

CURRICULUM VITAE

MARK O. ROBBINS

**Department of Physics and Astronomy
The Johns Hopkins University
Charles and 34th Streets
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Education:

- 1978-83 University of California, Berkeley
Ph.D., June 1983.
Research Advisor: L. M. Falicov.
- 1977-78 Churchill College, University of Cambridge, England
Certificate of Post-Graduate Study in Natural Science,
November 1978.
- 1973-77 Harvard University, Massachusetts
M.A., June 1977.
B.A., *summa cum laude*, June 1977.

Honors and Awards:

- 2012-13 Simons Fellow in Theoretical Physics.
- 1999 Fellow of American Physical Society.
- 1987 Sloan Foundation Fellow.
- 1986-91 Presidential Young Investigator.
- 1980-81 IBM Predoctoral Fellow.
- 1977-78 Winston Churchill Foundation Fellow.

Employment:

- 2005-6 General Member, Kavli Institute for Theoretical Physics,
University of California, Santa Barbara.
- 2001- Professor, Department of Mechanical Engineering,
The Johns Hopkins University.
- 1992- Professor, Department of Physics and Astronomy,
The Johns Hopkins University.
- 1995-6 Visiting Scientist, National Institute of Standards and Technology.
- 1988-92 Associate Professor, Department of Physics and Astronomy,
The Johns Hopkins University.
- 1986-88 Assistant Professor, Department of Physics and Astronomy,
The Johns Hopkins University.
- 1989 Visiting Associate Professor, Institute for Theoretical Physics,
University of California, Santa Barbara.
- 1986-98 Consultant, Corporate Research Science Laboratory,
Exxon Research and Engineering Company.
- 1983-85 Postdoctoral Fellow, Exxon Research and Engineering Company.

Grants:

2014-18	“Contact, Adhesion and Friction: From Atomic Interactions to Macroscopic Behavior” National Science Foundation	\$520,000
2012-17	“A Collaborative Program for the Multiscale Modeling and Design of Materials for Extreme Dynamic Environments,” (Co-I) Army Research Laboratory	\$39,850,000
2012-13	“Simons Fellow in Theoretical Physics,” The Simons Foundation	\$150,000
2012-12	“2012 Gordon Conference on Tribology - Paths of Dissipation,” (Co-I) National Science Foundation	\$26,000
2012-14	“Collaborative Research: 100G Connectivity for Data-Intensive Computing at JHU,” (Co-I) National Science Foundation	\$961,263
2010-13	“Advanced CyberInfrastructure for High Performance Data Intensive Computing,” (Co-I) National Science Foundation	\$1,337,372
2010-14	“Deformation and Fracture of Disordered Solids: Mechanisms Underlying Macroscopic Behavior,” National Science Foundation	\$580,000
2010-10	“2010 Gordon Conference on Tribology - Paths of Dissipation,” (Co-I) National Science Foundation	\$20,000
2010-10	“2010 Gordon Conference on Tribology - Paths of Dissipation,” (Co-I) Air Force Office of Scientific Research	\$10,000
2009-12	“MRI: Acquisition of 100TF Graphics Processor Laboratory for Multiscale/Multiphysics Modeling,” National Science Foundation	\$381,518
2009-12	“Multiscale Modeling of Stiffness, Friction and Adhesion in Mechanical Contacts,” Air Force Office of Scientific Research	\$569,089
2008-15	“IGERT: Modeling Complex Systems: The Scientific Basis of Coupling Multi-Physics Models at Different Scales,” (Co-I) National Science Foundation	\$3,000,000
2007-12	“NIRT: Interfacial Forces in Active Nanodevices,” National Science Foundation (PI, 3 Co-I’s)	\$1,100,000
2005-10	“Non-Equilibrium Systems: Spreading, Deformation, Adhesion and Friction” National Science Foundation	\$560,000
2003-07	“Acquisition of Instrumentation for a	\$425,000

	Digital Laboratory for Multi-Scale Science,” (Four Co-I’s) National Science Foundation	
2001-05	“Multi-Scale Modeling and Simulation of Adhesion, Nanotribology and Nanofluidics” (PI, 4 Co-I’s) National Science Foundation	\$1,000,000
2001-05	“FeCo Based Meta-Materials for Magnetic Bearing Applications in Jet Engines,” DARPA (One of ten Co-I’s)	\$4,202,586
2000-02	“Polymers and Interfaces” (Computational Materials Science Network), Department of Energy	\$123,800
2000-03	“Non-Equilibrium Systems: Friction, Lubrication and Adhesion,” National Science Foundation	\$390,000
1998-02	“Molecular Level Modeling of Polymer/Substrate Adhesion,” Semiconductor Research Corporation	\$240,000
1996-00	“Dissipation in Non-Equilibrium Processes” National Science Foundation	\$300,000
1994-96	“Dissipative Mechanisms in Friction and Adhesion” Petroleum Research Foundation	\$50,000
1994-96	Creativity Extension for NSF grant below	\$168,000
1992-95	“Non-Equilibrium Phase Transitions” (Supplement) National Science Foundation	\$178,000
1991-94	“Non-Equilibrium Phase Transitions” National Science Foundation	\$228,000
1989-91	“Dynamics of Fluid Interfaces in Porous Media” Petroleum Research Foundation	\$40,000
1987-91	Sloan Foundation Award	\$25,000
1986-91	Presidential Young Investigator Award National Science Foundation	\$312,000
1986-91	Exxon Education Foundation	\$45,000
1988	Exxon Research and Engineering Co.	\$8,000

Service:

Past Chair of Advisory Board for Kavli Institute for Theoretical Physics.

Past Chair of American Physical Society Topical Group on Statistical and Nonlinear Physics.

Member Advisory Board for NSF sponsored Boulder School for Condensed Matter and Materials Physics.

Served on NSF committees reviewing proposed Presidential and National Young Investigators in materials theory.

Served on NSF Panel on Frontiers of Fundamental Tribological Research (2004), and Research Opportunities in Friction (1992).

Workshops Organized:

“Non-equilibrium Pattern Formation in Growth,” Dept. of Physics and Astronomy, Johns Hopkins University, June 15-17, 1988.

“Scaling in Disordered Materials,” Symposium of the Materials Research Society, December 3-7, 1990.

“Collective Dynamics in Disordered Systems,” 1993 Aspen Winter Conference on Condensed Matter Physics, January 3-9, 1993.

“Complex Fluids,” Symposium of the Materials Research Society, November 29 - December 3, 1993.

Focussed session on “Tribology,” March Meeting of the American Physical Society, March 18-22, 1996.

Research program on “Jamming and Rheology: Constrained Dynamics on Microscopic and Macroscopic Scales,” Institute for Theoretical Physics, University of California at Santa Barbara, August 11 - December 19, 1997.

“Tribology on the 300th Anniversary of Amontons’ Law,” Materials Research Society Workshop, San Jose, CA, June 20-22, 1999.

Research program on “Friction Fracture and Earthquake Physics,” Kavli Institute for Theoretical Physics, University of California at Santa Barbara, August 6 - December 16, 2005.

Vice Chair of 2008 Gordon Conference on Tribology, Colby College, July 6-10, 2008.

Chair of 2010 Gordon Conference on Tribology, Colby College, June 27-July 2, 2010.

Research program on “Physical Principles of Multiscale Modeling, Analysis and Simulation in Soft Condensed Matter,” Kavli Institute for Theoretical Physics, University of California, Santa Barbara, April 2 - June 29, 2012.

Theses Supervised:

- Peter A. Thompson, “Dynamics of Fluids Near Solid Interfaces,” September 1990.
- Nicos Martys, “Critical Phenomena in Fluid Invasion of Porous Media,” November 1990.
- Mark J. Stevens, “Why do Like-Charged Macroions Attract and How do Solids Flow?” October 1991.
- Suman Kumar, “The Critical Dynamics of Contact Lines,” jointly supervised with Prof. D. H. Reich, June 1996.
- Christopher S. Nolle, “The Effects of Quenched Disorder on Moving Interfaces,” January 1996.
- Elizabeth D. Smith “Friction of Adsorbed Monolayers,” October 1997.
- Yiyong Zhou “Contact Line Dynamics on Disordered Surfaces,” October 1999.
- Gang He “Simulation studies of the tribological behavior of molecularly thin films,” July 2001.

- Joerg Rottler “Deformation and failure of glassy materials,” January 2003.
- Binqun Luan “Simulations of contact and friction: Connecting atomic and continuum descriptions,” February 2006.
- Robert S. Hoy “Effect of Entanglements on Mechanical Properties of Glassy Polymers,” August 2007.
- Shengfeng Cheng “Contact and capillary forces at the nanometer scale,” August 2010.
- K. Michael Salerno, Jr. “Inertia and the Critical Scaling of Avalanches in Sheared Disordered Solids, September 2013
- Ting Ge, “Entanglements in Large Deformation and Mechanical Failure of Glassy Polymers,” October 2013.

