Supporting Information

Perylene Diimide-based Ionene and Zwitterionic Polymers: Synthesis and Solution Photophysical Properties

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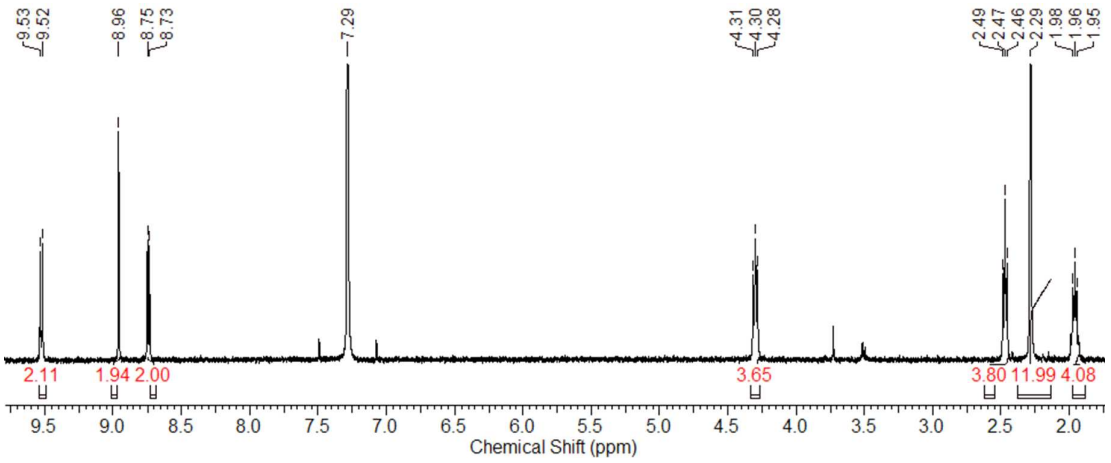

Fig. S1: ^{1}H NMR (500 MHz, $CDCl_3$) of 1,7-dibromo-[3(dimethylamino)propyl] perylene diimide **(1)**

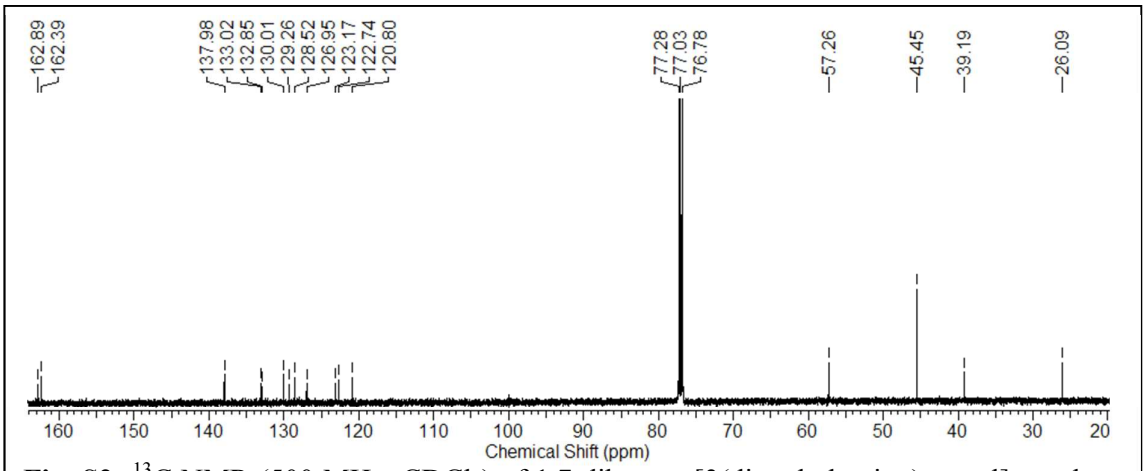

Fig. S2: ^{13}C NMR (500 MHz, $CDCl_3$) of 1,7-dibromo-[3(dimethylamino)propyl] perylene diimide **(1)**

