

Supplementary materials:

Redox processes for the 2,4 DHAQ

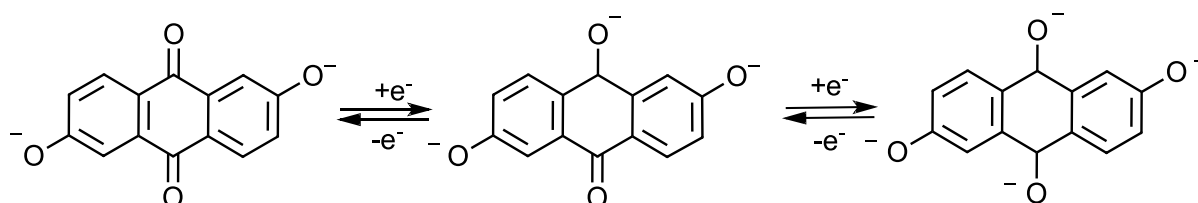


Figure S 1: Oxidation of anthraquinone at alkaline condition (pH 14)

Experimental cycling protocols

The experimental protocols with CC/CV cycles are described in Table S 1 showing the successive steps looped during charge/discharge test.

Table S 1: charge/discharge cycles protocol

Step	Imposed parameter	Next step condition
1	$I = 0 \text{ A}$	$t = 3600 \text{ s}$
2	$I = I_{\text{ch}}$	$U = U_{\text{max}}$
3	$U = U_{\text{max}}$	$ I = I_{\text{min}} $
4	$I = 0 \text{ A}$	$t = 3600 \text{ s}$
5	$I = I_{\text{dch}}$	$U = U_{\text{min}}$
6	$U = U_{\text{min}}$	$ I = I_{\text{min}} $

The PNNL power duty cycles representative of stationary applications with renewable energies [1] are represented in Figure S 2. It shows the normal profile scaled to fit the Pinflow cell characteristics (scale factor 0.5).

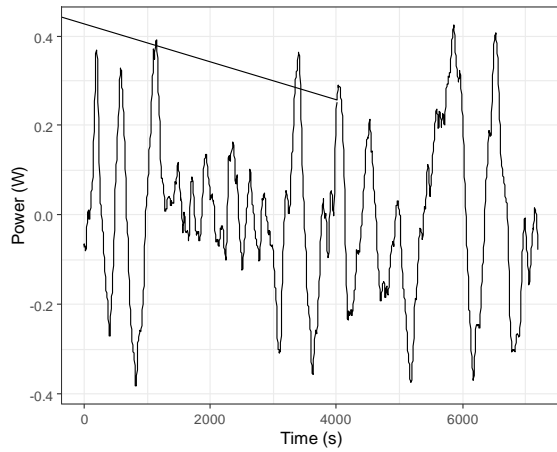


Figure S 2: PNNL normal power duty cycles

HER and OER kinetics

Experimental fitting of HER and OER kinetics have been performed on the carbon felts used in our Pinflow cell. The results as well as the Tafel slopes are shown in Figure S 3.

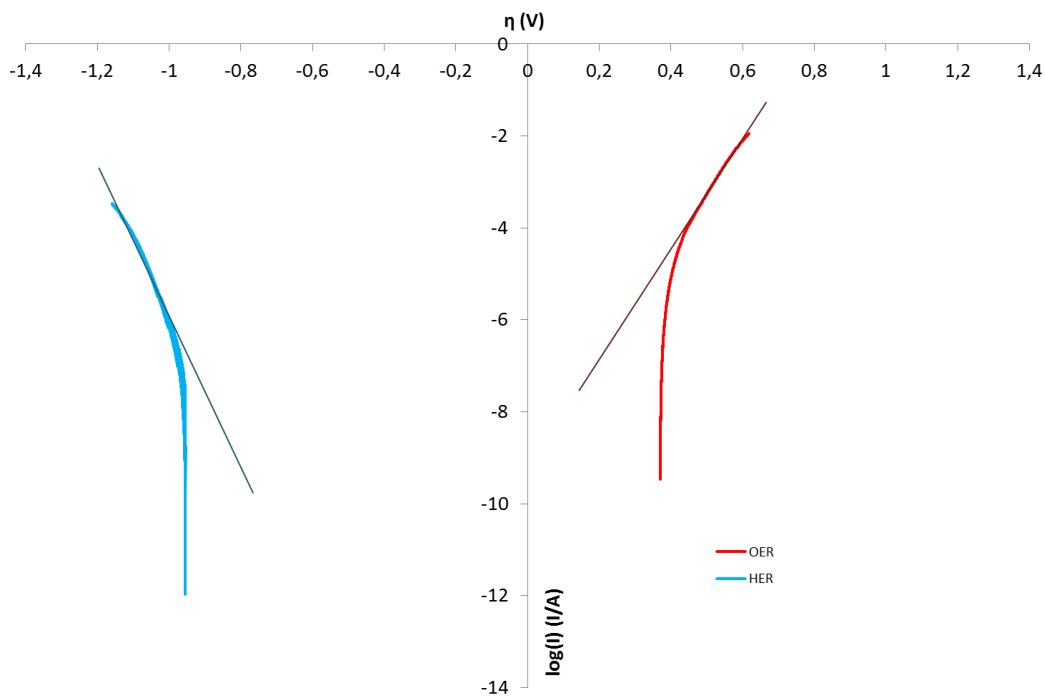


Figure S 3: Tafel slopes measured for HER and OER in Full Cell battery in KOH 1M on carbon felt

References

- [1] D.R. Conover, V.V. Viswanathan, A.J. Crawford, Determination of Duty Cycle for Energy Storage Systems Integrated with Microgrids, 2014.