CURRICULUM VITAE

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POSITIONS HELD

7/12 –	Chair, Department of Chemical & Biological Engineering, CU-Boulder
7/12 –	Alfred and Betty Look Professor of Engineering, CU-Boulder
4/04 –	Senior Editor, *Langmuir*
9/04 – 6/12	Professor, Dept. of Chemical & Biological Engineering, CU-Boulder
1/01 – 8/04	Associate Professor, Dept. of Chemical & Biological Engineering, CU-Boulder
7/98 – 12/00	Associate Professor, Department of Chemistry, Tulane University
7/94 – 6/98	Assistant Professor, Department of Chemistry, Tulane University
9/92 – 7/94	Postdoctoral Associate, Dept. of Chemistry and Biochemistry University of California, Los Angeles with Charles M. Knobler
4/91 – 8/92	Postdoctoral Associate, Dept. of Chemical and Nuclear Engineering University of California, Santa Barbara with Joseph A. Zasadzinski

EDUCATION

Ph. D. in Physics, Harvard University (Advisor: Professor Peter S. Pershan)	6/91
A.B. *summa cum laude* in Chemistry and Physics, Harvard University	6/84

SELECTED HONORS AND AWARDS

2014	Dean's Award for Outstanding Research
2014	Elected Fellow of the American Chemical Society
2011	Elected Fellow of the American Physical Society
2011	Graduate Teaching Award, CU-Boulder Chemical & Biological Engineering
2010	Faculty Research Award, CU-Boulder College of Engineering
2008	Boulder Faculty Assembly Award for Excellence in Research
2006	CU-LEAD Alliance Faculty Appreciation Award
1999	Camille Dreyfus Teacher-Scholar Award
1998	NSF/CAREER Award
1997-9	Mortarboard Honor Society Salute for Excellence in Teaching (3 times)
1994	Camille & Henry Dreyfus Foundation New Faculty Award
1985	Stone and Webster Fellowship, Harvard University
1981	Detur Prize (award for top freshmen), Harvard University

SYNERGISTIC ACTIVITIES

Senior Editor (2004–present), *Langmuir*
Chair-line Officer (2014-2017), ACS Colloid & Surface Chemistry Division
Founding Director (2003–2012), NSF REU Site Program in Functional Materials
Founding Director (1998–2000), Tulane Science Scholars Program
Curriculum Developer, *Creative Technology*, a course that has introduced alternative energy, biotech, and nanoscience concepts to more than 7000 non-science undergraduates.

PUBLICATIONS

1. J.F. Lynch, D.K. Schwartz, and K. Sivaprasad, *J. Acoust. Soc. Am.* **78**, 575 (1985)
"On the use of Focused Horizontal Arrays as Mode Separation and Source Location Devices in Ocean Acoustics"

2. D.K. Schwartz, A. Braslau, B. Ocko, and P.S. Pershan, *Phys. Rev. A* **38**, 5817 (1988)
"X-ray Reflectivity Studies of a Microemulsion Surface"

3. M.L. Schlossman, D.K. Schwartz, E.H. Kawamoto, G.J. Kellogg, P.S. Pershan, B.M. Ocko, M.W. Kim, and T.C. Chung, *Mat. Res. Soc. Symp. Proc.* **177**, 351 (1990)
"X-ray Studies of the Liquid/Vapor Interface: Water and Polymer and Fatty Acid Monolayers on Water"

4. D.K. Schwartz, M.L. Schlossman, E.H. Kawamoto, G.J. Kellogg, P.S. Pershan, and B.M. Ocko, *Phys. Rev. A* **41**, 5687 (1990)
"Thermal Diffuse X-ray Scattering Studies of the Water/Vapor Interface"

5. G. Swislow, D. Schwartz, B.M. Ocko, and P.S. Pershan, *Phys. Rev. A* **43**, 6815 (1991)
"X-ray Studies of the Surface and Bulk Structure of the Isotropic and Nematic Phase of a Lyotropic Liquid Crystal"

6. M.L. Schlossman, D.K. Schwartz, E.H. Kawamoto, G.J. Kellogg, P.S. Pershan, M.W. Kim, and T.C. Chung, *J. Phys. Chem.* **95**, 6628 (1991)
"X-ray Reflectivity of a Polymer Monolayer at the Water/Vapor Interface"

7. D.K. Schwartz, P.S. Pershan, E.H. Kawamoto, G.J. Kellogg, and S. Lee, *Phys. Rev. Lett.* **66**, 1599 (1991)
"Relaxation and the Reentrant Appearance of Phases in a Molecular Monolayer, M.L. Schlossman"

8. D.K. Schwartz, M.L. Schlossman, and P.S. Pershan, *J. Chem. Phys.*, **96**, 2356 (1992)
"Re-entrant Appearance of Phases in a Relaxed Langmuir Monolayer of Tetracosanoic Acid as Determined by X-ray Scattering"

9. J.T. Woodward, J.A.N. Zasadzinski, and D.K. Schwartz, *Phys. Rev. Lett.*, **68**, 2563 (1992)
"Alternative Method of Imaging Surface Topologies of Nonconducting Bulk Specimens" (comment)

10. D.K Schwartz, J. Garnaes, R. Viswanathan, and J.A.N. Zasadzinski, *Scanning*, **14**, II-3 (1992)
"Atomic Force Microscopy of the Molecular Lattice of Thin Langmuir-Blodgett Films"

11. R. Viswanathan, D.K. Schwartz, J. Garnaes, and J.A.N. Zasadzinski, *Langmuir*, **8**, 1603 (1992)
"Atomic Force Microscopy Imaging of Substrate and pH Effects on Langmuir-Blodgett Monolayers"

12. J. Garnaes, D.K. Schwartz, R. Viswanathan, and J.A.N. Zasadzinski, *Nature*, **357**, 54 (1992)
"Domain Boundaries and Buckling Superstructures in Langmuir-Blodgett Films"

