

International Summer School 2022 at Jade university

Being a first year PhD. student with a bio-engineering background, I want to incorporate microfluidic devices within my project. However, only a very brief introduction in microfluidics was given during my educational program. Therefore, I wanted to learn more about microfluidic devices, their applications and possibilities. By doing some research, I found the possibility to attend the international Summer School on fluidic MEMS (micro-electromechanical systems) in Wilhelmshaven (Germany), at the Jade Hochschule. I decided to give it a shot, and applied for the summer school together with a colleague. I was very lucky we both got in and was excited to pack my luggage somewhere in the mid of August to travel to Wilhelmshaven.

After a long day of travelling by train, we arrived at Hotel Home in Wilhelmshaven, where we received a very warm welcome. The people were very welcoming and warm, they really wanted us to feel 'home'. But not only the people from the hotel wanted us to feel at ease. When we got to the university the very first day, we were also welcomed with open arms. During the morning, we got to know each other already a bit better doing funny games after some general information. In the afternoon, the lessons started and there again, we were kindly welcomed, both in the lab as in the theoretical lessons. To conclude this first exciting day, we had a great get-together among all students, teachers and organizers during a welcome dinner. We got to know each other a bit better and we all learned 'a barbecue' in Germany is something different than a barbecue in every other country.

As the lessons continued, we have learned a lot about microfluidic systems. Besides some basic theory of fluidic mechanics and implications on the small scale, the lessons were substantiated by real-life applications and research done by the teaching professors. Moreover, the theoretical lessons were accompanied by practical courses. During the first week, we got an insight into how microfluidic devices are made by fabricating our own chip, using either soft lithography or hot embossing. Eventually, we tested these chips and got some more insight into fluid behavior on small scale. Already during the second week, we were able to implement the knowledge from the first week in an application: a glucose sensor. While encountering multiple problems during the execution, we learned theory is not always that easy to put into practice. In the last week, we made some colorful computational models to better understand the behavior of fluids in microdevices, and concluded studying a specific model to separate particles according to particle size. I believe the combination of theory and practice was one of the greatest assets of the educational program. Because the things we learned during the classes were immediately put into practice, the learning process became faster and more fun.

Although the lessons were already a great experience on itself, the things we have learned are not limited to microfluidics related matters. The point of following an international summer school was indeed not only to learn about microfluidics, but also to learn a bit English, to get to know different people and understand and respect different cultures. Although my knowledge on English vocabulary and grammar has not greatly improved during these three weeks, I notice that I now dare to speak. Instead of learning new words, I learned how to use the words. Even though I am a shy person, I got to know many people, partly thanks to the organized activities. Despite some covid infections within the organizing team, the leisure activity program went on. A bowling game in which I made zero points with the lightest ball, a Viking Chess game where we succeeded to not hit anything within two games, a trip to Nautimo, getting seasick on a boat while getting to a beautiful island, falling into the Banter See while trying to SUP... I enjoyed all of these activities, although I was definitely not good in all of them.

I got back home with mixed feelings. Although I was very happy because I have had a great experience, had learned a lot and made friends from all over the world, I was sad because it had to end so soon. Luckily, there are some things that are remaining: valuable knowledge, good memories and friends from over the world. *Vielen Dank!*