

REVIEW

Authored by Prof. D.Sc. Dimitar Andonov Dichev of Technical University – Gabrovo (TUG) concerning materials submitted for participation in competition for awarding the academic position of “Associate professor” in professional field 5.1. Machine engineering, scientific major “Structural mechanics, resistance of materials”

Candidate: Chief assistant professor Vladimir Petrov Dunchev, Ph.D.

1. Information about the competition

The competition for awarding the academic position of “Associate professor” in TU-Gabrovo was announced in the State Gazette, issue 68 from 31.07. 2020 and on the website of TU-Gabrovo to address the needs of Department “Applied Mechanics” which is a constituent unit of the Faculty of Mechanical and Precision Engineering.

2. Information about the candidate

There is one applicant for participation in the competition – Chief assistant professor Vladimir Petrov Dunchev, Ph.D., full time academic lecturer in the department of “Applied Mechanics”. The candidate has fully complied with the normative quantitative and qualitative requirements of the Act for Academic Staff Development in Republic of Bulgaria (ASDRB) in its part “Terms and Conditions for Awarding the Academic Position of Associate Professor”.

Chief assistant professor Dunchev, Ph.D. has a Master’s degree in Technical sciences, scientific specialty “Construction of buildings and facilities”, and a Ph.D. degree in “Applied Mechanics”. The topic of his defended doctoral dissertation is “Information and computational system for bidding and optimal design of metal structures of bridge cranes”.

V. Dunchev, Ph.D. began his research and teaching career in 2015 in the Technical College of Lovech on permanent labor contract, and before that he worked as a design engineer in “Christian-Neiko 90” company, Sofia. He is proficient in English and Russian. The materials for participation in the competition submitted by V. Dunchev, Ph.D. do not replicate the publications submitted for reviewing in his previous competitions for awarding of Ph.D. degree and the position of “Chief assistant professor”.

3. Overview of content and results in the submitted works

The scientific works submitted for participation in the competition can be categorized in four generalized groups: habilitation work, scientific publications – articles in journals and conference papers, teaching materials. The analysis of the materials submitted for reviewing by Vladimir Dunchev, Ph.D. shows that they do meet and even exceed in quantity the minimal national requirements and correspond to the stipulations of the ASDRB, the Rule for its implementation and the Rules of TU-Gabrovo.

In terms of structure, the habilitation thesis is based on 10 scientific publications conceptually combined in a complete scientific work on topic “Enhancement of fatigue strength of metal structural components through static surface plastic deformation”. This scientific work is an example of integrating the theoretical, methodical and experimental aspect of the processes related to surface plastic deformation in an overall logical structure based on the set objectives for increasing the fatigue strength of metal structures. Extensive data obtained from the experimental studies performed by the candidate and valuable and novel scientific and applied research contributions in the research area have been presented in the submitted materials. Here I want to draw attention to the exceptional quality of the scientific publications, each of which has been published in journals with high Impact Factor (IF).

A total of 14 publications were submitted all of which were published within the period from 2018 to 2020; 11 of them are articles in journals, 3 are papers presented at scientific conferences. One of the articles in this group of materials is with Impact Factor, so the total number of publications referenced and indexed in world renowned databases (Thomson Reuters и Scopus) is 11, which is a clear evidence of the high level of research done by the candidate. Out of all 14 publications 6 are of sole authorship and the rest are written in co-authorship with the number of co-authors ranging from 2 to 3. Chief assistant professor Dunchev is the first author of 12 of these publications and in 1 of them he is listed as a second co-author. This is another solid evidence that in all works Dr. Dunchev's contribution is the leading one, which is why I am confident that the formulations of investigated problems, the conducting of the respective experiments; analysis of data and publication of results are the exclusive merit of the candidate in this competition. With regard to the thematic of the research work, the publications comprise 11 thematic areas which are correctly formulated. Hereby, I would like to draw attention to the wide thematic area of the presented scientific works, accurately and consistently developed, which shows Mr. Dunchev's genuine interest in the field of the present competition.

