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Curriculum Vitæ

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Current Positions	2006– 2003– 2014– 2014– 2012–	Vicki and William Abrams Professor in the Natural Sciences Professor of Physics and Astronomy Associate Editor, Science Advances Secondary Appointment, Department of Mathematics Editorial Board, Physics Reports
Education	1992 1988 1988	Ph.D., Physics, Harvard University M.S., Physics, California Institute of Technology B.S., California Institute of Technology
Prior Positions	2009–2010 2006–2010 2006 2001–2005 2000–2003 2000–2003 May 1998 1997–2000 1995–1997 Fall 1995 1992–1995	Member, School of Mathematics, Institute for Advanced Study Associate Editor, Reviews of Modern Physics Edmund J. and Louise W. Kahn Endowed Term Professor William Smith Term Professor in the School of Arts & Sciences Associate Professor of Physics and Astronomy Associate Editor, Physical Review E Professeur Invité, Université Paris XI, Orsay, France Assistant Professor of Physics and Astronomy Postdoctoral Research Associate, Department of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA Visiting Scientist, Center for Studies in Physics and Biology, The Rockefeller University, New York, NY Member, School of Natural Sciences, Institute for Advanced Study, Princeton, NJ
Awards & Honors	2013 2010 2003 2001 1999–2001 1998–2002 1997	Simons Investigator Samsung Mid-Career Award, International Liquid Crystal Society Fellow, American Association for the Advancement of Science Fellow, American Physical Society (DCMP) Fellow, Alfred P. Sloan Foundation CAREER Award, National Science Foundation Research Innovation Award, Research Corporation

