R E V I E W

by competition for the academic position of professor in the field of higher education 5. Technical sciences, professional field 5.2. Electrical engineering, electronics and automatics, scientific specialty "Automated systems for information processing and control", at the University of Plovdiv "Paisii Hilendarski", published in the State Gazette issue № 40 from 14.05.2021 with a single candidate: **Assoc. Prof. Dr. Eng. Rumen Kostadinov Popov**.

Reviewer: Prof. Dr. Sc. Eng. Chavdar Ivanov Damyanov, UFT - Plovdiv (retired)

Elected reviewer on 26.08.2021 at a meeting of the scientific jury appointed by Order №: P33-4298 of 10.08.2021 of the Rector of Plovdiv University "Paisii Hilendarski".

As a reviewer, I declare that I do not have common publications and joint participation in research and projects with the candidate Assoc. Prof. Dr. Eng. Rumen Kostadinov Popov, as well as other reasons that would affect my assessments.

1. General provisions and biographical data

In the announcement in SG no. 40 / 14.05.2021 and on the website of the University of Plovdiv competition for a professor in a professional field 5.2. "Electrical Engineering, Electronics and Automatics", specialty "Automated Systems for Information Processing and Control", the only candidate for participation in the competition is Assoc. Prof. Dr. Eng. Rumen Kostadinov Popov from the Department of Electronics, Communication and Information Technologies (ECIT) at the Faculty of Physics and Technology of the University of Plovdiv (PU), for the needs of which department the competition was announced.

From the presented CV can be traced the professional development of the candidate - Rumen Popov. He was born on April 17, 1964 in the city of Plovdiv. In 1982 he completed his secondary education at the Technical School of Electrical Engineering in Plovdiv, majoring in "Production Automation". He received his higher education at the Tula Polytechnic Institute - town. Tula (Russia) with a diploma of excellence in 1990 and a master's degree in automatic control systems. In the same year he was appointed as a designer of radio electronic circuits at the Vazovski Machine-Building Plants - Sopot. Rumen Popov's academic career began in 1991 at the Technical University (TU) - Sofia, Plovdiv branch, where he won a competition for an assistant and until 2011 continued successively as a senior and chief assistant. In 2008 he defended his dissertation on "Reconstruction and modernization of existing systems for backup power supply of agricultural holdings" at the University of Ruse and the Higher Attestation Commission gave him the educational and scientific degree "Doctor". He habilitated as an associate professor in the scientific specialty "Automated systems for information processing and control" in 2011. At the same time he holds the academic position of associate professor at the European Polytechnic University-Pernik, where he is head of the master's program "Solar Energy". Since 2014 and currently Assoc. Prof. Dr. Rumen Popov is a lecturer in the Department of ECIT at the Faculty of Physics and Technology at Paisii Hilendarski University of Plovdiv.

Assoc. Prof. Dr. Rumen Popov speaks Russian and English. He is a member of the Union of Automation and Informatics and of the Bulgarian Geothermal Association.

All the facts from the professional profile and development of the candidate as an expert, lecturer and researcher are directly related to the professional direction of the competition procedure.

The copies of the documents for the competition for a professor provided to me contain:

1. Application from Assoc. Prof. Dr. Rumen Popov from August 10, 2021 to the Rector of the University of Plovdiv;
2. Curriculum vitae (CV) according to the European model;
3. Diploma for completed higher education with acquired master's degree;
4. Diploma for educational and scientific degree "Doctor";
5. Certificate / diploma for the academic position "Associate Professor";
6. List of scientific works;
7. Information on compliance with the minimum national requirements;
8. Declaration of originality and authenticity of the attached documents;
9. Annotations of the materials under art. 76. by ZRASRB, including self-assessment of contributions;
10. Document (certificate) for work experience;
11. Documents for the educational work;
12. Documents for research activity;
13. Copies of scientific publications and original editions of textbooks and teaching aids;
14. Photocopy copy from the State Gazette with the announcement of the competition;
15. Copy of all specified documents in electronic version in pdf format;
16. Set of other documents - 12 pcs.

