

Draw Solution Measurement and Separation in Forward Osmosis Desalination

Ali Shoeb Moon, 이문용*

영남대학교

(mynlee@ynu.ac.kr*)

For effective FO desalination Ammonium Bicarbonate (NH_4HCO_3) salt is used to form the draw solution. This salt is then separated from the desalinated water in the solute recovery system. As the inorganic salts breaks up into NH_4^+ and HCO_3^- ions in water, these are further transformed into Ammonia (NH_3) and Carbon dioxide (CO_2) free gases respectively. This work comprises of quantitative measurement of all the macro species, ionic (NH_4^+ , HCO_3^- , CO_3^{2-}) and gaseous (NH_3 , CO_2) present in the draw solution at the normal temperature and pressure. Secondly, the draw solute was stripped off in the form of gases CO_2 and NH_3 , in a batch distillation process with a Rotary Evaporator and time trend for the same was observed. Also the separation process was simulated in Aspen data base to estimate the energy consumption and compare it with other desalination processes mainly RO.

Acknowledgement: This work was supported by Human Resource Development Program of Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant (No. 20104010100580) funded by the Korean Ministry of Knowledge Economy.