

Synthesis and Characterization of Phenazine-Based Redox Center for High-Performance Polymer Poly(Aryl Ether Sulfone)-5, 10-Diphenyl-Dihydrophenazine

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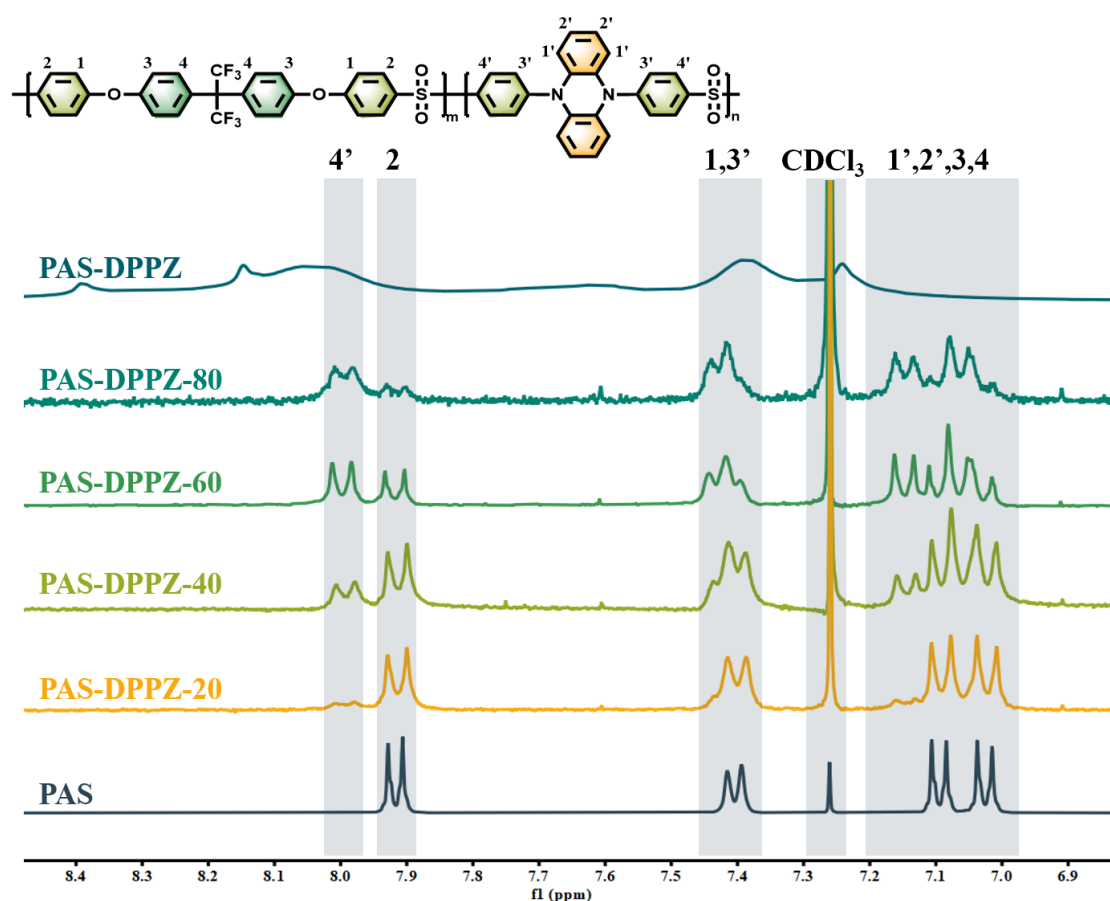


Figure S1. ^1H NMR spectra of PAS-DPPZs (Due to solubility limitations, the NMR tests for PAS-DPPZs were performed in TFA solvents, while the other polymers were in chloroform.).