According to the necessary documents for participation in the competition and their content, according to the normative base of the Law for development of the academic staff of the Republic of Bulgaria (ZRASRB), the Regulations for its implementation and the Internal regulations of PU, for the conditions, I have no objections. All materials are properly shaped and arranged. The procedural requirements for the announcement and participation of the candidate in the competition are met. According to ZRASRB, candidates for the academic position of "professor" must meet the requirements of Art. 29 (1):

1. To have acquired the educational and scientific degree "Doctor";

2. To have held the academic position of "associate professor" in the same or in another higher school or scientific organization for not less than two academic years or ..;

3. To have submitted a published monographic work or equivalent publications in specialized scientific journals…, which should not repeat the ones presented for acquiring the educational and scientific degree “Doctor”… and for holding the academic position “Associate Professor”;

4. To have presented other original research works, publications, inventions and other scientific and scientific-applied developments, which are evaluated as a whole.

5. (New, SG No. 30/2018, effective 04.05.2018) meet the minimum national requirements under Art. 2b, para. 2 and 3, respectively to the requirements under Art. 2b, para. 5;

6. (New, SG No. 30/2018, effective 04.05.2018) not to have plagiarism in the scientific papers proven in accordance with the statutory procedure.

It definitely follows that the requirements of Art. 29 (1) are fully fulfilled, as the Higher Attestation Commission gives Rumen Popov (Diploma № 33147 / 07.05.2009) the educational and scientific degree "Doctor" for successfully defended dissertation.

The candidate meets the requirements of Art. 29 (1) item 2, as with a decision of the FS of FEA at TU-Sofia from 06.10.2011. holds the academic position of "Associate Professor" and according to the submitted documents, has held this position for 10 years.

Assoc. Prof. Dr. Rumen Popov fulfills the requirement of Art. 29 (1) item 3, as he has presented 10 publications, equivalent to a monographic work (the works from group B.4), as well as a list of publications, for acquiring the educational and scientific degree “doctor” and for holding the academic position "Associate Professor", whose analysis shows that none of the candidate's publications are duplicated.

Assoc. Prof. Dr. Rumen Popov meets the requirements of Art. 29 (1) item 4, as he has presented other original research papers and publications, a total of 24, which are evaluated as a whole.

The applicant has submitted a Certificate for implementation of the national minimum requirements / Art. 29 (1) item 5 /, supplemented with a list of its scientific production.

Group	Content	For professor	For R. Popov
А	**Indicator 1**	**50**	**50**
	1. Dissertation work for awarding ONS "Doctor".	50	**50**
В	**Indicators 3 or 4**	**100**	**113.97**
	3. Habilitation work – monograph.	100	-
	4. Habilitation work - scientific publications in publications that are referenced and indexed in world-famous databases with scientific information.	60/n for each post	**2 x 8,57+2 x 20 + + 2 x 10 + 3,16 + + 15 + 12 + 6,67= = 113,97**
Г	**Sum of indicators from 5 to 10**	**200**	**223.67**
	6. Published book based on a defended dissertation.	30	**30**
	7. Scientific publication in publications that are referenced and indexed in world-famous databases.	40/n or distributed in a ratio based on a contribution protocol	**4 x 13.33+8+ +5 x 10 =111,33**
	8. Scientific publication in unreferred journals with scientific review.	20/n or distributed in a ratio based on a contribution protocol	**3 x 10+4 x 6.67 + +2 x 3.33+2 x 5 + +2 x 2,5+4 =82.34**
Д	**Sum of points in indicators 12 and 14**	**100**	**366**
	12. Citations or reviews in scientific journals, referenced and indexed in world-famous databases with scientific information.	10	**35 x 10 = 350**
	14. Citation in unreferred journals with scientific review.	2	**8 x 2 = 16**
Е	**Sum of points in indicators from 17 to 24**	**150**	**310**
	17. Manag. of a defended doctoral student	40/n	2 x 20 = 40
	18. Participation in a nat. research project	10	3 x 10 = 30
	19. Participation in the int.scientific project	20	4 x 20 = 80
	20. Management of nat. scientific project	20	1 x 20 = 20
	21. Management of int. project	40	1 x 40 = 40
	23. Published Univ. textbook	40/n	1 x 40 = 40
	24. Published Univ. study guide	20/n	3 x 20 = 60
	TOTAL:	minimum **600**	**1063.64***

* The total amount is overstated after correction of an erroneous summation in the presented report.

