

REVIEW

by Prof. Ivo Grabchev, DSc, Eng.

regarding the competition for the academic position of “Professor” in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.2. Chemical Sciences, scientific specialty “Organic Chemistry”, announced by the Agricultural University – Plovdiv in State Gazette, issue 48 of 26.05.2026, with candidate Assoc. Prof. Marin Neykov Marinov, PhD, Eng.

Reviewer: Prof. Ivo Grabchev, DSc, Sofia University “St. Kliment Ohridski”, Faculty of Medicine; 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 Agricultural University – Plovdiv.

1. General information on the candidate’s career and thematic development;

Assoc. Prof. Marin Neykov Marinov, PhD, Eng., graduated in 1998 from Prof. Dr. Asen Zlatarov University – Burgas, majoring in Biotechnology. In 2004, he was awarded the educational and scientific degree “Doctor” in the scientific specialty “Bioorganic Chemistry, Chemistry of Natural and Physiologically Active Substances” after defending a dissertation entitled “Synthesis and Characterization of Sulfur Analogues of Spirohydantoins and Their Derivatives”.

His professional development includes both industrial experience and a consistent academic career. From 2004 to 2006, he worked at Balkanpharma – Razgrad AD in the field of validation and quality assurance. From 2006 to 2010, he was Chief Assistant Professor at the Department of Organic Chemistry, Faculty of Chemistry, University of Plovdiv “Paisii Hilendarski”, and from 2010 to 2013 – Chief Assistant Professor at the Agricultural University – Plovdiv. Since 2013, he has held the academic position of Associate Professor of Organic Chemistry at the Faculty of Plant Protection and Agroecology, Agricultural University – Plovdiv.

Assoc. Prof. Marinov’s research activity is focused mainly on organic synthesis and the chemistry of heterocyclic compounds. His research development clearly demonstrates a progression from the synthesis and structural characterization of new heterocyclic systems to the study of their properties and biological activity. Spirohydantoins and their thio analogues, 1,8-naphthalimide and phenothiazine derivatives, as well as their complexes and functionalized derivatives, occupy an important place in his work. Various spectroscopic methods are used for structural characterization, while a substantial part of the research is aimed at establishing potential antimicrobial, cytotoxic and other biological activities. Thus, the candidate’s main scientific profile has been established in the field of the synthesis, structure and biological properties of heterocyclic organic compounds.

The submitted materials demonstrate sustained thematic development and continuity between the candidate’s doctoral research and his subsequent scientific work. Alongside his continuing interest in spirohydantoin structures, the research topics have gradually expanded to new classes of biologically active heterocyclic compounds, with phenothiazine derivatives and studies of their antimicrobial activity becoming particularly prominent in recent years. This development is

consistent with the scientific specialty "Organic Chemistry" for which the present competition has been announced.

2. General description of the submitted materials.

In the competition for the academic position of "Professor", Assoc. Prof. Marin Neykov Marinov, PhD, Eng., participates with a total of 29 works that do not duplicate those submitted for the acquisition of the educational and scientific degree "Doctor" and the academic position of "Associate Professor". The submitted output includes one habilitation work – a monograph – and one published book based on the defended doctoral dissertation.

- ❖ *Scientific publications in the scientific specialty – 22, including:*
 - *Publications related to the doctoral dissertation – 0, which are not subject to review;*
 - *Publications with an impact factor – 15;*
 - *Publications in peer-reviewed and refereed scientific journals – 4;*
 - *Publications in conference proceedings – 3;*

The personal contribution of Assoc. Prof. Marinov to the above 22 works is illustrated by the fact that none is single-authored; he is first author in 13, second author in 8, and third author in the remaining 1 publication.

- ❖ *Textbooks – 1.*

- ❖ *Teaching manuals – 4.*

A total of 29 works are subject to analysis in the preparation of this review.

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

Assoc. Prof. Marinov's research activity is directed mainly towards the synthesis, structural characterization and investigation of the biological activity of heterocyclic organic compounds. Three main areas can be distinguished in the works submitted for the competition: synthesis and structural characterization of heterocyclic organic compounds by physicochemical and spectroscopic methods; synthesis, structural characterization and investigation of the biological activity of heterocyclic organic compounds; and synthesis, structural characterization and investigation of the biological activity of organometallic coordination compounds.

