Electronic Supplementary Material (ESI) for Energy & Environmental Science

Supplementary Information for

Lithium electrochemistry and cycling behaviour of ionic liquids of the cyano-anions

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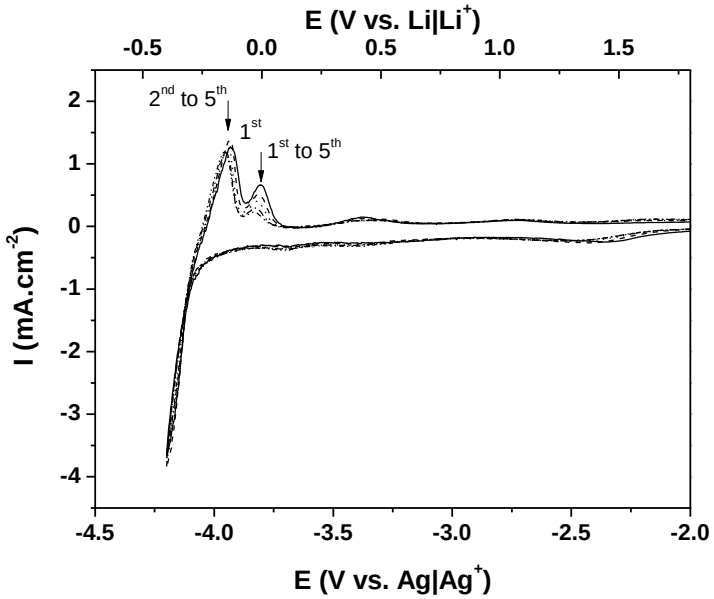
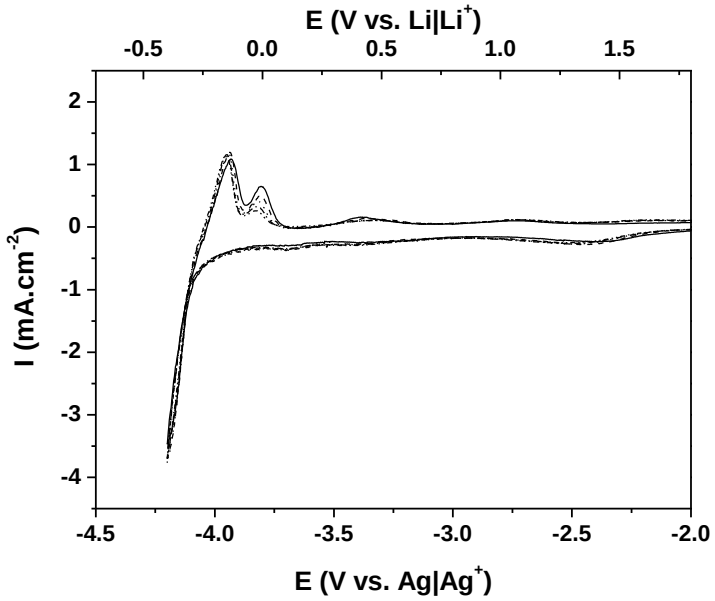
Cycling stability of C_4mpyr DCA with different moisture content

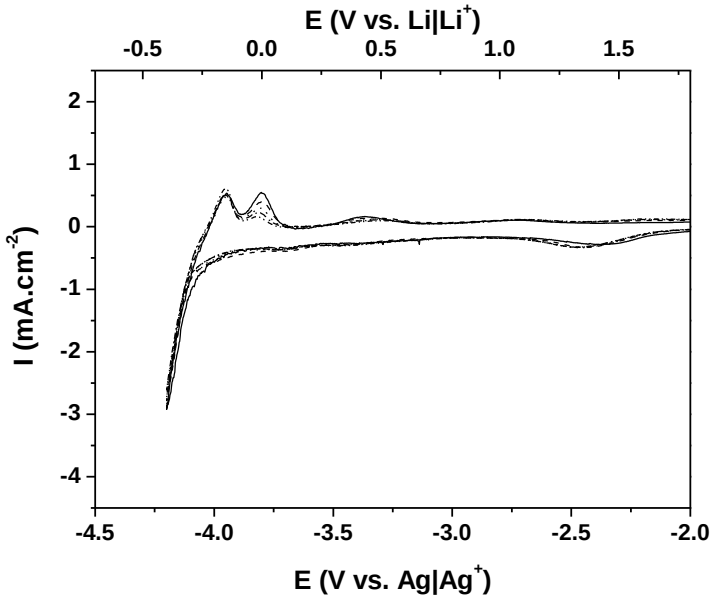
The figures below are in support of Figure 3 in the main text. Supplementary figures 1, 2 and 3 show the effect of moisture content, 233, 311 and 630 ppm respectively on the lithium plating and stripping in C_4mpyr DCA + 0.5 mol.kg LiDCA. The effect of the moisture decreases the maximum peak currents observed as well as to affect the electrochemical kinetics.



Supplement Fig.1. 5 CV scans of 0.5 mol kg^{-1} LiDCA in C_4mpyr DCA at ambient temperature with 233 ppm of H_2O (solid line is the first scan)

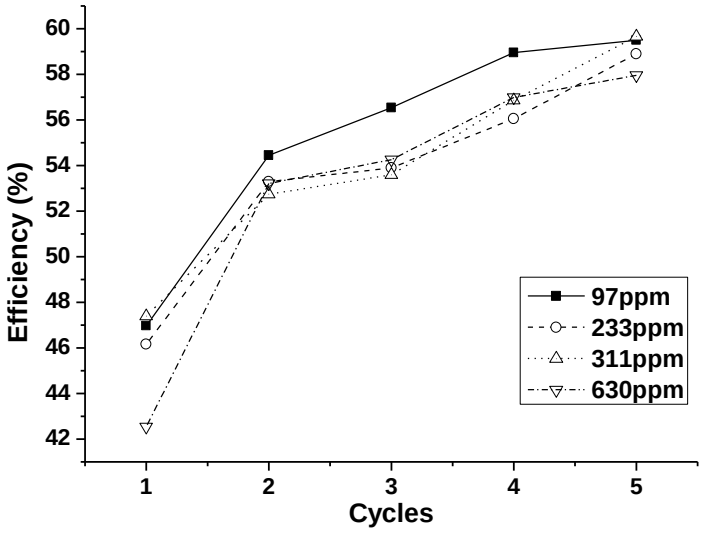


Supplement Fig.2. 5 CV scans of 0.5 mol kg^{-1} LiDCA in C_4mpyr DCA at ambient temperature with 311 ppm of H_2O (solid line is the first scan)



Supplement Fig.3. 5 CV scans of 0.5 mol kg^{-1} LiDCA in C_4mpyr DCA at ambient temperature with 630 ppm of H_2O (solid line is the first scan)

Supplementary figure 5 shows the effect of moisture on the coulombic efficiency of Lithium plating and stripping for the first 5 cycles. In all cases, independent of moisture content, the cycling efficiency of the .5 mol kg^{-1} LiDCA in C_4mpyr DCA reaches a maximum of 60 %.



Supplement Fig.4. Coulombic efficiencies of 0.5 mol kg^{-1} LiDCA in C_4mpyr DCA electrolytes with different amount of H_2O.