

Supporting Information

Soluble and Cross-Linkable Polyimides from a Vanillin-Derived Diamine: Preparation, Post-Polymerization and Properties

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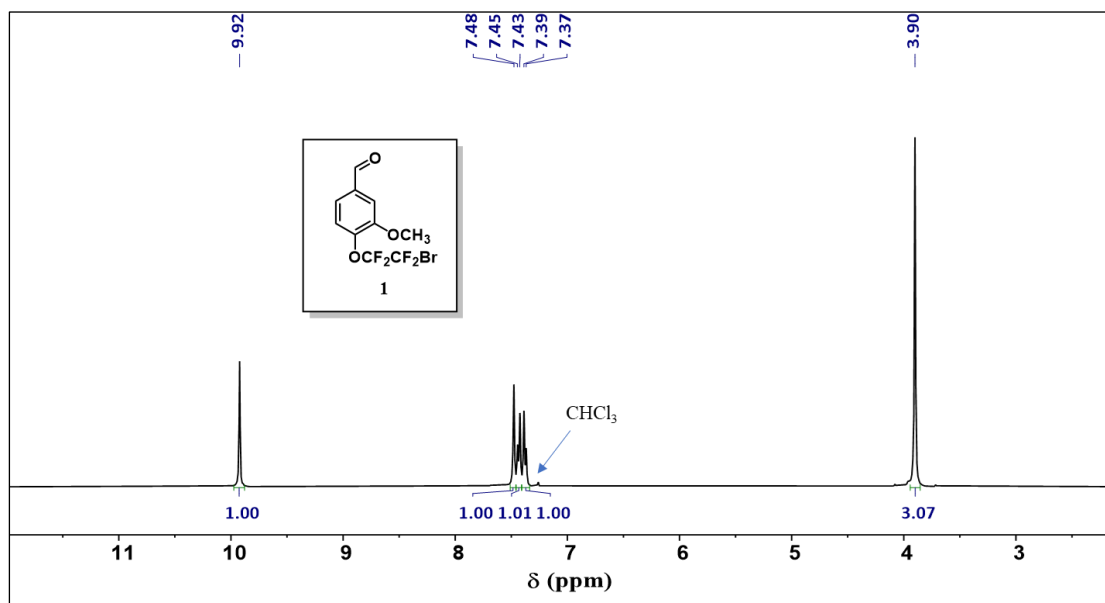


Fig. S1 ^1H NMR spectrum of monomer **1** (CDCl_3 , 400 MHz)

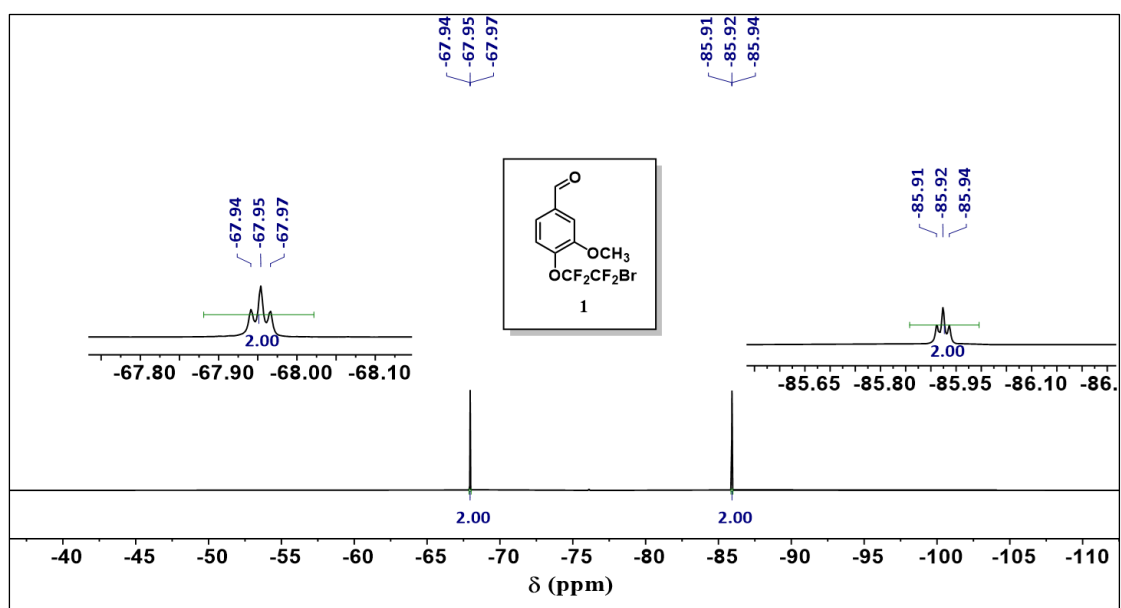


Fig. S2 ^{19}F NMR spectrum of monomer **1** (CDCl_3 , 376 MHz)