The first area includes studies on various classes of spirohydantoins and their derivatives, in which, alongside synthetic work, IR, Raman, one- and two-dimensional NMR spectroscopy, as well as quantum-chemical calculations, are used to confirm the structure and elucidate the conformational features of the obtained compounds.

The second and most broadly represented area combines organic synthesis with systematic investigation of the biological properties of the obtained compounds. It includes spirohydantoin, 1,8-naphthalimide and phenothiazine derivatives, with particular emphasis on their antimicrobial and cytotoxic activity. In the more recent studies, the development of the topic related to phenothiazine derivatives and their antimicrobial activity is especially evident and is also summarized in the submitted habilitation work "Phenothiazines: Synthesis and Antimicrobial Activity".

The third area is related to the synthesis and investigation of organometallic coordination compounds, including complexes of Ru, Pt, Ni and Cu with heterocyclic ligands, for which structural characteristics and biological activity have been studied.

Assoc. Prof. Marinov has also accumulated substantial experience in organizing and leading scientific research. He has been the principal investigator of 7 national research projects funded by the Bulgarian National Science Fund, the Ministry of Education and Science, the University of Plovdiv and the Agricultural University – Plovdiv. The topics of these projects consistently follow his main scientific interests – synthesis of N-containing heterocyclic compounds, spirohydantoins, 1,8-naphthalimide derivatives, complex formation and biological activity. These include a project under the “Young Scientists” competition of the Bulgarian National Science Fund, as well as a project funded under the Operational Programme “Human Resources Development”, co-financed by the European Social Fund.

The submitted data on the candidate’s scientific and project activities demonstrate an ability to formulate and consistently develop research topics, organize scientific teams and lead research projects, which I assess positively as an important element of his preparation for the academic position of “Professor”.

4. Assessment of the candidate’s pedagogical qualifications and teaching activity. His role in the training of young researchers.

Assoc. Prof. Marin Neykov Marinov, PhD, Eng., has extensive teaching experience in higher education and carries out teaching activities in bachelor’s and master’s programmes at the Agricultural University – Plovdiv. In recent years, he has delivered lectures and practical classes in “Organic Chemistry” for the programmes “Plant Protection” and “Ecology and Environmental Protection”, in both full-time and part-time forms of study. He also teaches “General Chemistry”, “Chemistry”, “Polymers in Plant Protection”, “Polymers in Agroecosystems”, “Operating Materials in Agricultural Machinery”, and “Anticorrosion Coatings”, and participates in practical classes in “Inorganic and Analytical Chemistry”. He also delivers lectures and practical classes in Organic Chemistry under the Erasmus programme.

The submitted teaching workload statement demonstrates a substantial volume of teaching activity. For the period from the 2021/2022 to the 2025/2026 academic year, his total workload amounts to 2750.1 hours, including lectures, practical classes, Erasmus teaching and extracurricular teaching activities. The total number of hours by academic year is 630.5, 477.9, 508.5, 541.3 and 519.9 hours, respectively, with the data for 2025/2026 based on the teaching plan.

The candidate’s pedagogical activity is also supported by the preparation of teaching literature. He is co-author of the university textbook “Organic Chemistry for Students in Non-Chemistry Degree Programmes” and author or co-author of four university teaching aids – “Terminological Dictionary of Organic Chemistry”, “Laboratory Manual in Organic Chemistry”, “Questions and Answers in Organic Chemistry”, and a second supplemented and revised edition of the terminological dictionary.

The training of researchers occupies an important place in his academic activity. Assoc. Prof. Marinov has supervised two successfully defended doctoral students – Romyana Prodanova-Kamaliyeva, who defended in 2017 a dissertation entitled “Synthesis and Biological Activity of Spirohydantoin Derivatives”, and Dimitar Stoitsov, who defended in 2025 a dissertation related to

NMR and vibrational spectra in the structural characterization of aromatic organic and organometallic coordination compounds.

