

# REVIEW

**regarding a competition announced by TU Gabrovo,  
for the occupation of an academic position "associate professor"  
in the field of higher education 5. Technical sciences,  
professional direction 5.1 Mechanical engineering,  
specialty "Technology of textile materials"  
promulgated in SG, no. 55 of 27.06.2023,  
with candidate chief assistant Dr. Eng. Borislav Tsonev Stoyanov**

**Reviewer: Prof. Jordan Todorov Maximov, DSc, PhD**

Only one candidate participates in the competition: Dr. Eng. Borislav Tsonev Stoyanov, born on 04.01.1978. The same candidate works at TU - Gabrovo, Department of Industrial Design and Textile Technology, and holds the academic position of "chief assistant".

## **1. Evaluation of the scientific-research, scientific-applied and publication activity of the candidate after the procedure for the educational and scientific degree "doctor"**

According to this indicator, the candidate chief assistant professor Borislav Stoyanov participates in the competition with an asset that I have classified as follows, regardless of the author's view expressed in the relevant lists:

1) Dissertation abstract on "Dynamics of running and lifting mechanism of a chain electric hoist" for obtaining the educational and scientific degree "doctor" – **1**;

The dissertation is on the scientific specialty 02.01.04 "Theory of mechanisms, machines and automatic lines".

2) Habilitation thesis - monograph on "Laser marking of textile materials" – **1**;

The monograph is unconditionally on the scientific specialty of the competition.

3) Journal articles with an impact factor – **8 articles**, publications: 7.2\*, 7.3, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10. The journals, the number of authors and the applicant's place among the authors are:

Journal of Physics: Conference Series – 2 articles (7.2 – 11 authors, IV author; 7.6 – 4 authors, III author);

Metals, IF 2.9 (2022), issue by MDPI, OA – 3 articles (7.3 – 9 authors, IV author; 7.8 – 7 authors, IV author; 7.10 – 10 authors, V author);

Crystals, issue by MDPI, OA – 1 article (7.5 – 7 authors, V author );

Coatings, issue by MDPI, OA – 1 article (7.7 – 6 authors, VI author);

Materials, issue by MDPI, OA – 1 article (7.9 – 4 authors, II author).

These articles were published in the period 2021 - 2023. All articles are devoted to electron beam machining of non-ferrous alloys, namely: 6 articles are dedicated to welding (copper-austenitic steel; copper-aluminum alloy; titanium-titanium alloy; titanium-aluminum alloy)

---

\* The numbering is according to the one made by the candidate in the respective lists

and 3 articles are devoted to modification of the surface layer of titanium alloys. *In other words, the field of research belongs to the scientific direction Surface Engineering and therefore has no relation to the specialty "Technology of textile materials", for which the competition is announced.* Therefore, I do not accept these publications for review, but I will take them into account in evaluating the overall performance of the candidate.

As a reviewer in more than 25 scientific journals with an impact factor, including MDPI publications, I cannot help but notice the following fact: An abnormally large number of coauthors appear in these articles (for example, 7.2 and 7.10 have 11 and 10 authors, respectively), and the candidate is in the middle of the list and further back. These facts are even more, shall we say, strange against the background of the information contained in these articles.

4) In Bulgarian journals – **18 articles**, publications: 7.1, 8.1, 8.2, 8.3, 8.4, 8.5, 8.27, 8.28, 8.16, 8.17, 8.29, 8.30, 8.18, 8.25, 8.31, 8.34, 8.35, 8.26.

Of these 18 posts, 8.1, 8.2, 8.3, 8.4 and 8.5 deal with various aspects of chain hoist mechanics, and 8.18 is devoted to a 3D scanner. *Therefore, these publications are not in the specialty "Technology of textile materials", for which the competition was announced.* Therefore, I do not review these publications, but will take them into account in evaluating the applicant's overall performance.

For the other publications, the journals, the number of authors and the candidate's place among the authors are:

Textiles and Clothing – 1 article (7.1 – 2 authors, I author);

Mechanics of Machines – 2 articles (8.27 – 2 authors, II author; 8.28 – 1 author, I author);

Mechanical Engineering and Mechanical Science – 4 articles (8.16 – 2 authors, II author; 8.17 – 2 authors, II author; 8.29 – 2 authors, II author; 8.30 – 2 authors, I author);

Journal of the Technical University of Gabrovo – 4 articles (8.25 – 2 authors, I author; 8.31 – 1 author, I author; 8.34 – 1 author, I author; 8.35 – 1 author, I author);

Automation and Informatics – 1 article (8.26 – 3 authors, II author).

