Abstract

Li-ion batteries are the key enabling technology in portable electronics applications, and such batteries are also getting a foothold in mobile platforms and stationary energy storage technologies recently. To accelerate the penetration of Li-ion batteries in these markets, safety, cost, cycle life, energy density and rate capability of the Li-ion batteries should be improved. The Li-ion batteries in use today take advantage of the composite materials already. For instance, cathode, anode and separator are all composite materials. However, there is still plenty of room for advancing the Li-ion batteries by utilizing nanocomposite materials. By manipulating the Li-ion battery materials at the nanoscale, it is possible to achieve unprecedented improvement in the material properties. After presenting the current status and the operating principles of the Li-ion batteries briefly, this review discusses the recent developments in nanocomposite materials for cathode, anode, binder and separator components of the Li-ion batteries.

Citation

DE Demirocak, S Srinivasan & E Stefanakos. A Review on Nanocomposite Materials for Rechargeable Li-ion Batteries. Applied Sciences, 2017, 7, 731.