



REVIEW

for participation in a competition for an academic position "Associate professor"
in scientific field 5 Technical sciences
professional field 5.1 Mechanical engineering
scientific specialty in the discipline "Cutting of materials and cutting tools"
announced in SG No. 40/31.05.2022.

candidate: Assist. Professor Eng. Dimka Vasileva, PhD

Reviewer: prof. Dimitar Damyanov, PhD

1. General and biographical data

Dimka Kostadinova Vasileva was born in Yambol in 1987. She completed her secondary education at "Ivan Raynov" Technical High School in Yambol, specialty "Technologist-programmer of CNC systems". In 2010, she graduated from TU-Varna, majoring in "Mechanical Engineering and Technologies". In 2005 started working at Palfinger Productionstechnic Bulgaria EOOD - Tenevo, and since 2011 works in the company Technoimpex 68 EOOD. The positions she held are: Machine operator, metal cutting machines, Designer, Design engineer, Mechanical engineer, Production manager. In 2012 graduated as a Master in the same specialty - "Mechanical engineering and technologies". In 2018 she defended her doctoral thesis, with scientific specialty 02.01.10 "Technology of mechanical engineering". Since 2019, she has held the academic position of "Assistant Proff." at TU-Varna at the department: "Technology of Machine Tools and Manufacturing" where she is currently working.

2. General description of the presented materials

Assist. Professor Eng. Dimka Vasileva, PhD., has submitted an independent monographic work entitled "Choice of effective methods and tools for processing the details by cutting" for participation in the competition for Associate Professor. The monograph covers the requirements of such work with a theoretical-practical orientation. For participation in the competition for the academic position of "Associate Professor" she also submitted a list of titles of 19 items. scientific works, which are distributed as follows;

- Monography – 1 pc.
- Scientific publications in referenced and indexed databases – 11 pcs.
- Scientific publications in non-refereed journals with scientific review or edited collective volumes - 8 pcs.

Scientific publications submitted for participation in the competition are divided into two groups:

- The first group [A], represents a habilitation work (monograph) on the topic: Selection of effective methods and tools for processing the details by cutting.
- The second group [B] represents a total of 19 scientific works, of which 3 are independent ([B15], [B17], [B18]), and the rest are co-authored.

Scientific works are distributed as follows:

Scientific publications

- Reports in international scientific conferences abroad [B1], [B2], [B3], [B4], [B5], [B6], [B7] – 7 issues;
- Reports from international conferences in Bulgaria [B8], [B9] – 2 issues;

Articles

- In international scientific journals abroad [B10], [B11], [B12], [B13] – 4 issues;
- Articles in international scientific journals in Bulgaria [B14], [B15], [B16], [B17], [B18], [B19] – 6 issues;

Thematically, the works from group [B] are systematized in the following two areas, or the candidate's research and applied scientific activity is oriented to the following areas:

1. Methods and devices for quality inspection - [B1], [B2], [B3], [B4], [B5], [B10], [B14], [B15], [B16];
2. Methods and tools for mechanical processing - [B6], [B7], [B8] [B9], [B11], [B12] [B13]], [B17], [B18], [B19];

The list of citations submitted for participation in the competition makes a good impression and includes:

- citations in scientific publications referenced and indexed in world-famous databases with scientific information;
- citations in non-refereed peer-reviewed publications.

For the period from 2018 so far, the candidate has participated in 5 scientific and educational projects, 2 of which were financed by the state budget and 3 by TU-Varna.

3. General characteristics of the candidate's scientific research and applied scientific activity

From the reviewed documents, submitted for participation in the competition, it is clear that Assistant Professor Dimka Vasileva works in several areas. They, in turn, provide the opportunity to appear as an author, researcher and educator with very good teaching skills and approaches.

