



## SCIENTIFIC STATEMENT

### **on the competition for the occupation of the academic post "Associate Professor"**

in the sphere of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological Sciences (Biophysics) according to the announcement in the SG№32/16.04.2021

**with the candidate Margarita Angelova Kouzmanova, PhD, Assistant Professor in the Department of Biophysics and Radiobiology of Faculty of Biology, Sofia University "St. Kliment Ohridski" (BF-SU)**

**by Miroslava Konstantinova Zhiponova, PhD, Associate Professor in the Department of Plant Physiology, BF-SU, member of the Scientific Jury of the competition with order №RD38-264 from 11.06.2021 of the Rector of SU "St. Kliment Ohridski", Prof. Anastas Gerdzhikov, Dr. Habil.**

### **1. General presentation of the candidate and the procedure**

#### **1.1. Presentation of the candidate**

Margarita Angelova Kouzmanova graduated with a master's degree Teacher in Biology and Chemistry at BF-SU, after which she defended her doctorate at the Department of Biophysics and Radiobiology on the topic "Study of the biological action and evaluation of the radioprotective efficiency of millimeter electromagnetic waves." In 1987 she started working as a biologist-specialist in the same department, in 1999 she became a senior assistant and since 2002 she has been an Assistant Professor. Over 30 years of work experience of Dr. Kouzmanova in the Department of Biophysics and Radiobiology testifies to perseverance and dedication to the teaching and research work, as well as to the colleagues. In accordance with the focus of the department, Dr. Kouzmanova's research interests include the action of physical factors on biological systems and human health, especially the action of low-intensity electromagnetic fields and microwaves; the application of physical factors in medicine; stress and adaptation; radiobiology; photobiophysics, biophysics of photosynthesis, chlorophyll fluorescence. In conclusion, Assist. Prof. Dr. Margarita Kouzmanova is a longtime member of the Department of Biophysics and Radiobiology and she has gained significant experience in the field of biophysics, which makes her a suitable candidate for the position.

## **1.2. Analysis of the presented materials**

The presented materials, available online on the website of BF-SU, are in accordance with the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions in Sofia University "St. Kl. Ohridski". Assist. Prof. Dr. Kouzmanova presented a list of 52 scientific works as a total scientific production, including: 1 dissertation work; 31 peer-reviewed publications, of which 1 book (№24), 7 chapters in a book (№1, 5, 6, 9, 10, 14, 20) and 23 scientific articles in peer-reviewed journals; 20 reports published in proceedings of international and national scientific forums. The results of the research activity were reported at 56 international and national scientific forums by posters and reports.

In the competition for the academic position of "Associate Professor" are included 19 publications. Of these publications, 14 scientific articles are in international peer-reviewed and indexed journals, distributed as follows: by quartiles Q1 - 7 pcs. (№8, 10, 14, 15, 16, 17, 18), Q2 - 2 pcs. (№13, 19), Q3 - 2 pcs (№5, 11), and Q4 - 1 pc. (№7); in journals with IF, without quartile for the year of publication - 2 pcs. (№1, 2). The other 5 publications are in books as follows: book - 1 pc. (№12), chapters from books - 4 pcs. (№3, 4, 6, 9). According to the database with scientific information Scopus, the presented works are cited about 390 times, with h-index 6. Dr. Kouzmanova has participated in 7 projects with biophysical focus – 4 national research projects, in 2 of which she was a supervisor, and 3 international projects. In conclusion, the scientometric indicators of the scientific and project production of the candidate cover the recommended criteria for holding the academic position of "Associate Professor". The research work was conducted in the Department of Biophysics and Radiobiology together with other institutions in the country and abroad and it is of interest and importance for the national and international scientific community.

