

Electrochemical Studies of Azulene Modified Electrodes

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Basic properties for **T** and characterization by elemental analysis, UV-Vis, IR, ¹H NMR, ¹³C-NMR, MS

Brown crystals, m. p. 258 °C. UV-vis (MeOH), λ_{\max} (log ϵ): 228 (5.06), 290 (4.07), 343 (3.82), 345 (3.82), 347 (3.82), 356 (3.77), 498 (4.41) nm. ¹H-NMR (CDCl₃, 500 MHz) δ 7.46–7.51 (m, 4 H, 3-H, 3''-H and 4''-H), 7.54 (t, ³J = 9.7 Hz, 1 H, 5-H), 7.66 (t, ³J = 9.9 Hz, 1 H, 7-H), 7.89 (t, ³J = 9.9 Hz, 1 H, 6-H), 8.04–8.09 (m, 2 H, 2''-H), 8.38 (d, ³J = 4.8 Hz, 1 H, 2-H), 8.39 (d, ³J = 9.2 Hz, 1 H, 4-H), 9.22 (d, ³J = 9.5 Hz, 1 H, 8-H) ppm. ¹³C-NMR (CDCl₃, 125 MHz) δ 123.1 (C-3), 127.2 (C-2), 128.0 (C-2'' and C-6''), 129.2 (C-3'' and C-5''), 130.0 (C-5), 130.1 (C-7), 131.0 (C-1''), 131.3 (C-4''), 136.2 (C-8), 139.6 (C-4), 140.9 (C-6), 144.7 (C-8a), 146.9 (C-3a), 166.8 (C-5'), 181.7 (C-2') ppm. IR (neat): 680, 750, 778, 859, 1198, 1240, 1268, 1317, 1410, 1455, 1491, 1573, 2360, 2849, 2917, 2955, 3026 cm⁻¹. MS [ESI]: 317 [M+1]. Calcd. for: C₁₈H₁₂N₄S: C, 68.33; H, 3.82; N, 17.71. Found: C, 68.35; H, 3.84; N, 17.70.

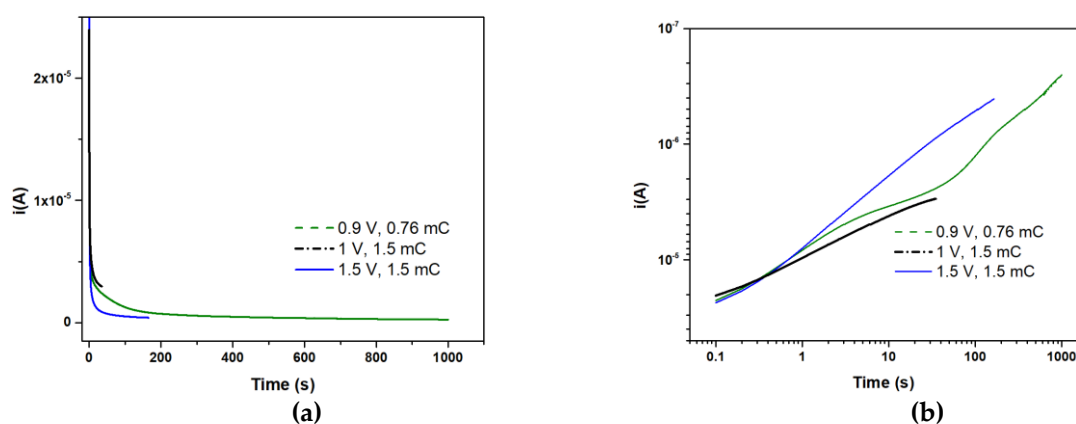


Figure S1. Chronoamperograms during the preparation of CMEs by CPE for a constant charge of 1.5 mC at different applied potentials: +1 V (black line), +1.5 V (blue line) and +0.9 V (green line) in real coordinates (a) and logarithmic scale (b).

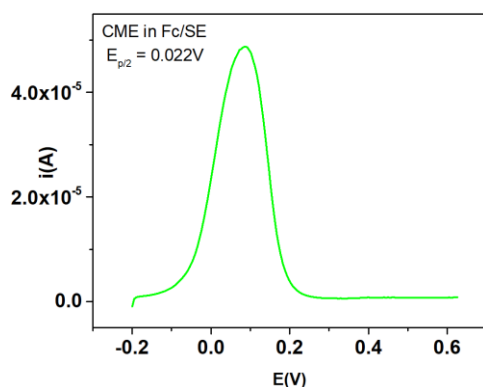


Figure S2. DPV curve for **T**-CME prepared by CPE at 1.5 V and 1.5 mC recorded in Fc/SE.

