



## REVIEW

By Assoc. Prof. Dimitar Rusev Rusev, PhD

*Scientific organization: University "Prof. Dr. Asen Zlatarov" - Bourgas  
Faculty of technical sciences, Department of "Electronics, electrical engineering and mechanical engineering"*

*Academic position: „Associate professor, scientific degree "Philosophy doctor"*

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**Subject:** Competition for the academic position of "Associate professor" in the field of higher education 5. Technical sciences, professional field 5.1. Machine engineering, scientific specialty Applied mechanics (Mechanics of coatings), announced in State gazette, issue 5/2020.01.17 by the University "Prof. Dr. Asen Zlatarov" - Bourgas.

**Position of the author of the review:** member of the scientific jury for the occupation of the academic position of "Associate professor".

**Candidate in the competition for the academic position of "associate professor":** Senior assistant Eng. Polina Ilieva Milusheva-Mandadzhiyeva, PhD, Department of "Electronics, electrical engineering and machine engineering", Faculty of technical sciences, University "Prof. Dr. Asen Zlatarov" - Bourgas.

**Grounds for the review:** order № Rd-111/01.06.2020 of the Rector of University "Prof. Dr. Asen Zlatarov" - Bourgas.

The materials presented for reviewing by the single candidate for the competition Senior assistant Eng. Polina Ilieva Milusheva-Mandadzhiyeva, PhD, contain all the information necessary for the estimation. The presented documents are structured according to the requirements of the LDASB and the Regulations for the conditions and terms for occupation of academic positions at the University „Prof. Dr. Asen Zlatarov”- Bourgas. For the review and estimation, the documents have been delivered on electronic and paper carriers and their contents allows making clear assessment of the scientific research, applied science research and educational and lecturing activities of the candidate. The materials cover absolutely the topic of the competition.

### **1. Information and analysis of the professional development of the candidate**

Senior assistant Polina Milusheva-Mandadzhiyeva, PhD, has graduated two master's degrees, the first one "Machine engineer with pedagogical qualification" at the Engineering and pedagogical Faculty – Sliven at the Technical University of Sofia (1993-1998), and the second master's degree of "Industrial management", specialty "engineering design" at the University „Prof. Dr. Asen Zlatarov”- Bourgas (2016-2018).

In 2016, Polina Milusheva-Mandadzhiyeva successfully defended her thesis for the educational and scientific degree "Philosophy doctor" at the Technical university – Sofia, field of higher education 5. "Technical sciences". Professional field 5.1. "Machine engineering", scientific

specialty “Materials science and technology of machine building materials” with scientific tutors Assoc. Prof. Tsanko Uzunov, PhD and Prof. Atanas Atanasov, PhD. The author’s summary entitled “metal coatings on polymeric materials” is in the field of the present competition and indicates for profound research at high scientific level.

Since 2011 the candidate works as lecturer – assistant (2011-2015) and Senior assistant (since 2016) at the Department of “Electronics, electrical engineering and machine engineering” at the University „Prof. Dr. Asen Zlatarov”- Bourgas and two years earlier she has been part-time lecturer at the same Department.

Senior assistant Eng. Polina Milusheva-Mandadzhiyeva PhD, is member of the Union of scientists in Bulgaria and member of the editorial board of the journal “Science. Education. Culture”, ISSN 1314-717 X, Republic of Bulgaria.

She has participated in five scientific research projects within the plan of the Scientific research sector at the University „Prof. Dr. Asen Zlatarov”- Bourgas. The autobiographic data testify for active civic position and very successful work in a team.

## **2. Analysis and estimation of the scientific papers presented by the candidate**

Senior assistant Eng. Polina Milusheva-Mandadzhiyeva submitted for the competition 40 publications, of which 10 are in group V and 30 in group G. As single author, she has published 1 textbook “Technical mechanics”, electronic edition (2020, CD, ISBN 978-619-91493-0-0) and 1 educational handbook “Collection of problems on technical mechanics, electronic edition (2020, CD, ISBN 978-619-91493-1-7).

Among the referenced 10 scientific papers in group V published in journals referred and indexed in world known databases, there are duplicate entries - №1 is identic with №3 from the PhD Thesis so it is not accepted. The candidate was asked to provide substitutes. The candidate provided additional 2 publications: the first one is in press in the Balkan Tribological Association, 26(5), 2020 г., (ISSN 1310-4772) where Dr. Milusheva is the only author. The second one is published in the Proceedings of the annual scientific conference of the University., V. Tarnovo, May 2020, pp. 1808-1816, electronic edition, (ISSN 2367-7481). In this publication, Dr. Milusheva is the leading author with two co-authors. After these changes, the number of publications in journals referred and indexed in world known databases remains 10. *The total number of points for group V is 480 which 4 times higher than the minimum number of points required – 100 according to the requirements of the University „Prof. Dr. Asen Zlatarov” – Bourgas.*

In group G, - scientific publications in non-referred journals or in redacted collective volumes, the candidate participates with 30 papers. Publication G\*21 is published in the Proceedings of the international conference in Leipzig, Germany. The other publications are in journals listed in the National Reference List of modern Bulgarian scientific journals with scientific reviewing.

