POSITION

on a competition for academic position "Professor" in professional field 5.2. "*Electrical engineering, electronics and automation*", under the scientific and educational specialty "*Electrotechnologies*", at the Department of Electrical Engineering and Electrotechnologies of the Faculty of Electrical Engineering of the Technical University - Varna, promulgated in the State Gazette No. 23/19.03.2019, with single candidate PhD **Bohos Rupen Aprahamian**, Associate Professor–Engineer.

Member of the scientific jury: PhD **Peter Doncheff Dineff**, Professor in the professional field 5.2. "Electrical engineering, electronics and automation", under the scientific and educational specialty "*Electrotechnologies*", Technical University – Sofia (retired from 2012).

1. GENERAL CHARACTERISTICS OF THE APPLICANT'S RESEARCH, SCIENTIFIC AND IMPLEMENTATION ACTIVITIES

The entire scientific activity of Assoc. Prof.-Eng. PhD **Bohos Rupen Aprahamyan** in the declared field of the scientific specialty of "*Electrotechnologies*", was permanently directed, as well as to research of specific problems, as well as to the analysis and understanding of the basic laws and characteristics of technological processes, methods and systems (devices).

The provided Assessment of compliance with the minimum national requirements in professional directions "*Electrical Engineering, Electronics and Automation*", under Art. 2b, Para. 2 and 3, respectively with the requirements under Art. 2b, Para. 5 of *Act on Development of the Academic Staff in the Republic of Bulgaria* (ADDSRB); Art. 60, Para. 3 of the *Act Amending and Supplementing ADDSRB*; Art. 27, Para. 1, Point 5 of the *Rules of Procedure for ADDSRB Implementation in Technical University–Varna*, for occupying academic positions of "Professor", accurately reflects the candidate's overall research and application activities and corresponds fully to the field of the declared scientific specialty. I positively assess the compliance of the submitted assets by the candidate **Bohos Aprahamyan** with the requirements of the current regulatory framework relevant to the application of the ADDSRB (*Prom. SG. 38/21.05.2010, amend. SG. 81/15.10.2010, amend. SG.101/28.12.2010, amend. SG. 68/02.08.2013, amend. and suppl. SG. 30/03. 04. 2018, amend. SG. 17/26.02.2019).*

I propose a table that illustrates the compliance with the minimum national requirements, in *Appendix* 1, applied to the candidate **Bohos Aprahamian** for holding academic positions of "Professor". I appreciate the positive that the candidate meets the requirements of groups of parameters **А** and **В** and substantially exceed the minimum national requirements on groups of indicators **Г**, **Д**, **Е** and **Ж**, i.e. I positively appreciate the overall research and development activities that enable the candidate to adequately occupy the academic position of "Professor" in the declared Area 5 "*Engineering Sciences*", accredited professional field 5.2 "*Electrical Engineering, Electronics and Automation*", scientific and educational specialty "*Electrotechnologies*".

2. EVALUATION OF THE APPLICANT'S TEACHING AND STUDENTS' SUPERVISION ACTIVITIES

Assoc. Prof.-Eng. PhD **Bohos Aprahamyan** is a full-time lecturer at the Department of Electrical Engineering and Electrotechnologies (EEET) of the Faculty of Electrical Engineering of

the Technical University-Varna (TU-Varna), who holds the academic position of "Associate Professor" for a termless employment contract since 2009 for about 10 years.

Bohos Aprahamyan previously held the same academic positions from 2001 to 2009, in the Department of Electrical Engineering of the N. Y. Vaptsarov Naval Academy, Varna. He held the academic position of "Chief Assistant" to the same department from 1997 to 2001. He has been working for this high school for about 12 years.

If to this long period of continuous teaching and student's supervision activity of the candidate in the field of higher education was added the activity as a part-time assistant to the EEET department of TU-Varna in the period from 1990 to 2001, then the acquired teaching and student's supervision experience from the candidate in the field of higher education covers the total of 29 years, 18 of them (more than half!) of the academic position "Associate Professor".

During the period from 1991 to 2001, **Bohos Aprahamyan** is also a lecturer at the Vocational High School of Electrical Engineering - Varna, which I find very useful basic educational experience for each teacher in a technical high school.

The combination of all these teaching activities is a specific individual development, which allows me to assert that the candidate fully meets the requirement for a educational experience acquired to occupy the academic position of "Professor".

When it comes to professional experience, the years of the candidate's employment during which he worked as a constructor and technologist from 1987 to 1991 should be added here. And it is natural to say that we have fully established professional with a specific and well recognizable public profile. The additional professional and teaching qualifications, training courses in English, participation in well-known public activities and programs in the Bulgarian and international scientific fields, confirm the fact that a scientist, lecturer and researcher is well recognized in our country and abroad.

The candidate is author (co-authored) of two university textbooks and five teaching aids (manuals for laboratory exercises). The textbooks and teaching aids have been developed in accordance with existing higher education curricula, structured methodically and successfully used in the educational process.

