

ATTITUDE OF REVIEWER

Prof. Maria Milinova Milanova, PhD, University of Sofia „St. Kl. Ohridski“

With respect to the materials, submitted for participation in the competition for occupying the academic position of **Professor** at the Institute of General and Inorganic Chemistry, BAS, Professional field 4.2. “Chemical Sciences”, Scientific research specialty „Inorganic Chemistry“

On the basis of Order № ПД-09-81 dated 01.07.2019 by the Director of the Institute of General and Inorganic Chemistry (IGIC), BAS, I have been appointed as a member of the Scientific Jury in the competition for occupying the academic position ‘Professor’ in professional field 4.2. “Chemical Sciences”, scientific research specialty „Inorganic Chemistry“, announced for the needs of IGIC, BAS, Laboratory „Intermetalides and intercalation materials“.

Assoc. Prof. Violeta Georgieva Koleva, PhD, from IGIC, BAS is the only candidate who submitted her application documents for participation in the announced competition (State Gazette, № 36/03.05.2019). The set of paper materials presented by Assoc. Prof. Koleva is in accordance with the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the implementation of this law and the respective Regulations for the conditions and the order for acquiring scientific degrees and for taking academic positions at IGIC, BAS.

Assoc. Prof. Koleva graduated in the year 1984 the Faculty of Chemistry at University of Sofia "St. Kliment Ohridski" acquiring the Master's degree in Chemistry with a specialization in Inorganic and Analytical Chemistry. She defended her doctoral dissertation at High Chemical Technology Institute in Sofia (at present University for Chemical Technology and Metallurgy) on the topic “Investigation of the dehydration process and IR spectra of iodate hydrates of some divalent metals” and in 1994 she acquired the scientific degree of Candidate of Chemical Sciences, (PhD). In 1994 she was appointed in the position of chemist in IGIC, BAS, and in 2007 she was promoted to Senior Research Fellow II degree, later in 2010 appointed to the academic position of Associate Professor.

Assoc. Prof. Koleva is an author of a total of 77 scientific papers; 74 of them published in peer-reviewed journals with IF, 3 in journals without IF; she has in total 822 quotations of her research (599, Scopus) achieving h-index 13 (Scopus). In the competition for the academic position of "Professor" she participates with 41 scientific papers that have not been used neither in her PhD thesis nor in her promotion to Senior Research Fellow II degree/Associate Professor. The publications, submitted for participation in the competition are 1 review, 40 articles in peer-reviewed journals with IF, of which 38 in international publications and 3 in national journals; 1 article in a refereed journal with SJR. In terms of authorship, 2 of the articles have two authors, 14 have three authors, and the rest have four or more authors. The reference attached for the scientific activity of Assoc. Prof. Dr. Koleva, prepared in accordance with the requirements of Art. 2b, clause 2 of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the additional requirements of the IGIC, BAS, shows that the number of points considerably exceeds the minimal national requirements.

The scientific research activities of Assoc. Prof. Koleva are connected with two scientific areas. The *first one*, presented through 15 publications, includes studies on the synthesis, structure, morphology and electrochemical properties of lithium and sodium trans-metal phosphates as electrode materials for lithium and sodium ion batteries. The topic of the research is important and concerns the problems of the energy storage. The impact of Assoc. Prof. Koleva is the new topic "Phosphates salts as electrode materials in ecological rechargeable batteries", developed at the Laboratory "Intermetalides and intercalation materials" at IGIC, BAS. New approaches and new methods for the synthesis of nanosized lithium and sodium trans-metal phosphates, namely the phosphate-formate method and ion exchange based on dittmarite type precursors for the synthesis of lithium and sodium phosphor-olivines, have been developed by Assoc. Prof. Koleva. In these studies, structural and spectroscopic characterizations of lithium and sodium transition-metal phosphates as

electrode materials for lithium and sodium ion batteries have been performed. The effect of precursor morphology on the target phosphate morphology has been established.

The *second line* of scientific research is reflected in 26 articles and is the application of molecular spectroscopy to characterize salts and thin films. The contribution of Assoc. Koleva are the vibration characteristics of salts with strong hydrogen bonds, the spectrum-structure connection proven, as well as the conducting of synthesis and characterization of electrochromic thin films based on manganese and vanadium oxides and nickel hydroxides as electrode materials for super capacitors.

The research work is related to both cooperation within the framework of IGIC and international cooperation with scientists from the University "St. St. Cyril and Methodius" Northern Macedonia. After promotion to Senior Research Fellow in the period (2008-2019) the results of her studies have been presented in 17 national and 55 international forums, including national ones with international participation, both through poster presentations and 10 oral reports, 1 of which is invited lecture.

The significance of the research of Assoc. Prof. Koleva is reflected in the works of other authors, namely the papers submitted for the competition and published in the period 2008 - 2019 have been cited 379 times (Scopus, Google Scholar, etc.).

The **educational training activity** of Assoc. Prof. Koleva is expressed by the guidance along with other scientists of 3 theses for the award of the educational and scientific degree "PhD", one of which to the IGIC, BAS and two for the Institute of Chemistry at the University "St. St. Cyril and Methodius", Northern Macedonia. The **project activities** of Assoc. Prof. Koleva comprise the leadership of 3 projects on bilateral scientific cooperation with the University "St. St. Cyril and Methodius", as well as a membership in the scientific teams of 11 projects, 6 of which are ongoing. As an **expert**, Assoc. Prof. Koleva reviews manuscripts for well-known scientific journals, like Vibrational Spectroscopy, Journal of Mol. Structure, Journal of Alloys and Compounds, just to mention a few.

Assoc. Prof. Koleva is a very active person in the **organizational activities** within the IGIC, BAS, as a member of the IGIC Scientific Council and chair of the IGIC Colloquium (since 2016), member of the IGIC Attestation Committee and chair of the Inorganic Materials Science Seminar at IGIC (since 2012).

I know Assoc. Prof. V. Koleva as an enthusiastic and dedicated researcher so I am convinced that as a professor, she will contribute to the further development and consolidation of the IGIC as a prominent research center.

CONCLUSION

The documents and the materials, submitted by Assoc. Prof. Koleva fulfill all the requirements of **the Law for the Development of the Academic Staff in the Republic of Bulgaria**, the Regulations for the application of this law and the respective Regulations of IGIC, BAS.

A sufficient number of research publications have been presented, published after the materials, used for defending the PhD thesis and those submitted for occupying the academic position of Assoc. Professor. The results achieved by Assoc. Prof. Koleva in her scientific research are **in complete correspondence with** the specific requirements of IGIC, BAS, accepted in connection with the Regulations for the application of the **Law for the Development of the Academic Staff**.

I give my positive estimation and I recommend Assoc. Prof. Koleva to be appointed in the academic position of Professor in IGIC, BAS, in the professional field 4.2. Chemical Sciences, scientific specialty „Inorganic Chemistry“.

Date 20.08.2019

Reviewer:

Prof. PhD Maria Milanova