

Born October 25, 1962  
Citizenship Canadian (US permanent resident)  
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### **Education**

1984-1989 Massachusetts Institute of Technology  
Ph.D. (Physics) September 1989, Advisor: Prof. A. Nihat Berker  
1980-1984 University of Alberta, Edmonton, Alberta, Canada  
B.Sc. (Physics) June 1984

### **Employment**

2001-present Associate Professor, Department of Physics, University of Illinois at Chicago  
1998-present Adjunct Assistant Professor, Department of Bioengineering,  
University of Illinois at Chicago  
1996-2001 Assistant Professor, Department of Physics, University of Illinois at Chicago  
1994-1996 Meyer Fellow, biophysics, Center for Studies in Physics and Biology,  
Rockefeller University  
1991-1994 Postdoctoral Researcher, theoretical condensed matter physics,  
Lab for Atomic and Solid State Physics and Materials Science Center,  
Cornell University  
1989-1991 Postdoctoral Researcher, theoretical condensed matter physics,  
James Franck Institute, University of Chicago  
1985-1989 Graduate Research Assistant, theoretical condensed matter physics,  
Department of Physics, Massachusetts Institute of Technology

### **Awards and Scholarships**

1999-2002 University Scholar (University of Illinois)  
1998-2002 CAREER Award (National Science Foundation)  
1992-1993 Materials Science Center Postdoctoral Fellow (Cornell University)  
1989-1991 NSERC Postdoctoral Scholarship (Government of Canada)  
1988-1989 Josephine De Karman Fellowship  
1984-1988 NSERC Postgraduate Scholarship (Government of Canada)  
1984 Gold Medal in Physics (University of Alberta)  
Gold Medal in Science (University of Alberta)  
1982 Petro-Canada Scholarship in Physics (University of Alberta)  
1981-1983 Louise McKinney Scholarships (Province of Alberta)

### **Professional Activities**

2003-present Member, Biophysical Society  
1999-present Member, American Society of Cell Biologists  
1988-present Member, Materials Research Society  
1987-present Member, American Physical Society  
1989-present Reviewer for Nature, Science, PNAS, Phys. Rev. Lett., Phys. Rev. A & E,  
Europhys. Lett., J. Phys., J. de Phys., J. Phys. Chem., Macromolecules,  
J. Mol. Biol., Biophys. J., J. Chem. Phys., Appl. Phys. Lett., Eur. Phys. J.  
Grant Reviewer for NSF, DOE, ACS-PRF, Israel Science Foundation,  
Research Corporation, and others

