

## OPINION OF REVIEWER

on the competition announced in State Gazette no. 55 of 27.06.2023, for the awarding of the academic position "Associate Professor" in the direction 4.2. Chemical Sciences (Chemical Kinetics and Catalysis) for the Laboratory "Catalysis for Clean Energy Production and Environmental Protection", Institute of Catalysis, Bulgarian Academy of Sciences.

**Reviewer:** Assoc. Prof. Hristo Gospodinov Kolev, PhD, Institute of Catalysis, BAS

**Participant:** The only candidate Assistant Professor Petia Tsvetanova Petrova, PhD, from the Laboratory "Catalysis for Clean Energy Production and Environmental Protection", Institute of Catalysis at the Bulgarian Academy of Sciences.

Associate Professor Dr. Petya Tsvetanova Petrova is a long-standing employee of the Institute of Catalysis - Bulgarian Academy of Sciences. Following the defense of her doctoral thesis in 2009, entitled "Gold Molybdenum Catalysts Supported on Cerium Oxide and Cerium Oxide Supported on Aluminum Oxide for the Complete Oxidation of Benzene," she has held the position of Associate Professor (2010 to the present), accumulating nearly 18 years of service at the Institute of Catalysis - BAS. She currently works in the laboratory of "New Heterogeneous Catalysts for Clean Energy and Environmental Protection."

Dr. Petrova also serves as a teacher of Chemistry and Environmental Conservation at 68th High School, First English Language School, and 91st German Language School. She has undertaken brief scientific specializations in Italy, Sweden, and Turkey.

Associate Professor Dr. Petrova is a co-author of 47 publications with a total of over 360 citations. Based on these figures, her Hirsch Index (H) calculated by Scopus stands at 14. Dr. Petrova has contributed 25 publications to the current competition, with a total of 240 citations. These articles are within the thematic scope of the competition and are distributed across the following quartiles: Q1 – 8 publications; Q2 – 7 publications; Q3 – 4 publications; Q4 – 1 publication; with no open access quartile and conference materials – 5 publications. Results from

Dr. Petrova's scientific research have been presented at over 80 national and international scientific forums. She has participated in 12 national and international projects.

The scientific activity of Associate Professor Dr. Petrova is directed towards the development and characterization of new, efficient catalytic materials for the removal of volatile organic compounds (VOCs). The candidate's work focuses on assessing the catalytic properties of materials investigated in reactions such as complete oxidation of propene and benzene, cyclization of 1,4-butanediol, reduction of nitrogen oxides with carbon monoxide, and the selective oxidation of carbon monoxide in the presence of hydrogen.

The candidate's primary contributions can be summarized as follows:

1. Synthesis and selection of nanoscale catalysts for VOC abatement.
2. Design of novel heterogeneous catalysts for clean hydrogen production through selective CO oxidation in the presence of hydrogen.
3. Reduction of NO with CO.
4. Catalysts for the synthesis of antitumor agents.

An analysis of Dr. Petya Petrova's research activities reveals her as a seasoned researcher with profound expertise and specialization in the field of environmental catalysis, particularly in the development and characterization of new nanoscale catalysts for environmental preservation and clean energy generation. Furthermore, her results have been published in prestigious scientific journals and have garnered significant citations, underscoring the relevance and significance of the subject matter in which Dr. Petrova works.

I do not have critical comments on the materials provided for the competition.

**Conclusion:**

Dr. Petya Tsvetanova Petrova's scientific research fully aligns with the theme of the announced competition for the academic position of 'Associate Professor.' Dr. Petrova is an excellent specialist in the fields of chemical kinetics, catalysis, and environmental catalysis, as well as in the characterization and selection of catalytic materials for air purification from volatile organic compounds and other pollutants. Her publication record, citations of her published results, active

scientific engagement, and participation in research projects meet all the requirements outlined in the Law on Academic Staff Development and the Regulations on the Conditions and Procedures for the Acquisition of Scientific Degrees and the Appointment to Academic Positions at the Institute of Catalysis at the Bulgarian Academy of Sciences. Therefore, I strongly recommend to the esteemed members of the Academic Jury and the respected Scientific Council of the Institute of Catalysis - BAS to confer upon Assistant Professor Dr. Petya Tsvetanova Petrova the academic title of “Associate Professor” in the field of 4.2. Chemical Sciences (Chemical Kinetics and Catalysis).

14.10.2023

Sofia

Reviewer: .....

/Assoc. Prof. Dr. Hristo Kolev/