Appendix 12c

REVIEW

to occupy the academic position:

''Professor''	
''Associate Professor''	X
	one of the academic positions indicated shall be marked with the sign "X"

Candidates to occupy the position:

1	Chief assist.	PhD	Stoyko	Alexandrov	Petrin	UCTM
№	academic position	scientific degree	name	middle name	last name	workplace

Scientific area:

5	Technical sciences
code	name

Professional area:

5.11	Biotechnology
code	name

Scientific specialty:

Technology of Biologically Active Substances

The competition has been announced:

71	07.08.2026	Biotechnology	Chemical and systems engineering
in SG issue	date	for the needs of the Department	Faculty

The review was written by:

Prof.	PhD	Nelly	Vladova	Georgieva	UCTM
academic position	scientific degree	name	middle name	last name	workplace

1. Review for the candidate:

Chief assist.	PhD	Stoyko	Alexandrov	Petrin
academic position	scientific degree	name	middle name	last name

1.1. Completion of the provided documents:

A) The competition documents are in full compliance with the Regulations	3 points	**X**

B) The documents are complete but do not fully comply with the requirements of the Regulations	2 points	
C) The documents are not completed in accordance with the requirements of the Regulations	0 points	
		one of the answers given is marked with the sign "X"

Missing documents and violated requirements must be described if response C is marked.
All documents for the announced competition have been meticulously compiled and are in full compliance with the Regulations of UCTM and the Rules for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria. There are no missing documents.

1.2. Meeting the minimum requirements under the Regulations:

A) The candidate meets the minimum requirements	20 points	X
B) The candidate doesn't meet the minimum requirements	0 points	
		one of the answers given is marked with the sign "X"

It must be filled in if answer B is marked. The publication activity of the candidate is analyzed. The response of the results achieved (quoted) is analyzed.
Chief Assistant Professor Dr. Stoyko Petrin is participating in this competition with a total of 36 scientific publications, comprising 10 works submitted for the habilitation requirement, 17 articles published in journals indexed in the Scopus and/or Web of Science databases, and 9 articles published in non-indexed, peer-reviewed scientific journals. The submitted publications do not overlap with those used to obtain the educational and scientific degree of "Doctor" (PhD). The competition documentation fully complies with the Regulations for the Acquisition of Scientific Degrees and the Occupation of Academic Positions at the University of Chemical Technology and Metallurgy (UCTM), as well as with the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the UCTM's own regulations regarding the acquisition of scientific degrees and the occupation of academic positions. The candidate's total score for the competition is 559.93 points. Of this, 104.81 points are derived from a habilitation work in the form of scientific publications (against a minimum requirement of 100 points), and 216.12 points come from publications in journals indexed in internationally recognized scientific databases, as well as articles in peer-reviewed non-indexed journals or edited collective volumes (against a minimum requirement of 200 points). This fully satisfies the minimum requirements for the academic position of "Associate Professor". Data is provided for 58 citations or reviews in scientific publications, amounting to 169 points (against a required minimum of 50 points). The candidate has also submitted a teaching aid titled "Instrumental Analysis in Biotechnology – Worksheets," worth 20 points.

1.3. Relevance of scientific and / or applied research:

A) The research is relevant. Part of the research is pioneering (no results are known on the topic by other authors)	7 points	
B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	5 points	X
C) Most of the research is relevant, but also some results are presented that have no scientific and / or applied value	3 points	
D) The smaller part of the research is relevant	2 points	
E) Research is not relevant	0 points	
		one of the answers given is marked with the sign "X"

The evaluation of the relevance of the research must be substantiated.
The materials submitted for the announced competition are current and address a significant area within biotechnology: the pretreatment and bioconversion of various lignocellulosic biomasses; the production of high-value-added cellulosic products and fermentable sugars; the kinetics of enzymatic processes; the development of biocomposites; the valorization of plant residues and natural bioactive compounds; as well as the synthesis and characterization of bioactive peptides. In his works, the candidate Chief Assistant Professor Dr. Stoyko Petrin, focuses on comparative studies regarding the potential of fast-growing tree species (such as Paulownia, poplar, willow, and acacia) and their utility in the production of unbleached pulp and in enzymatic hydrolysis, processes that yield valuable biotechnological products. This underscores the relevance of the presented research.

1.4. Knowledge of the problems subject of research:

A) The candidate knows in detail the achievements of other authors on the researched topics and/or applications	6 points	X
B) The candidate is partially familiar with the achieved results on the researched topics and / or applications	4 points	
C) The candidate has no prior knowledge of the status of the researched problems	0 points	
		one of the answers given is marked with the sign "X"

The evaluation must be substantiated if answer C is marked.
A review of the publications makes it clear that Chief Assistant Dr. Stoyko Petrin possesses a sound understanding of the subject matter and prior research in the field, as well as the contributions of other authors, and cites them correctly.

