REVIEW

Regarding the competition for "professor" in the scientific specialty "Organic Chemistry", announced in the State Gazette No. 48 of 26.05.2026 with candidate Assoc. Prof. PhD. Eng. Marin Neykov Marinov from the Department of "Chemistry, Phytopharmacy, Ecology and Environmental Protection", Agricultural University - Plovdiv, appointed according to Order No. RD 16-769 / 22.06.2026 of the Rector of the Agricultural University - Plovdiv as a member of the scientific jury

Reviewer: *Prof. PhD. Eng. Petar Todorov Todorov, University of Chemical Technology and Metallurgy - Sofia, Department of "Organic Chemistry", field of higher education: 4. Natural Sciences, Mathematics and Informatics, professional field: 4.2. Chemical Sciences, scientific specialty: "Organic Chemistry", appointed as a member of the scientific jury by order No. RD 16-769 / 22.06.2026 of the Rector of the Agrarian University.*

1. General data on the career and thematic development of the candidate.

The only candidate in the announced competition is Assoc. Prof. PhD Eng. Marin Neykov Marinov from the Faculty of Plant Protection and Agroecology at the Agrarian University - Plovdiv, Department of "Chemistry, Phytopharmacy, Ecology and Environmental Protection". The candidate has submitted all necessary documents in accordance with the requirements of the Regulations for the Implementation of the Act on the Development of Academic Staff in the Republic of Bulgaria.

Assoc. Prof. PhD Eng. Marin Marinov graduated from the University "Prof. Dr. Asen Zlatarov" - Burgas in 1998 as a Master of Biotechnology, with a professional qualification as a biotechnologist engineer. In 2004, he successfully defended his doctoral dissertation on the topic "Synthesis and characterization of sulfur analogues of spirohydantoins and their derivatives" at the University of Ruse "Angel Kanchev", Razgrad Branch.

During the period 2004–2006, he worked at Balkanpharma – Razgrad AD in the field of quality assurance and validation, initially as a validation specialist, and subsequently as a chief specialist in validation of capacities, equipment and systems. From 2006 to 2010 he was a chief assistant at the Department of Organic Chemistry at the Faculty of Chemistry of the Plovdiv University “Paisiy Hilendarski”. In the period 2010–2013 he held the position of chief assistant at the Agrarian University – Plovdiv, and from 2013 to the present he has been an associate professor of organic chemistry at the same university.

Assoc. Prof. Marinov conducts lectures, exercises and seminars on a significant number of disciplines intended for various specialties at the Agrarian

University – Plovdiv, in the Bachelor's Degree Programme – full-time and part-time form of study.

The candidate is the author and co-author of one textbook and four teaching aids. The results of his research activities are reflected in 22 publications in scientific journals, referenced and indexed in world-renowned scientific information databases, such as Web of Science and Scopus. He is the co-supervisor of two successfully defended doctoral students and three doctoral students who are in the process of training.

2. General description of the submitted materials.

Assoc. Prof. PhD Eng. Marin Marinov participated in the competition for "professor" with a total output of 22 works, grouped as follows:

❖ *Scientific publications in the nomenclature specialty - 22 pieces, of which:*

- Publications related to the doctoral dissertation - 0 pieces, which are not subject to consideration;

- Publications with an impact factor - 15 pieces

- Publications in peer-reviewed and refereed scientific journals - 4 pieces;

- Publications in conference proceedings - 3 pieces;

The personal participation of Assoc. Prof. Dr. Eng. Marin Marinov in the indicated 22 works is illustrated by the fact that 0 are independent, in 13 - he is the first, in 8 - he is the second, and in 1 - he is the third and subsequent author.

- Habilitation work (Monography) - 1 piece;

- Published book based on a defended dissertation for the award of the educational and scientific degree "Doctor" - 1 issue (independently).

❖ *Textbooks - 1 issue.*

❖ *Study guides - 4 issues.*

22 items are subject to analysis for the preparation of the opinion.

By individual groups of indicators and the criteria included in them, the results are as follows:

- For indicators from group A – 50 points (50 required);
- For indicators from group B – 100 points (100 required);
- For indicators from group D – 310 points (220 required);
- For indicators from group E – 150 points (120 required);
- For indicators from group E – 390 points (150 required).

3. Main areas of the candidate's research work. Demonstrated skills or aptitude for leading scientific research (project management, attracting external funding, etc.).

Assoc. Prof. PhD Eng. Marin Marinov has significant publication activity, being a co-author of a total of 110 scientific papers and 2 monographs. 22 publications were submitted for participation in the competition for the academic position of "professor".

