

OPINION

regarding the competition for the academic position "Professor" in the field of higher education 5 "Technical sciences", professional direction 5.6 "Materials and materials science", in the scientific specialty "Materials science and technology of engineering materials", announced in SG (official state gazette) No.47 from 24.06.2022 for the Faculty of Mechanical Engineering and Instrumentation, Technical University - Gabrovo with a single candidate: Associate Professor Angel Petrov Anchev, Ph.D.

by Roussi Minev Minev, Assoc. Prof. - Ruse University "A.Kanchev", PhD, MEng

1. General description of the content of documents presented by the applicant

Assoc. Prof. Anchev submitted 38 scientific papers for participation in the competition. The scientific works represent: 10 publications in international journals with an impact factor; 12 scientific publications that are referenced and/or indexed in world-renowned scientific information databases; one report in international conferences in the country - published in a Bulgarian scientific journal with scientific review; 15 publications in Bulgarian scientific publications with peer review. All publications are up-to-date, published after year 2018. All materials presented by the applicant are in the field of the announced competition and are not reviewed under previous procedures. The citations of Assoc. Prof. Anchev presented in the competition are a total of 167 from 29 publications.

The applicant's PhD dissertation is in the area of load-bearing capacity and fatigue life of structural elements.

For the past 7 years, Assoc. Prof. Anchev has been a lecturer in the Department of Materials Science and Mechanics of Materials, Faculty of Mechanical Engineering and Instrumentation at the Technical University - Gabrovo, and before that (12 years) he was employed by other departments of the same University. He supervised two successfully defended PhD students and participated in the writing of 4 textbooks and teaching materials in the last 5 years.

In the submitted documents it is stated that Associate Professor Anchev participated in 6 scientific projects financed by the state budget, one under the Scientific Research Fund (SRF) and one under the Operational Program Science

and Education for Intelligent Growth (OPSEIG). He is a member of EG 9 "Testing of metals" at the Bulgarian Institute of Standardization.

In total, Assoc. Prof. Anchev has 32 publications reflected in SCOPUS (of which 24 in the last 5 years) and 81 citations in the last year. Its h-index = 10.

2. General description of the scientific activities of the candidate

From the table shown which compares the submitted materials for the competition with the minimum requirements for occupying the academic position "Professor" according to the "Regulations for the Implementation of the Law on the Academic Career Development" for area 5. Technical sciences and the rules of the Gabrovo Technical University, it can be seen that all of them have been met.

Group		Minimum number of points needed	Minimum number of points achieved
A	Dissertation for the award of a PhD degree	50	50
B	Habilitation work – monography work (1 issue), scientific publications (not less than 10) in editions that are referenced and indexed in world-recognised scientific information databases.	100	127,14
C	Publications in refereed and indexed editions in world-renowned databases. Publication in non-refereed but peer-reviewed editions or in edited collective volumes.	200	270,78
D	Citations or reviews in publications referenced and indexed in global databases or monographs and collective volumes. Citations in refereed peer-reviewed publications. Citations in non-refereed peer-reviewed publications.	100	1594
E	Published textbooks (4 issues) Doctoral students defended (2 people) National project (1 project)	150	170,66

3. Analysis of the scientific and applied achievements of the candidate, presented for participation in the competition

According to the submitted reference and other documents, the scientific work of the candidate Assoc. Prof. A. Anchev is focused on

researching the influence of the morphology of the metal surface (surface integrity) obtained as a result of surface plastic deformation and diamond burnishing, on the fatigue characteristics and wear resistance of the materials (mainly alloyed steels and aluminium bronze).

A. Scientific contributions (proving of essential new aspects of already existing scientific hypotheses)

Two contributions related to the influence of surface integrity on the fatigue life of the material can be distinguished.

B. Scientific and applied contributions (creation of new classifications, methods, algorithms, models, etc.)

In my opinion three contributions stand out: (i) optimization of a diamond burnishing process for different materials; (ii) hardening model of the surface and subsurface layers of steel; (iii) integrated classification of static methods of diamond burnishing and their field of application.

B. Scientific and applied contributions (obtaining and proving new facts)

Three contributions stand out: (i) optimization results on parameters of surface plastic deformation and diamond burnishing of aluminum bronze; (ii) the influence of the cyclic loading coefficient and the number of transitions on the fatigue behavior of low-alloy steel was established; (iii) the influence of the generated temperature on residual stresses and fatigue strength was studied.

C. Applied Contributions

A total of eight contributions are distinguished. They are related to: generation of databases of surface texture parameters after surface plastic deformation; determination of residual stresses; establishment of proper lubrication surface texture; generation of fatigue curves for different materials (alloyed steels and aluminum bronze) subjected to diamond burnishing and surface plastic processing, etc.

4. Reflection of the candidate's results on the works of other authors (citations)

According to the applicant, his works have been cited at least 165 times in the last five years. In the last year alone, he has been cited in publications from international databases 81 times. Most of the publications were cited about ten times. Citations are in publications with IF and SJR.

In many of the works, the candidate is a co-author with colleagues from other research organizations in the country and abroad, which speaks of his

significant participation in joint developments as well as that the results are popularized among the scientific community.

5. Critical remarks and recommendations

I have no significant critical remarks on the materials provided by the applicant. I believe that the scientific and applied contributions and achievements presented by the candidate could be structured more compactly. In the paragraph point 3 of this statement I have indicated how I think this could be done.

My main recommendations to the candidate for the future work are to continue to be useful for the under and post graduate students as well as to continue to focus his research on modern technologies for improving the technological properties of the materials.

6. Personal impressions

I do not know Associate Professor Anchev personally, but from his scientific and publication activities I am convinced that he is a correct scientist. He treats his scientific production with appropriate responsibility. I have positive impressions of his research and achievements. The documents for the competition give the impression that he is familiar with the state of the art of the scientific field in which he works and he is familiar with the research achievements in other countries in Europe and the world. All this makes him an excellent specialist in the field of materials science and in special matters related to the surface treatment of materials using modern technological methods.

7. Conclusion

From all above and based on the presented evidences of the scientific and professional activities of the candidate I propose to the committee to make an official proposal to the Scientific Council of the Faculty of Mechanical Engineering and Instrumentation, Technical University – Gabrovo the academic position “Professor” to be awarded to Angel Petrov Anchev.

04.11.2022

Member of the scientific jury: /signature/

(R. Minev, Assoc. Prof., PhD, MEng)