



## **3D microscopy - new powerful tools in geomaterials characterization**

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Microtomography (microCT) is becoming more and more widely recognized in geological sciences as a powerful tool for the spatial characterization of rock and other geological materials. Together with 3D image analysis and other complementary techniques, it has the characteristics of an innovative and non-destructive 3D microscopical technique. On the other hand its main disadvantages are low availability (only a few geological laboratories are equipped with high resolution tomographs), the relatively high prices of testing connected with the use of an xray source, technical limitations connected to the resolution and imaging of certain materials, as well as timeconsuming and complex 3D image analysis, necessary for quantification of 3D tomographic data sets. In this work three examples are presented of optimal 3D microscopy analysis of geomaterials in construction such as porosity characterization of impregnated sandstone, aerated concrete and marble prone to bowing. Studies include processes of microCT imaging, 3D data analysis and fitting of data with complementary analysis, such as confocal microscopy, mercury porosimetry, gas sorption, optical/fluorescent microscopy and scanning electron microscopy. Present work has been done in the frame of national research project 3D and 4D microscopy development of new powerful tools in geosciences (ARRS J1-7148) funded by Slovenian Research Agency.