With regard to the requirement of Art. 29 (1) item 6, I am not aware of any received signals under Art. 4 para. 11 of the Law on Plagiarism and no plagiarism has been established in the submitted scientific papers of the candidate. There is also a declaration signed by R. Popov that the results and contributions in his scientific production are original and not borrowed.

Many of Rumen Popov's research developments have a specific practical focus and are the result of his many years of work (31 years of experience), starting as a designer of electronic circuits and from assistant to associate professor currently at the University of Plovdiv.

In accordance with Art. 80. (4) SJ should also take into account additional faculty requirements. In its Regulations for RAS, PU, in addition to the above requirements of ZRASRB, has given the faculties the right to introduce additional minimum requirements for candidates for academic positions. The Faculty of Physics and Technology of the University of Plovdiv has not accepted additional faculty requirements (Minutes № 14 / 20.93.2019).

2. General description of the submitted materials

Assoc. Prof. Rumen Popov presented for his participation in the competition a well-selected excerpt from his works, namely 34 publications, 1 book, 1 textbook and 3 textbooks, which are classified into 3 parts:

Part I: Scientific papers submitted for participation in the competition for "professor", as equivalent to a monograph, in accordance with the minimum national requirements - 10 copies [В4.1÷В4.10];

Part II: Scientific papers in group Г on indicators Г7 [Г 7.1÷ Г7.10] and Г8 [Г8.1÷ Г8.14] - a total of 24;

Part III: Books - 1 issue [Г6.1], textbooks and teaching aids - 4 issues [Е23.1. Е24.1÷Е24.3];

Only publications (total - 34) include 24 articles and 10 reports and are classified as follows:

By significance

- Articles in publications with Impact Factor - 15;
- Plenary reports - 0;
- Awarded publications - 0.

By place of publication:

- Articles in foreign magazines - 8;
- Papers in reports at international scientific conferences abroad - 5;
- Articles in Bulgarian magazines - 16;
- Papers in reports at international scientific conferences in Bulgaria - 4;
- Reports in the works of nat. scientific conferences, sessions and seminars - 1.

In the language in which they are written:

- In English - 31;
- In Bulgarian - 3.

By place among the co-authors:

- Independent - 0;
- First author - 5;
- Second author - 8;
- Third author and next author - 21 ;.

The distribution of publications by headings, in the country and abroad is given in more detail in Table 1.

Table 1	Articles with IF	Articles abroad	Articles in Bulgaria	Reports abroad	Reports in Bulgaria	Teaching aids	Number of publications
Group I	10	6	4	0	0	–	**10**
Group II	5	2	12	5	5	–	**24**
Group III	–	–	–	–	–	5	**5**
Total:	15	**8**	**16**	**5**	**5**	**5**	**39**

Over the years, the publications are distributed as follows:

Year	Number (works)	Year	Number (works)
2013	**3** [Г8.1,2 и 13]	2017	**3** [В4.5; Г8.11 и 12]
2014	**4** [В4.1; Г8.3,4 и 5]	2018	**2** [В4.6 и 8]
2015	**4** [Г8.6,7,8 и 14]	2020	**5** [В4.7,9; Г7.5,6 и 7]
2016	**11** [В4.2÷4,10; Г7.1÷4,10;Г8.9,10]	2021	**2** [Г7.8 и 9]

This distribution also shows that the submitted publications are outside those included for obtaining the ONS "Doctor" and the academic position of "Associate Professor".

The published book [Г6.1] (Control systems for diesel electric units, Marti-Deni Group Publishing House, 2019, 200 pages ISBN - 978-619-7207-16-3) is intended for students of the educational qualification degree "Master" in the specialties “Electric Power Engineering” and “Electric Power Technologies” in the higher technical schools.

The book [Г6.1], the 3 textbooks [Е23.1, Е24.2, Е24.3] and publications [Г8.1, Г8.4, Г8.5] are in Bulgarian. The main language for publication is English - 31 publications.

I accept that all other works from the candidate's production are entirely in the issue of the competition.

