

## Non-Technical Report MagIC, HZG

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After two years of a Natural Sciences degree, I found myself curious to explore what the world of Material Science research would entail. The chance to work at MagIC, HZG was therefore timely as I prepared for my second summer vacation. The opportunity not only provided a valuable insight into the world of research, but allowed for significant personal development on my part.

Upon arrival in Geesthacht, North Germany, I was met with a few unexpected surprises. The first was the unfavourable climate, which I quickly learned was a result of being on the same latitude as Birmingham. Secondly, and more importantly, was my lack of German dialogue. Menial tasks such as setting up a bank account proved particularly challenging and whilst I had spent most of the year learning German through online sources, I quickly learnt that the conversational German was not something to be learnt through a screen.

I found myself in a multinational research group, with researchers from Hungary to Malaysia to Australia. The international nature of the group certainly made me feel more comfortable. At the international centre, English is a common language between all nationalities, which put initial concerns about the language barrier to ease. The group, WZP, focuses on solidification in magnesium alloys, with their work focusing on in situ synchrotron tomography (3D imaging of solidification) and TEM analysis of post mortem structures.

After a week of finding my feet, I found myself plunged into the world of research with a trip to DESY Hamburg. Here I got a chance to work in the main beam line hatch on the PETRA III (closed down for summer maintenance) to prepare samples for the project. This involved recreating a previously attempted heat treatment to gain a further insight into the resultant microstructures.



Working with the research group for two months gave an insight into the frustrations of academic research. This was evident in our inability to gain any usable TEM images during my time at HZG. This came after several days in the lab grinding, slicing, cutting and polishing samples, followed by a week spent in the darkness of the TEM room, only to find no section thin enough to be electron transparent.

*Frustrating and fruitless work on the TEM, a dark week for all (TEM requires a very dark room).*

Outside of work, I made sure to appreciate my chance to explore Germany. The small city of Geesthacht, where I lived, was quiet and offered little beyond views of the river Elbe. Therefore, on the weekends I travelled around the country. Starting closer to home, I explored nearby Hamburg over numerous weeks. I managed to catch a variety of local events, from the Hamburg Wasser triathlon, to

the Alstervernügen, and feel like I came away with a real connection to the port city. On other weekends I explored the Hanseatic cities of Lübeck, Lüneberg and Bremen, getting a better feel for the history of the Schleswig-Holstein and Lower Saxony regions.

Soon I looked to venture further afield, and so I linked up with good friend and fellow CamPUSer Oliver Brown. Together we explored the capital, Berlin, taking in the sights and learning a great deal about the unique history and culture. A month later I found myself in Munich, enjoying the sun of the Englishgarten. A personal highlight to the summer was a visit to the Bavarian alps, where we summited Auerspitz (1811 m). We rightly rewarded ourselves with the (self-proclaimed) largest schnitzel in Bavaria the same evening.



*On the slog up Auerspitz; thirsty (and hungry) work.*

*The kleine Alster on a particularly photogenic day, one of Hamburg's many attractive (water based) sights.*

Despite my initial concerns about the language barrier, I feel I have made significant progress in both technical and conversational German. It has also inspired me to take German as my part II transferrable option. The opportunity to learn the language in this way, as well as to be immersed in another culture, is truly unique and I would wholeheartedly recommend students considering an application to the CampUS scheme to do so.

In conclusion, this trip has not only provided a unique insight into the world of Material Science research, but has enabled significant personal development, to which I am incredibly grateful. I'd like to take this opportunity to thank the Worshipful Company of Armourers & Brasiers, without whom this placement would not have been possible. I'd also like to thank the researchers of the WZP group Dr. Tolnai, Dr. Gavras and Dr. Subruto for their time, patience and wisdom which made the whole project easier and significantly more enjoyable.