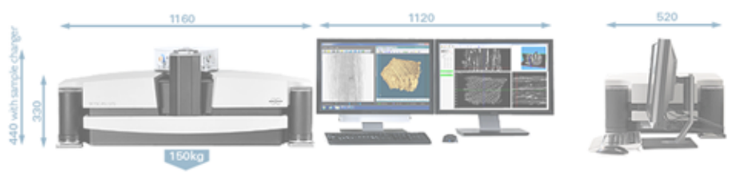
Technical Specifications

X-ray source	20-100kV, 10W, <5um spot size @ 4W	
X-ray detector	16Mp (4904x3280 pixels) or 11Mp (4032x2688 pixels) 14-bit, cooled CCD fiber-optically coupled to scintillator	
Nominal resolution (pixels on the object at maximum magnification)	<0.35um for 16Mp camera, <0.45um for 11Mp camera	
Reconstructed volume (after single scan)	up to 14456x14456x2630 pixels for 16Mp camera up to 11840x11840x2150 pixels for 11Mp camera	
Scanning space	maximum 75mm in diameter, 70mm in length	
Radiation safety	<1uSv/h at any point of instrument surface	
Dimensions	1160W x 520D x 330H mm (440H with sample changer)	
Weight	150kg without packaging	
Power supply	100-240V / 50-60Hz, typ. 90W at maximum X-ray power	
Control workstation	Standard	Advanced
Processors	Dual 6-core Intel XEON	Dual 8-core Intel XEON
Memory (RAM)	32GB / 1600MHz	128GB / 1600MHz
Disk space (HDD)	6TB (2 x 3TB RAID0)	12TB (4 x 3TB, RAID0)
Graphics	NVIDIA Quadro + Tesla	NVIDIA Quadro + Tesla
Monitors	2 x 24"wide (1920x1200)	2 x 24"wide (1920x1200)

Bruker microCT is contunually improving its products and reserve the rights to change specifications without notice.



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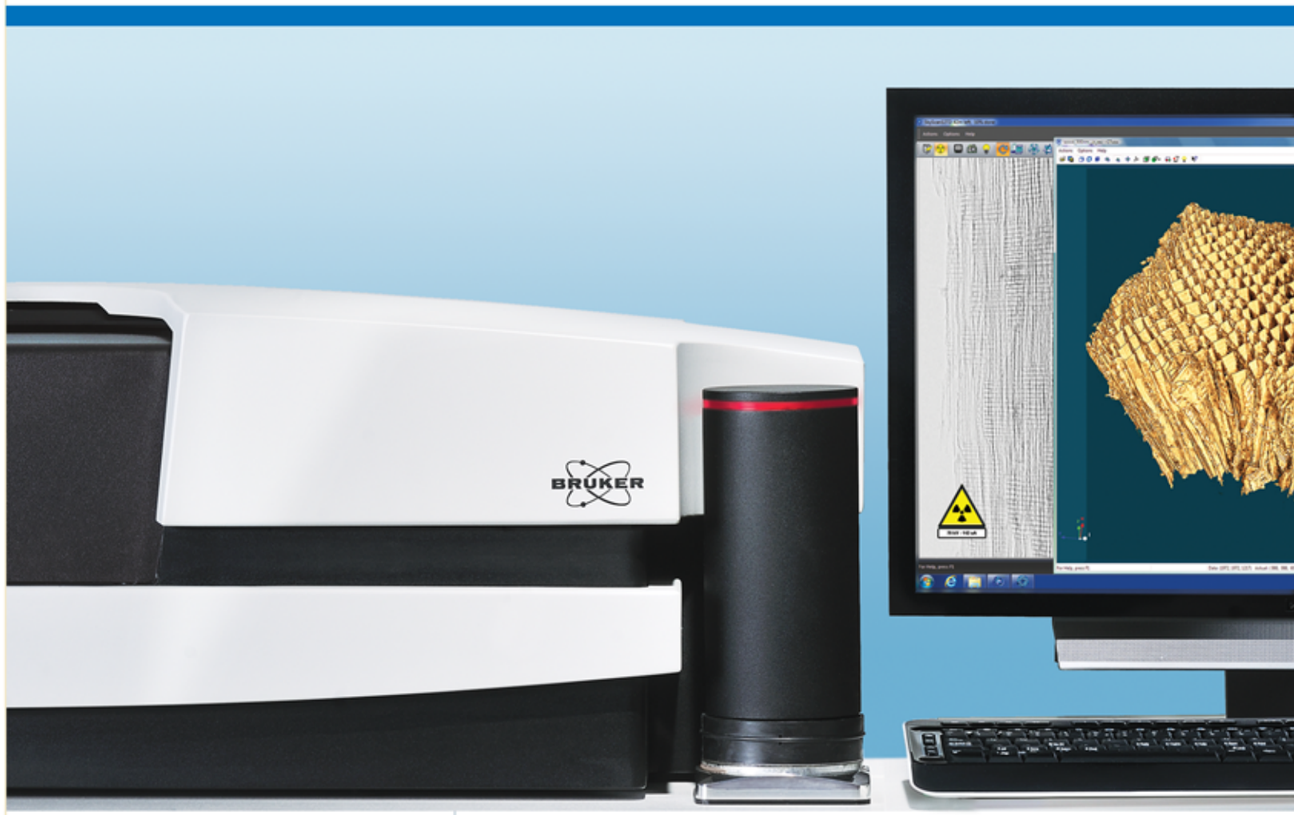


SkyScan 1272

● High-Resolution X-Ray Microtomograph

Innovation with Integrity

MICROTOMOGRAPHY

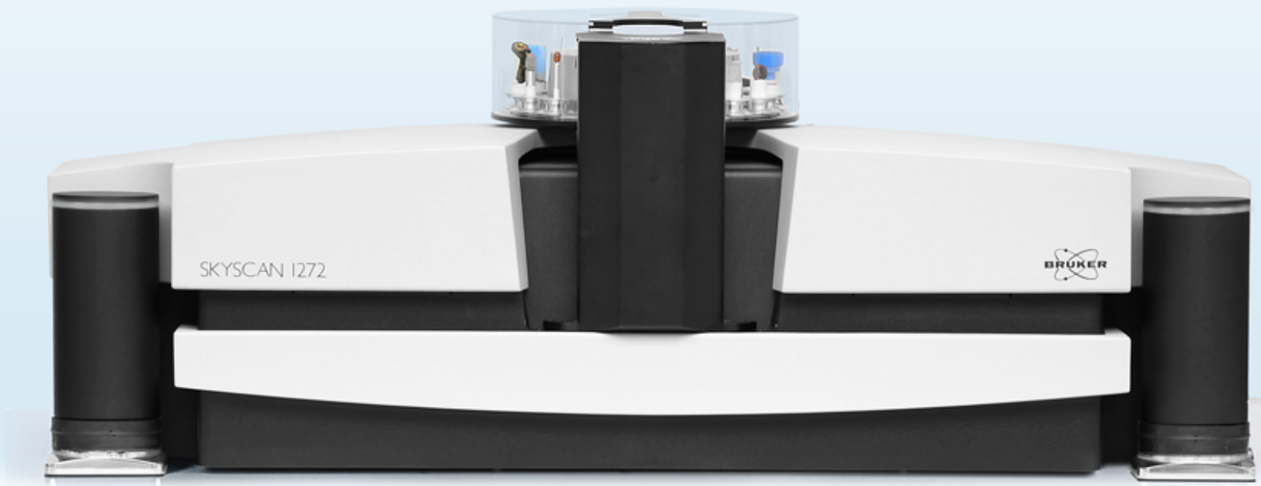
X-Ray Microtomography or Micro-CT: Most Advanced Nondestructive 3D Microscopy

Micro-computed tomography or Micro-CT is X-ray imaging in 3D, by the same method used in hospital CT (or "CAT") scans, but on a small scale with massively increased resolution.

It really represents true 3D microscopy, where very fine scale internal structure of objects is imaged non-destructively. No sample preparation, no staining, no thin slicing.

A single scan will image complete internal 3D structure of your object, plus you get your intact sample back at the end!

