

REPORT

for a competition for occupation of the academic position "Professor" in professional field 4.2. "Chemical Sciences", scientific specialty "Physicochemistry", according to the announcement in SG no. 79 of 04.10.2022

Applicant: Assoc. Professor Dr. Daniela Bogdanova Karashanova, Institute of Optical Materials and Technologies "Acad. J. Malinovski" (IOMT) - BAS

Reviewer: Prof. Dr. Tsvetanka Krumova Babeva, Institute of Optical Materials and Technologies "Acad. J. Malinovski" (IOMT) - BAS

General description of the presented materials

The sole applicant in the competition is Assoc. Prof. Dr. Daniela Karashanova from the Institute of Optical Materials and Technologies "Acad. J. Malinovski" (IOMT) - BAS. For participation in the competition, she submitted a total of 18 articles and 1 BG patent. Six of the published works are thematically merged in the equivalent of a habilitation thesis. All articles were published in referred journals with an impact factor classified in quartiles as follows: Q1 - 12 papers, Q2 - 5 papers, Q3 - 1 paper. In addition to the fact that two-thirds of the papers were published in journals of the Q1 category, i.e. that the articles were published in very prestigious journals with a high impact factor, it also makes a very good impression that some of these journals, for example *Applied Surface Science* are ranked *top 1* in the field. All this confirms the high scientific quality and relevance of the conducted research. 84 independent citations are presented in the competition. The reference in *Scopus* inquired on August 24th Jan 2023 shows 540 citations (excluding self-citations) and *H*-index 11.

Dr. Karashanova fully meets the minimum national requirements, the requirements in ZRAS-BAS and those of IOMT-BAS, and her indicators in individual groups exceed the minimum requirements: group A - 50 points (out of at least 50 pts), group V - 135 pts. (out of at least 100 pts), group G - 280 pt. (out of at least 200 pts), group D - 168 pt. (out of at least 120 pts), group E - 260 pt. (out of at least 150 pts). All publications and citations of Dr. Karashanova, presented in the current competition, have not been used either in her habilitation or in obtaining the PhD degree.

In conclusion, the documents submitted by the applicant fully comply to the requirements of the ZRSARB and the regulations for its implementation.

General characteristics of the applicant's scientific, applied, teaching and administrative activities

Dr. Karashanova works in the field of materials science, investigating the characterization of the phase composition and microstructure of modern materials using transmission electron microscopy. Her long years experience in the field and the gained knowledge during study diverse materials and solving various problems, have made her a distinct expert in electron microscopy and a desirable co-author and collaborator. I to point out

the very strong publication record of Dr. Karashanova especially in the recent years. The number of scientific works referenced in *Scopus* is 120, and only for the last 2 years, their number is 36. Dr. Karashanova has participated in the working teams of 15 research projects, five of which are for bilateral cooperation between BAS and the Academies of the sciences of Belgium and Estonia. She has been a project manager of 2 projects, one of which is still undergoing. In addition, she is a co-author of a Bulgarian patent, which approves the applied scientific nature of some of her research.

According to the teaching activity, Dr. Karashanova delivers a course for PhD students at the BAS PhD Training Center, which attracts great interest every year. She was supervisor of one bachelor student's degree and co-supervisor of two masters students' degrees. From 2008 until now, Dr. Karashanova is the organizer of the Spring Seminar for young scientists and PhD students. In 2013, she was the supervisor of the national student team of Bulgaria for participation in the 1st International Tournament of Young Naturalists, where the team won a bronze medal. Dr. Karashanova is one of the organizers of the 6th Crystallographic Symposium in 2016, as well as the International School of Crystallography in 2017, for which she also won two projects for co-financing from the Bulgarian Science Foundation.

Dr. Karashanova also has experience in science administration. Since 2019, he has been a member of the permanent scientific-expert committee on chemical sciences at the Bulgarian Science Foundation, and since 2021 he has been its deputy chairperson. In the period 2014-2020, she was a representative of the Ministry of Education and Science in the Program Committee of Horizon 2020 in the field of nanotechnology. He is currently the chairperson of the Scientific Council of IOMT and head of the Scientific and Technical Department of IOMT.

Basic and / or applied scientific contributions

I characterize the scientific contributions of the applicant as *"enrichment of existing knowledge and theories and application of scientific achievements in practice"*.

Contributions in the equivalent of the habilitation work are related to the results on the microstructure and phase composition of innovative catalytic materials such as metal particles on a support and oxide materials on porous supports. Beyond the equivalent of a habilitation thesis, scientific contributions concern thin layers of graphene and graphene-like materials, metal nanoparticles obtained by laser ablation in a liquid medium, etc. Having known the work of Dr. Karashanova for a long time, I fully agree with the personal contribution formulated by her herself in the materials presented in the competition, namely "the planning and conducting of the transmission electron microscopic studies of materials and systems that differ in their nature, structure and properties, as well as data analysis of their morphology, microstructure and phase composition".

I have no critical remarks and recommendations.

CONCLUSION

The sole applicant in the competition, Assoc. Professor Dr. Daniela Bogdanova Karashanova, presented sufficient quantity and quality of materials, which not only fully meets the minimum national requirements and those of BAS and IOMT-BAS for occupying the academic position "Professor", but also exceeds them. The applicant's scientific research activity is in an up-to-date field, the results obtained contribute positively to the field and are visible in the international research society. The applicant has a strong publication record, especially in recent years, as well as administrative experience. There is no doubt of plagiarism in the materials presented.

On the basis of the above, I give my positive assessment and strongly recommend to the honorable Scientific Jury to support the application and propose to the Scientific Council of IOMT - BAS to award Assoc. Prof. Dr. Daniela Bogdanova Karashanova the academic position of "Professor" in professional field 4.2. Chemical Sciences.

Date: 25th Jan 2023

Written by:

/prof. Dr. Tsvetanka Babeva/