

Modification of membrane hydrophobicity in membrane contactors for environmental remediation

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ABSTRACT

Membrane contactor is a well-developed, eco-friendly and waste-free technology that has been the subject of interest in both gas separation and water treatment. Despite the feasibility and advantages, one of the inherent issues with membrane contactor is the wetting of membrane which eventually leads to the increased mass transfer resistance and the deterioration of the membrane flux and overall long term stability performance. Various surface modification strategies which involve the alteration of surface chemistry and structure have been established to tackle this issue. The common goal of these strategies is to improve the surface hydrophobicity of the contacting membrane hence to prevent membrane wetting. This contribution reviews the state-of-the-art approaches that have been explored for membrane hydrophobic modifications. The recent progresses and performance evaluation of these surface modified hydrophobic membranes in both gas separation and wastewater treatment are presented. Finally, the challenges and future outlook of surface modified membranes for membrane contactors are highlighted.

KEYWORDS

Membrane contactor; Hydrophobic modification; Gas separation; Water treatment

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