



## ACADEMIC REVIEW

by Prof. DSc Vassil Borissov Delchev ,  
from Department of Physical chemistry, University of Plovdiv,  
on the materials deposited for the participation in the competition  
for the academic position "professor"

*Field of higher education:* 4: Natural sciences, mathematics and informatics  
*Professional area:* 4.2. Chemical sciences  
*Scientific field:* Physical chemistry

*Candidate:* Assoc. Professor PhD Nina Dimitrova Dimcheva – Dept. Physical chemistry, University of Plovdiv (PU)

*Competition announced in the State Gazette:* issue 96/11.11.2025.

*For the needs of the Department:* Physical Chemistry, Chemical Faculty, PU

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Rector's order for the constitution of the Scientific jury (SJ): **ПД-22-52/09.01.2026.**

Decision of the first meeting of the Scientific jury: **to be a Chairman of the SJ, to write an academic statement.**

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The only candidate in this competition is Assoc. Prof. Dr. Nina Dimcheva. The materials on the procedure of Assoc. Prof. Dimcheva are presented in digital format (on a virtual external platform) and include:

- 1) a request to the Rector of the University of Plovdiv for the admission to the competition for the academic position "professor";
- 2) *curriculum vitae* - standard format;
- 3) diplomas for Master (since 1990) and Doctor (since 2001) and a certificate for scientific rank "associate professor" (since 2006);
- 4) a complete list of publications and papers under the procedure;
- 5) a declaration for compliance with the Minimum national requirements and the Additional requirements of the Faculty of Chemistry;
- 6) a declaration for originality and authenticity of scientific works;
- 7) summaries of scientific papers in Bulgarian and English;
- 8) additional information (habilitation, scientific contributions, teaching activities and extracurricular employment, text books);
- 9) lists of citations of scientific papers and participation in projects;
- 10) a certificate of work experience.

The submitted documents are in a full compliance with the Regulations for the development of academic staff at the University of Plovdiv, Art. 77 (1).

### *Biographic information*

Assoc. Prof. N. Dimcheva has graduated with honors from the Faculty of Chemistry of the Sofia University "St. Kliment Ohridski", subject Chemistry, in 1990, where she has got a "master" degree with a specialization in Theoretical chemistry and chemical physics. After a short teaching experience, in 1993 she has been appointed as a part-time assistant professor at the Department of Physical chemistry at the Faculty of chemistry of the University of Plovdiv. Between 1994 and 2001 she has held the academic positions "assistant professor" and "senior assistant professor" respectively, and at the end of this period she has defended her PhD dissertation at the Specialized scientific council in Physical chemistry at the Higher attestation commission, Sofia. The topic of the dissertation is: "Enzymatic and electrochemical reactions with enzymes immobilized on carbon materials".

After the doctoral stage in the period 2002-2003, Assoc. Prof. Dimcheva is a post-doctoral

researcher at the University of Lund - Sweden, where she has been engaged in planning, conducting and summarizing the results of electrochemical experiments, under the supervision of Prof. Lo Gorton. Till 2006, the candidate has held the position "chief assistant professor" in the Department of Physical chemistry at the University of Plovdiv, and then, after winning a competition in front of the Specialized scientific council – Higher attestation commission, Sofia, she has acquired the scientific rank "associate professor" in the scientific field 01.05.05 Physical chemistry (biocatalysis and bioelectrochemistry). In this position, she has been working in the Department of Physical chemistry at the University of Plovdiv until now. After the habilitation, in the period 2007-2009 Assoc. Prof. Dimcheva has specialized at the Ruhr University, Bochum, in the research group of Prof. Schuhmann. There she has carried out scientific research in the field of electrochemistry, supervising also the diploma work investigation of one master level student.

Assoc. Prof. Dimcheva is actively involved in the administrative work at the Faculty of Chemistry of the University of Plovdiv. Since 2018 until February 2026, she has been a Head of the Department of Physical chemistry. One mandate she has been a member of the Control commission at the University of Plovdiv. In addition, in the interval 2021 – 2025, she has been a member of the Permanent scientific and expert commission in natural sciences at the National science fund (NSF) – Sofia. Thus she ensures the presence of academicians from University of Plovdiv at the NSF. Assoc. Prof. Dr. Dimcheva is an invited guest lecturer at several universities in different countries - Pakistan, Hungary, USA, etc.

#### *Scientific research*

The candidate for the academic position "professor" carries out scientific research in two basic areas of electrochemistry. In this aspect her main contributions are:

- 1) Modification of surfaces (porous and smooth) in order to find electrocatalysts for application in electrochemical (bio)sensors for quantitative determination of biologically relevant compounds (metabolites, vitamins, antioxidants, neurotransmitters, etc.).
- 2) Searching for methodologies for enzymatic immobilization on (un)modified electrode surfaces for the invention of highly selective and sensitive electrochemical biosensors for quantitative analysis of biologically relevant organic compounds in complex matrices. Bioelectrocatalysts are also being investigated from the stand point of their applications in biochemical energy sources (biofuel cells).

