

Personal Testimonial

Research Internship Information	
Institute: Institute of Nanotechnology	
Project: Printed Electrolyte Gated Transistors	
Supervisor: Gabriel Marques	Duration of stay: 15/01/2020 – 31/09/2020

Contact Details	
Name: Tongtong Fu	E-Mail: t9fu@uwaterloo.ca

MINTernship Program 2019/2020

Date:

I am a student from the University of Waterloo, since my first year of studying, I wanted to come to Germany for my internship because I have never been to Europe before. People refer Germany as “the Land of Engineers” and I am a Nanotechnology Engineering student, that makes me even more longing to come. I believed this opportunity would allow me to explore every aspect of German people’s work and life. As I finished my 3rd year of studying, I feel like I have gained enough ability and knowledge to be helpful in a research lab. I applied the position in the printed electronics group at the Institute of Nanotechnology (INT), since the group is doing research on minimizing the size of electronic devices with studying its profile at the Nano-level, I thought this would be a perfect match for me to learn and build up my path in Nano-electronics.

I was so happy when I got the position, the KIT international student

I agree that my report and accompanying pictures may be used by KIT in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the MINTernship program.



Karlsruher Institut für Technologie

office helped me making my visa application process very quick and smooth, and I was able to come to Germany at the very first day in 2020.

I was picked up by my student mentor from the student office and checked-in to the student resident HFK. The student leader was very nice and would like to explain all the dorm rules to me patiently, and I was very impressed by how the students were able to organize everything in the residence by themselves, every student takes responsibilities and contributes as much as possible in the residence and I was happy to be part of it. During the time in residence, I was able to cook some of my hometown dishes and share with other students, I helped a student with her exam in Chinese and found out that so many of them had exchange experience in China, there were so many of those activities, and I feel like the German students are even more happy to see culture diversities been brought into the residence.

I agree that my report and accompanying pictures may be used by KIT in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the MINTernship program.



(picture of some Chinese dishes I made in HFk)

I am cherishing every minute I have at the INT, my supervisor is very experienced in the field of printed electronics, and he was able to guide me into the topic in a very professional way when I just arrived. Only a week I already feel I can do all the laboratory works independently because my supervisors and co-workers were so friendly and helpful, the whole research group had a very positive and hard working environment, that encouraged me wanting to be very focusing on works and solve problems as much as possible.

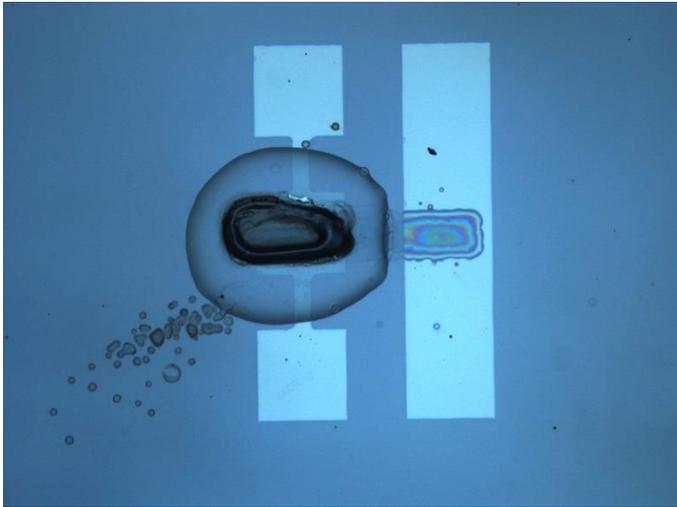


(Institute of Nanotechnology)

One of an interesting project I have done is to make the Nanoparticle transistor and tune its threshold voltage by varying the width/length ratio of the transistor. The picture attached below is a transistor printed by the inject printer, and the channel part was made by Indium Oxide nanoparticles. I think this work is very meaningful, because the whole fabrication process was in room temperature, that means we are developing devices that has potential to be made only by using an inject printer in the future. Also, the electronic characteristics followed the prediction that the threshold voltage was able to be controlled, shows

I agree that my report and accompanying pictures may be used by KIT in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the MINTernship program.

that it is possible even to have circuits been made in a much more simple way.



I am also grateful that I was able to do experiments and take over projects in the field of High Entropy Oxides, which is the other research direction of our group. Every day at work, I was charging up myself with knowledges and findings in topics that I barely encounter in my courses. I was willing to find new synthesis methods for HEOs, and was glad to be helpful when participating in different projects and making contribution to the group. My supervisor also allows me to participate in some paper publishing, which is another very valuable chance that I did not expected before I came here. Many of my co-workers are from different part of the world, so when we go for lunch together, we always share our experiences being an international student/worker, and we can learn from each other. I am not only gaining knowledge in research in the

I agree that my report and accompanying pictures may be used by KIT in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the MINTernship program.

institute, but also lots of lessons from life from other co-workers in my group, I appreciate them sharing their personal stories with me.

Moreover, out of expectation that the food at the Mensa is very decent as in fact, which broke my stereotype of “German people cannot cook”. I barely cook back in residence because I am quite lazy, so the food at the Mensa supports my nutrition for the day, and as I always tell my parents when they give me a phone call, that I am eating healthy over here and want them not to be worried.



(Photo of a dish at the Mensa)

Other than my life in the residence and at the institutes, I always take the opportunity during weekends to travel. So far I have been to 9 cities in Germany, 5 cities in France and also visited Switzerland, travelling in Europe was so convenient because of the well-developed



Karlsruher Institut für Technologie

railway systems. I am also glad that Karlsruhe is at a very center location of transportation, so lots of train would pass through from here. It was also very safe to travel as well, this allows me to explore the night views and nightlives of Europe. Most people I encounter in my journey were very friendly and I can feel that foreigners are being warmly welcomed to travel in those places. There are some pictures of the beautiful views I have explored; those journeys helped to recover me from all the tiredness from school and works.



(picture of visiting le-mont st Michel)

I agree that my report and accompanying pictures may be used by KIT in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the MINTernship program.



(a picture of me visiting my supervisor's hometown—Nuremberg)

I really enjoyed my life in Germany since the grocery shopping and daily life consumes are cheaper comparing to north America, and there are lots of high quality but inexpensive restaurants. Also, I was surprised by the cost of housing here is incredibly cheap, no matter it's student residence or renting a place in the city, this saved me a huge amount of money every month, that I could use those budgets to travel more in Europe.



Karlsruher Institut für Technologie

So far in my time in Germany, I barely had any difficulties in terms of settling down or any other trouble in life, and I think that is because every person that I encounter here were being friendly and willing to help me, and in general German people are very well organized in many aspects, so most of the process went through very smoothly. I will cherish this experience in Germany for life, and I highly appreciate the funding program gave me such an opportunity to add a highlighting period of my life.

I agree that my report and accompanying pictures may be used by KIT in printed materials, presentations, and on websites in order to inform funding organizations, sponsors, and students about the MINTernship program.