

## REVIEW

by DSc. Prof. Panteley Petrov Denev  
of the materials submitted for participation in the competition  
for the academic position of "professor"  
at Plovdiv University - "Paisii Hilendarski"

in: field of higher education 4. Natural Sciences, Mathematics and Informatics;  
professional field 4.2. Chemical Sciences (Organic Chemistry, Bioorganic Chemistry)  
announced for the needs of the Department of Organic Chemistry at the Faculty of  
Chemistry of Plovdiv University - "Paisii Hilendarski".

In the competition for "professor", announced in the State Gazette, issue 96/11.11.2025  
and on the website of Plovdiv University - "Paisii Hilendarski" at the Faculty of Chemistry,  
Assoc. Prof. Dr. Stoyanka Nikolova Atanasova, from the Department of Organic Chemistry,  
Faculty of Chemistry of Plovdiv University - "Paisii Hilendarski", participated as a candidate.

### **General presentation of the received materials**

By order No. RD-22-53 of 09.01.2026 of the rector of Plovdiv University - "Paisii  
Hilendarski", I have been appointed as a member of the scientific jury of a competition for the  
academic position of "professor" at PU in the field of higher education 4. Natural sciences,  
mathematics and informatics; professional direction 4.2. Chemical sciences (Organic chemistry  
and Bioorganic chemistry), announced for the needs of the Department of "Organic Chemistry"  
at the Faculty of Chemistry,

Only one candidate has been admitted to participate in the announced competition:  
Assoc. Prof. Dr. Stoyanka Nikolova Atanasova from Plovdiv University - "Paisii Hilendarski".

The set of materials on electronic media presented by Assoc. Prof. Atanasova is in  
accordance with Art. 77. (1) of the Regulations for the Development of Academic Staff at the  
University of Plovdiv - "Paisii Hilendarski" and includes the following documents:

1. Application
2. European format of CV
3. Higher education diploma
4. Doctoral diploma
5. Associate professor diploma
6. List of scientific publications
7. Reference minimum requirements
8. Declaration of authenticity
9. Abstract of materials (Bulgarian and English)
10. Habilitation reference (Bulgarian and English)
11. Self-assessment of contributions (Bulgarian and English)
12. List of citations
13. Service note internship
14. Certificate Faculty of Chemistry
15. Academic work
16. Scientific work service note NPD
17. Scientific work
18. Certificate additional requirements Faculty of Chemistry

### **Biographical data of the candidate**

In 1996, Assoc. Prof. Stoyanka Nikolova graduated with a Master's degree from the  
University of Shumen "Konstantin Preslavski" in the specialty - "Chemistry", and in 2003 she  
defended her educational and scientific degree "Doctor" before the Specialized Scientific

Council in "Organic Chemistry and Organic Technology" at the Institute of Organic Chemistry with a Center for Phytochemistry - Bulgarian Academy of Sciences.

Assoc. Prof. Nikolova began her work experience in 1996 as a teacher at the "P. R. Slaveykov" Secondary School - Dobrich. She began her teaching activity with students in 2004, when, after winning a competition, she was appointed as an assistant, and since 2005. she has been a chief assistant at the Plovdiv University "Paisiy Hilendarski". She conducts exercises and seminars in organic chemistry with students from the Faculty of Chemistry and the Faculty of Biology, as well as in the discipline "Chemistry of Medicinal Substances" for students of the specialty "Medicinal Chemistry"; "Analysis of Medicinal Substances" for students of the master's program "Medicinal Chemistry" and "Organic Analysis" for students of the master's program "Organic Chemistry". Since 2012 she has been an associate professor. She has been the supervisor of 52 graduate students in the specialties "Computer Chemistry", "Biology and Chemistry", "Chemistry and Physics", "Chemistry and English", "Medicinal Chemistry", as well as the supervisor of 6 doctoral students. She has participated in the scientific teams that have won national and international contracts funded by the National Science Foundation at the Ministry of Education and Science, by the Scientific Research Fund at the University "P. Hilendarski", from the Medical University-Plovdiv. He speaks English - excellent, Russian - excellent, Slovak - very good, German - basic.

Assoc. Prof. Nikolova has good organizational skills. She was the chairwoman of the organizing committee of the annual student scientific conference "Challenges in Chemistry", a member of the organizing committee of scientific conferences organized by the Faculty of Chemistry of Plovdiv University "Paisiy Hilendarski". She took part in the preparation and organization of "Evening of Chemistry", "Light Show" and "Night of Scientists". She has the ability to work with specialized chemical software: ChemDraw, AcdLabs, ChemWin, MestReC, SwissADME, PASS, etc. She is proficient in Microsoft Word, Microsoft Power Point, Adobe Acrobat, Foxit Reader, Adobe, InDesign, databases: MicrosoftAccess, MicrosoftExcel operating systems: Windows 10.

