

# Report on MERIT Long-term Overseas Dispatch

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## [Outline]

From June 4th to July 27th 2019, I stayed in the research group of Prof. Sir Richard Friend (University of Cambridge, UK). During this period, I also visited the group of Prof. Henning Sirringhaus (University of Cambridge, UK) for the research activities. In this report, the research topics and life during the stay will be reported.

## [Contents of research]

Luminescence of organic radicals has attracted attention due to the various unique properties based on their unique spin states. In particular, applications of luminescent radicals to organic light-emitting diodes (OLEDs) are one of most important issues owing to their high internal quantum efficiency. In this long-term overseas dispatch, I stayed in Prof. Sir Richard Friend's group and worked on fabricating novel OLEDs using luminescent radicals and their applications.

Research on magnetic and electronic properties of organic radicals and their metal complexes has been greatly contributing to the materials science. I also visited the group of Prof. Henning Sirringhaus and conducted experiments to investigate the magnetic properties of novel organic radical-metal complexes.

## [Life in Cambridge]

The Cavendish Laboratory is the Department of Physics at the University of Cambridge, a research institute that has produced many Nobel Prize winners. The laboratories have many students and postdoctoral

researchers from Europe and China, and people there were often discussing about their own researches. I was impressed by the fact that they were interested in each other's research, exchanging knowledge and opinions, and trying to advance their researches in cooperation, even if they were in different research fields.



**Figure 1. A building of Cavendish laboratory. Each building bears a name of Nobel Prize winner**

Also, it was surprising that people often asked me, "Are you a chemist or a physicist?" Here at Cavendish Laboratories, it seems that people who create new molecules or materials (= chemist) and people who perform physical measurements (= physicist) are working together for the research. I have never considered this difference, but it became a good opportunity to review my position and strength from a broad perspective of material science.

On a difference note, I basically cooked my own meals because the accommodation had a kitchen. In the UK, while eating out has a high tax rate, the foods sold in a supermarket are cheaper than in Japan. I found Cambridge city was safe and good to live in.

#### [Acknowledgement]

In closing this report, I would like to appreciate people who supported my research work in University of Cambridge. First, I would like to express my sincere gratitude to Prof. Sir Richard Friend and Prof. Henning Sirringhaus, who gave me an opportunity to conduct the researches. I would also like to appreciate Dr. Emrys Evans and Dr. Sam Schott for supporting and supervising my experiments and Prof. Feng Li for fruitful discussions. Finally, I deeply appreciate Prof. Hiroshi Nishihara and Assoc. Prof. Tetsuro Kusamoto for the great supports for my stay.