

**REPORT**

to occupy the academic position:

|                       |   |
|-----------------------|---|
| "Professor"           |   |
| "Associate Professor" | <b>X</b>  |
|                       | one of the academic positions indicated shall be marked with the sign "X" |

**Candidates to occupy the position:**

|   |                     |                   |            |             |             |             |
|---|---------------------|-------------------|------------|-------------|-------------|-------------|
| 1 | assistant professor | PhD               | Stanislava | Plamenova   | Vladimirova | UCTM, Sofia |
| № | academic position   | scientific degree | name       | middle name | last name   | workplace   |

**Scientific area:**

|      |                   |
|------|-------------------|
| 5.   | Chemical sciences |
| code | name              |

**Professional area:**

|       |                       |
|-------|-----------------------|
| 5.10. | Chemical Technologies |
| code  | name                  |

**Scientific specialty:**

|  |
|--|
| Technology of Fine Organic and Biochemical Synthesis |
|--|

**The competition has been announced:**

|             |            |                                 |                       |
|-------------|------------|---------------------------------|-----------------------|
| 67          | 13.08.2021 | Organic Synthesis               | Chemical Technologies |
| in SG issue | date       | for the needs of the Department | Faculty               |

**The report was written by:**

|                     |                   |       |             |            |             |
|---------------------|-------------------|-------|-------------|------------|-------------|
| Associate professor | PhD               | Polya | Mihaylova   | Miladinova | UCTM, Sofia |
| academic position   | scientific degree | name  | middle name | last name  | workplace   |

**1. Report for the candidate:**

|                     |                   |            |             |             |
|---------------------|-------------------|------------|-------------|-------------|
| assistant professor | PhD               | Stanislava | Plamenova   | Vladimirova |
| 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 | <b>X</b>   |
| 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.

Assistant Professor PhD engineer Stanislava Plamenova Vladimirova takes part in the competition for the academic position of "Associate Professor" with 25 scientific publications, 18 of which are in scientific journals indexed and referenced in world databases (with awarded IF and/or SJR), and 7 are in scientific journals with reviewers or in edited collective volumes. There are 20 citations marked which are after the acquisition of PhD. The total number of participations in scientific forums and conferences is 27, of which 23 presentations and 4 oral reports.

The only candidate in the competition is Stanislava Plamenova Vladimirova. She has the following indexes:

Index 1 – 50 p. at a needed 50 p.

Index 4 – 117 p., at a needed minimum of 100 p.

Indexes from 5 to 11 – 207,41 p. at a needed minimum of 200 p.

Indexes from 12 to 15 – 200 p. at a needed 50 p.

She was a leader of 14 scientific projects, financed by Scientific Research Sector at UCTM and a participant in a total of 25 scientific projects.

She is an author of a textbook "Design of biologically active substances", ed. UCTM-Sofia, 2021.

**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 | <b>X</b> |
| 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.   |
| <p>The research in the works of the candidate, submitted for the acquisition of the academic position "Associate Professor" are related to the scientific specialty in which the competition was announced. The main results published in the scientific papers which the candidate participates in the competition for "Associate Professor" with, as well as the relevant scientific contributions, are presented in 3 areas according to the topics of the studied problems.</p> <p>The research is up-to-date, and the obtained results can be related to the enrichment of the scientific field with new knowledge.</p> |

### 1.3. Objectives of the research:

|   |          |  |
|---|----------|--|
| A) Realistic and of scientific and / or applied interest      | 8 points | <b>X</b>   |
| 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   |
| <p>The candidate's research work has well-defined and formulated goals with a scientific interest, namely the synthesis and study of the biological activity of pyrrole derivatives. The set goals according to the nature of the conducted research are realistic, and the achieved results based on them are distinguished by scientific interest.</p> |

### 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 | <b>X</b> |
| 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.   |
| <p>The main scientific contributions can be summarised in the following three directions:</p> <p>1. Synthesis, structural characterization and biological activity of new N-pyrrolylcarboxylic acids.</p> <p>A number of N-pyrrolylcarboxylic acids containing residues of various amino acids were synthesized using the Paal-Knorr method. The resulting compounds were isolated and characterized. The representatives elected by them are assigned: analgesic properties in single and multiple (14 days) administration by hot plate test and formalin test; anti-inflammatory effect after single and repeated (14 day) administration using (by inhibition of a carrageenin-induced oedema of rat's paws); toxicity of the synthesized compounds on organs (performance of hematological tests); antibacterial activity against model Gram positive (<i>Bacillus cereus</i> 1085), Gram negative (<i>Pseudomonas fluorescens</i>) microorganisms and fungi (<i>Candida lipolytica</i>) using a standard disk diffusion method; herbicidal activity against wheat and cucumber cultivars.</p> <p>The chemical and physiological stability of the synthesized pyrrole esters at different pH of the medium was determined by high performance liquid chromatography by determining the hydrolysis products obtained at 37 °C.</p> <p>2. Synthesis, structural characterization and biological activity of new N-pyrrolylcarboxylic hydrazides and hydrazones.</p> <p>A total of two N-pyrrolylcarbohydrazides and 38 hydrazones were synthesized. The obtained compounds are isolated and characterized. The representatives elected by them are assigned: antioxidant activity in terms of radical-scavenging ability (DPPH assay) and reducing power (ABTS); tuberculostatic activity (investigations against <i>Mycobacterium tuberculosis</i> strain H37Rv); pharmacokinetic properties (an initial in vitro screening for cytotoxicity (on HepG2 cells) and hemocompatibility (hemolysis assay)).</p> <p>The chemical stability and the stability under close to physiological conditions of model pyrrole hydrazone at different pH of the medium were determined by high performance liquid chromatography with UV detection, by determining the obtained hydrolysis products at a temperature of 37 °C.</p> <p>3. Synthesis, structural characterisation and biological activity of new molecules containing pyrrole heterocycle.</p> <p>A series of hybrid molecules representing Tyr-MIF-1 mimetics incorporated in a pyrrole heterocycle was synthesized. The synthesis of the peptide moiety was realized by standard procedure. Pyrrole cycle and aimed hybrid structures were obtained by Paal-Knorr reaction. The experiments were carried out on male rats. The analgesic effects were evaluated using Paw-pressure and Hot-plate tests and the anti-inflammatory effect was evaluated by Digital Water Plethysmometer.</p> |

A series of pyrrole-containing compounds was designed, following the architecture of established tuberculostatics. The in vitro evaluation against *Mycobacterium tuberculosis* strain H37Rv (performed according to the SRI International Screening Program) was made.

Four novel pyrrole compounds have been designed to adopt the architecture of the modern antihyperlipidemic atorvastatin. The introduced structural variations in the molecules are a useful base for further optimizations and conclusions on the structure-activity relationship.

By "one-pot" ternary synthesis using benzaldehyde,  $\beta$ -naphthol and pyrrolylbenzamide in the absence of solvent, the novel 2-hydroxynaphthylpyrroles with expected biological activity were obtained. The advantages of this synthesis are evaluated - high yields, short reaction times, and simplified technological procedure.

#### 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>X</b>   |
| 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 80% of the presented 25 publications the candidate is the first or second author in teams of different sizes. In two of the articles, she is an independent 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 | <b>X</b> |
| 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 | <b>X</b>   |
| 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 | <b>X (74)</b>  |
| 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  |
| <p>The achieved results in the teaching and research activity fully comply with and exceed the national minimum quantitative scientometric criteria for holding the academic position of "Associate Professor".</p> <p>I recommend Assistant Professor Stanislava Plamenova Vladimirova to be elected "Associate Professor" in the professional field 5.10. Chemical technologies (Technology of Fine Organic and Biochemical Synthesis), according to a competition announced by UCTM in OJ, issue 67/13.08.2021.</p> |

|                   |   |           |
|-------------------|---|-----------|
| <b>21.11.2021</b> | The report was written by:                                  |           |
| date              | <b>Assoc. Prof. PhD Eng. Polya Mihaylova<br/>Miladinova</b> | signature |