H. DANIEL OU-YANG Professor of Physics, Lehigh University (October 16, 2018)

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Education:

Fu-Jen Catholic University, BS, Physics, 1975
Fu-Jen Catholic University, MS, Physics, 1977
University of California, Los Angles, Ph.D. Physics, 1985 (Advisors: Daniel Kivelson and Raymond Orbach)
University of Pennsylvania/Exxon, Postdoctoral Fellow, 1985-88 (Advisor: Paul Chaikin)

Appointments:

1975 -77	Teaching Assistant, Fu-Jen University, Physics Department	
1977 - 79	Teaching Officer, Military Service, Naval Junior Academy, Taiwan	
1979 - 81	Teaching and Research Assistant, Physics Department, UCLA	
1981 – 85	Research Associate, Chemistry Department, UCLA	
1985 - 88	Postdoctoral Fellow, Exxon/University of Pennsylvania	
1988 - 94	Assistant Professor of Physics, Lehigh University	
1994 - 2000	Associate Professor of Physics, Lehigh University	
2000 -	Professor of Physics, Lehigh University	
2002 - 2004	Co-Director, Bioengineering Program, Lehigh University	
2004 - 2008	Associate Director, Bioengineering Program, Lehigh University	
2009 -	Director, Emulsion Polymers Institute, Lehigh University	

Visiting Positions (academic leaves from Lehigh):

1999 – 2000	Visiting Researcher, CNRS Laboratoire de Dynamique des Fluides
	Complexes, Strasbourg, France
2008	Visiting Professor, Physics Department, Hong Kong University of Science and Technology
	Visiting Professor, Physics Department, National Taiwan University
	Visiting Professor, Physics Department, Korea Advanced Institute of
	Science and Technology
2015 - 16	Visiting Researcher, Solvay/CNRS/University of Bordeaux Lab of the
	Future, Bordeaux, France
2016 -	Visiting Adjunct Professor, Beijing University of Chemical Technology
2016 - 17	Visiting Fellow, Institute of Advanced Studies, Hong Kong University of
	Science and Technology

Elected Positions:

Sigma Xi, the Scientific Research Society, Lehigh Chapter President (2002 - 03)

Professional Affiliations and Memberships:

American Physical Society Optical Society of America SPIE, International Society of Optical Engineers Project Kaleidoscope Faculty for the 21st Century

Professional Services:

Program Committee, SPIE, Optical Trapping and Micromanipulation Symposium, 2005 -American Physical Society March Meeting, "Mechanics of Biological Cells and Cytoskeletal Proteins" Symposium Organizer 2003-04 NSF-SBIR/STTR Program Proposal Panel Review 2003 -NSF-MRSEC Review Panels, Site visit and Reversed site visit, 2000 and 2002 Review for the Singapore Academic Research Fund, Minister of Education, 2002-03 NSF grant proposal review 2000 -

American Chemical Society, Petroleum Research Fund grant proposal Review 1990-

College and University Services:

- Thrust Leader, Biophotonics, Center for Optical Technologies, 2007-2011
- BioTech Cluster committee member, 2007 2010
- CAS and RCEAS Dean's Research Advisory Council, 2007 2010
- Lehigh University College of Art and Sciences, Dean's Advisory Council for Diversity 2006-07
- Associate Director, Bioengineering and Applied Life Science Program 2003-2009
- Chair, Physics Department Faculty Search Committee 2003 -04
- Co-Director, Bioengineering Program, Lehigh University 2002-03
- Member, Chemical Engineering Faculty Search Committee 2002-03
- Member, Mechanical Engineering and Mechanics Faculty Search Committee 2002-03
- Co-Chair, Lehigh University Bioengineering Faculty Task Force that leads to the establishment of a BS in Bioengineering program in 2002 and Applied Life Science Program in 2003
- Lehigh University Polymer Science and Engineering Education Committee (1991-Lehigh University, NSF-IUCRC Polymer Interfaces Center, Theme co-champion (1991-2000)
- Lehigh University China Group, Delegation to visit Chinese Universities, September 10 - 20, 2012
- Lehigh University Delegation to Kazan National Research and Technological University, July 9 13, 2012
- Member, Bioengineering Program Committee, 2003 –
- Member, Bioengineering Faculty Search Committee, 2008 09, 10-11 and 11-12

- Member, Iacocca Building (3rd floor B-wing renovation) Committee
- Group Member, Vice Provost Faculty Networking Group, served as faculty mentor for Prof. Yaling Liu of Mechanical Engineering and Mechanics, and Prof. Chao Zhou of Electrical and Computer Engineering
- Member, Mechanical Engineering and Mechanics Faculty Search Committee, 2012 -13
- Member, Integrated Nanotechnology Facilities Committee
- Member, Internal (Research) Review Committee

Community Services:

Principal, Lehigh Valley Chinese School, 1992 – 93, 2001-2002 President, Association of Chinese Schools, 1995 – 96 Board of Directors, Association of Chinese Schools, 1993 – 96 Vice President and Member, Board of Directors, National Council of the Associations of Chinese Language Schools, 1996 – 97

Journal Publications:

- H. D. Ou-Yang, R.A. MacPhail and D. Kivelson, "Nonlinear Ultrasonically Induced Birefringence in Gold Sols: Frequency-Dependent Diffusion", Phys. Rev. A 33, 611 (1986).
- 2. Xia Qiu, H. Daniel Ou-Yang and P. M. Chaikin, "Self Diffusion in Mixtures of Charged Spheres", J. Phys. France 49, 1043 (1988).
- 3. Xia Qiu, H. Daniel Ou-Yang, D. J. Pine and P. M. Chaikin, "Self Diffusion of Interacting Colloids Far from Equilibrium", Phys. Rev. Lett. 61, 2554 (1988).
- E. B. Sirota, H. D. Ou-Yang, P. M. Chaikin, S. Sinha, J.D.Axe, and Y. Fujii, "Phase Diagram of Charged Colloidal Suspensions by Small Angle X-ray Scattering", Phys. Rev. Lett. 62, 1524 (1989)
- 5. H.D. Ou-Yang and Z. Gao, "Pancake to Brush Transition for Polymer Adsorption", J. Phys. II France 1, 1375 (1991).
- X.L Wu, C.Yeung, M.W. Kim, J.S. Huang and D. Ou-Yang, "Study of Internal Modes of a Living Polymer by Transient Electric Birefringence", Phys. Rev. Lett. 68 (1992) 1426.
- 7. Z. Gao and H.D. Ou-Yang, "Kinetics of Polymer Adsorption on Colloidal Surfaces", MRS Proceedings 248 "Complex Fluids" (1992) 425.
- H.D. Ou-Yang, C. Wang, B.E. Vugmeister, D. Wong and A.Dawson, "Shear Induced Orientational Order of Rigid Rod Suspensions", MRS Proceedings 248 "Complex Fluids" (1992) 287.
- C.A. Herbst, H.E. King, Z. Gao and H.D. Ou-Yang, "Dynamic Light Scattering Measurements of High Pressure Viscosity Utilizing a Diamond Anvil Cell", J. App. Physics 72 (1992) 838
- Joel A. Cohen, Donald J. Scales, H. Daniel Ou-Yang, and Paul M. Chaikin, "Freeze-Fracture Electron Microscopy of Polystyrene Colloidal Crystals", J. of Colloid and Interface Sci. 156, 137-142 (1993).

