

Bruker microCT

- High-Resolution X-Ray Microtomography

SkyScan 1272

- High Resolution Desktop Microtomograph



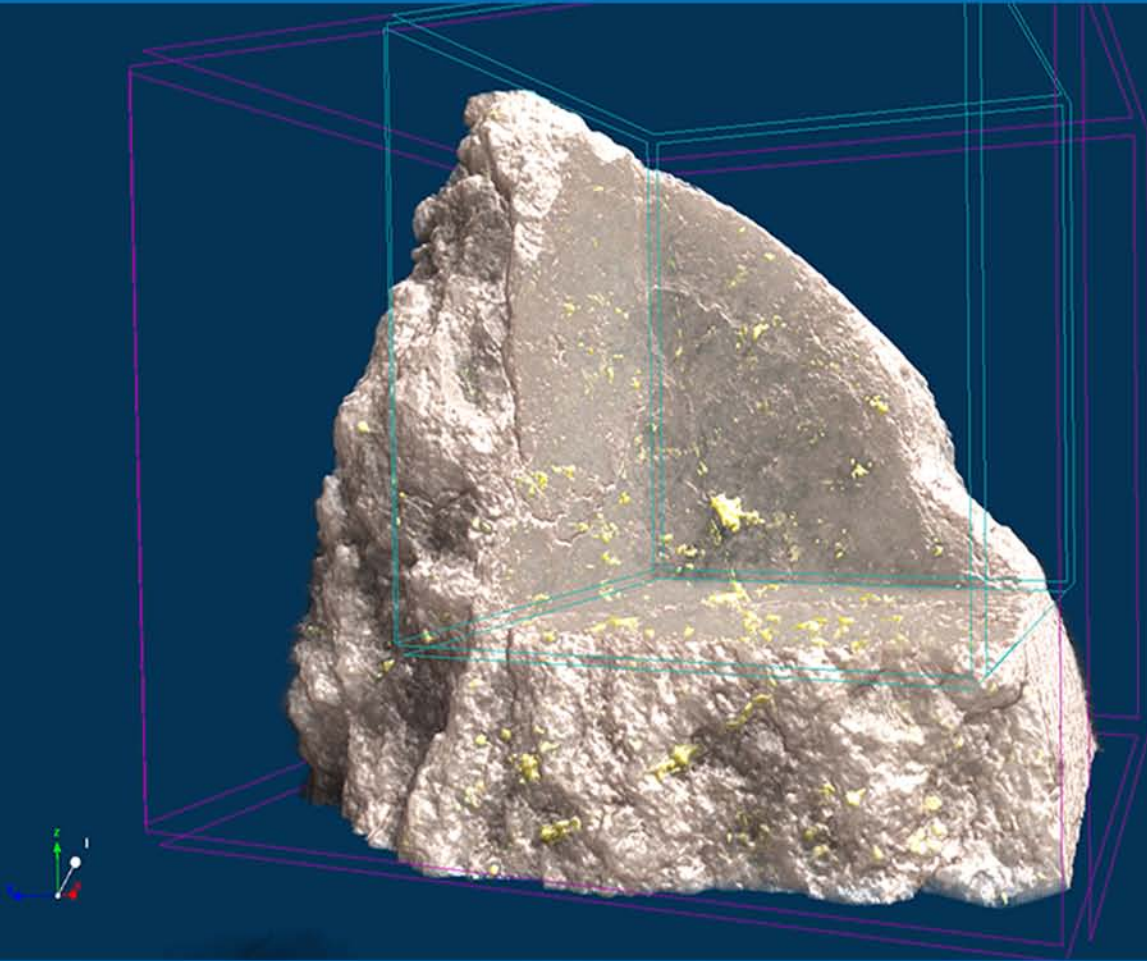
Volume rendering of the cell structure inside wood, 0.5 μ m isotropic pixel size, 4904x4904x1915 pixels



