

Supporting Information

Novel Near-infrared and Multi-colored Electrochromic Polybenzoxazines with Electroactive Triarylamine Moieties

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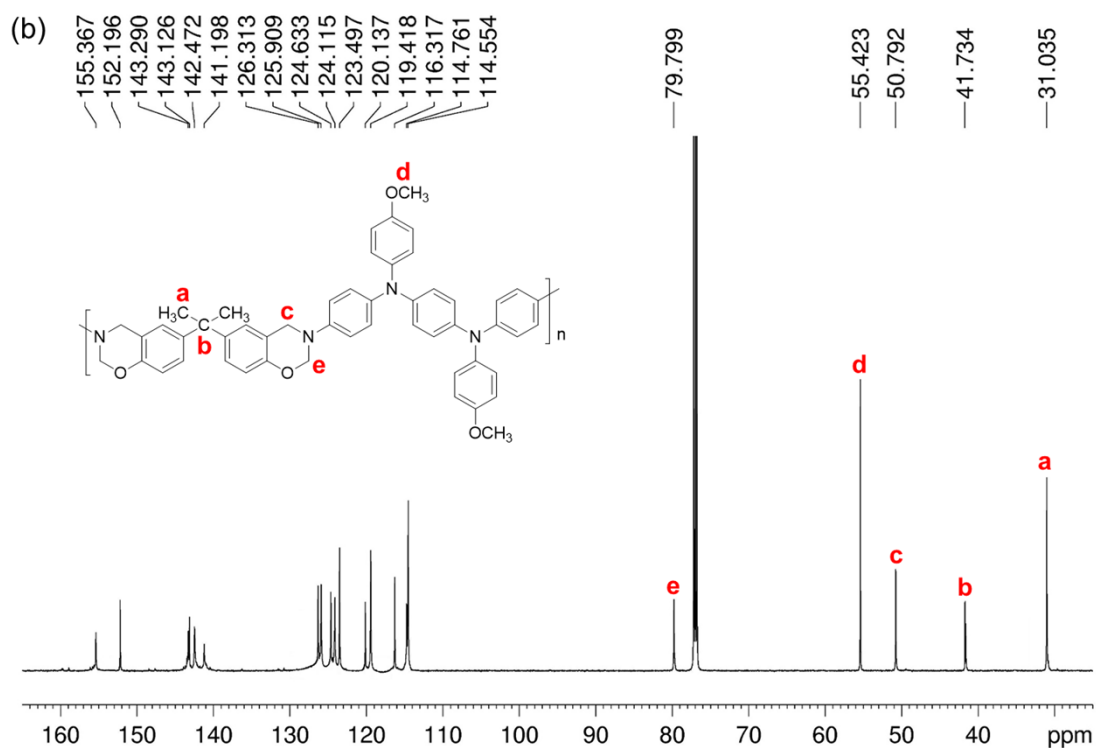
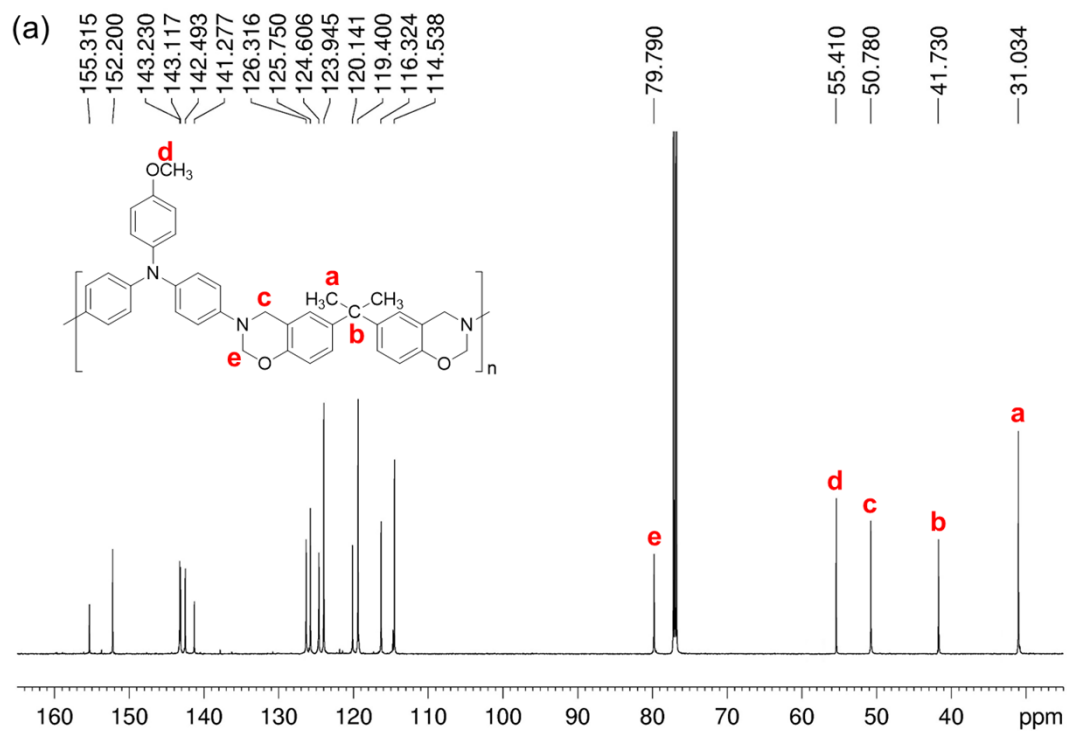


