

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	Chief Assistant Professor	PhD	Iliyan	Stoykov	Mitov	UCTM
No	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:

Materials science and technology of engineering materials
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The competition has been announced:

64	5.08.2025	Department of Physical Metallurgy and Thermal Equipment	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	Biserka	Ilieva	Lucheva	University of Chemical Technology and Metallurgy
academic position	scientific degree	name	middle name	last name	workplace

1. Report for the candidate:

Chief Assistant	PhD	Iliyan	Stoykov	Mitov	UCTM
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Professor					
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 documents for the competition are complete and fully comply with the 2025 REGULATIONS of UCTM–Sofia governing the conditions and procedures for the acquisition of academic degrees and the holding of academic positions at the university, in accordance with the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and its Implementing Regulations (IR-ADASRB).

The total number of points of the candidate for the academic position of “Associate Professor” at UCTM–Sofia, covering the required indicators, is **1167**, with a minimum requirement of 400 points.

Indicators / Position	Minimum Required Points	Points
Indicator 1 The dissertation “ <i>Investigation of Transport Processes in Rotary Kilns</i> ” has been defended for the award of the educational and scientific degree <i>PhD</i> , certified by Diploma No. 0041/02.10.2012.	50	50
Indicator 4 Habilitation work – scientific publications (minimum 10) in journals indexed in internationally recognized scientific databases (n=number of co-authors). Appendix 5G includes 10 indexed scientific papers.	100	150
Total points for Indicators 5–11	200	257
5. Published monograph not submitted as the main habilitation work	–	–
6. Published book based on a defended dissertation for <i>PhD</i> or <i>Doctor of Sciences</i>	–	–
7. Scientific publication (article or paper) in journals indexed in internationally recognized scientific databases. Seven publications presented, two under review.	–	129
8. Scientific publication (article or paper) in non-indexed peer-reviewed journals or edited collective volumes. Fifteen publications presented.	–	128
9. Published chapter in a collective monograph	–	–
10. Completed authorial project in architecture or design	–	–
11. Leading (independent) creative work in architecture or design	–	–

Total points for Indicators 12–15	50	710
12. Citations or reviews in indexed scientific journals or in monographs/collective volumes. Scopus data show 147 citations and h-index = 4. The candidate has submitted 71 citations, exceeding the minimum requirement of 50 points.	–	710
13. Citations in monographs and collective peer-reviewed volumes	–	–
14. Citations or reviews in non-indexed peer-reviewed journals	–	–
15. Review of authorial works in specialized editions in architecture or design	–	–
The submitted evidence shows that Chief Assistant Dr. Eng. Iliyan Stoykov Mitov fully meets and significantly exceeds the minimum requirements for holding the academic position of Associate Professor. The dissertation has been successfully defended; the habilitation work is represented by a sufficient number of high-quality publications in indexed and peer-reviewed journals; substantial scientific and applied scientific results have been achieved. The high citation rate demonstrates the real scientific impact of the conducted research.		

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.
The relevance of the scientific works of Chief Assistant Dr. Eng. Iliyan Mitov is clearly demonstrated and fully substantiated. The presented studies focus on improving the energy and environmental efficiency of metallurgical processes, optimizing transport phenomena in rotary kilns, and implementing technologies for the utilization of secondary raw materials in the context of the circular economy. The developed mathematical models and experimental results correspond to leading European priorities for reducing emissions and energy consumption and possess proven industrial applicability. It should be noted that for part of the presented research, no equivalent solutions are found in the available scientific literature, which highlights their originality and contributory value.

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 objectives of the research conducted by Chief Assistant Dr. Eng. Iliyan Mitov are directed toward the analysis and optimization of transport processes in metallurgical units, as well as toward improving the energy and environmental efficiency of production. They possess a combined character: on the one hand, fundamental, through the development of models for the movement of dispersed materials and heat transfer, and on the other hand, applied, related to the implementation of technologies for the utilization of secondary raw materials and the improvement of technological regimes. The objectives set are realistic, scientifically justified, and aligned with the leading European priorities in the field of sustainable industrial development.

