

PONG-YU (PETER) HUANG

Assistant Professor

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PROFESSIONAL PREPARATION

Cornell University	B.A.	Physics, <i>Cum Laude</i>	2000
Brown University	M.S.	Engineering	2003
Brown University	Ph.D.	Engineering	2007
Tufts University	Postdoctoral	Biomedical Engineering	2006 – 2008

PROFESSIONAL APPOINTMENTS

Assistant Professor	Binghamton University	Mechanical Engineering	2008 – present
Postdoctoral Associate	Tufts University	Biomedical Engineering	2006 – 2008

RESEARCH THRUSTS

- Nanoscale optofluidic sensors and actuators
- Mechanics of molecules and nanostructures
- Colloidal and adhesion dynamics of pathological cells
- Micro- and nanoscale transport phenomena
- Biofilm sensors and actuators
- Motion dynamics of microorganisms
- Optical manipulation of microorganisms

JOURNAL PUBLICATIONS

- ♦ P. Huang, J. S. Guasto, and K. S. Breuer. The effects of hindered mobility and depletion of particles in near-wall shear flows and the implications for nano-velocimetry. *Journal of Fluid Mechanics*, **637**, 241-265, 2009.
- ♦ P. Huang, M. Hunter and I. Georgakoudi. A confocal light scattering spectroscopic imaging system for in situ tissue characterization. *Applied Optics*, **48**, 2595-2599, 2009.
- ♦ B. J. Schmidt, P. Huang, K. S. Breuer and M. B. Lawrence. A catch strip assay for the relative assessment of rapid, two-dimensional protein association kinetics. *Analytical Chemistry*, **80**, 944-950, 2008.
- ♦ P. Huang and K. S. Breuer. Direct measurement of anisotropic near-wall hindered diffusion using total internal reflection velocimetry. *Physical Review E*, **76**, 046307, 2007.
- ♦ P. Huang and K. S. Breuer. Direct measurement of slip length in electrolyte solutions. *Physics of Fluids*, **19**, 028104, 2007.
- ♦ J. S. Guasto, P. Huang, and K. S. Breuer. Statistical particle tracking velocimetry using molecular and quantum dot tracer particles. *Experiments in Fluids*, **41**, 869-880, 2006.
- ♦ P. Huang, J. S. Guasto, and K. S. Breuer. Direct measurement of slip velocities using 3-D total

internal reflection velocimetry. *Journal of Fluid Mechanics*, **566**, 447-464, 2006.

- ◆ S. Jin, P. Huang, J. Park, J. Y. Yoo and K. S. Breuer. Near-surface velocimetry using evanescent wave illumination. *Experiments in Fluids*, **37**, 825-833, 2004.

CONFERENCE PROCEEDINGS

- ◆ B. Laughlin, A. Tabatabaie, and P. Huang. Accuracy of external force measurements based on particle tracking velocimetry. *Proceedings of ASME-IMECE*, Lake Buena Vista, Florida. IMECE2009-11214, November 2009.
- ◆ J. S. Guasto, P. Huang, and K. S. Breuer. Measurement and simulation of near-wall colloidal behavior. *IUTAM Symposium on Micro and Nanoscale Fluid Dynamics*. Dresden, Germany. September 2007.
- ◆ J. S. Guasto, P. Huang, and K. S. Breuer. Statistical particle tracking velocimetry using molecular and quantum dot tracer particles. *Proceedings of ASME-IMECE*, Orlando, Florida. November 2005.
- ◆ P. Huang, J. S. Guasto, and K. S. Breuer. Direct measurement of slip velocities using 3-D total internal reflection velocimetry. *Proceedings of ASME-IMECE*, Orlando, Florida. IMECE2005-79938, November 2005.
- ◆ P. Huang and K. S. Breuer. Direct measurement and simulation of apparent slip velocities in sub micron scale flows. *Proceedings of ICTAM*. Warsaw, Poland. August 2004.
- ◆ S. Jin, P. Huang, J. Park and K. S. Breuer. Near-surface velocimetry using evanescent wave illumination. *Proceedings of ASME-IMECE*, Washington, D.C. IMECE2003-44015, November 2003.
- ◆ S. Jin, P. Huang, J. Park, J. Y. Yoo and K. S. Breuer. Near-wall PTV measurements using evanescent wave illumination. *Proceedings of the 5th International Symposium on Particle Image Velocimetry*. Busan, Korea. PIV'03 Paper 3237. September 2003.
- ◆ P. Huang and K. S. Breuer. Performance and scaling of an electro-osmotic mixer. *Proceedings of IEEE Transducers 03*. Boston, MA. June 2003.
- ◆ J. Westin, C.-H. Choi, P. Huang, Z. Cao, K. S. Breuer, B. Caswell, P. Richardson and M. Sibilkin. Liquid transport properties in submicron channel flows. *Proceedings of ASME-IMECE*. New York, NY. November 2001.

