

Attitude of Reviewer

by competition

for the academic position "Associate Professor" in
Institute of General and Inorganic Chemistry - BAS
for the Laboratory „High Temperature Oxide Systems“

professional field - 4.2. Chemical Sciences (Inorganic Chemistry)
published in the Newspaper of State no. 47 of 04.06.2021

with candidate Assistant Professor Dr. Margarita Kirilova Milanova
Reviewer: Prof. Dr. Alexander Zhivkov Karamanov, IPC - BAS

1. Characteristics of the research and scientific activities.

Assistant Professor Dr. Margarita Kirilova Milanova is the only candidate, who participate in the announced competition. The presented materials are in agreement with the Rules for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria, of academic positions in BAS (since 29.10.2018), as well as with the specific requirements, added in the Rules for the procedure for obtaining scientific degrees and academic positions in the IGIC-BAS.

Margarita Kirilova Milanova graduated in 1997 with a master's degree in chemistry at Sofia University "St. Kliment Ohridski" (with a professional qualification Chemist, chemistry teacher and a specialization of physics). She started to work at the Institute of General and Inorganic Chemistry - BAS in 2003 and in 2005 defended her Ph.D. thesis entitled "Synthesis and characterization of amorphous and polycrystalline materials on molybdenum's basis" with tutors Prof. Y. Dimitriev and Corresponding Member Prof. D. Klisurski. From 2005 Milanova is researcher II degree, since 2008 is researcher I degree and since 2010 she is Assistant Professor in the Laboratory "High Temperature Oxide Systems", IGIC- BAS.

Up to now she is co-author of 42 scientific articles, 21 of which are in journals with IF. 38 of these publications are published after the defense of her Ph.D. thesis. The total number of citations, related to these publications is 151, of which 58 are associated to the publications used in materials for this competition.

The provided documentation also contains information for the participation in 7 national research projects and 41 scientific forums (28 of which are international). Dr. Milanova is a reviewer of the journals "Journal of Non - Crystalline Solids", "Applied Physics A", "Journal of Materials Science" and "Journal of Materials Science: Materials in electronics". In 2010-2012 she worked as a postdoctoral fellow at the Faculty of Chemistry, Bilkent University, Ankara, Turkey. In 2014 she specialized in Osaka, Japan in the frame of the program of the Matsumae International Foundation.

The materials of candidate, presented for the fulfillment of minimum requirements of BAS and the additional requirements of the IGIC for the position "Associate Professor", correspond to 859 points, which excess the required minimum points of 500.

Her habilitation report is based on 8 publications in journals included in the Scopus scientific database. Three of them are in journals with Q1, one in a journal with Q2 and four in journals Q3. It can be noted that she is the first author of all three articles in J. Non-Cryst. Solids (Q1).

Outside the materials for the habilitation report, other 11 publications are presented and discussed.

2. Main scientific contributions.

The research activity of the candidate is mainly related to experimental work for the evaluation of the fields of glass-forming in systems without classical glass-formers, as well as characterization of the optical and thermal characteristics of the obtained glasses. Particular attention is also paid to structural studies, which are made mainly by different spectral methods. This research elucidates that the scientific and scientific-applied contributions of the colleague Milanova have mainly fundamental significance and are related to the enrichment of the existing knowledge and theories. But we should also note the possible application of some of the results because some of the studied compositions can be used as a basis for the synthesis of amorphous semiconductors, superionic conductors, solid electrolytes and others.

The results discussed in the habilitation report follows the research started in her dissertation and are typical for the research activities of the laboratory "High Temperature Oxide Systems" at IGIC. Compositions containing "alternative" glass formers such as MoO_3 , WO_3 , PbO and Bi_2O_3 , which form complex polyhedral structures with high coordination number (usually 5 or 6), have been mainly studied.

Outside the habilitation reference, as interesting research, I would mention the synthesis and characterization of LiVMoO_6 , a phase that may be of interest for solid-state lithium-ion batteries.

3. Critical notes and recommendations.

The studied compositions are generally characterized by a high crystallization ability, which explains the application of high cooling rates to fix them in the glassy state. However, the control of the cooling rate is not well described and not sufficient data is presented for the "repeatability" of the experiments.

This is the reason that in the future research will be useful to "plan" and control different cooling rates, which is an important prerequisite for future applied research.

According to the DTA data presented in the publications, some of the compositions are also suitable for kinetic non-isothermal studies (determination of activating energy of viscous flow, activating energy of crystallization and determination of reaction order). Similar additional analysis in the future research would increase the level of work in the laboratory "High Temperature Oxide Systems".

CONCLUSION

The documents, presented by Assistant Professor Dr. Margarita Kirilova Milanova are in accordance with the Rules for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria, with the Rules on the Terms and Conditions for Acquisition of Academic Degrees and Occupation of Academic Positions in the Bulgarian Academy of Sciences and with the specific requirements added to the Rules for the Terms and Conditions for Acquisition of Academic Degrees and for Occupation of Academic Positions at IGIC- BAS.

The candidate presented a sufficient number of scientific papers, published after her Ph.D. degree defense. The supporting materials meet 859 points, which exceeds the minimum requirements of BAS and the additional requirements of IGIC.

As a result, I declare my positive valuation and recommend to the Scientific Jury to propose Dr. Margarita Kirilova Milanova in the Scientific Council of IGIC - BAS for the position "Associate Professor", required for the Laboratory "High Temperature Oxide Systems". I sincerely wish success to my colleague Milanova in her future scientific work.

Sofia, 23. 09.2021.

Sincerely:

Prof. Dr. Alexander Karamanov