Appendix 12c

REVIEW

to occupy the academic position:

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

Candidates to occupy the position:

1	Assoc. prof.	PhD	Rayna	Georgieva	Bryaskova	UCTM
№	academic position	scientific degree	name	middle name	last name	workplace

Scientific area:

4	Natural sciences, mathematics and informatics
code	name

Professional area:

4.2.	Chemical science
code	name

Scientific specialty:

Chemistry of high molecular compounds

The competition has been announced:

23	19.03.2024 г.	Polymer engineering	Chemical Technology
in SG issue	date	for the needs of the Department	Faculty

The review was written by:

Prof.	PhD	Sevdalina	Hristova	Turmanova	University “Prof. Dr Assen Zlatarov”-Burgas
academic position	scientific degree	name	middle name	last name	workplace

1. Review for the candidate:

Assoc. prof.	PhD	Rayna	Georgieva	Bryaskova
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.
The required documents for this competition have been duly submitted and are in full compliance with the Rules of the UCTM and Regulations on the Implementation of the Development of Academic Staff in the Republic of Bulgaria Act.

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 (quotes) is analyzed.
The candidate in the competition for the position of full professor, Assoc. Prof. Dr. Rayna Georgieva Bryaskova, submits 19 scientific publications for review, including 12 in international journals with an Impact factor, (cumulative impact factor Σ=38.376) Among them, **5** publications are in **Q1** journals, **7** publications are in **Q2** journals, **5** publications are in **Q3** journals, and **2** publications are in **Q4** journals, and **7** publications are in indexed journals without impact factors, with SJR ratings. The publications have been cited in the international scientific space totally 107 times. The publication activity of Assoc. Prof. Dr. Raina Bryaskova covers a total of 53 scientific articles, of which 49 are in journals with an Impact factor or Impact Rank. The scientific publications of Assoc. Prof.Dr. Rayna Bryaskova have a high scientific-theoretical and scientific-applied value due to the fact that they are based on her rich scientific, teaching and administrative experience as an established scientist and as a deputy rector for educational activities. Based on empirical knowledge, they are particularly valuable for enriching knowledge and have a theoretical contribution to polymer chemistry. The high citation rate - a total of 931 times, with h index e 15 is proof of the candidate's recognition among the scientific community in the contest's issues. Assoc. Prof.Dr. Rayna Bryaskova participated in 20 international, national and university scientific forums during the period. The candidate in the competition for the academic position of "professor" is also a keynote expert in a total of 13 projects of the Scientific Research Fund – Bulgaria, OP "Science and Education for Intelligent Growth", OP "Innovations and Competitiveness", National Program "European Scientific Networks", as well as in university research projects. The candidate is the author of a published textbook - Rayna Georgieva Bryaskova, "Intelligent Polymer Systems", 2024, 89 pp. ISBN 978-954-465-165-7, intended for students in the "Master's" students from in the specialty "Polymer Engineering". It is noteworthy that, according to all indicators, Assoc. Prof. Dr. Rayna Bryaskova exceeds the set minimum requirements. With the required minimum number of points for a professor of 600, Associate Professor Rayna Bryaskova collects 778 points. .

1.3. Relevance of scientific and / or applied research:

A) The research is up-to-date. Part of the research is pioneering (there are no results known on the topic by other authors)	7 points	**X**
B) Research is up-to-date. Results from other authors are known for each of the topics and / or applications studied.	5 points	
C) Most of the research is up-to-date, but also some of the presented results are of no scientific and / nor applied value	3 points	
D) The smaller part of the research is up-to-date	2 points	
E) Research is not up-to-date	0 points	
		one of the answers given is marked with the sign "X"