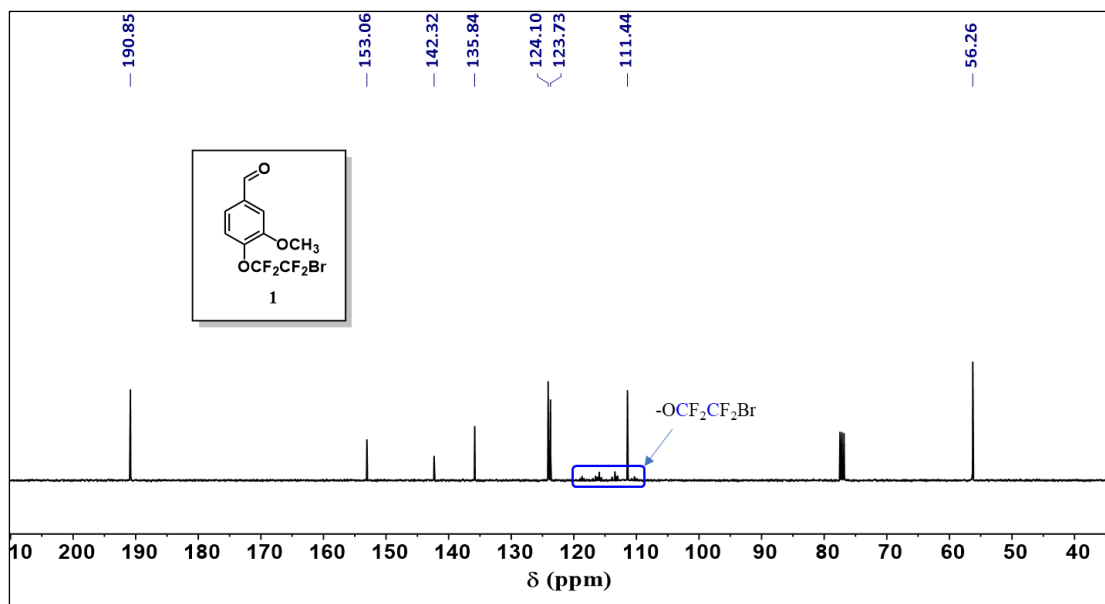


Fig. S3 ^{13}C NMR spectrum of monomer 1 (CDCl_3 , 101 MHz)

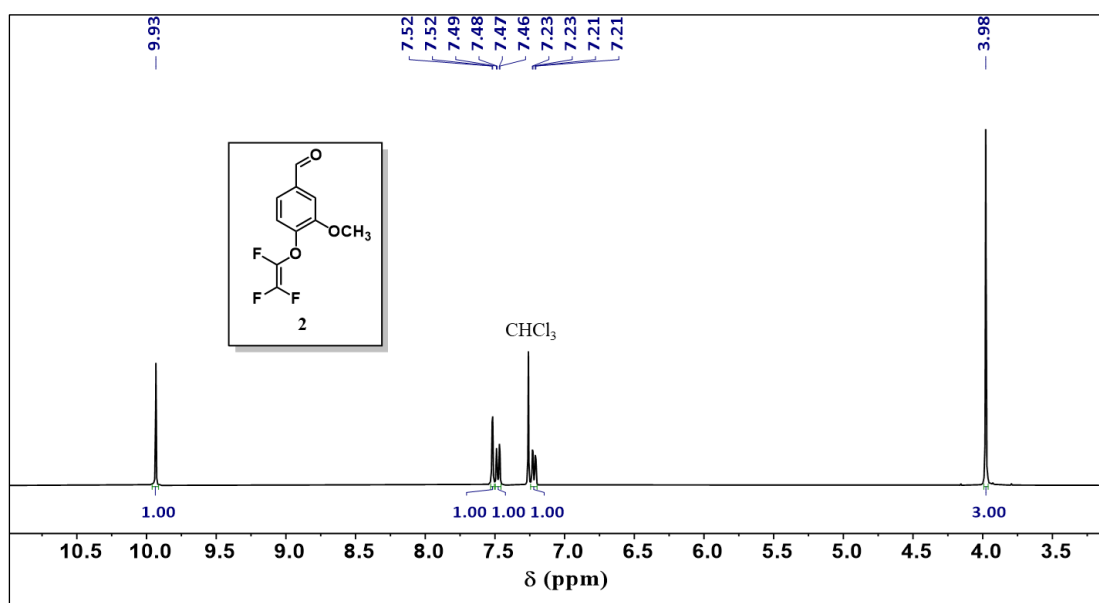


Fig. S4 ^1H NMR spectrum of monomer 2 (CDCl_3 , 400 MHz)