13. D.K. Schwartz, J. Garnaes, R. Viswanathan, and J.A.N. Zasadzinski, *Science*, **257**, 508 (1992)
"Surface Order and Stability in Langmuir-Blodgett Films"

14. D.K. Schwartz, R. Viswanathan, and J.A.N. Zasadzinski, *J. Phys. Chem.*, **96**, 10444 (1992)
"Reorganization and Crystallite Formation in Langmuir-Blodgett Films"

15. D.K. Schwartz, S. Steinberg, J. Israelachvili, J.A.N. Zasadzinski, *Phys. Rev. Lett.*, **69**, 3354 (1992)
"Growth of a Self-Assembled Monolayer by Fractal Aggregation"

16. D.K. Schwartz, J. Garnaes, R. Viswanathan, S. Chiruvolu, and J.A.N. Zasadzinski, *Phys. Rev. E*, **47**, 452 (1993)
"Quantitative Lattice Measurement of Thin Langmuir-Blodgett Films by Atomic Force Microscopy"

17. D.K. Schwartz, R. Viswanathan, and J.A. Zasadzinski, *Phys. Rev. Lett.*, **70**, 1267 (1993)
"Commensurate Defect Superstructures in a Langmuir-Blodgett Film"

18. D.K. Schwartz, R. Viswanathan, and J.A.N. Zasadzinski, *Langmuir*, **9**, 1384 (1993)
"Coexisting Lattice Structures in a Langmuir-Blodgett Film"

19. J. Garnaes, D.K. Schwartz, R. Viswanathan, J.A.N. Zasadzinski, *J. Synth. Metals*, **57**, 3795 (1993)
"Nanoscale Defects in Langmuir-Blodgett Films Observed by Atomic Force Microscopy"

20. D.K. Schwartz, *Nature*, **362**, 593 (1993) [invited editorial]
"Pattern Formation: Instant Patterns in Thin Films"

21. R. Viswanathan, J.A.N. Zasadzinski, and D.K. Schwartz, *Science* , **261**,.449 (1993)
"Strained-Layer van der Waals Epitaxy in a Langmuir-Blodgett Film"

22. D.K. Schwartz, R. Viswanathan, J. Garnaes, J.A.N. Zasadzinski, *J. Am. Chem. Soc.*, **115**, 7374 (1993)
"Influence of Cations, Alkane Chain Length, and Substrate on Molecular Order of Langmuir-Blodgett Films"

23. D.K. Schwartz and C.M. Knobler, *J. Phys. Chem.*, **97**, 8849 (1993)
"Direct Observations of Transitions between Condensed Langmuir Monolayer Phases by Polarized Fluorescence Microscopy"

24. D.K. Schwartz, R. Viswanathan, and J.A. Zasadzinski, *Science*, **263**, 1158 (1994)
"Examining Langmuir-Blodgett Films with Atomic Force Microscopy" [technical comment]

25. D.K. Schwartz, J. Ruiz-Garcia, X. Qiu, J.V. Selinger and C.M. Knobler, *Physica A*, **204**, 606 (1994)
"Tilt Stripe Textures in Langmuir Monolayers of Fatty Acids"

26. J.A. Zasadzinski, R. Viswanathan, L. Madsen, J. Garnaes, D.K. Schwartz, *Science*, **263**, 1726 (1994)
"Langmuir-Blodgett Films"

27. R. Viswanathan, J.A.N. Zasadzinski, and D.K. Schwartz, *Nature*, **368**, 440 (1994)
"Spontaneous Chiral Symmetry-Breaking by Achiral Molecules in a Langmuir-Blodgett Film"

28. J.A. Zasadzinski, R. Viswanathan, D.K. Schwartz, J. Garnaes, L. Madsen, S. Chiruvolu, J.T. Woodward, and M.L. Longo, *Colloids and Surfaces A*, **93**, 305 (1994)
"Applications of Atomic Force Microscopy to Structural Characterization of Organic Thin Films"

29. D.K. Schwartz, R. Viswanathan, and J.A. Zasadzinski, in "Lectures on Thermodynamics and Statistical Mechanics," eds. M. Costas, R. Rodriguez, and A.L. Benavides, p. 132 (World Scientific, Singapore) 1994. "Atomic Force Microscopy of Langmuir-Blodgett Films"

30. B. Fischer, M.-W. Tsao, J. Ruiz-Garcia, T.M. Fischer, D.K. Schwartz, and C.M. Knobler, *J. Phys. Chem.*, **98**, 7430 (1994)
"Observation of a Change from Splay to Bend Orientation at a Phase Transition in a Langmuir Monolayer"

31. D.K. Schwartz, R. Viswanathan, and J.A. Zasadzinski *J. Chem. Phys.*, **101**, 7161 (1994)
"Head-Tail Competition and Modulated Structures in Planar Surfactant (Langmuir-Blodgett) Films"

32. D.K. Schwartz, M.-W. Tsao and C.M. Knobler, *J. Chem. Phys.*, **101**, 8258 (1994)
"Domain morphology in a two-dimensional anisotropic mesophase: Cusps and boojum textures in a Langmuir monolayer"

33. D.K. Schwartz, C.M. Knobler, and R. Bruinsma *Phys. Rev. Lett.*, **73**, 2841 (1994)
"Direct Observation of Langmuir Monolayer Flow through a Channel"

34. S. Riviere, S. Hénon, J. Meunier, D.K. Schwartz, M.-W. Tsao and C.M. Knobler, *J. Chem. Phys.*, **101**, 10045 (1994)
"Textures and Phase Transitions in Langmuir Monolayers of Fatty Acids: A Comparative Brewster Angle Microscope and Polarized Fluorescence Microscope Study"

35. R. Viswanathan, L.L. Madsen, J.A.N. Zasadzinski, and D.K. Schwartz, *Science* , **269**, 51 (1995)
"Liquid to Hexatic to Crystalline Transition in Langmuir-Blodgett Films"

36. B. Fischer, M.-W. Tsao, J. Ruiz-Garcia, Th.M. Fischer, D.K. Schwartz, and C.M. Knobler, *Thin Solid Flims*, **284-285**, 110 (1996)
"The Blooming Transition in Langmuir Monolayers and its Microscopic Origin"

