

Final report

Internship abroad

Personal data and general information on the internship

Subject of studies: Geomaterials and Geochem

Bachelor/Master/State exam: Master

Time of internship: 12 / 03 /2025 to 11 /07/ 2025

Place of internship: Paris, France

Internship institution: ESPCI Paris, SIMM Laboratory

1. Planning and Preparation

The application process for this internship was primarily research-driven. I explored the official websites of several universities and laboratories in France to find openings where professors were actively recruiting research interns. I found my internship through my university's network. After reaching out to the hosting lab and submitting my CV and a short motivation letter, I was accepted by the SIMM laboratory at ESPCI Paris. The communication with my supervisor, E.V., went smoothly and the topic was clearly defined from the beginning.

As a Chinese student, I found it relatively easy to settle down in Paris, thanks to the large and active Chinese community. Through local Chinese social media groups, I was able to find housing very quickly. Although it is known that housing in central Paris can be scarce and expensive, I managed to secure accommodation along the RER commuter train lines, which made commuting to ESPCI Paris extremely convenient — very similar to Germany's S-Bahn system.

I did not take any formal language course, but I had a basic command of French before arrival and improved through daily use.

2. Internship

My internship project was focused on studying the mechanism of oil droplet solubilization in surfactant solutions under flow. It involved a combination of experimental work, theoretical

modeling, and data analysis. I worked full-time, 35 hours per week, and was fully integrated into the research team.

My main tasks included:

- Preparing surfactant solutions at various concentrations and salinities.
- Observing droplet solubilization using microscopy under controlled flow conditions.
- Measuring interfacial tension using a tensiometer.
- Characterizing microemulsions using Dynamic Light Scattering (DLS).
- Applying and adapting the Levich model to describe solubilization under flow.
- Analyzing images and quantifying dissolution rates.

The lab environment was stimulating and intellectually rich. Weekly group meetings allowed me to discuss my progress and receive feedback. My supervisor encouraged critical thinking and supported my independent work.

3. Social Contacts

Most of my social interactions were with fellow lab members, who were incredibly welcoming and supportive. The SIMM Lab fosters a friendly and collaborative atmosphere, and the team frequently organized informal activities. During my stay, we had a Mario Kart tournament in the lab, a wine and cheese evening, and several after-work pub gatherings.

Outside of work, I built friendships over shared meals and casual weekend outings. Being part of this vibrant lab community helped me integrate quickly and made the internship experience not only academically enriching but also personally fulfilling. While French was the common language in the lab, English was used frequently in scientific discussions. These interactions helped me integrate into the lab and build friendships.

4. Everyday Life and Leisure

Living in Paris was a fantastic cultural experience. Outside the lab, Paris offered endless opportunities for exploration. I'm passionate about photography and visual arts, so I spent most of my weekends visiting art exhibitions at institutions like the Centre Pompidou, the Musée d'Orsay, and the Fondation Louis Vuitton. I also enjoy street and landscape photography, and Paris, with its diverse neighborhoods and ever-changing light, was an ideal setting.

The city's transport network made it easy to travel across different arrondissements, and I often took spontaneous photography walks along the Seine or in Montmartre. Paris is a dream city for someone who loves culture and aesthetics.

5. Financing

My living expenses were approximately 1,000 euros per month. This included rent, groceries, transportation, and leisure activities. While Paris is known for its high cost of living, it is possible to manage with careful budgeting. I recommend checking local websites and social media platforms for second-hand items and student deals. Cooking at home also helped reduce costs.

I often bought groceries from Chinese supermarkets and cooked at home. For fresh produce, meats, and cheeses, I frequently visited Grand Frais, a high-quality fresh market chain that I strongly recommend. Although living in Paris can be expensive, budgeting carefully and shopping locally helped me manage my costs effectively.

6. Internship and Studies

This internship was highly relevant to my studies in chemical engineering. It allowed me to apply theoretical knowledge in interfacial chemistry, transport phenomena, and surfactant science. I gained hands-on experience with analytical tools like DLS and interfacial tension measurements, which I had only studied theoretically before. The experience deepened my understanding of experimental design and data interpretation, especially in the context of complex systems like micellar solubilization.

My long-term career plan is to enter the industrial sector, possibly working on the development of novel materials or chemical formulations. The knowledge I gained from studying interfacial phenomena and solubilization dynamics will be very useful in such settings.

At the end of the internship, my supervisor generously offered me the opportunity to stay on for a PhD within the group. While I appreciated the offer deeply, I chose to pursue my career in industry instead, in line with my professional goals.

7. Conclusion

My expectations for the internship were fully met. I had the opportunity to work on a meaningful scientific project, gain practical and intellectual skills, and experience life in a vibrant international city. One challenge was adapting to the initial language and administrative hurdles, but these were overcome with time and support from lab members.

The most defining experience was being trusted with a high level of autonomy in the lab and being able to contribute to a long-term research project. For future interns, I recommend being

proactive in communication, open to new experiences, and taking the time to enjoy the city alongside your research. This internship has been both personally and professionally enriching.

Overall, this internship exceeded my expectations. It provided me with valuable technical experience, introduced me to a dynamic international research environment, and offered countless opportunities for personal growth.

One of the most defining experiences was learning to approach a complex physicochemical phenomenon from both experimental and theoretical angles. Overcoming the initial difficulties of model mismatch and finally proposing a corrected predictive framework gave me a strong sense of achievement.

The only significant challenge was adjusting to the French research culture and language in the first few weeks, but the lab's inclusiveness and support made the transition smooth.

Tips for future interns:

- Be proactive in searching for internships that match your interests.
- Don't hesitate to reach out to professors directly — many are open to hosting motivated students.
- If you don't speak fluent French, don't worry — many labs in Paris work in English.
- Living slightly outside central Paris can save you money and still allow easy access to the city.
- Take full advantage of the cultural offerings — Paris has much more to offer than just work.

I would highly recommend doing a research internship abroad. For me, it was a transformative experience, academically and personally.