Yeng-Long Chen

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Madison, WI 53706

Experience:

University of Wisconsin at Madison, de Pablo Group. 2003-present

Postdoctoral Researcher, Department of Chemical Engineering, Genomic Science Training Program

- Developing modeling tools for computer-aided design of single molecule DNA analysis micro- and nano-fluidic devices.
- Investigating the structure, thermodynamic properties, and mechanical properties of polymer-particle composite materials.

University of Illinois at Urbana-Champaign, Schweizer Group. 1998-2003

Graduate Research Assistant, Department of Chemical Engineering

- Developed new theoretical methodologies for modeling the fluid structure, thermodynamics, dynamics, depletion interactions, and phase behavior of rod polymer-colloid mixtures.
- Developed numerical methods for theoretical modeling of flexible polymer-particle suspensions for all physical parameter regimes of system densities and polymer-colloid size asymmetry.
- Studied the ergodic-nonergodic (fluid-gel) phase transition and the gel elasticity in polymer-particle suspensions using a hybrid theory of liquid state theory and simplified mode coupling theory.
- Responsible for maintenance and administration of group computer equipments.

Teaching Assistant, Department of Chemical Engineering

- Led student recitation in Chemical Engineering Thermodynamics Fall 1998
- Led group projects in Senior Design Laboratory Spring 1998
- Led student recitation with head TA responsibilities in Chemical Engineering Thermodynamics Spring 2000

California Institute of Technology

Summer Undergraduate Research Fellowship, Kornfield Group. Summer 1996, 1997

- Investigated processing conditions for the phase separation of triblock copolymers into well-aligned three-layered lamellar nano-scale functional groups using *in situ* rheo-optical techniques.
- Investigated the global alignment process of block copolymers from ordered micro domains into well-aligned nanostructures using rheo-optical instruments.

Education:

Ph.D. Chemical Engineering with Computational Science and Engineering Option August 2003
Univeristy of Illinois at Urbana-Champaign.

Thesis Project: *Phase Behavior, Fluid Structure, and Slow Dynamics In Polymer-Colloid Mixtures: Novel Liquid State Theory And Its Applications*
Thesis Advisor: Professor Kenneth Schweizer

M.S. Chemical Engineering January 2001
University of Illinois at Urbana-Champaign.

Thesis Project: *Depletion Effects And Phase Behavior In Model Mixtures of Rod-like Polymers And Colloidal Spheres*
Thesis Advisor: Professor Kenneth Schweizer

B.S. Chemical Engineering June 1998
California Institute of Technology

Presentations:

- Alignment Behavior of Lamellar ABC Triblock Copolymers and Blends
  by Y-L. Chen, Z-R. Chen, A. M. Issaian, J. A. Kornfield , S. D. Smith, A. Ashraf
  Presented at American Physical Society meeting. March 1998
- Defect Dynamics of Three-Nanophase-Separated ABC Triblock Copolymers
  by J. A. Kornfield, Z-R. Chen, A. M. Issaian, Y-L. Chen, S. D. Smith, A. Ashraf, J. T. Grothaus, M. M. Satkowski
  Presented at American Physical Society meeting. March 1998
- Depletion Phenomena in Suspensions of Rigid Rods and Colloids
  by Y.-L. Chen, K.S. Schweizer. Presented at American Physical Society meeting. March 2001
- Structure, Free Volume and the Glass Transition of Colloid-Rod Polymer Suspensions
  by Ken Schweizer and Yeng-Long Chen. Presented at American Physical Society meeting. March 2002
- Nonlocal Entropic Repulsion Effects on Rod Polymer Induced Depletion Attraction between Spherical Particles
  by Yeng-Long Chen and Kenneth Schweizer. Presented at American Physical Society meeting. March 2002
- Liquid State Theory of Rod Polymer-Colloid Suspensions
  by Y.-L. Chen and K.S. Schweizer. Presented at ACS Colloid and Surface Science Symposium. June 2002
- Phase Behavior and Fluid Structure of Rod Polymer-Colloid Mixtures
  by Y.-L. Chen and K.S. Schweizer. Presented at AICHE annual meeting. November 2002
- Influence of Solvent Quality on Phase Behavior and Spatial Correlations in Polymer-Colloid Mixtures
  by Y.-L. Chen and K.S. Schweizer. Presented at APS annual meeting. March 2003
- Phase Separation, Structure and Gelation in Polymer-Particle Suspensions
  by Y.-L. Chen, S.A. Shah, K.S. Schweizer, and C.F. Zukoski. Presented at APS annual meeting. March 2003
- Structure and Viscoelasticity in Polymer-Colloid Gels
  by Y.-L. Chen, S.A. Shah, S. Ramakrishnan, K.S. Schweizer, and C.F. Zukoski.
  Presented at AICHE annual meeting. November 2003
- Gelation and Elasticity in Polymer-Nanoparticle Suspensions
  by Y.-L. Chen, S.A. Shah, S. Ramakrishnan, K.S. Schweizer, and C.F. Zukoski.
  To be presented at APS annual meeting. March 2004