37. H.D. Sikes, J.T. Woodward IV, and D.K. Schwartz, *J. Phys. Chem.*, **100**, 9093 (1996)
"Pattern Formation in a Substrate-Induced Phase Transition during Langmuir-Blodgett Transfer"

38. J.T. Woodward, A. Ulman, and D.K. Schwartz, *Langmuir* , **12**, 3626 (1996)
"Self-Assembled Monolayer Growth of Octadecylphosphonic Acid on Mica"

39. M.L. Kurnaz, D.K. Schwartz, *J. Phys. Chem.*, **100**, 11113 (1996)
"Morphology of Micro-Phase Separation in Arachidic Acid/Cadmium Arachidate Langmuir Blodgett Multilayers"

40. J.T. Woodward, and D.K. Schwartz, *J. Am. Chem. Soc.*, **118**, 7861 (1996)
"In Situ Observation of Self-Assembled Monolayer Growth"

41. M.L. Kurnaz, D.K. Schwartz, *Langmuir* , **12**, 4971 (1996)
"Skeletonization as a Probe of Interlayer Correlations in Langmuir Blodgett Films"

42. D.K. Schwartz, *Surf. Sci. Reports*, **27**, 241-334 (1997)
"Langmuir-Blodgett Film Structure" [review]

43. M.L. Kurnaz, D.K. Schwartz, *Phys. Rev. E* **56**, 3378 (1997)
"Channel Flow in a Langmuir Monolayer: Unusual Velocity Profiles in a Liquid-Crystalline Mesophase"

44. H.D. Sikes, D.K. Schwartz, *Langmuir* **13**, 4704 (1997)
"A Temperature-Dependent Two-Dimensional Condensation Transition during Langmuir-Blodgett Deposition"

45. M.L. Kurnaz, D.K. Schwartz, *Journal of Rheology* **41**, 1173 (1997)
"A Technique for Direct Observation of Particles under Shear in a Langmuir Monolayer"

46. J.T. Woodward, I. Doudevski, H.D. Sikes, D.K. Schwartz, *J. Phys. Chem. B* **101**, 7535 (1997)
"Kinetics of Self-Assembled Monolayer Growth Explored via Submonolayer Coverage of Incomplete Films"

47. H.D. Sikes, D.K. Schwartz, *Science* **278**, 1604 (1997)
"Two Dimensional Melting of an Anisotropic Crystal Observed at the Molecular Level"

48. J.T. Woodward, D.K. Schwartz, *Langmuir* **13**, 6873 (1997)
"Dewetting Modes of Surfactant Solution as a Function of the Spreading Coefficient"

49. J.T. Woodward, D.K. Schwartz, *J. Vac. Sci. Technology B* **16**, 51 (1998)
"Removing Drift from Scanning Probe Microscope Images of Periodic Samples"

50. D.Y. Takamoto, E. TerOvanesyan, D.K. Schwartz, R. Viswanathan, *et al., Acta Physica Polonica,* **93**, 373 (1998)
"Atomic Force Microscopy of Instabilities and Reorganization of Langmuir-Blodgett Films"

51. M. Breen, J.T. Woodward, A.W. Apblett, D.K. Schwartz, *Chem. of Materials* **10**, 710 (1998)
"Direct Evidence for an Ion by Ion Deposition Mechanism in Solution Growth of CdS Thin Films"

52. D.K. Schwartz, *Current Opinion in Colloid and Interface Science* **3**, 131 (1998)
"Scanning Probe Microscope Studies of Thermodynamic and Kinetic Processes in Ultrathin Organic Films" [invited review]

53. D. Gidalevitz, M.L. Kurnaz, O.Y. Mindyuk, B.M. Ocko, D.K. Schwartz, and P.A. Heiney, *Langmuir* **14**, 2910 (1998)
"Thermal Melting in Langmuir Films of Discotic Liquid-Crystalline Compounds"

54. D. Gidalevitz, O.Y. Mindyuk, M.R. Stetzer, P.A. Heiney, M.L. Kurnaz, D.K. Schwartz, B.M. Ocko , J.P. McCauley, Jr., and A.B. Smith, III *J. Phys. Chem. B* **102**, 6688 (1998)
"A Conformational Phase Transition in a Langmuir Film of an Amphiphilic Azacrown"

55. W.A. Hayes and D.K. Schwartz *Langmuir* **14**, 5913-5917 (1998).
"Two Stage Growth of Octadecyltrimethylammonium Bromide Monolayers at Mica from Aqueous Solution Below the Krafft Point"

56. I. Doudevski, W.A. Hayes and D.K. Schwartz *Phys. Rev. Lett.* **81**, 4927 (1998)
"Submonolayer Island Nucleation and Growth Kinetics during Self-assembled Monolayer Formation"

57. C.K. Park, F.J. Schmitt, L. Evert, D.K. Schwartz, J.N. Israelachvili, C. Knobler, *Langmuir* **15**, 202-206 (1999).
"Film Balance and Fluorescence Microscopic Investigation of the Effects of Ca2+ on Mixed DMPC/DMPG Monolayers"

58. C.M. Knobler and D.K. Schwartz, *Current Opinion in Colloid and Interface Science* **4**, 46-51 (1999).
"Langmuir and Self-assembled Monolayers" [invited review]

59. I. Doudevski and D.K. Schwartz *Phys. Rev. B* **60**, 14-17 (1999).
"Dynamic scaling of the submonolayer island size distribution during self-assembled monolayer growth"

60. A. Ivanova, M.L. Kurnaz, and D.K. Schwartz, *Langmuir* **15**, 4622-4624 (1999).
"Temperature and flow rate dependence of the velocity profile during channel flow of a Langmuir monolayer"

61. D.K. Schwartz and I. Doudevski, *Mat. Res. Soc. Symp. Proc.* **570**, 163-170 (1999).
"In situ observation of scaling behavior during solution-phase growth of surfactant monolayers"