- M. Kucks, H.D. Ou-Yang and I. Rubin, "Aggregation of Ethylene-Propylene Copolymer in Selective Hydrocarbon Solvents", Macromolecules, 26 (1993), 3846-3850
- Chaohua Wang, B.E. Vugmeister, and H. Daniel Ou-Yang "Pretransitional Orientational Ordering of Rigid Rod Polymers in Shear Flow", Phys. Rev. E, 48 (1993) 4455-4459.
- Z. Gao, L.E. Dewalt, H.D. Ou-Yang, "Kinetics of Telechelic Polymer Chain Bridging and Transport Between Two Colloidal Surfaces," Colloids and Surfaces A: Physiochemical and Engineering Aspects, 86, 255 (1994).
- L.E. Dewalt, H.D. Ou-Yang, V.L. Dimonie, "Competition Between Micellization and Adsorption of Diblock Copolymers in a Colloidal System," Journal of Applied Polymer Science, 58, 265 (1995).
- M.A. Awan, V.L. Dimonie, H.D. Ou-Yang and M.S. El-Aasser, "Solution Properties of Diblock Copolymer of Polystyrene-block-Polybutadiene", Langmuir 13 (1996) 140.
- M.T. Valentine, L.E. Dewalt, H.D. Ou-Yang, "Forces on a Colloidal Particle in Polymer Solution: A Study using Optical Tweezers", Journal of Physics: Condensed Matter (UK) 8, (1996) 9477-9482
- 17. L.A. Hough and H.D. Ou-Yang, "A new Micromechanical Probe for the Nanostructures in Soft Materials", J. Nanoparticle Res. 1(4), (1999) 495-499.
- M. Islam, H.D. Ou-Yang, D. Bassett, R. Jenkins, and W. Lau, "Single Chain Characterization of Hydrophobically Modified Polyelectrolytes Using Cyclodextrin/Hydrophobe Complexes", Macromolecules 33(7), (2000) 2480-2485.
- H.D. Ou-Yang, L.A. Hough and J.C. Daghlian, "Oscillating Optical Tweezers for Probing Dynamic Forces in Colloidal Suspensions", Avtometrija (in Russian), 5:58-66 (2000).
- E. E. Meyer, M. F. Islam, W. Lau, H. D. Ou-Yang, "Complexation Kinetics of Cyclodextrin with Hydrophobic Molecules Confined in an Isolated Droplet in Water", Langmuir 16:13 (2000) 5519-5522.
- L. A. Hough and H. D. Ou-Yang, "Correlated Motions of Two Hydrodynamically Coupled Particles Confined in Separate Quadratic Potential Wells", Phys. Rev. E., 65 (2002) 021906 1-7
- 22. Y.S. Seo, M.W. Kim, D.H. Ou-Yang, D.G. Peiffer, "Effect of interfacial tension on micellization of a polystyrene–poly(ethylene oxide) diblock copolymer in a mixed solvent system", Polymer 43 (2002) 5629–5638
- L.A. Hough and H.D. Ou-Yang "Viscoelasticity of Aqueous Telechelic Poly (ethylene oxide) solutions: Relaxation and Structure", Physical Review E., EF10071 (2006)
- 24. Ming-Tzo Wei, J. Junio, and H. D. Ou-Yang, "Direct measurements of the frequency dependent dielectrophoresis force," Biomicrofluidics, vol. 3, pp. 012003 (8 pages), 2009.
- 25. H. C. Yalcin, K.M. Hallow, J. Wang, M.T. Wei, H.D. Ou-Yang and S. N. Ghadiali, "Influence of cytoskeletal structure and mechanics on epithelial cell injury during cyclic airway reopening," *Am J Physiol Lung Cell Mol Physiol*, vol. 297, pp. L881-L891, 2009.

- 26. C.-H. Lien, M.-T. Wei, T.- Y. Tseng, C.-D. Lee, C. Wang, T.-F. Wang, H. D. Ou-Yang, and A. Chiou, "Probing the dynamic differential stiffness of dsDNA interacting with RecA in the enthalpic regime," *Optics Express*, vol. 17, pp. 20376-20385, 2009.
- 27. H. Daniel Ou-Yang and Ming-Tzo Wei, "Complex fluids: probing mechanical properties of biological systems with optical tweezers," *Annu. Rev. Phys. Chem.* vol. pp. 421–440, 2010.
- 28. J. Junio, S. Park, M.W. Kim and H. Daniel Ou-Yang "The Optical Bottle: A quantitative analysis of optically confined nanoparticle ensembles in suspension", *Special Issue: Nanoscale Interfacial Phenomena in Complex Fluids, Solid State Communications*, 150, 1003, 2010
- O. Latinovic, L.A. Hough, H.D. Ou-Yang, "Structural and micromechanical characterization of type I collagen gels," *Journal of Biomechanics*, 43 (2010) 500-505
- J. Junio, J. Ng, J. Cohen, Z. Lin, H.D. Ou-Yang, "Ensemble method to measure the potential energy of nanoparticles in an optical trap", Optics Letters, 36, 8, April 15, 2011
- 31. Israd H. Jaafar, Courtney E. LeBlon, Ming-Tzo Wei, Daniel Ou-Yang, John P. Coulter, and Sabrina S. Jedlicka, Improving Fluorescence Imaging of Biological Cells on Biomedical Polymers, Acta Biomaterialia Volume 7, Issue 4, April 2011, Pages 1588-1598
- 32. J. M. Rickman and H. Daniel Ou-Yang, "Elastic response of binary hard-sphere fluids," *Phy. Rev. E*, vol. 84, pp. 012401(5 pages), 2011.
- 33. C. Y. Park, H. D. Ou-Yang, and M. W. Kim, "Interface shear microrheometer with an optically driven oscillating probe particle," *Rev. Sci. Instrum.*, vol. 82, p. 094702 (8 pages), 2011.
- 34. H. Park, M.-T. Wei, and H. D. Ou-Yang, "Dielectrophoresis force spectroscopy for colloidal clusters," Electrophoresis, vol. 33, p. 2491-2497, 2012
- 35. Yaling Liu, Jifu Tan, Antony Thomas, Daniel Ou-Yang, Vladimir Muzykantov, The Shape of Things to Come: Importance of Design in Nanotechnology for Drug Delivery, Therapeutic Delivery, 3(2), ISSN: 2041 – 5990 (2012)
- 36. Jifu Tan, Samar Shah, Antony Thomas, H. Daniel Ou-Yang, Yaling Liu, The influence of size, shape and vessel geometry on nanoparticle distribution, Microfluid Nanofluid, DOI 10.1007/s10404-012-1024-5, (2012)
- 37. Lin Ling, Lu Huang, Jinxin Fu, Honglian Guo, Jiafang Li, H. Daniel Ou-Yang, and Zhi-Yuan Li, The properties of gold nanospheres studied with dark field optical trapping, Optics Express, 21, 5 (2013)
- Jingyu Wang, Ming-Tzo Wei, Joel A. Cohen, H. Daniel Ou-Yang. Mapping AC electroosmotic flow at the dielectrophoresis crossover frequency of a colloidal probe, *Electrophoresis*, vol. 34, .p. 1915-1921, 2013.
- 39. C. Ha, H. Daniel Ou-Yang, and H. K. Pak, "Direct measurements of colloidal hydrodynamics near flat boundaries using oscillating optical tweezers," *Physica A: Statistical Mechanics and its Applications*, vol. 392, p. 3497-3504, 2013.
- 40. Yi Hu, Xuanhong Cheng, and H. Daniel Ou-Yang, "Enumerating virus-like particles in an optically concentrated suspension by fluorescence correlation spectroscopy," *Biomedical Optics Express*, vol. 4, p. 1646-1653, 2013.

- 41. Jinxin Fu, Qiwen Zhan, Min Yao Lim, Zhiyuan Li, and H. Daniel Ou-Yang, "Potential energy profile of colloidal nanoparticles in optical confinement," *Optics Letters*, vol. 38, p. 3995-3998, 2013.
- 42. Wei Nie, S. Ming-Tzo Wei, Sabrina Jedlicka, H. Daniel Ou-Yang, Dimitris Vavylonis, "Formation of contractile networks and fibers in the medial cell cortex through myosin-II turnover, contraction, and stress-stabilization", Cytoskeleton, (2015), doi: 10.1002/cm.21207.
- 43. Antony Thomas, H. Daniel Ou-Yang, Linda Lowe-Krentz, Vladimir R. Muzykantov, and Yaling Liu, Biomimetic channel modeling local vascular dynamics of pro-inflammatory endothelial Changes, Biomicrofluidics 10, 014101 (2016); doi: 10.1063/1.4936672
- 44. Jingyu Wang, Ming-Tzo Wei, and H. Daniel Ou-Yang, Low-frequency dielectrophoretic response of a single particle in aqueous suspensions, Biomicrofluidics 10, 014108 (2016); doi: 10.1063/1.4940037
- 45. M.T. Wei, Jack Ng, C.T. Chan and H.D. Ou-Yang, "Lateral optical binding between two colloidal particles," Scientific Reports (2016) 6:38883/DOI: 10.1038/srep38883
- 46. Joseph Junio, Joel A. Cohen, and H. Daniel Ou-Yang, Osmotic Bulk Modulus of Charged Colloids Measured by Ensemble Optical Trapping, J. Phys. Chem. B (2016), DOI: 10.1021/acs.jpcb.6b05608
- 47. Ming-Tzo Wei, O. Latinovic, L. A. Hough Y.-Q. Chen, H.D. Ou-Yang, A. Chiou, "Studying microrheology of soft and living materials using optical trapping," in Handbook of Photonics for Biomedical Engineering, Kim, Donghyun; Ho, Aaron H.-P.; Somekh, Michael G. (Eds.), Springer-Verlag, Berlin, (2016). ISBN 978-94-007-5053-1.
- 48. Yan Xu, Ming-Tzo Wei, H. Daniel Ou-Yang, Stephen G. Walker, Hong Zhan Wang, Chris R. Gordon, Shoshana Guterman, Emma Zawacki, Eliana Applebaum, Peter R. Brink, Miriam Rafailovick, and Tatsiana Mironava, "Exposure to TiO2 nanoparticles increases Staphylococcus aureus infection of HeLa cells," J. Nanobiotechnology, vol. 14, pp. 34, 2016.
- 49. Hao Huang H. Daniel Ou- Yang, "A novel dielectrophoresis potential spectroscopy for colloidal nanoparticles," 2017, <u>doi.org/10.1002/elps.201700049</u>
- 50. Hao Huang, Yongyang Huang, Willie Lau, H. Daniel Ou-Yang, Chao Zhou & Mohamed S. El-Aasser, "Integrating optical coherence tomography with gravimetric and video analysis (OCT-Gravimetry-Video method) for studying the drying process of polystyrene latex system", Scientific Reports, 8, 12962 (2018)