## Publications

86. Irreversible binding of the DNA-bending proteins HMGB1, NHP6A and HU to a large DNA molecule, D. Skoko, B. Wong, R. Johnson, J.F. Marko, preprint (2003).
85. B-DNA, S-DNA and ssDNA, J. Yan, J.-F. Léger, S. Cocco, J.F. Marko, preprint (2003).
84. Near-field magnetic tweezer manipulation of single DNA molecules, J. Yan, D. Skoko, J.F. Marko, preprint (2003).
83. Effects of DNA-distorting proteins on DNA elastic response, J. Yan, J.F. Marko, Phys. Rev. E, **68**, 011905 (2003).
82. Force-extension properties of folding polymers, J. Yan, A. Sarkar, S. Cocco, R. Monasson, J.F. Marko, Eur. Phys. J. E **10**, 249-263 (2003).
81. Micromechanical studies of mitotic chromosomes, M.G. Poirier, J.F. Marko, Curr. Top. Devel. Biol., **55**, 75-141 (2003) (invited review).
80. Micromechanics of chromatin and chromosomes, J.F. Marko, M.G. Poirier, Biochem. Cell Biol. **81** 209-20 (2003) (invited minireview).
79. Slow nucleic acid unzipping kinetics from sequence-defined barriers, S. Cocco, R. Monasson, J.F. Marko, Eur. Phys. J. E **10**, 153-161 (2003).
78. The micromechanics of DNA, J.F. Marko, S. Cocco, Phys. World **16**, No. 3, 37-41 (2003) (invited popular magazine article).
77. Unzipping dynamics of long DNAs, S. Cocco, R. Monasson, J.F. Marko, Phys. Rev. E **66**, 051914 (2002).
76. Mitotic chromosomes are chromatin networks without a contiguous protein scaffold, M.G. Poirier and J.F. Marko, Proc. Natl. Acad. Sci USA **99**, 15393-15397 (2002) [also see Commentary on this paper by A. Belmont, Mitotic chromosome scaffold structure: New approaches to an old controversy, Proc. Natl. Acad. Sci. USA **99**, 15855-7 (2002)].
75. Micromechanical studies of mitotic chromosomes, M.G. Poirier, J.F. Marko, J. Musc. Res. Cell. Motil. **23**, 409-431 (2002) (invited review, refereed, note that this paper was actually published in 2003).
74. Theoretical models for single-molecule DNA and RNA experiments: from elasticity to unzipping, S. Cocco, J.F. Marko and R. Monasson, C.R. Physique (Paris) **3**, 569-584, (2002) (invited review).
73. Dynamics of chromosome compaction during mitosis, A. Sarkar, S. Eroglu, M.G. Poirier, A. Nemani, P. Gupta, J.F. Marko, Exp. Cell Res., **277**, 48-56 (2002).
72. Effects of internal friction on bending fluctuations of biofilaments, M.G. Poirier and J.F. Marko, Phys. Rev. Lett. **88**, 228103-6 (2002).
71. Force and kinetic barriers to unzipping of the DNA double helix S. Cocco, J.F. Marko, R. Monasson, Phys. Rev. E **65**, 041907-29 (2002).
70. Bending rigidity of mitotic chromosomes, M.G. Poirier, S. Eroglu and J.F. Marko, Mol. Biol. Cell **13**, 2170-2179 (2002).
69. Reversible hypercondensation and decondensation of mitotic chromosomes studied using combined chemical-micromechanical techniques, M.G. Poirier, T. Monhait and J.F. Marko, J. Cell. Biochem. **85** 422-34 (2002).
68. Removal of DNA-bound proteins by DNA twisting, A. Sarkar and J.F. Marko, Phys. Rev. E **64**, 061909 (2001).

