

**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	<b>Chief assistant</b>	<b>Dr.</b>	<b>Dimka</b>	<b>Ivanova</b>	<b>Ivanova</b>	<b>UCTM-Sofia</b>
№	academic position	scientific degree	name	middle name	last name	workplace

**Scientific area:**

<b>5</b>	<b>Technical Sciences</b>
code	name

**Professional area:**

<b>5.10.</b>	<b>Chemical Technologies</b>
code	name

**Scientific specialty:**

<b>Chemical impedance of the materials and anti corrosion protection</b>
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**The competition has been announced:**

<b>61</b>	<b>02 August 2019</b>	<b>Inorganic and Electrochemistry Productions</b>	<b>Faculty of Chemical Technologies</b>
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in SG issue	date	for the needs of the Department	Faculty
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**The report was written by:**

<b>Assoc.Prof.</b>	<b>Dr.</b>	<b>Snejanka</b>	<b>Alexandrova</b>	<b>Uzunova</b>	<b>UCTM-Sofia</b>
academic position	scientific degree	name	middle name	last name	workplace

**1. Report for the candidate:**

<b>Chief assistant</b>	<b>Dr.</b>	<b>Dimka</b>	<b>Ivanova</b>	<b>Ivanova</b>
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, Chief Assist. Dimka Ivanova has presented all the necessary documents, in accordance with terms and conditions predefined in the Law on the Development of the Academic Staff in Republic of Bulgaria and the relevant Regulations. To participate in the contest candidate has presented 25 publications, ten of which are Habilitation work and fifteen are outside. Nineteen of the represented articles are published in journals, referenced and indexed in scientific databases (ISI WoS or Scopus). In six of the publications the candidate is the first author, in two - the sole author, and co-author in the rest. The activity of the candidate, expressed by dissemination of her science achievements to the community is as follows: the total number of citations is 42, including 29 citations under item 12; 3 citations by indicator №13 and 10 citations according indicator №14.

**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	
B) Research is relevant. Results from other authors are known for each of the topics and / or applications studied.	6 points	x
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 main objective of investigations, the obtained results of which are presented in 14 articles deals with:

Phosphating of low carbon steel by use of zinc and modified phosphating mixtures; Amorphous phosphating of steel, zinc and aluminum surfaces; Corrosion of various materials. The topics of the articles presented are thematically a continuation and upgrading of the investigations related to the topic of Mrs. Ivanova's PhD thesis.

The actuality of the research is determined from the need to replace the toxic treatment of metal surfaces prior to the application of organic coatings with non-toxic anticorrosive one. One of the most promising alternative method for a such treatment is phosphating. The other studies, which results are reported in 11 publications are concerned with synthesis of intermetallic nanosized particles, used as catalysts, electrode materials for Li-ion batteries, etc.

**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"
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Objectives must be specified. The type of the set objectives must be justified
<p>The research objectives are related to the determination of the corrosion characteristics of different materials, the development of new approaches for amorphous and crystalline phosphating of metal surfaces, as well as the synthesis of new materials with practical applications in industry and medicine.</p> <p>To achieve the objectives were investigated:</p> <ul style="list-style-type: none"> <li>- the formation of crystalline phosphate coatings on low carbon steel, using newly developed mixtures, based on zinc, modified with nickel, calcium or manganese in different ratios;</li> <li>- the influence of various factors upon the formation, composition and morphology of coatings obtained by treatment of aluminum and low carbon steel surfaces in solutions containing ammonium and sodium phosphates, promoter ions, buffers, softeners, inorganic activators, surfactants, etc.;</li> <li>- the corrosion characteristics of plastically deformed steel in sulfuric acid model solutions;</li> <li>- the corrosion characteristics of two types of steel intended for structural materials in the mining industry;</li> <li>- the corrosion behavior of mild steel (0.17% C) in aqueous solutions of a liquid fertilizer;</li> <li>- the corrosion resistance of hybrid nanostructured sol-gel coatings deposited on a steel, etc.</li> <li>- the properties of different supported intermetallic nanoparticles.</li> </ul>

#### 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"
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Contributions must be specified. The type of results achieved must be justified.
<p>The publications submitted for participation in the competition, both excluded and included in the habilitation work, have a fundamental and applied character:</p> <ul style="list-style-type: none"> <li>- new compositions for amorphous and crystalline phosphating of metals have been developed;</li> <li>- the main parameters of the phosphating processes are optimized – such as concentration; temperature; duration, etc.;</li> <li>- data on the composition, structure, resistance and protective ability of the phosphate films formed were obtained;</li> <li>- the technologies for the industrial phosphating of zinc and its alloys have been accepted and used into practice;</li> <li>- new materials have been proposed for use in medicine, technology, industry. For example: materials for orthodontic appliances; electrodes for Li-ion batteries; magnetic materials for biomedicine, hybrid materials as transparent protective coatings, etc.</li> </ul>

#### 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.
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**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	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.

The applicant has very good pedagogical activity at the university over the last three academic years, comprising: six training courses, one of which is new to full-time and part-time students; two training courses in a foreign language.

The textbook entitled Corrosion of Materials by L. Fachikov and D. Ivanova is included in the publishing plan of the UCTM, Sofia by decision of the Academic Council from 19 June 2019.

During the period 2015-2019, Chief Assistant D. Ivanova takes part in two national projects, as well as in eight internal research contracts funded by the UCTM, in four of which as a manager.

**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"

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 <b>POSITIVE</b>	This evaluation is assigned to a total number of at least 50 points	x
B) The evaluation of the candidate's activity is <b>NEGATIVE</b>	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

**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	<b>Chief assistant</b>	<b>Dr.</b>	<b>Dimka</b>	<b>Ivanova</b>	<b>Ivanova</b>	77
place	academic position	scientific degree	name	middle name	last name	points

<b>11.11.2019</b>	The report was written by:	
date	<b>Assos.Prof.Dr.Snejanka Uzunova</b>	signature