

Supplementary information

Investigation of the Electrochemical Behaviour of Al Current Collector Material Polarised Highly Anodically and Located in Butyltrimethylammonium Bis(trifluoromethylsulfonyl)imide Room-Temperature Ionic Liquid

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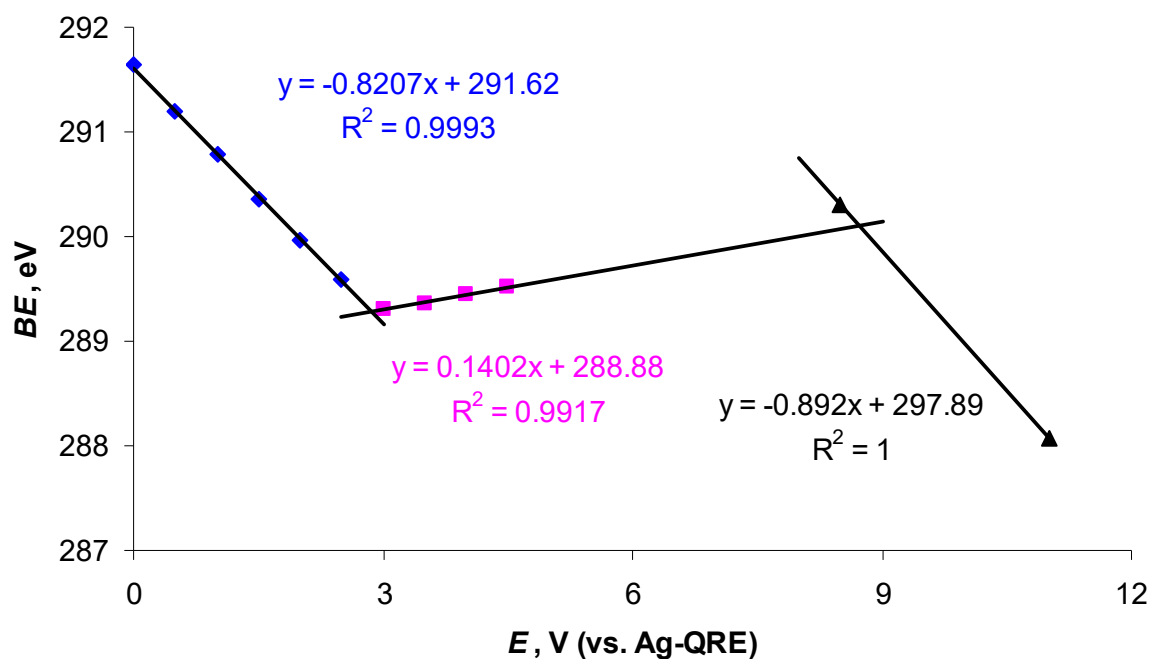
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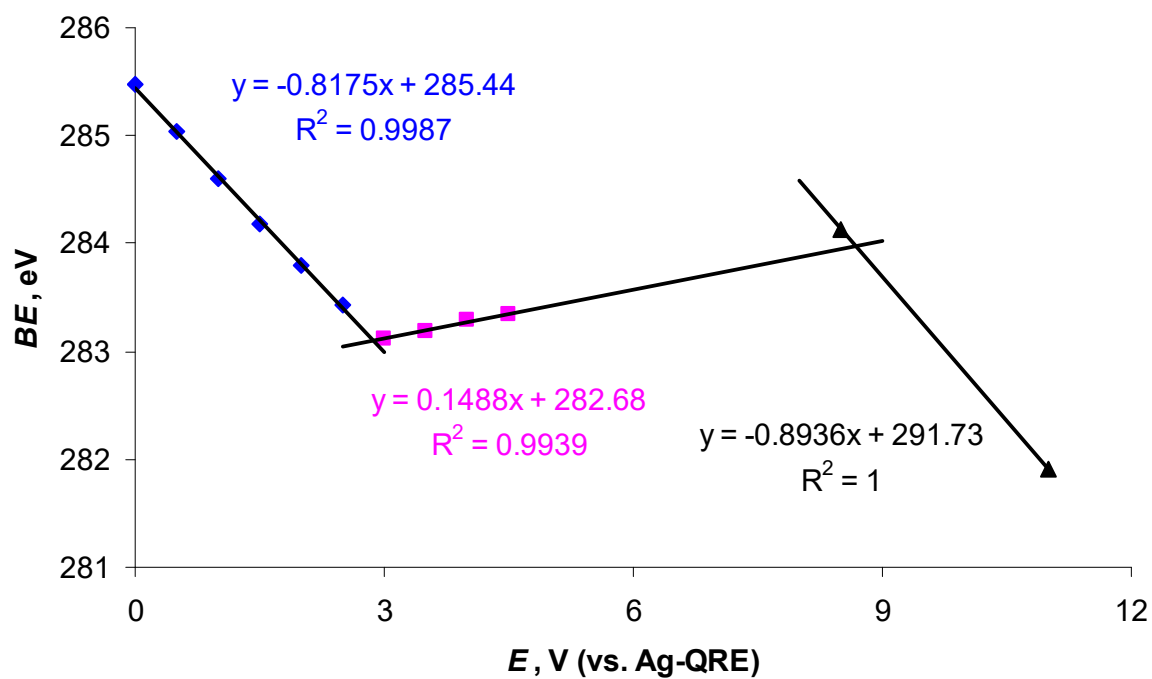
N4111(TFSI) | Al, C 1s, -CF₃