The evaluation of the up-to-dateness of the research must be substantiated.
The focus of the researches of Assoc. Prof. Dr. Rayna Bryaskova has been skillfully chosen upon obtaining new hybrid materials with pronounced antimicrobial activity. The latter have an attractive application in various fields of biotechnology and medical engineering. Synthesizing silver nanoparticles stabilized with polyvinyl alcohol is an important step towards applications in veterinary medicine. As a current contribution, I also consider the synthesis of gold nanoparticles with applications for diagnostics and therapy, immunoassay, clinical chemistry, detection and photothermolysis of microorganisms and cancer cells and tissues, targeted drug delivery, etc. in medicine, biomedicine and biology. New innovative developments of fluorescent micellar nanocarriers with controlled release of a novel anticancer drug to enable simultaneous intracellular imaging and cancer treatment are also presented for review. A current scientific niche, derived from the growing number of infectious diseases caused by pathogenic or conditionally pathogenic microorganisms with multiple resistance to antibiotics from different groups, leads Assoc. Prof. Dr. Bryaskova to focus resources and capacity on the discovery of alternative and more effective products, possessing "permanent" antibacterial activity" without the risk of generating resistance to them. The innovative antibacterial coatings obtained by her on the basis of new photoactive nanogels, the successful modification with suitable photosensitizers, the design and synthesis of photoactive polymer coatings, as well as the testing of their antibacterial properties are a sure proof not only of identifying scientific deficiencies, but also of offering suitable scientific solutions for practice. The scientific achievements of Assoc. Prof. Dr. Rayna Bryaskova are undeniably current and innovative and are a clear expression of creative pursuits, skilfully combined with very good knowledge, strong scientific interest, indisputable experience and dedication to the defined scientific problem.

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.
Assoc. Prof. Dr. Rayna Bryaskova is a proven scientist, known in the international scientific space. Her scientific output contains critical and in-depth literature reviews on the scientific issues of the content of the scientific publications. The large volume of cited literary sources used, as well as the specialized textbook "Intelligent Polymer Systems" are indisputable evidence of excellent awareness of world achievements by other authors in the scientific field of development.

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 scientific publications of Assoc. Prof. Dr. Rayna Bryaskova have a high scientific-theoretical and scientific-applied value. With consistent and thorough research on obtaining new polymer materials and systems, she is an innovator with an emphasis on their potential applications in modern medicine and biotechnology.

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 scientific niche and the realized scientific developments, published in prestigious specialized editions, have the character of up-to-dateness and avant-garde. The scientific achievements, skills and the candidate’s professionalism have a actual contribution to the development of polymer chemistry and industry. Systematic research on the synthesis and application of new hybrid materials, systems with included metal nanoparticles, polymer materials

with fluorescent properties for oncology, innovative polymer coatings with antibacterial focus clearly define the actual applicability of the candidate's achievements. .

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.
A proven and established scientist with professionalism and experience in conducting synthesis procedures and analyzing new materials obtained, Associate Professor Dr. Raina Bryaskova skillfully applies innovative and modern methods of evaluating the structural characteristics of the studied objects. The final published results were obtained using appropriate microscopic methods such as transmission electron and scanning electron microscopy, Fourier transform spectral-infrared spectroscopy and UV-Vis spectroscopy. The author applies thermogravimetric analysis and differential scanning calorimetry to evaluate the thermal properties of the obtained new materials.

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 scientific and applied contributions of the works presented by Assoc. Prof. Dr. Rayna Bryaskova can be grouped into the following five main research categories: 1. **Synthesis, characterization and application of polymeric materials with pronounced antibacterial properties for use in medicine.**

Novel antibacterial hybrid materials incorporating silver nanoparticles with pronounced antimicrobial activity and potential application in various fields of biotechnology and medical engineering have been synthesized and characterized for the first time.

Silver nanoparticles stabilized with polyvinyl alcohol were obtained and used for veterinary applications.

2. "Ghost" vaccines for veterinary use based on silver nanoparticles stabilized with polyvinyl alcohol have been obtained.

3. Polymer micelles with incorporated gold nanoparticles and appropriate design for medical purposes have been synthesized and characterized.

4. Novel fluorescent polymer micelles with a new design for application in biomedicine and traditional medicine have been synthesized and characterized. The valuable properties of the newly obtained fluorescent micelles are related to the high potential of sensory activity of the pH sensitive nanostructure for future biological and biomedical applications.

