Contribution ID: **89** Type: **Poster**

Investigation of radiation hardness in lateral position sensitive detector irradiated with 13.5 nm EUV

Tuesday 26 June 2018 16:00 (1 hour)

The development of lateral position sensitive detector for EUV irradiation is important for use in the lithographical equipment for 13.5 nm, which is the new standard in semiconductor industries.Using a scintillator (CsI(Tl)) at 13.5 nm wavelength produces ˜6 light photons which results in 6 eh-pairs in the detector. Direct conversion produces 26 eh-pairs in the silicon detector, which is more than 4 times as efficient. Producing 13.5 nm needs hot dense plasma or a synchrotron source. By filtering hot dense plasma by using multilayer Mo/Si mirrors, a beam of a wavelength 13.5 nm is generated. Several mirrors can be involved which makes a measurement of the beam position necessary for optimal beam performance, homogeneous wave front and increased brightness. Therefore a position sensitive direct conversion detector for 13.5 nm is needed.

Two different types of detector are tested, n in p-substrate and p in n-substrate, silicon lateral position sensitive detectors. The detectors are manufactured by Sitek electro optics. The passivation of surface is by oxidation, oxynitride, and titanium annealed at 400 ℃ for 1 hour (forming gas annealing). The layer thicknesses (˜10 nm) have been simulated by using MCNP to keep control of the attenuation. Stress measurement have been done at Elettra Sincrotrone Trieste using the beam line for Circular Polarization

Author: Dr THUNGSTRÖM, Göran (Mid Sweden University)

Co-authors: Prof. FRÖJDH, Christer (MId Sweden University); Prof. MENK, Ralf (Sincrotrone Trieste); Mr LUNDGREN, Anders (Sitek Electro Optics)

Presenter: Dr THUNGSTRÖM, Göran (Mid Sweden University)

Session Classification: Poster session