

REVIEW

by Prof. Dr. Valchan Todorov Georgiev,
of the materials submitted for participation in the competition
for occupying the academic position "associate professor",
in the field of higher education - 5. Technical sciences,
by professional direction - 5.2. Electrical engineering, electronics and automation,
specialty - "Electrical supply and electrical equipment" (Lighting and installation technology)
In the competition for associate professor, announced in the State Gazette, no. 54 of 25.06.2024
r. and on the TU-Gabrovo website for the needs of Technical College - Lovech;
as a candidate Ch. Assistant Dr. Eng. Milko Todorov Yovchev.

1. Brief biographical data

Ch. Assistant Professor Milko Yovchev received a bachelor's degree from TU-Gabrovo in 2009, specialty "Electricity and Electrical Equipment". In 2011, he also received a master's degree from TU-Gabrovo with the same specialty. In 2019, he defended his doctorate on the topic "Energy-efficient optical systems for LED illuminators", with scientific supervisor Prof. Dr. Plamen Tsankov. In the same year, Milko Yovchev became the main assistant at TU-Gabrovo, category "Electrical supply and electrical equipment", and I was a member of the scientific jury for the competition. I have very good personal impressions of the candidate and his professional performances, both as a member of the scientific jury for the above-mentioned competition, and from our joint participation in various scientific forums.

2. General description of the presented materials

According to the rules for acquiring scientific degrees and holding academic positions at the Technical University - Gabrovo, candidates for the academic position "docent" in area 5. Technical sciences must meet minimum criteria for four groups of indicators, namely groups of indicators A, B, G and D.

According to group of indicators A - *Dissertation work for the awarding of the educational and scientific degree "Doctor"*, the candidate has submitted diploma No. 0078/17.04.2019, with which he is awarded the educational and scientific degree "Doctor" in "Lighting technology and sources of light". The candidate is present in the national register of

academic staff and protected dissertation works. A list of 6 publications related to the dissertation is also presented.

Indicator group C - Habilitation thesis - scientific publications (not less than 10) in publications that are referenced and indexed in world-famous databases with scientific information. The candidate has submitted a list of 10 publications. At the time of writing this review, 9 of these publications are reflected in Scopus, and the tenth is in print. All those publications are reports from international conferences in Bulgaria. Seven of the ten publications have two more co-authors, two have three more and one has four more co-authors.

Group of indicators G

D.7 Scientific publication in publications that are referenced and indexed in world-renowned databases with scientific information. According to this indicator, 5 publications are presented, all from international conferences (4 in Bulgaria and 1 abroad). One of the publications is in an edition with SJR. One of these publications is independent, two are with one other co-author, one with three other co-authors, and one with four other co-authors. All are reflected in Scopus. **D.8. Scientific publication in non-refereed peer-reviewed journals or in edited collective volumes.** According to this indicator, 20 publications are presented. Three of them are in English, and 17 in Bulgarian. Six of the publications are in periodicals (3 in Bulgaria and 3 abroad), and 14 are conference reports. 3 publications are independent, 7 are with one more co-author, 6 with two more co-authors, 2 with three more co-authors and 2 with four more co-authors.

Group of indicators D

D.12. Citations or reviews in scientific publications, referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes. The candidate has submitted a list of three of his publications, which have been cited a total of 10 times by Bulgarian and international scientists. Publications and citations are reflected in Scopus. At the time of writing the review, a total of 18 citations to the applicant's publications (excluding self-citations of all co-authors) are reflected in Scopus. Obviously, the candidate participates in the competition with only part of his achievements.

Group of indicators E

E. 18. Participation in a national scientific or educational project and E. 20. Management of a national scientific or educational project. The candidate submitted official

notes for participation in project BG05M2OP001-1 .002-0002, co-financed by the European Union through the OP NOIR, 2014-2020 and for management of contract No. 2308E/2023 "Research of photometric and electrotechnical characteristics of LEDs illuminants, volt-ampere characteristics and efficiency of photovoltaic modules'. A list of 3 additional international research projects is given.

E. 23. Published university textbook or textbook that is used in the school network. The competition materials include a textbook on "Lighting and Installation Techniques", co-authored with another co-author.

E. 24. Published university textbook or textbook that is used on the school network. The candidate has submitted two teaching aids: "Guide for laboratory exercises in electrical supply" and "Guide for coursework in lighting and installation technology". Both manuals have another co-author. The candidate did not include his achievements under group E indicators when calculating the points for meeting the national requirements, but he has every reason to claim them.

