

OPINION

on competition for the academic position of “Associate Professor”

at the Faculty of Chemistry and Pharmacy, of Sofia University "St. Kliment Ohridski" in the professional field 4.2. Chemical Sciences (Inorganic chemistry), announced in SG, issue 15 of 15.03.2022,

with candidate: Assistant Professor Dr. Nina Veselinova Kaneva – Dobrevska (FChPh at Sofia University)

by Associate Professor Dr. Joana Tsvetanova Zaharieva (FChPh at Sofia University)

A. Fulfillment of the minimum national and additional SU-FChPh criteria for holding the academic position "Associate Professor"

The set of documents submitted by Dr. Nina Kaneva – Dobrevska includes habilitation thesis, based on 6 articles, focused on the preparation of catalysts for water purification from organic substances. Along side the thesis the set of documents includes 13 articles in which she emphasizes on the use of thin film catalysts for degradation of some dyes and pharmaceuticals. All of articles are published in peer-reviewed and indexed journals with high impact factor. A total of 309 citations were noted, 111 of them are on an article not included in the habilitation thesis. The citations on the articles included in the habilitation thesis are 57. She is a participant in several national and international research projects (scientific leader to one of them).

Dr. Kaneva – Dobrevska is a lecturer at the Faculty of Chemistry and Pharmacy, where she leads exercises and seminars in “General chemistry” and “Inorganic chemistry” for undergraduate students in almost all Bachelor’s degrees including “Chemistry”, “Chemistry and English”, “Chemistry and Informatics”, “Pharmacy”, “Chemical Engineering and Contemporary Materials”, “Ecochemistry”, “Computer chemistry”, “Nuclear Chemistry”, “Biology”, “Biology and Chemistry”, “Molecular Biology”, “Biotechnology”, “Ecology and Environmental Protection”. She is a scientific advisor for 11 theoretical and 2 experimental course projects.

All the above indicates that the scientific work of Dr. Kaneva – Dobrevska fulfills the requirements for holding the academic position “Associate Professor” in the department of Inorganic Chemistry of FChPh.

B. General characteristics of the research activity

- Main scientific contributions presented in the habilitation thesis

Nowadays one of the most serious problems the humanity faces is the protection of the environment. The main reasons for the environmental contamination are the human activity and the insufficient number of sewage treatment plants. Many contaminants (dyes, hormones, pesticides, pharmaceuticals, and others) are continuously released into surface waters. Therefore, the decontamination of surface and tap water of organic pollutants is becoming increasingly relevant. Dr. Kaneva-Dobrevska's habilitation thesis, entitled "Water purification from organic pollutants by heterogeneous photocatalysis" is also aimed at this problem. The main contributions of Dr. Kaneva-Dobrevska are related to the preparation and characterization of catalysts suitable for this purpose, as well as the conduct of photocatalytic experiments. Model solutions containing different types of contaminants such as dyes (malachite green, brilliant green) and drugs (paracetamol, chloramphenicol) are the subject of her research.

Various methods have been used to prepare the catalysts and several factors affecting their activity have been investigated.

- Scientific contributions presented in the articles, not included in the habilitation thesis

The basis of these studies is the doping of ZnO with Ni, Ti, La, Ce, Eu and obtaining composites in the form of powder or thin films, which have a potential application as photocatalysts. The influence of the synthesis methods and conditions, as well as the influence of the amount of doping agent, were investigated. Model solutions were extended (composites were tested for degradation of Reactive Black and Orange II dyes). The information from the studies carried out is necessary to understand the structural features of the obtained catalysts and how they correlate with their photocatalytic properties.

C. Recommendations

Dr. Nina Kaneva-Dobrevska's research is aimed at studying the photocatalytic properties of ZnO and composites based on it, used for water purification. Since the topic is interesting and current, the candidate could develop her scientific interests, considering new approaches in the selection and preparation of different photocatalysts (single or composite materials).

D. Conclusions

The research conducted by Dr. Kaneva-Dobrevska presents interesting data on the photocatalytic properties of ZnO-based thin films and composite materials. Based on her research and teaching activities, I propose to the scientific jury to propose to the Faculty Council to elect Ch. Assistant Professor Nina Veselinova Kaneva-Dobrevska at the academic position of "Associate Professor" in Professional field 4.2. Chemical Sciences (Inorganic Chemistry) at the Faculty of Chemistry and Pharmacy at the Sofia University "St. Kliment Ohridski".

08.07.2022

Joana Tsvetanova Zaharieva