R E V I E W

of Assoc. Prof. Olympia Nikolaeva Roeva

by competition for holding the academic position "**Professor**"

professional field 4.6. "Informatics and Computer Science"

(scientific specialty "Informatics")

Reviewer: Acad. Ivan P. Popchev – BAS

Based on a decision of the Scientific Council (Protocol № 1 of 14.01.2021) according to Art. 29 of ADASRB with Order № 20 of 15.01.2021 of Director Prof. Tania Pencheva I have been appointed a member of the Scientific Panel for conducting a competition for the academic position "Professor" in the professional field 4.6. "Informatics and Computer Science" (scientific specialty "Informatics"), announced in SG No. 98 / 17.11.2020.

As a reviewer, I have received all the documents submitted for participation in the competition.

According to ADASRB, Regulation for application of ADASRB (Decree № 26 of 13 February 2019) and Regulations for application of ADASRB in IBPhBME – BAS, candidates for academic position "Professor" must meet certain conditions.

Art. 29(1) Candidates to take academic position "Professor" shall meet the following conditions:

1. To have acquired the educational and scientific degree of Doctor …;

2. To have occupied the academic position of Associate Professor in the same or in another higher school or scientific organization for not less than two academic years …;

3. To have presented a published monograph or equivalent publications in specialized scientific issued or evidences of equivalent to them artistic and creative achievements in the field of arts, which do not reproduce those presented for awarding the educational and scientific degree of Doctor and for awarding of the scientific degree of Doctor of Science and for occupying the academic position of Associate Professor;

4. To have presented other original scientific-research works, publications, inventions, and other scientific and scientific-applicable works or artistic creative achievements, to be assessed together;

1

5. To meet the minimum national requirements and the requirements under Art. 2b, Para. 2 and 3, respectively to the requirements under Art. 2b, Para. 5;

6. To have no plagiarism proven as per the legally established order in the scientific works.

(3) The candidates shall submit a reference on the fulfillment of the minimum national requirements under Art. 2b, Para. 2 and 3, respectively the requirements under Art. 2b, Para. 5, and a reference of the original scientific contributions to which shall be attached the relevant evidence laid down in this Act, in the Regulations for its implementation and the regulations of the higher schools and of the scientific organizations.

According to the Regulations for application of ADASRB in IBPhBME – BAS in item 6 are "Conditions and procedure for holding the academic position "Professor"", including specific requirements in Annex 1 (Tables 1 and 2).

Assoc. Prof. O. Roeva, PhD, meets the conditions of Art. 29(1).1 as she presented the Diploma of the Higher Attestation Commission for the educational and scientific degree "Doctor" No 31 836, Sofia, 10.12.2007.

Assoc. Prof. O. Roeva, PhD, meets the conditions of Art. 29(1).2 according to the presented official note ref. № 18 КП / 07.01.2021 by Head of Personnel J. Zhivkova and Director Prof. T. Pencheva in the assurance that she has a total work experience of 19 years 3 months and 9 days for participation in a competition for "Professor".

Assoc. Prof. O. Roeva, PhD, meets the conditions of Art. 29(1).3 as it has presented 29 publications in specialized scientific journals, which do not repeat the ones presented for acquiring the educational and scientific degree "Doctor" and for holding the academic position "Associate Professor".

Assoc. Prof. O. Roeva, PhD, has 223 publications, of which 29 participated in the competition.

The analysis of these publications on the competition showed the following:

- 15 publications are in journals with IF (NNo 1, 2, 3, 4, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and 21);

- 12 publications are in journals with SJR (NNo 5, 6, 7, 8, 9, 10, 22, 23, 24, 25, 26 and 27);

- 2 publications are book chapters (NNo 28 and 29) with SJR (No 29);

- 4 publications are with single author O. Roeva (NNo 6, 8, 9 and 29).

All publications are in English.

The presented "List of citations in Scopus" includes a total of 136 citations of the papers participating in the competition.

