* Description of the problem
  + Other attempts to simulate multiphase flow from pore-scale: pore networks.
  + Limitations of those methods
  + Direct pore modeling: advantages and disadvantages
  + Combining direct modeling with pore scale modeling: image analysis+direct modeling+updating rules for pore networks with direct modeling.
* Research objectives
  + Develop fast and robust multi-phase capillary-dominated direct simulation technique
  + Validate techniques against experiments/analytical methods
  + Upscale results using pore network modeling
* Literature Review
* Proposed Research
  + Two-phase: validation of direct modeling techniques: level set, openfoam, lattice Boltzmann
  + Two-phase: experiments conducted by Dr. Mohanty and Sriram
  + Three-phase: direct modeling at the pore scale, validation against MS-P results for Piri/Blunt, VanDijke/Sorbie; attempts to improve predictions for Berea sandstone.
  + Dr. DiCarlo’s experimental data set, Amir’s results
* Preliminary results
  + Comparisons of level set versus openfoam versus lattice Boltzmann (?)
  + Openfoam, level set mixed wetting simulations
  + Results for larger number of pores?
  + Three phase network code for sandstone.