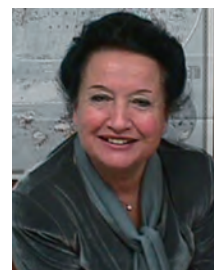


Pulse Radiolysis Studies of Solvated Electron in Dimethyl Sulfide at Universities Paris-Sud and Tokyo

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In the 70–80s, my main research activity was dealing with the pulse radiolysis of various liquids and the influence of their physical and chemical structure on the escape probability of the solvated electron. I remember, during my first visit in Japan, for the Intern. Congress on Radiation Research (Tokyo, 1979), my long discussions with Dr. M. Tachiya, who was the author of a theoretical model on the electron recombination. In 1982, I accepted with great pleasure an invitation from Prof. Y. Tabata, who organized an Intern. Symposium on Fast Processes in Radiation Chemistry in Tokai-Mura for the inauguration of the new Linac. When he asked me on the newly accessible studies with this picosecond pulse radiolysis facility, it came immediately to my mind the example observed, during the Jean-Louis Marignier's thesis (Fig. 1), of the simultaneous presence as early as 3 ns of two negatively charged species, issued from the solvation and from the attachment of the electron to dimethyl sulfide.

Only experiments at a shorter time resolution could answer on a competitive or a sequential mechanism. Prof. Tabata introduced to me the young Dr. Yosuke Katsumura in order to discuss the feasibility of the project, and he obtained for me an invitation by the JSPS to achieve a research work for one month at Tokai Mura.

When I arrived there in the snowy winter of February 1984, our experiments could start immediately and they continued non-stop, day- and often night-long... To save time, we had very friendly bento-lunches and most of dinners in the command room with the team of students, who are to-day promoted doctors and professors (Fig. 2).

The new results demonstrated that at 60 ps both solvated electron and radical anion $(\text{CH}_3\text{S})_2^\bullet$ were already formed, and that a competition, for the first time observed in an irradiated solvent, occurred between the simultaneous solvation of part of electrons and the attachment of the other ones onto molecules¹⁾.

This fruitful work induced a long friendship with my colleagues and a still alive French-Japanese collaboration between our laboratories.

References

- 1) J. Belloni, J. L. Marignier, Y. Katsumura, Y. Tabata, *J. Phys. Chem.*, 90 (1986) 4014.

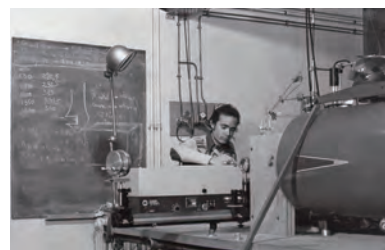


Figure 1. J.-L. Marignier and the Febetron at Orsay.

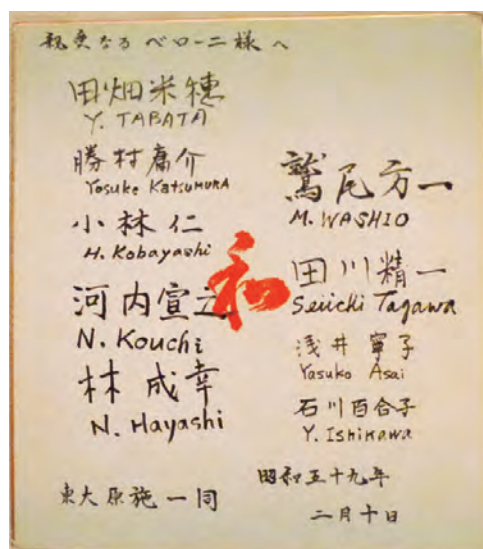


Figure 2. The team at Tokai-Mura in 1984.

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