Fig.S1 ^{13}C NMR spectra of (a) TPA-BPA and (b) TPPA-BPA in CDCl_3 .

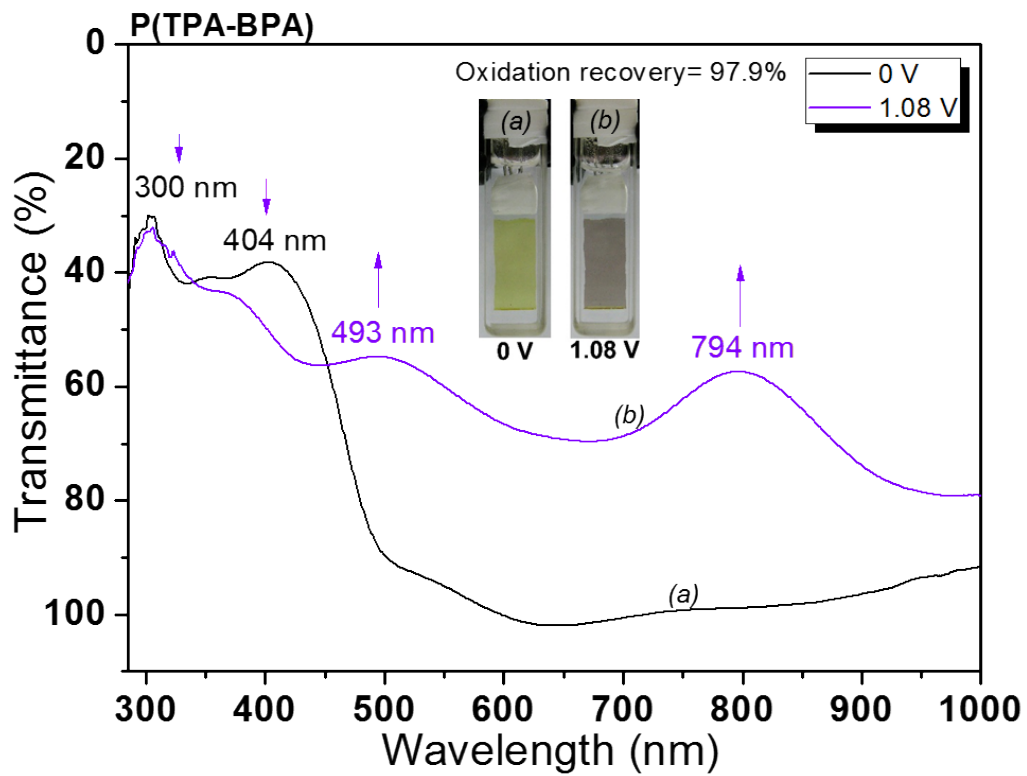


Fig. S2 Electrochromic behavior of **P(TPA-BPA)** film (110 nm) (in CH_3CN with 0.1M TBAP as the supporting electrolyte).

