

OPINION

prepared by Prof. DSc. Nikola Malinowski

Institute of Optical Materials and Technologies "Acad. J. Malinovski" -
Bulgarian Academy of Sciences

to the competition for the academic position **Full Professor** in Physical Sciences (Electrical,
Magnetic and Optical Properties of Condensed Matter)

announced in State Gazette no. 35 of 10.05.2022

with a single candidate **Assoc. Prof. Lian Lyubenov Nedelchev, PhD**

1. General presentation of the candidate

The candidate in the competition, Associate Professor Lian Nedelchev, was born on May 23, 1973. He completed his secondary education in 1991 at NPMG "Acad. L. Chakalov" and in the same year he was accepted as a student at the Faculty of Physics of SU "St. Kl. Ohridski". In 1997, he obtained a master's degree, majoring in "Laser Physics".

In May 1997, Lian Nedelchev started working as a physicist at the Central Laboratory for Optical Storage and Processing of Information - BAS (CLOSPI, now IOMT - BAS). Since the beginning of 1999, he has been a full-time PhD student at CLOSPI under the supervision of Prof. Lyudmila Nikolova and Prof. Todor Todorov. His doctoral research is focused on determining the photoanisotropic properties of azopolymer materials and their applications for polarization holographic recording and formation of photoinduced chiral structures. In the period 2001-2002, he specialized in the Risoe National Laboratory and the Optilink A/S company in Denmark, where he continued his research in the field of characterization of azopolymer materials for optical data storage. He defended his dissertation in 2004 and obtained a PhD degree in "Electrical, magnetic and optical properties of condensed matter" with a thesis entitled "Photoinduced processes in azobenzene -containing polymers and their application".

In the period from 2009 to 2021, he also worked at the College of Telecommunications and Posts (after 2015 – University of Telecommunications and Posts) as an associate professor and taught courses Physics, Fundamentals of Electronics, Electronics, Fundamentals of Electrical Engineering, Advanced Mathematics, etc. In UTP he also held positions as Director of the Research Directorate (2014-2015) and Dean of the Faculty of Telecommunications and Management (2015-2019).

Since 2011, the candidate holds the academic position "Associate Professor" in the department "Optical Metrology and Holography" at the Institute of Optical Materials and Technologies "Acad. Yordan Malinovski" - BAS, and in 2022 he was elected Scientific Secretary of IOMT. He is the academic supervisor of graduates and specialists in the "Student Practice" program, as well as two doctoral students, one of whom defended his thesis in 2022.

2. General characteristics of the materials presented in the competition

The materials presented by Associate Professor Lian Nedelchev are in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations on the Terms and Procedures for Acquiring Scientific Degrees and for Occupying Academic Positions at IOMT-BAS.

The candidate is a co-author of 95 scientific articles, of which 78 have been published in IF and/or SJR journals. More than 340 citations of his publications have been noted, for the last 10 years there have been 110 oral or poster reports presented at a total of 62 international and national conferences.

Assoc. Prof. Lian Nedelchev participates in the competition with 21 articles in scientific journals with an impact factor or impact rank, of which 2 were published in journals with a Q1 factor, 9 with factor Q2, 2 with factor Q3, 3 with factor Q4 and 5 in journals with SJR. In the documents attached

to the competition, the candidate indicated that he is the Leader of 2 projects and a participant in 4 national and 2 international projects. He is also the author of a textbook for higher schools, and has a registered utility model. 70 citations of the applicant's publications are included in the competition.

The documents presented by Associate Professor Lian Nedelchev show that his scientific activity fulfills and exceeds the minimum national requirements for the groups of indicators, respectively:

Group A – 50 (out of a minimum of 50)

Lian Nedelchev obtained a PhD in 2004 with a thesis entitled "Photoinduced processes in azobenzene -containing polymers and their application".

Group B – 109 (out of a minimum of 100)

7 publications equivalent to habilitation work are presented, which were published in refereed scientific journals, indexed in the established databases Scopus and Web of Science. The candidate is the first or second author of 6 of the 7 publications presented, which shows his substantial contribution.

Group Γ – 262 (from a minimum of 220)

According to this group of indicators, 14 publications in established international publications with an impact factor/rank, indexed in world-renowned databases with scientific information, are presented. According to indicator Γ.9, a utility model registered in 2021 is included, and it should be noted that the applicant is in first place among the team of inventors.

Group Д – 140 (from a minimum of 120)

70 citations were selected in refereed publications, indexed in world-renowned databases with scientific information (Web of Science and Scopus). 51 citations are from the last 5 years, which shows the relevance of the scientific works published by the candidate.

Group E – 209 (from a minimum of 150)

E-13. Supervision of a successfully defended doctoral student – 25 points;

E-14. Participation in a national scientific or educational project – 40 points;

E-15. Participation in an international scientific or educational project – 40 points;

E-16. Management of a national scientific or educational project – 40 points;

E-18. Attracted funds for projects managed by the applicant – 24 points;

E-19. Published university textbook – 40 points.

3. Evaluation of the candidate's research activity

The scientific and scientific-applied activities of Associate Professor Lian Nedelchev are in the field of characterization of photoanisotropic materials for polarization optical recording (azopolymers, azopolymer nanocomposites, stilbenes, etc.), as well as their applications for creating polarization-selective diffraction optical elements, chiral structures and other applications in photonics.

The candidate's scientific contributions can be grouped into several main areas:

I. Experimental optimization and numerical modeling of photoinduced birefringence in thin films of azopolymers, azodyes and azopolymer nanocomposites.

II. Analysis of photoinduced chiral structures in azopolymers and azopolymer nanocomposites and their influence on the efficiency of polarization holographic gratings.

III. Application of polarization holography methods for obtaining and analyzing polarization and surface-relief gratings.

IV. Monitoring the drying process during deposition of azopolymer layers by dynamic speckle analysis.

Each of these main areas covers important, new results, presented in articles in renowned international scientific journals. I believe that Associate Professor Lian Nedelchev has made a

significant personal contribution in each of the publications presented in the competition. I do not find any plagiarism in the candidate's scientific works.

4. Teaching and expert activity of the candidate

According to the provided reference, Associate Professor Lian Nedelchev leads a specialized course for doctoral students at the BAS Training Center on the topic "Polarization holography and applications: Holographic recording of information in anisotropic media". He is the supervisor (together with Prof. Dimana Nazarova) of two doctoral students at IOMT, one of whom defended this year, and the other was dismissed with the right to defend. The candidate was the supervisor of 7 diploma theses - 3 for the Bachelor's degree and 4 for the Master's degree. He has also led over 900 hours of lectures and 1600 hours of exercises at the University of Telecommunications and Posts. He has carried out Teaching mobilities within the Erasmus program in Leipzig (Germany), Valencia (Spain), Debrecen (Hungary) and Dublin (Ireland).

As can be seen in the public profile of Prof. Nedelchev in Publons /Web of Science, he is active as a reviewer for prestigious journals in the field of optics, photonics and optical materials. He has prepared a total of 56 reviews for journals such as Optics Letters, Optics Express, Applied Optics, Polymers, Sensors, Crystals, Nanomaterials and others. For the past 3 years, he has also been an evaluator for the Bulgarian Scientific Research Fund.

CONCLUSION

The scientific data and indicators of the materials presented for the competition by Associate Professor Lian Nedelchev exceed the minimum national requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, as well as the additional requirements of the Regulations on the Terms and Procedures for the Acquisition of Scientific Degrees and the Occupancy of Academic positions in IOMT-BAS. The candidate's scientific works contain original scientific and scientific-applied contributions, evidence of which is their publication in established international publications, as well as the significant number of citations, incl. in the last five years.

Based on everything written so far, I express my **positive opinion** and **strongly recommend** to the respected members of the Scientific Council of IOMT - BAS **to elect Associate Professor Dr. Lian Lyubenov Nedelchev to the academic position of "Full Professor"** in Physical Sciences (Electrical, Magnetic and Optical Properties of Condensed Matter).

Sofia, 05/09/2022

Prepared by:

/ Prof. DSc. Nikola Malinowski /