

# OPINION

**by Associate Professor Dr. Diana Yosifova Dakova, Department of Physics,  
Faculty of Physics and Technology, PU "Paisii Hilendarski"**

of the materials submitted for participation in a competition for the academic position of "Professor" at **the University of Plovdiv "Paisii Hilendarski"** in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.1. Physical Sciences (Condensed Matter Physics)

In the competition for "Professor", announced in the State Gazette, no. 92 of 18.11.2022 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of Physics at the Faculty of Physics and Technology, the only candidate participating is Associate Professor Dr. Maria Marudova-Zsivanovits from the Department of Physics at the Faculty of Physics and Technology, University of Plovdiv "Paisii Hilendarski".

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

By order No. PD-21-330 dated 15.02.2023 of the Rector of the Plovdiv University "Paisii Hilendarski" (PU), I have been appointed as a member of the scientific jury of a competition for the academic position of "professor" in PU in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.1. Physical Sciences (Physics of Condensed Matter), announced for the needs of the Department of Physics at the Faculty of Physics and Technology.

At the first meeting held in the period 27.02 - 03.04. 2023, the scientific jury decided to allow the candidate to participate in the competition and I was appointed to prepare an opinion.

The **only candidate**, Associate Professor Dr. Maria Georgieva Marudova-Zsivanovits from the Department of Physics at the Faculty of Physics and Technology of Plovdiv University "Paisii Hilendarski" submitted documents for participation in the announced competition.

The set of materials presented by Associate Professor Dr. Maria Marudova-Zsivanovits is in accordance with the Regulations for the Development of the Academic Staff of Plovdiv University and includes the following documents:

1. application form to the Rector for admission to participate in the competition;
2. curriculum vitae in European format;
3. higher education diploma with an acquired educational and qualification degree "master";
4. diploma for educational and scientific degree "doctor";
5. diploma (certificate) for the academic position "associate professor";
6. list of scientific works;
7. scientific works (copies of publications);
8. certificate of compliance with the minimum national requirements;
9. declaration of originality and authenticity of the attached documents;
10. annotations of the materials under Art. 76. from Regulations for the development of the academic staff of PU Paisii Hilendarski (in Bulgarian and a foreign language);

11. expanded habilitation reference;
12. self-assessment of contributions;
13. list of citations;
14. document (certificate) for work experience;
15. documents for academic work;
16. documents for scientific research activity;
17. other documents.

The candidate associate professor Dr. Maria Marudova-Zsivanovits participated in the competition with

- published book chapter,
- 40 scientific publications that are outside the dissertation and the procedure for associate professor. All scientific works are referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus).

- she is the author or co-author of 9 textbooks and study materials, two of which are in English,

- she participated in two international projects,
- she participates in 8 national projects, 3 of which she is the supervisor,
- she participates in 7 university projects, 3 of which she is the supervisor,
- she has one patent for an invention,
- information is provided for 90 citations.

The presented set of materials is in accordance with Art. 77 (1) of the Regulations for the Development of the Academic Staff of PU "Paisii Hilendarski". Associate professor Dr. Maria Marudova-Zsivanovits meets the requirements of the normative documents and exceeds the national scientometric criteria for occupying the academic position of "professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.1. Physical Sciences (Condensed Matter Physics).

## **2. Brief biographical data of the candidate**

Maria Marudova-Zsivanovits graduated from secondary education in 1993 at the Math High School "Acad. Kiril Popov" Plovdiv. In the period 1993-1998, she was a student at the Faculty of Physics of PU "Paisii Hilendarski" PU, majoring in Engineering Physics. She graduated with full honors as a Master of Physics with the qualification of Engineer-Physicist, specialization "Physics of Polymers". After graduation, she began teaching and research activities in the Department of Experimental Physics at the Faculty of Physics. In the period 1999 - 2002 she was an assistant, from 2002 to 2007 she was a senior assistant, and from 2007 to 2009 she was a chief assistant in the same department. From 2009 until now, she is an associate professor in the Department of Physics at the Faculty of Physics and Technology.

In the period 2004 - 2007, she was a PhD student at the PU "P. Hilendarski". Works in the field of pectin complexation with cationic polyelectrolytes. As a result of the defended dissertation, she acquired the scientific and educational degree of Doctor in Chemistry of High Molecular Compounds.

In the period 2001-2003, she specialized at the Institute of Food Research, Norwich, England (Marie Curie specialization) in the "Food Materials Science" division. Polyelectrolyte complexes of

pectin with polylysine and chitazan are the object of research. In October 2011 she is on one-month specialization at the Faculty of Food Science, Leeds University, Leeds, England, where she acquires additional knowledge and skills for the study of mechanical properties of multilayer polymer films. In June 2015, she again conducted one-month specialization in express microbiological methods at Corvinus University, Budapest, Hungary.

Currently at the Faculty of Physics and Technology, she is responsible for the Erasmus program and she is head of the Polymer Physics and New Materials Laboratory.

She is fluent in English, Russian and Hungarian to varying degrees.

I have **personal impressions** of the candidate. I have known Maria Marudova-Zsivanovits since her student years as a smart, persistent, responsible, active and proactive student with a rich general culture and a broad knowledge base in various fields of physics. Later, as a faculty colleague, she further developed and enriched her knowledge and skills. She is easy to work with. She is communicative and well-intentioned. She has excellent organizational skills and competencies and she is excellent teacher.

