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Preface

Special issue of catalysis today devoted to 5th WCOC

The 5th World Congress on Oxidation Catalysis (5WCOC) was held in Sapporo, Japan at the end of September 2005. It indeed gave us an excellent opportunity to encounter many scientific excitements and, in addition, to enjoy the beautiful autumn in Hokkaido, the big northern island of Japan. We welcomed 390 participants, which was close to our presumption and a little more than the number of participants in the 4th WCOC held in Berlin. A characteristic and impressive feature was that the majority of participants remained in the Convention Center from morning till evening and was always enthusiastic in listening to lectures, watching posters, and discussing mutual interests.

In the 5th Congress, under the main theme of *Innovations in Oxidation Catalysis Leading to a Sustainable Society* we set up three types of invited lectures: plenary for wide overviews, keynotes for recent advances in specific topics, and featured lectures mostly given by younger generation. All invited lectures were so creative and instructive that they inspired and stimulated us very much leading this congress to a real success. On behalf of the organizing committee we are very much grateful to all the invited speakers for their significant contributions. Only selected papers were given an opportunity for oral presentation. Because we intended to provide an opportunity for participants to be in touch with different fields of oxidation catalysis, the morning sessions were held as plenary sessions in one big conference room and three parallel sessions were run only in the afternoon. This plan enforced us to choose only 60 papers for oral presentation out of 323 presentations. This special issue of Catalysis Today is composed of contributions from these meticulously selected oral presentations as well as the invited lectures such as plenary, keynotes, and featured lectures. Accordingly, we believe that this issue would be later regarded as a milestone in the history of oxidation catalysis.

In its contents also this issue is significant because it conveys explicitly three key words: Fusion; *Green Sustainable Chemistry; and High Throughput*. An attempt was made for the first time in the 5th Congress to expand the scope of oxidation catalysis from the classical heterogeneous catalysts to homogeneous and bio-related catalysts. We recognized that among these fields there are obviously many differences in terminology; way of approach; applicability; and so on. At the same time; we shared an idea that technology fusion toward innovation may occur if we continue to communicate with each other through this sort of scientific meetings finally reaching molecular and atomic level understanding of catalysis and tailor-made manipulation of catalysts based on the scientific design.

Although the number of papers allotted to the environmental session was only one seventh of the total number of papers, so many papers presented in the other sessions were also directly concerned with environmentally benign chemical processes and energy-saving technologies. Especially, growing concerns are directed to the one-pot synthesis of H_2O_2 and to the utilization of H_2O_2 as an oxidizing agent. Selective oxidation of alcohols to aldehydes or acids are becoming a new research topic reflecting a future resources shift from petroleum to biomass. It was also really remarkable that Au catalysts have attracted rapidly growing attention occupying nearly 10% of papers in total owing to very high performance in low-temperature oxidation and mild oxidation of hydrocarbons.

While the number of papers is not large, the oral presentations concerning high throughput techniques attracted the majority of participants. This implies that people have been keeping eyes on the advances in high throughput approaches. An apparent change can be seen in the target from catalyst screening to catalyst development.

We are proud that this special issue will surely deliver recent advances and future prospects of oxidation catalysis to the readers. Our sincere thanks go to session organizers and co-organizers who assisted us to nominate invited lecturers and to select oral presentations; Prof. K. Asakura, Prof. T. Tanaka, Prof. D.W. Goodman, Prof. Y. Watanabe, Prof. W. Nam, Dr. T. Atoguchi, Prof. F. Cavani, Prof. K. Omata, Dr. Y. Koyasu, Prof. Y.-G. Shul, Prof. K. Eguchi, Prof. K. Domen, and Prof. K.-Y. Lee. Our appreciation is also extended to all the contributors to this special issue.

The 6th WCOC will be organized by a joint group of France and Belgium returning back to the birthplace. It is our hope that the attempts made in Sapporo would flourish in scientific achievements and mutual communication leading to the greater success of the next congress.

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Makoto Misono
National Institute of Technology and Evaluation,
2-49-10 Nishihara,
Shibuya-ku, Tokyo 151-0066,
Japan

Makoto Imanari
Mitsubishi Chemical Corp.,
Dai-ichi Tamachi Building 33-8,
Shiba 5-chome Minato-ku, Tokyo 108-0014,
Japan

Masatake Haruta
Materials Chemistry Course,
Faculty of Urban Environmental Sciences,
Tokyo Metropolitan University,
1-1 Minami-osawa, Hachioji, Tokyo 192-0397,
Japan

Shunichi Fukuzumi
Department of Material and Life Science,
Graduate School of Engineering, Osaka University,
2-1 Yamada-oka, Suita, Osaka 565-0871,
Japan

Guest Editor*
Takashi Tatsumi
Chemical Resources Laboratory,
Tokyo Institute of Technology,
4259 Nagatsuta,
Midori-ku,
Yokohama 226-8503,
Japan

Wataru Ueda
Catalysis Research Center,
Hokkaido University,
West 10, North 21,
Kita-ku,
Sapporo 001-0021,
Japan

*Corresponding author. Tel.: +81 45 924 5238;
fax: +81 45 924 5282
E-mail address: ttatsumi@cat.res.titech.ac.jp
(T. Tatsumi)

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