CURRICULUM VITAE

JOHN D. WEEKS

OFFICE ADDRESS:
Institute for Physical Science and Technology
University of Maryland
College Park, MD 20742

Tel: (301) 405-4802
FAX: (301) 314-9404
Email: jdw@ipst.umd.edu

HOME ADDRESS:
15301 Watergate Road
Silver Spring, MD 20905
(301) 989-1498

DATE OF BIRTH: October 11, 1943

EDUCATION:

University of Chicago Ph.D. Chemical Physics	1965-1969
Harvard College B.A. Physics - Magna cum laude	1961-1965

EXPERIENCE IN HIGHER EDUCATION:

Affiliate Professor, Department of Physics, University of Maryland	2003-
Distinguished University Professor, Institute for Physical Science and Technology and Department of Chemistry, University of Maryland	1995-
Professor, Institute for Physical Science and Technology and Department of Chemistry, University of Maryland	1990-1995
Research Associate, Cambridge University	1971-1972
Research Associate, University of California, San Diego	1969-1971

EXPERIENCE NOT IN HIGHER EDUCATION:

Member of Technical Staff, Materials Physics Research Department, AT&T Bell Laboratories, Murray Hill, NJ	1972-1990

NOTARIZATION STATEMENT

I have read the following and certify that this curriculum vitae is a current and accurate statement of my professional record.

_____ _____
Signature Date

OTHER PROFESSIONAL EXPERIENCE:
University of Illinois: Sept.-Dec. 1975
Institute of Theoretical Physics, University of California, Santa Barbara : Jan.-March 1982
University of Trondheim: Norway: April, May 1982
Aspen Center for Physics: July-August 1984
Institute for Theoretical Physics, University of California, Santa Barbara: Nov.-Dec. 1984
Aspen Center for Physics: August 1986
University of California, Berkeley: Jan.-May 1990
Nordita, Denmark : July 1994
Lorentz Institute, Leiden, The Netherlands: August 1994
University of California, Berkeley: June-July 1996
University of California, Berkeley: July-Dec. 1998 (Sabbatical Leave)

HONORS AND AWARDS:
Fellow: American Physical Society, 1984
Distinguished Member of Technical Staff Award, AT&T Bell Laboratories, 1985
Joel Henry Hildebrand Award in the Theoretical and Experimental Chemistry of Liquids (awarded by the American Chemical Society), 1990
Regent's Lecturer, University of California, Berkeley, 1990
Fellow, American Academy of Arts and Sciences, 2000

PROFESSIONAL ACTIVITIES:
Member: American Physical Society; American Association for the Advancement of Science; American Chemical Society
Editorial Boards: Chemical Physics; Advances in Chemical Physics; Journal of Chemical Physics 1994-1997
Chair, Subdivision of Theoretical Chemistry, American Chemical Society, 1992-1993
Vice-chair, Gordon Conference on Liquids, 1993; chair, 1995
Chair, Department of Energy Review Panel: Materials Theory, 1993
Member, NSF Panel evaluating National Young Investigators, 1993

GRANTS AND CONTRACTS:
Air Force of Scientific Research: "The Effect of Gravity on the Deposition of Thin Films: The Physical Vapor Transport of Copper Phthalocyanine," Aug. 1, 1991- July 31, 1994; $200,000. (M. Fisher and T. Einstein, co-PI's)

US-Israel Binational Science Foundation (BSF) (Grant # 95-00268): "Kinetics of Steps and Islands on Surfaces of Crystals" Sept. 1-1996 - Aug. 31, 1999 $60,000 (Daniel Kandel, Weizmann Institute, Ellen Williams, Co PI's)

National Science Foundation (Grant # CHE9528915): "Theory of Inhomogeneous and Confined Fluids," March 15, 1996 - March 15, 2000; $222,000.

National Science Foundation (Grant # CHE-0111104): "Theory of Nonuniform Fluids," Aug. 1, 2001-Aug. 1, 2004; $285,000.

National Science Foundation, "Adsorption, Epitaxy, and Growth: the Role of Surface Steps in Surface Morphology and Dynamics, Sept 1, 1991-Aug 31, 1996 (E. Williams, PI, 5 co-PI's)

National Science Foundation (Grant # DMR96-32521): "Center for Oxide Thin Films, Probes and Surfaces" (MRSEC) Sept. 1, 1996- Aug. 31, 2000; $8, 280,000. (E. Williams PI, 9 co-PI's)

National Science Foundation (Grant # DMR00-80008): "Center for Oxide Thin Films, Probes and Surfaces" (MRSEC) Sept. 1, 2000- Aug. 31, 2005; $10,000,000. (E. Williams PI, 15 co-PI's)

