

POSITION

Competition for the academic position of "Professor"

in area **5. "Technical Sciences"**,

Professional field **5.2 "Electrical engineering, electronics and automation"**

Scientific specialty: **"Automated systems for information processing and management"**

for the needs of the **Distributed Information and Management Systems Department**, announced in State Gazette issue 103 of December 12, 2023 by the Institute of Information and Communication Technologies – BAS (IICT-BAS)

with the only candidate: **Assoc. Prof. Dr Nikolay Ivanov Stoimenov** from IICT-BAS

Member of the Scientific Jury, Order No 42/09.02.2024 **Prof. Dr Vera Angelova Angelova-Dimitrova**, Institute of Information and Communication Technologies – BAS, Sofia 1113, ul. "Acad. G. Bonchev", bl. 2.

Assoc. Prof. Dr Nikolay Ivanov Stoimenov has submitted all the necessary documents, publications and declarations according to the Law on the Development of Academic Staff in the Republic of Bulgaria (LDAS in the Republic of Bulgaria), the Regulations for the Implementation of the Higher Education Act in the Republic of Bulgaria, the Regulations for its implementation, the Regulations for the Acquisition of Scientific Degrees and Academic Positions at the Bulgarian Academy of Sciences and the Regulations for the Specific Conditions for Acquiring Scientific Degrees and Occupying Academic Positions at IICT-BAS. The candidate participates in the competition with 57 publications presented in full text, recognized applications for one patent and two utility models of the Republic of Bulgaria and a list of 22 citations.

1. Compliance with the requirements of art. 60, para. 1 Regulations for implementation of LDAS in RB

a) p. 1, 2 and 2.a

Assoc. Prof. Dr Nikolay Ivanov Stoimenov obtained his PhD in the specialty "Electrical Engineering, Electronics and Automation" in 2016 at IICT-BAS. From 2020 he currently holds the academic position of Associate Professor at IICT-BAS. He has participated in the research teams of 3 projects (1 under the National Science Program, 1 under the Operational Program Science and Education for Smart Growth, and 1 under the Scientific Research Fund) and has managed 3 scientific projects funded by the National Science Fund.

b) p. 3 and 4

Of the 57 scientific publications participating in the competition, 36 are publications that are referenced and indexed in the world scientific database Scopus; 20 are in non-refereed journals with scientific review or in edited collective volumes and 1 is a chapter of a collective monograph published by an academic publishing house in Italy. All of the publications submitted for the competition, except two [37], [38], were published after the academic position "Associate Professor", which proves that they did not repeat the submitted for

acquiring the Ph.D. degree and for occupying the academic position of "Associate Professor". A publication is self-authored. The remaining 56 publications are co-authored with both established scientists and young colleagues. In 3 of the publications [14], [21] and [56] Assoc. Prof. Dr Nikolay Stoimenov is in a team of authors, entirely with foreign scientists. There are no protocols for scientific contribution between the authors, therefore, according to the Regulations for the Application of the Law on the Development of Academic Staff in the Republic of Bulgaria, the scientific contribution of Assoc. Prof. Dr Nikolay Ivanov Stoimenov is distributed equally with the authors of each publication. Except two publications in Bulgarian [48] and [49], the remaining 55 publications are in English, which is a prerequisite for a wide response to the results presented in the publications.

Assoc. Prof. Dr Nikolay Stoimenov has submitted for the competition recognized: patent application and utility model application, registered after occupying the academic position "Associate Professor" and a recognized application for a utility model registered before occupying the academic position of Associate Professor. The recognized patent and utility model applications of the Republic of Bulgaria: "Tactile graphic tile for the blind", "Abrasive body" and "Sample holder" confirm that Assoc. Prof. Dr Nikolay Ivanov Stoimenov has proven achievements in the field of the competition.

c) p. 5

By the number of points by indicators, the presented by Assoc. Prof. Dr Nikolay Ivanov Stoimenov materials of the competition perform, and by groups of indicators B, Г, Д and E significantly exceed the minimum national requirements and the minimum requirements of IICT-BAS:

Group of indicators	Minimum national requirements	Minimum requirements, IICT-BAS	Submitted for participation in the competition
A	50	50	50
B	100	100	290
Г	200	220	365,30
Д	100	120	414
E	150	150	243,60

Table 1. Number of points per indicator

d) p. 6

According to the documents submitted for the competition, Assoc. Prof. Dr Nikolay Ivanov Stoimenov has no plagiarism in scientific works.

