Lithium-ion Battery: Material and System Design towards High Rate Capability

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The world of clean electrification and digitization including adaptation of pure electric EV has put pressure on researchers to develop low cost high performance energy storage systems. Lithium-ion battery is currently the battery technology of choice for many applications especially those that require high power, high energy and fast charging capability. User expectation towards fast charging capability i.e. high rate capability battery, relies both on intrinsic material properties along with how the different components are function together as an electrochemical system. In this talk, we will review factors affecting LIBs high rate performance. A specific example of increasing ionic conductivity of Li-ion via a specially designed separator will be discussed.