Supplementary material for

Toward green substitutes: electrochemical properties of conductive inks containing biochar

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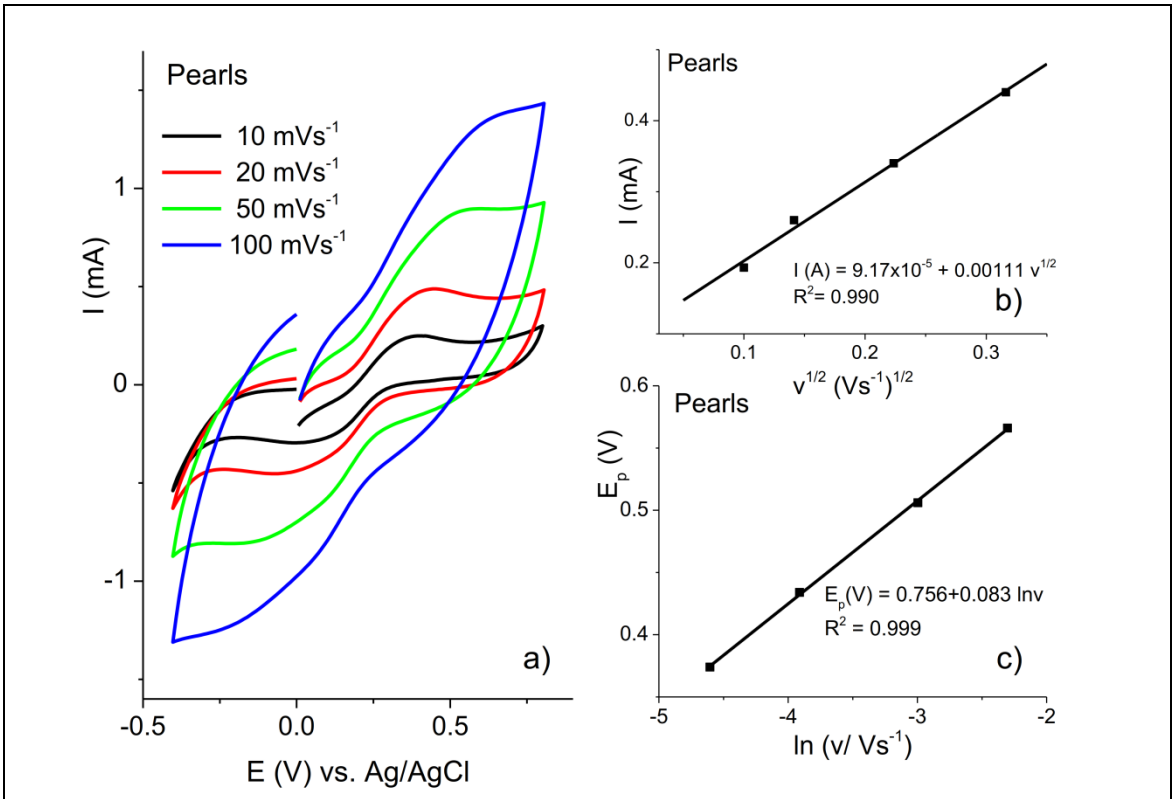


Figure S1: a) Cyclic voltammograms of Pearls electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