PUBLICATIONS

1. A. Strominger, A. L. Sessoms, E. S. Sadowski, M. Robbins and L. Holcomb, "A Liquid Argon/Iron Hadron Calorimeter," *IEE Trans. Nucl. Sci.* **NS-25**, 354-357 (1978).
2. M. O. Robbins and E. A. Marseglia, "X-ray Studies of the Charge-Density Wave Transitions in TaS₂," *Phil. Mag.* **B42**, 705-715 (1980).
3. M. O. Robbins and L. M. Falicov, "Electronic Theory of Ordering and Segregation in Binary Alloys: Application to Simple Metals," *Phys. Rev.* **B25**, 2343-2357 (1982).
4. L. M. Falicov and M. O. Robbins, "Theory of Ordering and Segregation in Binary Alloys: Application to Alkali and Noble Metals," Conference Proceedings of the NATO Advanced Study Institute on Excitations in Disordered Systems, East Lansing, Michigan, August 23-September 4, 1981. Edited by M. F. Thorpe (Plenum Press, New York, 1982), pp. 613-622.
5. M. O. Robbins and L. M. Falicov, "Electronic Energy and Short-range Order in Binary Alloys," Materials Research Society Proceedings, Boston, Massachusetts, November 1-4, 1982. Edited by L. H. Bennett (Elsevier Science Publishing Company, Inc., New York, 1983), pp. 53-66.
6. B. Koiller, M. O. Robbins, M. Davidovich and C. E. T. Gonçalves da Silva, "Renormalization Group Treatment for the Electronic Spectrum of Partially Ordered One-Dimensional Alloys," *Solid State Commun.* **45**, 955-959, (1983).
7. M. O. Robbins and B. Koiller, "Renormalization Group Methods for the Spectra of Disordered Chains," *Phys. Rev.* **B27**, 7703-7715 (1983).
8. M. O. Robbins and L. M. Falicov, "Electronic Theory of Ordering and Segregation in Transition-Metal Alloys," *Phys. Rev.* **B29**, 1333-1348 (1984).
9. M. O. Robbins, J. P. Stokes, S. Bhattacharya and R. A. Klemm, "Broadband Noise in Orthorhombic TaS₃," Proceedings of the International Conference on Synthetic Metals, Abano Terme, Italy, June 17-22, 1984, *Molecular Crystals and Liquid Crystals* **121**, 63-66 (1985).
10. M. O. Robbins and R. A. Klemm, "Charge Density Wave Conduction of Small Samples," Proceedings of the International Conference on Synthetic Metals, Abano Terme, Italy, June 17-22, 1984, *Molecular Crystals and Liquid Crystals* **121**, 95-98 (1985).
11. R. A. Klemm, M. O. Robbins and J. R. Schrieffer, "The Single Domain Model of Charge-Density Wave Transport," Proceedings of the International Conference on Charge Density Waves in Solids, Budapest, Hungary, September 3-7, 1984. Edited by Gy. Hutiray and J. Solyom (Lecture Notes in Physics, Springer-Verlag, New York, 1985), pp. 178-187.
12. J. P. Stokes, M. O. Robbins, S. Bhattacharya and R. A. Klemm, "Broadband Noise in Orthorhombic TaS₃," Proceedings of the International Conference on Solids, Budapest, Hungary, September 3-7, 1984. Edited by Gy. Hutiray and J. Solyom (Lecture Notes in Physics, Springer-Verlag, New York, 1985), pp. 301-303.
13. S. Bhattacharya, J. P. Stokes, M. O. Robbins and R. A. Klemm, "Origin of Broadband Noise in Charge-Density-Wave Conductors," *Phys. Rev. Lett.* **54**, 2453-2456 (1985).
14. R. J. Hawkins, M. O. Robbins and J. M. Sanchez, "A Microscopic Theory of Binary Alloy Phase Equilibrium," *Solid State Commun.* **55**, 253-256 (1985).

15. M. O. Robbins and B. Koiller, "Localization Properties of Random and Partially Ordered One-Dimensional Systems," *Phys. Rev.* **B32**, 4576-4583 (1985).
16. J. P. Stokes, M. O. Robbins and S. Bhattacharya, "AC Response of Pinned-Charge-Density-Wave Conductors," *Phys. Rev.* **B32**, 6939-6941 (1985).
17. M. O. Robbins, J. P. Stokes and S. Bhattacharya, "Charge-Density-Wave Depinning: A Dynamical Critical Phenomenon?," *Phys. Rev. Lett.* **55**, 2822-2825 (1985).
18. S. A. Safran, M. O. Robbins and S. Garoff, "Tilt and Splay of Surfactants on Surfaces," *Phys. Rev.* **A33**, 2186-2189 (1986).
19. R. J. Hawkins, M. O. Robbins and J. M. Sanchez, "Electronic Structure Calculations of Binary-Alloy Phase Diagrams," *Phys. Rev.* **B33**, 4782 (1986).
20. J. P. Stokes, D. A. Weitz, J. P. Gollub, A. Dougherty, M. O. Robbins, P. M. Chaikin and H. M. Lindsay, "Interfacial Stability of Immiscible Displacement in a Porous Medium," *Phys. Rev. Lett.* **57**, 1718-1721 (1986).
21. K. Kremer, M. O. Robbins and G. S. Grest, "Phase Diagram of Yukawa Systems: Model for Charge-Stabilized Colloids," *Phys. Rev. Lett.* **57**, 2694-2697 (1986).
22. M. O. Robbins and R. A. Klemm, "Charge-Density-Wave Conduction: Dynamics and Finite-Size Effects," *Phys. Rev.* **B34**, 8496-8506 (1986).
23. R. A. Klemm and M. O. Robbins, "Charge-Density-Wave Conduction: Dynamics and Finite-Size Effects," *Physica* **143B**, 76-79 (1986).
24. M. O. Robbins and J. F. Joanny, "Contact Angle Hysteresis on Random Surfaces," *Europhys. Lett.* **3**, 729-735 (1987).
25. K. Kremer, G. S. Grest and M. O. Robbins, "Dynamics of Supercooled Liquids Interacting with a Repulsive Yukawa Potential," *J. Phys. A: Math. Gen.* **20**, L181-187 (1987).
26. M. O. Robbins, K. Kremer, and G. S. Grest, "Phase Diagram and Dynamics of Yukawa Systems," *J. Chem. Phys.* **88**, 3286-3312 (1988).
27. M. O. Robbins, K. Kremer and G. S. Grest, "Phase Diagrams of Charge-Stabilized Colloidal Suspensions," in *Ordering and Organization in Ionic Solutions*, edited by N. Ise and I. Sogami (World Scientific, Singapore, 1988), pp. 607-617.
28. J. P. Stokes, A.P. Kushnick and M. O. Robbins, "Interface Dynamics in Porous Media: A Random Field Description," *Phys. Rev. Lett.* **60**, 1386 (1988).
29. M. Cieplak and M. O. Robbins, "Dynamical Transition in Quasi-static Fluid Invasion in Porous Media," *Phys. Rev. Lett.* **60**, 2042-2045 (1988).
30. N. Martys and M. O. Robbins, "Linear ac Response of a Depinned Charge-Density Wave," *Phys. Rev.* **B38**, 3773 (1988).
31. M. A. Davidovich, B. Koiller, Roberto Osorio and M. O. Robbins, "Electronic Theory of Ordering in $(\text{GaAs})_{1-x}\text{Ge}_{2x}$ Alloys," *Phys. Rev.* **B38**, 10524 (1988).
32. D. Andelman, J.-F. Joanny, and M. O. Robbins, "Complete Wetting on Rough Surfaces: Statics," *Europhys. Lett.* **7**, 731 (1988).

33. B. Koiller, M. A. Davidovich, R. Osorio, and M. O. Robbins, "Electronic Energy and Ordering in $(\text{GaAs})_{1-x}\text{Ge}_{2x}$ Alloys," Proceedings of the 19th International Conference on the Physics of Semiconductors, Warsaw, Poland. Edited by W. Zawadzki (Polish Academy of Science, Warsaw, 1988), pp. 861-4.
34. P. A. Thompson and M. O. Robbins, "Simulations of Contact-Line Motion: Slip and the Dynamic Contact Angle," Phys. Rev. Lett. **63**, 766-769 (1989).
35. D. Andelman, J. F. Joanny and M. O. Robbins, "Wetting of Rough Solid Surfaces by Liquids," Proceedings of NATO ASI on Phase Transitions in Soft Condensed Matter, Geilo, Norway, April 1989.
36. S. Bhattacharya, J. P. Stokes and M. O. Robbins, "Broadband-Noise Spectrum in Sliding-Charge-Density-Wave Conductors," Phys. Rev. B: Rapid Communications **40**, 5826 (1989).
37. B. Koiller and M. O. Robbins, "Elastic Energies and Order in Epitaxial Si-Ge Alloys," Phys. Rev. B: Rapid Communications **40**, 12554 (1989).
38. J. F. Joanny and M. O. Robbins, "Motion of a Contact Line on a Heterogeneous Surface," J. Chem. Phys. **92**, 3206 (1990).
39. M. J. Stevens and M. O. Robbins, "Density Functional Theory of Ionic Screening: When do Like Charges Attract?," Europhys. Lett. **12**, 81-86 (1990).
40. M. Cieplak and M. O. Robbins, "Influence of Contact Angle on Quasi-Static Fluid Invasion," Phys. Rev. **B41**, 11508 (1990).
41. M. O. Robbins and P. A. Thompson, "Molecular Dynamics Simulations of Contact Line Motion," *Macromolecular Liquids*, Materials Research Society Symposia Proceedings Vol. 177, Edited by C. R. Safinya, S. A. Safran and P. A. Pincus, (Materials Research Society, Pittsburgh, 1990) p. 411.
42. M. J. Stevens and M. O. Robbins, "Density Functional Theory of Interactions Between Charged Macroions in Solution," *Macromolecular Liquids*, Materials Research Society Symposia Proceedings Vol. 177, Edited by C. R. Safinya, S. A. Safran and P. A. Pincus, (Materials Research Society, Pittsburgh, 1990) p. 237.
43. P. A. Thompson and M. O. Robbins, "Shear Flow Near Solids: Epitaxial Order and Flow Boundary Conditions," Phys. Rev. **A41**, 6830-6837 (1990).
44. M. O. Robbins, G. S. Grest, and K. Kremer, "Effect of Finite System Size on Thermal Fluctuations: Implications for Melting," Phys. Rev. **B42**, 5579 (1990).
45. J. P. Stokes, M. J. Higgins, A. P. Kushnick, S. Bhattacharya, and M. O. Robbins, "Harmonic Generation As a Probe of Contact Line Dynamics," Phys. Rev. Lett. **65**, 1885 (1990).
46. P. A. Thompson and M. O. Robbins, "Origin of Stick-Slip Motion in Boundary Lubrication," Science **250**, 792-794 (1990).
47. J. Israelachvili, P. McGuiggan, M. Gee, A. Homola, M. O. Robbins, and P. A. Thompson, "Liquid Dynamics in Molecularly Thin Films," J. Phys.: Condens. Matter **2**, SA89 (1990).
48. P. A. Thompson and M. O. Robbins, "To Slip or Not to Slip?," Physics World, November, 1990, p. 35.

