

OPINION

on the competition for the holding an academic position “Associate Professor”,
scientific direction 4.2. Chemical Sciences, specialization *Electrochemistry /including
Chemical Power Sources/* at the Institute of Physical Chemistry,
Bulgarian Academy of Sciences,
announced in SG, issue 62, dated 27 July 2021, with a single
candidate: *Nelly Dimitrova Boshkova, PhD, Chief Assistant.*
Member of the Scientific Jury: *Ludmil Borissov Fachikov, PhD, Assoc. Prof.*

This opinion has been prepared in accordance with the recommended requirements for the acquisition of scientific degrees and for holding academic positions at IPC – BAS. My opinion does not provide biographical data, opinions about scientific works, as well as personal impressions of Ch. Assist. Prof. PhD Nelly Boshkova.

1. General characteristic of the research and applied research activities of the candidate.

Ch. Assist. Prof. Dr. Nelly Dimitrova Boshkova presented all the necessary documents on the procedure for establishing the academic position of “associate professor”, according to the minimum national requirements of ZRASRB, the similar of BAS, as well as those determined of IPC.

The research and applied research activities of Ch. Assist. Prof. N. Boshkova is in the field of corrosion and protection of metals, and in particular, on the electrochemical production of zinc, zinc alloys and modified with embedded polymer, organic and inorganic particles, nanoparticles and inhibitors coatings on low carbon steel, with in order to increase the corrosion resistance of steel and improve the protective ability of coatings. The research was conducted with good planning and use of modern electrochemical (PDP, CVA, EIS, etc.), physical and analytical (SEM, XRD, SVET, etc.) methods, as well as salt spray tests.

The candidate participated in the competition with 41 works and one registered patent. 9 of the works were published after the acquisition of PhD, as well as a published monograph, which is not presented as the main habilitation work “Alloys and composites of zinc, increasing the protective and anti-corrosion properties of low carbon steel”, ISBN 978-619-245-154-7, accepted for printing. 15 of the publications are in editions Q1, Q2, Q3, and Q4; 3 are in SJR publications. Published chapters of books - 3 issues. Meanwhile, during the competition procedure, another publication was published with the participation of N. Boshkova, registered in SCOPUS, in edition Q2.

Ch. Assist. Prof. N. Boshkova was the head and participant in 14 international, national and domestic contracts, mainly on the subject of the competition.

2. Main scientific and applied scientific contributions.

Zinc coatings are one of the oldest and mass coatings are widely used in practice, as well as as alloys with other metals. Nevertheless, research in order to increase their protective ability through alloying, co-deposition of polymers, nanoparticles, inhibitors, etc., continues intensively in recent years. In this sense, the topic in which PhD Boshkova works is relevant

in both scientific and applied aspects. In short, the contribution of the scientific production presented by the participant in the competition can be summarized as follows:

- Deposition of zinc and alloy coatings (Zn-Mn and Zn-Co) of weakly acidic electrolyte - determination of the composition and optimal deposition conditions; composition and characteristics of the coatings; comparative study of the corrosion behavior of these coatings in a model solution.

- Preparation of composite coatings: zinc and zinc-alloy, with included polymer particles; characterization of the coatings and determination of their corrosion-protective properties.

- Preparation of composite coatings with built-in inhibitors, organic and inorganic particles; characterization and protective ability of coatings.

- Deposition of zinc and nickel hybrid coatings with embedded carbon spheres and nanotubes - characterization, protective properties.

- Others: corrosion inhibitor testing; conversion films on zinc and zinc alloy coatings in solutions containing Cr^{3+} ; sol-gel protective coatings. Obtaining, characterizing, properties.

3. Impact of the candidate's scientific publications in the bulgarian and foreign literature.

The total number of citations of scientific papers in which Ch. Assist. Prof. N. Boshkova, in the specialized literature, so far is 80, 58 of them are works with which she participated in the competition and 22 citations of works from the dissertation. The co-authorship of foreign scientists in some of the works is an indicator of the importance of the topic and the level of work of both N. Boshkova and the staff of the section "Electrochemistry and Corrosion", in which she works.

In general, it can be concluded that although some papers have been published relatively recently, they find a very good response in the scientific community.

4. Critical remarks and recommendations to the scientific papers of the candidate.

I have no critical remarks in general to the materials with which Ch. Assist. Prof. N. Boshkova participated in the competition. I wish her strength and desire to continue working with the same enthusiasm, and I wish her success.

5. CONCLUSION

The submitted documents for participation in the competition for Assoc. Prof. at IPC - BAS, convincingly prove that the only candidate Ch. Assist. Prof. N. Boshkova fully satisfies the requirements of ZRASRB, BAS, as well as those set by the SC of IPC. All this gives me reason to strongly support her candidacy and to recommend to the Distinguished Members of the Scientific Jury to vote **positively** for the award of the academic position of "Associate Professor" in the scientific direction 4.2. Chemical Sciences, specialization Electrochemistry/ including Chemical Power Sources / Ch. Assistant Professor Dr. Nelly Dimitrova Boshkova.

Date: 03 December 2021

Prepared by: 
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