

Li-K Absorption Spectra of Various Lithium Halides

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Abstract

Li-K absorption spectra of lithium compounds were measured by synchrotron radiation. The monochromatic beam of 50 eV (Li-K absorption edge lies around 55 eV) to 90 eV was obtained using a concave grating (1200 lines/nm) in the beamline BL-2 at the compact synchrotron radiation facility of Ritsumeikan University. Samples were mounted on the surface of an indium metal plate. Absorption spectra were taken by means of the total electron yield (TEY) method. In lithium halides, each absorption spectrum has a sharp peak around 61 eV and a broad band at high energy side. Plots of the energies of the sharp peaks against electronegativity of halogen atoms give a straight line. The structures appeared in the broad absorption band are assigned to excitations from Li 1s to various empty orbitals. For LiF, the Li-K absorption spectrum measured is compared with a spectrum obtained by DV- $X\alpha$ molecular orbital calculation method.

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