a



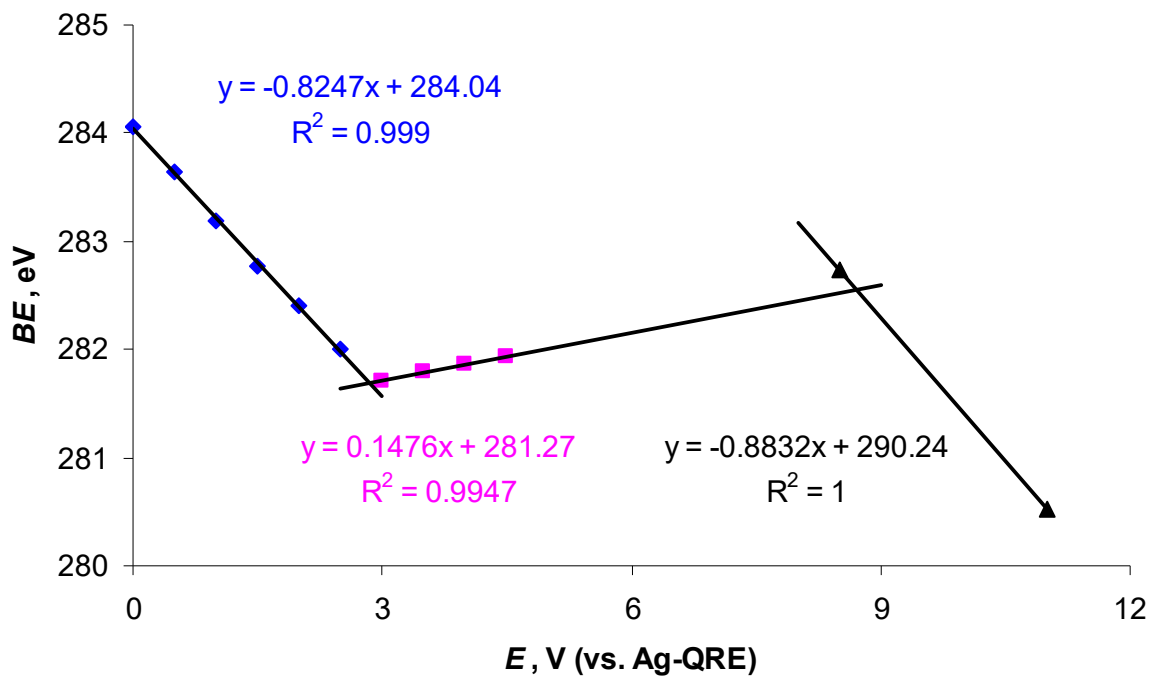
N4111(TFSI) | Al, C 1s, C-N

b



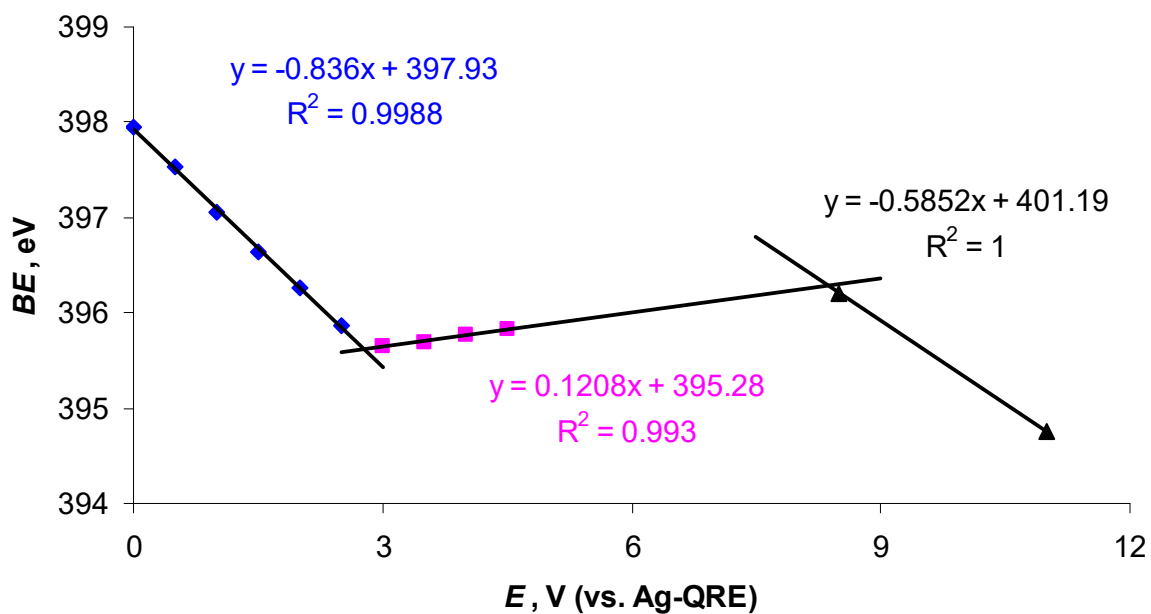
N4111(TFSI) | Al, C 1s, C-H

c



