

SUPPORTING INFORMATION

Sucrose-derived activated carbons: electron transfer properties and application as oxygen reduction electrocatalysts

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Table S1: ΔE_p and i_{pa}/i_{pc} ratios determined from Figures S9, S10 and S11.

Sample	$[\text{Fe}(\text{CN})_6]^{3-/4-}$		$\text{Ru}(\text{NH}_3)_6]^{3+/2+}$		$\text{Eu}^{2+/3+}$	
	ΔE_p	i_{pa}/i_{pc}	ΔE_p	i_{pa}/i_{pc}	ΔE_p	i_{pa}/i_{pc}
Bare GCE	0.081 ^{a,b}	1.02 (± 0.01)	0.076 ^{a,b}	1.04 (± 0.02)	0.133 ^a 0.284 ^b	0.96 (± 0.01)
SC800	0.071 ^a 0.090 ^b	0.96 (± 0.07)	0.071 ^a 0.076 ^b	1.01 (± 0.04)	0.075 ^a 0.128 ^b	0.98 (± 0.01)
SH800	0.066 ^a 0.081 ^b	0.97 (± 0.02)	0.071 ^{a,b}	1.03 (± 0.02)	0.076 ^a 0.085 ^b	1.02 (± 0.01)

^a at 0.01 V s⁻¹; ^b at 0.5 V s⁻¹

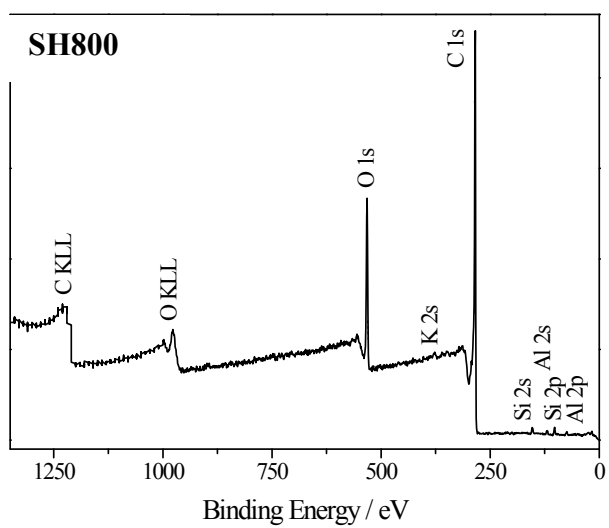
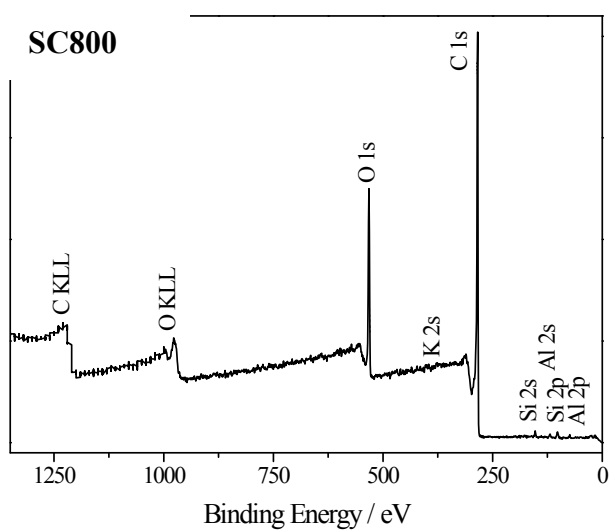


Figure S1: XPS survey spectra for the activated carbons, SC800 and SH800.