PUBLICATIONS AND OTHER SCHOLARLY ACTIVITIES

A. Journal Articles

1. J. D. Weeks and S. A. Rice, "Use of Pseudopotentials in Atomic Structure Calculations," J. Chem. Phys. 49, 2741-55 (1968).
2. J. D. Weeks, A. Hazi, and S. A. Rice, "On the Use of Pseudopotentials in the Quantum Theory of Atoms and Molecules," in *Advances in Chemical Physics*, Vol. XVI, edited by I. Prigogine and S. A. Rice (Interscience, New York, 1969), pp. 283-342.
3. J. D. Weeks, S. A. Rice, and I. Katz, "Coupling Parameter Expansion in the Kirkwood Integral Equation for Dense Fluids," J. Chem. Phys. 51, 4414-21 (1969).
4. J. D. Weeks, S. A. Rice, and J. J. Kozak, "Analytic Approach to the Theory of Phase Transitions," J. Chem. Phys. 52, 2416-26 (1970).
5. D. Chandler and J. D. Weeks, "Equilibrium Structure of Simple Liquids," Phys. Rev. Lett. 25, 149-52 (1970).
6. J. D. Weeks, D. Chandler, and H. C. Andersen, "Role of Repulsive Forces in Determining the Equilibrium Structure of Simple Liquids," J. Chem. Phys. 54, 5237-47 (1971).
7. H. C. Andersen, J. D. Weeks, and D. Chandler, "Relationship Between the Hard-Sphere Fluid and Fluids with Realistic Repulsive Forces," Phys. Rev. A 4, 1597-607 (1971).
8. J. J. Kozak, S. A. Rice and J. D. Weeks, "An Analytic Approach to the Theory of Phase Transitions. II. A Model Equation," Physica 54, 573-92 (1971).
9. J. D. Weeks, D. Chandler, and H. C. Andersen, "Perturbation Theory of the Thermodynamic Properties of Simple Liquids," J. Chem. Phys. 55, 5422-3 (1971).
10. J. D. Weeks and K. E. Shuler, "Random Walk Model of Interstitial Thermal Diffusion in Crystals," J. Chem. Phys. 56, 1883-9 (1972).
11. H. C. Andersen, D. Chandler, and J. D. Weeks, "Roles of Repulsive and Attractive Forces in Liquids: The Optimized Random Phase Approximation," J. Chem. Phys. 56, 3812-22 (1972).
12. R. I. Cukier, K. E. Shuler, and J. D. Weeks, "On the Validity of Stochastic Rate Equations in Finite Systems with Finite Strength Interactions," J. Stat. Phys. 5, 99-112 (1972).
13. H. C. Andersen, D. Chandler, and J. D. Weeks, "Optimized Cluster Expansions for Classical Fluids. III. Applications to Ionic Solutions and Simple Liquids," J. Chem. Phys. 57, 2626-31 (1972).
14. J. D. Weeks, P. W. Anderson, and A. G. H. Davidson, "Non-Hermitian Representations in Localized Orbital Theories," J. Chem. Phys. 58, 1388-95 (1973).
15. R. G. Palmer and J. D. Weeks, "Exact Solution of the Mean Spherical Model for Charged Hard Spheres in a Uniform Neutralizing Background," J. Chem. Phys. 58, 4171-4 (1973).
16. P. W. Anderson and J. D. Weeks, "Developments in Localized Pseudopotential Methods," in *Computational Methods for Large Molecules and Localized States in Solids*, edited by F. Herman, A. D. McLean and R. K. Nesbet (Plenum, New York, 1973), p. 251.
17. J. D. Weeks, G. H. Gilmer, and H. J. Leamy, "Structural Transition in the Ising Model Interface," Phys. Rev. Lett. 31, 549-51 (1973).
18. G. H. Gilmer, K. A. Jackson, H. J. Leamy, and J. D. Weeks, "On the Free Energy of Crystal Surfaces," J. Phys. C 7, L123-5 (1974).

19. J. D. Weeks and G. H. Gilmer, "Pair Approximation Equations for Interfaces and Free Surfaces in the Ising Model," J. Chem. Phys. 63, 3136-43 (1975).

20. J. D. Weeks, J. C. Tully, L. C. Kimerling, "Theory of Recombination Enhanced Defect Reactions in Semiconductors," Phys. Rev. B 12, 3286-92 (1975).

21. J. D. Weeks and G. H. Gilmer, "Pair Approximation Equations for Properties of the Crystal-Vapor Interface," J. Cryst. Growth 33, 21-8 (1976).

22. J. D. Weeks, G. H. Gilmer, and K. A. Jackson, "Analytical Theory of Crystal Growth, J. Chem. Phys. 65, 712-20 (1976).

23. H. C. Andersen, D. Chandler, and J. D. Weeks, "Roles of Repulsive and Attractive Forces in Liquids: The Equilibrium Theory of Classical Fluids," in *Advances in Chemical Physics*, Vol. XXXIV, edited by I. Prigogine and S. A. Rice (Interscience, New York, 1976), pp. 105-154.

24. S. T. Chui and J. D. Weeks, "Phase Transition in the Two-Dimensional Coulomb Gas, and the Interfacial Roughening Transition," Phys. Rev. B 14, 4978-82 (1976).

25. J. D. Weeks, "One and Two Component Hard Sphere Models for the Structure of Metallic Glasses. An Integral Equation Approach," Philos. Mag. 35, 1345-63 (1977).

