OPINION

in the competition for associate professor in professional field 4.2 Chemical Sciences: scientific specialty "Organic Chemistry" for the needs of the Laboratory "Organic Synthesis and Stereochemistry" at the Institute of Organic Chemistry with Center for Phytochemistry - BAS, announced in SG, issue. 91 of 02.11.2021 with the only candidate: **Dr. Atanas Atanasov Kurutos, Ch. assistant in the lab. OSS at IOHCF-BAS**

Reviewer: Professor Dr. Nikolay Georgiev Vassilev, Institute of Organic Chemistry with Center for Phytochemistry, BAS

I. Summary data on the scientific production and the activity of the candidate

The candidate is a doctor of chemistry and chief assistant in organic chemistry at the Institute of Organic Chemistry with the Center for Phytochemistry (IOHCF) - BAS. To participate in the competition he presented a total of 34 research papers, of which 2 chapters from a book. 29 have been published in refereed journals with impact factor or impact rank and 5 scientific publications have been published in journals without impact factor or impact rank. The candidate is the first author in 15 scientific papers, and the author for correspondence is in 14. The scientific results of the candidate are presented as 31 presentations at national and international scientific forums. The achieved results have been published in renowned journals and are on the topic of the announced competition. 16 of the candidate's works are in journals with Q1, 6 are in Q2, 1 in Q3 and 4 in Q4. A significant part of the publications are in scientific journals with a high impact factor: three in *Journal of Molecular Liquids* (*IF = 6.165 for 2020 - Q1*), seven in *Dyes and Pigments* (*IF = 4.889 for 2020 - Q1*) and two in *Journal of Photochemistry and Photobiology A* (*IF = 4.291 for 2020 - Q1*). The candidate's documents

included 110 citations of his scientific works, excluding auto-citations. The h-index of Dr. Atanas Kurutos is 6.

The presented articles as a number, as an impact factor and citations, meet the requirements set by IOHCF-BAS for holding the position of "Associate Professor". The minimum required points by groups of indicators for holding the academic position "Associate Professor" are as follows: by group of indicators A and B points cover the required minimum, by group of indicators D points are 277 and significantly exceed the minimum of 220, by group of indicators E points are 100 and are more than the minimum of 70.

II. Evaluation of the scientific and practical results and contributions of the creative production submitted for participation in the competition

The research of Chief Assistant Dr. Atanas Atanasov Kurutos in the presented publications is mainly in two directions:

- Design of new fluorescent organic compounds used as biosensors;

- Synthesis and study of the structure, spectral properties and application of newly synthesized compounds and dyes such as potential biomarkers, colorimetric pH-sensitive sensors or molecular switches.

Research in the first direction can be assessed as the creation and improvement of existing methods for the synthesis of new cyanine dyes and complexes. It should be noted the successful design of new compounds with predetermined photophysical properties.

Existing knowledge has been enriched with new fluorescent markers for nucleic acid labeling with application in confocal microscopy. Some of the compounds are markers for recognizing the secondary structures of nucleic acids, others are RNA-selective dyes and others

are fluorogenic substances for visually distinguishing living from apoptotic cells and cell cycle analysis.

Research in the second direction can be assessed as enriching existing knowledge on the synthesis, properties and application of new mono- and polymethine dyes as possible markers for the detection of pathogenic protein aggregates and amyloid fibrils, new compounds with applications such as pH-sensitive sensors and potential teranostic agents and new arylhydrazone molecular switches linked by an intramolecular hydrogen bond.

The wide use of modern spectral methods to prove the structure, properties and purity of the obtained compounds is impressive.

The personal contribution of the candidate in the presented research is indisputable for me. My discussions with Dr. Atanas Kurutos at various scientific forums, as well as informal discussions of various scientific problems with the candidate are the basis for this statement.

Dr. Atanas Kurutos is a young scientist in the field of organic chemistry. His scientific achievements are also highly appreciated by the Foundation (EUREKA Award for Achievements in Science in 2016), the Union of Scientists in Bulgaria (First Prize for thesis in the competition: "High Scientific Achievements in 2016") and colleagues in the jury at the national competition "PROMINENT YOUNG SCIENTIST IN THE FIELD OF ORGANIC CHEMISTRY" ("Academician Ivan Yukhnovski" Award - 2020).

III. Critical remarks and recommendations

I have no critical remarks on the design of the presented materials. Some technical inaccuracies have been noted, such as Magn Reson Chem's IF is 2,447 instead of 4,447, but they do not spoil the excellent impression of the candidate's scientific work.

IV. Conclusion

Based on the above, I believe that Chief Assistant Dr. Atanas Atanasov Kurutos fully meets and significantly exceeds in some respects the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and adopted by the Council of Ministers and the Institute of Organic Chemistry with Center for Phytochemistry - BAS regulations for its application for the academic position of "Associate Professor". The valuable scientific production presented for participation in the competition is sufficient in volume, has been published in renowned scientific journals and has found a wide response in the literature. Based on the above, I confidently give my positive assessment and strongly recommend to the Scientific Jury and the esteemed members of the Scientific Council of the Institute of Organic Chemistry with Center for Phytochemistry - BAS Chief Assistant Dr. Atanas Atanasov Kurutos to be elected to the academic position "Associate Professor" in professional field 4.2. Chemical sciences (Organic chemistry).

Date: 07.03.2022. Jury member:

(*Prof. Dr. Nikolay Vassilev*, IOCCP-BAS)