Minimum required points by groups of indicators for occupying the academic position Associate professor "A", area 5. Technical sciences, professional direction 5.1. Mechanical Engineering

A group of metrics	Content	Associate professor	Total number of points per Assistant Professor, PhD Dimka Vasileva
A	Indicator 1	50	50
Б	Indicator 2	-	-
В	Indicator 3 и 4	100	100
Г	Sum of indicators 5 - 11	200	257,65
Д	Sum of indicators 12 -15	50	180
Е	Sum of indicator 16 - 28	-	40
Ж	Indicator 29	30	440
Total Points:		430	1067.65

Number of points on the individual indicators of area 5. Technical sciences, professional direction 5.1 Mechanical engineering

Group of Indicators	Indicator	Points
A	1. PhD thesis to award education and science degree "PhD"	50
Б	2. PhD thesis to award of the SC "PhD of Science"	0
В	3. Habilitation thesis - monograph	100
	4. Habilitation work - scientific publications that are indexed and referenced in world-famous databases with scientific information	-
	5. A published monograph that is not presented as the main habilitation thesis	-
	6. A published book based on a protected dissertation work for the award of the National Academy of Sciences "PhD" or for the award of the	-

Г	National Academy of Sciences "PhD of Sciences"	
	7. Scientific publications that are referenced and indexed in world-renowned databases of scientific information	152,65
	8. Scientific publications in non-refereed journals with scientific review or in editorial collective works	105
	9. Published chapter of a collective monograph	-
	10. Realized author's projects in the field of architecture and design	-
	11. Leading (independent) creative expression in the field of architecture or design	-
Д	12. Citations or reviews in scientific publications referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes	170
	13. Citations in monographs and peer-reviewed collective volumes	
	14. Citations or reviews in non-refereed peer-reviewed journals	10
	15. Reviews of realized author's products in specialized publications in the field of architecture or design	-
Е	16. Obtained scientific degree "PhD of Sciences"	
	17. Guidance of a successfully defended PhD student	
	18. Participation in a national scientific and educational project	40
	19. Participation in an international scientific and educational project	-
	20. Management of a national scientific and educational project	-
	21. Management of an international scientific and educational project	-
	22. Attracted funds for projects managed by the applicant	-
	23. Published university textbook or of a textbook that is used in the school network	
	24. Published university textbook or textbook that is used on the school network	1
	25. Published patent application	

	26. Patent or utility model application recognized	
	27. Prizes in architectural or design competitions given by national professional forums and organizations	
	28. Prizes in architecture or design competitions given by professional forums and organizations abroad	
Ж	29. Schedule of lectures held at TU-Varna for the last three years	440
	Общо точки	1067,65

As can be seen from the above two tables, the scientometric requirements according to the table in ZRASRB and the regulations of TU-Varna for its implementation are fully met, and in some indicators even exceeded.

4. Assessment of the candidate's pedagogical training and activity

The horary of the lectures held at TU-Varna for the last three years is 440 hours, of which; in OKS - 225 hours, in OKS "Bachelor" - 126 hours; and in "Master" ox - 105h. I evaluate the candidate's pedagogical training based on the activities reflected in her creative resume and works related to this activity. She has sufficient teaching experience as an assistant and chief assistant in the TMMM department. Bearing in mind the presented report on the study load, which is significantly above the norm, I assume that his pedagogical experience is rich.

In the materials proposed for review, the style and language used are scientifically correct, accurate and adequate for the topics under consideration. Pedagogical competence, scientific awareness and skills to handle a conceptual apparatus are available.

5. Basic scientific and applied scientific contributions

Contributions are reduced to scientific, scientifically applied and applied, with which new aspects of already existing scientific tasks are proven. technologies, constructs, problems and theories.

