OPINION

from Stefka Nikolova Kasarova, PhD,

Assoc. Prof. at University "Prof. Dr. Assen Zlatarov" – Burgas

on the materials submitted for participation in the competition
for the academic position of **„Professor"**
at Plovdiv University "Paisii Hilendarski"

in 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 State Gazette, issue 92/18.11.2022 and in the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of Physics at the Faculty of Physics and Technology, as a candidate participates Associate Professor Maria Georgieva Marudova-Zsivanovits, PhD from Plovdiv University "Paisii Hilendarski".

1. General presentation of the procedure and the candidate

By order № РД-21-330 of 15.02.2023 of the Rector of the University of Plovdiv "Paisii Hilendarski" I was appointed as a member of the scientific jury of a competition for the academic position of **"Professor" in Plovdiv University** in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.1 Physical Sciences (Condensed Matter Physics), announced for the needs of the Department of Physics at the Faculty of Physics and Technology.

The only candidate who submitted documents for the participation in the competition is Associate Professor Maria Georgieva Marudova-Zsivanovits, PhD from Plovdiv University "Paisii Hilendarski".

The set of materials presented by Assoc. Prof. Maria Marudova-Zsivanovits (in hard-copy and electronic forms) is in accordance with the Regulations for the Development of the Academic Staff of Plovdiv University (PU), and includes all the necessary documents.

Assoc. Prof. Maria Marudova-Zsivanovits presents total list of 62 scientific works. In the current competition, candidate participates with 40 scientific publications, 1 co-authored chapter in a book (first author), 1 textbook, 1 study guide и 1 patent. These materials have not been used in the procedures for acquiring the PhD degree and the academic position " Associate Professor". All pub-

lications, submitted for participation in the competition, are referenced and indexed in world databases of scientific information Web of Science and Scopus.

Assoc. Prof. Marudova has graduated with honors from the Plovdiv University "Paisii Hilendarski", where in 1998 obtained a Master`s degree in Engineering physics with specialization of Polymer physics and additional qualification of Physics teacher. In 2007, she defended her dissertation for PhD degree on "Investigation of complex formation between pectin and cationic polyelectrolytes". To increase her qualifications, she also conducts a number of specializations abroad. In 1999, Assoc. Prof. Marudova started working as an assistant in the Department of Experimental Physics at the PU, where in 2009 acquired the academic position "Associate Professor" in the scientific specialty "Structure, mechanical and thermal properties of condensed matter (Molecular physics)".

2. General characteristics of the candidate activity

Assessment of educational and pedagogical activity

The teaching experience of Assoc. Prof. Marudova is over 23 years. According to the presented reference, she has an average teaching workload of 470 hours per academic year that exceeds substantially the required standard of 360 hours. The candidate has developed 12 lecture courses and 19 studying programs (3 in English) for different bachelor's and masters's degree specialities. It is also attached 8 curricula of which 2 are for bachelor students, 4 for masters and 2 for PhD students.

Under supervision of Assoc. Prof. Marudova, one PhD student has successfully defended his doctoral thesis, one has been dismissed with the right to defend and two are currently active. She was a supervisor of 16 graduates, too. Assoc. Prof. Marudova has independently developed 1 textbook in Mechanics and 7 electronic courses including 2 in English. She participates in the author team of a guide for laboratory exercises in physics.

The candidate is actively involved in partnership between PU and other universities in Bulgaria and abroad. Assoc. Prof. Marudova is Erasmus+ coordinator of the Faculty of Physics and Technology and from 2011 to 2019 she regularly took part in the academic mobility. The candidate has given lectures at meetings with teachers organized by Plovdiv Branch of the Union of Physicists in Bulgaria. She participated in the organization and holding of the National Student Conference "Physics-Engineering-Technologies" as well as in the preparation of the team for the National Student Olympiad in Physics in 2017.

Evaluation of the scientific and scientific-applied activity of the candidate

Scientific and scientific-applied activity of Assoc. Prof. Marudova includes publication, project and editorial activity, participations in the scientific conferences and work on organizing international and national scientific forums. The presented official notice by the Scientific and Research Depart-

ment at the PU shows that she has participated in 2 international, 8 national and 7 university projects and was a leader of 3 projects financed by the National Fund of Scientific Research, as well as of 3 projects financed by the Research Fund at the PU.