- New cooled 16Mp or 11Mp X-ray cameras, nominal resolution 0.35 μ m (16Mp) or 0.45 μ m (11Mp),
- Up to 14450x14450 pixels in every reconstructed slice (for systems with 16Mp detector),
- Automatically variable acquisition geometry for shortest scan at any magnification,
- 75mm maximum scanning diameter,
- 6-positions automatic filter changer, 20-100kV X-ray source energies,
- Integrated micropositioning stage allows easy finding most optimal sample placement,,
- 5Mp shielded CMOS visual camera,
- GPU-accelerated reconstruction and world's fastest hierarchical reconstruction,
- Optional automatic sample changer with 16 positions

SkyScan 1173

High-Energy Microtomograph ●



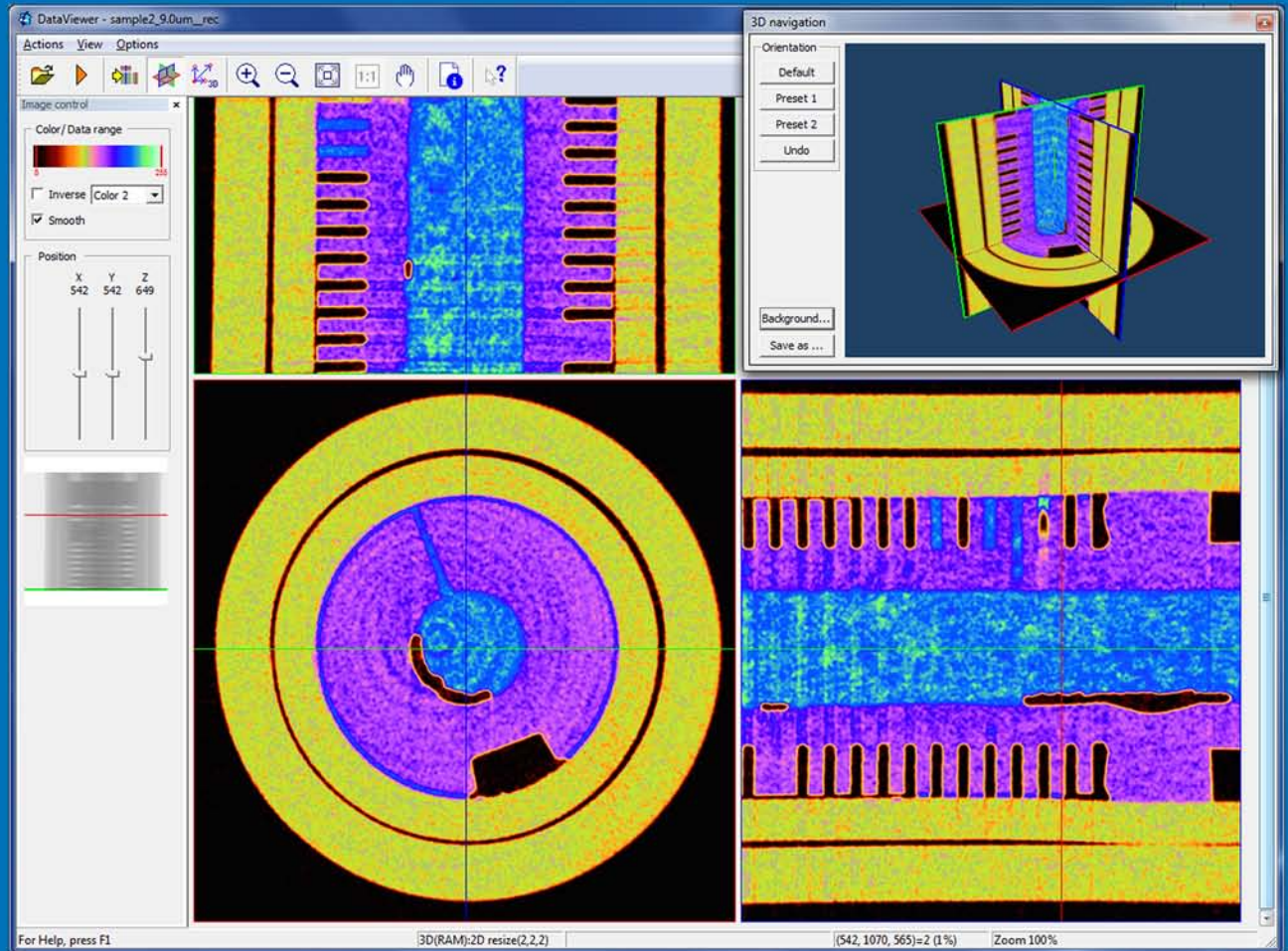
Volume rendering from the reconstructed results of a rock sample, 15.7 μ m pixel size, 130kV



