



Supplementary Information

Factors Affecting Hydroxide Ion Concentrations in Bipolar Membranes

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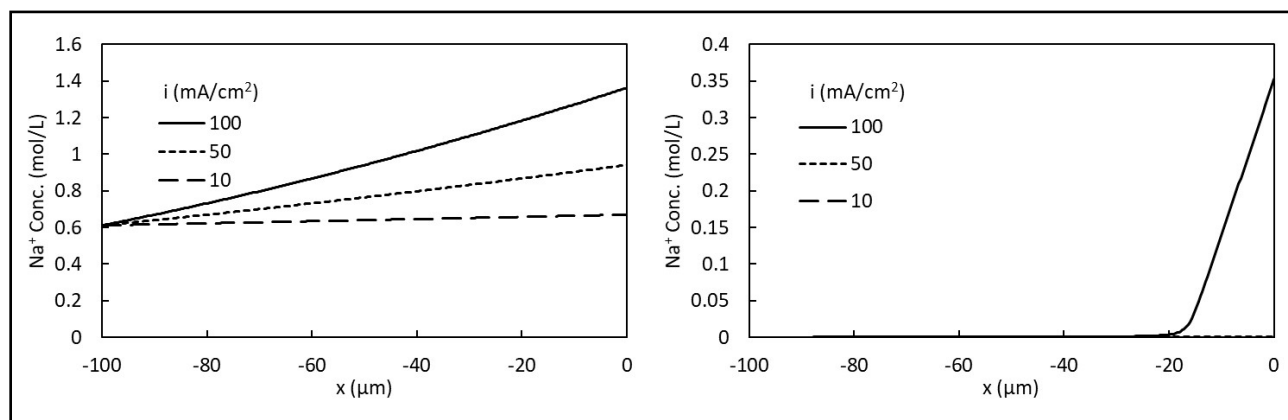


Fig. S1. a) Sodium ion concentrations in the AEL for a 1 M NaCl bulk electrolyte solution at current densities of 10, 50 and 100 mA/cm². b) Sodium ion concentrations in the AEL for a 0.01 M NaCl bulk electrolyte solution at current densities of 10, 50 and 100 mA/cm².

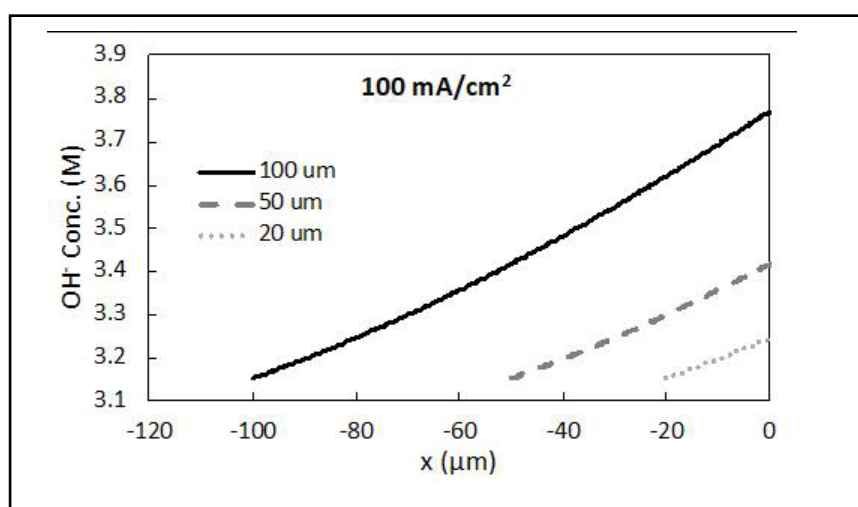


Fig. S2. Hydroxide concentrations for AEL thicknesses of 20, 50 and 100 μm for a bulk solution consisting of 1 M NaOH.

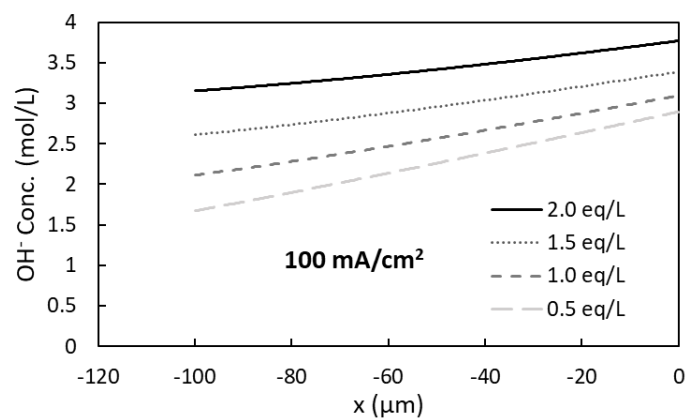


Fig. S3. Hydroxide concentrations in the AEL for a bulk solution consisting of 1 M NaOH for a range in ion exchange capacities.

Table S1
Bulk solution activity coefficients

Solution Composition	OH ⁻	H ⁺	Cl ⁻	Na ⁺
1 M NaCl + 0.1 M NaOH	0.551	0.925	0.598	0.713
1 M NaCl + 0.1 M HCl	0.513	0.993	0.598	0.738
1 M NaCl	0.546	0.959	0.603	0.716
0.75 M NaCl	0.578	0.879	0.622	0.71
0.5 M NaCl	0.618	0.826	0.65	0.714
0.4 M NaCl	0.64	0.809	0.665	0.721
0.3 M NaCl	0.665	0.798	0.687	0.731
0.2 M NaCl	0.701	0.796	0.716	0.75
0.1 M NaCl	0.759	0.811	0.767	0.787
0.01 M NaCl	0.899	0.906	0.902	0.904
1 M NaCl + 1 M NaOH	0.594	0.771	0.574	0.714
1 M NaCl + 0.5 M NaOH	0.565	0.839	0.583	0.708
1 M NaCl + 0.1 M NaOH	0.551	0.925	0.598	0.713
1 M NaCl + 0.01 M NaOH	0.550	0.944	0.604	0.714
1 M NaCl + 10 ⁻³ M NaOH	0.550	0.948	0.604	0.714
1 M NaCl + 10 ⁻⁴ M NaOH	0.550	0.948	0.604	0.714
1 M NaOH	0.679	0.508	-	0.656
0.5 M NaCl + 0.5 M NaOH	0.611	0.695	0.604	0.684