REFEREE REPORT

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Associate Professor at the Institute of Organic Chemistry with Centre of Phytochemistry – Bulgarian Academy of Sciences (IOCCP-BAS)

reviewer according to IOCCP-BAS Director's Order № РД-09-125/23.06.2025

of the materials submitted for participation
in the competition for the academic position "**professor**"

at the Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences (IOCCP-BAS)

in the field of higher education **4. "Natural sciences, mathematics and informatics"**, professional field "**Chemical Sciences - 4.2, scientific specialty " Bioorganic chemistry, chemistry of natural and physiologically active substances**"

In the competition for the academic position "Professor", announced in the State Journal, issue no. 40 of 16.05.2025 and on the website of **the Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences (IOCCP-BAS)**, the only participated candidate Vanya Nikolova Mantareva, associate professor from the Institute of Organic Chemistry with Centre of Phytochemistry - Bulgarian Academy of Sciences (BAS-BAS) has submitted the necessary documents.

1. General presentation of the received materials

The materials submitted by Assoc. Prof. Vanya Mantareva on paper format and electronic media are in accordance with the Law for Development of the Academic Staff in the Republic of Bulgaria, the Regulations of the Bulgarian Academy of Sciences and the Regulations for Development of the Academic Staff of the IOCCP-BAS, and meet the criteria for holding the academic position of "professor".

The candidate has submitted a set of materials containing: 1) Application addressed to the Director of IOCCP-BAS for participation in the competition; 2) Scientific CV as per European model; 3) Reference according to a model dated from 18.07.2025 for fulfillment of the criteria of IOCCP-BAS for holding the academic position of "professor" (excel.xlsx & pdf); 4) Diploma for acquiring the educational and scientific degree "PhD", issued on 09.02.1999; 5) Diploma for acquiring the scientific degree "Doctor of Sciences" issued on 22.10.2021; 6) Certificate, issued on 31.03.2014, for awarding the academic position "Associate Professor" at the Institute of Physics and Chemistry-BAS; 7) Thesis abstract from 1998 of a dissertation for acquiring the educational and scientific degree "PhD"; 8) Thesis abstract from 2021 of a dissertation for acquiring the degree of Doctor of Science - DS); 9) Habilitation extended report on the scientific contributions and prospects for scientific research in Bulgarian; 10) Habilitation extended report translated in English; 11) List of all scientific works, with a distinction between publications for participation in the competition - a total of 90 publications, published between 1992 - 2025; 12) List of publications (6 papers published between 2021 - 2024) participating in the competition as an equivalent number of articles for a habilitation, which do not repeat those submitted in other competitions for holding academic positions and acquiring scientific degrees (indicator C); 13) List of publications (21 papers published between 2018 - 2025) participating in the competition under group of indicators D (Appendix 1), which do not repeat those submitted in other competitions for holding academic positions and acquiring scientific degrees; 14) List of citations that do not repeat those submitted in other competitions for holding academic positions and acquiring

scientific degrees. A total of 249 citations were noted on 44 cited publications; 15) Information about the supervision of a doctoral thesis (Dr. Meliha Aliosman defended her thesis in 2019), with supporting material; 16) List of participation in scientific conferences (14 participations in the period 2021-2025 - of which 10 in Bulgaria and 4 abroad); 17) Information on participation in research projects (9 projects - leader on 3 of them); 18) A folder with copies of the publications participating in the competition as an equivalent number of articles for habilitation, which do not repeat those submitted in other competitions for holding academic positions and acquiring scientific degrees (indicator C); 19) A folder with copies of the publications participating in the competition under group of indicators D (Appendix 1), which do not repeat those submitted in other competitions for holding academic positions and acquiring scientific degrees; 20) A folder with evidence of participation in scientific forums; 21) A separate folder with evidence of leadership and participation in projects, and contribution to acquired funds.

