

## Preface

Today mankind is confronted with energy and environmental problems. The ultimate solution to the energy problem is the effective use of solar energy. With respect to the environmental problem, one solution is the development of reaction processes that are free from unwanted by-products. Photoreaction control is expected to be a key technology in solving both of these problems. Photoreaction control is, in our definition, a technology to control reactions at the atomic and molecular levels by using photons. We expect that it will enable us to develop efficient artificial photosynthesis, highly-selective synthesis of materials, and material processing on the nano-scale.

It should also be recognized that in this new information age, the needs for high speed and high capacity information processing and transmission are intensified. Optical information processing is expected to be a means to solve this problem, and the development of photofunctional materials is vital for the realization of optical information processing.

The "Photoreaction Control and Photofunctional Materials" project was started by one of the predecessors of the National Institute of Advanced Industrial Science and Technology (AIST) in 1997 with the aim described above, and has been continued by AIST. The Sixth AIST International Symposium on Photoreaction Control and Photofunctional

Materials was held on October 29–31, 2003 in Tsukuba, Japan as one of the activities associated with this project.

The purpose of this Symposium was to provide a forum for scientists from all over the world to present their work in the field of photoreaction control and photofunctional materials, and facilitate discussions and the exchange of opinions among them. The topics covered in the Symposium include photoreaction mechanism, light energy conversion, laser-induced reactions and photofunctional materials. Twenty five lectures were delivered. The poster sessions were held separately and 80 posters were presented. A total of 275 people attended this Symposium. This special issue collects most of the papers delivered as lectures.

We hope that this special issue stimulates further studies in the field of photoreaction control and photofunctional materials.

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