Review/Opinion

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About a **competition for „Professor"** in the field of Higher Education 4. Natural Sciences, Mathematics and Informatics, professional field 4.1. Physical Sciences (Medical Physics), announced in SG, issue 103/10.12.2021, for the needs of the Faculty of Medicine at Sofia University "St. Kliment Ohridski".

1. Common part

The only candidate in the competition is Associate Professor Dr. Genoveva Antonova Zlateva from the Faculty of Medicine at Sofia University "St. Kliment Ohridski.

The documents provided show that the procedure for opening and announcing the competition has been followed by the rules. The documents have been prepared in accordance with the requirements of the Law on Development of Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for its implementation and the Regulations for Development of the Academic Staff (RDAS) at Sofia University "St. Kliment Ohridski ". The candidate covers and even exceeds (at some criteria) the Minimal National Requirements under Art. 2b of the Regulations for application of the LDASRB for the scientific field in which the competition has been announced.

2. Biographical data of the candidate

Assoc. Prof. Dr. Genoveva Zlateva was born on October 12, 1964 in Nikopol, Bulgaria. In 1987, she obtained a master's degree in "Physics" (specialty "Solid State Physics") at the Faculty of Physics of Sofia University "St. Kliment Ohridski", Bulgaria. In 1994, she successfully defended a PhD thesis at the same faculty and obtained the educational and scientific degree "Doctor of Phylosophy (PhD)" in the professional field 4.1. Physical sciences, scientific specialty "Electrical, magnetic and optical properties of condensed matter". In 1999, Assoc. Prof. Zlateva acquired a postgraduate degree in Biophysics in the healthcare system.

From 1994 to May 2007, she held the academic positions of "Assistant Professor", "Senior Assistant Professor" and "Chief Assistant Professor" (in Medical Physics) at the Medical University (MU)-Sofia. From June, 2007 to the present, Dr. Zlateva holds the academic position of "Associate Professor" (scientific specialty "Electrical, magnetic and optical properties of condensed matter") in the Faculty of Medicine at Sofia

University "St. Kliment Ohridski". She has over 25 years of academic experience, as well as long administrative experience.

3. Overview of scientific activities

The reference of the candidate for fulfillment of the Minimal National Requirements (MNR) for holding the academic position "Professor" in the professional field 4.1. Physical Sciences shows the following:

Minimal National Requirements	Reference of the candidate
Index A: 50 points	Index A: 50 points
Index B: 100 points	Index B: 100 points
Index C: 200 points	Index C: 212 points
Index D: 100 points	Index D: 370 points
Index E: 150 points	Index E: 396 points

The presented report is based on the following research assets:

(1) According to indicator A – dissertation for awarding PhD degree – with 4 publications in peer-reviewed scientific journals with IF.

(2) According to indicator B – 7 publications in peer-reviewed journals indexed in world-famous databases with scientific information (with IF and/or SJR).

(3) According to indicator C – 12 publications in peer-reviewed journals indexed in world-famous databases with scientific information (with IF and/or SJR).

(4) The publications on indicators B and C have a total IF=24.641 and a total SJR=9.602.

(5) According to indicator D – 185 citations in scientific article, referenced and indexed in Web-of-Science and Scopus (auto-citations and hidden auto-citations are excluded).

(6) According to indicator E – supervisor of one successfully graduated PhD student, management of 6 scientific projects as a chief investigator, participation as a collaborator in 10 scientific projects.

The list of scientific assets also includes 30 publications in unreferred journals with peer-review, over 50 participations in scientific forums with oral or poster presentation, over 20 participations in scientific and educational (training) projects.

The above-mentioned research assets of Assoc. Prof. Zlateva are related to the profile of the current competition and are after the acquisition of the academic position of "Associate Professor".

4. Scientific contributions of the candidate in the field of "medical

physics"

Assoc. Prof. Dr. Genoveva Zlateva has briefly and accurately described her scientific contributions from experimental and theoretical studies, that can be summarized in the following areas of "medical physics":

(1) Nanomaterials and physical methods for their characterization: Investigation of surface and interface polariton modes of optical photons (SPP and IPP) in low-dimensional structures: (a) nanofilms and nanofilms of Mg_2Si and $FeSi_2$ in silicon matrix; (b) InN/AlN nanofilms.

(2) Nanotheranostics: Optical imaging in the study of the theranostic potential of synthetic biotolerable nanoparticles (polymersomes loaded with quantum dots or organic fluorophores). The studies also include characterization of the physicochemical properties of nanoparticles.

