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To  
The Chair of the Scientific Jury,  
Issued by Order № P – 109-133/16.03.2026 г.  
of the Rector of Medical University – Varna  
Marin Drinov St. 55  
5000 Varna

In accordance with your Protocol №1/ от 27.03.2026 г.

(дата на I<sup>то</sup> заседание)

**Attached: Opinion**

for the competition of the academic position Associate Professor  
scientific specialty “Physical Chemistry with Colloid Chemistry”  
announced for the needs of the Department of Chemistry,  
Faculty of Pharmacy, Medical University – Varna  
published in the State Gazette, issue no. 6/16.01.2026..

**Reviewer:** Assoc. Prof. Diana Atanasova Dobрева, PhD

Scientific Specialty: Chemistry

Institution: Medical University "Prof. Dr. Paraskev Stoyanov" – Varna

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## OPINION

In the announced competition for the academic position of Associate Professor at the Department of Chemistry, Faculty of Pharmacy, Medical University – Varna, *there is only one candidate* – *Aneliya Tsvetanova Gerasimova-Peneva*, PhD, currently serving as Chief Assistant at the same department.

At the First Meeting of the Scientific Jury (held on 27.03.2026), it was decided to reject the candidacy of Penko Kolev Papazov (who submitted an incomplete documents set, only in hard copy), with the reasons duly recorded.

The competition for the academic position of Associate Professor was announced in full compliance with the regulatory requirements and those specified in the Regulations on the Development of the Academic Staff at MU-Varna.

The candidate Aneliya Gerasimova-Peneva meets the requirements for the academic position of Associate Professor:

- Holds an educational and scientific doctoral degree;
- Has submitted the required number of publications equivalent to a habilitation thesis;
- Has provided the necessary number of original research publications;
- Possesses the required teaching experience as assistant professor and years of service

I will present my statement based on the information provided by the candidate, in accordance with the uniform state requirements and the Regulations on the Development of the Academic Staff at Medical University – Varna.

### **I. Brief biographical data and analysis of the candidate's career profile**

Dr. Anelia Tsvetanova Gerasimova-Peneva was born on 28.03.1987 in Provadia, Varna Province. Between 2006 and 2010 she completed her undergraduate education with a Bachelor's degree in Chemistry, and between 2010 and 2011 she obtained a Master's degree in the same field at Shumen University "Bishop Konstantin Preslavsky". Since 2016 she has been a doctoral student on an individual study plan at the Department of Chemistry, Faculty of Pharmacy, Medical University "Prof. Dr. Paraskev Stoyanov" – Varna, conducting research for a dissertation entitled "Kinetic Behaviour of Foam Films from Aqueous Solutions of Bovine Serum Albumin and n-Dodecyl- $\beta$ -D-Maltoside". Following a successful defence, she was awarded the educational and scientific degree of Doctor of Chemistry in the specialty of Bioorganic Chemistry, Chemistry of Natural and Physiologically Active Substances.

Her professional career began in 2010–2011 as a Junior Specialist (Chemist) – second grade at the Department of Chemistry, Faculty of Natural Sciences, Shumen University "Bishop Konstantin Preslavsky". From 2011 to 2012 she worked as an Assistant in Analytical Chemistry at the same university, and from 2012 to 2018 she served as an Assistant in Physical Chemistry with Colloid Chemistry at the Department of Chemistry, Faculty of Pharmacy, Medical University "Prof. Dr. Paraskev Stoyanov" – Varna. Since 2018 she has

been a Chief Assistant (and Administrative Assistant of the department) in the same discipline at MU-Varna.

Dr. Gerasimova-Peneva enhances her professional level through participation in international training courses: the Training Course of the ECIS and COST on "Fundamentals of Colloids and Interfaces" (June 2013, Potsdam-Golm, Germany) and the ECIS Training Course "Colloids and Medical Applications" (31 August – 1 September 2013, Sofia, Bulgaria), as well as through the acquired specialisation in Theoretical Foundations of Medical Chemistry (MU-Varna, No. 025616/07.07.2022).