Book chapters:

 H.D. Ou-Yang, "Design and Applications of Oscillating Optical Tweezers for Direct Measurements of Colloidal Forces" in "POLYMER-COLLOID INTERACTIONS: FROM FUNDAMENTALS TO PRACTICE", Editors, Paul Dubin and Raymond Farinato, John Wiley and Sons, New York (1999), Chapter 15, pp. 385-405

- 2. H.D. Ou-Yang and M.M. Santore, "Thermodynamic and Kinetic Aspects of Bridging Flocculation" in "POLYMER INTERFACES AND EMULSIONS", Editor, K. Esumi, Marcel-Dekker, New York, (1999), pp. 269-309
- Ming-Tzo Wei, O. Latinovic, L. A. Hough Y.-Q. Chen, H.D. Ou-Yang, A. Chiou, "Studying microrheology of soft and living materials using optical trapping," in Handbook of Photonics for Biomedical Engineering, Kim, Donghyun; Ho, Aaron H.-P.; Somekh, Michael G. (Eds.), Springer-Verlag, Berlin, (2016). ISBN 978-94-007-5053-1.

Education Related Journal Publications:

1. Lori Herz, M. Jean Russo, H. Daniel Ou-Yang, Mohamed El-Aasser, Anand Jagota, Svetlana Tatic-Lucic, John Ochs, "Development of an Interdisciplinary Undergraduate Bioengineering Program at Lehigh University", ADVANCES IN ENGINEERING EDUCATION, Summer 2011, Vol. 2 No. 4

Patens and Inventions:

- H. D. Ou-Yang and X. Chang, Opto-fluidic Nanoparticle Detection Apparatus, H. Daniel Ou-Yang, Xuanhong Chang, US 8,537,356 B2 (granted: September 17, 2013)
- H.D. Ou-Yang and J. Junio, "Polymer-Mediated Electromagnetic Field-Based Particle Concentrator", U.S. Patent Application No. 13/050,516, Filed March 2011

Papers in Symposium Proceedings (till 2009):

- 1. J.F. Wang, H. Daniel Ou-Yang, H. Y. Leu and F.J. Lin, "Studies of Molecular Light Scattering", Fu-Jen Studies, Taiwan, 11 (1977)
- P. M. Chaikin, A. Behrooz, M. J. Burns, D. Levine, H.D. Ou-Yang, B. Whitehead and X. Yan, "Novel Experimental Techniques and Realizations of Quasi-Periodicity", Proceedings, Los Alamos Conf. on Non-linearity in Condensed Matter, Springer-Verlag 1986
- 3. Michael J. Kucks, Christine Coldren and H. Daniel Ou-Yang, "Clustering Details of Dilute Associative Polymers under Shear", MRS Proceedings EA-25 "Scaling in Disordered Materials" (1990).
- 4. H. Daniel Ou-Yang and Zihao Gao, "Adsorption of Associative Thickeners on Colloidal Surfaces", MRS Proceedings EA-25 "Scaling in Disordered Materials" (1990).
- L.E. Dewalt, H.D. Ou-Yang, M.W. Kim, S-N. Liu, D. Pine, P. Dixon, and D.G. Peiffer, "Kinetics of Shear Induced Micellar Association", MRS Proceedings 248 "Complex Fluids" (1992) 203.
- 6. Z. Gao and H.D. Ou-Yang, "Kinetics of Grafted Chains in Polymer Brushes", in Colloid-Polymer Interactions, ACS Symposium Ser. 532, ed. Paul L. Dubin and Penger Tong, 70 (1993).

- L.E. Dewalt, K.L. Farkas, C.L. Abel, H.D. Ou-Yang, M.W. Kim, D.G. Peiffer, "Shear Induced Structure and Dynamics of Tube-Shaped Micelles," <u>Flow</u> <u>Induced Structure in Polymers</u>, ACS Symposium Series 597, ed. A. I. Nakatani and M. D. Dadmun, 263 (1995).
- 8. L.E. Dewalt, Z. Gao, H.D. Ou-Yang, "Transient Polymeric Bridging of Colloids," <u>Hydrophilic Polymers: Performance with Environmental Acceptance</u>, Advances in Chemistry Series 248, ed. J. E. Glass, 395 (1996).
- O. Lysenko, N. Karbalevich and H.D. Ou-Yang, "Holographic Study of Heat Transfer Characteristics of Organic Liquids", Proceedings, 8th International Symposium on Flow Visualization (1998)
- L.A. Hough and H.D. Ou-Yang, "Probing the Effects of Polymer-Particle Interactions in Solution by Microrheology", Chapter 4 in <u>Polymer-Colloids</u>, American Chemical Society, Symposium Series No. 801, ed. E.S. Daniels, D.Sudol, M.S. El-Aasser (2001)
- H. D. Ou-Yang, E.A. Rickter, C. Pu, O. Latinovic and A. Kumar, M. Mengistu, L. Lowe-Krentz and S. Chien, "Oscillating Optical Tweezer-Based 3-D Confocal Microrheometer for Investigating the Intracellular Micromechanics and Structures" SPIE Proceedings OTOM 5390-4 (2005)
- H.D. Ou-Yang and J. Wang, "The Design and Biological Applications of Dualbeam Oscillating Optical Tweezer-based Imaging Cytorheometer", Optical Trappings and Optical Maninpulation, SPIE Proceedings 6326-62 OTOM (2006) (11 pages)
- Jing Wang, Huseyin Yalcin, Angela Lengel, Corey Hewitt, and H. Daniel Ou-Yang, "Development and Applications of an Optical Tweezer-based Microrheometer: Case Studies of Biomaterials and Living Cells", SPIE Proceedings 6641_36 (2007)
- Joseph Junio, Eric Blanton, H. Daniel Ou-Yang, The Kerr effect produced by optical trapping of nanoparticles in aqueous suspensions, SPIE Proceedings 6644-8 (2007)
- Joseph Junio; H. Daniel Ou-Yang, "Depletion-driven selective optical trapping in nanoparticle suspensions," SPIE Optics Photonics, San Diego, USA, 2006. (SPIE Proc. Vol. 7400, 2009)
- Ming-Tzo Wei, Jack Ng, C. T. Chan, and H. Daniel Ou-Yang, "Measurement of optical binding force between two colloidal particles," SPIE Optics Photonics, San Diego, USA, 2006. (SPIE Proc. Vol. 7400, 2009)

Extended Abstracts

1. J. Junio and H. D. Ou-Yang, "Optical Bottles: Using Light to Confine and Analyze Nanoparticle Suspensions," in *Optical Trapping Applications*, OSA Technical Digest (CD) (Optical Society of America, 2009), paper OTuB4.

Invited Lectures and Colloquia:

- "Application of Light Scattering to Polymer Colloids", 21 Annual Summer Short Course on Advanced Emulsion Polymerization and Latex Technology, Lehigh University, 1990
- 2. "Light Scattering Studies of Polymer Adsorption", University of Vermont, Physics Department, 1991
- 3. "Light Scattering Studies of Polymer Adsorption", McGill University, Physics Department, 1992
- 4. "Kinetics and Thermodynamics of Polymer Adsorption on Colloidal Surfaces", University of Pittsburgh, 1992
- 5. "Light Scattering Techniques for Colloidal and Disperse Systems", Short Course on Basics in Colloidal and Interface Chemistry, Rhone-Poulenc-Rorer, 1993
- 6. "Interaction of polymer coated latex spheres", University of Toronto, Chemistry Department, April 24, 1995.
- 7. "Design and Applications of Oscillating Optical Tweezers", Materials Research Center, University of California, Santa Barbara, Materials Research Laboratory, August 3, 1998.
- 8. "Ideas of design and application of oscillating optical tweezers for inter and intra cellular interactions" at the University of California, San Diego, Department of Bioengineering (8/8/98).
- 9. "Design and Applications of Oscillating Optical Tweezers", C.N.R.S., L.D.F.C. and Institute de Physique, Universite Louis Pasteur, Strasbourg, France, March 12, 1999.
- 10. "Micro-viscoelasticity of polymer-colloid systems: an optical tweezers application", Department of Bioengineering, University of California, San Diego, May 13, 1999.
- 11. Colloquium at the Physics Department, Lehigh University on "Harness Photon for Mechanical Work", September 2000.
- 12. Colloquium at Mechanical Engineering Department, Lehigh University, "Harness Photon for Mechanical Work", March 2001
- 13. Lecture at International Conference on Trend of Photo-electronics, Fu-Jen University, Taipei "Harnessing Photons for Mechanical Work" May 2001
- Colloquium at Biomedical Engineering Department, University of Virginia, "Harness Photon for Mechanical Work, Applications for Biomedical Engineering", September, 2001
- Colloquium at the Chemistry Department, Clemson University, "Harnessing Photon for Mechanical Work: Study Chemical Reactions in a Femto Liter Reactor", February, 2002
- Lecture at the Bioengineering Department, Penn State University "Micromechanics of Soft Materials - Applications of Optical Tweezers for Cellular Mechanics", November, 2002
- 17. Lecture at the Physics Department, Fu-Jen Catholic University "Harnessing Photons for Mechanical Work", November 24, 2003
- Lecture at the Physics Department of Hong Kong University of Science and Technology, "Fluctuations in the Intracellular Mechanics of Living Endothelial Cells", November 26, 2003
- 19. Lecture at the Physics Department of Hong Kong Baptist University, "Fluctuations in the Intracellular Mechanics of Living Endothelial Cells", November 27, 2003
- 20. H.D. Ou-Yang: Optical Tweezers and Their Applications for Cellular Biophysics

