Electronic Supplementary Information

Syntheses, Photochromic and Electrochromic Properties of Oxo-centred Triruthenium Compounds With Dithienylethene Bis(phosphine) Ligand

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Table S1. ^{1}H NMR Chemical Shifts (δ) for Compounds **[2(o)]$^+$**, **[3(o)]$^{2+}$**, **2(o)**, and **3(o)**.

	[2(o)]$^+$	**[3(o)]$^{2+}$**	**2(o)**	**3(o)**
δ (OAc)	0.898 (3H)	0.928 (3H)	1.296 (3H)	1.725 (24H)
	1.295 (3H)	0.945 (3H)	1.873 (9H)	1.847 (12H)
	1.683 (3H)	0.986 (6H)	2.037 (3H)	
	4.384 (3H)	1.003 (6H)	2.133 (3H)	
	6.324 (3H)	1.296 (3H)		
	9.658 (3H)	4.063 (6H)		
		6.249 (3H)		
		9.594 (6H)		
δ (DTE)	2.278 (6H, CH_3)	2.351 (6H, -CH_3)	2.075 (6H, -CH_3)	2.049 (6H, -CH_3)
	2.233 (2H, CH_2)	2.370 (4H, -CH_2)	0.886 (2H, -CH_2)	1.298 (2H, -CH_2)
	2.847 (2H, CH_2)	3.099 (2H, -CH_2)	2.739 (4H, -CH_2)	2.714 (4H, -CH_2)
	3.005 (2H, CH_2)	4.887 (1H, CH)	7.011 (1H, CH)	7.499 (2H, CH)
	6.324 (1H, CH)	6.249 (1H, CH)	7.323 (1H, CH)	
	6.838 (1H, CH)			
δ (Ph)	5.984 (4H)	4.100-4.600 (6H)	7.341-7.528 (20H)	7.350-7.450 (12H)
	7.308-7.598 (16H)	5.969 (4H)		7.734 (8H)
		7.554-7.769 (10H)		
δ (py)	7.950 (2H, m)	2.032 (4H, m)	7.967 (4H, m)	7.968 (8H, m)
	8.256 (2H, m)	3.859 (2H, p)	8.239 (2H, p)	8.224 (4H, p)
	9.658 (6H, o, p)	4.100-4.600 (4H, o)	9.166 (4H, o)	9.343 (8H, o)
		7.956 (2H, m)		
		8.239 (2H, m)		
		9.594 (6H, o, p)		

