

## Supplementary Materials

Article

# Elucidating the mechanism of electro-adsorption on electrically conductive ultrafiltration membranes via modified Poisson-Boltzmann equation

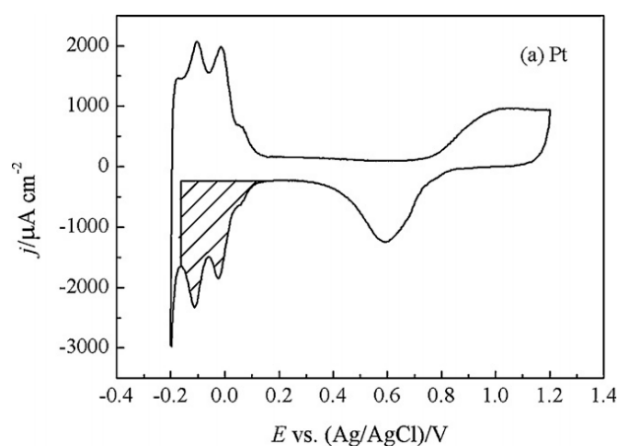


Figure 1S. Cyclic voltammogram of a Pt electrode in  $0.5 \text{ mol}\cdot\text{L}^{-1} \text{ H}_2\text{SO}_4$  solution at a scan rate of  $50 \text{ mV}\cdot\text{s}^{-1}$ , scanned from  $-0.2 \text{ V}$  to  $+1.2 \text{ V}$  vs. Ag/AgCl [1].

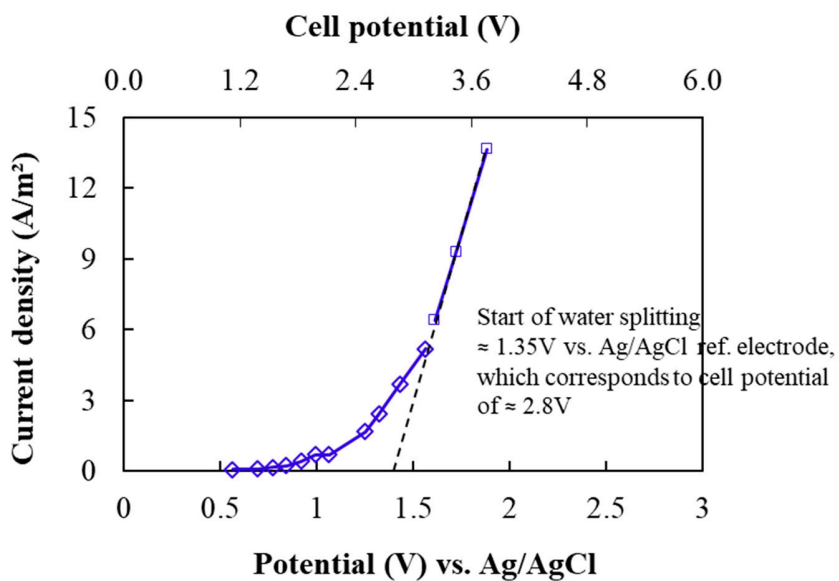


Figure 2S. V-I curve for cell potential in feed solution (natural organic water= 12 mg·L<sup>-1</sup> with NaCl= 1 mmol·L<sup>-1</sup> at pH 7 and filtration flux= 100 L·m<sup>-2</sup>·h<sup>-1</sup> [2].

