

TESCAN CoreTOM

Multi-resolution micro-CT system optimized for geoscience applications

The TESCAN CoreTOM combines in a single instrument the typical field of view of a medical CT system with the high-resolution imaging performance capabilities of laboratory micro-CT systems. It can image full cores up to 1 meter (~3 ft) in length, down to mm-size micro-plugs or drill cuttings at 3 micrometer spatial resolution. This makes the TESCAN CoreTOM the ideal system for multi-scale imaging from core to pore.

Equipped with a high-powered micro-focus X-ray source, the TESCAN CoreTOM enables high sample throughput and fast dynamic imaging with temporal resolutions below 10 seconds for a full 3D acquisition.



Multi-scale Imaging

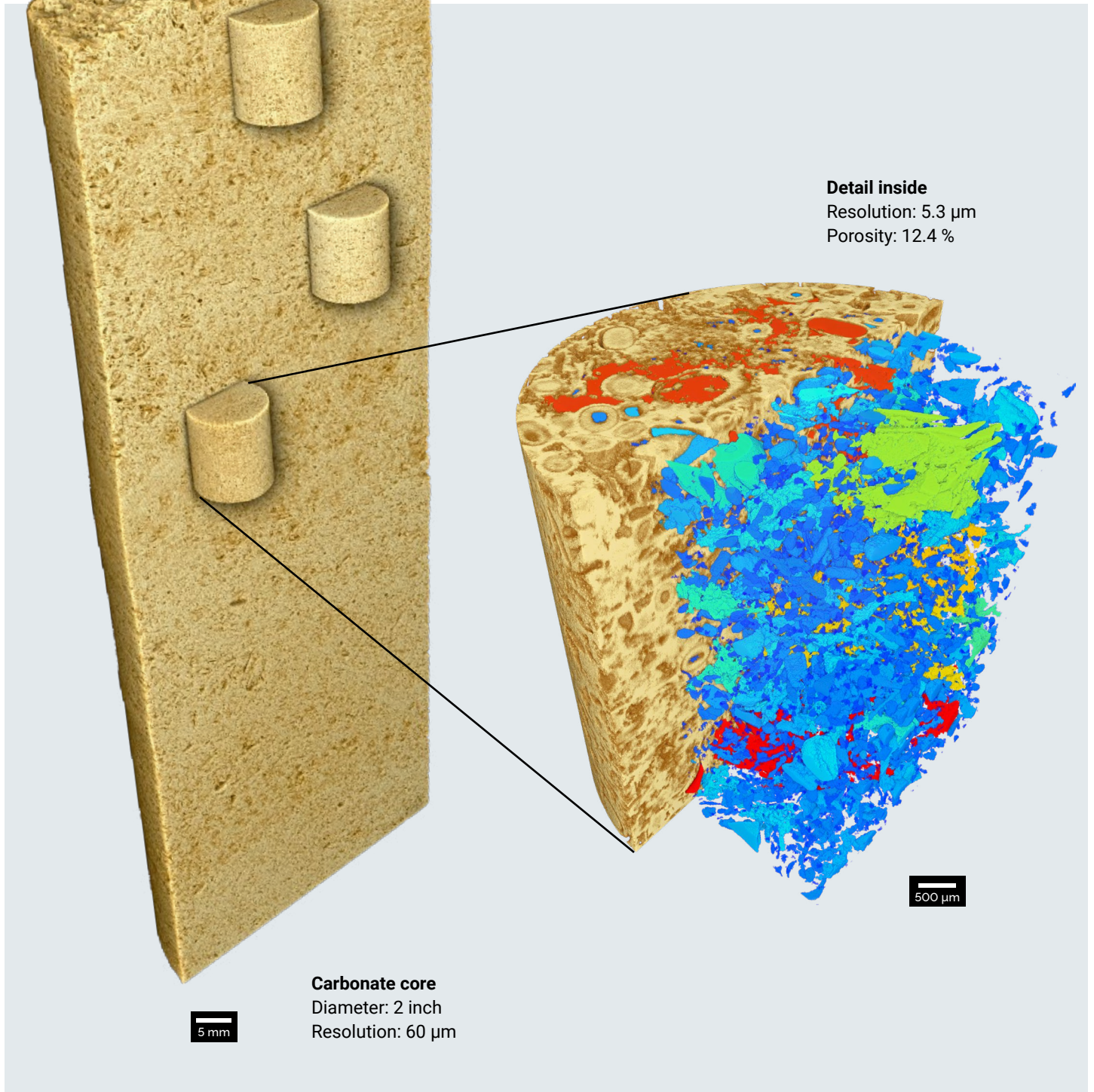
The TESCAN CoreTOM is specially designed to handle a wide range of geological samples from full size cores up to 1 meter in length down to plugs, drill cuttings and miniplugs. The TESCAN CoreTOM lets you quickly obtain 3D overview scans of layers, heterogeneities and other large-scale features inside full cores, and to obtain high-resolution scans to visualize the pore space in plugs and cuttings.

High Throughput

An optimized combination of a high-power source, efficient detector and software protocols combine in harmony to provide you with a system tuned to maximize throughput and contrast, reaching temporal resolutions below 10 seconds.

