

Report

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on the materials presented for participation in the competition for the academic post of "Associate Professor" in *Natural sciences, mathematics and informatics*, professional field 4.2. *Chemical Sciences* (scientific specialty "Inorganic Chemistry")

The only candidate in the competition for "Associate Professor" announced in the *State Gazette*, issue 21/13, March 2020 is **Head Assistant Professor Martin Petrov Tsvetkov, PhD** from the Department of General and Inorganic Chemistry, Faculty of Chemistry and Pharmacy, Sofia University.

1. General presentation of the procedure and of the applicant

The materials presented by Assistant Professor Dr. M. Tsvetkov are in accordance with the Regulations for the Implementation of the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), Regulations for the Development of the Academic Staff of the Sofia University, and meet the requirements of the Faculty of Chemistry and Pharmacy for the academic post "Associate Professor".

The candidate has submitted 19 scientific papers in the competition's research domain published in the period 2012-2020. They are not included in his PhD thesis and I accept to review all of them in my report. From these 19 papers, 18 are in journals with impact factor (IF), distributed between the quartiles as follows: 5 in Q1 journals; 5 in Q2 journals, 3 in Q3 journals and 5 – in Q4 journals.

Within the criterion B, five publications are included (3 in Q1, 1 in Q2 journals and 1 in journal with SJR). Within the criterion G, 14 papers are included (2 in Q1, 4 in Q2, 3 in Q3 and 5 in Q4 journals). In addition in the reference for fulfillment of the minimum requirements the following information is provided: 50 citations, participation in 7 research projects (the candidate is a leader of four of them) and h-index 4. Within criteria B, G, D and E the candidate exceeds the necessary number of points according to the specific requirements of the Faculty of Chemistry and Pharmacy for the academic post "Associate Professor".

The biographical reference of Dr. Tsvetkov shows that his higher education and subsequent academic development are in the field and professional direction of the competition. It should be pointed out that his leading research results have been obtained at the Faculty of Chemistry and Pharmacy, Sofia University. The report on the educational and pedagogical activity of the candidate unequivocally shows his commitment to the teaching activities of the Department of General and Inorganic Chemistry and it is necessary to stress on the elective courses led by Dr. Tsvetkov on "Equilibrium physical properties of single crystals" and "Single crystals and materials for fiber optics". These facts reveal the

relationship between the research and teaching activity of Dr. Tsvetkov with the scientific areas in the Faculty of Chemistry and Pharmacy and suggest future benefits for the Faculty and the Department of General and Inorganic Chemistry as a result of his habilitation.

2. General characteristics of the applicant's research activity.

Depending on the research objects of research, the candidate divides the presented scientific publications into two fields, in which he has indicated his contributions in the attached reference:

1) Synthesis, characterization and (photo)catalytic properties of transition metal oxides

The main goal of the research in this field is the decomposition of organic pollutants in water through improved oxidation processes. A wide range of materials that have been synthesized and characterized are studied. The applicant determines his contributions both in the synthesis and in characterization of the catalysts, as well as in the performance of photocatalytic experiments and the proposed mechanisms for the catalytic reactions. In the same thematic field is the habilitation work of the applicant entitled "Improved oxidative processes (AOP)". The future plans announced in it include the research on pharmaceutical products. I recommend to Dr. Tsvetkov in his future research to include the less studied at the moment organic pollutants that are a part of personal care products. Such studies are of particular importance given their presence in treated wastewater discharged from wastewater treatment plants.

2) Structural characterization of lanthanide ions modified materials

The research activity in this thematic area is a result of the applicant's visits to the Joint Institute for Nuclear Research in Dubna and the conducted joint research. Dr. Tsvetkov's contributions in the three scientific publications are not only in the synthesis of materials but also in their characterization and analysis through a wide range of methods and approaches such as X-ray and neutron diffraction, Mossbauer and Raman spectroscopy, TEM, Rietveld and TDPAC methods. The obtained results reveal new information and possibilities for modification of materials with lanthanide ions.

Most of the research works of Dr. Tsvetkov presented in the competition, a total of 10, have been published in scientific journals in categories Q1 and Q2. A proof for the quality of the presented research is their publication in renowned scientific journals in the field of catalysis and materials science, such as Catalysis Today, Catalysis Communications and Materials chemistry and physics. It should be stressed on the active publishing activity of the candidate in the period after acquiring the educational and scientific degree "Doctor" (2016). Only in 2019 6 articles with his participation have been published. For the same period the scientific works of Dr. Tsvetkov have been cited 68 times (Scopus).

CONCLUSION

The documents and materials presented by Head Assoc. Prof. Dr. Martin Tsvetkov meet the requirements of the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations for the Implementation of ADASRB, the Regulations for the Implementation of ADASRB of Sofia University and the specific Regulations of the Faculty of Chemistry and Pharmacy.

Dr. Tsvetkov has original scientific and applied contributions, which almost all of them published in scientific journals with an impact factor, that has given them significant international recognition. In all publications the candidate has a significant contribution to the presented results.

The above gives me a reason to assess positively the candidature of Dr. Tsvetkov and to recommend to the Scientific Jury to prepare a proposal to the Scientific Council of the Faculty of Chemistry and Pharmacy, Sofia University for election of Head Assistant Professor Dr. Martin Tsvetkov for the academic position "Associate Professor" at the Faculty of Chemistry and Pharmacy, Sofia University in the professional field 4.2. Chemical sciences (Inorganic chemistry).

21 August 2020

prof. Stefan Tsakovski, PhD