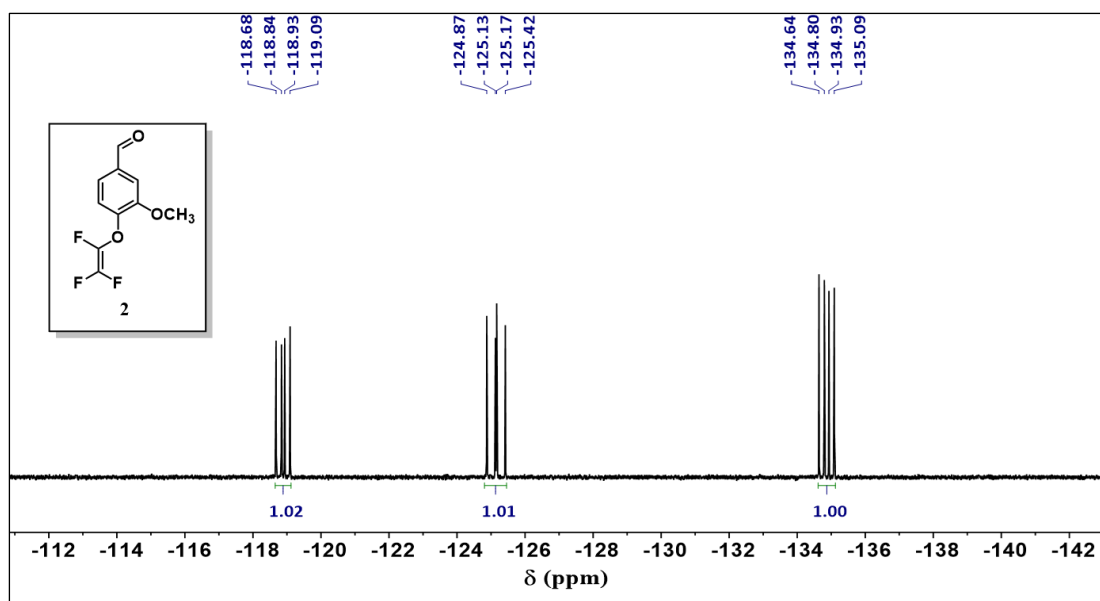


Fig. S5 ^{19}F NMR spectrum of monomer 2 (CDCl_3 , 376 MHz)

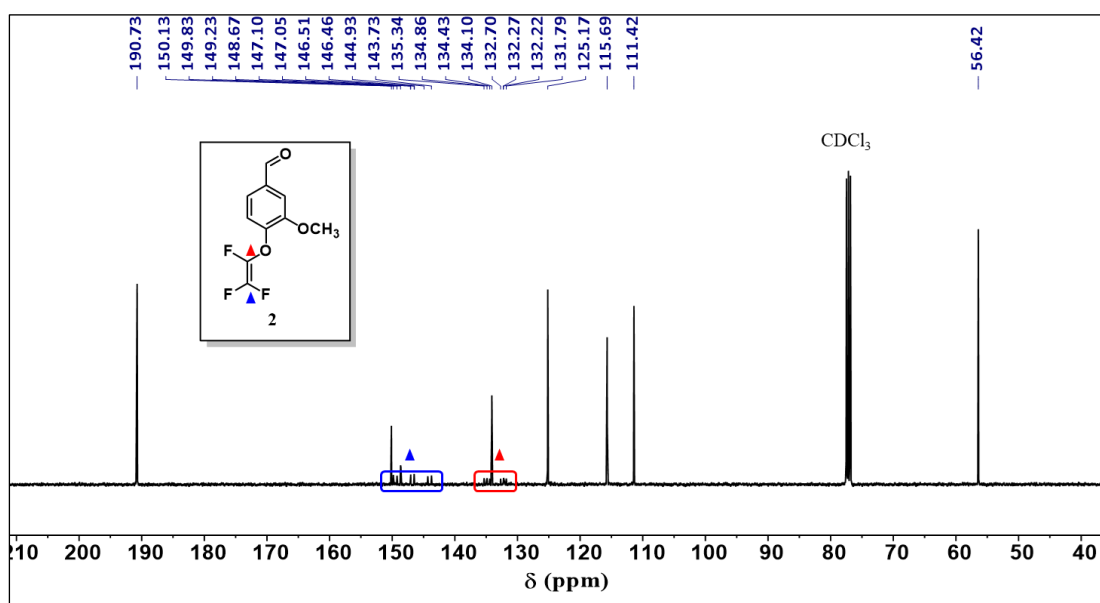


Fig. S6 ^{13}C NMR spectrum of monomer 2 (CDCl_3 , 101 MHz)