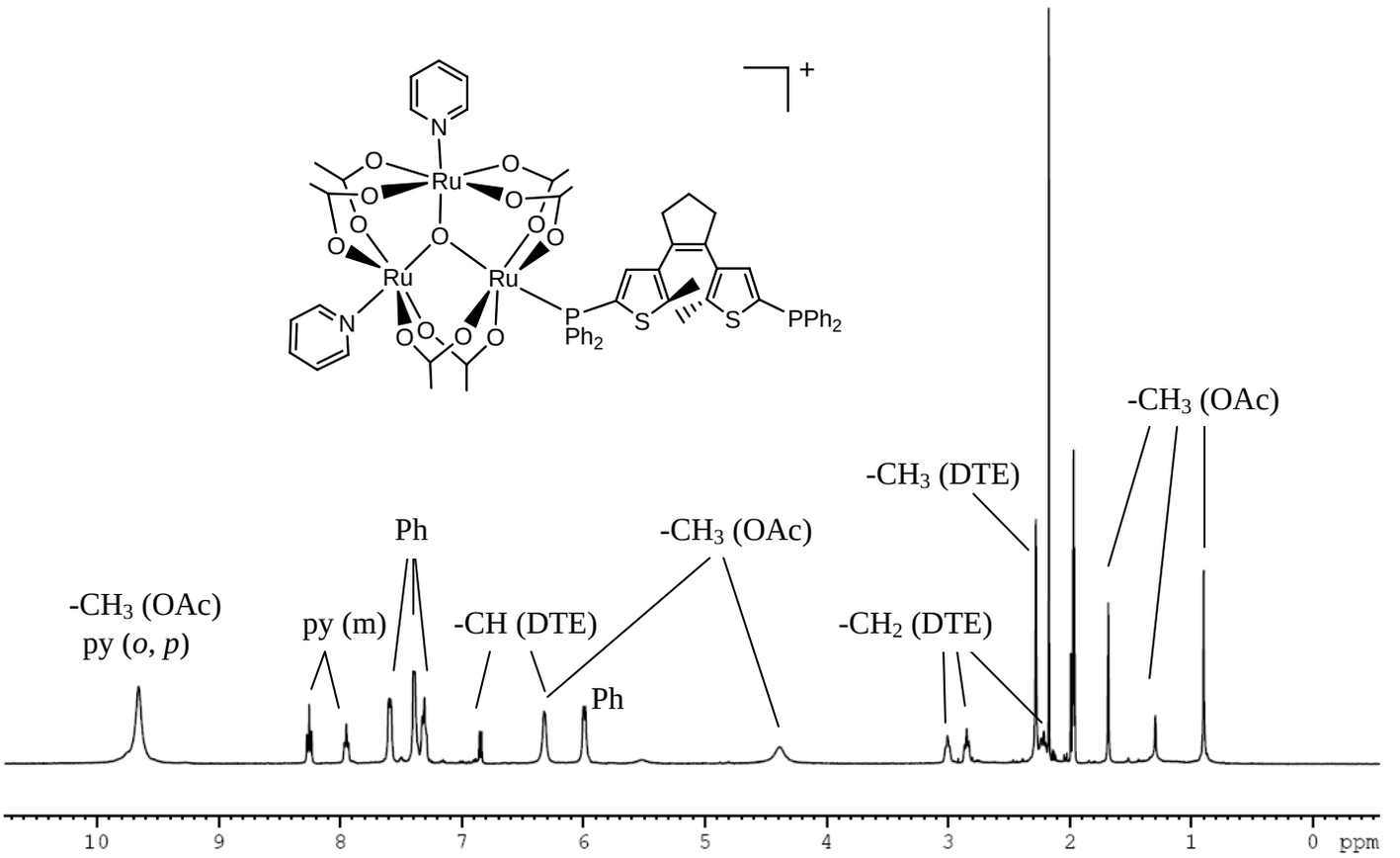

Fig. S1. ^{1}H NMR (400 MHz) spectrum of compound **[2(o)]**$^{+}$ in CD_3CN.

