

Tentative, version 4, 2023.1.21

International Workshop of Spin/Quantum Materials and Devices (IWSQMD)

Date: 23rd -24th, February, 2023

Venue: Seminar room, 2F at AIMR main building, Tohoku Univ. (in-person, up to 50 attendees)

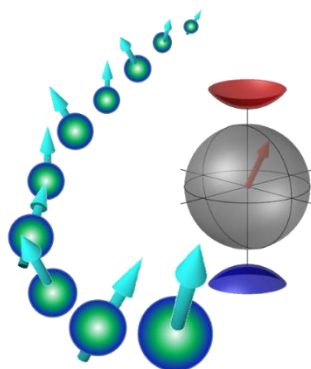
Registration fee: free (registration due: February, 22nd, 2023)

Organizers:

S. Mizukami (Chair), T. Yamashita (Co-chair), M. Kohda, H. Morishita, M. Shirai, S. Fukami

Organized by: CSRN division, Center of Science and Innovation of Spintronics (CSIS).

Co-organized by: Center for Heterogeneous Quantum/Material Fusion technology (CHQM), Core Research Cluster for Materials Science (CRC-MS) & WPI Advanced Institute for Materials Research (AIMR).



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 **AIMR**

 **CORE
RESEARCH
CLUSTER**

URL: <https://www.csrn.tohoku.ac.jp/meeting.html>

Contact: csrn.csis@grp.tohoku.ac.jp

Day 1: February 23rd, Thursday, 2023

13:00-

Opening remarks

Shigemi Mizukami & Taro Yamashita (Tohoku Univ.)

Session A:

Spin and quantum defects in wide-gap semiconductors

Chair : Shigemi Mizukami (Tohoku Univ.)

13:10-

“Quantum sensing with diamond spintronics”

Norikazu Mizuochi (Kyoto Univ.)

13:40-

“Magnetometry with nitrogen-vacancy centers in diamond for biomedical applications”

Akihiro Kuwahata (Tohoku Univ.)

14:10-

“Spin-dependent dynamics of photocarrier generation in electrically detected nitrogen-vacancy-based quantum sensing”

Hiroki Morishita (Tohoku Univ.)

14:40-

“Imaging nanoscale magnetic spin textures using single point defect in Diamond (tentative)”

Mohammad Waseem Akhtar (Jamia Millia Islamia Univ.)

15:10-

Coffee break

15:30-

“Creation of spin defects in silicon carbide and their applications for quantum sensing”

Takeshi Ohshima (QST)

16:00-

“Methods of spin defect formation in hBN and their optical and spin properties
(tentative)”

Yuichi Yamazaki (QST)

16:30-

“Exploring qubit host materials based on generalized scaling on spin coherence”

Shun Kanai (Tohoku Univ.)

Day 2: February 24th, Friday, 2023

Session B:

Spin and quantum in narrow-gap or topological semiconductors

Chair : Masafumi Shirai (Tohoku Univ.)

9:30-

“Quantum dots in new materials for quantum devices”

Tomohiro Otsuka (Tohoku Univ.)

10:00-

“Persistent spin helix state towards wave-based information processing”

Makoto Kohda (Tohoku Univ.)

10:30-

“New approaches to fabricating topological quantum devices and materials”

Koji Muraki (NTT)

11:00-

“Towards hybrid and topological qubits based on semiconductor-superconductor core-shell nanowire Josephson junctions”

Patrick Zellekens (RIKEN&PGI)

11:30-

Lunch

Session C:

Spin and quantum in superconducting devices

Chair : Shunsuke Fukami (Tohoku Univ.)

13:00-

“Superconducting devices for quantum computing and detector applications”

Taro Yamashita (Tohoku Univ.)

13:30-

“Superconducting diode effect in Rashba superlattice”

Teruo Ono (Kyoto Univ.)

14:00-

“Probing high temperature superconductors by spin current”

Jana Lustikova (Tohoku Univ.)

14:30-

“Spin-triplet supercurrent spin-valve effects in chiral antiferromagnetic Josephson junctions and a dc SQUID”

Kun-Rok Jeon (Chung-Ang Univ.)

15:00-

Closing remarks

Makoto Kohda (Tohoku Univ.)

Invited speakers' list

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