REPORT

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on the competition for filling the academic position of ***Associate Professor*** in the Institute of Organic Chemistry with Centre of Phytochemistry – BAS, in the area of *Natural Sciences, Mathematics and Informatics*, Professional Field 4.2 *Chemical Sciences*, scientific specialty *Organic Chemistry*

In the competition for filling the academic position of *Associate Professor*, announced in Official State Gazette, issue. 37 from 17.05.2022 and in the internet site of the Institute of Organic Chemistry with Centre of Phytochemistry – BAS, for the needs of Laboratory *Centre of NMR Spectroscopy*, Assist. Prof. Dr. Yavor Nikolaev Mitrev from the same laboratory is the only candidate.

1. General information about the procedure and the candidate

Only one candidate submitted documents for participation in the announced competition: Assist. Prof. Dr. Yavor Nikolaev Mitrev from the Laboratory *Centre of NMR Spectroscopy,* Institute of Organic Chemistry with Centre of Phytochemistry – BAS (IOCCP-BAS). The set of materials presented by Dr. Yavor Mitrev is in accordance with the requirements of the Development of Academic Staff in the Republic of Bulgaria Act (DASRB) for the acquisition of the academic position of *Associate Professor* and the Rules of the IOCCP-BAS for its implementation. The candidate has submitted a total of 16 scientific papers, as well as lists of all his publications, participations in scientific forums and citations. All 16 scientific papers (in the groups of indicators В and Г), published after the defense of his PhD dissertation, are accepted for evaluation in the competition. The distribution of the scientific papers is as follows: 11 publications in journals falling into quartile Q1 with impact factors (IF) in the 3.063 – 7.411 range; 2 – in Q2 (IF 2.284 – 3.841); 1 – in Q3 (IF 0.87) and 2 – in Q4 (IF 0.242 – 0.88). Documents for participation in scientific forums and in research projects are also presented. However, the latter, representing indicators 14-18 of the group of indicators Е, are not included in the reference form on the fulfillment of the IOCCP-BAS criteria for holding the academic position of *Associate Professor*, presented by the candidate, and therefore are not taken into account in the final evaluation.

Yavor Mitrev has Bachelor (2004) and Master (2006) degrees from Sofia University. From 2007 to 2011 he was a PhD student in the same university. In 2011, under the supervision of Prof. DSc Mariana Palamareva, he successfully defended his doctoral dissertation *Synthesis and spectral and chromatographic properties of novel 6H-6-oxo-dibenzo[c,h]chromenes*. Dr. Mitrev

has a post-doc stay in the University of Geneva, Switzerland in 2014–2015. His work experience – chemist (2005–2010), assistant (2010–2012), and assistant professor (since 2012) in the IOCCP-BAS – and activity are entirely related with research in the field of NMR spectroscopy.

2. **General characteristics of the candidate's research activity**

All scientific papers with which the candidate participates in the competition are published in refereed journals with impact factors. Most of the publications (11 out of 16) fall into quartile Q1. The candidate is the first author in 3 of them, in one he is the only author, and 12 are co-authored resulting from international cooperation with universities/research institutes. 11 of those publications have total of 97 citations; the most cited paper is [Miliovsky, M., Svinyarov, I., Mitrev, Y., Evstatieva, Y., Nikolova, D., Chochkova, N., Bogdanov, M. A novel one-pot synthesis and preliminary biological activity evaluation of cis-restricted polyhydroxy stilbenes incorporating protocatechuic acid and cinnamic acid fragments. European Journal of Medicinal Chemistry, 66, 2013, DOI:10.1016/j.ejmech.2013.05.040, 185-192. SJR:1.004, ISI IF:3.432] with 24 citations. The Hirsch index, according to Scopus, without self-citations of the candidate is 6. Results from the Dr. Mitrev's studies have been presented in 14 scientific events. He is the presenting author in 11 of them and 3 are oral presentations. He is/has been a principal investigator/coordinator of 1 and participant in 8 research projects funded by National Science Fund of Bulgaria, National science programs, and EU Operating programs.

In the vast majority, the papers in the groups of indicators Β and Γ are interdisciplinary. In some of them, NMR spectral studies of a methodological and applied nature were carried out, in which methods and analytical techniques have been developed for discrimination of brominated low-molecular weight compounds from the polymeric ones, analysis of weak molecular interactions, and investigation of distribution phenomena in two-phase systems. Solid-state NMR spectroscopy has been utilized for structural investigations of new mesoporous materials with potential for capture and storage of CO_2 and as catalysts. Within the frame of studies placed in the group of indicators Γ, NMR spectroscopy in solution for structural elucidation of various organic compounds – adamantane derivatives with potential antiviral and neuroprotective properties, zinc phthalocyanine dyes with potential application in the photodynamic therapy – has been applied. The configuration of the double bond in a chalcone and in trisubstituted polyhydroxy stilbenes as well as tautomeric composition of folic acid at physiological conditions have been determined. Diffusion NMR spectroscopy has been used for investigation of molecular mobility in

glycerol/DMSO mixtures for studies of viscosity effects on the chemical reactivity of various reactions and for explanation of the influence of choline chloride and dibutylhydroxytoluene (BHT) on the stability of 5-hydroxymethyl furfural. These studies were mainly carried out at the *Center for NMR Spectroscopy* at IOCCP-BAS or as part of the candidate's post-doctoral specialization, and his placement as first, corresponding or sole author in a number of publications confirms his substantial personal contribution. Given the interdisciplinary nature of the works and the role of the used NMR spectroscopic techniques as complementary methods and approaches, the contributions could be formulated as *proving by new means substantial new aspects of already existing scientific fields, problems, theories and hypotheses*. I know the candidate in absentia mainly from the opinions of colleagues who have worked and are working with him, who describe him as a correct, communicative and promising young researcher.

3. Critical notes and recommendations

I don't have any significant critical remarks about the candidate's scientific works and activities. On the contrary, the precise presentation of the documents and materials for the competition, which greatly facilitates the analysis and evaluation of scientific activity of the candidate, is noteworthy. At the end of the habilitation report, Dr. Mitrev has outlined prospects for future development. They are designed with respect to the possibilities for conducting and deepening research in the field of liquid- and solid-state NMR spectroscopy, which IOCCP-BAS can provide, but also reflect the acquired knowledge and experience that can build the candidate as a specialist with the potential to carry out and lead independent research work.

CONCLUSION

The scientific activity and research metric indicators of Dr. Yavor Mitrev exceed the requirements for holding the academic position of *Associate Professor*, defined in the DASRB, as well as those specified in the Rules of BAS and IOCCP-BAS. Based on the materials presented in the competition, as well as the above analyses and evaluations, I give a positive assessment and recommend the Scientific Council of IOCCP-BAS to support the election of Dr. Yavor Nikolaev Mitrev for filling the academic position of *Associate Professor* at the IOOCP-BAS in the professional field 4.2 Chemical Sciences.

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