O P I N I O N

By Prof. Dr. Iliyan Ivanov Ivanov
Faculty of Chemistry, “Paisii Hilendarski” University of Plovdiv
Member of the scientific jury, according to order RD – 22-52/09.01.2026
of the Rector of the “Paisii Hilendarski” University of Plovdiv, Plovdiv

ABOUT: a competition for occupying the academic position of *Professor* in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.2 Chemical Sciences (Physical Chemistry), announced in the State Gazette, issue 96/11.11.2025.

One candidate has been admitted to participate in the competition – Assoc. Prof. Dr. Nina Dimitrova Dimcheva. The documents submitted by Assoc. Prof. N. Dimcheva for participation in the competition, both in paper and electronic form, are in full compliance with the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB) and the Regulations for the Development of the Academic Staff of "Paisii Hilendarski" University of Plovdiv.

Brief biographical data and professional development

Assoc. Prof. Dr. N. Dimcheva is an established university lecturer and researcher in the field of Physical Chemistry, with more than thirty years of professional experience in the academic and scientific sphere. Her academic path began with the completion of her higher education with a Master’s degree in Chemistry (specialization in Theoretical Chemistry and Physical Chemistry) at the Faculty of Chemistry of Sofia University "St. Kliment Ohridski". Her professional career is closely connected with the Faculty of Chemistry at Plovdiv University "Paisii Hilendarski". She has successively held the academic positions of Assistant Professor, Senior Assistant Professor, Chief Assistant Professor, and Associate Professor (Physical Chemistry – Biocatalysis and Bioelectrochemistry, since 2006). In 2001, after completing her PhD studies under the supervision of Assoc. Prof. Dr. Elena Horozova and successfully defending her dissertation before the Higher Attestation Commission, she was awarded the educational and scientific degree “Doctor” in the scientific specialty Physical Chemistry. Her doctoral research focused on studies of enzymatic and electrochemical reactions involving enzymes immobilized on carbon materials, which were subsequently further developed and deepened in her later research. An important element of her professional development includes research specializations abroad (postdoctoral training in Germany and Sweden), aimed at expanding her scientific expertise and

mastering modern research methods and approaches. The main teaching activity of Assoc. Prof. Dimcheva is focused on education in Physical Chemistry. She has excellent proficiency in English.

Research evaluation

The research activity of Assoc. Prof. Dr. Nina Dimcheva is characterized by high publication productivity, thematic consistency, and a clearly expressed interdisciplinary profile in the fields of physical chemistry and materials science. For participation in the competition, the candidate presents a total of 38 publications, of which six articles are submitted as a habilitation thesis, two book chapters, two teaching manuals, and one patent. Of these, 31 articles are published in journals with an impact factor indexed in WoS and Scopus, while the remaining publications are indexed in Scopus. A substantial part of the publications fall within the first quartile (Q1 – 10 publications) and second quartile (Q2 – 13 publications), which is an indicator of the relevance and significance of the research presented in them. Further evidence of this is the recorded independent positive citations – more than 680, and a corresponding h-index of 17 (WoS) / 15 (Scopus). These indicators significantly exceed the minimum national requirements for holding the academic position of *Professor* and demonstrate international visibility and a sustained scientific presence.

Fulfillment of the minimum required points by groups of indicators for the academic position of *Professor*:

Group of indicators	Professor	Candidate data
А	50	50
Б	-	-
В	100	110
Г	200	590
Д	100	120
Е	150	248
Total	600	1118

The scientific interests of Assoc. Prof. Dimcheva can be systematized into two main, interrelated directions:

- electrocatalysis and modification of electrode surfaces;
- heterogeneous biocatalysis and bioelectrochemistry.

In the first direction, methodologies have been developed and optimized for the electrochemical deposition of mono- and bimetallic nanostructures (Pd–Pt, Pd–Au, Au, Rh, Os, etc.) on various electrode materials, and the relationship between the composition, morphology, and electrocatalytic activity of the obtained materials has been investigated. Quantitative relationships between the synthesis conditions and catalytic characteristics have been established, the formation of alloys has been demonstrated, and a significant increase in electrocatalytic activity with decreasing nanostructure size has been shown. These results represent a fundamental contribution to the field of electrochemistry of nanomaterials.

