

# STATEMENT

**from Prof. Dr. Kostadin Kostadinov**

in competition for the academic position “Professor”,  
announced in the State Gazette No. 103 of 12.12.2023 for the needs of the Department “Distributed  
information and control systems”,

Field: 5. *Technical Science*

Professional field: 5.2. *Electrical Engineering, Electronics and Automation*

Specialty: “*Automated Information Processing and Control Systems*”

Reason: *Order of the Director of ICT-BAS, No 42/09.02.2024.*

## 1. Bibliographical data

Documents of the candidate Assoc. Prof. Dr. Nikolay Stoimenov, under the announced competition for the academic position of “Professor” are presented. From the provided documents it is clear that Assoc. Prof. Dr. Nikolay Stoimenov graduated from TU-Sofia, Faculty of Mechanical Engineering, Department of Automation of Discrete Manufacturing - Bachelor's degree in 2011, and in 2013 he obtained a Master's degree in the same department. In 2016, he defended his PhD thesis with the topic “Study of movement and interaction of different shape bodies”. In 2020, he held the academic position of Associate Professor at ICT-BAS, Section “Distributed Information and Control Systems”, and from 2021 to the present he has been Head of the same Department and Deputy Director of the Institute of Information and Communication Technologies at the Bulgarian Academy of Sciences.

## 2. Overall description of the submitted materials

In the announced competition, the only candidate participated with a total of 57 scientific papers, distributed as follows:

- Indicator B4 - 12 scientific papers in publications indexed and referenced in the world-renowned database of scientific information - Scopus.

- Group of indicators Г: Г7 - 24 publications in publications that have been refereed and indexed in world-known databases of scientific information Scopus. Г8 20 issues. Г9 - submitted chapter of a collective monograph.

- Indicator group Д: Д12 - 37 citations of 13 publications in scientific journals that are refereed and indexed in world-known databases of scientific information, or in monographs and collective volumes. Д14 - list of 22 citations in non-refereed peer-reviewed journals.

- Indicator group E - participation in 3 projects. Head of the project of 3 projects and funds attracted to ICT-BAS for 3 projects. List of 3 intellectual property protections.

The publications do not repeat those submitted for the degree of PhD and the academic position of

Associate Professor. The analysis of the results submitted for the competition indicates that the indicators for all groups, required by the Act of the Development of the Academic Personnel of the Republic of Bulgaria, the Rules of the Academic Personnel of the Republic of Bulgaria, the Rules for the conditions, and the procedure for acquiring scientific degrees and for the occupation of academic position in the Institute of Information and Communication Technologies of the BAS, have been exceeded.

There are independent and co-authored scientific works, which shows the ability of Assoc. Prof. Dr. Stoimenov's ability to work both in a team, including with international scientists, and independently.

### **3. General characteristics of the candidate's scientific research applied scientific and pedagogical activities**

The works submitted by the candidate contain scientific research and applied scientific research on topics in the field of the announced competition. The papers show the candidate's in-depth knowledge in the following subject areas: Motion processes and behaviour of grinding bodies and media [B4-2, B4-4, B4-6, B4-7, B4-8, B4-11]; Wear resistance of 3D printed materials, including composites [B4-9, B4-10]; 3D Simulation modelling, scanning and printing [B4-1, B4-3, B4-5, B4-12].

The presented results in the scientific works under group D indicators are a continuation of the topics developed by the candidate in indicator B, as they also contain other original scientific research works, publications and inventions that can be referred to the following research groups:

- Developing specialized catcher-dispenser for accurate filling of laboratory mill with grinding bodies and sample holder, laboratory determined interaction coefficients between different bodies with application in simulation modeling;
- Simulation modeling and verification with laboratory experiments of interaction coefficients between different;
- Developing 3D models (pictures, Braille symbols and educational materials), and studies of the developed models in the direction of tactile suitability for application among visually impaired and blind people.

The candidate's scientific research is in contemporary and socially significant scientific topics.

Assoc. Prof. N. Stoimenov in his documents has presented as a Head of Project in three projects to the Scientific Research Fund and participation in another three projects, of which one to the Fund, one to the Operational Programme Science and Education for Smart Growth and one to a national scientific programme.

A reference to the website of the Institute of Information and Communication Technologies-BAS shows that the candidate has supervised two PhD students.

The submitted materials, their quality and the achieved results of the scientific research and scientific-applied activity **clearly show that the candidate fully satisfies the requirements for holding the academic position of "Professor"**, meeting the requirements of the Act of the Development of the Academic Personnel of the Republic of Bulgaria, the Rules of the Academic Personnel of the Republic of Bulgaria, the Rules for the conditions, and the procedure for acquiring scientific degrees and for the occupation of academic position in the IICT-BAS.

