OPINION

by Professor Silviya Vasileva Boycheva, PhD, Eng.
Technical University of Sofia

on the materials submitted for participation in the competition
for the academic position of Associate Professor
at the Institute of Organic Chemistry with Centre of Phytochemistry (IOCCP), Bulgarian Academy of Sciences (BAS)

Field of Higher Education: 4. Natural Sciences, Mathematics and Informatics
Professional Field: 4.2. Chemical Sciences
Scientific Specialty: Organic Chemistry
for the needs of the Laboratory of "Organic Reactions on Mesoporous Materials"

In the competition for the academic position of **Associate Professor**, announced in the *State Gazette*, Issue No. 13 of 03.02.2026, and on the website of the Institute of Organic Chemistry with Centre of Phytochemistry (IOCCP), BAS, the following candidate has applied:

Ivalina Ognyanova Trendafilova, PhD, from the Institute of Organic Chemistry with Centre of Phytochemistry, BAS,

admitted to participate in the competition for the academic position of **Associate Professor** in Professional Field 4.2. Chemical Sciences, Scientific Specialty "Organic Chemistry", by a decision of the Scientific Jury appointed by Order No. RD-09-53/12.03.2026 of the Director of the IOCCP-BAS, as recorded in Protocol No. 1/17.04.2026.

1. General Presentation of the Procedure and the Candidate

The set of documents submitted in hard copy by **Dr. Ivalina Trendafilova** complies with the Regulations for the Implementation of the Development of the Academic Staff in the Republic of Bulgaria and with the Regulations for the Development of the Academic Staff of the Institute of Organic Chemistry with Centre of Phytochemistry, BAS (IOCCP-BAS), and meets the criteria established by IOCCP-BAS for holding the academic position of Associate Professor.

The candidate in the competition, Dr. Ivalina Trendafilova has submitted a total of 16 scientific publications indexed in internationally recognized databases. Of these, 5 publications are considered equivalent to a a monography (Group of Indicators B), while 11 publications are outside the habilitation thesis (Group of Indicators G). The distribution of the publications according to journal quartiles is as follows: 10 publications in Q1 journals, 3 in Q2 journals, 1 in a Q3 journal, and 2 in Q4 journals.

For the purposes of this competition, I accept all 16 submitted scientific publications, which, according to the information provided in the attached dissertation abstract, are not part of the doctoral thesis for obtaining the educational and scientific degree "Doctor" (PhD).

A list of 198 citations in publications peer-reviewed and indexed in the internationally recognized databases Scopus and Web of Science (Group of Indicators D) has been attached. A reference has also been provided by the candidate regarding her leadership and participation

in 14 research projects (Group of Indicators E). According to data retrieved from the Scopus database, Dr. Ivalina Trendafilova has achieved an H-index of 14 (Indicator Zh).

Based on the evaluation against the required criteria and scoring system, it has been established that Dr. Ivalina Trendafilova quantitatively meets the minimum requirements for occupying the academic position of Associate Professor, as stipulated in the Regulations on the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions at the Institute of Organic Chemistry with Centre of Phytochemistry, BAS, for Professional Field 4.2 Chemical Sciences, as evidenced by the attached comparative table.

Compliance with the Minimum Requirements for the Academic Position of Associate Professor by Dr. Ivalina Trendafilova, as stipulated in the Regulations on the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions (RTPASDHAP) of IOCCP-BAS:

Group of Indicators	**Indicator**	**RTPASDHAP IOCCP-BAS Requirement**	**Dr. Ivalina Trendafilova**
A	1. Doctoral dissertation for obtaining the educational and scientific degree "Doctor" (PhD)	50	50
B	4. Habilitation work – scientific publications in journals indexed and abstracted in internationally recognized scientific databases (Web of Science and Scopus)	100	115 *(Q1 – 3; Q2 – 2)*
G	7. Scientific publications outside the habilitation work in journals indexed and abstracted in internationally recognized scientific databases (Web of Science and Scopus)	220	234 *(Q1 – 7; Q2 – 1; Q3 – 1; Q4 – 2)*
D	11. Citations in scientific papers, monographs, collective volumes, and patents indexed and abstracted in internationally recognized scientific databases (Web of Science and Scopus)	70	396 *(198 citations)*
Zh	H-index	≥ 5	14
Total Score		**440**	**795**

The comparison presented above demonstrates that Dr. Ivalina Trendafilova significantly exceeds the minimum requirements established by the Regulations on the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions of the Institute of Organic Chemistry with Centre of Phytochemistry, BAS, for Professional Field 4.2 Chemical Sciences, with a total score of 795 points compared to the required minimum of 440 points.

2. General Characteristics of the Candidate's Research Activity

As publications equivalent to a habilitation thesis, five scientific papers have been submitted, thematically focused on the development and investigation of novel mesoporous silicates and their polymer composites modified with metal ions for the controlled delivery of biologically active substances. These papers have been published in prestigious international scientific journals indexed in the Web of Science and Scopus databases. Three of the publications appeared in first-quartile (Q1) journals and two in second-quartile (Q2) journals, which attests to the high quality and international visibility of the obtained results.

The scientific output outside the habilitation work comprises 11 publications, of which seven are published in Q1 journals, one in a Q2 journal, and three in Q3 and Q4 journals.

