ROBERT LYNCH LEHENY

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EDUCATION

October, 1997	THE UNIVERSITY OF CHICAGO	Ph.D. Physics.
June, 1989	PRINCETON UNIVERSITY	A.B. Physics *cum laude*.

PROFESSIONAL EXPERIENCE

2007 – present	THE JOHNS HOPKINS UNIVERSITY. Associate Professor of Physics.
2000 – 2007	THE JOHNS HOPKINS UNIVERSITY. Assistant Professor of Physics.
1997 – 2000	MASSACHUSETTS INSTITUTE OF TECHNOLOGY. Postdoctoral Fellow in Physics; Advisor: Robert J. Birgeneau
1992 – 1997	THE UNIVERSITY OF CHICAGO. Research Assistant in Physics; Advisor: Sidney R. Nagel.
1990 – 1992	THE UNIVERSITY OF CHICAGO. Graduate Teaching Assistant in Physics.
1989 – 1990	IMPERIAL COLLEGE, London. Research Assistant in Experimental Solid State Physics.
1988	BELL LABORATORIES. Summer Research Assistant in Radio Astronomy.

AWARDS AND HONORS

2002	CAREER Award, National Science Foundation
1990--1993	GAANN Fellowship, Department of Education.
1989--1990	ORS Award, Committee of Principals of United Kingdom Universities.
1989	Election to Sigma Xi.

GRANT SUPPORT

1. DARPA Meta-Materials Program. "FeCo-Based Meta-Materials for Magnetic Bearings in Jet Engines." One of seven Investigators (PI: C. L. Chien). $2,948,685; 06/21/01 – 8/28/04.

2. ACS, Petroleum Research Fund. "Experimental Study of Liquid Crystal Phase Behavior under Anisotropic Random Disorder." Single Investigator. $25,000; 09/01/01 – 08/31/03.

3. NSF DMR. "CAREER: Structure and Dynamics of Disordered and Out-of-Equilibrium Systems." Single Investigator. $450,000; 03/01/02 – 02/28/07.

4. NSF IMR. "Acquisition of Particle Tracking Instrumentation for Soft Matter and Biomaterials Research and Education." Principal Investigator (co-Is: J. L. Harden, S. C. Kuo, and D. H. Reich). $118,000; 09/01/03 – 08/31/04.

5. NASA Fluid Physics Program. "Orientational Ordering, Pair Interactions, and Controlled Self-Assembly of Magnetic Nanowires in Nematic Liquid Crystal Solvent." Principal Investigator (co-I: D. H. Reich). $319,000; 12/01/03 – 09/30/06.

6. NSF. "Materials Research Science and Engineering Center (MRSEC)." One of eleven Investigators (PI: C. L. Chien). $7,200,000; 09/01/05 – 08/31/11

7. ACS, Petroleum Research Fund. "X-ray Photon Correlation Spectroscopy Studies of Nanoscale Particle Motion within Heterogeneous Complex Fluids." Single Investigator. $80,000; 09/01/06 – 08/31/08.

8. NSF CBET. "Interfacial Microrheology of Protein Layers." Principal Investigator (co-Is: D. H. Reich and K. J. Stebe). $207,118; 04/01/07 – 03/31/10.

9. NSF DMR. "Magnetic Probes of Elastic Energy, Dynamics, Interactions, and Shape Transitions of Anisotropic Colloids in Liquid Crystals." Principal Investigator (co-I: D. H. Reich). $390,000; 01/01/08 – 12/31/10.

10. NSF CBET. "Colloidal Mobility in Surfactant Films and its Application of the Shear Rheology of Protein Layers." Principal Investigator (co-Is: D. H. Reich and K. J. Stebe). $321,103; 09/01/10 – 08/31/13.

11. JHU Gateway Sciences Initiative. "Active Learning in General Physics." One of two Investigators (PI: J. H. Krolik). $49,580; 01/01/12 – 12/31/12.

12. NSF DMR. "Dynamics, Transport, and Ordering of Inclusions in Liquid Crystals." Principal Investigator (co-I: D. H. Reich). $405,000; 07/01/12 – 06/30/15.