The candidate Assoc. Prof. Vanya Mantareva has provided a list of 90 scientific papers for the entire period of her creative work, of which 27 (6 papers under indicator C, and 21 papers under indicator D) are accepted for review. These 27 papers are dated after the defense of the DSc dissertation and are taken into consideration for the final grade, and 9 research projects, which are also taken into account in the formation of the final grade. The 27 scientific papers submitted for the competition were published after 2018, which demonstrates high publication activity. The publications are written by 3 to 36 co-authors, which is a consequence of the interdisciplinary nature of scientific developments.

2. Brief CV of the applicant

Assoc. Prof. Vanya Nikolva Mantareva graduated from the HCTI - Sofia (now: Chemical Technology and Metallurgical University (UCTM-SOFIA)) in 1990 with a degree in "chemical engineering". In 1998, she obtained her PhD degree and DSc in 2021 from the Institute of Organic Chemistry with Center for Phytochemistry at the Bulgarian Academy of Sciences. During the period 1991-1998 she held the position of Chemist; Senior Lecturer; PhD student. During the period 1999-2002 she has been a scholar in numerous scientific research units such as i) Institute of Macromolecular Chemistry, University of Bremen, Bremen, Germany (Prof. Dieter Wörle); ii) University of Louisville, James Brown Cancer Center, Louisville, Kentucky, USA (Prof. Alan Morgan); and iii) Autonomous University of Madrid, Sciences, Madrid, Spain (Prof. Tomas Torres), conducting scientific research as a Senior Researcher; Postdoctoral Fellow. During the period 2005-2014 she held the position of a Senior Assistant at the IOCCP-BAS. From 2014 to now she is an "associate professor" at the same institute.

3. Assessment of the applicant's contributions and scientific activity

Assoc. Prof. Vanya Mantareva has submitted a list and copies of 27 publications for the participation in the current competition, as well as an extended habilitation report on the scientific contributions both in Bulgarian and English. The articles can be grouped as follows: Q1 – 5 publications, Q2 – 7 publications, Q4 – 4 publications, publications with SJR without IF – 9 publications, as well as by number of co-authors (1 author – 1 book, 3 co-authors – 2 papers, 4 co-authors – 3 papers, 5 co-authors – 8 papers, 6 co-authors – 1 paper, 7 co-authors – 1 paper, 8 co-authors – 1 paper, 9 co-authors – 1 paper, 10 co-authors – 4 papers, 11 co-authors – 2 papers, 13 co-authors – 1 paper, 16 co-authors – 1 paper, 36 co-authors – 1 issue). The scientific works of Assoc. Prof. Mantareva have found a response in the international literature. To date, 965 citations have been noted (excluding self-citations according to Scopus) in refereed and indexed journals. The submitted citations considered in this competition are 249, i.e. noted over the period 1992-2025. At the time of writing current evaluation, a SCOPUS search shows that Assoc. Prof. Mantareva has an H-index of 17 for the entire period of her creative work. In addition

to the 249 citations submitted for current competition, an extended Scopus search shows that the noted citations (excluding self-citations by all authors) on 27 publications submitted under indicators C and D for the competition are 64 in total.
Some of Assoc. Prof. Mantareva's research has been popularized among the scientific community by a total of 14 participations in national and international scientific forums during the period 2021-2025. Of these, 4 were held in Turkey and 10 in Bulgaria.
Assoc. Prof. Mantareva has demonstrated experience in conducting research and leading research projects funded by national organizations. Based on the submitted habilitation abstract, Assoc. Prof. Mantareva is the leader of a total of 3 national projects. She is also a participant in 6 projects. Judging from the submitted materials, it is clear that Assoc. Prof. Mantareva is a productive scientist, capable of finding funds to conduct scientific research, working and leading research teams, as well as generating scientific output in accordance with generally accepted high international standards.

During the period of her professional realization, Assoc. Prof. Mantareva has been a supervisor of 1 successfully defended PhD thesis, that of Dr. Meliha Bahri Aliosman during the period 2014-2019;

Assoc. Prof. Mantareva's activity gives me reason to believe that she possesses the necessary competencies for the successful implementation of scientific supervision.

