

REVIEW

to occupy the academic position:

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| "Professor" | |
| "Associate Professor" | X |
| | one of the academic positions indicated shall be marked with the sign "X" |

Candidates to occupy the position:

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|---|---------------------------|-------------------|-----------|-------------|------------|-------------|
| 1 | Chief assistant professor | PhD | Ekaterina | Stoyanova | Serafimova | UCTM, Sofia |
| № | academic position | scientific degree | name | middle name | last name | workplace |

Scientific area:

| | |
|------|--------------------|
| 5 | Technical sciences |
| code | name |

Professional area:

| | |
|------|---------------------|
| 5.13 | General Engineering |
| code | name |

Scientific specialty:

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| Environmental protection systems and devices |
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The competition has been announced:

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|-------------|------------|---------------------------------|---------------------------------|
| 27 | 02.04.2021 | Environmental engineering | Chemical and system engineering |
| in SG issue | date | for the needs of the Department | Faculty |

The review was written by:

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|-------------------|-------------------|---------|-------------|----------------|-------------|
| Assoc. prof. | PhD | Silviya | Igorova | Lavrova-Popova | UCTM, Sofia |
| academic position | scientific degree | name | middle name | last name | workplace |

1. Review for the candidate:

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|---------------------------|-------------------|-----------|-------------|------------|
| Chief Assistant professor | PhD | Ekaterina | Stoyanova | Serafimova |
| academic position | scientific degree | name | middle name | last name |

1.1. Completion of the provided documents:

| | | |
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| A) The competition documents are in full compliance with the Regulations | 3 points | X |
| 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.

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1.2. Meeting the minimum requirements under the Regulations:

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| 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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1.3. Relevance of scientific and / or applied research:

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| A) The research is relevant. Part of the research is pioneering (no results are known on the topic by other authors) | 7 points | |
| 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.

Much of the candidate's work is devoted to systems and devices from low-carbon practices, regenerative practices for protection and restoration of basic elements of the environment, through recovery of waste from agriculture and processing industry (publications № 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.10, 8.1, 8.2, 8.4, 8.8, 8.10, 8.12, 8.13, 8.16, 8.17, 8.18, 8.20, 8.22, 8.24, 8.25, 8.26, 8.28, 8.29, 8.31). The main wastes used to prepare various mixtures such as soil improvers are ash from biomass, crops and their waste by-products, sludge from WWTPs, animal waste, waste from the paper industry, lime sludge and others. Tunisian phosphorite and clinoprilolite have been used as natural raw materials. The use of waste as a raw material is an alternative to environmental protection, sustainable development and contributes to reducing the carbon footprint, which in turn will contribute to a smoother transition to a low-carbon economy. In another group of papers, attention is paid to the effective practices for reforestation with waste recovery for climate neutrality (publications № 4.5, 8.9, 8.11, 8.14). The third group of studies addresses the possibility of introducing sustainable development systems in construction and mitigating the effects of climate change through waste recovery and carbon saving practices (publications № 4.9, 8.3, 8.6, 8.7, 8.15, 8.17, 8.21, 8.27). Attention is also paid to the health risk for the population when exposed to various types of indoor air pollution in residential buildings (publications № 8.5, 8.23, 8.30). In a separate group, possible methods for intensification and characterization of solid waste and biomass, for increasing soil fertility, for restoring and increasing soil carbon content are considered.

1.4. Knowledge of the problems subject of research:

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|---|----------|--|
| 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:

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|---|----------|--|
| 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:

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|---|----------|--|
| 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 of the research are of a certain scientific and applied interest.

The obtaining of various mixtures from biodegradable agricultural waste materials, as well as waste from the processing industry and their use in the soil as improvers, the creation of efficient technologies and systems for carbonization of waste biomass for decentralized energy production and finding optimal conditions and techniques for disposal and minimization of harmful emissions from waste are issues of primary interest in the environmental protection.

1.7. Methods of research:

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|---|----------|--|
| 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.

1.8. Candidate research contributions:

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|--|-----------|----------|
| 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 | |

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| 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.

New soil improvers have been discovered by mixing different types of organic and inorganic waste. The tendencies of change in different ratios are also traced, in order to find conditions and techniques for disposal and minimization of harmful emissions from waste, through which to create conditions for obtaining new soil improvers, so that on the one hand to improve the balance of nutrients in the soil, and on the other hand to achieve a better structure of soil resources. A new economical method for obtaining biological charcoal by mechanical mixing of different types of waste and acid treatment has been developed. Reduction of the time for ripening of manure from poultry farms has been achieved. Some of the methods of processing manure from poultry farms have been applied practically in a poultry farm in Kyustendil.
The achieved results are of scientific and applied nature.

1.9. Participation of the candidate in the achievement of the presented results:

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| 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.

1.10. Pedagogical activity:

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| 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 | |

| | | |
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| 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" |

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| Critical notes must be provided if one of the items B or C is marked. |
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1.11. Critical notes:

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| 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“ |

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| Critical notes must be provided if one of the answers C, D or E is marked. |
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1.12. Conclusion

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| A) The evaluation of the candidate's activity is POSITIVE | This evaluation is assigned to a total number of at least 65 points | X 93 points |
| B) The evaluation of the candidate's activity is NEGATIVE | This evaluation is assigned to a total number below 65 points | |
| | | one of the answers given is marked with the sign "X" |

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| To be filled in if requested by the reviewer |
| In accordance with the rules of UCTM and the law of academic promotions, the materials presented by the candidate and the scientific results obtained, allow to suggest to the Faculty Council of the Faculty of Chemical and Systems Engineering of UCTM to approve chief assistant professor |

Ekaterina Stoyanova Serafimova for the academic position "Associate Professor" in the field of higher education "Technical Sciences", professional field 5.13 "General Engineering" (Systems and devices for environmental protection) for the needs of the Department "Environmental engineering" at UCTM, Sofia.

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| | The review was written by: | |
| 20.06.2021 | Assoc. prof. Silviya Igorova Lavrova-Popova | |
| date | | signature |