

Research report

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As a JSPS Invitation Fellow, I was in Professor Masahiro Takei's Lab at Chiba University from 15 March to 14 April 2016. As I expected, the research work in Takei's Lab is closely related to my own research area, which is electrical capacitance tomography (ECT) and industrial applications. During my stay, I was involved in several research topics, in particular medical applications of electrical impedance tomography (EIT), such as microfluidics for cell sensing and manipulation, imaging clots in blood flows and non-intrusive diagnosis of lymph problems by EIT. I was also involved in industrial applications of EIT/ECT, such as measurement of temperature distribution in moulding process, measurement of pulverized coal flow in coal-fired power plant, multiphase flow measurement by a combination of electromagnetic meter and EIT, and monitoring of battery material mixing process. For each topic, I made useful suggestions. For examples, I suggested how to improve micro-channel design for cell sensing and how to make an EIT sensor using a flexible printed circuit board (PCB) for imaging clots in blood flows. During my stay I also had discussions with the research staff members and students from time to time. My formal seminar "ECT and industrial applications" was arranged on 8 April. To help the audience understand the principle, I took an ECT system with me for a live demonstration. Because of strong interest from the audience, my seminar lasted 2 hours, which was much longer than usual.

I heard that in Japan people work longer than 8 hours a day. In Takei's Lab, students start quite early and usually leave after 8.00 pm, which impressed me. In contrast, in the UK, we would not encourage students to stay in lab that late. My stay at Chiba University was truly enjoyable because not only is the work being done there interesting, but also I could feel friendship from the people I met. On 9 April, Professor Takei organised a party in Ueno Park in Tokyo. With beautiful cherry blossoms on the trees and also on the food, this party will be in my memory forever.



During my stay, I also visited the University of Tokyo and met Professor Tsutsumi, whose research area is close to mine, and visited Waseda University and gave a talk on ECT.

This is the first time I have been to Japan. If I use a few words to describe Japan, I would say that Japan is very clean, there are no rubbish bins on the streets (I heard that people carry rubbish back home and then categorise this rubbish for recycling), it's a safe country with polite people and very punctual public transportation. During the weekends, I went to different places for sight-seeing, such as Kyoto, Nara, Kamakura and Tokyo. Because of the season beautiful cherry blossoms were everywhere. I hope that in the near future I can have another opportunity to visit Japan again. I cannot remember many Japanese sentences, but one sentence is very useful, "Sumimasen", particularly in a restaurant.