

Supporting Information

Dual-Processable Semi-Aromatic Fluorinated Polyimides with
Outstanding Optical Transparency and Low Dielectric Constant
Prepared from *In-situ* [2+2] Thermal Polymerization

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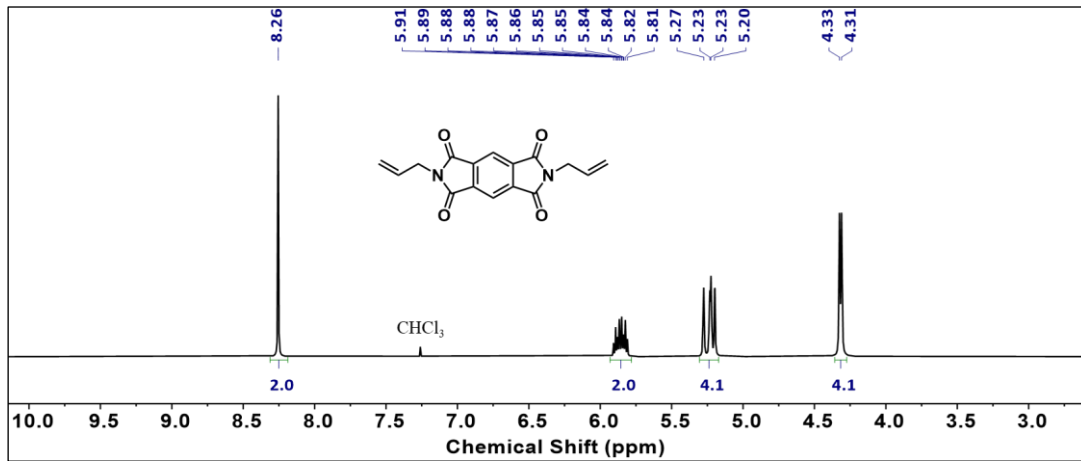


Fig.S1 ^1H NMR spectrum of PMDA-Allyl (CDCl_3 , 400 MHz)

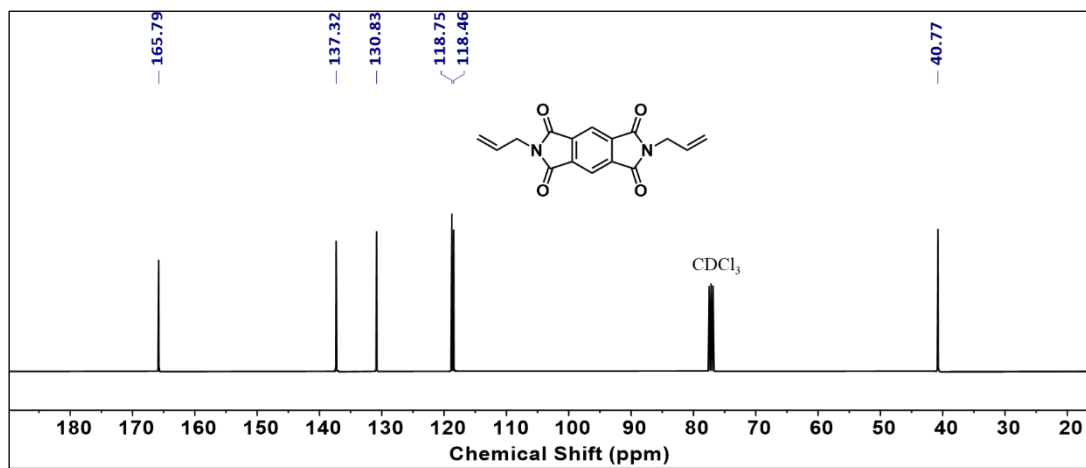


Fig. S2 ^{13}C NMR spectrum of PMDA-Allyl (CDCl_3 , 101 MHz)

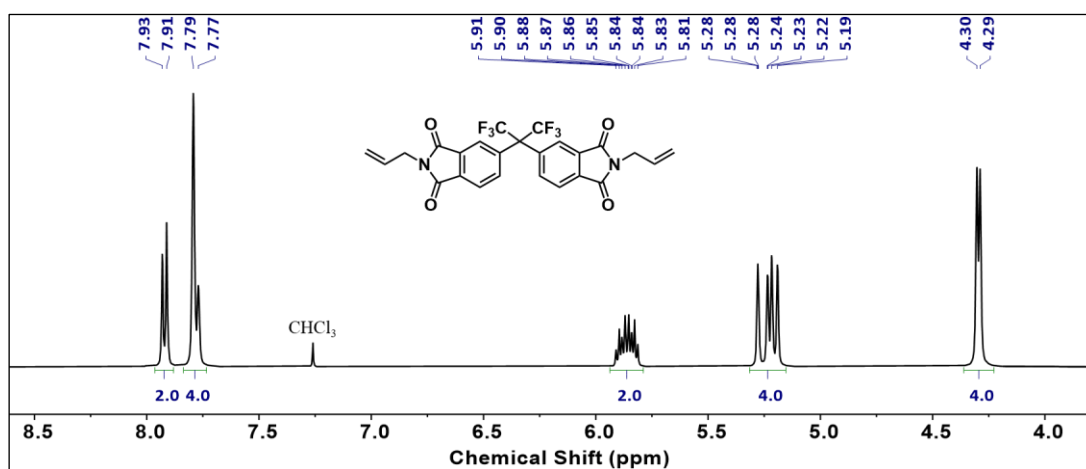


Fig. S3 ^1H NMR spectrum of 6FDA-Allyl (CDCl_3 , 400 MHz)

