Electrode Materials for Energy Storage and Conversion. First edition

Carbon derivatives in performance improvement of lithium-ion battery electrodes

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Abstract

Various carbon derivatives such as activated carbon, reduced graphene oxide (rGO), graphene oxide (GO), carbon nanotubes (CNTs), etc., have triggered favourable interest towards enhancing the energy storage capacity of lithium-ion batteries (LIBs). These carbon derivatives have the capacity to enhance energy storage capacity because they parade large specific surface area (SSA), great chemical stability, high electrical conductivity, as well as extraordinary mechanical flexibility and strength. This chapter is an assemblage of some properties of carbon-derivative composites for enhancement of energy storage mechanism of batteries. This chapter will explicitly study the role of carbon derivatives in upgrading the cycle stability, life span, storage capacity, and non-toxic nature of electrodes for LIBs. This study will evaluate the easiest and cheapest technique of fabrication of affordable, portable, and available electrode materials for LIB devices based on carbon derivatives.