*The analysis of the biographical data clearly highlights consistency and systematic progression in the candidate's development and professional advancement, having passed through all stages of growth as both an educator and a researcher.*

## **II. General description of the materials submitted for the competition**

For her participation in the Associate Professor competition, Chief Assistant Professor Anelia Gerasimova-Peneva has presented 20 full-text scientific publications in international journals (Q1–Q4), focused on biologically active substances from extracts, essential oils, and algae, as well as phycotoxins in Black Sea mussels. The presented publications are indexed in Scopus and/or Web of Science (Cosmetics, Applied Sciences, Plants, Life, Foods, International Journal of Molecular Sciences – 2019–2025). The accumulated total impact factor (IF = 48.26, according to the attached reference report) of the articles included in the competition is substantial and demonstrates the quality of the scientific contribution. Three additional publications, not included in the contribution toward the minimum scientometric requirements for the competition, have also been presented.

## **III. Evaluation of the candidate's scientific works for overall academic development**

### ***✓ General characteristics of the scientific output and publication activity***

The scientific output with which Chief Assistant Professor Anelia Gerasimova-Peneva participates in the Associate Professor competition is substantial. The candidate's research activity is focused in the field of bioorganic and colloid chemistry. The main areas of emphasis include biologically active substances from extracts and essential oils, applications of microalgae in the food, pharmaceutical, and cosmetic industries, as well as the determination of phycotoxins in Black Sea mussels. The conducted studies can be divided into three major research направления. I acknowledge and highly evaluate the merits of the scientific and applied contributions listed in the author's reference report, as follows:

### **Scientific contributions:**

- Bioactive substances from extracts and essential oils (about 45% of the publications)

A comparative chemotype and functional evaluation of essential oils from Bulgarian *Matricaria recutita* L. and *Chamaemelum nobile* L. was performed. The dominance of  $\beta$ -farnesene and chamazulene (German chamomile), as well as isobutyl angelate (Roman chamomile), was demonstrated, together with higher antioxidant activity (ABTS) and SPF values (26–27).

The essential oil of *Hypericum perforatum* L. from Bulgaria was characterized by GC-MS (43.55% monoterpenes,  $\alpha$ -pinene 27.52%), showing strong antibacterial activity against *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*, as well as anti-inflammatory effects surpassing those of prednisolone and aspirin.

A multispectroscopic approach (Raman, IR, fluorescence matrices) was developed for metabolic profiling of *Moringa oleifera*, identifying hydroxyl groups (3450–3200  $\text{cm}^{-1}$ ) and lignocellulosic structures.

The phytochemical profile of *Passiflora caerulea* L. (Bulgaria) was investigated, revealing  $\beta$ -sitosterol, as well as high levels of potassium (36,179  $\text{mg kg}^{-1}$ ) and magnesium (5,064  $\text{mg kg}^{-1}$ ) in leaves, alongside strong antioxidant (DPPH, FRAP) and antimicrobial activity.

- Application of microalgae in the food and beverage industry (about 45% of the publications)

The kinetics of convective drying of fruit bars enriched with *Chlorella* and *Spirulina platensis* was optimized (9–12 mm, 60–65°C), identifying a second critical point and optimal sensory parameters (score >9).

Ca(II)-alginate beads with inulin (6%) were synthesized as an optimal encapsulating agent for phycocyanin across a wide pH range.

The emulsifying activity of *Spirulina platensis* (12%) in oil-in-water (O/W) emulsions (40–60% oil phase) was established, demonstrating high stability and pseudoplastic behavior.

Phycocyanin was characterized using IR and NMR spectroscopy, and QSAR and SwissADME analyses confirmed oral bioavailability and low DNA binding affinity.

- Phycotoxins in Black Sea mussels (about 10% of the publications)

The first assessment of lipophilic phycotoxins (YTX, PTX2) in *Mytilus galloprovincialis* (2017–2018) was performed, with the highest YTX levels detected in farmed mussels (1.64  $\text{mg/kg}$  in 2018). An empirical conversion factor of 5.36 for YTX from hepatopancreas was established, confirming safety (ARfD  $\gg$  0.006  $\mu\text{g/kg}$ ).

All contributions were published in Q1–Q4 peer-reviewed journals (Cosmetics, Foods, Plants, Life) with impact factors, demonstrating an interdisciplinary approach and significant applied potential.

