



Enabling Defect Detection in Low-Density Materials with X-ray Phase Contrast Imaging (XPCI)

The Problem

X-rays can't see low-density materials that are used throughout the stockpile.

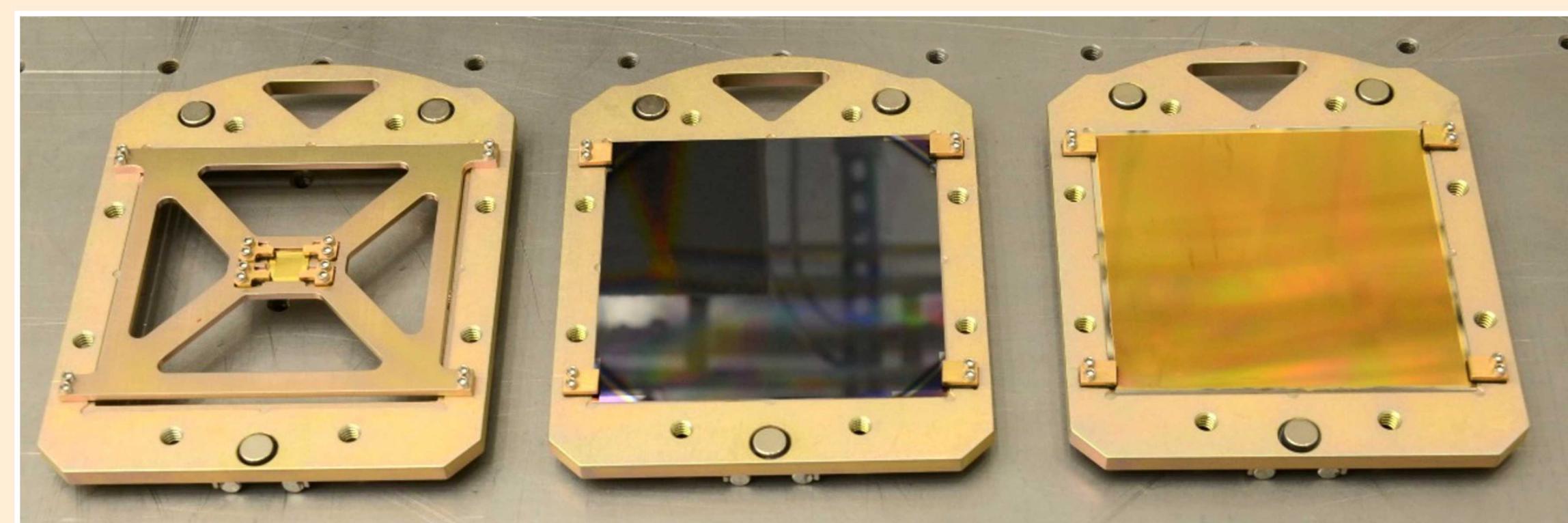


Voids, delamination, inhomogeneities, and cracks can lead to catastrophic failures.

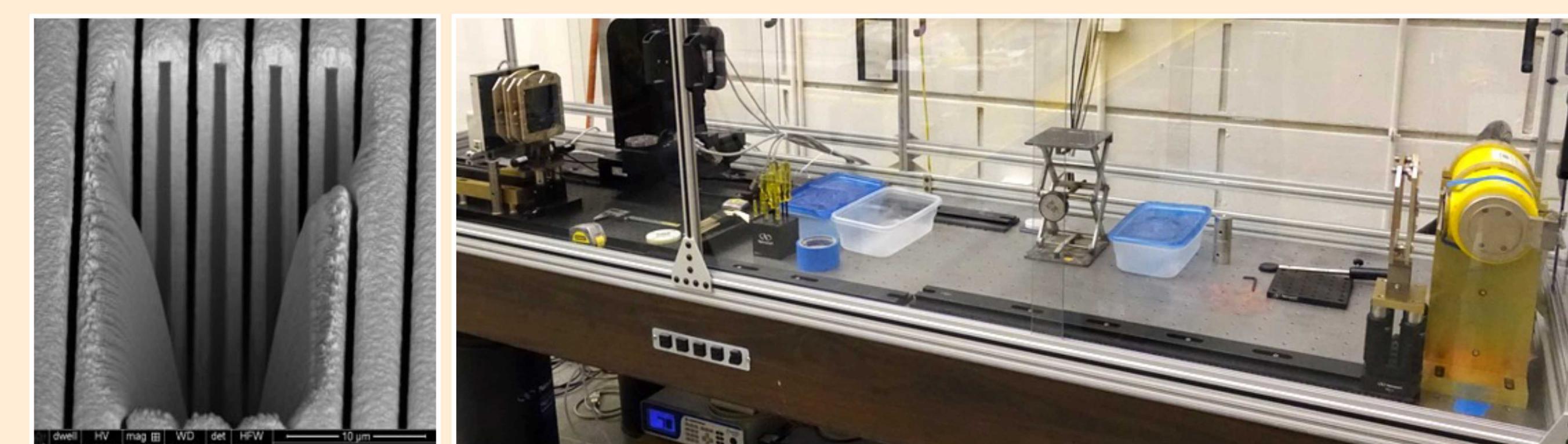
Why Sandia?



