

CURRICULUM VITAE

I. PERSONAL DATA

Name: Carolyn L. Ren

Department: Department of Mechanical and Mechatronics Engineering
(cross appointed to the Department of Chemistry since September 2005)
(cross appointed to the Department of Biology since September 2009)

Education:

Sept. 2000 – Apr. 2004 Ph.D., Mechanical Engineering, University of Toronto
Sept. 1992 – Mar. 1995 M.A.Sc., Thermal Engineering, Harbin Institute of Tech., China,
Sept. 1988 – Jul. 1992 B.Sc., Thermal Engineering, Harbin Institute of Tech., China

Academic Appointments:

July 2010 – present Associate Professor, Mechanical & Mechatronics Engineering,
University of Waterloo
May 2004 – June 2010 Assistant Professor, Mechanical & Mechatronics Engineering,
University of Waterloo (on maternity leave from Feb. – Sept. 2006)
May 2003 – Jun. 2003 Visiting Scientist, Computer and Electrical Engineering, University of
Alberta
Mar. 1995 – Jul. 1999 Lecturer, Power Engineering, Dalian University of Technology, China

II. RESEARCH AND SCHOLARSHIP

Awards and honors

- 1) 2012, Fellow of Canadian Society of Mechanical Engineering – given to outstanding mechanical engineers who have made significant contributions to the society.
- 2) 2010, Engineering Research Excellence Award – given to faculty members who made outstanding research accomplishments.
- 3) 2009 - 2014, Tier 2 Canada Research Chair (CRC) in Lab-on-a-Chip Technology – given to emerging researchers, acknowledged by their peers as having the potential to lead in their field. CRCs received reduced teaching load from their host university.
- 4) 2007, Early Researcher Award – given to promising, recently-appointed Ontario researchers to help build their research programs.
- 5) 2007, Nominated for Douglas R. Colton Medal for Research Excellence (not awarded) – given to young researchers within three years of the start of their professional career in recognition of their contributions to microfabrication technology.

Areas of interest

Microfluidics (flow, heat and mass transport phenomena at the microscale), Lab-on-a-Chip devices (design, fabrication, characterization and integration), electrokinetics, interfacial phenomena

Publications

Note: the names of the co-authors who were postdoctoral fellows and graduate students at the time a paper was written are marked with ** and *, respectively.

Refereed Journal Publications: (published or accepted)

55. S Shameli*, T Glawdel*, V Fernand**, **CL Ren**, "Micellar Affinity Gradient Focusing in a Microfluidic Chip with Integrated Bilinear Temperature Gradients", *Electrophoresis*, 33 (2012) 2703 – 2710.
54. Z Almutairi*, **CL Ren**, L. Simon, "Evaluation of Polydimethylsiloxane (PDMS) Surface Modification Approaches for Microfluidics Applications", *Colloid Surface A: Physicochemical Eng Aspects*, 415 (2012) 406-412.
53. L Li*, X Bi*, J Yu*, **CL Ren**, Z. Liu, "A new soft-lithographic route for the facile fabrication of hydrophilic and easy-to-UV detect sandwich microchips", *Electrophoresis*, 33 (2012) 2591 – 2597.
52. T Glawdel*, **CL Ren**, "Droplet Formation in Microfluidics T-junction Generators Operating in the Transitional Regime: Part III - Dynamic Surfactant Effects", *Phy Review E*, 86, 026308 (2012) (12 double-column pages).
51. T Glawdel*, **CL Ren**, "Global Network Design for Robust Operation of Microfluidic Droplet Generators with Pressure Driven Flow", *Microfluidics Nanofluidics*, 13 (2012) 469 – 480.
50. S Shameli*, T Glawdel*, Z Liu, **CL Ren**, "Bilinear Temperature Gradient Focusing in a Hybrid PDMS/Glass Microfluidic Chip Integrated with Planar Heaters for Generating Temperature Gradients", *Anal Chem*, (2012), 84, 2968–2973.
49. T Glawdel*, C Elbuken**, **CL Ren**, "Droplet Formation in Microfluidics T-junction Generators Operating in the Transitional Regime: Part II - Theoretical and Numerical Modelling", *Phy Review E*, 85, 016323 (2012) (12 double-column pages).
48. T Glawdel*, C Elbuken**, **CL Ren**, "Droplet Formation in Microfluidics T-junction Generators Operating in the Transitional Regime: Part I - Experimental Observations ", *Phy Review E*, 85, 016322 (2012) (9 double-column pages).
47. T Glawdel*, C Elbuken**, **CL Ren**, "Passive droplet trafficking at microfluidic junctions under geometric and flow asymmetries", *Lab Chip*, 11 (2011) 3774-3784 **[cover page]**.
46. C Elbuken**, T Glawdel*, D Chan*, **CL Ren**, "Detection of Microdroplet Size and Speed Using Capacitive Sensors", *Sensor Actuat A - Phys*, 171 (2011) 55-62.
45. BY Yu*, C Elbuken**, **CL Ren**, JP Huissoon, "Image Processing and Classification Algorithm for Yeast Cell Morphology in a Microfluidic Chip", *J Biomed Opt*, 16 (2011), 066108 **[selected for the June 15, 2011 issue of virtual Journal of Biological Physics Research]**.
44. L Gui**, **CL Ren**, "Microfluidic Phase Change Valve with a Two-level Cooling/Heating System", *Sens Actuators A - Phys* 168 (2011) 155-161.
43. S Shameli*, C Elbuken**, J Ou**, **CL Ren**, J Pawliszyn, "Fully integrated PDMS/SU-8/quartz Microfluidic Chip with a Novel Macroporous PDMS Membrane for Isoelectric Focusing of Proteins using Whole-channel Imaging Detection", *Electrophoresis*, 32 (2011) 333-339.
42. L Gui**, BY Yu*, **CL Ren**, JP Huissoon, " Microfluidic Phase Change Valve with a Two-level Cooling/Heating System", *Microfluidics Nanofluidics*, 10 (2011) 435-445.
41. J Ou**, **CL Ren**, J Pawliszyn, "A Simple Method for Preparation of Macroporous Polydimethylsiloxane Membrane for Microfluidic Chip-based Isoelectric Focusing Applications", *Anal Chim Acta*, 9 (2010), 1926 - 1932.
40. T Glawdel*, C Elbuken**, L Lee, **CL Ren**, "System with Integrated Electroosmotic Pumps, Concentration Gradient Generator and Fish Cell Line (RTgill-W1)-Towards Water Toxicity Testing, *Lab Chip*, 9 (2009) 3243 - 3250.

