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<i>Education</i>	UNIVERSITY OF CHICAGO, Ph.D. in Physics Advisor: David G. Grier, Thesis: <i>Probing Colloidal Interactions with Digital Video Microscopy and Blinking Optical Tweezers</i>	1996
	UNIVERSITY OF CHICAGO, A.M. in Physics	1992
	UNIVERSITY OF CHICAGO, A.B. in Physics	1990

<i>Employment</i>	UNIVERSITY OF PENNSYLVANIA, Associate Professor Department of Chemical and Biomolecular Engineering Institute for Medicine and Engineering Pennsylvania Muscle Institute	2007-present
	UNIVERSITY OF PENNSYLVANIA, <i>Skirkanich</i> Assistant Professor Department of Chemical and Biomolecular Engineering	2001-2007
	CALIFORNIA INSTITUTE OF TECHNOLOGY Assistant Professor, Department of Applied Physics	2000-2001
	UNIVERSITY OF PENNSYLVANIA Postdoctoral Fellow, Dept of Physics and Astronomy Supervisors: Arjun Yodh and David Weitz	1996-1999

<i>Awards</i>	BRILLIANT 10, 2005 member, <i>Popular Science</i> Magazine	2005
	INVITED SPEAKER, Beckman Frontiers of Science Conference, NAS	2004
	PACKARD FELLOW, David and Lucile Packard Foundation	2002
	SKIRKANICH CHAIR Assistant Professor of Innovation in Chemical and Biomolecular Engineering	2001
	GRAINGER FELLOWSHIP for excellence in experimental Physics	1995
	MOST EFFECTIVE first-year teaching assistant (student vote)	1991

<i>Research Interests</i>	cell mechanics and rheology, self-assembly by molecular recognition, soft glasses, single-molecule science, colloidal interactions, optical trapping
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<i>Research Achievements</i>	Determined the consensus rheology of cultured mammalian cells Demonstrated the first colloidal crystals formed by molecular recognition Invented 'physical grafting' method for functionalizing and modifying the surface brush layer of polymer colloids Co-developed methods for quantifying stress fluctuations in cells, active media Invented two-point microrheology Co-developed widely used 3-d particle tracking platform based on confocal microscopy and fluorescent PMMA colloids First direct measurements of pair-wise colloidal interactions due to molecular bridging, depletion, hydrodynamics and screened electrostatics Discovered the cause of spontaneous stratification in suspensions Co-developed widely used free particle tracking software
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Publications

