Imaging Fluid Transport in Porous Materials in Real Time or with High Chemical Sensitivity

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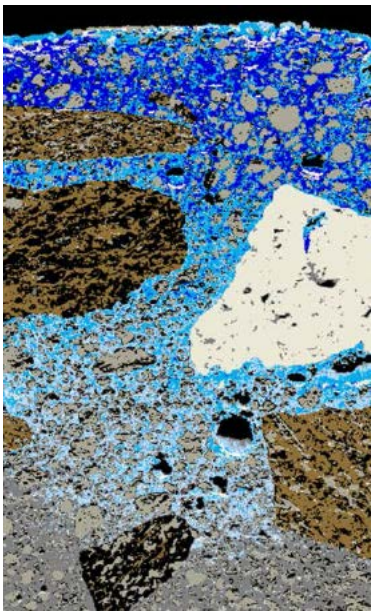
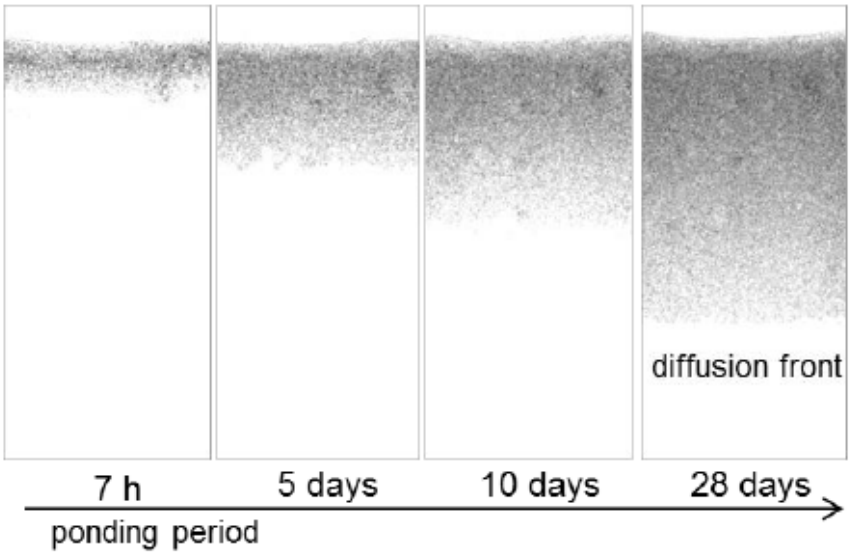
(I will be the second speaker)

The movement of fluids in porous materials is an important topics in a number of fields. These problems can be used to study diverse problems from the penetration of outside fluids into rock or construction materials, movement and distribution of medicine within patients, extraction of fluids from rock, penetration of fluid into soils, movement of fluids within plants or other biological materials.

This presentation will introduce two different imaging techniques that can be used to study these complex problems that are available at OSU. The first method is able to rapidly map the chemistry of large areas. This technique is helpful to quickly investigate chemical gradients and determine their spatial distribution at the ppm level. In the second method salts are added to solution and then their movement can be imaged at a micron resolution. This method can non-destructively capture the transport in almost real time and study the process in 3D!



The blue gradient shows the penetration of NaCl into a concrete sample from mXRF.



The penetration of salt solution into a cement paste sample.