Research, invited talk at the Optical Society of America, Lehigh Valley Chapter, April 2004

- 21. Seminar at Lehigh University, Chemical Engineering Department, "Biomechanics and Intracellular Dynamics of Living Cells", April, 2005
- 22. Lecture at the Physics Department of National Taiwan University, "Principles and Applications of Optical Tweezers", July, 2005
- 23. Seminar at the Environmental Engineering Department of National Chen-Kung University "Complexation Kinetics of Cyclodextrin withHydrophobic Molecules Confined in an Isolated Droplet in Water" July 2005
- 24. Seminar at the Physics Department of National Taiwan University, "An Optical Tweezers Study of Intracellular Mechanics of Living Cells", July, 2005
- 25. Seminar at Korea Institute for Advanced Study "An Optical Tweezers Study of Intracellular Mechanics of Living Cells" July 2005
- 26. Seminar at Korea Advanced Institute of Science and Technology "An Optical Tweezers Study of Intracellular Mechanics of Living Cells" July 2005
- 27. Seminar at Brown University, Division of Engineering, "An Optical Tweezers Study of Intracellular Mechanics of Living Cells" November, 2005
- 28. Seminar at Penn State University, Electrical Engineering Department, "An Optical Tweezers Study of Intracellular Mechanics of Living Cells" November, 2005
- The Inhomogeneous, Anisotropic and Dynamic Micromechanical Properties of Biomaterials and Living Cells", International Conference on the Optics Within Life Sciences (OWLS 9), Taipei, Taiwan, Novembe 26-29, 2006
- 30. Optical Tweezers and Its applications for Investigating Biomaterials and Living Cells", Pang Whang Jia Kung Endowed Lecture at the College of Nuclear Sciences, National Tsing-Hua University, Taiwan, November 30, 2006.
- 31. Micromechanical Properties of Live Cells, Hong Kong University of Science and Technology, February 20, 2008
- 32. Micromechanical Properties of Live Cells, Chinese University of Hong Kong, February 21, 2008
- 33. Micromechanical Properties of Live Cells, Institute of Physics, Academia Sinica, March 24, 2008
- 34. Micromechanical Properties of Live Cells, Institute of Biophotonics, National Yang Ming University, March 31, 2008
- 35. Optical Trapping and Micromanipulation of Nanoparticles in Suspension, Department of Polymer Science, Kyoto University, to be held on April 18, 2008
- 36. Micromechanical Properties of Live Cells, Department of Physics, National Taiwan University, April 23, 2008
- 37. Do you know how many HIV viral particles can be trapped by an optical tweezsers, Department of Physics, Lehigh University, Nov. 6, 2008
- 38. Optical Bottles: confinement, enrichment and sorting of nanoparticles in suspension, National Central University, Biophysics Group, Physics Department, Dec. 23, 2009
- 39. Optical Trapping and micromanipulations of nanoparticles in suspensions, Physics Department, Nanophotonics Group, KAIST, South Korea, Dec. 16, 2009
- 40. Fluorescence Correlation Spectroscopy in an Optical Bottle, Physics Department, Soft Matter Laboratory, KAIST, South Korea, May 20, 2009
- 41. The Optical Bottle: Confinement, Enrichment of Nanoparticles for Analysis in a

Micro-Fluidic Setting, Center for Optical Technologies, Biophotonics workshop, Oct. 12-13, 2009

- 42. The Optical Bottle: Confinement, Enrichment of Nanoparticles for Analysis in a Micro-Fluidic Setting, EPI Workshop, Dec. 9, 2009
- 43. Message in a bottle: Colloidal nanoparticles in optical confinement, SooChow University School of Physical Science and Technology, Suzhou, Jiangsu, China, May 27 2011
- 44. "Message in a bottle: Elastic Properties of Optically Confined Nanoparticles in Suspension", Kavli Institute of Theoretical Physics China, Workshop on "Growth of Hierarchical Functional Materials in Complex Fluids", Beijing, China, July 5-8, 2011
- 45. "Optical Bottles: Analysis of Colloidal Nanoparticles in Optical Confinement and Applications to HIV Viral Particle Detection", Department of Physics, Peking University, Beijing, China, July 8, 2011
- 46. "Optical Bottles: Analysis of Colloidal Nanoparticles in Optical Confinement and Applications to HIV Viral Particle Detection", Instrumentation Technology Research Center, Taiwan, July 27, 2011
- 47. "Optical Bottles: Analysis of Colloidal Nanoparticles in Optical Confinement and Applications to HIV Viral Particle Detection", KAIST-UC Santa Barbara Workshop on Soft Matter Physics, Daejeon, S. Korea, August 28-31.
- 48. "Electro- and Opto-mechanics of Colloidal Particles in an External Field", Department of Chemical Engineering, Colorado School of Mines, October 7, 2011
- 49. "Optical bottle analysis of colloidal nanoparticles in optical confinement: an application for HIV viral particle detection", ECUST-EPI Workshop on Advances in Emulsion and Nanoparticles Technologies for Biological Applications, East China University of Science and Technology, Oct. 12-15, 2011, Shanghai, China
- "Optical bottle analysis of colloidal nanoparticles in optical confinement: an application for HIV viral particle detection", Physics Department, Peking University, Beijing China, October 20, 2011
- 51. "Optical bottle analysis of colloidal nanoparticles in optical confinement: an application for HIV viral particle detection", Department of Bioengineering, Peking University, China, October 21, 2011
- 52. "Optical bottle analysis of colloidal nanoparticles in confinement: an application for HIV viral particle detection", Department of Materials Science and Engineering, Drexel University, October 26, 2011
- 53. "Optical bottle analysis of colloidal nanoparticles in confinement: an application for HIV viral particle detection", State Key Laboratory of Bioelectronics, Southeast University of China, January 4, 2012
- 54. "Optical bottle analysis of colloidal nanoparticles in confinement: an application for HIV viral particle detection", Physics Department King Mongkut's Institute of Technology at Ladkrabang, Thailand, January 11
- 55. "Opto-fluidic Nanoparticle Concentrator", OraSure Technologies, Inc., Bethlehem, Pennsylvania, January 18, 2012
- 56. "Why are viruses attracted to light and what do we do about them?", Lehigh Bioengineering Freshman Seminar, January 23, 2012
- "Optical Bottle: a New Optical Method to Monitor Colloidal Stability", 3M St. Paul, Minnesota Date: March 14, 2012

- "Research Highlight of the Emulsion Polymers Institute at Lehigh", R&D Center of SK Innovation, Daejon, S. Korea, June 20, 2012
- 59. "Research Highlight of the Emulsion Polymers Institute at Lehigh", Research Park LG Chem, Daejon, S. Korea, June 20, 2012
- 60. "Optical trapping and micromanipulation of colloidal particles and application", four lectures, University of Science and Technology, Hefei, China, June 27 to July 2, 2012.
- 61. "Optical bottle: ensemble analysis of colloidal nanoparticles in optical confinement", Institute of Physics, Chinese Academy of Sciences, Beijing, China, July 4, 2012
- 62. "Optical Bottle: Ensemble Analysis of Colloidal Nanoparticles in Confinement", Kazan National Research and Technological University, Kazan, Russia, July 12, 2012
- 63. "Optical Bottles: Ensemble Analysis of Colloidal Nanoparticle in Confinement", Institute of Scientific Instruments of the Academy of Science of the Czech Republic, October 5, 2012
- 64. "Optical Bottle: Ensemble Analysis of Colloidal Nanoparticles in Confinement", invited by Lehigh International Affairs Office for a faculty delegation from Kazan National Research and Technological University, December 14, 2012
- 65. "Noise and fluctuations in

Invited Conference Presentations:

