Short Communication

The Dependence of the Electrochemical Performance of Ambient Li-SO₂ Primary Cells on the Electrolyte Solvent

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The effect of the electrolyte solvent on the electrochemical performance of ambient Li-SO₂ primary cells was extensively investigated using four organic solvents: acetonitrile (AcN), dimethoxyethane (DME), dimethylformamide (DMF), and dimethyl sulfoxide (DMSO). The cells with DME, DMF or DMSO electrolytes delivered much higher discharge capacities (> 800 mAh/g), compared to those with a conventional AcN electrolyte. The DME electrolyte showed outstanding performance in terms of discharge capacity, rate property and energy density. In particular, the energy density of the test cells with a DME electrolyte was approximately 3.4-fold more than that with an AcN electrolyte when electrolyte solutions were saturated with SO₂.

Keywords: Li-SO₂ primary cells, Organic solvent, Acetonitrile, Dimethoxyethane

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