

Callewaert Tom

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Research interests

Optical Coherence Tomography
Imaging Physics
Signal analysis
Materials in Science and Archaeology

OCT for the study of varnish layer stratigraphy

Recent Research activities:

We have recently acquired a High Resolution – Optical Coherence Tomography setup in order to enhance and generally improve the study of cultural heritage. This system allows us to noninvasively probe varnish layers and other transparent structures.

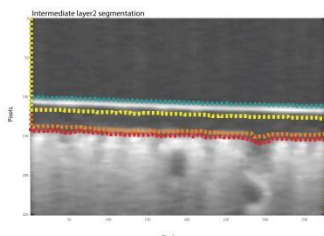


In collaboration with the Imphys Department of the faculty of applied sciences (QI), we develop advanced signal processing for the setup.

In addition to this work, we also have a strong interest in image processing. Extracting optical parameters, such as varnish layer thickness and refractive index, are the main goals.

Automation of the analysis of the obtained datasets by our system is pivotal in order to ensure the practical value.

To this end we have developed an algorithm, able to segment interfaces in 2D OCT datasets.

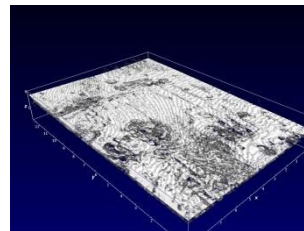


Avoiding the need for

manual segmentation creates the base for a stable analysis platform *Example of a segmented 2D-OCT image.*

The software is able to segment layers as thin as 5 μm .

Another research area is image stitching. This allows us to make 3D sample tomographic reconstructions



Example of a 3D-OCT volume cube. A wooden surface is depicted.