- 1. Am. Inst. Chem. Eng. Meeting (Pittsburgh) on "The Pancake-to-Brush Transition for End Adsorbing Polymers on Colloidal Surfaces", 1991
- 2. ACS Barnes Award Symposium (Denver) on "Dynamic Light Scattering Studies on Adsorption of Water-Soluble Associative Polymers on Colloidal Surfaces", 1993
- 3. Gordon Conference on Polymer Colloids (Tilton, New Hampshire) on "Kinetics of Associative Polymer Adsorption on Colloidal Surfaces", 1993
- 4. ACS PMSE Symposium on Water Soluble Polymers (Chicago) on "Telechelic Polymer Bridging of Colloids near the Onset of Bridging Flocculation", 1994
- 5. "Interaction of Monodisperse Polystyrene Latex Spheres with Adsorbed PEO Chains", Associating Polymers, Leon, Norway (1995)
- 6. "Adsorption of Hydrophobically Modified PEO Associative Polymers on Model Latex Micro-spheres", Associative Polymers as Rheology Modifiers for Paints and Paper Coating, April 21, 1995, Airport Hilton, Mississauga, Ontario Canada.
- 7. "Fluctuations in the Intracellular Mechanics of Living Endothelial Cells", Conference on the Applications of the Optical Technologies in Bio- and Nano- Sciences and Technologies, November 23, 2003, Fu-Jen Catholic University, Taipei, Taiwan
- 8. "Biomechanics and Intracellular Dynamics of Vascular Endothelial Cells", APS Marching Meeting, Montreal, Canada, March 24, 2004
- 9. Micromechanical Properties of Live Cells, Workshop on Frontiers in Microrheology, California NanoSystems Institute, UCLA, February 6-9, 2008
- 10. Visualizing the Dynamics of Nanoparticle, ISFV13 13th International Symposium on Flow Visualization July 1-4, 2008, Nice, France
- 11. Optical Bottles: Confinement of Nanoparticles in Concentrated Light, International Workshop on Current Problems, KAIST, Daejon, Korea, September 15-19, 2008
- 12. Optical Bottles: Optical Trapping and Micromanipulation of Nanoparticles in Liquid

Suspension, First National Symposium on the Technology and Applications of Optical Tweezers, Hefei, China, Nov. 10-12, 2008

- 13. Optical Tweezer-based DEP Force Spectroscopy, International Conference on Advanced Microfluidics and Nanofluidics, Hong Kong, January 4-7, 2009
- 14. Optical Bottles: optical manipulation of nanoparticles in suspensions, Nanophotonics, OAS International Conference, Harbin, May 13, 2009
- 15. Optical trapping and micromanipulation of nanoparticles in suspension, Tutorial at SPIE, Optical Instrument and Technology, Shanghai, China, Oct. 20, 2009
- 16. The Optical Bottle:confinement, enrichment and sorting of nanoparticles in a microfluidic setting, APCE and APLOC, Shanghai, China, Oct. 28, 2009
- 17. Optical Bottle: Colloidal Nanoparticles in Optical Confinement, The Fifth International Conference on Nanophotonics (ICNP) 2011
- Colloidal Stability of Nanoparticles in Optical Confinement, Advances in Emulsion and Microspheres Technology for Applications in Biosciences, Emulsion Polymers Institute (EPI) and East China University of Science and Technology (ECUST), Shanghai, China, October 12-15, 2011
- Optical and Mechanical Properties of Colloidal Nanoparticles in Confinement", IUPAC 7th International Conference on Novel Materials and Synthesis (NMS-VII) & 21st International Symposium on Fine Chemistry and Functional Polymers (FCFP-XXI), Shanghai, 16-21 October, 2011
- 20. Optical Bottles: Ensemble Analysis of Nanoparticles in Optical Confinement, International Conference on Nanophotonics, Beijing, China, May 28-30, 2012
- 21. Who cares about B2: a new method to measure the osmotic second virial coefficient of colloidal suspensions, Pioneers in Soft Matter Science Conference, KAIST, Daejeon, S. Korea, June 18-20, 2012
- 22. Optical bottle: ensemble analysis of colloidal nanoparticles in optical confinement, Soft-biophysics Conference, Gueyang, China, August 21-23, 2012
- 23. A reflection enriched by Bill: Celebration of W.W. Gelbart's 70th Birthday, Selfassembly from atoms to life: a workshop in honor of Bill Gelbart's 70th Birthday, Mesoamerican Centre for Theoretical Physics, Tuxtla Gutiérrez, Chiapas, Mexico, 2016 Oct https://conferences.pa.ucla. Commentator/Discussant/Moderator
- 24. Dielectrophoresis Force Spectroscopy for Colloidal Micro and Nano Particles, ITP Conference, Minneapolis, MN, 2016 Sep https://picometrics.com/itp...
- 25. Equation of State and Fluctuation-dissipation in Soft and Living Matters, Invited Public Lecture, Institute of Basic Science on Soft and Living Systems, UNIST, S. Korea, 2016 Aug
- 26. Osmotic Equilibrium of Colloidal Suspensions Under Potential Forces, Invited Public Lecture, Solvay Lab of the Future, Bordeaux, France, 2016 Jun
- 27. A proposed experiment for haze nucleation and growth, Workshop on Haze, International Center for Soft Matter Physics, Beijing University of Science and Technolgy, China, 2016 Jun
- 28. Osmotic Equilibrium of Colloidal Suspensions Under Potential Forces, Invited Public Lecture, Institute of Advanced Studies, School of Sciences, Hong University of Science and Technology, 2016 Feb
- 29. Noise and fluctuations in a non-equilibrium and non-linear biological system, Mid-Atlantic Soft Matter Workshop MASM18, University of Pennsylvania, Philadelphia, PA 19104, 2017 May http://www.lrsm.upenn.edu/w...
- 30. Noise and fluctuations in living cells:What could we learn from them?, Soft Matter Physics Symposium honoring Phil Pincus's 80th Birthday, Les Houches, France, 2017 May
- 31. Noise and fluctuations in living cells reveal nonlinear mechanical properties of the cytoskeleton, Nonequilibrium statistical mechanics symposium honoring Jim Gunton's 80th Birthday, Santa Fe, New Mexico, 2017 May

Short Abstracts (2000 – present)

- 1. L.A. Hough, H.D. Ou-Yang, Micro-rheology of the transient polymer network in aqueous solutions, Bulletin, American Physical Society March Meeting, 2000, Minneapolis.
- 2. Lawrence A. Hough, A. Knaebel, J-P Munch and H.D. Ou-Yang, "The effect of the adsorption of polymers onto probe particles on the micro-rheology of polymer solutions", American Chemical Society, Colloid 2000 Meeting, Lehigh University.
- 3. H.D. Ou-Yang, E. Meyer, M. Islam and W. Lau, "Complexation of Cyclodextrin with Molecules Confined in a Single Emulsion Droplet", American Chemical Society, Colloid 2000 Meeting, Lehigh University.
- 4. L.A. Hough and H.D. Ou-Yang "Force transmission between a pair of hydrodynamically coupled microspheres", ACS National Conference, San Diego, April, 2001.
- 5. L.A. Hough and H.D. Ou-Yang "Single and dual particle microrheology of homogeneous and inhomogeneous soft materials", APS March Meeting, Seattle, March, 2001.
- 6. L.A. Hough and H.D. Ou-Yang "Force transmission between a pair of hydrodynamically coupled microspheres", APS March Meeting, Seattle, March, 2001.
- L.A. Hough and H.D. Ou-Yang "Single and dual particle microrheology of homogeneous and in homogenous soft materials", ACS Colloid and Surface Science Symposium, Pittsburgh, June, 2001
- 8. L.A. Hough and H.D. Ou-Yang "Single and dual particle microrheology of homogeneous and inhomogeneous soft materials", ACS Colloids and Surface Science Symposium, Pittsburg, June, 2001.
- E.E. Meyer, B.J. Martin, M.F. Islam, L.A. Hough, H.D. Ou-Yang, W. Lau, "Molecular transport across phase boundaries in oil-water-polymer systems", ACS Colloid and Surface Science Symposium, Pittsburgh, June, 2001.
- 10. Olga Latinovic, Lawrence A. Hough and H. Daniel Ou-Yang, "The microrheology of Polyethylene Oxide solutions: a comparison between the results obtained from Brownian noise spectra and from forced oscillation measurements", American Physical Society March Meeting, Indianapolis (2002)
- 11. L. A. Hough and H. D. Ou-Yang, "Single and Two Particle Microrheology of Polymer Gels", American Physical Society March Meeting, Indianapolis (2002)
- 12. E.A. Rickter, L.A. Hough, Linda Lowe-Krentz and H.D. Ou-Yang, "Fluctuations in the Internal Viscoelasticity of Living Bovine Endothelial Cells", American Physical Society March Meeting, Austin, TX
- 13. Lawrence A. Hough and H. Daniel Ou-Yang , Microrheology of Poly(ethylene Oxide) Solutions, American Physical Society March Meeting, Austin, TX
- 14. E.A. Rickter, L.A. Hough, & H.D. Ou-Yang, "Fluctuations in the Internal Viscoelasticity of Living Bovine Endothelial Cells", ACS Graduate Student Polymer Conference, Lehigh University
- 15. L.A. Hough and H.D. Ou-Yang, "Two particle microrheology". ACS Graduate Student Polymer Conference, Lehigh University

