

OPINION

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On the materials presented for the competition
for the occupation of the academic position "Associate Professor"
in Area of Higher Education - 5. Technical sciences
Professional field - 5.13. General engineering
Specialty - Engineering Ecology

In the competition for associate professor, announced in the State Gazette, issue 68 / 31.07.2020 and on the website of TU-Gabrovo for the needs of the Department of Mathematics, Informatics and Natural Sciences at the Faculty of Economics, as a candidate participates Ch. Assistant Professor Dragomir Stoyanov Vassilev, Ph.D.

1. An overview of the content and the results of the presented works

The candidate for participation in the competition for associate professor Ch. Assistant Professor Dragomir Stoyanov Vassilev, PhD, presented all the materials and documents necessary for the preparation of this opinion. In 2003 he received a diploma for teaching qualification in Chemistry at Plovdiv University "Paisii Hilendarski". At the same time he received a bachelor's degree in chemistry in 2003 and a master's degree in medical chemistry in 2004. He defended his dissertation in 2016 on "Ultrasonic synthesis of biodegradable plasticizers for plastics" in the scientific specialty "Organic Chemistry" at the University of Food Technology Plovdiv. In 2016 at TU-Gabrovo received a master's degree in "Environmental Protection and Sustainable Development", and in 2019 Master in Occupational Safety.

The main accents when comparing the minimum requirements by groups of indicators show the following: group A - 50 points, ie. meets the minimum requirements; group B - 100 points - monograph; group D - scientific publications 272.3 points - about 30% more; group D - the cited 76 points about 20% more; Projects: 4 pcs. of 2 is the head, national - 18 pcs. in which in a participant; My general impression is of a significant over fulfillment of the minimum requirements. Separately, the requirements for the number of citations - a total of 10 bearing 76 points with a minimum requirement of 50 points or almost 30% more. Of all 31 publications - in 16 first author, 5 are independent, 2 abroad, and his participation in conferences is 29.

2. General characteristics of the candidate's activity

2.1. Educational and pedagogical activity (work with students and doctoral students)

Educational and pedagogical activity of Dragomir Stoyanov Vassilev began in 11.2004 and until now at the Technical University - Gabrovo in the Department of Mathematics, Informatics and Natural Sciences. Briefly for 16 years teacher of chemistry, bachelor of chemistry, 3 master's degrees and 1 doctorate in the field of chemical sciences, environmental protection and the working environment and sustainable development.

The educational and pedagogical activity can be presented as follows: lecturer of disciplines - 16, development of teaching programs - 4, issued textbooks - 5. Management of student groups - 8, participation in state examination commissions - 2, management of graduates - 6 and 22 reviews of diploma theses. One of the essential merits of the candidate Dragomir Stoyanov Vassilev are the textbooks and manuals written as an author and co-author.

2.2. Scientific and scientific-applied activity

Thematic area 1. Application of ultrasonic and microwave energy for synthesis and modification of organic compounds

PUBLICATIONS /B.1, B.8.1, B.8.10, B.8.18, B.8.23, B.8.24, B.8.25, B.8.26, B.8.30, B.8.31.

The monograph "Modern engineering solutions for synthesis, modification and application of organic compounds through the application of ultrasonic and microwave energy" published by the University Publishing House "Vasil Aprilov" - Gabrovo with ISBN: 978-954-683-619-9 is presented. Modern engineering solutions for synthesis, modification and application of organic compounds through the introduction of green technologies are considered, aiming to reduce and limit the application of conventional chemical technologies, and their replacement leads to modern solutions to reduce pollutants in the three areas (water basins, soils and air with hazardous wastes from chemical production). I accept the monograph on the basis of the accepted requirements for holding the academic position of "Associate Professor".

Innovative methods for the synthesis of polymers and for the modification of carbohydrates are presented in the presented publications. The synthesis and modification of natural organic compounds under ultrasonic treatment, which includes the synthesis of esters of higher fatty acids, are considered, and the mechanism of Fisher esterification as well as transesterification is clearly presented. This is proof that the applied innovative methods for synthesis - ultrasonic and microwave effects meet the basic requirements of scientific approaches to solving environmental problems - energy savings, minimum consumption of raw materials, reagents, consumables, reduced waste of non-renewable products, and preservation of the biological value of natural products.