49. S. Bhattacharya, J. P. Stokes and M. O. Robbins, "Inductive Anomaly and Noise Spectrum of a Sliding-Charge-Density-Wave Conductor," *Phys. Rev.* **B43**, 1835 (1991).
50. N. Martys, M. Cieplak and M. O. Robbins, "Critical Phenomena in Fluid Invasion of Porous Media," *Phys. Rev. Lett.* **66**, 1058 (1991).
51. M. O. Robbins, D. Andelman, and J. F. Joanny, "Thin Liquid Films on Rough or Heterogeneous Solids," *Phys. Rev.* **A43**, 4344 (1991).
52. M. J. Stevens, M. O. Robbins and J. F. Belak "Shear-Melting of Colloids: A Non-Equilibrium Phase Diagram," *Phys. Rev. Lett.* **66**, 3004 (1991).
53. Hong Ji and M. O. Robbins, "Transition from compact to self-similar growth in disordered systems: fluid invasion and magnetic domain growth," *Phys. Rev.* **A44**, 2538 (1991).
54. M. O. Robbins and P. A. Thompson, "Critical Velocity of Stick-Slip Motion," *Science* **253**, 916 (1991).
55. N. Martys, M. O. Robbins and M. Cieplak, "Scaling relations for interface motion through disordered media: Application to fluid invasion," *Phys. Rev.* **B44**, 12294 (1991).
56. B. Koiller, Hong Ji and M. O. Robbins, "Fluid wetting properties and the invasion of square networks," *Phys. Rev.* **B45**, 7762 (1992).
57. P. A. Thompson, G. S. Grest and M. O. Robbins, "Phase Transitions and Universal Dynamics in Confined Films," *Phys. Rev. Lett.* **68**, 3448 (1992).
58. B. Koiller, Hong Ji and M. O. Robbins, "Effect of Disorder and Lattice Type on Domain-Wall Motion in Two Dimensions," *Phys. Rev.* **B46**, 5258 (1992).
59. M. O. Robbins, M. Cieplak, H. Ji, B. Koiller and N. Martys, "Growth in Systems with Quenched Disorder," in *Growth Patterns in Physical Sciences and Biology*, edited by J. M. Garcia-Ruiz, L. Sander and P. Meakin (Plenum Press, New York, 1993) pp. 65-75.
60. M. Cieplak and M. O. Robbins, "Critical Phenomena in Fluid Invasion: Transitions in Growth Morphology," in *Surface Disorder: Growth, Roughening and Phase Transitions*, Edited by R. Jullien, J. Kertész, P. Meakin and D. E. Wolf (Nova Science Publishers, New York, 1992), pp 185-192.
61. Hong Ji and M. O. Robbins, "Percolative, self-affine and faceted domain growth in random three-dimensional magnets", *Phys. Rev.* **B46**, 14519 (1992).
62. P. A. Thompson, W. B. Brinckerhoff and M. O. Robbins, "Microscopic Studies of Static and Dynamic Contact Angles," *J. Adhesion Science and Technology*, **7**, 535-554 (1993).
63. M. J. Stevens and M. O. Robbins, "Melting of Yukawa Systems: A Test of Phenomenological Melting Criteria," *J. Chem. Phys.* **98**, 2319-2324 (1993).
64. P. A. Thompson, M. O. Robbins and G. S. Grest, "Structure and Dynamics of Confined Films," in *Computations for the Nano-Scale*, edited by P. Blöchl, C. Joachim, and A.J. Fisher, (Kluwer, Dordrecht, 1993), p. 127.
65. P. A. Thompson, M. O. Robbins and G. S. Grest, "Simulations of Lubricant Behavior at the Interface With Bearing Solids," in *Thin Films in Tribology*, edited by D. Dowson, C. M. Taylor, T. H. C. Childs, M. Godet and G. Dalmaz (Elsevier, Amsterdam, 1993), pp. 347-360.

66. M. O. Robbins, P. A. Thompson and G. S. Grest, "Simulations of Lubrication by Nanometer Thick Films," MRS Bulletin **18** (5), 45-49 (1993).
67. C. S. Nolle, B. Koiller, N. Martys and M. O. Robbins, "Morphology and Dynamics of Interfaces in Random Two-Dimensional Media," Phys. Rev. Lett. **71**, 2074 (1993).
68. M. J. Stevens and M. O. Robbins, "Simulations of Shear-Induced Melting and Ordering," Phys. Rev. E**48**, 3778 (1993).
69. C. S. Nolle, B. Koiller, N. Martys and M. O. Robbins, "Effect of quenched disorder on moving interfaces in two dimensions," Physica A **205**, 342-354 (1994).
70. M. Cieplak, E. D. Smith and M. O. Robbins, "Molecular origins of friction: The force on adsorbed layers," Science **265**, 1209 (1994).
71. B. Koiller, M. O. Robbins, Hong Ji and C. S. Nolle, "Morphology and Dynamics of Domain-Wall Motion in Disordered Two-Dimensional Magnets," in *New Trends in Magnetism, Magnetic Materials and their Applications*, J. L. Moran-Lopez and J. M. Sanchez (Eds.) (Plenum, New York, 1994) pp. 75-84.
72. P. A. Thompson, M. O. Robbins and G. S. Grest, "Structure and Shear Response in Nanometer Thick Films," Israel Journal of Chemistry **35**, 93 (1995).
73. S. Kumar, D. H. Reich and M. O. Robbins, "Critical dynamics of contact-line motion," Phys. Rev. E**52**, R5776 (1995).
74. M. J. Stevens, Michael L. Falk and M. O. Robbins, "Interactions between Charged Spherical Macroions," J. Chem. Phys. **104**, 5209 (1996).
75. A. R. C. Baljon and M. O. Robbins, "Energy Dissipation During Rupture of Adhesive Bonds," Science, **271**, 482 (1996).
76. M. O. Robbins and E. D. Smith, "Connecting Molecular-Scale and Macroscopic Tribology," Langmuir **12**, 4543-47 (1996).
77. S. Kumar, M. O. Robbins, and D. H. Reich, "An Experimental Study of the Dynamics of Contact Lines," in *Disordered Materials and Interfaces*, Materials Research Society Symposia Proceedings Vol. 407, Edited by H. Z. Cummins, D. J. Durian, D. L. Johnson and H. E. Stanley, (MRS, Pittsburgh, 1996), pp. XX-XX.
78. E. D. Smith, M. O. Robbins and M. Cieplak, "The Friction on Adsorbed Monolayers," Phys. Rev. B**54**, 8252 (1996).
79. A. R. C. Baljon and M. O. Robbins, "Stick-Slip Motion, Transient Behavior, and Memory in Confined Films," in *Micro/Nanotribology and its Applications*, Edited by B. Bhushan (Kluwer, Amsterdam, 1997) pp. 533-553.
80. A. R. C. Baljon and M. O. Robbins, "Adhesion and Friction of Thin Films," in special issue on "Theory and Simulation of Polymers at Interfaces", Materials Research Society Bulletin, **22** (1), 22-26 (1997).
81. A. R. C. Baljon and M. O. Robbins, "A Molecular View of Bond Rupture," Theoretical and Computational Polymer Science **9**, 35-40 (1999).
82. D. Gersappe and M. O. Robbins, "Where do Polymer Adhesives Fail?" Europhys. Lett. **48**(2), 150-155 (1999).

83. M. O. Robbins and J. Krim, "Energy Dissipation in Interfacial Friction," *Materials Research Society Bulletin*, June 1998, **23(6)**, 23-26 (1998).
84. M. O. Robbins and A. R. C. Baljon, "Response of Thin Oligomer Films to Steady and Transient Shear," in *Microstructure and Microtribology of Polymer Surfaces*, ACS Symposium Series vol. 741, Edited by V. V. Tsukruk and K. J. Wahl, (American Chemical Society, Washington DC, 1999), pp. 91-115.
85. G. He, M. H. Müser and M. O. Robbins, "Adsorbed Layers and the Origin of Static Friction," *Science* **284**, 1650-1652 (1999).
86. O. Vafek and M. O. Robbins, "Molecular Dynamics Study of the Stress Singularity at a Corner," *Phys. Rev. B* **60**, 12002-12006 (1999).
87. M. H. Müser and M. O. Robbins, "Conditions for static friction between flat, crystalline surfaces," *Phys. Rev. B*, **61**, 2335-2342 (2000).
88. M. O. Robbins, "Jamming, Friction and Unsteady Rheology," in *Jamming and Rheology: Constrained dynamics on microscopic and macroscopic scales*, Edited by A. J. Liu and S. R. Nagel (Taylor and Francis, London, 2000) and cond-mat/9912337.
89. M. O. Robbins and M. H. Müser, "Computer Simulations of Friction, Lubrication and Wear," in *Modern Tribology Handbook*, Edited by B. Bhushan (CRC Press, Boca Raton, 2001), pp. 717-765 and cond-mat/0001056.
90. B. Koiller and M. O. Robbins, "Morphology transitions in three-dimensional domain growth with Gaussian random fields," *Phys. Rev. B*, **62**, 5771-5778 (2000) and cond-mat/004183.
91. M. H. Müser, L. Wenning, and M. O. Robbins, "Simple Microscopic Theory of Amontons' Laws for Static Friction," *Phys. Rev. Lett.* **86**, 1295-8 (2001) and cond-mat/0004494.
92. G. He and M. O. Robbins, "Scale effects and the molecular origins of tribological behavior," in "Nanotribology: Critical Assessment and Research Needs," Edited by S. M. Hsu and Z. C. Ying (Kluwer, Dordrecht, 2003), pp. 29-44.
93. A. Baljon and M. O. Robbins, "Simulations of Crazing in Polymer Glasses: Effect of Chain Length and Surface Tension," *Macromolecules* **34**, 4200-4209 (2001).
94. G. He and M. O. Robbins, "Simulations of the kinetic friction due to adsorbed surface layers," *Tribology Letters* **10**, 7-14 (2001) and cond-mat/0008196.
95. S. Barsky and M. O. Robbins, "Molecular dynamics study of slip at the interface between immiscible polymers," *Phys. Rev. E* **63** 021801 (2001).
96. G. He and M. O. Robbins, "Simulations of the Static Friction Due to Adsorbed Molecules," *Phys. Rev. B* **64**, 035413 (2001).
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165. T. Ge, M. O. Robbins, D. Perahia and G. S. Grest, “Healing of polymer interfaces; Interfacial dynamics, entanglements and strength,” *Phys. Rev. E* **90**, 012602 (2014).
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Books and Proceedings:

"Scaling in Disordered Materials: Fractal Structure and Dynamics," edited by James P. Stokes, M. O. Robbins and Tom A. Witten, Proceedings of Symposium W, 1990 Fall Meeting of the Materials Research Society (Materials Research Society, Pittsburgh, 1990).