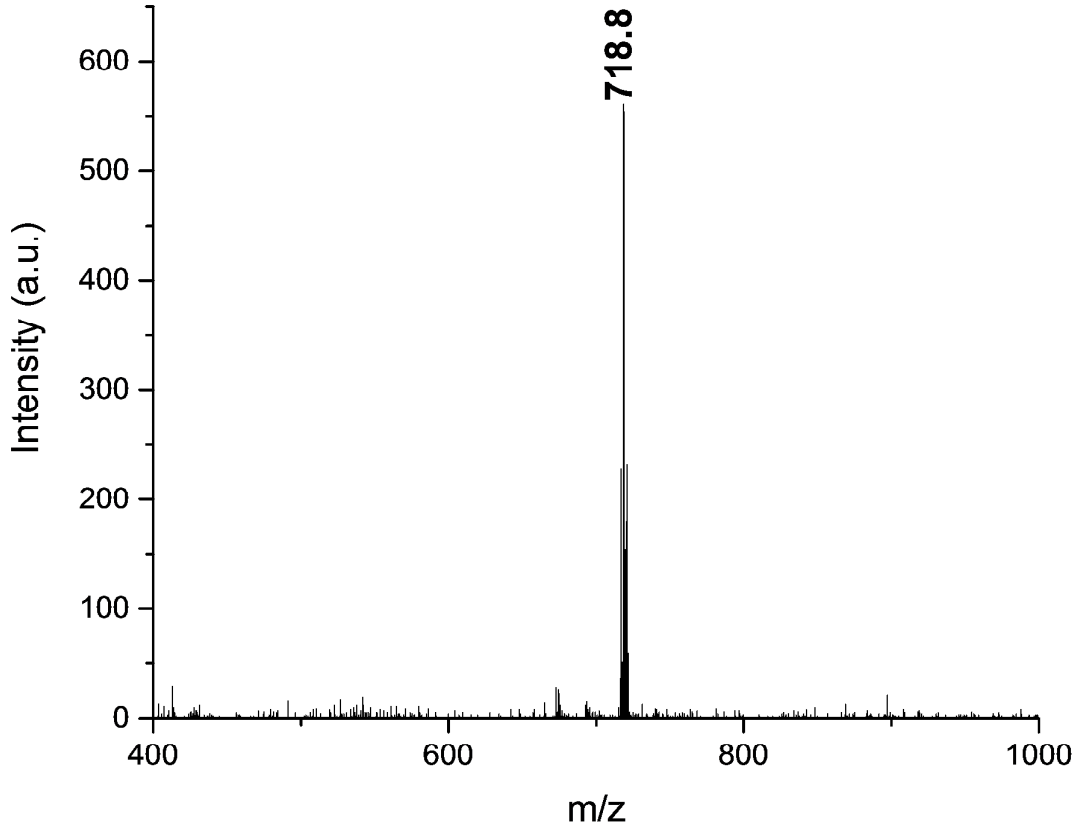

Fig. S3: MALDI-TOF spectrumof 1,7-dibromo-[3(dimethylamino)propyl] perylene diimide **(1)**

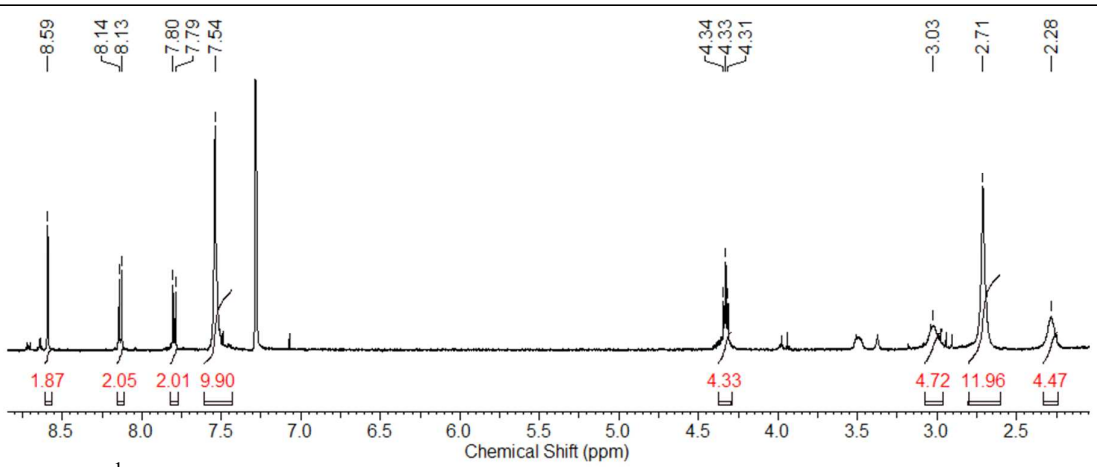

Fig. S4: ^{1}H NMR (500 MHz, $CDCl_3$) of 1,7-diphenyl-[3(dimethylamino)propyl] perylene diimide **(2)**

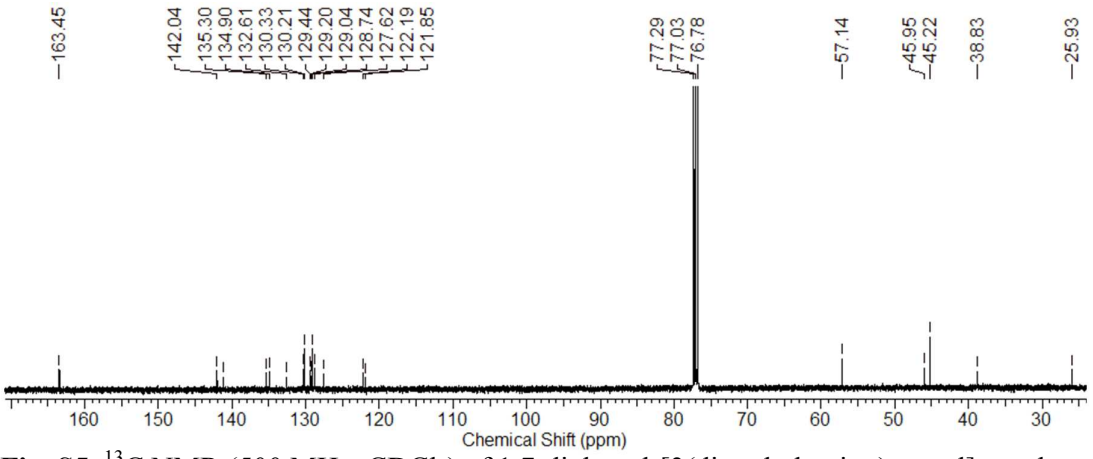

Fig. S5: ^{13}C NMR (500 MHz, $CDCl_3$) of 1,7-diphenyl-[3(dimethylamino)propyl] perylene diimide **(2)**