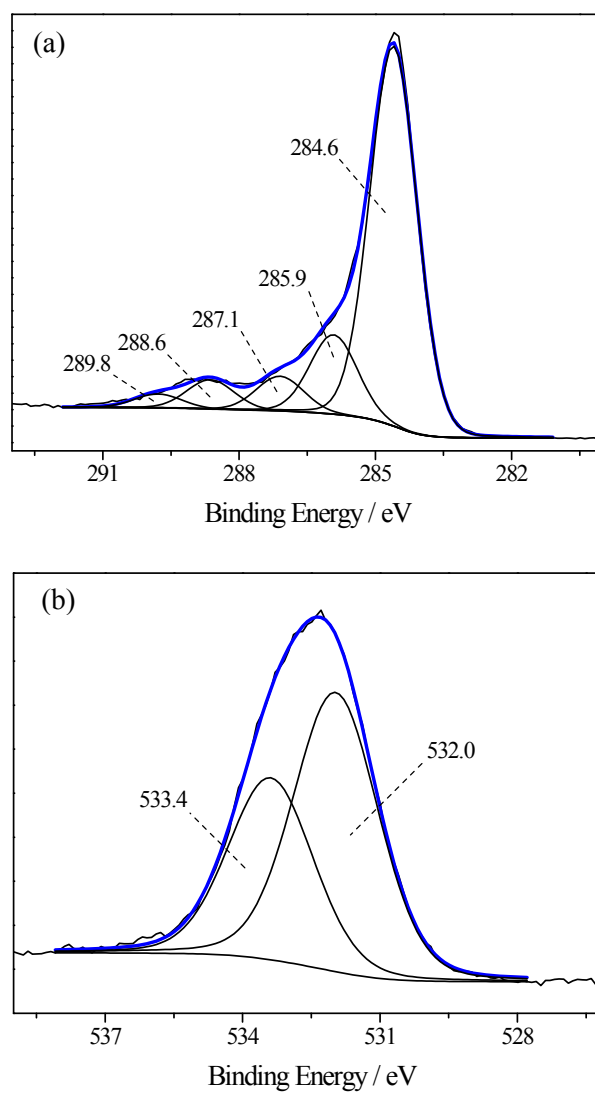


Figure S2. Deconvoluted high-resolution C 1s (a) and O 1s (b) XPS spectra of SC800.

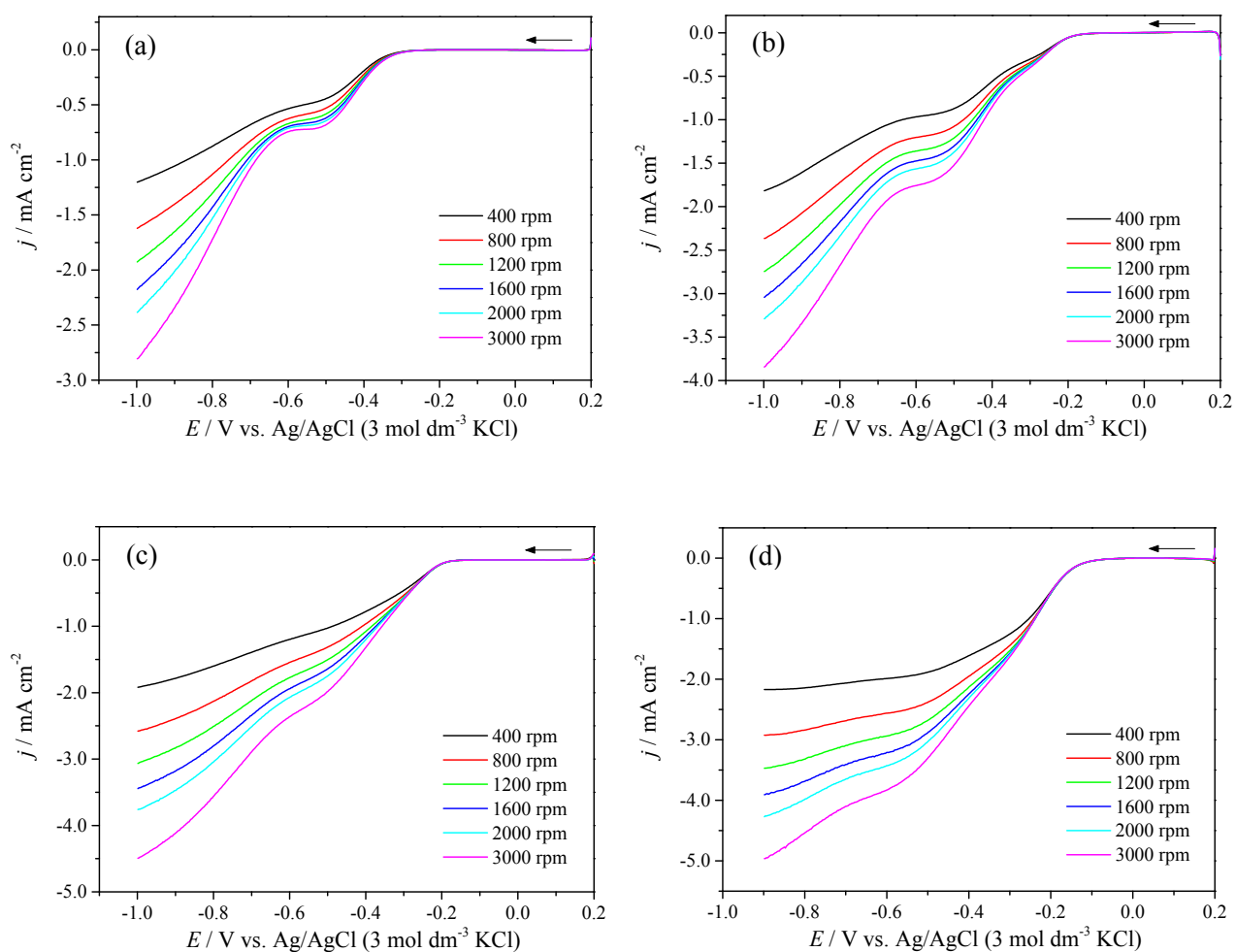


Figure S3. ORR polarization plots of bare GCE (a), SC800 (b) and SH800 (c) modified electrodes and 20 wt% Pt/C (d) at several rotation rates and 0.005 V s^{-1} , in $0.1 \text{ mol dm}^{-3} \text{ KOH}$ electrolytes.

