

The 35<sup>th</sup> Joint-Interlaboratory Workshop on Nano-Magnetics

# JIWONinKorea

## July 25<sup>th</sup> Online Invited Session (GP-spin Session)

(15:50~16:20) H. Lee (KAIST)  
“Bi-directional Neural Interface”

(16:20~16:50) K. Masuda (NIMS)  
“Magnetoresistance Oscillation: an Analytical Approach”

(16:50~17:20) S. Tsunegi (AIST)  
“Artificial Neural Networks Using Spin Torque Oscillator”

(17:20~17:50) M. Goto (Univ. of Fukui)  
“Non-conventional Devices Using Stochastic Skyrmion Dynamics”

Organized by  
Graduate Program in Spintronics, Tohoku University

Co-organized by  
The SIP project, QST, Japan

Brain Korea (BK) 21 FOUR Program through the National Research  
Foundation of Korea (NRF) funded by the Ministry of Education

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by the Ministry of Science and ICT

Please register for the online participation from the following forms!  
Google forms: <https://forms.gle/katZoNiqj6obt7cx5>



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# The 35<sup>th</sup> Joint Inter-laboratory Workshop on Nano-magnetics

## (JIWON)

July 24<sup>th</sup>-26<sup>th</sup>, 2024

Hana Square, Korea University, Seoul, Korea

### Participating laboratories

- Prof. Kim's Lab, Korea University, Seoul, Korea
- Prof. Oogane's Lab, Tohoku University, Sendai, Japan
- Prof. Shima's Lab, Tohoku Gakuin University, Sendai, Japan

### Invited Speakers

- Prof. Hyunjoo Lee at KAIST
- Mr. H. Fukushima at Spin Sensing Factory Corp.
- Dr. K. Masuda at NIMS
- Dr. S. Tsunegi at AIST
- Prof. M. Goto at University of Fukui

### Acknowledgments

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- The GP-Spin Program, Tohoku University

### Zoom Link

<https://korea-ac-kr.zoom.us/j/85641494559?pwd=dM1MabR20ZjWH6eBtoLvUpbgqz0zLC.1>

**Meeting ID: 856 4149 4559      Password: mqeJD1uJJ1**

### Wi-fi (eduroam)

If your institution is a member of eduroam, please use your **institution's wireless LAN ID@domain/password** as your username and password. Detailed instructions can be found at the link below.

[https://wifi.korea.edu/wifi\\_en/index.do](https://wifi.korea.edu/wifi_en/index.do)

## **Program**

### **July 24 (Wednesday)**

**08:05-17:05: Arrival (Incheon Airport)**

**17:05-18:30: Transportation from Incheon Airport to Hotel**  
(New Seoul Hotel, <https://www.newseoulhotel.co.kr/>).

**18:30-22:00: Welcome Reception**

### **July 25 (Thursday)**

**7:00~8:30 Breakfast (New Seoul Hotel)**

**8:30-9:10: Transportation to Hana Square meeting room, Korea University**

\* Prof. Kim's group members will come to the Hotel lobby by 08:15

**9:30-9:40: Opening remark by Prof. Young Keun Kim**

**9:40~11:45 Presentations by Korea University Participants**

(9:40-10:00) Prof. Young Keun Kim (20 min)

Title: Engineering  $\beta$ -W Alloys for Highly Efficient Spin-Orbit Torque Switching

(10:00-10:15) Mr. Jin Seo Lee (15 min)

Title: "Enhanced spin-orbit torques from PtZr/Co heterostructures"

(10:15-10:30) Mr. Doowon Kim (15 min)

Title: "Efficient spin-orbit torque switching in  $\beta$ -W-Ti alloy heterostructures"

**10:30~11:00 Coffee break**

(11:00-11:15) Ms. Ye Eun Kim (15 min)

Title: "Ruderman-Kittel-Kasuya-Yosida interaction based spintronic devices for physically unclonable functions"

(11:15-11:30) Mr. Young Jun Jang (15 min)

Title: "Au-FePO<sub>4</sub> multiyolk-shell nanocoils for exceptional photocatalytic efficiency"

(11:30-11:45) Mr. Hong En Fu (15 min)

Title: "Cu ion anchored Fe<sub>3</sub>O<sub>4</sub> nanoparticles for highly sensitive heavy metal ion detection"

**12:00~13:00 Lunch**

### **13:00~13:35 Presentations by Tohoku Gakuin University participants**

(13:00-13:20) Prof. Toshiyuki Shima (20 min)

Title: “Recent activity in Magnetic Materials Lab. at Tohoku Gakuin University”

(13:20-13:35) Mr. Yuichi Mori (15 min)

Title: “Structure and hard magnetic properties of Sm(Fe-Co)-B thin films”

### **13:35~15:50 Presentations by Tohoku University participants**

(13:35-13:50) Mr. Hayato Fukushima (15 min)

Title: “Design of TMR sensor for bio magnetic field detection”

(13:50-14:05) Mr. Takayuki Hojo (15 min)

Title: “Half-metallic  $\text{Co}_2\text{FeAl}_x\text{Si}_{1-x}$  Heusler alloy thin films with small magnetocrystalline anisotropy  $K_1$ ”

(14:05-14:20) Mr. Daisuke Amiie (15 min)

Title: “Investigation of in-plane magnetic anisotropy of (110)-oriented FeAlSi epitaxial thin films”

(14:20-14:35) Mr. Kenta Watanabe (15 min)

Title: “Magnetic properties of  $L_{10}$  ordered MnAl thin films for perpendicular magnetic tunnel junctions”

(14:35-14:50) Mr. Seiya Takano (15 min)

Title: “Small pin design for high sensitivity in magnetic vortex linear TMR sensors”

(14:50-15:05) Mr. Jun Ito (15 min)

Title: “Magnetic Vibration Measurement with TMR Sensor”

### **15:05~15:30 Coffee break**

(15:30-15:50) Prof. Mikihiko Oogane (20 min)

Title: “Development of Spintronic sensors”

### **15:50~17:50 Invited Speakers (GP-spin session)**

(15:50-16:20) Prof. Hyunjoo Lee at KAIST (30 min)

Title: “Bi-directional Neural Interface”

(16:20-16:50) Dr. K. Masuda at NIMS (30 min) (online)

Title: “Theory for Tunnel Magnetoresistance Oscillation: an Analytical Approach”

(16:50-17:20) Dr. S. Tsunegi at AIST (30 min) (online)

Title: “Artificial neural networks using spin torque oscillator”

(17:20-17:50) Prof. M. Goto at University of Fukui (30 min) (online)

Title: “Non-conventional devices using stochastic skyrmion dynamics”