

## REVIEW

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	assistant professor	PhD	Vesislava	Borislavova	Toteva	Uctm, Sofia, Bulgaria
No	academic position	scientific degree	name	middle name	last name	workplace

**Scientific area:**

5.	Technical Sciences
code	name

**Professional area:**

5.10.	Chemical Technologies
code	name

**Scientific specialty:**

Technology of natural and synthetic fuels
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**The competition has been announced:**

67	13.08.2021	Textile, leathers and fuels	Chemical Technologies
in SG issue	date	for the needs of the Department	Faculty

**The review was written by:**

professor	PhD	Ivo	Vladimirov	Valchev	UCTM, Sofia, Bulgaria
academic position	scientific degree	name	middle name	last name	workplace

**1. Review for the candidate:**

assistant professor	PhD	Vesislava	Borislavova	Toteva
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	<b>x</b>
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.
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The applicant participates with 38 scientific works in the competition. Ten of them are in the group of Index 4; 18 are in the group of Index 7; there are 10 papers in the group of Index 8 (9 presentations included). The applicant is leading author or equal one. There is a list of 60 citations noticed. The applicant Hirsch-index is 5.
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Assist. Prof. Vesislava Borislavova Toteva fully satisfies the minimum requirements for the academic position "Associate Professor", specified in the Law and the Rules of UCTM from 2018 in the Scientific area 5. Technical Sciences; Professional area 5.10. Chemical technologists. The points on the indicators: 3-4 (habilitation work or 10 equivalent publications) are a total of 126 (minimum number of 100 points and 10 articles required). The sum of the points on indicators 5-11 are total 228.4 (minimum number of 200 points required). The sum of the points according to the indicators 12-14 is a total of 650 (minimum number of 50 points required). The sum of the points according to the indicators 15 - 25 is 20.
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The total number of points are 1074.4 with a required minimum of 400 points.
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**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	
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B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	5 points	x
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 research in the applicant's papers submitted for the acquisition of the academic position "Associate Professor" is entirely in the field of the scientific specialty in which the competition is announced and relates to the production of fuels with low and ultra low sulfur content using alternative methods to hydrodesulfurization. (works 1, 3, 4, 16, 32, 33,34); to the preparation and application of biosorbents (activated carbon) based on waste biomass (works 2, 5, 9, 11, 14, 19, 20, 28, 30, 31); preparation and application of modified nanocomposite materials in water treatment (papers 18, 26), studies of the influence of technological factors on the yield and quality of products from the processes of hydrocracking, thermal and visbreaking (papers 6, 7, 8, 12, 13, 15, 17, 21, 22, 23, 24, 25, 27, 30) and other studies (papers 10, 29, 35, 36, 37, 38).

Undoubtedly, the research of the candidate is up-to-date, and the obtained results can be related to the enrichment of the scientific field with new knowledge.

#### 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.

#### 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.

**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 set goals in the works of the candidate fully correspond to the theme of the competition and are aimed at developing alternative methods for obtaining fuels with low sulfur content, to study the factors of hydrocracking, catalytic and thermal cracking, to solve environmental problems in oil production, of preparation and application of bio sorbents and nanocomposite materials. The objectives set according to the nature of the studies carried out are realistic and the results achieved on them are of considerable with significant scientific and applied contribution.
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**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 investigations are carried out by modern experimental, instrumental analytical and kinetic methods for analysis. FTIR, NMR spectroscopy and gas chromatography, elemental analysis, differential thermal, thermogravimetric analysis (DTA/TG) and scanning electron microscopy were used to characterize the obtained products and their properties.

### 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 of the scientific papers submitted by the candidate are of a pronounced scientific and applied nature. They are systematized in the following directions: 1. Development of effective methods of oxidative desulfurization and adsorption desulfurization by pyrolysis products for sulfur content reduction in petroleum fuels. 2. Preparation and environmental application of adsorbents from pyrolyzed rice husks, seaweed, hydrolysis lignin, from lignocellulosic waste biomass (beech, oak, banana and pine sawdust), as well as from coffee waste products. 3. Preparation and environmental application of modified nanocomposite materials with in situ zinc oxide particles. 4. Analysis of the positive effect of temperature increase and reduction of the catalyst particle size in three-phase fluidized bed hydrocracking process. Study of the influence of the raw material and the catalyst type on the parameters of the catalytic and thematic cracking processes. Investigation of the possibility of bitumen obtaining from a vacuum residue from the H-Oil process. 5. Reduction of sulfur content in coal combustion emissions by oxidizing by air at high temperature before burning. Improving the lubricant properties by new effective additives.

### 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
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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.

The applicant has a leading role in the submitted works.

#### 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.

#### 1.11. 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"

Critical notes must be provided if one of the answers C, D or E is marked.
None.

### 1.12. Conclusion

A) The evaluation of the candidate's activity is <b>POSITIVE</b>	This evaluation is assigned to a total number of at least 65 points	X (98 points)
B) The evaluation of the candidate's activity is <b>NEGATIVE</b>	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
On the basis of the comments made on the scientific contribution and the accumulated point asset, I am convinced that I would like to nominate assist. prof. Vesislava Borislavova Toteva to be awarded the academic position "Associate Professor" in the scientific specialty "Technology of natural and synthetic fuels " by professional field 5.10. Chemical technologies in the scientific field 5. Technical sciences.

### Candidate ranking (in case of more than one candidate who has received a positive evaluation to occupy the academic position):

Based on the assigned points, the candidates who have received a **positive** evaluation are ranked as follows:

1	assistant professor	PhD	Vesislava	Borislavova	Toteva	98
place	academic position	scientific degree	name	middle name	last name	points

15.11.2021	The review was written by:	
date	<b>Professor Ivo Vladimirov Valchev, PhD</b>	signature