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Structural and electrical properties of strained La-doped $SrTiO_3$ films MIRI CHOI, AGHAM B. POSADAS, HEIDI SEINIGE, Department of Physics, The University of Texas at Austin, ANDREW KELLOCK, IBM Almaden Research Center, MARTIN M. FRANK, IBM T. J. Watson Research Center, MAXIM TSOI, ALEXANDER A. DEMKOV, The University of Texas at Austin, THE UNIVERSITY OF TEXAS AT AUSTIN TEAM, IBM ALMADEN RESEARCH CENTER COLLABORATION, IBM T. J. WATSON RESEARCH CENTER COLLABORATION — Structural and electrical properties of La-doped thin (10nm and 20nm) $SrTiO_3$ films are investigated. Films with three different La doping concentrations (5, 15 and 25%) are grown by molecular beam epitaxy. Epitaxially strained La-doped $SrTiO_3$ films were grown on four different substrates, $LaAlO_3(100)$, $(LaAlO_3)_{0.3}(Sr_2AlTaO_6)_{0.7}(100)$, $SrTiO_3(100)$ and $DyScO_3(110)$, in order to have different strain conditions. We compare the structural properties of La-doped $SrTiO_3$ films using X-ray diffraction as a function of strain and La dopant concentrations. We also determine the electrical properties of strained La-doped films using Hall measurements, electrical resistivity and mobility at room temperature.

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