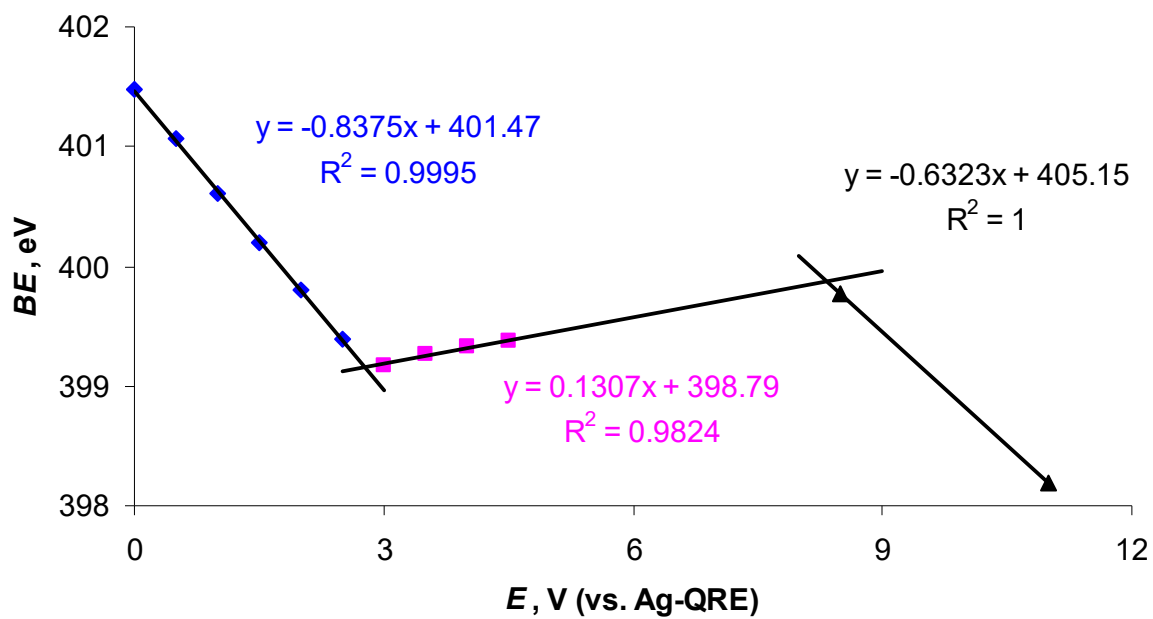
N4111(TFSI) | Al, N 1s, N-S

d



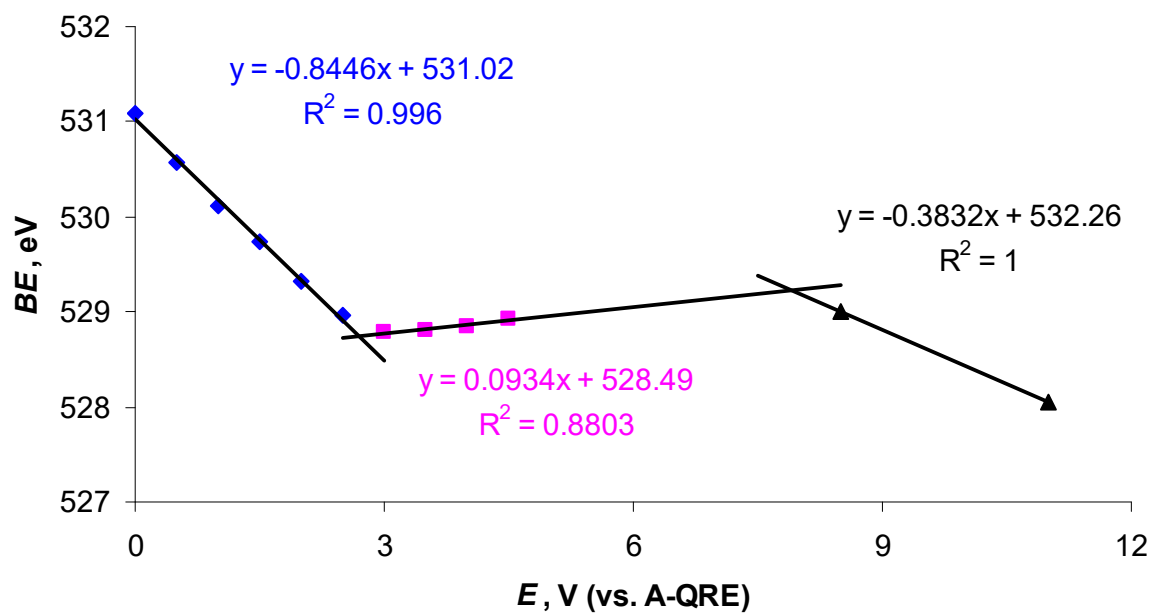
N4111(TFSI) | Al, N 1s, N-C

e



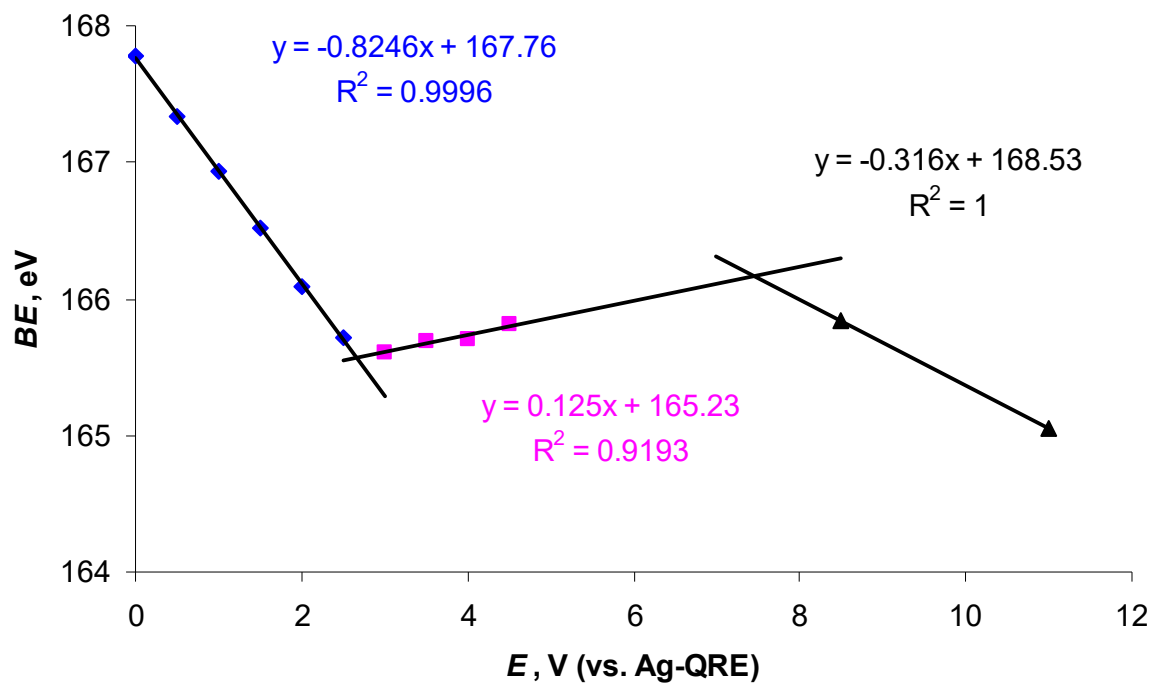
