MERIT internship (overseas) report

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MERIT 5th student
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Period

November 17, 2018 - March 2, 2019

Company

Scienta Omicron AB (Uppsala, Sweden)

Overview

To develop new photoelectron detectors and analyzers for Angle-resolved photoemission spectroscopy (ARPES) measurements, I stayed in Scienta Omicron. Scienta Omicron provides solutions and technologies for research in surface science and nanotechnology. Especially, it is famous for detectors and analyzers used in ARPES measurements.

Activity

I mainly did investigations for new photoelectron detectors, although I cannot write about details of this project because of non-disclosure agreement with the company. I compared several measurement principles and estimated physical parameters, such as measurement errors and sizes of apparatus. I joined the discussion with professionals of electron optics or production, as a professional of condensed matter physics and a user of the instruments. Finally, we made an internal presentation on summary of discussion. We confirmed that it is a promising project, and we will continue it.

I also tested and evaluated a deflector-type photoelectron analyzer, which enables measurements without the sample rotation, with an electron gun. Other than that, I tested a new software for measurements, and made feedbacks for manuals of new instruments.

Impression

During my stay, I was impressed by a stress-free and concentrated atmosphere in the company. Employees are friendly to each other regardless

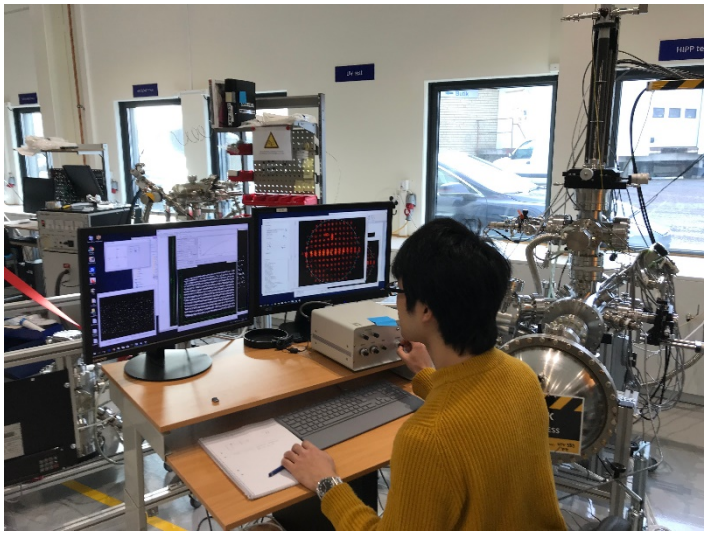
of their positions, and there are coffee times (fika) every day which almost everyone participates. I could concentrate on work because working time between rests is less than three hours. I felt working efficiency is very high.

I also use photoelectron detectors and analyzers in my research, and I learned a lot from instrumental point of view. We will keep in touch and discuss proceedings of developments, including possibility of user-site test of detectors in ISSP.

Acknowledgements

I would like to express my gratitude deeply to Dr. Marcus Lundwall, and Dr. John Åhlund for giving me the opportunity of this internship. Also, I would like to thank many other people in Scienta Omicron for fruitful discussions.

I would like to thank Professor Shik Shin and Associate Professor Kozo Okazaki for allowing me to go to this internship. I am also grateful to Professor Kazushi Kanoda for giving me the idea of this internship, and to Materials Education program for the future leaders in Research, Industry, and Technology (MERIT) for financially supporting my life as a PhD candidate.



Test measurement