OPINION

on the materials submitted for participation in a competition for „**Associated Professor**" in the field of higher education 6. Agricultural sciences and veterinary medicine, Professional field 6.5 Forestry, scientific specialty „Technology, mechanization and automation of the woodworking and furniture industry" in the discipline „Woodcutting and cutting tools"

In the competition for Associated Professor, published in the State Gazette, 102/01.12.2020 and on the site of the University of Forestry with the code WWI-AsP-1120-51 for the needs of the Department of „Woodworking machines" at the Faculty of Forest Industry, as a candidate participate Chief Assist. Pavlin Biserov Vitchev Ph.D., Faculty of Forestry, Department of „Woodworking machines".

Prepared the opinion: Panayot Angelov Panayotov, Ph.D., Professor in a Professional Field 6.5 Forestry, from University of Forestry, retired

1. Brief biographical data for the candidate

The candidate for the academic position "Associate Professor" chief assistant Pavlin Biserov Vitchev was born on 11.10.1978 in Sofia. He received his secondary education at the College of Communications - Sofia. From 1997 to1998 he completed his military service in the Construction Troops - Sofia. He graduated from the University of Forestry, Sofia with a bachelor's degree in 2004 with an overall grade of 4.38. The topic of his diploma theses was "Development of a technological part of an enterprise for the production of office furniture in the vicinity of Sofia" with supervisor Prof. Andrey Dimitrov Kavalov, which he defended with excellent (6.00) grade. From February 2007 to December 2008 he obtained his master's degree in Woodworking and Furniture Production with an elective module "Woodworking machinery and equipment" and overall grade excellent 5.64.(based on 5.29 from the set-up exams and 6.0 from the master thesis). The topic of his master thesis was "Design of pneumatic transport installation for the company Buldecor – Sofia" with supervisor prof. Bozhidar Dinkov.

2. Correspondence of the submitted documents and materials of the applicant according to the Rules of the Development of academic staff at the University of Forestry.

The documents and materials submitted by the candidate fully comply with the Law for Development of Academic Staff in the Republic of Bulgaria and the Regulation for the Development of Academic Staff in University of Forestry - Sofia,

3. Assessment of the candidate's educational and pedagogical activities (work with students and PhD students)

The candidate for the academic position "Associate Professor" diligently performs his duties to teach students in Technology of Wood and Furniture degree program in the following courses: *Cutting Wood and Cutting Tools* – full-time first and second-year students and *Metal Science* – full-time and part-time first-year students. He also conducts laboratory exercises in *Machines and Tools for Wood Processing* course for students in Business Management degree

program as well as in *Interior Acoustics* for students in Engineering Design (Interior and Furniture Design) degree program. He has been the supervisor of three successfully defended bachelor's degree theses and has prepared reviews of 30 bachelor's degree theses.

4. Assessment of candidate's scientific, scientific-applied and publishing activities

General description of the presented materials

Candidate Chief Assist. Pavlin Vitchev participated in the competition with:

- Monographs – 1 number (s);
- Books – 1 number (s);
- Publications – 36 number (s);
- Projects – 13 numbers (s).

4.1 Participation in scientific, scientific-applied and educational projects

- **Publications in scientific journals – 17 numbers, as follows:**

- in foreign refereed journal in Web of Science and Scopus – 2;
- in Bulgarian refereed journal in Web of Science and Scopus – 3;
- in foreign refereed journal outside Web of Science and Scopus – 6;
- in Bulgarian refereed journal outside Web of Science and Scopus – 6.

- **Publications in proceedings of international scientific forums – 19 number (s), as follows:**

- in foreign refereed proceedings in Web of Science and Scopus – 4.;
- in foreign refereed proceedings outside Web of Science and Scopus – 15;

- Publications in Bulgarian journals – 13;
- Publications in foreign journals – 25;

- Publications without co-authors – 7;
- Publications with one co-author – 5;
- Publications with two co-authors – 12;
- Publications with three or more co-authors – 14.

4.2 Characterization of published scientific results

- Research projects funded by the University of Forestry under Ordinance № 9 – 3 in number;
- National educational projects - 3 in number;
- Infrastructure projects – 3 in number;
- Scientific and applied projects funded by the training and experimental forest ranges of the University of Forestry – 4 in number;
- Participation in the management of scientific research laboratory – 1 in number.

4.3 Reflection of Candidate's Scientific Publications in Literature (known citations)

The presented citations for participation in the competition are 7 incl.:

- Citations in peer-reviewed (refereed) or indexed scientific journals, series or conference proceedings in Web of Science and Scopus – 3 in number (№№ G13.1÷G13.3);
- Citations in non-refereed journals with scientific review or publications in edited collective volumes – 4 in number (№№ D15.1÷D15.4).

