

Carbon Utilization by forming Precipitated Calcium Carbonate by Chemical Conversion at Moderate Condition

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In this research, possibility for carbon utilization at moderate temperature and pressure was studied. 5 and 30 wt% of alkanolamine solutions were used as absorbents and calcium oxide solution was used to convert ionic carbon dioxide into precipitated calcium carbonate. Monoethanolamine, diethanolamine, N-Methyldiethanolamine were used as primary, secondary and tertiary amines since CO₂ absorption properties were related with the order of amines. Unlike other carbon fixation methods which are operated at high temperature and pressure, all of the experiments in this research were performed at mild conditions which means less energy was consumed in our research. Absorption and desorption experiments were conducted to investigate how much carbon dioxide is absorbed and converted.

Also, X-ray diffraction(XRD) analysis were performed and SEM images were obtained to verify that the solid formed after conversion was precipitated calcium carbonate.