MEMBRANE WETTING IN CARBON DIOXIDE ABSORPTION PROCESS USING MEMBRANE CONTACTORS: A REVIEW

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Abstract

Porous membranes as gas-liquid contactors are widely used in carbon dioxide (CO\textsubscript{2}) absorption systems. It provides larger mass transfer area and excellent operational flexibility. Membrane contactors have been considered as alternative to conventional approaches in removing CO\textsubscript{2}. In spite of its advantages over conventional technologies, membrane wetting is a major problem which reduces performance of CO\textsubscript{2} absorption. This paper explains the concept of membrane wetting phenomenon and its influence on the CO\textsubscript{2} mass transfer through the membrane and absorption performance. The factors that cause membrane wetting were presented including hydrophobicity of membranes surfaces, membrane pore size, liquid entry pressure and properties of absorbent liquid. Current proposed methods to alleviate the membrane wetting were reviewed and discussed. Development of mathematical model was presented for all types of membrane wetting modes, as well as its validity for CO\textsubscript{2} physical and chemical absorption.

Key words: CO\textsubscript{2} removal, gas absorption, greenhouse gases, membrane wetting

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