Development of Lithium Ion Battery and Post Lithium Battery based on Nanostructure Materials and New Concepts

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Now, we are facing the serious problems of the limited oil storage and the global warming threat. So, how to build the low carbon society has been a worldwide hot topic. One of the key technologies to realize the low carbon society is to introduce the electric vehicles (EVs) based on the large scale lithium-ion battery and next generation lithium-ion battery.

Recently, many lithium-ion batteries based on nanostructure active materials have been investigated to improve the high rate performance related with high power density. I will introduce some research works of lithium ion battery based on nanostructure materials in my research group. However, even the largest energy density of lithium ion battery can not satisfy the industrial needs resulted from the electric vehicle. Recently, the lithium air battery with theoretic largest energy density has also attracted much more attention. I will also introduce some new concepts for post lithium battery including a new type lithium air battery developed in my research group.

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