

OPINION

On the application of Assistant Professor, Kamelia Todorova Hristova-Panusheva, PhD

For the opened academic position "Associate Professor" in the professional field 4.3. „Biological sciences“, Scientific specialty „Biophysics“,
Announced in SG, issue number 58/18.07.2025

Written by member of the Scientific Commission

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1. General characteristic of presented materials

For the abovementioned position application was submitted by a single candidate, Dr. Kamelia Todorova Hristova-Panusheva, Assistant Professor at the Laboratory of Electroinduced and adhesive properties at the Institute of Biophysics and Biomedical Engineering. To participate in the competition, Dr. Panusheva submitted a total of 19 publications, 10 of which are published in scientific journals with an impact factor and 9 publications in international scientific journals without an impact factor. Eight of Dr. Panusheva's publications are of Q1 category, 2 of Q2, 2 of Q3 and 2 of Q4 category, which testifies to the high level of scientific results from her work. Three of the publications included in the competition materials have an impact factor exceeding 5 and four have an impact factor around 4, which undoubtedly testifies to the high level of scientific results from her work. A reference to the Scopus database also confirms the applicant's 170 citations of works with her coauthorship and h-index equal to 6. A very good impression makes the tendency for a strong increase in the citations of K. Panusheva's publications in the last year (57 citations in 2025 compared to ~20 citations for both 2024 and 2023). Dr. Panusheva has promoted the results of her research work at more than 15 international and national scientific forums with oral and poster presentations, and has also participated in four successfully completed and reported projects (one under COST Action funded by the European Union, one infrastructure project funded by the Ministry of Education, Youth and Science of the Republic of Bulgaria, one funded by the Bulgarian Scientific Research Fund, one funded by the Bulgarian Academy of Sciences. Currently, Dr. Kamenia Panusheva is actively participating in two ongoing projects funded by the Bulgarian Scientific Research Fund. During her career development,

Dr. Panusheva has improved her qualifications by participating in international working teams during her specializations in leading scientific Research Centres in Germany and Spain.

2. General characteristics of the applicant's scientific and applied research

Dr. Hristova-Panusheva's scientific activity is mainly in the field of cellular biophysics and, more specifically, her work is focused on the analysis of the interaction of various biological cells with a wide class of nanomaterials, mainly inorganic nanoadditives (metal nanoparticles, carbon nanostructures, nanodiamond materials, etc.) with applications for drug delivery systems, photothermal anticancer therapy, bone tissue engineering and other biomedical applications. In recent decades, there has been a growing public interest in nanotechnology applications and in particular in various types of inorganic nanoparticles, including gold, silver, metal oxides, nanodiamond and carbon nanomaterials, which are widely used both as additives in the design and production of effective systems for the transport and targeted delivery of drugs into the blood, and to optimize and achieve maximum efficiency while minimizing side effects in the promising non-invasive method for cancer treatment, such as photothermal anticancer therapy mediated by nanomaterials. In the presented documents a special attention is focused on the assessment of the biocompatibility of the studied materials and the development of strategies for improving their qualities. Particular attention in the works of Kamelia Panusheva is paid to the study and optimization of the properties and applications of graphene oxide nanomaterials with and without surface functionalization, and the advantages of these materials in a number of biomedical applications have been proven. In addition, a significant part of the contributions, mainly in the candidate's habilitation work, is focused on the optimized use of laser irradiation (continuous and pulsed) in the therapy of cancer formations, varying the different classes of laser sources and the parameters of the radiation used, such as wavelength, power density and pulse duration. All this makes Dr. Panusheva's research extremely relevant and presupposes the wide potential application of the developed methodologies and the obtained results. Apart from her habilitation work, Dr. Panusheva's research covers a broader area of biophysics and biomedicine and includes development and characterization of new materials and coatings for tissue engineering, studies of cell adhesion, investigation of the biological effects of graphene oxide on colon cancer cells and rat liver, assessment of the biocompatibility of plant extracts for use in cosmetics, etc.

Overall, the contributions of Dr. Kamelia Panusheva can be defined as both fundamental and applied science.

3. Basic scientific and applied scientific contributions with an assessment of the extent to which they are a candidate's personal achievement

I characterize Dr. Panusheva's achievements mainly as "experimental obtaining and theoretical confirmation of new facts and enrichment of existing knowledge" (in the habilitation work IA and IB, as well as apart from the habilitation work IIA, IIC, IID and IIE) as well as "development of new original methods and optimization of the qualities of materials" (II B).

The personal contribution of the candidate in the submitted materials can be judged by the fact that Kamelia Panusheva is the first author in three of the publications and the second author in 5 of the submitted publications. In one of the manuscripts it is explicitly mentioned that Dr. Panusheva has an equal contribution with the first author (Zlatina Gospodinova). In addition, I personally know the work of Kamelia Panusheva, her workaholism, accuracy and tendency to in-depth critical analysis of the obtained results and I have no doubt in the personal contribution of the candidate to the submitted for the competition materials.

4. Critical remarks and recommendations

I have no critical comments on the materials presented.

5. Conclusion

The scientific output of Kamelia Todorova Hristova-Panusheva contains a significant amount of original results, both fundamental and applied in nature, and reflects achievements in several extremely relevant and promising scientific and applied fields. I know the candidate personally and can say that Kamelia Panusheva is a highly qualified young person with in-depth knowledge and analytical thinking, who is formed as a scientist and can formulate, solve and manage complex scientific and research tasks and problems, as well as carry out research using novel and advanced techniques and methods. The submitted materials for the competition fully comply with the requirements of the Law for the development of the academic staff in the Republic of Bulgaria and the Regulations for its implementation in BAS and in the IBPBME-BAS.

Considering the abovementioned I can confidently recommend to the Scientific Commission and to the Scientific Council of the Institute of Biophysics and Biomedical Engineering - BAS to assign the scientific position “Associate Professor” to Dr. Kamelia Todorova Hristova-Panusheva in the professional field 4.3. „Biological sciences “, Scientific specialty „Biophysics “.

24.11.2025



/Prof. Julia Genova, PhD/