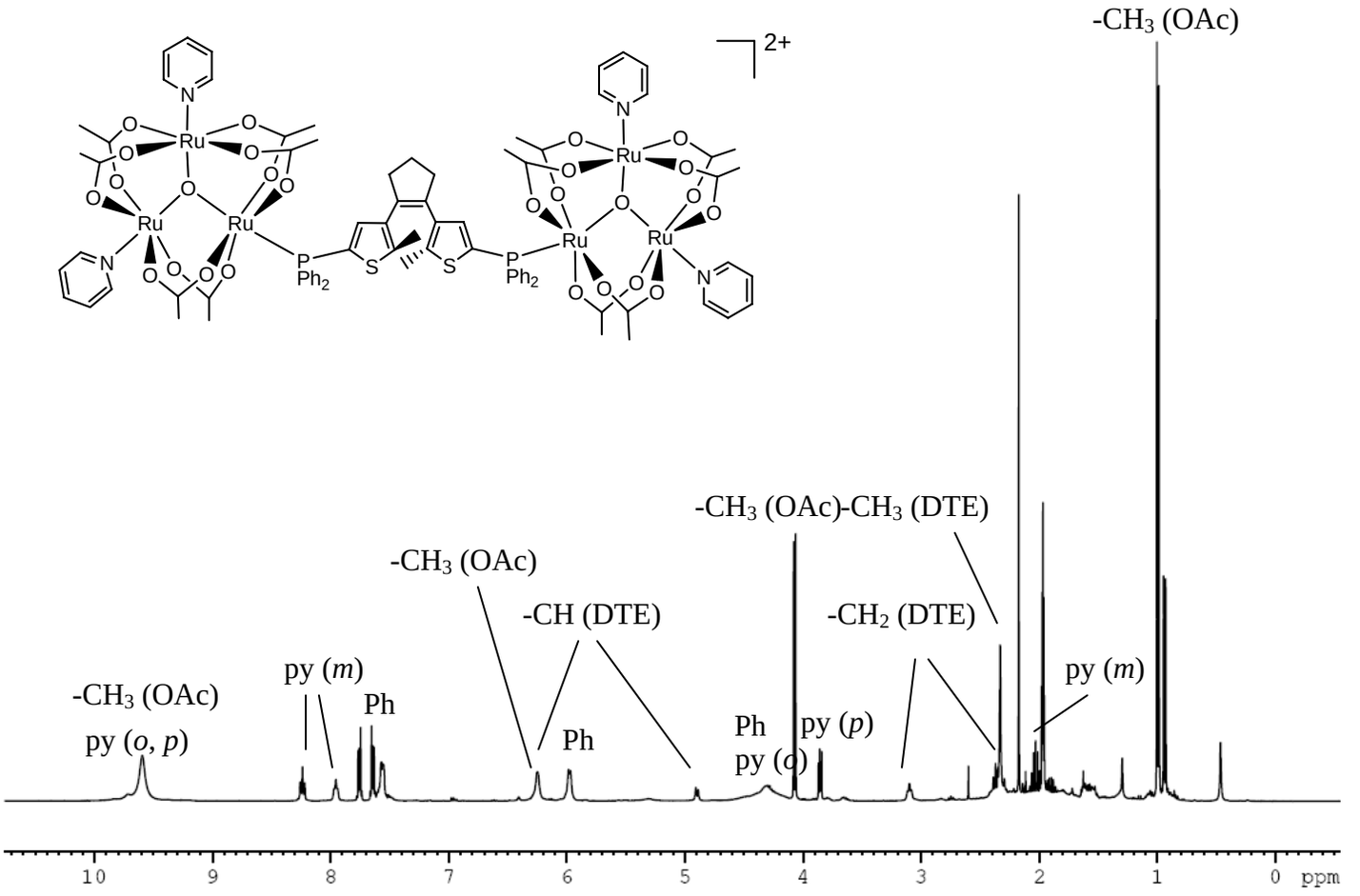

Fig. S2. ^{1}H NMR (400 MHz) spectrum of compound **[3(o)]**$^{2+}$ in CD_3CN.

