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## ● Welcome

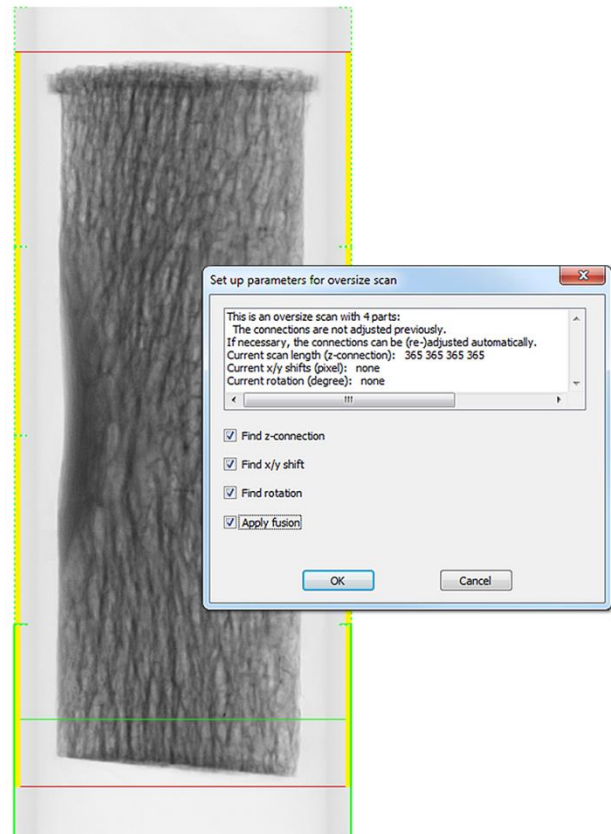
Bruker microCT welcomes you to the very first issue of 2015. We wish everyone a prosperous, happy and successful year! May the New Year bring us even more nice opportunities to interact with you through conferences, newsletters, e-mails and user meetings. Registration for the Bruker microCT User Meeting 2015 is now open! Find out more in the news section.

Bruker microCT will continue updating you on our latest innovations. Find out more in the upcoming newsletters. This month, we will focus on the reconstruction of a microCT scans. In addition to an overview of the major parameters, this issue will also cover oversize scans and what (if any) actions are needed to reconstruct them!

## ● Reconstruction of single and oversize scans

Images obtained by your micro-CT scanner during the acquisition are called projection images. After the acquisition, this full set of projections can be reconstructed into cross-section images. NRecon is the Bruker microCT program that performs this reconstruction. Its user interface allows fine tuning parameters such as beam-hardening correction, alignment optimization, ring artifact correction as well as reconstruction in a restricted volume of interest, reconstruction of objects larger than the field of view, defect pixel masking, interactive density window selection and many other options. Method note [“MN062 An overview of NRecon”](#) provides a summary of these various parameters and how to optimize them in order to achieve the best image quality in your reconstructed dataset. For the actual reconstruction calculations, SkyScan supplies a variety of reconstruction options including multithread reconstruction by Feldkamp algorithm, GPU-accelerated reconstruction and InstaRecon® hierarchical reconstruction based on new patented algorithms. More background info on these options can also be found in the method note.

Oversize scans, also referred as long scans, or connected scans, are used for large samples which are too long to fit in the axial field-of-view (FOV).



*Oversize scan (4 subscans) of a trabecular sheep bone on the SkyScan 1174 and the corresponding popup window for oversize reconstruction options. Z-connection is till now the most used option. X/y shift is usually only necessary for high-resolution scans. The rotation is rarely necessary.*

These samples are then scanned in steps by moving the stage/bed after each (sub-) scan. The reconstruction is done sub-scan by sub-scan with the necessary adjustment in the file sequences to form a complete stack of 3D volumes. Ideally, oversize scans do not require any additional action during reconstruction, as the systems were initialized and calibrated in the startup procedure. Whenever there is a need for fine tuning, NRecon provides a user interface with options to match z shift, x/y shifts and rotation to get best possible match between partial subs cans during fusion. These options are the subject of method note "[MN042 Oversize Reconstruction](#)". The method note describes the concepts involved in reconstructing an oversize scan. It explains possible causes of error and concludes with a step-by-step procedure how to fine tune reconstruction of an oversize scan.

#### ● Bruker microCT News

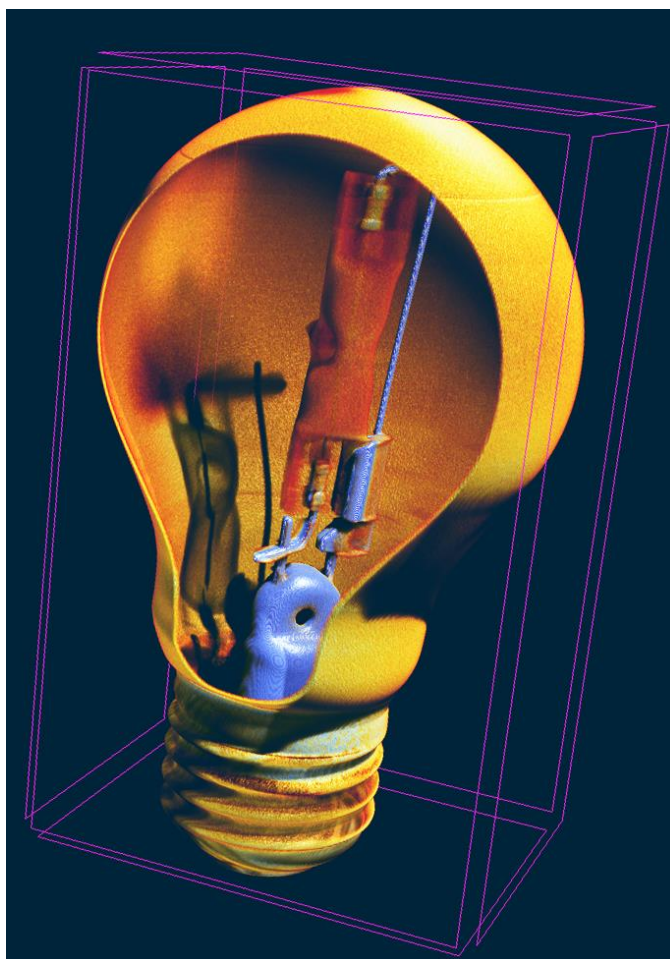
[Registration](#) for the Bruker microCT User Meeting 2015 in the historical city of Bruges is now open. On our [website](#) you will find more information on the program and the link to download the [abstract template](#). Authors of the abstracts which will be selected for oral presentations are rewarded with three nights of hotel accommodation by Bruker microCT. Selected poster presentations receive one night. Don't forget to submit your best picture/movie for a chance to win great prizes!

#### ● Upcoming Events

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

#### ● Image of the Month

Oversize scan of a halogen light bulb with a diameter of 5.5 cm on the SkyScan 2211. The scan consists of 2 subs cans obtained at 135 kV with a 0.5mm Al filter at a pixel size of 47  $\mu$ m. Front side is virtually removed.



#### 2015:

- [AADR](#) Mar. 11-14 Boston, USA
- [ORS](#) Mar. 28-31 Las Vegas, USA
- [AACR](#) Apr. 18-22 Philadelphia, USA
- [ECTS + IBMS](#) Apr. 25-28 Rotterdam, the Netherlands
- [ISBM](#) Apr. 27-29 Tokyo, Japan
- [ATS](#) May 15-20 Denver, USA
- [INTERPORE](#) May 18-21 Padova, Italy