

Selective 3D visualization of pore space in geologic material by impregnation of heavy element-containing liquid

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Pores are that portion of the rock or sediment volume occupied by components such as water, microbial life, petroleum liquids, and gases. The 3D visualization of them places critical constraints on the physical, chemical, and biological processes and has importance on investigations of materials transport and geomicrobiological processes in geologic materials.

We attempted to visualize the pore space through X-ray computed tomography (CT). However, the pore space filled with water was found to be almost indistinguishable from the spaces filled with organic materials because of the relatively subtle difference in X-ray attenuation compared to the difference to inorganic minerals and grains. Then, we investigated the fluid material that can selectively enhance contrast of the pore space in X-ray CT through introduction of heavy element. The optimization and the examples of the results will be shown and discussed.

Keywords: X-ray CT, Pore space