

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Influence of Strain on the Thermoelectric Properties of electron-doped $SrTiO_3$ Thin Films¹ ALEXANDROS SARANTOPOULOS, ELIAS FERREIRO-VILA, CIQUS, Universidad de Santiago de Compostela, 15782 - Santiago de Compostela, Spain, CESAR MAGEN, LMA, INA, Universidad de Zaragoza, 50018 Zaragoza, Spain & Fundación ARAID, 50018 Zaragoza, Spain, MYRIAM H. AGUIRRE, LMA, INA, Universidad de Zaragoza, 50018 Zaragoza, Spain, VICTOR PARDO, Instituto de Investigaciones Tecnológicas, Universidade de Santiago de Compostela, 15782 Santiago de Compostela, Spain, FRANCISCO RIVADULLA, CIQUS, Universidad de Santiago de Compostela, 15782-Santiago de Compostela, Spain — The discovery of a two dimensional electron gas with high mobility at the interface between insulating $LaAlO_3/SrTiO_3$ (LAO/STO) opened the possibility of fabricating functional devices based on this interfacial effect. Therefore, it is important to study the influence of the growth parameters on the properties of the constituent materials. Here, we demonstrate that the thermoelectric properties of epitaxial thin films of Nb:STO can be finely tuned by adjusting the growth conditions in a PLD system. By growing the sample on different substrates, we demonstrate that the amount of vacancies depends on the degree of epitaxial compressive stress. The vacancies produced lead to impurity scattering at low temperatures. We show that the magnetoresistance response, and non-linear behavior of the Hall effect, characteristic of LAO/STO interfaces, can be reproduced in thin films of Nb:STO with a controlled number of vacancies. Moreover, we show that the Seebeck coefficient is a valid tool to obtain information about the degeneracy of the electronic band structure.

¹We acknowledge support from the ERC 2D Therms project.

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Date submitted: 12 Nov 2014

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