REVIEW

on the materials submitted for participation in the competition for the academic position of **„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 „Technology of wood fiber materials"

In the competition for professor, announced in the State Gazette, issue 26/21.03.2023 and on the website of University of Forestry (UF) with procedure code WWI-P-0223-104, for the needs of the Department of Mechanical technology of wood (MTW) at the Faculty of Forest Industry (FFI), as a candidate participates Assoc. Prof. Viktor Petrov Savov Ph.D., FFI, and Department of MTW.

РецензентReviewer: Prof. Dr. Eng. Zhivko Bonev Gochev, in Professional Field 6.5. Forestry, Scientific specialty Technology, mechanization and automation of the woodworking and furniture industry" (TMAWWFI) from the University of Forestry.

1. Brief biographical data for the candidate

Associate Professor Viktor Petrov Savov, PhD, was born on 23.02.1980 in the city of Sofia, where in 1997 he completed his secondary education at 15 Adam Mickiewicz Secondary School. In 2002 he graduated as an engineer-bachelor, and in 2005 as an engineer-master in „Woodworking and furniture production" at the Faculty of Forest Industry (FFI) of the University of Forestry (UF) - Sofia. In the period 2005-2007, he was trained at the Center for Postgraduate Education and Qualification of UF in the professional qualification „Teacher of general technical and special subjects From 2006 to 2010, he was a full-time Ph.D. student in the scientific specialty TMAWWFI, obtaining in 2010 the Educational and Scientific Degree „Doctor" with the topic of the dissertation „Study of the influence of steaming regimes on the performance indicators of wood fiber boards". He successively held the academic position of assistant (2008 - 2011) and chief assistant (2011 - 2015) at the Department of MTW.

Since 2015, he has been an associate professor at the MTW department, giving lectures on the disciplines: „Technology of wood fiber materials", and „Technology of wood particle boards" for the specialty „Wood and furniture technology" (WFT), Bachelor's Degree, „Manufacturing of Wooden Boards", specialty „Economic Management" (EM), Bachelor's Degree, „Technological Design of Wood Processing Enterprises", specialty MTW, Master's Degree.

Assoc. Prof. Savov speaks English and Russian. He participates in editorial boards of journals with an impact factor (IF - Web of Science) or impact rank (SJR - Scopus), including as a reviewer of scientific articles.

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 candidate for the academic position „Professor" in the professional field 6.5 Forestry, scientific specialty TMAWWFI has submitted all the necessary documents required under Art. 65a (4) of the Regulations for development of the academic staff of UF and the Law for development of the academic staff in the Republic of Bulgaria:

- CV on the European model;

- Notarized copies of diploma for completed higher education, Bachelor's and Master's Degree; certificates of Doctor and Associate Professor; official note for the occupied academic position; medical certificate; criminal record certificate; certificate of internship in the specialty; reference-self-assessment for the fulfillment of the national minimum requirements under Art. 2a, para. 2, 3, and 4 for academic position "professor" and reference of original scientific contributions; habilitation reference; a list of publications and other scientific and applied results after holding the academic position of Associate Professor; reference to known citations; documents and written materials certifying professional and creative activities and appearances within the meaning of art. 67, para. 2; references for the management of graduates; prepared curricula; scientific teaching and expert activity; published chapter of a collective monograph; published university textbook and study guide; declaration under Art. 313 of the Criminal Code for the reliability of the information presented.

  All documents are uploaded on electronic media.

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

Associate Professor Dr. Victor Savov has been working as a teacher at UF - Sofia for 14 years. After his habilitation in 2015, he is titular of the following academic disciplines:

- „Technology of wood fiber materials" - specialty WFT, Bachelor's Degree, full-time and part-time form of education.
- „Particle board technology" - specialty WFT, Bachelor's Degree, full-time form of education.
- „Technological design of woodworking enterprises" - specialty WFT, Master's Degree, full-time and part-time form of education.
- „Production of wooden boards", specialty EM, full-time form of education.

His average classroom occupancy, for the last five years, amounts to 390 hours.

Assoc. Prof. Savov prepared the curricula of the disciplines „Technology of wood fiber materials"; „Particle board technology" and „Technological design of wood processing plants" which have been updated in 2021.

The candidate has been the scientific supervisor of a total of 44 successful graduate students, and for the period from 2015 to 2023, they are 26 in the field of technology of wood fiber materials.