The works with which the candidate participates in the competition are the product of active and consistent research work in the period 2013 ÷ 2021. Fifteen of the publications are in Class A publications, indexed in world databases. As it was explained before, the candidate meets the scientometric indicators of PPZRASRB and the Regulations for holding academic positions at PU. The quantitative indicators of the criteria for holding the position of "professor" are met.

From the presented tables it can be seen that the candidate fulfills and overfulfills all conditions and normative quantitative requirements of the Regulations of PU. This gives me reason to confirm with conviction that Assoc. Prof. Rumen Popov meets the requirements of the University of Plovdiv "Paisii Hilendarski" to hold the academic position of "professor".

3. Reflection of the candidate's scientific publications in the scientific community (known citations)

A cursory reference in the scientific databases Scopus, Google Scholar and Researchgate.net (as of September 29, 2021) on the degree of citation of the candidate's publications gives over 100 citations of a limited number of his works. In the report on compliance with the minimum national requirements, the candidate presented data on 43 citations of his work B4.1 (with IF: 4.626), of which 35 citations are in editions, referenced and indexed in world databases and 8 citations in unreferred journals with scientific review. All works from group B are cited many times. The citations show that the candidate's scientific results have become widely known.

4. Overview of the content and results in the presented works

The scientific production of Assoc. Prof. Dr. Rumen Popov is oriented mainly to the creation of methods and tools for analysis of systems for underground heat storage. It is not superfluous to emphasize how important this issue is for the theory and practice of PN 5.2. Electrical engineering, electronics and automation, where the quality of each technical solution is usually determined by its energy efficiency.

The presented publications in group B on indicator B4 consider the theoretical basis, methods and means for studying the properties and operational characteristics of two major categories of heat energy accumulators:

o - accumulators with phase change materials (MPFS), known in the English literature as Phase Change Materials;

o - underground, heat, energy accumulators (PTEA).

In the presented 10 articles the results of conducting specific experimental and simulation studies of different types of heat storage systems are reviewed and analyzed.

The most significant scientific results and contributions are contained in the works of group B.4, presented as equivalent to a monographic work. This includes most of the papers (10) published in class A journals (with impact factor IF). Rumen Popov's publications in Group B are on issues that can be summarized as "Methods and tools for the study of heat storage systems." I accept that the 10 publications in group B are equivalent to a monograph.

I will note that a certain interest is the participation of Assoc. Prof. Rumen Popov in joint works of large international teams, in particular works [B4.5 -51 pages and B4.9 - 45 pages] with 18 and 8 co-authors from 10 countries. . The aim of the authors was to present in a single and generalized form the capabilities of ground heat exchangers, their features and areas of application. Issues related to the modeling of thermomechanical interactions that can have a decisive influence on energy geostructures were solved and discussed, and the aim was to offer the interested reader a comprehensive idea and

strategy regarding the possibilities and main problems in the synthesis and analysis of geothermal energy systems. I believe that this goal has been largely achieved.

Although almost entirely the works of the candidate are co-authored, I believe that his role in the submitted works is indisputable. This is largely due to his long-standing interest in this still inexhaustible scientifically applied problem of an interdisciplinary nature.

5. General characteristics of the candidate's activity

5.1. Educational and pedagogical activity

The candidate has conducted classes in over 11 disciplines and is a full-time lecturer, developed courses in over six disciplines ("Signals and Systems", "Programmable Logic Controllers", "Sensors and Actuators", "Digital Image Processing", "Computer simulation ",“ Automation of electric power systems ”, etc.), performed in TC Smolyan and PU“ Paisii Hilendarski ”. The curricula and characteristics of these disciplines have been developed, as well as methodical manuals for laboratory and seminar classes. Under the scientific guidance of Assoc. Prof. Rumen Popov, 11 graduates and 2 doctoral students have successfully defended. The candidate has an active participation in the development and updating of 8 curricula of specialties in the Faculty of Physics and Technology of PU.

In the teaching and methodological activity of the candidate the most significant contributions are related to the 4 textbooks written, which are entirely in the subject of the competition:

• Programmable Logic Controllers - Zelio Logic Controller Programming Guide. Academic Publishing House of IIT-Plovdiv, 2021, p. 128, ISBN 978-619-91382-6-7. (Textbook on the subject "Programmable Logic Controllers").