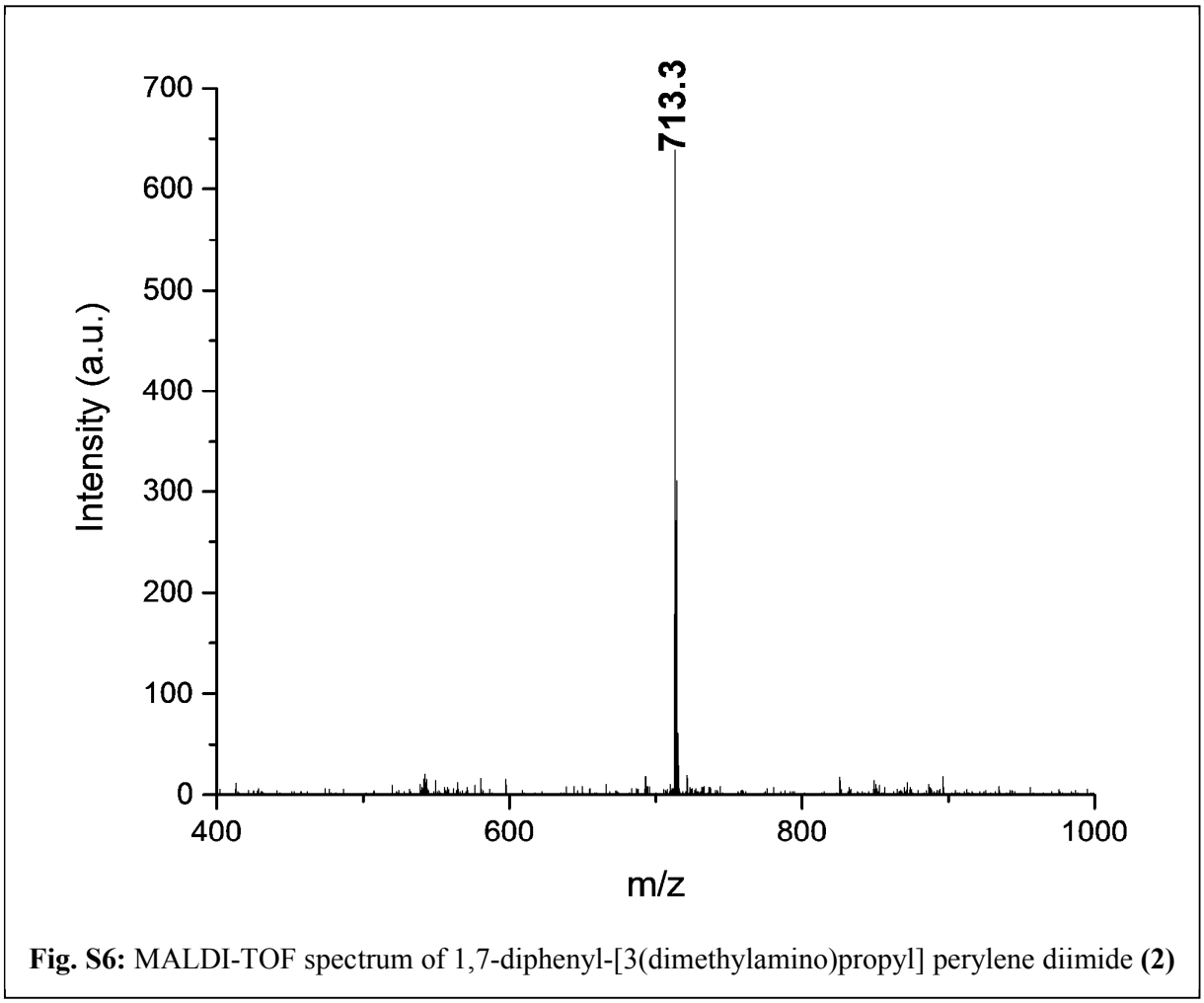

Fig. S6: MALDI-TOF spectrum of 1,7-diphenyl-[3(dimethylamino)propyl] perylene diimide **(2)**