This publication activity clearly demonstrates a sustainable scientific presence and high quality of the candidate's research work. The scientific research included in the competition documentation is in the field of organic chemistry and mainly covers the development of effective methods for the synthesis of new heterocyclic organic compounds, as well as their structural characterization using various spectral analysis methods. The candidate's work is distinguished by a complex and interdisciplinary nature, combining synthetic, spectral, and applied research. The main scientific contributions can be distinguished in the following areas:

1.) Synthesis of heterocyclic organic compounds and their structural characterization by physicochemical and spectral methods;

2.) Synthesis, structural characterization and study of the biological activity of heterocyclic organic compounds;

3.) Synthesis, structural characterization and study of the biological activity of organometallic coordination compounds.

He participated as a leader in 7 national scientific projects, as a member of a scientific team in 9 national scientific projects, and in 1 international scientific project.

4. Assessment of the candidate's pedagogical training and activities. His role in the training of young scientists.

I n the period 2020/2021–2025/2026, the candidate has given lectures and exercises in a wide range of academic disciplines at the Agricultural University - Plovdiv, in the Bachelor's Degree Program, in full-time and part-time study. His teaching activities cover the disciplines "Organic Chemistry", "General Chemistry", "Chemistry", "Polymers in Plant Protection", "Polymers in Agroecosystems", "Operational Materials in Agricultural Machinery", "Anti-Corrosion Coatings" and "Inorganic and Analytical Chemistry", for various specialties. He has also conducted training in "Organic Chemistry" under the Erasmus program. Some of the disciplines have subsequently been updated and renamed in accordance with the development of the curricula.

Assoc. Prof. Marinov has significant and consistent experience in scientific supervision and the training of doctoral students. He is the co-supervisor of two successfully defended doctoral students in the field of chemical sciences – at the University of Chemical Technology and Metallurgy – Sofia and the University of Plovdiv "Paisii Hilendarski". The topic of their dissertations covers the synthesis, structural characterization, and research of biologically active organic and organometallic compounds. At present, Assoc. Prof. Marinov is also the co-supervisor of three full-time doctoral students in the process of training in the professional field "Plant Protection" at the Agricultural University – Plovdiv. The scientific developments of the doctoral students are aimed at the synthesis and research of heterocyclic and phenothiazine compounds with potential biological activity and application in plant protection. The work with the doctoral students includes the development of synthetic approaches, structural characterization, and evaluation of the biological properties of the obtained compounds.

The experience gained as a scientific supervisor of successfully defended doctoral students and as a supervisor of doctoral students in the process of training demonstrates the candidate's sustainable contribution to the training of young specialists and the development of scientific potential in the field of organic chemistry and the chemistry of biologically active compounds.

The candidate is the author and co-author of one university textbook and four teaching aids, intended mainly for students of non-chemical specialties. The textbook "Organic Chemistry for Students of Non-Chemistry Specialties" (2016), co-authored with Neyko Stoyanov, was developed in accordance with the specifics of undergraduate education and limited teaching hours, by systematically presenting the basic knowledge of organic chemistry and creating a basis for its upgrading in related scientific fields.

The teaching aids include "Terminological Dictionary of Organic Chemistry" (2019), "Guide to Laboratory Exercises in Organic Chemistry" (2019, co-author Rumyana Prodanova-Kamalieva), "Questions and Answers in Organic Chemistry" (2024), and another teaching aid. They complement the learning process by systematizing basic concepts and reactions, developing practical laboratory skills, and supporting the preparation and self-control of students. The developed teaching materials are consistent with the curricula of the Agricultural University - Plovdiv and are also applicable to students from other non-chemical specialties studying organic chemistry.

5. Significance of the results obtained, proven by citations, publications in prestigious journals, awards, membership in international and national scientific bodies, etc.

From the review of the submitted materials, it is established that at the moment the candidate has 75 citations without self-citations, which meet the necessary requirements under this criterion. The candidate's N-index is 9, and after excluding self-citations – 7 https://www.scopus.com/pages/citationOverview?authorsIds=24295358800&origin=AuthorProfile/. A significant part of the citations have been realized in publications in international scientific journals, which shows that the results of the candidate's scientific research have received some scientific response and are used in the work of other researchers.

6. Significance of contributions to science and practice. Motivated answer to the question of the extent to which the candidate has a clearly outlined profile of scientific research work.

The candidate's scientific research activity has a clearly outlined and consistent profile, concentrated on the synthesis of new heterocyclic organic compounds, their structural characterization by modern physicochemical and spectral methods, and the study of their biological activity. This main direction logically includes research on organometallic coordination compounds. The significance of the results obtained is determined primarily by the expansion of knowledge about the synthesis, structure

and properties of different classes of heterocyclic compounds. The conducted studies on their antibacterial, antifungal and cytotoxic activity reveal possibilities for future application of individual compounds as potential biologically active molecules. The practical focus of the results should be considered primarily as the creation of a scientific basis for subsequent applied research, and not as direct implementation in practice.