SERVICE

Professional Service

2012	Co-Chair	Rheology and Dynamics Sessions, ACS Colloid and Surface Science Symposium
2012-present	Vice Chair	Advanced Photon Source User Organization Steering Committee
2011-2012	Member	Advanced Photon Source User Organization Steering Committee
2009	Organizer	5th Mid-Atlantic Soft Matter Workshop.
2008-present	Spokesperson	Beamline Advisory Team, CHX Beamline, NSLS II, Brookhaven National Laboratory
2008-present	Member	General Users Program Advisory Panel, Advanced Photon Source, Argonne National Laboratory
2008	Member	ID10A Review Panel, European Synchrotron Radiation Facility
2008	Organizer	Workshop on X-ray Photon Correlation Spectroscopy and Microbeam SAXS at NSLS-II
2007-2010	Member	Scientific Review Committee, Neutron Scattering Science Division, Oak Ridge National Laboratory
2007-present	Member	8-ID Beamline Advisory Group, Advanced Photon Source
2007-2008	Member	Beamtime Allocation Committee, NIST Center for Neutron Research
2006-2009	Member	Neutron Scattering Scientific Advisory Committee, Oak Ridge National Laboratory
2006-present	Member	Editorial Board, *Soft Materials*
2006	Co-Chair	Rheology and Dynamics of Complex Fluids Sessions, ACS Colloid and Surface Science Symposium
2004-2006	Member	Proposal Review Panel, National Synchrotron Light Source
2003-2007	Member	Users Committee, NIST Center for Neutron Research
2002-2007	Member	Program Advisory Committee, NIST Center for Neutron Research

University Service

2012-present	Member	Homewood Laboratory Safety Committee
2009-present	Member	Post-Bac Program Advisory Committee
2005-2007	Member	Undergraduate Curriculum Committee, Kreiger School
2004	Member	Dean's Teaching Fellowship Committee
2003	Member	Dean's Teaching Fellowship Committee

Departmental Service

2008-present		Vice Chair for Research
2008-present	Chair	Computer Committee
2006-2008		Director of Undergraduate Studies
2006-2008	Chair	Undergraduate Curriculum Committee
2004-2006	Chair	Outreach Committee
2004	Member	Condensed Matter Experiment Search Committee
2003-2006	Faculty Supervisor	Physical Sciences Machine Shop
2002	Member	Condensed Matter Experiment Search Committee

2000-2003 Member Colloquium Committee

EDUCATIONAL ACTIVITIES

Postdocs Supervised

Dr. Myung Han Lee	2007-2009	(postdoc, U. Penn)
Dr. Ranjini Bandyopadhyay	2003-2005	(Associate Professor, Raman Research Institute)

Graduate Students Supervised

Hasan Yardmici	2001-2006	Ph.D. 2006 (postdoc, UIUC)
Dennis Liang	2001-2006	Ph.D. 2006 (postdoc, Argonne National Lab)
Clayton Lapointe	2002-2008	Ph.D. 2008 (postdoc, U. Colorado, Boulder)
Hongyu Guo	2005-2010	Ph.D. 2010 (postdoc, UCSD)
Joel Rovner	2008-present	
Daniel Allan	2009-present	
Kui Chen	2011-present	

Undergraduates Participating in Research

Andrew O'Bannon	2001	(graduate student, U. of Washington)
Christopher Chan	2003-2004	(graduate student, Carnegie Mellon)
Garrett Butler	2003	(high school physics teacher)
Alexander Siemens	2004-2007	(graduate student, Eindhoven)
Andrew Briggs	2005-2007	(graduate student, UCSD)
James McIver	2005-2007	(graduate student, Harvard)
Mark Zachary	2006-2007	(graduate student, Brandeis)
Matthew Beidler	2007-2008	(graduate student, UWV)
Scott Ingram	2008-2010	(graduate student, U. Texas)
Steven Cardinali	2008-2011	(graduate student, UC Berkeley)
Daniel Berman	2011	
Victor Allard	2011-present	
Daniel Firester	2012-present	