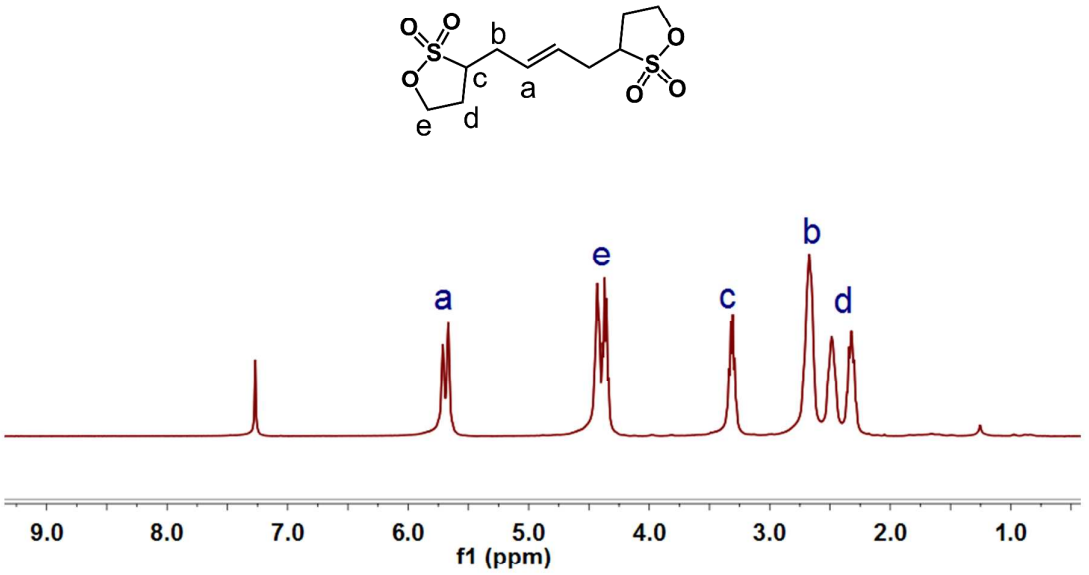

Fig. S7: ^{1}H NMR (500 MHz, $CDCl_3$) of 3,3'-(but-2-ene-1,4-diyl)bis(1,2-oxathiolane 2,2-dioxide) **(3)**

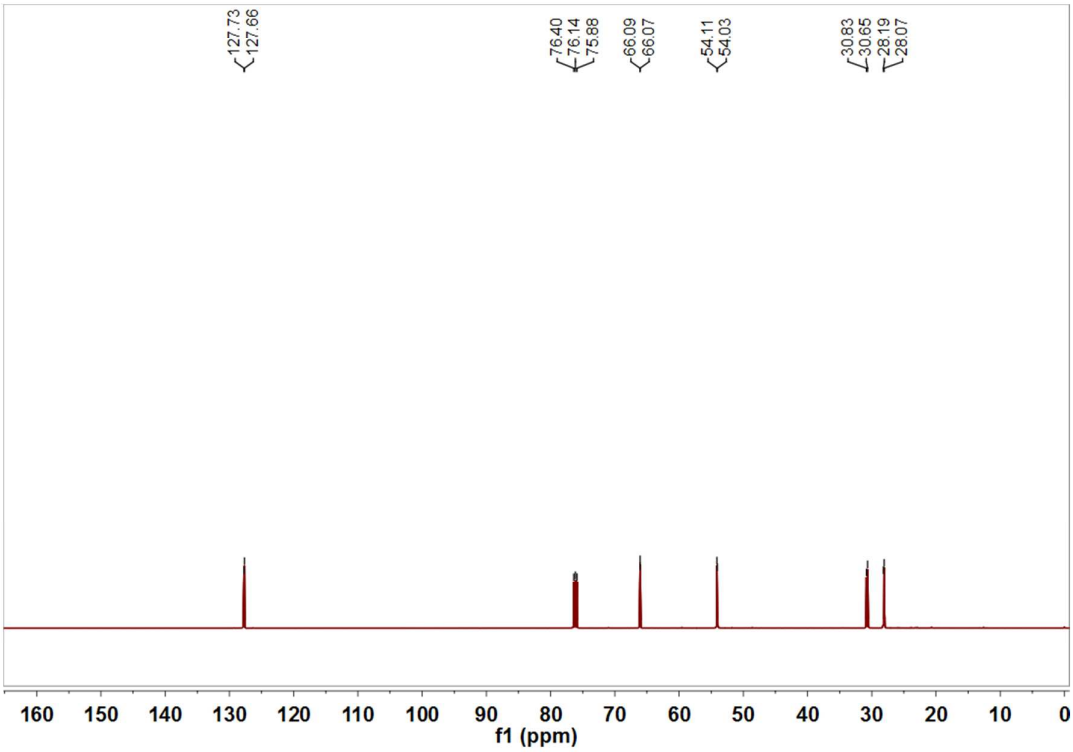

Fig. S8: ^{13}C NMR (500 MHz, $CDCl_3$) of 3,3'-(but-2-ene-1,4-diyl)bis(1,2-oxathiolane 2,2-dioxide) **(3)**