BOOK CHAPTERS

- ◆ P. Huang, J. S. Guasto and K. S. Breuer. Near-surface particle tracking velocimetry. *Microfluidics and Nanofluidics Handbook*, Sushanta K. Mitra and Suman Chakraborty (ed.), CRC Press (in press), 2010.
- ◆ J. S. Guasto, P. Huang and K. S. Breuer. Evanescent wave microscopy. *Encyclopedia of Micro- and Nano-fluidics*, Dongqing Li (ed.), Springer, 2008.

TECHNICAL PRESENTATIONS

- ◆ P. Huang and K. S. Breuer. Measurement and simulation of hindered diffusion and the implications for near-wall velocimetry. The 59th annual APS-DFD Meeting, Tampa, FL. November 2006.
- ◆ P. Huang, J. S. Guasto, and K. S. Breuer. Direct measurement of liquid slip velocities using total internal reflection velocimetry. The 58th annual APS-DFD Meeting, Chicago, IL. November 2005.
- ◆ P. Huang, S. Jin, J. Park and K. S. Breuer. Slip and apparent slip in submicron flows. The 56th annual APS-DFD Meeting, Meadowland, NJ. November 2003.

INVITED SEMINARS

- ◆ Nanofluids: Fundamentals and Applications II Conference, Montreal, Canada, “Evanescent wave-based optical diagnostic techniques and their applications to nanofluidics and mass transport,” August, 2010.
- ◆ National Taiwan University, “Exploration of near-surface transport phenomena masked by nanoscale randomness,” January 2009.
- ◆ University of Rhode Island, “Dancing with the particles: direct measurement of near-surface transport phenomena in the nanoscale,” April 2008.
- ◆ San Diego State University, “Near-surface transport phenomena in the nanoscale,” February 2008.

INSTRUCTIONAL HISTORIES

ME 441, Heat Transfer	Fall	2009
ME 580, Transport at the Micro/Nanoscale	Spring	2009
ME 550, Introduction to Fluid Mechanics	Fall	2008
Senior Design Project (1 team)		2009 – 2010

PROFESSIONAL SERVICES

Organizer, Micro- and Nanofluidics Symposium, ASME IMECE	2010
Co-organizer, Micro- and Nanofluidics Symposium, ASME IMECE	2009
Outside Examiner, dissertation defense of Yayong Liu, Binghamton University	2010

HONORS

NSF Summer Institute Fellowship	2009
Brown University Graduate Fellowship	2000 – 2001

PROFESSIONAL AFFILIATIONS

Member, American Society of Mechanical Engineers (ASME).
 Member, Micro Nano Fluid Dynamic Technical Committee, ASME.
 Member, American Physical Society (APS).
 Member, SPIE.

ARCHIVAL JOURNAL ARTICLE REFEREED

Journal of Fluid Mechanics
 Journal of Fluid Engineering
 Microfluidics and Nanofluidics
 International Journal of Heat and Mass Transfer
 Optics Express
 Mathematical Problems in Engineering
 Journal of the Association for Laboratory Automation
 Proceedings of ASME IMECE2009