REPORT

by prof. Petko Denev, PhD – Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences

member of the Academic Jury set to render a decision on the competition for filling the academic position of an Associate Professor in the Professional Field 4.2. Chemical Sciences, according to the Classifier of the Areas of Higher Education and the Professional Fields (Scientific Specialty "Polymers and Polymer Materials") for the needs of direction "Polymers for alternative energy and environment protection", announced in State Gazette issue 102/23.12.2022

The Report complies with Development of Academic Staff in the Republic of Bulgaria Act (DASRBA), the Rules for the Application of the Development of Academic Staff in the Republic of Bulgaria Act, the Rules of BAS and with the Rules set at the Institute of Polymers (IP), Bulgarian Academy of Sciences (BAS), for applying the Act aforementioned.

1. Assessment of the scientific and research accomplishments of the candidate

To participate in the announced competition, only chief assist. prof. eng. Ivelina Tsankova Tsacheva, PhD submitted documents. In the competition, Ivelina Tsacheva participates with twenty scientific papers (nineteen scientific publications and one book chapter) in co-authorship, distributed by categories of indicators as follows: 5 publications participating in the competition as an equivalent number for a habilitation thesis (group of indicators B) and 15 papers participating in the competition by group of indicators Г. All 20 scientific papers are on the subject of the competition and were published outside the dissertation for the acquisition of the PhD degree, therefore are accepted for review and are taken into account in the final evaluation. The points declared by the candidate by groups of scientometric indicators, defined in the rules of the IP-BAS for the conditions and procedure for acquiring scientific degrees and academic positions for "associate professor" are:

Group of indicators	Points by indicators	
	Minimal requirements by groups of indicators	Points declared by the candidate
А	50	50
Б	-	-
В	100	107
Г	220	245
Д	60	384
Е	-	
Total	430	786

Group of indicators А: Chief. assist. prof. Tsacheva presented a diploma for acquisition of PhD degree with doctoral thesis entitled "Polymer radiation protection complexes: design, characterization and effectiveness", which earned her 50 points for this indicator.

Group of indicators В: This group of indicators includes five scientific publications (three in Q1 journals, one in Q2 and one in Q4) presented as an equivalent number of publications as habilitation thesis. The candidate's contributions in these studies, according to the attached author's habilitation reference, are related to the development of experimental synthetic approaches for the synthesis of new biologically active aminophosphonates, as well as new polymer carriers with improved properties. I accept that Dr. Tsacheva's authorial contribution to the creation of these publications is substantial, which is why I recognize them as equivalent to a habilitation thesis. They bring the candidate 107 points, which exceeds the required minimum of 100 points of DASRBA and the regulations of IP-BAS.

Group of indicators Г: In this group of indicators, 15 scientific works are presented, the majority of which are in journals from the third and fourth quartiles (Q3 and Q4). Of these publications, №18 should be classified as publications with an impact rank without an impact factor, because in 2018 *Bulgarian Chemical Communications* was already with terminated impact factor. I attribute this error to oversight on the part of the candidate, as a result of which the points for this publication are reduced to 10, and the distribution of scientific works is adjusted as follows:

Quartile (Q)	Count	Points
Q1	3	75
Q2	1	20
Q3	5	75
Q4	4	48
Publications with SJR without IF	1	10
Book chapters	1	15
	Total	**243**

After this reduction, the point collected by Dr. Tsacheva for this group of indicators are 243, and the total number of points should be reduced to 784 points.

Group of indicators Д: At the time of drafting the report, the total number of citations (without self-citations) of the scientific works in which chief assist. prof. Tsacheva is the co-author are 196. This is indicative of the relevance of her scientific research and the interest it triggers among the scientific community. In the competition, she applied with 192 citations, mostly from foreign authors in foreign journals of major academic publishing houses. The obtained 384 points exceed more than 6 times the required minimum of 60 points.

Thus, in terms of its volume, quality and scientometric indicators, the presented scientific production of Dr. Ivelina Tsacheva fully meets and even exceeds the requirements of the Development of Academic Staff in the Republic of Bulgaria Act, the Rules for its Application and the Rules for holding the position “associate professor” at IP-BAS.

Research topics of chief. assist. prof. Dr. Ivelina Tsacheva are interesting and up-to-date. The presented publications are related to the development of synthetic methods for obtaining new

aminophosphonates and poly(aminophosphonates). The publications include studies of the structure of low molecular weight analogues by crystallographic analysis, as well as biological studies proving their effectiveness and safety. Another part of the research is related to surface modification of mesoporous nanoparticles with polymer complexes as carriers for controlled release of biologically active substances. As a result, new experimental synthetic approaches have been proposed, aimed at developing strategies for the synthesis of new biologically active aminophosphonates, as well as synthetic procedures for obtaining a new type of polymeric carriers with improved properties by attaching aminophosphonate units to biodegradable polymeric carriers such as polyphosphoesters. A new biologically active Schiff base containing an anthracene moiety and a furan ring was synthesized and characterized, and three new α-aminophosphonic acid diesters were obtained. An efficient synthetic procedure was proposed and a new class of biodegradable polymeric carriers consisting of aminophosphonate and poly(ethylene glycol) units was obtained.

2. Opinions, notes and recommendations

I do not know personally Dr. Ivelina Tsacheva and I have no direct impressions of her or her work. Regarding the presented materials, I have one important remark related to the preparation of the extended habilitation reference. Taking into account the fact that part of the publications referred to group Г are thematically related to the publications referred to group B, I consider it inappropriate to conditionally divide the extended habilitation reference into publications from categories B and Г. It would have been more logical if it had been structured thematically by research topics, thus to avoid duplication of contributions and research topics and to better demonstrate the integrity of Dr. Tsacheva's research.

3. Conclusion

Based on familiarization with the documents and materials presented by chief assist. prof. Dr. Ivelina Tsacheva and evaluation of her scientific production and the scientific and applied contributions contained therein, **I express a positive opinion** and According to Art. 26(3) of the DASRBA, I recommend the Academic jury to render **a positive decision** on Dr. Tsacheva filling the position of an Associate Professor at the Institute of Polymers, Bulgarian Academy of Sciences in professional direction 4.2. Chemical Sciences (Polymers and Polymeric Materials).

Date: 06.04.2023 **Report prepared by:**
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