"Tribology on the 300th Anniversary of Amontons' Law," edited by M. D. Drory and M. O. Robbins, Proceedings of the 1999 MRS Workshop Series, June 20-22, 1999, San Jose, CA (Materials Research Society, Pittsburgh, 1999).

Invited Talks:

“Electronic Energy and Short-range Order in Binary Alloys,” Meeting of the Materials Research Society in Boston, Massachusetts, November 1 – 4, 1982.

“Ordering and Segregation in Intermetallic Alloys,” March Meeting of the American Physical Society in Los Angeles, California, March 21 – 25, 1983.

“Disorder and the Dynamics of Charge Density Wave Conductors,” Synmetals III Workshop at Los Alamos National Laboratory, New Mexico, April 9 – 12, 1985.

“Phase Diagram of Yukawa Systems: Model for Charge Stabilized Colloids,” March Meeting of the American Physical Society in New York, March 16 – 20, 1987.

“Pinning and Noise in the Motion of an Interface in Random Porous Media,” Society of Petroleum Engineers Forum on Wettability and Relative Permeability in Durango, Colorado, July 26 – 31, 1987.

“Molecular Dynamics Simulations of Contact Line Motion,” Meeting of the Materials Research Society in Boston, Massachusetts, November 27 – December 2, 1989.

“Critical Phenomena in Fluid Invasion of Porous Media,” Random Processes Workshop, in Barbados, W.I., December 18 – 23, 1990.

“Origin of Stick-Slip Motion in Boundary Lubrication,” Meeting of the Materials Research Society in Anaheim, California, April 28 – May 3, 1991.

“Shear-melting in Colloidal Crystals and Boundary Lubrication,” European Research Conference on Colloids and Interfaces, Obernai, France, September 1 – 5, 1991.

“Critical transitions in interface morphology and dynamics,” NATO Advanced Research Workshop on “Growth Patterns in Physical Sciences and Biology,” Granada, Spain, 7 – 11 October 1991.

“Shear-Melting in Colloidal Crystals,” Meeting of the Materials Research Society in Boston, Massachusetts, December 2 – 6, 1991.

“Simulation Studies of Shear-Induced Phase Transitions in Colloids,” March Meeting of the American Physical Society in Indianapolis, March 16 – 20, 1992.

“Simulations of Contact-Line Motion: Slip and the Dynamic Contact Angle,” Symposium on Contact Angle, Wettability and Adhesion, American Chemical Society Meeting, San Francisco, California, April 6 – 10, 1992.

“Altered Equilibrium and Dynamic Behavior in Confined Fluid Films,” Washington Meeting of the American Physical Society, April 20 – 24, 1992.

“Effects of Wettability on Fluid Invasion,” 66th Colloid and Surface Science Symposium, Morgantown, West Virginia, June 14 – 17, 1992.

“Friction and Phase-Transitions in Thin Films,” Institute for Theoretical Physics, University of California, Santa Barbara, July 27 – 31, 1992.

“Transitions in Fluid Invasion: Wettability and Dynamic Scaling,” European Research Conference on “Capillarity and Wetting, Dynamical Phenomena,” Arnhem, Netherlands, September 2 – 6, 1992.

“Simulations of Lubricant Behavior at the Interface with Bearing Solids,” 19th Leeds-Lyon Symposium on Tribology, “Thin Films in Tribology,” September 8 – 11, 1992.

“Friction in Molecularly Thin Films,” American Vacuum Society Meeting, Chicago, Illinois, November 9 – 13, 1992.

“Simulations of Friction at the Molecular Scale”, American Chemical Society Meeting, Denver, Colorado, March 29 – April 2, 1993.

“Critical Phenomena in Interface Motion Through Random Media” Condensed Matter Theory Gordon Conference on “Aspects of Disorder in Condensed Matter Physics”, June 27 – July 2, 1993.

“Critical Phenomena in Interface Motion Through Random Media,” Taipei International Symposium on Statistical Physics II, “Order-disorder Transitions and Criticality,” Taipei, Taiwan, August 1 – 7, 1993.

“Morphology and Dynamics of Interfaces in Disordered Media”, International Conference on the Complex Geometry in Nature, “Fractals in Natural Sciences,” Budapest, Hungary, August 30 – September 2, 1993.

“Morphology and Dynamics of Interfaces in Disordered Media,” Meeting of the Materials Research Society in Boston, Massachusetts, November 29 – December 3, 1993.

“Overview of Simulations of Confined Liquids,” Meeting on “Molecular Aspects of Confined Liquids” in Les Houches, France, February 28 – March 4, 1994.

“Dissipation in Friction and Adhesion,” Meeting on “Molecular Aspects of Confined Liquids” in Les Houches, France, February 28 – March 4, 1994.

“Contact Line Dynamics,” Interfaces Meeting, Univ. of Chicago, April 28 – 30, 1994.

“Atomic Theories of Friction”, Gordon Research Conference on Tribology 1994, Plymouth, New Hampshire, July 3 – 8, 1994.

“Friction and Adhesion in Thin Films,” Gordon Research Conference on Chemistry at Interfaces, July 24-29, 1994.

“Simulations of Thin Film Adhesion,” Interdisciplinary Workshop on Polymer Surfaces and Interfaces, Brewster, MA, October 2-5, 1994.

“Probing the Molecular Origins of Friction with Computer Simulations,” March Meeting of the American Physical Society, March 20-25, 1995.

“Simulation of Static and Dynamic Contact Angles,” Workshop on “Computational Methods in Materials Science and Engineering”, International Center for Theoretical Physics, June 12-23, 1995.

“Friction and Adhesion in Thin Films,” Workshop on “Computational Methods in Materials Science and Engineering”, International Center for Theoretical Physics, June 12-23, 1995.

“Probing the Molecular Origins of Friction with Computer Simulations,” Workshop on “Sliding Friction”, NATO ARW International Center for Theoretical Physics, June 20-23, 1995.

“Properties of Confined Films,” Tribology Workshop, Bar Harbor, Maine, August 28 - Sept. 1, 1995.

“Molecular Underpinnings of Macroscopic Phenomena,” Workshop on “Simulation of Interfacial Phenomena,” Lehigh University, Bethlehem, Pennsylvania, March 12, 1996.

“Molecular Mechanisms of Rupture of Thin Adhesive Bonds,” European Research Conference on “Solid/Fluid Interfaces: Wetting and Capillarity,” Crete, Greece, March 22-27, 1996.

“Molecular Origins of Static and Kinetic Friction,” NATO ASI Course on Micro/Nanotribology and its Applications, Sessimbre, Portugal, June 17-28, 1996.

“Friction and Adhesion in Thin Films,” NATO ASI Course on Micro/Nanotribology and its Applications, Sessimbre, Portugal, June 17-28, 1996.

“Simulations of Frictional Dissipation at the Atomic Level,” 1996 Gordon Research Conference on Tribology, Holderness School, Plymouth, New Hampshire, June 30-July 5, 1996.

“Molecular Mechanisms of Adhesion,” Workshop on Fluctuation Mediated Interactions in Soft Matter, Centre de Physique Des Houches, Les Houches, France, October 14-18, 1996.

“Where Does Friction Come From?,” Japan Science and Technology Corporation Forum for Multidisciplinary Research “Friction-Basics of Tribology,” Shonan Village Center, Japan, February 6-8, 1997.

“Where Does Friction Come From?,” Special Topics in Statistical Mechanics: A Symposium in Honor of Raymond D. Mountain,” National Institute of Standards and Technology, April 10-11, 1997.

“Molecular Simulations of the Rupture of Polymer/Solid Bonds,” Joint SRC/NIST/SEMATECH Workshop: “Interfaces & Adhesion in Electronic Packaging and Assembly,” National Institute of Standards and Technology, April 14, 1997.

“Rupture of Thin Adhesive Bonds,” 71st Colloid and Surface Science Symposium, University of Delaware, Newark, June 29-July 2, 1997.

“Where Does Friction Come From?,” Gordon Research Conference on “Condensed Matter Physics,” Tilton School, July 6-11, 1997.

“Rupture of Thin Adhesive Bonds” Gordon Research Conference on “Solid State Studies in Ceramics,” Kimball Union Academy, August 3-8, 1997.

“Unsteady Rheology,” Conference on “Jamming and Rheology: Constrained Dynamics on Microscopic and Macroscopic Scales” at the Institute for Theoretical Physics, October 12-16, 1997.

“Rupture of Thin Adhesive Bonds,” Meeting of the Materials Research Society in Boston, Massachusetts, December 1-4, 1997.

“Connecting Molecular and Macroscopic Tribology,” Symposium on Microstructure and Tribology of Polymer Surfaces, American Chemical Society National Meeting, Boston, August 23 - 27, 1998.

“Location and Mechanism of Failure in Polymer Adhesive Films,” Symposium on Physical Properties of Polymeric Materials and Molecular Thin Films, American Chemical Society National Meeting, Boston, August 23 - 27, 1998.

“Molecular Origins of Friction,” Workshop on Opportunities in Materials Theory, National Science Foundation, Arlington, VA, October 8-9, 1998.

“Molecular Simulations of the Rupture of Polymer/Substrate Bonds,” The Adhesion Society’s 22nd Annual Meeting, Panama City Beach, FL, February 21-24, 1999.

“Adsorbed monolayers and the origin of static friction,” Adriatico Research Conference on Wetting, Trieste, Italy, June 15-18, 1999.

“Molecular origins of friction,” Nanotribology Workshop, National Institute of Standards and Technology, March 13-15, 2000.

“Adsorbed layers and the origin of Amontons’ laws,” March Meeting of the American Physical Society, Minneapolis, March 20-24, 2000.

“Where does friction come from?” L. M. Falicov Memorial Symposium in Condensed Matter Physics, March 25, 2000.

“Molecular simulation studies of adhesive failure” XXIII Encontro Nacional de Física da Matéria Condensada, Sao Lourenco, Brazil, May 9-13, 2000.

“Simulations of contact line motion on disordered surfaces,” Second International Symposium on Contact Angle, Wettability and Adhesion, Newark, June 19-12, 2000.

“What can molecular simulations tell us about friction?” 2000 Gordon Research Conference on Tribology, Holderness School, Plymouth, New Hampshire, July 2-July 7, 2000.

