Yi Jiang

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RESEARCH INTERESTS:

Biophysics, soft condensed matter, materials modeling, nonlinear and non-equilibrium dynamics, complex fluids, pattern formation, random networks.

EDUCATION:

Ph.D.	1998	Physics, University of Notre Dame.
		Dissertation: *Cellular Pattern Formation*
		Advisor: *James A. Glazier*
B.S.	1993	Physics, University of Science and Technology of China.
		Thesis: *Optical Properties of Nano-Oxides* ZnO_2 *and* SnO_2
		Advisors: *C. Shi (Physics) & D. Wang (Materials Science and Engineering)*

EXPERIENCE:

3/2001 - present	Research Staff, Theoretical Division, Los Alamos Natl. Lab.
9/1998 - 3/2001	Postdoctoral Research Associate, Theoretical Division, Los Alamos Natl. Lab.
6/1996 - 12/1999	Consultant (part time), IOTA. Inc, Delaware.

PROJECTS & FUNDING

CI	LDRD-DR	*Interfacial Energy and Charge Transfer in Multifunctional Bio-Inspired Nano-Assemblies*
	2003 - 2005	US$3,600K
CI	LDRD-ER	*Bone morphogenesis and regulation by external fields*
	2002 - 2004	US$500K

PROFESSIONAL ACTIVITIES:

- Co-Organizer, *Conference: Multiscale Modeling in Biology*, Notre Dame, IN, August 4-17, 2003.
- Co-Organizer, *Conference: Networks: Structure, Dynamics and Function*, Santa Fe, May 12-16, 2003.
- Review Committee, *Homeland Defense LDRD Proposals*, Los Alamos, February, 2002.
- Co-Organizer, *Workshop: Bridging the Canyon*, Santa Fe, Sept 13-14, 2001.
- Organizer, *Seminar Series "Processes of Life: from the molecule to the cell"*, Los Alamos, 2001 - present.
- Session Chair, *Conferece: Dynamics of Interfaces, Patterns and Domains*, Los Alamos, April 22-24, 1999.
- Organizer, *Workshop: Nonlinear Phenomena in Complex Systems*, Los Alamos, May 17-18, 1999.
- Referee for Phys. Rev. Lett., Phys. Rev. E, Phys. Rev. B (1995-present), Physica D (1996-present), Biophys. J.(1999-present), Radio. Cancer Res. and Computing in Sci. & Eng. (2003).
- Lecturer, *Los Alamos Summer School of Physics*, Los Alamos, 2000-2003.

MEMBERSHIP:

- Member of American Physical Society
- Member of Biophysical Society
- Member of Materials Research Society
- Member of Society for Industrial and Applied Mathematics

INVITED TALKS AND COLLOQUIA:

- Materials Theory Seminar Series, Los Alamos National Laboratory, Los Alamos, NM (October 2003).
- Interdisciplinary Center of Biocomplexity, University of Notre Dame, Notre Dame, IN (November 2002).
- Biocomplexity Workshop: Bioengineering. University of Notre Dame, Notre Dame, IN (November 2002).
- Department of Mathematics and Statistics, University of New Mexico, Albuquerque, NM (January 2002).
- Department of Mathematics, Stanford University, Palo Alto, CA (August 2001).
- Fifth SIAM Conference on Control and its Applications, San Diego, CA (July, 2001).
- Department of Physics, Arizona State University, Phoenix, AZ (March 2001).
- Department of Physics, University of South Florida, Tampa, FL (February 2001).
- Department of Chemistry, Virginia Tech, Blacksburg, VA (January 2001).
- Department of Physics, Indiana University, Bloomington, IN (January 2001).
- Department of Physics, Emory University, Atlanta, GA (October 2000).
- Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD (October 2000).
- Center for Nonlinear and Complex Systems, Duke University, Durham, NC (October 2000).
- Department of Physics, Virginia Tech, Blacksburg, VA (October 2000).
- Department of Chemistry, Virginia Tech, Blacksburg, VA (October 2000).
- Department of Physics, University of Missouri, Columbia, MO (September 2000).
- Computational Sciences and Information Technology, Florida State University, Tallahassee, FL (September 2000).
- Department of Physics, UC Irvine, CA (February 2000).
- Arizona Days, Center for Nonlinear Studies, Los Alamos, NM (January 2000).
- Kansas Institute of Computational and Theoretical Science, Lawrence, KS (December 1999).
- Department of Physics, Kansas State University, Manhattan, KS (September 1999).
- Nonlinear Phenomena in Complex Systems Workshop, Los Alamos, NM (May 1999).
- Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA (May 1998).
- Center for Nonlinear Sciences, Hong Kong Baptist University, Hong Kong (January 1998).
- RIEC, Tohoku University, Sendai, Japan (December 1997).
- Materials Theory and Computation Group, Sandia National Lab, Albuquerque, NM (January 1997).