Analysis of the main scientific contributions

Assoc. Prof. Mantareva makes a self-assessment of her scientific contributions under an extended-habilitation report, which reflects the main conclusions found in the submitted publications. The candidate's scientific research activity fully corresponds to the direction of the announced competition. The research carried out falls into the field of organic synthesis and medicinal chemistry, and the contributions are of a fundamental and scientific-applied nature. In the extended reference, Assoc. Prof. Mantareva has summarized the main scientific contributions, grouped mainly in 4 areas of fundamental and applied nature:

i) New phthalocyanine complexes as photosensitizers for PDT: synthesis and photo - properties;

ii) Natural photosensitizers for photodynamic method: (1) cobalamin derivatives - properties and contributions; (2) anthraquinones for PDT;

iii) Conjugates of phthalocyanine complexes with proteins and enzymes: photo-properties and PDT effects;

iv) Development of the photodynamic method with phthalocyanines for socially significant diseases.

Research field 1

The detailed review of the results summarized by the candidate, reflected in the extended Habilitation Report, outlines the main focus of her research activity towards the synthesis and study of the photophysical properties of new phthalocyanine complexes as photosensitizers for PDT. Photosensitizers for PDT based on the phthalocyanine ring and biologically active fragments as substituent groups were obtained. Phthalocyanine complexes with cationic groups in a non-peripheral position were obtained by analogy with the peripheral derivatives from the candidate's previous work. Metal ions of palladium, nickel, gallium, zinc, aluminum, and lutetium were selected for coordination, contributing to the transition of the molecule to a triplet excited state. The new complexes, unlike previous structures, differ in the position of the substituents - methylpyridyloxy groups, which are in the four non-peripheral positions of the ring-shaped, symmetrical phthalocyanine molecule.

The choice of pyridyloxy group is justified by the positive charge at the *N*-atom after the quaternization with methyl iodide or dimethyl sulfate, which also changes the lipophilic nature of the phthalocyanine molecule.

Cationic and hydrophilic phthalocyanine complexes of palladium, nickel, aluminum and with substituents of symmetrically positioned methylpyridyloxy groups at a non-peripheral position have been obtained. In the synthesis of non-peripherally substituted phthalocyanines as complexes, a synthetic procedure with initial preparation of the ligand and subsequent formation of the complex was applied. It has been found that with this approach the complexes obtained in higher yields as opposed to those obtained by the direct synthesis from monomers (dinitriles), and also require fewer reagents for the synthesis and purification. Exceptions are lutetium and gallium complexes, which, due to steric hindrance, make any complex formation from a ligand inefficient even under "harsh" reaction conditions. The second series of phthalocyanine derivatives were obtained as complexes of lutetium with biologically active carbohydrate groups (galactopyranose and galactose) in non-peripheral positions, connected by an ether bond. A successful synthetic scheme is the direct cyclotetramerization to coordinate the lutetium ion. Zinc complexes with lipid fragment substituents (mestranol) have been prepared by direct synthesis (boiling, DBU catalyst) or indirectly, from the ligand after addition of $Zn(OAc)_2$ or $ZnCl_2$ without isolation of intermediates. In this case, a click reaction was also applied to connect the complex to the functional group (mestranol or galactose) through a triazole ring. The focus of the coordination with lutetium ion is the preparation of monomolecular complexes in a higher percentage of the crude product composition. Double-decker structures of phthalocyanine rings linked through lutetium are not suitable as PDT sensitizers. A total of 50 citations to publications were noted in research field 1.

