Appendix 12c

REVIEW
to occupy the academic position:

"Professor"	**x**
"Associate Professor"	
	one of the academic positions indicated 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.	dts	Sanchi	Konstantinova	Nenkova	UCTM
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.
All the necessary documents for this competition have been submitted and fully comply 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 (quoted) is analyzed.
Assoc. Prof. Rayna Bryaskova participated in the competition for professor with 19 articles, of which 12 in international journals with impact factor (IF), total IF.-38,376 and 7 in indexed international journals with SJR. A total of 107 citations were observed on these publications. The total number of publications of assoc. prof. Rayna Bryaskova is 53, of which 49 are in journals with Impact factor or Impact rang. They have been cited a total of 931 times, with a Scopus h index of 17. She has 20 participations in international, national and university scientific forums. She was the head of 7 SRS - UCTM contracts and the head, coordinator and participant in 6 contracts in Scientific Research Fund – Bulgaria, OP "Science and Education for Intelligent Growth", OP "Innovations and Competitiveness" and the National Program "European Scientific Networks". A textbook named – "Intelligent Polymer Systems", has been published, which is intended for Master's students in the field of "Polymer Engineering". With minimum requirements / number of points/ for professor 600, assoc. prof. Rayna Bryaskova has 778 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	**X**
B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	5 points	
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 researches of assoc. prof. R. Bryaskova are directed toward application of hybrid materials obtained by the sol-gel method, synthesis and application of metal nanoparticles included in polymer materials, synthesis, characterization and application of fluorescent polymer materials for visualization and treatment of cancer diseases, preparation of antibacterial nanocoatings based on new photoactive nanogels. All the developments of assoc. prof. R. Bryaskova are modern, innovative, applicable in practice with an expected very good result.

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.
Proof of knowledge of the achievements of other authors on the researched problems is the in-depth literature reference of each of her publications and of the scientific topics developed by assoc. prof. R. Bryaskova.

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 researches of assoc. prof. R. Bryaskova represent a novelty for the polymer industry, with the possibility of implementing and renewing polymer products.

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 topic of assoc. prof. Bryaskova's scientific research is current, modern and definitely of interest to the industry. Assoc. prof. R. Bryaskova's research is directed toward application of hybrid materials obtained by the sol-gel method, synthesis and application of metal nanoparticles included in polymer materials, synthesis, characterization and application of fluorescent polymer materials for visualization and treatment of cancer and preparation of antibacterial nanocoatings based on new photoactive nanogels.

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.
In her research, assoc. prof. R. Bryaskova applies innovative research methods that prove the positive scientific results achieved. To characterized the obtained materials, appropriate methods such as transmission electron microscopy (TEM), scanning electron microscopy (SEM), infrared spectroscopy (FTIR), UV-Vis analysis were applied. The thermal properties of materials were determined by thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC).

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 investigatigations of assoc.prof. R. Bryaskova have a scientific and applied contribution. Proof of this is the large number of citations of her publications. The main scientific contributions are: - For the first time, new hybrid materials based on polyvinyl alcohol "PVA" and 3 types of organosilanes with incorporated silver nanoparticles were synthesized by the sol-gel method. The incorporation of silver nanoparticles to the polymer matrices improved the antibacterial effect of the composite compared to the use of Ag ions. - Vaccines for veterinary use based on silver nanoparticles stabilized with polyvinyl alcohol were obtained. Adding more strains to the vaccine makes it possible to expand its coverage. - New hybrid materials based on polyethylene glycol, poly (4-vinyl pyridine) and gold nanoparticles have been synthesized. Thus synthesized micelles can be used in medicine for the diagnosis and treatment of cancer. A series of well-defined diblock and triblock copolymers based on polyethylene glycol and poly (4-vinyl pyridine) were synthesized by controlled atom transfer radical polymerization. Subsequently, gold nanoparticles were incorporated into the core of the resulting micelles. Their cytotoxicity against breast cancer cells was determined. - A novel pH-sensitive nanostructures designed as water-soluble fluorescent micelles using a well-defined amphiphilic diblock copolymer were prepared and monitored. The new fluorescent micelles are able to serve as highly sensitive pH indicators in aqueous media. - Fluorescent micellar nanocarriers with controlled release of a new anticancer drug have been synthesized, which are able to simultaneous intracellular monitoring and treatment of cancer. - Innovative antibacterial coatings based on new photoactive gels have been obtained. Silver nanoparticles (AgNps) were synthesized and successfully incorporated into an innovative polymer nanogel. Photoactive coatings were obtained, in which the last layer is composed of protoporphyrin with incorporated silver nanoparticles. -The antibacterial properties of the modified polymer coatings have been tested against Gram-positive and Gram-negative bacteria by disk diffusion method. The results show that all antibacterial coatings possess strong antibacterial activity.

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.
Assoc. prof. Rayna Bryaskova is first or second author in most of the presented scientific works, which gives me a reason to accept her active role in the conducted research.

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.
Assoc.prof. Rayna Bryaskova has a textbook – "Intelligent polymer systems", for the Masters students in the field of "Polymer Engineering". There is also a PhD- eng. Selen Ismail, developed a dissertation on the topic "Synthesis and research of new polymer architectures", defended in 2020. She was Deputy Dean of the Faculty of Chemical Technology from 2017 to 2019, Deputy Rector of education at UCTM for the period from 2019 to 2023. From October 2005 to October 2007 Assoc. prof. Rayna Bryaskova was a post-doctoral specialist at the University of Liege, Belgium. She was also on a two-month specialization at the University of Leeds, UK.

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 towards assoc.prof. R. 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	**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 total number of points from the activity of assoc. prof. Dr. Rayna Georgieva Bryaskova is 100, which reflects her excellent scientific and teaching activity. I propose to the Scientific Jury to award the scientific title "Professor" to assoc. prof. Dr. Rayna Georgieva Bryaskova in Scientific 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. Sanchi Nenkova**	signature