

## OPINION

**by Assoc. Prof. Lenia-Nezaet de Brito Gonsalvesh, PhD**

Faculty of Natural Sciences, University "Prof. Dr Asen Zlatarov" - Burgas

External member of the scientific jury, according to the Order № RD 38-13 from 10.01.2024 of the Rector of the Sofia University "St. Kliment Ohridski"

### **Regarding the call for the academic post of Associate Professor**

**in scientific specialty "Analytical Chemistry",**

area of higher education 4. Natural Sciences, Mathematics and Informatics,

professional field 4.2. Chemical Sciences,

for the needs of the Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski", published in the State Gazette, issue 103, date 12.12.2023.

**There is only one applicant, Senior Assist. Prof. Galina Ivaylova Yotova, PhD**, lecturer at the Department of Analytical Chemistry, Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski".

#### **1. Details of the applicant's professional and academic development**

Senior Assist. Prof. Galina Ivaylova Yotova, PhD, graduated with honors from the Faculty of Chemistry and Pharmacy at Sofia University "St. Kliment Ohridski" (FCP-SU). She graduated in 2010 as a Bachelor of Science in Chemistry, acquiring the professional qualification of Bachelor in Chemistry and teacher of chemistry and environmental protection. Later (2012) she also obtained the degree of Master of Science in Chemistry, master programme Ecochemistry. Subsequently, she worked on her PhD thesis entitled "Ecometric and ecotoxicological methods in the environmental objects assessment" and defended it in the professional field 4.2 Chemical Sciences (Analytical Chemistry). In the period 2019 - 2020 she is developing a postdoctoral project under the National scientific programme „Young Scientists and Postdoctoral Researchers" on "Assessment of anthropogenic impacts on surface waters. Assessment of water quality in the Mesta catchment using integral indices and multivariate statistical models". The candidate's work experience started in 2010 as a lecturer in Chemistry and Environmental Protection at the National Cultural Educational Complex, where she worked for 5 years. Her academic career started in 2015 at the Department of Analytical Chemistry, FCP-SU, where she has worked until now, holding successively the positions of Assistant Professor and Senior Assistant Professor. In the period 2015 - 2016, PhD Yotova also taught at the National Gimnasium of Natural Sciences and Mathematics "Acad. L. Chakalov".

#### **2. General characteristics of the candidate's research activity**

Under the current competition, PhD G. Yotova has declared a total of 19 scientific publications in co-authorship, of which 2 are included in her dissertation for obtaining the PhD degree. The presented scientific production is of high quality and testifies to a thorough mastery and application of contemporary chemometric and ecotoxicological methods of analysis.

A check in SCOPUS for the candidate (ID: 57185731800, ORCID <https://orcid.org/0000-0002-2677-6806>) shows 18 scientific articles (14-Q1, 1-Q2, 2-Q3, 1-Q4) and 165 citations (excluding self-citations) and *h*-index 8, confirming Dr. Yotova's scientific prestige. The article with

the highest number of citations (45) is article №12 (10A.AllPublicationsList), published in 2021, followed by article №8 with 28 citations. It is impressive that more than half of the candidate's publications are in journals with a high impact factor (>4.2), such as *Science of the Total Environment* (IF = 5.589), *Ecological Indicators* (IF = 6.263), *Environmental Pollution* (IF = 5.714), *Environmental Research* (IF = 5.026), etc. The same applies to citations - the majority of citations noted are in reputable journals. Acknowledgement of the significant contribution of the candidate in the conducted research is the fact that in 42% of the publications PhD Yotova is the first author, in 21% the second and in 21% the third author. According to SCOPUS data, she is co-author with 27 researchers, which demonstrates her ability for good scientific partnership. The candidate's project activity is also impressive. She has participated as a researcher in 10 scientific and educational projects. Her scientific results have been presented through oral reports and poster presentations at 9 scientific forums, 7 of which international.

Scientific contributions of Senior Assist. Prof. Galina Ivaylova Yotova, PhD are in accordance with the professional field and scientific specialty of the competition procedure. They are related to research work in the field of multivariate statistical analysis of environmental data (water, soil, sediment), drug mixtures data and food packaging data, using classical and advanced chemometric approaches, as well as to the interpretation of results from ecotoxicological analyses. The candidate's scientific publications reveal consistency and methodical approach in the research carried out, covering a significant interdisciplinary area, by using chemical, instrumental and chemometric methods to solve problems of fundamental and ecological concern. I accept the scientific contributions in the author's abstract as original and properly formulated. They can be summarized in the following three main directions:

– ***Ecometric and ecotoxicological assessment of water samples (Pub. № 1-4, 12, 13, 15 in 10B.SelectedPublicationsList)***. Research has focused on (i) the analysis of wastewater treated by wastewater treatment plants and its impact on the surface water bodies to which it discharges (Pub. № 1, 2, 4), (ii) assessment of surface water quality of the Mesta River by implementation of a novel approach combining composite WQI and SOM (Pub. № 3), (iii) assessment of surface water quality of the Ogosta River (Pub. № 12) and the Maritza River (Pub. № 13). In addition, the distribution of aluminium in the water supply network of the Sofia city (Pub. № 15). By the application of ecotoxicological and ecometric analysis methods, new information on the status of the investigated waters has been obtained, which can be used for the development of effective policies in the water resources management in Bulgaria. The number of citations noted in this field is 70, which is indicative of the importance and relevance of the research conducted.

