

## Recent Developments of ARPES Studies at HiSOR BL-1

Shin-ichiro Ideta<sup>a,b</sup>, Masashi Arita<sup>b</sup>, Shiv Kumar<sup>c</sup>, Yudai Miyai<sup>a</sup>,  
Yogendra Kumar<sup>a</sup>, Amit Kumar<sup>d</sup>, Kenya Shimada<sup>a,b</sup>

<sup>a</sup> Graduate School of Advanced Science and Engineering, Hiroshima Univ.,  
Higashi-Hiroshima 739-0046, Japan

<sup>b</sup> Hiroshima Synchrotron Radiation Center (HiSOR), Hiroshima Univ.,  
Higashi-Hiroshima 739-0046, Japan

<sup>c</sup> Institute of Microelectronics (IME), Agency for Science, Technology and Research, 138632, Singapore

<sup>d</sup> Max Planck Institute of Molecular Plant Physiology,  
Am Mühlenberg 114476 Potsdam Brandenburg, Germany

**Keywords:** Angle-resolved photoemission, electronic structure, synchrotron radiation, laser

The Hiroshima Synchrotron Radiation Center (HiSOR) is the synchrotron radiation facility established at Hiroshima University. A compact 700 MeV electron-storage ring produces synchrotron radiation in the ultraviolet (VUV) and soft x-ray range. Tunable photon energy in this range is indispensable and valuable for studying the fine electronic structures of novel materials such as superconductors, topological insulators, and Weyl semimetals etc., employing high-resolution angle-resolved photoemission spectroscopy (ARPES).

Recently, to perform surface mapping in synchrotron radiation, based on the research and developments, we have reduced the beam size of the synchrotron radiation by using a focusing mirror and to perform detailed measurements by improving the accuracy of the manipulator system. In BL-1 (high-resolution ARPES beamline), the beam size of the synchrotron radiation is reduced by order of magnitude (beam size: ~50-60  $\mu\text{m}$ ). In addition, we have installed new analyzers for the beamline of BL-1 to realize fast Fermi surface mapping. In near future, we install the laser ARPES system at the endstation of BL-1 and will open soon.

In this presentation, we will show the details of recent developments in HiSOR beamline (BL-1) towards the HiSOR-II projects.