



REPORT

from assoc. prof. Dr eng. Andriana Risk Surleva

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on: a competition for the academic position of "Associate Professor" in the scientific area 4. Natural Sciences, Mathematics and Informatics, professional area 4.2 Chemical Sciences, scientific specialty Analytical Chemistry (Instrumental Methods of Analysis), announced by the University "Prof. Dr Assen Zlatarov" in SG issue 105 / 11.12.2020.

The only applicant for the announced academic position is senior assistant professor Dr Lenia-Nazaet de Brito Gonsalvesh – Musakova.

1. Biographical data

Senior assist. prof. Dr Lenia Gonsalvesh-Musakova graduated in Chemistry and obtained MSc degree in "Modern spectral and chromatographic techniques for analysis" at the "St. Kliment Ohridski" University of Sofia. In 2012 she defended PhD thesis on "Study of sulfur and organic sulfur compounds in low-grade coal" at the Institute of Organic Chemistry with the Center for Phytochemistry, BAS and the University of Hasselt, Belgium. She followed postdoctoral training at the University of Hasselt, Belgium, broadening her PhD research in the field of valorization of waste biomass in value-added products through slow pyrolysis. She expanded her competence in the field of GC/MS analysis of liquid products from semi-coking of coal and biodesulfurization of coal through participation in international mobility at the Sabantsi University, the National Technical University of Donetsk, Ukraine, the University of Hasselt, Belgium.

Her professional career began at the Institute of Organic Chemistry-BAS as a chemist, assistant and senior assistant in solid fuel chemistry. Since 2015 Dr L. Gonsalvesh is a senior assistant at the University "Prof. Dr. As. Zlatarov", Central Research Laboratory, since 2019 - a senior assistant at the Department of Chemistry at the same university.

2. General characteristics and evaluation of the research activity

The research interest of Dr L. Gonsalvesh-Musakova could be divided in the following directions:

- *Study of the organic sulfur containing species and the composition of the organic matter of fossil solid fuels and other geological objects*

In this direction, Dr L. Gonsalves-Musakova developed new or improved existing analytical methods, tools and experimental approaches: temperature programmed reduction at atmospheric pressure combined online with mass spectrometer; temperature programmed oxidation at atmospheric pressure with offline system for thermal desorption and gas chromatographic separation with mass spectrometric detection; liquid extraction and high performance liquid chromatography. It should be noted the innovative approach in combining sample preparation

techniques, instrumental methods of analysis and interpretation of analytical data, which allowed to obtain information about the content of sulfur-containing compounds in coal and study the mechanism of their biodesulfurization. I would estimate this research as fundamental one, as it provided a tool that opened up the possibility of obtaining new data and studying the mechanism of processes. It was confirmed by its successful application not only for the characterization of coal, but also in the study of geochemical processes, as well as in research related to medical geology. The developed strategy and tools for obtaining analytical information have been successfully implemented (9 publications) and presented significant interest to the scientific community - 67 citations, which clearly demonstrated the relevance of the research in this area.

- Recovery of industrial and municipal waste by pyrolysis and activation to obtain "value-added products". Characterization and application of activated carbon.

Dr L. Gonsalvesh-Musakova applied innovative approach to achieve the aim of this study: valorisation of waste products. A smart combination of advantages of various analytical techniques and interpretation of the obtained analytical results were proposed. The analytical data obtained were a base for optimization of the technology for obtaining "value-added products" – also contribution of the applicant. The results could be considered as scientific and applied. Scientific-applied contribution: new data about the effect of the precursors characteristics, contents of inorganic components, the effect of the conditions of carbonization and activation on the yield and characteristics of the solid products; the mechanism of adsorption of Cr (VI) and Ni (II) ions on the obtained activated carbons were revealed. Applied contribution: it was demonstrated that slow pyrolysis was an effective approach for recovery of technological and household waste by converting them into products with potential application as adsorbents.

The research results were presented in 7 publications. Their relevance was evidenced by the high ranked journals, the large number of citations (45), as well as the fact that some of them were obtained in the frame of an international project.

- Assessment of air quality by determination of polycyclic aromatic hydrocarbons in fine particulate matter

Dr L. Gonsalvesh-Musakova is developing this area in the framework of an ongoing project funded by the NSF-MES, Bulgaria which clearly demonstrates its relevance. The quality of the obtained results and the derived conclusions is evidenced by the fact that two recently published scientific papers already have two citations. I would define the results in this direction as: scientific and applied - developed and validated methodology for qualitative and quantitative determination at trace levels of 19 polycyclic aromatic hydrocarbons fine particulate matter, based on liquid extraction and gas chromatography with mass spectrometric detection; applied - a point for sampling and monitoring of atmospheric aerosol has been built.

I believe that the participation in scientific forums is an important criterion for the applicant's skills to present and defend results in front of research community. Dr L. Gonsalvesh demonstrated high activity - 30 participations in national and international conferences. She received an award for the best research paper at the 56th Science Conference of the University of Russe, 2017.

4. General characteristics and evaluation of other activities

In addition to the active research and teaching activities, the university service activity of Dr Gonsalvesh-Musakova is also impressive: responsible of the Central research Laboratory at the University "Prof. Asen Zlatarov", Technical Secretary of the Faculty Council of the Faculty of Natural Sciences and the Scientific Colloquium "Technical and Natural Sciences", Member of the Commission for evaluation and maintenance the quality of education, member of the General Assembly of the Faculty of Natural Sciences. This clearly demonstrates the skills of Dr Lenia Gonsalves-Musakova to manage her tasks and time, as well as her commitment to the activities and mission of the university.

5. Fulfillment of the requirements for the academic position of "Associate Professor"

The candidate Dr Lenia Gonsalvesh-Musakova meets all the requirements for the academic position of "Associate Professor".

In group A - she holds PhD , thesis entitled "Study of sulfur and organic sulfur compounds in low-grade coal" by the Institute of Organic Chemistry with the Center for Phytochemistry, BAS and the University of Hasselt, Belgium - 50 points.

In group B, indicator 4 – 4 research papers in Q1 journals referenced and indexed in the Web of Science and Scopus databases - 100 points.

In group D, indicator 7 Scientific publications referenced and indexed the Web of Science and Scopus database not included in indicator 4: 14 papers with 228 points.

In group D - 72 citations in papers published in journals, referenced and indexed the Web of Science and Scopus - 144 points.

In group E – participation in 9 projects, 8 national and 1 international - 100 points.

The applicant Dr Lenia-Nezaet de Brito Gonsalvesh-Musakova meets and even exceeds for some indicators the requirements for holding the academic position of "Associate Professor".

6. Recommendations, questions and remarks: none

Conclusion: with this report I am confidently expressing my positive assessment of the applicant's activity and I recommend to the Scientific Jury to propose to the Faculty Council of the Faculty of Natural Sciences to approve senior assistant professor Dr Lenia-Nezaet de Brito Gonsalvesh-Musakova for the academic position of "associate professor" in the scientific area 4. Natural Sciences, Mathematics and Informatics, professional area 4.2 Chemical Sciences, scientific specialty Analytical Chemistry (Instrumental Methods of Analysis) at the University " Prof. Dr Assen Zlatarov ".

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/assoc. prof. Andriana Surleva/