

## OPINION

from Assoc. Prof. Hristiyan Aleksandrov Aleksandrov

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on the application of Head Assistant Professor Dr. Stanislava Metodieva Andonova, in Competition for Associate Professor in Professional Degree 4.2 Chemical Sciences (Chemical Kinetics and Catalysis) at the Institute of General and Inorganic Chemistry, Bulgarian Academy of Sciences, announced in Bulgarian State Gazette No. 36 of 03/05/2019

Head Assist. Prof. Stanislava Metodieva Andonova is the only candidate at the competition for associate professor. In 2000, she completed her Master's in Chemical Technology; Technology of Inorganic Substances at the University of Chemical Technology and Metallurgy, Sofia. In 2005, she obtained her PhD in chemistry from the Institute of Catalysis, Bulgarian Academy of Sciences (BAS). The title of her PhD thesis is "Preparation and characterization of modified Ni(Co)-Mo catalysts for hydrodesulfurization". In the period 2004 to 2013 Dr. Andonova worked at the Institute of Catalysis, BAS, where in 2005 she became a Head Assistant Professor. From 2013 till now she has been working at the Institute of General and Inorganic Chemistry, BAS. She has three specialisations as a postdoctoral fellow at: the Polytechnic University of Bucharest, Romania (4 months), the Bilkent University, Turkey (2007 - 2011) and the Chalmers University of Technology, Sweden (2011 - 2013).

Dr. Andonova has co-authored 32 scientific publications, 27 of which are in refereed and indexed journals with a total Impact Factor (IF) of 110.775. Most of these publications (19) are in first quartile journals (Q1), 4 publications are in journals from Q2 and one is in Q4. Some of these journals are among the most respected ones in the field of catalysis: *Journal of Catalysis*, *Applied Catalysis B Environmental*, *Catalysis Today*, *Molecular Catalysis*, *The Journal of Physical Chemistry C*, *Microporous and Mesoporous Materials*, *Catalysts*, *Catalysis Letters*, *Applied Catalysis A General*, *Chemical Communications*, *Physical Chemistry Chemical Physics*. The large number of citations (384) of these papers should be noted, the candidate's h-factor is 11.

Dr. Andonova participates in the competition with 22 scientific publications, 20 of which are in refereed and indexed journals (15 of them are in Q1, 4 in Q2 and one is a patent application). These publications have been cited 254 times. These scientific achievements significantly exceed all the minimum national requirements stipulated in the Act for the Development of the Academic Staff in the Republic of Bulgaria, as well as additional criteria

of the Institute of General and Inorganic Chemistry at the BAS for occupying an academic position of "Associate Professor".

The candidate's scientific contributions can be grouped into three main areas:

1. Development and investigation of new effective metal oxide catalysts used for NO<sub>x</sub> storage and reduction.
2. Development and investigation of new metal-exchanged zeolites used as effective catalysts for the selective catalytic reduction of NO<sub>x</sub> with ammonia.
3. Investigation of new and promising materials used as adsorbents for gas purification and selective separation of gas mixtures.

The topics are very timely, for example, the selective catalytic reduction of nitrogen oxides has numerous applications to reduce NO<sub>x</sub> emissions in the exhaust gases generated by stationary power plants, motor vehicles, and various industrial processes. It is noteworthy that many two- and three-component catalysts have been investigated, not only the classic Pt/BaO/γ-Al<sub>2</sub>O<sub>3</sub> catalyst for this process. Opportunities have been sought to develop novel adsorbents and catalysts exhibiting simultaneously high activity and selectivity, high thermal stability and improved SO<sub>x</sub> poisoning resistance. Three patent applications have also been made for the development and investigation of a new type of Fe-exchanged SAPO-34 catalyst with significantly improved hydrothermal stability and activity compared to the conventionally used Cu/SAPO-34 catalyst under the conditions of the selective catalytic reduction of nitrogen oxides with ammonia.

Head Assistant Professor Andonova has participated in three national and three international research projects. She has presented her scientific results at more than 20 national and international forums. I have personally attended two of them, and my impressions from the oral and poster presentations of the candidate are excellent.

In conclusion, taking into account the applicant's scientific results and achievements mentioned above, I consider that Head Assist. Prof. Stanislava Metodieva Andonova fully meets all the minimum national requirements as well as the criteria of the Institute of General and Inorganic Chemistry at the Bulgarian Academy of Sciences for occupation of the academic position "Associate Professor" and I strongly recommend that she should be selected as "Associate Professor" in professional field 4.2 Chemical Sciences (Chemical Kinetics and Catalysis) at the Institute of General and Inorganic Chemistry at the Bulgarian Academy of Sciences.

Sofia

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