26. J. D. Weeks, "Structure and Thermodynamics of the Liquid-Vapor Interface," J. Chem. Phys. 67, 3106-21 (1977).

27. S. T. Chui and J. D. Weeks, "Dynamics of the Roughening Transition," Phys. Rev. Lett. 40, 733-6 (1978).

28. J. D. Weeks and G. H. Gilmer, "Thermodynamic Properties of Surface Steps," J. Cryst. Growth 43, 385-7 (1978).

29. G. H. Gilmer and J. D. Weeks, "Statistical Properties of Steps on Crystal Surfaces," J. Chem. Phys. 68, 950-8 (1978).

30. W. J. Shugard, J. D. Weeks, and G. H. Gilmer, "Monte Carlo Test of Theories for the Planar Model, the F Model, and Related Systems," Phys. Rev. Lett. 41, 1399-402 (1978).

31. J. D. Weeks and G. H. Gilmer, "Dynamics of Crystal Growth," in *Advances in Chemical Physics*, Vol. XL, edited by I. Prigogine and S. A. Rice (John Wiley, New York, 1979), pp. 157-228.

32. S. T. Chui and J. D. Weeks, "Effect of the Substrate Potential on Incommensurate Expitaxies at Finite Temperatures," Phys. Rev. B 21, 4413-18 (1980).

33. W. J. Shugard, J. D. Weeks, and G. H. Gilmer, "Monte Carlo Simulation of the Planar Model Using the Dual Solid-on-Solid Representation," Phys. Rev. B 21, 5309-11 (1980).

34. J. D. Weeks, "The Roughening Transition," in *Ordering in Strongly Fluctuating Condensed Matter Systems*, edited by T. Riste (Plenum, New York, 1980), pp. 293-317.

35. W. J. Shugard and J. D. Weeks, "Renormalized Finite Cluster Method for Lattice Models. I. Site Renormalization and Star Cluster Expansions," Phys. Rev. B 22, 5245-58 (1980).

36. S. T. Chui and J. D. Weeks, "Pinning and Roughening of One-Dimensional Models of Interfaces and Steps," Phys. Rev. B 23, 2438-41 (1981).

37. J. D. Weeks, "Volume Change on Melting for Systems with Inverse Power Law Interactions," Phys. Rev. B 24, 1530-5 (1981).

38. J. Q. Broughton, G. H. Gilmer and J. D. Weeks, "Constant Pressure Molecular Dynamics Simulations of the 2D r^{-12} System: Comparison with Isochores and Isotherms," J. Chem. Phys. 75, 5128-32 (1981).

39. M. P. A. Fisher, D. S. Fisher, and J. D. Weeks, "Agreement of Capillary Wave Theory with Exact Results for the Interface Profile of the Two-Dimensional Ising Model," Phys. Rev. Lett. 48, 368 (1982).

40. W. J. Shugard, J. D. Weeks, and G. H. Gilmer, "Reply to 'Comment On: Monte Carlo Test of Theories for the Planar Model, the F Model, and Related Systems'," Phys. Rev. B 25, 2022-4 (1982).

41. J. Q. Broughton, G. H. Gilmer, and J. D. Weeks, "Molecular-Dynamics Study of Melting in Two Dimensions. Inverse Twelfth Power Interaction," Phys. Rev. B25, 4651-69 (1982).

42. J. D. Weeks, "Variational Theory of Multilayer Solid Adsorption," Phys. Rev. B 26, 3998-4000 (1982).

43. J. D. Weeks and J. Q. Broughton, "Van der Waals Theory of Melting in Two and Three Dimensions," J. Chem. Phys. 78, 4197-4205 (1983).

44. D. Chandler, J. D. Weeks and H. C. Andersen, "The van der Waals Picture of Liquids, Solids and Their Phase Transformations," Science 220, 787-794 (1983).

45. D. S. Fisher and J. D. Weeks, "Shape of Crystals at Low Temperatures: Absence of Quantum Roughening," Phys. Rev. Lett. 50, 1077-1080 (1983).

46. W. van Saarloos and J. D. Weeks, "Surface Undulations in Explosive Crystallization: A Thermal Instability," Phys. Rev. Lett. 51, 1046-1049 (1983).

47. J. D. Weeks, D. Bedeaux, and B. J. A. Zielinska, "Anisotropic van der Waals Model of the Liquid-Vapor Interface," J. Chem. Phys. 80, 3790-3800 (1984).

48. J. D. Weeks, "Scaling Relations Between Correlations in the Liquid-Vapor Interface and the Interface Width," Phys. Rev. Lett. 52, 2160-2163 (1984).

49. J. D. Weeks, "Multilayer Solid Adsorption and the Roughening Transition," in *Phase Transformations in Solids*, edited by T. Tsakalakos (Elsevier, New York, 1984), 597-603.

50. W. van Saarloos and J. D. Weeks, "Surface Undulations in Explosive Crystallization" A Nonlinear Analysis of a Thermal Instability," Physics 12D, 279-294 (1984).

