

Study on the CO₂ Absorption Characteristics in PEGDME Solution with Additives at High Pressure

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Carbon capture technologies are still far from being the industrial standard, and processes vary from pre-combustion to post-combustion technologies. CO₂ capture for pre-combustion is to remove the acid gases such as CO₂ and H₂S in synthesis gas produced from integrated gasification of combined cycle(IGCC). During the capture process, it is operated under high pressure and high partial pressure of CO₂. In this study, as a candidate of the carbon dioxide absorbents, KEA(KEPCO Enhanced Absorbent)-series were investigated. The relative CO₂ loading capacity of PEGDME and mixtures were estimated at 298.15K, 30bar for 30 min by using semi-batch apparatus. Equilibrium partial pressure(P_{CO₂}) and pressure change were measured by using VLE(Vapor-liquid equilibrium) equipment in PEGDME and mixture at 283.15 to 298.15K, up to 30bar. Based on the results, we found that KEA had higher CO₂ solubility compared with PEGDME.