67. Force and kinetic barriers to unzipping of the DNA double helix, S. Cocco, R. Monas-son, J.F. Marko, Proc. Natl. Acad. Sci. USA **98**, 8608-13 (2001).
66. Scaling behavior of communication by ‘slithering’ on a supercoiled DNA, J.F. Marko, Physica A **296**, 289-292 (2001).
65. Structural transitions in DNA driven by external force and torque, A. Sarkar, J.-F. Leger, D. Chatenay, J.F. Marko, Phys. Rev. E **63**, 1903 (2001).
65. Chromosome elasticity and mitotic polar ejection force measured in living Drosophila embryos by four-dimensional microscopy-based motion analysis, W. Marshall, J.F. Marko, J. Sedat, Curr. Biol. **11**, 569-578 (2001).
64. Kinetic proofreading can explain the suppression of supercoiling fluctuations by type-II topoisomerases, J. Yan, M.O. Magnasco and J.F. Marko, Phys. Rev. E **63** 1909- (2001).
63. Dynamics of force relaxation as a probe of chromosome structure. M.D. Poirier, A. Nemani, S. Eroglu and J.F. Marko, Phys. Rev. Lett. **86** 360-3 (2001).
62. One- and three-dimensional pathways for proteins to reach specific DNA sites, N.P. Stanford, M.D. Szczelkun, J.F. Marko and S.E. Halford, EMBO J. **19**, 6546-6557 (2000).
61. Reversible and irreversible unfolding of mitotic newt chromosomes by applied force, M. Poirier, S. Eroglu, D. Chatenay and J.F. Marko, Mol. Biol. Cell, **11**, 269-276 (2000).
60. Kinetic proofreading mechanism for DNA disentanglement by topoisomerases, J. Yan, M.O. Magnasco and J.F. Marko, Nature **401**, 932-935 (1999).
59. Structural Transformations of a Twisted and Stretched DNA, J.F. Leger, J. Robert, L. Bordieu, A. Sarkar, D. Chatenay and J.F. Marko, Phys. Rev. Lett. **83**, 1066-1069 (1999).
58. Coupling of Intra- and Intermolecular Linkage Complexity of Two DNAs, J. F. Marko, Phys. Rev. E **59**, 900-912 (1999).
57. RecA binding to a single double-stranded DNA molecule: A possible role of DNA conformational fluctuations, J.F. Leger, J. Robert, L. Bordieu, D. Chatenay and J. Marko, Proc. Natl. Acad. Sci. USA, **95**, 12295 (1998).
56. Architecture of a bacterial chromosome (invited), N. J. Trun and J. F. Marko, American Society for Microbiology News **64**, 276 (1998).
55. DNAs under high tension: overstretching, undertwisting, and relaxation dynamics, Phys. Rev. E **57**, 2134 (1998).
54. Twist and shout (and pull): molecular chiropractors undo DNA (invited), Proc. Natl. Acad. Sci. USA **94**, 11770 (1997).
53. Interphase chromatin undergoes large-scale diffusional motion in living cells, W. F. Marshall, A. Straight, J. F. Marko, J. R. Swedlow, A. F. Dernburg, A. W. Murray, A. S. Belmont, D. A. Agard and J. W. Sedat, Curr. Biol. **7**, 930 (1997).
52. Mechanics of microtubule-based membrane extension, D. Kuchnir Fygenson, J. F. Marko, M. Betterton and A. Libchaber, Phys. Rev. Lett. **79**, 4497 (1997).
51. Polymer models of meiotic and mitotic chromosomes, J. F. Marko and E. D. Siggia, Mol. Biol. Cell **8**, 2217 (1997).
50. Driving proteins off DNA using applied Tension, J. F. Marko and E. D. Siggia, Biophys. J. **73**, 2173 (1997).
49. The slithering dynamics of supercoiled DNA (invited), J. F. Marko, Physica A **244**, 263 (1997).