Peer-Reviewed Publications

1. R.D. Kamien, H.D. Politzer and M.B. Wise, “Universality of Random-Matrix Predictions for the Statistics of Energy Levels”, *Phys. Rev. Lett.* **60** (1988) 1995–1998.
2. L. Balents, R.D. Kamien, P. Le Doussal and E. Zaslav, “On the Isotropic-Nematic Transition for Polymers in Liquid Crystals”, *J. Phys. I France* **2** (1992) 263–272.
3. R.D. Kamien, P. Le Doussal and D.R. Nelson, “Theory of Directed Polymers”, *Phys. Rev. A* **45** (1992) 8727–8750. [[cond-mat/9204007](#)]
4. R.D. Kamien and D.R. Nelson, “Directed Polymer Melts and Quantum Critical Phenomena”, *J. Stat. Phys.* **71** (1993) 23–50. [[cond-mat/9206006](#)]
5. R.D. Kamien, “Flory Exponents from a Self-Consistent Renormalization Group”, *J. Phys. I France* **3** (1993) 1663–1670. [[cond-mat/9304004](#)]
6. R.D. Kamien, P. Le Doussal and D.R. Nelson, “Rotational Invariance and the Theory of Directed Polymer Nematics”, *Phys. Rev. E* **48** (1993) 4116–4117. [[cond-mat/9306021](#)]
7. R.D. Kamien and T.C. Lubensky, “Twisted Line Liquids”, *J. Phys. I France* **3** (1993) 2131–2138. [[cond-mat/9306043](#)]
8. R.D. Kamien and D.R. Nelson, “Iterated Moiré Maps and Braiding of Chiral Polymer Crystals”, *Phys. Rev. Lett.* **74** (1995) 2499–2502. [[cond-mat/9411039](#)]
9. R.D. Kamien and J. Toner, “Anomalous Elasticity of Polymer Cholesterics”, *Phys. Rev. Lett.* **74** (1995) 3181–3184. [[cond-mat/9408041](#)]
10. R.D. Kamien and D.R. Nelson, “Defects in Chiral Columnar Phases: Tilt Grain Boundaries and Iterated Moiré Maps”, *Phys. Rev. E* **53** (1996) 650–666. [[cond-mat/9507080](#)]
11. R.D. Kamien, “Liquids with Chiral Bond Order”, *J. Phys. II France* **6** (1996) 461–475. [[cond-mat/9507023](#)]
12. R.D. Kamien and G.S. Grest, “Structure Function of Polymer Nematic Liquid Crystals: A Monte Carlo Simulation”, *Phys. Rev. E* **55** (1997) 1197–1200. [[cond-mat/9512157](#)]
13. R.D. Kamien and T.C. Lubensky, “Chiral Lyotropic Liquid Crystals: TGB Phases and Helicoidal Structures”, *J. Phys. II France* **7** (1997) 157–163. [[cond-mat/9605129](#)]
14. A.B. Harris, R.D. Kamien and T.C. Lubensky, “On the Microscopic Origin of Cholesteric Pitch”, *Phys. Rev. Lett.* **78** (1997) 1476–1479; 2867 *erratum*. [[cond-mat/9607084](#)]
15. R.D. Kamien, T.C. Lubensky, P. Nelson and C.S. O’Hern, “Direct Determination of DNA Twist-Stretch Coupling”, *Europhys. Lett.* **38** (1997) 237–242. [[cond-mat/9611224](#)]
16. R.D. Kamien, “Smectic Order in Double-Twist Cylinders”, *J. Phys. II France* **7** (1997) 743–750. [[cond-mat/9611021](#)]
17. R.D. Kamien and T.R. Powers, “Determining the Anchoring Strength of a Capillary Using Topological Defects”, *Liq. Cryst.* **23** (1997) 213–216. [[cond-mat/9612169](#)]
18. J.D. Moroz and R.D. Kamien, “Self-Avoiding Walks with Writhe”, *Nucl. Phys. B* **506** (1997) 695–710. [[cond-mat/9705066](#)]
19. R.D. Kamien, “Local Writhing Dynamics”, *Eur. Phys. J. B* **1** (1998) 1–4. [[cond-mat/9703137](#)]
20. C.S. O’Hern, R.D. Kamien, T.C. Lubensky and P. Nelson, “Elasticity Theory of a Twisted Stack of Plates”, *Eur. Phys. J. B* **1** (1998) 95–102. [[cond-mat/9707040](#)]
21. J.E. Martin, J. Odinek, T.C. Halsey and R.D. Kamien, “Structure and Dynamics of Electrorheological Fluids”, *Phys. Rev. E* **57** (1998) 756–775.
22. R.D. Kamien, “Force-Free Configurations of Vortices in High-Temperature Superconductors near the Melting Transition”, *Phys. Rev. B* **58** (1998) 8218–8221. [[cond-mat/9804287](#)]
23. R.D. Kamien and T.C. Lubensky, “Minimal Surfaces, Screw Dislocations, and Twist

