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:

Assistant	Eng.	Dimitar	Krasimirov	Dimitrov	UCTM
academic position	scientific degree	name	middle name	last name	workplace

Topic of the dissertation:

Functional thin-film coatings with the participation of graphene

Scientific area:

5	Technical science
code	name

Professional area:

5.10	Chemical technologies
code	name

Scientific specialty:

Technology of silicates, binders and refractory non-metallic materials

The report was written by:

Prof.	PhD	Lyuben	Ivanov	Lakov	-
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
The selected materials – graphene oxide, reduced graphene oxide, nano-sized particles and thin-film coatings – are extremely relevant in attempts to solve several problems in modern industry and healthcare. 120 contemporary sources are cited, which testifies to the large volume of work on the topic worldwide.

3. Type of research:

A) Theoretical	4 points	
B) Applied	4 points	X
C) Theoretical with application elements	4 points	
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 objectives include selection, production, and examination of suitable materials - graphene oxide, reduced graphene oxide, nanosized particles, which can be incorporated into coatings to give functional properties - optical, mechanical, antimicrobial, with future application in optics, medicine, and daily applications.

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.
Nanocomposites have been obtained, which are included in coatings, and have the potential to find application in various fields: - Silicone composites with graphene materials and ZnO; - Optical thin-film coatings; - Epoxy coatings with graphene materials and $ZnTiO_3$, as the interaction of both the additives with each other and with the polymer matrix has been studied; - The coatings have been studied and characterized by multiple methods, their preparation has been confirmed, and the properties that determine their application have been determined.

6. Conclusion

A) The evaluation of the dissertation is **POSITIVE**	This evaluation is assigned to a total number of at least 40 points	X 60pt
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

22.07.2025	The report was written by: Lyuben Ivanov Lakov	
date		signature