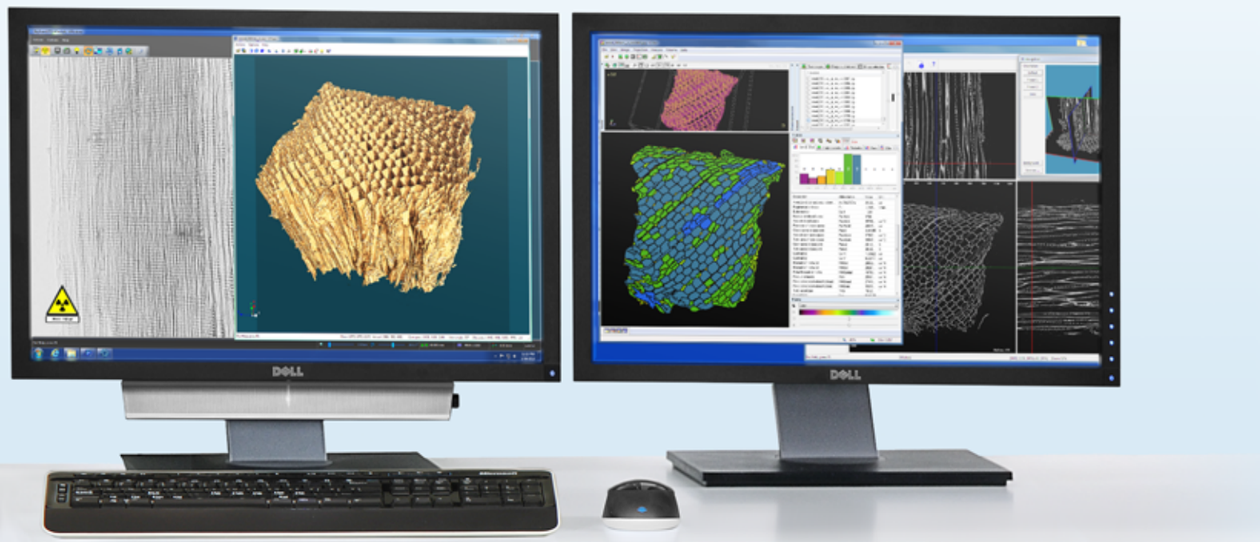
SkyScan 1272 high resolution
desk-top X-Ray microtomograph
is shown with automatic sample changer.



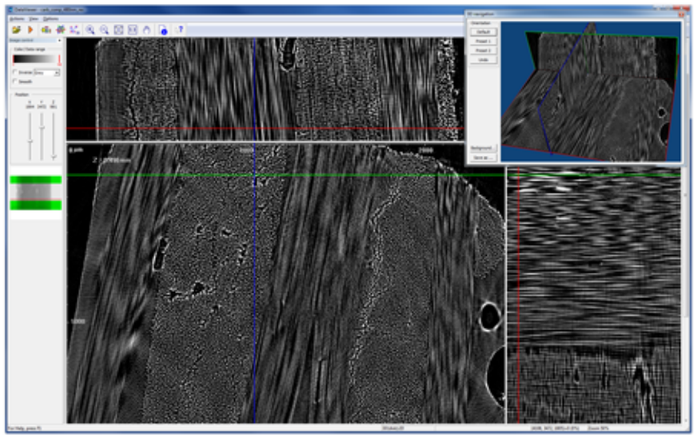
Reaching for the sky of technology

World's first micro-CT with more than 200 Megapixels in a single crossection

- Large format 16Mp or 11Mp cooled 14bit X-ray detector in one, two or three offset positions allows scanning up to 75mm object width and acquiring up to 14456 x 3240 pixels in each projection image, followed by reconstruction of astonishing 209Mp slices, up to 2600 such slices after a single scan.
- A new maintenance free x-ray source with adjustable 20-100kV peak energy and a 6-position automatic filter changer help you to select the best possible scanning conditions for any kind of sample. The system can also automatically select the best energy / filter combination for any sample.
- Isotropic detail detectability down to 0.35µm with phase contrast enhancement for submicron details make previously invisible object features well recognizable and measurable.
- Automatically variable acquisition geometry with both object and detector positioning for shortest scan reduces the scanning cycle time for most magnifications by 2-5 times compared to competitor scanners. The scanner can also send you an e-mail at the end of scanning with a direct link to results.
- Single computer or cluster GPU-accelerated 3D reconstruction supports all scanning formats up to 14456 x 14456 pixels and reconstructs crossection slices 20 times faster than commonly used reconstruction approaches. Optional 8xGPU server pushes reconstruction speed beyond this limit.
- The powerful software package for 2D/3D image analysis and realistic visualization is unique. It allows numerical analysis and volume rendering in large format scanning results. The analysis software can execute hundreds of embedded functions, allows you to make task lists to apply to multiple scan results in a batch run, and supports user plug-ins. Realistic 3D visualization includes surface and volume rendering, easy manipulation and virtual cut, movie creation, stereo imaging and data export to CAD and 3D printers.
- An integrated micro-positioning stage allows you to find most optimal sample placement easy and precisely, or you can select an exact volume of interest to scan within a sample larger than the field of view. Optional stages for *in-situ* examination support sample scanning during compression, tension, heating or cooling.
- The 16-position automatic sample changer (optional) is a big step forward in automation and high throughput scanning. As well as imaging multiple similar samples you can mix samples with different sizes and materials. The scanner can automatically select magnification and acquisition parameters for every particular sample. Samples queued for scanning can be replaced at any time without interrupting an ongoing scanning process.



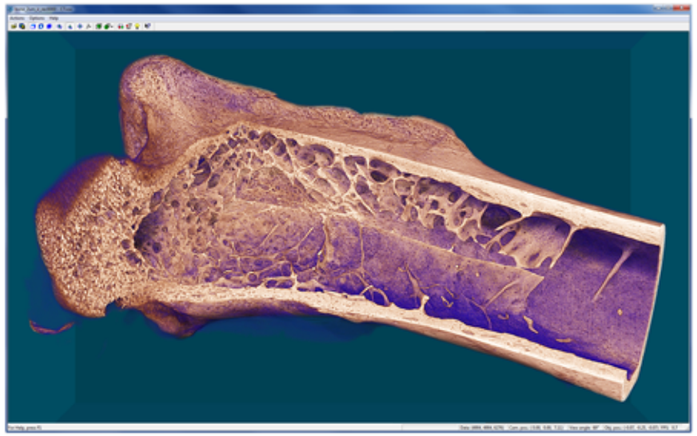
Flexibility for the best results in any application



Composites

Reconstructed virtual slices through a sample of composite material with carbon fibers in an epoxy matrix.

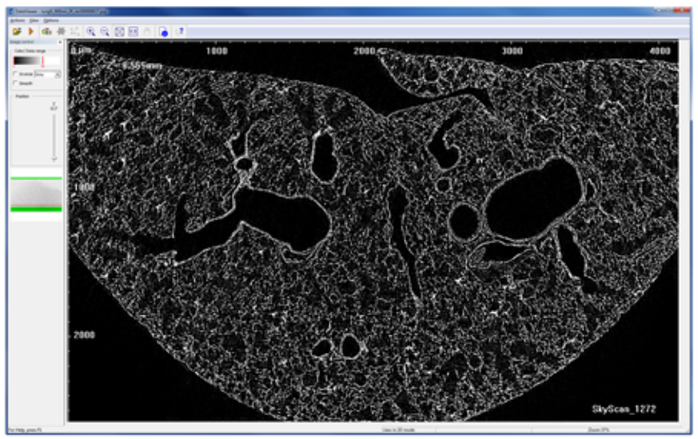
Scanning protocol:
0.48µm isotropic pixel size,
50kV, no filter,
4900x4900x2650 rec. volume.



Bone

Volume rendering of the trabecular structure inside a mouse bone.

Scanning protocol:
1.7µm isotropic pixel size,
70kV, Al 0.5mm filter,
4904x4904x6276 rec. volume.



Lung

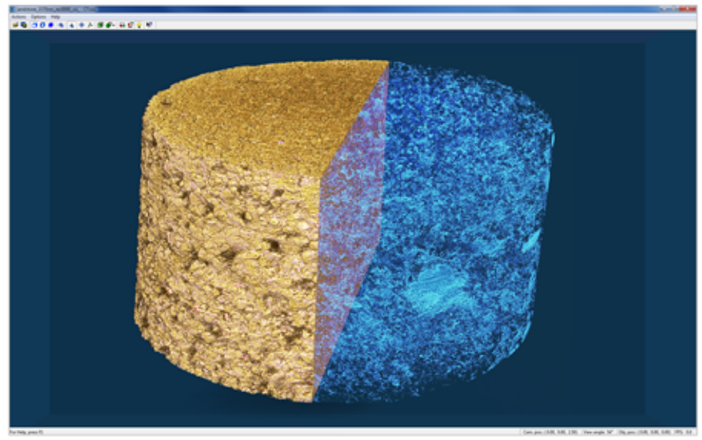
Reconstructed virtual slice through a mouse lung sample.

