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Preface

Molecules containing heavy elements are stereochemically and electrochemically "dynamic" with rich physicochemical properties, due to the flexible nature of their valence electrons. Chemistry of heavy-element molecules is a realm of unlimited possibility, spanning coordination/cluster compounds of transition metal elements, organometallic complexes, and heavy main-group compounds. Because of the importance of developing the chemistry of such heavy element compounds, a new 4-year research project "Reaction Control of Dynamic Complexes" started in 2002 in Japan. About 100 active chemists participated in the project. Their specialties extended over a wide range of inorganic chemistry, organometallic chemistry, organoelement chemistry, and theoretical chemistry. Since the isolation and reactions of heavy-element compounds are often difficult to control, new methods for their creation and manipulation were sought.

This project, headed by K. Tatsumi, was financially supported by The Ministry of Education, Science, Sports and Culture, as a Grant-in-Aid for Scientific Research on Priority Areas. The following four sub-groups were set to investigate the designated research topics: (1) Synthesis and Function of Dynamic Complexes (group leader: Kazuyuki Tatsumi), (2) Reactions and Manipulation of Dynamic Complexes (group leaders: Mitsuo Kira and Fumiyuki Ozawa), (3) Dynamic Complexes in New Reaction Media (group leader: Takao Ikariya), and (4) Use of Dynamic Complexes for Highly Efficient Organic/Inorganic Synthesis (group leaders: Koichiro Oshima and Yoshiki Chujo). The designated subjects are broad in scope, yet rigorous in approach, encompassing classic disciplines of inorganic/organic chemistry and the interface with other areas such as bioinorganic/bioorganic chemistry, the chemistry of catalysis, materials chemistry, and macromolecular chemistry. Thus, one of the most important missions of this project was to bring together different disciplines of chemistry and/or different types of chemists, to blend them, and to create a new research area based on "Dynamic Complexes".

This special issue of *Journal of Organometallic Chemistry* is a compilation of the research output achieved during the 4-year period of the project, and 83 research papers are sorted in three issues in the order of the above four topics. I hope that our research results assembled in this special issue will make an important contribution to the community of chemistry, organometallic chemistry above all, by providing a basis for the future molecular design innovation and new reactions of heavy-element compounds, and that they will have an impact on a variety of related research areas.

I am grateful to all the chemists who took part in this project, and most of their names appear in this special issue as authors. Owing to their continuing efforts and dedication, the project has been completed with great success, and I truly enjoyed integrating the project. I would like to thank the members of Evaluation Committee, Professors Akio Yamamoto, Akira Nakamura, Hiroshi Ogino, Ryoji Noyori, Masanobu Hidai, Shinji Murai, and Kohei Tamao, for their advice and encouragement, and The Ministry of Education, Science, Sports and Culture, Japan, for their financial support.

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