



## ATTITUDE OF REVIEWER

**on a competition to award the academic position “Professor”**

**in the professional field 4.2. Chemical Sciences (Inorganic Chemistry),**

announced in State Gazette, issue 111/31.12.2021 for the needs of Department of Chemical Sciences, Faculty of Pharmacy, Medical University, Plovdiv (MU-Plovdiv)

Applicant: **Assoc. Prof. Dr. Kiril Blazhev Gavazov**

Member of the Scientific Jury: Assoc. Prof. Dr. Boriana Venelinova Donkova, (Faculty of Chemistry and Pharmacy, University of Sofia “St. Kliment Ohridski”)

### **I. Candidate’s career profile**

Assoc. Prof. Gavazov graduated from the University of Plovdiv “Paisii Hilendarski” in 1993 as a Master of Science in Chemistry with two majors: i) in organic chemistry and ii) teacher in chemistry and chemical technology. In the period from 1994 to 2017 he has been working at the Department of General and Inorganic chemistry with Chemical Education Methods, University of Plovdiv (starting from assistant professor, 1994 to associated professor, 2010). During his work for the University of Plovdiv the applicant prepared and defended in 2001 his PhD thesis on the topic „Extraction of ternary ion-associated complexes of vanadium (IV,V) with polyphenols and tetrazolium salts”. In the period 2012-2017 he is a Head of the Department. Since 2016 Assoc. Prof. Gavazov is working for the Department of Chemical Sciences, MU-Plovdiv and since 2020 he has been appointed as a Head of the Department.

The candidate's educational and scientific profile is fully in line with the objectives of the competition. The career development of Assoc. Prof. Gavazov demonstrates extensive teaching experience, acquired scientific knowledge and professional skills.

### **II. General description of the submitted in the competition materials**

The documents submitted by the applicant are in accordance with the Regulations for the Implementation of the Law for the Development of the Academic Staff in the Republic of Bulgaria and the specific requirements for occupying the academic positions at MU-Plovdiv. The materials are organized in 26 folders, according to the guidelines of the Medical University, Plovdiv.



### **III. Assessment of the candidate's scientific production for the overall academic development**

Assoc. Prof. Gavazov is an author/coauthor of 75 full-length articles (including 1 book chapter) published in national and international journals. One of them is published after the submission of the documents for participation in the competition and it is visible in Scopus database. Average number of publications for the latest 5-years period (2017-2021) is 4 papers per year. The scientometric reports (May 2022) from the Scopus and Web of Science databases show 63 papers and 190 citations (excluding self-citation), and 52 papers and 244 citations, respectively. It is necessary to point out also and papers 4-6 from an Appendix 13, which are not referred in Scopus or WoS, but are cited in articles, referred in the above mentioned databases.

The scientific work of Assoc. Prof. Gavazov is distinguished by consistency and systematicity. Therefore, the focus below will be on the research activity after his promotion as assoc. professor, and on the main scientific and applied contributions of the candidate. After his habilitation, the main object of investigations is again ion-association complexes and their extraction, but the number/composition of the systems studied and extraction methods applied are significantly expanded. Complexes containing ions of various metals (V, Fe, Co, Cu, Ni, Ag, Nb, Ga, In) in different oxidation states, azodyes, o-diphenols, cationic reagents for ion-association or nonionic surfactants are studied. The candidate's longstanding interest in this type of complexes is driven by the possibility to use them for the extraction of metal ions aiming their determination. By varying the concentration of reagents, pH of the medium and other experimental parameters, the optimal conditions for liquid-liquid extraction (LLE) or cloud point extraction (CPE) are determined. A number of quantitative characteristics concerning with the extraction equilibriums, extracted complexes themselves and analytical determination of metals are estimated/measured. Quantum chemical calculations (Hartree-Fock method and DFT) are also carried out to elucidate the geometrical structure of some of the complexes of V (IV,V), Fe(II,III), W(VI) and the stability of possible isomers.

As a natural extension on the studies performed the LLE-spectrophotometric method for determination of V(V) and V(IV) is developed, as well as "green" spectrophotometric methods based on cloud point extraction for determination of i) total V, ii) V and Cu (simultaneously), and based on microextraction - for determination of main inorganic iodine species. In addition, in



international cooperation Assoc. Prof. Gavazov participates in the elaboration of analytical devices.

The applicant promotes his scientific results through numerous participations in scientific forums, 41 of them after his promotion as assoc. professor (Appendix 33.2.g). For the period after habilitation (2010-2022) Dr. Gavazov participates in 2 educational and 10 scientific projects (of which 1 bilateral and 9 intra-university), being a leader of the Bulgarian team for the bilateral and of 2 intra-university projects. Assoc. Prof. Gavazov has been a supervisor of two PhD students and a consultant of two other PhD students. He has been also an advisor of post-doctoral student.