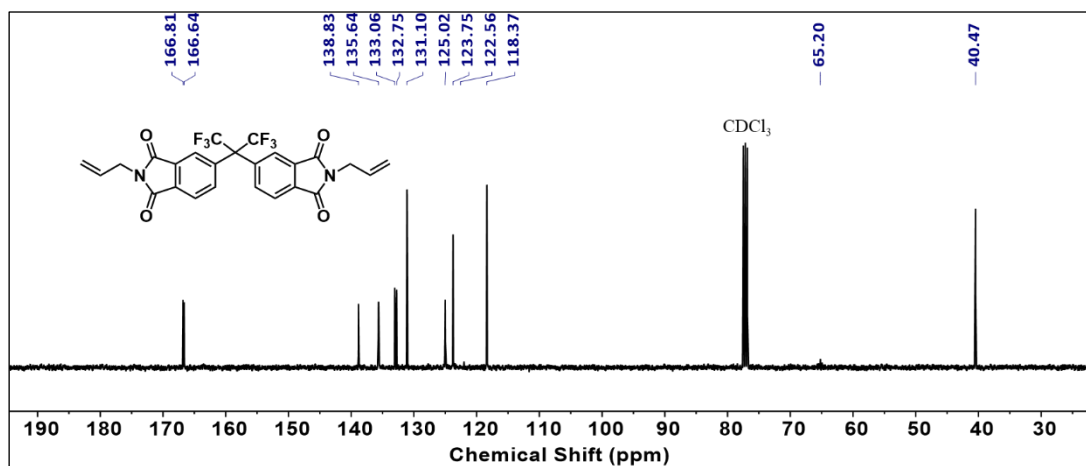


Fig. S4 ¹³C NMR spectrum of 6FDA-Allyl (CDCl₃, 101 MHz)

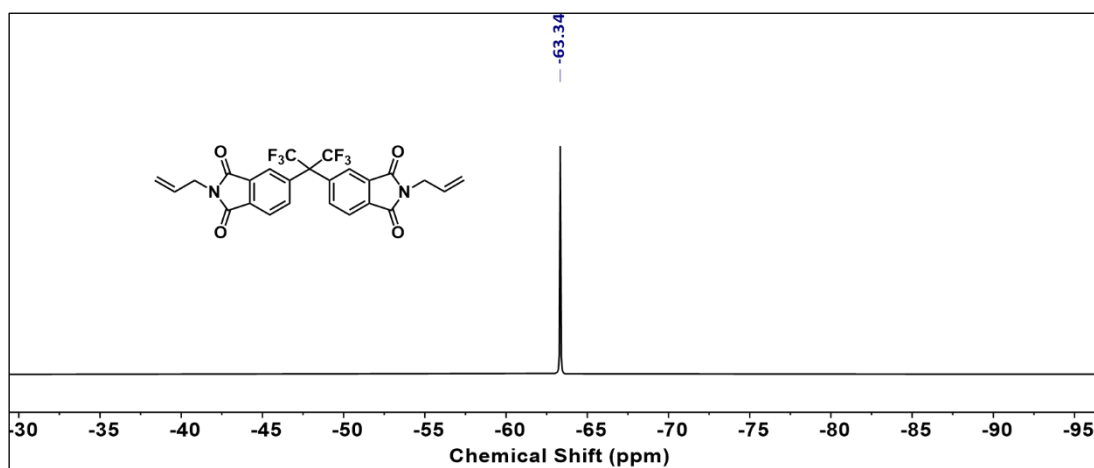


Fig. S5 ¹⁹F NMR spectrum of 6FDA-Allyl (CDCl₃, 376 MHz)

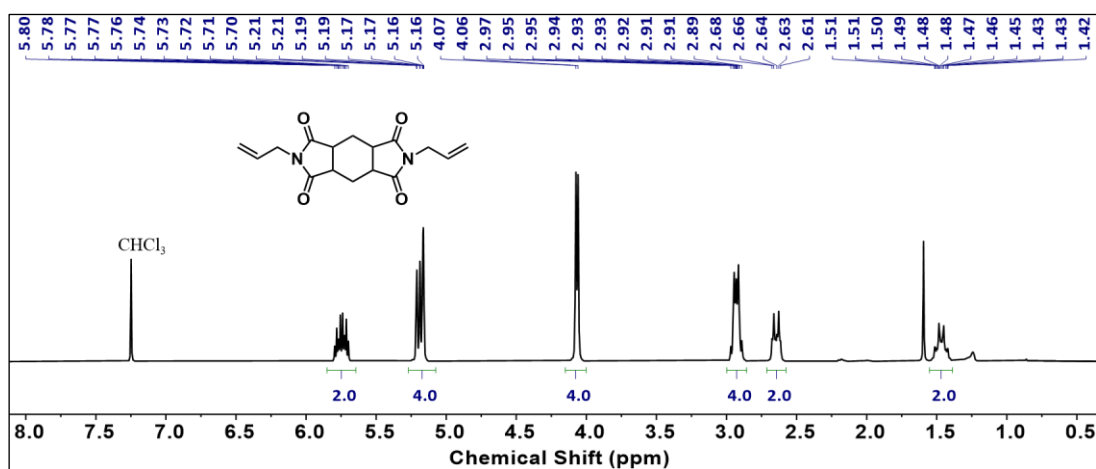


Fig. S6 ¹H NMR spectrum of HPMDA-Allyl (CDCl₃, 400 MHz)