- Maintenance-free 130 kV X-ray source,
- Radiation hardened, distortion-free 5Mp flat panel detector,
- 140 mm maximum object diameter,
- Integrated micro-positioning stage,
- Better than 7 micron 3D spatial resolution,
- GPU-accelerated reconstruction,
- 2D / 3D image analysis and realistic visualization,
- Optional world's fastest hierarchical (InstaRecon) reconstruction

SkyScan 1174

- Compact Microtomograph



Virtual orthogonal slices through a multi-component plastic eyeliner, 9.0 μ m isotropic pixel size, 1084x1084x999 pixels

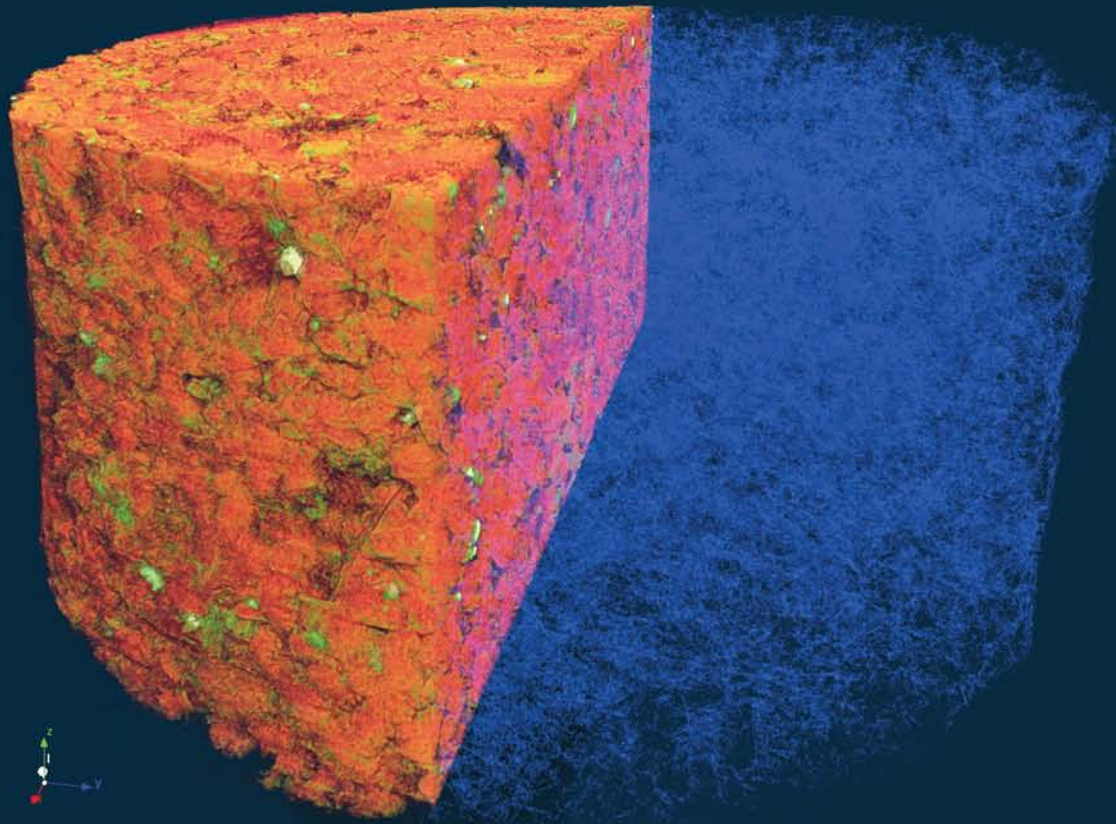


At a fraction of the price of competitive systems, with a small footprint, this scanner provides fast, high resolution 3D imaging with exceptional quality.

