High-purity dimethyl carbonate and lithium battery

GC/TQ is a powerful technique for the identification of organic volatile compounds. Battery electrolyte is a mixture composed of high-purity organic solvents, electrolyte lithium salt, and many additives, where organic solvents are normally the main component.

Herein, we present an electrolyte design by significantly increasing the LiTFSI salt concentration within the dimethyl carbonate (DMC) solvent to solve the interfacial incompatibility. The increased salt concentration not only leads to the ion association mode"s gradual evolution from a solvent-separated ion pair into a contact ion ...

Lithium-ion batteries (LIBs) are ubiquitous in portable consumer electronic devices and electric vehicles. The development of more efficient and lightweight, higher capacity batteries is a vast ...

As conductive media that facilitate the movement of ions between the cathode and anode, organic electrolytes are essential to LIBs. Owing to their capacity to dissolve lithium salts and promote ion flow, these electrolytes frequently include organic carbonates like ethylene carbonate and dimethyl carbonate. Reversible electrochemical reactions ...

Graphite electrodes cycled in single solvent electrolytes based on dimethyl carbonate (DMC) exhibit surprising and unfamiliar behavior. The electrochemical performance of graphite anodes cycled vs. Li metal in DMC electrolytes, containing 1 M LiPF 6 is strongly dependent on the solvent purity. The behavior of the graphite anodes in ...

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Carbonate-based electrolytes generally suffer from low Coulombic efficiency and poor cycling stability in lithium metal batteries. In this work, localized high concentration electrolytes (LHCEs) based on dimethyl ...

The highly safe electrolyte has a broad application prospect in high energy density Li-metal batteries. The strategies of high concentration, TFSI and FSI dual-anion and co-solvent of ionic liquid and carbonate give electrolytes many merits and offer a significant reference in designing safe electrolytes for practical batteries.

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Realizing the high energy density of lithium batteries depends significantly on creating an electrolyte suited for high-voltage operation and compatible with lithium metal. Generally, a high concentration of solvents within diluted electrolytes may readily form thick and susceptible solid electrolyte interphases, especially when encountering ...

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