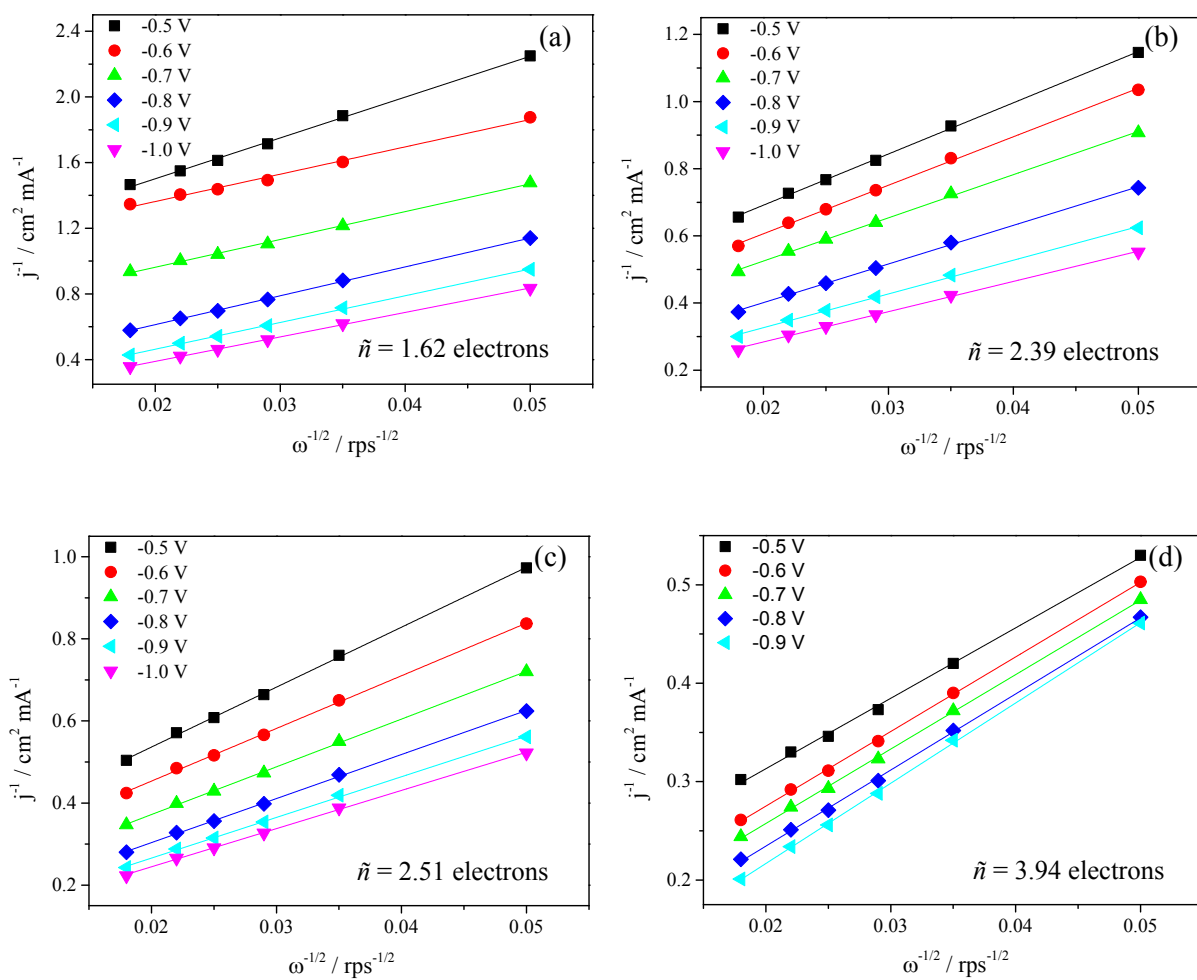


Figure S4. Koutecky-Levich (K-L) plots of bare GCE (a), SC800 (b) and SH800 (c) modified electrodes and 20 wt% Pt/C (d) obtained from data in Figure S2.

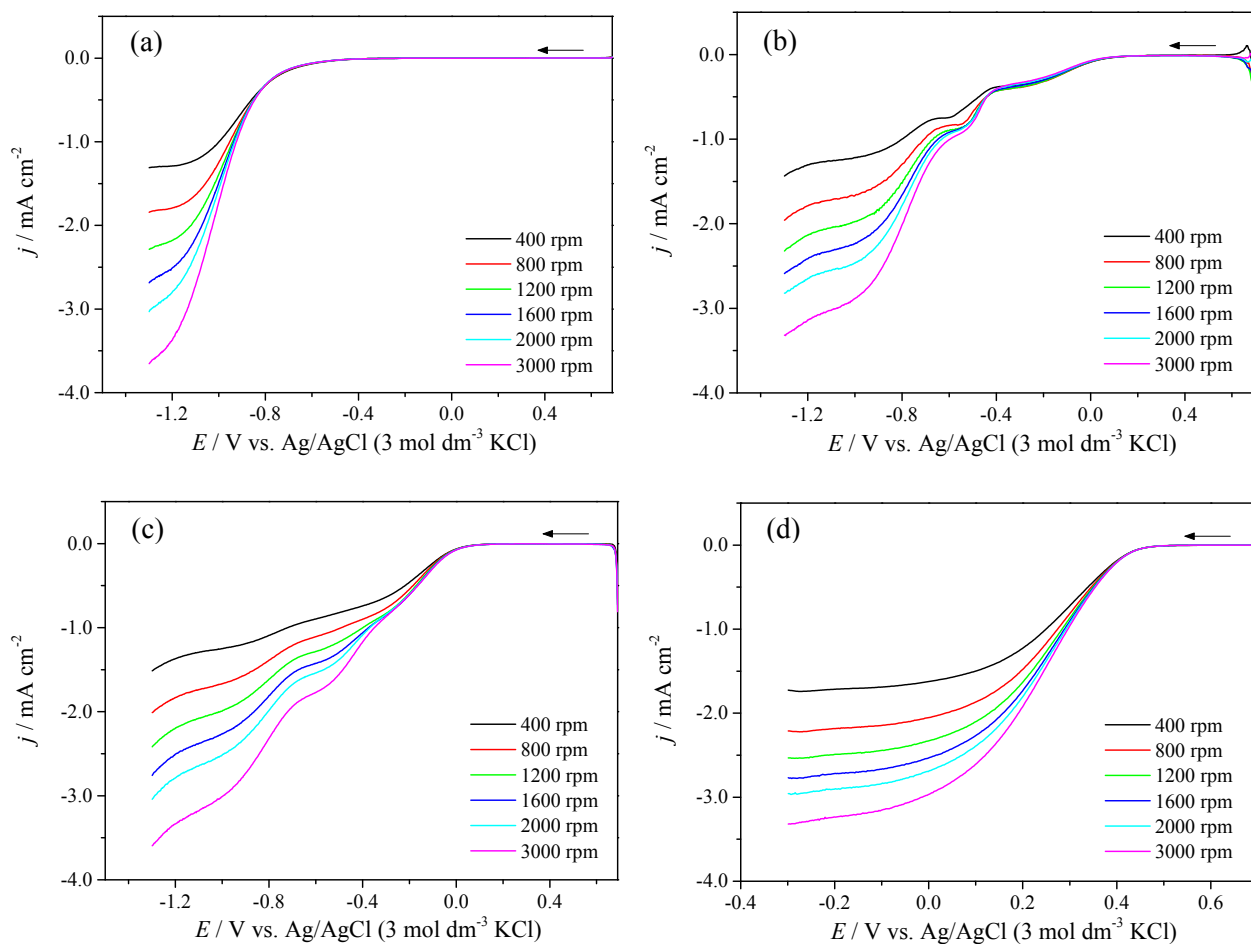


Figure S5. ORR polarization plots of bare GCE (a), SC800 and (b), SH800 (c) modified electrodes and 20 wt% Pt/C (d) at several rotation rates and 0.005 V s^{-1} , in $\text{H}_2\text{SO}_4/\text{Na}_2\text{SO}_4$ (pH 2.5).

