

Electron holographic observation of all-solid-state Li-ion battery

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All-solid-state lithium-ion batteries (LIBs) with nonflammable solid electrolytes offer the possibility of avoiding some safety issues associated with conventional LIBs that contain combustible liquid electrolytes. However, they have a lower power density, and this is mostly attributed to the large resistance to Li-ion transfer across the electrode/solid-electrolyte interface. To date, knowledge of how the local electric potential varies during Li-ion transfer has been unattainable. Recently we succeeded in operating the battery in a TEM and observing the potential by in-situ electron holography. In this lecture, we will introduce the principle of electron holography and show the latest results.