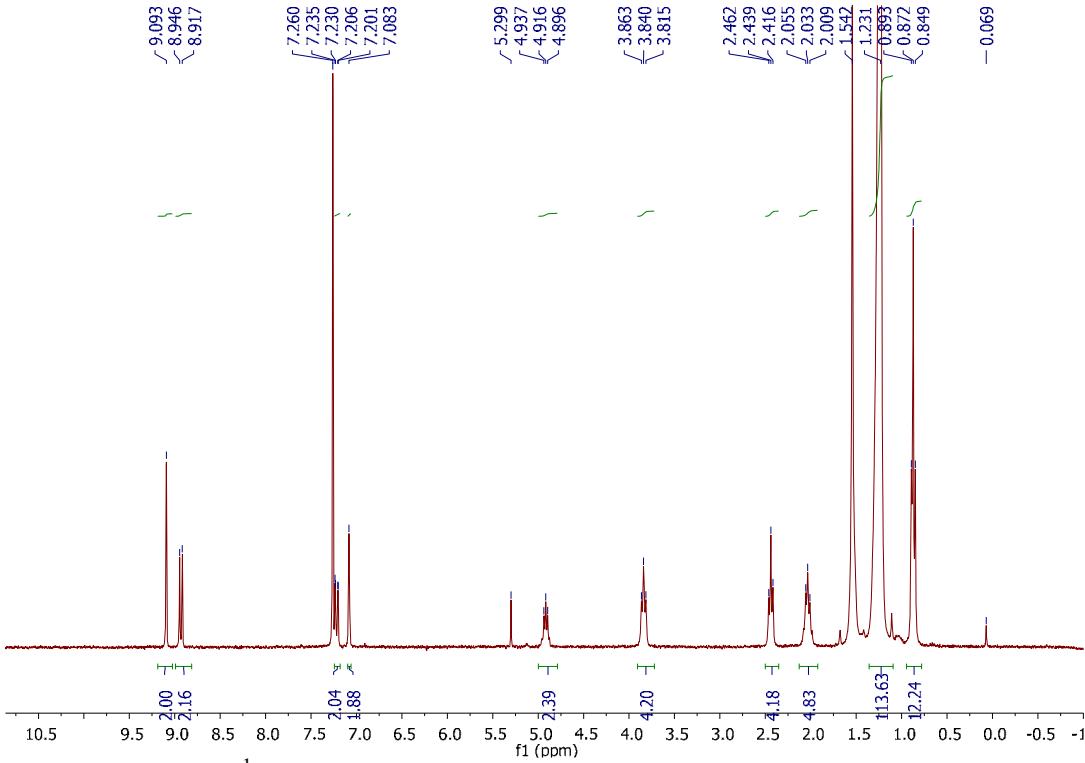


Fig. S8 300 MHz ^1H NMR spectrum for di(tritriacontan-17-yl) 4,4'-($(3E,3'E)$ -(2,6-dioxobenzo[1,2-*b*:4,5-*b'*]difuran-3,7(2*H*,6*H*)-diylidene)bis(6-bromo-2-oxoindoline-1-yl-3-ylidene))dibutyrate (**3b**) in CDCl_3 .

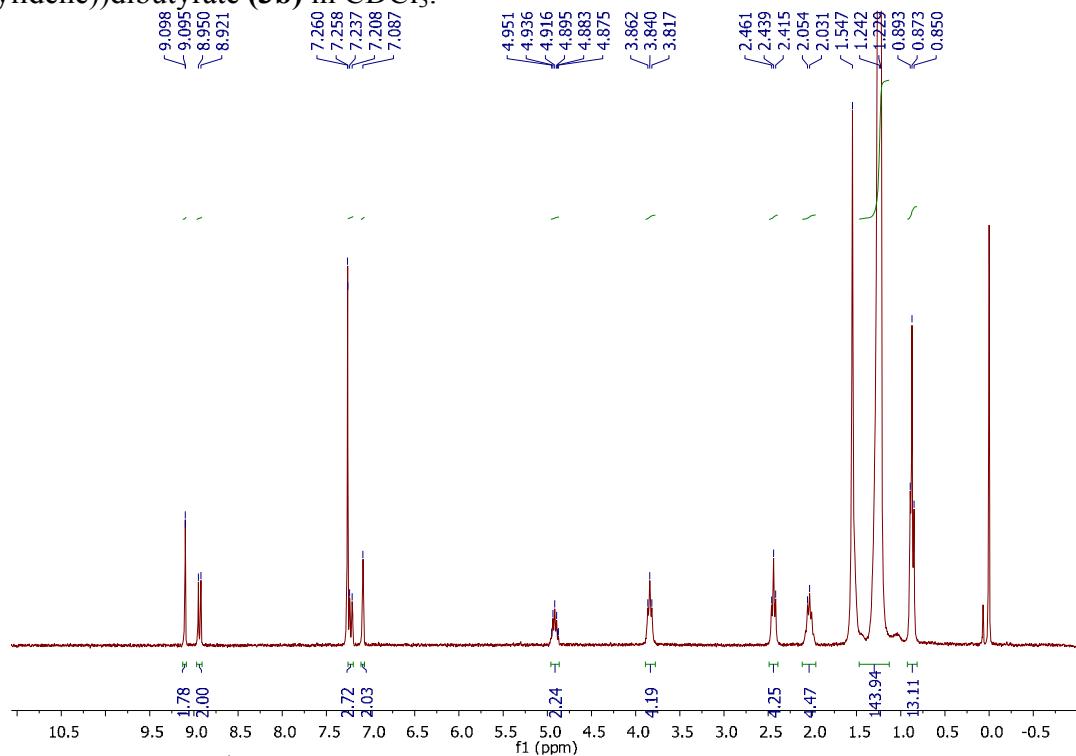


Fig. S9 300 MHz ^1H NMR spectrum for di(heptatriacontan-19-yl) 4,4'-($(3E,3'E)$ -(2,6-dioxobenzo[1,2-*b*:4,5-*b'*]difuran-3,7(2*H*,6*H*)-diylidene)bis(6-bromo-2-oxoindoline-1-yl-3-ylidene))dibutyrate (**3c**) in CDCl_3 .