1.5. Type of research:

A) Theoretical	4 points	
B) Applied	4 points	
C) Theoretical with application elements	4 points	X
D) It does not correspond to the level specified in the Act for the Development of the Academic Staff in the Republic of Bulgaria and the Regulations	0 points	
		one of the answers given is marked with the sign "X"

The level of research must be substantiated if answer D is marked.
The research presented is both fundamental and applied in nature. Some of the candidate's work involves analyses of the physicochemical and kinetic principles governing the enzymatic hydrolysis of cellulosic and lignocellulosic materials, as well as the use of spectroscopic approaches to monitor and characterize chemical transformations - aspects that underscore the fundamental nature of this research. Further development of these kinetic studies focuses on the use of fast-growing tree species (poplar, paulownia, willow, and acacia) for the production of second-generation bioethanol, which highlights the applied scientific nature of the work. Research concerning the conditions for the acid hydrolysis of bleached hardwood pulp - specifically regarding the potential to utilize the resulting waste hydrolysate for subsequent bioconversion into biogas - is classified as applied research. The fundamental nature of the candidate's work is also evident in his research on the synthesis, modification, and characterization of natural and synthetic biologically active compounds; for instance, the development of analogs of the antimicrobial peptide Temporin A, featuring modifications at positions 1 and 10. By replacing Phe with Tyr or fluorinated Phe, and Ser with Tyr or Thr, it becomes possible to investigate how hydrophobicity, spatial structure, and halogenation influence antibacterial, antiproliferative, and cytotoxic activity.

1.6. Objectives of the research:

A) Realistic and of scientific and / or applied interest	8 points	X
B) Realistic, but not of scientific and / or applied interest	4 points	
C) Unattainable (unrealistic)	0 points	
		one of the answers given is marked with the sign "X"

Objectives must be specified. The type of the set objectives must be justified.
The research objectives underlying the candidate's work are both scientific and applied in nature and can be summarized as follows:

1. Physicochemical and kinetic principles governing the enzymatic hydrolysis of various types of lignocellulosic biomass; 2. Pretreatment and bioconversion of lignocellulosic biomass into fermentable sugars; 3. Acid hydrolysis and modification of cellulose for the production of value-added products; 4. Production of medium - and high-density fiberboards via the dry process, recycling and utilization of secondary fibrous raw materials, and the use of additives to enhance the properties of the resulting boards; 5. Preparation, modification, and characterization of natural and synthetic biologically active compounds; 6. Spectroscopic approaches for monitoring and characterizing chemical transformations, as well as technological studies related to the production of chemical pulp.

1.7. Methods of research:

A) Adequate to research and set scientific objectives and /or applications	8 points	X
B) Partially appropriate, enabling part of the scientific objectives and / or applications to be achieved	4 points	
C) Inappropriate methods	0 points	
		one of the answers given is marked with the sign "X"

Methods must be specified. The type of methods used is justified.
Chief Assistant Dr. Stoyko Petrin employs a wide range of modern instrumental analysis methods, including infrared (IR) spectroscopy, UV-Vis analysis, chromatographic techniques, and steam-explosion treatment systems. The instrumental methods utilized are appropriate and well-selected in relation to the subject of study and the objectives of the chemical analysis. Furthermore, the potential of IR spectroscopy as an analytical tool for monitoring reactions in solution has been demonstrated.

1.8. Candidate research contributions:

A) With lasting scientific and / or applied response, they form the basis for new research and applications	20 points	X
B) They are of significant scientific and / or applied interest, complete and / or summarize previous research	16 points	
C) They are of scientific and / or applied interest	12 points	
D) Lack of significant contributions	8 points	
E) Lack of contributions	0 points	

		one of the answers given is marked with the sign "X"

Contributions must be specified. The type of results achieved must be justified.
The contributions within the candidate's research can be classified as scientific-applied and focused on several key areas: the pretreatment and bioconversion of various lignocellulosic biomasses; the production of high-value-added cellulose products and fermentable sugars; the kinetics of enzymatic processes; the development of biocomposites; the valorization of plant residues and natural bioactive compounds; and the synthesis and characterization of bioactive peptides. Of particular significance is the candidate's research on fiberboards and biocomposites, which addresses the recycling of MDF, the utilization of technical lignins, the mitigation of formaldehyde emissions, and the enhancement of water resistance through the use of functional additives. A specific line of research has been developed aimed at reducing the content of synthetic binders (resins) in MDF by utilizing lignosulfonates and technical hydrolysis lignin. The study also demonstrates the potential for utilizing waste lavender biomass and converting it into value-added products. The applicability of infrared (IR) spectroscopy for tracking chemical transformations, such as the acetylation of p-aminophenol to paracetamol, has been established. By carefully selecting an appropriate solvent and characteristic IR bands, the evolution of the reaction system over time was monitored. The data obtained regarding the dynamics of the transformation, without the need to isolate intermediate products, highlights the potential of IR spectroscopy as an analytical tool for monitoring reactions in solution.