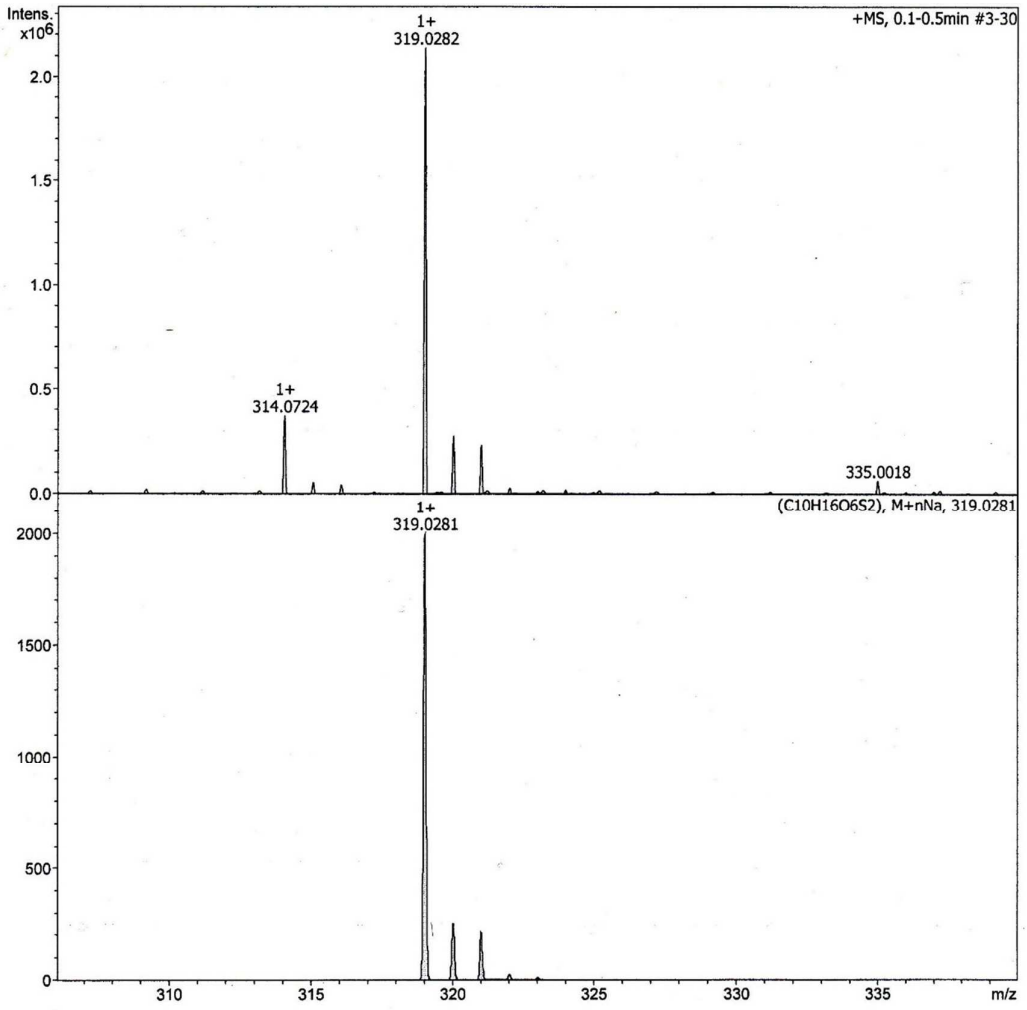

Fig. S9: HRMS of 3,3'-(but-2-ene-1,4-diyl)bis(1,2-oxathiolane 2,2-dioxide) **(3)**

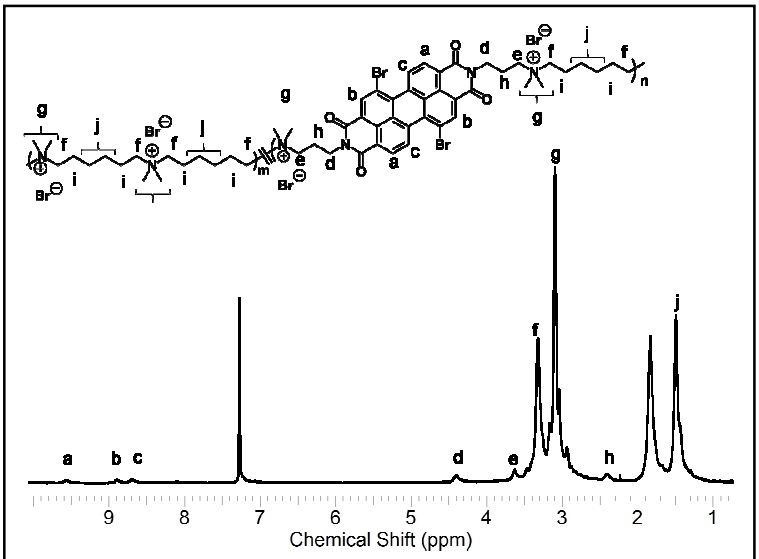

Fig. S10: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 10 mole % PDI-Br_2 ionene copolymer **(4)**

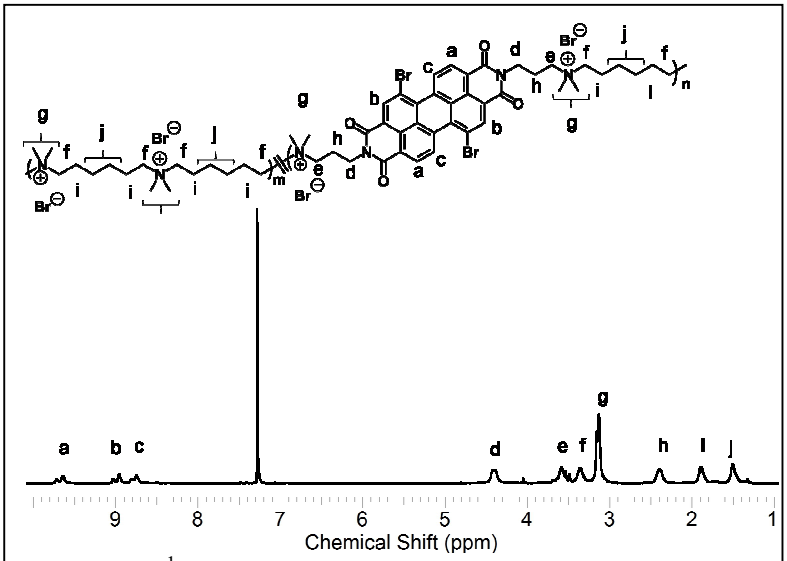

Fig. S11: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 50 mole % PDI-Br_2 ionene copolymer **(5)**