All publications, presented for the participation in the competition, are in the journals with impact factor (IF) and/or impact rank (SJR). Of these 40 articles, 7 are in journals with Q1, 4 – in journals with Q2, 4 – in journals with Q3, 12 – in journals with Q4 and the rest 13 are in the journals with SJR, but without quartiles. Total number of IF is 50,9.

Contributions (scientific, scientific-applied, applied) and citations

Scientific interests of Assoc. Prof. Marudova are focused on preparation and characterization of polymer films as well as on investigation of physical and physicochemical properties of food products. The contributions of the research work of Assoc. Prof. Marudova are as follows:

- Polyelectrolyte multilayer structures (PMS) on biodegradable polyester substrates have been developed by aplying an innovative approach of corona discharge treatment to modify their surfaces and ensure the surface excess charge. Various methods and techniques as FT-IR, XPS, UV-VIS-NIR, SEM, AFM, DSC, etc. have been used to investigate the prepared structures. The influence of different factors such as type and polarity of the substrate, deposition method, pH and ionic strength of the solutions on the structure, thickness and morphology of the obtained layers has been established.

- The potential of PMS as drug delivery systems has been investigated by incorporation several classes of biologically active substances into them. Impact of various technological factors has been studied in details and the optimum conditions for drug loading of PMS were determined. The developed systems have been characterized in terms of some substantial operating conditions as surface pH, moisture absorption, mucoadhesion, mechanical properties, immobilization ability, drug release, etc.

- Corona charged films from poly(lactic acid) with different degree of crystalinity have been prepared. Electret stability and effect of gamma irradiation on polymeric films has been investigated. The immobilization and controlled release of salicylic acid in chitosan/poly(lactic acid) blends have been analysed.

- Thermal, optical, electrical and reological properties of food products and additives have been studied. Various physical methods have been applied for quality control of olive oils and honey.

- Methodologies have been developed for the production of innovative edible packaging with improved barrier and mechanical properties ensuring reliable antibacterial protection.

- Two types of sensors for ammonia registration, based on the composite films, has been developed.

The candidate has a significant personal contribution to conducting the research and presenting the results obtained from them as it can be seen in the given reference for each publication in the Annotation of the materials.

Scientific recognition of the contributions of research activity of Assoc. Prof. Marudova is the large number of citations of her scientific works. For the current competition, a list of 90 citations for the period between 2019 and 2022 is presented. Reference in Scopus, however, shows that since 2010, the citations are almost 300 and h-index is 10.

With the submitted materials, the candidate Assoc. Prof. Marudova fully meets the minimum national requirements for the academic position "professor" in professional field 4.1 Physical Sciences, exceeding them more than twice in groups B and Г. The points achieved for the individual groups are:

- Group A (minimum 50 points) – **50 points** (the candidate holds a PhD degree);
- Group B (minimum 100 points) – **214 points**, obtained from 13 scientific publications in journals indexed in Scopus and Web of Science (WoS);
- Group Г (minimum 200 points) – **420 points**, obtained from 27 scientific publications indexed in Scopus and WoS, one book chapter (in English) and one patent;
- Group Д (minimum 100 points) – **180 points**, obtained from 90 citations in Scopus and WoS;
- Group E (minimum 150 points) – **226 points**, obtained from: supervision of one PhD student; participation in one international and six national research or educational projects; management of two national research projects and funds received on them; publication of one textbook and one study guide (co-authored).

3. Critical remarks and recommendations

I have no critical remarks on the scientific production and its presentation in the documents of the candidate in the competition for the academic position of "Professor".

CONCLUSION

The documents and materials presented by Assoc. Prof. Maria Georgieva Marudova-Zsivanovits, PhD meet all the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria and its Regulations for the Implementation and the relevant Regulations of PU "Paisii Hilendarski". She has presented a sufficient number of scientific works published after the materials used in the defense of the PhD and the acquisition of the academic position of "Associate Professor". The candidate's works contain original scientific and applied contributions that have received international recognition, all of which have been published in journals issued by international academic publishing houses. The scientific and teaching qualification of Assoc. Prof. Maria

Georgieva Marudova-Zsivanovits, PhD is undoubted and the achieved results exceed the minimum national requirements.

After getting acquainted with the materials and scientific works presented in the competition, analysis of their significance and contained in them scientific, scientific-applied and applied contributions, I find it reasonable to give my **positive** assessment and recommend to the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Physics and Technology for election of Assoc. Prof. Maria Georgieva Marudova-Zsivanovits, PhD to 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).

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Assoc. Prof. Stefka Kasarova, PhD