

## OPINION

by **Dr. Zhelyazka Dimitrova Raykova - Professor at the University of Plovdiv "Paisius of Hilendar"**

of the materials submitted for participation in the competition  
for the academic position of **'Associate Professor'**  
at **Plovdiv University "Paisii Hilendarski"**  
in the field of higher education 1. Pedagogical sciences  
Professional direction 1.3 Pedagogy of teaching ...  
Scientific specialty Didactics of Chemistry

In the competition for **'associate professor'**, announced in the State Gazette, issue 40 from 14.05. 2021 and on the website of Plovdiv University "Paisii Hilendarski" for the needs of the Department of General and Inorganic Chemistry with the Methodology of Chemistry Education at the Faculty of Chemistry, as a candidate **Dr. Yordanka Petrova Stefanova**, Chief assistant in the same department.

### **1. General presentation of the procedure and the candidate**

By order № P33-3163 / 13.07.2021 of the Rector of Plovdiv University "Paisii Hilendarski" I was appointed a member of the Scientific Jury.

The set of materials on electronic media presented by Dr. Yordanka Stefanova is in accordance with the Regulations for development of the academic staff of the University of Plovdiv and includes all necessary documents.

The candidate Dr. Stefanova has submitted a total of **22** scientific papers, of which **2** monographs, **6** articles in peer-reviewed and indexed publications, **14** articles in non-peer-reviewed scientific journals. **4** textbooks have been published in co-authorship and **1** independently - all published by IM "P. Hilendarski". Documents for participation in two national and four university projects, **4** participations in seminars and trainings are also attached; **9** participations in scientific conferences and symposia.

Dr. Yordanka Stefanova graduated from Plovdiv University "Paisii Hilendarski" with a degree in Chemistry and a teacher of chemistry and physics in 1987. She worked for two years as a primary school teacher, which is a good basis for her professional development as a scientist in the field of methodology of teaching chemistry. Since 1989 he has been working as a lecturer at the Faculty of Chemistry at Paisii Hilendarski University of Plovdiv. In 2008 he acquired ONS "Doctor" in the scientific specialty Methodology of teaching chemistry by defending a dissertation on "The explanation in teaching chemistry."

Her research interests are in the field for which the competition has been announced - the methodology of chemistry education.

The high assessment of the educational and pedagogical activity and the preparation of the candidate for the position of "Associate Professor" can be justified by her professional commitment to overfulfill the mandatory teaching standards, with voluntary participation in the Center for Chemical Demonstrations and her competent attitude to work with students, future chemistry teachers.

Her research activity, related to the work on projects, as well as on independently organized scientific research, is a confirmation of the professional opportunities of Dr. Stefanova in the scientific field of the competition. My high assessment of the scientific and applied activity of the candidate is a result of the analysis of the scientific works and the established scientific contributions.

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

### ***Assessment of educational and pedagogical activity of the candidate***

The educational activity of Dr. Yordanka Stefanova is mainly related to academic disciplines that are relevant to the direction of the competition. She actively participates in the preparation of 6 curricula, in the development of 3 lecture courses - "Modern educational technologies in education", "School legislation and educational documentation", "Methodology of training in specialized training in chemistry", in the management of a master's program and is the scientific supervisor of a doctoral student. All this is more indicative of a good teaching and organizational experience.

### ***Evaluation of the scientific and scientific-applied activity of the candidate***

The main research highlights in Dr. Stefanova's publications are:

- *Formation and development of scientific literacy* (Publications № 1, 2, 11, 14, 16)

Dr. Stefanova has analyzed educational documentation in chemistry in terms of the place and importance of science literacy in it. She conducted an interesting study on the notions of scientific literacy of teachers and students, future teachers of chemistry. The results can be seen as a contribution to the enrichment of the theory of methodology of teaching chemistry and be useful for future researchers in this field and practicing teachers.