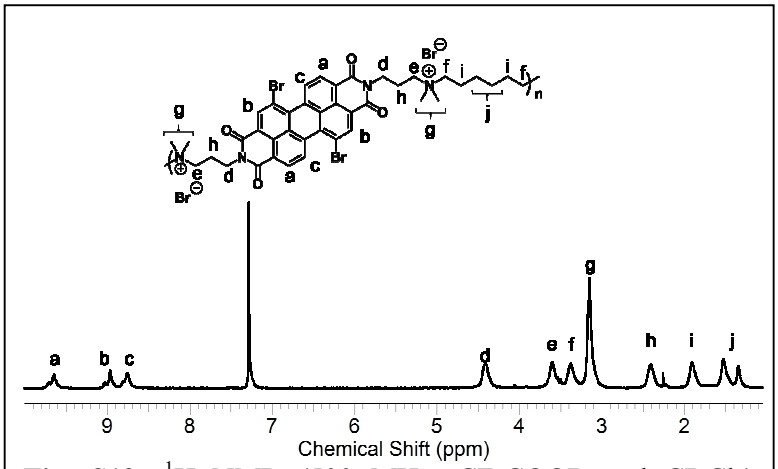

Fig. S12: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 100 mole % PDI-Br_2 ionene homopolymer **(6)**

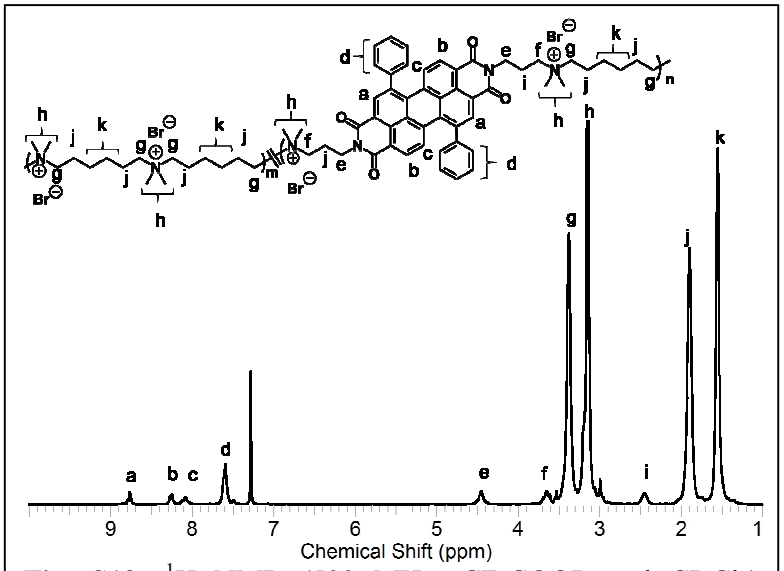

Fig. S13: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 10 mole % PDI-Ph_2 ionene copolymer **(7)**

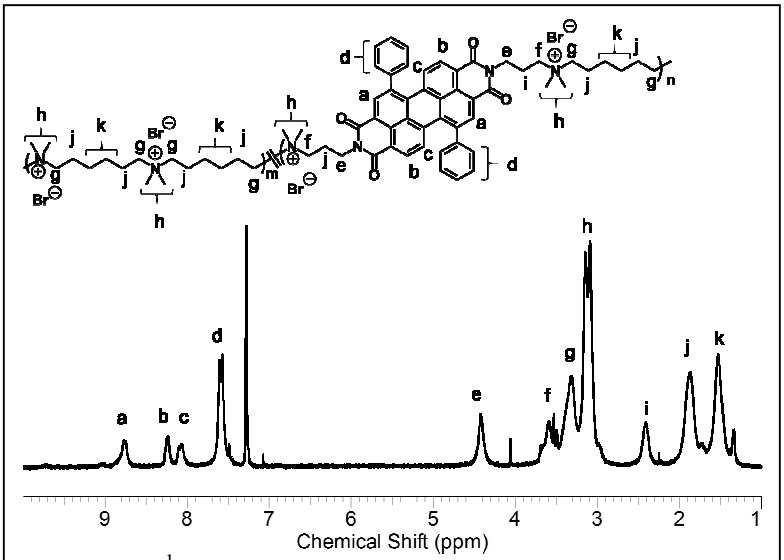

Fig. S14: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 50 mole % PDI-Ph_2 ionene copolymer **(8)**