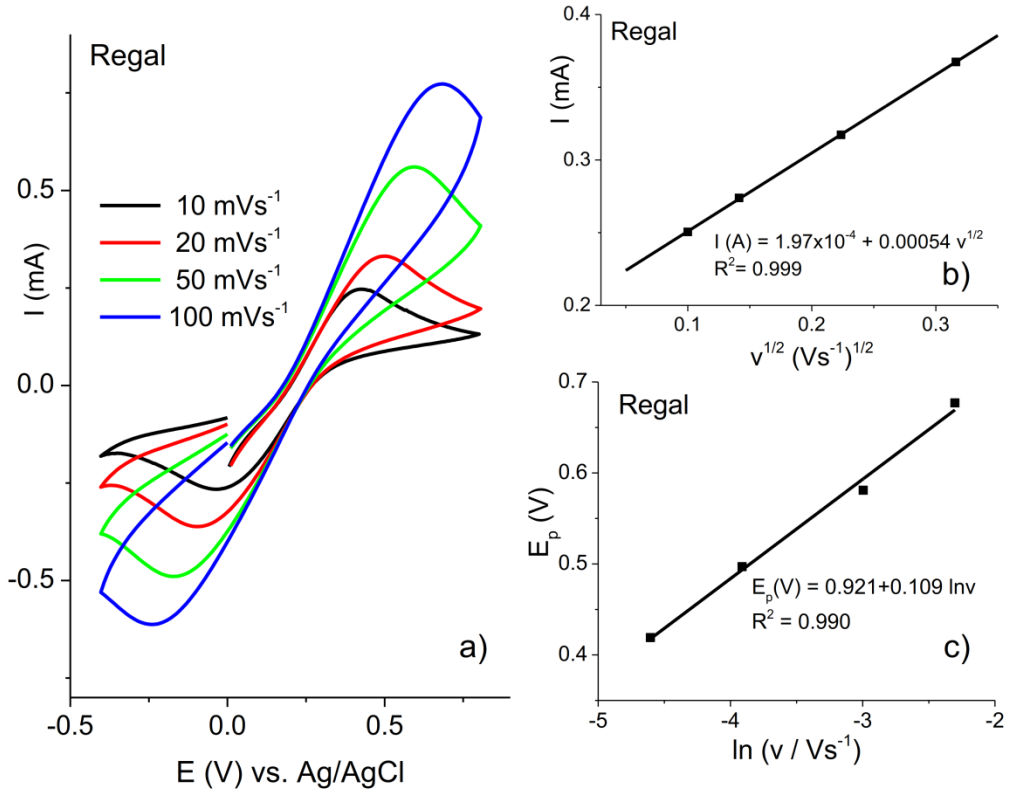


Figure S2: a) Cyclic voltammograms of Regal electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

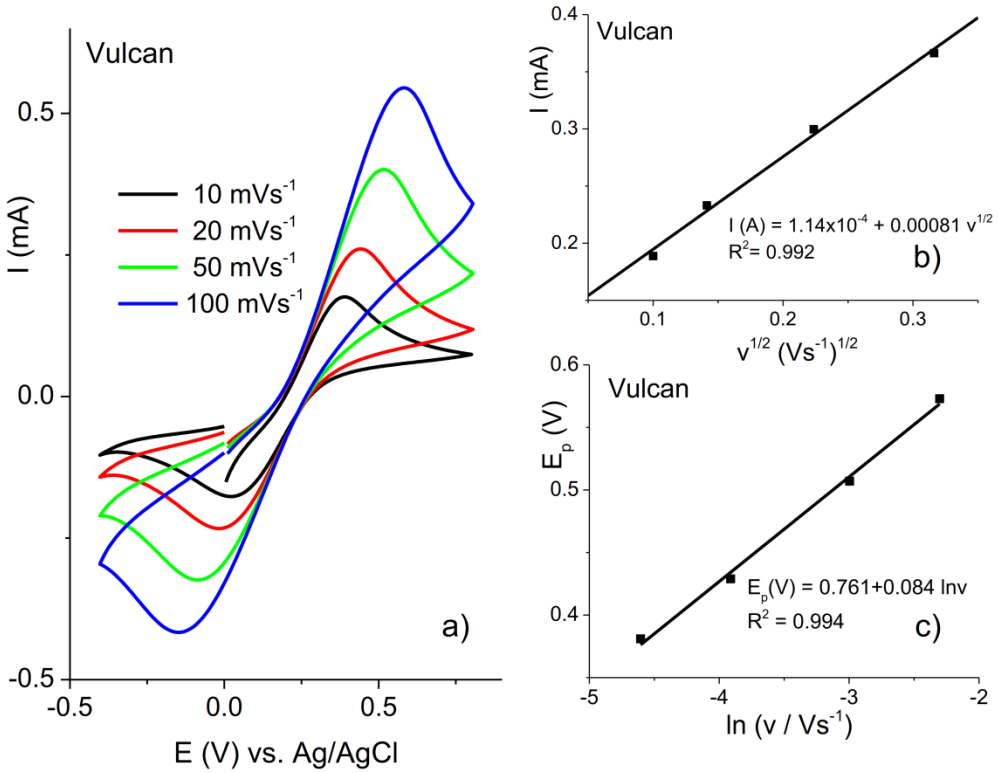


Figure S3: a) Cyclic voltammograms of Vulcan electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