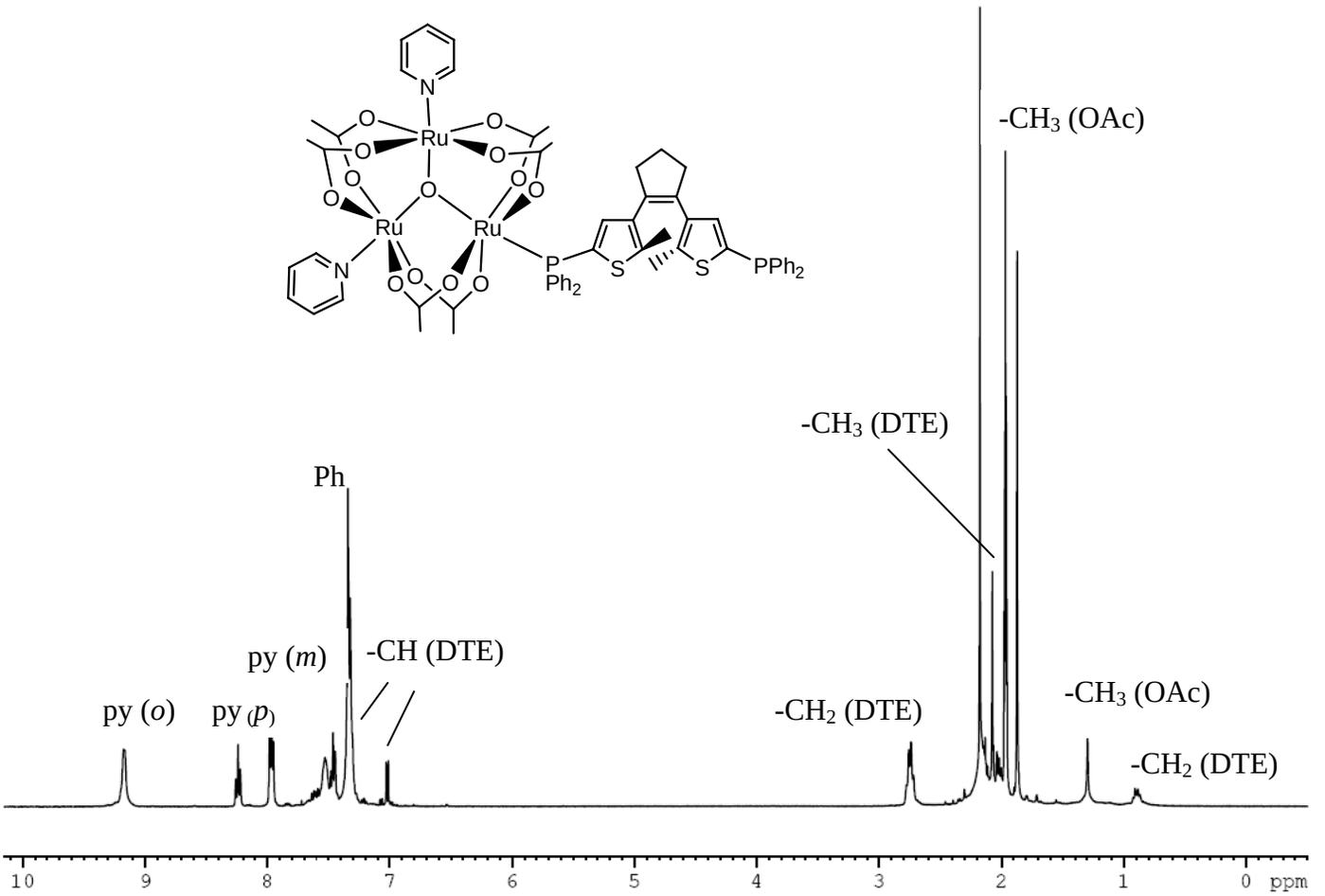

Fig. S3. ^{1}H NMR (400 MHz) spectrum of compound **2(o)** in CD_3CN.