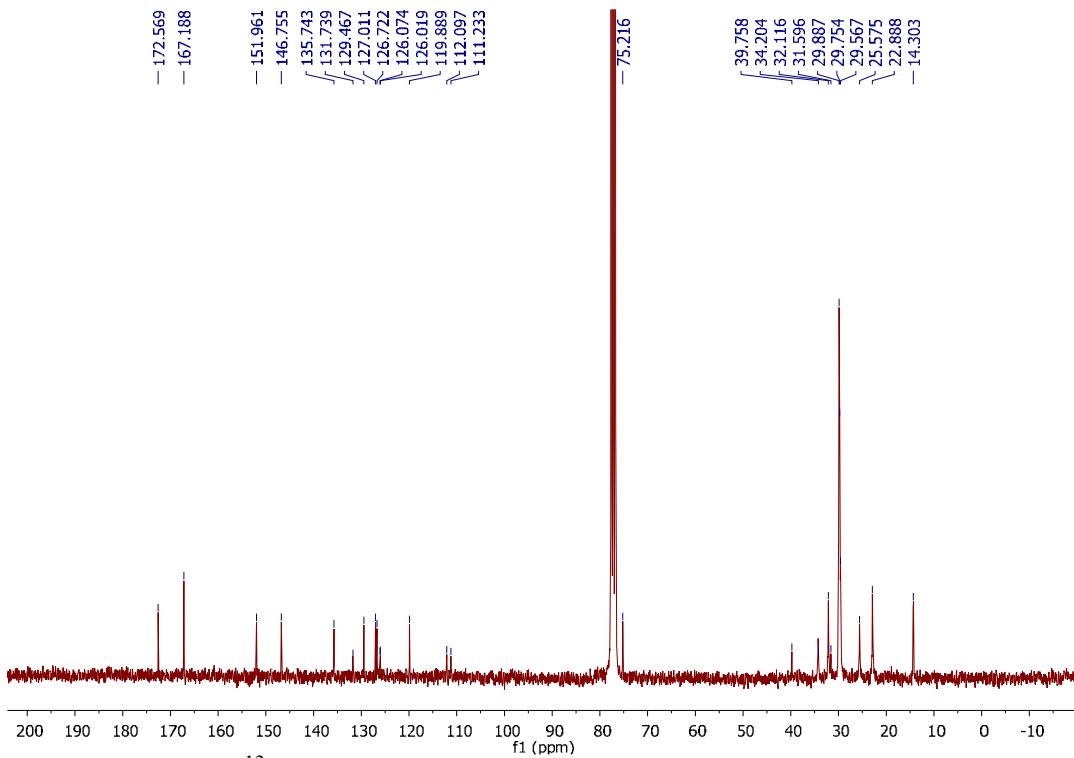


Fig. S10 75 MHz ^{13}C NMR spectrum for di(nonacosan-15-yl) 4,4'-($(3E,3'E)$ -(2,6-dioxobenzo[1,2-*b*:4,5-*b'*]difuran-3,7(2*H*,6*H*)-diylidene)bis(6-bromo-2-oxoindoline-1-yl-3-ylidene))dibutyrate (**3a**) in CDCl_3 .

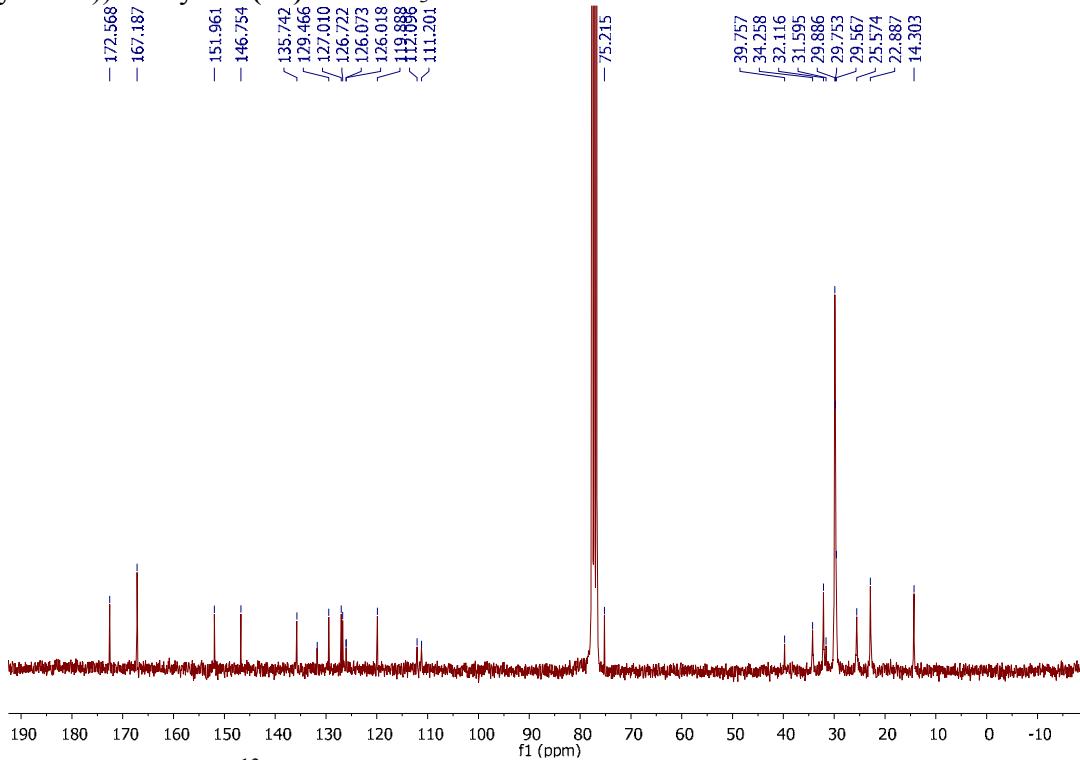


Fig. S11 75 MHz ^{13}C NMR spectrum for di(tritriacontan-17-yl) 4,4'-($(3E,3'E)$ -(2,6-dioxobenzo[1,2-*b*:4,5-*b'*]difuran-3,7(2*H*,6*H*)-diylidene)bis(6-bromo-2-oxoindoline-1-yl-3-ylidene))dibutyrate (**3b**) in CDCl_3 .