Volume of Interest Scanning (VOIS)

Intuitively zoom in on selected areas inside a core or plug to obtain higher resolution details. Interior volumes-of-interest can be selected in 3D reconstructed volumes or on 2D projections.



▲ Fig. 2: Selected volumes of interest inside a 2 inch carbonate core showing pore scale information.

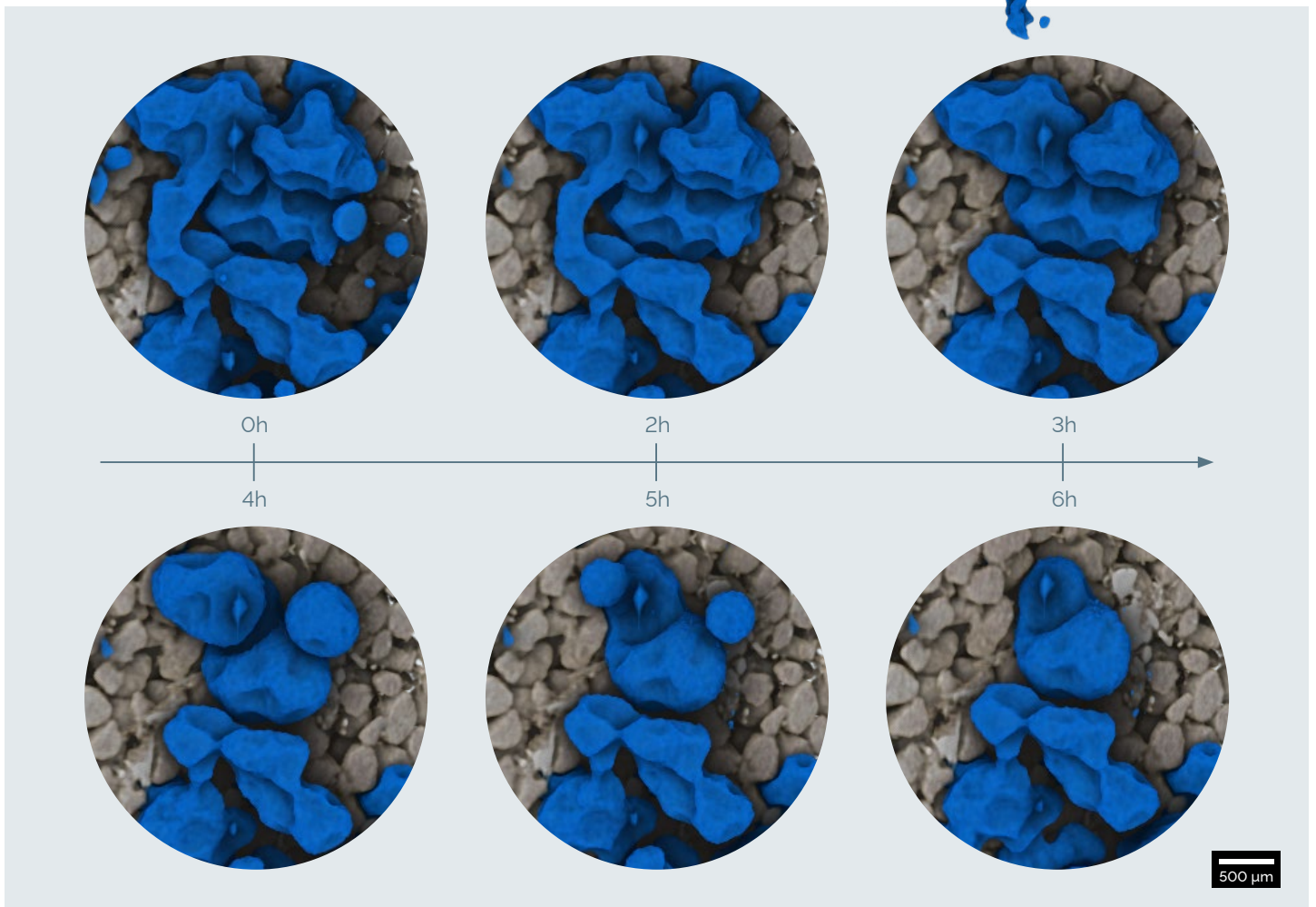
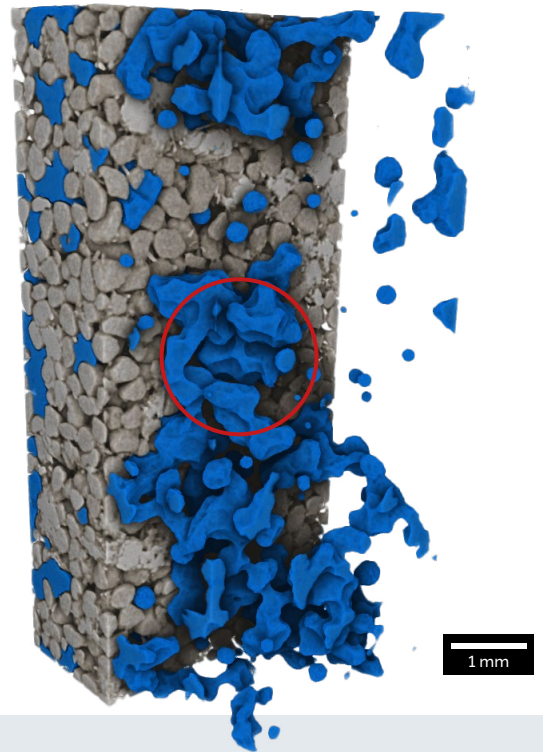
In Situ Integration and Dynamic CT

