

Accepted Manuscript

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PII: S0167-577X(18)30162-9
DOI: <https://doi.org/10.1016/j.matlet.2018.01.144>
Reference: MLBLUE 23792

To appear in: *Materials Letters*

Received Date: 29 November 2017
Revised Date: 15 January 2018
Accepted Date: 26 January 2018

Please cite this article as: H. Chen, X. Zhu, Y. Chang, J. Cai, R. Zhao, 3D flower-like CoS hierarchitectures recycled from spent LiCoO₂ batteries and its application in electrochemical capacitor, *Materials Letters* (2018), doi: <https://doi.org/10.1016/j.matlet.2018.01.144>

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3D flower-like CoS hierarchitectures recycled from spent LiCoO₂ batteries and its application in electrochemical capacitor

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Abstract

As more and more lithium ion batteries are scrap to recycle in recent years, developing high-efficient recycling method is crucial and urgent. In this paper, LiCoO₂ wastes are employed and the cobalt source is recycled as an active material for supercapacitor, while the lithium source can be recycled as Li₂CO₃. The recycled CoS exhibits a 3D flower-like morphology and superb electrochemical capacity can be obtained due to the unique structure. This method can provide a new thinking to battery recycling, which can be also applied to other battery wastes.

Keywords: CoS; battery wastes; recycling; lithium ion battery; composite materials; energy storage and conversion

1. Introduction

The demand for lithium ion batteries (LIBs) in the fields such as portable electronic devices and electric vehicles has increased quickly over the past several years. It's predictable that the exhausted batteries will be a focus issue in the near

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