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Preface

For more than 20 years, the European Workshops on Selective Oxidation have created a feeling of community among European researchers in the field of selective oxidation and has been their forum to gather and discuss the new requirements and advances in the field, as well as the place to generate new contacts and collaborations. The *8th European Workshop Meeting on Selective Oxidation*, "Towards 100% Selectivity in Catalytic Oxidation over Nanostructured Metal Oxides (ISO 2007)", was organized as Symposium 19 of Europacat VII, held in Turku (Finland) on 26–31 August 2007. This symposium continues the series of *European Workshop Meetings on Selective Oxidation* initiated by Profs. B. Delmon and P. Ruiz in 1986 in Louvain-la-Neuve, Belgium.

The workshops have been held about every 2 years, excepting when they coincided with the World Congress on Catalytic Oxidation held outside Europe. Since 1999, they have been integrated in the Europacat Conferences. As a contribution to disseminate and foster discussion on the relevant topics, selected papers presented at each Workshop have been published, since the very first one (*Catalysis Today* Volume 1, 1987). Those selected from the latest previous editions were published in special issues of Catalysis Today: 6th Workshop Meeting "*Innovation in Selective Oxidation* (*ISO 1999*)", origin of the acronym "ISO", in Volume 61 (2000), and the 7th European Workshop Meeting on Selective Oxidation, "*Innovative Selective Oxidation: Nanoscale and Dynamics Aspects* (*ISO 2003*)" in Volume 91–92 (2004).

Selectivity is the key issue in all catalytic reactions and, together with productivity, the ultimate goal of catalytic applications in general. The Workshop was focused on the critical aspect of the design of selective oxidation catalysts: how to use the advances in nanotechnology in order to develop the next generation of nanostructured metal oxide catalysts as a way to control the surface reactivity, and to advance towards achieving 100% selectivity. This new field of nanoscience can allow a breakthrough advance in the improvement of existing processes or even implementing new ones. In fact, one of the key objectives for sustainable chemical production is to understand how the catalyst surface has to be tailored to control its reactivity in complex multi-step reactions. Thus, the ideal goal of 100% selectivity might be achieved in the future, in order to avoid waste formation, to improve the raw materials and energy efficiency, to save resources and to reduce greenhouse gases emissions (mainly CO_2).

Innovation comes along with new reactions, non-conventional oxidants, new reactor concepts, new nanostructured or nano-sized catalytic materials, due to the new properties generated by the decrease in the particle size at the nanometer level, etc. Different disciplines such as chemistry, chemical physics, chemical engineering, physics, biology, etc. have to be involved in the worldwide efforts to meet these goals.

The Workshop ISO 2007 was a part of the activities of the European Network of Excellence IDECAT (Integrated Design of Catalytic Materials for a Sustainable Production) and a continuation of the activities of the European Coordinated Action CONCORDE (Co-Ordination of Nanostructured Catalytic Oxide Research and Development in Europe).

The programme of the workshop included two keynotes, 10 oral presentations, and numerous posters, which were selected from the 47 abstracts received. For these proceedings, manuscripts were reviewed (two to four times) by more than sixty referees, to whom the organizing committee would like to express our great gratitude for their efforts. After the standard reviewing procedure, 27 manuscripts were accepted for publication. They cover a variety of micro-, mesoporous and nanostructured oxide catalysts for oxidation of light alkanes and olefins, new advances in the study and application of metal-active oxide catalysts, application of new reactor and catalyst morphology concepts (membrane reactor, silicon carbide foams as support), liquid phase oxidation, photo- and electro-catalytic oxidation and use of CO_2 as reactant in reforming and oxidative dehydrogenation. This broad variety of topics proves that selective oxidation still attracts strong interest of scientists from academia and industry. The interesting papers presented, the intensive discussions, the high participation in each of the workshop sessions, and the contents of this special issue of *Catalysis Today*, show that selective oxidation continue to be one of the most active and innovative fields of catalytic research. This is a nice augur for the next 6th World Congress on Oxidation Catalysis that under the title "Towards an integrated approach in innovation and development" will be held in Lille, France, in 5–10 July 2009.

The organizing committee would like to thank the organizers of Europacat VII (in particular to Professor Dmitry Yu. Murzin, Laboratory of Industrial Chemistry, Abo Akademi University, Turku, Finland) for helping us to include ISO 2007 in the scientific programme of the Conference.

Prof. Adolfo Parmaliana, one of the contributors to the present issue, passed away tragically during the period of its preparation. The guest editors want to express their condolences to their relatives and colleagues, and their recognition to his contribution to the research in the field of selective oxidation.

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