

Accepted Manuscript

Methanol oxidation on Ru/Pd(poly) in alkaline solution

S. Štrbac, A. Maksić, Z. Rakočević



PII: S1572-6657(18)30425-9
DOI: doi:[10.1016/j.jelechem.2018.06.011](https://doi.org/10.1016/j.jelechem.2018.06.011)
Reference: JEAC 4109

To appear in: *Journal of Electroanalytical Chemistry*

Received date: 7 February 2018
Revised date: 11 May 2018
Accepted date: 5 June 2018

Please cite this article as: S. Štrbac, A. Maksić, Z. Rakočević, Methanol oxidation on Ru/Pd(poly) in alkaline solution. *Jeac* (2017), doi:[10.1016/j.jelechem.2018.06.011](https://doi.org/10.1016/j.jelechem.2018.06.011)

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.

Methanol oxidation on Ru/Pd(poly) in alkaline solution

S.Štrbac^{a,*}, A.Maksić^b, Z.Rakočević^b,

^{a,*}ICTM Institute of Electrochemistry, University of Belgrade, Njegoseva 12, 11001 Belgrade, Serbia

^bINS Vinca, Laboratory of Atomic Physics, University of Belgrade, Mike Alasa 12–14, 11001 Belgrade, Serbia

Abstract

Polycrystalline Pd electrode, Pd(poly), is modified by Ru nanoislands using spontaneous deposition method. Coverage of Pd(poly) electrode with the deposited Ru are approx. 20, 30 and 50 % as estimated from phase atomic force microscopy images. The oxidation state of Pd substrate and the deposited Ru is determined by X-ray spectroscopy (XPS). Electrocatalytic activity of obtained Ru/Pd(poly) bimetallic electrodes is tested toward methanol oxidation in alkaline medium. Cyclic voltammetry and chronoamperometry experiments show the enhanced activity of Ru/Pd(poly) electrodes toward methanol electrooxidation with respect to bare Pd(poly). This is explained by the presence of Ru islands, which provided RuOH and Pd-RuOH sites, necessary for the oxidation of CO as the main intermediate during the oxidation of methanol at lower potentials. 30% Ru/Pd(poly) is the most active of all examined electrodes.

Key words: ruthenium; palladium; spontaneous deposition; methanol oxidation.

**Corresponding author: E-mail: sstrbac@tmf.bg.ac.rs*

Phone: +381 11 3370 389

Download English Version:

<https://daneshyari.com/en/article/6661561>

Download Persian Version:

<https://daneshyari.com/article/6661561>

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