Separation of CH_4 from landfill gas using chemical absorption

앙꿀 가르, 송호준, 박종진, 장정화, 박진원*, 마킨 산지브
연세대학교
(jwpark@yonsei.ac.kr*)

Landfill gas consists mainly of CH_4 and CO_2. Both of these gases are green house gases and methane has 21 times higher global warming potential than CO_2. CH_4 has high calorific value. Separating CH_4 from CO_2 would be of great interest. Purified methane can be used in various applications. CO_2 can be captured and stored. There are numerous processes of separating this mixture such as PSA, membrane separation and liquid absorption. This work focuses on liquid absorption since it is very effective and economical method as compared to the other options. It is also the widely used method for CO_2 capture. Liquid absorbents like Monoethanolamine (MEA), Dietanolamine (DEA), Methyldietanolamine (MDEA), Isobutanolamine (AMP), and piperazine have been used for CO_2 absorption. Vapor liquid equilibrium (VLE) apparatus is used to calculate the solubility of CO_2 in various liquid absorbents as mentioned above. Comparison is done with pure CO_2 solubility in absorbents.