

OPINION

By Assoc. Prof. Dr. Svetlana Dimitrova Zheleva, PhD, Prof. Dr. Asen Zlatarov University of Burgas, Member of the Scientific Jury, according to the order No. RD-322/22.11.2021 of the Rector of "Prof. Dr. Asen Zlatarov University" of Burgas

Regarding the application for the academic position of Associate Professor, announced in the State Gazette, issue 87/19.10.2021, Area of Higher Education 4. Natural Sciences, Mathematics and Informatics, **Professional Field 4.2 Chemical Sciences**, Scientific specialty "Ecology and Environmental Protection" (**Ion Exchange and Bioelectrochemical Methods for Water Purification**), for the needs of the Department of Ecology and Environmental Protection, "Prof. Dr. Asen Zlatarov" University of Burgas

1. Brief Biographical Data

Chief assistant professor Blagovesta Nikolaeva Midiurova, PhD is the sole applicant in the current competition. In 2001 she graduated with a Master's degree from "Prof. Dr. Asen Zlatarov" University of Burgas with a professional qualification "Chemical Engineer" in the specialty "Materials Technology and Materials Science". In 2007, she was appointed to the Department of Ecology and Environmental Protection at the Faculty of Natural Sciences of the "Prof. Dr. Asen Zlatarov" University of Burgas as a technician-chemistry, where she started and gradually deepened her interest in teaching and research. In the period 2012 – 2016 she developed her PhD thesis on "Application of proton exchange membranes in fuel cells" and in October 2016 she was appointed to the Department of Ecology and Environmental Protection at the academic position of "Assistant Professor". Within one year, after a competition was announced in the Department, Dr. Blagovesta Midiurova was appointed to the academic position of "Chief Assistant Professor".

Chief assistant prof. Blagovesta Midyurova was started to teach lecture courses, practical exercises and seminars on different academic disciplines for students in the Bachelor's and Master's degrees. The applicant's teaching experience up to the submission of the competition documents amounts to 5 years and 2 months.

2. General Description of the Submitted Materials

The scientific production presented by the candidate for the competition consists of 19 articles published in refereed journals, indexed in Scopus and Web of Science and one monographic work on "Ion exchange conditioning of natural waters", published by Libra Scorp, Burgas in 2019 (ISBN 978-954-471-572-4), which has a volume of 147 pages and meets the requirements for a scientific monograph. Attached are also 6 scientific publications submitted for the award of PhD, which are not relevant to this competition.

The presented scientific publications in journals indexed in Web of Science and Scopus are as follows:

- Bulgarian Chemical Communications* (SJR=0.142), Q4) – [15]
- Oxidation Communication* (2017 SJR=0.161, Q4; 2018 SJR=0.216, Q3; 2019 SJR=0.224 Q3) 2020 SJR=0.215, Q3) – [6, 8, 9, 11, 12, 16]
- Journal of Chemical Technology and Metallurgy* (SJR=0.22, Q3) – [1, 2, 3, 7]
- Journal of Environmental Protection and Ecology* (SJR=0.214, IF=0.301, Q3) – [4, 5]
- Journal of the Balkan Tribological Association* (SJR=0.212, Q3) – [10]
- Journal of Materials and Environmental Science* (SJR=0.295, Q3) – [13]
- IOP Conference Series: Materials Science and Engineering* – [17]

16th Conference on Electrical Machines, Drives and Power Systems, ELMA 2019 – Proceedings – [18]

10th National Conference with International Participation, ELECTRONICA 2019 – Proceedings – [19]

Article [14] in *International Symposium on Bioinformatics and Biomedicine, 2020, Studies in Computational Intelligence* is "in press" status, which has not changed to "accepted for publication" or been published at this time, so I do not accept it for evaluation.

In the reference of citations 44 citations are presented, and to date in Scopus a total of 57 citations of all publications recorded in the database are found. The productivity and significance of the candidate's publications is rated with an *h-index* 6. A reference for the additional indicators of the candidate, as well as a reference for the scientific contributions according to Art. 57a, § 2 stated in The Regulation on the Terms and Procedure for Acquisition of Academic Degrees are enclosed

3. Teaching Activities

From the moment of appointment to the academic position "assistant professor" at the "Prof. Dr. Asen Zlatarov" University of Burgas (2016) chief assistant prof. Blagovesta Midyurova carries out teaching and learning activities, which consist in giving lectures, seminars and laboratory exercises to students in the Bachelor and Master degree programmes in Ecology and Environmental Protection and Ecology and Environmental Management of the professional field 4.2 Chemical Sciences. From the presented detailed reference it is evident the lecture load of the courses, some of which are "Climatology and Hydrology", "Water Pollution and WEC", "Fluid Treatment II", "Project (Air, Water)". Educational courses have also been conducted for Master Ecologists in the disciplines "Ecology of the Sea", "Water Management" and "Specific Technologies for Mitigation of Anthropogenic Pressures on the Hydrosphere". She has been involved in the preparation of four graduate students of the Department of Ecology and Environmental Protection of the Faculty of Natural Sciences, who have successfully graduated under her supervision in the period 2019 – 2021.

