Improvements of Grating-based X-ray Phase Contrast Imaging with a Microfocus X-ray Source by a SOI Pixel Detector, SOPHIA

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X-ray radiography
Microfocus x-ray source: spot size of a few μm

X-ray absorption imaging
Incident x-ray absorption

X-ray phase contrast imaging (XPCI)
Absorption

XPCI with a microfocus x-ray source

Introduction

XPCI methods with a microfocus x-ray source

SOI (Silicon On Insulator) pixel detector

Purpose of this work

Application of “SOI pixel detector” to “XPCI using single amplitude grating”

Experimental Result & Discussion

High spatial resolution XPCI

Summary & Future plan

Energy-resolved x-ray imaging

Energy-resolved shadowgraphs of grating

1 shot energy-resolved XPCI

Sub-pixels analysis

High spatial resolution XPCI

Summary & Future plan

Energy-resolved imaging by single measurement

Important for material characterization

Subpixel analysis (Shortening pitch of grating image)

Improvement of spatial resolution