

Statement

for a contest for academic position of "Associate Professor"
professional field 4.2. Chemical sciences (Solid state chemistry)
announced at State Gazette, no. 65. of 28/07/2023, with a candidate:

Chief assistant professor Veselina Toncheva Rangelova, PhD

Reviewer: Prof. Konstantin Todorov Balashev, PhD, DSc

1. General conditions and brief description of the candidate

The sole candidate who took part in the contest for the position of Associate Professor in Solid State Chemistry at the Faculty of Chemistry and Pharmacy of Sofia University was Chief Assistant Dr. Veselina Toncheva Rangelova. Dr. Rangelova graduated from the Faculty of Chemistry (now the Faculty of Chemistry and Pharmacy, FChPh) of the Sofia University "St. Kliment Ohridski" (SU) in 1996, completing her master's degree in Chemistry with a specialty "Chemicals with highest purity and materials based on them". Then, in the period from 1997 to 2003, she was a doctoral student at the same faculty of SU, where she successfully defended a dissertation on the topic "Amorphous and nanocrystalline Mg-Ni alloys for hydrogen storage", for which she was awarded by the Higher Attestation Commission PhD degree (diploma No. 28986/23.04.2004). Dr. Rangelova's career started in 2003 when she was selected as an Assistant professor in the Department of Applied Inorganic Chemistry of the FChPh, and subsequently, she was promoted to the academic positions of Senior Assistant Professor (2003-2005) and Chief Assistant Professor, a position that she holds up to this day.

2. Description of the presented materials

Dr. Rangelova has prepared and presented in tabular form a report on the fulfillment of the minimum national requirements for acquiring the academic position of Associate Professor. She participates in the contest with publications in the leading specialized international journals or published chapters in books, textbooks, and teaching materials, as well as reports at the relevant scientific forums. In the database "Scopus" as of today (23.10.2023) can be found 14 articles published by Dr. Rangelova and 187 citations. Her Hirsch index is 5, excluding self-citations by all co-authors.

For participation in the contest, Dr. Rangelova has submitted a list of 14 publications, which are a portion of her total 18 publications, one textbook, and one teaching book for secondary school. Presented in this way, the publication activity of Dr. Rangelova clearly shows her outstanding scientific and pedagogical competence. Most of the publications presented in the general list are in specialized and leading journals in the field of solid-state chemistry and modern nanotechnology, such as *Materials Letters*, *Journal of Nanomaterials*, *International Journal of*

Electrochemical Science, etc. All submitted publications cover entirely the subject of the announced contest.

Dr. Rangelova also has presented the monograph "MOFS. Storage of gases in porous materials", which can be considered as her habilitation thesis, in which within 128 pages her main scientific contributions are summarized. She has presented a list of 10 scientific projects financed by state funds and the Ministry of Education and Science or by European and international programs. In the 3 of the projects funded by the Sofia University Dr. Rangelova has been the leader. She was also the supervisor of one bachelor and two master's degree graduates.

Dr. Rangelova's scientific achievements and teaching activities as a whole correspond and, in some points, even significantly exceed the minimum national requirements and those of the FChPh established for the candidates of the academic position "Associate Professor". This is demonstrated in the table:

Group indicators	National requirements	Requirements of FChPh	Points achieved
A	50	50	50
B	100	100	100
Г	200	220	230
Д	50	70	348
Е	-	-	-
Ж	-	70	155

3. General characteristics of the candidate's research, teaching and scientific-applied activities

Dr. Rangelova's research activities are in the field of amorphous and nanocrystalline alloys, hydrogen storage, and catalytic decomposition of ammonium perchlorate. These include the synthesis of new materials that were morphologically, microstructurally, and thermally characterized for the determination of their specific functional properties and practical applications. Her research can be thematically grouped into 2 areas: the first and the main one refers to the amorphous and crystalline materials having storage potential of the hydrogen gas in the solid phase, while the second one involves the catalytic decomposition of ammonium perchlorate.

4. Basic scientific and scientifically applied contributions

The contributions of Dr. Rangelova can be systematized according to the above-mentioned areas of her scientific activity, as follows:

The first area [3, 6-10, 11-14, 4] refers to the preparation and complex characterization of metal alloys used for hydrogen storage. For these purposes, she has used, new methods and original techniques applied for the synthesis of alloys and their structural and microstructural

characterization by means of TEM, SEM, X-ray, and electron diffraction. The hydrogen sorption was studied by the method of gas-phase saturation in electrochemical conditions.

The second area of Dr. Rangelova's scientific activity includes studies [1,2,5] on catalysts that are involved in the decomposition reaction of ammonium perchlorate (AP), which is an oxidant with a major role in the combustion process of solid fuels. Her results have a promising basis for future development that includes synthesis and complex characterization of catalytically active substances with appropriate morphology and microstructure.

7. Лични впечатления на рецензента за кандидата

Познавам и високо ценя д-р Рангелова с нейната компетентност на специалист и отзивчивост на колега. Тези мои впечатления са формирани от конференциите, семинари и други научни форуми, на които сме присъствали при съвместно ни участие в някои от научните проекти на ФХФ.

7. Personal impressions of the reviewer about the candidate

I know personally and highly respect Dr. Rangelova for her competence as a specialist and responsiveness as a colleague. These impressions of mine have been formed during our joint participation in some of the scientific projects of the FChPh and her presentations at the conferences, seminars, and other scientific forums that we have both attended.

CONCLUSION

The documentation presented by Dr. Rangelova, as the only candidate for the announced contest for the academic position "Associate Professor" in professional field 4.2. Chemical sciences (Solid state chemistry), satisfy and even exceed the requirements of the law and the recommended criteria of the FChPh. Her contributions are undeniable and clearly distinguishable in the scientific community.

The analysis of her overall research and pedagogic activities gives me a solid reason to support the candidacy of Ch. Assistant Dr. Veselina Toncheva Rangelova and to recommend to the members of the respected scientific jury and to the members of the Faculty Council of the FChPh to award her the academic position "Associate Professor" in professional field 4.2. Chemical sciences (Solid state chemistry).

15.11.2023 г.

Sofia

(Prof. Konstantin Balashev, PhD, DSc)