The dependence of structure on thickness of NiO(100) films on Ag(100) studied by IV-LEED — •Jan Lachnitt[1], Shuvankar Das[2], Krishnakumar S. R. Menon[2], Suman Mandal[3], and Jan I. Flege[1] — [1]Applied Physics and Semiconductor Spectroscopy, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany — [2]Surface Physics & Material Science Division, Saha Institute of Nuclear Physics, Kolkata, India — [3]Department of Physics, Sabang Sajanikanta Mahavidyalaya, Paschim Medinipur, India

Ultrathin NiO films have prospective applications especially in heterogeneous catalysis, microelectronics, and spintronics and are thus an object of active research. The Ag(100) surface is the usual support for these films, as its cubic lattice parameter is only 2.2 % smaller than that of NiO, which enables pseudomorphic growth at very low thicknesses. We have studied the NiO(100) surface for three thicknesses of the oxide: 2 ML on Ag(100), 20 ML on the same substrate, and a bulk single crystal. We have used intensity-voltage low-energy electron diffraction (IV-LEED) in combination with X-ray photoelectron spectroscopy (XPS) and density-functional theory (DFT) calculations. We focus on differences among the three thicknesses, mainly in terms of lattice parameters and surface defects, and our study deepens existing knowledge of the growth of ultrathin NiO films. The IV-LEED calculations have been carried out using the AQuaLEED package, which will also be briefly presented.

Part: O
Type: Talk
Topic: Oxide and insulator surfaces: Structure, epitaxy and growth
Email: jan.lachnitt@b-tu.de
Submitted: Thu Dec 1 23:27:58 2022
Changed: Mon Feb 6 18:35:10 2023

Part
O

Number in Part
753

Session
92

Number in session
4

Start
11:15

End
11:30

Day
Fri

Location
CHE 91