Short Communication

Preparation of RGO/NiO Anode for Lithium-ion Batteries

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As an efficient and stable energy storage device, lithium-ion batteries (LIBs) have become an important part of today's society and are widely used in production and life. The research on the performance of LIBs is also widely concerned by researchers. The electrode material that plays a decisive role in the performance of the battery is our key research object, and many kinds of new negative electrode materials have been explored. Metal organic frameworks (MOFs) are a type of coordination polymers that have attracted wide attention in recent years [1-2]. With MOFs as the precursor, porous metal oxides and porous carbon materials with a controllable structure can be obtained. As electrode materials, they can significantly improve the electrochemical performance of batteries. Therefore, MOFs have become the preferred material of our new electrode materials. In this paper, hydrothermal method is adopted to prepare spherical porous Ni-MOFs material, which is calcined into metal oxide NiO material, and then its electrical conductivity and electrochemical performance are improved on the basis of retaining spherical pore structure. At the constant current density of 1C, the reversible capacity of NiO material maintains stably at 160mAh/g and the coulomb efficiency reaches 97.12% at 200 circles. In this paper, Ni-MOFs is synthesized with graphene oxide (GO) to generalize GO/Ni-MOFs material, and then it is transformed into reduced graphene oxide (RGO) to obtain RGO/NiO. RGO acts as a soft protective layer of active substances, which greatly improves the structural stability of the electrode during charging and discharging process. At the constant current density of 1C and at 200 circles, the reversible capacity reaches 440mAh/g, the coulomb efficiency reaches 99.49%, and its multiplying power and impedance performance are also very out.

Keywords: MOFs, RGO, NiO, LIBs, electrode materials

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