51. D. A. Kurtze, W. van Saarloos, and J. D. Weeks, "Front Propagation in Self-Sustained and Laser-Driven Explosive Crystal Growth: Stability Analysis and Morphological Aspects," Phys. Rev. B 30, 1398-1415 (1984).

52. D. Bedeaux and J. D. Weeks, "Correlation Functions in the Capillary Wave Model of the Liquid-Vapor Interface," J. Chem. Phys. 82, 972-979 (1985).

53. D. A. Huse, W. van Saarloos, and J. D. Weeks, "Interface Hamiltonians and Bulk Critical Behavior," Phys. Rev. B 32, 233-246 (1985).

54. W. van Saarloos and J. D. Weeks, "Boundary Layer Formulation of Dendritic Growth: Existence of a Family of Steady-State Needle Solutions," Phys. Rev. Lett. 55, 1685-1688 (1985).

55. D. Bedeaux, J. D. Weeks, and B. Zielinska, "Structure of the Liquid-Vapor Interface Using a Gaussian Column Model with a Variable Interaction Range," Physica A 130, 88-122 (1985).

56. W. van Saarloos and J. D. Weeks, "Physics of Heat Flow in the Tails of Needle Crystals," Phys. Rev. A 35, 2357-2360 (1987).

57. W. van Saarloos, J. D. Weeks, and G. Kotliar, "Asymptotic Expansion of the Full Non-Local Solidification Problem," Phys. Rev. A 35, 2288-2292 (1987).

58. J. D. Weeks and W. van Saarloos, "Boundary Layer Approaches to Dendritic Growth," Phys. Rev. A 35, 3001-3024 (1987).

59. S. J. Singer and J. D. Weeks, "Renormalized Finite Cluster Expansions," Phys. Rev. B36, 2228-45 (1987).

60. W. van Saarloos, J. D. Weeks, and M. Grant, "Indications of Microscopic Solvability from Counting Arguments," Phys. Rev. A 37, 230-34 (1988).

61. J. D. Weeks and W. van Saarloos, "Directional Solidification Cells with Grooves for Small Partition Coefficient," Phys. Rev. A 39, 2772-2775 (1989).

62. J. D. Weeks and W. van Saarloos, "Implications of the Triezenberg-Zwanzig Surface Tension Formula for Models of Interface Structure," J. Phys. Chem. 93, 6969-6975 (1989).

63. J. D. Weeks, W. van Saarloos, D. Bedeaux, and E. Blokhuis, "Consistency of Capillary Wave Theory in Three Dimensions: Divergence of the Interface Width and Agreement with Density Functional Theory," J. Chem. Phys. 91, 6494-6504 (1989).

64. J. D. Weeks and W. van Saarloos, "Stability of Cellular Patterns in Directional Solidification," Phys. Rev. A 42, 5056-5059 (1990).

65. J. D. Weeks and W. van Saarloos, "Stability and Shapes of Cellular Profiles in Directional Solidification: Expansion and Matching Methods," J. Cryst. Growth 112, 224-282 (1991).

66. L. V. Mikheev and J. D. Weeks, "Sum Rules for Interface Hamiltonians," Physica A 177, 495-504 (1991).

67. J. D. Weeks, "Comment on the Capillary Wave Model in Three Dimensions," J. Stat. Phys. 64, 823-827 (1991).

68. W. van Saarloos and J. D. Weeks, "Cellular Profiles in Directional Solidification: is the Saffman-Taylor Branch of Solutions the Physically Relevant One?," in *Growth and Form*, edited by M. Ben Amar, et al. (Plenum Press, 1991), pp. 157-165.

69. D. Kandel and J. D. Weeks, "Step Bunching as a Chaotic Pattern Formation Process," Phys. Rev. Lett. 69, 3785-3791 (1992).

70. K. J. Naidoo, J. Schnitker, and J. D. Weeks, "Two-Dimensional Melting Revisited: Molecular Dynamics Simulations Initiated with Optical Microscopy Data," Mol. Phys. 80, 1-24 (1993).

71. D. Kandel and J. D. Weeks, "Chaotic Step Bunching During Crystal Growth," Physica D 66, 78-86 (1993).

72. D. Kandel and J. D. Weeks, "Theory of Impurity Induced Step Bunching," Phys. Rev. B 49, 5554-5564 (1994).

73. J. D. Weeks, "Modeling Research," Comp. Mat. Sci. 2, 81-84 (1994).

74. D. Kandel and J. D. Weeks, "Step Motion, Patterns and Kinetic Instabilities on Crystal Surfaces," Phys. Rev. Lett. 72, 1678-1681 (1994).

75. F. H. Stillinger and J. D. Weeks, "Capillary Waves at the Liquid-Vapor Interface. Widom-Rowlinson Model at Low Temperature," J. Phys. Chem. 99, 2807-2816 (1995).

76. W. van Saarloos and J. D. Weeks, "Faraday Instability of Crystallization Waves at the ^{4}He Solid-Liquid Interface," Phys. Rev. Lett. 74, 290-293 (1995).