The main contributions concern the development of various types of mesoporous silica and zeolite structures (SBA-15, SBA-16, KIT-6, MCM-41, ZSM-5, KIL-2, and β-zeolite), modified with metal ions, magnetic nanoparticles, polymeric components, and functional groups, and their investigation as novel carriers for biologically active compounds. The studies include the synthesis and comprehensive characterization of the mesoporous materials with respect to structure, composition, morphology, textural properties, and related characteristics by means of a combination of advanced analytical techniques. Furthermore, the processes of loading and release of active substances have been investigated, together with the evaluation of their antioxidant, cytotoxic, and pharmacological properties. A major research direction has been the development of systems for the delivery and controlled release of antioxidants (quercetin, morin, hesperetin, kaempferol, curcumin, and capsaicin) and pharmaceutical compounds (verapamil, tamoxifen, miltefosine, prednisolone, and sulfadiazine).

These studies are situated at the interdisciplinary interface of materials science, nanotechnology, and biomedical applications of functional materials. The obtained results possess both fundamental and applied significance. The possibility of enhancing the efficiency of delivery and controlled release of a number of natural antioxidants and pharmaceutical compounds through modification of mesoporous carriers has been demonstrated. A significant contribution lies in establishing relationships between the structural characteristics of the materials, the type of modifier used, and the release kinetics of the active components. In part of the investigations, combined experimental and theoretical approaches, including molecular modeling and quantum-chemical calculations, have been employed, providing a deeper understanding of the interaction mechanisms between functionalized mesoporous carriers and biologically active molecules.

The research activity also encompasses the preparation of amine-modified mesoporous silicates for carbon dioxide capture, thereby extending the application of the synthesized materials to the fields of environmental technologies and sustainable development.

Substantial scientific and scientific-applied contributions have been achieved in the following areas:

- Development and investigation of novel functionalized mesoporous silicate and zeolitic materials;
- Elucidation of the influence of structural and textural characteristics, as well as surface modification of porous materials, on the adsorption and controlled release processes of polyphenols and pharmaceutical compounds;

- Investigation of the interaction mechanisms between active molecules and functionalized carriers with the aim of optimizing the properties of the developed materials;
- Development of magnetic and polymer-modified nanocomposite systems for targeted drug delivery and the prevention of drug resistance.

The submitted scientific output is characterized by thematic consistency, a high scientific level, and a pronounced interdisciplinary nature. The conducted studies are based on a comprehensive research approach, and the obtained results contribute to the enrichment of existing knowledge in the field of functional nanomaterials while revealing promising prospects for their application in biomedicine and pharmacy. The significance and international recognition of these achievements are confirmed by the high citation rate of the publications in the specialized scientific literature.

For the competition for the academic position of Associate Professor, Dr. Ivalina Trendafilova has submitted a list of 198 citations**,** corresponding to 396 points**,** considerably exceeding the minimum requirement of 70 points for the respective academic position. This demonstrates the significance of the publications submitted for the competition within the relevant scientific field and reflects the strong international scientific interest in the achieved results.

3. Assessment of the Candidate's Personal Contribution

In four of the publications included under Indicator B as equivalent to a habilitation thesis, and in three of the publications included under Indicator G, Dr. Ivalina Trendafilova is the first author. This demonstrates her leading role and substantial personal contribution to the planning, execution, and interpretation of the results of the scientific investigations.

The submitted report on participation and leadership of research projects shows that Dr. Ivalina Trendafilova has participated in a total of 14 research projects, nine of which were funded by the National Science Fund of the Ministry of Education and Science of the Republic of Bulgaria, two were carried out within the framework of national and operational programs, one was an intrainstitutional project, and two were implemented through international collaborations based on inter-academic agreements and cooperation frameworks. Dr. Trendafilova has served as the principal investigator of three projects under programs for young researchers and postdoctoral fellows, which attests to her scientific independence and her ability to successfully lead and coordinate research teams and projects.

The postdoctoral specializations carried out at the National Institute of Chemistry in Ljubljana, Slovenia, and at the University of Namur, Belgium, have contributed to the expansion of Dr. Ivalina Trendafilova's research expertise and to the establishment and development of international scientific collaborations.

Dr. Ivalina Trendafilova has received a number of prestigious awards and distinctions from the Union of Chemists in Bulgaria**,** the Bulgarian Academy of Sciences, the Institute of Organic Chemistry with Centre of Phytochemistry, the National Donation Fund "13 Centuries Bulgaria", and other scientific organizations. These distinctions constitute recognition of the high quality and significance of her scientific achievements.

4. Critical Remarks and Recommendations

I have no substantial critical remarks regarding the submitted materials and the scientific output of the candidate. I recommend that Dr. Ivalina Trendafilova, alongside her research activities, further develop her academic engagement in the education and supervision of undergraduate and doctoral students, including serving as an academic mentor, supervising diploma theses, and participating in teaching activities and the delivery of university lecture courses. Such activities constitute an integral part of the profile related to the academic position of Associate Professor.

CONCLUSION

In conclusion, I consider that the documents and materials submitted by Dr. Ivalina Trendafilova satisfy the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of LDASRB and the Regulations for the Development of the Academic Staff of the Institute of Organic Chemistry with Centre of Phytochemistry, BAS. The scientific papers submitted for the competition contain substantial scientific and scientific-applied contributions.

Dr. Ivalina Trendafilova convincingly fulfills the requirements of the competition, and I fully support her candidacy for the academic position of Associate Professor.

Signature:

10 June 2026 .....

Prof. Dr. Eng. Silviya Boycheva