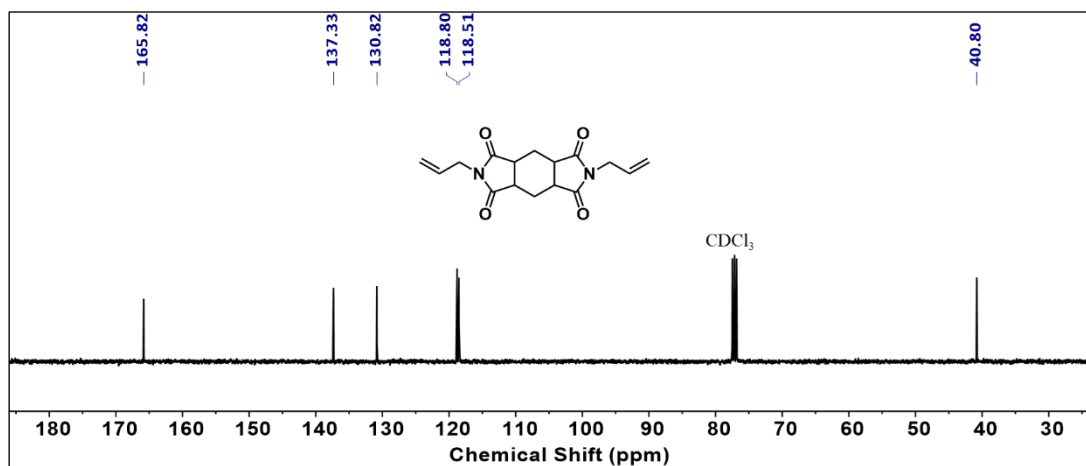


Fig. S7 ¹³C NMR spectrum of HPMDA-Allyl (CDCl₃, 101 MHz)

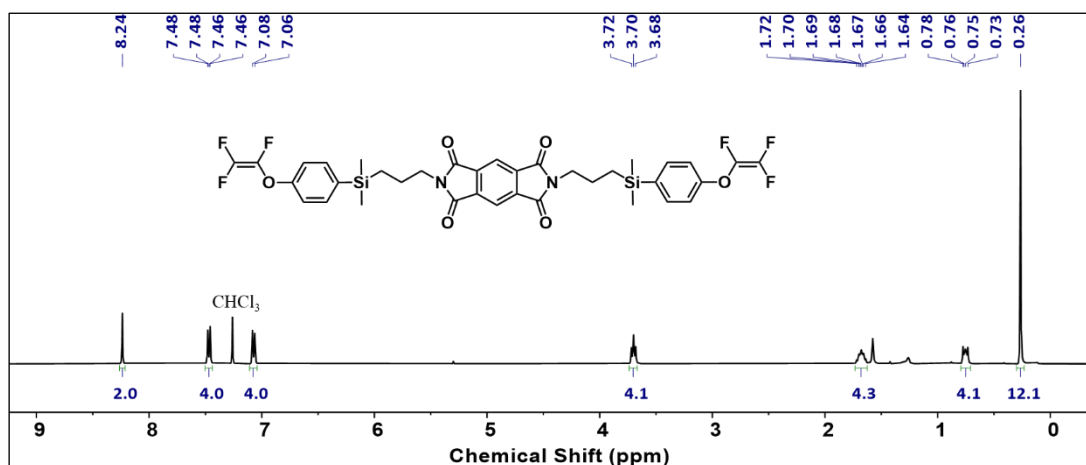


Fig. S8 ¹H NMR spectrum of PMDA-TFVE (CDCl₃, 400 MHz)

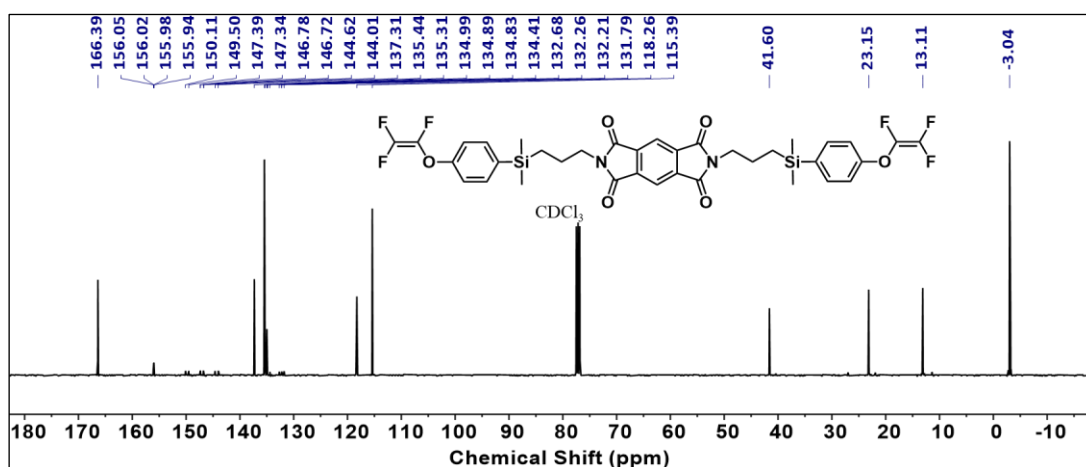


Fig. S9 ¹³C NMR spectrum of PMDA-TFVE (CDCl₃, 101 MHz)

