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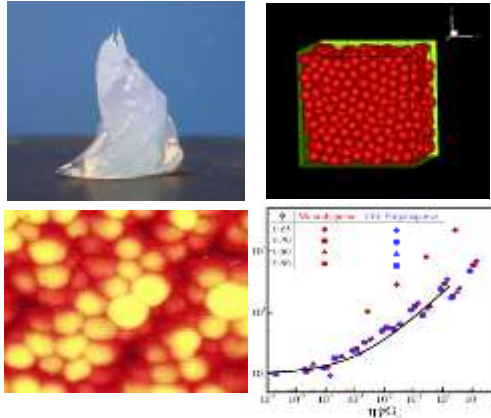
Simulation, Theory and Experiments on Complex Fluids and Nanomanufacturing

Research Themes:

- Discovery & understanding of fundamental phenomena in the behavior of complex fluids and materials processing
- Application of understanding for optimization of material processing, nanomanufacturing and particle transport

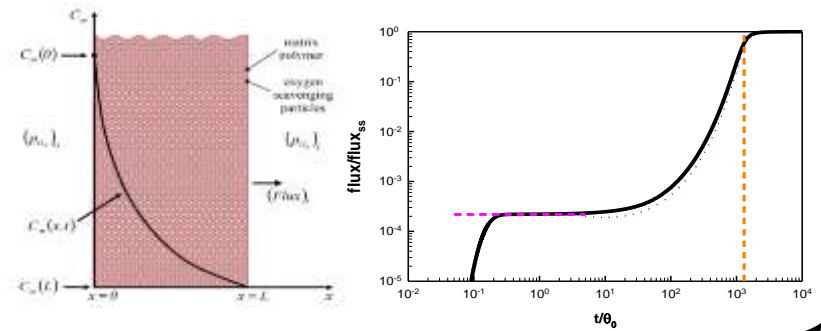
Research Activities

Soft Particle Paste Rheology

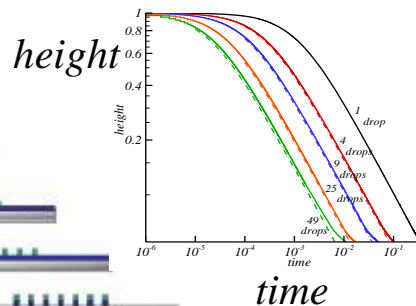
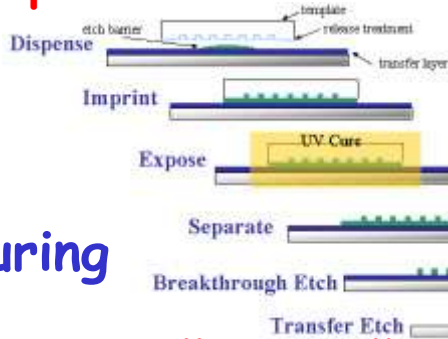


Complex Fluids,
Transport
Phenomena

Oxygen Scavenging Membranes

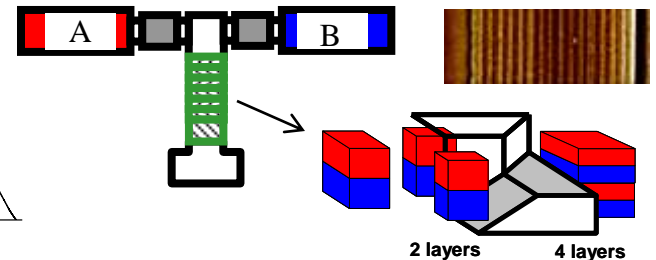


Imprint & Immersion Lithography

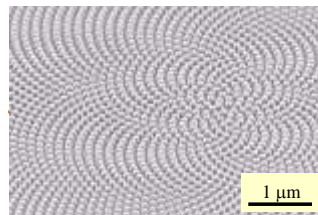
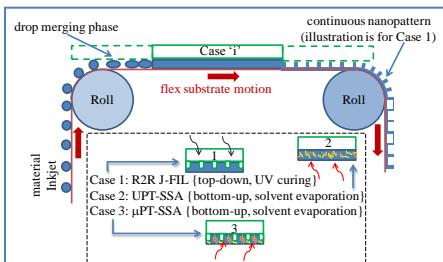


Nano-
manufacturing

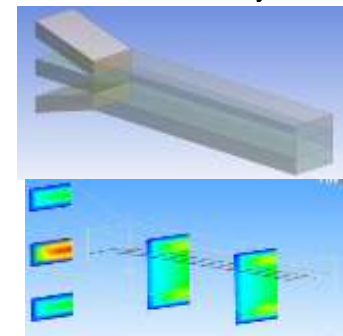
Polymer Nanolayering



Ink Jet Roll-to-Roll Imprint Lithography



e.g., Sub
100-nm
photonics



- Simulation
 - MD and MD-like particle simulations
 - Monte Carlo methods
 - Continuum mechanics
- Theory
 - Perturbation methods
 - Scaling theory
 - Fluid, solid and statistical mechanics
- Experiments
 - Electrical resistance and magnetic resonance tomography
 - Confocal microscopy & microrheology
 - Rheometry
 - High-speed flow imaging