

Opinion

by Assoc. Prof. Dr. Stela Mironova Statkova-Abeghe
Department of Organic Chemistry, University of Plovdiv "Paisii Hilendarski"

of the materials submitted for participation in the competition for the academic position of 'Professor' at Sofia University 'St. Kliment Ohridski', Faculty of Chemistry and Pharmacy

In field of higher education 4. Natural Sciences, Mathematics and Informatics,
Professional direction 4.2. Chemical Sciences (Physical chemistry – formulation of dispersions for cosmetics and household chemistry).

In the competition for the academic position of 'Professor', announced in the State newspaper, issue 55 of 28.06.2024, and on the website of Sofia University 'St. Kliment Ohridski' for the needs of the Faculty of Chemistry and Pharmacy, the sole candidate is Associate Professor Dr. Krastanka Georgieva Marinova from the Department of 'Chemical Engineering and Pharmaceutical Engineering' of the same faculty.

General description of the presented materials

By order № P-109-131/ 01.04.2024 of the Rector of Sofia University 'St. Kliment Ohridski', I have been appointed as a member of the scientific jury for the competition for the academic position of 'Professor' in the field of higher education 4. Natural Sciences, Mathematics and Informatics, professional direction 4.2. Chemical Sciences (Physical chemistry – formulation of dispersions for cosmetics and household chemistry), announced for the needs of the Faculty of Chemistry and Pharmacy.

For participation in the announced competition, documents have been submitted by the sole candidate: Associate Professor Dr. Krastanka Georgieva Marinova. The set of materials submitted by Associate Professor Marinova are in complete accordance with the Regulations for the development of the academic staff at Sofia University.

The candidate, Associate Professor Marinova, has presented a total of 22 scientific works, 13 of which have been published in journals indexed in Web of Science and Scopus, one book chapter, one patent, one patent application, and 6 publications in other editions. All of these works are related to the topic of the competition. The scientific works have not been submitted by the candidate in any previous competitions.

The distribution according to the rank of scientific journals, expressed in quartiles of the publications included in the competition, is as follows: eight publications in Q1; five publications in Q2; one book chapter (15 points), one patent (25 points), and one patent application (15 points). The attached report on meeting the minimum requirements for the competition includes: **Indicator A** - PhD dissertation, 2003, topic: 'Mechanisms of action and depletion of rapid defoamers', 50 points; **Indicator B** - a total of five publications corresponding to the Habilitation thesis - 115 points; **Indicator C** - a total of 11 works - 240 points. **Indicator D** - citations in publications indexed by Web of Science and Scopus - an impressive 488 citations - 976 scientometric points. **Group of indicators E** - the candidate is a co-supervisor of three defended PhD students, a member of the team in seven national and international projects, the leader of one national project, and the coordinator of the Bulgarian team in one international project - a total of 260 points. Additionally, introduced **Group of indicators F** - Hirsch index $h = 20$, six new courses introduced, 25 defended diploma students, six publications, and seven industrial projects - a total of 551 points.

The submitted materials are well-organized and clearly present the candidate's previous scientific activities and achievements, fully meeting the requirements.

Brief biographical data

Krastanka Marinova completed her higher education at the Faculty of Physics of Sofia University, where she obtained a Master's degree in 'Engineering Physics' in 1992. In 2002, she defended her dissertation on the topic 'Mechanisms of Action and Depletion of Rapid Defoamers' with the scientific specialty 01.05.05 Physical chemistry, developed at the Faculty of chemistry of Sofia University. From 2003 to 2009, she successively held the positions of senior and chief assistant, and since November 2009, K. Marinova has been an Associate Professor at the Faculty of Chemistry and Pharmacy.

General characteristics of the candidate's activities

The teaching and pedagogical activities of Associate Professor Dr. K. Marinova began in 2003 as a Senior Assistant and Chief Assistant, and since 2010 as an Associate professor at the Faculty of Chemistry and Pharmacy. She is the lecturer for the following main courses: **1.** "Separation processes in disperse systems" for the Bachelor's program "Eco-chemistry"; **2.** "Programming computational tasks in chemistry" for the Bachelor's program "Chemistry and Informatics"; **3.** "Dispersions in cosmetics and household chemistry" for the Master's program "Disperse systems in chemical technologies"; **4.** "Formulation of dispersions for cosmetics and household chemistry" for the Master's program "Cosmetics and household chemistry". The candidate also teaches several elective and one optional course, as well as "Basic mathematics for chemists". Associate Professor Marinova is the head of the Master's program "Cosmetics and household chemistry". She supervises diploma students and co-supervises three doctoral students.