The last group of materials includes two study guides for solving problems in statics and kinematics. The material in the study guides is well structured, clearly and concisely presented and covers all the necessary aspects of the theoretical training of students of all majors in the professional field of Mechanical engineering.

4. Reflection of candidate's scientific publications among the scientific community

From the reference I made at the time of writing this review it is evident that the publications of V. Dunchev, Ph.D. have attracted the attention of the scientific community both at home and abroad. To support my claim, I will note that 17 citation of the candidate's publications have been found in the world renowned databases (Web of Science and/or Scopus).

5. General description of candidate's activity

5.1. Teaching and pedagogical activity

Chief assistant professor V. Dunchev, Ph.D. is a highly qualified academic teacher. He started his teaching career in 2015 and went through all stages of his career development, which logically and naturally should continue by awarding the academic position of "Associate Professor". To support this claim I will point out that the Department of Applied Mechanics at TUG has highly evaluated his teaching and pedagogical skills and therefore assigned him to read lectures in 4 subjects taught in bachelor degree courses. I am fully convinced that the in-depth research, competence and innovations demonstrated in the works presented by chief assistant professor V. Dunchev are reflected in his teaching activity.

5.2. Scientific, applied research and implementation activity

As stated previously the candidate participates in the competition with 24 scientific publications. It is necessary to point out that the scientific merits of these publications result from the creative approach in formulating the problems, the analytical interpretation of studied information, the correct organization of the experimental research, as well as the correctness of the analysis made leading to objective solutions of scientific and applied character in one important area related to ensuring the strength resource of components, sub-assemblies and machines subjected to variable dynamic influences. It is evident that the main results and conclusions in these publications are based on extensive experimental material obtained from candidate's participation in 7 applied research projects.

The materials submitted for participation in the competition do not contain supporting documents concerning implementation. However, the submitted works are of relevant importance to practice and contain results that have been implemented or can be implemented in practice. Furthermore, chief assistant professor V. Dunchev, Ph.D. actively participated in modernization of installations

and machines in the laboratory for metal tests, whose goals and objectives are of applied research character.

6. Contributions. Significance of contributions for science and practice

I assume that the contributions are defined correctly. The contributions are correctly arranged according to their essential characteristics in the generally accepted methodological groups. Due to the limited scope of this review, I will only note that I fully accept the submitted reference record of contributions. To justify my decision, I will point out that the main scientific, applied research and application contributions are based on materials published in some of the most prestigious and world-renowned scientific journals.

7. Evaluation of candidate's personal contribution

In my opinion, the personal contribution of the candidate Vladimir Dunchev, Ph.D. resulting from his teaching, pedagogical, scientific and applied research activities is significant and indisputable. The presence of a substantial circle of co-authors in Bulgaria and abroad is evidence of the topicality and significance of the problems studied and the ability of the candidate to work in a team in important scientific areas. It should be strongly emphasized that the obtained scientific results, specific applied contributions and citations are largely due to the individual efforts, ideas, organizational skills and competencies of chief assistant professor V. Dunchev, Ph.D.

8. Critical remarks and recommendations

My highly positive assessment is based on the grounds of the aforementioned merits of the materials submitted for review by the candidate. I have no particular remarks and recommendations.

9. Personal impressions

I have known the candidate V. Dunchev, Ph.D. for a couple of years. I highly appreciate and admire his sense of responsibility, careful, correct and considerate attitude, intellectual agility, proficiency and expertise, as well as his genuine commitment to his work.

10. Conclusion

In view of the above, **I propose to the esteemed jury that Chief assistant professor Vladimir Petrov Dunchev, Ph.D. be awarded the position of "Associate Professor" in:**

higher education area - 5. Technical sciences,
professional field - 5.1. Machine engineering,
scientific major – Structural mechanics, resistance of materials

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Reviwer: /signature/
/Prof. Dimitar Dichev, D.Sc./