Research field 2

The contribution of Assoc. Prof. Mantareva in the second research field is dedicated to studies on the properties of cobalamin. The results obtained have shown photosensitivity of both forms of cobalamin (cyano- and hydroxy-cobalamin), over a wide concentration range. Studies of PDT - the effect of cobalamins alone and in conditions of PDT with phthalocyanine complexes were conducted *in vitro* with tumor cell lines (MCF-7 and MDA-MB-231) and for comparison on healthy model cells (MCF-10A). The applied Zn(II)-phthalocyanines (3ZnPc & 4ZnPc), which differ in the position of the four groups - substituents for identical other experimental conditions, such as concentrations and light irradiation parameters (LED 660 nm; 50 J/cm^2 and 100 mW/cm^2), have shown dependence on the structural features of the complexes. The contribution of cobalamin is in reducing the dark toxicity of the main photosensitizer (3ZnPc), as well as phototoxicity in both types of model cell lines (tumor and normal cells). It was found that the observed effect was a result of selective accumulation in tumor cells, with an observed protective (shielding) effect to the applied radiation. The main conclusion from the conditionally called cobalamin-dependent PDT is that a positive effect of reducing the overall toxicity of the main photosensitizer (ZnPcs) is achieved, with improved selectivity, which is a prerequisite for subsequent minimization of major drawbacks and side effects in biological objects.

A total of 8 citations were noted on these publications (7 of them are duplicated with those from research field 1).

Research field 3

This scientific direction examines the preparation and characterization of physical conjugates based on phthalocyanines with biologically active protein (collagen hydrolysate) and enzyme (α-chemotrypsin), as native and physiologically functional biomolecules, and with transport system capabilities.

Both types of conjugates have been studied under physiological conditions for formation and stability of the double structures, and in concentration ranges acceptable for subsequent applications. The observed interactions are a result of the lipophilic - hydrophilic nature of the molecules, of the charge. The stability of the conjugates in a neutral environment (pH 7.4-7.8) has been proven. Their photophysical properties and a process of energy transfer from the biomolecule based on the amino acids tryptophan and tyrosine to the phthalocyanine with a fluorescence spectrum in the far-red region (> 690 nm), suitable for diagnostic and PDT purposes, have been established. The resulting conjugates with chymotrypsin and collagen hydrolysate were characterized in a comparative aspect with the pure phthalocyanine complexes containing them (GaPc1 & GaPc2) for photostability (BALB 3T3) and for biological photodynamic activity under *in vitro* conditions on tumor and normal cell lines (SH4 versus HaCaT, BJ). In summary, the results show: (1) an order of magnitude lower values of the main photophysicochemical parameters compared to those for pure phthalocyanines; (2) reduced cytotoxicity for conjugated phthalocyanines for both types of biomolecules; (3) PDT effect was observed at higher concentrations of phthalocyanines, respectively, and phototoxicity; (4) the conjugate with chymotrypsin showed lower toxicity in normal keratinocyte cells and (5) a major contribution to the PDT method are the obtained values for phototherapeutic index (PIF) and selectivity (SI) for the conjugates compared to the effect when applying pure phthalocyanine compounds.

A total of 13 citations were noted (all of which are duplicated with those from scientific field 1).

Research field 4

The accumulation of the complexes in bacterial cells was quantitatively assessed using a fluorescence method. The results were also confirmed by bacterial biofilm samples. Studies on photodynamic inactivation of a Gram (–) strain of *Flavobacterium hydatis*, which is the cause of huge losses in fish farms, were conducted using Pd(II) phthalocyanines with different positions of the functional groups. As a result of these studies, it was found that non-peripherally substituted complexes show complete inactivation at lower concentrations compared to their peripherally substituted analogues.

Scientific efforts are also directed at monitoring the effectiveness of PDT under different conditions of virus-host cell interaction. Research conducted at the Institute of Microbiology and Immunology-BAS shows that PDT is a reliable and unambiguous method for inactivating enveloped viruses for all stages of infection of host cells in experimental conditions.

The observation regarding the position of the substituents and the toxicity of the phthalocyanine was also confirmed in PDT studies with tumor cells. Cell culture experiments showed that non-peripherally substituted complexes exhibited higher toxicity than peripherally substituted complexes on various tumor and normal cell lines. According to the candidate's reference, her personal contribution to these studies is in the synthesis of new photosensitizers and as ideas for their application as working protocols.

