

STATEMENT OF OPINION

regarding associate professor Nikolay Ivanov Velinov, the sole candidate in the announced competition for the academic position of Professor in the field 4.2 "Chemical Sciences" and the scientific specialty "Solid State Chemistry", announced by Institute of Catalysis – Bulgarian Academy of Sciences for the needs of the laboratory "Design and Characterization of Catalytic Materials" in the thematic direction "Synthesis and Structure of Catalysts and Sorbents", promulgated in State Gazette №82 of 07.10.2025

by Professor DSc Yuri Kalvachev, internal member of the academic jury appointed by Director's Ordinance № RD 09-92 of 09.12.2025.

Associate Professor Nikolay Velinov is the sole candidate in the announced competition. Candidate Nikolay Velinov graduated from the University of Chemical Technology and Metallurgy, Sofia in 2001 as a Master, Chemical Engineer in Materials Technology and Materials Science; Specialization: Silicate Materials; Defended diploma thesis on the topic: Synthesis and characterization of liquid phase perovskites. At the same university in 2009 he defended his doctoral dissertation in the scientific specialty "Technology of silicates, binders and refractory non-metallic materials", on the topic: "Synthesis and study of materials with perovskite and perovskite-like structure for cathodes in solid oxide fuel cells". He joined the Institute of Catalysis - Bulgarian Academy of Sciences in 2010 as a research associate, and is currently an associate professor at the same institute.

The scientific research of Assoc. Prof. Dr. Nikolay Velinov is mainly in the field of catalysis, using various catalytic systems in reactions important for industry and environmental protection. One main line of this research is the application of Mössbauer spectroscopy of ferritic materials and iron-modified oxides. The studied catalytic systems are:

- 1) two-component or multi-component iron oxide catalytic systems;
- 2) catalysts supported on activated carbon;
- 3) various ferrite materials, pure or doped with various elements.

The candidate Nikolay Velinov submitted for the competition a total of 27 scientific publications, 9 of which are in the form of habilitation papers. The remaining 18 publications

have an impact factor and are distributed by quartiles as follows: Q1: 7 pcs.; Q2: 3 pcs.; Q3: 3 pcs.; Q4: 5 pcs. Some of them have been published in the most renowned international journals in the respective field - Applied Catalysis B: Environmental; Nanomaterials; Applied Surface Science, Catalysis Communications, etc. These works have found a response in the scientific literature - they have 154 citations in the Web of Science and Scopus databases. The Hirsch index (h-index) of Assoc. Prof. Velinov, checked in the Scopus scientific information database without self-citations, is 14, which indicates high quality of the works and relevance of the tasks being solved. The presented research is original and corresponds to the topic of the announced competition. In these publications, the candidate is not the first author, nor is he a corresponding author. His contribution is in the results obtained using Mössbauer spectroscopy, which is why I first indicate the methodological contributions of the candidate: Application of Mössbauer spectroscopy for the study and demonstration of active catalytic phases in modern functional materials, including two-component or multi-component iron-oxide catalytic systems, microporous and mesoporous materials, metals and metal oxides supported on activated carbon, ferrite materials doped with metals. All of these materials have been used as catalytic systems in reactions of nitrous oxide reduction, methanol decomposition to synthesis (syngas) gas, and volatile organic compound oxidation.

Assoc. Prof. Velinov's habilitation thesis was prepared at a high scientific level and is on the topic "Synthesis, structural characterization and catalytic properties of mixed ferrites". The thesis is based on 9 articles, all published in journals with an impact factor. The candidate is a leading co-author in research related to targeted modification of the crystal and electronic structure of Cu–M (M=Co, Zn, Mn, Ni) ferrites and ferrites deposited on activated carbon for the purpose of optimizing catalytic properties.

The main scientific results in the publications from the habilitation thesis include:

- establishment of phase-structural dependencies for mixed spinel Cu–M ferrites, controlled by the methods of mechanochemistry and autoignition;
- establishment of composition-structure-activity relationships in a number of catalytic reactions (methanol decomposition, ethyl acetate oxidation, WGS);
- introduction of modified carbons derived from agro-waste as a carrier for the deposition of ferrite catalysts;

- demonstration of the formation of specific active phases (magnetites, carbides, alloys, nitrides) using Mössbauer spectroscopy;
- introduction of Mössbauer spectroscopy as a tool for monitoring the structural changes of catalytically active ferrite phases.

The candidate Velinov meets the requirements for occupying the academic position “professor” at Institute of Catalysis – Bulgarian academy of sciences, referred to in Article 29, Paragraph 1, Items 3,4 and 5 of the Law on the Development of the Academic Staff in the Republic of Bulgaria and in the Regulations for its implementation

All other requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria have also been met - a recognized educational and scientific degree of "doctor of philosophy" and an awarded academic position of "associate professor". The diplomas have been presented, as well as a certificate of internship in the specialty, which shows that he held the academic position of "associate professor" for a longer period than required. A careful review of the materials provided to me for review gives me reason to claim that there is no evidence of plagiarism in the candidate's scientific works and that he meets the condition specified in Art. 29, para. 1, item 6 of the Law on the Development of the Academic Staff in the Republic of Bulgaria. An additional basis for this claim is the publication of the works in reputable journals that monitor for the presence of plagiarism.

Assoc. Prof. Dr. Nikolay Velinov meets and exceeds the requirements of Art. 29, para 1 of the Law on the Development of the Academic Staff in the Republic of Bulgaria. Based on the above, I strongly propose to the esteemed members of the scientific jury and the members of the Scientific Council of the Institute of Catalysis - Bulgarian Academy of Sciences to award Assoc. Prof. Dr. Nikolay Ivanov Velinov the academic position of “professor” in professional field 4.2. Chemical Sciences, scientific specialty "Solid State Chemistry".

February 09th, 2026

Sofia

Prof. Yuri Kalvachev