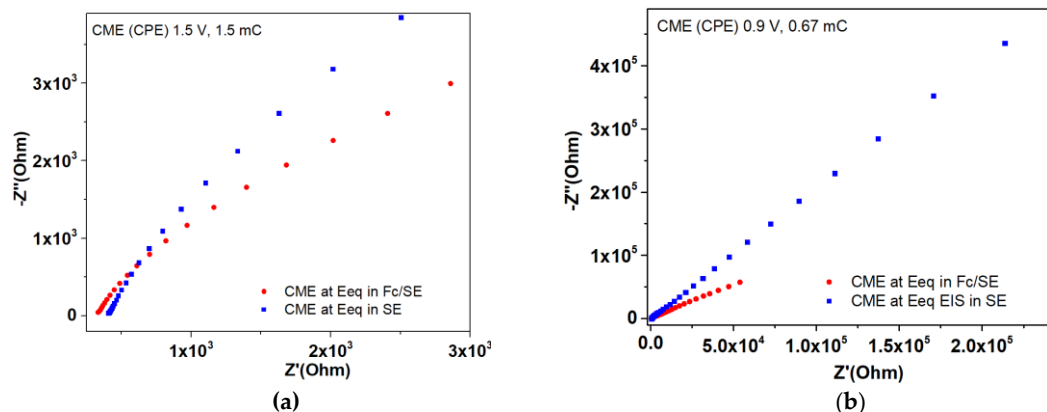


Figure S3. EIS curves for CMEs obtained by CPE at equilibrium potentials in SE (blue squares) and in Fc/SE (red dots) for CMEs obtained at: (a) 1.5V, 1.5mC; (b) 0.9V, 0.67mC.

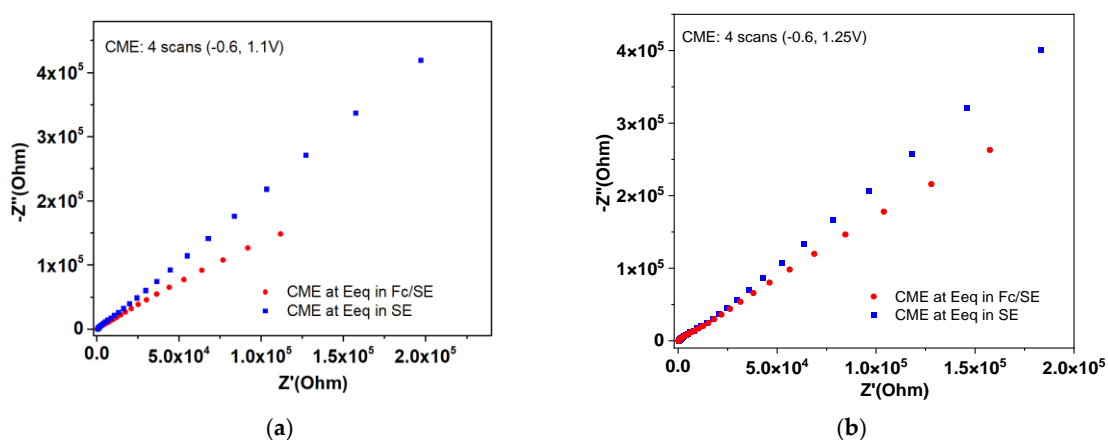


Figure S4. EIS curves for CME obtained by scanning (4 scans) in the ranges: (a) -0.6, 1.1V; (b) -0.6, 1.25V at the equilibrium potentials in SE (blue squares) and in Fc/SE (red dots).

Table S1. Parameters for EIS curves for CMEs prepared by scanning recorded in type B experiments in SE at different potentials according to models in Figure 6.

No.	Sample at E (V)	Rsol (Ω)	CPEdl		Rct (Ω)	W			Circuit model	X ²
			CPEdl-T	CPEdl-P		Rw (Ω)	Wo-T (μF)	Wo-P		
1	CME (1.1 V, 4 scs in Fc SE) at Eeq	240	2.55	0.874	9887	8.448×10^5	32.73	0.57	C2	6.496×10^{-4}
2	CME (1.25 V, 4 scs in Fc SE) at Eeq	290	2.29	0.878	21665	630	0.00013	0.318	C1	4.734×10^{-4}
3	CME (0.9 V, 0.67 mC in Fc SE) at Eeq	367.5	3.17	0.842	6108	1.7830×10^5	10	0.52	C1	1.705×10^{-3}
4	CME (1.1 V, 4 scs in SE) at Eeq	340	2.3	0.869	37053	139.7	7.902×10^{-6}	0.132	C1	3.247×10^{-4}
5	CME (1.25 V, 4 scs in SE) at Eeq	356.4	2.4	0.843	36964	2128	7.535×10^{-4}	0.346	C1	5.424×10^{-4}
6	CME (0.9 V, 0.67 mC in SE) at Eeq	351.4	3.03	0.804	83093	8.4197×10^6	72.92	0.66	C2	4.838×10^{-4}