

## CO<sub>2</sub> Utilization by Chemical Conversion Applying Inorganic Carbonation Using Seawater-based Wastewater

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In this study, characteristics of carbon dioxide (CO<sub>2</sub>) capture and its chemical conversion to calcium carbonate salt was studied. Indirect inorganic aqueous carbonation methods were applied and seawater-based wastewater was used as the calcium ion supplying source. The absorbent solutions of monoethanolamine (MEA), diethanolamine (DEA), and methyldiethanolamine (MDEA) were used with concentrations of 30 wt%. CO<sub>2</sub> loading data for each absorbent solutions were provided. X-ray diffraction and scanning electron microscopy showed the crystal structure of the products to be aragonite mixed with vaterite as a result of carbonation. Furthermore, the CO<sub>2</sub> capture capacity of each absorbent and the amount of CO<sub>2</sub> desorbed by the carbonation reaction were investigated. The results may support the design of carbon capture and utilization plants and potential market research.