5) Scientific conferences abroad – **2 reports**, publications: 8.19 and 8.24. Of these, 8.19 refers to a 3D scanner. *Therefore, these publications are not in the specialty "Technology of textile materials", for which the competition was announced.* Therefore, I do not review these publications, but will take them into account in evaluating the applicant's overall performance.

Publication 8.24 (2 authors, I author) has been presented at a conference in France in 2011.

6) Scientific conferences in Bulgaria – **19 reports**, publications: 7.4, 8.6, 8.7, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.20, 8.21, 8.22, 8.23, 8.33, 8.36, 8.37, 8.32.

Of these 19 publications, 7.4 and 8.37 are dedicated to electron-beam welding of different metals and alloys, such as copper and chromium-nickel austenitic steel, 8.6, 8.7, 8.8 and 8.9 refer to different aspects of chain telfer mechanics, and 8.23 considers software for electro-mechanical systems. *Therefore, these publications are not in the specialty "Technology of textile materials", for which the competition was announced.* That is why I do not review these publications, but will take them into account to evaluate the applicant's overall activity.

For the other publications, the conferences, number of Authors and candidate's place among the authors are:

UNITECH, Gabrovo – 11 papers (8.10 – 1 author, I author; 8.11 – 1 author, I author; 8.12 – 1 author, I author; 8.13 – 2 authors, I author; 8.14 – 2 authors, II author; 8.15 – 2 authors, II author; 8.20 – 1 author, I author; 8.21 – 1 author, I author; 8.22 – 2 author, I author; 8.33 – 1 author, I author; 8.36 – 3 author, I author);

Sozopol 2014 г. – 8.32 (1 author, I author).

Of the 26 scientific works outside the autoreraf, which I have accepted to review, as they are unconditionally in the specialty of the announced competition, independent (without co-authors) are **13**: monograph and 12 articles and reports (publications 8.28, 8.34, 8.35, 8.10.10 8.11, 8.12, 8.20, 8.21, 8.22, 8.23, 8.32). In the remaining 13 scientific works, Dr. Borislav Stoyanov is the first author in **6** of them (publications 7.1, 8.30, 8.25, 8.24, 8.13, 8.36), and in **7** (publications 8.27, 8.16, 8.29, 8.26, 8.15 ) is the second author. Unlike the 8 publications in impact factor journals, the statistics show unequivocally the leading role of Dr. Borislav Stoyanov.

The list of his writings cited by the candidate, as well as the reviewer's study, showed the following:

1) **Three** of the candidate's publications in impact factor journals published by MDPI *have been cited by foreign authors in impact factor journals* as follows:

- 7.10 is cited in Crystals, MDPI edition, OA (open access);
- 7.5 is cited in Materials, MDPI edition, OA;
- 7.3 is cited in Journal of Materials Research and Technology, Elsevier edition, OA.

2) **Four** of the candidate's publications (in Journal of the Technical University of Gabrovo) were cited by foreign authors in journals outside Bulgaria.

3) **The remaining** citations are made by Bulgarian authors, colleagues of the candidate.

I highly value the 7 citations (3+4) and especially the three in journals with an impact factor, because these 7 citations are a real testament to the applicant's achievements.

In the additional provisions of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), paragraph 1, item 10, a brief definition of a monograph is given: "A monograph is a published scientific publication that contains a complete and comprehensive study of a certain subject, problem or person, written by one or several authors adhering to the same view. **A monograph is a scientific work that does not repeat or summarize existing knowledge**, has a scientific editor and/or scientific reviewers, has an ISBN, and is not less than 100 standard pages with 1800 characters per page. It contains an expanded table of contents, a comprehensive bibliography, and in-text references to other scientific works."

The work "Laser marking of textile materials" submitted by the candidate meets the above definition, and therefore I accept it unconditionally as a monograph. As structure, research methods, research conducted, new results achieved and analyzed, overall layout, I highly appreciate what the candidate has done. I believe that he has significantly increased his knowledge of mathematical modeling and optimization of technological objects. He also received specific skills for working with the QStatLab software.

The applicant is the author of 5 useful models (4 of them relate to the application of laser technology and 1 to an automated system for fastening details), which I appreciate very much, since today this creative activity is practiced by fewer and fewer people in our

country. And only four decades ago, Bulgaria was in fourth place (after the USA, the USSR and Japan) in the world in terms of the number of inventions per capita. Ch. Associate Professor Borislav Stoyanov presented 6 documents certifying the implementation of his developments, including useful models. In addition, he was the leader of one project and a participant in another 19 research projects, financed by Section III of the State Budget.

