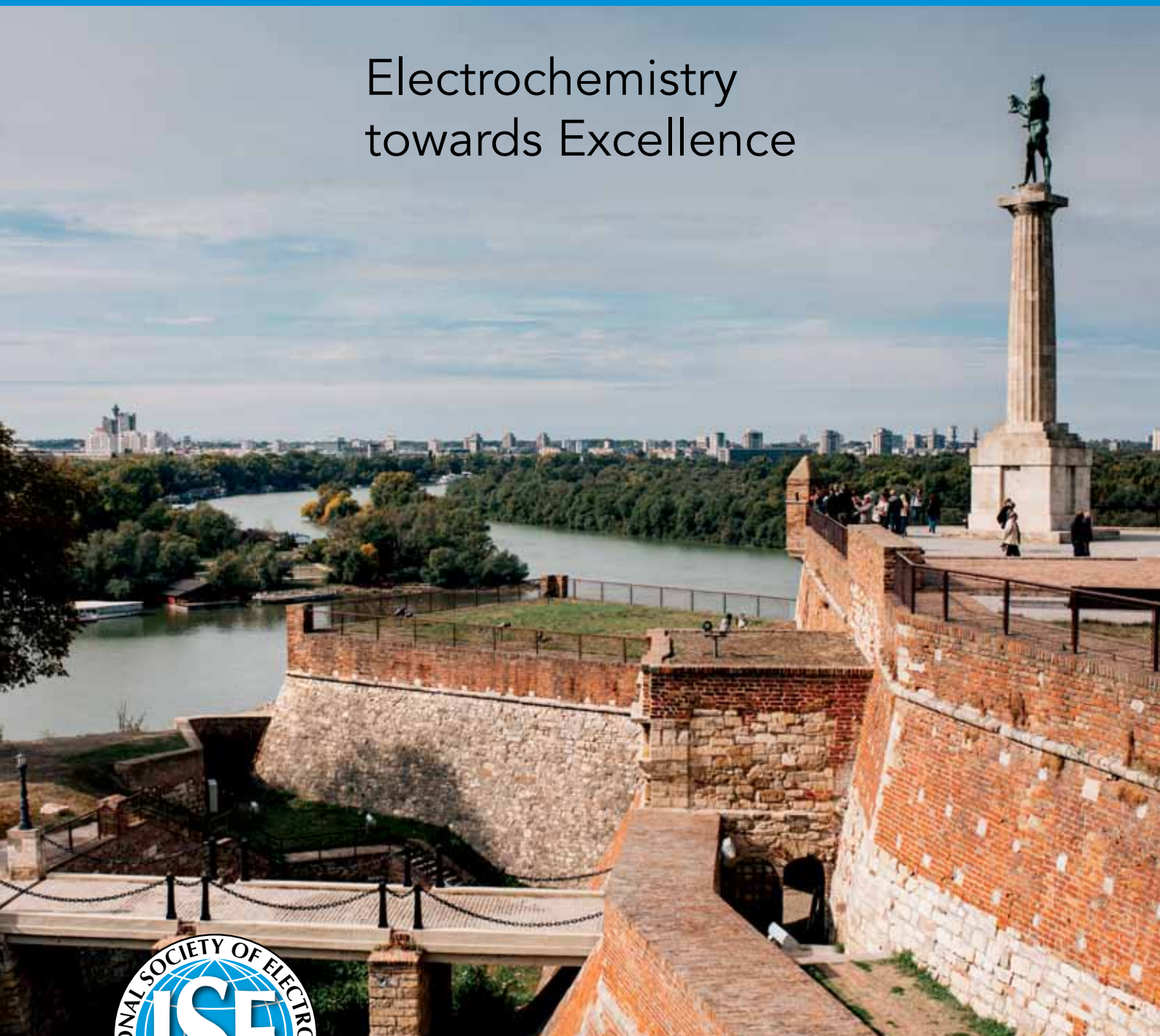


# 71<sup>st</sup> Annual Meeting

of the International Society of Electrochemistry

30 August - 4 September 2020  
Belgrade, Serbia

Electrochemistry  
towards Excellence



<https://annual71.ise-online.org>  
e-mail: [events@ise-online.org](mailto:events@ise-online.org)

## 71st Annual ISE Meeting - Belgrade Online - Notification of presentation acceptance

Julia Claudia Mirza Rosca <julia.mirza@ulpgc.es>

Mar 11/08/2020 22:23

Para: LUCERO BALDEVENITES <viviana.lucero@ulpgc.es>



**De:** International Society of Electrochemistry <events@ise-online.org>

**Enviado:** lunes, 6 de julio de 2020 9:13

**Para:** Julia Claudia Mirza Rosca <julia.mirza@ulpgc.es>

**Asunto:** 71st Annual ISE Meeting - Belgrade Online - Notification of presentation acceptance

Dear Julia C. Mirza Rosca,

It is our pleasure to inform you that your submission "*A Preliminary Investigation into the Microscopic Passivation of new Bio High Entropy Alloys*" (ise202874) has been accepted and selected for a **Poster** presentation in symposium "s11" of the **ISE Belgrade Online Meeting**.