- Olga S. Latinovic, Lawrence A. Hough and H. Daniel Ou-Yang, Validation of Microrheology of Poly(ethylene Oxide) Solutions, ACS Graduate Student Polymer Conference, Lehigh University
- E.A. Rickter, L.A. Hough, L. Lowe-Krentz & H.D. Ou-Yang, "Fluctuations in the Internal Viscoelasticity of Living Bovine Endothelial Cells", Am. Soc. Cell Biology, San Francisco
- E. A. Richter, Linda Lowe-Krentz, H. Daniel Ou-Yang, Viscoelasticity of cytoskeletal protein network in living cells, NIH Polymer Networks Conference, Bethesda 2004
- 19. H.D. Ou-Yang, "Biomechanics and Intracellular Dynamics of Vascular Endothelial Cells", invited talk, APS March Meeting, Montreal, 2004
- H.D. Ou-Yang, Optical Tweezers and Their Applications for Cellular Biophysics Research, invited talk, Optical Society of America, Lehigh Valley Chapter, April 2004
- 21. E.A. Rickter, L.A. Hough & H.D. Ou-Yang, Fluctuations in the Internal Viscoelasticity of Living Bovine Endothelial Cells and the Effects of Drug Treatment, Biophysical Society, Baltimore 2004
- 22. E.A. Rickter, L.A. Hough & H.D. Ou-Yang, The Effects of Temperature Variation on the Intracellular Dynamics of Living Cells, American Physical Society, Montreal 2004
- 23. E.A. Rickter, L.A. Hough & H.D. Ou-Yang, The Local Viscoelastic Properties of Bovine Endothelial Cells, St. Joseph's Sigma Xi Meeting 2004
- 24. Olga S. Latinovic, L. A. Hough & H. D. Ou-Yang, Microrheology of Poly(ethylene Oxide) Solutions, American Physical Society, Montreal 2004
- 25. Olga S. Latinovic & H. D. Ou-Yang, Microrheology of Collagen Type I Gels, NIH Polymer Networks Conference, Bethesda 2004
- 26. Olga S. Latinovic & H. D. Ou-Yang, Microrheology of Collagen Type I Gels, Biomedical Engineering Society, Philadelphia 2004:
- 27. Meron Mengistu, Linda Lowe-Krentz, H.Daniel Ou-Yang, Physical Properties of the Transcytosis Machinery in Endothelial Cells, American Physical Society, Montreal 2004:
- 28. Meron Mengistu, Linda Lowe-Krentz, H.Daniel Ou-Yang, Microrheology of Caveolae in Endothelial Cells, Biomedical Engineering Society, Philadelphia 2004:
- 29. Meron Mengistu, Linda Lowe-Krentz, and H. Daniel Ou-Yang, Optical Tweezers as a Sensor for Intracellular Mechanical Properties, Extended Abstract, AiChE Annual Meeting, Cincinnati, November, 2005
- 30. M. Mengistu, L. Lowe-Krentz and H.D. Ou-Yang, Structure and Intracellular Mechanics of Bovine Endothelial Cells, APS March Meeting, Los Angeles, 2005
- O. Latinovic, H.D. Ou-Yang and H.D. Ou-Yang, "Structure and Microrheology of Collagen Solutions, APS March Meeting, Los Angeles, 2005
- 32. H. D. Ou-Yang, E.A. Rickter, C. Pu, O. Latinovic and A. Kumar, M. Mengistu and L. Lowe-Krentz and S. Chien, "Oscillating Optical Tweezer-Based 3-D Confocal Microrheometer for Investigating the Intracellular Micromechanics and Structures" Optical Trapping and Optical Manipulation Symposium, SPIE Annual Meeting, San Diego, July 31 August 4, 2005

- 33. Carolyn Perretta, Sheena Farrell, Olga Latinovic, H. Daniel Ou-Yang, "Internal Structures, Fluctuations and Micromechanical Properties of Bovine Arterial Endothelial Cells: An Optical Tweezers Study" APS March Meeting, March 20-24, 2006
- Meron Mengistu, Linda Lowe-Krentz and H. Daniel Ou-Yang, "Micromechanical Properties of Endothelial Cell Cytoskeleton", APS March Meeting, March 20-24, 2006
- 35. Olga S. Latinovic and H. Daniel Ou-Yang, "Active and Passive Microscopic Viscoelastic Response in Poly(Ethylene) Oxide Solutions", APS March Meeting, March 20-24, 2006
- 36. H. Yalcin, J. Wang, S. Ghadiali, H. D. Ou-Yang, "Influence of Cellular Mechanics On Injury Patterns During Airway Reopening", APS March Meeting, March 20-24, 2006
- 37. J. Wang, C. Pu, H.D. Ou-Yang, "Dual-beam Oscillating Optical Tweezers-Based 3-D Confocal Microrheometer", APS March Meeting, March 20-24, 2006
- 38. J. Junio, E. Blanton, H.D. Ou-Yang, "The Kerr effect produced by optical trapping of nanoparticles in aqueous suspensions", OTOM Symposium, SPIE Annual Conference, August 2007
- 39. J. Wang, H.D. Ou-Yang, "3-D structure and dynamics of microtubule selforganization", APS March Meeting, New Orleans, March 10-14, 2008
- 40. Ming-Tzo Wei, Angela Zaoski, Huseyin C. Yalcin, Jing Wang, Samir N. Ghadiali, Arthur Chiou, and H. Daniel Ou-Yang "Probing Micromechanical Properties of Biological Cells by Oscillatory Optical Tweezers" APS March Meeting, New Orleans, March 10-14, 2008
- J. Junio, H.D. Ou-Yang, "Investigation of colloidal interactions in nanoparticle suspensions with a single optical trap", APS March Meeting, New Orleans, March 10-14, 2008
- 42. Joseph Junio, H. Daniel Ou-Yang "Determination of Charge Interactions of Nanoparticles by Optical Trapping", APS March Meeting, Pittsburgh, USA, 2009.
- 43. Steven M.-T. Wei, Joseph Junio, H. Daniel Ou-Yang, "DEP Force Spectroscopy" APS March Meeting, Pittsburgh, USA, 2009.
- 44. Joseph Junio, H. Daniel Ou-Yang, "Depletion-Modified Interactions in Nanoparticle Suspensions" APS March Meeting, Pittsburgh, USA, 2009.
- 45. Ming-Tzo Wei and H.D. Ou-Yang, "Optical binding force acting on two optically trapped particles" APS March Meeting, Pittsburgh, USA, 2009.
- 46. M.-T. Wei, C. Shu and H. D. Ou-Yang, "Mechanical anisotropy of cytoskeleton in biological cells" APS March Meeting, Pittsburgh, USA, 2009.
- 47. Seongmin Park, Joseph Junio and H. Daniel Ou-Yang, "Osmotic Compressibility of Unilamellar Vesicles in Aqueous Suspensions" APS March Meeting, Pittsburgh, USA, 2009.
- 48. Chun-Yu Lin, Hsia-Yu Lin, Shean-Jen Chen, Steven M.T. Wei, H.D. Ou-Yang,"Optical Trapping of Colloidal Nanoparticles by a Weakly Focused Laser Beam" APS March Meeting, Pittsburgh, USA, 2009.
- 49. Ming-Tzo Wei, Dimitrios Vavylonis, and H. Daniel Ou-Yang, "Response of Mitotic HeLa Cells to Local Mechanical Perturbations, *The 55th Biophysics Annual Meeting*, Baltimore, USA, 2011

