

Performance improvement of capacitive deionization by using ionomer-combined carbon electrodes

강문성<sup>†</sup>, 장은혜, 김도형, 박진수

상명대학교 환경공학과

(solar@smu.ac.kr<sup>†</sup>)

Capacitive deionization (CDI) is one of the attractive environmentally-friendly technologies for desalting applications. It consumes relatively small energy for operation without high pressure pumps. In addition, it does not produce any secondary regeneration wastes for a re-use. In this work, we have successfully prepared ionomer coating solutions using engineering polymers as the base materials. The functionalized ionomers were coated on porous carbon electrodes and also utilized as a binder for immobilizing the carbon particles to improve the current and removal efficiencies of CDI process. The ionomers exhibited excellent electrochemical properties of both the low electrical resistance and high ion selectivity. As a result, the desalination performances of the CDI were largely improved by employing the ionomer-combined carbon electrodes.

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