Correction to: Facile One-Step Fabrication of 3-Dimensional SiO₂-C Electrodes for Lithium-ion Batteries Using a Highly Porous SBA-15 Template and Pore-Forming Agent

Seokho Suh¹ · Sunghoon Han¹ · Hocheol Yoon¹ · Hyunso Kim¹ · Jisue Kang¹ · Chanhok Pak¹ · Hyeong-Jin Kim¹

Published online: 22 February 2022

© The Author(s) under exclusive licence to The Korean Institute of Metals and Materials 2022

Correction to: Electronic Materials Letters

<https://doi.org/10.1007/s13391-021-00332-6>

In the original publication, the abstract for this article was inadvertently truncated before the text 'while the typical SiO₂ anode is electrochemically inactive with Li⁺ ions'. The correct abstract is given in this correction.

The original article has been corrected.

Abstract

SiO₂-based anodes have attracted extensive attention due to their high theoretical capacity of 1,956 mAh g⁻¹, stable cycle life, and abundance on Earth. However, their commercialization is still hindered by several intrinsic problems, such as poor electrical conductivity and electrochemical inactiveness. In this study, a 3-dimensional SiO₂/C electrode is fabricated by introducing a pore-forming agent

(polytetrafluoroethylene, PTFE) and partially carbonizing a polyvinylidene fluoride (PVDF) binder. During heat treatment at 600 °C, PTFE powders are unzipped to develop micro-sized pores. Meanwhile, the PVDF binder is partially carbonized to form highly conductive F-doped graphitic carbon. In particular, a highly porous platelet SBA-15 template is used as an SiO₂ active material for large contact areas between SiO₂ and carbonized PVDF. As a result, the structured SiO₂/C anode exhibits better cycle performance and internal resistance than typical SiO₂ electrodes: the structured SiO₂/C anode delivers 294 mAh g⁻¹, while the typical SiO₂ anode is electrochemically inactive with Li⁺ ions.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

The original article can be found online at <https://doi.org/10.1007/s13391-021-00332-6>.

Seokho Suh and Sunghoon Han contributed equally to this work.

✉ Chanhok Pak
chanho.pak@gist.ac.kr

✉ Hyeong-Jin Kim
hjkimc@gist.ac.kr

¹ Graduate School of Energy Convergence, Institute of Integrated Technology, Gwangju Institute of Science and Technology, 123 Cheomdangwagi-ro, Buk-gu, Gwangju 61005, Republic of Korea