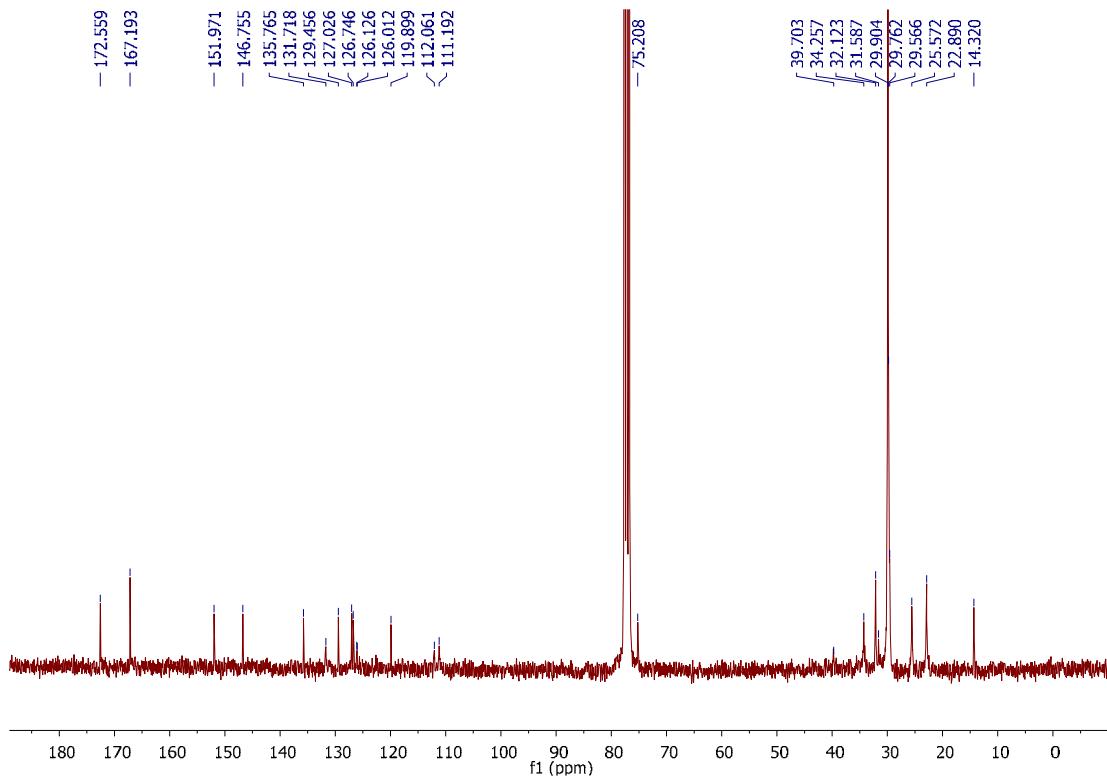


Fig. S12 75 MHz ^{13}C NMR spectrum for di(heptatriacontan-19-yl) 4,4'-($(3E,3'E)$ -(2,6-dioxobenzo[1,2-*b*:4,5-*b'*]difuran-3,7(2*H*,6*H*)-diylidene)bis(6-bromo-2-oxoindoline-1-yl-3-ylidene))dibutyrate (**3c**) in CDCl_3 .

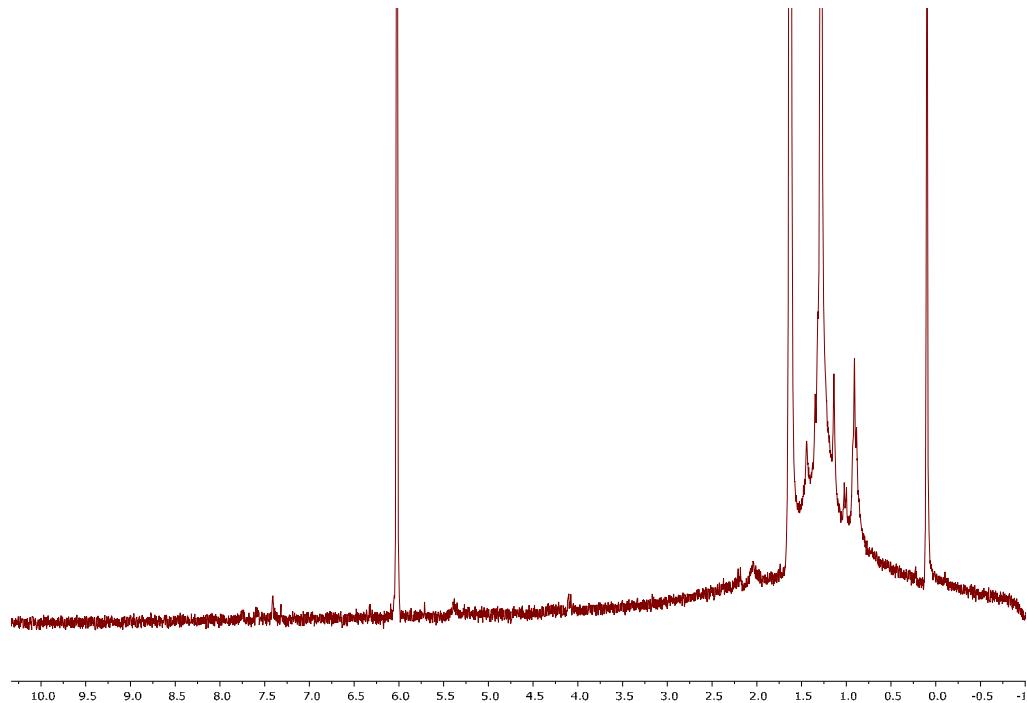


Fig. S13 300 MHz ^1H NMR spectrum for **P-33** in $\text{C}_2\text{D}_2\text{Cl}_4$.

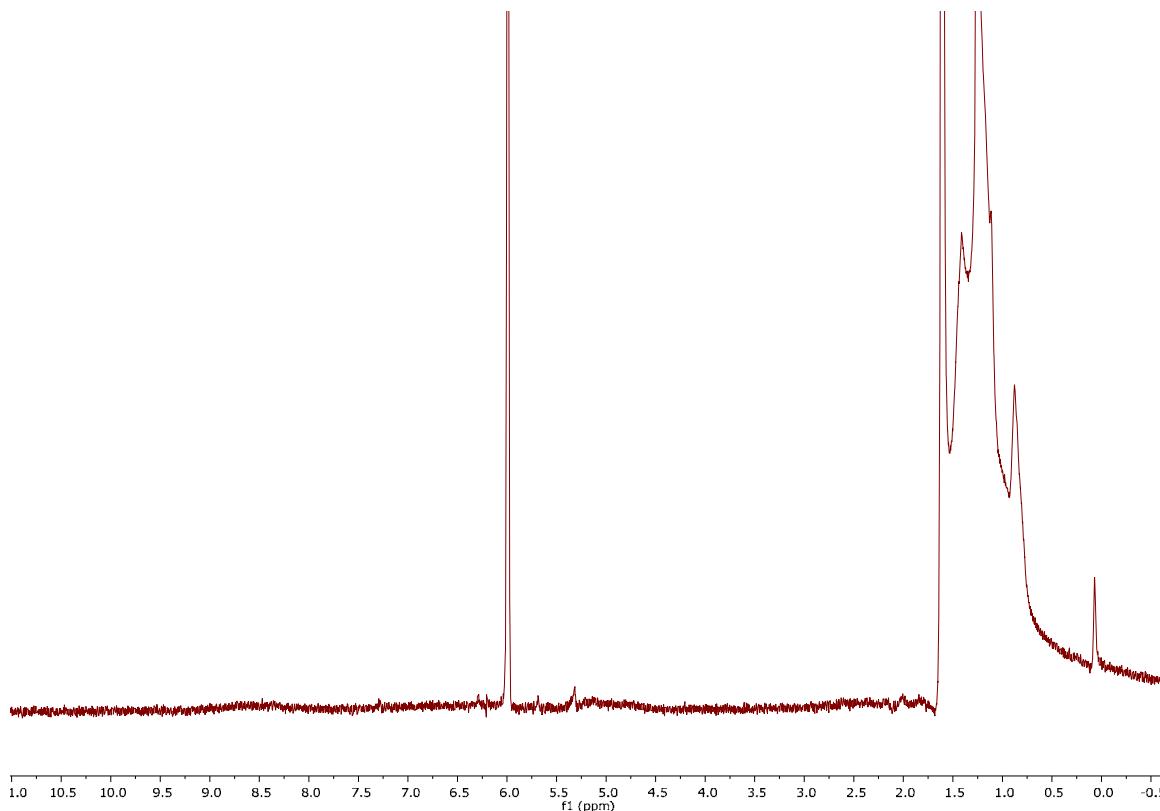


Fig. S14 300 MHz ^1H NMR spectrum for P-37 in $\text{C}_2\text{D}_2\text{Cl}_4$.

