

CO₂ Vacuum Stripping Process from Aqueous amine solutions using PDMS-PE Composite Membrane

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CO₂ emission from the combustion of fossil fuels in conventional power plants is recognised as one of the main source of global climate change. An absorption process using aqueous amine is the most common CO₂ capture process. Despite of many advantages of an amine absorption process, it still needs some hard works such as lowering its operating cost. During an amine absorption process, the distillation(desorption) process is known as the most high energy consuming and responsible for the main operational cost. In this study, membrane vacuum stripping process was applied to desorption process for the purpose of the reduction of desorption energy in an amine absorption process. 30 wt% of aqueous MEA (monoethanolamine), DEA(diethanolamine), TEA(triethanolamine) solution were used as the absorbent and PE(polyethylene) was used as a support of composite membrane. PDMS (polydimethylsiloxane) knowing flaxable and high permeability was coated on the one side of PE support with desired thickness. The stripped CO₂ fluxes were checked at various solution temperatures and vacuum pressures.