A total of 40 citations were observed in field 4 (of which 28 are duplicated with those from fields 1 and 3).

All 27 scientific publications which the candidate uses for participation in this competition feature 64 citations (excluding self-citations) as of September 5, 2025, according to a Scopus search 6 scientific publications (**C6**, **D1**, **D9**, **D10**, **D17**, **D21**) are not found in the Scopus/Web of Science databases.

In conclusion, all scientific research conducted in recent years, as part of Assoc. Prof. Mantareva's research activities, has focused on third-generation photosensitizers for the PDT method. The photosensitizers being developed are based on the phthalocyanines with peripheral, non-peripheral and axial positions of the functional substituent groups. Phthalocyanine complexes of various metals have been obtained, where the ones that showed the best effect for the PDT method being the complexes of lutetium, palladium and gallium, studied in a comparative aspect with the same compounds as ligands and as zinc complexes. The substituents are functional groups - cationic and biologically active, and receptor-oriented, as well as specific for pathogenic microorganisms or tumor cells. Stable under physiological conditions, physical conjugates of phthalocyanines with native protein and enzyme biomacromolecules suitable for the transfer of the photosensitizer to target cells have been obtained. The main task for her future work in synthesis is the introduction of low-toxic "green" solvents. The medicinal properties of natural anthraquinones obtained from plants are well studied for tumor chemotherapy. Their studies as natural photosensitizers are in the initial stage of our studies for antiviral photodynamic applications.

Prospect for future research work

The synthesis of phthalocyanines using "green methods" (microwave irradiation) is envisaged, as well as the use of "eco-friendly solvents" (low-toxic solvents, ionic liquids and deep-eutectic mixtures).

Within the framework of a bilateral project with China, it is planned to study the mechanism of action of photosensitizers and the PDT method on the activity of tumor-targeted MMPs (24 in number). Currently, there are conflicting and mutually exclusive observations on the problem. Using the "organ-on-a-chip" model, new phthalocyanine complexes for the PDT method will be investigated.

In addition to the candidate's future research work, the study of natural photosensitizers as a basis for structural modifications, analyses and investigation of their properties for PDT purposes. Accordingly, future efforts should be focused on: i) studies of natural anthraquinones for PDT; ii) obtaining structural analogues of natural anthraquinones; iii) research on the possible applications of representatives of both groups of anthraquinone compounds for various photodynamic applications.

According to the documentation submitted by Assoc. Prof. Mantareva, her plans for future research are concentrated into 3 main areas, which fall into the field of organic synthesis and green chemistry.

i) Sustainable, green approaches to synthesis: development and advancement of a “green method” for the production of phthalocyanines;

ii) Studies of exosomes (LncRNA) and matrix metalloproteases (MMPs) as natural targets in tumor therapy;

iii) Natural photosensitizers as a basis for structural modifications, analyses and investigation of their properties for PDT purposes.

To a large extent, the above work plans are determined by the management and implementation of a research project with China, funded under "COMPETITION FOR PROJECTS UNDER BILATERAL COOPERATION PROGRAMS" - China, Mobility - 2024; topic: "Research on lung cancer with organ-on-a-chip technology for evaluation of photodynamic therapy with novel phthalocyanine photosensitizers through Bulgaria-China cooperation".

4. Assessment of the candidate's personal contribution

Out of the 27 submitted publications under indicators C and D, Assoc. Prof. Mantareva is a corresponding author of 11 publications, while first author of 10 publications, which reflects her participation in the investigation. Due to the interdisciplinary nature of the research, the scientific papers presented by Assoc. Prof. Mantareva include co-authors from both Bulgaria and abroad. The research conducted and the published results have scientific and applied contributions in the relevant fields of science.

In all 6 publications under indicator C, the candidate is first author and listed as the corresponding author. The publications under this indicator are published by MDPI, except for publication 6C, which is published by Heighten Science Publications Inc (HSPI) – The open access publisher.

