

Opinion

regarding the application of

Head Assistant Professor Ivaylo Dimitrov Yotinov, Ph.D

for occupation THE ACADEMIC POSITION ASSOCIATE PROFESSOR OF PN 4.3. BIOLOGICAL SCIENCES
(HYDROBIOLOGY - WATER MANAGEMENT), State Gazette, no. 67/04/08/2023

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Teaching and learning activity

Dr. Yotinov has considerable experience as a Lecturer at the Department of General and Applied Microbiology, Faculty of Biology, SU "St. Kliment Ohridski" in the period from 2016 until the announcement of the competition. In the role of the Head assistant Professor currently he offers lecture courses on Water Management (Bachelor's degrees "Biomangement and Sustainable Development", "Ecology and Environmental Protection" - full-time and part-time studies; Key directions in biobusiness; Management and marketing in biobusiness; Bioremediation, as well as being responsible for practical classes in the above-mentioned disciplines. He also teaches lecture courses in the Master's College of Engineering at the "Biobusiness and Bioentrepreneurship" MSc and conducts practical classes at the Master's College of Engineering within the framework of the "Ecological Biotechnology" MSc. Outside of his work at the Faculty of Biology of the Sofia University he gives lectures on Wastewater Microbiology at the Professional Training Center of the Bulgarian Water Association. Part of the methods developed by the candidate in the framework of his research work are used to train students from the Bulgarian Water Association Bachelor and MSc degrees. The joint research work with students from the specialty "Biomangement and Sustainable Development" and from the MP "Ecological Biotechnology" is documented with participation in scientific forums. Under the scientific guidance of Dr. Yotinov, 18 students successfully defended their diploma theses / 17 in the Master's College and 1 in the Bachelor's College. As the head of the Master's program "Biobusiness and Bioentrepreneurship", the candidate takes an active part in the training in the development of projects aimed at bioentrepreneurship and the development of innovative ideas in the field of clean technologies and water management.

In addition to regular training of students, the candidate participates as part of the team of the laboratory of "Ecological Biotechnology and Biological Water Treatment" in a number of targeted trainings for students from primary and secondary education, to obtain additional qualifications in the field of water, assessment, control and management of water resources. The candidate participated with colleagues from the Faculty of Biology of the Sofia University the creation and development of a BUSINESS INCUBATOR with partners - "Sofiiska Voda" JSC and "Capital Waste Treatment Enterprise" from the business side and the Clean & Circle Competence Center and the Ministry of Environmental Biotechnology from the research side. Since its establishment, this incubator has trained on the DUAL SYSTEM a large number of students who, after training, have been provided with jobs in business partners.

Scientific activity

Basically, Dr. Yotinov's scientific work is focused on the control and management of water, underlying the water cycles of key and critical importance (in natural and technological environments). In his publications (12 publications in this direction are presented), the candidate uses a control system of hydrobiological, microbiological, hydrochemical, enzymological and molecular genetic indicators, emphasizing selective indicator connections that improve the control system of water purification processes. As a specific contribution of the candidate, the studied relationships of micro- and metafauna with bacteria in activated sludge in biobasins and SBRs of some treatment plants can be evaluated. The obtained results demonstrate continuity of research in this direction.

Another essential direction of the candidate's scientific work is the application of enzymological and molecular genetic indicators in the management of water purification processes. Through the application of the specific oxygenase and dehydrogenase enzymological indicators, the biodegradation and biodegradation abilities of the microorganisms in the activated sludge (AU) are successfully described. Through the above-mentioned indicators plus some conventional ones, an assessment was made of the effect of shock entry of heavy fractions of petroleum products into the treatment facilities of the Sofia WWTP and deformations in the structure and functions of the WWTP were identified. The results of these studies (presented through 12 publications) are of high practical value.

A significant contribution of Dr. Yotinov, as part of teamwork, is the research (7 publications on the topic) regarding the application of molecular genetic analyzes /fluorescence in-situ hybridization - FISH/ as an indicator for researching the hidden potential of non-cultivable microorganisms. This molecular indicator, along with other technological, chemical, microbiological and enzymological indicators, were used in studies aimed at evaluating the adaptive changes of activated sludge (AU) from PS for leachate waters, and the corresponding adaptation process was simulated. The key conclusion was made that water purification processes in the presence of xenobiotics in high concentrations can be inhibited, but with knowledge of the conditions and mechanisms of biodegradation and adaptation of AU, the purification processes can be managed successfully.

An important part of the candidate's scientific activity is the evaluation of the critical factors influencing the processes of self-purification in sedimentary areas. In the course of a implemented monitoring program, it was established that the most risky area is the dam sediments.

As innovative elements in the candidate's scientific work, the activities related to the functional control and management of key processes of water cycles can be defined under a) Functional control and indication in the part of self-purification processes in natural water ecosystems and biodegradation processes of xenobiotics in model conditions with dams sediments; b) Functional application of bioaugmentation factors / microbial cultures / for adaptation of activated sludge in biodegradation with shock pollution with xenobiotics; Application and effect of nanoaugmenting factors /nanodiamonds/ on detoxification processes in sediments and waters; c) Plasma sources, as a means of eliminating hazardous pollutants and microbial water disinfection.

Another cross-disciplinary contribution, developed in a team and with the participation of the candidate, is the application of molecular genetic analyzes /fluorescence in-situ hybridization - FISH/ as a key indicator for researching the hidden potential of non-cultivable microorganisms.

The candidate participated in the competition with 12 publications (Q1 – 1x25 points; Q2 – 5x20 points; Q3 – 3x15 item points; Q4 – 2x12 points; without Q – 1x10 points) in total 204 points and one invention for which duly issued security document. 44 citations of his publications were noted in Scopus and Web of Science. Dr Yotinov has participated with reports in 76 international and national conferences and other forums.

The candidate has submitted all the necessary documents for participation in the competition for the academic position of "associate professor" and meets the conditions and procedures for holding this position according to the REGULATIONS FOR THE CONDITIONS AND PROCEDURE FOR ACQUIRING SCIENTIFIC DEGREES AND HOLDING ACADEMIC POSITIONS IN SU "ST. CLEMENT OF OHRID.

Conclusion

In general, Head Assistant Professor Ivaylo Yotinov, Ph.D., shows impressive research results on topics related to the competition and has the necessary teaching experience in the field of hydrobiology and water management. On this basis, I consider that he fully meets the requirements for occupying the academic position of "Associate Professor". This gives me the reason to give a positive assessment and to confidently recommend the selection of Dr. Yotinov for the position of "Associate Professor" in professional direction 4.3. BIOLOGICAL SCIENCES (HYDROBIOLOGY - WATER MANAGEMENT).

Prof. Valentin Nenov

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