62. J.T. Woodward, H. Gwin, and D.K. Schwartz, *Langmuir* , **16**, 2957-2961 (2000)
"Contact angles on surfaces with mesoscopic chemical heterogeneity"

63. I. Doudevski, W.A. Hayes, J.T. Woodward, D.K. Schwartz, *Coll. and Surf. A* **174**, 233-243 (2000).
"Atomic force microscope imaging of molecular aggregation during self-assembled monolayer growth"

64. J. Ignes-Mullol and D.K. Schwartz, *Phys. Rev. Lett.* **85**, 1476 (2000).
"Alignment of Hexatic Langmuir Monolayers under Shear"

65. A.T. Ivanova and D.K. Schwartz, *Langmuir* **16**, 9433-9438 (2000).
"Transient Behavior of the Velocity Profile in Channel Flow of a Langmuir Monolayer"

66. I. Doudevski and D.K. Schwartz, *J. Phys. Chem. B* **104**, 9044-9047 (2000).
"Evolution of a Steady State Island Size Distribution during Self-Assembled Monolayer Dissolution"

67. I. Doudevski and D.K. Schwartz, *Langmuir* **16**, 9381-9384 (2000).
"Mechanisms of Self-Assembled Monolayer Desorption Determined using In Situ Atomic Force Microscopy"

68. R.M. Enmon Jr., K.C. O'Connor, D.J. Lacks, D.K. Schwartz, and R.S. Dotson, *Biotechnol. Bioeng.*, **72**, 579-591 (2001).
"Dynamics of Spheroid Self-Assembly in Liquid-Overlay Culture of DU 145 Human Prostate Cancer Cells"

69. I. Doudevski and D.K. Schwartz, *Appl. Surface Sci.* **175-176**, 17-26 (2001).
"Self-Assembled Monolayers in the Context of Epitaxial Film Growth"

70. C. Messerschmidt and D.K. Schwartz, *Langmuir* **17**, 462-467 (2001).
"Growth mechanisms of octadecylphosphonic acid self-assembled monolayers on sapphire (corundum): Evidence for a quasi-equilibrium triple point"

71. D.K. Schwartz, *Ann. Rev. Phys. Chem.* **52**, 107-137 (2001).
"Mechanisms and Kinetics of Self-Assembled Monolayer Formation"

72. B.K. Simmons, C. Taylor, S. Li, F. Landis, V.T. John, G.L. McPherson, D.K. Schwartz and R. Moore, *J. Am. Chem. Soc.* **123**, 2414-2421 (2001)
"Microstructure Determination of AOT + Phenol Organogels Utilizing Small-Angle X-Ray Scattering and Atomic Force Microscopy"

73. J. Ignes-Mullol and D.K. Schwartz, *Nature* **410**, 348-351 (2001).
"Shear-induced Molecular Precession in a Hexatic Langmuir Monolayer."

74. I. Doudevski and D.K. Schwartz, *J. Am. Chem. Soc.* **123**, 6867-6872 (2001).
"Concentration dependence of self-assembled monolayer island nucleation and growth."

75. A.T. Ivanova, J. Ignes-Mullol, and D.K. Schwartz, *Langmuir* **17**, 3406-3411 (2001).
"Micro-rheology of a sheared Langmuir monolayer: Elastic recovery and inter-domain slippage."

76. J. Ignes-Mullol and D.K. Schwartz, *Langmuir* **17**, 3017-3029 (2001).
"Molecular Orientation in Langmuir Monolayers under Shear."

77. D.Y. Takamoto, E. Aydil, J.A. Zasadzinski , A. T. Ivanova, D.K. Schwartz, T. Yang, P.S. Cremer, *Science* **293**, 1292-1295 (2001).
"Stable ordering in Langmuir-Blodgett films"

78. D.K. Schwartz, in *Encyclopedia of Materials: Science and Technology,* K.H.J. Buschow *et al.* eds. Elsevier, Oxford (2001) pp. 4392-4399.
"Langmuir-Blodgett Films: Formation and Structure"

79. J. Ding, H.E. Warriner, J.A. Zasadzinski, D.K. Schwartz, *Langmuir* **18**, 2800-2806 (2002).
"A Magnetic Needle Viscometer For Langmuir Monolayers"

80. R.M.Enmon Jr., K.C.O 'Connor, H. Song, D.J. Lacks, D.K. Schwartz, *Biotechnol. Bioeng.* **80**, 580-588 (2002).
"Aggregation Kinetics of Well and Poorly Differentiated Human Prostate Cancer Cells"

81. B.M. Ocko, M. Kelly, A.T. Nikova, D.K. Schwartz, *Langmuir* **18**, 9810-9815 (2002).
"Structure and phase behavior of mixed monolayers of saturated and unsaturated fatty acids"

82. B. Simmons, S. Li, V.T. John, G.L. McPherson, C. Taylor, D.K. Schwartz and K. Maskos, *Nanoletters* **2**, 1037-1042 (2002).
"Spatial compartmentalization of nanoparticles into strands of a self-assembled organogel".

83. G.B. Bantchev and D.K. Schwartz *Langmuir* **19**, 2673-2682 (2003).
"Surface rheology of β-casein layers at the air/solution interface: Formation of a two-dimensional physical gel"

84. C.E. Taylor and D.K. Schwartz, *Langmuir* **19**, 2665-2672 (2003).
"Octadecanoic acid self-assembled monolayer growth at sapphire surfaces"

85. D.M. Walba,, C.A. Liberko, E. Körblova, M. Farrow, T.E. Furtak, B.C. Chow, D.K. Schwartz, A.S. Freeman, K. Douglas, S.D. Williams, A.F. Klittnick, and N.A. Clark, *Liquid Crystals*, **31**, 481-489 (2004)
"Self-Assembled Monolayers for Liquid Crystal Alignment: Simple Preparation on Glass Using Alkyltrialkoxysilanes."

