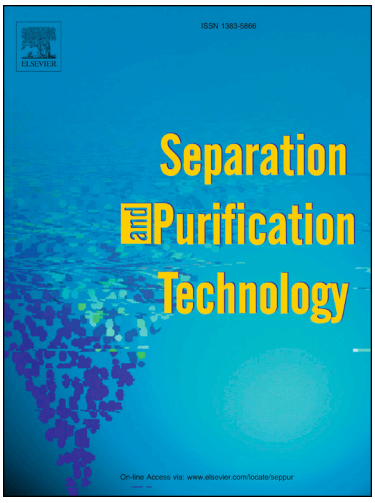

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Submerged vacuum membrane distillation crystallization (S-VMDC) with turbulent intensification for the concentration of NaCl solution

Tong Zou[a,b], Guodong Kang[a,*], Meiqing Zhou[a], Meng Li[a], Yiming Cao[a,*]

[a] Dalian National Laboratory for Clean Energy (DNL), Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China

[b] University of Chinese Academy of Sciences, Beijing 100049, China

[*] Corresponding authors at: Dalian National Laboratory for Clean Energy (DNL), Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, China.

E-mail address:kangguod@dicp.ac.cn, ymcao@dicp.ac.cn

Abstract

The feasibility of simultaneous pure water production and salt crystal recovery from highly concentration NaCl solution was evaluated by utilizing a submerged vacuum membrane distillation crystallization (S-VMDC) system with different turbulent intensification modes. The effect of intensification mode including stirring and aeration on membrane distillation performance and crystallization behavior was investigated systematically. An iterative method was used to evaluate the heat transfer enhancement effect. The results indicated that both stirring and aeration had positive influence on permeate flux due to the improvement of heat transfer and weakening of polarization phenomenon in boundary layer. The dominated