- Grain Boundaries”, *Phys. Rev. Lett.* **82** (1999) 2892–2895. [[cond-mat/9808306](#)]
24. M. Triantafillou and R.D. Kamien, “Polymer Shape Anisotropy and The Depletion Interaction”, *Phys. Rev. E* **59** (1999) 5621–5624. [[cond-mat/9810234](#)]
 25. A.B. Harris, R.D. Kamien and T.C. Lubensky, “Molecular Chirality and Chiral Parameters”, *Rev. Mod. Phys.* **71** (1999) 1745–1757. [[cond-mat/9901174](#)]
 26. R.D. Kamien, “Poisson Bracket Formulation of Nematic Polymer Dynamics”, *Phys. Rev. E* **61** (2000) 2888–2894. [[cond-mat/9906339](#)]
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 29. P. Zihlerl and R.D. Kamien, “Soap Froths and Crystal Structures”, *Phys. Rev. Lett.* **85** (2000) 3528–3531. [[cond-mat/0007256](#)]
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 32. I. Bluestein, R.D. Kamien, and T.C. Lubensky, “Dislocation Geometry in the TGB_A Phase: Linear Theory”, *Phys. Rev. E* **63** (2001) 061702:11 pages. [[cond-mat/0101270](#)]
 33. P. Zihlerl and R.D. Kamien, “Maximizing Entropy by Minimizing Area: Towards a New Principle of Self-Organization”, *J. Phys. Chem. B* **105** (2001) 10147–10158 *Feature Article*. [[cond-mat/0103171](#)]
 34. W. Kung, P. Zihlerl and R.D. Kamien, “The Foam Analogy in Charged Colloidal Crystals”, *Phys. Rev. E* **65** (2002) 050401(R):4 pages *Rapid Communication*; erratum **68** (2003) 049905. [[cond-mat/0111313](#)]
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 47. C.D. Santangelo and R.D. Kamien, “Curvature and Topology in Smectic-A Liquid Crystals”, *Proc. R. Soc. A* **461** (2005) 2911–2921.
 48. M.A. Ambroso, R.D. Kamien, and D.J. Durian, “Dynamics of Shallow Impact Cratering”, *Phys. Rev. E* **72** (2005) 041305: 4 pages. [[cond-mat/0503454](#)]
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 6. R.D. Kamien, “Chiral Mesophases of DNA”, in *Proceedings of “The 35th Annual Technical Meeting of the Society of Engineering Science”*, Pullman, WA, (*International Journal of Engineering Science* **38** (2000) 1025–1032). [[cond-mat/9812128](#)]
 7. S. Fraden and R.D. Kamien, “Self-Assembly *in Vivo*”, *Biophys. J.* **78** (2000) 2189–2190.
 8. R.D. Kamien, “Chiral Interactions and Structures”, *Proceedings of “The VIIIth International Topical Meeting on Optics of Liquid Crystals”*, Humacao, PR, (*Mol. Cryst. Liq. Cryst.* **358** (2001) 97–101). [[cond-mat/9908277](#)]
 9. R.D. Kamien, “Review of *Physical Properties of Liquid Crystals: Nematics*, by Dunmur and Luckhurst”, *Liq. Cryst. Today* **11**:1 (2002).
 10. R.D. Kamien, “Soap Froths and Crystal Structures”, *Proceedings of “TH-2002: International Conference on Theoretical Physics”*, Paris, France, (*Ann. Henri Poincaré*, **4**, Suppl. 2 (2003) S679–S681).
 11. R.D. Kamien, “Topology from the Bottom Up”, *Science* **299** (2003) 1671–1673. [[cond-mat/0303353](#)]
 12. D.E. Discher and R.D. Kamien, “Towards Precision Micelles”, *Nature* **430** (2004) 519–520.
 13. R.D. Kamien and M. Kaul, “Nice planet, shame about the human race”, *Nature* **434** (2005) 1067.
 14. R.D. Kamien, “Review of *Bicontinuous Liquid Crystals*, by Lynch and Spicer”, *Liq. Cryst. Today* **15** (2006).
 15. R.D. Kamien, “Better Geometry through Chemistry”, *Science* **315** (2007) 1083–1084.
 16. R.D. Kamien, “Entropic Attraction and Ordering”, in *Soft Matter: Volume 3, Colloidal Order: Entropic and Surface Forces*, ed. by G. Gompper and M. Schick, (Wiley-VCH, Weinheim, 2007), pp. 1–40.
 17. R.D. Kamien, “Knot Your Simple Defect Lines?”, *Science* **333** (2011) 46–47.
 18. M.A. Gharbi, D.A. Beller, A. Honglawan, K.J. Stebe, S. Yang, and R.D. Kamien, “Controlling Liquid Crystal Defects”, *SPIE Newsroom* (2014) 10.1117/2.1201402.005369.

Patents

1. “Patterning Structures Using Deformable Substrates”, S. Yang, Y. Zhang, R.D. Kamien, J.M. Kikkawa, E. Mastumoto, and D. Chandra. US Patent Number 8,577,341 B2 (15 October 2013).

