" Dynamic X-ray Microtomography: Displacement Processes and Relaxation Dynamics in Multiphase Flow "

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With recent advances at X-ray micro-computed tomography synchrotron beam lines, it is now possible to study pore-scale flow in porous rock under dynamic flow conditions. The collection of 4 dimensional data allows for the direct 3D visualization of fluid-fluid displacement in porous rock as a function of time. With this data we are able to identify individual imbibition and drainage events, predict oil blob mobilization, measure interfacial curvature, and monitor relaxation dynamics during multiphase flow. The talk will highlight recent advances in 4D imaging of multiphase flow and provide insights on pore-scale flow in simple (sandstone) to complex (coal) porous media systems.