

STATEMENT

by Prof. Nikolay Lichkov Georgiev, D.Sc.

regarding materials for participation in a competition for the academic position of "PROFESSOR" at the Institute of Robotics of the Bulgarian Academy of Sciences.

Field of higher education "Technical Sciences", **Professional field: 5.2 Electrical engineering, electronics and automation (magnetic field sensors)**, for the needs of the Scientific Section "Sensors and measuring technologies in robotics and mechatronics" at the Institute of Robotics of the Bulgarian Academy of Sciences (IR-BAS) announced in the State Gazette No. 26 of 21.03.2023 (p. 34).

Only participant in the competition: Ass. Prof. Dr. Avgus Yordanov Ivanov

Basis for preparing the statement: Decision of the Scientific Council of IR-BAS reflected in Protocol No. 5/16.05.2023 (item 1.), Order for the appointment of a Scientific Jury of the Director of the Institute of Robotics No. 70/31.05.2023, and minutes of the first meeting of the Scientific Jury dated 05.06.2023.

1. General information about the candidate

The only candidate in the competition, Ass. Prof. Dr. Avgust Yordanov Ivanov, graduated as a Master of Engineering in "Hydraulics and Pneumatics" at the Technical University of Sofia in 1983, in 2017 he defended his doctoral dissertation on Elements and Devices of automation and computer technology on the topic "New varieties of magnetic field microsensors using the Hall effect" and since 2017 he has held the academic position of "Associate Professor" in Electrical Engineering, Electronics and Automation at IR-BAS.

The entire professional career of Ass. Prof. Dr. Avgust Ivanov was spent at the Bulgarian Academy of Sciences, working in his specialty in a number of institutes - Institute of Technical Cybernetics and Robotics, Institute of Informatics, Institute of Management and System Research, Institute of System Engineering and Robotics and from 2017 until now - at IR-BAS, of which he is currently the Director.

2. General characteristics of the presented materials

The candidate has submitted the documents required according to the regulatory framework, as his works include 30 titles (of which two are currently under printing), and inventions - 29 (of which 7 are in the process of examination).

Of the papers submitted for review, 20 are scientific publications in international and national journals and series with impact factor and SJR in

"Sensors and Actuators" Elsevier; Procedia Engineering, Elsevier; "Electronics Letters"; "Comptes Rendus de l'Academie Bulgare des Sciences"; "Solid-state Sensors and Actuators", "Proceedings at the Eurosensors", and 9 issues are full-text reports from international and national forums.

In the competition for "professor", the candidate participates with 10 reports in journals with an impact factor, including refereed and indexed in the world evaluation system, which, according to the requirements, represent the equivalent of a monographic work.

All works presenting the candidate's research and applied scientific activities are related to the field of the competition.

Publications with the candidate's participation are cited in a total of 50 publications by other authors, a large number of which are in refereed and indexed publications in the world evaluation system.

In addition, Ass. Prof. Dr. Avgust Ivanov has participated in 42 scientific projects, supervised two doctoral students and has received numerous awards for his scientific activity.

With his overall publication and creative activity, Ass. Prof. Dr. Avgust Ivanov fully satisfies the requirements of the national normative documents for occupying the academic position "professor", and the total number of points collected is as follows:

A – Indicator 1	50 pts.
B – Indicator 4	154 pts.
Г – Sum of Indicators 7 and 8	221.62 pts.
Д – Sum of Indicators 12, 13 and 14	406 pts.
Е – Sum of Indicators 18, 20, 22, 25 and 26	2620 pts.
Total:	3451.62 pts.

3. Main scientific and scientific-applied contributions

A method for measuring more than one non-electrical parameter – magnetic field and temperature – with the same area in silicon structures has been developed and tested. In this direction, a new class of sensor microsystems with amperometric output has been created for simultaneous and independent measurement of the direction and value of the magnetic field and of the ambient temperature, using the phenomenon for the first time. This type of sensors have increased noise resistance to parasitic effects, high sensitivity and thermostability.

New three-component magnetometers with parallel and orthogonal axis of sensitivity were designed, implemented and tested, measuring simultaneously and independently the three spatial components of the magnetic field, distinguished by high spatial resolution.

A new sensing mechanism in Hall microsystems was discovered, investigated and interpreted, allowing by injection of non-major carriers with only 0.1% of the supply current to increase the magnetosensitivity by more than 50%.

A family of multidimensional silicon vector magnetometers has been developed, with a maximally simplified construction, high resolution of the individual output channels containing a minimum number of contacts, registering simultaneously and independently the 2D and 3D components of the magnetic field.

4. Personal impressions

I have known Associate Professor Dr. Avgust Yordanov Ivanov since 2019, when our joint work on the QUAZAR project led by IR-BAS began. My impression of him is very good, as an intelligent and well-prepared specialist, who knows the object of the study and has the capacity for in-depth scientific research using a variety of scientific methods and tools. He works actively to realize his developments, including through their implementation in national and international projects, demonstrating an extremely rich and successful administrative and organizational experience.

I have no scientific research or publications in common with Ass. Prof. Dr. Avgust Yordanov Ivanov.

5. Conclusion

The participant in the competition, Ass. Prof. Dr. Avgust Yordanov Ivanov, has presented the necessary materials, which in their totality significantly exceed the minimum national requirements according to the LAW on the development of the academic staff in the Republic of Bulgaria, the Rules for its implementation. The quality of the submitted materials and the applicant's overall research and development activity give me reason to conclude that he meets the requirements of the LAW on the development of the academic staff in the Republic of Bulgaria. Therefore, I give a positive assessment of his candidacy, and I propose that the Scientific Jury propose to the Scientific Council of IR - BAS to award Assoc. Prof. Dr. Avgust Yordanov Ivanov the academic position "PROFESSOR" in the professional field: 5.2 Electrical engineering, electronics and automation (sensors of a magnetic field).

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Sofia

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