

**REPORT**

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	Assist. Prof.	Dr.	Tsvetelina	Georgieva	Foteva	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
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**The competition has been announced:**

96	17.11.2023	Biotechnology	Faculty of Chemical and System Engineering
in SG issue	date	for the needs of the Department	Faculty

**The report was written by:**

Assoc. prof.	PhD	Dilyana	Petrova	Nikolova	Sofia University St. Kliment Ohridski
academic position	scientific degree	name	middle name	last name	workplace

**1. Report for the candidate:**

Assist. Prof.	Dr.	Tsvetelina	Georgieva	Foteva
academic position	scientific degree	name	middle name	last name

**1.1. 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.
According to the indicator of group A, the candidate has obtained the PhD in field of Biotechnology (50 points). According to indicators from group B, the candidate has presented 10 scientific publications in refereed and indexed journals, which are scored with a total of 100.4 points. According to indicator 7 of group D, the candidate presented 19 scientific publications in refereed and indexed journals, scored with a total of 181 points, and according to indicator 8 of group D – 8 publications in non-refereed editions with a total of 32.7 points. The total number of points for indicators from group D is 213.7. According to indicators from group D, the candidate presented 10 citations of her scientific publications (100 points) and one review of scientific publication (10 points) with a total of 110 points. In addition, in the documents for group E indicators, a published electronic manual for university is presented, which contributes 10 points and meets the requirements of the internal additional requirements of UCTM. In addition, a list of 7 lecture courses, participation in 7 national and institutional projects and management of 5 institutional projects, 48 poster participations in scientific forums, thesis supervision of 14 graduate students and consultant of 7 are presented. The candidate Tsvetelina Foteva held academic position assistant professor at vfor more than three academic years. All additionally presented information meets the requirements of the internal additional requirements of UCTM.. The presented documents of the candidate assist. prof. dr. Tsvetelina Foteva prove, that she satisfies and exceeds the minimum requirements by groups indicators for the academic position of Associate Professor in PN 5.11. Biotechnology, with a total score of 484.1.

**1.2. 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)	8 points	
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B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	6 points	X
C) Most of the research is relevant, but also some results are presented that have no scientific and / or applied value	4 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 scientific research of the assist. prof. dr. Tsvetelina Foteva are summarized in three main areas, which include research on: Antimicrobial activity of polymeric and hybrid materials containing metal ions; Biocompatibility and cytotoxicity of hybrid materials; Synthesis, characterization, analysis and research of activities of biomolecules for the purpose of their application in medicine, pharmacy and diagnostics. Scientific publications in these areas in the world databases show their significant relevance, but also predetermine the potential for the development of research work in these areas.

### 1.3. 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 main goals of the research work of Dr. Foteva are aimed at: developing a series of organic polymer materials and hybrid materials with included metal ions or metal nanoparticles and evaluating their significant properties, such as antimicrobial activity, antibiofilm activity, preservative ability, biocompatibility through cytotoxicity assessment; synthesis, analysis and assessment of biological activities of newly obtained bioconjugates and/or analogs of biologically active peptides and other BAS; development and validation of chromatographic methods with uV or MS detection to determine a spectrum of biologically active substances that are regulated or prohibited for use. The specified scientific objectives are justified, realistic and well-formulated and with a marked applied character.

### 1.4. 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.
<p>1. Antimicrobial activity of polymeric materials containing metal ions - in scientific research, there is an ongoing interest in the development of materials combining the properties of hybrid polymers and nanoparticles with increased stability and prolonged biological activity. Three types of inorganic-organic hybrid materials based on SiO<sub>2</sub>, hydroxypropyl cellulose, hydroxypropyl methylcellulose, carboxymethyl cellulose and incorporated silver nanoparticles were obtained by the sol-gel method, which were characterized by spectral and electron microscopic methods and their antimicrobial properties were investigated. Collagen materials with incorporated spherical nanosilver particles with certain bactericidal properties have also been reported. Hybrid materials with zinc nanoparticles, copper ions were obtained, in which the antimicrobial potential was also investigated. Antimicrobial properties have also been determined in other nanocomposite materials with SiO<sub>2</sub>, ZnO, TiO<sub>2</sub>, reduced graphene oxide and SeO<sub>2</sub>. The toxic tolerance and manganese ions sorption capacity by <i>Trichosporon cutaneum</i> was investigated. Bacterial resistance of wood, modified with activated hydrolyzed lignin, Cu<sub>2</sub>S and maleic anhydride, and antibacterial activity of silver-ligated lignocellulosic materials were determined. The obtained results are a very good basis for the development and application in various aspects of new hybrid materials with antimicrobial properties.</p> <p>2. Biocompatibility and cytotoxicity of hybrid materials - the determination of these characteristics is an important stage in determining the applicability of new materials. Cytotoxicity studies were performed on hybrid materials with silver nanoparticles, hybrid materials containing SiO<sub>2</sub>/pectin and silver, hybrid materials containing SiO<sub>2</sub>/cellulose and copper from different sources. The importance of the type of materials, the metal ions included and their concentration, the used cell lines to determine the cytotoxic effect is established. Antifungal activity against <i>C. albicans</i> and antibiofilm activity against clinically isolated pathogens <i>P. aeruginosa</i> of some hybrid materials were determined.</p> <p>3. Synthesis, characterization, analysis and activity research of biomolecules with the aim of their application in medicine, pharmacy and diagnostics - the obtaining of the new synthetic analogues of BAS, especially from the group of bioactive peptides, is of interest to pharmacy, cosmetics and other industries. New bioconjugates of monofluorinated analogs of BIM-23052 were obtained, for witch stability and activity in aspect of anticancer potential were evaluated. Analogues and bioconjugates of the (KLAKLAK)<sub>2</sub>-NH<sub>2</sub> peptide were synthesized and characterized, and antibacterial properties, antifungal activity,</p>

antiproliferative effect and cytotoxicity were investigated. Antibacterial activity of structural analogues of memantine was investigated. Chromatographic methods with uV or MS detection have been developed to determine a spectrum of biologically active substances, including some steroids, which are prohibited for use or it is important to track and regulate in the composition of various food supplements. Significant prospects for future research work are identified based on the results achieved.

### 1.5. 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.

### 1.6 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.

### 1.7. 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.

### 1.8. Conclusion

A) The evaluation of the candidate's activity is <b>POSITIVE</b>	This evaluation is assigned to a total number of at least 50 points	X
B) The evaluation of the candidate's activity is <b>NEGATIVE</b>	This evaluation is assigned to a total number below 50 points	
		one of the answers given is marked with the sign "X"

To be filled in if requested by the member of the scientific jury
Based on the review of the presented documents and a total point asset of 78 points, I find that the candidate assist. prof. dr. Tsvetelina Foteva fully complies the requirements of law regulations, as well as the requirements of UCTM for awarding of the academic position of "Associate Professor" under PN 5.11 Biotechnology (Technology of biologically active substances).

<b>22.02.2024</b>	The report was written by:	
date		signature