# $CO_2$ Absorption Study of New Multipurpose Amine, KIER-C3

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In recent years, the removal of carbon dioxide ($CO_2$) as a greenhouse gas has been investigated for industrial purposes because of the global warming and environmental problems. Several absorbents are already used in many industries for removing $CO_2$ due to several reasons: different reaction properties and mechanisms, etc.
However the process of $CO_2$ with general amine absorbents was clarified, it is still hard to clear up the mechanism of absorption process between acidic gases and amine absorbents, especially new amine absorbents which is not studied well.
In this study, $CO_2$ capacity of absorption was compared with several new amine candidates (KIER-C3, C5, H1, H2, and G1) against well-known amine absorbents (MEA, MDEA, AMP). Among new amine candidates, KIER-C3 has the most effective capacity (around 3 $CO_2$ mol/amine mol) so it is selected to examine the process of $CO_2$ absorption. KIER-C3 is a cyclic amine compound which has two amine groups. Using CAChe simulating program, KIER-C3 was calculated to describe the absorption process of $CO_2$ and was expected possible mechanisms.