39. Z Shao*, **CL Ren**, GE Schneider, "A Numerical Model for Electrokinetic Flow and Species Transport in Microchannels", *Eur Phys J Appl Phys: Special Topics*, 171 (2009), 189–194.
38. J Ou**, T Glawdel*, **CL Ren**, J Pawliszyn, "Fabrication of a Hybrid PDMS/SU-8/quartz Microfluidic Chip for Enhancing UV Absorption Whole-channel Imaging Detection Sensitivity and Application for Isoelectric Focusing of Proteins", *Lab Chip*, 9 (2009), 1926 - 1932.
37. Z Almutairi*, T Glawdel*, **CL Ren**, D Johnson, "A Y-channel Design for Improving Zeta Potential and Surface Conductivity Measurements", *Microfluidics Nanofluidics*, 6 (2009) 241 – 251.
36. T Glawdel*, Z Almutairi*, S Wang, **CL Ren**, "Photobleaching Absorbed Rhodamine B to Improve Temperature Measurements in PDMS Microchannels.", *Lab Chip*, 9 (2009) 171 - 174.
35. **(invited)** T Glawdel*, **CL Ren**, "Electroosmotic Flow Control for Living Cell Analysis in Microfluidic Chips", *Mech Res Commun: Recent Adv in Microfluidics*, 36 (2009) 75 - 81.
34. J Ou**, R Samy*, T Glawdel*, T Huang**, Z Liu, **CL Ren**, J Pawliszyn, "Integration of Dialysis Membranes into a Poly(dimethylsiloxane) Microfluidic Chip for Isoelectric Focusing of Proteins Using Whole-Channel Imaging Detection", *Anal Chem*, 80 (2008) 7401 – 7407.
33. Z Liu*, J Ou*, R Samy*, T Glawdel*, T Huang, **CL Ren**, J Pawliszyn, "Side-by-side Comparison of Disposable Microchips with Commercial Capillary Cartridges for Application in Isoelectric Focusing with Whole Column Imaging Detection", *Lab Chip*, 8 (2008) 1738 – 1741.
32. **(invited)** J Taylor*, **CL Ren**, G.D. Stubbley, "Numerical and Experimental Evaluation of Microfluidic Sorting Devices", *Biotechnol Progr*, 24 (2008) 981 - 991.
31. R Samy*, T Glawdel*, **CL Ren**, "Method for Microfluidic Whole-Chip Temperature Measurement Using Thin-Film Poly(dimethylsiloxane)/Rhodamine B", *Anal Chem*, 80 (2008) 369 – 375.
30. C Elbuken*, L Gui**, **CL Ren**, M Yavuz, B Khamesee. "Design and Analysis of a Polymeric Photo-thermal Microactuator", *Sensor Actuat A - Phys*, 147(2008) 292-299.
29. J Taylor*, **CL Ren**, GD Stubbley, "Experimental Determination of Sample Stream Focusing with Fluorescent Dye", *Electrophoresis*, 29 (2008) 2953 - 2959.
28. L Gui**, **CL Ren**, "Temperature Measurement in Microfluidic Chips Using Photobleaching of a Fluorescent Thin Film", *Appl Phys Lett*, 92 (2008) 024102. **[This article has been selected by Virtual Journal of Nanoscale Science & Technology, 17 (2008) 4].**
27. L Gui**, **CL Ren**, "Analytical and Numerical Study of Joule Heating Effects on Heat Transfer in an Electrokinetic-Pumped Continuous Flow PCR Chip", *Langmuir*, 24 (2008), 2938-2946.
26. WG Hou, **CL Ren**, "Evaluation of Intrinsic Ionization and Complexation Constants of TiO₂ and Mg-Fe Hydrotalcite-like Compounds", *Chinese J Chem*, 24 (2006) 1336-1341.
25. L Gui**, **CL Ren**, "Numerical Simulation of Heat Transfer and Electrokinetic Flow in an Electroosmosis-based Continuous Flow PCR Chip", *Anal. Chem.*, 78 (2006) 6215-6222.
24. Z Shao*, **CL Ren**, GE Schneider, "3D Electrokinetic Flow Structure of Solution Displacement in Microchannels for On-chip Sample Preparation", *J Micromech Microeng*, 16 (2006) 589-600.
23. B Kates*, **CL Ren**, "Study of Joule Heating Effects on Temperature Gradient in Diverging Microchannels for Isoelectric Focusing", *Electrophoresis*, 27 (2006) 1967 - 1976.
22. **CL Ren**, D Li, "Sample Transport Control in a Microchannel with Spatial Electrical Conductivity Gradients", *J Colloid Interface Sci*, 294 (2006) 482 – 491.
21. J Taylor*, **CL Ren**, "Application of Continuum Mechanics to Fluid Flow in Nanochannels", *Microfluidics Nanofluidics*, 1 (2005) 356 – 363.
20. JN McMullin, H Qiao*, S Goel*, **CL Ren**, D Li, "Integrated Optical Measurement of Microfluid Velocity", *J Micromech Microeng*, 15 (2005) 1810 – 1816.
19. **CL Ren**, D Li, "Improved Understanding of the Effect of Electrical Double Layer on Pressure-Driven Flow in Microchannels", *Anal Chimica Acta*, 531 (2005) 15-23, 2005.

18. JS Lee*, **CL Ren**, D. Li, "Effects of Surface Heterogeneity on Flow Circulation in Electroosmotic Flow in Microchannels", *Anal Chimica Acta*, 530 (2005) 273-282.
17. **CL Ren**, Y Hu, C. Werner, D. Li, "A New Model for the Total Interaction Energy Between Two Surfaces in Aqueous Solutions", *J Adhesion*, 80 (2004) 831-849.
16. **CL Ren**, D Li, "Effects of Spatial Gradients of Electrical Conductivity on Chip-based Injection Processes", *Anal Chimica Acta*, 518 (2004) 59-68.
15. **CL Ren**, D Li, "Electroviscous Effects on Pressure-driven Electrokinetic Flow in Small Microchannels", *J Colloid Interface Sci*, 274 (2004) 319-330.
14. **L Ren***, D Sinton*, D Li, "Numerical Simulation of Microfluidic Injection Processes in Crossing Microchannels", *J Micromech Microeng*, 13 (2003) 739 – 747.
13. **L Ren***, J Masliyah, D Li, "Experimental and Theoretical Study of the Displacing Processes Between Two Electrolyte Solutions in a Microchannel", *J Colloid Interface Sci*, 257 (2003) 85 – 92.
12. D Sinton*, **L Ren***, X Xuan*, D Li, "Liquid Conductivity Differences in Microfluidic Chips: Injection, Pumping and Stacking", *Lab Chip*, 3 (2003) 173 – 179.
11. D Sinton*, **L Ren****, D Li, "A Dynamic Loading Step for Microfluidic Chip Sample Injection," *J Colloid Interface Sci.*, 266 (2003) 448 – 456.
10. D Sinton*, **L Ren***, D Li, "Visualization and Numerical Modeling of Microfluidic On-Chip Injection Processes", *J Colloid Interface Sci*, 260 (2003) 431 – 439.
9. A Sze*, D Erickson*, **L Ren***, D Li, "Zeta-Potential Measurement of Flat Solid Surfaces Using Electroosmotic Flow and the Slope of Current-Time Method" *J Colloid Interface Sci*, 261 (2003) 402 – 410.
8. **L Ren***, D Li, "Theoretical Studies of Microfluidic Dispensing Process", *J Colloid Interface Sci*, 254 (2002) 384 – 395.
7. **L Ren***, C Escobedo*, D Li, "A New Method of Evaluating the Average Electro-Osmotic Velocity in Microchannels", *J Colloid Interface Sci*, 250 (2002) 238-242.
6. D Sinton*, C Escobedo*, **L Ren***, D Li, "Direct and Indirect Electroosmotic Flow Velocity Measurements in microchannels", *J Colloid Interface Sci*, 254 (2002) 184-189.
5. **L Ren***, C Escobedo, D Li, "Electro-osmotic Flow in a Micro-capillary with One Solution Displacing Another Solution", *J. Colloid Interface Sci.*, 242 (2001) 264 – 271.
4. **L Ren***, D Li, "Electro-Osmotic Flow in Heterogeneous Microchannels", *J. Colloid Interface Sci.*, 243 (2001) 255 – 261.
3. **L Ren***, W Qu, D Li, "Interfacial Kinetic Effects on Liquid Flow in Microchannels", *Int. J. Heat Mass Transfer*, 44 (2001) 3125 – 3134.
2. **L Ren***, D Li, W Qu, "Electro-Viscous Effects on Liquid Flow in Microchannels", *J. Colloid Interface Sci.*, 233 (2001) 12 – 22.
1. **L Ren***, B Chen, J Liu, "Study of Heat Transfer Correlation of Two-Phase Closed Thermosyphon", *J. Dalian University of Technology (in English)*, 39 (1999) 532 – 537.

