

Mass transfer study on CO₂ absorption into ammonia solution using structured packing

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Recently, ammonia solution has been suggested as a new absorbent, which has larger capacity of CO₂ compared to amine solution, low regeneration energy required, low material cost, and potential ability to capture acidic gases in flue gas. The present study provides comprehensive experimental data on the performance of structured packing in CO₂ absorption application using ammonia solution. The volumetric overall mass transfer coefficient ($K_G a_v$) was investigated with an absorption column packed with high-efficiency Gauze packing ($a=700 \text{ m}^2/\text{m}^3$). The $K_G a_v$ was evaluated over ranges of main operating variables; that is, up to 72.4–106 kmol/(m²h) gas molar flux, 9.5–23.7 m³/(m²h) liquid molar flux, 10–25 kPa partial pressure, and 7–17 wt% liquid concentration with different lean CO₂ loaded solutions.