48. Microdissection of eukaryotic chromosomes, B. Houchmandzadeh, J. F. Marko, D. Chatenay and A. Libchaber, *J. Cell Biol.* **139**, 1 (1997).
47. Communications between distant sites on supercoiled DNA from non-exponential kinetics for DNA synapsis by resolvase, M. Oram, J. F. Marko and S. E. Halford, *J. Mol. Biol.* **270**, 396 (1997).
46. Extension of torsionally stressed DNA by external force, J. F. Marko and A. V. Vologodskii, *Biophys. J.* **73**, 123 (1997).
45. Stretching must twist DNA, J. F. Marko, *Europhys. Lett.* **38**, 183 (1997).
44. Supercoiled and braided DNA under tension, J. F. Marko, *Phys. Rev. E* **55**, 1758 (1997).
43. Statistical mechanics of supercoiled DNA (invited), E. D. Siggia and J. F. Marko, in Mathematical Approaches to Biomolecular Structure and Dynamics, ed. J. P. Mesirov, K. Schulten and D. W. Sumners (Springer, New York, 1996).
42. Equilibrium phase transitions in a porous medium, T. MacFarland, G. T. Barkema and J. F. Marko, *Phys. Rev. B* **53**, 148 (1996).
41. Stretching DNA, J. F. Marko and E. D. Siggia, *Macromolecules* **28**, 8759 (1995).
40. Layering Phase separation of densely grafted diblock copolymers, G. Brown, A. Chakrabarti and J. F. Marko, *Macromolecules* **28**, 7817 (1995).
39. Phase ordering in the Ising model with conserved spin, J. F. Marko and G. T. Barkema, *Phys. Rev. E* **52**, 2522 (1995).
38. Transient wetting and 2D spinodal decomposition in a binary polymer blend, W. Straub, F. Bruder, R. Brenn, G. Krausch, H. Bielefeldt, A. Kirsch, O. Marti, J. Mlynek and J. F. Marko, *Europhys. Lett.* (1995).
37. Scaling properties of DC gel electrophoresis of DNA, G. T. Barkema, C. Caron and J. F. Marko, *Biopolymers* **38**, 665 (1996).
36. Order-induced period doubling during surface-directed spinodal decomposition, G. Krausch, J. Mlynek, W. Straub, R. Brenn and J. F. Marko, *Europhys. Lett.* **28**, 323 (1994).
35. Twisting and bending elasticity of DNA (invited), J. F. Marko, in CRC Polymeric Materials Encyclopaedia, ed. J. Salamone, (CRC Press, Boca Raton FL, 1996).
34. Statistical mechanics of supercoiled DNA, J. F. Marko and E. D. Siggia, *Phys. Rev. E* **52** 2912 (1995).
33. Entropic elasticity of DNA, C. Bustamante, J. F. Marko, E. D. Siggia and S. Smith, *Science (Technical Comment)* **265**, 1599 (1994).
32. Fluctuations and supercoiling of DNA, J. F. Marko and E. D. Siggia, *Science* **265**, 506 (1994).
31. Surface induced asymmetries during spinodal decomposition in off-critical polymer mixtures, G. Krausch, E. J. Kramer, F. S. Bates, J. F. Marko, G. Brown and A. Chakrabarti, *Macromolecules* **27**, 6768 (1994).
30. Electrophoresis of charged polymers: simulation and scaling in the repton model, G. T. Barkema, J. F. Marko and B. Widom, *Phys. Rev. E* **49**, 5303 (1994).
29. Surface-induced nucleation, G. Brown, A. Chakrabarti and J. F. Marko, *Phys. Rev. E* **50**, 1674 (1994).

28. Microphase separation of a dense two-component polymer brush, G. Brown, A. Chakrabarti and J. F. Marko, *Europhys. Lett.* **25**, 239 (1994).
27. Transient and asymptotic domain growth in the 3D Ising model With conserved spin, G. T. Barkema, J. F. Marko and J. de Boer, *Europhys. Lett.* **26**, 653 (1994).
26. Logarithmic corrections for the percolative properties of the four-state Potts model, C. Vanderzande and J. F. Marko, *J. Phys. A*, **26**, 7391 (1993).
25. Phase separation of grafted copolymers, H. Dong, J.F. Marko and T.A. Witten, *Macromolecules* **27**, 6428-6442 (1994).
24. Twisting and bending elasticity of DNA, J. F. Marko and E. D. Siggia, *Macromolecules* **27**, 981 (1994).
23. Static and dynamic collective correlations of grafted polymers, J. F. Marko and A. Chakrabarti, *Phys. Rev. E*, **48**, 2739 (1993).
22. Interference of spinodal Waves in thin polymer films, G. Krausch, A.-C. Dai, E. Kramer, J. F. Marko and F. S. Bates, *Macromolecules*, **26**, 5566 (1993).
21. Accelerating diffusive nonequilibrium processes in discrete spin systems, G. T. Barkema and J. F. Marko, *Phys. Rev. Lett.* **71**, 2070 (1993).
20. Grafted polymers under the influence of external fields, J. F. Marko, A. Johner and C. Marques, *J. Chem. Phys.* **99**, 8142 (1993).
19. Influence of surface interactions on spinodal decomposition, J. F. Marko, *Phys. Rev. E*, **48**, 2861 (1993).
18. Microphase Separation of block copolymer rings, J. F. Marko, *Macromolecules* **26** 1442 (1993).
17. Polymer brush in contact with a mixture of solvents, J. F. Marko, *Macromolecules* **26**, 313 (1993).
16. Microphase separation of charged diblock copolymers: melts and solutions, J. F. Marko and Y. Rabin, *Macromolecules* **25**, 1503 (1992).
15. Correlations in grafted polymer layers, J. F. Marko and T. A. Witten, *Macromolecules*, **25**, 296 (1992).
14. Microphase separation in charged diblock copolymers: the weak segregation limit, Y. Rabin and J. F. Marko, *Macromolecules* **24**, 2134 (1991).
13. Phase separation in a grafted polymer layer, J. F. Marko and T. A. Witten, *Mat. Res. Soc. Ext. Abs.* **EA-25**, 155 (1990).
12. Phase separation in a grafted polymer layer, J. F. Marko and T. A. Witten, *Phys. Rev. Lett.* **66**, 1541 (1991).
11. Liquid crystals (invited), Chapter 12 of *Inhomogeneous Fluids*, ed. D. R. Henderson (Marcel Dekker Inc., 1992).
10. Polymers grafted to a convex surface, R. C. Ball, J. F. Marko, S. T. Milner and T. A. Witten, *Macromolecules* **24**, 693 (1991).
9. Weighted-density theory of phase transitions in fluids composed of anisotropic particles, J. F. Marko and W. A. Curtin, *Mat. Res. Soc. Symp. Proc.* **177**, 329 (1990).
8. Structure and scaling at first and second order phase transitions, J. F. Marko, MIT Ph.D. Thesis, (1989).
7. Pressure studies on phase transitions in 4-alkophenyl-4'- nitrobenzoyloxybenzoates