86. J.M. Mellott, W.A. Hayes, and D.K. Schwartz, *Langmuir* **20**, 2341-2348 (2004).
"Kinetics of Otcadecyltrimethylammonium Bromide Self-Assembled Monolayer Growth at Mica from Aqueous Solution"

87. J.M. Mellott and D.K. Schwartz, *J. Am. Chem. Soc.*, **126**, 9369-9373 (2004)
"Supercritical Self-Assembled Monolayer Growth"

88. G.B. Bantchev and D.K. Schwartz, *Langmuir*, **20**, 11692-11697 (2004)
"Structure of β-casein layers at the air/solution interface: Atomic Force Microscopy studies of transferred layers."

89. C.R. Vessely, J.F. Carpenter, and D.K. Schwartz, *Biomacromolecules,* **6**, 3334-3344 (2005)
"Calcium-Induced Changes to Molecular Conformation and Aggregate Structure of beta-Casein at the Air-Water Interface"

90. Mark Nelson, Nicholas Cain, Chad E. Taylor, Benjamin M. Ocko, Douglas L. Gin, Scott R. Hammond, Daniel K. Schwartz, *Langmuir* **21**, 9799-9802 (2005)
"Periodic Arrays of Interfacial Cylindrical Reverse Micelles"

91. Andrew D. Price, and Daniel K. Schwartz, *Langmuir*, **22**, 9753-9759 (2006)
"Anchoring of a Nematic Liquid Crystal on a Wettability Gradient"

92. Nicholas Cain, Josh Van Bogaert, Douglas L. Gin, Scott R. Hammond, Daniel K. Schwartz, *Langmuir* **23**, 482487 (2007)
"Self-Organization of a Wedge-Shaped Surfactant in Monolayers and Multilayers"

93. Andrew D. Price, and Daniel K. Schwartz, *J. Phys. Chem. B*, **111**, 1007-1015 (2007)
"Fatty Acid Monolayers at the Nematic/Water Interface: Phases and Liquid Crystal Alignment"

94. Keith Forward, Amanda Moster, Daniel K. Schwartz, and Daniel J. Lacks, *Langmuir,* **23**, 5255-5258 (2007)
"Contact angles of sub-millimeter particles: Connecting wettability to nanoscale surface topography"

95. Eric Karp, Cory S. Pecinovsky, Michael J. McNevin, Douglas L. Gin, and Daniel K. Schwartz, *Langmuir,* **23**, 7923-7927 (2007)
"Langmuir Monolayers of a Photo-isomerizable Macrocycle Surfactant"

96. Siwar Trabelsi, Shishan Zhang, T. Randall Lee, Daniel K. Schwartz, *Soft Matter,* **2**, 1518-1524 (2007)
"Swelling of a Cluster Phase in Langmuir Monolayers Containing Semi-Fluorinated Phosphonic Acids"

97. Siwar Trabelsi, Shishan Zhang, T. Randall Lee, Daniel K. Schwartz, *Phys. Rev. Lett.,* **100**, 037802 (2008)
"Linactants: Surfactant Analogues in Two Dimensions"

98. Andrei Honciuc, Adam Harant, and Daniel K. Schwartz, *Langmuir*, **24**, 6562-6566 (2008)
"Single-Molecule Observations of Surfactant Diffusion at the Solution-Solid Interface"

99. Andrew D. Price, and Daniel K. Schwartz, *J. Am. Chem. Soc.,* **130**, 8188-8194 (2008)
"DNA Hybridization-Induced Reorientation of Liquid Crystal Anchoring at the Nematic Liquid Crystal/Aqueous Interface"
(Highlighted in *Chemistry World*, 6/262008, "Liquid crystals stand up for DNA detection")

100. Stephanie M. Malone and Daniel K. Schwartz. *Langmuir*, **24**, 9790-9794 (2008)
"Polar and Azimuthal Alignment of a Nematic Liquid Crystal by Alkylsilane Self-Assembled Monolayers: Effects of Chain-Length and Mechanical Rubbing"

101. Shishan Zhang, Andrew C. Jamison, Daniel K. Schwartz, and T. Randall Lee, *Langmuir*, **24**, 10204-10208 (2008)
"Self-Assembled Monolayers Derived from a Double-Chained Monothiol Having Chemically Dissimilar Chains"

102. Andrei Honciuc, Alexander L. Howard, Daniel K. Schwartz, *J Phys Chem C* **113**, 2078-2081 (2009)
"Single Molecule Observations of Fatty Acid Adsorption at the Silica/Water Interface: Activation Energy of Attachment"

103. Siwar Trabelsi, Shishan Zhang, Zhongcheng Zhang, T. Randall Lee, Daniel K. Schwartz, *Soft Matter* **5**, 750-758 (2009)
"Semi-fluorinated Phosphonic Acids Form Stable Nanoscale Clusters in Langmuir-Blodgett and Self-Assembled Monolayers"

104. Steve T. Marshall, Daniel K. Schwartz, J. William Medlin, *Sensors and Actuators B: Chemical* **136**, 315-319 (2009)
"Selective Acetylene Detection Through Surface Modification of Metal-Insulator-Semiconductor Sensors with Alkanethiolate Monolayers"

105. Andrei Honciuc, Denver Jn. Baptiste, Daniel K. Schwartz, *Langmuir* **25**, 4339-4342 (2009)
"Hydrophobic Interaction Microscopy: Mapping the Solid/ Liquid Interface using Amphiphilic Probe Molecules"

106. Andrei Honciuc, Daniel K. Schwartz, *J. Am. Chem. Soc.* **131**, 5973-5979 (2009)
"Probing Hydrophobic Interactions using Trajectories of Amphiphilic Molecules at a Hydrophobic/Water Interface"

107. Andrew D. Price, Jordi Ignés-Mullol, Thomas E. Furtak, Yu-an Lo, Stephanie M. Malone, and Daniel K. Schwartz, *Soft Matter,* **5**, 2252-2260 (2009)
"Liquid Crystal Anchoring Transformations Induced by Phase Transitions of a Photoisomerizable Surfactant at the Nematic/Aqueous Interface"

