



Supplementary Materials

Text 1. Energy Dispersive X-Ray (EDX) Analysis

The surface chemistry and composition significantly influence the membrane's rejection and transport capabilities. Based on interactions with surface molecules, membranes of similar composition, pore size, and porosity might have varying rejection properties for various components. A membrane with a surface charge similar to the salts in solution, for instance, would have a higher rejection rate. The Donnan exclusion principle is recognised for such repulsive interaction [1]. Hence EDX analysis as shown in Supportive data Fig. S1 is used to study surface qualities, chemical composition, and component distribution.

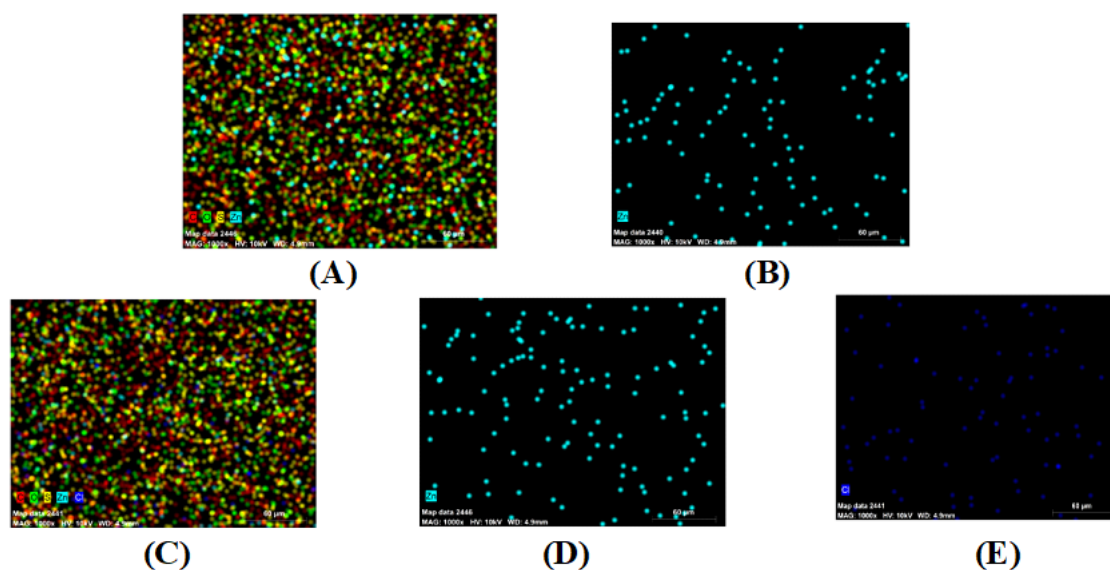


Fig. S1. EDS of PSF/ZnO (A, B) and PSF/ZnO-HCl (C, D, E)

Text S2. Standard Error and Deviation in the Analysis

Error bars can be used to represent this uncertainty in the predicted values graphically. The length of the error bars would correspond to the width of the confidence interval, with longer error bars indicating greater uncertainty in the predictions. The error bar plot with respect to the predicted value y is shown below in Fig. S2.

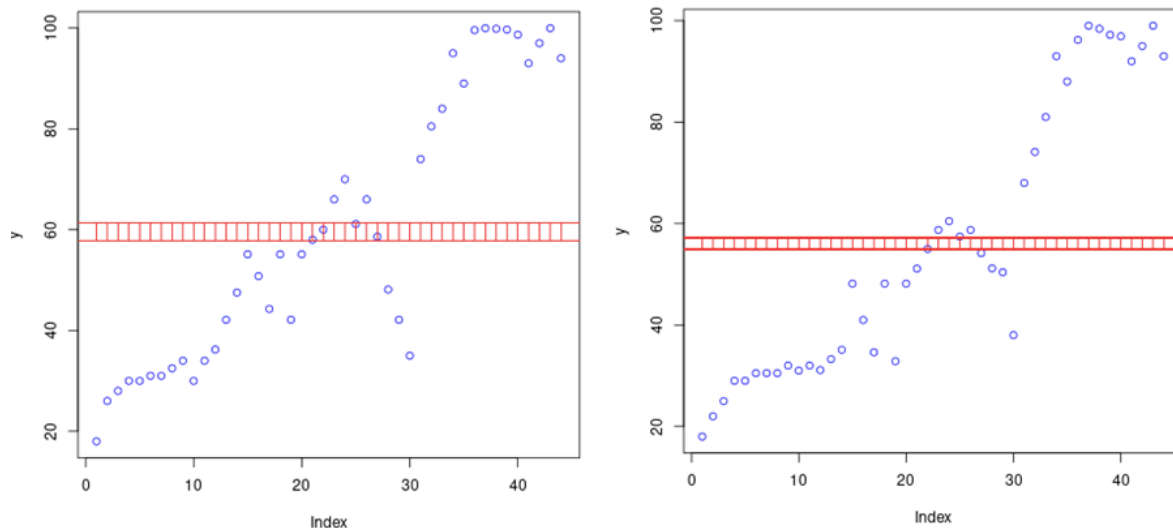


Fig. S2. Error bar Plots with respect to Predicted Y (Mn (Left) & Cr (Right))

References

1. Mahajan-Tatpate P, Dhume S and Chendake Y. Removal of Heavy Metals from Water: Technological Advances and Today's Lookout through Membrane Applications. *Int. J. Membr. Sci. Technol.* 2021;8;1-21. <https://doi.org/10.15379/2410-1869.2021.08.01.01>.
2. Dhume SS, Mahajan-Tatpate P and Chendake YJ. Optimization of PSF Membrane Transport Properties with the Use of Porogenic Additive. *J. Appl. Membr. Sci. Technol.* 2020;24:57-73. DOI: 10.11113/amst.v24n3.193.