“Modeling and Simulation of the Failure and Toughness of Polymer/Substrate Bonds,” Topical Research Conference on Reliability, Stanford University, Oct. 30 - Nov. 1, 2000.

“Computer simulations of fluid flow near interfaces,” Pan-American Advanced Studies Institute on Computational Materials Science, Santiago, Chile, Jan 8-19, 2001.

“Where Does Friction Come From?” Pan-American Advanced Studies Institute on Computational Materials Science, Santiago, Chile, Jan 8-19, 2001.

“From Atomic Simulations to the Toughness of Polymers,” Pan-American Advanced Studies Institute on Computational Materials Science, Santiago, Chile, Jan 8-19, 2001.

“Craze Formation and the Macroscopic Toughness of Polymers,” 21st CNSL Annual Conference: Principles of Soft Matter, Sante Fe, New Mexico, May 21-25, 2001.

Lectures on flow and friction at Boulder School for Condensed Matter and Materials Physics: Nonequilibrium Statistical Physics, Boulder, Colorado, July 2-27, 2001.

“Where does friction come from?” 21st IUPAP International Conference on Statistical Physics, STATPHYS 21, Cancun, Mexico, July 15-21, 2001.

“Modeling and Simulation of the Failure and Toughness of Polymer/Substrate Bonds,” 2nd Annual Multiscale Modeling- Bridging the Gap Between Atomistic and Meso Scales, Boston, Mass., August 13-14, 2001.

“Adsorbed Layers and the Origin of Amonton’s Friction Laws,” 2nd Annual Multiscale Modeling- Bridging the Gap Between Atomistic and Meso Scales, Boston, Mass., August 13-14, 2001.

“Static and Kinetic Friction from Adsorbed Layers: Does Dirt Explain Macroscopic Friction Laws?” Workshop on “Simulation and theory of solid friction: From atomic shear forces to macroscopic tribology,” CECAM, Lyon, France, August 27-30, 2001.

“Cracks and Crazes: From Molecular Simulations to the Macroscopic Toughness of Polymers,” Mardi Gras Conference on “Nanotechnology at the Interface of Information Technology,” February 7-9, 2002, Embassy Suites Hotel, Baton Rouge, Louisiana.

“Cracks and Crazes: From Molecular Simulations to the Macroscopic Toughness of Polymers,” March Meeting of the American Physical Society, March 18-22, 2002.

“The Molecular Origins of Friction,” Computational Nanotechnology: Industrial Relevance and Applications, Washington, DC, May 21, 2002.

“Yielding and crazing in glassy polymers,” Gordon Conference on Complex Fluids, Oxford, United Kingdom, June 30-July 5, 2002.

“Cracks and Crazes: From Molecular Simulations to the Macroscopic Toughness of Polymers,” Gordon Conference on the Science of Adhesion, Tilton School, New Hampshire, August 11-16, 2002.

“Cracks and Crazes: Connecting molecular simulations to the macroscopic fracture energy of glassy polymers,” 2003 Joint Mathematics Meeting, Baltimore, MD, January 13-17, 2003.

“From Atomic Interactions to Macroscopic Adhesion,” 26th Annual Meeting of The Adhesion Society, Myrtle Beach, SC, February 23 – 26, 2003.

“Computer Simulation in Tribology,” Plenary Talk at 14th International Conference on Wear of Materials, Washington DC, March 30 – April 3, 2003.

“Multiscale Modeling,” Federal Highway Administration on Nanoscale Research and Development, April 16-17, 2003.

“Cracks and Crazes: From Atomic Interactions to Macroscopic Adhesion,” Understanding Complex Systems, University of Illinois Urbana-Champaign, May 20-21, 2003.

“Cracks and Crazes: From Atomic Interactions to Macroscopic Adhesion,” SHARCNET Conference on “Computer Simulations of Soft and Nano/Meso Scale Materials,” The University of Western Ontario, London, Ontario, Canada, August 24-26, 2003.

“Flow at Interfaces: Boundary Conditions and Multiscale Approaches,” CSCAMM Workshop on “Non-equilibrium Interface Dynamics: Theory and Simulation from Atomistic to Continuum Scales”, University of Maryland, October 27-31, 2003.

“Dynamics of Friction from Confined Films: Effects of Elasticity and Roughness,” Fall Meeting of the Materials Research Society, Boston, MA, December 1-5, 2003.

“Cracks and Crazes: From Atomic Interactions to Macroscopic Adhesion,” American Chemical Society Molecular Modeling Workshop, Hilton Head Island, South Carolina, March 17-20, 2004.

“Strategies for multiscale modeling of flow, friction and fracture,” National Science Foundation/European Commission Workshop: Methods in Computational Materials Science, San Francisco, CA, April 15-16, 2004.

“Cracks and Crazes: From atomic interactions to macroscopic adhesion,” Molecular Modeling of Polymers Workshop, Dept. Polymer Science and Engineering, University of Massachusetts, Amherst, May 12, 2004.

“Cracks and Crazes: From atomic interactions to macroscopic Adhesion,” 3rd International Conference on Computational Modeling and Simulation of Materials, Acireale, Sicily, Italy, May 30 - June 4, 2004.

“Deformation of glasses: Bulk rheology and the molecular origins of friction,” Plenary Talk, XIX Sitges Conference “Jamming, Yielding, and Irreversible Deformation in Condensed Matter,” Sitges, Barcelona, Spain, June 14-18, 2004.

“Deformation of glasses: Bulk rheology and the molecular origins of friction,” Conference on Computational Physics 2004, Genoa, Italy, Sept. 1-4, 2004.

“From atomic simulations to macroscopic models of contact mechanics and friction,” Plenary Talk, NanoSikkim II: Friction and Biotribology, Pelling, Sikkim, India, November 8-12, 2004.

“Contact and Friction between Rough Surfaces at the Nanometer Scale,” Fall Meeting of the Materials Research Society, Boston, Nov. 29 – Dec. 3, 2004.

“Simulations of the Effect of Random Roughness on Contact and Friction,” Adhesion Society Meeting, February 13-16, 2005.

“Deformation and Contact between Self-Affine Surfaces,” March Meeting of the American Physical Society, Los Angeles, March 21-25, 2005.

“A hybrid atomistic/continuum method applied to fluid flow and solid contact,” Spring Meeting of the Materials Research Society, San Francisco, March 28– April 1, 2005.

“From atomic simulations to macroscopic friction,” Keynote Speaker of The International Tribology Conference, Kobe 2005, May 29-June 2, 2005, Kobe, Japan.

“Friction Mechanisms: From Atomistic to Macroscopic Scales,” Kavli Institute for Theoretical Physics Conference on Friction, Fracture and Earthquake Physics, Aug. 15-19, 2005.

“Effect of Atomic-Scale Surface Roughness on Friction,” World Tribology Conference, Washington, DC, Sept. 12-16, 2005.

“Flow boundary conditions for fluid mixtures at solid walls and moving contact lines,” 58th Annual Meeting of the Division of Fluid Dynamics, Chicago, IL, November 20-22, 2005.

“Molecular Simulations of the Fracture Energy and Dynamics of Glassy Polymers,” 29th Annual Meeting of the Adhesion Society, Jacksonville, FL, Feb. 19-22, 2006.

“Connecting the Motion of Atoms to Macroscopic Behavior,” Computer Science Research Institute workshop on Atomistic-to-Continuum Coupling Methods, March 20-21, 2006.

“Contact, adhesion and friction between rough surfaces: From atomic to macroscopic scales,” International Workshop: Bridging Nanoscale Forces and Interfacial Phenomena to the Macroscopic World, Cancun, Mexico, May 7-12, 2006.

“Statistics of mechanical contact and fracture surfaces,” Statistical Physics in Mechanics, Grasse, France, June 11-23, 2006.

“Effects of Multiscale Roughness on Contact Mechanics and Friction,” The 2006 Gordon Research Conference on Tribology, Colby College, June 18-23, 2006.

Lectures on “Simulation Methods: Multiscale Modeling” at 2006 Boulder Summer School for Condensed Matter and Materials Physics, “Physics of Soft Matter: Complex Fluids and Biological Materials” June 26-July 21, 2006

“Breakdown of Continuum Contact Mechanics at Small Dimensions,” The 2006 Science of Adhesion Gordon Research Conference, Tilton School, August 6-11, 2006.

“Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Keynote Lecture, 33rd Leeds-Lyon Symposium on Tribology, Leeds, England, September 12-15, 2006.

“Multiscale Modeling,” Computational Science Meeting, Princeton University, October 14-15, 2006.

“Contact and Friction: Connecting Atomic Interactions to Macroscopic Behavior,” NSF-Sandia Joints Modelling Workshop, Arlington, VA, October 16-18, 2006.

“Contact And Friction: Connecting Atomic Dynamics To Macroscopic Behaviour,” International Conference on Industrial Tribology, Indian Institute of Science, Bangalore, November 30 - December 2, 2006.

“Yield, Aging, Strain Hardening and Brittle Fracture in Glasses,” Conference on Flow in Glassy Systems, Les Houches, France, Feb. 5-9, 2007.

“Evolution of Stress and Entanglements During Deformation of Glassy Polymers,” March Meeting of the American Physical Society, Denver, CO, March 5-9, 2007.

“Identifying the limitations of continuum mechanics in describing nanoscale contacts,” Spring Meeting of the Materials Research Society, San Francisco, April 9-13, 2007.

“Coupling Atomistic and Continuum Descriptions in Multi-scale Modeling,” DOE Multiscale Mathematics and High Performance Computing Workshop, Corvallis, OR, June 29 – July 3, 2007.

“Connecting the Motion of Atoms to Macroscopic Flow and Friction,” Keynote Lecture at conference on “Challenges in Computer Simulation: Bridging Length and Time Scales,” Singapore, July 23-25, 2007.

“Cracks and Crazes: From Atomic Interactions to Macroscopic Fracture Energies,” Invited Lecture at conference on “Challenges in Computer Simulation: Bridging Length and Time Scales,” Singapore, July 23-25, 2007.

“Multiscale Methods for Connecting the Motion of Atoms to Macroscopic Flow and Friction,” Fourth International Workshop on Meshfree Methods for Partial Differential Equations, Bonn, Germany, Sept. 17-20, 2007.

“Effects of Roughness, Chemical Disorder and Plastic Deformation on Friction at the Nanoscale,” Spring meeting of the Materials Research Society, San Francisco, March 26, 2008.

