Preface

We would like to offer the readers the scientific activity report of the Institute for Solid State Physics (ISSP) for the Japanese FY 2020.

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 2020, the number of adapted joint usage/research is 1,042 and the total number of researchers is 931, which was reduced by the COVID-19 pandemic.

The third part includes the reports on progress of facilities in 2020 as follows. (1) In International MegaGauss Science Laboratory, the pulse magnets can generate up to 87 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 B was replaced in October 2020, which has larger total computational power. 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 is scheduled to come 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 2020 where ISSP has integrated the two streams, namely the extreme lasers and synchrotron radiations, into the common platform. In Synchrotron Radiation Laboratory, operand spectroscopy is available by using lasers at Harima branch.

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

The fourth international external evaluation was held by hybrid-style from December 7 to 10, 2020 for the proposal of the next Joint Usage/Research Center during FY2022~2027. The activities toward the current five missions, the activities of two cross-sectional groups established after the last evaluation, and the establishment of a materials data commons (materials data science research) and a quantum materials nanostructure laboratory as future plans were proposed and evaluated by the international evaluation committee with important and useful comments.

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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