2. Compliance with the requirements of art. 60, para. 2

Assoc. Prof. Dr Nikolay Stoimenov presents 12 publications in journals, referenced and indexed in the world scientific database Scopus. The publications are equivalent to a published monographic work. Of these 12 publications, 11 were published after occupying the academic position of "Associate Professor" and did not repeat the submitted for acquiring the PhD degree and the academic position "Associate Professor".

3. Evaluation of the scientific and applied activities of the applicant and contributions in the materials submitted for review

The scientific and applied results in the publications and utility models of Assoc. Prof. Dr Nikolay Ivanov Stoimenov focus on four main topics: Processes of movement and behavior of grinding bodies and media; Wear resistance of 3D printed materials and composites, 3D simulation modelling, scanning and printing and application of non-contact thermographic methods. On Processes of movement and behavior of grinding bodies and media are also most of the presented publications in specialized scientific journals, equivalent to a published monographic work.

The scientific and applied results are:

Movement processes and behavior of grinding bodies and media

- Proposed methodology for the determination of critical speed, separation angle and angle of incidence at laboratory ball mills using a high-speed camera;
- An experimentally developed method for the determination of voids between grinding bodies in a mill;

Wear resistance of 3D printed materials and composites

- Determined the parameters of the experimental study of wear resistance of polymeric composite materials;
- Experimentally established antiwear properties (graphic wear characteristics, wear rate, intensity and wear resistance) of different materials (polymer) and coatings (diamond with micro and nano razer particles) under different conditions: mass wear, abrasive wear resistance under dry and boundary friction, presence of lubricant, influence of sliding speed;

3D simulation modelling, scanning and printing

- Developed 3D models and simulation models of a laboratory ball mill, of grinding bodies and environments with predefined characteristics, of a high-energy mill for mechanical alloying;
- Constructed 2D drum of laboratory ball mill by 3D modeling and 3D printing;
- Proposed methodology for scanning 3D printed lifters;
- Developed bench for determining voids in different grinding bodies;
- Developed specialized gripper-dispenser for accurate filling of laboratory mill with grinding bodies
- Samples of Braille symbols, 3D objects of buildings, animals, paintings and educational materials related to the accessibility of visually impaired people to objects of cultural and historical heritage

Application of non-contact thermographic methods:

- For the study of power and energy losses in heating, design of heating systems for industrial buildings, in medicine,
- To determine the structure of concrete, estimate and locate defects and imperfections on the surface and interior.

In his scientific papers, the candidate demonstrates a high level of competence in the detailed description and analysis of properties and the application of innovative methods and tools for research, analysis and optimization of movement, interaction and behavior of bodies of variable form: tribology, CAD models, thermographic non-contact methods. The results obtained are concrete and practically applicable and confirm the significance of the candidate's contributions.

I have no critical comments or recommendations.

Conclusion

The documents and materials presented by Assoc. Prof. Dr Nikolay Ivanov Stoimenov, meet the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for the Application of the LDAS in RB, the Regulations on the Terms and Conditions for the Acquisition of Scientific Degrees and Positions at the Bulgarian Academy of Sciences and the Regulations on the Specific Conditions for Acquiring Scientific Degrees and for Occupying Academic Positions at IICT-BAS. Achieved by Assoc. Prof. Dr Nikolay Ivanov Stoimenov results correspond and in four of the groups of indicators – significantly exceed the minimum national requirements and the requirements of IICT-BAS for the academic position of "professor".

Based on the presented documents and scientific publications and the analysis of their significance and the contributions contained in them, **I give a positive conclusion for the choice of Assoc. Prof. Dr Nikolay Ivanov Stoimenov on the academic position "Professor" at IICT-BAS** and I recommend to the Scientific Jury to propose to the Scientific Council of IICT-BAS **Assoc. Prof. Dr Nikolay Ivanov Stoimenov for the selection of the academic position "Professor" at IICT-BAS** for the needs of the Department of Distributed Information and Control Systems, in professional field 5.2 "Electrical Engineering, Electronics and Automation", specialty: "Automated Information Processing and Control Systems".

April 1, 2024 г.
Sofia

Prepared the opinion:
/Pr

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