“Connecting atomic dynamics to macroscopic flow: When does the discreteness of fluids matter?” Keynote Talk, Joint Symposium of Center for Environmental and Applied Fluid Dynamics and Burgers Program, University of Maryland, May 2, 2008.

“Multiscale Simulations of Flow and Friction Using Hybrid Atomistic/Continuum Methods,” 2008 SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 11-14, 2008

“Multiscale Simulations of Flow, Fracture and Friction,” International Symposium on Multiscale Simulations of Biological and Soft Materials, Tokyo, Japan, Jun 18-20, 2008.

“Moving Contact Lines: Can the Interfacial Width Remove the Stress Singularity,” Sixth International Symposium on Contact Angle, Wettability and Adhesion, University of Maine, July 14-16, 2008

Lectures on Friction at Cargese Workshop on “Dynamics in Soft Matter,” Cargese, Corsica, July 28 to Aug. 8, 2008.

“Deformation in Disordered solids: Correlations in displacement derivatives and avalanche distributions,” Multiscale Materials Modeling, Tallahassee, FL October 27-31, 2008.

“Mapping Molecular Dynamics to Mesoscopic Models: Challenges at Interfaces,” Meeting on Development and Analysis of Multiscale Methods, University of Minnesota, Nov. 3-7, 2008.

“Capillary adhesion from atomically thin films,” American Chemical Society National Meeting, March 23-27, 2009.

“Following Entanglement Networks During Deformation and Yield of Glassy Polymers,” 14th International Conference on Deformation, Yield and Fracture of Polymers, Rol Duc Abbey, Kerkrade, The Netherlands, April 6-9, 2009.

“Capillary adhesion and electrowetting at atomic scales: Testing the limits of continuum theories,” 18th International Conference on the Discrete Simulation of Fluid Dynamics, Peking University, Beijing, China, July 6-10, 2009.

“Connecting the Motion of Atoms to Macroscopic Flow, Fracture and Friction,” International Symposium on the Multiscale Modeling and Simulation of Materials-2009, Tsinghua University, Beijing, July 5-7, 2009.

“Friction in Multi-Asperity Contacts and ‘Earthquakes’ in Sheared Solids,” International School on Complexity “Grains, Friction, and Faults,” Erice, Sicily, Italy, July 20-25, 2009.

“Using Simulations to Probe the Atomic Origins of Macroscopic Friction,” Plenary Talk, World Tribology Congress 2009, Kyoto, Japan, September 6-11, 2009.

“Precursor Events and the Onset of Frictional Sliding,” Invited Talk, World Tribology Congress 2009, Kyoto, Japan, September 6-11, 2009.

“Energy Dissipation and the Atomic Origins of Kinetic Friction,” Focus Workshop on “Energy Dissipation in Nanocontacts and Molecular Bonds,” Dresden, Germany, September 28 - October 1, 2009.

“Following Entanglement Networks during Deformation and Yield of Glassy Polymers,” Workshop on Multiple Length Scales in Polymers and Complex Fluids, Santa Fe, NM, October 18-21, 2009

“Power Law Correlations and Avalanche Distributions in Quasistatic Shear,” Mid-Atlantic Soft-Matter Workshop, Johns Hopkins University, November 20, 2009.

“Power Law Correlations and Avalanche Distributions in Quasistatic Shear,” Workshop on Physics of Amorphous Solids: Mechanical Properties and Plasticity, Les Houches, France, March 14-19, 2010.

“Connecting atomistic and continuum models of contact area and stick-slip friction in single and multi-asperity contacts,” CECAM Workshop: Stick-slip dynamics, from nano to geophysical scales, Lausanne, Switzerland, May 3-5, 2010.

“Contact and Friction of Nano-Asperities,” STLE Annual Meeting, Las Vegas, May 16-20, 2010.

“Coupling Atomistic and Continuum Descriptions in Multi-scale Modeling,” UCSB-IMMS Workshop on Multiscale Modeling and Coarse-Graining, Santa Barbara, CA, June 4, 2010

“Power Law Correlations and Avalanche Distributions in Quasistatic Shear of Amorphous Systems,” Conference on “Emerging Concepts in Glass Physics,” Kavli Institute for Theoretical Physics June 21-25, 2010.

“Connecting Atomistic and Continuum Models of Contact Area, Stiffness and Friction in Single and Multi-Asperity Contacts,” MMM2010, Freiburg, Germany, October 7-10, 2010.

“Strain Hardening and Crazing in Amorphous Polymers: Effects of Entanglements and Molecular Orientation,” Multi-scale Dynamics of Structured Polymeric Materials, ESPCI-Michelin Workshop, Paris, Dec. 6-7, 2010.

“Entanglements and the Mechanical Properties of Glassy Polymers,” March Meeting of the American Physical Society, Dallas, TX, March 22, 2011.

“Effect of Inertia on Avalanche Distributions in Sheared Amorphous Solids,” Plenary talk, Workshop on Large Fluctuations and Collective Phenomena in Disordered Materials, Univ. of Illinois, Urbana Champaign May 16-19, 2011.

“Friction Forces-From Atomic to Macroscopic Scales,” Encontro de Fisica 2011, Sociedade Brasileira de Fisica, Foz do Iguacu, June 5-10, 2011.

“Effect of Inertia on Avalanche Distributions in Sheared Amorphous Solids,” CECAM Workshop on “MultiScale Modelling of Amorphous Materials,” Dublin, Ireland July 4-6, 2011.

“Exploring the Atomic Underpinnings of Macroscopic Friction,” Keynote Lecture at Joint ICTP-FANAS Conference on Trends in Nanotribology 12 - 16 September 2011, Trieste, Italy.

“Scaling of Area, Stiffness and Friction for Multi-Asperity Contacts,” Keynote Lecture, International Tribology Conference, Hiroshima, Japan, Oct. 30 - Nov. 3, 2011.

“Capillary Phenomena at Nanoscales: Electrowetting and Capillary Adhesion - When do discrete molecules matter?” Annual Meeting of Division of Fluid Dynamics of American Physical Society, Baltimore, MD, Nov. 22, 2011.

“Nanomechanical Properties of Amorphous Polymers,” Fall Meeting of Materials Research Society, Boston, Nov. 28 - Dec. 2, 2011.

“Effect of Inertia on Avalanches in Sheared Glasses,” Les Houches, Materials Deformation 2012, France, Jan. 22-27, 2012.

“Concurrent Modeling of Fluid Flow and Solid Contact,” Workshop on “Averaging Methods for Multiscale Phenomena in Engineering Materials,” Carnegie Mellon University, Pittsburgh, April 2-4, 2012.

“From Atomistic Simulations to Macroscopic Interfacial Response,” Physical Principles of Multiscale Modeling, Kavli Institute for Theoretical Physics, UC Santa Barbara, May 3, 2012.

“Area, Stiffness, Friction, and Adhesion in Multi-Asperity and Atomic Scale Contacts,” American Chemical Society, Philadelphia, Pennsylvania, 8/21/2012.

“Mechanical Properties of Interfaces at Atomic Scales,” CINT User Conference, Sandia, Albuquerque, New Mexico, 9/20/2012.

“Area, Stiffness, Friction, and Adhesion of Contacts Between Rough Surfaces,” American Vacuum Society, Tampa, Florida, 10/29/2012.

“Effect of Molecular Orientation and Entanglements on Mechanical Properties of Amorphous Polymers,” Materials Research Society, Boston, Massachusetts 11/26/2012.

“Concurrent atomistic/continuum modeling of fluids: Transport of solvent, heat and ions,” NIC workshop on “Hybrid Particle-Continuum Methods in Computational Materials Physics (HYBRID2013),” Jülich Supercomputing Centre, Germany, March 4-7, 2013.

“Modeling plastic flow at interfaces and in glassy polymers,” 2013 SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, June 9-12, 2013.

“Coarse-graining for nonequilibrium simulations: Electroosmosis and yield,” 246th ACS Na-

tional Meeting & Exposition, Indianapolis, Indiana, September 8-12, 2013.

“Contact and Adhesion of Rough Adhesive Surfaces,” Conference on Friction and Energy Dissipation in Man-Made and Biological Systems, Trieste, Italy, November 5-8, 2013.

“Contact and Adhesion of Rough Surfaces,” International Nanotribology Foundation Workshop on Friction and Wear at the Nanoscale, Kerala, India, January 6-10, 2014

“Modeling Mechanical Properties of Glassy Polymers,” DPOLY Short Course on Multiscale Computational Approach to Studies of Polymers, Denver, CO, March 2, 2014.

“Welding and Healing of Polymer Interfaces: Connecting Structure, Dynamics and Strength,” March Meeting of the American Physical Society, Denver, CO, March 3-7, 2014.

“Contact and Friction of Rough Adhesive Surfaces,” Spring Meeting of the German Physical Society (DPG), Dresden, Germany, March 30 - April 4, 2014.

“Contact and Friction of Rough Adhesive Surfaces,” International Conference on Metallurgical Coatings and Thin Films, San Diego, CA, April 27 - May 2, 2014.

“Contact Mechanics with Adhesion,” Gordon Research Conference on Tribology, July 20 - 25, 2014.

“Mechanical Properties of Glassy Polymers from Coarse-Grained Simulations,” Workshop on Coarse-Grained Modeling of Polymers and Soft Materials for the Materials Genome Initiative, National Institute of Standards and Technology, Gaithersburg, MD, August 6 - 7, 2014.

“Welding and Healing of Polymer Interfaces: Strength from Entanglements,” XXVI IUPAP Conference on Computational Physics, CCP2014, August 11-14, Boston, MA.

“Contact and Adhesion of Rough Adhesive Surfaces,” Surfaces Forces Apparatus Conference 2014, International Workshop in Colloidal and Interfacial Science, Technology, Engineering and Mathematics (CAI-STEM), August 24-29, Cancun, Mexico.

“Contact and Friction of Rough Adhesive Surfaces,” Plenary Talk, 7th International Conference on Multiscale Materials Modeling (MMM2014), Berkeley, CA, October 6-10, 2014.

“Critical Scaling of Avalanches, Stress and Spatial Correlations in Shear of Disordered Systems,” KITP Conference “Complexity in Mechanics: Intermittency and collective phenomena in disordered solids,” Santa Barbara, CA, October 20 - 24, 2014.