## **2. General assessment of the candidate's activity**

### **2.1. Evaluation of the educational and pedagogical activity**

As a lecturer at BF-SU Assist. Prof. Dr. Margarita Kouzmanova performed significant teaching and pedagogical activities in the educational and qualification degrees "Bachelor" and "Master" with an average total and auditorium employment in the last 5 years 417 and 349 hours, respectively. Dr. Kouzmanova developed a total of 95 h of lectures and 42 h of practical exercises. She developed and conducted lecture courses "Action of Physical Factors on Living Systems", "Biophysics and Radiobiology", "Fundamentals of Radiobiology". She developed and conducted practical classes for the course in Biophysics, for the cycle Radiobiology and Dosimetry of

Ionizing Radiation, for the course in Action of Physical Factors, for the summer training practice in Biophysics. Dr. Kouzmanova was supervisor of 6 successfully graduated students, as well as of 116 term papers of students majoring in specialty Molecular Biology. In conclusion, Dr. Kouzmanova is actively involved in conducting and optimizing the teaching material in the Department of Biophysics and Radiobiology.

## **2.2. Evaluation of the scientific and scientific-applied activity**

From the scientometric data it can be seen that the scientific activity of Assist. Prof. Dr. Margarita Kouzmanova is focused on the scientific field of the competition – Biophysics. The scientific contributions are highlighted in three main areas:

- biological effects of magnetic and electromagnetic fields
- combined action of non-ionizing and ionizing radiation
- biophysics of photosynthesis

The studied effects of magnetic and electromagnetic fields, as well as the action of non-ionizing and ionizing radiation are fundamental, and they are focused on changes in erythrocyte membranes and at the level of the whole organism with rats. These studies could find medical applications for the prevention and treatment of diseases through non-invasive approaches, as well as for the analysis of technological impacts (telecommunications, mobile phones) on living organisms. The development of the biophysical method based on measurements of rapid chlorophyll fluorescence has made a significant contribution. This approach can be used to non-invasively determine the state of photosynthesis and, accordingly, the functional state of plants in the presence of changes in the environment. The method can be applied in agriculture for rapid assessment of the condition of economically important crops under the influence of various environmental factors or genotype. For this purpose, fundamental research is needed to determine the relationships between the plant's reactions to specific changes, which Dr. Kouzmanova is developing together with the team of Prof. Goltsev. I believe that the contributions from the research work of Dr. Kouzmanova are significant and provide opportunities for continuing research on the topic, as well as for applying the experience gained in new fundamental and applied research together with the staff of the Department of Biophysics and Radiobiology, and with other scientific groups.

### **2.3. Evaluation of administrative and organizational activities, personal impressions**

Assist. Prof. Dr. Kouzmanova participates in various administrative activities at BF-SU: Secretary of the Master Program of Biophysics until 2016; participates in the candidate-student campaigns as a quaestor and examiner; she is responsible for the faculty Isotope Laboratory; she is responsible for the collection from the departments and the transfer of chemical substances containing radioactive isotopes; she is a member of the group for the faculty's fire protection and of the group of floor managers. She is actively involved in organizational activities related to the promotion of science: she is a member of the commission for organizing and conducting the National Competition in Natural Sciences and Ecology; she participates in the faculty's Open Doors and in organizing visits of groups of pupils; she participates in the organizing committees of scientific events with international participation – schools in the field of biophysics. My personal impressions from Dr. Margarita Kouzmanova are as a colleague who always finds a way to overcome challenges. She acts bravely and combinatorially, both to achieve personal results and to assist colleagues. She is distinguished by her commitment and responsibility to various activities in the faculty, including research, administrative and organizational tasks. In conclusion, Dr. Kouzmanova is a worthy member of BF-SU and the Department of Biophysics and Radiobiology, which is distinguished by her dedication in conducting effective activities of various kinds.

### **3. Conclusion**

The thorough review of the documentation submitted for review highlighted the candidate as an established researcher in the field of biophysics. My conclusion is that the scientific production of Assist. Prof. Dr. Kouzmanova satisfies the recommended criteria of the Law for Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the Regulations for the conditions and the order for acquiring scientific degrees and holding academic positions in SU "St. Kl. Ohridski". Based on the review, I strongly recommend the esteemed Scientific Jury to prepare a report-proposal to the Faculty Council of BF-SU for the election of Assist. Prof. Dr. Margarita Angelova Kouzmanova for the academic position of "Associate Professor" in the field of higher education 4. Natural Sciences, Mathematics and Informatics; professional field 4.3. Biological Sciences (Biophysics).

29.07.2021

Member of the Scientific Jury:

/Assoc. Prof. Miroslava Zhiponova, PhD/