

# System Dynamics at Nano-Scale:

Drainage from contact  
does not conform to  
continuity of flow



Other kinetics than hydrodynamics



- **Solvation/Hydration:** Molecular reordering due to constraining effect of solid boundaries.
- **Van der Waals Interactions:** Intermolecular attractions between fluid-fluid and fluid-solid molecules.
- **Electrostatic Repulsion:** Repulsive action between the aforementioned.
- **Meniscus Forces:** Negative Laplace Pressure between adjacent solids due to wetness.
- **Adhesion:** attractive force at close range due to free surface energy.

A combination of the above operate, depending on free surface energy, topography and physical chemistry

