CURRICULUM VITAE

CONTACT INFORMATION

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EDUCATION

Ph.D., 1997, Chemistry, University of California, Berkeley.
(Adviser: Professor David Chandler).

B.S., 1993, Chemistry, Korea Advanced Institute of Science and Technology.

PROFESSIONAL EXPERIENCES

2002 – present	Postdoctoral Associate, Department of Biochemistry, Weill Medical College of Cornell University, New York, NY.
2001 – 2002	Postdoctoral Associate, Department of Chemical Engineering, University of Massachusetts, Amherst, MA.
1999 – 2001	Postdoctoral Associate, Department of Chemistry, Iowa State University, Ames, IA.
1997 –1999	Instructor, Republic of Korea Army Chemical School, Chunnam, South Korea (mandatory military service).

Research Experiences

- Computational biophysics of proteins (works currently in progress).
  - Grand canonical Monte Carlo simulation of water with proteins.
  - Free energy calculation of the binding affinity of ligands to enzymes.
- Nonequilibrium thermodynamics and statistical mechanics.
  - Theoretical formulations; statistics of trajectories and hydrodynamics .
- Phase behavior and glassy dynamics of fluids in porous media.
  - Modeling of Vycor glasses and fluid adsorption.
  - Equilibrium and dynamical simulations of coarse-grained lattice models.
- Statistical mechanics of phase transitions in simple fluids.
  - Mean-field theory of ice phase equilibria.
  - Density functional theories of hard and soft sphere fluids.
  - Theory of freezing in weakly anisotropic fluids and colloidal systems.
- Statistical mechanics of phase transitions in complex fluids
  - Theories of self-assembly in amphiphilic mixtures.
  - Mesoscopic correlations in bicontinuous microemulsions.
  - Elastic properties of amphiphilic layers and membranes .

Publications

1. H.-J. Woo and B. Roux,
   Grand canonical Monte Carlo in the generalized solvent boundary potential,
   submitted (2003).
2. H.-J. Woo,
   Statistics of nonequilibrium trajectories and pattern selection,
   Europhys. Lett., **64**, 627 (2003).
3. H.-J. Woo,
   Variational formulation of nonequilibrium thermodynamics for hydrodynamic pattern formations,
   Phys. Rev. E, **66**, 066104 (2002).

4. H.-J. Woo, F. Porcheron, and P. A. Monson,
Modeling desorption of fluids from disordered mesoporous materials,
submitted (2003).

5. H.-J. Woo and P. A. Monson,
Mean-field theory of ice phase stability,
J. *Chem. Phys.*, **118**, 7005 (2003).

6. H.-J. Woo and P. A. Monson,
Phase behavior and dynamics of fluids in mesoporous glasses,
Phys. Rev. E, **67**, 041207 (2003).

7. H.-J. Woo, L. Sarkisov, and P. A. Monson,
Mean-field theory of fluid adsorption in a porous glass,
Langmuir, **17**, 7472 (2001).

8. H.-J. Woo and X. Song,
Self-consistent theory of orientational order and fluid-solid equilibria in weakly anisotropic fluids,
J. Chem. Phys., **116**, 4587 (2002).

9. H.-J. Woo and X. Song,
Freezing and orientational order in weakly anisotropic fluids,
Phys. Rev. E, **63**, 051501 (2001).

10. H.-J. Woo and X. Song,
Functional integral formulations for classical fluids,
J. Chem. Phys., **114**, 5637 (2001);

11. H.-J. Woo, C. Carraro, and D. Chandler,
Assembly of extended interfaces and micelles: Charge frustrated models of amphiphilic mixtures,
Faraday Discussions, **104**, 183 (1997).

12. H.-J. Woo, C. Carraro, and D. Chandler,
Quantitative molecular interpretation of curvature elasticity of saturated surfactant monolayers,
Phys. Rev. E, **53**, R41, (1997).

13. H.-J. Woo, C. Carraro, and D. Chandler,
Quantitative molecular interpretation of mesoscopic correlations in bicontinuous microemulsions,
Phys. Rev. E, **52**, 6497 (1996).

14. H.-J. Woo, Y. I. Kim, and E.-K. Lee,
Effect of Perturbation on the area-preservation map,
Int. J. Bifurcation Chaos, **4**, 137 (1994).

15. H.-J. Woo, E. K. Lee, and E.-K. Lee,
Generalization of the Curie-Weiss model to the D-dimensional spin system,
Bull. Korean Chem. Soc., **14**, 485 (1993).

Conference Prceedings

1. H.-J. Woo, L. Sarkisov, and P. A. Monson,
   Understanding adsorption hysteresis in porous glasses and other mesoporous materials,
   Studies in Surface Science and Catalysis, **144**, 155 (2002).

Miscellaneous Skills

- Scientific programming: C, Fortran 90, parallel programming in MPI.
- Biomolecular simulation package: CHARMM.
- Unix system administration experiences on Linux, AIX, SGI, and Digital Unix.