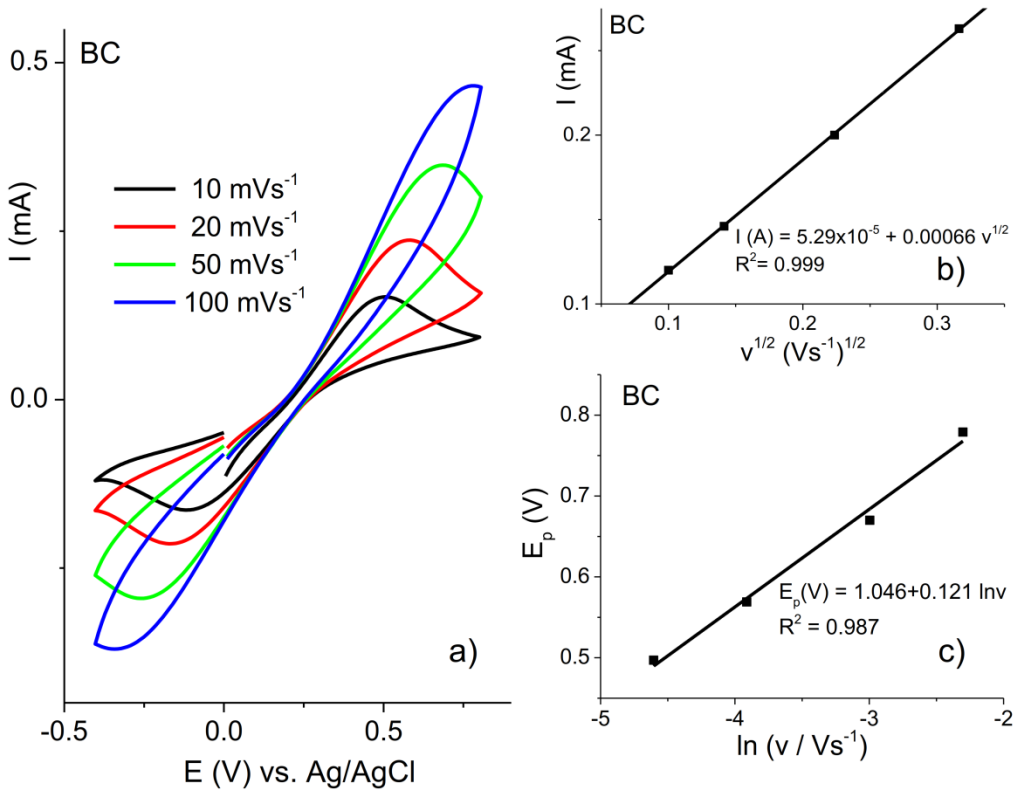


Figure S4: a) Cyclic voltammograms of BC electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

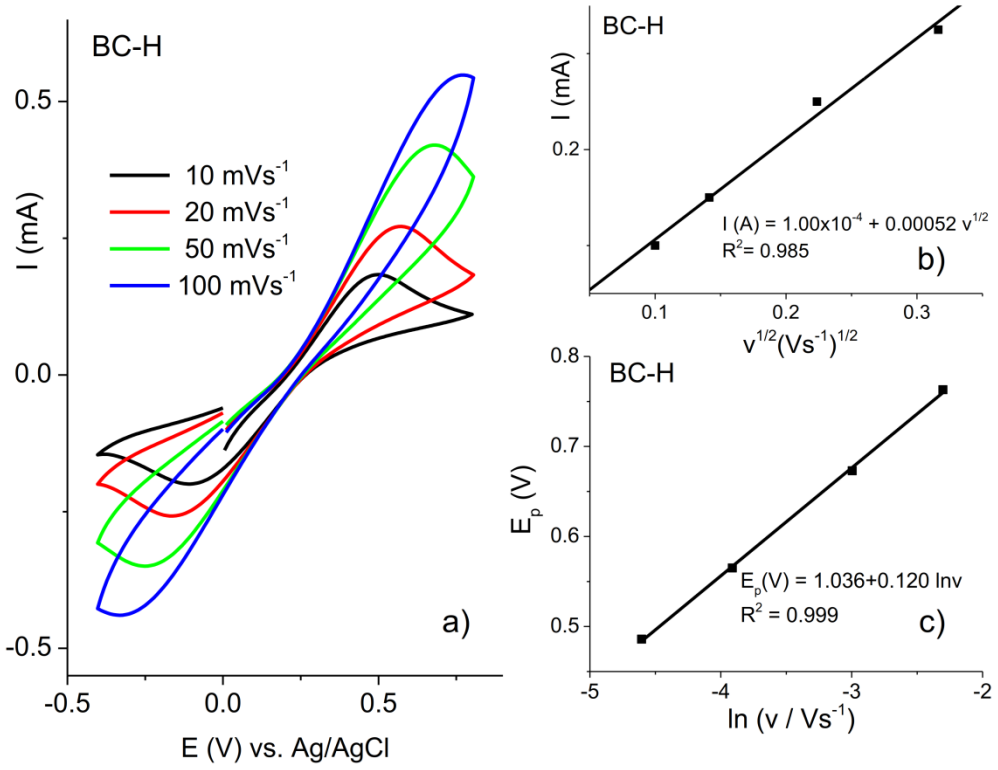


Figure S5: a) Cyclic voltammograms of BC-H electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