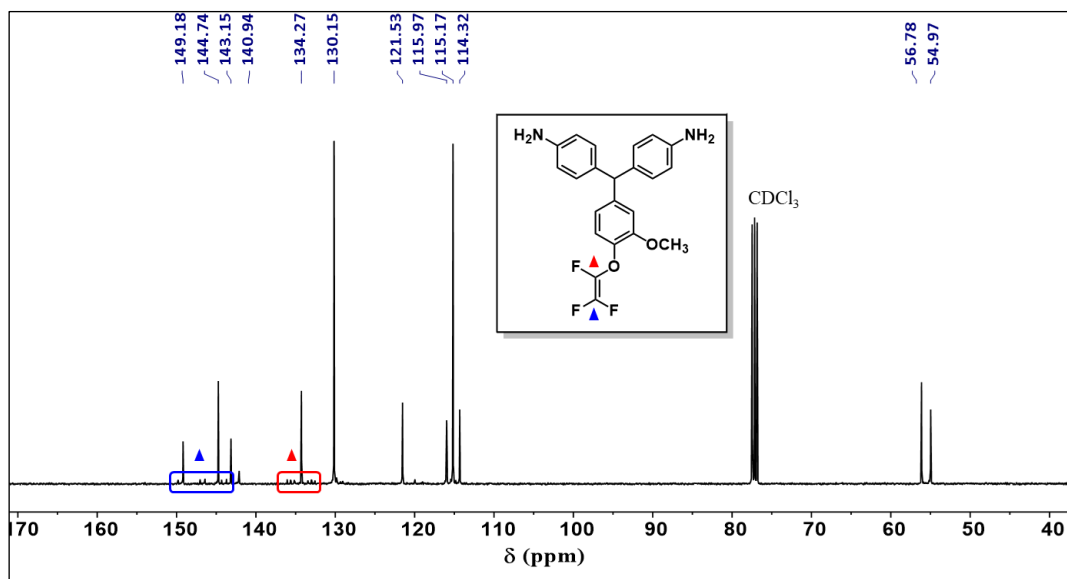


Fig. S7 ^{13}C NMR spectrum of DA-TFVE (CDCl_3 , 101 MHz)

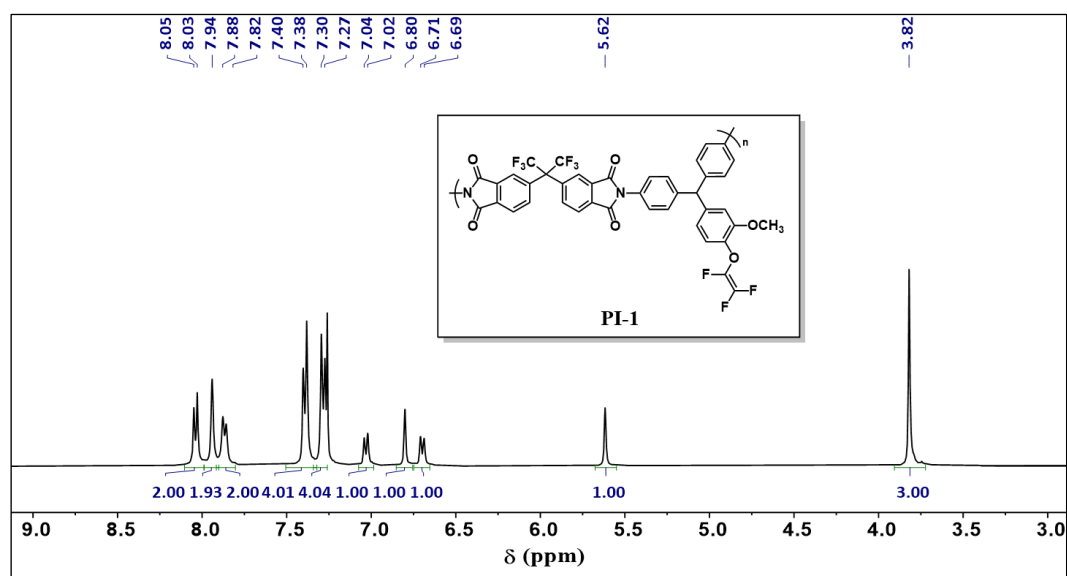


Fig. S8 ^1H NMR spectrum of PI-1 (CDCl_3 , 400 MHz)