Invited Presentations

1. “Grain Boundaries and Braiding of Chiral Polymer Crystals”, Liquid Crystal Gordon

- Research Conference, June 1995.
2. "Twisting and Braiding of Chiral Polymer Crystals", Materials Research Society Meeting, Complex Fluids Symposium, Fall 1995.
 3. "The Origin of Cholesteric Pitch", Symposium on Liquid Crystals, Colloids and Emulsions, Laboratory for Research on the Structure of Matter, University of Pennsylvania, May 1996.
 4. "Weak Chirality in Ordered DNA Phases", 16th International Liquid Crystal Conference, June 1996.
 5. "Chiral Mesophases of DNA", 1997 March Meeting of the American Physical Society, Session on Physical Properties of DNA, March 1997.
 6. "Chiral Mesophases of DNA", National Institutes of Health Workshop on Interaction between DNA Double Helices: Chirality and Structure of DNA Liquid-Crystals, June 1997.
 7. "Chiral Interactions and Structures", Materials Research Society Meeting, Complex Fluids and Biomaterials Symposium, Fall 1997.
 8. "The Mystery of the Missing Chirality", Aspen Center for Physics Winter Workshop on Defects in Soft Condensed Matter, January 1998.
 9. "Chiral and Polymer Liquid Crystals", International Centre for Theoretical Physics Spring College on The Statistical Mechanics and Dynamics of Soft Condensed Matter, May 1998 (*4 Lectures*).
 10. "Chiral Mesophases of DNA", 35th Annual Technical Meeting of the Society of Engineering Science, Eringen Medal Symposium, September 1998.
 11. "Scherk's First Surface, Twist Grain Boundaries and All That", 1999 March Meeting of the American Physical Society, Session on Defects in Polymers and Soft Materials, March 1999.
 12. "Minimal Surfaces, Twist Grain Boundaries and All That", Liquid Crystal Gordon Research Conference, June 1999.
 13. "The Microscopic Origin of Macroscopic Chirality", Complex Materials Conference in Honor of Philip A. Pincus, August 1999.
 14. "Chiral Interactions and Structures", VIIIth International Topical Meeting on Optics of Liquid Crystals, September 1999.
 15. "Scherk's First Surface, Twist Grain Boundaries and All That", 3rd Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical Aspects of Materials Science, May 2000.
 16. "The Microscopic Origin of Macroscopic Chirality", 3rd Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical Aspects of Materials Science, May 2000.
 17. "Minimal Surfaces and Topological Defects", Nonlinear Analysis: 2000 →, Courant Institute, New York University, May 2000.
 18. "Macroscopic Chirality and Biaxial Correlations", Fall 2000 National Meeting of the American Chemical Society, Liquid Dynamics: Into the New Millennium, August 2000.
 19. "Soap Froths and Crystal Structures", 21st CNLS Annual Conference, Principles of Soft Matter, May 2001.
 20. "Bees Do It", 6th Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems, May 2001.
 21. "Bees Do It", 7th New England Quarterly Workshop on Complex Fluids, June 2001.

22. “Turn of the Screws”, 8th International Conference on Ferroelectric Liquid Crystals, August 2001.
23. “The Geometry of Soft Materials”, 2002 Boulder School for Condensed Matter and Materials Physics: Physics of Soft Condensed Matter, July 2002 (*4 lectures*).
24. “Minimal Surfaces and Crystal Structure”, Society for Industrial and Applied Mathematics (SIAM) 50th Anniversary and 2002 Annual Meeting, July 2002.
25. “Soap Froths and Crystal Structures”, TH-2002: International Conference on Theoretical Physics, July 2002.
26. “Packing Fuzzy Spheres”, Soft Matters, Laboratory for Research on the Structure of Matter, University of Pennsylvania, September 2002.
27. “The Geometry of Defect Phases”, Materials Research Society Meeting, Defect-Mediated Phenomena in Ordered Polymers Symposium, December 2002.
28. “Hard Spheres, Soap Froths and Self-Assembly”, 26th Asilomar Conference on Polymeric Materials, February 2003.
29. “Hard Spheres, Soap Froths and Self-Assembly”, Advanced Computation Inspired by Biological Processes Conference (NSF), April 2003.
30. “Geometric Approach to Self-Assembly”, Fall 2003 National Meeting of the American Chemical Society, September 2003.
31. “Geometric Frustration in Soft Materials”, Modeling of Soft Matter Workshop, Institute for Mathematics and Its Applications (IMA), September 2004.
32. “What’s Kelvin’s Problem?”, National Science Foundation Workshop on Opportunities in Materials Theory 2004, October 2004.
33. “Smectics with Three Dimensional Periodicity”, 2005 March Meeting of the American Physical Society, Session on Novel Ordering In Smectics and other Layered Systems, March 2005.
34. “What’s Kelvin’s Problem?”, Frontiers in Soft Condensed Matter Workshop, May 2005.
35. “The Geometry and Topology of Smectics”, 21st International Liquid Crystal Conference, July 2006 (*Plenary Lecture*).
36. “Geometry and Topology in Smectics”, Princeton Center for Complex Materials (PCCM) 2006 Summer School, August 2006 (*2 lectures*).
37. “Materials Geometry”, International Seminar on Applied Geometry in Andalusia, September 2006 (*4 lectures*).
38. “Spherical Phases of Diblocks”, 96th Statistical Mechanics Conference, Rutgers University, December 2006.
39. “Self-Assembly of Soft Spheres”, 81st ACS Colloid and Surface Science Symposium, June 2007 (*Keynote Lecture*).
40. “Defect Effects in Smectics”, Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical Aspects of Materials Science, May 2008.
41. “The Geometry of Topological Defects”, Geometrical Singularities and Singular Geometries Workshop, Institute for Mathematics and Its Applications (IMA), July 2008.
42. “Geometry of Topological Defects in Soft Matter”, Workshop on Topology and Physics, Drexel University, September 2008.
43. “What’s Kelvin’s Problem”, Colloquium Ehrenfestii, Leiden University, April 2009.
44. “Geometry and Topology of Smectics”, Hougen Symposium on Frontiers of Liquid Crystals, University of Wisconsin, April 2009.

