

研究论文

复合物 $\text{LiFePO}_4/\text{CaB}_6$ 的结构与性能研究

刘善科¹, 董全峰^{1,2}, 郑明森¹, 金明钢², 詹亚丁^{1,2}, 林祖赓^{1,2}, 孙世刚¹

1. 厦门大学固体表面物理化学国家重点实验室, 化学化工学院化学系;
2. 厦门大学宝龙电池研究所, 厦门 361005

收稿日期 2006-4-13 修回日期 网络版发布日期 2007-2-7 接受日期

摘要 采用固相法合成了纯的 LiFePO_4 , 并通过两种不同的方法合成了不同 CaB_6 含量的复合物 $\text{LiFePO}_4/\text{CaB}_6$. 对这些产物进行了粒度、形貌、电导率、振实密度、X射线衍射和充放电性能的研究. 实验结果表明, CaB_6 的掺入虽然没有明显地提高产物的比容量, 但却显著地增加了产物的振实密度和电导率. 第二种方法合成的产物性能更好, 其电导率提高了5个数量级, 振实密度提高了65%.

关键词 [复合物 \$\text{LiFePO}_4/\text{CaB}_6\$](#) - [电导率](#) [振实密度](#) [晶胞参数](#) [比容量](#)

分类号 [O646](#)

DOI:

Structure and Performance of $\text{LiFePO}_4/\text{CaB}_6$ Composites

LIU Shan-Ke¹, DONG Quan-Feng^{1,2}, ZHENG Ming-Shen¹, JIN Ming-Gang², ZHAN Ya-Ding^{1,2}, LIN Zu-Geng^{1,2}, SUN Shi-Gang¹

1. State Key Laboratory for Physical Chemistry of Solid Surface, College of Chemistry and Chemical Engineering,
2. PowerLong Battery Institute, Xiamen University, Xiamen 361005, China

Received 2006-4-13 Revised Online 2007-2-7 Accepted

Abstract In order to improve the electric conductivity and tap density of lithium iron phosphate, CaB_6 was used as a new additive for the first time. LiFePO_4 was synthesized by solid state reaction and $\text{LiFePO}_4/\text{CaB}_6$ composite with different contents of CaB_6 was prepared by two different methods. The samples were characterized by granularity, morphology, electric conductivity, tap density, X-ray diffraction and charge-discharge performance. The results show that although the specific capacity of these materials doped with CaB_6 was not improved significantly, the tap density and electronic conductivity of these composites increased. The samples synthesized by the second method exhibit much better performance, and the electronic conductivity of the materials is enhanced by five orders of magnitude and the tap density by 65%.

Key words [LiFePO₄/CaB₆ composite](#); [Electronic conductivity](#); [Tap density](#); [Unit cell parameter](#); [Specific capacity](#)

通讯作者:

董全峰 qfdong@xmu.edu.cn

作者个人主页: 刘善科¹; 董全峰^{1,2}; 郑明森¹; 金明钢²; 詹亚丁^{1,2}; 林祖赓^{1,2}; 孙世刚¹

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