

Report on MERIT Long-term Overseas Dispatch

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I studied under supervision of Prof. Jonathan Nitschke at University of Cambridge from December 4th to February 28th. Nitschke group focused on the synthesis of metal organic nanocages and development of dynamic system by modification of nanocages after assembly.

On the other hand, our laboratory has developed the atomic-resolution electron microscopic analysis of single organic molecules, and I investigated the interaction between cyclic oligosaccharide, cyclodextrin, and curved graphitic surface as a model to investigate the size-selective complexes of cyclodextrins. I decided to visit Nitschke group because I would like to extend my research from investigation of the molecule-surface interaction to molecule-molecule interaction.

After the schedule was fixed, I discussed the research plan with Prof. Nitschke and Dr. Pilgrim and decided to synthesize the nanocage with reactive cycloalkyne group. Because there was Xmas vacation during my stay, therefore the time was limited, however, finally I obtained the targeted compound. I did not experience organic synthesis and coordination chemistry, therefore the research in Nitschke group provided me a good occasion to learn new methodology,

I have also set two goal before going abroad. First one is to explore and learn the key of high productivity in Nitschke group. Although working hours in UK is generally shorter than that in Japan, Nitschke group has published many high impact papers. Second one is to improve communication skill in English enough to show a presence in casual conversation, in which people do not pay attention to me unlike presentation and discussion in symposium.

In Nitschke group, most students have tea time at 11 am, lunch time at 1 pm and go home around 6pm. Therefore, the working hours was actually short. I thought that discussion which was frequently conducted between students

played an important role to achieve high productivity. Everyday discussion enables them to share their knowledge and technique completely and collaborate each other to reach the best result from initial results. This collaboration and lively discussion which makes it possible achieving fast output of the results. Moreover, people frequently change their laboratory during doctoral course and post-doctoral research in UK, therefore the lab members have various background, and also they have interaction among other laboratory in the department. These features help their research style. Finally, I have again realized the importance of networking between a lot of research areas, which was afforded by MERIT program.

For the second topic, I often experience difficulties in English communication. It was difficult for me to join the casual conversation because it was fast. However, I gradually got used to the speed of conversation and sometimes made a reciprocal conversation. I have got feeling of confidence to be adapted to their conversation when I will work abroad.

I brought back the obtained compounds to Japan and will proceed to further analysis including transmission electron microscopy. I hope that this program will lead to the achievement as a collaborative research.

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