

OPINION

on the competition for the academic position „Professor“ in the field of higher education 4. “Natural Sciences, Mathematics and Informatics”, professional field 4.2 “Chemical Sciences” („Analytical Chemistry“) for the needs of the Institute of General and Inorganic Chemistry, BAS – Sofia, announced in the “State Gazette”, issue 46 / 26.05.2023, p. 57.

by Associate Professor Dr. Ivanka Grigorova Dakova,
Faculty of Chemistry and Pharmacy at Sofia University „St. Kliment Ohridski”,
a member of the Scientific Jury, appointed by order № RD-09-129 / 17.07.2023 of the
Director of Institute of General and Inorganic Chemistry, BAS – Sofia

The only applicant in the competition is Assoc. Prof. Dr. Albena Detcheva-Tchakarova from Institute of General and Inorganic Chemistry, BAS – Sofia, Atomic Spectrometry Methodology Laboratory. The materials presented by Assoc. Prof. Albena Detcheva-Tchakarova are in compliance with the requirements of the Law for the Development of the Academic Staff in Republic of Bulgaria as well as the additional requirements specified in the IGIC Rules for occupying academic position "Professor".

Career development of the candidate

Albena Detcheva-Tchakarova obtained her M.Sc. degree in 1985 from the Faculty of Chemistry, Sofia University. In 2000 she successfully defended her doctoral thesis entitled „Atomic absorption analysis of impurities in a fluoride matrix“ and is awarded the PhD degree. Initially she worked as a Chemist in the Institute of Applied Mineralogy - BAS(1985–1988). From 1992 until now, she has worked at the IGIC-BAS, successively as a Chemist (1992–2001), Head Assistant Professor (2001–2007), and Associate Professor (from 2012 to the present). Since 2016, she has been the head of the “Atomic Spectrometry Methodology Laboratory” at IGIC-BAS. In the period 2004-2006 Albena Detcheva-Tchakarova was an independent national expert at the Institute for Reference Materials and Measurements at the Directorate-General Joint Research Centre of the European Commission (IRMM-JRC), Geel (Belgium).

Scientific activity of the candidate

Assoc. Prof. Detcheva-Tchakarova is a co-author of 79 scientific publications, 59 of which are in journals with impact factor, and three are book chapters. According to data submitted by the

candidate, the scientific publications have 442 citations and her h-index is 12 according to the Scopus database (exclude self-citations). She participates in the competition for a professor position with 19 publications (3 Q1, 7 Q2, 6 Q3, 3 Q4) and two book chapters. The candidate is the lead author (first author and/or corresponding author) in 15 articles. The citations of the articles submitted for the competition are 68 (Scopus, exclude self-citations).

The presented habilitation thesis is based on 6 publications (1 Q1, 3 Q2, 1 Q3, 1 Q4) in which the candidate is a lead researcher. It presents and discusses the development, optimization, validation and application of "green" atomic spectrometry methods for direct electrothermal analysis of solid samples. The presented work is in a clearly defined area and with the candidate's own achievements.

Scientific contributions

The main areas of scientific interests and research of Associate Professor Detcheva-Tchakarova are in the field of the development of direct methods for the analysis of solid samples, the analytical characterization of materials used as sorbents and the statistical processing and interpretation of elemental analysis results. The scientific contributions can be summarized in the following main areas:

1. Development, optimization and validation of TXRF-methods corresponding to the concept of "green" analytical methods and their application for the simultaneous determination of elements in three different types of objects: bottled drinking waters, archaeological glass finds and fly ashes from Bulgarian coal-fired Power Plants.

2. Development, optimization and validation of ETV-ICP-OES-methods for direct analysis of solid samples (high-purity copper, medicinal plants and soda-lime glass).

3. Analytical characterization of materials (fly ashes from Bulgarian coal-fired power plants and two biomaterials based on the Bulgarian medicinal plants *Mentha spicata L.* и *Ruta graveolens L.*) with a view to their use as sorbents for water purification from metal ions.

4. Statistical analysis and interpretation of data sets from the elemental analysis of samples of Bulgarian drinking waters and plant materials.

Teaching and project activity

Assoc. Prof. Albena Detcheva-Tchakarova is an experienced and respected teacher in the field of analytical chemistry. She conducted lectures of courses such as "Atomic absorption analysis", and "Sample preparation in chemical analysis" for PhD students. Assoc. Prof. Detcheva-Tchakarova is co-author of Collection of lectures entitled "Training in Metrology in Chemistry" under the TrainMiC

program of the European Commission. She is the co-supervisor of one successfully defended PhD student.

The project activity of Assoc. Prof. Detcheva-Tchakarova includes 17 national and international projects and 4 projects at the IGIC-BAS. The candidate is the leader of 1 national project and 1 project at the IGIC-BAS.

Conclusion:

The presented overall scientific research, project and teaching activities and the fulfilled quantitative indicators specified in the Law for the Development of the Academic Staff in Republic of Bulgaria as well as the additional requirements specified in the IGIC Rules, clearly show that Assoc. Prof. Dr. Albena Detcheva-Tchakarova is a well-established and independent scientist, possesses a high professional level in the scientific specialty "Analytical Chemistry". Based on the above, I am convinced of my positive assessment and suggest Associate Professor Dr. Albena Detcheva-Tchakarova to be elected to the academic position of "Professor" in the professional field 4.2 Chemical Sciences (Analytical Chemistry).

Sofia

17.09.2023

Writing the statement:

Assoc. Prof. Dr. Ivanka Dakova