Институт по ФИЗИКОХИМИЯ при БАН
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OPINION

Regarding the competition for the academic position of "Associate Professor", Professional Field 4.2 Chemical Sciences, Specialty "Physical Chemistry," announced in the State Gazette, Issue No. 63 / July 10, 2026, with candidate Chief Assistant Professor Dr. Nikolay Bozhidarov Yordanov, Institute of Physical Chemistry – Bulgarian Academy of Sciences (IPC-BAS). Member of the Scientific Jury: Georgi Evgeniev Chernev, Associate Professor at the University of Chemical Technology and Metallurgy, Sofia.

1. General characteristics of the candidate's research and applied scientific activities

The materials submitted for the competition by the candidate, Chief Assistant Professor Dr. Nikolay Bozhidarov Yordanov, meet the minimum national requirements stipulated in the *Law on the Development of the Academic Staff in the Republic of Bulgaria* (LDASRB) and the *Regulations for its Application*, as well as the *Regulations of the Bulgarian Academy of Sciences* (BAS) and the *Regulations on the Conditions and Procedure for Acquiring Scientific Degrees and Occupying Academic Positions* at the Institute of Physical Chemistry – BAS.

Chief Assistant Professor Dr. Nikolay Yordanov obtained the educational and scientific degree of "Doctor" (PhD) in 2017, having completed a doctoral thesis titled "Analysis and Characterization of Conductive Glazing Systems Using Electrochemical Methods" as an independent doctoral candidate. Between 2009 and 2022, the candidate worked at the Institute of Physical Chemistry of the Bulgarian Academy of Sciences (IPC-BAS) as an Assistant, focusing on materials science. This work involved the thermal synthesis and physicochemical characterization of foam materials derived from industrial waste, using optical-thermal and differential thermal methods, along with X-ray structural, spectroscopic, and imaging analyses, as well as the synthesis and thermodynamic characterization of conductive glassy and crystalline materials via electrochemical methods. In 2022, the candidate assumed the position of Chief Assistant, directing their research toward the synthesis and physicochemical characterization of inorganic sintered foam materials produced from waste raw materials.

For the purpose of this competition, the candidate submitted five publications as an equivalent to a habilitation thesis. All these works were published in reputable scientific journals: two in the first quartile (Q1) - "Ceramics International and ""Heliyon; two in the second quartile (Q2) – "Materials" and "Thermochimica Acta"; and one in the "SGEM Conference Proceedings (Section: Recycling), which holds an SJR ranking. Additionally, a list of 14 other publications - produced since the candidate obtained their PhD degree - was submitted; these also appeared in reputable scientific journals (including two in Q1 and six in Q2). The materials submitted for the competition meet both the national minimum requirements and those set by the Bulgarian Academy of Sciences (BAS) and the Institute of Physical Chemistry (IPC):

- Group A: 50 points (out of a minimum of 50)
- Group C: 100 points (out of a minimum of 100)
- Group D: 242 points (out of a minimum of 220)
- Group E: 166 points (out of a minimum of 60)

2. Main Scientific and Applied-Scientific Contributions

The research activities of Chief Assistant Professor Dr. Nikolay Yordanov focus on several key areas:

1. Analysis and characterization of conductive glazing compositions: Investigation of the physicochemical properties, crystallization, and microstructure of metallic and glass-based pastes/coatings used in microelectronics and the solar photovoltaic industry.

2. Sinter-crystallization and crystallization: Preparation and characterization of glass-ceramic materials; study of sintering kinetics and phase formation at high temperatures.

3. Utilization of industrial waste: Synthesis and development of novel glass-ceramic and functional materials based on industrial waste products and waste raw materials.

While some of these areas are traditional for the "Phase Formation, Crystalline and Amorphous Materials" Section at the IPC-BAS, Chief Assistant Professor Dr. Nikolay Yordanov has made a significant contribution to their modern development and successful application in non-traditional fields. It is worth noting the significant results achieved in the work of Chief Assistant Professor Dr. Nikolay Yordanov, particularly regarding international cooperation, technology transfer, and project - based activities, through which he bridges the gap between academic research at the Institute of Physical Chemistry (IPC-BAS) and the practical needs of the industry.
Chief Assistant Professor Dr. Nikolay Yordanov has been actively involved in numerous research projects in both Bulgaria and Germany. This engagement clearly demonstrates both his high level of expertise and his commendable academic initiative and entrepreneurial spirit.

3. Impact of the candidate's scientific publications in Bulgarian and international literature

The total number of publications by the candidate, Dr. Yordanov, indexed in the Scopus database is 18, with 172 citations. These figures provide compelling evidence of the high quality and relevance of the candidate's research, as well as the high regard in which his work is held by the international scientific community. Findings from the candidate's research have been presented at numerous prestigious national and international scientific conferences and symposia.

4. Critical remarks and recommendations regarding the candidate's scientific work

I have no critical remarks concerning the works and materials submitted for this competition. Based on my direct familiarity with the work of Chief Assistant Professor Dr. Nikolay Yordanov - including his research publications and the results he has achieved - as well as the reception of his work within the scientific community, it is clear that his research is of a high standard.

CONCLUSION

Based on the materials submitted for the competition, the quality of the scientific publications, the high citation rate, and the clear, substantial contribution of Chief Assistant Professor Dr. Nikolay Yordanov to the contemporary development of key areas within physical chemistry, I consider that he fully meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB) and the Regulations for its implementation for holding the academic position of "Associate Professor."

I confidently provide a positive assessment and recommend that Chief Assistant Professor Dr. Nikolay Bozhidarov Yordanov be appointed to the academic position of "Associate Professor" at the Institute of Physical Chemistry - BAS (IPC-BAS), in professional field 4.2. Chemical Sciences, scientific specialty "Physical Chemistry".

November 5, 2026

Sofia

Prepared by:

/Assoc. Prof. Dr. Eng. Georgi Chernev/