- Fast scanning with simple scanner operation,
- 50 kV maintenance-free X-ray source,
- Cooled 1.3 Mp 14-bit X-ray camera,
- Down to 6 micron 3D detail detectability,
- GPU-accelerated reconstruction,
- 2D/ 3D image analysis and realistic visualization

SkyScan 2211

Multi-scale Laboratory Nanotomograph ●



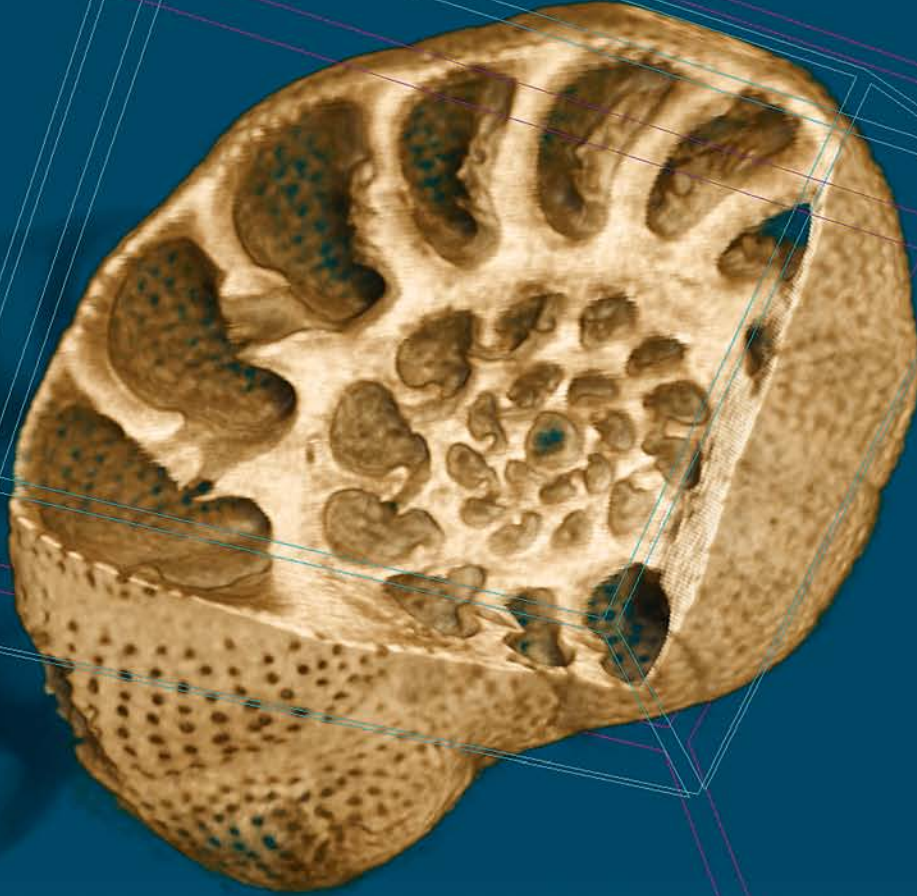
Volume rendering of a sandstone, 1 μm spatial resolution.
Left side: visualization of the mineral content,
Right side: porous space inside this sample



- Smallest pixel size is 100nm,
- Maximum object size is 204mm in diameter, 200mm in length,
- Precision air-bearing rotation with <math><50\text{nm}</math> accuracy for objects up to 25 kg weight,
- Integrated anti-vibration natural granite platform with pneumatic leveling,
- X-ray source: 10...190kV, 600nm spot size,
- Two X-ray detectors: 3Mp flat-panel + 11Mp cooled CCD,
- Up to 8000x8000x2300 pixels can be reconstructed after a single scan,
- Integrated micro-positioning stage with piezo-drives,
- Supplied with software for 2D/3D morphological analysis and surface/volume rendering,
- Fully shielded laboratory instrument

Micro-CT for SEM

- Non-invasive 3D Imaging in any SEM



Volume rendering of the foraminifera,
with 0.9 μ m spatial resolution



This inexpensive attachment adds to any SEM a unique capability to image and measure 2D / 3D micromorphology throughout the entire sample volume with submicron spatial resolution and create realistic visual models for virtual travel within the object.