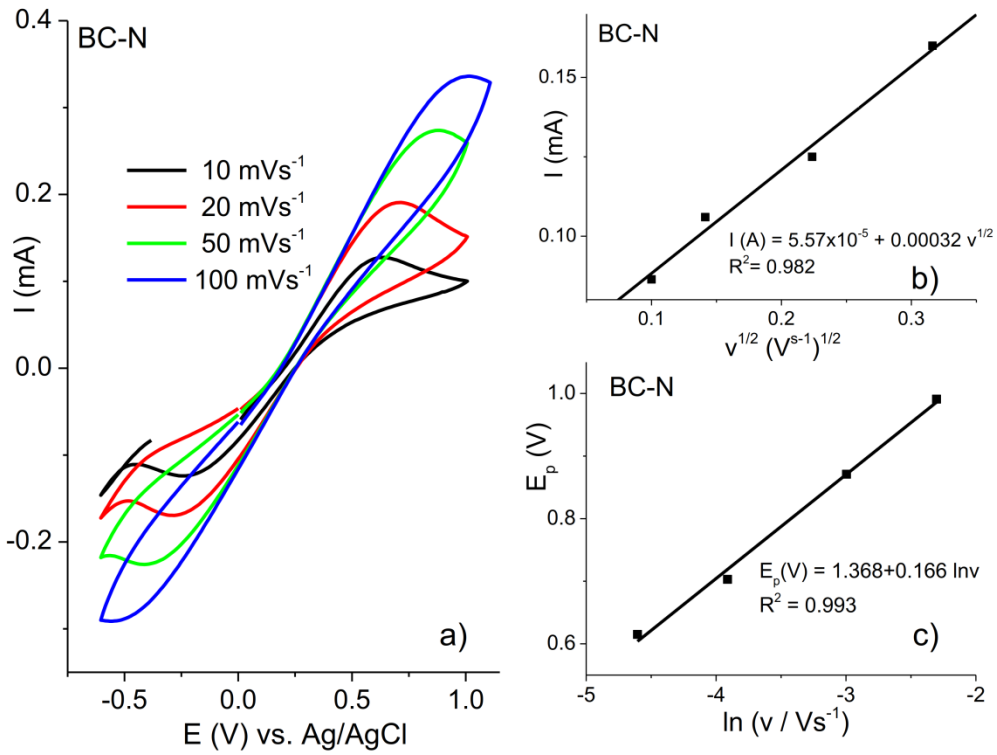


Figure S6: a) Cyclic voltammograms of BC-N electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

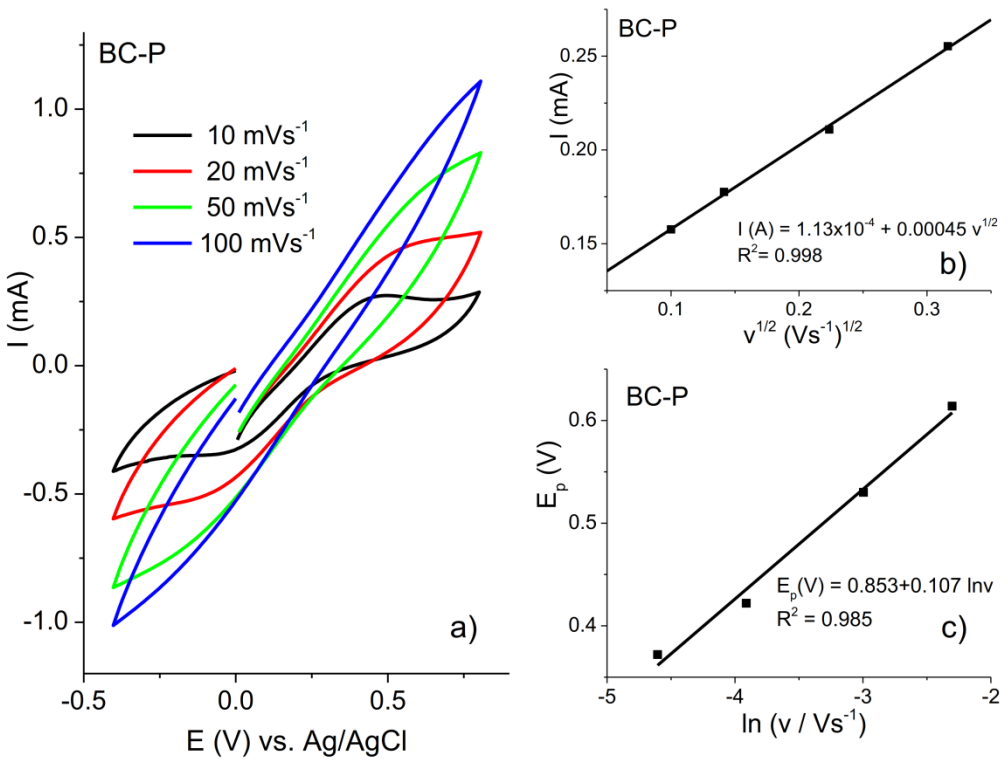


Figure S7: a) Cyclic voltammograms of BC-P electrode in 5 mM $[Fe(CN)_6]^{3-/4-}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) dependence of peak potential on the logarithm of scan rate.