NOTE: Dr. Carolyn L. Ren's name appeared as **L Ren** in her publications prior to 2004.

Conference Publications and Presentations (refereed)

IMECE: ASME International Mechanical Engineering Congress and R&D Expo

μTAS: International Conference on Miniaturized Systems for Chemistry and Life Sciences

33. Z Almutairi*, T Glawdel*, **CL Ren**, D Johnson, "Experimental Studies of Liquid/Liquid Droplets Transport in Curved Microchannels", 64th Annual Meeting of the APS Division of Fluid Dynamics, Nov.20-22, 2011, Baltimore, Maryland, USA.
32. S Shameli*, T Glawdel*, **CL Ren**, "Bilinear Temperature Gradient for Improving the Separation Performance of Temperature Gradient Focusing in Microfluidic Chips", Gordon

- Research Conference on the Physics & Chemistry of Microfluidics, Jun.26 – Jul. 1, 2011, Waterville Valley NH, USA (Poster)
31. T Glowdel*, C Elbuken**, **CL Ren**, "Droplet Sorting at a T-junction under Asymmetric Geometries and Flow Conditions", Gordon Research Conference on the Physics & Chemistry of Microfluidics, Jun.26 – Jul. 1, 2011, Waterville Valley NH, USA (Poster)
 30. C Elbuken**, T Glowdel*, **CL Ren**, D Chan*, "Real Time Capacitive Detection of Microdroplets", IMECE2010, Nov. 12-18, 2010, Vancouver, BC, Canada.
 29. T Glowdel*, C Elbuken*, **CL Ren**, "Modelling of T-junction Generator in the Transitional Regime", IMECE 10, Nov. 12-18, 2010, Vancouver, BC, Canada.
 28. S Shameli*, C Elbuken**, J Ou**, **CL Ren**, J Pawliszyn, "Integration of PDMS/SU-8/Quartz Microfluidic Chip for Proteins", FEDSM2010-ICNMM2010, Aug 1-5, 2010, Montreal, QC, Canada.
 27. Z Almutairi*, **CL Ren**, D Johnson, "Effects of Hydrophobic Recovery of Plasma Treated PDMS on Surface Tension Driven Flow", FEDSM2010-ICNMM2010, Aug 1-5, 2010, Montreal, QC, Canada.
 26. Z Almutairi*, **CL Ren**, L. Simon, "Improving the Electrokinetic Properties of PDMS with Surface Treatments", FEDSM2010-ICNMM2010, Aug. 1-5, 2010, Montreal, QC, Canada
 25. Z Shao*, GE Schneider, **CL Ren**, "Justification of Non-dimensional Schemes and Identification of Parameters on Modeling Electrokinetic Transport Phenomena", ASME 3rd Joint US-European Fluids Engineering Summer Meeting and 8th International Conference on Nanochannels, Microchannels and Minichannels, FEDSM2010-ICNMM2010, Aug. 1-5, 2010, Montreal, QC, Canada
 24. Z Shao*, GE Schneider, **CL Ren**, "Characterization of Injected Sample Plugs in Microchip Capillary Electrophoresis", FEDSM2010-ICNMM2010, Aug. 1-5, 2010, Montreal, QC, Canada
 23. T Glowdel*, C Elbuken**, **CL Ren**, " Modelling of T-junction Generator Operating in the Transitional Regime: Defining the Fitting Parameters ", The 16th U.S. National Congress of Theoretical and Applied Mechanics, Jun. 27 – Jul. 2, 2010, Pennsylvania State University, University Park, PA, USA. *[also presented in 93rd Canadian Chemistry Conference and Exhibition, May29 – Jun. 2, 2010, Toronto, ON, Canada (oral)]*.
 22. T Glowdel*, C Elbuken**, **CL Ren**, LEJ Lee, "Electro-osmotic Pumps With Steady Long-term Performance for Cytotoxicology Studies", μ TAS2009, Nov. 1 – 5, 2009, Jeju, South Korea (Poster) *[also presented in Gordon Research Conference on the Physics & Chemistry of Microfluidics, Jun.28 – Jul. 2, 2009, Lucca, Italy (Poster) and ASME 2nd Micro/Nanoscale Heat and Mass Transfer International Conference, Dec. 18 – 21, 2009, Shanghai, China (oral)]*.
 21. T Glowdel*, **CL Ren**, "Photobleaching Absorbed Rhodamine B to Improve Fluorescent Thermometry in PDMS Microchannels", IMECE08, Nov. 1-6, 2008, Boston, MA, USA.
 20. Z Shao*, **CL Ren**, GE Schneider "Multi-step Dynamic Control for Enhanced Electrokinetic Transport Characteristics in Microchip Capillary Electrophoresis", IMECE08, Nov. 1-6, 2008, Boston, MA, USA.
 19. C Elbuken*, L Gui**, **CL Ren**, M. Yavuz, B. Khamesee, "Design and Characterization of a Polymeric Photo-thermal Microgripper for Micromanipulation", IMECE08, Nov. 1-6, 2008, Boston, MA, USA.
 18. L Gui**, B Y Yu*, **CL Ren**, "Microfluidic Ice Valve with a Two-level Cooling/Heating System", IMECE08, Nov. 1-6, 2008, Boston, MA, USA (presentation only).
 17. **(invited) CL Ren**, "On-chip Thermometry Technology Development for Lab-on-a-Chip Applications", ASME 2nd Integration & Commercialization of Micro & Nanosystems International Conference & Exhibition, Jun. 3 - 5, 2008, Hong Kong.
 16. **CL Ren**, J Taylor, G. D. Stubbley "Evaluation of microfluidic Chips for Cell-sorting Applications", 60th Annual Meeting of the Division of Fluid Dynamics, Nov. 18 - 20, 2007,

