

Supplementary Materials

for

Concurrent Boron Removal from Reverse Osmosis Concentrated and Energy Production using
Microbial Desalination Cell-Donnan Dialysis Hybrid System

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Table SM1. Comparison of COD removal efficiencies, desalination efficiencies, and power production of the different MDC and MDC-DD hybrid system configurations.

Reactor type	Anode electrode	Cathode material	Contaminant type and concentration	COD removal efficiency (%)	Desalination efficiency (%)	Power density	Ref.
QMDC	Graphite	Graphite	30 mg/L of salt solution	91.1	72.8	8.16 W/m ³	1
MDC	Graphite brush	Carbon cloth	100 mM NaCl and 100 mM NaHCO ₃ containing salt solution	52	66	8.01 W/m ³	2
MDC	Carbon brush	Activated carbon and PTFE electrode	35 g/L NaCl solution	92.2	76.5	737 mW/m ²	3
MDC	Carbon graphite	Carbon graphite	5 mg/L boron solution	61.3	90.3	8.93 mW /m ³	4
PMDC	Graphite plate	Graphite plate	20 g/L salt solution	78.2	65.8	44.1 mW/m ²	5
MDC	Carbon felt	Carbon felt	6.8 g/L of NaCl solution	14 ^a	93	0.24 kWh/m ³	6
APMDC	Carbon fiber brush	Carbon cloth coated with 0.5 gm Pt/cm ²	35 g/L of NaCl solution	83.6	30	880 mW/m ²	7
MDC	Graphite rods	Stainless steel grid	35 g/L NaCl solution	57	31	-	8
MDC	AC-CS composite sponge	Carbon graphite	10.48 mg/L of boron-containing geothermal brine	81.4	65.5	867 mW/m ²	9
MDC-DD	Carbon fiber brush	Carbon cloth coated with activated carbon-supported platinum	20 mg/L boron solution	-	52%	-	10
MDC-DD	Carbon graphite sheet	Carbon graphite sheet	10.48 mg/L of boron-containing geothermal brine	≈90	90.1	2759 mA/m ²	This study
			10 mg/L boron solution		75.3	4203 mA/m ²	
			15.1 mg/L boron-containing RO concentrate water		56.9	4818 mA/m ²	

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