77. D. Kandel and J. D. Weeks, "Kinetics of Surface Steps in the Presence of Impurities: Patterns and Instabilities," Phys. Rev. B 52, 2154-2164 (1995).

78. D. Kandel and J. D. Weeks, "Simultaneous Bunching and Debunching of Surface Steps: Theory and Relation to Experiments," Phys. Rev. Lett. 74, 3632-3635 (1995).

79. E. D. Williams, E. Fu, Y.-N. Yang, D. Kandel, and J. D. Weeks, "Measurement of the Anisotropy Ratio During Current-Induced Step Bunching," Surface Sci. 336, L746-L752 (1995).

80. J. D. Weeks, R. L. B. Selinger, and J. Q. Broughton, "Self-Consistent Treatment of Repulsive and Attractive Forces in Nonuniform Liquids," Phys. Rev. Lett. 75, 2694-2697 (1995).

81. H.-C. Jeong and J. D. Weeks, "Faceting Through the Propagation of Nucleation," Phys. Rev. Lett. 75, 4456-4459 (1995).

82. E. S. Fu, M. D. Johnson, D.-J. Liu, J. D. Weeks, and E. D. Williams, "Size Scaling in the Decay of Metastable Structures," Phys. Rev. Lett. 77, 1091-1094 (1996).

83. D.-J. Liu, R. L. B. Selinger, and J. D. Weeks, "Representing Molecular Shape and Interactions -- A Reduced Intermolecular Potential For Copper Phthalocyanine," J. Chem. Phys. 105 , 4751-4760 (1996) .

84. D.-J. Liu, E. S. Fu, M. D. Johnson, J. D. Weeks, and E. D. Williams, "Relaxation of the Step Profile for Different Microscopic Mechanisms," J. Vac. Sci. & Tech. B 14, 2799-2808 (1996).

85. E. S. Fu, D.-J. Liu, M. D. Johnson, J. D. Weeks, and E. D. Williams, "The Effective Charge in Surface Electromigration," Surface Science 385, 259-269 (1997).

86. D.-J. Liu, J. D. Weeks, and D. Kandel, "Velocity Function Models of Step Dynamics: Theory of Current Induced Step Bunching on Si(111) Surfaces," Surf. Rev. and Lett. 4, 107-113 (1997).

87. D.-J. Liu, J. D. Weeks, M. D. Johnson, and E. D. Williams, "Two-Dimensional Facet Nucleation and Growth on Si(111)," Phys. Rev. B 55, 7653-7659 (1997).

88. J. D. Weeks, D.-J. Liu, and H.-C. Jeong, "Two-Dimensional Models for Step Dynamics," in *Dynamics of Crystal Surfaces and Interfaces*, edited by P. Duxbury and T. Spence (Plenum, New York) 1997, pp. 199-216.

89. J. D. Weeks, K. Vollmayr and K. Katsov, "Intermolecular Forces and the Structure of Uniform and Nonuniform Fluids," Physica A 244, 461-475 (1997).

90. D.-J. Liu and J. D. Weeks, "Interactions between Fluctuating Steps on Vicinal Surfaces: Edge Energy Effects in Reconstruction Induced Faceting," Phys. Rev. Lett. 79, 1694-1697 (1997).□

91. H.-C. Jeong and J. D. Weeks, "Two-Dimensional Dynamical Model for Step Bunching and Pattern Formation Induced by Surface Reconstruction," Phys. Rev. B 57, 3939-3948 (1998).

92. D.-J. Liu and J. D. Weeks, "A Quantitative Theory of Current-Induced Step Bunching on Si(111)," Phys. Rev. B 57, 14891-14900 (1998).

93. D.-J. Liu, J. D. Weeks, and D. Kandel, "Current-Induced Step Bending Instability on Vicinal Surfaces," Phys. Rev. Lett. 81, 2743-2746 (1998).

94. J . D. Weeks, K. Katsov, and K. Vollmayr, "Roles of Repulsive and Attractive Forces in Determining the Structure of Nonuniform Liquids: Generalized Mean Field Theory," Phys. Rev. Lett. 81, 4400-4403 (1998).

95. H.-C. Jeong and J. D. Weeks, "Effect of Step-Step Interactions on the Fluctuations of an Individual Step on a Vicinal Surface," Surf. Sci. 432, 101-114 (1999).

96. K. Lum, D. Chandler, and J. D. Weeks, "Hydrophobicity at Small and Large Length Scales," J. Phys. Chem. B 103, 4570-4577 (1999).

97. K. Thürmer, D-J. Liu, E. D. Williams, and J. D. Weeks, "Onset of Step Anti-Banding Instability due to Surface Electromigration," Phys. Rev. Lett. 83, 5531-5534 (1999).

98. N. Israeli, H.-C. Jeong, D. Kandel, and J. D. Weeks, "Dynamics and Scaling of One Dimensional Surface Structures," Phys. Rev. B 61, 5698-5706 (2000).

