

ICR-iJURC Report

Research Visit at the Teruo Ono's Laboratory

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Good people, calming sceneries, fruitful discussion about research, various experimental equipment, these are what Professor Teruo Ono's laboratory got. Middle of autumn, the weather was bright and old heritages are fascinating for the first tourist in Japan. With the heart of admiration, the research trip to professor Ono's laboratory had begun. The unfamiliar culture and etiquette of Japan become impressive atmosphere to me. These influenced me as positive and refreshing spirit.

I worked on the Professor Teruo Ono's nanospintronics laboratory at the Institute of Chemical Research in Kyoto University. My experimental goal is to learn spin-wave detection and RF signal processing to measure low-level signal from the nanometer-thick magnetic film. The magnetic excitation inside the magnetic thin film is called the spin wave (often called magnon). The detection of such spin wave is subtle and sensitive depending on many external parameters. I tried that measurement in my home laboratory Kab-Jin Kim's ultrafast spin dynamics laboratory in KAIST(South Korea), however it did not work successfully because of my lack of experimental skill and technical ability. Professor Teruo Ono's laboratory is specialized for such high-quality spin-wave detecting techniques, especially for the lab members, Professor Yoichi Shiota and the PhD student Shinsaku Funada. I have learned experimental set-up details, measurement skills, calibration of RF-probes, data processing. I brought my own magnetic samples and tested them successfully with tremendous help of Professor Y. Shiota. We measured ferromagnetic resonance and propagating spin wave in the SAFs (Synthetic Antiferromagnets), RKKY (RudermanKittel-Kasuya-Yoshida)-coupled GdCo bilayer and perpendicularly magnetized Co/Ni multilayer.

Firstly, I greatly acknowledge to the ICR-iJURC research internship program for giving me this precious opportunity to visit professor Ono's laboratory in the Kyoto University. I am grateful to Professor Teruo Ono boundlessly for kind offer of permission to study and research in the laboratory. I would like to give my special thanks to Professor Yoichi Shiota for teaching me spin wave detection measurements and for kind advice to the RF experiments. Thank you for every lab member who gave me warm welcome to the Kyoto University. Thank you Funada-san, Kotaro-san, Hayashi-san, Itoh-san, Feifan-san, Kobayashi-san, Sugi-san, Iijima-san, Komiyamasan, Yuko-san, Shiga-san, professor Hisatomi-san and, professor Moriyama-san.