108. Andrei Honciuc, Denver Jn. Baptiste, Ian P. Campbell, and Daniel K. Schwartz, *Langmuir* **25**, 7389-7392 (2009)
"Solvent Dependence of the Activation Energy of Attachment determined by Single Molecule Observations of Surfactant Adsorption"

109. Siwar Trabelsi, Shishan Zhang, Zhongcheng Zhang, T. Randall Lee, Daniel K. Schwartz, *Langmuir* **25**, 8056-8061 (2009)
"Correlating Linactant Efficiency and Self-Assembly: Structural Basis of Line-Activity in Molecular Monolayers"

110. Robert Walder, Andrei Honciuc, and Daniel K. Schwartz, *Langmuir* **26** 1501-1503 (2010)
"Directed Nanobead Motion on a Gradient of Interfacial Free Energy"

111. Stephanie M. Malone, Siwar Trabelsi, Shishan Zhang, T. Randall Lee, Daniel K. Schwartz, *J. Phys. Chem. B*, **114**, 8616-8620 (2010)
"Self-assembly of Linactants: Micelles and Lyotropic Liquid Crystals in Two-Dimensions"

112. Robert Walder and Daniel K. Schwartz, *Langmuir*, **26**, 13364–13367 (2010)
"Single Molecule Observations of Multiple Protein Populations at the Oil–Water Interface"

113. Robert Walder, Andrei Honciuc, Daniel K. Schwartz, *J. Phys Chem. B*, **114**, 11484-11488 (2010)
"Phospholipid Diffusion at the Oil-Water Interface"

114. Stephen T. Marshall, Marykate O'Brien, Brittany Oetter, April Corpu, Ryan M. Richards, Daniel K. Schwartz, J. William Medlin, *Nature Materials*, **9**, 853-858 (2010)
"Controlled Selectivity for Palladium Catalysts using Self-assembled Monolayers"

115. Mark Kastantin, Blake B. Langdon, Erin L. Chang, and Daniel K. Schwartz, *J. Am. Chem. Soc.,* **133**, 4975-4983 (2011)
"Single-molecule resolution of interfacial fibrinogen behavior: Effects of oligomer populations and surface chemistry"

116. Stephen T. Marshall; Daniel K. Schwartz; J. William Medlin, *Langmuir*, **27**, 6731-6737 (2011)
"Adsorption of oxygenates on alkanethiol-functionalized Pd(111) surfaces: Mechanistic insights into the role of self-assembled monolayers on catalysis"

117. Robert Walder and Daniel K. Schwartz, *Soft Matter*, **7**, 7616-7622 (2011)
"Dynamics of Protein Aggregation at the Oil-Water Interface Characterized by Single Molecule TIRF Microscopy"

118. Robert Walder, Nathaniel Nelson, Daniel K. Schwartz, *Physical Review Letters*, **107**, 156102 (2011)
"Single Molecule Observations of Desorption-Mediated Diffusion at the Solid-Liquid Interface"
(Highlighted in Virtual Journal of Biological Physics)

119. Stephanie M. Malone and Daniel K. Schwartz, *Langmuir*, **27**, 1767-1772 (2011)
"A Macroscopic Liquid Crystal Response to Isolated DNA Helices"

120. Mark Kastantin and Daniel K. Schwartz, *ACS Nano,* **5**, 9861-9869 (2011)
"Connecting Rare DNA Conformations and Surface Dynamics using Single-Molecule Resonance Energy Transfer"

121. Robert Walder, Nathaniel Nelson, and Daniel K. Schwartz, *Nature Communications*, **2**, 515 (2011)
"Super-Resolution Surface Mapping using the Trajectories of Molecular Probes"
(Highlighted in MRS Bulletin, **37**, 105, 2012)

122. Patrick S. Noonan, Amit Shavit, Bharat R. Acharya, and Daniel K. Schwartz, *ACS Applied Materials and Interfaces*, **3**, 4374-4380 (2011)
"A Liquid Crystal Alignment Layer that Simultaneously Promotes Wetting and Homeotropic Anchoring"

123. Indira Sriram and Daniel K. Schwartz, *Surface Science Reports*, **67**, 143-159 (2012)
"Line Tension between Coexisting Phases in Monolayers and Bilayers of Amphiphilic Molecules"

124. Aaron C. McUmber, Patrick S. Noonan, and Daniel K. Schwartz, *Soft Matter,* **8**, 4335-4342 (2012)
"Surfactant-DNA Interactions at the Liquid Crystal / Aqueous Interface"

125. Mark Kastantin, Thomas F. Keller, Klaus D. Jandt, and Daniel K. Schwartz, *Advanced Functional Materials*, **22**, 2617-2623 (2012)
"Single-Molecule Tracking of Fibrinogen Dynamics on Nanostructured Poly(ethylene) Films"

126. Indira Sriram, Robert Walder, and Daniel K. Schwartz, *Soft Matter*, **8**, 6000-6003 (2012).
"Stokes-Einstein and Desorption-Mediated Diffusion of Protein Molecules at the Oil-Water Interface"

127. Robert Walder, Mark Kastantin, and Daniel K. Schwartz, *Analyst*, **137**, 2987-2996 (2012)
"High Throughput Single Molecule Tracking for Analysis of Rare Populations and Events".

128. Blake B. Langdon, Mark Kastantin, and Daniel K. Schwartz, *Biophysical Journal*, **102**, 2625-2633 (2012)
"Apparent Activation Energies Associated with Interfacial Protein Dynamics".