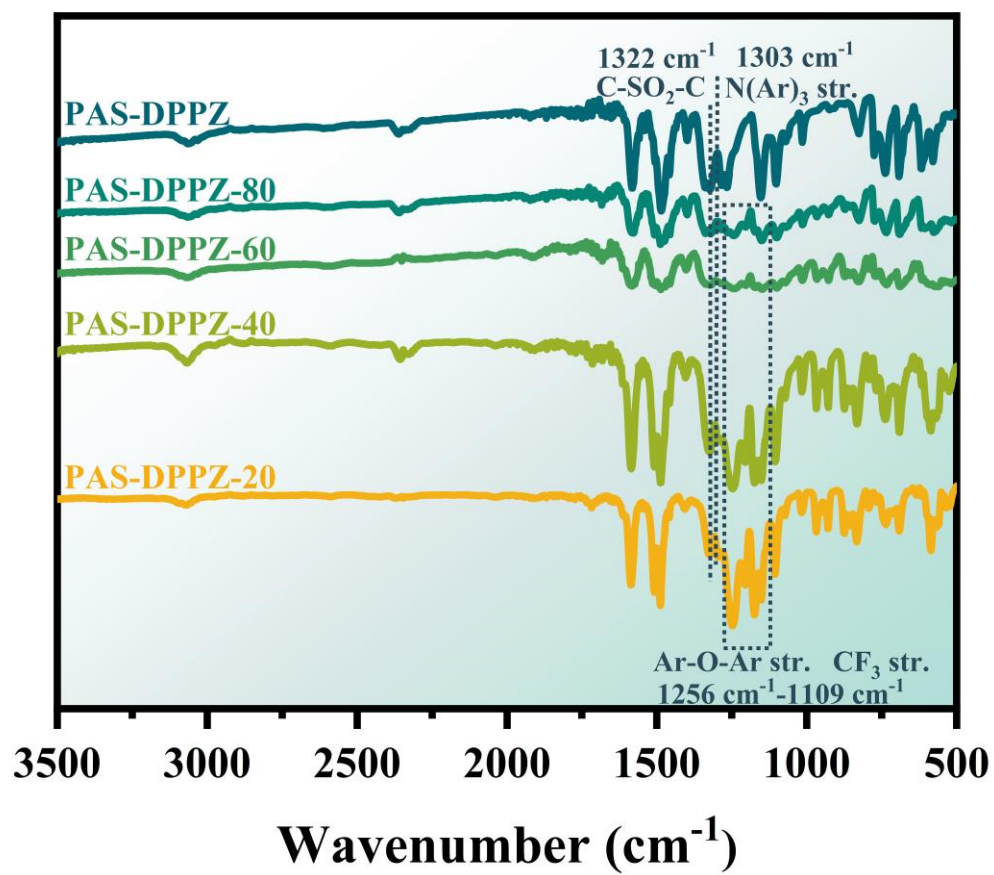


Figure S2. FT-IR spectra of PAS-DPPZs.

