

Opinion

for a contest for obtaining an academic position «Associate Professor»

Professional field 4.2 Chemical Sciences (Physical chemistry)

Announced in SN no. 51 of 13.06.2023

Candidate: Chief Assistant Dr. Plamen Hristov Tchoukov

by Prof. Dr. Slavka Stoyanova Tcholakova

Part of the scientific jury



Plamen Chukov has diploma N 30641 of 03/07/2006 from the VAK (Higher Attestation Commission) for the acquired scientific degree "doctor", which satisfies the requirements of Art. 53 par. 1 item 1 of the PP ZRASRB (The regulations for implementing the law on the development of the academic staff in the Republic of Bulgaria). It is evident from the certificate of work experience N 284 dated 01/08/2023 from IPC-BAN (Institute of Physical Chemistry in Bulgarian Academy of Science), that he held the academic position of "chief assistant" for more than 12 years, thereby satisfying the requirement of Art. 53 par. 1 item 2 of the PP ZRASRB. To fulfil the requirements of Art. 53 par. 1 item 3 the candidate has presented a total of 6 publications (4 in journals in the Q1 quartile and 2 in the Q2 quartile), of which he is the first author of two of these publications and the second author of the remaining 4, which shows that he has a substantial contribution in conducting relevant research. The publications are related to the understanding of the stability of water-in-oil emulsions, which are important not only from a scientific point of view, but also from a practical point of view, since the formation of such emulsions in oil production is an undesirable phenomenon and it is important to understand the ways, by which their formation can be avoided, which is also the focus of the conducted research. To fulfil the requirements of Art. 53 par. 1 item 4 and Art. 54 para. 1 the candidate has provided a certificate of fulfilment of the minimum requirements of the IPC-BAS for occupying the academic position "associate professor", from which it is clear that according to the criteria of group B he has collected 140 points out of the required 100 points, according to the criteria of group D he has collected 260 points out of a required 220 points and according to the criteria of group D there are 2398 points out of a required 60 points. The candidate has also attached an author reference for the scientific contributions in all scientific works, which are grouped into 4 areas: (1) Mechanisms of stabilization of W/O petroleum emulsions and effect of different crude oil fractions; (2) Design of unique scientific instrumentation for studying thin liquid films; (3) Drainage kinetics and interactions in thin liquid films formed between a flat solid surface and approaching drop/bubble and (4) Impact of adsorption layer properties on thin liquid films behaviour. Most of the publications are assigned to the first area, which also includes scientific papers presented as equivalent to the required monographic work. Six scientific contributions are defined in this area, while a total of six more scientific contributions are defined in the other three areas. My personal opinion is that it would make more sense to combine the third and fourth areas, since both are related to the behavior of thin water films.

The first scientific contribution in the first field is related to determine the effect of bitumen concentrations and type of diluent (aromatic/aliphatic) on the stability of thin liquid emulsion films of bituminous solutions. The second scientific contribution is related to the discovery of a new mechanism of stabilization of water-in-oil emulsions and is based on 4 scientific publications that are well accepted in the scientific community, as evidenced by the large

number of citations that have been noticed on them (275 items). This scientific contribution is important to the scientific community because it shows that the aggregation of asphaltenes is responsible for the stabilization of water/oil emulsions and allows to focus subsequent studies on their solubility in solvents of different composition, which is the basis of the following three contributions in this section of the author reference. It should be noted that for all the publications included in this field, 1072 citations out of a total of 1240 were noticed in the Scopus reference from 08/10/2023, which shows that these studies have important implications for science and practice. Some of these scientific publications also present original scientific equipment that was used to carry out the research. Three contributions to the development of new or modification of existing apparatus are formulated. In the third and fourth areas, which are related to the study of thin water films, three contributions are formulated, which are based on 13 scientific publications. It is not very clear from the author reference why more articles are cited in the title of the fourth area than in the single contribution in this section. It would be good to clarify this issue.

I accept all the formulated scientific contributions in the author's reference, which can be classified as enrichment of existing knowledge and theories, and contribution 1.2 as the formulation of a new mechanism for the stabilization of water/oil emulsions, which provides opportunities to control their stability.

Conclusion

Based on the materials submitted by the candidate Chief Assistant Professor Plamen Hristov Chukov, Ph.D., allows me to conclude that he meets all the requirements for holding the academic position "associate professor" in professional field 4.2. Chemical Sciences (Physical Chemistry), laid down in the regulations for the implementation of the law on the development of the academic staff of the Republic of Bulgaria, as well as the additional criteria of the IPC-BAS, which is why I recommend the honourable scientific jury to choose Chief Assistant Professor Dr. Plamen Hristov Chukov for "associate professor".

Date: 08 October 2023

Member of the scientific jury:

Prof. Dr. Slavka Stoyanova Tcholakova