Thematic area 2. Engineering ecology and environmental protection

PUBLICATIONS /B.8.2, B.8.3, B.8.4, B.8.6, B.8.11, B.8.17, B.8.19, B.8.20, B.8.28, B.8.29 /.

The content of active oxygen in the obtained oxide systems was studied, as well as its influence depending on the pH of the medium. The specific surface of the catalytic systems was studied. It has been shown that the catalysts obtained can be successfully used in environmental catalysis for the catalytic purification of fluids (gases and liquids) containing organic substances, which is favored by the high content of active oxygen due to the production method used.

Thematic area 3. Ensuring safety at risk of exposure to chemicals in the workplace

PUBLICATIONS /B.8.5, B.8.9, B.8.16, B.8.21 /

Risk assessment is a dynamic process that allows companies and organizations to implement a proactive policy of managing risks in the workplace. There are two principles that should always be kept in mind when initiating a risk assessment: structuring the assessment to ensure that all relevant hazards and risks are addressed. The European Guidance on Risk Assessment at Work proposes an approach based on a few steps. There is no single "correct" way to perform a risk assessment and different approaches can be used in different circumstances. New approaches have been proposed for assessing the risks associated with working with chemicals. A methodology is proposed, which is based on the classification of chemical substances or their mixtures, according to the current legislation.

2.3. Implementation activity

A risk assessment has been developed through the OiRA online platform, which consists of an OiRA generator tool (where developers create sector tools) and OiRA sector risk assessment tools, available through an interactive website where micro and small enterprises can perform risk assessment. The assessment is developed on the basis of the methodology for economic activity "Human Health" created by the author.

3. Contributions (scientific, scientific-applied, applied). Significance of contributions to science and practice

1. New catalytic systems for complete oxidation based on metal oxides have been obtained, their applicability for treatment of wastewater contaminated with organic substances has been established, and a tool for monitoring parameters of a flow-circulation reactor for complete catalytic oxidation has been prepared.

2. Ultrasonic and microwave was applied in the preparation of esters of higher fatty acids and the optimal reaction parameters for conducting ultrasonic synthesis of esters of higher unsaturated fatty acids were established.
3. Microwave was applied and new organic substances with potential biological activity were obtained.
4. The antimicrobial and antifungal activity of ultrasonic esters has been demonstrated.
5. The applicability of sucrose palmitate and inulin acetate as a biodegradable plasticizer in PVC processing has been studied and proven. The morphology of plasticized polyvinyl chloride with sucrose palmitate was established with the help of SEM.

According to the scientific, scientific-applied and applied contributions, I assume that they consist of:

1. Proving with new means of essential new aspects of already existing scientific fields, problems, theories, hypotheses;
2. Formulation or substantiation of a new theory or hypothesis;
3. Implementation of modern technology-based solutions in business and industry, business models and processes and effective use of information systems.

4. Assessment of the candidate's personal contribution

From what has been said so far, I can conclude: I accept the formulated scientific, scientific-applied and applied contributions of the candidate, finding that some of them can be regrouped and refined, as they represent further development and enrichment of existing knowledge with new research.

5. Critical notes and recommendations

These contributions are the personal work of the applicant. The authorship of the candidate is clearly distinguished in the collective scientific works. There is no difference between the way, the approach and the analysis, which is done in the monograph, the textbook and in the presented scientific articles. This gives me reason to assume that Chief Assistant Dr. Eng. Dragomir Stoyanov Vassilev presents original scientific works, which are his personal work.

6. Personal impressions

I have no critical remarks, except that the materials presented in the tender documentation are extensive in terms of scientific interests and areas, as well as in terms of quantitative measures. This creates certain difficulties in seeking synergies and generalizations, standardization and unification.

7. Conclusion:

Given the above, I propose Ch. Assistant Professor Eng. Dragomir Stoyanov Vassilev, PhD to take up the academic position of "Associate Professor" in the Area of higher education 5. Technical sciences, professional field 5.13. General Engineering, specialty - Engineering Ecology.

27/10/2020

Jury member: /signature/
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