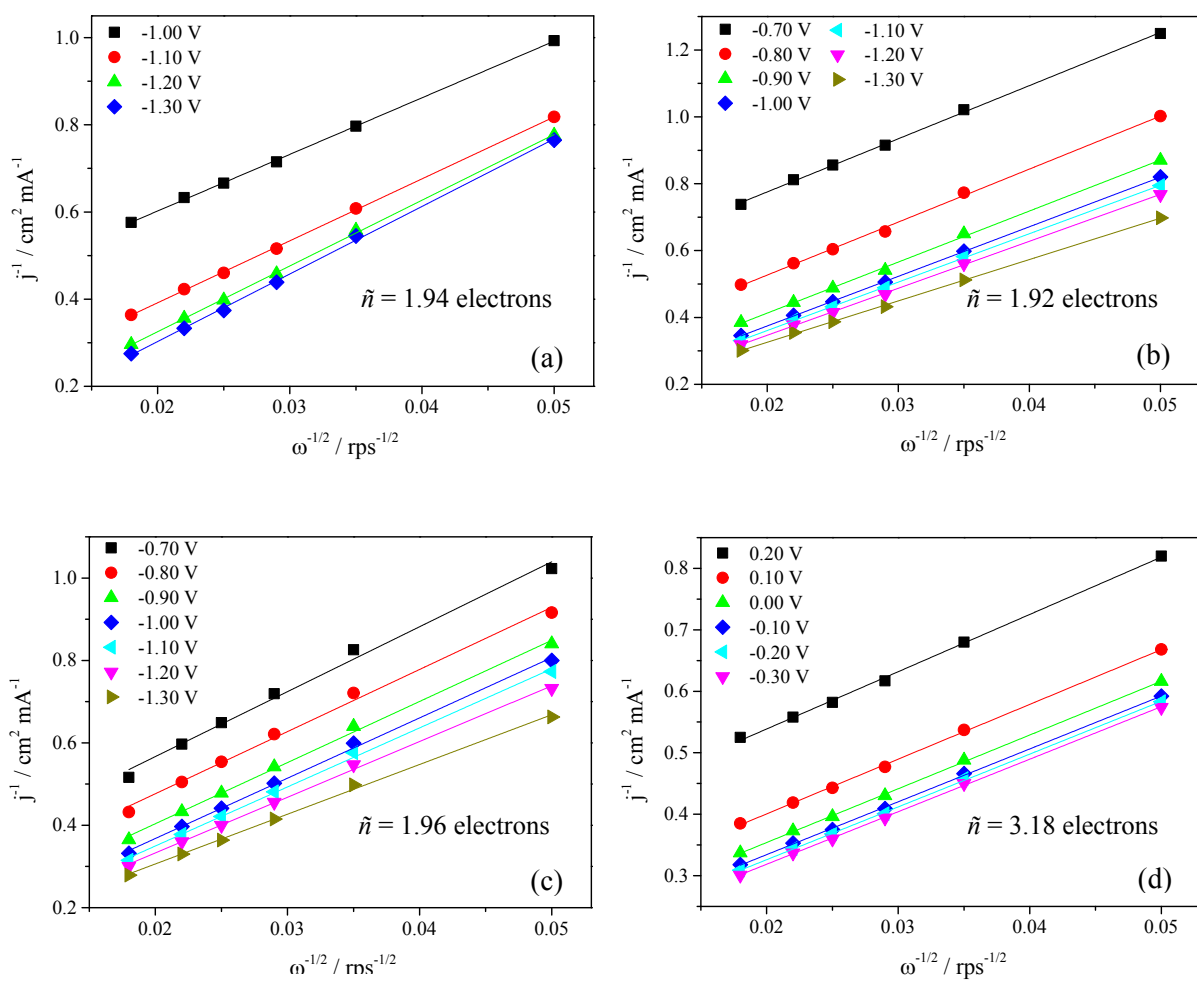


Figure S6. Koutecky-Levich (K-L) plots of bare GCE (a), SC800 (b) and SH800 (c) modified electrodes and 20 wt% Pt/C (d) obtained from data in Figure S4.

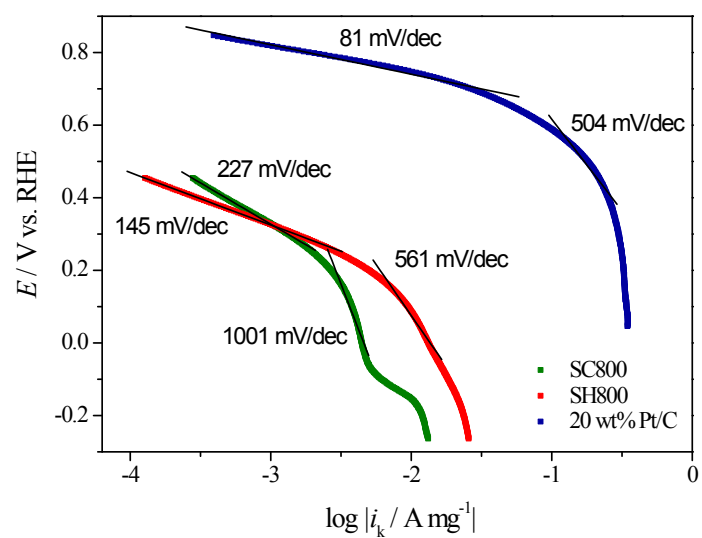


Figure S7. ORR Tafel plots for SC800 and SH800 activated carbons and 20 wt% Pt/C, obtained from LSV data in Figure 6 (b); current intensities normalized to the mass of each electrocatalyst deposited on electrode (see experimental section).

