

課題番号 : F-16-KT-0057
利用形態 : 機器利用
利用課題名(日本語) :
Program Title(English) : Porous metal oxide/graphene composites for energy storage applications
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1. 概要(Summary)

Although metal oxide nanoparticles are widely investigated for energy storage applications, their generally low electrical conductivity makes it difficult to achieve high performance. One solution for this problem is to add carbon materials to facilitate charge transport. In this study, we load metal oxide nanoparticles onto the surface of porous graphene oxide scaffolds prepared by diffusion driven layer-by-layer assembly, and evaluate the performance of the composites as supercapacitor.

used to explain the material properties of our samples.

(Experimental results are not yet published, so we are not able to present them in this report)

2. 実験(Experimental)

【利用した主な装置】

超高分解能電界放出形走査電子顕微鏡 (C1)
分析走査電子顕微鏡(C2)
X 線回折装置 (C3)

【実験方法】

Sample preparation (iCeMS)

Porous graphene oxide scaffolds were prepared by using a diffusion-driven layer-by-layer (dd-LbL) assembly method [1]. Various metal precursors were reacted with the scaffold to form metal oxide /reduced graphene oxide (rGO) composites.

Sample characterization (Nanohub)

The nanostructure of the composites were examined under SEM of Nanohub. We have also used XRD to determine the material composition.

3. 結果と考察(Results and Discussion)

Through SEM imaging, we have been able to clearly determine the structure of the composites produced at iCeMS. This information has been

4. その他・特記事項(Others)

[1] J. Zou and F. Kim, Nat. Commun. (2014) DOI: 10.1038/ncomms6254.

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5. 論文・学会発表(Publication/Presentation)

Two manuscripts in preparation.

6. 関連特許(Patent)

N/A.