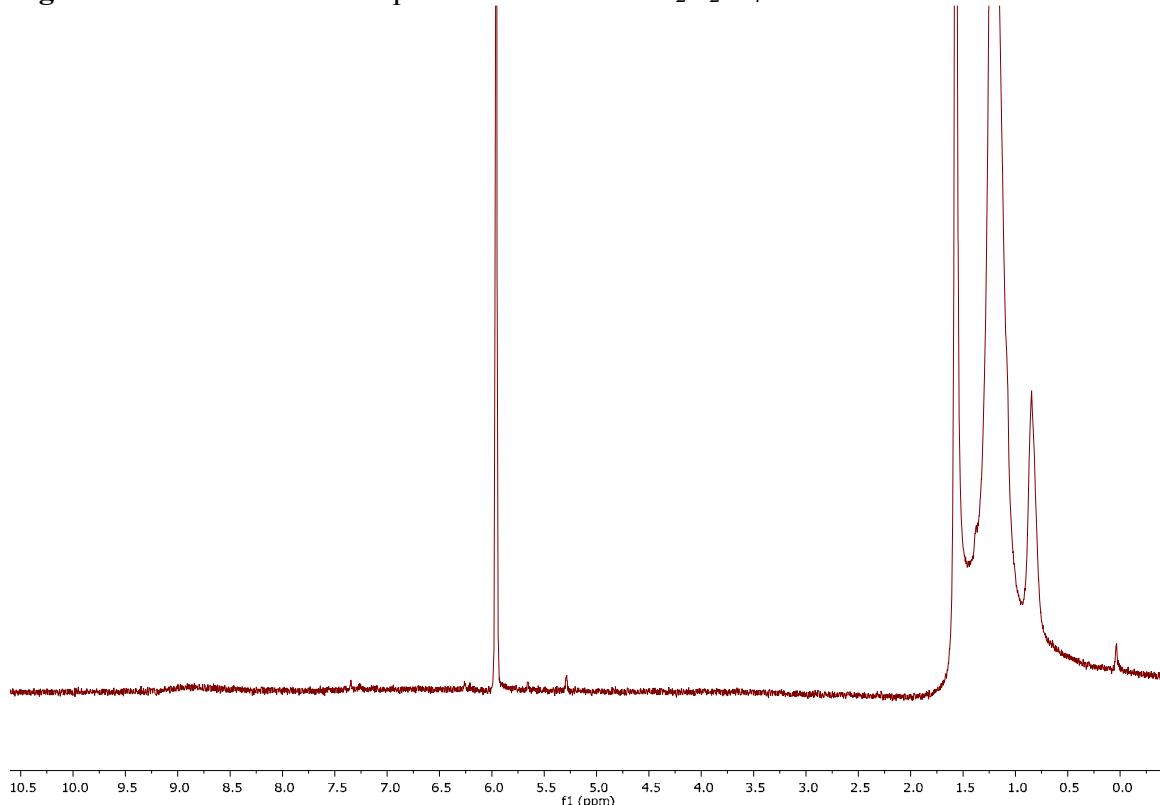


Fig. S15 300 MHz ^1H NMR spectrum for P-41 in $\text{C}_2\text{D}_2\text{Cl}_4$.

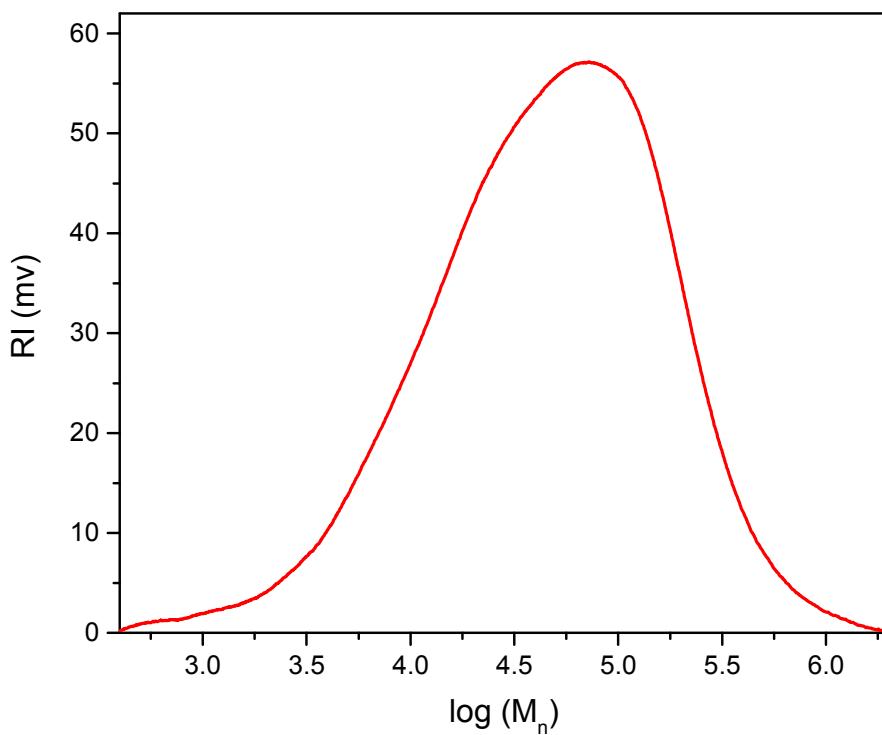


Fig. S16 HT-GPC curve of **P-33**: $M_n = 16$ kDa; PDI = 4.0.