• Solar Radiation Measurement - Guide on Solar Radiation Energy and Lighting Calculations. IIIT Academic Publishing House - Plovdiv, 978-619-91382, 2021, pp. 80, ISBN 978-619-91382-3-6. (Solar Radiation Measurement Workshop Guide).

• Signals and systems. Academic Publishing House of IIIT-Plovdiv, 2021, p. 128, ISBN 978-619-91382-5-0. (Guide with a set of individual assignments for seminars in the discipline "Signals and Systems").

• Sensors and actuators. Academic Publishing House of IIIT-Plovdiv, 2021 ISBN 978-619-91382-7-4 (electronic edition: video exercises in the discipline "Sensors and actuators").

The presented textbook and manuals reflect the accumulated pedagogical experience and professional skills of Assoc. Prof. Rumen Popov. I will also add that writing textbooks for students is a significant contribution to the teaching of a candidate for professor.

The manuals are written professionally, in a clear and understandable style and language for students. A virtual training laboratory with video lessons in the discipline "Sensors and actuators" has been built.

As a university lecturer with over 29 years of experience, the pedagogical activity of the candidate in all its aspects can undoubtedly be highly appreciated. Both in terms of quality and volume, it is completely sufficient for the purposes of the competition.

5.2. Scientific and scientific-applied activity

The applicant has certified his participation in 9 research projects, one of which is national, three are internal to the PA and five are European (under the COST program):

1. NI15-KS-016/2015 - "Functional study of electronic devices and actuators in automotive engineering, mechanical engineering and energy";

2. ФП17-ФФ-010/2017 - "Complex approach for research of physical and engineering aspects of ecotechnologies";

3. FP19-FTF-012/2019 - "Application of information technology in laboratory research of systems with renewable energy sources";

4. BГO5M2OPO1-2.0110001- "Support for success", funded by the Operational Program "Science and Education for Smart Growth" 2014-2020. Co-financed by the European Union.

The active participation of the candidate as a leading contractor in 5 major projects under the EU COST program is impressive: Action №№ MP1004, MP1305, TU0802, TU1205, TU1405, and the latter is the coordinator for Bulgaria.

5.3. Implementation activity

The candidate presented official notes for his participation in the establishment of 2 laboratories ("Renewable Energy Sources" and "Sensors and Actuators"), as well as 17 stands and laboratory installations implemented in the educational process, developed by Assoc. Prof. Rumen Popov. Despite the claims of some of the publications for tested and implemented developments, the presented materials do not contain data on such, obtained economic effect, patents, etc.

6. Contributions

The scientific interests of Assoc. Prof. Rumen Popov are mainly in intensively studied areas of heat storage systems. The candidate has submitted his own self-assessment of his contributions separately for the publications in groups B and Г. I accept the scientific, scientific-applied and applied contributions in their edited form (according to the reference for contributions), considering that in this form they correspond to the results obtained from it. The main contributions to the candidate's work can generally be characterized as the enrichment of existing knowledge of classical and modern areas of methods and tools for studying the properties and performance characteristics of heat accumulators. The contributions to the works submitted for the competition (assuming that the participation of all co-authors is equal) can be summarized as follows:

Scientific contributions:

• A first-of-its-kind systematic comparison between field and laboratory tests to determine the thermal characteristics of ground heat exchangers, the different approaches in laboratory tests and guidelines for their features and areas of application [B4.5];

• A new hybrid approach and method for measuring the efficiency of vertical ground heat exchangers (VZT) and the surrounding underground thermal properties has been proposed and tested, which combines the traditional thermal response test (TOTX) with the method of well temperature relaxation (inverse heat response - GR), based on two-dimensional radial conductive heat transfer [B4.6].

• Methods and algorithms for research and modeling of hybrid heat systems (HTS) with ground-connected heat pump and solar collectors have been developed. Methods and tools for mathematical modeling and simulations of the main components of HTS and their work are presented [Г7.2, Г8.7, Г8.14].

• Algorithms for identification of systems using artificial intelligence methods (real and integer coded genetic algorithm and particle swarm optimization algorithm) have been developed and studied [Г8.4, Г8.5].

