

REVIEW

by

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Regarding

the application of the following candidates for the academic position of *Associate Professor*: Sen. Lect. Ismail Ismailov, Ph.D. being the sole candidate applied for the academic position of Associate Professor, announced in the State Gazette, issue 87/09.10.2020, Area of Higher Education 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.2 Chemical Sciences (Analytical Chemistry with Instrumental Methods) for the needs of the Department of Chemistry, *Konstantin Preslavsky University of Shumen*

By order № ПД 16-180 from 26.11.2020 signed by the Rector of *Konstantin Preslavsky University of Shumen* I'm appointed as a member of the scientific jury. At its first meeting on 14th December 2020 I was chosen to write a review in accordance with Art. 69 (§2 and § 3) stated in *The Regulation on the Terms and Procedure for Acquisition of Academic Degrees and the Occupation of Academic Jobs at Shumen University*.

General Information of Applicant's Scientific and Educational Activities

It is Sen. Lect. Ismail Ismailov, Ph.D. being the sole candidate applied for the academic position of **Associate Professor** announced for the needs of the Department of Chemistry at *Konstantin Preslavsky University of Shumen*. By now, he is a lecturer at that Department.

I have received electronically all materials for the competition, announced in the State Gazette, issue 87 dated 09.10.2020, Area of Higher Education 4. Natural

Sciences, Mathematics and Informatics, Professional Field 4.2 Chemical Sciences (Analytical Chemistry with Instrumental Methods).

The presented materials and scientific results entirely meet the requirements set in the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), in the Rules on the Application of LDASRB (RALDASRB) and in *The Regulation on the Terms and Procedure for Acquisition of Academic Degrees and the Occupation of Academic Jobs at Shumen University*. The development of Sen. Lect. Ismail Ismailov, Ph.D. in the last few decades as a student, doctoral student, lecturer and scientist at the Shumen University is fully presented in a convincing manner.

The points declared by the candidate in regard to the groups of indicators for the academic position *Associate Professor* are as follows:

Indicator	Minimal Requirements	Applicant's points
A	50	50
B	100	100
Г	200	203
Д	50	50

Group A Indicators presents the applicant's PhD dissertation on Synthesis and Reactions of Electrophilic Cyclization and Cycloisomerization of Phosphorylated Alpha- and Beta- Hydroxyalenes – **50 points**.

In Group B a monograph is presented: I. Ismailov, Functionalized allenes – Reactions of Cyclization. Regioselective Synthesis and Research on the Cycloisomerization Reaction of Phosphorylated 1-hydroxyalkylalenes. ISBN 978-619-201-416-2, Konstantin Preslavsky University Publishing House, 2020, p. 196 – **100 points**.

Sen. Lect. Ismail Ismailov, PhD submits for the completion a total list of 13 publications all of which in compliance with the competition announces. These are not presented by him in other competitions, and are accepted for review. These publications are divided by type and quartiles (Q) as follows:

Types, Quartiles	Group Γ Indicators
Q1	1
Q2	3
Q3	4
Q4	4
Publications with SJR	1

Brief Biographical Data

Sen. Lect. Ismail Ismailov, PhD was born in Targovishte. He was awarded a Master Degree in Biology and Chemistry in 2001 by the Faculty of Natural Sciences at *Konstantin Preslavsky* University of Shumen. In 2015, he was awarded with a Doctoral Degree. His PhD thesis was on *Synthesis and Reactions of Electrophilic Cyclization and Cycloisomerization of Phosphorylated Alpha- and Beta-Hydroxyalenes*.

Since 2015 he is a Senior Lecturer in Organic Chemistry at the Department of Chemistry within the Faculty of Natural Sciences, *Konstantin Preslavsky* University of Shumen.

Teaching Activities

The candidate's teaching activities started in 2015 as an Assistant and by 2016 he is a Senior Lecturer at the Department of Chemistry.

The teaching activities of Sen. Lect. Ismail Ismailov significantly exceeds the teaching workload at Shumen University of 360 hours per academic year. Last year (2018-2019), his teaching workload was of 500 hours.

Sen. Lect. Ismail Ismailov, PhD delivers lectures as follows:

1. Analytical Chemistry with Instrumental Methods, *Ecology and Environmental Protection* major, 2nd year full-time Bachelor students.
2. Analytical Chemistry with Instrumental Methods, *Pedagogy of Teaching Natural Sciences* major, 2nd year full-time Bachelor students.