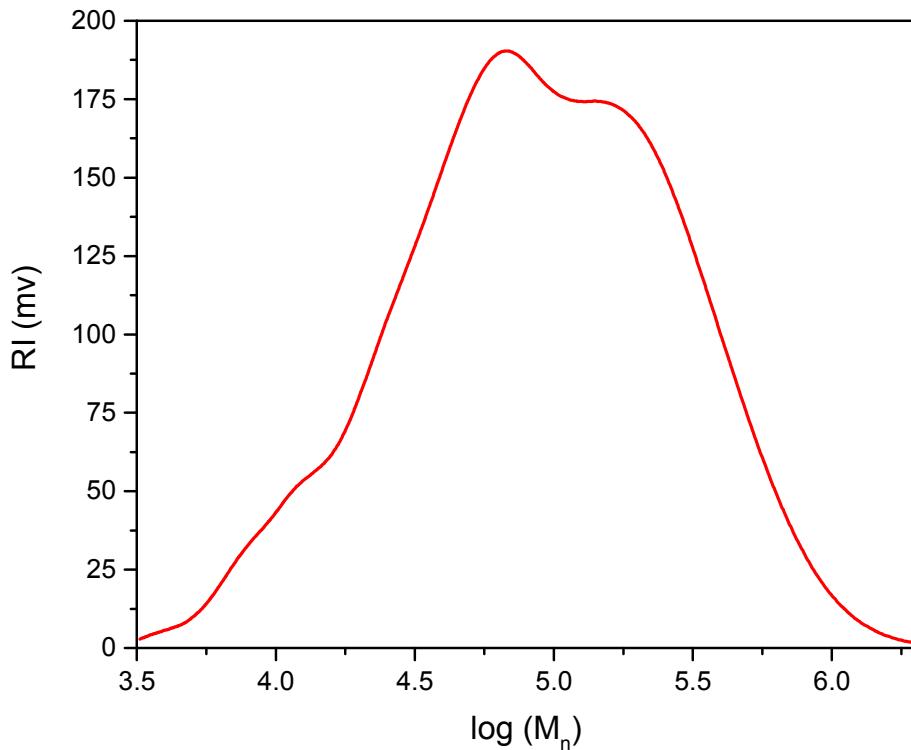


Fig. S17 HT-GPC curve of **P-37**: $M_n = 40$ kDa; PDI = 3.4.

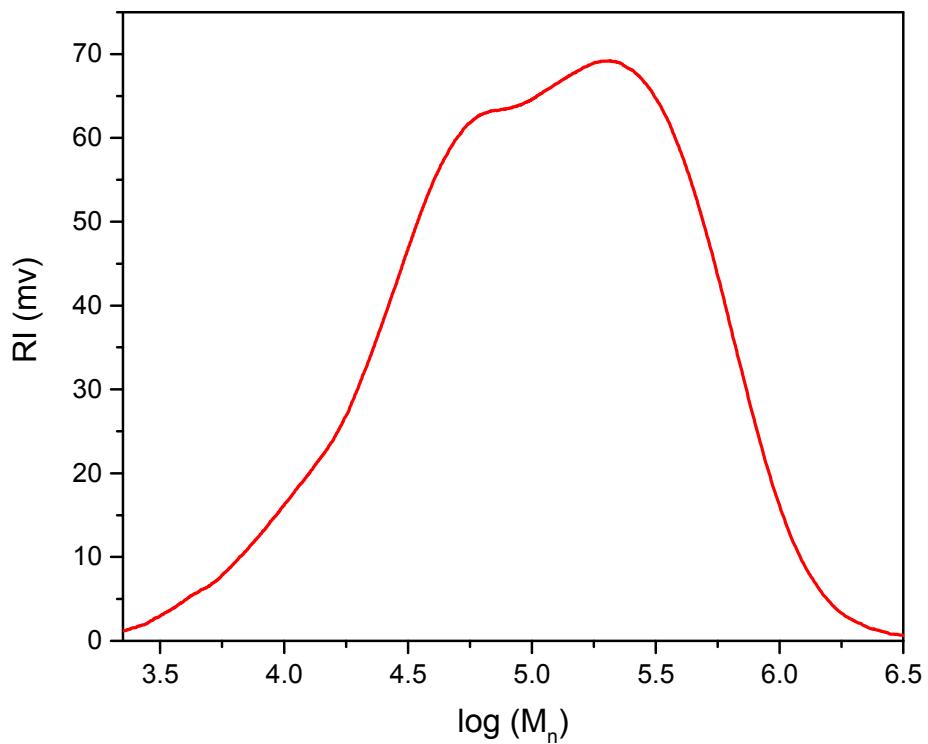


Fig. S18 HT-GPC curve of **P-41**: $M_n = 39$ kDa; PDI = 4.8.

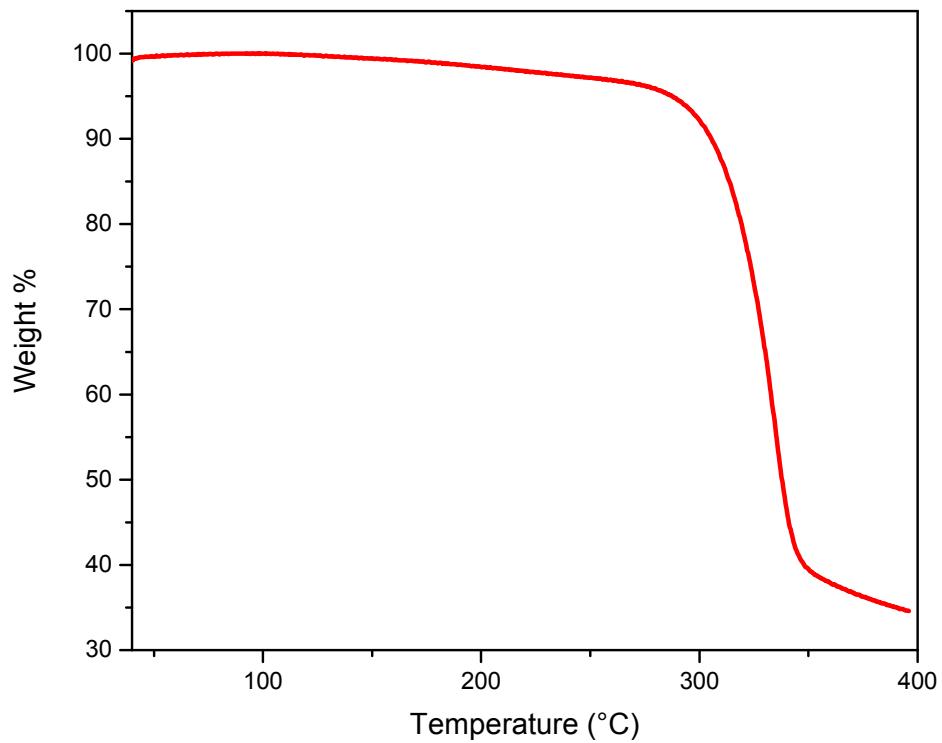


Fig. S19 TGA curve of **P-33**.

