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	Elena	Georgieva	Koleva	IE-BAS
№	academic position	scientific degree	name	middle name	last name	workplace

Scientific area:

5	**Technical sciences**
code	name

Professional area:

5.2.	**Electrical engineering, Electronic and Automation**
code	name

Scientific specialty:

02.21.06. Automation of engineering labour and computer-aided design systems (in branches)

The competition has been announced:

74	21.08.2020	Automation and Process Control	Faculty of Chemical and System Engineering
in SG issue	date	for the needs of the Department	Faculty

The review was written by:

Prof.	**DSc**	**Lyubka**	**Atanassova**	**Doukovska**	**IICT-BAS**
academic position	scientific degree	name	middle name	last name	workplace

1. Review for the candidate:

Assoc. Prof.	**PhD**	**Elena**	**Georgieva**	**Koleva**
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.

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. Elena Koleva satisfies the minimum requirements for holding the academic position of "professor" at UCTM, and for the individual groups of indicators, the results are: • Group of indicators A (50 points with a minimum of 50 points) • Group of indicators B (144 points with a minimum of 100 points) • Group of indicators D (273.1 points with a minimum of 200 points) • Group of indicators D (424 points with a minimum of 100 points) • Group of indicators E (200 points with a minimum of 150 points) The list of scientific works of Assoc. Prof. Elena Koleva includes - two monographs, 10 publications referenced and indexed in world databases, presented for habilitation work, 3 publications referenced and indexed in world databases and 34 in non-refereed publications. From the analysis of the competition papers submitted by the applicant we can conclude that the peer-reviewed publications "do not repeat the ones submitted for the acquisition of the educational and scientific PhD degree and for the occupation of the academic position - Associate Professor", in accordance with the requirements of Art. 29 (1), item 3 of the Development of Academic Staff Act in the Republic of Bulgaria. Present is a list of 40 citations in scientific journals, referenced and indexed in the world databases with scientific information of the Assoc. Prof. Elena Koleva publications. I take that those citations are at the moment of submission of documents and no new ones are included.

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 relevance of the submitted scientific papers is determined by the fact that they cover broad areas of scientific knowledge, such as analysis of electron beam processes, nanotechnology, analysis of pharmaceutical processes, energy efficiency and renewable energy sources, e-learning and the development of a system for event management. Emerging scientific problems are much more than the possibilities for solving them. This is the reason why any new knowledge and practical realization in the fields of research is met by the scientific community with increased attention and strong and unadulterated scientific interest.

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.
After getting acquainted with the materials presented by the candidate in the competition and from the analysis of the information presented above, I come to the conclusion that the candidate knows the subject area well and successfully achieves scientific, applied and applied contributions within its research field.

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 candidate's research is theoretical with elements of applications, being mainly in the field of mathematical modeling, statistical methods, optimization and management of technological processes. Another aspect of the work of the cadid is the study of physical processes and applications of the generation of intense beams of accelerated electrons and their interaction with the environment. The properties of the obtained materials have been studied and the technological working conditions have been optimized under different requirements for the final characteristics of the materials.

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 objectives of the research are realistic and are related to the application of statistical methods, which allows overcoming the complexity of the studied processes and subsequent computer simulation aimed at predicting the expected results. The candidate's research is oriented towards solving real problems of engineering practice and has a scientific, scientifically applied and applied character.

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.
The researches of Assoc. Prof. Elena Koleva are in the following areas: - Penetration of accelerated electrons into polymer layers (exposure and development at submicron electron lithography) (the obtained results are reflected in 13 publications for participation in the competition); - Electron beam welding (EBW) (the obtained results are reflected in one monograph and 10 publications for participation in the competition);

- Electron beam melting and refining (the obtained results are reflected in 4 publications for participation in the competition);
- Synthesis and optimization of electron beam treatment of materials based on biopolymers (the results are reflected in 7 publications for participation in the competition);
- Nanotechnology (the obtained results are reflected in one monograph and 4 publications for participation in the competition);
- Modeling and optimization of pharmaceutical processes (the results obtained are reflected in 3 publications for participation in the competition);
- Energy efficiency and renewable energy sources (the results obtained are reflected in 2 publications for participation in the competition);
- Ergonomic quality of e-learning (results obtained are reflected in 2 publications for participation in the competition);
- Event management system (the results obtained are reflected in 1 publication for participation in the competition).