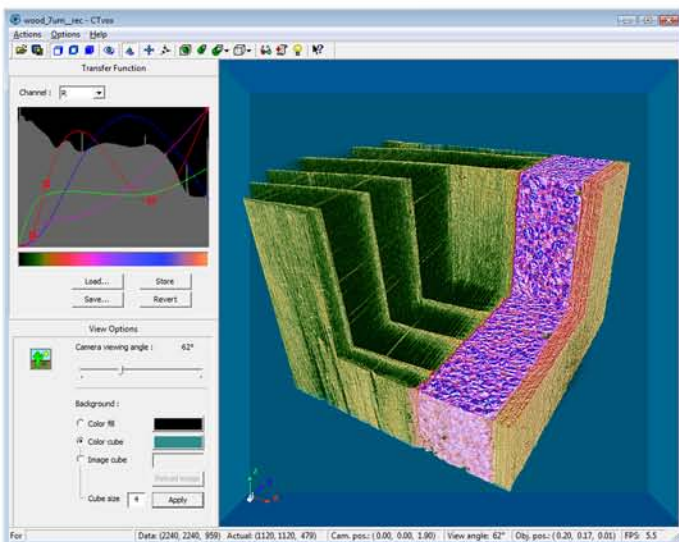
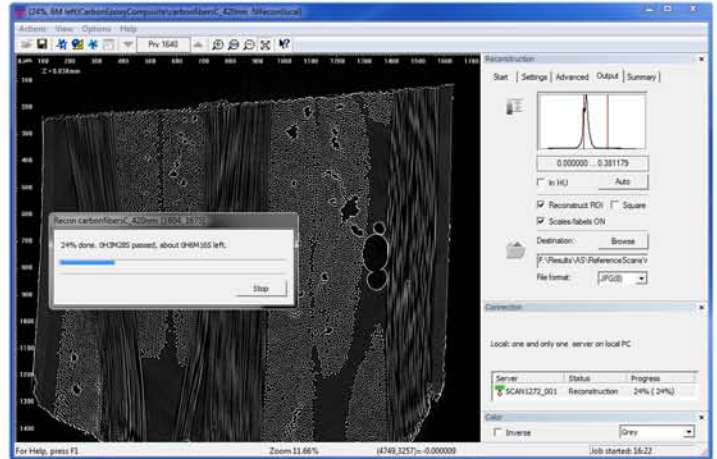
- Detail detectability down to 500 nm,
- Uses SEM electron beam to generate X-rays,
- Can work with conductive and non-conductive samples,
- Does not require any modifications in SEM electronics or SEM control software,
- No ring artifacts in reconstructed slices due to the camera with direct photon detection,
- Supplied with software for reconstruction, 2D/3D image analysis and realistic visualization

Software suite

Reconstruction, Analysis and Realistic Visualization

- **NRecon:**
Multithreaded GPU-accelerated Reconstruction

NRecon achieves the world's fastest large format reconstruction. It can run on a single PC or a cluster of several PCs. The reconstruction uses a unique parallelization algorithm for GPU-acceleration on single or multiple graphical cards. It supports beam-hardening correction, misalignment correction, ring artifact elimination, volume of interest reconstruction and reconstruction of objects larger than field of view, automatic merging partial scans, drift compensation and many other options.



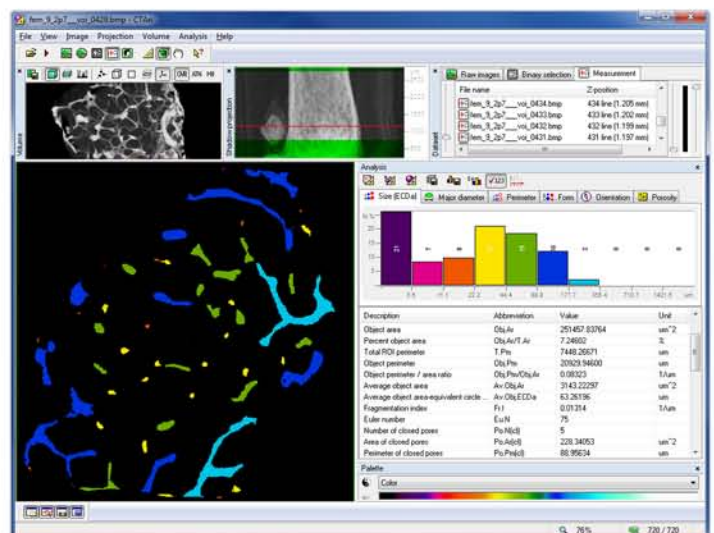
- **CTVox:**
Realistic Visualization by Volume Rendering

The volume rendering program CTvox displays a set of reconstructed slices as a realistic 3D object with intuitive navigation and manipulation of both object and camera, a flexible clipping tool to produce cut-away views, background selection including custom scenery and an interactive transfer function control to adjust color and transparency. The lighting and shadowing options combined with selection of properties of the material surfaces allow fully realistic visualization. A "flight recorder" function allows fast creation of animations based on the selection of several key frames with automatic interpolation in between. Imaging possibilities include stereo viewing using glasses with color filters. Any 3D results can be sent to iPhone, iPad or Android mobiles for volume rendering and virtual cut.

- **CTAn:**
2D / 3D Image Analysis and Processing;

- **CTVol:**
Realistic Visualization by Surface Rendering

CTAn or "CT-Analyser" allows accurate and detailed study of micro-CT results for morphometry and densitometry. Powerful, flexible and programmable image processing tools allow a wide range of segmentation, enhancement and measurement functions. CTVol or "CT-Volume" uses surface triangulated models from CTAn and provides a virtual 3D viewing environment, flexible and rich in features, to give you a wide range of options for 3D presentation of micro-CT results.



● Object stages for *in situ* examination

● Optional sample mounts

Besides the standard sample holders that are supplied with the system, there are a number of additional optional sample mounts available.

Left: Tube sample holder allows scanning of samples with different sizes, including automated batch scanning or samples in liquid.

Middle: Spider sample holder has four fingers to hold objects of variable geometry and with sizes from 0.8 to 18 mm.

Right: this sample mount contains two layers of parallel tube compartments for four samples up to 5 mm in diameter in each layer for scanning simultaneously.



● Heating and cooling stages

The heating and cooling stages allow micro-CT scanning under controlled object temperature above or below ambient. The heating stage can keep an object at a temperature up to +85°C. The cooling stage can keep an object at sub-zero temperature down to 30-40°C below ambient. An internal microprocessor controls a dual-stage solid-state Peltier cooling or heating system and stabilizes object temperature with <math><0.5^{\circ}\text{C}</math> accuracy.

Like other stages for *in-situ* examination, cooling or heating stages are powered and controlled through a small connector at the top of the object stage. The power and control signals are connected to the static part of the scanner through special gold contact slip rings with low friction and high reliability in endless rotation.

● Material testing stage

The material testing stage (MTS) applies controlled compression or tension to an object, while having a design which allows tomographic scanning while applying force. An internal microprocessor controls the loading mechanics and the readout of applied force and displacement. The loading curve is displayed on-screen in real time. An object can be held under specific load(s) during one or more micro-CT scans.

Maximum object diameter for MTS is 20mm, maximum length for compression is 23mm, for tension - 18mm. Travel range is 5.5mm. The material testing stage can be supplied with different load cells for maximum compression or tension force of 42, 210 or 440N.



Cover Image:

Volume rendering of a reconstructed D size battery using CTVox.
Scanned with SkyScan 2211, 19 μm isotropic pixel size, 170kV.



To connect to the Bruker microCT website bruker-microct.com, scan this QR-code by camera in your mobile phone or iPad.

Free QR-code readers are available on the AppStore or Google play.

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