#### **4. Scientific research and scientific-applied contributions of the candidate**

The contributions described by the candidate can be attributed to the development of new methods for the study of emergent processes in the motion and interaction of bodies and media, the creation of classifications and simulation models with industrial applicability.

**I positively evaluate the scientific and scientific-applied contributions** of the candidate in the presented areas of research.

The contributions correspond to the competition procedure and can be summarized as follows:

- Determination of key performance factors of ball mills, investigation of characteristics and behaviour of grinding bodies and media by application of advanced methods and technologies.
- A comparative analysis is made for theoretical and experimental study of critical speed of a laboratory ball mill.
- Developed an experimental method for determining voids between grinding bodies and media;
- Created 3D models and simulations of a laboratory ball mill with grinding media and grinding bodies;
- Developed a specialized gripper-dispenser.
- Experimental results of testing the wear resistance of 3D printed materials, including composites, were obtained.
- Developed and tested samples of Braille characters with applications in various areas of society.

#### **5. Significance of contributions to science and practice**

The scientific and applied contributions presented by the candidate are of industrial and social importance. The developed and applied methods and tools for the determination of key factors in grinding bodies and media, the use of 3D technologies in various fields, including social have a positive effect and significant importance for the development of scientific research in the thematic areas in which the candidate develops and works.

A total of 59 independent citations, mostly from international authors, are presented in the competition documents. The citations exceed many times the requirements of the Act of the Development of the Academic Personnel of the Republic of Bulgaria, the Rules of the Academic Personnel of the Republic of Bulgaria, the Rules for the conditions, and the procedure for acquiring scientific degrees and for the occupation of academic position in the IICT-BAS. This is proof that the candidate's works have become known to the scientific community worldwide.

In addition to the monographic publications, Assoc. Prof. Dr. Nikolay Stoimenov has submitted a chapter of a co-authored monograph, published in English and Italian, which is not presented as a major habilitation work. It describes the results achieved in research and development in the field of image segmentation and presentation in tactile version for blind users. An exhibition was set up in 2015, which I visited in my capacity as Deputy Minister of Education and Science, where I was convinced of the importance of this contribution, the qualities and the ability of the candidate to work in a team with experienced and established national and international scientists.

## 6. Critical comments and recommendations

I have no critical remarks to challenge the main scientific and scientific-applied contributions of the candidate. The high publication activity and quality of some of the results obtained has enabled their publication and citation in journals with impact factor, SJR and intellectual property protection.

In summary, the shortcomings in the submission materials are:

- No separation protocols for the contributions in the evaluated research papers have been provided and therefore, based on the the Rules of the Academic Personnel of the Republic of Bulgaria, I consider that the authors have an equal contribution to them.
- The results of research with a significant social impact have not been systematized;
- Non-significant gaps in the bibliographic description of some references are noted.
- The declared contributions are disjointed and can be clustered.

In spite of the critical remarks and omissions (irrelevant for the overall evaluation), I believe that the formulated contributions are proof that the **candidate fully meets the requirements for the academic position of "Professor"**.

## CONCLUSION

I do believe that the candidate's research and applied scientific activities satisfy the requirements of the Act of the Development of the Academic Personnel of the Republic of Bulgaria, the Rules of the Academic Personnel of the Republic of Bulgaria. The additional Rules for the condition's qualitative indicators of the and the procedure for acquiring scientific degrees and for the occupation of academic position Professor in the IICT-BAS are met, most of which are exceeded many times. All this gives me a reason for a **positive vote** for the academic position of "Professor" by Assoc. Prof. Dr. Eng. Nikolai Ivanov Stoimenov

**The candidature meets the requirements of the Act of the Development of the Academic Personnel of the Republic of Bulgaria, the Rules of the Academic Personnel of the Republic of Bulgaria, The additional Rules for the condition's qualitative indicators of the and the procedure for acquiring scientific degrees and for the occupation of academic position "Professor" in the IICT-BAS. This gives me a reason to recommend the esteemed scientific jury to positively evaluate the scientific works of the competition and to propose to the Scientific Council of IICT-BAS to elect Assoc. Prof. Dr. Nikolay Ivanov Stoimenov to the academic position of "Professor" in the specialty "Automated Information Processing and Control Systems", Professional field 5.2 Electrical Engineering, Electronics and Automation, in the Distributed Information and Control Systems Department at IICT-BAS.**

27.03.2024, Sof

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/Prof. Dr. Kos

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