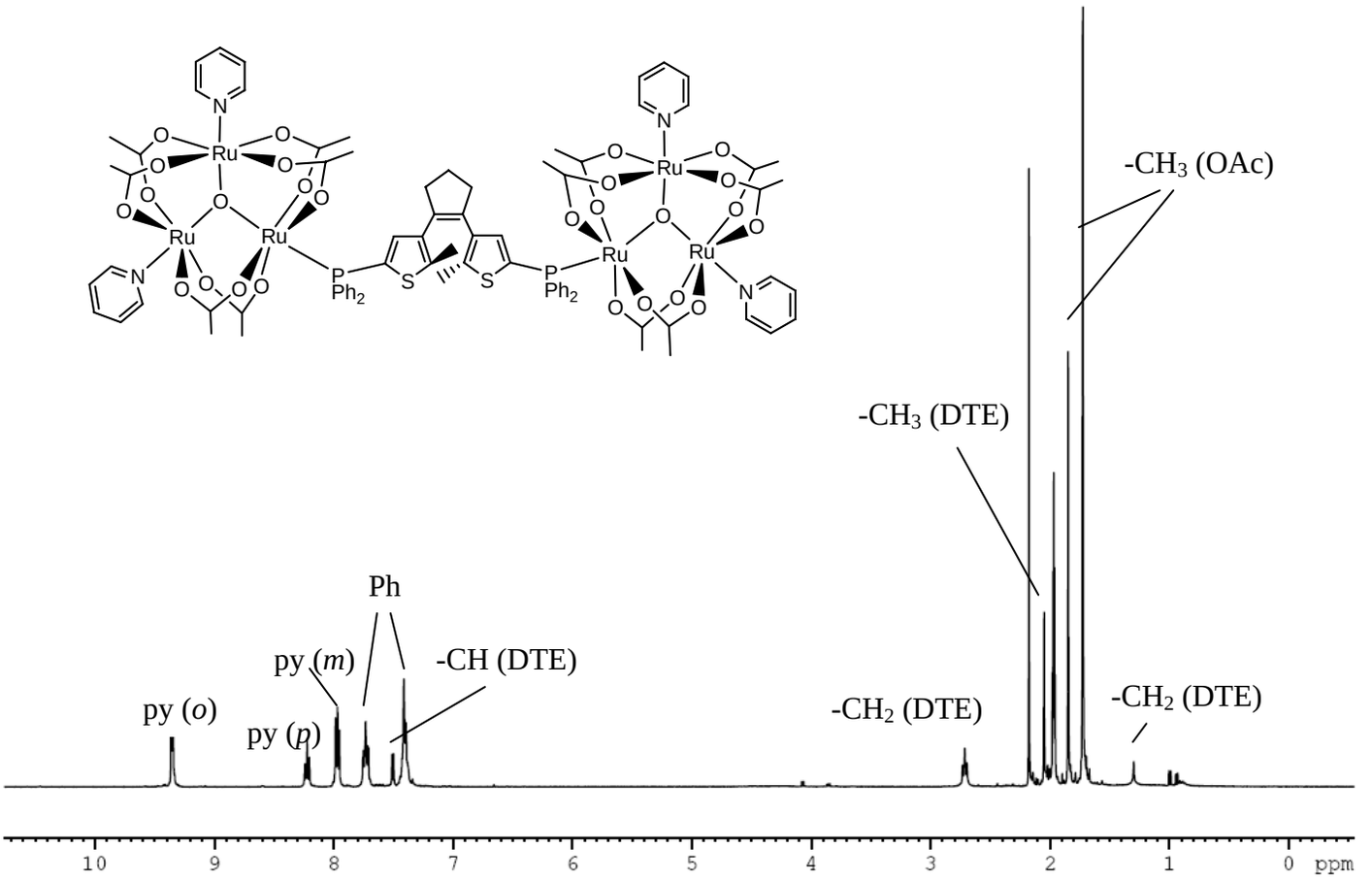

Fig. S4. ^{1}H NMR (400 MHz) spectrum of compound **3(o)** in CD_3CN.

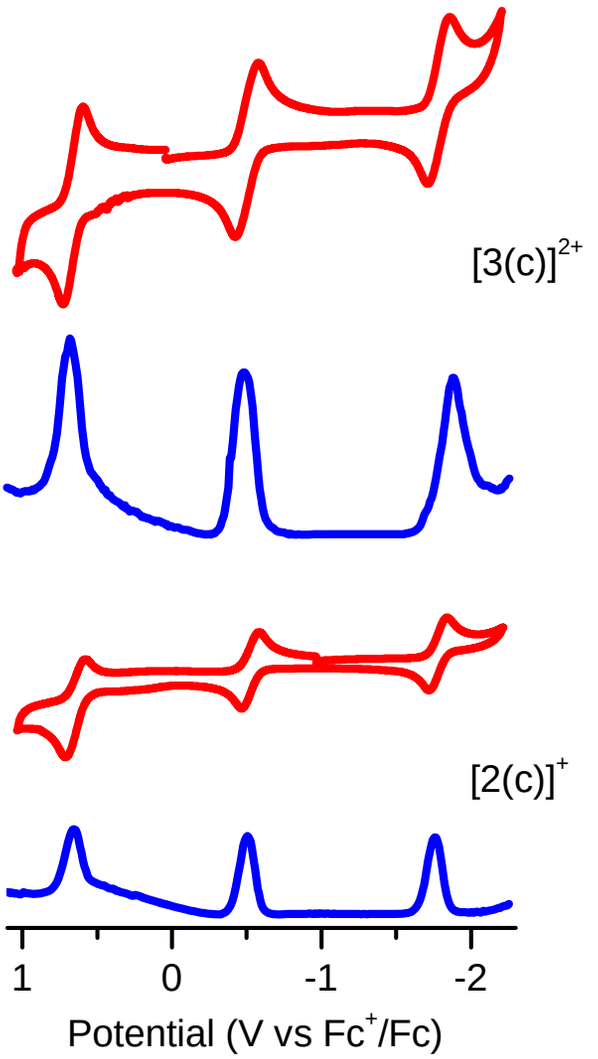

Fig. S5 Plots of cyclic and differential pulse voltammograms for compounds **[2(c)]**$^{+}$ and **[3(c)]**$^{2+}$ recorded after irradiation of **[2(o)]**$^{+}$ and **[3(o)]**$^{2+}$ at 254 nm in 0.1 M acetonitrile solution of $(Bu_4N)(PF_6)$. The scan rates are 100 mV s-1 for CV and 20 mV s-1 for DPV.