### **Applied contributions:**

The following contributions in the scientific output of Assoc. Prof. Aneliya Gerasimova-Peneva are of a clearly applied nature:

- The importance of green methodologies for cosmetics and dietary supplements has been emphasized through GC-MS profiling of Bulgarian chamomile species (SPF 26–27), *Hypericum perforatum* (showing superior activity compared to prednisolone), and *Moringa/Passiflora* for sensitive skin applications. The multispectroscopic control (Raman/IR) of *Moringa oleifera* is considered ready for implementation in herbal supplement production.

- Food functionalization processes have been optimized through modeling of drying kinetics of fruit bars enriched with Chlorella/Spirulina (60°C, 9 mm). Ca-alginate beads with inulin were developed for phycocyanin stabilization (pH 4.8–9), and Spirulina (12%) was tested as an emulsifier (100% stability), enabling potential use in food and supplement fortification.

- Safety assessment was conducted through dose calculations for radionuclides (*Sambucus nigra*), evaluation of phycotoxins in mussels (conversion factor 5.36), and QSAR analysis of phycocyanin for oral application.

These contributions establish a direct link with the priorities of the Medical University of Varna – colloidal systems, bioactive substances, and food safety, with applications in cosmetics, pharmacy, and the food industry.

*The most significant contribution is considered to be the continuity and systematic nature of the research, which began with the chemotype characterization of Bulgarian essential oils and microalgae, continued with the optimization of colloidal systems for the stabilization of bioactive compounds, and culminated in the safety assessment of their use in cosmetics and dietary supplements. In this way, the work provides new and up-to-date scientific knowledge supporting the development of sustainable formulations and food safety.*

✓ *Scientific activity – dissemination and application of the candidate’s scientific and practical achievements within the scientific community.*

In addition to the presented publications, Assoc. Prof. Aneliya Gerasimova has actively participated in sixteen national and seven international scientific forums, where she has presented to the scientific community the results of her individual and collaborative research.

✓ *Participation in the implementation and management of projects*

During the period 2010–2026, Dr. Gerasimova-Peneva has participated in fifteen national research projects. The full-text publications submitted in the present competition are thematically related to most of these projects.

#### **IV. Evaluation of the monographic work or equivalent publications submitted for participation in the competition for “Associate Professor”.**

One of the key requirements for participation in a competition for the academic position of “Associate Professor” is the submission of a monograph or an equivalent number of scientific publications comparable to a monographic work. In this regard, the candidate meets the requirements set out in the Regulations for the Development of the Academic Staff of the Medical University of Varna, as a total of 10 scientific articles published in international journals are presented. These publications carry the necessary number of points to fulfill the national requirements for a habilitation work.

- 2 publications in Q2: Cosmetics;
- 5 publications in Q3: Appl. Sci., Nat. Prod. Commun., Food Sci. Appl. Biotech., J. Chem. Technol. Metall., Bulg. J. Agric. Sci.;

- 3 publications in Q4: Bulgarian Chemical Communications.
- Overall, the selected publications contribute a total of 156 points, which significantly exceeds the required minimum of 100 points under indicator B.

The assessment of equivalence to a monographic work depends not only on the number of publications but also on the nature of the studies and the significance of the obtained results.

A review of the submitted 10 publications clearly highlights the main directions of the aforementioned scientific and applied contributions (chemotypes of essential oils, colloidal systems for microalgae, safety assessment of herbs and mussels). The selected articles trace the chronological development of Dr. Gerasimova-Peneva's scientific activity—from characterization (2019–2024), through optimization (2024), to applications (2025).

I evaluate the results presented in the scientific research as having high potential for application in cosmetics, the food industry, and healthcare. Of particular importance is the use of green methodologies (ultrasound-assisted extraction, multispectroscopy), validated analytical accuracy (GC-MS, QSAR), and environmental sustainability.

This provides grounds for appropriately recognizing the candidate's achievements, which I hope will continue to be further expanded and complemented over time.

*In conclusion, I confidently accept that the presented 10 scientific articles, both in terms of number, scope, and content, are equivalent to a habilitation thesis.*

#### **V. Citation impact of the candidate's publications in national and international literature (publication profile / scientific visibility).**

For the present competition, a list of citations comprising 65 entries has been submitted. This number significantly exceeds the minimum requirements for occupying the academic position of "Associate Professor," representing 260% of the required threshold.

