Int. J. Electrochem. Sci., 17 **(2022)** Article Number: 220764, doi: 10.20964/2022.07.68

International Journal of
ELECTROCHEMICAL
SCIENCE
www.electrochemsci.org

An Online Method for Power State Estimation of Lithium-Ion Batteries under the Constraints of the Fusion Model Considering Temperature Effect

Jian Wang[1], *Shunli Wang*[1,*], *Chunmei Yu*[1], *Bowen Li*[2], *Mingfang He*[1]

[1] School of Information Engineering, Southwest University of Science and Technology, Mianyang 621010, China;
[2] School of Pharmacy and Life Sciences, Robert Gordon University, Aberdeen, AB10-7GJ, UK
[*]E-mail: wangshunli@swust.edu.com

Received: 1 April 2022 / *Accepted:* 13 May 2022 / *Published:* 6 June 2022

As the main source of energy storage and power supply for new energy vehicles, the state of power of the power lithium-ion battery reflects the maximum power that the vehicle can provide. However, the ambient temperature of the automotive battery pack in the process of use is complex and variable. To address the challenge of achieving high accuracy in power estimation, an adaptive forgetting factor recursive least squares method based on improved bias compensation is proposed to achieve online tracking of state of power estimation with the fusion model limitation of voltage, current and charge state as influence factors and combined with parameter correction of temperature influence. The experiments show that the algorithm has a voltage error lower than 0.08V and an online power calculation error lower than 6W under BBDST conditions.

Keywords: state of power; power lithium-ion battery; adaptive forgetting factor recursive least squares method based on improved bias compensation; fusion model limitation of voltage, current and charge state; parameter correction of temperature influence

FULL TEXT