- Salt Lake City, Utah, U.S.A (presentation only).
15. T Glowdel*, **CL Ren**, "Exploration of the Feasibility using Electroosmotic Pump in Cell Culture", IMECE07, Nov. 11-15, 2007, Seattle, WA, USA.
 14. R Samy*, T Glowdel*, **CL Ren**, "Whole-Chip Temperature Measurements Using Thin-film PDMS/Rhodamine B For Microfluidic Chip Design", IMECE07, Nov. 11-15, 2007, Seattle, WA. [also presented in ASME 1st Micro/Nano Scale Heat Transfer International Conference, Jan. 6-9, 2008, Tainan, Taiwan]
 13. J Taylor*, **CL Ren**, GD Stubley, "Evaluation of Microfluidic-based Cell-sorting Devices", IMECE07, Nov. 11-15, 2007, Seattle, WA, USA. [\[an honor paper recommended by two independent reviewers\]](#).
 12. Z Almutairi*, T Glowdel*, **CL Ren**, D Johnson, "A Novel Y-Channel Design for Measuring The Zeta Potential using the Current Monitoring Technique", IMECE07, Nov. 11-15, 2007, Seattle, WA, USA.
 11. Z Shao*, GE Schneider, **CL Ren**, "Theoretical Investigation of On-chip Multi-species Transport in Microchannels for Analysis Applications", IMECE07, Nov. 11-15, 2007, Seattle, WA, USA.
 10. Z Shao*, **CL Ren**, GE Schneider, "Theoretical Study on Unsteady Multi-species Transport in Electrokinetic Flows", The 16th Discrete Simulation of Fluid Dynamics: Micro, Nano and Multiphysics for Emerging Technologies Conference, Jul. 23-27, 2007, Banff, AB, Canada.
 9. Z Almutairi*, T Glowdel*, **CL Ren**, D Johnson, "Area-averaged Method for Velocity Measurements in Microchannels", 21st Canadian Congress of Applied Mechanics, Jun. 3-7, 2007, Toronto, ON, Canada.
 8. Z Shao*, **CL Ren**, GE Schneider, "Theoretical Study of Electroosmotic Flow with Replacement Solutions", IMECE05, Nov. 5-11 2005, Orlando, FL, USA.
 7. J Taylor*, **CL Ren**, "Evaluation of Continuum Mechanics for Electroosmotic Flow in Nanosized Structures", 3rd International Conference on Microchannels and Minichannels, Jun. 13-15, 2005, Toronto, ON, Canada.
 6. Z Shao*, **CL Ren**, GE Schneider, "Control of Laminar Flow and Mass Transport in Crossing Linked Microchannels for Micro Fabrication", 3rd International Conference on Microchannels and Minichannels, Jun. 13-15, 2005, Toronto, ON, Canada.
 5. **CL Ren***, D Li, "Sample Manipulation in Microfluidic Devices with Electrical Conductivity Differences", ASME 2nd International Conference on Microchannels and Minichannels, Jun. 17 – 19, 2004, Rochester, NY, USA.
 4. **L Ren***, D Li, "Theoretical Study of On-Chip Microfluidic Dispensing Processes with Spatial Gradients of Electrical Conductivity", IMECE03, Nov. 15 – 21, 2003, Washington DC, USA.
 3. **L Ren***, D Li, " Numerical Studies of Injection Process Control with Spatial Gradients of Electrical Conductivity", ASME Summer Heat Transfer Conference, Jul. 21 – 23, 2003, Rio All Suite Hotel & Casino Las Vegas, Nevada, USA.
 2. **L Ren***, D Li, "Numerical Studies of Microfluidic Transport Phenomena", Third International Conference on Computational Heat and Mass Transfer, May 05-09, 2003, Banff, AB, Canada.
 1. **L Ren***, D Li, "Evaluation of Electro-Osmotic Flow Velocity in Microchannels by Monitoring the Current Change", CSME 2002Forum, May 21-24, 2002, Kingston, ON, Canada.

Book chapters

6. J Ou**, **CL Ren**, "Microchip UV absorption detection applied to isoelectric focussing of proteins", a chapter in Methods in Molecular Biology – Microfluidic Diagnostics, (accepted 2011) Humana Press, Springer publishing group.

5. L Gui**, **CL Ren**, "Thermalmechanical Microvalves", a chapter in Encyclopaedia of Microfluidics and Nanofluidics, Springer-Verlag Heidelberg, Germany, 2047 – 2061, 2008, Ed. D. Li.
4. T Glawdel*, **CL Ren**, "Zeta Potential Measurements", a chapter in Encyclopaedia of Microfluidics and Nanofluidics, Springer-Verlag Heidelberg, Germany, 2199 - 2206, 2008, Ed. D. Li.
3. **CL Ren**, "Electrical Current Monitoring Methods", a chapter in Encyclopaedia of Microfluidics and Nanofluidics, Springer-Verlag Heidelberg, Germany, 435 - 444, 2008, Ed. D. Li.
2. **CL Ren**, "Electrokinetic Dispensing", a chapter in Encyclopaedia of Microfluidics and Nanofluidics, Springer-Verlag Heidelberg, Germany, 482 - 489, 2008, Ed. D. Li.
1. T Glawdel*, **CL Ren**, "Electrokinetic Focusing", a short chapter in Encyclopaedia of Microfluidics and Nanofluidics, Springer-Verlag Heidelberg, Germany, 516 - 516, 2008, Ed. D. Li.

Invited Presentations

31. **CL Ren**, Mechanical Engineering, Massachusetts Institute of Technology, USA, Nov. 2012.
30. **CL Ren**, Chemical Engineering, Queen's University, Sept. 2012.
29. **CL Ren**, Harbin Institute of Technology, China, Aug. 2012.
28. **CL Ren**, University of Bordeaux, France, Dec. 2011.
27. **CL Ren**, Patheon Inc. (Pharmaceutical company), Mississauga, Ontario, Nov. 2011.
26. **CL Ren**, Department of Biochemistry, McMaster University, Hamilton, Ontario, Apr. 2011.
25. **CL Ren**, Canadian Microelectronics Corporation's Workshop on "Microfluidics and Nanofluidics: Technologies, Trends and Reducing Barriers to R&D", Edmonton, Alberta, Apr. 2011.
24. **CL Ren**, Xerox Research Center Canada, Mississauga, Ontario, Jan. 2011.
23. **CL Ren**, Harbin Institute of Technology, China, Sept. 2010.
22. **CL Ren**, Dalian Institute of Chemical Physics, Chinese Academy of Science, China, Sept. 2010.
21. **CL Ren**, Dalian University of Technology, China, Sept. 2010.
20. **CL Ren**, Dalian Maritime University, China, Sept. 2010.
19. **CL Ren**, Institute of Mechanics, Chinese Academy of Science, China, Sept. 2010.
18. **CL Ren**, Technical Institute of Physics and Chemistry, Chinese Academy of Science, China, Sept. 2010.
17. **CL Ren**, The School of Naval Architecture, Ocean and Civil Engineering, School Seminar, Shanghai Jiaotong University, Shanghai, China, Dec. 2009.
16. **CL Ren**, Mechanical Engineering Department Seminar, Tongji University, Shanghai, China, Dec. 2009.
15. **CL Ren**, Chemistry Department Seminar, Nanjing University, Nanjing, China, Dec. 2009.
14. **CL Ren**, Ontario Network of Women in Engineering Bootcamp Workshop, Kingston, Ontario, Canada, Jun. 2009.
13. **CL Ren**, Mechanical Engineering Department Seminar, University of Massachusetts, Lowell, MA, U.S.A., Nov. 2008.
12. **CL Ren**, The Frontiers of Science plenary session of the Fifth Science Center World Congress, Toronto Science Center, Toronto, ON, Canada, Jun. 2008.
11. **CL Ren**, ASME 2nd Integration & Commercialization of Micro & Nanosystems International Conference & Exhibition, Hong Kong, Jun. 2008.
10. **CL Ren**, Ontario Network of Women in Engineering Bootcamp Workshop, Kingston, Ontario, Canada, Apr. 2008.
9. **CL Ren**, Chemistry Department Seminar, University of Toronto, Toronto, Ontario, Oct. 2007.