1. Scientific contributions

1. A model describing the trajectory of the tip of the tool is proposed for estimating the shape error in the cross-section of the workpiece during a sudden change in the cutting force during turning. [B8]

2. Equations for the ratio coefficient of the shape and dimensions of the k-harmonic have been proven and derived. With them, it is possible to choose the most suitable combination for the angle of the prism and the direction of measurement, when measuring the deviation from roundness in prisms. [B5]

3. A methodology was developed and proposed for the analysis of the dynamic system through the frequency and time characteristics, zeros and poles of the system, calculated and graphically displayed using Matlab. [B9]
4. It is proven and theoretically justified that the instrument for surface plastic deformation (SDP) developed by us has the possibility to adjust the deforming force and to measure its size during the SDP processing process. [B12]

2. Scientific - applied contributions

An approach for using factorial experimental analysis and determining the influence of the main parameters of the surface plastic deformation (SPD) process regime on the fatigue resistance of the studied AISI 304 and 316L steels has been developed and proposed. [B11]

1. An experimental study was conducted and the applicability of the mathematical models for calculating the tool path point coordinates was confirmed. [B12]

2. Mathematical models have been developed for the formation of regular microreliefs through surface plastic deformation (SDP) and the use of a modern vibration-free method. [B12]

3. A theoretically grounded approach for switching from one processing method to another method of technological processing of complex rotary surfaces is proposed. [B7]

4. An algorithm has been developed for the selection of appropriate measuring tools and measurement methods. [B1]

5. A new methodological sequence approach has been developed for fracture fatigue testing of different types of materials, processing methods and experimental plans involving a different number of influencing factors. [B11]

6. It has been proved by experimental investigation that the stable operating ranges of a CoroMill 490-050Q22-08M milling head can be determined in terms of the value of the relative displacement generated during the face milling process.

[B13]3. Applied Contributions

12. The practical necessity of introducing the GPS standards in Bulgaria in the Bulgarian language has been proven, aiming at the correct understanding and application of the new symbols, which would lead to their wide use in practice. [B10]

13. An experimental bench was constructed for evaluating the main axes of stability of a CNC lathe metal-cutting machine, which finds application in practice. [B8]

14. An experimental setup was developed and implemented in practice to study the influence of the parameters: cutting speed; feed rate, the actual number of cutting

edges involved in the milling process; the minimum thickness of the cut material layer and their relative displacement in the tool-workpiece system relative to the roughness parameter of the processed surface Ra. [B13]

6. Significance of contributions to science and practice

The contributions to science and practice are significant. The scientific, scientific-applied and applied contributions contained in the candidate's works are essential for the development and enrichment of scientific research in the field of the announced competition.

I believe that, in terms of volume and quality, the scientific-teaching, scientific-research and scientific-applied activities of the candidate fully satisfy the requirements for occupying the academic position "Associate Professor".

7. Critical notes and recommendations

I have no substantive critical remarks to challenge the candidate's basic scientific, applied science, and applied contributions. Minor technical errors are noted.

I recommend the candidate to start working in a team with other scientists who have interests in the field of modern industrial technologies and the requirements of the Fourth Industrial Revolution. I recommend that in the future the efforts in scientific research work should be directed to the study and analysis of the latest forms of development and modeling of highly automated technologies in this direction. Every year, in our country and abroad, a number of forums are organized in which the candidate can participate in order to gather up-to-date information and apply in practice the theoretical knowledge acquired from scientific forums and literature.

8. Personal impressions and opinion of the reviewer

I have known the potential candidate for the announced competition for a short time, but from the materials presented, I can conclude that she is a young scientist who knows how to work independently, has developed professionally over the years and has the necessary qualities to acquire the academic position of Associate Professor.

CONCLUSION

The presented developments are made at the necessary scientific level and are dedicated to a topic that corresponds to the requirements of the competition in professional field 5.1. "Mechanical Engineering". In the scientific works presented by the candidate, sufficient scientific, scientific-applied and applied contributions

have been realized. All the requirements of the "Regulations on the terms and conditions of holding academic positions" in TU-Varna have been met. All necessary documents and references are presented.

Based on the above, I find it reasonable to propose to Assist. Proff. Eng. Dimka Kostadinova Vasileva PhD to be awarded the academic position "Associate Professor" in professional direction 5.1. Mechanical engineering, scientific specialty in the discipline "Cutting of materials and cutting tools".

08.09.2022г.

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по Регламент (ЕС)
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Reviewer:.....
/Proff. Dimitar Damyanov PhD/