Chief assistant prof. Blagovesta Midyurova participates in the updating of the curriculum documentation for the specialties "Ecology and Environmental Protection" and "Ecology and Environmental Management" and develops in co-authorship new curricula for the disciplines "Ecology of the Sea", "Water Management" and a program for foreign students under Erasmus+. She is a member of the organizing committees of the Scientific Conference "Ecological Engineering and Environmental Protection" and of the five editions of the National Conference for School and University Students "Thinking Ecologically for the Future" organized by the Department of Ecology and Environmental Protection at the Faculty of Natural Sciences of the "Prof. Dr. Asen Zlatarov" University of Burgas. The organizational qualities of the candidate have been noticed by the management of the Faculty of Natural Sciences, evidence of which is her inclusion in the Committee for Evaluation and Maintenance of the Quality of Training, as well as her commitments as Technical Secretary of the Faculty in the period 2018 – 2020. The administrative responsibilities she assumes relate to her involvement on the Inventory Committee and her functions as Head of the Institutional Archives of the Faculty of Science Unit.

4. Research and scientific contributions

Chief assistant prof. Blagovesta Midyurova presents a certificate of participation in two national educational projects and one scientific project, as well as a certificate of participation in three international research contracts. Two certificates of participation in a qualification course

and a thematic scientific exchange are also shown but the candidate is not a member of the working group.

During the development of the doctoral dissertation chief assistant prof. Blagovesta Midyurova, PhD established full scientific contacts and gradually grew as a researcher with scientific interests in the field of ion exchange and bioelectrochemical methods for water treatment. Four letters for recommendation from foreign scientists in different organizations are attached to the competition documents, which support the candidate's work and academic growth.

The scientific contributions are presented in three thematic areas::

I. Ion exchange methods in natural water treatment

Information on the composition and sources of contamination of natural waters used in domestic, industrial and agricultural applications has been obtained through hydrochemical studies. Studies on the treatment and conditioning of natural waters have been carried out to control and meet user requirements. Technological schemes for ion exchange softening have been applied and it has been found that, other things being equal, the stratification of the ionic layer, as well as its regeneration, has an influence on ion hardness. The influence of the concentration of electrolytes in aqueous solutions was quantified. The published monographic work "Ion Exchange Conditioning of Natural Waters", based on four scientific publications co-authored by Dr. Blagovesta Midyurova in the period 2015 – 2018 (two in the Proceedings of "Angel Kanchev" University of Ruse, one in the Annual of Assen Zlatarov University and one in the Academic Journal "Industrial Technologies") presents all scientific and applied contributions of this thematic area.

II. Application of bioelectrochemical systems (BES) in wastewater treatment

The behavior of BES in water treatment was investigated for better waste stream treatment efficiency and higher generated electrical driving voltage. BES optimization options are proposed using alternative separators to polymer membranes for microbial fuel cells, which have similar operating characteristics and process kinetics. The effectiveness of bioelectrochemical methods for organic removal, reagent-free pH elevation, metal ion reduction, and water desalination is demonstrated. The feasibility of treating livestock effluents high in organic matter, suspended solids, phosphorus and nitrogen by microbial fuel cells was evaluated and it was found that the voltage generated by the system remained relatively constant.

III. Surface water pollution assessment methods

In order to determine the ecological status of surface waters according to the requirements of the Water Framework Directive, different methods have been proposed to assess the pollution of aquatic ecosystems by physicochemical indicators: oxygen saturation, dissolved oxygen, biochemical oxygen demand, ammonium nitrogen, nitrite nitrogen, nitrate nitrogen and phosphorus content. On the basis of measured physicochemical and biological indicators of surface water, the Vollenweider method was applied to calculate the TRIX index, which helps to take actions and measures for prevention and protection of water from pollution.

IV. Application of neural networks and fuzzy sets in bioelectrochemical systems. Mathematical modelling and computer simulations.

Mathematical models based on fuzzy sets have been developed to apply neural networks for BES optimization. Preliminary information about the systems has been generated through observation and research on the status of individual indicators over a period of time. Specific parameter estimation and optimization methods were used to synthesize new air cathodes. Based

on mathematical modelling of the cathode parameters, problems related to their synthesis technology have been predicted, summarised and solved.

5. Compliance in requirements for the academic position “Associate Professor”

The scientific-metric evaluation of the presented by the candidate documentation for participation in the competition for the academic position of “Associate Professor” is as follows:

Groupe A of indicators – A1 PhD thesis

– PhD thesis “Application of proton exchange membranes in fuel cells” on scientific specialty 02.22.02 “Water treatment technology”, Diploma № 0041, 30.05.2016 (**50 points**)

Groupe B of indicators – B3 Habilitation thesis - monograph

– Habilitation thesis – scientific monograph on “Ion exchange conditioning of natural waters”, Ed. Libra Scorp, (2019), ISBN 978-954-471-572-4, (**100 points**).