45. “Smectic Topology, Topography, and Tomography”, Joint IAS-Rutgers workshop on Topology: Identifying Order in Complex Systems, Rutgers University, May 2009.
46. “Geometry of Soft Materials”, Soft Solids and Complex Fluids Summer School, University of Massachusetts, Amherst, June 2009.
47. “Smectics!”, Liquid Crystal Gordon Conference, June 2009.
48. “Films and Layers: Nematics and Smectics”, Variational Problems for Curves and Surfaces and Related Topics, Nara Women’s University, Japan, June 2009.
49. “Smectic Topology, Topography, and Tomography”, Variational Problems for Curves and Surfaces and Related Topics, Nara Women’s University, Japan, June 2009.
50. “New Chiral Geometries”, Chirality, July 2009.
51. “Focal Conics”, Complex energy landscapes and long time dynamics, Princeton Center for Theoretical Sciences, Princeton, November 2009.
52. “Smectics!”, Annual Meeting of the International Institute for Complex Adaptive Matter, University of California, Davis, January 2010.
53. “Smectic Topology”, 23rd International Liquid Crystal Conference, July 2010.
54. “Hidden Symmetry in Focal Conics”, Confined Liquid Crystals: Landmarks and Perspectives, Ljubljana, Slovenia, July 2010.
55. “Topological Defects in Liquid Crystals”, 2nd School of the Italian Liquid Crystal Society, Erice, Italy, July 2011.
56. “Topology and Geometry of Materials”, Topological Methods in Complex Systems, Institute for Mathematics and its Applications (IMA) Participating Institutions Graduate Students Summer Program, Philadelphia, July-August 2011.
57. “Smectics!”, 8th Liquid Matter Conference, Vienna, Austria, September 2011.
58. “Layered Liquid Crystals”, Geometry of Interfaces, Primosten, Croatia, October 2011.
59. “Constructing Smectics”, Frontiers in Soft Matter, University of Colorado, Boulder, May 2012.
60. “I Got Stripes”, Polymer Gordon Conference, July 2012.
61. “What do Burgers and Lorentz Have to Say About Smectics?”, Modern Perspectives on Thin Sheets: Geometry, Elasticity, and Statistical Physics, Lorentz Center, Leiden, The Netherlands, September 2012.
62. “Packing Sheets in Curved Space”, 2012 MRS Meeting: Colloidal Crystals, Quasicrystals, Assemblies, Jammings, and Packings, Boston, November 2012.
63. “Conformal Smectics”, 2012 MRS Meeting: Geometry and Topology of Biomolecular and Functional Nanomaterials, Boston, November 2012.
64. “Topological Defects and the Ground State Manifold”, Symmetry, Bifurcation, and Order Parameters, Isaac Newton Institute, January 2013.
65. “Topological Defects and the Ground State Manifold”, SIAM Conference on Mathematical Aspects of Materials Science, June 2013.
66. “Pure and Applied Focal Conics”, Liquid Crystal Defects and Blue Phase Structure; Elastomers and Related Systems, Isaac Newton Institute, June 2013.
67. “Homotopy Theory and Topological Defects”, I-CAMP Summer School on Liquid Crystals, Cambridge, UK, June 2013.
68. “Ring Around the Colloid”, Evolution of Colloidal Matter, NYU, June 2013.
69. “Lectures on Topological Defects”, (4 lectures), Mathematical Approaches to Complex Fluids - a Two Week Summer School, Isaac Newton Institute, July 2013.