#### **VI. Comprehensive qualitative assessment of the teaching and methodological activity, including scientific supervision of students, doctoral candidates, and residents/specialists.**

One of the key requirements for the academic position of "Associate Professor" is the quality and quantity of teaching activity, ensuring a high educational and scientific level for students.

The assessment of the teaching activity of Chief Assistant Prof. Gerasimova is as follows:

1. According to Certificate No. 099-437/438 (26.01.2026, Medical University of Varna), Aneliya Gerasimova-Peneva has 14 years, 1 month, and 14 days of professional experience in the specialty.
2. The average annual teaching workload for the last five academic years (as presented in the academic reference) is 558.6 hours, compared to the standard of 360 hours according to the decision of the Academic Council of the Medical University of Plovdiv. This corresponds to an average annual workload of 155% according to the submitted evaluation card.
3. Participation in teaching materials – 4 co-authored educational resources with colleagues from the Department of Chemistry at MU-Varna, including the textbook “Colloid Chemistry: Lectures, Problems and Laboratory Exercises” (2025, MU-Varna), the textbook “Physical Chemistry: Lectures, Seminars, Problems and Laboratory Exercises” (2020, Steno–Varna), as well as the study guides “Collection of Problems for the Entrance Exam in Chemistry” and “Collection of Test Questions for the Entrance Exam in Chemistry” for MU-Varna.
4. Participation in the preparation of laboratory and seminar exercises for the course “Physicochemical and Colloid Chemistry” for the Pharmacy program.
5. Supervision of a diploma student – Natalia Hristova (2013), Department of Chemistry, Shumen University “Episkop Konstantin Preslavski”.
6. Administrative assistant at the Department of Chemistry from 2018 to the present.

*The information provided by the candidate regarding her teaching activity corresponds to the requirements for academic workload and demonstrates strong engagement in the educational process, as well as efforts to enhance students' level of knowledge and awareness through the provision of teaching materials and study aids.*

## **VII. Critical remarks and recommendations**

I have no substantial critical remarks regarding Chief Assistant Prof. Gerasimova-Peneva. As a reviewer of the candidate's documentation, I acknowledge the high applied potential of the research. However, I note the need for a clearer delineation of her individual contribution in co-authored publications, particularly in cases with a large number of authors and when she is not listed as leading or corresponding author.

I would also recommend improving the academic style of the submitted reports, as well as integrating the research topics into more coherent research lines within the field of “Physicochemical and Colloid Chemistry,” supported by fundamental models. Furthermore, it would be beneficial for the candidate to assume a stronger leadership role by developing an independent research agenda and initiating her own scientific projects.

## **VIII. Overall assessment of the candidate's compliance with the minimum national requirements**

Based on the submitted documents of Chief Assistant Prof. Aneliya Gerasimova-Peneva, and in view of the mandatory quantitative criteria and scientometric indicators in accordance with the Regulations for the Academic Staff Development at the Medical University of Varna, I consider that the candidate meets the minimum national requirements and is eligible to occupy the academic position of "Associate Professor".

With a minimum required threshold of 400 points across criteria A1 to D11, the candidate presents a scientific output totaling 572 points. Thus, the candidate significantly exceeds the mandatory minimum requirements (by 43%) in terms of publication activity, citations, project involvement, and teaching activities.

In addition, a patent application has been submitted as part of the overall contributions, which serves as a positive complementary indicator of the applied nature and practical relevance of the presented scientific research.

**IX. The candidate meets the mandatory and specific requirements, as well as the scientometric criteria, for occupying the academic position of Associate Professor**

*Based on the analysis of the submitted documents and information covering the candidate's teaching, academic, and research activities, as well as the effectiveness of her efforts in advancing knowledge and experience in accordance with the regulatory requirements and the Regulations for the Development of the Academic Staff at the Medical University of Varna, I respectfully submit to the esteemed Scientific Jury my assessment that Dr. Aneliya Gerasimova-Peneva is duly qualified to occupy the academic position of "Associate Professor" at the Department of Chemistry, Faculty of Pharmacy, Medical University of Varna.*

Prepared by:

Заличено на основание чл. 5,  
§1, б. „Б“ от Регламент (ЕС)  
2016/679

/Assoc. Prof. Diana Dobрева, PhD/

08.05.2026

Varna