

**REPORT**

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	Associate Professor	Ph.D.	Nikolai	Iliev	Georgiev	UCTM
№	academic position	scientific degree	name	middle name	last name	workplace

**Scientific area:**

	Technical sciences
code	name

**Professional area:**

5.10	Chemical technologies
code	name

**Scientific specialty:**

Technology of fine organic and biochemical synthesis
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**The competition has been announced:**

23	19.03.2024	Organic synthesis	Faculty of Chemical Technologies
in SG issue	date	for the needs of the Department	Faculty

**The report was written by:**

Professor	D.Sc.	Todor	Minkov	Dudev	Sofia University "St. Kliment Ohridski"
academic position	scientific degree	name	middle name	last name	workplace

**1. Report for the candidate:**

Associate Professor	Ph.D.	Nikolai	Iliev	Georgiev
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 fully meets (and in a number of cases significantly exceeds) the minimum requirements for holding the position of "Professor". Assoc. Prof. Georgiev participates in the competition with 29 publications, ten of which are presented as part of a habilitation thesis. None of them is included in the competition for associate professor. In 12 of the publications Dr. Georgiev is the first author or corresponding author, and in 16 – second author (without being the corresponding author). A significant part of the articles were published in journals with high impact factor such as Sensors and Actuators, Journal of Photochemistry and Photobiology A: Chemistry, Dyes and Pigments, Molecules and Spectrochimica Acta A. Seventeen of the articles were published in co-authorship with foreign researchers. In general, Dr. Georgiev is the co-author of 78 articles, cited 1517 times in the scientific literature. The candidate's H-index is 26.

### 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.

Assoc. Prof. Georgiev's research is up-to-date and innovative. His investigations are focused on the design, synthesis and application of functional fluorescent compounds of the 1,8-naphthalimide, 9-phenylxanthene and perylene classes. Newly synthesized compounds (a large part of which are not described in the literature) have been investigated in order to establish their photophysical properties and their potential application for molecular sensors and molecular logic devices with a wide range of applications. Evidence of the topicality of the researched issues is the high citation rating of the relevant publications.

### 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 goals set by the candidate (synthesis and characterization of new molecular systems with applications in sensors) are ambitious, but achievable and with a significant impact on science and practice.

### 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.

Dr. Georgiev's research activity is in the field of synthesis of functional fluorescent compounds and subsequent characterization of their photophysical properties with the aim of their application as molecular sensors and molecular logic devices.

The candidate's contributions can be summarized in the following areas:

- Benzylether light-harvesting systems, not described in the literature, were synthesized and photophysically investigated, entirely made of 1,8-naphthalimide fluorophores, which can be efficiently used to determine the presence of water in organic solvents, as well as having the ability to transport light energy up to 1, 8-naphthalimide rotor with switching mechanism.
- New water-soluble sensor systems, based on 1,8-naphthalimide and perylenediimide, have been synthesized and characterized, which have the ability to selectively determine the pH of the medium in all-aqueous solutions. The newly synthesized perylenediimide is characterized by good cell penetration and low cytotoxicity, which makes it applicable for diagnostics in medicine and biology.
- For the first time, sensor 1,8-naphthalimides with solid state emission were synthesized and studied. Films of these compounds have been successfully applied as chemosensors for rapid detection of acid and base vapors.
- Researched, for the first time in Bulgaria, is the possibility of applying molecular sensors as molecular logic devices.

**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	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"

As can be seen from the documents submitted for the competition, the candidate has made a significant contribution to the development and publication of the scientific results: in 12 of the publications Dr. Georgiev is the first author or corresponding author, and in 16 – the second author.

**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.

### 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"
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To be filled in if requested by the member of the scientific jury
The publications and habilitation thesis presented by the candidate are on the topic of the competition and represent original scientific developments with a significant contribution in the field of synthesis and application of functional fluorescent compounds. The research is up-to-date, conducted at a high scientific level and is innovative in nature. The candidate is a distinguished scientist/educator in his field. I am convinced that with his scientific and teaching activities Assoc. Prof. Nikolai Georgiev fully meets all the requirements of the Law on holding the academic position of "professor" and I propose that he be elected as a "professor" in the scientific specialty 5.10 Chemical technologies (Technology of fine organic and biochemical synthesis).

<b>19.07.2024</b>	The report was written by:	
date		signature