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Analysis of CO_2 Capture Products from Carbon Capture and Utilization Plant

Authors : Bongjae Lee, Beom Goo Hwang, Hye Mi Park

Abstract : CO_2 capture products manufactured through Carbon Capture and Utilization (CCU) Plant that collect CO_2 directly from power plants require accurate measurements of the amount of CO_2 captured. For this purpose, two tests were carried out on the weight loss test. And one was analyzed using a carbon dioxide quantification device. First, the ignition loss analysis was performed by measuring the weight of the sample at 550°C after the first conversation and then confirming the loss when ignited at 950°C. Second, in the thermogravimetric analysis, the sample was divided into two sections of 40 to 500°C and 500 to 800°C to confirm the reduction. The results of thermal weight loss analysis and thermogravimetric analysis were confirmed to be almost similar. However, the temperature of the ignition loss analysis method was 950°C, which was 150°C higher than that of the thermogravimetric method at a temperature of 800°C, so that the difference in the amount of weight loss was 3 to 4% higher by the heat loss analysis method. In addition, the tendency that the CO_2 content increases as the reaction time become longer is similarly confirmed. Third, the results of the wet titration method through the carbon dioxide quantification device were found to be significantly lower than the weight loss method. Therefore, based on the results obtained through the above three analysis methods, we will establish a method to analyze the accurate amount of CO_2. Acknowledgements: This work was supported by the Korea Institute of Energy Technology Evaluation and planning (No. 20152010201850).

Keywords : carbon capture and utilization, CCU, CO2, CO2 capture products, analysis method
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