Alkali-based catalysts for soot combustion

Since people are addicted to energy, and the main energy source is based on carbon-containing fuels, the emission of soot is an important problem for human health and the environment. Catalysts containing alkali metals are the most promising systems to replace those based on the noble metals. Alkali-based catalysts can be divided into two groups – surface doped, where alkali metal is stabilized on the surface of the carrier, and bulk doped, where alkali metal is stabilized within the oxide matrix. Comparison of those two types of doping will be shown, together with further optimization of such systems by transition metal doping.

Piotr Legutko, Ph.D. is a member of the Environmental Catalysis Team, Faculty of Chemistry, Jagiellonian University, where he has been working for 10 years. His research focuses on environmental catalysis, mainly on soot combustion, reforming reactions, and VOC oxidation. He has published over 30 papers, with more than 700 citations. Ph.D. thesis of Dr. Legutko was awarded by the Polish Chemical Society and the Polish Catalysis Club.

Andrzej Adamski, Ph.D., D.Sc. (born in 1970) works as a professor at the Faculty of Chemistry of the Jagiellonian University in Krakow (Poland), where he leads the Environmental Catalysis Team and the Laboratory of Chemical Monitoring of Environment & Studies on Occupational Environment. His research interests are focused on innovative solutions remaining of vital importance for current environmental challenges, including preparation of heterogeneous catalysts and their applications in environmentally important reactions, environmental chemistry and pressing problems of critical zone, chemical monitoring of environmental pollution, sustainable processes and technologies (in particular, in chemical/petrochemical industry and energy sector). He published over 75 papers focused mainly on environmental catalysis, spectroscopy, and oxide materials (h-index 21), and presented his results over 240 times at international and national conferences. A. Adamski is a co-author of 9 patents and patent applications. Some of them were appreciated at innovation fairs (Europe France Innovateurs Medal, IWIS Gold Medal, Brussels Innova Gold and Silver Medals). He participated in many international and national research and educational projects. Since 2010 A. Adamski was involved in KIC-related issues at the Jagiellonian University, serving in the years 2013-2016 as Rector's Proxy for KICs and being a leader of three innovative market-oriented projects. In the years 2016-2020 he served as Rector's Proxy for Innovations. A. Adamski spent 2.5 years working in foreign laboratories at Universität Leipzig (Germany), Ecole Nationale Supérieure de Chimie de Paris (France), and Université Catholique de Lovain (Belgium). In 2013 he created Department of Environmental Chemistry at the Faculty of Chemistry of the Jagiellonian University. A. Adamski works/worked as an expert for the Polish National Science Center, the National Centre for Research and Development, the Polish National Agency for Academic Exchange, KIC InnoEnergy as a Member of the Thematic Field Level Assessment Committee (fields: clean coal and gas technologies, chemical fuels) and expert evaluating competing start-ups in HelloCleanTech programme. Since 2015 he is a Member of the Energy Community (Vienna) Summer School Board.