Scanning protocol:
0.9µm isotropic pixel size,
50kV, no filter,
no contrast agent,
4900x4900x2650 rec. volume

Geology

Volume rendering of a sandstone internal microstructure (left side) and visualization of the porous space inside this sample (right side).

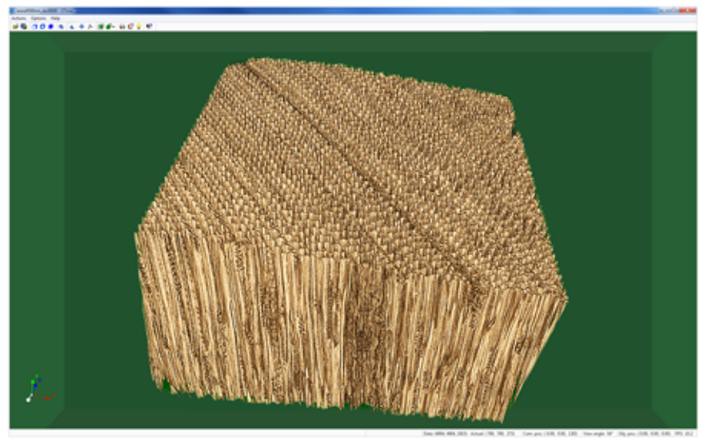
Scanning protocol:
1.57µm isotropic pixel size,
80kV, Al 1mm filter,
4904x4904x2000 rec. volume



Wood

Volume rendering of the cell structure inside a sample of wood.

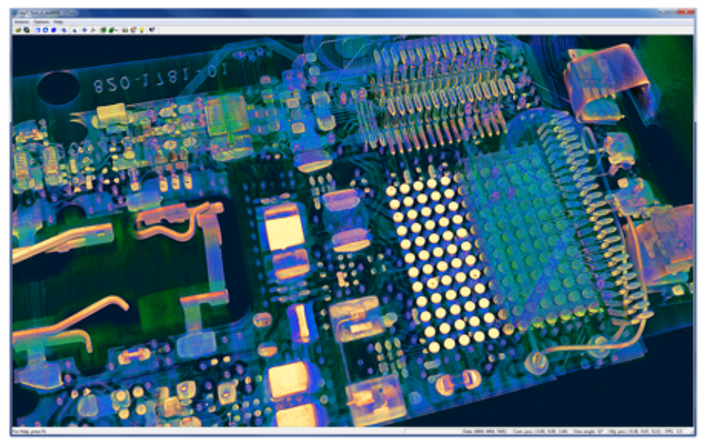
Scanning protocol:
0.5µm isotropic pixel size,
50kV, no filter,
4904x4904x1915 rec. volume



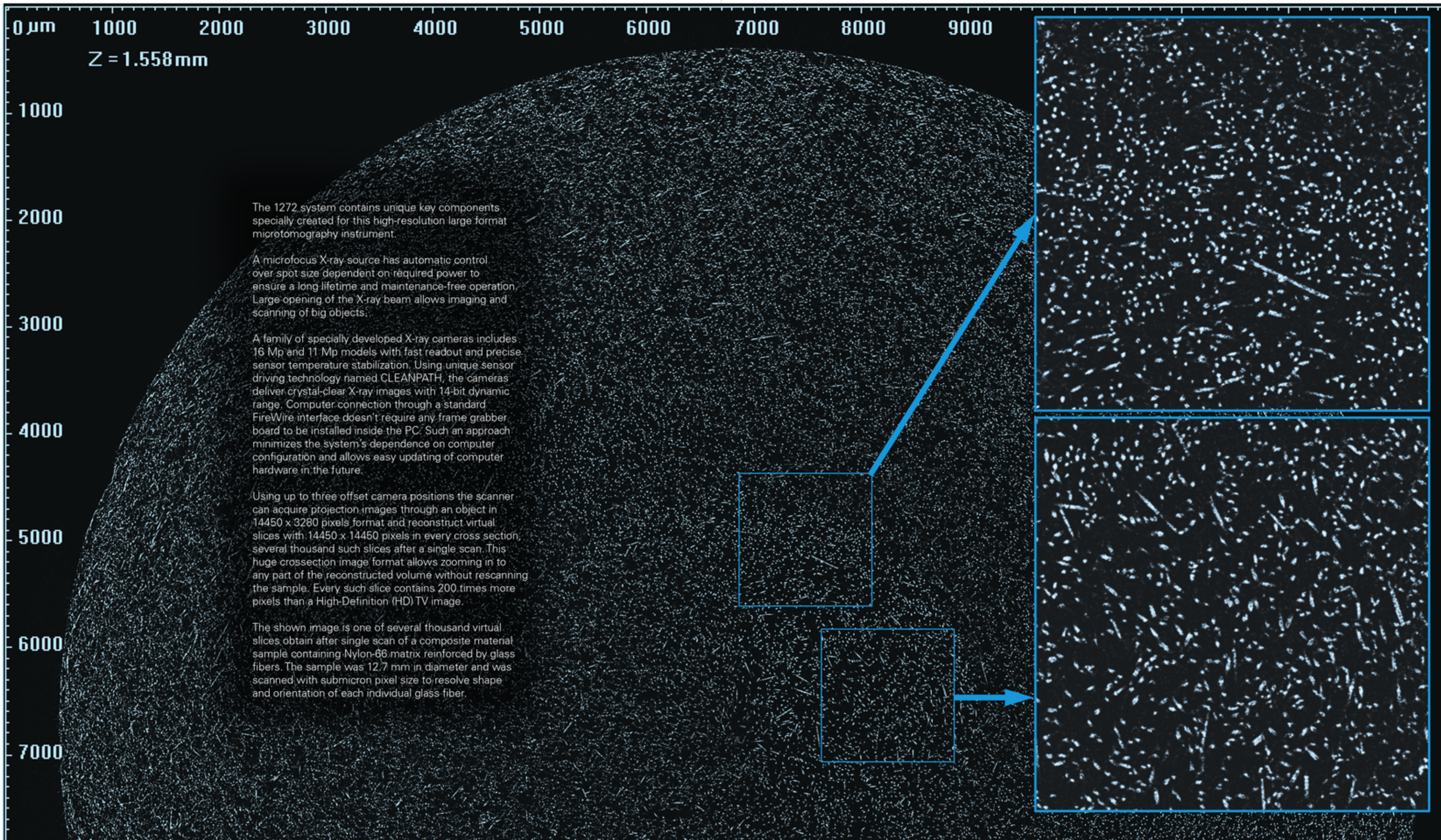
Electronics

Volume rendering of the internal structure of an MP3 player.

Scanning protocol:
5µm isotropic pixel size,
100kV, Cu 0.11mm filter,
4904x4904x7491 rec. volume



More than 200 Megapixel in every slice



The 1272 system contains unique key components specially created for this high-resolution large format microtomography instrument.

A microfocus X-ray source has automatic control over spot size dependent on required power to ensure a long lifetime and maintenance-free operation. Large opening of the X-ray beam allows imaging and scanning of big objects.

A family of specially developed X-ray cameras includes 16 Mp and 11 Mp models with fast readout and precise sensor temperature stabilization. Using unique sensor driving technology named CLEANPATH, the cameras deliver crystal-clear X-ray images with 14-bit dynamic range. Computer connection through a standard FireWire interface doesn't require any frame grabber board to be installed inside the PC. Such an approach minimizes the system's dependence on computer configuration and allows easy updating of computer hardware in the future.

Using up to three offset camera positions the scanner can acquire projection images through an object in 14450 x 3280 pixels format and reconstruct virtual slices with 14450 x 14450 pixels in every cross section, several thousand such slices after a single scan. This huge crossection image format allows zooming in to any part of the reconstructed volume without rescanning the sample. Every such slice contains 200 times more pixels than a High-Definition (HD) TV image.

The shown image is one of several thousand virtual slices obtain after single scan of a composite material sample containing Nylon-66 matrix reinforced by glass fibers. The sample was 12.7 mm in diameter and was scanned with submicron pixel size to resolve shape and orientation of each individual glass fiber.

Simple control, enjoyable experience

The user interface of the SkyScan-1272 is simple and intuitive. All functions can be selected by Menu and supported by comprehensive context help.

