

OPINION

in the competition for the academic position

„Associate Professor“

in the professional field 4.1. Physical Sciences (Electrical, magnetic and optical properties of condensed matter),

for the requirements of Sofia University „St. Kliment Ohridski“ (SU),

Faculty of Physics, published in SG N87 from 19.10.2021

The opinion was prepared by: **Assoc. Prof. Dr. Marushka Blagovestova Sendova-Vassileva, professional field 4.1. Physical Sciences** in her capacity as a member of the scientific jury of the competition according to Order № RD-38-578 / 9.12.2021 of the Rector of Sofia University.

Only **one candidate** has submitted documents for participation in the announced competition:

Head Assistant Doctor Neno Dimitrov Todorov, SU «St. Kliment Ohridski»

I. General description of the submitted materials

1. Details of the application

The documents submitted by the candidate for the competition comply with the requirements of ZRASRB, PPZRASRB and the Regulations on the terms and conditions for obtaining scientific degrees and holding academic positions at Sofia University "St. Kliment Ohridski" (PURPNSZADSU).

For participation in the competition, the candidate Dr. Neno Dimitrov Todorov has presented a list of a total of 18 titles, incl. 18 publications in Bulgarian and foreign scientific journals and scientific forums. 24 other documents (in the form of official notes and certificates from the employer, project manager, financing organization or project assignor, references and feedback, awards and other relevant evidence) supporting the achievements of the applicant are also presented.

The presented publications and documents provide comprehensive information and a complete picture of the scientific and teaching activities of Dr. Neno Todorov.

2. Details about the candidate

Neno Dimitrov Todorov received a bachelor's and master's degree from the Faculty of Physics at Sofia University "St. Kliment Ohridski" with honors. He carried out post graduate studies under double supervision at the Faculty of Physics, Sofia University and the Jean Ruxel Institute of Materials, Nantes, France with supervisors Prof. M. Abrashev / Dr. E. Faulques. In 2014 he defended a thesis „Phonons in oxides with complex crystal structure“ and acquired the scientific-educational degree "Doctor". From 2008 until now Dr. Neno Todorov has held the positions of physicist, assistant and head assistant at the Faculty of Physics at Sofia University. He has had diverse and wide-ranging teaching activities from workshops and seminars to lecture courses, both in General Physics and specialized ones in Raman Spectroscopy. He has participated in over ten national and international research projects. He has been a member of the National Commission for Organizing

and Conducting National Physics Olympiads and the head of the national physics team at the International Physics Olympiads for high-school students every year from 2015 until now.

3. General characteristics of the scientific activities and achievements of the candidate

The scientific activities of Dr. Neno Todorov are mainly in the field of the application of Raman spectroscopy as a method for identification and characterization of various materials, substances and crystals. He has mastered and applies the whole set of experimental approaches in Raman Spectroscopy such as measurements of crystals in different orientations with polarized light, variation of the wavelength of the excitation light, temperature dependent measurements, etc. On the other hand, to interpret the spectra, he performs lattice dynamics calculations. A significant part of his work is the detailed measurement and analysis of the Raman spectra of certain crystals with complete identification of the lines and bands in them as they are attributed to particular oscillations of the crystal lattice. The observed dependences on temperature and the composition of the materials are also analyzed and explained. In addition, part of his research is related to the application of Raman spectroscopy for the characterization of precious metal structures suitable for SERS (Surface Enhanced Raman Spectroscopy), liquid crystals and the identification of inorganic substances used for pigments in paintings.

After getting acquainted in detail with the materials and evidence provided by the applicant and asking for some additional ones related to his participation in research projects, I made sure that

a) the scientific publications meet the minimum national requirements (under Art. 2b, para. 2 and 3 of ZRASRB) and respectively the additional requirements of Sofia University "St. Kliment Ohridski" for holding the academic position of "Associate Professor" in the scientific field and professional direction of the competition;

The coverage of the national requirements for holding the academic position "Associate Professor" and the additional ones of Sofia University "St. Kliment Ohridski" is correctly shown in the information provided by the candidate and the evidence in it. The candidate significantly exceeds the minimum national requirements and the additional requirements of Sofia University "St. Kliment Ohridski" in number of citations, in participation in national and international projects, in teaching experience.

b) the scientific papers submitted by the candidate do not repeat those of previous procedures for acquiring a scientific title and academic position;

c) there is no legally proven plagiarism in the scientific papers submitted for the competition.