99. K. Katsov and J. D. Weeks, "Determining Liquid Structure from the Tail of the Direct Correlation Function," J. Stat. Phys. 100, 107-134 (2000).

100. K. Vollmayr-Lee, K. Katsov, and J. D. Weeks, "Using Mean Field Theory to Determine the Structure of Uniform Fluids," J. Chem. Phys. 114, 416-425 (2001).

101. K. Katsov and J. D. Weeks, "Density Fluctuations and the Structure of a Nonuniform Hard Sphere Fluid," Phys. Rev. Lett. 86, 440-443 (2001).

102. K. Katsov and J. D. Weeks, "On the Mean Field Treatment of Attractive Interactions in Nonuniform Simple Fluids," J. Phys. Chem. B 105, 6738-6744 (2001).

103. J. D. Weeks, "Connecting Local Structure to Interface Formation: A Molecular Scale van der Waals Theory of Nonuniform Liquids," Annu. Rev. Phys. Chem. 53, 533-562 (2002).

104. J. D. Weeks, "External fields, Density Functionals, and the Gibbs Inequality," J. Stat. Phys. 110, 1209-1217 (2003).

105. K. Katsov and J. D. Weeks, "Incorporating Molecular Scale Structure into the van der Waals Theory of the Liquid-Vapor Interface," J. Phys. Chem. 106, 8429-8436 (2002).

106. Y.-G. Chen and J. D. Weeks, "Different Thermodynamic Pathways to the Solvation Free Energy of a Spherical Cavity in a Hard Sphere Fluid," J. Chem. Phys. 118, 7944-7953 (2003).

107. J. D. Chai and J. D. Weeks, "Modified Statistical Treatment of Kinetic Energy in the Thomas-Fermi Model," J. Phys. Chem. (in press)

108. T. Zhao and J. D. Weeks, "A Unified Treatment of Current-induced Instabilities on Si Surfaces," Phys. Rev. Lett. (submitted)

B. Invited Lectures (Since arrival at MD, Sept. 1990)

October 25, 1990 - National Institute of Standards and Technology, Gaithersburg, MD, "Directional Solidification Patterns"

November 13, 1990 - University of Delaware, Dept. of Physics, Newark, DE, "Directional Solidification Patterns"

March 19, 1991 - American Physical Society Meeting, Cincinnati, OH, "Pattern Formation in Crystal Growth" (Invited Talk)

April 22, 1991 - Ohio State University, Columbus OH, Dept. of Physics, "Stability of Patterns in Directional Solidification"

April 26, 1991 - University of Chicago, Dept. of Applied Mathematics, Chicago, IL, "A Stability Analysis of Directional Solidification Patterns"

November 5, 1991 - University of Maryland, College Park, Dept. of Physics, "Interface Fluctuations"

December 18, 1991 - 66th Statistical Mechanics Meeting, Rutgers University, Symposium in Honor of J. Percus' 65th Birthday, "Sum Rules and Interface Structure"

May 21, 1992 - Center for Nonlinear Studies, Los Alamos; Conference on *Nonlinearity in Materials Science*, "Step Dynamics on Crystal Surfaces."

August 15, 1992 - International Summer School on Crystal Growth - 8, Palm Springs, CA, "Pattern Formation in Directional Solidification."

September 15, 1992 - University of Maryland, IPST, "Chaotic Step Bunching During Crystal Growth."

September 22, 1992 - University of Michigan, Department of Physics, "Chaotic Step Bunching During Crystal Growth."

September 24, 1992 - University of Chicago, *Symposium in Honor of Stuart Rice's 65th Birthday*, "Step Bunching as a Chaotic Pattern Formation Process."

October 28, 1992 - University of Illinois, Department of Chemistry, "Chaotic Step Bunching During Crystal Growth."

October 30, 1992 - Iowa State University, Department of Chemistry, "Chaotic Step Bunching During Crystal Growth."

October 27, 1993 - Texas A&M University, Department of Chemistry, "Chaotic Step Bunching During Crystal Growth."

October 29, 1993 - University of Texas, Department of Chemistry, "Step motion and instabilities on crystal surfaces."

April 14, 1994 - University of Pennsylvania, Dept. of Chemistry, "Step motion, patterns, and kinetic instabilities on crystal surfaces"

July 21, 1994 - Nordita, Denmark, "Step motion, patterns, and kinetic instabilities on crystal surfaces"

August 2, 1994 - Lorentz Institute, Leiden University, The Netherlands, "Theory of inhomogeneous and confined liquids"

August 15, 1994 - FOM Institute, Amsterdam, The Netherlands, "Step motion and kinetic instabilities on crystal surfaces"

August 23, 1994 - Lorentz Institute, Leiden University, The Netherlands, "Step motion, patterns, and kinetic instabilities on crystal surfaces"

October 14, 1994 - Brown University, Dept. of Chemistry, "Kinetics of surface steps in the presence of impurities: patterns and instabilities"

November 28, 1994 - Ohio State University, Dept. of Chemistry, "Kinetics of surface steps in the presence of impurities: patterns and instabilities"

January 24, 1995 - University of Maryland, Institute for Physical Science and Technology, "Correlations in inhomogeneous fluids: Treating attractive and repulsive forces self consistently."

