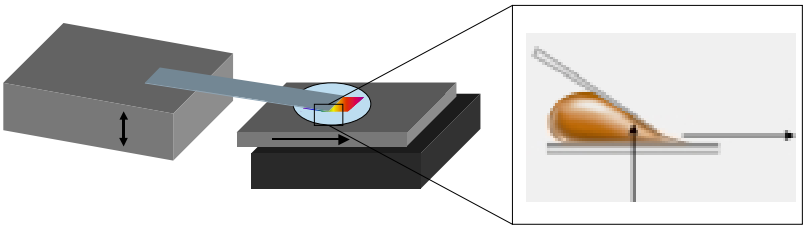
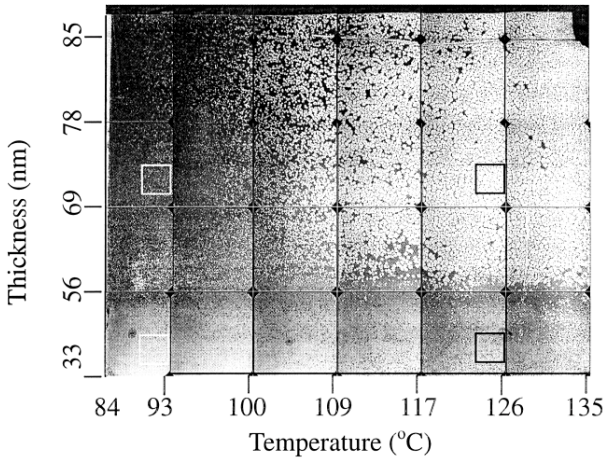
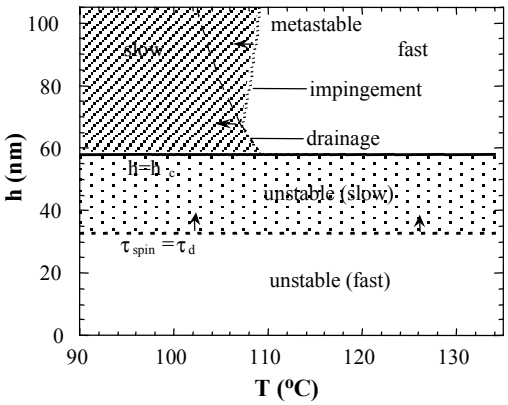
Polymer coatings and films

- Critical Issues
  - The challenge is to achieve desired mechanical, optical or thermal properties in thin film coatings by manipulation of interfacial structure, microstructure and processing conditions.
- Research Strategy
  - The goal is to develop combinatorial methods for investigating polymer coatings, for example, by creating a gradient in cross-link density in polymers. High speed automated scanning techniques such as optical and microscopy techniques can be used for evaluation of optical and other properties under orthogonally varying process variables such as temperature or stress gradients.
- Research Highlights
  - Current research efforts have focused on factors affecting stability of thin film coatings. Specifically, the effect of temperature and film thickness on film wettability. Utilizing flow coating film preparation, spot ellipsometry for thickness characterization and automated optical microscopy for imaging on a temperature gradient stage, complete libraries of dewetting of low molecular mass polystyrene on Si from nucleated to thermally induced capillary wave "spinodal" dewetting have been mapped in the course of a few hours.







For more information ...

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