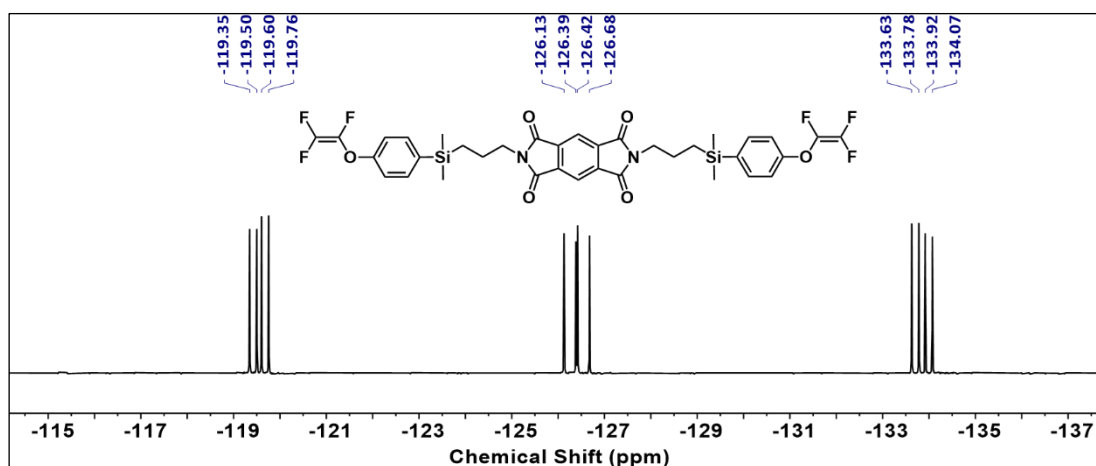


Fig. S10 ^{19}F NMR spectrum of PMDA-TFVE (CDCl_3 , 376 MHz)

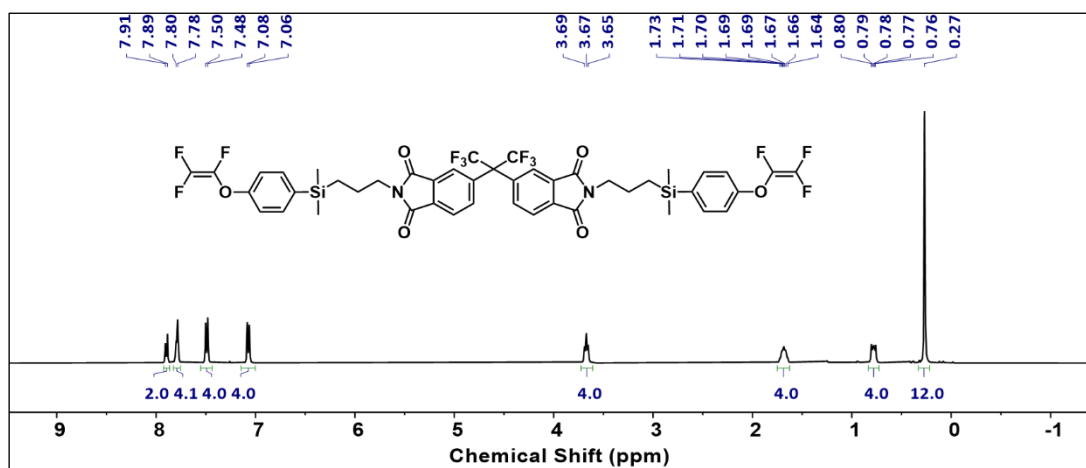


Fig. S11 ^1H NMR spectrum of 6FDA-TFVE (CDCl_3 , 400 MHz)

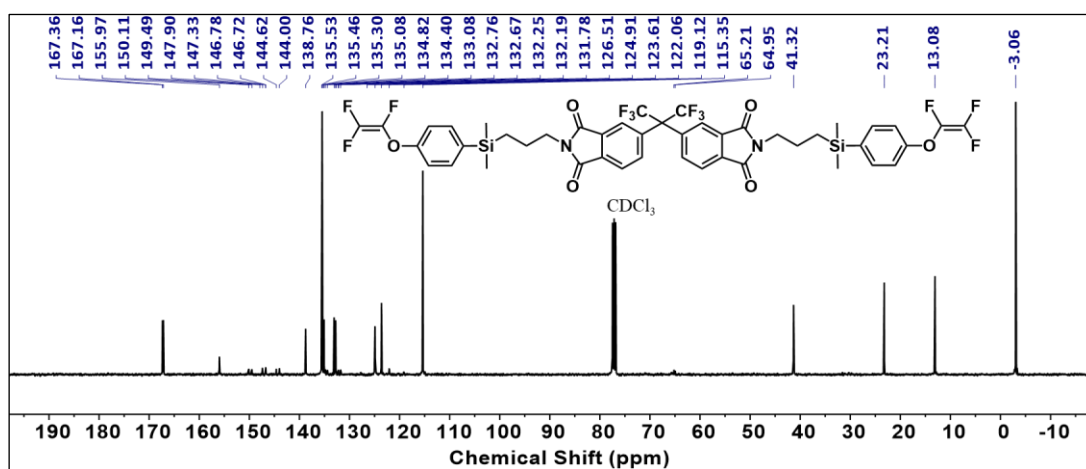


Fig. S12 ^{13}C NMR spectrum of 6FDA-TFVE (CDCl_3 , 101 MHz)