Based in the information mentioned above, *the total number of points for indicator G\* becomes 332 which exceeds the minimum of 300 points required by the University „Prof. Dr. Asen Zlatarov” – Bourgas.*

In the information about the citations, the candidate provided 32 noticed citations, as follows: for indicator D\*12 (citations or reviews in scientific journals referenced and indexed in world known databases with scientific information or in monographies and collective works (Scopus; Web of Science etc.) - 5 citations (5x10=50 points) and for indicator D\*14 (citations or reviews in non-referred journals with scientific reviewing – 27 citations (27x2=54 points).

It was found, however, that analyzing the information about the citing sources provided the candidate for indicator D\*14, 13 citations can be classified into group D\*12. Precisely, the citations

in scientific publications №2, №3, №4, №5, №6 and №8 are in JBTA which is indexed in Scopus and Web of Science;

As a result, it can be summarized that indicator D\*12 contains 18 citations, i.e. 180 points (18x10=180 points) and 14 citations remain in indicator D 14, i.e. 28 points (14x2=28 points).

*The total number of points for citations for indicators D is 208 which exceeds the minimum number of 100 points required by the University "Prof. Dr. Asen Zlatarov" – Bourgas.*

### **3. Analysis and estimation of the scientific research and applied science activities of the candidate**

It can be concluded from the materials submitted for participation in the competition that the main achievements and results from the scientific research and applied science activities of the candidate are in the field deposition of coatings onto polymeric materials and the studies cover wide spectrum of interdisciplinary fields related to the influence of the technological parameters on the physicochemical, mechanical and tribological properties of the coatings. Major part of the research is of experimental nature due to the complexity of the contact interactions taking place in the system "substrate-coating". They require knowledge in various fields of science – mechanics, physicochemistry, tribology, statistical processing and analysis of the results, etc.

In the reference about the contributions presented, the information is structured in details and it is classified in four main directions:

- Deposition of metal, graphene and wear-resistant coatings onto polymeric materials
- Studies of the mechanical characteristics of the deposited coatings and the surface properties of thin layers.
- Simulation studies and optimization of mechanical structures with deposited coatings.
- Other directions.

The scientific and applied science contributions for each of these directions are described in details.

Senior assistant Polina Milusheva participated in 5 scientific research project financed by the Scientific research center of the University "Prof. Dr. Asen Zlatarov"- Bourgas and is co-author in two patent applications – № 112894/18.03.2019 and № 112901/04.04.2019 which are covered by the topic of the present competition.

### **4. Analysis and estimation of the pedagogical activity of the candidate**

The candidate for the competition Senior assistant Eng. Polina Milusheva, PhD has been lecturer in the Department of "Electronics, electrical engineering and mechanical engineering" since 2011. As can be seen from the information about the lecturing load, Senior assistant Eng. Polina Milusheva, PhD has had substantial lecturing activity during the last three academic years. For the last academic year 2019/2020 her total lecturing workload reached 585 hours.

The lecturing, educational and pedagogical activities are connected with development and giving lecture courses and practical exercises for students studying for the educational qualification degrees of Bachelor and Master for both regular and part-time forms of education.

It can be seen from the information presented that Senior assistant Eng. Polina Milusheva gives lectures and carries out exercises in Mechanics, Technical mechanics, Mechanics I, Materials resistance, Machine engineering, Computer modelling, Printing and preprint preparation, etc., to students from more than 10 specialties in the regular and part-time forms of education.

Senior assistant Eng. Milusheva, PhD, has published as single author 1 textbook "Technical mechanics", electronic edition (2020, CD, ISBN 978-619-91493-0-0) and one handbook "Collection of problems in technical mechanics", electronic edition (2020, CD, ISBN 978-619-91493-1-7).

#### 5. Critical remarks and recommendations

I did not find serious imperfections in the documents and scientific works for participation in the competition presented to me. I have no critical remarks in the essence, as well as on the technical presentation of the materials. I express my positive estimation of the overall scientific value of the publication activity of Senior assistant Eng. Polina Milusheva, PhD.

I find it expedient for the accumulated experience and the scientific potential to be concentrated in future to more active participation in national and international projects and the award of the academic position of "Associate professor" to expand the capabilities of Dr. Milusheva as a scientist in the team work with specialists and experts from other universities and scientific institutions.

#### CONCLUSION

In accordance with the analysis and estimation made above, I would like to note that, in my opinion, Senior assistant Eng. Polina Milusheva, PhD, obeys the requirements listed in the Law for development of the academic staff in Bulgaria and the Regulation for acquiring scientific degrees and positions at the University "Prof. Dr. Asen Zlatarov" – Bourgas and is suitable for the occupation of the academic position of "Associate professor".

With my full conviction I recommend the honorable members of the Scientific jury to vote positive and award the academic position of "**Associate professor**" to **Senior assistant Eng. POLINA ILIEVA MILUSHEVA-MANDADZHIEVA, PhD**, in the scientific specialty Applied mechanics (Mechanics of coatings).

24.08.2020 r.  
Burgas

Member of the scientific jury: .....  
/ Assoc. Prof. Dimitar Rusev Rusev, PhD /