

OPINION

For a procedure for an academic position „Associated Professor”,
State Newspaper, No 45/28.05. 2021
Candidate: **Chief Assistant PhD Stanislav Dimitrov Gyoshev**

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(IICT – BAS)

I am nominated as a member of the Scientific Jury according to Order № 178 from 16.07.2021 by the Director of IICT – BAS, on the base of solution of the Scientific Council of IICT-BAS about procedure for the academic position “Associate professor” in the scientific domain 5.“Technical Sciences”, professional field 5.2.“Electrical Engineering, Electronics and Automatics”, scientific specialty “Application of principles of cybernetics in different scientific domains” for the needs of “Cyber-Physical Systems” department of IICT – BAS. Only one candidate – Chief assistant professor PhD Stanislav Dimitrov Gyoshev has submitted documents.

1. General description of the presented documents

Chief assistant St. Gyoshev is a PhD from 2016. According to the official notice about total work experience which is 6 years and 8 months, 4 years and 2 months he is working like chief assistant in IICT - BAS.

St. Gyoshev has submitted 36 publications for the competition and 8 of them are individual publications [Г8.1, Г8.2, Г8.12, Г8.14, Г8.17, Г8.18, Г8.19, Г8.24].

The scientific interests of Chief assistant St. Gyoshev are in two main domains according to his publications:

- Methods and tools for increasing quality of life of people with visual impairments
- Methods and tools for creating materials with improved physic-chemical properties.

2. Analysis of the scientific and applied contributions

I appreciate the contributions of the presented publications like scientific-applied and applied in the following directions:

- **Methods and tools for increasing quality of life of people with visual impairments**
 - Innovative approaches for training and tools for visualization of information to people with reduced vision are presented. Different types of graphic Braille screens and graphic tactile tiles are proposed [B4.1].
 - New technologies for access to cultural and historical sites of people with visual impairments based on 3D modeling are proposed [B4.2, B4.3, Г22].
 - An approach for access to sites of cultural and historical heritage of people with visual impairments has been developed [B4.4, B4.5 B4.10]. Appropriate tools for tactile access of people with visual impairments to a graphical computer interface, cultural and historical heritage and temperature in the home are also proposed [B4.10]. Different sizes of graphic Braille screens based on linear electromagnetic micro drives, tactile graphic plates and a thermometer for people with visual impairments

have been studied. This leads to better education and perception of knowledge of this group of people.

- **Methods and tools for creating materials with improved physico-chemical properties**
 - Materials containing micro and nano-elements with increased hardness, wear resistance, hydrophobicity (surface coatings, powder metallurgy materials) have been studied and developed [B4.6, B4.7].
 - Innovative shapes of various industrial parts based on the Reuleaux triangle and tetrahedron are proposed, which provides a larger contact surface with the processed material [B4.9]. The advantages and areas of application of the considered details are discussed. The benefits of innovative forms can be summarized to energy efficiency and better product quality.
 - The parameters of the impact process in case of controllable impact of an elastic body using a high-speed camera and specialized software to it are studied [Г8.1, Г8.18]. This makes it possible to measure all the parameters of the impact process and more accurately determine the effect of the application of controllable impact in elastic deformation. Conclusions are made as a result of the conducted experiments.
 - The results of experiments for compaction of iron dust are analyzed [Г8.24]. The obtained results, as well as the world experience show that the percussion machines (hammers) can be used successfully for obtaining briquettes from metal shavings and for compaction of metal powders. In both cases, a higher density is obtained than when using hydraulic or mechanical presses.
 - In connection with further use in the production of various machines and equipment, some mechanical properties of materials with strength tests have been studied [Г8.2, Г8.14, Г8.20]. The plastic deformations of parts during testing of materials under pressure were also studied and appropriate conclusions were made.
 - The process of cold plastic deformation, characterized by simultaneous processes of plastic deformation and hardening, which is associated with a structural change in the deformed body, has been studied [Г8.21].
 - An approach for non-destructive analysis of the structure of A356 alloy samples using a computer tomograph has been synthesized Nikon XT H 225. 3D. In this way a 3D image of the structure and its individual elements is observed [Г8.23].
 - An approach for briquetting of shavings of aluminum alloys with controlled impact is proposed and conclusions are made from the advantage of the approach [Г8.8, Г8.17].
 - An approach for high briquetting of metal shavings and powders used to propel an industrial rocket engine is proposed [Г8.15]. The experiments were performed for impact briquetting of AL-alloy shavings and gray cast iron. The results of the study show that high-speed briquetting of metal waste can achieve material savings and energy efficiency.
 - A new type of nail profile with three spherical surfaces and three edges has been studied in order to provide greater resistance to collapse of the structure at risk of earthquakes, tornadoes and other disasters [Г8.10].
 - The results of experiments for the study of thin coatings with computed tomography [Г8.26] are analyzed and options for testing thinner and thicker coatings are proposed.
- **Improving traffic safety**
 - An approach has been proposed to increase the safety of trains using intelligent optical sensors [Г8.13]. The sensors are for acceleration and the degree of acceleration obtained from the rail under the influence of shock cyclic loads is examined.

