

## REVIEW

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regarding the materials submitted for participation in the competition to occupy the academic position "Associate professor" at the University of Plovdiv "Paisii Hilendarski" in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.1. Physical Sciences (Physics of Wave Processes)

In the competition for an "Associate professor", announced both in the State Gazette, no. 96, dated 17.11.2023 and on the website of the University of Plovdiv "Paisii Hilendarski" for the needs of the "Physics" department at the Faculty of Physics and Technology at the University of Plovdiv "Paisii Hilendarski", as the only candidate participates Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD from the University of Plovdiv "Paisii Hilendarski".

### 1. General overview of the procedure and the candidate

The PhD set of materials (in electronic form) presented to me by Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova is in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Development of the Academic Staff of the University of Plovdiv "Paisiy Hilendarski" and includes all the necessary documents for participation in the competition.

The scientific papers with which the candidate participates in the current competition for the academic position of "Associate professor" were published after obtaining the educational and scientific degree "Doctor (PhD)" and after occupying the academic position of "Chief Assistant Professor" and they are 25. All publications for the competition are in journals that are referenced and indexed in the Web of Science and/or Scopus databases, 15 of which have IF (with a total IF of 38.67) and 10 have SJR. There are 80 citations in scientific publications, referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus). The Hirsch index (*h*-Index) is 8 (according to Scopus).

She has 7 oral presentations at international and national scientific conferences and 7 poster participations. The candidate is a participant in 5 scientific projects, two of which are international - one for the 7<sup>th</sup> Framework Programme and 1 for the Science Europe Roadmap, 1 for the Scientific Research Fund - MES, and 2 for the Fund "Scientific research" at the University of Plovdiv "P. Hilendarski". She was the head of two projects partially financed by the Fund "Scientific research" at the University of Plovdiv "P. Hilendarski".

For participating in the competition the candidate Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD presents 25 scientific works that are published in journals with impact factor or SJR. One of the articles is in Q1 journal, 10 of them have Q2 quartile, 4 have Q3 quartile, 1 has Q4 quartile and 9 have SJR. They include:

- equivalent to Habilitation work - scientific publications in journals that are referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus) (indicator B) - 7 articles;

- scientific publications in journals that are referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus), outside of the habilitation work, (indicator G, point 7) - 18 articles.

The total number of publications in which the candidate is the lead author is 8 out of 25.

Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD has successively held the positions of Assistant and Chief Assistant Professor at University of Plovdiv "P. Hilendarski" since 2011.

She won 1 scientific award in 2019 for “best scientific achievement” in the competition of the “Academician Emil Djakov” Institute of Electronics at BAS.

The scientific activities presented by Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD fully comply with the minimum national requirements for professional field 4.1. Physical sciences, as well as those of the University of Plovdiv “P. Hilendarski”:

According to criterion A (min. 50 points) – 50 points

In 2016, she received a PhD in Physics of Wave Processes, defended at the “Academician Emil Djakov” Institute of Electronics at the Bulgarian Academy of Sciences, Sofia, on the topic “Linear and nonlinear optics of femtosecond and attosecond laser pulses”.

According to criterion B (min. 100 points) – 130 points

7 publications equivalent to a monographic work are presented, which are referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus).

According to criterion G (min. 200 points) – 257 points

18 scientific publications are presented in journals that are referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus).

According to criterion D (min. 50 points) – 160 points

All citations are in scientific publications, referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus) according to indicator D-11.

## **2. General characteristics of the candidate's activity**

*Assessment of educational and pedagogical activity* and preparation of the candidate(s)

For the last six academic years, the candidate's auditorium occupancy has been from 428 hours to 695 hours. For the last three years a teaching workload of lectures respectively 142 hours, 134 hours and 134 has been provided, of which according to the specifics of the professional field of the competition, there are 105 hours, 75 hours and 60 hours lectures.

For the last six academic years, sets of 12 lecture courses for master's and bachelor's specialties have been developed and some of them have been uploaded to electronic platforms.

Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD has 18 graduates who successfully defended their thesis.

*Evaluation of the candidate's scientific and scientific-applied activity*

The candidate's scientific interests and developments are in the field of Physics of wave processes: Soliton regime of propagation of optical pulses in nonlinear dispersive media; Four-photon parametric processes and energy exchange between laser pulses and their components in nonlinear dispersive media; Propagation of optical vortex structures in isotropic nonlinear dispersive media.

Her scientific contributions have both a fundamental and an applied nature and can be grouped into several fields:

- Analytical study of the generation of broad-band bright and dark optical solitons in isotropic nonlinear dispersive media based on the nonlinear amplitude equation.
- Analysis of optical solitons obtained by the Kudryashov equation.
- Analysis of optical solitons obtained by the Fokas–Lenells equation and the Laplace-Adomian decomposition method.
- Analytical study of energy exchange between broad-band laser pulses and their components in nonlinear dispersive media.
- Analytical study of the conditions for generation and propagation of optical vortex structures in isotropic nonlinear dispersive media.

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

## CONCLUSION

The documents and materials presented by Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD, **meet all the requirements** of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of LDASRB and the respective Regulations of the University of Plovdiv “Paisii Hilendarski”.

The candidate in the competition has submitted a **significant** number of scientific papers and materials, published after the defense of the “Doctor (PhD)” degree and after occupying the academic position of “Chief Assistant Professor”. The candidate's works contain original scientific and applied contributions that have received international recognition, as all scientific publications are in journals that are referenced and indexed in world-renowned databases with scientific information (Web of Science and Scopus). The theoretical developments have a practical applicability, and some of them are directly oriented to academic work. The scientific and teaching qualifications of Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD is **unquestionable**.

The results achieved by Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD in educational and research activities **fully** correspond to the minimum national and additional requirements of the Faculty of Physics and Technology.

After getting acquainted with the materials and scientific works presented in the competition, analyzing their significance and the scientific and scientific-applied contributions contained in them, I find it reasonable to give my **positive** assessment and to recommend the Scientific Jury to prepare a report-proposal to the Faculty Council of The Faculty of Physics and Technology for the election of Ch. Assistant Professor Aneliya Mincheva Dakova-Mollova, PhD to the academic position of “Associate professor” at the University of Plovdiv “Paisii Hilendarski” in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.1. Physical Sciences (Physics of Wave Processes).

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Review issued by:

(Prof. Temenuzhka Yovcheva, PhD)