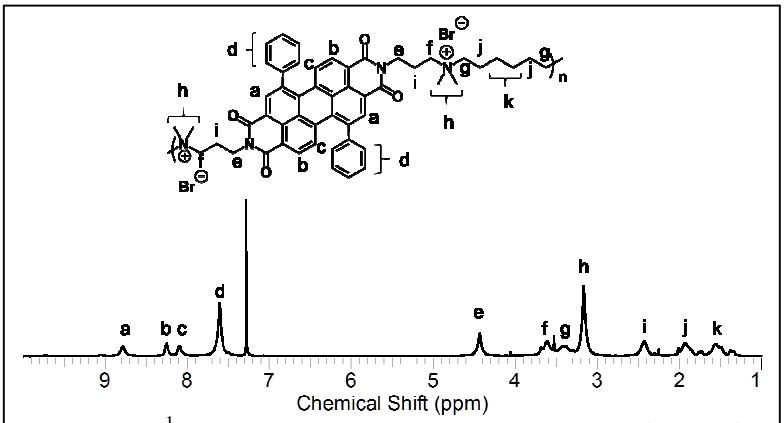

Fig. S15: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 100 mole % PDI-Ph_2 ionene homopolymer **(9)**

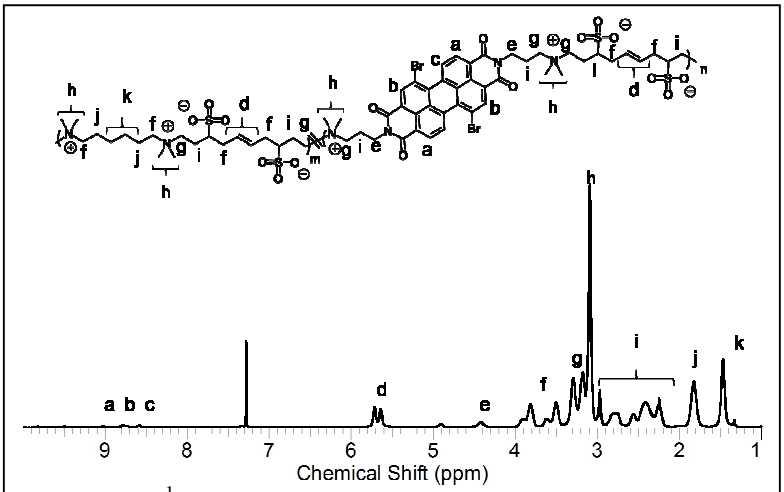

Fig. S16: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 10 mole % PDI-Br_2 zwitterionic copolymer **(10)**

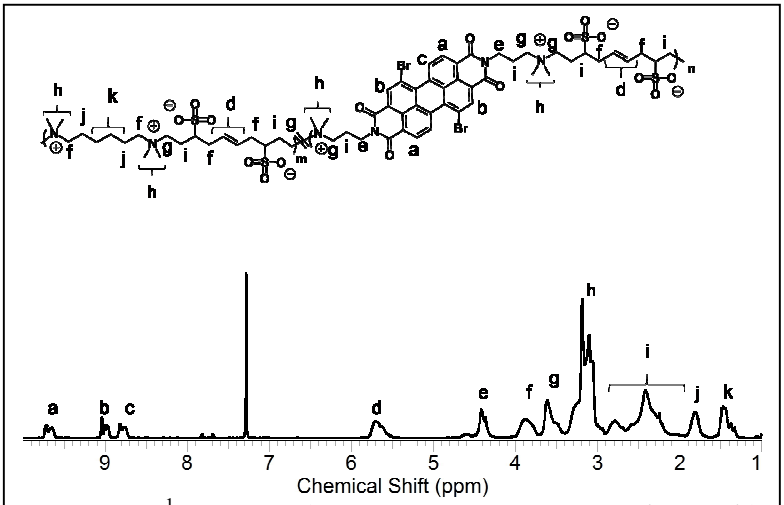

Fig. S17: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 50 mole % PDI-Br_2 zwitterionic copolymer **(11)**

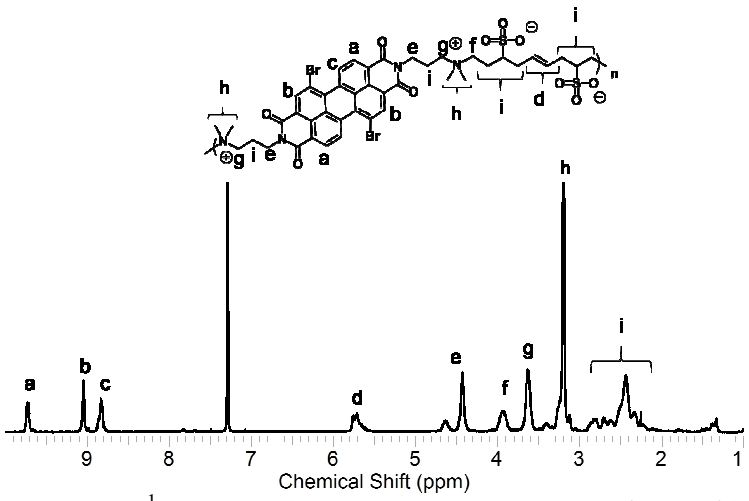

Fig. S18: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 100 mole % PDI-Br_2 zwitterionic homopolymer **(12)**