Courses Taught

Spring 2012:	171.310 Biological Physics
Fall 2011:	172.203 Contemporary Physics Seminar
Spring 2011:	171.102 General Physics for Physical Sciences Majors II
Fall 2010:	172.203 Contemporary Physics Seminar
Spring 2010:	171.102 General Physics for Physical Sciences Majors II
Fall 2009:	172.203 Contemporary Physics Seminar
Spring 2009:	171.102 General Physics for Physical Sciences Majors II
Fall 2008:	172.203 Contemporary Physics Seminar

Spring 2008:	171.102 General Physics for Physical Sciences Majors II
Spring 2007:	171.106 Introduction to Classical Physics II -- Electricity and Magnetism
Fall 2006:	171.201 Special Relativity and Waves
Spring 2006:	171.106 Introduction to Classical Physics II -- Electricity and Magnetism
Fall 2005:	171.201 Special Relativity and Waves
Spring 2005:	171.106 Introduction to Classical Physics II -- Electricity and Magnetism
Fall 2004:	171.201 Special Relativity and Waves
Spring 2004:	171.428 & 540.428 Introduction to Complex Fluids (co-taught with Prof. James Harden from the Dept. of Chemical and Biomolecular Engineering)
Fall 2003:	171.201 Special Relativity and Waves
Spring 2003:	171.622 Condensed Matter Physics
Fall 2002:	171.405 Introduction to Condensed Matter Physics
	171.621 Condensed Matter Physics
Spring 2002:	171.622 Condensed Matter Physics
Fall 2001:	171.405 Introduction to Condensed Matter Physics
	171.621 Condensed Matter Physics
Fall 2000:	171.621 Condensed Matter Physics

OUTREACH ACTIVITIES

2010-2011	Organizer	Physics and Science Bowl components of JHU Physics Fair
2009-2011	Mentor	Ingenuity Program
2008	Mentor	Women in Science and Engineering Program, JHU
2004-2005	Co-Organizer	JHU Physics Fair (an event attracting over 500 people from the community for a day of interactive demonstrations and events)
2004	Speaker	Materials Science Outreach Workshop on *Explorations in Nanoscale Science and Engineering*
2003-2004	Faculty advisor	JHU Traveling Physics Show

<u>High School Students Participating in Research</u>

Sara Small	summer, 2003
Matthew Keagle	summer, 2004
Thomas Lubawski	summer, 2005
Joshua Caasi	summer, 2006
Michael Ingber	summer, 2007
Lauren Gilliss	spring, 2008
Dan Bornia*	2009-2011
James Chen	summer 2010
Jackson Hance	summer 2011

*Dan was named National Semifinalist in the INTEL Science Talent Search on the basis of his research with the group.

INVITED TALKS

1. "Structural Studies of an Organic Liquid through the Glass Transition," Material Science Division, Argonne National Laboratory, Argonne, Illinois, November 1995.
2. "Searching for a Glass Transition in Statics and Dynamics," Department of Physics and Astronomy, Northwestern University, Evanston, IL, January 1997.
3. "Searching for a Glass Transition in Statics and Dynamics," Department of Physics, MIT, Cambridge, MA, January 1997.
4. "Neutron Diffraction and Molecular Dynamics Simulation Studies of Ordering in Molecular Liquids," Annual Meeting of the American Crystallographic Association, St. Louis, MO, July 1997.
5. "High-Frequency Behavior of the Primary Relaxation in Supercooled Liquids," Third International Discussion Meeting on Relaxations in Complex Systems, Vigo, Spain, July 1997.
6. "Dielectric Susceptibility Studies of Deeply Supercooled Liquids," Workshop on Jamming and Rheology, Institute for Theoretical Physics, Santa Barbara, CA, October 1997.
7. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics and Astronomy Colloquium, Rutgers University, Piscataway, NJ, February 1999.
8. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics and Astronomy Colloquium, University of Pennsylvania, Philadelphia, PA, February1999.
9. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics Colloquium, Worcester Polytechnical Institute, Worcester, MA, May 1999.
10. "Quantum Magnetism in Two Dimensions," Department of Physics Colloquium, Bryn Mawr College, Bryn Mawr, PA, January 2000.
11. "Quantum Magnetism in Two Dimensions," Department of Physics Colloquium, Williams College, Williamstown, MA, February 2000.
12. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics Colloquium, Syracuse University, Syracuse, NY, February 2000.
13. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics Colloquium, University of Oregon, Eugene, OR, February 2000.
14. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics Colloquium, University of Texas, Austin, TX, February 2000.
15. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics Colloquium, Emory University, Atlanta, GA, February 2000.
16. "The Two-Dimensional Quantum Heisenberg Antiferromagnet," Department of Physics, Cornell University, Ithaca, NY, March 2000.