Sandia has advanced x-ray grating fabrication beyond state-of-the-art, enabling the **world's largest** field-of-view benchtop 3D XPCI system.



Large area, high aspect ratio x-ray gratings are the enabling technology for x-ray phase contrast imaging.



High aspect ratio grating features.

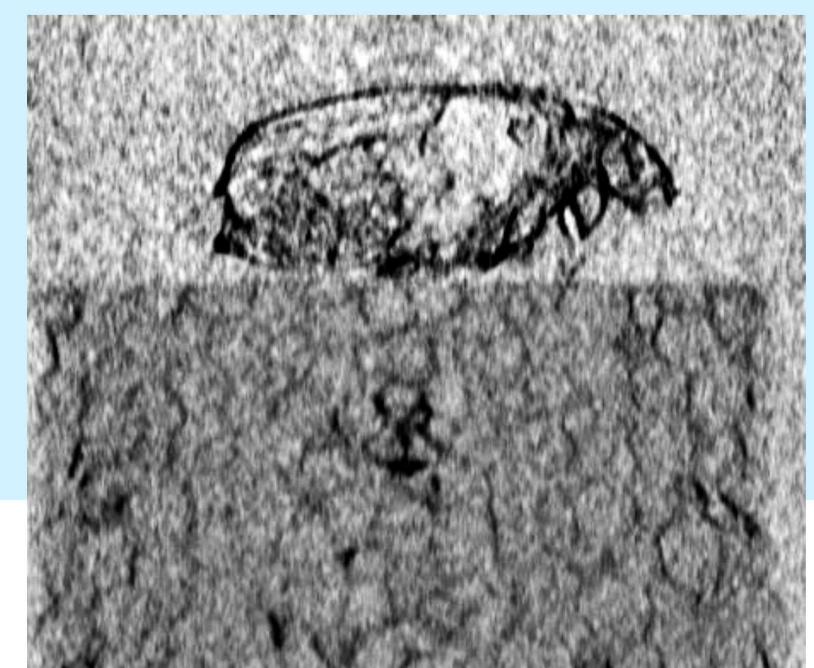
Now available as a failure analysis tool.

The Solution

X-ray phase contrast imaging computed tomography (CT)

- Revolutionary improvement in non-destructive imaging of low-density features.

