

STATEMENT

on the competition for the academic position "Assoc. Prof." in the field of "Optical metrology and holography" in professional field 4.1. Physical sciences, scientific specialty "Optics of wave processes", announced in State Gazette no. 79/04.10.2022 from the Institute of Optical Materials and Technologies (IOMT) "Acad. J. Malinovski", BAS

by Assoc. Prof. PhD Sanka Gateva-Kostova, Institute of Electronics, BAS, Member of the Scientific Jury

The only candidate in the competition is Chief Assist. Prof. PhD Nataliya Dimitrova Berberova-Buhova, from the Optical Metrology and Holography group at the Institute of Optical Materials and Technologies (IOMT) "Acad. Y. Malinovski", BAS.

Natalia Berberova graduated in 2005 the National Vocational High School of Precision Technology and Optics "M. V. Lomonosov" majoring in Laser technology, after which he graduated in 2011 at SU "Kliment Ohridski" majoring in Quantum Electronics and Laser Technology. Since 01.11.2010 she is with IOMT-BAS as an physicist, Assist. Prof., PhD student and Chief Assist. Prof. In 2016 defends a PhD thesis on the topic "Coherent optical metrology: methods and implementation with a spatial light modulator" with scientific supervisors Prof. Elena Stoykova and Prof. Dr. Petar Sharlandzhiev.

During the period 2013-2015 specialized in Korean Electronics Technology Institute for 1 month, Electronics Technology Institute of Finland for 2 months, and National Chiao Tung University of Taiwan for 2 months. From December 2015 until December 2016 is a scholarship holder of the World Federation of Scientists - Professor A. Zichichi, Switzerland, and in 2017 won a scholarship in the competition "For women in science" 2017 with a project: "Polarization holographic recording in azopolymer nanocomposites".

The submitted materials for participation in this competition are prepared very accurately and provide the necessary information about the candidate, the subject of his works and his contributions.

Chief Assist. Prof. Nataliya Berberova formulates 4 main topics in her investigations:

- improving the optical properties of materials for polarization holographic recording by adding nanoparticles;

- reversible polarization holographic recording and analysis of the parameters of the obtained diffraction gratings;

- dynamic speckle analysis and its application for non-destructive control in rapidly changing processes (drying of polymer thin layers, etc.). Numerical methods for image processing;

- modeling of the optical response from surface-relief diffraction gratings by varying their parameters. Modeling of optical constants.

In total, Nataliya Berberova-Buhova has 56 publications and one patent. Of the publications, 41 have an impact factor and/or an impact rank. Of these, 13 publications are related to her doctoral dissertation. She participated in 65 scientific forums. She has 102 citations and a Hirsch index 5. She has been a coordinator of 5 projects and participated in another 17.

In the competition for Associate Professor, she participates with 27 works: 7 publications (4 with impact factor and 3 with impact rank), which are substitutes for habilitation work and another 20 (7 with impact factor and 13 with impact rank). N. Berberova is the first author of 5 of the publications, and corresponding author of 7. Most of the investigations are experimental, however most of them involve digital image processing, numerical simulation, and theoretical evaluations. The topic is hot, with opportunities for new applications and development.

The scientific indicators of the works with which she participates in the competition cover the requirements for occupying the academic position "Associate Professor" of the ZRASRB, the Regulations for the implementation of the ZRASRB of the Council of ministers of the Republic of Bulgaria, Bulgarian Academy of Sciences and IOMT.

I have excellent impressions of the presentations of Nataliya Berberova at the International Conference and School of Quantum Electronics: Lasers, Physics and Applications, which is held every 2 years by the Institute of Electronics, BAS.

In conclusion, I would like to recommend the Scientific Jury to support and propose to the IOMT Scientific Council Chief Assist. Prof. Nataliya Berberova-Buhova, PhD to be elected to the academic position "Associate Professor" in professional field 4.1. Physical Sciences.

30.01.2023

/Assoc. Prof. Sanka Gateva-Kostova, PhD/