

STATEMENT

on the competition for the academic position „Associated Professor” in the professional field 4.1 Physical Sciences (General Physics), announced in State Gazette No 54/21.06.2021.

from Prof. DSc Victor Genchev Ivanov

Documents for participation in the competition are submitted by a single candidate – Senior Assistant Professor Dr. Plamen Veskov Petkov. The candidate graduated with a five-year term of study in 1992 at the Leningrad State Technical University (St. Petersburg, Russia) with a degree in "Thermophysics" and a professional qualification of thermal-physics engineer. In the period 2000-2003, the candidate continued his education in three consecutive specializations / qualifications - twice in the "MELCOR" program of IAEA at the Argon National Laboratory (USA) and in Nuclear Engineering at the University of Illinois Urbana Champaign (USA). In the period 2007–2011 Plamen Petkov graduated from a second MSc study with a degree in “Colloidal Systems in Modern Sciences and Technologies” at the Faculty of Chemistry of Sofia University “St. Kliment Ohridski”. In the period 2010–2016 the candidate is a full-time doctoral student at the Faculty of Chemistry and Pharmacy at Sofia University, majoring in Theoretical Chemistry – Macrokinetics. He acquired the PhD degree on March 22, 2016 after successfully defending a dissertation entitled “Interactions in monolayers of charged colloidal particles at a liquid surface and their surface pressure”.

From 1992 to 2010, Plamen Petkov worked at Kozloduy NPP, where he held various positions of responsibility – from Senior Engineer for BBEP-440 Reactor to Head of the Thermohydraulic Analysis Group. In 2010 the candidate started working in the Faculty of Chemistry and Pharmacy at Sofia University as a "Chemist-analyst" until 2016. During this period he worked on a number of research projects in the field of colloid chemistry and physical chemistry of surfaces. In 2017, Plamen Petkov won a competition for "Senior Assistant Professor" at the Department of Nuclear Engineering and Nuclear Energy of the Faculty of Physics (currently attached to the Department of Atomic Physics), where he still works.

The scientific interests of the candidate are diverse and can be classified into four main areas – (1) statistical analysis of measurement uncertainties in nuclear energetics; (2) participation in the design and study of the safety functions of a small modular fast-neutron reactor; (3) study of the formation of capillary bridges between flat surfaces; (4) study of monolayers of charged particles at the liquid-gas interface. The candidate has presented a general list of 27 publications, of which – 16 in indexed journals visible in world scientific databases, and the remaining 11 are mainly conference papers published in full. The works published in the period 2014-2017, which are dedicated to the formation of capillary bridges between surfaces and to the electrostatic interactions on charged monolayers, attract the greatest interest among the scientific community. These articles continue to be actively cited to date. In a series of works in

the period 2006–2008, the candidate developed an original statistical approach for estimating uncertainties in measurements in nuclear energetics, which is based on an entropic approach. A reference in SCOPUS to date shows a total of 135 independent citations and a Hirsch index of 7, which are excellent indicators for the academic position of Associate Professor.

The candidate has selected 19 publications for participation in the competition, which have not been used previously in the acquisition of PhD degree and the Assistant Professor position. Eleven of these publications are articles in indexed journals with an impact factor, and the rest are published conference proceedings or book chapters. Based on the submitted publications and the documented citations, the candidate fully meets the minimum national requirements for holding the academic position of "Associate Professor" in professional field 4.1 "Physical Sciences", defined in the Regulations for application of ZRASRB. With regard to the additional requirements of the Faculty of Physics of Sofia University, the applicant documents contributions that fully meet most of the criteria:

- Total teaching experience as a senior assistant of 885 hours with a requirement of 540 hours;
- 22 publications with significant contribution of the candidate (first or second author) with a minimum of 4 publications;
- One publication in the last three years;
- 107 (135 to date) independent citations with a minimum of 50 citations;
- Hirsch-index of 5 (7 according to SCOPUS to date) at a minimum of 5;
- 4 successfully defended graduates with a minimum of 1;
- Participation in international and national research projects and management of a national project.

Only to the criterion “number of publications from group I” the candidate has indicated 6 publications with a required minimum of 7 publications. I believe that this discrepancy is a result of a technical error, because the additional requirements of the Faculty of Physics relate to the cumulative scientific indicators for the overall career of the candidate, and not only for the publications included in the competition. Based on the general list of publications and the reference generated by the electronic system "Authors" of the Sofia University, it is clear that the total number of articles from the first or second quartile (i.e. group I) is 9, which means that the candidate fully covers this criterion.

As a critical remark to the candidate, I can point out the chaotically prepared documentation for the competition. In order to obtain certain information, such as publications included in the competition or scientific contributions of the author, it is necessary to browse the content of several different documents. The indicators for fulfillment of the minimum national requirements are poorly distinguished from the indicators of the additional criteria of the Faculty of Physics.

Of course, the critical remarks refer to the purely formal side of the competition. In terms of the scientific and teaching qualities of the candidate, I have an excellent impression. First of all, in most of his publications Plamen Petkov has a significant contribution, which implies an active role in conducting research. His diverse scientific interests prove a sufficiently broad view of various fields of physics and its applications. This is undoubtedly a significant advantage for a future lecturer in general physics. The candidate's engineering experience would be extremely useful in his teaching work at the Department of General Physics, where the main emphasis in teaching physics is placed on laboratory demonstrations and practical works.

In conclusion, based on the facts presented above, **I give a positive assessment on the candidacy of Senior Assistant, Dr. Plamen Petkov in the competition for the academic position "Associate Professor" in the professional field 4.1 "Physical Sciences" (General Physics) and I strongly recommend the Faculty Council at the Faculty of Physics to elect the candidate for this position.**

Sofia, 04 November 2021

The statement is prepared by:

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