OPINION

prepared by Prof. PhD Boyko Tsyntsarski,
Institute of Organic Chemistry with Centre of Phytochemistry,
Bulgarian Academy of Sciences,

member of the Scientific Jury, according to Order No. RD 38-526/01.09.2023
of the Rector of Sofia University "St. Kliment Okhridski",

in connection with the materials submitted for participation in a competition for the academic position of **"associate professor" at Sofia University "St. Kliment Okhridski",**
Faculty of Chemistry and Pharmacy,
Professional area “4.2.Chemical sciences”, Scientific specialty "Solid State Chemistry"

In the competition for the occupation of academic position "Associate Professor", announced in Bulgarian State Gazette, No. 65 from 28.07.2023, and presented on the website of the Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Okhridski", documents are submitted by Chief Assistant PhD Vesselina Rangelova (only candidate).

1. General presentation

Vesselina Rangelova graduated from the elite National Nature and Mathematics High School "Acad. L. Chakalov", class "Chemistry", Sofia in 1991. She completed her higher education at Sofia University "St. Cl. Ohridski", Faculty of Chemistry, as a MSc of Chemistry, specialty "Extremely Pure Substances and Materials on Their Base". Vesselina Rangelova obtained the educational and scientific degree "PhD - doctor" in 2004 at Sofia University "St. Kl. Okhridski", Faculty of Chemistry.

In the competition for the position "Associate Professor, PhD Rangelova included 1 monograph, 3 articles with quartile Q1, 4 articles with quartile Q2, 5 articles of quartile Q3 and 2 articles in unindexed journals. With this publication activity, the applicant fulfills completely the requirements of Sofia University "St. Kliment Okhridski", Faculty of Chemistry and Pharmacy, for the position.

2. Main characteristics of the scientific activities of the applicant

In her scientific activities, the applicant is concentrated generally in the field of amorphous and nanocrystalline alloys, as well as hydrogen storage – hydrogen is regarded as the eco-fuel of the future. The catalytic decomposition of ammonium perchlorate is also investigated. The research includes the synthesis of new materials with certain functional properties, their characterization and study of the properties in order to find their practical applications.

Investigarions, related to the synthesis and characterization of new metal alloys [3-4, 6-14], as well as their application as hydrogen storage materials, have been carried out. Original methods and techniques for synthesis of the alloys have been used - ultra-fast quenching from a melted material, mechanical alloying and reactive mechanical alloying. Modern characterization methods were carried out - transmission electron microscopy, scanning electron microscopy, X-ray diffraction, electron diffraction. The sorption properties of the obtained alloys with respect to hydrogen have been studied in detail. New catalysts for the decomposition of ammonium perchlorate have been synthesized and studied [1, 2, 5].

The presented research has a significant contribution in the field of materials science, catalysis, alternative fuels, ecology.

14 scientific publications are included in the competition, whereas 12 of them are in refereed and indexed journals, with 48 citations. At the time of submission of the documents, there are a total of 174 (176 by 20 November 2023) citations according to Scopus and h-index 5. Some of the obtained results are included in research projects, MSc theses, presentations at international and national conferences.

The candidate is coordinator of 2 projects and participant in 8 projects. She is supervisor of 3 MSc graduates. PhD Rangelova has 6 sectional reports, she is co-author in 1 book and 1 manual for students. The monograph is at a high level.

3. Critical remarks and recommendations

I have no significant critical remarks on the work of PhD Vesselina Rangelova and on the documents submitted for the competition. Some editorial technical mistakes have been made in the writing of report (for example, not all references have links and some are hard to be found /1, 3,

8, 10/, detailed information about the projects is missing, also there are some technical errors), which do not reduce the importance of the scientific contributions of the candidate.
I recommend PhD Vesselina Rangelova to intensify her work on the training of PhD students.

Conclusion

The scientific activity and scientometric data of Chief Assistant PhD Vesselina Rangelova, reflected in the documents for the competition, cover and exceed the requirements for occupying the academic position "professor" of Sofia University "St. Kliment Okhridski", Faculty of Chemistry and Pharmacy, as well as the criteria according to the Law on the Development of the Academic staff in the Republic of Bulgaria (ZRASRB) and the Regulations for Implementation of the ZRASRB.

The scientific achievements of PhD Rangelova represents her as an sucessfull and promising young scientist, with significant contributions and international recognition in the field of amorphous and nanocrystalline alloys, as well as hydrogen storage.

Based on the analysis of scientific works and their scientific contributions, I give my positive assessment and recommend the Scientific Jury to prepare report-proposal to the Faculty Council of Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Okhridski", to award Chief Assistant PhD Vesselina Rangelova with the academic position of "Associate Professor" in the professional area “4.2 Chemical sciences”; Scientific specialty "Solid State Chemistry", for the needs of Sofia University "St. Kliment Okhridski", Faculty of Chemistry".

21.11.23

Prepared the opinion:

Prof. PfD Boyko Tsyntsarski