

## 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 research specialty “Chemical Kinetics and Catalysis”, published in „Newspaper of State”, issue 24, dated 22.03.2019

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 Sylvia Zhivova Todorova. All the documents, required and specified by the “Regulations for the Conditions and Order of Appointing in Academic Positions in the Institute of Catalysis of BAS” have been duly submitted.

The entire scientific research career of Assoc. Prof. Todorova is devoted to investigations in the field of heterogeneous catalysis. The beginning was in the year 1990, when she was accepted as a PhD student, regular form of education, after a competition examination, carried out at the Institute of Catalysis. She defended in the year 1999 her PhD thesis in the scientific research field „Chemical Kinetics and Catalysis” and later in the year 2000 she was promoted to the position of Research Fellow II degree. Since the year 2004 she occupied the position of Research Fellow I degree, while later since 2010 she occupies the position of Associated Professor. The chronology of her professional development and occupied positions proves that she completely satisfies the requirements specified for occupying the academic position of “professor”.

Assoc. Prof. Todorova is co-author of 48 research publications. She submitted 27 publications for the participation in the present competition, published after she acquired the position of „Assoc. Prof”. Most of them – 22 publications, have been published in prestigious international journals having high impact factor in the field of heterogeneous catalysis and studies on catalytic materials, whereupon 8 publications among them belong to the category Q1. The remaining 5 research works have been published in reviewed indexed journals without impact factor. The leading role and considerable personal contribution of Assoc. Prof. Todorova in these investigations and in summarizing their results is confirmed by the fact that she is the first or second-ranking coauthor of submitted 19 publications. Out of about 350 noticed citations for the period after acquiring the position of „Assoc. Prof.”, 106 citations belong to publications, included in the list, submitted for the present competition. This number of citations demonstrates convincingly the actuality of the research topic and the importance of the contributions of the studies carried out. The results from these studies, performed with the participation of Assoc. Prof. Todorova, have been presented in the form of 7 oral and 23 poster contributions in scientific events, 8 of them in national scientific events with foreign visitor participation and 13 presentations in international scientific events.

The fulfillment of national and international scientific research projects occupies considerable share of the time of the activities of Assoc. Prof. Todorova. She manifested impressive capabilities in the process of preparation of research projects and thereafter in their execution. The projects approved for funding are an indication of scientific competence, expertise and international recognition of Assoc. Prof. Todorova, of her skill to propose a hot topic of the day, underlying the project proposal, to form a working team and to lead successfully research work team. For the period of the competition she was the leader of 6 projects, including 3 projects, funded by the Bulgarian National Science Fund (BNSF) for bilateral scientific research cooperation between Bulgaria and India, Bulgarian and France, Bulgaria and Russia and 3 joint projects with the Institute of Physical Chemistry in Bucharest, sponsored within the framework of Agreement between Bulgarian Academy of Sciences and Romanian Academy. Her leading role was also in 5 national sponsored projects, in which she was the Head of the research team at IC. Being the Director of IC Assoc. Prof. Todorova organized and took active participation in the

preparation of the required documents for the National Center of Excellence for Mechatronics and Clean Technologies – a project financed by the European Union based on the Operating Program „Science and Education for Intelligent Growth“ and in the National Scientific Research Program „Low-Carbon Energy for the Transportation and Household Consumption“. Thanks to her expertise qualities and experience for team work Assoc. Prof. Todorova participated in the execution of 6 scientific research projects, sponsored by BNSF and 1 international project, sponsored by the Ministry of Education and Science.

The survey of authorship in regard to the contributions in the research publications of Assoc. Prof. Todorova, including those included in the indicative index „Habilitation thesis“, reveals clearly outlined topics of the investigation. These are directed to the design of new, highly efficient catalytic systems for the elimination of volatile organic compounds and pure hydrogen production by means of selective oxidation of CO. Both types of catalytic processes bear direct connection to the protection of the environment, including air decontamination – a global hot topic of the day, concerning human health. The published results demonstrate originality of the scientific selection of approaches for the synthesis of catalytic materials, expressed in combination of various methods of preparation, in suitable choice of model compounds, aiming at the elucidation of the dependence of the catalytic behavior on the state of the deposited active components, the interaction between the active phases, as well as between the active phase and the support. The scientific contributions can be evaluated as a novelty in the scientific knowledge and enrichment of the already available data, and also to some extent as application of the scientific achievements in the practice.

Assoc. Prof. Todorova combined successfully scientific research investigations with active educational and expert activities. She is the co-leader of a PhD student, who defended successfully her PhD thesis, as well as of a diploma work of a student for acquiring education degree „Master of Science“ and also mentor of 5 students, based on projects „Student practices“. Evidence is presented also for the lecturing activities of Assoc. Prof. Todorova. An indicator of the expert qualities of the candidate is also the participation in 13 academic juries: 6 for bestowing of the scientific and education degree „philosophy doctor PhD“ (including opinions as reviewer of 3 PhD theses), and 7 juries for occupying academic positions (including 3 opinions for the position „Assoc. Prof.“ and 4 opinions for Professor“ position). The expert activities as assistance for institutions and governing bodies are manifested in reviewing a project in the competition of the Romanian National Council for Studies and Development and 3 projects in competitions, announced by NSF.

The achievements of Assoc. Prof. Todorova should be evaluated also upon considering her time consuming engagements with administrative duties as Scientific Secretary during the period 2011-2015, while since year 2015 she assumed great responsibility as Director of IC and Head of the Laboratory „New Heterogeneous Catalysts for Clean Energy Production and Protection of the Environment“.

I know Assoc. Prof. Todorova from our collaboration in IC as competent, ambitious and hard working colleague having considerable experience in the experimental research work and in the interpretation of results. She is highly qualified researcher with strong experience in the selection and synthesis of catalytic materials, their characterization by suitable physico-chemical methods and studies on reactions of ecological importance. As a personal aspect, she possesses high moral-ethical qualities, extraordinary goodness and humanity, demonstrated in her attitude to all colleagues. The scientific production metrics correspond to the specific requirements of the Regulations of IC-BAS and even exceed them in regard to occupying the academic position „Professor“. The confirmation of the high scientific research level of the activities of Assoc. Prof. Todorova is the survey, whether the criteria are fulfilled, envisaged in item 4 of the Regulations. The acquaintance with the materials submitted for the competition as well as my personal impressions point to a researcher devoted to science having sense of responsibility. I think that the scientific research interests and achievements of Assoc. Prof.

Todorova in a promising field of great actuality represent a decisive argument in the competition procedure for a professor. I am really convinced to propose to the members of the Jury and to the Scientific Council of IC-BAS to vote positively and to approve Assoc. Prof. Sylvia Zhivova Todorova for occupying the academic position of „Professor” in the professional field 4.2. „Chemical Sciences”, scientific speciality „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 28.06.2019

Member of the Scientific Jury:

/Prof. PhD Tatyana Tabakova/