

Review

A review of the Doping Modification of LiFePO_4 as a Cathode Material for Lithium Ion Batteries

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In the today that energy crisis and the rapid development of electronic equipment, lithium-ion batteries, as a kind of energy storage device with high energy density, safe and cheap, have become a hotspot of research. Lithium iron phosphate (LiFePO_4) has attracted wide attention in the field of large-capacity power lithium-ion batteries for its advantages of good stability, low raw material cost and environmental friendliness, and is considered to be one of the most potential lithium-ion battery cathode materials. However, the low intrinsic conductivity and lithium ion diffusion coefficient limit its development and application in the further. For a long time, various methods have been studied to improve its performance. This article will systematically describe the effects of doping of metal element, doping of non-metallic element and doping of metallic simple substance or metal oxide on the electrochemical performance of LiFePO_4 , and summarize the latest research progress in the modification of doping of LiFePO_4 in recent years. Different doped particles have different effects on the performance of LiFePO_4 cathode materials. An appropriate amount of doping can often improve the performance of LiFePO_4 cathode materials to a certain extent. Multi-element co-doping of LiFePO_4 is expected to be an important way to effectively improve its electrochemical performance.

Keywords: lithium ion battery; LiFePO_4 ; Doping modification

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