I. ORIGINAL CONTRIBUTIONS

The original contributions include:

- the synthesis and characterization of several new heterocyclic organic compounds, including derivatives of spirohydantoins, spirodithiohydantoins, naphthalimides, phenothiazines and other heterocyclic systems;
- the preparation of new organometallic coordination compounds of Pt, Ru, Ni and Cu with biologically active ligands;
- the establishment of biological activity in some of the newly synthesized compounds, including antimicrobial and cytotoxic activity.

These results expand the chemical diversity of the studied classes of compounds and create prerequisites for further study of the relationship between structure and biological activity.

II. METHODOLOGICAL CONTRIBUTIONS

The methodological contributions are related to:

- development and application of synthetic approaches for the preparation of new heterocyclic and coordination compounds;
- use of a complex approach for structural characterization by IR, Raman, UV-Vis, NMR and two-dimensional NMR spectroscopy, as well as quantum-chemical calculations;
- comparison of experimental and theoretically predicted spectral characteristics;
- application of established methods for preliminary assessment of antimicrobial and cytotoxic activity.

III. SCIENTIFIC CONTRIBUTIONS

The scientific contributions of the candidates are related to the following, mainly to the preparation and study of new heterocyclic organic and organometallic compounds, which can be summarized in the following areas:

- Knowledge has been expanded on the synthesis and properties of different classes of heterocyclic compounds, including cycloalkanespirohydantoins and their thioanalogues, hydrazone products, fluorenespirohydantoins, naphthalimide and naphthopyran derivatives, benzodiazepine and other condensed heterocyclic systems. Data have been obtained on the possibilities of their structural modification and the influence of substituents on their properties.
- New data have been obtained on the structural characterization of the synthesized compounds through the complex use of physicochemical and spectral methods. For several compounds, the structure has been proven by combining one- and two-dimensional NMR spectroscopy, IR and Raman spectroscopy, which allows

for reliable assignment of spectral signals and establishment of the structural features of the obtained products.

• The dependence of the chemical structure and biological activity of the research heterocyclic compounds has been established. In vitro studies of antiproliferative, antibacterial, and antifungal activity have been conducted on individual representatives, and compounds with a pronounced effect against the tested microorganisms have been identified.

• Research on biologically active products of nalidixic acid has been expanded by obtaining new amide products with different heterocyclic substituents. It has been established that some of the synthesized compounds exhibit antimicrobial activity both towards Gram-positive and Gram-negative bacteria.

• Obtained results in the field of organometallic coordination compounds, including synthesis, structural characterization, and study of their biological activity. This consistently directs the main scientific topic of the candidate and expands research on the influence of coordination with metal ions on the properties and potential biological activity of organic ligands.

• The knowledge about phenothiazine compounds and their antimicrobial activity has been summarized and systematized in a monographic work, which reviews classical and different methods for the synthesis of phenothiazines and their biological activity. This is to systematize the existing knowledge and outline the prospects for the development of new biologically active phenothiazine derivatives.

IV. APPLIED CONTRIBUTIONS

Overall, the candidate's contributions are thematically related and form a consistent scientific direction in the field of organic synthesis, structural characterization, and the study of biologically active heterocyclic compounds.

7. Critical remarks and recommendations.

I have no critical remarks and recommendations.

8. Personal impressions and opinion of the reviewer.

I have known Assoc. Prof. Marinov since 2017, when I was selected as a reviewer of the dissertation work of his doctoral student Rumyana Prodanova-Kamalieva at the University of Chemical Technology and Metallurgy - Sofia. Since then, I have had excellent professional impressions of him.

CONCLUSION

Based on the analysis of the candidate's pedagogical, scientific, and applied scientific activities, I believe that Assoc. Prof. PhD Eng. Marin Neykov Marinov meets the requirements of the ZRASRB, PPZRASRB and the Regulations of the Agrarian University for its application. The candidate significantly exceeds the legally defined minimum requirements in terms of the required number of points. The achieved results testify to a high degree of professional competence, consistent scientific research and teaching activity, as well as a sustainable contribution to the development of the academic and scientific environment.

All of the above gives me reason to evaluate his overall activity **POSITIVELY**.

I would like to propose that the esteemed Scientific Jury also vote positively, and that the Faculty Council of the Faculty of Plant Protection and Agroecology at the Agrarian University - Plovdiv elect Assoc. Prof. PhD Eng. Marin Neykov Marinov as a "professor" in the scientific specialty "Organic Chemistry".

Data: 01.09.2026

REVIEWER:.....
(Prof. PhD. Eng. Petar Todorov)