

## OPINION

from Assoc. Prof. Dr. Veselin Yordanov Kmetov,  
Dean of the Faculty of Chemistry and lecturer in the Department of Analytical Chemistry and  
Computer Chemistry at Plovdiv University "Paisii Hilendarski"  
appointed a member of the Scientific Jury by Order of the Rector of Sofia University  
RD-38-6068 / 14.12.2021 for conducting a competition for the academic position of "professor"  
in Chemical Sciences (4.2) (Inorganic Chemistry) for the needs  
of the Faculty of Chemistry and Pharmacy at Sofia University "St. Kliment Ohridski "  
with the only candidate **Assoc. Prof. Dr. Penka Vasileva Tsanova**

### **1. Assessment of the conformity of the submitted materials by the candidate for meeting the requirements for obtaining the academic position "Professor"**

This opinion has been prepared in accordance with the Recommendations adopted on February 20, 2018 by the Faculty of Chemistry (FChPh) of Sofia University for the criteria for obtaining scientific degrees and holding academic positions at Sofia University "St. Kl. Ohridski " for professional fields 4.2 " Chemical Sciences " and 7.3 " Pharmacy " (abbreviated as FChPh Recommendations). The requirements of the *Law for the Development of the Academic Staff in the Republic of Bulgaria* (Listed in the State Gazette 2010 and the adopted amendments until March 2021) are also taken into account, as well as the *Regulations on the terms and conditions for acquiring scientific degrees and holding academic positions in Sofia University "St. Kliment Ohridski "* with last amendments from May 26, 2021.

The competition for "professor" was announced in SG, issue 96 page 52 of 19.11.2021. The only candidate in the competition is Assoc. Prof. Dr. Penka Vasileva Tsanova.

The candidate has presented the required in art. 117 of the *Regulations of Sofia University* documents for the competition, which I can evaluate according to the requirements of Section VI. in the FChPh Recommendations, as follows:

Point 1 - Assoc. Prof. Tsanova has been awarded by the Higher Attestation Commission in 2003 with the PhD "Doctor" defended with a dissertation titled "Synthesis of silicon tetrachloride and fine rectification purification of silicon tetrachloride and some organic solvents" in scientific specialty 01.05.02 Inorganic chemistry. The dissertation was developed in the period 1984-1987 at the Faculty of Chemistry at Sofia University.

Point 2, a) - Assoc. Prof. Tsanova has held the academic position of "Associate Professor" at the same university since 2012, ie she meets the requirement to have worked as an associate professor for at least two academic years and not less than five years as defined in point 2 (a).

Point 3 and point 4 - The candidate has submitted in the materials of the competition original research papers - publications. In this regard, *the Additional Recommended Criteria in the FChPh Recommendations of Sofia University* are met (some exceeded):

(a) The applicant has submitted a list of a total of 66 publications (required at least 40) in which she is the author and co-author. Of these, 33 (required at least 30) are publications in peer-reviewed scientific journals, referenced and indexed in Scopus and / or WoS (two of the included A10 and A15 are equated to the reference requirement according to D.3 of the Recommendations). Eight of the publications are in Q1 group journals; with Q2 there are 8 others, and with Q3 and Q4 are 6 and 4 respectively.

b) Outside the dissertation for "Doctor" there are 36 papers (required at least 35) of which 31 are referred (required at least 25).

c) Outside the competition for "associate professor" the candidate submits 36 papers (required at least 15), including 16 publications in scientific journals with quartiles (required at least 10).

d) In the materials of the competition is included HABILITATION WORK of Penka V. Tsanova with clearly defined and significant topic: *Design and characterization of new nanomaterials for speciation analysis of mercury, chromium and iron*. The HW has a volume of 89 pages, includes 41 cited literature sources (of which 8 are self-citations).

e) 153 citations (SCOPUS) are presented (required not less than 80). The included citations are only of the publications submitted for participation in the competition, but the reference in Scopus from 10.03.2022 shows a total of 425 citations of all publications of the candidate reflected in Scopus and h-index = 10 of the candidate.

### Conclusion:

The candidate Assoc. Prof. Dr. Penka Vasileva Tsanova meets and even exceeds the requirements for holding the academic position of "professor" set out in the *Recommendations of the FChPh of Sofia University* and in the *Additional Recommended Criteria* to it.

## **2. Assessment of the professional achievements and merits of the candidate for the academic position "Professor"**

### **2.1. Achievements related to the educational activity**

Assoc. Prof. Tsanova has over 40 years of experience at Sofia University, 26 of which are in academic positions, as can be seen from the attached *Official Note from the Human Resources Department*. In 1982 she entered the University as a "Chemist" in the Laboratory for Highly Pure Substances at the Faculty of Chemistry, and since 1989 she has been an Assistant Prof. in the Department of General and Inorganic Chemistry, where she continues her academic career. Her teaching activities include a wide range of lecture courses: *General Chemistry; Inorganic chemistry; General and inorganic chemistry; Chemistry; Substances of high purity*. They are part of the curricula of many bachelor's and master's programs offered by the FChPh at Sofia University. Impressive are also the developed original elective courses: *Methods for preparation and purification of inorganic substances* and *Basic separation processes in low-tonnage production*. She is a co-supervisor of 1 defended doctoral dissertation (PhD student L. Jerahov with title- *Silver nanoparticles and nanocomposite films based on them with new analytical applications*). Under her leadership, 15 successful graduates worked diploma work.