The participation of Assoc. Prof. Gavazov in various councils and committees at faculty and university level (Faculty Council, Academic Staff Appraisal Committee and Council of scientific-research activity at MU-Plovdiv), his election as head of the Department of Chemical Sciences, his membership in the editorial boards of reputed journals (*Earthline Journal of Sciences* and *Molecules*), as well as in scientific communities (Royal Society of Chemistry and American Chemical Society), and his activity as a reviewer are a testimony to his teaching and scientific authority.

#### **IV. Assessment of the habilitation work - scientific publications, referred and indexed in world-famous databases (indicator B)**

Assoc. Prof. Gavazov presents 7 publications as habilitation thesis. Five of them are research type articles, devoted to extraction-chromogenic systems, containing Co(II,III), Ag(I), V(V) and Fe(III). The complexformation and extraction of ion-association complexes is thoroughly studied, the influence of various experimental parameters is examined and, as a result, the optimal conditions for extraction and/or spectrophotometric determination are found. The key constants of ion-associated complexation and extraction processes are calculated. Additional spectrophotometric and analytical characteristics, important for the determination of metal ions are also estimated/measured. Some of the extraction-chromogenic systems are studied for the first time [B1, B4, B6]. Optimal conditions for high sensitive LLE-spectrophotometric determination of Ag(I) is proposed [B3].

Publications B2 and B7 are review type articles. The former is devoted to the shortcomings of each modality of liquid-phase microextraction (LPME) and different possibilities for overcoming them in order to increase the application of microextraction techniques. The second is a review on the extraction-spectrophotometry of ion-association



complexes, in which the author discusses the most important practical and theoretical problems on the topic based on his experience and knowledge in this field.

#### **V. Reflection of the applicant's publications in the national and foreign literature**

The total number of citation of Assoc. Prof. Gavazov according Scopus and WoS databases is given in p. III. The difference in the number of articles reported in the two databases (63 vs 52) leads to discrepancies in the number of quotes and Hirsch index (h), respectively. Either way, the achieved by the applicant index of Hirsch is higher than that required by Medical University regulations.

In the present competition Assoc. Prof. Gavazov participates with 136 citations, derived from Scopus and/or WoS and summarized in Appendix 15a. From them 126 quotes are from foreign scientists.

The scientific authority of the applicant is confirmed by his participation in the editorial boards of the reputed journals (see p.III), as well as by his activity as a reviewer for journals such as *Talanta*, *Spectrochimica Acta Part A*, *Molecules*, *Desalination and Water Treatment*, *Dyes and Pigments*, *Separation and Purification Reviews*, *RCS Advanced*, and others. In addition, Assoc. Prof. Gavazov is guest editor of the upcoming special issue of *Molecules* devoted to the chemistry of vanadium (Appendix 33.2c).

#### **VI. Comprehensive assessment of the teaching activity**

The teaching activity of Assoc. Prof. Gavazov is presented in Appendixes 6 and 33.1. I would like to point out: i) the developed by the applicant new compulsory or optional courses for students at University of Plovdiv and MU-Plovdiv; ii) the high evaluation given by the students for the teaching in General and Inorganic Chemistry, the lectures delivered and the lecturer himself, on which indicators some of the highest grades are achieved among all subjects studied; iii) the applicant's participation in ERASMUS and ERASMUS+ programs as a lecturer in the universities in Edirne and Istanbul (total 7 visits); iv) the large number of teaching aids (1 textbook and 9 handbooks) for high-school and university students, in which Assoc. Prof. Gavazov is co-author or team's leader.

#### **VII. Critical remarks and recommendations**

I have no critical remarks to the Assoc. Prof. Gavazov.

### **VIII. General assessment of the candidate's compliance with the minimal national requirements and the specific requirements of MU-Plovdiv**

The analyses of the documents presented by Assoc. Prof. Gavazov for participation in the competition shows that he fulfills the normative requirements for acquiring the academic position of Professor, specified in the Bulgarian legislation, and in the relevant regulations of MU-Plovdiv. The scientific output and teaching activity of the candidate for most of the indicators exceed significantly the requirements of MU-Plovdiv.

### **IX. Conclusion**

The level of scientific, research and teaching activities of Assoc. Prof. Gavazov **fully meets the requirements** of Law for the Development of the Academic Staff in Republic of Bulgaria and the specific requirements of Medical University, Plovdiv for the academic positions "Professor".

Based on the evaluation of the submitted materials, **I propose** with conviction to the Scientific Jury **to award the academic position of Professor** in the professional field 4.2. Chemical Sciences (Inorganic Chemistry) **to Assoc. Prof. Kiril Blazhev Gavazov.**

18.05.2022

Member of the Scientific Jury

Заличено на основание  
Чл.5 §1, б."В" Регламент (ЕС)2016/679

Assoc. Prof. Borjana Donkova