- * 45. Crocker JC, *News and Views: Golden Handshake, Nature*, **451**, 528-529, 2008.
- * 44. Biancaniello PL, Kim AJ, Crocker JC, Long-time stretched exponential kinetics in single DNA duplex dissociation, *Biophys J*, **94**, 891-896, 2008.
- * 43. Hoffman BD, Massiera G, Crocker JC, Fragility and mechanosensing in a thermalized cytoskeleton model with forced protein unfolding, *Phys Rev E*, **76**, 051906-(1-5), 2007.
- * 42. Massiera G, Van Citters KM, Biancaniello PL, Crocker JC, Mechanics of single cells: rheology, time dependence and fluctuations, *Biophys J*, **93**, 3703-3713, 2007
- 41. Moon JH, Kim AJ, Crocker JC, Yang S, High-throughput synthesis of anisotropic colloids via holographic lithography, *Advanced Materials*, **19**, 2508, 2007.
- * 40. Crocker JC, Hoffman BD, "Multiple Particle Tracking and Two-Point Microrheology in Cells" in *Cell Mechanics*, Eds. Yu-Li Wang and Dennis Discher, *Methods in Cell Biology* series (Elsevier Academic Press), 30pp, 2007.
- 39. Weeks ER, Crocker JC, Weitz DA, Short and long range correlated motion observed in colloidal glasses and liquids, *J Phys: Cond Mat*, **19**, 205131-(1-12), 2007.
- 38. Biancaniello PL, Crocker JC, Hammer DA, Milam VT, DNA-mediated phase behavior of microsphere suspensions, *Langmuir*, **23**, 2688-2693, 2007.
- * 37. Biancaniello PL, Crocker JC, A Line Optical Tweezers Instrument for Measuring Nanoscale Interactions and Kinetics, *Rev of Sci Inst*, **77**, 113702-(1-10), 2006.
- * 36. Van Citters KM, Hoffman BD, Massiera G, Crocker JC, The role of F-actin and myosin in epithelial cell rheology, *Biophys J*. **91**, 3946-3956, 2006.
- * 35. Hoffman BD, Massiera G, VanCitters KM, Crocker JC, The consensus mechanics of cultured mammalian cells, *Proc Nat Acad Sci (USA)*, **103**, 10259-10264, 2006.
- 34. Byfield FJ, Hoffman BD, Romanenko VG, Fang Y, Crocker JC, Levitan I, Evidence for the role of cell stiffness in modulation of volume regulated anion channels, *Acta Physiologica*, **187**, 285-294, 2006.
- 33. Liu J, Gardel ML, Kroy K, Frey E, Hoffman BD, Crocker JC, Bausch AR, Weitz DA, Microrheology Probes Length Scale Dependent Rheology, *Phys Rev Lett*, **96**, 118104-(1-4), 2006.
- 32. Gardel ML, Nakamura F, Hartwig JH, Crocker JC, Stossel TP, Weitz DA, Stress-Dependent Elasticity of Composite Actin Networks as a Model for Cell Behavior, *Phys Rev Lett*, **96**, 088102-(1-4), 2006.
- * 31. Kim AJ, Biancaniello PL, Crocker JC, Engineering DNA-Mediated Colloidal Crystallization, *Langmuir*, **22**, 1991-2001, 2006.
- 30. Gardel ML, Nakamura F, Hartwig JH, Crocker JC, Stossel TP, Weitz DA, Pre-stressed F-actin networks cross-linked by hinged filamins replicate mechanical properties of cells, *Proc Nat Acad Sci (USA)*, **103**, 1762-1767, 2006.
- * 29. Hoffman BD, Massiera G, Crocker JC, Power-law rheology and mechano-sensing in a cytoskeleton model with forced protein unfolding, *preprint*, (arxiv.org/pdf/physics/0504051), 4pp, 2005.
- 28. Kapur SS, Prasad M, Crocker JC, Sinno T, Role of configurational entropy in the thermodynamics of clusters of point defects in crystalline solids, *Phys Rev B*, **72**, 014119-(1-12), 2005.
- 27. Valignat M-P, Theodoly O, Crocker JC, Russel WB, Chaikin PM, Reversible self-assembly and directed assembly of DNA-linked micrometer-sized colloids, *Proc Nat Acad Sci (USA)*, **102** 4225-4229, 2005.
- * 26. Biancaniello PL, Kim AJ, Crocker JC, Colloidal interactions and self-assembly using DNA hybridization, *Phys Rev Lett*, **94**, 058302-(1-4), 2005.
- * 25. Kim AJ, Manoharan VN, Crocker JC, Swelling-based method for preparing stable, functionalized polymer colloids, *J Am Chem Soc* **127**, 1592-1593, 2005.
- 24. Milam VT, Hiddessen AL, Crocker JC, Graves DJ, Hammer DA, DNA-driven assembly of bidisperse, micron-sized colloids, *Langmuir*, **19**, 10317-10323, 2003.
- 23. Lau AWC, Hoffman BD, Davies A, Crocker JC, Lubensky TC, Microrheology, stress fluctuations, and active behavior of living cells, *Phys Rev Lett*, **91**, 198101-(1-4), 2003.

