

KIST-KINKEN Joint Workshop 2019

Korea Institute of Science and Technology (KIST) is a long-term partner institute of IMR and Tohoku University. Alternating “KINKEN-KIST joint symposium” in Sendai and Seoul are important for connecting each researches by exchanging the idea in the broad range of the materials science. Among several research institutes in KIST, Post-Silicon Semiconductor Institute (PSI) is a Key institute for materials science. In 2019, “PSI (Post-Silicon Semiconductor Institute) – KINKEN Joint Workshop 2019” was held at KIST

“KINKEN - KIST Joint Workshop 2019” was held at a lecture hall in International Cooperation Building, Korea Institute of Science and Technology (KIST), Seoul, on 29-30 October 2019. Tohoku University has a long history of academic exchange with KIST. As a commemoration of concluding university - level academic exchange agreement between KIST and Tohoku University in 2016, Institute for Materials

Research (IMR, KINKEN) and KIST jointly held a “KINKEN-KIST joint seminar” in Sendai, and that led to a series symposium in 2017 in Seoul and in 2018 in Sendai alternatively. In 2019, director of IMR, Prof. Koki Takanashi and seven researches of IMR participated in this Joint Workshop by supporting from ICC-IMR.

Starting from an opening address and brief introduction of exchange history between KIST and IMR by Dr. J. Chang, director of PSI, Prof. Koki Takanashi, director of IMR, introduced recent research activities in IMR. In the scientific sessions, wide range of research topics such as spintronics, condensed matter physics and electronic materials and device applications were presented by both KIST and IMR researches. During coffee breaks, lunch and banquet time, very vigorous discussions on each presentation and future plan for effective exchange between PSI/KIST and IMR were conducted. In the morning of the second day, lab tours in KIST and group discussions were carried out.

We will deepen an academic relationship, exchange and collaboration with KIST continuously through holding this series symposium. Next symposium will be opened at IMR in 2020.



Fig. 1 Opening remarks by Director Dr. Joonyeon Chang and introduction of IMR by Director Prof. Koki Takanashi



Fig. 2 Group photo at KIST in Seoul

Keywords: spintronics, electronic material, devices
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Program

□ Oct. 29(Tues.)

08:50-09:00 Registration
09:00-09:15 Opening remarks, Joonyeon Chang(PSI, KIST)
09:15-09:30 Introduction of KINKEN, Koki Takanashi (IMR)

Session 1. Spintronics

Session Chair : Dr. Byoung-Chul Min (Center for Spintronics, KIST)

09:30-09:55 "Electronic state and phase stability of half-metallic ferromagnets in Heusler alloys" Rie Umetsu (Cooperative Research and Development Center for Advanced Materials,IMR)
09:55-10:20 "Asymmetric motions of magnetic domain wall and skyrmion with the Dzyaloshinskii-Moriya interaction"
Kyoung-Whan Kim (Center for Spintronics, PSI, KIST)
10:20-10:30 Break
10:30-10:55 "Anomalous Nernst effect in nanostructured materials",
Masaki Mizuguch (Collaborative Research Center on Energy Materials, IMR)
10:55-11:20 "Chiral interlayer exchange coupling in synthetic antiferromagnets",
Dong-Soo Han (Center for Spintronics, PSI, KIST)
11:20-11:45 "Spin-charge conversion in ferromagnetic materials"
Takeshi Seki (IMR)
11:45-12:10 "Charge density wave order in 2D transition metal dichalcogenides"
Hyejin Ryu (Center for Spintronics, PSI, KIST)
12:10-13:10 Lunch (Group Photo)

Session 2. Electronic materials

Session Chair : Dr. Chong-Yun Kang (Center for Electronic Materials, KIST)

13:10-13:35 "Epitaxial Piezoelectric Thin Films on Si for Ultrasound Transducers",
Seung-Hyub Baek (Center for Electronic Materials, PSI, KIST)
13:35-14:00 "Magnetoelectric effects in the quantum spin dimer system",
Shojiro Kimura(High field laboratory for Superconducting Materials,

- IMR)
- 14:00-14:25 "Trap analysis and IR applications of colloidal quantum dots",
Gyu Weon Hwang (Center for Electronic Materials, PSI, KIST)
- 14:25-14:50 "New aspects of Sn-based transparent conducting oxides:
high-mobility interface and its potential coupling with spontaneous
polarization" Kohei Fujiwara (IMR)
- 14:50-15:15 "Stress-Composition Coupling in Li Alloys and Their Applications"
Sangtae Kim (Center for Electronic Materials, PSI, KIST)
- 15:15-15:30 Break

Session 3. Devices and Semiconductor Materials

Session Chair : Dr. Jin-Dong Song(Center for Opto-Electronic Materials and Devices,
PSI, KIST)

- 15:30-15:55 "π-electron physics in organic molecular materials,
Takahiko Sasaki (IMR)
- 15:55-16:20 "Heterogeneous optical phase modulation for Si photonics"
Jae-Hoon Han (Center for Opto-Electronic Materials and Devices,
PSI, KIST)
- 16:20-16:45 "Neutron-Scattering Study of Electron-Doped High-Tc Cuprate
superconductor"
Masaki Fujita (IMR)
- 16:45-17:00 "Introduction to CMOS-Compatible Single-Photon Avalanche
Diodes And Their Applications",
Myung-Jae Lee(Center for Opto-Electronic Materials and Devices
Research, PSI, KIST)
- 17:00-17:30 Closing remarks
Koki Takanashi (IMR) / Joonyeon Chang(PSI, KIST)

Oct. 30(Wed.)

- 10:00-11:30 Lab. tour (MBE)