

REVIEW

by Prof. Ana Iovkova Proykova, PhD, Doctor of Sciences, Faculty of Mathematics and Informatics, Sofia University "St. Kliment Ohridski "

a member of the jury in a competition for occupying the academic position "Associate Professor", in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.6 Informatics and computer sciences (Informatics), announced in SG no. 32, 16.04.2021

Candidate Dr. Mariana Ilieva Atanasova (Pencheva), Assistant Professor, Faculty of Mathematics and Informatics, Sofia University "St. Kl. Ohridski "

By order of the Rector of the Sofia University № ПД 38-267/14.06.2021, I was appointed a member of the scientific jury in a competition for the academic position of 'Associate Professor' at the Sofia University in the field of higher education 4. Natural Sciences, Mathematics and Informatics; professional field 4.6 Informatics and computer sciences (Informatics). A set of materials available electronically has been submitted for participation in the announced competition.

The only candidate in this competition – Dr. Mariana Atanasova (Pencheva), Assistant Professor at the FMI, Sofia University "St. Kliment Ohridski ", fully satisfies the minimum national requirements under Art. 2b, para. 2 and 3, of the RAS of the Republic of Bulgaria for holding the academic position of "Associate Professor" in 4.6. Informatics and computer science (Informatics).

1. General description of the materials

All the necessary documents for participation in the competition are presented in a well-organized directory – the application form, the CV, diploma for educational - qualification degree "master", diploma for educational and scientific degree "doctor", documents related to scientific papers (all publications, as well as the publications submitted for this competition), citations of publications, documents related to the minimum national requirements, reference for teaching and learning activities, including supervision of master students, participation in research projects and international conferences.

The candidate Dr. Atanasova participates in the competition with nine articles co-authored in scientific journals with impact (WoS / SCOPUS), teaching materials for the eight lecture courses in the field of the competition.

All submitted materials, including those already used in previous competitions were considered for completeness. The final conclusion of the current review is based on materials purposefully presented to this competition – scientific papers and the training courses developed by the candidate.

2. Brief curriculum vitae of the candidate

The candidate was awarded a degree in higher education from the Faculty of Physics, Sofia University in 1998; the scientific degree "Doctor of

engineering" in 2012 by the Free University in Brussels, Belgium. The dissertation was in the field of plasma physics – the main field of research of the candidate.

3. General characteristics of the candidate's activity

Educational and pedagogical activity

The materials presented for the competition demonstrate a high academic activity of the candidate in the field of competition: eight courses were developed and available for the students enrolled at the Sofia University:

- o Information systems and technologies, compulsory discipline for the specialty Bio-management and sustainable development, first year bachelors, Faculty of Biology

- o Mathematics and Informatics, part Informatics, compulsory course for Biology and Ecology and Environmental Protection, first year bachelors, Faculty of Biology

- o Operating systems and office applications, elective course in the category Core of Computer Science, 2nd year, FMI

- o Office technologies – exercises to the elective course in the category Computer practicum, 3rd year, FMI

- o Operating systems and computer networks in school, optional discipline until 2019, 3rd year, FMI

The created educational content of the disciplines (lectures, exercises, assignments for interim projects) is available and is provided to the students in electronic version in Moodle (<http://learn.fmi.uni-sofia.bg> and <http://elearn.uni-sofia.bg>).

The students have a remote access to Moodle, which provides excellent opportunity for continuing education during the pandemic that prevented the students from being at the university campus. The effort for lecture preparation is high and should be positively considered. Under candidate's guidance, three master students defended their diploma theses.

Scientific and applied science activity

Dr. Atansaova is the author or co-author of 40 publications in various scientific journals. She gave talks at several conferences in the field of plasma physics.

The candidate's contributions in brief:

A Methodology for the theoretical description of nonequilibrium plasmas has been developed and published in peer-reviewed journals (SCOPUS / WoS). The methodology includes separate analyzes of the configuration in which the plasma is studied, the transport of the charged plasma particles and the processes of creation and destruction of the particles in the plasma.

A kinetic model of plasma in argon was developed and applied to the study of processes in low-temperature nonequilibrium plasma in argon. The paper is published: Surface-wave-sustained argon plasma kinetics from intermediate to atmospheric pressure, J. Phys. D Appl. Phys., Vol: 51, issue: 47, 2018.

In a sequence of 6 articles (B1, B2, G3, G4, G5, G6) a theoretical description of a surface-wave discharge is made, which clarifies many dependencies of the properties of the discharge on its operating conditions. The influence of key internal plasma parameters on the discharge characteristics was studied. As a result, it was found that at atmospheric pressure a specific property of the discharge is observed - it does not completely consume the wave power.

In biological and medical applications, plasma is in contact with the aquatic environment. Theoretical (and experimental) study of the processes of interaction between plasma and water, necessary for biological and medical applications, has been published in work B3: Microwave plasma torch at water surface, Plasma Medicine, 2016.

According to WoS, the articles co-authored by the candidate were cited in 38 articles by researchers who were not co-authors of the cited publications. The total number of citations (including co-authors of the candidate) is 92 (Google Scholar).

Dr. Atanasova's research is still of interest to the community due to modern technological development, which allows for the transfer of scientific results in practice.

Collaboration with foreign scientists

Dr. Atanasova has also worked in collaboration with foreign scholars on international projects and during her work as a PhD student at the Free University of Brussels, Belgium. The results of the cooperation are also the publications with foreign scientists. Out of the total number of 40 publications, 13 publications are co-authored with foreign scholars.

Cooperation with foreign scientists has been achieved through participation in the program committees of international conferences and schools of plasma physics (International Workshop and Summer School on Plasma Physics - 2005, 2006, 2010, 2012, 2014, 2016, 2018).

http://iwsspp.deo.uni-sofia.bg/?page_id=715

The candidate is well known in her guild for her research results, as evidenced by her participation with talks at specialized conferences.

4. Assessment of the candidate's contribution and personal impression

The publications, the lecture courses and the materials to them, the supervision of the master students demonstrate the personal contribution of the candidate.

I know in person Dr. Atanasova as a precise researcher with deep interests in the field of plasma physics. Dr. Atanasova treats her research and pedagogical activities responsibly. These qualities are especially important in today's world, where scientists often work in different environments. Only through successful collaboration with other researchers a sustainable and productive research is ensured.

CONCLUSION

The results achieved by Dr. Mariana Atanasova (Pencheva) in teaching and research fully comply with the specific requirements of the Faculty of Mathematics and Informatics, adopted in connection with the Rules of the Sofia University for the application of ZRASRB.

Opinion: there is no plagiarism in the materials for the competition.

After getting acquainted with the materials and scientific papers presented in the competition, the analysis of their significance and the scientific and applied contributions contained in them, I find it reasonable to give my **positive assessment and recommend** to the Scientific Jury to prepare a proposal to the Faculty Council of the Faculty of Mathematics and Informatics for the election of Dr. Mariana Atanasova (Pencheva) to the academic position of "Associate Professor" at the Sofia University "St. Kliment Ohridski" in the field of higher education 4. Natural sciences, mathematics and informatics; professional field 4.6 Informatics and computer sciences (Informatics).

Sofia, 11.08.2021 r.

Review done by:
(Prof. Dr. Ana Proykova, Doctor Habil)