

外国人客

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It was my great honor to have the opportunity, as visiting professor hosted by Prof. Yohei Kobayashi, to revisit the Institute for Solid State Physics (ISSP), for a period of 50 days in Jan. and Feb. 2025. I stayed 6 years in ISSP as postdoc from November 2012 to October 2018, so the experience for this time was particularly meaningful for me.

When I was in ISSP a few years ago, I mainly worked on the development of high-power femtosecond lasers and high repetition rate vacuum ultraviolet (VUV) source generation for ARPES application. After I left ISSP, the cooperation and connection with Kobayashi Group was never stopped, we recently co-authored two papers published on Review of Scientific Instrument and Physical Review B, both about the VUV sources based ARPES. As for this time, the major focus was to discuss on how to continue the ongoing development of the 1-MHz VUV laser system. Together with Prof. Yohei Kobayashi, Prof. Takeshi Kondo, Dr. Kaishu Kawaguchi, Dr. Shang Wang, we explored possibilities for improving the system performance by adopting a kind of new high-gain laser amplifier, aiming to enhance its conversion efficiency for VUV source, compact the system, and make the repetition rate adjustable. Before I left ISSP, the experimental work has been started and is ongoing now.

Except for that, I also worked on a commercial optical parametric amplifier (OPA), pumped by our homemade femtosecond fiber laser. Together with Dr. Shang Wang, we did our best to recover the system to the best case of 80 mW of average power. Hopefully, it can be used for pump-probe experiment in the future. In addition, I also joined Takayuki Terazono's Mid-IR difference frequency generation experiments for short time, which is quite interesting for a laser guy because of the generated new

wavelength range.

During the period, I also visited Prof. Satoshi Ashihara and Dr. Xiangbao Bu, in the Institute of Industrial Science. They kindly introduced their work on mode locked Cr:ZnS lasers and applications in spectroscopy.

Special thanks goes to Toshio OTSU, who was doctor student when I was postdoc in Kobayashi-group and now has become a laser processing specialist. Thank you for sharing noodle information with me, for which I enjoyed a lot. Special thanks also goes to my old friend, Isao Ito, who was next to me and ever helped me a lot whenever I stay in Kobayashi group.

Importantly, the visit also served as a platform for future collaboration, particularly in the field of development of ultrafast laser and VUV source generation. I have talked with Prof. Yohei Kobayashi a few times on the potential long-term cooperation in the future and always got positive feedback. For the moment, my previous doctor student, Dr. Shang Wang, has been working in Kobayashi group as ISSP postdoc, mainly working on laser development. I believe it could be a very good substantial starting point for both sides.

I also would like to express my sincere gratitude to Ms. Yuko Ishiguchi from the ISSP ILO and Ms. Ayako Shibata, whose assistance with administrative procedures and paperwork was indispensable to the success of this fruitful visit.

Overall, I am very pleased with the time at ISSP, both professionally and personally, and look forward to the continued stronger collaboration in the future.

