

Adsorption of Carbon Dioxide using Polyethyleneimine Based Silica

이광진, 노경호^{1,*}, 주도¹
(재)충북테크노파크; ¹인하대학교
(rowkho@inha.ac.kr*)

In order to find an ideal adsorbent for carbon dioxide capture, a new polyethyleneimine modified silica gel material had been synthesized with simple procedure. Three silica gel materials with various particle sizes (15, 25 and 40–63 μm) were prepared and functionalized with polyethyleneimine. The carbon dioxide adsorption amounts of modified silica gel and non-modified silica gel were calculated using a mass balance equation at three different temperatures (298.15, 308.15 and 318.15 K), respectively, and the influences of gas pressure and particle size on adsorption were discussed. The experiment data showed that the carbon dioxide adsorption capacity of modified silica gel was better than non-modified silica gel, and with the temperature increasing, the adsorption capacity gradually decreased. The smaller particle size (15 μm) PEI modified silica gel had the largest adsorption capacity at 298.15 K, which relating to highest amino surface density in this material.