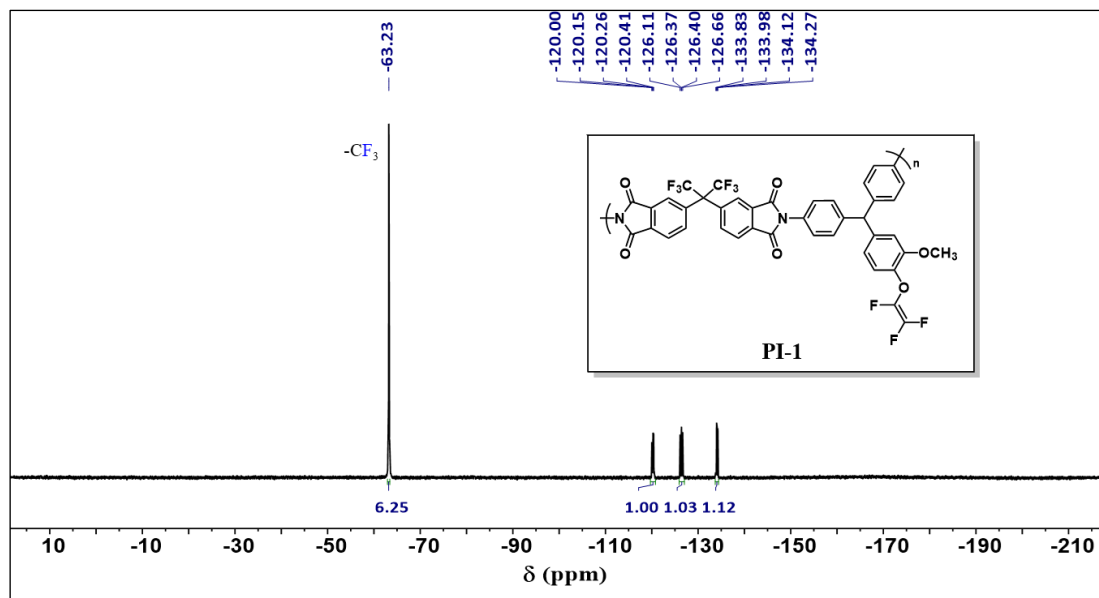


Fig. S9 ¹⁹F NMR spectrum of PI-1 (CDCl₃, 376 MHz)

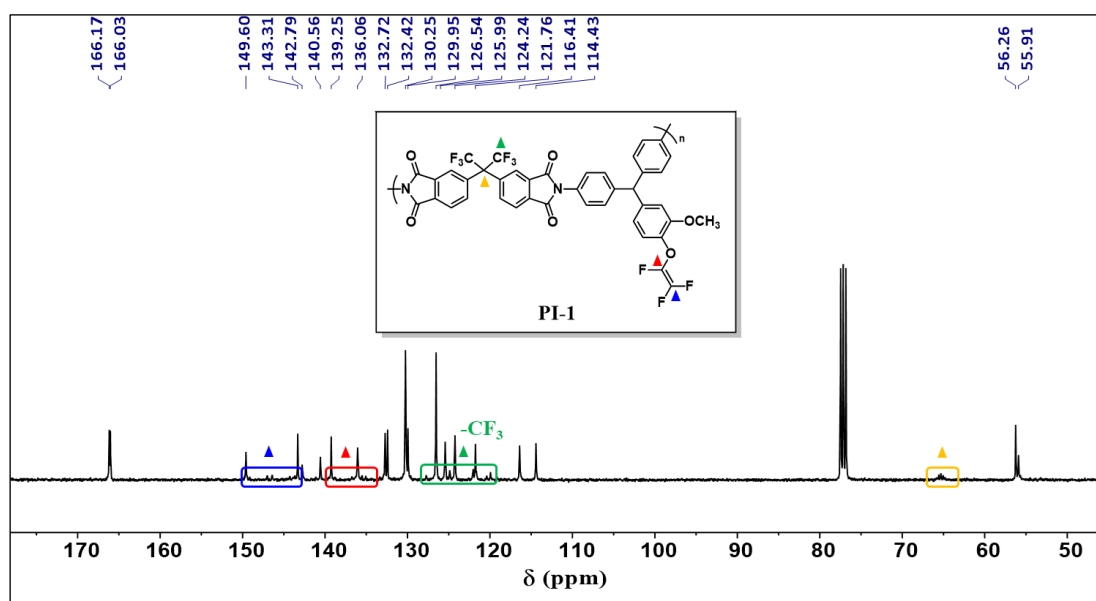


Fig. S10 ¹³C NMR spectrum of PI-1 (CDCl₃, 101 MHz)