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22. Gardel ML, Valentine MT, Crocker JC, Bausch AR, Weitz DA, Microrheology of entangled F-actin solutions, *Phys Rev Lett*, **91**, 158302-(1-4), 2003.
21. Chen DT, Weeks ER, Crocker JC, Islam MF, Verma, R, Gruber J, Levine AJ, Lubensky TC, Yodh AG, Rheological microscopy: local mechanical properties from microrheology, *Phys Rev Lett*, **90**, 108301-(1-4), 2003.
20. MEGA Collaboration (67 co-authors), Search for the lepton-family-number nonconserving decay $\mu^+ \rightarrow e^+ \gamma$, *Phys Rev D*, **65**, 112002-(1-31), 2002.
19. Dasgupta BR, Tee SY, Crocker JC, Frisken BJ, Weitz DA, Microrheology of polyethylene oxide using diffusing wave spectroscopy and single scattering, *Phys Rev E*, **65** 051505-(1-10), 2002.
18. Valentine MT, Kaplan PD, Thota D, Crocker JC, Gisler T, Prud'homme RK, Beck M, Weitz DA, Investigating the microenvironments of inhomogeneous soft materials with multiple particle tracking. *Phys Rev E*, **64** 061506-(1-9), 2001.
17. Lin KH, Crocker JC, Zeri AC, Yodh AG, Colloidal interactions in suspensions of rods, *Phys Rev Lett*, **87** 8301-8301, 2001.
16. Owen RJ, Crocker JC, Verma R, Yodh AG, Measurement of long-range steric repulsions between microspheres due to an adsorbed polymer, *Phys Rev E*, **64** 011401-(1-6), 2001.
15. Yodh AG, Lin KH, Crocker JC, Dinsmore AD, Verma R, Kaplan PD, Entropically driven self-assembly and interaction in suspension, *Philos T Roy Soc A*, **359** 921-937, 2001.
14. Lin KH, Crocker JC, Prasad V, Schofield A, Weitz DA, Lubensky TC, Yodh AG, Entropically driven colloidal crystallization on patterned surfaces, *Phys Rev Lett*, **85** 1770-1773, 2000.
- * 13. Crocker JC, Valentine MT, Weeks ER, Gisler T, Kaplan PD, Yodh AG, Weitz DA, Two-point microrheology of inhomogeneous soft materials, *Phys Rev Lett*, **85** 888-891, 2000.
12. Weeks ER, Crocker JC, Levitt AC, Schofield A, Weitz DA, Three-dimensional direct imaging of structural relaxation near the colloidal glass transition, *Science*, **287** 627-631, 2000.
11. Grier DG, Crocker JC, Comment on "Monte Carlo study of structural ordering in charged colloids using a long-range attractive interaction", *Phys Rev E*, **61** 980-982, 2000.
10. Verma R, Crocker JC, Lubensky TC, Yodh AG, Attractions between hard colloidal spheres in semi-flexible polymer solutions, *Macromolecules*, **33** 177-186, 2000.
9. Crocker JC, Matteo JA, Dinsmore AD, Yodh AG, Entropic attraction and repulsion in binary colloids probed with a line optical tweezer, *Phys Rev Lett*, **82** 4352-4355, 1999.
8. Verma R, Crocker JC, Lubensky TC, Yodh AG, Entropic colloidal interactions in concentrated DNA solutions, *Phys Rev Lett*, **81** 4004-4007, 1998.
7. Crocker JC, Grier DG, Interactions and dynamics in charge-stabilized colloids, *MRS Bull*, **23** 24-31, 1998.
6. Dinsmore AD, Crocker JC, Yodh AG, Self-assembly of colloidal crystals, *Curr Opin Colloid Interface Science*, **3** 5-11, 1998.
- * 5. Crocker JC, Measurement of the hydrodynamic corrections to the Brownian motion of two colloidal spheres, *J Chem Phys*, **106** 2837-2840, 1997.
4. Crocker JC, Grier DG, When like charges attract: The effects of geometrical confinement on long-range colloidal interactions, *Phys Rev Lett*, **77** 1897-1900, 1996.
3. Mueth DM, Crocker JC, Esipov SE, Grier DG, Origin of stratification in creaming emulsions, *Phys Rev Lett*, **77** 578-581, 1996.
2. Crocker JC, Grier DG, Methods of digital video microscopy for colloidal studies, *J Colloid Interface Sci*, **179** 298-310, 1996.
1. Crocker JC, Grier DG, Microscopic Measurement of the Pair Interaction Potential of Charge-Stabilized Colloid, *Phys Rev Lett*, **73** 352-355, 1994.