Bohos Aprahamyan has made a recognized personal contribution to the construction and modernization of the infrastructure of the Department of EEET. These activities are funded by the Department's funds, projects and sponsorship by a number of companies working in the field of electrical engineering. He is able to attract young teachers and many distinguished students to accomplish his assigned tasks, which gives a deeper meaning to the results achieved.

Evidence was presented of the needs of the Department of ETET, which is a serious reason for the announcement of the competition in relation to the Bachelor of Electrical Engineering course, which falls directly in the field of the declared professional direction - scientific and educational specialty "Electrotechnologies".

The candidate gives lectures (see information for the last three years) in the following courses: a) for Professional Bachelor Degree Programs: "*Alternative Energy Sources*"; b) for Bachelor's Degree Programs: "*Wind Systems and Facilities*", "*RES Management and Control Systems*", "*Photovoltaic Systems and Solar Power Plants*", "*Electromechanical Systems*" and "*Electric Micromachines*"; c) for Master's Degree Programs: "*Special Electrotechnology Course*", "*Wind Energy*", "*RES Management and Protection Systems*" and "*Nanomaterials and Nanotechnology in Electrical Engineering*". Each of these courses can have leading teacher and researcher in the academic position of "Professor".

I assess positively the compliance of the presented assets by the candidate **Bohos Aprahamyan** with the requirements of ADDSRB, Act Amending and Supplementing ADDSRB and Rules of Procedure for ADDSRB Implementation in Technical University–Varna. I appreciate the candidate's professional and educational experience, which allows him to successfully meet the essential requirements for occupying the academic position of "professor" in the announced scientific and educational specialty.

3. KEY SCIENTIFIC AND APPLIED SCIENCE CONTRIBUTIONS

The presented scientific papers are grouped thematically into several groups. For each thematic group (self-assessment), the scientific contributions related to specific scientific publications are formulated in detail. The main scientific contributions can be attributed to the group of applied scientific contributions resulting from the industrial research carried out (EC Regulation

651/2014). This means deliberately planned and conducted research of the utmost importance, designed to acquire new knowledge and skills to develop new products, processes or services, or to achieve significant improvements to existing products, processes or services.

The main scientific contributions can be attributed to the group of applied scientific contributions resulting from industrial research (Commission Regulation EU 651/2014). This means purposefully planned and conducted research of the utmost importance, designed to acquire new knowledge and skills to develop new products, processes or services, or to achieve significant improvements to existing products, processes or services.

I accept that they can be categorized into the following groups: i) proving with new means the essential new sides of already existing scientific and technological fields, problems, theories, hypotheses; ii) creation of new methods, constructions, technologies, schemes; iii) obtaining and proving new facts; iv) obtaining confirmatory facts; v) implementation contributions.

Some of these contributions can be attributed to the group of true applied contributions resulting from the so-called "experimental development" (Commission Regulation EU 651/2014). Experimental development means the acquisition, combination, design and use of existing scientific and technological and other relevant knowledge and skills in order to develop new or improved products, processes or services.

The scientific and applied contributions shall mainly relate to: a) a) the presented monograph dealing with scientific and technological issues concerning the production of nanostructured single or multi-layer (up to 3 layers) thin-layer coatings and multi-layer (4 to 10 layers) superlattices based on Ti/TiN, Ti/TiC and Ti/TiN/TiC by two of the major vacuum deposition or transport technologies - by magnetron sputtering (Sputtering PVD) and arc-evaporation (Arc-PVD) in vacuum; (b) the scientific publications submitted which may be assigned to the following objects of study and development: i) resistive coatings deposition technology on ceramic substrates by magnetron sputtering and screen printing intended for surface heating elements; ii) electrochemical oxy-hydrogen (Brown gas) technology; iii) induction heating technology; iv) magnetic separation technology and purification of bulk materials; v) special industrial research on electrical machines; vi) remote web-based control of electrical apparatus; vii) development and selection of peristaltic pumps for technological application; viii) specific application of photovoltaic modules and systems; ix) LED lighting systems with specific applications.

It should be appreciated that the foundations of the Electrotechnology Research Laboratory, located at 102BB and 240BBB of the EEET Department, which is not only part of the research infrastructure of TU - Varna in the field of "Electrotechnology", but it is main part of the training infrastructure of PhD students in this educational and scientific field. The National doctoral degree program of Electrotechnology and Nanotechnology in Electrical Engineering the only one in the country was accredited in 2013.

I appreciate the positively accomplished research that allows the candidate **Bohos Aprahamyan** to successfully meet the essential requirements for occupying the academic position of "professor" in the declared scientific and educational specialty.

4. SIGNIFICANCE OF CONTRIBUTIONS TO SCIENCE AND PRACTICE

The significance of **Bohos Aprahimian's** contributions to science and industrial practice is indisputable. The focus is on the applied-science (industrial) contributions related to creating new methods, approaches, technologies and constructions. The defined application contributions related to solving of numerous practical tasks, cover a large range of applications and are of serious significance to society.

