

## Obituary

# Recollecting many years of friendship with Professor Kenichi Fukui\*

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It is several months since the death of Prof. Kenichi Fukui. From time to time I recollect his activities and personality, and mourn deeply over his passing.

Quantum-mechanical studies of the electronic structure of molecules in Japan before the Second World War was actively pursued for small molecules such as the oxygen molecule by a research group led by Prof. Masao Kotani, and its accomplishments are internationally highly regarded. After the war, in addition to these pre-war activities, new research activities sprouted from the devastation and chaos of the war and several groups of young chemists in their twenties and thirties in Sapporo, Tokyo, Kyoto and other cities initiated active research on complicated  $\pi$ -electron systems. As the place for research presentation, discussions and mutual communication among these researchers, “the  $\pi$ -Electron Symposium” was organized for the first time in 1952 by the Chemical Society of Japan and has been held every year since then. In 1953 a Group Research Project “Theoretical and experimental studies on  $\pi$ -electrons” was initiated with a grant-in-aid from the Ministry of Education, Science, Sports and Culture. Professor Fukui was the key participant in these activities and played the central role in the development of quantum-theoretical research on the electronic structure of complicated molecules in Japan.

At the  $\pi$ -Electron Symposia and in the Group Research on  $\pi$ -electrons, discussions were held mainly on the relationship between the electronic structure and the electronic properties arising from the mobility of  $\pi$  electrons. The topics included chemical reactivities, electronic spectra, electric conductivity, magnetic properties, double-bond properties and steric structure, and electric dipole moment and electron density. Always based on his frontier orbital theory, Professor Fukui presented, one after another, very creative research results on its applications to aromatic substitution reactions, polymerization reactions, carcinogenic activities, and other topics. I can still remember clearly Professor Fukui who gave lectures at the  $\pi$ -Electron Symposia in a

very gentle manner but with confidence and passion in his heart.

In the 1960s, strong sentiment arose among researchers involved in theoretical and experimental studies of  $\pi$ -electron systems for the establishment of a new institute, the Institute for Molecular Science. In 1966 a subcommittee to promote the establishment of the Institute was initiated, and discussions on the plans for the Institute took place. In 1974, the Ministry of Education, Science, Sports and Culture approved the preparation for the establishment of the Institute for Molecular Science, and the Preparative Committee was organized. Professor Fukui was a member of both committees and was instrumental in the establishment of the Institute. In 1975 the Institute for Molecular Science was finally established, and when the Institute Council was inaugurated in 1976, he was elected to be its member and contributed significantly to the selection of the Director-General and to other important decisions regarding the management of the Institute. Especially, for five years from June 1986 to May 1991, he assumed the responsibility as the Chair of the Council. Furthermore, until his death, as Distinguished Research Consultant, he continued to contribute to the development of the research activities of the Institute.

In December 1983 Prof. Kenichi Fukui was elected as a member of the Japan Academy. I was elected a year later in 1984, and I enjoyed the time I spent with him at the Academy over more than ten years since then, and am grateful for the many opportunities at which I could hear directly from him on topics other than research. At the regular meeting of the Academy in April 1996, he presented a one-hour lecture on “The new development of carbon chemistry”, which unfortunately was the last time I listened to a lecture by Professor Fukui.

Kanagawa Academy of Science and Technology, at which I presently work, is also much indebted to Professor Fukui. From its establishment in 1988 until his death, he was a member of the International Advisory Board, and participated enthusiastically in the decision-making of important operational matters and in the evaluation of research activities. I am extremely grateful for his great contribution to the establishment of the

\* Contribution to the Kenichi Fukui Memorial Issue

operational system of the Academy and in the upsurge of international evaluation of its research activities.

In addition to the  $\pi$ -Electron Symposium, the  $\pi$ -electron Group Research, the Institute for Molecular Science, the Japan Academy, and Kanagawa Academy of Science and Technology, I had many opportunities to be with Professor Fukui. Among them, one I particularly want to single out is when both of us, as members of the Science Council, an advisory body to the Minister of Education, Science, Sports and Culture, discussed and gave direction to important matters of Japanese academic administration. For six years, from 1990 to 1996, Professor Fukui was the Chair of the Science Council. I happened to be in the same Council and cooperated with Professor Fukui in deliberation of the

Japanese academic research structure for the twenty-first century and many other important means for the promotion of science in Japan. For six years as the Chair, Professor Fukui always stressed and advocated the importance of the promotion of basic research with a simple and to-the-point expression, fitting his thoughtful, careful and taciturn personality. This was based on his strong belief that the promotion of basic science leads to the happiness of human society, and is also a reflection of his long-standing assertion which values most the "spring source of knowledge" in research and education. I believe that further promotion and development of basic research in Japan is the way to respond to and to repay Professor Fukui's vision and many contributions.