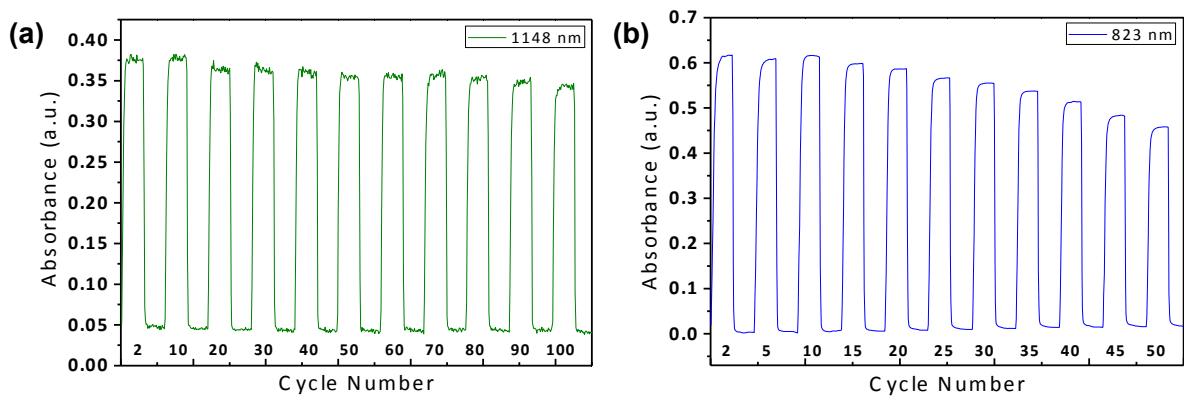


Fig. S3 EC switching between (a) 0 and 0.86 V and (b) 0 and 1.14 V (versus Ag/AgCl) of **P(TPPA-BPA)** film(125 nm) on the ITO-coated glass substrate in 0.1 M TBAP/CH₃CN with a cycle time of 30 s and 46 s at the given wavelength, respectively.

Table S1 Inherent Viscosity^a and Molecular Weight^b of Polybenzoxazine Precursors

Sample	η_{inh} (dL/g)	M_w	M_n	PDI ^c
TPA-BPA	0.27	4.8×10^4	1.9×10^4	2.55
TPPA-BPA	0.18	1.5×10^4	8.3×10^3	1.81

^a Measured at a polymer concentration of 0.5 g/dL in NMP at 30 °C.

^b Calibrated with polystyrene standards, using NMP as the eluent at a constant flow rate of 0.5 mL/min at 40 °C.

^c Polydispersity Index = M_w/M_n .

Table S2 Solubility^a of polybenzoxazine precursors, **TPA-BPA** and **TPPA-BPA**.

	DMSO	THF	DCM	DMAc	NMP	dioxane	CHCl ₃	acetone	DMF
TPA-BPA	-	++	++	S	+	+	++	-	-
TPPA-BPA	-	++	++	S	+	+	++	-	-

^a Qualitative solubility was tested with 1 mg of a sample in 1 mL of stirred solvent. ++, only need a short time to become soluble at room temperature; +, need a long time to become soluble at room temperature with stir; S, need some times to become swelling at room temperature with stir; -, insoluble even with stir. DMSO: dimethylsulfoxide; THF: tetrahydrofuran; DCM: dichloromethane; DMAc: *N,N*-dimethylacetamide; NMP: *N*-methyl-2-pyrrolidone; CHCl₃: chloroform; DMF: dimethylformamide.