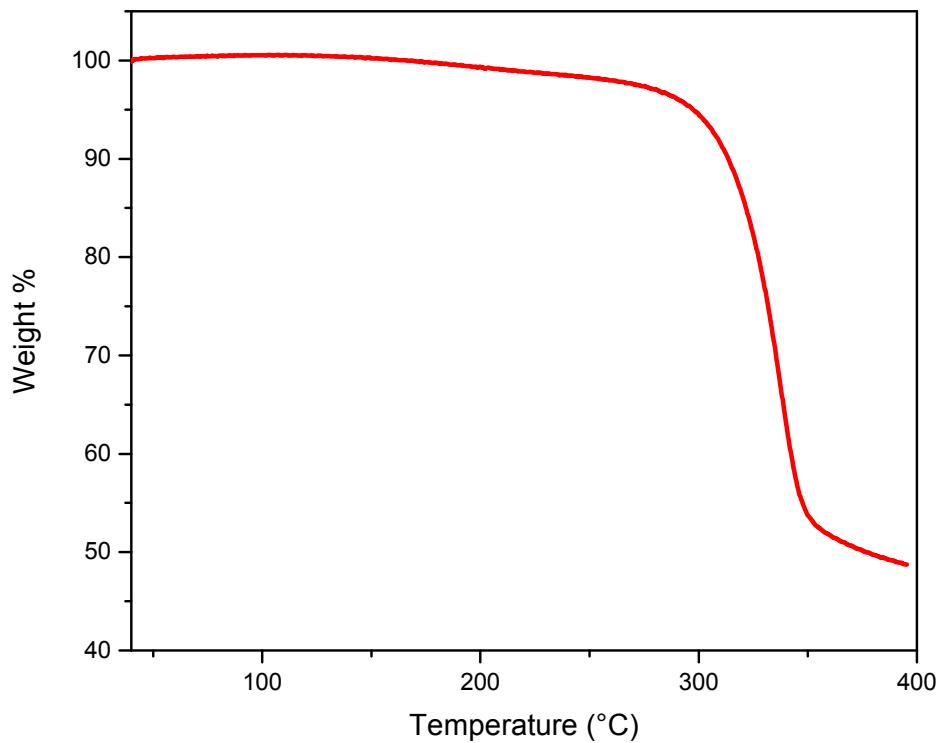


Fig. S20 TGA curve of **P-37**.

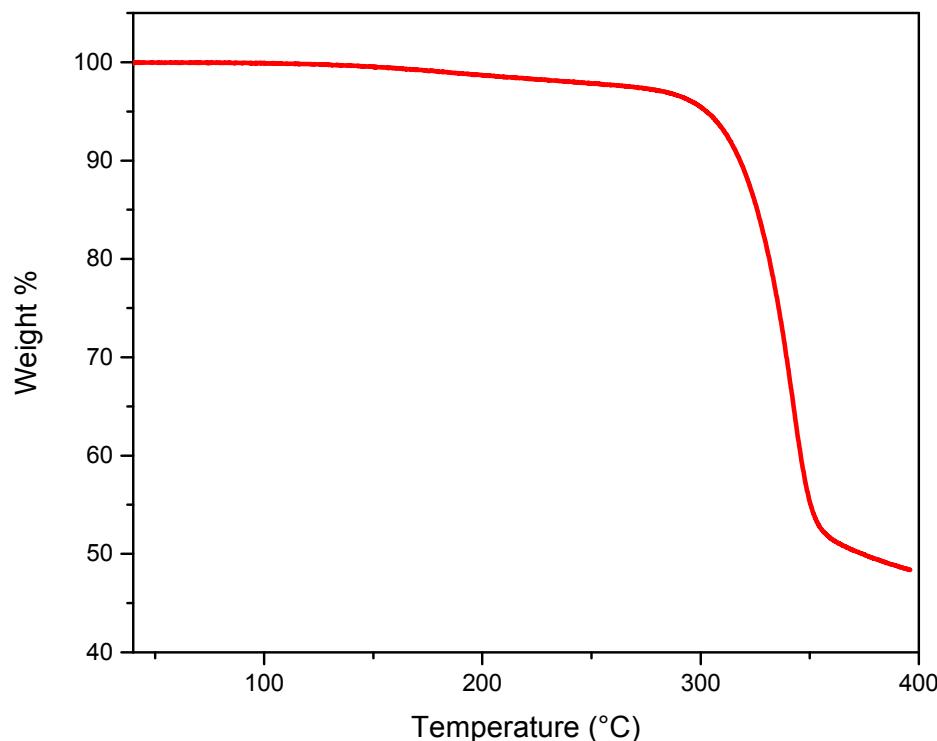


Fig. S21 TGA curve of **P-41**.

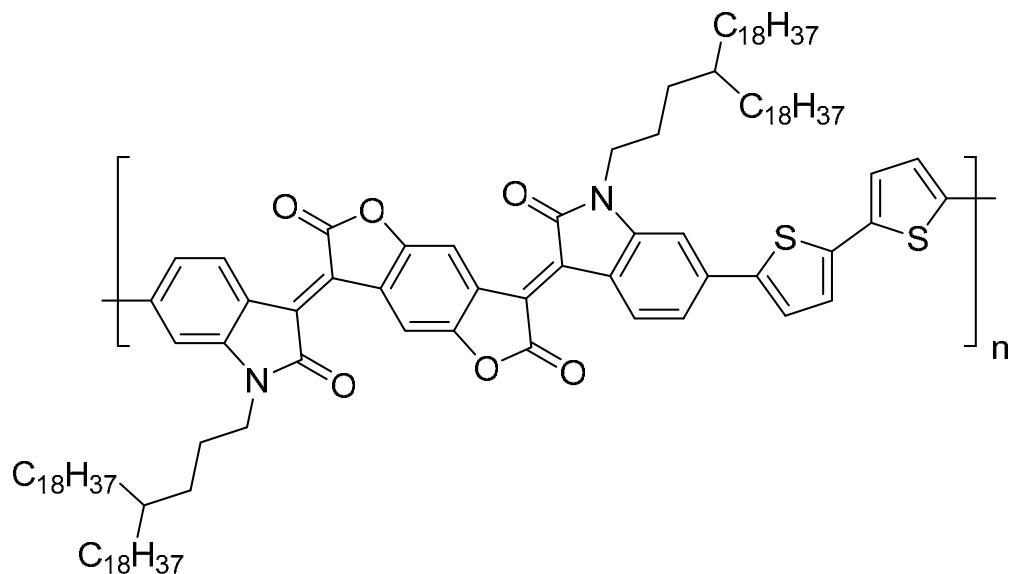


Fig. S22 Chemical structure of **PIBDFBT-40**.