N4111(TFSI) | Al, O 1s, O=S

f



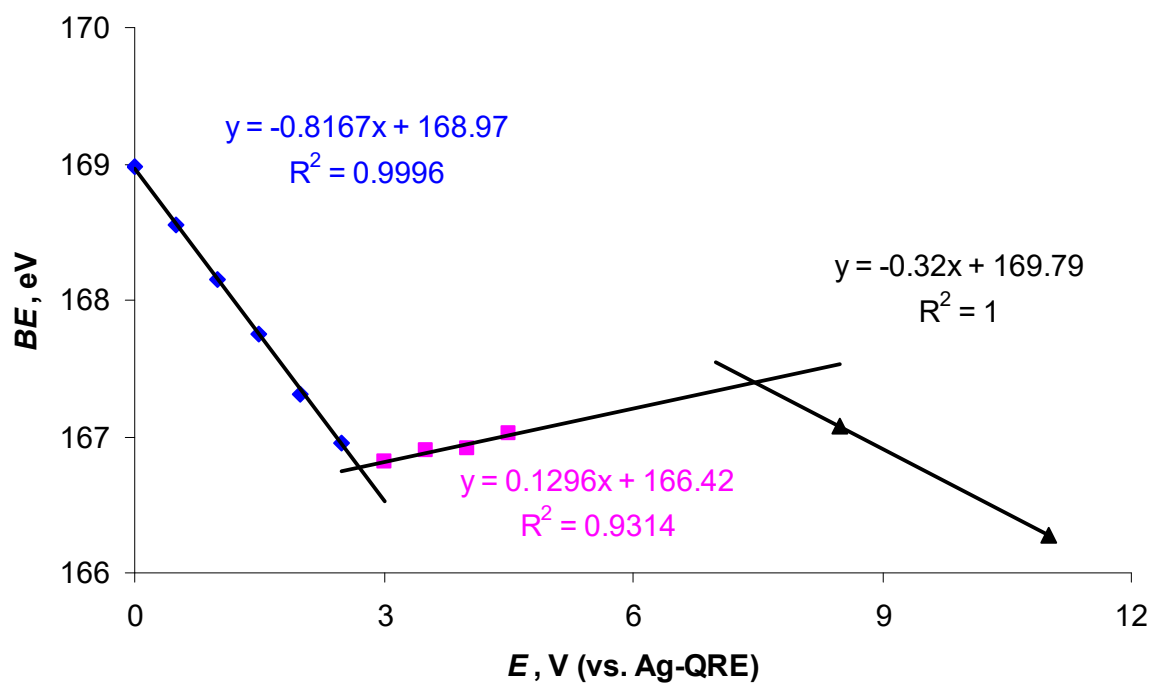
N4111(TFSI) | Al, S 2p_{3/2}

g



N4111(TFSI) | Al, S 2p_{1/2}

h



