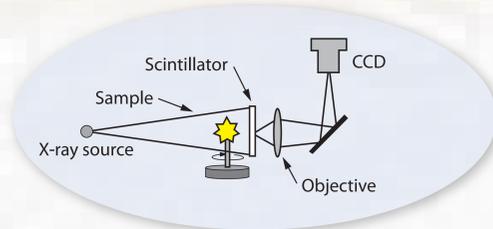


Micro- and Nanoscale X-ray Digital Radiography and Computed Tomography

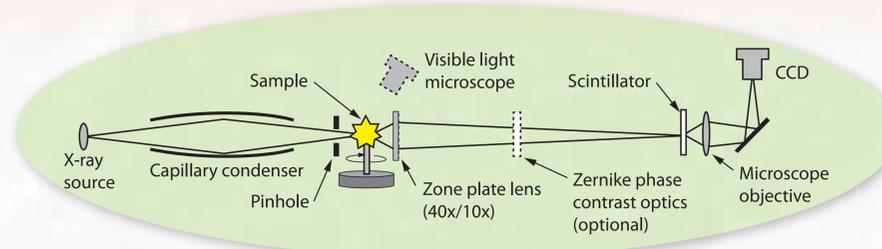
Cutting-edge nondestructive 3-D bulk characterization in a laboratory system

J. Sain, C. Divin, K. J. Wu, R. Seugling, J. Satcher, Y. Han, D. Chinn, H. Martz, Jr.

Microscale Radiography System



Nanoscale Radiography System

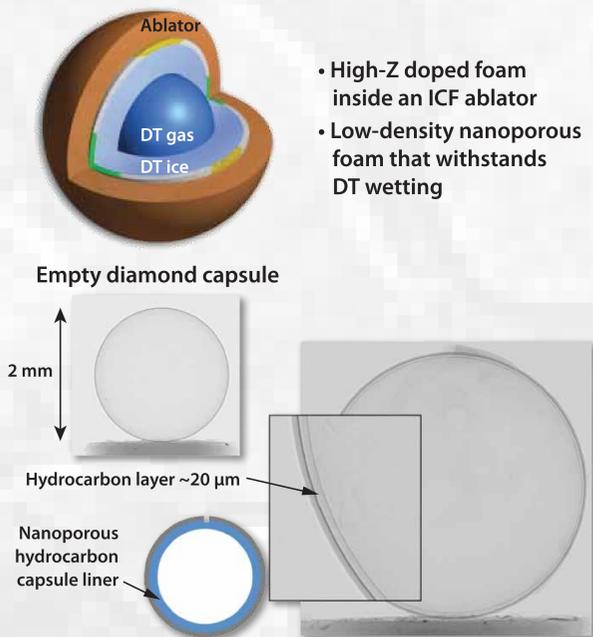


This new system, installed in 2011, provides synchrotron-type x-ray imaging capability in a lab-based environment

| Specification | MicroXCT-200 | UltraXRM-L200 |
|--------------------|------------------------------------------|-------------------------------|
| X-ray energy | 50–150 keV _p , bremsstrahlung | 8.04 keV, characteristic line |
| Field of view | 1–6 mm | 65 μm, 16 μm |
| Magnification | 4x–40x | 200x, 800x |
| Spatial resolution | 1–6 μm | 150 nm, 50 nm |
| Contrast mode | Absorption | Absorption, phase |

