

Performance enhancement of RED stack by employing electrochemically-fabricated electrode system

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The depletion of fossil fuels and the high cost for energy production threatens a mankind. For the reason being, there arises a great attention on the renewable energy sources, such as solar, wind, and ocean. Among the ocean energy, a salinity gradient power draws a huge interest due to high energy potential. A reverse electro-dialysis (RED) is a promising technique for generating the salinity gradient power, in that it is environmentally benign and is not intervened by climate and time. The performance of RED or RED stack is determined by multiple factors, including the characteristics of membrane, operating parameters, and electrode system. In this study, we attempt to design and suggest a electrochemically-fabricated electrode system, in order to increase the power density and the energy density of RED. By controlling fabricating conditions, the electrodes with various structures and compositions can be prepared. The as-prepared electrodes are employed in a lab-scale RED stack and the performance is evaluated.