

REVIEW

by Prof. D.Sc. Eng. Dimitar Andonov Dichev, Technical University of Gabrovo
of the materials submitted for participation in the competition for occupying the academic position "Professor" in field of higher education – 5. Technical sciences, by professional direction – 5.6. Materials and Materials Science, specialty - Materials science and technology of engineering materials

1. Information about the competition

The competition for the academic position of "Professor" at TU-Gabrovo was announced in the „State Gazette“ newspaper, no. 47 of 24.06.2022 and on the TU of Gabrovo website for the needs of the „Material science and Mechanics of materials“ department at the „Mechanical and Precision Engineering“ faculty.

2. Information about the candidates in the competition

One candidate participated in the announced competition – Assoc. Prof. Eng. Angel Petrov Anchev, Ph.D., head of the „Materials Science and Mechanics of Materials“ department at the „Mechanical and Precision Engineering“ Faculty of TU of Gabrovo.

The candidate Assoc. Prof. Angel Anchev fully complied with the normative quantitative and qualitative requirements of the „Law on the Development of the Academic Staff in the Republic of Bulgaria“ in the part „Conditions and procedure for occupying the academic position of Professor“.

Associate Professor Anchev has a master's degree in technical sciences with a specialty in „Engineering and Technologies for Environmental Protection“ and PhD with scientific specialty 01.02.02 „Applied Mechanics“ based on a defended dissertation on the topic „Increasing the load-bearing capacity and fatigue life of structural elements with cylindrical holes by means of spherical dorning“. The topic of the dissertation work is a basic foundation that Associate Professor Anchev develops and expands in a scientific and applied aspect in the following years of his professional activity.

Associate Professor Anchev's work experience began in 2004 as an assistant in the „Chemistry and Ecology“ department, later as a chief assistant (2005) in the same department, and from 2011 he was appointed to the same academic position in the „Technical mechanic“. From 2016 to the present, he is an Associate Professor in the scientific specialty „Applied Mechanics“ at Technical University of Gabrovo. At the present moment, Assoc. Prof. Angel Anchev is the head of the „Materials Science and Mechanics of Materials“ department. He participates in the research teams of two laboratories, the scope of which is related not only to scientific, but also to applied activity.

All this shows that Associate Professor Anchev successfully combines his scientific interests and research with applied activity and with administrative and managerial positions. My overall assessment is that the candidate for professor has a rich and fruitful academic career and an authoritative presence in the academic community of TU-Gabrovo.

It is necessary to note that in the competition Associate Professor Anchev participated with scientific materials that do not repeat the submitted publications for obtaining the educational and scientific degree "PhD" and for occupying the academic position "Associate Professor".

3. Overview of content and results in the presented works

The candidate's scientific works presented in the competition can be classified into the following three general groups: habilitation work, scientific publications - journal articles and conference reports, textbooks and teaching aids. The carried out analysis of the materials received by

Assoc. Prof. Anchev shows that they cover and exceed in quantitative terms the relevant minimum national requirements in the sense of the „Law on the Development of the Academic Staff in the Republic of Bulgaria“, the regulations for its implementation and the regulations of TU-Gabrovo.

Structurally, the habilitation work is based on 10 scientific publications, conceptually united in a scientific work on a topic „Improving the operational behavior of metallic materials subjected to diamond polishing through management of characteristics Surface Integrity“. In these thematically grouped publications, the theoretical, methodological and experimental aspects of the processes related to surface plastic deformation by diamond polishing have been successfully integrated into a general concept subordinated to the idea of improving the operational characteristics of various metallic materials. Proprietary data obtained as a result of long-term and in-depth research, theoretical-methodical and experimental activity are proposed, on the basis of which original scientific and scientific-applied contributions in the researched area were derived. Here I want to emphasize the high quality of scientific publications, each of which is printed in a journal with a high Impact Factor (IF).

The presented 28 publications were printed in the period 2016–2022, with 1 of them being a conference report and all others being journal articles. There are 12 published in refereed and indexed editions from the Web of Science and/or Scopus databases, such as 11 of them are in editions with an Impact Factor (Thomson Reuters). Here it is necessary to note that including the articles of the first group, the total number of publications in journals with an Impact Factor is 21, which is an important proof of the high level of the candidate's scientific work. Five of the publications are independent, and the rest are co-authored, with the number of authors varying from 2 to 11. Assoc. Prof. Anchev is the first author in 3 of these publications, and in 10 of them his name is listed as the second co-author. That is why I accept that in the majority of the presented publication materials Associate Professor Anchev has a leading contribution, which means that the formulation of the researched problems, the conduct of the relevant experiments, the analysis of the data and the publication of the results are an outstanding merit of the candidate for the current competition. As an issue, the candidate's publications can be categorized into the following three main areas:

- Methods for improving Surface Integrity characteristics by: the method of deformation; the schemes of the deformation body in contact with the surface of the part; contact friction conditions; the shape and parameters of the working parts of the deforming body; the technological parameters of the deformation process, etc.

