

## **OPINION**

about the competition for an academic position “Associate Professor” in the professional field of 4.3. Biological sciences (specialty Microbiology), at the Institute of Microbiology, Bulgarian Academy of Sciences, published in the “State Gazette”, issue 21/14.03.2025.

by Assoc. Prof. Dr. Neli Nikolova Mintcheva-Peneva from the University of Mining and Geology, Sofia, a member of the academic committee, appointed with the order I-65/29.04.2025 by the Director of the Institute of microbiology, BAS

The chief assistant professor Dr. Venelin Neichev Hubenov is the only candidate for this position. He graduated with bachelor's degree from the University "Prof. d-r Assen Zlatarov", Burgas in 2005, Master of Science in Ecological Biotechnology (2007) and Doctor degree (2015) in the professional field 4.3. Biological Sciences (Microbiology) from the Institute of Microbiology, Bulgarian Academy of Sciences, where he continues his career. His doctoral dissertation on the topic "Anaerobic Degradation of Organic Waste under Mesophilic and Thermophilic Cultivation Conditions" was developed into in-depth and consistent research in the field of biotechnological production of renewable energy sources. Dr. Hubenov is co-author of 31 scientific publications and 2 utility models, of which 4 scientific articles and one utility model related to his dissertation, and 27 articles were published in peer-reviewed and indexed journals (Scopus and Google Scholar), along with one utility model from 2022, were included in the application for this position.

### **Research activity**

The scientific contribution of the candidate is in the detailed study of the anaerobic degradation of organic matter for production of methane and hydrogen, which are used as environmentally friendly fuels. Different stages of this process have been examined, the composition of the resulting gas has been analyzed based on the type of organic waste, the effect of the raw material's pretreatment has been assessed, and the microorganisms involved in biodegradation have been identified. The theoretical and applied contributions of the candidate's scientific work can be grouped into several areas:

- Study of methods for the pretreatment of lignocellulosic materials and their subsequent use in anaerobic biodegradation (1 publication)
- Investigation of two-stage anaerobic biodegradation processes for production of hydrogen and methane, and the use of immobilized microbial consortia for the biodegradation of organic waste of various types (6 articles)
- Analysis of the composition of microbial communities involved in anaerobic biodegradation to produce hydrogen and methane from lignocellulosic materials, corn extract, wheat straw, and waste algal biomass (4 articles)
- Exploration of methods for the utilization of sludge (waste liquid fraction) through the formulation of a decolorizing agent for the liquid fraction and subsequent methane production (4 articles)
- Application of anaerobic biodegradation to organic waste generated during piloted space missions, aiming to achieve recycling systems on board (1 article)
- Determination of the antibacterial activity of zinc-containing nanocomposites (2 articles)

### **Participation in projects**

In the period 2012–2020, Dr. Hubenov participated in 11 projects funded by the National Research Fund, as well as by European and international programs, in collaboration with several research teams. In the past four years, the candidate has taken part in 15 national and international conferences, where he has disseminated his scientific results, demonstrating a record of intensive and productive scientific activity.

### **Compliance of the submitted documents with the evaluation criteria.**

The candidate has submitted 17 scientific publications, of which 5 are included in Group B and 12 in Group G.

**Group A** – The dissertation for educational and scientific degree "Doctor" earns 50 points.

**Group B** – This group includes 5 articles, 3 of five were published in Q1 journals, indicating high-quality output, and 2 more are in Q2 and Q4 journals. These publications contribute a total of 107 points, exceeding the minimum requirement of 100 points.

**Group C** – This group consists of 12 scientific publications and one utility model, that yield 224 points (the minimum is 220 points). Notably, 50% of the articles are in Q2 journals, underscoring good scientific value.

**Group D** – The candidate reports 94 citations in recognized scientific databases (Web of Science and Scopus) and 7 citations in other sources, resulting in 195 points, which are above the minimum requirement of 60 points.

Additionally, the candidate meets the criteria for academic promotion at the Institute of Microbiology of the Bulgarian Academy of Sciences, having presented a total of 27 publications, in 6 of them the candidate is first or corresponding author. The total impact factor of the candidate's scientific work is 35.835, and the overall H-index is 6, both of which exceed the minimum required thresholds.

From the materials submitted for this competition, it is evident that Dr. Venelin Hubenov is engaged in environmental problems specifically the utilization of organic waste to produce renewable fuels (methane and hydrogen). As an advantage of his research can be considered the potential of his results to be applied in industrial scale production, thus integrating science and business. He is an experienced scientist who has worked extensively and in-depth on this topic over many years.

In conclusion, the candidate's documents fully meet and even exceeds the requirements set in the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its implementation and the recommended criteria for an academic position of Associate Professor at the Institute of Microbiology of the Bulgarian Academy of Sciences, in professional field 4.3 Biological Sciences. I give my positive assessment and confidently recommend to the scientific jury and the Scientific Council of the Institute of Microbiology at BAS to vote for the appointment of Chief Assistant Professor Dr. Venelin Hubenov to the academic position of Associate Professor in professional field 4.3. Biological Sciences (Microbiology).

24.06.2025 г.

Sofia

Reviewer:

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