

Forward Osmosis



Overview:

Forward osmosis (FO) is a process that uses osmotic pressure to drive flow across a semi-permeable membrane for separations. The platform has applications in dewatering, water treatment and brine concentration. The challenge around FO is the need to regenerate the draw solute inexpensively so that it can be used again.

This system, which is operated with commercial elements, offers draw solute regeneration via reverse osmosis. It can be run in continuous flow mode and closed loop. Any FO element can be installed on this device and it can be connected to other draw solute recovery systems. Draw solute recovery via membrane distillation coming in 2020

Description of the test bed:

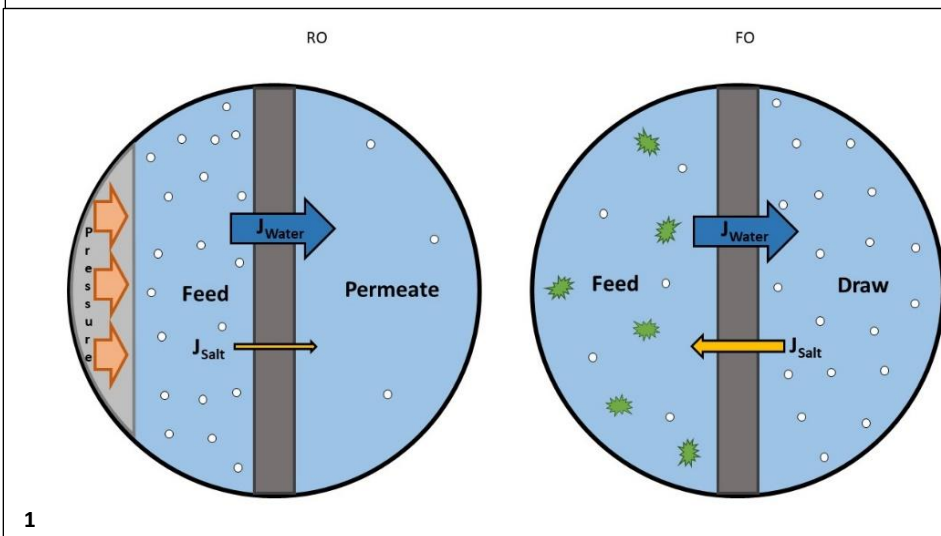
- The test bed is equipped with a 4040 FO element that can be replaced with other FO elements as needed. The RO unit is currently using a 4040 Seawater RO element and can be replaced as needed
- **Working pressure:** RO up to 700 psi
- **Working temperature:** Module dependent
- **Liquids:** Aqueous solutions only
- **Analysis system:** Flux measured through flow meters and rejection and reverse solute flux is measured using conductivity

Services offered:

- Application testing for membrane processes
- Membrane characterization

1 Principle scheme of Forward and Reverse Osmosis.

2 FO and RO test rig at CEI laboratory which is equipped with a module for flat sheet substrates.



Connecticut Center for Applied Separations Technologies (CAST)

159 Discovery Drive
Storrs, CT 06269-5279

Contact:

Prof. Jeffrey McCutcheon
Phone: 860-486-4601
jeffrey.mccutcheon@uconn.edu
<http://www.cei.fraunhofer.org>