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Electronic and magnetic transport properties in YBCO, LCMO and related multilayers¹ XIAOSHAN WU, Nanjing University, JU GAO, The University of Hong Kong — We summarized the recently studies on the structures and properties in YBCO and LCMO films and related heterostructures. The single layer of LCMO may be separated into 3-sublayers with different lattice strain containing in the film. The conduction "death" layer, which related to the substrate and thickness, may relate to the interaction between the substrate and the film, or due to the larger lattice strain. Good surface morphology in YBCO film can be obtained with LCMO working as buffer. In heterostructures, both of superconductivity and magnetism may coexist with varying the thickness of each sublayer. In LCMO/YBCO/LCMO trilayers, the superconductivity disappears when the thickness of YBCO is less than that of LCMO, we argue that the Adreev effect play main roles on the transport properties. A negative thermal expansion behavior is also observed in LCMO and related heterostructures at low temperature. At high temperature, the lattice parameters increase with increasing temperature up to 600 *°*С.

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Xiaoshan Wu Nanjing University

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