Invited Presentations

30. "What do cell mechanics measurements really measure?" University of South Florida, Tampa, 2007
29. "What do cell mechanics experiments really measure?" Carnegie Mellon, Pittsburgh, 2007
28. "Making Sense of Cell Mechanics" McGill University, Montréal, 2007
27. "The consensus mechanical response of cells and the role of dynamic protein crosslinks" St. Joseph's University, Philadelphia, 2006

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26. "Colloidal Interactions, Kinetics and Crystallization due to DNA Hybridization" Optical Society of America, National Meeting, Rochester, 2006
25. "What does cell rheology really measure?" Technische Universität München, Garching, Germany, 2006
24. "The 'consensus rheology' of cultured epithelial cells" American Chemical Society, 80th Annual Colloids Meeting, Boulder, 2006
23. "DNA-Mediated Colloidal Crystallization, Interactions and Dynamics" American Physical Society, March Meeting, Baltimore, 2006
22. "The mechanical response of cells, cross-link dynamics and mechano-sensing" UCSB, Santa Barbara, 2006
21. "Squishiness and mechano-sensing of living cells" Johns Hopkins University, Baltimore, 2005
20. "The mechanical response of cells, cross-link dynamics and mechano-sensing" Courant Institute/NYU, New York City, 2005
19. "Crystallization of PEG-modified colloids using DNA-hybridization: Reducing the effects of non-specific binding", Particles Meeting 2005, San Francisco 2005
18. "Colloidal self-assembly with DNA: Taking the 'nano' out of nanotechnology", Beckman Frontiers of Science Conference, National Academy of Science, Irvine, 2004
17. "Cell mechanics, the actin model and forced cross-link unfolding" Columbia, New York City, 2004
16. "Cell mechanics, the actin model and forced cross-link unfolding" Brown, Providence, 2004
15. "Programmable Colloidal Self-Assembly with DNA, Interactions, Dynamics and Phases" Gordon Research Conference, Colby-Sawyer College, NH, 2004
14. "Microrheology of the Living Cytoskeleton" American Physical Society, March Meeting, Montreal, Canada, 2004
13. "Micromechanical Measurements of the Living Cytoskeleton" Rutgers, New Jersey, 2004
12. "Putting the Cell Back Together; Fluctuations in the Living Cytoskeleton" New York University, New York, 2003
11. "Micromechanics of the Living Cytoskeleton" Packard Fellows Meeting, Vancouver, 2003
10. "Microrheology and Microseismology of Living Cells" University of Massachusetts, Amherst, 2002
9. "Microrheology of Living Cells" Harvard University, Cambridge, 2002
8. "How Squishy is a Cell? Rheology of the Cytoskeleton" Emory University, Atlanta, 2001
7. "Micromechanics of Two Macromolecular Systems—Rheology of F-actin and the Search Mechanism of the RecA/DNA complex" University of California, Los Angeles, 2000
6. "Two-point Microrheology of Inhomogeneous Soft Matter—Guar and F-Actin" Harvard, 1999
5. "Measuring Entropic Forces and Liquid Structure with Optical Tweezers" Gordon Research Conference, Physics and Chemistry of Liquids, Holderness School, VT, 1999
4. "Colloidal Calipers—Measuring Colloidal Forces and Soft Materials with Optical Traps" Cambridge University, Cambridge Colloids Workshop, Cambridge, UK, 1999
3. "Beyond the $k_B T$ Limit with Colloidal Calipers" American Physical Society, March Meeting, Los Angeles, 1998
2. "Measuring Entropic, Molecular and Colloidal Forces with Scanning Optical Tweezers" Fine Particle Society, 28th Annual Meeting, Dallas, 1998
1. "Microrheology: Probing Elasticity and Structure of Gels with Small Particles" Fine Particle Society, 28th Annual Meeting, Dallas, 1998