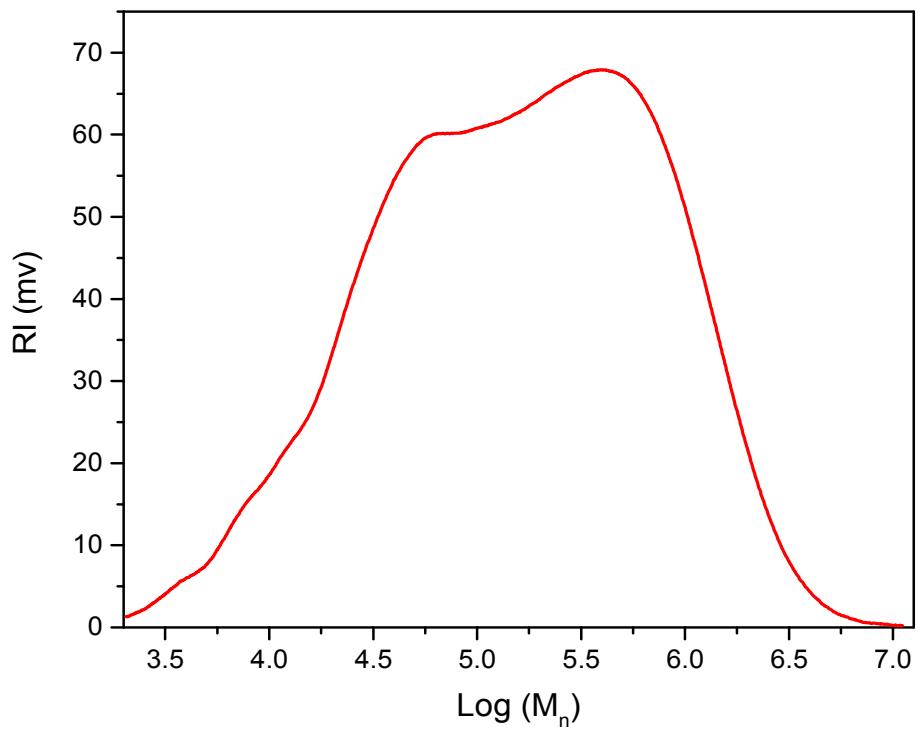


Fig. S23 HT-GPC curve of **PIBDFBT-40**: $M_n = 40$ kDa; PDI = 8.4.

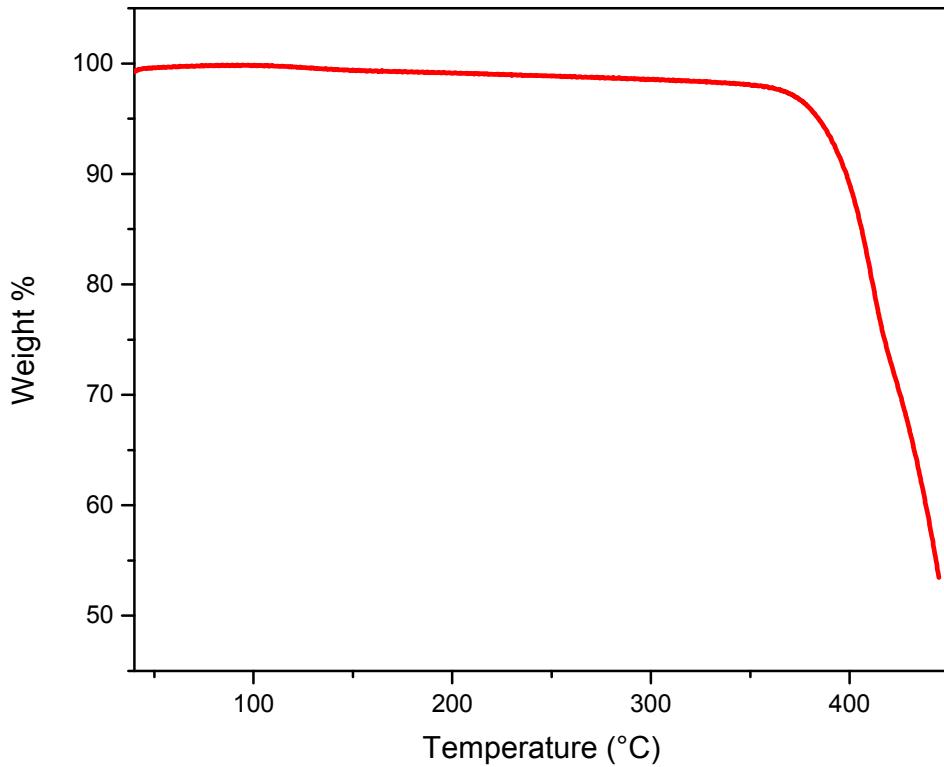


Fig. S24 TGA curve of **PIBDFBT-40**.

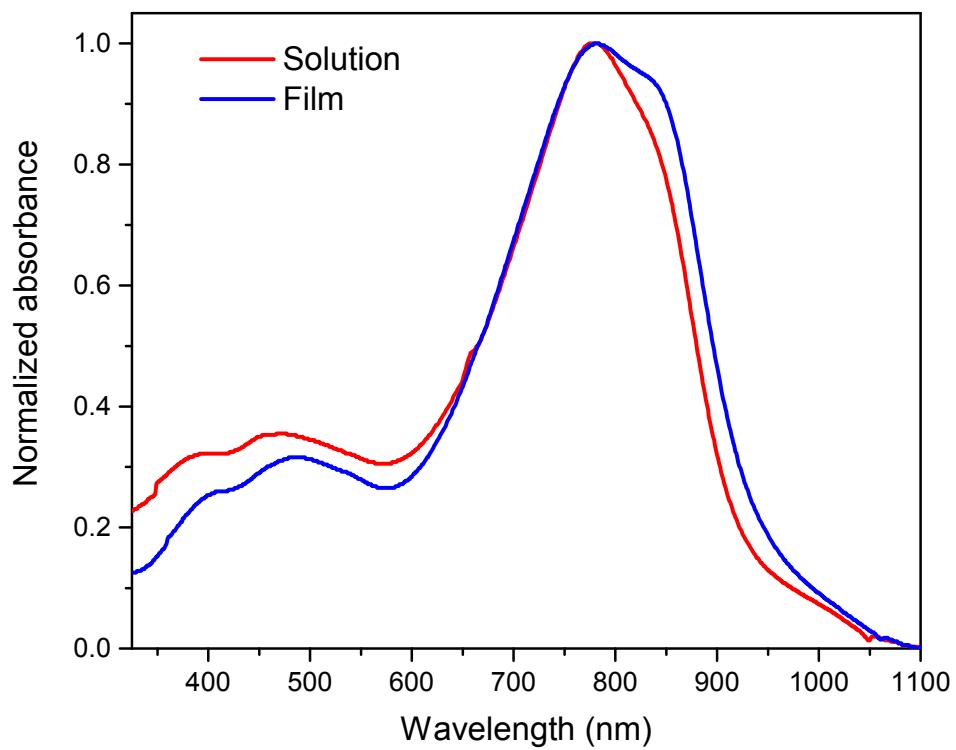


Fig. S25 UV-Vis absorption of **PIBDFBT-40**.