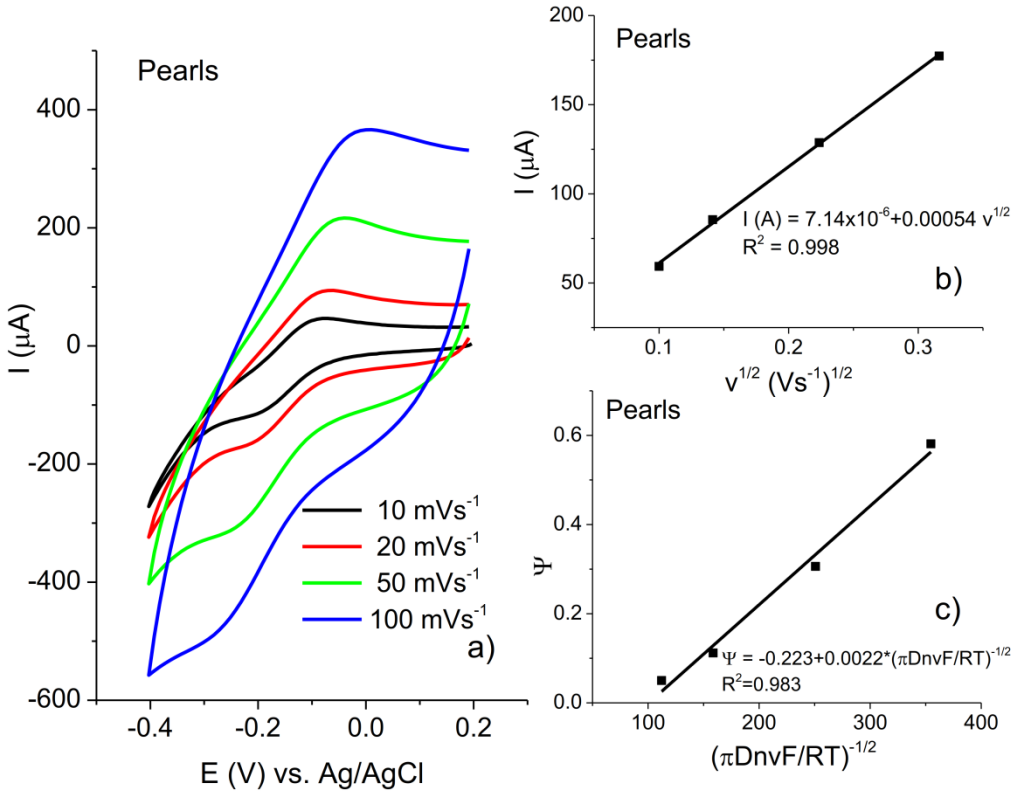


Figure S8: a) Cyclic voltammograms of Pearls electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.

