SPACE POWER SYMPOSIUM (C3)
Advanced Space Power Technologies and Concepts (3)

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A QUICK-CHARGE LITHIUM-ION BATTERY WITH HIGH SPECIFIC ENERGY

Abstract

The quick-charge and lightweight requirement of battery is increasingly outstanding for the power supply and distribution system of future launchers and deep space probes. Due to the good features of high specific energy, low self-discharge, high voltage and no memory effect, the lithium ion battery had gradually displaced the nickel-hydrogen battery and lead-acid battery, and become an important energy storage and power supply device in the spacecraft. However, the quick-charge lithium-ion battery that is relatively mature and used in engineering in domestic currently, with specific energy in 60 - 100 Wh/kg, could not meet the requirement of the future use. In this work, a quick-charge 18650 lithium-ion battery with a capacity of 2000 mAh was prepared. The performance test results showed that this developed battery could charge to 80 percent of its capacity in less than ten minutes, with a specific energy over 160 Wh/kg (6C, 4.2V, 24.1 degrees centigrade). The performance of this developed lithium ion battery could meet the requirements of engineering application, showing a broad potential use in future space vehicles.