

## OPINION

of prof. Mona Dinkova Stancheva, DSc,  
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of the materials submitted for participation in the competition for the occupation of the academic position "Associated Professor" at the Institute of Oceanology - Varna, BAS

By Order No 252 of 01.10.2019 of the Director of the Institute of Oceanology - Varna I was appointed a member of the scientific jury under the procedure for occupation of the academic position "Associated Professor", Higher Education Area 4. Natural Sciences, Mathematics and Informatics, professional direction 4.3. Biological Sciences, "Botany", specialty "Algology (Diatomology)".

The only candidate in the competition is Ralitsa Petrova Zidarova, Chief Assistant Professor at the Institute of Oceanology. She has submitted all the necessary documents for participation in the competition for the academic position "Associated Professor", in accordance with the Law on the Development of the National Academy of Sciences and the Regulations for the Development of the Academic Staff of the Institute of Oceanology - BAS.

### **Short biographical information**

Chief assistant professor Ralitsa Petrova Zidarova graduated the Faculty of Biology at Sofia University "St. Kliment Ohridski" in 2001 with a Master's Degree in Biology. From 2003 to 2006 he was a full-time doctoral student at the Faculty of Biology. She received her PhD in Botany in 2009. She worked as a specialist biologist at the Institute of Botany at the Bulgarian Academy of Sciences (2001 - 2002) and at the Central Laboratory of General Ecology at the Institute of Biodiversity and Ecosystem Research - BAS (2007 - 2011), where she was selected as a Research Fellow in 2009, and from 2011 - 20016 she is a Chief Assistant Professor at the Faculty of Biology at Sofia University "St. Kliment Ohridski". Since 2018 she has been working at the Institute of Oceanology.

### **Research and evaluation of contributions**

For participation in the competition for the academic position "Associated Professor" R. Zidarova submitted **32** scientific publications, **20** of which are in refereed and indexed publications with Impact Factor (IF), the total amount of IF

is 26,003. There are **147** citations, of which **97** are in **IF** issues and **60** are in **Scopus**. Participation in scientific forums is **32**, **26** are abroad, with published abstracts are **31**. Scientific production significantly exceeds the stated requirements in the Regulations of the Institute of Oceanology for occupation of the position “Associated Professor”.

The research work of Chief assistant professor R. Zidarova is mainly in the field of **taxonomy, species diversity and biogeography of diatoms from Antarctica**. She has participated in **6 scientific expeditions to the Antarctic**, which is a major contribution to her scientific work and career related to the study and enrichment of knowledge about Antarctic diatoms.

Scientific research is aimed at proving the identity of different types of diatoms from freshwater and terrestrial habitats in the marine area of the Antarctic. An in-depth study of the diatoms species and genera described up to 2006 has been made and a very large number of new materials (750 samples) collected from 2009-2013 have been analyzed. The technique of light and scanning electron microscope was used to establish the identity of the Antarctic species, both in new samples and in samples that were incorrectly identified in the past.

In order to clarify the exact geographical distribution of the Antarctic diatoms, a comprehensive reference and comparison was made with available illustrated material from earlier studies in the Antarctic, Subantarctic and South American regions, with new data from analyzes being compared with recent data from other regions. Full analysis has also been made of known cosmopolitan species of Antarctic algae to confirm or deny their presence there. In the research and analysis briefly described above, R. Zidarova has worked on **four projects with international teams** and has a large number of publications (No 10-16, 18-30, 35-41).

The scientific contributions are described in detail in the attached report, indicating that they are contributions of **worldwide importance** to the taxonomy, biodiversity and geographic distribution of diatoms from Antarctica, as well as scientific contributions of **national importance**.

There are many contributions, I will pay attention to some of them, which I find exclusively important.

### **Taxonomy**

- New 90 taxa have been described according to the International Code of Nomenclature for algae, fungi and plants. The material types of the species are found in several well-known collections around the world.
- Two new taxonomic combinations of poorly known Antarctic algae species have been made.
- From a taxonomic point of view, the correct names of some algae, common in the Southern Hemisphere, have been clarified.