Rapidly Collect and Analyze Classified or Unclassified Data On Site

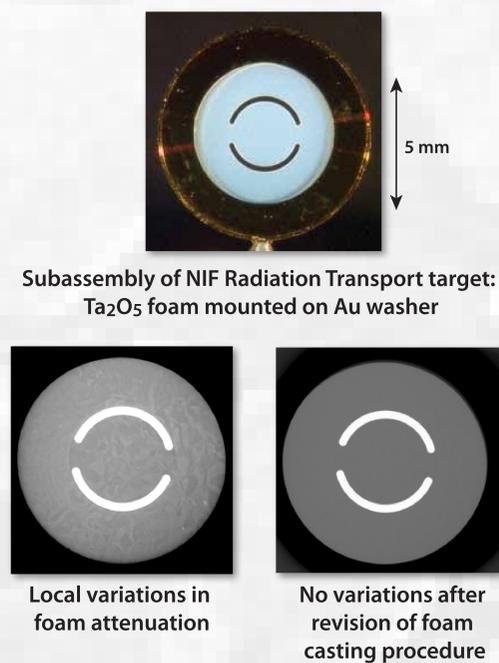
- Shortens interruptions to fabrication schedules
- Eliminates risks of packaging and shipping fragile items
- Enables repeated evaluation of fabrication procedures



- High-Z doped foam inside an ICF ablator
- Low-density nanoporous foam that withstands DT wetting

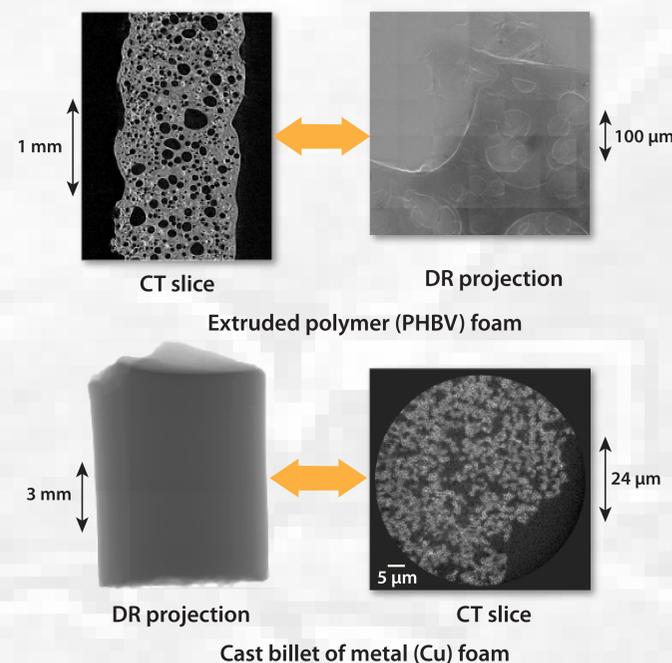
Detect and Characterize Abnormalities in Materials and Assemblies

- Helps improve fabrication procedures
- Improves probability of successfully interpreting experimental results



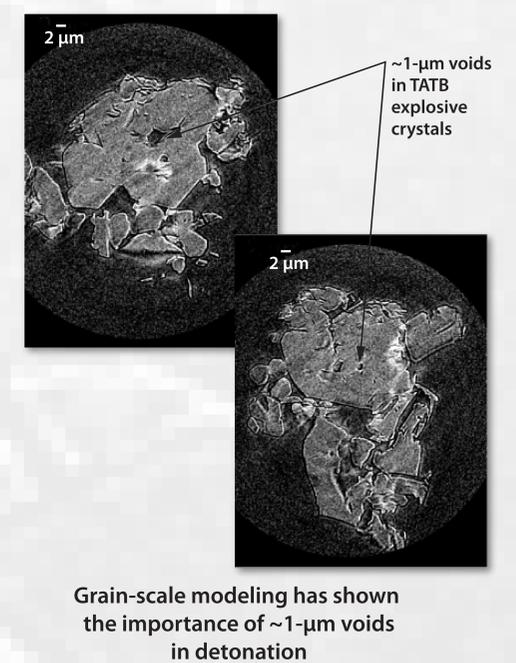
Visualize and Quantify Microstructures at Multiple Length Scales

- Allows correlation between macroscopic behavior and microscopic structure in materials
- Improves workflow to subsequent higher-resolution, but destructive, techniques



Inform and Validate Morphology and As-Built Models

- Addresses gap between predicted model and experiment
- Improves understanding and reduces uncertainty of material performance



Expanded capability in x-ray nondestructive evaluation enables materials research at new length scales