- *Application of a constructivist approach in chemistry education* (Publications № 4, 6, 13, 15, 18)

Constructivist theory has a great application in the study of natural sciences and the candidate's interest in this topic is natural. I evaluate as a positive contribution the methodological models proposed by her, based on constructivist ideas for explanation and description of cognitive problems in the study of chemical phenomena. Dr. Stefanova's shared experience in organizing modern chemistry education in high school is valuable and useful.

- *Formation and development of key competences* (Publications № 5, 8 and 9)

The modern concept of key competencies finds a place among the scientific interests of Dr. Stefanova. In her latest publications, she reflects the results of the research undertaken on this topic and offers ideas for the formation of key competencies in the study of chemistry in high school. I assume that the guidelines for the future research development of the candidate will be related to this topic.

- *The explanation in chemistry education* (Publications № 3 and 10)

Dr. Stefanova has been working on this topic since the time she prepared her doctoral thesis. The significance of the explanation in the study of the natural sciences is indisputable. I evaluate the proposed methodological models for inductive and deductive explanation of chemical facts, concepts and regularities included in the school course as useful and of a contributory nature for the methodology of teaching chemistry.

The presented monograph "*Modern educational technologies in teaching chemistry and environmental protection*" summarizes the research and teaching experience of Dr. Stefanova. As a reviewer of the book, I had the opportunity to read it in more depth and discuss with the author some of the ideas in it. The monograph examines current issues about the state and some trends in the pedagogy of chemistry education, considered in the context of chemistry education in the Bulgarian school. On the basis of the constructivist paradigm the problem of the personality-oriented educational technologies and their combination with the characteristic features in the study of the subject Chemistry and Environmental Protection is considered. Many examples are shared that illustrate the described technological solutions. This determines the practical value of the monograph and makes it useful for chemistry teachers and researchers in the field of chemistry teaching methodology.

In general, a high assessment can be given of the scientific and scientific-applied production presented by Dr. Stefanova in the field of the Didactics of Chemistry. As a support for this overall assessment of the scientific contributions, the fact that the candidate's works have been cited in **13** publications can be mentioned.

The presented report on the implementation of the minimum national requirements for holding the academic position of "Associate Professor" shows that the candidate fully meets the requirements for the various groups of indicators. The review of the reliability of the presented data and evidence convinces me of their truthfulness and correctness.

## 2. Critical remarks and recommendations

I have the following recommendation for the research and teaching activities of the candidate: In her future professional development it is good for Dr. Stefanova to link her research efforts to study modern educational technologies in closer connection with the increased opportunities of ICT (for example, training with mobile devices and through cloud technologies).

I have been working with Dr. Yordanka Stefanova since she started working at the university, when we were initially members of a common department of the University "Methodology of Education". Over the years we have had excellent collegial or relationship and our joint work has convinced me that she is a disciplined and purposeful researcher, ethical and respected colleague.

## CONCLUSION

The documents and materials submitted by **Ch. Assistant Professor Dr. Yordanka Petrova Stefanova** meet all the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the implementation of ZRASRB and the relevant Regulations of PU "Paisii Hilendarski".

The candidate in the competition has submitted a **sufficient** number of scientific papers, published after the materials used in the defense of ONS "Doctor". In the works of the candidate there are original scientific and applied contributions, which have received international recognition and some of them are published in journals and scientific journals published by international academic publishers. Her theoretical developments have practical applicability, and most of them are directly oriented to the educational work. The scientific and teaching qualification of *Dr. Yordanka Petrova Stefanova* is **undoubted**.

After getting acquainted with the materials and scientific works presented in the competition, analysis of their significance and the scientific, scientific-applied and applied contributions contained in them, I find it reasonable to give my **positive conclusion** and recommend to the Scientific Jury to prepare a report-proposal to the Faculty Council of the Faculty of Physics and Technology for election of Dr. Yordanka Petrova Stefanova to the academic position of "Associate Professor" at the University of Plovdiv "Paisii Hilendarski" by professional field 1.3. Pedagogy of teaching ... (Didactics of Chemistry).

07.09. 2021

Prepared the opinion: .....  
Prof. Dr. Zhelyazka Raykova