CONFERENCE PRESENTATIONS:

- “Agent-Based Cellular Automata Modle of Aggration in Myxobacteria”
  Biocomplexity V- Multiscale Modeling in Biology, Notre Dame, IN (August 2003).
- “Multiscale modeling of avascular tumor growth”
  Multiscale Modeling in Biology, Notre Dame, IN (August 2003).
- “Modeling Avascular Tumor Growth”
  LANL Research Symposium 2003, Los Alamos, NM (August 2003).
- “Stochastic CA models for rippling in Myxobacteria”
  CNLS 22th Annual Conference - Frontiers of Simulation Los Alamos, NM (August 2002).
- “2D flow of foams: a theoretical analysis”
  Eurofoam 2002, Manchester, England (July 2002).
- “Modeling avascular tumor growth”
  Los Alamos Research Symposia, Los Alamos, NM (June 2002).
- “Stochastic CA models for rippling in Myxobacteria”
  Los Alamos Research Symposia, Los Alamos, NM (June 2002).
- “From Equilibrium Energy to Stress Strain in 2D Foams”
  Principles of Soft Matter, Santa Fe, NM (June 2001).
- “Interference of Composition Waves in Filled Polymer Blend Thin Films”
  Principles of Soft Matter, Santa Fe, NM (June 2001).
- “Interference of filler induced composition waves in polymer blend”
  APS March Meeting, Seattle, WA (March 2001).
- “Stress distribution in fluid foams”
  APS March Meeting, Seattle, WA (March 2001).
- “Influence of Filler Particles and Clusters in Phase Separating Polymer Blends” (Poster)
  MRS Fall Meeting, Boston, MA (November 2000).
- “Phase Separation Induced Morphology Evolution in Lipid Membranes”
  APS March Meeting, Minneapolis, MN (March 2000).
- “Energy-landscape of fluid foams”
  APS March Meeting, Minneapolis, MN (March 2000).
- “Deformation of elastic membranes induced by phase separation”
  Biophysics Society Annual Meeting, New Orleans, LA (February 2000).
- “Role of curvature in phase separation and deformation of elastic membranes” (Poster)
  Dynamics Days 2000, Santa Fe, NM (January 2000).
- “Phase separation and deformation on a two-phase membrane” (Poster)
  Center for Nonlinear Studies Annual Meeting, Los Alamos, NM (May 1999).
- “Phase separation on a two-dimensional membrane”
  Dynamics of Interfaces, Patterns and Domains ’99, Los Alamos, NM (April 1999).

