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Rock Crack Analysis by X-ray CT

About the sample: Cracked rocks, bricks, and concrete

Rocks, bricks, and concrete can have cracks for various reasons. X-ray CT [computed tomography](#) is a convenient technique to visualize the cracks without altering the sample and analyze how cracks propagate, how wide or long they are, etc.

Analysis procedure

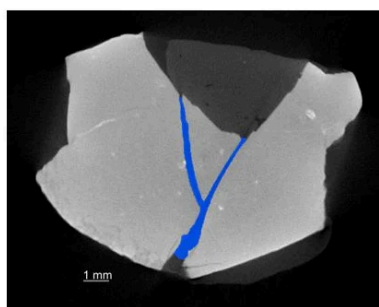
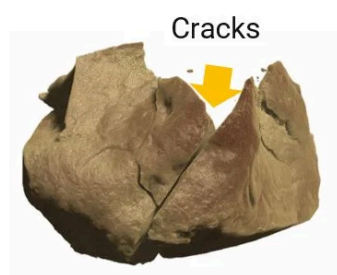
1. In this example, a piece of rock with cracks was scanned using a micro-CT scanner, [CT Lab HX](#).
2. The cracks were segmented using gray-level [thresholding](#).
3. The width distribution of the segmented cracks was analyzed.

1. CT scan

A roughly 1/2" size piece of rock was scanned to produce the 3D grayscale CT image.

2. Image segmentation

The gray level in CT data (right) represents the relative density. The cracks appear black because the air density is lower than that of rock. This crack space was segmented by gray-level thresholding and colored blue.

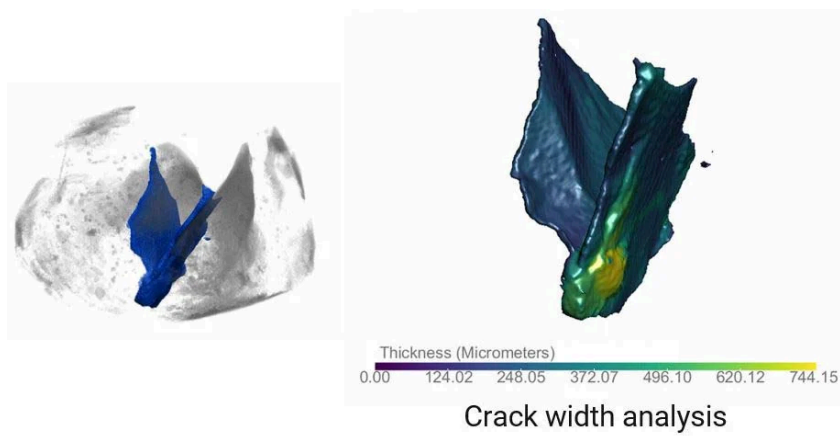


Segmented cracks

3. Crack width analysis

3D rendering of the segmented cracks is highlighted with blue (left).

The crack width was analyzed and color coordinate from purple (0 micron) to yellow (744.15 microns). The width distribution is shown on the right.



Related products



CT Lab HX

High-resolution benchtop microtomography of large samples