3. Instrumental Methods for Analyses, *Medical Chemistry* major, 4th year full-time Bachelor students.

4. Analysis of Medicinal Substances, *Medical Chemistry* major, 4th year full-time Bachelor students.

5. Molecular Spectroscopy, *Medical Chemistry* major, 4th year full-time Bachelor students.

6. Instrumental Methods in Chemistry, *Biology and Chemistry* major, специалност Биология и химия, 3rd year full-time Bachelor students.

Qualification and Postgraduate Courses

Once started his career at Shumen University Sen. Lect. Ismail Ismailov periodically improves his qualification in postgraduate courses. He participated under the Project intended to provide access of students, doctoral students and young Scientists to the National Center for MRI Spectroscopy named "Development of the National Laboratory of NMR Spectroscopy in an Effective Research Infrastructure for NMR Analysis of Bio- and Nanomaterials ". BAS, 2012.

Scientific work

Areas of scientific interest

The scientific interests of Sen. Lect. Ismail Ismailov are in the field of: Instrumental analysis; Application of ICS for qualitative and quantitative analysis; Organic chemistry; Organic synthesis; Chemistry of organometallic compounds; Synthesis of new heteroatom- (phosphorus, sulfur, selenium, silicon, etc.) substituted unsaturated compounds (alenes, 1,3-dienes, vinylalenes, propargyls, allyls, etc.) and their application for the synthesis of carbo- and heterocyclic compounds; Synthesis and electrophilic cyclization reactions of phosphorylated allenes; Synthesis and electrophilic cyclization reactions of phosphorylated 2-chloro-1,3-alkadienes; Synthesis and electrophilic cyclization reactions of bifunctionalized allenes; Cycloisomerization reactions of functionalized allenes; Nucleophilic cyclization reactions initiated by metal ions or complexes; Synthesis and electrophilic cyclization reactions of functionalized vinylalenes; Diels-Alder reaction to functionalized

vinylalenes; Reactions of heletropic addition of sulfur dioxide to functionalized vinylalenes; Toxicocochemistry.

Science Indicators

The science indicators of Sen. Lect. Ismail Ismailov meet the criteria of the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), in the Rules on the Application of LDASRB (RALDASRB) and in *The Regulation on the Terms and Procedure for Acquisition of Academic Degrees and the Occupation of Academic Jobs at Shumen University*. For the period 2013 - 2020 the candidate has 45 publications.

The applicant submits a list of 13 publications with IF in English for this very competition.

Most of these scientific publications are co-authored, and in 3 of them Dr. Ismail Ismailov is the first author.

Citations Noticed

The scientific production of Sen. Lect. Ismail Ismailov is of great interests to the sciences community: a total of 25 citations in journals, referenced and indexed in world-famous databases with scientific information have been noticed (Web of Science and Scopus). According to Scopus database, his h-index is 5.

Participation in Scientific Forums

Sen. Lect. Ismail Ismailov has participated in 41 international conferences or forums with international participation in Bulgaria with posters and reports. The dynamics of these scientific communications shows: 21 of them in the last 5 years.

Participation in Scientific Projects

Sen. Lect. Ismail Ismailov has contributed to the development and implementation of the following research projects:

1. Project BG051PO001-3.3.06-0003 „Enhancement and Sustainable Development of Doctoral Students, Postdoctoral Students and Young Scientists in the Field of Natural, Technical and Mathematical Sciences”. Shumen University.2012
2. Project № ПД-05-247/15. 03. 2012 “ Synthesis and Cyclization Reactions of Mono- and Bifunctionalized Allenes” headed by Prof. Valery Hristov
3. Project intended to provide access of students, doctoral students and young Scientists to the National Center for MRI Spectroscopy named "Development of the National Laboratory of NMR Spectroscopy in an Effective Research Infrastructure for NMR Analysis of Bio- and Nanomaterials", BAS
4. Project № ПД-08-243/13.03.2013 "1,1- and 1,3- Bifunctionalized Alenes - Suitable Substrates for Electrophilic Cyclization Reactions" headed by Prof. Valery Hristov
5. Project № ПД-08-208/07.03.2014 "Syntheses and Reactions of Cyclization of 1,1- and 1,3- Bifunctionalized Alenes", funded by the Scientific Research Fund at *Konstantin Preslavsky* University of Shumen
6. Project № ПД-08-248/06.03.2015 “Syntheses and Reactions of Cyclization of 1,1- and 1,3- Bifunctionalized Alenes” headed by Prof. Valery Hristov
7. Project № ПД-08-109/08.02.2016 “Design of 1,1- and 1,3- Bifunctionalized Alenes and Study of their Reactions to Electrophilic Cyclization and Cycloisomerization” headed by Prof. Valery Hristov
8. Project № ПД-08-98/ 6.02.2017 "Theoretical, Experimental and Methodological Research in Chemistry“, funded by the Scientific Research Fund at *Konstantin Preslavsky* University of Shumen
9. Project № ПД-08-158/09.02.2018 "Modern Research in Chemistry“, funded by the Scientific Research Fund at *Konstantin Preslavsky* University of Shumen
10. Project № ПД-08-94/01.02.2019 "Modern Scientific Research in Chemistry“, funded by the Scientific Research Fund at *Konstantin Preslavsky* University of Shumen
11. Project № ПД-08-117/03.02.2020 "Modern Aspects in Chemistry“, funded by the Scientific Research Fund at *Konstantin Preslavsky* University of Shumen

