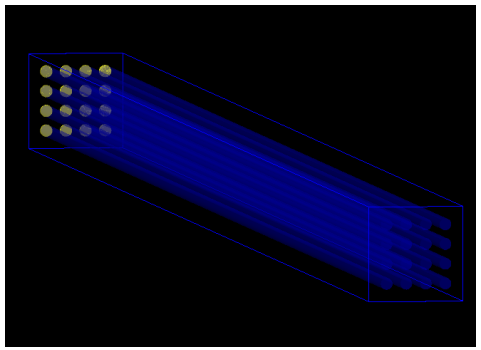
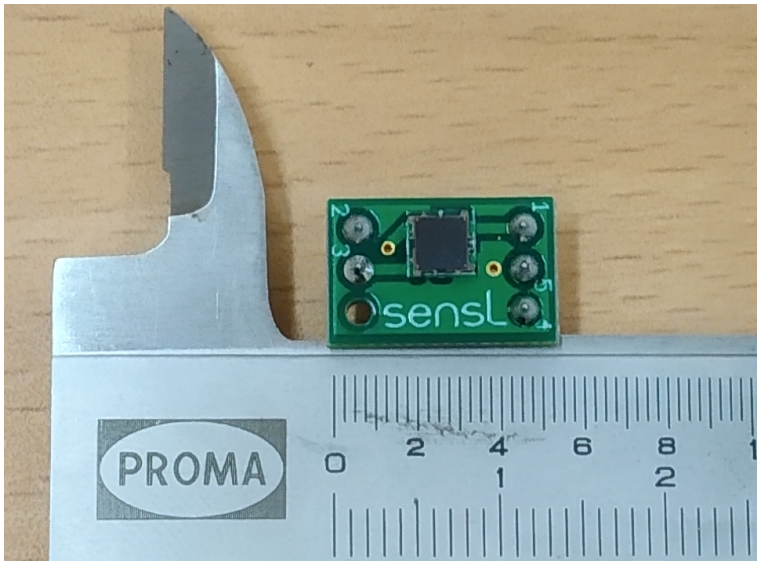
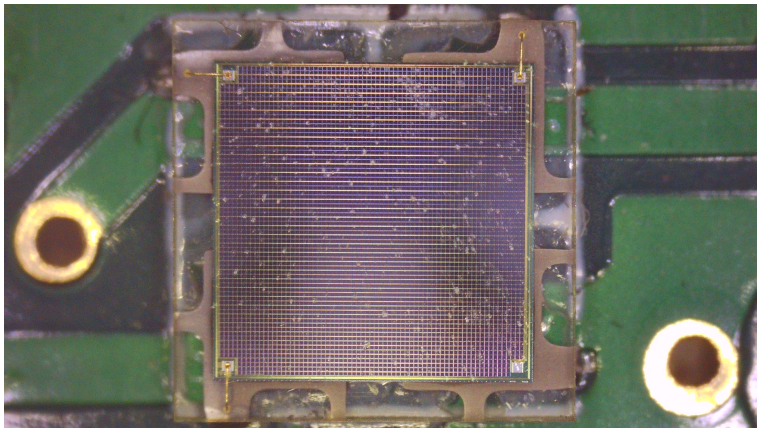
Luminosity measurement at Electron Ion Collider

- nominal luminosity at EIC will reach $10^{33}\text{cm}^{-2}\text{s}^{-1}$ to 10^{34} $\text{cm}^{-2}\text{s}^{-1}$
- luminosity measurement based on detection of bremsstrahlung photons and electron tagging in the Far Backward area
- detectors for luminosity measurement
  - pair spectrometer
  - electron taggers
  - direct photon detector
- Direct photon detector
  - detection of hard bremsstrahlung photons
  - one possible design is a spaghetti calorimeter with Cherenkov silicon fibers
  - due to high bunch crossing rate at nominal luminosity fast sensors for optical photon detection are needed



Silicon Photomultipliers





- onsemi C-series 30035
  - one of possible candidates for optical photon detection at the direct photon detector
  - fast and standard signal output
  - testing of timing and impedance characteristics
  - development of SiPM signal amplification circuit