MEA and acid recovery in a novel method of the CO_2 absorption for energy reduction

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In the amine-based chemical absorption process, MEA (mono-ethanolamine) has been used largely for capturing CO_2 in the industrial process however; the energy requirement for MEA solvent recovery is higher than that for other amine-based solvents. According to past researches, the energy requirement for amine recovery can be decreased by adding an organic acid in the CO_2 stripping process. This study demonstrates that it is feasible to apply the proposed method for energy reduction in the stripper. Previous work of this study suggested another amine recovery method using an organic acid, and showed how much the method can save energy in the amine recovery. And, this work demonstrates that amine solvent and the acid could be recycled effectively using reaction crystallization. To show that the recycling of amine solvent and the acid are possible, the solubility of the organic acid and the organic acid salts were measured after reaction crystallization. Also, percent recovery of MEA and percent loss of acid were estimated through these data.