Assoc. Prof. Savov is the scientific supervisor of a full-time Ph.D. student in the scientific specialty TMAWWFI, with a deadline for completing the doctoral studies 02.01.2024.

Every year he participates in a complex practice of students from the WFT specialty.

From the academic year 2022/2023, he is a member of the State Examination Board of the WFT specialty for Bachelor's Degree.

Assoc. Prof. Savov has also published supporting literature for training: a chapter of a collective monograph was published in English („Nanomaterials to Improve Properties in Wood-Based Composite Panels"); a university textbook „Technology of wood fiber materials" and a manual for exercises on „Technology of wood fiber materials" for the students of the WFT specialty have been published.

14 official notes and certificates are presented, which confirm the candidate's participation in various forums, events, editorial boards and trainings organized at home and abroad.

4. Assessment of candidate's scientific, scientific-applied and publishing activities (general description of the presented materials)

The candidate Assoc. Prof. Viktor Petrov Savov participated in the competition with:

- Habilitation work – 10 pcs. scientific publications in peer-reviewed publications from the Web of Science (WoS) and SCOPUS databases;
- Textbooks – 1 pcs.;
- Teaching aids – 1 pcs.;
- Publications – 38 pcs.;
- Published chapter of a collective monograph – 1 pcs.;
- Projects – 8 pcs.

4.1 Participation in scientific, applied and educational projects

Assoc. Prof. Savov has submitted a reference of participation in 8 projects, of which 6 are research and 2 educational projects. In 5 of the research projects, he is a member of the work team, and in one he is the head of the team. Two of the scientific research projects were financed by the Scientific Research Fund of the Republic of Bulgaria, and the remaining 4 were financed by the Scientific Research Sector (SRS) of UF through a subsidy from the Ministry of Education and Science (MES).

4.2 4.2 Characteristics of published scientific results

- The presented in the competition 10 scientific publications on criterion B4, referenced and indexed in world-famous databases with scientific information - Web of Science (WoS) and SCOPUS, formed as a habilitation work entitled „Obtaining wood fiber boards with technical lignin as binders" are presented results of the candidate's research work related to research on the methods of obtaining ecological, i.e. with minimal formaldehyde emissions, wood fiber boards (WFB) by means of technical lignins as biological binders.
- Assoc. Prof. Dr. Victor Savov was registered in 2022 in the register of the academic staff of NACID (National Center for Information and Documentation) as an „Associate Professor" in professional field 6.5. Forestry 6.5. Forestry. For participation in the competition for the academic position „Professor" he presented 38 publications with which he did not participate in the competition for the academic position „Associate Professor", as well as during the registration in the register of the academic staff of NACID. The publications are in scientific journals and proceedings of international scientific conferences, most of them abroad, in the following editions.

Publications can be classified as follows:

By type:

- Publications in scientific journals - 32 pcs. (84%);
- Publications in Proceedings of Scientific Forums - 6 pcs. (16%);

By importance:

- Journal articles with Impact Factor - 17 pcs. (45%);
- Journal articles refereed and indexed in WoS and SCOPUS - 8 pcs. (18%);
- Journal articles without Impact Factor - 7 pcs. (21%);
- Reports in proceedings of scientific forums - 6 pcs. (16%).

Place of publication:

- Articles in Bulgarian and foreign journals indexed in WoS and SCOPUS - 25 pcs. (Polymers – 7; Wood Material Science & Engineering – 1; Journal of Renewable

Materials – 1; Drewno – 1; Polymer Degradation and Stability – 1; Journal of Material Research and Technology – 1; Wood Research – 1; Materials – 2; Forests – 1; Applied Science – 1; Innovations in Woodworking Industry and Engineering Design – 8);

- Articles in refereed Bulgarian and foreign journals indexed outside WoS and SCOPUS - 7 pcs. (Journal of Anatolian Environmental and Animal Sciences – 1; Management and Sustainable Development – 1; European Mechanical Science Journal – 1; PRO LIGNO – 2; International Journal – Wood, Design & Technology – 2;);
- Publications in proceedings of international scientific forums - 6 pcs. (Lithuania – 1; Croatia – 2; Slovenia – 1; Turkey – 1; Slovakia – 1).

