

Bruker microCT
Kartuizersweg 3B
B-2550 Kontich, Belgium
Tel: +32 (0)3 877 5705
Fax: +32 (0)3 877 5769
applications.BmCT@bruker.com
www.bruker-microCT.com

In this issue:

- [In-situ tensile and compression testing](#)
- [Bruker microCT news](#)
- [Upcoming events](#)
- [Image of the month](#)

● Welcome

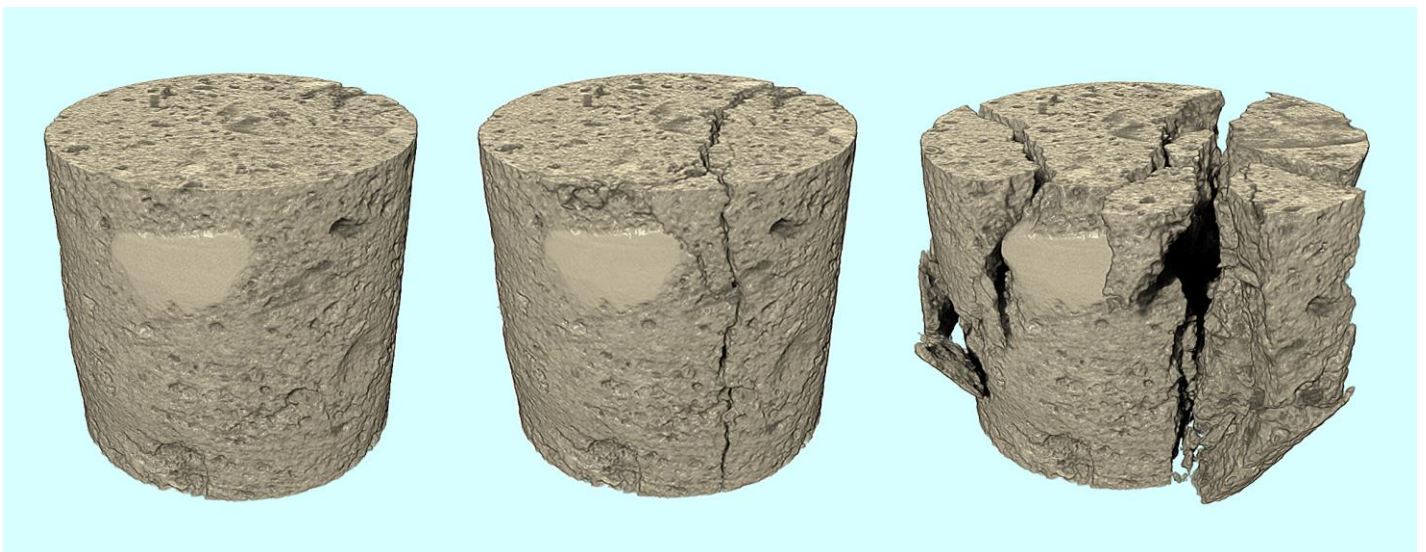
Welcome to the October edition of the Bruker microCT Academy newsletter. In this month's edition we have a look at *in-situ* tensile and compression testing combined with micro-CT imaging. An overview of the material testing stages available for the SkyScan systems is presented.

● *In-situ* tensile and compression testing

Mechanical testing stages for micro-CT allow observing changes to the microstructure as a result of pressure in situ. As with stand-alone testing stages the critical steps are sample preparation and mounting.

- The sample dimensions clearly have an impact on the required force and hence are intimately linked to the selection of MTS version and vice versa. Additionally, the accuracy of a testing device is correlated to the maximum force provided by the load cell (typically 1 %).
- A good contact between the load area and the sample should be ensured. Varying options exist depending on the sample type including: flattening the contact surfaces (e.g. for compression testing of rocks), working with grip improving spacers, glueing samples with epoxy resin, ...

- The guidelines for scan parameters selection are the same as in the regular case. Sample stability is key; this may imply leaving some time for sample relaxation before initiating a scan at certain load point.
- The Bruker microCT material testing stages allow loading the samples in manual mode or automatically by setting a predefined load or displacement. The 'scheduled scanning' mode allows for further automation by scanning at different loading points.
- The resultant data is recognized as being part of a series by NRecon and allows batch reconstruction as part of a 4D dataset which in its turn is recognized as such by the visualization programs DataViewer and CTVOx.



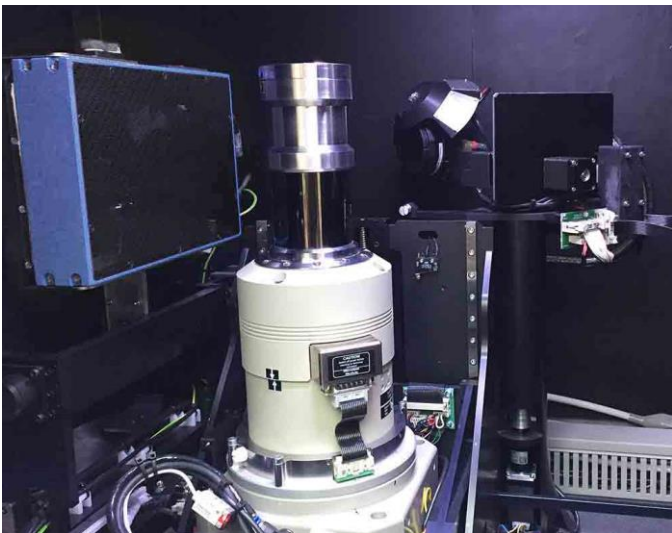
Volume rendering images of Noyant limestone during compression testing with the MTS3. The 9.5 mm diameter sample was scanned using the SkyScan 1275 with pixel size of 12.1 μm .

For further reading we kindly refer to '[MN049 Compression testing of trabecular bone in the Materials Testing Stage \(MTS\)](#)' where the use of MTS1 is described for the example of human trabecular bone loaded to failure. In '[MN097 Compression testing of Noyant limestone with the MTS3](#)' the use of MTS3 is exemplified by a compression test on a Noyant limestone.

● Bruker microCT news

Bruker microCT produces a range of object stages for *in-situ* imaging using the SkyScan systems. The latest addition to this family is the Material Testing Stage 3 increasing the maximum force to 4400 N. The details of the current range can be found on the [website](#).

Besides these proprietary stages it is not uncommon that users design systems in-house or make use of third party suppliers. The SkyScan 2211 multiscale nano-CT for example is compatible with the stages produced by [Deben](#) for X-ray CT systems.



SkyScan 2211 multiscale nano-CT with Deben CT5000 tensile stage installed

● Upcoming events

Bruker microCT will participate with an exhibit in the forthcoming conferences. Please click the link below for more information. We hope to see you there!

2016:

- [IASLC](#) Dec. 04 – 07 Vienna, Austria
- [Zoology](#) Dec. 16 – 17 Antwerp, Belgium

2017:

- [iCT](#) Feb. 07 – 09 Leuven, Belgium
- [ORS](#) Mar. 19 – 22 San Diego, USA
- [IADR](#) Mar. 22 – 25 San Francisco, USA
- [AACR](#) Apr. 01 – 05 Washington DC, USA
- [EMIM](#) Apr. 05 – 07 Cologne, Germany

● Image of the month

The two volume rendering images feature a 2 mm long larva of the arthropod *Leancoilia illecebrosa* fossil. The sample was scanned using the SkyScan 1272 at an image pixel of 1.5 μm . We thank Dr. Yu Liu of the Yunnan Key Laboratory for Paleobiology, Yunnan University, for providing the sample.