This presents the candidate as an academic lecturer with interests and competencies mainly in the field of Physical chemistry and specifically in Disperse systems for cosmetics.

The scientific and applied research activities of Associate Professor Marinova are impressive. She is the author and co-author of 46 scientific articles (being the first author in 16 of them), one of which has been cited 163 times. The total number of citations for the 32 publications with an impact factor or impact rank according to Scopus exceeds 1800. The wide recognition within the scientific community confirms to the significance of the achieved results. The following directions can be summarized: **1.** New methods for determining interfacial tension; **2.** Investigation of the surface properties of systems with high surface elasticity and viscosity; **3.** Physicochemical characterization of multicomponent systems with applications in cosmetics and household chemistry; **4.** Applied research with the development of formulations.

The report on the original scientific contributions accurately summarizes the achievements and contributions of the research. Five publications from the period 2009-2017, equivalent to a Habilitation thesis, are accurately presented. Three of them are published in an international journal ranked Q1: (*J. Colloid Interface Sci.* 2009, 2012, and 2015). The remaining two publications are in a journal ranked Q2: (*Colloids Surf.* 2014 and 2017). The total impact factor of these articles is 15.554, with an average of 3.111.

Main contributions: The developments have **scientific and industrial-applied** contributions in the field of disperse systems for the quantitative description of the formation and stability of foams and emulsions. An original methodology has been developed, and equipment has been proposed for synchronous measurement of pressure and determination of the profile of drops and bubbles over short time intervals. The principles of operation of the new equipment have been validated, and the innovations are patent-protected. A new method has been developed for measuring the rheological parameters of the expansion of the surface between liquids with low and high viscosity in the presence of surfactants. The applicability of the method for determining the surface elastic modulus has been confirmed.

Physicochemical approaches have been used to describe the surface properties of multicomponent disperse systems with rough surfaces of drops and bubbles, obtained by stabilization with proteins. The publication describing the surface adsorption and rheological properties of *Quillaja* saponin extracts, containing bio-surfactants, has received wide recognition. Proteins such as hydrophobin HFBII, bovine serum albumin BSA, beta-casein, and others have also been studied.

The originality of the research and the personal involvement of Associate Professor Dr. Marinova are indisputable. The recognition in the scientific community confirms the scientific-applied nature of the research and the significance of the contributions. The quantitative indicators according to the national requirements for the academic position of ‘Professor’ have been exceeded by more than 15% for each indicator (**Indicator D** by more than 8 times!).

CONCLUSION

The documents and materials submitted by Associate Professor Krastanka Georgieva Marinova meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of the LDASRB, the relevant Regulations of Sofia University, and the Recommended Criteria for holding academic positions in the professional field 4.2. Chemical Sciences of the Faculty of Chemistry and Pharmacy.

The candidate in the competition has presented a **significant** number of scientific works, published after the materials used for the defence of the PhD degree and the acquisition of the academic position of “Associate professor”. The candidate’s works contain original scientific, scientific-applied, and applied contributions that have received international recognition. They are published in journals issued by international academic publishers. The research has practical applicability, with the majority of it being directly oriented towards educational work. The scientific and teaching qualifications of Associate Professor Dr. Krastanka Georgieva Marinova are categorical.

The results achieved by Associate Professor Dr. Krastanka Georgieva Marinova in her teaching and research activities fully comply with the minimum national requirements and the Regulations of Sofia University for the implementation of the LDASRB. After reviewing the materials and scientific works submitted in the competition, analyzing their significance and the scientific, scientific-applied, and applied contributions contained therein, I find it reasonable to give my **positive assessment** and **recommend** to the scientific jury to prepare a report-proposal to the Faculty council of the Faculty of Chemistry and Pharmacy for the election of Dr. Krastanka Georgieva Marinova to the academic position of “Professor” at the Faculty of Chemistry and Pharmacy of Sofia University “St. Kliment Ohridski” in field of higher education 4. Natural Sciences, Mathematics and Informatics, Professional direction 4.2. Chemical Sciences (Physical chemistry – formulation of dispersions for cosmetics and household chemistry).

29.10.2024

Plovdiv

Member of the scientific jury:

(Assoc. Prof. Dr. Stela Statkova-Abeghe)