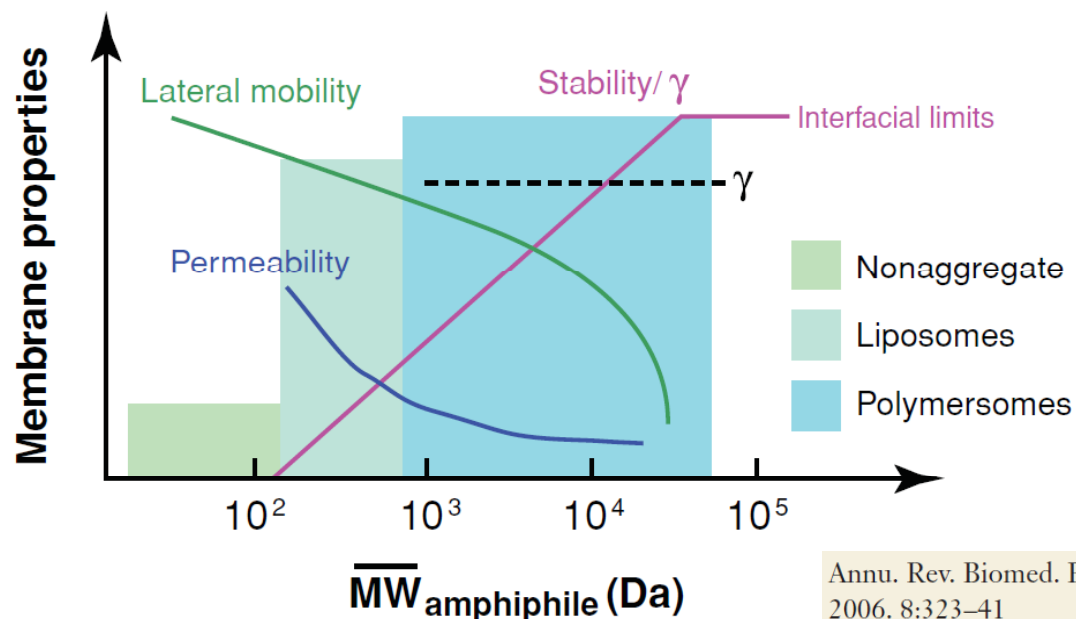
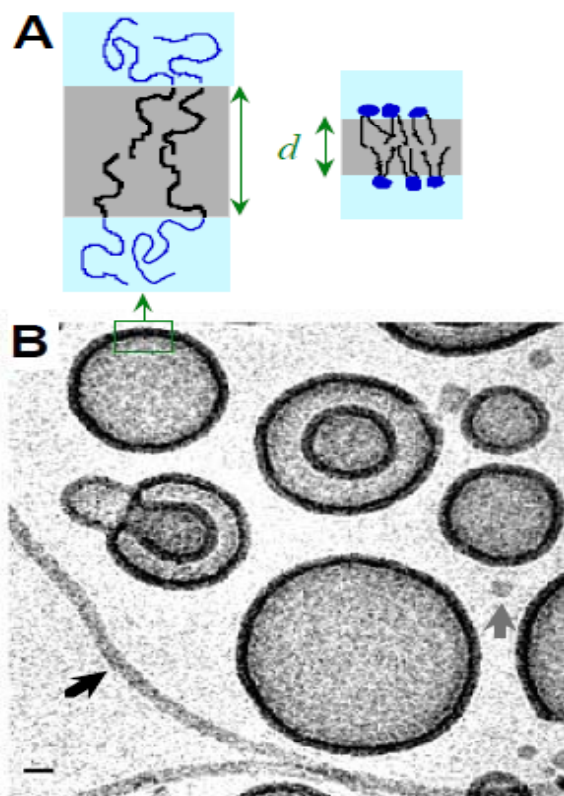
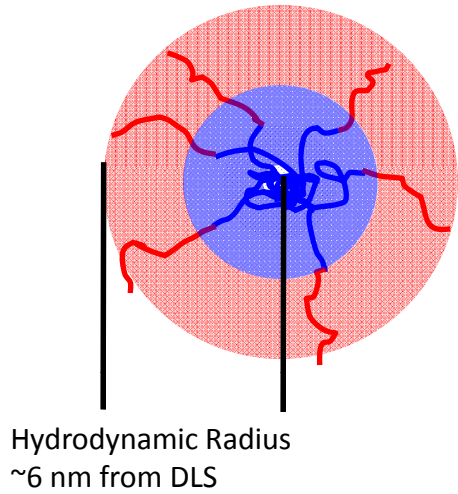


