

# Structural studies of confined soft matter- surfaces and interfaces

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## Collaborators

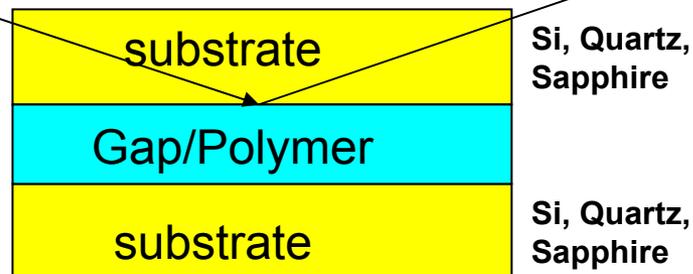
Tonya Kuhl, UC Davis  
Bill Hamilton, ORNL

# Neutron Confinement Cell

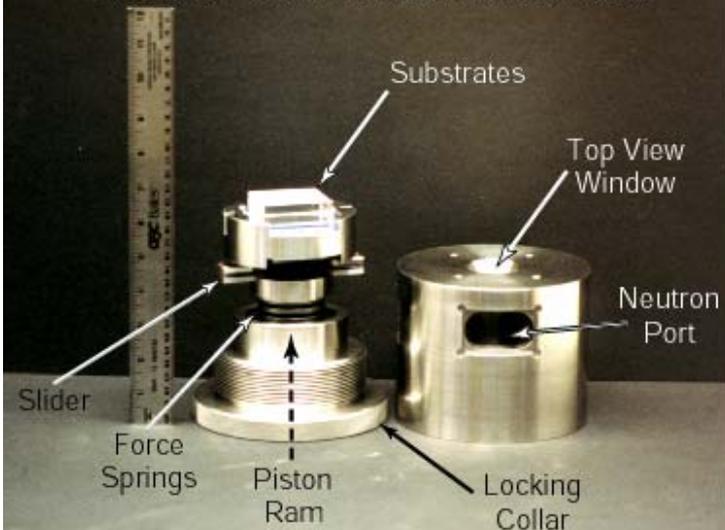


- Polymer brushes
- Steric Stabilizers
- Lubricants
- Adhesion

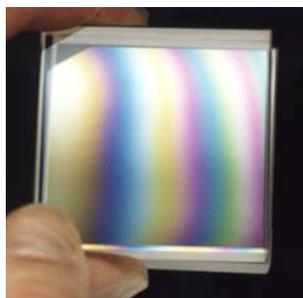
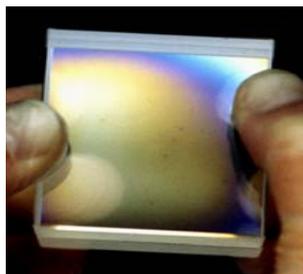
Reflection geometry:



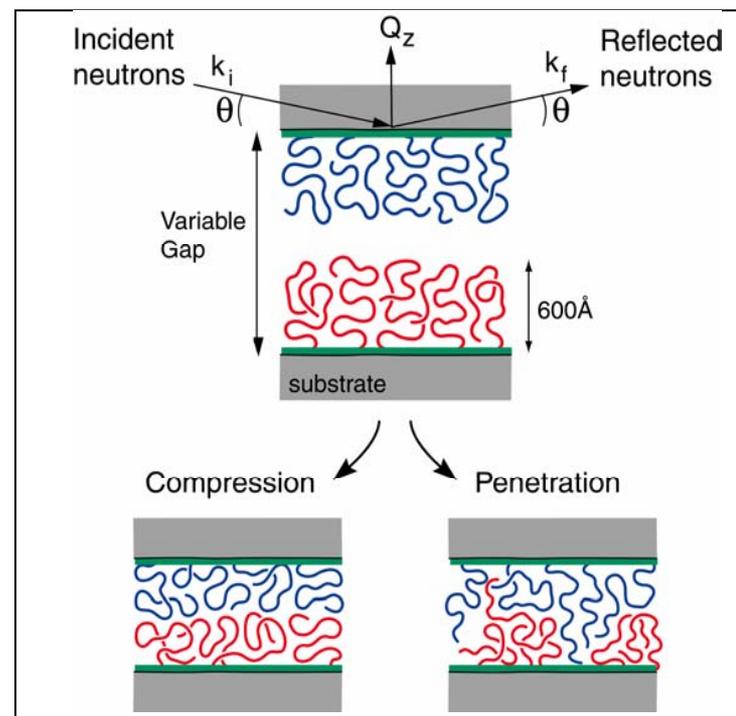
Neutron Confinement Shear Cell



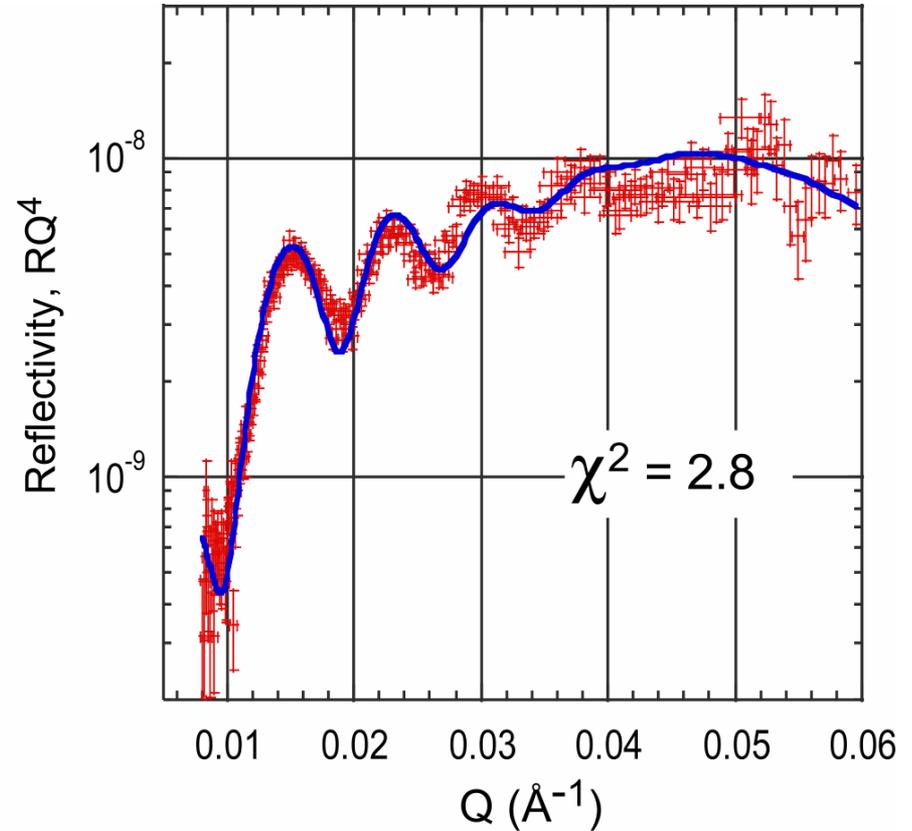
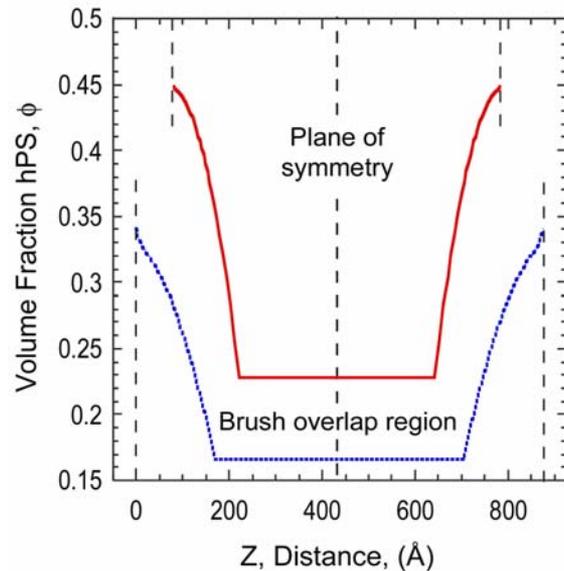
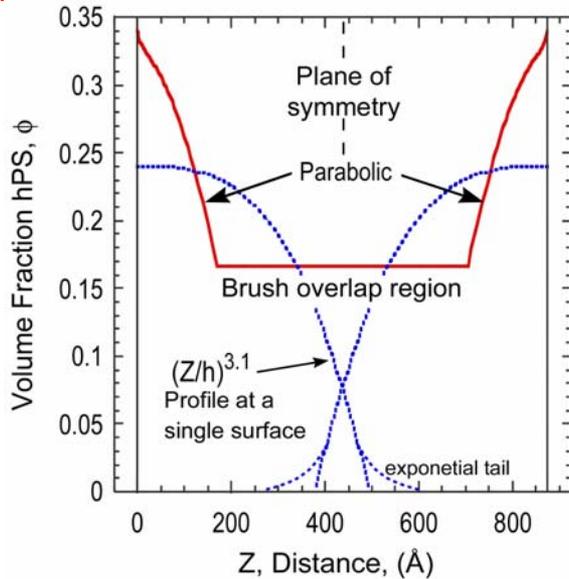
5 cm



Flatness >  $\lambda/20$



# Solvated Polymer Brush – Smaller Gap 850Å



High density PS brush  
Compression/Interpenetration

# Sheared-confined brushes



## Future

- Smaller gaps- shorter chains
  - smaller areas
  - x-ray cells much smaller
- Bottlenecks
  - New instruments which can probe smaller areas- focused beam??
  - Non-user friendly: Needs sample environment support
  - Automated data analysis
- Bio-Membranes
- In-plane structure

