Wei Li

Current Position (Jan. 2014-present)

Assistant Professor
Department of Chemical Engineering
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EDUCATION

NSERC Postdoctoral Research Fellow 2010- 2013
Department of Chemical Engineering, MIT
Advisor: Prof. Paula T. Hammond

Doctor of Philosophy 2005–2010
Department of Chemistry, University of Toronto, Canada
Advisor: Prof. Eugenia Kumacheva

Master of Applied Science 2003-2005
Department of Chemical Engineering, University of Toronto, Canada
Advisor: Prof. Yu-Ling Cheng

Master of Science 1999-2002
Department of Chemistry, Polymer Chemistry & Physics, Wuhan University, China
Advisor: Prof. Ren-Xi Zhuo

Bachelor of Science 1995-1999
Department of Chemistry, Wuhan University, China, 1999

AWARDS

- NSERC Postdoctoral Fellowship (2010)
- Chinese Government Award for Outstanding Students Abroad (2009)
- Ontario Graduate Scholarships in Science and Technology (2008)
- Edwin Walter Warren Graduate Student Awards (2007, 2008)
- Xerox Research Centre of Canada Graduate Award (2007)
- Ontario Centers of Excellence Professional Outreach Award (2007)
- Graduate Travel Award, University of Toronto (2009)
- Open Fellowship, University of Toronto (2003-2007)
- Outstanding Graduate Student, Wuhan University, (2000-2002)

PUBLICATIONS

Researcher ID: P-3546-2016, h-index 15 with citation of 1780 by March 2017
[Google Scholar link: https://scholar.google.com/citations?user=E3XTpssAAAAJ&hl=en**]**
*** corresponding author, ‡ undergraduate student.**

Publications in Refereed Journals

26. Z. Dong, C. C. Ahrens, D. Yu, Z. Ding, H.T. Lim, W. Li.* Cell isolation and recovery in resource-limited settings using hollow glass microspheres coated with nanolayered films. (submitted).

25. C. C. Ahrens, Z. Dong, W. Li.* Engineering cell aggregates through incorporated polymeric microparticles. (submitted).

24. D. K. Singh, C. C. Ahrens, W. Li, S. A. Vanapalli.* Label–free, high-throughput holographic enumeration of tomor cells in blood. (submitted).

23. M-H. Park, E. Reategui, W. Li, S. N. Tessier, K. H. K. Wong, A. Jensen, V. Thapar, D. Ting, M. Toner, S. L. Stott, P. T. Hammond. Enhanced Isolation and Release of Circulating Tumor Cells Using Nanoparticle Binding and Ligand Exchange in a Microfluidic Chip. **Journal of the American Chemical Society** 2017, ASAP. 10.1021/jacs.6b12236.

22. D. K. Singh, C. C. Ahrens, W. Li, S. A. Vanapalli. Label-free fingerprinting of tumor cells in bulk flow using inline digital holographic microscopy. **Biomedical Optics Express** 2017, *8*, 536-554.

21. Z. Dong, L. Tang, C. C. Ahrens, V. Cao,‡ Z. Ding, S. A. Castleberry, J. T. Yan,* W. Li.* A benchtop capillary flow layer-by-layer (CF-LbL) platform for rapid assembly and screening of biodegradable nanolayered films. **Lap on a Chip** 2016, *23*, 4601-4611.

20. N. Zhang, Z. Dong, D. Ji, H. Song, X. Zeng, Z. Liu, S. Jiang, A. Bernussi, W. Li,* Q. Q. Gan.* Tunable coupled and decoupled super absorbing structures. **Applied Physics Letters** 2016, 108, 091105-091108.

19. Z. Wang, D. Voicu, L. Tang, W. Li,* E. Kumacheva.* Microfluidic Studies of Polymer Absorption in Flow. **Lab on a Chip** 2015, 15, 2110-2116.