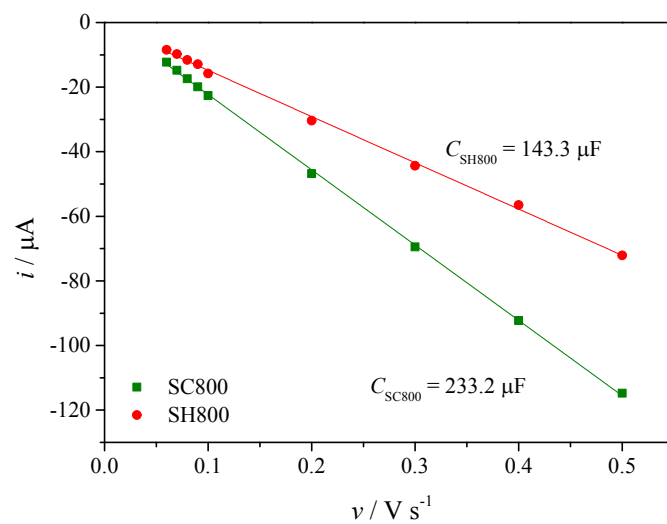


Figure S8. Plots of i vs. ν for SC800 and SH800, with indication of the respective slope / capacity, C , values.

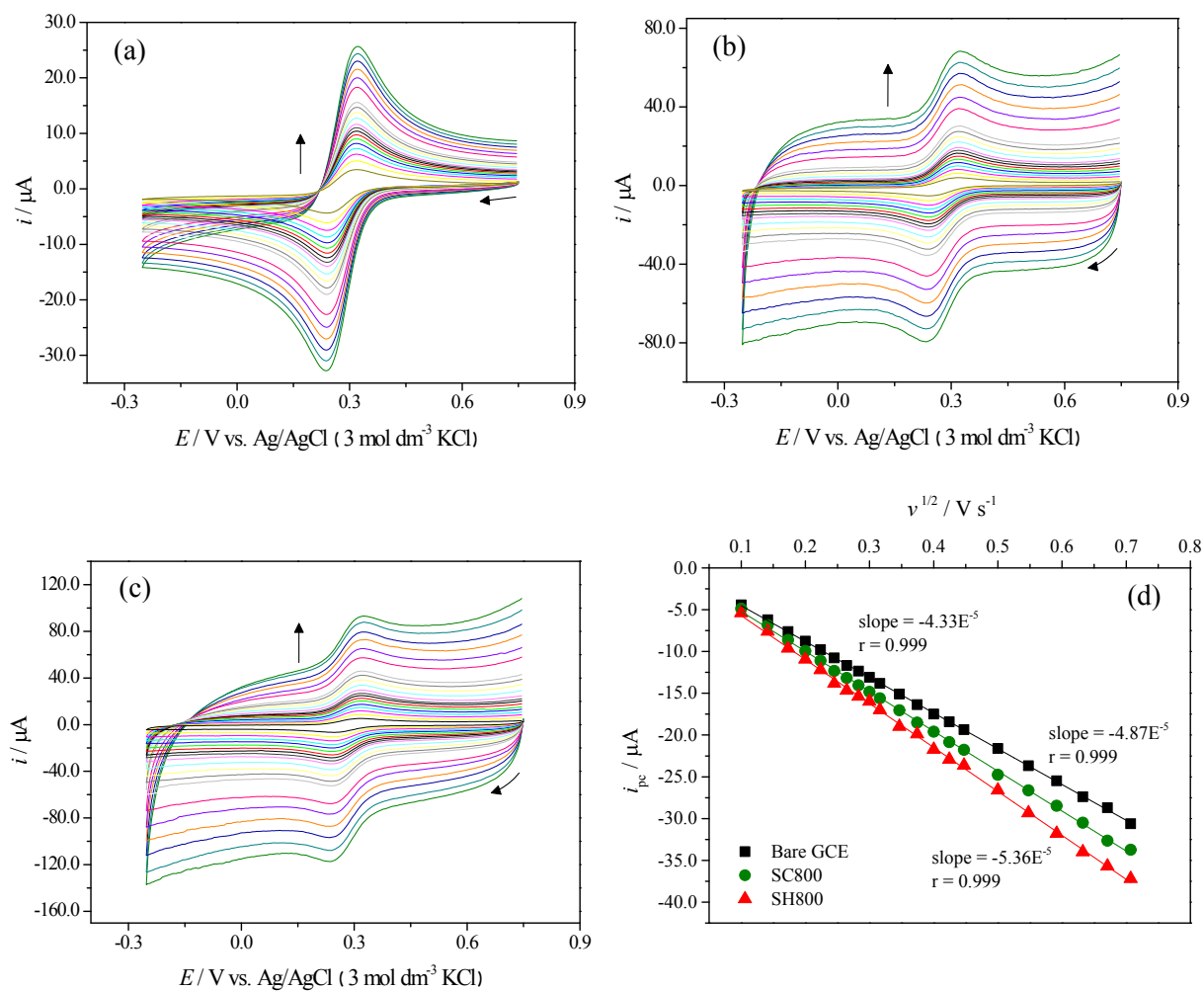


Figure S9. CVs of $[\text{Fe}(\text{CN})_6]^{3-/4-}$ (1.0 mmol dm⁻³ in KCl 1.0 mol dm⁻³) at bare GCE (a), SC800 (b) and SH800 (c) modified electrodes at several scan rates (0.010 – 0.500 