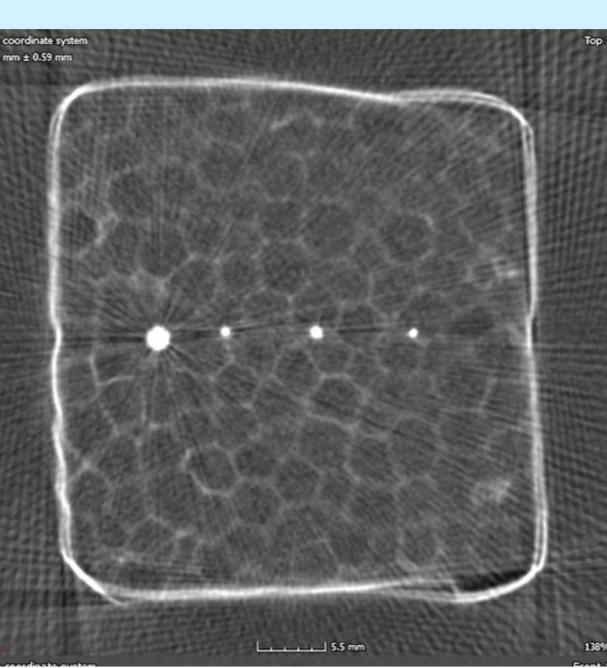
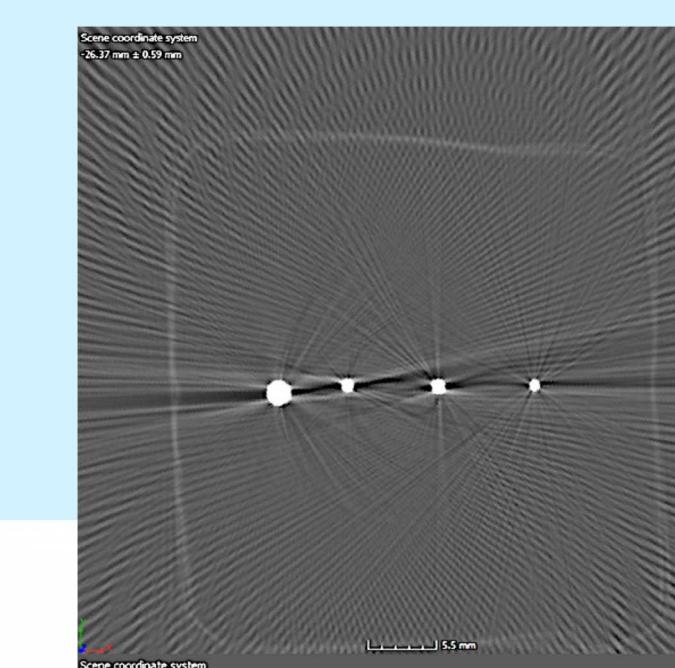
June bug on Styrofoam



Normal x-ray CT

XPCI-CT

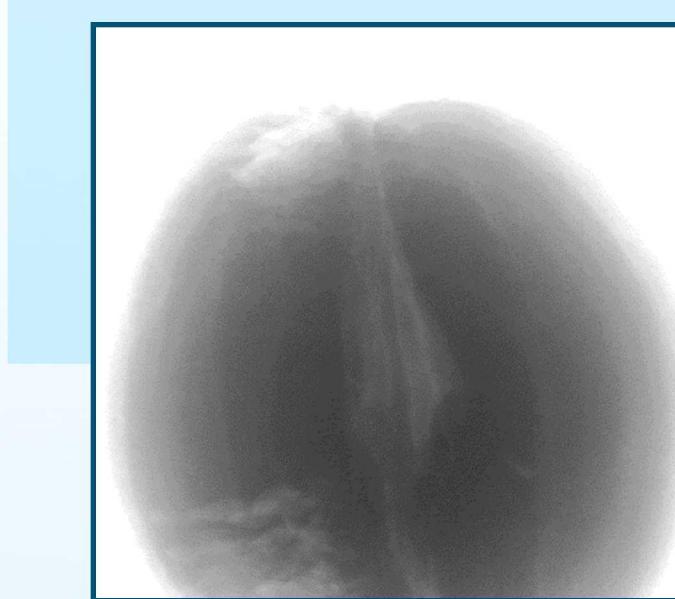
Wire in foam



Normal x-ray CT

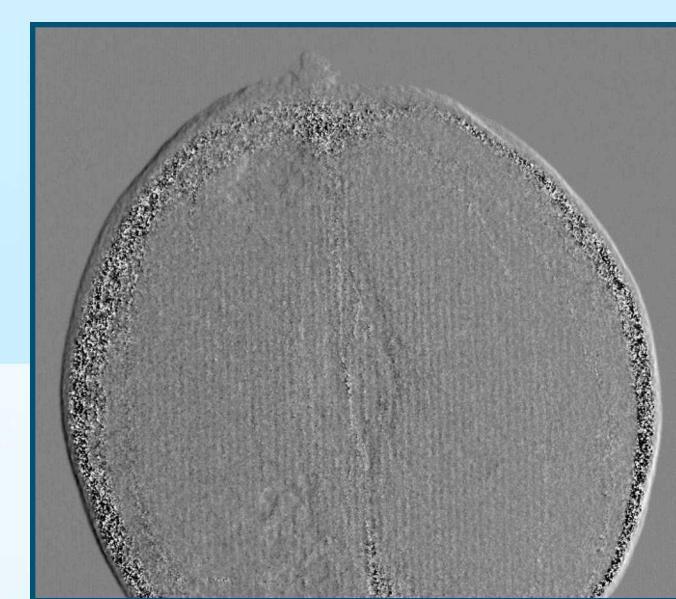
XPCI-CT

Orange



Normal x-ray

XPCI dark field



XPCI phase contrast