- (*DB.kO.NO<sub>2</sub>*), V. N. Raja, B. R. Ratna, R. Shashidhar, G. Heppke, Ch. Bahr, J. F. Marko, J. O. Indekeu and A. N. Berker, *Phys. Rev. A* **39**, 4341 (1989).
6. Mixtures in the frustrated spin-gas theory of reentrant polar liquid crystals, J. F. Marko, J. O. Indekeu and A. N. Berker, *Phys. Rev. A* **39**, 4201 (1989).
  5. Exact pair correlations in a one-dimensional fluid with orientational and translational degrees of freedom, J. F. Marko, *Phys. Rev. Lett.* **62**, 543 (1989).
  4. First-order phase transitions in the hard-ellipsoid fluid from variationally optimized direct pair correlations, J. F. Marko, *Phys. Rev. A* **39**, 2050 (1989).
  3. Universality classes of deterministic multifractal tree growth, J. F. Marko, *Mat. Res. Soc. Ext. Abs.* **EA-17**, 127 (1988).
  2. Accurate calculation of isotropic-plastic and isotropic-nematic transitions in the hard ellipsoid fluid, J. F. Marko, *Phys. Rev. Lett.* **60**, 325 (1988).
  1. Dynamical symmetries of a class of action equivalent hamiltonians, J. F. Marko and M. Razavy, *Lett. Nuovo. Cimento* **40**, 533 (1984).

## Grants and Awards

### *Submitted*

12. Subcontract to NSF BIO Grant, 3/04 to 3/08, \$ 230,000 (UIC subcontract portion), for single-molecule study of type-II topoisomerases, contractor is Prof. E. Lynn Zechiedrich, Baylor Medical College.
11. Subcontract to NIH R21 Grant 1-R21-GM-71019-1, 1/04 to 12/05, \$ 150,000 (UIC subcontract portion), for single-molecule study of V(D)J recombination, contractor is Prof. David Roth, New York University School of Medicine. This proposal has been reviewed by the ALY study section during and has been assigned an NIH priority score of 136.

