

OPINION

**regarding the competition for occupation of the academic position “Associate Professor”
in professional field 4.1 Physical sciences (General physics),
for the needs of the Sofia University „St. Kliment Ohridski“ (SU),
Faculty of Physics, announced in SG № 21 from 15.03.2022**

The opinion has been prepared by: **Assoc. Prof. Dr. Ruzha Georgieva Harizanova – UCTM-Sofia, Professional field 4.1 Physical sciences, Scientific area 4 Natural sciences, mathematics and informatics**, as a member of the scientific jury for the competition, according to an Order № ПД-38-248/20.05.2022 and ПД-38-266/02.06.2022 of the Rector of Sofia University.

Only one candidate has submitted documents for the announced competition:
Head Assist.-Prof. Dr. Gergana Emilova Alexieva, Faculty of Physics, SU “St. Kl. Ohridski”.

I. General description of the submitted materials

1. Information on the application

The documents submitted by the candidate for the competition correspond to the requirements of LDASRB, RALDASRB and the Rules on the conditions and procedure for acquiring science degrees and holding academic positions in Sofia University “St. Kliment Ohridski” (RCPADHAPSU).

One candidate applies for the competition – Head Assist.-Prof. Dr. Gergana Emilova Alexieva. Dr. Alexieva participates in the competition for the occupation of the academic position “Associate Professor” announced for the needs of the General Physics Department at the Faculty of Physics of SU with 19 publications and a total number of 30 scientific publications, according to the available materials. All scientific works submitted for the competition are published in Bulgarian and foreign scientific magazines. Certificates have been presented certifying the work experience in the field of the specialty, for the study employment of Dr. Alexieva during the period 2016-2021, certificate on the publication activity, list of supervised/consulted diploma-students and memoranda about the participation in and management of scientific contracts. The candidate has prepared and submitted a detailed list for the compliance with the minimum national requirements, according to article 2b, paragraphs 2 and 3 of the LDASRB in the scientific area 4 Natural sciences, mathematics and informatics, professional field 4.1 Physical sciences, of the total number of publication as well as of those submitted for the competition for the occupation of the academic position “Associate Professor”, a summary for each of the submitted publications and list of the citations are supplied and the main contributions in each work, as well as the personal contributions of Dr. Alexieva are outlined.

In the submitted curriculum vitae, the professional experience of the candidate as a lecturer and a researcher is described and a detailed list of the practical/seminar and lecturing courses taught

is supplied. The submitted documents exactly and accurately reflect the scientific and teaching activity of Head Assist.-Prof. G. Alexieva.

2. Information on the applicant

Dr. Alexieva has graduated from the Faculty of Physics of SU “St. Kl. Ohridski” with a specialty Solid State Physics in 1997 and between 1998 and 2002 was a regular PhD student at the same faculty. In 2013 she defended her PhD thesis entitled “Acoustic properties and applications of polymer materials” with a scientific consultant Prof. DSc V. Strashilov and acquired the educational and scientific degree “Doctor”. Between 2003 and 2013 she was employed as an Assist.-Professor and from 2013 till present – as a Head Assist.-Prof. at the Faculty of Physics of SU (Departments of SSP and ME and General physics). Head Assist.-Prof. Gergana Alexieva has an impeccable pedagogical activity with more than 2 500 academic hours. She has supervised 2 and consulted 1 diploma students who successfully graduated their theses, as well as she has developed 3 laboratory exercises for different practical courses taught at the Faculty of Physics of SU. She has supervised seminar and practical exercises in physics, programming and numerical methods as well as she has delivered lectures for the students from the Faculty of Chemistry and Pharmacy and from the Biological Faculty of SU. Between 1998 and 2000 she had two long-term specializations at the TU Munich, Germany. She participated as a member of 5 research projects (1 international and 4 national) and guided 1 research project financially supported by the SU. Dr. Alexieva has disseminated results from the work on these projects in the form of poster and oral presentations at a number of national and international conferences.

3. General assessment of the scientific work and the achievements of the candidate

The scientific area and the research interests of Dr. Alexieva concern the solving of theoretical and theoretical with application elements problems in the field of materials science and applied physics. The main part of her research is dedicated to the study of acoustic, acousto-optical and optical properties of bulk and thin film materials with potential application in sensor systems, in microelectronics, ecology and pharmacy. A considerable number of the presented scientific results are achieved by the application of the quartz crystal microbalance method due to its high sensitivity and precision. The results from the investigation of Dr. G. Alexieva have led to the solving of various experimental, methodological, engineering and technological problems and are acquired as a result of her collaboration with other scientists. The total number of her scientific publications is 30 (25 are published in journals referred in the international data bases) and they concern the solving of a number of methodological, engineering and technological tasks. These publications are result of her cooperation with other scientists and are published in leading Bulgarian and international scientific magazines. In the competition Dr. Alexieva applies with 19 scientific works published in indexed and peer-reviewed journals and which are in the field of the synthesis and characterization of the physico-chemical and acousto-optical properties of different solid state

materials – mainly polymers, medicinal substances, chalcogenide glasses and glass-crystalline materials. The submitted scientific works of Dr. Gergana Alexieva for the competition as a score are relevant to and for most of the indicators exceed the minimum national requirements (article 2b, paragraphs 2 and 3 of the LDASRB) and the additional requirements of the SU “St. Kl. Ohridski” for the occupation of the academic position “Associate Professor” in the scientific area and professional field of the competition: indicator A /required 50 points/ - 50 points; indicator B /required 100/ - 119 points; indicator G /required 200/ - 234 points; indicator D /required 100/ - 104 points; indicator E – 80 points. The candidate as well meets or even exceeds the minimum requirements imposed by the Faculty of Physics of SU for the occupation of the academic position “Associate Professor”. The total score is 587 points. The scientific publications submitted for the competition differ from those submitted for the defense of the PhD thesis and no indications for plagiarism are legally detected.

