Soon Kwan Jeong et al., Mod Chem Appl 2017, 5:3(Suppl)
DOI: 10.4172/2329-6798-C1-006

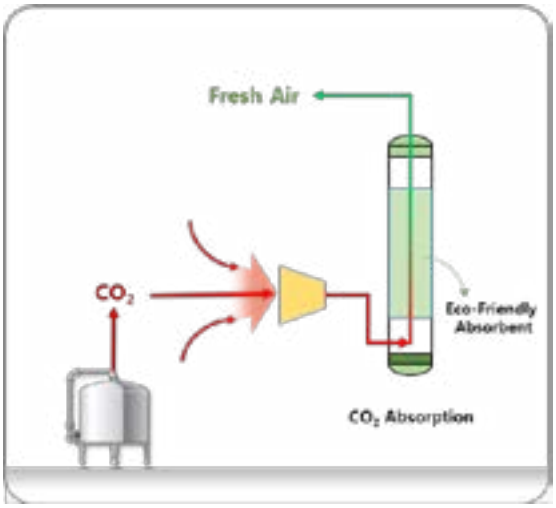
5th Global Chemistry Congress

September 04-06, 2017 | London, UK

Amino-acids salt solutions for CO_2 capture from flue gases

Soon Kwan Jeong and **K T Park**
Korea Institute of Energy Research, South Korea

Anthropogenic carbon dioxide (CO_2) is a major greenhouse gas that acts as a blanket to absorb thermal radiation emitted by the earth's surface. Many studies have introduced new technologies for CO_2 capture; however, the quest for feasible capture technologies continues. Amino acid salt solutions have distinguished features such as fast reaction kinetics, high cyclic loading capacity, and good stability towards oxygen, low vapor pressure and biodegradable property. In this study, the CO_2 absorption capacity, absorption rate and heat of absorption of the aqueous potassium salts of amino acids were investigated using semi-batch absorption system, wetted wall column and a differential reaction calorimeter (DRC). The results were compared to amine solvents. The CO_2 loading capacity of amino-acids salts solutions showed higher than that of amine solutions. The CO_2 loading capacities were found to be 0.50 and 0.68 mol of CO_2/mol of solvent for aqueous MEA and potassium salt of L-alanine at 298 K, respectively. The heat of regeneration depends on the heat of absorption as well as sensible heat and latent heat. Therefore, the heat of absorption can be used as useful data for the continuous process. MEA and DEA showed 81.77 kJ/mol of CO_2 and 67.06 kJ/mol of CO_2, respectively. Among the amino-acids slats solutions, potassium salt of L-alanine showed the lowest heat of absorption of 53.26 kJ/mol CO_2. Amino-acids salts solutions had the higher CO_2 loading capacity and lower heat of absorption than those of MEA. Therefore, amino-acids salts solutions are deemed to be the potential CO_2 absorbent to replace the existing system.



Biography

Soon Kwan Jeong received BS degree in Chemical Engineering and PhD degree in Chemical Engineering both from Korea University, South Korea, in 1993 and 2000, respectively. From 1992 to 1994, he was a Researcher at Honkook Tire Co., Seoul. From 2005 to 2006, he was a Postdoctoral Fellow with Pratim Biswas at Washington University. He is currently a Principal Researcher at Korea Institute of Energy Research, South Korea. His research interests include "Biomimetics, material science and engineering for CO2 capture and conversion".

jeongsk@kier.re.kr

Notes: