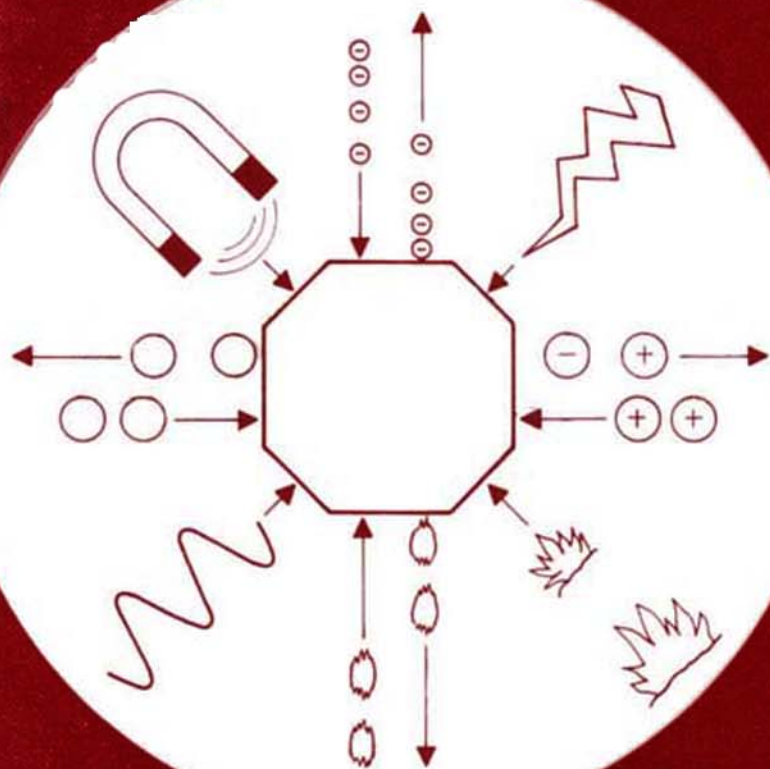


studies in surface science and catalysis



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NEW DEVELOPMENTS IN ZEOLITE SCIENCE AND TECHNOLOGY

Y. Murakami
A. Iijima
J. W. Ward
(editors)

elsevier

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**Proceedings of the 7th International Zeolite Conference
Tokyo, August 17-22, 1986**

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Studies in Surface Science and Catalysis 28

New Developments in Zeolite Science and Technology

**Proceedings of the 7th International Zeolite Conference
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Kodansha
Tokyo

1986



Elsevier

Amsterdam-Oxford-New York-Tokyo

Copublished by
KODANSHA LTD., Tokyo

and
ELSEVIER SCIENCE PUBLISHERS B. V., Amsterdam

exclusive sales rights in Japan
KODANSHA LTD.
12-21, Otowa 2-chome, Bunkyo-ku, Tokyo 112, Japan

for the U.S.A. and Canada
ELSEVIER SCIENCE PUBLISHING COMPANY, INC.
52 Vanderbilt Avenue, New York, NY 10017

for the rest of the world
ELSEVIER SCIENCE PUBLISHERS B. V.
25 Sara Burgerhartstraat, P.O. Box 211, 1000 AE Amsterdam, The Netherlands

ISBN 0-444-98981-1 (Vol.28)

ISBN 0-444-41801-6 (Series)

ISBN 4-06-202899-9 (Japan)

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Preface

More than 200 years have passed since the discovery of zeolite. This natural mineral was first used as an ion-exchange material and as an adsorbent. After World War II, low temperature synthesis and the discovery of natural zeolite deposits of sedimentary origin made it possible to obtain large supplies of zeolite. Because of its unique crystal structure, various uses were developed and significant progress was made in basic research on zeolite in geology, mineralogy, synthesis, structure, ion exchange and modification, adsorption and diffusion, catalysis and technology. Thus zeolite, a mineral formerly known mainly as an item exhibited in museums, gained importance as an inorganic material with superior performance potential.

This progress was accelerated by the appearance of highly siliceous zeolites with medium-size pores. As soon as the role of these zeolites as high-efficiency catalysts in the methanol-to-gasoline process was recognized, the world's zeolite scientists and engineers began to cast enthusiastic eyes upon such novel kinds of zeolite, stimulating basic studies on the synthesis, structure and catalysis of highly siliceous zeolites and giving new impetus to the progress of zeolite science as a whole. This trend resulted in the appearance of various metallosilicates and aluminophosphates with a zeolite structure. It was in the midst of such exciting scientific and technological activity that the 7th International Zeolite Conference was held in Tokyo in August 1986, following the Conference held in Reno, U.S.A., in 1983. Moreover, it is significant that the Conference was held for the first time in Asia; all past Conferences were held in Europe and North America.

Because of increasing world-wide interest in zeolite, over 260 papers were submitted for oral presentation. After quite strict review, 121 papers were finally accepted. This volume, which contains the 121 accepted papers together with 12 papers including an introductory talk, two plenary lectures and nine invited lectures, is valuable not only for quantity but for quality as well. In addition to the above papers, over 180 poster papers, whose titles and authors are listed in this volume, were presented at the Conference.

The contributions introduce numerous new results and concepts. MAS-NMR has become a powerful tool in the structural analysis of zeolite, metallosilicate and aluminophosphate, enabling definition at the atomic level of the silicon and aluminum forming the zeolite framework. Detailed knowledge on the structure of natural zeolite has increased. Regarding synthesis, studies on the preparation of various metallosilicates, the role of various organic compounds as templates and the kinetics of crystallization and crystal growth have been made. Developments in zeolite catalysts focus not only on the solid-acid catalysts and the shape selective catalysts but on the bifunctional

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type catalysts as well. Catalyses by metallosilicates or silico-aluminophosphates are also reported. Many remarkable attempts to improve the catalytic performance by modification are presented. Much effort is also being devoted to the analysis of adsorption state and diffusion in zeolites. Zeolite deposits of economic value are reported from several countries.

Because of the high quality and originality of the papers in this volume, the 7th International Zeolite Conference was a most exciting one.

We are grateful to all the reviewers who have contributed so much to the quality of the papers in this volume. Grants from the Commemorative Association for the Japan World Exposition, the Kajima Foundation, the Shimadzu Science Foundation, the Nippon Sheet Glass Foundation for Materials Science and the Yoshida Foundation for Science and Technology as well as contributions from over 70 companies are deeply appreciated.

August 1986

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Editors
Y. Murakami
A. Iijima
J.W. Ward

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