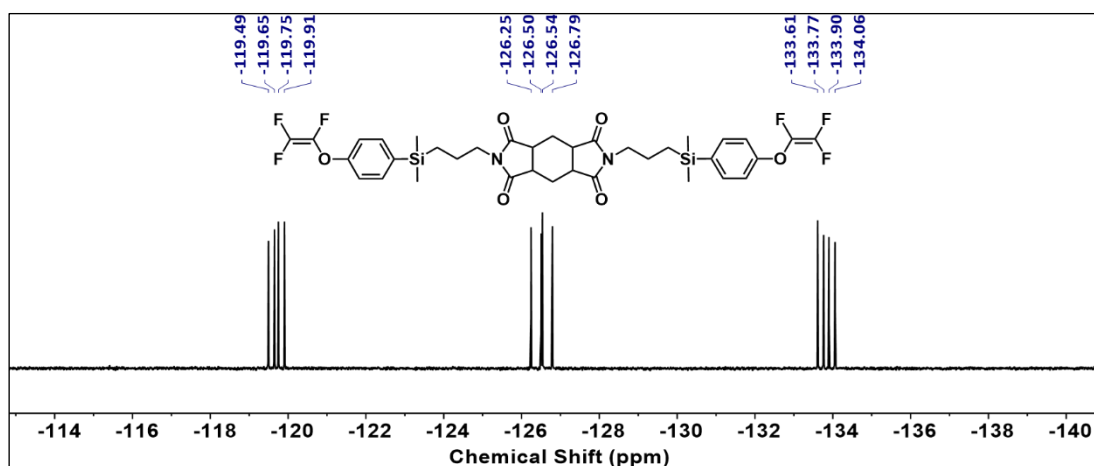


Fig. S16 ^{19}F NMR spectrum of HPMDA-TFVE (CDCl_3 , 376 MHz)

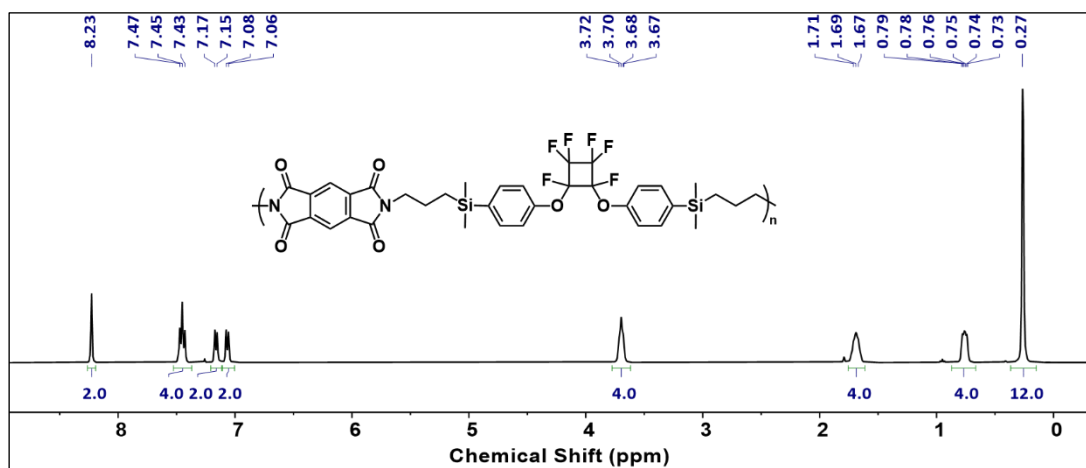


Fig. S17 ^1H NMR spectrum of PMDA-PFCB (CDCl_3 , 400 MHz)

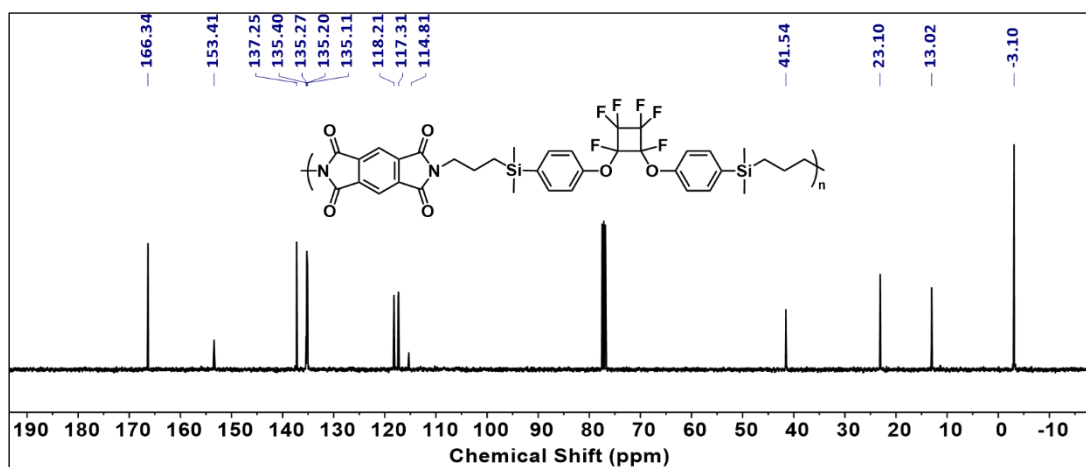


Fig. S18 ^{13}C NMR spectrum of PMDA-PFCB (CDCl_3 , 101 MHz)