(3) Experimental imaging diagnostics and sensor systems: Physical and biophysical methodological approaches for visualization of pathologies accompanied by disrurbance of cellular redox state: (a) multimodal contrast agents; (b) contrast-enhanced magnetic resonance imaging (MRI); (c) algorithms for image processing and extraction of contrast-enhanced MRI signals. Of particular interest in this field is the developed two-component sensor system for estimating the total reducing capacity of biological objects and the development of oxidative stress in them, using simultaneously three imaging techniques: EPR spectroscopy, MRI and fluorescent imaging. This work has been highlighted over 20 media in Japan and the United States.

(4) Redox imaging and redox modulation: Applications of redox modulators as cytotoxic agents in tumor cells alone or as agents to increase sensitivity to conventional chemotherapeutics, as well as to reduce their side effects. Of particular interest are the studies on the modulation of mitochondrial redox state in glioblastoma and the therapeutic efficacy of the selected redox modulators (redox cyclers). It should be noted that redox theranostics is one of the most advanced fields in biomedical sciences related to the control and treatment of diseases characterized by the development of persistent inflammation (such as viral, bacterial and parasitic infections; cancer; neurodegenerative diseases; diabetes; atherosclerosis, etc.).

(5) Methodology of teaching "medical physics": Analyzing the results of various forms and methods of teaching physics and other major disciplines for students of medical specialties. Methodical solutions have been applied to increase the motivation of students, as well as for more successful mastering of the material - interdisciplinary training modules covering general medical problems, the solution of which requires coordinated efforts of specialists in "medical physics",

"biophysics", "physiology". "pathophysiology", "biology", "biochemistry", "anatomy".

Many of the scientific contributions of Assoc. Prof. Dr. Genoveva Zlateva are of an applied nature in the field of medicine and teaching of "medical physics".

5. Educational activities

Assoc. Prof. Zlateva has over 25 years of teaching experience in "medical physics". From 1994 to 2007, she conducted practical classes in "medical physics" for students in "medicine", "stomatology" and "pharmacy" at MU-Sofia. From 2007 to the present, she has led and leads the following lectures and practical classes for students from the Faculty of Medicine at Sofia University:

- "physics" – for the specialty "medicine";
- "medical equipment in nursing practice" – for the specialty "nurse";
- "biophysics" – for the specialty "medicine" (2007-2009);
- "biomechanics" – for the specialty of "medical rehabilitation and occupational therapy" (from 2019 to the present).

Assoc. Prof. Zlateva also leads an elective lecture course on "Methods of medical physics" within the master's program "Bio- and Medical Informatics" at FMI at Sofia University.

The total educational load of Assoc. Prof. Zlateva exceeds 700 hours per year, which includes lectures and practical classes in Bulgarian and English.

6. Expert and administrative activities

Assoc. Prof. Dr. Genoveva Zlateva has a large administrative experience and expert work. She was the chairman of three expert groups for accreditation of doctoral programs at NAEA – two of them in "medical physics" (MU-Varna and Shumen University "St. Konstantin Preslavski") and one in "biophysics" (MU-Sofia), as well as a member of the expert group for accreditation of a doctoral program at NAEA in "medical biophysics" (MU-Pleven). She has participated as a chairman or a member of 10 scientific juries for the acquisition of scientific degrees "Doctor of Philosophy" and "Doctor of Sciences", and academic positions "Associate Professor" and "Professor". She is a regular reviewer in a number of national and international scientific journals.

Assoc. Prof. Zlateva has also held the following administrative positions: Vice-Dean of the Faculty of Medicine at Sofia University (2009-2012; 2019-present), Head of the Department of Physics, Biophysics and Roentgenology of the Faculty of Medicine at Sofia University (2010-2019), Director of the University Center for Quality Management at Sofia University (2019-2020).

This is a high recognition for her professional and organizational skills.

CONCLUSION

Since the beginning of her scientific career, Assoc. Prof. Dr. Genoveva Antonova Zletava has been working in the field of "medical physics". Her experimental and theoretical studies are closely related to the priorities of the Department of Physics, Biophysics and Roentgenology of the Faculty of Medicine at Sofia University "St. Kliment Ohridski ", for the purposes of which the current competition was announced. In the course of her research and teaching career she has gained excellent experience and generated original scientific ideas.

The scientific assets of Dr. Zlateva fully cover, and in some of the criteria exceed the minimum national requirements for holding the academic position of "Professor", specified in the Regulations for the implementation of LDASRB. Assoc. Prof. Zlateva is an excellent researcher and university lecturer, a person with vast administrative experience and excellent organizational skills. She is an extremely loyal person who treats her colleagues with understanding and care, she is always ready to help and assist young colleagues in their career, as well as students in their education. Dr. Zlateva enjoys an extremely high authority among students and faculty members.

Given the above, I strongly recommend to the esteemed Scientific Jury to propose to the Faculty Council of the Faculty of Medicine at Sofia University "St. Kliment Ohridski" to award Dr. Genoveva Antonova Zlateva the academic position of "Professor" in the professional field 4.1. Physical Sciences (Medical Physics).

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