- An approach is proposed for assessing the quality of guardrails and guardrails using a high-speed camera and specialized software for determining the speed, acceleration, elastic and plastic deformation of guardrails and guardrails [Г8.16].

I **appreciate positively** the theoretical and application contributions in the presented main research areas of the candidate.

3. Citations

The noticed citations of the presented in the procedure publications are 19 and 4 of the citations are self-citations and I ignore them (2.4; 2.6; 3.3; 3.4). Accordingly, the number of points in Д12 is reduced by 40 and instead of 160 (the candidate incorrectly recorded 140), the amount is 120. A significant drawback here is the lack of attached links to confirm the citations.

4. Implementation of the minimal requirements and other activities

Chief assistant Gyoshev satisfies the minimal criteria for the academic position „associate professor”. I report inaccuracies admitted by the candidate in the Certificate for fulfillment of the minimum requirements attached by him. I decrease 15 points by Indicator B4. B4.4 is reported with 5 authors and 12 points, but the authors are 6 - 10 points; B4.9 is reported with 25 points, but the authors are 5 or 12 points. The sum of the points instead of 159.23 becomes 144.23.

By indicator Д12 – citations I decrease 40 points because of self-citations (2.4; 2.6; 3.3; 3.4).

I appreciate positively the activities according to indicators "E", where at a minimum of 20 points the candidate has 224 points. He has 2 patents and 1 utility model recognized, a patent application has been filed. He is a manager of 3 projects. He is a participant in an international project. Chief assistant PhD St. Gyoshev has

- Patent №112368/25.08.2016/25.08.2016, „Thermometer” with authors D. Karastoyanov, N. Stoimenov, St. Gyoshev;
- Patent №112716/03.04.2018 „Tactile Graphics Board For The Blind” with authors D. Karastoyanov, N. Stoimenov, St. Gyoshev;
- 1 patent application - invention №113199 / 31.07.2020 „Tactile graphic portrait for the blind” with authors N. Stoimenov, D. Karastoyanov, St. Gyoshev;
- 1 useful model - №3937 / 20.12.2017 „Tactile graphic portrait for the blind” with authors T. Penchev and St. Gyoshev.

Despite the inaccuracies, the candidate significantly exceeds the minimum required for the position. His total number of points is more than the minimum required for the position 450 points – 862.17 points.

His H-index in Scopus is 4. In Scopus are visible 12 of his publications.

Chief assistant PhD St. Gyoshev has very good research and applied research activities.

5. Critical remarks and recommendations

I have remarks to the candidate regarding the technical presentation of the materials, which makes the evaluation very difficult.

- The numbering of the documents in the Application for admission to the competition does not correspond to the numbering of the files (the file names are illegible, therefore the content of the file is not understood).

- In the List of publications, indexed in Scopus, there are not links or DOI (except for two publications).
 - There are no hyperlinks to citations of publications in the citation list.
 - The list of citations of publications is not well arranged in rows.
 - The report on the contributions is not well arranged by rows by indicators Д12, Д13, Д14.
 - The publications in full text are not presented with appropriate numbering according to the list in separate files, but one after another in 1 file, which makes them difficult to identify. The two merged files do not contain numbers corresponding to the lists of publications on indicators B4 and Г8.
 - The list of publications does not correspond to the attached publications in full text. The full text of the publication B4.8 is not attached. In its place is another publication (Ice nucleation dynamics on super-nonwetable carbon soot coatings with diverse physicochemical profile)
 - The titles and authors of the publications are not written in the file Abstracts of the publications.
 - The numbering of the list of publications jumps from 31 to 34, from which the list includes 38 instead of 36 publications. This makes it even more difficult to read the publications that are not in separate files.
 - The full text of publications Г8.2 and Г.814 is in reverse order.
 - The full text of publication Г8.7 is not located. On its place is again Г8.6.
 - Instead of full text of Г8.10 is put a similar paper with the same authors.
 - Instead of full text of Г.25 there is another paper.
- The recommendation to the candidate is to pay serious attention to the presentation of the documents and always to use evidence.

Conclusion: On the base of the presented documents, scientific and applied contributions, and on the base of the complex appreciation of the other criteria of the procedure, I give my **positive opinion** and **recommend** to the honorable Scientific Jury to propose to the Scientific Council of ICT-BAS to award to Assistant Prof. Stanislav Gyoshev the academic position "Associate Professor" for the needs of "Cyber-Physical Systems" department, professional field 5.2."Electrical Engineering, Electronics and Automatics", scientific specialty "Application of principles of cybernetics in different scientific domains".

14.09.2021

Member of Scientific Jury



K. Stoilova, DSc.