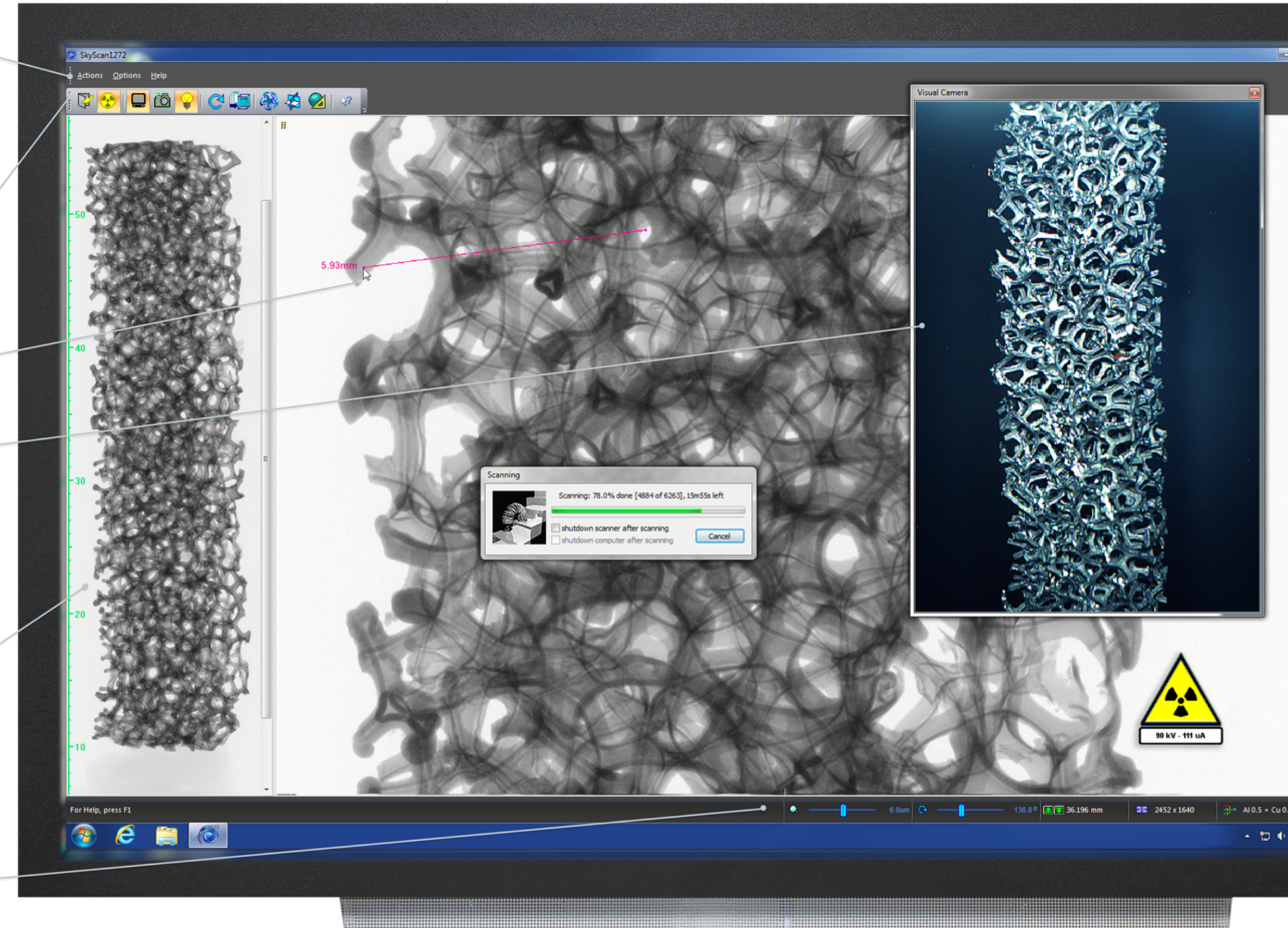
A toolbar provides access to frequently used functions. Simply click the toolbar buttons from left to right to place a sample in the scanner, start the X-ray source, use real-time X-ray imaging to adjust magnification and scanning location, check a single image using acquisition protocol, inspect the sample by visual camera, start scanning and reconstruction, etc. The program look and toolbar buttons can be customized by the user.

The central part of the screen is occupied by the current image from the X-ray camera. One can measure dimensions of the object features by dragging the mouse cursor over the image. Drag-and-drop with the keyboard Ctrl button implements vertical and horizontal shifting of the object position by the sample stage.

A 5Mp colour visual camera inside the specimen chamber allows you to check positioning of large objects. It shows a real-time image of the sample during positioning and scanning.

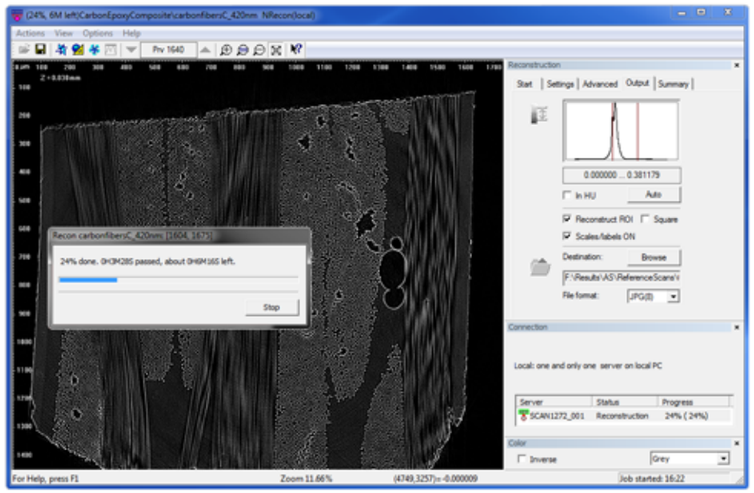
The left part of the screen can be occupied by the scout view, which shows a connected projection image of object(s) over the more than 70mm scanning length. The operator can select any place and length of object to scan. If the selected length cannot fit in a single camera field of view, the scan will contains a number of overlapped subscans with automatic connection of reconstructed results to one large volume. The scout view also allows selection of multiple scans of different length, which will be executed in batch mode using individual scanning protocols.

The bottom of the control program window shows the status bar, which contains short help information when the mouse cursor crosses toolbar buttons or menu items. On the right hand side the status bar contains two sliders for direct magnification and angular position selection, buttons for moving the object up or down, selection of image formats for X-ray camera and selection of energy filters. The software also allows adjustment of sample elevation and magnification by numerical values. It can assist by automatically selecting the optimal energy filter and voltage in the X-ray source for any particular object.



Software suite for reconstruction, analysis and realistic visualization

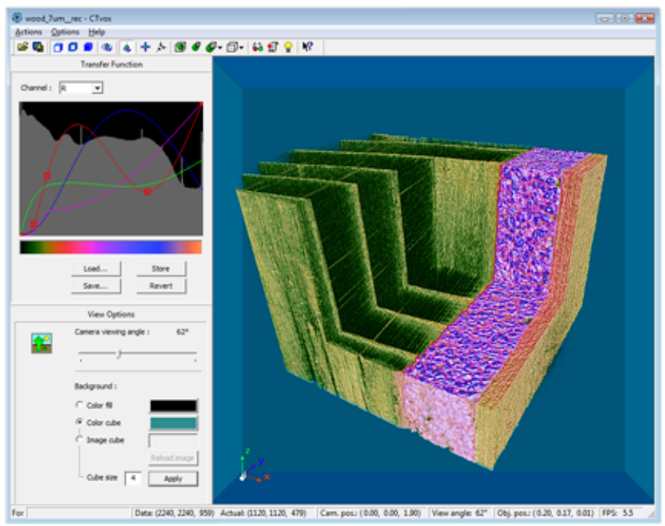
NRECON: Multithreaded GPU-accelerated Reconstruction for Single Computer or Cluster.



NRecon achieves the world's fastest large format reconstruction. It can run on single PC or 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, reconstruction volume of interest and objects larger than field of view, automatic merging partial scans, drift compensation and many other options.
The SkyScan-1272 is supplied with a control workstation equipped with two graphical cards, one of them an NVIDIA Tesla GPU processor.
Optional configuration includes a 19" rack-mounted **GPU cluster** with eight Tesla GPUs, 144GB RAM, 2 Intel XEON processors and 4 hard drives on RAID0.