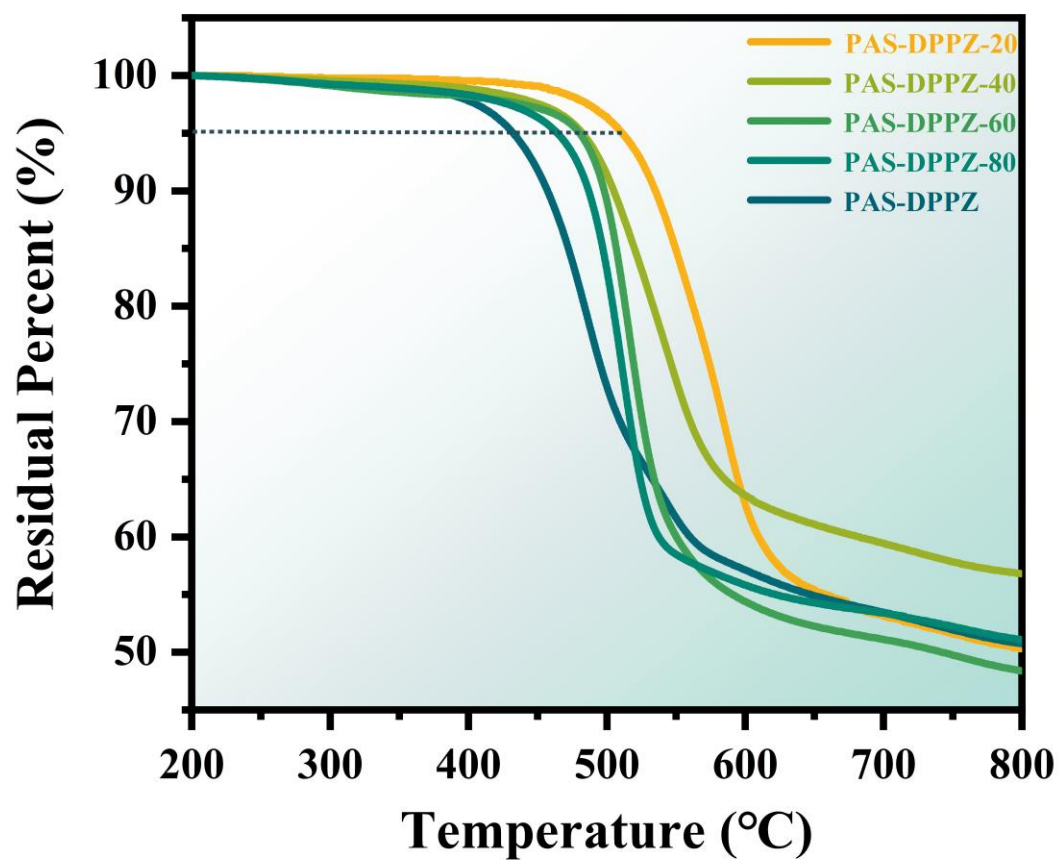


Figure S3. TGA curve of PAS-DPPZs.

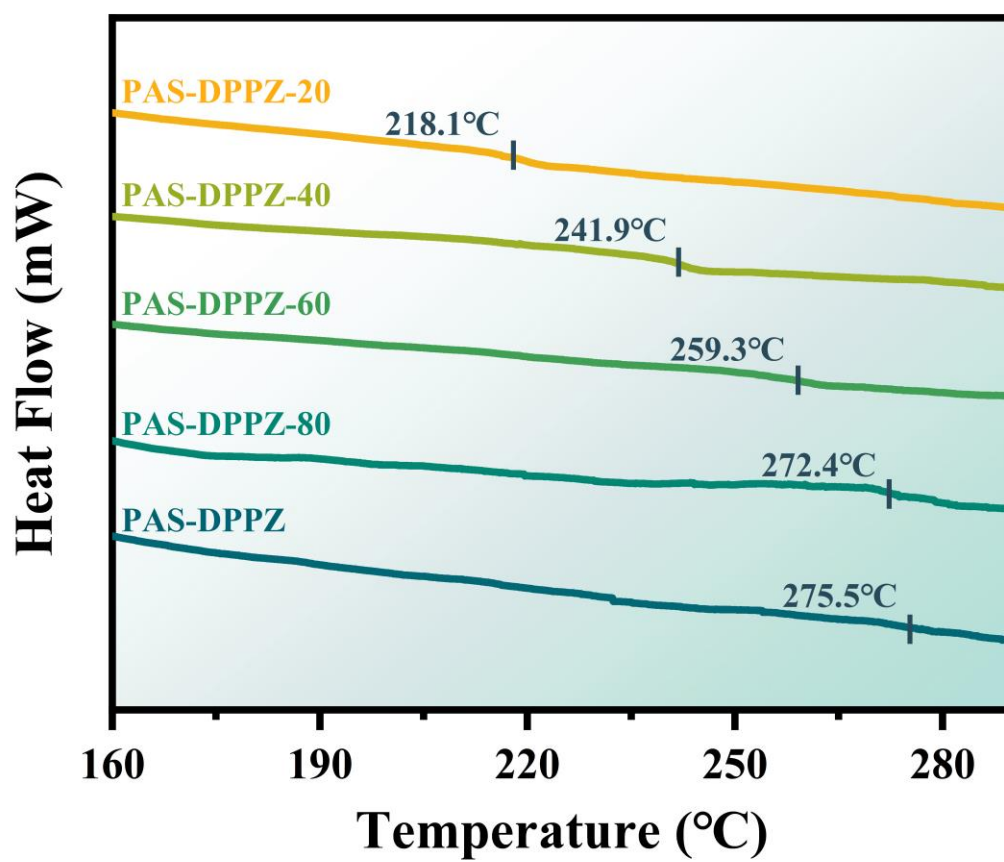


Figure S4. DSC curve of PAS-DPPZs.

