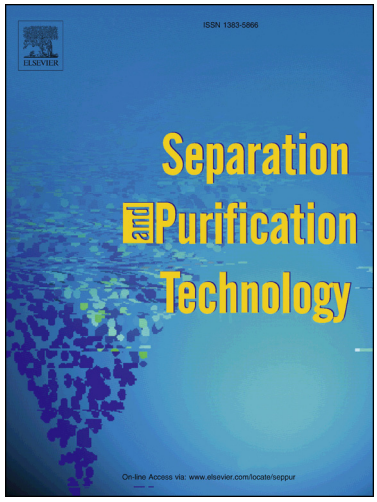

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PII: S1383-5866(17)30278-2
DOI: http://dx.doi.org/10.1016/j.seppur.2017.03.035
Reference: SEPPUR 13621

To appear in: *Separation and Purification Technology*

Received Date: 25 January 2017
Revised Date: 15 March 2017
Accepted Date: 19 March 2017

Please cite this article as: L. Eykens, K. De Sitter, C. Dotremont, L. Pinoy, B. Van der Bruggen, Membrane synthesis for membrane distillation: A review, *Separation and Purification Technology* (2017), doi: http://dx.doi.org/10.1016/j.seppur.2017.03.035

MEMBRANE SYNTHESIS FOR MEMBRANE DISTILLATION: A REVIEW

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Abstract

Membrane distillation (MD) is an emerging thermal separation technique, using a hydrophobic microporous membrane. Initially, the process used MF membranes with a hydrophobic character, such as PTFE and PVDF membranes. These membranes are not wetted by aqueous feed liquids and their microporous structure allows the transport of water vapor molecules through the membrane due to an applied temperature difference. On average 23% of the publications on MD focus on membrane engineering. Besides the traditional stretching and phase inversion technique, many novel techniques are proposed, including electrospinning, the use of carbon nanotubes, surface modification techniques and the design of novel polymers. This article provides guidelines for the evaluation of these membranes measured using a large variety in process conditions at lab scale. In the second part, an overview of the synthesis methods used for MD was given and the advantages, disadvantages and the performance of the respective membrane types in MD were evaluated.

Keywords: Carbon nanotubes, Electrospinning, Membrane fabrication, surface modification