O P I N I O N

on the competition for the academic position of **Associate Professor** for the needs of the Laboratory of Organic Synthesis and Stereochemistry at the Institute of Organic Chemistry with the Center for Phytochemistry, BAS in the professional field 4.2. Chemical Sciences (Organic Chemistry), announced in SG no. 91 of 02.11.2021, with candidate Ch. Assistant Professor Dr. **Atanas Atanasov Kurutos**

by Prof. Todor Minkov Dudev, D.Sc.

Faculty of Chemistry and Pharmacy, Sofia University “St. Kliment Ohridski ”

In the competition for Associate Professor in the professional field 4.2. Chemical Sciences (Organic Chemistry) for the needs of the Laboratory of Organic Synthesis and Stereochemistry at the Institute of Organic Chemistry with the Center for Phytochemistry, BAS participates one candidate - Ch. Assistant Professor Dr. Atanas Atanasov Kurutos. To participate in the competition, the candidate has submitted a full set of documents in accordance with the requirements of the Regulations for the Implementation of the Academic Staff Development Act in the Republic of Bulgaria and the Regulations for obtaining academic degrees and holding academic positions at IOCCP-BAS. The documents are prepared/assembled very precisely and provide comprehensive information on the multifaceted research activities of Dr. Kurutos.

Biographical reference. Atanas Kurutos received his bachelor's degree (Bachelor of Science in Chemistry) in 2010 from Kingston University - London, UK. In 2013 he graduated from the master's program "Modern methods for synthesis and analysis of organic compounds" at the Faculty of Chemistry and Pharmacy of Sofia University "St. Kliment Ohridski ”, and in 2016, at the same faculty, under the supervision of Prof. Todor Deligeorgiev, he successfully defended his doctoral dissertation (“ Synthesis of cyanine dyes and study of photophysical properties of some of them ”). In 2016 he was appointed an Assistant Professor at the IOCCP-BAS, where he subsequently grew to the position of Chief Assistant Professor (2018). He has specialized in a number of renowned research centers such as Keio University (Japan), University of Copenhagen (Denmark), Roskilde University (Denmark), University of Fribourg (Switzerland) and Ruder Boskovic Institute (Croatia). He obtained the "Academician Ivan Yukhnovski" award for outstanding young scientist in the field of organic chemistry (2020), first prize for dissertation "High Scientific Achievements for 2016." - Union of Scientists in Bulgaria, and the EUREKA award for Achievements in Science for 2016 - Eureka Foundation.

Scientometric data. To participate in the competition, Dr. Kurutos presented 21 scientific papers - 18 articles and 2 chapters from a book published after the defense of his doctoral dissertation, as well as a habilitation thesis. All articles have been published in peer-reviewed journals, most of them in those with a high impact factor (eg Dyes Pigm., J. Mol. Liq., J. Photochem. Photobiol., Magn. Reson. Chem.). Articles with quartile 1 (11 in number) predominate. In 8 of the articles, Dr. Kurutos is the first author and / or correspondent author. Seventeen of the articles and chapters in the book are the result of scientific collaboration with scientists from foreign research institutes. In total, Dr. Kurutos is the co-author of 34 scientific papers, on which a total of 110 citations have been noted (excluding self-citations). The candidate's Hirsch index is 9 (WoS) / 11 (Google Scholar). The results of Dr. Kurutos' research have been reported in the form of 14 oral presentations and 17 poster presentations at 26 national and international scientific forums. He is a participant in 12 national and international research projects (as a leader or member of the team). From the attached reference it can be seen that Dr. Kurutos meets the minimum national requirements under Art. 2b of the Law, as well as the recommendatory criteria of IOCCP- BAS for holding the academic position "Associate Professor".

Scientific contributions. Dr. Kurutos' research, summarized in the attached habilitation thesis, focuses on the synthesis and spectral characterization of a series of fluorescent organic compounds (mono- and polymethine, styrene and azo dyes) used in practice as fluorescent markers for labeling of nucleic acid and insulin amyloid fibrils, as well as colorimetric pH-sensitive sensors in living cells. Effective synthetic methods for synthesizing new dyes from the listed series have been developed. The resulting compounds are characterized by low cytotoxicity, remarkable selectivity and high fluorescent quantum yield upon binding to cellular biomolecules, which make them promising biomarkers in the diagnosis of various diseases. It has also been convincingly shown that some of the newly synthesized dyes have the ability to inhibit the formation of insulin amyloid fibrils associated with the development of amyloidosis in patients with diabetes, and as such, have high therapeutic potential. Fluorescent sensors that are sensitive to changes in the pH of tissues and cells have also been successfully developed, which is essential for medical practice.

Conclusion

The publications and habilitation thesis presented by Dr. Kurutos are on the topic of the competition and represent original scientific developments with significant contributions in the field of synthetic and applied organic chemistry, and molecular spectroscopy. The obtained results can be described as novelties in scientific research and convincingly demonstrate the potential of the newly

synthesized groups of fluorescent dyes for use in medical diagnosis and treatment of socially significant diseases. They provide a solid basis for further extensive and promising research in this area. The candidate is a researcher with deep knowledge and practical skills in the field of organic synthesis and molecular spectroscopy. Demonstrates maturity, creative thinking and the ability to successfully select and solve current tasks with a high impact on science and practice.

In conclusion, as a result of the above, I am convinced that with his multifaceted and active research activities Ch. Assistant Professor Dr. Atanas Atanasov Kurutos fully meets all the requirements of the Law on occupying the Academic Position of Associate Professor. I propose that Dr. Kurutos be elected Associate Professor in the professional field 4.2. Chemical Sciences (Organic Chemistry) for the needs of the Laboratory of Organic Synthesis and Stereochemistry at the Institute of Organic Chemistry with the Center for Phytochemistry, BAS.

05.03.2022

Signature:

(Prof. Todor Dudev, D.Sc.)