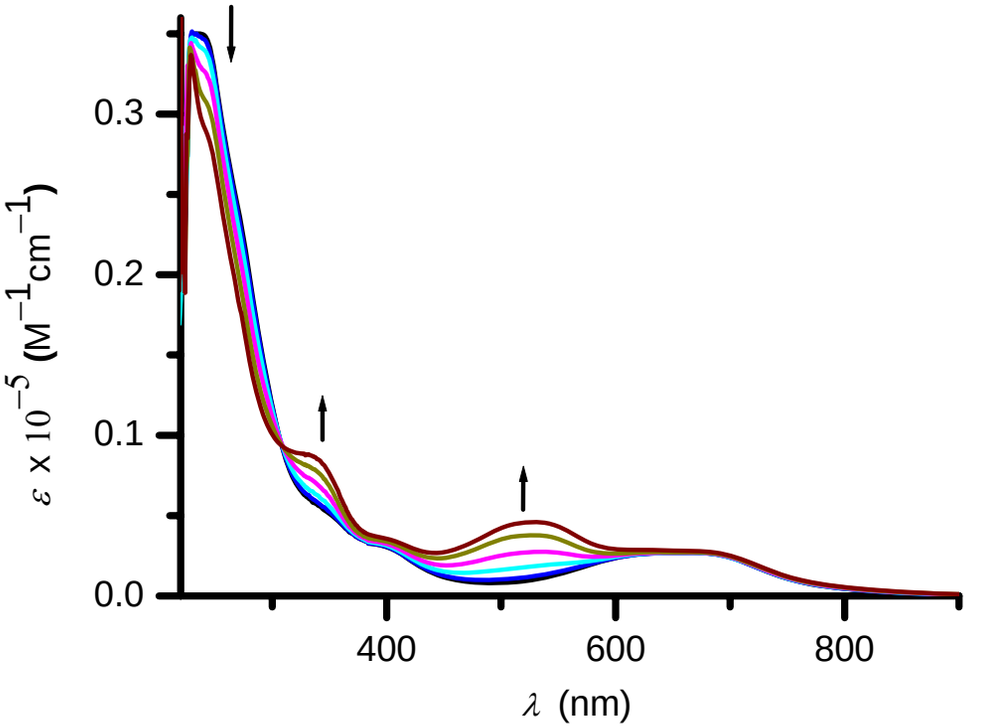

Fig. S6. UV-vis absorption spectra of **[2]**$^{+}$ (2.0 × 10^{-5} mol/L) in dichloromethane upon irradiation with UV light (254 nm) at 0, 1, 3, 6, 10, 15 min.

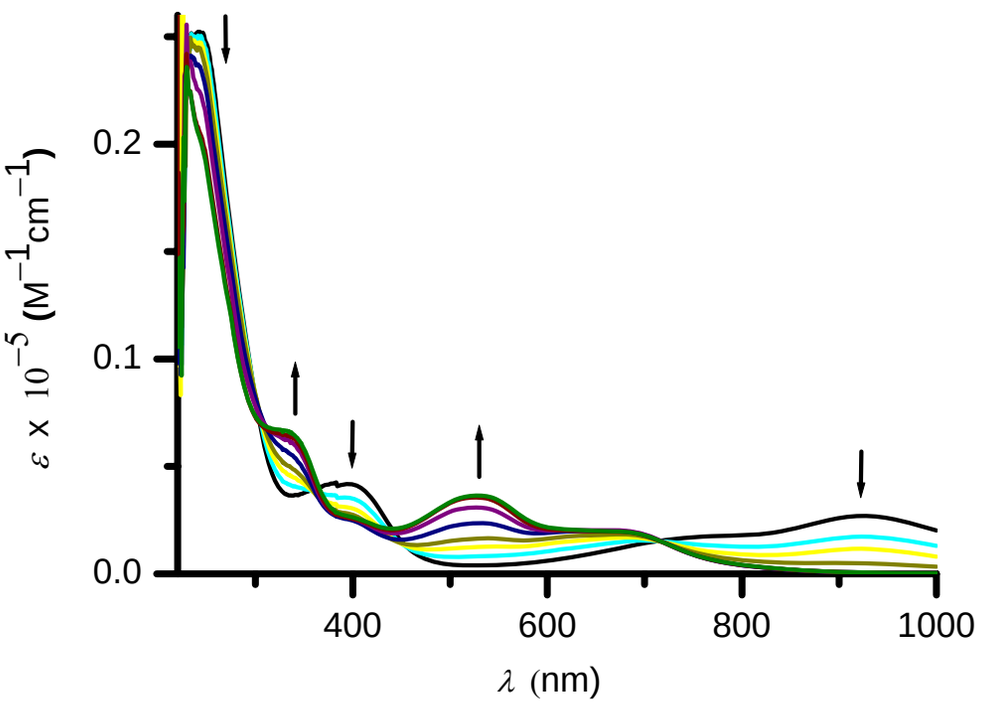

Fig. S7. UV-vis absorption spectra of **2** (2.0 × 10^{-5} mol/L) in dichloromethane upon irradiation with UV light (254 nm) at 0, 1, 3, 5, 9, 15, 23, 30 min.