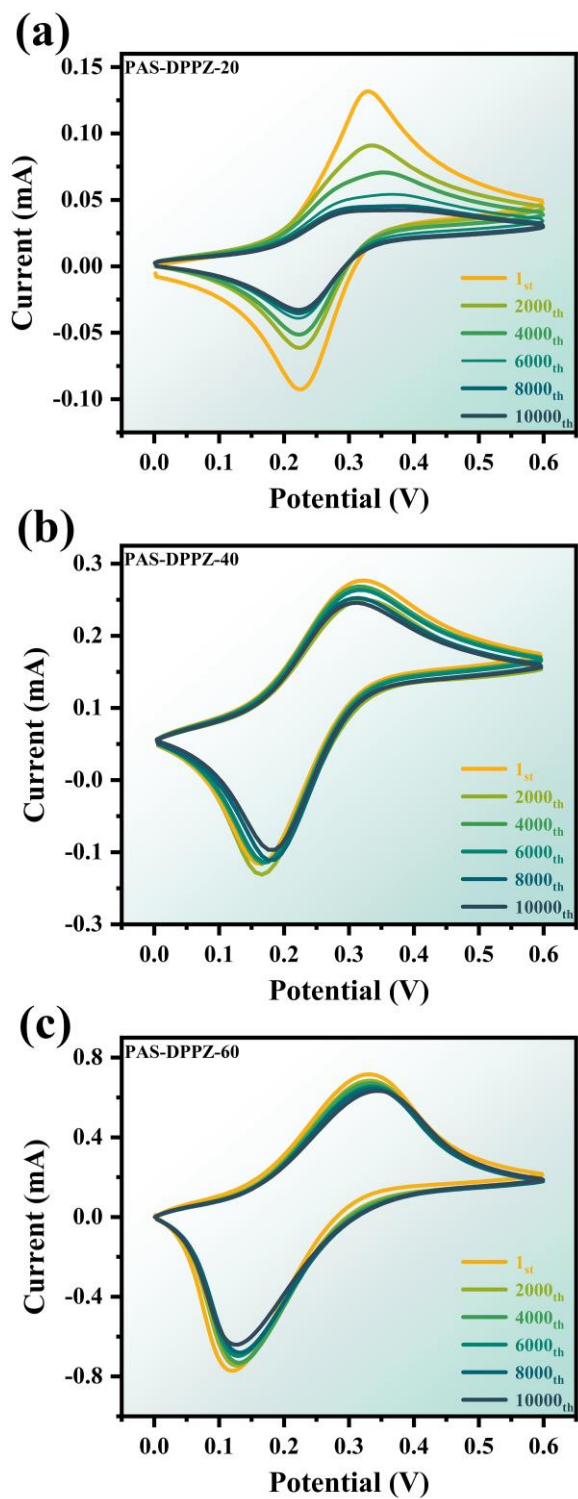


Figure S5. Comparison diagram of 10,000-cycle voltammetry curves of PAS-DPPZ-20 (a); PAS-DPPZ-40 (b) and PAS-DPPZ-60 (c) in 0.1 M TBAP/ACN solution at 0.1 V/s scanning rate.

Table S1. Solubility test results of PAS-DPPZs

Polymer Code	Solvent ^a							
	THF	CH ₂ Cl ₂	CHCl ₃	DMF	DMAc	DMSO	NMP	ACN
PAS-DPPZ-20	++	++	++	++	++	+	++	-
PAS-DPPZ-40	++	+	++	++	++	+	++	-
PAS-DPPZ-60	-	-	++	+	++	-	++	-
PAS-DPPZ-80	-	-	-	-	-	-	-	-
PAS-DPPZ	-	-	-	-	-	-	-	-

++: Soluble at room temperature; +: soluble on heating; -: insoluble on heating.

a) Qualitative solubility was determined with as 10 mg of polymer in 1 mL of solvent.

Procedure of CR2023 coin battery assembly

PAS-DPPZ, conductive carbon black (Super P) and polyvinylidene fluoride (PVDF) were dissolved in N-methyl-2-pyrrolidone after grinding for 1h in a weight ratio of 7:2:1. It was dried at 80°C for 12 h after being uniformly coated on aluminum foil. After that, it was cut into electrode sheets of 12 mm diameter and weighed. The average loading of the electrode active substance was about 0.5 mg/cm. Subsequently, it was transferred to a glove box ($\text{H}_2\text{O} < 1$ ppm, $\text{O}_2 < 1$ ppm) for assembly and packaging. In particular, the electrode, diaphragm (Celgard 2500), electrolyte (1 M LiPF_6 in EC/DEC, v/v = 1:1), and lithium metal sheet anode (0.45 mm thickness, 15.8 mm diameter) were assembled and sealed using CR2032 coin battery.