Selection of Novel Solvents for Carbon Dioxide Absorption

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Global warming is a hot issue over the world nowadays. Because of continuous increase of fossil fuel consumption, concentration of carbon dioxide in atmosphere is increasing. Carbon dioxide is responsible for global warming about 60 % according to the report of IPCC. The most promising technique for separation of carbon dioxide in flue gas from a large point source is chemical absorption method. In this study, several new amine solvents were investigated. The candidate solvents were alkanolamine, akylamine with multiple amine group, amino acid. The apparatus was devised to measure the solubility of carbon dioxide, rate of absorption, rate of desorption and temperature increase with operating time. Carbon dioxide was absorbed at 40 °C, desorbed at 70 °C in 3 hours respectively. Concentration of carbon dioxide is 15 v/v % in feed gas with nitrogen as an inert gas and exhaust gas was analyzed with CO_2 analyzer. All the results were compared with those of monoethanolamine(MEA). In this screening test the novel solvent for carbon dioxide separation was suggested and the VLE test and some experiments for physical, kinetic data will be our future work.