

عنوان مقاله:

The Role and Application of Ionic Liquids in Lithium-ion Batteries

محل انتشار:

اولین همایش ملی باتری لیتیومی (سال: 1400)

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نویسندگان:

S.M.J. Ghavam - Department of Basic Sciences, Tarbiat Modares University, Tehran, ۱۴۱۱۵۱۱۱, Iran

A.A ABBASI - Lithium battery center of excellence, Tehran, Iran

M Ghorbanzadeh - Lithium battery center of excellence, Tehran, Iran

خلاصه مقاله:

Today, the fast improvement and need of inexpensive, lightweight, high-performance, wearable/portable electronic devices in medical systems, aerospace, electric vehicles, etc., strongly attracts researchers to study advanced electrochemical energy storage (EES) devices and technologies. The electrolyte is one of the essential parts of EES devices, like batteries. Besides the stable electrochemical performance and fast ion transport of electrolytes, great endeavors are needed to overcome safety matters because of thermal instability, leakage, and flammability. Much research has been performed on solid polymer electrolytes, but they are still lagging behind for practical purposes. In recent years, ionic liquids (ILs) as electrolytes in lithium-ion batteries applications have received much attention and can be a significant step to achieve success for next-generation EES systems. The low melting point (lower than  $100^{\circ}\text{C}$ ), high ionic conductivity, broad electrochemical potential window (up to  $5.6\text{ V vs. Li}^{+}/\text{Li}$ ), non-flammability, proper thermal stability, low volatility because of cation-anion combinations, and the promising self-healing ability of ILs make them superior as "green" solvents for industrial EES purposes. In this study, we intend to investigate the role and application of ILs in lithium-ion batteries with the help of electrochemical analyzes such as electrochemical impedance spectroscopy (EIS), cyclic voltammetry (CV), etc.

کلمات کلیدی:

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