

NEXUS International Internship Completion Report

NEXUS 国際インターンシップ終了レポート

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Host Laboratory / Supervisor 受入研究室・指導教員	Someya Lab	Internship Period 期間	2026/03/01 – 2026/05/30
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1. Overview of Internship Activities / 活動内容の概要

Briefly describe your main activities: research theme, experiments, simulations, fabrication, measurements, data analysis, seminars, discussions, or laboratory work
Suggested length: 120-160 words.

My main work in Someya Lab is following a recipe from lab's previous research to fabricating Janus electrode using polyurethane (PU) nanofiber and providing additional experiments. The Janus electrode has three layers, including a thin layer of gold in the bottom for conductivity, a hydrophilic layer on the top for liquid absorption and a thin hydrophobic layer in the middle to prevent liquid going back. With this structure, a sensor attaching to human skin could overcome interferences and unwanted interaction between the sensor and human sweat. During the fabrication process, I have practiced with senior members and capable of using electrospinning method to make nanofiber, performing various methods for coating materials, running a two-pump vacuum system manually in a PVD system for gold deposition and executing aqua plasma treatment to modify PU hydrophobic property to hydrophilic. I also learned about laboratory regulations in Japan, experienced entering a cleanroom and working together with people from various countries in the world. For the measurements, I tried measuring the liquid capability of the hydrophilic layer with water and PBS, which is considered artificial sweat, and the water contact angles. After some measurements, I have pointed out the hydrophilic-like phenomenon in a wet hydrophobic PU and recorded some issues with the liquid capability experiment. I have provided a potential explanation and ideas to tackle them during the lab final presentation.

2. Photo from the Internship / インターンシップ中の写真

Insert one representative photo and provide a short caption: date, place, activity, or people shown in the photo.



Some fabricated Janus electrodes

[2026-05-15 / Someya laboratory office]

3. Reflection on the Program / プログラムへの感想

Write what you learned, what was most valuable, challenges you faced, influence on future study/career plans, and suggestions for improving the program. Suggested length: 120-160 words.

Thanks to the program, I had the chance to participate in a lab with people from various countries. I also gained experience and skills that beneficial for my future lab working,