

研究论文

不同碳源对LiFePO<sub>4</sub>/C复合正极材料性能的影响

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**摘要** 采用固相反应法在惰性气氛下合成了橄榄石型LiFePO<sub>4</sub>/C复合正极材料. 采用XRD, SEM和激光粒度分布(LSD)以及电化学测试等手段对目标材料进行了结构表征和性能测试. 考察了葡萄糖、乙炔黑以及石墨等不同碳源对目标材料性能的影响. 结果表明, 以葡萄糖作为碳源的正极材料具有优良的电化学性能, 首次放电比容量达142.5 mAh/g, 循环30次后, 容量衰减只有2.5%. 分析了不同碳源对目标材料性能影响的原因.

**关键词** [碳源](#) [磷酸亚铁锂](#) [橄榄石型](#) [正极材料](#)

分类号

## Effects of Different Carbon Source on the Performance of LiFePO<sub>4</sub>/C Composite Cathode

### Material

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**Abstract** Olivine LiFePO<sub>4</sub>/C composite cathode materials were synthesized by a solid state method in an inert atmosphere. The crystal structure and the electrochemical performance were characterized by XRD, SEM, laser particle-size distribution measurement and electrochemical performance testing. The effects of different carbon source, such as dextrose, acetylene black and graphite, on the performance of as-synthesized cathode materials were investigated and the causes also analyzed. The results demonstrated that the composite material carbon-doped by dextrose had the most excellent electrochemical performances. The initial discharge capacity, namely 142.5 mAh/g, was delivered at room temperature and C/20 discharge rate. After 30 cycles, the capacity fade was only 2.5%.

**Key words** [carbon source](#) [lithium iron\(II\) phosphate](#) [olivine](#) [cathode material](#)

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