Electronic supplementary information (ESI)

Electrochemical lithium recovery and organic removal from industrial wastewater of a battery recycling plant

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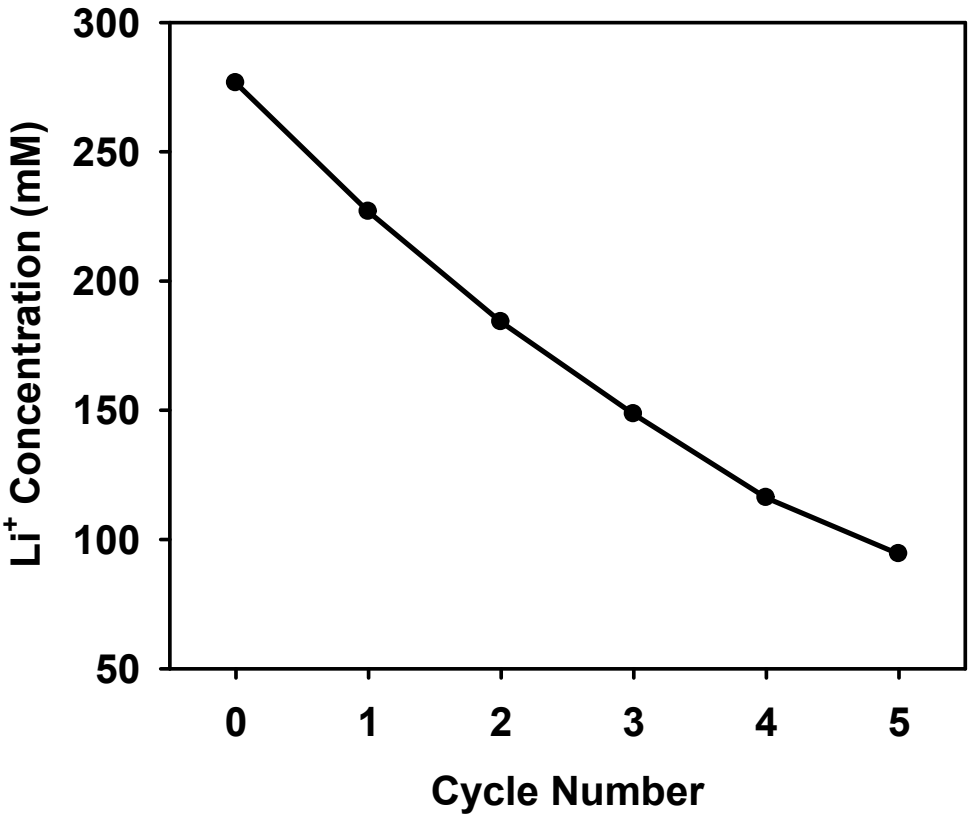

Fig. S1. The concentration of lithium ions in the wastewater during the 5 cycles of LMO/BDD system operation. The ion composition in initial wastewater was as follows: $[Li^+]$ = 276.5 mM, $[Na^+]$ =1847 mM, $[Ni^{2+}]$ = 8.903 mM, $[SO_4^{2-}]$ = 1070 mM).

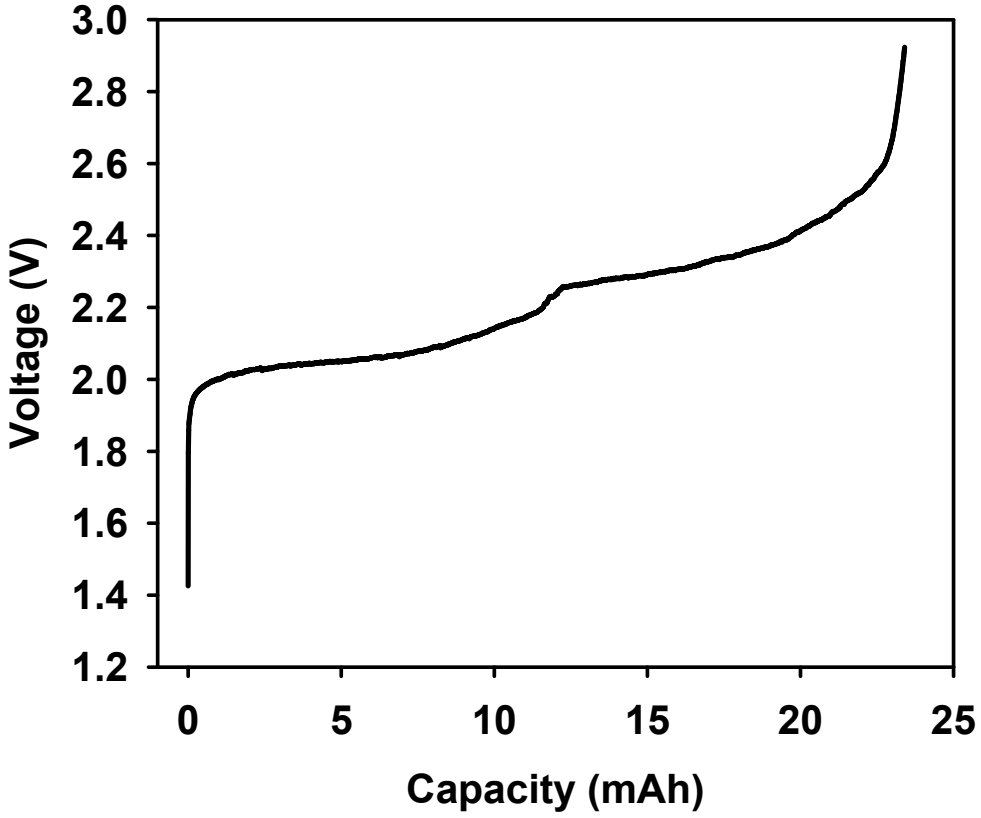

Fig. S2. Voltage profile of LMO/BDD system under operation at 25 mA (100 mA/g_{LMO} and 12.5 mA/cm^2_{BDD} of current density)

The energy consumption of LMO/BDD system was calculated based on the cell voltage depicted in Fig. S2 using the following equation:

$$Energy\ Consumption\ (Wh) = \int VdQ$$

Where V (V) is cell voltage of LMO/BDD system and Q (Ah) is capacity. With this LMO/BDD system operation, 5.98 mg of Li^+ was adsorbed and 1.56 mg of DOC was removed. Energy consumption of this system was calculated as 0.052 mW based on the voltage profile in Fig.

S2, and this value gives 8.71 kWh/kg and 33.4 kWh/kg for Li^+ recovery and DOC removal, respectively.