Jang Myoun Ko et al., Biosens J 2018, Volume 7
DOI: 10.4172/2090-4967-C1-003

Lithium bis(oxalate)borate electrolyte salt for supercapacitors in elevated temperature applications

Jang Myoun Ko and **Choong Sup Yoon**
Hanbat National University, South Korea

The electrolyte plays one of the most significant roles in the performance of electrochemical supercapacitors. Most liquid organic electrolytes used commercially have temperature and potential range constraints, which limit the possible energy and power output of the supercapacitor. The effect of elevated temperature on a lithium bis(oxalate)borate(LiBOB) salt-based electrolyte was evaluated in a symmetric supercapacitor assembled with activated carbon electrodes and different electrolyte blends of acetonitrile (ACN) and propylene carbonate (PC). The electrochemical properties were investigated using linear sweep voltammetry, cyclic voltammetry, galvanostatic charge–discharge cycles, and electrochemical impedance spectroscopy. In particular, it was shown that LiBOB is stable at an operational temperature of 80°C, and that, blending the solvents helps to improve the overall performance of the supercapacitor. The cells retained about 81% of the initial specific capacitance after 1000 galvanic cycles in the potential range of 0–2.5 V. Thus, LiBOB/ACN:PC electrolytes exhibit a promising role in supercapacitor applications under elevated temperature conditions.

Biography

Jang Myoun Ko have been studying electrical energy storage materials including electrolytes and electrodes based on organic and inorganic chemistry for many kinds of batteries and supercapacitors.

jmko@hanbat.ac.kr

Notes: