

REVIEW

Bx. № 277 / 01.09.2022.

**by prof. dr. Temenuzhka Atanasova Yovcheva,
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of the materials presented for participation in competition for assuming an academic position of
“Associate Professor”
in the Institute of Optical Materials and Technologies "Akad. J. Malinovski”
at the Bulgarian Academy of Sciences (IOMT – BAS)

professional direction
scientific specialty

4.1. Physical Sciences
„Electrical, Magnetic and Optical Properties of
Condensed Matter“

Dr. Katerina Emilova Lazarova is the only candidate in the competition for the position of
“associated professor” announced in state gazette nr. 35 of 10.05.2022 and in the web page of the
Institute of Optical Materials and Technologies "Akad. J. Malinovski”.

1. General presentation of the procedure and the candidate

The set of materials presented to me in electronic format by chief assistant Dr. Katerina Emilova Lazarova meet the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria and the Regulations for Development of the Academic Staff of IOMT- BAS and contains all necessary documents for participation in the competition.

The scientific papers of the candidate for the whole research period are 41 in total as 25 of them are in impact factor and impact rank journals, one popular science article and 9 of the articles are related to the acquisition of the PhD academic degree. To date, all these works have been cited 110 times, and the Hirsch Index (H-Index) is 6. In the current competition the candidate presented 20 articles with 31 citations of the scientific works. She has participated in international and national conferences with 38 scientific reports and 23 posters. Besides the PhD study she is the leading researcher in 3 national projects and participated in 10 scientific projects.

The candidate chief assistant Dr. Katerina Emilova Lazarova submitted in the competition procedure 20 scientific works which are in journals with impact factor or impact rank. 7 articles are in journals with factor Q1, 3 – in journals with factor Q2, 6 are in journals with factor Q4 and 4 with SJR. They include:

- equal to a habilitation work – scientific publications in journals which are referenced and indexed in world scientific information databases (Web of Science and Scopus) (indicator C) – 6 items;

- scientific publications in journals that are referenced and indexed in world scientific information databases (Web of Science and Scopus), out of the habilitation work, (indicator G, point 7) - 14 items.

Total number of publications in which the candidate is the first author is 11 of 20.

Chief assistant Dr. Katerina Emilova Lazarova has been assigned the positions of a physicist, assistant and chief assistant in the Institute of Optical Materials and Technologies “Acad. J. Malinovski” – Bulgarian Academy of Sciences since 2013.

She has won 9 awards and grants: 2 awards for the best poster; 3 awards for best report/lecture; scholarships for specialization in LCS, Caen, France and for training at CERN, Switzerland. She won a scholarship in the National Program “Early-stage and Postdoctoral researchers”.

Scientific activities presented by chief assistant Dr. Katerina Emilova Lazarova fully meet the minimum national requirements for Professional Direction 4.1 Physical Sciences and those of the BAS and IOMT:

According to criterium A (minimum 50 points) – 50 points

She acquired PhD degree in Physical Chemistry in the Institute of Optical Materials and Technologies – BAS in 2015, subject „Porous one-dimensional photonic crystals of metal oxides and nanoscaled zeolites for sensing applications”.

According to criterium B (minimum 100 points) – 117 points

6 publications equal to monographic works which are referenced and indexed in world scientific information databases are presented.

According to criterium G (minimum 220 points) – 230 points

14 publications referenced and indexed in world scientific information databases are presented.

According to criterium D (minimum 50 points) – 62 points

All citations are in scientific journals references and indexed in the world scientific information databases by criterion D-11.

2. General assessment of applicant's activity

Chief assistant Dr. Katerina Emilova Lazarova has very active and diverse activity in scientific research, in participation in national and international projects and programs.

Scientific and applied scientific results

The main scientific and applied scientific activity of chief assistant professor Katerina Emilova Lazarova is in the field of developing new materials for optics and their application as optical sensors for humidity or volatile organic compounds. Her work is aimed at obtaining thin layers of polymers, zeolites or composites of metal oxides, finding conditions for deposition in the form of films, their complete characterization by various techniques and investigation of sensing properties. The scientific contributions have both fundamental and applied nature and can be grouped into several areas:

- I. Investigation of the optical and sensor properties of thin films of different humidity-sensitive polymers
- II. Development of a flexible humidity sensor with optical detection
- III. Characterization of the optical and sensor properties of nanocomposites of metal oxides and zeolites
- IV. Development of photonic crystals of metal oxides and/or composites
- V. Investigation of the optical characteristics of ZrO₂ thin films obtained by different synthesis and doped with rare earth elements

I do not find any plagiarism in candidate's scientific works.

CONCLUSION

The documents and materials presented by chief assistant Dr. Katerina Emilova Lazarova meet all the requirements of the Law on Development of the Academic Staff in the Republic of Bulgaria and the specific additional requirements of the Institute of Optical Materials and Technologies "Acad. J. Malinovski" – BAS as the publications and scientific activities exceed the minimum national requirements for assuming the academic position of "associate professor". There are original scientific and applied scientific contributions in candidate's works which gained international recognition through their publication in journals issued by international academic publishers. Undoubtedly the active scientific activity of chief assistant Dr. Katerina Emilova Lazarova related to her participation in different programs and projects should be also considered. Based on all this, I do not hesitate to support the candidacy of chief assistant Dr. Katerina Emilova Lazarova for assuming the academic position of "associate professor" at IOMT - BAS.

September 1, 2022

Prepared by:

(Prof. Dr. Temenuzhka Yovcheva)