ATTITUDE OF REVIEWER

Prof. PhD Tatyana Tabakova, Institute of Catalysis - BAS

with respect to the competition for occupying the academic position "Professor" in professional field 4.2 "Chemical Sciences", scientific specialty "Chemical Kinetics and Catalysis", published in „Newspaper of State", issue 77, dated 77 от 01.10.2019

The only candidate, applying for the academic position of "Professor" in the competition, announced by the Institute of Catalysis (IC) for the needs of the Laboratory „New heterogeneous catalysts for clean energy production and protection of the environment" is Assoc. Prof. PhD Margarita Valentinova Gabrovska. All the documents, required and specified by the "Regulations for the conditions and order of appointing in academic positions in the Institute of Catalysis" have been duly submitted. The review of the overall research activity demonstrates that the minimum requirements for occupation of the academic position of "Professor" in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as the enhanced criteria of the Bulgarian Academy of Sciences and the Institute of Catalysis are fulfilled. The review is very correctly filled in and the fulfillment of all indicators is accurately evaluated.

Curriculum vitae of Assoc. Prof. Gabrovska reveals that her scientific career is related to investigations in the field of heterogeneous catalysis. She is co-author of 70 research publications. 31 of them have been submitted for participation in the present competition, together with two chapters in books published by Atlantis Press and InTech. All of them have been published after acquisition of the position „Assoc. Prof." in scientific specialty "Chemical Kinetics and Catalysis" at 2010. Most of them – 20 publications, are in international journals with impact factor in the field of heterogeneous catalysis and catalytic materials science. Assoc. Prof. Gabrovska is first author in 13 of these works. This fact discloses clearly her leading role and considerable personal contribution not only in conceptualization and investigation, but also in summarizing the results. Ten papers have been published in peer-reviewed proceedings of international scientific forums. Among 224 noticed citations for the period after acquiring the position of „Assoc. Prof.", 150 citations belong to publications, submitted for the present competition. The majority of them – 136 are indexed in database WoS and Scopus, the rest are in PhD theses abroad, international publications and proceedings of scientific forums. This number of citations demonstrates the actuality of the research topic and the importance of the contributions of the studies carried out. The achievements from the research carried out with the participation of Dr. Gabrovska have been reported as 21 oral presentations and 55 posters. Assoc. Prof. Gabrovska has presented 10 oral contributions at international scientific forums, 1 - at a national forum with foreign participation and 5 - at national forums, among them 1 plenary lecture and 5 keynote lectures.

Dr. Gabrovska demonstrates active participation in the managing and implementation of national and international research projects. For the period of the competition, she has been a leader of totally 7 projects, sponsored within the framework of Non-Currency Equivalent Exchange Contracts of Bulgarian Academy of Sciences, i.e. 4 with the Institute of Physical Chemistry of the Romanian Academy and 3 with the Institute of Chemistry, Technology and Metallurgy, Department of Catalysis and Chemical Engineering, University of Belgrade. She is the Head of the research team at IC in national project sponsored by Bulgarian National Science Fund and in component 2 of National

Scientific Program “Low Carbon Energy for Transport and Households” (E +). Assoc. Prof. Gabrovska participates in the implementation of 3 scientific research projects sponsored within the framework of Non-Currency Equivalent Exchange Contracts of Bulgarian Academy of Sciences with research institutions from Poland, Belgium and Egypt.

Special emphasis should be placed on the activity of Assoc. Prof. Gabrovska in applied research. Her solid knowledge and long-years of experience in the development and implementation of industrial catalyst production technologies is the basis on which she has demonstrated the ability to execute a contract funded by an outsourcer - GenCell Ltd, Petah Tikva, Israel. Her competence, creativity and complete dedication to achieving the goals of the contract are highly appreciated by the foreign partners in their feedback. A proof of a very successful activity in the applied field is the annual renewal of the contract starting from 2012, a US patent granted, and significant funds gathered for the Institute.

The summary of authorship in regard to the contributions in the research publications of Assoc. Prof. Gabrovska, including those in the indicative index „Habilitation thesis“, reveals well-targeted topic of the investigation. The main focus is on rational design of new high-performing catalytic materials for reactions related to environmental protection and improving quality of life. The „Habilitation thesis“ includes the results reported in 8 publications, where the development of new effective catalyst compositions for pure hydrogen production is highlighted. The advantages of Co-Al and Ni-Al layered double hydroxides as precursors of active catalysts for the purification of gas mixtures from CO and CO_2 by low-temperature CO oxidation, medium temperature water-gas shift reaction and low temperature CO_2 methanation are addressed based on careful composition control and in depth studying the structure-reactivity relationship.

The survey of the results not included in the Habilitation work is a proof of the competence and extended scope of the scientific interests of Assoc. Prof. Gabrovska. During the post-habilitation period, she demonstrates an ambition and aim to expand her research and works actively on the development of nanoscale metal and metal oxides compositions with appropriate structure and properties for important industrial processes - partial hydrogenation of vegetable oils, oxidative dehydrogenation of light alkanes, biodiesel production, photocatalytic nitrobenzene removal from water. Her leading role in the development of new highly active and selective Ni-containing catalysts for the partial hydrogenation of vegetable oils is of particular importance. Significant achievements have been attained in improving the performance properties, both in terms of increased hydrogenation activity and reduced content of harmful trans- and saturated fatty acids in the products of the reaction, which is directly related to the requirements for the protection of human health and improvement of quality of life.

The scientific contributions can be evaluated as a novelty in the scientific knowledge and enrichment of the already available data, as well as a significant scientific achievements in the practice.

An assessment of the expert qualities and skills of Assoc. Prof. Gabrovska is the invitation to serve as Guest editor of the journal Bulgarian Chemical Communications (volume 50H, 2018), as well as membership of 4 scientific juries for occupying academic positions and awarding of PhD degree. She is an active participant in the managing and administrative activities of IC as Head of the Attestation committee, leader of scientific group, member of Scientific Council and General Assembly of IC.

Evidence of proven organizational skills is the multiple invitations to be member and vice-chair of organising committees at national and international scientific forums. He has received several diplomas for his contributions to the establishment and development of the Institute of Catalysis.

I know personally Assoc. Prof. Gabrovska since 1982 when he jointed the IC. In addition to the proven professional qualities of a highly competent and intelligent chemist with in-depth knowledge in the development of catalytic materials for reactions with impact on environmental protection and improvement of human health and quality of life, she is a perfect colleague due to her deep sense of responsibility and loyalty. Apart from her experience and knowledge, required in the field of catalysis, she has proven to be very hard working.

The scientific production metrics correspond to the specific requirements of the Regulations of IC-BAS and even exceed them concerning occupying the academic position of "Professor". The acquaintance with the materials submitted for the competition extends my personal impressions of an enthusiastic and devoted to scientific investigations researcher with significant achievements. I am convinced to propose to the members of the Scientific Jury and to the Scientific Council of IC-BAS to vote positively and to approve Assoc. Prof. PhD Margarita Valentinova Gabrovska for occupying the academic position of „Professor" in the professional field 4.2. „Chemical Sciences", scientific specialty „Chemical Kinetics and Catalysis" in the Laboratory „New heterogeneous catalysts for clean energy production and protection of the environment" in the Institute of Catalysis – BAS.

Date 06.02.2020 Member of the Scientific Jury:

/Prof. PhD Tatyana Tabakova/