February 28, 1995 - Exxon Research and Engineering, "Current induced step bunching on Si surfaces: theory and relation to experiment"

June 23, 1995 - University of Hong Kong, *International Conference on Surface Science: Critical Reviews and Outlooks*, "Current induced step bunching"

October 18, 1995 - Naval Research Laboratory, *Workshop on Materials Modeling,* "Faceting by the propagation of nucleation"

December 17, 1995 - Rutgers University, Statistical Mechanics Meeting, "Self-consistent treatment of repulsive and attractive forces in nonuniform liquids"

January 26, 1996 - University of California, Berkeley, Dept. of Chemistry, "Self-consistent treatment of repulsive and attractive forces in nonuniform liquids"

February 15, 1996 - Louisiana State University, *Experimental and Simulation Challenges in Nanostructured Materials,* "Faceting by the propagation of nucleation"

May 7, 1996 - University of Wisconsin, Dept. of Chemistry - "Step dynamics and pattern formation on surfaces"

August 6, 1996 - Traverse City, MI, *Fundamental Problems in Surface Science,* "Two-dimensional models for step dynamics"

September 24, 1997 - Lyon, France, CECAM conference on *Dynamics of Surfaces Near Equilibrium,* "Step dynamics and patterns on crystal surfaces"

September 29, 1997- University of Maryland MRSEC Industrial Review and Workshop- "Understanding step dynamics on crystal surfaces - interplay between theory and experiment"

February 27, 1998 - University of Virginia, Dept. of Physics - "Step dynamics and patterns on crystal surfaces"

March 2, 1998 - Boston University, Department of Chemistry - "Step dynamics and patterns on crystal surfaces"

April 22, 1998 - Weizmann Institute, Israel - "Step dynamics and patterns on crystal surfaces"

April 27, 1998 - Hebrew University, Israel - "Step dynamics and patterns on crystal surfaces"

May 17, 1998 - Rutgers University, Statistical Mechanics Meeting (honoring John Cahn's 70th birthday), "Theory of step dynamics"

Aug. 24, 1998 - American Chemical Society Meeting, Boston, "Connecting local structure to interface formation : simple liquids and hydrophobic interactions in water"

Oct. 7, 1998 - Institute for Theoretical Physics, University of California, Santa Barbara, "Connecting local structure to interface formation : simple liquids and hydrophobic interactions in water"

Nov. 2, 1998 - University of California, Berkeley, Department of Chemistry, "Connecting local structure to interface formation : simple liquids and hydrophobic interactions in water"

Feb. 22, 1999 - Ohio State University, Department of Physics, "From local structure to interface formation in liquids"

March 22, 1999 - American Chemical Society Meeting, Anaheim, CA, "From local structure to interface formation in liquids"

April 19, 1999 - Washington University, Department of Chemistry, "From local structure to interface formation in liquids"

June 22, 1999 – Gordon Conference on Thin Films and Crystal Growth Mechanisms, "Step dynamics and pattern formation on crystal surfaces"

Aug. 3, 1999 - Gordon Conference on Chemistry and Physics of Liquids, "From local structure to interface formation in simple liquids"

Oct. 21, 1999 - University of Pennsylvania, Dept. of Physics, "From local structure to interface formation in liquids"

Oct. 25, 1999 - George Mason University, Dept. of Physics, "Role of repulsive and attractive forces in liquids"

Nov. 3, 1999 - Catholic University, Dept. of Physics, "Role of repulsive and attractive forces in liquids"

Nov. 16, 1999 - National Institute for Standards and Technology, "From local structure to interface formation in liquids"

Jan. 12, 2000 - Pitzer Memorial Symposium on Theoretical Chemistry, University of California, Berkeley, "Step dynamics and pattern formation on crystal surfaces"

May 22, 2000 - SIAM Conference on Mathematical Aspects of Material Science, Philadelphia, PA, "Current Induced Step Dynamics and Pattern Formation on Crystal Surfaces"

June 2, 2000 - Bruce Berne Festschrift, Columbia University, "Density fluctuations and the structure of nonuniform fluids"

Aug. 15, 2000 – American Association of Crystal Growth, Vail, CO,
"Current induced step dynamics and pattern formation on crystal surfaces"

Nov. 14, 2000 – Penn State University, Dept. of Physics, "Density fluctuations and the structure of nonuniform fluids"

Dec. 7, 2000 – University of Maryland, Dept. of Mathematics, "Current induced step dynamics and pattern formation on crystal surfaces"

Oct. 30, 2001 – University of Maryland, Statistical physics seminar, "Connecting local structure to interface formation in liquids"

Nov. 7, 2001 – University of Leiden, Dept. Of Physics, (Colloquium Ehrenfestii), "Connecting local structure to interface formation: a molecular scale van der Waals theory of nonuniform fluids"

Dec. 16, 2001 - Rutgers University, Statistical Mechanics Meeting (honoring Michael Fisher's 70th birthday), "Connecting local structure to interface formation in liquids"

