APPRAISAL

on the competition for occupying the academic position of "Associate Professor" in professional field 4.4. Earth Sciences (Mineralogy and Crystallography) for the needs of the Department "Mineralogy and Mineral Raw Materials" at the Institute of Mineralogy and Crystallography "Acad. Ivan Kostov", Bulgarian Academy of Sciences (IMC-BAS), announced in the State Gazette, issue 56/19.06.2026

Candidate: Chief Assistant Professor Dr. Liliya Vladimirova Tsvetanova – IMC-BAS

Member of the Scientific Jury: Assoc. Prof. Dr. Elena Slavcheva Tacheva – IMC-BAS

In accordance with the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation, and Art. 18, Para. 2 of the "Regulations on the Terms and Procedure for Acquiring Scientific Degrees and Holding Academic Positions at the Acad. Ivan Kostov Institute of Mineralogy and Crystallography – BAS" (Regulations of IMC-BAS), **Dr. Liliya Vladimirova Tsvetanova meets the requirements for appointment to the academic position of "Associate Professor"**, namely: she acquired the educational and scientific degree of "Doctor" in 2017; she has held the academic positions of "Assistant Professor" (from 2015 to 2017) and "Chief Assistant Professor" (from 2018 to the present) for a period of 11 years; she has submitted a sufficient number of publications (21) in specialized scientific journals, which do not repeat those submitted for acquiring the educational and scientific degree of "Doctor"; her research activity complies with the minimum national requirements for the academic position of "Associate Professor" in Professional Field 4.4. Earth Sciences, as well as with the requirements in Appendices No. 1 and No. 2 of the Regulations of IMC-BAS; there is no plagiarism proven under the legally established procedure in the scientific works submitted for the competition.

For participation in the competition, Dr. Tsvetanova has submitted: a list, copies, and abstracts in Bulgarian and English of her scientific works (21 items); a citation report (27 citations); a report on participations with oral presentations (6 items) and posters (16 items) at scientific forums in Bulgaria (11 items) and abroad (11 items); as well as a list of 7 national research projects, serving as the principal investigator (project leader) for one of them. All 21 submitted publications are indexed and abstracted in world-renowned scientific databases, categorized by quartiles as follows: Q1 – 6 items, Q2 – 5 items, Q3 – 1 item, Q4 – 4 items. Three of the publications are designated as "Publications in editions with SJR without IF" (publications No. 5, 13, and 16), which upon verification in the SCImago Journal & Country Rank hold a Q3/Q4 quartile and consequently carry more points. She is the first author in 1 of the publications, the second author in 2, and the third or subsequent author in the remaining 18. Although the published research is a collaborative effort, the candidate's authorship contribution is correctly outlined in her submitted "Author's Statement on Scientific Contributions in Publications". She actively participated in the experimental work (synthesis, modification, and ion exchange of materials), analytical work (wavelength dispersive X-ray fluorescence (WDXRF) and powder X-ray diffraction (XRD) characterization, interpretation of chemical and phase composition), and the synthesis of the obtained results. Dr. Tsvetanova has listed 27 citations (135 points), which more than doubles the minimum requirements (60 points).

The scientific and applied research activity of Dr. Liliya Tsvetanova lies in the field of experimental mineralogy, crystallography, and materials science. It is directed toward studies related to the synthesis, modification, and characterization of a wide range of natural and synthetic materials – titanosilicates, zeolites, geopolymer and ceramic materials, composite catalysts, anthropogenic products, and natural mineral raw materials. Four main thematic areas stand out in the candidate's publication activity:

– Synthesis, modification, and application of mineral materials: investigating the relationship between chemical composition, structural features, and functional behavior of the studied systems.

– Investigation of sorption, catalytic, and biological properties: studying the behavior of materials upon their interaction with various pollutants and biological systems.

– Utilization of natural and anthropogenic raw materials: aimed at obtaining geopolymer, ceramic, and cementitious materials.

– Mineralogical, crystal-chemical, and analytical studies: investigating natural mineral systems using modern analytical methods.

Through the application of modern analytical and physicochemical methods, these studies expand current knowledge on the mechanisms of ion exchange, sorption, phase formation, and structural-phase transformations, as well as the factors governing the photocatalytic and technological properties of materials. The obtained results reveal new opportunities for their practical application in water and gas stream purification, detoxification, and the utilization of industrial and plant waste products. In this context, Dr. Tsvetanova's in-depth qualification in X-ray fluorescence (WDXRF) and powder X-ray diffraction (PXRD) analysis makes her a valuable collaborator in interdisciplinary research teams in the field of mineralogy and materials science.

Critical Comments and Recommendations: The author's statement outlines Dr. Tsvetanova's contributions in a highly generalized manner, which does not fully reflect her actual personal contribution to the scientific publications submitted for the competition. My personal observations confirm her active participation in all stages of the research activity – from experimental and analytical work to the final preparation, graphic design, and writing of the texts. My primary recommendation for the future professional development of Dr. Tsvetanova is to focus more on her own research topics, successfully combining this with her proven ability for teamwork within research groups.

Conclusion

The overall research and professional activity of Dr. Tsvetanova complies in terms of both volume and quality with the requirements for habilitation. Therefore, in the competition for occupying the academic position of "Associate Professor" in professional field 4.4. Earth Sciences (Mineralogy and Crystallography), announced in the State Gazette, issue 56 of June 19, 2026, for the needs of the "Experimental Mineralogy and Crystallography" research department at the Acad. Ivan Kostov Institute of Mineralogy and Crystallography – BAS, **I fully support the candidacy of Dr. Liliya Vladimirova Tsvetanova and recommend her to the Scientific Jury.**

05.11.2026

Prepared by:

Заличено съгласно чл. 2 от ЗЗЛД

/Assoc. Prof. Dr. Elena Tacheva/