### **3. General characteristics of the applicant's activity**

#### **- Teaching and learning activity:**

Associate Professor Dr. Maria Marudova-Zsivanovits has many years of teaching activity. She is a demanding but patient and attentive teacher. With these qualities, she has won the respect and love of students and colleagues.

Associate Professor Dr. Marudova-Zhivanovic has developed a number of educational lecture courses, curricula and study plans:

- 12 educational lecture courses for educational and qualification degrees Bachelor and Master in the disciplines Mechanics, Molecular Physics, Mechanics and Molecular Physics, Basics of Polymer Science, Application of Polymers in Medicine, Polymeric Materials, Rheology and Texture of Food Products, Experimental Methods in physics, Physics, Fundamentals of electronics, Nanomaterials and nanotechnologies, Polymers in electronics and telecommunications.

- 19 curricula for educational and qualification degrees Bachelor and Master, some of which are Mechanics, Molecular Physics and Thermodynamics, High Molecular Compounds, Fundamentals of Electronics, Polymers in Electronics and Telecommunications, Application of Polymers in Medicine and Biotechnology, Polymer Photovoltaics, Polymers in the Food Industry, Scientific research practice in food physics, etc.

- curricula of doctoral programs "Structure, Mechanical and Thermal Properties of Condensed Matter" and "Physics of Condensed Matter" (full-time and part-time form of education),

- master degree programs for the specialty Food Physics (specialists and non-specialists, full-time and part-time form of education),

- study plans for the Engineering Physics, bachelor degree, full-time and part-time form of education.

She is the scientific supervisor of 4 PhD students, one of whom has successfully defended his doctoral degree. She is also supervisor of 16 graduate student successful graduated in Bachelor and Master degrees.

Under the Erasmus+ program, she lectured at Corvinus University of Budapest, Hungary and at the University of Technology, Athens, Greece.

#### **- Research activity:**

The scientific interests of Associate Professor Dr. Marudova-Zsivanovits are related to current topics in the field of Condensed Matter Physics and more specifically to the study of physical properties of polymer materials and food products.

Her scientific developments are in the field of food physics, polyelectrolytes and polyelectrolyte complexes, drug-delivery systems, investigation of the rheological behavior of polymer solutions, melts and colloidal systems, investigation of the thermophysical characteristics of crystalline and semi-crystalline systems by means of differential scanning calorimetry.

The main scientific contributions can be summarized in the following areas:

- Development of polyelectrolyte multilayer films from natural polymers and establishing their potential to include different classes of biologically active substances,
- Investigation of physical properties of polymer films,
- Research of physical and physico-chemical properties of food products,
- Development of sensors for ammonia registration,
- Development of edible packaging based on biopolymers.

As a result of the successful research work, she is a co-author in over 90 articles, of which over 60 are in journals with an impact factor and/or impact rank and has an h-index - 10 (Scopus). She took an active part in over 18 scientific forums at the national and international level, in numerous international, national and university projects, some of which she is the supervisor.

She participates in the editorial board of 2 scientific editions - Polymers, MDPI, ISSN: 2073-4360 - Scopus and WoS and Bioengineering International, ISSN: 2668-7119.

#### **- Organizational activity:**

Dr. Maria Marudova-Zsivanovits actively participates in the organization and holding of scientific forums and prestigious events for the University. She participated in the scientific committee of 3 international conferences, chaired the organizing committee of the XIth International Conference of Food Physicists, June 2014, Plovdiv, Bulgaria, she was a member of the jury of the annual National Student Scientific Conference on Physics and Engineering Technologies, etc. She is a lecturer at meetings with teachers organized by the Union of Physicists - Plovdiv branch.

With her activity, she contributes to establishing and maintaining active cooperation with other universities and research institutions in Bulgaria and abroad.

She is also a member of the Committee on International Activities of the University of Plovdiv and the Committee on Accreditation of the Faculty of Physics and Technology.

#### 4. Evaluation of the candidate's personal contribution

Taking into account my personal impressions and the presented scientific publications and developed teaching materials, I consider that a large number of them are work of the candidate or are a result of the teamwork in which she has a significant contribution.

#### 5. Critical remarks and recommendations

I have no critical remarks and recommendations.

### CONCLUSION

The documents and materials presented by associate professor Dr. Maria Marudova-Zsivanovits meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Implementation of the Law on the Development of the Academic Staff of the Republic of Bulgaria and the relevant Regulations of PU "Paisii Hilendarski".

The candidate in the competition has submitted a sufficient number of scientific papers published after the materials used in the defense of the ONS "doctor" and participation in the procedure for associate professor. The candidate's articles have substantial original scientific and applied contributions that have received international recognition. They have been published in journals and scientific collections issued by international academic publishing houses. Theoretical developments have practical applicability.

The scientific and teaching qualifications of associate professor Dr. Maria Marudova-Zsivanovits are unquestionable. The results achieved by her in the educational and research activities correspond to and exceed the minimum national requirements adopted in connection with the Regulations of the University of Plovdiv for the application of the law on the development of the academic staff of the Republic of Bulgaria.

After getting acquainted with the materials and scientific works presented in the competition, analyzing their significance and contained in them scientific, scientific-applied and applied contributions, I find it reasonable to give my **positive** assessment and I strongly recommend the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Physics and Technology for the election of associate professor Dr. Maria Marudova-Zsivanovits for the academic position "Professor" in the Department of Physics at PU "Paisii Hilendarski" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.1. Physical sciences (Physics of condensed matter).

04.04.2023

Prepared the opinion: .....  
(signature)

Associate Professor Dr. Diana Dakova