

### Preparation and Application of MnO/C Nanocomposite for $\text{LiMn}_2\text{O}_4$ - MnO/C Li-Ion Battery

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Manganese oxides are promising anode materials for lithium ion battery because they have high theoretical conversion capacities ( $1233\text{mAh g}^{-1}$  for  $\text{MnO}_2$  and  $937\text{mAh g}^{-1}$  for  $\text{Mn}_3\text{O}_4$ ) with low cost and exhibit low voltage plateau (around  $0.4\text{V}$  for  $\text{MnO}_2$  and  $\text{Mn}_3\text{O}_4$ .) compared to other transition metal oxides. However, it has been difficult to practice their high theoretical capacity and cycling stability due to low electrical conductivity and large volume changes during the charge-discharge conversion processes. In this study, manganese oxide/mesoporous carbon foams (CF) nanocomposite was prepared by impregnation of manganese precursor solution onto CF followed by thermal annealing in Ar flow. Electrochemical properties of thus prepared MnO/CF not only as a half cell but as a full cell configuration of  $\text{LiMn}_2\text{O}_4$ -MnO/CF were investigated by cyclic voltammetry, galvanostatic charge-discharge cycling and rate capability tests.