Novel fluorescent polymer micelles with an included biologically active drug for the treatment of oncological diseases have also been synthesized and characterized in detail. Fluorescent micellar nanocarriers with controlled release of a novel anticancer drug have been successfully developed to enable simultaneous intracellular imaging and treatment of carcinomas. The new micelles, with incorporated benzimidazole-hydrazone, represent a new system for the release of antitumor drugs, which has a high potential for application in anticancer therapy.

5. Innovative antibacterial coatings based on novel photoactive nanogels have been obtained.

Polymeric coatings have been obtained on a stainless steel substrate and their chemical and physicomechanical properties have been evaluated.

Photosensitizers have been synthesized and polymer coatings have been modified.

New photoactive polymer coatings with included photosensitizers and metal nanoparticles with an innovative design have been obtained. Testing of the antibacterial properties of the modified polymer coatings against Gram-positive and Gram-negative bacteria has been performed using the disk diffusion method. All coatings have been proven to have strong antibacterial activity. The resulting photoactive antibacterial coatings and their pronounced activity against gram-negative and gram-positive bacteria is of extreme social importance in view of the increasing resistance of a large number of microbes to the traditionally used preparations.

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.
The leading role of Assoc. Prof.Dr. Rayna Bryaskova is proven by her participation as first or second author in most of the peer-reviewed scientific production. With deep conviction, I assert that Assoc. Prof. Dr. Rayna Bryaskova is a scientist with indisputable contributions to scientific activity, with undeniable dedication to the development of polymer science, and I consider her leading participation in research and published results.

1.10. Pedagogical activity:

A) The candidate has impeccable 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.
The candidate is the author of a published textbook - Rayna Georgieva Bryaskova, "Intelligent Polymer Systems", 2024, 89 pp. ISBN 978-954-465-165-7, intended for students in the "Master's" students from the specialty "Polymer Engineering" and she is scientific supervisor of PhD student Selen Ridvan Ismail, who defended in 2020, with PhD thesis on the topic "Synthesis and research of new polymer architectures for biomedical applications" 2020. Assoc. Prof. Dr. Raina Bryaskova has improved and upgraded her knowledge in a two-year post-doctoral specialization at the University of Liege, Belgium in the period October 2005 - October 2007. She has also completed a two-month specialization at the University of Leeds, UK. She has acquired specific skills for working with structural analysis methods - differential scanning calorimetry and thermogravimetry, dynamic light scattering, infrared and UV-VIS spectroscopy. The administrative experience of Assoc. Prof. Dr. Rayna Bryaskova is impressive. During the period 2017-2019, she was the Deputy Dean of Faculty of Chemical Technology, and from 2019-2023 she successfully implemented the educational state policies as Vice rector of CTMU for educational activities. I am convinced that Assoc. Prof. Dr. Rayna Bryaskova is a person with rich pedagogical experience and erudition, and in her active academic activity she applies her indisputably proven organizational abilities and her indisputable leadership skills.

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 comments on the scientific production presented by the only candidate in the competition, Assoc. Prof. Dr. Rayna Bryaskova

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	**Positive** **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 precise execution of scientific research and the important for science and practice results, published in high-impact journals, give me the reason to evaluate the scientific, teaching and administrative activity of Assoc. Prof. Dr. Rayna Georgieva Bryaskova with a maximum total number of 100 points. In accordance with the above and referring to the qualities and contributions of Assoc. Prof. Dr. Rayna Bryaskova as a leading scientist, proven university teacher and excellent administrator, I propose that the respected Scientific Jury vote positively and propose to the Faculty Council of the Faculty of Chemical Sciences to elect Assoc. Prof. Dr. Rayna Georgieva Bryaskova in the academic position of "Professor" in Science Area 4. Natural Sciences, Mathematics and Informatics, Professional Direction 4.2. Chemical sciences, Science specialty Chemistry of high molecular compounds.

	The review was written by:	
date	**Prof. Sevdalna Turmanova, PhD**	signature