Jan. 9, 2002 – Interphase 2001: Numerical Methods for Free Boundary Problems, College Park, MD, "Step dynamics and pattern formation on crystal surfaces"

Jan. 12, 2002 – 2002 Mini Statistical Mechanics Meeting, Berkeley, CA, "Connecting local structure to interface formation in liquids"

Jan. 16, 2002 – Lawrence Livermore Laboratories, "Impurity induced step dynamics and pattern formation on crystal surfaces"

April 15, 2002 – University of Toronto, Dept. of Physics, "Connecting local structure to interface formation in liquids"

Sept. 24, 2002 – University of Maryland, Statistical Physics seminar, "Gaussian fluctuations and molecular fields: A simple theory of nonuniform fluids"

Oct. 14, 2002 – Yangtze Conference on Fluids and Interfaces, China, "Gaussian fluctuations and molecular fields: A simple theory of nonuniform fluids"

Oct. 20, 2003 – CSCAMM Conference on Nonequilibrium Interface Dynamics, Maryland, "Current-induced instabilities on Si surfaces"

April 13, 2004 – University of Maryland, Statistical Physics seminar, "Screening, structure and simulations of Coulomb systems: The long and short of it"

April 23, 2004 – Iowa State University, Dept. of Chemistry, "Screening, structure and simulations of Coulomb systems: The long and short of it"

May 16, 2004 – Rutgers University, Statistical Mechanics Meeting, "Screening, structure and simulations of ionic fluids"

May 27, 2004 – Los Alamos National Laboratory, P-T Colloquium, "Screening, structure and simulations of Coulomb systems: The long and short of it"

June 14, 2004 – American Association for Crystal Growth Conference on Crystal Growth and Epitaxy, Fallen Leaf Lake, CA, "A unified treatment of current-induced instabilities on Si surfaces"

ACADEMIC ACTIVITIES

A. Courses Taught

Semester	*Title*	*Course No.*	*Enrollment*
Spring 1991	Statistical Mechanics and Chemistry	Chem. 687	8
Spring 1992	Statistical Mechanics and Chemistry	Chem. 687	6
Spring 1993	Statistical Mechanics and Chemistry	Chem. 687	8
Spring 1994	Statistical Mechanics and Chemistry	Chem. 687	10
Spring 1995	Statistical Mechanics and Chemistry	Chem. 687	8
Fall 1995	Chemical Thermodynamics	Chem. 684	18
Fall 1996	Chemical Thermodynamics	Chem. 684	9
Fall 1997	Chemical Thermodynamics	Chem. 684	8
Spring 1999	Statistical Mechanics and Chemistry	Chem. 687	8
Spring 2000	Statistical Mechanics And Chemistry	Chem. 687	8
Spring 2001	Statistical Mechanics And Chemistry	Chem. 687	6
Spring 2002	Physical Chemistry I	Chem. 481	38
Spring 2003	Physical Chemistry I	Chem. 481	27
Fall 2003	Chemical and Statistical Thermodynamics	Chem. 684	14
Spring 2004	Statistical Mechanics and Chemistry	Chem. 687	10

B. Supervision of Student Research

Da-Jiang Liu (physics; graduated Sept 1998)
Kirill Katsov (chemical physics; graduated Sept 2000)
Tong Zhao (fifth year chemical physics student)
Yng-gwei Chen (fifth year physics student)
Jeng-Da Chai (second year chemical physics student)

C. University Service

1.) Promotion Committees
Ellen Williams, Robert Gammon 1991
Dave Thirumalai (Chair) 1992

2.) Other Committee Assignments and Service
Local Organizer, M. E. Fisher's Sixtieth Birthday Symposium 1991
Committee for Evaluation of Chemical Physics Program 1991
Organized Chemical Physics Seminars, Spring 1992
Co-organized Statistical Physics Seminars, Spring 1994, Spring 1995, Fall 1996, Fall 1997, Spring 1998
Co-organized Interdisciplinary Problems in Chemistry and Physics Seminars, Fall 1999, Fall 2000, Spring 2001, Spring 2002, Spring 2003
Policy Committee, IPST 1992-96
Salary Review Committee, IPST 1993-96
Graduate Admissions Committee, Chemistry 1993-1997
FAPT Committee, IPST 1996-1998
FAC Committee, Chemistry 1997-98
Physical Chemistry Division Chair Fall 1997- Spring 1998
IPST "5-year plan" Committee – 2000
Chair, IPST FAPT Committee 2000-2002
IPST Director Search Committee 2000-2001
FAC Committee, Chemistry 2001-2003
Secretary, IPST assembly 2001-2002
Nanosearch committee, Physics 2002
IPST Director Search Committee 2003
Chair, IPST assembly 2003
Vice-chair, IPST assembly 2004
Nanosearch committee, Physics 2004
IPST Policy Committee 2003-2004
Long-ranged Planning Committee- Chemistry 2003-2004
Graduate Awards Committee – Chemistry 2003-2004