ASSESSMENT

On a competition for the academic position "PROFESSOR" in the field 4. Natural sciences, mathematics and informatics in professional field 4.1. Physical sciences, scientific specialty "Physics of condensed matter" (Creation and study of thin layers for modification of *surfaces) for the needs of CLPF-BAS, Plovdiv, announced in SG no. 26 of 01.04.2022 with the sole candidate, Dr. Lilyana Petrova Kolaklyeva from CLPF – BAS, Plovdiv*

Chair of a scientific jury: Acad. DSc Alexander Georgiev Petrov,
Honorary member of the ISSP

1. General characteristics of the materials presented. *Monographs, articles and reports, textbooks,* testimonies and patents, research projects, etc.

The total number of scientific publications of the candidate in publications with impact factor or impact-rank presented for the competition is 26, released in the period 2005-2019. All articles are accepted for review. Reduction of articles is not necessary.

Under this competition, according to the requirements of the law, a separate Habilitation work was presented including eight publications in referenced international editions with impact factor (Web of Science and Scopus) in categories Q1 (1publication), Q2 (6 publications) and Q3 (1publication). Those publications scored 160 points. Publications went out of print during the period 2009–2021. Habilitation work has the qualities of a dissertation for the scientific degree "Doctor of Sciences" and can serve as the basis for successful promotion of such a dissertation.

The publications presented in the competition outside the habilitation work are a total of 16 (sixteen): Q2 (four publications), Q3 (four publications), Q4 (three publications), 2 chapters of books and 3 publications with SJR. They scored 236 points. These science-metric indicators satisfy the ISSP's requirements for the academic position of "professor".

2. General characteristics of the scientific, applied and pedagogical activities of the candidate *(scientific fields and problems; prepared PhD students and graduates).*

The scientific field of Assoc. Prof. Kolaklyeva is the material science. The subject of the study are thin layers developed in order to achieve specific surface properties and obtained by physical methods of application (PVD) on a particular type of material. The thin layers that are examined in the publications presented have two important areas of application: microelectronics and mechanical engineering (metalworking).

1. Ohmic contacts for high power and high temperature microelectronics (thematic area B1)

2. Nanostructured surface modification coatings (thematic area B2)

It is evident from the work that Dr. Kolaklyeva has a clearly delineated scientific topic with 2 thematic areas, in which she is a leading researcher and head of division. She has been involved in 6 international research projects and contracts and 15 national research and innovative projects and contracts. Its scientific and applied activities include 12 developments of technologies, methodologies and structures.

She has prepared two PhD students assigned to the right to promotion and one PhD student, starting in 2020.

3. Basic scientific and/or scientific and applied contributions; evaluated to what extent they are the personal work of a candidate.

In general, the scientific activities of Assoc. Prof. L. Kolaklyeva cover 101 publications, quoted 339 times, and 7 useful models.

In my opinion the contributions are largely a personal achievement. In many of the publications she is a leading (first or second) author. She has active collaborations with leading specialists from abroad.

The scientific contributions to habilitation work (TT), 7 in number, are summarized as follows: it developed and implemented a new and experimental method and technologies and 2 of the contributions with a received and for the first time. The results outside of this work are summarised in another 7 contributions, of which one was received for the first time. I support all these contributions, and I believe that they have the character of:

- *Uor justification of a new scientific field or problem, new theory or hypothesis*: ***contributions TT A1-IV, TT A2-III, B1-III***
- *Oriching of existing knowledge and theories:* ***TT AI-III, B1-I, B1-II, B2-I, B2-III***
- *Developmentof scientific achievements in microelectronics, realized economic effect:* ***TT A 1-I, TT A 1-I I, TT A 2-I, TT A 2-I I , B2-II, C2.1, C2.2, C2.3***

4. I do not have critical notes and recommendations on the submitted works. My personal impressions of Assoc. Prof. Kolaklyeva as head of scientific teams and administrator of high rank at BAS are entirely favorable.

5. Reasoned and clearly formulated conclusion (which candidates meet the requirements of the Rules of Procedure of IFT-BAS for the academic position

The science-metric data of Assoc. Prof. Kolaklyeva go beyond the requirements of ISSP for the academic position of "Professor", especially regarding her participation in international research projects and contracts (6 in number) and in national research and innovative projects and contracts (15 in number).

The citations of her scientific work are impressive in number (339 citations) and are in authoritative specialized publications on materials physics and high-powered microelectronics.

The research papers characterize the candidate in this competition Assoc. Prof. Dr. Lilyana Kolaklyeva as distinguished Bulgarian scientist, who authoritatively presents the Bulgarian solid state physics to the world.

Given the relevance, importance and international recognition of her scientific contributions, I am fully convinced that Dr. Lilana Petrova Kolaklyeva has to take up the academic position OF PROFESSOR in the Professional Field 4.1.Physical sciences, specialty: Physics of condensed matter.

8.08.2022 Produced: Acad. DSc Alexander Georgiev Petrov

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