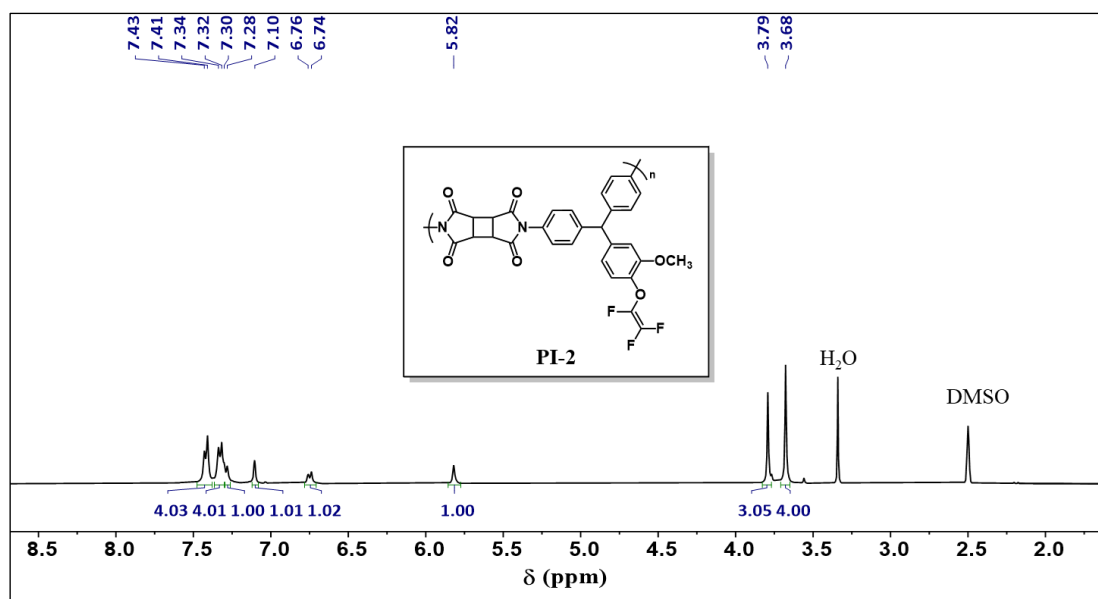


Fig. S11 ¹H NMR spectrum of PI-2 (DMSO-*d*₆, 400 MHz)

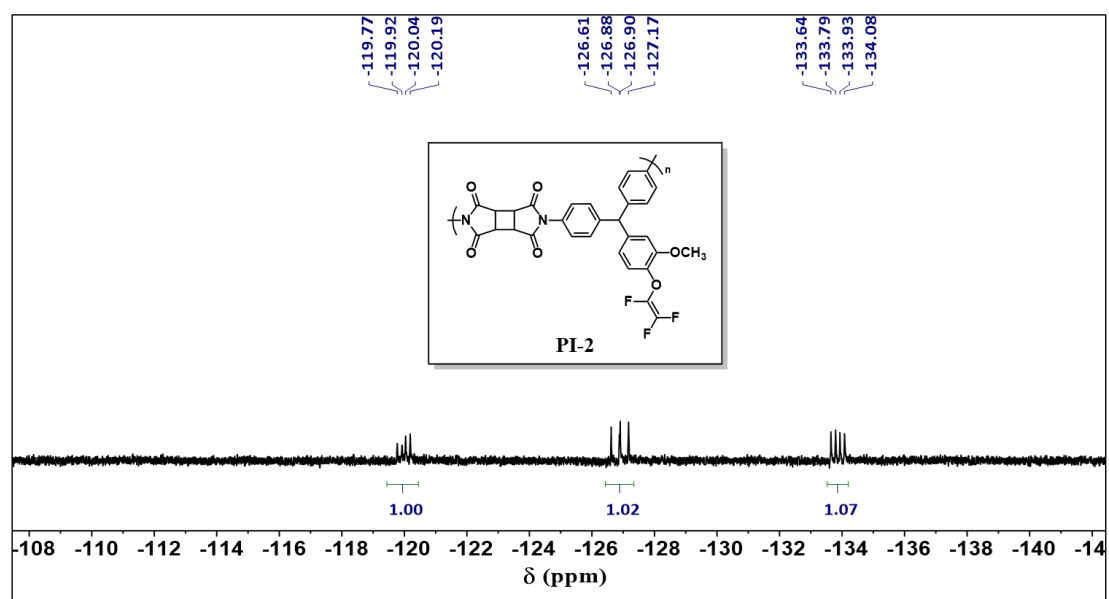


Fig. S12 ¹⁹F NMR spectrum of PI-2 (DMSO-*d*₆, 376 MHz)

