

2020. 3. 16.

# Reports of Internship

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**Gifu University**  
**Graduate School of Engineering**  
**Electronics and Information Systems Engineering**

**Kensuke Hayashi**

# Self Introduction

**Name:** Kensuke Hayashi  
**Country :** Japan  
(Not foreigner)  
**Character :** Pleasant guy

**Dream: World-Class Scientist**



~In Tottori Dunes~  
It looks Western Asian.

## Biography

**2012-2016:** Gifu University Under Graduate (Material Science)

**2016-2017:** Gifu University Graduate School

**Global Environment & Energy Course (GU-GLEE)**

**2017- present:**

**Gifu University Graduate School**

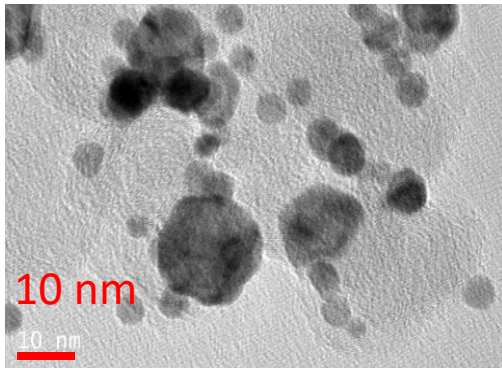
**Electronics and Information Systems Engineering**

# Introduction of My Laboratory

## Theme of Laboratory : Nanomagnetism

### Fine particles

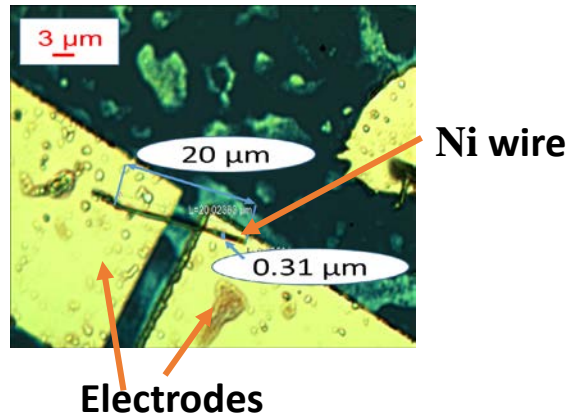
#### CoPt particles



0 Dimensions  
(Point word)

### Nano wires

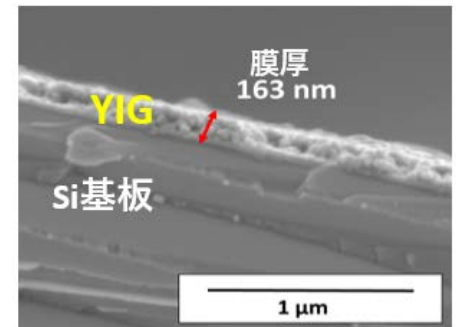
#### Ni nano wire



1 Dimension  
(Line word)

### Thin films

#### $Y_3Fe_5O_{12}$ thin film



2 Dimensions  
(Sheet word)

We study the change of their magnetic properties when magnets become smaller.

# Introduction of NIMS

## NIMS(国研) (National Institute for Material Science)



- Located at Tsukuba city in Ibaraki
- The biggest institute of material science in Japan
- One of the “Special”  
National Research and Development Agencies  
(The Others: RIKEN(理研) and AIST(産総研))

**Here is the cutting edge of material science.**

**I wanted to see**

**the world-class scientists working in NIMS.**

# The Sequence of Events for NIMS Internship

**Internship report presentation in March 2019**



**Presentation from a person  
who did internship in RIKEN.**



**I asked HIRAKU staff (Prof. Miyaji) to send me to  
an “Institute” like RIKEN after the presentation.**



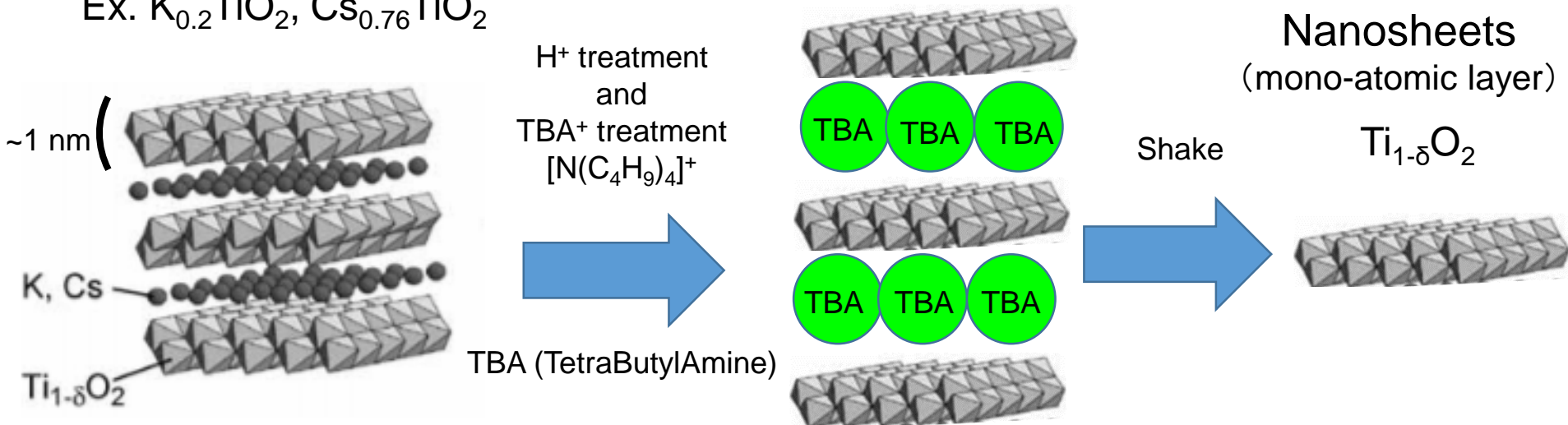
**Owing to supports of Prof. Miyaji and my supervisor,  
NIMS internship was decided.**

# Internship in NIMS

## Nanosheets ~Ultimate Thin Films~

Layered compounds

Ex.  $K_{0.2}TiO_2$ ,  $Cs_{0.76}TiO_2$



I have synthesized  
magnetic nanosheets in NIMS as internship work.

# Life in NIMS ①

- **Sate-of-the-art equipment**



Ex. LB Thin Film Former

- **Official Language**  
→ **English**

90% of students are foreigner.

My supervisor was also foreigner.

- **Progress speed of experiment**

Since they always discuss the results of experiment when the results come out, it is quick to decide next experiments.

# Life in Tsukuba

## Science city in Japan



Ex. Dysprosium free magnet



Ex. Japan kilogram archive



Ex. Artificial satellites in Japan

There are many institutes of science,  
and exhibits representing the history of Japanese science.

## Scientific events



• Presentation from  
Nobel Prize Laureate

• Tsukuba expo center

Ex. Trial for Segway

Ex. Huge Planetarium





# Generalization of Internship

## Things obtained in NIMS

- Grate experience

High-level equipment and experiments

Environmental where always discussing experiments

- Offer of second internship from supervisor of NIMS

They have considered me as not “guest” but “staff” for experiments.

I was a member of the **“world-class scientists”** working in NIMS.

## Things I think now after Internship

- As for experiments,

there is huge deference between Gifu Univ. and NIMS.

It is obvious, but “seeing is believing”.

This experience lead me to US after my graduation.

# Ending

## To people who will do internship

**It is possible to “chose” where you will do internship.**

**You can ask for chance of internship to**

**any company, institute, and facility.**

**Staffs in Gifu Univ. and HIRAKU will help you a lot,**

**if you have enthusiasm.**

**I hope that you will do the best internship for you.**

## If you want to be a scientist...

**I highly recommend you to know**

**the highest level of your faculty.**

**Although you might be able to imagine the level,**

**the real is always higher than your imagination.**