According to the list of 21 publications in total under indicator D, Assoc. Prof. Mantareva is listed as a corresponding author on 5 publications (or 24% of them). In 4 of them (**1D** – book; **4D** - Front. Biosci. (Landmark Ed) 2024, 29(5): 168 - review article; **7D** - J of Biomedical Photonics & Eng 2021, 7 (4), 040202 – review article; **12D** - J. Phys.: Conf. Ser. 2023, 2487 (1), 012023 – conference paper) she is also first author.

The activities for each competition publication are summarized as follows:

Publication **1C** – Preparation of Zn (II) and Pd (II) complexes with phthalocyanines containing 4 quaternary substituents (*N*-methyl pyridoxy) at the periphery. Studies on gram-negative bacteria *Aeromonas hydrophila* (*A. hydrophila*).

Publication **2C** – Synthesis of analogues of the previous publication of Ga(III) phthalocyanines and study of conjugates with bovine hydrolyzed collagen as PDT agents.

Publication **3C** – Study of 3ZnPc, 4ZnPc and vitamin B12 on breast cancer cell lines (MDA-MB-231 and MCF-7), as well as comparison with normal cell lines.

Publication **4C** – Preparation of Pd(II) complexes with phthalocyanines, as in publication **1C**, where a difference in the position of the pyridine ring is observed according to the starting o-phthalonitrile. Investigation of the newly obtained complexes as PDT agents.

Publication **5C** – Preparation of analogues from publications **1C** and **4C**. Octa-methylpyridyloxy-substituted Zn(II)- and Ga(III)-phthalocyanines (ZnPc1 and GaPc1) were studied on human pigmented melanoma (SH4) and keratinocyte (HaCaT) cell lines.

Publication **6C** – Preparation of Zn(II) complexes containing 4 mestranol fragments at the periphery by cycloaddition via a “click” reaction using tetraazidoethoxy substituted Zn(II)-phthalocyanine. Investigation of photophysical and photochemical properties of the newly obtained compounds.

Publication **1D** – Book based on the candidate's long-term experience and work in the field of phthalocyanines and their application in PDT.

Publication **2D** - Review article.

Publication **3D** – Study of ZnPcMe (synthesis is reported in publication **1C**) and GaPcMe for photodynamic inactivation of human herpes virus *in vitro*.

Publication **4D** - Review article.

Publication **5D** – Synthesis of Pd(II) / Ni(II) phthalocyanine complexes. The synthesis of the palladium complexes has already been published in publication **4B**, but the nickel analogues are new. The *in vitro* photodynamic activity on two pathogenic bacteria, namely Gram (+) methicillin-resistant *Staphylococcus aureus* (MRSA) and Gram (-) *Aeromonas hydrophila*, was investigated.

Publication **6D**- 2-carbamido-1,3-indandione / no synthetic part.

Publication **7D** – Review article on phthalocyanines and their application in PDT from previous results of the group.

Publication **8D** – Review article.

Publication **9D** – Biocompatibility of Zn- and Ga- phthalocyanines. No synthetic part.

Publication **10D** – *In vivo* study of Zn- and Ga- phthalocyanines by analogy with the previous work. No synthetic part.

Publication **11D** – Considers the toxicity of CO.

Publication **12D** – Study of vitamin B12 as a photosensitizer.

Publication **13D** – Octa substituted ZnPc / GaPc. The synthesis is described in previous publications.

Publications **14D**-**21D** - Mainly examine the application of photosensitizers without describing the synthesis of new compounds. The research falls entirely within the field of biomedicine. Most of these 8 publications are reports (between 5 and 7 pages) from conference proceedings and online events from Bulgaria, Russia, Germany and the USA.

5. Critical remarks and recommendations

The publications presented are the result of work of a multidisciplinary nature, and it is not clear from the candidate's habilitation abstract what her personal contribution to them was. On page 7 only it is noted: "The results obtained are due to collaborations with various universities in Russia. My personal contribution to these studies is in the synthesis of new photosensitizers and as ideas for their application as work protocols."