12. Project BG05M2OP001-1.001-0004 Universities for Science, Informatics and Technologies in e-Society (USITe)

13. Project „Students Internships – Phase 1“

14. Project „Students Internships – Phase 2“.

The main contributions of Sen. Lect. Ismail Ismailov could be summarized in the following scientific areas:

1. A method has been developed for the preparation of bifunctionalized and trifunctionalized allenes by synthesized alkinols with diphenyl chlorophosphine or dimethyl chlorophosphite in the presence of an organic base with intermediate formation of propargyl phosphites or phosphinites, which spontaneously tolerate [2,3] rearrangement to the desired phosphorylated hydroxyalenes and alencarboxylates with a protected hydroxyl group. The synthesized allenes were used as substrates for the production of hydroxyalenes by deprotecting the hydroxyl group of the respective bifunctionalized and trifunctionalized hydroxyalenes with a protected hydroxyl group in the presence of PPTS.

2. Synthesized, isolated and purified by column chromatography and characterized ^1H -, ^{13}C -, ^{31}P -NMR and IR-spectral new, not described in the literature, bifunctionalized and trifunctionalized allenes.

3. Phosphorylated reactions of α -, β - hydroxyalenes, 4-phosphorylated 5-hydroxyal-2,3-dienoates were studied, as well as those of 4- phosphorylated β -hydroxyalcarboxylates with a protected and unprotected hydroxyl group with electrophilic reagents such as sulfur chloride, bromine, benzenesulfonyl chloride and benzeneselenyl chloride. Reaction conditions in regard to their solvent, reaction temperature and time and electrophile molar ratio were optimized. It has been found that the reactions proceed in the same way, regardless of whether the hydroxyl group is protected or unprotected. Heterocyclic and unsaturated acyclic compounds are obtained depending on the type of substituents in the phosphoryl group.

4. The cycloisomerization reactions of the phosphorylated α , β - hydroxyalenes, 4-phosphorylated 5-hydroxyal-2,3-dienoates and 4-phosphorylated β -

hydroxycarboxylates with the catalytic participation of ions of the so-called coin metals were studied.

5. Synthesized, isolated and purified by column chromatography and characterized ^1H -, ^{13}C -, ^{31}P -NMR and IR-spectral new, not described in the literature, organophosphorus heterocyclic and unsaturated acyclic compounds.

In conclusion, once I have read the materials and scientific publications submitted and have made an analysis of their significance and the scientific contributions contained in them, I think that the sole candidate: Sen. Lect. Ismail Ismailov, Ph.D. has accomplished all the minimal national requirements set in the Development of Academic Staff in the Republic of Bulgaria Act, The Regulation on the Terms and Procedure for Acquisition of Academic Degrees and the Occupation of Academic Jobs at Shumen University and all other relative normative documents. I find it worthwhile to **give my positive assessment** and to recommend to the Scientific Jury to make a report to the Faculty Council of the Faculty of Natural Sciences to ask them to grant the academic rank Associate Professor to **Sen. Lect. Ismail Ismailov, Ph.D.** at *Konstantin Preslavsky* University of Shumen in the Area of Higher Education 4. Natural Sciences, Mathematics and Informatics, Professional Field 4.2 Chemical Sciences (Analytical Chemistry with Instrumental Methods).

Varna, 30th December 2020

Scientific Jury Member:

Prof. Lyubomir Makedonski, PhD

