

# Report of MERIT Corporate Internship (inside Japan)

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## 【Overview】

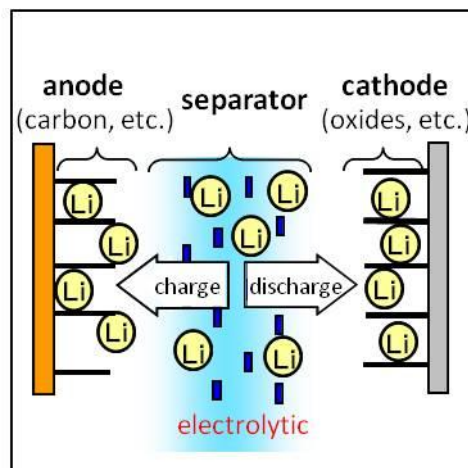
I worked for Hitachi Research Laboratory (HRL), Hitachi, Ltd. located in Hitachi city, Ibaraki as an intern from January 25th to March 25th. Hitachi produces wide range of products and services such as Information & Telecommunication Systems, Power Systems, Social Infrastructure, Electronic Systems & Equipment and High Functional Materials & Components. Hitachi possesses several research laboratories, HRL is one of them, and focuses on basic researches.

## 【Research】

I performed a research on Lithium Ion Battery (LIB) and the theme of my research was to consider a synthesis process of cathode material. LIB is consisted of cathode, anode and electrolyte as you can see in the figure on the right.

I learned how to manage, mix, bake cathode materials and evaluate their physical and chemical properties in a premier month. In the latter month, I examined the synthesized cathodes and investigate what to need in order to obtain the target values.

Though this theme was just started and I didn't have enough time to complete this study, I could establish the way to pretreat cathode materials and this point is my major achievement of my internship.



Schematic diagram of lithium-ion battery

## **【Summary】**

I needed chemical operations and knowledge to perform materials development. At first, many chemical operations which are unfamiliar to me made me a little confused but I could gradually overcome this adverse circumstances. I could take advantage of my being a beginner at chemistry and ask many questions even an extremely basic one. This experience made me learn much chemical technique and knowledge and it was one of the good points of my internship.

There were many experiences that made me more confident than before. The experience that I could get an opportunity to be concerned with a study at initial stage was one of them. I could learn how to promote study in private companies. Furthermore, I found a paper which is close to my major and proposed a new experiment to evaluate the cathode materials. In addition, I went to a field trip to another laboratory and factory and could get much information about interesting studies.

I will make the most of several precious experiences I had at HRL and aim to be a successful researcher.

## **【Acknowledgement】**

First of all I would like to thank the members of Hitachi Research Laboratory for accepting me as an intern and guiding me enthusiastically. I also want to thank Prof. Takigawa and Prof. Amemiya for allowing me to leave my study for a long term. Finally, I would like to thank the MERIT program for giving me the precious opportunity.



At an entrance of Hitachi Research Lab.