Original methods, models and algorithms for numerical and empirical modeling of the processes in generating intense electron beams, as well as for simulating the processes in the processing of materials have been developed. The methods used are adequate to the research and the set scientific goals. Approaches are proposed and the experimentally proposed methods for control and optimization of the operation of electron beam installations and technological processes are tested.

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 contributions to the peer-reviewed papers, assuming equal participation of the co-authors can be briefly presented, as:
- New data have been obtained, regularities have been studied and new research methods have been proposed, models, algorithms and computer programs have been developed for numerical and empirical modeling of the processes in generating intense electron beams, as well as for simulating the processes of processing materials with them.
- Approaches are proposed and experimentally new methods for control and optimization of the operation of electron beam installations and technological processes are tested.
- Approaches have been developed for optimization of electron beam welding, refining by electron beam melting, as well as for the process of synthesis of biomaterials by irradiation in linear electronic accelerators.
- Applied computer programs have been developed to simulate the processes of exposure and development in obtaining submicron and nano-dimensional electron-lithographic images.
- The properties of the obtained materials have been studied and the technological working conditions have been optimized under different requirements for the final characteristics of the materials.

I accept the contributions formulated by the candidate in the works with which Assoc. Prof. Elena

Koleva participates in the competition, as the results are scientific, scientifically applied and applied and can be defined as enriching an existing scientific field with new knowledge and are the basis for new directions of research and applications.

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.
In the submitted documents for participation in the competition there are no separation protocols in the collective publications, so I accept that Assoc. Prof. Elena Koleva has equal participation in the submitted collective works included in this competition.

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. Elena Koleva for the period 2015/2016-2019/2020 has led lecture courses for master's and bachelor's students as follows: 1. Total lectures and exercises - 1076 hours of lectures and 405 hours of exercises. 2. Bachelor's degree courses: • Methods for experimental research • Applied statistics • Industrial management • Statistical methods • Biomedical Statistics 3. Courses for Master's degree:

• Experimental methodology • Planning and analysis of the experiment • Quality management • Statistics • Statistical methods for process management • Quality through design Assoc. Prof. Elena Koleva has included in her documents for participation in the competition a textbook and a textbook, which are: 1. Koleva, E. - Applied Statistics, 2020 - textbook, accepted for publication by UCTM with a decision of the Academic Council from 23.09.2020. 2. Koleva E. - Lecture notes on the subject "Statistics", 2008 - textbook for masters in the specialty: Materials Science and for doctoral students for a broad-based doctoral course "Statistics".

1.11. 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.

1.12. 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.
In conclusion, I agree that the requirements of the Law for the *Development of Academic Staff Act in the Republic of Bulgaria* and the specific requirements in the Act's Institutional Regulations for its implementation and the Rules for the specific conditions for acquisition of academic degrees and occupation of academic positions at the University of Chemical Technology and Metallurgy are accomplished. After getting acquainted with the materials submitted by the applicant for the competition, I give my positive estimation about the choice of Associate Professor Elena Georgieva Koleva in the competition for the academic position of „Professor" for the needs of the Automation and Process Control Department of the University of Chemical Technology and Metallurgy, in the Scientific Field 5. Technical sciences, the Professional Area 5.2. Electrical engineering, Electronic and Automation, the Scientific Specialty 02.21.06. Automation of engineering labour and computer-aided design systems (in branches). I propose that the Scientific Jury unanimously vote for a proposal to the Faculty Council of the University of Chemical Technology and Metallurgy, to elect Associate Professor Elena Georgieva Koleva for the academic position of „Professor" in the Scientific Field 5. Technical sciences, the Professional Area 5.2. Electrical engineering, Electronic and Automation, the Scientific Specialty 02.21.06. Automation of engineering labour and computer-aided design systems (in branches).

22.11.2020	The review was written by:	
date		signature