- 50. Jinsuk Song and H. Daniel Ou-Yang, Particle interactions in colloids are revealed in a nonlinear effect in light transmission, APS March Meeting 2011, Dallas, Texas
- 51. H. Daniel Ou-Yang, Joseph Junio, and Liangcheng Zhou, Message in a bottle: the statistical behavior of nanoparticles in optical confinement, APS March Meeting 2011, Dallas, Texas
- 52. Jingyu Wang and H. Daniel Ou-Yang, Low-frequency dielectric response of a single particle in aqueous suspensions, APS March Meeting 2011, Dallas, Texas
- 53. Yi Hu, Xuanhong Cheng, and H. Daniel Ou-Yang, Poisson or not Poisson: Probability distribution of colloidal nanoparticles in an optical trap, APS March Meeting 2011, Dallas, Texas
- 54. Liangcheng Zhou, Qiwen Zhan, and H. Daniel Ou-Yang, 3D Optical Field Mapping of a Focused Cylindrical Vector Beam Using Rayleigh Nanoparticles, APS March Meeting 2011, Dallas, Texas
- 55. Joseph Junio, Jack Ng, Joel Cohen, Zhifang Lin, and H. Daniel Ou-Yang, A new method to measure the optical trapping energy of nanoparticles, APS March Meeting 2011, Dallas, Texas
- 56. Ming-Tzo Wei and H. Daniel Ou-Yang, Non-equilibrium microrheology of living cells, APS March Meeting 2011, Dallas, Texas
- 57. Y, Hu, Xuanhong Cheng, and Daniel H. Ou-Yang, Probability distribution of colloidal nanoparticles in an optical trap, *SPIE Optics Photonics*, OTOM VIII, San Diego, CA, 2011
- Jinsuk Song and Daniel H. Ou-Yang, Particle interactions in colloids are revealed in a nonlinear effect in light transmission, *SPIE Optics Photonics*, OTOM VIII, San Diego, CA, 2011
- 59. Ming-Tzo Wei, Jack Ng, Che-Ting Chan, and Daniel H. Ou-Yang, Experimental and theoretical study of optical binding forces between two colloidal particles, *SPIE Optics Photonics*, OTOM VIII, San Diego, CA, 2011
- 60. H. Daniel Ou-Yang, Liangcheng Zhou, and Joseph Junio, Message in a bottle: the statistical behavior of nanoparticles in optical confinement, *SPIE Optics Photonics*, OTOM VIII, San Diego, CA, 2011
- 61. H. Daniel Ou-Yang, Liangcheng Zhou, Joseph Junio, Jack Ng, Joel A. Cohen, and Zhifang Lin, Message in a bottle: the statistical behavior of nanoparticles in optical confinement, OSA Optics and Photonics *Topical Meetings*, Monterrey, CA, 2011
- 62. Liangcheng Zhou, Qiwen Zhan, H. Daniel Ou-Yang, Mapping of the optical field of a Focused Cylindrical Vector Beam by Trapped Rayleigh Particles, *OSA* Optics and Photonics *Topical Meetings*, Monterrey, CA, 2011
- 63. Wei Nie, Ming-Tzo Wei, Ivan Biaggio, H. Daniel Ou-Yang, Sabrina Jedlicka, and Dimitrios Vavylonis, Stress Fiber Organization and Dynamics in Cells Adhered to Substrates of Varying Stiffness, Biophysical Society 56th Annual Meeting, San Diego, USA (2012)
- 64. Joel A. Cohen, Ming-Tzo Wei, and H. Daniel Ou-Yang, Shear Modulus and Viscosity of Deionized Suspensions of Charged Liposomes, Biophysical Society 56th Annual Meeting, San Diego, USA (2012)
- 65. Jingyu Wang and H. Daniel Ou-Yang, A Study of the Polarizability of Single-Walled Carbon Nanotubes in an Optical Field, American Physical Society March Meeting, Boston, USA (2012)

- 66. Yi Hu, Xuanhong Cheng, and H. Daniel Ou-Yang, Fluorescence correlation spectroscopy enumerate the number of nanoparticles in optical confinement, American Physical Society March Meeting, Boston, USA (2012)
- 67. Ming-Tzo Wei, Jack Ng, C.T. Chan, and H. Daniel Ou-Yang, Lateral optical binding forces between two colloidal Mie particles, American Physical Society March Meeting, Boston, USA (2012)
- 68. Jinxin Fu, Melissa Goleb, and H. Daniel Ou-Yang, Partial osmotic compressibility of binary mixtures of colloidal nanoparticles and PEG, American Physical Society March Meeting, Boston, USA (2012)
- 69. Ming-Tzo Wei, and H. Daniel Ou-Yang, Non-equilibrium intracellular microrheology in living cells, SPIE Optics Photonics, San Diego, USA (2012)
- 70. Jinxin Fu, Liangcheng Zhou, H. Daniel Ou-Yang, and Qiwen Zhan, Mapping the optical field distribution of the focal point of a tightly focused vector beam by 3D optical trapping of colloidal nanoparticles, SPIE Optics Photonics, San Diego, USA (2012)
- 71. Ming-Tzo Wei, Sabrina Jedlicka, Dimitrios Vavylonis, and H. Daniel Ou-Yang, Microrheology of a non-equilibrium system produced by molecular motor-generated forces in living cells, BMES 2012 Annual Meeting, Atlanta, USA, (2012)
- 72. H. Daniel Ou-Yang Jim Huang, 3D Metamaterial Ultra-thin Lens and Sharp-Bending Waveguides for Monolithic Integration in Silocon Photonics ICs, Research Proposal Presentation, Futurewei Technologies, Bridgewater, NJ, 2016 Dec.
- 73. Hao Huang, Dielectrophoresis Force Spectroscopy for Colloidal Micro and Nano Particles, SPIE OTOM XIII, San Diego, CA, 2016 Aug <u>https://spie.org/</u>
- 74. Ray Pearson, Paul Chaikin, Pierre Guillot, International Workshop on Sustainable Polymer Materials and Materials Sustainability, International Workshop on Sustainable Polymer Materials and Materials Sustainability, Iacocca Hall, Lehigh University, 2016 Jun
- 75. Hao Huang, H. Daniel Ou-Yang, Drying inhomogeneity of waterborne latex, MidAtlantic Rubber and Plastic Group Education Symposium, Lehigh University, 2017 Nov
- 76. Hao Huang, H. Daniel Ou-Yang, Skin Layer Formation during Drying of Latex Films, AIChe Annual Meeting, Minneapolis, MN, 2017 Oct
- 77. Hao Huang, H. Daniel Ou-Yang, Skin Layer Formation during Drying of Latex Films, International Polymer Colloid Group Conference, Arantzazu, Spain, 2017 Jun, Same title for both the oral and poster presentations.
- 78. H. Daniel Ou-Yang, Current status and future directions of EPI, EPI Annual Review Meeting, Rauch Business Center, Lehigh University, 2017 Jun, This was the director's oral presentation reporting the status of the Emulsion Polymers Institute at the EPI Annual Review Meeting. Session Organize
- 79. Krittanon Sirorattanakul, H. Daniel Ou-Yang, A New Technique for Measuring Concentration Dependence of Self and Collective Diffusivity by using a Single Sample, APS March Meeting, New Orleans, Louisiana, 2017 Mar <u>http://meetings.aps.org/Mee...</u>
- 80. Brandon Harris, Chong Shen, H. Daniel Ou-Yang, The use of magnetic bottles to determine the susceptibility of paramagnetic nanoparticles, APS March Meeting, New Orleans, Louisiana, 2017 Mar <u>http://meetings.aps.org/Mee</u>..

81. Chong Shen, H. Daniel Ou-Yang, An Experimental Study of the Equation of State of Nano Colloids Using a Novel Dielectrophoresis Osmometer, APS March Meeting, New Orleans, Louisiana, 2017 Mar http://meetings.aps.org/Mee...

Workshops and Symposia Organizations (2004 – present):

- 1. "Mechanics of Biological Cells and Cytoskeletal Proteins" which will be held at the APS March Meeting in Montreal, 2004.
- Biophotonics Workshop II took place during the annual Center for Optical Technologies (COT) Open House (May 18). Ten invited talks were given by Lehigh and Penn State faculties. Three penal presentations on industrial perspectives were delivered by invited speakers from BD, Olympus America and Glucolight. The workshop agenda and talks can be found at http://www.lehigh.edu/optics/Documents/2005OpenHouse/2005ThursAgendaBio.htm
- 3. Biological Imaging and Engineered Biosystems, September 28-2, 2007. Lehigh University
- 4. Biophotonics Workshop III, "Advances in Laser-based Biophotonic Imaging and Diagnostics", Center for Optical Technologies, Lehigh University, October 8-9, 2007
- Biophotonics Workshop III, "Advances in Laser-based Biophotonic Imaging and Diagnostics", Center for Optical Technologies, Lehigh University, October 13-14, 2008
- Biophotonics Workshop III, "Advances in Laser-based Biophotonic Imaging and Diagnostics", Center for Optical Technologies, Lehigh University, October 12-13, 2009
- 7. EPI Workshop: Directed Particle Synthesis and Characterization for Emerging Needs: Directed Synthesis and Characterization toward Biomedical and Catalytic Applications, December 8 -9, 2009.
- 8. Advances in Emulsion and Microspheres Technology for Applications in Biosciences, Emulsion Polymers Institute (EPI) and East China University of Science and Technology (ECUST), Shanghai, China, October 12-15, 2011
- 9. Emulsion Polymers Institute: a brief history, current status and future perspective, Invited Public Lecture, Beijing University of Chemical Technology, 2016 Jan

Professional Program Committees:

Program committee, SPIE Optical Trapping and Optical Micromanipulation (2005 – Panel Member, The Future Direction of Polymer Colloids Research, International Polymer Colloids Group, July 5-9, 2009, Italy – on going.