“Area, Stiffness, Friction and Adhesion of Contacts Between Rough Surfaces,” AVS 61st International Symposium and Exhibition, Baltimore, MD, November 9-14, 2014.

“Structure Property Relations in Amorphous Polymers: Packing, Entanglements and Molecular Orientation,” Materials Research Society, December 1 - 5, 2014.

“Welding and Healing of Polymer Interfaces: Strength from Entanglements”, Deformation, Yield and Fracture of Polymers, Rolduc Abbey, Netherlands, March 29 - April 2, 2015.

Scaling of friction with contact area in single asperity contacts,” Meeting on ”Friction - from atomic to geophysical scales,” Earthquake Research Institute, Tokyo, September 14-15, 2015.

“Friction Mechanisms: From Atomic Interactions to Macroscopic Friction Laws,” International Tribology Conference 2015, Tokyo, Japan, September 16-20, 2015.

“Flow in Disordered Systems: From Simple Fluids to Athermal Solids,” Plenary talk, Society of Rheology 87th Annual Meeting, Baltimore, MD, October 11-15, 2015.

“Flow in Disordered Systems: From Fluids to Athermal Solids,” Materials Research Society Fall Meeting, Boston, MA, November 29 - December 4, 2015.

Seminars and Colloquia (since summer 1988)

- 9/13/88 “Critical Phenomena in Fluid Invasion of Porous Media,” Colloquium, Institute for Science and Technology, University of Maryland.
- 9/27/88 “Pattern Formation in Fluid Invasion of Porous Media: Transition From Fractals to Blobs,” Condensed Matter Seminar, University of Pennsylvania.
- 10/12/88 “Critical Phenomena in Fluid Invasion of Porous Media,” Solid State Seminar, University of California, Berkeley.
- 1/89 “Critical Phenomena in Fluid Invasion of Porous Media,” Condensed Matter Seminar, Ecole Normale Supérieure de Lyon.
- 1/89 “Phase Diagram and Dynamics of Yukawa Systems,” Condensed Matter Seminar, Ecole Normale Supérieure de Lyon.
- 1/89 “Critical Phenomena in Fluid Invasion of Porous Media,” Condensed Matter Seminar, College de France.
- 8/89 “Critical Phenomena in Fluid Invasion of Porous Media,” Physics Colloquium, Pontificia Universidade Catolica do Rio de Janeiro, Brazil.
- 8/89 “Molecular Dynamics Simulations of Contact Line Motion,” Solid State Seminar, Pontificia Universidade Catolica do Rio de Janeiro, Brazil.
- 8/89 “Critical Phenomena in Fluid Invasion of Porous Media,” Physics Colloquium, Federal University of Brasilia, Brazil.
- 10/6/89 “Density Functional & Monte Carlo Studies of Electrostatic Interactions,” Self-Assembling Systems Seminar, Institute for Theoretical Physics, University of California, Santa Barbara.
- 10/89 “Critical Phenomena in Fluid Invasion of Porous Media,” Seminar, Institute for Theoretical Physics, University of California, Santa Barbara.
- 11/2/89 “Electrostatic Interactions in Solution-When do Like Charges Attract?” *H*-Division Seminar at Livermore National Laboratory.
- 11/3/89 “Molecular Dynamics Simulations of Contact Line Motion,” Chemical Engineering Seminar, Stanford University.
- 2/15/90 “Physics at Solid-Fluid Interfaces: How Fluids Spread and Why Bearings Squeak,” Colloquium, Dept. of Physics and Astronomy, Johns Hopkins University.
- 3/30/90 “Critical Phenomena in Fluid Invasion of Porous Media,” Physics Colloquium, Indiana University of Pennsylvania.
- 4/3/90 “Critical Phenomena in Fluid Invasion of Porous Media,” Solid State Seminar, Massachusetts Institute of Technology.

- 4/12/90 "Critical Phenomena in Fluid Invasion of Porous Media," Solid State Seminar, Carnegie Mellon Univ.
- 6/11/90 "Origin of Stick-Slip Motion in Boundary Lubrication," Surface Forces Institute, Stockholm, Sweden.
- 7/3/90 "Critical Phenomena in Fluid Invasion of Porous Media," Seminar at the French Petroleum Institute.
- 7/4/90 "Molecular Dynamics Simulations of Moving Contact Lines," ESPCI, Paris.
- 10/1/90 "Molecular Dynamics Simulations of Moving Contact Lines," Condensed Matter Physics Seminar, Michigan State University.
- 10/22/90 "Critical Phenomena in Fluid Invasion of Porous Media," Seminar at the Institute for Theoretical Physics, Santa Barbara.
- 10/26/90 "Shear Melting in Colloidal Crystals and in Boundary Lubrication," Materials Science Seminar, University of California, Santa Barbara.
- 11/16/90 "Critical Phenomena in Fluid Invasion of Porous Media," Colloquium, James Franck Institute, University of Chicago.
- 2/11/91 "Shear-Melting in Colloidal Crystals and Boundary Lubrication," Solid State Seminar, Princeton University.
- 3/6/91 "Shear-Melting in Colloidal Crystals and Boundary Lubrication," Seminar, Kodak, Rochester.
- 3/7/91 "Shear-Melting in Colloidal Crystals and Boundary Lubrication," Solid State Seminar, Cornell University.
- 5/21/91 "Shear-Melting in Colloidal Crystals and Boundary Lubrication," National Institute of Science and Technology.
- 8/30/91 "Stick-Slip Motion from Shear Induced Phase Transitions," Institut für Festkörperforschung der Kernforschungsanlage, Jülich, Germany.
- 10/3/91 "Friction in Thin Films: Why Bearings Squeak." Condensed Matter Physics Seminar, University of Minnesota.
- 11/8/91 "Influence of Wettability on Fluid Invasion," Low Tension Seminar, University of Minnesota.
- 11/15/91 "Simulations of Contact-Line Motion," Low Tension Seminar, University of Minnesota.
- 1/8/92 "Effect of Wettability on Fluid Invasion," Soil Physics Seminar, University of Minnesota.
- 1/10/92 "Friction in Thin Films: Glassy Response and Shear-Melting," 3M Technical Forum, Interface Science Chapter. Seminar at 3M.

- 1/31/92 "Shear-Melting of Solids and Stick-Slip Friction," Pittsburgh Supercomputing Center, Pittsburgh.
- 11/30/92 "Critical Phenomena in Fluid Invasion and Magnetic Domain Wall Motion," Condensed Matter Seminar, University of Florida, Gainesville.
- 1/19/93 "Simulations of Friction at The Molecular Scale," General Physics Colloquium, AT&T Bell Laboratories.
- 2/3/93 "Simulations of Friction at The Molecular Scale," Condensed Matter Seminar, Johns Hopkins University.
- 2/23/93 "Microscopic Simulations of Friction at The Molecular Scale," Seminar, Levich Institute, City College of the City University of New York.
- 9/16/93 "Molecular Mechanisms of Friction," Physics Colloquium, Penn State University.
- 9/28/93 "Molecular Mechanisms of Friction," Condensed Matter Seminar, University of Pennsylvania.
- 10/18/93 "Molecular Mechanisms of Friction," Condensed Matter Seminar, Ohio State University.
- 11/10/93 "Simulations of Friction at the Molecular Level," National Institute of Standards and Technology.
- 1/11/94 "Morphology and Dynamics of Interfaces in Random Media," Nonlinear Dynamics and Complex Systems Seminar, Duke University.
- 1/12/94 "Studies of Friction at the Molecular Level," Colloquium, Dept. of Physics, Duke University.
- 2/10/94 "Molecular Origin of Friction," Colloquium, Dept. of Physics and Astronomy, Johns Hopkins University.
- 4/15/94 "Molecular Origins of Friction," Applied Physics Seminar, Harvard University.
- 4/19/94 "The Molecular Origins of Dissipation in Friction and Adhesion," Physics Colloquium, Brandeis University.
- 5/26/94 "Molecular Origins of Dissipation in Friction and Adhesion," Condensed Matter Seminar, University of Minnesota.
- 9/29/94 "Molecular Origins of Dissipation in Friction and Adhesion," Physics Colloquium, Georgetown University.
- 10/12/94 "Molecular Origins of Dissipation in Friction and Adhesion," Physics Colloquium, University of Delaware.
- 10/19/94 "Molecular Origins of Dissipation in Friction," Physics and Astronomy Colloquium, Rutgers University.

- 11/15/94 "Molecular Origins of Dissipation in Friction and Adhesion," Hercules.
- 2/27/95 "Growth in Systems With Quenched Disorder," Physics Colloquium, Emory University.
- 3/3/95 "Molecular Mechanisms of Friction," Colloquium, Applied Physics Laboratory.
- 6/2/95 "Growth in Disordered Systems," Colloquium, Ecole Superieure de Physique et Chimie Industrielle, Paris.
- 6/14/95 "Adhesion in Thin Films," Seminar, College de France, Paris.
- 10/19/95 "Dissipation During Rupture of Thin Adhesive Bonds," Metallurgy Group, National Institute of Standards and Technology.
- 10/23/95 "Interfaces in Disordered Media," The Aaron N. Bloch Memorial Symposium, Exxon Research and Engineering Co..
- 10/26/95 "Molecular Mechanisms of Friction," Colloquium, Massachusetts Institute of Technology.
- 12/7/95 "Dissipation During Rupture of Thin Adhesive Bonds," Metallurgy Group, National Institute of Standards and Technology.
- 2/19/96 "Molecular Origins of Friction," Condensed Matter Seminar, Princeton University.
- 2/27/96 "Simulations of Wetting and Spreading," Chemical Thermal Sciences Lab, National Institute of Standards and Technology.
- 3/12/96 "Molecular Origins of Friction," Distinguished Lecture Series on Polymer Interfaces, Polymer Interfaces Center, Lehigh University.
- 10/9/96 "Fundamental Theory and Modeling of Friction and Lubrication," Department of Materials Science and Engineering, Stevens Institute of Technology.
- 10/30/96 "Molecular Origins of Friction," Colloquium, Department of Physics, Fluminense, Brazil.
- 10/31/96 "Molecular Origins of Friction," Colloquium, Department of Physics, UFRJ, Brazil.
- 11/19/96 "Simulations of Wetting and Spreading," Center for Molecular Modeling, Department of Chemistry, University of Pennsylvania.
- 1/9/97 "Molecular Origins of Friction," Complex Systems Seminar, University of Michigan.
- 1/10/97 "Where Does Friction Come From?" SIGMA XI Presentation, General Motors Corporation.
- 2/25/97 "Where Does Friction Come From?," Institute for Physical Science and Technology, University of Maryland.