The TESCAN CoreTOM is ideally suited for many demanding in situ applications and provides an industry-leading level of device connectivity, interfaces and software protocols to maximize your in situ research.

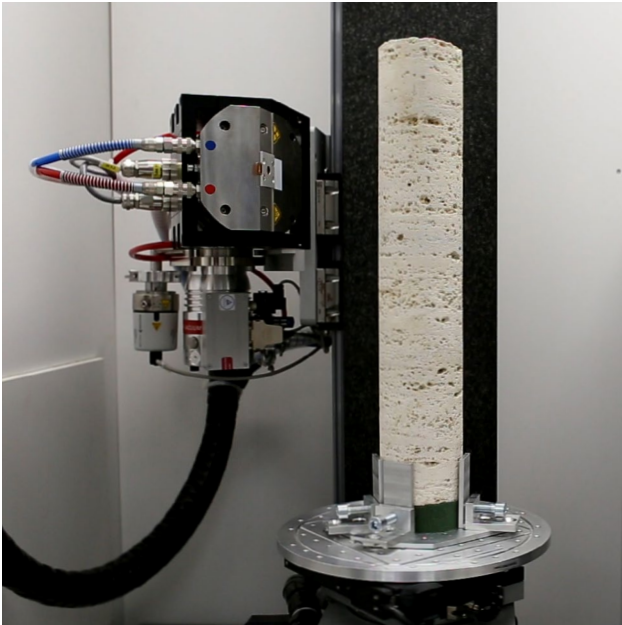
In situ devices such as flow cells and compression stages as well as related peripheral equipment outside the system may be installed, connected and controlled with ease. Continuous scanning via slip ring connection facilitates dynamic CT workflows on a 'classical' architecture.

Flexibility for Research

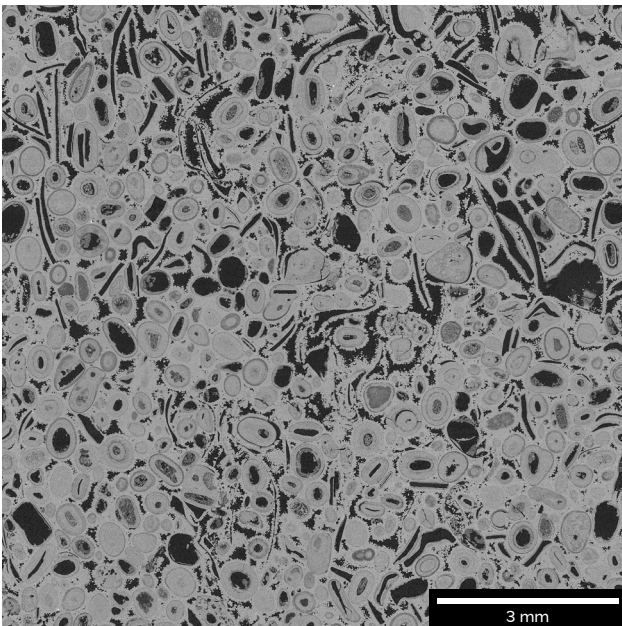
At TESCAN, we recognize that research is a complex and often unpredictable endeavor. We believe that maximizing access to scripting protocols and raw data, when needed, accelerates your ability to explore, solve problems and make new discoveries.



▲ Fig. 3: In situ imaging of multiphase flow: dissolution of CO₂.



▲ **Fig. 4:** Interior view of TESCAN CoreTOM, showing a mounted rock specimen.



▲ **Fig. 5:** Reconstructed slice through oolitic limestone (voxel size: 3.4 μm).

Key Specifications TESCAN CoreTOM

Max. temporal resolution	< 10 seconds
Max. spatial resolution (line pair) ¹	3 μm
X-ray source	30 – 180 kV or 30 – 230 kV 300 W Type: Open / Reflection
X-ray detector	Large amorphous Si flat panel detector 2856 × 2856 pixels Up to 100 fps read-out modes
Max. sample size ($\varnothing \times h$)	600 mm × 1150 mm
Max. CT FOV ($\varnothing \times h$)	300 mm × 1000 mm
Max. sample weight	45 kg
Motorization	9 stages mounted on a high precision granite base
Source-Detector Distance	970 mm
System dimensions ²	1.5 × 2.5 × 2.1 m (W × L × H)
System weight ³	4900 kg

¹ Spatial resolution determined based on JIMA line pattern

² Preferred installation footprint at least 3.5 m × 3.5 m

³ Configuration dependent