The scientific work of Assoc. Prof. Dimcheva has a clear gradation and personal elaboration since her appointment as an assistant professor in the Dept. Physical chemistry until today. Assoc. Prof. Dimcheva uses a wide range of electrochemical methods, namely amperometric, potentiometric, impedimetric, etc., and together with them many modern and expensive methods for investigation of surfaces of the obtained patterns (atomic force and scanning electron microscopy, etc.). Under her research leadership, many sensors have been developed, for example: for the analysis of glucose, ascorbic acid, urea, xanthine, pesticides, etc.), and the majority of them are highly selective and sensitive. Methods for electrochemical deposition of micro- or nanoscale structures on various substrates (rhodium, gold, osmium) have also been developed. The binding ability of some of them with enzymes and proteins has been established.

Regarding the scientific metrics, according to indicator A of the Minimum national requirements, Assoc. Prof. Dimcheva applies with a diploma for PhD degree. Under indicator B, the candidate applies with six publications equivalent to a monographic thesis, which are described in a separate file with the title of the document "Extended habilitation reference". Among these publications, one is with quartile Q1, three with quartile Q2, one with quartile Q3, and one without quartile. The total number of points for this indicator is 110, the minimum is 100 (according to the National minimum requirements) points. The total impact factor of journals with publications from indicator B is less than 10.

The candidate has attached a list of 49 publications, from which 2 are included in the procedure for defending the dissertation for educational and scientific degree "doctor" and 17 were used in the procedure for acquiring the scientific rank "associate professor". In the current procedure, Assoc. Prof. Dimcheva participates with 40 scientific publications, from which 6 were under indicator B (described above), and the rest were included in indicator Г – 36 total. From them, 9 scientific reports have quartile Q1 (225 points), 9 publications have quartile Q2 (180 points), 3 publications have quartile Q3 (45 points), 5 have quartile Q4 (60 points) and 8 scientific reports have been published in journals without impact factor (80 points). The total impact factor of journals with scientific papers is over 80.

The candidate for the academic position "professor" declares one patent, which is registered under number 66837 B1: "Bio-electrochemical method for quantitative analysis of L-ascorbic acid). The patent is authored by three scientists, from whom the first author is Assoc. Prof. N. Dimcheva. The patent has been published in the Official Bulletin of the Patent Office of the Republic of Bulgaria, No. 02.2/28.02.2019 (intellectual property: Plovdiv University P. Hilendarski, N. Dimcheva, E. Horozova).

Assoc. Prof. Dimcheva is an author of chapters of collective monographs:

- V. Rangelova, D. Tsankova, N. Dimcheva, *Soft Computing Techniques in Modelling the Influence of pH and temperature of dopamine biosensor*: in "Intelligent and Biosensors", p 99-122. Publ. INTECH, Croatia, ISBN: 978-953-7619-58-9, 386 страници
- N. Dimcheva, Nanoparticles of noble metals: electrochemical synthesis, properties and application: in "Nanoscience and nanotechnology" (Y. Dimova - compiler), Plovdiv University Press, ISBN: 978-619-202-282-2, p. 54-64.

The total number of points that the candidate collects under indicator Г is 590. It exceeds many times the Minimum national requirements for this indicator.

According to indicator Д, Assoc. Prof. Dimcheva has presented 60 independent citations for only one article! Thus, the points collected for this indicator are 120, which is 20 more than the Minimum national requirements. It would be a good choice if Assoc. Prof. Dimcheva has applied citations of more than one publication, which could be assumed by the high Hirsch index,  $h=17$  (according to Scopus)!

The candidate has managed and successfully completed two research projects (2011-2014 and 2019-2025) at the National science fund with a total fund of 187 500 BGN, which calculates 37.5+40 points in indicator E. She is a member of the team of three projects funded by regional EU funds with Bulgarian co-financing, one of which (PERIMED) continues at the moment, by 2029.

Assoc. Prof. Dimcheva has been a supervisor of one PhD student (April 2024), who continues his scientific career as a chief assistant professor at the Institute of Organic chemistry with a center of phytochemistry – BAS. She has been a co-supervisor of three PhD students, two of them working as academicians - lecturers (chief assistant and associate professor) at the University of Plovdiv and University of Food Technologies, and one as a junior expert in another state institution (125 points). At present, Assoc. Prof. Dimcheva is a supervisor of one current PhD student.

In the last 15 years of her scientific career, the candidate has participated in 29 scientific forums, from which 8 are with international participation (4 posters, 3 reports and 1 plenary report) in countries such as Turkey, Hungary, Romania, Pakistan, USA, etc. With 21 poster and oral presentations, she has participated in national scientific forums in Sofia, Plovdiv, Ruse, etc.