Cross section format (pixels)	1000 x 1000	2000 x 2000	4000 x 4000	8000 x 8000	14450 x 14450
Number of cross sections in reconstructed volume	615	1229	2255	2495	2610
Number of projections used for reconstruction	499	996	1990	2157	8100
Reconstruction time: full volume / per slice					
NRECON CPU reconstruction, single PC	4m / 400ms	58m / 2.8s	15h / 24s	59h / 1.5m	50days / 28m
NRECON CPU reconstruction, cluster of 4 PCs	43s / 70ms	11.5m / 0.56s	3h / 4.8s	12h / 17s	13days / 7m
NRECON, GPU-accelerated, single PC with TeslaC2075 GPU processor	33s / 50ms	10m / 0.48s	2h / 3s	8.5h / 12s	150h / 3.5m
NRECON, GPU-accelerated, single PC with dual-GPU GTX690 card	11s / 18ms	3m / 0.15s	44m / 1.2s	4.5h / 6.5s	140h / 3.2m
NRECON, GPU-accelerated, 8 x TeslaC2075 GPU-cluster	14s / 23ms	1.5m / 73ms	19m / 500ms	1h / 1.5s	18.5h / 25s

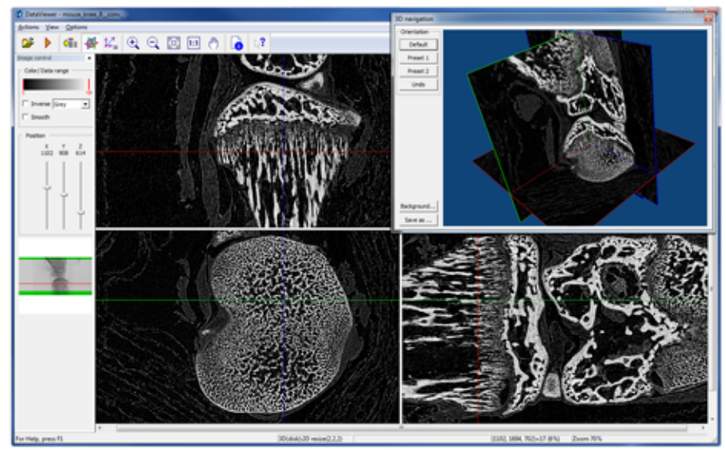
CTVOX: Realistic Visualization by Volume Rendering



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 colors 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 "fly around" and "fly through" animations based on the selection of several key frames with automatic interpolation in between. Imaging possibilities include stereo viewing using glasses with colour filters. The supplied version of **CTVox** includes export to 3D apps on mobile devices, such as iPad and iPhone. After selecting settings on the screen, the compressed dataset together with transfer functions can be send through cloud or data transfer services, such as Dropbox, to mobile devices where they can be stored, viewed and further edited.

DATAVIEWER: Slice-by-Slice Movie, Three Virtual Slices Intersecting at Any Point in the Reconstructed Volume

DataViewer displays reconstructed results as a slice-by-slice movie or as three orthogonal sections, centered at any selected point inside the reconstructed space. One can rotate and resample reconstructed volume in any direction. Additional features include the 4th dimension for time-resolved tomography and compression/tension in-situ examination, variable smoothing options, measuring distances in 3D with saving a table of results and measuring intensity profiles.
DataViewer also allows detailed examination inside volumes of interest. It can apply different grayscale linear and non-linear transformations and use colour coding with several look-up tables.



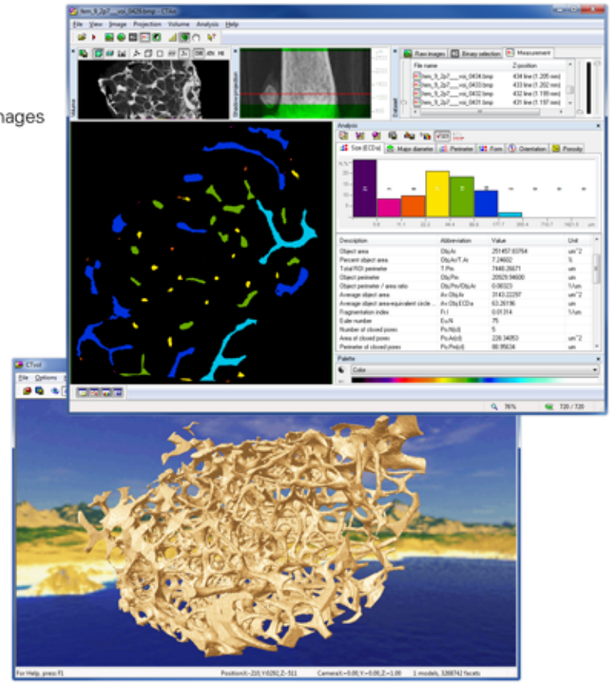
CTAN: 2D / 3D Image Analysis and Processing; CTVOL: Realistic Visualization by Surface Rendering

CT-Analyser or **CTAn** 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 for analyses ranging from porosity to contact surface around high-density insertions to complex architectures. Versatile volume of interest selection tools are included. "CT-Volume" or **CTVol** 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.

Main features of **CTAn** are:

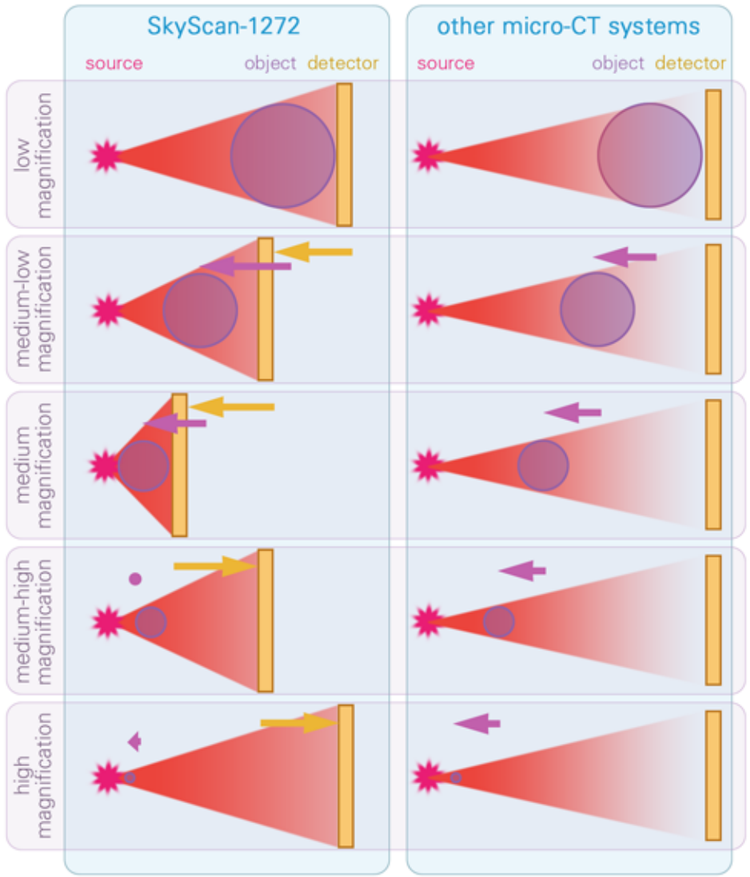
- Import of dataset in tiff, bmp, jpg, png, DICOM, etc.
- Global, Otsu, multi-level and adaptive segmentation
- Advanced region/volume of interest selection tools
- Creates maximum and minimum intensity projection images
- Measures 3D distances and angles
- Calibrates density as HU, BMD or attenuation
- Smooth, sharpen, despeckle, Boolean operations
- Analysis of integrated structures within VOI in 2D, 3D
- Analysis of all individual objects within VOI in 2D, 3D
- Parameters measured (including 2D and 3D):
  - Object (pore, particle, etc.) volume
  - Object surface,
  - Structure thickness,
  - Structure separation, number
  - Structure Model Index (SMI)
  - Fragmentation index (trabecular pattern factor)
  - Euler number, eccentricity
  - Degree of anisotropy, eigenvalues, eigenvectors
  - Fractal dimension (Kolmogorov)
  - Moments of inertia (x, y, polar, product)
  - Detailed analysis of porosity
- Automated batch analysis
- Connects to user-created plug-ins
- Creates 3D models by several rendering algorithms
- Export triangulated 3D models in STL and PLY formats

Full list of functions for **CTAn** and **CTVol** can be found at
bruker-microct.com/next/CTan_UserManual.pdf
bruker-microct.com/next/CTvol_UserManual.pdf



