

Gas permeability: A simple and efficient method for testing membrane material/solvent compatibility for membrane contactors applications

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ABSTRACT

The selection of the most efficient hydrophobic microporous material is a key issue for membrane contactors applications. This holds especially for intensified gas–liquid absorption operations for which stable membrane performances such as non wetting conditions or effective gas permeability are demanded on a long time basis. In this study, the membrane material challenges of post combustion carbon dioxide capture performed in a membrane contactor are developed with a 30% aqueous MEA solution as chemical solvent. A simple, sensitive, non destructive and relevant experimental technique based on gas permeability measurement is proposed in order to estimate membrane / solvent compatibility. The interest of the technique is presented on ten different membrane materials; the materials screening step and the possibility to point out differences in materials ageing issues are shown.

Keywords: Membrane contactors; Polymers; Ageing; Carbon dioxide; Capture; Permeability

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