The candidate has published works with scientific, scientificcally applied and applied contributions to science and practice. He has been active in innovation as a researcher, expert, consultant, designer and implementer. He has participated in the writing of university textbooks and teaching materials in the field of the announced competition and in areas that are in direct contact with it. The contributions of the candidate in his scientific field are significant, and the information reported in them is useful, sought and needed by other authors and specialists, and most importantly, the name of the applicant (and his co-authors) is already well known to the scientific community at home and abroad.

It shall also be emphasised that the minimum requirements of the Rules of Procedure for ADDSRB Implementation in Technical University – Varna internal concerning the occupation the

position “Professor”, are significantly exceeded, evident from the submitted documents. The **candidate Bohos Aprahimian** is a visible and well recognized researcher by the scientific community both in the country and abroad.

5. CRITICAL REMARKS AND RECOMMENDATIONS

I do not have critical remarks that give rise to questions and doubts in the scientific, scientifically applied (industrial) and applied contributions defined and defended by the candidate **Bohos Aprahimian** in this competition.

CONCLUSION

Based on the presented scientific papers, on the acquaintance and assessment of their significance and visibiity by the scientific community in the country and abroad, on the scientific, applied-scientific and applied contributions contained in them, as well as on acquainance with and assessment of the overall teaching and supervision activities, submitted monographie, textbooks and learning materials,

I find it justified to propose,

Assoc. Prof.-Eng. PhD **Bohos Rupen Aprahamian** to be awarded the academic position “Professor” in Department of “Electrical Engineering and Electrotechnologies” at the Faculty of Electrical Engineering, Technical University -Varna, in the professional field 5.2. Electrical Engineering, Electronics and Automation, specialty “Electric Power Networks and Systems”.

Varna,
04.03.2020

Member of the Scientific Jury,
Prof.-Eng. PhD Peter Dineff:……

Application 1.

ASSESSMENT

of compliance with the **minimum national requirements** in professional directions "Electrical Engineering, Electronics", under Art. 2b, Para. 2 and 3, respectively with the requirements under Art. 2b, Para. 5 of Act (ADDSRB) on Development of the Academic Staff in the Republic of Bulgaria (*Prom. SG. 38/21.05.2010, amend. SG. 81/15.10.2010, amend. SG.101/28.12.2010, amend. SG. 68/02 Aug 2013, amend. and suppl. SG. 30/3Apr 2018, amend. SG. 17/26 Feb 2019)*; Art. 60, Para. 3 of the Act Amending and Supplementing ADDSRB; Art. 27, Para. 1, Point 5 of the Rules of Procedure for ADDSRB Implementation in Technical University – Varna, for occupying academic positions of "Professor".

Assoc. Prof.-Eng. PhD **Bohos Rupen Aprahamian** is the candidate wishing to hold the academic positions "Professor" for the needs of the Department of Electrical Engineering and Electrotechnologies of the Faculty of Electrical Engineering at Technical University - Varna.

	Indicators	**Individual Score**, points		Rate, points	Meets norm: Yes/No Note
А.1	Dissertation thesis for the awarding of the Doctor's degree: „*Development and testing of surface heating elements on a ceramic basis*", 1991; COBISS.BG ID: 1254567908			≥ 50	Yes, Meets the norm
В.3.	Authors' monograph: B. Aprahamian, M. Nikolova, V. Zaharieva. „*Application of thin and nanostructured PVD coatings for protection and performance improvement of current carrying components of electrical equipment*", TU-Varna, ISBN: 978-954-20-0793-7, p. 208, 2019.			≥ 100	Yes, Meets the norm
Г.7.	Publications in referenced and indexed publications	9 publications; 116,65 points	Individual Score: 369,01 points	≥ 200	Yes, Exceeds the norm
Г.8.	Publications in non-referenced and non-indexed publications	29 publications; 252,36 points			
Д.12.	Citations in referenced and indexed publications	13 citations; 130 points	Individual Score: 173 points	≥ 100	Yes, Exceeds the norm
Д.13.	Citations in monographs with scientific reviewing	3 citations; 9 points			
Д.14.	Citations in non-referenced publications with scientific reviewing	17 citations; 34 points			
Е.17.	PhD students – successfully supervised dissertations	3 PHD students, 80 points	Individual Score: 368,34 points	≥ 150	Yes, Exceeds the norm
Е.18.	Participation in successfully managed national scientific or educational projects	3 Projects 30 points			
Е.23.	Published university textbook	2 textbooks, 20 points			
Е.24.	Published university teaching materials	5 teaching materials; 38,34 points			
Е.26.	Applications for national utility model patents filed	5 applications; 200 points			
Ж.29.	A series of lectures delivered in the last three years at TU-Varna	1336 hours	1336 points	≥ 120	Yes, Exceeds the norm