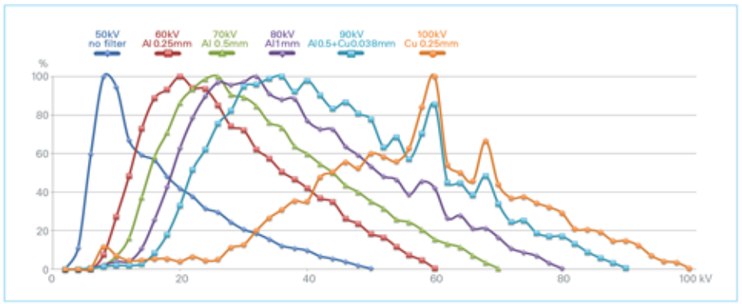
The most advanced scanning engine

Variable Scanning Geometry for Best Scan at Any Magnification



All available micro-CT systems on the market use static acquisition geometry where the X-ray source and X-ray detector are separated by a fixed distance and image magnification is adjusted by object movement between them. The limited opening angle of emission from the X-ray source and attempts to extend the magnification range increase the source-detector distance and reduce quadratically the intensity of the X-ray beam at the detector, with a corresponding steep increase in the scan time. To escape this dilemma the SkyScan-1272 uses automatically variable scanning geometry invented by Bruker microCT, which is unique and the most advanced solution. Using an X-ray source with a big beam opening angle and a large format detector, the maximum distance between the source and the detector, required for maximum and minimum magnifications, can be reduced with a corresponding increase in detected X-ray intensity. At intermediate image magnifications, both object and detector are moved towards the source until they reach the most compressed geometry possible while collecting all X-ray photons emitted from the source. Such adaptive scanning geometry applied to all magnifications allows improvement in quality or reducing of scan time by a factor of 2...5 compared to traditional fixed scanning geometry. This repositioning doesn't require any operator's command. The control software automatically optimises the scan geometry to the image magnification selected by operator.

Automatic Fine Tuning of X-Ray Energy Window According to Absorption in an Object

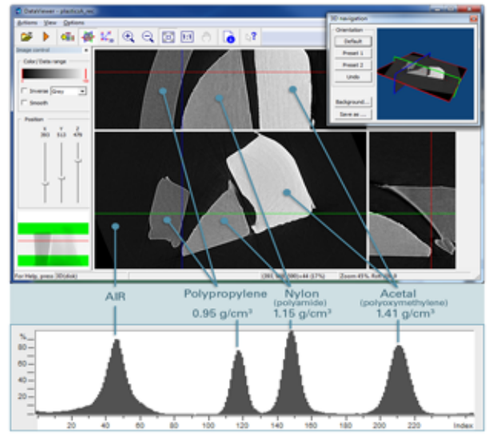


The SkyScan-1272 includes a 6-position automatic filter changer and is equipped with an X-ray source designed in such a way that adjustment of X-ray peak energy always keep the same output power. The flexibility for precise tuning of maximum X-ray energy emitted by the source and the minimum energy cut-off selected by numerous filters allows operator to select the most optimal energy window for any particular object. The control software can select best possible scanning protocol automatically.

Quality and precision without compromises

High Sensitivity in Distinguishing Materials

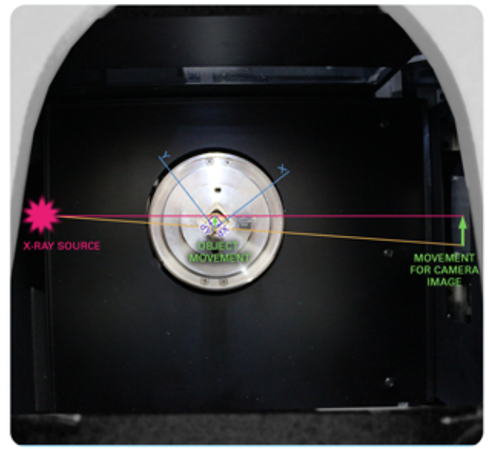
Using variable acquisition geometry to increase the number of X-ray photons acquired by the detector, together with proper energy selection and filtering in combination with exceptionally low noise level in the X-ray camera allows a significantly improved sensitivity to local density or chemical composition variations. The SkyScan-1272 allows clear resolution of materials with very small difference in X-ray absorption. Clear separation of different materials in the brightness histogram makes it possible to extract and analyze information by a simple global threshold.



This image is a screenshot from DataViewer showing the reconstruction results from a sample containing three different plastic materials with very similar chemical composition and a small difference in physical density. The intensity histogram shown in the bottom was made by CTAn and indicates a clear separation of the three plastics.

Integrated Micro-Positioning Stage

A micro-positioning stage is integrated into the object manipulator of the SkyScan-1272 scanner, allowing exact object centering to get the best fit of the sample size in the field of view, with maximum magnification. It also allows selecting a scanning volume for samples larger than field of view (a truncated scan). The micro positioning stage contains precision XY linear drives on the top of the object's rotation table. The XY drives are connected to the drive's electronics through multiple slip rings, which allows unlimited object rotation in any direction keeping the drives always properly connected. For any operator's command for object repositioning by a selected on-screen distance, the control program recalculates the required distance of travel of the X and Y stage drives dependent on the current orientation of the turntable and image magnification. This is done in such a way that the operator will see the proper object movement to the left or right on the screen with no movement in the direction along the X-ray beam.



Integrated Vibration Isolation

The SkyScan-1272 is a high precision instrument filled with sensitive micromechanics and electronics. To ensure smooth and accurate scanning in any installation environment, the whole instrument is supported by four feet with integrated pneumatic vibration isolators. The anti-vibration feet with low resonance frequency provide efficient isolation and shock absorption in all direction.
This relaxes the vibration requirements for the places where the scanner can be installed while ensuring high accuracy scanning in laboratories located close to sources of industrial or environmental vibrations, such as underground transportation, train stations, power ventilation installations, etc.

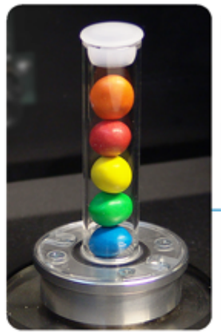
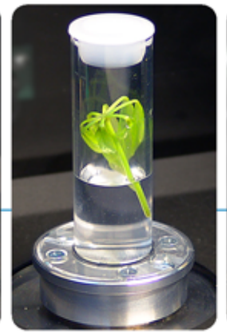
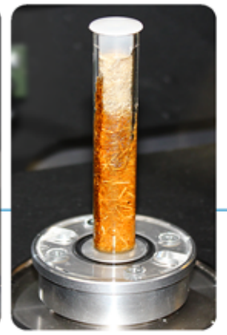
Sample holders for any sizes and shapes

Standard Sample Mounts

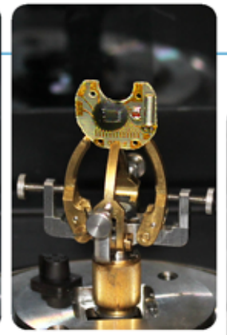


The system is supplied with three types of sample mounts: two brass sample mounts for different size of objects (two pieces each), which can be held by the micropositionng stage, and a steel sample mount for large objects connected directly to the turntable. The thin brass mount can be used to scan small samples with high magnification, and the large brass mount can be used for samples up to 25mm in diameter to be scanned in wide range of magnifications. The steel mount for large samples has a chuck with four independently adjusted jaws to hold the objects with complex shape and to adjust their proper centering.

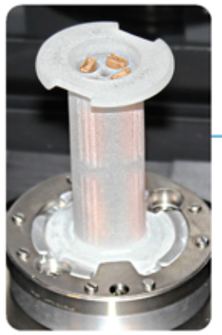
Optional Sample Mounts

Optionally the system can be equipped with tube sample holders. A supplied set has four replaceable tube holders with plastic lids, which can be attached to a sealed baseplate. Tubes are 8 cm high, with internal diameters of (approx.) 6, 10, 15, 20 mm. The tube holders allow scanning samples with different sizes, including automated batch scanning, and imaging of hydrated samples and samples inside a liquid.

Another optional "spider" sample mount has four fingers to hold objects of variable geometry and with sizes from 0.8 to 18mm. Each "finger" is screw-adjusted to obtain a grip on any object including objects with irregular and asymmetric shape.



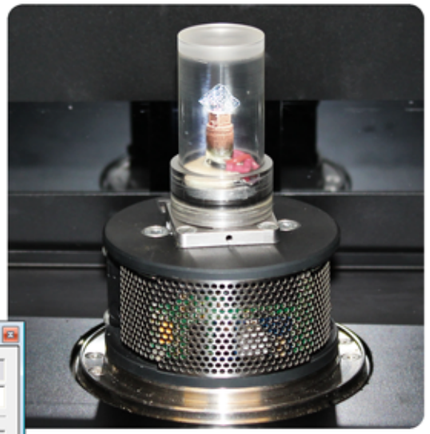
Another optional sample mount is dedicated to scanning several samples simultaneously for comparison. It contains two layers of parallel tube compartments for four samples up to 5mm in diameter in each layer. This allows analysis of 8 small samples – such as mouse bones, in a single scan.