17. “Liquid Crystals in Aerosils: The Fate of the Smectic-A Transition,” Annual Conference of the Center for Nonlinear Studies at Los Alamos National Laboratory, Santa Fe, NM, May 2001.
18. “Liquid Crystals in Aerosils: The Fate of the Smectic-A Transition,” Gordon Research Conference on Liquid Crystals, New London, NH, June 2001.
19. “Aging and Memory in Glass Forming Liquids,” Department of Physics Colloquium, Georgetown University, Washington, DC, March 2002.
20. “Aging and Memory in Glass Forming Liquids,” Department of Physics Colloquium, Northern Illinois University, DeKalb, IL, April 2002.
21. “Memory in an Aging Structural Glass,” Applied Dynamics Seminar, University of Maryland, College Park, MD, May 2002.
22. “Colloidal Wires in Nematics,” ESF Exploratory Workshop on Colloid Liquid Crystal Dispersions, Bled, Slovenia, August 2003.
23. “Levitating Wires, Elastic Torques, and Other Adventures with Particles in Liquid Crystals,” Department of Physics Colloquium, Worcester Polytechnical Institute, Worcester, MA, December 2003
24. “XPCS and the Slow Dynamics in Clay Gels,” NSLS-II Workshop, Brookhaven National Laboratory, Upton, NY, March 2004.
25. “Anisotropic Particles within Anisotropic Fluids,” R. G. Herb Materials Physics Seminar, University of Wisconsin, Madison, WI, April 2004.
26. “XPCS and the Nanoscale Dynamics in Glassy Colloidal Systems,” APS Workshop on Time Domain Science Using X-ray Techniques, Lake Geneva, WI, September 2004.
27. “Anisotropic Particles within Anisotropic Fluids,” Department of Physics, University of Massachusetts, Amherst, MA, September 2004.
28. “Anisotropic Particles within Anisotropic Fluids,” W. G. Pritchard Seminar, Pennsylvania State University, University Park, PA, September 2004.
29. “Elastic Torque and the Manipulation of Magnetic Nanowires in Anisotropic Complex Fluids,” 49th Conference on Magnetism and Magnetic Materials, Jacksonville, FL, November 2004.
30. “Anisotropic Particles within Anisotropic Fluids,” NIST Center for Neutron Research, Gaithersburg, MD, January 2005.
31. “Worms that Torque, Wires that Levitate, and other Adventures with Particles in Complex Fluids,” Department of Physics Colloquium, University of Ottawa, Ottawa, Ontario, April 2006.
32. “Structure and Rheology of Smectics in Random Porous Environments,” 21st International Liquid Crystal Conference, Keystone, Colorado, July 2006.

33. “Anisotropic Particles within Anisotropic Fluids,” Computations in Science Seminar, University of Chicago, Chicago, IL, September 2006.

34. “Slow, Non-Diffusive Dynamics in Glassy Soft Matter,” Department of Physics and Astronomy, University of Pennsylvania, Philadelphia, PA, January 2007.

35. “Slow, Non-Diffusive Dynamics in Concentrated Depletion Gels and other Glassy Soft Matter,” Ceramics Seminar, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, February 2007.

36. “Aging and Gelation in Concentrated Nanocolloidal Suspensions,” 2007 APS Users Meeting, Argonne National Laboratory, Argonne, IL, May 2007.

37. “XPCS and Science Opportunities at NSLS-II,” NSLS-II User Workshop, Brookhaven National Laboratory, Upton, NY, July 2007.

38. “Slow, Non-Diffusive Dynamics in Glassy Soft Matter,” Department of Mechanical Engineering, Yale University, New Haven, CT, September 2007.

39. “Prospects for XPCS/microbeam SAXS at NSLS-II”, Workshop on X-ray Photon Correlation Spectroscopy and Microbeam SAXS at NSLS-II, Brookhaven National Laboratory, Upton, NY, January 2008.

