

Optimization of membrane properties for efficient reverse electro dialysis

강문성<sup>†</sup>, 김도형, 장은혜, 박진수

상명대학교 환경공학과

(solar@smu.ac.kr<sup>†</sup>)

Reverse electro dialysis (RED) is one of the promising processes for generating electricity from the salt concentration gradient between river and sea water. The power generation performance of RED significantly depends on the characteristics of ion exchange membranes (IEMs), which are selective for cations or anions. When the IEMs with different polarities are stacked alternately, with compartments for seawater or river water in between, the Donnan potentials over each membrane result in a voltage that can be used for electricity generation. In this work, novel pore-filled types of IEMs have been successfully prepared. Moreover, the membrane properties have been optimized via various electrochemical analyses for efficient RED application.

This work was supported by the Material Technology Development Program funded by the Ministry of Trade, industry & Energy (MOTIE) (No. 10047796).