Appendix 12b

REPORT

of dissertation for the acquisition of:

educational and scientific degree " **doctor** "	X
scientific degree **"Doctor of Science"**	
	the true is indicated by the sign "X"

Author of the dissertation:

		Nikoleta	Dragomirova	Philipova	"Integra Plastiks " EAD, Elin Pelin
academic position	scientific degree	name	middle name	last name	workplace

Topic of the dissertation:

OBTAINING ANTIBACTERIAL PHOTOACTIVE POLYMER COATINGS

Scientific area:

4	Natural sciences, mathematics and informatics
code	name

Professional area:

4.2.	Chemical Sciences
code	name

Scientific specialty:

Chemistry of high molecular compounds

The report was written by:

Assoc. prof.	Dr	Petar	Ninov	Velev	UCTM
academic position	scientific degree	name	middle name	last name	workplace

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 is mandatory to fill in if answer B is marked. The publication activity of the candidate is analyzed. The response of the results achieved (quoted) is analyzed.

2. The relevance of the topic of the dissertation:

A) The topic is relevant and new (there are no known results on the topic by other authors)	8 points	X
B) The topic is relevant and results from other authors are known	6 points	
C) The topic is not relevant, but results from other authors are known	2 points	
D) The topic is not relevant and no results from other authors are known	1 point	
E) The topic does not correspond to the level of dissertation	0 points	
		one of the answers given is marked with the sign "X"

The evaluation of the relevance of the dissertation must be substantiated
In the last decade, coatings based on nanogels of natural and synthetic polymers have attracted the attention of scientists due to the possibility of easier modification of surfaces with their help and the incorporation of various antibacterial compounds in the structure of the coatings. The possibility of using nanogels as suitable coatings for different types of surfaces and their full utilization by including photoactive compounds of different nature is a new and interesting approach for obtaining effective antibacterial coatings

3. 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 of dissertation	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.

4. 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	3 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 goal is to obtain new photoactive polymer coatings that have good adhesion and pronounced antibacterial properties. The possibility of obtaining innovative and highly effective photoactive antibacterial coatings using well-defined functional nanogels and modified photosensitizers, which act on the principle of photodynamic processes, which will have a fundamental character, is being investigated

5. Contributions of the dissertation:

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.
1. For the first time, photoactive polymer coatings were obtained on a stainless steel substrate based on polymer nanogel and amino modified photosensitizer based on 9-aminoacridine. 2. For the first time, photoactive polymer coatings based on polymer nanogel ("in " type) with included silver nanoparticles (Pox (mDOPA)-Ag^0/PAH) and photosensitizer - amino modified protoporphyrin IX were obtained, as well as those using a complex of amino modified protoporphyrin IX with incorporated silver nanoparticles as the final layer. Photoactive coatings were obtained using the LbL technique by dipping (" dip coating "), on a stainless-steel substrate. 3. The results of the conducted antibacterial activity studies demonstrate that the obtained coatings can be used as a platform for obtaining antibacterial polymer coatings for various applications in the field of medicine. The research has been published in prestigious international publications, has lasting significant scientific and, to a lesser extent, applied contributions to the development of polymer chemistry and polymer composites

6. Conclusion

A) The evaluation of the dissertation is **POSITIVE**	This evaluation is assigned to a total number of at least 40 points	X
B) The evaluation of the dissertation is **NEGATIVE**	This evaluation is assigned to a total number below 40 points	
		one of the answers given is marked with the sign "X"

To be filled in at the request of the member of the scientific jury
Eng. Nikoleta Dragomirova Philipova has developed a remarkable dissertation work. She has a high level of competence, knows how to analyse and present the obtained results. Nikoleta Philipova meets and exceeds the requirements of “Law on the growth of the academic staff of the Republic of Bulgaria” and “Regulations for the implementation of the Law on the growth of the academic staff of the Republic of Bulgaria -UCTM” to acquire the ESD Ph.D. I firmly believe that she is a promising scientist, which will continue its construction. This gives me the reason to give a positive assessment to the dissertation of eng. Nikoleta Dragomirova Philipova for obtaining of PhD.

31.10.2024	The report was written by: **Assoc. Dr. Petar Ninov Velev**	
date		signature