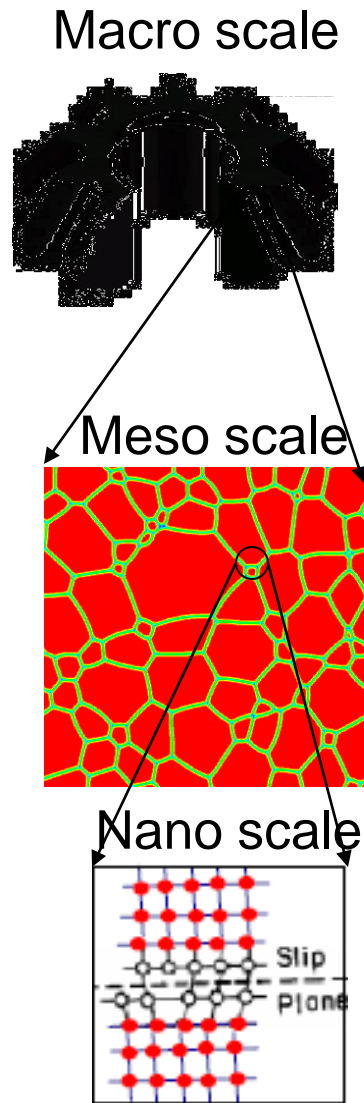


Information Theoretic Multiscaling



- Can information theory (Shannon, 1948) be used to link simulations at various scales in multiscale simulations?
- At what scale do we need to resolve physics for providing robust solutions on the macroscale?
- Require `compatible' stochastic/statistical representation of information at different scales (e.g. maximize mutual information)
- How to transfer across scales as much information as possible about parameters of interest?
- How should information/data be represented and stored at different scales? (e.g. wavelet representation)
- How do you reduce data storage while simultaneously ensuring that important features are captured.
- How to filter out noise in the upscaling of data from lower to higher scales
- Need a precise definition of noise across length scales.