40. “Slow, Non-Diffusive Dynamics in Glassy Soft Matter,” Department of Physics, McGill University, Montreal, Canada, January 2008.

41. “XPCS Studies of Nanoparticle Motion within Glassy Polymer Melts,” Annual Meeting of the American Crystallographic Association, Knoxville, TN, June 2008.

42. “Anisotropic Particles within Anisotropic Fluids,” Mid-Atlantic Soft Matter Workshop, Philadelphia, PA, June 2008.

43. “XPCS and the Study of Nanoparticle Motion in Polymer Melts and Solutions,” Meeting on X-ray and Neutron Techniques for Nano-Structural Research, SPring-8, Hyogo, Japan, August 2008.

44. “XPCS Studies of Slow, Hyper-diffusive Dynamics in Glassy Soft Matter,” XXI Congress of the International Union of Crystallography, Osaka, Japan, August 2008.

45. “Static and Dynamic Behavior of Anisotropic Particles in Nematics,” Hougen Symposium on Frontiers of Liquid Crystals, Madison, Wisconsin, April 2009.

46. “Glassiness and Aging in Soft Matter (4 lectures),” Soft Solids and Complex Fluids Summer School, University of Massachusetts, Amherst, June 2009.

47. “Aging of the Johari-Goldstein Beta Relaxation,” Sixth International Discussion Meeting on Relaxations in Complex Systems, Rome, Italy, August 2009.

48. “Connecting Nanoscale Motion and Rheology of Viscoelastic and Glassy Complex Fluids,” Coherence 2010: International Workshop on Phase Retrieval and Coherent Scattering, Rostock, Germany, June 2010.

49. “Microrheology of Protein Layers,” MedImmune, Gaithersburg, MD, July 2010.

50. "The Slow Dynamics of Glassy Materials," Herman Z. Cummins Symposium, The City College of New York, New York, NY, October 2010.

51. "Application of interfacial microrheology to protein layer formation," Engineering Conferences International; Biological & Pharmaceutical Complex Fluids: New Trends in Characterizing Microstructure, Interactions & Properties, Tovar, Portugal, July 2012.

52. "Interfacial microrheology of protein layers during formation at fluid interfaces," The XVIth International Congress on Rheology, Lisbon, Portugal, August 2012.

PUBLICATIONS

1. R. L. Leheny and S. R. Nagel, "Model for the Evolution of River Networks," Phys. Rev. Lett. **71**, 1470–1473 (1993).

2. R. L. Leheny, "Simple Model for River Network Evolution," Phys. Rev. E **52**, 5610–5620 (1995).

3. R. L. Leheny, N. Menon, S. R. Nagel, D. L. Price, K. Suzuya and P. Thiyagarajan, "Structural Studies of an Organic Liquid through the Glass Transition," J. Chem. Phys. **105**, 7783–7794 (1996).

4. R. L. Leheny, N. Menon and S. R. Nagel, "Comment on 'Spectral shape of the α-process in supercooled liquids revisited'," Europhys. Lett. **36**, 473–474 (1996).

5. D. Bitko, S. N. Coppersmith, R. L. Leheny, N. Menon, S. R. Nagel and T. F. Rosenbaum, "Evidence for Glass and Spin-Glass Phase Transitions from the Dynamic Susceptibility," J. Res. Natl. Inst. Stand. Technol. **102**, 207–211 (1997).

6. R. L. Leheny and S. R. Nagel, "High-Frequency Asymptotic Shape of the Primary Relaxation in Supercooled Liquids," Europhys. Lett. **39**, 447–452 (1997).

7. S. A. Blanton, R. L. Leheny, M. A. Hines, P. Guyot-Sionnest, "Dielectric Dispersion Measurements of CdSe Nanocrystal Colloids: Observation of a Permanent Dipole Moment," Phys. Rev. Lett. **79**, 865–868 (1997).

8. R. L. Leheny and S. R. Nagel, "Frequency-Domain Study of Physical Aging in a Simple Liquid," Phys. Rev. B **57**, 5154–5162 (1998).