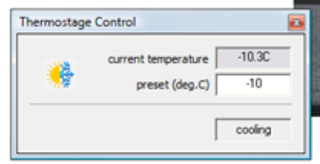
There are a number of additional optional sample mounts available and their number is always growing. For example, a special mount can hold thin flat samples, such as piece of paper or plastics; two other sample mounts allow scanning powders with different packaging geometries, etc. Contact your local distributer of Bruker-microCT products to discover best possible option for your particular application.

Stages for *in-situ* investigations

Heating and Cooling Stages

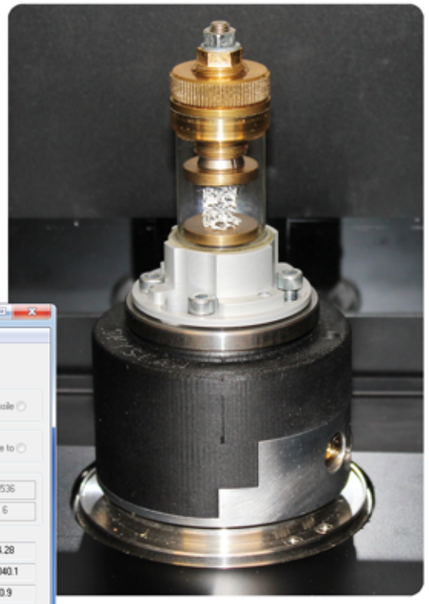
The heating and cooling stages allow micro-CT scanning under controlled object temperature above or below ambient. The heating stage can keep an object at any temperature up to +85°C. The cooling stage can keep an object at sub-zero temperature down to 30-40°C below ambient. An internal microprocessor controls a dual-stage solid-state Peltier cooling or heating system and measures the object temperature with <0.5°C 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 contacts slip rings with low friction and high reliability in endless rotation.

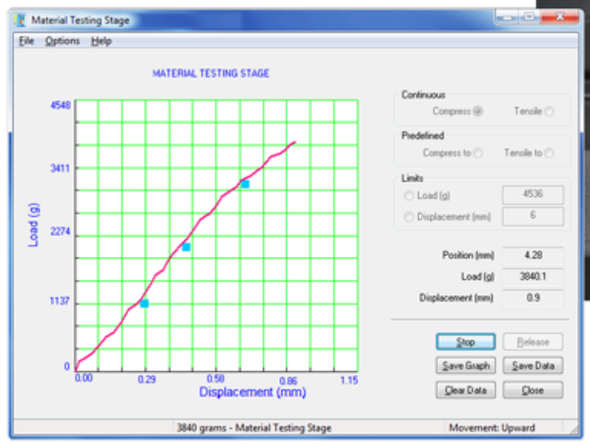




Material Testing Stage

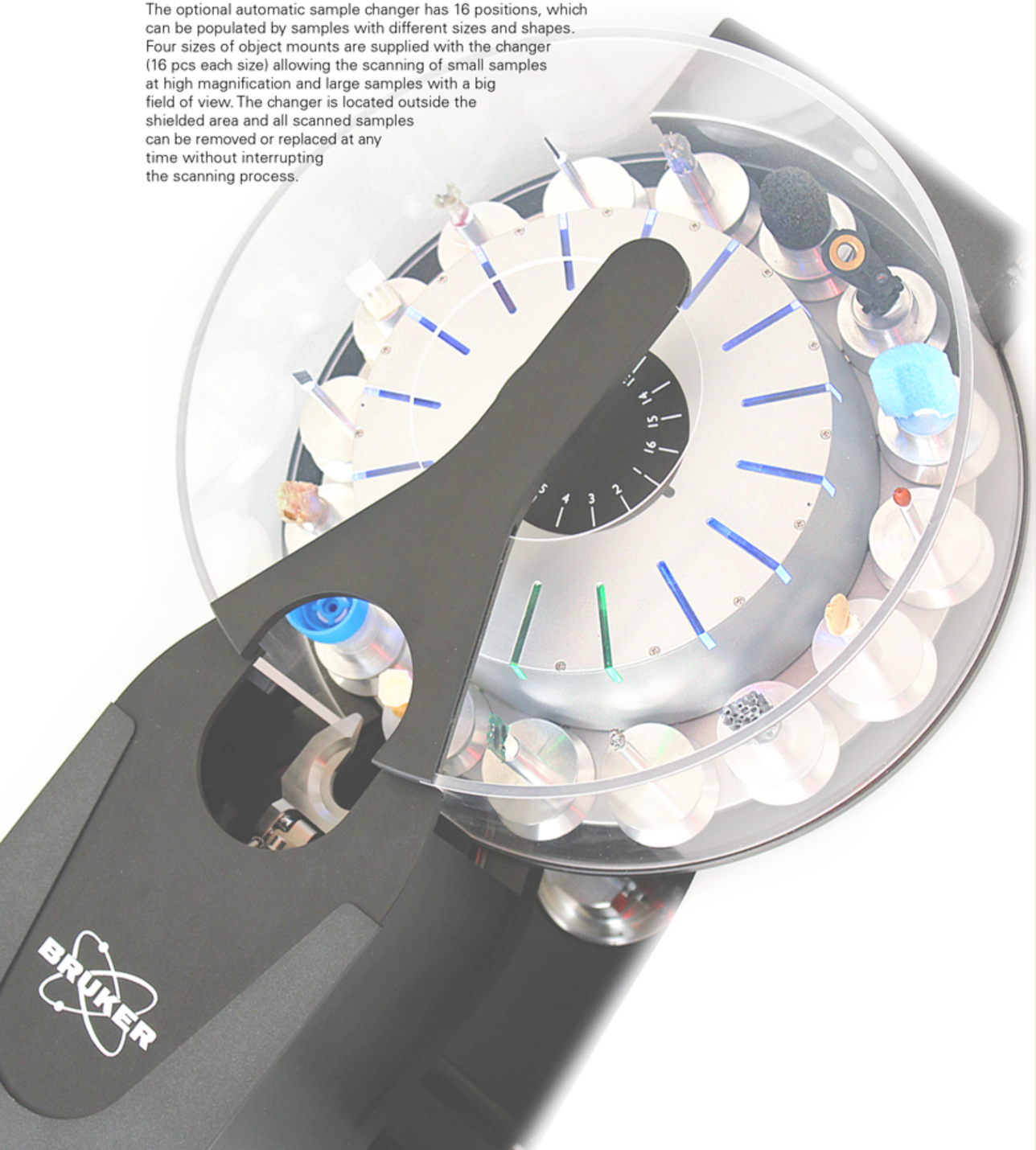
The material testing stage (MTS) applies controlled compression or tension to an object, while having a design which allows tomographic scanning while applying force. Internal microprocessor controls the loading mechanics and the readout of applied force and displacement. The loading curve is displaying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





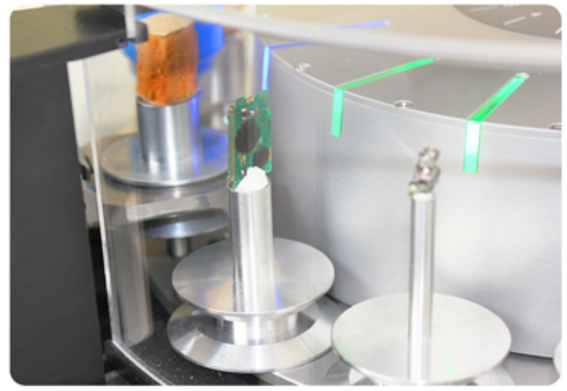
Automatic sample changer

The optional automatic sample changer has 16 positions, which can be populated by samples with different sizes and shapes. Four sizes of object mounts are supplied with the changer (16 pcs each size) allowing the scanning of small samples at high magnification and large samples with a big field of view. The changer is located outside the shielded area and all scanned samples can be removed or replaced at any time without interrupting the scanning process.



