Hall effects of overdoped/underdoped of $La_{2-x}Sr_xCuO_{4+\delta}$ multilayers (LT26)

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A series of $La_{2-x2}Sr_{x1}CuO_{4+\delta}/La_{2-x2}Sr_{x2}CuO_{4+\delta}$ multilayers were epitaxially grown on (001) $LaSrAlO_4$ substrates by laser ablation, where $x1 = 0.45$, 0.32, 0.24 (over-doped), and $x2 = 0.0, 0.08$ (underdoped). Before the deposition of the multilayers, all of the single layer films were deposited and characterized, and then the multilayers were deposited by using the same deposition condition except shifting targets for depositing multilayers. These multilayers are highly c-axis oriented. Several modulation wave-lengths of the sublayers were selected for preparing them. The hall effect and resistant measurements of the single layer films of $La_{2-x1}Sr_{x1}CuO_{4+\delta}$ and $La_{2-x2}Sr_{x2}CuO_{4+\delta}$, and the multilayers were tested and compared. The transport measurements suggest that the charge redistribution may be the dominant reason for increasing values of superconducting transition temperatures in low temperature.