

Poster Presentation

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Detector Development Status and Outlook of the SACLA/SPring-8 Site

T. Hatsui¹, S. Ono¹, T. Kudo¹, K. Kobayashi¹, T. Kameshima², K. Ozaki¹, Y. Kiriwara¹, M. Omodani², N. Teranishi¹

¹RIKEN SPring-8 Center, Hyogo, Japan, ²JASRI, Hyogo, Japan

X-ray Free-Electron Laser facility, SACLA has been operational for more than 2 years. During the user runs, multi-port charge coupled device (MPCCD) detectors has been extensively used to deliver novel scientific results. In order to strengthen the facility capability, we are developing new variants of the MPCCD detectors[1]. Because some of the features such as high peak signal detection cannot be implemented by CCD technology, novel monolithic process based on silicon-on-insulator (SOI) sensor technology is under development. By employing the novel process, we are developing SOPHIAS sensor targeting the peak signal of 40000 photons at 7 keV within 100 micrometer square[2]. The SPring-8 site has proposed an upgrade of the storage ring to SPring-8 II. After the upgrades, we will obtain brighter x-rays, for example, 10^{13} photons/second within a diameter of 100 nanometer. With this kind of bright X-ray sources, X-ray imaging detector with higher count rate, higher frame rate, and higher quantum efficiency up to 20-30 keV region is required. Detector development plan toward these targets are also discussed.

[1] Kameshima et.al., submitted, [2] T.Hatsui, *Proceedings of International Image Sensor Workshop 2013*

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