V s⁻¹) and respective plots of i_{pa} vs. $v^{1/2}$ (d).

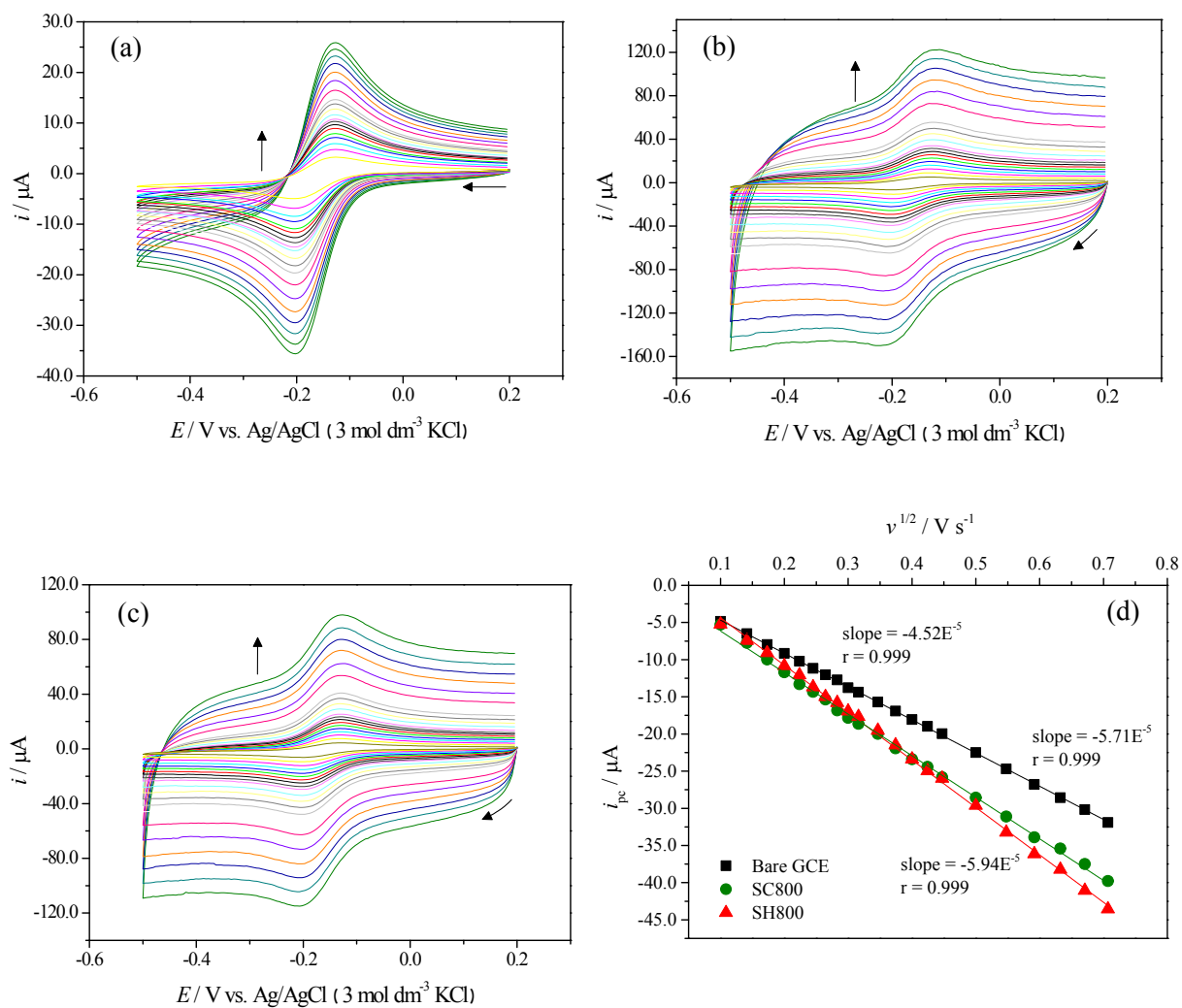


Figure S10. CVs of $\text{Ru}(\text{NH}_3)_6]^{3+/2+}$ (1.0 mmol dm^{-3} in $\text{KCl } 1.0 \text{ mol dm}^{-3}$) at bare GCE (a), SC800 (b) and SH800 (c) modified electrodes at several scan rates ($0.010 - 0.500 \text{ V s}^{-1}$) and respective plots of i_{pa} vs. $v^{1/2}$ (d).

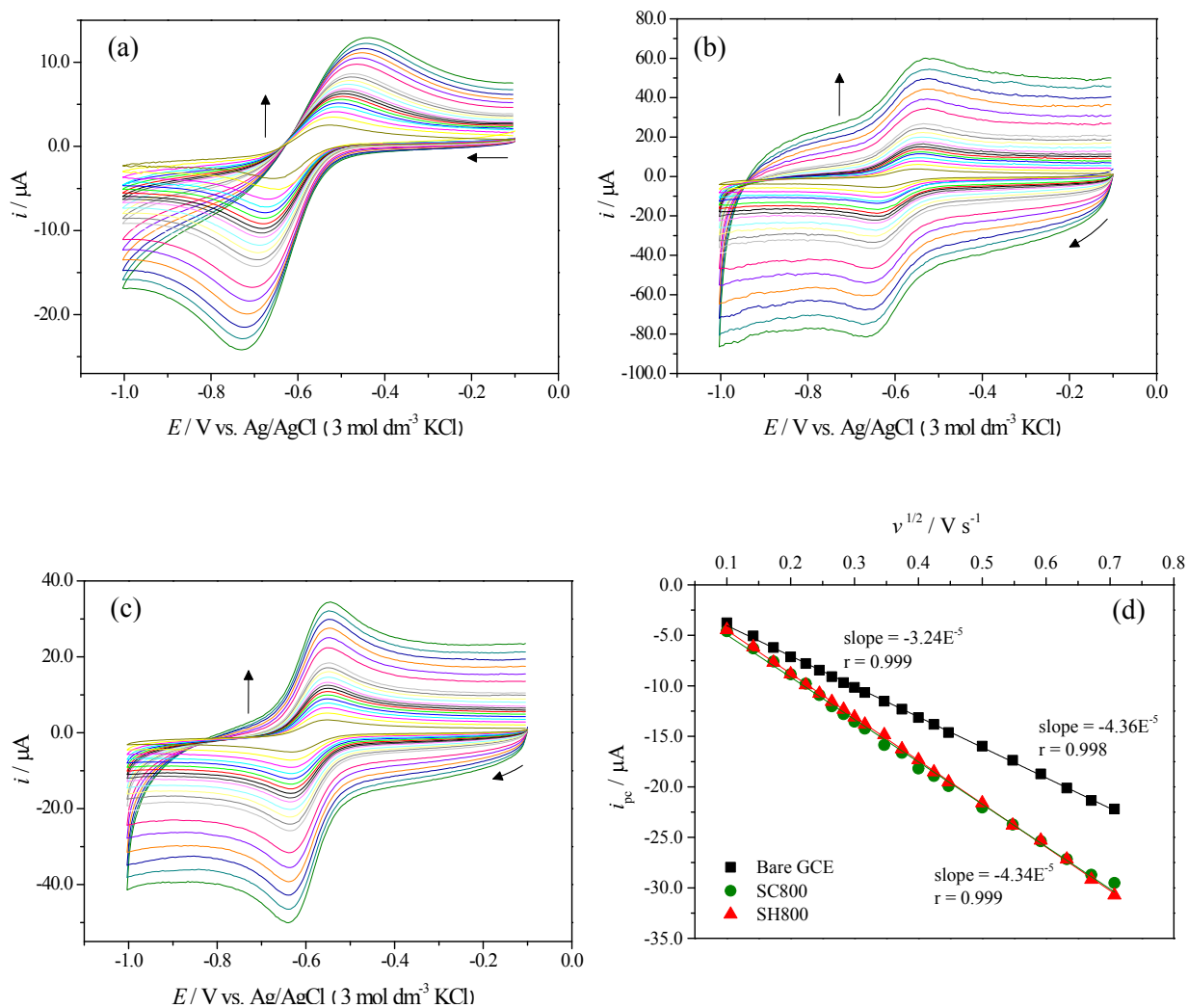


Figure S11. CVs of $\text{Eu}^{3+/2+}$ (1.0 mmol dm⁻³ in KCl 1.0 mol dm⁻³) at bare GCE (a), SC800 (b) and SH800 (c) modified electrodes at several scan rates (0.010 – 0.500 V s⁻¹) and respective plots of i_{pa} vs. $v^{1/2}$ (d).