

CFD modeling for Analysis of Charge and Discharge Characteristic of the Li-ion battery

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Li-ion battery can be charged and discharged, so it is used in small electric devices like cell phone, laptop computer. Also it is used in battery of hybrid electric vehicle (HEV), plug-in hybrid electric vehicle (PHEV) and energy storage system (ESS) which is energy storage device for storing excess energy generated by power plant. In order to charge and discharge of the battery, in electrode intercalation and deintercalation reaction of ions have to occur easily, and electrolyte is to be easy to pass the ions. In other words, the electrochemical reaction in the internal of the Li-ion battery should proceed smoothly. Such as Li-ion battery which is capable of charge·discharge is classified as secondary battery. Secondary battery can be continuously used for a long time. But heat by reaction generated in charge·discharge process, thereby temperature of inside battery is changed. Recently, Li-ion battery's overheated, explosion accidents by heat generation emerged problems. Therefore, the study is needed in charge and discharge characteristic and safety problem. So in this study analyse charge and discharge characteristic of Li-ion battery using CFD modeling.