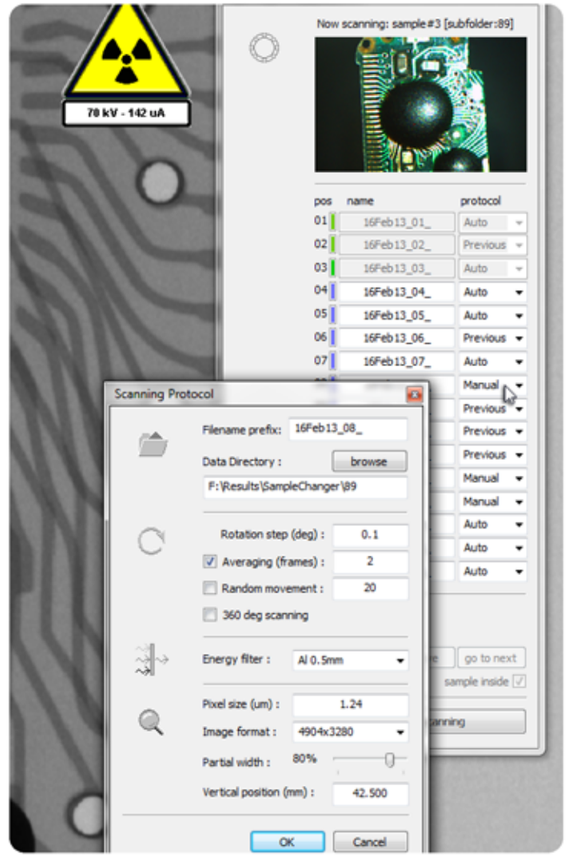
Sample Changer Control

The sample changer contains a motorized object carrousel, a robotic arm with multiple precision drives and a microprocessor controller for monitoring the object's presence and scanning process. At every position on the object's carrousel, the scan status of the sample is indicated by a colour illuminated bar: for newly installed objects waiting for scanning the bar has blue illumination, and for already scanned objects - green. An operator can replace scanned objects any time without interrupting scanning process. After scanning one object, the carrousel will be turned to the position occupied by the next object waiting for scanning and the robotic arm will install the object into the scanner. The visual camera inside the scanner first takes an image of the mount neck to measure the diameter of the mount. Using this measurement, the control software identifies the length of the mount and adjusts the vertical position of the object inside the scanner in such a way that the field of view of the X-ray camera will be set to image the object above the top of the mount.



Automatic adjustments of magnification and scanning protocol

The scanning protocol for every sample can be adjusted individually. There are three possible selections of scanning protocols: manual selection, automatic selection and using scanning parameters from the previous sample. In the case of manual selection, the operator can adjust all scanning settings, filename prefix and data directory as in the shown screenshot. In the case of automatic selection of scanning protocol, the control software will firstly measure the size of a sample using the X-ray image at the lowest magnification and multiple angular positions. Afterwards it will find the optimal magnification for that sample where it will be fully inside field of view. In the next step the control software will select the energy filter and voltage on the X-ray source for best scanning according to X-ray absorption in the object. Then it will start scanning and repeat the fully individual adjustment process for the next object in the case of selection of automatic protocol adjustments. Every step of automatic adjustment can be overwritten by operator. Selection of the scanning protocol and filename prefix can be done any time for any non-scanned object without interrupting scanning sequence. After installing the next object by the sample changer, the visual camera inside the scanner will make a "photo" of the object under scanning, which will be shown during scanning in the top of changer control dialog. In this way an operator can always identify which sample is currently being scanned.



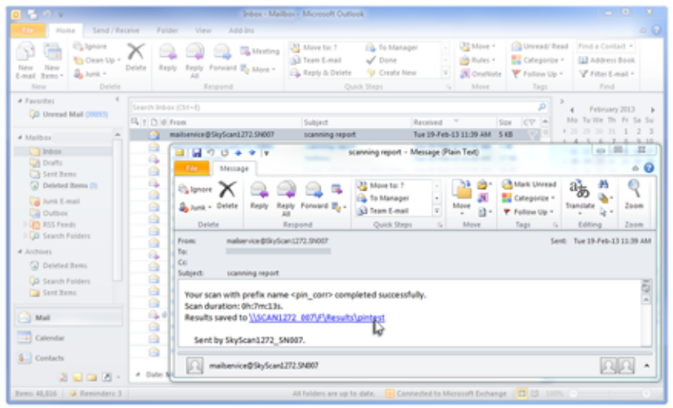
3D rendering on mobiles, e-mail reporting, DICOM export

Data Export and Volume Rendering on Mobile Devices

The **CTVox**, the volume rendering program supplied with the system, has a mobile version, which can be free downloaded from AppStore. Any 3D results obtained by the system can be send to a mobile device, such as iPad, for realistic visualization by real-time volume rendering with the possibility of 3D object manipulation, virtual cut, adjustments of object's opacity and colors, etc.

The exported reconstruction data and colour schemes are stored in the local memory of the mobile device and do not require any connection or uploading.
A large number of reconstructed datasets can be loaded to the memory of a mobile device to share results with colleagues or to demonstrate them at scientific conferences.

Automatic E-mail Reporting



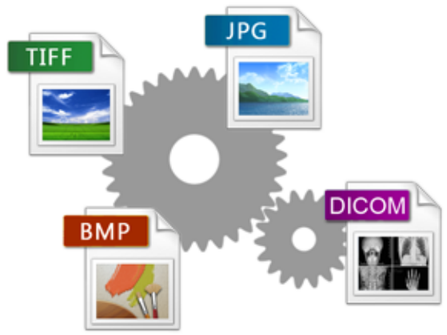
The SkyScan-1272 control software can send you an e-mail at the end of a scan. The e-mail contains a direct link to the data folder containing the scan results. By a simple click to this link one can open the dataset directly from a local computer. If the scanning process has been interrupted, the software will also email you a report of the details.

If the SkyScan-1272 is working with the automatic sample changer, the operator can adjust e-mail reporting to either get an e-mail after the scanning of every sample or for getting one e-mail with links to all scanned datasets when all samples inserted into the sample changer have been scanned.

File Converter and Export to DICOM-Format

The acquired projection images and reconstructed slices can be modified in size, file format and intensity scale by an additional software utility named "**Format Converter**". This can convert a full dataset between TIFF, BMP, and JPEG formats with renaming, resizing, rescaling and changing of index for combining several sets of reconstructed slices together.

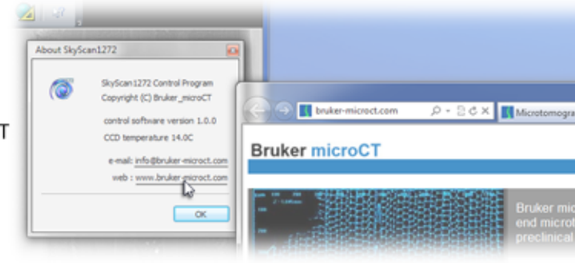
Another useful utility named "**DICOM Converter**" allows exporting of dataset to the DICOM format (compliant with the Dicom 3 convention). DICOM is an industry standard for medical imaging instruments. It is widely used for data exchange between systems which produce 3D information.



Software updates, support, training courses

Software Updates

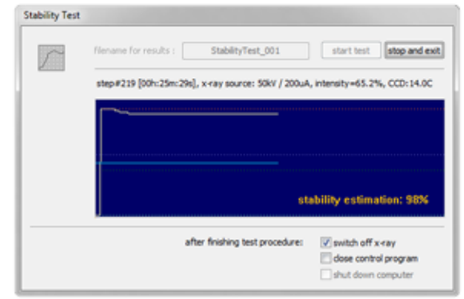
All users of SkyScan instruments supplied by **Bruker microCT** have unlimited free access to all software updates. New versions of control and application software can be downloaded from bruker-microct.com website. To get connected to the **Bruker microCT** website, an operator can just click to the link in the About box in the control program. Using the other link in the same About box, operator can send e-mail to info@bruker-microct.com with questions or requests.



Self-Testing, Diagnostics and Remote Support

The control software contains number of functions for system calibration and self-diagnostics. The screenshot shows the stability test for the X-ray source and cooling of the camera's sensor. The tests run fully automatically and save results to a text file for subsequent analysis if necessary.

Any system in the world connected to the internet can be taken over for control by service personal from **Bruker microCT** using remote access. This can be done for educational purposes, for system diagnostics or for problem solving. Using the same remote access the Application Scientist group at **Bruker microCT** can help to find the best possible way for scanning and analysing a particular type of sample directly with the system at the customer's site.



Micro-CT Annual Meetings, Training Courses

Bruker microCT has developed a training platform for new and experienced users. It offers a combination of both system and software training and covers three major topics: image acquisition, image reconstruction and data analysis. These 5-day courses are held several times per year at **Bruker microCT** headquarters, Belgium. The goal is to combine the basic theoretical background of micro CT with as much hands-on experience as possible.

Bruker microCT also organizes annual Micro-CT Meetings in the form of a three day scientific conference combined with workshop at headquarter. Intensive exchange of knowledge and experience helps new and skilled users to find the way for getting best results from their micro-CT scanners. Invitation to the next Micro-CT Meeting and abstracts from presentations in previous Meetings can be found at www.bruker-microct.com

To connect to **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