

# 10th International "Hiroshima" Symposium on the Development and Application of Semiconductor Tracking Detectors, Xi'an, China

Contribution ID: 19

Type: ORAL

## Looking with a SOI monolithic pixel sensor

*Sunday 27 September 2015 11:30 (20 minutes)*

Silicon-On-Insulator (SOI) monolithic pixel sensor is a new imaging device which can be used for looking many kinds of invisible object, such as X-ray, charged particle, ion beam, infrared light, neutron and so on. SOI technology has many outstanding features and there were several projects to develop SOI sensors in 1990's and early 2000's. Unfortunately most of them are stopped due to difficulties in solving SOI specific issues and lack of process technology at that time.

In these days, SOI technology attracts attention again as next generation semiconductor devices. From 2005 we have been developing SOI sensors process technology at KEK. The technology is based on 0.2 um SOI-CMOS process of Lapis semiconductor Co. Ltd. We have introduced several new technologies to this process and solved major problems of SOI sensor such as back-gate effect, high-resistivity wafer, cross talk between sensor and circuit, total-ionizing dose (TID) effect etc.

We are now performing tens of projects for various kinds of applications and also doing a few international collaborations. I would like to describe recent status of our SOI sensor development and present applications aimed by our collaborators.

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**Session Classification:** Pixels (including CCD's)-2

**Track Classification:** Pixels (incl. CCD's) - X-ray imaging