

OPINION

Based on the submitted materials for participation in a competition for the occupation of the academic position "Associate Professor" in professional direction 4.5. Mathematics, special "Mathematical modeling and application of mathematics" (applications in computational physics and biology), announced in State Gazette (SG) no. 21 of 15.03.2022, for the needs of the "Scientific calculations with Laboratory of 3D digitization and microstructural analysis" section of IIKT-BAS

Author of the opinion: Prof. Dr. Nina Hristova Pesheva, Institute of Mechanics - BAS, appointed as a member of the scientific jury for conducting the competition by ORDER No.: 131/13.05.2022, of the Director of IIKT-BAS, in execution of the decision of the SC of IIKT-BAN from **Minutes No.:** 4/27.04.2022г. for a scientific jury approval.

1. General description of the submitted materials for participation in the competition.

The competition was announced in SG no. 21 of 15.03.2022, and also on the website of IIKT-BAS, according to the requirements of Art. 47(1) of the Regulations for the implementation of the ZRSARB (ЗРАСРБ -- Law on the Development of the Academic Staff of a Republic of Bulgaria). One candidate submitted documents for participation in the competition – Senior Assistant Prof. DR. ELENA BOYANOVA LILKOVA, as she submitted the following documents: 1) resume; appendix 1A -- list of all scientific publications; appendix 1B - list of reports presented at scientific conferences; Annex 1V - list of participations in projects and contracts; appendix 1G List of independent citations; 2) a copy of a diploma for the educational and scientific degree "doctor"; 3) a certificate of academic position held and internship in the specialty; 4) list of scientific publications for participation in the competition; 5) list of noticed citations; 6) translation of abstracts; 7) copies of publications; 8) certificate of fulfillment of the minimum requirements for an associate professor (IIKT); 9) certificate of fulfillment of the minimum requirements for an associate professor (NACID); 10) author reference for contributions; 11) declaration by the candidate about the absence of proven plagiarism.

The Commission for Review of Documents for the Competition, appointed by order of the Director of IIKT-BAS, has checked the submitted documents and found that they meet all the requirements of ZRASRB.

2. General characteristics of the candidate's scientific and scientific-applied activities (education and professional experience)

Dr. Elena Lilkova, senior assistant professor, received her higher education at Sofia University "Kl. Ohridski"- FzF (2009-2011), and in 2009 she obtained the educational degree "Bachelor" in physics, and in 2011 - "Master" in medical physics. After that, she continued her education and in 2011-2015 she was a doctoral student in the field of "Physics of atoms and molecules"

at the Faculty of Physics of Sofia University. She successfully defended a doctoral thesis in 2015 entitled "Investigation of human interferon gamma by molecular dynamic simulations".

From November 2015 to December 2017, she works as a programmer (software developer) at IIKT in the "Scientific Calculations" section and developed programs for modeling biological molecules, then she became an assistant professor from March 2015 to November 2015 in the same section. In December 2017, she was elected senior assistant professor in "Computer Modeling of Biological Molecules". From the information presented, it can be seen that the candidate has all the necessary prerequisites that make her a suitable candidate for work on the topic of the announced competition for **associate professor**: the candidate holds the educational and scientific degree "doctor"; the candidate has at least 7 years of experience as a member of a research team at IIKT-BAS, working in the field of computational physics - molecular modeling, medical physics, etc.

Minimal requirements

The candidate submitted for participation in the competition a total of 21 scientific publications (19 of which are published and 2 accepted for publication), 16 of the published scientific articles are visible in SCOPUS/Web of Science, and 4 have an impact factor (2 in Q1, 1 in Q2 and 1 in Q3), the rest have SJR. The two accepted for print have SJR. Publication G1 should not be on this list as it is included in the candidate's PhD thesis and I have not taken this publication into consideration.

The candidate has a doctoral degree and has the required number of publications that do not repeat those presented for the acquisition of the educational and scientific degree "doctor". As can be seen from the table below, the candidate meets and even exceeds the minimal requirements for occupying the academic position of associate professor in most indicators of the regulations for the implementation of ŽARASRB, as well as the minimum requirements of the IIKT regulations (which are higher than the national ones).

A SCOPUS query shows that the candidate has a Hirsch factor of $h=2$ and a total of 23 co-authors.

The candidate's participation in a large number of projects - with FNI and MES grant - a total of 13, as well as in 3 projects with European funding, is impressive. According to this indicator (E), the minimum requirements are significantly exceeded.

показател	Мин. Изисквания		кандидат
	Национални; за ИИКТ		
А	50	50	50
В	100	100	110
Г	220	260	280
Д	60	70	156
Е	20	20	143

3. Basic scientific and scientific-applied contributions

From the presented list of publications (as well as a reference in SCOPUS), it can be seen that the applicant has been very active in the last 4-5 years - there are 4 publications in 2019, 2 in 2020, 1 in 2021 and 2 accepted in 2022, such as these publications are "visible" in SCOPUS/Web of Science. Based on presented materials - doctoral dissertation, articles, reports and participation in projects, it can be seen that the main part of the scientific work of Senior Assistant Professor Elena Lilkova is in the field of mathematical and physical modeling of biological macromolecules and complexes. This is an interesting, very promising and rapidly developing multidisciplinary scientific field, with complex objects of research, which requires knowledge both in the field of physics and mathematics, as well as sufficient knowledge in the field of biology and medicine for the successful implementation of scientific calculations.

I fully accept the contributions formulated by the candidate.

The submitted works give reason to believe that the candidate possesses scientific knowledge and research abilities in scientific fields related to professional direction 4.5 "Mathematics", such as numerical methods and programming, processing and analysis of large data sets, mathematical modeling in the field of biology.

4. Reflection of the candidate's results in the works of other authors.

A list of noticed citations of works in which the candidate is an author or co-author has been prepared and attached. Independent citations noted and presented are total of 26. This exceeds (more than 2 times) the minimum requirements in the regulations of IIKT-BAS for application of ZRASRB.

Visible in SCOPUS for the period 2010 - 2022 are a total of 32 citations (excluding self-citations of all authors), i.e., candidate's works are basically cited in IF and/or SJR journals.

5. Candidate's contribution to collective publications.

In the submitted materials for participation in the competition - there are no references provided to determine the contribution of the individual authors in the joint publications.

I accept that the candidate's participation is equal to the participation of the other co-authors.

6. Personal impressions

I have very good personal impressions of the candidate – sen. assistant professor Elena Lilkova, based on her participation in seminars and conferences. She is an intelligent, persistent and motivated young scientist who deserves to be supported in her scientific growth.

6. Notes and recommendations

I have no other comments except the inclusion of publication G1, which I assume is an inadvertent error.

Conclusion

The candidate, Dr. Elena Lilkova, senior assistant professor, meets all the requirements of the Law on the Development of the Academic Staff of a Republic of Bulgaria and the Rules for its Application for occupying the academic position of associate professor at IIKT - BAS.

I support the decision of the scientific jury to propose to the SC of IIKT-BAS to make a positive decision and choose senior assistant professor Dr. Elena Lilkova for associate professor according to the competition announced by IIKT in professional field 4.5. Mathematics, special "Mathematical modeling and application of mathematics" (applications in computational physics and biology) (announced by IIKT-BAS in SG No. 21 of 15.03.2022).

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