

濃度極化現象對NF薄膜之分離成效的影響

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摘要

本研究探討在不同濃度極化現象時，對於NaCl、Na₂SO₄、PEG200與PEG600溶液的分離成效與傳輸、去除機制的情形。在本研究的操作條件(固定進流濃度為5 10⁻⁴ molar fraction，操作壓力在60~140 psi)下，薄膜對於NaCl、Na₂SO₄、PEG200和PEG600的去除率為20~40%、89~96%、46~54%與93%；且有無濃度極化現象對去除率的影響趨勢並不明顯。且在本研究的實驗條件下，Hydrosep薄膜並不具帶電性，因此主要的溶質去除機制為篩除效應和表面作用力。將本研究以Kimura與Sourirajun的模式來定量去除率與穩態清水通量之間的關係，在固定掃流速度為0.15 m/s時，NaCl的平均溶質輸送參數為5.57 × 10⁻⁶ m/s，平均Aid值為4.78 10⁻¹⁵ (m)；而在固定掃流速度為0.50 m/s時，Na₂SO₄的平均溶質輸送參數為2.29 10⁻⁷ m/s，平均Aid值為3.56 10⁻¹ (m)。

關鍵詞：NF；薄膜；濃度極化

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