

Report on MERIT Internship (domestic)

2018.10.15 ~ 2018.11.16

Masayuki Sasaki

Purpose of Internship

I took my internship in a domestic company for MERIT course work for 2 purposes.

One is related to the direction of my research. My research is directed to application of organic semiconductor rather than basic research. Thus through this internship, I intended to learn new perspectives for industrialization of new materials such as necessity of reducing cost.

The other is related to management of teams. I will work in a chemical company after graduation, where various people works on the same goal cooperating with each other. I guessed that researchers in companies must cope with difficulties in management such as keeping tight schedule or distributing proper works to the members, which is apt to be ignored in researches in academics. I intended to learn what skills I must learn before working in the company.

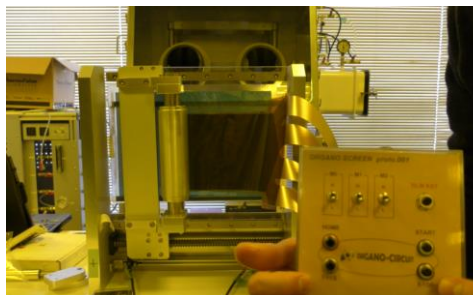
The host Company

[ORGANO-CIRCUIT INC.](#) was founded on June 6 in 2015, developing flexible displays. The core technology is integration of organic active matrix using organic semiconductors, which I also study. The research center is in Tokatsu Techno Plaza next to the Kashiwa campus of the Univ. of Tokyo.

Work in Internship

During the internship I worked on novel display system which ORGANO-CIRCUIT has developed. Specifically I assembled an experimental machine, confirmed the displaying principles and improved the image quality with advices by the staffs. I reported my results in meetings every week, received feedbacks and decided the research strategy for next week.

As a result of this internship I succeeded displaying “Organo Circuit” on the experimental machine for the first time.



Photograph of the experimental machine.
(Middle) Main display
(Right) Controller

Outcome of Internship

I learned both new perspectives and what skills I must learn before working in the company as intended.

First I report on the direction of my research. I re-confirmed the fact that it is worth improving the uniformity of device characteristics, and is not worth succeeding in only one time. The experimental machine is just for experiment, not for mass production. Therefore, I managed to display

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character by adjusting parameters which are unique for the machine. However it is not realistic to adjust all the products in mass production. This point was featured in the meeting again and again to give me great impression. I keep in mind in this point for the future experiments.

Next I report on the management skills. These are the main outcome of this internship.

- **Team members must work on the same purpose.** Members are friends, not enemies. Members must not confront one another to keep own position. Success for team is success for members.
- **The base is good relationship between members.** It is not necessary to be in best term, but members are required to respect the others. Good members listen to others well and put oneself in the other member's shoes. As TOYOTA says, "Previous process was from God, following process is by customers."
- **There should be a facilitator in the team.** It is natural that every member thinks different way. Thus there have been many techniques to summarize the opinions. If a team would not use such techniques, team would not function as team. At least one member of high facilitation skill should be in the team.
- **Positive synergy is obtained only when every members uses their**

strengths. The strengths mentioned here is not only the skills in research. Strengths include skills to build trusting relationship, skills to communicate vision to others or skills to keep accomplishing tasks, for example. Supreme results are brought by optimizing members' strengths.

- **Research passionately with your best effort.** Members should think out anything as hard as they can without making excuses, for example out of order of the machine or just waiting until the delivery date.
- **Make the most of technology. WEB application like Slack or Asana for communication for example.** There are many kinds of WEB application to support teamwork. Members can cope with difficulty in communication by introducing such WEB applications that typically cost only 10,000 yen per month.
- **Psychological Safety brings great teamwork. Unsafety such as denouncing or criticizing personality decreases self-esteem and self-efficacy to end up in terrible outcome.** Such unsafety is felt to members not only when he or she is the person concerned but also when he or she hears someone denounced. Psychological safety is often made by the leader's behaviors.
- **All members must control what to do.**

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Members often unconsciously draws work over their capacity in researches involving many members. Both managers and followers have responsibility; managers must know what work members tackles and followers must control the amount of work and when it comes on the margin of capacity they should discuss with the manager. Overwork undermines the team in a long term.

- **Pay attention to both failure and success.** Most researchers pay attention to failure to improve. However, reproducing success is as significant as improving. The reasons for successes should be shared with the members to accumulate best practices.
- **Most problems are adaptive, not technical, which are solved by changing mindset.** Ronald Heifetz, a professional researcher in leadership says that in technical problems it is clear what technique or skills members should learn. On the other hand in adaptive problems members must change their mindset as the maxim “we can't solve problems by using the same kind of thinking we used when we created them” said by Einstein. Research team often have conflict of opinions from people in different positions. These problems are typical adaptive problems and requires cognitive solution.

There were more qualities than I wrote here, which I would like to emulate. I will keep disciplining myself based on this experience.

Acknowledgement

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