SCIENTIFIC APPRAISAL

on the competition for the occupation of the academic position "Associate Professor"
at the Institute of organic chemistry with Centre of phytochemistry, Bulgarian Academy of Sciences
in the field of chemical sciences, code 4.2.
scientific speciality “Organic chemistry”
declared in the State Gazette, issue 27 from 05.04.2022

Candidate (sole): Assist. Prof. Dr. Ivanka Georgieva Stoycheva
Review: Prof. Dr. Vanya Bogdanova Kurteva, IOCCP-BAS; Member of the Scientific Jury, appointed by Order RD-09-77 from 01.06.2022 of the Director of IOCCP-BAS

1. General presentation of the procedure and the applicant

Assist. Prof. Dr. Ivanka Stoycheva presented all required documents in hard copy and electronic form, which are in accordance with the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations for the application of the ADASRB, the Regulations for the terms and conditions for acquiring academic degrees and occupying academic positions of the Bulgarian Academy of Sciences and the Regulations for the terms and conditions for acquiring academic degrees and occupying academic positions of the IOCCP-BAS, related to the procedure for occupying the academic position “Associate Professor”. The documentation submitted has been prepared correctly, transparently and in accordance with all requirements and recommendations.

Dr. Stoycheva has less than 10 years of work experience in the specialty at IOCCP-BAS, where she entered in 2013 as a full-time doctoral student. In 2016, she acquired the educational and scientific degree "doctor" in professional field 4.2. "Chemical sciences", the scientific specialty "Technology of natural and synthetic fuels". Since 2016, she has successively held the positions of assistant (2016-2019) and assistant professor (from 2019).

Dr. Stoycheva is the winner of the Award for the best presentation at the "Ecological Products for Health" conference, held in Velingrad in 2020, and was awarded 1st place in the 18th Scientific Poster Session for young scientists, students and doctoral students of UCTM-Sofia in 2021.

Dr. Stoycheva submitted for participation in the current competition a list of scientific papers for her entire creative period, a list and copies of scientific papers with which she participated in the current competition, and a reference to the scientific contributions in Bulgarian and English. A certificate of compliance with national requirements is presented. The distribution by indicators is as follows: indicator A – 50 points; indicator C – 104 points (required 100 points); indicator D – 231 points (required 220 points); indicator D – 150 points (required 70 points); indicator E – 246 items (not required); and G index – Hirsch factor 5 (≥ 5). It should be noted here that for article "D1" (*Polymer International* **2021**, *70*, 866-876) 1 citation is submitted, while 7 are reflected in the *Scopus* database, therefore, 12 points (6 citations) were added to the points of indicator "D". As can be clearly seen, the candidate's contributions fully cover the national requirements and those of BAS and IOCCP-BAS.

2. General characteristics of the applicant's activities

Dr. Stoycheva is the co-author of 35 scientific communications for her entire creative period, 2014-2022. In the current competition, Dr. Stoycheva participated with 20 scientific communications, of which 6 under indicator C and 14 under indicator D. The articles under indicator C, habilitation thesis - scientific publications in journals that are referenced and indexed in world-renowned scientific information databases (*Web of Science* and *Scopus*), include 1 article in a journal with rank Q1, 2 in journals with rank Q2, 1 in a journal with rank Q3 and 2 in Q4-ranked journals. In 4 of the 6 articles, the candidate is a corresponding author, which clearly shows her substantial personal contribution. The 14 scientific publications presented beyond the habilitation thesis, indicator D, include 3 articles in Q1-ranked journals, 4 in Q2-ranked journals, 3 in Q4-ranked journals and 4 in refereed but non-indexed international journals.

Scientific communications with the participation of the candidate have been cited more than 85 times in the world literature, and the citations that are not included in previous competitions and with which she participated in the current competition are 75. According to the world databases *Scopus* and *Web of Science*, Dr. Stoycheva has a Hirsch factor 5 excluding self-citations.

