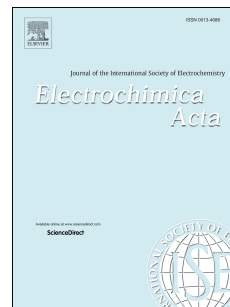


Accepted Manuscript

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PII: S0013-4686(18)31437-3

DOI: [10.1016/j.electacta.2018.06.149](https://doi.org/10.1016/j.electacta.2018.06.149)

Reference: EA 32142

To appear in: *Electrochimica Acta*

Received Date: 27 May 2018

Revised Date: 22 June 2018

Accepted Date: 24 June 2018

Please cite this article as: C.-s. An, B. Zhang, L.-b. Tang, B. Xiao, J.-c. Zheng, LiFePO₄ cathode material modified with nitrogen/sulfur co-doped graphene for high-power Li-ion batteries, *Electrochimica Acta* (2018), doi: 10.1016/j.electacta.2018.06.149.

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LiFePO₄ cathode material modified with nitrogen/sulfur co-doped graphene for high-power Li-ion batteries

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ABSTRACT: LiFePO₄ is one of the most promising cathode materials for Li-ion batteries. However, its low electronic conductivity and slow Li-ion diffusion rate lead to poor electrochemical performance, especially poor rate performance. The hybrid of LiFePO₄/Nitrogen and Sulfur co-doped graphene is successfully synthesized via a self-assembly method. Given its Nitrogen and Sulfur co-doped graphene matrix, the hybrid exerts a significantly impact on the electron conductivity of LiFePO₄, resulting in excellent electrochemical properties and power density. The LiFePO₄ composite has reversible capacity of 106.1 mAhg⁻¹ at 10 C and 94.6 mAhg⁻¹ at 15 C. Moreover, with less than 5% loss of discharge capacity after 500 cycles at 10 C, the Nitrogen and Sulfur co-doped graphene can effectively improve the electrochemical performance of LiFePO₄.

KEYWORDS: LiFePO₄; high power; co-doped; graphene; self-assembly

1. INTRODUCTION

With the escalating serious energy crisis, rechargeable Li-ion batteries (LIBs) are used to meet the increasing energy demand of modern society. LIBs are

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