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Desalting and Water Purification Research Program

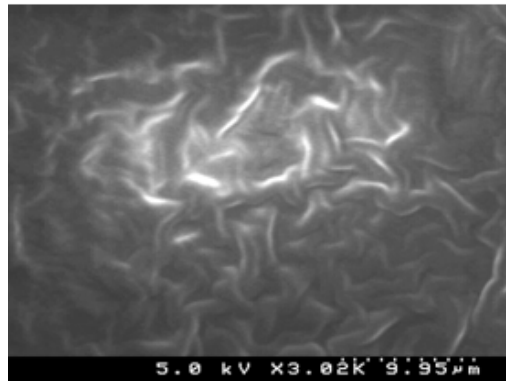
Novel Fouling-Resistant Membranes for Water Purification

DWPR Report #129, B. Freeman, U of T at Austin

Background:

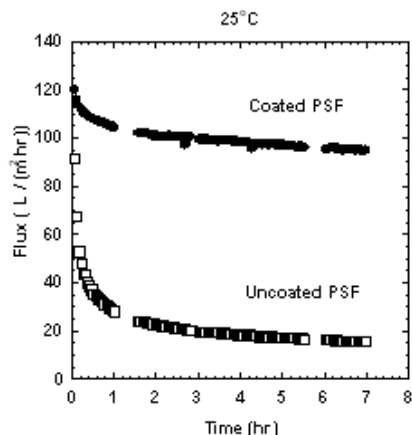
Produced water from oil and gas extraction could be put to beneficial uses if it can be treated to remove remnants of oil compounds and some of the salt. Conventional membranes are easily fouled by oil and other organic materials in produced water. In this project, a water-permeable thin coating of cross linked poly(ethylene glycol) diacrylate (XLPEGDA), in a range of molecular sizes, was applied to conventional membranes to act as a physical barrier to eliminate fouling while maintaining or improving water permeability.

Coated PSF



Objectives:

- Characterize base membrane (polysulfone membrane from GE was chosen for testing).
- Apply XLPEGDA coating in variety of formulations.
- Characterize coated membranes with clean water and standard oil emulsion.



Results:

- Coating process was optimized to achieve stable coating layer.
- Composite polysulfone membranes were prepared and tested for oil water fouling in dead-end and cross flow filtration.
- Results illustrate that XLPEGDA coatings can improve membrane fouling resistance and therefore, provide better overall performance.