- Methods, models and methodologies developed for evaluation, experimental investigation and comparative analysis of the characteristics defining the operational behavior of metallic materials processed by static methods of surface plastic deformation.

- Theoretical summaries and solutions of a number of scientific, scientific-applied and applied problems in the field of technological assurance and quality management of the surfaces of details in surface plastic deformation, which represent a significant and original contribution to science.

It is important to note that the author's interests cover a wide range of thematic areas, in which the presented works are developed precisely and systematically, which shows the serious professional training and the in-depth research, theoretical-methodical, experimental and applied activity of Assoc. Prof. Anchev in the field of the announced contest.

4. General characteristics of the applicant's activity

4.1. Educational-pedagogical activity

The candidate, Assoc. Prof. Anchev has significant professional experience as a university teacher at TU-Gabrovo, where he has been working since 2004. Assoc. Prof. Angel Anchev conducts lecture courses and conducts exercises in 6 disciplines, the thematic area of which is within the scope of the announced competition for "Professor". The applicant's annual classroom employment for the last 3 years exceeds the minimum required by regulatory documents for announcing the competition.

In support of my high assessment of the educational and pedagogical activities, the three textbooks and one teaching aid issued after the period of the first habilitation are also available. The educational literature is distinguished by topicality, logical structuring and a very good presentation style. That is why I can point out that Assoc. Prof. Anchev demonstrates a desire for continuous enrichment of training in accordance with good practices in higher education; his educational literature is at a high level, which makes him a prominent and authoritative teacher.

4.2. Scientific and scientific-applied activity

Assoc. Prof. Anchev is a scientist with a profile and individuality established over the years. To a large extent, these qualities have been acquired thanks to the rich scientific and scientific-applied activity of the candidate. Here I can summarize that the long-term work of Associate Professor Anchev is characterized by a clearly defined specificity and thematic scope of his research interests, an interdisciplinary approach successfully used to achieve the goals, appropriate methodology and good scientific awareness. A strong impression in the scientific production of the candidate is made by the fact that the main inferences and conclusions are synthesized on the basis of extensive experimental material obtained on the basis of the participation of Assoc. Prof. Anchev in 8 national and university science-research projects. That is why the scientific publications of Prof. Anchev are sought after and evaluated appropriately by the scientific community on a national and international scale, and the proof of this is the corresponding citation rate. From the reference I made, at the time of writing this review, I will only indicate that in the world databases and in publications from the national reference list I have found 168 citations, of which in Web of Science and/or Scopus – 161.

4.3. Implementation activity

Implementation documents are not presented in the competition materials. On the other hand, however, a large part of scientific works contain results that have been implemented or can be implemented in practice. Assoc. Prof. Anchev has managed and manages projects in the field of the subject of the present procedure, the total value of the attracted funds is several tens of thousands of BGN. His participation in research projects with a specific applied theme, which were successfully completed and received positive evaluations, is proof that Assoc. Prof. Anchev is a distinguished and sought-after researcher.

5. Contributions. Significance of contributions to science and practice

I believe that the defined contributions are correct and reflect the essence of the results obtained in the candidate's scientific, scientific-applied and applied activities. The contributions are properly arranged in the generally accepted methodological groups. I accept in full the presented reference to the contributions, which are derived on the basis of material published in some of the world's most prestigious scientific journals in the scientific field of the present procedure.

6. Evaluation of the candidate's personal contribution

In the presented materials to me for review, I find the clearly expressed personal creative approach of Assoc. Prof. Anchev and the specific organization and instrumentation of his experimental research. In addition, his active work on scientific-research projects and long-term teaching activity in the field of the competition's subject matter result in an indisputable way in the published scientific materials. That is why I accept that the obtained scientific results, specific applications and citations are largely due to the personal efforts, ideas, expertise and organizational qualities and skills of Assoc. Prof. Anchev.

7. Critical notes and recommendations

The above-mentioned merits of the materials presented by Prof. Anchev dominate categorically in my completely positive assessment. The presented materials for review do not give grounds for formulating critical remarks, but rather recommendations. I recommend the candidate to direct his efforts in the following years in a more active implementation activity. The basis for this

recommendation gives to me the high level of achieved scientific results and his participation in a remarkable scientific team.

8. Personal impressions

I have personally known the candidate, Assoc. Prof. Angel Anchev for more than 20 years. He is a highly erudite specialist, an excellent colleague. I highly appreciate and admire his persistence, responsibility, consistency in science, as well as building excellently prepared young specialists.

9. Conclusion

Taking into account the above, **I propose to the honorable Scientific Jury to award Assoc. Prof. Eng. Angel Petrov Anchev, PhD the academic position of „Professor“** in field of higher education - 5. Technical sciences, professional direction - 5.6. Materials and Materials Science, specialty - Materials science and technology of engineering materials.

01.11.2022

Reviewer: /signature/
 /Prof. D.Sc. Eng. Dimitar Dichev/