9. D. L. Price, M.-L. Saboungi, Y. S. Badyal, J. Wang, S. C. Moss, and R. L. Leheny, "Structure Of Molten Iron Chloride: Neutron Scattering and Modeling," Phys. Rev. B **57**, 10496–10503 (1998).

10. R. L. Leheny, "Dielectric-Susceptibility Study of a Strong Glass-Forming Liquid," Phys. Rev. B **57**, 10537–10544 (1998).

11. R. L. Leheny and S. R. Nagel, "Dielectric Susceptibility Studies of the High-Frequency Shape of the Primary Relaxation in Supercooled Liquids," J. Non-Cryst. Solids **235-237**, 278–285 (1998).

12. R. D. Deegan, R. L. Leheny, N. Menon, S. R. Nagel, and D. C. Venerus, "Dynamic Shear Modulus of Tricresyl Phosphate and Squalane," J. Phys. Chem. B **103**, 4066–4070 (1999).

13. R. L. Leheny, R. J. Christianson, R. J. Birgeneau, and R. W. Erwin, "Spin Correlations in an Isotropic Spin-5/2 Two-Dimensional Antiferromagnet," Phys. Rev. Lett. **82**, 418–421 (1999).

14. R. J. Christianson, R. L. Leheny, R. J. Birgeneau, and R. W. Erwin, "Spin Dynamics in a Spin-5/2 Two-Dimensional Heisenberg Antiferromagnet," Phys. Rev. B **63**, 140401(R) (2001).

15. S. Park, R. L. Leheny, R. J. Birgeneau, J.-L. Gallani, C. W. Garland, and G. S. Iannacchione, "Hydrogen-bonded Silica Gels Dispersed in a Smectic Liquid Crystal: A Random Field XY System," Phys. Rev. E **65**, 050703(R) (2002).

16. R. L. Leheny, S. Park, R. J. Birgeneau, J.-L. Gallani, C. W. Garland, and G. S. Iannacchione, "Smectic Ordering in Liquid crystal - Aerosil Dispersions I. X-ray Scattering," Phys. Rev. E **67**, 011708 (2003).

17. G. S. Iannacchione, S. Park, C. W. Garland, R. J. Birgeneau, and R. L. Leheny, "Smectic ordering in liquid crystal - aerosil dispersions II. Scaling Analysis," Phys. Rev. E **67**, 011709 (2003).

18. R. L. Leheny, Y. S. Lee, G. Shirane, and R. J. Birgeneau, "Spin Wave Propagation in the Domain State of a Random Field Ising Magnet," Eur. Phys. J. B **32**, 287–290 (2003).

19. H. Yardimci and R. L. Leheny, "Memory in an Aging Molecular Glass," Europhys. Lett. **62**, 203–209 (2003).

20. A. Duckham, D. Z. Zhang, D. Liang, V. Luzin, R. C. Cammarata, R. L. Leheny, C. L. Chien, and T. P. Weihs, "Temperature Dependent Mechanical Properties of Ultra-Fine Grained FeCo-2V," Acta. Mat. **51**, 4083–4093 (2003).

21. P. S. Clegg, R. J. Birgeneau, S. Park, C. W. Garland, G. S. Iannacchione, R. L. Leheny, and M. E. Neubert, "High resolution x-ray study of the nematic – smectic-*A* and smectic-*A* – smectic-*C* transitions in liquid-crystal – aerosil gels," Phys. Rev. E **68**, 031706 (2003).

22. C. Lapointe, A. Hultgren, D. M. Silevitch, E. J. Felton, D. H. Reich, and R. L. Leheny, "Elastic Torque and the Levitation of Metal Wires by a Nematic Liquid Crystal," Science **303**, 652–655 (2004).

23. D. Liang, M. A. Borthwick, and R. L. Leheny, "Smectic Liquid Crystals in Anisotropic Silica Gels," J. Phys.: Condens. Matter **16**, S1989–S2002 (2004).

    This paper was selected by the editors for inclusion in IOP Select, a collection of articles identified by the Institute of Physics for their novelty and significance. A story on the work also appears in the Annual Report of the Advanced Photon Source as one of the outstanding results of 2004.

24. R. Bandyopadhyay, D. Liang, H. Yardimci, D. A. Sessoms, M. A. Borthwick, S. G. J. Mochrie, J. L. Harden and R. L. Leheny, "Evolution of particle-scale dynamics in an aging clay suspension," Phys. Rev. Lett. **93**, 228302 (2004).