4.4 Contributions to the candidate's work (scientific, scientific applied, applied)

The candidate's contributions can be divided into scientific, scientific-applied and applied

Scientific contributions (4 in number):

- Requirements for conducting research on the acoustic characteristics of woodworking machines; methodology, developed for evaluation of the sound pressure level at the workplace, generated during milling;
- Methodology, developed to determine the force-energy parameters of the milling process;
- The degree of influence of the cutting rate and feeding rate on the cutting process was determined;
- The degree of influence of the feeding rate and the thickness of the removed layer on the quality of processed surface during milling of wood specimens from beech (*Fagus Sylvatica* L.,), Scots pine (*Pinus Sylvestris* L.) and oak (*Quercus Robur,* L.), has been identified.

Scientific-applied contributions (14 in number):

- The influence of the cutting tools' construction on the quality of the processed surfaces of solid wood at different frequency of tool rotation, at different cutting speed and different feed speeds respectively has been determined;

- The degree of influence of the rotation frequency of the tool, feed rate and the thickness of the removed layer on the variations in the roughness of the processed surfaces of beech wood ((*Fagus Sylvatica* L.) and Scots pine wood (*Pinus Sylvestris* L.) wood has been evaluated;

- The degree of influence of the cutting height on the sound pressure level, generated by the circular saw machine has been determined;

- The sound pressure level, generated by a shaper with a spindle at a low position has been assessed;
- The influence of the cutting tools' construction on the noise load of the operator of a shaper with a spindle at a low position has been evaluated
- Graphical dependences have been derived to show the influence and the relationship between the different individual factors, i.e. feed rate, rotational frequency of the cutting tool and the thickness of the removed layer, affecting the level of noise emissions, generated during longitudinal milling of beech wood (*Fagus Sylvatica* L.);

- The change in the vibration intensity of a shaper with a spindle at a low position has been determined depending on the cutting speeds, feed rate and the thickness of the removed layer, as well as the influence of the cutting tool on the overall dynamic behaviour of the machine;
- Assessments have been made of the sound-absorbing characteristics of Scots pine wood (*Pinus Sylvestris* L.), determined at different frequency rages as well as the acoustic parameters of the rooms where the wood of this tree species is used in the interior
- The level of noise emission at the operator's workplace of the block saw and dividing saw has been determined;
- The degree of influence of different cutting speeds, of the thickness of the removed layer and the number of gear belts on the dynamic behaviour of a universal woodworking milling machine has been evaluated;
- The degree of influence of the cutting speed, the feed rate and the area of the removed layer on the variations of the power and the cutting force during longitudinal flat cutting of beech wood (*Fagus Sylvatica* L.) and Scots pine wood (*Pinus Sylvestris* L.) has been determined;
- The indicator of efficiency and effective power in sharpening flat knives with abrasive tools has been determined;
- Dynamic models for research, performed with woodworking milling machine have been developed;
- The influence of the quantity and temperature of the adhesive on the feed rate at the tunnel lining of furniture details made of chipboard and MDF has been determined.

Applied contributions (5 in number):

- The influence of the number of V-belts on the operation of the cutting mechanism of a shaper with a spindle at a low position has been determined
- The frequencies and types of the free spatial vibrations of a shaper, its spindle and the rotor of electric motor have been identified
- The free fading spatial vibrations of a shaper with a spindle at a low position, the rotor of electric motor and its spindle have been identified
- The accompanying spatial vibrations as a result of imbalance of the rotor of electric motor of a shaper with a spindle at a low position have been identified
- On the basis of the performed review of the available information, the degree of mechanization and automation of the woodworking and furniture industry in Bulgaria in the period 1947-1989 was assessed. An analysis of the state of automation and digitalization in DPM after 1989 and the trends for its development was made.

5. Assessment of the applicant's personal candidate

The candidate for the academic position "Associate Professor" ***Pavlin Biserov Vitchev*** is an author of three one monograph, one book and a single author of five scientific publications. The candidate is the first author in 13 publications and has led three scientific projects. All the above gives me the confidence to conclude that the candidate is an established scientist who is able to independently manage and perform research.

6. Critical remarks

My assessment of the overall scientific and teaching activity of the candidate Chief Assistant Prof. Pavlin Vitchev, PhD, is highly positive, However, I would like to recommend him to direct his future efforts to publish in journals with impact factor. Judging by the level of his current publications, I strongly believe that his future work will be at even higher scientific quality. Further, I would recommend him to focus his efforts on issuing textbooks for students in the disciplines in which he teaches.

7. Personal impressions

The candidate Chief Assistant Prof. Pavlin Vitchev, PhD, participating in the competition for the academic position of "Associate Professor", is impressing with diligence and activity in the teaching and research activities of the Faculty of Forestry. He actively participated in the modernization of the laboratory for "Wood cutting and cutting tools" as well as in the foundation of two modern training and demonstration centers, i.e. for hand tools and demonstration center BLUM, located at the Department of Woodworking Machines at the Faculty of Forestry.

8. Conclusion

In connection with the above, I propose that Chief Assistant Professor Dr. Pavlin Biserov Vitchev be elected as „Associate Professor“ in the discipline “Wood cutting and cutting tools” in the Professional field 6.5 Forestry, scientific specialty “Technology, mechanization and automation of the woodworking and furniture industry”.

Prepared the opinion:

Prof. Panayot Panayotov, PhD

Opinion delivered to: