

## OPINION OF REVIEWER

For a for the competition announced in the State Gazette, issue 55 of June 27, 2023, for the position of "Associate Professor" in the professional field 4.2 "Chemical Sciences," scientific specialty "Chemical Kinetics and Catalysis," thematic direction "Synthesis and Characterization of Catalytic Materials for the Abatement of Volatile Organic Compounds" for the needs of the Laboratory of "Catalysis for Energy and Environmental Protection," Institute of Catalysis, Bulgarian Academy of Sciences

The position is prepared by:

Dr. Elena Ivanova, Associate Professor at the Institute of General and Inorganic Chemistry - BAS, as a member of the scientific jury for the competition.

Documents for participation in the competition have been provided by one candidate, Dr. Petia Petrova, who currently holds the position of Assistant Professor at the Institute of Catalysis, Bulgarian Academy of Sciences.

Dr. Petia Petrova has submitted all the necessary documents that meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASTB), the Regulations for the Implementation of ZRASTB, and the respective Regulations of the Institute of Catalysis at the Bulgarian Academy of Sciences.

### Candidate Data

Petia Petrova was born in 1979. In 2003, she graduated from the University of Chemical Technology and Metallurgy in Sofia. Following her graduation, she began working at the Institute of Catalysis, Bulgarian Academy of Sciences, in the Laboratory of New Catalytic Materials and Nanoscale Catalysts. She held the position of Assistant Professor starting from 2010. In 2009, she earned her doctoral degree in chemistry. Dr. Petrova is registered with NACID, where her academic title of "Doctor" and the academic position of "Assistant Professor" have been recognized.

### General Overview of the Candidate's Scientific Achievements

Dr. Petia Petrova has contributed 25 publications to scientific journals, which were not used for obtaining her educational and scientific degree of "Doctor" and are within the thematic scope of the competition:

Q1 - 8 publications, with 1 of them falling into the category of indicators B;

Q2 - 7 publications, with 4 of them in the category of indicators B;

Q3 - 4 publications, with 3 of them in the category of indicators B;

Q4 - 1 publication;

No quartile assigned - 5 publications, with 2 of them in the category of indicators B.

Depending on the research topics presented in the competition, the scientific production of Dr. Petia Petrova can be categorized into the following areas:

- *Included in indicator "B"* - The habilitation report includes 10 publications that focus on the development and characterization of new effective catalytic materials for the neutralization of volatile organic compounds. The primary scientific contributions can be summarized in the following thematic directions:
  - Development and study of nanoscale gold catalysts based on CeO<sub>2</sub> and modified with Co<sub>3</sub>O<sub>4</sub> for the complete oxidation of volatile organic compounds.
  - Synthesis and characterization of mixed oxide composites based on Co<sub>3</sub>O<sub>4</sub>, modified with various amounts of CeO<sub>2</sub>, for the complete oxidation of volatile organic compounds.
  - Production and characterization of a new type of supports for nanoscale gold catalysts for the neutralization of volatile organic compounds.
- *Included in indicator "G"* - The candidate has presented a total of 15 scientific articles outside of the habilitation work. These articles evaluate the catalytic properties of materials studied in various reactions, including the complete oxidation of volatile organic compounds, the reduction of NO<sub>x</sub> with carbon monoxide, and the selective oxidation of CO in the presence of hydrogen.

The candidate's works have made original scientific and practical contributions that have received international recognition. The in-depth and critical discussion of results in the field under consideration is impressive. The production demonstrates a systematic and analytical approach in scientific research, which is a prerequisite for future advancements as a scientist.

No plagiarism has been found in the scientific works submitted for the competition.

The candidate has participated in over 85 international scientific forums or forums with international participation and has delivered 16 presentations at forums held in Bulgaria. Her participation in so many scientific events establishes her as a widely recognized scientist, which is further confirmed by the number of citations of her publications. Her publications have been cited in a total of 366 scientific papers. The scientific papers submitted for the competition alone have a combined total of 240 citations. This extensive recognition and citation of her work underscore her significant contributions to the field of research.

The candidate serves as a teacher for the subject of "Chemistry and Environmental Conservation" both at the high school level and within specialized education programs for students.

Dr. Petia Petrova has experience in participating in scientific projects. She has been involved in numerous international projects, contributing to the development of international scientific collaboration and knowledge transfer. Additionally, her participation in nearly 6 national projects, which were funded by the Fund for Scientific Research (FNI) or the Bulgarian Academy of Sciences (BAS), highlights her activity within the academic community in the

country. This experience not only establishes her as a successful research scientist but also as a significant contributor to the development of the Bulgarian scientific community.

She actively engages in the scientific life and organizational activities of the Institute of Catalysis at BAS. Her dedication and ability to work as part of a team have a positive impact on the scientific community and the institute where she works.

In addition, I would like to add my personal impressions of working with Dr. Petia Petrova. She is an exceptionally fair, responsive, and dedicated scientist. She works conscientiously and competently, and her colleagues can always rely on her assistance.

## Conclusion

The field of scientific research conducted by Dr. Petia Petrova is in full alignment with the thematic focus of the laboratory "Catalysis for Energy and Environmental Protection" for which the competition has been announced.

After reviewing the materials presented in the competition, analyzing their significance, and considering the scientific contributions contained within them, I find it well-founded to provide a fully convinced positive opinion and recommend to the Scientific Jury at the Institute of Catalysis, Bulgarian Academy of Sciences, to award the academic position of "Associate Professor" to Dr. Petia Petrova in the professional field of Chemical Sciences (Chemical Kinetics and Catalysis).

**I give my positive assessment of the candidacy.**

Date: October 6, 2023.

Prepared by:

(Associate Professor Dr. Elena Ivanova)