

عنوان مقاله:

Diamond like LiFePO₄ as cathode material for high energy Lithium ion batteries

محل انتشار:

دومین کنفرانس بین المللی رویکردهای نوین در نگهداشت انرژی (سال: 1391)

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خلاصه مقاله:

A novel method has been developed to fabricate LiFePO₄ diamond arrays, during which polyethylene glycol was employed as the template. After being hydrothermally processed at 160 °C, the highly-crystallized LiFePO₄ arrays were directly obtained. Which are composed of single crystal diamond with a thickness of 550 nm - 2.5 μm. The reported synthesis is simple, mild and energy efficient. The structural, morphological and electrochemical properties were investigated by means of X-ray diffraction (XRD), scanning electron microscopy (SEM), electrochemical impedance spectroscopy (EIS), cyclic voltammetry. To further understand the electrochemical performance of powder, the galvanostatic charge-discharge curves of the sample were measured. Content Fe³⁺ and Li⁺ of samples were tested with spectrophotometric method and flame AAS, respectively. Diamond shaped LFP exhibit the best original capacities. The results showed that initial discharge capacity of LiFePO₄ was 143 mAh g⁻¹. The results from CV and EIS suggested that the diamond-like LFP during the chargedischarge which led to enhance Li ion diffusion and electrochemical performance

کلمات کلیدی:

LiFePO₄, Cathode, Li-ion battery

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