#### **Certificate of fulfillment of the minimum national requirements and the additional requirements specified in PRASTU**

Stoyanka Nikolova Atanasova is registered in NACID as an "associate professor" in the list of habilitated persons with scientometric indicators. For her participation in the competition, the candidate has declared the fulfillment of the minimum requirements for holding the academic position of "professor", specified in Table 1.

**Table 1. Implementation of national minimum requirements**

No.	Group of indicators	Minimum required number of points	Declared number of points
1.	A	50	<b>50</b>
2.	B	-	-
3.	C	100	<b>170</b>
4.	D	200	<b>475</b>
5.	E	100	<b>592</b>
6.	F	150	<b>192,1</b>

Based on the documents provided to me and the reference made in NACID, Web of Science and Scopus, I declare the accuracy of the data presented below for the minimum required points by groups of indicators for holding the academic position of "professor" in professional field 4.2. Chemical Sciences.

#### **Group of indicators A**

Content	Professor
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Indicator 1 Dissertation for the award of the educational and scientific degree „Doctor“	<b>50</b>
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The educational and scientific degree "Doctor" obtained by Stoyanka Nikolova on the topic "Synthesis of nitrogen derivatives" with the scientific supervisor Prof. DSc Stoyan Minchev Stoyanov is registered in NACID with diploma 28594/13.08.2003. Two publications have been entered in NACID for the minimum required number of points of 30, with total indicators of 30 points:

#### **Group of indicators C**

Indicators 4. Habilitation work - scientific publications in publications that are referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus)	Minimum points <b>100</b>	Declared points <b>170</b>
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For the group of indicators C, Assoc. Prof. Nikolova has presented a list, copies and doi addresses of eight scientific publications that are referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus). Seven of them fall into quartile Q1 and one into quartile Q2. In six of the publications, St. Nikolova is a person of correspondence, which shows her leading role in the research. The indicated publications correspond to the requirement for habilitation work.

8 publications with a total number of points of 170 are presented with a required minimum of 100 points.

#### **Group of indicators D**

7. Scientific publication in publications that are referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus), outside the habilitation thesis	Minimum points <b>200</b>	Declared points <b>475</b>
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For the group of indicators D, Assoc. Prof. Nikolova has presented a list, copies and doi addresses of twenty scientific publications that are referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus). Fifteen of them fall in journals that are ranked in quartile Q1, and five of the journals - in quartile Q2. All publications are related to the topic of the competition in professional direction 4.2. Chemical Sciences (Organic Chemistry, Bioorganic Chemistry).

The total points for group of indicators “D” are 475 with minimum national requirements for group of indicators “D” - 200 points.

#### **Group of indicators E**

Sum of points in indicator 11	Minimum points	Declared points
11. Citations in scientific publications, monographs, collective volumes and patents, referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus)	<b>100</b>	<b>592</b>

The list submitted by the candidate shows a total of 286 citations in articles indexed in Web of Science and Scopus. Copies of the author's user profile in these databases are presented as an appendix. A detailed list of links to the articles in which citations were found is presented.

Total number of points 592 points with a required minimum of 100

#### **Group of indicators F**

Assoc. Prof. Nikolova has submitted documents confirming that she has:

- led one national scientific project – 20 points
- participated in four national scientific projects – 30 points

- co-supervised two successfully defended doctoral students – 50 points
- attracted 190,400 leva for a scientific project funded by the National Science Foundation – 38.8 points

Three university textbooks in English have been published for foreign language training of medical students. The textbooks have an approved ISBN and a specified publishing house. In two of the textbooks she is a co-author (2X20 points) and in the third – the authors are three - 13.3 points

Total number of points 192.1 points with a required minimum of 150 points.

#### **Additional requirements of the Faculty of Chemistry**

Requirement for holding the academic position of "professor" - number of lecture hours	Auditory classes	Performance - number of hours taken for the last 5 years
	1800	1981

From the submitted certificate it is evident that Assoc. Prof. Nikolova meets the additional requirements of the Faculty of Chemistry of the "Paisiy Hilendarski" University, accounting for 1981 hours of lecture hours, with a required minimum of 1800 hours.

#### **General characteristics of the candidate's research and applied scientific activities**

The publications of Assoc. Prof. Nikolova related to her research and applied scientific activities are 72 in total, of which 57 are referenced in the Scopus and Web of Science databases. Hirsch index - 12. The number of independent citations of the publications from the last 5 years is 296, and she has participated in 19 international and 19 national conferences. The candidate has submitted documents for participation in 3 national scientific contracts, financed by the National Science Foundation at the Ministry of Education and Science, in 2 contracts, financed by the Scientific Research Fund at the P. Hilendarski University - Plovdiv and in 3 contracts, financed by the Medical University of Plovdiv.