Scientific applied contributions:

• Mathematical modeling and 3-D numerical simulation studies were performed in order to predict the thermal behavior (in the process of phase transformations) of heat accumulators with paraffins (as materials with phase change - MPFS) and the factors influencing the the heat transfer process before the physical experiment. [B4.2, B4.3];

• Experimental and numerical studies of MPFS-based batteries for solar heat storage applications have been performed. By charging a latent heat accumulator (LTA) based on MPFS, its energy storage capacity is determined [Г8.11];

• Developed and tested (in the middle of LabVIEWTM) is a set of virtual tools allowing online or offline calculations of measurement uncertainty, as well as testing of statistical hypotheses [B4.7].

Applied contributions:

• An experimental system for testing a latent heat accumulator has been developed and tested as part of a hybrid air conditioning system [Г8.2] and a specialized measuring system for heat field analysis in hybrid systems [Г7.3], as well as a hybrid installation with ground based heat pump and solar collectors [Г8.3];

• A set of virtual statistical measuring instruments designed for use in engineering education for the conditions of COVID-19 [D7.9] has been developed and tested. • A small hybrid installation has been developed, containing daily and seasonal accumulators and supporting five different operating

modes with an emphasis on charging a drilling heat exchanger (DHW), heating mode with ground-connected heat pump and subsequent natural relaxation [B4.8].

Teaching methods contributions:

• Virtual tools have been developed for computer-based systems for measuring various technological quantities and a range of measuring schemes for switching on the developed sensors.

Here I also accept as teaching and methodological contributions related to the improvement of the learning process developed laboratory exercises in the manuals [E24.1, E24.2, E24.3].

A number of other results with an engineering-applied and educational-methodical character have been achieved, which the candidate has set out in detail in the author's reference for contributions.

The overall content analysis of the scientific production of Rumen Popov gives me reason to believe that the authenticity of the contributions is undoubted and they are definitely his personal work.

7. Assessment of the personal contribution of the candidate

Assoc. Prof. Dr. Rumen Popov carries out effective research and uses the name of a respected and qualified expert in the professional field of the competition.

Summarizing this part of my review, I believe that the presented publications have obtained original results in creating methodologies and tools for determining thermal characteristics, measuring the efficiency of ground heat exchangers, heat accumulators, their testing and research in virtual and in-situ natural Wednesday. In accordance with the generally accepted differentiation of the contributions, with Assoc. Prof. Rumen Popov, they cover the range of scientific, scientific-applied, engineering-applied and educational-methodical, contributions, consisting in: proving with new means of existing scientific problems and theories, obtaining new facts and confirmatory ones and creation of new methodologies for calculations, simulation and application of scientific achievements in practice. I find it a certain advantage that the application of individual fragments are practically feasible and implemented in training stands and models that help the learning process and others.

Regarding the contribution moments in the works of Assoc. Prof. Rumen Popov, I have indicated only those that, in my opinion, deserve special attention. I think that they completely satisfactorily cover the results achieved in his scientific production. The works are written at a high professional level. The candidate has worked for a long time on the issues of the competition. As far as I know the literature in this field, I have no doubt that all the contribution results in the scientific production of Assoc. Prof. Rumen Popov are his personal work.

Rumen Popov's participation in 9 research contracts / projects is convincing proof that he has established cooperation and contacts with scientists and teams directly related to the issues of the competition. Assoc. Prof. Dr. Rumen Popov is a lecturer who has supported his long-term practice as a lecturer with a number of teaching aids. Under the guidance of the candidate, two doctoral dissertations have been successfully defended.

The candidate has submitted as an independent author 5 works [Г6.1, E23.1, E24.1 ÷ E24.3]. The other publications are collective, as in 5 of them [B4.7, Г7.5, Г7.10, Г8.4, Г8.8] Popov is the first author, and in 8 publications he is the second author [B4.8, Г7. 1, Г7.3, Г7.7, Г8.1, Г8.5, Г8.6, Г8.12]. As there is no separation protocol in the materials, I accept the participation of each of the co-authors in conducting the research and writing the publications as equivalent.

