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YONGYUTH SAENSUPHAN : ADSORPTION ISOTHERMS OF CONCENTRATED HYDROCARBON GASES ON ZEOLITES. THESIS ADVISOR : DEACHA CHATSIRIWECH, Ph.D. 105 pp. ISBN 974-332-096-2.

Adsorption isotherms of methane, ethane and propane on NaA, NaX and NaY zeolites at temperatures between 35-100 °C were measured by the dynamic column breakthrough method. Within the partial pressure range of 20-160 kPa, all isotherms agreed with both Langmuir and Freundlich models. However, the isotherms tended to be linear as an increase in temperature. The dependence of adsorption Langmuir constant on temperature corresponded with van't Hoff equation. Propane was adsorbed more strongly than ethane and methane, respectively. While the maximum amount adsorbed of methane was greater than that of ethane and propane, respectively. Although NaY provided more adsorption area than NaX and NaA, respectively, the area of NaA was utilized more effectively than that of NaX and NaY, respectively. The results of monolayer adsorption at low temperature could be depicted as adsorption on cation sites of uniform two-dimensional framework models. Only the heats of adsorption of methane on NaA and NaX were less the heat of condensation of the normal boiling point.

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