3936628 SCAI/M: MAJOR: APPLIED ANALYTICAL AND INORGANIC CHEMISTRY; M.Sc. (APPLIED ANALYTICAL AND INORGANIC CHEMISTRY)
KEY WORDS: CLAY MINERAL/ EXCHANGE CAPACITY/ POTENTIOMETRY
PRANORM SAEJUENG: CATION-EXCHANGE PROPERTIES OF SOME CLAY MINERALS. THESIS ADVISORS: NOPADOL CHAIKUM Ph.D., LADDAWAN PDUNGSAP Ph.D., PRAPIN WILAIRAT Ph.D. 108 P. ISBN 974-662-407-5

The cation exchange capacity (CEC) of clay mineral, kaolinite, was determined using two methods: saturation and equilibration methods. Variations of CEC with the nature of the exchanging cations, pH and temperature were studied. The saturation method results in CEC approximately twice as great as that from the equilibration method, except for transition metal cations. In general, cations of higher charge and smaller size give higher CEC's. Increasing pH and temperature also increase the CEC but the effect of temperature is small.

The $H^+$-exchanged clays were titrated against NaOH and KOH to study the potentiometric behavior of the clays. The titration curves obtained for all types of clays resemble those for weak diprotic acids, indicating that each clay structure has two weak acidic sites. The acid dissociation constants, $K_{a_1}$ and $K_{a_2}$, are in the order of $10^{-5}$ and $10^{-7}$ which are attributed to the neutralization at the interlayer and the edge sites, respectively. These results also agree with the result from titration of $H^+$-exchanged clays differing in particle size and the polymer-intercalated $H^+$-exchanged clays.