This paper was selected for the Dec. 6, 2004 issue of the Virtual Journal of Nanoscale Science and Technology. A story on the work also appears in the Annual Report of the Advanced Photon Source as one of the outstanding results of 2004.

25. R. Bandyopadhyay, D. Liang, R. H. Colby, J. L. Harden, and R. L. Leheny, "Enhanced Elasticity and Soft Glassy Rheology of a Smectic in a Random Porous Environment," Phys. Rev. Lett. **94**, 107801 (2005).

    This paper was selected for the Mar. 28, 2005 issue of the Virtual Journal of Nanoscale Science and Technology.

26. C. Lapointe, N. Cappallo, D. H. Reich, and R. L. Leheny, "Static and Dynamic Properties of Magnetic Nanowires in Nematic Fluids," J. Appl. Phys. **97**, 10Q304 (2005).

27. T. Huberman, R. Coldea, R. A. Cowley, D. A. Tennant, R. L. Leheny, R. J. Christianson, and C. D. Frost, "Two-magnon excitations observed by neutron scattering in the two-dimensional spin-5/2 Heisenberg antiferromagnet Rb_2MnF_4," Phys. Rev. B **72**, 014413 (2005).

    The work described in this paper is highlighted in a cover story in the spring, 2004 issue of Neutron News.

28. H. Yardimci, B. Chung, J. L. Harden, and R. L. Leheny, "Phase Behavior and Local Dynamics of Concentrated Triblock Copolymer Micelles," J. Chem. Phys. **123**, 244908 (2005).

    A story on this work appears as a research highlight in the 2005 Annual Report of the NIST Center for Neutron Research.

29. H. Yardimci and R. L. Leheny, "Aging of the Johari-Goldstein Relaxation in the Glass-Forming Liquids Sorbitol and Xylitol," J. Chem. Phys. **124**, 214503 (2006).

30. B. Chung, S. Ramakrishnan, R. Bandyopadhyay, D. Liang, C. F. Zukoski, J. L. Harden, and R. L. Leheny, "Microscopic Dynamics of Recovery in Sheared Depletion Gels," Phys. Rev. Lett. **96**, 228301 (2006).

    This paper was selected for the July 19, 2006 issue of the Virtual Journal of Nanoscale Science and Technology. A story on the work also appeared in the Annual Report of the Advanced Photon Source as one of the outstanding results of 2006.

31. R. Bandyopadhyay, D. Liang, J. L. Harden, and R. L. Leheny, "Slow dynamics, aging, and glassy rheology in soft and living matter," Solid State Commun. **139**, 589–598 (2006).

32. A. Anguelouch, R. L. Leheny, and D. H. Reich, "Application of ferromagnetic nanowires to interfacial microrheology," Appl. Phys. Lett. **89**, 111914 (2006).

    This paper was selected for the Sept. 25, 2006 issue of the Virtual Journal of Nanoscale Science and Technology.

33. A. Concha, J. W. McIver III, P. Mellado, D. Clarke, O. Tchernyshyov, and R. L. Leheny, "Wrinkling of a bilayer membrane," Phys. Rev. E **75**, 016609 (2007).

    This paper was selected for the Feb. 1, 2007 issue of the Virtual Journal of Biological Physics Research.

34. D. Liang and R. L. Leheny, "Smectic Liquid Crystals in an Anisotropic Random Environment," Phys. Rev. E **75**, 031705 (2007).

35. H. Guo, J. N. Wilking, D. Liang, T. G. Mason, J. L. Harden, and R. L. Leheny, "Slow, Non-Diffusive Dynamics in Concentrated Nanoemulsions," Phys. Rev. E **75**, 041401 (2007).

36. N. Cappallo, C. Lapointe, D. H. Reich, and R. L. Leheny, "Nonlinear microrheology of wormlike micelle solutions using ferromagnetic nanowire probes," Phys. Rev. E **76**, 031505 (2007).

37. F. Crucenau, D. Liang, R. L. Leheny, and G. S. Iannacchione, "Calorimetric study of the isotropic to nematic phase transition in an aligned liquid crystal nano-colloidal gel," Liq. Cryst. **35**, 1061-1071 (2008).