1.4. Candidate research contributions:

A) With lasting scientific and / or applied response, they form the basis for new research and applications	20 points	
B) They are of significant scientific and / or applied interest, complete and / or summarize previous research	16 points	X
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.
Chief Assistant Dr. Eng. Iliyan Mitov has grouped his contributions into four main areas. This classification is essentially correct and reflects the logic of his scientific development. The assessment by areas is as follows: 1. Thermal engineering issues and improvement of the energy and environmental efficiency of industrial facilities Publications: [1A], [7A], [13B], [15B], [14B], [1C] In this area, Chief Assistant Dr. Eng. Iliyan Mitov develops approaches for the optimization of heat transfer and combustion processes, integration of energy flows, and reduction of emissions and energy consumption in metallurgical production. The results are achieved through numerical modelling and experimental verification, leading to real technological improvements. The contributions here are scientific-applied. The scientific component lies in the substantiated modelling of the processes, while the applied component is demonstrated through

proven implementability.

2. Transport processes in rotary kilns

Publications: [3B], [4B], [5B], [2C], [2A], [3A], [15A], [6B], [7B], [8B], [13A], [4A], [1B], [2B], [9B], [14A]

This area represents the core of the candidate's scientific work and includes the development of mathematical models, experimental setups for validation of the models, quantitative engineering correlations, and applicable technological guidelines for industrial kilns.

Particularly significant are the publications in *Chemical Engineering Science* (2012), *International Journal of Heat and Mass Transfer* (2012), and *Experimental Heat Transfer* (2015), where original correlations are proposed for contact heat transfer between the kiln wall and a moving granular material in rotary kilns.

The contributions here are simultaneously fundamental and scientific-applied (type A and type B). This is the only area with lasting scientific impact that other researchers can build upon and extend further.

3. Utilization of wastes from metallurgical processes

Publications: [5A], [6A], [8A], [10B]

In this field, Chief Assistant Dr. Eng. Iliyan Mitov develops technological solutions for converting waste materials (iron tailings, barite sludge, etc.) into products with real industrial value.

There are no fundamental scientific contributions in this area. The processes involved (reduction, calcination, flotation) are well known; the contribution lies in their experimental optimization and demonstration of technological applicability.

The contributions here are scientific-applied and applied.

4. Wear resistance, heat treatment, and metallography of metals and alloys

Publications: [9A], [11B], [12A], [11A], [12B], [16A], [17A], [10A]

In this area, Chief Assistant Dr. Eng. Iliyan Mitov investigates the behaviour of alloys under various heat-treatment regimes and operational loading conditions. The results are relevant to material selection and the control of technological regimes.

The contributions are scientific-applied.

In conclusion, I find that the presented scientific works contain significant scientific and scientific-applied contributions, executed at a high professional and methodological level. They address relevant problems of contemporary metallurgical practice and demonstrate real applicability of the obtained results.

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"

In the majority of the presented works, Chief Assistant Dr. Eng. Iliyan Mitov is the first or second author (e.g., 2B, 4B, 5B, 8B, 5A, 6A, 8A, as well as 1B, 2A, 3A, 4A, 13A), which

indicates at least an equal contribution. In the remaining publications, his participation is co-authorial but not leading.

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"

The candidate has sufficient teaching activity at UCTM, and the published textbook Yordanov, B., Mitov, I. *Teaching Aid on Composite Metallic Materials and Products*. Reviewer: D. Krastev. Sofia: UCTM, 2023. ISBN 978-954-465-174-9 (e-book) meets the requirements of the Regulations.

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"

The presented scientific works are methodically executed, well-argued, and consistent with established academic standards for research activity. I recommend that Chief Assistant Dr.

Eng. Mitov expand the application of the developed models to a broader range of technological processes, as well as increase the publication of his results in peer-reviewed and indexed international scientific journals in order to enhance scientific visibility and citation impact.

Critical notes must be provided if one of the answers B, 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	X
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
Based on the evaluated scientific contributions and the fulfilled requirements for habilitation indicators, I confidently propose that Chief Assistant Dr. Eng. Iliyan Stoykov Mitov be appointed to the academic position of Associate Professor in the scientific specialty " Materials Science and Technology of Engineering Materials," professional field 5.6 "Materials and Materials Science," scientific domain 5 "Engineering Sciences."

	The report was written by:	Assoc.Prof.Biserka Lucheva
date		signature