Language in which they are published:

- In English - 38 pcs.;

Брой на съавторите:

- Independent - 1 pcs.;
- With one co-author - 7 pcs.;
- With two co-authors - 14 pcs.;
- With three or more co-authors - 16 pcs.

The scientific results and data published by Assoc. Prof. Dr. Victor Savov and the data presented in NACID Appendix 2 form a total of 170 points in group B4 with minimum requirements of 100 points, and a total of 245.2 points in group G with minimum requirements of 200 points. This makes **115.2 points more than the minimum national requirements for holding the academic position of „professor“ in a professional field 6.5. Forestry**.

4.3 Reflection of the candidate's scientific publications in the literature (known citations)

In the documents presented by Assoc. Prof. Dr. Victor Savov is attached a list of a total of 301 known citations (excluding self-citations) of 26 of his works by other authors and copies of evidence.

- Total - 25 citations.

According to the type of citations:

- In refereed journals and proceedings of scientific forums - 265 citations;
- In study aids, monographs, dissertations, etc. - 24 citations;
- In specialized non-refereed journals - 12 citations.

The scientific and scientific-applied activity of Assoc. Prof. Dr. Victor Savov can be assessed as widely reflected abroad and in our country.

4.4 Contributions in the works of the candidate (scientific, scientific-applied, applied)

In this review, the candidate's contributions are assessed for 38 scientific works, as well as the habilitation work, including 10 articles in WoS and SCOPUS.

Materials on scientific, scientific-applied and applied contributions can be grouped into the following five main directions: „Modified adhesive compositions and hot pressing modes for obtaining wood fiber boards (WFB) with the participation of synthetic binders and technical lignins“; „Influence of lignosulfonates as binders and formaldehyde acceptors, as well as the influence of additional heat treatment on WFB indicators“; „Determining the values of the main factors and the optimal ratios of the components of the adhesive compositions, when producing WFB with synthetic binders and technical lignins by modified hot pressing modes“; „Experimental WFBs with the participation of recycled, waste, raw materials, as well as WFBs with the participation of non-woody lignocellulosic raw materials and the influence of the main factors on their indicators“; „Systematization and analysis of the applicability of nanomaterials in the production of wood panels“.

After analyzing the scientific works of the candidate and the scientific, scientific-applied, and applied contributions by him, can be accepted as:

❖ **Scientific contributions:**

- High-temperature, modified hot-pressing regimes have been established to produce WFB with technical lignins, in particular lignosulfonates and hydrolyzed lignin, as biological binders.
- Modified adhesive compositions (lignosulfonate + phenol-formaldehyde resin (FFR) and lignosulfonate + urea-formaldehyde resin (UFR)) were created to obtain ecological WFB with the participation of synthetic binders and technical lignins.
- The effect of lignosulfonates as formaldehyde acceptors has been experimentally proven, which has an impact on lower formaldehyde emissions in WFB.
- The positive influence of additional thermal treatment on the indicators of WFB obtained with lignosulfonate as a binder was established, which leads to an improvement of their physical and mechanical indicators.

❖ **Scientific and applied contributions:**

- Empirically, the values of the main factors were established when using modified, high-temperature hot-pressing regimes to produce WFB with technical lignins as binders, as well as the influence of the lignosulfonate concentration on the physicomechanical parameters of the plates.
- The optimal ratios of the components of the adhesive compositions, in the preparation of WFB with synthetic binders and technical lignins - UFR + lignosulfonate and FFR + lignosulfonate - have been determined. In this way, the indicators of the plates meet the standard requirements, with a minimum total content of binders.
- WFBs have been developed with the participation of recycled, waste, raw materials in the production of paper - fibers related to lignosulfonate, and the influence of main factors in their production has been experimentally established. These boards have low emissions of free formaldehyde, but unsatisfactory water absorption and thickness swelling, which determines their possible application for non-load-bearing structures and operation in dry environments.
- The influence of main factors in obtaining WFB with the participation of non-wood lignocellulosic, agricultural raw materials - corn stalks and vine sticks has been established. This type of mass can successfully be included in the WFB composition, but its content should not exceed 24% and 20%, respectively.

❖ **Applied contributions:**

- The influence of the temperature and the hot pressing factor on the indicators of light WFB, as well as the optimal contents of UFR and FFR for the production of high-density WFB plates, have been established.
- A systematization was carried out and an analysis was made of the applicability of nanomaterials in the production of wooden boards, incl. and for WFB.

