중기공 탄소의 탄화온도에 따른 이산화탄소 흡착 거동

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Effect of Carbonization Temperature on Carbon Dioxide Adsorption Behaviors of mesoporous carbon

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In this study, we prepared the nitrogen-containing carbon spheres with mesopore processed by a facile polymerization-induced colloid aggregation method including carbonization in order to investigate the characterization and the effect on their carbon dioxide adsorption behaviors. The carbonization temperature was varied in the range of 600℃ to 900℃. The nitrogen contents of the mesoporous carbon sphere were characterized using XPS. The carbon dioxide adsorption capacities of the prepared mesoporous carbon sphere were determined by the amounts of carbon dioxide adsorptions at 298 K and 1.0 atm. The results showed that the prepared mesoporous carbons were highly effective for the carbon dioxide adsorption due to the increasing the affinity of the basic functionalities of adsorbent surface to acidic carbon dioxide. Maximum adsorption capacities of carbon dioxide at 25℃ were achieved up to 106 mg/g.

Key words : Carbon spheres(탄소구), Mesopore(중기공), Carbon dioxide(이산화탄소), Adsorption(흡착)

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메조포어러스카본의 마그네슘 옥사이드의 처리에 따른 이산화탄소 흡착 거동

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Influence of Magnesium Oxide on Carbon Dioxide Adsorption Behaviors of Mesoporous Carbons

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In this study, we prepared the magnesium oxide decorated ordered mesoporous carbons processed by the reduction of magnesium oxide precursor on the CMK-3 surfaces in order to investigate the characterization and the effect on their carbon dioxide adsorption behaviors. The magnesium contents of the prepared samples were characterized using XPS. The textural properties of the prepared samples were investigated by N_2/77 K adsorption isotherms by BET equation. The carbon dioxide adsorption capacities of the prepared samples were investigated by the amounts of carbon dioxide adsorptions at 298 K and 1.0 atm. The results showed that the magnesium oxide on the CMK-3 surface enhanced interaction between carbon dioxide and adsorbents. Consequently, it was found that the magnesium oxide led to an increase in the carbon dioxide adsorption capacity of the CMK-3

Key words : Magnesium oxide(마그네슘 옥사이드), ordered mesoporous carbons(중기공 탄소), adsorption(흡착), CMK-3(메조포어러스카본)

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