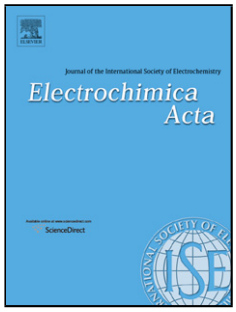

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$Co_3V_2O_8$ Hexagonal Pyramid with Tunable Inner Structure as High Performance Anode Materials for Lithium Ion Battery

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ABSTRACT: $Co_3V_2O_8$ hexagonal pyramid was successfully fabricated *via* a simple hydrothermal process and subsequent heat treatment. The inner structure of the hexagonal pyramid was further adjusted by controlling the size of $Co_7V_4O_{16}(OH)_2(H_2O)$ precursors. Hierarchical $Co_3V_2O_8$ hexagonal pyramid with height of 1 μm were orderly constructed from 60-80 nm inter-connected particles, showing numerous interval voids. Benefiting from its unique structure, the as-prepared sample showed higher electrochemical performance as an anode material for lithium-ion batteries than that of another bulk sample with height of 5 μm and adhesive inner structure. When tested at a current density of 500 mA g^{-1}, the hierarchical $Co_3V_2O_8$ hexagonal pyramid exhibited good rate capacity, high cycling stability, and excellent discharge capacity up to 712 mA h g^{-1}, making it promising electrode materials for lithium-ion batteries.

Keywords: $Co_3V_2O_8$; ; ; ; , hexagonal pyramid, hierarchical architecture, anode material, lithium-ion batteries

1. Introduction