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In Memory of the Late Professor Shigeru Oae

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It is tragic that Prof. Shigeru Oae, Professor Emeritus of Tsukuba University, passed away on 3 May 2000, at the age of 80. His numerous acts of kindness and helpfulness to chemists throughout the world will long be remembered. The present article is dedicated to the deceased.

Prof. Oae was the first organizer of the International Conference on Heteroatom Chemistry (ICHAC), which was held in Kobe, Japan, in 1987. It should also be mentioned that Prof. Oae had been the Far East Editor of *Heteroatom Chemistry* since 1990 when the journal was founded by Prof. William E. McEwen. He was also the founding editor of *Reviews on Heteroatom Chemistry*, the first issue being dated 1988, and it is presently at the stage of volume 22.

Now, I will give a brief history of ICHAC. At the time when the 2nd ICHAC was held at Albany, New York, in 1989, presided over by Prof. Eric Block, Prof. Oae was hospitalized for an operation on his neck for osteoporosis, his bones having become fragile because of the loss of density. Therefore, he could not attend the meeting and we missed him.

The 3rd ICHAC was held in the beautiful city of Ricione, Italy, in 1992. It is sad that Prof. Nino Fava, who was the chairperson of this conference, had since passed away. Prof. Oae enjoyed the meeting and sightseeing around the city.

The 4th ICHAC was held in Seoul, Korea, in 1995. Prof. Yong Hae Kim, an alumnus member of the Oae group, played a key role in organizing this conference. Prof. Oae was very delighted to witness the success of his former students in Korea.

The 5th ICHAC was held at London, ON, Canada, 3 years ago, under the chairpersonship of Prof. Jim King. Prof. Oae attended the conference with his daughter, Mrs. Margie Inaki, and her son, Taichiro-kun.

It was sorry to see that at this moment of his life he lacked sufficient vitality to circulate widely and we got no chance to take his photograph during the conference. However, after the conference, Professor Oae and I flew together to Florence, Italy, to attend the 9th ISCOS, the International Symposium on the Chemistry of Organic Sulfur, and we stayed together at the same hotel. Photographs of Prof. Oae taken at this conference are probably the last ones taken while he was working actively as a chemist.

Prof. Oae had suffered from diabetes for many years and while he was being treated for this disease, he was also diagnosed as having pneumonia. Since that time (about 2 years ago) he was hospitalized for about 1 year and was unable to return to his own home except for one short period of time.

Prof. Oae published about 500 research papers and about 120 reviews and monographs in addition to 15 books. For many years he was one of the world's leaders in the field of heteroatom chemistry.

In 1946, shortly after the end of World War II, Prof. Oae began his career as a research worker in physical organic chemistry by joining the late Prof. Masuo Murakami's group at Osaka University. You can imagine the terrible social condition of Japan in that era. Most people were desperate for food to survive and had no time to pay attention to either cultural developments or the sciences. It is therefore understandable that he left Japan to carry on work at the University of Kansas, USA, so as to get involved in the realm of modern chemistry. Although

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he returned to Japan 3 years later, he remained dissatisfied with the state of chemistry here, and traveled back to the United States in 1954, this time to the University of Pennsylvania. It was 1959 when he returned to Japan as the Head of the Department of Chemistry at the Radiation Center of Osaka Prefecture, where I first met him and where we worked together, investigating the chemistry of sulfur. This position provided him with his first opportunity to organize and direct his own chemistry research group and gave him a good chance to develop his ability in chemistry. There is no doubt that the members of this group, including myself, were extremely fortunate to be involved in his American style of modern chemistry, which he constantly introduced to us. The experimental results we obtained were published internationally and were appreciated by innumerable chemists around the world. All of us could sense his enthusiasm for chemistry, which soon became a characteristic of the entire group.

His major chemistry topics in this period of his career were *3d Orbital Resonance in Organic Sulfur Compounds* and *Chemistry of Pyridine N-Oxide*. He advised us not to follow others but to use our own ideas, that is, to go our own way. Since then, these words have been, and still are, my motto.

In 1963, he was appointed as a professor of chemistry at Osaka City University, where his research group was expanded significantly to include about 30 research workers most of whom were graduate and undergraduate students. It should be noted that these graduate and undergraduate students have been contributors to most of the research initiatives in Japanese universities. The major topic that he investigated during this period was the *Chemistry of Sulfoxide*, including stereochemical investigations of various sulfoxide reactions. I believe that his research in this field is the most brilliant and valuable among his many outstanding contributions to chemistry. His ability in chemistry research and teaching blossomed rapidly at Osaka City University and his laboratory soon became a mecca of chemistry. I remember clearly that not only Japanese chemists but also chemists from all over the world used to visit him at his office in the university, and this state of affairs continued even after he moved to Tsukuba University in 1973.

At this point, I must mention that his varied activities could not have continued without the assistance of his secretary general, Prof. Naomichi Furukawa.

In the seventies student rioting caused difficulties in universities throughout the world for several years, Osaka City University was no exception. Faced with these difficulties, Prof. Oae was forced to quit his research at the university for a couple of years. Fortunately a new university was founded in 1973 at Tsukuba and he was invited to the university to work as the Head of the Chemistry Department, which provided another opportunity for him to teach his brand of chemistry to an entirely new group of people. His devotion to chemistry research led to successful results and he published many papers on the chemistry of sulfoxides.

Although his formal retirement from Tsukuba University came in 1983 at the age of 63, he was nevertheless able to devote another 17 years of distinguished sevice to the field of chemistry. A couple of years before he retired from the university, he became involved in a new research interest, namely *Ligand Coupling*. Although this phenomenon is reminiscent of what we see in "reductive elimination," (a term that he hated), a conventional concept in transition-metal chemistry, he introduced stereochemical studies into the reaction matrix in order to elucidate details of the mechanism, a concept that became a fact after his initial publication on the subject. His research into the chemistry of ligand coupling continued until he passed away. After his formal retirement, Prof. Oae established the Institute of Heteroatom Chemistry at his home, which had been a meeting place for chemists who shared his enthusiasm for chemistry. Indeed, this charismatic scholar loved chemistry throughout his life.

Prof. Shigeru Oae was also the kind of man who had a great love for humanity. He was always happy when surrounded by people. I believe that this was the main reason why he loved traveling around the world, making as many friends as possible. Up until the last months of his life, he acted as an ambassador of chemists worldwide. His interests were not only limited to chemistry, but also extended to various arts such as singing, painting, and pottery.

Therefore, in memory of Prof. Oae, I ask you all to join together, to communicate with each other and to enjoy good conversation. The topic of conversation may be anything, but whatever the conversation be, and wherever you are, I am sure that Prof. Oae would be happy to join you and listen regardless of whether you can hear him or not. Perhaps even now he is delivering lectures in chemistry in front of angels in Heaven. I can imagine his voice, saying "ligand coupling is a phenomenon which..."

With my deepest appreciation for my mentor, the late Prof. Shigeru Oae. God bless him.