

The 34th Joint-Interlaboratory Workshop on Nano-Magnetics

JIWON in Sendai

February 22nd Online Invited Session (GP-spin Session)

(13:00~13:30) H. Sukegawa (NIMS)

“Giant oscillations in tunnel magnetoresistance effect”

(13:30~14:00) T. Fukushima (AIST)

“First-principles calculations of finite temperature electronic structure and transport properties”

(14:00~14:30) Y. Miura (NIMS)

“Understanding magnetocrystalline anisotropy based on orbital and quadrupole moments”

(14:30~15:00) T. Yamada and K. Ishii (Chiba Univ.)

“Magnetic Imaging Utilizing Spin-Polarized STM and Zero-Bias Anomaly of Quantum Spin on Insulating Surface”

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

The National Research Foundation of Korea (NRF) funded by the Ministry of Science and ICT

Please register for the online participation from the following forms!

Google forms: <https://forms.gle/roiRGRNCmpgFTYJm7>



Contact: H. Saito (hiroto.saito.t5@dc.tohoku.ac.jp)

C. Uttam Kumar (chowdhury.uttam.kumar.r3@dc.tohoku.ac.jp)

The 34th Joint Inter-laboratory Workshop on Nano-magnetics

(JIWON)

February 21~23, 2024

**Laboratory for Nanoelectronics and Spintronics conference room (4F), RIEC,
Tohoku University, and Online (Zoom)
2-1-1 Katahira, Sendai, Miyagi, Japan**

**Online links: <https://zoom.us/j/98292307860?pwd=ek94Q1dzSlpwQnZLTU9NYkNNMjlpUT09>
for Feb. 22nd (invited session)**

Participating laboratories:

- Information Devices and Materials Lab (Kim lab), Korea University, Seoul, Korea
- Spin-electronics Labs (Oogane Lab, Seki Lab, and Tsunoda Lab), Tohoku University, Sendai, Japan
- GP-Spin Students, CSIS members, Tohoku University, Sendai, Japan

Invited Speakers:

T. Fukushima (AIST), H. Sukegawa (NIMS), Y. Miura (NIMS),
T. Yamada and K. Ishii (Chiba University)

Sponsorship:

- The GP-Spin Program, Tohoku University
- 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 (4199990514635)
- The National Research Foundation of Korea (NRF) funded by the Ministry of Science and ICT (2019R1A2C3006587, 2022M3H4A1A04096339, RS-2023-00258680)

Agenda

February 21 (Wednesday)

16:00 Arrival to Sendai hotel (Hotel Green With)

17:30~19:00 Welcome Reception (RIEC, Tohoku Univ.)

February 22 (Thursday)

7:00~8:30 Breakfast (Hotel Green With)

8:55~9:00 Opening and introduction (RIEC, Tohoku Univ.)

Prof. M. Oogane

9:00~11:15 Korea University, Seoul, Korea

Session Chair: Mr. Hong En Fu

(9:00~9:30) Prof. Young Keun Kim (30 min)

“Spin-orbit torque technology for true random number generation”

(9:30~9:45) Mr. Jeong Kyu Lee (15 min)

“Ruderman-Kittel-Kasuya-Yoshida based spintronic physically unclonable function devices”

(9:45~10:00) Ms. Ye Eun Kim (15 min)

“External magnetic field-free spintronic devices for physically unclonable function”

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

“Spin-orbit torques of W-Zr/ferromagnet heterostructures”

10:15~10:30 Coffee Break

(10:30~10:45) Ms. Han Sol Kim (15 min)

“DMI energy density modulation induced by interfacial roughness with Au nanoparticles”

(10:45~11:00) Mr. Hong En Fu (15 min)

“Porous core-satellite nanocomposite for visible-light-driven advanced oxidation of organic pollutants”

(11:00~11:15) Mr. Young Jun Jang (15 min)

“Ru-Co(OH)₂ nanocomposites with large surface area for oxygen evolution reaction catalyst”

11:30~13:00 Lunch (RIEC, Tohoku Univ.)

13:00~15:00 Invited talk session (GP-spin session) (RIEC, Tohoku Univ. and Zoom)

Session Chair: Mr. C. Uttam Kumar, Mr. H. Saito

(13:00~13:30) Dr. H. Sukegawa (NIMS)

“Giant oscillations in tunnel magnetoresistance effect”

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“First-principles calculations of finite temperature electronic structure and transport properties” (Online)

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“Magnetic Imaging Utilizing Spin-Polarized STM and Zero-Bias Anomaly of Quantum Spin on Insulating Surface”

15:00~15:15 Coffee break

15:15~16:45 Tohoku University, Sendai, Japan (RIEC, Tohoku University)

Session Chair: Assist. Prof. C. Zhang

(15:15~15:45) Assist. Prof. Takafumi Nakano (30 min)

“Recent progress on TMR sensor development”

(15:45~16:00) Mr. Seiya Takano (15 min)

“Design of vortex-type TMR sensor for NMR measurement”

(16:00~16:15) Mr. Daisuke Amiie (15 min)

“Fabrication of (110)-oriented Sendust films”

(16:15~16:30) Mr. T. Sato and Prof. Masakiyo Tsunoda (15 min)

“Magneto-Transport Properties of (001) and (110) Oriented Epitaxial Fe₄N Thin Films”

(16:30~17:00) Prof. Takeshi Seki (30 min)

“Synthetic antiferromagnet-based spintronics”

17:30~19:30 Dinner (Downtown)

February 23 (Friday)

7:00~8:30 Breakfast (Hotel Green With)

9:00~14:00 Lab. tour

February 24 (Saturday)

7:00~8:30 Breakfast (Hotel ROUTE-INN NATORI IWANUMA INTER)

Departure from Sendai