

Synthesis of Manganese Oxide Using Ni Additive for Li-ion Batteries

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Graphite has been widely used as the anode material of commercial Li-ion batteries. With the growing demands of high-capacity secondary batteries, the low capacity of graphite has been looked upon as the limiting factor in wide applications and new anode materials with high capacity have been sought. Meso-Mn₂O₃ showed the best anode performance. Because It has high capacity and good coulombic efficiency. However, its irreversible capacity comes to about 50% of initial capacity, the initial coulombic efficiency needs improvement in order to commercialize meso-Mn₂O₃ as the anode material of Li-ion batteries. Because it was reported that lithium ion battery is cycled through the formation and decomposition of SEI a poor decomposition of SEI at the first charge can be regarded as the cause of high initial irreversible capacity. Therefore addition of Ni to Mn₂O₃ was selected as a method to decrease the initial irreversible capacity. Meso-Mn₂O₃ addition of Ni was synthesized using KIT-6 and analyzed by XRD, Nitrogen adsorption and SEM