8. **CL Ren**, Chemical Engineering Department Seminar, University of Alberta, Alberta, Mar. 2007.
7. Xerox Research Center Canada, Technical Series Seminar, Mississauga, Ontario, Canada, Oct. 2005.
6. **CL Ren**, Mechanical Engineering Department Seminar, Purdue University, West Lafayette, IN, U.S.A., Mar. 2005
5. **CL Ren**, Chemistry Department Seminar, University of Toronto, Mississauga Campus, Ontario, Canada, Feb 2005
4. **CL Ren**, Mechanical Engineering Department Seminar, Columbia University, New York, NJ, U.S.A, Sept. 2003.
3. **CL Ren**, Mechanical Engineering Department Seminar, University of Waterloo, Waterloo, ON, Canada, Sept. 2003.
2. **CL Ren**, Mechanical Engineering Department Seminar, University of Victoria, Victoria, BC, Canada, Feb. 2003.
1. **CL Ren**, Mechanical and Industrial Engineering Department Seminar, University of Toronto, Toronto, ON, Canada, Feb. 2003.

Research awards

NSERC-Natural Science Engineering Research Council, CFI – Canada Foundation for Innovation, ORF – Ontario Research Fund, ISTP – International Science Technology Program, ERA – Early Research Award, RTI – Research Tools and Instruments, IPS – Industrial Postgraduate Scholarship.

Principle Investigators	Title of proposal, funding source and program	Total funding (sharing)	Years of tenure
CL Ren (PI)	Droplet-based Microfluidics - Enabling Technology Platform for High-throughput Screening of Material Synthesis, Life Science Research and Food Safety Control, NSERC Discovery	185,000 (100%)	2013-2018
CL Ren (PI)	A Characterization System for Microwave Sensing and Heating over Individual Nanoliter-sized Droplets, NSERC RTI	49,226 (100%)	2013-2018
CL Ren (PI) E MIGNARD-EXTERIEUR (co-PI)	Microwave Sensing and Heating for Chemical Reactions Using Droplet-Based Microfluidics, Aquitaine region Scholarships, France	\$117,000 (€90,000) (50%)	2013-2016
G Grasselli (PI) CL Ren (co-PI)	Physical-chemical response to geomechanical processes during geologic sequestration of scCO ₂ , CMC- NCE	750,000 (9%)	2012-2015
CL Ren (PI)	Novel Microwave Technology for Droplet-based Microfluidics, NSERC CRD	120,000 (100%)	2012 - 2015
CL Ren (PI)	Novel Microwave Technology for Droplet-based Microfluidics, Advanced Electrophoresis Solutions Ltd.	60,000 (100%)	2012 - 2015
CL Ren (PI)	Droplet-based Microfluidic Platforms Integrated with Electrical Detection Methods for High Throughput Screening, National Science Council, Taiwan	13,000 (NT\$400,000) (100%)	2011-2012
CL Ren (PI) HC Chang (co-PI)	Droplet-based Microfluidic Platforms Integrated with Electrical Detection Methods for High Throughput Screening, WIN-Academia Sinica, Taiwan	10,000 (50%)	2012 - 2012
J Soares (PI) CL Ren (co-PI)	Synthesis of Monodisperse Spherical MgCl ₂ Support Particles for TiCl ₄ Catalysts Using Microfluidic Devices, Sud-Chemie, Germany-Canada	50,000 (100%)	2012 - 2013
CL Ren (PI)	Novel Microwave Technology for Droplet-based Microfluidics, MITACS Elevate Award	35,000 (100%)	2011 - 2012
CL Ren (PI)	A Visualization System for Droplet-based Microfluidics, NSERC RTI	113,967 (100%)	2011 - 2013

D Li (PI) CL Ren (co-PI)	Research Infrastructure to Support Microfluidics, Nanofluidics and Lab-on-Chip Technology, Operation for CFI-CRC	108,000 (33.33%)	2010 – 2015
CL Ren (PI)	Development of Droplet-based Microfluidic Systems For Pharmaceutical Applications, Institutional match for CRC	95,000 (100%)	2010-2015
CL Ren (PI)	Microfluidics and Lab-on-a-Chip Technology, CRC	500,000 (100%)	2009-2014
CL Ren (PI)	Development of Droplet-based Microfluidic Technology for Drug Discovery, Drug Delivery and Biomedical Diagnosis Applications, NSERC Discovery	84,000 (100%)	2009 – 2013
D Li (PI) CL Ren (co-PI)	Research Infrastructure to Support Microfluidics, Nanofluidics and Lab-on-Chip Technology, CFI for Canada Research Chairs (CRC)	360,000 (33.33%)	2009 – 2011
D Li (PI) CL Ren (co-PI)	Research Infrastructure to Support Microfluidics, Nanofluidics and Lab-on-Chip Technology, ORF (CFI matching)	360,000 (33.33%)	2009 – 2011
CL Ren (PI)	Development of microfluidic chip-based electrophoresis platform and approaches for rapid and high-resolution disease diagnosis, Canada ISTP/OCE	315,000 (100%)	2008 - 2011
CL Ren (PI)	Development of a Field-portable, Battery-powered, and Microfluidic-based Lab-on-a-Chip Device for Detection of Pathogenic Bacteria, ERA program	190,000 (100%)	2007 - 2010
CL Ren (PI) D Johnson (co-PI)	A Microscale Velocity Measurement System for Lab-on-a-Chip Applications, NSERC RTI	143,967 (50%)	2007 - 2009
J Pawliszyn (PI) CL Ren (co-PI)	Development of novel microfluidic chips and whole column imaging detection technologies for point-of-care diagnostics, NSERC Strategic	382,700 (50%)	2007 - 2010
Carolyn Ren (PI)	Fluid, Heat and Mass Transfer Phenomena in Micro Bioreactors, NSERC Discovery	166,850 (100%)	2004 – 2009
CL Ren (PI)	Development of Microfluidic Mixers for Organic Materials: Nanopigment Quantification, XEROX Research Center, Canada (XRCC)	24,000 (100%)	2006 – 2008
CL Ren (PI)	Development of Microfluidic Mixers for Organic Materials: Nanopigment Quantification, NSERC IPS Match for the XRCC's funding	50,000 (100%)	2006 – 2008
CL Ren (PI)	Development of Microfluidic Chips, Dean's award for student support	29,999 (100%)	2006 – 2008
C Devaud (PI) CL Ren (co-PI)	A Facility to Develop Novel Micro Devices and Analysis Tools for Biomedical, Environmental and Safety Applications, CFI-Operation	58,030 (75%)	2006 – 2010
C Devaud (PI) CL Ren (co-PI)	A Facility to Develop Novel Micro Devices and Analysis Tools for Biomedical, Environmental and Safety Applications, CFI	193,434 (75%)	2005 – 2006
C Devaud (PI) CL Ren (co-PI)	A Facility to Develop Novel Micro Devices and Analysis Tools for Biomedical, Environmental and Safety Applications, ORF (CFI matching)	193,434 (75%)	2005 – 2006
CL Ren (PI)	An Analysis System for Flow Cytometry in Lab-on-a-Chip Devices, NSERC RTI	52,278 (100%)	2005 – 2006
CL Ren (PI)	Visualization of Microfluidic Chips NSERC RTI	60,036 (100%)	2004 – 2005
CL Ren (PI)	Visualization of Microfluidic Chips UW matching for RTI of 2004	66,70 (100%)	2004 – 2005
CL Ren (PI)	Development of Real-time PCR Chip for DNA Amplification, UW Start-up	45,000 (100%)	2004 – 2005

