

Surface Modification of Cathode Materials from Nano- to Microscale for Rechargeable Lithium-Ion Batteries

Seung-Taek Myung*

Department of Chemical Engineering, Iwate University
(smyung@iwate-u.ac.jp*)

The present concern with global warming urgently requires a large increase in the energy share provided by green, renewable energy sources, as well as massive commercialization of sustainable vehicles. The widespread availability of reliable energy storage systems and highly efficient lithium batteries can, in principle, meet this need. For example, many individuals already own at least one lithium-ion battery portable device, such as a cellular phone, MP3 player, digital camera, or laptop computer. Hybrid electric vehicles and full electric vehicles will sooner or later be marketed with lithium-ion batteries. However, to acquire an established role in the commercial sector, lithium-ion batteries must be improved with regard to energy density, cost, and particularly, safety. Further development of electrode materials, especially the cathode active materials, is important to satisfy the above requirements. The easiest route to cathode improvement is to modify the cathode surface.