

## Advances in high resolution neutron computed tomography: Adapted to the Earth materials

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The application of state-of-the-art detector systems at the Advanced Neutron Tomography And Radiography Experimental System (ANTARES) has led to significant improvements in spatial resolution and contrast for geomaterial imaging. Resolutions of approximately  $16\ \mu\text{m} \rightarrow 100\ \mu\text{m}$  are now possible with fields of view of  $33\ \text{mm} \rightarrow 205\ \text{mm}$ , a level which is now comparable with X-Ray Computed Tomography (XCT) for which a micro XCT at the institute for mineralogy, crystallography and material science at the University Leipzig was used. Fine pixel resolution comes at the cost of image quality and increased exposure time, so that the optimum configuration for each sample must be determined on a case-by-case basis. Our interdisciplinary approach has yielded an efficient system of data acquisition, processing and quantification that is well suited for geomaterial imaging. It is now expected to find application in a much wider spectrum of geomaterial research, including: the formation of natural glasses, the characterisation of limited / precious samples such as scientific drill cores, and biomaterials (e.g. tooth) studies.

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