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Preface



Professor Rokuro Okawara

An outstanding Japanese organometallic chemist, Professor Rokuro Okawara, passed away on 21 January 1998 at the age of 83. This issue of the *Journal of Organometallic Chemistry* is dedicated to him.

Professor Rokuro Okawara was born in Hyogo Prefecture, Japan, on January 20, 1915. He was educated at Hiroshima Bunri University (now Hiroshima University). Soon after graduating in March 1939, he got employment at a textile company for a short period, then he was enlisted for Japanese military service from December 1939 to April 1944. Then, he worked at a chemical company, Kurashiki Kouku Kakou Company, for 1 year. He was then invited to be a lecturer by the Faculty of Science, Osaka University, in April 1945, almost at the end of the Second World War. Osaka was heavily air-raided during the War, and many laboratories in Osaka University were destroyed. After the War, he devoted himself for many months to rebuilding the laboratory with little money, or even food. In May 1949, he was promoted to Associate Professor at the Faculty of Engineering, Osaka University, and his first work on organosilicon chemistry was published in *J.*

Chem. Phys. (1950). He received his D.Eng. in 1958 from Osaka University.

Naturally, as an organosilicon chemist, he had been interested in the works of Professor E.G. Rochow at Harvard University, and he spent 1 year at Harvard University during 1958–1959, where he became interested in the unique properties of organotin compounds. He introduced IR spectroscopy to the study of methyltin compounds. He found two bands in the IR spectra of common trimethyltin and dimethyltin derivatives in the region of 600–500 cm^{-1} , which were assigned to the symmetric and asymmetric Sn–C stretching vibrations. The symmetric vibration was absent in trimethyltin fluoride and trimethyltin formate. He first explained the observation by assuming that the compounds were ionic with planar SnC_3 skeleton, but later he made it clear that these compounds were polymeric, with planar SnC_3 moieties bridged by the anionic groups.

The other interest he had was the property of dimethyltin oxide. While oligomeric dimethylsiloxanes were known, and are soluble in many common organic

solvents, dimethyltin oxide is a white solid insoluble in most organic solvents. For the purpose of elucidating the origin of the properties, he worked on the tetraalkyldistannoxane derivatives, $\text{XR}_2\text{SnOSnR}_2\text{X}$, and found that these compounds existed as dimers, both in solution and in the solid state, by intermolecular association between Sn–O–Sn skeletons. This observation made him realize that the true structures of trimethyltin fluoride and trimethyltin formate should be polymeric as mentioned above.

A large number of organotin complexes having five- or six-co-ordinated tin have been prepared and their structures were estimated by IR spectroscopy, molecular weight measurement, and X-ray crystal analysis. The successful application of IR spectroscopy to estimate the structure of organotin compounds both in the solid state and in solution made a new breakthrough in organotin chemistry in the world. These properties of organotin compounds were distinguished remarkably from those of organosilicon compounds. During these investigations, he also found that the distannoxanes can work as an excellent catalyst for the polymerizations of urethane as well as the ring-opening polymerization of epichlorohydrin.

In February 1962 he became Professor at the Faculty of Engineering in Osaka University. Professor R. Okawara was the first Japanese author in *Advance of Organometallic Chemistry* (Vol. 5, 1967). The title was 'Structural aspects of organotin compounds'.

In 1969 he was invited to Iowa State University as an NSF senior foreign scientist and gave lectures of organometallic chemistry to students in graduate class for a half year.

He extended his work further to the organometallic chemistries of antimony, indium, thallium, lead, and some transition elements, such as nickel, palladium and platinum, and he made numerous outstanding contributions to the field of organometallic chemistry. During his life, he published about 200 papers describing synthetic, structural and mechanistic aspects of the chemistry of virtually every typical element and some transition elements.

His contribution to chemical societies in Japan is also worth noting. In November 1950, he was involved in the foundation of the Division of Organosilicon Chemistry, Kinki Chemical Society, Japan. In April 1958, the division expanded the name to Division of Organometallic Chemistry, Kinki Chemical Society, Japan. These divisions contributed to the development of organometallic chemistry in Japan by the organization of Japanese organometallic chemists, by regularly

holding symposia and seminars, and by the publications of *Yuuki Keiso Kagaku* (Organosilicon Chemistry) (1959), *Yuukikinzoku-no Kagaku-to Oyou* (Organometallic Chemistry and its Applications) (1965), *Yuukikinzoku-no Kagaku* (Organometallic Chemistry) (1966), and *Yuukikinzoku Handbook* (Handbook of Organometallic Compounds) (1967). During these years, Osaka had become the Mecca of organometallic chemistry in Japan, where Professors Shunsuke Murahashi (Osaka University), Nobue Hagihara (Osaka University), Seinosuke Otsuka (Osaka University) and Makoto Kumada (Osaka City University, then Kyoto University) were the leading organometallic chemists in Japan.

After Professor Shunsuke Murahashi, Professor R. Okawara was elected as the Chairman of the Division of Organometallic Chemistry, Kinki Chemical Society, Japan for 3 years, from 1970. He proposed to hold an international conference on organometallic chemistry in Japan, and the VIIIth International Conference on Organometallic Chemistry was held at Kyoto in September 1977. Professor R. Okawara worked in the local organizing committee for the arrangements of programs.

In 1963, Professor R. Okawara was also concerned in the foundation of the *Journal of Organometallic Chemistry*, and he served on one of the Editorial Boards until 1985. He contributed 63 original papers and five annual surveys in *JOM* between 1963 and 1981, one third of his contributions being in the field of organometallic chemistry.

He invited a number of organometallic chemists working actively in the world to Japan, which made inscrutable stimulations to Japanese chemists to improve the level of organometallic chemistry in Japan.

Soon after he retired from Osaka University in 1978, he worked for the settlement and the development of Okayama University of Science between 1978 and 1989.

He was awarded The Chemical Society of Japan Award in April 1975 and The Chemical Society of Japan Award for Technical Development in April 1986. In November 1988, he was decorated by the Japanese Order of the Rising Sun from the Government.

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