I do not deny the personal contribution of Assoc. Prof. Mantareva in multidisciplinary works where organic synthesis is not present, but the candidate did not indicate it.

The synthetic part is limited to publications under indicator C (**1C**, **2C**, **4C**, **5C**, **6C**). Of these, a significant part appears in the dissertation of the candidate for the DSc degree, for example: publication **5D**, compounds **3**, **4, 5** and **6** are part (page 15 / Scheme 1.1.2 / compounds **7a** and **9a** of the DSc thesis abstract); publication **1C**, compound **3** as Pd(II) (p. 60 / Scheme 1.1.2 / compound **8a** of the dissertation); publication **4C**, compounds **4** and pPdPc (p. 60 / Scheme 1.1.2 / compounds **8** and **8a** of the dissertation); compounds **4** and **5** of publication **6C** (p. 40 / Figure 2.3.2 / compounds **7** and **8** of the abstract); compounds **7** and **8** of publication **7D** (p. 28 / Figure 2.1.2 / compounds **10**, **12**, **14**, **15**, **16** and **17** of the abstract).

From indicator C, publication **6C** is not found in the Scopus/Web of Science databases.

From indicator D, publications **1D**, **9D**, **10D**, **17D**, **21D** are also not found in the Scopus/Web of Science databases. Publications **9D** and **10D** do not have a DOI (Digital Object Identifier) numbering.

Publication **8D** is a 15-page review article by 36 authors (25 affiliations in total). According to the order of authors, Assoc. Prof. Mantareva is the 10th co-author without being listed as a corresponding author.

According to the reference submitted by the candidate, publications **17D** and **21D** have SJR, but even the titles themselves are not found in the Scopus/Web of Science databases.

According to indicator D, 10 out of the 21 publications are published in journals with SJR, but without IF. According to Scopus database these items are marked as "conference paper", whereas regularly they should appear as article. These are almost half of the scientific papers submitted by the candidate in this competition, which accordingly carry points when assessing them for reaching the minimum criteria. Publications **14D**-**21D** show 10-16 co-authors, where the candidate is in 6-9th place, without being listed as a corresponding author. They are not found in Web of Science, but they can be found in Scopus (as conference papers).

4 review articles and 1 book are included to the list of publications, which also contribute to the formation of the necessary points to cover the minimum requirements according to the regulations.

6. Personal impressions

I know Assoc. Prof. Mantareva as a colleague from the IOCCP-BAS. I have good impressions of her as a colleague and scientist. She is motivated, hardworking, and dedicated to her work, with ideas and prospects for development, with a wide range of interests in the field of natural sciences.

CONCLUSION

From the publications presented, it is evident that the candidate has established fruitful cooperation with research groups in Bulgaria and abroad. Obviously, she is visible and recognizable, which is indisputable proof that she works in a relevant scientific field. The documents and materials presented by Assoc. Prof. Vanya Mantareva meet the requirements of the Act on Development of the Academic Staff in Republic of Bulgaria, the Regulations for the Implementation of the Bulgarian Academy of Sciences and the Regulations of the IOCCP-BAS.

The candidate has presented a significant number of scientific works published after the defense of her "PhD degree" and "Doctor of Sciences - DSc". The candidate's works contain original applied contributions reflected in scientific journals. The results achieved by Assoc. Prof. Vanya Mantareva in scientific research activities comply with the specific requirements of the Regulations of the IOCCP-BAS.

After familiarizing with the materials and scientific papers presented in the competition and after analysing their significance, and the scientific, applied science and contributions contained in them, I give my **positive assessment** and recommend to the Scientific Jury to prepare a report-proposal to the Scientific Council of the IOCCP-BAS for the election of **Assoc. Prof. Vanya Nikolova Mantareva to occupy the academic position of "professor"** at the IOCCP-BAS in the professional field 4.2. Chemical Sciences, scientific specialty "Bioorganic Chemistry, Chemistry of Natural and Physiologically Active Substances".

Sofia, 22 September 2025 Reviewer:

/Assoc. professor Atanas Kurutos, PhD/