

OPINION

on the competition for the academic position of **Associate Professor** at the Faculty of Chemistry and Pharmacy of Sofia University "St. Kliment Ohridski" in the professional field 4.2. Chemical Sciences (Theoretical Chemistry), announced in SG, issue 63 of 30.07.2021, with candidate

Ch. Assistant Professor Dr. **Julia Ruslanova Romanova**

by Prof. Todor Minkov Dudev, D.Sc.

Faculty of Chemistry and Pharmacy, Sofia University "St. Kliment Ohridski "

In the competition for Associate Professor in professional field 4.2. Chemical Sciences (Theoretical Chemistry) at the Faculty of Chemistry and Pharmacy of Sofia University "St. Kl. Ohridski" one candidate participates - Ch. Assistant Professor Dr. Julia Ruslanova Romanova. To participate in the competition, the candidate has submitted a complete set of documents in accordance with the requirements of the Regulations for the implementation of the Academic Staff Development Act in the Republic of Bulgaria and the Regulations for the acquisition of scientific degrees and academic positions at Sofia University "St. Kl. Ohridski ".

Biographical reference. Julia Romanova is a graduate of the Faculty of Chemistry and Pharmacy at Sofia University "St. Kl. Ohridski ", where in 2005 she received the Bachelor's degree (specialization Physical Chemistry and Theoretical Chemistry), and in 2006 - the Master's degree in Computational Chemistry. In 2010 she successfully defended her doctoral dissertation on "Influence of the environment on the geometry, electronic structure and magnetic properties of polyaniline". From 2011 to 2016 she conducted several specializations in renown foreign scientific institutions such as the Leibniz Institute for Polymer Research Dresden (Germany), University of Namur (Belgium) and University of Surrey (UK). In 2018 she was appointed Chief Assistant Professor at the Department of Inorganic Chemistry at the Faculty of Chemistry and Pharmacy at Sofia University, where she still works.

Scientometric data. To participate in the competition, Dr. Romanova presented 16 scientific papers - 14 articles and one chapter of a book, published after the defense of the doctoral dissertation, as well as a habilitation thesis. All publications are published in peer-reviewed and indexed journals, most of them in such with a high impact factor (e.g. Angewandte Chemie Int. Ed., J. Phys. Chem. C, Chemistry - A European Journal, J. Phys. Chem. Lett.). The articles with quartile 1 (9 in number) predominate. In 6 of the articles Dr.

Romanova is the first author, and in 5 - an author for correspondence. Eleven of the articles and the chapter of the book are the result of scientific collaboration with scientists from foreign research institutes. In total, Dr. Romanova is a co-author of 31 scientific papers, of which 24 scientific articles in peer-reviewed journals, 4 book chapters, 2 articles in conference proceedings and a patent. A total of 249 citations (without self-citations) were noted on the articles, and Hirsch's index is 11. The results of Dr. Romanova's research were reported at 24 national and international scientific forums (12 posters and 12 oral presentations). She was a Guest Editor of the thematic edition of *Molecules*-MDPI "Metal-Organic Complexes: Applications in Chemistry and Materials Science" in 2020. She is a participant in a number of national and international research projects (as a leader or team member). From the attached reference it can be seen that Dr. Romanova meets the minimal national requirements under Art. 2b of the Law on Chemistry and Pharmacy, as well as the recommendation criteria of the Faculty of Chemistry and Pharmacy for holding the academic position of "Associate Professor".

Scientific contributions. Dr. Romanova's research is focused on theoretical modeling and study of the physicochemical properties of molecular systems of interest to spectroscopy, luminescent optics and medicine. State-of-the-art quantum chemical methods have been employed. The candidate's contributions can be summarized in the following areas:

1. Studies of organic molecules (polyaniline, boron-doped polycyclic aromatic hydrocarbons, o- and p-quinometides, poly- (p-phenylene vinylene)) with open electron shell. The factors responsible for the stability and optical behavior of the studied systems have been determined.

2. Modeling of metal-organic complexes with potential application in medicine / pharmacy (Au (I) complexes) and luminescent optics (Pt (II) and Ru (II) complexes).

3. Theoretical studies of the spectral behavior (in the field of UV / VIS absorption and resonance Raman spectroscopy) of methylviologen and paraphenylene-extended viologen. The key parameters determining the strength of the electron-vibration interactions in the studied radical systems have been derived.

Teaching activity. Dr. Romanova is a respected lecturer at the Faculty of Chemistry and Pharmacy, where she leads exercises and seminars in inorganic chemistry for undergraduate students of pharmacy and biology. She was a scientific consultant on a bachelor's thesis and a doctoral dissertation. She has supervised 11 coursework for first-year chemistry students. In the framework of research projects at Sofia University and NSF she has led / leads research students (4) and doctoral students (1).

Conclusion

The publications and habilitation thesis presented by the candidate are on the topic of the competition and represent original scientific developments with a significant contribution in the field of theoretical chemistry. The obtained results are innovative and shed light on the mechanism and key determinants of a number of processes in systems of interest for theoretical and applied chemistry, optics and biochemistry. The candidate is an established researcher with deep knowledge in the field of molecular modeling and computational chemistry. Demonstrates maturity, creative thinking and ability to successfully select and solve relevant tasks with a high impact on science and practice.

In conclusion, as a result of the above, I believe that with her multifaceted and active research and teaching activities, Ch. Assistant Professor Dr. Julia Ruslanova Romanova fully meets all the requirements of the Law for acquiring the academic position of "Associate Professor". I suggest Ch. Assistant Professor Dr. Julia Ruslanova Romanova to be elected Associate Professor in the professional field 4.2. Chemical Sciences (Theoretical Chemistry) at the Faculty of Chemistry and Pharmacy of Sofia University "St. Kl. Ohridski".

22/11/2021

Signature:

(Prof. Todor Dudev, D.Sc.)