Please be aware that for your presentation to be maintained as a **Poster** presentation, we must receive your registration **before 31 July 2020**. To help us manage this first ISE Online Meeting, please register as soon as possible, don't wait until the last moment.

**Link to registration:** <https://annual71.ise-online.org/registration.php>

For all Oral presentations, you will soon receive more information from your Symposium Organizers.

Only registered participant will be able to submit a Poster (pdf), and will receive information about how to submit.

### IMPORTANT DATES

**Registration deadline for presentation(s): 31 July 2020**

*(Presentations without a registered speaker or Poster presenter will be cancelled and removed from the program on 01 August 2020).*

With best wishes,

Jelana Bajat and Aleksandar Dekanski Organizing Committee co-chairs

\*\*\*\*\*

International Society of Electrochemistry  
email: [events@ise-online.org](mailto:events@ise-online.org)

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# A Preliminary Investigation into the Microscopic Passivation of new Bio High Entropy Alloys

Julia C.Mirza Rosca, Nestor Florido Suarez, Ionelia Voiculescu, Victor Geanta  
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*Campus Universitario Tafira EIIC – 35017*  
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In recent years, due to the great advance of scientific and technological research, new alloys are being explored with a different metallurgical concept: at least three basic components and these alloys are called High Entropy Alloys (HEA). In this way it was created the groundwork for a new concept in alloy design by looking after combinations of metals to work “in team” for an advanced material with unique properties.

At the end of the last century, the progress of science led to the rapid development of biomedical materials and the recent development of high entropy alloys (HEA) provides a new perspective for a new generation of biomaterials.

Two new experimental alloys (with the composition presented in Table 1) were obtained by Vacuum Arc Remelting from high purity chemical elements (99.5%) that exhibit extremely low bio-toxicity for the human body (for this reason we named them BioHEA).

Table 1. Chemical composition of the analyzed BioHEA.

	Wt.%					
	Mo	Ta	Ti	Zr	Nb	Fe
BioHEA 1	20.45	32.45	12.67	18.97		15.46
BioHEA 2	17.32	38.95	13.21	17.45	13.07	

The alloys were microstructurally characterized (dendritic morphology, Fig.1 and Fig.2) and microhardness measurements were performed. Both the compositional analysis performed using the dispersive energy probe and the structural characterization by X-ray diffraction revealed the dendritic separation of compounds in the fine dendritic matrix.

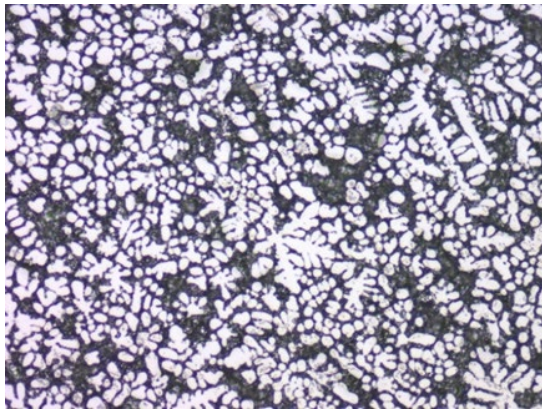


Fig.1. BioHEA 1 microstructure

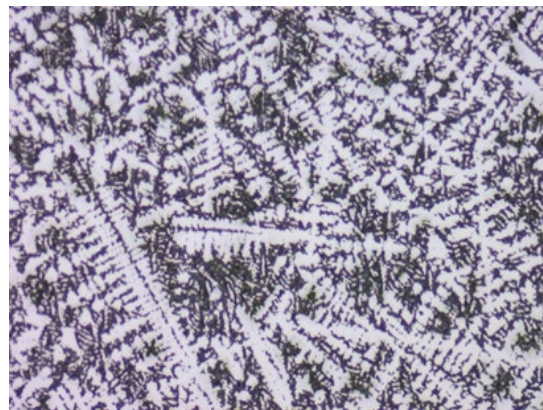


Fig.2. BioHEA 2 microstructure

In order to analyze the passivation process, the electrochemical impedance spectroscopy technique at different potentials was used and the experimental results were compared with those obtained by potentiostatic and potentiodynamic techniques.

The low corrosion rates, low corrosion currents and high polarization resistance attest the good stability of these BioHEA in simulated biological environments.



<sup>3</sup> LAMET, Politecnica University of Bucharest, Romania

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