

Supplementary Materials

The freezing points of sodium tetraethylenepentamine heptaacetate (STPH) solutions and de-ionized water (DI water) were measured using a self-assembled system as described in our previous work [1]. The osmotic pressure (π) was then calculated based on the reduced temperature value (ΔT) of the STPH solution as compared to that of DI according to Equation (S1).

$$\pi = \frac{\Delta T}{1.86} \times 22.66 \text{ (bar)} \quad (\text{S1})$$

Relative Viscosity Measurement of the Draw Solution

Relative viscosities (η_R) of draw solutions were determined by Equation (S2) using a commercial Ubbelohde viscometer ($d = 0.4\text{--}0.5$ mm) at 25 °C maintained by a water bath during test process. The detailed process was also described elsewhere [1,2].

$$\eta_R = \frac{t_T \rho_T}{t_{DI} \rho_{DI}} \quad (\text{S2})$$

where t_T and t_{DI} (s) were the respective outflow time of the draw solution and DI water, while ρ_T and ρ_{DI} (g/mL) were their solution densities measured by a portable density meter (KEM DA-130N, Tokyo, Japan).

Forward Osmosis (FO) Performance Evaluation

The water flux, J_w (L/m² h, referenced to as LMH), was obtained by the weight change of draw solution, Δm (g), during a test time interval, Δt (h), using Equation (S3). The reverse salt flux, J_R (g/m² h, referenced to as gMH), was calculated from the changes of the feed solution concentration, C (mg/L), measured by a conductivity meter (Mettler toledo, FE30, Shanghai, China), and its volume, V (L), using Equation (S4).

$$J_w = \frac{\Delta m}{\rho A \Delta t} \quad (\text{S3})$$

$$J_R = \frac{\Delta(CV)}{A \Delta t} \quad (\text{S4})$$

where A is the effective membrane area (m²), and ρ is the density of pure water (0.996 g/cm³ at 25 °C).

Nanofiltration (NF) Performance Evaluation

The water flux in nanofiltration (NF) process was also calculated by Equation (S3) with an upstream pressure of 3.5 bar, while the solute rejection (R) was obtained by Equation (S5).

$$R = \left(1 - \frac{C_p}{C_T}\right) \times 100\% \quad (\text{S5})$$

where C_p (mg/L) and C_T (mg/L) are the solute concentrations in the permeate water and the diluted draw solutions, respectively.

References

1. Long, Q.; Qi, G.; Wang, Y. Synthesis and application of ethylenediamine tetrapropionic salt as a novel draw solute for forward osmosis application. *AIChE J.* **2015**, *61*, 1309–1321.
2. Zhao, Q.; Chen, N.; Zhao, D.; Lu, X. Thermoresponsive Magnetic Nanoparticles for Seawater Desalination. *ACS Appl. Mater. Interfaces* **2013**, *5*, 11453–11461.