

## Experimental and Modeling Study of CO<sub>2</sub> Solubility in Aqueous Blended Amine Solutions for Estimating Regeneration Energy of Post Combustion Carbon Capture Process

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Newly measured experimental data of CO<sub>2</sub> solubilities in aqueous MEA (primary), DIPA (secondary), MDEA (tertiary), AMP (steric hindrance) and their mixture solutions are provided with thermodynamic models, such as Kent Eisenberg, Deshmukh Mather, and electrolyte NRTL models. The solubility measurements were carried out over a wide temperature range and at various amine concentration conditions with static method. The successive substitution method was introduced for calculating mole fractions of all electrolytes from equilibrium, material and charge balance equations simultaneously. CO<sub>2</sub> partial pressure, liquid phase concentrations for all components including carbamates, pH, and the heats of absorption for all amine concentrations, temperatures, and CO<sub>2</sub> loading conditions could be obtained. Also a simple method to estimate the regeneration energy in amine-based wet scrubbing processes was proposed.