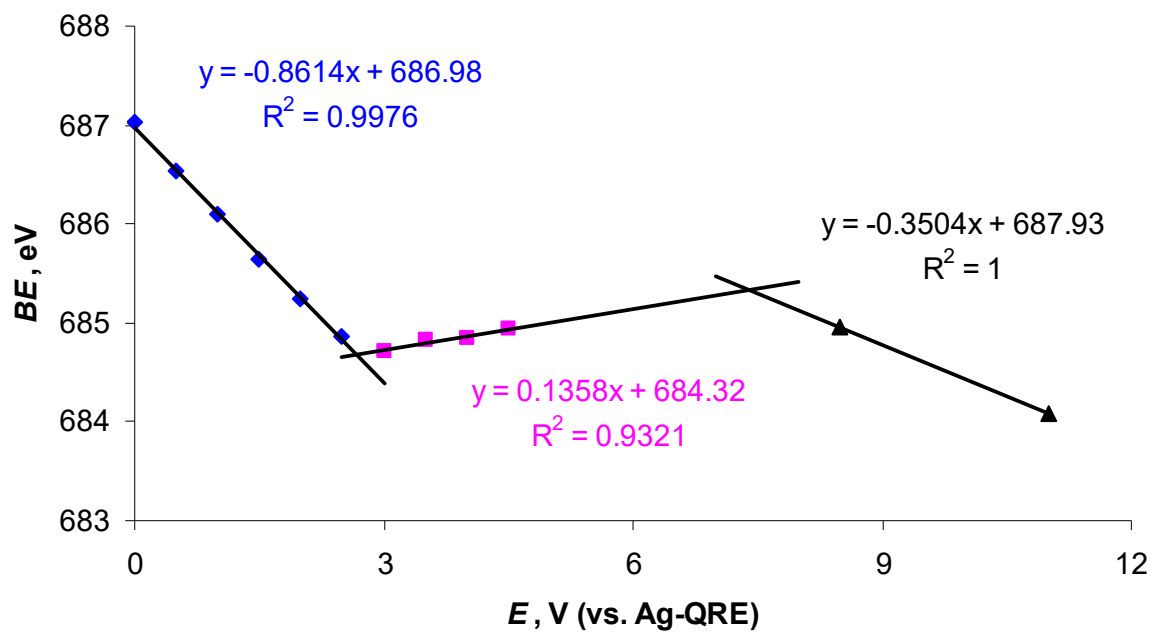
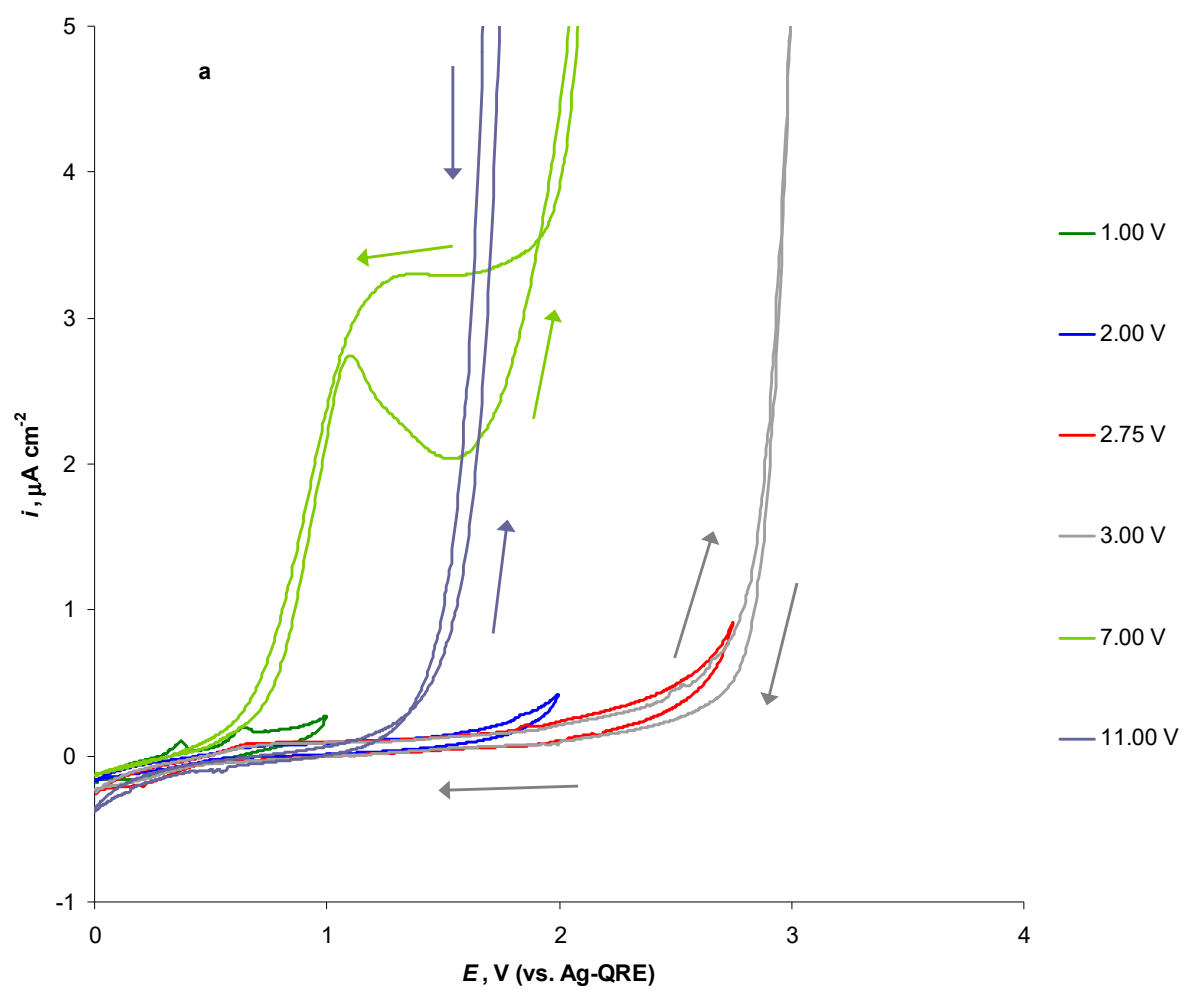
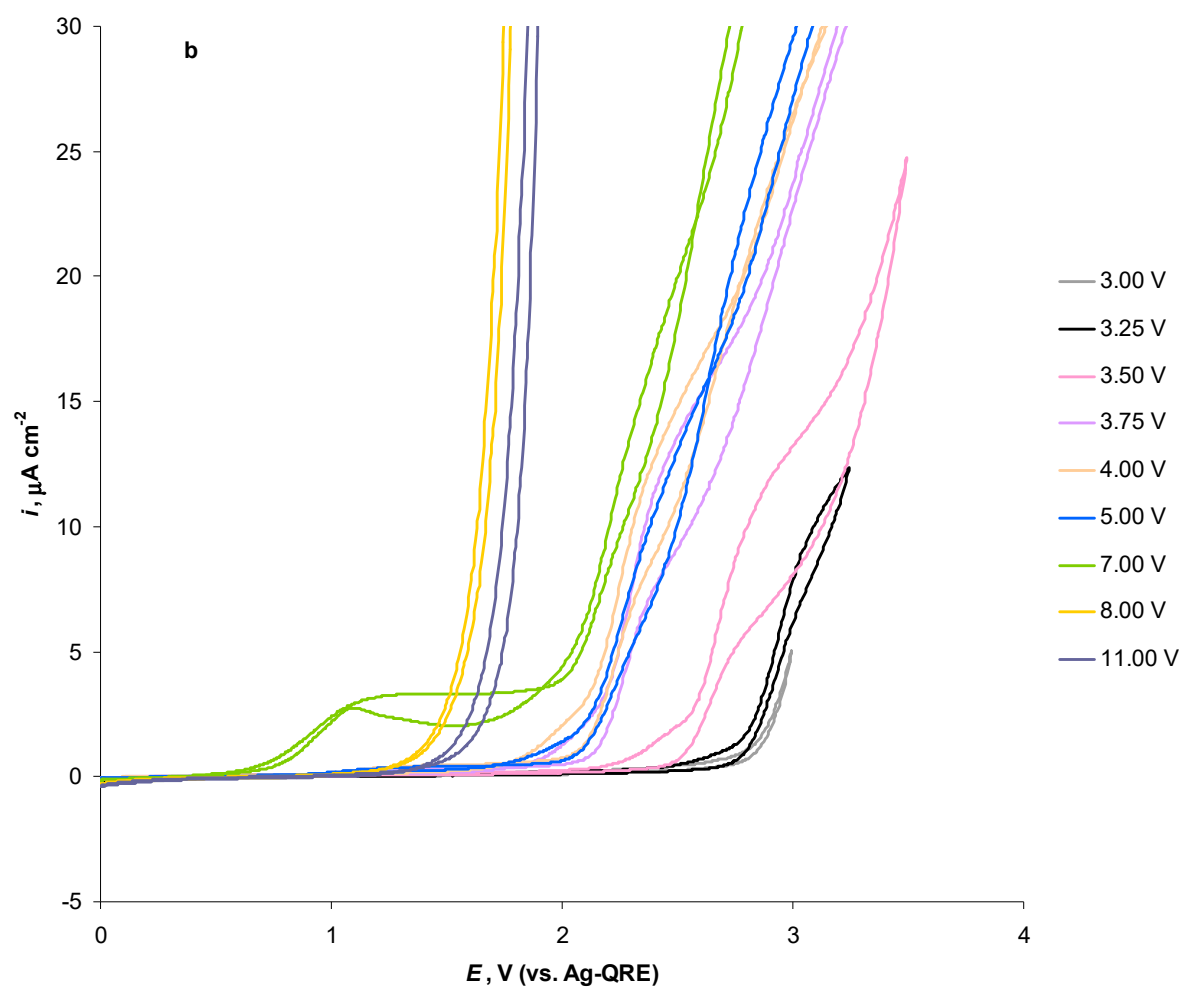
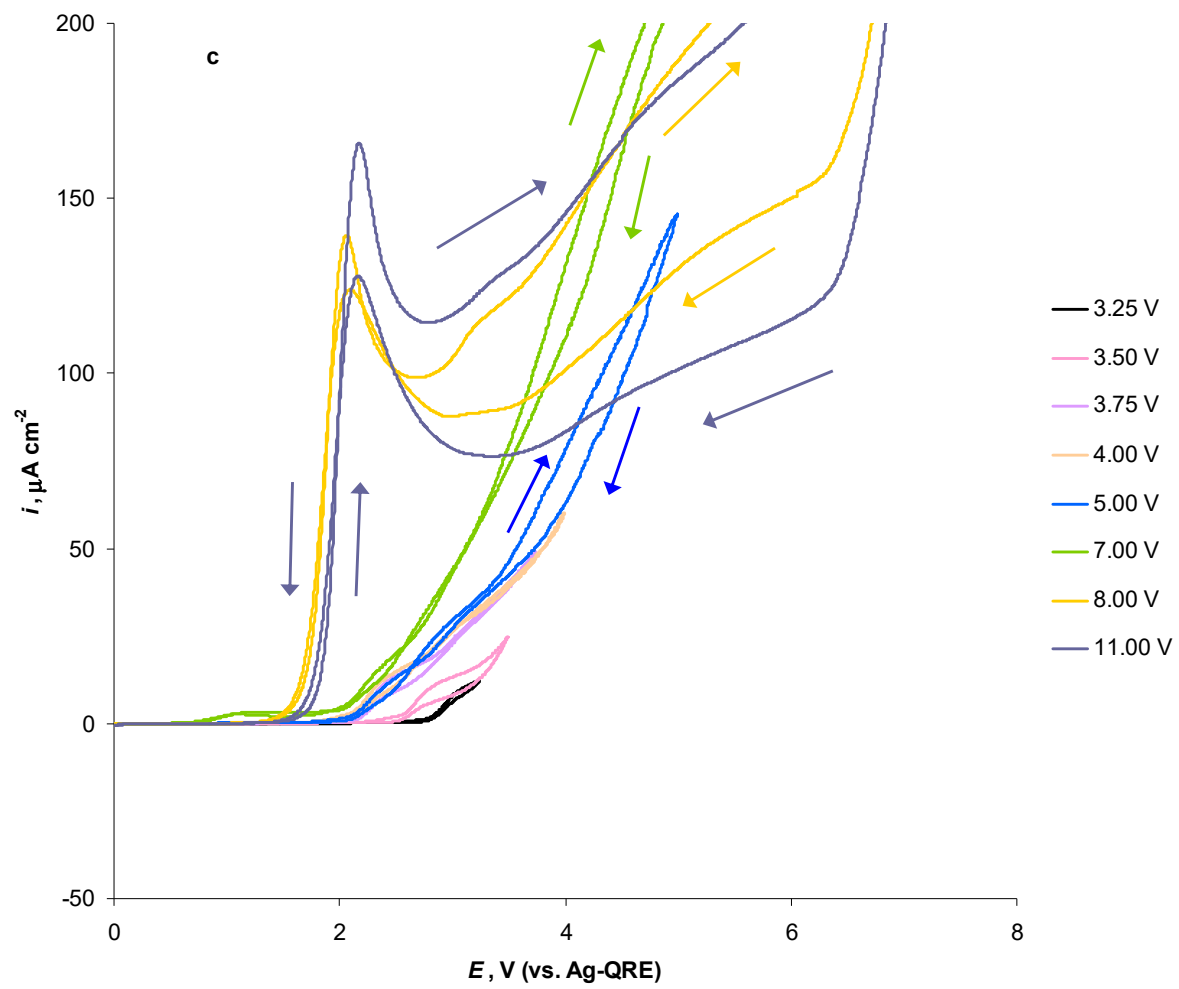


Figure S1a-i. *BE* vs. *E* relationships for the elements forming butyltrimethylammonium bis(trifluoromethylsulfonyl)amide (N4111(TFSI)).







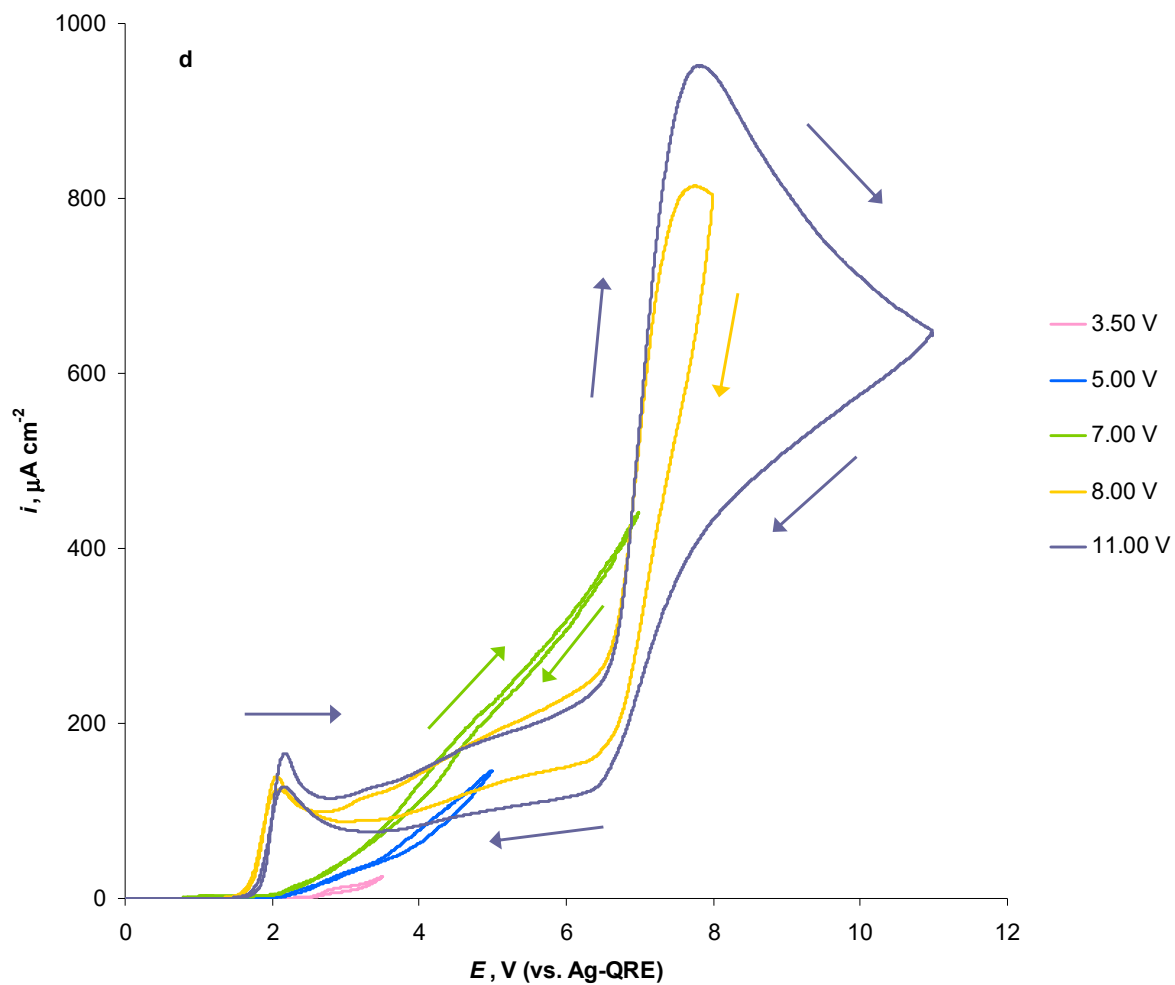
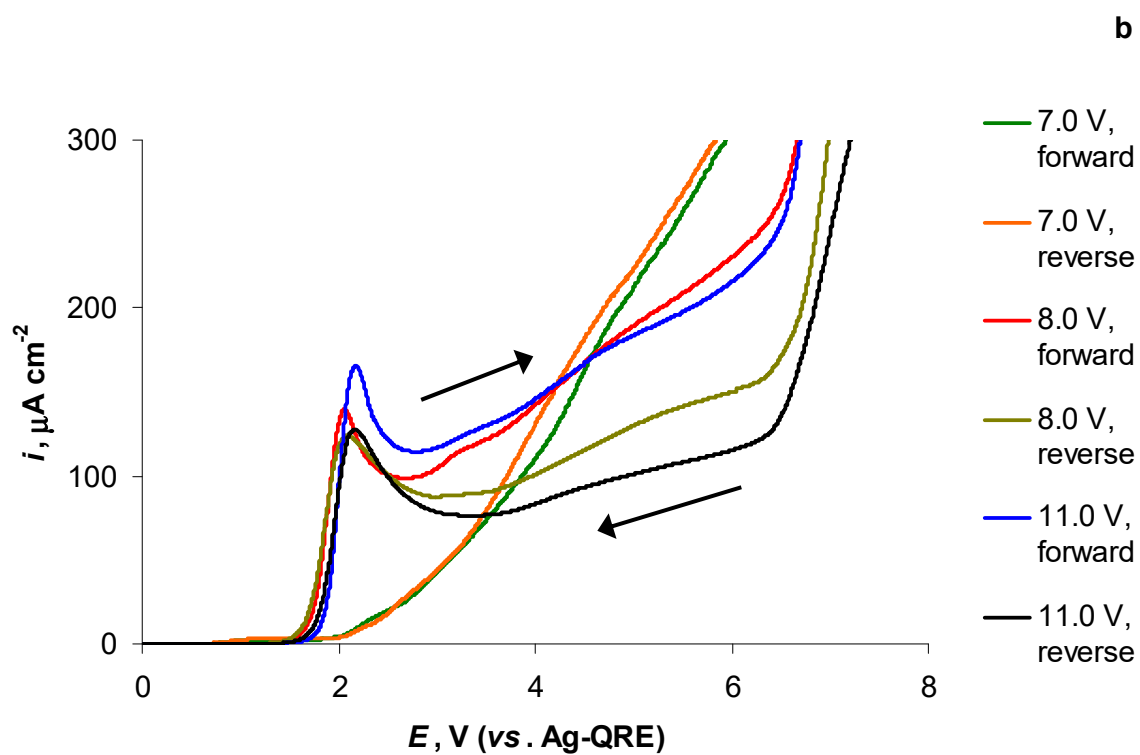
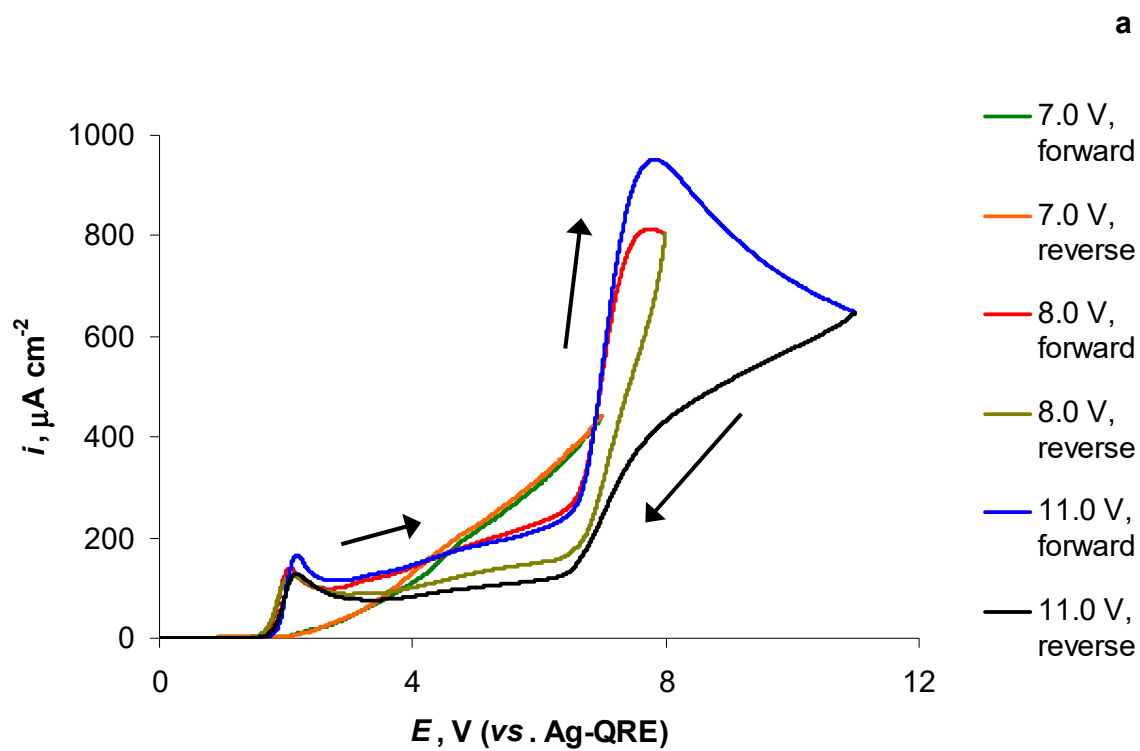


Figure S2a-d. The cyclic voltammograms (CV) measured within the potential range from 0.00 V to the final potentials (indicated in the figures) and reverse at the potential sweep rate 1.00 mV s⁻¹. The measured CVs are shown in various current scales; the second CV sweeps are presented.