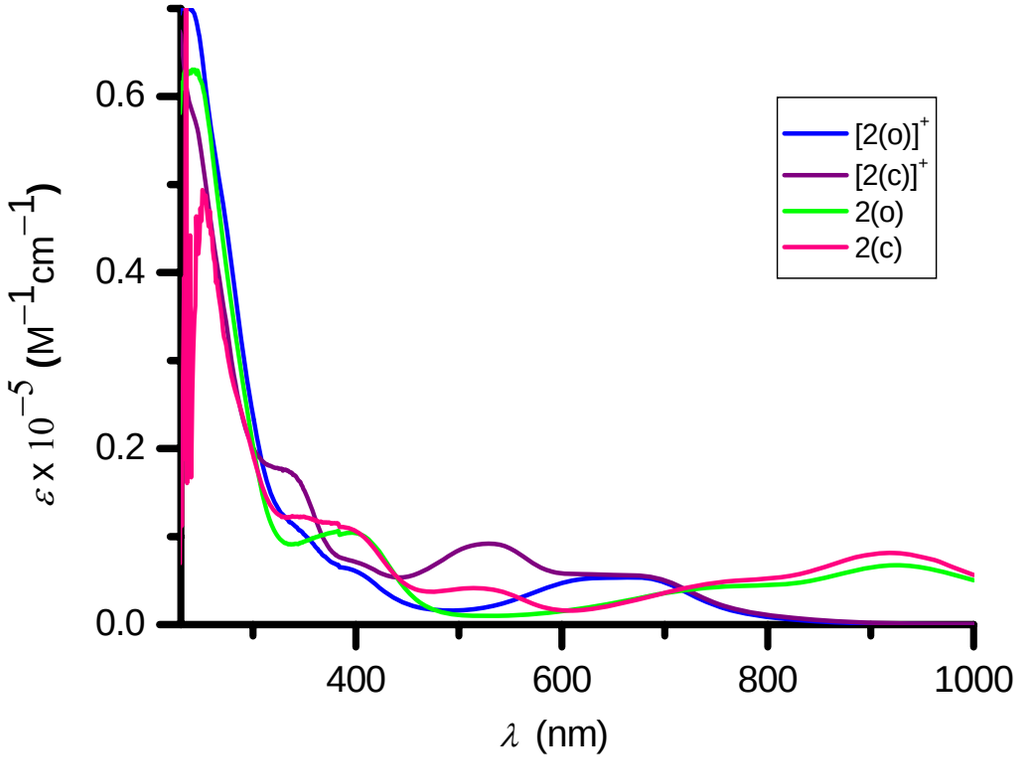

Fig. S8. UV-vis absorption spectra of **[2(o)]**$^{+}$, **2(o)**, **[2(c)]**$^{+}$, and **2(c)**.

