

### Effect of HBP-g-silica on the Characterization and Performance of RO membranes

박시영, 김상곤, 김성현\*  
고려대학교  
(kimsh@korea.ac.kr\*)

Advances in reverse osmosis (RO) membrane technology include higher rejection membranes, permeable membranes and surface area elements. We synthesized membrane materials based on hyper-branched aromatic polyamide grafted silica nano particles (HBP-g-silica) with high concentration of amide group in aqueous solution for interfacial polymerization. Then we examined characterization of synthesized HBP-g-silica and composite RO membranes. The amount of amino groups on the APS-silica and HBP-g-silica was determined 7% and 13% of amino groups grafted onto nano-silica respectively. The each FT-IR spectrum confirmed that HBP-g-silica was successfully conjugated to the aromatic polyamide onto nano-silica. The activer layer of RO membrane is prepared by interfacial polymerization which aqueous solution containing a 1% (w/v) mixture of HBP-g-silica, MPDA and 1% (w/v) organic phase solution had various amide bonds. From the composite RO membrane containing different concentration of HBP-g-silica, we observe the changes in the surface roughness, salt rejection and water flux.