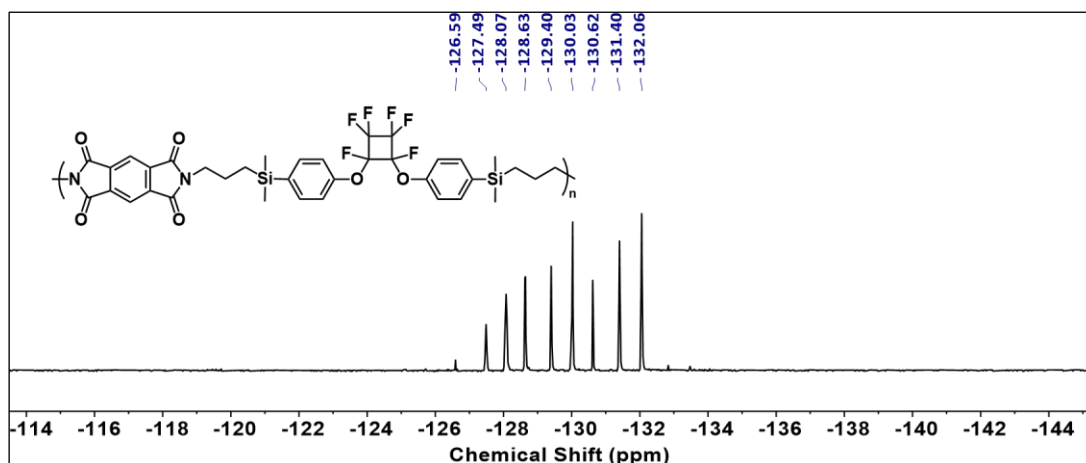


Fig. S19 ¹⁹F NMR spectrum of PMDA-PFCB (CDCl₃, 376 MHz)

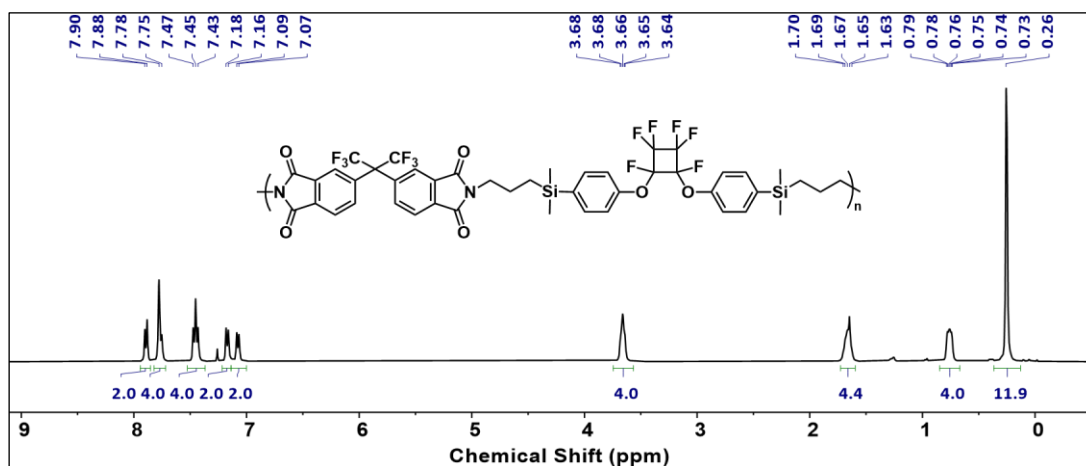


Fig. S20 ¹H NMR spectrum of 6FDA-PFCB (CDCl₃, 400 MHz)

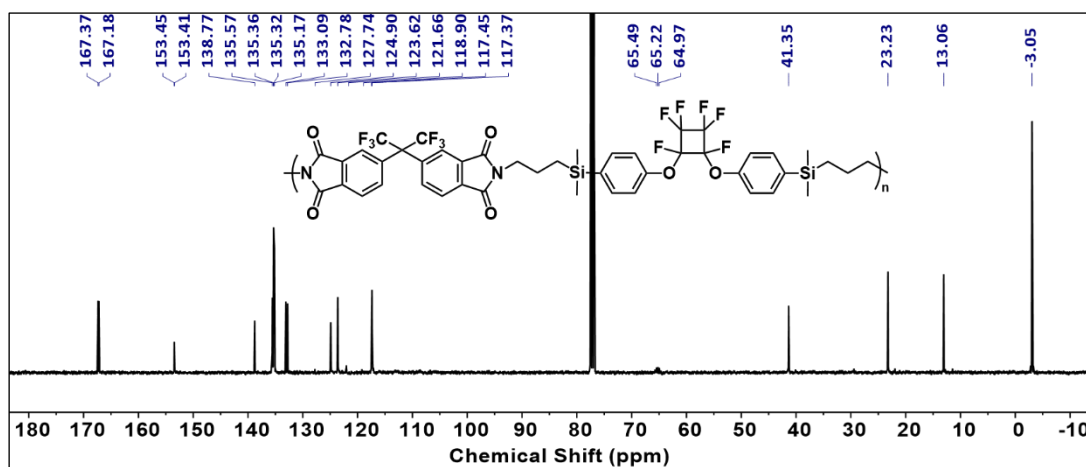


Fig. S21 ¹³C NMR spectrum of 6FDA-PFCB (CDCl₃, 101 MHz)

