

Membranes for Osmotic Processes

Sunday

Lecturers:

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ABSTRACT

This workshop presents membrane characteristics, processes, systems, examples, barriers, research needs, and other details on osmotic processes for real world applications.

FIRST SESSION

Osmotic Membranes and Application Introduction: Dr. Tzahi Cath

This session will cover the different types of membranes, elements, systems and processes suitable for a variety of osmotic processes.

1. Overview

- Introduction to osmotic pressure
- Introduction to osmotic membrane types, definitions, compositions, and structures.
- Introduction to osmotic membrane processes.
- Introduction to draw solutions and draw recovery systems

2. Osmotic processes and systems

- Reverse osmosis
- Forward osmosis
- Pressure retarded osmosis
- Hybrid systems

3. Data and Applications with real world solutions

- Oil and gas produced water concentration and reuse
- Industrial wastewater reuse
- Other

SECOND SESSION

Real world Examples: Erik Desormeaux

This session will focus on the examples, data, primary applications, and industry needs from a membrane and system supplier perspective. The topics will be as follows:

1. Oil and Gas Produced Water Lab and Pilot scale Results
2. Winery Wastewater and Agricultural Reuse Lab and Pilot scale Results
3. US Army Graywater Reuse Lab and Pilot scale Results
4. Municipal Potable Reuse Lab and Pilot scale Results
5. Municipal Brine concentration Lab and Pilot scale Results

6. Food and beverage product concentration Lab, Pilot scale, and Commercial scale Results

THIRD SESSION

Markets and Applications: Carl Lundin

This session will focus on applicable markets and the key drivers, barriers, and research needs within the osmotic membrane field. The topics will be as follows:

1. Markets and Applications for Engineered Osmosis

- Oil and Gas
- Industry and Mining
- Food and Beverage
- Water and Wastewater
- Agriculture
- Power

2. Engineering Osmosis

- Process Design
- Facility Design
- Capital and O&M Estimating
- Piloting