

Lithium Adsorption of various Dilithium Dioxido(oxo)manganese-based Adsorbents

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Lithium adsorbents were prepared from dilithium dioxido(oxo)manganese (Li_2MnO_3) by acid treatment using 2.5 N H_2SO_4 at 75°C for 24 hr. The Li_2MnO_3 were synthesized by solid-state reaction between Li_2CO_3 and MnCO_3 at $500\text{--}700^\circ\text{C}$. Li^+ adsorption capacity (Q) of the adsorbents ranged between 75.65 ± 0.02 and 99.87 ± 0.04 mg Li^+ /g adsorbent according to elemental analysis and acid-base titration. The BET surface area of the adsorbents increased by 17–56 folds after Li^+ leaching. Li^+ adsorptions increased with pH increased. Maximum Q of the adsorbents were between 13.06 ± 0.06 and 23.49 ± 0.45 mg Li^+ /g adsorbent. The highest Q value was obtained from Li_2MnO_3 fabricated at 500°C . This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST) (No. 2012R1A2A1A01009683 and 2012-0006693).