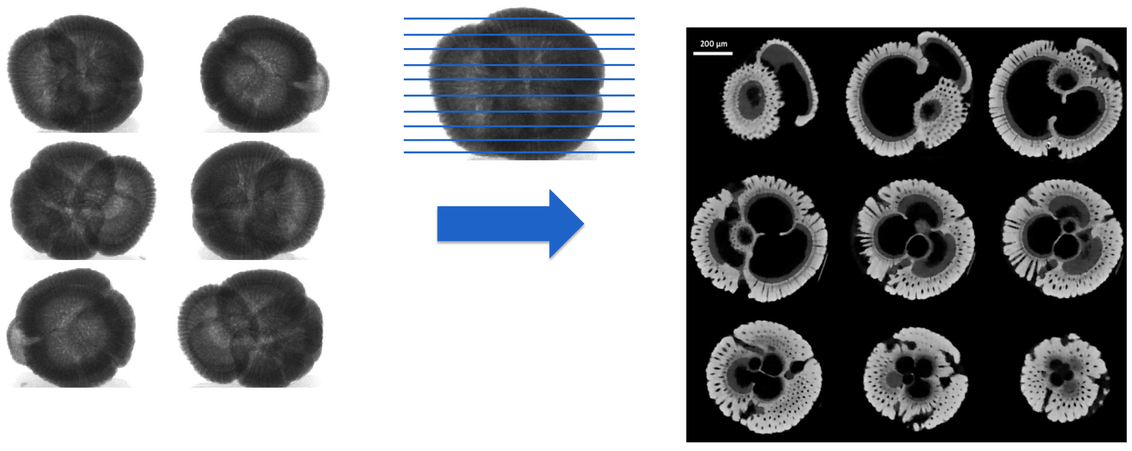
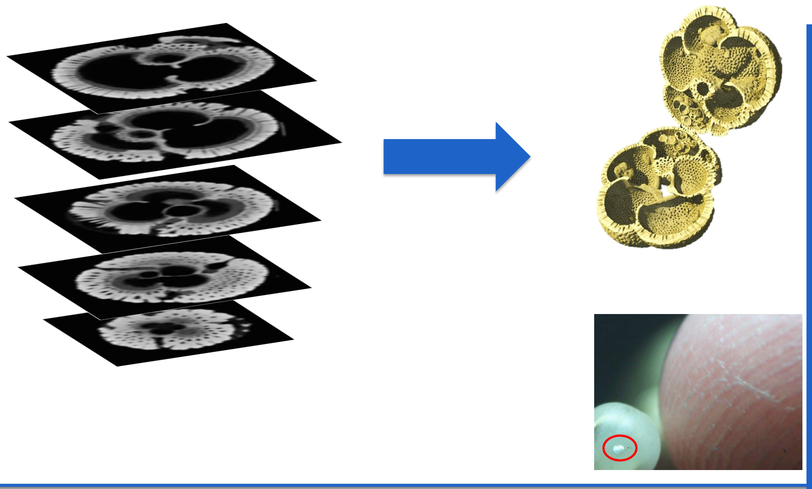
Radiation Physics research group
Centre for X-ray Tomography

