Report on the ICR-iJURC Short-term Exchange Program in the workgroup of Prof. Dr. N. Tokitoh, Kyoto University

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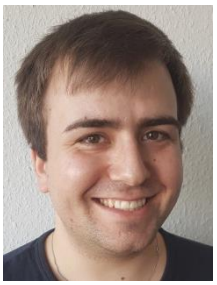
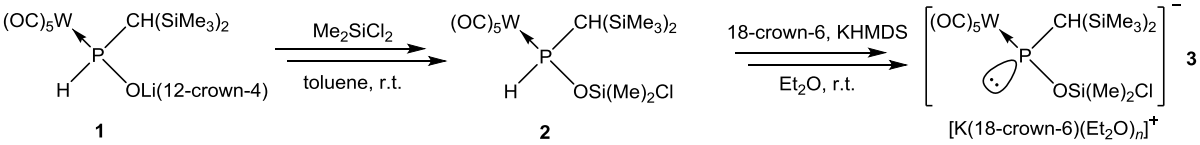


I studied chemistry at the University of Bonn and achieved my Master degree in September 2018. During these studies I focused on inorganic synthetic chemistry and wrote my Bachelor thesis in the workgroup of Prof. Dr. A. C. Filippou about the chemistry of low-valent silicon with cyclic alkyl amino carbenes (CAACs) and the Master thesis in the workgroup of Prof. Dr. R. Streubel about reactivity studies on isonitrile phosphinidene complex adducts. Since October 2018 I am working on my PhD project ibidem which builds up on the results of my Master thesis.

The longtime collaboration between the Tokitoh and Streubel workgroups bases on the shared interest of heteroatom containing organic molecules. In 2019 the workgroups started a new cooperation project about small molecule activation using anionic crypto-FLPs. Due to this project I was allowed to stay 2 months in the laboratories of Prof. Dr. N. Tokitoh in the Kyoto University.

The aim of my research was to investigate the reactivity of the crypto-FLPs containing a P-O-Si motif. Starting from the phosphinito complex **1** the siloxyphosphane complex **2** could be synthesized via addition of dichlorodimethylsilane and was isolated. The deprotonation of compound **2** could be performed successfully to obtain the anionic crypto-FLP **3**. Unfortunately, all attempts to isolate this complex failed. Thus, in the end of the stay only *in situ* reactions with **3** were performed. In this regard reactions with *tert*-butyl isocyanate and carbon dioxide were tested. While for the reaction with isocyanate the desired formation of the corresponding five-membered ring compound was observed next to several side products, the addition of CO_2 gave only the hydrolysis product.



During my stay, I learned a lot of new techniques which can also be applied in the research of Prof. Dr. R. Streubel and I had a lot of discussions to get new hints and insights into this crypto-FLP system. Furthermore, I learned to work and reproduce results under different conditions.

Besides, I am glad that I had the possibility to get in contact to a completely different culture by all accounts. I also had the opportunity to explore the city of Kyoto and a large part of Japan during my leisure time which is remarkably beautiful and breathtaking, and I could discover a lot of delicious food. Finally, I am also very happy for the possibility to meet so many talented and polite people.

I owe special thanks to the ICR-iJURC short-term exchange program for the whole funding including the flight and housing costs in Uji. Furthermore, I want to thank Prof. Dr. N. Tokitoh for the hosting and the possibility to work in his laboratories, Prof. Dr. Y. Mizuhata for organization and supervision of my stay and the whole Tokitoh workgroup for the nice atmosphere and all the discussions.