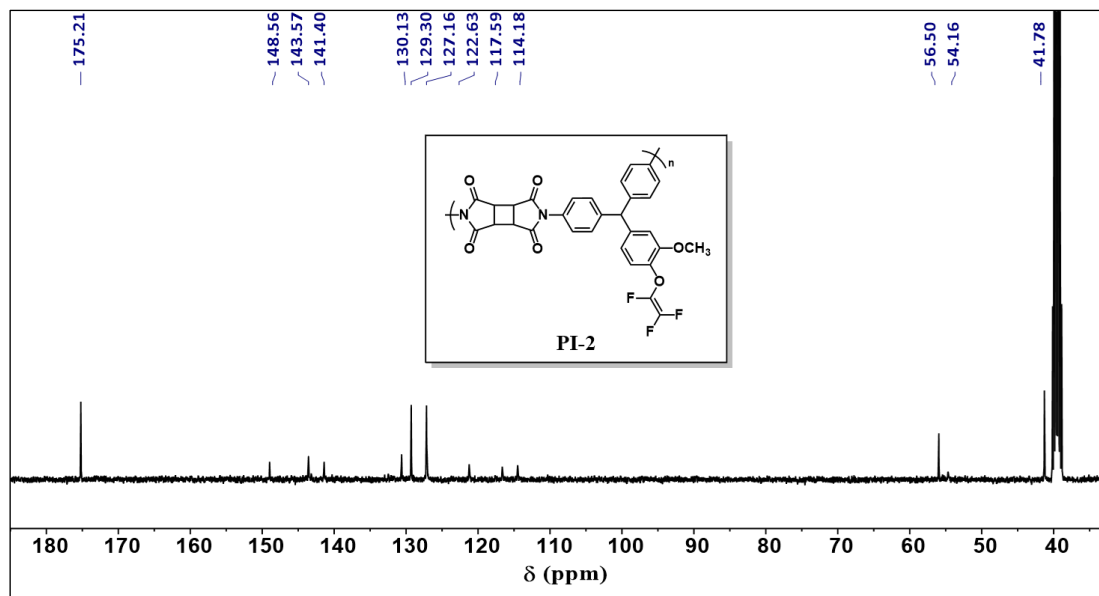


Fig. S13 ^{13}C NMR spectrum of PI-2 (DMSO- d_6 , 101 MHz)

m/z	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
232.0343	232.0342	0.37	-4.0	$\text{C}_4\text{H}_{15}\text{O}_4\text{ClF}_2\text{S}$
	232.0342	0.52	6.0	$\text{C}_{10}\text{H}_7\text{O}_3\text{F}_3$
	232.0341	0.76	13.0	$\text{C}_{16}\text{H}_8\text{S}$
	232.0340	1.45	2.0	$\text{C}_8\text{H}_9\text{F}_5\text{S}$
	232.0347	-1.58	1.5	$\text{C}_7\text{H}_{10}\text{O}_2\text{NClF}_3$

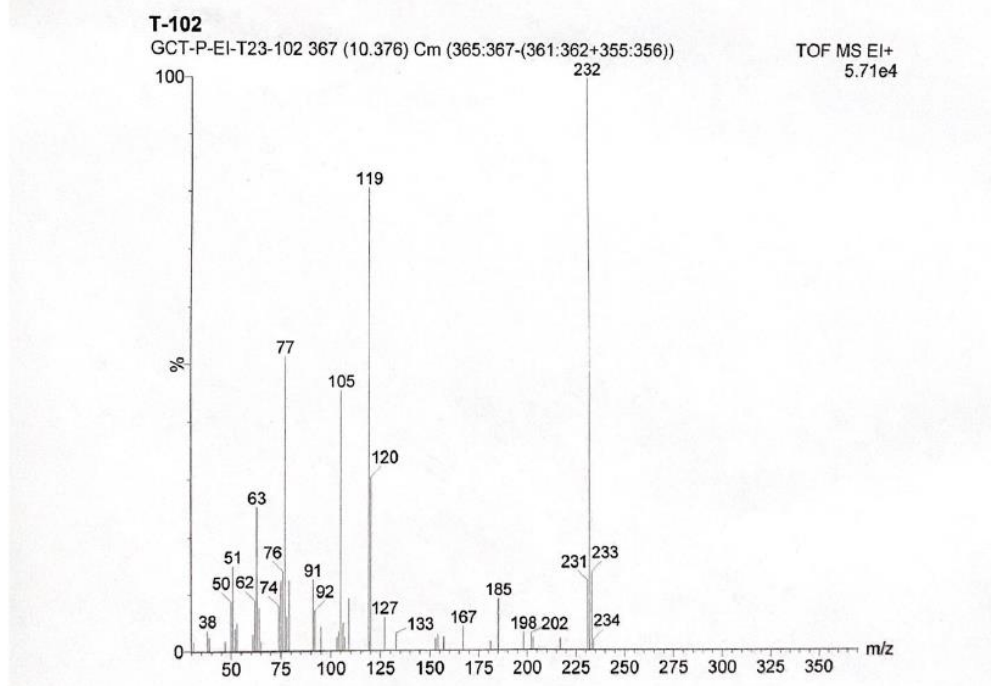


Fig. S14 Mass result of monomer 2

m/z	Theo. Mass	Delta (ppm)	RDB equiv.	Composition
400.1389	400.1389	0.10	7.5	C ₁₉ H ₂₄ O ₄ NF ₂ S
400.1389	400.1389	0.10	16.0	C ₂₇ H ₂₂ ClF
400.1387	400.1387	0.50	5.0	C ₁₉ H ₂₃ ClF ₆
400.1393	400.1393	-1.03	13.0	C ₂₂ H ₁₉ O ₂ N ₂ F ₃
400.1393	400.1393	-1.12	3.0	C ₁₆ H ₂₇ O ₃ N ₂ ClF ₂ S