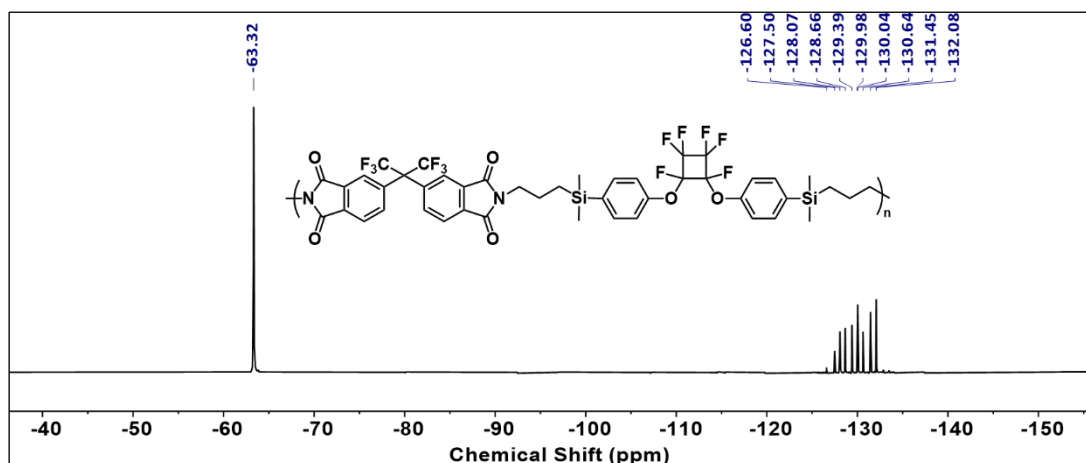


Fig. S22 ^{19}F NMR spectrum of 6FDA-PFCB (CDCl_3 , 376 MHz)

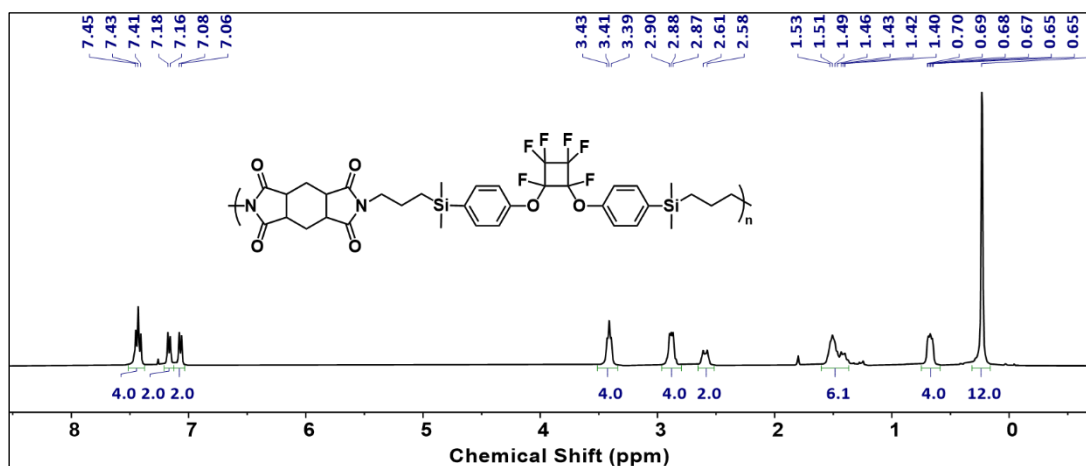


Fig. S23 ^1H NMR spectrum of HPMDA-PFCB (CDCl_3 , 400 MHz)

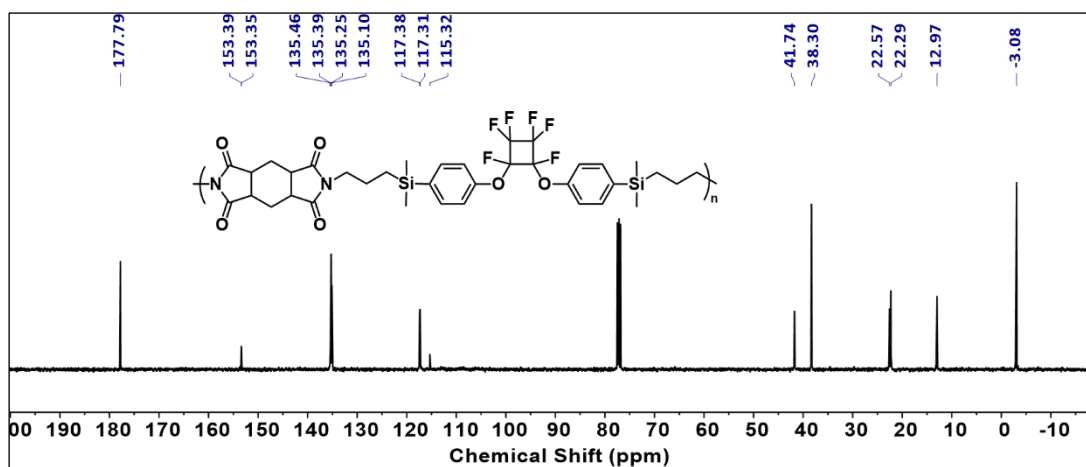


Fig. S24 ^{13}C NMR spectrum of HPMDA-PFCB (CDCl_3 , 101 MHz)

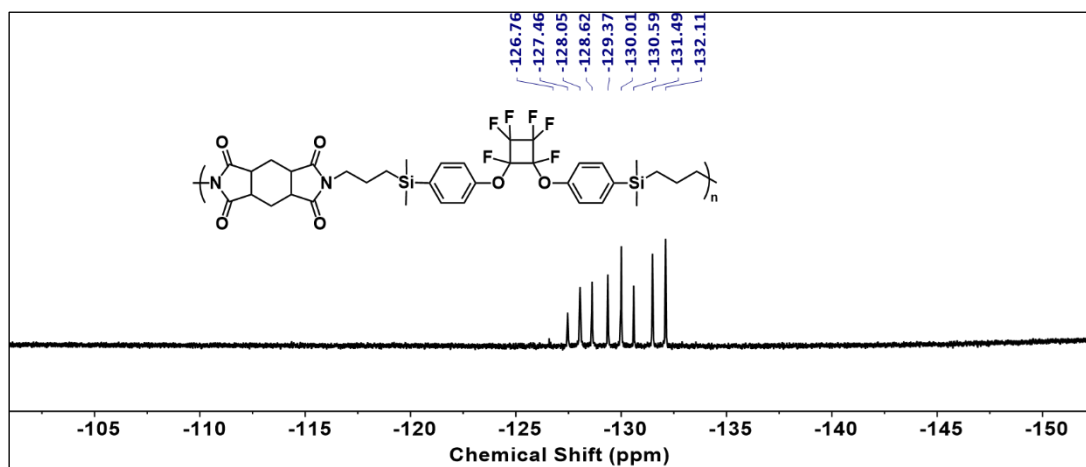


Fig. S25 ^{19}F NMR spectrum of HPMDA-PFCB (CDCl_3 , 376 MHz)