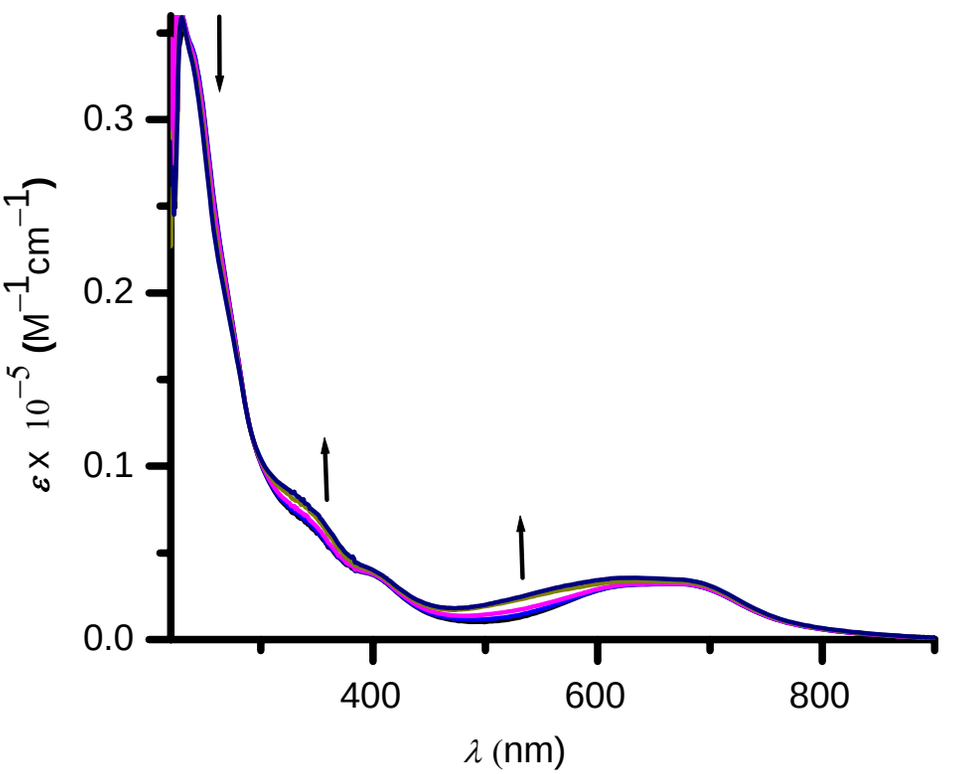

Fig. S9. UV-vis absorption spectra of **[3]**$^{2+}$ (2.0×10^{-5} mol/L) in dichloromethane upon irradiation with UV light (254 nm) at 0, 0.5, 1, 4, 6 min.

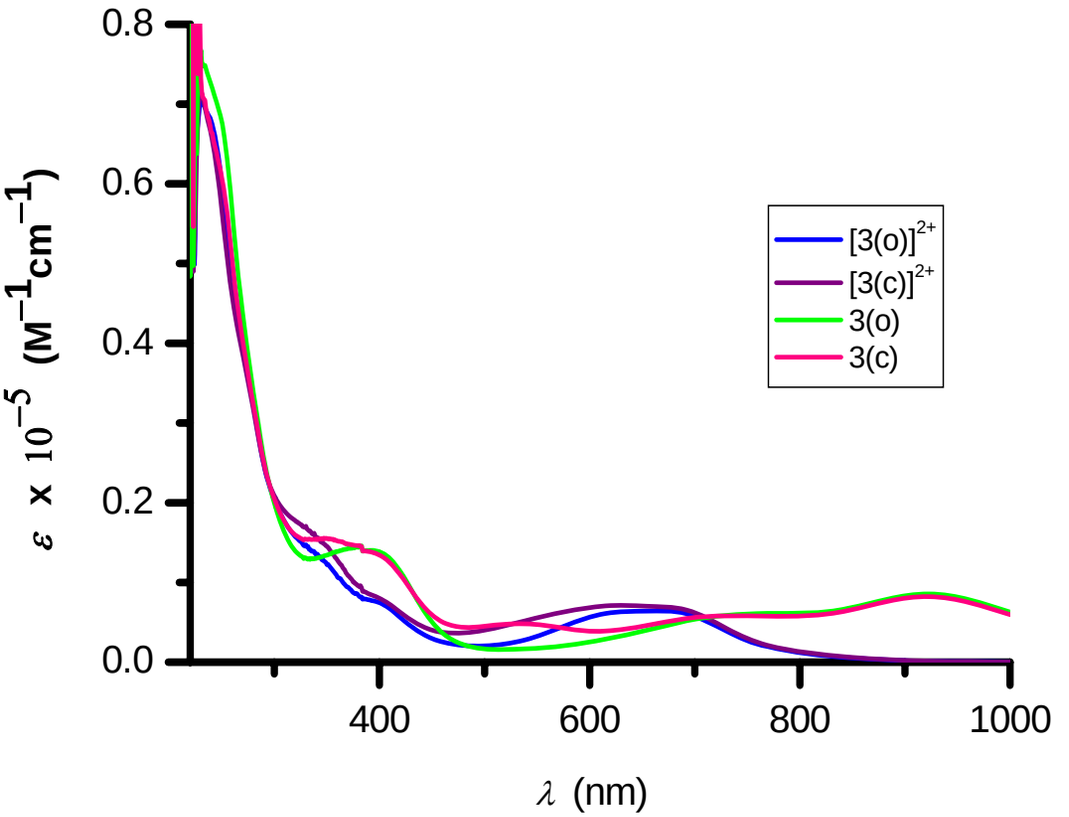

Fig. S10. UV-vis absorption spectra of **[3(o)]**$^{2+}$, **3(o)**, **[3(c)]**$^{2+}$, and **3(c)**.