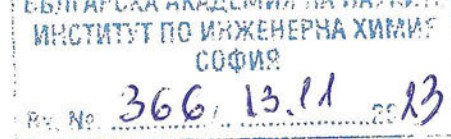


Opinion



regarding to a competition for holding the academic position "**Professor**" in professional field **4.2. Chemical Sciences "Processes and Apparatus in Chemical and Biochemical Technology"**, for the needs of the laboratory "Biochemical Engineering" of the Institute of Chemical Engineering at Bulgarian Academy of Sciences (ICHE-BAS), announced in the state newspaper no. 67 (04.08.2023)

Candidate: **Dr. Daniela Ilieva Batovska**

Reviewer: **Assoc. Prof. Dr. Eng. Elisaveta Georgieva Kirilova**

1. Brief biographical data and description of the applicant's scientific interests

Daniela Batovska is the only candidate in the competition for holding the academic position "Professor", announced for the needs of the laboratory "Biochemical Engineering" of the Institute of Chemical Engineering at Bulgarian Academy of Sciences (ICHE-BAS) by professional field 4.2. Chemical Sciences "Processes and Apparatus in Chemical and Biochemical Technology".

Daniela Batovska was born in 1968. She completed her secondary education at the NPMG "Acad. L. Chakalov" in 1986, and her higher education at the Faculty of Chemistry of the Sofia University "St. Kliment Ohridski", receiving in 1992 Master of Science degree in "Organic and Analytical Chemistry". After her graduation from the Sofia University, Daniela Batovska worked for a short time (1991 - 1992) as a chemist in the Department of "Clinical Pharmacology and Therapy" of the Medical University of Sofia. From 1992 to 2017, Daniela Batovska worked at the Institute of Organic Chemistry with Centre of Phytochemistry at Bulgarian Academy of Sciences (IOCCP-BAS), successively holding the positions: "Chemist", "Research Associate I degree", "Research Associate II degree" and "Senior Research Associate II degree". The latter is equivalent to the academic position of "Associate Professor". In 2001, Daniela Batovska defended her PhD thesis in the same research organization in professional field 01.05.10 "Bioorganic chemistry, chemistry of natural and physiologically active substances" on the topic "Synthesis and biological activity of sterol derivatives". In parallel with his work at IOCCP-BAS, in the period 2009 - 2020 she was also a part-time lecturer at "Neofit Rilski" University of Blagoevgrad. During the period 2017 – 2023, Dr. Batovska worked in the private sector, where she engaged in research activities in areas close to her scientific interests. Since August 2023, she has been working as a chemist at ICHE-BAS. In 2002 - 2003 and 2003 - 2004, Dr. Batovska also completed two postdoctoral specializations at two universities in Japan. In addition to the materials for the current competition, the candidate has also submitted materials related to her competition for the academic position "Associate Professor" at the IOCCP-BAS, which provide complete information about her scientific activity to date.

Dr. Batovska's scientific interests are in the following areas: organic and enzymatic synthesis of natural compounds; analysis of plant extracts and essential oils; development and validation of methods for quantitative determination of biologically active substances and determination of their ability to capture radicals; structure-activity relationship analysis of natural and synthetic compounds; analysis of the interaction of secondary plant metabolites with fungal pathogens and insects.

2. General characteristics of the candidate's scientific research and applied scientific activity

The candidate has presented information on the management of Bulgarian teams in two scientific projects funded by the Bulgarian Science Fund at Ministry of Education and Science under cooperation programmes with Germany (2011) and India (2013).

Dr. Daniela Batovska was the supervisor of a PhD student from India who defended her thesis in 2018.

3. Evaluation of the presented materials

According to the reference for meeting the minimum requirements of the Regulations for the terms and conditions for holding the academic positions in the Bulgarian Academy of Sciences and the Regulations for the application of the Law on the Development of the Academic Staff in the Republic of Bulgaria by groups of indicators, the candidate participates in the competition with:

Group A, Indicator 1: Received PhD degree (50p. from a minimum of 50p.).

Group C, Indicator 4: 6 publications with ISI Impact factor and/or SJR, that are distributed by quartiles: 2 in Q1, 2 in Q2 and 2 in Q3. The total number of points for the indicator C is 120p. from a minimum of 100p.