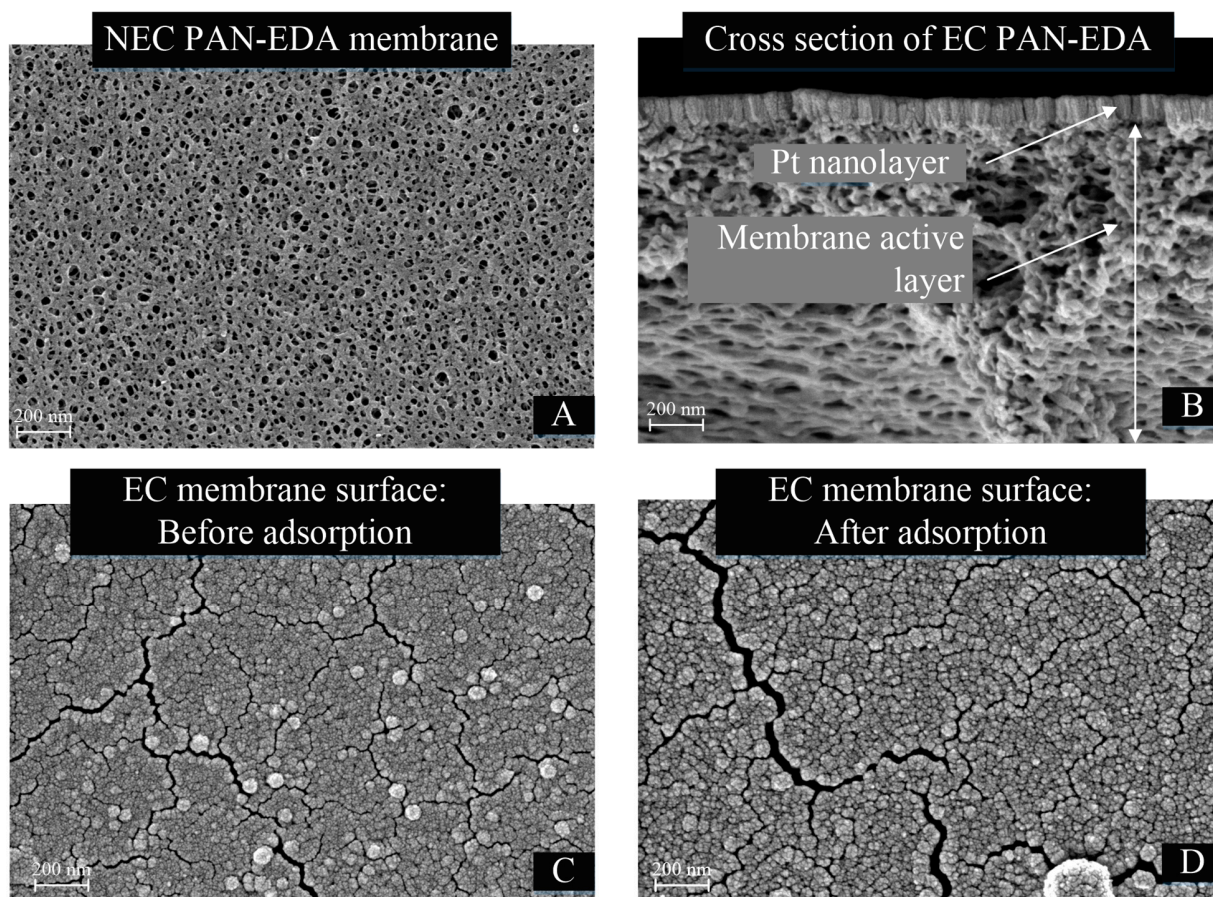


Figure 3S. SEM imaging of (A) uncoated PAN-EDA membrane; (B) cross-section of EC PAN-EDA membrane; (C) EC PAN-EDA membrane: before electro-adsorption; (D) EC PAN-EDA membrane: after electro-adsorption with 50K magnification.

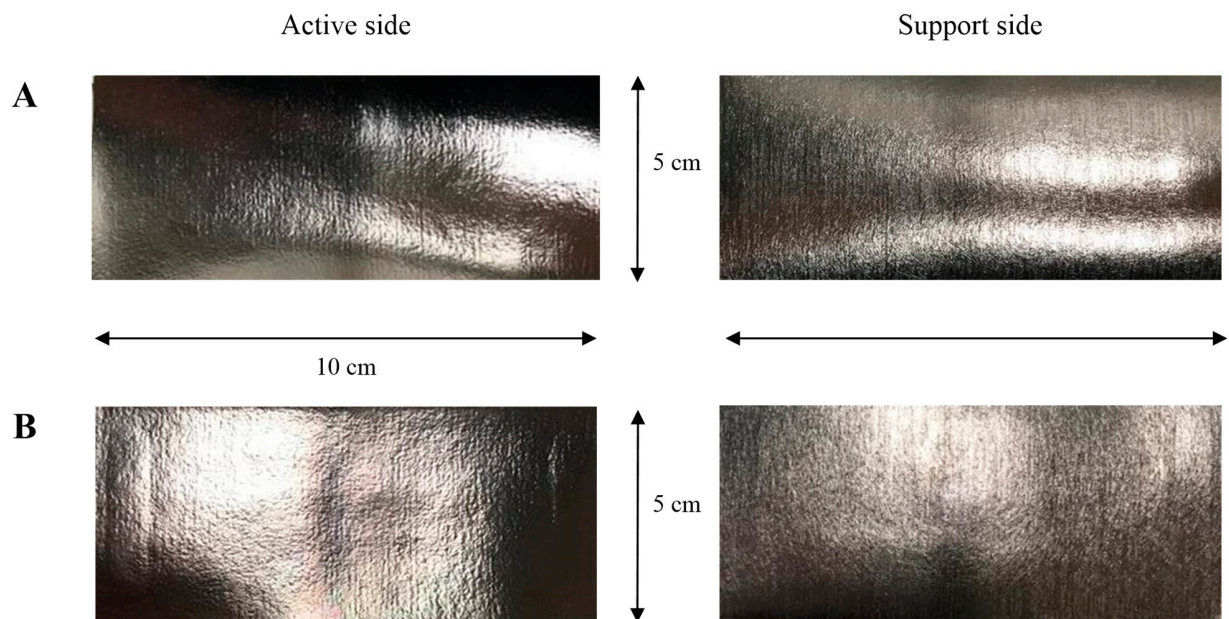


Figure 4S. Visual appearances of the EC membrane; (A) Before electro-adsorption; and B) After membrane regeneration.

## References

1. Liu, Y.; Zeng, Y.; Liu, R.; Wu, H.; Wang, G.; Cao, D. Poisoning of acetone to Pt and Au electrodes for electrooxidation of 2-propanol in alkaline medium. *Electrochimica Acta* **2012**, *76*, 174–178, doi:10.1016/j.electacta.2012.04.130.
2. Usman, M.; Glass, S.; Mantel, T.; Filiz, V.; Ernst, M. Electro-sorption and -desorption characteristics of electrically conductive polyacrylonitrile membranes to remove aqueous natural organic matter in dead-end ultrafiltration system. *Journal of Water Process Engineering* **2024**, *58*, 104733, doi:10.1016/j.jwpe.2023.104733.