

Design and Development of an Intelligent Li-Ion Battery

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Abstract: In this contemporary mobile society, Li-ion batteries, which are only utilized in mobile phones and laptop computers, are the driving force behind the digital electronic revolution. Commercial Li-ion battery success in the 1990s was a consequence of extensive study and the contributions of many outstanding scientists and engineers, not an instant breakthrough. The performance of Li-ion batteries has since seen tremendous improvement as a result of extensive work. Intensified research is needed to create next-generation Li-ion batteries with dramatically better performances, including improved specific energy and volumetric energy density, cyclability, charging rate, stability, and safety, in order to meet the rising demand for energy storage, particularly from the increasingly popular electric vehicles. There are still notable challenges in the development of next-generation Li-ion batteries. New battery concepts have to be further developed to go beyond Li-ion batteries in the future. In this tutorial review, the focus is to introduce the basic concepts, highlight the recent progress, and discuss the challenges regarding Li-ion batteries. Brief discussion on popularly studied "beyond Li-ion" batteries is also provided.

Keywords: Blockchain, Voting System, Biometric Authentication, Security

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