O P I N I O N

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On the documents submitted in a competition for the academic position of 'associate professor' at the Institute of Organic Chemistry with Centre of Phytochemistry (IOCCP), Bulgarian Academy of Sciences (BAS), professional field 4.2 Chemical Sciences (Organic Chemistry)

In the competition for 'associate professor', announced in the State Gazette, issue 13 of 03.02.2026 and on the website of the Institute of Organic Chemistry with Centre of Phytochemistry (IOCCP), Dr. Ivalina Ognyanova Trendafilova participated as a candidate.

1. General information for the procedure and the candidate

The set of documents and materials for participation in the competition presented by Dr. Ivalina Trendafilova is in accordance with the ZRASRB, the Regulations for the Development of the Academic Staff of the IOCCP-BAS, and in terms of scientometric indicators, it meets the minimum national criteria, as well as the criteria of the IOCCP-BAS for occupying the academic position of "associate professor".

The candidate, Dr. I. Trendafilova, has attached a list of a total of 32 scientific publications, of which she participates in the competition for associate professor with 16 publications. These 16 publications are not included in the dissertation for the PhD degree and do not repeat those submitted in other competitions for holding academic positions and acquiring scientific degrees. Full-text copies of the publications in the competition have been provided. Five of the scientific works are equated to a habilitation work (indicator "B") [publ. No. 1-5], and the remaining 11 scientific publications are assigned to indicator "G" [publ. No. 6-16]. The distribution of scientific works for participation in the competition by the relevant Q factors is as follows: Q1 – 10 publications; Q2 – 3 publications; Q3 – 1 publication; Q4 – 2 publications. A list of citations of the articles with which she participates in the competition is presented (198 independent citations), as well as a list of participations in 14 research projects (of which I. Trendafilova is the leader of three).

Ivalina Trendafilova obtained a bachelor's degree in chemistry in 2011 and a master's degree in medicinal chemistry in 2014 at the Faculty of Chemistry and Pharmacy of Sofia University St. Kliment Ohridski. She received the PhD degree in organic chemistry from the IOCCP-BAS in 2018. In the period 2019-2024 she is a post-doctoral fellow in Slovenia and Belgium, and a visiting researcher in France and the USA. The candidate's research experience is on the topic of the announced competition. It is also worth noting a number of awards and distinctions of the candidate, including the prestigious Young Scientist Award "Prof. Marin Drinov" of the Bulgarian Academy of Sciences (BAS) in 2019 for significant achievements in

the scientific field "Nanosciences, New Materials and Technologies", a three-time nomination for the "Pythagoras" Award (2021-2023), the "Prof. Hristo Balarev" Award of the Union of Chemists in Bulgaria "Prominent Young Scientist in the Field of Inorganic Chemistry" (2022) and others.

I know the candidate personally as a fellow chemist and my impressions are excellent.

2. Evaluation of the candidates' scientific work and achievements

To participate in the competition, Dr. Trendafilova has provided a list of 16 scientific publications, 5 of which serve as a habilitation report of scientific contributions. All publications are written in English and have been published in refereed and indexed prestigious scientific journals in international databases. The majority of articles (10) are in journals with a quartile Q1, which is evidence of the high quality of the scientific research conducted. In 11 of the publications, Dr. Trendafilova is the first or second author, which testifies to a leading role and contributions to the research conducted. By number of co-authors: one article with two co-authors, while the rest have four or more co-authors. The larger number of authors in some publications is a natural result of the multidisciplinary nature of the research, in which authors from different teams and institutions, including international ones, often participate.

The presented habilitation thesis summarizes the results published in 5 scientific publications. These publications are dedicated to the preparation and characterization of various dosage forms based on mesoporous silicates. The work on the incorporation of the flavonol quercetin into a Zn-modified mesoporous silicate material is particularly impressive. The corresponding scientific publication is among the most cited articles by Dr. Trendafilova in Scopus. A high degree of quercetin loading was achieved in the carrier by the impregnation method by wetting, in which the formation of a Zn-quercetin complex was established. Comparative cytotoxic studies have shown that quercetin loaded into a Zn-modified silicate carrier exhibits higher antineoplastic potential compared to the unloaded (pure) biologically active substance. The habilitation report also describes experiments on the loading of capsaicin and curcumin (or a mixture of the two) into silver-containing and pure silicate carriers by the impregnation method by wetting from an ethanol solution. The results have shown effective incorporation of the substances in all samples. Experiments with the preparation of amino-modified mesoporous silicates loaded with quercetin have also been described. It has been found that the release of quercetin can be further controlled by coating the carrier with appropriate polymer layers. Other oral delivery systems have also been reported, in which silver and magnesium were used to modify the silicate carrier for the delivery of the polyphenols morin and hesperetin. In these cases, lower cytotoxicity of the formulated substances was observed, which is explained by the slower release of the substances from the carriers in these cases. In general, the obtained delivery systems described in the habilitation report are promising for the preparation of extended-release formulations, especially for oral and dermal administration.

Publications attached to the group of indicators "G" (according to App. 1) are also in the field of loading of various biologically active substances into pure and/or modified mesoporous silicate carriers. Various formulations of sulfadiazine, verapamil, prednisolone, tamoxifen, and others have been developed and studied. I consider the preparation of various magnetic porous silicate carriers and their modification with various functional groups and PEG to be particularly interesting and challenging from a synthetic point of view.

The significance of the described contributions in the scientific works of Dr. Trendafilova, as well as the interest of the scientific community in them, are evidenced by the large number of citations of the publications for participation in the competition - over 200 independent citations in the Scopus system (as of 01.06.2026).

I believe that the personal contribution of the candidate to these developments is undoubted and the results obtained on the synthesis of modified silicates and their loading with biologically active substances are largely the personal merit of Dr. Trendafilova.

3. Critical notes and recommendations

I have no critical remarks or recommendations regarding the candidate and the documents provided. The proposed plan for the future development of the candidate's research work makes a good impression.

CONCLUSION

The documents and materials submitted by Dr. Ivalina Trendafilova meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of ZRASRB and the Regulations of IOCCP-BAS. The results and contributions achieved by Dr. Ivalina Trendafilova in scientific research fully comply with the specific requirements of IOCCP-BAS for the Implementation of ZRASRB.

The candidate in the competition has presented a sufficient number of scientific works published after the defense of PhD degree. The candidate’s works contain original scientific and applied contributions that have received significant international recognition, as the scientific articles with which the candidate participates in the competition have been published in prestigious refereed indexed international journals and have received an impressively large number of independent citations. The published developments of new drug formulations have significant potential for practical applicability. The scientific qualification and competence of Dr. Ivalina Trendafilova is unquestionable.

After familiarizing myself with the materials and scientific papers presented in the competition, analyzing their significance and the scientific contributions contained in them, I find it reasonable to give my **positive assessment** and recommend to the Scientific Jury to prepare a report-proposal to the Scientific Council of IOCCP-BAS for the election of Dr. Ivalina Ognyanova Trendafilova to the academic position of 'associate professor' at IOCCP-BAS in the professional field 4.2 Chemical Sciences (organic chemistry).

03 June 2026 **Signature**: .....

(Georgi Yordanov, DSc)