In conclusion, it can be said that the results of the research work (not only on the competition) of Ch. Assistant Dr. Stoyanov can be summarized in the following groups:

- Technology of textile materials (monograph, 7.1, 8.10, 8.11-8.17, 8.20-8.22, 8.24-8.36);
- Study of the effect of application of concentrated energy flows (7.2-7.10, 8.37, useful models);
- Study of the mechanical behaviour of load-lifting equipment (8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9);
- Mechanical Engineering Technology (utility models and implementations);
- Others (8.18, 8.19, 8.23)

It is difficult to give an unequivocal answer to the question of what the candidate looks like as a scientific worker (in this concept, any pedagogical nuances are excluded) - innovator, experimenter, analyst, translator of ideas. I think the answer at the moment is "a useful mix of all of the above". And he has yet to shape himself as a real scientist with a recognizable profile.

## **2. Evaluation of the educational activity and qualification of the candidate**

Chief assistant Dr. Borislav Stoyanov participates in the competition with 3 textbooks, of which he is the independent author: Testing of textile materials, Machines and processes in the textile industry, Computer 3D modeling. He has developed curricula in 8 disciplines: Textile Materials Science, Textile Testing, Spinning Machines and Processes, Modern Spinning Methods, Computer 3D Modeling, Modeling and Modeling, Computer Tools for Graphic Design, Computer-Interior Design. In the attached certificate, the applicant indicates 10 (ten!) disciplines in which he gave lectures and 11 (eleven!) disciplines in which he led laboratory exercises.

On the basis of the above, I firmly believe that *Dr. Borislav Stoyanov has the necessary pedagogical training and qualifications to occupy the academic position of "associate professor" for which he claims.*

## **3. Meeting the minimum requirements for occupying the academic position "Associate professor", defined in LDASRB from 2018**

The candidate chief assistant Dr. Borislav Tsonev Stoyanov satisfies the minimum national requirements defined in the LDASRB from 2018.

## **4. Main scientific-applied, applied and teaching-methodical contributions**

Regardless of the author's point of view, the contributions I have accepted are summarized and categorized as follows:

### *1) Scientific applied contributions*

- Correlations between the parameters of the electron-beam processing process on the one hand, and the material structure, mechanical properties and surface integrity characteristics on the other hand, during welding and modification of the surface layer of metals and alloys.

- Static and dynamic characteristics of the mechanical behavior of a chain hoist.
- Kinematic model and block diagram for controlling a 3D scanning device.
- Approach to upgrade ring spinning machines, including spindle drive, law of motion of the drawing apparatus, construction of the starting coil and control of the winding density of the yarn.
- Program control of a device for winding yarn bodies with intersecting axes and an experimentally verified tare procedure of a device for measuring the effort of a thread during winding.
- The influence of preliminary preparation on the properties of terry fabrics, the rate of moisture diffusion in them depending on the time of treatment with different softeners and on other characteristics such as tensile strength, stretchability to break, was established.
- Correlation dependence between extensibility and absolute strength, as well as optimized elastic parameters of yarns.
- A mathematical model has been derived for controlling the winding and unwinding processes of tape material.

## 2) *Applied contributions*

- Kinematic model of a 3D object scanning device.
- Device for measuring the total effort when winding a thread with winding machines.

## 3) *Teaching and methodical contributions*

- I accept the applicant's claims for educational and methodological contributions (3 textbooks, 8 curricula).

## 5. Significance of contributions to science and practice

The results of the scientific-research and teaching-methodical activities of ch. assistant professor Dr. Borislav Stoyanov have an applied orientation and ultimately aim to serve the engineering practice and the education of students.

## 6. Notes and recommendations

I did not find errors of a principled nature in the candidate's works. Some small mistakes are rather the result of excessive haste and carelessness, which will be corrected with time. The contributions could have been specified and summarized: not the quantity, but the quality is decisive in this case. For example, "research on ..." alone cannot be a contribution. A contribution can be the result from the research, etc. I recommend that the candidate limit his "breadth" appearances in science at the expense of greater depth.

## 7. Personal impressions

I know chief assistant Dr. Borislav Stoyanov from the time when he was a doctoral student. I was a reviewer of his dissertation, which he successfully defended at the then specialized scientific council on mechanics at the former VAK in 2006. Even then, he was distinguished by a very good general technical training, and over the years he significantly expanded and deepened his knowledge of mechanical engineering. Judging by the results of his educational activities (textbooks, curricula, taught subjects), I believe that he is a well-built teacher at a high modern level. In his person, I see one of the pillars of the faculty in the foreseeable future.

## 8. Conclusion

Based on all of the above, *I propose that Chief Assistant Dr. Eng. Borislav Tsonev Stoyanov to take the academic position of "Associate professor" at the Technical University - Gabrovo*, in the field of higher education 5. Technical sciences, in the professional field 5.1 Mechanical engineering, specialty "Technology of textile materials".

/signature/

01.11.2023

Reviewer: Prof. Jordan Maximov, DSc

Gabrovo