Group D: Indicator 7 - 13 publications, outside the habilitation, which are distributed by quartiles: 1 in Q1, 7 in Q2, 3 in Q3 and 2 in Q4 and 1 publication, that have no quartile and SJR (234p. from a minimum of 220p.); Indicator 8 - 1 book chapter in prestigious international publishing house (15p.); Indicator 9 - 1 utility model for which the candidate has been issued a document (25p.). The total number of points for the indicator D is 274p. from a minimum of 220p.

Group E, Indicator 11: Citations in scientific publications, referenced and indexed in world databases of scientific information (Web of Science and Scopus) – 383. The total number of points for the indicator E is 766p. from a minimum of 120p.

Group G, Indicator 13 - The guidance of a successfully defended PhD student (50p.); Indicator 17 - management of a Bulgarian team in an international scientific project (100p.); Indicator 18 - funds earned on projects managed by the candidate (10p.). The total number of points for the indicator G is 160p. from a minimum of 150p.

The candidate also satisfies the additional criteria of the Institute of Chemical Engineering at the Bulgarian Academy of Sciences for holding the position of "Professor" by presenting the following information:

Total number of publications - 60 (min. 40);

Total number of publications in journals with ISI Impact Factor and/or SJR - 56 (min. 12);

Number of publications, outside the habilitation - 20 (min. 20);

Number of publications with ISI Impact Factor and/or SJR, outside the habilitation - 19 (min. 7);

Number of citations in scientific publications, referenced and indexed in world databases of scientific information (Web of Science and Scopus) - 383 (min. 50);

Recommended Hirsch index – greater than 14 (min. 8).

It should be noted that the actual number of citations of the candidate is significantly greater than the presented one. After checking two databases, the following information is available for the applicant: 1). Scopus: "Todorova D": 118 citations (8 publications), h = 6; "Batovska D": 1461 citations (38 publications), h = 14; 2). Web of Science: "Batovska D": 1428 citations (47 publications), h = 16.

From the quantitative indicators presented above, it can be seen that the candidate exceeds the requirements of the Regulations for the terms and conditions for holding the academic positions in the Bulgarian Academy of Sciences, the Regulations for the application of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the additional criteria of the Institute of Chemical Engineering at the Bulgarian Academy of Sciences for holding the position of "Professor".

4. Basic scientific and scientific-applied contributions

Based on the materials provided to me for review, I would summarize the scientific, applied science and applied contributions as follows:

1. Design and synthesis of pharmacologically active chalcones with emphasis on their mechanisms of action and structure-activity relationship.

1.1. Synthesis of chalcones by enzymatic route with potential for their industrial application in food, cosmetic, pharmaceutical, agricultural and other products.

1.2. Synthesis of chalcones with antioxidant activity and investigation of their interaction with peroxide radicals by applying a highly sensitive chemiluminescence method.

1.3. Synthesis of chalcones with antimalarial activity that target specific strains of chloroquine-resistant microorganisms approved for the treatment of tropical malaria.

1.4. Synthesis of chalcones as inhibitors of glycoprotein overexpression in tumor cells with multidrug resistance to anticancer drugs.

2. Adaptation of spectrophotometric methods to determine the antiradical activity against highly reactive oxygen- and nitrogen-containing particles present in living systems.

3. Research on the medicinal properties of plants and their extracts such as *Artemisia alba*, *Clinopodium vulgare*, *Hypericum tetrapterum*, *H. Richeri*, *H. Rumeliacum*, *xGraptoveria*, *Potentilla reptans*, *Gentiana*, etc.

5. Reflection of scientific publications in the literature

The evidence presented by Dr. Batovska about the citations of her publications, as well as additional information about their real number based on queries made in world scientific information databases (Web of Science and Scopus), show a huge number of citations - over 1500. They significantly exceed the requirements of the above-mentioned regulation for holding the academic position "Professor" and are proof of the relevance of the research topics and the significance of the obtained results.

CONCLUSION

The materials presented to me for review are in accordance with the the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation as well as the Regulations for the terms and conditions for holding academic positions at the Institute of Chemical Engineering at Bulgarian Academy of Sciences. Bearing in mind their importance, as well as that of the contributions contained in them, I consider it reasonable to propose **Dr. Daniela Ilieva Batovska**, to hold the academic position of "**Professor**" in professional field **4.2. Chemical Sciences "Processes and Apparatus in Chemical and Biochemical Technology"**.

Data 13.03.2023

Reviewer:


/Assoc. Prof. E. Kirilova/