

SCIENCE AND TECHNOLOGY
TO ADVANCE NATIONAL GOALS:
SCIENCE POLICIES
IN THE UNITED STATES AND JAPAN

Edited by
Dale R. CORSON and Sogo OKAMURA
with the assistance of
Carole Ganz-Brown

Japan Society for the Promotion of Science

1989

SCIENCE AND TECHNOLOGY TO ADVANCE
NATIONAL GOALS:
SCIENCE POLICIES IN THE UNITED STATES AND JAPAN

PROCEEDINGS OF THE FIFTH U.S.-JAPAN SCIENCE POLICY SEMINAR
May 21-24, 1989, Honolulu, U.S.A.

Edited by
Dale R. Corson and Sogo Okamura

with the assistance of
Carole Ganz-Brown

JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE
TOKYO, JAPAN
1989

PREFACE

This volume represents the proceedings of the 5th U.S.-Japan Science Policy Seminar held from May 21 through May 24, 1989 at the East-West Center in Hawaii under the sponsorship of the National Science Foundation (NSF) of the United States of America and the Japan Society for the Promotion of Science (JSPS).

The idea of holding joint seminars to compare the science policies of the United States and Japan originated from recommendations made at the 5th Co-Chairmen's Meeting of the U.S.-Japan Cooperative Science Program, held in Washington, D.C. in September, 1979. The first seminar in the series was held from September 29 through October 2, 1980 at the East-West Center in Hawaii to discuss the organization of scientific activities, the kinds and amounts of resource allocations made to research projects, and the evaluation of scientific research. Proceedings were published by the JSPS.

The second seminar was held at the same location from August 24 through 26, 1982 to extend the bilateral dialogue on research policies. Topics discussed were the nature of basic and applied research, policies of resource allocation, practices of government support for research, university-industry cooperation, and patent policies for government-supported research. As edited by Professor Arthur Gerstenfeld, in 1982, Academic Press published the proceedings, *Science Policy Perspectives: USA-Japan*.

To deepen our understanding of the role of science policies under changing economic and scientific conditions, the main theme of the third seminar was "Transforming Scientific Ideas Into Innovations". Four aspects of this theme: production, communication, application and barriers to the transformation of scientific knowledge were discussed at the East-West Center in Hawaii from February 19 through 22, 1984, and the results of these discussions were published by JSPS in 1985. The publishing of the volume of papers, *Engineering Education: United States and Japan* by the NSF in 1988 represented the contributions by a distinguished group of Japanese and U.S. scholars to the fourth United States-Japan science policy seminar held October 19 through 23, 1986 at the East-West Center in Honolulu.

I would like to extend my gratitude to the American and Japanese participants, whose thought and hard work this volume represents. Our task in these seminars has been to bring distinguished individuals in academia, government, and the business community together in open discussion to lend insight to U.S. and Japanese science policy making, with the goal of

improving decision-making in science and engineering research and education. My sincere hope is that this volume will contribute to that deeper understanding.

Fuminori Sakai
Director General
Japan Society for the
Promotion of Science

ACKNOWLEDGEMENTS

Our special gratitude goes to Dr. Dale R. Corson, President Emeritus, Cornell University and Dr. Sogo Okamura, Professor Emeritus, Tokyo University. Their helpful suggestions and support at all stages of this project, and their skillful chairmanship during the three-day seminar made the meeting not only productive, but enjoyable.

In addition, we would like to express our sincere appreciation to Dr. John Boright, Director, Division of International Programs, National Science Foundation and Dr. Fumio Kodama, Director, Japanese National Institute of Science and Technology Policy for their thoughtful chairmanship of the Roundtable Discussion which explored cross-cutting issues among the seminar topics. The "Summary of Discussions" section of this volume highlights the major points of this Roundtable Discussion.

We would also like to thank the following individuals for their participation and contributions to the meeting: Albert Eisele, William C. Norris Institute; Tatsuo Kishi, JSPS; Tadashi Matsumoto, Kyowa Hakko Kogyo Co., Ltd.; Nagahide Onozawa, JSPS; Larry Weber, NSF.

Finally, our thanks include Dr. Carole Ganz-Brown, Senior Program Manager, Division of International Programs, National Science Foundation for her careful editing of the seminar papers; the East-West Center, Honolulu, for their logistical support of the meeting; and the Science and Technology Program, SRI/Washington for their assistance in preparing this manuscript for publication.