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Effect of A-site ordering on the magnetoelectric properties in (111)-oriented $LaMnO_3/SrMnO_3$ superlattices MINHUI HU, RUINAN SONG, JIANDONG GUO, Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China — It is expected that the chemical order that occurs over the crystallographic A-sites might strongly influence the distribution of the charges, magnetic and transport properties of the perovskite magnates. In this work, we focus on growing $LaMnO_3/SrMnO_3$ superlattices on (111)-oriented by PLD. The superlattices were characterized by magnetic as well as electronic transport measurements, and compared with the $La_{2/3}Sr_{1/3}MnO_3$ thin film having the same components in which the A-site dopants are randomly distributed. The superlattices had different properties from the thin film: higher Curie temperature of FM and metal-insulator transitions, larger magnetization, and lower resistivity. This will allow for an understanding of the dependence of the intrinsic properties with respect to the long-range ordering of dopants. These differences can be explained by Mn^{3+}/Mn^{4+} double exchange separation arising from the artificially induced the order of the A-site cations in the superlattices. Our proposed superlattices will allow for understanding of the fundamental magnetic and electronic interactions arising from dopant ordering in transition metal oxides.

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