18. W. Li, E. Reategui, M-H. Park, S. A. Castleberry, J. Z. Deng, B. Hsu, S. Mayner, A. Jensen, L. V. Sequist, S. Maheswaran, D. A. Haber, M. Toner, S. L. Stott, P. T. Hammond. Biodegradable Nano-Films for Capture and Non-invasive Release of Circulating Tumor Cells. **Biomaterials** 2015, 65, 93-102.

17. S. A. Castleberry, B. D. Almquist, W. Li, T. Reis, J. Chow, S. Mayner, P. T. Hammond. Self-Assembled Wound Dressings Silence MMP-9 and Improve Diabetic Wound Healing In Vivo. **Advanced Materials** 2016, 28, 1809-1817.

16. E. Reátegui, N. Aceto, E. J. Lim, J. P. Sullivan, A. E. Jensen, M. Zeinali, J. M. Martel, W. Li, S. A. Castleberry, A. Bardia, L. V. Sequist, D. A. Haber, S. Maheswaran, P. T. Hammond, M. Toner, S. L. Stott. Tunable Nanostructured Coating for the Capture and Selective Release of Viable Circulating Tumor Cells. **Advanced Materials** 2015, 27, 1593-1599.

15. S. A. Castleberry, W. Li, D. Deng, S. Mayner, P. T. Hammond. Capillary Flow Layer-by-Layer: A Microfluidic Platform for the High Throughput Assembly and Screening of Nanolayered Film Libraries. **ACS Nano** 2014, 8,6580-6589.

14. W. Li, S. Lee, M. Ma, S. M. Kim, P. Guye, J. R. Pancoast, D. G. Anderson, R. Weiss, R. T. Lee, P. T. Hammond. Microbead-based Biomimetic Synthetic Neighbors Enhance Survival and Function of Rat Pancreatic β-cells. **Scientific Reports** 2013, 3, 2863.

13. W. Li, K. Liu, R. Simms, J. Greener, S. Pinto, A. Guenther, and E. Kumacheva. A Microfluidic Study of fast gas-liquid reactions. **Journal of the American Chemical Society** 2012, 134, 3127-3132.

12. D. Voicu, C. Scholl, W. Li, D. Jagadeesan, I. Nazimova, J. Greener, E. Kumacheva. Kinetics of Multicomponent Polymerization Reaction Studied in a Microfluidic Format. **Macromolecules** 2012, 45, 4469-4475.

11. K. Liu, Z. Nie, N. Zhao, W. Li, M. Rubinstein, E. Kumacheva. Step-Growth Polymerization of Inorganic Nanoparticles. **Science** 2010, 329, 197-200.

10. J. Greener, W. Li, J. Ren, V. Pakharenko, D. Voicu, T. Tang, E. Kumacheva. Rapid, Cost-efficient Fabrication of Microfluidic Reactors in Thermoplastic Polymers by Combining Photo-lithography and Hot Embossing. **Lab on a Chip** 2010, 10, 522-524. (Top 10 accessed article in LOC in Feb 2010).

09. W. Li, J. Greener, D. Voicu, E. Kumacheva. Multiple Modular Microfluidic (M^3) Reactors for the Synthesis of Polymer Particles. **Lab on a Chip** 2009, 9, 2715-2722. (Front cover).

08. W. Li, H. H. Pham, Z. Nie, B. MacDonald, A. Güenther, E. Kumacheva. Multi-Step Microfluidic Polymerization Reactions Conducted in Droplets**. Journal of the American Chemical Society** 2008, 130, 9935-9941.

07. W. Li, E. Young, P. Garstecki, C. A. Simmons, E. Kumacheva. Simultaneous Microfluidic Generation of Droplets with Different Dimensions. **Soft Matter** 2008, 4, 258-262.

06. Z. Nie, J. L. Park, W. Li, S. Bon, and E. Kumacheva. An "Inside-Out" Microfluidic Approach to Monodisperse Emulsions Stabilized by Solid Particles. **Journal of the American Chemical Society** 2008, 130, 16508–16509.

05. W. Li, Z. Nie, H. Zhang, E. Kumacheva. Screening of the Effect of Surface Energy of Microchannels on Microfluidic Emulsification. **Langmuir** 2007, 23, 8010-8014.

