Multiphase flow with moving contact lines (MCLs) is at the core of many displacement processes in subsurface porous media. The physics of MCLs involves effects that originate at the molecular scale, and this makes the multiphase flow problem fundamentally multiscale. We present accurate numerical methods that efficiently model the MCL problem at the pore-scale using level sets. The governing flow equations are based on the Navier-Stokes, which are coupled with the level-set method.

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