1. TEACHING ACTIVITIES

Undergraduate

Time	Course	Title	Number of Students	Critique Q 10	Critique Avg. Q 1-9	% Response
S2013	ME203	Ordinary Differential Equations				
S2013	SD383	Fluid Mechanics I				
S2012	ME203	Ordinary Differential Equations	98	83	83	67.3
S2012	ME351	Fluid Mechanics I, Section I	78	57	64	70.5
W2012	MTE202	Ordinary Differential Equations	130	79	80	61.4
S2011	SD282	Fluid Mechanics I	64	60	73	84.3
S2010	ME351	Fluid Mechanics I, Section I	81	56	63	69.3
W2010	ME351	Fluid Mechanics I, Section II	84	84	84	54.7
S2009	ME203	Ordinary Differential Equations	85	81	81	76.7
W2009	MTE202	Ordinary Differential Equations	93	93	91	72.0
S2008	ME203	Ordinary Differential Equations	88	88	85	75.0
W2008	MTE202	Ordinary Differential Equations	94	79	82	62.8
S2007	ME203	Ordinary Differential Equations	95	69	75	72.6
S2007	ME303	Advanced Engineering Math	63	47	63	85.7
W2007	MTE202	Ordinary Differential Equations	110	89	87	77.3
S2005	ME303	Advanced Engineering Math	82	35	50	69.5

Graduate

Time	Course	Title	Number of Students	Critique Q 10	Critique Avg. Q 1-9	% Response
S2009	ME770	Microfluidics	6	--	--	--
S2008	ME770	Microfluidics	1	--	--	--
F2005	ME770	Microfluidics	8	--	--	--
F2004	ME770	Microfluidics	6	--	--	--

Thesis supervision

Name(Co-Supervisor)	Degree (MAsc/PhD)	Supervisory Period	Research Title and Comments
Pegah Pezeshkpour (G Schneider)	Doctoral	5/2013-	Numerical Modelling of Microfluidic Transport Phenomena for Electrophoresis Separation
Gürkan Yeşilöz	Doctoral	1/2013 -	Development of Microwave Sensor/heater for Droplet-based Microfluidics
Alex Brukson	Master's	9/2012-	Development of Droplet-based Microfluidic Platform for Protein Analysis
Chao Jin	Doctoral	4/2012 -	Fundamental Understanding of Granular Media Filtration Mechanisms and Technologies
Ning Qing	Doctoral	9/2012-	Development of Droplet-based Microfluidic Platform for Protein Analysis
Cheng-Che Chung (H-C Chang)	Doctoral	9/2008-9/2012	Development of Droplet-based Microfluidic Platform for Particle/Cell Manipulation using DEP

Xiaoming Chen	Doctoral	5/2011-	Development of Droplet-based Microfluidic Platform for Cell Analysis
Seyed Shameli	Doctoral	1/2009-	Development of Microfluidic Chip for Multidimensional Protein Separation
Zeyad Almutairi (D Johnson)	Doctoral	9/2008-	Development of Micro-PIV Imaging System for Biofluid Detection
Atefeh Shadpour	Doctoral	1/2009-8/2009 (Withdrawal)	Development of Portable Microfluidic Chip for Chemical Detection
Zhanjie Shao (G Schneider)	Doctoral	9/2008-1/2012 (Withdrawal)	Numerical Modelling of Microfluidic Transport Phenomena for Electrophoresis Separation
Tomasz Glowdel	Doctoral	1/2008-6/2012	Development of Droplet-based Microfluidic Platform for Cell Analysis
Bo Yang Yu (J Huissoon)	Master's	5/2009-8/2010	Development of Microfluidic Chips for Cell Manipulation
Jay Kendall Taylor	Master's	9/2004-12/2006	The Design and Evaluation of a Microfluidic Cell Sorting Chip
Razim Farid Samy	Master's	9/2005-12/2007	Soft Lithography for Applications in Microfluidic Thermometry, Isoelectric Focusing
Tomasz Glowdel	Master's	9/2005-12/2007	Design, Fabrication, and Characterization of Electrokinetically Pumped Microfluidic Chips for Cell Culture Applications
Zeyad Almutairi (D. Johnson)	Master's	1/2006-4/2008	Electroosmotic Flow Characterization and Enhancement in PDMS Microchannels
Shuwen Wang	Master's	9/2006-8/2008	Evaluation of Miniaturizing Mixer and Integrated Optical Components for Cell Sorting
Zhanjie Shao (G. Schneider)	Master's	9/2004-8/2008	Numerical Modelling of Microfluidic Transport Phenomena for Electrophoresis Separation

Other supervisions

Postdoctoral fellows and research associates

Name (Co-Supervisor)	Status	Supervisory Period	Research Title and Comments
Tomasz Glowdel	Postdoctoral	07/2012-02/2013	Manufacturing of MgCl ₂ Catalyst Support Carriers Using Droplet Microfluidics
Said Boybay	Postdoctoral	09/2010-06/2012	Development Imaging Systems for Protein Analysis in Microfluidic Chips
Hulie Zeng	Postdoctoral	11/2009-11/2010-	Development of Miniaturized Optical Detection System
Caglar Elbuken	Postdoctoral	9/2008-8/2010	Development of Droplet-based Microfluidic Platform for Cell Analysis
Lin Gui	Postdoctoral	7/2005-8/2010	Development of Microfluidic PCR Chip for DNA Amplification
Razim Samy	Technician	1/2009-8/2009	Developing Portable Zeta Potential Measurement Instruments

Tiemin Huang	Postdoctoral	6/2008-4/2010	Development Imaging Systems for Protein Analysis in Microfluidic Chips
Yandong Hu	Postdoctoral	10/2007-9/2009	Development of Microfluidic Chips for DNA Amplification
Junjie Ou (J. Pawliszyn)	Postdoctoral	5/2007-4/2009	Development of Microfluidic Chips for Protein Analysis Using Isoelectric Focusing
Henry Zhu	Research Associate	8/2008 – 9/2008	Microfluidic Cell Sorting for Water Testing
Shuwen Wang	Research Associate	9/2008 – 10/2008	Integration of PMT with Microfluidic Chips
Jay Taylor	Research Associate	1/2007 – 3/2007	Matlab Program Development for Cell Sorting
Lin Gui	Postdoctoral	7/2005-present	Development of Microfluidic PCR Chip for DNA Amplification

Undergraduate research assistants (URA)

Name	Status	Supervisory Period	Research Title and Comments
Naiwen Cui	URA	1/2013–4/2013	Droplet-based Microfluidics
Naiwen Cui	Co-op student	9/2012–1/2013	Droplet-based Microfluidics
Woohyuk Lee	4-th year project	9/2011-4/2012	Team project: Droplet Microfluidic Platform for Biological Analysis
Mike Winer			
Po Wei Huang			
Samuel Legge			
Austin Jiao	Co-op student	9/2011–4/2012	Droplet-based Microfluidics
Michael Winer	Co-op student	5/2011–8/2011	Droplet-based Microfluidics
Austin Jiao	URA	5/2011 – 8/2011	Droplet-based Microfluidics
Danny Chan	URA	1/2011–4/2011	Impedance Capacitor Design
Danny Chan	Co-op student	9/2010–12/2010	Impedance Capacitor Design
Andrew Tai-Pow	Co-op student	9/2010–12/2010	Temperature Measurement
Andrew Carnovale	Co-op student	5/2010 – 8/2010	Damper for Microfluidic Valves
Chong Shen	URA	5/2010 – 8/2010	Damper for Microfluidic Valves
Danny Chan	URA	5/2010 – 8/2010	Impedance Capacitor Design
Chong Shen	Co-op student	1/2010 – 4/2010	Micromixing using Microfluidic Chips
Danny Chan	Co-op student	1/2010 – 4/2010	Impedance Capacitor Design
Teddy Mamo	4-th year project	9/2009-4/2010	Team project: Droplet Microfluidic Platform for Biological Analysis
Jasper Huang			
Thomas Lever			
Sarvesh Varma			
Ali Kazerani	Co-op student	9/2009–12/2009	Impedance Capacitor Design
Woohyuk Lee	URA	5/2009-8/2009	Development of Sputtering Techniques
Ya-Chun Jan	URA	5/2009-8/2009	Flow Element Design for Cell Sorting
Timothy Kwan	URA	5/2009-8/2009	3D Focusing Design for Cell Sorting
Woohyuk Lee	Co-op student	1/2009-4/2009	Development of Sputtering Techniques
Bo Yang Yu	URA	1/2009-4/2009	Modelling of Microfluidic Chip for DNA Amplification
Woohyuk Lee	URA	9/2008-12/2008	Developing Bonding Techniques
Rafay Shams	URA	9/2008-12/2008	Developing Bonding Techniques

Bo Yang Yu	URA	9/2008-12/2008	Modelling of Microfluidic Chip for DNA Amplification
Bo Yang Yu	Co-op student	5/2008-8/2008	Ice Valve for Flow Control in Microfluidic Chips
Bo Yang Yu	Co-op student	9/2007-12/2007	Modelling of Microfluidic Chip for DNA Amplification
James Montgomery	4-th year project	5/2007-8/2007	Design of Portable Power Source for Cell Sorter
Claudio Canizares	4-th year project	5/2007-8/2007	Team project: Development of Microfluidic Chip for Protein Separation
Richard Hui			
Jason Taylor			
Barsam Tabrizi	4-th year project	1/2007-4/2007	Development of Pressure Driven Pumping System for Microfluidic Chip Applications
Nicholas Aitken	URA	9/2006-12/2006	Characterization of UV Exposure and Spincoating System for Microfabrication
Raymond Chiu	URA	9/2006-12/2006	Development of Flow Sensors
Brian Kates	Co-op student	5/2005 – 8/2005	Modeling of Heat Transfer in PCR Chips
Alain Rousson	URA	5/2005 – 8/2005	Modify Electrical Power System
Jeremy Daniels	4-th year project	9/2004-12/2004	Modify Electrical Power System

Visiting scholars

Name (Co-Supervisor)	Status	Supervisory Period	Research Title and Comments
Zhen Liu (J Pawliszyn)	Visiting Scholar	7/2007-8/2007	Development of Microfluidic Chips for Protein Analysis Using Isoelectric Focusing

II. SERVICE

Editorial Services

1. May 2012-, Editorial board member of the Scientific World Journal, Mechanical Engineering Subject.
2. January 2012 – May 2013, Editorial board member and section editor of the 2nd edition of the Encyclopedia of Microfluidics and Nanofluidics.

Committee member of thesis examination at Waterloo

1. Jan. 2013, Committee member for PhD oral defence, Candidate: Yasaman Daghighi, Mechanical and Mechatronics Engineering. Reading thesis, attending oral presentation, discussing with the candidate about corrections and approving the corrected thesis
2. Apr. 2012, Committee member for PhD oral defence, Candidate: Mohamed Aly Saad Aly, Systems Design Engineering.
3. Dec. 2011, Committee member for Master's thesis, Andrew Buckrell, Mechanical and Mechatronics Engineering. Service: Reading thesis, attending oral presentation, discussing with the candidate about corrections and approving the corrected thesis.
4. Jul. 2011, PhD Comprehensive Exam Member, Candidate: Jin Chao, Service: Reading thesis, attending oral presentation, discussing with the candidate about corrections and approving the corrected thesis.

5. Dec. 2010, PhD Comprehensive Exam Member, Candidate: Yasama Daghighi, Service: Reading thesis, attending oral presentation, discussing with the candidate about corrections and approving the corrected thesis.
6. Apr. 2010, Committee member for PhD comprehensive exam, Candidate: Amir Ahmadzadegan, Mechanical and Mechatronics Engineering.
7. Nov. 2009, Committee member for PhD oral defence, Candidate: Hao Wu, Mechanical and Mechatronics Engineering.
8. May 2009, Committee member for PhD comprehensive exam, Homeyra Pourmohammadali, Mechanical and Mechatronics Engineering.
9. Apr. 2008, Committee member for Master's thesis, Michael McWilliam, Mechanical and Mechatronics Engineering.
10. Mar. 2008, Committee Member for PhD oral defence, Hussain, Mohammed Mujtaba, Mechanical and Mechatronics Engineering.
11. Dec. 2006, Committee member for PhD comprehensive exam, Hao Wu, Mechanical and Mechatronics Engineering.
12. Jul. 2006, Committee member for Master's thesis, Funmilayo Oyediran, Chemistry.
13. Dec. 2005, Committee member for Master's thesis, Hui (Lucy) Liu, Mechanical and Mechatronics Engineering.
14. Mar. 2005, Committee Member for PhD comprehensive exam, Mohammed Mujtaba Hussain, Mechanical and Mechatronics Engineering.
15. Nov. 2004, Committee member for Master's thesis, Jonathan T. Jilesen, Mechanical and Mechatronics Engineering.