Research Awards and Grants:

• Modern Instrumentation for Advanced Laboratories, Award Number:9051982; Principal Investigator: Wesley Smith; Co-Principal Investigator: John Huennekens, Alan D. Streater, H. Daniel Ou-Yang; NSF Organization: PHY Award Date:08/15/1990; Award Amount:\$37,286.00

- NSF Industry/University Cooperative Research Center for Polymer Interfaces: A Multi-Institutional Program Targeting the Fundamental Adsorption Behavior of Polyelectrolytes, Award Number:9712915; Principal Investigator: Manoj Chaudhury; Co-Principal Investigator: Maria Santore, H. Daniel Ou-Yang, James Roberts; NSF Organization: IIP Award Date:09/15/1997; Award Amount:\$55,000.00
- SGER: Measurement of Colloidal Forces in Situ With Dual Optical Tweezers, Award Number:9805887; PI: H. Daniel Ou-Yang, NSF Organization: CBET Award Date:03/01/1998; Award Amount: \$61,125.00
- Establishing a Cross-Disciplinary Bioengineering Program with a Technical Entrepreneurship Focus, Award Number:0343283; Principal Investigator: Mohamed El-Aasser; Co-Principal Investigator: H. Daniel Ou-Yang, John Ochs, Svetlana Tatic-Lucic; NSF Organization: EEC Award Date:10/01/2003; Award Amount:\$1,403,902.00
- MRI: Development of an Optical Tweezers-based Time-Lapse 3D Imaging Cytorheometer, Award Number: 0421259; PI: H. Daniel Ou-Yang; NSF Organization: DMR Award Date: 08/01/2004; Award Amount:\$185,848.00; Lehigh cost sharing \$59,840
- Micromechanics and Injury Mechanisms of Lung Epithelial Cells during the Reopening of Fluid-filled Alveoli, American Heart Association, \$100,000, 7/1/2005-6/30/2007
- PITA IX: Materials Assessment for the Development of Photopolymerizable Resins, PA-Department of Community & Economic Development, \$29,527, 5/1/2006-6/30/2007
- Optics V: Biophotonics, PA-Department of Community & Economic Development, \$253,060, 1/1/2006 06/30/2007
- Optics VI: Biophotonics, PA-Department of Community & Economic Development, \$349,000, 7/1/2007 6/30/2008
- Optics VII: Biophotonics, PA-Department of Community & Economic Development, \$\$275,000, 7/1/2008 – 6/30/2009
- Non-linear Imaging and Mechanical Perturbations of the Cytoskeleton of Mitotic Cancer Cells, DOE-Office of Science, COPI (with Dimitrios Vavylonis and Ivan Biaggio, December 1, 2008 May 31, 2010, \$26,541.12
- Optics VIII: Biophotonics, PA Dept of Community & Economic Development, PI, January 1, 2009, \$227,000 December 31, 2010
- Emulsion Polymers Institute Industrial Liaison Program, \$100,000/year, PI, July

1, 2009 -

- MRI: Development of Spectroscopic Imaging Optical Bottles for Analysis of Nanoparticles in Confinement, Award Number:0923299; Principal Investigator: H. Daniel Ou-Yang; Co-Principal Investigator: Ivan Biaggio, Volkmar Dierolf, Mark Snyder; NSF Organization: DMR Award Date:10/01/2009; Award Amount:\$427,520.00; Lehigh cost sharing \$183,222
- Lehigh University CORE: Novel Mechanisms to Control Neuronal Phenotype: Targeting Degenerative Diseases, Co-PI: Sabrina Jedlicka, Dimitrios Vavylonis, Daniel Ou-Yang (PI), \$75,000, 07/01/2012 – 06/30/2013
- International Workshop on Stem Cell Differentiation: the Influence of Biomaterials and Biomechanics, Shanghai, China, March 13-15, 2013, Award Number:1258916; PI: H. Daniel Ou-Yang, Co-Principal Investigator: Miriam Rafailovich, Dimitrios Vavylonis, Sabrina Jedlicka; NSF Organization: CBET Award Date:11/01/2012; Award Amount:\$25,000.00
- Lehigh University Faculty Innovation Grant: Investigation of osmotic equilibrium of protein solutions in an external force for measuring protein-protein interactions, \$25,000, 07/01/2014 6/30/2015, Role: PI
- An Integrated Biometric Platform for Evaluation of Nanomedicine Delivery, U.S. Department of Health and Human Services, NIH, Award amount: \$442,505, Award Period: 7/1/2013 6/30/2016, PI: Yaling Liu, co-PI: H. Daniel Ou-Yang, Linda Lowe-Krentz
- Anti-reflective roof coating, Oriental Yuhong North American LLC, Award amount: \$282,530, Award Period: 12/01/2015 – 11/30/2017, PI: H. Daniel Ou-Yang

MS Students:

- 1. Samantha Parrmley (1999)
- 2. Elizabeth Rickter (2002)
- 3. Vural Kara (2012)
- 4. Michael Primrose (2017)

Ph.D. Students and Postdoctoral Fellows:

Ph.D. students advised:

- 1. Zihao Gao (Ph.D. 94)
- 2. Michael Kuck (Ph.D. 96)
- 3. Chaohua Wang (Ph.D. 97)
- 4. Luke Dewalt (Ph.D. 98)
- 5. Mohamed Islam (Ph.D. 00)

- 6. Lawrence Hough (Ph.D. 03)
- 7. Olga Latinovic (Ph.D. 05)
- 8. Meron Mengistu (co-advised, with Prof. Linda Lowe-Krentz, Ph.D, 08)
- 9. Joseph Junio (Ph.D. 10)
- 10. Jingyu Wang (Ph.D. 12)
- 11. Yi Hu (Ph.D. 2012)
- 12. S. Min-Tzo Wei (Ph.D. 2014)

Postdoctoral Fellows Advised:

- 1. Elizabeth Colaianni (1997, Ph.D. Pittsburgh)
- 2. Chuan Pu (2004, Ph.D. Cornell)
- 3. Jing Wang (2005-08, Ph.D. U. Penn)
- 4. Hsia-Yu Lin (2008, Ph.D. National Taiwan University)
- 5. HyunJoo Park (2009, Ph.D. Korea Advanced Institute of Science and Technology)
- 6. Liangcheng Zhou (2010, Ph.D. Lehigh University)
- 7. Jinsuk Song (2011, Ph.D. Korea Advanced Institute of Science and Technology)
- 8. Jinxin Fu (2011- 2013, Ph.D. Institute of Physics, Chinese Academy of Science, Beijing)

Course taught in 2015 -17

2015 Spring

Electricity & Magnetism II, PHYS 213, Credits: 3

Soft Matter Physics, PHYS 497, Credits: 1

Integrated Bioelectronics Lab, BIOE 331, Credits: 3

Undergraduate Research, PHYS 273, Credits: 3

2015 Summer

REU Research, PHYS 273, Credits: 3

Graduate Research, PHYS 491, Credits: 3

2015 Fall

Electricity & Magnetism I, PHY 212, 16 students, Credits: 3

Undergraduate Research, PHYS 273, one student, Credits: 3

2016 Spring on Sabbatical

2016 Fall

Electricity & Magnetism I, PHYS 212, Credits: 3

2017 Spring

Electrodyanamics I, PHYS 412, Credits: 3

Bioelectronics and Photonics, BioE 313, Credits: 2

2017 Spring

Electricity and Magnetism I, PHY421, Credits: 3

Bioelectronics and Photonics, BioE 313, Credits: 2

2017 Fall

Thermal Physics, PHY340, Credits: 3

2017 Summer

Iacocca International Internship Program in Bordeaux, France: Led 4 Lehigh undergraduate students to conduct collaborative research at CNRS laboratories in University of Bordeaux for 8 weeks.

Current grants and Pending Grant Proposals

2017

An Experimental Study of the Osmotic Pressure, Effective Temperature and Fluctuation-Dissipation of Active Brownian Particles, Pending, National Science Foundation

Extrinsic Drivers of Neural Stem Cell Fate: Mechanical Influences on Division Asymmetry, Pending National Science Foundation, Role Co-PI

PITA XVIII: Study of the Degradation of Polymer-Modified Self-Adhesive Waterproof Membranes and Possible Solutions, Grant Status Funded, Sponsor PA Dept of Community & Economic Development Funding Type Contract, Role PI, Contribution Year 2016, Award Amount 23853.00

Elastomeric Roof Coatings - Elastomeric Roof Coatings, Grant Status Funded, Sponsor Beijing Oriental Yuhong Waterproof Technology Co., LTD, Role PI, Contribution Year 2016, Award Title Elastomeric Roof Coatings - Elastomeric Roof Coatings, Award Start Date 2015-12-01 Award End Date 2017-11-30, Award Amount 282530.00

EPI-Ind Liaison Prog - EPI-Ind Liaison Prog, Grant Status Funded, Role PI, Contribution Year 2016 Award Title EPI-Ind Liaison Prog - EPI-Ind Liaison Prog, Award Start Date 1987-07-01 Expenditure Amount 104429.98