4. Content analysis of the scientific and scientific-applied achievements of the candidate, contained in the materials for participation in the competition

The candidate's scientific contributions presented in the publications on which the competition is based are the establishment of new facts about the Raman spectra and the vibrations of the crystal lattice of certain crystals, enrichment of existing knowledge in this field, application of Raman spectroscopy for research of new materials and structures as well as its application in the practice of identifying unknown inorganic pigments. The publications of Dr. Neno Todorov have a strong response in the scientific literature and are cited a total of 271 times, and those included in the competition - 182 times. Most of the papers have been published in journals with

a high impact factor, in the first quartile (Q1). The Hirsch factor of the candidate is 7, while the required minimum - 5.

5. Characteristics and evaluation of the teaching activity of the candidate

The teaching activity of the candidate covers both laboratory exercises and maintenance of training laboratories, seminars as well as lectures in the period after taking the academic position of head assistant. The subjects he teaches cover both general disciplines such as General Physics, Mechanics, Fundamentals of Physics, Optics, and specialized ones like Raman spectroscopy. Dr. Neno Todorov was the supervisor of the theses of two successfully graduated graduate students. Special mention should be made of his activities as a member of the National Commission for Organizing and Conducting National Olympiads and Physics Competitions and Head of the National Physics Team at International Olympiads as well as Head of the Student Team of the Faculty of Physics at Sofia University. He also participated in three published articles in the journal "Physics: Methodology of Teaching", containing problems given at the International and European Physics Olympiads, which is an important contribution to the methodology and practice of training and development of future physicists. All this proves a very wide, consistent and successful activity for training in physics. It far exceeds the additional minimum requirements of the Faculty of Physics for teaching activities.

6. Critical remarks and recommendations

As a remark I would like to mention the way of preparation the document with the scientific contributions of the candidate. It is written quite modestly and sparingly, and in my opinion the new achievements in science and practice in the publications presented for the competition are not highlighted and emphasized enough. This in no way detracts from the assessment of the candidate's qualities, but to some extent makes it difficult to carry out this assessment objectively.

7. Personal impressions of the candidate

I have known Dr. Neno Todorov for many years. He is a young scientist with very solid and comprehensive training in the field of Raman spectroscopy and crystal lattice vibrations as a narrow field of his scientific specialization in both experimental and theoretical aspects. He is strongly dedicated and engaged in his scientific and teaching activities and is always ready to cooperate by providing his knowledge and skills for solving new fundamental and applied scientific problems.

8. Conclusion on the application

After getting acquainted with the materials and scientific papers presented in the competition and based on the analysis of their importance and the scientific and scientific-applied contributions contained in them, I **confirm** that the presented scientific achievements meet the requirements of ZRASRB, Regulations for its application and relevant Regulations of Sofia University "St. Kliment Ohridski" for holding the academic position "Associate Professor" in the scientific field and professional direction of the competition. In particular, the candidate satisfies the minimum national requirements in the professional field and no plagiarism has been established in the scientific papers submitted for the competition.

I give my **positive** assessment of the candidacy.

II. GENERAL CONCLUSION

Based on the above, I strongly **recommend** the scientific jury to propose to the competent body for the selection of the Faculty of Physics at Sofia University "St. Kliment Ohridski" to choose Dr. Neno Dimitrov Todorov to take the academic position of "Associate Professor" in the professional field 4.1 Physical Sciences.

22.02.2022.

Sofia

Signed:

Assoc. Prof. Dr. Marushka Sendova-Vassileva