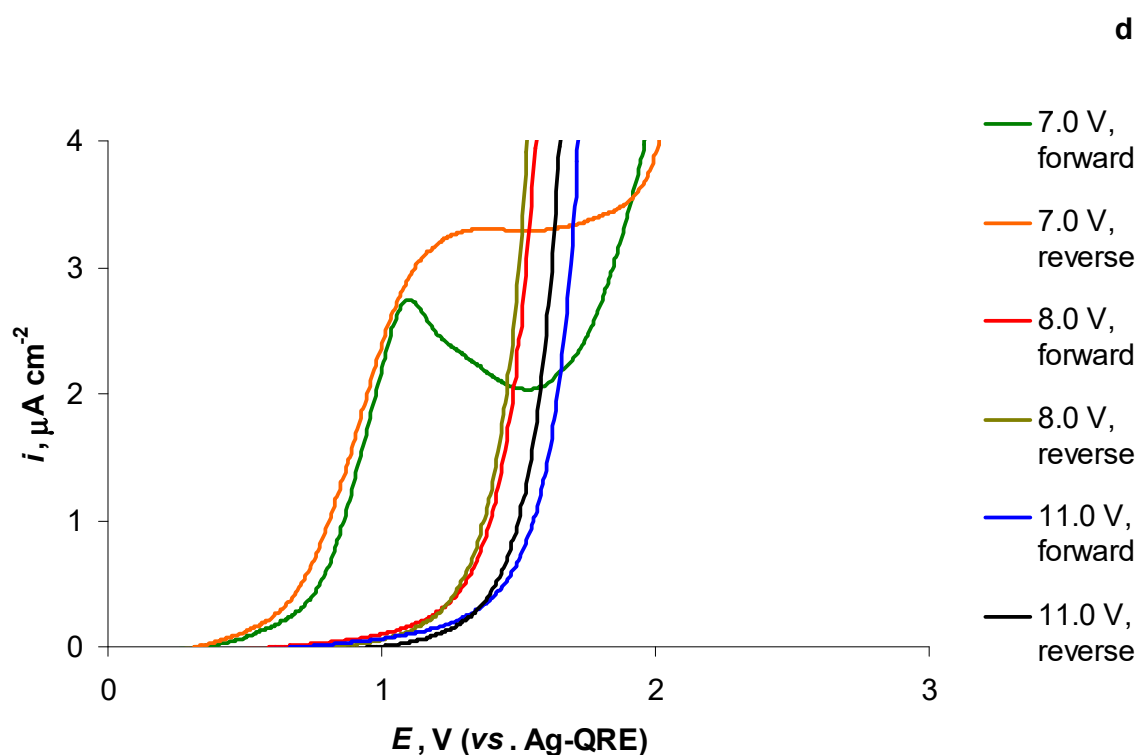
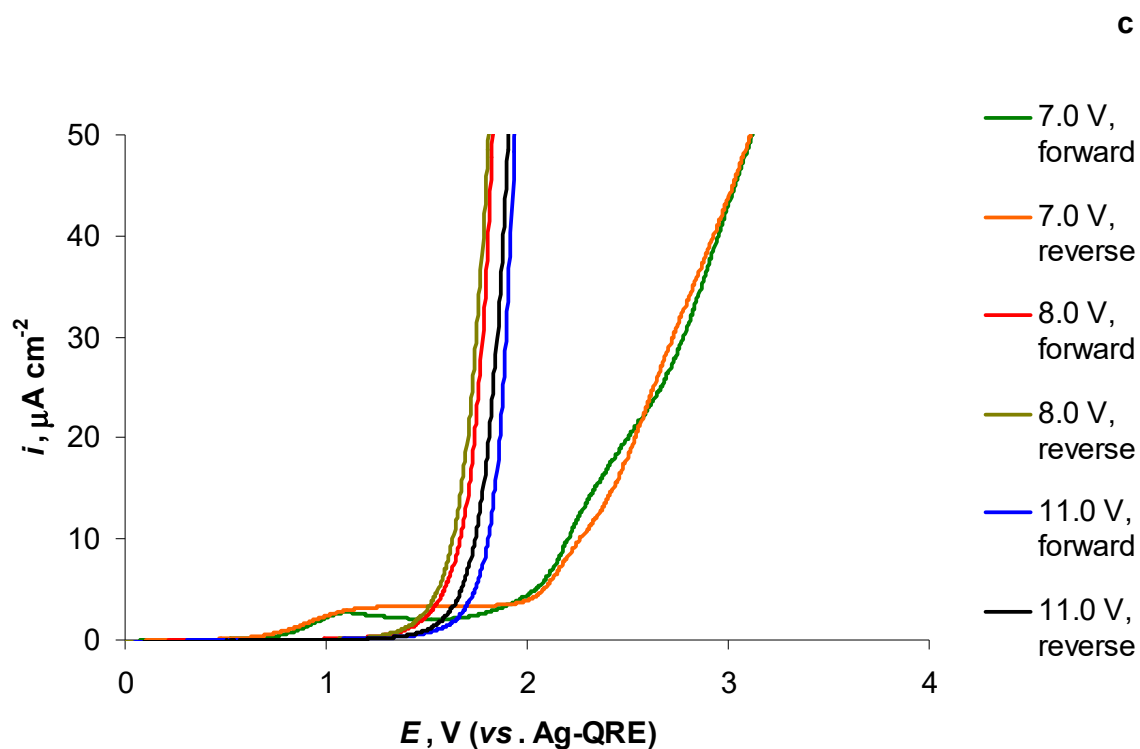


Figure S3a-d. The cyclic voltammograms (CV) measured within the potential range from 0.00 V to the final potentials (indicated in the figures) and reverse at the potential sweep rate 1.00 mV s^{-1} . The measured CVs are shown in various current scales; the second CV sweeps are presented.

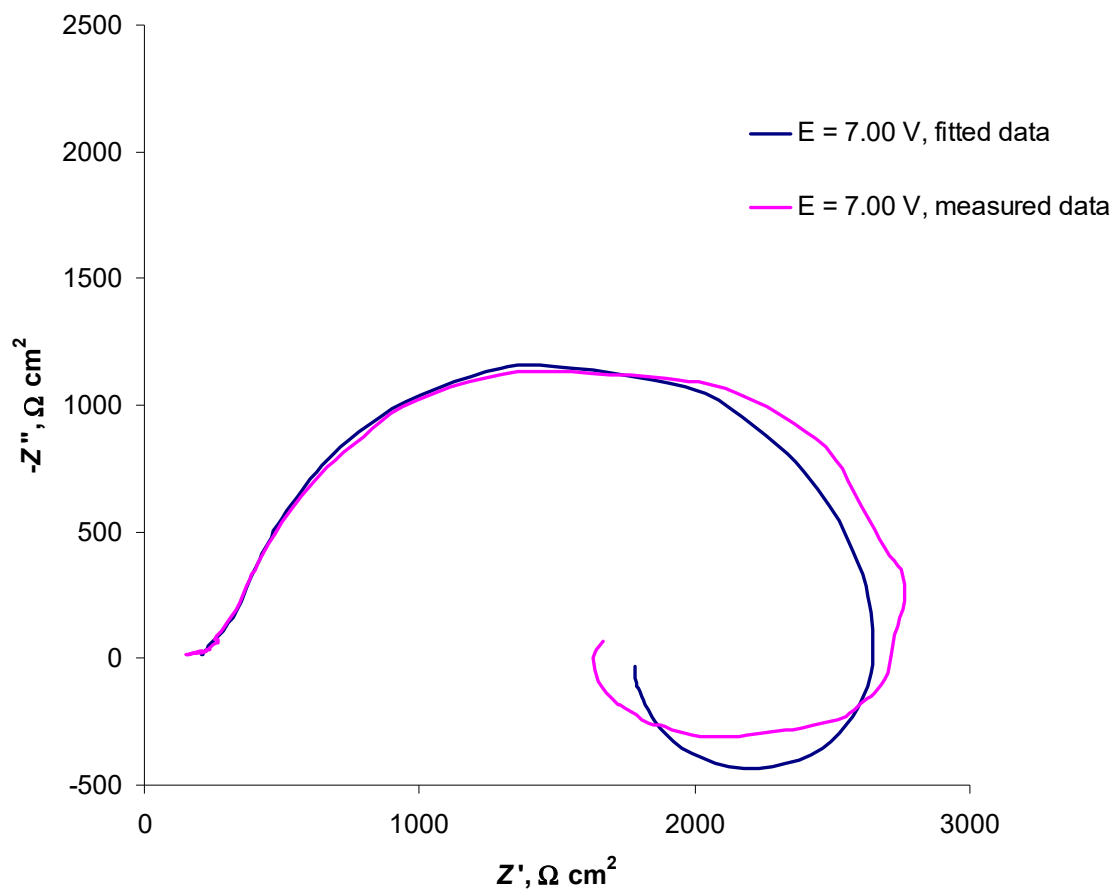


Figure S4. Nyquist plots measured for N4111(TFSI) | Al/Al₂O₃ system at $E = 7.00 \text{ V}$: pink — measured data, dark blue — fitted data, using equivalent circuit shown in Scheme 2a.