Dr. Stoycheva's research results have been reported 77 times at national and international scientific forums, of which 23 oral and 54 poster presentations. After obtaining the degree "Doctor" in 2016, there are 60 participations in national and international scientific forums with 18 oral and 42 poster presentations.

Dr. Stoycheva actively participates in the work on scientific projects. She is a participant in 4 national, 1 Center of Competence and 3 funded by FNI to the Ministry of Education and Science, and 8 international projects, 1 under the Horizon 2020 program, 1 with Turkey and 6 under EBR with Poland and Romania. She is the leader of 2 national scientific projects, 1 under the Competition "Funding of fundamental scientific research of young scientists and postdoctoral fellows" and 1 under the National Program "Young scientists and postdoctoral fellows".

The reference for the scientific contributions is written concisely and clearly with precisely distinguished references to the articles with which the candidate participated in the competition, from those outside it, as well as to the articles on the separate indicators C and D. The scientific developments of Dr. Ivanka Stoycheva are in the field of the technology of natural and synthetic fuels and, more specifically, to the protection of the environment through the conversion of organic wastes from agricultural and industrial production into useful products with applications such as energy sources and carbon adsorbents for water and air purification, and can be systematized in four main directions:

- ✓ Analysis of the chemical composition of organic waste, available in large quantities, in order to select the most suitable of them for processing into useful products;
- ✓ Development of methods for conversion of selected organic waste to useful liquid, gas and solid products;
- ✓ Characterization of the carbon materials obtained after processing;
- ✓ Determining the applicability of the obtained solid products as carbon adsorbents for water purification from toxic organic and inorganic pollutants.

As a result of Dr. Stoycheva's research, which falls into a very current field of chemistry, a number of important scientific results have been achieved. Environmentally friendly methods have been developed to convert organic production waste and high-ash raw materials into nanoporous carbon adsorbents and high-calorific liquid and gas energy sources. A new cost-effective method for the production of carbon foam with a porous structure and high mechanical strength is proposed. The applicability of the obtained carbon materials for water purification from toxic pollutants is investigated.

3. Critical remarks and suggestions

I have one serious critical note, which concerns the list of noticed citations of articles with the participation of Dr. Stoycheva. It is obvious that the applicant did not update her reference and fill in her details in the SONIX system before exporting the list. More importantly, the thus presented non-updated list of citations points to a Hirsch factor of 4, which is below the minimum value indicated in the Regulations for the terms and conditions for acquiring academic degrees and occupying academic positions of the IOCCP-BAS, related to the procedure for occupying the academic position “Associate Professor”. As mentioned above, for article "D1" 1 citation is entered, while 7 are reflected in the *Scopus* database excluding self-citations, which is why I have indicated that Dr. Stoycheva meets all the requirements. Additionally, a Hirsch factor of 6 is indicated in both the Reference of Scientific Contributions and the CV, which corresponds to information from the *Scopus* database with self-citations included, which are not eligible for reporting. These inconsistencies are in complete contrast to the overall very good layout of the materials, and I would recommend Dr. Stoycheva to be precise in all details in the future.

V. CONCLUSION

It is undisputed for me that Assist. Prof. Dr. Ivanka Stoycheva is a productive researcher. Analysing the candidate's scientific achievements, the relevance and perspective of the topics and her personal qualities and skills, I think that the applicant meets all the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the application of the ADASRB, the Regulations for the terms and conditions for acquiring academic degrees and occupying academic positions of the Bulgarian Academy of Sciences and the Regulations for the terms and conditions for acquiring academic degrees and occupying academic positions of the IOCCP-BAS, related to the procedure for occupying the academic position “Associate Professor”, and I recommend that the Scientific Council of the IOCCP at BAS award to

Assistant Professor Dr. Ivanka Georgieva Shoycheva

the academic position of "Associate Professor" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.2. Chemical Sciences, scientific speciality “Organic chemistry”.

Sofia, August 09, 2022 Prepared the scientific appraisal

(Prof. Dr Vanya Kurteva)