

Preface

Nano-structured materials for catalysis

The 37th Polish Conference on Catalysis was held on 15–18 March 2005 in Kraków, Poland. The meeting belongs to a series of catalytic conferences organised annually by the Institute of Catalysis and Surface Chemistry (Kraków) since 1969.

The last year conference was the second one organised within the 6th Framework Programme of the European Union under the project no. NMP3-CT-2004-510318 (POL-CAT), and was also co-sponsored by the Ministry of Education and Science, Warsaw. The objective of this project is to promote and disseminate knowledge in the field of catalysis, setting an efficient forum for exchange of relevant information and experience between the scientists, research institutions and industry. Polish and foreign scientists, in all 240 registered participants, were attending the meeting. Eight plenary lectures, 1 key-note lecture and 23 oral presentations were delivered. The 2 sessions with 194 posters covering essentially a whole field of activity in catalysis in Poland complemented the lectures. All the contributions presented at the meeting were printed in *The Book of Abstracts* (394 pages).

The efforts made by the Authors at the conference are now reproduced in this special issue of *Catalysis Today*, comprising 27 papers selected from oral and poster contributions. Additionally, a few papers were written upon invitation by the Guest Editor. The articles span a wide range of experimental and theoretical topics, focusing on zeolites, clays and mesoporous materials. Zeolites and mesoporous molecular sieves are advanced materials of paramount importance for fundamental and applied studies. Zeolites and related materials are generally referred to as molecular sieves exhibiting nanometer dimensions (0.3–10 nm) of windows, channels, pores and cavities of various architectures. The incorporation of molecularly dispersed ions, atoms and molecules gives rise to formation of solids exhibiting very interesting properties. Such novel materials represent a ‘new frontier’ of solid-state chemistry with great opportunities for innovative research and development. The most recent efforts are centred on finding several applications including catalysis, molecular electronics, ‘quantum’ nanodevices, zeolite electrodes, batteries, nonlinear

optical materials, enzyme mimics, molecular wires and chemical sensors. Of these, catalytic properties are dealt with here.

The two reviews, on pillared clays by Tomlinson et al. and on transition metal ions dispersed in zeolitic matrices by Decyk, are opening the volume. Various aspects of adsorption of CO and organic molecules on zeolites are presented in papers by Datka et al. The fundamental question of aluminium siting in aluminosilicates is exemplified by a paper by Derewiński et al., using solid-state NMR for studies of ZSM-22 and Theta-1 zeolites. Dealumination of zeolites and catalytic properties of aluminium-depleted solids are described in papers by Boveri et al. and Rachwalik et al. An interesting transesterification reaction of dimethyl carbonate with ethanol, proceeding on zeolites and other catalysts, was studied by Zielińska-Nadolska et al. The fascinating problems of preparation of zeolitic solids using chiral templates is dealing with in a contribution by J. Pérez-Pariante et al. Various aspects of chemistry of MCM and SBA type materials are discussed in few papers, encompassing very different reactions. Other topics, including theoretical modeling, are also discussed by several Authors. Finally, a microcalorimetric study of water and ethanol sorption on type A zeolites by Lalik et al. completes subjects of the present issue.

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