

Study on structural and electrochemical properties of cobalt oxide anode material prepared by hydrothermal method at different reaction conditions

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Recent research on the anode material for lithium ion battery has been focused on carbonaceous materials and alternative materials like tin oxide, cobalt oxide etc. Cobalt oxide belongs to a cubic closely-packed structure of oxide ions and has attracted extra attention due to the broad range of applications such as heterogeneous catalysts, anode materials in Li-ion rechargeable batteries, solid-state sensors. Cobalt oxide has received much attention as an anode material for lithium secondary batteries and which has a good electrochemical capacity and high recharging rate.

Co₃O₄ was successfully prepared using hydrothermal method at various reaction and heat treatment conditions from cobalt nitrate, hexamethylenetetramine, and trisodium citrate. Characterization of the as prepared Co₃O₄ was done by X-ray diffraction (XRD), scanning electron microscopy (SEM). Co₃O₄ electrodes were prepared by mixing the active material, PVdF binder, and a carbon conductor. The electrochemical properties of Co₃O₄ as an anode material will be discussed.