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The influence of growth temperature on the physical properties of La1-xSrxMnO3 thin film by rf magnetron sputtering YONGHANG PEI, JIWEI LU, STUART WOLF — Perovskite $La_1-xSrxMnO_3$ has been of interest for such diverse applications as a spin injector for spintronic devices and for fuel cell electrodes due to its magnetic and transport properties, namely high spin polarization and ionic conduction. In this work, we prepared $La_1-xSrxMnO_3$ (LSMO) thin films by rf-magnetron sputtering. LSMO films were deposited on single crystal $SrTiO_3$ (100) substrates and platinized Si wafers concurrently in the temperature range from 450 to 600 °C. X-Ray diffraction (XRD) determined that the LSMO film was epitaxial on either substrate. Magnetic hystersis loops were measured at temperatures between 10 and 300K and the saturation moment was significantly improved by increasing the growth temperature. In addition, the Curie temperature of LSMO was between 150 and 250 K and was also strongly dependent on the growth temperature. We will also discuss the impact of growth temperature on the temperature dependent transport and magnetic properties of LSMO.

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