

The electrical characterization of battery materials with EBIC (Electron beam induced current)/RCI (Resistive contrast image) analysis

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The Electron beam induced current (EBIC) and the related method -such as resistive contrast image (RCI) or electron beam absorbed current (EBAC) - use the electron beam to generate a signal of materials. Among them, RCI acquisition is generally used to characterize electrical resistivity of the nets with sub-micron resolution. RCI acquisition is performed with a scanning electron microscope (SEM) and Point electronic EBIC system. EBIC/RCI analysis is very useful for generally non-destructive studies of recombination in polycrystalline solar cells. It is possible to detect the flow of electrons and holes which are created by electron beam with an internal electrical field present (e.g. p-n junction).

In this study, we investigate the electrical properties and current path of battery components with EBIC/RCI analysis. The RCI acquisition images show the electrical difference in the electroactive materials, conducting agent and electrolyte, directly. More details on the investigation procedure, the electrical and structural properties of battery components will be presented at the meeting.

[1] V. I. Orlov, O. V. Feklisova, and E. B. Yakimov, Semiconductors 49 (2015) 720

[2] N. Klein-Kedem, D. Cahen, and G.Hodes, Accounts of chemical research 49 (2016) 347