

Public Uses of Hard X-ray Photoemission Spectroscopy at SPring-8

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Since the first test experiments of the high resolution hard X-ray photoemission spectroscopy by the JASRI-RIKEN-HiSOR collaboration at BL29XU in 2002, we have been trying to widen the application field of this novel method [1]. We have conducted collaborations on Si-LSI related materials [2], diluted magnetic semiconductors [3], and strongly correlated electronic device materials [4] with several leading edge groups to test the feasibility of this method. Basing upon these preliminary efforts, we started to accept public user subjects in the frame of Nanotechnology Support Project at BL47XU from 2004. In 2005, General proposals industrial application subjects began to be introduced. Proprietary beamtimes have been requested by users in the application fields and two to three proprietary subjects have been carried out every half a year. Now we use 2/3 of the beamtime of BL47XU and some of BL39XU for the HX-PES public uses, which covers general, nanotechnology, and industrial subjects. Still we have to reject more than half of the proposals due to lack of the beamtime resources. Typical experimental outcomes will be illustrated in the presentation. The progress of the HX-PES public use at SPring-8 public beamline described above is entirely owes to the earnest efforts of Drs. E. Ikenaga, J. J. Kim, S. Ueda, and M. Kobata of the SPring-8/JASRI HX-PES crew. Collaborations with HX-PES groups of SPring-8/RIKEN and HiSOR are also very helpful. We are grateful to Drs. M. Yabashi, K. Tamasaku, Y. Nishino, D. Miwa, S. Goto, and T. Ishikawa for designing, construction, and alignment of the X-ray optics. Cooperation with VG SCIENTA AB. is also helpful. This work is partly supported by a Grant-in-Aid for Scientific Research (A) (No. 15206006, Principal Investigator: Takeo Hattori), “Nano Technology Support Project”, and “The Program for Strategic Use of Advanced Large-scale Research Facilities” of the Ministry of Education, Science, Sports and Culture (MEXT), and also partly supported by Hyogo Prefecture project “Collaboration of Regional Entities for the Advancement of Technological Excellence”. The HX-PES activities as typically introduced here are the results of the collaborations with the public users. We are deeply thankful to them all.

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