

OPINION

on the competition for holding the academic position "Associate Professor" at IOMT-BAS,
in professional field "4.2 Chemical sciences",
scientific field "Physical chemistry",
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of the Director of IOMT-BAS*

In the competition for holding the academic position "Associate Professor" in the professional field "4.2 Chemical Sciences" ("Physical chemistry") at the IOMT-BAS only one candidate participates – Assist. Prof. Dr. Biliana Chavdarova Georgieva.

The materials, prepared by the candidate and described in the competition application form, are in accordance with *Development of Academic Staff in the Republic of Bulgaria Act (DASRBA)* and the *Regulations on the conditions and order for acquiring scientific degrees and for holding academic positions in IOMT-BAS*, and include all required documents. Assist. Prof. Dr. Biliana Georgieva is registered in the *Register of the academic staff in the Republic of Bulgaria*, maintained by the National Centre for Information and Documentation (<https://ras.nacid.bg/dissertation-preview/39810>). Data on her academic degree (PhD; PhD thesis titled "Vacuum deposited Sn-O-Te layers as sensors for moisture and reducing gases") and academic position (Assist. Prof. at IOMT) are available.

Assist. Prof. Dr. Biliana Georgieva is a co-author of 53 publications in scientific journals, 42 of which are published in indexed journals with an impact factor/impact rank. Six of the articles are related to the acquisition of PhD degree. In the current competition, she participates with 19 scientific works, which are not part of the doctoral dissertation. 4 publications are published in journals of category Q1, 8 publications - category Q2, 1 publication - Q3, 3 publications - Q4. The total number of citations is 140 according to Scopus as of the date of preparation of the reference by the candidate (148 as of the date of the preparation of the opinion). The Hirsch index of Assist. Prof. Dr. Biliana Georgieva according to data from Scopus is 6. The results of the scientific research conducted with the participation of Assist. Prof. Dr. Biliana Georgieva are widely popularized - they have been presented at over 50 national and international scientific forums.

For participation in the competition Assist. Prof. Dr. Biliana Georgieva presented a reference for the original scientific contributions in scientific publications by indicator groups "C" and "D".

In the reference for the original scientific contributions in the scientific publications, included in the group of indicators "C" (equivalent to habilitation thesis publications) are summarized results published in 5 articles and dedicated to the study of nanomaterials based on metal oxides. The main scientific contributions of the candidate, reflected in the habilitation

reference, are related to the determination of the morphology, structure and phase composition of metal oxides using the methods of transmission electron microscopy and electron diffraction, which allows explaining their properties and revealing potential applications.

14 publications are included in the author reference for the scientific contributions in the publications under indicator “D”, and they are divided into 3 main groups according to the type of systems/processes studied:

- resistive humidity sensors based on thermal-vacuum deposited organic and inorganic thin films;

- thin films of Nb-, Ta- and V-oxides (with additional structured mesopores using various copolymers) for application as optical sensors for volatile organic vapors;

- "green" synthesis of silver nanoparticles.

The author's reference for this group of articles is competently prepared and adequately reflects the scientific contributions:

- physical/chemical adsorption of water molecules on the surface of thin polyimide and SnO₂ films used as sensor materials;

- mesoporous materials with optical and sensor properties, obtained from Nb-, Ta- and V-oxide thin films, and additionally constructed porosity with the help of different polymer materials - templates;

- silver nanoparticles obtained by “green” synthesis in water extracts from the waste products of rose (*Rosa Damascena*), yarrow (*Achillea millefolium*) and lavender (*Lavandula angustifolia*) flowers.

The review of the presented materials shows that the scientific interests of Assist. Prof. Dr. Biliana Georgieva are aimed at researching the relationship between morphology, structure, phase composition, doping, etc. of metal oxides and their optical, sensory, catalytic, electrical and other properties. The methods used by her are transmission electron microscopy and electron diffraction. The obtained results contribute to a deeper understanding of the structure/property relationship of nanomaterials based on metal oxides.

I have no critical remarks on the materials submitted for evaluation.

CONCLUSION

From the presented report on the implementation of the minimum requirements to the BAS and, respectively, the IOMT for the scientific and teaching activities of the candidates for the academic position of “associate professor”, it can be seen that according to each of the indicators Assist. Prof. Dr. Biliana Georgieva has the required number of points. The total number of scientific works of which Dr. Georgieva is a co-author (53) is almost three times larger than those presented for the competition (19). The scientific achievements of Assist. Prof. Dr. Biliana Georgieva are high and fully correspond to the theme of the announced competition. He has the necessary scientific qualifications and is a specialist in the field in which he works.

The materials submitted by the candidate for participation in the competition exceed the requirements for occupying the academic position of “Associate Professor” according to DASRBA, the Regulations for the implementation of DASRBA, as well as the minimum

requirements of BAS and, respectively, IOMT to the scientific and teaching activities of the candidates for the academic position “Associate Professor”. I confidently give a positive assessment to the candidates and recommend to the members of the Scientific Jury and the Scientific Council of IOMT-BAS to choose Assist. Prof. Dr. Biliانا Georgieva for “Associate Professor” in direction 4.2. Chemical Sciences ("Physical chemistry").

Sofia

July 19, 2022

/Assoc. Prof. Silvia Angelova, PhD/