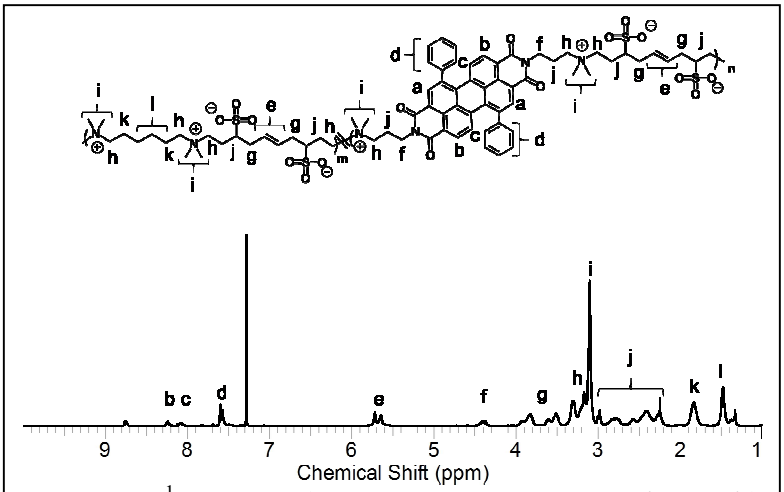

Fig. S19: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 10 mole % PDI-Ph_2 zwitterionic copolymer **(13)**

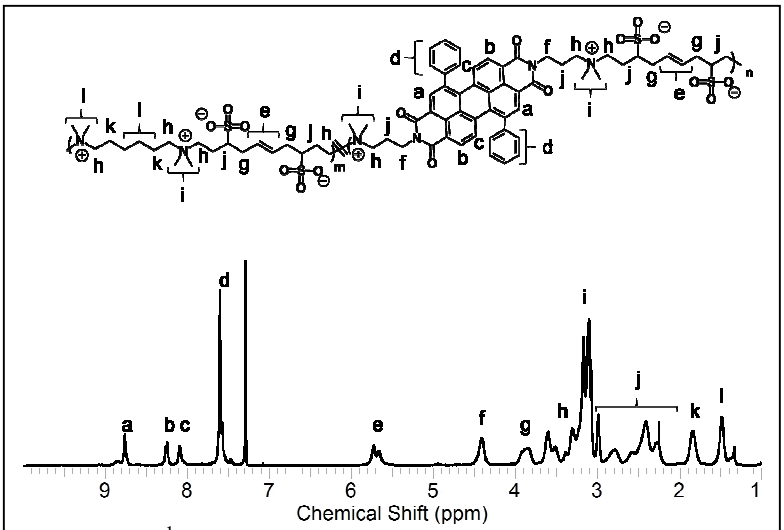

Fig. S20: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 50 mole % PDI-Ph_2 zwitterionic copolymer **(14)**

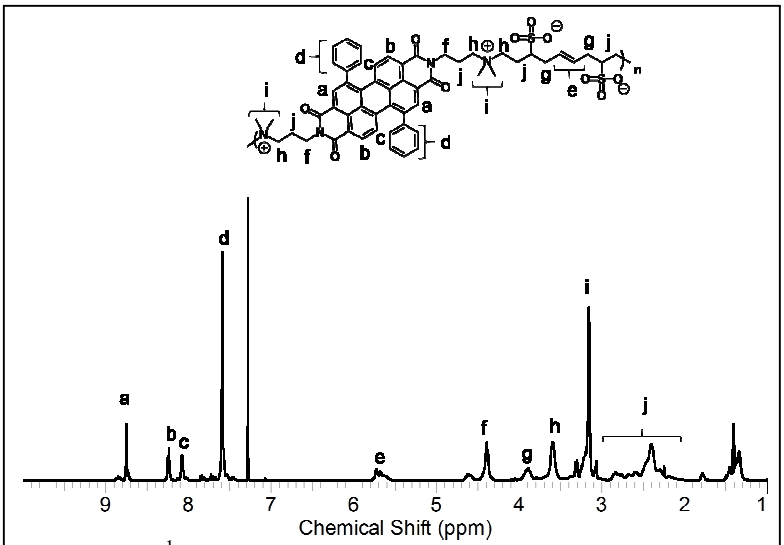

Fig. S21: ^{1}H NMR (500 MHz, CF_3COOD and $CDCl_3$) spectrum of 100 mole % PDI-Ph_2 zwitterionic homopolymer **(15)**

Table S22: Summary of Solution Photophysical Properties PDI-Ph_2-containing ionene and zwitterionic polymers

Compound	λ_{abs}(nm)	λ_{em}(nm)	Φ_f
(2) PDI-Ph_2 monomer	554, 523, 397	535, 613	0.34
(7) PDI-Ph_2 10	564, 523, 397	535, 613	0.30
(8) PDI-Ph_2 50	535, 397	520, 563, 607	0.14
(9) PDI-Ph_2 100	531, 400	608	0.12
(13) PDI-Ph_2 10Z	564, 522, 397	525, 565	0.18
(14) PDI-Ph_2 50Z	535, 397	522, 564	0.10
(15) PDI-Ph_2 100Z	531, 400	529, 570	0.06