

Attitude of Reviewer

on competition for the occupation of the academic position "Associate Professor" in the professional field 4.1 "Physical Sciences" (Electric, magnetic and optical properties of Condensed matter), announced by the Sofia University "St. Kliment Ohridski" in SG no. 93 of 26. 11. 2019

Applicant: Assistant Professor Dr. Kiril Mladenov Kirilov, Faculty of Physics at SU

Jury member: Associate Professor Dr. Peter Metodiev Rafailov, ISSP – BAS

1. *General description of the materials presented.* The total number of scientific publications of the applicant is 39; 29 of them are in refereed journals and 10 in conference proceedings. This indicates a significant and relatively persistent publication activity, both before and after receiving the PhD degree in 2008. As the deadline for submission of documents for the present competition has passed before the entry into force of the new rules for development of the academic staff of the University of Sofia, I assume that the applicant shall be assessed according to the minimal national requirements as formulated in the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and its Regulations.

Dr. Kirilov presents himself in this competition with 16 publications, of which 4 articles with category Q1 form his habilitation work; the remaining 12 papers (of which 2 - category Q1, 3 - category Q2, 6 - category Q3 and 1 - category Q4) have been submitted as "scientific publications beyond the habilitation work" in accordance with the new provisions of the ADASRB and the Regulations for its Application. At the first meeting of the jury, it was verified and confirmed that the publications presented in the competition do not have any match with those on which his PhD thesis was based and which were used to obtain the PhD degree. The applicant has also provided a list of 89 independent citations and it is not completely clear what part of them he submits to meet the criteria of indicator D11. I assume that these are the first 25 citations, as stated in document 12 of the list of documents submitted for the competition and that the "citations 1-50" quoted in Table B5 are given for informational purposes, in order to demonstrate that Dr. Kirilov satisfies also the increased citation criteria of the Faculty of Physics at Sofia University. The presented assets yield 100 points in indicator group V, 212 points in indicator group G and 50 points in group D (D11) of the Regulations for Application of the ADASRB, which fully satisfies the minimum national requirements for occupation of the position "associate professor". The high level of research described in the submitted articles is emphasized by their acceptance and publication in prestigious journals with high impact factors such as Applied Surface Science, Semiconductor Science and Technology, Journal of Physics D, Physica Status Solidi, Colloids & Surfaces A etc.

2. *General characterization of the scientific, applied and educational activity of the applicant.* The applicant participates in an impressive number of 23 scientific projects with a wide range of topics. In one of them devoted to research of nitride nanostructures for optoelectronics Dr. Kirilov is project leader. In his scientific and applied activities, the applicant specializes in various optical characterization techniques as well as in the electrical testing of the samples, which emphasizes the importance of his contribution to each of the studies performed.

The applicant has supervised 3 bachelor's theses and 1 master's thesis. In the last 3 years, Dr. Kirilov has had more than full-time teaching in classroom and extracurricular activities. His work with pupils through his participation in the National Commission for Olympiads in Physics is also extremely valuable in view of the need to make physics more popular in secondary education.

It creates a very positive impression that the scientific, applied and educational activity of the applicant, although typical for a university scientist, are harmoniously combined and complement and support each other. As an example, I would mention the didactic elements in the topic of publication 13 and the activity of Dr. Kirilov as a team mentor in the Inventory Marathon competition.

3. *Analysis of the scientific contributions of the applicant with an assessment of their character.* Among the applicant's most significant contributions I would point out the following:

- Participation in the development of a method for reproducible deposition of single to few-layered nano-sized graphene with good electrical conductivity;
- Design of an experiment to study samples of graphene oxide with cathodoluminescence;
- Participation in the optical characterization of layers, quantum wells and superlattices in various nitride materials of the GaInAs(Sb)N system;
- Participation in the creation of a vector model for analysis of the amplitude and phase of the surface photovoltage and the application of the model in complex nanostructures.
- Design of a novel feedthrough for insertion of an optical fiber for cathodoluminescence measurements in vacuum systems.

I support all contributions presented by the applicant. He demonstrates the ability to identify unclear issues and independently find original solutions to them. The scientific contributions presented can be characterized as *enrichment of existing knowledge and theories with new facts, both in terms of fundamental and applied science, and progress towards the future practical application of scientific achievements.*

I have no critical comments on the materials presented. The applicant's publications have been widely reflected through over 100 independent citations in the scientific literature (mainly abroad). In this sense, his scientometric data, such as citations and Hirsch index, also stand out positively if compared to the Recommended requirements for scientific degrees and academic positions at the Faculty of Physics of Sofia University before the amendment of the ADASRB.

Conclusion. The above analysis demonstrates that the applicant fully satisfies the requirements of the ADASRB and the Regulations for its application for occupation of the position "associate professor" and characterizes him as a promising scientist, capable of planning and leading scientific research. Therefore, I strongly propose to the Honorable Jury to recommend the election of Assistant Professor Dr. Kiril Mladenov Kirilov in the academic position "Associate Professor" by the Faculty Council of the Faculty of Physics of Sofia University "St. Kliment Ohridski".

Sofia, 07. 02. 2020

Jury member: /signed/
Associate Professor Dr. Peter Rafailov