

Attitude of Reviewer

on competition for occupation of the academic position “Assistant Professor”, in professional field 4.4. "Earth Sciences" ("Applied Mineralogy, Innovative Building Materials") for the needs of the "Experimental Mineralogy and Crystallography" department at IMC-BAS, announced in the State Gazette, no. 56/2022 of 19.07.2022

Candidate: Ch. assistant Dr. Alexander Nikolaev Nikolov – IMC-BAS

Member/Chairman of the Scientific Jury: Prof. Dr. Vladislav Kostov – IMK-BAS

The only candidate in the competition is Ch. assistant Dr. Alexander Nikolaev Nikolov from the department "Experimental Mineralogy and Crystallography" at IMC-BAS.

For participation in the competition, Dr. A. Nikolov submitted 24 scientific publications, which do not repeat those submitted for the acquisition of the educational and scientific degree "doctor", of which 22 appear in the certificate of fulfillment of the minimum criteria. Fourteen of them are publications, indexed in WoS, Scopus, ERIH+, and 16 are scientific publications in Bulgarian scientific journals. Among the renowned international journals in which the candidate has published are: *Case Studies in Construction Materials Elsevier BV*; *Comptes rendus de l'Academie bulgare des Sciences*, *Review of the Bulgarian Geological Society*, *Bulgarian Chemical Communications*, *Clay Minerals*, *Journal of Radioanalytical and Nuclear Chemistry*, *Construction and Building Materials*, *Elsevier and Materials*, *MDPI*. The observed citations on the publications participating in the contest are 135. The candidate's Hirsch index is 4 based on all publications. In the presented set of articles ch. assistant Nikolov is first or corresponding author in 20 of them, second or subsequent author in 4. Personal contributions in the presented publications are correctly declared in the author references. The candidate's scientific indicators meet and exceed the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the regulations for its implementation that have come into force, including the Regulations of the IMC-BAS for occupying the academic position “Assistant Professor”.

The essential part of the researches (20 publications) of Dr. A. Nikolov fall into one main direction, which is a natural continuation of his previous activity. It can generally be formulated as composition-structure-properties-application research in the field of geopolymers. Syntheses with variations in the conditions of the experiment and different types of subsequent laboratory studies and tests to establish the phase-chemical, mechanical and other characteristics of the obtained products are included. The aim is to establish the possibility of natural and fabricated materials being used as raw materials for the preparation of geopolymers with potential application in construction. The choice of objects for his research is pragmatic and skillfully executed. On the one hand, these are natural raw materials, with which our country is rich and available (zeolites from South Bulgaria and kaolinite from the north), and on the other hand, waste products from the mining and metallurgical industry (fayalite as a by-product from the production of copper from the largest plant in South-Eastern Europe – Aurubis-Bulgaria, Pirdop). Apart from the main field of activity of the candidate for the competition, works in which he is not the main researcher have been attached in the application set. There are four publications, which I briefly summarize as follows: work [11] related to the mineralogical diversity of our country - turquoise-chalcocyanite-planerite natural solid solution; work [13] focused on applied mineralogy - ion exchange properties of natural clinoptilolite; work [19] - archaeomineralogy with object flint artefacts and work [22] related to the opportunity of extraction of new,

critical raw materials, such as the tungsten-containing mineralizations from the Grancharitsa deposit, Western Rhodopes. Although it is not properly considered in the author's reference, I can conclude from my own observations that Dr. Nikolov's participation in these studies is a manifestation of his desire to learn research methods and techniques useful in general for materials science, as well as being sympathetic to the professional interests of the staff and equipment capabilities of the unit in which he works.

Chief assistant Dr. Alexander Nikolov is an original and already well-known researcher with a taste for experimental activity in the field of his interests and a will to participate in pilot projects not only for our country. The strongly manifested individuality and independence do not prevent him from joining a wider spectrum of collectives for research with diverse goals and tasks in the field of materials science and in particular mineralogical sciences. Over time, many of his endeavors have become, and may become in the future, independent topics and tasks of the scientific research plan of IMC and beyond.

I have no questions or recommendations for the candidate.

In conclusion, I express my conviction that the level of scientific and research activity and scientometric indicators of Ch. assistant Dr. Alexander Nikolaev Nikolov fully meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and all the legal regulations for its application for the occupation of the academic position "Assistant professor". I recommend that the members of the Scientific Council of IMC-BAS vote for the award of the academic position of Assistant Professor in the professional field 4.4. "Earth Sciences" for the needs of the "Experimental Mineralogy and Crystallography" department at IMC-BAS of Ch. assistant Dr. Alexander Nikolaev Nikolov.

Member/Chairman of the Scientific Jury:

/Prof. Vladislav Kostov/