### *Present*

10. NSF Grant MCB-0240998 (BIO-MCB Eukaryote Genetics), 10/03 to 9/05, \$379,794, for study of chromosome structure and folding using measurement of mechanical response to biochemical modification.
9. NSF Grant DMR-0203963 (PHY-DMR Materials Theory), 6/02-5/06, \$340,000, for theoretical research on single-molecule micromechanical experiments and chromosome structure and dynamics. \$12,000 of UIC matching funds were awarded with this grant.
8. Johnson & Johnson COSAT Focused Giving Program, 9/00 to 5/04, \$105,000, for single-molecule experiments on protein-DNA interactions.

### *Past*

7. UIC University Scholar Award, 7/99 to 6/02, \$18,000, in recognition of distinguished teaching and research, funds for support of general research expenses.
6. UIC Campus Research Board Grant, 7/99 to 6/00, \$14,225, for experimental study of interaction of DNA with enzymes, using single-molecule micromanipulation techniques.
5. NSF CAREER Award DMR-9734178, 5/98 to 6/02, \$214,000, for theoretical study of protein interactions with DNA (especially topoisomerases), and chromosome dynamics (condensation-resolution and homolog pairing). \$13,000 of UIC matching funds were awarded with this grant.
4. Research Corporation, 9/98 to 12/02, \$35,000, for theoretical study of the role of thermal conformational fluctuations in enzyme action on DNA. \$2,000 of UIC matching funds were awarded with this grant.
3. Whitaker Foundation Biomedical Engineering Research Grant, 9/97 to 2/02, \$253,000, for experimental study of dynamics of structure and elasticity of chromosomes during condensation; \$106,000 of UIC matching funds and lab space were awarded along with this grant.
2. Petroleum Research Foundation AC Grant, 5/97 to 12/00, \$50,000, for theoretical study of statistical mechanics of DNAs subject to topological constraints.
1. NATO International Scientific Exchange Programme Grant, 7/97 to 6/00, \$5,000, for support of travel expenses connected with collaboration on DNA micromanipulation experiments with D. Chatenay (University Louis Pasteur, Strasbourg, France).

## Research Advising

### *Postdoctoral Researchers*

Dr. Simona Cocco, Sept. 2000 - Aug. 2001, theoretical biological physics  
DNA biophysics, now CNRS researcher in Strasbourg, France

Dr. Lisa Pope, May 2003 - Apr. 2005, experimental biological physics  
chromosome and chromatin micromanipulation

Dr. Sumithra Sankararaman, Sept. 2003 - Aug. 2005, theoretical biological physics  
protein-DNA interactions in single DNA experiments

### *Ph.D. students*

Dr. Michael Poirier, Oct. 1997 - Dec. 2001, experimental biological physics  
thesis title *Micromechanical-Biochemical Studies of Mitotic Chromosome Elasticity and Structure*

Dr. Abhijit Sarkar, May 1998 - August 2002, theoretical biological physics  
thesis title *Theoretical micromechanics of DNA and DNA-protein complexes*

Mr. Yan Jie, Oct. 1998-present, theoretical and experimental biological physics  
chromatin and chromosome biophysics

Ms. Dunja Skoko, May. 2001-present, experimental biological physics  
micromanipulation study of protein-DNA interactions using single-molecule techniques

Ms. Chee Xiong, Oct. 2001-present, experimental biomedical engineering  
biophysical study of chromosome structure

### *Undergraduate research students*

Ms. Caitilin Hammill-Thompson, B.S. Biochemistry (2000)

Mr. Ajay Namani, B.S. Physics (2000)

Ms. Tamar Monhait, B.Eng. Bioengineering (2001)

Mr. Prateek Gupta, B.Eng. Bioengineering (2002)

Mr. Mazen Albaghdadi, B.Eng. Bioengineering (2002)

Ms. Hannah Lazurus, B.Eng. Bioengineering (2003)



