

## **GEOMETRIC MODELING OF FOSSIL PORIFERA - VOLUME RECONSTRUCTION USING THE VISUALIZATION TOOLKIT**

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The Visualization Toolkit (VTK) is a library with more than 500 C++ classes for 3D computer graphics, image processing, and visualization. VTK implements a wide range of visualization algorithms with a strong part in volumetric methods. Many VTK based applications are developed for volume reconstruction in medicine. We introduce the program GEOBODY with an application of volumetric reconstruction of two fossil porifera individuals. The data is derived by scanning more than 200 thin sections of two rock specimen bearing the fossil porifera. The sections are used to build a volume from which isosurfaces of grey values can be extracted. GEOBODY runs in batch mode to process the slices with a range of different constellations. Modified options include the resampling and smoothing of image data, different grey value thresholds and the decimation and smoothing of the extracted polygonal meshes. Depending on the settings the meshes represent distinct parts of the porifera. These parts are combined to build a colored surface representation of the sponge. This geometric model is used to visualize details of the spongocoel and the canal system.