

Experience report 2018

Home university: University of Waterloo

City, country: Waterloo, Ontario, Canada

Department (Home university): Department of Chemistry &
Department of Physics and Astronomy

Period of stay: May – August 2018

Accommodation: Hans-Dickmann-Kolleg (HaDiKo)

Useful links for the stay: <https://www.nextbike.net/>,
<https://www.bahn.com/de>, <https://www.flixbus.com/>,
<https://canada.diplo.de/ca-en/consular-services/visa>, <http://www.expat-karlsruhe.com/home.html>

Institute at KIT: Lichttechnisches Institut (LTI)

I've always wanted to work in Germany, because it has the reputation of having the best engineers in the world, and for the opportunity to live abroad and immerse myself in a different culture. Working at KIT has fulfilled that wish. I want to thank the Christian Bürkert Stiftung for supporting me at my work term abroad because it has given me countless experiences that I will not forget.

First, a little bit about myself. In September, I will be entering the final year of my Bachelor studies in Materials and Nanosciences at the University of Waterloo (UW). I am a member of the varsity swim team at UW and we compete against other universities in Ontario and in Canada. I volunteer for science outreach and recruitment at UW and hope to be a role model for other women in science, especially those in underrepresented fields.

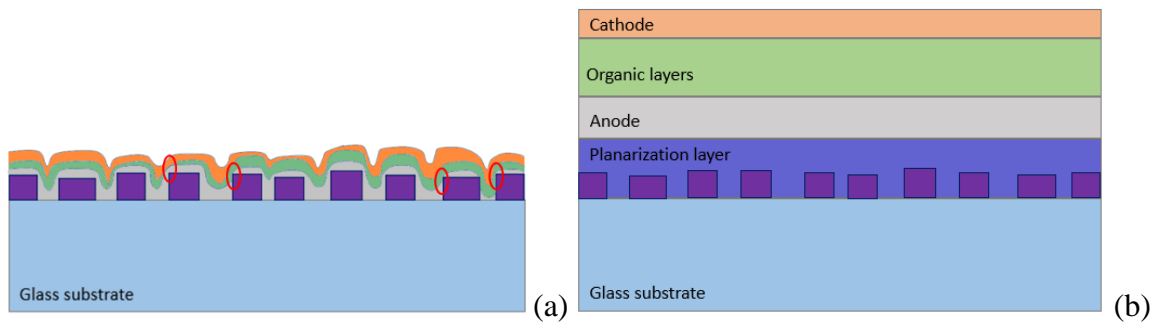
When I first arrived in Germany I was greeted by Franz, a student at KIT who works for the International Student's Office (IStO). She picked me up from the Hauptbahnhof and brought me to my residence. Throughout the week, another student, Lisa, helped me and other UW students to register at city hall, get a cellphone plan, and other administrative things that I could not have done without her. I am very grateful for the two of them making my transition here very smooth as well as the other staff at the IStO who helped me with my visa and finding accommodations in Karlsruhe.

Living in Germany

For my stay in Germany, I lived at the Hans-Dickmann-Kolleg (HaDiKo) which is a student residence. It has 15 students on each floor, so it was a great way to meet others. Some standout memories include watching the World Cup in the kitchen and having a barbeque on our balcony. HaDiKo was a great location because it's about a 15 minute walk or 7 minute bike ride to LTI.

At LTI, I worked on improving the light emission of organic light-emitting diodes (OLEDs). OLEDs show a lot of promise for the future since they can be made on flexible substrates and

have the potential to be made cheaply. Currently, many of the photons produced in OLEDs are trapped inside due to internal reflection. It was discovered that a layer of nanostructures can help with scattering light in an OLED and more light will be emitted.



(a) The layers are not stacked properly which leads to shorts in the device (b) Planarized OLED

The problem is that when the nanostructures are present, the devices are not electronically stable and do not work 100% of the time. My project involved making a planar (flat) layer on top of the nanostructures so that there is still a scattering effect while achieving consistent electrical stability. During my time I conducted many tests and I was able to find some parameters that worked but none that significantly improved the light extraction. Although I did not complete the project, I gained a good understanding of the spirit of research and that not everything you try will work.



Working at LTI and me holding my first working OLED

I would like to thank my supervisor, Dr. Guillaume Gomard, and his doctoral student, Yidenekachew Donie, who supported and assisted me throughout my entire time at LTI. LTI was a great working environment because there are a lot students, some of who became my friends.



Myself and a couple friends visiting the Lichtenstein Castle

Travel

Travelling in Germany was far easier than in Canada. The public transportation system in Europe was amazing with so many trains going all over the continent and seamless transfers. The Deutsche Bahn (DB) website was easy to navigate and has made travelling around Germany easy because they have the same signs and methods to get around everywhere. I was also amazed that the trains even went to small towns and not just the main cities. In Canada the trains go mainly to the larger cities and you have to drive to all the smaller towns. I also took the FlixBus during my time here which goes everywhere and was a cheaper alternative to taking the train. The bike lanes were fantastic too. I once biked from Karlsruhe to the Rhine River and was awestruck that there was a bicycle lane right beside the highway! I will definitely miss the transportation system when I go back home.



The Rhine River during my bike ride

I made sure to take full advantage of my time here in Europe and travelled all around on my weekends. At the end of my time here, I will have been to a total of nine countries. Here are the places that I visited:

Germany: Berlin, Munich and Leipzig. In Berlin and Leipzig I met up with a friend from UW who was working in Hamburg for his co-op work term.



Beer garden in Prenzlauer Berg, Berlin

Switzerland: Bern, Interlaken, Lucerne and Zurich. Switzerland was a beautiful country with its mountains and lakes. In Zurich I met up with an old colleague of mine who is doing her post-doctorate.

The Netherlands: Amsterdam, Haarlem. I met up with a cousin here and we visited a relative in Haarlem.

France: Strasbourg. Strasbourg is a beautiful city and I was happy to be able to practice my French with the locals.

Spain: Mallorca. I visited Mallorca with another UW co-op because we found cheap flights with RyanAir.



In front of the cathedral in Mallorca

Italy: Rome. Met up with my parents here at the beginning of July and I was happy to see them halfway through the semester!

Austria: Salzburg. Beautiful city with a lot of history and musical influence.

Luxembourg: Luxembourg City. I will be going in mid-August.

Ireland: Dublin. I will be meeting a friend from high school in Dublin after I finish work at KIT and then I will fly home from Dublin.

Food



Schnitzel and bread machine

Food is something that I love trying around the world since it is such a large part of every culture. Some of my favourite foods include pretzels (especially käsebretzel), schnitzel and leberkäse. All of the desserts and pastries were lovely. I will miss the bakeries on every corner since they are so convenient and have such delicious foods! At HaDiKo we had a bread slicer and that was very cool.

My short time here was unforgettable and Germany will always have a special place in my heart. Thank you again for your support, I truly enjoyed this opportunity and would do it again.