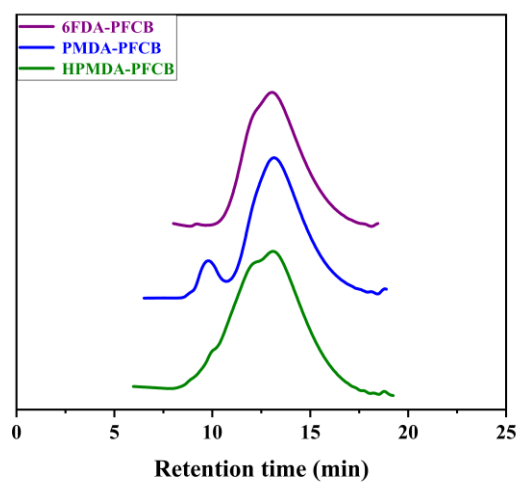


Fig. S26 GPC traces of polyimides.

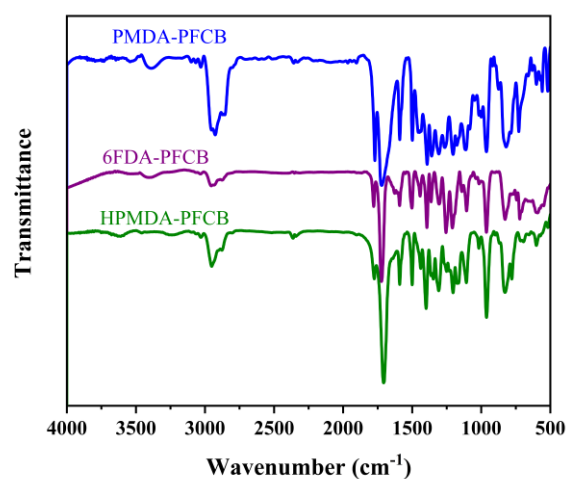


Fig. S27 FT-IR spectra of the polymers in full range.

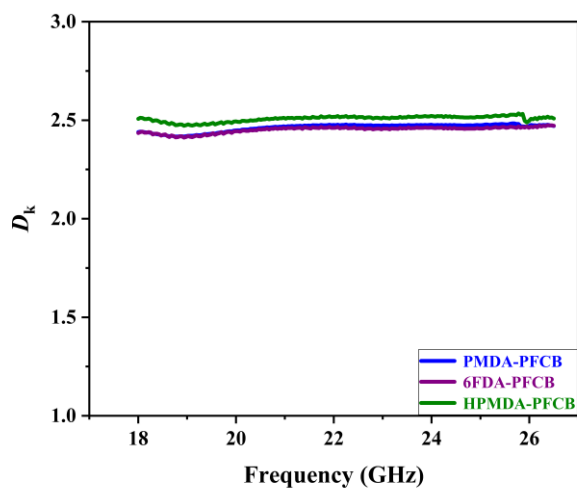


Fig. S28 D_k values of polyimides in ranges of frequencies under room temperature.

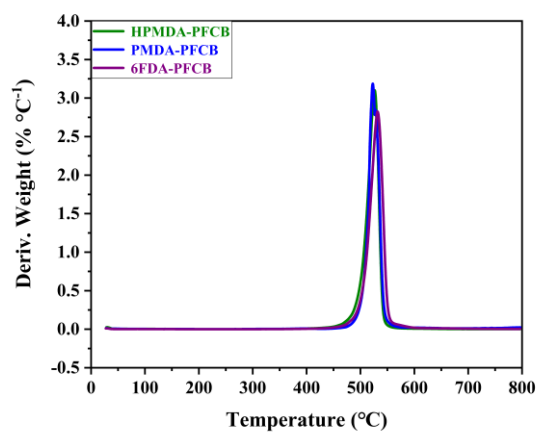


Fig. S29 DTG curves of the polyimides at a heating rate of 10 °C min⁻¹ in N₂.

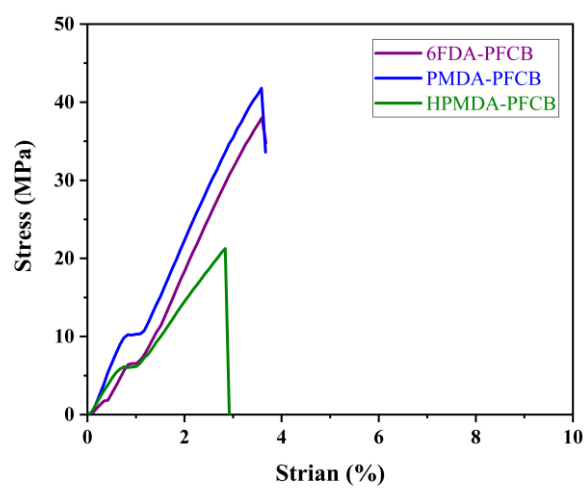


Fig. S30 Tensile measurements of the polyimides.