At present, he also participates as a scientific supervisor in the training of three full-time doctoral students whose topics are related to the biological activity of synthetic heterocyclic compounds, potential biocides, and phenothiazine derivatives with potential biological activity.

I assess Assoc. Prof. Marinov's pedagogical qualifications and teaching activity as very good. They are characterized by a substantial teaching workload, teaching across a broad range of chemical disciplines, developed teaching literature, and consistent work in doctoral training.

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

The significance and recognition of Assoc. Prof. Marin Marinov's scientific results are confirmed by the submitted citation data for his publications. For the competition, 75 citations have been reported, of which 21 are in Q1 journals, 19 in Q2, 15 in Q3, 7 in Q4, 2 in SJR-indexed publications without an impact factor, and 11 in books. This citation profile shows that his results have been used and discussed in publications with high international visibility.

The scientific output submitted for the competition also demonstrates good international visibility. All 22 scientific publications appear in sources refereed and indexed in Web of Science and/or Scopus, with 1 publication in Q2, 8 in Q3, 10 in Q4, and 3 in SJR-indexed sources without an impact factor. The publications include papers in Crystals, Journal of the Iranian Chemical Society, Acta Chimica Slovenica, Anti-Cancer Agents in Medicinal Chemistry, Phosphorus, Sulfur, and Silicon and the Related Elements, and other international specialized journals. For example, the paper in Acta Chimica Slovenica is indexed in Scopus and Web of Science and was ranked Q3 for the respective year.

An additional indicator of the scientific impact of the publication activity is an h-index of 7 in Scopus, excluding self-citations. The reported citations include references in high-quartile publications, showing that some of the candidate's results have been incorporated into subsequent studies by international research teams.

On the basis of the submitted materials, I assess the significance and scientific impact of Assoc. Prof. Marinov's results as good. There are publications in internationally refereed and indexed journals, consistent citation activity, and citations in Q1 and Q2 journals, demonstrating the visibility of his research in the relevant scientific fields.

6. Significance of the contributions to science and practice. A reasoned assessment of the extent to which the candidate has a clearly defined research profile;

The submitted scientific works outline a clearly defined and consistently developed research profile in the field of organic chemistry, focused on the synthesis of new heterocyclic compounds, their structural characterization by modern spectroscopic methods, and investigation of their biological activity. This main area is complemented by studies on organometallic coordination compounds. On the basis of the submitted materials, I would summarize the candidate's contributions as follows:

I. Original Contributions

The synthesis of new heterocyclic organic compounds and the development of synthetic approaches for their preparation can be regarded as original contributions. New derivatives of spirohydantoins

and spirodithiohydantoin, 1,8-naphthalimides, naphthopyranones and phenothiazines have been obtained. Methods have been developed for the synthesis of hydrazones of cycloalkanespirodithiohydantoin, N3-acetyl derivatives of spirohydantoin, and new functionalized naphthalimide structures.

The studies on the preparation of new metal complexes of heterocyclic ligands, including platinum and ruthenium complexes, followed by structural and biological characterization, are also original in nature.

II. Methodological Contributions

The methodological contributions are primarily related to the integrated application of physicochemical and spectroscopic methods for reliable determination of the structures of the synthesized compounds. One- and two-dimensional NMR spectroscopy – ^1H NMR, ^{13}C NMR, COSY, HMQC, HSQC, HMBC, NOESY and DEPT – has been used in combination with IR, ATR, Raman and UV-Vis spectroscopy, elemental analysis and, in individual cases, quantum-chemical calculations. This integrated approach enables detailed structural assignment and confirmation of the obtained products.

This group of contributions also includes the combination of synthetic and structural studies with standardized methods for assessing biological activity, including agar diffusion assays for antimicrobial activity and cell-based tests for evaluating cytotoxic and antiproliferative effects.

III. Scientific Contributions

The scientific contributions consist in establishing relationships between the structure of the synthesized heterocyclic compounds and their physicochemical, spectroscopic and biological properties. New data have been obtained on the structural features of various classes of spirohydantoin, naphthalimide and phenothiazine derivatives, as well as their metal complexes.

