

CO₂ Vacuum Stripping Process from Aqueous amine solutions using PTMSP-PTFE Composite Membrane

김정훈^{1,2}, 박성률^{1,2}, 안효성¹, 서봉국¹, 김정훈^{1,*}
¹한국화학연구원; ²한국과학기술연합대학원대학교
(jhoonkim@kRICT.re.kr*)

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 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. 20 wt% of aqueous MEA (monoethanolamine) solution was used as the absorbent and PTFE(polytetrafluoroethylene) which has high chemical, thermal stability was used as a support of composite membrane. PTMSP(poly(1-trimethylsilyl-1-propyne)) knowing large free volume and high permeability was coated on the one side of PTFE support with desired thickness. The stripped CO₂ fluxes were checked at various solution temperatures and vacuum pressures.