XPS STUDY OF THE "INFINITE CHAIN" Ca_2CuO_3 AND DISORDER $Ca_{0.5}Sr_{0.5}CuO_2$ COMPOUNDS

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9.7 cm

Al Kα excited photoelectron spectra (XPS) of the O 1s, Cu 2p, Ca 2p, Sr 3d core levels have been measured for "infinite chain" Ca_2CuO_3 and disorder $Ca_{0.5}Sr_{0.5}CuO_2$ compounds. For Ca_2CuO_3 the spectrum of the O 1s level was well-fitted with three states at BE's of 528.9, 531.0 and 532.2 eV respectively, attributable to lattice oxygen in the bulk material (similarly as to HTS oxides), mixed lattice and strongly adsorbed oxygens and OH^- species. For $Ca_{0.5}Sr_{0.5}CuO_2$ only two state were found for O 1s core level: 529.3 eV and 531.5 eV. For both samples, the Cu 2p 3/2 core level spectra exhibited the same main peak at BE $\approx$ 934 eV with a prominent shake-up satellite structure, but for Ca_2CuO_3, an additional component appears which can be connected with copper hydroxide. The valency of the Cu, Ca and Sr atoms is close to +2. The results showed that for the "infinite chain" Ca_2CuO_3 the surface electronic structures are strongly influenced by a humid atmosphere.

13.4 cm

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