The candidate has participated in the preparation of 14 textbooks, teaching and methodological aids.

An important positive of the candidate is the demonstrated long-term commitment to the organization and holding of the National Chemistry Olympiads, as she has been the Head of the Bulgarian teams for participation in the International Chemistry Olympiad since 2005. 15 publications are related to this Olympiad and chemistry training. I personally know olympians - students from Plovdiv, who take prizes with extremely high achievements.

Note: The candidate's materials do not contain official information about results from performed survey of the student's opinion on the teaching work of Assoc. Prof. Tsanova or

opinions from the Faculty Attestation commission or from the Faculty Quality commission of the FChPh of Sofia University, with which me, as an external member of the SJ, could not be familiar.

#### Conclusion:

The candidate Assoc. Prof. Tsanova is an established expert and lecturer with extensive academic experience in teaching students from bachelor's and master's programs. She is also involved in the training of doctoral students and graduates, as well as in working with outstanding Olympic students.

### **2.2. Achievements related to research and applied research**

In general, the applicant's research interests relate to the preparation and characterization of substances of high and extremely high purity: physicochemical methods for separation and purification; distillation and rectification processes - mathematical modeling and equipment solutions; chemical methods for the synthesis and characterization of monometallic and bimetallic nanoparticles, nanoscale and submicron inorganic oxides; "Green chemistry"; synthesis and characterization of: metal oxide nanocomposites; hybrid organic-inorganic nanomaterials.

Current results have been achieved in the field of science and technology of nanomaterials: catalytic and photocatalytic activity of metal nanoparticles and metal oxide nanocomposites; sensor applications of metal nanoparticles; nanosorbents in analytical chemistry; biological effects of metal nanoparticles and metal oxide nanocomposites. Results on the development and optimization of new "green" chemical methods for the synthesis of nanoparticles and their composite nanostructures with desired properties, as well as the precise physicochemical characterization of nanomaterials. As an analyst, I particularly appreciate the developments and publications in relation to Analytical Chemistry - for example, those for speciation analysis of toxic and essential elements; separation methods with nanosorbents for solid phase extraction, etc. The attached *AUTHOR'S REFERENCE of the contributions* of Assoc. Prof. Tsanova correctly systematizes the scientific fields in which she has worked and the achieved scientific results in them. It is obvious that the achieved results of high scientific value have an applied character and are in the service of solving real problems of practice. Proof of this are the 9 business contracts for low-tonnage production of chemical reagents and substances of high purity, financed by Bulgarian companies. From the presented lists it is evident that her name is in 34 projects, but there is no indication in which of them she has performed the role of a leader.

### **2.3. Achievements related to transnational, project and administrative activities**

Assoc. Prof. Penka Vasileva undoubtedly has the skills for partnership and the ability to work in a team. Successful collaborations with teams from the Faculty of Biology of Sofia University and the Faculty of Pharmacy of the Medical University, Plovdiv are indicated. Her commitments to the International Chemistry Olympiad (IOC) and her membership in the IOC International Jury were also commented on.

She has participated in two international projects funded by the European Union; 12 projects for research and technological developments, financed by DKNTF, DKIT, MNP, MIP,

Ministry of Education, Youth and Science, MES and 11 funded by the Research Fund at Sofia University "St. Kl. Ohridski "

Her administrative involvement consists in participation in committees at the FChPh: Attestation Commission; Quality Commission; Teaching council, etc. As an external member of the SJ, I am not familiar with and cannot comment on the quality of fulfillment of the administrative duties of the candidate - Assoc. Prof. Tsanova.

### **3. Conclusion of the opinion**

Based on the above facts from the analysis of the submitted documents for research and academic activities of Assoc. Prof. Dr. Penka Vasileva Tsanova, I find it reasonable in this opinion to give a **positive assessment of her candidacy**. I believe that she is a worthy candidate for the academic position of "Professor" of Inorganic Chemistry. I am convinced that her selection will be useful for establishing the authority of Sofia University, and that this will be a good example for the academic community in our country.

I believe that the other members of the esteemed Scientific Jury, after analyzing the submitted competition documentation, will reach the same conclusion and together we will recommend to the Faculty Council of the Faculty of Chemistry and Pharmacy of Sofia University to approve the election of Assoc. Prof. Dr. Penka Vasileva Tsanova for holding the academic position of "professor" in Inorganic Chemistry.

Plovdiv

Prepared the opinion:

10.03.2022

(Assoc. Prof. Dr. Veselin Kmetov)