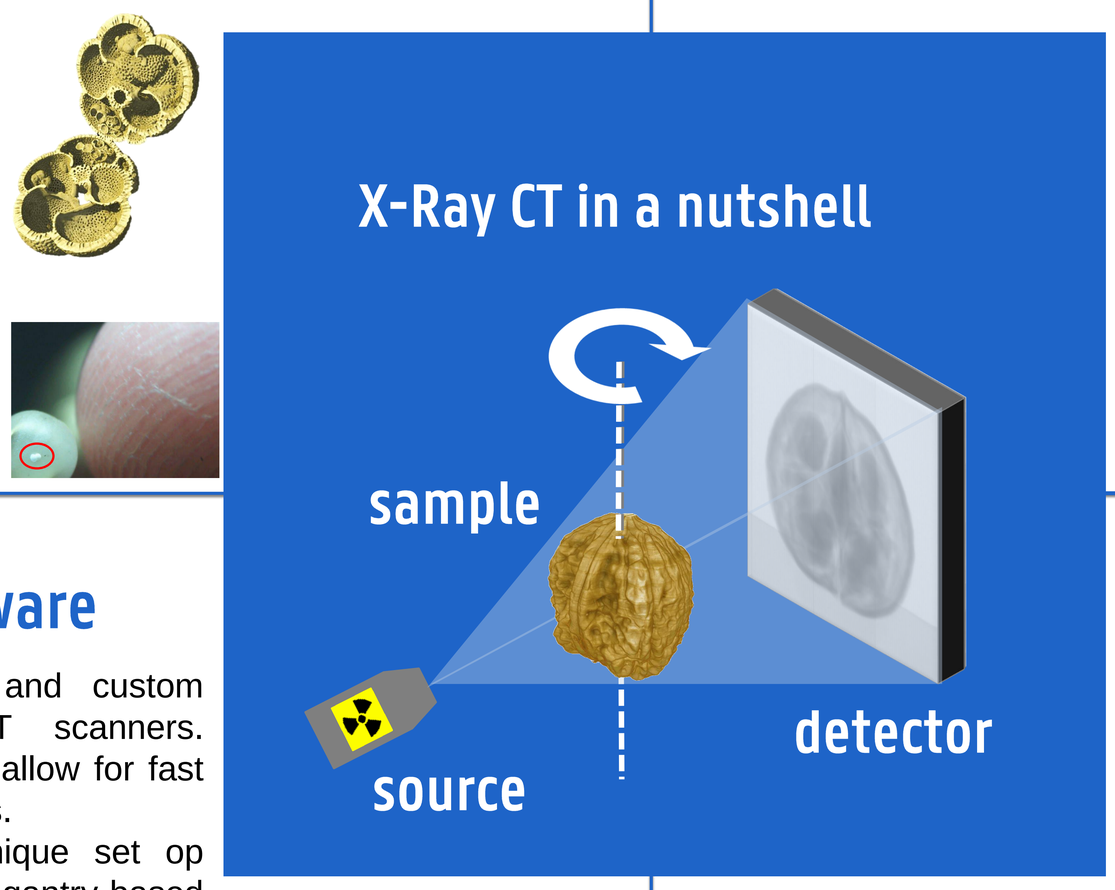
High-resolution X-ray tomography

A powerful 3D imaging technique

High-resolution X-ray tomography allows for the visualization and analysis of objects in 3D. By acquiring X-ray radiographs of a rotating object, virtual slices through the object can be reconstructed using dedicated algorithms. These slices can then be stacked to yield a virtual 3D representation, which can be digitally manipulated.



