INTRODUCTION Cultural heritage artefacts are historical treasures. During transportation and restoration, parts are removed or breaks. The resulting micro-samples are archived by the museums. The micro-samples are mostly less than 3 mm and ask for special care concerning their analysis. Laboratory high-resolution X-ray computed tomography (hCT) is non-destructive and allows detailed 3D inspections in a short time. The information extracted from the 3D dataset is of high interest for the conservation, restoration and comparison of techniques in the cultural heritage field. A huge amount of data are created every second. Their availability to the community and the need to interconnect them is an important part of scientific work. Our work focuses on the development of a conservative methodology for the micro-samples from their preparation to their way back in the museums, their analysis and the availability of the results to the community.

MEASUREMENT
- Laboratory-based hCT
- Non-destructive
- Non-invasive
- Micron to nanometer resolution
- Multi-material analysis
- Multi-dimensional
- Measurement in hours
- Easy access to the device

POST-PROCESSING
- Reconstruction of the 3D volume based on the 2D slices
- Blurring, Edge enhancement, Filtering, Artefacts suppression

DATA CORRELATION
- X-ray Nano CT
- Material, Techniques, Provenance, Conservation
- Non-destructive: Optical microscopy, Confocal microscopy
- Semi-destructive or invasive: SEM, RAMAN, FTIR
- Destructive: TEM, GC-MS

CONCLUSION The increasing use of hCT asks for more standardization and clear preservation rules. We address this issue in our work and continually try to improve it. With the development of a stable and preparative preservation method, the search for dedicated measurement and post-processing parameters offers a precise reconstructed sample and more visibility for each particle and material. The 3D volume can be used by the scientists for the scientists or for the public understanding, which asks for publicly available data.


Artioli, G. and Angelini, I., Scientific methods and cultural heritage: an introduction to the application of materials science to archaeometry and conservation science, Oxford University Press (2010).


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