

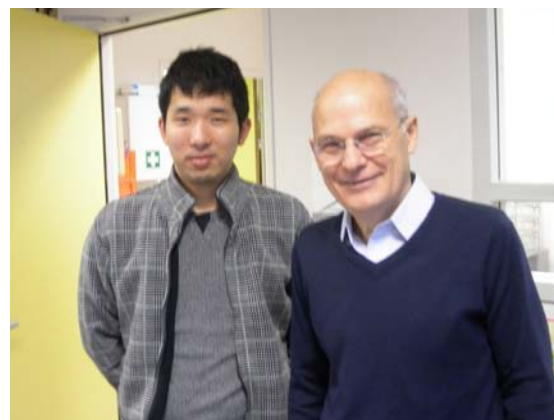
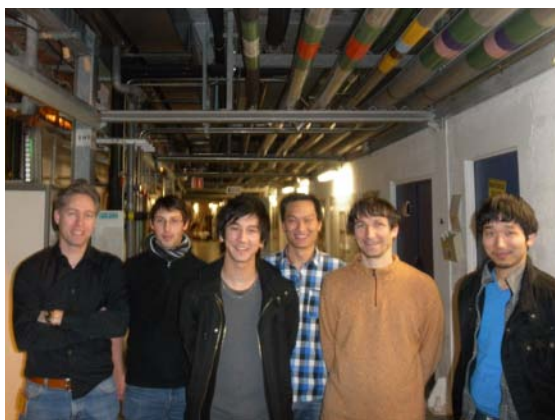
Studying abroad in France

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I visited Prof. Ludwik Leibler in Paris Tech (École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris) in France for four months (Oct. 1. 2013–Jan. 31. 2014). I studied reaction mechanisms in vitrimers based on solution experiments and quantum chemical calculation, and showed a new design principle.

Vitrimer is recently developed new organic polymer that can reorganize its shape at high temperature, and it is reshapable at room temperature. This property originates from reorganization of chemical bonds in this vitrimer, which efficiently proceeds only at high temperature. Zinc is known to accelerate the reaction and lowers the reorganization temperature, but detailed mechanism is unknown. I revealed the reaction mechanism of zinc-catalyzed bond reorganization, and a novel system using no metals. For the zinc-catalyzed system, I corroborated with Prof. Han Goossens in Eindhoven University of Technology to measure EXAFS at European synchrotron radiation facility (ESRF). Both experiments were not familiar to me, but owing to the help of staff members and colleagues. It was a stimulating experience for me to broaden my interest throughout the study there, and I realized the wide world in photon science.

Finally, I thank Prof. Leibler and the lab members for kindly accepting me, and I thank Prof. Nakamura, Prof. Sano, and ALPS projects for giving me an opportunity to study abroad.



(Left) Team members in ESRF. Prof. Goossens is on the left. (Right) With Prof. Leibler (right)