

OPINION

**by Ivayla Nedialkova Pantcheva-Kadreva, DSc,
professor at SU "St. Kliment Ohridski", Faculty of Chemistry and Pharmacy**

on the materials submitted for participation

in a competition for occupying the academic position "associate professor"
at the Institute of Organic Chemistry with the Centre of Phytochemistry (IOCCP), BAS,
in the field of higher education 4. Natural sciences, mathematics and informatics,
professional direction 4.2. Chemical Sciences (Organic Chemistry)

In the competition for "assoc. prof.", announced in the State Gazette № 9 / 30.01.2024 and on the website of the IOCCP, BAS, as the only candidate participates chief assistant professor Dr. Vera Ventsislavova Deneva from IOCCP, BAS.

1. General presentation of the procedure and the candidate

Ch. assist. prof. Dr. Vera Deneva presented a set of paper and electronic materials, which are in accordance with the running legislation in Bulgarian, including the Regulations for the development of the academic staff of the IOCCP and meet the criteria of the IOCCP-BAS for occupying the academic position "associate professor".

Candidate Vera Deneva has submitted a list of all her publications (26), as well as two lists (according to the indicators C and D) of specific 16 scientific papers which are intended for participation in the current competition. The scientific publications under the procedure are attached in full text, fall within the scope of the competition's issues, were not used to acquire the PhD degree and are accepted for review. The distribution of scientific papers by the respective quartiles is as follows: 12 in Q1 (300 points) and 4 in Q2 (80 points). Evidence (as official notes, scanned documents, electronic materials) of her participation in scientific forums (13 in total), research projects (13) and specializations (1) is also presented. The materials include the required list of citations (118 on the publications in the competition, excluding the self-citations of all co-authors), as well as a document proving the granted award by the BAS for the youngest scientist.

2. General characteristics of the applicant's activity

Evaluation of the candidate's scientific activity

The topic on which Dr. Vera Deneva has been working purposefully in the period 2017-2023 covers the field of tautomeric systems, including a systematic research on the factors that influence their equilibrium. The main methods she applies independently are spectroscopic

studies in the ultraviolet / visible region and fluorescence. The results are summarized in manuscripts published in renowned refereed journals such as *Journal of Molecular Liquids* (IF 6.63), *Pharmaceuticals* (IF 5.40), *Dyes & Pigments* (IF 4.11-4.68), *Molecules* (IF 4.41-4.60), etc. In six of the publications ch. assistant professor Deneva is the first author, in two - co-author for correspondence; her Hirsch index (without self-citations) is 10.

All publications have been subject to peer review, which gives me a reason to accept the credibility of the conducted research. The overall impact factor of the articles for participation in the competition is 67.3, with an average IF of 4.21, which is a very good certificate for the quality of the scientific production co-authored by Dr. Deneva. The multidisciplinary nature of the research in which Vera is involved is impressive – in 94% of the scientific reports, the team consists of an average of 7 co-authors, while only one of the publications is written by two authors (6%). This indicator reveals the team-working ability of the candidate; in many of the works (11 papers), the partners are researchers from Universities and Institutes in Japan, Germany, Switzerland, Denmark, the Czech Republic, and Australia. There is also successful cooperation with Bulgarian colleagues from IOCCP-BAS, as well as from MU-Sofia, UHT-Plovdiv, AU-Plovdiv, Institutes of BAS, etc.

Vera Deneva has presented her running results at a total of 13 scientific events, 8 of them in the period 2017-2023 after her appointment as chief assistant professor – a position she holds until now at IOCCP-BAS. The latter include two oral and six poster presentations given at six international and two national specialized forums.

Contributions and citations

The habilitation reference presented by Vera Deneva contains information about the candidate's achievements in the last 6 years of her research activity and includes summary data regarding all publications under the current procedure. The main results are in the field of organic chemistry, namely studying various tautomeric systems such as azodyes, coumarins, Schiff bases, quinolines, etc. Emphasis in most works is placed on elucidating the mechanism of tautomeric equilibrium and the factors that influence it, as well as the possibility of controlling and/or manipulating certain states in order to achieve desired defined properties. In addition to the spectral techniques listed above, part of the research is also accompanied by NMR experiments and single crystal X-ray diffraction analysis. Quantum-chemical calculations and theoretical models have also been applied in order to design specific optical sensors and/or to explain observed physicochemical phenomena. The achievement is significant not only from the point of view of the fundamental understanding of the properties of matter in solution and solid state, but also from an applied aspect, since part of the studied systems can be used as sensors for specific metal cations, rotary switches, optoelectronic materials. The originality of the results

is very well recognized by the researchers in the scientific field - 118 independent citations from foreign authors who have published in prestigious specialized journals (e.g. *J. Mol. Liquids*, *J. Phys. Chem. A*, *J. Photochem. Photobiol. A*, *Bioorg. Chem. Lett.*, *Dyes & Pigments*, *Polyhedron*, etc.) are found in Scopus database.

The reference is accompanied by a conclusion in which the candidate describes the directions in which she plans to develop her future research activity – study of tautomeric equilibria and complexation processes, characterization of new organic compounds, research on materials with potential application in nanotechnology.

The results of Dr. Deneva's publications, equivalent to a habilitation thesis - № 5-9 and № 11, are included in the presented reference, but no special attention was paid to resume them as a brief summary where to reflect their significance and to highlight the candidate's personal contribution. These works are dedicated to the rotor switches - an interesting topic, especially taking into account the data obtained by the authors in the study of the photophysics and dynamics of the switching mechanism (solvent effects, irradiation, etc.). The role of Vera Deneva stated in these publications relates to the conceptual design, the conduct of spectral studies, the processing and analysis of the results – due to the absence of other information, I assume that this is precisely the personal contribution of ch. assist. prof. Deneva in the presented materials, and it can be referred to the "proving by new techniques of essential new problems of already existing scientific fields" category.

3. Remarks and recommendations

I have no other remarks about the presented materials except the mentioned one regarding the summary of achievements in the publications equivalent to a habilitation thesis. I sincerely recommend to Dr. Deneva more independence in her future research and attracting young people to her team, which will undoubtedly affect her position as a leading author in upcoming scientific publications. The fact that V. Deneva already supervises a scientific project financed by National Research Fund shows the positive trends in her career – a direction in which I wish a success.

CONCLUSION

The documentation presented by ch. assistant professor Vera Deneva, PhD, meets the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for its implementation, the Regulations for the implementation of the LDASRB in the Bulgarian Academy of Sciences and the Regulations of the IOCCP-BAS. The scientometric indicators according to the national minimum requirements and the additional

criteria of IOCCP-BAS have been reached and in some cases – exceeded since the candidate has presented a sufficient number of significant scientific articles which were published by prestigious publishing houses and received an international recognition.

Indicator	National minimum requirements	Criteria of IOCCP-BAS	Candidate Vera Deneva
A	50	50	50
C	100	100	145
D	200	220	235
E	50	70	236

Based on quality production I give my positive assessment and recommend to the Scientific Jury to propose to the Scientific Council of IOCCP-BAS the election of ch. assistant professor Vera Ventsislavova Deneva, PhD, for the academic position "associate professor" at IOCCP-BAS in professional field 4.2. Chemical Sciences (Organic Chemistry).

May 22, 2024

The opinion is written by prof. Ivayla Pantcheva, DSc