

Accepted Manuscript

Investigation of Pb/Ru(0001) by means of AES and LEED

M. Jurczyszyn, M. Nowicki

PII: S1044-5803(15)00171-0
DOI: doi: [10.1016/j.matchar.2015.05.024](https://doi.org/10.1016/j.matchar.2015.05.024)
Reference: MTL 7906

To appear in: *Materials Characterization*

Received date: 26 January 2015
Revised date: 14 May 2015
Accepted date: 15 May 2015



Please cite this article as: Jurczyszyn M, Nowicki M, Investigation of Pb/Ru(0001) by means of AES and LEED, *Materials Characterization* (2015), doi: [10.1016/j.matchar.2015.05.024](https://doi.org/10.1016/j.matchar.2015.05.024)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Investigation of Pb/Ru(0001) by means of AES and LEED

M. Jurczyszyn, M. Nowicki*

Institute of Experimental Physics, University of Wrocław, pl. M. Borna 9,
50-204 Wrocław, Poland

Abstract

Auger electron spectroscopy (AES) and low energy electron diffraction (LEED) were used to study the growth mechanism, thermal stability and long range order of Pb on the Ru(0001) surface. The adsorption at 330K leads to the formation of the wetting layer. The character of the Auger signal decay during the continuous Pb adsorption after the wetting layer formation suggests the growth of Pb islands and/or a significant decrease of the sticking coefficient. The Auger signal recorded during the heating of the adsorbed Pb layer reveals a sudden agglomeration of 3D islands on the first wetting layer at about 600K. Then the desorption of the adsorbate at elevated temperatures first from the 3D islands and then from the wetting layer is observed. A detailed analysis of LEED patterns recorded during the continuous Pb adsorption indicates the presence of the $c(4 \times 2)$ structure at low coverages, the splitting and disappearance of some reflexes, and then the sequential formation of the $\begin{pmatrix} 2 & 1 \\ -0.25 & 1.5 \end{pmatrix}$, $(\sqrt{7} \times \sqrt{7})R19.1^\circ$ and $\begin{pmatrix} 2.4 & 0.7 \\ -1 & 2.45 \end{pmatrix}$ structures. The mutually rotated adsorbate domains were identified within each structure. The registered LEED patterns show the continuous transformations $c(4 \times 2) \rightarrow \begin{pmatrix} 2 & 1 \\ -0.25 & 1.5 \end{pmatrix}$ and $(\sqrt{7} \times \sqrt{7})R19.1^\circ \rightarrow \begin{pmatrix} 2.4 & 0.7 \\ -1 & 2.45 \end{pmatrix}$ at increased Pb coverages. The discontinuous transformation was found for the $\begin{pmatrix} 2 & 1 \\ -0.25 & 1.5 \end{pmatrix} \rightarrow (\sqrt{7} \times \sqrt{7})R19.1^\circ$ structural change.

Download English Version:

<https://daneshyari.com/en/article/7970194>

Download Persian Version:

<https://daneshyari.com/article/7970194>

[Daneshyari.com](https://daneshyari.com)