Appendix 12d

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.	PhD	Tina	Radmilova	Tasheva	UCTM-Sofia
№	academic position	scientific degree	name	middle name	last name	workplace

Scientific area:

5	Technical sciences
code	name

Professional area:

5.6	Materials and materials science
code	name

Scientific specialty:

Silicate materials

The competition has been announced:

64	05.08.2025	Silicate Technology	Faculty of Metallurgy and Materials Science
in SG issue	date	for the needs of the Department	Faculty

The report was written by:

Assoc. Prof.	PhD	Lyubomir	Ivov	Aleksandrov	IGIC-BAS
academic position	scientific degree	name	middle name	last name	workplace

1. Report for the candidate:

Assist. prof.	PhD	Tina	Radmilova	Tasheva
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.
The candidate participated in the competition with 18 publications, 10 in the habilitation (group of indicators B) and 8 outside the habilitation (group of indicators D), which are included in journals in the Scopus database and/or Web of Science. The presented citations on the publications participating in the competition are 17, included in the Scopus database. When referenced from Scopus, the citations are much higher. The candidate's Hirsch index in the Scopus database is 8 based on all publications.

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	X
B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	6 points	
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.
It can be seen that Assist. prof. Dr. Tasheva works in several current areas related to the synthesis and characterization of new compositions of glasses, ceramics and glass-ceramics with various applications.

The calculation and systematic prediction of some optical parameters of a large number of glasses in different oxide systems provides indispensable information to the scientific community for predicting the properties of oxide glasses. The study of the crystallization ability of melts, depending on the cooling rate, provides valuable information for the modification of glasses and glass-ceramics with controll of the crystallization process. This allows to using the characteristics of both glasses and the corresponding crystalline phases to obtain multifunctional materials. According to my opinion the scientific interests of Dr. Tasheva are relevance, systematized, and with well down experiments.

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 candidate's main goals are: - Obtaining of new theoretical and experimental data on the electronic polarizability and optical basicity of simple oxides and oxide glasses, establishing the relationship between composition, structure and properties, through the application of the polarization approach. - Study the relation between composition, structure and properties of new glasses with the participation of classical and conditional glass formers and modifying oxides, through the application of modern methods for structural analysis for application as functional materials with magnetic, electrical, catalytic and optical properties. - Preparation and structural characterization of new glasses, glass-ceramics and ceramics for dental and regenerative medicine application.

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.
The main scientific contributions of the candidate are dedicated to the study of the interrelationships between the chemical composition, structure, electronic polarizability and optical properties of simple oxides, oxide glasses and multicomponent glass systems. In addition, new functional glass and ceramic materials with potential for application in dental and regenerative medicine have been obtained. New theoretical and experimental results on the electronic polarizability and optical basicity of simple oxides (SiO_2, Al_2O_3, TiO_2) and oxide glasses with their participation, including Bi_2O_3-, Nb_2O_5- and TeO_2-based systems are presented. The polarization approach for the electronic polarizability in Bi_2O_3-based glasses, including those with the participation of a classical glass former (such as SiO_2, P_2O_5, GeO_2, B_2O_3), a conditional glass former such as TeO_2, modifying oxides (Li_2O, ZnO), as well as oxides such as PbO, Ga_2O_3 and RE_2O_3, is developed. In these systems, the optical basicity, $\Lambda(n_0)$ and the interaction parameter, $A(n_0)$, are calculated using equations based on the Lorentz–Lorentz formula and the Yamashita-Kurosawa theory. The optical basicity, $\Lambda(n_0)$, of some binary and ternary silicate glasses has been determined based on the refractive index. A comparison is made between the experimentally determined optical basicity Λ_{exp} and the theoretically calculated Λ_{th}, which allows for a comparison and easy prediction of the polarizability of the glasses, as well as the role of the glass-forming oxides. Results of the synthesis and structural characterization of new silicate and multicomponent glasses containing classical and so-called conditional glass formers, as well as modifying oxides, are presented. The influence of Fe_2O_3 and ZrO_2 on the structure, physicochemical, physicomechanical and optical properties of the resulting glasses were studied. It has been established that the addition of Fe_2O_3 leads to an increase in the density, molar volume and refractive index, as well as to changes in the oxygen density, which leads to structural depolymerization of the silicate network of the glass. The addition of ZrO_2 in to the compositions of the multicomponent silicate glasses leads to an increase in the density, oxygen density and refractive index, and is accompanied by a decreases in the molar volume, which indicates a densification of the silicate network. Dr. Tasheva's efforts on the synthesis and characterization of bioactive glasses and glass-ceramics are also very interesting and relevant. New glasses have been obtained, compatible in thermal expansion coefficient with zirconium dental ceramics (Y-TZP), which demonstrate excellent adhesion, homogeneity and transparency. Bioactive glasses and ceramics based on biogenic hydroxyapatite have also been synthesized, characterized by the formation of an apatite layer upon contact with physiological solution. These data provide grounds for potential application in bone regeneration and dental restorations. Another results show the possibility of controlling the dielectric properties by replacing BaO with TeO_2 in TeO_2–BaO–V_2O_5 glasses. A structural model has been developed to influence the structure on the dielectric properties of the studied materials. All these results open up prospects for the development of new functional amorphous materials in the TeO_2-BaO-V_2O_5 system with potential applications in various technological fields. In the end of the presented scientific works, which is presented by Dr. Tasheva, is related to the characterization of products from the carbonization of cement kiln dust. The essence of the this work is related to the product of clinker production, rich in alkali and alkaline

earth compounds, which makes it suitable for CO_2 capture through mineral carbonization. The research examines two approaches: direct carbonization of dry powder and carbonization of hydrated powder. The main activity of the candidate is related to the structural characterization of the investigated materials.

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	
B) The candidate has at least an equal participation in most of the submitted papers	7 points	X
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	
B) The candidate has sufficient pedagogical activity at the university. The textbooks issued satisfy the requirements of the Regulations.	6 points	X
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	
B) Critical notes of a technical nature	7 points	X
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 **POSITIVE**	This evaluation is assigned to a total number of at least 50 points	76
B) The evaluation of the candidate's activity is **NEGATIVE**	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
The review and analysis of the documents and materials submitted by Dr. Tina Tasheva for the announced competition shows that they meet and exceed legal requirements for acquiring the academic position " associate professor ". Based on the above, I give my positive assessment and propose to the Scientific Jury to award Dr. Tina Tasheva with the academic position " associate professor " in the

professional field 5.6 Materials and materials science, for the needs of the department of Silicate Technology.

02.12.2025	The report was written by:	
date	**Assoc. prof. PhD Lyubomir Aleksandrov**	signature