4. Characterization and assessment of the teaching activity of the candidate

According to the presented official certificates, Dr. G. Alexieva has a remarkable pedagogical activity from more than 2 800 teaching hours during the last 6 years, more than 2 500 from which are from academic hours. She has supervised seminar and practical exercises in the following subjects: Basics of computer knowledge; Condensed matter physics; Crystallography and physics of crystals; Polymers in microelectronics; Acoustic and optical waves in solids; Electricity and magnetism; Optics; Physics; Programming and computational physics; Contemporary experimental methods; Introduction to programming; Physics of wave processes; Geometric optics; Computational methods for data processing; Medical statistics; Medical statistics. Data processing; Introduction to astronomical optics; Computer modeling in optics. She was also appointed to deliver lectures in Physics of wave processes, Basics of acoustics; the lectures in Physics within the teaching course “Physics and Biophysics” for students from the Faculty of Chemistry and Pharmacy and Physics for students from the Biological Faculty of SU.

5. Meaningful analysis of the theoretical and theoretical with elements of application contributions of the candidate contained in the materials submitted for the competition

The contributions in the scientific publications submitted for the competition by Head Assist.-Prof. Alexieva correspond to the development of already existing knowledge and probing of the possibility for practical application of scientific achievements and could be summarized as follows: 1) Performing of experiments and solving of theoretical with elements of application problems aiming the characterization of the structure and the properties of new solid state materials by utilizing a number of acoustic, acousto-optical and optical methods, and 2) Accumulation of information for the applicability of the respective solid state materials as parts of the construction of sensors and for pharmaceutical applications.

The relevance of the research of Dr. Alexieva is determined by the fact that her work is published in renowned journals in the field of materials science and applied physics: 4 papers are published in magazines with a quartile Q1 [2, 3, 14, 16]; 8 – in Q2 [1, 6, 8, 10, 11, 15, 18, 19]; 3 - in Q3 [7, 12, 13] and 4 – in Q4 journals [4, 5, 9, 17]. 6 of the publications submitted for the competition substitute for the habilitation thesis [2, 3, 5, 9, 14, 19] and 13 correspond to indicator G [1, 4, 6-8, 10-13, 15-18]. The publication activity of the candidate is significant which is supported by the large number of citations of her work, i.e. the total number of citations registered before the beginning of the competition is 52 (51 in Scopus and 1 additional in Web of Science): publication [6] has been cited 11 times, [5] and [11] – have 9 citations, [4] – 7 citations and publications [3] and [8] – 5 citations. Despite that all publications are the result of co-authorship, the personal contribution of Dr. Alexieva is indisputable and well-outlined in each of the articles and could be summarized as follows: measurements by quartz crystal microbalance; in the scientific problem statement and the writing of most of the manuscripts; processing and analysis of the data from the acoustic and acousto-optical measurements; preparation of multilayered structures for multielectrode materials; construction of set-ups for acoustic measurements. In 7 of the submitted publications her contribution could be described as significant and in 4 of the articles she is the corresponding author. The candidate's h-index is 5.

6. Remarks and recommendations

In the submitted summary of the contributions there are few insignificant comments that should be kept in mind though they do not directly concern the field of competence of the candidate– for example, in the analysis of publication [13] the term “solid state solutions” is used in stead of “solid solutions”. However, these remarks do not diminish the significance of the presented work and the reported results.

7. Personal impressions from the candidate

The candidate makes the impression of being a serious and thorough teacher and researcher who has a responsible and critical attitude towards the analysis and the interpretation of the obtained results and while solving problems. The personal contribution of Dr. Alexieva in the publications submitted for the competition is significant, clearly defined and indisputable.

8. Conclusion on the candidature

After getting acquainted to the materials submitted by Dr. Alexieva for the competition and based on the analysis of their significance and the contributions contained in them, I **confirm** that the scientific achievements correspond to the LDASRB, the Rules of its application and the respective Rules of the SU “St. Kl. Ohridski” for the occupation from the candidate of the academic position “Associate Professor” in the scientific area 4. Natural sciences, mathematics and informatics, professional field 4.1 Physical sciences. The candidate satisfies the minimum national requirements

in the respective professional area and no plagiarism is legally established in her scientific publications submitted for the competition. The above stated comments do not diminish the importance of the results submitted for the competition and my final assessment for the candidature of Dr. Alexieva is **positive**.

II. GENERAL CONCLUSION

Based on the above stated, I recommend to the scientific jury to propose the election competent authority at the Faculty of Physics of SU “St. Kl. Ohridski” to appoint Head Assistant-Professor Dr. Gergana Emilova Alexieva on the academic position “Associate Professor” in professional field 4.1 Physical sciences.

24.06.2022.

The opinion is submitted by:

(Assoc. Prof. Dr. Ruzha Harizanova)