Fulfillment of the minimum national scientometric requirements for area 5. Technical sciences by the candidate, head assistant Milko Yovchev.

group of indicators		points	total points	min . requirement	overfulfillment
A	1. Dissertation work for awarding the educational and scientific degree "doctor"	50	50	50	1
C	4. Habilitation work - scientific publications (not less than 10) in publications that are referenced and indexed in world-famous databases with scientific information	182	10 pcs. 182 items	10 pcs. 100 items	1.82
D	7. Scientific publication in publications that are referenced and indexed in world-renowned databases of scientific information	103.3	291.3	200	1.46
	8. Scientific publication in non-refereed peer-reviewed journals or in edited collective volumes	188			
D	12. Citations or reviews in scientific publications referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes	100	100	50	2
E	18. Participation in a national scientific or educational project	10	70	-	yes
	20. Management of a national scientific or educational project	20			

	23. Published university textbook or textbook that is used in the school network	20			
	24. Published university textbook or textbook that is used on the school network	20			
Total Points:			693.3		

Fulfillment of the minimum requirements of TU-Gabrovo for the scientific and teaching activities of the candidates for acquiring the academic position of "docent"

	Milko Yovchev	Minimum requirements "associate professor"
Total number of posts	35 posts, 4 independent, 1 with SJR	15 publications of which at least 4 independent and 1 with IF or SJR
Number of known citations from other authors	10	5
Issued textbooks	1	1
Educational materials issued	2	1

The candidate for head of state Milko Yovchev fulfills and re-fulfills all minimum requirements - both national and specific for TU-Gabrovo.

3. Reflection of the candidate's scientific publications in the scientific community (known citations)

The applicant's citations are already noted above in indicator group D.

4. Overview of the content and results in the presented works

The candidate's research activity is mainly in the field of lighting technology. Naturally, the main part of the scientific works are in this area. Ch. Associate Professor Milko Yovchev and his supervisor and main co-author Assoc. Pl. Tsankov have established themselves among the lighting engineering community in Bulgaria as experts in the modeling of optical systems. The main publication activity of the candidate is also related to this topic (B4.1, B4.2, B4.3, B4.6, B4.7, B4.9, D7.2, D7.3, D8.18, D8.19). Analysis and synthesis of optical systems is carried out with the help of three-dimensional models. The light technical parameters of the investigated optics are obtained by raytracing with given characteristics of the materials. Optimization of the synthesized optical systems is carried out.

The study of the color characteristics of illuminants is an area in which the candidate publishes actively (B4.4, D 7.5, D8.5, D8.9, D8.13). The influence of various factors on the color indicators of the illuminators was studied - color coordinates, color temperature, color rendering index.

The candidate has investigated the photobiological risk when using LED illuminators (B4.8, D8.20) and the possible consequences of the increased intensity in the blue part of the spectrum.

an LED greenhouse illuminator was published. By using colored LEDs, a spectral maximum is obtained in the orange-red zone.

The construction of effective outdoor lighting, including the reconstruction of existing street lighting systems, is also the subject of the candidate's scientific and applied activity (D8.4, D8.6, D8.10, D8.12). A number of energy-saving measures have been proposed - introduction of efficient lighting and appropriate control systems. Measures to increase energy efficiency also proposed for internal lighting systems (G8.1, G8.3, G8.16).

The temperature regimes of industrial lighting are investigated in B4.5. Modeling of the thermal processes in the illuminator was carried out with the help of specialized software and an experimental study of the same illuminator.

The electrical characteristics and, in particular, the power quality indicators when using LED lighting are examined in G7.1 and G7.18.

Part of the research is related to RES (G8.2, G8.14, G8.15), in particular with the possibilities of their integration in lighting systems.

5. General characteristics of the applicant's activity

5.1. Educational and pedagogical activity (work with students and doctoral students)

The candidate has serious teaching experience and has led classes in 5 academic disciplines. He participated in the development of study documentation - study plans for 2 disciplines from the study plan for the master's degree program and 3 disciplines from the doctor's program study plan .

5.2. Scientific and scientific-applied activity

The candidate's scientific research is reflected sufficiently extensively in his publications. I consider the candidate's participation in project BG05M2OP001-1 .002-0002 to be the main scientific-applied activity, with which an exceptional light engineering laboratory was built on the territory of TU-Gabrovo. This laboratory opens up huge prospects, for the realization of which qualified researchers are needed. The publications related to the survey and reconstruction of lighting systems are also a clear consequence of the scientific and applied activity of the candidate.

6. Contributions (scientific, scientific-applied, applied).

The following scientifically applied contributions can be summarized from the candidate's publication activity:

1. With the help of an established methodology for three-dimensional modeling of optical systems, new optimal designs of optical systems (lenses, reflectors, diffusers) of LED illuminators have been synthesized.
2. The photobiological risk of blue light in LED luminaires has been investigated.
3. The influence of various factors on the color characteristics of lamps and lighting fixtures has been investigated.
4. Measures have been proposed and implemented to increase the energy efficiency of lighting systems in a number of settlements.

7. Evaluation of the candidate's personal contribution

In the documents presented by the applicant, I find no grounds for suspicion of unregulated borrowing. An equivalent contribution of the candidate to joint publications can be assumed.

8. Critical notes and recommendations

I have no significant objections to the materials submitted by the candidate for participation in the competition.

It may be recommended that the candidate publish their results in highly cited journals in the future.

9. Personal impressions

I know Ch. Assistant Professor Milko Yovchev from the time when he was a PhD student. We have met at various scientific forums, I have also participated in his professional development so far. I have a very high opinion of his professional and personal qualities.

10. Conclusion:

Bearing in mind the above, I propose that Milko Todorov Yovchev be elected as an "associate professor" in the field of higher education - 5. Technical sciences, professional direction - 5.2. Electrical engineering, electronics and automation, specialty "Electrical supply and electrical equipment" (Lighting and installation technology)

30.10.2024

Reviewer: /...../signature/...../