

MERIT Long Term Overseas Dispatch (ETH Zurich)

2016.06.01-2016.08.31

School of Science, Department of Chemistry
Inorganic Chemistry Laboratory
D2 Eunice Phua

I spent my 3 months exchange in the Laboratory of Polymer Chemistry at ETH Zurich. My host professor, Prof Dieter A. Schlüter, is a full professor in the Department of Materials and focuses his research on polymer synthesis with particular interest in the organic and supramolecular chemistry.

As my doctoral thesis is on 2D imine containing coordination nanosheets, we decided that I would focus my 3 month research on something similar, an acetylene-containing 2D imine polymer formed at the air/water interface. Although similar, there are also many differences between the two projects, which could give me a fresh perspective on my project when I return. The synthetic method used in this group is also slightly different; in this case, synthesizing at the air/water interface uses a Langmuir Blodgett trough, which allows control of the surface pressure of the interface such that monolayers have a higher probability of being formed. Unfortunately, this method cannot be applied to my current doctoral project, but I think this is a very useful method to obtain monolayer nanosheets which we are interested in, since monolayer nanosheets behave slightly differently from multi layered ones.

There are approximately 20 researchers in the lab, and interaction with them also taught me many things. Other than about scientific research, I also learnt a lot about the lab culture in Europe, and also many things from a colleague who grew up on a farm as I have always been a city child. There is a forest park just behind the school campus where many students and staff go for walks or jogs in good weather. On some days, there would also be cows or horses or even sheep grazing in the fields. The photo below was taken at the edge of the forest park facing the school campus; part of the campus is seen towards the right of the photo where there are some low-rise buildings. At the front of the photo, we can see the beginning of a corn field, which was almost fully grown by the time I was leaving (see photo inset at left).



Photo showing the campus surroundings. (inset) An almost fully grown cornfield!

The most significant difference, I feel, about the lab culture in Switzerland and Japan, is how the PhD students work. In Switzerland, the PhD students are working staff with a certain number of days off per year and they have the ownership of their own research project. They are able to put up

notices to attract master course students to work under them on a side project that interest them, or contact their own collaborators to work with. The role of their PhD student feels more like the equivalent of an assistant professor here in Japan. I have heard that this is the general working style of most European labs, which probably prepares the PhD students better for heading their own labs in the future.

There are some facilities in ETH which helped with the efficiency of research. For example, they have a glassware washer, which saves a lot of time spent on glassware cleaning when doing experiments. They also have technicians to help with many analyses which we have to do on our own here, but this has both advantages and disadvantages. The advantage would definitely be time saved, but the disadvantages include not knowing how the particular machines work since the analyses are done by someone else.

The cost of living in Zurich is very high especially the transport. However, almost all Swiss or their residents hold a 'Half fare card' which allows for half price off all transport in Switzerland. In addition, if you are a staff or student of ETH Zurich (PhD students included), you can get this half fare card for free, or even a full year pass (that covers all transport in the whole of Switzerland) at a much lower price. Unfortunately for me, as an exchange student, I do not count as a staff.

It is however, rather comfortable to live in Zurich, and I do not really have problems with language issues since almost everyone can speak English. Although I would think that is it still a good idea to learn some German before going since all the signs are in German. For example, on my first day in school, I did not know which restroom to enter as there were no signs, only words written. Other than that, the German-speaking region of Switzerland actually speak Swiss-German, which is slightly different from regular German, so it could still be difficult for German speakers to communicate with the local Swiss.

Lastly, I would like to thank the MERIT program as well as my professor, Prof Nishihara, my host professor, Prof Schlüter, for all the support that I have been given to go on this long term dispatch. It was a very enjoyable experience and I highly recommend everyone to try out a research stint in a different country and in a slightly different research focus as I believe that this is an invaluable experience.



Panoramic view of Zurich city.