In the announced competition for the academic position of "professor", Assoc. Prof. St. Nikolova participated with 28 articles published in journals indexed in world-renowned databases. Eight of them replace a habilitation thesis (Indicator B), the remaining 20 cover the requirements under "Indicator D" of the national minimum points of professional direction 4.2. Chemical Sciences, area 4. Natural Sciences, Mathematics and Informatics. The articles were published in journals indexed by Scopus and/or Web of Science with a total impact rank SJR – 24.065 and an impact factor IF -106.4.

The scientific research of Assoc. Prof. Dr. S. Nikolova, presented in scientific publications, can be summarized in two main scientific directions, described in the habilitation report:

1. Design and synthesis of new compounds with antispasmodic, anti-inflammatory and antimicrobial activity.
2. Preparation of silver nanoparticles and study of their biological activity.

#### **Design and synthesis of new compounds with antispasmodic, anti-inflammatory and antimicrobial activity**

For many years, the anticholinergic antispasmodic mebeverine has been used in the treatment of irritable bowel syndrome. Mebeverine acts by blocking calcium channels. At the same time, it exerts antispasmodic action and regulatory effects on intestinal function. The compound is a second-generation papaverine analogue, possessing direct myolytic activity by reducing the excessive contractility of smooth muscle cells.

The working group, in which Assoc. Prof. St. Nikolova participates, through the design and synthesis of the target compounds has focused its efforts on finding new therapeutic

strategies to influence established pharmacological targets or to synthesize new compounds acting in an alternative way for the treatment of irritable bowel syndrome. Among the promising directions is the development of hybrid molecules combining different pharmacophoric elements and optimization of the biological activity and safety of the newly synthesized molecules. Fragment modifications of mebeverine with different pharmacophoric functional groups were obtained. Functional groups were introduced, determined as a result of preliminary *in silico* calculations and possible pharmacokinetic properties. Based on them, structural changes were made in mebeverine at 4 key positions. The obtained compounds were structurally characterized by IR, NMR and high-resolution mass spectrometry (HRMS). A more thorough pharmacological evaluation of their antispasmodic, anti-inflammatory and antimicrobial activity was performed on the obtained new derivatives.

As more important contributions of a scientific nature, the following can be noted: the design of small molecules as antispasmodics was carried out and synthetic approaches for their preparation were found; the influence of the antispasmodic activity on the introduction of various substituents was studied; clear relationships between the molecular structure and biological activity were found for the synthesized compounds, which can serve as a basis for future rational design of biologically active compounds.

Contributions of a scientific and applied nature can be mentioned: the synthesis of twenty-eight derivatives; the measured antispasmodic activity of all synthesized compounds. It has been proven that all synthesized compounds do not affect the repeated acetylcholine response, unlike mebeverine; the adaptation of a quantitative approach for assessing the inhibition of albumin denaturation. The method is an indicator for determining *in vitro* anti-inflammatory activity, which has been confirmed by *ex vivo* evaluation, *in silico* calculations and molecular docking.

#### **Preparation of silver nanoparticles and study of their biological activity**

The interest in silver nanoparticles as carriers of active pharmaceutical compounds is due to their ability to be modified at the molecular level by various stabilizers and functional groups, which allow their targeting to specific cells, tissues or organs. This makes them applicable not only in conventional drug delivery systems, but also in advanced therapies such as gene therapy, immunotherapy and precision oncology. Among their main advantages are the possibility of controlling the kinetics of drug release, improved bioavailability, as well as the reduction of side effects by localization of action. The ability of silver nanoparticles to react with various biomolecules and to be modified for specific targeting provides the basis for the development of hybrid systems for intelligent drug release, responding to external or internal stimuli (such as pH, temperature or enzymatic activity).

The contributions of a scientific and applied nature relate to the development of a fast, completely green and ecological method for the synthesis of silver nanoparticles as drug or synthetic substance carriers; the optimization of the synthesis conditions of silver nanoparticles loaded with mebeverine, mebeverine precursors and phenindione and the study of the antispasmodic and anticoagulant activity of the immobilized nanoparticles; the study of the change in the fatty acid composition and tocopherols of nanoparticles obtained from a solution of *Spirulina platensis*, showing the relationship between the change in the composition of the extract and the preparation of nanoparticles.