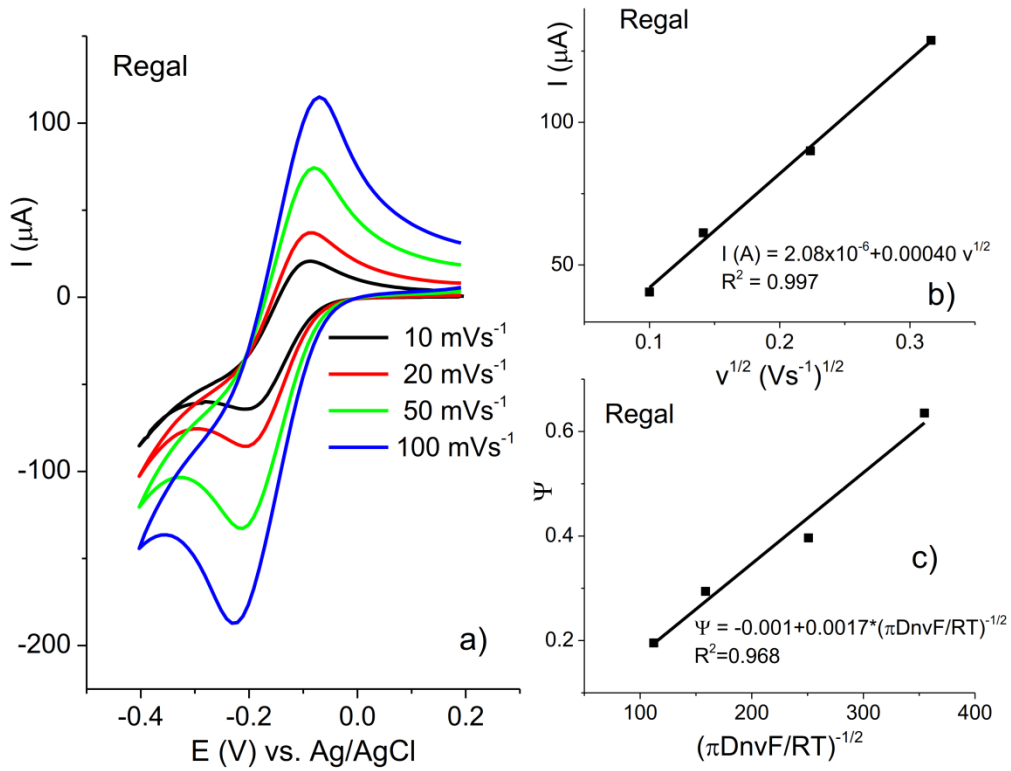


Figure S9: a) Cyclic voltammograms of Regal electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.

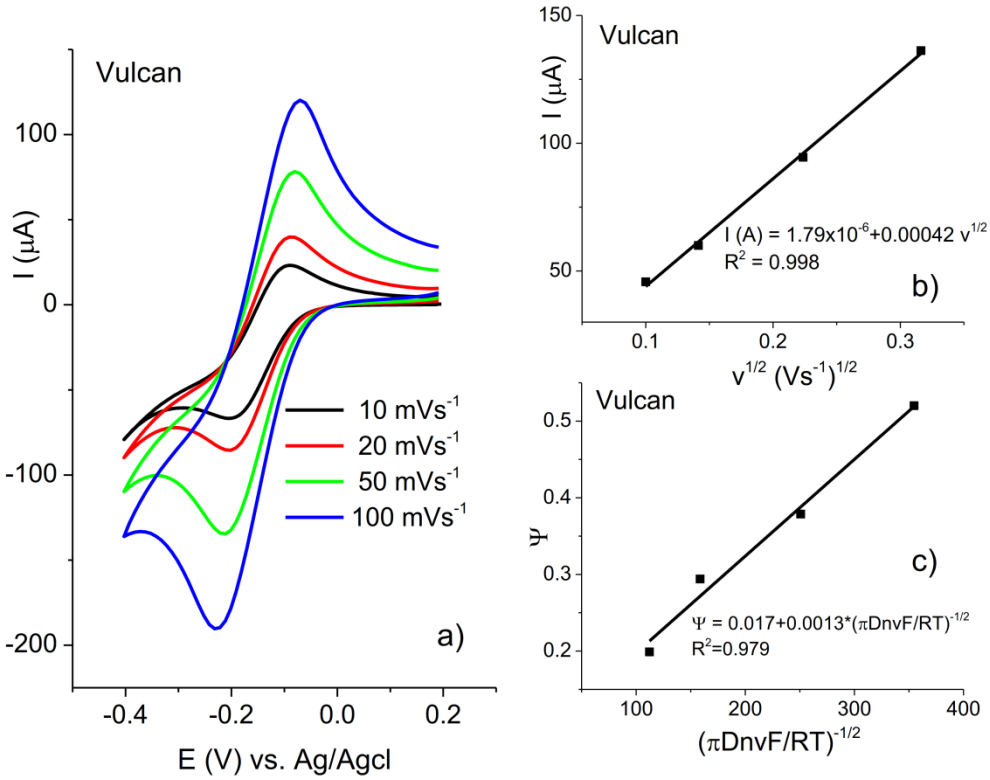


Figure S10: a) Cyclic voltammograms of Vulcan electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.

