CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

Effects of zeolite type, adsorbate concentration and temperature were studied here. *KBaX* and *KY* zeolites were chosen as the adsorbents for this study. Roughly, concentrations of each C_8 aromatics were varied from 1.25 to 20% by weight at the temperatures of 40, 65 and 90°C.

The *KBaX* zeolite adsorbed *p*-xylene more than the other aromatics, and *o*-xylene was the least adsorbed species at high xylene/toluene mole ratios. However, at low xylene/toluene mole ratios, *o*-xylene was the most adsorbed aromatic.

The *KY* zeolite adsorbed *p*-xylene more than the other aromatics, and *o*-xylene was the least adsorbed aromatic at high xylene/toluene mole ratios. At low xylene/toluene mole ratios, unlike the *KBaX* zeolite, the *KY* zeolite adsorbed about the same amounts of the C_8 aromatics. The *KY* zeolite had an ability to adsorb more C_8 aromatics than the *KBaX* zeolite.

As the adsorption process is exothermic, the zeolites adsorbed all the species less at higher temperature. But, at full capacity of both zeolites, temperature had very little effect on the selectivity of *p*-xylene relative to the other C_8 aromatics and toluene. The *KBaX* and *KY* zeolites selectively adsorbed *p*-xylene more than toluene while they adsorbed more toluene than the other C_8 aromatics.

Although this work provides some insight on the xylene adsorption, more work should be done to investigate effects of other xylenes, if present at the same time, on the adsorption behavior. Moreover, water content in the zeolite or %lost of ignition (%LOI) deserves some attention because it may affect adsorption capacity of the zeolite and their selectivity.