

Realization of common platform technologies, facilities and equipment that create innovative knowledge and products

R&D Project Title : High-throughput Platform for Device Development by Fusion of Multi-scale Measurement and Modeling

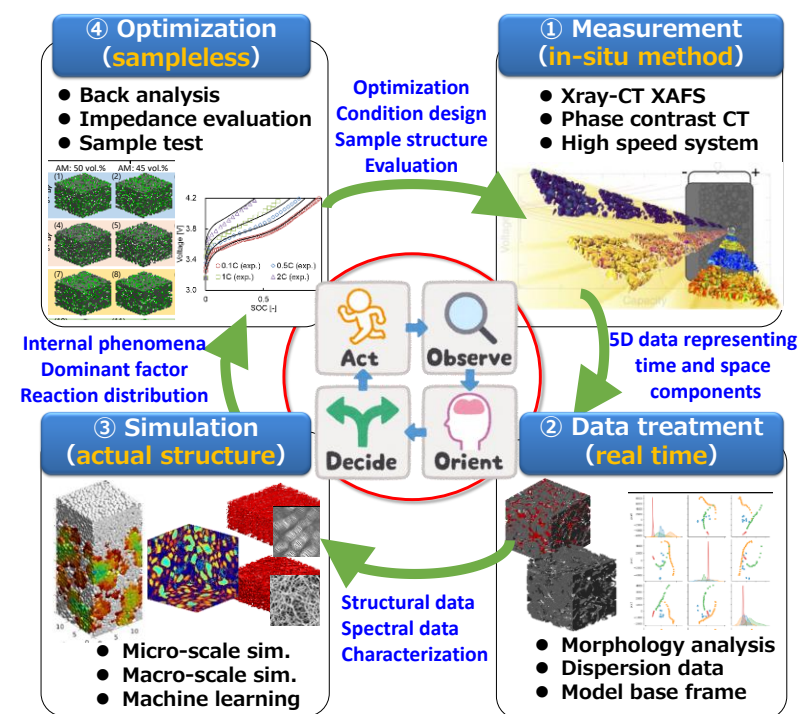
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Summary :

The objective of this project is to establish a high-throughput platform for device development by integrating multi-scale measurement and modeling. In the first stage, we attempt to understand the internal phenomena of all solid-state batteries by using cutting-edge measurement technology, data treatment technology, multi-physics simulations, and an automatic optimization method. We then realize a technology that can analyze batteries by decomposing their three-dimensional distribution and resistance components using kinetic-non steady mathematical modeling of electrochemical reactions and mass transport. Our findings offer insight into the relationship between internal phenomena and cell performance, stability, and durability, and present a design for an optimal device system. Another objective is to develop technologies that provide design guidelines for enhancing a variety of devices and systems by estimating their internal phenomena. These technologies can reduce the lead time for final product development.



Integrating multi-scale measurement and modeling

Contributing to the high throughput development of innovative devices and systems