04. Z. Nie, W. Li, M. Seo, SQ Xu, E Kumacheva. Janus and Ternary Particles Generated by Microfluidic Synthesis: Design, Synthesis and Self-Assembly. **Journal of the American Chemical Society** 2006, 128, 9408-9412.

03. Y. Liu, J. Ling, W. Li, X. Zhang. Effective Synthesis of Carbon-coated Co and Ni Nanocrystallites with Improved Magnetic Properties by AC Arc Discharge under an N_2 Atmosphere, **Nanotechnology** 2003, 15, 43-47.

02. GP. Yan, RX. Zhuo, CY. Zheng, W. Cao, W. Li, L. Li, ML. Liu, YX. Zhang. Synthesis and Preliminary Evaluation of Gadolinium Complexes Containing Sulfonamide Groups as Potential MRI Contrast Agents. **Radiography** 2003, 9, 35-41.

01. RX. Zhuo, W Li. Preparation and Characterization of Macroporous PNIPAAm Hydrogels for Controlled Release of Proteins. **Journal of Polymer Science Part A: Polymer Chemistry** 2002, 41, 152-159.

Invited Book Chapters

01. C. C. Ahrens, Z. Dong, W. Li.* Microfluidic Devices for Isolation of Circulating Tumor Cells (CTCs), Microfluidics. Fundamental Devices and Applications (in press, John Wiley& Sons. 2017).

Patents

04. W. Li, S. A. Castleberry, P. T. Hammond. Biodegradable LbL films for cell capture and release. (in process, MIT Technology disclosure No. 15894)

03. W. Li, S. A. Castleberry, P. T. Hammond. Capillary flow layer-by-layer assembly of polyelectrolytes. (MIT Technology disclosure No. 15867, provisional 61/719,068, filed in Oct. 2012)

02. W. Li, S. A. Castleberry, P. T. Hammond. Automated Capillary flow layer-by-layer systems (MIT Technology disclosure No. 15541, provisional 61/719,093, filed in Oct. 2012)

01. W. Li, J. Greener, E. Kumacheva, Photo-resist stamp for hot embossing. (Invention Disclosure No. 10001883, US patent filed on Feb. 3rd, 2010)

PRESENTATIONS

Invited Presentations

03. University of Maryland, College Park, Department of Chemical Engineering, Biodegradable nano-films for cancer applications, in April 2017.

02. TTUHSC, School of Pharmacy, Biodegradable nano-films for capture and non-invasive release of circulating tumor cells, Feb. 17, 2016.

01. State University of New York (SUNY) at Buffalo, Surface Engineering of Polymer Materials and Microdevices for Biological Applications, Nov. 14, 2014.

Conference Presentations

09. Z. Dong, L. Tang, W. Li, High-Throughput Layer-By-Layer (LbL) Platform for Assembly and Screening of Multi-Layered Nanofilm Libraries. AIChE 2015, Salt Lake City.

08. W. Li, S. A. Castleberry, P. T. Hammond. Automated Capillary flow layer-by-layer assembly of polyelectrolytes. AIChE 2012 Annual, Pittsburgh.

07. W. Li, S. Lee, S. M. Kim, R. T. Lee, P. T. Hammond. Microbeads-based ex vivo 3D microenvironment enhances survival and function of pancreatic β-cell stability. BMES 2012, Atlanta.

06. W. Li, S. Lee, S. M. Kim, R. T. Lee, P. Hammond. Engineering in vivo like 3D microenvironment for studying pancreatic β cell stability and communication. MRS 2011 Fall, Boston.

05. W. Li, J. Greener, D. Voicu, E. Kumacheva. Modular multiple microfluidic (M^3) reactors for the synthesis of polymer particles. AIChE 2009 Spring, Tampa.

04. J. Greener, W. Li, E. Kumacheva. New materials and techniques for producing robust, high-fidelity, high-throughput microfluidic droplet generators. AIChE 2009 Spring, Tampa.

