

OPINION

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of the materials submitted for participation in a competition for the academic position "Associate Professor" in the field of higher education 5. Technical sciences, professional field 5.2. Electrical Engineering, Electronics and Automation, specialty "Biomedical equipment and technologies" at the Faculty "Public Health, Department of Medical Equipment, Electronic and Information Technologies in Healthcare". The competition was announced in the State Gazette, issue 86 of October 6, 2020, as a candidate participates Assistant Professor PhD Eng. Zhivko Borisov Bliznakov.

1. Brief biographical data

Assist. Prof. PhD Eng. Zhivko Borisov Bliznakov was born in Varna in 1973. He completed his higher education in 1996 at the Technical University - Varna, in the specialty "Electronic Engineering and Microelectronics" with a qualification "Electrical Engineer".

From 1998 to 2003 he was a PhD student in Biomedical Technologies at the University of Patras, Greece. In the period 2004 - 2016 he was a Researcher and Head of the branch "Biomedical Technology Management" at the Department of Medical Physics, Institute of Biomedical Technologies, Patras, Greece. From 2013 to 2019 he was a Research Associate and part-time lecturer at the Laboratory of Computer Simulations in Medicine at the Technical University - Varna and Head of the Center for National and International Projects. In 2019 he started working at the Medical University – Varna. He is currently an assistant professor at the Department "Medical Equipment, Electronic and Information Technologies in Healthcare", Faculty "Public Health".

2. General description of the submitted materials

The candidate Assistant Professor PhD Eng. Zhivko Borisov Bliznakov participates in the competition with 28 scientific publications which cover the minimum scientometric requirements. All are in English and reflect the candidate's research activities in the period 2000 - 2020, divided into categories as follows:

1. Scientific publications from Group B (Group B4), referenced in the international database SCOPUS - 10;
2. Scientific publications from Group G - 18:



- Group G7, referred to in the international database SCOPUS - 13;
- Group G8 - 5.

The presented publications are as follows:

- With Impact Factor - 8;
- Referenced in the international database SCOPUS - 23.

From the presented scientific publications:

- 5 - with one co-author;
- 6 - with two co-authors;
- 17 - with three or more co-authors;

All publications covering scientometric requirements are in English.

3. Reflection of the applicant's scientific publications in the scientific community (known citations)

To date, Assistant Professor Phd Eng. Zhivko Borisov Bliznakov, has 5 well-known citations from publications covering scientometric indicators.

4. Overview of the content and results in the presented works

The scientific publications submitted for participation in the competition can be divided into three main thematic areas, as follows:

Thematic area 1: Computer models, simulations, algorithms and software applications in image diagnostics using X-rays. Publications: B4-01, B4-02, B4-03, B4-04, B4-05, B4-06, B4-07, B4-08, B4-09, B4-10, G7-01, G7-06, G7-07, G8-01;

Thematic area 2: Management of medical equipment in healthcare and development of specialized software systems for this purpose. Publications: G7-02, G7-03, G7-04, G7-05, G7-13, G8-02, G8-03;

Thematic area 3: Reforming and harmonizing curricula in the field of biomedical engineering in Europe. Publications: G7-08, G7-09, G7-10, G7-11, G7-12, G8-04, G8-05.

5. Assessment of the pedagogical preparation and activity of the candidate

The candidate has a modest but diverse teaching activity, including lectures, laboratory work and graduates at the Technical University of Varna, Medical University of Varna and the University of Patras, Greece. The participation of the candidate in the training in English is also active.

Assist. Prof. PhD Eng. Zhivko Borisov Bliznakov is a co-author of two teaching aids and a textbook (book), which I have quoted below:

- K. Bliznakova, I. Buliev, Z. Bliznakov, Anthropomorphic Phantoms in Image Quality and Patient Dose Optimization: A EUTEMPE network book, (Book Textbook), publisher: IOP Publishing Ltd, 2018, Online ISBN: 978-0-7503- 1323-0, Print ISBN: 978-0-7503-1324;.



- K. Bliznakova, I. Buliev, Z. Bliznakov, MPE05: Anthropomorphic Phantoms, Laboratory Exercises - Guide for Learners, (A guide to practical exercises), publisher: European project EUTEMPE-RX, FP7 Fission2013-5.1.1 (GA: 605298), 2015;

- Z. Bliznakov, K. Bliznakova, N. Pallikarakis, 2008, Aspects of Clinical Engineering – Management of Biomedical Technology, Lecture notes, University of Patras, Greece, (Lecture course, Publishing of the University of Patras, Greece), 2008.

During the period of his teaching activity he was the scientific supervisor of 7 successfully defended graduates.

6. Main scientific, scientific-applied and applied contributions

Scientific contributions:

- Creation of new algorithms for reconstruction of tomographic images.
- Development of new physical "phantoms" of the female breast for research in the field of X-ray imaging.

Scientific-applied contributions:

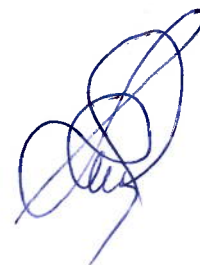
- Research of new materials for preparation of physical models for testing of new X-ray techniques.
- New methods for modeling small in shape and volume composite parts composed from polymers reinforced with carbon fibers.
- Development of Monte Carlo based software simulators for scientific research in the field of X-ray imaging and radiation therapy.
- Development of new computer models of the female breast for scientific research in the field of X-ray imaging.

Applied contributions:

- Introduction of new, attractive methods for conducting training in the field of computer simulations in medicine.
- Solution to increase the efficiency and utilization of conventional technologies used in radiation therapy.
- Implementation of specialized software systems for medical equipment management in the health sector in Greece Development of a comprehensive integrated software system for improving the management of medical equipment.
- Comprehensive analysis and classification of withdrawals of medical devices from their manufacturers.
- A comprehensive overview of the current state of biomedical engineering curricula in European universities.
- Proposal for harmonization of curricula in the field of biomedical engineering in European universities.

7. Significance of contributions to science and practice

The candidate has presented his publications mainly at prestigious international forums and scientific publications. 23 of the articles and publications presented in the



competition are in publications referenced in the international database SCOPUS and 8 of them with impact factor.

The applicant presents evidence of participation in 5 national and 18 international research projects.

It is noteworthy that Mr. Bliznakov has a rich scientific and publishing activity. So far, he has 49 articles and 69 reports and 170 citations, including those with which he participated in the competition.

8. Recommendations to the candidate

In the future, the candidate should establish himself more as an independent author. To create more teaching aids for students and to ensure the learning process.

9. Personal impressions

I do not know Assistant Professor PhD Eng. Zhivko Borisov Bliznakov. My impressions are based on the materials provided for the competition.

The results achieved during many years of hard work, the experience gained from the University of Patras, the published textbooks, articles and reports, as well as the professional realization show that the candidate is a researcher, demonstrates the qualities of a scientist in the field of biomedical engineering and technologies, has original creative achievements at a high scientific level and his candidacy fully meets the requirements of the Regulations for acquiring scientific degrees and holding the academic position of ASSOCIATE PROFESSOR at the Medical University - Varna.

CONCLUSION

Having in mind the above, I propose that Assistant Professor PhD Eng. Zhivko Borisov Bliznakov to be elected for "Associate Professor" in the field of higher education – 5. Technical sciences, professional field 5.2. Electrical Engineering, Electronics and Automation, specialty "Biomedical equipment and technologies".

13.01.2021

Member of the scientific jury:

/Prof. D.Sc. Eng. Raycho T. Ilarionov/

