

LiNi_{0.5}Mn_{1.5}O₄ cathode via carbon combustion method and Li₄Ti₅O₁₂ anode for lithium ion battery

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We investigated the electrochemical performance of the spinel compound LiNi_{0.5}Mn_{1.5}O₄ and Li₄Ti₅O₁₂. The LiNi_{0.5}Mn_{1.5}O₄ was synthesized by carbon combustion method as a cathode material. We used a commercial product Li₄Ti₅O₁₂ as an anode material in this work. The electrolyte was 1.15 M of LiPF₆ in EC-EMC-DMC (3:3:4). The LiNi_{0.5}Mn_{1.5}O₄ / Li₄Ti₅O₁₂ full cells were designed to obtain negative-to-positive (N/P) capacity ratios. The thicknesses and loading densities of the positive and negative electrodes depended on the mass ratio of electrodes. The ratio was about 2:3. The assembled full-cell of LiNi_{0.5}Mn_{1.5}O₄ / Li₄Ti₅O₁₂ exhibited good cycling performance between 1.5 V and 3.2 V. The capacity retentions were 85 % after 50 cycles.