

GIANT research internship experience report

Duration of the stay: 17.10.25 – 27.12.25

Research area: Fabrication and AFM measurements of
TDMC monolayers

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Laboratory work

I joined the Group of Prof. Dr. Joy Mitra, which is working on 2D TMDC materials. There, I learned several techniques to fabricate these materials and analyse them with Atomic Force Microscopy (AFM). Figure 1 shows a picture of my lab space, which I shared with 7 lab mates. The lab was comfortable and the atmosphere was very pleasant. My lab mates Narendra and Soumyadip introduced me to both the theoretical foundations and the practical fabrication of TMDC monolayers. In particular, Narendra taught me, how to perform measurements on these materials using AFM. Unfortunately, my laptop broke down during my stay IISER. Afterward, the lab kindly provided me with a laptop to continue my work.



Fig. 1 Picture of me operating the AFM software (left) my provided lab space (right).

Free time

I stayed in the PHD house called Eravimala. In the first days in the campus, I met many people in the campus and after a short time found some new friends. Many students were curious about my stay and how life in Germany is. At the same time, I learnt a lot of different things from the people here. After the first week, I joined the university football team and trained with them regularly. Figure 2 (left) shows a picture of my team before the final match in an IISER weekend tournament, which was cancelled, because of the heavy rain. In Fig. 2 (right), me and 3 lab mates visited some waterfalls not far away from the campus.



Fig. 2 Group photo of the football team (left) way to the waterfall (right)

In IISER, the opportunities to spend your free time are limited. But there are some sport activities, like football, badminton, volleyball, cricket etc. However, the campus is very remote. It takes quite some time to reach the most touristic places in the area. It takes 90min by car to reach the next bigger city called Trivandrum. Another big difference is the night life. In IISER alcohol, cigarettes and other drugs are forbidden, while in Wuerzburg the city offers many opportunities to go out and have fun at a bar or different clubs.

Teaching activity

I attended the master course semiconductor physics, held by Prof. Joy Mitra. Unfortunately, the lecture started in August, and I was only able to visit the last third of it. However, Joy Mitra is an excellent teacher and in this short time, I learnt some concepts and theoretical foundation about semiconductors. I additionally attended the lectures of Bert Hecht about his research in Wuerzburg, when he was visiting.

Critics

The communication about the funding was really bad. I expected to receive 12 000 rupees per month, as claimed in the Website of University Wuerzburg (<https://www.uni-wuerzburg.de/en/giant/mobilities/>) (Fig.3). After paying my accommodation and mess food with this money, I should have some money left to live here. But as Mr. Mitra told me, the 12 000 rupees were divided for 10 students. I don't know how they calculated, but that should not happen. At the end, I haven't received money from the funding, except of the travel allowance. As I heard, the Giant interns who stay in Germany got the promised 992 Euro per month. For future projects, the communication should be far better.

The funding includes the following lump sums for travel and living expenses:

For JMU students:

- Travel allowance: EUR 1,425
- Living allowance: INR 12,000 per month

For IISER-TVM students:

- Travel allowance: INR 100,000
- Living allowance: EUR 992 per month

Fig. 3 Screenshot of the website of University Wuerzburg (<https://www.uni-wuerzburg.de/en/giant/mobilities/>)

Additionally, the GIANT interns did not get the same accommodation. I was the only one, who didn't live in the guest house (VFR), while all other students were placed in VFR, as stated in the invitation letter, I was placed in one of the PHD housings. Again,

as stated by Prof. Mitra this was because of funding issues as well as status differences between the responsible supervisors. I lived in the PHD house, but at the end, I am really happy to get the experience with the same condition as PHD students here. Because of this, I met very nice people and stayed always in contact with different people with origins from almost every place in India.

Additionally, there was no guidance from the German side regarding the recognition of possible ECTS credits. On the website (<https://www.uni-wuerzburg.de/en/giant/mobilities/>), under the section *Credit Transfer Options*, it is stated that "*Master's students from IISER-TVM may discuss matters of credit transfer options with their academic supervisor.*" However, despite contacting three different offices regarding the recognition of credits, I was not able to obtain any clear information. This aspect should be communicated more clearly in future projects.

Conclusion

I would like to emphasize that I am very grateful and happy to have been given this opportunity. Despite the fact, that the process did not run entirely smoothly, the scholarship was successful both academically and in terms of cultural exchange. I enjoyed this time very much.

I would like to express my special thanks to Joy Mitra for making this experience possible. I also thank Rebekka Steinmann for the organizational support and for ensuring a smooth process wherever possible. Finally, I would like to thank my labmates Shashwata, Soumyadip, Gokul, Sraboni, Kritika, Satyam, and especially Narendra for welcoming me so warmly from the very first day.