

Preface

Challenges in alkane activation and selective oxidation

Catalytic-selective oxidation has received much attention over many years and undoubtedly this situation will continue. This is because catalytic oxidation — whether homogeneous or heterogeneous — possesses high potential both in the existing chemical industries and in the so-called “Green oxidation”, which it is hoped will simplify many energetically and environmentally inefficient multi-step reactions. However, the situation is not simple because most researchers have faced many difficulties in their work for developing selective catalytic oxidation processes. This can be seen easily from the fact that when molecular oxygen is used as an oxidant, many catalytic-selective oxidations are not yet attainable, even after using advanced oxidation catalyst systems. Obviously, rather basic but challenging research is still necessary in this field. Fortunately, our capabilities have been magnified by the recent development of alkane-selective and zeolite oxidation catalysts.

In order to disseminate recent work on catalysis research and technology in selective oxidation and to look at the future of this field, a workshop named Selective Oxidation Workshop 2000 (SOW 2000) was organized jointly by the Catalysis Society of Japan and the Research Institute of Innovative Technology for the Earth (RITE) and was held in Yokohama, Japan, from

30 November to 1 December 2000. The workshop consisted of four topics (methane activation, alkane oxidation, crystalline materials and engineering hybrids), each of which was addressed by a number of invited lecturers and also by a number of poster presentations. The last session of the workshop was devoted to a panel discussion on two topics: (1) what new methodologies and technologies are required to achieve improved catalysts for alkane activation, and (2) how catalysts can be designed for improved oxidation activity and selectivity. The workshop was well organized and had a high attendance and the discussions were lively.

The exciting and challenging efforts presented by the authors in this workshop are now reproduced in this special issue of Catalysis Today, and it is hoped that readers will enjoy reading the papers and find a future for catalytic-selective oxidation. The guest editor would like to acknowledge Prof. M. Misono's help and kind suggestions for our editorial works.

Wataru Ueda

*Catalysis Research Center, Hokkaido University
Kita-ku, Kita, 11-10, Sapporo 060-0811, Japan
Tel.: +81-11-706-2907; fax: +81-11-709-4748
E-mail address: ueda@cat.hokudai.ac.jp (W. Ueda)*