### *Teaching activity*

The teaching activity of Assoc. Prof. Dimcheva has begun in 1991 at the secondary school level of education. Since 1993 she has started teaching work as a part-time assistant in the Dept. Physical Chemistry, University of Plovdiv, where until 2006 she has passed over the academic positions "assistant professor", "senior assistant professor" and "chief assistant professor" and has taught mainly laboratory exercises and seminars in physical chemistry with students from the

Faculty of Chemistry and Faculty of Biology. In 2006 she has been promoted to the position "associate professor" in physical chemistry in the same department. The candidate's work experience so far, as a lecturer, is about 31 years (according to a certificate of work experience from the University of Plovdiv).

Over the past five years, Assoc. Prof. Dimcheva is a lecturer of the following disciplines with bachelor students from almost all study classes of the Faculty of Chemistry of the University of Plovdiv:

- lectures in Physical chemistry (basic course): 1592 academic hours – in the discipline in which the competition was officially announced
- lectures on Electrochemical methods of analysis (basic course): 422 academic hours
- lectures on Biocatalysis and bioelectrochemistry (elective course): 24 academic hours
- seminar exercises in Physical chemistry: 75 academic hours
- Physical chemistry exercises: 391 academic hours

The academic hours equivalent to exercises exceed the minimum of 1800 hours of the Additional requirements of the Faculty of chemistry. The academic hours in the discipline of Physical chemistry are many times more than the required 150 academic hours.

As it has already become clear, for 15 years Assoc. Prof. Dimcheva is a supervisor of the research works of five PhD students (one current). Four of them have successfully defended their dissertations. She trained and introduced her doctoral students to the field of research in which they work, providing them with everything necessary for normal research and study, including technical equipment such as computers, etc.

Assoc. Prof. Dimcheva is an active member of the commissions of the annual State exams at the Faculty of chemistry with students from "Medicinal chemistry", "Biology and chemistry", "Chemistry and English" etc. She is the author of numerous test problems in physical chemistry for the two annual sessions (July and September). In addition, she participates in commissions for competitions for PhD students in the Department of Physical chemistry. The candidate has been two times a member of the scientific jury for academic positions (professor and chief assistant professor) and six times for awarding the educational and scientific degree "doctor".

For 2007 until 2024, Assoc. Prof. Dimcheva has been a supervisor of seventeen graduate students developing their diploma theses in the field of bioelectrocatalysis and bioelectrochemistry. As a part of her teaching duties, Assoc. Prof. Dimcheva annually prepares exam materials for semester exams and problems for home works of students from her lecture courses.

Assoc. Prof. Dimcheva is a co-author of four textbooks in physical chemistry. Two of them are indicated for participation in the current competition, namely:

- E. Horozova, St. Hristoskova, K. Kanchev, R. Mancheva, M. Stoyanova, N. Dimcheva, V. Delchev, Exercises and problems in applied Physical chemistry (master level course), Plovdiv University Press, 2007, p. 203, ISBN 978-954-423-385-3
- E. Horozova, St. Hristoskova, R. Semkova, M. Stoyanova, N. Dimcheva, V. Delchev, D. Petrov, Laboratory Exercises in Physical chemistry and colloidal chemistry, Plovdiv University Press, 2017, p. 273, ISBN 978-619-202-242-6

In summary, the number of points collected under indicator E (including points from the supervision of the PhD students and participation in projects) is over 238.

### *Personal impressions*

For 29 years we are colleagues with Assoc. Prof. Dimcheva and we work in one academic unit at the University of Plovdiv. We have walked together over the years as lecturers and researchers, each in its own scientific field. We have shared common adversities and successful moments on the scientific achievements of each of us. I confidently state that Assoc. Prof. Dimcheva is a responsible colleague and scientist who is always ready to share knowledge and skills with other colleagues and to participate in discussions - scientific and methodological. For the last

8 years she was a Head of the Physical chemistry department. She subjected all problems of the department to discussion and voting by the Collegium and never allowed herself to decide on issues alone. For many years she has been developing own scientific field of research, in which a large number of graduates have successfully defended their diploma theses. She managed to equip a new scientific laboratory and attract young and reliable students to work there. She is a great colleague and person! I do not have any joint scientific developments with Assoc. Prof. Dimcheva, but in the future we could find a common cross-section between the scientific interests of mine and her research group.

**CONCLUSION.** All materials submitted by the applicant under this procedure meet the requirements of the Law for development of academic staff in the Republic of Bulgaria and its Regulations. According to them and my personal impressions, the candidate for the academic position "professor" Assoc. Prof. Nina Dimcheva is a well-established scientist in her field, a nationally and internationally recognized researcher and capacity. She successfully copes with the supervision of junior researchers (PhD students etc.), she is able to assign scientific tasks to researchers, participates in scientific discussions and coordinates the publication of scientific articles. Therefore, with full conviction, I give my **positive** assessment for the candidate and recommend to the Scientific Jury to propose to the Faculty Council of the Faculty of Chemistry of the University of Plovdiv to elect Assoc. Prof. Dr. Nina Dimitrova Dimcheva at the academic position "professor" in the field of higher education: 4: Natural sciences, mathematics and informatics; professional area 4.2. Chemical sciences; scientific field: physical chemistry.

02.03.2026

Plovdiv

(Prof. DSc Vassil Delchev)