Data have been obtained on the antibacterial, antifungal, cytotoxic and antiproliferative activity of a number of the synthesized compounds. For individual derivatives, activity against Gram-positive and Gram-negative bacteria, yeasts and molds has been established. Some of the investigated compounds have also shown potential antitumor activity, while a ruthenium complex exhibited a moderate cytotoxic effect on the studied retinoblastoma cell line.

IV. Applied Contributions

The applied aspect of the research is mainly related to the identification of newly synthesized organic compounds as potentially biologically active substances. The results of the antimicrobial studies show that some of the obtained naphthalimide and phenothiazine derivatives are active against a broad range of microorganisms, indicating the possibility of further development of these structures as potential antimicrobial or biocidal agents.

Studies on compounds with established cytotoxic or antiproliferative effects also have practical potential and may serve as a basis for future, more in-depth research in the field of biologically active substances. At this stage, however, the submitted materials more appropriately support the wording “potential for application” rather than a claim of already realized practical application.

Overall, I consider Assoc. Prof. Marinov's contributions to be logically connected, thematically consistent, and relevant to the scientific specialty “Organic Chemistry”. Particularly evident is the consistent progression from the synthesis and structural characterization of new molecules to the

evaluation of their biological properties, which gives the research both fundamental and applied scientific significance.

7. Critical remarks and recommendations

I have no substantial critical remarks regarding the submitted scientific, teaching and research-organizational activities of Assoc. Prof. Marin Neykov Marinov, PhD, Eng. The competition documentation is comprehensive and makes it possible to trace the main directions of his academic development.

As a recommendation for his future research, I would suggest increasing the number of publications in higher-quartile journals and expanding international scientific collaboration, which would contribute to greater international visibility and citation of the obtained results. These recommendations do not diminish my positive assessment of the candidate's overall scientific and academic activity.

8. Personal impressions and reviewer's opinion

I do not know Assoc. Prof. Marin Neykov Marinov, PhD, Eng., personally and therefore cannot provide a direct assessment of his personal qualities and day-to-day work as a lecturer and researcher. However, I have direct impressions of the results of his work as a doctoral supervisor, as I participated as a member of a scientific jury in the procedure for the defense of a dissertation by one of his doctoral students. My impressions of the dissertation presented at that time, together with my analysis of the materials submitted for the present competition, indicate consistency in scientific supervision, a good thematic relationship between the doctoral research and the scientific areas in which the candidate works, and an ability to supervise doctoral students successfully.

On the basis of the submitted materials, I assess Assoc. Prof. Marinov as an established lecturer and researcher with a clearly defined scientific profile, sustained publication activity, experience in leading research projects, and proven activity in doctoral training. His overall academic activity gives me grounds for a positive opinion regarding his participation in the competition for the academic position of "Professor".

CONCLUSION

On the basis of the analysis of the submitted materials and of the research, publication, teaching and research-organizational activities of Assoc. Prof. Marin Neykov Marinov, PhD, Eng., I consider that the candidate meets the requirements of the Development of Academic Staff in the Republic of Bulgaria Act, the Regulations for its Implementation, and the Regulations of the Agricultural University – Plovdiv for occupying the academic position of "Professor".

The submitted scientific output outlines a clearly defined and consistently developed research profile in the field of organic chemistry. The obtained results are of scientific and applied scientific significance and have been published in refereed and indexed international scientific journals. The candidate's scientific works have received recognition in the specialized literature, as confirmed by the submitted citation data. This is complemented by his extensive teaching activity, the teaching literature he has developed, his supervision of doctoral students, and his accumulated experience in leading and participating in research projects.

All of the above gives me grounds to assess POSITIVELY the overall scientific, pedagogical and academic activity of Assoc. Prof. Marin Neykov Marinov, PhD, Eng., and to strongly recommend that the members of the Scientific Jury support his election and that the Faculty Council of the Faculty of Plant Protection and Agroecology at the Agricultural University – Plovdiv elect him to the academic position of “Professor” in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.2. Chemical Sciences, scientific specialty “Organic Chemistry”.

Date:

Plovdiv

REVIEWER:.....

(Prof. Ivo Grabchev, DSc, Eng.)