129. Mark Kastantin and Daniel K. Schwartz, *Microscopy and Microanalysis*, **18**, 793-797 (2012)
"Distinguishing Positional Uncertainty from True Mobility in Single-Molecule Trajectories that Exhibit Multiple Diffusive Modes"

130. Nathan Nelson, Robert Walder, and Daniel K. Schwartz, *Langmuir*, **28**, 12108-12113 (2012)
"Single Molecule Probe Dynamics on Hydrophobic Self-Assembled Monolayers"

131. Mark Kastantin, Robert Walder and Daniel K. Schwartz, *Langmuir*, **28**, 12443-12456 (2012)
"Identifying Mechanisms of Interfacial Dynamics Using Single-Molecule Tracking"

132. Jared Bee, Daniel K. Schwartz, Erwin Freund, John Carpenter, and Theodore W. Randolph, *Soft Matter*, **8**, 10329-10335 (2012)
"Production of Particles of Therapeutic Proteins at the Air-Water Interface during Compression/Dilation Cycles"

133. Keith A. Britt, Daniel K. Schwartz, Christine Wurth, Hanns-Christian Mahler, John F. Carpenter, and Theodore W. Randolph, *Journal of Pharmaceutical Sciences*, **101**, 4419-4432 (2012)
"Excipient Effects on Humanized Monoclonal Antibody Interactions with Silicone Oil Emulsion"

134. Michael Skaug and Daniel K. Schwartz, *Soft Matter*, **8**, 12017-12024 (2012)
"Using the Dynamics of Fluorescent Cations to Probe and Map Charged Surfaces"

135. Karl R. Kahsar, Daniel K. Schwartz, and J. Will Medlin, *Applied Catalysis A: General*, **445-446**, 102-106 (2012)
"Liquid- and Vapor-Phase Hydrogenation of 1-Epoxy-3-butene Using Self-Assembled Monolayer Coated Palladium and Platinum Catalysts"

136. Indira Sriram, Burapol Singhana, T. Randall Lee, and Daniel K. Schwartz, *Langmuir*, **28**, 16294-16299 (2012)
"Line Tension and Line Activity in Mixed Monolayers containing Aliphatic and Aromatic Compounds"

137. Jon H. Monserud and Daniel K. Schwartz, *Biomacromolecules*, **13**, 4002-4011 (2012)
"Effects of Molecular Size and Surface Hydrophobicity on Oligonucleotide Interfacial Dynamics"

138. Andrew C. Jamison, Shishan Zhang, Oussama Zenasni, Daniel K. Schwartz, and T. Randall Lee *Langmuir*, 28, 16834-16844 (2012)
"Fibrillar Self-organization of a Line-active Partially-fluorinated Thiol within Binary Self-assembled Monolayers"

139. Mark Kastantin and Daniel K. Schwartz, *ChemPhysChem*, **14**, 374-380 (2013).
"Identifying Multiple Populations from Single-Molecule Lifetime Distributions"

140. Mark Kastantin and Daniel K. Schwartz, *Small*, **9**, 933-941 (2013)
"DNA Hairpin Stabilization on a Hydrophobic Surface"

141. Patrick S Noonan, Richard H Roberts, Daniel K. Schwartz, *J. Am. Chem. Soc.,* **135**, 5183-5189 (2013)
"Liquid Crystal Re-orientation Induced by Aptamer Conformational Changes"
(Highlighted as a *JACS* Spotlight, doi:10.1021/ja403480m, *JACS* **135**, 5475–5476, 2013)

142. Carolyn A. Schoenbaum, Daniel K. Schwartz, and J. Will Medlin, *J. Catalysis*, **303**, 92-99 (2013)
"Controlling Surface Crowding on a Pd Catalyst with Self-Assembled Monolayers"

143. Lu Liu, Wei Qi, Daniel K. Schwartz, Theodore W. Randolph, and John F. Carpenter, *Journal of Pharmaceutical Sciences*, **102**, 2460–2470 (2013)
"The Effects of Excipients on Protein Aggregation during Agitation: An Interfacial Shear Rheology Study"

144. Michael J. Skaug, Joshua Mabry, Daniel K. Schwartz, *Physical Review Letters*, **110**, 256101 (2013)
"Intermittent Molecular Hopping at the Solid-Liquid Interface"

145. K.R. Kahsar, Daniel K. Schwartz, J. William Medlin, *ACS Catalysis*, **3**, 2041-2044 (2013)
"Selective Hydrogenation of Polyunsaturated Fatty Acids Using Alkanethiol Self-Assembled Monolayer Coated Pd/Al_2O_3 Catalysts"

146. Simon H. Pang, Carolyn A. Schoenbaum, Daniel K. Schwartz, and J. Will Medlin, *Nature Communications,* **4**, 2448 (2013); doi:10.1038/ncomms3448
"Directing Reaction Pathways by Catalyst Active-Site Selection using Self-Assembled Monolayers"

147. Nathan Nelson and Daniel K. Schwartz, *J Phys Chem Letters*, **4**, 4064–4068 (2013)
"Specific Ion (Hofmeister) Effects on Adsorption, Desorption, and Interfacial Diffusion"

148. Sean Yu McLoughlin, Mark Kastantin, Daniel K. Schwartz, and Joel L. Kaar, *Proc. Natl. Acad. Sci. U.S.A.*, **110**, 19396-19401 (2013)
"Single Molecule Resolution of Protein Structure and Interfacial Dynamics at Biomaterial Surfaces"
(Highlighted on *Phys.org*, http://phys.org/news/2013-12-price-single-molecule-microscopy-simultaneously-protein.html)
(Highlighted on *Technology.org*, http://www.technology.org/2013/12/05/two-price-one-single-molecule-microscopy-simultaneously-monitors-protein-structure-function/)

149. Michael J. Skaug, Brennan M. Coffey, and Daniel K. Schwartz, *ACS Applied Materials & Interfaces*, **5**, 12854-12859 (2013).
"Colloid Transfer Printing"

150. Michael J. Skaug, Joshua Mabry, and Daniel K. Schwartz, *JACS*, **136**, 1327-1332 (2014)
"Single-Molecule Tracking of Polymer Surface Diffusion"
(Highlighted as a *JACS* Spotlight, doi:10.1021/ja412289s, *JACS* **135**, 18237–18237, 2013)

151. Blake B. Langdon, Mark Kastantin, Robert Walder, and Daniel K. Schwartz, *Biomacromolecules,* **15,** 66-74 (2014)
"Interfacial Protein-Protein Associations"