## Polymers to the Rescue!- Overcoming the Limits of Lipids

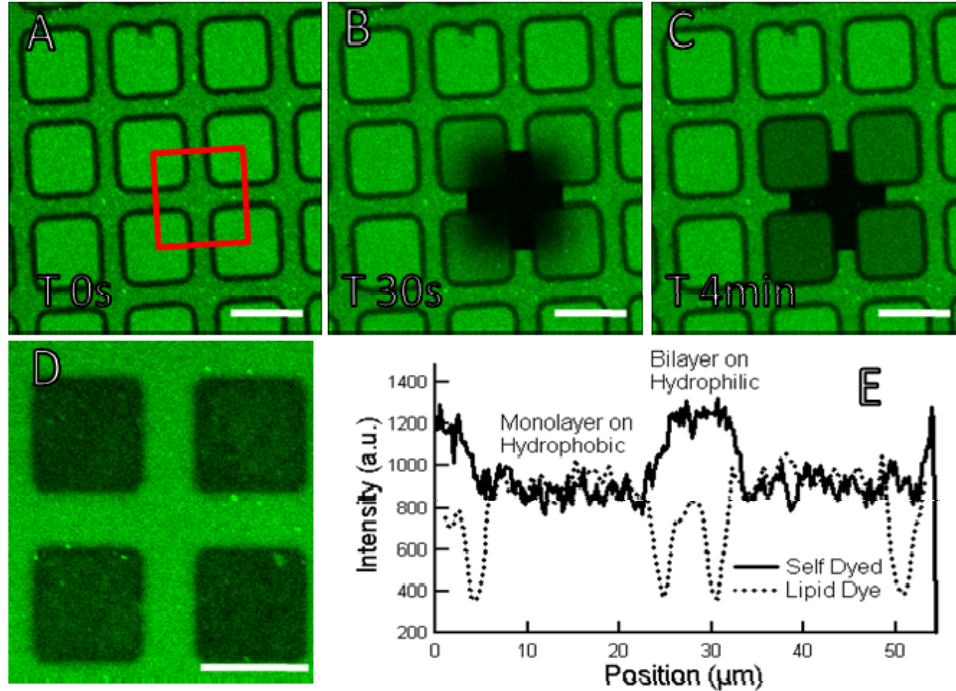
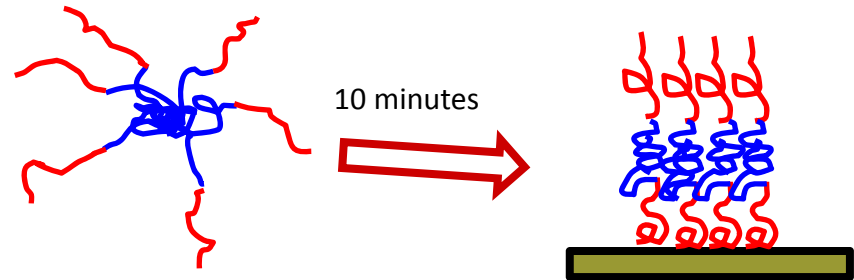


- Block Copolymer can self-assemble into the same structures as other surfactants
- Polymer chemistry offers tremendous tunability of the system (monomer choice, molecular weight, end groups)

# Making bio-friendly polymer layers



Micelles are formed when hydrophobic block is <50% of weight fraction



Hydrophobic squares with a hydrophilic grid.



Lipid Based Dyes

PEO-PBD hybrid layers with varying controllable properties

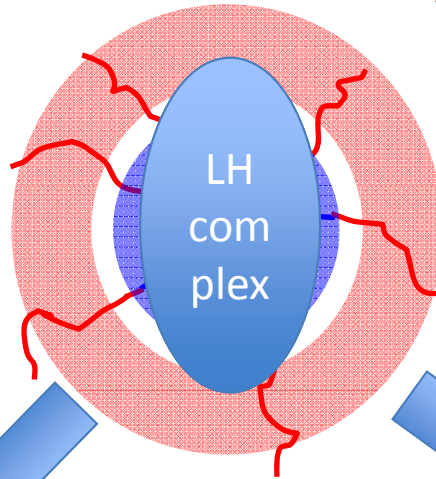


Self-dyed Polymer

(Goertz, et al., ACS Nano 2012)

