

Programme & The Book of Abstracts

Twenty-first Annual Conference

**YUCOMAT 2019**

&

Eleventh World Round Table Conference

on Sintering –

Science of Sintering & Its Future: Fifty Years Later

**WRTCS 2019**

Herceg Novi, Montenegro September 2 - 6, 2019

Organised by



Endorsed by



ENDORSED MEETINGS



MRS



FEDERATION OF EUROPEAN 1987 - 2017

Twenty-first Annual Conference  
**YUCOMAT 2019**  
&  
Eleventh World Round Table Conference  
on Sintering  
**WRTCS 2019**

**Programme  
and  
The Book of Abstracts**

Organised by:  
**Materials Research Society of Serbia**  
&  
**International Institute for the Science of Sintering**

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,  
September 2-6, 2019, <http://www.mrs-serbia.org.rs>

**Title:** Twenty-first Annual Conference **YUCOMAT 2019** &  
Eleventh World Round Table Conference on Sintering  
**WRTCS 2019**  
Programme and The Book of Abstracts

**Publisher:** Materials Research Society of Serbia  
Knez Mihailova 35/IV, P.O.Box 433, 11000 Belgrade,  
Serbia  
<http://www.mrs-serbia.org.rs>

**Editors:** Prof. Dr. Dragan P. Uskoković and Prof. Dr. Velimir R.  
Radmilović

**Technical editors:** Maja Jovanović and Jasmina Jevtić

**Cover page:** Nenad L. Ignjatović

**Front cover:** Image is the property of MRS Serbia

**Back cover:** Modified Photo by Vlada Marinković; Wikimedia Commons

([https://commons.wikimedia.org/wiki/File:Belgrade\\_iz\\_balona.jpg](https://commons.wikimedia.org/wiki/File:Belgrade_iz_balona.jpg)); CC BY-SA 3.0

**Copyright** © 2019 Materials Research Society of Serbia and International Institute for the  
Science of Sintering



**Printed in:** Biro Konto  
Sutorina bb, Igalo – Herceg Novi, Montenegro  
Phones: +382-31-670123, 670025, E-mail: [bkonto@t-com.me](mailto:bkonto@t-com.me). Circulation: 220 copies. The end of printing:  
August 2019

P.S.B.1.

### Cost effective alloys based catalysts for alkaline fuel cells application

Ljiljana Gajić-Krstajić<sup>1</sup>, Borka Jović<sup>2</sup>, Vladimir D. Jović<sup>2</sup>, Piotr Zabinski<sup>3</sup>, Nevenka Elezović<sup>2</sup>  
<sup>1</sup>Institute of Technical Sciences of Serbian Academy of Science and Arts, Knez Mihajlova 45, 11000 Belgrade, Serbia; <sup>2</sup>Institute for Multidisciplinary Research University of Belgrade, P.O. Box 33, 11030 Belgrade, Serbia; <sup>3</sup>AGH University of Science and Technology, Faculty of Non-Ferrous Metals, Al. Mickiewicza 30, Krakow, Poland

Alkaline fuel cells (AFCs) have recently become attractive as environmental friendly future power sources. It was really important having in mind that in alkaline media less expensive non noble catalysts could be used. Namely, successful alkaline anion exchange membrane development enabled benefits of faster kinetics of oxygen reduction reaction in alkaline solutions.

In this study electrodeposited silver-palladium alloys of various composition were investigated and tested as the prospective catalysts for direct ethanol fuel cells application. All samples were characterized by scanning electron microscopy, energy dispersive spectroscopy, X-ray photoelectron spectroscopy, as well as by electrochemical techniques: cyclic voltammetry, polarization measurements at rotating disc electrode. The electrochemical active surface area was determined from the charge values corresponding to the reduction of Pd (II) oxide, assuming 420  $\mu\text{C}$  for full oxide monolayer coverage. The optimal alloy composition showing the best catalytic activity for oxygen reduction and ethanol oxidation, with as much as possible lower content of Pd, was determined. It was found that it could be possible to obtain alloys containing only  $\sim 20\%$  of more noble metal – palladium, showing high activity for both anode and cathode reaction. The stability testing gave very promising results, as well.

#### Acknowledgements:

This work was financially supported by Ministry of Education, Science and Technological Development Republic of Serbia, under Contract No. 172054.

The authors would like to acknowledge networking support by the COST Action MP1407.

**CIP- Каталогизација у публикацији  
Народна библиотека Србије**

66.017/.018(048)

621.762.5(048)

**DRUŠTVO za istraživanje materijala Srbije (Beograd). Godišnja konferencija (21 ; 2019 ;  
Herceg Novi)**

Programme ; and The Book of abstracts / Twenty-first Annual Conference YUCOMAT 2019 & Eleventh World Round Table Conference on Sintering WRTCS 2019, Herceg Novi, Montenegro, September 2-6, 2019 ; organised by Materials Research Society of Serbia & International Institute for the Science of Sintering ; [editors Dragan P. Uskoković and Velimir R. Radmilović]. - Belgrade : Materials Research Society of Serbia, 2019 (Herceg Novi : Biro Konto). - XLVIII, 174 str. : ilustr. ; 23 cm

Tiraž 220. - Bibliografija uz pojedine apstrakte. - Registar.

ISBN 978-86-919111-4-0

1. World Round Table Conference on Sintering (11 ; 2019 ; Herceg Novi)

a) Наука о материјалима -- Апстракти б) Технички материјали -- Апстракти в) Синтеровање -- Апстракти

COBISS.SR-ID 278510092