### **Biodiversity and identity**

- It has been clarified the identity of a large number of previously incorrectly identified diatom species, reported by the names of European or North American taxa,
- It has been identified for the first time species new to science in analyzes of Antarctic materials since 2009.
- It has been clarified the diversity of diatoms in the Antarctic marine area, with the actual species richness of many genera proving to be much greater than that reported in the literature up to 2000.
- It is explored the biodiversity of marine benthic diatoms along the coast of Livingston Island for first time. It has been stated a huge diversity of 127 species for the area and a clear differentiation of habitats.

### **Biogeography**

- The actual distribution of diatoms in the Antarctic marine area has been clarified.
- The presence of several European and other widespread species from other regions of the world has been confirmed.
- It has been proven that in the Antarctic marine area, the diatomaceous flora is strictly specific to the area with a high percentage of endemic species, most of which occur only in that marine area.
- It has been obtained results that do not support the hypothesis of Finlay & Clarke (1999) that the same species of microorganisms are found worldwide under similar conditions.

- It has been found that there is an increased growth of diatoms in gulfs where there is melting glaciers. In glacial waters are dominated species known from sea ice.

The contributions mentioned above are of **worldwide importance**. I will also mention a few contributions of **national importance**:

- Participation in the development of a new typology, classification system and reference conditions for different types of water bodies.
- It has been made a proposal for a new method for assessment of rare and endangered species of microalgae for Bulgaria. It may be adapted to other places.
- A new habitat for a rare species of freshwater red algae in Bulgaria has been established. The species is considered as an indicator of good ecological status.

I accept the contributions listed in the report as significant, based on research from a number of international projects and participation in scientific expeditions to the Antarctic. Most of the results have been published in renowned journals that have received high praise from the scientific community - over 145 citations.

To the scientific activity of Ch. as. R. Zidarova will also note:

- *Participation in scientific projects* - 11 projects, in 2 of them she is a scientific supervisor. Some of them have been implemented in cooperation with scientists from abroad.
- *Reviews of publications in specialized international journals* - 17 journals
- *Two scholarships won for research projects*
- *Participation in 6 scientific expeditions to Antarctica*
- *Membership in international scientific organizations – two*

### **Teaching work**

In 2009 R. Zidarova was selected as a research associate I / chief assistant professor at the Institute of Biodiversity and Ecosystem Research - BAS, and since 2011 has been assist. professor at the Faculty of Biology. The teaching work is related to practical exercises and summer teaching practices in compulsory subjects taught at the Biological Faculty, such as: Structure and biodiversity of plants and fungi; Systematics of algae and fungi, as well as Botany classes.

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I find that the teaching work of chief assist. prof. R. Zidarova needs to expand in the future. Her knowledge and experience gained from her work on scientific projects and research can be used to develop elective courses that I think to be of interest to students. They will enrich the students' knowledge and broaden their interests. Furthermore, organizing study and research expeditions will be of great interest to them.

### **Personal impressions**

I find that the rich scientific experience and knowledge gained from chief assist. prof. R. Zidarova, should be used extensively in the future. For example, to set up a scientific group and develop new projects, to continue scientific cooperation with scientists from other countries and with colleagues from other universities and scientific institutes. She can organize courses, seminars, conferences and be a successful leader and consultant for doctoral students. All of this will be important for her future development as a researcher and teacher, as well as for the Institute of Oceanology.

### **CONCLUSION**

I highly appreciate the research work of chief assist. prof. R. Zidarova. Undoubtedly, she has established herself as an authoritative and respected explorer of the Antarctic diatoms. Of great importance for this is her work at the Faculty of Biology at Sofia University and at the two Institutes of BAS, her participation in a number of international projects and in expeditions with field work in the Antarctic. There are a large number of contributions of scientific importance to the taxonomy, biodiversity and geographical distribution of diatoms from the Antarctic.

I suggest on chief assist. prof. Ralitsa Petrova Zidarova to be awarded the academic position of Associated Professor in the Higher Education Area 4. Natural Sciences, Mathematics and Informatics, Professional Degree 4.3 Biological Sciences, Botany and Scientific Degree Algology (Diatomology).

28.11.2019

Varna

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