In the second direction, Assoc. Prof. Dimcheva develops original approaches for the immobilization of enzymes on electrode surfaces with the aim of creating electrochemical biosensors and bioelectrocatalysts. Biosensors have been developed for glucose, xanthine, urea, pesticides, ascorbic acid, and other biologically significant compounds, characterized by high selectivity, low detection limits, and long operational stability. Particularly significant is her contribution to the development of third-generation biosensors and to the construction of an enzymatic biofuel cell operating with lactose as fuel. Additional contributions include research on nanozymes (biomimetic catalysts), composite electrode materials, and electrochemical methods for the determination of peroxide compounds, as well as studies on the corrosion resistance of metallic coatings. The existence of a patent for a bioelectrocatalytic method for the quantitative analysis of L-ascorbic acid demonstrates the applied potential of the achieved results.

The scientific output of Assoc. Prof. Dimcheva is distinguished by a clearly developed thematic line that builds upon the results of her doctoral dissertation and its subsequent development during her career as an Associate Professor. Her publications demonstrate both fundamental contributions in the field of electrochemistry and nanostructured materials and significant applied potential in bioanalytics and energy sources.

The impressive project activity of Assoc. Prof. Dimcheva directly supports the development of her research in bioelectrochemistry, electrocatalysis, and biosensor technologies, contributing to the expansion of her scientific infrastructure and publication activity. Assoc. Prof. Dr. Nina Dimcheva actively participates in nationally and internationally funded research projects. She is a researcher and work package leader in projects supported by the European Structural Funds and the Recovery and Resilience Facility (CoE “PERIMED”, “PERIMED-2”, DUEcoS), which demonstrates international project engagement and a high level of trust in her expertise. She is the principal investigator of two projects funded by the National Science Fund (“FOQUS” and “ChEnCat”), as well as a participant in other national research projects.

Based on the presented materials, it can be reasonably concluded that the research activity of the candidate fully meets and significantly exceeds the requirements for holding the academic position of Professor, demonstrating a high scientific level, originality of research, and international recognition.

Evaluation of teaching and learning activities

The teaching activity of Dr. N. Dimcheva is characterized by active and consistent engagement in student education and in the development of the educational process at the Faculty of Chemistry. In the period 2019–2025, she has carried out a substantial teaching load of over 2500 hours, including lectures, seminars, and laboratory exercises in both fundamental and specialized disciplines. The courses

she teaches, “Physical Chemistry” (Parts I and II) and “Electrochemical Methods for Analysis,” are intended for students from various specializations in the Bachelor’s degree program. Her teaching is distinguished by systematic presentation, scientific depth, and a clearly expressed connection between theoretical knowledge and its practical application.

A significant contribution of the candidate is her participation in the development and updating of curricula, as well as in the preparation of teaching materials for laboratory work. Dr. Dimcheva is a co-author of two teaching manuals used in the training in physical chemistry: “Exercises and Problems in Applied Physical Chemistry (Master’s course; sections Biocatalysis and Electrocatalysis – 9 laboratory exercises)” and “Laboratory Manual for Physical Chemistry and Colloid Chemistry” (second revised and expanded edition).

Her extracurricular academic activity includes active participation in the supervision of graduate and PhD students, participation in state examination committees, as well as in scientific juries and academic procedures.

Overall, the teaching activity of Assoc. Prof. Dimcheva is characterized by consistency, high academic responsibility, and a commitment to integrating modern scientific achievements into the educational process, which contributes to the high-quality training of chemistry students.

Conclusion

The results achieved by Assoc. Prof. Dr. Nina Dimcheva in both teaching and research activities significantly exceed the minimum national requirements as well as the additional requirements of the Faculty of Chemistry at “Paisii Hilendarski” University of Plovdiv.

After reviewing the materials and scientific works submitted for the competition, and analyzing their significance and the scientific and applied contributions contained therein, I find it justified to give my positive evaluation and to recommend that the esteemed Scientific Jury prepare a report to the Faculty Council of the Faculty of Chemistry for the election of Assoc. Prof. Dr. Nina Dimitrova Dimcheva to the academic position of *Professor* at “Paisii Hilendarski” University of Plovdiv, in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.2 Chemical Sciences.

27.02.2026 Opinion prepared by**: .....**

Plovdiv

Prof. Dr. Iliyan Ivanov