Assoc. Prof. O. Roeva, PhD, meets the conditions of:

- Art. 29(1).4 as she has presented other original research papers, publications,... and other scientific and applied research works– participation in 10 projects, of which 1 is a supervisor;

- Art. 29(1).5 as it meets the minimum national requirements under Art. 26, para. 2 and 3, respectively to the requirements under Art. 26, para. 5. A reference for fulfilment of the minimum national requirements with number of points 1442 is presented;

- Art. 29(1).5 as there is no legally evidenced plagiarism in scientific papers.

Assoc. Prof. O. Roeva, PhD, has 38 participations in scientific forums with 49 reports (published), management of a part-time doctoral student, management of exercises, participation in editorial and program committees, reviewer of over 100 articles in journals and dissertation for educational and scientific degree "Doctor", winner of 1 diploma, 1 certificate and 3 awards from competitions and scientific sessions. He is a member of international and national scientific organizations.

According to Art. 29(3) the candidates shall submit a "Reference for the original scientific contributions". Assoc. Prof. O. Roeva, PhD, presented a "Reference to the original contributions" in a volume of 4 pages.

Briefly the contributions can be summarized as follows:

1. Metaheuristic algorithms have been adapted for parameter identification of nonlinear models of *E. coli* fermentation processes: genetic algorithm (GA), firefly algorithm (FA), ant colony optimization (ACO), bat algorithm (BA), cuckoo search algorithm (CS), artificial bee colony (ABC), water cycle algorithm (WCA) (NNo 1, 2, 3, 4, 5, 6, 7, 8 and 9).

2. In case of fermentation processes modelling to improve the accuracy of solutions, hybrid metaheuristic algorithms are proposed: ACO – GA, BA – SQP (Sequential Quadratic Programming), GA – SQP, GA – FA, FA – GA (NNo 4, 8, 9 and 10).

3. A generalized net (GN) model is developed, describing and simulating the CS, BA and FA algorithms, by setting different characteristic functions of the tokens (No 13).

4. Applying InterCriteria analysis (ICA), based on indexed matrices and intuitionistic fuzzy sets, the influence of the metaheuristic algorithms parameters on their performance and·the relationships between the parameters of the models in parameter

3

identification problems and their influence on the results of optimization procedures are evaluated (NNo 11, 22 and 23).

As a generalized "scientometric identity" of Assoc. Prof. Olympia Roeva, PhD, the world's scientific databases show the following:

- Scopus: 92 documents, 640 citations, h-index 11, excluded self-citations;
- Web of Science: 61 total publications, 189 citations without self-citations, h-index 9;
- Scholar.google: 1527 references, h-index 20, i10-index 47;
- Research Gate: RG Score 22.95, h-index 17, h-index 13 excluding self-citations.

The elements of the "scientometric identity" show successful and effective research activity and can be subject to mandatory self-analysis and new research guidelines.

As a reviewer of the PhD thesis of Assoc. Prof. O. Roeva for educational and scientific degree "Doctor" (2007) and her papers, I am familiar with both the progress and the potential of the candidate. I am convinced of the possibilities for presenting a thesis for a "Doctor of Science", which must contain theoretical conclusions and solutions of major scientific and applies scientific problems, which correspond to the up-to-date achievements and can be regarded as a considerable and original contribution to science.

According to item 6 of the IBPhBME Regulations, Assoc. Prof. O. Roeva, PhD, has fulfilled all the requirements for holding the academic position of "Professor", including the specific requirements in Appendix 1 (Tables 1 and 2).

CONCLUSION

All conditions according to ADASRB, Regulations for application of ADASRB and the Regulations for application of ADASRB in the Institute of Biophysics and Biomedical Engineering (IBPhBME) are met and I give a definite **positive** conclusion for the election of Assoc. Prof. Olympia Roeva, PhD, in a competition for the academic position "Professor" in a professional field 4.6. "Informatics and Computer Science" (scientific specialty "Informatics").

I propose that the Scientific Panel unanimously vote on the proposal to the Scientific Council of IBPhBME to elect Assoc. Prof. Olympia Roeva, PhD, for the academic position of "Professor" in the professional field 4.6. "Informatics and Computer Science" (scientific specialty "Informatics").

03.02.2021 г.   Reviewer: ……………,…………..

Acad. Ivan P. Popchev