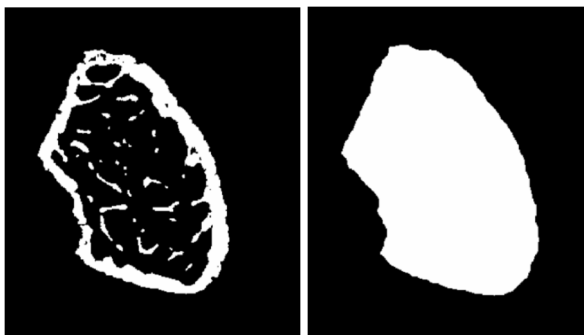**FIRST Newsletter**
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CT-analyzer Plug-ins: ROI Shrink-Wrap and Primitive ROI:

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In many cases the complex geometry of objects makes it undesirable or even impossible to define a suitable region-of-interest manually. For certain types of analyses, if and where objects touch the outside of the volume of interest needs to be taken into account. The ROI shrink-wrap and primitive ROI plug-ins are powerful tools for automatic ROI definition in such cases. Especially when trying to analyze larger numbers of samples in a consistent manner this proves essential.

ROI Shrink-Wrap

The **ROI shrink-wrap** plug-in gives the possibility to automatically generate a region-of-interest by adapting to the shape of selected objects. It has three modes: shrink-wrap, fill-out and adaptive; these modes have additional options allowing to stretch over holes, remove pores or trim lumps. A
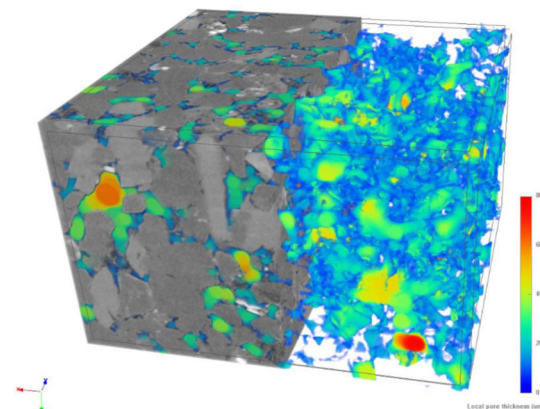
description of the options along with practical examples can be found in "*MN121 – ROI shrink-wrap*".

Primitive ROI

The **primitive ROI** plug-in gives the possibility to create an image for the region of interest containing exclusively a certain edge as binary object. Additionally, the intersection with or the addition of that image and a pre-existing ROI, referred to as the infimum and the supremum respectively, can be output. This tool is useful for selecting or excluding structures touching certain edges of the image cube. Especially when used in combination with the ROI shrink-wrap plug-in (fill-out), as is described in '*MN120 – Primitive ROI*'. When quantifying the fluid percolation properties inside rock cores, only the pore space connecting from top to bottom needs to be considered. The method note shows how to select this portion automatically.

Binary image of a bone sample (left) and a region-of-interest automatically generated in CT-analyzer using the shrink-wrap plug-in (right).

Volume rendering of a Vosges sandstone sample scanned using the SKYSCAN 2214 nanoCT at 1.10 µm image pixel size. The pore space connected from top to bottom was selected using the primitive ROI and ROI shrink-wrap plug-ins. It is color coded by local thickness.

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