

Preface

This special issue of Catalysis Today contains selected papers presented at Korea Conference on Innovative Science and Technology (KCIST-2005), held in Gyeongju, Korea, between December 4 and December 7, 2005, with a theme of "Frontiers in Hydrogen Storage Materials and Technology." KCIST is an annual international forum supported by Korea Federation of Science and Technology Societies for the presentation and discussion of frontier research in the biological, chemical and physical sciences, and their related technologies. In 2005, KCIST provided an opportunity to review the forefront information and knowledge on hydrogen storage materials and technology through extensive formal and informal discussion with 14 invited speakers from 8 countries. Altogether 42 presentations were contributed by experts from academia, R&D sectors and industries, attracting 75 participants to a variety of hydrogen storage options.

Hydrogen storage is widely recognized as a major technological barrier to the successful implementation of fuel cells for transportation and portable applications. Although some methods of hydrogen storage reached the stage of engineering prototypes, all the methods still need substantial increase in the hydrogen storage capacity for practical applications. In addition, hydrogen storage and release should be realized at acceptable rates within the operating window of fuel cell system. Catalysis may play a crucial role in improving the hydrogen storage capacity and the kinetics of the storage and release, especially when solid-state storage materials are involved. In fact, a number of catalysts have been employed to facilitate hydrogen storage and release in several metal hydrides systems. Recently, some catalysts bounded to nanoscale materials were demonstrated to enhance hydrogen storage capacity. Not to mention the catalyst itself, a variety of

techniques for catalyst characterization can be applied to understand more deeply the interaction of hydrogen with microporous materials so that new materials with higher hydrogen storage capacity can be developed. We hope that this special issue may serve as noticeable references for the readers to view the hydrogen storage materials and technology in relation with catalysis.

Finally, we would like to express our sincere gratitude to all the participants for their valuable contribution to KCIST-2005 and all the reviewers for their in-depth comments for the manuscripts. We also wish to thank our co-organizers of the conference, Prof. Jaehon Kim, Prof. Kee Suk Nahm, Prof. Young Seak Lee and Dr. Hae Jin Kim. Additional supports from the Korea Institute of Chemical Engineers and Hydrogen R&D Center in Korea are gratefully acknowledged.

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