Chair of thesis examination at Waterloo

1. Apr. 2013, Chair of PhD comprehensive, Subodha Hettiachchi Gunawardena, Electrical and Computer Engineering.
2. Sept. 2012, Chair of PhD comprehensive, Miao Wang, Electrical and Computer Engineering.
3. Feb. 2012, Chair of PhD thesis exam, Ahmed Gad, Electrical and Computer Engineering.
4. Aug. 2010, Chair of PhD thesis exam, Laura Jane Ingram, Chemistry, Faculty of Science.
5. Apr. 2010, Chair of PhD comprehensive exam, Joydeep Banerjee, System Design Engineering.
6. Oct. 2009, Chair PhD oral defence, Candidate: Mustaq Ahmed, School of Computer Science.
7. Jul. 2009, Chair of PhD comprehensive exam, Bahram Zargar, Chemical Engineering.
8. Apr. 2008, Chair of PhD comprehensive exam, Lin Zhang, Chemical Engineering.
9. Apr. 2007, Chair of Ph.D. comprehensive exam, Youngsam Kim, Civil Engineering.

Services Committee members at Waterloo

1. May 2012 - present, Member of Appointment Committee, Department of Mechanical and Mechatronics Engineering, University of Waterloo
2. 2011- present, Contact for the MOU between Waterloo and Huazhong University of Science and Technology
3. Jan. 2010 – Dec. 2013, Member of Engineering Council.
4. Jan. 2010 – Dec. 2013, Graduate Studies Committee for Engineering Faculty.
5. Sept. 2010 - Jan. 2012, Member of Steering Committee for Bio Center, University of Waterloo.

6. Jan. 2010 – Dec. 2012, Representative to Science Faculty Council as a Member of Engineering Council.
7. Jan. 2007 – Dec. 2009, Member of nomination committee for the Faculty of Engineering: review nomination package, discuss the nomination package with other members and vote for the final decision.
8. Jan. 2008 – present, Committee member for graduate studies at the departmental level: evaluating scholarship application files and discussing new graduate programs.
9. Sept. 2006 – Dec. 2006, Committee member of the departmental website design: evaluating the existing website, researching some high-clicking-rate websites, planning for the new website, calling for web logo designs from undergraduate students, reviewing the submitted designs and determining the final one together with other committee members.
10. Jan. 2005 – Aug. 2005, Member of Planning of Exercise for Grad Studies.
11. Jan. 2005 – Aug. 2005, Member of Planning of Exercise for Faculty Related Issues.
12. Jan. 2005 – Aug. 2005, Member of subcommittee (Undergraduate Studies) for Mechatronics Program Committee.
13. Jan. 2005 – Aug. 2005, Member of subcommittee (Institute & Collaboration) for Mechatronics Program Committee.
14. Jan. 2005 – Feb. 2006, Member of Engineering Council.

External thesis examiner

1. Apr. 2013, External examiner for PhD thesis, Candidate: Yanfeng Fan, Department of Mechanical and Industrial Engineering, Concordia University, Montreal.
2. Mar. 2013, External examiner for PhD thesis, Candidate: Xin Guo, Department of Mechanical Engineering, Queen's University, Kingston.
3. Dec. 2011, External examiner for PhD thesis, Candidate: Zhengwei Ge, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore.
4. Sept. 2011, External examiner for PhD thesis, Candidate: Jian Chen, Department of Mechanical and Industrial Engineering, University of Toronto.
5. Jun. 2010, External examiner for PhD thesis, Candidate: Michael Schertzer, Department of Mechanical and Industrial Engineering, University of Toronto.

Extra activities

1. University Affairs at Toronto (Oct. 2011)
2. Help "Go EngGirl" – organize labs tour and testing in my lab, March 2011
3. Campus Day Tour (2005, 2007 – 2012)
Help the event for one hour. Duties include arrange tours for the visitors and introduce Mechanical and Mechatronics programs to the visitors. I also contributed research presentations (one to three slides normally) which are normally played during that day.
4. Graduate education fair, 2007, 2010
5. Organize appreciation gifts for Mechanical Engineering staff, 2004, 2005.
Help collect contributions from faculty members and then purchase gift cards from different places.
6. Help nominate faculty members for awards by preparing reference letters for them.

III. PROFESSIONAL ACTIVITIES

Society memberships and positions held

1. Member of APS
2. Member of ASME
3. Member of CSME

Conference organization

1. Jun. 2013, Track Co-Chair of ASME 2013 11th International Conference on Nanochannels, Microchannels and Minichannels (ICNMM13), Sapporo, Japan.
2. Jul. 2012, Track Chair of ASME 2012 10th International Conference on Nanochannels, Microchannels and Minichannels (ICNMM12), Puerto Rico, USA.
3. Mar. 2012, Track Co-chair of ASME 3rd Micro/Nanoscale Heat and Mass Transfer International Conference (MNHMT12), Georgia, Atlanta, USA.
4. Dec. 2010, Scientific committee and Track Co-chair of 2nd European Conference on Microfluidics, Toulouse, France.
5. Dec. 2009, Track Co-chair of ASME 2nd Micro/Nanoscale Heat and Mass Transfer International Conference (MNHMT09), Shanghai, China.
6. Dec. 2008, Scientific committee and session chair of 1st European Conference on Microfluidics, in Bologna, Italy.
7. Nov. 2008, Session chair of ASME International Mechanical Engineering Congress and Exposition (IMECE), Boston, MA, USA.
8. Jun. 2008, Session chair of ASME 2nd Integration and Commercialization of Micro & Nanosystems International Conference and Exhibition, Kowloon, Hongkong.
9. Jan. 2008, Session chair of ASME 1st Micro/Nanoscale Heat Transfer International Conference (MNHT08), Tainan, Taiwan.
10. Nov. 2007, Session chair of ASME International Mechanical Engineering Congress and Exposition (IMECE), Seattle, WA, USA.
11. Jun. 2006, Session chair of 4th International conference on Micro-/Mini- Channels, Limerick, Ireland.
12. Jun. 2005, Session chair of 3rd International conference on Micro-/Mini- Channels, Toronto, ON, Canada.
13. Nov. 2004, Committee member of the Microfluidics Division for IMECE, Anaheim, CA, USA.
14. 2004, Awards committee member of the Microfluidics division for IMECE, Anaheim, CA, USA.
15. Nov 2003, Committee member of the Microfluidics Division for IMECE, Washington DC, USA.

Referring and reviewing for journals (name, frequency)

1. Lab on a Chip, monthly
2. Microfluidics and Nanofluidics, bi-monthly
3. Analytical Chemistry, quarterly
4. Electrophoresis, quarterly
5. Journal of Biophysics
6. Journal of Microengineering and Micromechanics, quarterly
7. Sensors Actuators A and B, monthly
8. ASME fluid engineering, quarterly
9. Analyst, quarterly
10. Journal of Fluids Engineering, quarterly
11. Journal of Thermophysics and Heat Transfer, semi-annually
12. Langmuir, semi-annually
13. Journal of MEMS, semi-annually