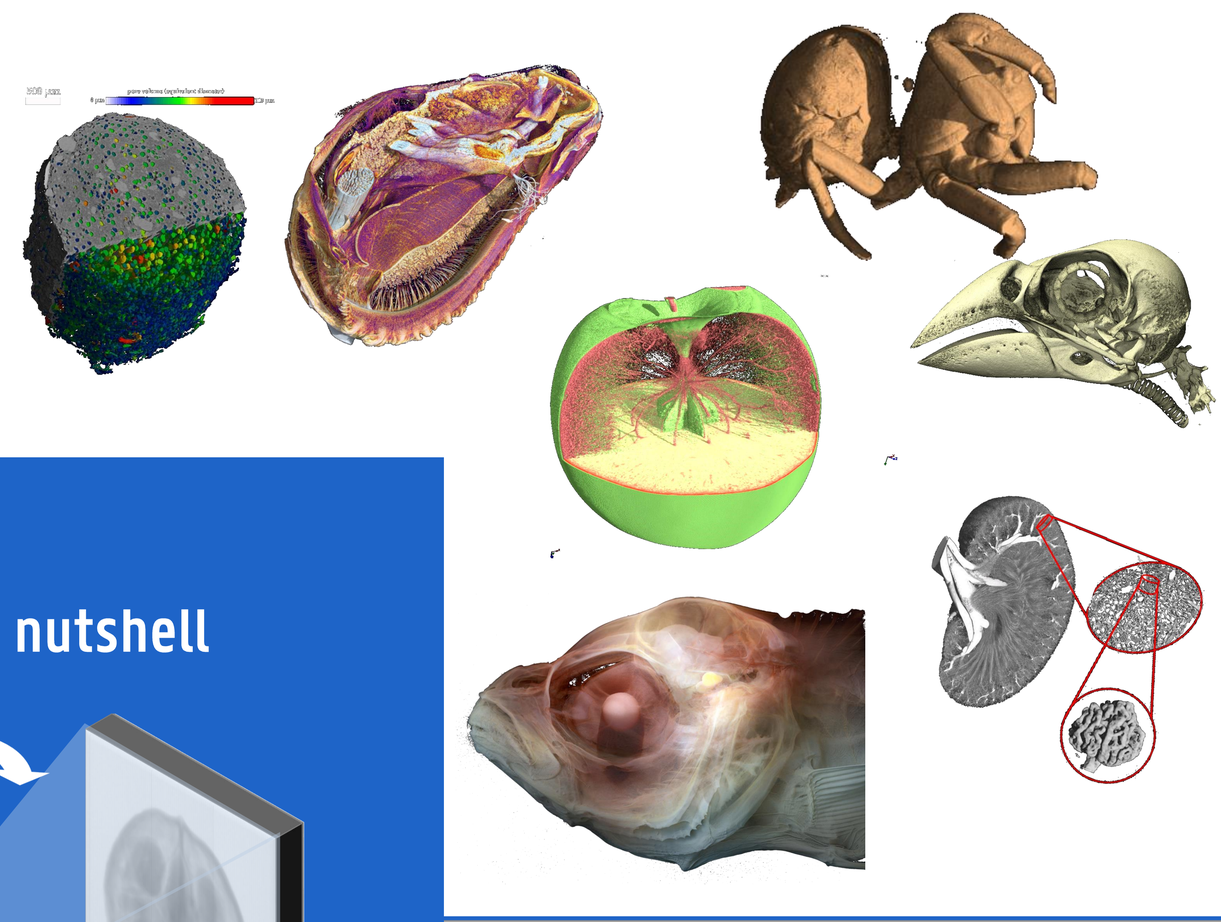




The Centre for X-ray Tomography

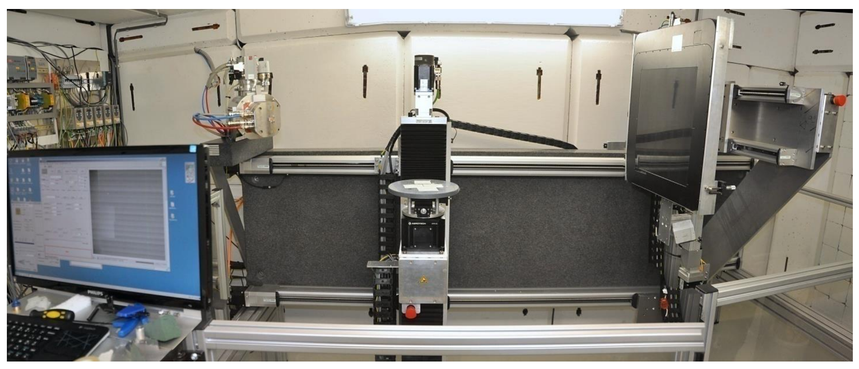
A multidisciplinary collaboration and UGent Centre of Expertise