Publications:

- Depletion Interaction In Suspensions of Spheres And Rod Polymers
  by Y.-L. Chen and K.S. Schweizer, *J. Chem. Phys.*, **117**, 1351, 2002
- Collective Structure and Dynamics in Dense Colloid-Rod Polymer Suspension
  by Y.-L. Chen and K.S. Schweizer, *Langmuir*, **18**, 7354, 2002
- Phase Behavior and Concentraion Fluctuations in Suspensions of Hard Spheres and Near Ideal Polymers
  by S.A. Shah, Y.-L. Chen, C. F. Zukoski, and K.S. Schweizer, *J. Chem. Phys.*, **118**, 3350, 2003.
- Phase Separation in Colloid-Polymer Suspensions: Role of Solvent Quality, Physical Mesh, and Nonlocal Entropic Repulsion
  by Y.-L. Chen, M. Fuchs, and K.S. Schweizer, *J. Chem. Phys*, **118**, 3880, 2003
- Scattering Studies of the Structure of Colloid-Polymer Suspensions and Gels
  by S.A. Shah, S. Ramakrishnan, Y.-L. Chen, K.S. Schweizer, and C.F. Zukoski, *Langmuir*, **19**, 5128, 2003.
- Microstructure of Dense Colloid-Polymer Suspensions and Gels
  by S.A. Shah, Y.-L. Chen, S. Ramakrishnan, K.S. Schweizer, and C.F. Zukoski, *J. Phys.*: *Condens. Matter*, **15**, 4751, 2003
- Viscoelasticity and Rheology of Depletion Flocculated Gels and Fluids
  by S.A. Shah, Y.-L. Chen, K.S. Schweizer, and C.F. Zukoski, *J. Chem. Phys.*, **119**, 8747, 2003.
- Liquid State Theory of Structure, Thermodynamics, and Phase Separation in Suspensions of Rod Polymers and Hard Spheres
  by Y.-L. Chen and K.S. Schweizer, *J. Phys. Chem.: B*, in press, 2004
- Microscopic Theory of Gelation and Elasticity in Polymer-Particle Suspensions
  by Y.-L. Chen and K.S. Schweizer, *J. Chem. Phys*., submitted
- Gel Structure and Elastic Properties of Polymer-Colloid Mixtures
  by S. Ramakrishnan, Y.-L. Chen, K.S. Schweizer, and C.F. Zukoski, in preparation

Scientific Skills:

Statistical Thermodynamics	Atomic-Scale Simulations	Numerical Methods Programming
Colloidal & Interface Science	Fluid Dynamics	Rheo-optical Instrument
Polymer Physics	Polymer Dynamics	

Language Skills:

Proficient in reading, writing, and speaking in Mandarin Chinese, English, and German.
Proficient in speaking Taiwanese.

Computer Skills:

Programming Language C, Fortran.
Familiar with Unix, Linux, DEC TruUnix 64, Windows 98, 2000, XP, Macintosh platforms
Familiar with Microsoft Office, SigmaPlot, Emacs, Grace.

Societies:

Sigma Xi, the scientific research society	1997-present
American Physical Society	2000-present
American Institute of Chemical Engineers	2002-present