70. “O Topology”, Waterloo Soft Matter Theory Conference, Perimeter Institute, December 2013.
71. “Pure and Applied and Pure Smectics”, British Liquid Crystal Society Meeting, Durham, UK, April 2014.
72. “Pure and Applied and Pure Smectics”, Mid-Atlantic Soft Matter Meeting, Johns Hopkins, August 2014.
73. “Making the Cut: Kirigami Topology”, This Week’s Discoveries Colloquium, Leiden University, October 2014.
74. “What Becomes a Cholesteric Most”, ICERM Workshop on Small Clusters, Polymer Vesicles and Unusual Minima, Providence, RI, March 2015.
75. “Cholesteric Twist”, Chirality at the Nanoscale, Kent, OH, June 2015.
76. “What Becomes a Cholesteric”, Liquid Crystal Gordon Conference, Biddeford, ME, June 2015.
77. “Liquid-Crystal/Colloid Dispersions”, (5 lectures), Summer School on Soft Matter Self-Assembly, International School of Physics “Enrico Fermi”, Varenna, IT, June 2015.
78. “Kirigami Topology”, Soft Matter Gordon Conference, New London, NH, August 2015.
79. “Cholesteric Geometry and Topology”, International Conference on Geometry and Physics of Spatial Random Systems, Bad Herrenalb, Germany, September 2015.
80. “Cholesteric Geometry and Topology”, 2015 MRS Meeting: Topology in Materials Science: Biological and Functional Nanomaterials, Metrology and Modeling, Boston, November 2015.
81. “Kirigami Topology”, 2015 MRS Meeting: Shape Programmable Materials, Boston, November 2015.

Recent Colloquia

Tufts University (April 2015), Max Planck Institute Göttingen (July 2013), University of Strathclyde (March 2013), Case Western Reserve (April 2012), Georgia Tech (March 2012), Johns Hopkins University (February 2012), Carnegie Mellon University (March 2011), University of Pennsylvania - Math (November 2010), Brandeis University (April 2010), Los Alamos National Laboratory (March 2010).

Recent Seminars

Rensselaer Polytechnic Institute (April 2015), University of Warwick (July 2013), University of Ljubljana (August 2012), CalPoly (June 2012), Kavli Institute for Theoretical Physics (June 2012), University of Edinburgh (May 2012), University of Chicago (November 2011), Cambridge University (June 2011), Harvard University (March 2011), University of Pennsylvania (September 2010), Laboratoire de Physique des Solides Orsay (July 2010).

Current Support

1. University of Pennsylvania MRSEC Grant, National Science Foundation, 2011–2017 (Co-Leader of IRG1). *DMR11-20901*
2. National Science Foundation Grant, *EFRI-ODISSEI: Cutting and Pasting - Kirigami in Architecture, Technology, and Science*, 2013–2017. *EFRI13-31583*
3. Simons Investigator Grant, 2013–2018.
4. National Science Foundation Grant, *Topological and Geometrical Problems in Soft Matter*, 2013–2018. *DMR12-62047*
5. Charles E. Kaufman Foundation, *Living Photonic Devices: Self-assembly from Proteins as Patchy Colloids* (Co-PI; PI Alison Sweeney), 2014–2016. *KA2014-73924*