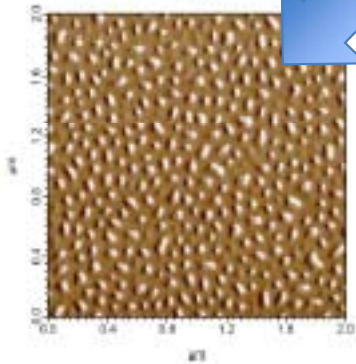
# Biomimetic Polymer Layers

- Polymer-dependent, phase separated patterning of Biomolecules

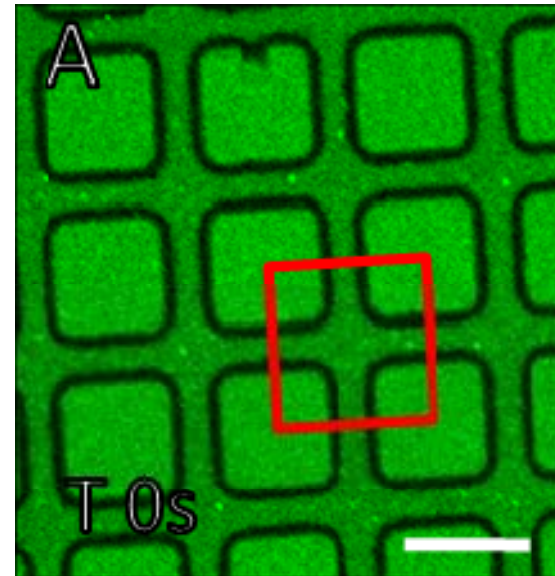
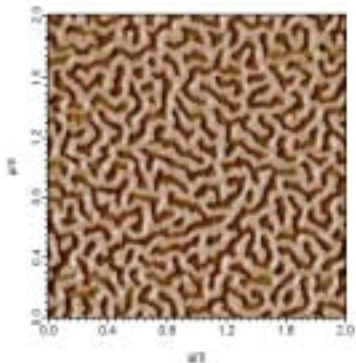


- One-step Membrane Protein Solubilization and Deposition

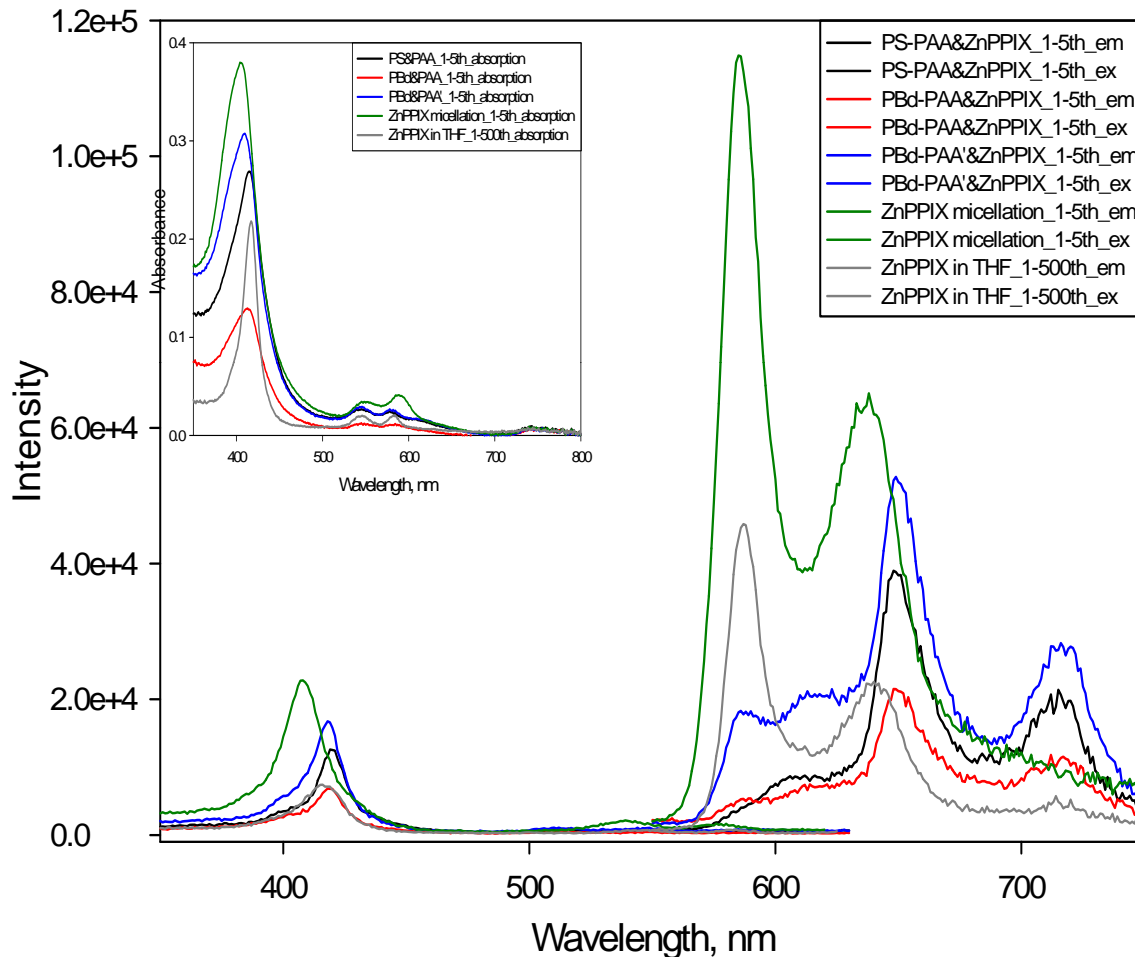
38% PS



58% PS



# “Chloropolyphyrsones?”



Fluorescence Lifetime

Wavelength	THF	PS	PBD	PBD'
582 nm	14.9 ns			
645 nm		5.48 ns	5.1 ns	5.26 ns

- Incorporation of Zn-PPIX into polymer micelles results in j-aggregate like emitting species.
- Occurs with both glassy Polystyrene (PS) and less-glassy polybutadiene (PBD) indicating organization may be within the micelles.
- Exploring shifts in temperature, pH and porphyrin type to create dynamic porphyrin-based LH systems.