- 8/18/97 "Where Does Friction Come From?" Institute for Theoretical Physics, University of California, Santa Barbara.
- 9/23/97 "Molecular Simulations of Adhesion," Center for Studies in Physics and Biology, Rockefeller University.
- 1/15/98 "Molecular origins of friction," Colloquium, McGill University, Montreal, Canada.
- 2/18/98 "Molecular simulations of adhesion," Center for Adhesive and Sealant Science, Virginia Institute of Technology.
- 5/13/98 "Where Does Friction Come From," Princeton Materials Institute.
- 6/3/98 "Molecular simulations of polymer adhesion," Sandia National Laboratory.
- 11/2/98 "Effect of Wettability on Fluid Invasion of Porous Media", Earth and Planetary Sciences, Johns Hopkins University.
- 1/13/99 "Where Does Friction Come From?" Center for Non-Linear Science Colloquium, Los Alamos National Laboratory.
- 1/25/99 "Where Does Friction Come From?" Physics Department Colloquium, Carnegie Mellon University.
- 3/1/99 "Where Does Friction Come From?" Physics Department Colloquium, Michigan State University.
- 3/15/99 "Where Does Friction Come From?" Physics Department Colloquium, North Carolina State University.
- 4/20/99 "Where Does Friction Come From?" Physics Department Colloquium, University of Maryland.
- 4/28/99 "Molecular Level Modeling of Polymer/Substrate Adhesion," Lucent Technologies.
- 5/12/99 "Ordering and Disordering with Shear", Chemical Physics Seminar, University of Maryland.
- 6/1/99 "Molecular simulations of adhesion," Chemical Engineering and Materials Science, University of Minnesota.
- 8/24/99 "Molecular Level Modeling of Polymer/Substrate Adhesion," AMD, San Jose.
- 9/16/99 "Where does friction come from?" Physics Department Colloquium, Johns Hopkins University.
- 9/28/99 "The molecular origins of adhesion," Nonequilibrium Seminar, University of California, Santa Barbara.
- 1/13/00 "Where does friction come from?" XFD seminar, Advanced Photon Source, Argonne National Laboratory.

- 1/21/00 "Where does friction come from?" Physics Department Colloquium, College of William and Mary.
- 5/8/00 "Where does friction come from?" State University of Sao Paulo, Sao Carlos, Brazil.
- 5/16/00 "Where does friction come from?" Federal University, Rio de Janeiro, Brazil.
- 5/25/00 "Where does friction come from?" Lecture to Naval Research Laboratory Edison Chapter of Sigma Xi.
- 9/26/00 "Simulations of Contact Line Motion on Disordered Surfaces," Seminar, Levich Institute, City College of the City University of New York.
- 12/14/00 "Where does friction come from?" University of Pennsylvania, Joint Physics-Chemistry-Materials Science Seminar.
- 6/18/02 "Molecular Level Modeling of Polymer/Substrate Adhesion," AMD, San Jose.
- 10/4/01 "Where does friction come from?" Physics Colloquium, University of Toronto.
- 11/1/01 "Calculating the Macroscopic Toughness of Polymers From Molecular Simulations," Mechanical Engineering, Johns Hopkins University.
- 11/9/01 "Where does friction come from?" "Science on the Edge" Seminar, Michigan State University.
- 2/26/02 "Where does friction come from," Boston University, Physics Colloquium.
- 5/15/2002 "Connecting Molecular Dynamics to Macroscopic Friction," Ceramics Division, NIST.
- 1/21/2003 "Where does friction come from?" Physics Colloquium, Kansas State University.
- 3/13/2003 "Friction and Lubrication from Atomic to Macroscopic Scales," Materials Research Laboratory, University of California, Santa Barbara.
- 3/20/2003 "Friction and Lubrication from Atomic to Macroscopic Scales," Physics Colloquium, Johns Hopkins University.
- 7/11/2003 "Molecular Simulations of Adhesion and Polymer Mechanics," 3M Center, St. Paul, MN.
- 1/21/2004 "From Molecular Interactions to Macroscopic Friction," Mechanical Engineering Seminar, Yale University.
- 6/29/2004 "Connecting the Motion of Atoms to Macroscopic Behavior," Rensselaer Polytechnic Institute.
- 11/5/2004 "Connecting Molecular Interactions to Macroscopic Friction," Tata Institute for Fundamental Research, Mumbai.

- 2/22/2005 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” James Franck Institute Colloquium, University of Chicago.
- 3/3/2005 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” College de France, Paris.
- 4/5/2005 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Distinguished Lecture Series, Cornell Theory Center, Cornell University.
- 4/20/2005 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” PRISM Seminar, Princeton University.
- 9/19/2005 “Friction Mechanisms: Lessons from Simple Analytic Models,” Blackboard Seminar, Kavli Institute for Theoretical Physics, Univ. of California, Santa Barbara.
- 1/12/2006 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, Wayne State University.
- 2/2/2006 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Endowed Lectureship in Solid Mechanics, University of Texas, Austin.
- 2/9/2006 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, University of California, Irvine.
- 4/21/2006 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Condensed Matter Seminar, University of California, Santa Cruz.
- 10/11/2006 “Connecting Atomic-Scale Dynamics to Macroscopic Friction Laws,” Colloquium, University of Minnesota.
- 10/12/2006 “Deformation and Fracture of Glassy Materials,” Condensed Matter Seminar, University of Minnesota.
- 10/25/2006 “Deformation of Glassy Materials: Yield, Strain Hardening, Crazing and Fracture,” Liquid Crystal Institute, Kent State, Ohio.
- 11/29/2006 “Multiscale Modelling: Connecting Atomic Interactions to Macroscopic Behavior,” Mechanical Engineering, Indian Institute of Science, Bangalore.
- 12/4/2006 “Contact and Friction Between Rough Surfaces,” Condensed Matter Seminar, Indian Institute of Science, Bangalore.
- 2/26/2007 “Contact and Friction: Connecting Atomic Interactions to Macroscopic Behavior” Joint Physics and Mechanical Engineering Seminar, University of Pennsylvania.
- 9/21/2007 “Simulations of Deformation in Polymer Glasses: Yield and Strain Hardening,” Max Planck Institute for Polymer Research, Mainz, Germany.
- 10/5/2007 “Simulations of Deformation in Polymer Glasses: Yield and Strain Hardening,” Center for Advanced Metallic and Ceramic Systems, Johns Hopkins.

- 10/17/2007 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, U. Mass. Amherst.
- 1/9/2008 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, University of Victoria, Canada.
- 1/10/2008 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, University of British Columbia, Canada.
- 1/11/2008 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, Simon Frasier University, Canada.
- 1/24/2008 “Contact and Friction: Connecting Atomic-Scale Interactions to Macroscopic Behavior,” Physics Colloquium, Northeastern University, Boston.
- 6/16/2008 “Connecting the Motion of Atoms to Macroscopic Friction” Physics Department, Kyoto University.
- 6/17/2008 “Connecting the Motion of Atoms to Macroscopic Flow, Fracture and Friction ” Department of Applied Physics, The University of Tokyo.
- 1/27/2009 “Connecting the Motion of Atoms to Macroscopic Friction,” Colloquium, Georgetown University.
- 7/13/2009 “Connecting Atomic Dynamics to Continuum Flow Equations: When Does the Discreteness of Fluids Matter?” Beijing University.
- 11/10/2009 “Scaling of Earthquakes and Strain Correlations During Deformation of Disordered Solids,” Center for Nonlinear Science Seminar, Duke University.
- 11/11/2009 “Friction: A Surprisingly Slippery Subject,” Colloquium, Duke University.
- 1/19/2010 “Friction: A Surprisingly Slippery Subject,” Colloquium, Brandeis University.
- 12/9/2010 “Friction: A Surprisingly Slippery Subject,” Highlight Seminar, Thomas Young Centre, Imperial College London.
- 1/27/2011 “Connecting Molecular Interactions to the Macroscopic Mechanical Properties of Glassy Polymers,” Aberdeen Proving Grounds.
- 9/27/2011 “Capillary Phenomena at Nanoscales: Electrowetting and Capillary Adhesion – When does continuum theory fail?” Soft Matter Seminar, New York University.
- 10/18/2011 “Contact, Adhesion and Friction Between Self-Affine Surfaces: Does Friction Scale with Contact Area?” Statistical Physics Seminar, University of Maryland.
- 9/14/2012 ”Friction: A Surprisingly Slippery Subject,” Condensed Matter Seminar, University of Illinois, Urbana-Champaign.

- 11/9/2012 "Entanglements and the Mechanical Response of Glassy Polymers: Hardening, Crazing, Welding," Polymer and Advanced Materials Lecture Series, University of Akron, Ohio.
- 2/1/2013 "Contact of rough adhesive surfaces: Why aren't all surfaces sticky," DISCONAP Seminar, University of Pennsylvania.
- 2/20/2013 "Avalanches in Strained Amorphous Solids: Does Inertia Destroy Critical Behavior?" Condensed Matter Seminar, University of Pennsylvania.
- 2/26/2013 "Friction: A Surprisingly Slippery Subject," Colloquium, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland.
- 2/28/2013 "Contact of rough adhesive surfaces: Why aren't all surfaces sticky," IBM Zurich.
- 3/1/2013 "Friction: A surprisingly slippery subject," ETH, Zurich, Switzerland.
- 5/14/2013 "Friction: A surprisingly slippery subject," Max Planck Institute for Polymer Physics, Mainz, Germany.
- 6/17/2013 "Entanglements and the Mechanical Response of Glassy Polymers: Hardening, Crazing, Welding," Eindhoven University of Technology, Netherlands.
- 12/9/2013 "Contact and Friction of Rough Surfaces," University of Pennsylvania.
- 11/25/2014 "A Rough View of Friction and Adhesion," Physics Colloquium, Georgetown University.
- 2/24/2015 "A Rough View of Friction and Adhesion," Physics Colloquium, Boston University.
- 4/30/2015 "A Rough View of Friction and Adhesion," Mechanical Engineering Colloquium, Johns Hopkins University.