

ATTITUDE OF REVIEWER

Prof. Tatyana Tabakova, PhD, Institute of Catalysis - BAS

concerning the competition for occupying the academic position “Associate Professor” in professional field 4.2 “Chemical Sciences”, scientific specialty “ Chemical Kinetics and Catalysis ”, published in „Newspaper of State”, issue 67, dated 28.07.2020

Assist. Prof. Dr. Radostina Dimitrova Palcheva is the only candidate, applying for the academic position of “Associate 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“. 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 is correctly filled in and the fulfillment of all indicators is accurately evaluated.

Radostina Palcheva joined the IC - BAS in 2001 as a chemist. She was a PhD student during the period 2003-2006. She defended in the year 2006 her PhD thesis entitled “Synergy between components in NiW/ γ -Al₂O₃ catalysts for hydrodesulfurization” and received the PhD degree.

Assist. Prof. Palcheva is co-author of 25 research publications, and 21 of them are reviewed in the WoS and Scopus databases. Twenty articles have been submitted for participation in the present competition, 17 of them have been published in renowned international journals with IF in the field of catalysis, e.g. Applied Catalysis A, Applied Catalysis B, Topics in Catalysis, Catalysis Letters, etc. The ranking by quartile is as follows: 8 in Q1, 4 - Q2, 3 - Q3, 2 - Q4. Two of the remaining research works have been published in peer-reviewed proceedings of international scientific forums, and the last one – in a journal without IF, however, this paper has received 12 citations.

The number of noticed citations throughout the whole period of an academic career is 331, among them 292 citations belong to publications included in the list, submitted for the present competition, which demonstrates the actuality and scientific relevance of the research conducted. A confirmation of this conclusion is the high H-index of the applicant – 12 (Scopus, without self-citations of all co-authors). The highest number of citations have been noticed for publications with Dr. Palcheva as first author, namely № 4 and № 5 included in habilitation work with 47 and 26 citations, respectively, as well as № 8 and № 13 in the list with publications not included in habilitation work with 27 and 45 citations, respectively.

The results from the research carried out with the participation of Dr. Palcheva have been presented at 30 international and national scientific forums, incl. 3 oral contributions. An assessment of the expert qualities of Assist. Prof. Palcheva is the invitation to serve as a reviewer of numerous manuscripts and submitted projects.

Dr. Palcheva demonstrates active participation in the managing and implementation of research projects. During the periods 2008-2010, 2017-2019 и 2020-2022 she has been a leader of 3 projects with the Institute of Chemical Process Fundamentals, Academy of Sciences of the Czech Republic, sponsored within the framework of Non-Currency Equivalent Exchange Contracts of Bulgarian Academy of Sciences. It should be also noted her participation in the execution of 3

scientific research projects, sponsored by BNSF and 3 in the frame of Non-Currency Equivalent Exchange Contracts of BAS.

The publications with which Dr. Palcheva participates in the competition are divided into two groups covering indicators “B” and „Г“ in Tabl. 2 of the “Regulations”. According to the submitted summary for the fulfillment of the minimal national and some additional requirements, the „Habilitation thesis“ includes the results reported in 6 publications, with 130 points. The significant personal contribution of Dr. Palcheva in these studies and in summarizing the results is highlighted by the fact that she is the first author of 5 of these papers. The results related to the effect of various factors on the catalytic activity of Co(Ni)-Mo(W) catalysts for hydrodesulfurization (HDS) of thiophene at atmospheric pressure and 1-benzothiophene at 1 MPa are described in the Habilitation work. The role of preparation method, nature of support, and modifying additives, catalyst composition, and thermal treatment are analyzed. The influence of the impregnation procedure for the preparation of alumina-supported heteropolymolybdate on the HDS activity is studied and comparison with commercial catalysts is reported.

Scientific achievements presented in the non-habilitation thesis are described in 14 papers. They include fundamental investigations for the impact of the type of support and active components on the catalytic activity of three groups of materials:

1. Ni(Co)-Mo(W) catalysts for HDS of thiophene and 1-benzothiophene;
2. Monometallic (Ni, Rh) and bimetallic NiRh catalysts supported on mixed and perovskite oxides for methane partial oxidation and dry methane reforming;
3. Catalysts for deep oxidation of ethanol, dehydration of glycerol, and conversion of ethene to propene.

The scientific contributions can be evaluated as a novelty in the scientific knowledge and enrichment of the already available data.

The acquaintance with the materials submitted for the competition reveals that Dr. Palcheva has established herself as a researcher with extensive knowledge in the development of active catalytic materials for hydrodesulfurization. The scientific outputs of Dr. Palcheva cover the subject of the announced competition. The submitted lists and supporting documents demonstrate that both the minimum requirements and the enhanced criteria for the occupation of the academic position of “Associate Professor” under the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation and the Rules for the Conditions and Procedures for Acquisition of Academic Degrees and Occupation of Academic Positions at IC - BAS are fulfilled. The review of the overall research activity and the indicators performed gives me a reason to assess positively the achievements of Assist. Prof. Dr. Radostina Palcheva. I am truly convinced to recommend to the members of the Scientific Jury and the Scientific Council of IC-BAS to vote positively and to approve Dr. Radostina Palcheva for occupying the academic position of „Associate 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 16.11.2020

Member of the Scientific Jury:

/Prof. PhD Tatyana Tabakova/