

Fundamental Radiation Chemistry Research in Japan

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Not much after obtaining my PhD, in 1975/76 I spent 9 months in Japan in the labs of Prof. S. Sato and Prof. Y. Hatano. At that time Hungary belonged to the “Soviet” block and the trip was really a great adventure that basically determined my further scientific carrier. It was my first trip to the “west” and it was also the first time when I travelled by aeroplane. In both laboratories I found an extremely large number of complete vacuum systems (for degassing, Toepler pumps for gas collection, on-line vacuum measuring devices) with large amount of mercury in them. With simple equipment the scientists conducted first-class research and published papers in the leading journals. For instance, the colleagues fabricated VUV lamps supplementing the traditional hydrocarbon radiation chemistry by photodecomposition experiments. By comparing radiolytic and photolytic degradation they identified the excited state intermediates. I also prepared a lamp and took with me to Hungary and adapted the technique. Based on this research 8 years later I wrote my thesis for the DSc degree.

In 1997 I spent 2 months in Japan again and I was shocked by the great change that occurred in science. The Toepler pumps and vacuum systems disappeared. There were many new excellent scientific instruments, electron accelerators with ps, or even fs pulses, synchrotron etc. It is obvious that the Japanese scientists in certain fields want to be “the first”, e.g. in producing ultrashort pulses or in studying the early processes in radiation chemistry. I highly appreciate this behavior. The great boom in developing the basics of radiation chemistry was between 1960 and 1990. The fathers of radiation chemistry have

already retired and in most countries the research on the theoretical field stopped. It is not true for Japan. The Japanese scientists besides many investigations into the direction of practical applications continue to work on the fundamental field. Why I think it is important? As being an editor-in-chief of Radiation Physics and Chemistry I obtain yearly about 200 manuscripts. About 95 % of the papers concern practical applications. The scientist working on practical problems often does not have enough knowledge about fundamental radiation chemistry and often makes serious mistakes when writing the manuscripts, and unfortunately, sometimes in the practical applications as well.

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