Past Support

- University of Pennsylvania Research Foundation, *Topological Physics: From Elementary Particles to Electrons to Elasticity* (with C.L. Kane and M. Trodden), 2013–2014.
- National Science Foundation Grant (Co-PI; PI Shu Yang), *From a Single Micropatterned Elastic Membrane to a Library of Complex Patterns of Nanostructures: an Efficient Nanomanufacturing Route via Harnessing of Elastic Instability*, 2009–2013. CMMI09-00468
- National Science Foundation Grant, *Bending, Twisting and Packing: Geometry and Soft Materials*, 2006–2013. DMR05-47230
- University of Pennsylvania MRSEC Grant, National Science Foundation, 2005–2011.
- Petroleum Research Fund Type AC Grant, American Chemical Society, *Bending the Rules* 2005–2007.
- University of Pennsylvania Research Foundation, *Materials Geometry: The Use of Modern Geometry in Real Materials*, 2006.
- National Science Foundation Grant, *Cells and Boundaries All Around Us*, 2002–2005.
- Nanoscience Interdisciplinary Research Team (NIRT) Grant, National Science Foundation, *Single Molecule Functional Nanostructures*, 2001–2005.
- University of Pennsylvania Research Foundation, *Novel Spherical Phases of Diblock Copolymers*, 2003.
- Petroleum Research Fund Type AC Grant, American Chemical Society, *Soap Froths and the Rational Design of Molecular Crystals*, 2001–2003.
- National Science Foundation International Grant (with CNRS), *Structure of Smectic Blue Phases*, 2000–2003.
- Drug Delivery Team, Southeastern Pennsylvania Nanotechnology Institute, 2001–2006.
- University of Pennsylvania Research Foundation, *Soap Froths and the Rational Design of Molecular Crystals*, 2001.
- Fellowship, Alfred P. Sloan Foundation, 1999–2001.
- University of Pennsylvania MRSEC Grant, National Science Foundation, 1998–2001.
- Faculty Early Career Development (CAREER) Award, National Science Foundation, *Chiral Molecules, Structures and Materials*, 1998–2002.
- Research Innovation Award, Research Corporation, *Entanglement Hydrodynamics of Polymer Nematics*, 1998–2000.
- Petroleum Research Fund Type G Grant, American Chemical Society, *Dynamics of Polymer Nematics*, 1998–2000.

Selected Professional Activities

- Organizing Committee, 2016 International Liquid Crystal Conference, Kent, OH.
- Chair, APS Group on Soft Matter (GSOFT), 2014–
- Soft Matter Organizing Committee, APS, 2014–
- Session Leader on Multi/Inter-Disciplinary Courses, 2013 APS Graduate Education in Physics Conference.
- Fellowship Committee, Division of Polymer Physics, APS, 2010–2011.
- Member, KITP Advisory Board, 2009–2012.
- Scientific Committee, 23rd International Liquid Crystal Conference, Kraków, Poland 2010.
- Co-organizer, Journal Club for Condensed Matter Physics, 2009 – 2011.
- Discussant, *Students Lunch with the Experts*, 2009 and 2005 March Meeting of the

American Physical Society.

- Nominating Committee and Public Lecture Committee, Aspen Center for Physics 2009.
- Selection Committee for the Lars Onsager Prize of the American Physical Society, 2008–2009.
- Speaker, 2008 APS Graduate Education in Physics Conference.
- Summer Program Committee, Aspen Center for Physics 2006–2009 (Chair 2007 and 2008).
- Chair of Nominating Committee, Division of Condensed Matter Physics (DCMP), American Physical Society, 2006 – 2009.
- Scientific Committee, *Curvature and Variational Modelling in Physics and Biophysics*, Santiago de Compostela, Spain (2007).
- Winter 2007 and Winter 2008 Program Committee, Aspen Center for Physics.
- Corresponding Member, Journal Club for Condensed Matter Physics, 2005 –
- External Review Committee, Chemical Physics Interdisciplinary Program, Kent State University, April 2005.
- Participant, National Science Foundation Workshop on *Opportunities in Materials Theory*, October 2004.
- General Member, Aspen Center for Physics, 2004–2009.
- Participant, National Science Foundation Workshop on the *Role of Theory in Biological Physics and Materials*, May 2004.
- Member, Board of Directors, Boulder School for Condensed Matter and Materials Physics, 2004 –
- Fellowship Committee, Group on Statistical and Nonlinear Physics, 2003.
- Editorial Board, *Electronic Liquid Crystal Communications*, March 2002 –
- Program Committee, Group on Statistical and Nonlinear Physics, March 2002.
- Member-at-Large, Executive Committee of the American Physical Society Topical Group on Statistical and Nonlinear Physics (GSPN), March 2001 – 2004
- Editorial Board, *Liquid Crystals Today*, 2000 –
- Lecturer, University of Pennsylvania Summer Science Academy, 1998, 2000, 2003, 2004, 2006, 2011.

