Poster-1-32

Structural and electronic properties of $SrCuO_{2+\delta}$ thin films

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The discovery of high-T_c superconductivity in cuprates has triggered a large effort to understand the microscopic origin of the pairing mechanism, a phenomenon still debated today : a central role is attributed to the CuO_2 planes, a common structural block of these compounds. This observation has led to the study of infinite-layer compounds, $ACuO_2$, since they present the simplest layered structure composed of CuO_2 planes separated by alkaline metal (A = Ca, Sr, Ba) planes [1].

The infinite-layer compounds are insulating, but can be doped with electrons or holes, leading to the appearance of superconductivity. Hole doping in these systems is usually associated with the appearance of apical oxygen, both in bulk crystals [2] and in multilayer thin films [3-5]. Controlling the oxygen content in these systems is therefore crucial to determine their properties and eventually induce high-Tc superconductivity.

In this work, $SrCuO_2$ and $SrCuO_{2+\delta}$ thin films were deposited by pulsed laser deposition. The use of highly oxidising growth conditions leads to the emergence of a high c-axis structure [6, 7]. The structural and electronic properties of these systems are studied with various experimental techniques such as X-ray diffraction (XRD), X-ray absorption spectroscopy (XAS) and electrical transport measurements.

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