

A large area photon counting X-ray detector with indirect conversion

Roger Durst¹

¹Bruker AXS GmbH

roger.durst@bruker.com

A new large-area pixel detector for X-ray diffraction combining indirect conversion with photon counting is described. Indirect conversion allows the detector to achieve a large active area with no gaps or dead areas. The indirect convertor also achieves near ideal X-ray absorption over a broad range of energies from 8 keV to 24 keV. The detector runs at high frame rates of up to 140 Hz in charge integration mode which allows photon counting operation with no charge sharing noise or pulse pileup effects. The detector is also able to discriminate against high energy events from the natural background radiation. This allows the detector to acquire very long exposures with essentially zero noise.