K₂NiF₄-type La_{1.8}Sr_{0.2}CuO₄ Cathode for Magnesium-air Battery

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In this study, the K₂NiF₄-type La_{1.8}Sr_{0.2}CuO₄ has been hydrothermal synthesized and applied in Mg-air battery. The hydrothermal time and heat treatment temperature of synthesized La_{1.8}Sr_{0.2}CuO₄ has been discussed. X-ray diffraction (XRD) and scanning electron spectroscopy (SEM) were carried out to demonstrate the crystalline structure and morphology of synthesized materials. The electrochemical impedance and discharge performance were studied to understand the catalytic activities of La_{1.8}Sr_{0.2}CuO₄. The La_{1.8}Sr_{0.2}CuO₄ with active carbon addition (La_{1.8}Sr_{0.2}CuO₄/AC) in Mg-air battery was found to hold specific discharge capacity of 962 mAh g⁻¹ at current density of 40 mA cm⁻², which was higher than that of the bulk electrode (i.e., 782 mAh g⁻¹). The K₂NiF₄-type La_{1.8}Sr_{0.2}CuO₄ has been proved as a potential candidate for air cathode in Mg-air battery.

Keywords: La_{1.8}Sr_{0.2}CuO₄; K₂NiF₄-type; Mg-air battery; discharge capacity; cycle stability

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