

Synthesis of microcarbons from furfuryl alcohol

김태환*, 손석진, 손병배, S. Vijayalakshmi¹
한국에너지기술연구원; ¹IIT-Bombay India
(thkim@kier.re.kr*)

Template synthesis of microporous carbon and nanocarbons have come a longway in the past few years. In this work, highly porous carbons are synthesized using zeolite Y template by polymerization and pyrolysis of furfuryl alcohol. Impregnation of the zeolite Y using furfuryl alcohol for different duration, polymerization and further pyrolysis of the furfuryl alcohol at different temperatures are studied. The zeolite template is removed by the conventional hydrogen fluoride dissolution method. The samples thus prepared was characterized using XRD, SEM, TEM, etc. The XRD of the various carbons prepared showed a broad peak at 2θ , 8 to 18, which shows that the continuous structural regularity of the zeolite Y used for templating is not imparted to the microcarbons prepared. The SEM and TEM analysis showed a well defined morphology as that of the zeolite Y. The polymerization temperature (150 -250°C) and the pyrolysis temperature (700 - 900°C) was studied. The sample pyrolysed at 700°C was found to have more microporosity than that pyrolysed at 900°C. The BET surface area was in the range 1000 to 2000 m²/g. The adsorption of CO₂ and other gases are being studied to characterize the microporosity of the sample prepared. The CO₂ adsorption capacity is found to be > 150mg/g.