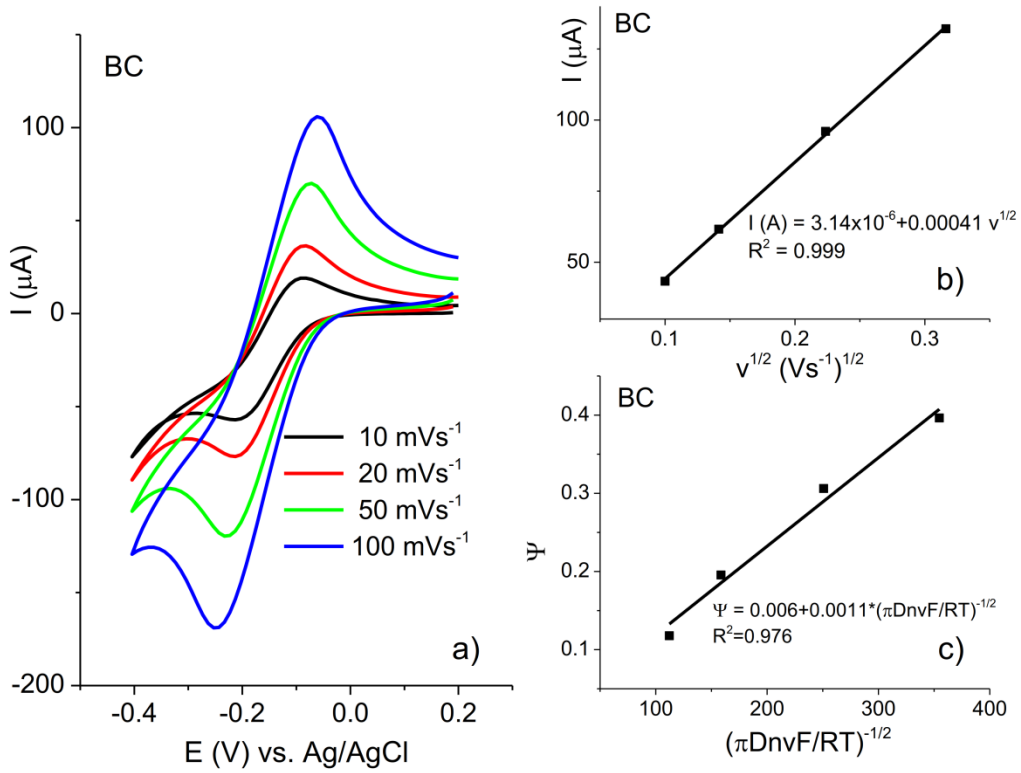


Figure S11: a) Cyclic voltammograms of BC electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.

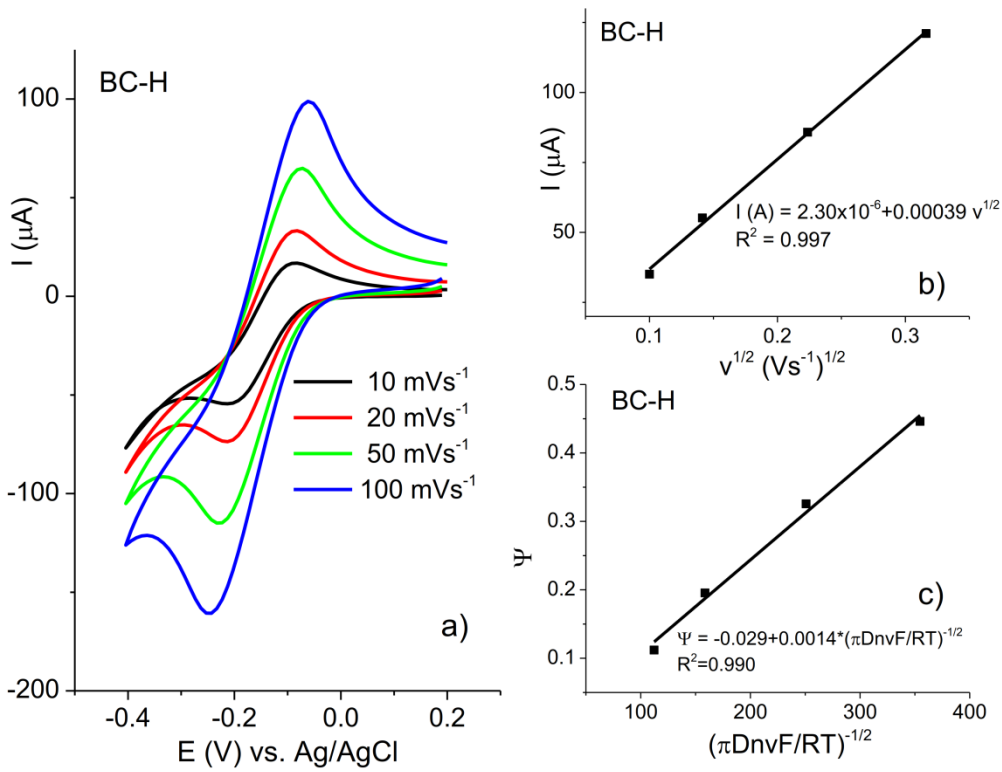


Figure S12: a) Cyclic voltammograms of BC-H electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.