Groupe Γ of indicators – Γ7 – scientific publications, referenced and indexed in databases Web of Science and Scopus

Nineteen publications were presented, of which 18 were evaluated (publication status of 14 is “in print”), respectively in quartiles: Q3 – [1-13,]; Q4 – [15, 16]; with SJR without IF – [17-19] (**249 points**).

Groupe Δ of indicators – Δ11 – Citations in scientific journals, monographs, collective volumes and patents, referenced and indexed in databases Web of Science and Scopus

A reference with 44 citations of the applicant's publications is provided (**88 points**). In the group of indicators Δ11 two monographs are mentioned but they are not indexed in the Scopus and Web of Science databases, therefore they are not recognized.

Groupe E of indicators – E14 and E15 – Participation in a national/international scientific or educational project

Participation in 3 national projects (**30 points**) and 3 international research projects (**60 points**) is declared. A training course or participation in a thematic scientific school is not considered as participation in a project.

The completion of the minimum national requirements and the minimum requirements under the Regulations on the Conditions and Procedure for the Acquisition of Scientific Degrees and Academic Positions at “Prof. Dr. Asen Zlatarov” University of Burgas is as follows:

<i>Groupe of indicators</i>	Minimal National Requirements	Minimal Requirements according to the Regulations at “Prof. D-r. Asen Zlatarov” University of Burgas	Total points achieved by Chief assistant prof. Blagovesta Midyurova
<i>A</i>	50	50	50
<i>B</i>	-	-	-
<i>B</i>	100	100	100
<i>Γ</i>	200	200	249
<i>Δ</i>	50	100	88
<i>E</i>	-	100	90
<i>Total Number of Points</i>	400	550	577

6. Conclusion

I know chief assistant prof. Blagovesta Midyurova since her appointment as a technician-chemistry at the Department of Ecology and Environmental Protection at the Faculty of Natural Sciences of “Prof. Dr. Asen Zlatarov” University of Burgas and I am familiar with her academic

growth and her scientific development as a researcher. Between 2016 and 2019, as Dean of the Faculty of Science, we have worked closely together in the preparation and generation of faculty documentation, and I can share good impressions of the organization of its administrative work.

To chief assistant prof. Blagovesta Midyurova I have the following comments and recommendations:

It is not clear from the materials submitted for the competition whether the candidate has other scientific publications in national and international refereed journals, which are not required according to the scientific metrics in the professional field 4.2 Chemical sciences. A list of participations in scientific forums is also not provided. In my opinion, this hinders the construction of an overall picture of scientific results and the correct distinction of contributions in the thematic areas mentioned by the candidate.

The list of citations presented for the competition (44 or 88 points) does not meet the 100-point requirement of the Regulations on the Conditions and Procedure for the Acquisition of Scientific Degrees and Academic Positions at “Prof. Dr. Asen Zlatarov” University of Burgas. Since the minimum national requirements for indicator group Д require 50 points (25 citations) and the fact that 57 citations (114 points) are visible in the Scopus database, I accept that the requirement for this indicator group is fulfilled.

From the certificates of the candidate's participation in educational/scientific national and international projects submitted for the competition, it is evident that the requirement of the Regulations on the Conditions and Procedure for the Acquisition of Scientific Degrees and Academic Positions at “Prof. Dr. Asen Zlatarov” University of Burgas of 100 points has not been met. My personal opinion is that the group of indicators for the academic post of “Associate Professor” in these Regulations is disproportionately high. Moreover, according to the national minimum requirements, no points are scored for this group of indicators. Principal chief assistant prof. Blagovesta Midyurova has not reflected her participation in the working team of the University's project under the Bulgaria-Turkey Cross-Border Cooperation Programme 2014-2020 on "Cross-border regions collaborate for Blue Growth", which I consider as an omission.

Based on all of the above and with the above remarks, I would like to conclude that the documentation submitted by the candidate for participation in the competition for the academic position of “Associate Professor” meets the regulatory requirements, for which I ***give my positive assessment***. I propose to the Scientific Jury to recommend to the Faculty Council of the Faculty of Natural Sciences at the “Prof. D-r. Asen Zlatarov” University of Burgas ***to approve Chief assistant prof. Blagovesta Nikolaeva Midyurova, PhD for the academic position of “Associate Professor”*** in the scientific area 4. Natural Sciences, Mathematics and Informatics, professional field ***4.2 Chemical Sciences***, scientific specialty ***“Ecology and Environmental Protection” (Ion Exchange and Bioelectrochemical Methods for Water Purification)*** for the needs of the Department of Ecology and Environmental Protection.

17.02.2022 г.

Member of the Scientific Jury:

(Assoc. Prof. Svetlana Zheleva, PhD)