5. Assessment of the personal contribution of the candidate

The documents, scientific works and evidentiary materials submitted by the candidate are well structured and no significant gaps were found. Most of the results achieved in the materials submitted by the candidate for the competition are a collective work, and in 10 of them he is in first place, incl. and those included in the habilitation report, and in 8 it is in second place. One publication is self-contained. However, I accept that the above-mentioned contributions to the competition for the professorship were achieved with his active participation.

6. Critical remarks

In the works of the candidate and the presented creative achievements with which he participated in the competition, I did not find any significant gaps such as wrong positions and approaches, incorrect methods and generalizations, or incomplete analysis of the obtained results.

I will allow myself to share some critical remarks and recommendations to the candidate:

- In the official note No. ФГП-2395#1/28.03.2023, the specified discipline under number 6 „Technological design of woodworking enterprises" is studied in the Master's Degree, in full-time and part-time form of education, and not in the of the WFT specialty.
- The publication under № 38 from the list of the works and publications of Assoc. Prof. V. Savov, which is in the journal „Innovations in Woodworking Industry and Engineering Design" is placed in part 3. „Publications in specialized scientific journals that are not referenced and indexed in world-renowned databases of scientific information (WoS and Scopus)", and the publications under №№ 25, 26, 27, 28, 29, 30, 31, 33, and 34 of the same journal are placed, in the same list, in part 2. „Publications in scientific journals, referenced and indexed in world-renowned databases of scientific information (WoS and Scopus)".
- The journal "Innovations in Woodworking Industry and Engineering Design", which is published by FFI, is included in modern Bulgarian scientific publications, referenced and indexed in world-renowned scientific information databases of NACID, in the category of Web of Science, but the articles published in this journal cannot be found in SCOPUS and WoS data.
- In this regard, articles B4.3. and B4.5. in indicator B4 Habilitation work - scientific publications (not less than 10) in publications that are referenced and indexed in world-famous databases with scientific information are in the journal „Innovations in Woodworking Industry and Engineering Design".
- In the list of works and publications - Publications in proceedings of scientific conferences, there are 6, not 7 pcs.
- In indicator E18 "Participation in a national scientific or educational project", under number E18.3. is NIF Project - 7IF-02-23/29.07.2014 „Development of an innovative technology for the production of lightweight furniture boards with polymer material inserts". The head of the UF partner country is Prof. Dr. Veselin Stamenov Brezin. This project is from before 2015 and is outside the period 2015-2023 of the works and publications, after the award of an academic position of „Associate Professor". The total number of points in the group of indicators „E" will become 180 points, not 195 points, but it will still be 80 points above the minimum required 100 points.
- Scientific research projects financed by SRS-UF through the subsidy of the MES should not be in the category „National scientific project".
- The contributions presented by the candidate can be summarized in a more concise and summary form.
- All documents in electronic form must be signed by the applicant.
- Although scientific research is very often a collective activity, it is recommended to Assoc. Prof. V. Savov to increase the number of articles in which he is a leading researcher, as well as to publish more of their own independent articles.
- I recommend Assoc. Prof. Viktor Savov to continue working actively and purposefully as a teacher and scientist, passing on his experience to both students and Ph. D. students under his supervision.

7. Personal impressions

I know Associate Professor Viktor Savov as a colleague, teacher, and from my personal contacts, as a person holding the elective position of Dean of the FFI. Assoc. Prof. Savov has established himself as a good teacher and scientist, working actively with students, proof of which is the successful defense of the graduate students supervised by him. In his future work, he should be actively involved in the administrative and management work of the department and the faculty.

Assoc. Prof. Dr. V. Savov knows and uses modern computer technologies and mathematical methods and has successfully entered, as a good professional, the scientific specialty for which the competition was announced.

8. Conclusion

In connection with the above, I propose Assoc. Prof. Dr. Viktor Petrov Savov to be elected „Professor" in the discipline „ Technology of wood fiber materials" in Professional field 6.5 Forestry, scientific specialty „Technology, mechanization and automation of woodworking and furniture industry".

Prepared the review:

/Prof. Zhivko Bonev Gochev Ph.D./

The review was submitted on: 07/17/2023