152. Michael J. Skaug, A.M. Lacasta, L. Ramirez-Piscina, J.M. Sancho, K. Lindenberg, and Daniel K. Schwartz, *Soft Matter*, **10**, 753-759 (2014)
"Molecular Diffusion in a Mesoscale Periodic Potential at a Solid-Liquid Interface"

153. K.R. Kahsar, Daniel K. Schwartz, and J. William Medlin, *J. Am. Chem. Soc.,* **136**, 520-526 (2014)
"Control of Metal Catalyst Selectivity through Specific Non-Covalent Molecular Interactions"

154. Mark Kastantin, Blake B. Langdon, and Daniel K. Schwartz, *Advances in Colloid and Interface Science*, **207**, 240-252 (2014); doi: 10.1016/j.cis.2013.12.006
"A Bottom-Up Approach to Understanding Protein Layer Formation at Solid-Liquid Interfaces"

155. Patrick S. Noonan, Praveena Mohan, Andrew Goodwin, and Daniel K Schwartz, *Advanced Functional Materials*, **24**, 3206-3212 (2014); doi:10.1002/adfm.201303885
"DNA Hybridization-Mediated Liposome Fusion at the Aqueous-Liquid Crystal Interface"

156. Carolyn A. Schoenbaum, Daniel K. Schwartz, and J. Will Medlin, *Accounts of Chemical Research,* **47**, 1438-1445 (2014); doi:10.1021/ar500029y
"Controlling the Surface Environment of Heterogeneous Catalysts Using Self-Assembled Monolayers"

157. Jon H. Monserud and Daniel K. Schwartz, *ACS Nano,* **8**, 4488-4499 (2014); doi:10.1021/nn4064874
"Mechanisms of Surface-Mediated DNA Hybridization"

158. Alana Gerhardt, Nicole R. McGraw, Daniel K. Schwartz, Jared S. Bee, John F. Carpenter, Theodore W. Randolph, *Journal of Pharmaceutical Sciences*, **103**, 1601-1612 (2014); doi:10.1002/jps.23973
"Protein Aggregation and Particle Formation in Pre-filled Glass Syringes"

159. Simon H. Pang, Carolyn A. Schoenbaum, Daniel K. Schwartz, and J. Will Medlin, *ACS Catalysis*, **4**, 3123-3131 (2014); doi:10.1021/cs500598y
"Effects of Thiol Modifiers on the Kinetics of Furfural Hydrogenation over Pd Catalysts"

160. Karl R. Kahsar, Stephanie Johnson, Daniel K. Schwartz, J. Will Medlin, *Topics in Catalysis,* **57**, 1505-1511 (2014); doi:10.1007/s11244-014-0325-1
"Hydrogenation of cinnamaldehyde over Pd/Al_2O_3 catalysts modified with thiol monolayers"

161. Joshua N. Mabry, Michael J. Skaug, and Daniel K. Schwartz, *Analytical Chemistry,* 86, 9451-9458 (2014); doi:10.1021/ac5026418
"Single Molecule Insights into Retention at a Reversed Phase Chromatographic Interface"

162. Karl R. Kahsar, Daniel K. Schwartz, and J. Will Medlin, *Journal of Molecular Catalysis A: Chemical,* **396**, 188-195 (2015); doi:10.1016/j.molcata.2014.10.004
"Stability of Self-Assembled Monolayer Coated Pt/Al_2O_3 Catalysts for Liquid Phase Hydrogenation"

163. Dapeng Wang, Renfeng Hu, Michael J. Skaug, and Daniel K. Schwartz, *J. Phys. Chem. Letters,* **6**, 54-59 (2015)
"Temporally anti-correlated motion of nanoparticles at a liquid interface"; doi:10.1021/jz502210c

164. Michael J. Skaug and Daniel K. Schwartz, *Industrial and Engineering Chemical Research,* doi:10.1021/ie503895b
"Tracking Nanoparticle Diffusion in Porous Filtration Media"

165. Dapeng Wang, Chunlin He, Mark P. Stoykovich, Daniel K. Schwartz, *ACS Nano* (in revision)
"Nanoscale Topography Influences Polymer Surface Diffusion"

166. Alana Gerhardt, Aaron C. McUmber, Bao H. Nguyen, Rachael Lewus, Daniel K. Schwartz, John F. Carpenter, Theodore W. Randolph, (submitted)
"Surfactant Effects on Particle Generation in Antibody Formulations in Pre-filled Syringes"

167. Blake B. Langdon, Roya Mirhossaini, Indira Sriram, Josh Mabry, Ajay Lajmi, Yanxia Zhang, Orlando J. Rojas, Daniel K. Schwartz, *ACS Applied Materials and Interfaces* (in revision)
"Single-molecule resolution of protein dynamics on polymeric membrane materials: The roles of spatial and population heterogeneity"

168. Michael J. Skaug, Liang Wang, Yifu Ding, and Daniel K. Schwartz, (in preparation)
"Nanoparticle Diffusion and Size-Exclusion in a Three-Dimensional Porous Medium"

169. Aaron C. McUmber, Theodore W. Randolph, and Daniel K. Schwartz, (in preparation)
"Single-Molecule Tracking and Dynamic Interfacial Tensiometry Elucidate Complementary Stages of Protein Layer Formation at the Oil-Water Interface"

170. Blake B. Langdon, Mark Kastantin, Daniel K. Schwartz (in preparation)
"Surface Chemistry Influences the Dynamics of Protein-Protein Associations"

171. Dapeng Wang, Renfeng Hu, Bing Miao, David T. Wu, Hans-Jürgen Butt, Kaloian Koynov, Daniel K. Schwartz (in preparation)
"Polymer Swelling and Enhanced Dynamics at the Oil/Water Interface"

172. Jon H. Monserud and Daniel K. Schwartz (in preparation)
"DNA Utilizes Forager Behavior to Search for a Binding Partner"

173. Nathan Nelson and Daniel K. Schwartz (in preparation)
"Unbiased Clustering of Molecular Dynamics for Spatially-Resolved Analysis of Chemically Heterogeneous Surfaces"