## Invited Presentations at Conferences, Meetings and Schools

34. Micromechanical Study of Mitotic Chromosomes, 2003 Meeting of the American Society for Cell Biology, San Francisco CA, December 2003.
33. Physical properties of chromatin and chromosomes, Chromosome and Plasmid Dynamics Gordon Research Conference, Tilton School, Tilton NH, August 2003.
32. Physical Properties of DNA and Chromosomes, International Conference on Chromosome Dynamics and Site-Specific Recombination, Oxford University, Oxford UK, September 2002.
31. Biophysical Study of Chromosome Structure and Dynamics, CNRS Summer School on Biophysics, Cargese, France, August 2002.
30. Combined Biochemical-Micromechanical Dissection of Mitotic Chromosomes, National Institutes of Health, May 2002.
29. Micromanipulation Study of Mitotic Chromosomes, Burroughs-Wellcome Workshop on Biology and Physics, Cambridge, England, April 2002.
28. Micromanipulation Study of DNA and Chromosomes, International Meeting on Biotechnology, Arachon, France, March 2002.
27. Micromanipulation Study of DNA, DNA-protein Interactions and Chromosomes, 2002 March Meeting of the American Physical Society, Indianapolis IN, March 2002.
26. Micromanipulation Study of Mitotic Chromosomes, Chromosome and Plasmid Dynamics Gordon Research Conference, Colby-Sawyer College, New London NH, July 2001.
25. Physical Properties of DNA and Chromosomes, 21st Annual Conference of the Center for Nonlinear Studies, Los Alamos National Laboratory, Santa Fe NM, May 2001.
24. Biophysics of Chromosomes, CNRS Summer School on Biophysics, Cargese, Corsica, July 2000.
23. Physical Properties of DNA and Chromosomes, PMMB/MSRI School on Biophysics, Berkeley, CA, June 2000.
22. Physical Properties of DNA and Chromosomes, Polymer Science and Engineering MRSEC Conference, University of Massachusetts at Amherst, Amherst MA, May 2000.
21. Reversible and Irreversible Unfolding of Eukaryote Chromosomes by Force BMES/EMBS Conference, Atlanta, October 1999.
20. Structure, Elasticity and Dynamics of Chromosomes, EMBO Conference on Single Molecule Biophysics, Tours, France, July 1999.
19. Structure, Elasticity and Dynamics of Chromosomes, Gordon Conference on Condensed Matter Physics, Kingston, RI, June 1999.
18. Elasticity of DNA and Chromosomes, Banbury Conference on Gene Regulation, Banbury, NY, March 1999.
17. Physics of Chromosomes, March Meeting of the American Physical Society, Atlanta GA, March 1999.
16. Polymer Biophysics of DNA and Chromosomes, NSF-DMR Theory Workshop on Opportunities in Materials Theory, Ballston MD, October 1998.
15. Dynamics of Distant-Site Communications on Large DNAs, International Workshop on Site-Specific Recombination and Transposition, Oxford, England, September 1998.
14. DNA, Chromosomes and the Cell, Summer School on Biophysics, Cargese, Corsica, July 1998.