From the publications it can be concluded that Assoc. Prof. Rumen Popov has been actively involved in several scientific problems, one of which he has summarized in the works of group B, as equivalent to a monographic work. The analysis of the presented self-assessment of the candidate's contributions gives me reason to assume that they are his personal work and merit.

The scientific and teaching qualification of Assoc. Prof. Rumen Popov is undoubted. The candidate in the competition has presented a significant number of scientific papers published after the defense of ONS "Doctor" and the first habilitation ("Associate Professor"). In the works of the candidate there are scientific, scientific-applied and applied contributions, which have received international and national recognition, and have been published in journals and scientific collections. Theoretical developments have practical applicability, and most of them are directly oriented to the educational

work or engineering practice. The scientometric data on the results achieved by Assoc. Prof. Dr. Rumen Popov in teaching and research fully comply with the requirements of Plovdiv University for the academic position of "Professor".

8. Critical remarks and recommendations

I have no critical remarks of a significant nature to the materials of the competition. They are properly presented and structured. In some of the articles, the style of the exhibition can be improved. In this line of thought, my following remarks are of a recommendatory nature:

• The presented author's report on the contributions does not contain well-formulated summary claims, but presents statements and results from individual publications or groups of publications. It is difficult to distinguish his personal contribution to collective publications.

• There is no separation protocol for the share participation of the co-authors in the collective developments.

• Repeatability, such as figures, individual text passages or inferences, is observed in some of the publications.

• There are no individual/stand-alone publications in group B, their total number is small (five). Undoubtedly, the areas of scientific interest in which the candidate works require the involvement of more specialists, but I would recommend him in the future to summarize some of his results in stand-alone publications.

The above remarks are of a formal nature and do not detract from the results of the research carried out, nor do they affect the very good general impression that the candidate's production creates.

9. Personal impressions and opinion of the reviewer

My personal impressions of Assoc. Prof. Rumen Popov are from the time when he was a lecturer at the branch of TU-Sofia in Plovdiv and are based on my visits there, as well as some of his scientific achievements and results of his research. I also have direct impressions of his work in Smolyan. They are all entirely positive. He is always very precise, constructive and accurate. This, by the way, has been reflected in his scientific work, which is characterized by depth and accuracy. After my detailed acquaintance with the scientific production of the candidate, I believe that his participation in the current competition for professor is also a proof of the positive development of his potential as a teacher and researcher.

The claims for scientific contributions are substantiated and correspond to the results actually achieved. The candidate has serious scientific publications on the issues of the competition, they have been tested at Bulgarian and international scientific forums and published in authoritative publications. From the presented production, obtained results and achievements it is evident that Assoc. Prof. Rumen Popov has made a name for himself as a highly erudite and respected scientist in the field of competition. His participation in the competition presents him as a very well-prepared and actively working researcher, which confirmed my positive personal impressions of Assoc. Prof. Rumen Popov. It should be noted that behind the quantitative indicators and contributions of Assoc. Prof. Rumen Popov in its development as a lecturer and expert in the field of competition, stands the excellent student and dedicated to his profession, who throughout his conscious life has worked systematically, continuously. and persistently to build himself as a specialist and university lecturer. In this light, the long path of professional development, the accumulated academic experience and scientific production by Assoc. Prof. Rumen Popov make him the most suitable candidate in the current competition for professor.

CONCLUSION

Having in mind the above, evaluating the overall educational and research work of Assoc. Prof. Dr. Rumen Popov, I believe that it fully satisfies the conditions, criteria and requirements for election to the academic position of "professor". On this basis, I give my positive vote and invite the members of the esteemed scientific jury to vote positively for the selection of the candidate.

From the presented materials it can be seen that sufficient scientific and applied contributions have been received. After getting acquainted with them, my assessment of their importance and the contribution results contained in them, I find it reasonable to propose to the esteemed members of the Scientific Concil at the Faculty of Physics and Technology at PU "Paisii Hilendarski" Assoc. Prof. Dr. Eng. Rumen Kostadinov Popov to take the academic position "PROFESSOR" in the professional field 5.2. "Electrical Engineering, Electronics and Automatics" in the specialty "Automated systems for information processing and control".

September 30, 2021. REVIEWER: .....
Plovdiv (Prof. Ch. Damyanov)