– ***Ecometric and ecotoxicological assessment of soil samples and sediments (Pub. № 9, 10, 14 in 10B.SelectedPublicationsList)***. Using a series of analytical, graphical and mathematical approaches, new data on the geochemical background and threshold values of 8 potentially toxic elements (As, Cd, Cr, Cu, Hg, Ni, Pb and Zn) in the surface soil layer in Bulgaria were obtained (Pub. № 10). This could contribute to a differentiated and more effective soil management in the country. The locations of priority areas for further assessment have been identified. The regions where exceedances of the geochemical threshold values for the investigated elements are observed are located in places mainly affected by mining and metal production. Additionally (Pub. № 9), the contamination of soils around three copper mines and a copper mining plant located in the area of the towns of Zlatitsa and Pirdop was assessed, the bioavailability of potentially toxic elements (As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) from contaminated soils into the grass growing in the same area was evaluated, and the factors controlling the transport of the investigated toxic elements were identified. This study offers a new way to assess bioavailability and transport processes in the complex soil/plant system and reveals other

opportunities for reliable risk assessment and contamination management in regions affected by industrial activity. The temporal dynamics of anthropogenic impacts on sediments in the Pchelina reservoir are also assessed (Pub. № 14). The results of the conducted research have been cited in 39 publications.

– ***Chemometric analysis of toxicity data for drug mixtures and packaging materials (Pub. № 5-8, 11)***. In this area, contributions are related to *i*) quantitative assessment of the ecotoxicity of drug mixtures of 9 substances (diclofenac (sodium salt), oxytetracycline hydrochloride, fluoxetine hydrochloride, chloramphenicol, ketoprofen, progesterone, estrone, androstenedione and gemfibrozil) present in the environment at specific concentration levels, and the interactions of the drugs in a mixture, *ii*) an assessment of the impact of abiotic factors on the toxicity and endocrine potential of pharmaceuticals and mixtures thereof, and *iii*) an assessment of the toxicity/endocrine hazard of food contact packaging and extracts thereof under simulated conditions. 33 citations were noted on publications in this area.

### 3. Teaching and learning

PhD G. Yotova has taught lecture course, seminars and laboratory exercises in 10 disciplines in different BSc and MSc specialties and has independently developed a curriculum in the discipline "Analytical Chemistry". Under her supervision two students have successfully defended their master thesis. Since 2018, she has been a member of the National Committee for conducting National Olympiad on Chemistry and Environmental Protection, and since 2020, she has been a member of the National Committee for conducting National Competition on Chemistry and Environmental Protection. I believe that Dr. Yotova has gained serious pedagogical experience as a university lecturer, combining professionalism and innovative approach in the educational process.

### 4. Fulfilment of the requirements for the academic position of Associate Professor

The applicant's report on the fulfilment of the minimum national requirements and the recommended criteria of FCP-SU for holding the academic position of "Associate Professor" in Professional Field 4.2 "Chemical Sciences" reveals the following:

Group indicators	Minimum national requirements	FCP-SU	Indicator/Content	Applicant
A	50	50	1) Dissertation for PhD (see section 1)	50
Б	-	-	-	-
B	100	100	4) Habilitation work – scient. publications: 4-Q1	100
Г	200	220	7) Publications outside the habilitation thesis: 8-Q1 (JCR, WoS), 2-Q3 (SJR) 1-Q4 (SJR)	242
Д	50	70	11) 157 citations	314
E	-	-	-	-
Ж	-	70	21) <i>h-index</i> 8×10 pts. 22) New Courses 1×10 pts. 23) Diplomats 1.5 10 pts. 25) Projects 9×5 pts.	150
Total for all indicators	400	510	-	856

It is evident that the achievements of PhD Galina Yotova meet, and in some indicators exceed the requirements for the academic position "Associate Professor" in the professional field 4.2 Chemical Sciences.

## **5. Conclusion**

On the basis of the above, I give my confident positive assessment of the candidature of Senior Assist. Prof. Galina Ivaylova Yotova, PhD. I propose to the esteemed members of the Scientific Jury to propose to the Faculty Council of the Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski" to award the academic position "Associate Professor" to Senior Assist. Prof. Galina Ivaylova Yotova, PhD in the Field of Higher Education 4. Natural Sciences, Mathematics and Informatics, Professional field 4.2. Chemical Sciences (Analytical Chemistry).

18.04.2024 г.

Member of the scientific jury:

/Assoc. Prof. Lenia Gonsalves, PhD/