13. The Physical Problems of Chromosomes, XV Stiges Conference, Barcelona, June 1998.
12. Physics and Biology of Supercoiled and Braided DNAs, Rutgers Statistical Mechanics Conference, December 1997.
11. Shape Fluctuations in DNA, 45th Midwest Solid State Conference, Kansas State University, October 1997.
10. Dynamics of Structure and Elasticity of Eukaryote Chromosomes, 5th Bar-Ilan Conference on Frontiers in Condensed Matter Physics, Ramat-Gan, Israel, April 1997.
9. Stretched, Twisted, Supercoiled and Braided DNA, March Meeting of the American Physical Society, Kansas City, March 1997.
8. Bending, Stretching and Twisting Elasticity of DNA, Materials Research Society Meeting, Boston MA, December 1996.
7. Structure and Dynamics of Chromosomes in Living Cells, Gordon Research Conference on Dynamics of Macromolecular and Polyelectrolyte Solutions, Oxnard CA, February 1996.
6. Manipulation of single DNA molecules, Gordon Research Conference on Complex Fluids, New London NH, August 1995.
5. Fluctuations of DNA in the test tube and in the cell, Rutgers Statistical Mechanics Conference, May 1995.
4. Statistical Mechanics of Supercoiled DNA, Canadian-American-Mexican Physical Society Meeting, Cancun, Mexico, September 1994.
3. Microphase Separation of Charged-Neutral Diblock Copolymers Canadian Institute of Advanced Research Meeting, Xerox Research Corporation of Canada, Mississauga, May 1993.
2. Recent Progress in the Theory of End-Grafted Polymers, USA-FRG Polymer Symposium, Gross Ledder, Germany, August 1990.
1. Density Functional Theory of Phase Transitions in Fluids of Anisotropic Particles, March Meeting of the American Physical Society, Anaheim, March 1990, *Bull. Am. Phys. Soc.* **35**, 542 (1990).

#### **Invited Presentations at Research Institutions**

101. Micromechanical Study of DNA, Chromatin and Chromosomes, Colloquium, Department of Physics, Ohio University, October 2003.
100. Micromechanics of DNA, Chromatin and Chromosomes, Colloquium, Department of Physics, Indiana University, Bloomington IN, October 2003.
99. Micromechanics of DNA, Chromatin and Chromosomes, Colloquium, Department of Physics, Brandeis University, Waltham MA, September 2003.
98. Micromechanical Study of DNA, Chromatin and Chromosomes, Colloquium, Department of Biology, York University, York ON Canada, September 2003.
97. DNA and Chromosome Biophysics, Seminar, Department of Physics, University of Texas, Austin TX, November 2002.
96. Micromanipulation of DNA and Mitotic Chromosomes, Colloquium, Department of Chemical Engineering, Johns Hopkins University, Baltimore MD, November 2002.
95. Micromanipulation of DNA and Chromosomes, Colloquium, Department of Physics, University of Massachusetts, Amherst MA, October 2002.
94. Physical Properties of DNA and Chromosomes, Medical College of Wisconsin, Milwaukee WI, October 2002.

93. Physical Properties of DNA and Chromosomes, Colloquium, Department of Biochemistry, University of Bristol, Bristol UK, September 2002.
92. Micromechanical-Biochemical Study of Mitotic Chromosome Structure, Seminar, Department of Biomathematics, UCLA School of Medicine, Los Angeles CA, March 2002.
91. Micromechanical-Biochemical Study of Mitotic Chromosome Structure, Colloquium, Department of Molecular and Cell Biology, University of California, Berkeley CA, March 2002.
90. Micromanipulation Study of dsDNA and Chromosomes, Colloquium, Department of Physics, University of Minnesota, Minneapolis MN, February 2002.
- 87., 88., 89. Biomechanics of DNA and Chromosomes, Statistical Mechanics of Single DNA Molecules, Biophysics of Folded Chromosomes, Distinguished Visitor Lecture Series, University of Alberta, Edmonton, Canada, February 2002.
86. Micromechanics of DNA and Chromosomes, Colloquium, Department of Physics, Carnegie-Mellon University, Pittsburgh PA, January 2002
85. Micromechanics of DNA and Chromosomes, Colloquium, Department of Physics, University of Texas, Austin TX, January 2002
84. Micromechanics of nucleic acids: molecular biology meets soft condensed matter physics, Colloquium, Department of Physics, University of Chicago, Chicago IL, January 2002
83. Combined micromechanical-biochemical study of DNA and chromosomes, Colloquium, Department of Biochemistry and Molecular Biology, University of Chicago, Chicago IL, January 2002
82. Micromechanical study of DNA and chromosomes, Biophysics Division Seminar, University of Michigan, Ann Arbor MI, January 2002

(complete list available on request)