

Olefin/Paraffin Separation using Ordered Mesoporous Silica

김성수, 강민¹, 이형익, 고창현², 김종남², 김지만*
성균관대학교; ¹EnD solution; ²한국에너지기술연구원
(jimankim@skku.edu*)

1-butene is produced through separation processes from C4 fractions in the naphta cracking center of a petrochemical plant. There have been a lot of works in order to develop an excellent adsorbent for separation of olefin and paraffin. The discovery of ordered mesoporous silica, MCM-41, has generated tremendous interest in the field of catalysis, separation science and advanced materials. In the present work, the adsorption characteristics of mesoporous MCM-41 containing cuprous, ferrous ions and its complexes for 1-butene and n-butane were studied. In case of MCM-41 containing cuprous/ferrous pair ions, the sorbents exhibit much higher adsorption amount for 1-butene than n-butane, compared to those of 13X zeolite and Cu/MCM-41. The adsorption amount of 1-butene is dramatically increased due to the π -complexation. The MCM-41 containing equal molar ratio of cuprous and ferrous exhibit the high 1-butene/n-butane adsorption ratio at low pressure (100 Torr)