- “Shape and Phase of Cell Membranes”
  Center for Nonlinear Studies Forum, Los Alamos, NM (April 1999).
- “Lattice model for cell sorting”
  SCRI Monte Carlo Workshop, Tallahassee, FL (March 1999).
- “Kinetics of phase separation on deformable membranes”
  APS March Meeting, Atlanta, GA (March 1999).
- “Modeling tip formation in *Dictyostelium* mound”
  Arizona Days Workshop, University of Arizona, Tucson, AZ (January 1999).
- “Dynamics and disorder in 2D foam rheology simulations”
  Center for Nonlinear Studies, Los Alamos National Lab, Los Alamos, NM (April 1998).
- “Cell sorting in the mound stage of *Dictyostelium*”
  APS March Meeting, Los Angles, CA (March 1998).
- “Monte Carlo study of 2D foam under stress”
  APS March Meeting, Los Angles, CA (March 1998).
- “Modeling foam drainage”
  Center for Applied Math, University of Notre Dame, Notre Dame, IN (February 1998).
- “Two-dimensional grain growth under stress”
  MRS Fall meeting, Boston, MA (December 1997).
- “Differential adhesion *vs.* chemotaxis in mound formation of *Dictyostelium*”
  International *Dictyostelium* Conference, Snowbird, UT (August 1997).
- “Foam drainage and its connection to flow in porous media”
  Center for Nonlinear Studies, Los Alamos National Lab, Los Alamos, NM (August 1997).
- “From chicken cells to slime mold: how cells know where to go”
  Center for Nonlinear Studies, Los Alamos National Lab, Los Alamos, NM (July 1997).
- “Hysteresis of cellular pattern under stress”
  APS March Meeting, Kansas City, MO (March 1997).
- “Foam drainage: extended large-Q Potts model simulations and a mean field theory”
  MRS Fall Meeting, Boston, MA (December 1996).
- “Dynamics of cellular pattern formation”
  Complex Systems Summer School, Santa Fe, NM (June 1996).
- “Cellular pattern formation in foams and cells”
  Center for Nonlinear Studies, Los Alamos National Lab, Los Alamos, NM (May 1996).
- “Anomalous grain growth and special scaling state in a two-dimensional growth”
  APS March Meeting, St. Louis, MO (March 1996).
- “Slow positron annihilation study of nano-TiN films” (Poster)
  MRS Fall Meeting, Boston, MA (December 1993).
- “Infrared absorption study of N ion implanted silicon” (Poster)
  MRS Fall Meeting, Boston, MA (December 1993).

PUBLICATIONS:

1. Y. Jiang, J. Pjesivac-Grbovic, C. Cantrell, and J. Freyer, *Modeling Avascular Tumor Growth*, in preparation, 2003.

2. Y. Jiang, *Modeling Bone Remodeling: Disuse and Overload*, in preparation, 2003.

3. M. S. Alber, Y. Jiang, and M. A. Kiskowski, *Density Dependant Aggregation Formation in Myxobacteria*, preprint, 2003.

4. M. S. Alber, M. A. Kiskowski, and Y. Jiang, *Two-Stage Aggregate Formation via Streams in Myxobacteria*, submitted to Phys. Rev. Lett., 2003.

5. Y. Jiang, T. Lookman, A. Saxena, and J. K. Douglas, *Interference of Filler induced composition waves in phase separating polymer thin films*, preprint, 2003.

6. M. S. Alber, Y. Jiang, and M. A. Kiskowski, *Lattice Gas Cellular Automata Model For Rippling in Myxobacteria*, to appear in Physica D (2003).

7. M. Aubouy, Y. Jiang, J.A. Glazier, and F. Graner, *A texture tensor to quantify deformations*, Granular Matter **5**, 64 (2003).

8. M. Asipauskas, M. Aubouy, J. A. Glazier, F. Graner and Y. Jiang, *A texture tensor to quantify deformations: the example of two-dimensional flowing foams*, Granular Matter **5**, 71 (2003).

9. M. S. Alber, M. A. Kiskowski, J. A. Glazier and Y. Jiang, *On Cellular Automaton Approaches to Modeling Biological Cells*, IMA **134**: *Mathematical systems theory in biology, communication, and finance*, Springer-Verleg, New York (2002).

10. F. Graner, Y. Jiang, E. Janiaud, and C. Flament, *Equilibrium states and ground state of 2D fluid foams*, Phys. Rev. E, **6301**, 1402 (2001).

11. Y. Jiang, T. Lookman, A. Saxena, and J. F. Douglas, *Influence of filler particles and cluster geometry on phase-separating polymer blends*, MRS Boston 2000, **661**, pp. kk8.5.1.

