

Blended amine의 CO₂ 흡수 특성 모델링

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The removal of carbon dioxide from synthesis gas, natural gas and refinery gas using aqueous amine solvents continues to be of big interest. MEA, AMP, DIPA and MDEA are the representative primary and tertiary amines and is thermodynamically and kinetically selective for CO₂ in the presence of N₂ or O₂. The solubility of CO₂ has been measured at the low temperature range from 313.15 to 333.15 K (absorption range) and the high temperature range from 363.15 to 403.15 K (stripping range) by the static method. In order to overcome non-ideality for solubility calculation, activity coefficients and fugacity coefficients were implemented. The activity coefficients took into account interaction between solute species in the liquid phase. Debye-Huckel and Electrolyte NRTL expressions were used to obtain activity coefficient matrices. The fugacity coefficients were also calculated to consider non-ideality of pressure. All the solubility calculations and optimizations (parameter regressions) were executed using MATLAB® 2015b version.