

Recent advances in post combustion CO₂ capture by absorption

Neel Thakker^{1*} and Mr. Anirban Dey²

Pandit Deendayal Petroleum University, India

Over past few decades, drastic climatic changes throughout the globe have gained the worldwide attention. There is a rapid increase in the amount of greenhouse gases, essentially carbon dioxide which is major concern for developing a sustainable future. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily due to fossil fuel emissions. Due to which gas treating has become one of the significant areas of research. These processes are facing a transition over past few years. Various technologies have emerged at different stages of industrial expansion to reduce the emission of carbon dioxide in flue gases. Carbon dioxide can be captured out of air or fossil fuel power plant flue gas using various technologies viz adsorption gas separation, cryogenic separation, membrane separation or absorption technologies. Out of these, chemical absorption is the most promising method available that helps in CO₂ capture. Amines are the leading carbon scrubbing solvents due to its high flexibility and easy retrofit in existing power plant. The operation of the chemical absorption process is reviewed in this work together with the use of absorbents such as the alkanolamines, and their blended solvents. In addition to this, a cost effective and energy efficient process is proposed for industrial application.