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Preface

In this special issue of *Catalysis Today* entitled *Applied Catalysis Research and Development in China*, we present a selection of 19 communications written by Chinese scientists involved in catalysis. The purpose of the issue is to give our international colleagues some picture of what has happened, and is happening, in catalysis research and development in China. We hope that it will in the near future be possible to organize a further issue or issues to cover separately other topics.

Catalysis and its technological development, in the modern sense, occurred rather late in China. Prior to 1949, China had only a limited number of small-sized and scattered chemical industries based on catalysis, these being involved in the production of ammonia, sulfuric acid, nitric acid, gunpowder, nitrocellulose, etc. [1]. The catalysts used were either imported or were produced at a low-technological level, although a few isolated good products existed. There existed a small number of individual professionals and research groups in both the universities and industries who carried out limited experimental studies on catalysts; however, there were practically no organized research activities in the field.

In 1949, the Institute of Petroleum of the Chinese Academy of Sciences was founded in Dalian (Liaoning Province), this later, in 1963, being renamed the Dalian Institute of Chemical Physics. Its major aims were originally to search for and develop catalysts and catalytic processes for the domestic chemical industry [2]. In the 1950s, China began to establish a series of chemical institutes under the Chinese Academy of Sciences as well as a number of industrial research centers, the research efforts being mainly directed to oil processing and fertilizer production. The Fertilizer Catalyst Plant in Nanjing (Jiangsu Province) was the earliest of the industrial installations and is one of the largest catalyst manufacturing facilities in China. The production of oil-refining catalysts was later built up gradually and has now reached the highest tonnage in China.

During the period from 1950 to 1978, catalysis research in China experienced a very rapid growth. Many research institutions were set up and their research activities expanded constantly. However, due to historical reasons, this development was isolated from the rest of the world. Catalysis research institutions were set up and grown-up somewhat independently. As a result of the hard work of several generations of Chinese intellectuals, domestically synthesized catalysts met the needs of the weak but progressing chemical industry in China. Our veteran researchers in catalysis made great contributions to the survival of the people under very difficult conditions [3]. Since 1978, China has started to open her doors and has made much progress in social and economic reform, this being accompanied by rapid developments in many other aspects. A spectrum of completely new style chemical industries and various key laboratories with a large number of imported technologies have been built. At the same time, a great challenge was posed to Chinese scientists. The need for domestically fabricated catalysts has accelerated and this has become a major driving force for catalysis research in China and, as a result, many important and innovative research projects in catalysis have been launched.

Education in catalysis science and technology is of the fundamental importance in catalysis development and has received great attention in many Chinese universities since the beginning of the 1980s. Most of the well-established chemistry departments of the

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universities, the chemistry institutes of Chinese Academy of Sciences, as well as some industrial research centers now offer the higher academic degrees of M.Sc. and Ph.D. while the major chemical engineering schools offer not only M.Eng. and Ph.D. degrees but also bachelors' degrees in applied catalysis. A large number of the graduates and postgraduates now take up jobs in industries, institutions, research centers and universities all over China and devote themselves to the promotion of catalysis science and technology. Moreover, a significant number of them go abroad for advanced study and/or research.

In October 1998, the 9th National Congress on Catalysis was held in Beijing. This was the latest of a series of academic events held every two years, each in a different region of China and organized by institutions located in that region. Over 500 scientists participated in the Beijing meeting – even though the number of the participants was strictly controlled – and this shows that catalysis research is currently very active in China. Some other important events which have occurred in China recently include two other biannual conferences, the National Conference of Young Scientists on Catalysis and Pacific-Asia Conference on Catalysis (previously the China–Japan–USA Symposium of Catalysis), as well as other regular national conferences, organized by different academic societies, which include catalysis as one of the major themes, such as those on C1 Chemical Technology and Petroleum Processing.

The Chinese community of catalysis has developed its own publications in the Chinese language. There are now three journals dedicated to catalysis: Cuihua Xuebao (Journal of Catalysis China); Fenzi Cuihua (Journal of Molecular Catalysis China); and Gongye Cuihua (Industrial Catalysis). Many other Chinese journals published by the Chinese Chemical Engineering, Petroleum Processing, and Chemical Societies also carry considerable numbers of papers on catalysis. In addition, a few number of articles written by Chinese researchers have been published in international journals in recent years and this number is still increasing.

This issue of *Catalysis Today* was planned to include reviews, research papers as well as representative works from various institutions. Professor Khi Rui Tsai and Professor Liwu Lin, two leading figures of the Chinese catalysis community, have contributed reviews on the history and development of catalysis research at Xiamen University and the Dalian Institute of Chemical Physics respectively. Also included are six other reviews and 11 research papers covering a variety of topics. Unfortunately, a number of other papers could not be included because of limitations of space. It is hoped that some of these will appear in a future issue.

We should like to take this opportunity to express our thanks to all the authors who have made contributions to this issue, to our international colleagues who have kindly helped us in refereeing the manuscripts, and to Drs. Huub Manten-Werker of Elsevier for her great help in the final processing of the papers.

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