1.9. Participation of the candidate in the achievement of the presented results:

A) The candidate has at least an equal participation in the submitted papers	8 points	X
B) The candidate has at least an equal participation in most of the submitted papers	7 points	
C) The candidate has a secondary participation in most of the submitted papers	4 points	
D) The candidate participation is unnoticeable	0 points	
		one of the answers given is marked with the sign "X"

Critical notes must be provided if one of the items C or D is marked.
In his research activities, Chief Assistant Dr. Stoyko Petrin employs a rich methodological arsenal of chemical and biochemical techniques, demonstrating proficiency in modern and widely applied working approaches. I consider the stated contributions to be original in nature; they generate new knowledge within the specific field and hold the potential for practical application. The scientific works submitted for evaluation in this competition are characterized by their originality, precision, and topicality, and they align fully with the

scientific field and discipline relevant to this competition. The results obtained and the scientific contributions of Chief Assistant Dr. Stoyko Petrin, which reflect his research experience, open up opportunities and prospects for further investigation into current issues.

1.10. Pedagogical activity:

A) The candidate has effective and sufficient pedagogical activity at the university. The textbooks issued are modern and useful (they meet the requirements of the Regulations). The work with undergraduate and doctoral students is at a high professional level.	8 points	X
B) The candidate has sufficient pedagogical activity at the university. The textbooks issued satisfy the requirements of the Regulations.	6 points	
C) The pedagogical activity and / or textbooks issued are insufficient (do not meet the requirements of the Regulations)	0 points	
		one of the answers given is marked with the sign "X"

Critical notes must be provided if one of the items B or C is marked.
Chief Assistant Stoyko Petrin has actively participated in the implementation of 10 research projects, 6 of which were funded by the Bulgarian National Science Fund. He has served as the principal investigator for 4 research contracts under the Research Sector at the University of Chemical Technology and Metallurgy. Over the last 5 academic years, the candidate's average annual teaching load has exceeded 360 hours. The lecture courses he has taught include: Instrumental Analysis in Biotechnology, Bioanalytical Techniques, Introduction to the profession (for students majoring in Biomedical Engineering), and Biotechnological Processing and Valorization of Plant Raw Materials. He has also conducted practical exercises in these same subjects. Under his supervision, 17 diploma theses have been developed and successfully defended, 11 for the Bachelor's degree and 6 for the Master's degree.

1.11. Critical notes:

A) Lack of critical notes	8 points	X
B) Critical notes of a technical nature	7 points	
C) Critical notes that would partially improve the results achieved in a small part of the research	5 points	
D) Critical notes that would partially improve the results achieved in most of the research	3 points	
E) Significant critical notes	0 points	

		one of the answers given is marked with the sign "X"

Critical notes must be provided if one of the answers C, D or E is marked.
I have no critical remarks or recommendations regarding the candidate.

1.12. Conclusion

A) The evaluation of the candidate's activity is **POSITIVE**	This evaluation is assigned to a total number of at least 65 points	X
B) The evaluation of the candidate's activity is **NEGATIVE**	This evaluation is assigned to a total number below 65 points	
		one of the answers given is marked with the sign "X"

To be filled in if requested by the reviewer
The research results presented for the competition, along with their significance, the scientific, applied-scientific, and methodological contributions they contain, and the candidate's teaching experience, demonstrate that the candidate, Chief Assistant Dr. Stoyko Petrin, possesses a high level of professional qualification and scientific expertise. All documents and materials comply with the requirements of the "Act on the Development of the Academic Staff in the Republic of Bulgaria", the "Regulations for its Application", and the "Regulations of the University of Chemical Technology and Metallurgy" regarding the acquisition of the academic rank of "Associate Professor." The subject matter and standard of the research, as well as the originality of the results, meet all the criteria for the requested academic rank. On this basis, I provide a positive assessment of the candidate's overall research and teaching activities and confidently recommend to the Scientific Jury that the academic rank of "Associate Professor" be awarded to Chief Assistant Dr. Stoyko Petrin in Professional Field 5.11 "Biotechnology," under the scientific specialty "Technology of Biologically Active Substances."

03.11.26	The review was written by:	
date	**Prof. Nelly Georgieva, PhD**	signature