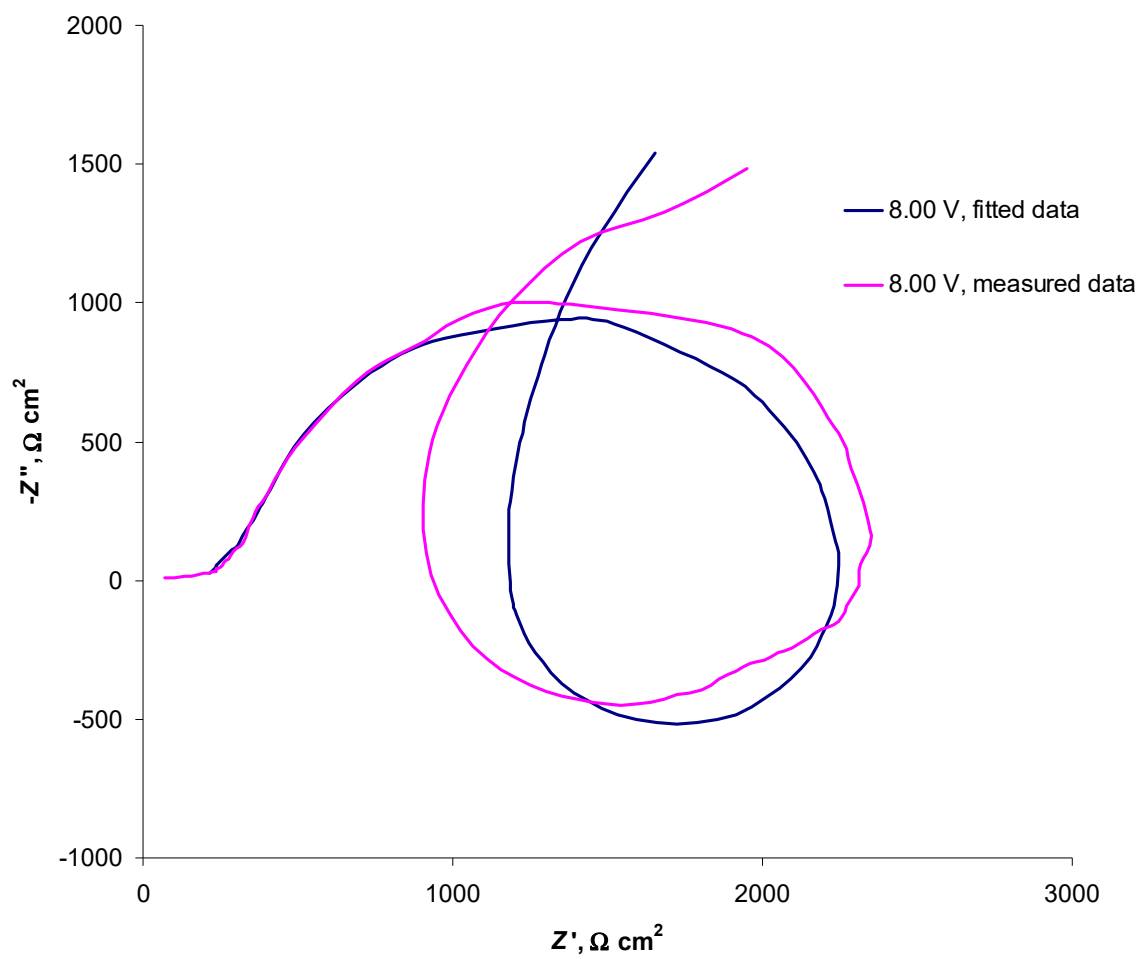


Figure S5. Nyquist plots measured for N4111(TFSI) | Al/Al₂O₃ system at $E = 8.00$ V: pink — measured data, dark blue — fitted data, using equivalent circuit shown in Scheme 2b.

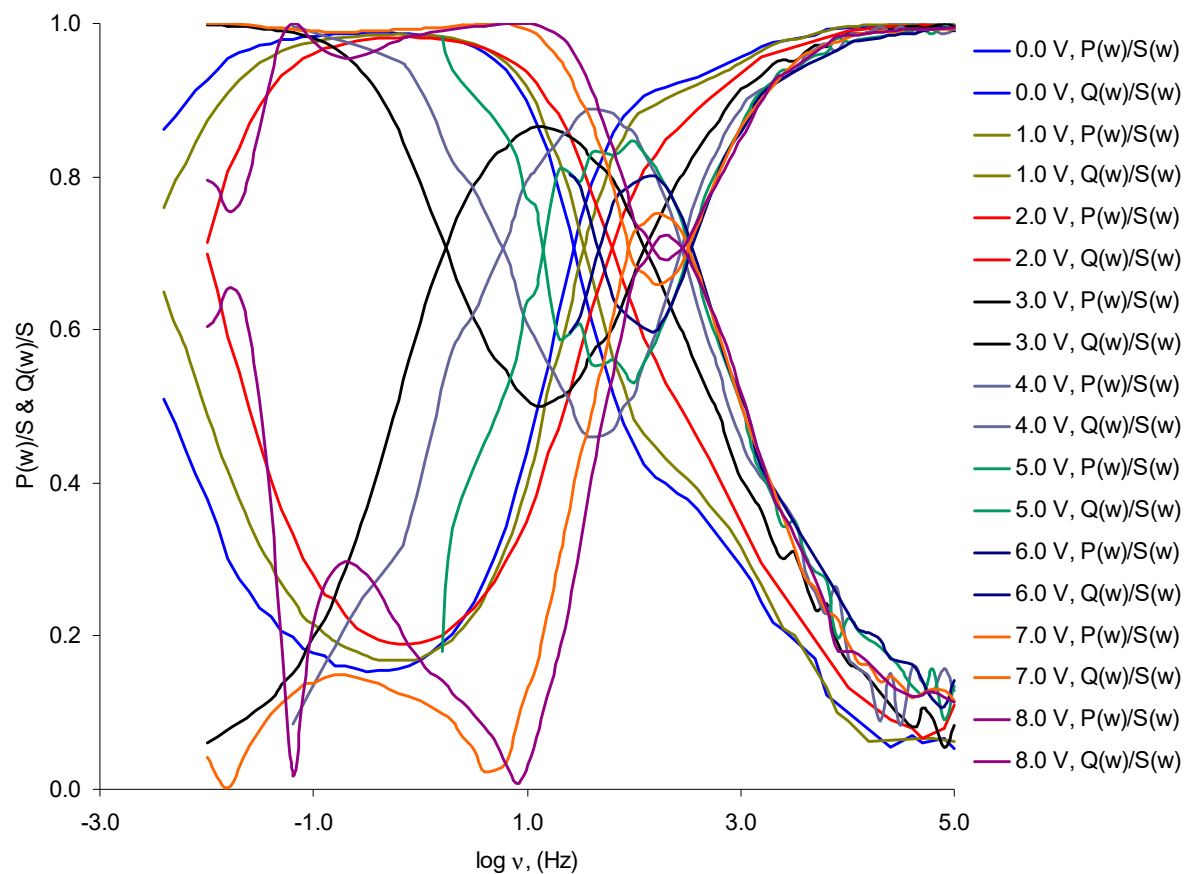


Figure S6. The complex power dependences for N4111(TFSI) | Al interface at various Al potentials applied.