

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**High Temperature Conductance Characteristics of Differently Modified LaAlO<sub>3</sub>/SrTiO<sub>3</sub>-Heterostructures** FELIX GUNKEL, SUSANNE HOFFMANN-EIFERT, FZ Juelich, PGI-7 and JARA-FIT, Juelich, Germany, JOSÉE E. KLEIBEUKER, PETER BRINKS, MARK HUIJBEN, GUUS RIJNDERS, GERTJAN KOSTER, Mesa+ Institute for Nanotechnology, University of Twente, Enschede, The Netherlands, REGINA DITTMANN, RAINER WASER, FZ Juelich, PGI-7 and JARA-FIT, Juelich, Germany — In order to understand the physical origin of the high charge carrier density at the conducting interface between SrTiO<sub>3</sub> (STO) and LaAlO<sub>3</sub> (LAO) the role of defects has to be clarified. In this study, LAO/STO-heterostructures modified in stacking sequence and growth conditions were investigated by means of high temperature conductance (HTC) measurements under changing oxygen ambience. Under measurement conditions the samples are in equilibrium with the surrounding oxygen atmosphere, which rules out the effect of mobile oxygen vacancies on the interface conductivity [Gunkel et al., APL 97(2010)]. The HTC characteristics show a significant dependency on the preparation procedure of STO and LAO close to the interface. Nevertheless, a common conduction and charge compensation mechanism can be identified. The results are discussed with respect to the defect chemistry model of perovskite oxides.

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Date submitted: 19 Nov 2010

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