Simulation of draw solute recovery process in forward osmosis desalination

이도연, 김 영[1], 윤좌문[2], 김태우, 박선원*
KAIST; [1]Korea Institute of Machine & Materials;
[2]Doosan Heavy Industries & Construction
(sunwon@kaist.ac.kr*)

Forward osmosis is known as a prominent desalination method in terms of energy efficiency. Development of an efficient draw solute recovery process is a key factor in minimizing energy consumption of forward osmosis process. In this work, a typical draw solute recovery process, i.e., distillation is simulated to evaluate its energy consumption. For accurate simulation, appropriate interaction parameters for electrolyte system should be adapted. ELECNRTL is known as one of the best property methods to analyze an aqueous electrolyte system. Therefore, the property method is employed to predict the property changes of different draw solutes in the framework of a process simulator. This simulation may facilitate economic evaluation of forward osmosis processes.

Acknowledgement: This work was strongly supported by the research project on the Development of Multi-Purpose Forward-Osmosis Desalination Plant from the Korean Ministry of Knowledge Economy.