

REPORT

by competition for the occupation of the academic position of "professor" in professional area 4.2. Chemical sciences, scientific specialty: "Electrochemistry"

announced in SN No. 99/13.12.2022

with candidate: Assoc. Prof. Dr. Maria Hristova Petrova

Member of the scientific jury: Assoc. Prof. Angelina Konstantinova Popova, HTMU, Department of "Physical Chemistry"

1. General characteristics of the candidate's scientific-research and scientific-applied activity.

In the competition for professor, the candidate participated with 27 publications referenced in Scopus and Web of Science, of which: 1 in Q1, 17 in Q2, 3 in Q3, 4 in Q4 and 2 with SJR.

In 11 scientific works, the candidate is the first author, in 11 – the second author.

According to the required Certificate of fulfillment of the minimum requirements under Art. 29, para. (1), item 5 of the ZRASRB and the minimum requirements adopted by the Supreme Council of the IFH, defined in Appendix No. 1 of the Regulations for the conditions and procedures for acquiring scientific degrees and holding academic positions at the IFH - BAS, the number of points according to the indicators for occupying the academic position "professor" in accordance with the scientific assets of the candidate, are distributed as follows:

Indicator A1. Dissertation – 50 points (minimum requirements 50)

Indicator B4. Habilitation thesis - 5 publications are presented in Q2 - total 100 points (minimum requirements 100);

Indicator G7. Scientific publications outside of the habilitation thesis are presented 22 publications – 1 in Q1; 12 in Q2; 3 in Q3; 4 in Q4; 2 with SJR - total 378 points;

Indicator G9. Invention, patent or utility model, for which a protective document has been issued in due order - 3 pcs. patents – a total of 75 points.

According to indicators from G5 to 10 - total amount 453 points (minimum requirements 220 points)

Indicator D11. Citations - 453 citations are presented - a total of 874 points.

Indicator E13 - Guidance for successfully defended doctoral students - 50 points.

Indicator E14 - Participation in a national scientific or educational project - 6 items, 60 points;

Indicator E 15 - Participation in an international scientific or educational project - 2 items, 40 points;

Indicator E16 – Management of a national scientific or educational project – 4 items, 80 points;

Indicator E18 - Attracted funds for projects managed by the applicant - 104 items.

Indicator E20 - Published university textbook - 1 item, 10 points.

According to indicators E - total amount 344 points (minimum requirements 150 points)

According to all the necessary indicators, Assoc. Dr. Maria Petrova meets and significantly exceeds the minimum requirements for holding the position of "professor".

2. Basic scientific and scientific-applied contributions.

I accept the attached statement of the applicant's contributions. The scientific contributions are significant and have a scientific and scientific-applied character.

The author's reference summarizes all the scientific works included in: the dissertation for the acquisition of the ONS "doctor"; the list of publications for the occupation of the academic position "Associate Professor" and the list of publications for the occupation of the academic position "Professor". (A total of 70 issues, 48 of them in Scopus, with 27 of them participating in the "Professor" contest).

When presenting them in the statement of contributions, they are distinguished.

The scientific works are in the field of the main thematic priorities of IFC, related to cutting-edge materials and technologies based on electrochemically obtained

metal, alloy and modified polymer coatings with protective, decorative and electrocatalytic properties.

Contributions are systematized in three main areas:

Area 1. Investigation of the zinc extraction process from sulfate electrolytes.

Research in this area is related to the preparation of nickel/phosphorus and copper dispersion coatings on two types of substrates: rigid (non-metallic and metallic) and flexible.

These studies were mainly carried out within the framework of the dissertation for the acquisition of the ONS "Doctor" and were included in the list of publications for holding the academic position of "Associate Professor".

Area 2. Chemical deposition of metal coatings on various types of substrates.

This area includes research and contributions in the area of: chemical deposition of nickel/phosphorus and copper dispersion coatings on solid non-metallic and metallic substrates; pretreatment of non-metallic substrates; chemical deposition of dispersed coatings with various micro- and nanoparticles; chemical deposition of nickel/phosphorus dispersion coatings on non-metallic (ABS) and metallic substrates; chemical deposition of copper dispersion coatings on an ABS substrate; chemical deposition of environmentally friendly, formaldehyde-free and low-pH copper electrolyte coatings; chemical deposition of coatings on 3D-printed substrates; chemical deposition of nickel/phosphorus and copper dispersion coatings on flexible substrates; chemical deposition of nickel/phosphorus and copper dispersion coatings.

Area 3. Problems in the production of printed circuit boards.

Solutions have been proposed for a number of problem areas in the production of printed circuit boards, such as: the final stage of the pre-processing during the metallization of printed circuit boards; passivating solution for copper in the production of printed circuit boards; chemical deposition of tin from acidic electrolytes.

Contributions could relate to: proving by new means substantial new aspects of already existing scientific fields; creating new technologies and obtaining corroborating facts; application of scientific achievements in practice with the aim of realizing an economic effect. The candidate's personal contribution is indisputable, she is a leading scientist in a number of areas.

3. Reflection of the candidate's scientific publications in Bulgarian and foreign literature.

As mentioned, Assoc. Dr. Maria Petrova submitted a list of 453 citations to her works, and these citations were not used in the competition for "associate professor". This shows that the candidate's scientific achievements have been noticed and reflected in the literature.

4. Critical notes and recommendations to the candidate's scientific works. I don't have any.

CONCLUSION

The presented materials show systematic, precise and in-depth studies of problems that are important from a scientific point of view, but also have real practical significance. The topic is clearly outlined and its importance and relevance are undoubted.

The scientific works presented by Assoc. Dr. Maria Petrova are sufficient in quantity and quality to meet the requirements of IEES - BAS for holding the academic position of "professor". The scientific and applied contributions are significant and illustrate extensive experience and accumulated in-depth knowledge of the topics. This gives me reason to confidently recommend Assoc. Dr. Maria Petrova to occupy the academic position of "professor" in professional area 4.2. "Chemical sciences" and scientific specialty "Electrochemistry".

04/21/2023

Reviewer:

Assoc. Prof. I

va Popova