

# Frontiers in Microscopy & Microanalysis

## New dimensions to micro-CT imaging

### Fast dynamic CT imaging and spectral CT on TESCAN micro-CT systems

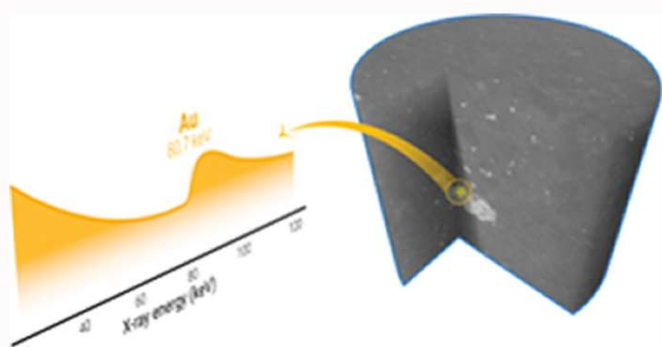


Figure 1: detection of gold inside an unprocessed rock core.

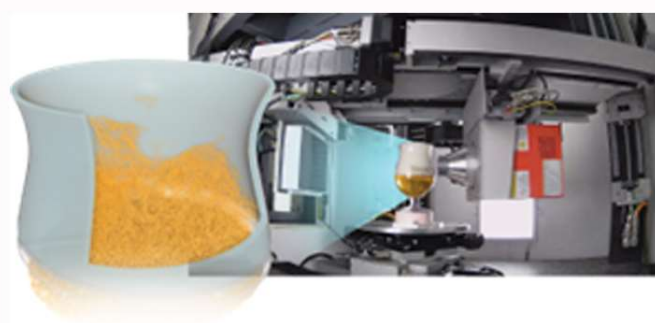


Figure 2: Fast, in-situ dynamic imaging of beer foam collapse.

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Micro-CT is an invaluable technique for non-destructive 3D characterization of materials. Its ability to measure samples from a few millimeters up to one meter in size, and the lack of any sample preparation make it a unique method for the inspection of both raw materials and finished products. Although these qualities are undisputed, two persistent prejudices about micro-CT exist: micro-CT scans take many hours to complete, and micro-CT does not provide any chemical or compositional information.

Over the last years, TESCAN micro-CT has proven that fast, laboratory-based dynamic micro-CT is able to visualize and analyze processes with temporal resolutions of just a few seconds. This development enabled experiments that used to be possible only at synchrotron facilities, such as in-situ flow experiments in porous materials, mechanical tests of metals and additively manufactured components or studying the behavior of liquid foams. This talk will focus on some real examples on how fast CT scanning using complex setups can be used to understand the behavior of materials.

With the release of TESCAN SPECTRAL CT, also the second prejudice can be tackled. Spectral CT scanning has the unique capability of revealing the composition of materials in 3D, at any point inside a sample, nondestructively. Using an energy-sensitive, photon counting detector, complete spectral information can be used to reveal contrast where traditional CT cannot, or use k-edge detection to identify precious elements such as gold and platinum.

**The University of Queensland / CMM**  
**Location: AIBN Bldg. 75 Level 1 Seminar Room**  
**Zoom: <https://uqz.zoom.us/j/82126998320>**  
**on Wednesday 26<sup>th</sup> September 2022; 15:00-16:00 (AEST)**