For the period 2023–2025, Assoc. Prof. Nikolova was a reviewer of 93 publications. She is a member of the Union of Scientists in Bulgaria, Plovdiv branch and the Scientific and Technical Union. Under the Erasmus+ program, she gave lectures at the University of Alicante, Spain, 2013 and at the University of Warsaw, Poland, 2014.

The candidate - Assoc. Prof. Dr. Stoyanka Nikolova Atanasova covers the national minimum scientometric indicators in the professional field 4.2 Chemical Sciences, described in

the PPZRASRB and all indicators of the Regulations for RASRB of Plovdiv University "Paisiy Hilendarski", determining the requirements for holding the academic position of "professor". I declare that I have not found any data on plagiarism or incorrect interpretation of the results in the submitted scientific publications.

#### **Assessment of the candidate's teaching activity**

From the documents submitted for the competition, it is evident that Assoc. Prof. Dr. Stoyanka Nikolova Atanasova began her teaching career at the Plovdiv University "Paisiy Hilendarski" in 2004, successively holding the academic positions of "assistant" and "chief assistant" in the Department of Organic Chemistry. In 2012, she won the announced competition and held the academic position of "associate professor" in the same department.

During this time, she has spent over 2000 teaching hours with students from various specialties of the Faculty of Chemistry and Physics. The classroom work includes lectures, seminars and laboratory exercises in organic chemistry for the specialties "Biology and Chemistry", "Chemistry and English", "Natural Science Education", development of a course of lectures and exercises in "Bioorganic Chemistry", a course of lectures and exercises in the discipline "Organic Analysis" for the specialty "Analysis and Control", development of a course in the discipline "English for Chemists", as well as development of a cycle of lectures and exercises in "Biochemistry" in English for foreigners.

She has published three textbooks in English in co-authorship. The textbooks are written in accordance with the curricula adopted in the curriculum. They are intended for use by English-speaking students of the Medical University of Plovdiv. The textbooks can also be used for other professional fields that train students in English in the field of natural, technical and medical sciences. Where "Organic Chemistry", "Inorganic Chemistry" or "General Chemistry" are studied.

The assessment by the "Attestation Commission" at the Faculty of Chemistry is "very good", which coincides with the assessment of student opinion on the quality of teaching.

Assoc. Prof. Nikolova successfully strives to create a school of young scientists and students who will develop in the field of science outlined by her. She is a scientific supervisor or co-supervisor of 6 doctoral students, two of whom have successfully defended their dissertations, and the rest are in the process of studying. The scientific works of the doctoral students are registered in the National Center for Scientific Research and Development (NACID) and the indicated topics coincide with the scientific specialty of the announced competition. The doctoral students who defended their thesis currently hold the academic position of "chief assistant".

Over the past 13 years, she has been the scientific supervisor of 21 graduate students in the specialties of "Chemistry", "Biology and Chemistry", "Chemistry and English" and "Medical Chemistry". Her doctoral and graduate students have presented reports in 40 youth, doctoral and student scientific sessions.

The candidate - Assoc. Prof. Dr. Stoyanka Nikolova Atanasova meets all the requirements for teaching activities described in the Regulations for the Academic Staff of the Plovdiv University "Paisiy Hilendarski", which determine the requirements for holding the academic position of "professor".

#### **Conclusion**

The documents and materials presented by Assoc. Prof. Dr. Stoyanka Nikolova Atanasova meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LAADRB), the Regulations for the Implementation of the LAADRB, the Regulations for the LAADRB of the Plovdiv University "Paisiy Hilendarski", describing the manner of holding academic positions.

The candidate in the competition has presented a sufficient number of scientific works published after the materials used in the defense of the ONS "doctor" and for acquiring the

academic position "associate professor". The candidate's works contain original scientific and applied contributions that have received international recognition, as a representative part of them have been published in journals and scientific collections published by international academic publishers. Her theoretical developments have practical applicability. The scientific qualification of Assoc. Prof. Dr. Stoyanka Nikolova Atanasova is undoubted. The results achieved by her in scientific research activities fully comply with the specific requirements of the announced competition.

After familiarizing myself with the submitted documents and scientific papers, their significance, and the scientific and applied results contained in them, I give a positive assessment and recommend that a report-proposal be prepared by the scientific jury to the Faculty Council of the Faculty of Chemistry with a proposal for Assoc. Prof. Dr. Stoyanka Nikolova Atanasova to occupy the academic position of "professor" in the competition announced in issue 96/11.11.2025 in the scientific field 4. Natural sciences, mathematics and informatics, professional field 4.2. Chemical ("Organic Chemistry" and "Bioorganic Chemistry") for the needs of the Faculty of Chemistry at the Plovdiv University "Paisiy Hilendarski".

25.02.2026 г.

Prof. DSc. Panteley Denev