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● Welcome

Another two months have passed since our user meeting, we can only say “time flies when you’re having fun”! In our user meeting you could already learn about upcoming releases of the software. This newsletter will show the latest features in CTAn and as always – the applications for which they are beneficial. Hope you’ll enjoy!

● New in CTAn v.1.18

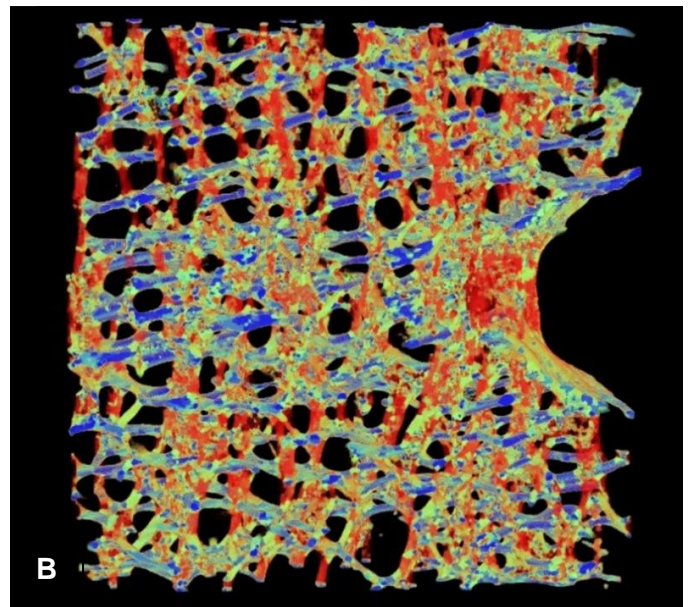
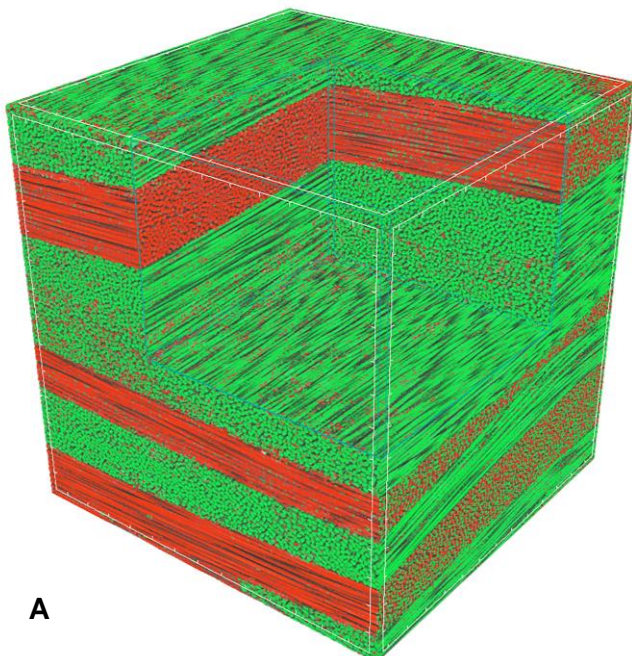
Anisotropic Diffusion has been added in the filtering plugin. Anisotropic means not oriented uniformly. It implies smoothing is only applied perpendicular to local edges, so edges are not blurred. “Diffusion” implies no overall increase or decrease in intensity, i.e. no creation or destruction of intensity signal: good for density measurement. Anisotropic diffusion provides an excellent compromise between noise reduction and edge preservation. When the change in grey values is high, smoothing will not be applied.

In the morphological operations plugin, a user can now define the *<Tolerance>* for the watershed separation. The H-minima transform suppresses the regional minima with a dynamic intensity equal or below this tolerance value.

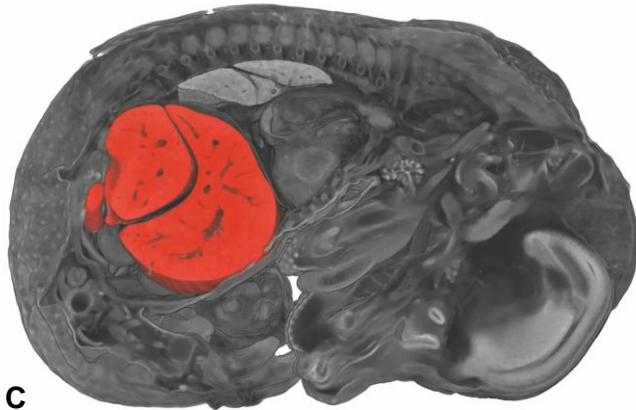
In the *<Individual object analysis>* plug-in, color-coded images can be saved to the clipboard. Each individual object gets assigned a grey value according to the feature of choice. This choice can now also be the *<Object label>*. Grey values will be assigned randomly to individual object.

The *Euler number and connectivity* parameters were previously only available in the 3D analysis, now they are also available in the individual 3D object analysis. In addition, the algorithm to calculate the Euler number has been changed to fix an issue with the negative connectivity.

CTAn now offers a new plugin to perform *local orientation analysis*. It is based on the calculation of grey scale gradients within a certain radius. The calculation can be



done in 2D or 3D space. Above you can find an example of a CFRP, scanned at 350nm on a SkyScan nanoCT (image A) with local orientation analysis performed in 3D. (Image B) shows a human vertebral slice mapped for local orientation. The vertically aligned trabeculae are shown in red while horizontal bracing trabecular plates are colored blue. Nodal and oblique structures show up green.



A seed-growing tool has been added in CTAn. From the ROI-shrink-wrap plugin one can choose the Fill-out mode. This function grows a region of interest (VOI) from a “seed” within a binarized region. It fills the VOI from inside rather than shrinking from outside. It is useful in many applications, for example it allows the segmentation of embryo liver, (image C), without selecting other soft tissues of similar densities.

Finally, Batman can start automatically after reconstruction. When an automated analysis protocol can be established, large numbers of samples can be analyzed in two ways. One can choose to wait until all data is collected, then load the analysis protocol and all datasets in Batman for automatic analysis. From v1.18 it is also possible to automatically start Batman after each reconstruction. This feature is particularly interesting when using a push-button CT or sample changer in SkyScan 1275, where all steps of scanning, reconstruction and analysis of the samples can be carried out automatically without user intervention between the different steps. The feature is also available for all other systems, where the application matches. The method note will explain how to configure the software to this end. Furthermore, <[Method note MN117](#)> also describes some smaller new features and improvements.

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!

- [BRS](#) Jun. 27 – 29 Winchester, UK
- [EUFOAM](#) Jun. 10 – 12 Liege, Belgium
- [IADR](#) Jul. 25 – 28 London, England
- [IMA](#) Aug. 13 – 17 Melbourne, Australia
- [SCA](#) Aug. 26 – 31 Trondheim, Norway

Image of the month



Bruker announced the launch of the new nano-CT system: SkyScan 2214, an innovative system that generates sharper images with outstanding precision. It offers unprecedented, ultra-high resolution for small and large objects, which makes nano-CT practical and truly useful for industrial and academic research. Check out more on the [official press release](#).

