

Zinc Stannate as anode and Pyrrolidinium-Based Room Temperature Ionic Liquid as electrolyte for Lithium-ion Cells

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Abstract

With the aim to design safer batteries, pyrrolidinium-based room temperature ionic liquids (RTIL) have been used as electrolytes in Li-ion batteries using zinc stannate as the anodic material. The lithium diffusion coefficients were calculated using Electrochemical Impedance Spectroscopy (EIS) data and were $2.37 \times 10^{-12} \text{ cm}^2\text{s}^{-1}$ for MPPyrTFSI and $1.29 \times 10^{-12} \text{ cm}^2\text{s}^{-1}$ for BMPyrTFSI. The performance of the device strongly depended on the cation chemical structure, yielding different specific capacity values of 306.3 mAhg^{-1} for BMPyrTFSI and 269.2 mAhg^{-1} for MPPyrTFSI.

Author keywords

Ionic Liquids
Lithium-ion cells
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