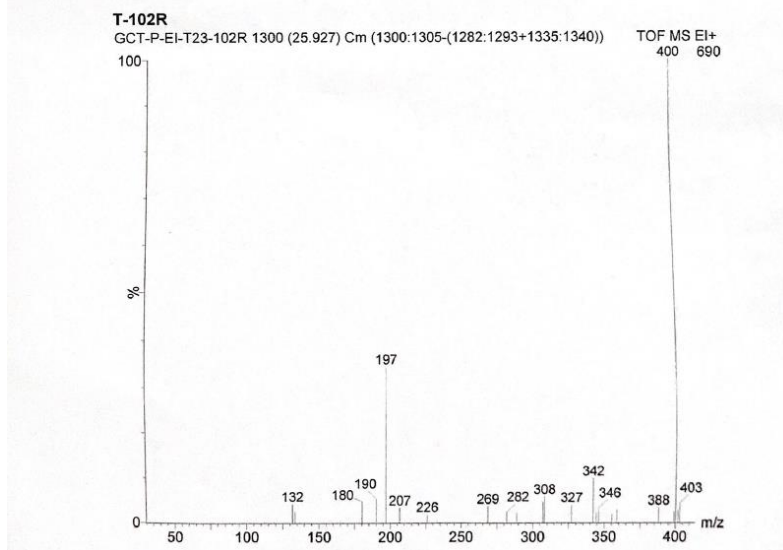


Fig. S15 Mass result of DA-TFVE

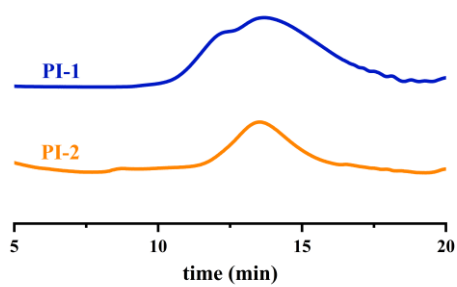


Fig. S16 GPC curves of PI-1 and PI-2.

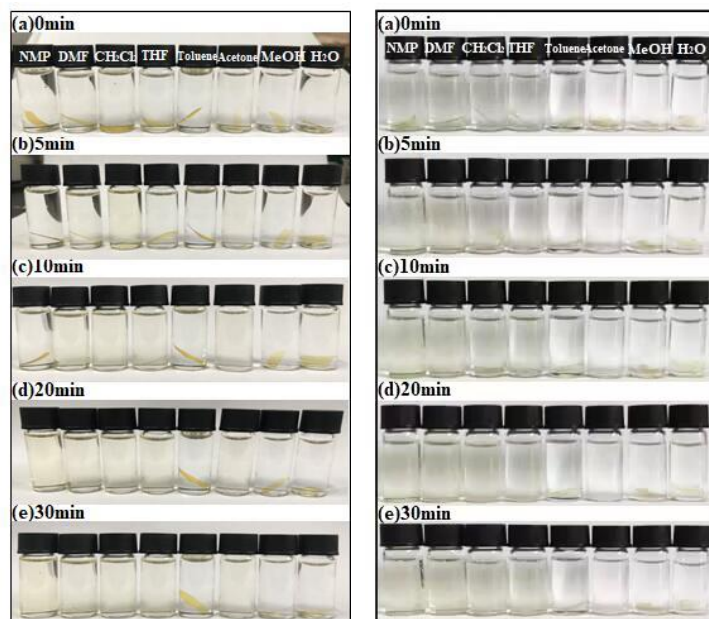


Fig. S17 Photographs of solubility behaviors of **PI-1** (left) and **PI-2** (right) in different solvents.

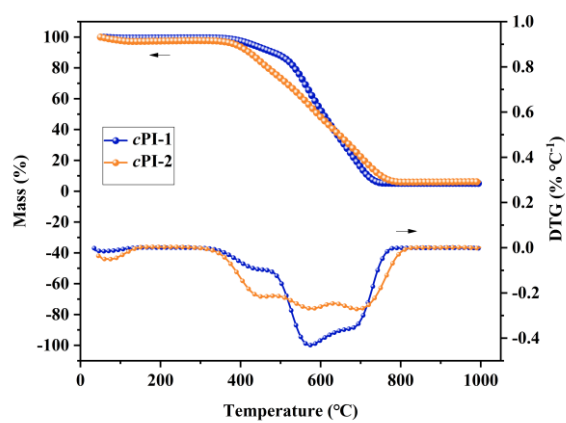


Fig. S18 TGA curves of the crosslinked PIs in air.