Conferences and Schools Organized

- Co-organizer, *Topology in Motion*, Institute for Computational and Experimental Research in Mathematics, Providence, RI, 6 September - 9 December 2016.
- Co-organizer, *Foldable, Buildable, and Responsive Materials*, University of Pennsylvania, 22-23 August 2014.
- Chair, 2013 Gordon Research Conference on Liquid Crystals (Vice-Chair 2011).
- Co-organizer, *Knotted Fields*, Kavli Institute for Theoretical Physics, June 2012.
- Co-organizer, *Materials and the Imagination*, Aspen Center for Physics, January 2011.
- Co-organizer, *Geometry and Materials Physics: Making the Connection*, Aspen Center for Physics, June 2004.
- Co-organizer, *2002 Boulder School for Condensed Matter and Materials Physics*, July 2002.
- Co-organizer, *Symposium in Honor of the 65th Birthday of A. Brooks Harris*, University of Pennsylvania, 17-18 March 2000.
- Co-organizer, *3rd and 4th Annual Symposia on the Physics of Soft Materials*, Labora-

tory for Research on the Structure of Matter, University of Pennsylvania, 2 May 1998 and 9 October 1999.

- Co-organizer, *Ten Years of the TGB Phase: A Workshop*, University of Pennsylvania, 22-24 April 1998.

Internal Service

Department of Physics and Astronomy

- Planning Committee, 2000-05 (*ex officio*), 2006-07 (*ex officio*), 2007-08, 2010-15.
- Graduate Committee, 1998-2007, 2010-2014.
- Chair of Colloquium Committee, 1999-2000, 2012-14.
- Chair of Bio/Nano Search Committee, 2011-12 (ending in hire of Professor Alison Sweeney).
- Associate Chair for Graduate Affairs and Chair of the Graduate Group in Physics and Astronomy, 2000-05, 2006-07, 2013-14.
- Member of search committees, organizer of seminar series, and chair and member of promotion *ad hoc* committees.
- Awards Committee, 2014-15.

School of Arts and Sciences

- Chair of Cluster Search Committee in Evolution, 2012-14.
- Personnel Committee, 2003-05.

University of Pennsylvania

- SAS Dean Search Committee, 2012-13.
- Co-Leader, IRG1, Laboratory for Research in the Structure of Matter, 2011-17.
- Middle States Reaccreditation Self Study Team, 2002-03, 2012-13.
- Graduate Council of Faculties, 2005-08.
- Chair, Selection Committee, Penn Prize for Excellence in Teaching by Graduate Students, 2005-08.
- Graduate Education Strategic Planning Committee, 2001.
- Focus Group on Undergraduate Brochure, 1998.

Teaching

Fall 2014	Physics 611	<i>Statistical Mechanics</i>
Fall 2014	Physics 500	<i>Mathematical Methods in Physics I</i>
Spring 2013	Physics 528	<i>Introduction to Liquid Crystals</i>
Fall 2013	Physics 500	<i>Mathematical Methods in Physics I</i>
Fall 2012	Physics 611	<i>Statistical Mechanics</i>
Spring 2012	Physics 528	<i>Introduction to Liquid Crystals</i>
Fall 2011	Physics 611	<i>Statistical Mechanics</i>