38. C. P. Lapointe, D. H. Reich, and R. L. Leheny, "Manipulation and Organization of Ferromagnetic Nanowires by Patterned Nematic Liquid Crystals," Langmuir **24**, 11175-11181 (2008).

39. F. Crucenau, D. Liang, R. L. Leheny, C. W. Garland, and G. S. Iannacchione, "High-resolution calorimetric study of the nematic to smectic-A transition in aligned liquid crystal–aerosil gels," Phys Rev. E **79**, 011710 (2009).

40. H. Guo, G. Bourret, M. K. Corbierre, S. Rucareanu, R. B. Lennox, K. Laaziri, L. Piche, M. Sutton, J. L. Harden, and R. L. Leheny, "Nanoparticle Motion within Glassy Polymer Melts," Phys Rev. Lett. **102**, 075702 (2009).

    This paper was selected for the Mar. 6, 2009 issue of the Virtual Journal of Nanoscale Science and Technology. A story on the work also appeared in the Annual Report of the Advanced Photon Source as one of the outstanding results of 2009.

41. M. H. Lee, C. P. Lapointe, D. H. Reich, K. J. Stebe, and R. L. Leheny, "Interfacial Hydrodynamic Drag on Nanowires Embedded in Thin Oil Films and Protein Layers," Langmuir **25**, 7976-7982 (2009).

42. M. H. Lee, D. H. Reich, K. J. Stebe, and R. L. Leheny, "Combined Passive and Active Microrheology Study of Protein-Layer Formation at an Air-Water Interface," Langmuir **26**, 2650-2658 (2010).

43. A. Madsen, R. L. Leheny, H. Guo, M. Sprung, and O. Czakkel, "Beyond simple exponential correlation functions and equilibrium dynamics in x-ray photon correlation spectroscopy," New J. Phys. **12**, 055001 (2010).

44. H. Guo, S. Ramakrishnan, J. L. Harden, and R. L. Leheny, "Connecting nanoscale motion and rheology of gel-forming colloidal suspensions," Phys. Rev. E **81**, 050401 (2010).

    This paper was selected for the May 24, 2010 issue of the Virtual Journal of Nanoscale Science and Technology.

45. J. B. Rovner, C. P. Lapointe, D. H. Reich, and R. L. Leheny, "Anisotropic Stokes drag and dynamic lift on cylindrical colloids in a nematic liquid crystal," Phys. Rev. Lett. **105**, 228301 (2010).

46. M. H. Lee, D. H. Reich, K. J. Stebe, and R. L. Leheny, "Brownian dynamics of colloidal probes during protein-layer formation at an oil-water interface," Soft Matter **7**, 7635 (2011).

47. H. Guo, S. Ramakrishnan, J. L. Harden, and R. L. Leheny, "Gel formation and aging in weakly attractive nanocolloid suspensions at intermediate concentrations," J. Chem. Phys. **135**, 154903 (2011).

    This paper was selected for the November 11, 2011 issue of the Virtual Journal of Nanoscale Science and Technology.

48. S. Relaix, R. L. Leheny, L. Reven, and M. Sutton, "Memory effect in liquid crystal and silica aerosil composites," Phys. Rev. E **84**, 061705 (2011).

49. R. L. Leheny, "XPCS: nanoscale motion and rheology," Curr. Opin. Colloid Interface Sci. **17**, 3 (2012).

50. L. Botto, L. Yao, R. L. Leheny, and K. J. Stebe, "Capillary bond between rod-like particles and the micromechanics of particle-laden interfaces," Soft Matter **8**, 4971 (2012).

51. H. Y. Guo, G. Bourret, R. B. Lennox, M. Sutton, J. L. Harden, and R. L. Leheny, "Entanglement-controlled subdiffusion of nanoparticles within concentrated polymer solutions," Phys. Rev. Lett. **109**, 055901 (2012).

52. J. B. Rovner, D. S. Borgnia, D. H. Reich, and R. L. Leheny, "Elastic and hydrodynamic torques on a colloidal disk within a nematic liquid crystal," Phys. Rev. E **86**, 041702 (2012).