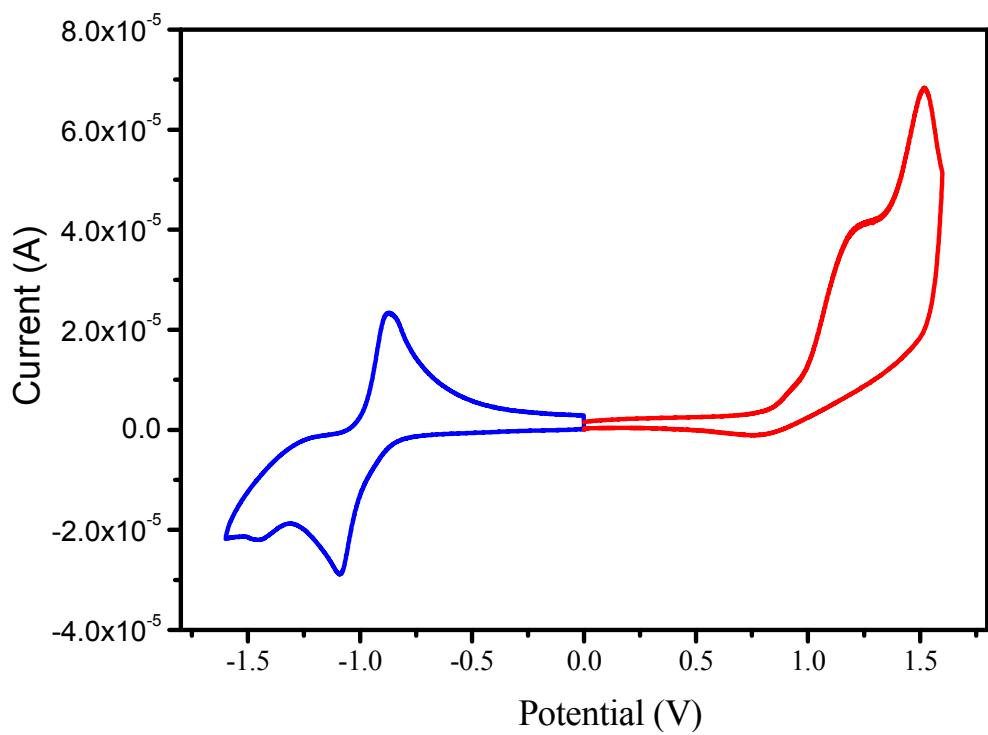


Fig. S26 Cyclic voltammetry diagram of **PIBDFBT-40**: $E_{\text{HOMO}} = -5.72$ eV; $E_{\text{LUMO}} = -3.88$ eV.

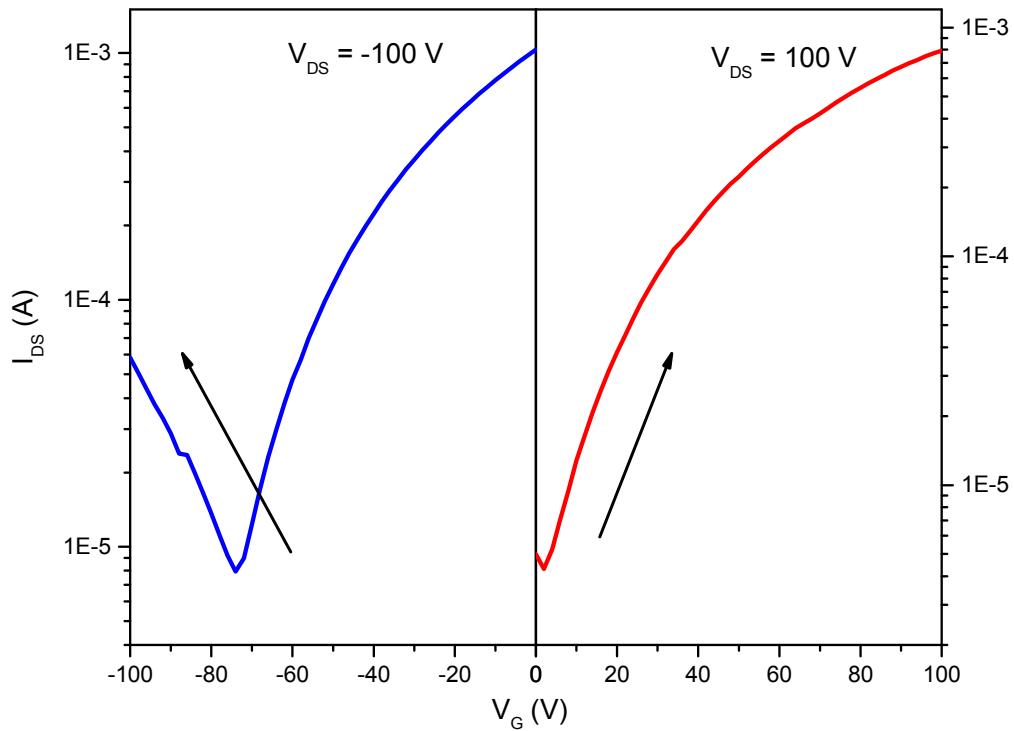


Fig. S27 The transfer curves of a BGBC OTFT device with 200 °C-annealed **PIBDFBT-40**. Device dimensions: channel length (L) = 30 μm ; channel width (W) = 1000 μm .

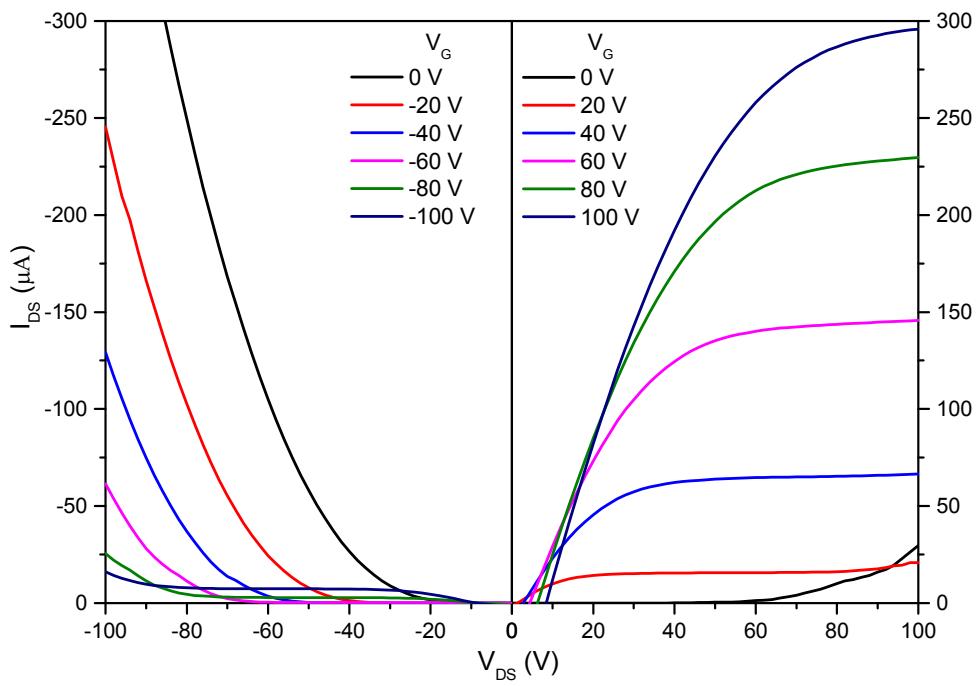


Fig. S28 The output curves of a BGBC OTFT device with 200 °C-annealed **PIBDFBT-40**. Device dimensions: channel length (L) = 30 μm ; channel width (W) = 1000 μm .