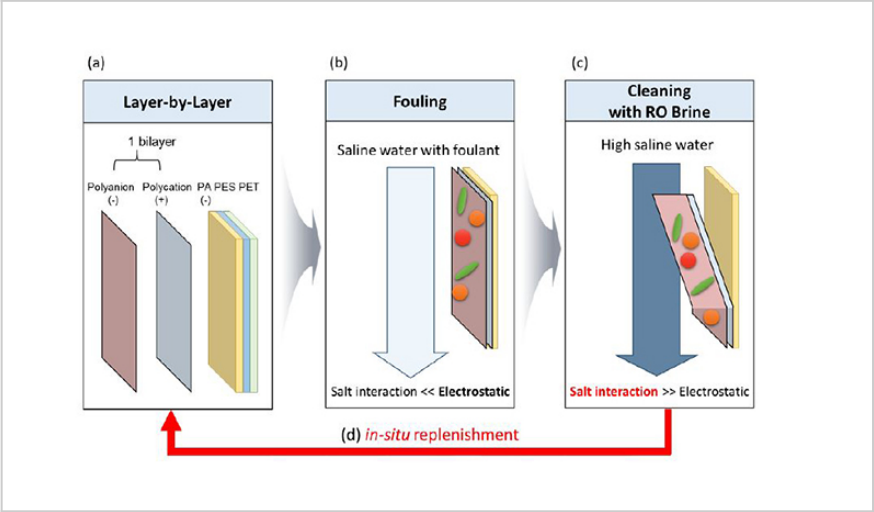
Polyelectrolyte Protective Layer for Water Filters

ID# 2018-4774



Flushing Foulants attached to PL

Technology Summary

This novel invention uses a sacrifical polyelectrolyte layer (PL) to protect membranes used in water filtration and desalination from fouling. Foulants accumulate on the surface of the PL, which can then be detached together with the PL using a simply saline solution flush. The PL can then be replenished with a simple in-situ method.

Membrane fouling needs to be addressed as it is an inevitable phenomenon during membrane filteration which significantly decreases the efficiency of the system. Current methods (hydrophobicity control, blush polymer grating, functional material incorporation) have high costs and leach problems

Application & Market Utility

The average flux recovery ratio of 97 ± 3% was achieved with the membrane coated with the PL over four fouling cycles, whereas only 83 ± 3% was measured for the membrane without the PL. The PL coated membrane also produces more water during the initial stage of fouling due to the higher flux recovery compared to the pristine membrane.

Next Steps

Seeking licensing opportunities. Patent pending.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- desalination
- membrane
- protective layer
- polyelectrolyte
- fouling control

Researchers

Moon Son
Postdoctoral Researcher

Bruce Logan
Professor of Environment Engineering
Website

Wulin Yang
Postdoctoral Researcher

Other Researchers

Johannes Vrouwenvelder

Originating College

College of Engineering

Office of Technology Management Contact

Swope, Bradley
bas101@psu.edu
814-863-5987