

# Preface

We would like to offer the readers the scientific activity report of the Institute for Solid State Physics (ISSP) for the Japanese FY 2021.

ISSP was established in 1957 as a joint usage/research institute attached to the University of Tokyo. In every era, we aim to lead the frontier of “condensed matter physics and materials science” and contribute to science and technology from the view of basic research. We have promoted activities focused on research, education, and joint usage/research.

The first and second parts of the report, Research Highlights/Joint Research Highlights, exhibit experimental and theoretical achievements in condensed matter physics and materials science. In 2021, the number of adapted joint usage/research is 1,803 and the total number of researchers is 6,489, whose number was recovered even in the COVID-19 pandemic.

The third part includes the reports on progress of facilities in 2021 as follows. (1) In International MegaGauss Science Laboratory, the pulse magnets can generate up to 86 Tesla (T) by non-destructive manner, and from 100 T up to 1200 T, the world strongest as an in-door record, by destructive methods to promote materials science under high magnetic field. (2) In the Supercomputer Center (SCC), the System C is scheduled to be settled in June 2022. In Center of Computational Materials Science, the website "MateriApps" for information on application software in computational science has been constructed to support community members. (3) In Neutron Science Laboratory, it is really good news that JRR-3 has restarted in February 2021 after long shutdown and the normal General User Program came back from July 2021. The technical progress of High Resolution Chopper (HRC) spectrometer has been proceeded under high pressure and low temperature environment in cooperation with KEK. (4) The Laser and Synchrotron Research (LASOR) center has 10 groups in 2021 where ISSP has integrated the two streams, namely the extreme lasers and synchrotron radiations, into the common platform. In Synchrotron Radiation Laboratory, operant spectroscopy is available by using lasers at Harima branch. (5) The Laboratory of Quantum Material Nanostructures (Q-NanoLab) has opened on March 10, 2022 as a joint facility. The Q-NanoLab provides a common infrastructure for investigating nanostructures, non-equilibrium phenomena, or device operations of newly synthesized materials and novel quantum structures.

In the following parts, seven reports of international and domestic online and hybrid conferences and workshops owing to COVID-19 pandemic, subjects of joint research, and list of publications have been presented.

For the development of material science studying the various physical properties of matters, it is essential to further expand the research area and promote the diversity of the researchers. The ISSP Workshop entitled "ISSP WOMEN'S WEEK 2021" was held to further promote the activities of female researchers who still remain a minority in the field of science and engineering research. We invited female researchers who are active on the cutting edge in a wide range of fields of material science, ranging from leading professors representing each research field, who serve as a role model for female students, to up-and-coming young female researchers. Moreover, special lectures on the efforts of the institutions to promote diversity and a panel discussion with invited speakers were given.

All these facts confirm that ISSP continues to develop successfully and dynamically as the global center of excellence of condensed matter physics and materials science. We appreciate continuous support and cooperation of communities for our activities.



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