03. W. Li, Z. Nie, P. Garstecki, E. Kumacheva. Parallel Multiple Droplet Generators. AIChE 2007 Spring, Houston.

02. E. Kumacheva, W. Li, H. Pham, S. Dubinski. Consecutive Polymerization Reactions Conducted in Continuous Microfluidic Reactors. AIChE 2007 Spring, Houston.

01. R-X. Zhuo, W. Li. Preparation and characterization of macroporous PNIPAAm hydrogels by using PEG as pore-forming agent. IUPAC World Polymer Congress 2002, Beijing.

TEACHING EXPERIENCE

Courses Taught

- ChE3330 Engineering Materials Science, TTU, 2015, 2016, 2017
- ChE4363/5363 Biochemical Engineering, TTU, 2014, 2015, 2016
- ChE4341/5341 Polymerization Engineering, TTU, 2014

Mentorship

- **Current Lab Members (9)**

  Ziye Dong, Ph.D. Student, 2015-

  Zhenya Ding Ph.D. Student, 2016-

  Jimmy Cho, M. S. Student, 2015-

  Sharanya Ramakrishna, M. S. Student, 2016

  HyunTaek Lim, M. S. Student, 2016-

  Caroline C. Ahrens, Postdoc Researcher, 2015-

  Qingye Liu, Postdoc Researcher, 2016-

  Dan Yu, Visiting Scholar, 2016-

  Yuting Chen, Visiting Scholar, 2016-

- **Students Graduated**

  Nadia Sultana, M. S. May 2015, Thesis: A Study of Adipocyte Differentiation of 3T3-L1 Cells in LbL nanofilm Coated 3D Microbead-Based Microenvironment.

  Samira Abedi, M.S. March 2015, Non-Thesis.

- **Undergraduates Supervised**

  Vi Cao, 2015-2016 (co-author of 1 published paper)

  Jacqueline Berry, 2015-2016

  Shawn Macha, 2015-2016

  Neftaly Zapata**,** 2014-2015

  Kabindra Sedhain**,** 2014-2015

- **Postdocs and Visiting Scholars**

  Anil Khanal**,** Postdoc, 2016

  Ling Tang**,** Visiting Scholar, 2014-2016

  Xue Zhang**,** Visiting Scholar, 2014-2015

- **Graduate Committee**

Shashwati U. Atwe (ChE, TTU, PhD Thesis Defense, 02-17-2017)

Uddin, Md Jasim (ChE, TTU, PhD Qualify Exam, 10-27-2016)

Hasan Ahasanul (School of Pharmacy, TTUHSC, Ph.D. PhD Qualify Exam, 09-14-2016)

Shashwati U. Atwe (ChE, TTU, PhD Qualify Exam, 11-06-2015)

Wenqian Tao (ChE, TTU, PhD Thesis Defense, 06-18-2015)

Wenqian Tao (ChE, TTU, PhD Qualify Exam, 09-11-2014)

SERVICE ACTIVITIES

- **Professional Organizations**

  Session co-Chair (Biomimetic Materials) for AIChE 2017

  Session Chair (Micro/Nano Technology for Cancers) for BMES 2014

- **Department**

  Chair for AIChE Reception Committee, 2015-present

  Co-chair for Art Committee, 2015-present

  Member of Faculty Search Committee, 2016/17

- **College of Engineering**

  Member of Academic Program Committee, 2015-present

- **Texas Tech University**

  Member of Faculty Search Committee, Department of Chemistry & Biochemistry, 2015/16

- **Invited Reviewer**

  Panelist for National Science Foundation 2014 (CMMI), 2017 (DMR)

  Reviewer for Early Career Fellowship, The Wellcome Trust DBT India Alliance 2016

  Reviewer for Academic Journals: Lab on a Chip, Angewandte Chemie International Edition, ACS Nano, RSC Advances, Chemical Communications, Polymers, Chemical Engineering Journal, Journal of Polymer Science B, Journal of Bioactive and Compatible Polymers, etc.