FACULTY OF
THE CENTER FOR
BIOENGINEERING

CBEPeople

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Materials

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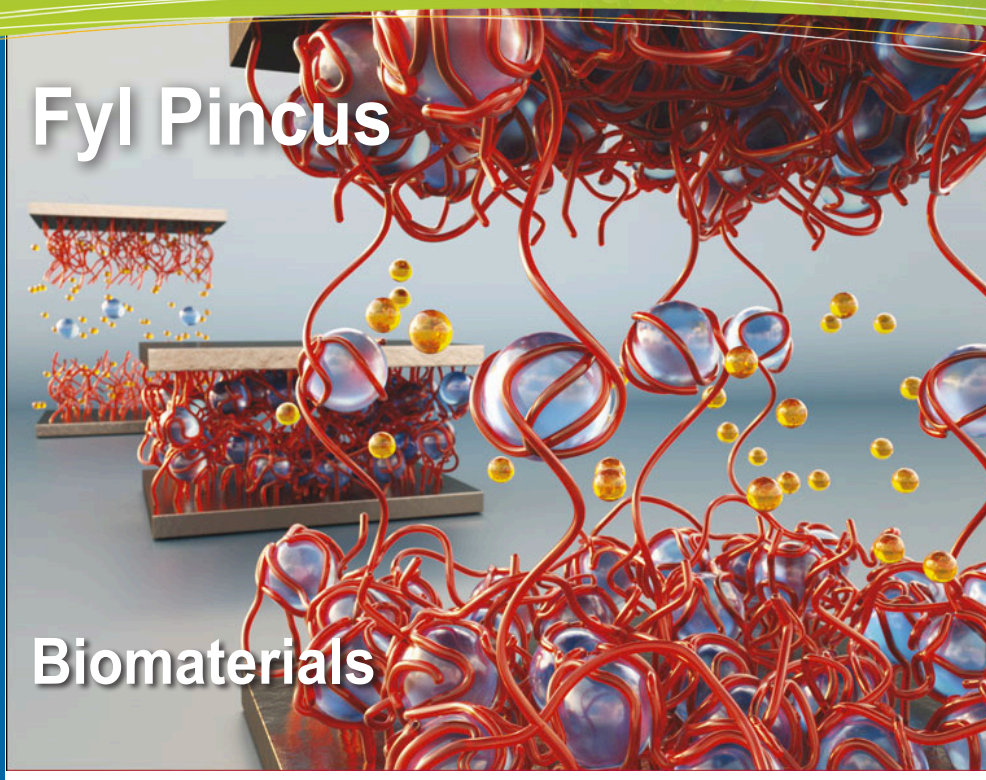
Education

University of California, Berkeley
Ph.D. Physics (1961)
B.S. Physics (1957)

Honors and Awards

Fellow, American Association for Advancement of Science (AAAS, 2011)
Fellow, American Physical Society (APS, 2001)
High Polymer Physics Prize of the APS (Ford Prize, 1992)

Fyl Pincus



Biomaterials

Research Overview

The Pincus group is presently concerned with theoretical problems in the physics of multicomponent fluids, including polymer solutions, colloidal dispersions, microemulsions, vesicles, and other surfactant phases. Present activities are mainly focused on biophysics and interfacial interactions. Biophysical considerations include (1) phase behavior of polymers which hydrogen bond to water, e.g. polysaccharides, (2) the interactions between polymers exhibiting helix-coil transitions and lipid membranes, and (3) the role of the interplay between proteins and the membranes in which they are imbedded in determining order-disorder phenomena of membrane bound proteins. Interfacial interaction studies are principally motivated by colloid science and tribology. Current work includes (1) flow and thermal instabilities of polymer layers which are attached or adsorbed on surfaces, (2) interactions between colloidal particles in the presence of mixed solvents, (3) the structure and properties of charged polymers adsorbed or otherwise attached to surfaces, and (4) self assembly of block copolymers to form membranes and microemulsion-like phases.

Group Website: materials.ucsb.edu/people/faculty/philip-pincus

Selected Publications

Brettmann B, Laugel N, Hoffmann N, Pincus PA, Tirrell MW. 2016. Bridging Contributions to Polyelectrolyte Brush Collapse in Multivalent Salt Solutions, J. **Polymer Sci. Chemistry 54(2): 284-291.**

Kang H, Pincus PA, Hyeon C, Thirumalai D. 2015. Effects of macromolecular crowding on the collapse of biopolymers, **Phys. Rev. Letters.** 114: 068303.

Derot C, Porcar L, Lee Y, Pincus PA, Jho YS, In M. 2015. Electrostatic interaction between non-uniformly charged colloids: Experimental and numerical study, **Langmuir** 31: 1649-1659.

Song J, Franck J, Pinups PA, Kim MW, Han S. 2014. Specific ions modulate diffusion dynamics of hydration water on lipid membrane surfaces, **J. Am. Chem.** Soc. 136: 2642-2649.

Jho YS, Brown FLH, Kim MW, Pincus PA. 2013. Repulsion between oppositely charged planar macroions, **PLOS One** 8: e69436.

Farina R, Laugel N, Pincus PA, Tirrell MW. 2013. Brushes of strong polyelectrolytes in mixed mono- and tri-valent ionic media at fixed total ionic strengths **Soft Matter** 9: 10458-10472.

Bracha D, Karzbrun E, Shemer G, Pincus PA, Bar-Ziv RH. 2013. Entropy-driven collective interactions in DNA brushes on a biochip, **Proc. Natl. Acad. Sci**. USA 110: 4534-4538.

Y. S. Jho, S. A. Safran, M. In, and P. A. Pincus, Effect of charge inhomogeneity and mobility on colloid aggregation, **Langmuir** 28 (2012) 8329—8336.

J. Landy, D. B. McIntosh, O. A. Saleh, and P. A. Pincus, Ionic excesses and entropies in mean-field screening models, **Soft Matter** 8 (2012) 9368—9375.

T. Yamamoto and P. A. Pincus, Collapse of polyelectrolyte brushes in electric fields, **Europhys. Lett. 95 (2011) 48003.**

Y. S. Jho, R. Brewster, S. A. Safran,and P. A. Pincus, Long-range interaction between heterogeneously charged membranes, **Langmuir** 27 (2011) 4439—4446.

R. Beck, J. Deek, M. C. Choi, T. Ikawa, O. Watanabe, E. Frey, P. A. Pincus, and C. R. Safinya, Unconventional salt trend from soft to stiff in single neurofilament biopolymers, **Langmuir** 26 (2010) 18595—18599.