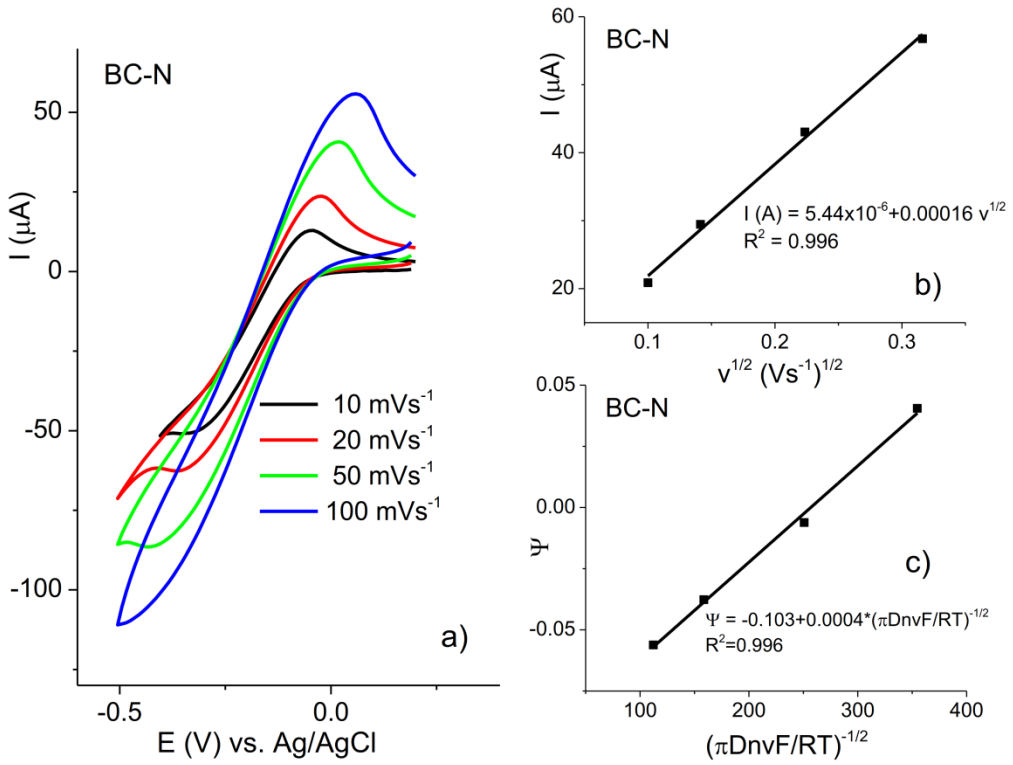


Figure S13: a) Cyclic voltammograms of BC-N electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.

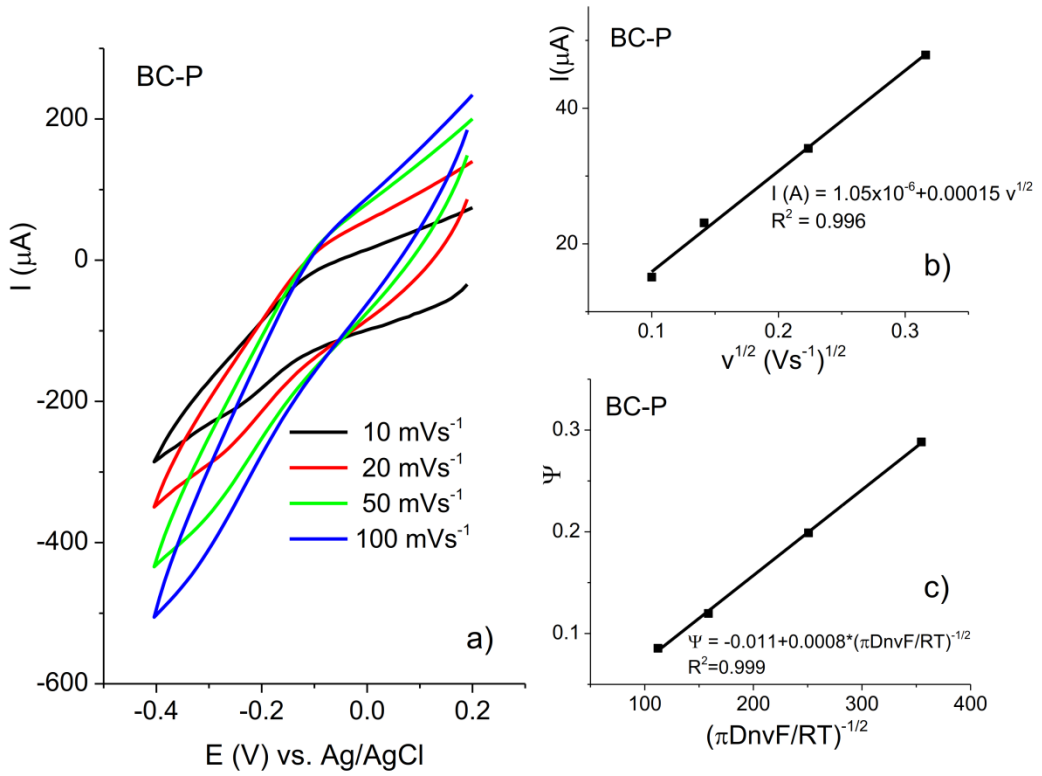


Figure S14: a) Cyclic voltammograms of BC-P electrode in 1 mM $[Ru(NH_3)_6]^{2+/3+}$ + 0.1 M KCl recorded at the scan rates of 10, 20, 50 and 100 mV s^{-1}; b) dependence of peak current on the square root of scan rate; c) Plot of Ψ vs. $[\pi DnFv/RT]^{-1/2}$.