



Chair for X-ray imaging

(UPPA-CNRS-Total) - 2014-2019



Peter Moonen is the chair for X-ray imaging, a public-private joint venture between the UPPA, the CNRS and Total. The chair was created in June 2014 based on the theme of multiphase flows in porous media. This fundamental topic has applications in both civil engineering, including for example the study of the longevity of construction materials, and in the geosciences, such as studying the behavior of bio-methane in subsurface aquifers. In order to tackle this kind of cross-disciplinary challenge, we use an approach combining experimental results and digital simulations. A cutting-edge X-ray laboratory -the X-Ray Imaging Center - was created to obtain the experimental results, which represents an investment of €5.4 M over five years. The laboratory has two X-ray tomographs and all the equipment required to prepare samples and process data. The digital work relies heavily on the collaboration with the Mathematics and Applications Laboratory of Pau (LMAP), specialized in the development of flow calculation algorithms in complex geometries to reduce calculation costs. Thematically, the chair has strong ties with the Laboratory of Complex Fluids and their Reservoirs (LFCR). Both joint ventures were ratified by the development of a new algorithm for recording 3D images and the development of a test cell to validate multiphase flow calculations.