Li-K XANES Spectra of the Carbon Materials Inserted Lithium

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In recent years, rechargeable battery market further expands with the demand of electronic equipment such as mobile phones and laptop computers. The miniaturization of this electronic equipment rapidly advances. On the other hand, electric power consumption tends to increase. Then, materials of lithium-ion rechargeable battery are widely investigated and are developed. In addition, evaluation of these materials is also carried out. For example, structural change with discharge and charge in positive electrode materials are analyzed by EXAFS spectra of transition elements. The structural change of graphite, which is generally used for negative electrode materials, is also investigated from spectral changes of C K-edge spectra. However, lithium in materials of lithium-ion rechargeable battery has never measured directly by means of X-ray spectrum in the past.

In this report, the Li-K XANES spectra for the carbon materials inserted lithium are measured, and the local structure and the electronic structure of the lithium are investigated also from the obtained spectra.