12. Y. Jiang, M. Asipauskas, J. A. Glazier, and F. Graner, *Ab Initio derivation of mesoscopic stress and stain in foams*, in *Foams, Emulsions and their Applications*, P. Zitha, J. Banhart and G. Verbist editors (Verlag MIT Publishing, Bremen, Germany, 2000), 297-304.

13. Y. Jiang, E. Janiaud, C. Flament, J. A. Glazier, and F. Graner, *Energy landscape of 2D fluid foams*, in *Foams, Emulsions and their Applications*, P. Zitha, J. Banhart and G. Verbist editors (Verlag MIT Publishing, Bremen, Germany, 2000), 321-327.

14. Y. Jiang, T. Lookman, and A. Saxena, *Phase Separation and Shape Deformation on membranes*, Biophys. J., **78**, 1068 (2000).

15. Y. Jiang, T. Lookman, and A. Saxena, *Phase Separation and Shape Deformation on a Two-Phase Membrane*, Phys. Rev. E Rapid Comm. **61**, R57 (2000).

16. Y. Jiang, P. Swart, A. Saxena, M. Asipauskas, and J. A. Glazier, *Hysteresis and Avalanches in Two Dimensional Foam Rheology Simulations*, Phys. Rev. E **59**, 5819 (1999).

17. F. Elias, C. Flament, J. A. Glazier, F. Graner and Y. Jiang, *Foams Out of Stable Equilibrium: Cell Elongation and Side Swapping*, Phil. Mag. B **79**, 729 (1999).

18. Y. Jiang, H. Levine, and J. A. Glazier, *Possible Collaboration of Differential Adhesion and Chemotaxis Cooperate in Mound Formation of Dictyostelium*, Biophys. J. **75**, 2615 (1998).

19. Y. Jiang and J. A. Glazier, *Foam Drainage: Extended Large-Q Potts Model Simulation and a Mean Field Theory*, Proceedings of MRS Boston 1996, **463**, 307 (1997).

20. Y. Jiang and J. A. Glazier, *Extended Large-Q Potts Model Simulation of Foam Drainage*, Phil. Mag. Lett. **74**, 119 (1996).

21. Y. Jiang, J. C. M. Mombach and J. A. Glazier, *Grain Growth From Homogeneous Initial Conditions: Anomalous Grain Growth and Special Scaling States*, Phys. Rev. E Rapid Comm. **52**, R3333 (1995).

22. H. Weng, D. Wang, Y. Jiang and X. Liu, *Low Energy Positron Beam Studies of Nano-TiN Films*, Mat. Sci. Eng. **B26**, 163 (1994).

23. D. Wang, Y. Jiang, S. Zhang and R. Fang, *The Microstructure of Nano-*SnO_2, Trans. Mat. Res. Soc. Jpn. **16B**, 1563 (1993).

24. D. Wang, H. Chen and Y. Jiang, *X-Ray Diffractions of Nanocrystals*, Trans. Mat. Res. Soc. Jpn. **16B**, 1551 (1993).

25. D. Wang, Y. Jiang, H. Chen, W. Liu and R. Fang, *Monte Carlo Simulation of the Structure of Nanophase Materials*, Trans. Mat. Res. Soc. Jpn. **16A**, 179 (1993).

26. D. Wang, J. Yang, and Y. Jiang, *Infrared Absorption Study of N Ion Implanted Silicon*, Proceedings of MRS Fall meeting (1993).

27. H. Wen, D. Wang, and Y. Jiang, *Slow Positron Annihilation Study of Nano-TiN Films*, Proceedings of MRS Fall meeting (1993).

28. D. Zhang, B. Yang, and Y. Jiang, *Mössbauer Study of the High-Temperature BiPbSrCaCuSnO Superconductor*, Solid State Comm. **83**, 999 (1992).

29. D. Zhang and Y. Jiang, *Application of Mössbauer Effect on Characterization of Nano-Crystalline* SnO_2, Proceedings of Intl. Conf. on the Appl. Mössbauer Effects, Hefei, China (1991).