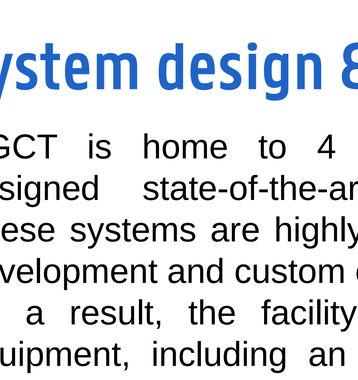
The Radiation Physics group is fully embedded in the Ghent University Centre for X-ray Tomography (UGCT). This is a multidisciplinary research collaboration which is also a user facility open to researchers from all over the world. Joint research with these users provides the opportunity to the Radiation Physics group to adjust the µCT technique to real imaging needs and to participate in various types of state-of-the-art research.



System design & Hardware

UGCT is home to 4 dedicated and custom designed state-of-the-art micro-CT scanners. These systems are highly flexible to allow for fast development and custom experiments.
As a result, the facility has a unique set op equipment, including an innovative gantry-based setup and a unique combined XRF-CT imaging system, developed in collaboration with the XMI research group. The latter allows for retrieval of both morphological and chemical information from a sample.





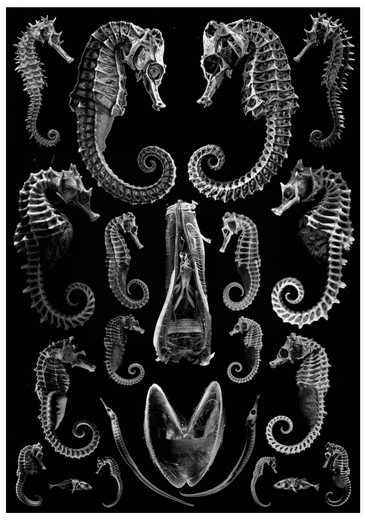
Pictures and CAD drawing of several of the systems designed and developed by the Radiation Physics research group. Top left: the flexible system HECTOR; top right: CAD drawing of the rotating-gantry system; bottom left: top view of the rotating gantry system with peripheral equipment installed; bottom right the unique combined XRF-CT imaging system

Valorization and science communication

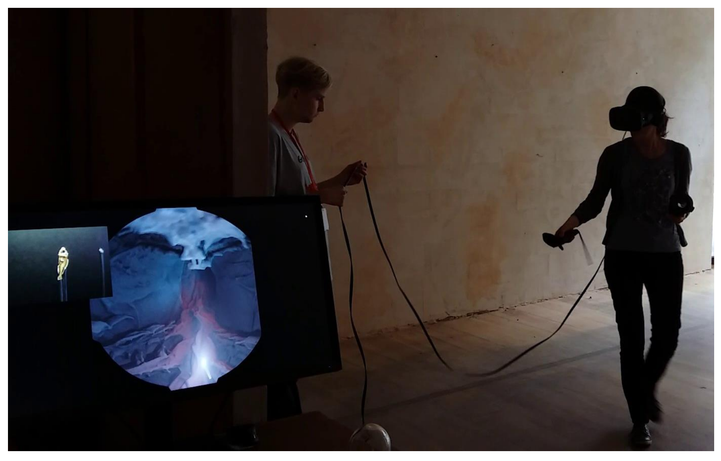
The Radiation Physics research group was at the basis of two spin-off companies which were recently acquired by the TESCAN Holding, now forming TESCAN micro-CT Solutions. Our former colleagues are based in Zwijnaarde and are one of the important constructers of micro-CT setups.

The visual aspect of µCT data makes it ideal for science communication. Notable examples are the use of a VR rendering tool, allowing you to walk inside the data, and artistic renderings.

The TESCAN CoreTOM system



An artist's rendering of µCT data of seahorses



Walking inside a tiny fish with the VR visualization tool.

UNIVERSITEIT GENT

Radiation Physics research group – Centre for X-ray Tomography (UGCT)
Dept. Physics and Astronomy; Proeftuinstraat 86; B-9000 Gent
http://www.ugct.ugent.be
Contact: **Matthieu.Boone@UGent.be**

UGCT